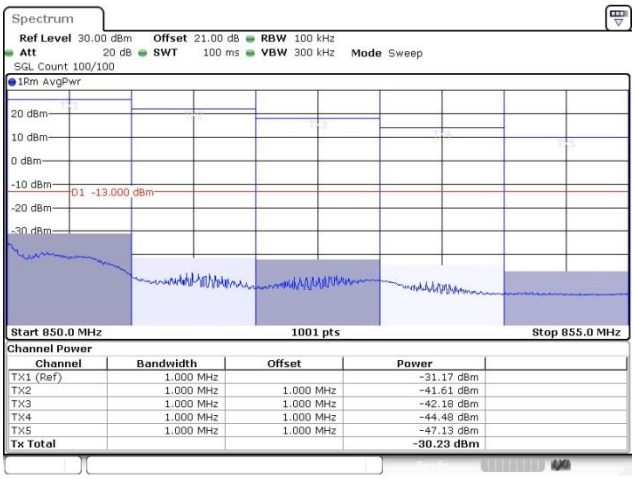
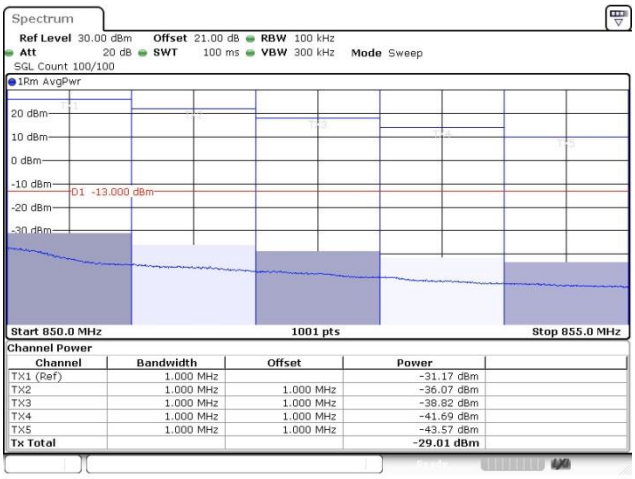
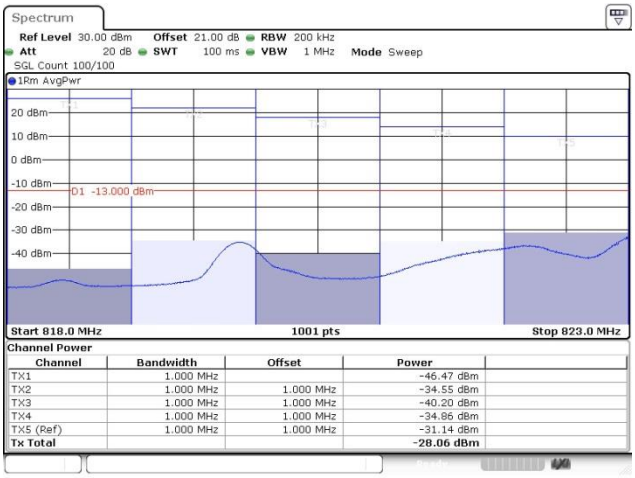
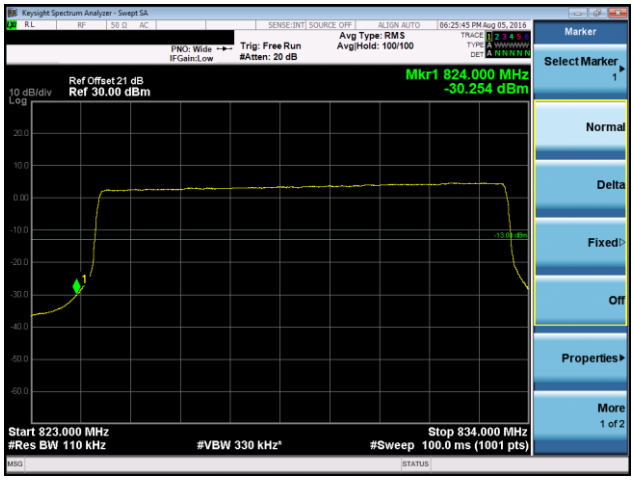
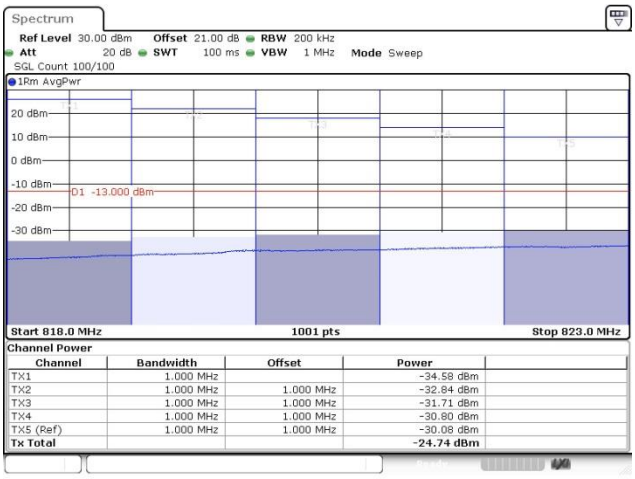
Mode	LTE Band 5, CB: 5MHz, 16QAM				
Channel	20625	1 RB upper / Offset 0	**Channel**	20625	1 RB upper / Offset 0
					
Channel	20625	100% RB / Offset 0	**Channel**	20625	100% RB / Offset 0
					

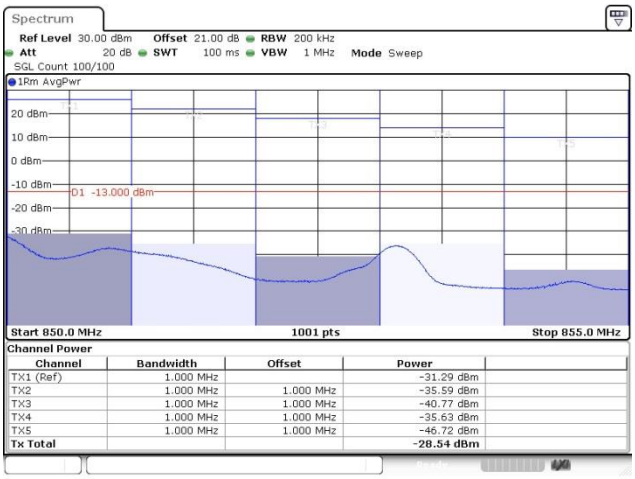
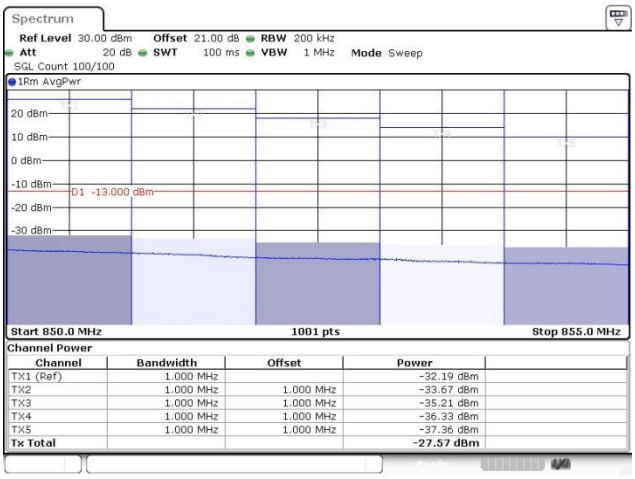
Mode	LTE Band 5, CB: 10MHz, QPSK				
Channel	20450	1 RB lower / Offset 0	**Channel**	20450	1 RB lower / Offset 0



