RF TEST REPORT

Applicant	Quectel Wireless Solutions Co., Ltd
FCC ID	XMR202005BG95M5
Product	LTE Cat M1 & Cat NB2 & EGPRS Module
Brand	Quectel
Model	BG95-M5
Marketing	Quectel BG95-M5
Report No.	R2108A0767-R4V1
Issue Date	November 11, 2021

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2020)/ FCC CFR47 Part 27C (2020)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Performed by: Peng Tao *Approved by: Kai Xu*

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TABLE OF CONTENT

Version	Revision description	Issue Date
Rev.0	Initial issue of report.	September 24, 2021
Rev.1	Update data. Update description	November 11, 2021
Note: This revised report (Report No. R2108A0767-R4V1) supersedes and replaces the previously issued report (Report No. R2108A0767-R4). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	RF Power Output and Effective Isotropic Radiated Power	2.1046 27.50(d)(4) /27.50(b)(10) /27.50(c)(10)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edge Compliance	27.53(h) /27.53(g) /27.53(f) /27.53(c)	PASS
4	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
5	Frequency Stability	2.1055 / 27.54	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 /27.53(h) /27.53(g) /27.53(f) /27.53(c)	PASS
7	Radiates Spurious Emission	2.1051 /27.53(h) /27.53(g) /27.53(f) /27.53(c)	PASS
Date of Testing(original): May 23, 2020 ~ June 16, 2020 (variant): August 31, 2021 ~ November 5, 2021			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

BG95-M5 (Report No.: R2108A0767-R4V1) is a variant model of BG95-M5 (Report No.: R2005A0283-R4V1). There is only changed the Power Amplifier and Software Version of product.

Tested cases refer to the following table. Please refer to Appendix C for Verify data

Test Case	Original	Variant
RF Power Output and Effective Radiated Power	PASS	Retest(LTE Band 4/66/12/13/85)
Occupied Bandwidth	PASS	Verify the worst combination of each frequency band(LTE Band 4/66/12/13/85)
Band Edge Compliance	PASS	Verify the worst combination of each frequency band(LTE Band 4/66/12/13/85)
Peak-to-Average Power Ratio	PASS	Retest(LTE Band 4/66/12/13/85)
Frequency Stability	PASS	Verify the worst combination of each frequency band(LTE Band 4/66/12/13/85)
Spurious Emissions at Antenna Terminals	PASS	Verify the worst combination of each frequency

		band(LTE Band 4/66/12/13/85)
Radiates Spurious Emission	PASS	Verify the worst combination of each frequency band(LTE Band 4/66/12/13/85)

The detailed product change description please refers to the Difference Declaration Letter.

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3 Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City:	Shanghai
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2 General Description of Equipment under Test

2.1 Applicant and Manufacturer Information

Applicant	Quectel Wireless Solutions Co., Ltd
Applicant address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Manufacturer	Quectel Wireless Solutions Co., Ltd
Manufacturer address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

2.2 General information

EUT Description		
Model	BG95-M5	
IMEI	Original	866833040004456
	Variant	866833040047463
Hardware Version	R1.1	
Software Version	BG95M5LAR02A03	
Power Supply	External Power Supply	
Antenna Type	The EUT don't have standard Antenna, The Antenna used for testing in this report is the after-market accessory (Dipole Antenna)	
Antenna Gain	Frequency(MHz)	Gain(dBi)
	700	1.66
	710	3.26
	780	4.45
	1720	1.94
	1740	2.00
	1780	0.97
Test Mode(s)	LTE Band 4/12/13/66/85;	
Test Modulation	(LTE)QPSK 16QAM;	
LTE Category	M1	
Maximum E.I.R.P	LTE Band 4:	25.70dBm
	LTE Band 66:	25.50dBm
Maximum E.R.P	LTE Band 12:	25.10dBm
	LTE Band 13:	25.63dBm
	LTE Band 85	24.29dBm
Rated Power Supply Voltage:	3.8V	
Extreme Voltage	Minimum: 3.3V Maximum: 4.3V	

Extreme Temperature	Lowest: -40°C Highest: +85°C		
Frequency Range(s)	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 12	699 ~ 716	729 ~ 746
	LTE Band 13	777 ~ 787	746 ~ 756
	LTE Band 66	1710 ~ 1780	2110 ~ 2180
	LTE Band 85	698 ~ 716	728 ~ 746
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.			

3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:

FCC CFR47 Part 27C (2020)

ANSI C63.26 (2015)

Reference standard:

FCC CFR47 Part 2 (2020)

KDB 971168 D01 Power Meas License Digital Systems v03r01

4 Test Configuration

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (X axis, horizontal polarization) and the worst case was recorded.
All mode and data rates and positions and RB size and modulations were investigated.
Subsequently, only the worst case emissions are reported.
The following testing in LTE is set based on the maximum RF Output Power.
The following testing in different Bandwidth is set to detailin the following table:

Test modes are chosen to be reported as the worst case configuration below for LTE 4/12/13/66/85:

Test items	Modes	Bandwidth (MHz)						Modulation		RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF Power Output and Effective Isotropic Radiated Power	LTE 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 13	-	-	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 66	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 85	-	-	O	O	-	-	O	O	O	O	O	O	O	O
Occupied Bandwidth	LTE 4	O	O	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 12	-	-	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 13	-	-	O	O	-	-	O	O	-	-	O	-	O	-
	LTE 66	O	O	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 85	-	-	O	O	-	-	O	O	-	-	O	-	O	-
Band Edge Compliance	LTE 4	O	O	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 12	-	-	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 13	-	-	O	O	-	-	O	O	O	-	O	O	-	O
	LTE 66	O	O	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 85	-	-	O	O	-	-	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	LTE 4	O	O	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 12	-	-	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 13	-	-	O	O	-	-	O	O	-	-	O	-	O	-
	LTE 66	O	O	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 85	-	-	O	O	-	-	O	O	-	-	O	-	O	-
Frequency Stability	LTE 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 12	-	-	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 13	-	-	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 66	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 85	-	-	O	O	-	-	O	O	O	O	O	O	O	O
Spurious	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O

Emissions at Antenna Terminals	LTE 12	-	-	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 13	-	-	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 66	O	O	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 85	-	-	O	O	-	-	O	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 4	O	-	O	-	-	O	O	-	O	-	-	-	O	-
	LTE 12	-	-	O	-	O	O	O	-	O	-	-	-	O	-
	LTE 13	-	-	O	O	-	-	O	-	O	-	-	-	O	-
	LTE 66	O	O	O	O	O	O	O	-	O	-	-	-	O	-
	LTE 85	-	-	O	O	-	-	O	-	O	-	-	-	O	-
Note	1. The mark “O” means that this configuration is chosen for testing. 2. The mark “-” means that this configuration is not testing.														

5 Test Case Results

5.1 RF Power Output and Effective Isotropic Radiated Power

Ambient condition

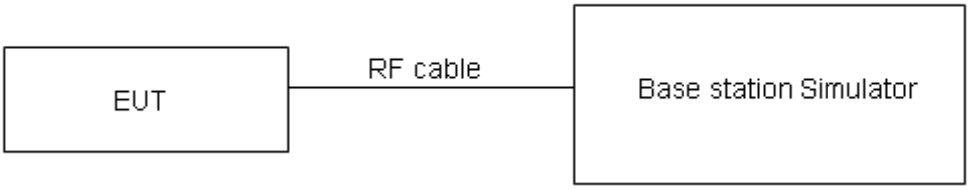
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

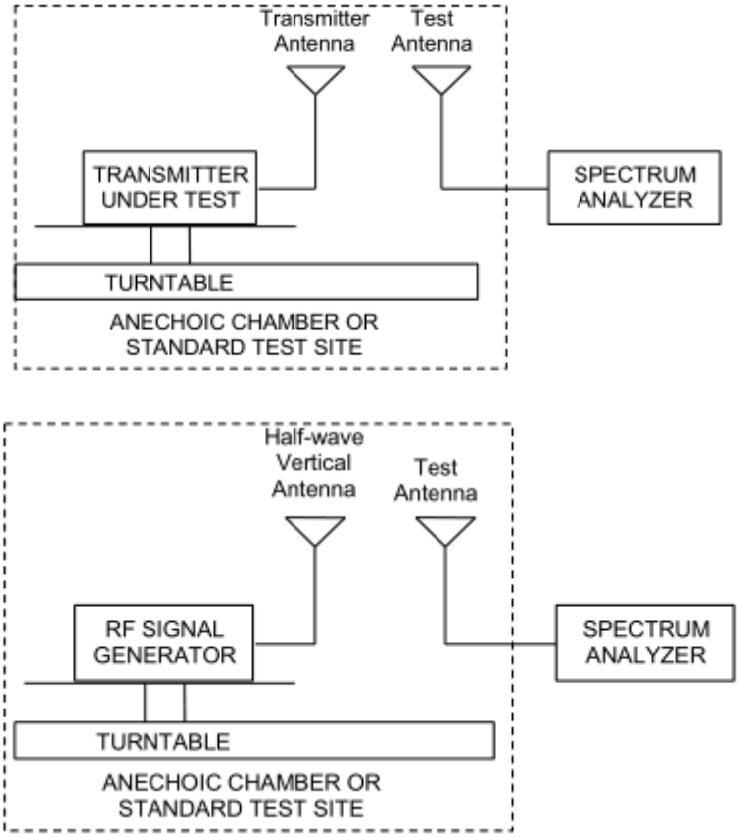
During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
a) Connect the equipment as illustrated. Mount the equipment with the manufacturer specified antenna in a vertical orientation on a manufacturer specified mounting surface located on a non-conducting rotating platform of a RF anechoic chamber (preferred) or a standard radiation site.
b) Key the transmitter, then rotate the EUT 360° azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading at each angular increment. (Note: several batteries may be needed to offset the effect of battery voltage droop, which should not exceed 5% of the manufactured specified battery voltage during transmission).
c) Replace the transmitter under test with a vertically polarized half-wave dipole (or an antenna whose gain is known relative to an ideal half-wave dipole). The center of the antenna should be at the same location as the center of the antenna under test.
d) Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading.LOSS = Generator Output Power (dBm) – Analyzer reading (dBm)
e) Determine the effective radiated output power at each angular position from the readings in steps b) and d) using the following equation:ERP (dBm) = LVL (dBm) + LOSS (dB)
f) The maximum ERP is the maximum value determined in the preceding step.
g) When calculating ERP, in addition to knowing the antenna radiation and matching characteristics, it is necessary to know the loss values of all elements (e.g.transmission line attenuation, mismatches, filters, combiners) interposed between the point where transmitter output power is measured, and the point where power is applied to the antenna. ERP can then be calculated as follows:
EIRP (dBm) = Output Power (dBm) - Losses (dB) + Antenna Gain (dBi)
where:dBd refers to gain relative to an ideal dipole.
EIRP (dBm) = ERP (dBm) + 2.15 (dB.)
The RB allocation refers to section 5.1, using the maximum output power configuration.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.



Note: Area side:2.4mX3.6m

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

Limits

No specific RF power output requirements in part 2.1046.

Rule Part 27.50(b) (10) specifies that “Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP”

Rule Part 27.50(c) (10) specifies that “Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP”

Rule Part 27.50(d) (4) specifies that “Fixed, mobile and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP”

Part 27.50(b)(10)Limit	≤ 3 W (34.77 dBm)
Part 27.50(c)(10)Limit	≤ 3 W (34.77 dBm)
Part 27.50(d)(4)Limit	≤ 1 W (30 dBm)

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U=0.4 dB for RF power output, k = 2, U= 1.19 dB for ERP/EIRP.

Test Results

LTE Band 4	Channel/ Frequency(MHz)	Index	RB# RBstart	Conducted Power (dBm)		EIRP (dBm)	
				QPSK	16QAM	QPSK	16QAM
1.4MHz	19957/1710.7	0	1#0	23.48	22.74	25.42	24.68
		0	6#0	21.52	21.40	23.46	23.34
	20175/1732.5	0	1#0	23.69	22.52	25.69	24.52
		0	6#0	21.37	21.56	23.37	23.56
	20393/1754.3	0	1#5	23.12	22.42	24.69	23.99
		0	6#0	21.41	21.13	22.98	22.70
3MHz	19965/1711.5	0	1#0	23.62	22.85	25.56	24.79
		0	6#0	21.55	21.54	23.49	23.48
	20175/1732.5	0	1#0	23.42	22.50	25.42	24.50
		0	6#0	21.36	21.24	23.36	23.24
	20385/1753.5	1	1#5	23.25	22.63	24.82	24.20
		1	6#0	21.41	21.24	22.98	22.81
5MHz	19975/1712.5	3	1#0	23.56	23.76	25.50	25.70
		0	6#0	22.54	21.42	24.48	23.36
	20175/1732.5	0	1#0	23.43	23.15	25.43	25.15
		0	6#0	22.38	21.48	24.38	23.48
	20375/1752.5	0	1#5	23.27	23.11	24.84	24.68
		3	6#0	22.44	21.51	24.01	23.08
10MHz	20000/1715	3	1#0	23.66	23.37	25.60	25.31
		0	4#0	23.66	22.62	25.60	24.56
	20175/1732.5	0	1#0	23.41	23.62	25.41	25.62
		0	4#0	23.40	22.17	25.40	24.17
	20350/1750	4	1#5	23.26	23.14	24.83	24.71
		7	4#2	23.54	22.55	25.11	24.12
15MHz	20025/1717.5	3	1#0	23.62	23.27	25.56	25.21
		0	6#0	23.64	23.65	25.58	25.59
	20175/1732.5	0	1#0	23.55	23.17	25.55	25.17
		0	6#0	23.54	23.58	25.54	25.58
	20325/1747.5	8	1#5	23.27	23.12	24.84	24.69
		11	6#0	23.47	23.49	25.04	25.06
20MHz	20050/1720	3	1#0	23.58	23.36	25.52	25.30
		0	6#0	23.55	23.61	25.49	25.55
	20175/1732.5	0	1#0	23.57	23.17	25.57	25.17
		0	6#0	23.57	23.56	25.57	25.56
	20300/1745	12	1#5	23.31	23.16	24.88	24.73
		15	6#0	23.41	23.45	24.98	25.02

LTE Band 12	Channel/ Frequency(MHz)	Index	RB# RBstart	Conducted Power (dBm)		ERP (dBm)	
				QPSK	16QAM	QPSK	16QAM
1.4MHz	23017/699.7	0	1#0	23.00	22.41	22.51	21.92
		0	6#0	21.23	21.09	20.74	20.60
	23095/707.5	0	1#0	23.01	22.28	24.12	23.39
		0	6#0	21.13	20.89	22.24	22.00
	23173/715.3	0	1#5	23.03	22.21	24.83	24.01
		0	6#0	21.14	20.98	22.94	22.78
3MHz	23025/700.5	0	1#0	23.60	22.23	23.11	21.74
		0	6#0	21.16	21.56	20.67	21.07
	23095/707.5	0	1#0	23.41	22.05	24.52	23.16
		0	6#0	21.08	21.45	22.19	22.56
	23165/714.5	1	1#5	23.30	22.02	25.10	23.82
		1	6#0	21.12	21.51	22.92	23.31
5MHz	23035/701.5	3	1#0	23.24	23.12	22.75	22.63
		0	6#0	22.26	21.58	21.77	21.09
	23095/707.5	0	1#0	23.18	22.98	24.29	24.09
		0	6#0	22.19	21.47	23.30	22.58
	23155/713.5	0	1#5	23.14	22.83	24.94	24.63
		3	6#0	22.01	20.63	23.81	22.43
10MHz	23060/704	3	1#0	23.23	23.02	22.74	22.53
		0	4#0	23.33	22.56	22.84	22.07
	23095/707.5	0	1#0	23.25	23.04	24.36	24.15
		0	4#0	23.18	22.72	24.29	23.83
	23130/711	4	1#5	23.03	23.21	24.83	25.01
		7	4#2	23.16	21.81	24.96	23.61

LTE Band 13	Channel/ Frequency(MHz)	Index	RB# RBstart	Conducted Power (dBm)		ERP (dBm)	
				QPSK	16QAM	QPSK	16QAM
5MHz	23205/779.5	3	1#0	23.08	23.33	25.38	25.63
		0	6#0	22.32	21.27	24.62	23.57
	23230/782	0	1#0	23.30	22.91	25.60	25.21
		0	6#0	22.28	21.65	24.58	23.95
	23255/784.5	0	1#5	23.02	22.70	25.32	25.00
		3	6#0	22.22	21.47	24.52	23.77
10MHz	23230/782	0	1#0	23.25	22.87	25.55	25.17
		0	4#0	23.23	22.59	25.53	24.89

LTE Band 66	Channel/ Frequency(MHz)	Index	RB# RBstart	Conducted Power (dBm)		EIRP (dBm)	
				QPSK	16QAM	QPSK	16QAM
1.4MHz	131979/1710.7	0	1#0	23.37	22.56	25.31	24.50
		0	6#0	21.38	21.31	23.32	23.25
	132322/1745	0	1#0	23.41	22.38	25.41	24.38
		0	6#0	21.17	21.38	23.17	23.38
	132665/1779.3	0	1#5	23.11	22.98	24.08	23.95
		0	6#0	21.69	21.42	22.66	22.39
3MHz	131987/1711.5	0	1#0	23.56	22.23	25.50	24.17
		0	6#0	21.49	21.71	23.43	23.65
	132322/1745	0	1#0	23.31	21.98	25.31	23.98
		0	6#0	21.25	21.47	23.25	23.47
	132657/1778.5	1	1#5	23.89	22.41	24.86	23.38
		1	6#0	21.54	22.09	22.51	23.06
5MHz	131997/1712.5	3	1#0	23.55	23.24	25.49	25.18
		0	6#0	22.40	21.49	24.34	23.43
	132322/1745	0	1#0	23.23	23.02	25.23	25.02
		0	6#0	22.23	21.31	24.23	23.31
	132647/1777.5	0	1#5	23.49	23.08	24.46	24.05
		3	6#0	22.71	22.03	23.68	23.00
10MHz	132022/1715	3	1#0	23.43	23.17	25.37	25.11
		0	4#0	23.55	22.71	25.49	24.65
	132022/1745	0	1#0	23.02	23.26	25.02	25.26
		0	4#0	23.12	22.41	25.12	24.41
	132622/1775	4	1#5	23.36	22.97	24.33	23.94
		7	4#2	23.69	23.31	24.66	24.28
15MHz	132047/1717.5	3	1#0	23.48	23.22	25.42	25.16
		0	6#0	23.47	23.48	25.41	25.42
	132322/1745	0	1#0	23.13	23.41	25.13	25.41
		0	6#0	23.10	23.18	25.10	25.18
	132597/1772.5	8	1#5	23.52	23.07	24.49	24.04
		11	6#0	23.55	23.76	24.52	24.73
20MHz	132072/1720	3	1#0	23.42	23.25	25.36	25.19
		0	6#0	23.36	23.40	25.30	25.34
	132322/1745	0	1#0	23.21	22.97	25.21	24.97
		0	6#0	23.18	23.21	25.18	25.21
	132572/1770	12	1#5	23.00	22.54	23.97	23.51
		15	6#0	23.56	23.75	24.53	24.72

LTE Band 85	Channel/ Frequency(MHz)	Index	RB# RBstart	Conducted Power (dBm)		ERP (dBm)	
				QPSK	16QAM	QPSK	16QAM
5MHz	134027/700.5	3	1#0	23.41	23.32	22.92	22.83
		0	6#0	22.19	21.03	21.70	20.54
	134092/707	0	1#0	23.02	22.85	24.13	23.96
		0	6#0	21.92	20.73	23.03	21.84
	134157/713.5	0	1#5	23.08	23.00	24.19	24.11
		3	6#0	22.10	20.88	23.21	21.99
10MHz	134052/703	3	1#0	23.32	23.14	22.83	22.65
		0	4#0	23.07	22.26	22.58	21.77
	134092/707	0	1#0	23.12	23.02	24.23	24.13
		0	4#0	23.05	21.87	24.16	22.98
	134132/711	4	1#5	23.09	23.18	24.20	24.29
		7	4#2	22.82	21.74	23.93	22.85

5.2 Occupied Bandwidth

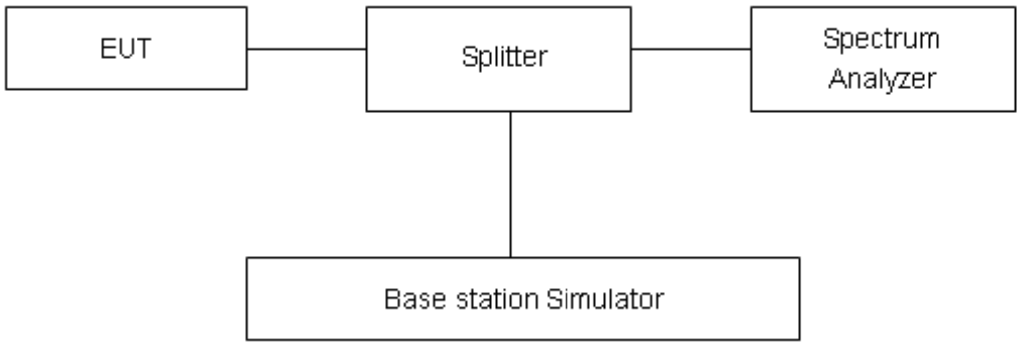
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.
RBW is set to 51kHz, VBW is set to 160kHz for LTE Band 4/12/13/66/85 .
99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U=624Hz.

