
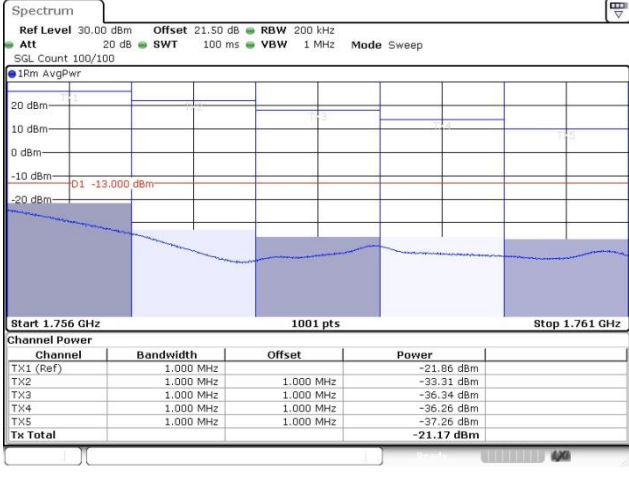

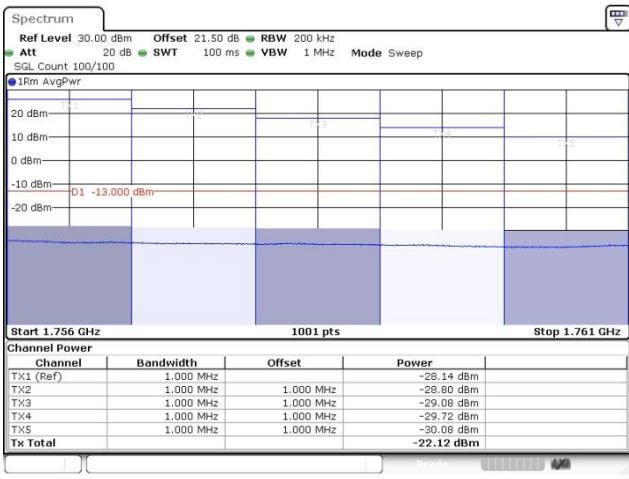
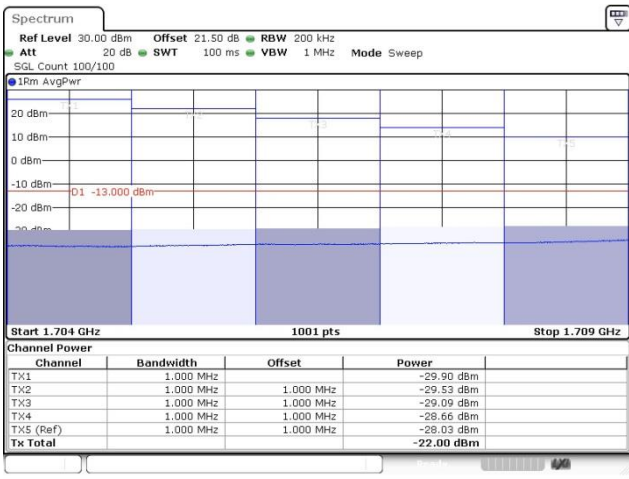
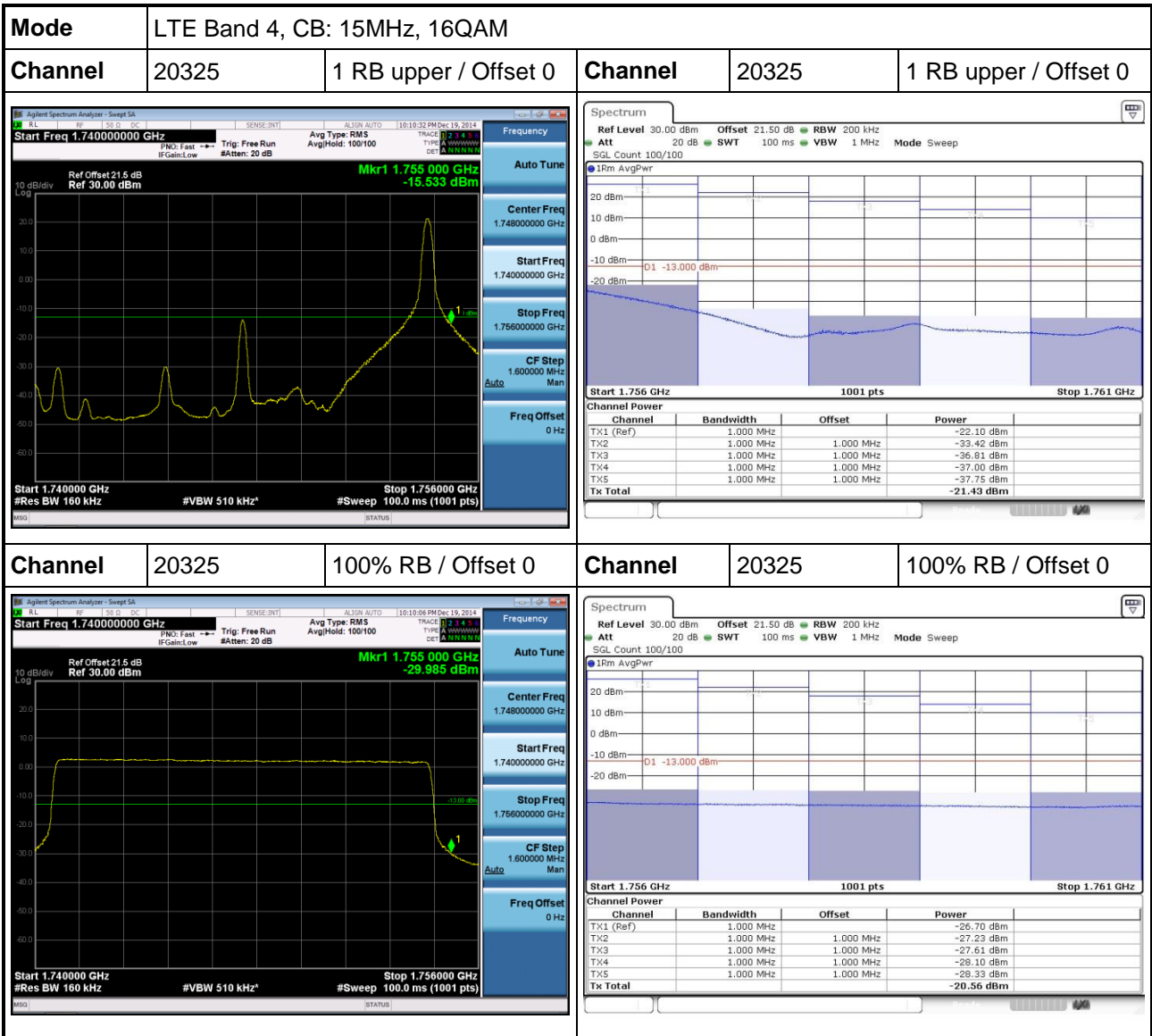


