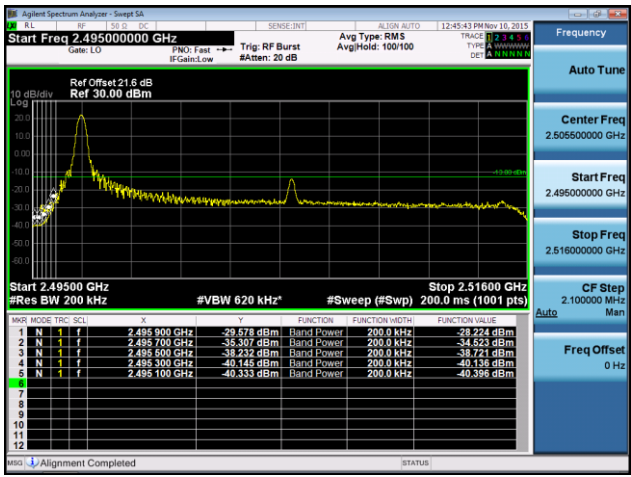


Mode | **LTE Band 41, CB: 20MHz, QPSK, Low Channel, 1RB**



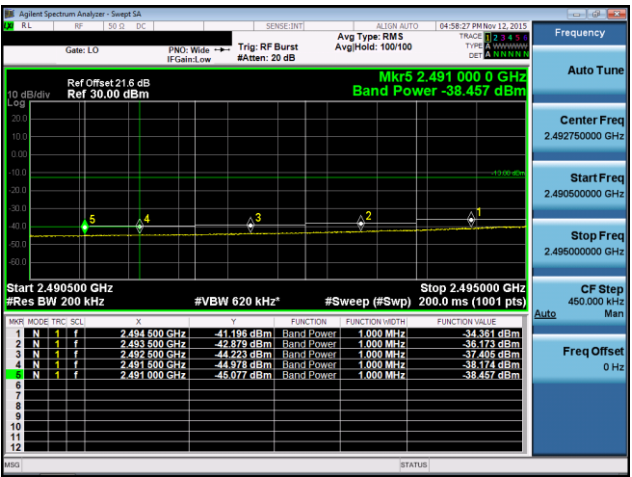
Agilent Spectrum Analyzer - Swept SA

Start Freq 2.49500000 GHz

Ref Offset 21.6 dB
Ref 30.00 dBm

Start 2.49500 GHz #Res BW 200 kHz #VBW 620 kHz #Sweep (#Swp) 200.0 ms (1001 pts) Stop 2.51600 GHz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.495 000 GHz	-39.878 dBm	Band Power	200.0 kHz	-39.878 dBm
2	N	1	f	2.495 700 GHz	-35.307 dBm	Band Power	200.0 kHz	-35.307 dBm
3	N	1	f	2.495 500 GHz	-38.232 dBm	Band Power	200.0 kHz	-38.232 dBm
4	N	1	f	2.495 300 GHz	-40.146 dBm	Band Power	200.0 kHz	-40.146 dBm
5	N	1	f	2.495 100 GHz	-40.333 dBm	Band Power	200.0 kHz	-40.333 dBm




Agilent Spectrum Analyzer - Swept SA

Mkr5 2.491 000 0 GHz
Band Power -38.457 dBm

Start 2.4905000 GHz #Res BW 200 kHz #VBW 620 kHz #Sweep (#Swp) 200.0 ms (1001 pts) Stop 2.4950000 GHz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.484 500 GHz	-41.198 dBm	Band Power	1.000 MHz	-34.351 dBm
2	N	1	f	2.483 500 GHz	-42.975 dBm	Band Power	1.000 MHz	-36.113 dBm
3	N	1	f	2.492 500 GHz	-44.223 dBm	Band Power	1.000 MHz	-37.495 dBm
4	N	1	f	2.491 500 GHz	-44.678 dBm	Band Power	1.000 MHz	-38.174 dBm
5	N	1	f	2.491 000 GHz	-45.077 dBm	Band Power	1.000 MHz	-38.457 dBm



Agilent Spectrum Analyzer - Swept SA

Marker 1 2.488328000000 GHz

Ref Offset 21.6 dB
Ref 30.00 dBm

Mkr1 2.488 328 0 GHz
-38.226 dBm

Start 2.40000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz #Sweep (#Swp) 200.0 ms (1001 pts) Stop 2.49050 GHz

Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr--CF
Mkr--RefLv
More 1 of 2

Mode | **LTE Band 41, CB: 20MHz, QPSK, Low Channel, 100%RB**

Start Freq 2.49500000 GHz
Stop Freq 2.51600000 GHz
Res BW 200 kHz
#Sweep (Swp) 200.0 ms (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.495000 GHz	-30.877 dBm	Band Power	200.0 kHz	-30.878 dBm
2	N	1	f	2.495700 GHz	-29.716 dBm	Band Power	200.0 kHz	-31.346 dBm
3	N	1	f	2.495500 GHz	-32.333 dBm	Band Power	200.0 kHz	-31.473 dBm
4	N	1	f	2.495300 GHz	-33.017 dBm	Band Power	200.0 kHz	-34.071 dBm
5	N	1	f	2.495100 GHz	-30.208 dBm	Band Power	200.0 kHz	-31.786 dBm