Test Result

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	RB	Bandwidth(MHz)	
					99% Power	-26dBc
LTE Band 4	1.4MHz	QPSK	20175/1732.5	6#0	1.1043	1.310
		16QAM	20175/1732.5	6#0	0.9383	1.358
	3MHz	QPSK	20175/1732.5	6#0	1.1127	1.378
		16QAM	20175/1732.5	6#0	0.9530	1.178
	5MHz	QPSK	20175/1732.5	6#0	1.1120	1.329
		16QAM	20175/1732.5	6#0	0.9523	1.245
	10MHz	QPSK	20175/1732.5	6#0	1.1170	1.350
		16QAM	20175/1732.5	6#0	0.9564	1.177
	15MHz	QPSK	20175/1732.5	6#0	1.1302	1.353
		16QAM	20175/1732.5	6#0	0.9719	1.321
	20MHz	QPSK	20175/1732.5	6#0	1.1324	1.363
		16QAM	20175/1732.5	6#0	0.9736	1.178

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	RB	Bandwidth(MHz)	
					99% Power	-26dBc
LTE Band 12	1.4MHz	QPSK	23095/707.5	6#0	1.1009	1.356
		16QAM	23095/707.5	6#0	0.9381	1.227
	3MHz	QPSK	23095/707.5	6#0	1.1082	1.354
		16QAM	23095/707.5	6#0	0.9455	1.172
	5MHz	QPSK	23095/707.5	6#0	1.1121	1.316
		16QAM	23095/707.5	6#0	0.9489	1.201
	10MHz	QPSK	23095/707.5	6#0	1.1163	1.327
		16QAM	23095/707.5	6#0	0.9517	1.237

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	RB	Bandwidth(MHz)	
					99% Power	-26dBc
LTE Band 13	5MHz	QPSK	23230/782	6#0	1.1241	1.332
		16QAM	23230/782	6#0	0.9474	1.175
	10MHz	QPSK	23230/782	6#0	1.1212	1.346
		16QAM	23230/782	6#0	0.9559	1.222

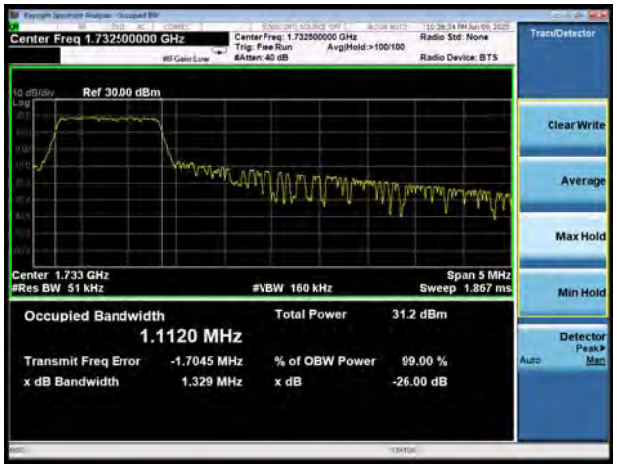
Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	RB	Bandwidth(MHz)	
					99% Power	-26dBc
LTE Band 66	1.4MHz	QPSK	132322/1745	6#0	1.1022	1.327
		16QAM	132322/1745	6#0	0.9406	1.382
	3MHz	QPSK	132322/1745	6#0	1.1088	1.360
		16QAM	132322/1745	6#0	0.9466	1.180
	5MHz	QPSK	132322/1745	6#0	1.1101	1.325
		16QAM	132322/1745	6#0	0.9534	1.201
	10MHz	QPSK	132322/1745	6#0	1.1173	1.321
		16QAM	132322/1745	6#0	0.9573	1.167
	15MHz	QPSK	132322/1745	6#0	1.1145	1.325
		16QAM	132322/1745	6#0	0.9569	1.224
	20MHz	QPSK	132322/1745	6#0	1.1228	1.416
		16QAM	132322/1745	6#0	0.9658	1.245

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	RB	Bandwidth(MHz)	
					99% Power	-26dBc
LTE Band 85	5MHz	QPSK	134092/707	6#0	1.1412	1.389
		16QAM	134092/707	6#0	0.9530	1.178
	10MHz	QPSK	134092/707	6#0	1.1255	1.413
		16QAM	134092/707	6#0	0.9577	1.203

LTE Band 4 QPSK 1.4MHz CH-Middle

LTE Band 4 QPSK 3MHz CH-Middle

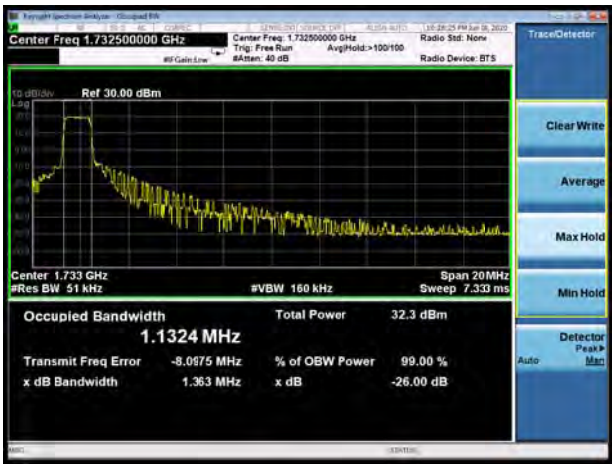
LTE Band 4 QPSK 5MHz CH-Middle



LTE Band 4 QPSK 10MHz CH-Middle

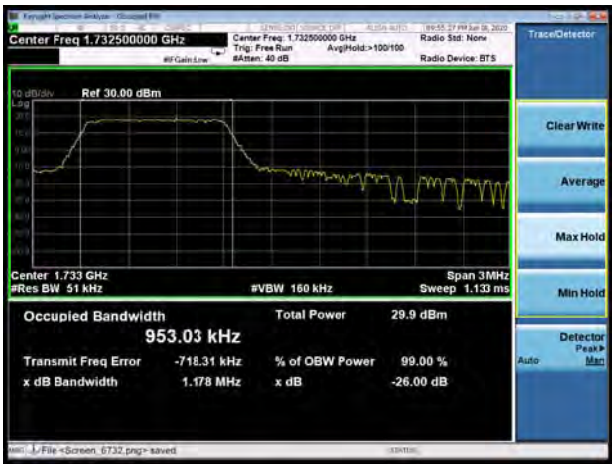
LTE Band 4 QPSK 15MHz CH-Middle

LTE Band 4 QPSK 20MHz CH-Middle

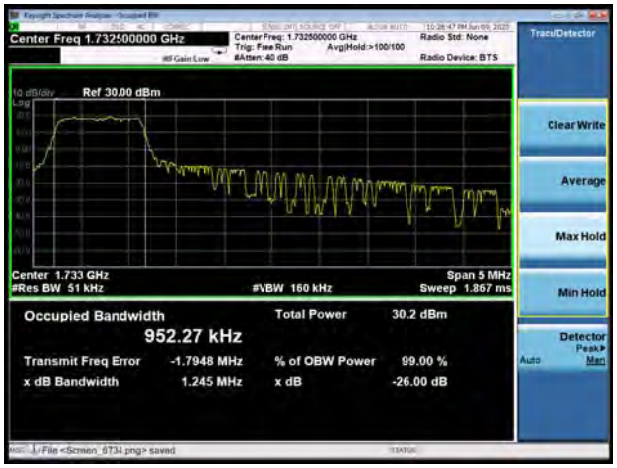


LTE Band 4 16QAM 1.4MHz CH-Middle

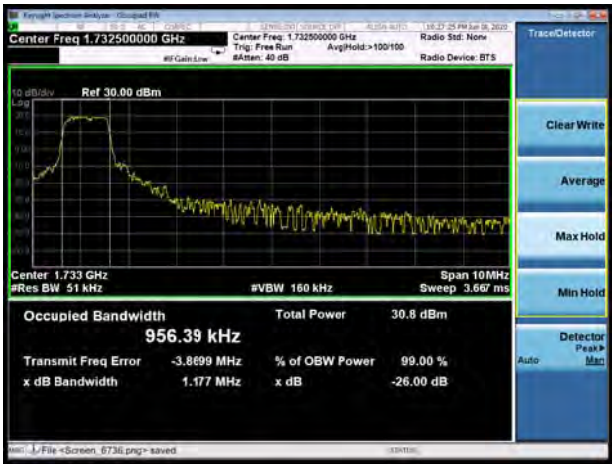
LTE Band 4 16QAM 3MHz CH-Middle



LTE Band 4 16QAM 5MHz CH-Middle



LTE Band 4 16QAM 10MHz CH-Middle

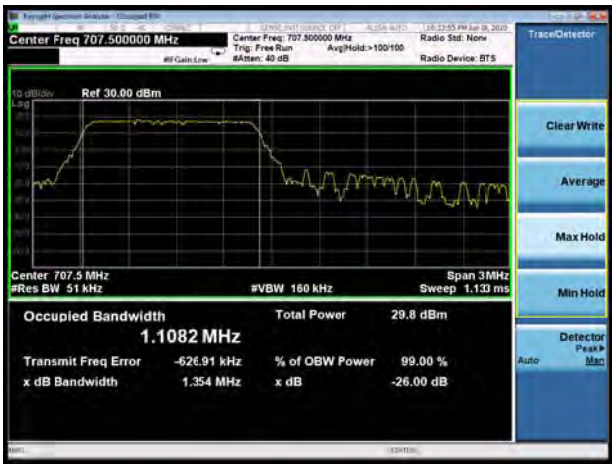


LTE Band 4 16QAM 15MHz CH-Middle

LTE Band 4 16QAM 20MHz CH-Middle

LTE Band 12 QPSK 1.4MHz CH-Middle

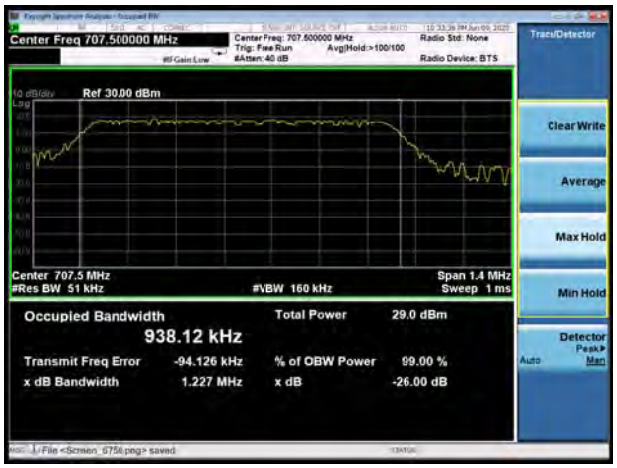
LTE Band 12 QPSK 3MHz CH-Middle



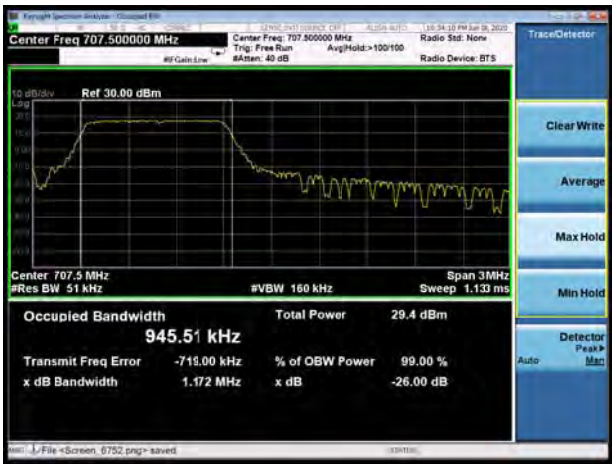
LTE Band 12 QPSK 5MHz CH-Middle

LTE Band 12 QPSK 10MHz CH-Middle

LTE Band 12 16QAM 1.4MHz CH-Middle



LTE Band 12 16QAM 3MHz CH-Middle



LTE Band 12 16QAM 5MHz CH-Middle

LTE Band 12 16QAM 10MHz CH-Middle

LTE Band 13 QPSK 5MHz CH-Middle

LTE Band 13 QPSK 10MHz CH-Middle

LTE Band 13 16QAM 5MHz CH-Middle

LTE Band 13 16QAM 10MHz CH-Middle

LTE Band 66 QPSK 1.4MHz CH-Middle

LTE Band 66 QPSK 3MHz CH-Middle

LTE Band 66 QPSK 5MHz CH-Middle

LTE Band 66 QPSK 10MHz CH-Middle

LTE Band 66 QPSK 15MHz CH-Middle

LTE Band 66 QPSK 20MHz CH-Middle

LTE Band 66 16QAM 1.4MHz CH-Middle

LTE Band 66 16QAM 3MHz CH-Middle

LTE Band 66 16QAM 5MHz CH-Middle

LTE Band 66 16QAM 10MHz CH-Middle

LTE Band 66 16QAM 15MHz CH-Middle

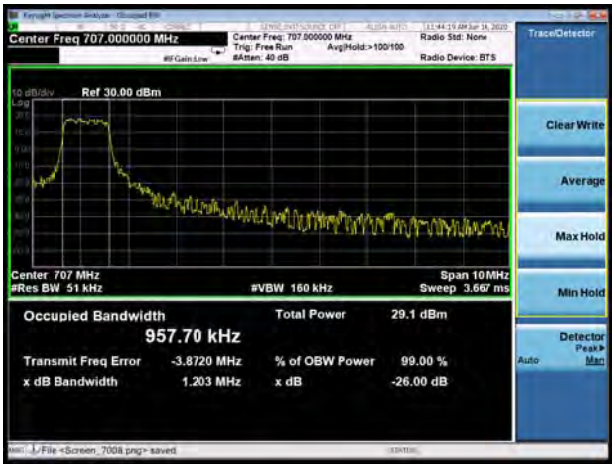
LTE Band 66 16QAM 20MHz CH-Middle

LTE Band 85 QPSK 5MHz CH-Middle

LTE Band 85 QPSK 10MHz CH-Middle

LTE Band 85 16QAM 5MHz CH-Middle

LTE Band 85 16QAM 10MHz CH-Middle



5.3 Band Edge Compliance

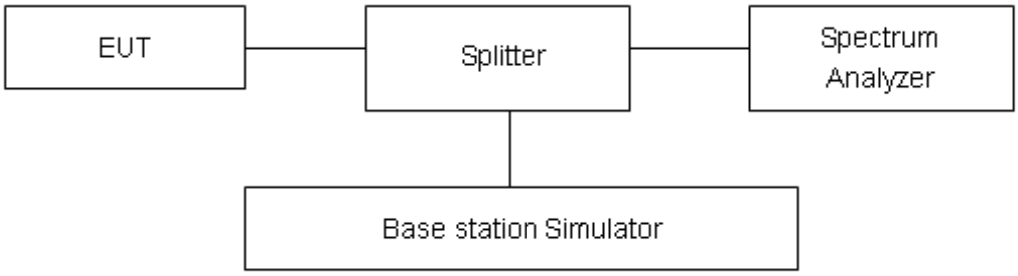
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured.
The testing follows KDB 971168 D01 v03r01 Section 6.0
The EUT was connected to spectrum analyzer and system simulator via a power divider.
The band edges of low and high channels for the highest RF powers were measured.
RBW is set to 51kHz, VBW is set to 160kHz for LTE Band 4/12/66/85 .
RBW is set to 6.25 kHz for LTE Band 13 (763MHz~775MHz).
RBW is set to 100 kHz for LTE Band 13 (775MHz~776MHz).
RBW is set to 200 kHz for LTE Band 13 (776MHz~788MHz).
RBW is set to 100 kHz for LTE Band 13 (788MHz~793MHz).
RBW is set to 6.25 kHz for LTE Band 13 (793MHz~805MHz).
on spectrum analyzer.
Set spectrum analyzer with RMS detector.
The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
Checked that all the results comply with the emission limit line.

Test Setup



Limits

Rule Part 27.53(i) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz.

Rule Part 27.53(h) specifies that " for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780

MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 $\log_{10}$ (P) dB"

Rule Part 27.53(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Rule Part 27.53(m) (4)/ specifies that "for BRS and EBS stations. For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
Example:
The limit line is derived from 43 + 10log (P) dB below the transmitter power P(Watts)
= P(W)- [43 + 10log(P)] (dB)
= [30 + 10log (P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.

Rule Part 27.53(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Rule Part 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;
(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log

(P) dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Measurement Uncertainty

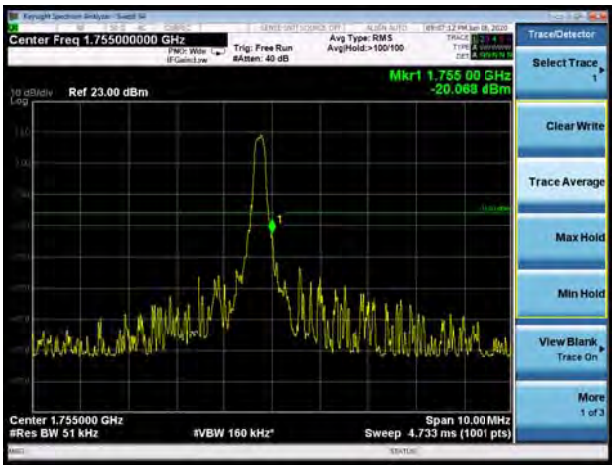
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U=0.684dB.

Test Result

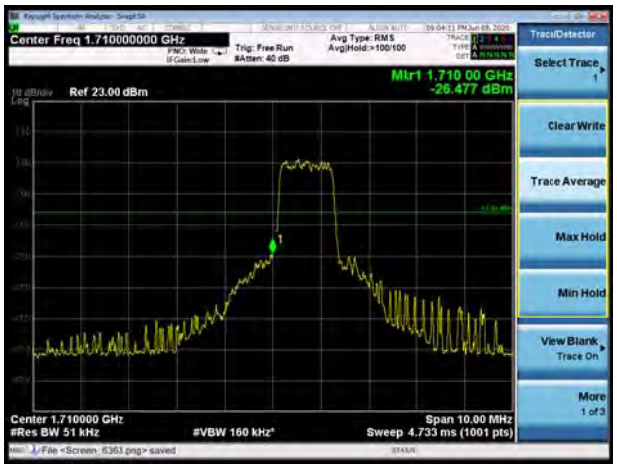
All the test traces in the plots shows the test results clearly.

