

4.7 Radiated Emission Measurement

4.7.1 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.

4.7.2 Test Procedure

- a. Substitution method is used for E.I.R.P measurement. 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 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.P.R power 2.15 dBi.

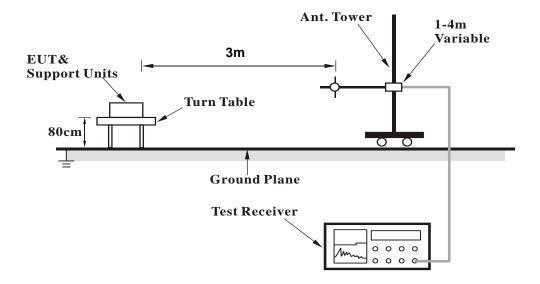
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.

4.7.3 Deviation from Test StandardNo deviation.

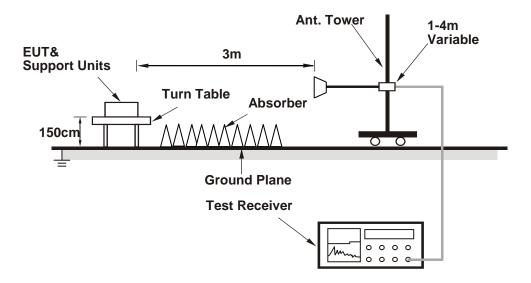


4.7.4 Test Setup

<Radiated Emission below or equal 1 GHz>



<Radiated Emission above 1 GHz>



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



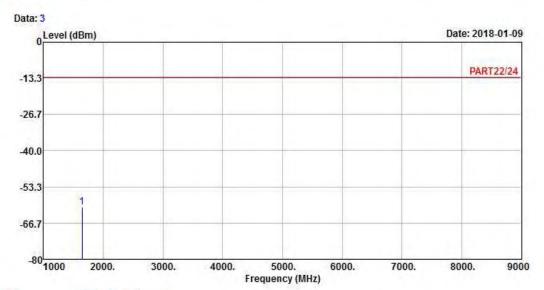
4.7.5 Test Results

GSM:

Low Channel



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Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL Remark : GPRS 850 Link L-CH

Tested by: Jisyong Wang

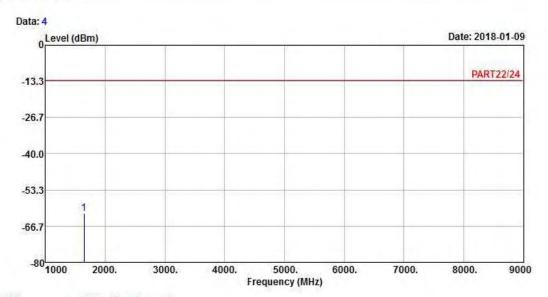
Read Limit Over Freq Level Level Lime Limit Factor Remark

MHz dBm dBm dB dB

1 pp 1648.40 -60.85 -46.12 -13.00 -47.85 -14.73 Peak







Site : 966 Chamber 5 Condition: PART22/24 VERTICAL

Remark : GPRS 850 Link_L-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

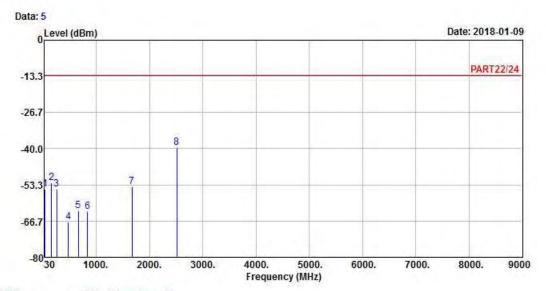
1 pp 1648.40 -62.02 -47.29 -13.00 -49.02 -14.73 Peak



Middle Channel



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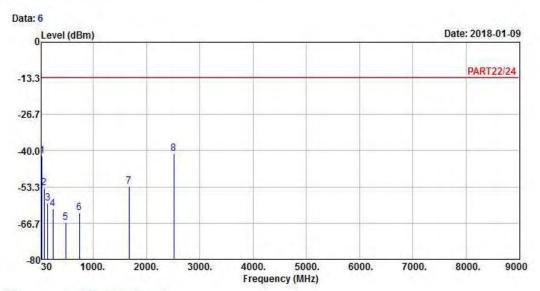
Site : 966 Chamber 5 Condition: PART22/24 HORIZONTAL Remark : GPRS 850 Link_M-CH