Channel	20450	100% RB / Offset 0	Channel	20450	100% RB / Offset 0

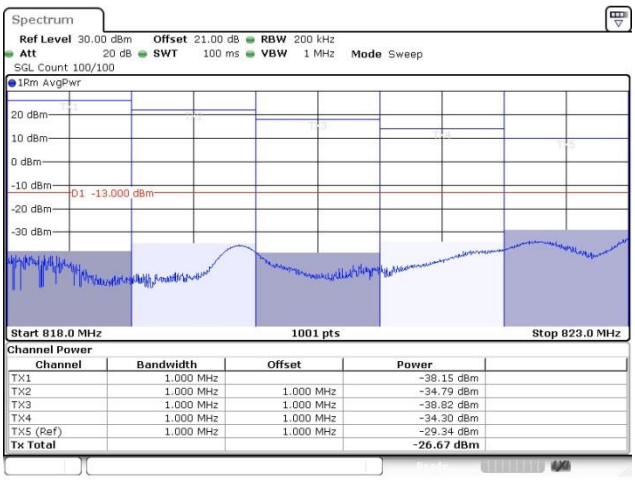
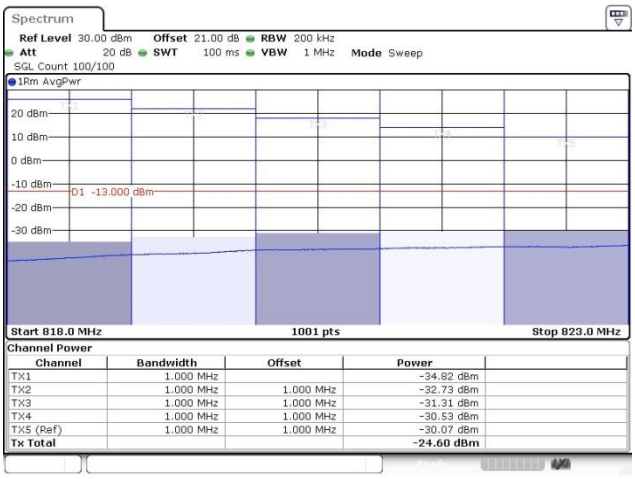




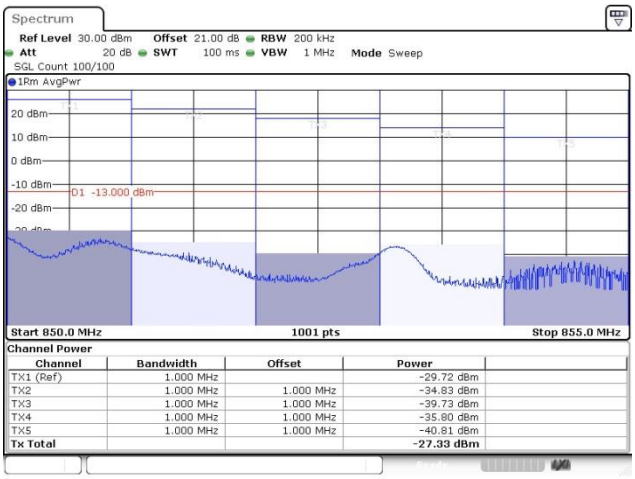
Mode	LTE Band 5, CB: 10MHz, QPSK				
Channel	20600	1 RB upper / Offset 0	**Channel**	20600	1 RB upper / Offset 0
					
Channel	20600	100% RB / Offset 0	**Channel**	20600	100% RB / Offset 0
					

Channel	Bandwidth	Offset	Power
TX1 (Ref)	1.000 MHz		-31.29 dBm
TX2	1.000 MHz	1.000 MHz	-35.59 dBm
TX3	1.000 MHz	1.000 MHz	-40.77 dBm
TX4	1.000 MHz	1.000 MHz	-35.63 dBm
TX5	1.000 MHz	1.000 MHz	-46.72 dBm
Tx Total			-28.54 dBm

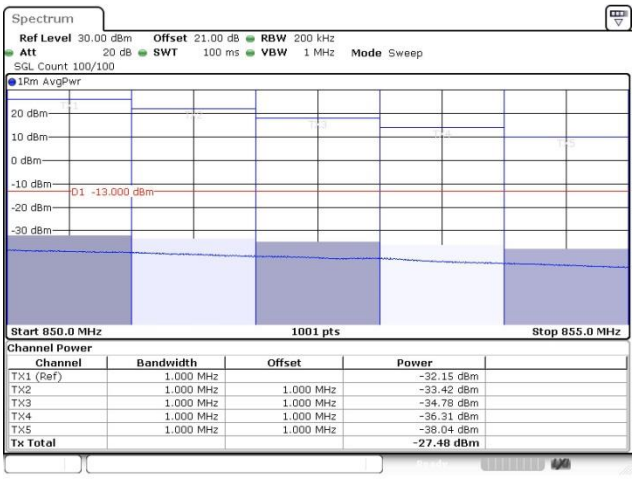
Channel	Bandwidth	Offset	Power
TX1 (Ref)	1.000 MHz		-32.19 dBm
TX2	1.000 MHz	1.000 MHz	-33.67 dBm
TX3	1.000 MHz	1.000 MHz	-35.21 dBm
TX4	1.000 MHz	1.000 MHz	-36.33 dBm
TX5	1.000 MHz	1.000 MHz	-37.36 dBm
Tx Total			-27.57 dBm

Mode	LTE Band 5, CB: 10MHz, 16QAM				
Channel	20450	1 RB lower / Offset 0	**Channel**	20450	1 RB lower / Offset 0
					
Channel	20450	100% RB / Offset 0	**Channel**	20450	100% RB / Offset 0
					

Mode	LTE Band 5, CB: 10MHz, 16QAM				
Channel	20600	1 RB upper / Offset 0	**Channel**	20600	1 RB upper / Offset 0



