



RF TEST REPORT

Applicant ZTE Corporation
FCC ID SRQ-A31PLUS3
Product LTE/WCDMA/GSM(GPRS)
Multi-Mode Digital Mobile Phone
Model ZTE Blade A31 Plus
Report No. R2205A0440-R3
Issue Date June 14, 2022

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2021)/ FCC CFR47 Part 27C (2021)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Peng Tao

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000



TABLE OF CONTENT

1	Test Laboratory	4
1.1	Notes of the Test Report	4
1.2.	Test facility	4
1.3	Testing Location	4
2	General Description of Equipment under Test	5
2.1	Applicant and Manufacturer Information	5
2.2	General information	5
3	Applied Standards	7
4	Test Configuration	8
5	Test Case Results	10
5.1	RF Power Output and Effective Isotropic Radiated Power	10
5.2	Occupied Bandwidth	24
5.3	Band Edge Compliance	54
5.4	Peak-to-Average Power Ratio (PAPR)	89
5.5	Frequency Stability	95
5.6	Spurious Emissions at Antenna Terminals	103
5.7	Radiates Spurious Emission	114
6	Main Test Instruments	122
ANNEX A: The EUT Appearance		123
ANNEX B: Test Setup Photos		124
ANNEX C: Product Change Description (Variant1)		125
ANNEX D: Product Change Description (Variant2)		126

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(h)(2)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edge Compliance	27.53(h) 27.53(m)	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(m)	PASS
7	Radiates Spurious Emission	2.1053 27.53(h) 27.53(m)	PASS

Date of Testing: (Original) August 4, 2021~ August 10, 2021
(Variant) November 15, 2021 ~ November 24, 2021

Date of Sample Received: August 1, 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.

ZTE Blade A31 Plus (Report No.: R2205A0440-R3) is a variant model (Variant 2) of ZTE Blade A31 Plus (Report No.: R2110A0943-R3). This report only removes LTE Band12/17/38, changed Software Version and changed to single card slot. There is only tested Radiates Spurious Emission (LTE Band 7).The power of new variant is varied due to measurement uncertainty, and sample tolerance of the acceptance range. and did not worsen, so they were not recorded in the report. The detailed product change description please refers to the Difference Declaration Letter.

ZTE Blade A31 Plus (Report No.: R2110A0943-R3) is a variant model (Variant 1) of ZTE Blade A31 Plus (Report No.: R2108A0671-R3V1). This product only added LTE Band 12/17, changed Software Version and changed to dual card slots. This variant report added the data of LTE Band 12/17, retested LTE Band 38 and retest the worst Radiates Spurious Emission (LTE Band 7). The other bands all verified the power and there is no worse than the original, so it didn't record in this report. The detailed product change description please refers to the Difference Declaration Letter.



1 Test Laboratory

1.1 Notes of the Test Report

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

1.2. Test facility

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

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform 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
Country: P. R. China
Contact: Xu Kai
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

2.1 Applicant and Manufacturer Information

Applicant	ZTE Corporation
Applicant address	ZTE Plaza, #55 Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, China
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, #55 Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, China

2.2 General information

EUT Description		
Model	ZTE Blade A31 Plus	
IMEI	IMEI 1: 866591060000396 IMEI 2: 866591060001543	
Hardware Version	z1kA	
Software Version	4.0.0_A31Plus_TEL	
Power Supply	Battery / AC adapter	
Antenna Type	Internal Antenna	
Antenna Gain	Mode	dBi
	WCDMA Band IV	-1.1
	LTE Band 4	-1.1
	LTE Band 7	1.0
	LTE Band 66	-1.1
Test Mode(s)	WCDMA Band IV; LTE Band 4/7/66;	
Test Modulation	(WCDMA) BPSK, QPSK, 16QAM; (LTE) QPSK 16QAM 64QAM;	
HSDPA UE Category	24	
HSUPA UE Category	7	
LTE Category	5	
Maximum E.I.R.P.	WCDMA Band IV:	22.30dBm
	LTE Band 4:	22.02dBm
	LTE Band 7:	23.29dBm
	LTE Band 66:	22.34dBm
Rated Power Supply Voltage	3.8V	
Operating Voltage	Minimum: 3.4V Maximum: 4.35V	
Operating Temperature	Lowest: -10°C Highest: +55°C	
Extreme Temperature	Lowest: -30°C Highest: +50°C	



RF Test Report

Report No.: R2205A0440-1

Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	WCDMA Band IV	1710 ~ 1755	2110 ~ 2155
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
	LTE Band 66	1710 ~ 1780	2110 ~ 2180
EUT Accessory			
Adapter 1	Manufacturer: Shenzhen Ruijing Industrial Co Ltd Model: STC-A51D-Z		
Adapter 2	Manufacturer: HUIZHOU PUAN ELECTRONICS CO.,LTD Model: STC-A51D-Z		
Battery	Manufacturer: Guangdong Fenghua New Energy Co.,Ltd. Model: Li3830T43P8h486375		
Earphone 1	Manufacturer: Shenzhen FDC Electronics Co. ,Ltd. Model: DEM-8A		
Earphone 2	Manufacturer: JUWEI ELECTRONICS CO., LTD Model: JWEP1091-Z01		
USB Cable 1	Manufacturer: Dongguan Guojun Plastic Electronic Co.,Ltd Model: USB-MU5-B-70-M-L		
USB Cable 2	Manufacturer: Shenzhen Yihuaxing Electronic Co., Ltd. Model: USB-MU5-B-70-M-L		
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant. 2. There are more than one Adapter, Earphone and USB Cable, each one should be applied throughout the compliance test respectively, however, only the worst case (Adapter 1, Earphone 2 and USB Cable 1) will be recorded in this report.			



3 Applied Standards

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

Test standards:

FCC CFR47 Part 27C (2021)

ANSI C63.26 (2015)

Reference standard:

FCC CFR47 Part 2 (2021)

KDB 971168 D01 Power Meas License Digital Systems v03r01

4 Test Configuration

There is more than one SIM card slot, each one should be applied throughout the compliance test respectively, and however, only the worst case (SIM 1) will be recorded in this report

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, horizontal polarization) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated.

Subsequently, only the worst case emissions are reported.

The following testing in WCDMA/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:

Test items	Modes/Modulation
	WCDMA Band IV
RF Power Output and Effective Isotropic Radiated Power	RMC/AMR HSDPA/HSUPA DC-HSDPA/HSPA+
Occupied Bandwidth	RMC
Band Edge Compliance	RMC
Peak-to-Average Power Ratio	RMC
Frequency Stability	RMC
Spurious Emissions at Antenna Terminals	RMC
Radiates Spurious Emission	RMC

Test modes are chosen to be reported as the worst case configuration below for LTE Band 4/7/66:

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 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 7	-	-	O	O	O	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	O
Occupied Bandwidth	LTE 4	O	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	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
Band Edge Compliance	LTE 4	O	O	O	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 7	-	-	O	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
Peak-to-Average Power Ratio	LTE 4	O	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	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
Frequency Stability	LTE 4	O	O	O	O	O	O	O	O	O	O	-	-	-	O	-
	LTE 7	-	-	O	O	O	O	O	O	O	O	-	-	-	O	-
	LTE 66	O	O	O	O	O	O	O	O	O	O	-	-	-	O	-
Spurious Emissions at Antenna Terminals	LTE 4	O	O	O	O	O	O	O	-	-	O	-	-	O	O	O
	LTE 7	-	-	O	O	O	O	O	-	-	O	-	-	O	O	O
	LTE 66	O	O	O	O	O	O	O	-	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 4	O	-	O	-	-	O	O	-	-	O	-	-	-	O	-
	LTE 7	-	-	O	-	-	O	O	-	-	O	-	-	-	O	-
	LTE 66	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.