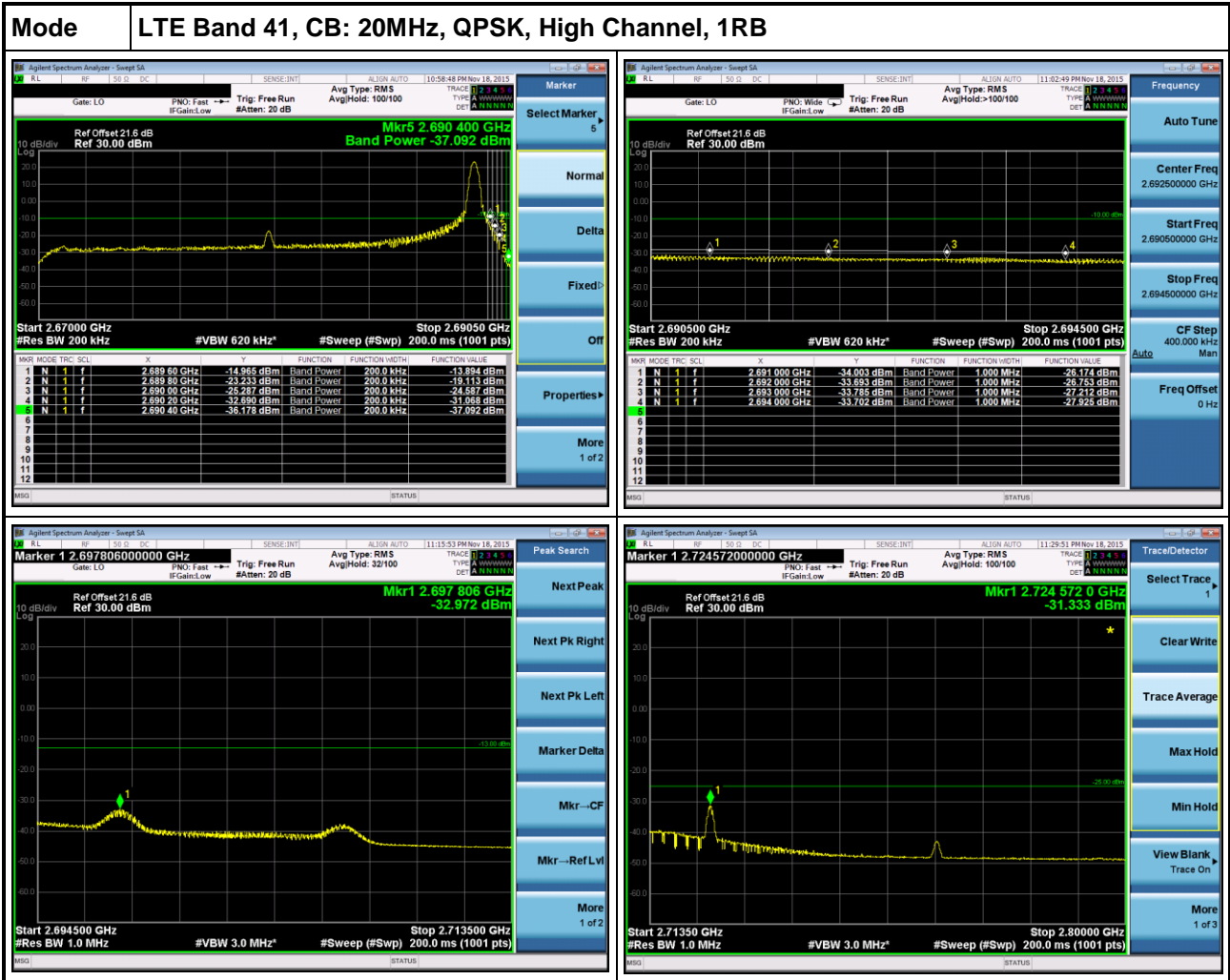
Mkr5 2.4910000 GHz
Band Power -29.161 dBm
Start Freq 2.49050000 GHz
Stop Freq 2.49500000 GHz
Res BW 200 kHz
#Sweep (Swp) 200.0 ms (1001 pts)

