

Summary

Mode	Max-NdB (Hz)	Max-OBW (Hz)	ITU-Code	Min-NdB (Hz)	Min-OBW (Hz)
Band 5	-	-	-	-	-
LTE_1.4MHz_Nss1,QPSK_1TX	1.26M	1.084M	1M08G7D	1.232M	1.079M
LTE_1.4MHz_Nss1,16QAM_1TX	1.276M	1.081M	1M08W7D	1.251M	1.08M
LTE_3MHz_Nss1,QPSK_1TX	2.925M	2.687M	2M69G7D	2.91M	2.681M
LTE_3MHz_Nss1,16QAM_1TX	2.929M	2.687M	2M69W7D	2.903M	2.676M
LTE_5MHz_Nss1,QPSK_1TX	4.881M	4.462M	4M46G7D	4.856M	4.453M
LTE_5MHz_Nss1,16QAM_1TX	4.856M	4.468M	4M47W7D	4.806M	4.449M
LTE_10MHz_Nss1,QPSK_1TX	9.713M	8.945M	8M95G7D	9.588M	8.931M
LTE_10MHz_Nss1,16QAM_1TX	9.613M	8.968M	8M97W7D	9.525M	8.914M

Max-N dB = Maximum 26dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 26dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

Result

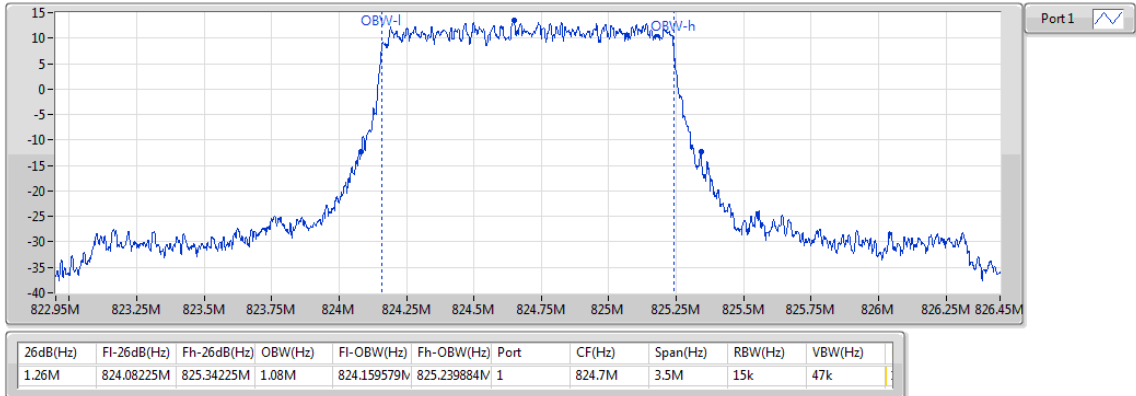
Mode	Result	Limit (Hz)	Port 1-NdB (Hz)	Port 1-OBW (Hz)
LTE_1.4MHz_Nss1_1TX	-	-	-	-
824.7MHz_QPSK_RB 6,#RB 0	Pass	Inf	1.26M	1.08M
836.5MHz_QPSK_RB 6,#RB 0	Pass	Inf	1.243M	1.084M
848.3MHz_QPSK_RB 6,#RB 0	Pass	Inf	1.232M	1.079M
824.7MHz_16QAM_RB 6,#RB 0	Pass	Inf	1.251M	1.081M
836.5MHz_16QAM_RB 6,#RB 0	Pass	Inf	1.265M	1.08M
848.3MHz_16QAM_RB 6,#RB 0	Pass	Inf	1.276M	1.08M
LTE_3MHz_Nss1_1TX	-	-	-	-
825.5MHz_QPSK_RB 15,#RB 0	Pass	Inf	2.925M	2.684M
836.5MHz_QPSK_RB 15,#RB 0	Pass	Inf	2.91M	2.687M
847.5MHz_QPSK_RB 15,#RB 0	Pass	Inf	2.91M	2.681M
825.5MHz_16QAM_RB 15,#RB 0	Pass	Inf	2.903M	2.687M
836.5MHz_16QAM_RB 15,#RB 0	Pass	Inf	2.918M	2.682M
847.5MHz_16QAM_RB 15,#RB 0	Pass	Inf	2.929M	2.676M
LTE_5MHz_Nss1_1TX	-	-	-	-
826.5MHz_QPSK_RB 25,#RB 0	Pass	Inf	4.881M	4.454M
836.5MHz_QPSK_RB 25,#RB 0	Pass	Inf	4.856M	4.462M
846.5MHz_QPSK_RB 25,#RB 0	Pass	Inf	4.869M	4.453M
826.5MHz_16QAM_RB 25,#RB 0	Pass	Inf	4.85M	4.449M
836.5MHz_16QAM_RB 25,#RB 0	Pass	Inf	4.806M	4.464M
846.5MHz_16QAM_RB 25,#RB 0	Pass	Inf	4.856M	4.468M
LTE_10MHz_Nss1_1TX	-	-	-	-
829MHz_QPSK_RB 50,#RB 0	Pass	Inf	9.588M	8.931M
836.5MHz_QPSK_RB 50,#RB 0	Pass	Inf	9.713M	8.945M
844MHz_QPSK_RB 50,#RB 0	Pass	Inf	9.65M	8.931M
829MHz_16QAM_RB 50,#RB 0	Pass	Inf	9.525M	8.914M
836.5MHz_16QAM_RB 50,#RB 0	Pass	Inf	9.613M	8.968M
844MHz_16QAM_RB 50,#RB 0	Pass	Inf	9.55M	8.931M

Port X-N dB = Port X 26dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

Band 5_LTE_1.4MHz_Nss1,QPSK_1TX

EBW

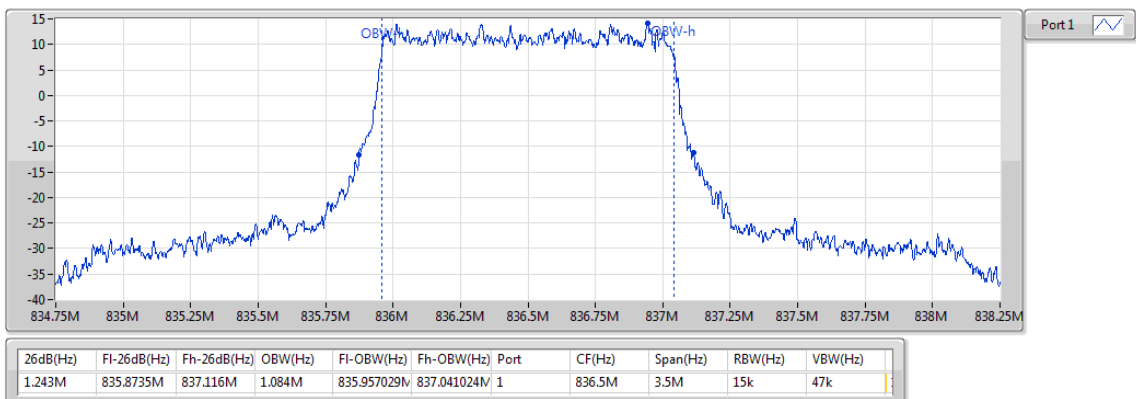
824.7MHz_QPSK_RB 6,#RB 0



Band 5_LTE_1.4MHz_Nss1,QPSK_1TX

EBW

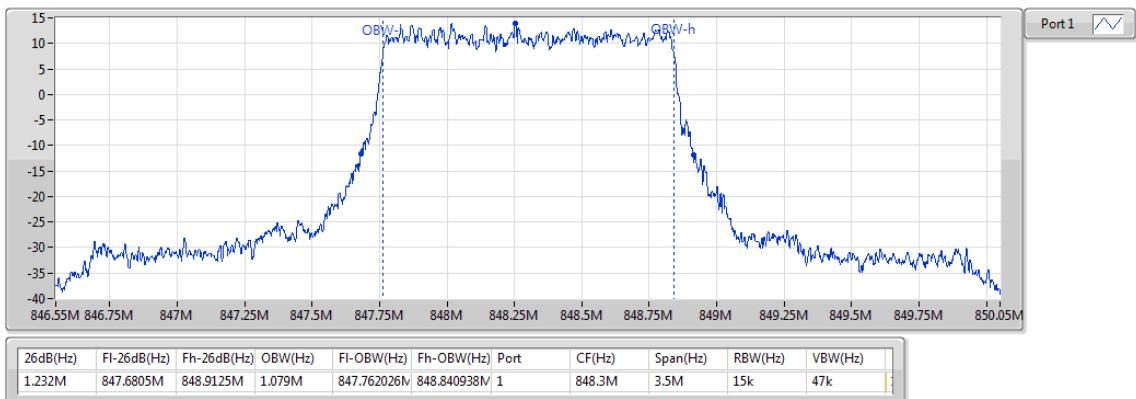
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Band 5_LTE_1.4MHz_Nss1,QPSK_1TX

