



RF TEST REPORT

Applicant Xiaomi Communications Co., Ltd.
FCC ID 2AFZZ3QL
Product Mobile Phone
Brand Redmi
Model 220333QL
Report No. R2111A1057-R8
Issue Date January 29, 2022

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

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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	2.1053 27.53(h) 27.53(g) 27.53(f) /27.53(c)	PASS
Date of Testing: December 30, 2021 and January 24, 2022			
Date of Sample Received: December 27, 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.			



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 measurements.

A2LA (Certificate Number: 3857.01)

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

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City: Shanghai
Post code: 201201
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2 General Description of Equipment under Test

2.1 Applicant and Manufacturer Information

Applicant	Xiaomi Communications Co., Ltd.
Applicant address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Manufacturer	Xiaomi Communications Co., Ltd.
Manufacturer address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

2.2 General information

EUT Description			
Model	220333QL		
IMEI	IMEI 1: 860223060033583 IMEI 2: 860223060033591		
Hardware Version	P1.1		
Software Version	MIUI13		
Antenna Type	PIFA Antenna		
Antenna Gain	Band	Low Antenna	Upper Antenna
	LTE Band 12:	-4.30	-3.00
	LTE Band 13:	-3.80	-3.40
	LTE Band 17:	-4.30	-3.00
	LTE Band 66:	-0.39	0.80
Test Mode(s)	LTE Band 12/13/17/66;		
Test Modulation	QPSK, 16QAM, 64QAM;		
LTE Category	5		
Maximum E.I.R.P./ E.R.P.	LTE Band 12:	19.95 dBm	
	LTE Band 13:	18.01 dBm	
	LTE Band 17:	20.23 dBm	
	LTE Band 66:	24.34 dBm	
Rated Power Supply Voltage	3.87V		
Operating Voltage	3.6V ~ 4.2V		
Operating Temperature	Lowest: 0°C Highest: +40°C		
Testing Temperature	Lowest: -30°C Highest: +50°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	LTE Band 12	699 ~ 716	729 ~ 746
	LTE Band 13	777 ~ 787	746 ~ 756
	LTE Band 17	704 ~716	734 ~ 746
	LTE Band 66	1710 ~ 1780	2110 ~ 2180
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 27 (2020)

FCC CFR47 Part 2 (2020)

Reference standard:

ANSI C63.26 (2015)

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 (Z axis, vertical polarization for Low Antenna, X axis, horizontal polarization for Upper Antenna) 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 detail in the following table:

Test modes are chosen to be reported as the worst case configuration below for LTE Band 12/13/17/66:

Test items	Modes	Bandwidth (MHz)						Modulation		RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM/64QAM	1	50%	100%	L	M	H
RF Power Output and Effective Isotropic Radiated Power	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 17	-	-	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
Occupied Bandwidth	LTE 12	O	O	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 13	-	-	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 17	-	-	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 66	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	LTE 12	O	O	O	O	-	-	O	O	O	-	O	O	-	O
	LTE 13	-	-	O	O	-	-	O	O	O	-	O	O	-	O
	LTE 17	-	-	O	O	-	-	O	O	O	-	O	O	-	O
	LTE 66	O	O	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	LTE 12	O	O	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 13	-	-	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 17	-	-	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 66	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	LTE 12	O	O	O	O	-	-	O	O	O	-	-	-	O	-
	LTE 13	-	-	O	O	-	-	O	O	O	-	-	-	O	-
	LTE 17	-	-	O	O	-	-	O	O	O	-	-	-	O	-
	LTE 66	O	O	O	O	O	O	O	O	O	-	-	-	O	-
Spurious Emissions at	LTE 12	O	O	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 13	-	-	O	O	-	-	O	-	O	-	-	O	O	O



Antenna Terminals	LTE 17	-	-	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 66	O	O	O	O	O	O	O	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 12	O	-	O	O	-	-	O	-	O	-	-	-	O	-
	LTE 13	-	-	O	O	-	-	O	-	O	-	-	-	O	-
	LTE 17	-	-	O	O	-	-	O	-	O	-	-	-	O	-
	LTE 66	O	O	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 was connected to the Base Station Simulator with a known loss. The EUT is controlled by the Base Station Simulator test set to ensure max power transmission with proper modulation.

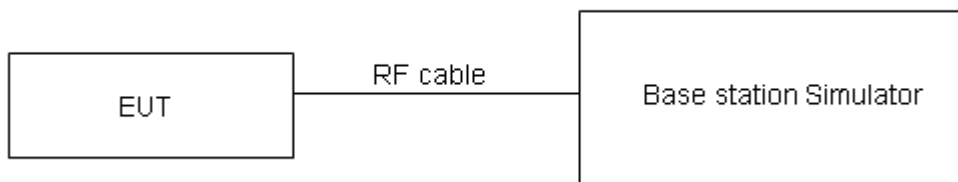
ERP can then be calculated as follows:

$$\text{EIRP (dBm)} = \text{Output Power (dBm)} - \text{Losses (dB)} + \text{Antenna Gain (dBi)}$$

where:dBd refers to gain relative to an ideal dipole.

$$\text{EIRP (dBm)} = \text{ERP (dBm)} + 2.15 \text{ (dB.)}$$

Test Setup



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	$\leq 3 \text{ W}$ (34.77 dBm)
Part 27.50(c)(10)Limit	$\leq 3 \text{ W}$ (34.77 dBm)
Part 27.50(d)(4)Limit	$\leq 1 \text{ W}$ (30 dBm)

Measurement Uncertainty

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



Test Results

LTE Band 12				Maximum Output Power(dBm)			Low Antenna ERP (dBm)			Upper Antenna ERP (dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				23017/699.7	23095/707.5	23173/715.3	23017/699.7	23095/707.5	23173/715.3	23017/699.7	23095/707.5	23173/715.3
1.4MHz	QPSK	1	0	24.53	24.75	24.65	18.08	18.30	18.20	19.38	19.60	19.50
		1	2	24.60	24.66	25.10	18.15	18.21	18.65	19.45	19.51	19.95
		1	5	24.74	24.73	24.75	18.29	18.28	18.30	19.59	19.58	19.60
		3	0	23.54	23.50	23.50	17.09	17.05	17.05	18.39	18.35	18.35
		3	2	23.50	23.52	23.55	17.05	17.07	17.10	18.35	18.37	18.40
		3	3	23.48	23.41	23.50	17.03	16.96	17.05	18.33	18.26	18.35
		6	0	23.46	23.48	23.41	17.01	17.03	16.96	18.31	18.33	18.26
	16QAM	1	0	23.65	23.21	23.29	17.20	16.76	16.84	18.50	18.06	18.14
		1	2	23.64	23.58	23.67	17.19	17.13	17.22	18.49	18.43	18.52
		1	5	23.26	23.27	23.31	16.81	16.82	16.86	18.11	18.12	18.16
		3	0	22.56	22.52	22.58	16.11	16.07	16.13	17.41	17.37	17.43
		3	2	22.61	22.61	22.68	16.16	16.16	16.23	17.46	17.46	17.53
		3	3	22.63	22.66	22.71	16.18	16.21	16.26	17.48	17.51	17.56
		6	0	22.57	22.61	22.68	16.12	16.16	16.23	17.42	17.46	17.53
	64QAM	1	0	22.29	22.23	22.31	15.84	15.78	15.86	17.14	17.08	17.16
		1	2	22.39	22.33	22.42	15.94	15.88	15.97	17.24	17.18	17.27
		1	5	22.43	22.41	22.45	15.98	15.96	16.00	17.28	17.26	17.30
		3	0	21.53	21.45	21.51	15.08	15.00	15.06	16.38	16.30	16.36
		3	2	21.60	21.58	21.65	15.15	15.13	15.20	16.45	16.43	16.50
		3	3	21.56	21.59	21.64	15.11	15.14	15.19	16.41	16.44	16.49
		6	0	21.48	21.52	21.59	15.03	15.07	15.14	16.33	16.37	16.44
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				23025/700.5	23095/707.5	23165/714.5	23025/700.5	23095/707.5	23165/714.5	23025/700.5	23095/707.5	23165/714.5
3MHz	QPSK	1	0	24.49	24.67	24.60	18.04	18.22	18.15	19.34	19.52	19.45
		1	7	24.57	24.61	25.05	18.12	18.16	18.60	19.42	19.46	19.90
		1	14	24.69	24.67	24.68	18.24	18.22	18.23	19.54	19.52	19.53
		8	0	23.49	23.41	23.43	17.04	16.96	16.98	18.34	18.26	18.28
		8	4	23.45	23.43	23.48	17.00	16.98	17.03	18.30	18.28	18.33
		8	7	23.42	23.33	23.42	16.97	16.88	16.97	18.27	18.18	18.27
		15	0	23.41	23.39	23.32	16.96	16.94	16.87	18.26	18.24	18.17



	16QAM	1	0	23.60	23.15	23.22	17.15	16.70	16.77	18.45	18.00	18.07
		1	7	23.58	23.53	23.61	17.13	17.08	17.16	18.43	18.38	18.46
		1	14	23.21	23.20	23.26	16.76	16.75	16.81	18.06	18.05	18.11
		8	0	22.50	22.46	22.52	16.05	16.01	16.07	17.35	17.31	17.37
		8	4	22.55	22.54	22.61	16.10	16.09	16.16	17.40	17.39	17.46
		8	7	22.58	22.57	22.64	16.13	16.12	16.19	17.43	17.42	17.49
		15	0	22.52	22.52	22.61	16.07	16.07	16.16	17.37	17.37	17.46
	64QAM	1	0	22.22	22.17	22.24	15.77	15.72	15.79	17.07	17.02	17.09
		1	7	22.33	22.28	22.36	15.88	15.83	15.91	17.18	17.13	17.21
		1	14	22.38	22.34	22.40	15.93	15.89	15.95	17.23	17.19	17.25
		8	0	21.47	21.39	21.45	15.02	14.94	15.00	16.32	16.24	16.30
		8	4	21.54	21.51	21.58	15.09	15.06	15.13	16.39	16.36	16.43
		8	7	21.51	21.50	21.57	15.06	15.05	15.12	16.36	16.35	16.42
		15	0	21.43	21.43	21.52	14.98	14.98	15.07	16.28	16.28	16.37
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				23035/ 701.5	23095/ 707.5	23155/ 713.5	23035/ 701.5	23095/ 707.5	23155/ 713.5	23035/ 701.5	23095/ 707.5	23155/ 713.5
5MHz	QPSK	1	0	24.46	24.65	24.56	18.01	18.20	18.11	19.31	19.50	19.41
		1	13	24.55	24.57	25.02	18.10	18.12	18.57	19.40	19.42	19.87
		1	24	24.66	24.62	24.64	18.21	18.17	18.19	19.51	19.47	19.49
		12	0	23.46	23.36	23.39	17.01	16.91	16.94	18.31	18.21	18.24
		12	6	23.43	23.39	23.43	16.98	16.94	16.98	18.28	18.24	18.28
		12	13	23.40	23.31	23.38	16.95	16.86	16.93	18.25	18.16	18.23
		25	0	23.41	23.38	23.30	16.96	16.93	16.85	18.26	18.23	18.15
	16QAM	1	0	23.57	23.11	23.19	17.12	16.66	16.74	18.42	17.96	18.04
		1	13	23.55	23.51	23.58	17.10	17.06	17.13	18.40	18.36	18.43
		1	24	23.18	23.18	23.22	16.73	16.73	16.77	18.03	18.03	18.07
		12	0	22.48	22.42	22.49	16.03	15.97	16.04	17.33	17.27	17.34
		12	6	22.52	22.49	22.57	16.07	16.04	16.12	17.37	17.34	17.42
		12	13	22.55	22.52	22.60	16.10	16.07	16.15	17.40	17.37	17.45
		25	0	22.50	22.48	22.56	16.05	16.03	16.11	17.35	17.33	17.41
	64QAM	1	0	22.19	22.17	22.21	15.74	15.72	15.76	17.04	17.02	17.06
		1	13	22.30	22.30	22.33	15.85	15.85	15.88	17.15	17.15	17.18
		1	24	22.39	22.32	22.36	15.94	15.87	15.91	17.24	17.17	17.21
		12	0	21.45	21.35	21.46	15.00	14.90	15.01	16.30	16.20	16.31
		12	6	21.51	21.46	21.54	15.06	15.01	15.09	16.36	16.31	16.39
		12	13	21.48	21.45	21.53	15.03	15.00	15.08	16.33	16.30	16.38



		25	0	21.41	21.39	21.47	14.96	14.94	15.02	16.26	16.24	16.32
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				23060/ 704	23095/ 707.5	23130/ 711	23060/ 704	23095/ 707.5	23130/ 711	23060/ 704	23095/ 707.5	23130/ 711
10MHz	QPSK	1	0	24.44	24.58	24.54	17.99	18.13	18.09	19.29	19.43	19.39
		1	25	24.55	24.57	25.01	18.10	18.12	18.56	19.40	19.42	19.86
		1	49	24.63	24.60	24.60	18.18	18.15	18.15	19.48	19.45	19.45
		25	0	23.44	23.32	23.36	16.99	16.87	16.91	18.29	18.17	18.21
		25	13	23.41	23.35	23.40	16.96	16.90	16.95	18.26	18.20	18.25
		25	25	23.36	23.27	23.35	16.91	16.82	16.90	18.21	18.12	18.20
		50	0	23.40	23.31	23.25	16.95	16.86	16.80	18.25	18.16	18.10
	16QAM	1	0	23.12	23.08	23.14	16.67	16.63	16.69	17.97	17.93	17.99
		1	25	23.52	23.50	23.55	17.07	17.05	17.10	18.37	18.35	18.40
		1	49	23.16	23.13	23.20	16.71	16.68	16.75	18.01	17.98	18.05
		25	0	22.45	22.41	22.47	16.00	15.96	16.02	17.30	17.26	17.32
		25	13	22.48	22.46	22.53	16.03	16.01	16.08	17.33	17.31	17.38
		25	25	22.53	22.48	22.57	16.08	16.03	16.12	17.38	17.33	17.42
		50	0	22.48	22.44	22.53	16.03	15.99	16.08	17.33	17.29	17.38
	64QAM	1	0	22.14	22.10	22.16	15.69	15.65	15.71	16.99	16.95	17.01
		1	25	22.27	22.25	22.30	15.82	15.80	15.85	17.12	17.10	17.15
		1	49	22.33	22.27	22.34	15.88	15.82	15.89	17.18	17.12	17.19
		25	0	21.42	21.34	21.40	14.97	14.89	14.95	16.27	16.19	16.25
		25	13	21.47	21.43	21.50	15.02	14.98	15.05	16.32	16.28	16.35
		25	25	21.46	21.41	21.50	15.01	14.96	15.05	16.31	16.26	16.35
		50	0	21.39	21.35	21.44	14.94	14.90	14.99	16.24	16.20	16.29

LTE Band 13				Maximum Output Power(dBm)			Low Antenna ERP (dBm)			Upper Antenna ERP (dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				23205/779.5	23230/782	23255/784.5	23205/779.5	23230/782	23255/784.5	23205/779.5	23230/782	23255/784.5
5MHz	QPSK	1.00	0.00	23.22	23.11	23.23	17.27	17.16	17.28	17.67	17.56	17.68
		1.00	13.00	23.40	23.28	23.24	17.45	17.33	17.29	17.85	17.73	17.69
		1.00	24.00	23.56	23.43	23.44	17.61	17.48	17.49	18.01	17.88	17.89
		12.00	0.00	22.48	22.36	23.41	16.53	16.41	17.46	16.93	16.81	17.86
		12.00	6.00	22.34	22.21	23.35	16.39	16.26	17.40	16.79	16.66	17.80
		12.00	13.00	22.38	22.25	22.38	16.43	16.30	16.43	16.83	16.70	16.83
		25.00	0.00	22.48	22.36	22.35	16.53	16.41	16.40	16.93	16.81	16.80



	16QAM	1.00	0.00	22.45	22.30	22.41	16.50	16.35	16.46	16.90	16.75	16.86
		1.00	13.00	22.44	22.32	22.34	16.49	16.37	16.39	16.89	16.77	16.79
		1.00	24.00	22.51	22.38	22.48	16.56	16.43	16.53	16.96	16.83	16.93
		12.00	0.00	21.54	21.41	21.45	15.59	15.46	15.50	15.99	15.86	15.90
		12.00	6.00	21.63	21.50	21.60	15.68	15.55	15.65	16.08	15.95	16.05
		12.00	13.00	21.66	21.54	21.61	15.71	15.59	15.66	16.11	15.99	16.06
		25.00	0.00	21.30	21.17	21.20	15.35	15.22	15.25	15.75	15.62	15.65
	64QAM	1.00	0.00	20.87	20.72	20.78	14.92	14.77	14.83	15.32	15.17	15.23
		1.00	13.00	21.32	21.20	21.23	15.37	15.25	15.28	15.77	15.65	15.68
		1.00	24.00	21.92	21.83	21.79	15.97	15.88	15.84	16.37	16.28	16.24
		12.00	0.00	20.43	20.32	20.30	14.48	14.37	14.35	14.88	14.77	14.75
		12.00	6.00	20.59	20.47	20.51	14.64	14.52	14.56	15.04	14.92	14.96
		12.00	13.00	20.53	20.41	20.33	14.58	14.46	14.38	14.98	14.86	14.78
		25.00	0.00	20.59	20.46	20.54	14.64	14.51	14.59	15.04	14.91	14.99
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				/	23230/782	/	/	23230/782	/	/	23230/782	/
10MHz	QPSK	1.00	0.00	/	23.08	/	/	17.13	/	/	17.53	/
		1.00	25.00	/	23.27	/	/	17.32	/	/	17.72	/
		1.00	49.00	/	23.41	/	/	17.46	/	/	17.86	/
		25.00	0.00	/	22.33	/	/	16.38	/	/	16.78	/
		25.00	13.00	/	22.19	/	/	16.24	/	/	16.64	/
		25.00	25.00	/	22.22	/	/	16.27	/	/	16.67	/
		50.00	0.00	/	22.33	/	/	16.38	/	/	16.78	/
	16QAM	1.00	0.00	/	22.26	/	/	16.31	/	/	16.71	/
		1.00	25.00	/	22.28	/	/	16.33	/	/	16.73	/
		1.00	49.00	/	22.36	/	/	16.41	/	/	16.81	/
		25.00	0.00	/	21.38	/	/	15.43	/	/	15.83	/
		25.00	13.00	/	21.47	/	/	15.52	/	/	15.92	/
		25.00	25.00	/	21.51	/	/	15.56	/	/	15.96	/
		50.00	0.00	/	21.15	/	/	15.20	/	/	15.60	/
	64QAM	1.00	0.00	/	20.70	/	/	14.75	/	/	15.15	/
		1.00	25.00	/	21.16	/	/	15.21	/	/	15.61	/
		1.00	49.00	/	21.77	/	/	15.82	/	/	16.22	/
		25.00	0.00	/	20.27	/	/	14.32	/	/	14.72	/
		25.00	13.00	/	20.43	/	/	14.48	/	/	14.88	/
		25.00	25.00	/	20.38	/	/	14.43	/	/	14.83	/
		50.00	0.00	/	20.44	/	/	14.49	/	/	14.89	/



LTE Band 17				Maximum Output Power(dBm)			Low Antenna ERP (dBm)			Upper Antenna ERP (dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				23755/ 706.5	23790/ 710	23825/ 713.5	23755/ 706.5	23790/ 710	23825/ 713.5	23755/ 706.5	23790/ 710	23825/ 713.5
5MHz	QPSK	1	0	24.76	24.65	24.68	18.31	18.20	18.23	19.61	19.50	19.53
		1	13	25.24	25.38	25.27	18.79	18.93	18.82	20.09	20.23	20.12
		1	24	24.79	24.59	24.72	18.34	18.14	18.27	19.64	19.44	19.57
		12	0	23.76	23.57	23.71	17.31	17.12	17.26	18.61	18.42	18.56
		12	6	23.77	23.58	23.61	17.32	17.13	17.16	18.62	18.43	18.46
		12	13	23.65	23.54	23.58	17.20	17.09	17.13	18.50	18.39	18.43
		25	0	23.60	23.68	23.60	17.15	17.23	17.15	18.45	18.53	18.45
	16QAM	1	0	23.56	23.55	23.59	17.11	17.10	17.14	18.41	18.40	18.44
		1	13	23.55	23.51	23.53	17.10	17.06	17.08	18.40	18.36	18.38
		1	24	23.35	23.30	23.33	16.90	16.85	16.88	18.20	18.15	18.18
		12	0	22.62	22.57	22.58	16.17	16.12	16.13	17.47	17.42	17.43
		12	6	22.87	22.80	22.83	16.42	16.35	16.38	17.72	17.65	17.68
		12	13	22.54	22.49	22.51	16.09	16.04	16.06	17.39	17.34	17.36
		25	0	22.62	22.58	22.60	16.17	16.13	16.15	17.47	17.43	17.45
	64QAM	1	0	22.44	22.36	22.40	15.99	15.91	15.95	17.29	17.21	17.25
		1	13	22.64	22.60	22.62	16.19	16.15	16.17	17.49	17.45	17.47
		1	24	22.22	22.17	22.20	15.77	15.72	15.75	17.07	17.02	17.05
		12	0	21.52	21.47	21.48	15.07	15.02	15.03	16.37	16.32	16.33
		12	6	21.77	21.70	21.73	15.32	15.25	15.28	16.62	16.55	16.58
		12	13	21.73	21.68	21.70	15.28	15.23	15.25	16.58	16.53	16.55
		25	0	21.60	21.56	21.58	15.15	15.11	15.13	16.45	16.41	16.43
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				23780/ 709	23790/ 710	23800/ 711	23780/ 709	23790/ 710	23800/ 711	23780/ 709	23790/ 710	23800/ 711
10MHz	QPSK	1	0	24.72	24.57	24.63	18.27	18.12	18.18	19.57	19.42	19.48
		1	25	25.21	25.33	25.22	18.76	18.88	18.77	20.06	20.18	20.07
		1	49	24.74	24.53	24.65	18.29	18.08	18.20	19.59	19.38	19.50
		25	0	23.71	23.48	23.64	17.26	17.03	17.19	18.56	18.33	18.49
		25	13	23.72	23.49	23.54	17.27	17.04	17.09	18.57	18.34	18.39
		25	25	23.59	23.46	23.50	17.14	17.01	17.05	18.44	18.31	18.35
		50	0	23.55	23.59	23.51	17.10	17.14	17.06	18.40	18.44	18.36
	16QAM	1	0	23.56	23.49	23.52	17.11	17.04	17.07	18.41	18.34	18.37



		1	25	23.49	23.46	23.47	17.04	17.01	17.02	18.34	18.31	18.32
		1	49	23.30	23.23	23.28	16.85	16.78	16.83	18.15	18.08	18.13
		25	0	22.56	22.51	22.52	16.11	16.06	16.07	17.41	17.36	17.37
		25	13	22.81	22.73	22.76	16.36	16.28	16.31	17.66	17.58	17.61
		25	25	22.49	22.40	22.44	16.04	15.95	15.99	17.34	17.25	17.29
		50	0	22.57	22.49	22.53	16.12	16.04	16.08	17.42	17.34	17.38
	64QAM	1	0	22.37	22.30	22.33	15.92	15.85	15.88	17.22	17.15	17.18
		1	25	22.58	22.55	22.56	16.13	16.10	16.11	17.43	17.40	17.41
		1	49	22.17	22.10	22.15	15.72	15.65	15.70	17.02	16.95	17.00
		25	0	21.46	21.41	21.42	15.01	14.96	14.97	16.31	16.26	16.27
		25	13	21.71	21.63	21.66	15.26	15.18	15.21	16.56	16.48	16.51
		25	25	21.68	21.59	21.63	15.23	15.14	15.18	16.53	16.44	16.48
		50	0	21.55	21.47	21.51	15.10	15.02	15.06	16.40	16.32	16.36

LTE Band 66				Maximum Output Power(dBm)			Low Antenna EIRP (dBm)			Upper Antenna EIRP (dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				131979 /1710.7	132322 /1745	132665 /1779.3	131979 /1710.7	132322 /1745	132665 /1779.3	131979 /1710.7	132322 /1745	132665 /1779.3
1.4MHz	QPSK	1	0	22.87	23.32	23.00	22.48	22.93	22.61	23.67	24.12	23.80
		1	2	23.14	23.52	23.19	22.75	23.13	22.80	23.94	24.32	23.99
		1	5	23.03	23.46	23.06	22.64	23.07	22.67	23.83	24.26	23.86
		3	0	21.70	22.02	21.78	21.31	21.63	21.39	22.50	22.82	22.58
		3	2	21.80	21.98	21.64	21.41	21.59	21.25	22.60	22.78	22.44
		3	3	21.72	21.96	21.74	21.33	21.57	21.35	22.52	22.76	22.54
		6	0	21.79	21.98	21.83	21.40	21.59	21.44	22.59	22.78	22.63
	16QAM	1	0	21.86	21.86	21.81	21.47	21.47	21.42	22.66	22.66	22.61
		1	2	21.89	21.86	21.84	21.50	21.47	21.45	22.69	22.66	22.64
		1	5	21.49	21.49	21.47	21.10	21.10	21.08	22.29	22.29	22.27
		3	0	20.73	20.73	20.72	20.34	20.34	20.33	21.53	21.53	21.52
		3	2	20.73	20.73	20.70	20.34	20.34	20.31	21.53	21.53	21.50
		3	3	20.72	20.73	20.67	20.33	20.34	20.28	21.52	21.53	21.47
		6	0	20.74	20.77	20.75	20.35	20.38	20.36	21.54	21.57	21.55
	64QAM	1	0	20.62	20.62	20.57	20.23	20.23	20.18	21.42	21.42	21.37
		1	2	20.66	20.63	20.61	20.27	20.24	20.22	21.46	21.43	21.41
		1	5	20.20	20.20	20.18	19.81	19.81	19.79	21.00	21.00	20.98
		3	0	19.62	19.62	19.61	19.23	19.23	19.22	20.42	20.42	20.41



		3	2	19.61	19.61	19.58	19.22	19.22	19.19	20.41	20.41	20.38
		3	3	19.68	19.69	19.63	19.29	19.30	19.24	20.48	20.49	20.43
		6	0	19.79	19.79	19.77	19.40	19.40	19.38	20.59	20.59	20.57
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				131987 /1711.5	132322 /1745	132657 /1778.5	131987 /1711.5	132322 /1745	132657 /1778.5	131987 /1711.5	132322 /1745	132657 /1778.5
3MHz	QPSK	1	0	22.87	23.31	23.00	22.48	22.92	22.61	23.67	24.11	23.80
		1	7	23.13	23.54	23.21	22.74	23.15	22.82	23.93	24.34	24.01
		1	14	23.02	23.45	23.05	22.63	23.06	22.66	23.82	24.25	23.85
		8	0	21.72	22.05	21.82	21.33	21.66	21.43	22.52	22.85	22.62
		8	4	21.81	22.02	21.65	21.42	21.63	21.26	22.61	22.82	22.45
		8	7	21.73	22.00	21.75	21.34	21.61	21.36	22.53	22.80	22.55
		15	0	21.82	21.99	21.83	21.43	21.60	21.44	22.62	22.79	22.63
	16QAM	1	0	21.83	21.85	21.81	21.44	21.46	21.42	22.63	22.65	22.61
		1	7	21.90	21.87	21.86	21.51	21.48	21.47	22.70	22.67	22.66
		1	14	21.48	21.49	21.46	21.09	21.10	21.07	22.28	22.29	22.26
		8	0	20.76	20.76	20.73	20.37	20.37	20.34	21.56	21.56	21.53
		8	4	20.74	20.74	20.71	20.35	20.35	20.32	21.54	21.54	21.51
		8	7	20.74	20.75	20.71	20.35	20.36	20.32	21.54	21.55	21.51
		15	0	20.75	20.77	20.73	20.36	20.38	20.34	21.55	21.57	21.53
	64QAM	1	0	20.59	20.61	20.57	20.20	20.22	20.18	21.39	21.41	21.37
		1	7	20.67	20.64	20.63	20.28	20.25	20.24	21.47	21.44	21.43
		1	14	20.19	20.20	20.17	19.80	19.81	19.78	20.99	21.00	20.97
		8	0	19.65	19.65	19.62	19.26	19.26	19.23	20.45	20.45	20.42
		8	4	19.62	19.62	19.59	19.23	19.23	19.20	20.42	20.42	20.39
		8	7	19.70	19.71	19.67	19.31	19.32	19.28	20.50	20.51	20.47
		15	0	19.79	19.81	19.77	19.40	19.42	19.38	20.59	20.61	20.57
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				131997 /1712.5	132322 /1745	132647 /1777.5	131997 /1712.5	132322 /1745	132647 /1777.5	131997 /1712.5	132322 /1745	132647 /1777.5
5MHz	QPSK	1	0	22.87	23.33	23.01	22.48	22.94	22.62	23.67	24.13	23.81
		1	13	23.13	23.54	23.22	22.74	23.15	22.83	23.93	24.34	24.02
		1	24	23.04	23.48	23.08	22.65	23.09	22.69	23.84	24.28	23.88
		12	0	21.72	22.08	21.83	21.33	21.69	21.44	22.52	22.88	22.63
		12	6	21.83	22.05	21.68	21.44	21.66	21.29	22.63	22.85	22.48
		12	13	21.74	21.99	21.78	21.35	21.60	21.39	22.54	22.79	22.58
		25	0	21.79	22.02	21.85	21.40	21.63	21.46	22.59	22.82	22.65



	16QAM	1	0	21.85	21.82	21.81	21.46	21.43	21.42	22.65	22.62	22.61
		1	13	21.91	21.89	21.83	21.52	21.50	21.44	22.71	22.69	22.63
		1	24	21.49	21.49	21.48	21.10	21.10	21.09	22.29	22.29	22.28
		12	0	20.74	20.77	20.73	20.35	20.38	20.34	21.54	21.57	21.53
		12	6	20.74	20.74	20.73	20.35	20.35	20.34	21.54	21.54	21.53
		12	13	20.75	20.78	20.69	20.36	20.39	20.30	21.55	21.58	21.49
		25	0	20.74	20.79	20.73	20.35	20.40	20.34	21.54	21.59	21.53
	64QAM	1	0	20.62	20.59	20.58	20.23	20.20	20.19	21.42	21.39	21.38
		1	13	20.68	20.65	20.62	20.29	20.26	20.23	21.48	21.45	21.42
		1	24	20.19	20.19	20.18	19.80	19.80	19.79	20.99	20.99	20.98
		12	0	19.67	19.66	19.60	19.28	19.27	19.21	20.47	20.46	20.40
		12	6	19.61	19.64	19.59	19.22	19.25	19.20	20.41	20.44	20.39
		12	13	19.70	19.71	19.69	19.31	19.32	19.30	20.50	20.51	20.49
		25	0	19.81	19.84	19.78	19.42	19.45	19.39	20.61	20.64	20.58
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				132022 /1715	132322 /1745	132622 /1775	132022 /1715	132322 /1745	132622 /1775	132022 /1715	132322 /1745	132622 /1775
10MHz	QPSK	1	0	22.86	23.34	22.99	22.47	22.95	22.60	23.66	24.14	23.79
		1	25	23.12	23.50	23.20	22.73	23.11	22.81	23.92	24.30	24.00
		1	49	23.03	23.46	23.06	22.64	23.07	22.67	23.83	24.26	23.86
		25	0	21.71	22.04	21.81	21.32	21.65	21.42	22.51	22.84	22.61
		25	13	21.81	22.02	21.65	21.42	21.63	21.26	22.61	22.82	22.45
		25	25	21.74	21.99	21.74	21.35	21.60	21.35	22.54	22.79	22.54
		50	0	21.79	22.01	21.84	21.40	21.62	21.45	22.59	22.81	22.64
	16QAM	1	0	21.86	21.84	21.81	21.47	21.45	21.42	22.66	22.64	22.61
		1	25	21.89	21.86	21.85	21.50	21.47	21.46	22.69	22.66	22.65
		1	49	21.48	21.51	21.46	21.09	21.12	21.07	22.28	22.31	22.26
		25	0	20.76	20.73	20.72	20.37	20.34	20.33	21.56	21.53	21.52
		25	13	20.75	20.75	20.72	20.36	20.36	20.33	21.55	21.55	21.52
		25	25	20.73	20.74	20.70	20.34	20.35	20.31	21.53	21.54	21.50
		50	0	20.75	20.77	20.73	20.36	20.38	20.34	21.55	21.57	21.53
	64QAM	1	0	20.62	20.60	20.57	20.23	20.21	20.18	21.42	21.40	21.37
		1	25	20.66	20.63	20.62	20.27	20.24	20.23	21.46	21.43	21.42
		1	49	20.19	20.22	20.17	19.80	19.83	19.78	20.99	21.02	20.97
		25	0	19.65	19.62	19.61	19.26	19.23	19.22	20.45	20.42	20.41
		25	13	19.63	19.63	19.60	19.24	19.24	19.21	20.43	20.43	20.40
		25	25	19.69	19.70	19.66	19.30	19.31	19.27	20.49	20.50	20.46



		50	0	19.79	19.81	19.77	19.40	19.42	19.38	20.59	20.61	20.57
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				132047 /1717.5	132322 /1745	132597 /1772.5	132047 /1717.5	132322 /1745	132597 /1772.5	132047 /1717.5	132322 /1745	132597 /1772.5
15MHz	QPSK	1	0	22.89	23.36	23.03	22.50	22.97	22.64	23.69	24.16	23.83
		1	38	23.14	23.53	23.23	22.75	23.14	22.84	23.94	24.33	24.03
		1	74	23.06	23.51	23.10	22.67	23.12	22.71	23.86	24.31	23.90
		36	0	21.74	22.09	21.85	21.35	21.70	21.46	22.54	22.89	22.65
		36	18	21.83	22.06	21.70	21.44	21.67	21.31	22.63	22.86	22.50
		36	39	21.76	22.01	21.78	21.37	21.62	21.39	22.56	22.81	22.58
		75	0	21.81	22.02	21.86	21.42	21.63	21.47	22.61	22.82	22.66
	16QAM	1	0	21.89	21.88	21.84	21.50	21.49	21.45	22.69	22.68	22.64
		1	38	21.92	21.88	21.88	21.53	21.49	21.49	22.72	22.68	22.68
		1	74	21.51	21.53	21.50	21.12	21.14	21.11	22.31	22.33	22.30
		36	0	20.78	20.77	20.75	20.39	20.38	20.36	21.58	21.57	21.55
		36	18	20.78	20.80	20.76	20.39	20.41	20.37	21.58	21.60	21.56
		36	39	20.76	20.79	20.74	20.37	20.40	20.35	21.56	21.59	21.54
		75	0	20.77	20.81	20.78	20.38	20.42	20.39	21.57	21.61	21.58
	64QAM	1	0	20.65	20.64	20.60	20.26	20.25	20.21	21.45	21.44	21.40
		1	38	20.69	20.65	20.65	20.30	20.26	20.26	21.49	21.45	21.45
		1	74	20.22	20.24	20.21	19.83	19.85	19.82	21.02	21.04	21.01
		36	0	19.67	19.66	19.64	19.28	19.27	19.25	20.47	20.46	20.44
		36	18	19.66	19.68	19.64	19.27	19.29	19.25	20.46	20.48	20.44
		36	39	19.72	19.75	19.70	19.33	19.36	19.31	20.52	20.55	20.50
		75	0	19.81	19.85	19.82	19.42	19.46	19.43	20.61	20.65	20.62
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				132072 /1720	132322 /1745	132572 /1770	132072 /1720	132322 /1745	132572 /1770	132072 /1720	132322 /1745	132572 /1770
20MHz	QPSK	1	0	22.84	23.27	22.97	22.45	22.88	22.58	23.64	24.07	23.77
		1	50	23.12	23.50	23.19	22.73	23.11	22.80	23.92	24.30	23.99
		1	99	23.00	23.44	23.02	22.61	23.05	22.63	23.80	24.24	23.82
		50	0	21.69	22.00	21.78	21.30	21.61	21.39	22.49	22.80	22.58
		50	25	21.79	21.98	21.62	21.40	21.59	21.23	22.59	22.78	22.42
		50	50	21.70	21.95	21.71	21.31	21.56	21.32	22.50	22.75	22.51
		100	0	21.79	21.94	21.79	21.40	21.55	21.40	22.59	22.74	22.59
	16QAM	1	0	21.81	21.81	21.76	21.42	21.42	21.37	22.61	22.61	22.56
		1	50	21.86	21.85	21.82	21.47	21.46	21.43	22.66	22.65	22.62



		1	99	21.46	21.46	21.44	21.07	21.07	21.05	22.26	22.26	22.24
		50	0	20.73	20.72	20.70	20.34	20.33	20.31	21.53	21.52	21.50
		50	25	20.71	20.72	20.68	20.32	20.33	20.29	21.51	21.52	21.48
		50	50	20.71	20.70	20.67	20.32	20.31	20.28	21.51	21.50	21.47
		100	0	20.73	20.73	20.70	20.34	20.34	20.31	21.53	21.53	21.50
	64QAM	1	0	20.57	20.57	20.52	20.18	20.18	20.13	21.37	21.37	21.32
		1	50	20.63	20.62	20.59	20.24	20.23	20.20	21.43	21.42	21.39
		1	99	20.17	20.17	20.15	19.78	19.78	19.76	20.97	20.97	20.95
		50	0	19.62	19.61	19.59	19.23	19.22	19.20	20.42	20.41	20.39
		50	25	19.59	19.60	19.56	19.20	19.21	19.17	20.39	20.40	20.36
		50	50	19.67	19.66	19.63	19.28	19.27	19.24	20.47	20.46	20.43
		100	0	19.77	19.77	19.74	19.38	19.38	19.35	20.57	20.57	20.54

5.2 Occupied Bandwidth

Ambient condition

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

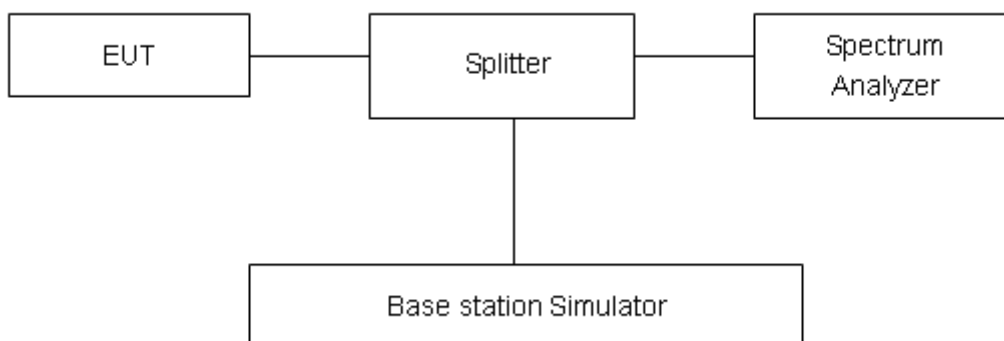
Method of Measurement

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 $\geq 1\%EBW$, VBW is set to 3x RBW.

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 $k = 2$, $U=624\text{Hz}$.



Test Result

LTE Band 12						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	23017	699.7	1.094	1.286
			23095	707.5	1.092	1.275
			23173	715.3	1.094	1.309
		3	23025	700.5	2.702	3.002
			23095	707.5	2.687	2.981
			23165	714.5	2.706	2.983
		5	23035	701.5	4.514	4.977
			23095	707.5	4.512	4.900
			23155	713.5	4.503	4.977
		10	23060	704	8.967	9.833
			23095	707.5	8.949	9.698
			23130	711	8.959	9.767
	16QAM	1.4	23017	699.7	1.097	1.291
			23095	707.5	1.099	1.297
			23173	715.3	1.099	1.262
		3	23025	700.5	2.692	2.975
			23095	707.5	2.694	2.983
			23165	714.5	2.696	2.980
		5	23035	701.5	4.491	4.941
			23095	707.5	4.497	5.000
			23155	713.5	4.509	4.943
		10	23060	704	8.958	9.790
			23095	707.5	8.964	9.740
			23130	711	8.966	9.745
	64QAM	1.4	23017	699.7	1.093	1.291
			23095	707.5	1.094	1.295
			23173	715.3	1.090	1.289
		3	23025	700.5	2.694	2.991
			23095	707.5	2.706	2.973
			23165	714.5	2.698	2.993
		5	23035	701.5	4.498	4.979
			23095	707.5	4.513	4.952
			23155	713.5	4.510	4.964
		10	23060	704	9.005	9.783
			23095	707.5	8.946	9.717
			23130	711	8.981	9.846



LTE Band 13						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	23205	779.5	4.507	4.972
			23230	782	4.508	4.974
			23255	784.5	4.509	4.980
		10	23230	782	8.973	9.765
	16QAM	5	23205	779.5	4.513	4.961
			23230	782	4.501	4.975
			23255	784.5	4.512	4.954
		10	23230	782	8.977	9.771
	64QAM	5	23205	779.5	4.517	4.987
			23230	782	4.511	4.997
			23255	784.5	4.517	4.934
		10	23230	782	8.986	9.718

LTE Band 17						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	23755	706.5	4.505	4.966
			23790	710	4.497	4.987
			23825	713.5	4.509	5.005
		10	23780	709	8.955	9.748
			23790	710	8.941	9.850
			23800	711	8.971	9.629
	16QAM	5	23755	706.5	4.506	5.019
			23790	710	4.498	4.964
			23825	713.5	4.514	4.938
		10	23780	709	8.958	9.750
			23790	710	8.969	9.775
			23800	711	8.957	9.846
	64QAM	5	23755	706.5	4.506	4.988
			23790	710	4.506	4.972
			23825	713.5	4.499	5.005
		10	23780	709	9.006	9.791
			23790	710	8.981	9.732
			23800	711	8.939	9.803

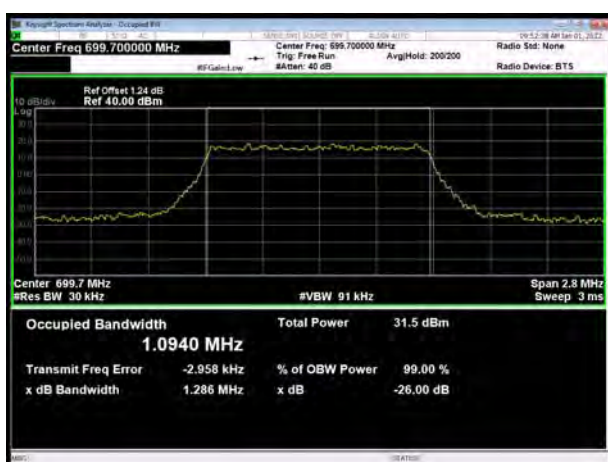


LTE Band 66						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	131979	1710.7	1.102	1.271
			132322	1745	1.098	1.299
			132665	1779.3	1.096	1.293
		3	131987	1711.5	2.710	2.969
			132322	1745	2.714	2.998
			132657	1778.5	2.710	2.961
		5	131997	1712.5	4.509	4.881
			132322	1745	4.501	4.946
			132647	1777.5	4.507	4.908
		10	132022	1715	8.963	9.820
			132322	1745	8.965	9.774
			132622	1775	8.987	9.842
		15	132047	1717.5	13.413	14.672
			132322	1745	13.381	14.454
			132597	1772.5	13.412	14.661
		20	132072	1720	17.927	19.339
			132322	1745	17.892	19.349
			132572	1770	17.885	19.205
	16QAM	1.4	131979	1710.7	1.096	1.287
			132322	1745	1.096	1.282
			132665	1779.3	1.098	1.270
		3	131987	1711.5	2.691	3.005
			132322	1745	2.694	2.973
			132657	1778.5	2.702	2.971
		5	131997	1712.5	4.511	4.937
			132322	1745	4.491	5.007
			132647	1777.5	4.508	4.997
		10	132022	1715	8.976	9.758
			132322	1745	8.964	9.643
			132622	1775	8.972	9.897
		15	132047	1717.5	13.386	14.645
			132322	1745	13.416	14.457
			132597	1772.5	13.400	14.469
		20	132072	1720	17.857	19.291
			132322	1745	17.865	19.441
			132572	1770	17.921	19.523
	64QAM	1.4	131979	1710.7	1.094	1.286



			132322	1745	1.095	1.296
			132665	1779.3	1.093	1.278
		3	131987	1711.5	2.690	3.014
			132322	1745	2.702	2.985
			132657	1778.5	2.701	2.991
		5	131997	1712.5	4.503	4.984
			132322	1745	4.503	4.950
			132647	1777.5	4.497	5.030
		10	132022	1715	8.984	9.827
			132322	1745	8.946	9.764
			132622	1775	8.977	9.717
		15	132047	1717.5	13.416	14.434
			132322	1745	13.441	14.511
			132597	1772.5	13.451	14.402
		20	132072	1720	17.916	19.376
			132322	1745	17.900	19.441
			132572	1770	17.910	19.232

