



REPORT No.: SZ19070119W08

15MHz/ QPSK / HCH



15MHz/ 16QAM / HCH



15MHz/ 64QAM / HCH



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SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.
FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555 Fax: 86-755-36698525
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REPORT No.: SZ19070119W08

LTE Band 7 99% & 26dB Bandwidth

20MHz/QPSK / LCH



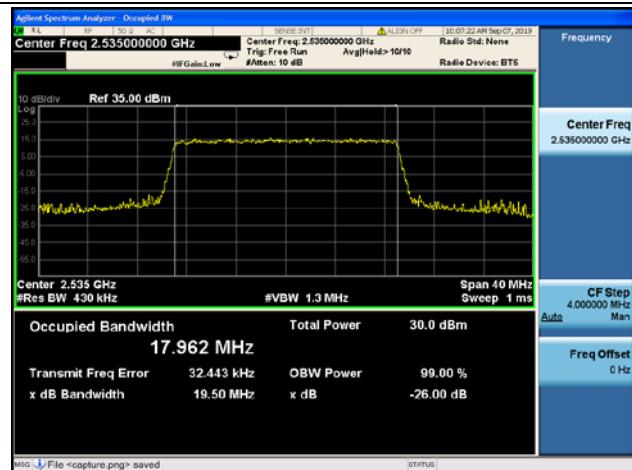
20MHz/16QAM / LCH



20MHz/ 64QAM / LCH



20MHz/QPSK / MCH



20MHz/ 16QAM / MCH



20MHz/ 64QAM / MCH



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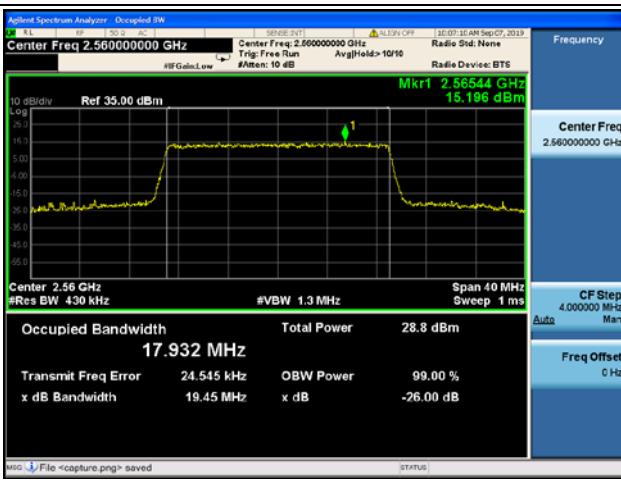
20MHz/ QPSK / HCH



20MHz/ 16QAM / HCH



20MHz/ 64QAM / HCH



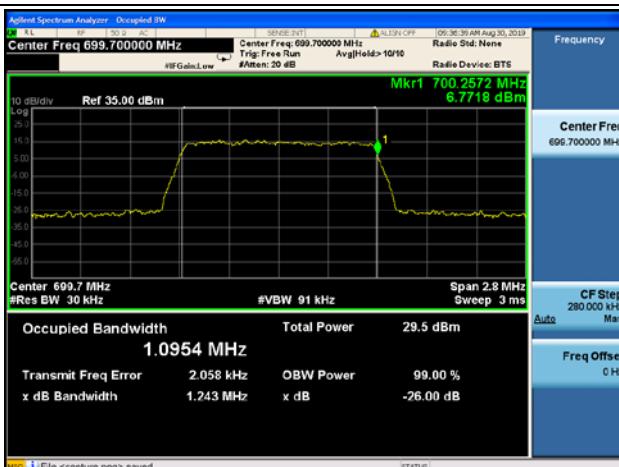
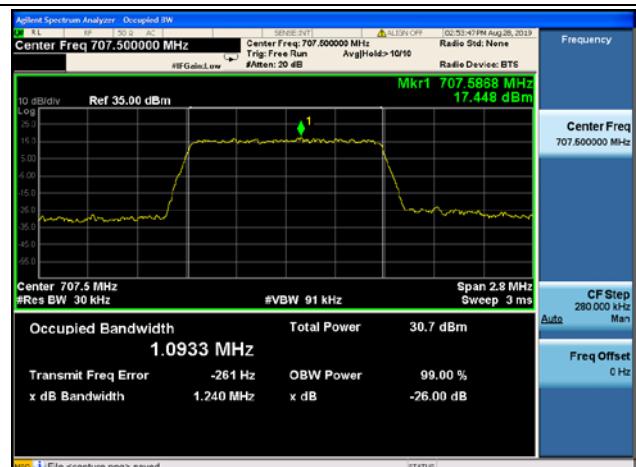
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LTE Band 12 99% & 26dB Bandwidth
1.4MHz/QPSK / LCH