EBW

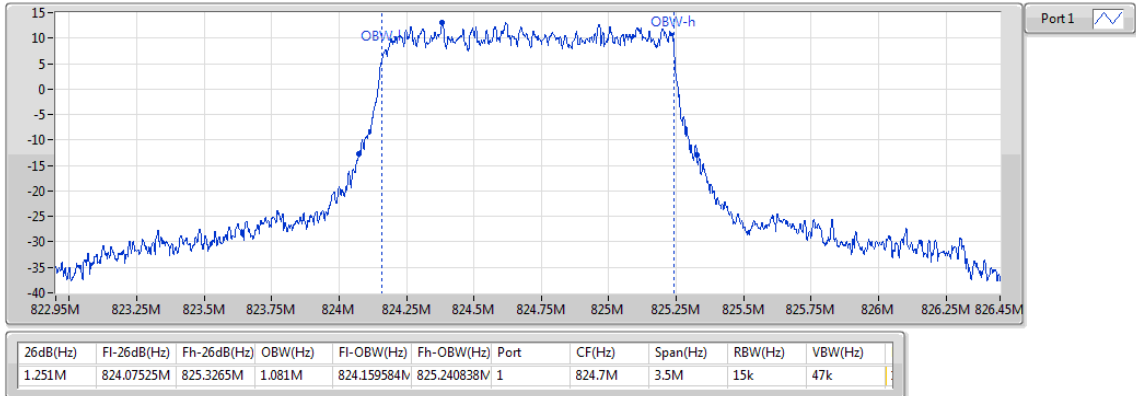
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Band 5_LTE_1.4MHz_Nss1,16QAM_1TX

EBW

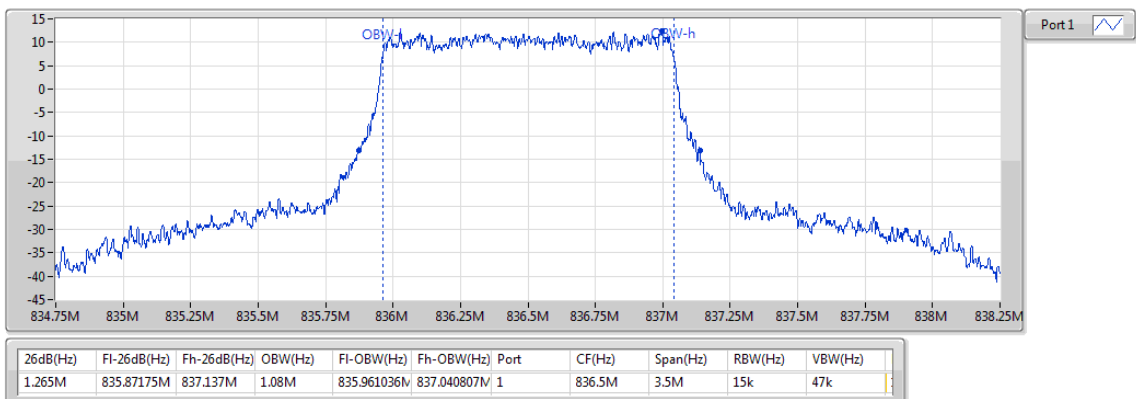
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Band 5_LTE_1.4MHz_Nss1,16QAM_1TX

EBW

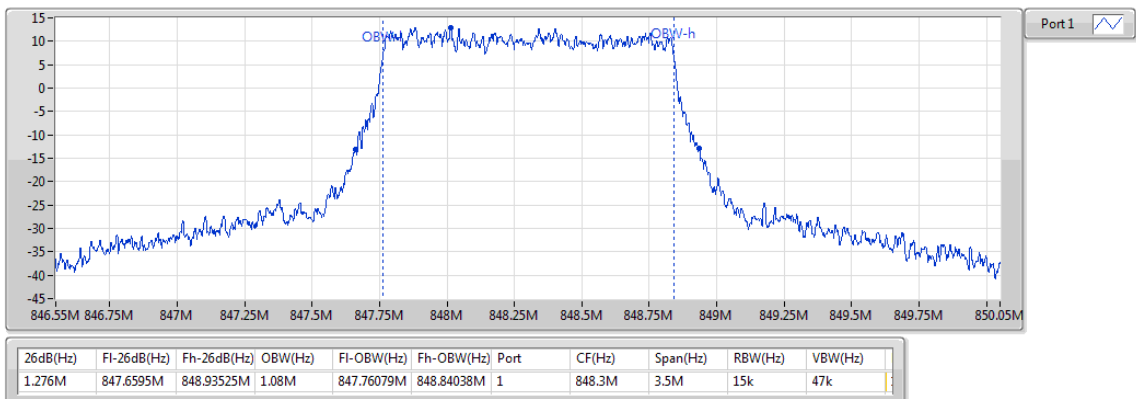
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Band 5_LTE_1.4MHz_Nss1,16QAM_1TX

EBW

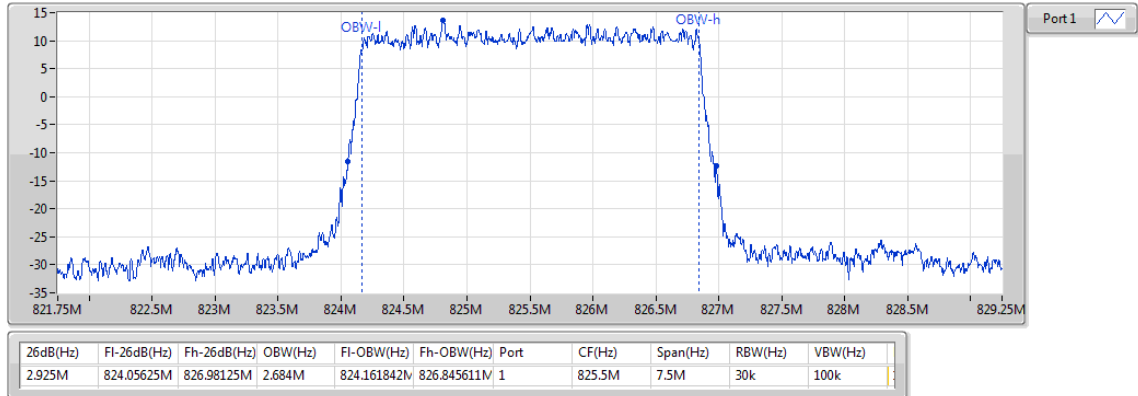
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Band 5_LTE_3MHz_Nss1,QPSK_1TX

EBW

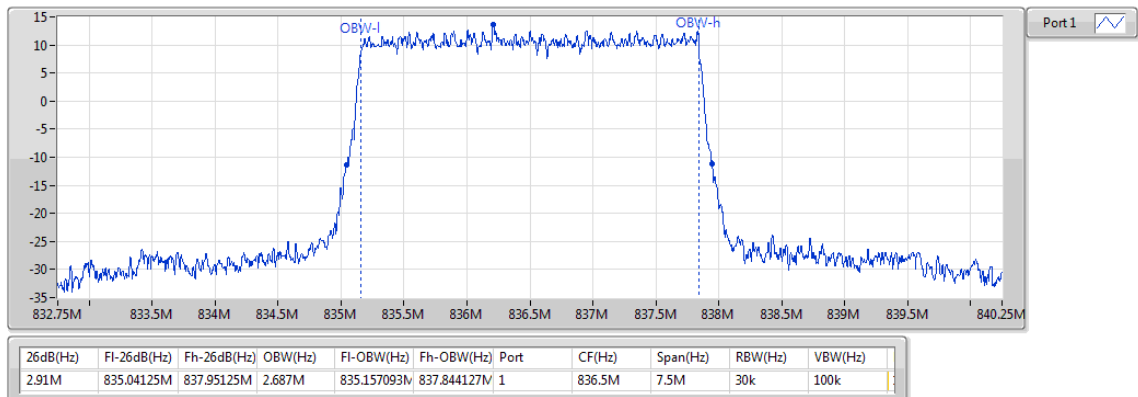
825.5MHz_QPSK_RB 15,#RB 0



Band 5_LTE_3MHz_Nss1,QPSK_1TX

EBW

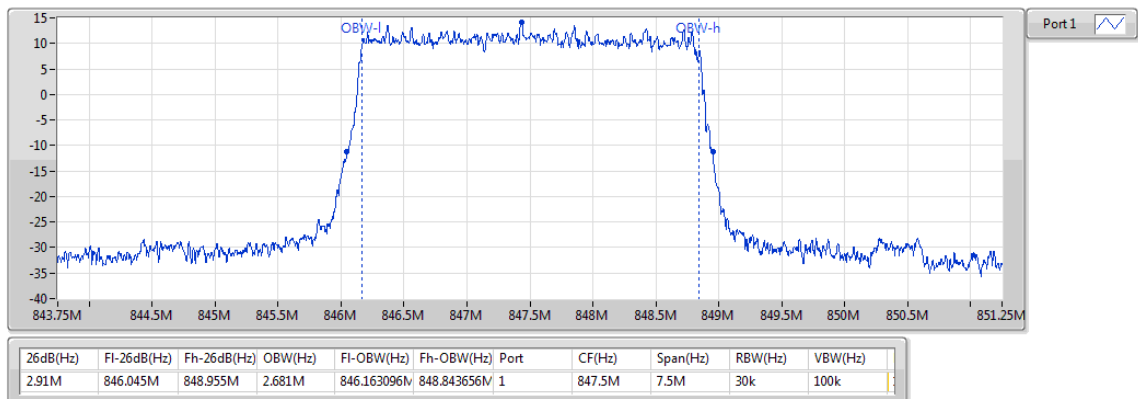
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Band 5_LTE_3MHz_Nss1,QPSK_1TX