LTE Band 12 QPSK 1.4MHz CH-Low



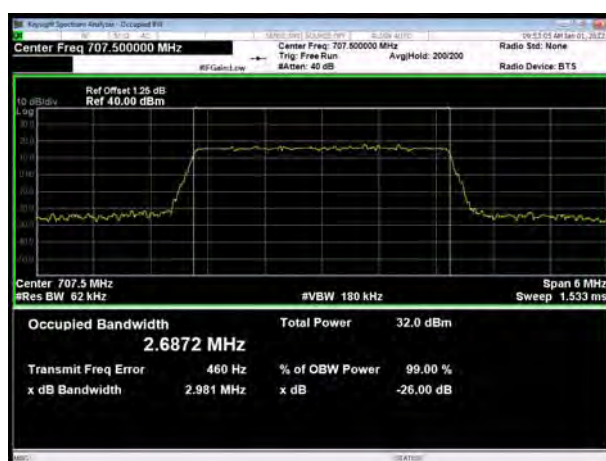
LTE Band 12 QPSK 3MHz CH-Low



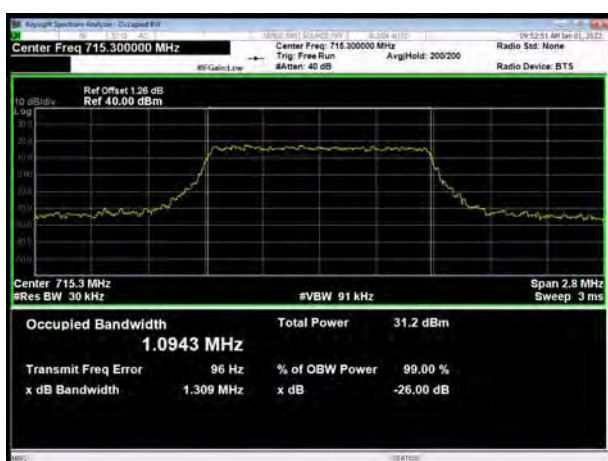
LTE Band 12 QPSK 1.4MHz CH-Middle



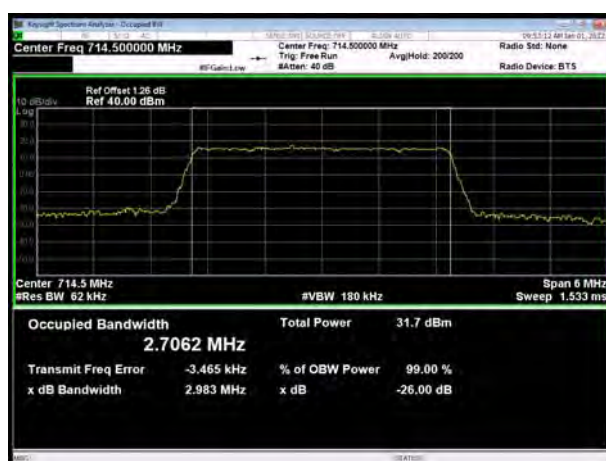
LTE Band 12 QPSK 3MHz CH-Middle



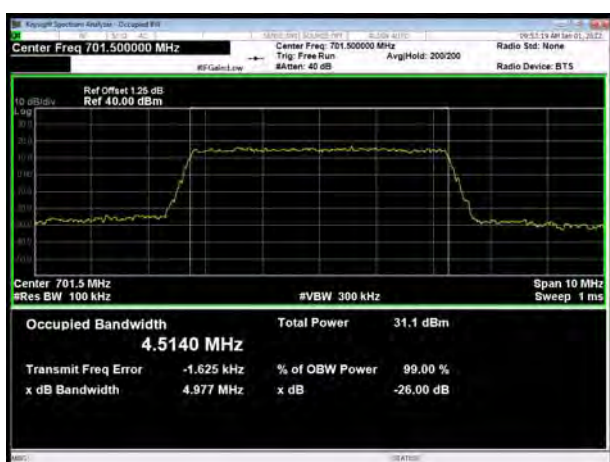
LTE Band 12 QPSK 1.4MHz CH-High



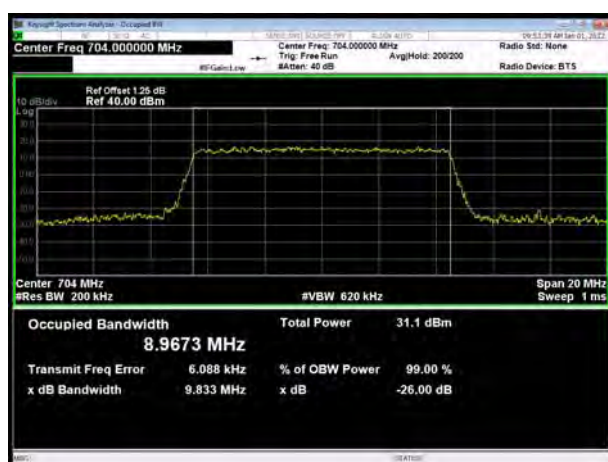
LTE Band 12 QPSK 3MHz CH-High



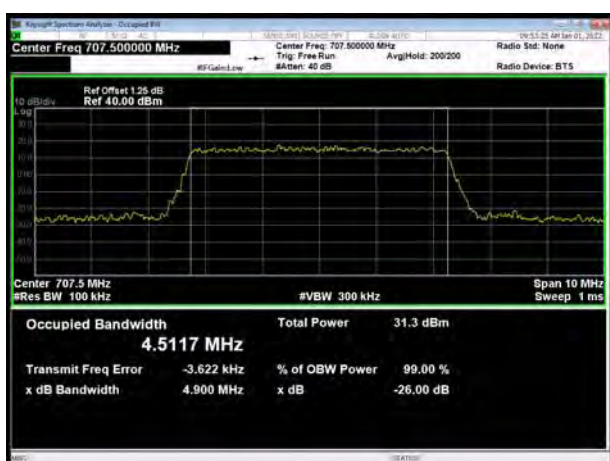
LTE Band 12 QPSK 5MHz CH-Low



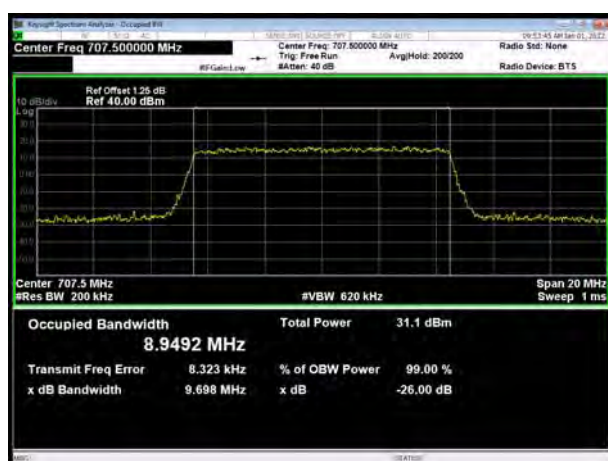
LTE Band 12 QPSK 10MHz CH-Low



LTE Band 12 QPSK 5MHz CH-Middle



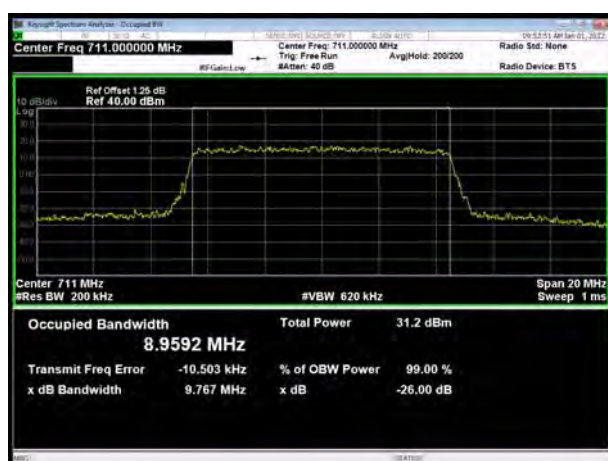
LTE Band 12 QPSK 10MHz CH-Middle



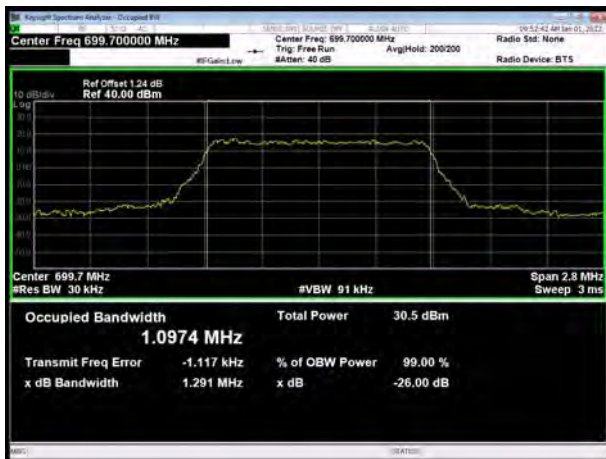
LTE Band 12 QPSK 5MHz CH-High



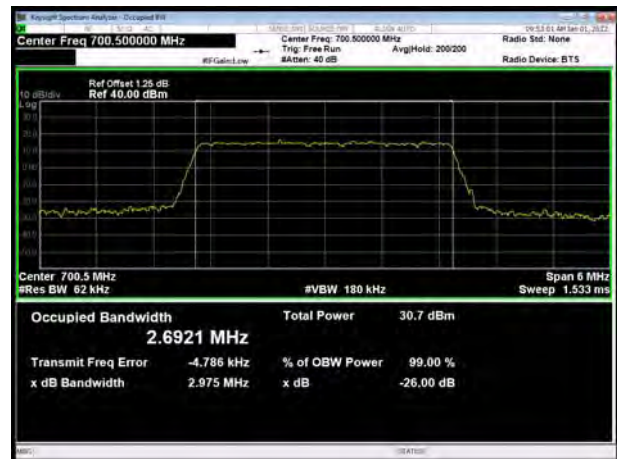
LTE Band 12 QPSK 10MHz CH-High



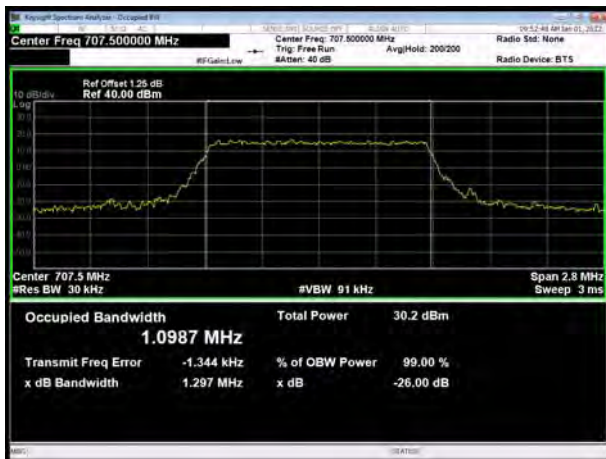
LTE Band 12 16QAM 1.4MHz CH-Low



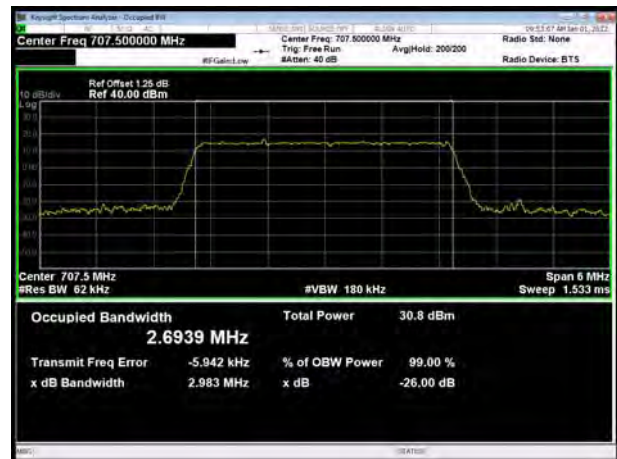
LTE Band 12 16QAM 3MHz CH-Low



LTE Band 12 16QAM 1.4MHz CH-Middle



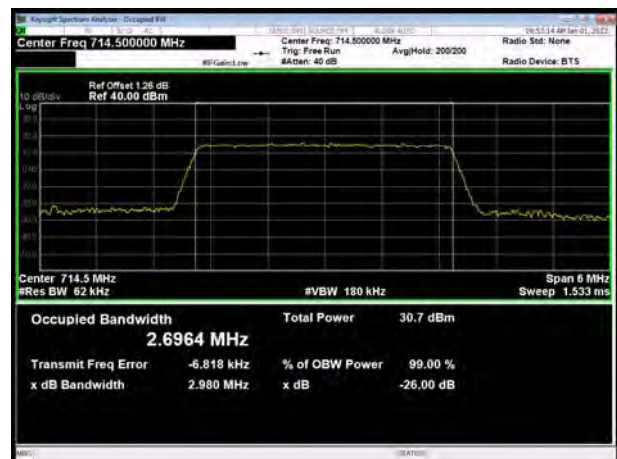
LTE Band 12 16QAM 3MHz CH-Middle



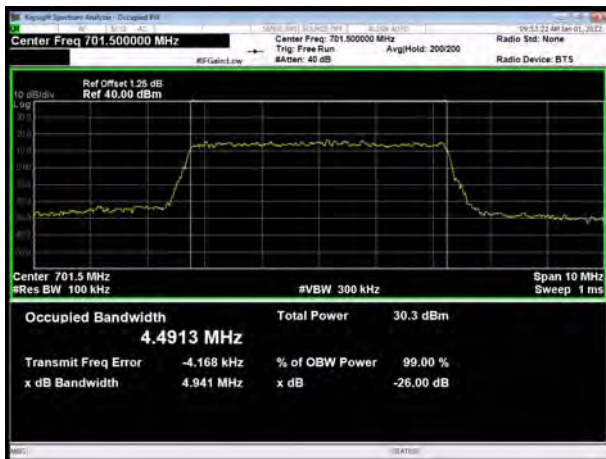
LTE Band 12 16QAM 1.4MHz CH-High



LTE Band 12 16QAM 3MHz CH-High



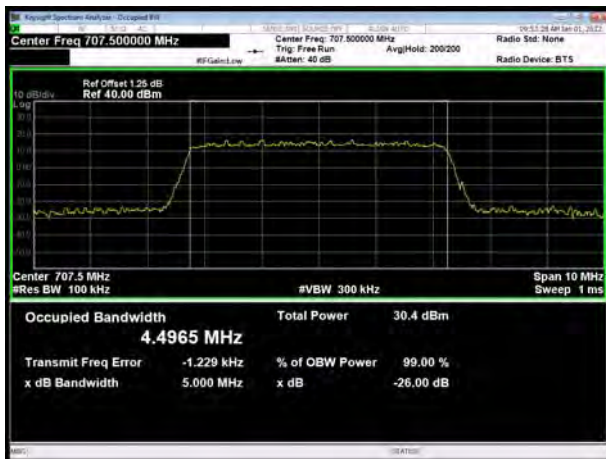
LTE Band 12 16QAM 5MHz CH-Low



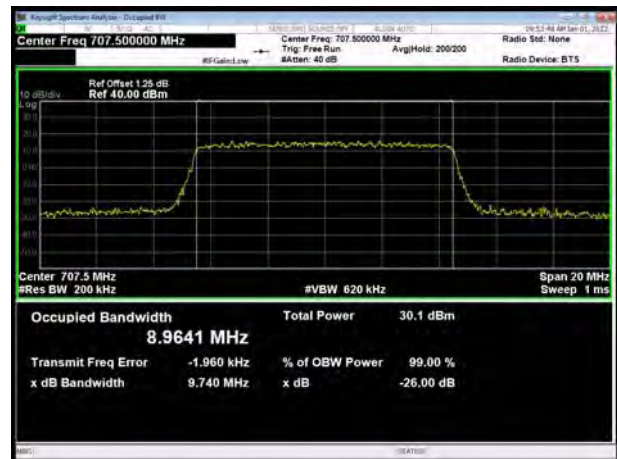
LTE Band 12 16QAM 10MHz CH-Low



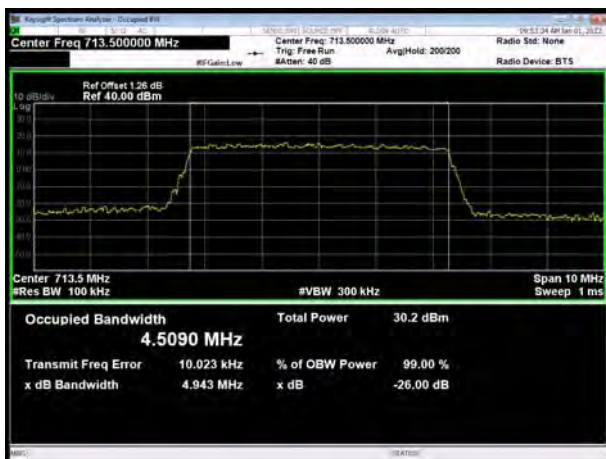
LTE Band 12 16QAM 5MHz CH-Middle



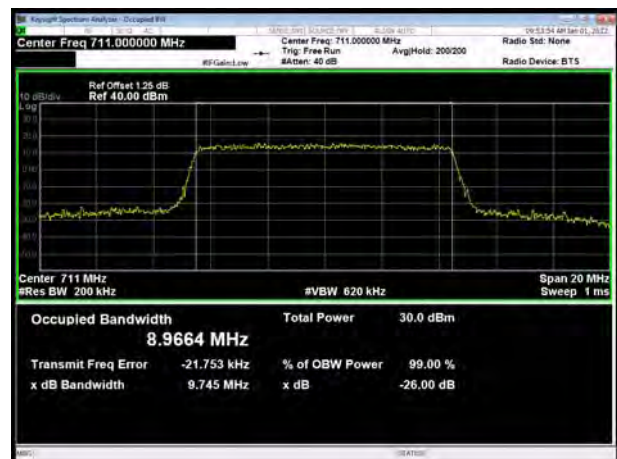
LTE Band 12 16QAM 10MHz CH-Middle



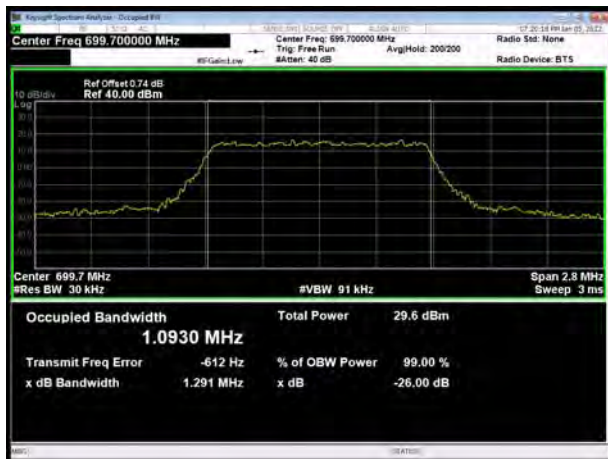
LTE Band 12 16QAM 5MHz CH-High



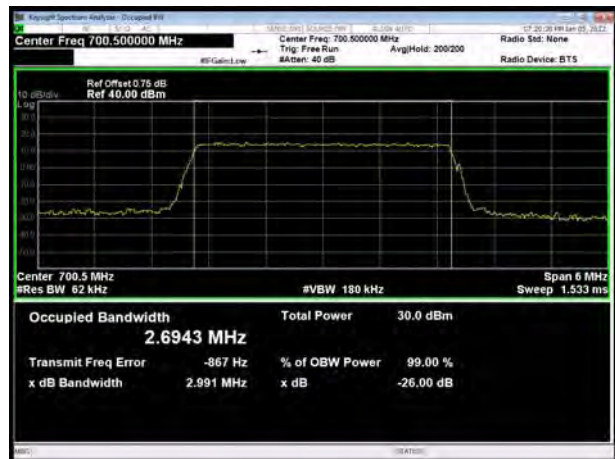
LTE Band 12 16QAM 10MHz CH-High



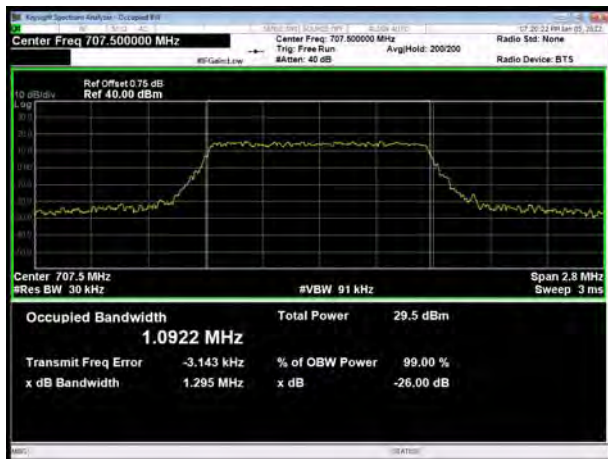
LTE Band 12 64QAM 1.4MHz CH-Low



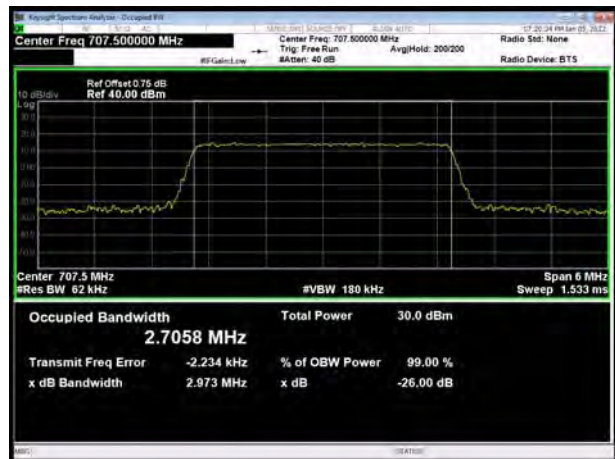
LTE Band 12 64QAM 3MHz CH-Low



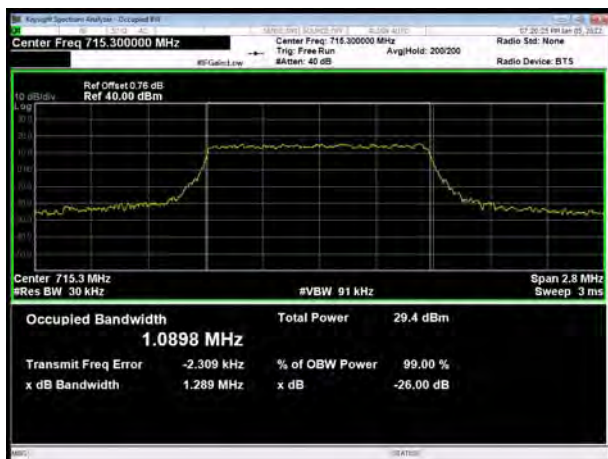
LTE Band 12 64QAM 1.4MHz CH-Middle



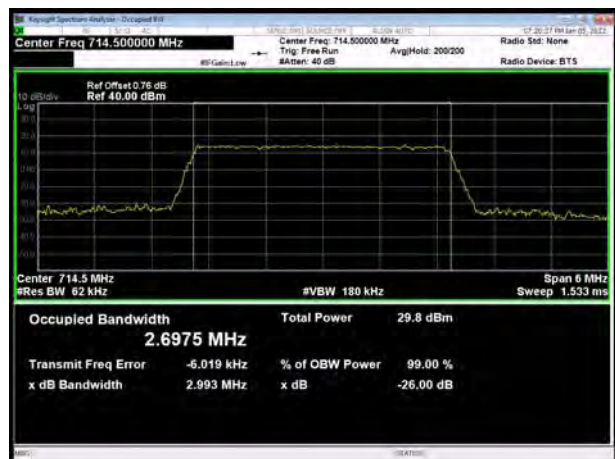
LTE Band 12 64QAM 3MHz CH-Middle



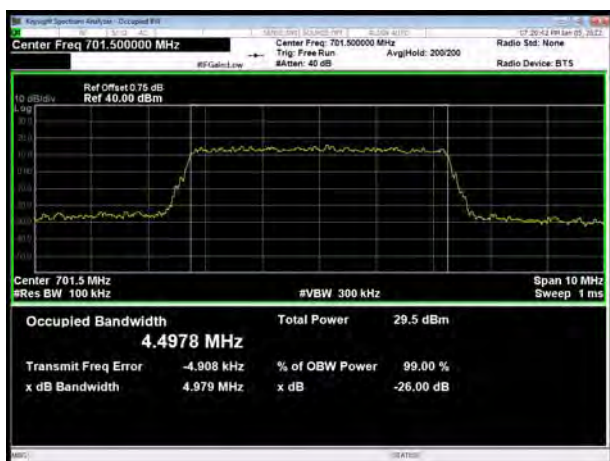
LTE Band 12 64QAM 1.4MHz CH-High



LTE Band 12 64QAM 3MHz CH-High



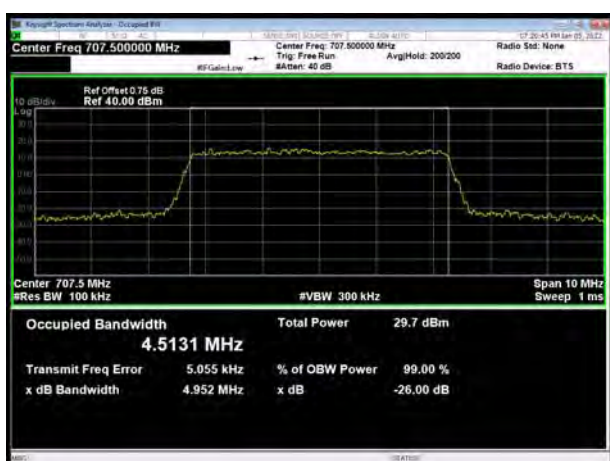
LTE Band 12 64QAM 5MHz CH-Low



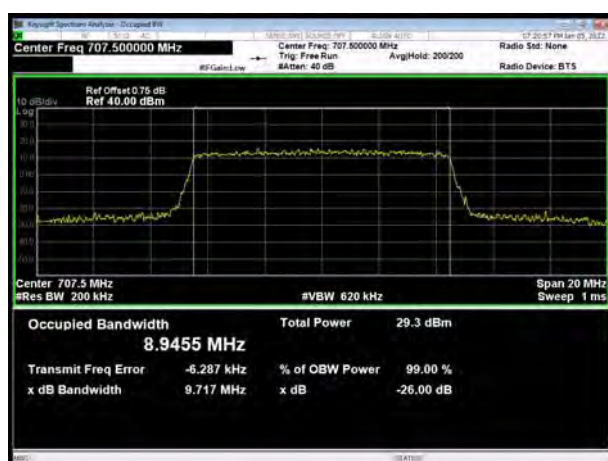
LTE Band 12 64QAM 10MHz CH-Low



LTE Band 12 64QAM 5MHz CH-Middle



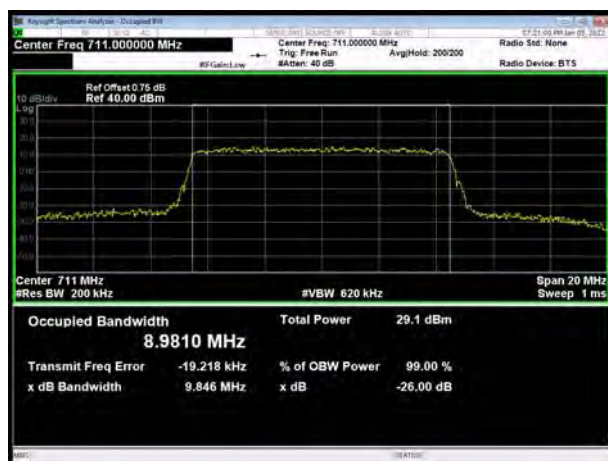
LTE Band 12 64QAM 10MHz CH-Middle



LTE Band 12 64QAM 5MHz CH-High



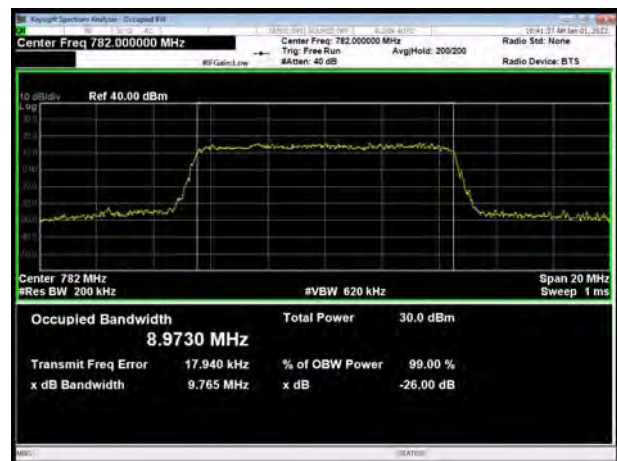
LTE Band 12 64QAM 10MHz CH-High



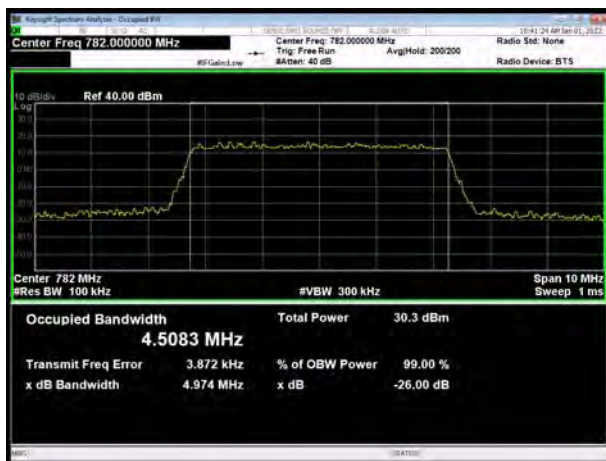
LTE Band 13 QPSK 5MHz CH-Low



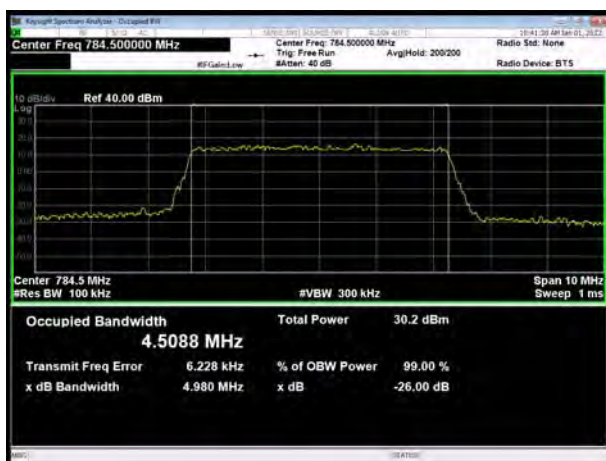
LTE Band 13 QPSK 10MHz CH-Middle



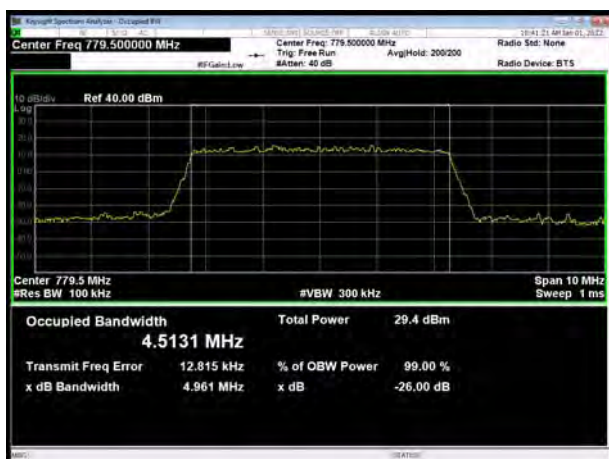
LTE Band 13 QPSK 5MHz CH-Middle



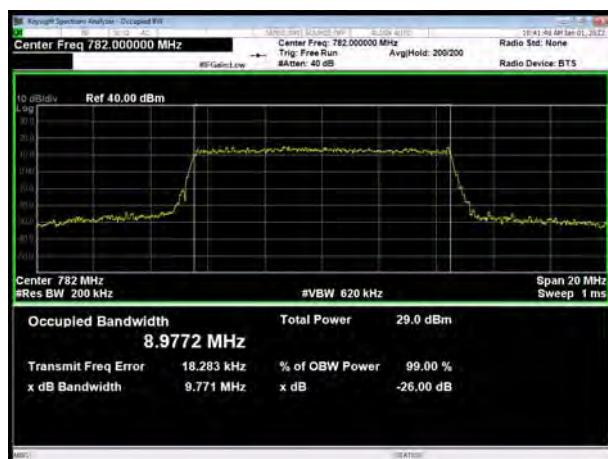
LTE Band 13 QPSK 5MHz CH-High



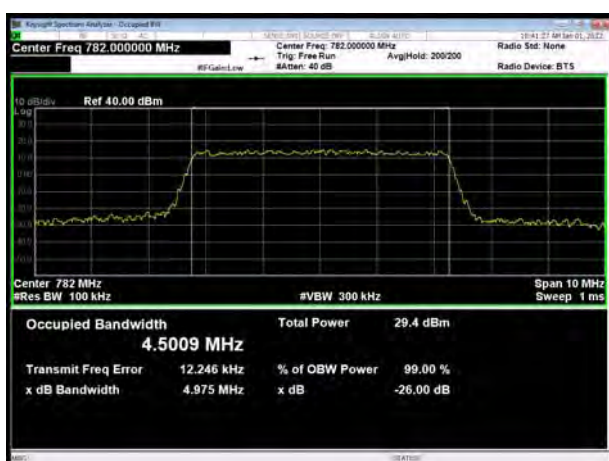
LTE Band 13 16QAM 5MHz CH-Low



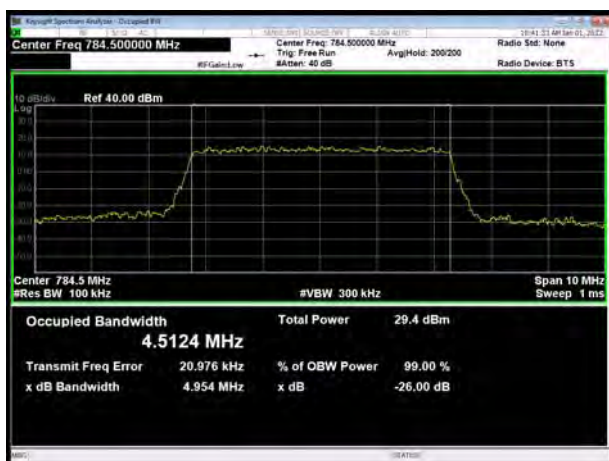
LTE Band 13 16QAM 10MHz CH-Middle



LTE Band 13 16QAM 5MHz CH-Middle

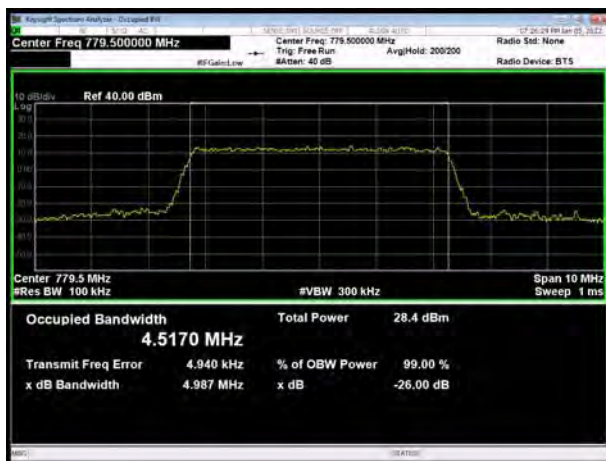


LTE Band 13 16QAM 5MHz CH-High

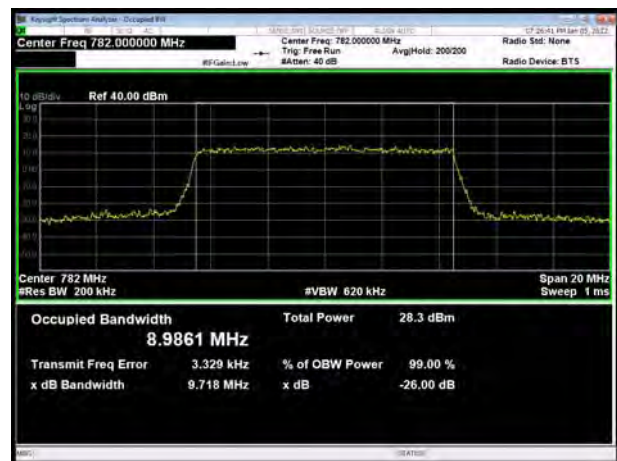




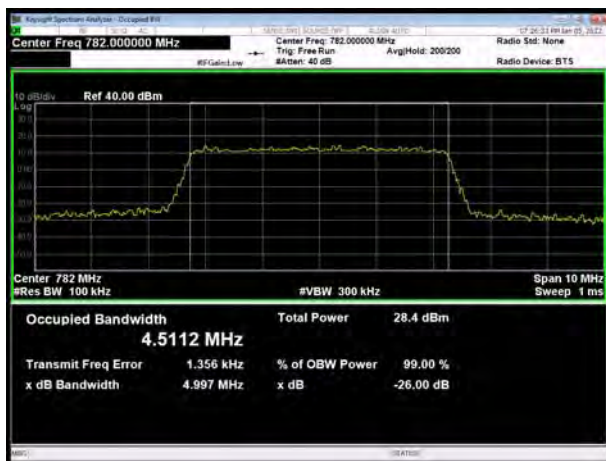
LTE Band 13 64QAM 5MHz CH-Low



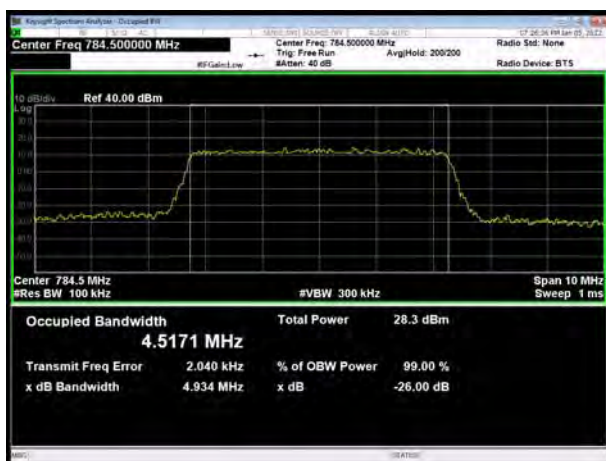
LTE Band 13 64QAM 10MHz CH-Middle



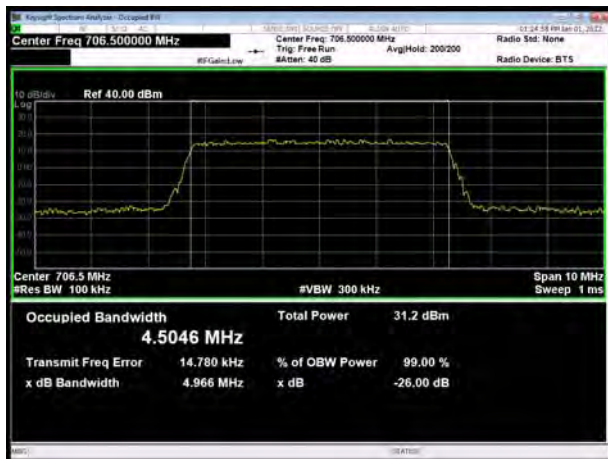
LTE Band 13 64QAM 5MHz CH-Middle



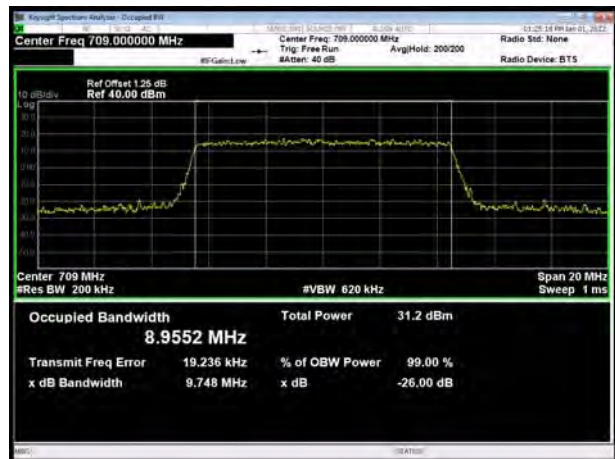
LTE Band 13 64QAM 5MHz CH-High



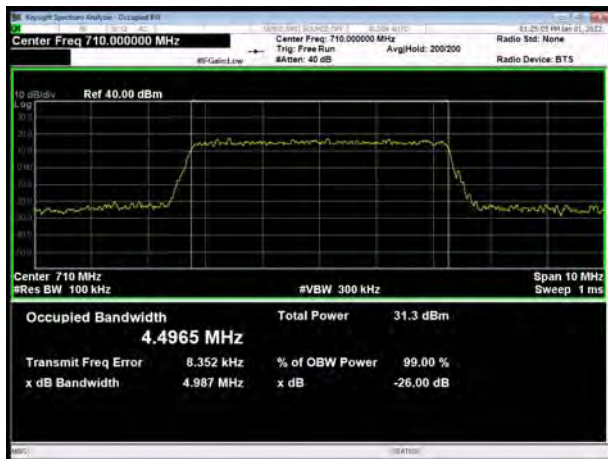
LTE Band 17 QPSK 5MHz CH-Low



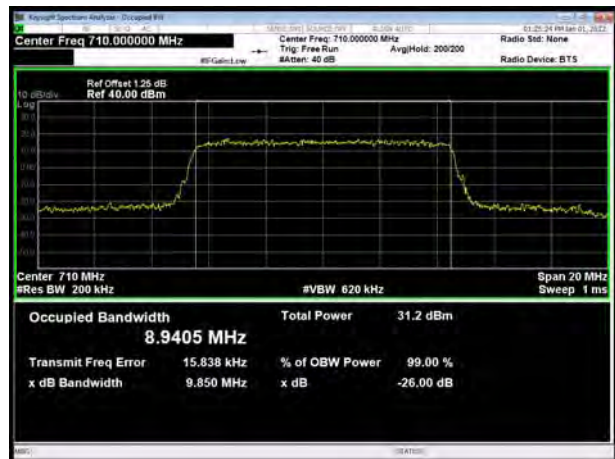
LTE Band 17 QPSK 10MHz CH-Low



LTE Band 17 QPSK 5MHz CH-Middle



LTE Band 17 QPSK 10MHz CH-Middle



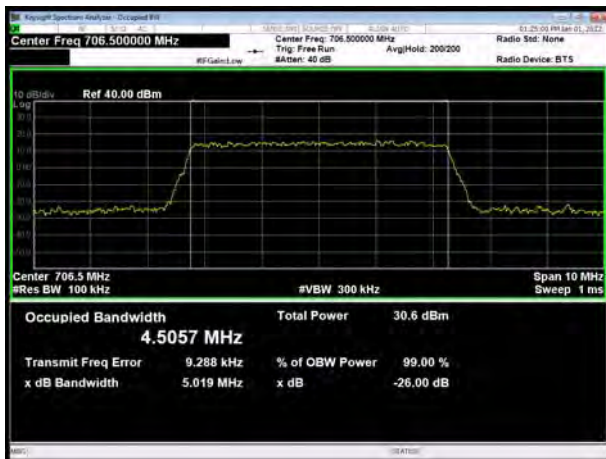
LTE Band 17 QPSK 5MHz CH-High



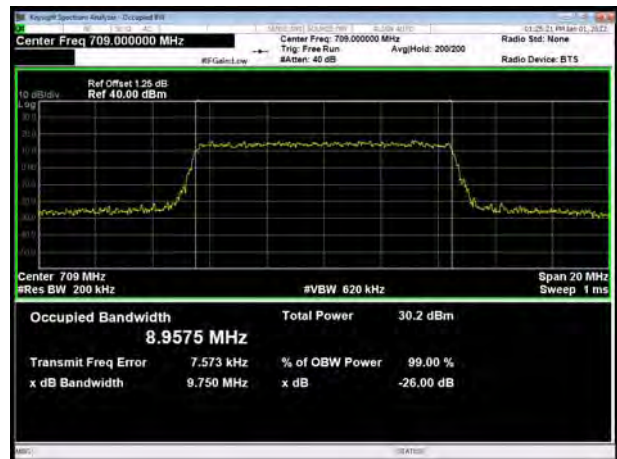
LTE Band 17 QPSK 10MHz CH-High



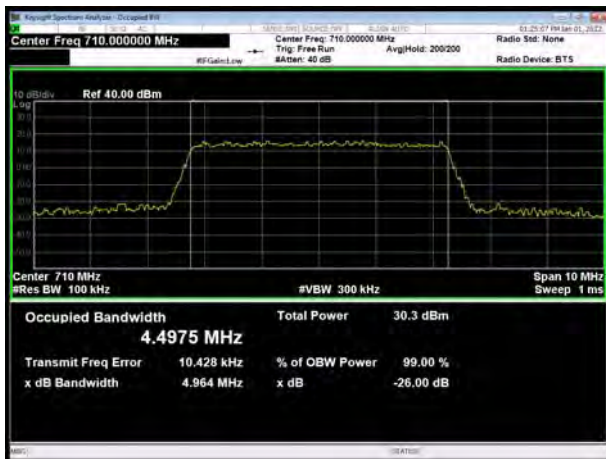
LTE Band 17 16QAM 5MHz CH-Low



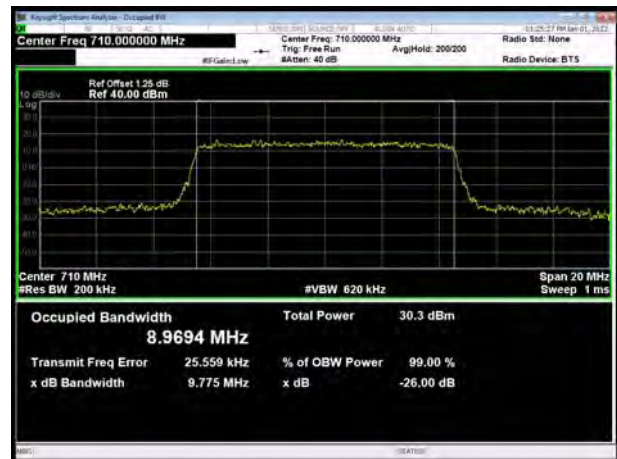
LTE Band 17 16QAM 10MHz CH-Low



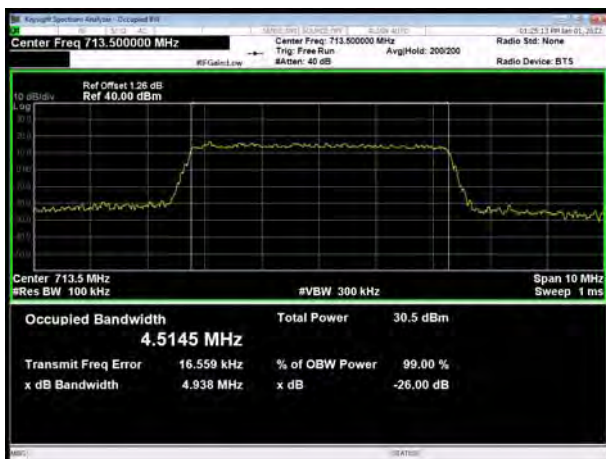
LTE Band 17 16QAM 5MHz CH-Middle



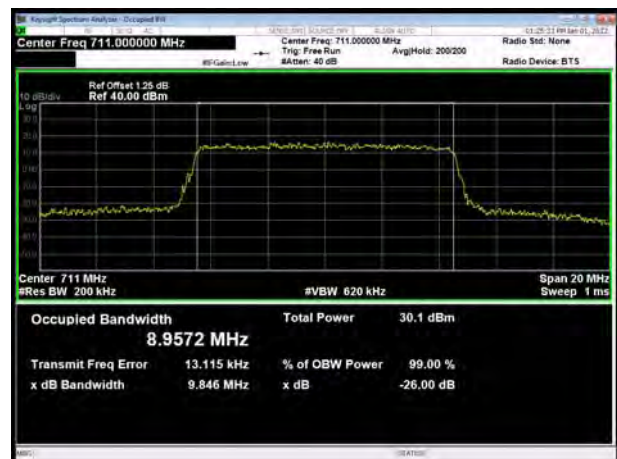
LTE Band 17 16QAM 10MHz CH-Middle



LTE Band 17 16QAM 5MHz CH-High

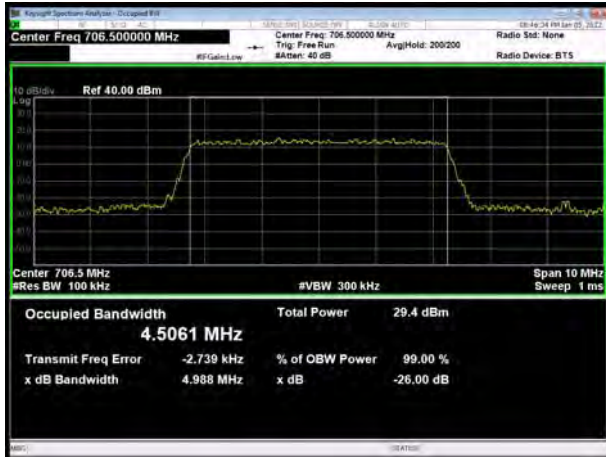


LTE Band 17 16QAM 10MHz CH-High

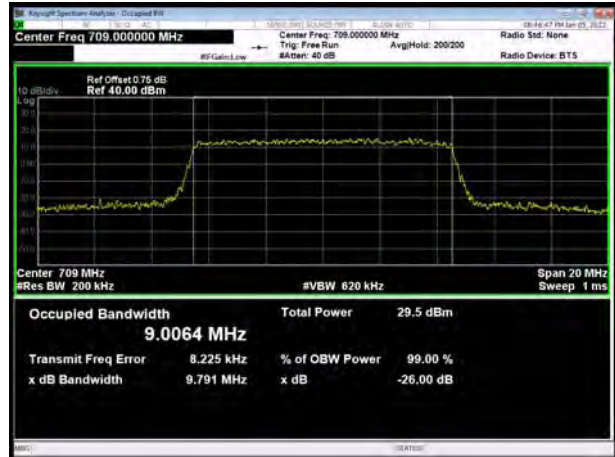




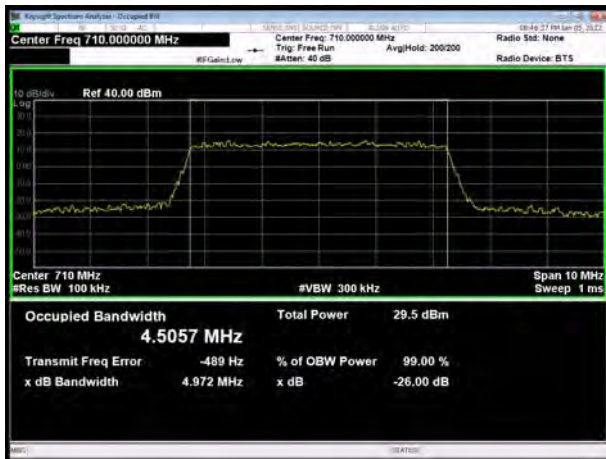
LTE Band 17 64QAM 5MHz CH-Low