Tested by: Jisyong Wang

			Kead	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
-	MHz	dBm	dBm	dBm	dB	dB	
1	42.52	-55.02	-54.08	-13.00	-42.02	-0.94	Peak
2	162.53	-52.57	-47.52	-13.00	-39.57	-5.05	Peak
3	255.85	-54.77	-48.66	-13.00	-41.77	-6.11	Peak
3 4 5	477.53	-67.06	-62.02	-13.00	-54.06	-5.04	Peak
5	662.53	-62.83	-62.14	-13.00	-49.83	-0.69	Peak
6	833.26	-63.09	-63.53	-13.00	-50.09	0.44	Peak
7	1672.80	-53.90	-39.22	-13.00	-40.90	-14.68	Peak
8 pp	2509.20	-39.48	-28.57	-13.00	-26.48	-10.91	Peak







Site : 966 Chamber 5 Condition: PART22/24 VERTICAL Remark : GPRS 850 Link_M-CH

Tested by: Jisyong Wang

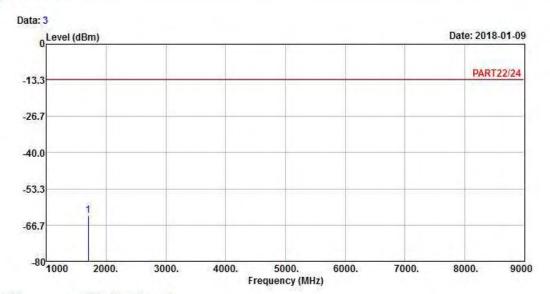
			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
-	MHz	dBm	dBm	dBm	dB	dB	
1	41.53	-41.94	-41.53	-13.00	-28.94	-0.41	Peak
2	76.86	-53.60	-43.62	-13.00	-40.60	-9.98	Peak
3	144.66	-59.42	-51.26	-13.00	-46.42	-8.16	Peak
4 5	239.53	-61.39	-54.97	-13.00	-48.39	-6.42	Peak
5	481.66	-66.48	-61.53	-13.00	-53.48	-4.95	Peak
6	739.86	-62.84	-63.53	-13.00	-49.84	0.69	Peak
7	1672.80	-53.06	-38.38	-13.00	-40.06	-14.68	Peak
8 pp	2509.20	-41.12	-30.21	-13.00	-28.12	-10.91	Peak



High Channel



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Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL Remark : GPRS 850 Link_H-CH

Tested by: Jisyong Wang

Read Limit Over

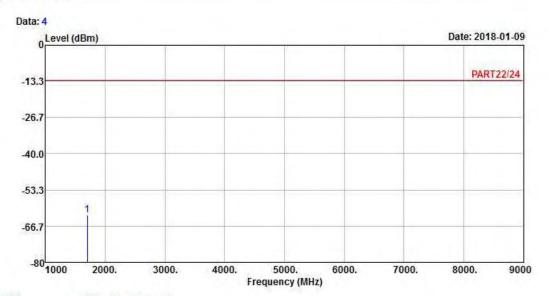
Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 pp 1697.60 -63.08 -48.55 -13.00 -50.08 -14.53 Peak







Site : 966 Chamber 5 Condition: PART22/24 VERTICAL

Remark : GPRS 850 Link_H-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

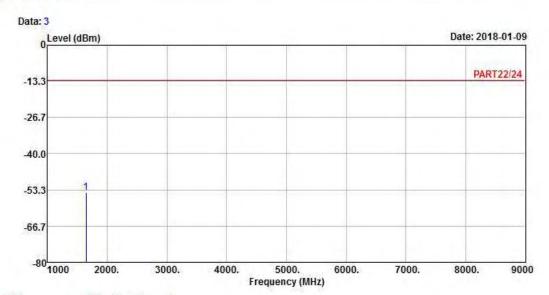
1 pp 1697.60 -62.59 -48.06 -13.00 -49.59 -14.53 Peak



EDGE: Low Channel



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Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL Remark : EDGE 850 Link_L-CH

Tested by: Jisyong Wang

Read Limit Over

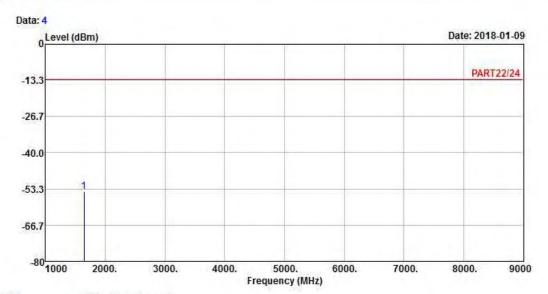
Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 pp 1648.40 -54.22 -39.49 -13.00 -41.22 -14.73 Peak