1.4MHz/16QAM / LCH

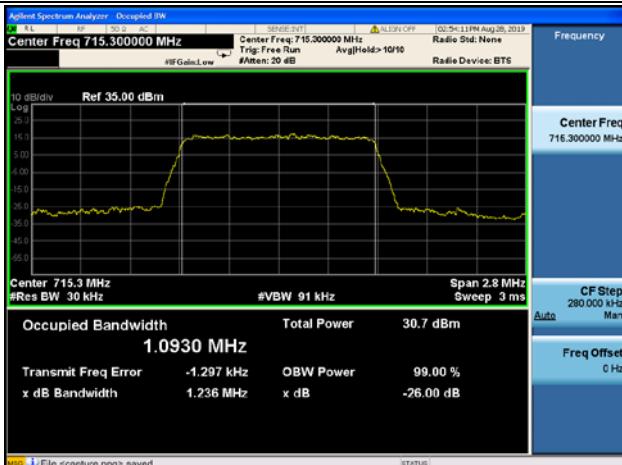
1.4MHz/ 64QAM / LCH

1.4MHz/QPSK / MCH

1.4MHz/ 16QAM / MCH

1.4MHz/ 64QAM / MCH

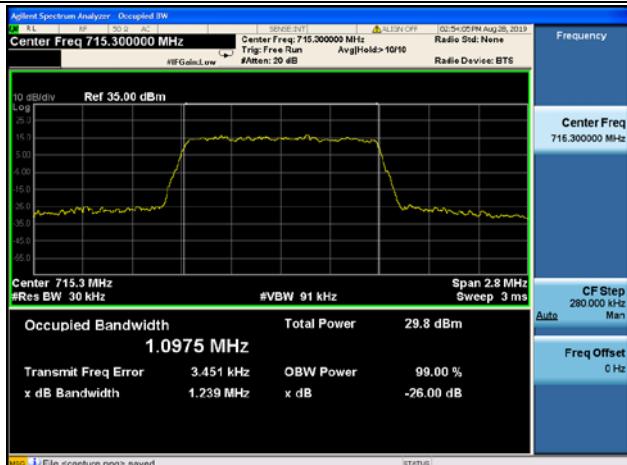



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1.4MHz/ QPSK / HCH



1.4MHz/ 16QAM / HCH



1.4MHz/ 64QAM / HCH



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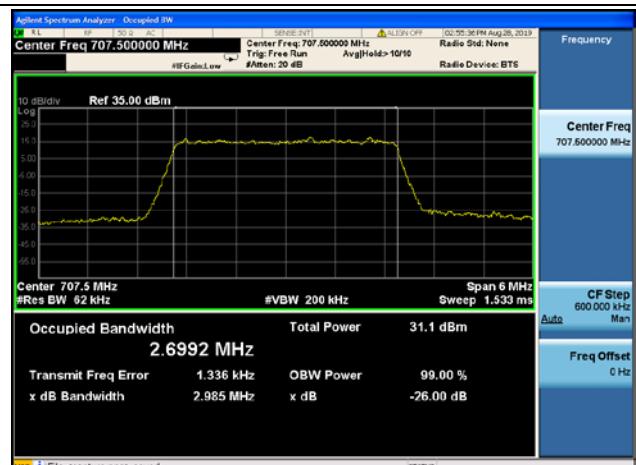
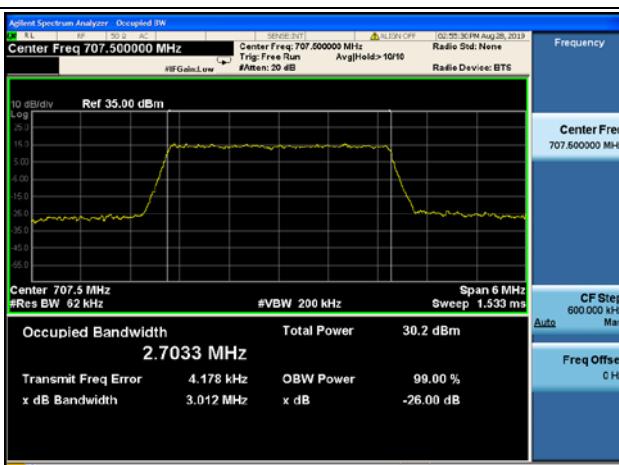
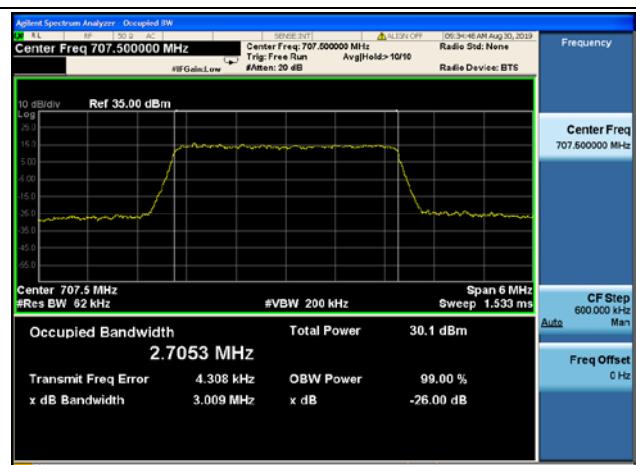
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LTE Band 12 99% & 26dB Bandwidth
3MHz/QPSK / LCH

