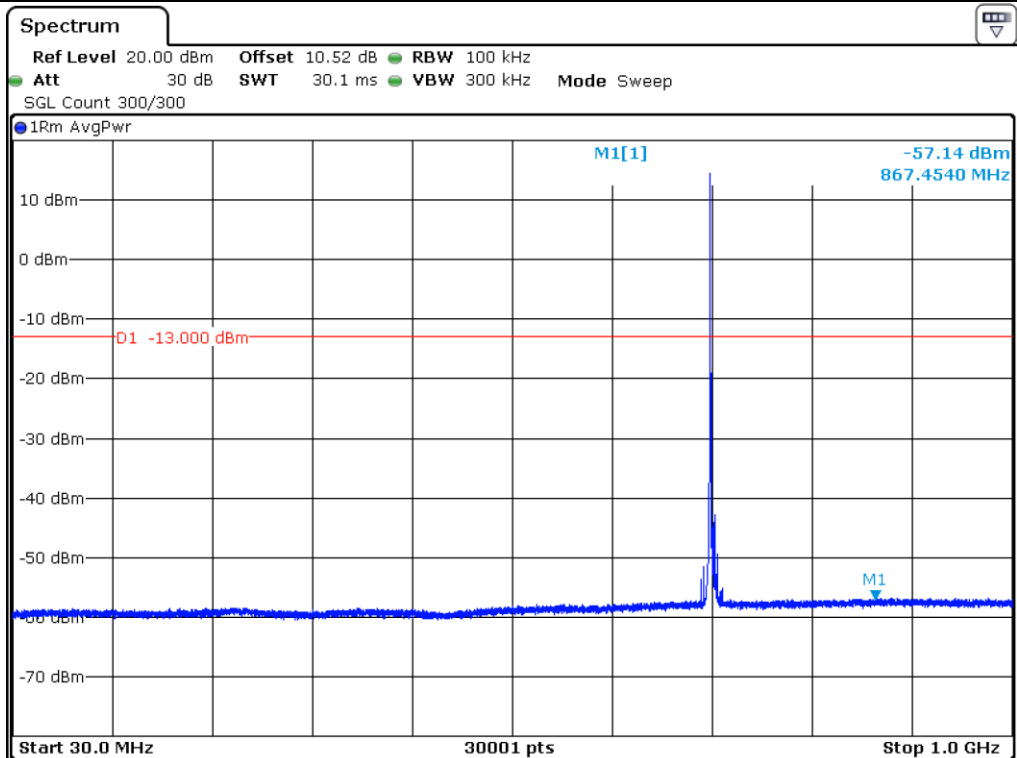
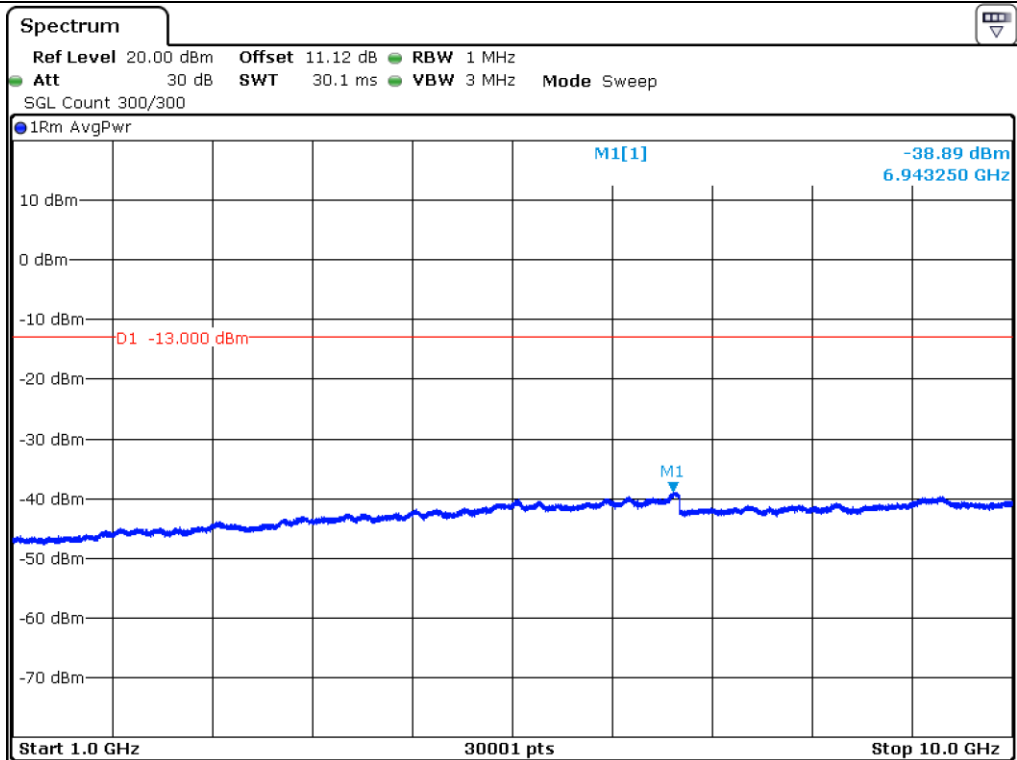