Site : 966 Chamber 5 Condition: PART22/24 VERTICAL

Remark : EDGE 850 Link_L-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

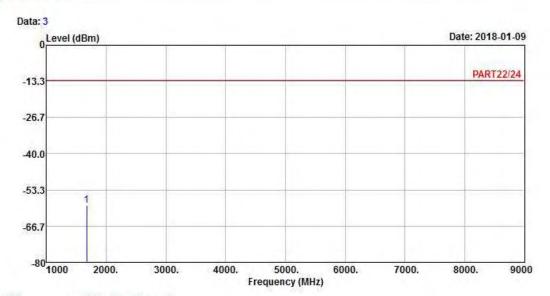
1 pp 1648.40 -54.17 -39.44 -13.00 -41.17 -14.73 Peak



Middle Channel



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Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL Remark : EDGE 850 Link_M-CH

Tested by: Jisyong Wang

Read Limit Over

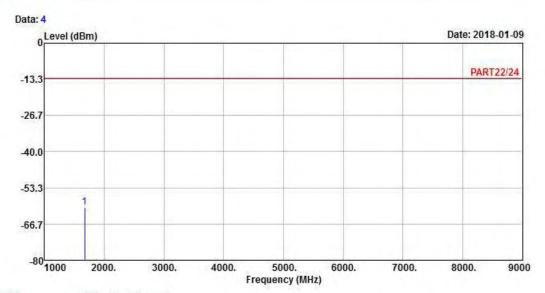
Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 pp 1672.80 -59.17 -44.49 -13.00 -46.17 -14.68 Peak







Site : 966 Chamber 5

Condition: PART22/24 VERTICAL Remark : EDGE 850 Link_M-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

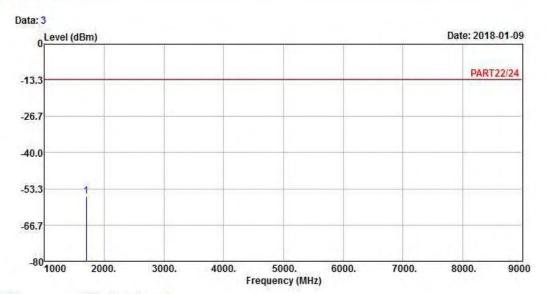
1 pp 1672.80 -60.58 -45.90 -13.00 -47.58 -14.68 Peak



High Channel



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Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL Remark : EDGE 850 Link_H-CH

Tested by: Jisyong Wang

Read Limit Over

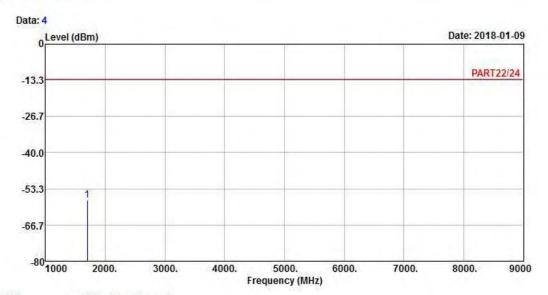
Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 pp 1697.60 -56.04 -41.51 -13.00 -43.04 -14.53 Peak







Site : 966 Chamber 5

Condition: PART22/24 VERTICAL Remark : EDGE 850 Link_H-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

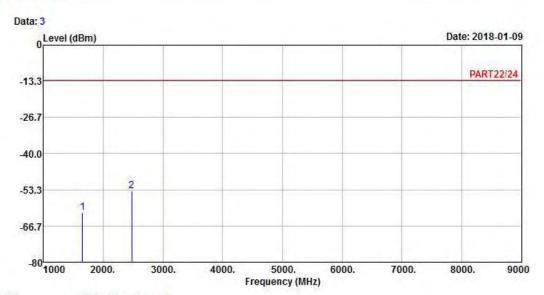
1 pp 1697.60 -57.50 -42.97 -13.00 -44.50 -14.53 Peak



WCDMA: Low Channel



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Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL Remark : WCDMA Band V Link_L-CH