3MHz/16QAM / LCH

3MHz/ 64QAM / LCH

3MHz/QPSK / MCH

3MHz/ 16QAM / MCH

3MHz/ 64QAM / MCH


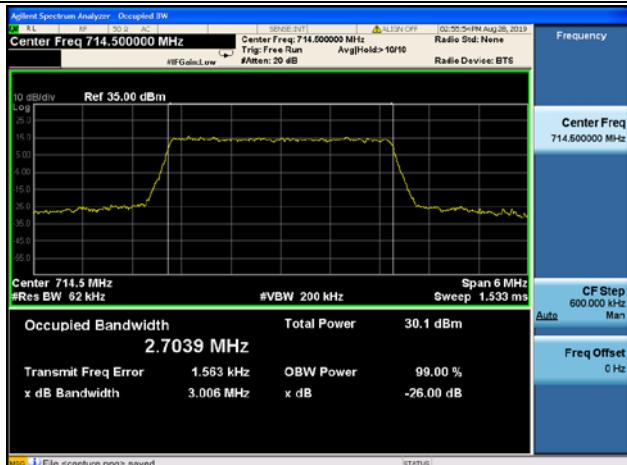


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3MHz/ QPSK / HCH



3MHz/ 16QAM / HCH



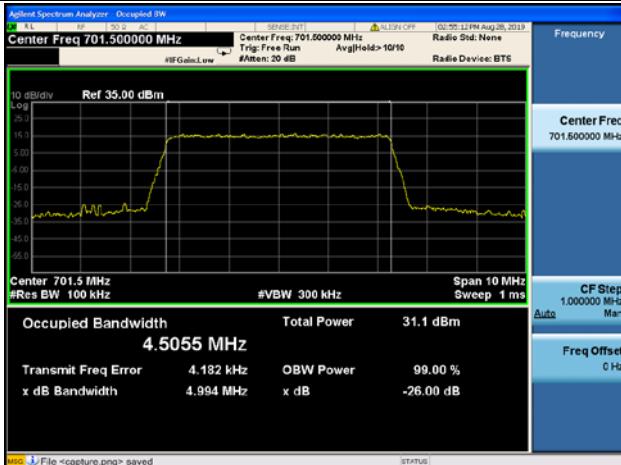
3MHz/ 64QAM / HCH



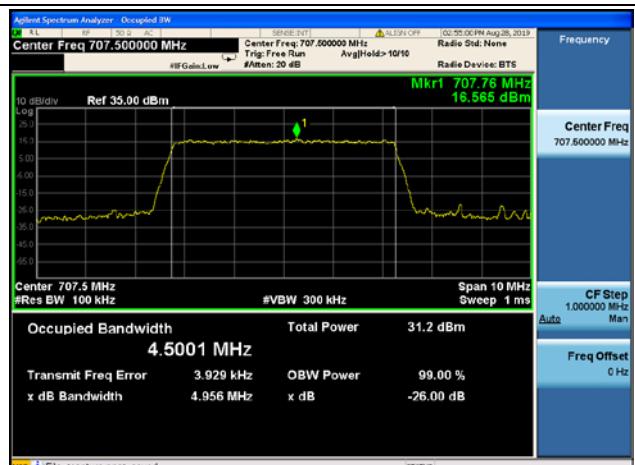
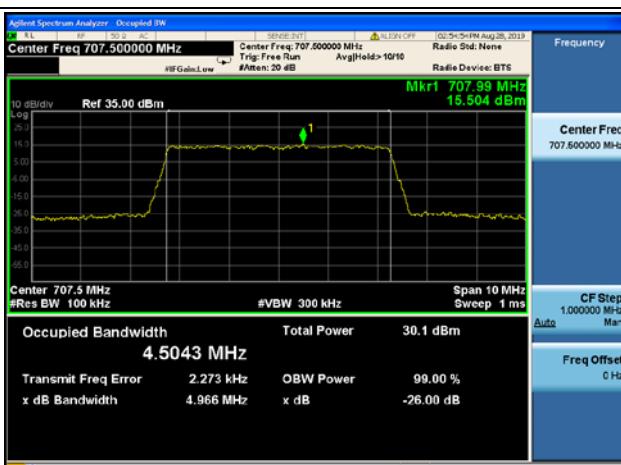
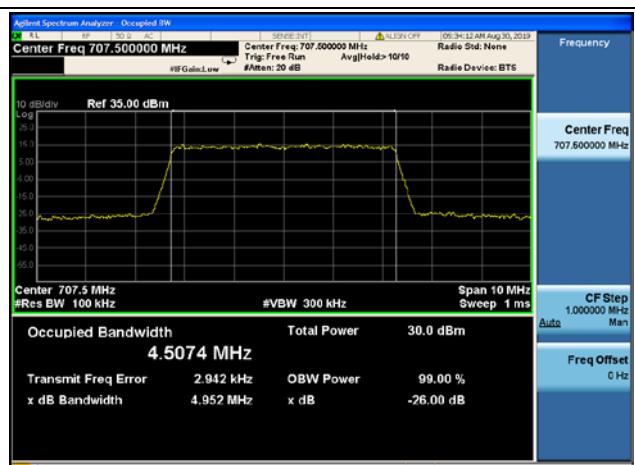