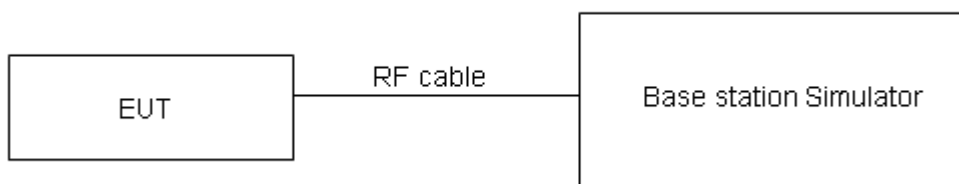
ERP can then be calculated as follows:

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

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

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

Test Setup



Limits

No specific RF power output requirements in part 2.1046.

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”

Rule Part 27.50(h) (2) specifies that “Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.”



Part 27.50(d)(4)Limit	$\leq 1\text{ W}$ (30 dBm)
Part 27.50(h)(2) Limit	$\leq 2\text{ W}$ (33 dBm)

Measurement Uncertainty

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



Test Results

WCDMA Band IV		Maximum Output Power (dBm)			EIRP (dBm)		
		Channel 1312	Channel 1413	Channel 1513	Channel 1312	Channel 1413	Channel 1513
		1712.4 (MHz)	1732.6 (MHz)	1752.6 (MHz)	1712.4 (MHz)	1732.6 (MHz)	1752.6 (MHz)
RMC		23.33	23.30	23.30	22.23	22.20	22.20
AMR		23.37	23.40	23.26	22.27	22.30	22.16
HSDPA	Sub - Test 1	22.99	22.70	22.74	21.89	21.60	21.64
	Sub - Test 2	22.91	22.92	22.86	21.81	21.82	21.76
	Sub - Test 3	22.27	22.24	22.42	21.17	21.14	21.32
	Sub - Test 4	22.43	22.44	22.24	21.33	21.34	21.14
HSUPA	Sub - Test 1	22.69	22.80	22.88	21.59	21.70	21.78
	Sub - Test 2	21.67	21.80	21.90	20.57	20.70	20.80
	Sub - Test 3	22.33	22.40	22.30	21.23	21.30	21.20
	Sub - Test 4	21.77	21.68	21.86	20.67	20.58	20.76
	Sub - Test 5	22.91	22.74	22.76	21.81	21.64	21.66
DC-HSDPA	Sub - Test 1	22.73	22.96	22.84	21.63	21.86	21.74
	Sub - Test 2	22.75	22.88	22.72	21.65	21.78	21.62
	Sub - Test 3	22.45	22.18	22.24	21.35	21.08	21.14
	Sub - Test 4	22.33	22.22	22.14	21.23	21.12	21.04
HSPA+	16QAM	22.49	22.36	22.36	21.39	21.26	21.26

LTE Band 4				Maximum Output Power(dBm)			EIRP (dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				19957/1710.7	20175/1732.5	20393/1754.3	19957/1710.7	20175/1732.5	20393/1754.3
1.4MHz	QPSK	1	0	23.10	22.85	22.92	22.00	21.75	21.82
		1	2	23.07	22.83	22.74	21.97	21.73	21.64
		1	5	22.90	22.62	22.76	21.80	21.52	21.66
		3	0	22.72	22.77	22.78	21.62	21.67	21.68
		3	2	22.65	22.72	22.72	21.55	21.62	21.62
		3	3	22.68	22.68	22.71	21.58	21.58	21.61
		6	0	21.70	21.75	21.67	20.60	20.65	20.57
	16QAM	1	0	22.18	22.14	22.17	21.08	21.04	21.07
		1	2	22.16	22.31	22.12	21.06	21.21	21.02
		1	5	22.29	22.22	22.18	21.19	21.12	21.08



		3	0	21.73	21.72	21.82	20.63	20.62	20.72
		3	2	21.73	21.70	21.77	20.63	20.60	20.67
		3	3	21.74	21.69	21.67	20.64	20.59	20.57
		6	0	20.72	20.87	20.88	19.62	19.77	19.78
	64QAM	1	0	21.46	21.37	21.41	20.36	20.27	20.31
		1	2	21.53	21.47	21.50	20.43	20.37	20.40
		1	5	21.14	21.14	21.12	20.04	20.04	20.02
		3	0	21.55	21.46	21.51	20.45	20.36	20.41
		3	2	21.22	21.16	21.19	20.12	20.06	20.09
		3	3	21.21	21.14	21.16	20.11	20.04	20.06
		6	0	20.53	20.49	20.54	19.43	19.39	19.44
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				19965/ 1711.5	20175/ 1732.5	20385/ 1753.5	19965/ 1711.5	20175/ 1732.5	20385/ 1753.5
3MHz	QPSK	1	0	23.12	22.89	22.95	22.02	21.79	21.85
		1	7	23.05	22.86	22.78	21.95	21.76	21.68
		1	14	22.93	22.67	22.80	21.83	21.57	21.70
		8	0	21.82	21.89	21.91	20.72	20.79	20.81
		8	4	21.77	21.82	21.84	20.67	20.72	20.74
		8	7	21.78	21.79	21.81	20.68	20.69	20.71
		15	0	21.70	21.79	21.70	20.60	20.69	20.60
	16QAM	1	0	22.21	22.16	22.20	21.11	21.06	21.10
		1	7	22.19	22.31	22.16	21.09	21.21	21.06
		1	14	22.31	22.26	22.21	21.21	21.16	21.11
		8	0	20.84	20.85	20.94	19.74	19.75	19.84
		8	4	20.84	20.83	20.89	19.74	19.73	19.79
		8	7	20.84	20.81	20.80	19.74	19.71	19.70
		15	0	20.75	20.91	20.91	19.65	19.81	19.81
	64QAM	1	0	21.49	21.39	21.44	20.39	20.29	20.34
		1	7	21.56	21.47	21.52	20.46	20.37	20.42
		1	14	21.16	21.13	21.15	20.06	20.03	20.05
		8	0	20.66	20.59	20.63	19.56	19.49	19.53
		8	4	20.33	20.29	20.31	19.23	19.19	19.21
		8	7	20.31	20.26	20.29	19.21	19.16	19.19
		15	0	20.56	20.53	20.57	19.46	19.43	19.47



BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				19975/ 1712.5	20175/ 1732.5	20375/ 1752.5	19975/ 1712.5	20175/ 1732.5	20375/ 1752.5
5MHz	QPSK	1	0	23.09	22.87	22.91	21.99	21.77	21.81
		1	13	23.03	22.82	22.75	21.93	21.72	21.65
		1	24	22.90	22.62	22.76	21.80	21.52	21.66
		12	0	21.79	21.84	21.87	20.69	20.74	20.77
		12	6	21.75	21.78	21.79	20.65	20.68	20.69
		12	13	21.76	21.77	21.77	20.66	20.67	20.67
		25	0	21.70	21.78	21.68	20.60	20.68	20.58
	16QAM	1	0	22.18	22.12	22.17	21.08	21.02	21.07
		1	13	22.16	22.29	22.13	21.06	21.19	21.03
		1	24	22.28	22.24	22.17	21.18	21.14	21.07
		12	0	20.82	20.81	20.91	19.72	19.71	19.81
		12	6	20.81	20.78	20.85	19.71	19.68	19.75
		12	13	20.81	20.76	20.76	19.71	19.66	19.66
		25	0	20.73	20.87	20.86	19.63	19.77	19.76
	64QAM	1	0	21.46	21.39	21.41	20.36	20.29	20.31
		1	13	21.53	21.49	21.49	20.43	20.39	20.39
		1	24	21.17	21.11	21.11	20.07	20.01	20.01
		12	0	20.64	20.55	20.64	19.54	19.45	19.54
		12	6	20.30	20.24	20.27	19.20	19.14	19.17
		12	13	20.28	20.21	20.25	19.18	19.11	19.15
		25	0	20.54	20.49	20.52	19.44	19.39	19.42
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				20000/ 1715	20175/ 1732.5	20350/ 1750	20000/ 1715	20175/ 1732.5	20350/ 1750
10MHz	QPSK	1	0	23.11	22.88	22.94	22.01	21.78	21.84
		1	25	23.06	22.87	22.79	21.96	21.77	21.69
		1	49	22.92	22.66	22.79	21.82	21.56	21.69
		25	0	21.82	21.89	21.91	20.72	20.79	20.81
		25	13	21.78	21.83	21.83	20.68	20.73	20.73
		25	25	21.78	21.81	21.82	20.68	20.71	20.72
		50	0	21.74	21.80	21.72	20.64	20.70	20.62
	16QAM	1	0	22.20	22.15	22.19	21.10	21.05	21.09
		1	25	22.19	22.33	22.16	21.09	21.23	21.06
		1	49	22.31	22.26	22.20	21.21	21.16	21.10