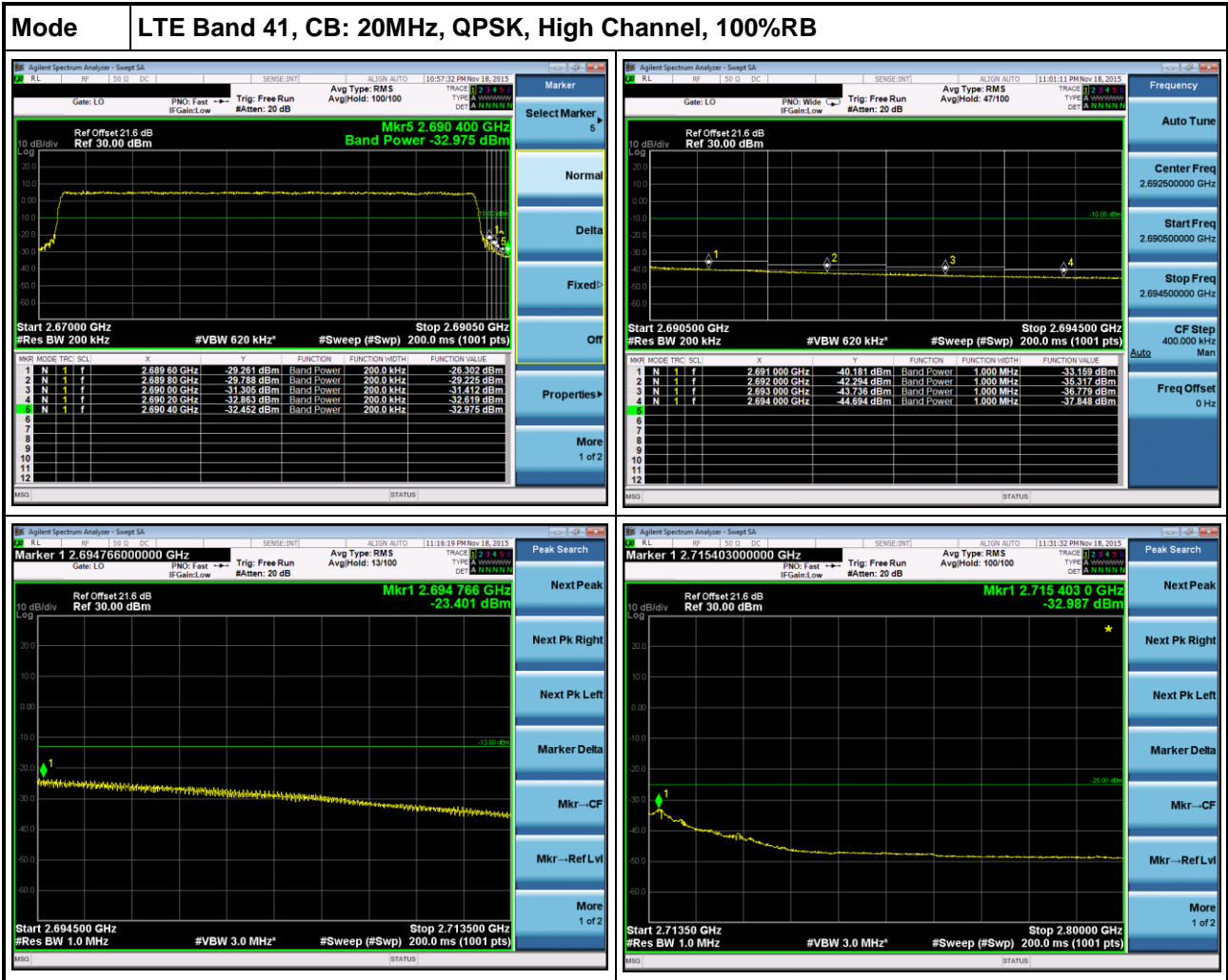
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.484500 GHz	-33.723 dBm	Band Power	1.000 MHz	-26.824 dBm
2	N	1	f	2.483500 GHz	-33.427 dBm	Band Power	1.000 MHz	-27.663 dBm
3	N	1	f	2.492500 GHz	-34.520 dBm	Band Power	1.000 MHz	-28.216 dBm
4	N	1	f	2.491500 GHz	-35.232 dBm	Band Power	1.000 MHz	-28.885 dBm
5	N	1	f	2.491000 GHz	-36.464 dBm	Band Power	1.000 MHz	-29.161 dBm

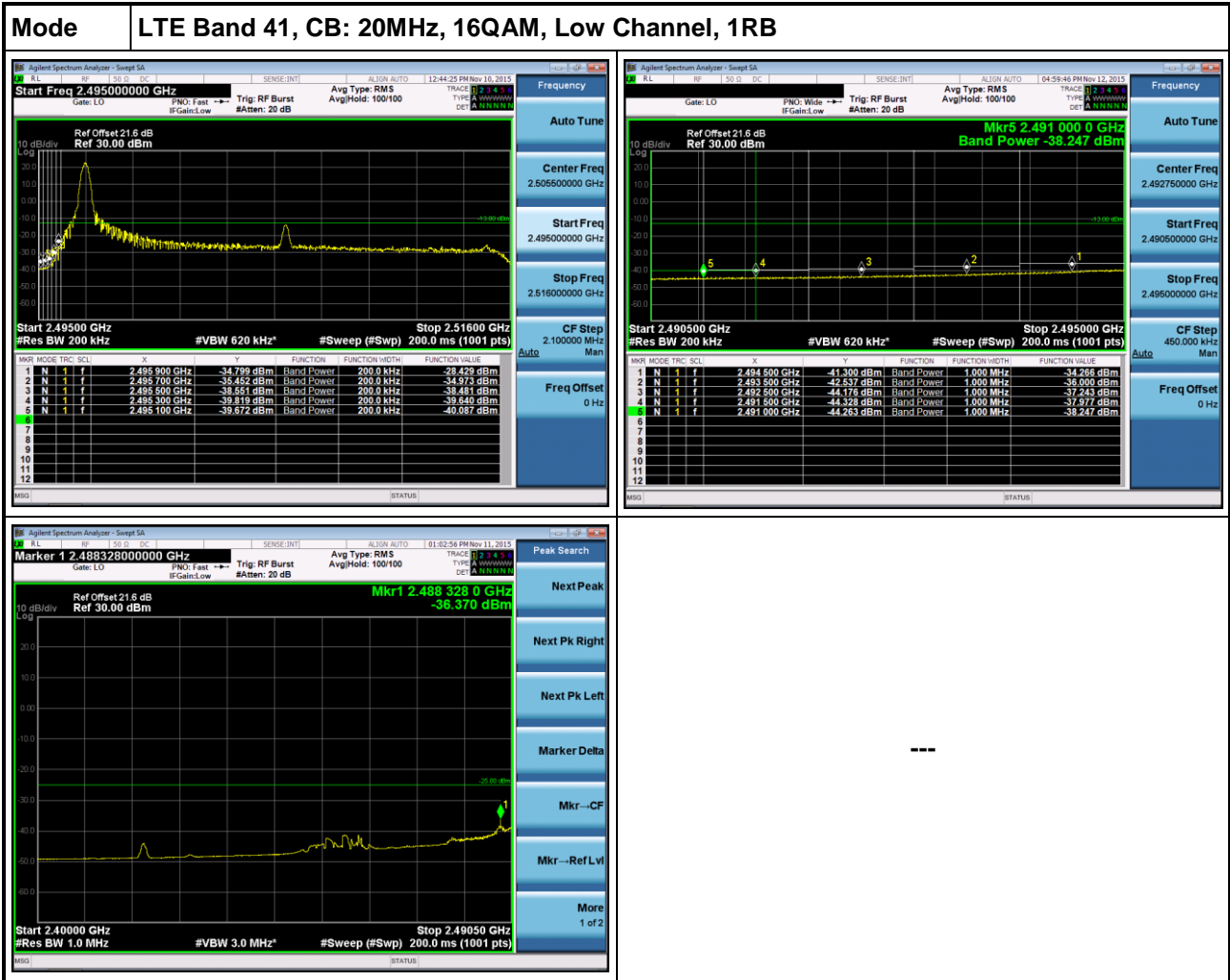
Mkr1 2.4895950 GHz
-28.826 dBm
Start Freq 2.48900000 GHz
Stop Freq 2.49050000 GHz
Res BW 1.0 MHz
#Sweep (Swp) 200.0 ms (1001 pts)