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LTE Band 12 99% & 26dB Bandwidth
5MHz/QPSK / LCH

5MHz/16QAM / LCH

5MHz/ 64QAM / LCH

5MHz/QPSK / MCH

5MHz/ 16QAM / MCH

5MHz/ 64QAM / MCH




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5MHz/ QPSK / HCH



5MHz/ 16QAM / HCH



5MHz/ 64QAM / HCH



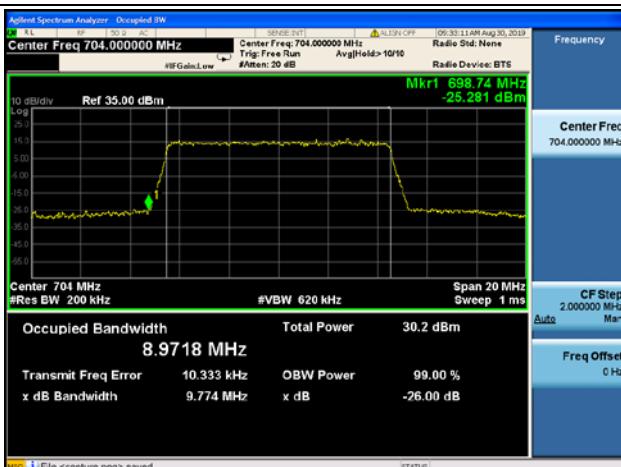
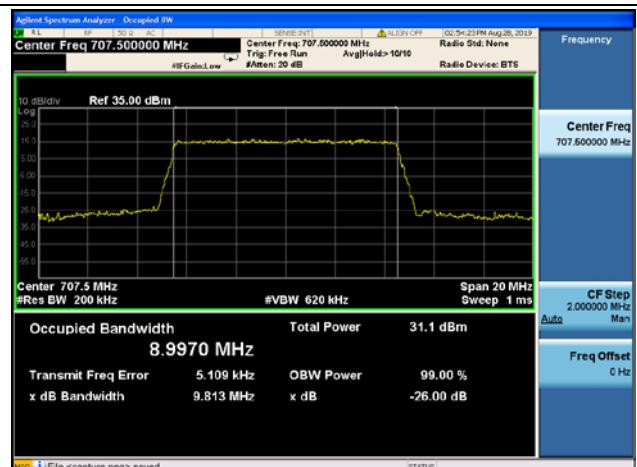
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LTE Band 12 99% & 26dB Bandwidth
10MHz/QPSK / LCH