Channel	20600	100% RB / Offset 0	**Channel**	20600	100% RB / Offset 0

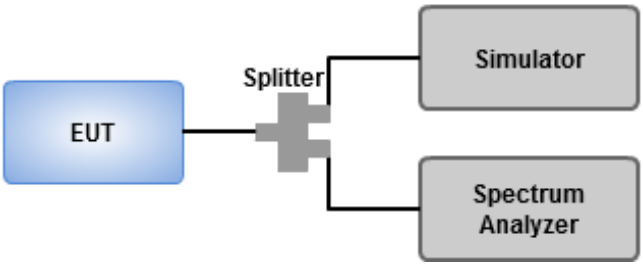


3.5 Occupied and 26 dB Bandwidth

3.5.1 Test Procedures

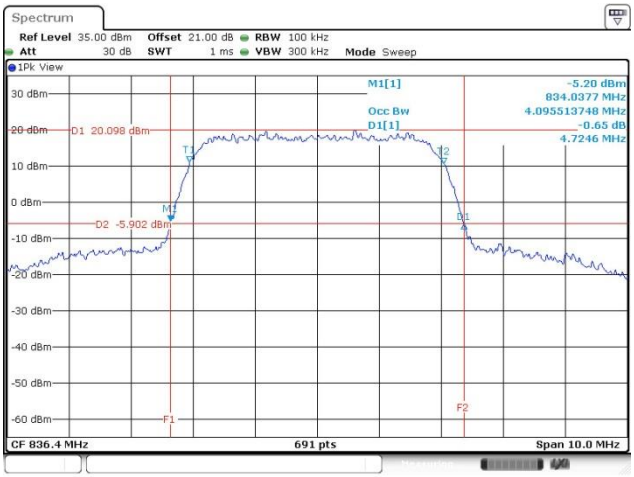
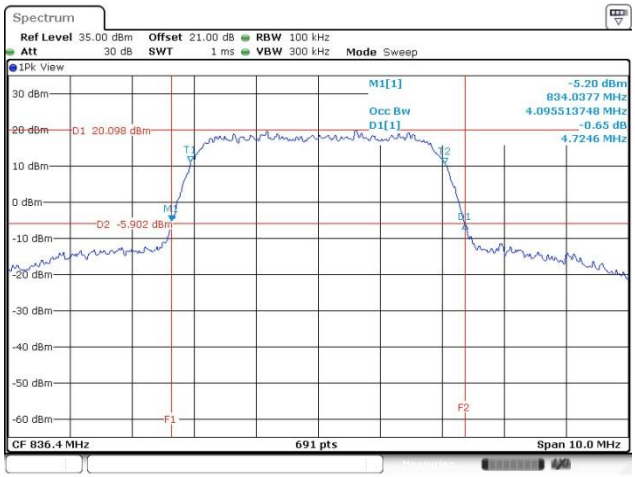
1. Set RBW = 100 kHz, VBW = 300 kHz for WCDMA.
   Set RBW = 20 / 50 / 100 / 200 kHz, VBW = 100 / 200 / 300 /1000 kHz for LTE channel bandwidth 1.4 / 3 / 5 / 10 MHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Using occupied bandwidth measurement function of spectrum analyzer to measure occupied bandwidth
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 26dB relative to the maximum level measured in the fundamental emission.

3.5.2 Test Setup

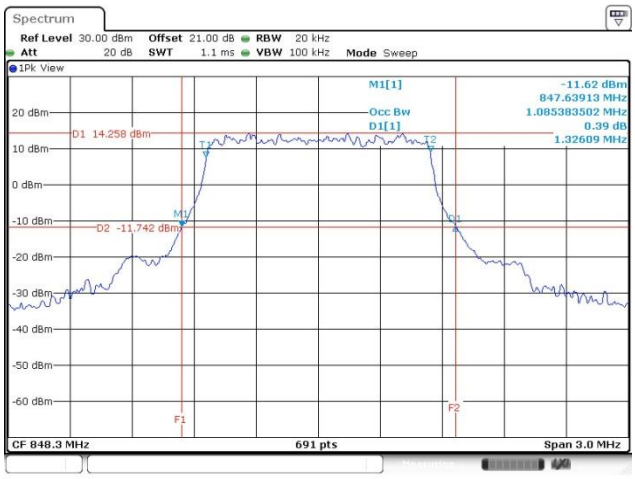
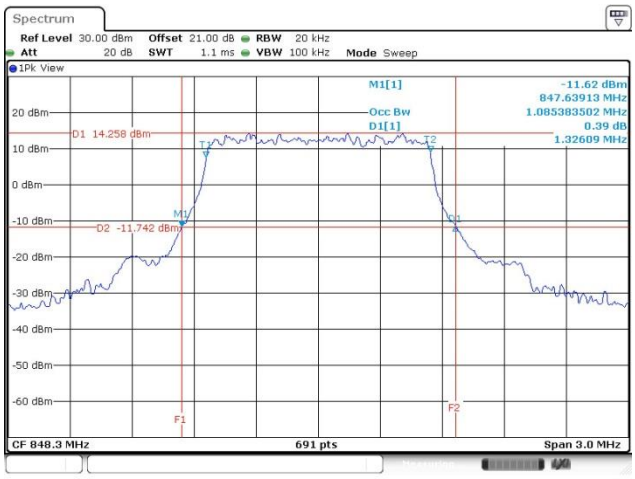


3.5.3 Test Result of Occupied Bandwidth

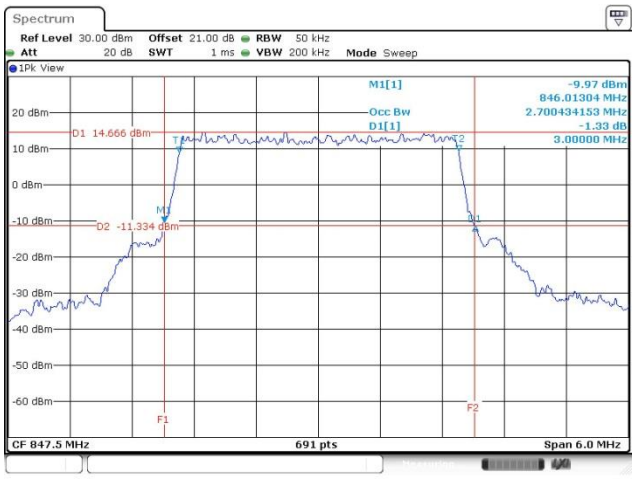
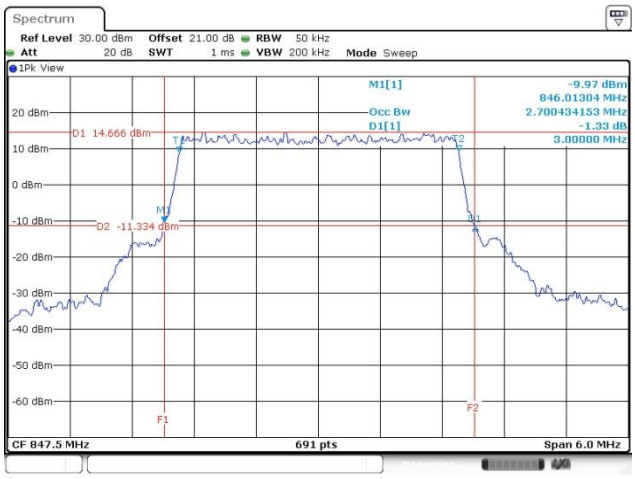
Mode	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
WCDMA BAND 5	4132	826.4	4.6087	4.07
WCDMA BAND 5	4182	836.4	4.7246	4.10
WCDMA BAND 5	4133	846.6	4.6087	4.08