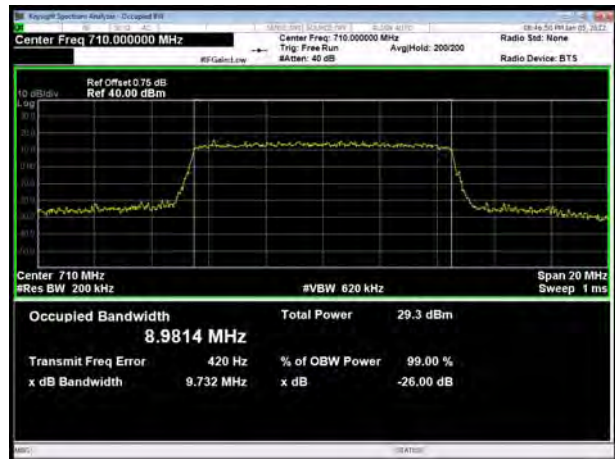
LTE Band 17 64QAM 10MHz CH-Low



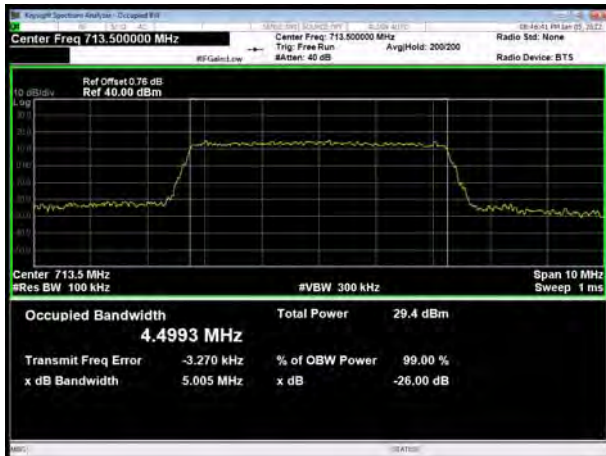
LTE Band 17 64QAM 5MHz CH-Middle



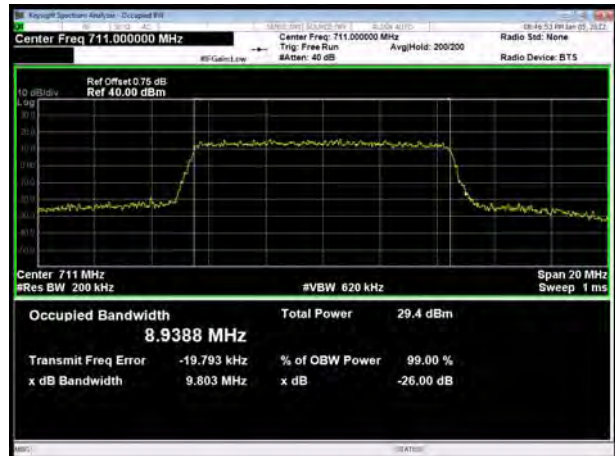
LTE Band 17 64QAM 10MHz CH-Middle



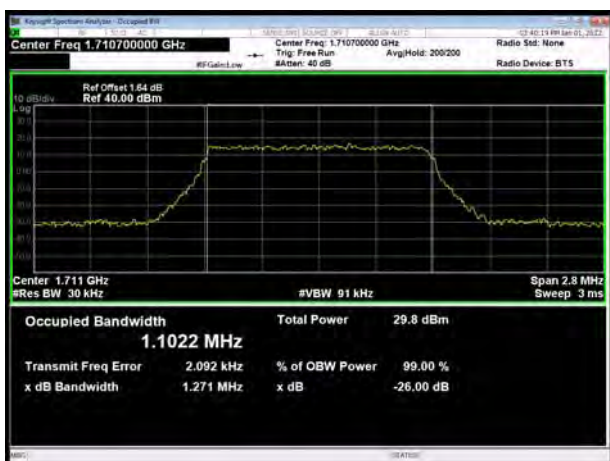
LTE Band 17 64QAM 5MHz CH-High



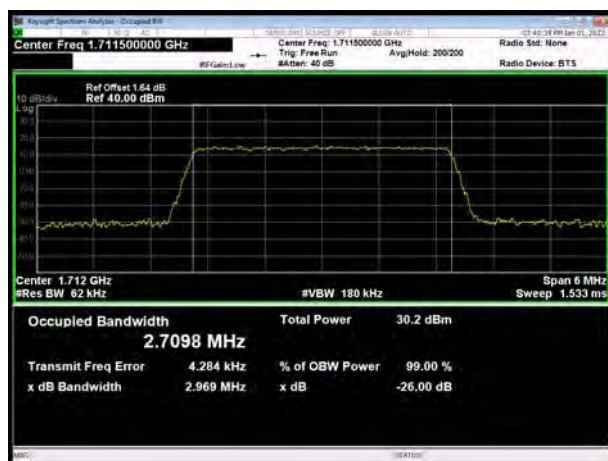
LTE Band 17 64QAM 10MHz CH-High



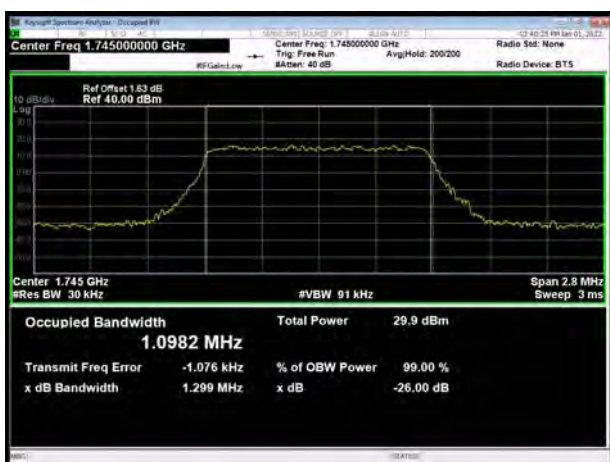
LTE Band 66 QPSK 1.4MHz CH-Low



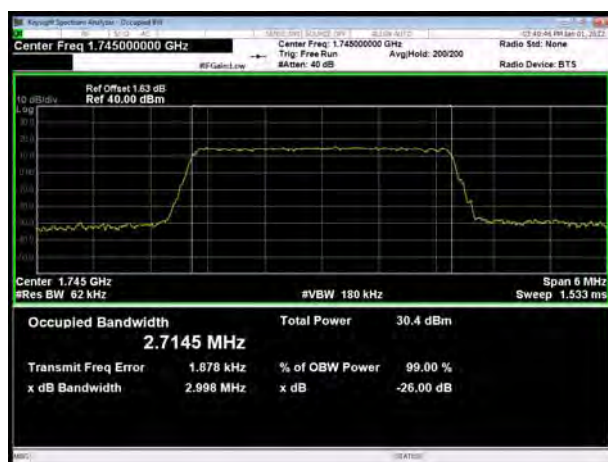
LTE Band 66 QPSK 3MHz CH-Low



LTE Band 66 QPSK 1.4MHz CH-Middle



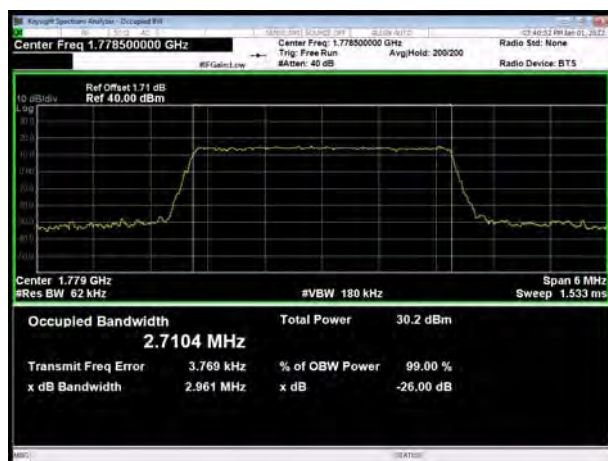
LTE Band 66 QPSK 3MHz CH-Middle



LTE Band 66 QPSK 1.4MHz CH-High



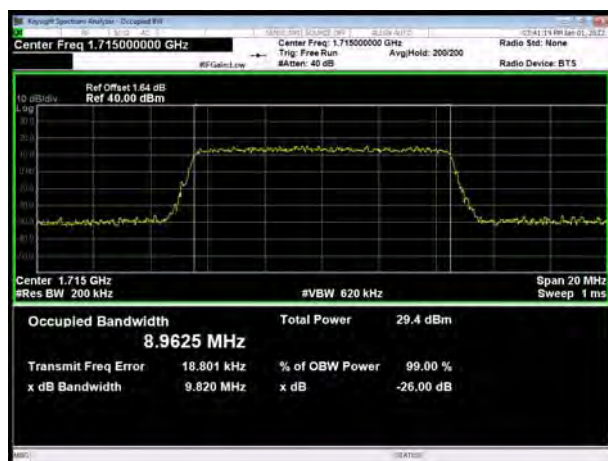
LTE Band 66 QPSK 3MHz CH-High



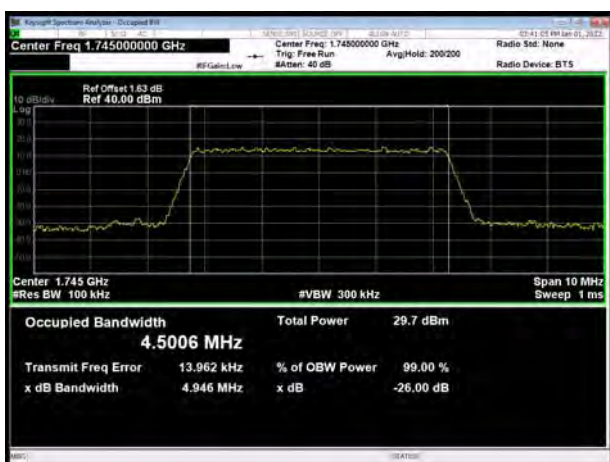
LTE Band 66 QPSK 5MHz CH-Low



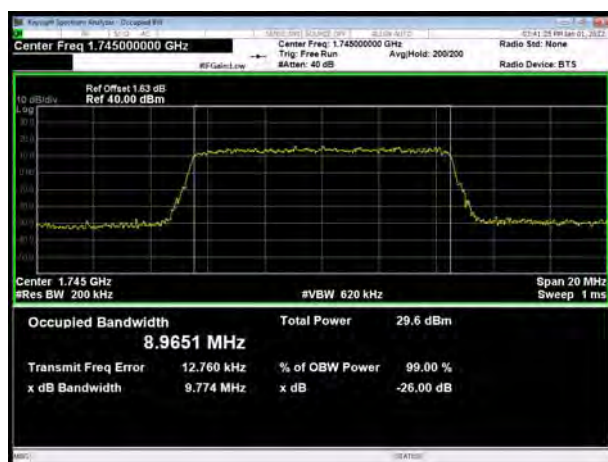
LTE Band 66 QPSK 10MHz CH-Low



LTE Band 66 QPSK 5MHz CH-Middle



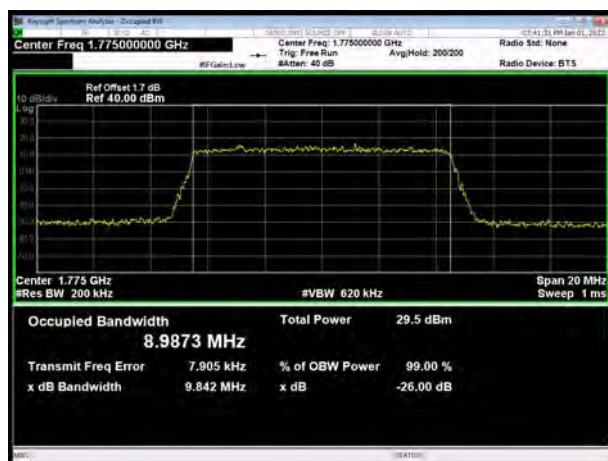
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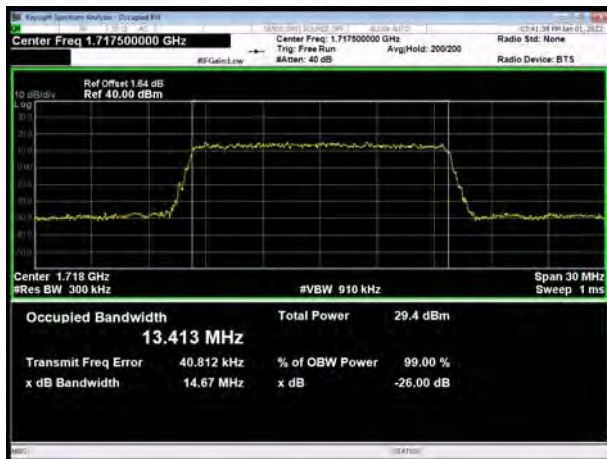
LTE Band 66 QPSK 5MHz CH-High



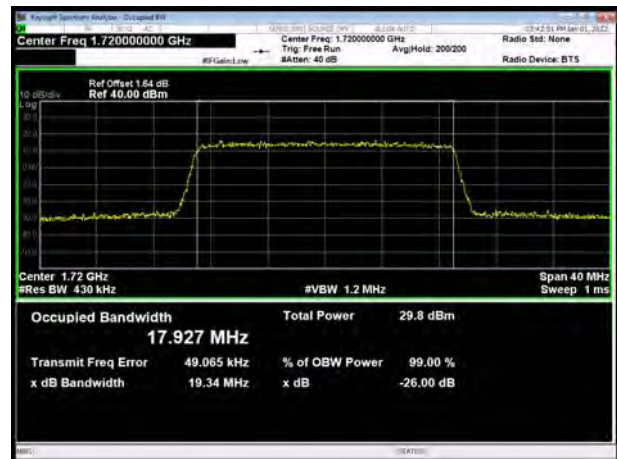
LTE Band 66 QPSK 10MHz CH-High



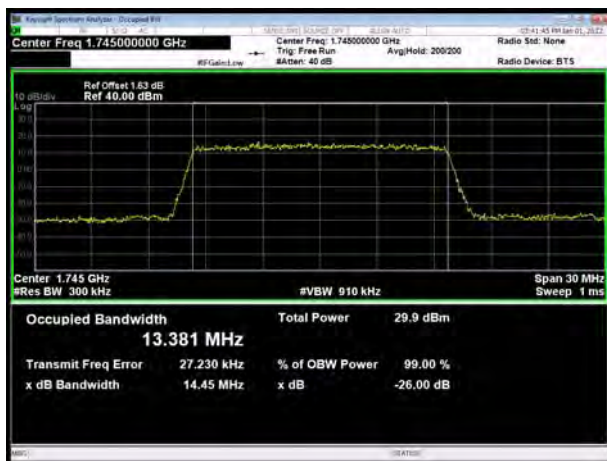
LTE Band 66 QPSK 15MHz CH-Low



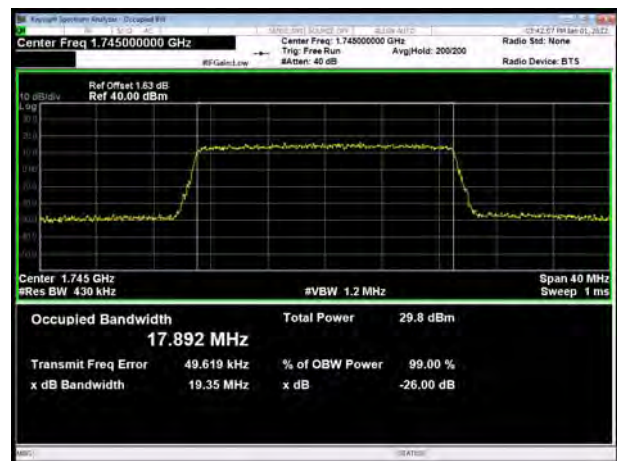
LTE Band 66 QPSK 20MHz CH-Low



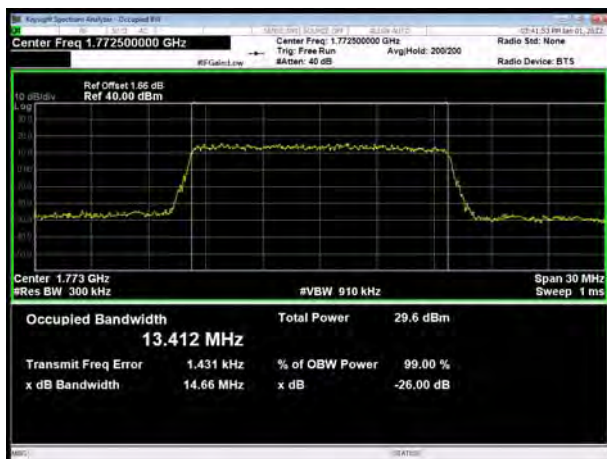
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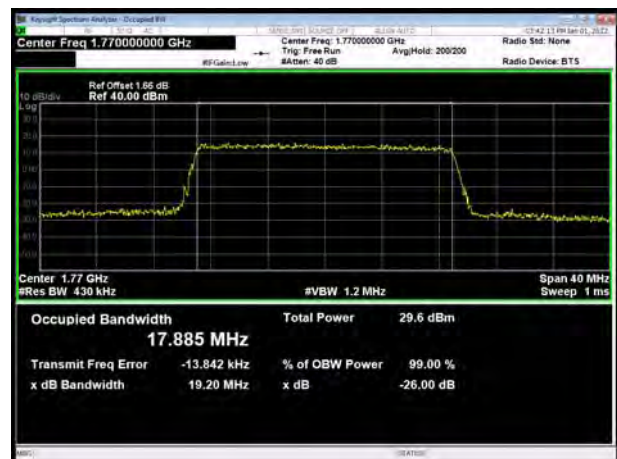
LTE Band 66 QPSK 20MHz CH-Middle



LTE Band 66 QPSK 15MHz CH-High



LTE Band 66 QPSK 20MHz CH-High



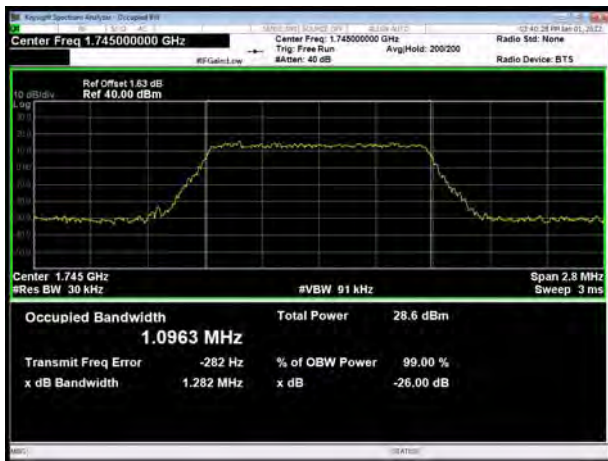
LTE Band 66 16QAM 1.4MHz CH-Low



LTE Band 66 16QAM 3MHz CH-Low



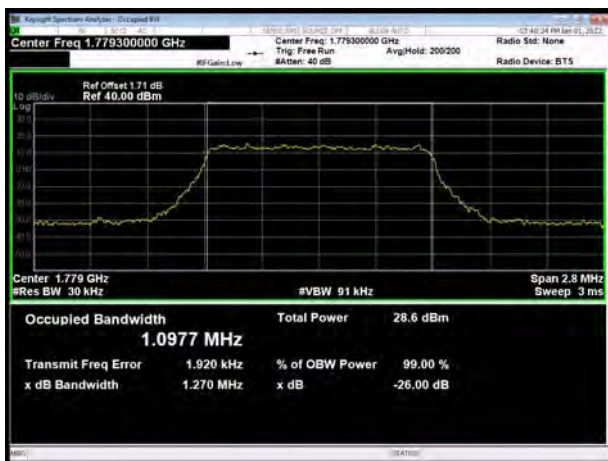
LTE Band 66 16QAM 1.4MHz CH-Middle



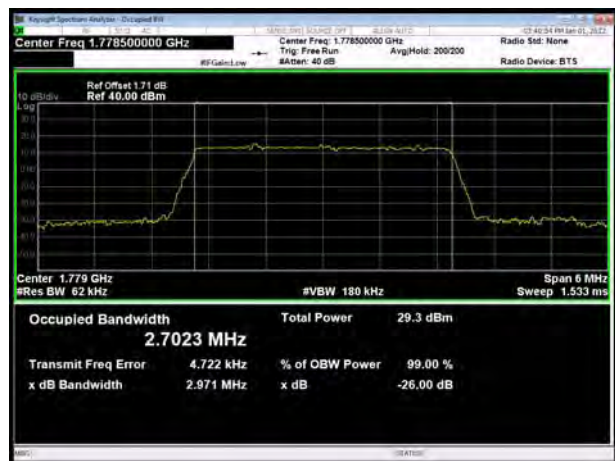
LTE Band 66 16QAM 3MHz CH-Middle



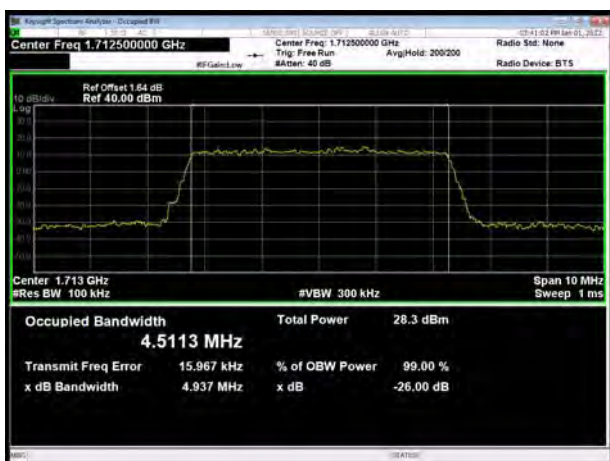
LTE Band 66 16QAM 1.4MHz CH-High



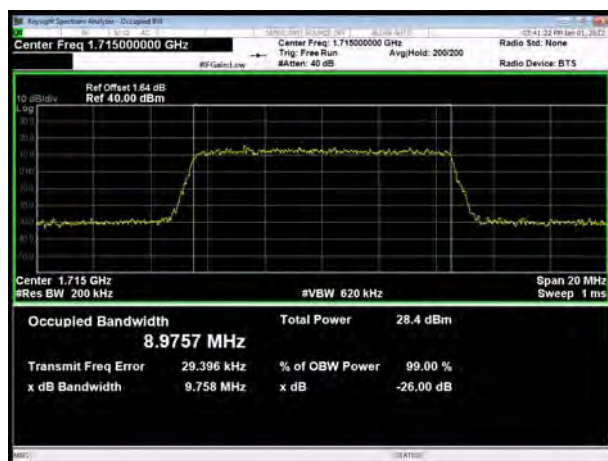
LTE Band 66 16QAM 3MHz CH-High



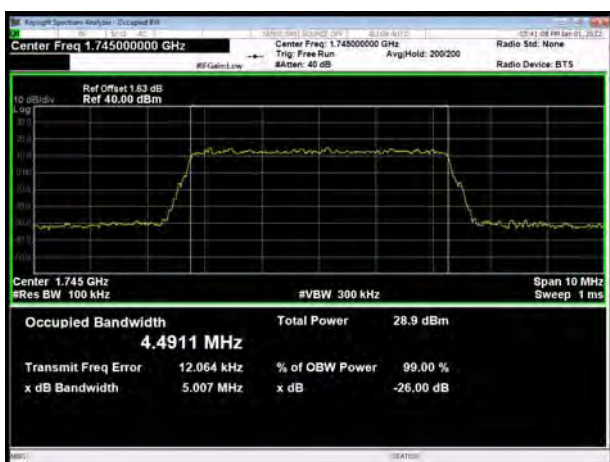
LTE Band 66 16QAM 5MHz CH-Low



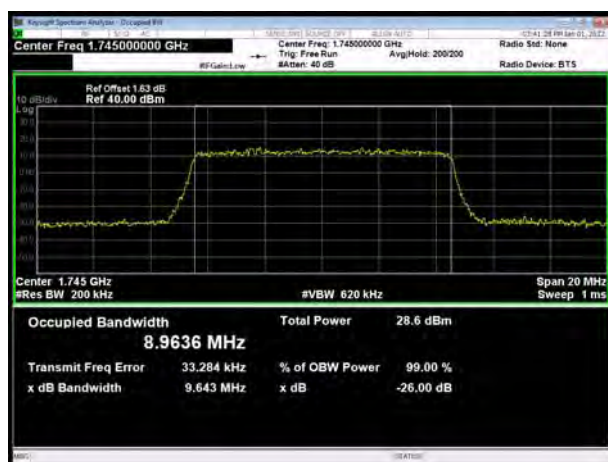
LTE Band 66 16QAM 10MHz CH-Low



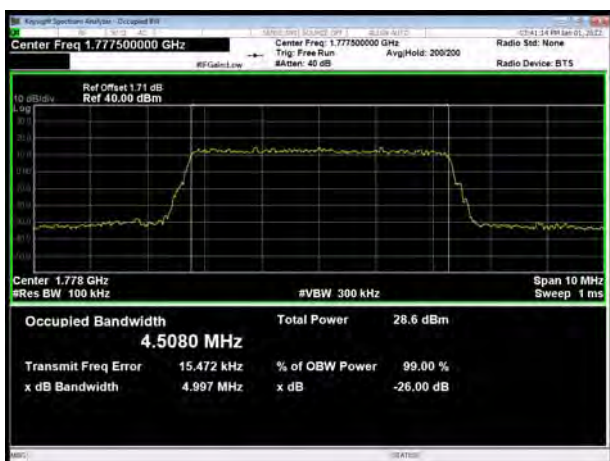
LTE Band 66 16QAM 5MHz CH-Middle



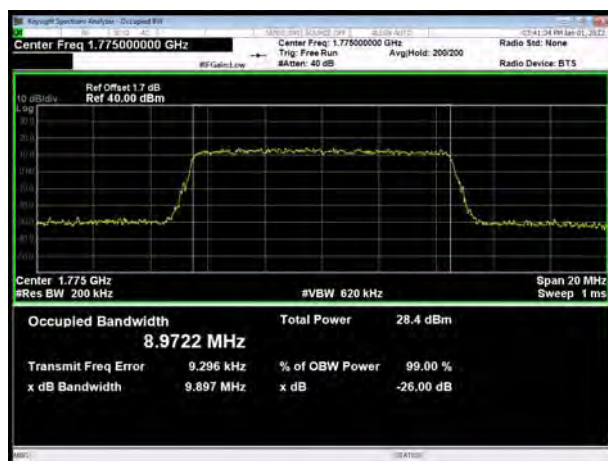
LTE Band 66 16QAM 10MHz CH-Middle



LTE Band 66 16QAM 5MHz CH-High

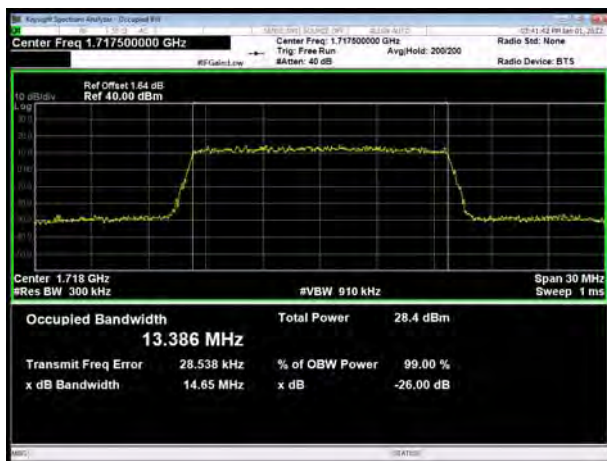


LTE Band 66 16QAM 10MHz CH-High

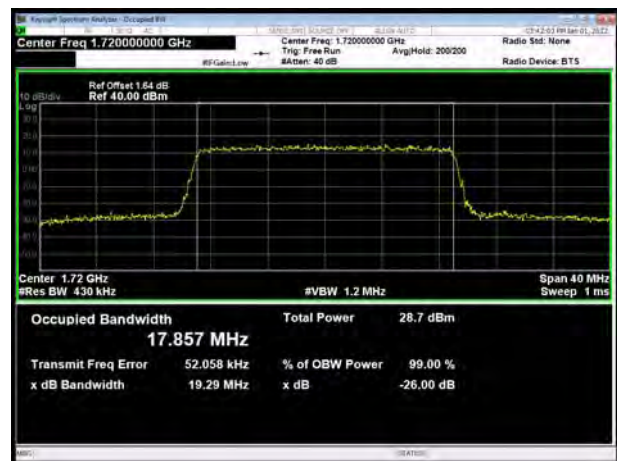




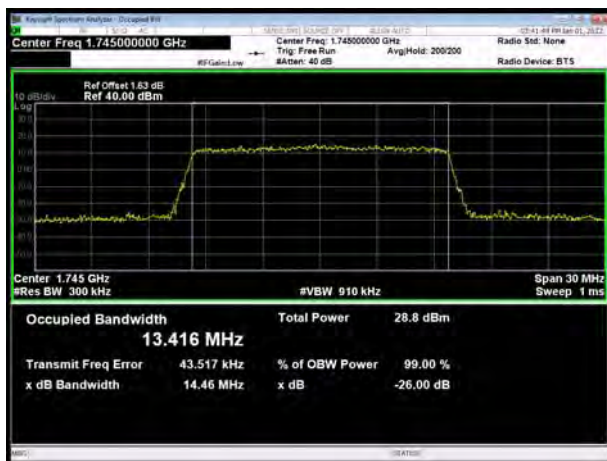
LTE Band 66 16QAM 15MHz CH-Low



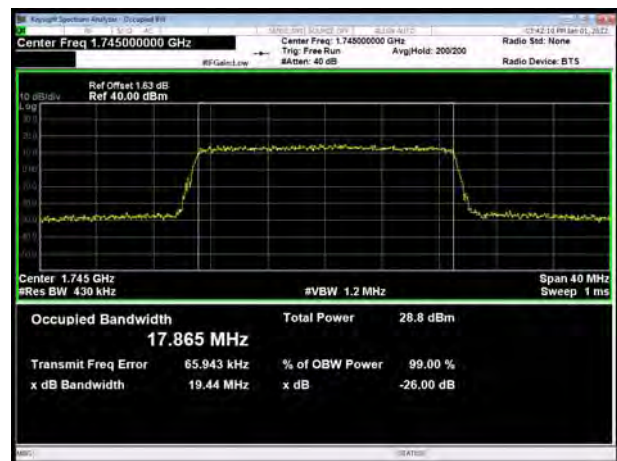
LTE Band 66 16QAM 20MHz CH-Low



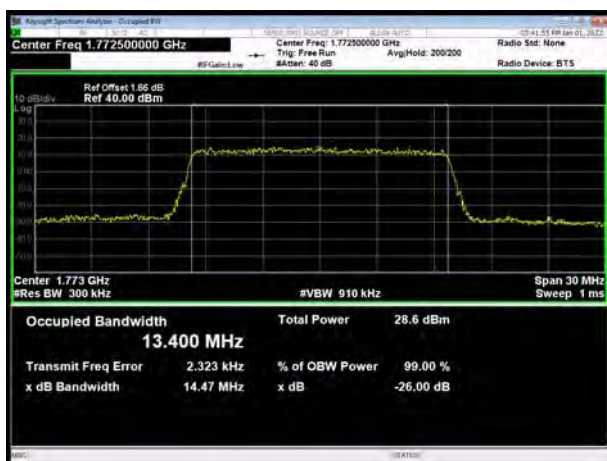
LTE Band 66 16QAM 15MHz CH-Middle



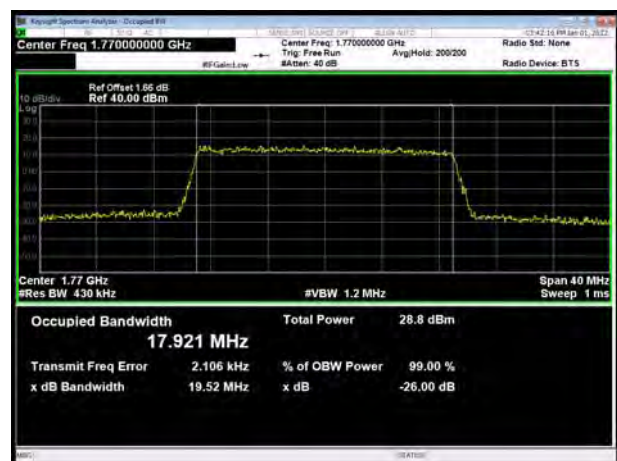
LTE Band 66 16QAM 20MHz CH-Middle



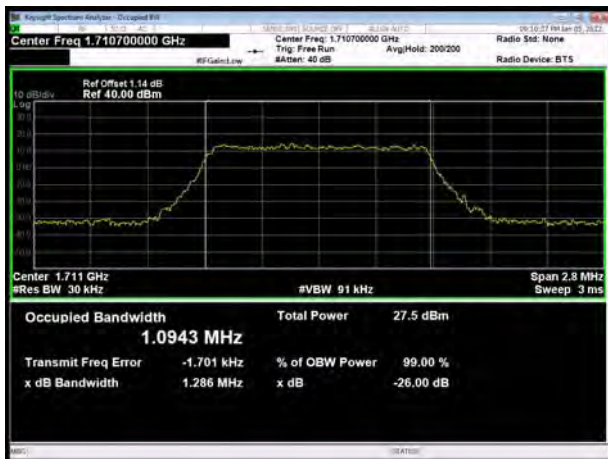
LTE Band 66 16QAM 15MHz CH-High



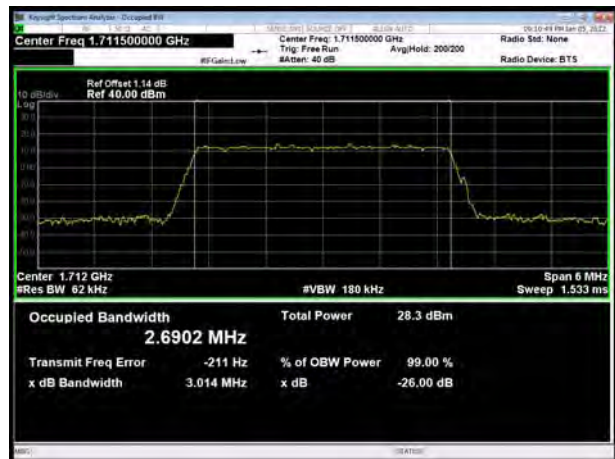
LTE Band 66 16QAM 20MHz CH-High



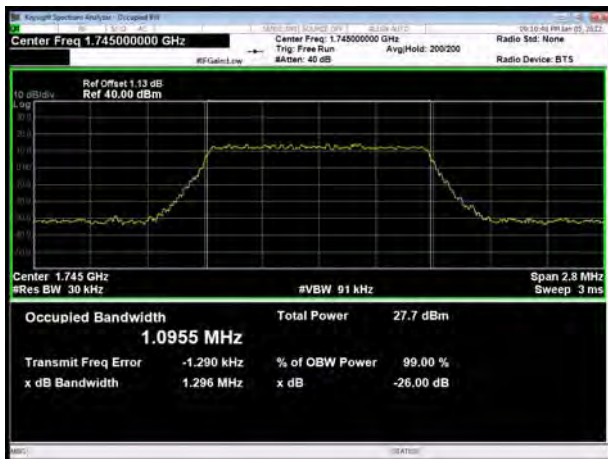
LTE Band 66 64QAM 1.4MHz CH-Low



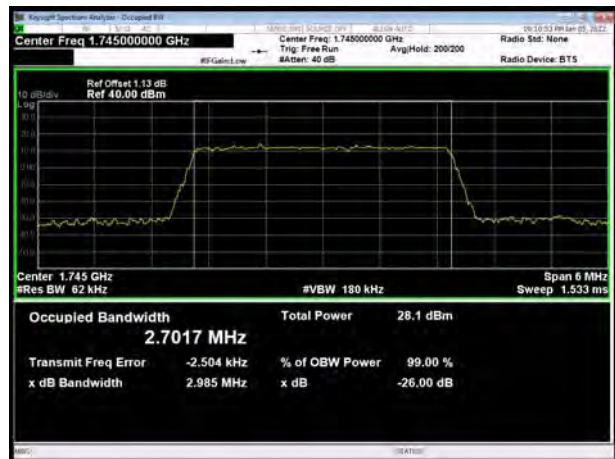
LTE Band 66 64QAM 3MHz CH-Low



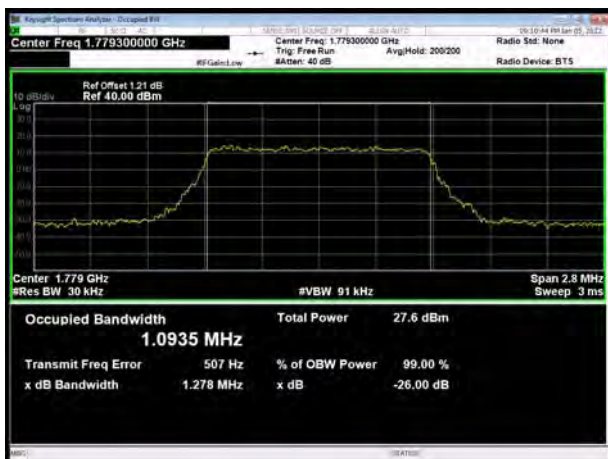
LTE Band 66 64QAM 1.4MHz CH-Middle



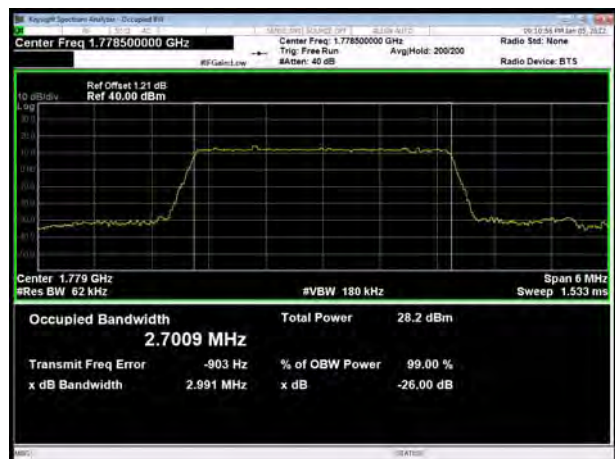
LTE Band 66 64QAM 3MHz CH-Middle



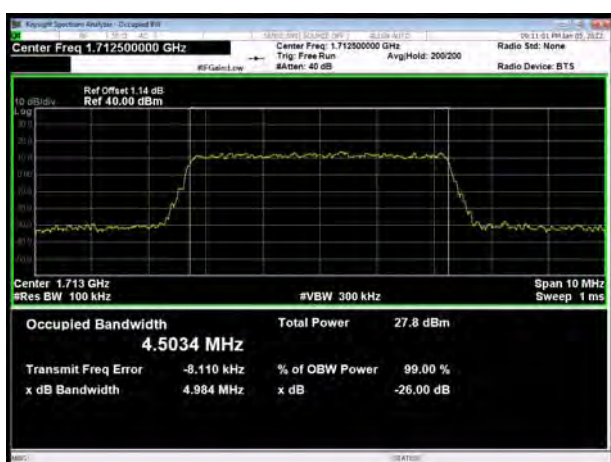
LTE Band 66 64QAM 1.4MHz CH-High



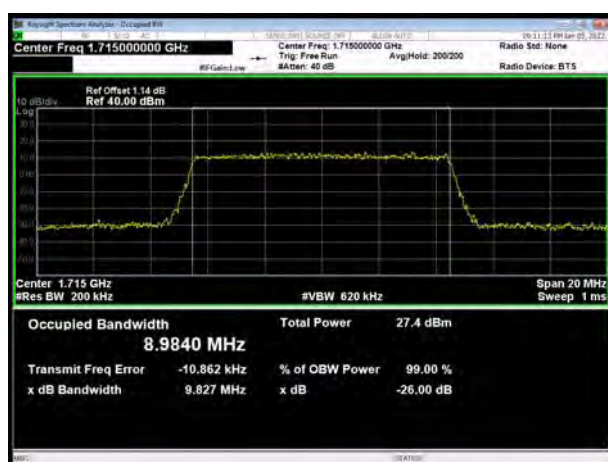
LTE Band 66 64QAM 3MHz CH-High



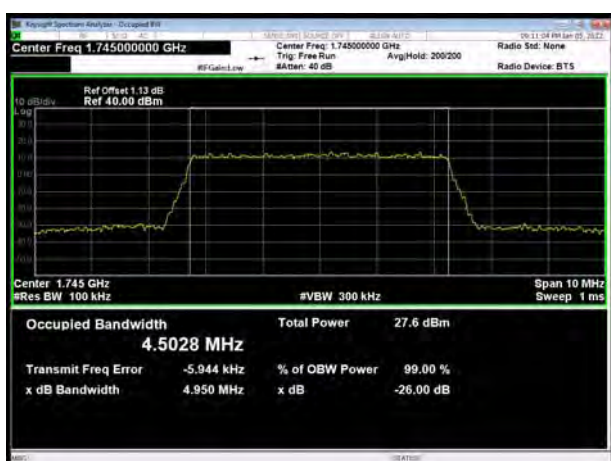
LTE Band 66 64QAM 5MHz CH-Low



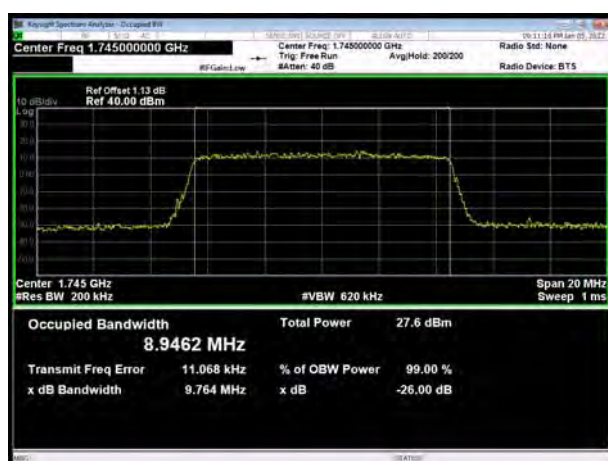
LTE Band 66 64QAM 10MHz CH-Low



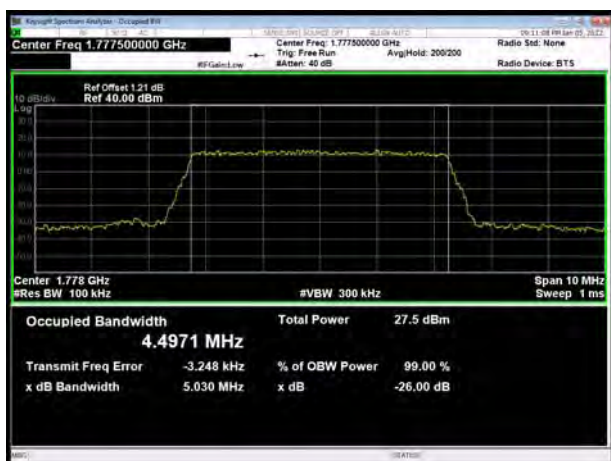
LTE Band 66 64QAM 5MHz CH-Middle



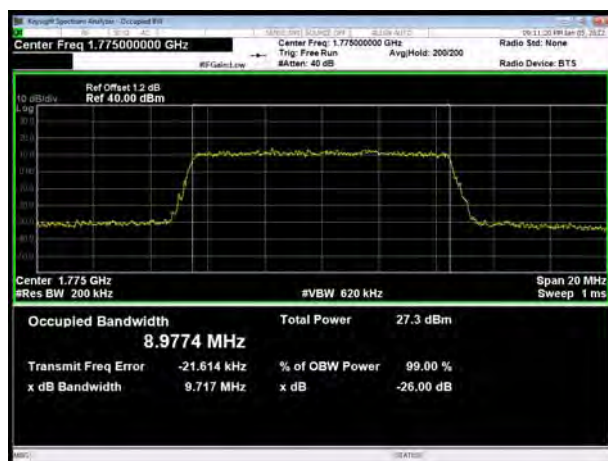
LTE Band 66 64QAM 10MHz CH-Middle



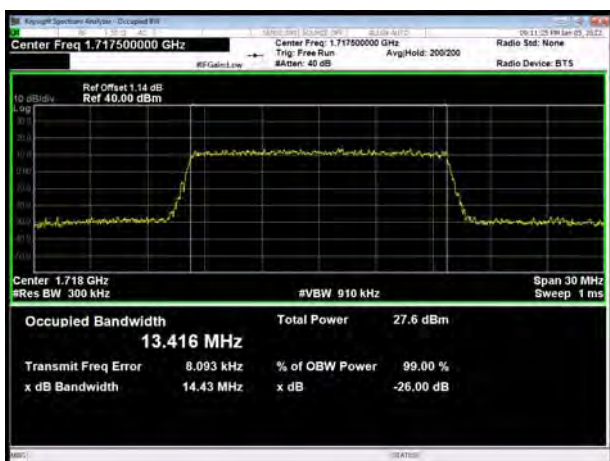
LTE Band 66 64QAM 5MHz CH-High



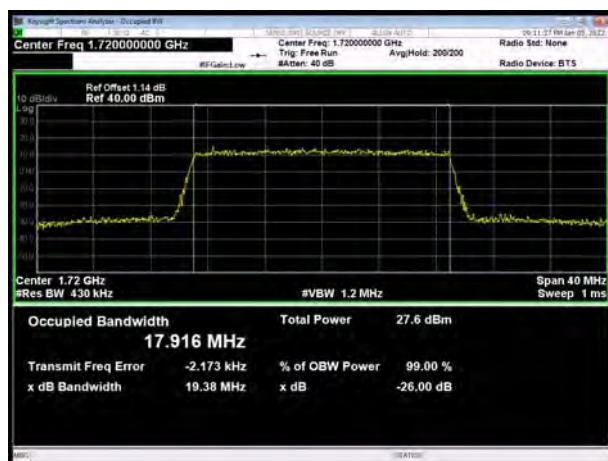
LTE Band 66 64QAM 10MHz CH-High



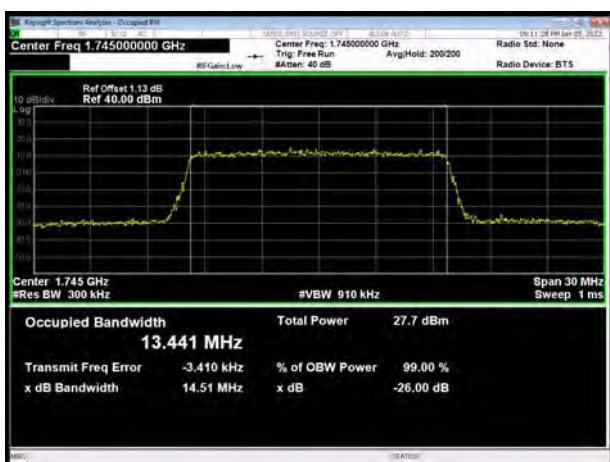
LTE Band 66 64QAM 15MHz CH-Low



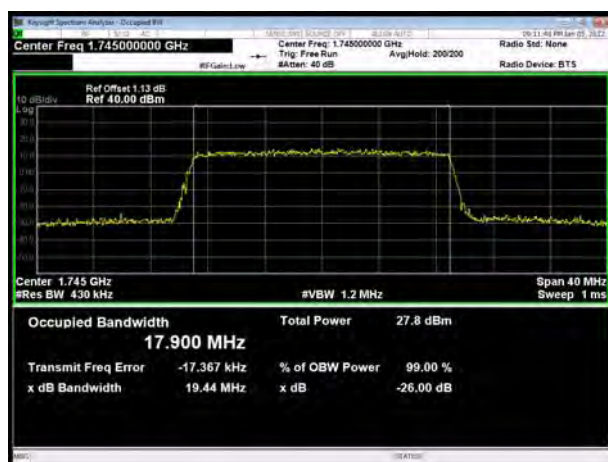
LTE Band 66 64QAM 20MHz CH-Low



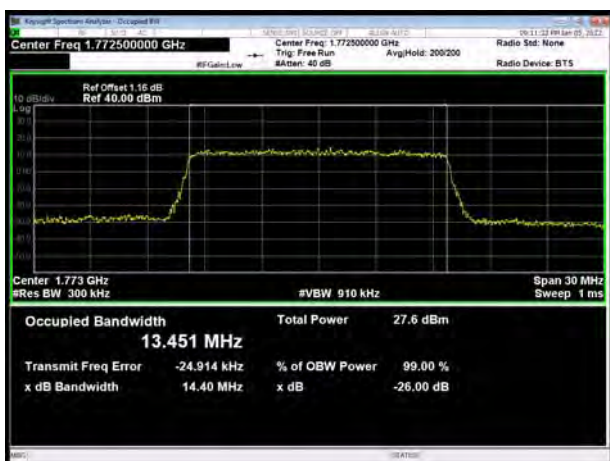
LTE Band 66 64QAM 15MHz CH-Middle



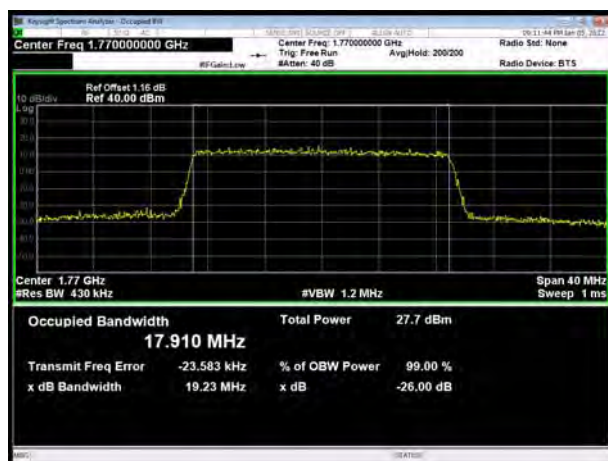
LTE Band 66 64QAM 20MHz CH-Middle



LTE Band 66 64QAM 15MHz CH-High



LTE Band 66 64QAM 20MHz CH-High



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 $\geq 1\%EBW$, VBW is set to 3x RBW.