Peak Search

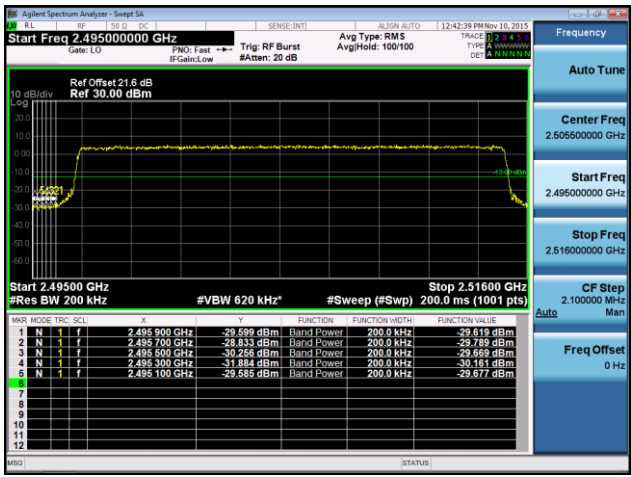
- Next Peak
- Next Pk Right
- Next Pk Left
- Marker Delta
- Mkr--CF
- Mkr--RefLv
- More 1 of 2



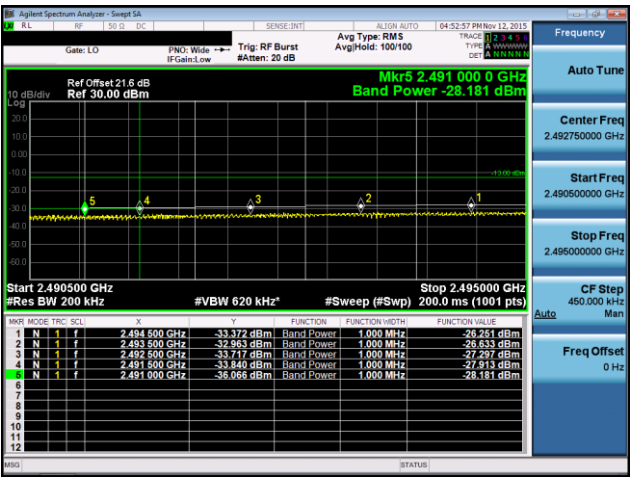





Mode | **LTE Band 41, CB: 20MHz, 16QAM, Low Channel, 100%RB**



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.495 000 GHz	-29.899 dBm	Band Power	200.0 kHz	-29.899 dBm
2	N	1	f	2.495 700 GHz	-28.833 dBm	Band Power	200.0 kHz	-29.789 dBm
3	N	1	f	2.495 500 GHz	-30.266 dBm	Band Power	200.0 kHz	-29.669 dBm
4	N	1	f	2.495 300 GHz	-31.484 dBm	Band Power	200.0 kHz	-30.181 dBm
5	N	1	f	2.495 100 GHz	-29.985 dBm	Band Power	200.0 kHz	-29.877 dBm