LTE Band 4 QPSK 1.4MHz CH-Low, 1 RB

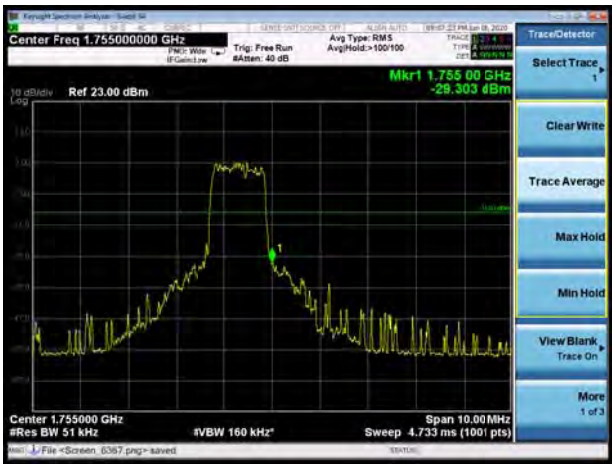
LTE Band 4 QPSK 1.4MHz CH-High, 1 RB



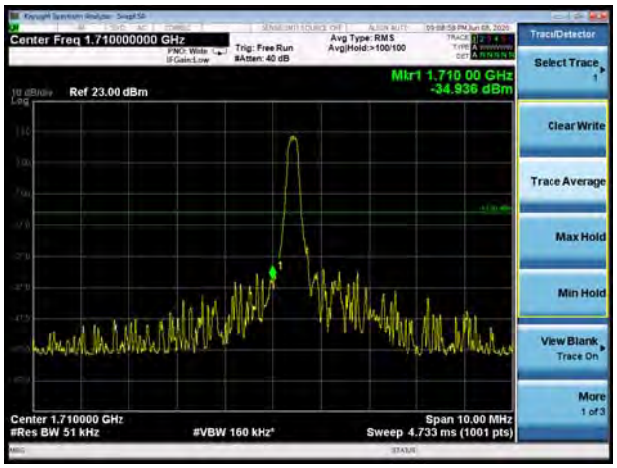
LTE Band 4 QPSK 1.4MHz CH-Low, 100%RB



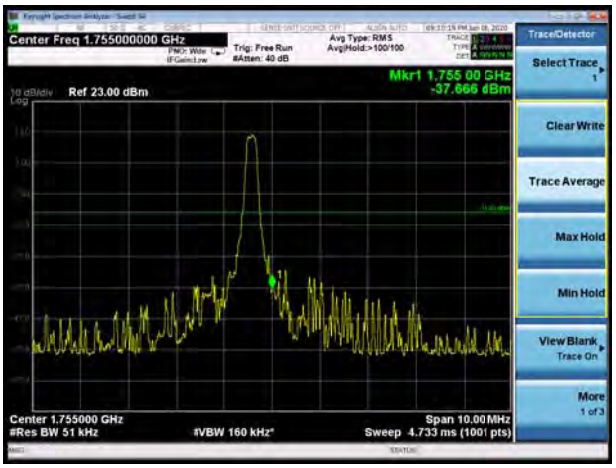
LTE Band 4 QPSK 1.4MHz CH-High, 100%RB



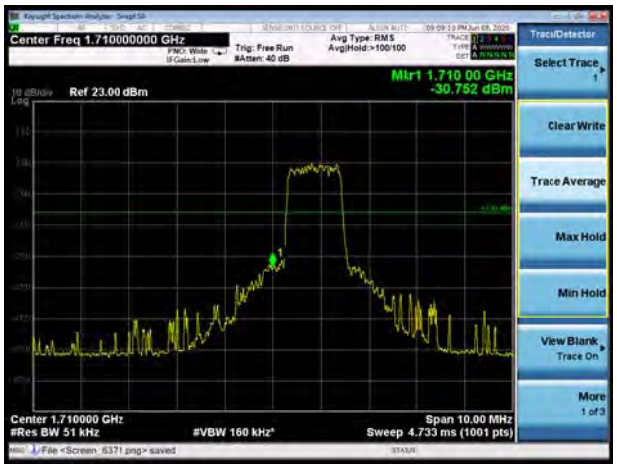
LTE Band 4 QPSK 3MHz CH-Low, 1 RB



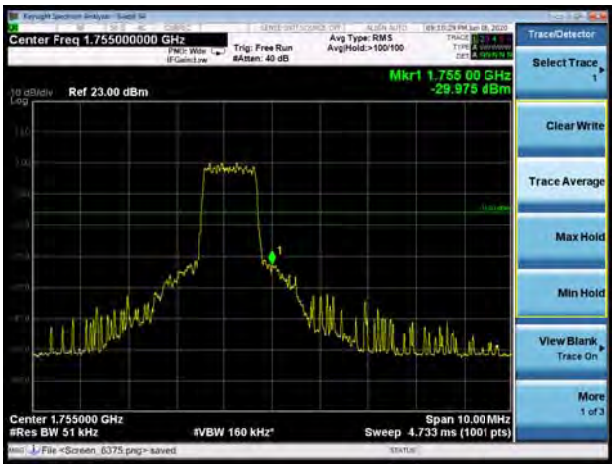
LTE Band 4 QPSK 3MHz CH-High, 1 RB



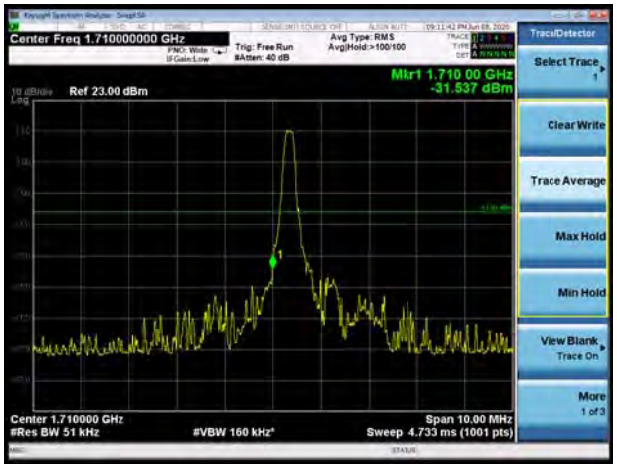
LTE Band 4 QPSK 3MHz CH-Low, 100%RB



LTE Band 4 QPSK 3MHz CH-High, 100%RB

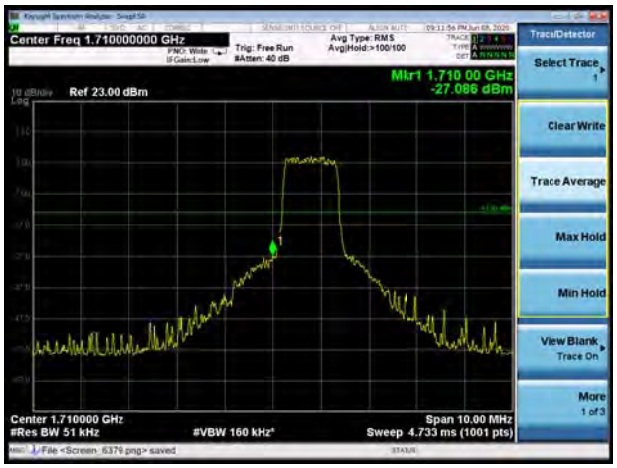


LTE Band 4 QPSK 5MHz CH-Low, 1 RB

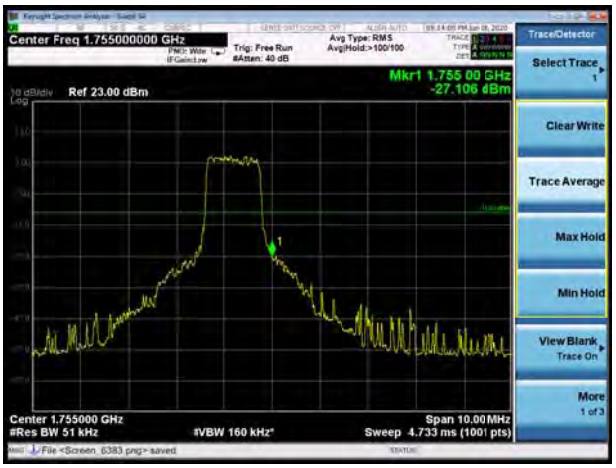


LTE Band 4 QPSK 5MHz CH-High, 1 RB

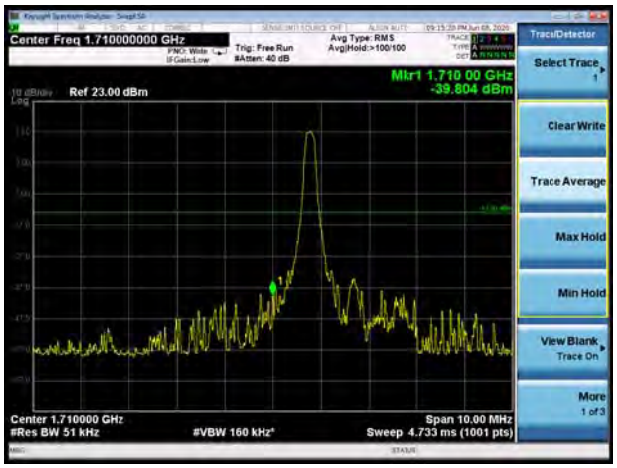
LTE Band 4 QPSK 5MHz CH-Low, 100%RB



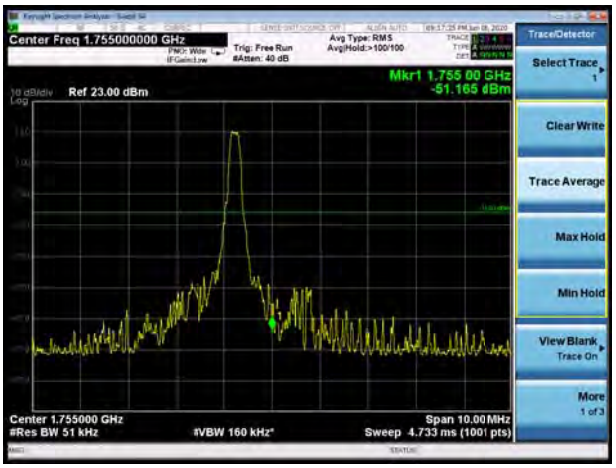
LTE Band 4 QPSK 5MHz CH-High, 100%RB



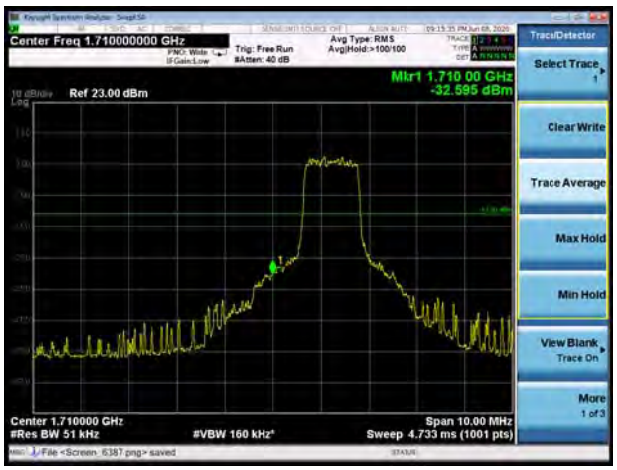
LTE Band 4 QPSK 10MHz CH-Low, 1 RB



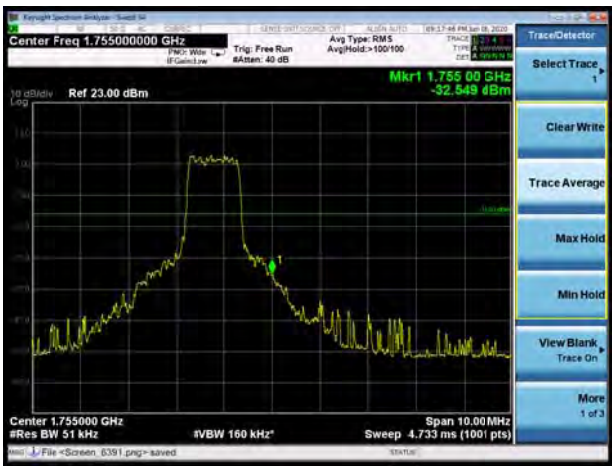
LTE Band 4 QPSK 10MHz CH-High, 1 RB



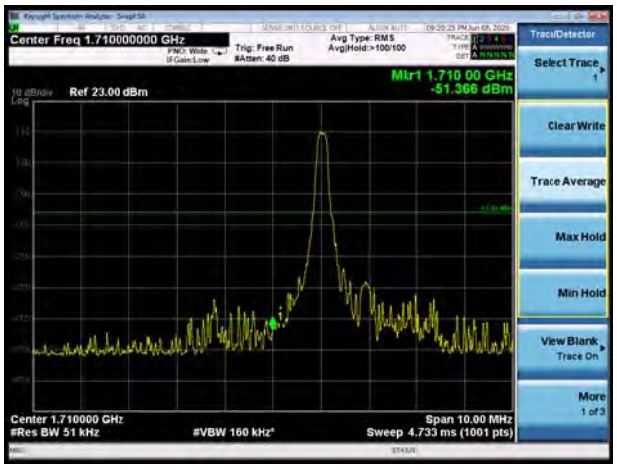
LTE Band 4 QPSK 10MHz CH-Low, 100%RB



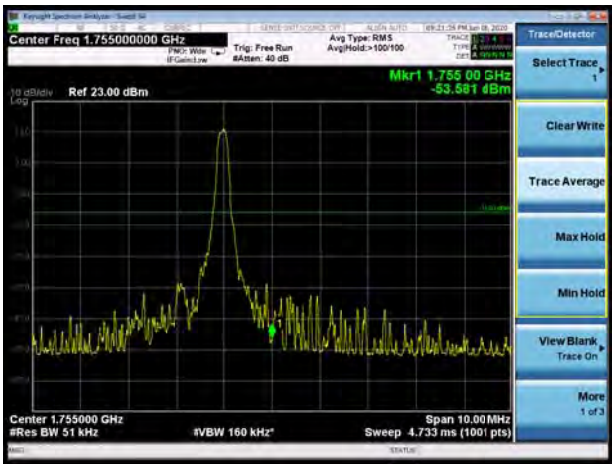
LTE Band 4 QPSK 10MHz CH-High, 100%RB



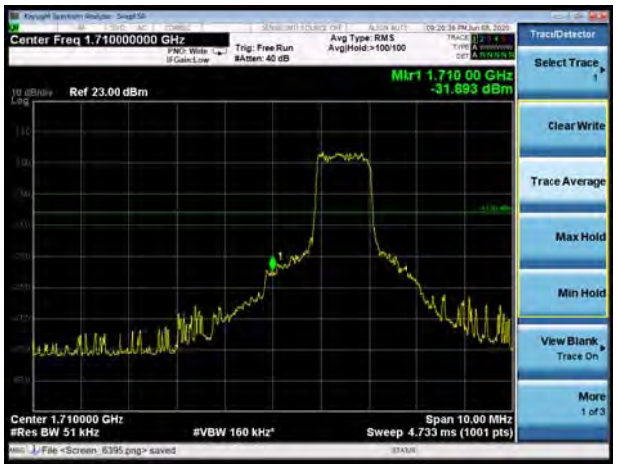
LTE Band 4 QPSK 15MHz CH-Low, 1 RB



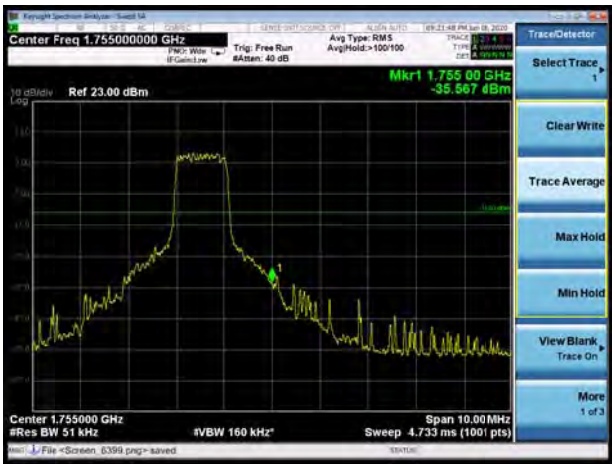
LTE Band 4 QPSK 15MHz CH-High, 1 RB



LTE Band 4 QPSK 15MHz CH-Low, 100%RB

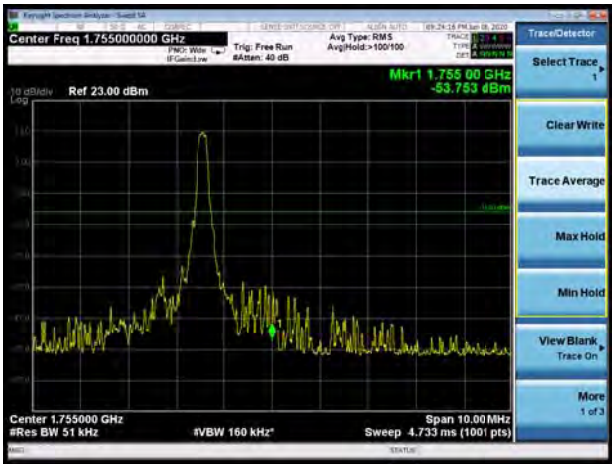


LTE Band 4 QPSK 15MHz CH-High, 100%RB



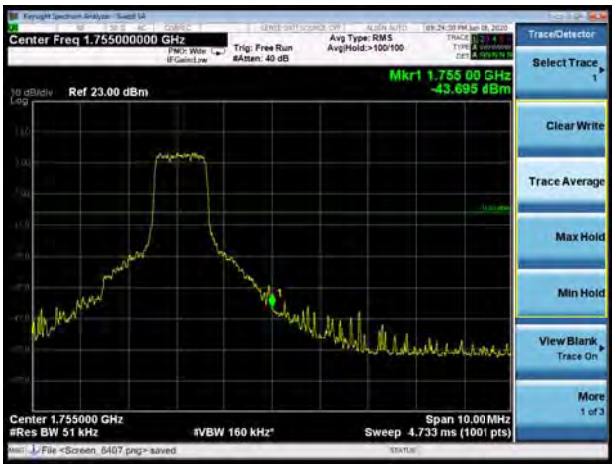
LTE Band 4 QPSK 20MHz CH-Low, 1 RB

LTE Band 4 QPSK 20MHz CH-High, 1 RB

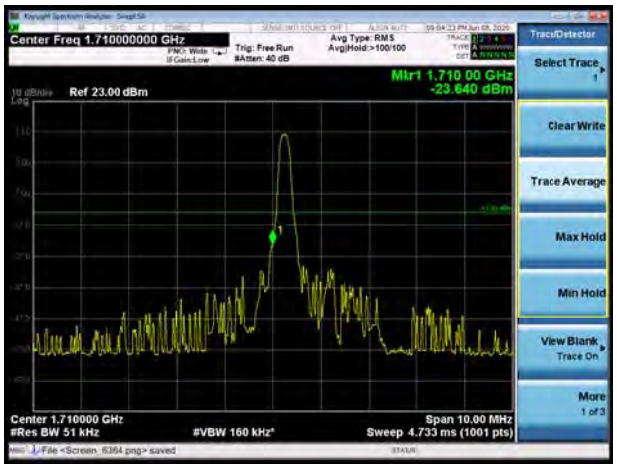


LTE Band 4 QPSK 20MHz CH-Low, 100%RB

LTE Band 4 QPSK 20MHz CH-High, 100%RB