Mode		LTE Band 4, CB: 15MHz, QPSK																															
Channel		2025	1 RB lower / Offset 0	Channel	2025	1 RB lower / Offset 0																											
		 <table border="1"> <thead> <tr> <th>Channel</th> <th>Bandwidth</th> <th>Offset</th> <th>Power</th> </tr> </thead> <tbody> <tr> <td>TX1</td> <td>1.000 MHz</td> <td></td> <td>-35.37 dBm</td> </tr> <tr> <td>TX2</td> <td>1.000 MHz</td> <td>1.000 MHz</td> <td>-36.22 dBm</td> </tr> <tr> <td>TX3</td> <td>1.000 MHz</td> <td>1.000 MHz</td> <td>-36.42 dBm</td> </tr> <tr> <td>TX4</td> <td>1.000 MHz</td> <td>1.000 MHz</td> <td>-33.01 dBm</td> </tr> <tr> <td>TX5 (Ref)</td> <td>1.000 MHz</td> <td>1.000 MHz</td> <td>-21.61 dBm</td> </tr> <tr> <td>Tx Total</td> <td></td> <td></td> <td>-20.09 dBm</td> </tr> </tbody> </table>				Channel	Bandwidth	Offset	Power	TX1	1.000 MHz		-35.37 dBm	TX2	1.000 MHz	1.000 MHz	-36.22 dBm	TX3	1.000 MHz	1.000 MHz	-36.42 dBm	TX4	1.000 MHz	1.000 MHz	-33.01 dBm	TX5 (Ref)	1.000 MHz	1.000 MHz	-21.61 dBm	Tx Total			-20.09 dBm
Channel	Bandwidth	Offset	Power																														
TX1	1.000 MHz		-35.37 dBm																														
TX2	1.000 MHz	1.000 MHz	-36.22 dBm																														
TX3	1.000 MHz	1.000 MHz	-36.42 dBm																														
TX4	1.000 MHz	1.000 MHz	-33.01 dBm																														
TX5 (Ref)	1.000 MHz	1.000 MHz	-21.61 dBm																														
Tx Total			-20.09 dBm																														
Channel		2025	100% RB / Offset 0	Channel	2025	100% RB / Offset 0																											
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Channel	Bandwidth	Offset	Power																														
TX1	1.000 MHz		-31.58 dBm																														
TX2	1.000 MHz	1.000 MHz	-31.09 dBm																														
TX3	1.000 MHz	1.000 MHz	-30.56 dBm																														
TX4	1.000 MHz	1.000 MHz	-30.10 dBm																														
TX5 (Ref)	1.000 MHz	1.000 MHz	-29.10 dBm																														
Tx Total			-23.41 dBm																														

Mode	LTE Band 4, CB: 15MHz, QPSK				
Channel	20325	1 RB upper / Offset 0	Channel	20325	1 RB upper / Offset 0
					
Channel	20325	100% RB / Offset 0	Channel	20325	100% RB / Offset 0
					

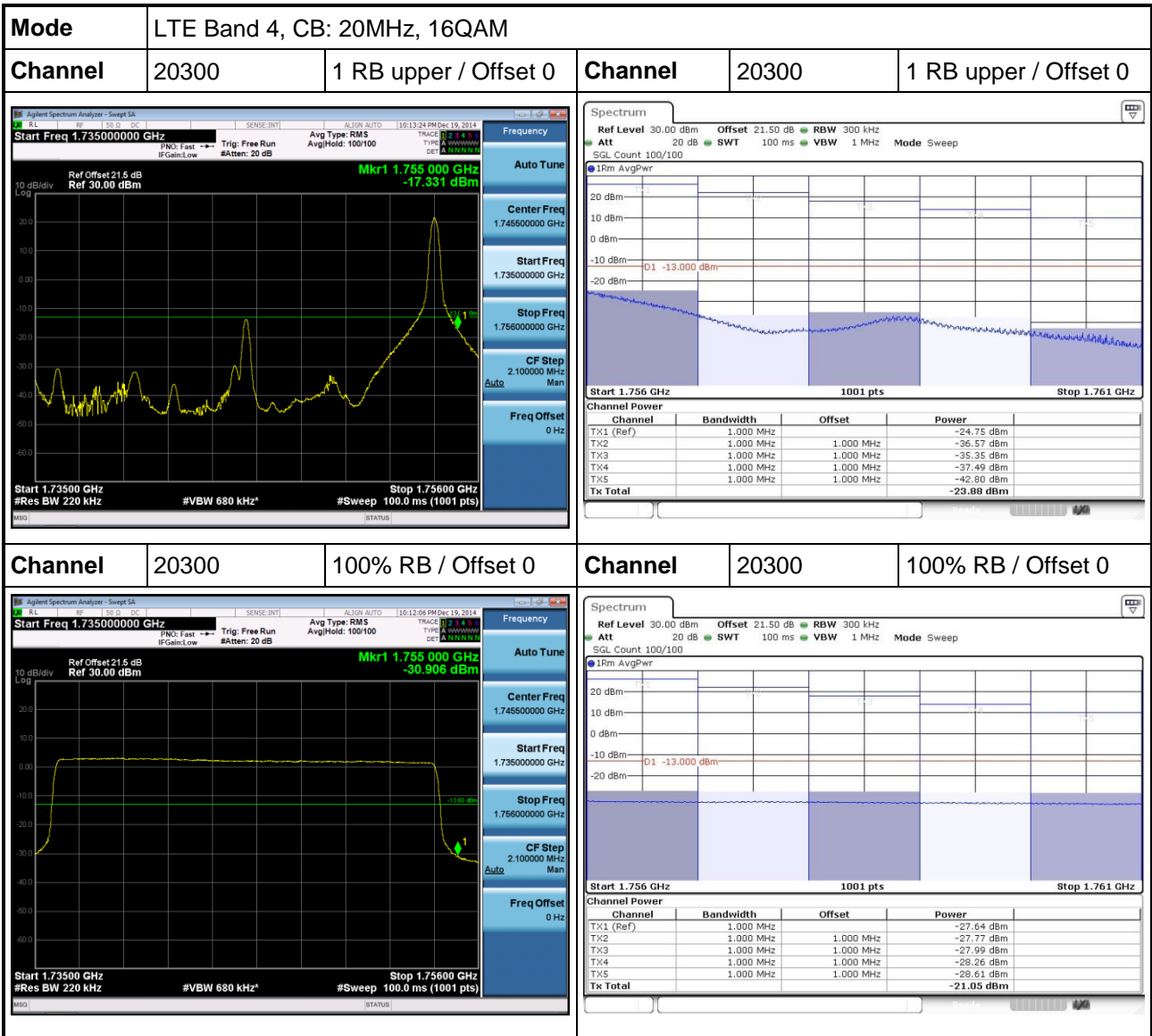
Mode		LTE Band 4, CB: 15MHz, 16QAM					
Channel		2025	1 RB lower / Offset 0	Channel		2025	1 RB lower / Offset 0
							