		25	0	20.85	20.86	20.95	19.75	19.76	19.85
		25	13	20.83	20.82	20.88	19.73	19.72	19.78
		25	25	20.84	20.81	20.80	19.74	19.71	19.70
		50	0	20.76	20.92	20.90	19.66	19.82	19.80
	64QAM	1	0	21.48	21.38	21.43	20.38	20.28	20.33
		1	25	21.56	21.49	21.52	20.46	20.39	20.42
		1	49	21.16	21.13	21.14	20.06	20.03	20.04
		25	0	20.67	20.60	20.64	19.57	19.50	19.54
		25	13	20.32	20.28	20.30	19.22	19.18	19.20
		25	25	20.31	20.26	20.29	19.21	19.16	19.19
		50	0	20.57	20.54	20.56	19.47	19.44	19.46
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				20025/ 1717.5	20175/ 1732.5	20325/ 1747.5	20025/ 1717.5	20175/ 1732.5	20325/ 1747.5
15MHz	QPSK	1	0	23.10	22.84	22.92	22.00	21.74	21.82
		1	38	23.04	22.86	22.76	21.94	21.76	21.66
		1	74	22.89	22.61	22.75	21.79	21.51	21.65
		36	0	21.80	21.85	21.88	20.70	20.75	20.78
		36	18	21.75	21.78	21.79	20.65	20.68	20.69
		36	39	21.75	21.78	21.78	20.65	20.68	20.68
		75	0	21.72	21.76	21.67	20.62	20.66	20.57
	16QAM	1	0	22.15	22.13	22.17	21.05	21.03	21.07
		1	38	22.17	22.30	22.14	21.07	21.20	21.04
		1	74	22.28	22.22	22.17	21.18	21.12	21.07
		36	0	20.82	20.84	20.92	19.72	19.74	19.82
		36	18	20.80	20.77	20.84	19.70	19.67	19.74
		36	39	20.82	20.77	20.77	19.72	19.67	19.67
		75	0	20.73	20.87	20.86	19.63	19.77	19.76
	64QAM	1	0	21.43	21.36	21.41	20.33	20.26	20.31
		1	38	21.54	21.46	21.50	20.44	20.36	20.40
		1	74	21.17	21.12	21.15	20.07	20.02	20.05
		36	0	20.66	20.62	20.65	19.56	19.52	19.55
		36	18	20.30	20.25	20.29	19.20	19.15	19.19
		36	39	20.29	20.22	20.26	19.19	19.12	19.16
		75	0	20.54	20.49	20.52	19.44	19.39	19.42



BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				20050/ 1720	20175/ 1732.5	20300/ 1745	20050/ 1720	20175/ 1732.5	20300/ 1745
20MHz	QPSK	1	0	23.07	22.80	22.89	21.97	21.70	21.79
		1	50	23.03	22.82	22.74	21.93	21.72	21.64
		1	99	22.87	22.60	22.72	21.77	21.50	21.62
		50	0	21.77	21.80	21.84	20.67	20.70	20.74
		50	25	21.73	21.74	21.76	20.63	20.64	20.66
		50	50	21.72	21.73	21.74	20.62	20.63	20.64
		100	0	21.69	21.71	21.63	20.59	20.61	20.53
	16QAM	1	0	22.05	22.09	22.12	20.95	20.99	21.02
		1	50	22.13	22.28	22.10	21.03	21.18	21.00
		1	99	22.26	22.19	22.15	21.16	21.09	21.05
		50	0	20.79	20.80	20.89	19.69	19.70	19.79
		50	25	20.77	20.75	20.81	19.67	19.65	19.71
		50	50	20.79	20.72	20.73	19.69	19.62	19.63
		100	0	20.71	20.83	20.83	19.61	19.73	19.73
	64QAM	1	0	21.41	21.32	21.36	20.31	20.22	20.26
		1	50	21.50	21.44	21.46	20.40	20.34	20.36
		1	99	21.11	21.06	21.09	20.01	19.96	19.99
		50	0	20.61	20.54	20.58	19.51	19.44	19.48
		50	25	20.26	20.21	20.23	19.16	19.11	19.13
		50	50	20.26	20.17	20.22	19.16	19.07	19.12
		100	0	20.52	20.45	20.49	19.42	19.35	19.39

LTE Band 7				Maximum Output Power(dBm)			EIRP (dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				20775/2502.5	21100/2535	21425/2567.5	20775/2502.5	21100/2535	21425/2567.5
5MHz	QPSK	1	0	22.15	22.16	22.10	23.15	23.16	23.10
		1	13	22.08	22.24	21.94	23.08	23.24	22.94
		1	24	21.99	22.25	22.29	22.99	23.25	23.29
		12	0	21.07	21.19	20.98	22.07	22.19	21.98
		12	6	20.98	21.00	21.15	21.98	22.00	22.15
		12	13	20.97	21.02	21.13	21.97	22.02	22.13
		25	0	20.93	21.09	21.23	21.93	22.09	22.23
	16QAM	1	0	21.75	21.43	21.58	22.75	22.43	22.58



		1	13	21.73	21.52	21.57	22.73	22.52	22.57
		1	24	21.75	21.54	21.41	22.75	22.54	22.41
		12	0	20.18	20.16	20.29	21.18	21.16	21.29
		12	6	20.22	20.15	20.32	21.22	21.15	21.32
		12	13	20.24	20.19	20.39	21.24	21.19	21.39
		25	0	20.16	20.26	20.38	21.16	21.26	21.38
		25	0	20.16	20.26	20.38	21.16	21.26	21.38
	64QAM	1	0	21.05	21.02	21.09	22.05	22.02	22.09
		1	13	20.93	20.89	20.93	21.93	21.89	21.93
		1	24	20.91	20.85	20.87	21.91	21.85	21.87
		12	0	20.02	19.92	20.04	21.02	20.92	21.04
		12	6	19.99	19.91	19.97	20.99	20.91	20.97
		12	13	19.24	19.21	19.29	20.24	20.21	20.29
		25	0	18.61	18.56	18.62	19.61	19.56	19.62
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				20800/ 2505	21100/ 2535	21400/ 2565	20800/ 2505	21100/ 2535	21400/ 2565
10MHz	QPSK	1	0	22.17	22.17	22.13	23.17	23.17	23.13
		1	25	22.11	22.29	21.98	23.11	23.29	22.98
		1	49	22.01	22.29	22.10	23.01	23.29	23.10
		25	0	21.10	21.24	21.02	22.10	22.24	22.02
		25	13	21.01	21.05	21.19	22.01	22.05	22.19
		25	25	20.99	21.06	21.18	21.99	22.06	22.18
		50	0	20.97	21.11	21.27	21.97	22.11	22.27
	16QAM	1	0	21.77	21.46	21.60	22.77	22.46	22.60
		1	25	21.76	21.56	21.60	22.76	22.56	22.60
		1	49	21.78	21.56	21.44	22.78	22.56	22.44
		25	0	20.21	20.21	20.33	21.21	21.21	21.33
		25	13	20.24	20.19	20.35	21.24	21.19	21.35
		25	25	20.27	20.24	20.43	21.27	21.24	21.43
		50	0	20.19	20.31	20.42	21.19	21.31	21.42
	64QAM	1	0	21.07	21.01	21.11	22.07	22.01	22.11
		1	25	20.96	20.89	20.96	21.96	21.89	21.96
		1	49	20.90	20.87	20.90	21.90	21.87	21.90
		25	0	20.05	19.97	20.04	21.05	20.97	21.04
		25	13	20.01	19.95	20.00	21.01	20.95	21.00
		25	25	19.27	19.26	19.33	20.27	20.26	20.33
		50	0	18.64	18.61	18.66	19.64	19.61	19.66



BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				20825/ 2507.5	21100/ 2535	21375/ 2562.5	20825/ 2507.5	21100/ 2535	21375/ 2562.5
15MHz	QPSK	1	0	22.16	22.13	22.11	23.16	23.13	23.11
		1	38	22.09	22.28	21.95	23.09	23.28	22.95
		1	74	21.98	22.24	22.28	22.98	23.24	23.28
		36	0	21.08	21.20	20.99	22.08	22.20	21.99
		36	18	20.98	21.00	21.15	21.98	22.00	22.15
		36	39	20.96	21.03	21.14	21.96	22.03	22.14
		75	0	20.95	21.07	21.22	21.95	22.07	22.22
	16QAM	1	0	21.72	21.44	21.58	22.72	22.44	22.58
		1	38	21.74	21.53	21.58	22.74	22.53	22.58
		1	74	21.75	21.52	21.41	22.75	22.52	22.41
		36	0	20.18	20.19	20.30	21.18	21.19	21.30
		36	18	20.21	20.14	20.31	21.21	21.14	21.31
		36	39	20.25	20.20	20.40	21.25	21.20	21.40
		75	0	20.16	20.26	20.38	21.16	21.26	21.38
	64QAM	1	0	21.02	20.99	21.09	22.02	21.99	22.09
		1	38	20.94	20.86	20.94	21.94	21.86	21.94
		1	74	20.91	20.86	20.91	21.91	21.86	21.91
		36	0	20.04	19.99	20.05	21.04	20.99	21.05
		36	18	19.99	19.92	19.99	20.99	20.92	20.99
		36	39	19.25	19.22	19.30	20.25	20.22	20.30
		75	0	18.61	18.56	18.62	19.61	19.56	19.62
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				20850/ 2510	21100/ 2535	21350/ 2560	20850/ 2510	21100/ 2535	21350/ 2560
20MHz	QPSK	1	0	22.13	22.09	22.08	23.13	23.09	23.08
		1	50	22.08	22.24	21.93	23.08	23.24	22.93
		1	99	21.96	22.23	22.25	22.96	23.23	23.25
		50	0	21.05	21.15	20.95	22.05	22.15	21.95
		50	25	20.96	20.96	21.12	21.96	21.96	22.12
		50	50	20.93	20.98	21.10	21.93	21.98	22.10
		100	0	20.92	21.02	21.18	21.92	22.02	22.18
	16QAM	1	0	21.67	21.40	21.53	22.67	22.40	22.53
		1	50	21.70	21.51	21.54	22.70	22.51	22.54
		1	99	21.73	21.49	21.39	22.73	22.49	22.39



		50	0	20.15	20.15	20.27	21.15	21.15	21.27
		50	25	20.18	20.12	20.28	21.18	21.12	21.28
		50	50	20.22	20.15	20.36	21.22	21.15	21.36
		100	0	20.14	20.22	20.35	21.14	21.22	21.35
	64QAM	1	0	21.00	20.95	21.04	22.00	21.95	22.04
		1	50	20.90	20.84	20.90	21.90	21.84	21.90
		1	99	20.85	20.80	20.85	21.85	21.80	21.85
		50	0	19.99	19.91	19.98	20.99	20.91	20.98
		50	25	19.95	19.88	19.93	20.95	20.88	20.93
		50	50	19.22	19.17	19.26	20.22	20.17	20.26
		100	0	18.59	18.52	18.59	19.59	19.52	19.59

LTE Band 66				Maximum Output Power(dBm)			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
1.4MHz	QPSK	1	0	23.34	23.26	23.17	22.24	22.16	22.07
		1	2	23.24	23.40	23.11	22.14	22.30	22.01
		1	5	23.36	23.37	23.13	22.26	22.27	22.03
		3	0	23.14	23.13	23.10	22.04	22.03	22.00
		3	2	23.07	23.14	23.16	21.97	22.04	22.06
		3	3	23.17	23.14	23.15	22.07	22.04	22.05
		6	0	22.26	22.13	22.16	21.16	21.03	21.06
	16QAM	1	0	21.75	21.55	21.92	20.65	20.45	20.82
		1	2	21.73	21.66	21.70	20.63	20.56	20.60
		1	5	21.82	21.62	21.69	20.72	20.52	20.59
		3	0	22.31	22.22	22.25	21.21	21.12	21.15
		3	2	22.27	22.30	22.36	21.17	21.20	21.26
		3	3	22.26	22.33	22.21	21.16	21.23	21.11
		6	0	21.34	21.32	21.30	20.24	20.22	20.20
	64QAM	1	0	21.42	21.33	21.35	20.32	20.23	20.25
		1	2	21.54	21.47	21.51	20.44	20.37	20.41
		1	5	21.66	21.66	21.63	20.56	20.56	20.53
		3	0	21.08	21.06	21.03	19.98	19.96	19.93
		3	2	21.11	21.06	21.11	20.01	19.96	20.01
		3	3	21.26	21.20	21.22	20.16	20.10	20.12



		6	0	20.60	20.55	20.63	19.50	19.45	19.53
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
3MHz	QPSK	1	0	23.36	23.30	23.20	22.26	22.20	22.10
		1	7	23.22	23.43	23.15	22.12	22.33	22.05
		1	14	23.39	23.42	23.17	22.29	22.32	22.07
		8	0	22.24	22.25	22.23	21.14	21.15	21.13
		8	4	22.19	22.24	22.28	21.09	21.14	21.18
		8	7	22.27	22.25	22.25	21.17	21.15	21.15
		15	0	22.26	22.17	22.19	21.16	21.07	21.09
	16QAM	1	0	21.78	21.57	21.95	20.68	20.47	20.85
		1	7	21.76	21.66	21.74	20.66	20.56	20.64
		1	14	21.84	21.66	21.72	20.74	20.56	20.62
		8	0	21.42	21.35	21.37	20.32	20.25	20.27
		8	4	21.38	21.43	21.48	20.28	20.33	20.38
		8	7	21.36	21.45	21.34	20.26	20.35	20.24
		15	0	21.37	21.36	21.33	20.27	20.26	20.23
	64QAM	1	0	21.45	21.35	21.38	20.35	20.25	20.28
		1	7	21.57	21.47	21.53	20.47	20.37	20.43
		1	14	21.68	21.65	21.66	20.58	20.55	20.56
		8	0	19.89	19.80	19.85	18.79	18.70	18.75
		8	4	20.22	20.19	20.23	19.12	19.09	19.13
		8	7	20.36	20.32	20.35	19.26	19.22	19.25
		15	0	20.63	20.59	20.66	19.53	19.49	19.56
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
5MHz	QPSK	1	0	23.36	23.30	23.20	22.26	22.20	22.10
		1	7	23.22	23.43	23.15	22.12	22.33	22.05
		1	14	23.39	23.42	23.17	22.29	22.32	22.07
		8	0	22.24	22.25	22.23	21.14	21.15	21.13
		8	4	22.19	22.24	22.28	21.09	21.14	21.18
		8	7	22.27	22.25	22.25	21.17	21.15	21.15
		15	0	22.26	22.17	22.19	21.16	21.07	21.09
	16QAM	1	0	21.78	21.57	21.95	20.68	20.47	20.85
		1	7	21.76	21.66	21.74	20.66	20.56	20.64