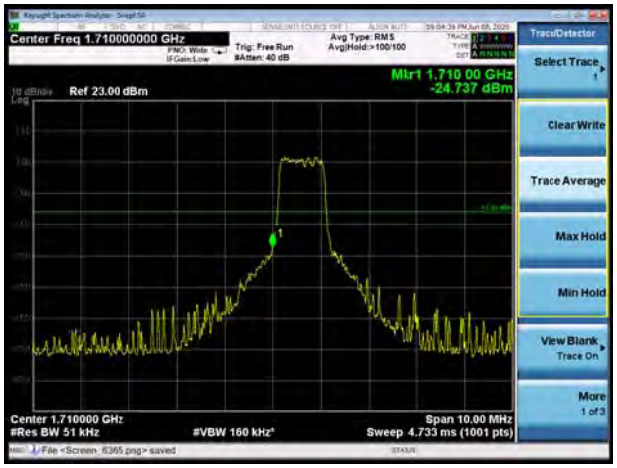


LTE Band 4 16QAM 1.4MHz CH-Low, 1 RB

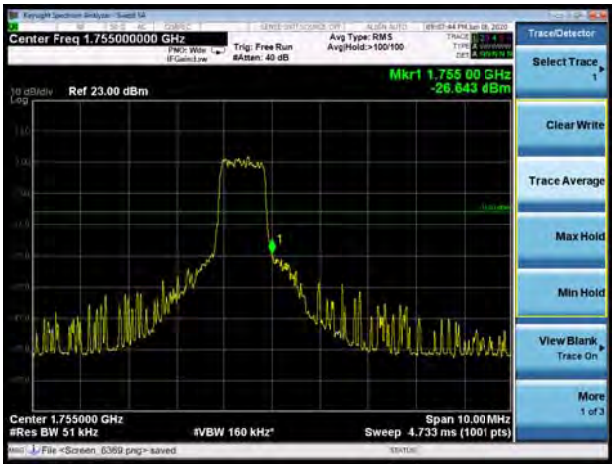


LTE Band 4 16QAM 1.4MHz CH-High, 1 RB

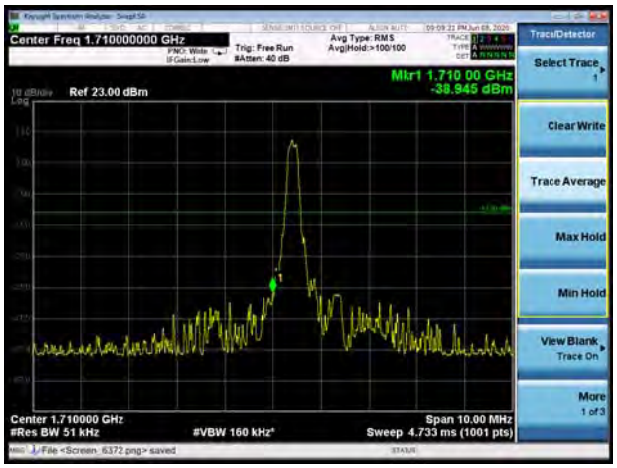
LTE Band 4 16QAM 1.4MHz CH-Low, 100%RB



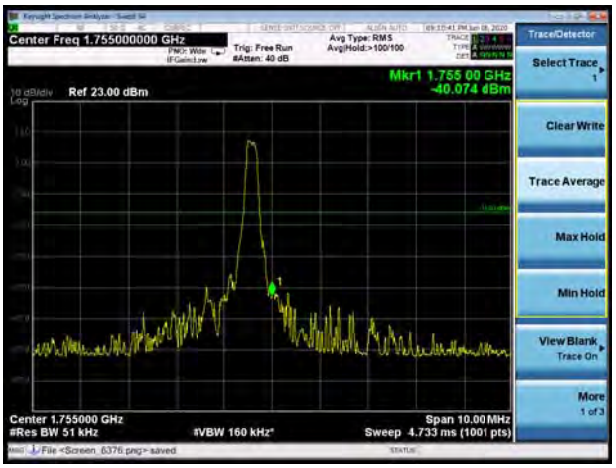
LTE Band 4 16QAM 1.4MHz CH-High, 100%RB



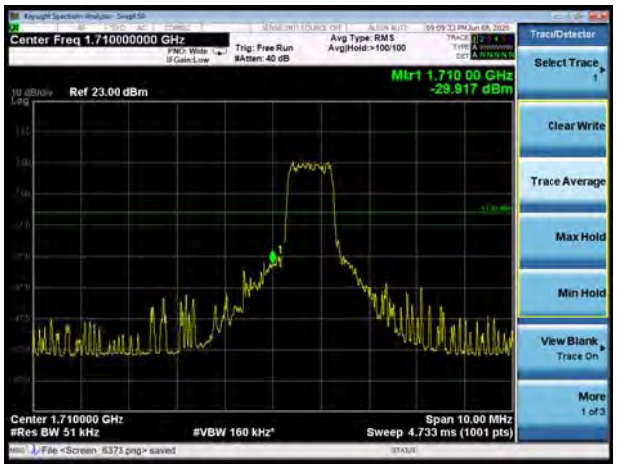
LTE Band 4 16QAM 3MHz CH-Low, 1 RB



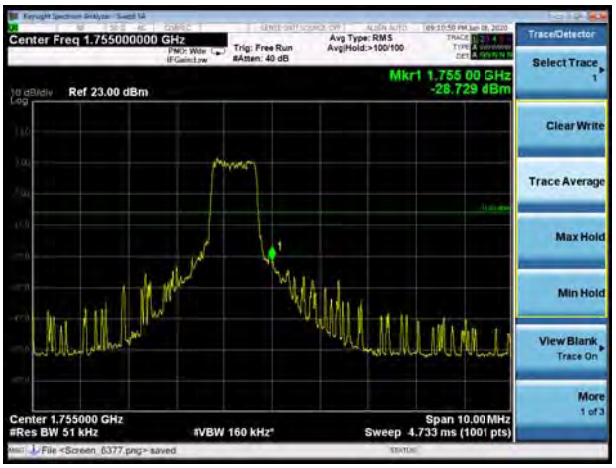
LTE Band 4 16QAM 3MHz CH-High, 1 RB



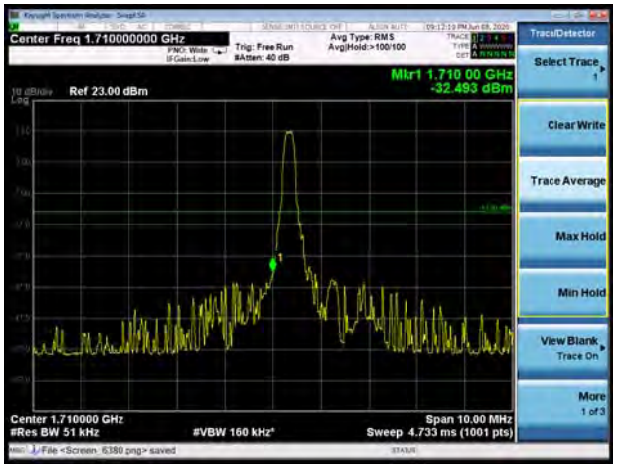
LTE Band 4 16QAM 3MHz CH-Low, 100%RB



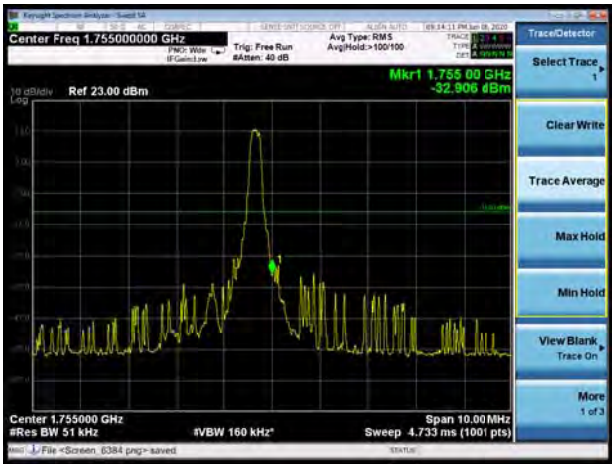
LTE Band 4 16QAM 3MHz CH-High, 100%RB



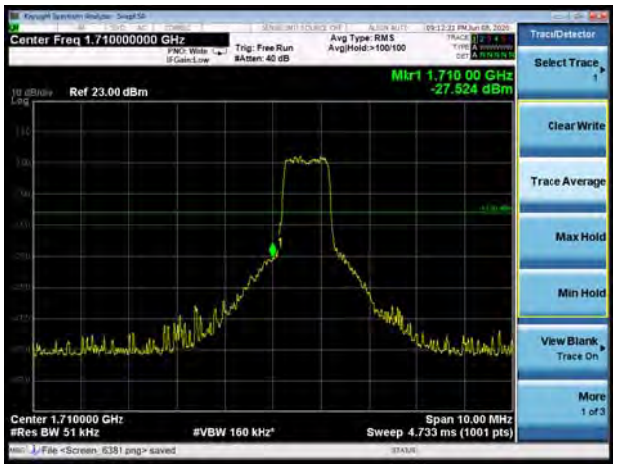
LTE Band 4 16QAM 5MHz CH-Low, 1 RB



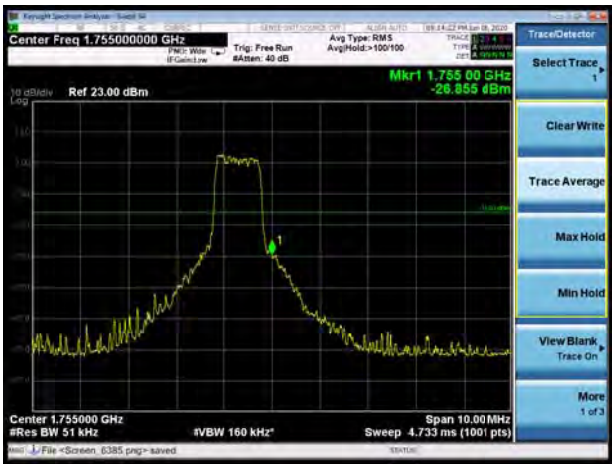
LTE Band 4 16QAM 5MHz CH-High, 1 RB



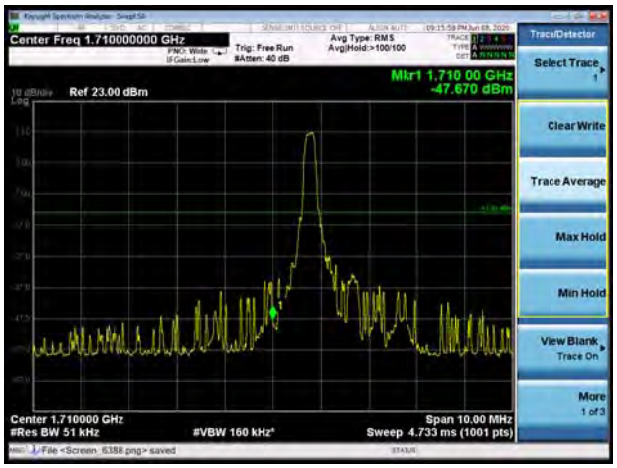
LTE Band 4 16QAM 5MHz CH-Low, 100%RB



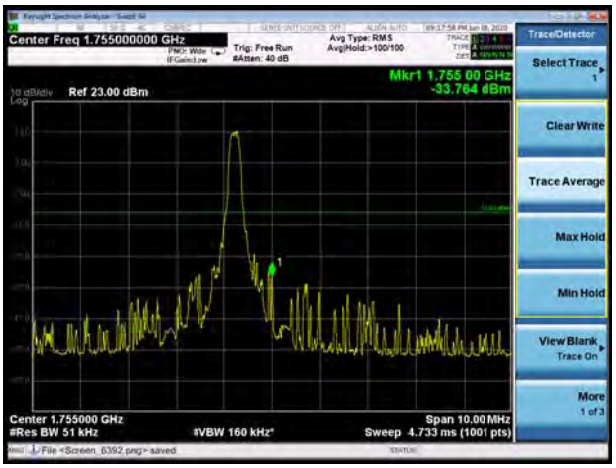
LTE Band 4 16QAM 5MHz CH-High, 100%RB



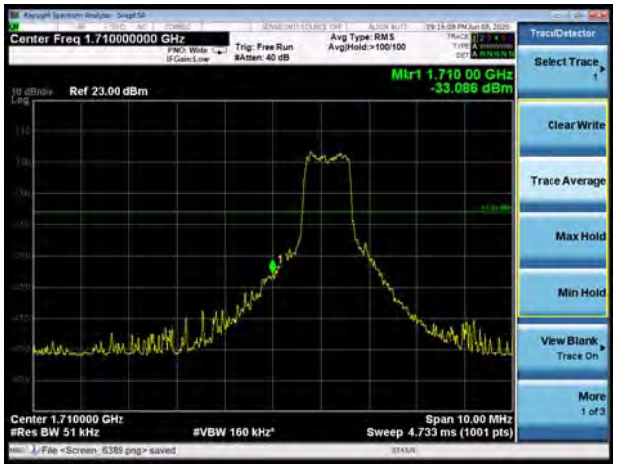
LTE Band 4 16QAM 10MHz CH-Low, 1 RB



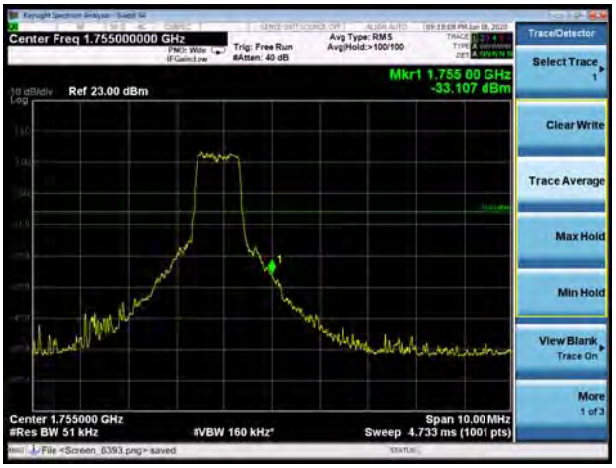
LTE Band 4 16QAM 10MHz CH-High, 1 RB



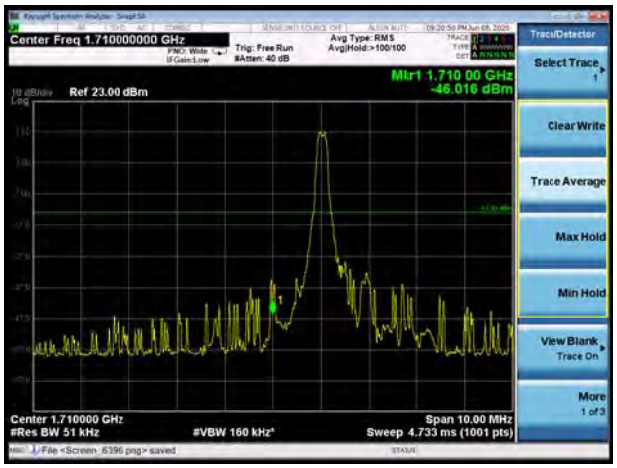
LTE Band 4 16QAM 10MHz CH-Low, 100%RB



LTE Band 4 16QAM 10MHz CH-High, 100%RB

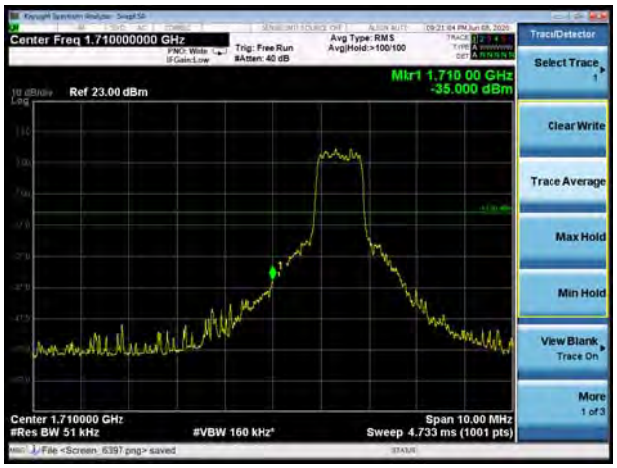


LTE Band 4 16QAM 15MHz CH-Low, 1 RB

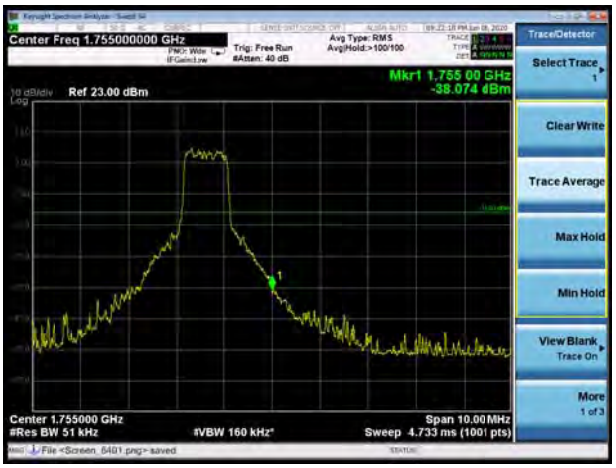


LTE Band 4 16QAM 15MHz CH-High, 1 RB

LTE Band 4 16QAM 15MHz CH-Low, 100%RB

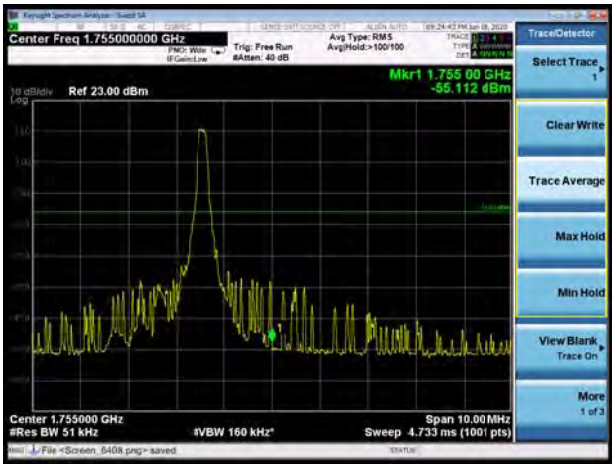


LTE Band 4 16QAM 15MHz CH-High, 100%RB

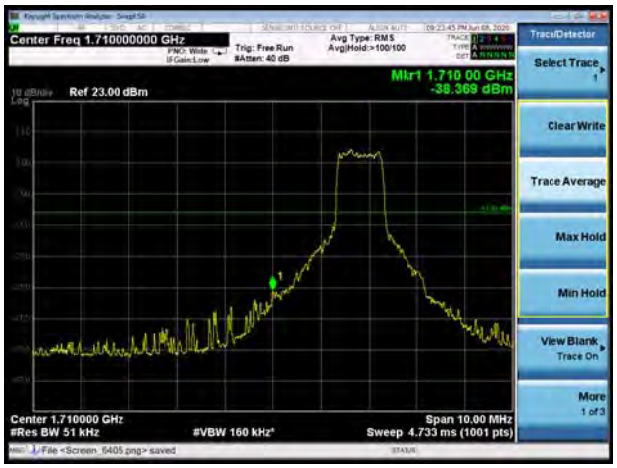


LTE Band 4 16QAM 20MHz CH-Low, 1 RB

LTE Band 4 16QAM 20MHz CH-High, 1 RB

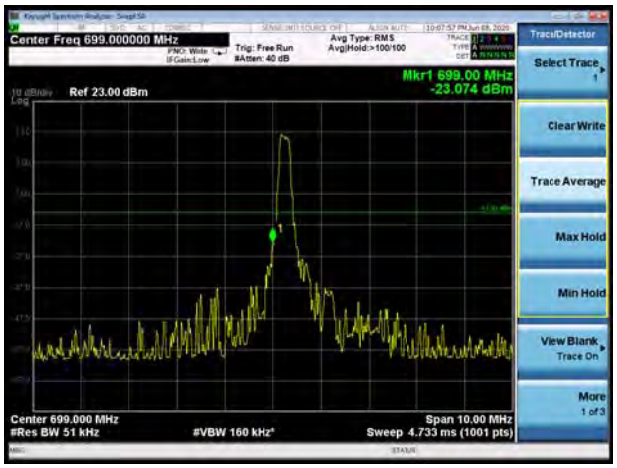


LTE Band 4 16QAM 20MHz CH-Low, 100%RB