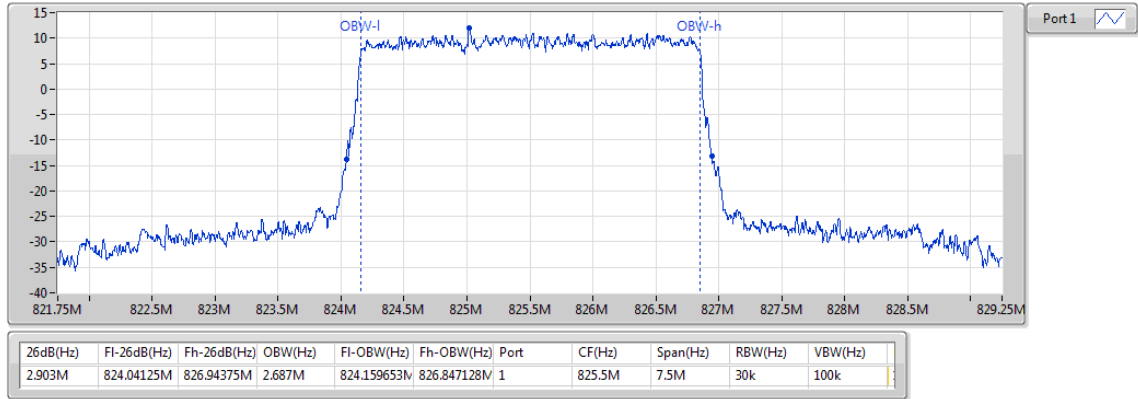
EBW

847.5MHz_QPSK_RB 15,#RB 0



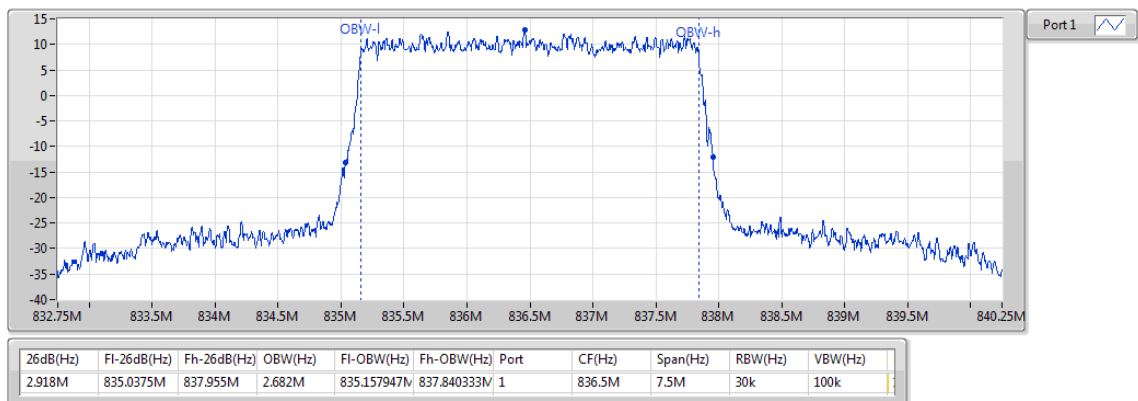
Band 5_LTE_3MHz_Nss1,16QAM_1TX
825.5MHz_16QAM_RB 15,#RB 0

EBW



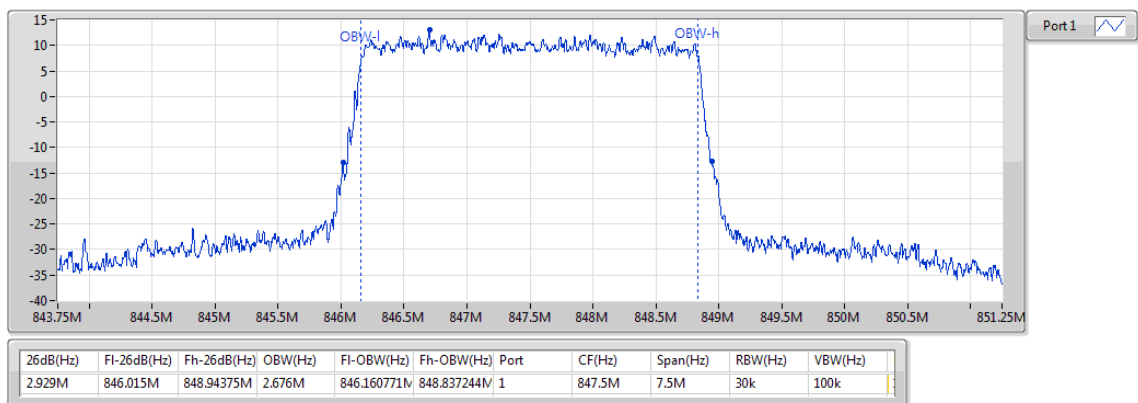
Band 5_LTE_3MHz_Nss1,16QAM_1TX
836.5MHz_16QAM_RB 15,#RB 0