		1	14	21.84	21.66	21.72	20.74	20.56	20.62
		8	0	21.42	21.35	21.37	20.32	20.25	20.27
		8	4	21.38	21.43	21.48	20.28	20.33	20.38
		8	7	21.36	21.45	21.34	20.26	20.35	20.24
		15	0	21.37	21.36	21.33	20.27	20.26	20.23
	64QAM	1	0	21.45	21.35	21.38	20.35	20.25	20.28
		1	7	21.57	21.47	21.53	20.47	20.37	20.43
		1	14	21.68	21.65	21.66	20.58	20.55	20.56
		8	0	19.89	19.80	19.85	18.79	18.70	18.75
		8	4	20.22	20.19	20.23	19.12	19.09	19.13
		8	7	20.36	20.32	20.35	19.26	19.22	19.25
		15	0	20.63	20.59	20.66	19.53	19.49	19.56
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
10MHz	QPSK	1	0	23.35	23.29	23.19	22.25	22.19	22.09
		1	25	23.23	23.44	23.16	22.13	22.34	22.06
		1	49	23.38	23.41	23.16	22.28	22.31	22.06
		25	0	22.24	22.25	22.23	21.14	21.15	21.13
		25	13	22.20	22.25	22.27	21.10	21.15	21.17
		25	25	22.27	22.27	22.26	21.17	21.17	21.16
		50	0	22.30	22.18	22.21	21.20	21.08	21.11
	16QAM	1	0	21.77	21.56	21.94	20.67	20.46	20.84
		1	25	21.76	21.68	21.74	20.66	20.58	20.64
		1	49	21.84	21.66	21.71	20.74	20.56	20.61
		25	0	21.43	21.36	21.38	20.33	20.26	20.28
		25	13	21.37	21.42	21.47	20.27	20.32	20.37
		25	25	21.36	21.45	21.34	20.26	20.35	20.24
		50	0	21.38	21.37	21.32	20.28	20.27	20.22
	64QAM	1	0	21.44	21.34	21.37	20.34	20.24	20.27
		1	25	21.57	21.49	21.53	20.47	20.39	20.43
		1	49	21.68	21.65	21.65	20.58	20.55	20.55
		25	0	19.90	19.81	19.86	18.80	18.71	18.76
		25	13	20.21	20.18	20.22	19.11	19.08	19.12
		25	25	20.36	20.32	20.35	19.26	19.22	19.25
		50	0	20.64	20.60	20.65	19.54	19.50	19.55



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
15MHz	QPSK	1	0	23.34	23.25	23.17	22.24	22.15	22.07
		1	38	23.21	23.43	23.13	22.11	22.33	22.03
		1	74	23.35	23.36	23.12	22.25	22.26	22.02
		36	0	22.22	22.21	22.20	21.12	21.11	21.10
		36	18	22.17	22.20	22.23	21.07	21.10	21.13
		36	39	22.24	22.24	22.22	21.14	21.14	21.12
		75	0	22.28	22.14	22.16	21.18	21.04	21.06
	16QAM	1	0	21.72	21.54	21.92	20.62	20.44	20.82
		1	38	21.74	21.65	21.72	20.64	20.55	20.62
		1	74	21.81	21.62	21.68	20.71	20.52	20.58
		36	0	21.40	21.34	21.35	20.30	20.24	20.25
		36	18	21.34	21.37	21.43	20.24	20.27	20.33
		36	39	21.34	21.41	21.31	20.24	20.31	20.21
		75	0	21.35	21.32	21.28	20.25	20.22	20.18
	64QAM	1	0	21.39	21.32	21.35	20.29	20.22	20.25
		1	38	21.55	21.46	21.51	20.45	20.36	20.41
		1	74	21.69	21.64	21.66	20.59	20.54	20.56
		36	0	19.89	19.83	19.87	18.79	18.73	18.77
		36	18	20.19	20.15	20.21	19.09	19.05	19.11
		36	39	20.34	20.28	20.32	19.24	19.18	19.22
		75	0	20.61	20.55	20.61	19.51	19.45	19.51
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				132072/ 1720	132322/ 1745	132572/ 1770	132072/ 1720	132322/ 1745	132572/ 1770
20MHz	QPSK	1	0	23.31	23.21	23.14	22.21	22.11	22.04
		1	50	23.20	23.39	23.11	22.10	22.29	22.01
		1	99	23.33	23.35	23.09	22.23	22.25	21.99
		50	0	22.19	22.16	22.16	21.09	21.06	21.06
		50	25	22.15	22.16	22.20	21.05	21.06	21.10
		50	50	22.21	22.19	22.18	21.11	21.09	21.08
		100	0	22.25	22.09	22.12	21.15	20.99	21.02
	16QAM	1	0	21.65	21.50	21.87	20.55	20.40	20.77
		1	50	21.70	21.63	21.68	20.60	20.53	20.58
		1	99	21.79	21.59	21.66	20.69	20.49	20.56



		50	0	21.37	21.30	21.32	20.27	20.20	20.22
		50	25	21.31	21.35	21.40	20.21	20.25	20.30
		50	50	21.31	21.36	21.27	20.21	20.26	20.17
		100	0	21.33	21.28	21.25	20.23	20.18	20.15
	64QAM	1	0	21.37	21.28	21.30	20.27	20.18	20.20
		1	50	21.51	21.44	21.47	20.41	20.34	20.37
		1	99	21.63	21.58	21.60	20.53	20.48	20.50
		50	0	19.84	19.75	19.80	18.74	18.65	18.70
		50	25	20.15	20.11	20.15	19.05	19.01	19.05
		50	50	20.31	20.23	20.28	19.21	19.13	19.18
		100	0	20.59	20.51	20.58	19.49	19.41	19.48

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 51 kHz, VBW is set to 160 kHz for WCDMA Band IV.

RBW is set to 30 kHz, VBW is set to 91 kHz for LTE Band 4/66 (1.4MHz).

RBW is set to 62 kHz, VBW is set to 180 kHz for LTE Band 4/66 (3MHz).

RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/7/66 (5MHz).

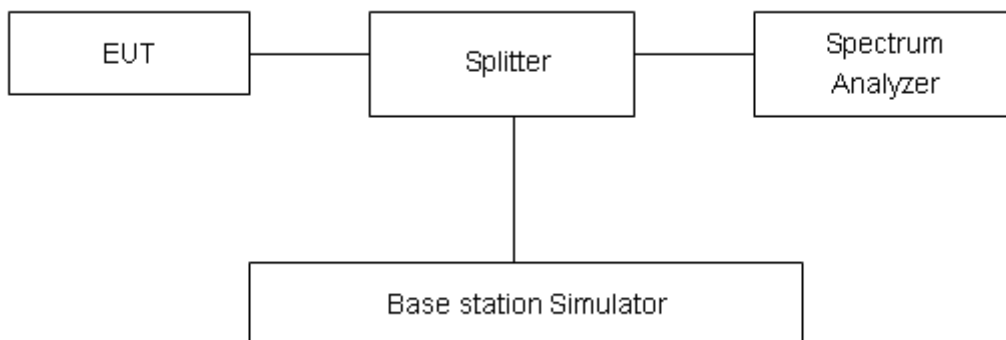
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 4/7/66(10MHz).