Channel		2025	100% RB / Offset 0	Channel		2025	100% RB / Offset 0







Mode	LTE Band 4, CB: 20MHz, 16QAM				
Channel	20050	1 RB lower / Offset 0	Channel	20050	1 RB lower / Offset 0
					
Channel	20050	100% RB / Offset 0	Channel	20050	100% RB / Offset 0
					

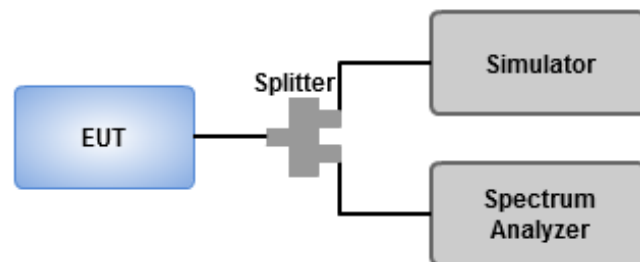


3.5 Occupied and 26 dB Bandwidth

3.5.1 Test Procedures

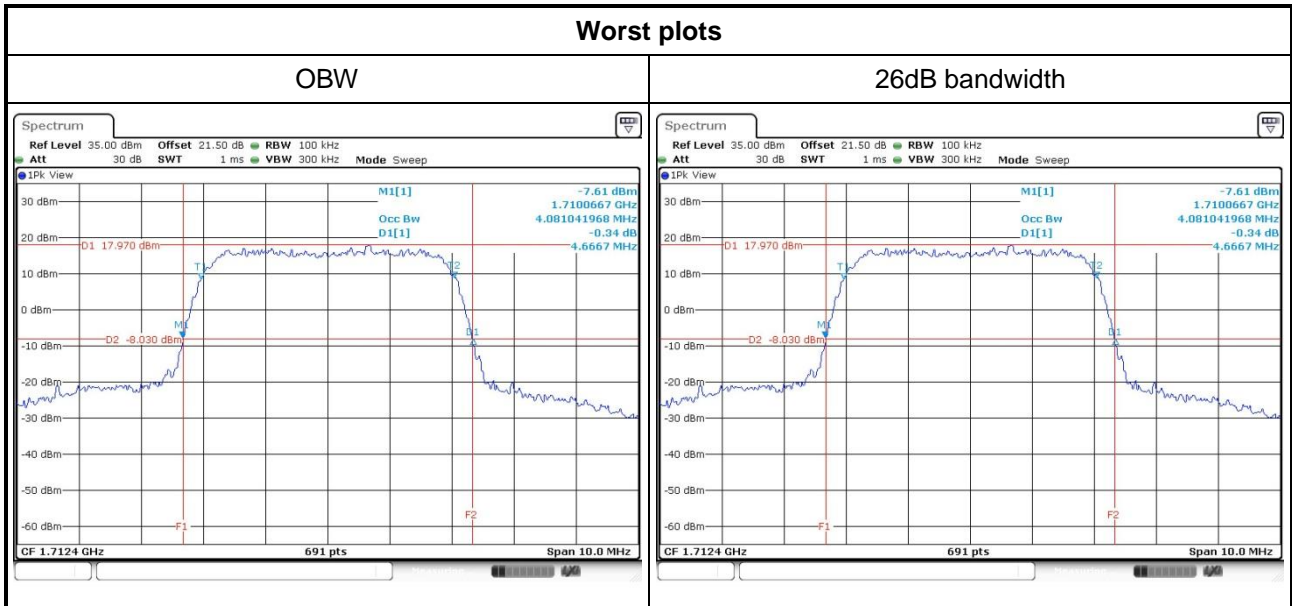
1. Set RBW = 100 kHz, VBW = 300 kHz for WCDMA
Set RBW = 20 / 50 / 100 / 200 / 200 / 300 KHz , VBW = 100 / 200 / 300 / 1000 / 1000 / 1000 kHz, for channel bandwidth 1.4 / 3 / 5 / 10 / 15 / 20 ,for LTE channel bandwidth 3 / 5 / 10 MHz
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow 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