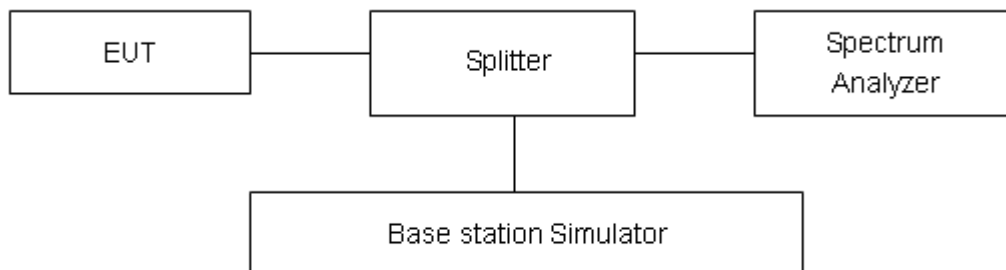
on spectrum analyzer.

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(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

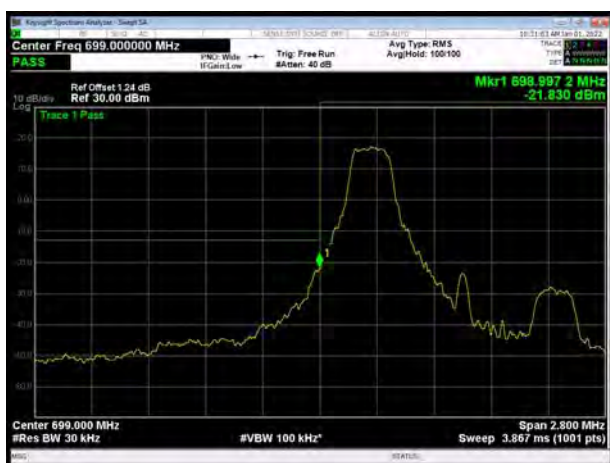
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U=0.684$ dB.



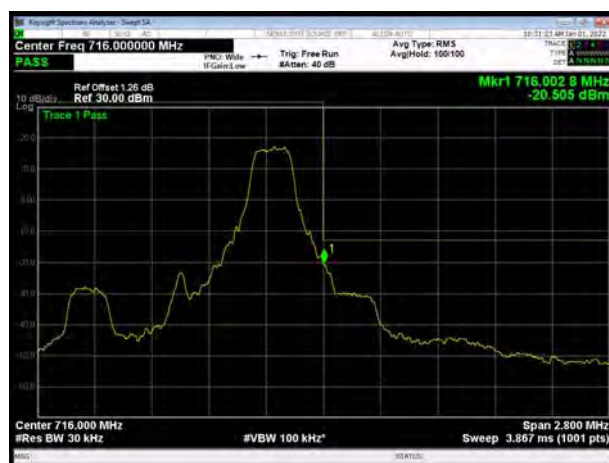
Test Result

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

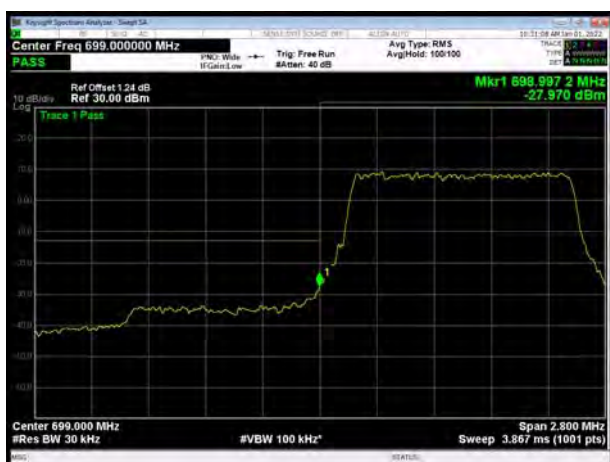
LTE Band 12 QPSK 1.4MHz CH-Low, 1 RB



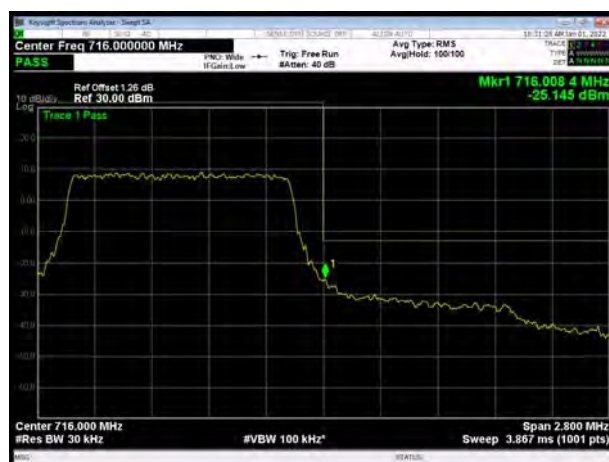
LTE Band 12 QPSK 1.4MHz CH-High, 1 RB



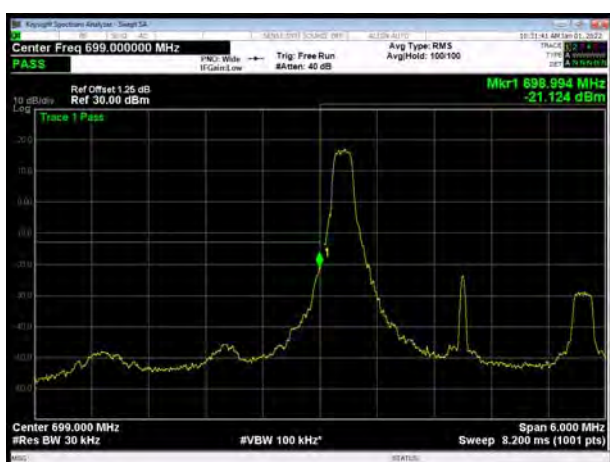
LTE Band 12 QPSK 1.4MHz CH-Low, 100%RB



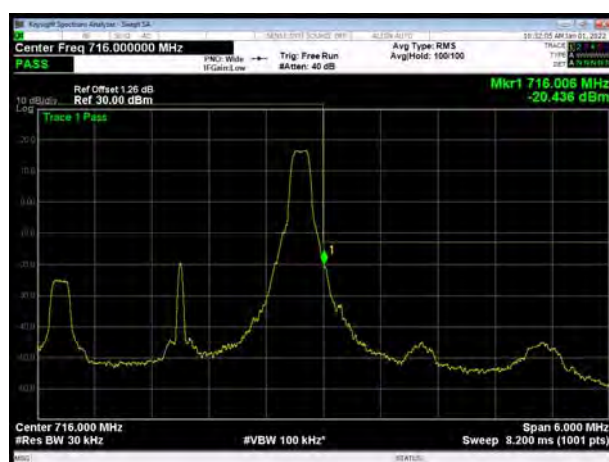
LTE Band 12 QPSK 1.4MHz CH-High, 100%RB



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



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



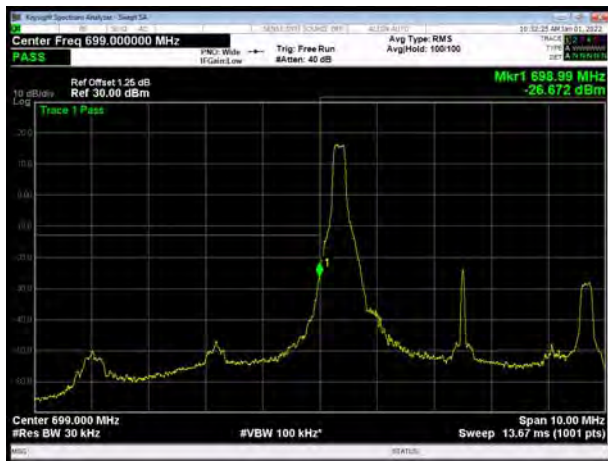
LTE Band 12 QPSK 3MHz CH-Low, 100%RB



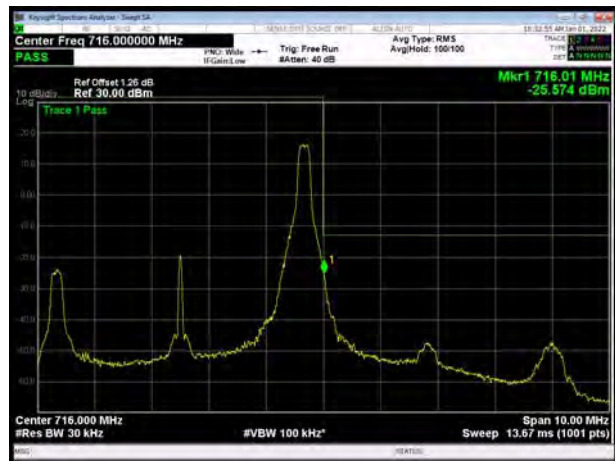
LTE Band 12 QPSK 3MHz CH-High, 100%RB



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



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



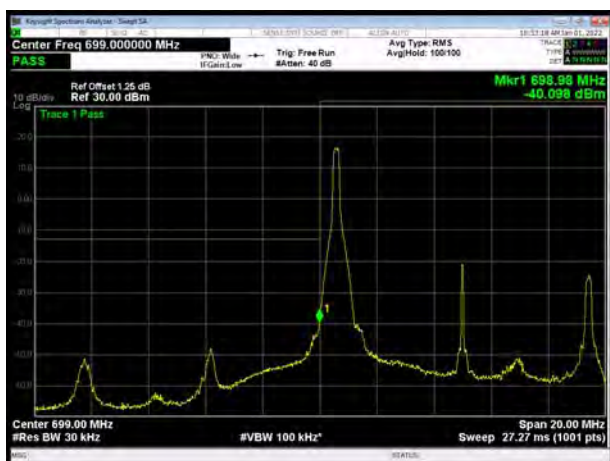
LTE Band 12 QPSK 5MHz CH-Low, 100%RB



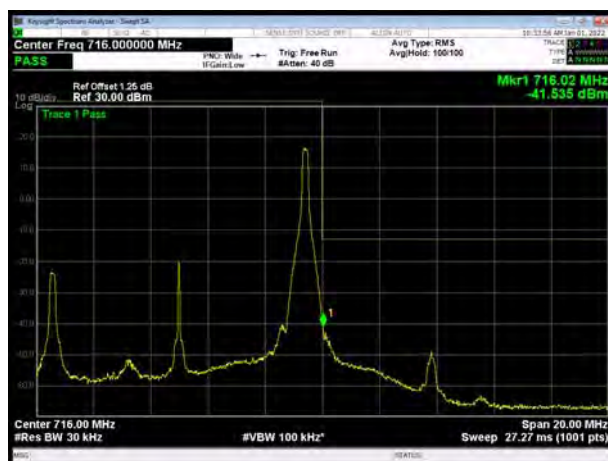
LTE Band 12 QPSK 5MHz CH-High, 100%RB



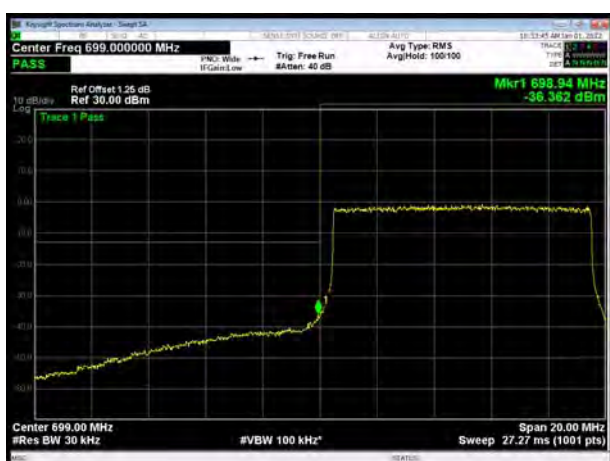
LTE Band 12 QPSK 10MHz CH-Low, 1 RB



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



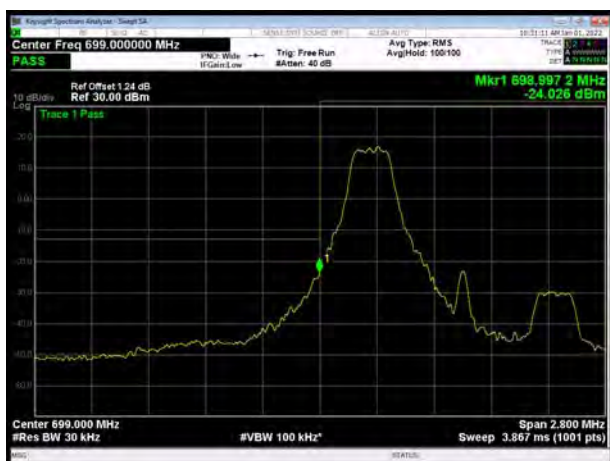
LTE Band 12 QPSK 10MHz CH-Low, 100%RB



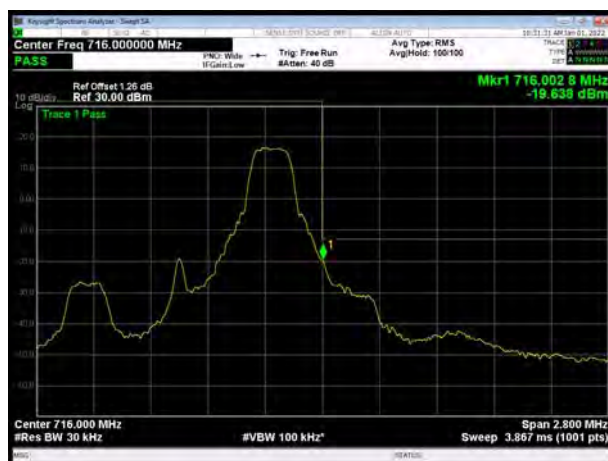
LTE Band 12 QPSK 10MHz CH-High, 100%RB



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



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





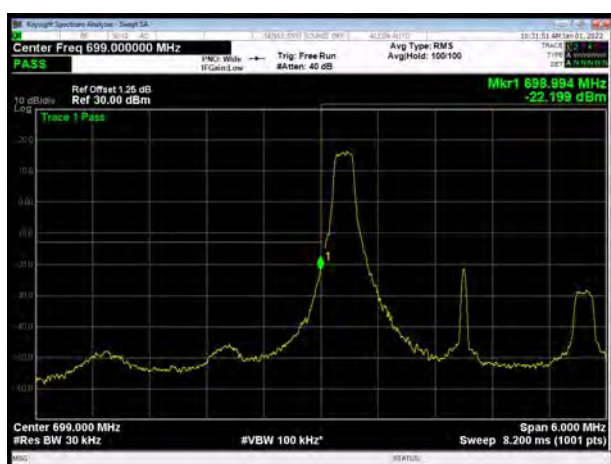
LTE Band 12 16QAM 1.4MHz CH-Low, 100%RB



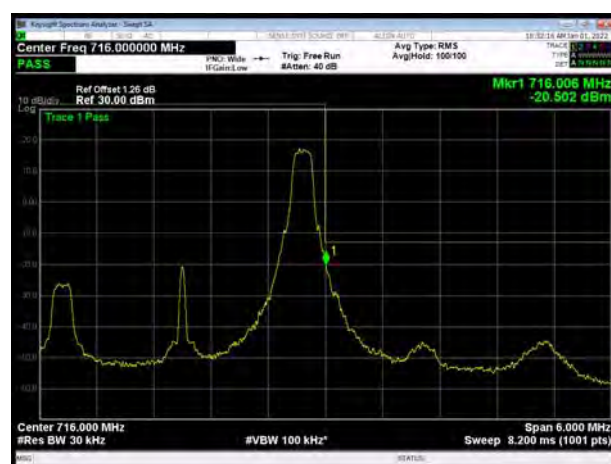
LTE Band 12 16QAM 1.4MHz CH-High, 100%RB



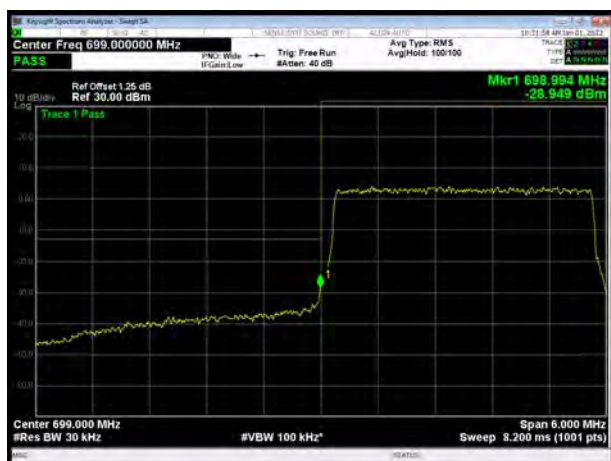
LTE Band 12 16QAM 3MHz CH-Low, 1 RB



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



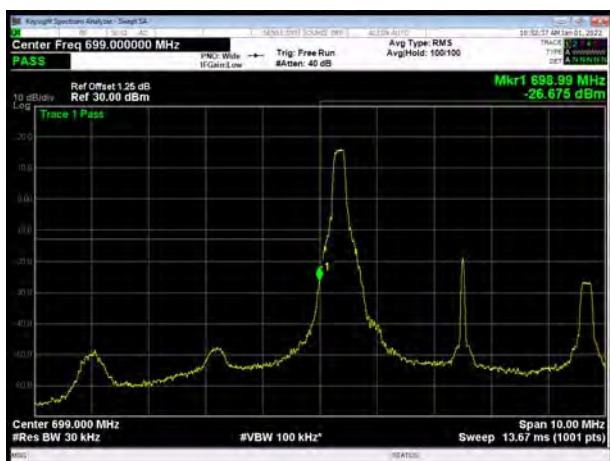
LTE Band 12 16QAM 3MHz CH-Low, 100%RB



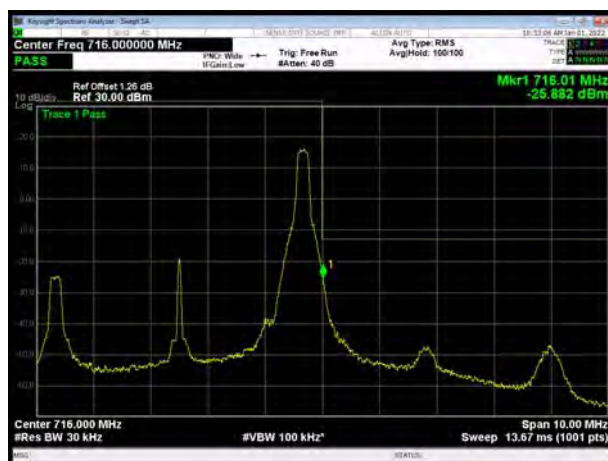
LTE Band 12 16QAM 3MHz CH-High, 100%RB



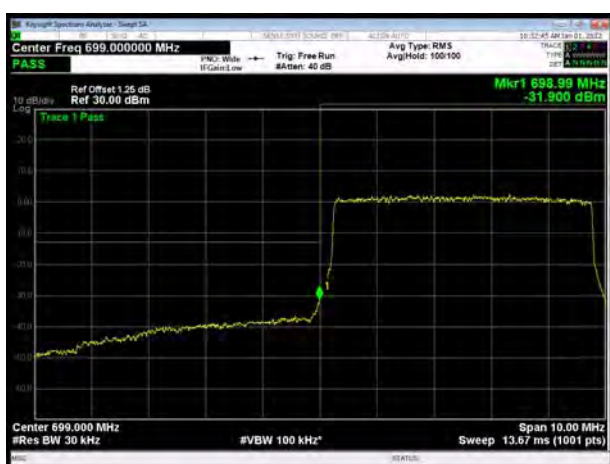
LTE Band 12 16QAM 5MHz CH-Low, 1 RB



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



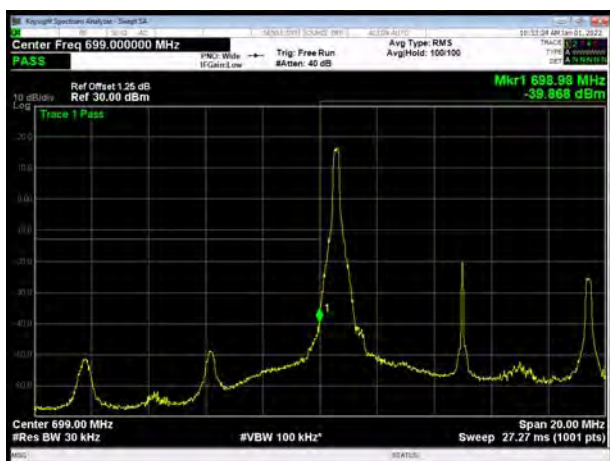
LTE Band 12 16QAM 5MHz CH-Low, 100%RB



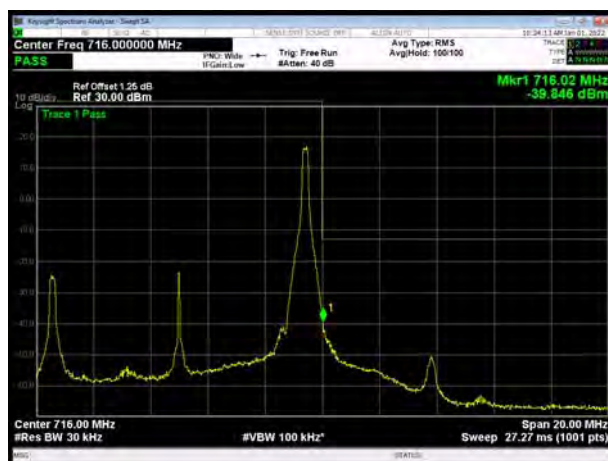
LTE Band 12 16QAM 5MHz CH-High, 100%RB



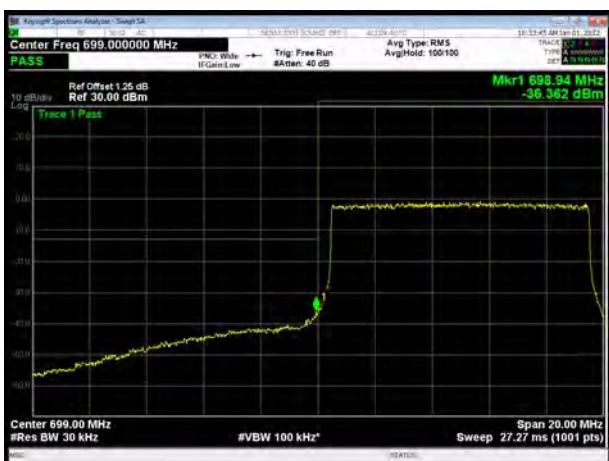
LTE Band 12 16QAM 10MHz CH-Low, 1 RB



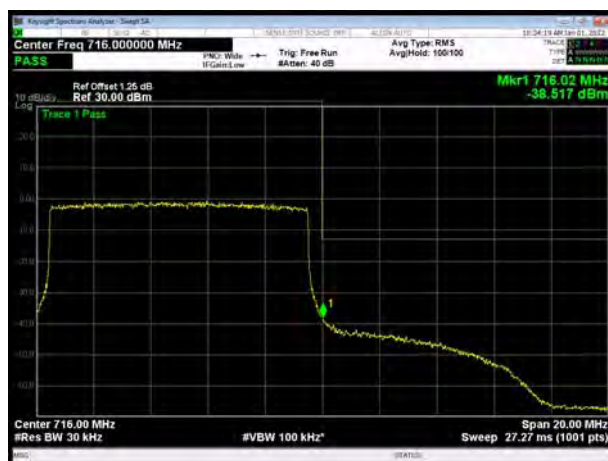
LTE Band 12 16QAM 10MHz CH-High, 1 RB



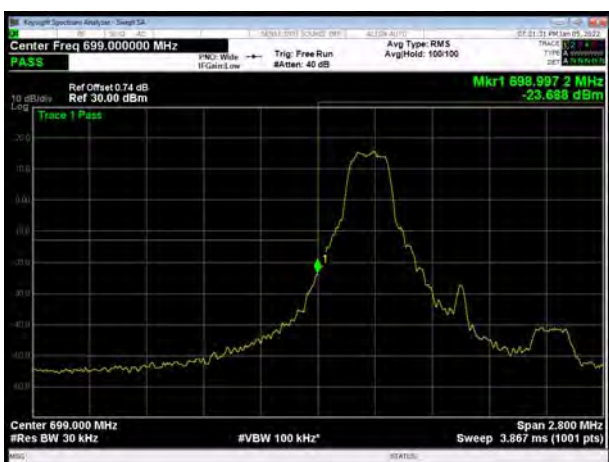
LTE Band 12 16QAM 10MHz CH-Low, 100%RB



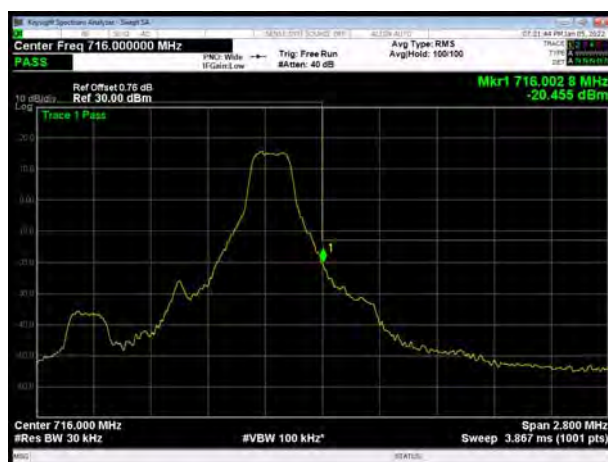
LTE Band 12 16QAM 10MHz CH-High, 100%RB



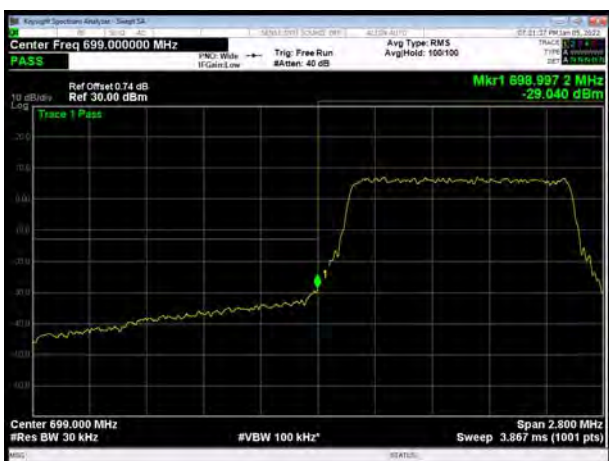
LTE Band 12 64QAM 1.4MHz CH-Low, 1 RB



LTE Band 12 64QAM 1.4MHz CH-High, 1 RB



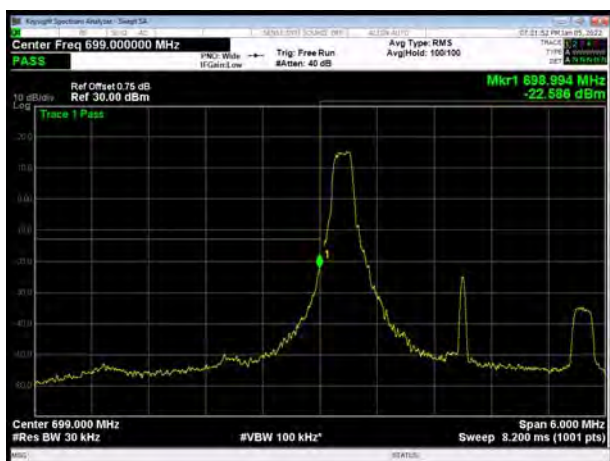
LTE Band 12 64QAM 1.4MHz CH-Low, 100%RB



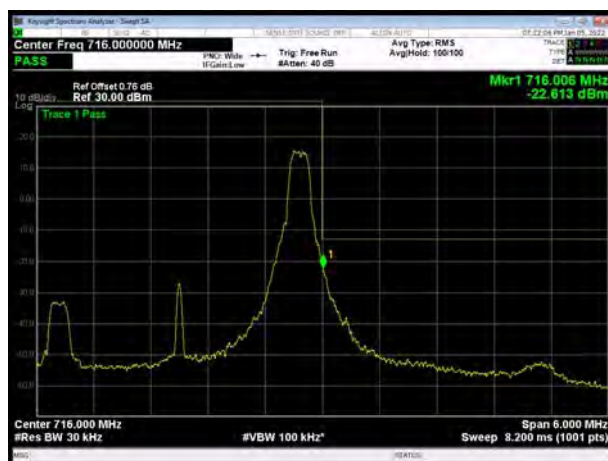
LTE Band 12 64QAM 1.4MHz CH-High, 100%RB