RBW is set to 300 kHz, VBW is set to 910 kHz for LTE Band 4/7/66 (15MHz).

RBW is set to 430 kHz, VBW is set to 1.2MHz for LTE Band 4/7/66(20MHz).

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

Mode	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth(MHz)
WCDMA Band IV (RMC)	1312	1712.4	4.1543	4.659
	1413	1732.6	4.1386	4.642
	1513	1752.6	4.1479	4.623

LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.095	1.238
			20175	1732.5	1.102	1.244
			20393	1754.3	1.092	1.243
		3	19965	1711.5	2.719	3.074
			20175	1732.5	2.720	3.023
			20385	1753.5	2.716	3.039
		5	19975	1712.5	4.511	4.930
			20175	1732.5	4.519	4.982
			20375	1752.5	4.508	4.934
		10	20000	1715	8.981	9.776
			20175	1732.5	8.981	9.747
			20350	1750	9.013	9.764
		15	20025	1717.5	13.493	14.875
			20175	1732.5	13.503	14.926
			20325	1747.5	13.509	14.885
		20	20050	1720	18.007	19.531
			20175	1732.5	18.015	19.527
			20300	1745	18.070	19.804
	16QAM	1.4	19957	1710.7	1.103	1.242
			20175	1732.5	1.092	1.245
			20393	1754.3	1.100	1.255
		3	19965	1711.5	2.697	3.042
			20175	1732.5	2.708	3.053
			20385	1753.5	2.704	3.027
		5	19975	1712.5	4.522	4.969
			20175	1732.5	4.535	4.983
			20375	1752.5	4.509	4.952
		10	20000	1715	8.988	9.896
			20175	1732.5	8.992	9.689
			20350	1750	9.018	9.808



		15	20025	1717.5	13.443	14.751
			20175	1732.5	13.482	14.866
			20325	1747.5	13.478	14.863
		20	20050	1720	17.939	19.621
			20175	1732.5	18.017	19.581
			20300	1745	18.081	19.487
	64QAM	1.4	19957	1710.7	1.099	1.258
			20175	1732.5	1.096	1.243
			20393	1754.3	1.097	1.248
		3	19965	1711.5	2.694	3.038
			20175	1732.5	2.707	3.054
			20385	1753.5	2.709	3.039
		5	19975	1712.5	4.513	4.963
			20175	1732.5	4.533	4.961
			20375	1752.5	4.515	4.986
		10	20000	1715	8.966	9.781
			20175	1732.5	8.996	9.806
			20350	1750	9.011	9.747
		15	20025	1717.5	13.458	14.679
			20175	1732.5	13.509	14.840
			20325	1747.5	13.504	14.837
		20	20050	1720	17.936	19.641
			20175	1732.5	18.011	19.522
			20300	1745	18.043	19.497

LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.507	4.989
			21100	2535	4.501	4.932
			21425	2567.5	4.496	4.926
		10	20800	2505	8.993	9.862
			21100	2535	8.989	9.822
			21400	2565	8.970	9.874
		15	20825	2507.5	13.505	15.020
			21100	2535	13.466	14.733
			21375	2562.5	13.507	14.670
		20	20850	2510	18.006	19.709
			21100	2535	17.999	19.612
			21350	2560	17.986	19.894



	16QAM	5	20775	2502.5	4.510	4.952
			21100	2535	4.525	4.986
			21425	2567.5	4.504	4.947
		10	20800	2505	9.002	9.835
			21100	2535	8.981	9.744
			21400	2565	9.006	9.807
		15	20825	2507.5	13.489	14.755
			21100	2535	13.481	14.813
			21375	2562.5	13.507	14.802
		20	20850	2510	17.989	19.650
			21100	2535	18.023	19.825
			21350	2560	18.016	19.729
	64QAM	5	20775	2502.5	4.504	4.964
			21100	2535	4.521	4.921
			21425	2567.5	4.524	4.953
		10	20800	2505	9.016	9.832
			21100	2535	8.990	9.855
			21400	2565	8.995	9.865
		15	20825	2507.5	13.484	14.703
			21100	2535	13.510	14.787
			21375	2562.5	13.460	14.795
		20	20850	2510	18.002	19.520
			21100	2535	17.985	19.443
			21350	2560	17.992	19.664

LTE Band 66						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	131979	1710.7	1.091	1.240
			132322	1745	1.100	1.257
			132665	1779.3	1.098	1.248
		3	131987	1711.5	2.720	3.036
			132322	1745	2.707	3.049
			132657	1778.5	2.711	3.050
		5	131997	1712.5	4.508	4.954
			132322	1745	4.502	4.934
			132647	1777.5	4.519	4.940
		10	132022	1715	8.989	9.802
			132322	1745	9.020	9.799
			132622	1775	9.017	9.867
		15	132047	1717.5	13.482	14.717
			132322	1745	13.468	14.844



		20	132597	1772.5	13.475	14.776
			132072	1720	17.973	19.534
			132322	1745	18.029	19.603
			132572	1770	17.950	19.647
	16QAM	1.4	131979	1710.7	1.106	1.245
			132322	1745	1.093	1.248
			132665	1779.3	1.102	1.250
		3	131987	1711.5	2.701	3.006
			132322	1745	2.708	3.030
			132657	1778.5	2.710	3.044
		5	131997	1712.5	4.518	4.937
			132322	1745	4.549	4.972
			132647	1777.5	4.516	4.940
		10	132022	1715	8.996	9.795
			132322	1745	9.012	9.769
			132622	1775	8.990	9.867
		15	132047	1717.5	13.440	14.794
			132322	1745	13.479	14.837
			132597	1772.5	13.499	14.720
		20	132072	1720	17.944	19.530
			132322	1745	18.049	19.792
			132572	1770	17.993	19.454
	64QAM	1.4	131979	1710.7	1.101	1.254
			132322	1745	1.097	1.251
			132665	1779.3	1.094	1.257
		3	131987	1711.5	2.703	3.044
			132322	1745	2.704	3.038
			132657	1778.5	2.703	3.028
		5	131997	1712.5	4.494	4.921
			132322	1745	4.524	4.969
			132647	1777.5	4.507	4.967
		10	132022	1715	8.991	9.912
			132322	1745	9.008	9.823
			132622	1775	9.002	9.831
		15	132047	1717.5	13.460	14.749
			132322	1745	13.484	14.875
			132597	1772.5	13.477	14.675
		20	132072	1720	17.955	19.537
			132322	1745	17.995	19.867
			132572	1770	18.013	19.755