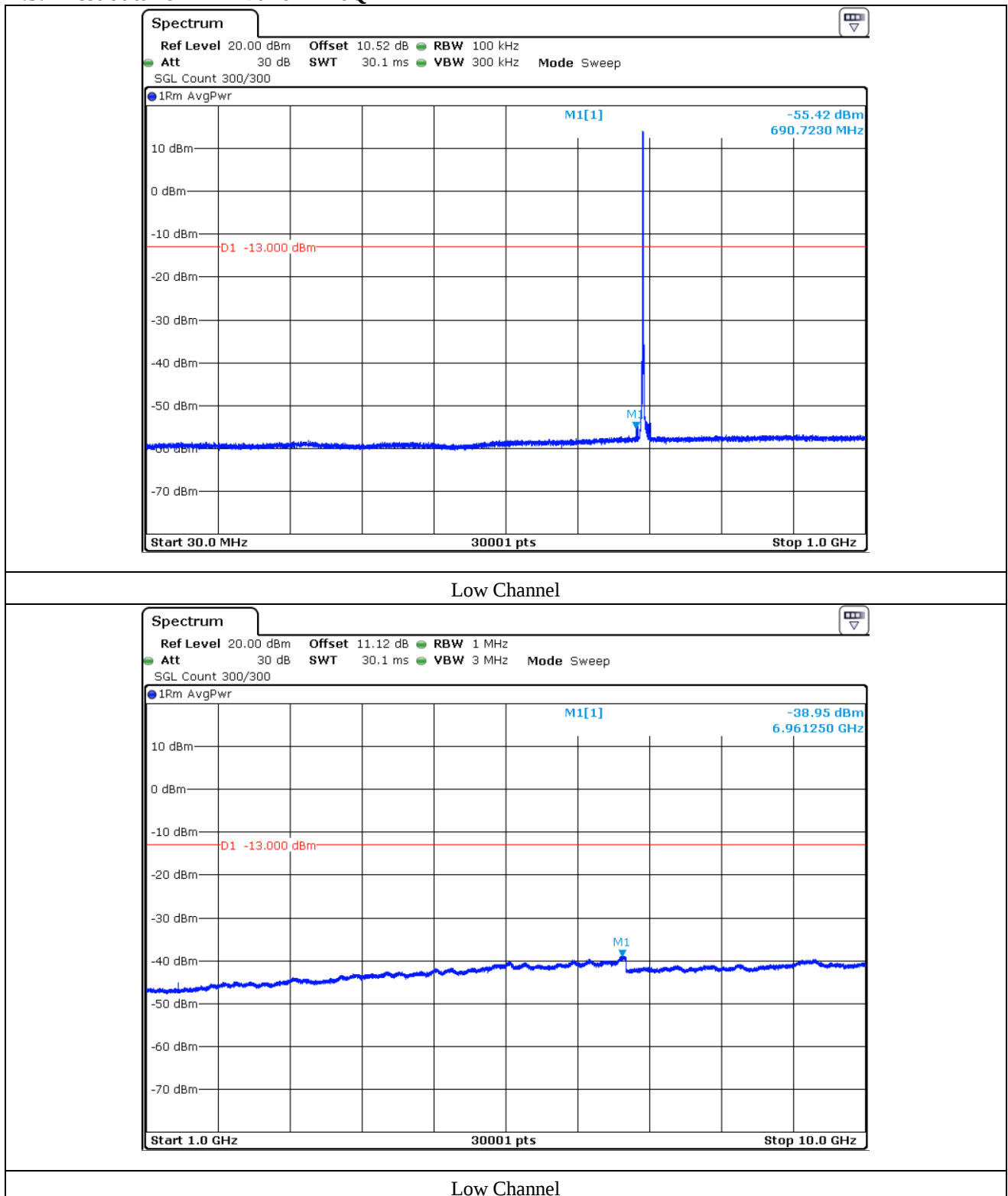


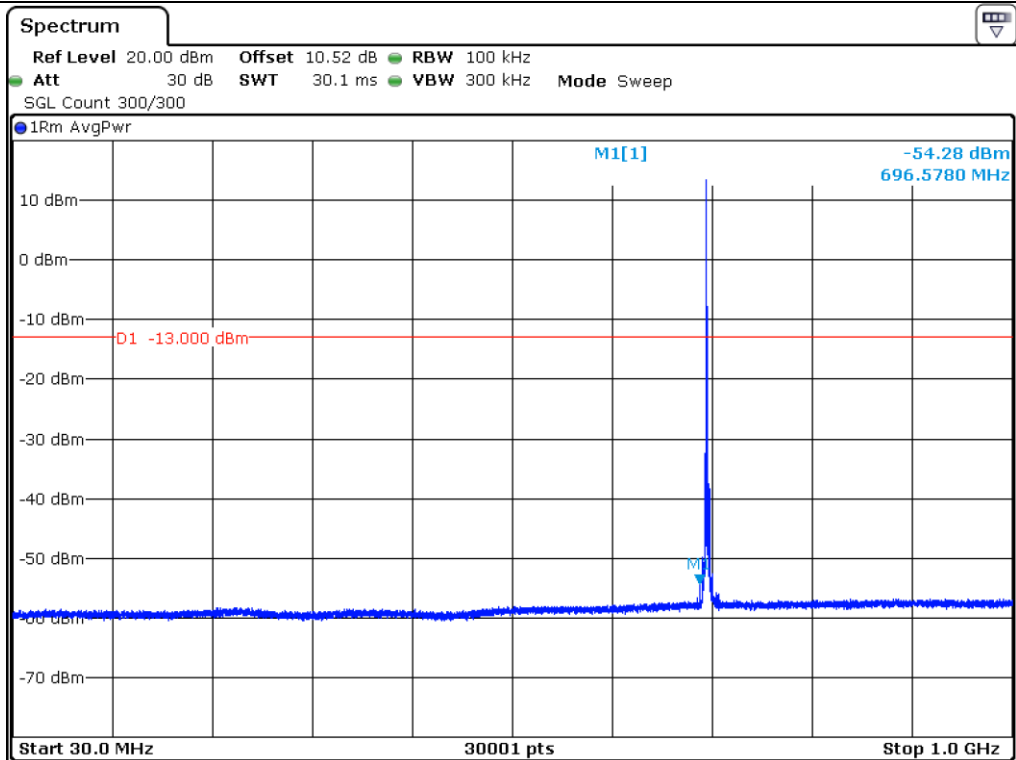
High Channel



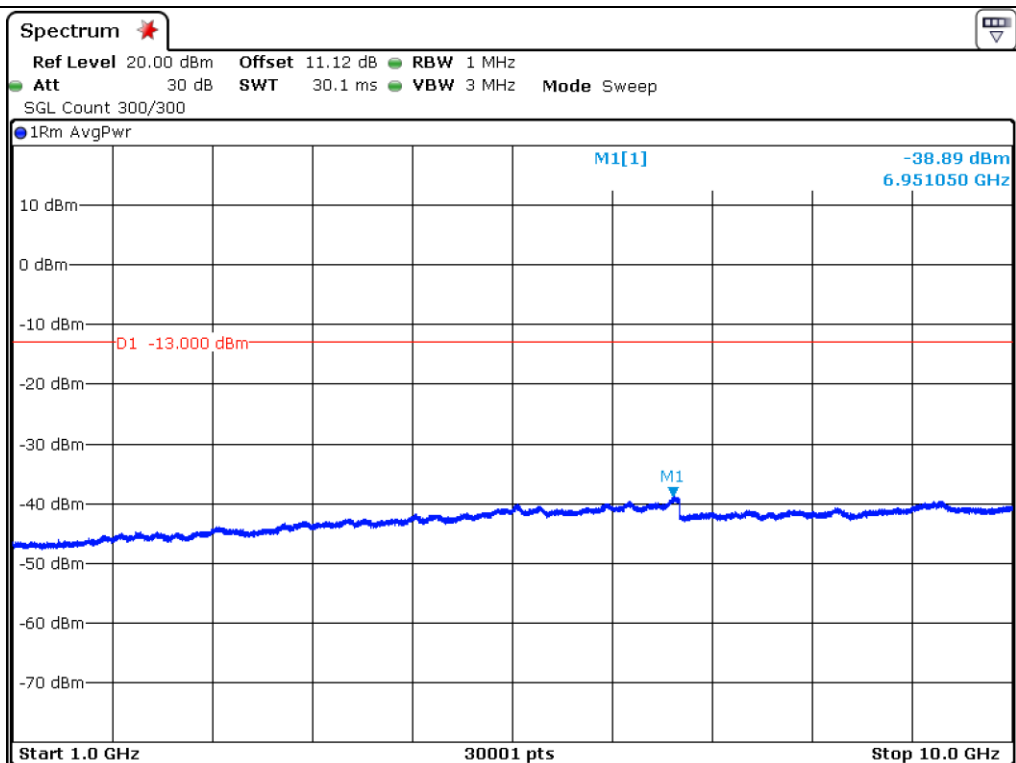
High Channel

14.5.4 Test data for LTE Band 12 16QAM