Tested by: Jisyong Wang

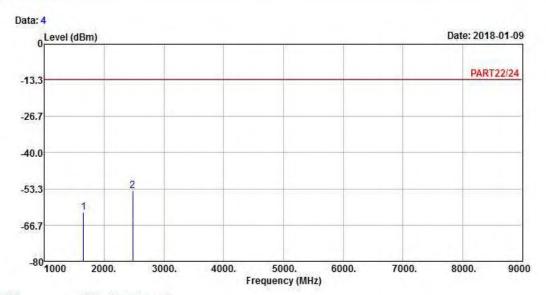
Read Limit Over
Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 1652.80 -61.67 -46.94 -13.00 -48.67 -14.73 Peak 2 pp 2479.20 -53.67 -43.23 -13.00 -40.67 -10.44 Peak







Site : 966 Chamber 5 Condition: PART22/24 VERTICAL Remark : WCDMA Band V Link L-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

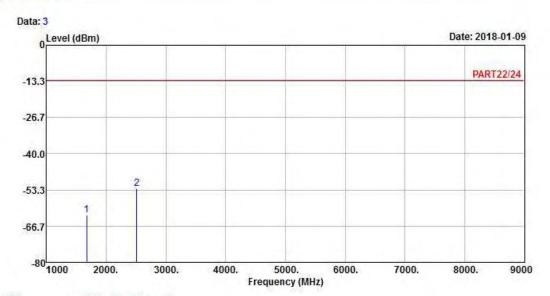
1 1652.80 -62.04 -47.31 -13.00 -49.04 -14.73 Peak 2 pp 2479.20 -54.03 -43.59 -13.00 -41.03 -10.44 Peak



Middle Channel



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Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL Remark : WCDMA Band V Link_M-CH

Tested by: Jisyong Wang

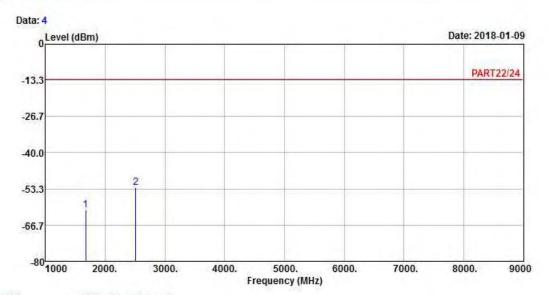
Read Limit Over
Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 1672.80 -62.63 -47.95 -13.00 -49.63 -14.68 Peak 2 pp 2509.20 -52.74 -41.83 -13.00 -39.74 -10.91 Peak







Site : 966 Chamber 5 Condition: PART22/24 VERTICAL

Remark : WCDMA Band V Link M-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

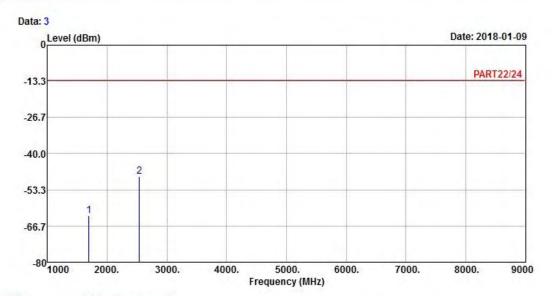
1 1672.80 -61.25 -46.57 -13.00 -48.25 -14.68 Peak 2 pp 2509.20 -52.81 -41.90 -13.00 -39.81 -10.91 Peak



High Channel



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Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL Remark : WCDMA Band V Link_H-CH

Tested by: Jisyong Wang

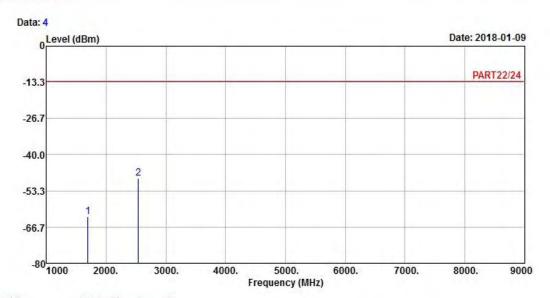
Read Limit Over
Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 1693.20 -62.97 -48.44 -13.00 -49.97 -14.53 Peak 2 pp 2539.80 -48.33 -37.56 -13.00 -35.33 -10.77 Peak







Site : 966 Chamber 5 Condition: PART22/24 VERTICAL Remark : WCDMA Band V Link_H-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