Worst plots	
OBW	26dB bandwidth
	

Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 5	1.4	QPSK	20407	824.7	1.3087	1.09
LTE Band 5	1.4	QPSK	20525	836.5	1.2957	1.09
LTE Band 5	1.4	QPSK	20643	848.3	1.3000	1.09
LTE Band 5	1.4	16QAM	20407	824.7	1.3174	1.09
LTE Band 5	1.4	16QAM	20525	836.5	1.3087	1.09
LTE Band 5	1.4	16QAM	20643	848.3	1.3261	1.09

Worst plots	
26dB bandwidth	**OBW**
	

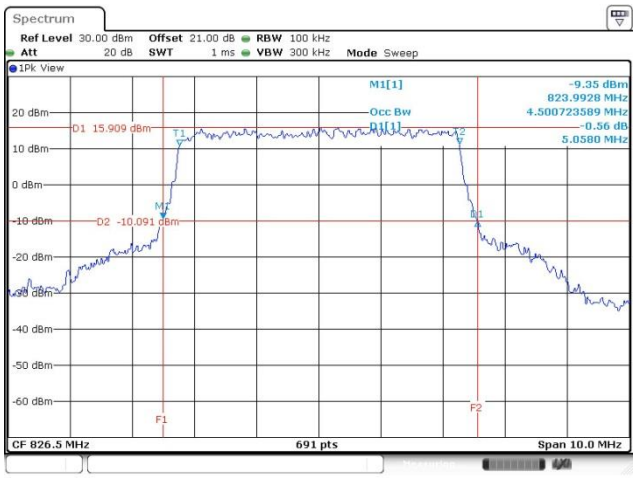
Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 5	3	QPSK	20415	825.5	2.9826	2.68
LTE Band 5	3	QPSK	20525	836.5	2.9652	2.69
LTE Band 5	3	QPSK	20635	847.5	2.9739	2.69
LTE Band 5	3	16QAM	20415	825.5	2.9913	2.70
LTE Band 5	3	16QAM	20525	836.5	2.9913	2.69
LTE Band 5	3	16QAM	20635	847.5	3.0000	2.70

Worst plots	
26dB bandwidth	**OBW**
	

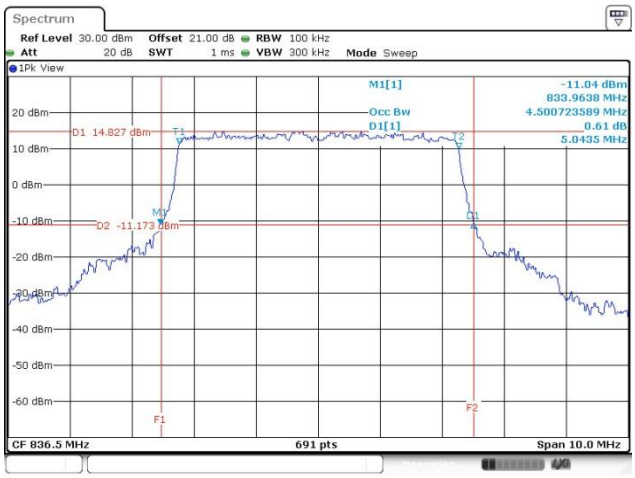
Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 5	5	QPSK	20425	826.5	5.0580	4.50
LTE Band 5	5	QPSK	20525	836.5	5.0145	4.49
LTE Band 5	5	QPSK	20625	846.5	5.0435	4.50
LTE Band 5	5	16QAM	20425	826.5	4.9710	4.50
LTE Band 5	5	16QAM	20525	836.5	5.0435	4.50
LTE Band 5	5	16QAM	20625	846.5	4.9420	4.50

Worst plots

26dB bandwidth

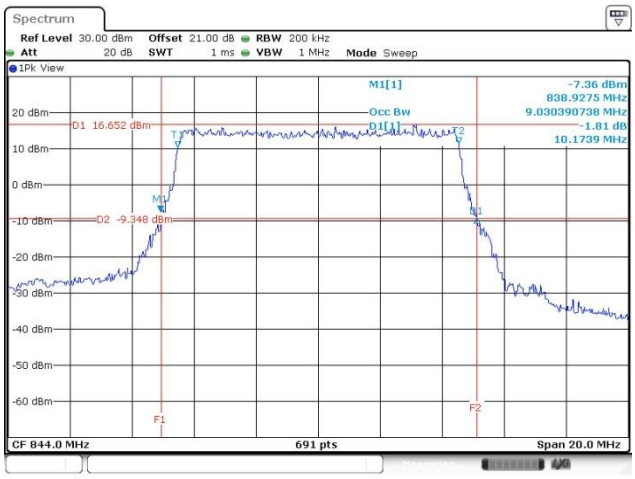
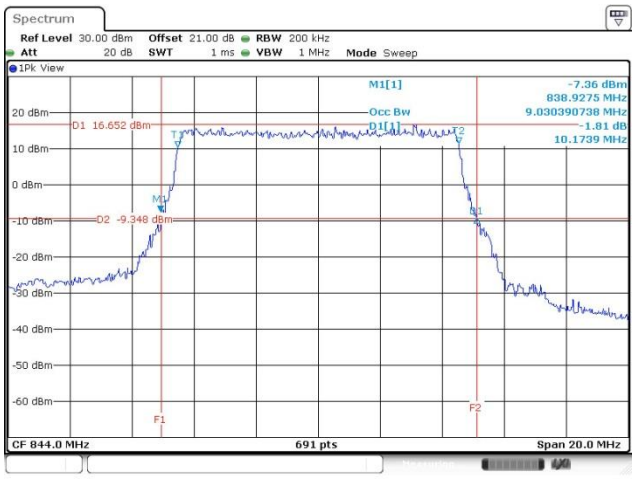