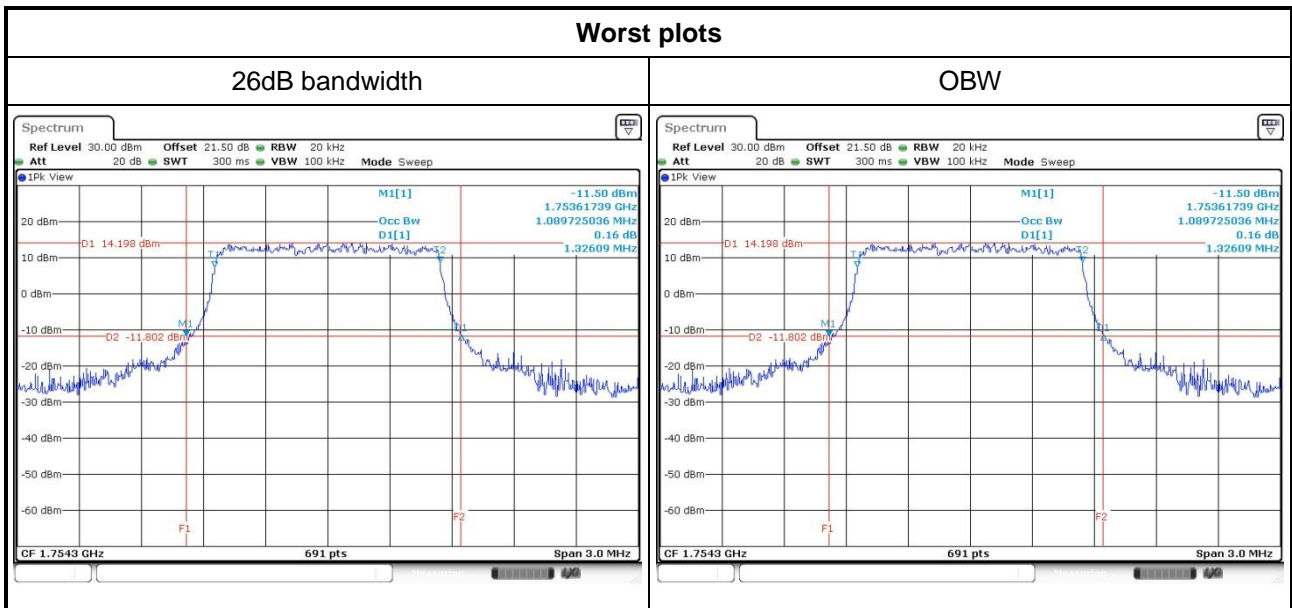


3.5.3 Test Result of Occupied Bandwidth

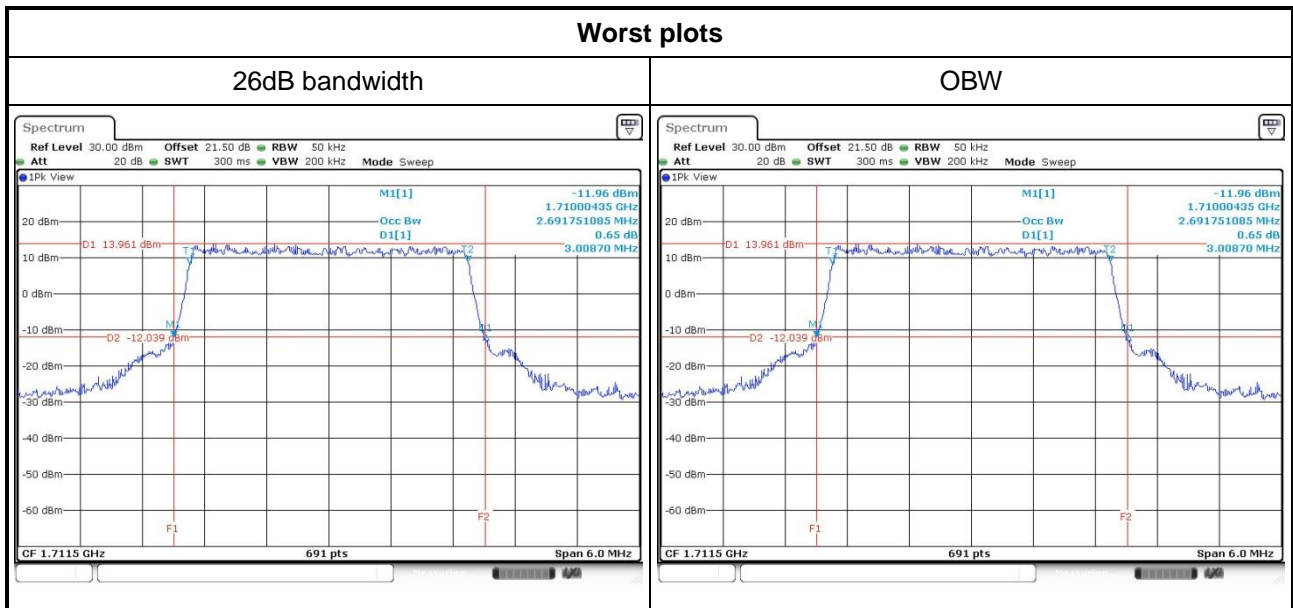
MODE	Channel	Frequency (MHz)	OBW (MHz)	26dB BW (MHz)
WCDMA BAND IV	1312	1712.4	4.08	4.6667
WCDMA BAND IV	1413	1732.6	4.08	4.6377
WCDMA BAND IV	1513	1752.6	4.08	4.6377



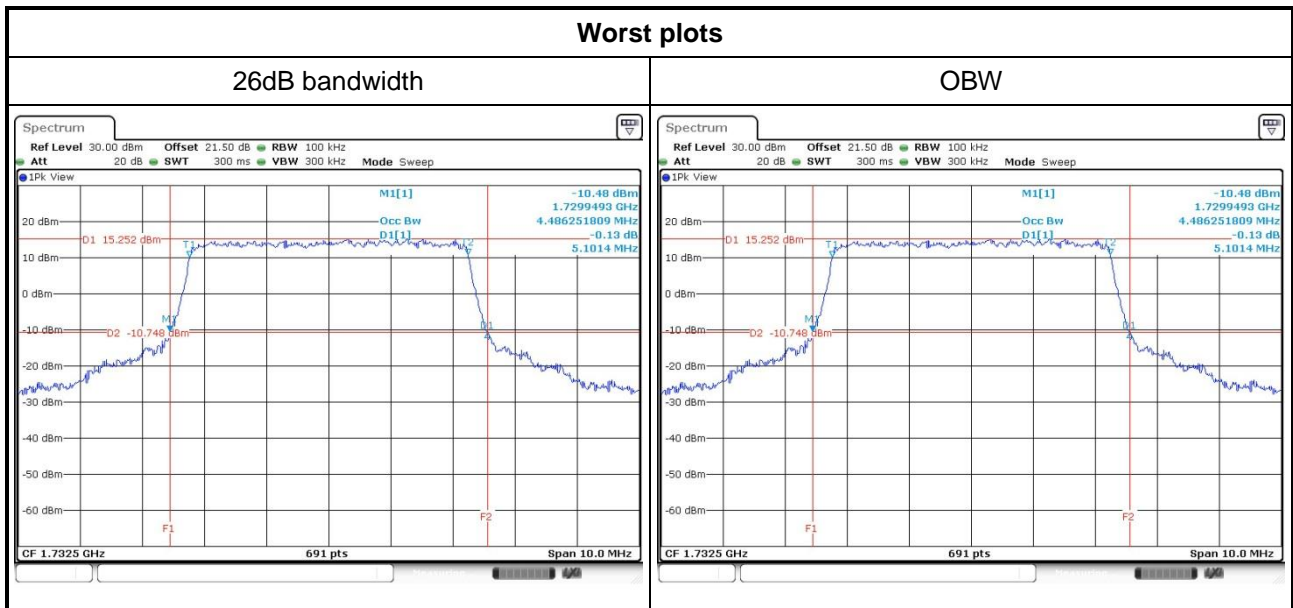
Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 4	1.4	QPSK	19957	1710.7	1.3087	1.09
LTE Band 4	1.4	QPSK	20175	1732.5	1.3000	1.09
LTE Band 4	1.4	QPSK	20393	1754.3	1.32609	1.09
LTE Band 4	1.4	16QAM	19957	1710.7	1.30435	1.09
LTE Band 4	1.4	16QAM	20175	1732.5	1.32174	1.09
LTE Band 4	1.4	16QAM	20393	1754.3	1.31739	1.09