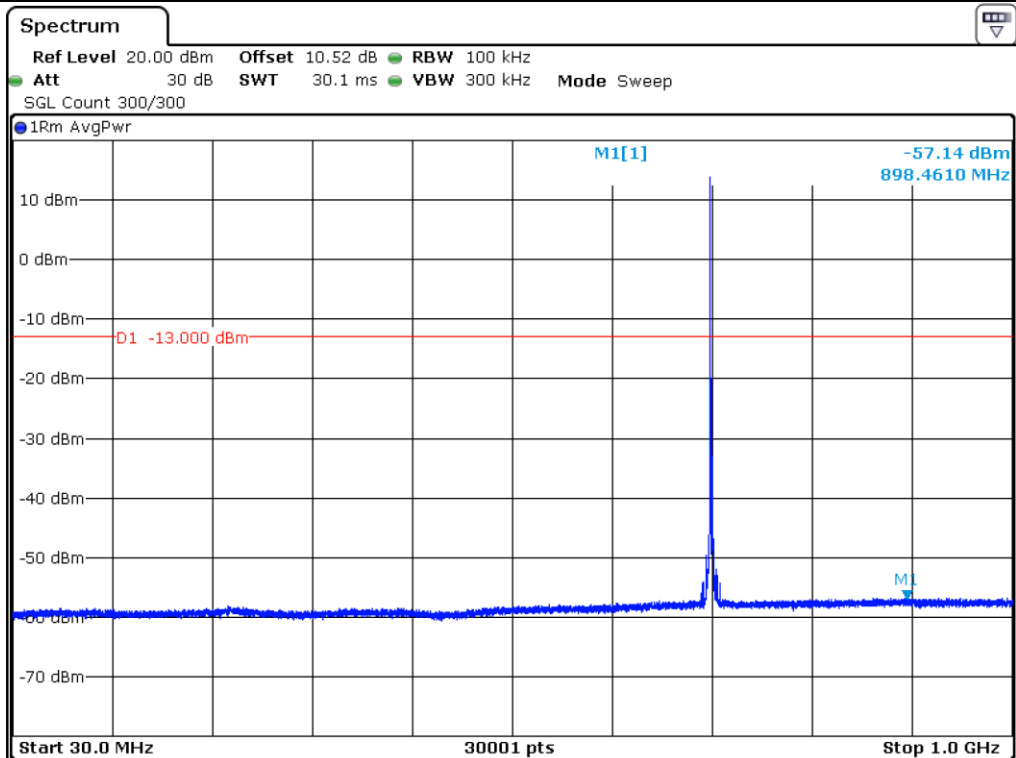




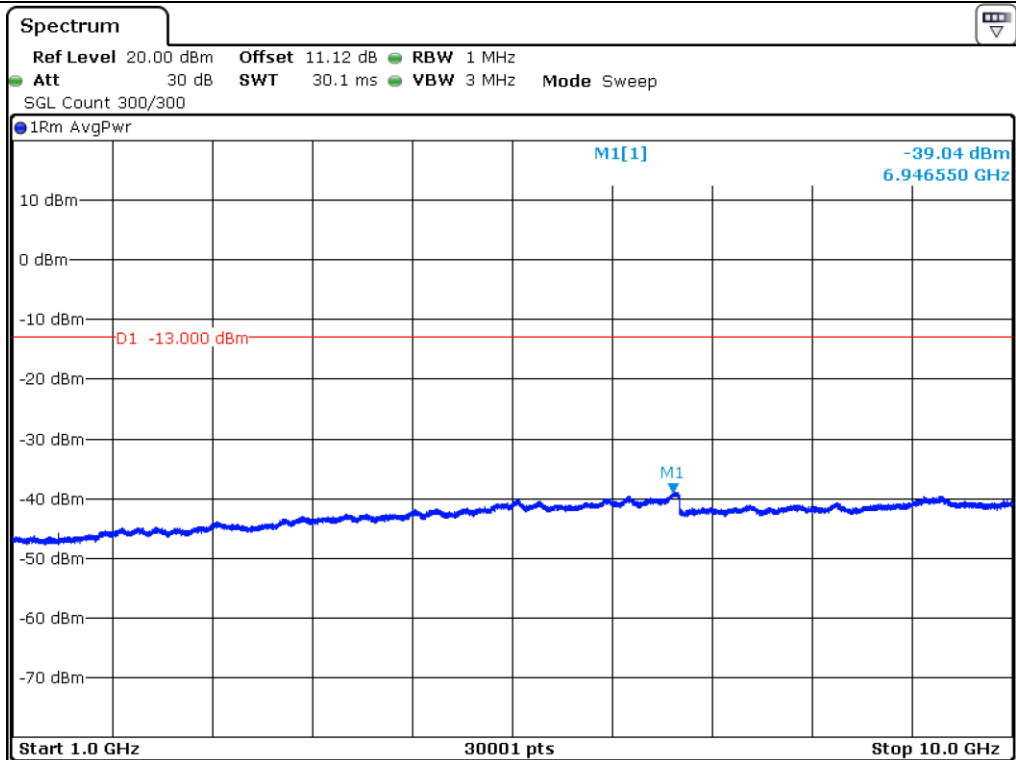
Midle Channel



Midle Channel

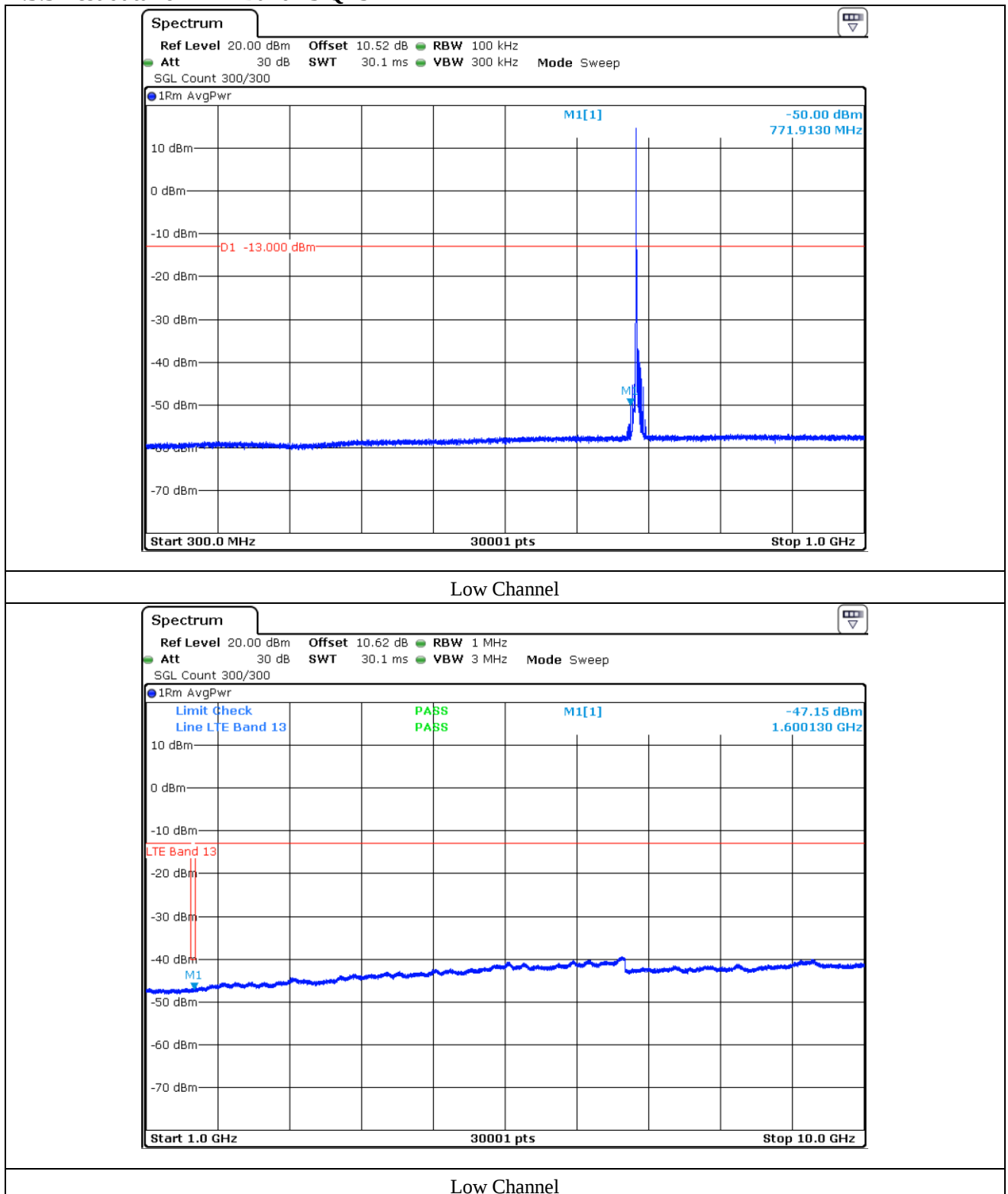


High Channel

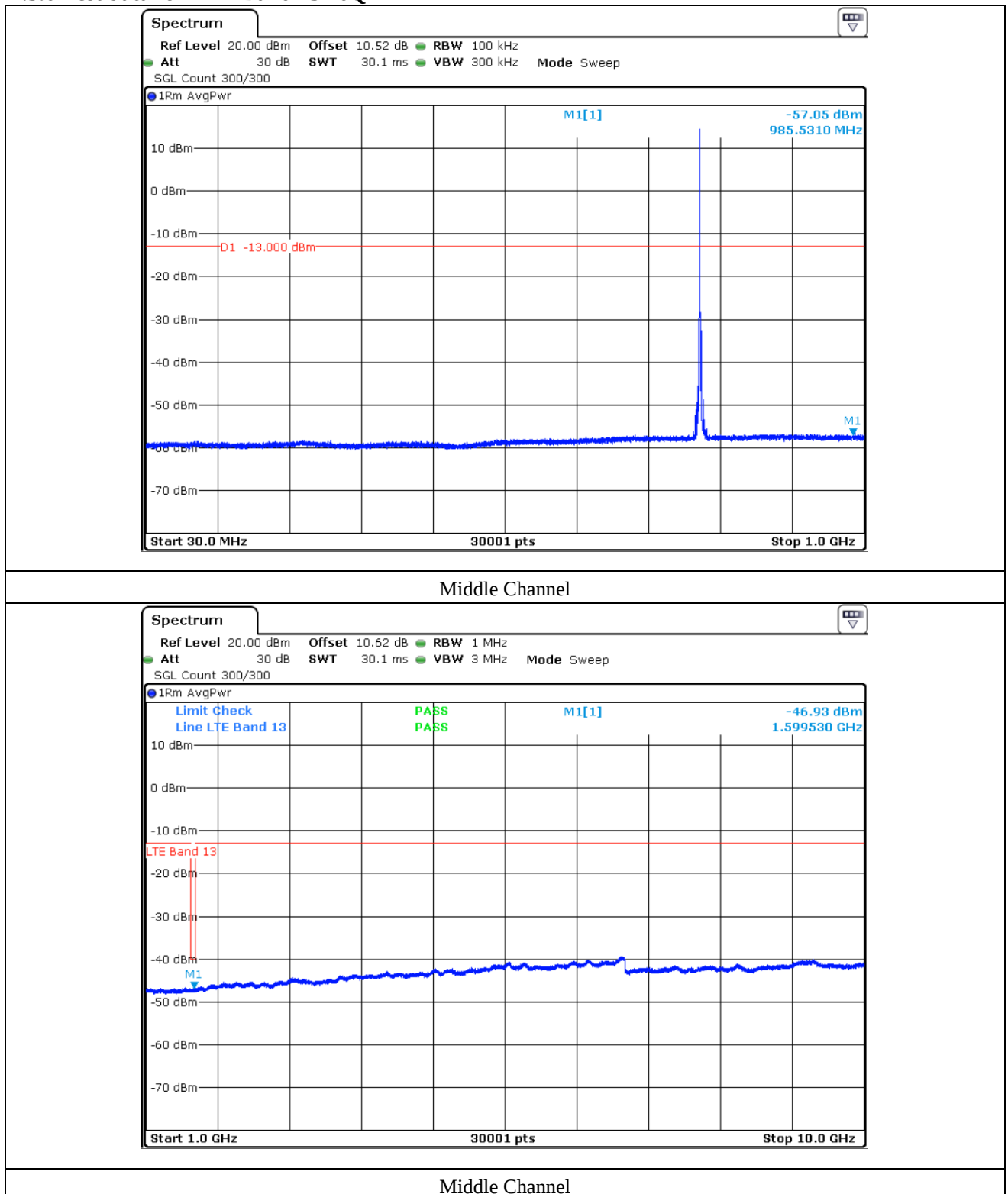


High Channel

14.5.5 Test data for LTE Band 13 QPSK



14.5.6 Test data for LTE Band 13 16QAM



15. FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

15.1 Operating environment

Temperature : 23 °C
Relative humidity : 47 % R.H.

15.2 Test set-up

1. Frequency Stability (Voltage Variation)

+20 °C temperature and $\pm 15\%$ supply voltage variations. If a product is specified to operate over a range of input voltage then the -15% variation is applied to the lowermost voltage and the $+15\%$ is applied to the uppermost voltage.

- (1) Vary primary supply voltage from $\pm 15\%$ of the nominal value for other than hand carried battery equipment.
- (2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery-operating end point which shall be specified by the manufacturer.