10MHz/16QAM / LCH

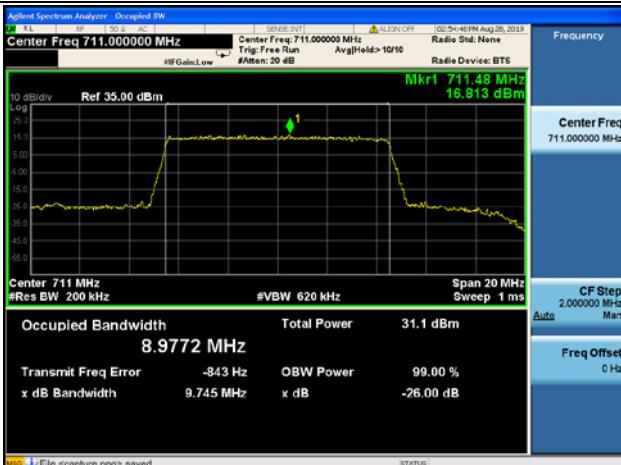
10MHz/ 64QAM / LCH

10MHz/QPSK / MCH

10MHz/ 16QAM / MCH

10MHz/ 64QAM / MCH




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10MHz/ QPSK / HCH



10MHz/ 16QAM / HCH



10MHz/ 64QAM / HCH



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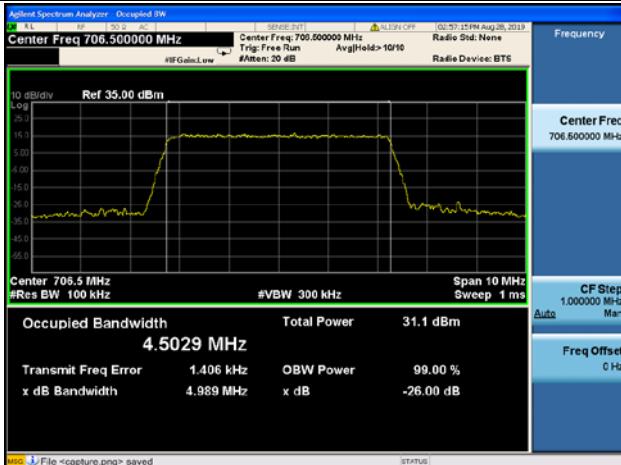
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LTE Band 17 99% & 26dB Bandwidth

5MHz/QPSK / LCH



5MHz/16QAM / LCH



5MHz/ 64QAM / LCH



5MHz/QPSK / MCH



5MHz/ 16QAM / MCH



5MHz/ 64QAM / MCH



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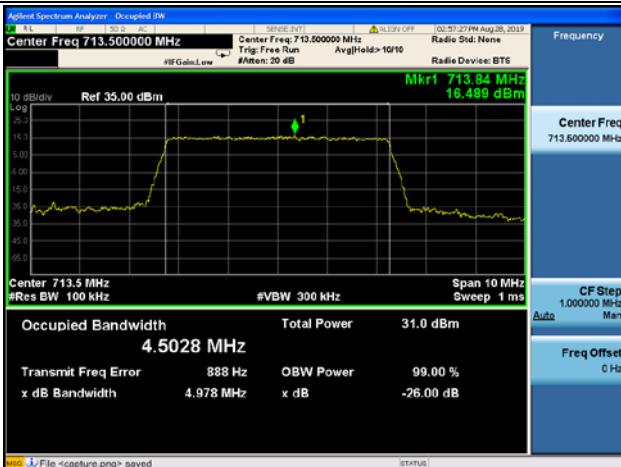
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LTE Band 17 99% & 26dB Bandwidth