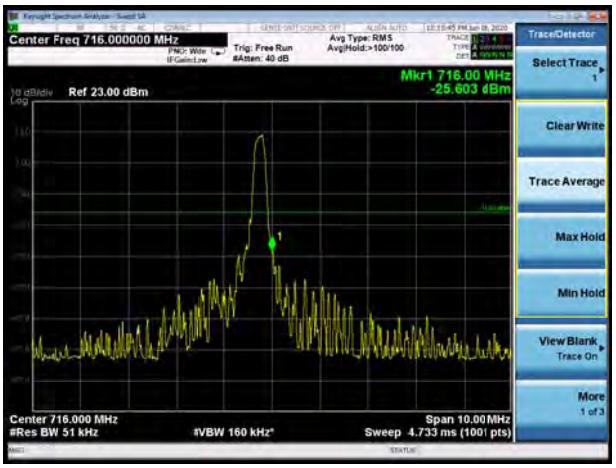


LTE Band 4 16QAM 20MHz CH-High, 100%RB

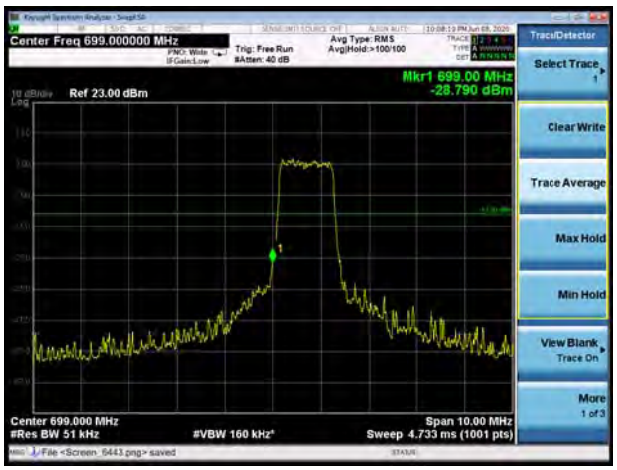
LTE Band 12 QPSK 1.4MHz CH-Low, 1 RB



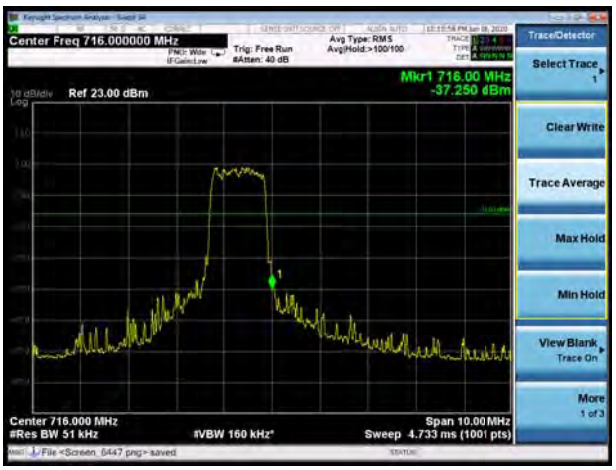
LTE Band 12 QPSK 1.4MHz CH-High, 1 RB



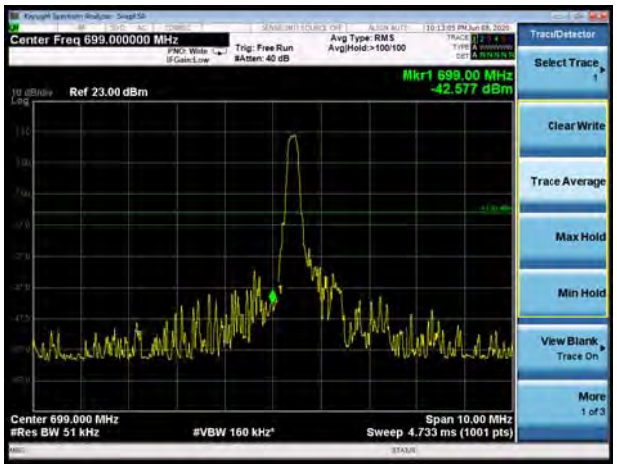
LTE Band 12 QPSK 1.4MHz CH-Low, 100%RB



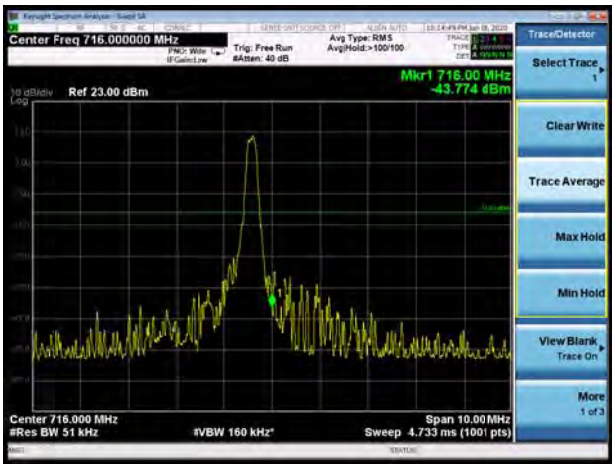
LTE Band 12 QPSK 1.4MHz CH-High, 100%RB



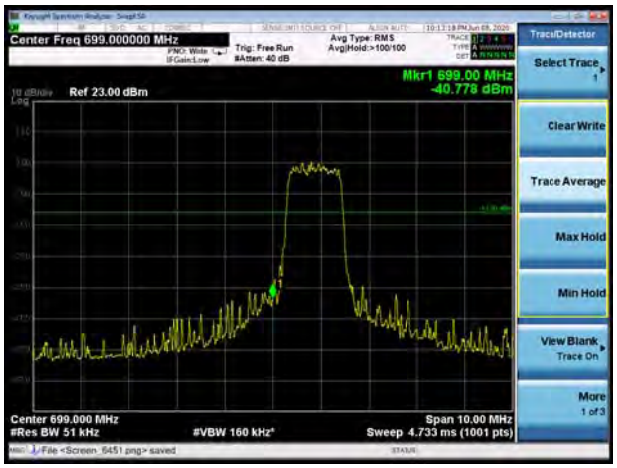
LTE Band 12 QPSK 3MHz CH-Low, 1 RB



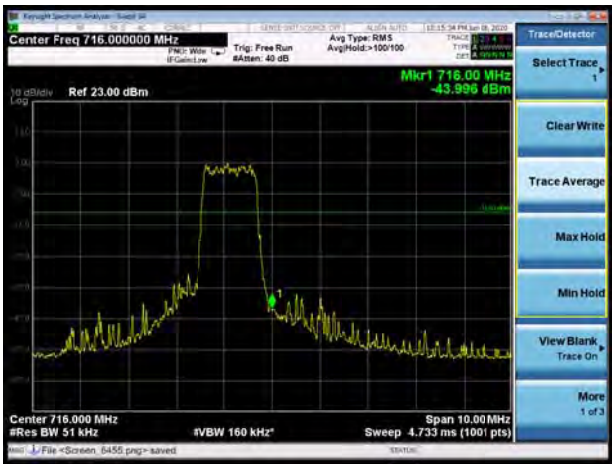
LTE Band 12 QPSK 3MHz CH-High, 1 RB



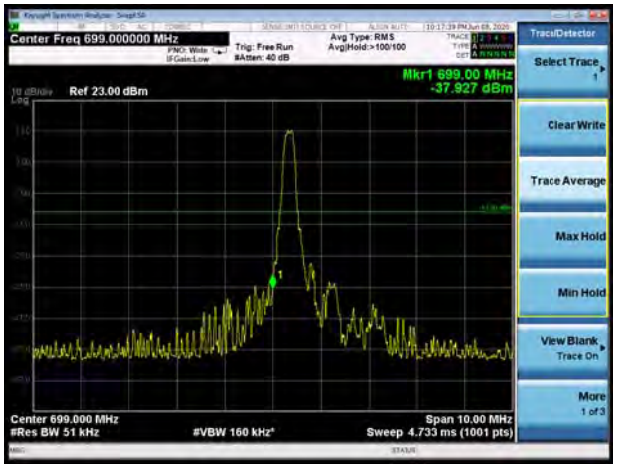
LTE Band 12 QPSK 3MHz CH-Low, 100%RB



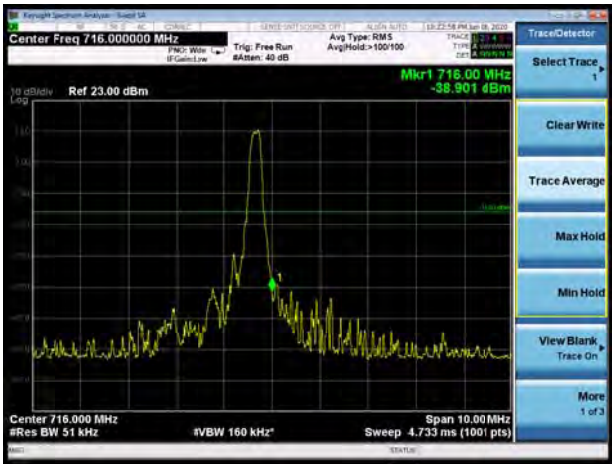
LTE Band 12 QPSK 3MHz CH-High, 100%RB



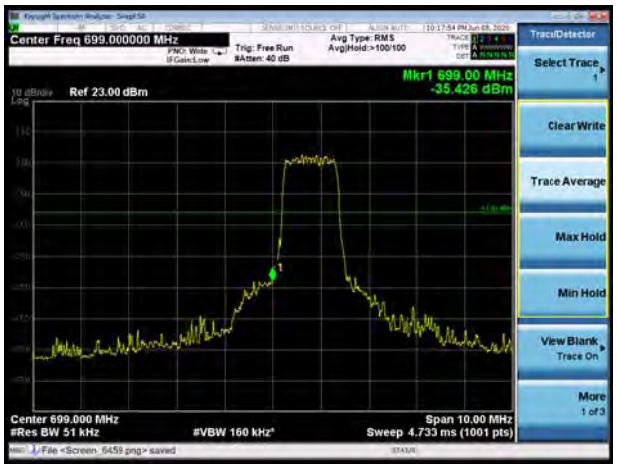
LTE Band 12 QPSK 5MHz CH-Low, 1 RB



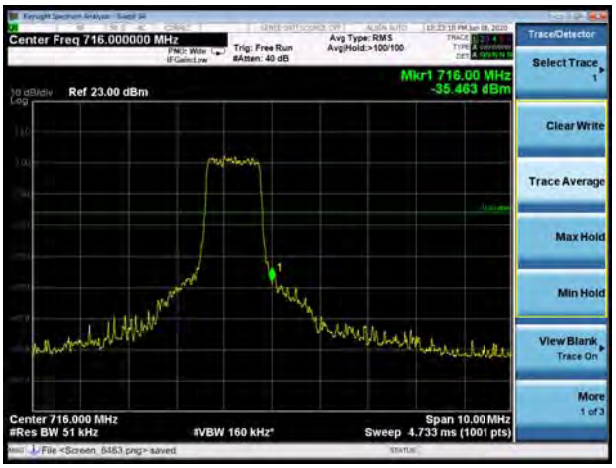
LTE Band 12 QPSK 5MHz CH-High, 1 RB



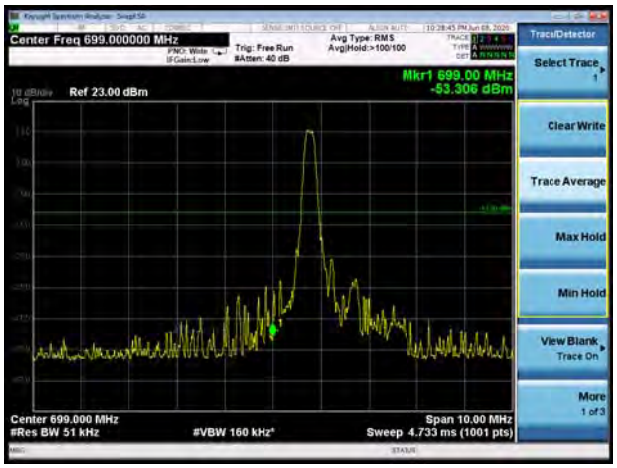
LTE Band 12 QPSK 5MHz CH-Low, 100%RB



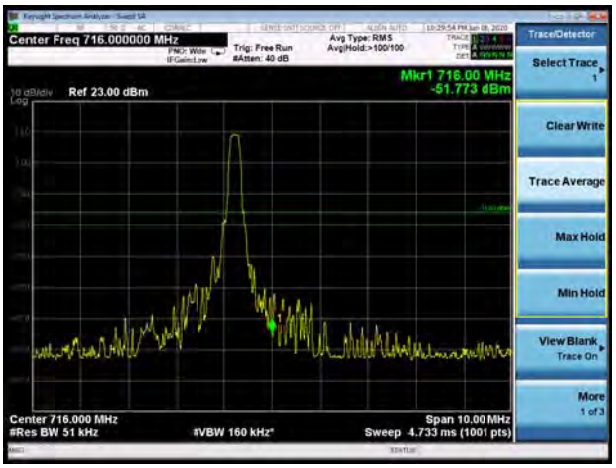
LTE Band 12 QPSK 5MHz CH-High, 100%RB



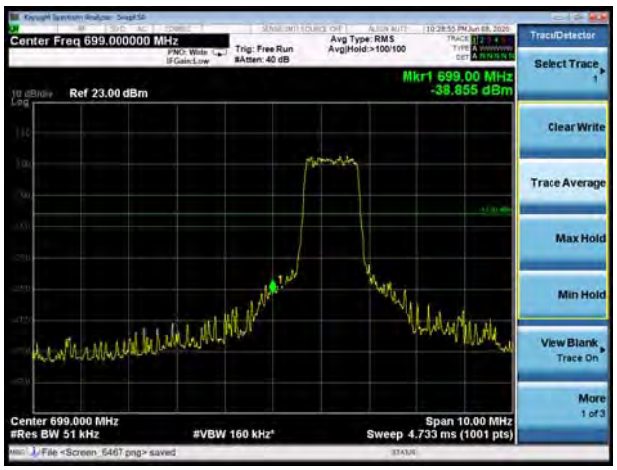
LTE Band 12 QPSK 10MHz CH-Low, 1 RB



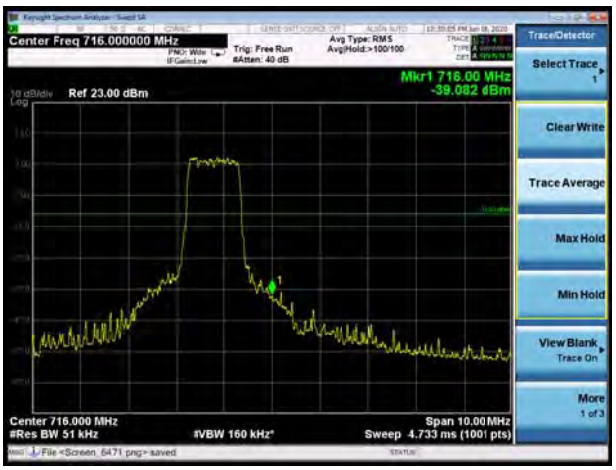
LTE Band 12 QPSK 10MHz CH-High, 1 RB



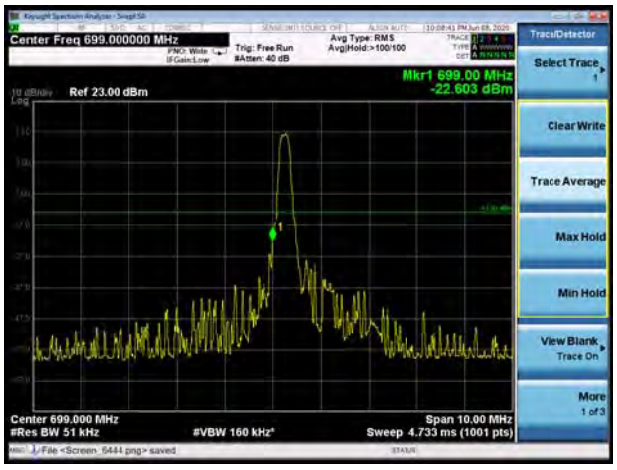
LTE Band 12 QPSK 10MHz CH-Low, 100%RB



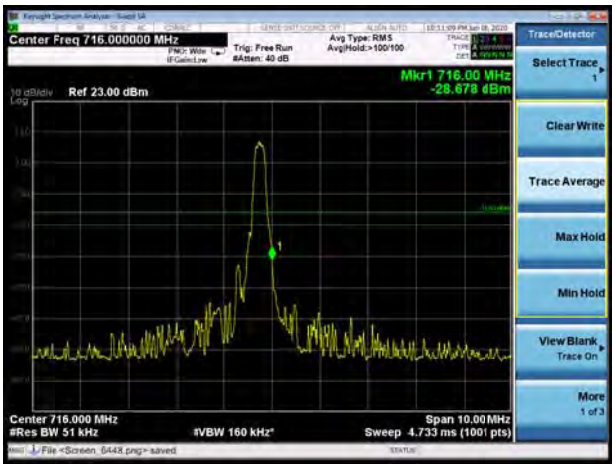
LTE Band 12 QPSK 10MHz CH-High, 100%RB



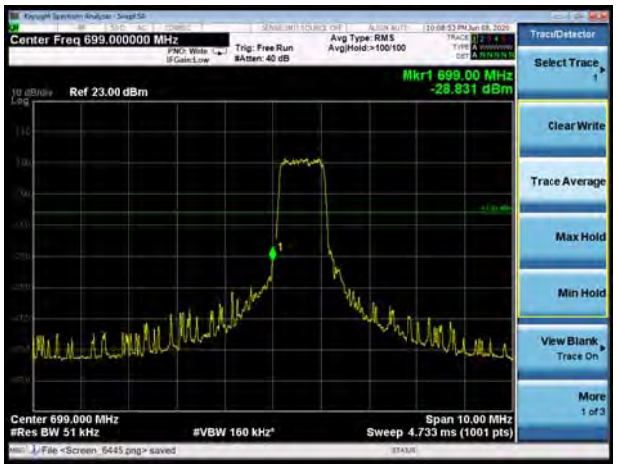
LTE Band 12 16QAM 1.4MHz CH-Low, 1 RB



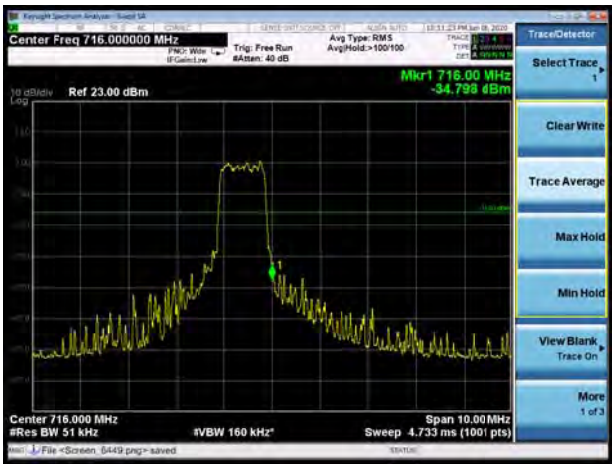
LTE Band 12 16QAM 1.4MHz CH-High, 1 RB



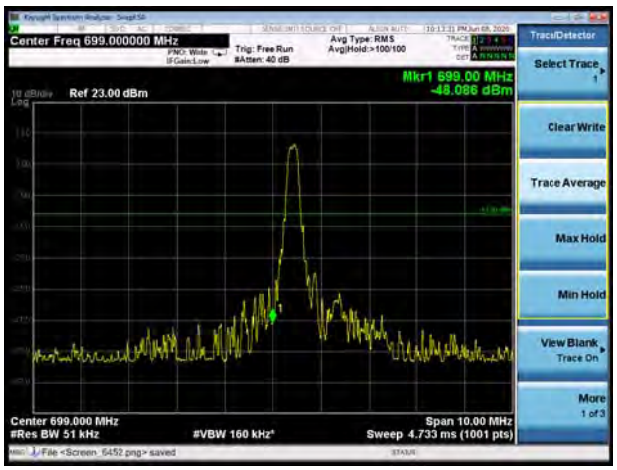
LTE Band 12 16QAM 1.4MHz CH-Low, 100%RB



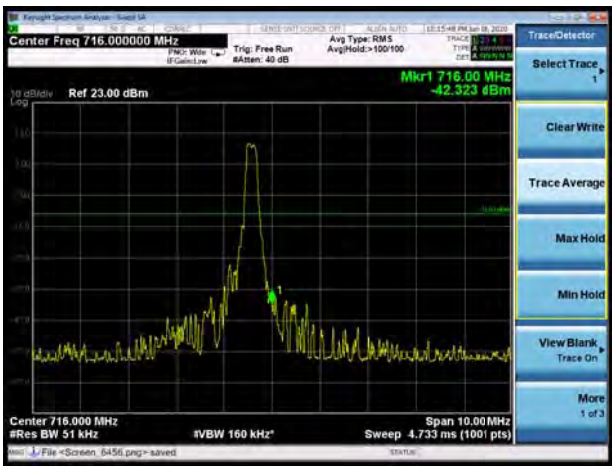
LTE Band 12 16QAM 1.4MHz CH-High, 100%RB