2. Frequency Stability (Temperature Variation)

Turn EUT off and set chamber temperature to $-30\text{ }^{\circ}\text{C}$ and then allow sufficient time (approximately 20 to 30 minutes after chamber reach the assigned temperature) for EUT to stabilize. Turn ON EUT and measure the EUT operating frequency and then turn off the EUT after the measurement. The temperature in the chamber was raised $10\text{ }^{\circ}\text{C}$ step from $-30\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$. Repeat above method for frequency measurements every $10\text{ }^{\circ}\text{C}$ step and then record all measured frequencies on each temperature step.

15.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV30	Rohde & Schwarz	Signal Analyzer	101372	Aug. 23, 2018 (1Y)
■ -	AAMCS-UDC	AA-MCS	Directional Coupler	400	Aug. 23, 2018 (1Y)
■ -	MT8821C	ANRITSU	Radio Communication Analyzer	6261849029	Aug. 22, 2018 (1Y)
■ -	PSL-2KP	ESPEC	Environmental Test Chamber	14009407	Feb. 22, 2019 (1Y)
■ -	PWS-3003D	Protek	DC Power Supply	4020409	Aug. 24, 2018 (1Y)

All test equipment used is calibrated on a regular basis.

15.4 Test data

15.4.1 Test data for Voltage(V)_LTE Band 4

Temperature(° C)	Power(VDC)	Center Freq.	Measured Freq.	PPM
20	12.0	1 732 500 000	1 732 500 009	0.005 2
	10.2		1 732 500 011	0.006 3
	13.8		1 732 500 008	0.004 6

15.4.2 Test data for Temperature(° C)_LTE Band 4

Temperature(° C)	Power(VDC)	Center Freq.	Measured Freq.	PPM
-30	12.0 V	1 732 500 000	1 732 499 996	-0.002 3
-20			1 732 499 995	-0.002 9
-10			1 732 499 991	-0.005 2
0			1 732 500 003	0.001 7
10			1 732 500 006	0.003 5
20			1 732 500 009	0.005 2
30			1 732 500 007	0.004 0
40			1 732 500 009	0.005 2
50			1 732 500 011	0.006 3



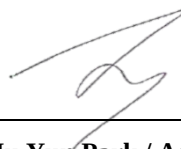
Tested by: Ju Yun Park / Assistant Manager

15.4.3 Test data for Voltage(V)_LTE Band 12

Temperature(° C)	Power(VDC)	Center Freq.	Measured Freq.	PPM
20	12.0	707 500 000	707 500 006	0.008 5
	10.2		707 500 008	0.011 3
	13.8		707 499 991	-0.012 7

15.4.4 Test data for Temperature(° C)_LTE Band 12

Temperature(° C)	Power(VDC)	Center Freq.	Measured Freq.	PPM
-30	12.0 V	707 500 000	707 500 014	0.019 8
-20			707 500 011	0.015 5
-10			707 499 993	-0.009 9
0			707 499 995	-0.007 1
10			707 500 009	0.012 7
20			707 500 006	0.008 5
30			707 500 010	0.014 1
40			707 499 994	-0.008 5
50			707 499 998	-0.002 8



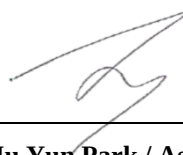
Tested by: Ju Yun Park / Assistant Manager

15.4.5 Test data for Voltage(V)_LTE Band 13

Temperature(° C)	Power(VDC)	Center Freq.	Measured Freq.	PPM
20	12.0	782 000 000	781 999 987	-0.016 6
	10.2		781 999 985	-0.019 2
	13.8		781 999 988	-0.015 3

15.4.6 Test data for Temperature(° C)_LTE Band 13

Temperature(° C)	Power(VDC)	Center Freq.	Measured Freq.	PPM
-30	12.0 V	782 000 000	781 999 984	-0.020 5
-20			781 999 987	-0.016 6
-10			781 999 982	-0.023 0
0			782 000 006	0.007 7
10			781 999 998	-0.002 6
20			781 999 997	-0.003 8
30			781 999 992	-0.010 2
40			781 999 994	-0.007 7
50			781 999 996	-0.005 1



Tested by: Ju Yun Park / Assistant Manager