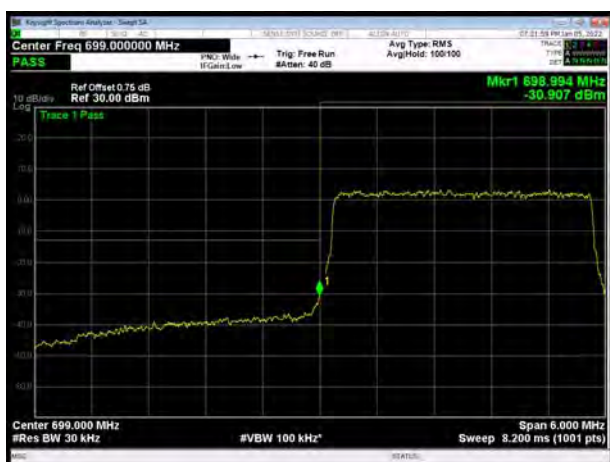
LTE Band 12 64QAM 3MHz CH-Low, 1 RB



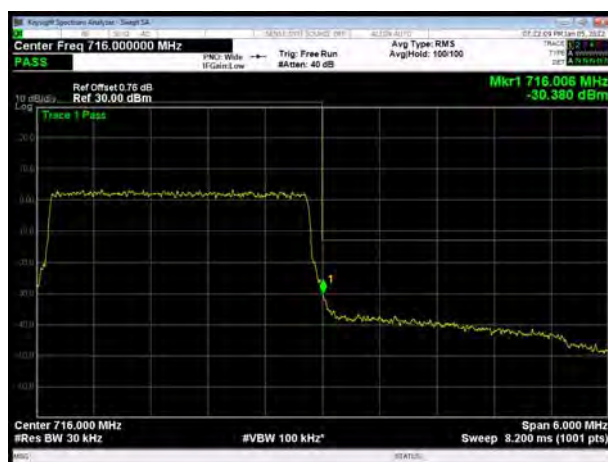
LTE Band 12 64QAM 3MHz CH-High, 1 RB



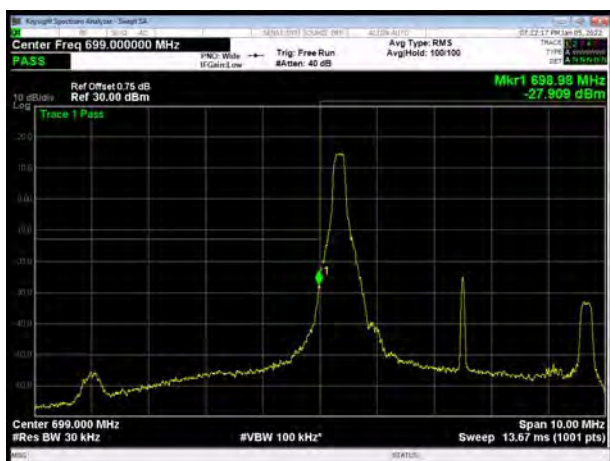
LTE Band 12 64QAM 3MHz CH-Low, 100%RB



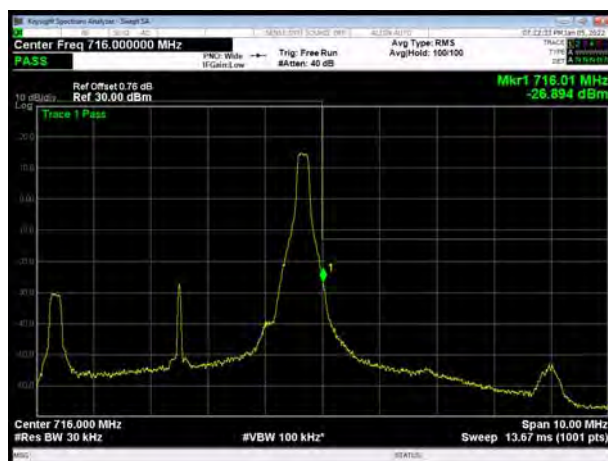
LTE Band 12 64QAM 3MHz CH-High, 100%RB



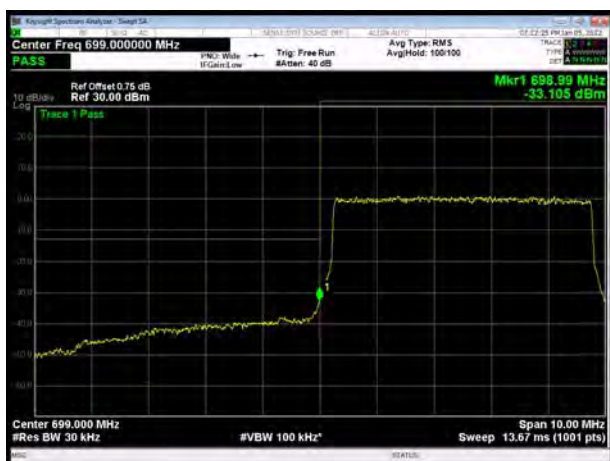
LTE Band 12 64QAM 5MHz CH-Low, 1 RB



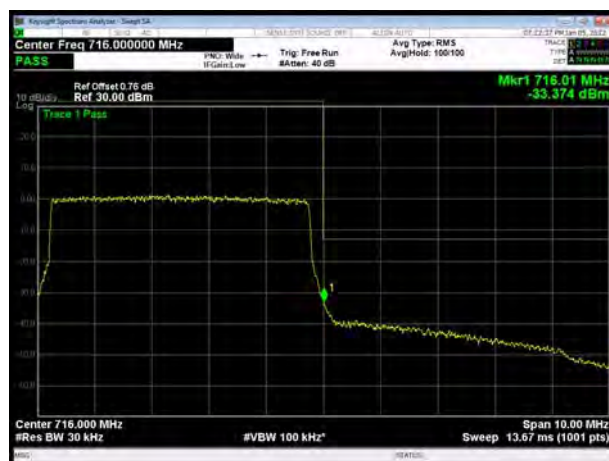
LTE Band 12 64QAM 5MHz CH-High, 1 RB



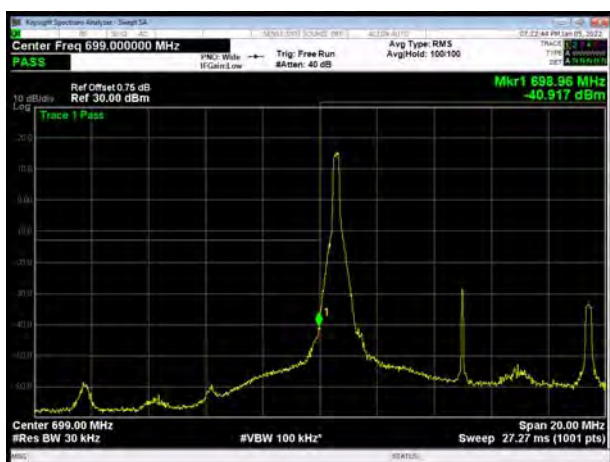
LTE Band 12 64QAM 5MHz CH-Low, 100%RB



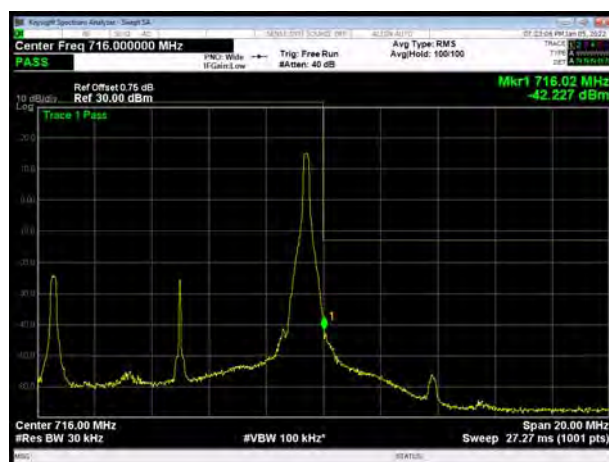
LTE Band 12 64QAM 5MHz CH-High, 100%RB



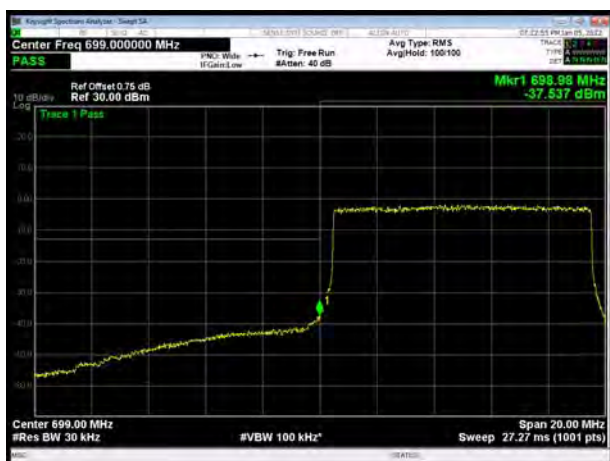
LTE Band 12 64QAM 10MHz CH-Low, 1 RB



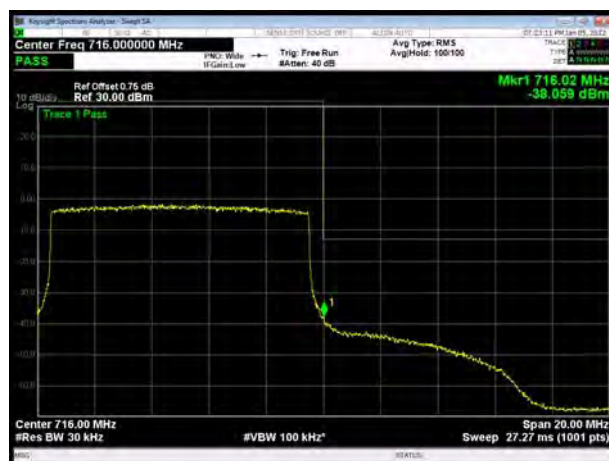
LTE Band 12 64QAM 10MHz CH-High, 1 RB



LTE Band 12 64QAM 10MHz CH-Low, 100%RB



LTE Band 12 64QAM 10MHz CH-High, 100%RB



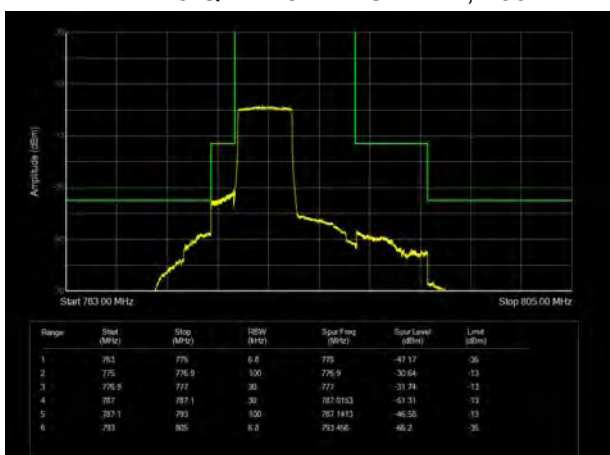
LTE Band 13 QPSK 5MHz CH-Low, 1 RB



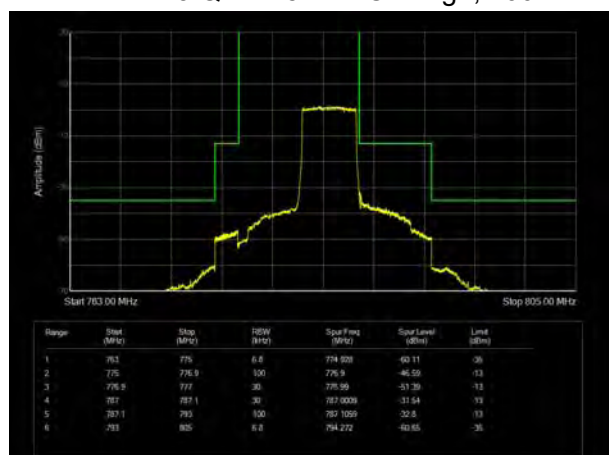
LTE Band 13 QPSK 5MHz CH-High, 1 RB



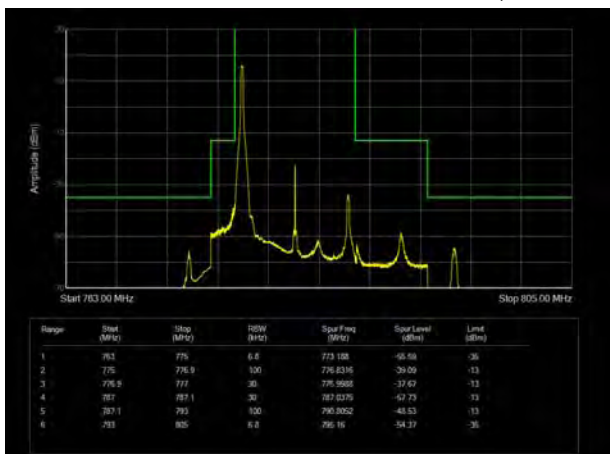
LTE Band 13 QPSK 5MHz CH-Low, 100%RB



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



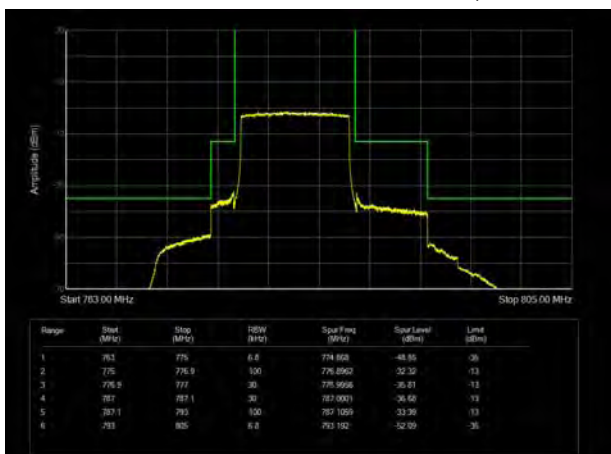
LTE Band 13 QPSK 10MHz CH-Low, 1 RB



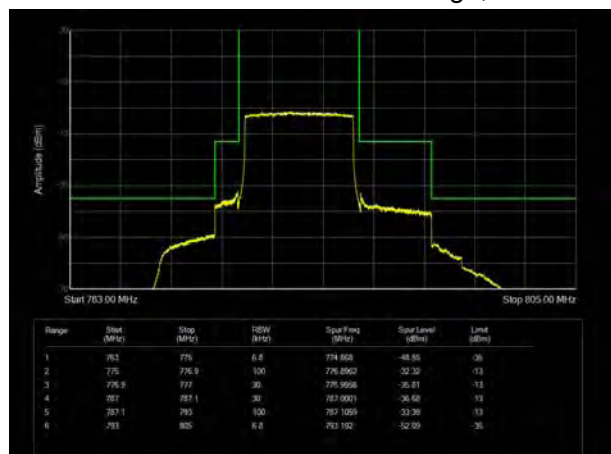
LTE Band 13 QPSK 10MHz CH-High, 1 RB



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



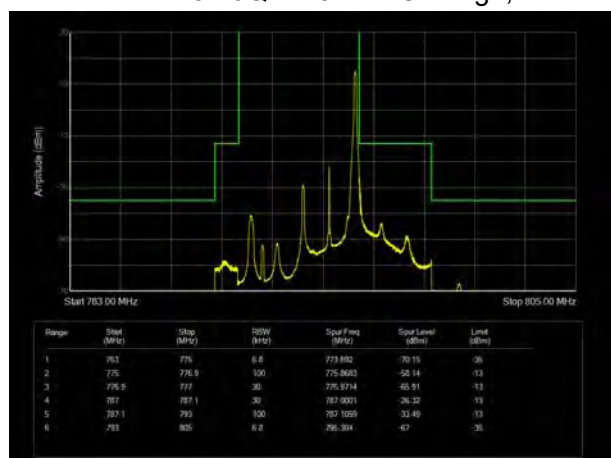
LTE Band 13 QPSK 10MHz CH-High, 100%RB



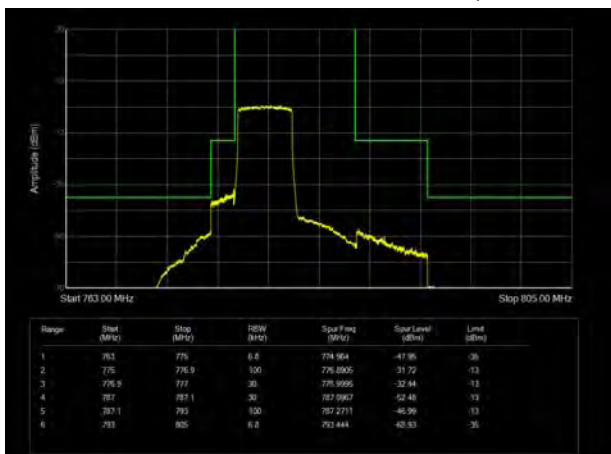
LTE Band 13 16QAM 5MHz CH-Low, 1 RB



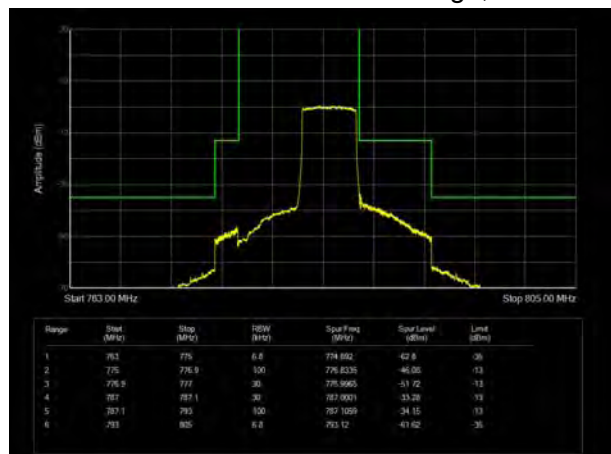
LTE Band 13 16QAM 5MHz CH-High, 1 RB



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



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



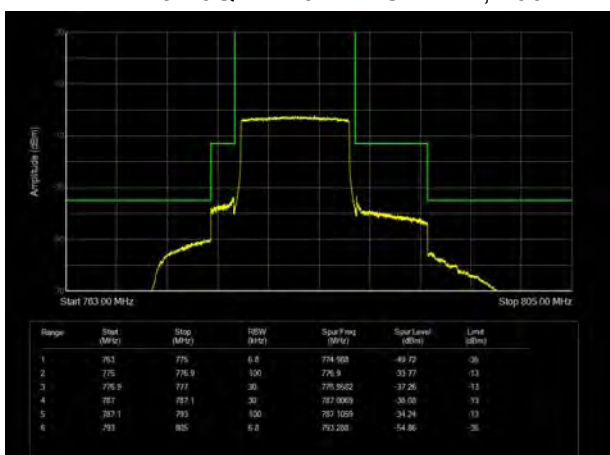
LTE Band 13 16QAM 10MHz CH-Low, 1 RB



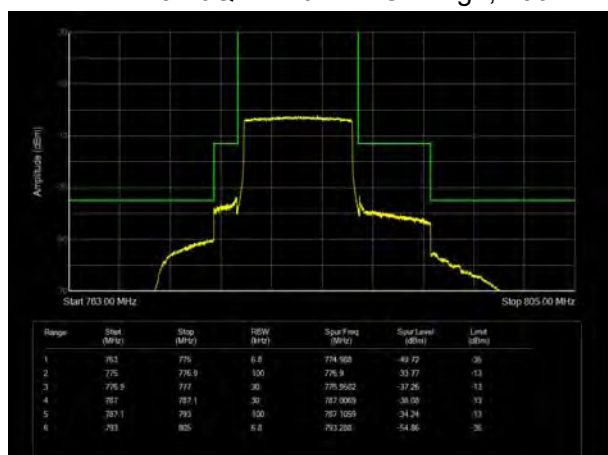
LTE Band 13 16QAM 10MHz CH-High, 1 RB



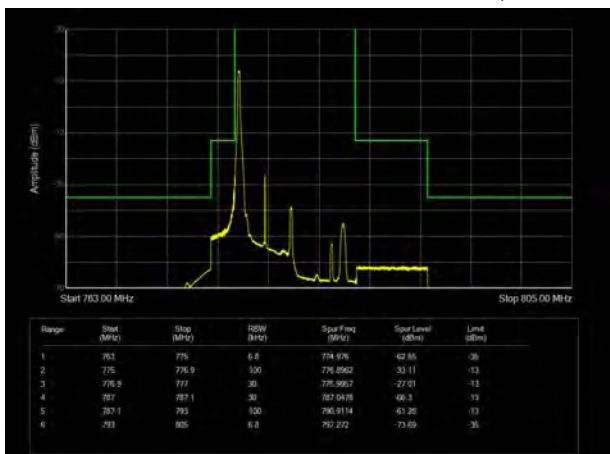
LTE Band 13 16QAM 10MHz CH-Low, 100%RB



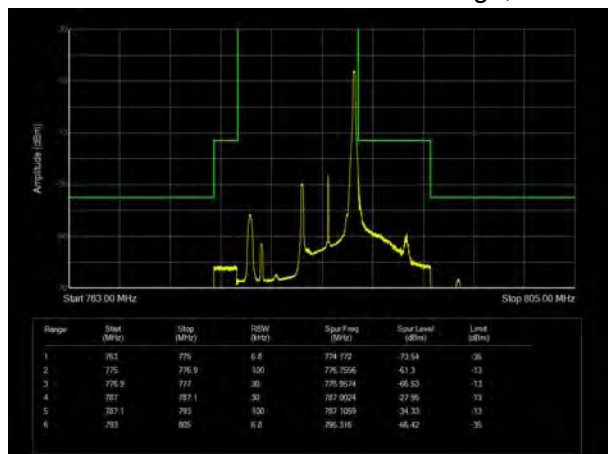
LTE Band 13 16QAM 10MHz CH-High, 100%RB



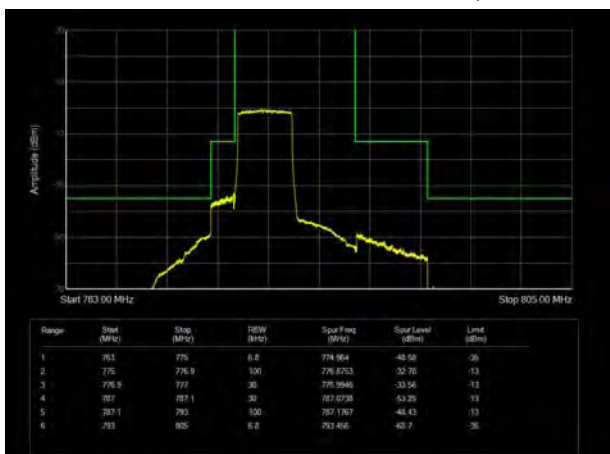
LTE Band 13 64QAM 5MHz CH-Low, 1 RB



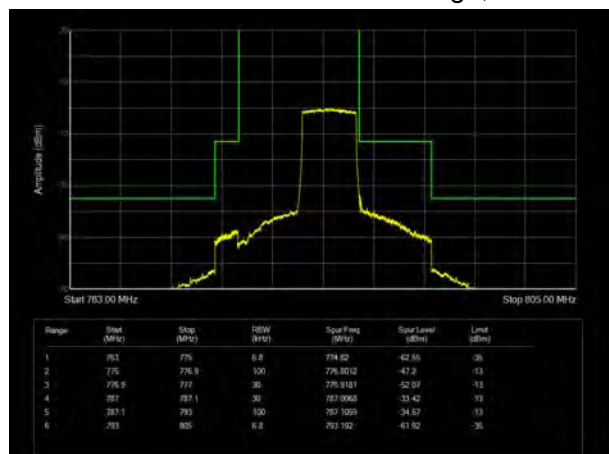
LTE Band 13 64QAM 5MHz CH-High, 1 RB



LTE Band 13 64QAM 5MHz CH-Low, 100%RB



LTE Band 13 64QAM 5MHz CH-High, 100%RB



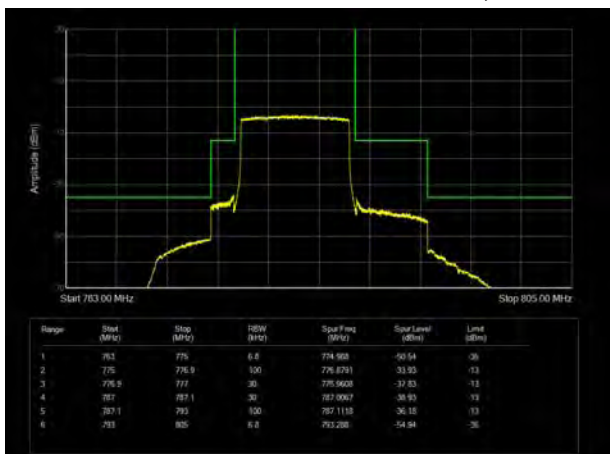
LTE Band 13 64QAM 10MHz CH-Low, 1 RB



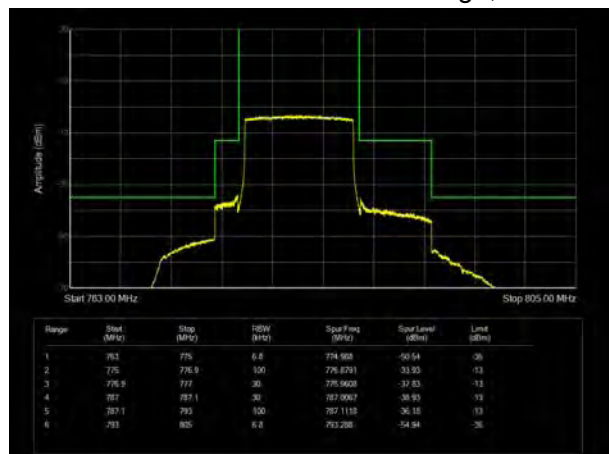
LTE Band 13 64QAM 10MHz CH-High, 1 RB



LTE Band 13 64QAM 10MHz CH-Low, 100%RB

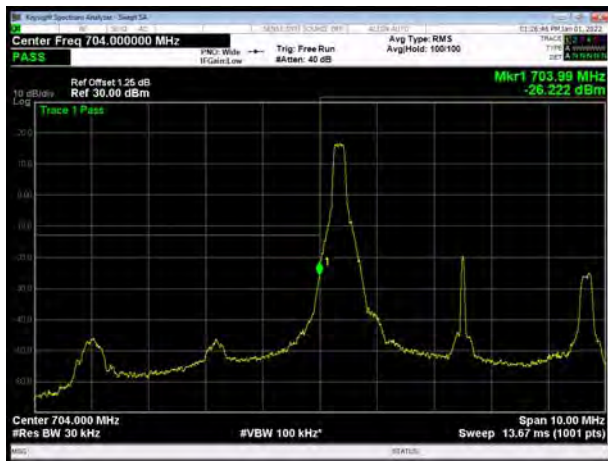


LTE Band 13 64QAM 10MHz CH-High, 100%RB

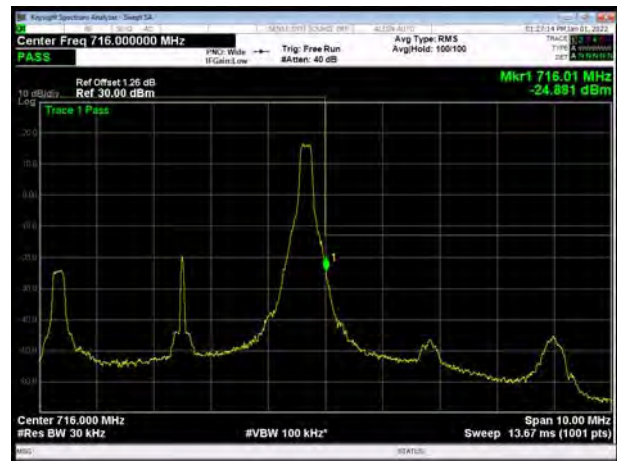




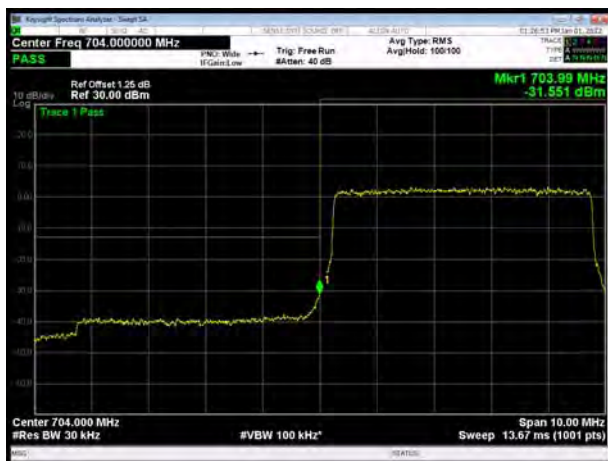
LTE Band 17 QPSK 5MHz CH-Low, 1 RB



LTE Band 17 QPSK 5MHz CH-High, 1 RB



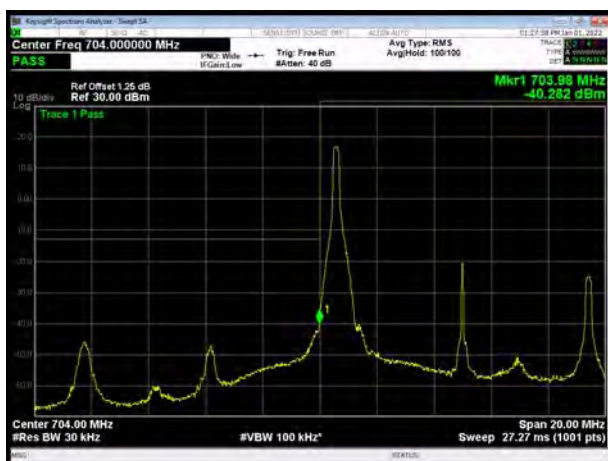
LTE Band 17 QPSK 5MHz CH-Low, 100%RB



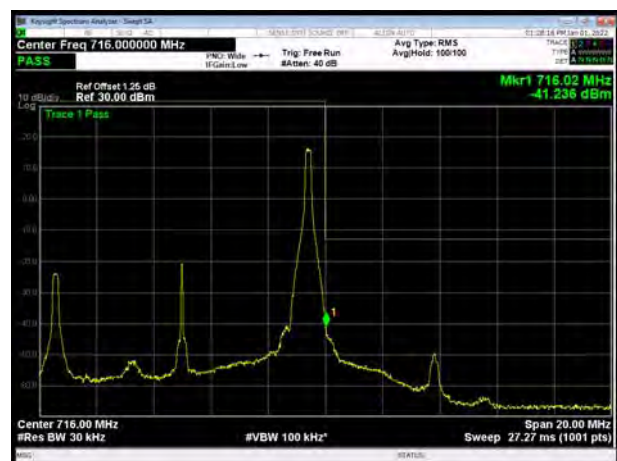
LTE Band 17 QPSK 5MHz CH-High, 100%RB



LTE Band 17 QPSK 10MHz CH-Low, 1 RB

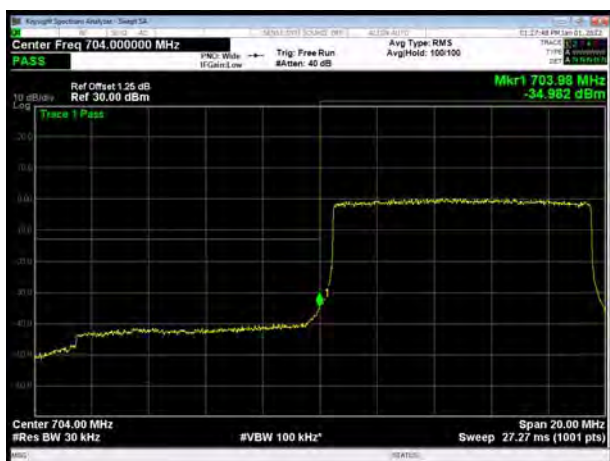


LTE Band 17 QPSK 10MHz CH-High, 1 RB





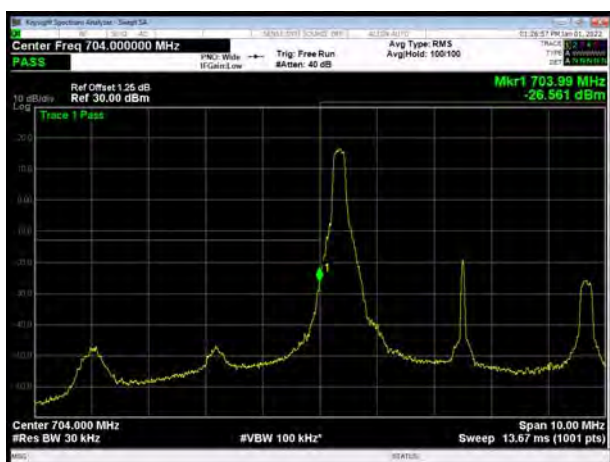
LTE Band 17 QPSK 10MHz CH-Low, 100%RB



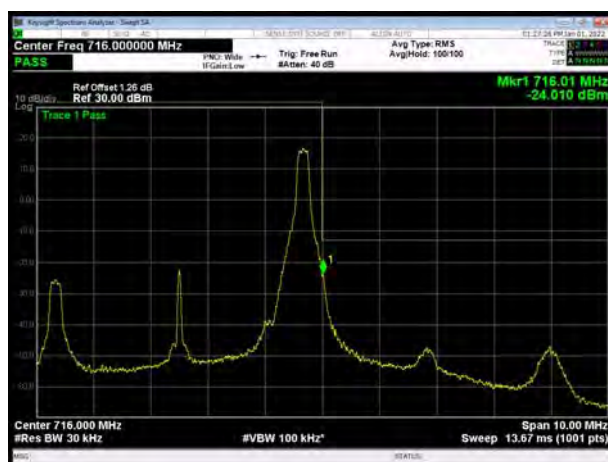
LTE Band 17 QPSK 10MHz CH-High, 100%RB



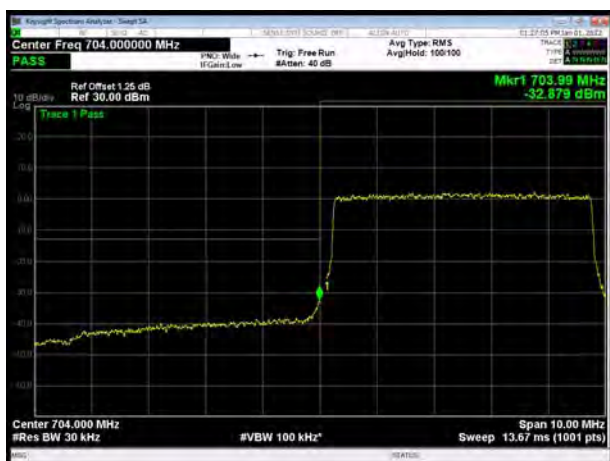
LTE Band 17 16QAM 5MHz CH-Low, 1 RB



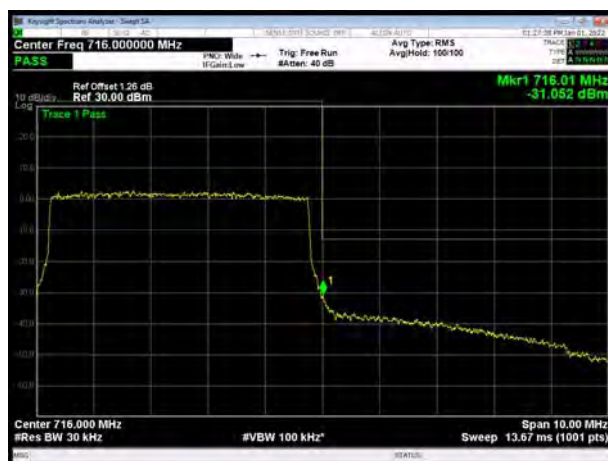
LTE Band 17 16QAM 5MHz CH-High, 1 RB



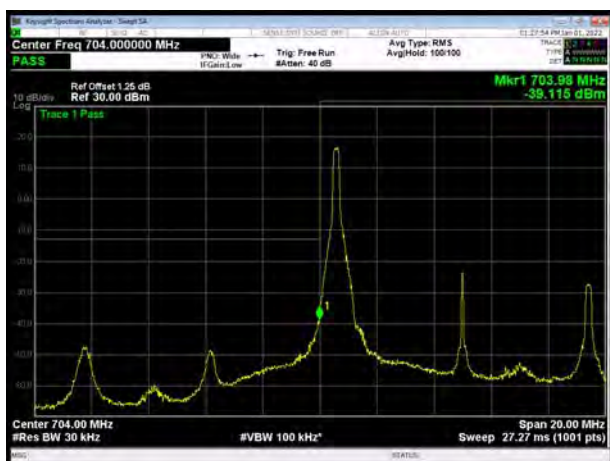
LTE Band 17 16QAM 5MHz CH-Low, 100%RB



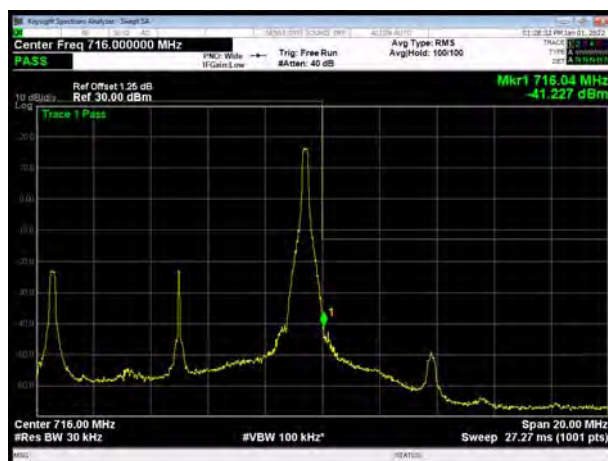
LTE Band 17 16QAM 5MHz CH-High, 100%RB



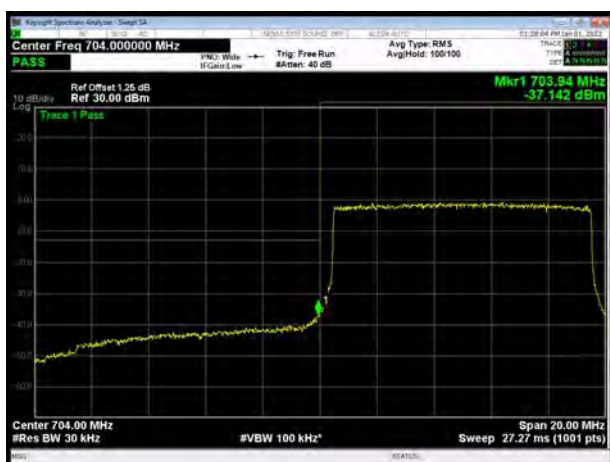
LTE Band 17 16QAM 10MHz CH-Low, 1 RB



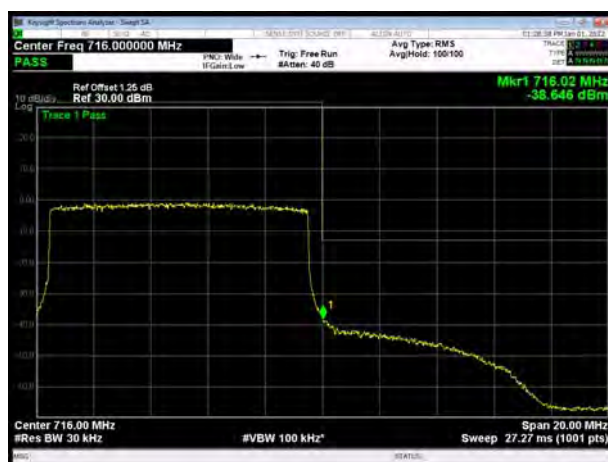
LTE Band 17 16QAM 10MHz CH-High, 1 RB



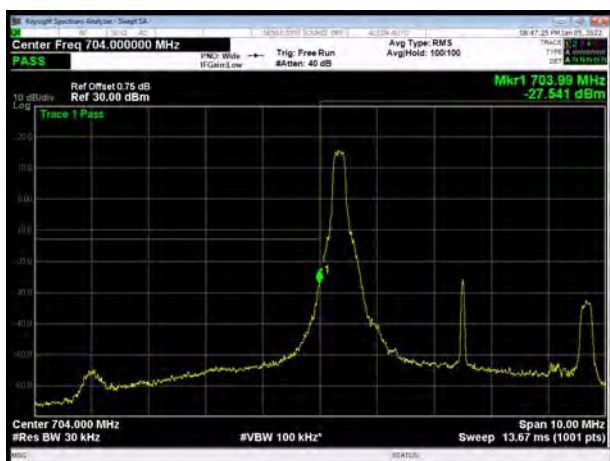
LTE Band 17 16QAM 10MHz CH-Low, 100%RB



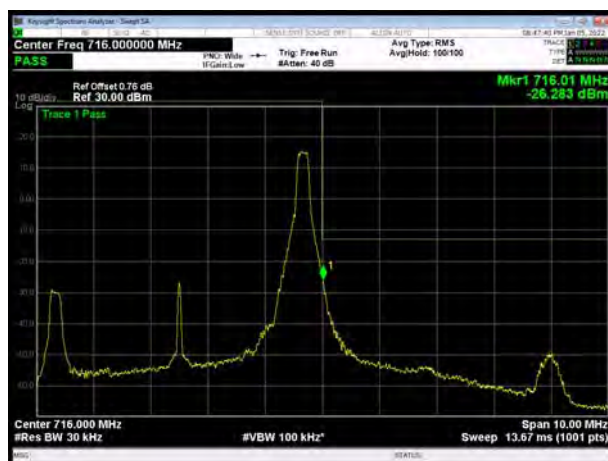
LTE Band 17 16QAM 10MHz CH-High, 100%RB



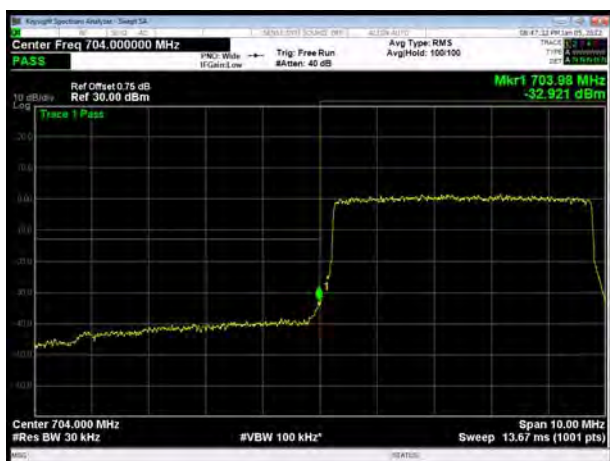
LTE Band 17 64QAM 5MHz CH-Low, 1 RB



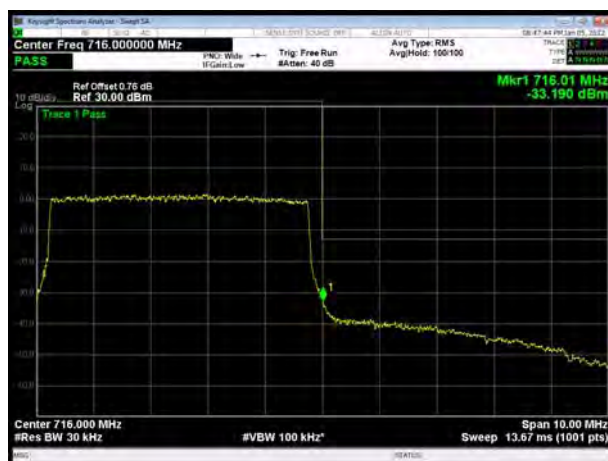
LTE Band 17 64QAM 5MHz CH-High, 1 RB



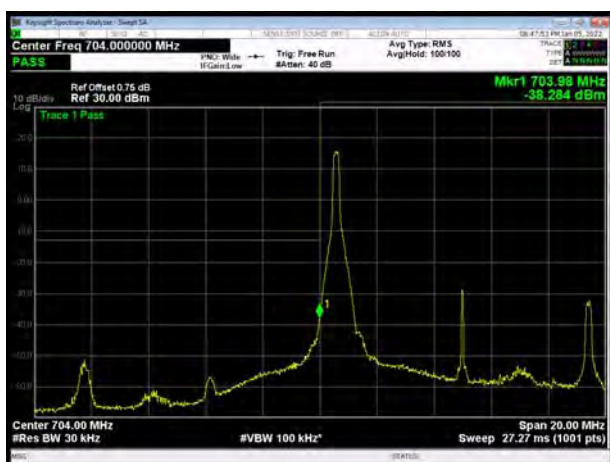
LTE Band 17 64QAM 5MHz CH-Low, 100%RB



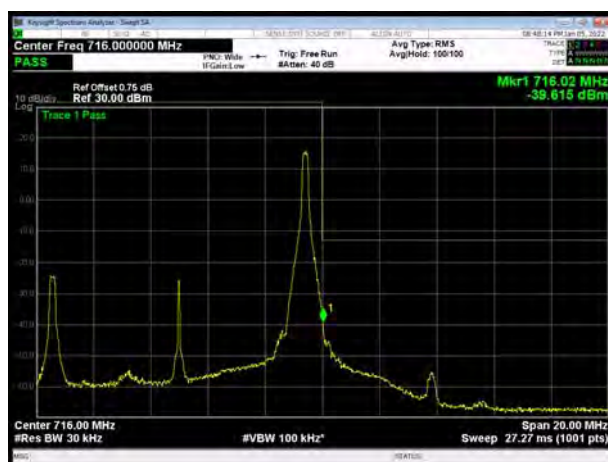
LTE Band 17 64QAM 5MHz CH-High, 100%RB



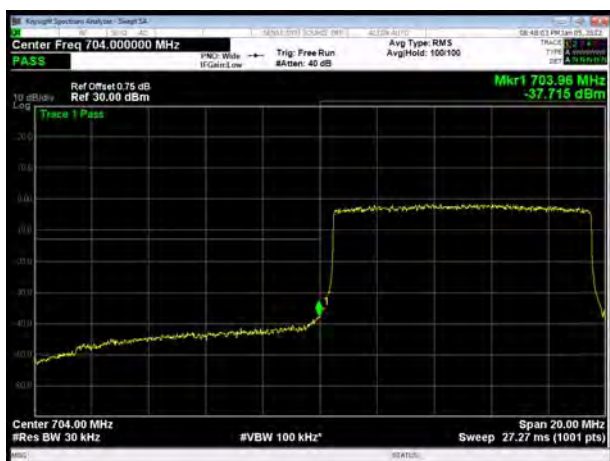
LTE Band 17 64QAM 10MHz CH-Low, 1 RB



LTE Band 17 64QAM 10MHz CH-High, 1 RB



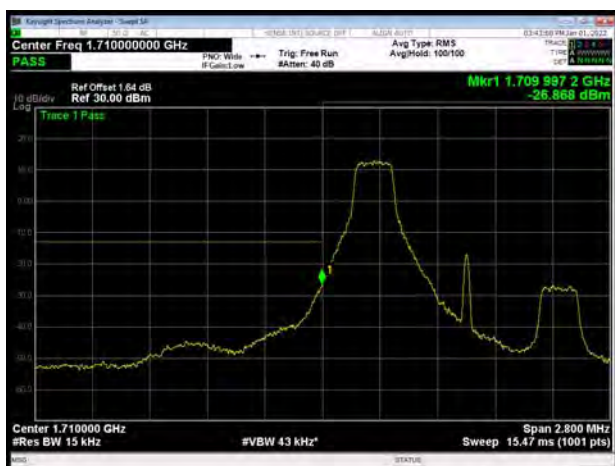
LTE Band 17 64QAM 10MHz CH-Low, 100%RB



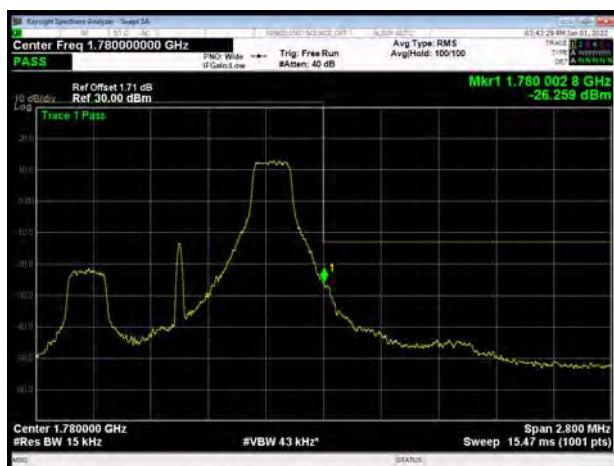
LTE Band 17 64QAM 10MHz CH-High, 100%RB



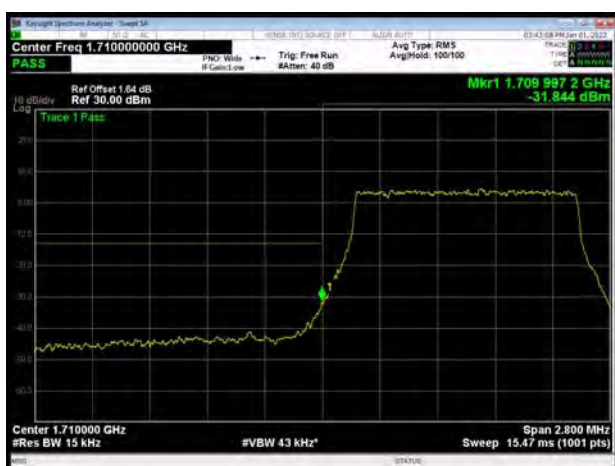
LTE Band 66 QPSK 1.4MHz CH-Low, 1 RB



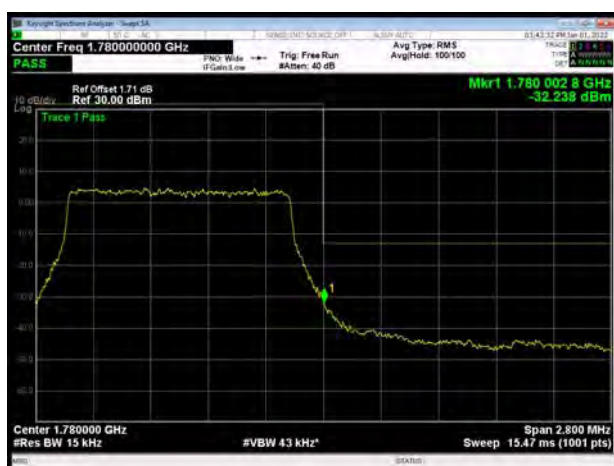
LTE Band 66 QPSK 1.4MHz CH-High, 1 RB



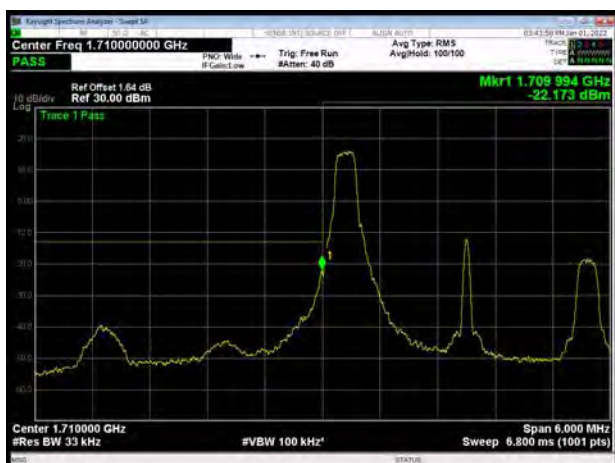
LTE Band 66 QPSK 1.4MHz CH-Low, 100%RB



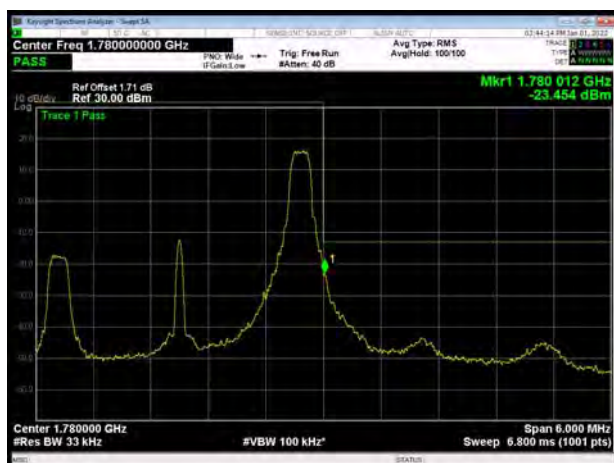
LTE Band 66 QPSK 1.4MHz CH-High, 100%RB



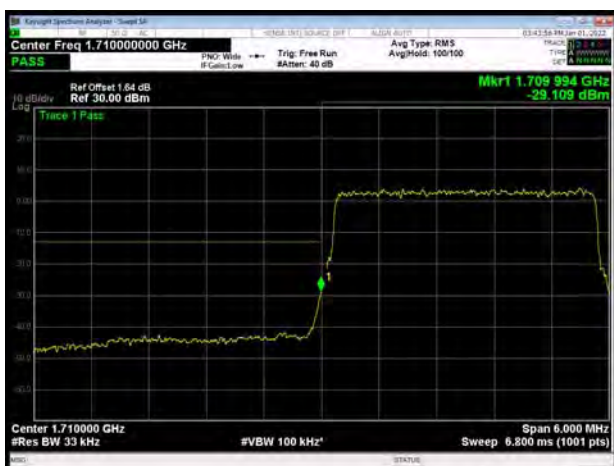
LTE Band 66 QPSK 3MHz CH-Low, 1 RB



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



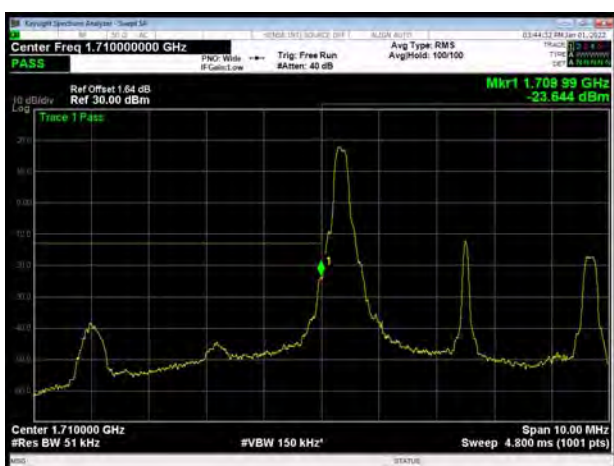
LTE Band 66 QPSK 3MHz CH-Low, 100%RB



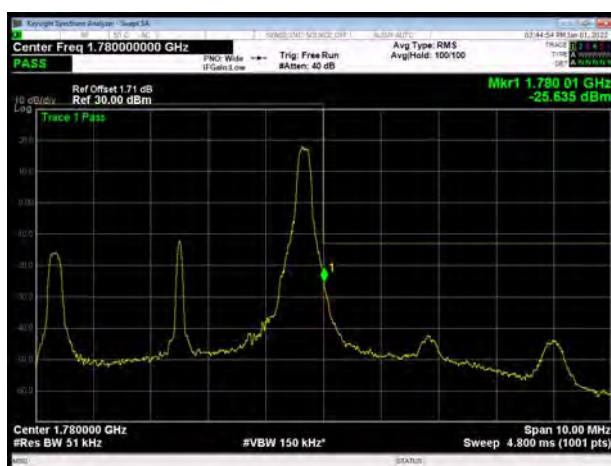