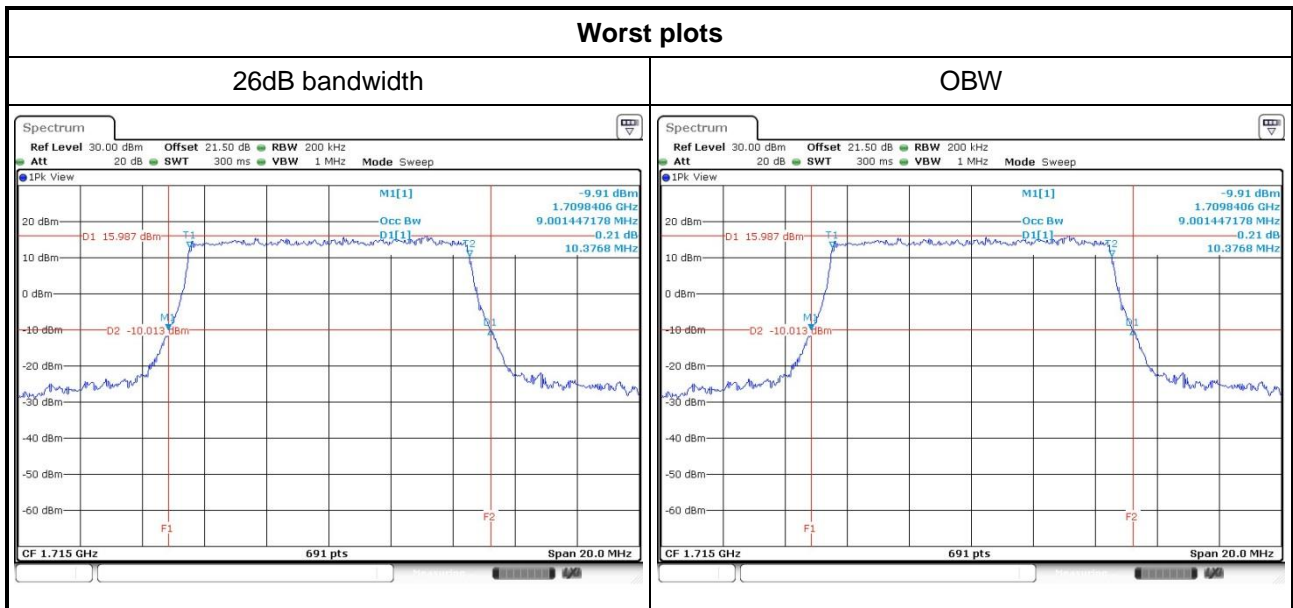
Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 4	3	QPSK	19965	1711.5	2.97	2.69
LTE Band 4	3	QPSK	20175	1732.5	2.95	2.69
LTE Band 4	3	QPSK	20385	1753.5	2.97	2.69
LTE Band 4	3	16QAM	19965	1711.5	3.01	2.69
LTE Band 4	3	16QAM	20175	1732.5	3.00	2.69
LTE Band 4	3	16QAM	20385	1753.5	3.00	2.69



Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 4	5	QPSK	19975	1712.5	5.0725	4.49
LTE Band 4	5	QPSK	20175	1732.5	5.1014	4.49
LTE Band 4	5	QPSK	20375	1752.5	5.1014	4.49
LTE Band 4	5	16QAM	19975	1712.5	5.0435	4.49
LTE Band 4	5	16QAM	20175	1732.5	5.087	4.49
LTE Band 4	5	16QAM	20375	1752.5	5.058	4.49



Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 4	10	QPSK	20000	1715.0	10.3768	9.00
LTE Band 4	10	QPSK	20175	1732.5	10.2899	9.00
LTE Band 4	10	QPSK	20350	1750.0	10.2609	9.00
LTE Band 4	10	16QAM	20000	1715.0	10.1159	8.97
LTE Band 4	10	16QAM	20175	1732.5	10.1159	8.97
LTE Band 4	10	16QAM	20350	1750.0	10.1739	8.97



Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 4	15	QPSK	20025	1717.5	15.3913	13.50
LTE Band 4	15	QPSK	20175	1732.5	15.3043	13.42
LTE Band 4	15	QPSK	20325	1747.5	15.3478	13.46
LTE Band 4	15	16QAM	20025	1717.5	15.6522	13.46
LTE Band 4	15	16QAM	20175	1732.5	15.6522	13.46
LTE Band 4	15	16QAM	20325	1747.5	15.7391	13.46



Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 4	20	QPSK	20050	1720.0	20.2319	17.89
LTE Band 4	20	QPSK	20175	1732.5	20.1739	17.89
LTE Band 4	20	QPSK	20300	1745.0	20.3478	17.95
LTE Band 4	20	16QAM	20050	1720.0	20.2319	17.95
LTE Band 4	20	16QAM	20175	1732.5	20.4638	17.95
LTE Band 4	20	16QAM	20300	1745.0	20.3478	17.89