EBW



Band 5_LTE_3MHz_Nss1,16QAM_1TX
847.5MHz_16QAM_RB 15,#RB 0

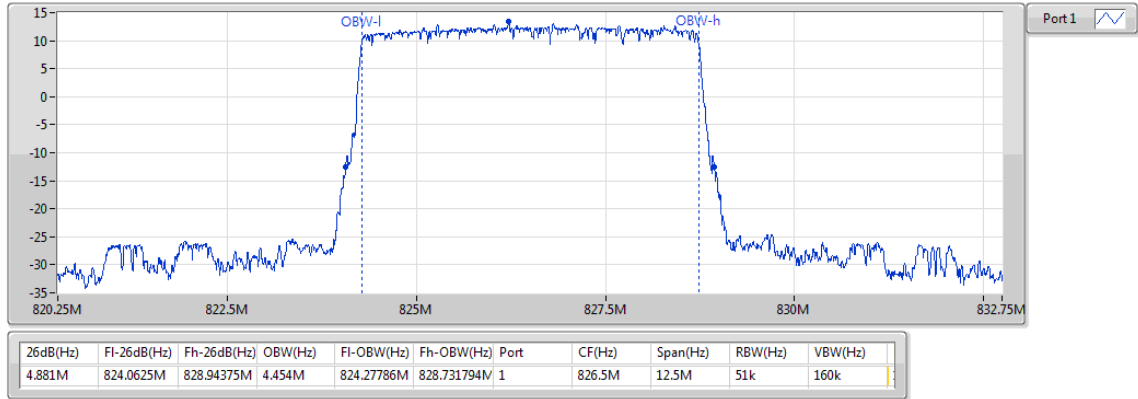
EBW



Band 5_LTE_5MHz_Nss1,QPSK_1TX

EBW

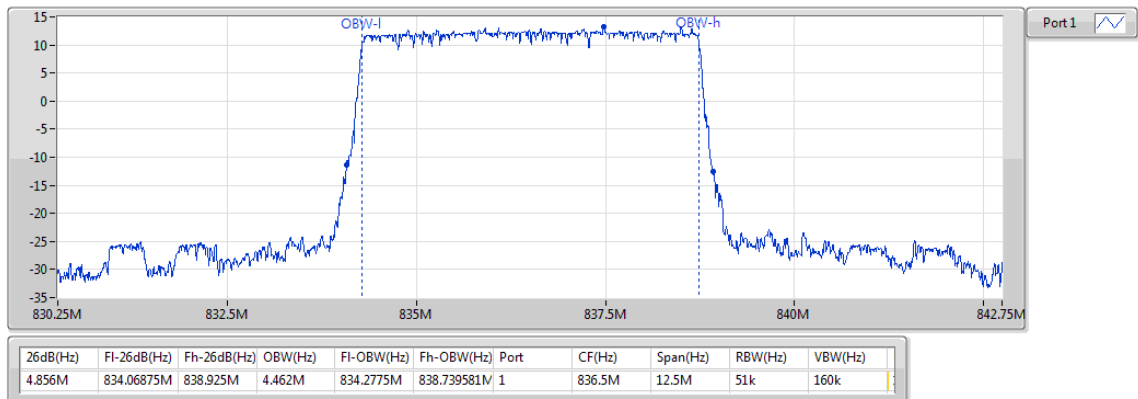
826.5MHz_QPSK_RB 25,#RB 0



Band 5_LTE_5MHz_Nss1,QPSK_1TX

EBW

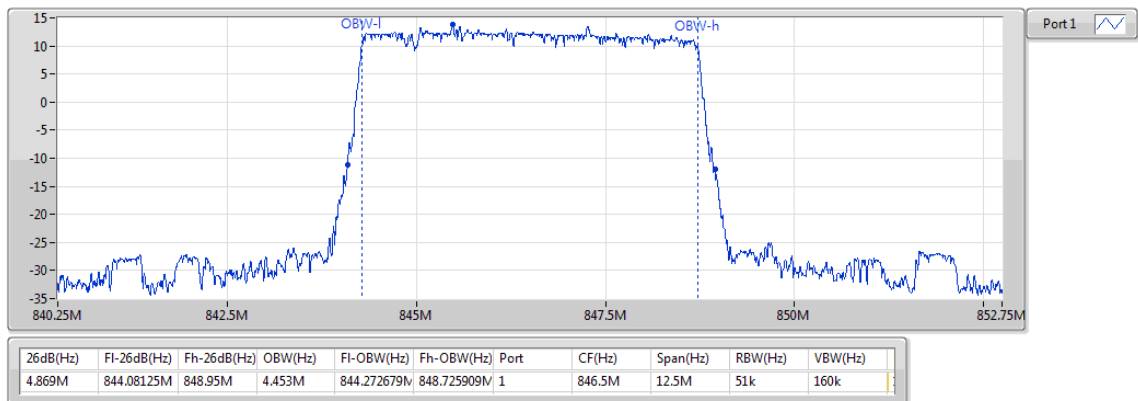
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Band 5_LTE_5MHz_Nss1,QPSK_1TX

EBW

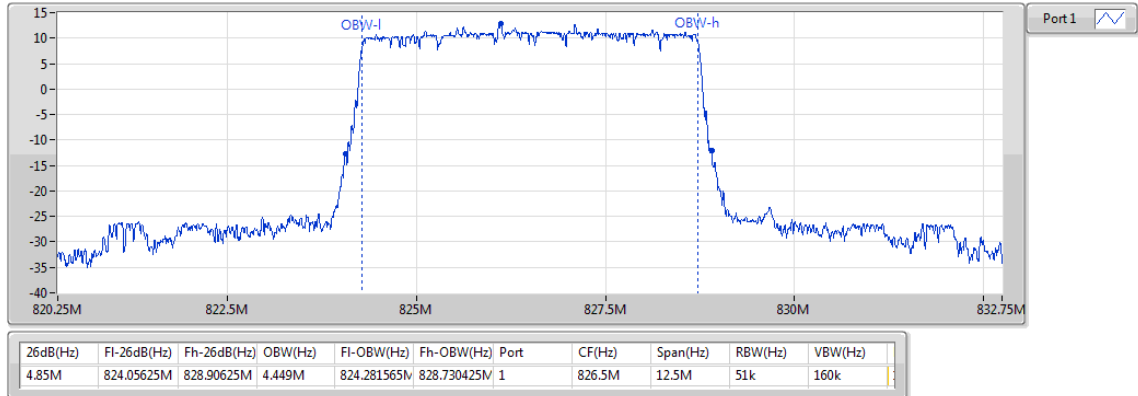
846.5MHz_QPSK_RB 25,#RB 0



Band 5_LTE_5MHz_Nss1,16QAM_1TX

EBW

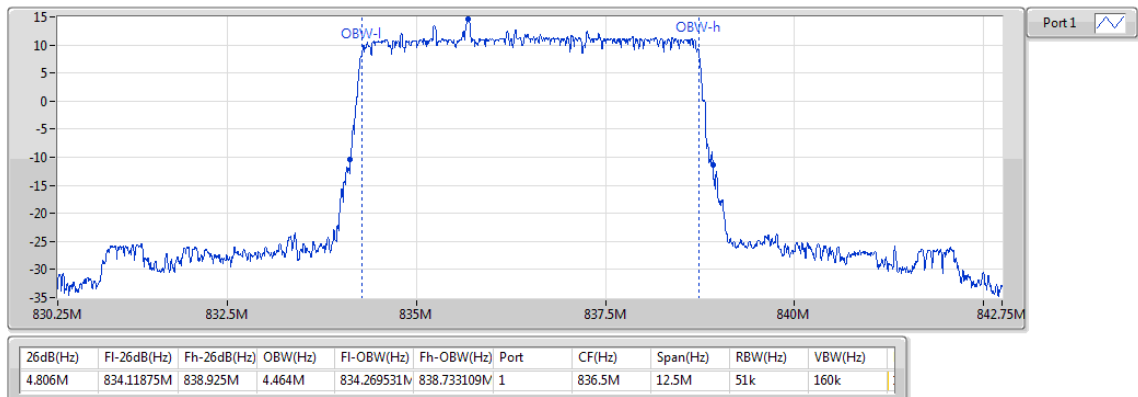
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Band 5_LTE_5MHz_Nss1,16QAM_1TX

EBW

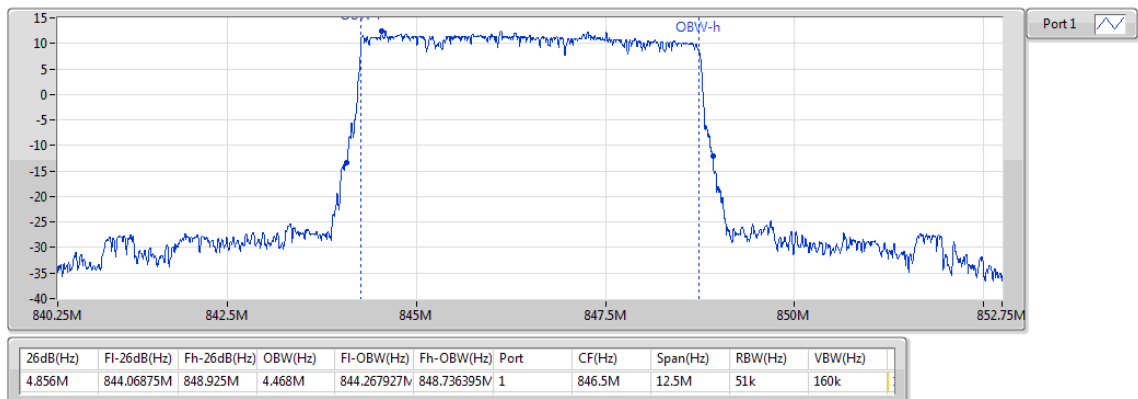
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Band 5_LTE_5MHz_Nss1,16QAM_1TX

EBW

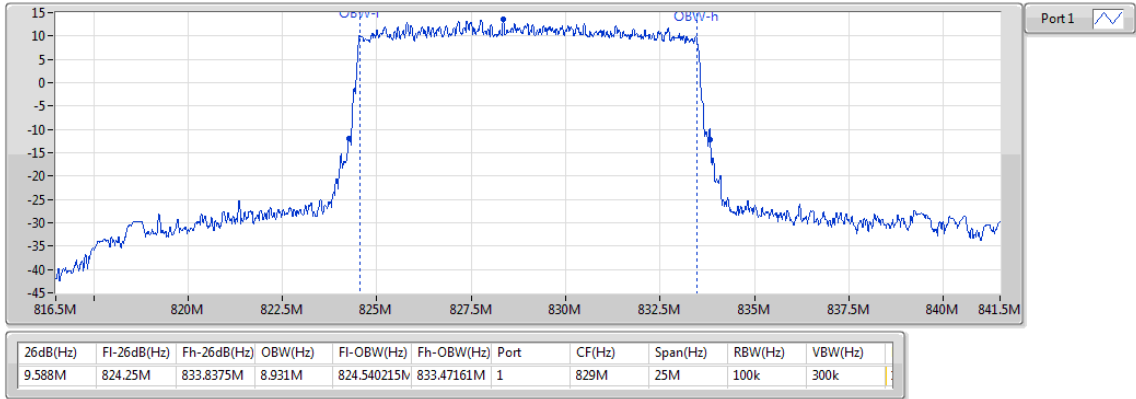
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Band 5_LTE_10MHz_Nss1,QPSK_1TX