OBW



Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 5	10	QPSK	20450	829.0	10.1449	9.00
LTE Band 5	10	QPSK	20525	836.5	10.0870	9.00
LTE Band 5	10	QPSK	20600	844.0	10.1739	9.03
LTE Band 5	10	16QAM	20450	829.0	10.0870	8.97
LTE Band 5	10	16QAM	20525	836.5	10.0580	8.97
LTE Band 5	10	16QAM	20600	844.0	10.0870	9.00

Worst plots

26dB bandwidth	OBW
	

3.6 Peak to Average Ratio

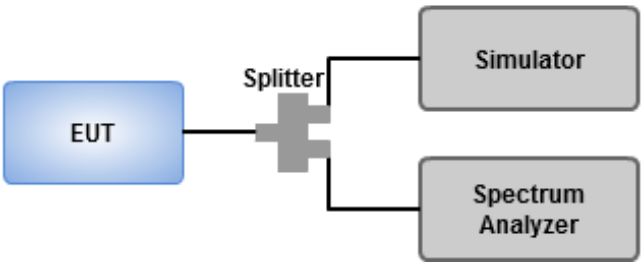
3.6.1 Limit of Peak to Average Ratio

Peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.6.2 Test Procedures

1. Enable CCDF function of spectrum analyzer and set RBW = 10 MHz.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Record the maximum PAPR level associated with a probability of 0.1%.