3.6 Peak to Average Ratio

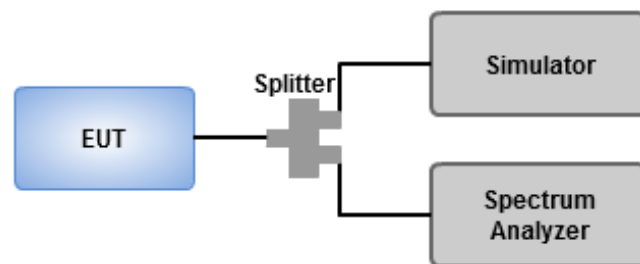
3.6.1 Limit of Peak to Average Ratio

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

3.6.2 Test Procedures

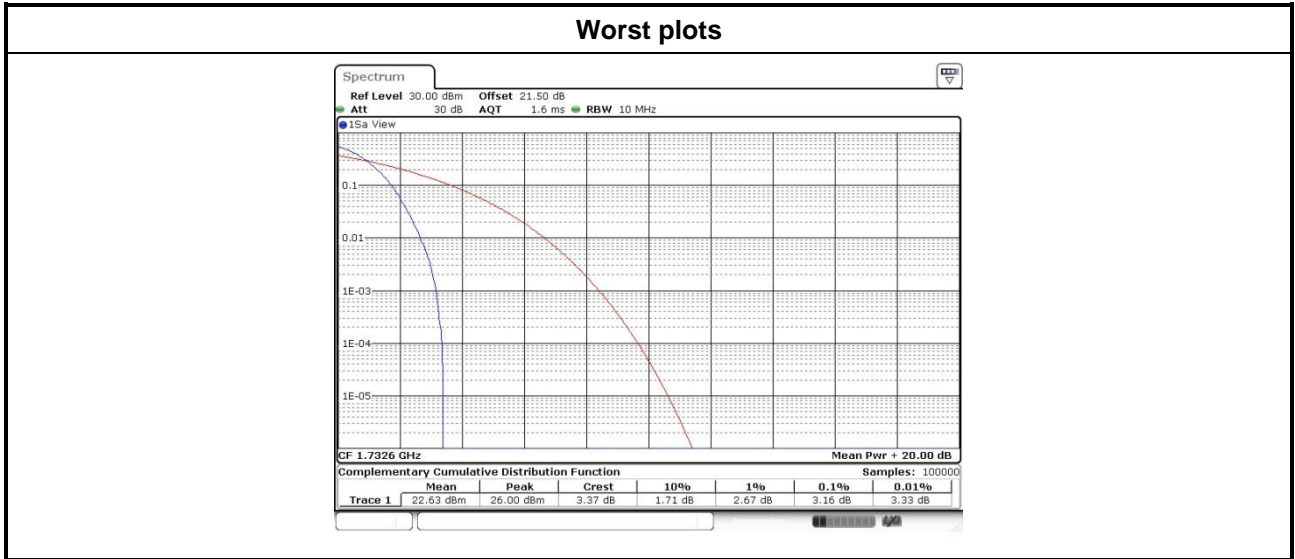
1. Set resolution/measurement bandwidth \geq signal's occupied bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Set the measurement interval to 1 ms.
4. Record the maximum PAPR level associated with a probability of 0.1%.

3.6.3 Test Setup

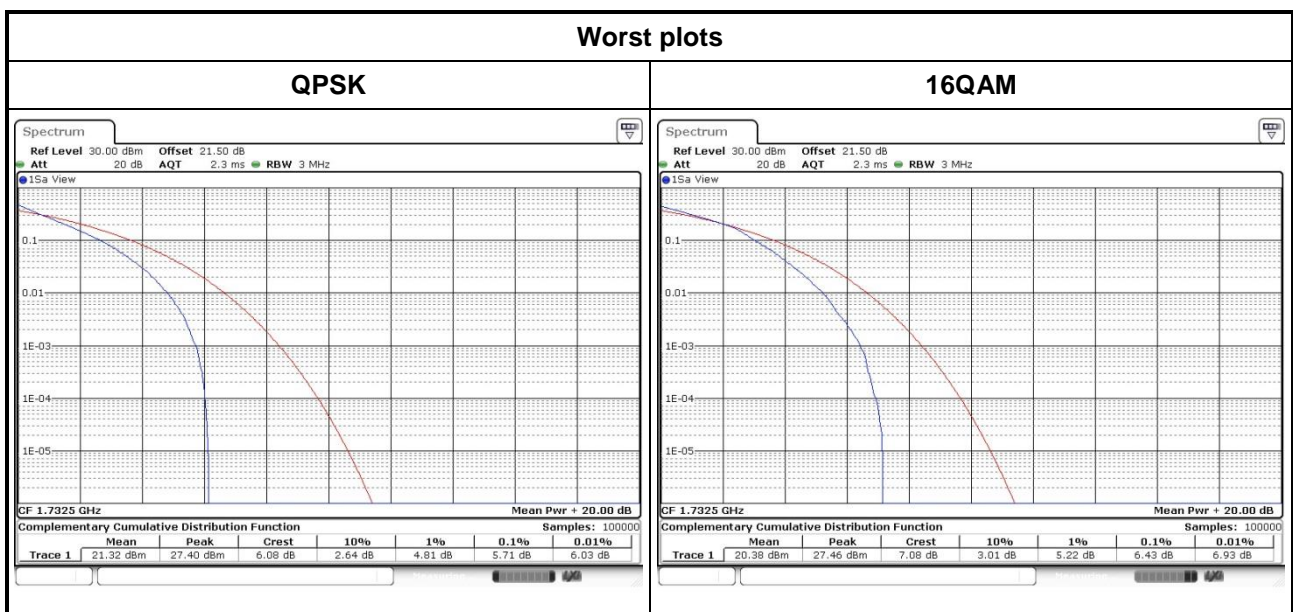


3.6.4 Test Result of Peak to Average Ratio

MODE	Channel	Frequency (MHz)	Peak to Average ratio (dB)
WCDMA BAND IV	1312	1712.4	3.07
WCDMA BAND IV	1413	1732.6	3.16
WCDMA BAND IV	1513	1752.6	3.04