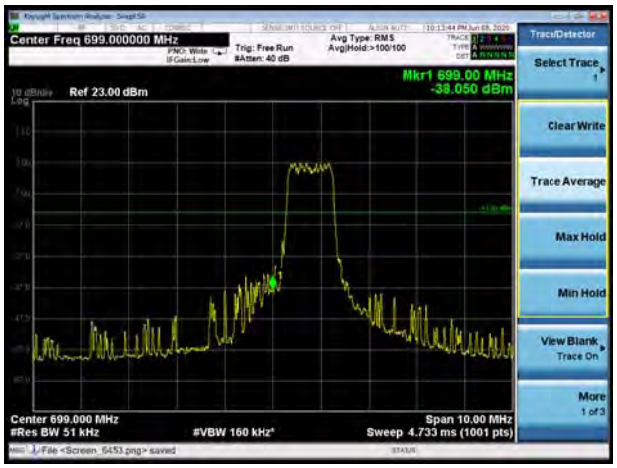
LTE Band 12 16QAM 3MHz CH-Low, 1 RB



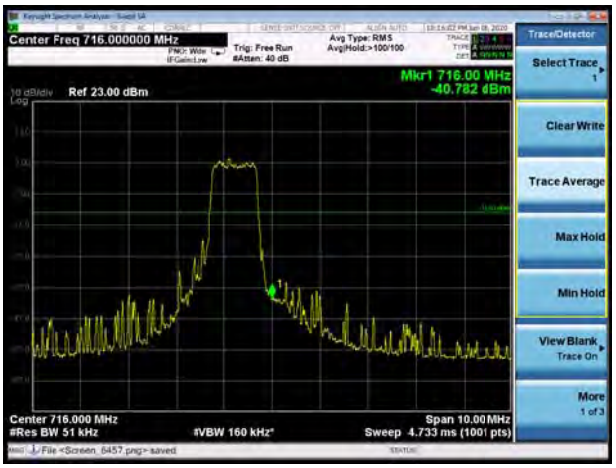
LTE Band 12 16QAM 3MHz CH-High, 1 RB



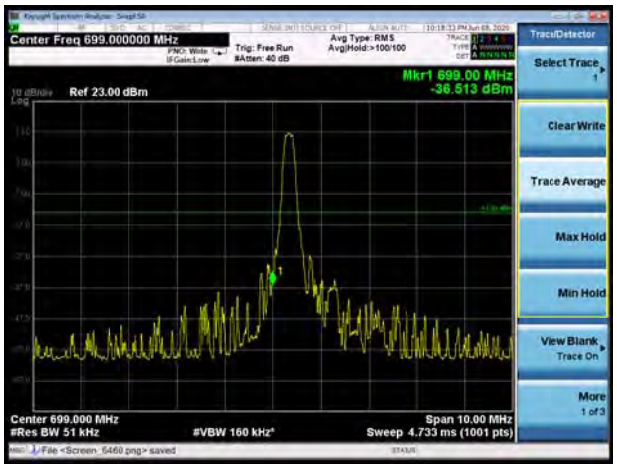
LTE Band 12 16QAM 3MHz CH-Low, 100%RB



LTE Band 12 16QAM 3MHz CH-High, 100%RB

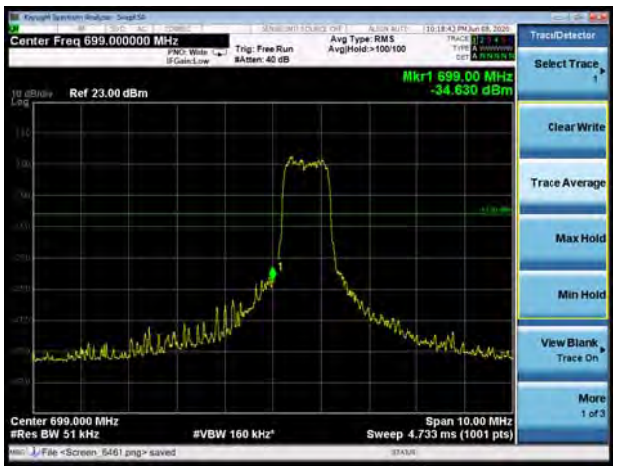


LTE Band 12 16QAM 5MHz CH-Low, 1 RB

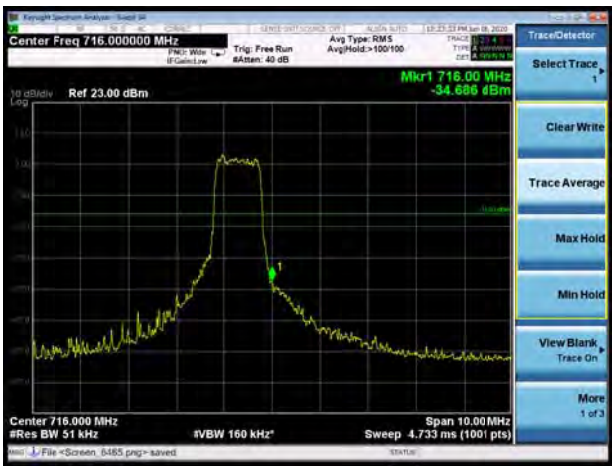


LTE Band 12 16QAM 5MHz CH-High, 1 RB

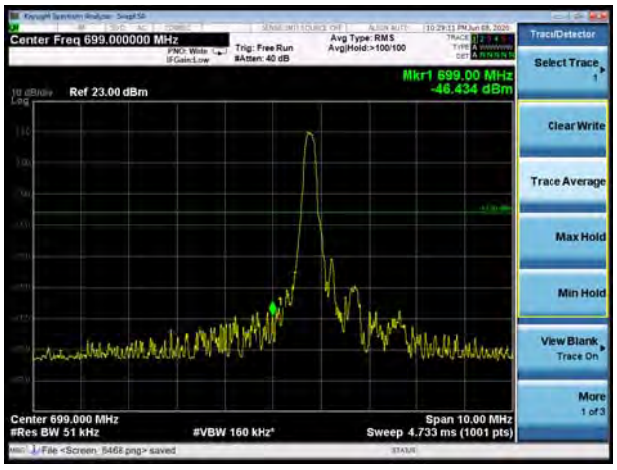
LTE Band 12 16QAM 5MHz CH-Low, 100%RB



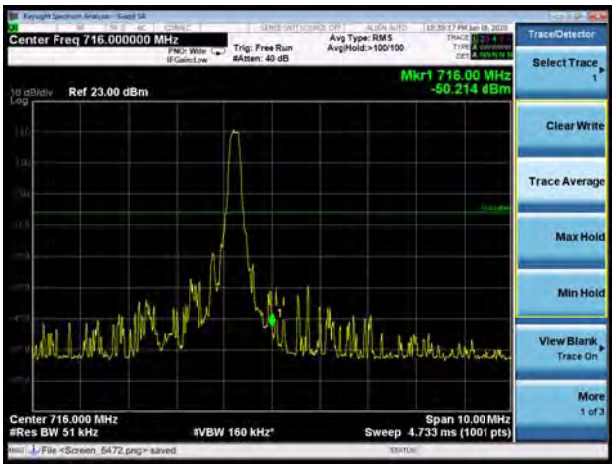
LTE Band 12 16QAM 5MHz CH-High, 100%RB



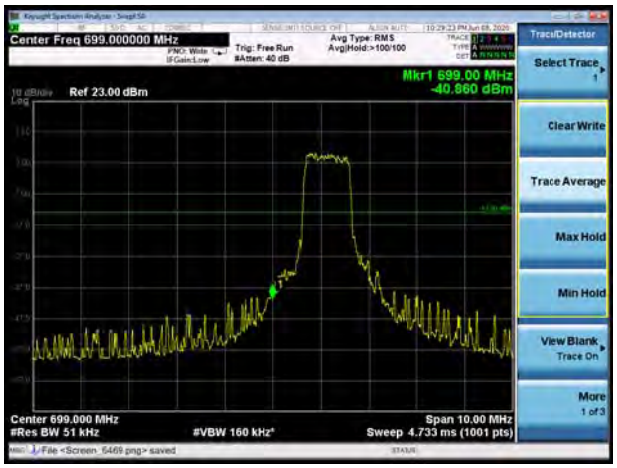
LTE Band 12 16QAM 10MHz CH-Low, 1 RB



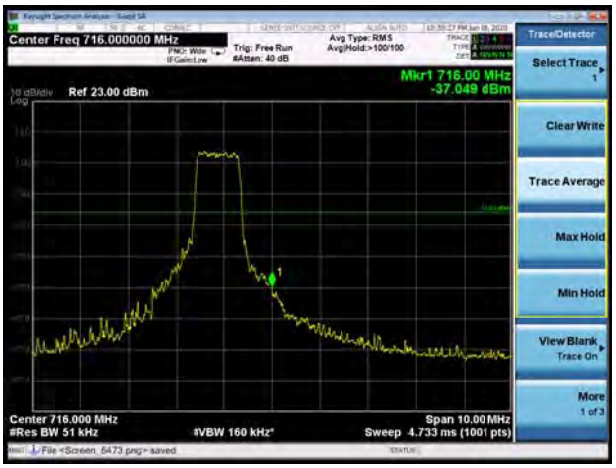
LTE Band 12 16QAM 10MHz CH-High, 1 RB



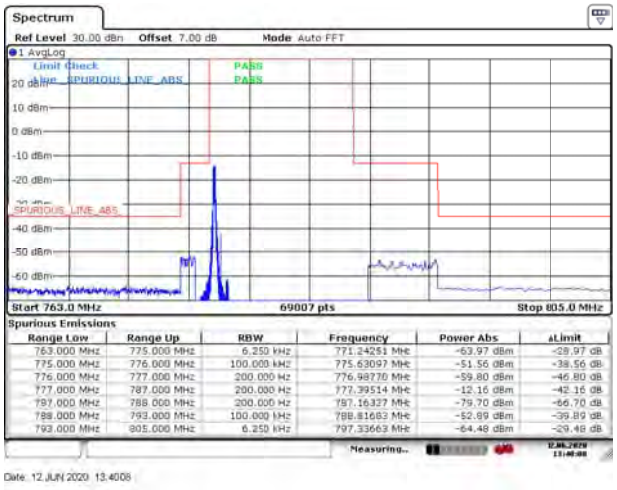
LTE Band 12 16QAM 10MHz CH-Low, 100%RB



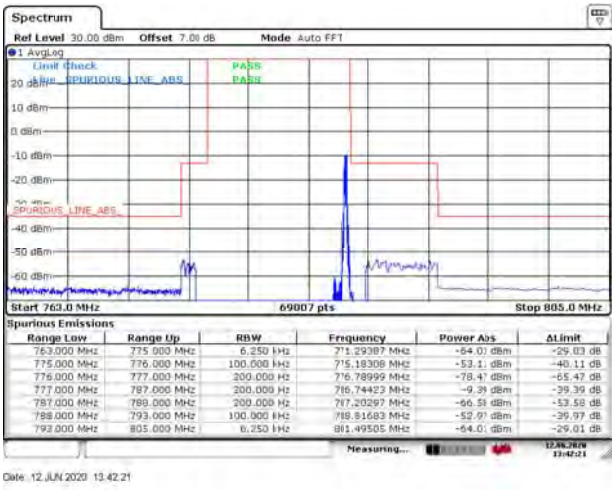
LTE Band 12 16QAM 10MHz CH-High, 100%RB



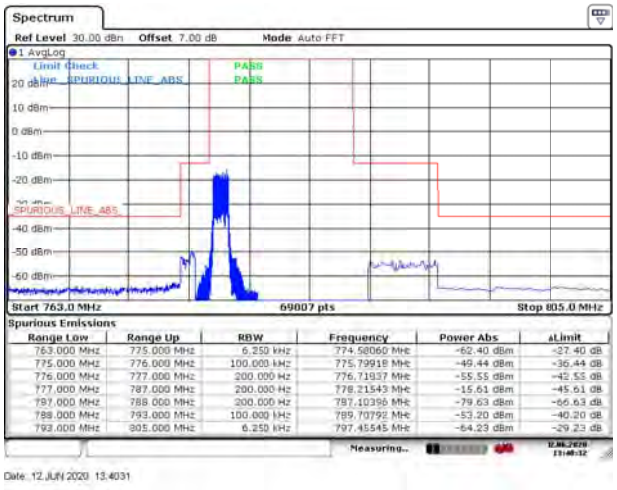
LTE Band 13 QPSK 5MHz CH-Low, 1 RB



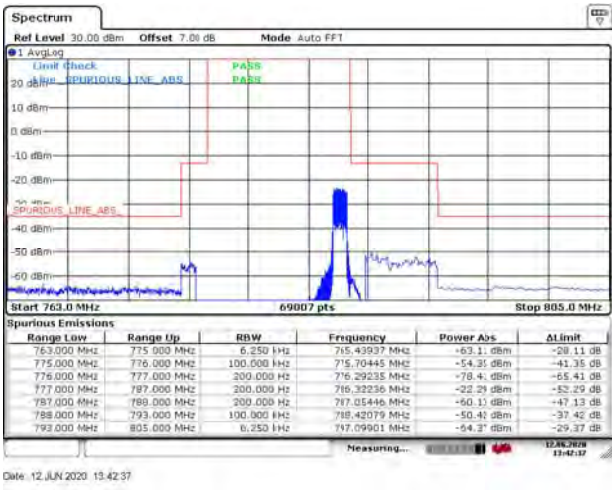
LTE Band 13 QPSK 5MHz CH-High, 1 RB



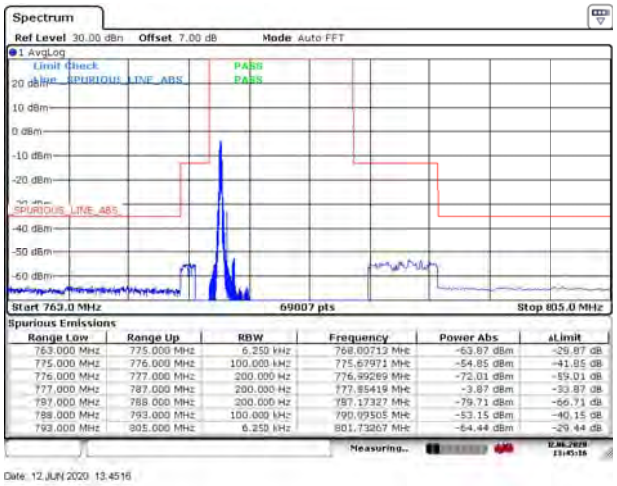
LTE Band 13 QPSK 5MHz CH-Low, 100%RB



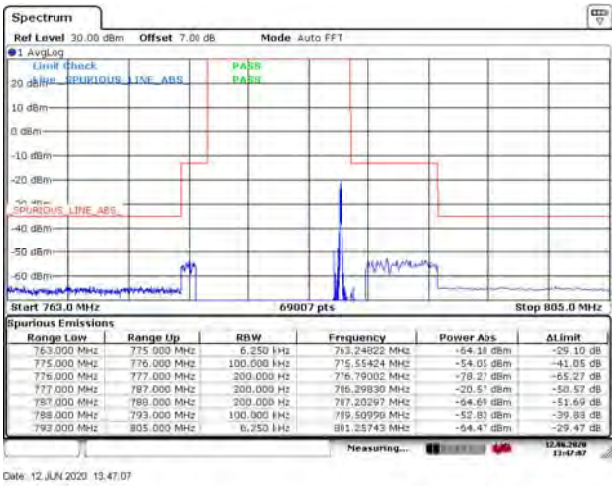
LTE Band 13 QPSK 5MHz CH- High, 100%RB



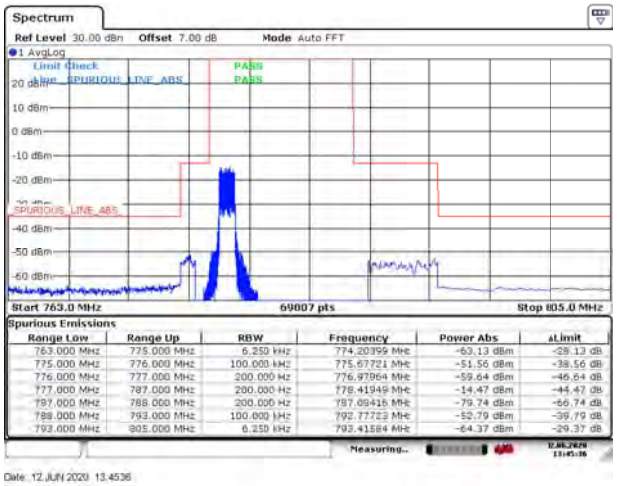
LTE Band 13 QPSK 10MHz CH-Low, 1 RB



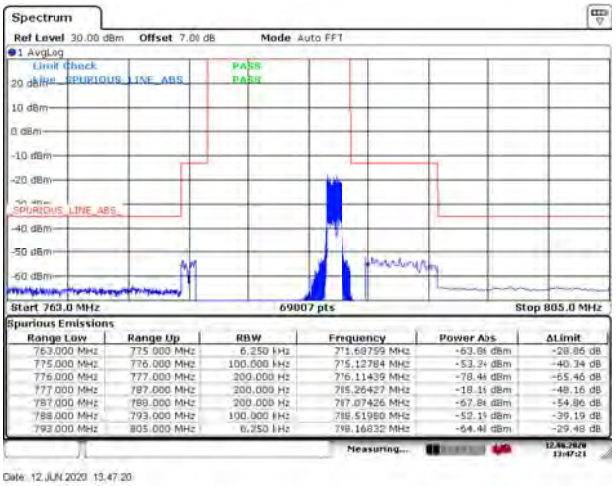
LTE Band 13 QPSK 10MHz CH-High, 1 RB



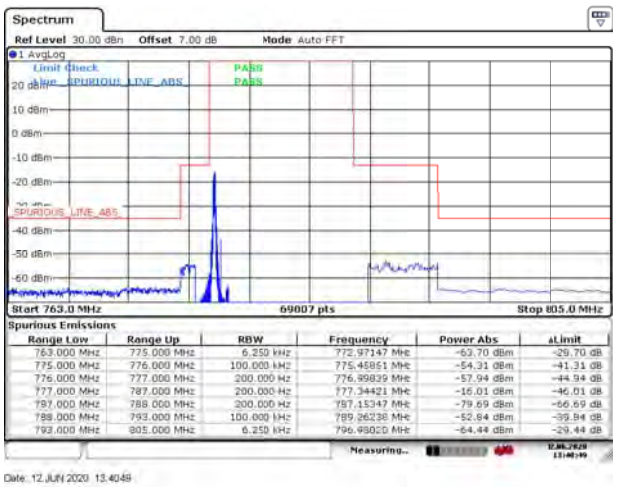
LTE Band 13 QPSK 10MHz CH-Low, 100%RB



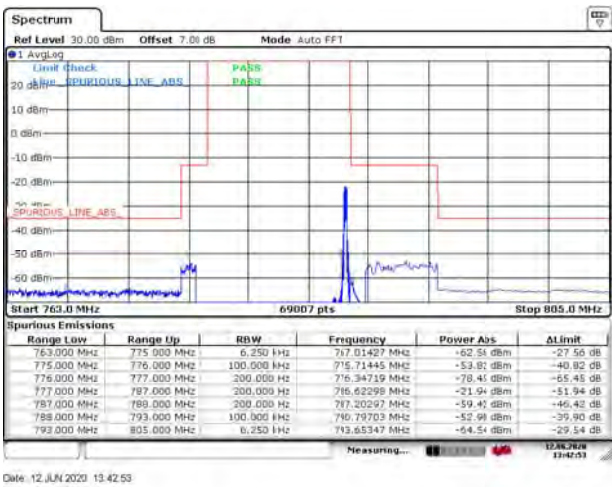
LTE Band 13 QPSK 10MHz CH- High, 100%RB



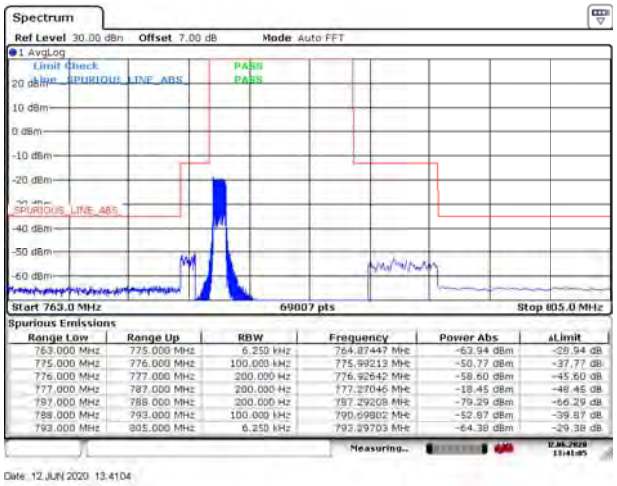
LTE Band 13 16QAM 5MHz CH-Low, 1 RB



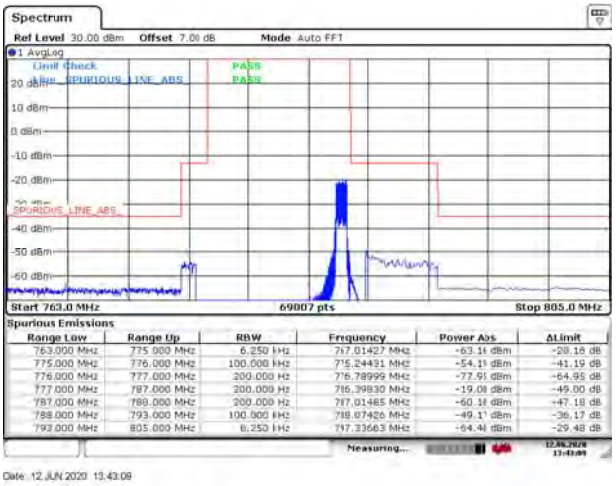
LTE Band 13 16QAM 5MHz CH-High, 1 RB



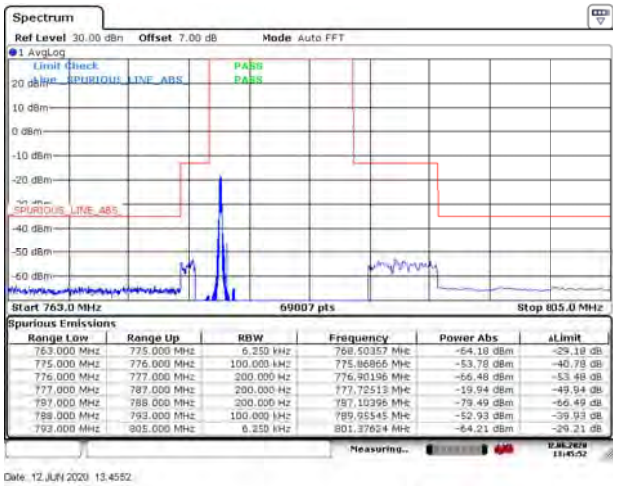
LTE Band 13 16QAM 5MHz CH-Low, 100%RB



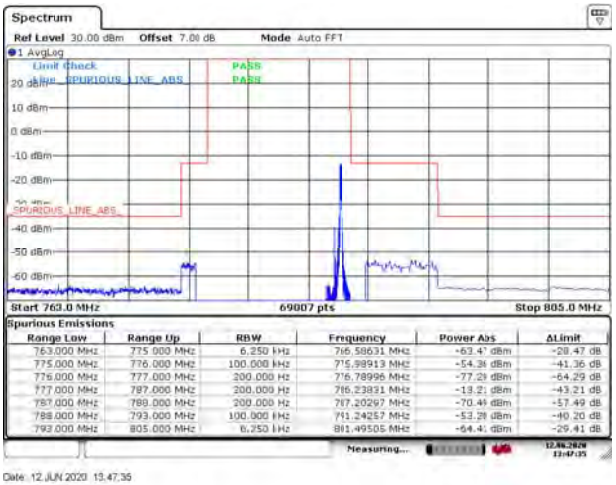
LTE Band 13 16QAM 5MHz CH- High, 100%RB



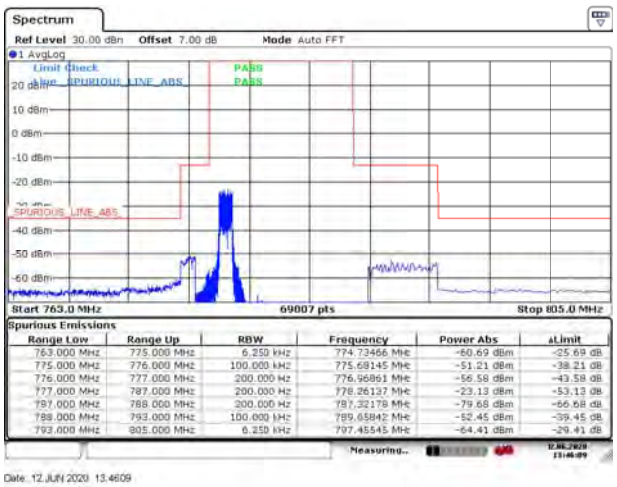
LTE Band 13 16QAM 10MHz CH-Low, 1 RB



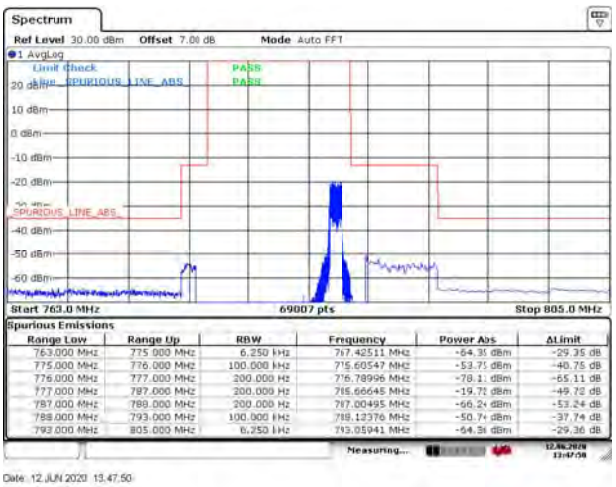
LTE Band 13 16QAM 10MHz CH-High, 1 RB



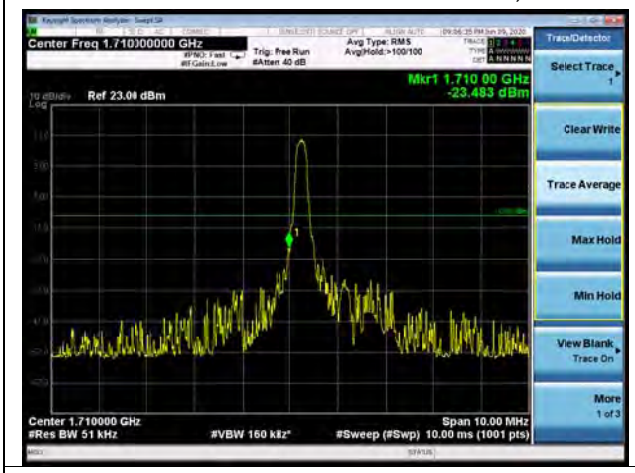
LTE Band 13 16QAM 10MHz CH-Low, 100%RB



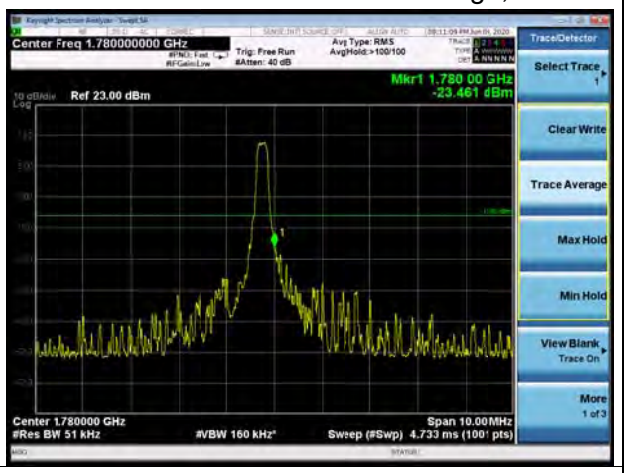
LTE Band 13 16QAM 10MHz CH- High, 100%RB