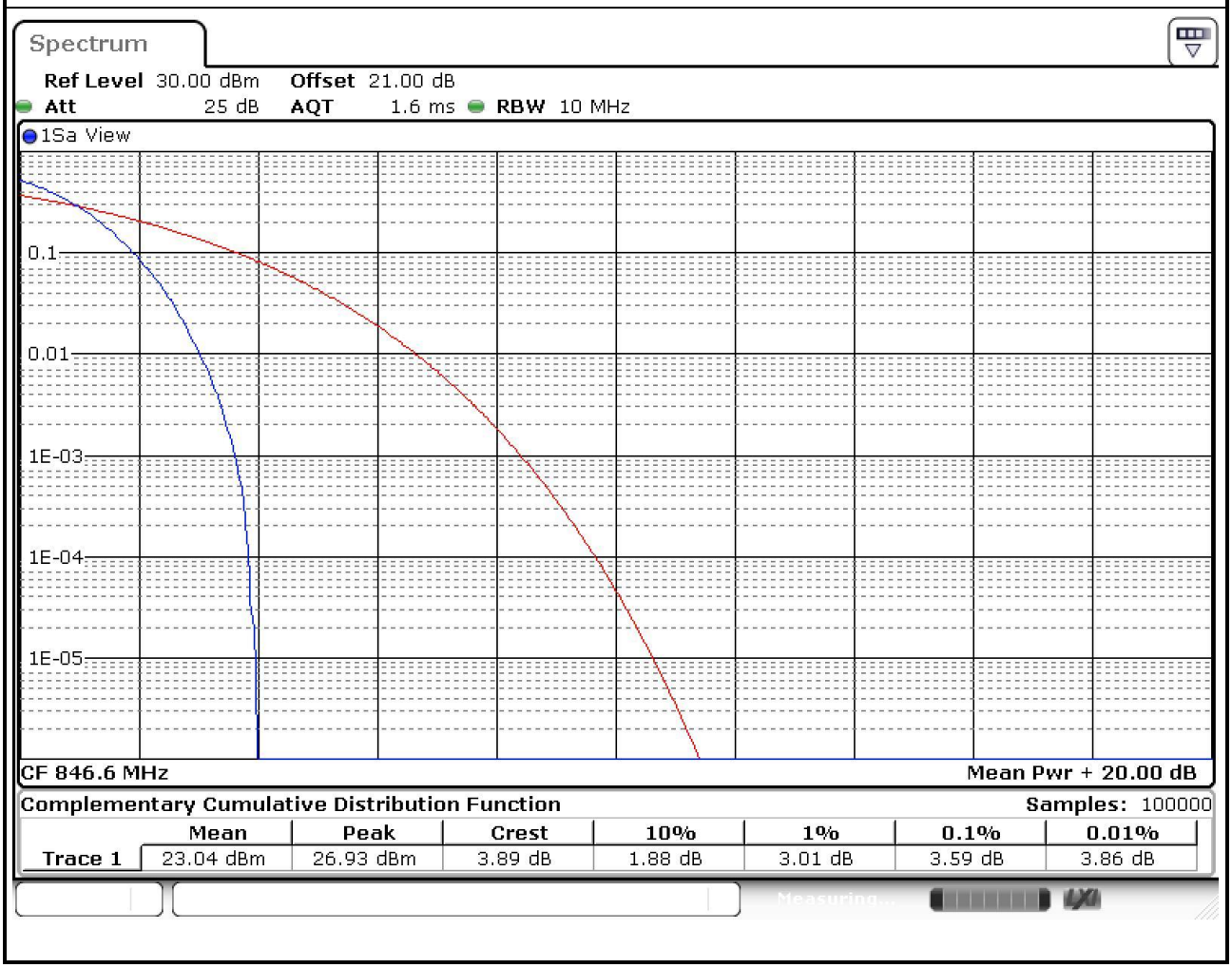
3.6.3 Test Setup



3.6.4 Test Result of Peak to Average Ratio

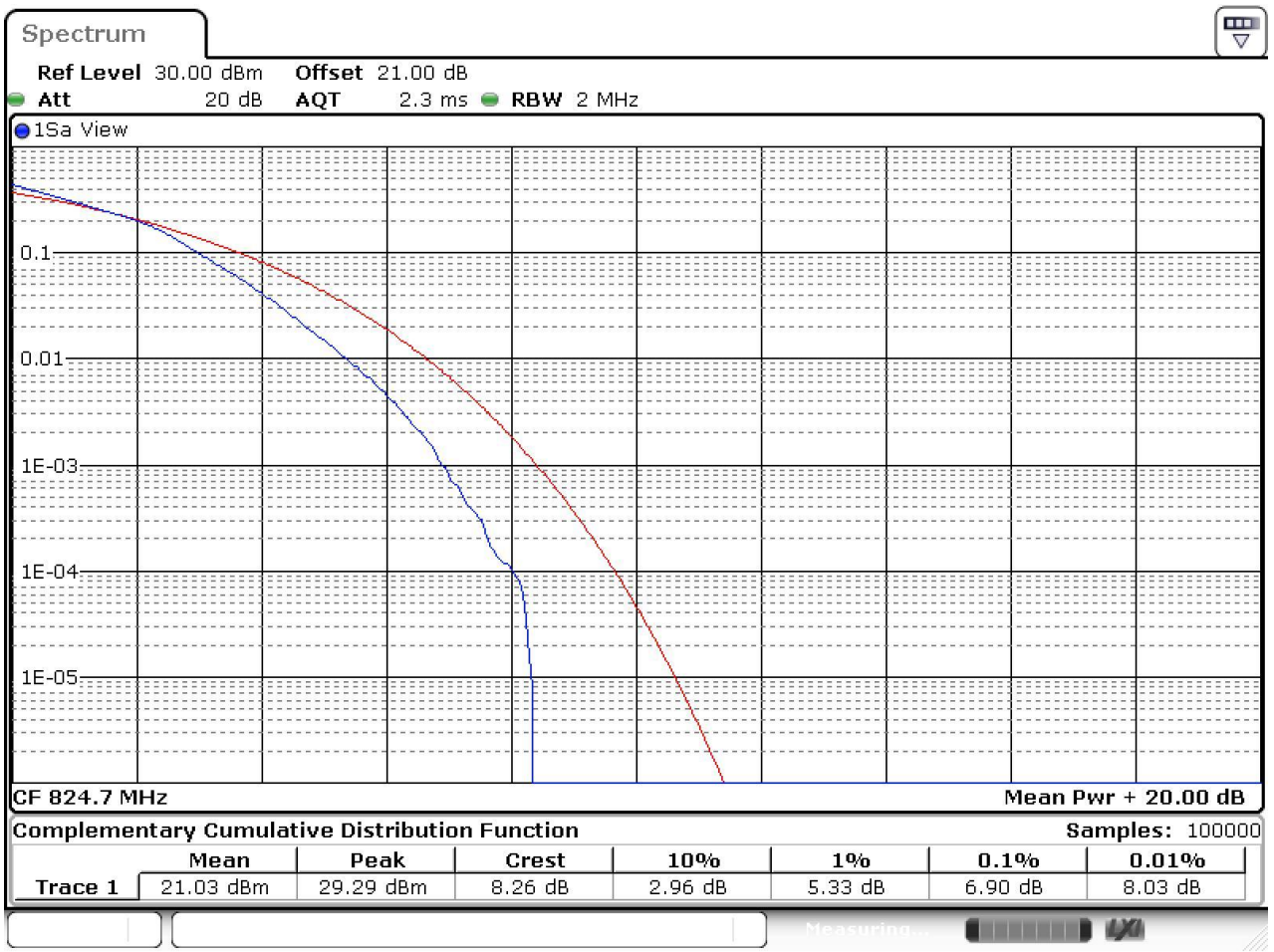
MODE	Channel	Frequency (MHz)	Peak to Average ratio (dB)
WCDMA BAND 5	4132	826.4	3.57
WCDMA BAND 5	4182	836.4	2.64
WCDMA BAND 5	4133	846.6	3.59

Worst plots



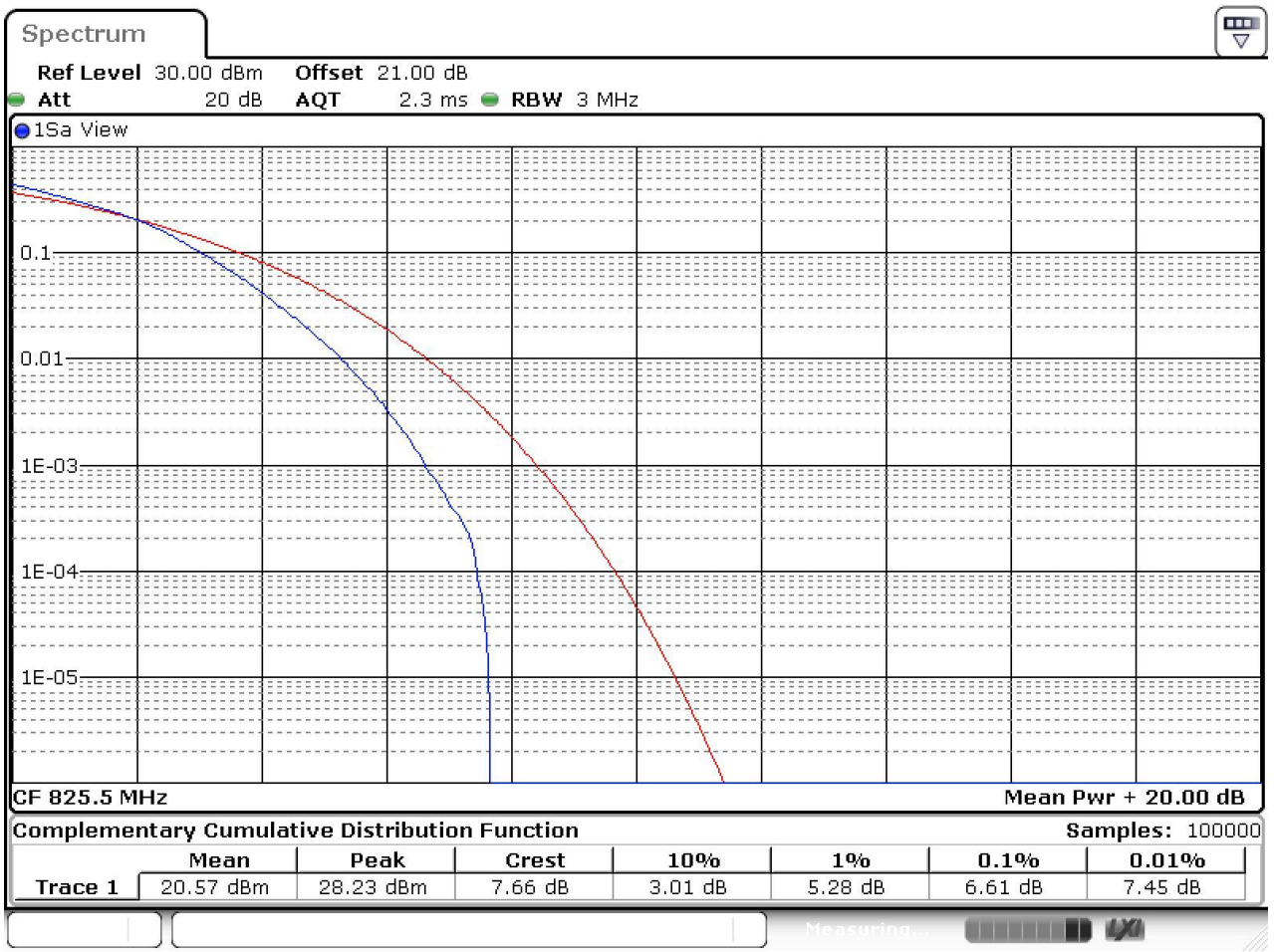
Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 5	1.4	QPSK	20407	824.7	6.14
LTE Band 5	1.4	QPSK	20525	836.5	5.74
LTE Band 5	1.4	QPSK	20643	848.3	6.03
LTE Band 5	1.4	16QAM	20407	824.7	6.90
LTE Band 5	1.4	16QAM	20525	836.5	6.64
LTE Band 5	1.4	16QAM	20643	848.3	6.49