10MHz/QPSK / LCH



10MHz/16QAM / LCH



10MHz/ 64QAM / LCH



10MHz/QPSK / MCH



10MHz/ 16QAM / MCH



10MHz/ 64QAM / MCH





REPORT No.: SZ19070119W08

10MHz/ QPSK / HCH



10MHz/ 16QAM / HCH



10MHz/ 64QAM / HCH



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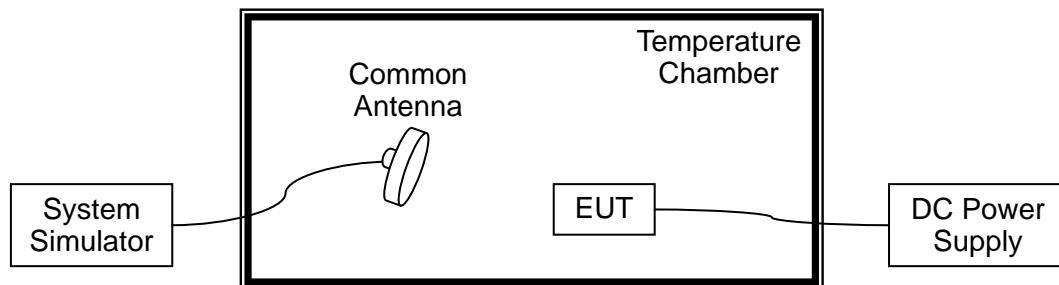
2.3. Frequency Stability

2.3.1. Requirement

According to FCC section 2.1055 & 27.54&24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

- (a) The temperature is varied from -10°C to +45°C at intervals of not more than 10°C.
- (b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

2.3.2. Test Description



The EUT which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power. A call is established between the EUT and the SS via a Common Antenna.

2.3.3. Test procedure

KDB 971168 D01v03 Section 9.0 and ANSI/TIA-603-E-2016.

2.3.4. Test Result

The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.35VDC and 3.5VDC, which are specified by the applicant; the normal temperature here used is 20°C.



LTE Band 2, QPSK, Channel 18900, Frequency 1880.0MHz Limit =Within Authorized Band					
Voltage(%)	Power(VDC)	Temp(°C)	Fre. Dev.(Hz)	Deviation (ppm)	Result
100	3.82	+20 (Ref)	31	0.016	PASS
100		-10	14	0.007	
100		0	-64	-0.034	
100		+10	-67	-0.036	
100		+20	-49	-0.026	
100		+30	52	0.028	
100		+40	56	0.030	
100		+45	45	0.024	
115		+20	35	0.019	
85		+20	37	0.020	

LTE Band 4, QPSK, Channel 20175, Frequency 1732.5MHz Limit =Within Authorized Band					
Voltage(%)	Power(VDC)	Temp(°C)	Fre. Dev.(Hz)	Deviation (ppm)	Result
100	3.82	+20 (Ref)	53	0.031	PASS
100		-10	-57	-0.033	
100		0	42	0.024	
100		+10	-43	-0.025	
100		+20	-47	-0.027	
100		+30	31	0.018	
100		+40	47	0.027	
100		+45	53	0.031	
115		+20	26	0.015	
85		+20	-15	-0.009	

LTE Band 5, QPSK, Channel 20525, Frequency 836.5MHz Limit=±2.5ppm					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.82	+20 (Ref)	52	0.025	PASS



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100		-10	-57	-0.027	
100		0	38	0.018	
100		+10	-43	-0.021	
100		+20	-37	-0.018	
100		+30	73	0.035	
100		+40	47	0.022	
100		+45	27	0.013	
115	4.4	+20	26	0.012	
85	3.3	+20	-42	-0.020	

LTE Band 7, QPSK, Channel 21100, Frequency 2535MHz					
Limit= Within Authorized Band					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.82	+20 (Ref)	26	0.010	PASS
100		-10	-42	-0.017	
100		0	45	0.018	
100		+10	-27	-0.011	
100		+20	-47	-0.019	
100		+30	25	0.010	
100		+40	26	0.010	
100		+45	17	0.007	
115		+20	36	0.014	
85		+20	-25	-0.010	

LTE Band 12, QPSK, Channel 23095, Frequency 707.5MHz					
Limit =Within Authorized Band					
Voltage(%)	Power(VDC)	Temp(°C)	Fre. Dev.(Hz)	Deviation (ppm)	Result
100	3.82	+20 (Ref)	26	0.015	PASS
100		-10	-66	-0.037	
100		0	45	0.025	
100		+10	-27	-0.015	
100		+20	-27	-0.015	
100		+30	25	0.014	
100		+40	56	0.032	
100		+45	17	0.010	
115		+20	37	0.021	