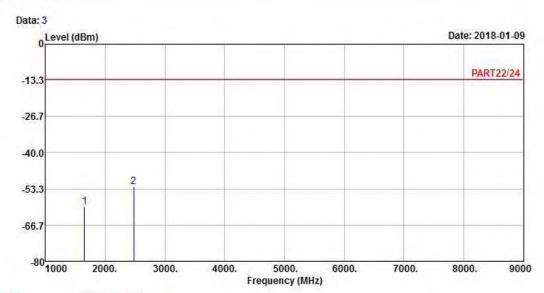
1 1693.20 -63.00 -48.47 -13.00 -50.00 -14.53 Peak 2 pp 2539.80 -48.70 -37.93 -13.00 -35.70 -10.77 Peak



CDMA: Low Channel



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Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL Remark : CFMA BC0 Link_L-CH

Tested by: Jisyong Wang

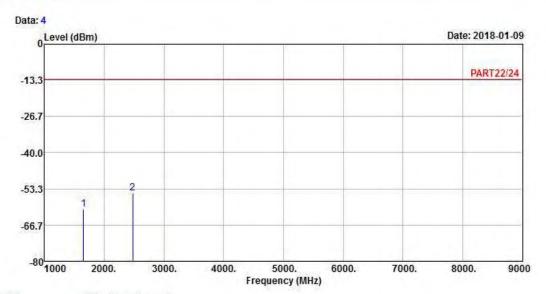
Read Limit Over
Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 1649.40 -59.88 -45.15 -13.00 -46.88 -14.73 Peak 2 pp 2474.10 -52.57 -42.13 -13.00 -39.57 -10.44 Peak







Site : 966 Chamber 5

Condition: PART22/24 VERTICAL Remark : CFMA BC0 Link_L-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

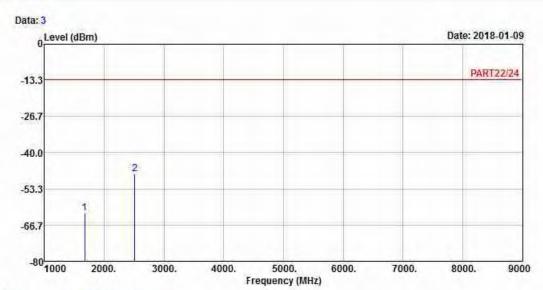
1 1649.40 -60.77 -46.04 -13.00 -47.77 -14.73 Peak 2 pp 2474.10 -54.88 -44.44 -13.00 -41.88 -10.44 Peak



Middle Channel



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Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL Remark : CFMA BC0 Link_M-CH

Tested by: Jisyong Wang

Read Limit Over

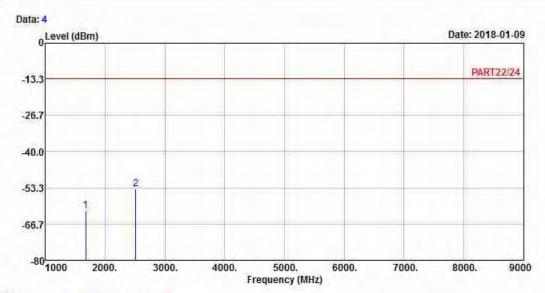
Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 1673.04 -62.19 -47.51 -13.00 -49.19 -14.68 Peak 2 pp 2509.56 -47.95 -37.04 -13.00 -34.95 -10.91 Peak







Site : 966 Chamber 5

Condition: PART22/24 VERTICAL Remark : CFMA BC0 Link M-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

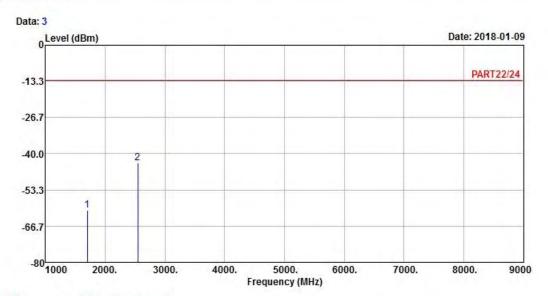
1 1673.04 -61.74 -47.06 -13.00 -48.74 -14.68 Peak 2 pp 2509.56 -53.74 -42.83 -13.00 -40.74 -10.91 Peak



High Channel



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Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL Remark : CFMA BC0 Link_H-CH

Tested by: Jisyong Wang

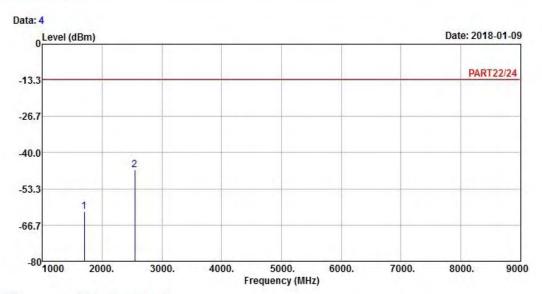
Read Limit Over
Freq Level Level Limit Factor Remark