Worst plots



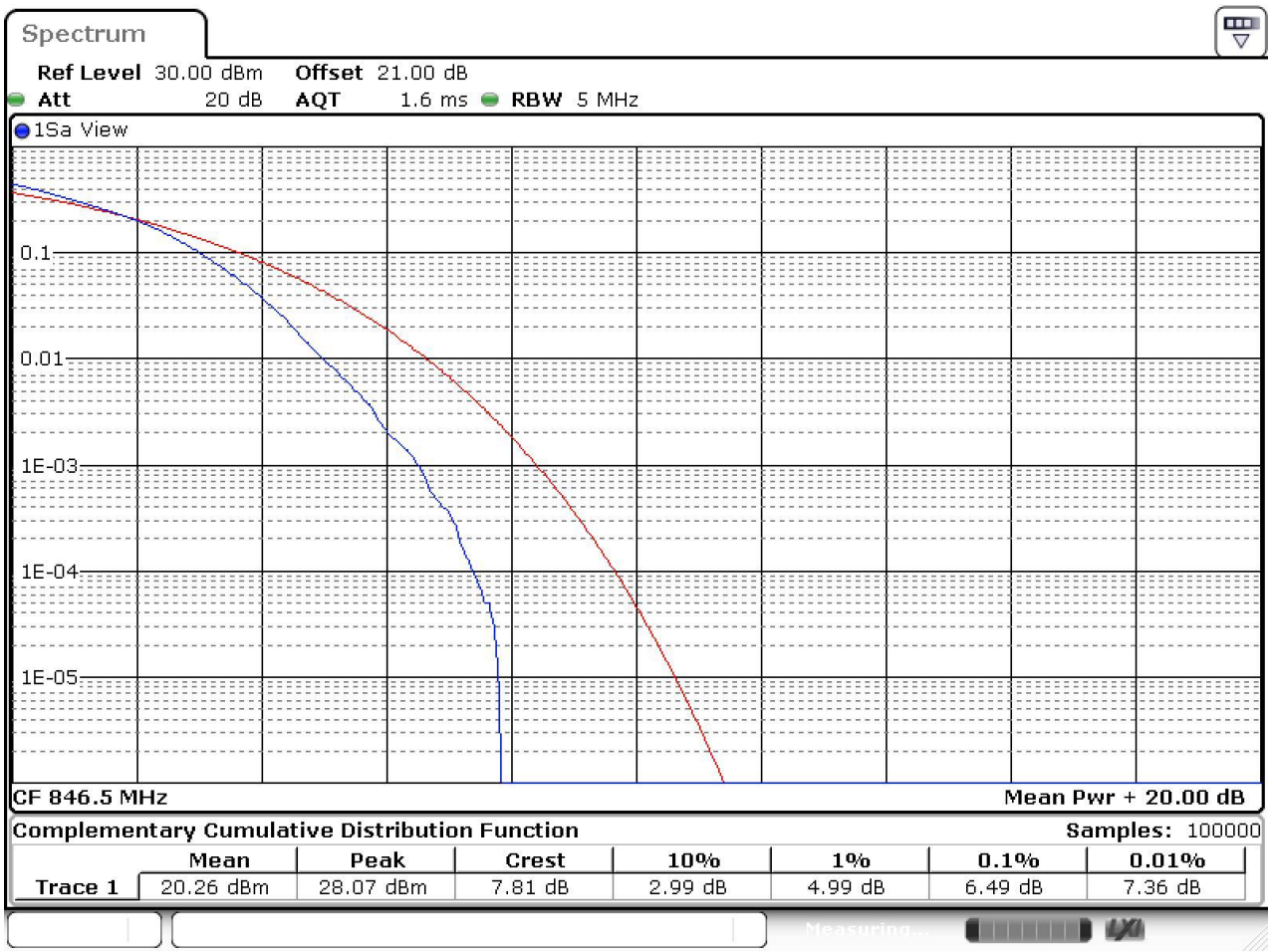
Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 5	3	QPSK	20415	825.5	5.94
LTE Band 5	3	QPSK	20525	836.5	5.51
LTE Band 5	3	QPSK	20635	847.5	5.80
LTE Band 5	3	16QAM	20415	825.5	6.61
LTE Band 5	3	16QAM	20525	836.5	6.41
LTE Band 5	3	16QAM	20635	847.5	6.43

Worst plots



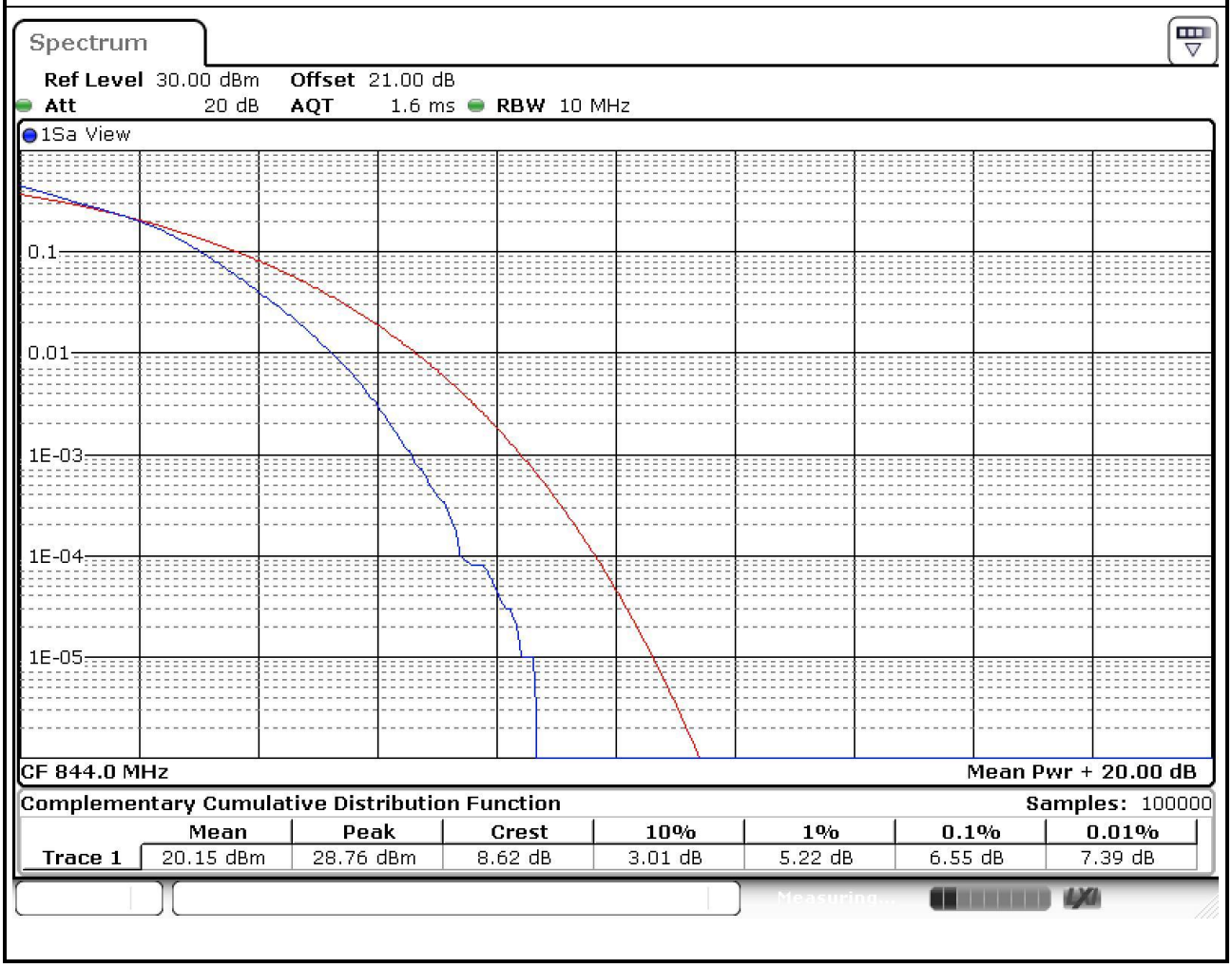
Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 5	5	QPSK	20425	826.5	5.68
LTE Band 5	5	QPSK	20525	836.5	5.54
LTE Band 5	5	QPSK	20625	846.5	5.59
LTE Band 5	5	16QAM	20425	826.5	6.43
LTE Band 5	5	16QAM	20525	836.5	6.35
LTE Band 5	5	16QAM	20625	846.5	6.49