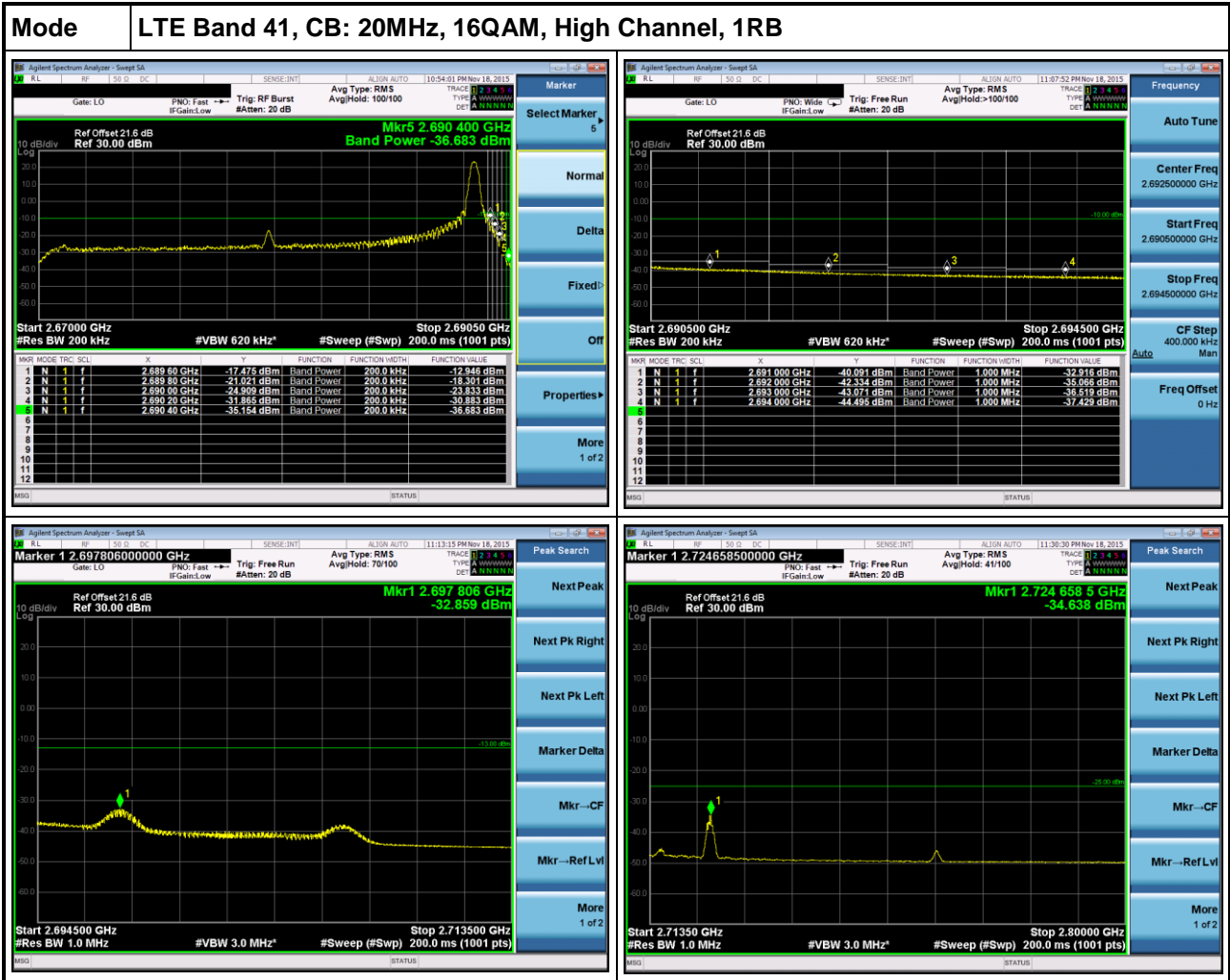
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.494 500 GHz	-33.372 dBm	Band Power	1.000 MHz	-26.261 dBm
2	N	1	f	2.493 500 GHz	-32.963 dBm	Band Power	1.000 MHz	-26.633 dBm
3	N	1	f	2.492 500 GHz	-33.717 dBm	Band Power	1.000 MHz	-27.737 dBm
4	N	1	f	2.491 500 GHz	-33.849 dBm	Band Power	1.000 MHz	-27.913 dBm
5	N	1	f	2.491 000 GHz	-36.066 dBm	Band Power	1.000 MHz	-28.181 dBm