EBW

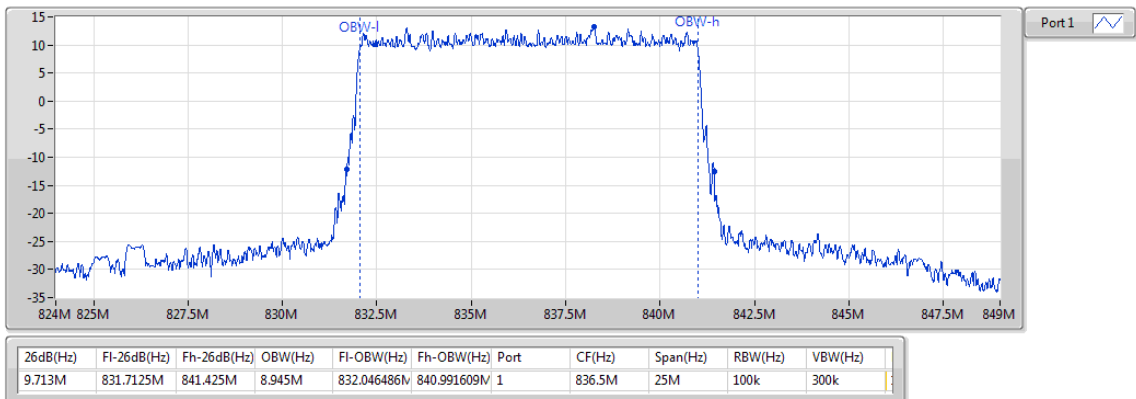
829MHz_QPSK_RB 50,#RB 0



Band 5_LTE_10MHz_Nss1,QPSK_1TX

EBW

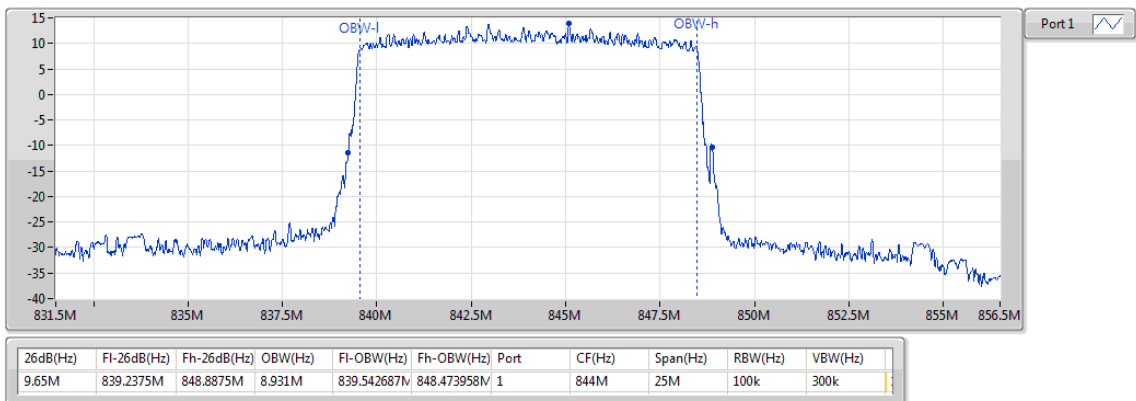
836.5MHz_QPSK_RB 50,#RB 0



Band 5_LTE_10MHz_Nss1,QPSK_1TX

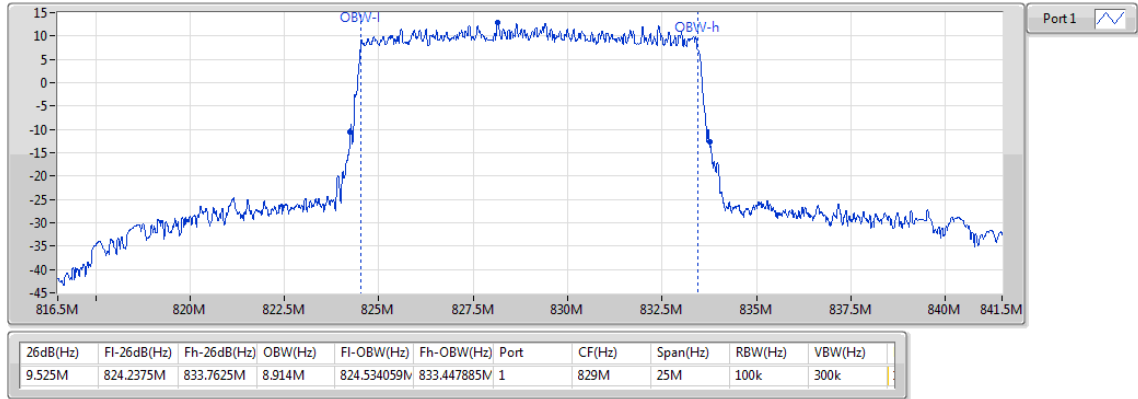
EBW

844MHz_QPSK_RB 50,#RB 0



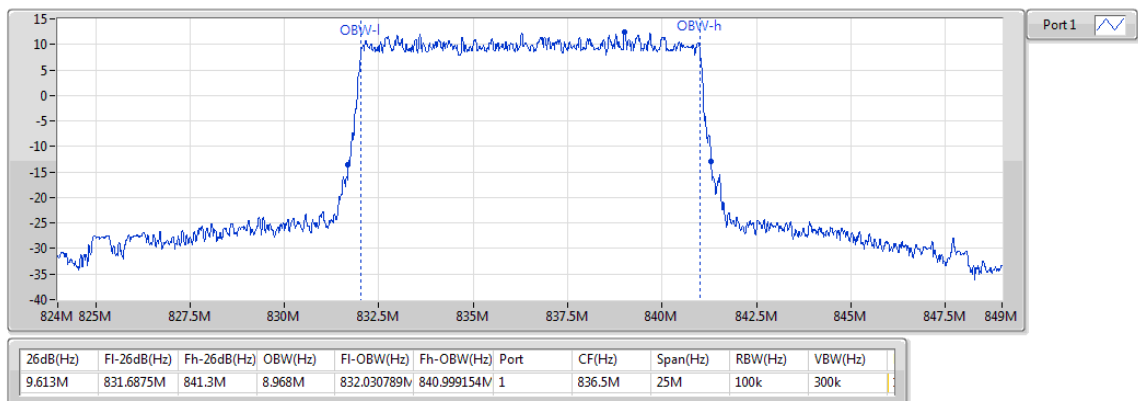
Band 5_LTE_10MHz_Nss1,16QAM_1TX
829MHz_16QAM_RB 50,#RB 0

EBW



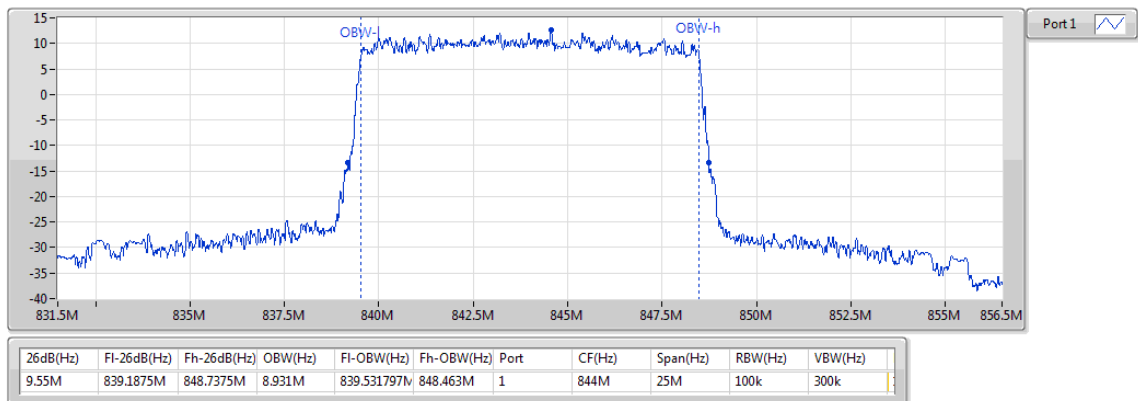
Band 5_LTE_10MHz_Nss1,16QAM_1TX
836.5MHz_16QAM_RB 50,#RB 0

EBW



Band 5_LTE_10MHz_Nss1,16QAM_1TX
844MHz_16QAM_RB 50,#RB 0

EBW



3.5 Peak to Average Ratio

3.5.1 Limit of Peak to Average Ratio

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

3.5.2 Test Procedures

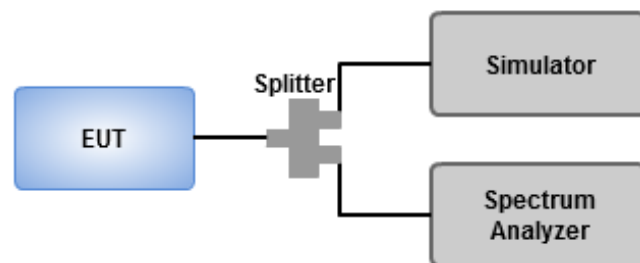
GPRS mode

1. Set RBW=1MHz, RBW=3MHz, Peak detector in Trace 1
2. Set RBW=1MHz, RBW=3MHz, RMS detector in Trace 2
3. Trigger function is enabled for measuring signal at burst on time. Measure the difference between trace1 and trace 2.