Worst plots



Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 5	10	QPSK	20450	829.0	5.45
LTE Band 5	10	QPSK	20525	836.5	5.57
LTE Band 5	10	QPSK	20600	844.0	5.74
LTE Band 5	10	16QAM	20450	829.0	6.43
LTE Band 5	10	16QAM	20525	836.5	6.32
LTE Band 5	10	16QAM	20600	844.0	6.55

Worst plots



3.7 Frequency Stability

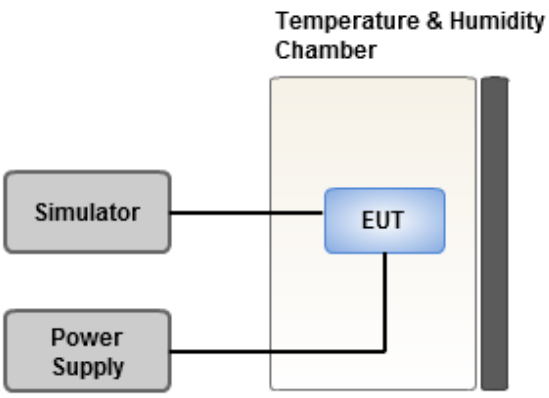
3.7.1 Limit of Frequency Stability

The frequency stability shall be less +/- 2.5ppm.

3.7.2 Test Procedures

1. EUT was placed at temperature chamber and connected to an external power supply.
2. Temperature and voltage condition shall be tested to confirm frequency stability.
3. Temperature range is from -30~55°C and voltage range is from lowest to highest working voltage.
4. Link up EUT and simulator. Confirm frequency drift value of simulator and record it.

3.7.3 Test Setup



3.7.4 Test Result of Frequency Stability

WCDMA Band 5			
Temperature (^{o}C)	**Voltage (dc)**	**Frequency Drift (ppm)**	**Limit (ppm)**
55	3.7	0.020	2.5
50	3.7	0.018	2.5
40	3.7	0.016	2.5
30	3.7	0.017	2.5
20	3.7	0.018	2.5
10	3.7	0.020	2.5
0	3.7	0.020	2.5
-10	3.7	0.018	2.5
-20	3.7	0.019	2.5
-30	3.7	0.022	2.5
20	4.5	0.018	2.5
20	3.2	0.017	2.5

LTE Band 5, CB: 1.4MHz			
Temperature (^{o}C)	Voltage (dc)	Frequency Drift (ppm)	Limit (ppm)
55	3.7	0.026	2.5
50	3.7	0.025	2.5
40	3.7	0.027	2.5
30	3.7	0.029	2.5
20	3.7	0.030	2.5
10	3.7	0.024	2.5
0	3.7	0.026	2.5
-10	3.7	0.025	2.5
-20	3.7	0.027	2.5
-30	3.7	0.023	2.5
20	4.5	0.026	2.5
20	3.2	0.024	2.5

LTE Band 5, CB: 3MHz			
Temperature (^{o}C)	Voltage (dc)	Frequency Drift (ppm)	Limit (ppm)
55	3.7	0.024	2.5
50	3.7	0.026	2.5
40	3.7	0.027	2.5
30	3.7	0.026	2.5
20	3.7	0.025	2.5
10	3.7	0.024	2.5
0	3.7	0.025	2.5
-10	3.7	0.027	2.5
-20	3.7	0.027	2.5
-30	3.7	0.029	2.5
20	4.5	0.027	2.5
20	3.2	0.027	2.5

LTE Band 5, CB: 5MHz			
Temperature (^{o}C)	**Voltage (dc)**	**Frequency Drift (ppm)**	**Limit (ppm)**
55	3.7	0.027	2.5
50	3.7	0.025	2.5
40	3.7	0.024	2.5
30	3.7	0.027	2.5
20	3.7	0.029	2.5
10	3.7	0.030	2.5
0	3.7	0.024	2.5
-10	3.7	0.023	2.5
-20	3.7	0.024	2.5
-30	3.7	0.026	2.5
20	4.5	0.026	2.5
20	3.2	0.027	2.5

LTE Band 5, CB: 10MHz			
Temperature (^{o}C)	**Voltage (dc)**	**Frequency Drift (ppm)**	**Limit (ppm)**
55	3.7	0.027	2.5
50	3.7	0.025	2.5
40	3.7	0.024	2.5
30	3.7	0.029	2.5
20	3.7	0.027	2.5
10	3.7	0.026	2.5
0	3.7	0.023	2.5
-10	3.7	0.027	2.5
-20	3.7	0.027	2.5
-30	3.7	0.025	2.5
20	4.5	0.024	2.5
20	3.2	0.026	2.5

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan Hsiang. Location map can be found on our website http://www.icertifi.com.tw.

Linkou	**Kwei Shan**	**Kwei Shan Site II**
Tel: 886-2-2601-1640	Tel: 886-3-271-8666	Tel: 886-3-271-8640
No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan, R.O.C.	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666
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Email: ICC_Service@icertifi.com.tw

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