LTE Band 66 QPSK 3MHz CH-High, 100%RB



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



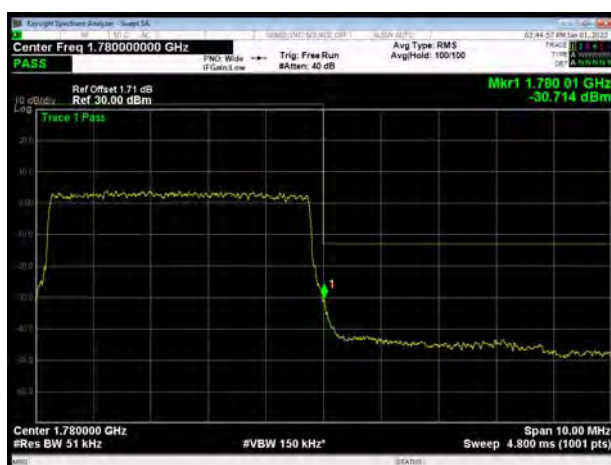
LTE Band 66 QPSK 5MHz CH-High, 1 RB



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

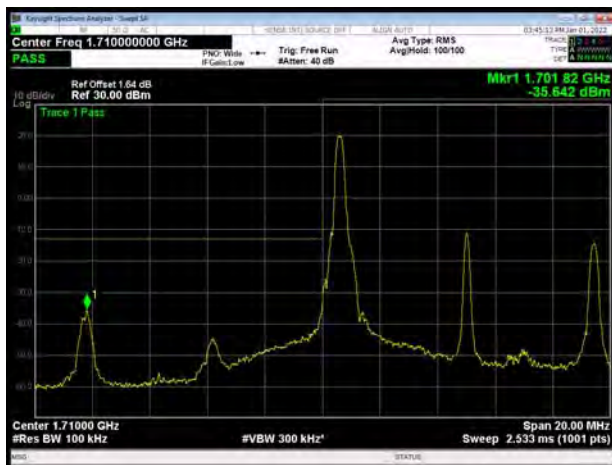


LTE Band 66 QPSK 5MHz CH-High, 100%RB

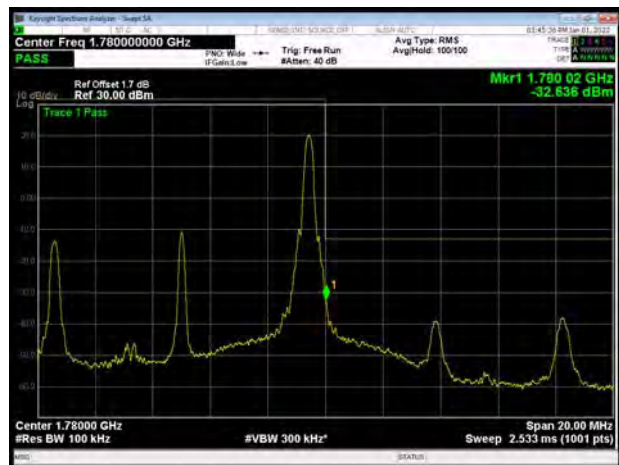




LTE Band 66 QPSK 10MHz CH-Low, 1 RB



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



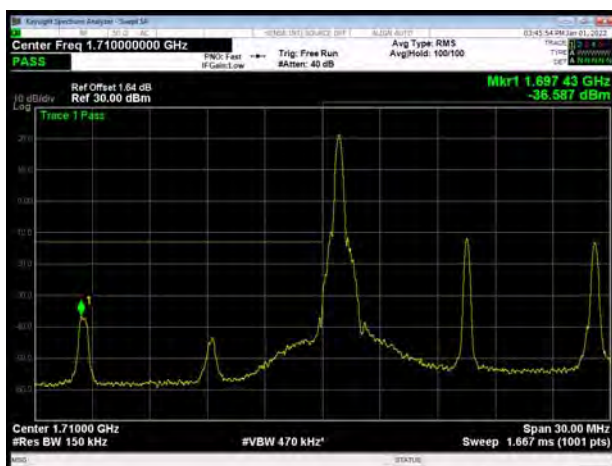
LTE Band 66 QPSK 10MHz CH-Low, 100%RB



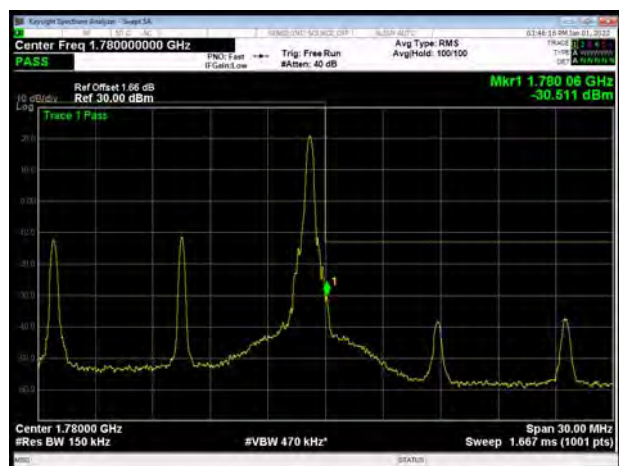
LTE Band 66 QPSK 10MHz CH-High, 100%RB



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

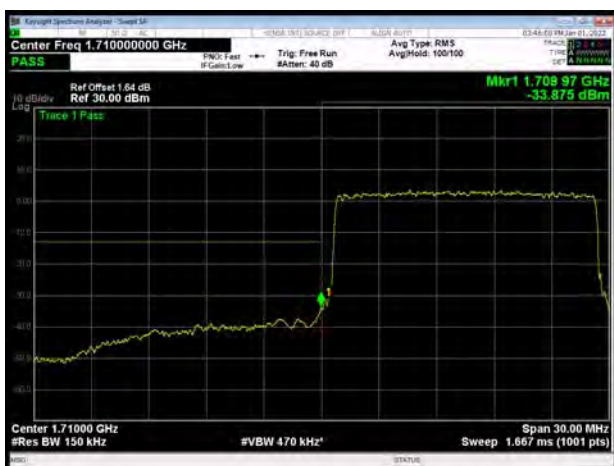


LTE Band 66 QPSK 15MHz CH-High, 1 RB





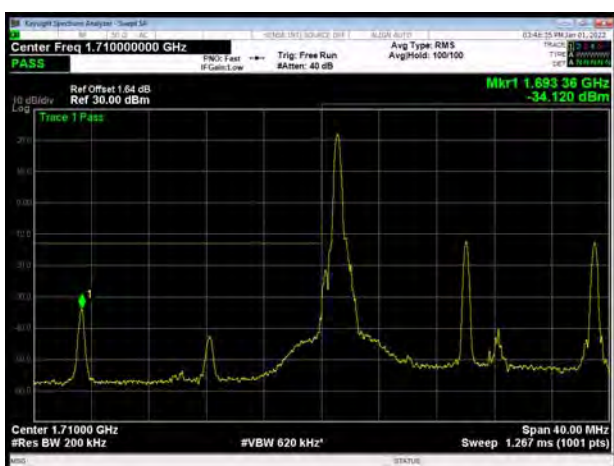
LTE Band 66 QPSK 15MHz CH-Low, 100%RB



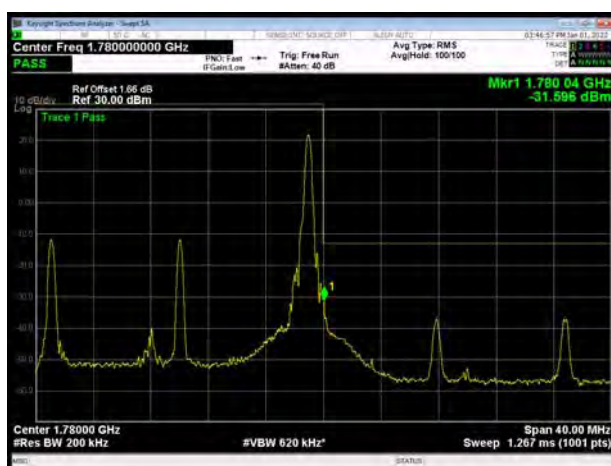
LTE Band 66 QPSK 15MHz CH-High, 100%RB



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

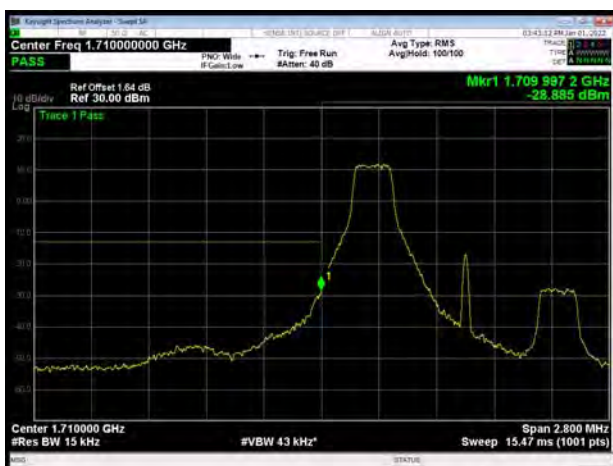


LTE Band 66 QPSK 20MHz CH-High, 100%RB

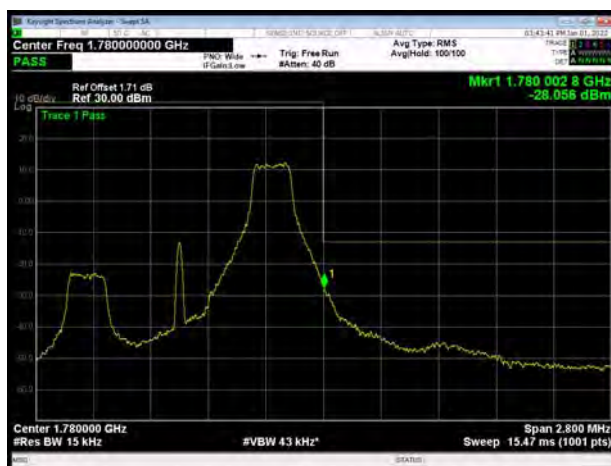




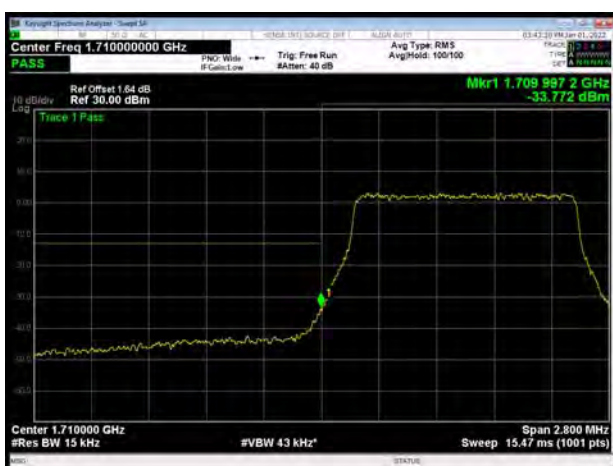
LTE Band 66 16QAM 1.4MHz CH-Low, 1 RB



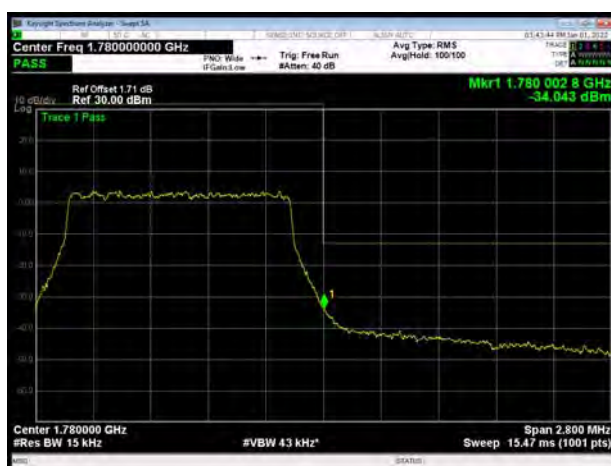
LTE Band 66 16QAM 1.4MHz CH-High, 1 RB



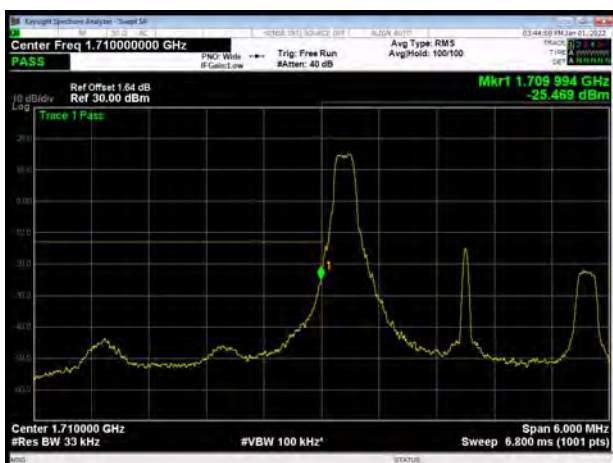
LTE Band 66 16QAM 1.4MHz CH-Low, 100%RB



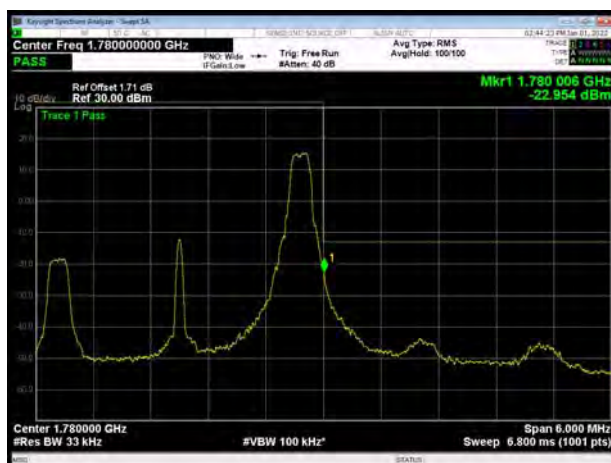
LTE Band 66 16QAM 1.4MHz CH-High, 100%RB



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

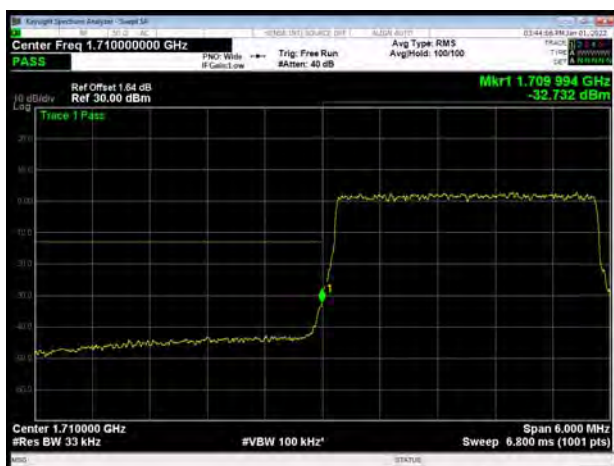


LTE Band 66 16QAM 3MHz CH-High, 1 RB





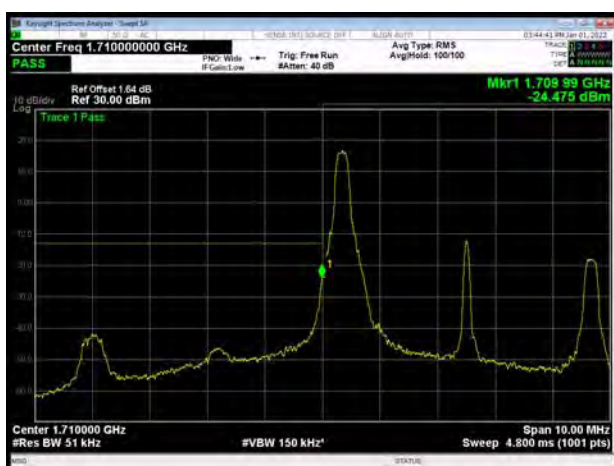
LTE Band 66 16QAM 3MHz CH-Low, 100%RB



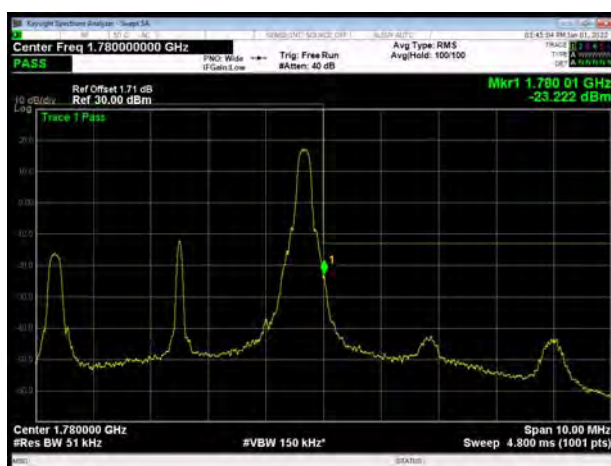
LTE Band 66 16QAM 3MHz CH-High, 100%RB



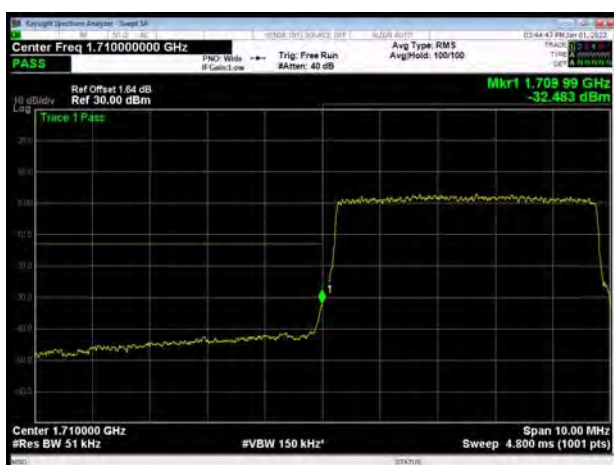
LTE Band 66 16QAM 5MHz CH-Low, 1 RB



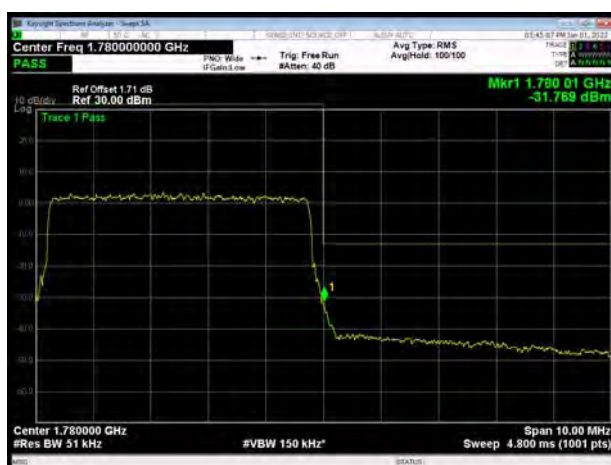
LTE Band 66 16QAM 5MHz CH-High, 1 RB



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

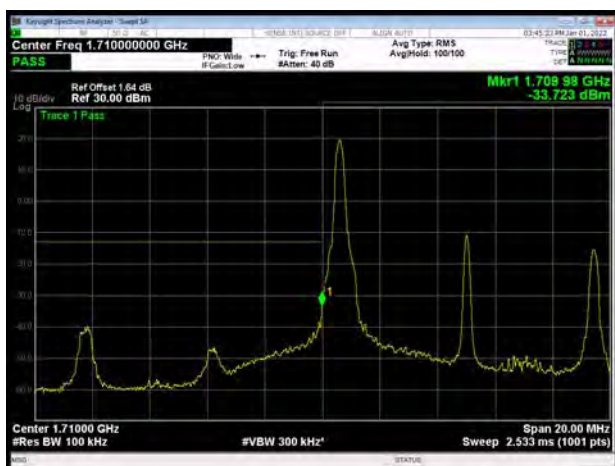


LTE Band 66 16QAM 5MHz CH-High, 100%RB

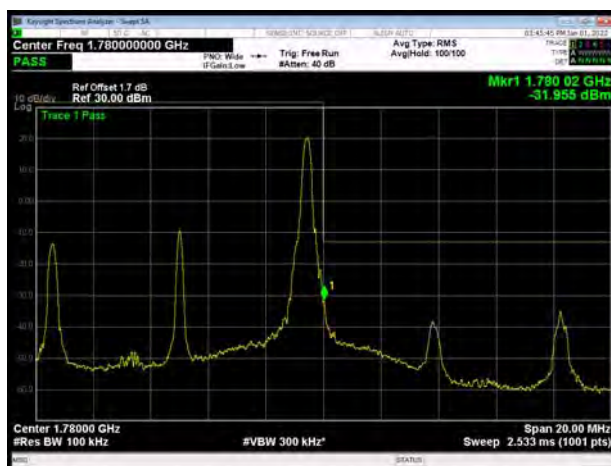




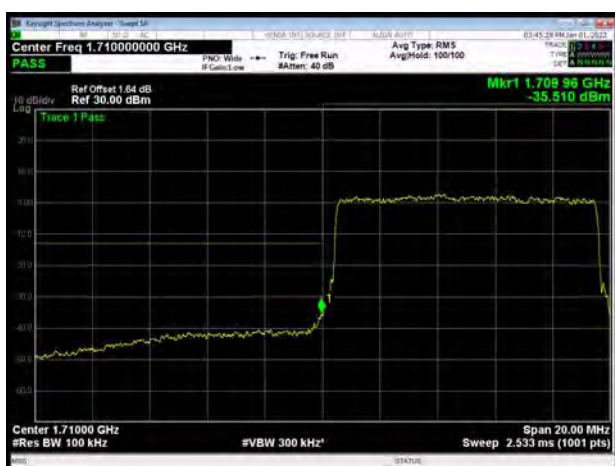
LTE Band 66 16QAM 10MHz CH-Low, 1 RB



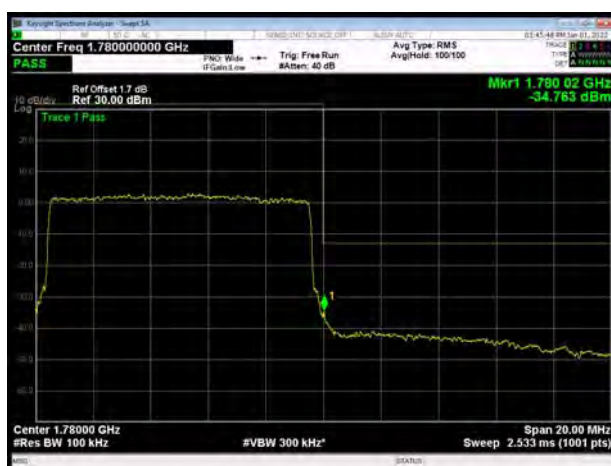
LTE Band 66 16QAM 10MHz CH-High, 1 RB



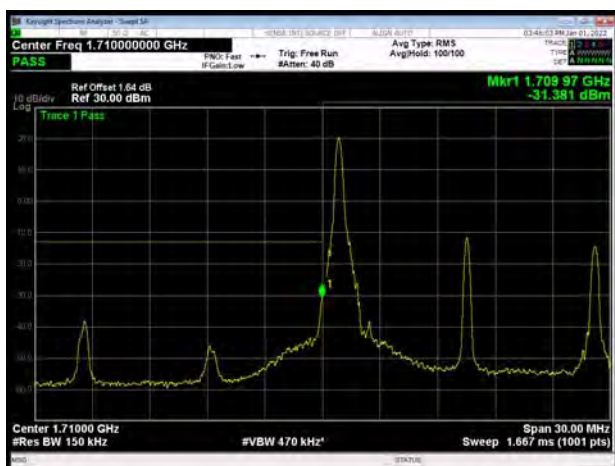
LTE Band 66 16QAM 10MHz CH-Low, 100%RB



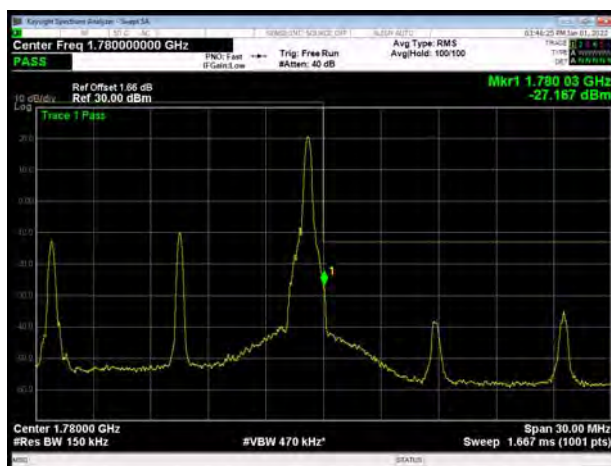
LTE Band 66 16QAM 10MHz CH-High, 100%RB



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



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





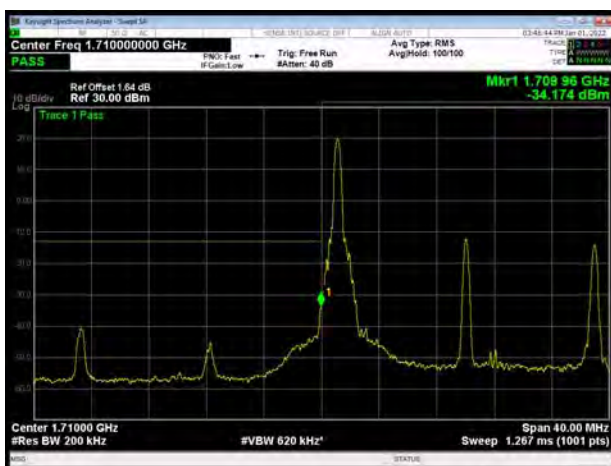
LTE Band 66 16QAM 15MHz CH-Low, 100%RB



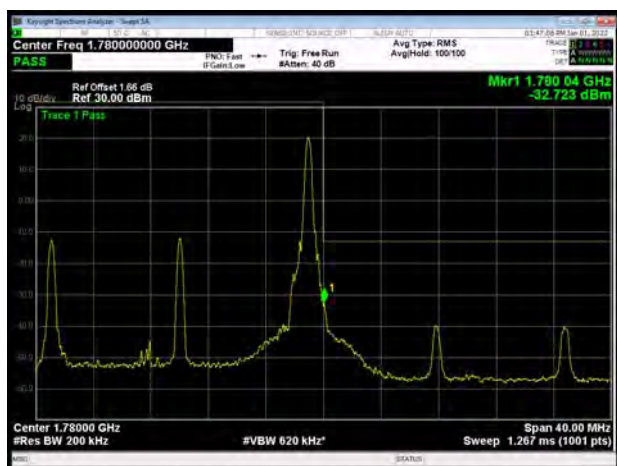
LTE Band 66 16QAM 15MHz CH-High, 100%RB



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



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



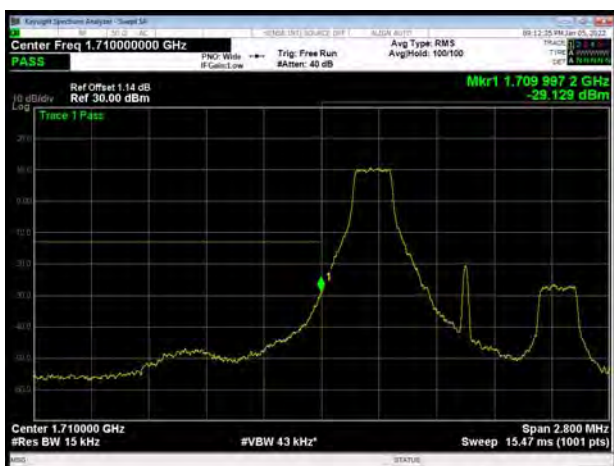
LTE Band 66 16QAM 20MHz CH-Low, 100%RB



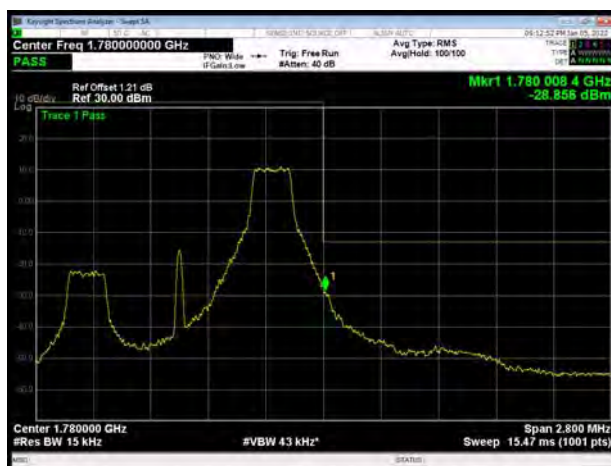
LTE Band 66 16QAM 20MHz CH-High, 100%RB



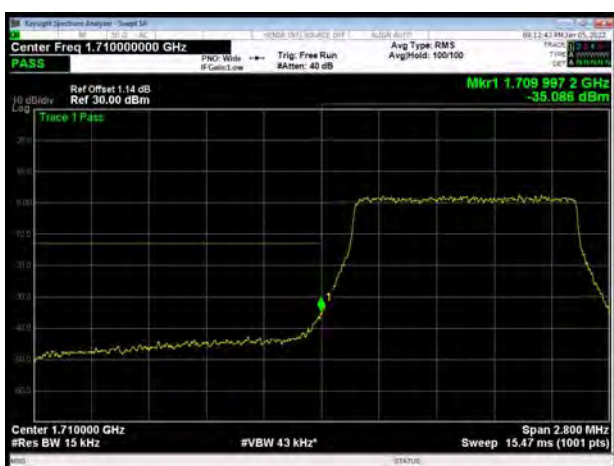
LTE Band 66 64QAM 1.4MHz CH-Low, 1 RB



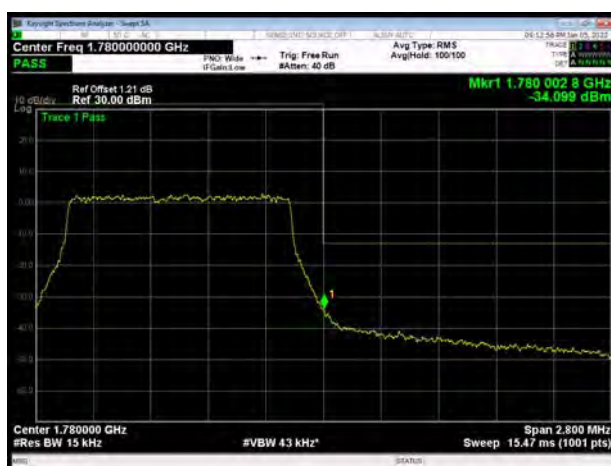
LTE Band 66 64QAM 1.4MHz CH-High, 1 RB



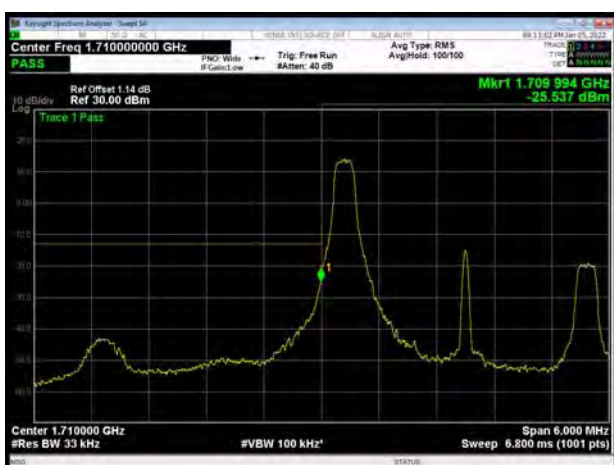
LTE Band 66 64QAM 1.4MHz CH-Low, 100%RB



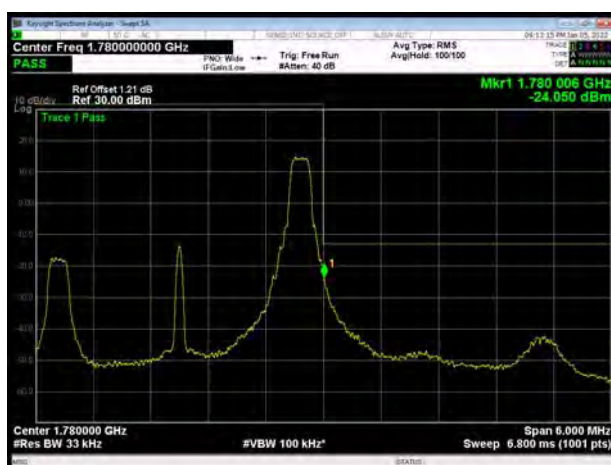
LTE Band 66 64QAM 1.4MHz CH-High, 100%RB



LTE Band 66 64QAM 3MHz CH-Low, 1 RB

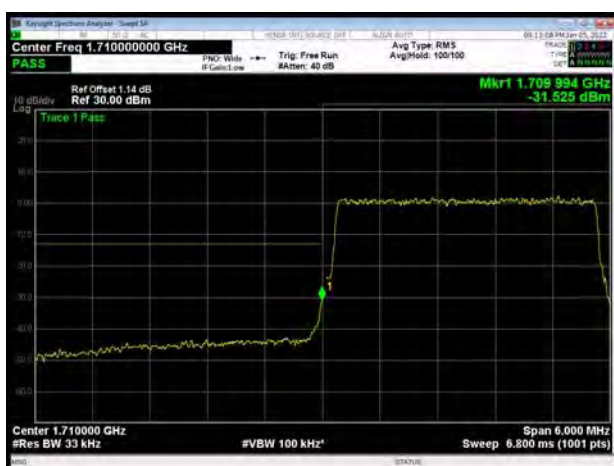


LTE Band 66 64QAM 3MHz CH-High, 1 RB

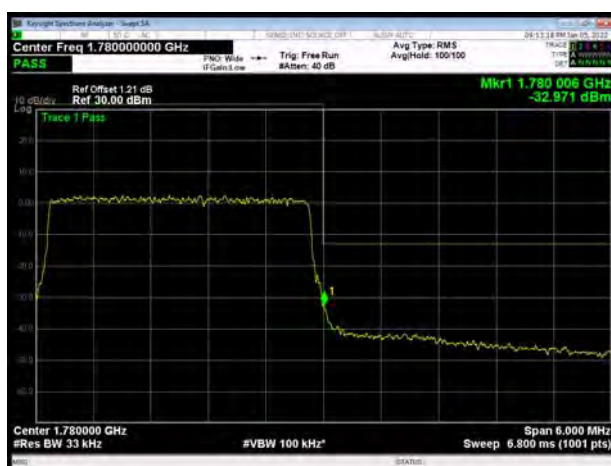




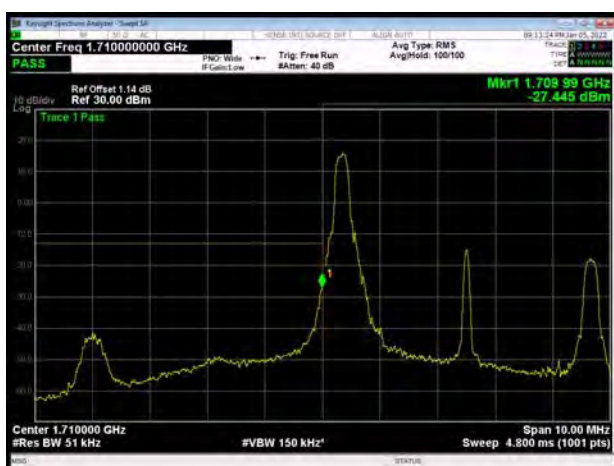
LTE Band 66 64QAM 3MHz CH-Low, 100%RB



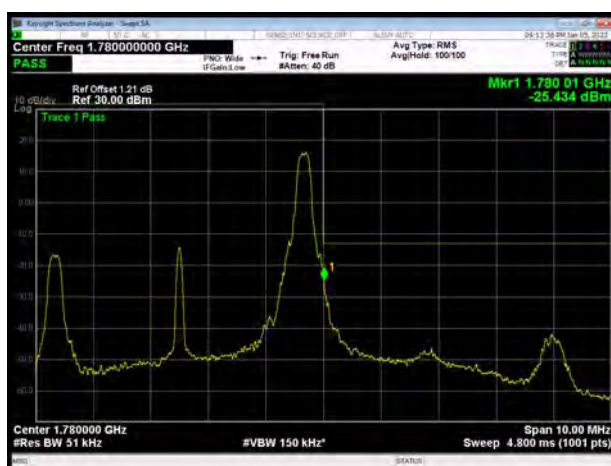
LTE Band 66 64QAM 3MHz CH-High, 100%RB



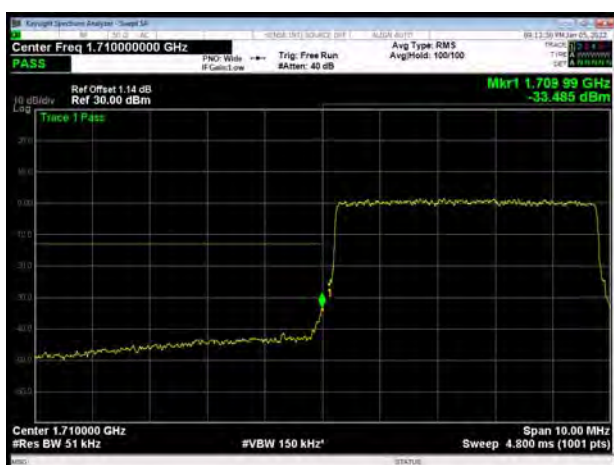
LTE Band 66 64QAM 5MHz CH-Low, 1 RB



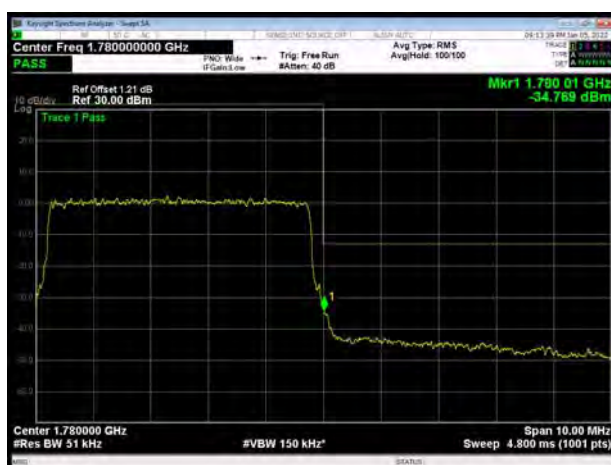
LTE Band 66 64QAM 5MHz CH-High, 1 RB



LTE Band 66 64QAM 5MHz CH-Low, 100%RB

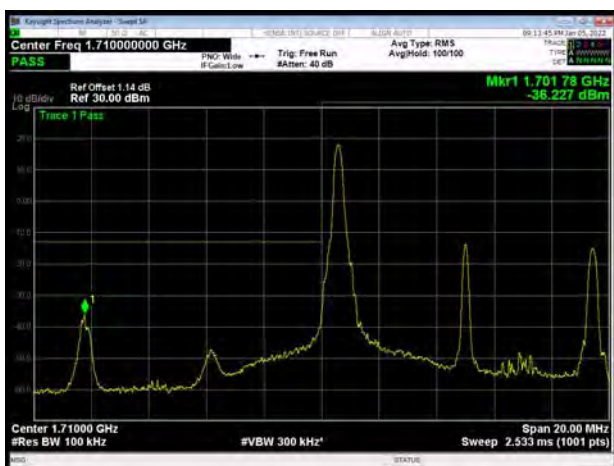


LTE Band 66 64QAM 5MHz CH-High, 100%RB

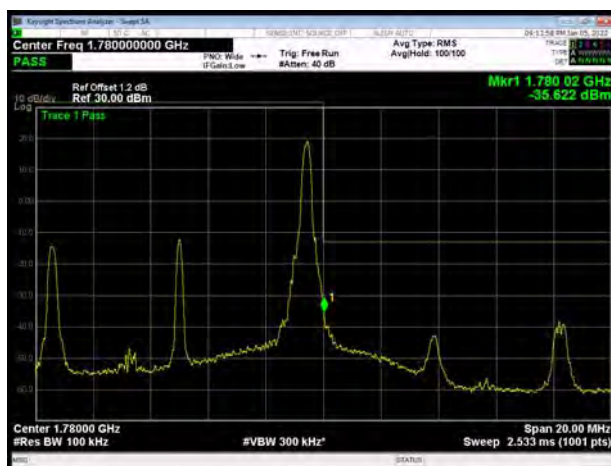




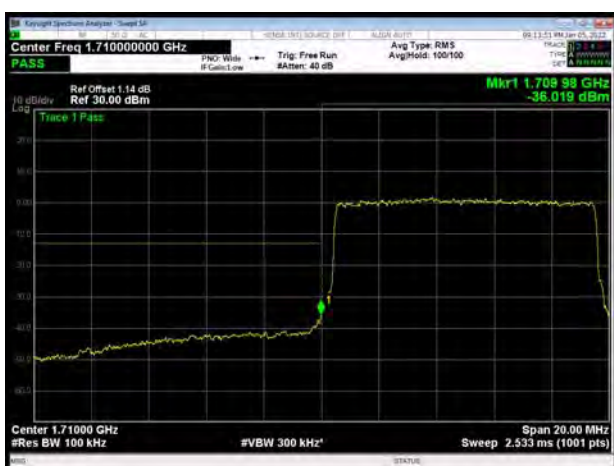
LTE Band 66 64QAM 10MHz CH-Low, 1 RB



LTE Band 66 64QAM 10MHz CH-High, 1 RB



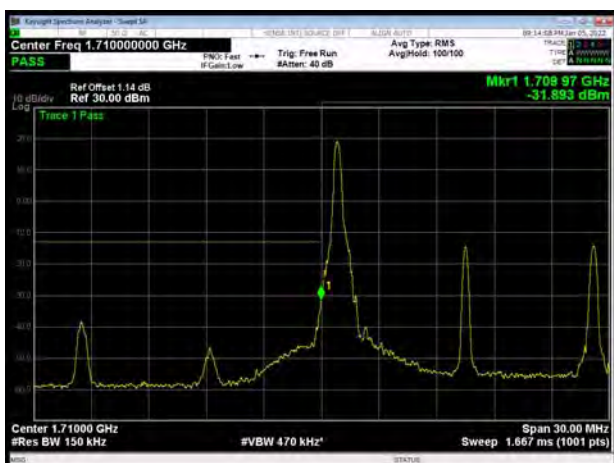
LTE Band 66 64QAM 10MHz CH-Low, 100%RB



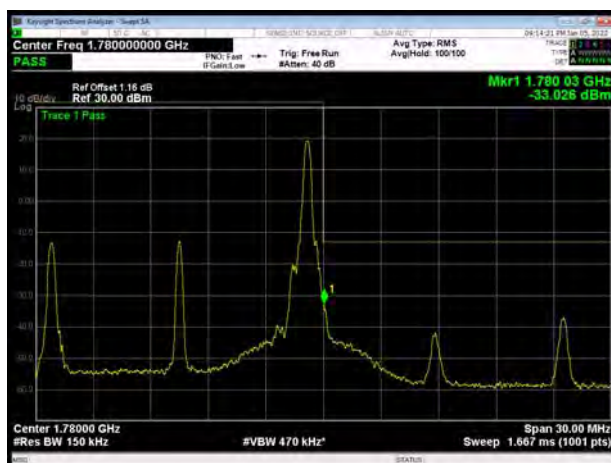
LTE Band 66 64QAM 10MHz CH-High, 100%RB



LTE Band 66 64QAM 15MHz CH-Low, 1 RB



LTE Band 66 64QAM 15MHz CH-High, 1 RB





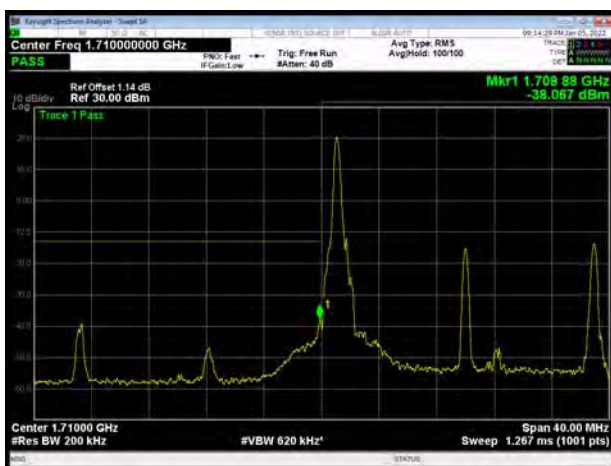
LTE Band 66 64QAM 15MHz CH-Low, 100%RB



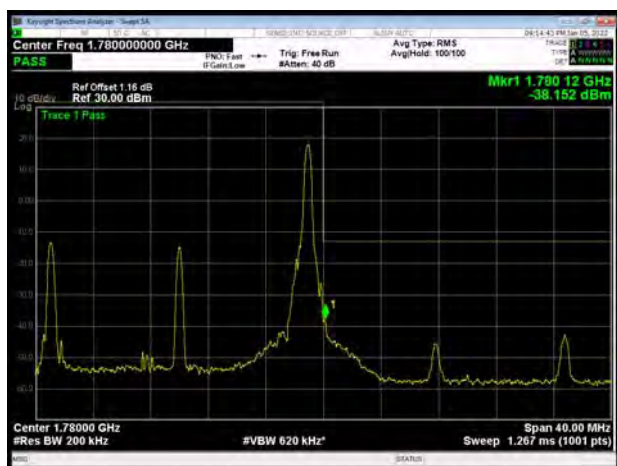
LTE Band 66 64QAM 15MHz CH-High, 100%RB



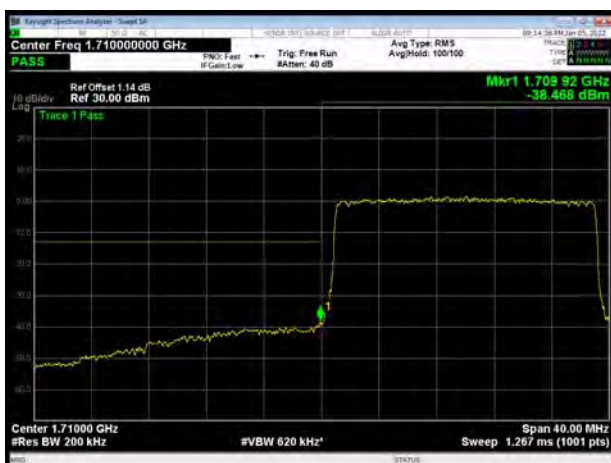
LTE Band 66 64QAM 20MHz CH-Low, 1 RB



LTE Band 66 64QAM 20MHz CH-High, 1 RB



LTE Band 66 64QAM 20MHz CH-Low, 100%RB



LTE Band 66 64QAM 20MHz CH-High, 100%RB



5.4 Peak-to-Average Power Ratio (PAPR)

Ambient condition

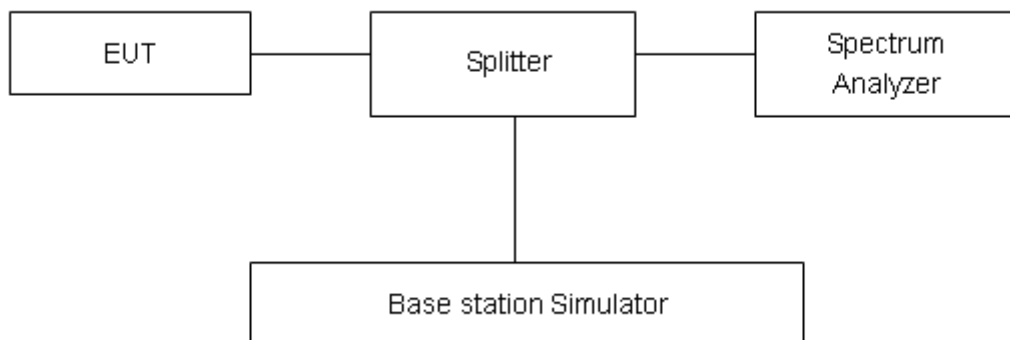
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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:

$$\text{PAPR (dB)} = \text{PPk (dBm)} - \text{PAvg (dBm)}.$$

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 the normal distribution is with the coverage factor $k = 2$, $U = 0.4$ dB.