WCDMA / LTE mode

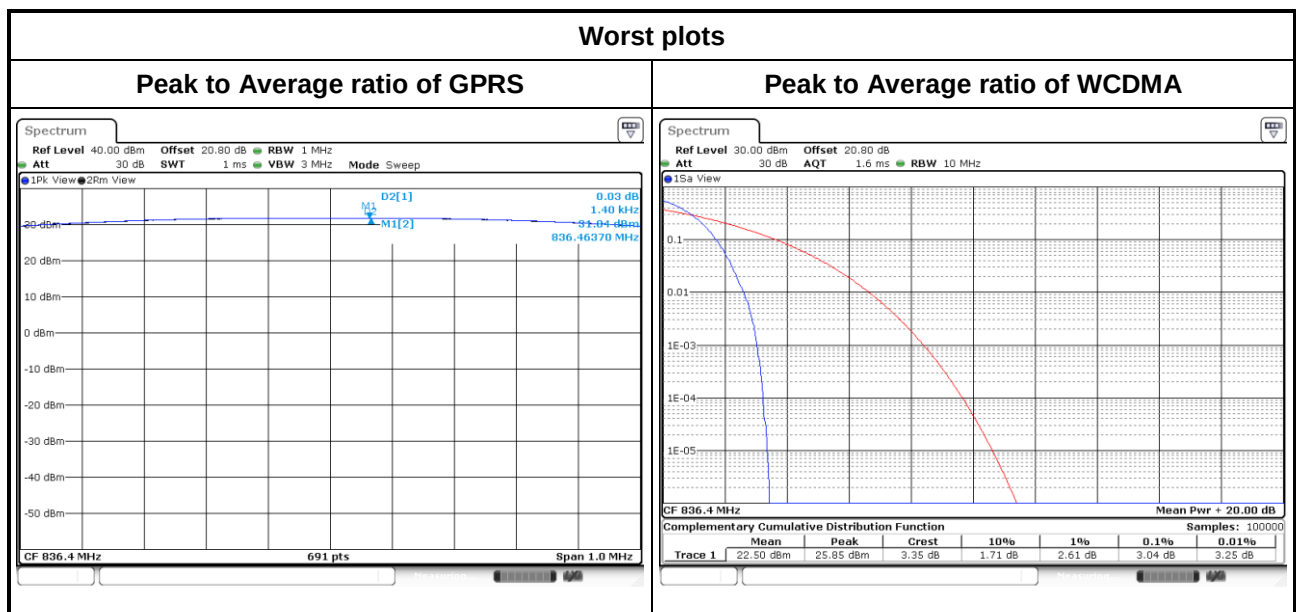
1. Enable CCDF function of spectrum analyzer and set RBW=10MHz
2. Set the number of counts to a value that stabilizes the measured CCDF curve
3. Record the maximum PAPR level associated with a probability of 0.1%.