WCDMA Band IV CH-Low



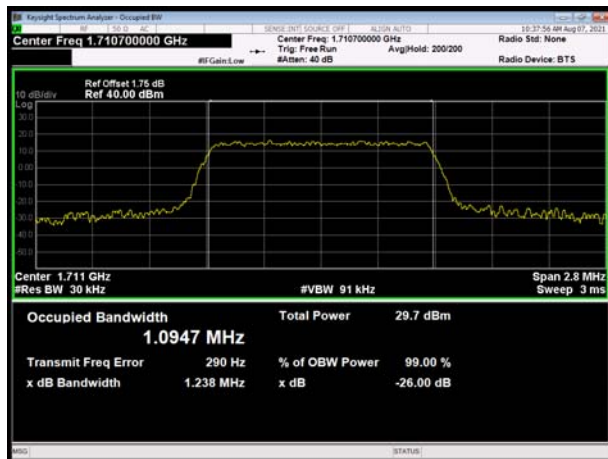
WCDMA Band IV CH Middle



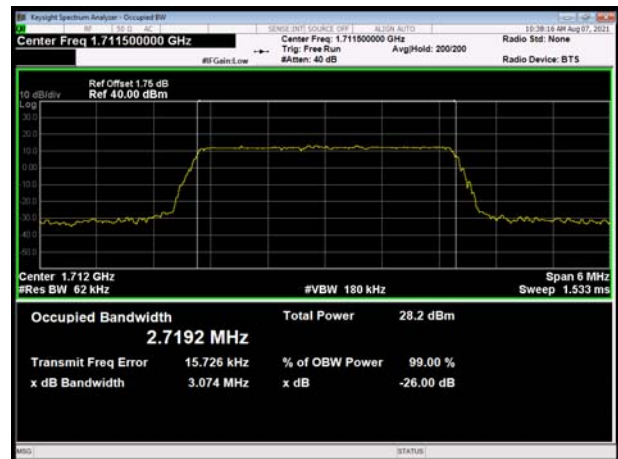
WCDMA Band IV CH High



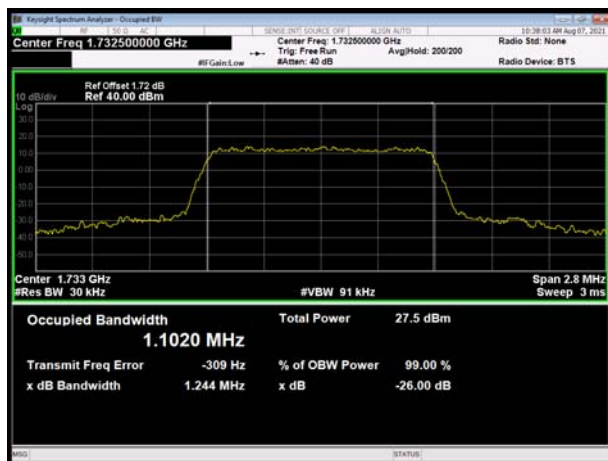
LTE Band 4 QPSK 1.4MHz CH-Low



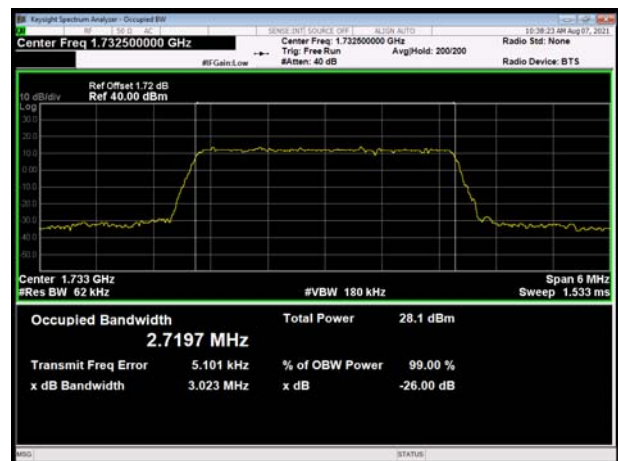
LTE Band 4 QPSK 3MHz CH-Low



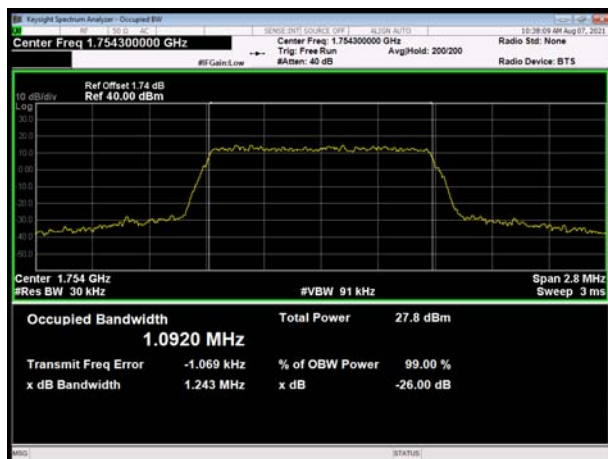
LTE Band 4 QPSK 1.4MHz CH-Middle



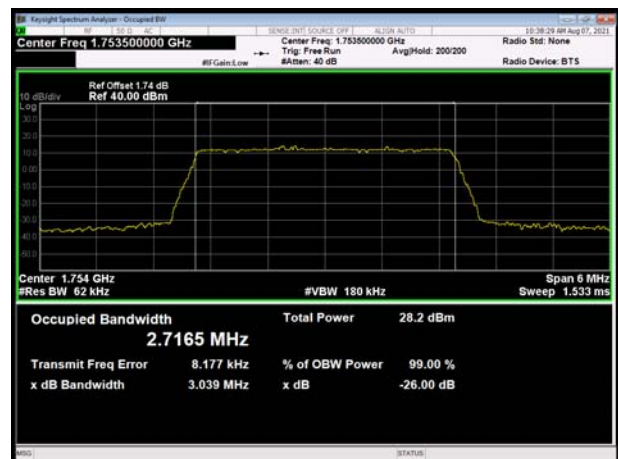
LTE Band 4 QPSK 3MHz CH-Middle



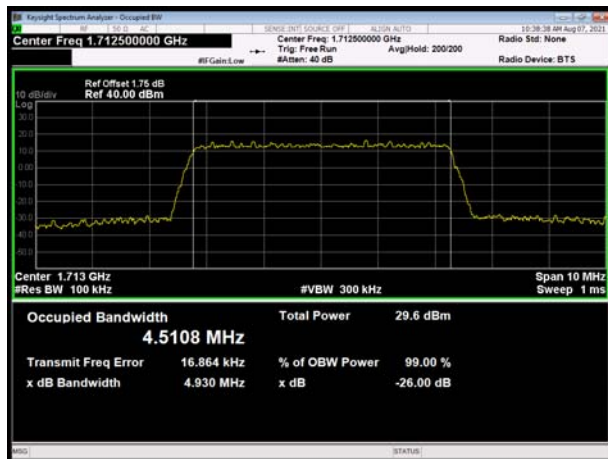
LTE Band 4 QPSK 1.4MHz CH-High



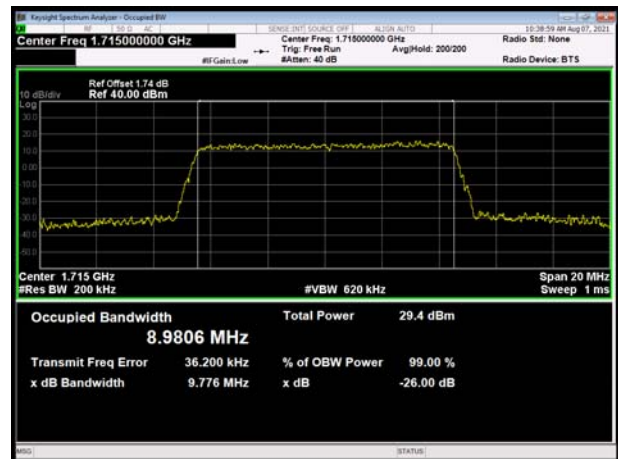
LTE Band 4 QPSK 3MHz CH-High