MHz dBm dBm dB dB

1 1696.62 -60.79 -46.26 -13.00 -47.79 -14.53 Peak 2 pp 2544.93 -43.33 -32.56 -13.00 -30.33 -10.77 Peak







Site : 966 Chamber 5

Condition: PART22/24 VERTICAL Remark : CFMA BC0 Link_H-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 1696.62 -61.65 -47.12 -13.00 -48.65 -14.53 Peak 2 pp 2544.93 -46.47 -35.70 -13.00 -33.47 -10.77 Peak



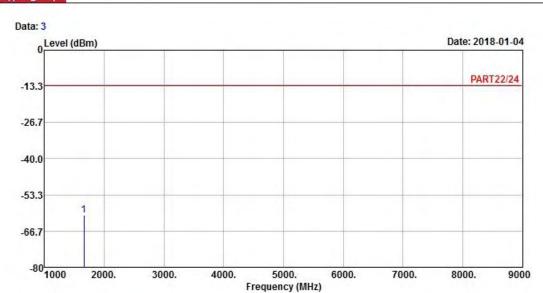
LTE Band 5

Channel Bandwidth: 10 MHz / QPSK

Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : LTE Band 5 QPSK_10M Link_L-CH

Tested by: Jisyong Wang

Read Limit Over

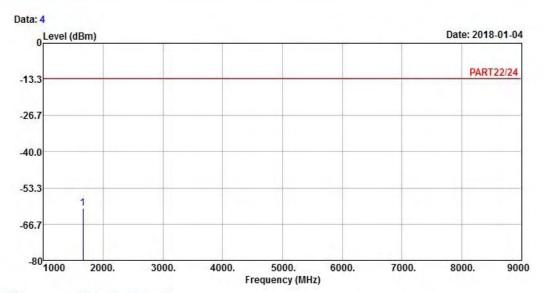
Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 pp 1658.00 -60.80 -46.12 -13.00 -47.80 -14.68 Peak







Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 5 QPSK_10M Link_L-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

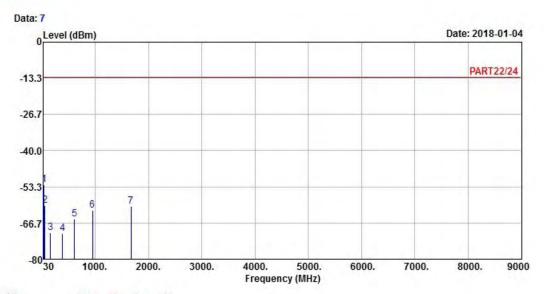
1 pp 1658.00 -60.93 -46.25 -13.00 -47.93 -14.68 Peak



Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch



Over

Site : 966 Chamber 5 Condition: PART22/24 HORIZONTAL

Remak : LTE Band 5 QPSK_10M Link_M-CH

Tested by: Jisyong Wang

1 pp

3

6

 Freq
 Level
 Line
 Limit
 Factor
 Remark

 MHz
 dBm
 dBm
 dB
 dB
 dB

 42.96
 -52.41
 -51.47
 -13.00
 -39.41
 -0.94
 Peak

 52.95
 -60.21
 -54.40
 -13.00
 -47.21
 -5.81
 Peak

 163.65
 -70.17
 -65.05
 -13.00
 -57.17
 -5.12
 Peak

 381.90
 -70.57
 -64.52
 -13.00
 -57.57
 -6.05
 Peak

 610.10
 -65.18
 -64.40
 -13.00
 -52.18
 -0.78
 Peak

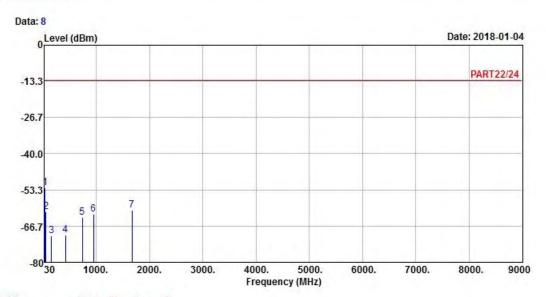
 952.40
 -62.03
 -63.93
 -13.00
 -49.03
 1.90
 Peak