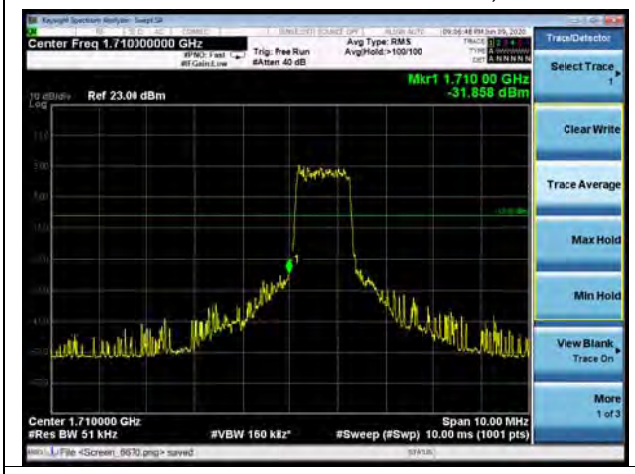
LTE Band 66 QPSK 1.4MHz CH-Low, 1 RB



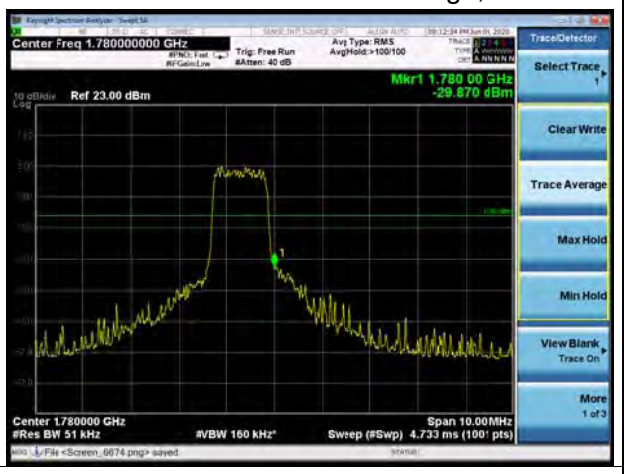
LTE Band 66 QPSK 1.4MHz CH-High, 1 RB



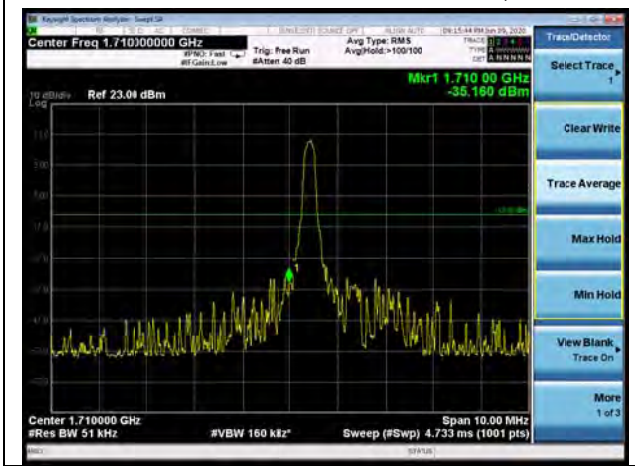
LTE Band 66 QPSK 1.4MHz CH-Low, 100%RB



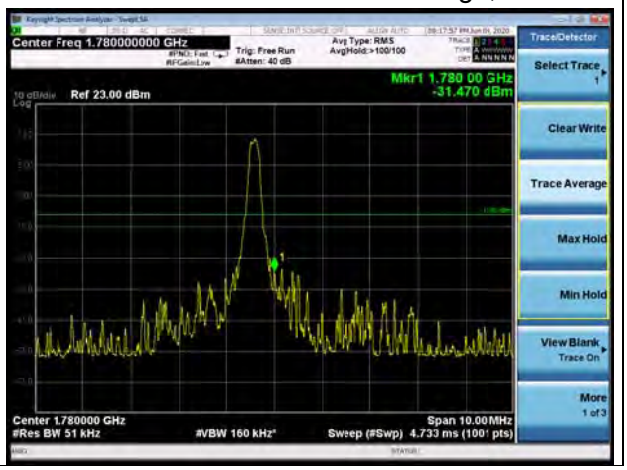
LTE Band 66 QPSK 1.4MHz CH-High, 100%RB



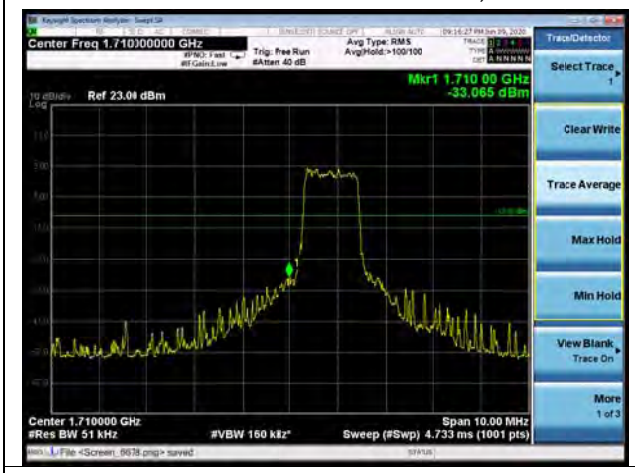
LTE Band 66 QPSK 3MHz CH-Low, 1 RB



LTE Band 66 QPSK 3MHz CH-High, 1 RB

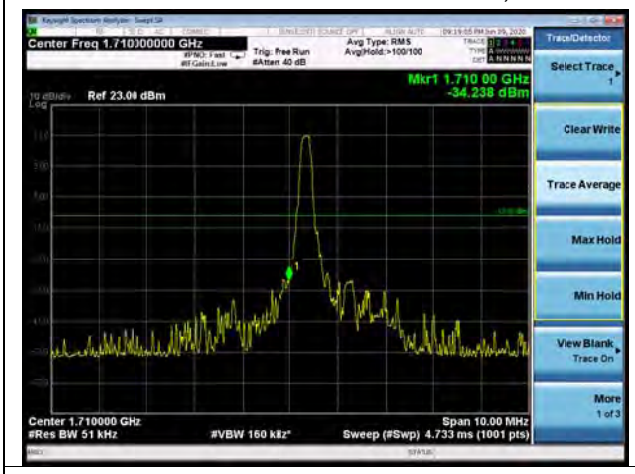


LTE Band 66 QPSK 3MHz CH-Low, 100%RB



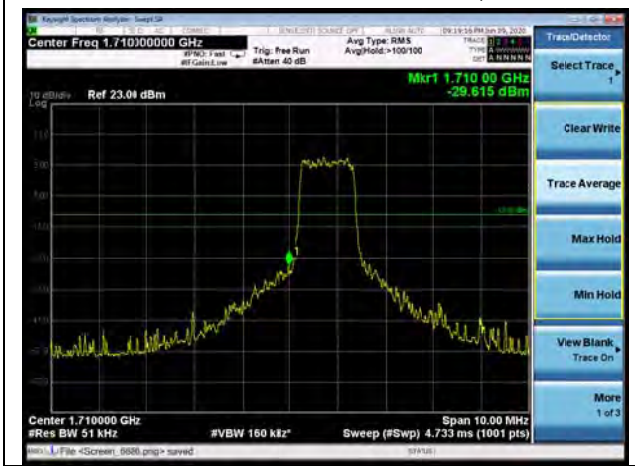
LTE Band 66 QPSK 3MHz CH-High, 100%RB

LTE Band 66 QPSK 5MHz CH-Low, 1 RB



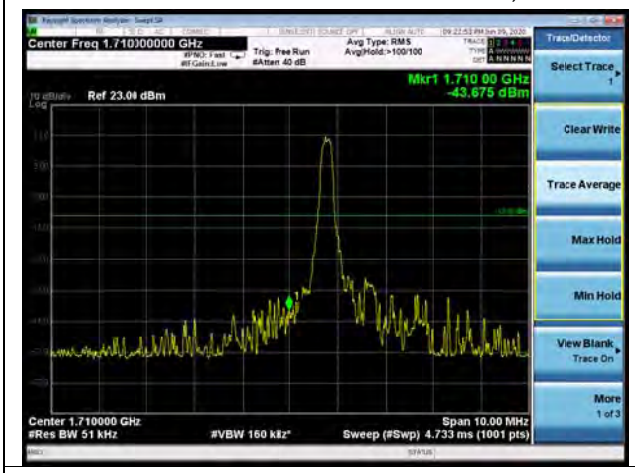
LTE Band 66 QPSK 5MHz CH-High, 1 RB

LTE Band 66 QPSK 5MHz CH-Low, 100%RB

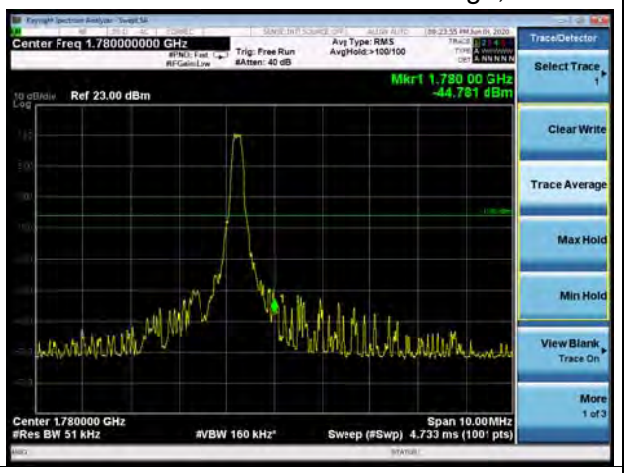


LTE Band 66 QPSK 5MHz CH-High, 100%RB

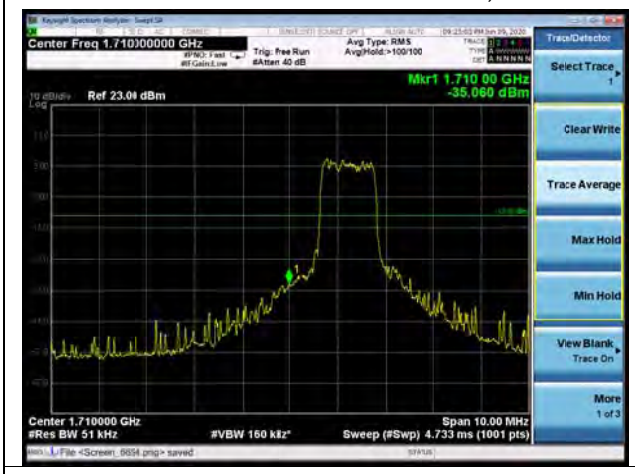
LTE Band 66 QPSK 10MHz CH-Low, 1 RB



LTE Band 66 QPSK 10MHz CH-High, 1 RB

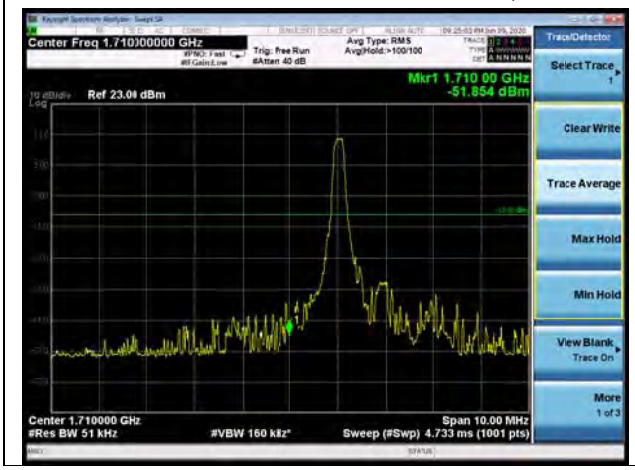


LTE Band 66 QPSK 10MHz CH-Low, 100%RB

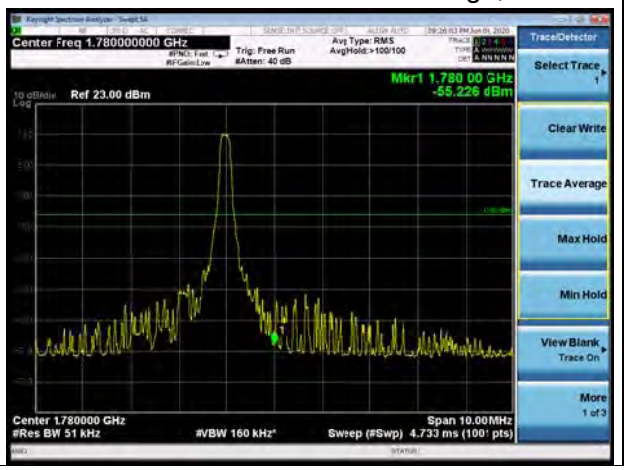


LTE Band 66 QPSK 10MHz CH-High, 100%RB

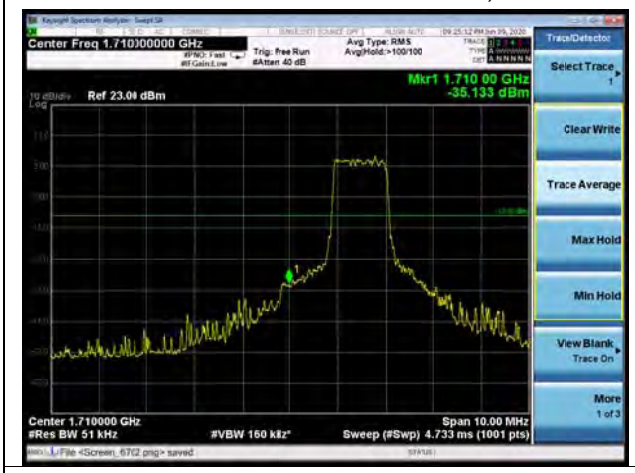
LTE Band 66 QPSK 15MHz CH-Low, 1 RB



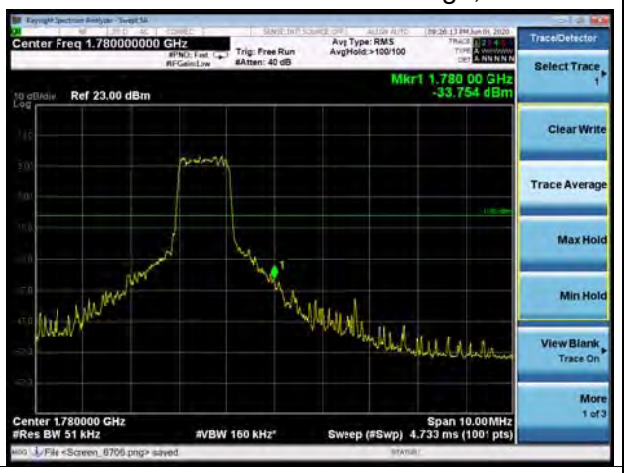
LTE Band 66 QPSK 15MHz CH-High, 1 RB



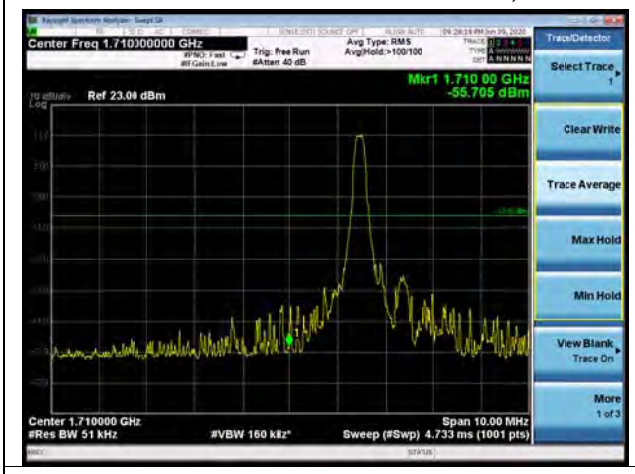
LTE Band 66 QPSK 15MHz CH-Low, 100%RB



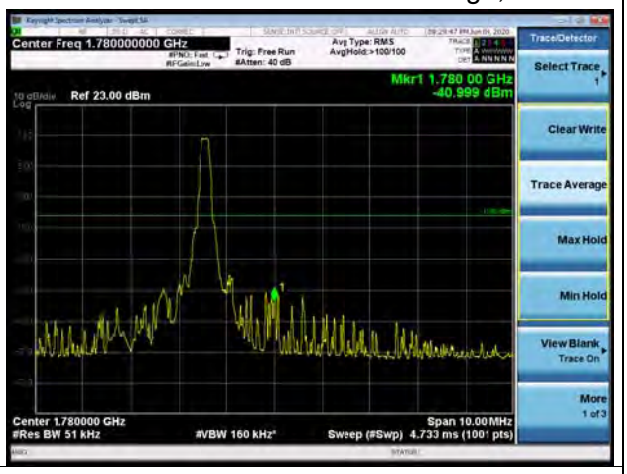
LTE Band 66 QPSK 15MHz CH-High, 100%RB



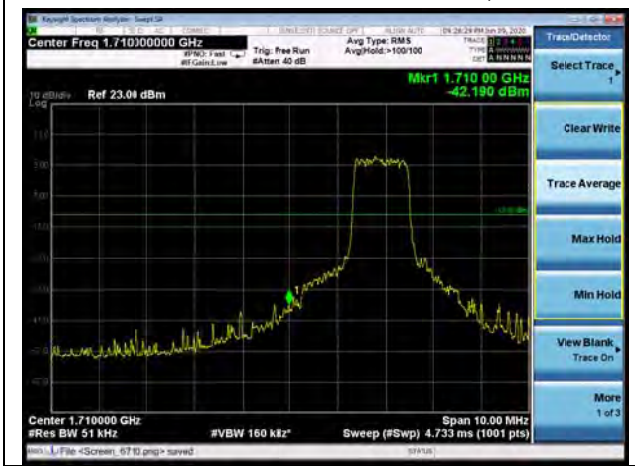
LTE Band 66 QPSK 20MHz CH-Low, 1 RB



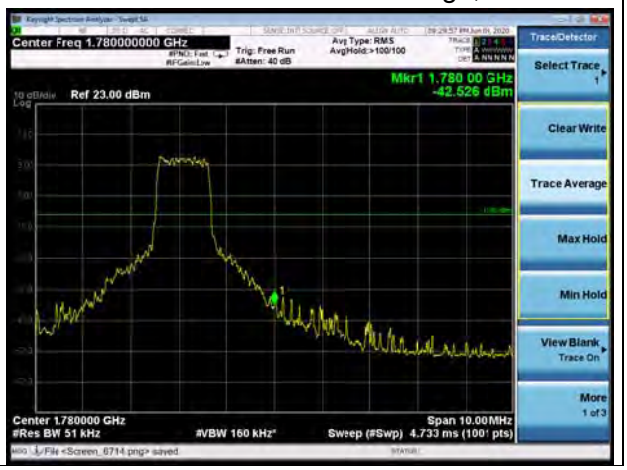
LTE Band 66 QPSK 20MHz CH-High, 1 RB



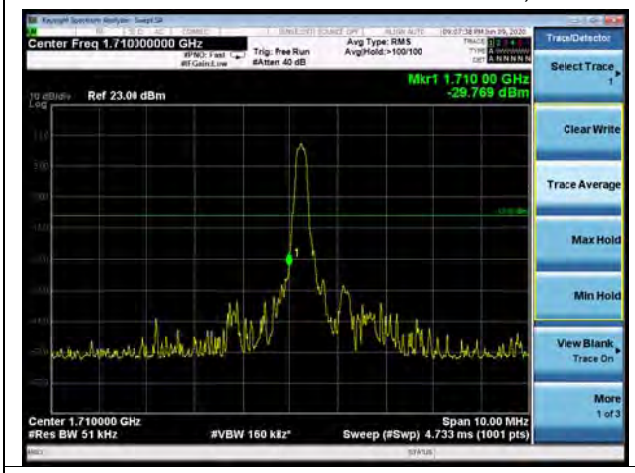
LTE Band 66 QPSK 20MHz CH-Low, 100%RB



LTE Band 66 QPSK 20MHz CH-High, 100%RB

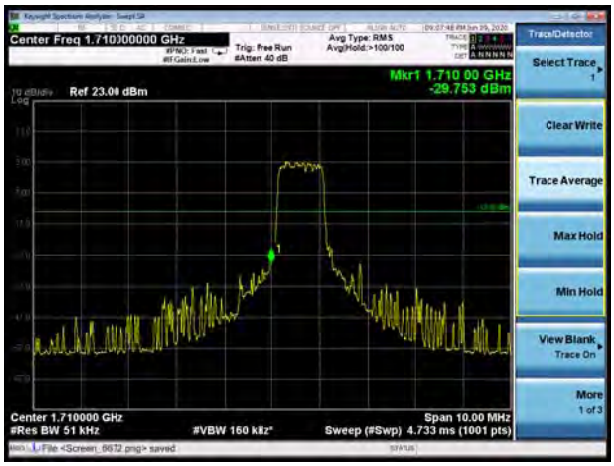


LTE Band 66 16QAM 1.4MHz CH-Low, 1 RB

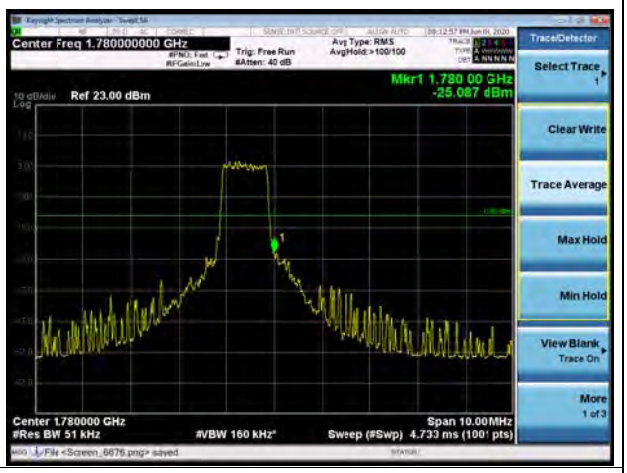


LTE Band 66 16QAM 1.4MHz CH-High, 1 RB

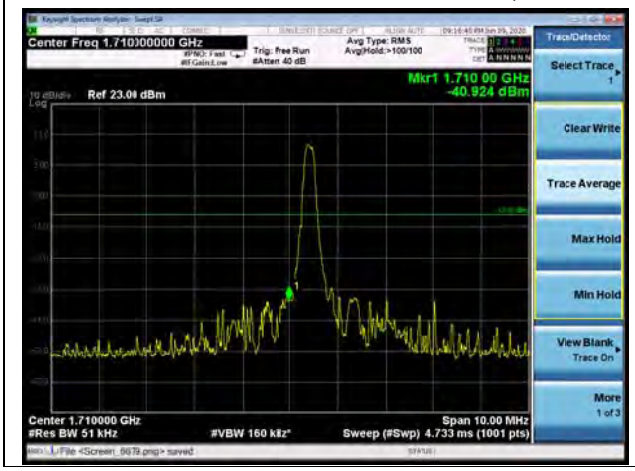
LTE Band 66 16QAM 1.4MHz CH-Low, 100%RB



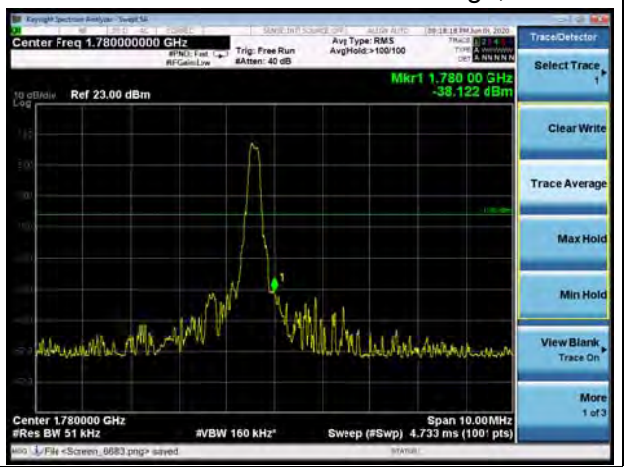
LTE Band 66 16QAM 1.4MHz CH-High, 100%RB