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REPORT No.: SZ19070119W08

85	3.3	+20	-25	-0.014	
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LTE Band 17, QPSK, Channel 23790, Frequency 710MHz					
Limit =Within Authorized Band					
Voltage(%)	Power(VDC)	Temp(°C)	Fre. Dev.(Hz)	Deviation (ppm)	Result
100	3.82	+20 (Ref)	51	0.029	PASS
100		-10	-53	-0.030	
100		0	42	0.024	
100		+10	-7	-0.004	
100		+20	-39	-0.022	
100		+30	27	0.015	
100		+40	37	0.021	
100		+45	13	0.007	
115	4.4	+20	36	0.020	
85	3.3	+20	-55	-0.031	

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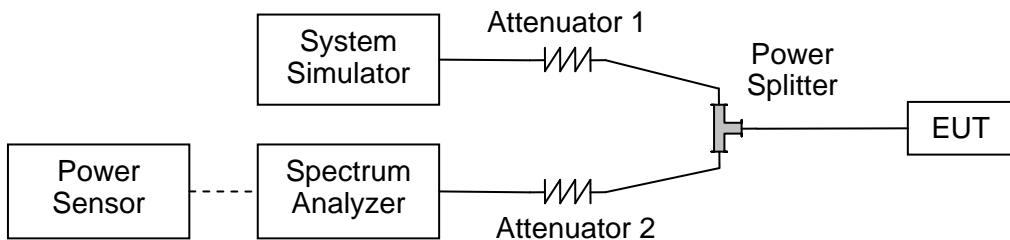
2.4. Peak to Average Radio

2.4.1. Requirement

According to FCC section 24.232(d), the peak to average ratio (PAR) of the transmission may not exceed 13dB.

2.4.2. Test Description

A. Test Set:



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.4.3. Test procedure

KDB 971168 D01v03 Section 5.7 and ANSI/TIA-603-E-2016.

2.4.4. Test Result

Record the maximum PAPR level associated with a probability of 0.1%.



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LTE Band 2						
BW (MHz)	Modulation	Low CH	Mid CH	High CH	Limit (dB)	Verdict
1.4	QPSK	5.03	5.37	5.4	<=13	PASS
	16QAM	5.97	5.80	5.93	<=13	PASS
	64QAM	6.00	5.80	5.97	<=13	PASS
3	QPSK	5.05	5.22	5.19	<=13	PASS
	16QAM	5.99	5.86	5.93	<=13	PASS
	64QAM	5.98	5.84	5.91	<=13	PASS
5	QPSK	5.18	5.29	5.22	<=13	PASS
	16QAM	5.91	5.84	5.89	<=13	PASS
	64QAM	5.90	5.84	5.89	<=13	PASS
10	QPSK	5.21	5.32	5.41	<=13	PASS
	16QAM	5.98	5.89	6.00	<=13	PASS
	64QAM	5.96	5.9	5.97	<=13	PASS
15	QPSK	5.17	5.21	5.31	<=13	PASS
	16QAM	6.01	5.86	6.05	<=13	PASS
	64QAM	6.00	5.88	6.02	<=13	PASS
20	QPSK	5.3	5.18	5.22	<=13	PASS
	16QAM	6.05	5.92	5.89	<=13	PASS
	64QAM	6.08	5.94	6.14	<=13	PASS

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LTE Band 4						
BW (MHz)	Modulation	Low CH	Mid CH	High CH	Limit (dB)	Verdict
1.4	QPSK	5.46	5.55	5.51	<=13	PASS
	16QAM	6.13	6.00	6.01	<=13	PASS
	64QAM	6.10	6.02	6.01	<=13	PASS
3	QPSK	5.28	5.18	5.20	<=13	PASS
	16QAM	6.17	6.00	5.99	<=13	PASS
	64QAM	6.15	5.97	5.97	<=13	PASS
5	QPSK	5.42	5.38	5.27	<=13	PASS
	16QAM	6.03	5.94	5.94	<=13	PASS
	64QAM	5.99	5.98	5.90	<=13	PASS
10	QPSK	5.32	5.28	5.37	<=13	PASS
	16QAM	5.97	5.99	5.95	<=13	PASS
	64QAM	6.00	5.98	5.94	<=13	PASS
15	QPSK	5.25	5.24	5.23	<=13	PASS
	16QAM	5.93	5.92	5.90	<=13	PASS
	64QAM	5.94	5.92	5.91	<=13	PASS
20	QPSK	5.30	5.18	5.28	<=13	PASS
	16QAM	6.05	5.92	6.14	<=13	PASS
	64QAM	6.00	5.95	5.90	<=13	PASS