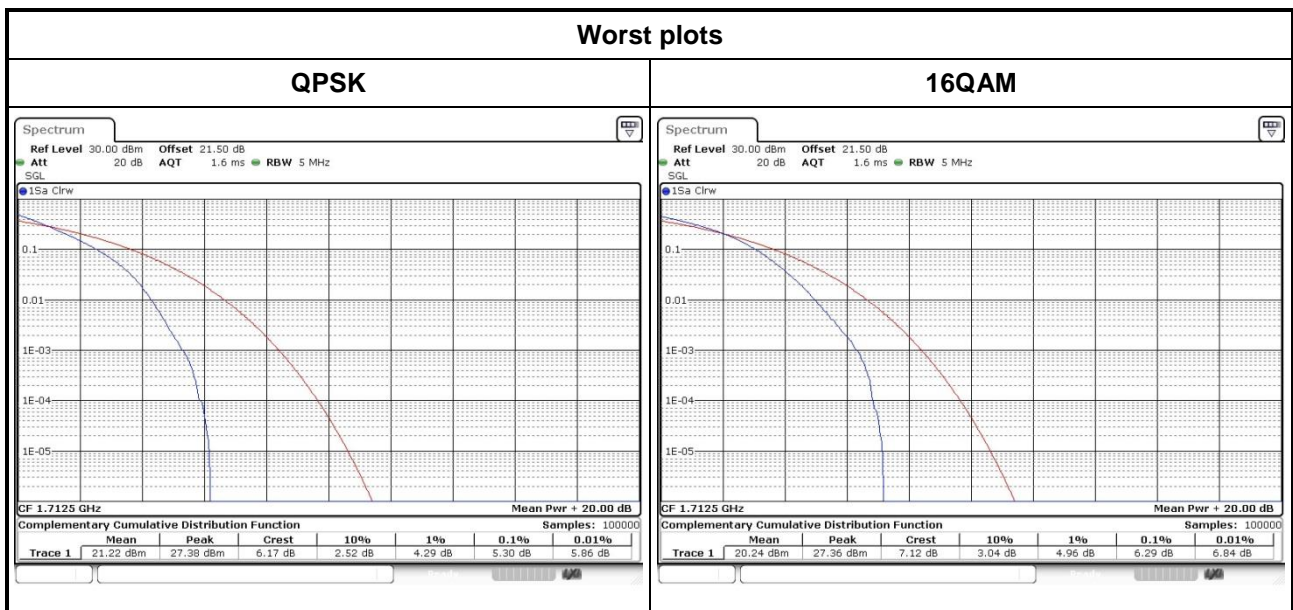
Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average Ratio (dB)
LTE Band 4	1.4	QPSK	19957	1710.7	5.51
LTE Band 4	1.4	QPSK	20175	1732.5	5.71
LTE Band 4	1.4	QPSK	20393	1754.3	5.54
LTE Band 4	1.4	16QAM	19957	1710.7	6.32
LTE Band 4	1.4	16QAM	20175	1732.5	6.43
LTE Band 4	1.4	16QAM	20393	1754.3	6.23



Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average Ratio (dB)
LTE Band 4	3	QPSK	19965	1711.5	5.45
LTE Band 4	3	QPSK	20175	1732.5	5.13
LTE Band 4	3	QPSK	20385	1753.5	5.28
LTE Band 4	3	16QAM	19965	1711.5	6.32
LTE Band 4	3	16QAM	20175	1732.5	6.09
LTE Band 4	3	16QAM	20385	1753.5	6.2



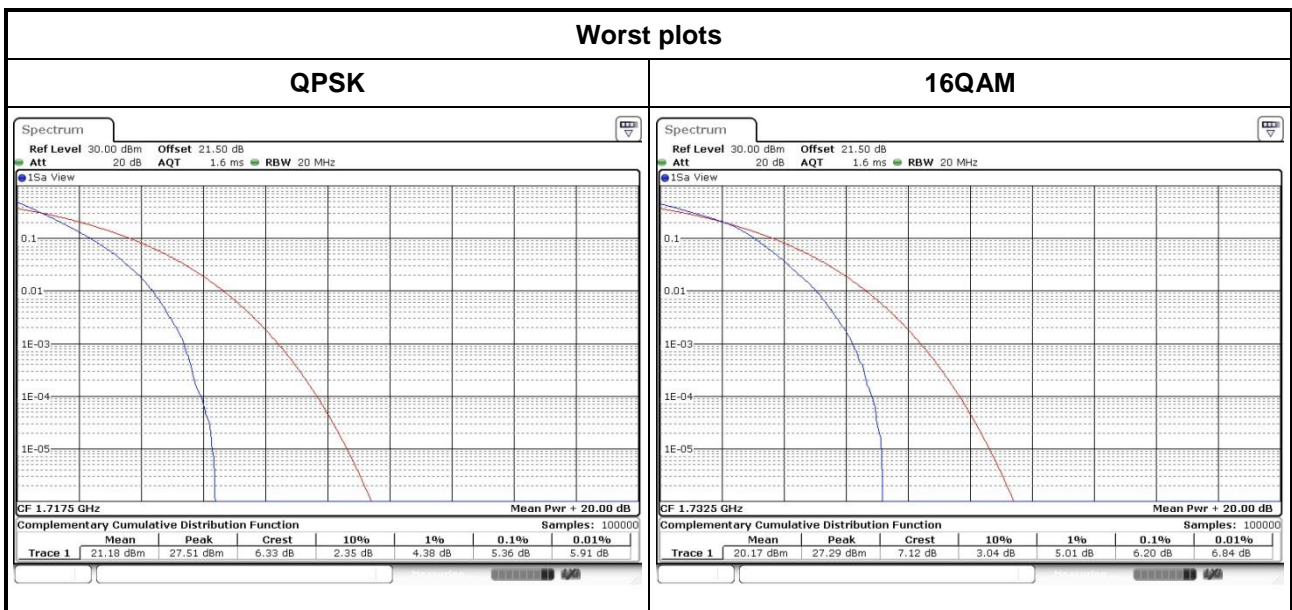
Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average Ratio (dB)
LTE Band 4	5	QPSK	19975	1712.5	5.3
LTE Band 4	5	QPSK	20175	1732.5	5.28
LTE Band 4	5	QPSK	20375	1752.5	5.25
LTE Band 4	5	16QAM	19975	1712.5	6.29
LTE Band 4	5	16QAM	20175	1732.5	6.2
LTE Band 4	5	16QAM	20375	1752.5	6.03



Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average Ratio (dB)
LTE Band 4	10	QPSK	20000	1715.0	5.57
LTE Band 4	10	QPSK	20175	1732.5	5.54
LTE Band 4	10	QPSK	20350	1750.0	5.45
LTE Band 4	10	16QAM	20000	1715.0	6.38
LTE Band 4	10	16QAM	20175	1732.5	6.06
LTE Band 4	10	16QAM	20350	1750.0	5.94



Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average Ratio (dB)
LTE Band 4	15	QPSK	20025	1717.5	5.36
LTE Band 4	15	QPSK	20175	1732.5	5.36
LTE Band 4	15	QPSK	20325	1747.5	5.28
LTE Band 4	15	16QAM	20025	1717.5	6.17
LTE Band 4	15	16QAM	20175	1732.5	6.2
LTE Band 4	15	16QAM	20325	1747.5	6.12



Mode	BW (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average Ratio (dB)
LTE Band 4	20	QPSK	20050	1720.0	5.25
LTE Band 4	20	QPSK	20175	1732.5	5.16
LTE Band 4	20	QPSK	20300	1745.0	5.19
LTE Band 4	20	16QAM	20050	1720.0	6.26
LTE Band 4	20	16QAM	20175	1732.5	6.14
LTE Band 4	20	16QAM	20300	1745.0	6.2



3.7 Frequency Stability

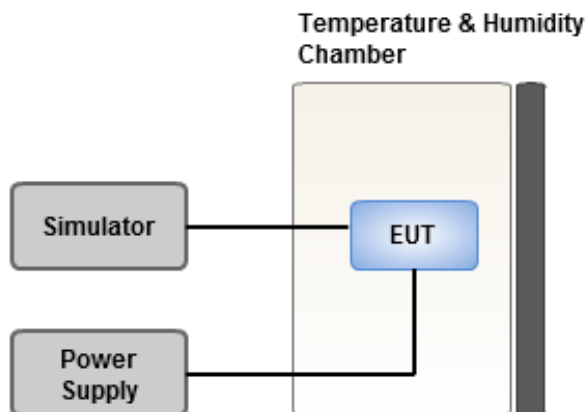
3.7.1 Limit of Frequency Stability

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

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. Tem 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 IV			
Temperature (°C)	Voltage (Vac)	Frequency Drift (ppm)	Limit (ppm)
55	7.40	0.011	2.5
50	7.40	0.013	2.5
40	7.40	0.012	2.5
30	7.40	0.013	2.5
20	7.40	0.010	2.5
10	7.40	0.011	2.5
0	7.40	0.011	2.5
-10	7.40	0.010	2.5
-20	7.40	0.009	2.5
-30	7.40	0.010	2.5
20	8.14	0.014	2.5
20	6.66	0.009	2.5

LTE Band 4, CB: 1.4MHz			
Temperature (°C)	Voltage (Vac)	Frequency Drift (ppm)	Limit (ppm)
55	7.40	0.014	2.5
50	7.40	0.013	2.5
40	7.40	0.012	2.5
30	7.40	0.011	2.5
20	7.40	0.009	2.5
10	7.40	0.008	2.5
0	7.40	0.011	2.5
-10	7.40	0.010	2.5
-20	7.40	0.012	2.5
-30	7.40	0.013	2.5
20	8.14	0.013	2.5
20	6.66	0.011	2.5

LTE Band 4, CB: 3MHz			
Temperature (°C)	Voltage (Vac)	Frequency Drift (ppm)	Limit (ppm)
55	7.40	0.012	2.5
50	7.40	0.012	2.5
40	7.40	0.011	2.5
30	7.40	0.009	2.5
20	7.40	0.010	2.5
10	7.40	0.012	2.5
0	7.40	0.013	2.5
-10	7.40	0.008	2.5
-20	7.40	0.011	2.5
-30	7.40	0.010	2.5
20	8.14	0.015	2.5
20	6.66	0.013	2.5

LTE Band 4, CB: 5MHz			
Temperature (°C)	Voltage (Vac)	Frequency Drift (ppm)	Limit (ppm)
55	7.40	0.013	2.5
50	7.40	0.013	2.5
40	7.40	0.011	2.5
30	7.40	0.009	2.5
20	7.40	0.010	2.5
10	7.40	0.011	2.5
0	7.40	0.012	2.5
-10	7.40	0.008	2.5
-20	7.40	0.009	2.5
-30	7.40	0.011	2.5
20	8.14	0.013	2.5
20	6.66	0.011	2.5

LTE Band 4, CB: 10MHz			
Temperature (°C)	Voltage (Vac)	Frequency Drift (ppm)	Limit (ppm)
55	7.40	0.018	2.5
50	7.40	0.016	2.5
40	7.40	0.014	2.5
30	7.40	0.015	2.5
20	7.40	0.016	2.5
10	7.40	0.014	2.5
0	7.40	0.017	2.5
-10	7.40	0.013	2.5
-20	7.40	0.012	2.5
-30	7.40	0.011	2.5
20	8.14	0.012	2.5
20	6.66	0.013	2.5

LTE Band 4, CB: 15MHz			
Temperature (°C)	Voltage (Vac)	Frequency Drift (ppm)	Limit (ppm)
55	7.40	0.013	2.5
50	7.40	0.014	2.5
40	7.40	0.014	2.5
30	7.40	0.016	2.5
20	7.40	0.014	2.5
10	7.40	0.013	2.5
0	7.40	0.012	2.5
-10	7.40	0.016	2.5
-20	7.40	0.016	2.5
-30	7.40	0.013	2.5
20	8.14	0.017	2.5
20	6.66	0.014	2.5

LTE Band 4, CB: 20MHz			
Temperature (°C)	Voltage (Vac)	Frequency Drift (ppm)	Limit (ppm)
55	7.40	0.015	2.5
50	7.40	0.016	2.5
40	7.40	0.016	2.5
30	7.40	0.013	2.5
20	7.40	0.015	2.5
10	7.40	0.016	2.5
0	7.40	0.016	2.5
-10	7.40	0.013	2.5
-20	7.40	0.014	2.5
-30	7.40	0.012	2.5
20	8.14	0.018	2.5
20	6.66	0.013	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, 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

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Kwei Shan

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No. 3-1, Lane 6, Wen San 3rd
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Yuan Hsien 333, Taiwan, R.O.C.

Kwei Shan Site II

Tel: 886-3-271-8640

No. 14-1, Lane 19, Wen San 3rd
St., Kwei Shan Hsiang, Tao
Yuan Hsien 333, Taiwan, R.O.C.

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

Tel: 886-3-271-8666

Fax: 886-3-318-0155

Email: ICC_Service@icertifi.com.tw

==END==