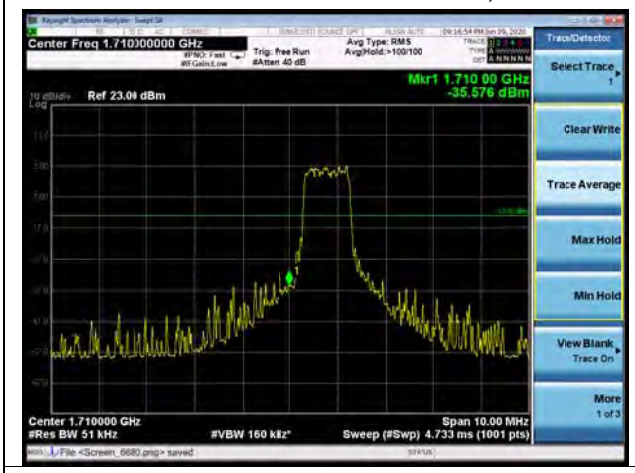
LTE Band 66 16QAM 3MHz CH-Low, 1 RB



LTE Band 66 16QAM 3MHz CH-High, 1 RB

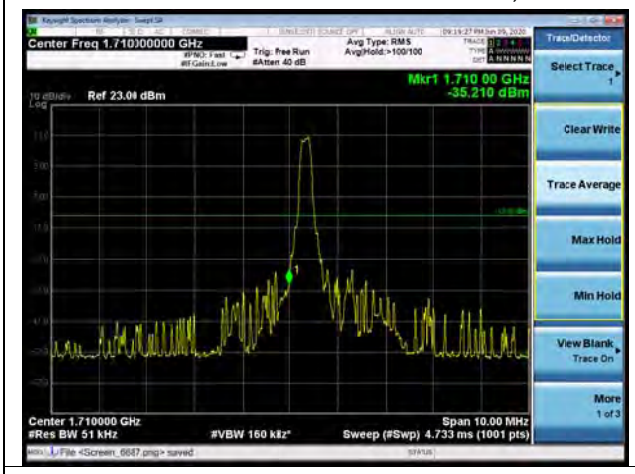


LTE Band 66 16QAM 3MHz CH-Low, 100%RB



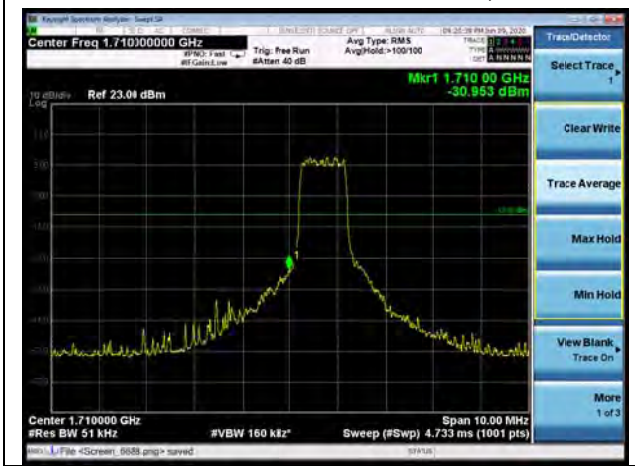
LTE Band 66 16QAM 3MHz CH-High, 100%RB

LTE Band 66 16QAM 5MHz CH-Low, 1 RB

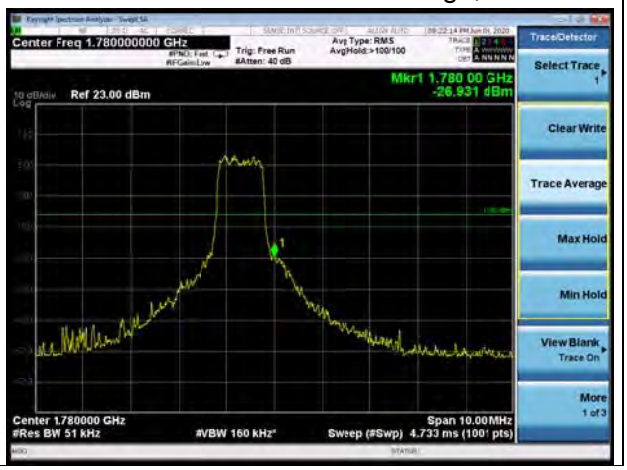


LTE Band 66 16QAM 5MHz CH-High, 1 RB

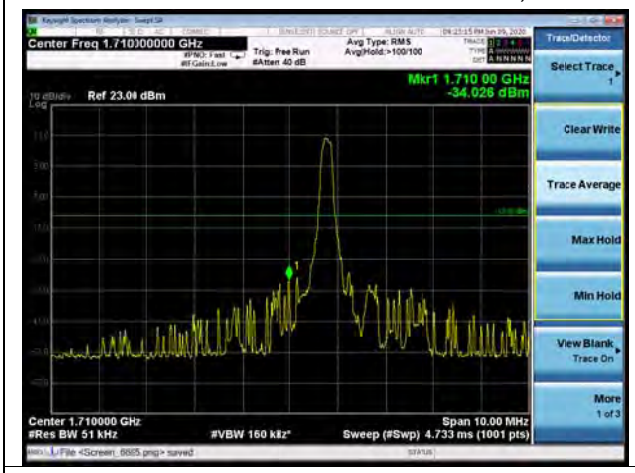
LTE Band 66 16QAM 5MHz CH-Low, 100%RB



LTE Band 66 16QAM 5MHz CH-High, 100%RB

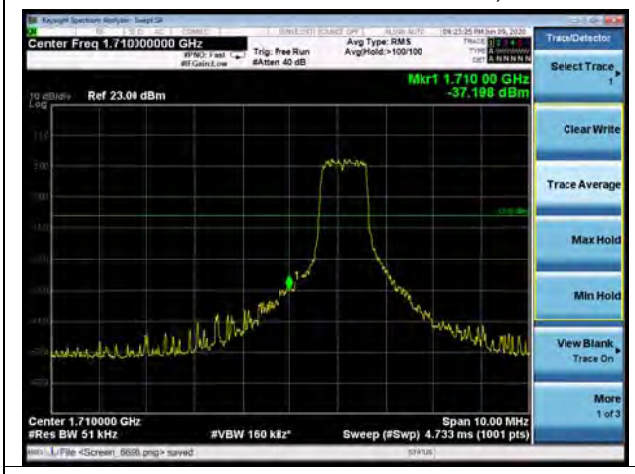


LTE Band 66 16QAM 10MHz CH-Low, 1 RB



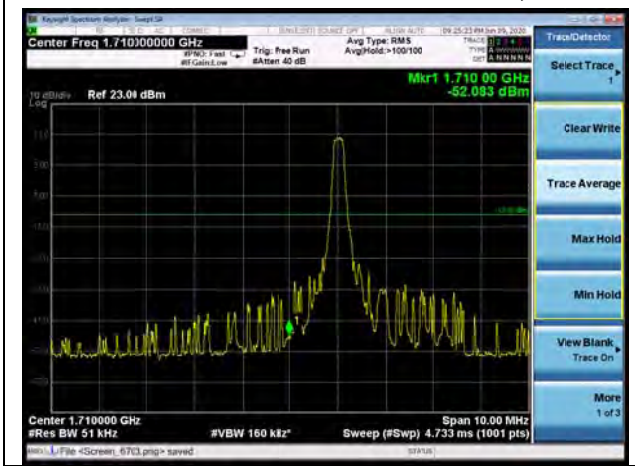
LTE Band 66 16QAM 10MHz CH-High, 1 RB

LTE Band 66 16QAM 10MHz CH-Low, 100%RB



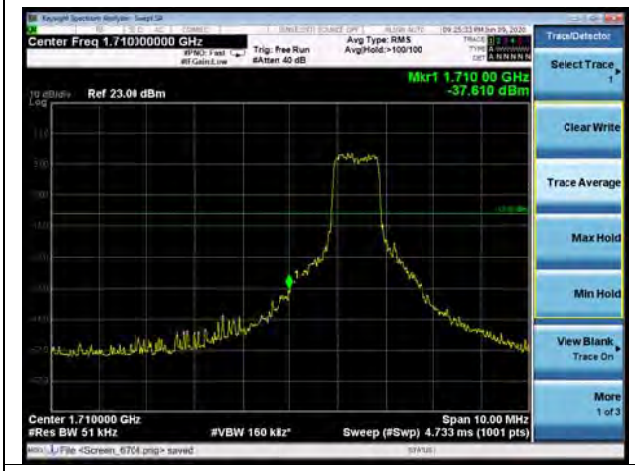
LTE Band 66 16QAM 10MHz CH-High, 100%RB

LTE Band 66 16QAM 15MHz CH-Low, 1 RB



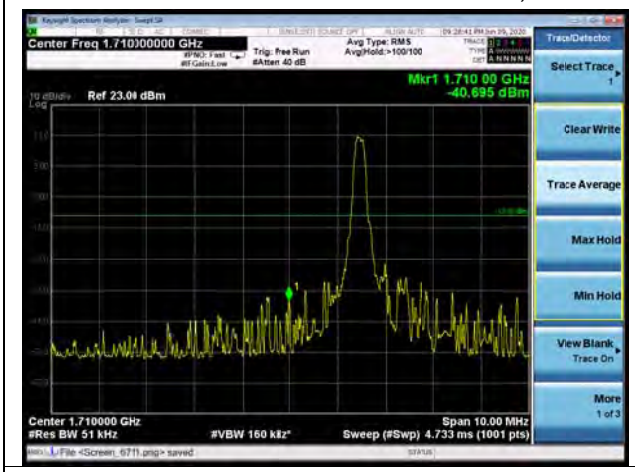
LTE Band 66 16QAM 15MHz CH-High, 1 RB

LTE Band 66 16QAM 15MHz CH-Low, 100%RB

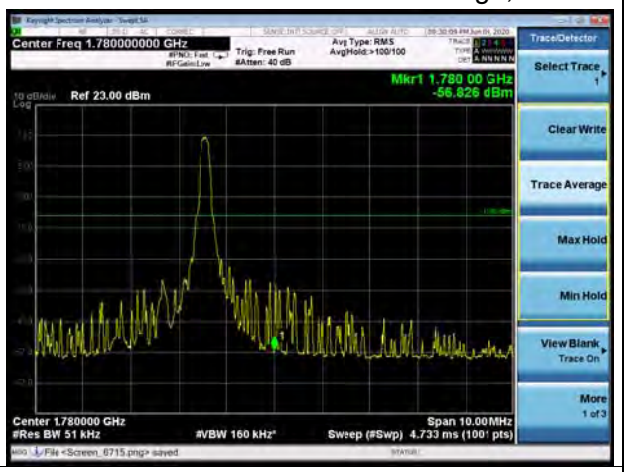


LTE Band 66 16QAM 15MHz CH-High, 100%RB

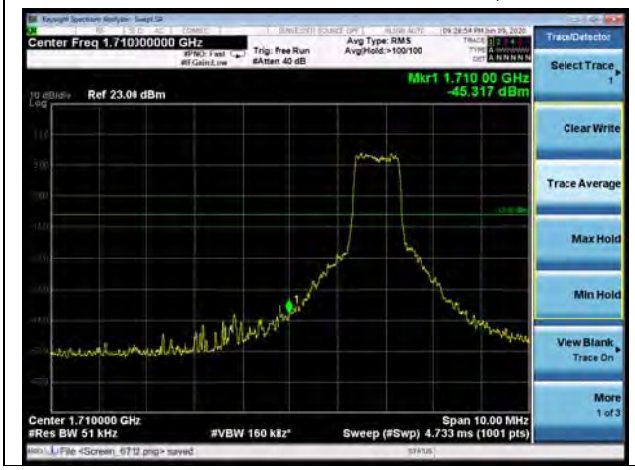
LTE Band 66 16QAM 20MHz CH-Low, 1 RB



LTE Band 66 16QAM 20MHz CH-High, 1 RB

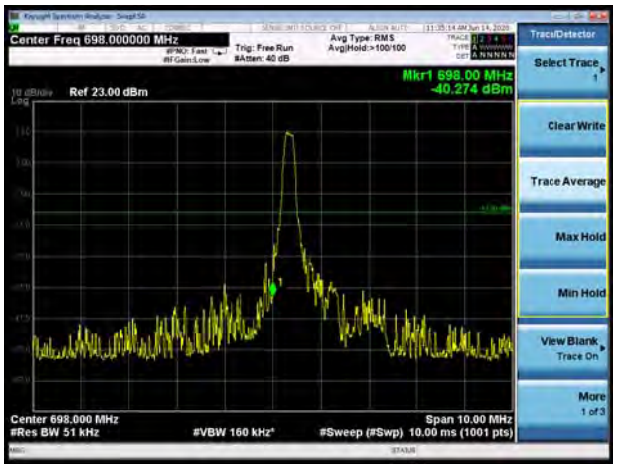


LTE Band 66 16QAM 20MHz CH-Low, 100%RB



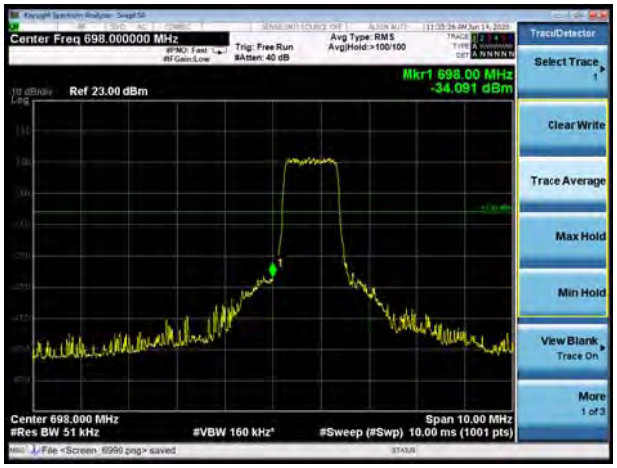
LTE Band 66 16QAM 20MHz CH-High, 100%RB

LTE Band 85 QPSK 5MHz CH-Low, 1 RB



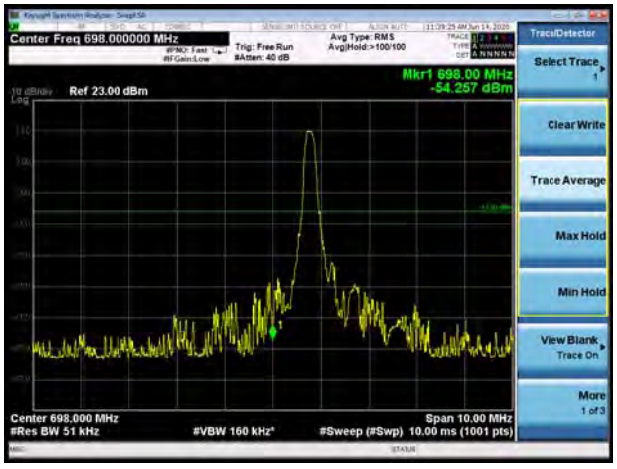
LTE Band 85 QPSK 5MHz CH-High, 1 RB

LTE Band 85 QPSK 5MHz CH-Low, 100%RB

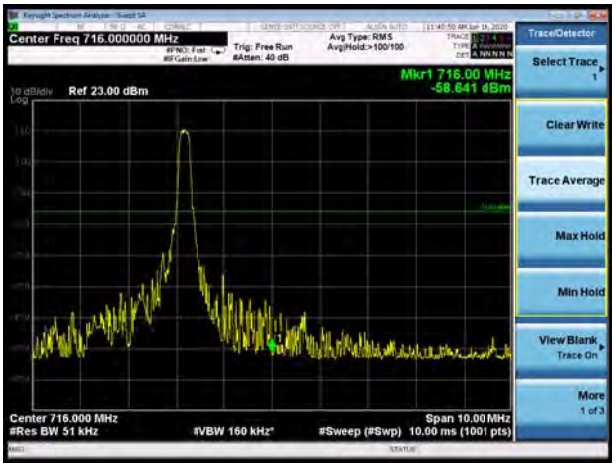


LTE Band 85 QPSK 5MHz CH-High, 100%RB

LTE Band 85 QPSK 10MHz CH-Low, 1 RB



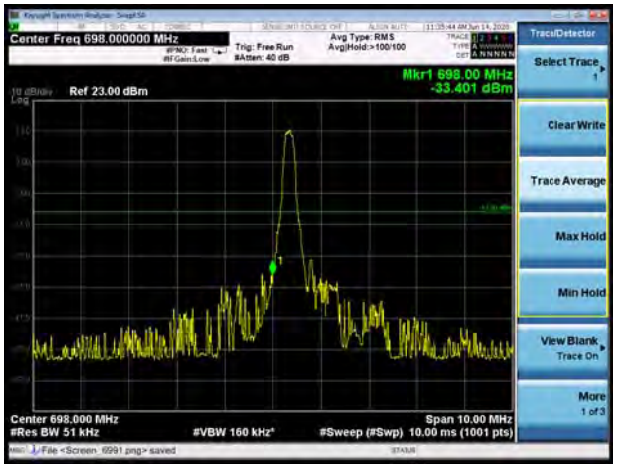
LTE Band 85 QPSK 10MHz CH-High, 1 RB



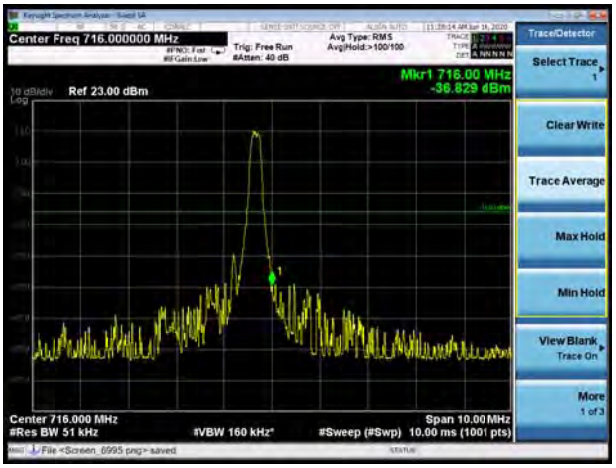
LTE Band 85 QPSK 10MHz CH-Low, 100%RB

LTE Band 85 QPSK 10MHz CH-High, 100%RB

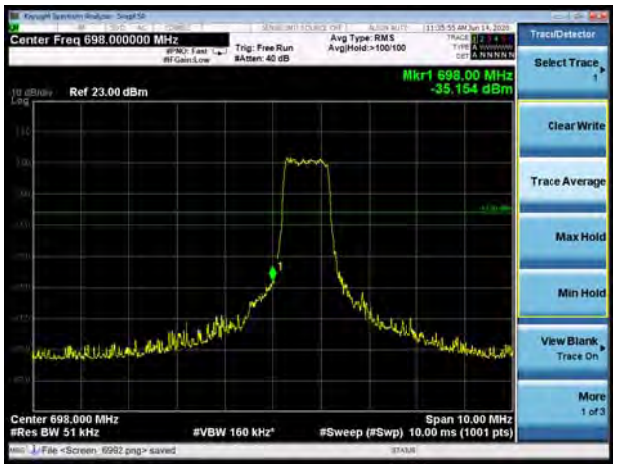
LTE Band 85 16QAM 5MHz CH-Low, 1 RB



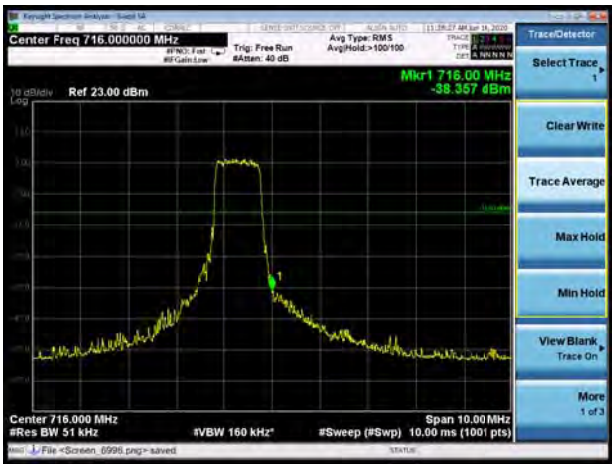
LTE Band 85 16QAM 5MHz CH-High, 1 RB



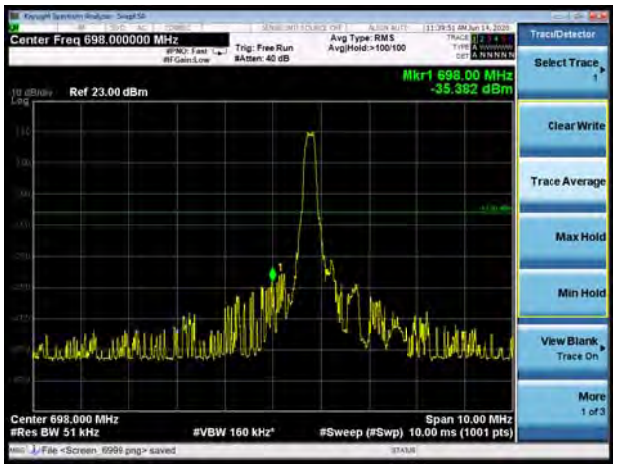
LTE Band 85 16QAM 5MHz CH-Low, 100%RB



LTE Band 85 16QAM 5MHz CH-High, 100%RB

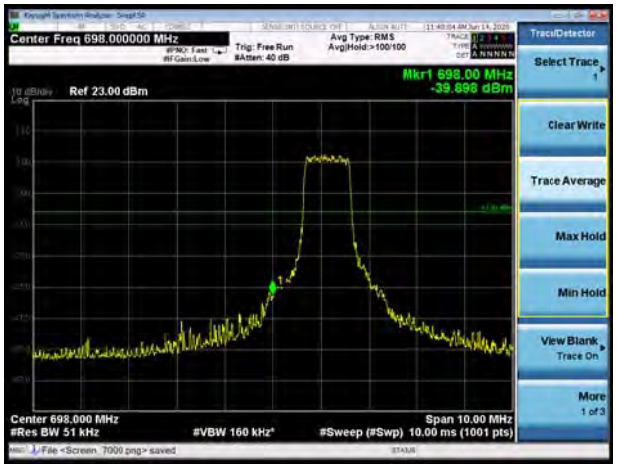


LTE Band 85 16QAM 10MHz CH-Low, 1 RB

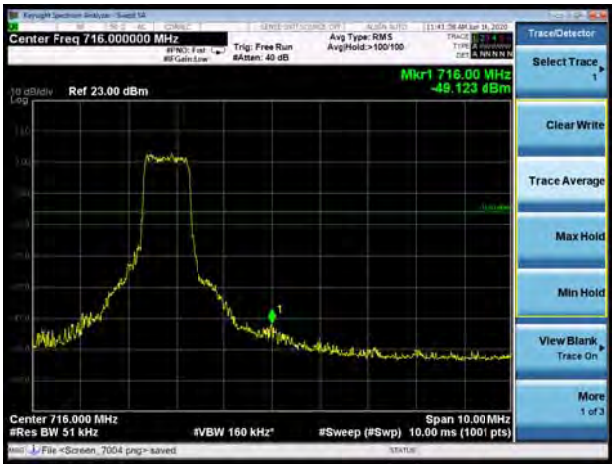


LTE Band 85 16QAM 10MHz CH-High, 1 RB

LTE Band 85 16QAM 10MHz CH-Low, 100%RB



LTE Band 85 16QAM 10MHz CH-High, 100%RB



5.4 Peak-to-Average Power Ratio (PAPR)

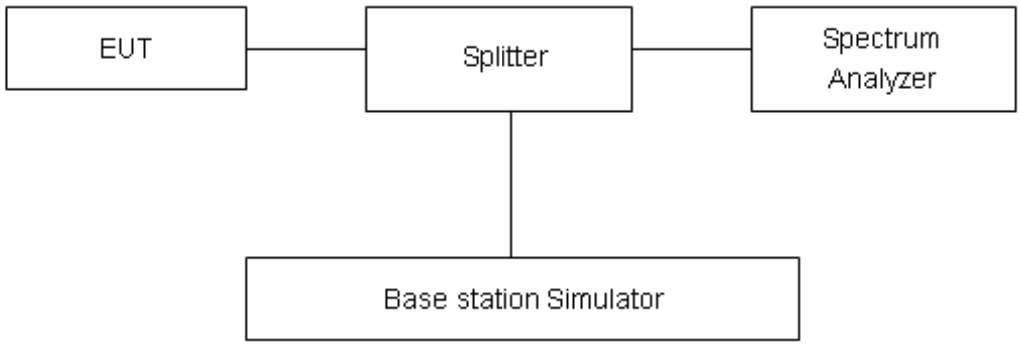
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

Measure the total peak power and record as PPk. And measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (*e.g.*, dBm). Determine the PAPR from:
PAPR (dB) = PPk (dBm) - PAvg (dBm).

Test Setup



Limits

Rule Part 27.50(d)(5) Equipment employed must be authorized in accordance with the provisions of 24.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for thenormal distribution is with the coverage factor k = 2, U= 0.4 dB.

Test Results

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	Peak-to-Average Power Ratio (PAPR)			Limit (dB)	Conclusion
				Peak(dBm)	Avg(dBm)	PAPR(dB)		
LTE Band 4	1.4MHz	QPSK	20175/1732.5	26.02	16.10	9.92	13	PASS
		16QAM	20175/1732.5	26.61	16.11	10.50	13	PASS
	3MHz	QPSK	20175/1732.5	26.00	16.06	9.94	13	PASS
		16QAM	20175/1732.5	26.59	16.06	10.53	13	PASS
	5MHz	QPSK	20175/1732.5	26.77	17.10	9.67	13	PASS
		16QAM	20175/1732.5	26.73	16.37	10.36	13	PASS
	10MHz	QPSK	20175/1732.5	26.63	16.77	9.86	13	PASS
		16QAM	20175/1732.5	27.25	17.31	9.94	13	PASS
	15MHz	QPSK	20175/1732.5	27.34	17.98	9.36	13	PASS
		16QAM	20175/1732.5	27.63	18.54	9.09	13	PASS
	20MHz	QPSK	20175/1732.5	27.29	17.56	9.73	13	PASS
		16QAM	20175/1732.5	27.62	18.64	8.98	13	PASS

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	Peak-to-Average Power Ratio (PAPR)			Limit (dB)	Conclusion
				Peak(dBm)	Avg(dBm)	PAPR(dB)		
LTE Band 12	1.4MHz	QPSK	23095/707.5	25.66	14.18	11.48	13	PASS
		16QAM	23095/707.5	26.76	14.66	12.10	13	PASS
	3MHz	QPSK	23095/707.5	25.60	15.68	9.92	13	PASS
		16QAM	23095/707.5	26.38	15.75	10.63	13	PASS
	5MHz	QPSK	23095/707.5	26.60	16.93	9.67	13	PASS
		16QAM	23095/707.5	26.53	16.08	10.45	13	PASS
	10MHz	QPSK	23095/707.5	26.55	16.84	9.71	13	PASS
		16QAM	23095/707.5	27.17	16.67	10.50	13	PASS

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	Peak-to-Average Power Ratio (PAPR)			Limit (dB)	Conclusion
				Peak(dBm)	Avg(dBm)	PAPR(dB)		
LTE Band 13	5MHz	QPSK	23230/782	26.39	16.90	9.49	13	PASS
		16QAM	23230/782	26.42	16.14	10.28	13	PASS
	10MHz	QPSK	23230/782	26.22	16.94	9.28	13	PASS
		16QAM	23230/782	26.72	16.86	9.86	13	PASS