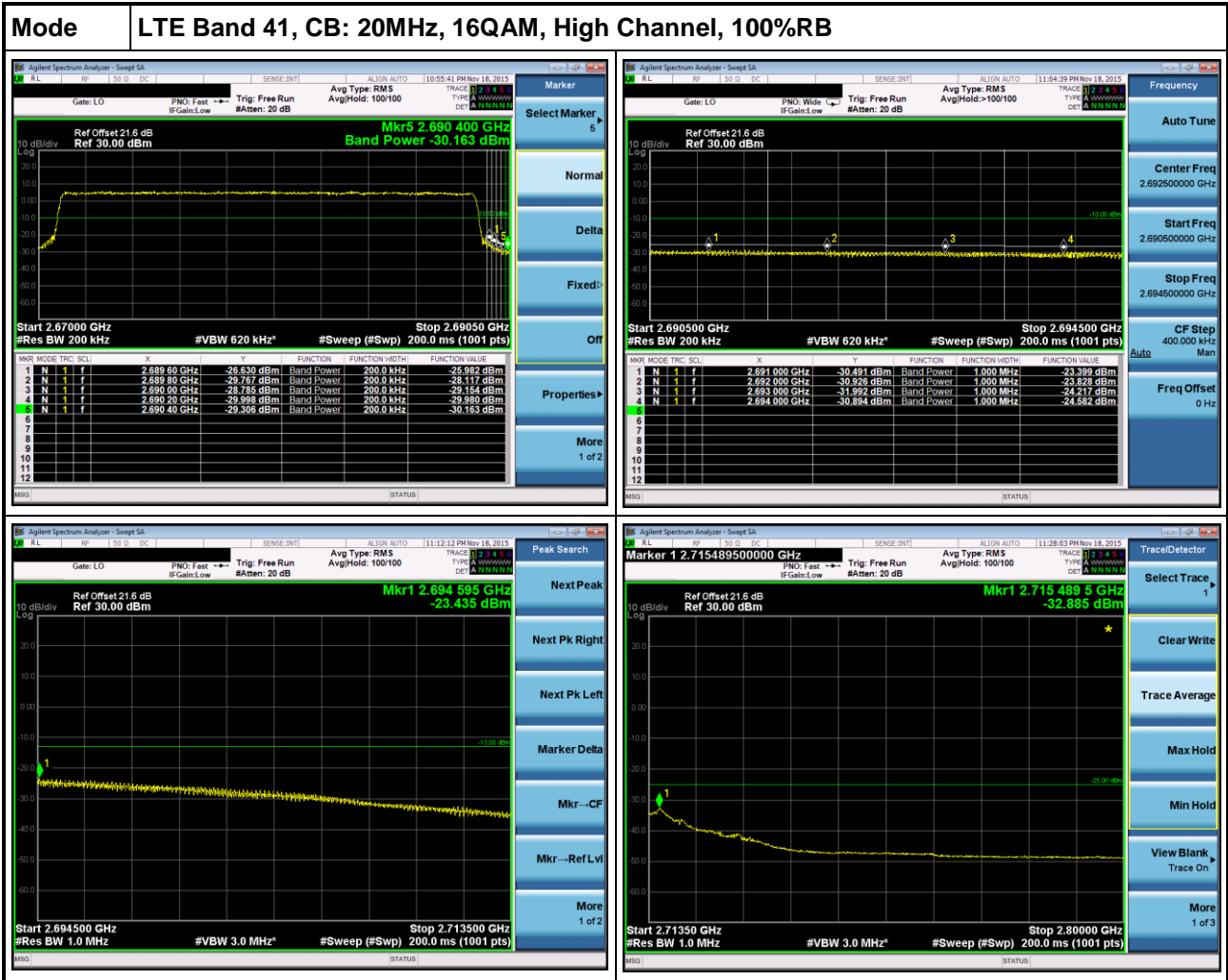


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.490 228 5 GHz	-27.436 dBm	Band Power	1.000 MHz	-27.436 dBm

Peak Search

- Next Peak
- Next Pk Right
- Next Pk Left
- Marker Delta
- Mkr→CF
- Mkr→RefLv
- More 1 of 2



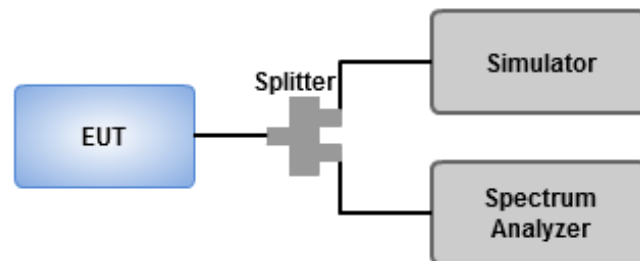


3.5 Emission and Occupied Bandwidth

3.5.1 Test Procedures

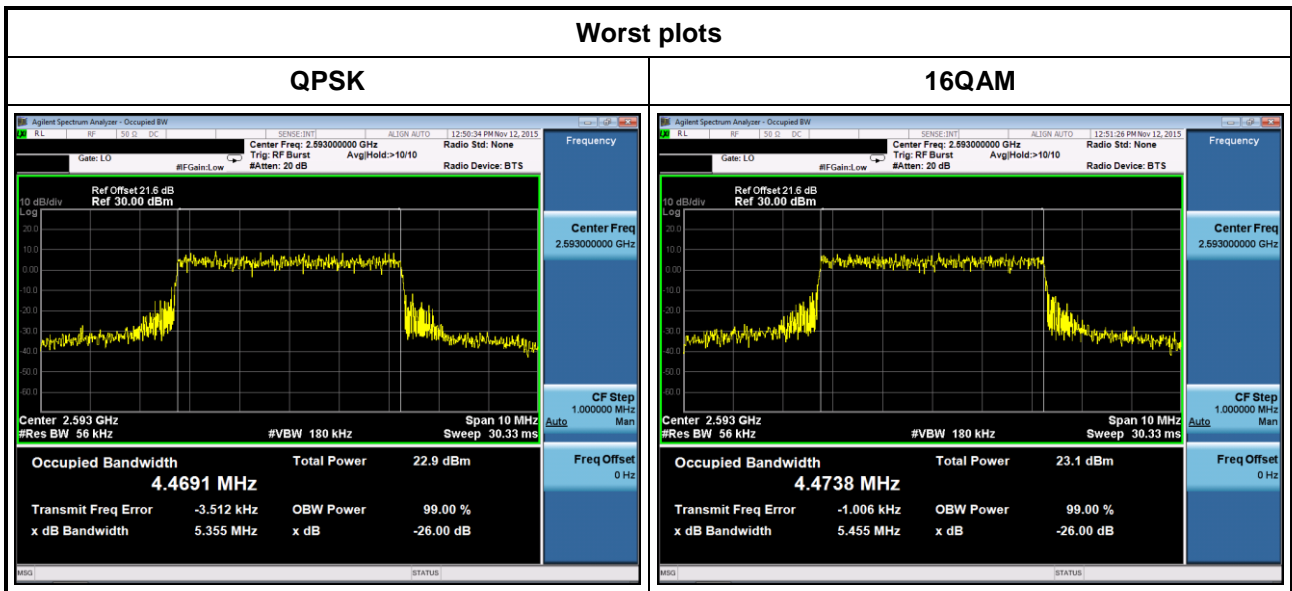
1. Set resolution bandwidth (RBW) = 51~200 kHz, Video bandwidth=180 ~ 620kHz for 5 ~ 20 MHz channel bandwidth
2. Set Detector = Peak, Trace mode = max hold, Sweep = auto couple, Allow the trace to stabilize.
3. Using 26dB and occupied bandwidth measurement function of spectrum analyzer to measure bandwidth