Test Results

LTE Band 12								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	23017	699.7	27.70	23.18	4.52	≤13	PASS
		23095	707.5	27.76	23.41	4.35	≤13	PASS
		23173	715.3	27.43	22.97	4.46	≤13	PASS
	3	23025	700.5	28.25	23.38	4.87	≤13	PASS
		23095	707.5	27.69	23.23	4.46	≤13	PASS
		23165	714.5	27.67	23.11	4.56	≤13	PASS
	5	23035	701.5	28.09	23.22	4.87	≤13	PASS
		23095	707.5	27.79	23.33	4.46	≤13	PASS
		23155	713.5	27.75	23.20	4.55	≤13	PASS
	10	23060	704	28.09	23.33	4.76	≤13	PASS
		23095	707.5	27.95	23.30	4.65	≤13	PASS
		23130	711	27.85	23.21	4.64	≤13	PASS
16QAM	1.4	23017	699.7	27.63	22.20	5.43	≤13	PASS
		23095	707.5	27.14	22.15	4.99	≤13	PASS
		23173	715.3	27.50	22.22	5.28	≤13	PASS
	3	23025	700.5	28.16	22.37	5.79	≤13	PASS
		23095	707.5	27.58	22.23	5.35	≤13	PASS
		23165	714.5	27.58	22.15	5.43	≤13	PASS
	5	23035	701.5	28.00	22.24	5.76	≤13	PASS
		23095	707.5	27.62	22.18	5.44	≤13	PASS
		23155	713.5	27.60	22.14	5.46	≤13	PASS
	10	23060	704	27.87	22.16	5.71	≤13	PASS
		23095	707.5	27.73	22.15	5.58	≤13	PASS
		23130	711	27.79	22.30	5.49	≤13	PASS
64QAM	1.4	23017	699.7	26.93	21.24	5.69	≤13	PASS
		23095	707.5	26.70	21.67	5.03	≤13	PASS
		23173	715.3	26.35	21.17	5.18	≤13	PASS
	3	23025	700.5	27.00	21.18	5.82	≤13	PASS
		23095	707.5	26.63	21.30	5.33	≤13	PASS
		23165	714.5	26.63	21.35	5.28	≤13	PASS
	5	23035	701.5	27.11	21.49	5.62	≤13	PASS
		23095	707.5	26.78	21.63	5.15	≤13	PASS
		23155	713.5	26.66	21.33	5.33	≤13	PASS
	10	23060	704	26.90	21.31	5.59	≤13	PASS
		23095	707.5	26.93	21.57	5.36	≤13	PASS
		23130	711	26.80	21.35	5.45	≤13	PASS

LTE Band 13								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	23205	779.5	26.93	22.33	4.60	≤13	PASS
		23230	782	26.86	22.28	4.58	≤13	PASS
		23255	784.5	26.89	22.28	4.61	≤13	PASS
	10	23230	782	27.01	22.31	4.70	≤13	PASS
16QAM	5	23205	779.5	26.84	21.37	5.47	≤13	PASS
		23230	782	26.69	21.23	5.46	≤13	PASS
		23255	784.5	26.73	21.22	5.51	≤13	PASS
	10	23230	782	26.72	21.12	5.60	≤13	PASS
64QAM	5	23205	779.5	25.85	20.48	5.37	≤13	PASS
		23230	782	25.78	20.48	5.30	≤13	PASS
		23255	784.5	25.69	20.27	5.42	≤13	PASS
	10	23230	782	25.79	20.34	5.45	≤13	PASS

LTE Band 17								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	23755	706.5	27.74	23.34	4.40	≤13	PASS
		23790	710	27.69	23.34	4.35	≤13	PASS
		23825	713.5	27.77	23.38	4.39	≤13	PASS
	10	23780	709	27.99	23.45	4.54	≤13	PASS
		23790	710	27.93	23.39	4.54	≤13	PASS
		23800	711	27.89	23.35	4.54	≤13	PASS
16QAM	5	23755	706.5	27.72	22.48	5.24	≤13	PASS
		23790	710	27.51	22.20	5.31	≤13	PASS
		23825	713.5	27.69	22.41	5.28	≤13	PASS
	10	23780	709	27.84	22.51	5.33	≤13	PASS
		23790	710	27.70	22.21	5.49	≤13	PASS
		23800	711	27.77	22.35	5.42	≤13	PASS
64QAM	5	23755	706.5	26.61	21.31	5.30	≤13	PASS
		23790	710	26.69	21.57	5.12	≤13	PASS
		23825	713.5	26.65	21.36	5.29	≤13	PASS
	10	23780	709	26.87	21.54	5.33	≤13	PASS
		23790	710	26.87	21.49	5.38	≤13	PASS
		23800	711	26.80	21.40	5.40	≤13	PASS



LTE Band 66								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	131979	1710.7	26.37	21.61	4.76	≤13	PASS
		132322	1745	26.75	21.78	4.97	≤13	PASS
		132665	1779.3	26.59	21.64	4.95	≤13	PASS
	3	131987	1711.5	26.51	21.74	4.77	≤13	PASS
		132322	1745	26.83	21.84	4.99	≤13	PASS
		132657	1778.5	26.69	21.71	4.98	≤13	PASS
	5	131997	1712.5	26.40	21.65	4.75	≤13	PASS
		132322	1745	26.89	21.89	5.00	≤13	PASS
		132647	1777.5	26.59	21.68	4.91	≤13	PASS
	10	132022	1715	26.46	21.66	4.80	≤13	PASS
		132322	1745	26.81	21.83	4.98	≤13	PASS
		132622	1775	26.54	21.67	4.87	≤13	PASS
	15	132047	1717.5	26.67	21.61	5.06	≤13	PASS
		132322	1745	26.89	21.78	5.11	≤13	PASS
		132597	1772.5	26.65	21.63	5.02	≤13	PASS
	20	132072	1720	26.72	21.77	4.95	≤13	PASS
		132322	1745	26.85	21.85	5.00	≤13	PASS
		132572	1770	26.59	21.63	4.96	≤13	PASS
16QAM	1.4	131979	1710.7	26.21	20.52	5.69	≤13	PASS
		132322	1745	26.76	20.95	5.81	≤13	PASS
		132665	1779.3	26.48	20.65	5.83	≤13	PASS
	3	131987	1711.5	26.42	20.73	5.69	≤13	PASS
		132322	1745	26.59	20.62	5.97	≤13	PASS
		132657	1778.5	26.58	20.73	5.85	≤13	PASS
	5	131997	1712.5	26.26	20.62	5.64	≤13	PASS
		132322	1745	26.65	20.75	5.90	≤13	PASS
		132647	1777.5	26.40	20.57	5.83	≤13	PASS
	10	132022	1715	26.14	20.43	5.71	≤13	PASS
		132322	1745	26.58	20.73	5.85	≤13	PASS
		132622	1775	26.34	20.57	5.77	≤13	PASS
	15	132047	1717.5	26.34	20.50	5.84	≤13	PASS
		132322	1745	26.76	20.87	5.89	≤13	PASS
		132597	1772.5	26.41	20.61	5.80	≤13	PASS
	20	132072	1720	26.42	20.58	5.84	≤13	PASS
		132322	1745	26.70	20.88	5.82	≤13	PASS



		132572	1770	26.50	20.77	5.73	≤13	PASS
64QAM	1.4	131979	1710.7	25.25	19.64	5.61	≤13	PASS
		132322	1745	25.67	19.84	5.83	≤13	PASS
		132665	1779.3	25.52	19.59	5.93	≤13	PASS
	3	131987	1711.5	25.31	19.77	5.54	≤13	PASS
		132322	1745	25.48	19.50	5.98	≤13	PASS
		132657	1778.5	25.50	19.52	5.98	≤13	PASS
	5	131997	1712.5	25.06	19.45	5.61	≤13	PASS
		132322	1745	25.47	19.57	5.90	≤13	PASS
		132647	1777.5	25.41	19.56	5.85	≤13	PASS
	10	132022	1715	25.17	19.53	5.64	≤13	PASS
		132322	1745	25.66	19.84	5.82	≤13	PASS
		132622	1775	25.39	19.63	5.76	≤13	PASS
	15	132047	1717.5	25.31	19.51	5.80	≤13	PASS
		132322	1745	25.65	19.78	5.87	≤13	PASS
		132597	1772.5	25.36	19.55	5.81	≤13	PASS
	20	132072	1720	25.38	19.55	5.83	≤13	PASS
		132322	1745	25.69	19.88	5.81	≤13	PASS
		132572	1770	25.28	19.52	5.76	≤13	PASS

5.5 Frequency Stability

Ambient condition

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

Method of Measurement

Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -30°C to +50°C in 10°C step size.

(1) With all power removed, the temperature was decreased to -10°C and permitted to stabilize for three hours.

(2) Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

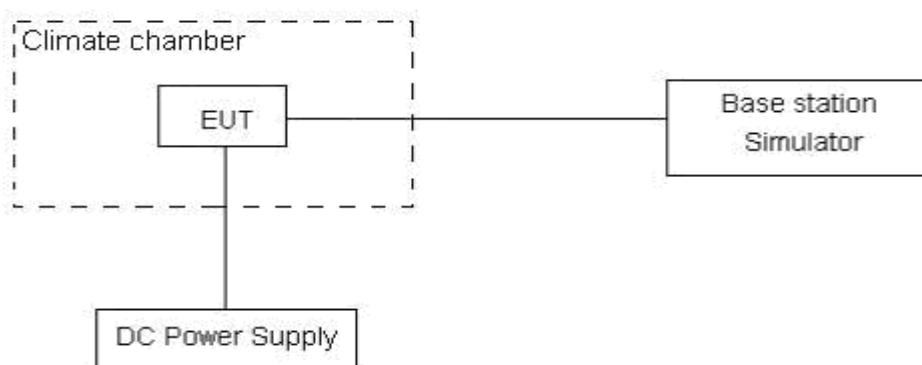
Frequency Stability (Voltage Variation)

The frequency stability shall be measured with variation of primary supply voltage as follows:

Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

This transceiver is specified to operate with an input voltage of between 3.6 V and 4.2 V, with a nominal voltage of 3.87V.

Test setup



Limits

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

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 3, U = 0.01\text{ppm}$.



Test Result

LTE Band 12								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	1.4MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	7.00	10.17	13.68	0.00990	0.01437	0.01933	PASS
Extreme (50℃)		14.03	2.16	14.40	0.01984	0.00305	0.02035	PASS
Extreme (40℃)		9.18	6.78	10.63	0.01297	0.00958	0.01503	PASS
Extreme (30℃)		14.07	12.78	6.39	0.01988	0.01806	0.00903	PASS
Extreme (20℃)		13.60	8.88	12.59	0.01922	0.01256	0.01779	PASS
Extreme (10℃)		13.79	14.63	3.84	0.01949	0.02068	0.00543	PASS
Extreme (0℃)		16.00	8.70	17.43	0.02262	0.01230	0.02464	PASS
Extreme (-10℃)		15.92	1.08	3.83	0.02250	0.00152	0.00542	PASS
Extreme (-20℃)		4.29	4.96	2.54	0.00606	0.00701	0.00359	PASS
Extreme (-30℃)		5.14	13.76	17.06	0.00727	0.01945	0.02411	PASS
25℃	LV	14.30	15.80	1.23	0.02021	0.02233	0.00174	PASS
	HV	11.52	9.83	3.77	0.01629	0.01390	0.00533	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	3MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	4.46	14.76	10.22	0.00630	0.02086	0.01445	PASS
Extreme (50℃)		8.93	10.15	15.79	0.01262	0.01435	0.02231	PASS
Extreme (40℃)		16.41	9.38	15.36	0.02320	0.01326	0.02171	PASS
Extreme (30℃)		4.54	16.46	8.21	0.00642	0.02326	0.01160	PASS
Extreme (20℃)		7.59	3.98	14.83	0.01073	0.00562	0.02096	PASS
Extreme (10℃)		3.00	16.22	6.17	0.00424	0.02292	0.00872	PASS
Extreme (0℃)		1.21	4.90	1.95	0.00171	0.00692	0.00276	PASS
Extreme (-10℃)		6.70	16.13	4.43	0.00946	0.02280	0.00626	PASS
Extreme (-20℃)		9.55	7.65	2.90	0.01349	0.01082	0.00410	PASS
Extreme (-30℃)		8.52	10.61	14.56	0.01205	0.01499	0.02057	PASS
25℃	LV	16.25	11.52	15.75	0.02297	0.01628	0.02226	PASS
	HV	8.99	11.06	4.80	0.01270	0.01564	0.00678	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	6.20	12.76	5.51	0.00876	0.01804	0.00779	PASS
Extreme (50℃)		4.68	8.58	11.48	0.00661	0.01213	0.01622	PASS
Extreme (40℃)		17.71	3.45	13.72	0.02503	0.00488	0.01940	PASS
Extreme (30℃)		15.49	11.53	8.48	0.02189	0.01629	0.01199	PASS
Extreme (20℃)		5.63	8.36	4.92	0.00796	0.01182	0.00695	PASS



Extreme (10℃)		17.21	15.10	14.58	0.02433	0.02135	0.02061	PASS
Extreme (0℃)		9.77	12.34	3.72	0.01381	0.01744	0.00526	PASS
Extreme (-10℃)		17.83	12.44	15.45	0.02519	0.01758	0.02183	PASS
Extreme (-20℃)		13.08	7.93	1.91	0.01848	0.01121	0.00270	PASS
Extreme (-30℃)		3.29	6.33	16.79	0.00465	0.00895	0.02373	PASS
25℃	LV	2.16	12.60	10.89	0.00306	0.01781	0.01539	PASS
	HV	5.07	12.51	3.33	0.00716	0.01768	0.00471	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	11.39	8.76	3.64	0.01609	0.01239	0.00514	PASS
Extreme (50℃)		7.26	7.47	10.17	0.01026	0.01056	0.01437	PASS
Extreme (40℃)		15.35	1.25	5.10	0.02169	0.00177	0.00721	PASS
Extreme (30℃)		7.80	10.19	7.00	0.01103	0.01440	0.00990	PASS
Extreme (20℃)		7.57	9.40	5.48	0.01070	0.01328	0.00775	PASS
Extreme (10℃)		12.40	15.61	4.76	0.01753	0.02206	0.00673	PASS
Extreme (0℃)		6.90	12.37	3.68	0.00976	0.01748	0.00520	PASS
Extreme (-10℃)		12.20	15.81	17.10	0.01724	0.02234	0.02416	PASS
Extreme (-20℃)		3.58	15.06	11.71	0.00506	0.02129	0.01655	PASS
Extreme (-30℃)		7.46	16.22	7.88	0.01054	0.02292	0.01114	PASS
25℃	LV	2.62	4.34	4.25	0.00370	0.00614	0.00601	PASS
	HV	2.59	6.82	3.86	0.00366	0.00965	0.00545	PASS

LTE Band 13								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	5.96	14.06	10.44	0.00762	0.01798	0.01335	PASS
Extreme (50℃)		1.21	5.86	1.13	0.00155	0.00750	0.00145	PASS
Extreme (40℃)		17.14	3.80	5.35	0.02192	0.00486	0.00684	PASS
Extreme (30℃)		3.19	15.55	15.01	0.00408	0.01988	0.01919	PASS
Extreme (20℃)		3.37	4.90	15.56	0.00431	0.00627	0.01989	PASS
Extreme (10℃)		17.62	6.35	2.87	0.02254	0.00812	0.00367	PASS
Extreme (0℃)		1.25	8.00	17.92	0.00160	0.01022	0.02291	PASS
Extreme (-10℃)		6.35	9.26	14.76	0.00812	0.01185	0.01887	PASS
Extreme (-20℃)		12.18	11.76	3.67	0.01558	0.01504	0.00469	PASS
Extreme (-30℃)		10.88	4.98	2.02	0.01391	0.00637	0.00258	PASS
25℃	LV	9.16	14.36	8.95	0.01172	0.01836	0.01145	PASS
	HV	8.17	10.05	8.18	0.01044	0.01285	0.01046	PASS
Condition		Freq.Error	Freq.Error	Freq.Error	Frequency	Frequency	Frequency	Verdict



		(Hz)	(Hz)	(Hz)	Stability (ppm)	Stability (ppm)	Stability (ppm)	
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	4.70	8.62	7.89	0.00601	0.01102	0.01009	PASS
Extreme (50℃)		3.02	10.84	10.36	0.00386	0.01386	0.01324	PASS
Extreme (40℃)		1.24	3.89	3.31	0.00159	0.00498	0.00424	PASS
Extreme (30℃)		14.37	16.56	4.58	0.01837	0.02118	0.00585	PASS
Extreme (20℃)		2.25	14.14	9.33	0.00288	0.01808	0.01193	PASS
Extreme (10℃)		16.99	11.60	11.49	0.02173	0.01484	0.01470	PASS
Extreme (0℃)		15.57	8.73	10.17	0.01991	0.01116	0.01300	PASS
Extreme (-10℃)		9.92	3.04	10.41	0.01269	0.00388	0.01331	PASS
Extreme (-20℃)		9.73	13.89	14.24	0.01244	0.01776	0.01820	PASS
Extreme (-30℃)		10.47	9.54	5.61	0.01338	0.01220	0.00717	PASS
25℃	LV	6.81	10.66	13.11	0.00871	0.01363	0.01676	PASS
	HV	7.06	12.08	14.40	0.00903	0.01544	0.01842	PASS

LTE Band 17								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	6.39	1.42	10.44	0.00900	0.00200	0.01471	PASS
Extreme (50℃)		8.56	17.22	4.02	0.01206	0.02425	0.00566	PASS
Extreme (40℃)		14.23	6.36	3.42	0.02005	0.00895	0.00482	PASS
Extreme (30℃)		7.75	13.78	11.86	0.01091	0.01941	0.01670	PASS
Extreme (20℃)		4.39	10.05	1.16	0.00619	0.01415	0.00164	PASS
Extreme (10℃)		9.35	13.73	3.70	0.01317	0.01933	0.00521	PASS
Extreme (0℃)		15.63	16.20	10.00	0.02201	0.02282	0.01409	PASS
Extreme (-10℃)		5.30	14.19	4.06	0.00747	0.01999	0.00572	PASS
Extreme (-20℃)		10.83	9.35	7.59	0.01526	0.01316	0.01069	PASS
Extreme (-30℃)		15.03	2.23	14.42	0.02117	0.00315	0.02031	PASS
25℃	LV	3.77	2.22	12.77	0.00531	0.00313	0.01798	PASS
	HV	12.25	1.70	4.89	0.01725	0.00240	0.00688	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	11.52	12.75	3.95	0.01622	0.01796	0.00557	PASS
Extreme (50℃)		6.44	3.78	5.48	0.00907	0.00532	0.00772	PASS
Extreme (40℃)		14.59	14.93	15.11	0.02054	0.02103	0.02128	PASS
Extreme (30℃)		15.68	8.61	5.29	0.02209	0.01213	0.00745	PASS
Extreme (20℃)		3.75	11.30	11.55	0.00529	0.01592	0.01627	PASS



Extreme (10℃)		15.04	6.24	9.20	0.02118	0.00879	0.01295	PASS
Extreme (0℃)		11.98	7.64	10.56	0.01688	0.01076	0.01487	PASS
Extreme (-10℃)		4.31	1.06	16.69	0.00606	0.00149	0.02351	PASS
Extreme (-20℃)		10.13	5.66	16.72	0.01427	0.00797	0.02355	PASS
Extreme (-30℃)		7.29	6.84	1.72	0.01027	0.00963	0.00243	PASS
25℃	LV	3.47	9.74	14.49	0.00489	0.01372	0.02041	PASS
	HV	13.52	9.13	5.37	0.01904	0.01286	0.00756	PASS

LTE Band 66								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	1.4MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	8.00	14.00	15.00	0.00458	0.00802	0.00860	PASS
Extreme (50℃)		4.00	9.00	4.00	0.00229	0.00516	0.00229	PASS
Extreme (40℃)		7.00	1.00	17.00	0.00401	0.00057	0.00974	PASS
Extreme (30℃)		10.00	6.00	3.00	0.00573	0.00344	0.00172	PASS
Extreme (20℃)		8.00	15.00	2.00	0.00458	0.00860	0.00115	PASS
Extreme (10℃)		12.00	16.00	3.00	0.00688	0.00917	0.00172	PASS
Extreme (0℃)		5.00	1.00	2.00	0.00287	0.00057	0.00115	PASS
Extreme (-10℃)		4.00	5.00	14.00	0.00229	0.00287	0.00802	PASS
Extreme (-20℃)		11.00	1.00	14.00	0.00630	0.00057	0.00802	PASS
Extreme (-30℃)		14.00	2.00	10.00	0.00802	0.00115	0.00573	PASS
25℃	LV	13.00	8.00	11.00	0.00745	0.00458	0.00630	PASS
	HV	15.00	3.00	1.00	0.00860	0.00172	0.00057	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	3MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	10.00	11.00	9.00	0.00573	0.00630	0.00516	PASS
Extreme (50℃)		10.00	2.00	3.00	0.00573	0.00115	0.00172	PASS
Extreme (40℃)		3.00	13.00	17.00	0.00172	0.00745	0.00974	PASS
Extreme (30℃)		6.00	7.00	16.00	0.00344	0.00401	0.00917	PASS
Extreme (20℃)		5.00	7.00	6.00	0.00287	0.00401	0.00344	PASS
Extreme (10℃)		3.00	4.00	10.00	0.00172	0.00229	0.00573	PASS
Extreme (0℃)		7.00	11.00	13.00	0.00401	0.00630	0.00745	PASS
Extreme (-10℃)		17.00	8.00	11.00	0.00974	0.00458	0.00630	PASS
Extreme (-20℃)		16.00	4.00	8.00	0.00917	0.00229	0.00458	PASS
Extreme (-30℃)		17.00	5.00	13.00	0.00974	0.00287	0.00745	PASS
25℃	LV	6.00	6.00	6.00	0.00344	0.00344	0.00344	PASS
	HV	4.00	10.00	8.00	0.00229	0.00573	0.00458	PASS
Condition		Freq.Error	Freq.Error	Freq.Error	Frequency	Frequency	Frequency	Verdict



		(Hz)	(Hz)	(Hz)	Stability (ppm)	Stability (ppm)	Stability (ppm)	
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	16.00	17.00	17.00	0.00917	0.00974	0.00974	PASS
Extreme (50℃)		6.00	10.00	7.00	0.00344	0.00573	0.00401	PASS
Extreme (40℃)		8.00	8.00	15.00	0.00458	0.00458	0.00860	PASS
Extreme (30℃)		15.00	1.00	6.00	0.00860	0.00057	0.00344	PASS
Extreme (20℃)		7.00	5.00	15.00	0.00401	0.00287	0.00860	PASS
Extreme (10℃)		4.00	12.00	13.00	0.00229	0.00688	0.00745	PASS
Extreme (0℃)		13.00	12.00	7.00	0.00745	0.00688	0.00401	PASS
Extreme (-10℃)		13.00	8.00	8.00	0.00745	0.00458	0.00458	PASS
Extreme (-20℃)		3.00	1.00	11.00	0.00172	0.00057	0.00630	PASS
Extreme (-30℃)		17.00	4.00	16.00	0.00974	0.00229	0.00917	PASS
25℃	LV	13.00	11.00	6.00	0.00745	0.00630	0.00344	PASS
	HV	1.00	15.00	7.00	0.00057	0.00860	0.00401	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	1.00	16.00	7.00	0.00057	0.00917	0.00401	PASS
Extreme (50℃)		14.00	9.00	16.00	0.00802	0.00516	0.00917	PASS
Extreme (40℃)		13.00	6.00	17.00	0.00745	0.00344	0.00974	PASS
Extreme (30℃)		6.00	11.00	16.00	0.00344	0.00630	0.00917	PASS
Extreme (20℃)		17.00	15.00	8.00	0.00974	0.00860	0.00458	PASS
Extreme (10℃)		14.00	16.00	9.00	0.00802	0.00917	0.00516	PASS
Extreme (0℃)		2.00	16.00	11.00	0.00115	0.00917	0.00630	PASS
Extreme (-10℃)		1.00	14.00	10.00	0.00057	0.00802	0.00573	PASS
Extreme (-20℃)		2.00	3.00	11.00	0.00115	0.00172	0.00630	PASS
Extreme (-30℃)		6.00	6.00	15.00	0.00344	0.00344	0.00860	PASS
25℃	LV	3.00	4.00	2.00	0.00172	0.00229	0.00115	PASS
	HV	6.00	7.00	13.00	0.00344	0.00401	0.00745	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	15MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	11.00	7.00	12.00	0.00630	0.00401	0.00688	PASS
Extreme (50℃)		16.00	14.00	14.00	0.00917	0.00802	0.00802	PASS
Extreme (40℃)		7.00	3.00	5.00	0.00401	0.00172	0.00287	PASS
Extreme (30℃)		8.00	14.00	15.00	0.00458	0.00802	0.00860	PASS
Extreme (20℃)		6.00	9.00	15.00	0.00344	0.00516	0.00860	PASS
Extreme (10℃)		6.00	14.00	7.00	0.00344	0.00802	0.00401	PASS
Extreme (0℃)		16.00	7.00	7.00	0.00917	0.00401	0.00401	PASS
Extreme (-10℃)		5.00	2.00	13.00	0.00287	0.00115	0.00745	PASS



Extreme (-20℃)		10.00	2.00	14.00	0.00573	0.00115	0.00802	PASS
Extreme (-30℃)		13.00	12.00	9.00	0.00745	0.00688	0.00516	PASS
25℃	LV	11.00	5.00	1.00	0.00630	0.00287	0.00057	PASS
	HV	9.00	8.00	14.00	0.00516	0.00458	0.00802	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	20MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	17.00	3.00	16.00	0.00974	0.00172	0.00917	PASS
Extreme (50℃)		10.00	13.00	14.00	0.00573	0.00745	0.00802	PASS
Extreme (40℃)		11.00	14.00	13.00	0.00630	0.00802	0.00745	PASS
Extreme (30℃)		16.00	9.00	10.00	0.00917	0.00516	0.00573	PASS
Extreme (20℃)		14.00	16.00	15.00	0.00802	0.00917	0.00860	PASS
Extreme (10℃)		6.00	1.00	14.00	0.00344	0.00057	0.00802	PASS
Extreme (0℃)		8.00	14.00	17.00	0.00458	0.00802	0.00974	PASS
Extreme (-10℃)		4.00	2.00	16.00	0.00229	0.00115	0.00917	PASS
Extreme (-20℃)		3.00	6.00	9.00	0.00172	0.00344	0.00516	PASS
Extreme (-30℃)		5.00	10.00	2.00	0.00287	0.00573	0.00115	PASS
25℃	LV	2.00	17.00	2.00	0.00115	0.00974	0.00115	PASS
	HV	10.00	11.00	5.00	0.00573	0.00630	0.00287	PASS

5.6 Spurious Emissions at Antenna Terminals

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 measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 9kHz to the 10th harmonic of the carrier. The peak detector is used.

RBW is set to 100kHz, VBW is set to 300kHz for 30MHz~1GHz

RBW is set to 1MHz, VBW is set to 3MHz for above 1GHz, Sweep is set to ATUO.

RBW is set to 1 kHz (0.009MHz~ 0.15 MHz),

RBW is set to 10 kHz (0.15 MHz~ 30 MHz)

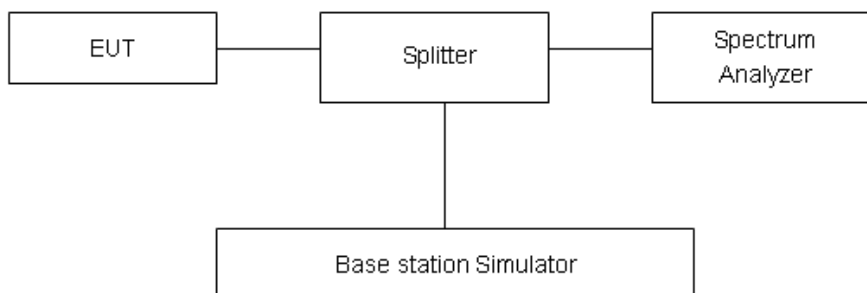
RBW is set to 100 kHz (30MHz~1000 MHz)

RBW is set to 1000 kHz (above 1000MHz)

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.

The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup



Limits

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(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.

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;

Part 27.53(a)/(h)/(g) Limit		-13 dBm
Part 27.53(f) Limit	Limit out of the band 1559-1610 MHz	-13 dBm
	Limit in the band 1559-1610 MHz	-40 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

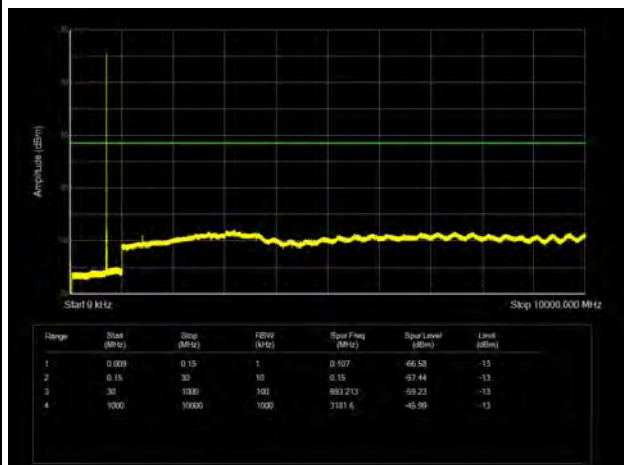
Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-27GHz	1.407 dB

Test Result

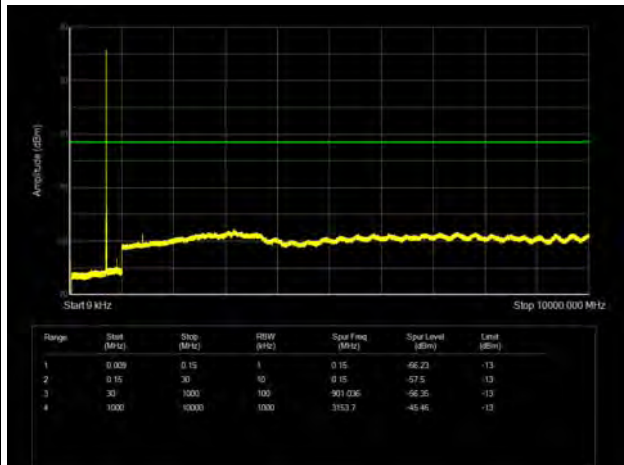
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

The signal beyond the limit is carrier.

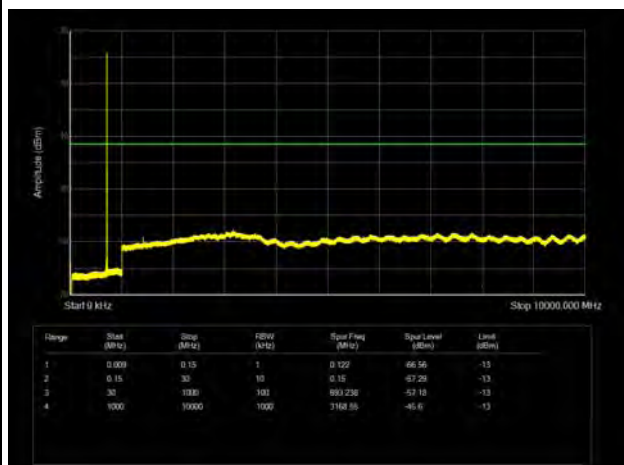
LTE Band 12 1.4MHz CH-Low 9kHz ~10GHz



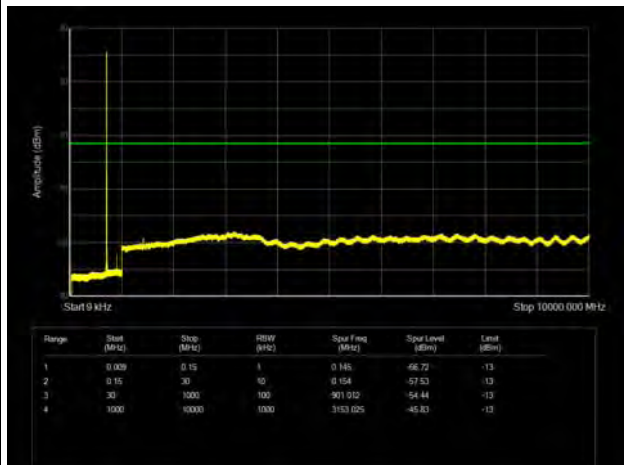
LTE Band 12 3MHz CH-Low 9kHz ~10GHz



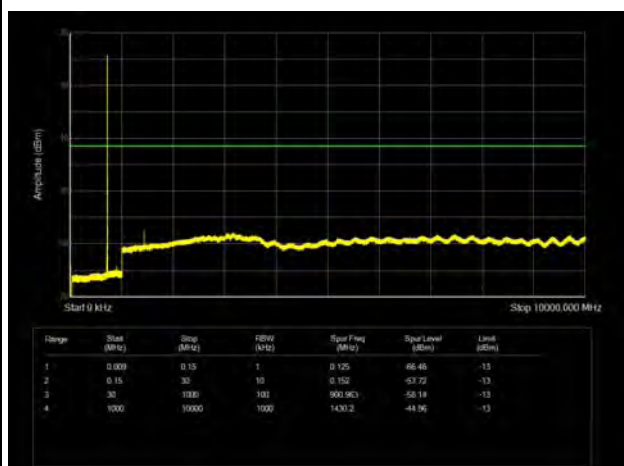
LTE Band 12 1.4MHz CH- Middle 9kHz ~10GHz



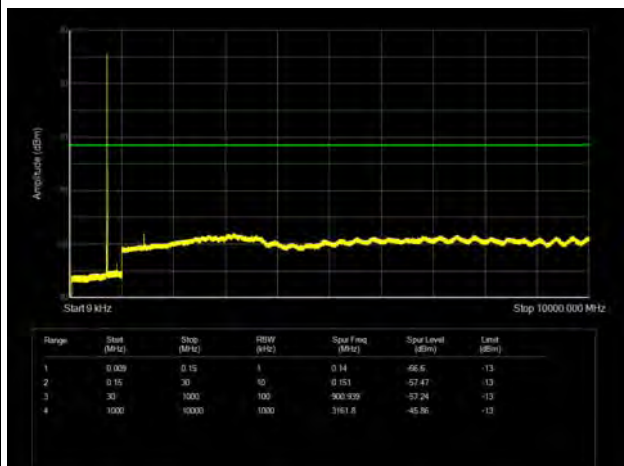
LTE Band 12 3MHz CH- Middle 9kHz ~10GHz



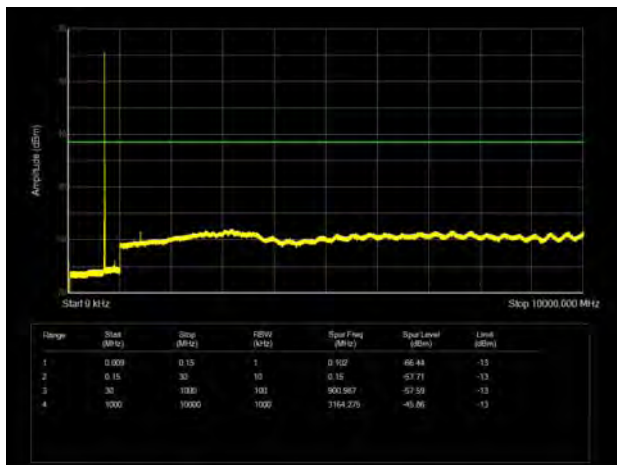
LTE Band 12 1.4MHz CH-High 9kHz ~10GHz



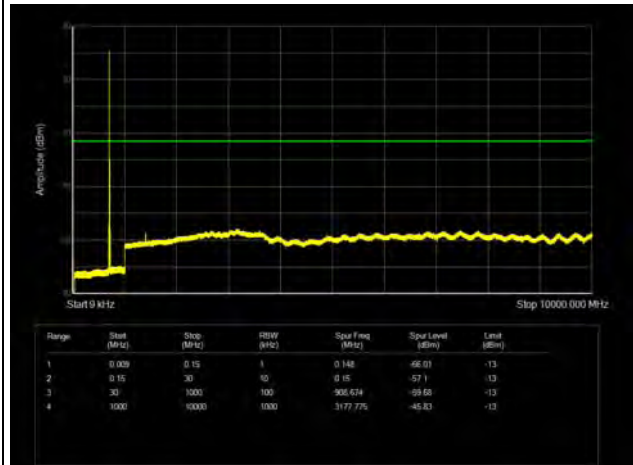
LTE Band 12 3MHz CH-High 9kHz ~10GHz



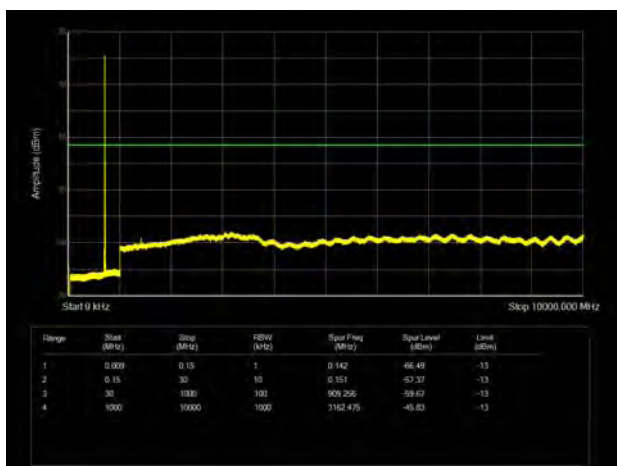
LTE Band 12 5MHz CH-Low 9kHz ~10GHz



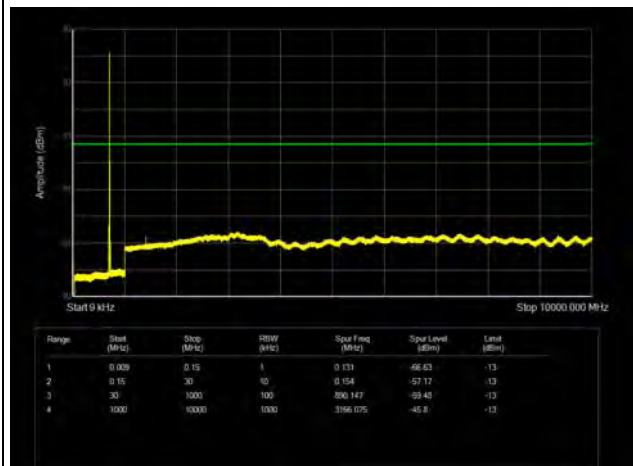
LTE Band 12 10MHz CH-Low 9kHz ~10GHz



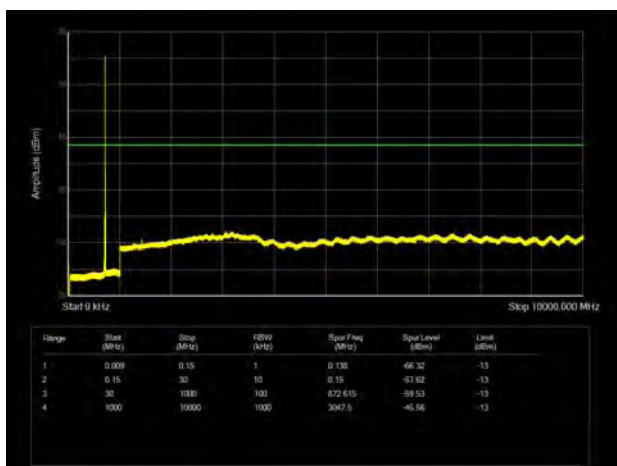
LTE Band 12 5MHz CH- Middle 9kHz ~10GHz



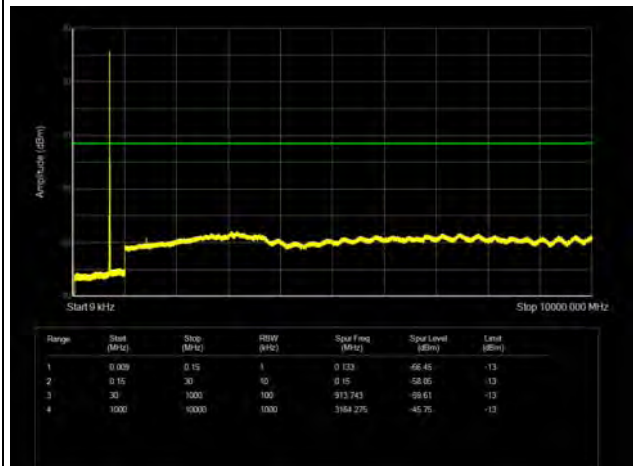
LTE Band 12 10MHz CH- Middle 9kHz ~10GHz