LTE Band 5						
BW (MHz)	Modulation	Low CH	Mid CH	High CH	Limit (dB)	Verdict
1.4	QPSK	5.64	5.57	5.43	<=13	PASS
	16QAM	6.15	6.11	6.01	<=13	PASS
	64QAM	6.12	6.08	6.00	<=13	PASS
3	QPSK	5.30	5.30	5.20	<=13	PASS
	16QAM	6.08	6.10	5.99	<=13	PASS
	64QAM	6.08	6.06	5.97	<=13	PASS
5	QPSK	5.26	5.33	5.96	<=13	PASS
	16QAM	5.96	5.96	5.33	<=13	PASS
	64QAM	5.97	5.99	5.96	<=13	PASS
10	QPSK	5.27	5.33	5.34	<=13	PASS
	16QAM	6.02	6.02	6.02	<=13	PASS
	64QAM	6.03	6.00	6.04	<=13	PASS

LTE Band 7						
BW (MHz)	Modulation	Low CH	Mid CH	High CH	Limit (dB)	Verdict
5	QPSK	5.27	5.27	5.21	<=13	PASS
	16QAM	5.95	5.95	5.87	<=13	PASS
	64QAM	5.94	5.94	5.85	<=13	PASS
10	QPSK	5.25	5.29	5.25	<=13	PASS
	16QAM	5.93	5.90	5.92	<=13	PASS
	64QAM	5.97	5.95	5.89	<=13	PASS
15	QPSK	5.25	5.24	5.15	<=13	PASS
	16QAM	5.94	5.88	5.89	<=13	PASS
	64QAM	5.97	5.93	5.88	<=13	PASS
20	QPSK	5.29	5.19	5.13	<=13	PASS
	16QAM	5.96	5.95	5.92	<=13	PASS
	64QAM	5.94	5.89	5.92	<=13	PASS

LTE Band 12						
BW (MHz)	Modulation	Low CH	Mid CH	High CH	Limit (dB)	Verdict



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1.4	QPSK	5.52	5.45	5.39	<=13	PASS
	16QAM	5.98	5.96	6.00	<=13	PASS
	64QAM	5.98	6.00	6.00	<=13	PASS
3	QPSK	5.27	5.23	5.27	<=13	PASS
	16QAM	5.99	5.97	5.99	<=13	PASS
	64QAM	6.00	5.96	6.02	<=13	PASS
5	QPSK	5.35	5.34	5.41	<=13	PASS
	16QAM	5.94	5.94	5.98	<=13	PASS
	64QAM	5.97	5.94	5.97	<=13	PASS
10	QPSK	5.33	5.40	5.41	<=13	PASS
	16QAM	5.97	5.98	6.00	<=13	PASS
	64QAM	5.86	5.99	6.00	<=13	PASS

LTE Band 17						
BW (MHz)	Modulation	Low CH	Mid CH	High CH	Limit (dB)	Verdict
5	QPSK	5.37	5.09	5.41	<=13	PASS
	16QAM	5.94	5.76	5.99	<=13	PASS
	64QAM	5.96	5.94	5.96	<=13	PASS
10	QPSK	5.36	5.37	5.44	<=13	PASS
	16QAM	5.97	5.98	6.02	<=13	PASS
	64QAM	5.97	5.94	6.01	<=13	PASS

MORLAB

SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.
FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. ChinaTel: 86-755-36698555 Fax: 86-755-36698525
Http://www.morlab.cn E-mail: service@morlab.cn

LTE Band 2 Peak-to-Average Radio
1.4MHz/QPSK / LCH

1.4MHz/16QAM / LCH

1.4MHz/ 64QAM / LCH

1.4MHz/ QPSK / MCH

1.4MHz/16QAM / MCH

1.4MHz/ 64QAM / MCH


1.4MHz/ QPSK / HCH

1.4MHz/16QAM / HCH

1.4MHz/ 64QAM / HCH