3.5.2 Test Setup



3.5.3 Test Result of Occupied Bandwidth

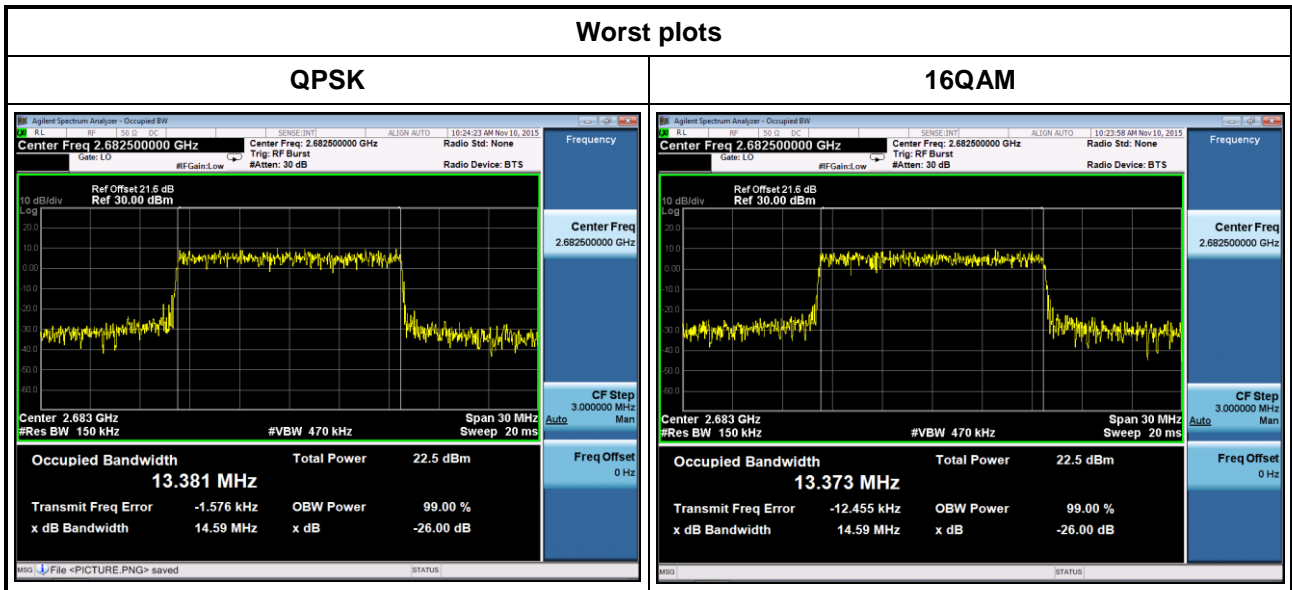
Channel Bandwidth (MHz)	Modulation	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
5	QPSK	2498.5	5.212	4.48
5	QPSK	2593.0	5.355	4.47
5	QPSK	2687.5	5.023	4.47
5	16QAM	2498.5	5.113	4.47
5	16QAM	2593.0	5.455	4.47
5	16QAM	2687.5	5.220	4.46