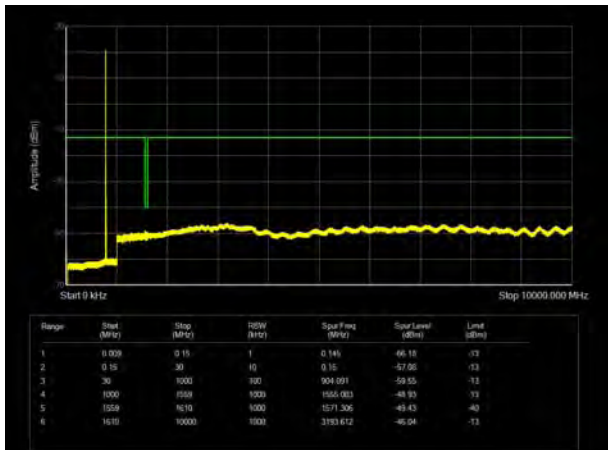
LTE Band 12 5MHz CH-High 9kHz ~10GHz



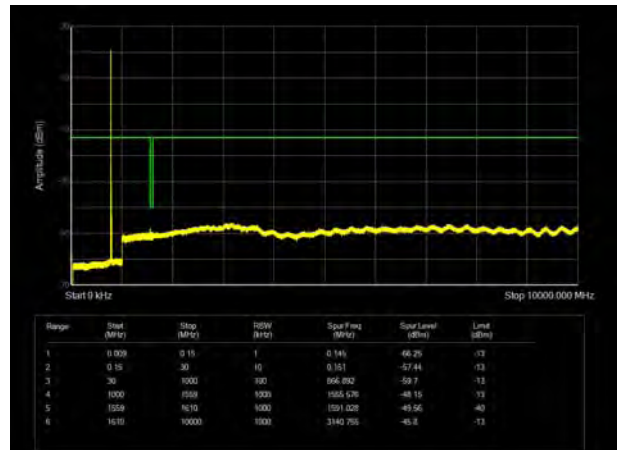
LTE Band 12 10MHz CH-High 9kHz ~10GHz



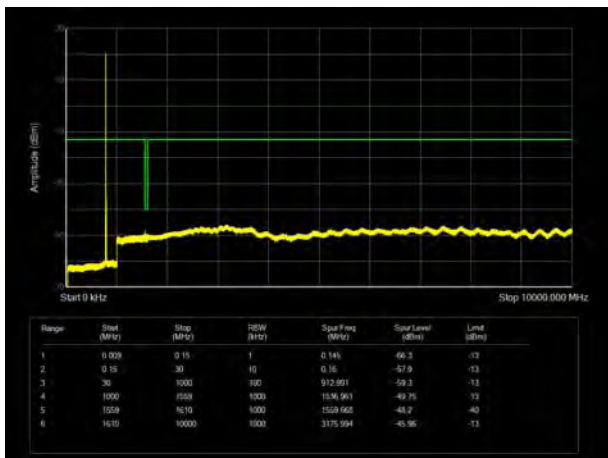
LTE Band 13 5MHz CH-Low 9kHz~10GHz



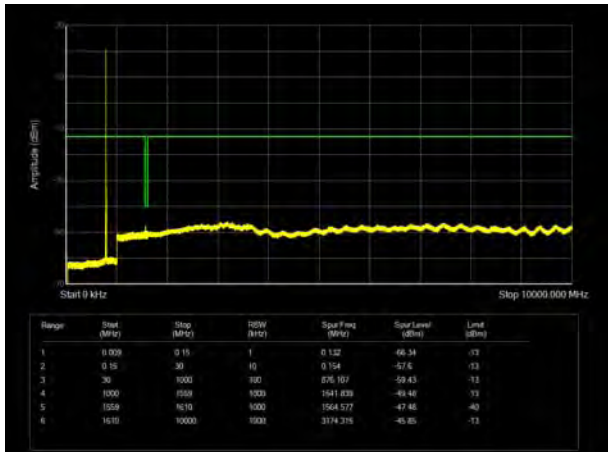
LTE Band 13 10MHz CH- Middle 9kHz~10GHz



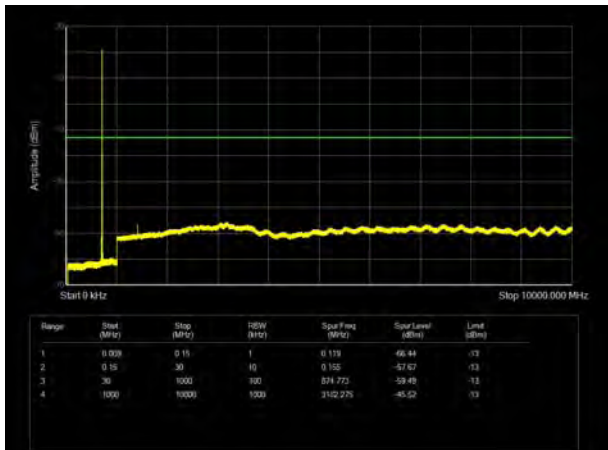
LTE Band 13 5MHz CH-Middle 9kHz~10GHz



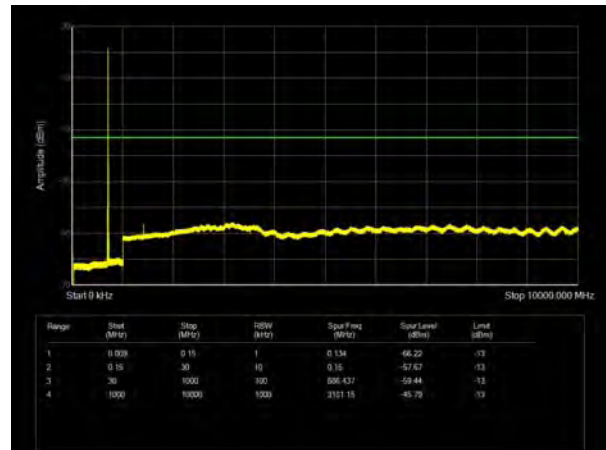
LTE Band 13 5MHz CH-High 9kHz~10GHz



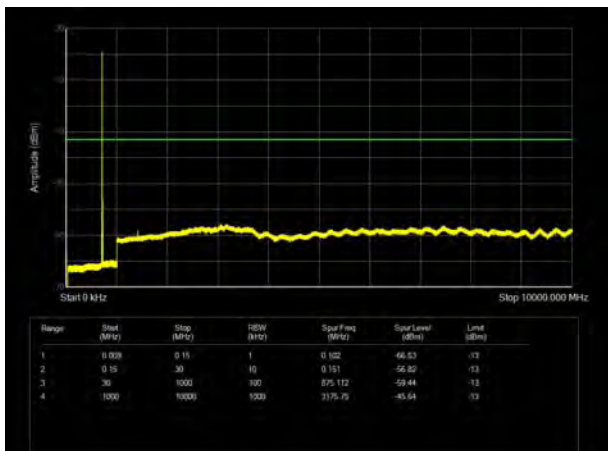
LTE Band 17 5MHz CH-Low 9kHz ~10GHz



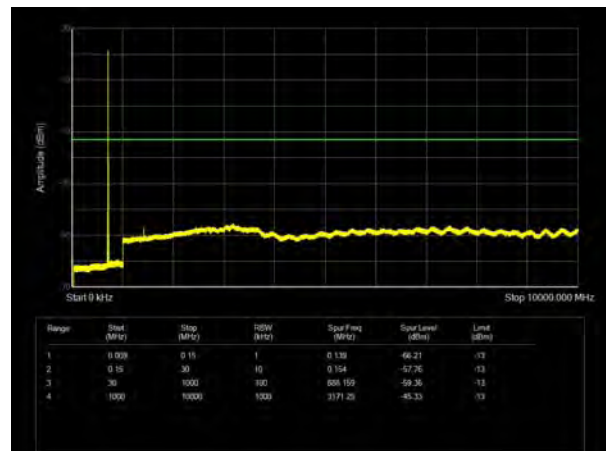
LTE Band 17 10MHz CH-Low 9kHz ~10GHz



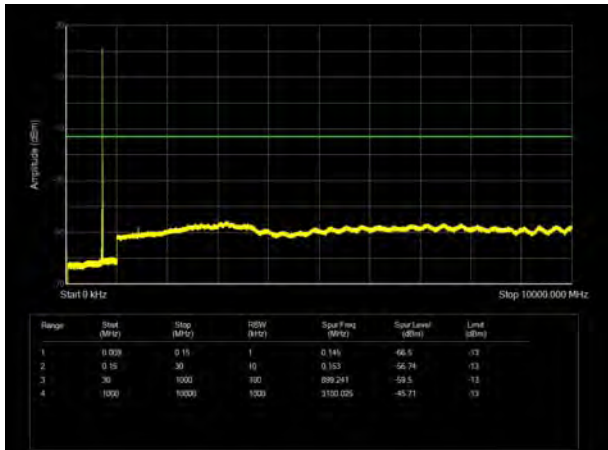
LTE Band 17 5MHz CH-Middle 9kHz ~10GHz



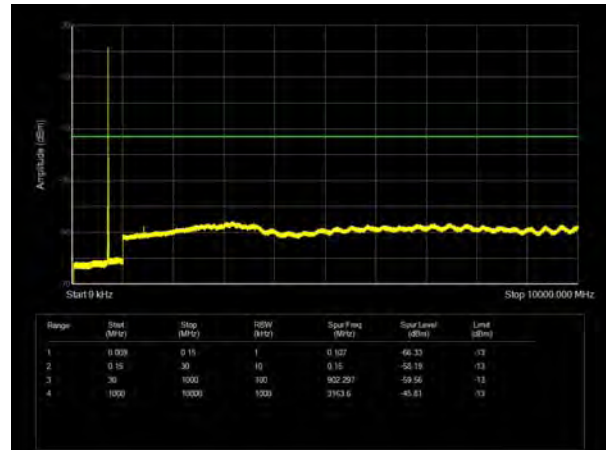
LTE Band 17 10MHz CH-Middle 9kHz ~10GHz



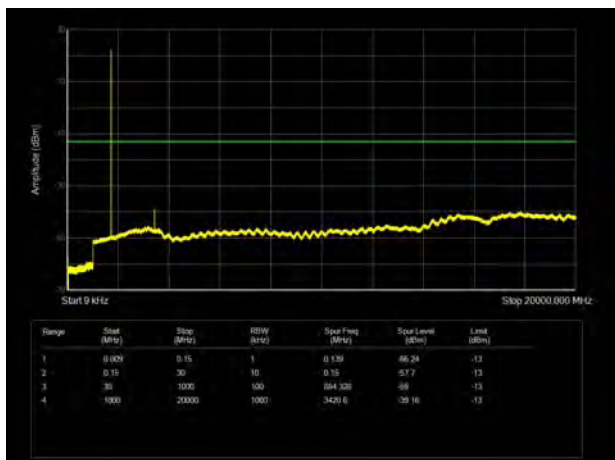
LTE Band 17 5MHz CH-High 9kHz ~10GHz



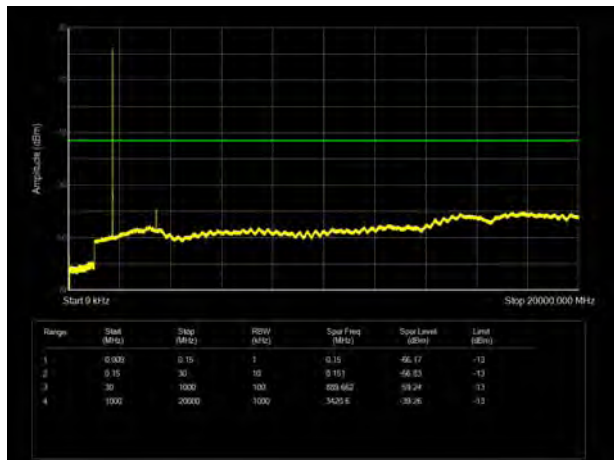
LTE Band 17 10MHz CH-High 9kHz ~10GHz



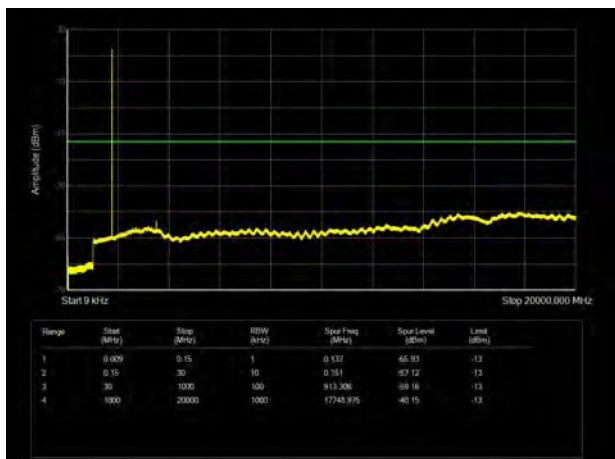
LTE Band 66 1.4MHz CH-Low 9kHz ~20GHz



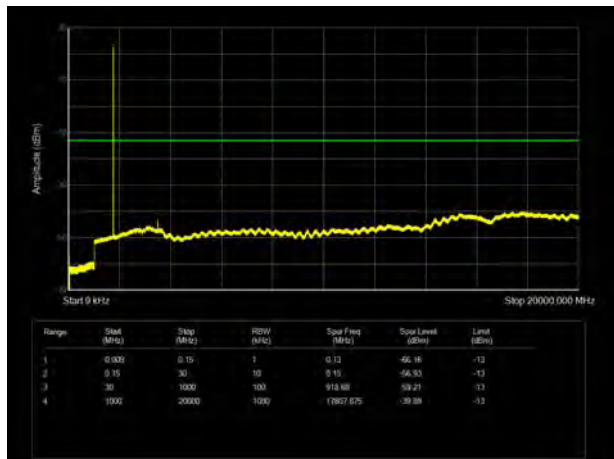
LTE Band 66 3MHz CH-Low 9kHz ~20GHz



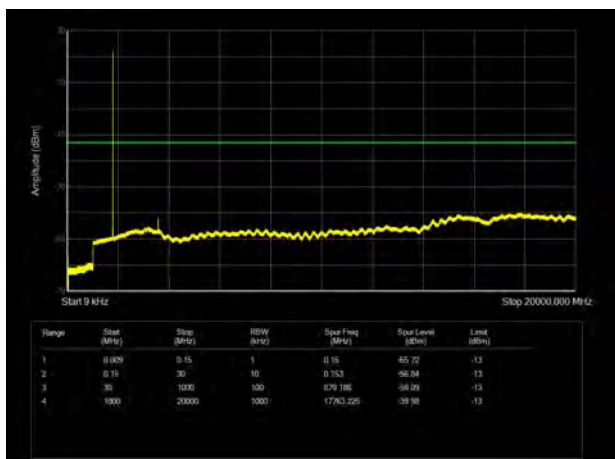
LTE Band 66 1.4MHz CH-Middle 9kHz ~20GHz



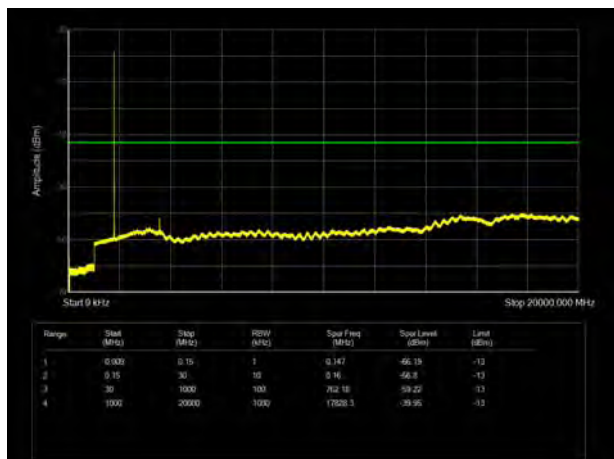
LTE Band 66 3MHz CH-Middle 9kHz ~20GHz



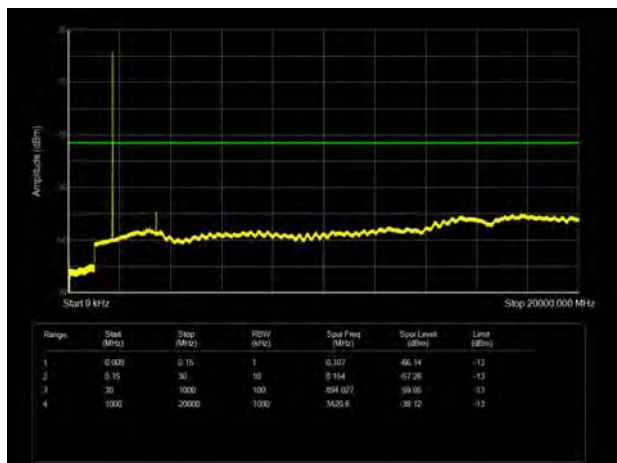
LTE Band 66 1.4MHz CH-High 9kHz ~20GHz



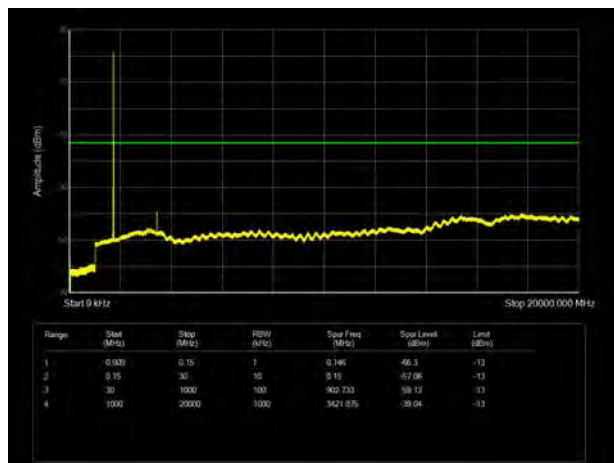
LTE Band 66 3MHz CH-High 9kHz ~20GHz



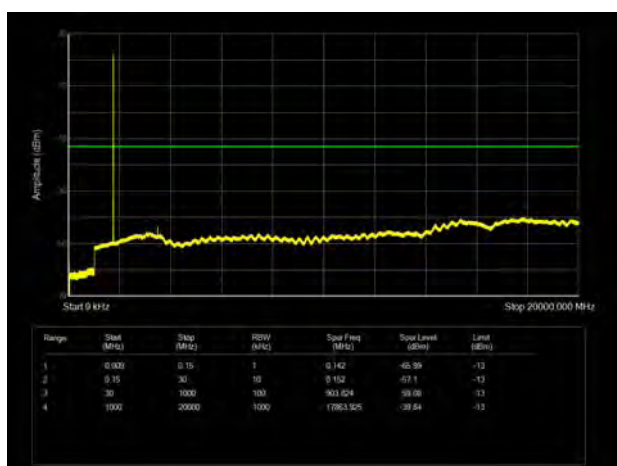
LTE Band 66 5MHz CH-Low 9kHz ~20GHz



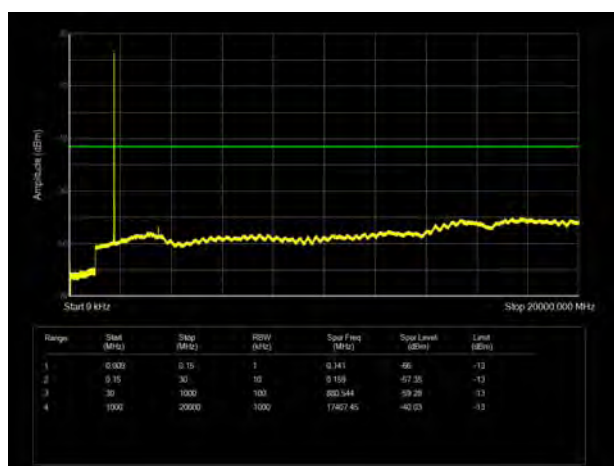
LTE Band 66 10MHz CH-Low 9kHz ~20GHz



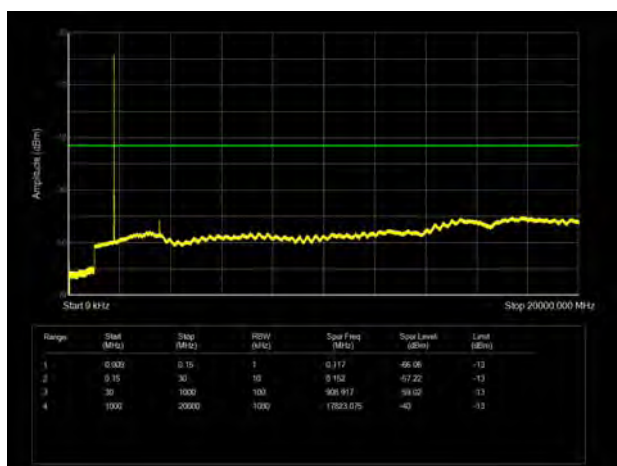
LTE Band 66 5MHz CH-Middle 9kHz ~20GHz



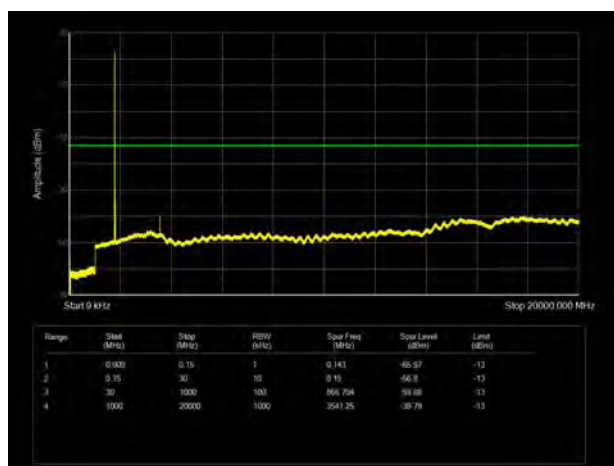
LTE Band 66 10MHz CH-Middle 9kHz ~20GHz



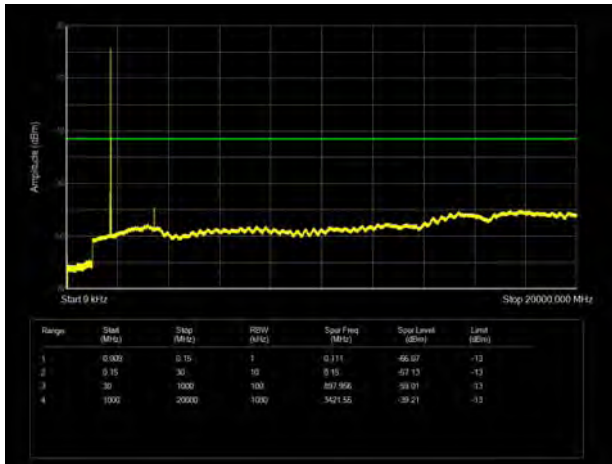
LTE Band 66 5MHz CH-High 9kHz ~20GHz



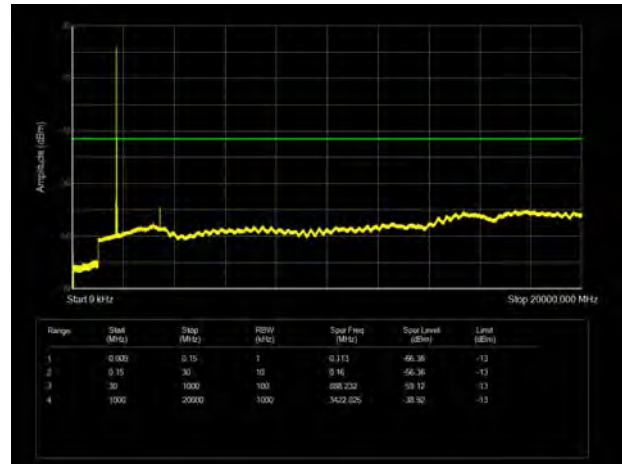
LTE Band 66 10MHz CH-High 9kHz ~20GHz



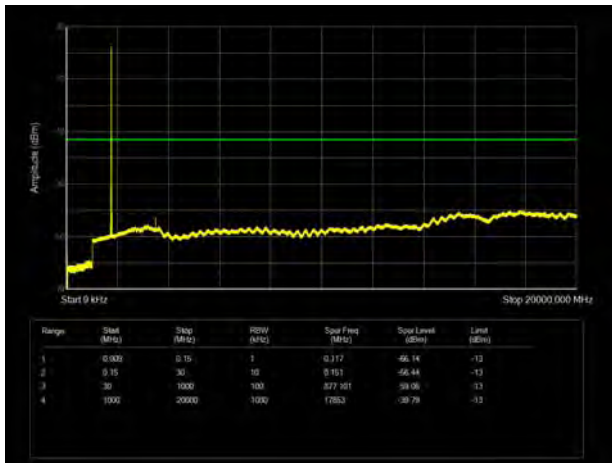
LTE Band 66 15MHz CH-Low 9kHz ~20GHz



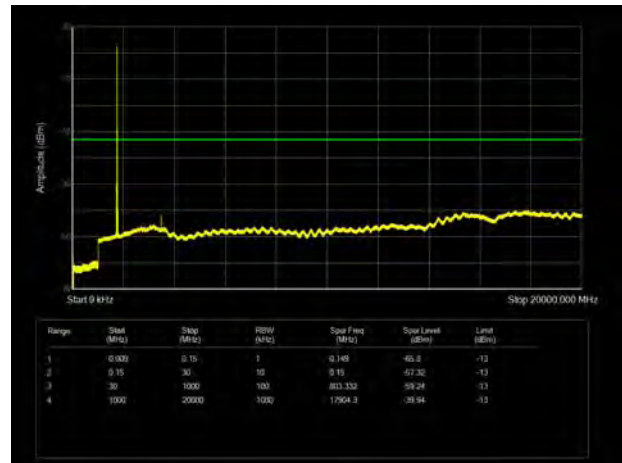
LTE Band 66 20MHz CH-Low 9kHz ~20GHz



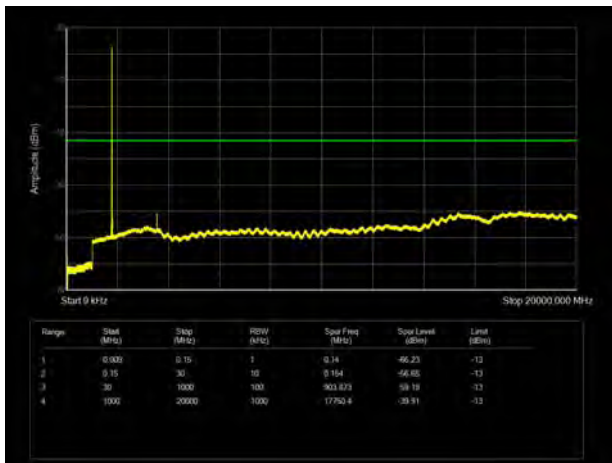
LTE Band 66 15MHz CH-Middle 9kHz ~20GHz



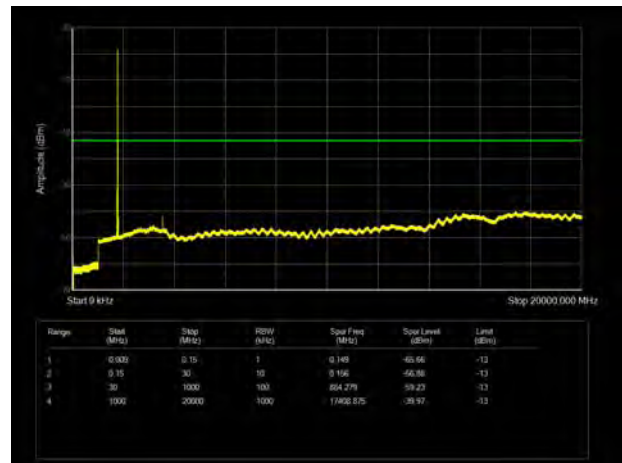
LTE Band 66 20MHz CH-Middle 9kHz ~20GHz



LTE Band 66 15MHz CH-High 9kHz ~20GHz



LTE Band 66 20MHz CH-High 9kHz ~20GHz



5.7 Radiates Spurious Emission

Ambient condition

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

Method of Measurement

1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A loop antenna, A log-periodic antenna or horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=100kHz, VBW=300kHz for 30MHz to 1GHz and RBW=1MHz, VBW=3MHz for above 1GHz, and the maximum value of the receiver should be recorded as (Pr).
5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAG) should be recorded after test.
7. The measurement results are obtained as described below:

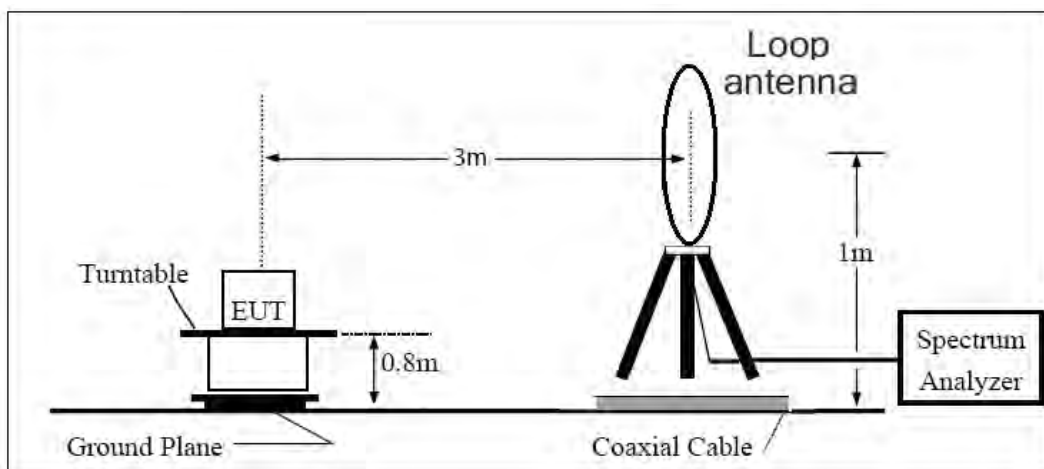
$$\text{Power(EIRP)} = \text{PMea} - \text{PAG} - \text{Pcl} + \text{Ga}$$
The measurement results are amend as described below:

$$\text{Power(EIRP)} = \text{PMea} - \text{Pcl} + \text{Ga}$$
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dB) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, $\text{ERP} = \text{EIRP} - 2.15\text{dB}$.

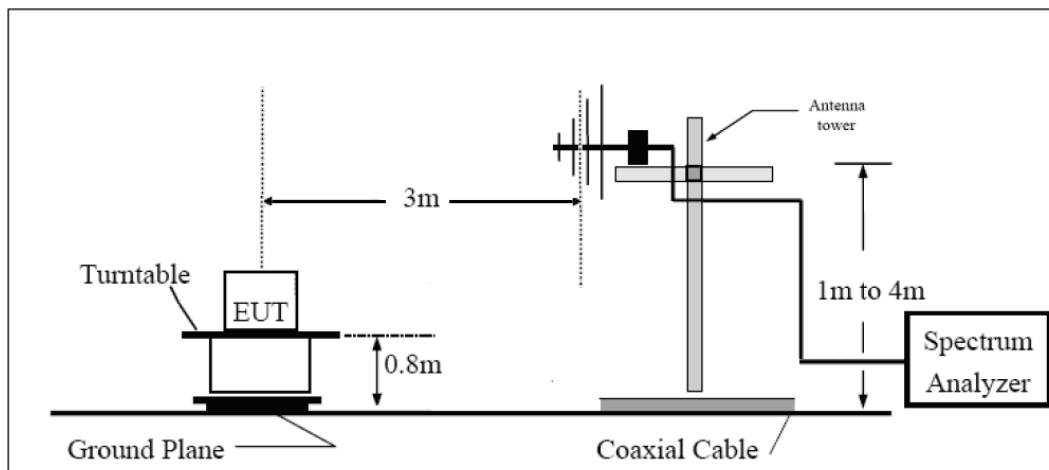
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

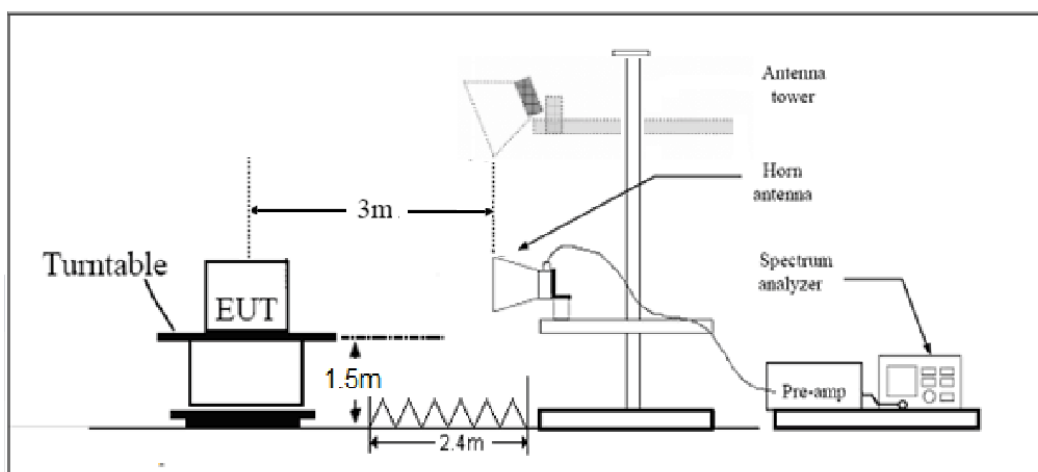
9KHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits



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(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.

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;

Part 27.53(a)/(h)/(g) Limit		-13 dBm
Part 27.53(f) Limit	Limit out of the band 1559-1610 MHz	-13 dBm
	Limit in the band 1559-1610 MHz	-40 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = \pm 1.96$, $U = \pm 3.55$ dB.

Test Result



Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions below the noise floor will not be recorded in the report.

Low Antenna

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1413.60	-68.24	1.70	8.70	Vertical	-63.39	-13.00	50.39	90
3	2120.40	-67.08	2.10	11.10	Vertical	-60.23	-13.00	47.23	45
4	2827.20	-68.19	2.30	13.10	Vertical	-59.54	-13.00	46.54	315
5	3537.50	-67.15	2.60	12.70	Vertical	-59.20	-13.00	46.20	225
6	4245.00	-64.41	3.30	12.50	Vertical	-57.36	-13.00	44.36	45
7	4952.50	-63.25	3.40	12.50	Vertical	-56.30	-13.00	43.30	315
8	5660.00	-62.51	3.30	12.50	Vertical	-55.46	-13.00	42.46	0
9	6367.50	-59.01	3.80	11.50	Vertical	-53.46	-13.00	40.46	180
10	7075.00	-54.67	4.20	11.80	Vertical	-49.22	-13.00	36.22	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1410.00	-68.51	1.70	8.70	Vertical	-63.66	-13.00	50.66	270
3	2115.00	-66.39	2.10	11.10	Vertical	-59.54	-13.00	46.54	180
4	2820.00	-68.19	2.30	13.10	Vertical	-59.54	-13.00	46.54	0
5	3525.00	-66.62	2.60	12.70	Vertical	-58.67	-13.00	45.67	90
6	4230.00	-64.56	3.30	12.50	Vertical	-57.51	-13.00	44.51	0
7	4935.00	-63.28	3.40	12.50	Vertical	-56.33	-13.00	43.33	135
8	5640.00	-62.60	3.30	12.50	Vertical	-55.55	-13.00	42.55	45
9	6345.00	-57.51	3.80	11.50	Vertical	-51.96	-13.00	38.96	225
10	7050.00	-54.78	4.20	11.80	Vertical	-49.33	-13.00	36.33	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

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



Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1405.00	-64.56	1.70	8.70	Vertical	-59.71	-13.00	46.71	225
3	2107.50	-67.56	2.10	11.10	Vertical	-60.71	-13.00	47.71	45
4	2810.00	-69.24	2.30	13.10	Vertical	-60.59	-13.00	47.59	315
5	3512.50	-67.14	2.60	12.70	Vertical	-59.19	-13.00	46.19	45
6	4215.00	-64.61	3.30	12.50	Vertical	-57.56	-13.00	44.56	180
7	4917.50	-63.88	3.40	12.50	Vertical	-56.93	-13.00	43.93	225
8	5620.00	-62.76	3.30	12.50	Vertical	-55.71	-13.00	42.71	0
9	6322.50	-58.79	3.80	11.50	Vertical	-53.24	-13.00	40.24	45
10	7025.00	-55.54	4.20	11.80	Vertical	-50.09	-13.00	37.09	315

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Vertical position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1558.80	-63.69	1.70	8.70	Vertical	-58.84	-13.00	45.84	315
3	2338.50	-67.27	2.10	12.00	Vertical	-59.52	-13.00	46.52	45
4	3118.00	-65.93	2.30	13.10	Vertical	-57.28	-13.00	44.28	90
5	3897.50	-65.08	2.90	12.50	Vertical	-57.63	-13.00	44.63	225
6	4677.00	-64.39	3.10	12.50	Vertical	-57.14	-13.00	44.14	315
7	5456.50	-63.75	3.30	12.50	Vertical	-56.70	-13.00	43.70	45
8	6236.00	-60.11	3.50	12.80	Vertical	-52.96	-13.00	39.96	180
9	7015.50	-56.59	4.20	11.80	Vertical	-51.14	-13.00	38.14	315
10	7795.00	-54.02	4.40	12.30	Vertical	-48.27	-13.00	35.27	0

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Vertical position.



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1565.95	-64.60	1.70	8.70	Vertical	-59.75	-13.00	46.75	315
3	2331.00	-67.28	2.10	12.00	Vertical	-59.53	-13.00	46.53	90
4	-58.42	-67.07	2.30	13.10	Vertical	-58.42	-13.00	45.42	270
5	-57.73	-65.18	2.90	12.50	Vertical	-57.73	-13.00	44.73	0
6	-57.04	-64.29	3.10	12.50	Vertical	-57.04	-13.00	44.04	45
7	-55.97	-63.02	3.30	12.50	Vertical	-55.97	-13.00	42.97	315
8	-54.45	-61.60	3.50	12.80	Vertical	-54.45	-13.00	41.45	180
9	-51.22	-56.67	4.20	11.80	Vertical	-51.22	-13.00	38.22	90
10	-49.36	-55.11	4.40	12.30	Vertical	-49.36	-13.00	36.36	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

LTE Band 17 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.00	-68.21	1.70	8.70	Vertical	-63.36	-13.00	50.36	45
3	2122.50	-66.44	2.10	11.10	Vertical	-59.59	-13.00	46.59	315
4	2830.00	-65.94	2.50	13.10	Vertical	-57.49	-13.00	44.49	270
5	3537.54	-66.70	2.60	12.70	Vertical	-58.75	-13.00	45.75	315
6	4245.00	-64.69	3.30	12.50	Vertical	-57.64	-13.00	44.64	270
7	4952.00	-63.69	3.40	12.50	Vertical	-56.74	-13.00	43.74	180
8	5660.00	-63.96	3.40	12.80	Vertical	-56.71	-13.00	43.71	0
9	6367.50	-57.99	4.10	11.50	Vertical	-52.74	-13.00	39.74	45
10	7075.00	-55.88	4.20	12.20	Vertical	-50.03	-13.00	37.03	315

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

LTE Band 17 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1410.00	-68.25	1.70	8.70	Vertical	-63.40	-13.00	50.40	180
3	2115.00	-66.71	2.10	11.10	Vertical	-59.86	-13.00	46.86	0
4	2820.00	-68.97	2.50	13.10	Vertical	-60.52	-13.00	47.52	90
5	3525.00	-66.47	2.60	12.70	Vertical	-58.52	-13.00	45.52	0
6	4230.00	-64.83	3.30	12.50	Vertical	-57.78	-13.00	44.78	45
7	4935.00	-63.85	3.40	12.50	Vertical	-56.90	-13.00	43.90	315
8	5640.00	-62.14	3.40	12.80	Vertical	-54.89	-13.00	41.89	270
9	6345.00	-58.95	4.10	11.50	Vertical	-53.70	-13.00	40.70	315
10	7050.00	-56.62	4.20	12.20	Vertical	-50.77	-13.00	37.77	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3488.65	-61.28	2.70	12.70	Vertical	-51.28	-13.00	38.28	90
3	5232.90	-60.82	3.20	12.50	Vertical	-51.52	-13.00	38.52	180
4	6977.20	-60.49	4.20	11.80	Vertical	-52.89	-13.00	39.89	315
5	8721.50	-57.37	4.40	12.50	Vertical	-49.27	-13.00	36.27	225
6	10465.80	-54.56	4.70	11.80	Vertical	-47.46	-13.00	34.46	315
7	12210.10	-54.42	5.20	13.80	Vertical	-45.82	-13.00	32.82	45
8	13954.40	-53.15	5.70	13.20	Vertical	-45.65	-13.00	32.65	0
9	15698.70	-60.29	6.10	16.80	Vertical	-49.59	-13.00	36.59	180
10	17443.00	-54.21	6.10	14.20	Vertical	-46.11	-13.00	33.11	270

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3485.00	-62.18	2.70	12.70	Vertical	-52.18	-13.00	39.18	0
3	5227.50	-61.82	3.20	12.50	Vertical	-52.52	-13.00	39.52	45
4	6970.00	-59.87	4.20	11.80	Vertical	-52.27	-13.00	39.27	315
5	8712.50	-57.83	4.40	12.50	Vertical	-49.73	-13.00	36.73	225
6	10455.00	-54.83	4.70	11.80	Vertical	-47.73	-13.00	34.73	315
7	12197.50	-52.13	5.20	13.80	Vertical	-43.53	-13.00	30.53	90
8	13940.00	-52.71	5.70	13.20	Vertical	-45.21	-13.00	32.21	270
9	15682.50	-60.95	6.10	16.80	Vertical	-50.25	-13.00	37.25	315
10	17425.00	-51.02	6.10	14.20	Vertical	-42.92	-13.00	29.92	90
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Vertical position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3470.00	-61.93	2.70	12.70	Vertical	-51.93	-13.00	38.93	45
3	5205.00	-62.13	3.20	12.50	Vertical	-52.83	-13.00	39.83	270
4	6940.00	-59.53	4.20	11.80	Vertical	-51.93	-13.00	38.93	180
5	8675.00	-57.27	4.40	12.50	Vertical	-49.17	-13.00	36.17	0
6	10410.00	-54.51	4.70	11.80	Vertical	-47.41	-13.00	34.41	315
7	12145.00	-53.83	5.20	13.80	Vertical	-45.23	-13.00	32.23	225
8	13880.00	-52.45	5.70	13.20	Vertical	-44.95	-13.00	31.95	315
9	15615.00	-60.08	6.10	16.80	Vertical	-49.38	-13.00	36.38	45
10	17350.00	-54.73	6.10	14.20	Vertical	-46.63	-13.00	33.63	90
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Vertical position.									

**Upper Antenna**

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1413.60	-65.83	1.70	8.70	Horizontal	-60.98	-13.00	47.98	90
3	2120.40	-61.31	2.10	11.10	Horizontal	-54.46	-13.00	41.46	45
4	2827.20	-67.64	2.30	13.10	Horizontal	-58.99	-13.00	45.99	315
5	3537.50	-67.33	2.60	12.70	Horizontal	-59.38	-13.00	46.38	225
6	4245.00	-64.99	3.30	12.50	Horizontal	-57.94	-13.00	44.94	45
7	4952.50	-63.83	3.40	12.50	Horizontal	-56.88	-13.00	43.88	315
8	5660.00	-63.24	3.30	12.50	Horizontal	-56.19	-13.00	43.19	0
9	6367.50	-58.39	3.80	11.50	Horizontal	-52.84	-13.00	39.84	180
10	7075.00	-55.84	4.20	11.80	Horizontal	-50.39	-13.00	37.39	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1410.00	-66.12	1.70	8.70	Horizontal	-61.27	-13.00	48.27	270
3	2115.00	-60.39	2.10	11.10	Horizontal	-53.54	-13.00	40.54	180
4	2820.00	-67.98	2.30	13.10	Horizontal	-59.33	-13.00	46.33	0
5	3525.00	-65.78	2.60	12.70	Horizontal	-57.83	-13.00	44.83	90
6	4230.00	-63.90	3.30	12.50	Horizontal	-56.85	-13.00	43.85	0
7	4935.00	-63.21	3.40	12.50	Horizontal	-56.26	-13.00	43.26	135
8	5640.00	-63.61	3.30	12.50	Horizontal	-56.56	-13.00	43.56	45
9	6345.00	-58.32	3.80	11.50	Horizontal	-52.77	-13.00	39.77	225
10	7050.00	-55.26	4.20	11.80	Horizontal	-49.81	-13.00	36.81	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1405.00	-66.14	1.70	8.70	Horizontal	-61.29	-13.00	48.29	225
3	2107.50	-61.67	2.10	11.10	Horizontal	-54.82	-13.00	41.82	45
4	2810.00	-68.00	2.30	13.10	Horizontal	-59.35	-13.00	46.35	315
5	3512.50	-67.03	2.60	12.70	Horizontal	-59.08	-13.00	46.08	45
6	4215.00	-64.29	3.30	12.50	Horizontal	-57.24	-13.00	44.24	270
7	4917.50	-63.08	3.40	12.50	Horizontal	-56.13	-13.00	43.13	135
8	5620.00	-61.74	3.30	12.50	Horizontal	-54.69	-13.00	41.69	225
9	6322.50	-58.51	3.80	11.50	Horizontal	-52.96	-13.00	39.96	45
10	7025.00	-56.08	4.20	11.80	Horizontal	-50.63	-13.00	37.63	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1559.00	-65.47	1.70	8.70	Horizontal	-60.62	-13.00	47.62	45
3	2338.50	-66.27	2.10	12.00	Horizontal	-58.52	-13.00	45.52	135
4	3118.00	-67.61	2.30	13.10	Horizontal	-58.96	-13.00	45.96	90
5	3897.50	-64.52	2.90	12.50	Horizontal	-57.07	-13.00	44.07	315
6	4677.00	-63.83	3.10	12.50	Horizontal	-56.58	-13.00	43.58	270
7	5456.50	-62.30	3.30	12.50	Horizontal	-55.25	-13.00	42.25	0
8	6236.00	-59.31	3.50	12.80	Horizontal	-52.16	-13.00	39.16	45
9	7015.50	-55.97	4.20	11.80	Horizontal	-50.52	-13.00	37.52	135
10	7795.00	-55.70	4.40	12.30	Horizontal	-49.95	-13.00	36.95	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1554.00	-64.81	1.70	8.70	Horizontal	-59.96	-13.00	46.96	315
3	2331.00	-64.91	2.10	12.00	Horizontal	-57.16	-13.00	44.16	180
4	3108.00	-67.18	2.30	13.10	Horizontal	-58.53	-13.00	45.53	225
5	3885.00	-64.63	2.90	12.50	Horizontal	-57.18	-13.00	44.18	45
6	4662.00	-64.91	3.10	12.50	Horizontal	-57.66	-13.00	44.66	180
7	5439.00	-62.34	3.30	12.50	Horizontal	-55.29	-13.00	42.29	315
8	6216.00	-60.28	3.50	12.80	Horizontal	-53.13	-13.00	40.13	135
9	6993.00	-57.29	4.20	11.80	Horizontal	-51.84	-13.00	38.84	45
10	7770.00	-54.84	4.40	12.30	Horizontal	-49.09	-13.00	36.09	0
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE Band 17 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.00	-67.23	1.70	8.70	Horizontal	-62.38	-13.00	49.38	270
3	2122.50	-61.63	2.10	11.10	Horizontal	-54.78	-13.00	41.78	45
4	2830.00	-68.16	2.50	13.10	Horizontal	-59.71	-13.00	46.71	90
5	3537.54	-67.18	2.60	12.70	Horizontal	-59.23	-13.00	46.23	225
6	4245.00	-64.96	3.30	12.50	Horizontal	-57.91	-13.00	44.91	315
7	4952.00	-63.33	3.40	12.50	Horizontal	-56.38	-13.00	43.38	0
8	5660.00	-63.24	3.40	12.80	Horizontal	-55.99	-13.00	42.99	180
9	6367.50	-58.29	4.10	11.50	Horizontal	-53.04	-13.00	40.04	315
10	7075.00	-55.48	4.20	12.20	Horizontal	-49.63	-13.00	36.63	270
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE Band 17 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1410.00	-66.17	1.70	8.70	Horizontal	-61.32	-13.00	48.32	225
3	2115.00	-60.58	2.10	11.10	Horizontal	-53.73	-13.00	40.73	135
4	2820.00	-67.48	2.50	13.10	Horizontal	-59.03	-13.00	46.03	0
5	3525.00	-67.38	2.60	12.70	Horizontal	-59.43	-13.00	46.43	45
6	4230.00	-63.70	3.30	12.50	Horizontal	-56.65	-13.00	43.65	135
7	4935.00	-62.71	3.40	12.50	Horizontal	-55.76	-13.00	42.76	180
8	5640.00	-62.91	3.40	12.80	Horizontal	-55.66	-13.00	42.66	0
9	6345.00	-58.88	4.10	11.50	Horizontal	-53.63	-13.00	40.63	225
10	7050.00	-55.87	4.20	12.20	Horizontal	-50.02	-13.00	37.02	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3488.65	-51.00	2.70	12.70	Horizontal	-41.00	-13.00	28.00	45
3	5232.90	-60.03	3.20	12.50	Horizontal	-50.73	-13.00	37.73	225
4	6977.20	-58.61	4.20	11.80	Horizontal	-51.01	-13.00	38.01	135
5	8721.50	-56.70	4.40	12.50	Horizontal	-48.60	-13.00	35.60	180
6	10465.80	-53.10	4.70	11.80	Horizontal	-46.00	-13.00	33.00	270
7	12210.10	-54.17	5.20	13.80	Horizontal	-45.57	-13.00	32.57	0
8	13954.40	-52.74	5.70	13.20	Horizontal	-45.24	-13.00	32.24	315
9	15698.70	-58.78	6.10	16.80	Horizontal	-48.08	-13.00	35.08	45
10	17443.00	-54.47	6.10	14.20	Horizontal	-46.37	-13.00	33.37	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3485.00	-51.27	2.70	12.70	Horizontal	-41.27	-13.00	28.27	45
3	5227.50	-59.31	3.20	12.50	Horizontal	-50.01	-13.00	37.01	135
4	6970.00	-59.23	4.20	11.80	Horizontal	-51.63	-13.00	38.63	270
5	8712.50	-56.46	4.40	12.50	Horizontal	-48.36	-13.00	35.36	0
6	10455.00	-54.14	4.70	11.80	Horizontal	-47.04	-13.00	34.04	225
7	12197.50	-53.51	5.20	13.80	Horizontal	-44.91	-13.00	31.91	315
8	13940.00	-52.59	5.70	13.20	Horizontal	-45.09	-13.00	32.09	90
9	15682.50	-58.85	6.10	16.80	Horizontal	-48.15	-13.00	35.15	135
10	17425.00	-54.04	6.10	14.20	Horizontal	-45.94	-13.00	32.94	225
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3470.00	-52.02	2.70	12.70	Horizontal	-42.02	-13.00	29.02	45
3	5205.00	-57.65	3.20	12.50	Horizontal	-48.35	-13.00	35.35	180
4	6940.00	-58.59	4.20	11.80	Horizontal	-50.99	-13.00	37.99	270
5	8675.00	-57.83	4.40	12.50	Horizontal	-49.73	-13.00	36.73	90
6	10410.00	-54.43	4.70	11.80	Horizontal	-47.33	-13.00	34.33	0
7	12145.00	-54.40	5.20	13.80	Horizontal	-45.80	-13.00	32.80	135
8	13880.00	-50.34	5.70	13.20	Horizontal	-42.84	-13.00	29.84	315
9	15615.00	-57.43	6.10	16.80	Horizontal	-46.73	-13.00	33.73	225
10	17350.00	-52.84	6.10	14.20	Horizontal	-44.74	-13.00	31.74	45
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									



6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113645	2021-05-15	2022-05-14
Climate Chamber	Weiss	VT4002	582261194500 10	2021-05-15	2022-05-14
Spectrum Analyzer	Keysight	N9020A	MY52330084	2021-05-15	2022-05-14
Universal Radio Communication Tester	Key sight	E5515C	GB44400275	2021-05-15	2022-05-14
Signal Analyzer	R&S	FSV3030	101411	2021-12-12	2022-12-12
Signal Analyzer	R&S	FSV30	100815	2021-12-12	2022-12-11
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	01439	2021-06-30	2024-06-29
Horn Antenna	Schwarzbeck	BBHA 9120D	01799	2019-09-21	2022-09-20
Software	R&S	EMC32	9.26.0	/	/

*****END OF REPORT *****



ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.



ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.