 1673.00
 -60.66
 -45.98
 -13.00
 -47.66
 -14.68
 Peak

Read Limit







Site : 966 Chamber 5 Condition: PART22/24 VERTICAL

Remak : LTE Band 5 QPSK_10M Link_M-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Level Line Limit Factor Remark

MHz dBm dBm dBm dB dB

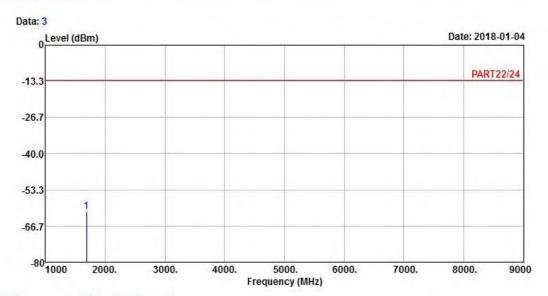
1 pp	43.23	-52.52	-51.05	-13.00	-39.52	-1.47	Peak	
2	53.22	-61.39	-55.58	-13.00	-48.39	-5.81	Peak	
3	157.98	-70.25	-64.86	-13.00	-57.25	-5.39	Peak	
4	423.20	-69.91	-64.15	-13.00	-56.91	-5.76	Peak	
5	738.20	-63.48	-64.13	-13.00	-50.48	0.65	Peak	
6	948.90	-62.41	-64.18	-13.00	-49.41	1.77	Peak	
7	1673.00	-60.91	-46.23	-13.00	-47.91	-14.68	Peak	



High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : LTE Band 5 QPSK_10M Link_H-CH

Tested by: Jisyong Wang

Read Limit Over

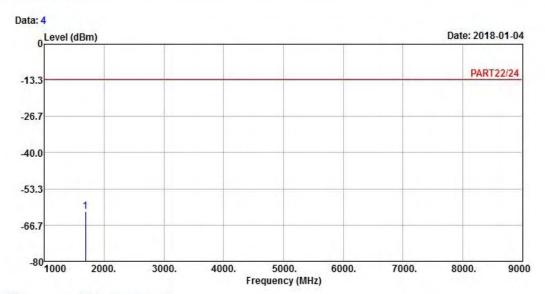
Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 pp 1688.00 -61.46 -46.86 -13.00 -48.46 -14.60 Peak







Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 5 QPSK_10M Link_H-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 pp 1688.00 -61.57 -46.97 -13.00 -48.57 -14.60 Peak



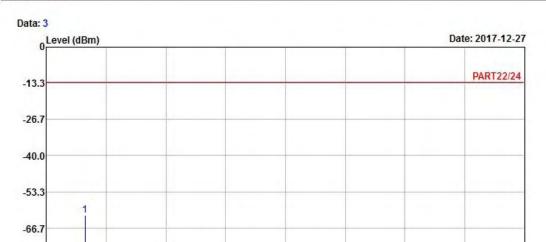
LTE Band 26

Channel Bandwidth: 15 MHz / QPSK

Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch



5000.

Frequency (MHz)

6000.

7000.

8000.

9000

Site : 966 Chamber 5

-80 1000

Condition: PART22/24 HORIZONTAL

2000.

Remak : LTE Band 26 QPSK_15M Link_L-CH

3000.

Tested by: Jisyong Wang

Read Limit Over

4000.

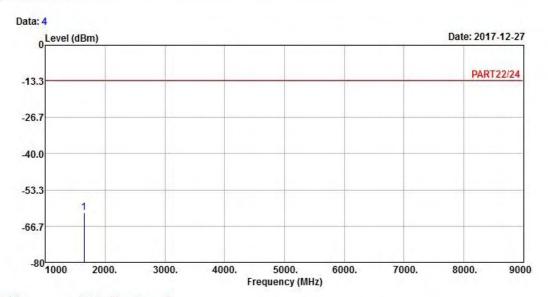
Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 pp 1643.00 -62.02 -47.29 -13.00 -49.02 -14.73 Peak







Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 26 QPSK_15M Link_L-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

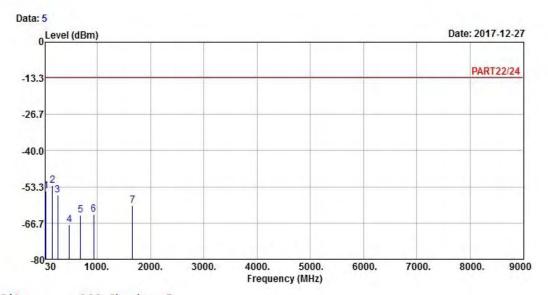
1 pp 1643.00 -61.80 -47.07 -13.00 -48.80 -14.73 Peak



Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch



Over

: 966 Chamber 5

Condition: PART22/24 HORIZONTAL

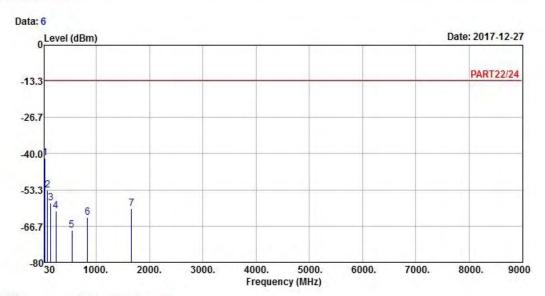
: LTE Band 26 QPSK_15M Link_M-CH

Tested by: Jisyong Wang

Read Limit Freq Level Level Line Limit Factor Remark MHz dBm dBm dBm dB dB 42.61 -54.94 -54.00 -13.00 -41.94 -0.94 Peak 1 159.98 -52.82 -47.98 -13.00 -39.82 -4.84 Peak 2 pp 259.89 -56.29 -50.10 -13.00 -43.29 -6.19 Peak 479.11 -67.32 -62.31 -13.00 -54.32 -5.01 Peak 686.69 -63.71 -63.40 -13.00 -50.71 -0.31 Peak 6 932.10 -63.47 -64.84 -13.00 -50.47 1.37 Peak 1662.00 -60.31 -45.63 -13.00 -47.31 -14.68 Peak







Site : 966 Chamber 5 Condition: PART22/24 VERTICAL

Remak : LTE Band 26 QPSK_15M Link_M-CH

Tested by: Jisyong Wang

Read Limit Over
Freq Level Level Line Limit Factor Remark

MHz dBm dBm dB dB

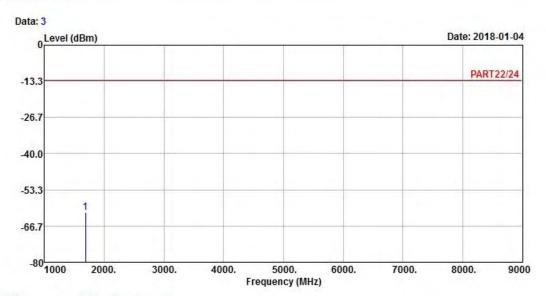
1 pp 42.61 -41.57 -40.63 -13.00 -28.57 -0.94 Peak 2 81.41 -53.51 -42.60 -13.00 -40.51 -10.91 Peak 3 144.46 -58.13 -49.97 -13.00 -45.13 -8.16 Peak 4 245.34 -61.17 -54.98 -13.00 -48.17 -6.19 Peak 5 542.16 -68.19 -65.06 -13.00 -55.19 -3.13 Peak 6 835.10 -63.36 -63.78 -13.00 -50.36 0.42 Peak 7 1662.00 -60.22 -45.54 -13.00 -47.22 -14.68 Peak



High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch



dB

: 966 Chamber 5

Condition: PART22/24 HORIZONTAL

: LTE Band 26 QPSK_15M Link_H-CH

dBm

Tested by: Jisyong Wang

MHz

Read Limit Over

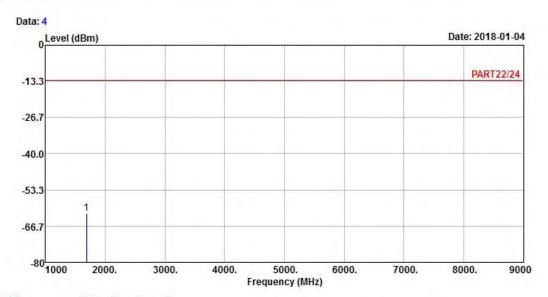
Freq Level Line Limit Factor Remark dBm

1 pp 1683.00 -61.55 -46.95 -13.00 -48.55 -14.60 Peak

dBm







Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 26 QPSK_15M Link_H-CH

Tested by: Jisyong Wang

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm dBm dB dB

1 pp 1683.00 -61.86 -47.26 -13.00 -48.86 -14.60 Peak



5 Pictures of Test Arrangements							
Please refer to the attached file (Test Setup Photo).							
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Appendix - Information on 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.

Hsin Chu EMC/RF/Telecom Lab

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

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Hwa Ya EMC/RF/Safety

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Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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