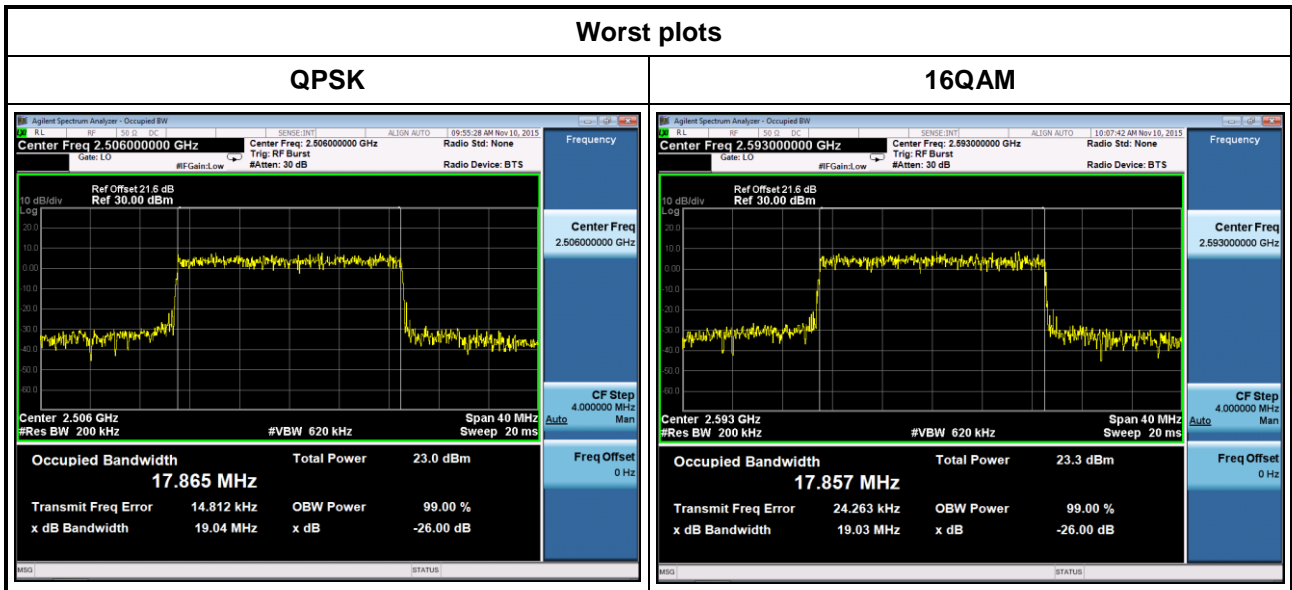
Channel Bandwidth (MHz)	Modulation	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
10	QPSK	2501.0	10.18	8.92
10	QPSK	2593.0	10.05	8.92
10	QPSK	2685.0	10.04	8.92
10	16QAM	2501.0	10.27	8.93
10	16QAM	2593.0	10.18	8.95
10	16QAM	2685.0	10.15	8.97



Channel Bandwidth (MHz)	Modulation	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
15	QPSK	2503.5	14.59	13.33
15	QPSK	2593.0	14.58	13.37
15	QPSK	2682.5	14.59	13.38
15	16QAM	2503.5	14.57	13.35
15	16QAM	2593.0	14.57	13.35
15	16QAM	2682.5	14.59	13.37



Channel Bandwidth (MHz)	Modulation	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
20	QPSK	2506.0	19.04	17.87
20	QPSK	2593.0	19.02	17.85
20	QPSK	2680.0	19.01	17.87
20	16QAM	2506.0	19.01	17.90
20	16QAM	2593.0	19.03	17.86
20	16QAM	2680.0	19.02	17.85



3.6 Frequency Stability

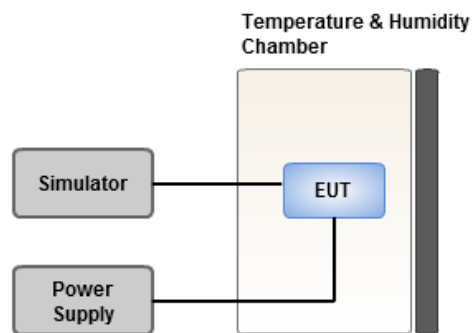
3.6.1 Limit of Frequency Stability

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

3.6.2 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. Temperature range is from -30~50°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.

3.6.3 Test Setup



3.6.4 Test Result of Frequency Stability

LTE Band 41, CB: 5MHz			
Temperature (°C)	Voltage (Vac)	Frequency Drift (ppm)	Limit (ppm)
50	120	0.016	2.5
40	120	0.012	2.5
30	120	0.018	2.5
20	120	0.015	2.5
10	120	0.016	2.5
0	120	0.017	2.5
-10	120	0.014	2.5
-20	120	0.017	2.5
-30	120	0.015	2.5
20	138	0.015	2.5
20	102	0.011	2.5

LTE Band 41, CB: 10MHz			
Temperature (°C)	Voltage (Vac)	Frequency Drift (ppm)	Limit (ppm)
50	120	0.018	2.5
40	120	0.016	2.5
30	120	0.015	2.5
20	120	0.017	2.5
10	120	0.018	2.5
0	120	0.016	2.5
-10	120	0.016	2.5
-20	120	0.019	2.5
-30	120	0.018	2.5
20	138	0.017	2.5
20	102	0.014	2.5

LTE Band 41, CB: 15MHz			
Temperature (°C)	Voltage (Vac)	Frequency Drift (ppm)	Limit (ppm)
50	120	0.020	2.5
40	120	0.022	2.5
30	120	0.020	2.5
20	120	0.020	2.5
10	120	0.019	2.5
0	120	0.018	2.5
-10	120	0.016	2.5
-20	120	0.019	2.5
-30	120	0.022	2.5
20	138	0.022	2.5
20	102	0.021	2.5

LTE Band 41, CB: 20MHz			
Temperature (°C)	Voltage (Vac)	Frequency Drift (ppm)	Limit (ppm)
50	120	0.012	2.5
40	120	0.019	2.5
30	120	0.017	2.5
20	120	0.019	2.5
10	120	0.020	2.5
0	120	0.016	2.5
-10	120	0.019	2.5
-20	120	0.024	2.5
-30	120	0.017	2.5
20	138	0.017	2.5
20	102	0.015	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

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 Hsiang, Tao
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

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