3.5.3 Test Setup

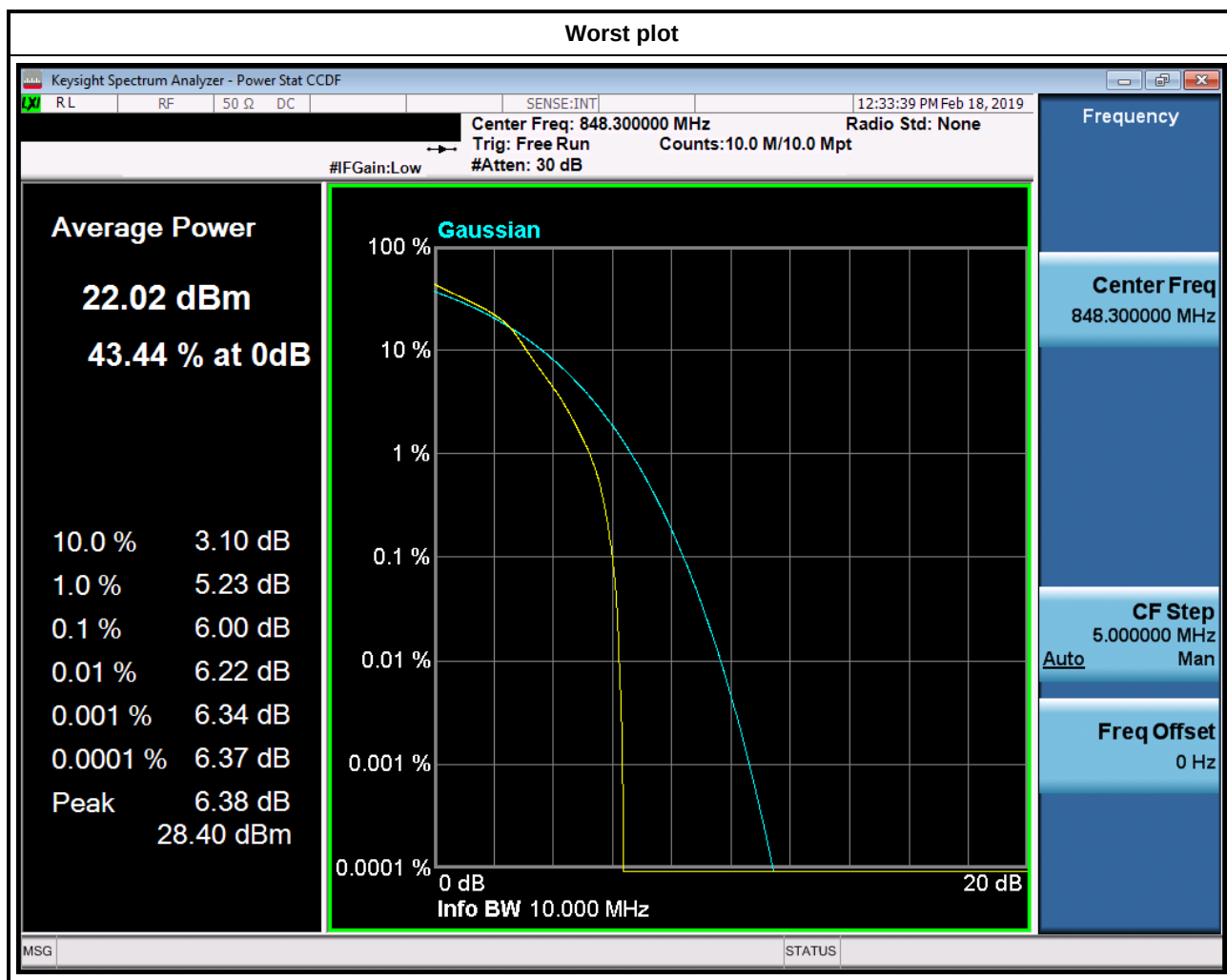


3.5.4 Test Result of Peak to Average Ratio

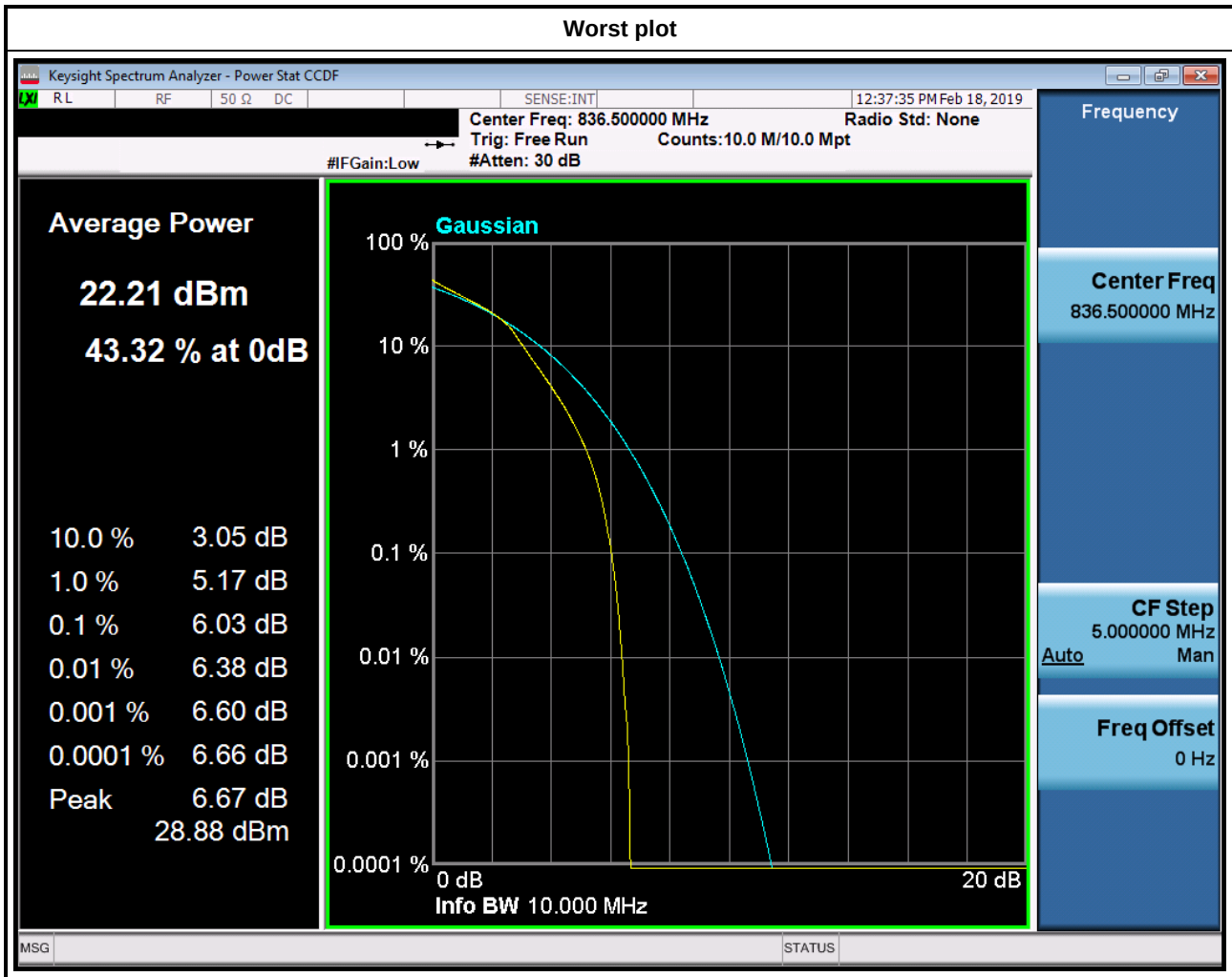
MODE	Channel	Frequency (MHz)	Peak to Average ratio (dB)
GPRS	128	826.4	0.01
GPRS	189	836.4	0.03
GPRS	251	846.6	0.01
WCDMA V	4132	826.4	3.01
WCDMA V	4182	836.4	3.04
WCDMA V	4133	846.6	3.04



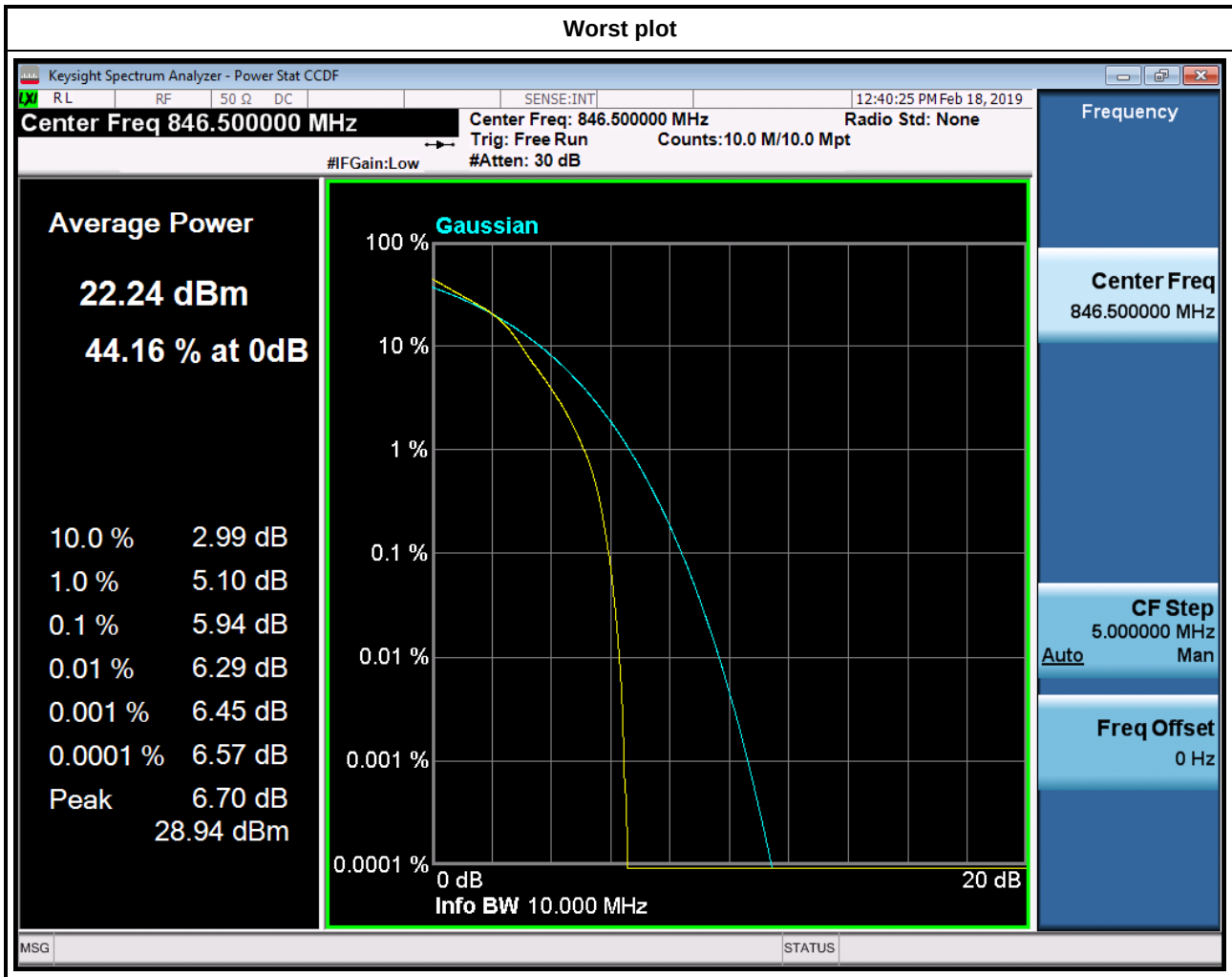
Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 5	1.4	QPSK	20407	824.7	4.94
LTE Band 5	1.4	QPSK	20525	836.5	4.99
LTE Band 5	1.4	QPSK	20643	848.3	5.05
LTE Band 5	1.4	16QAM	20407	824.7	5.87
LTE Band 5	1.4	16QAM	20525	836.5	5.92
LTE Band 5	1.4	16QAM	20643	848.3	6.00



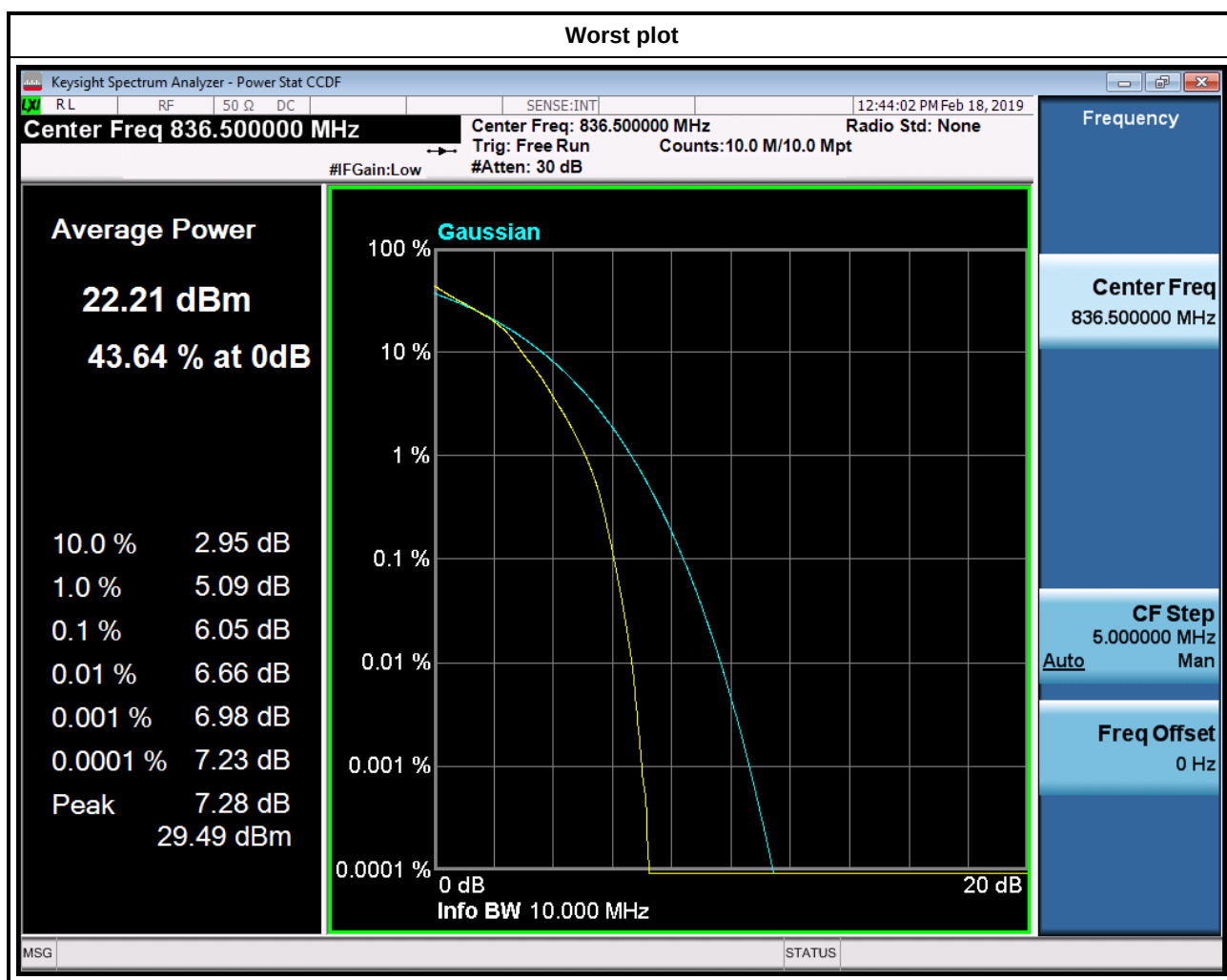
Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 5	3	QPSK	20415	825.5	4.80
LTE Band 5	3	QPSK	20525	836.5	5.05
LTE Band 5	3	QPSK	20635	847.5	5.05
LTE Band 5	3	16QAM	20415	825.5	5.72
LTE Band 5	3	16QAM	20525	836.5	6.03
LTE Band 5	3	16QAM	20635	847.5	5.99



Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 5	5	QPSK	20425	826.5	5.00
LTE Band 5	5	QPSK	20525	836.5	5.14
LTE Band 5	5	QPSK	20625	846.5	5.05
LTE Band 5	5	16QAM	20425	826.5	5.84
LTE Band 5	5	16QAM	20525	836.5	5.93
LTE Band 5	5	16QAM	20625	846.5	5.94



Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 5	10	QPSK	20450	829.0	5.09
LTE Band 5	10	QPSK	20525	836.5	5.23
LTE Band 5	10	QPSK	20600	844.0	4.97
LTE Band 5	10	16QAM	20450	829.0	5.98
LTE Band 5	10	16QAM	20525	836.5	6.05
LTE Band 5	10	16QAM	20600	844.0	5.88



3.6 Frequency Stability

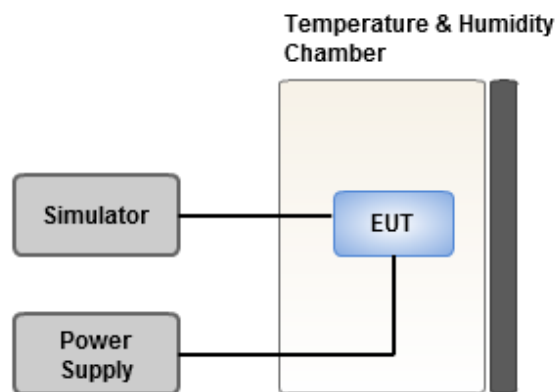
3.6.1 Limit of Frequency Stability

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

3.6.2 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. The test shall be performed under normal and extreme condition for temperature and voltage.
4. Link up EUT and simulator. Confirm frequency drift value of simulator and record it.

3.6.3 Test Setup



3.6.4 Test Result of Frequency Stability

GPRS 850			
Temperature (°C)	Voltage (dc)	Frequency Drift (ppm)	Limit (ppm)
T20°C Vmax	4.29	0.0012	2.5
T20°C Vmin	3.51	0.0012	2.5
T55°C Vnom	3.9	0.0024	2.5
T50°C Vnom	3.9	0.0024	2.5
T40°C Vnom	3.9	0.0024	2.5
T30°C Vnom	3.9	0.0024	2.5
T20°C Vnom	3.9	0.0012	2.5
T10°C Vnom	3.9	0.0012	2.5
T0°C Vnom	3.9	-0.0012	2.5
T-10°C Vnom	3.9	-0.0024	2.5
T-20°C Vnom	3.9	-0.0024	2.5
T-30°C Vnom	3.9	-0.0024	2.5

WCDMA V			
Temperature (°C)	Voltage (dc)	Frequency Drift (ppm)	Limit (ppm)
T20°C Vmax	4.29	0.0024	2.5
T20°C Vmin	3.51	0.0024	2.5
T55°C Vnom	3.9	0.0024	2.5
T50°C Vnom	3.9	0.0024	2.5
T40°C Vnom	3.9	0.0024	2.5
T30°C Vnom	3.9	0.0024	2.5
T20°C Vnom	3.9	0.0024	2.5
T10°C Vnom	3.9	0.0012	2.5
T0°C Vnom	3.9	-0.0012	2.5
T-10°C Vnom	3.9	-0.0024	2.5
T-20°C Vnom	3.9	-0.0024	2.5
T-30°C Vnom	3.9	-0.0024	2.5

LTE Band 5, CB: 1.4MHz			
Temperature (°C)	Voltage (dc)	Frequency Drift (ppm)	Limit (ppm)
T20°C Vmax	4.29	0.002	2.5
T20°C Vmin	3.51	0.002	2.5
T55°C Vnom	3.9	0.002	2.5
T50°C Vnom	3.9	0.002	2.5
T40°C Vnom	3.9	0.002	2.5
T30°C Vnom	3.9	0.002	2.5
T20°C Vnom	3.9	0.002	2.5
T10°C Vnom	3.9	0.001	2.5
T0°C Vnom	3.9	-0.001	2.5
T-10°C Vnom	3.9	-0.001	2.5
T-20°C Vnom	3.9	-0.002	2.5
T-30°C Vnom	3.9	-0.002	2.5

LTE Band 5, CB: 3MHz			
Temperature (°C)	Voltage (dc)	Frequency Drift (ppm)	Limit (ppm)
T20°C Vmax	4.29	0.002	2.5
T20°C Vmin	3.51	0.002	2.5
T55°C Vnom	3.9	0.003	2.5
T50°C Vnom	3.9	0.003	2.5
T40°C Vnom	3.9	0.002	2.5
T30°C Vnom	3.9	0.002	2.5
T20°C Vnom	3.9	0.001	2.5
T10°C Vnom	3.9	0.001	2.5
T0°C Vnom	3.9	-0.001	2.5
T-10°C Vnom	3.9	-0.002	2.5
T-20°C Vnom	3.9	-0.003	2.5
T-30°C Vnom	3.9	-0.003	2.5

LTE Band 5, CB: 5MHz			
Temperature (°C)	Voltage (dc)	Frequency Drift (ppm)	Limit (ppm)
T20°C Vmax	4.29	0.001	2.5
T20°C Vmin	3.51	0.001	2.5
T55°C Vnom	3.9	0.002	2.5
T50°C Vnom	3.9	0.002	2.5
T40°C Vnom	3.9	0.002	2.5
T30°C Vnom	3.9	0.001	2.5
T20°C Vnom	3.9	0.001	2.5
T10°C Vnom	3.9	-0.001	2.5
T0°C Vnom	3.9	-0.002	2.5
T-10°C Vnom	3.9	-0.002	2.5
T-20°C Vnom	3.9	-0.002	2.5
T-30°C Vnom	3.9	-0.002	2.5

LTE Band 5, CB: 10MHz			
Temperature (°C)	Voltage (dc)	Frequency Drift (ppm)	Limit (ppm)
T20°C Vmax	4.29	0.002	2.5
T20°C Vmin	3.51	0.002	2.5
T55°C Vnom	3.9	0.003	2.5
T50°C Vnom	3.9	0.003	2.5
T40°C Vnom	3.9	0.001	2.5
T30°C Vnom	3.9	0.002	2.5
T20°C Vnom	3.9	0.002	2.5
T10°C Vnom	3.9	-0.002	2.5
T0°C Vnom	3.9	-0.002	2.5
T-10°C Vnom	3.9	-0.003	2.5
T-20°C Vnom	3.9	-0.003	2.5
T-30°C Vnom	3.9	-0.003	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 District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

Tel: 886-2-2601-1640

No. 30-2, Ding Fwu Tsuen, Lin
Kou District, New Taipei City,
Taiwan, R.O.C.

Kwei Shan

Tel: 886-3-271-8666

No. 3-1, Lane 6, Wen San 3rd St.,
Kwei Shan District, Tao Yuan City
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 District, Tao Yuan
City 333, Taiwan, R.O.C.

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