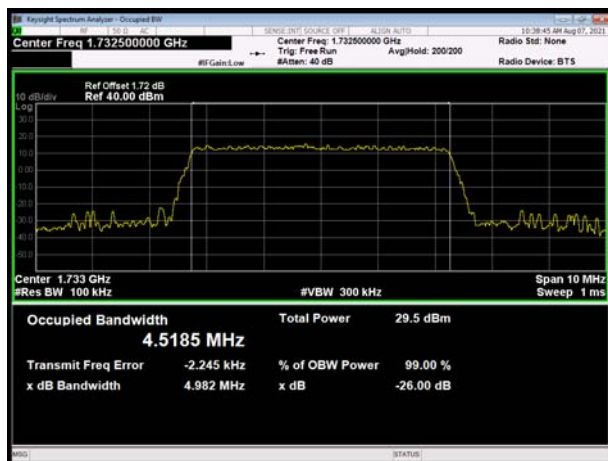
LTE Band 4 QPSK 5MHz CH-Low



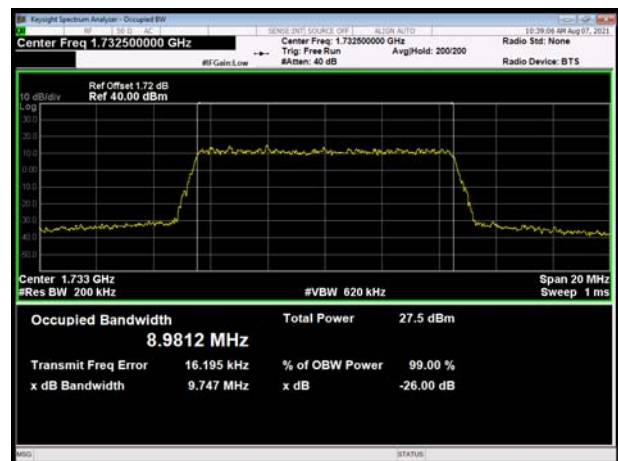
LTE Band 4 QPSK 10MHz CH-Low



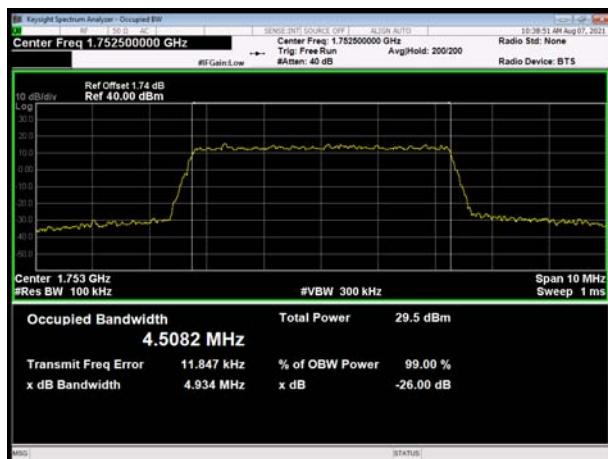
LTE Band 4 QPSK 5MHz CH-Middle



LTE Band 4 QPSK 10MHz CH-Middle



LTE Band 4 QPSK 5MHz CH-High

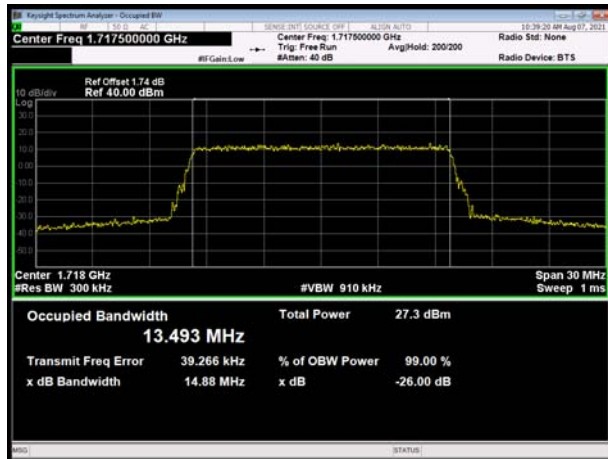


LTE Band 4 QPSK 10MHz CH-High

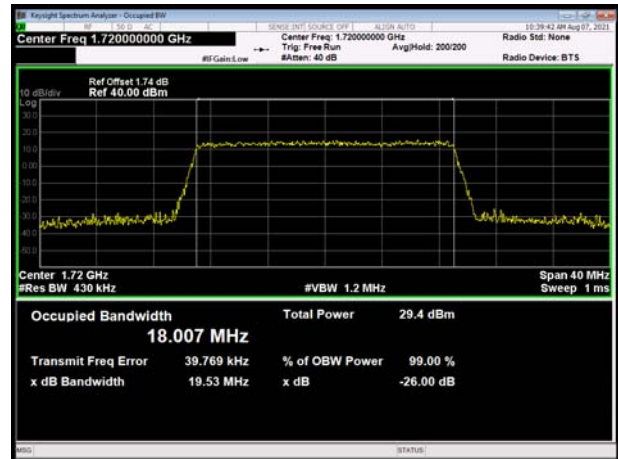




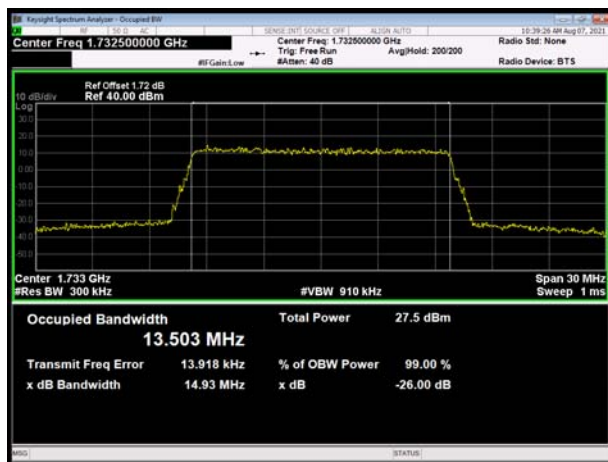
LTE Band 4 QPSK 15MHz CH-Low



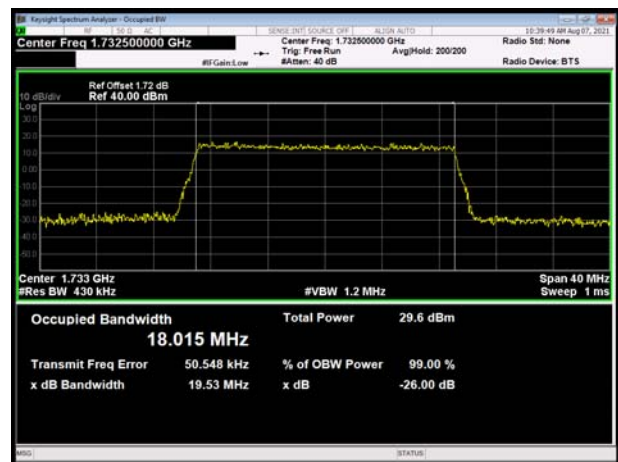
LTE Band 4 QPSK 20MHz CH-Low



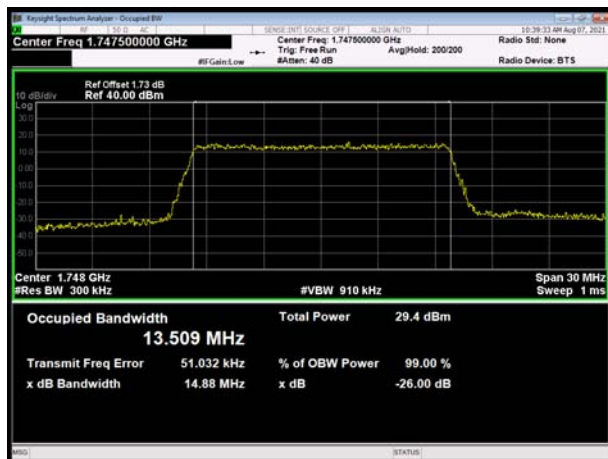
LTE Band 4 QPSK 15MHz CH-Middle



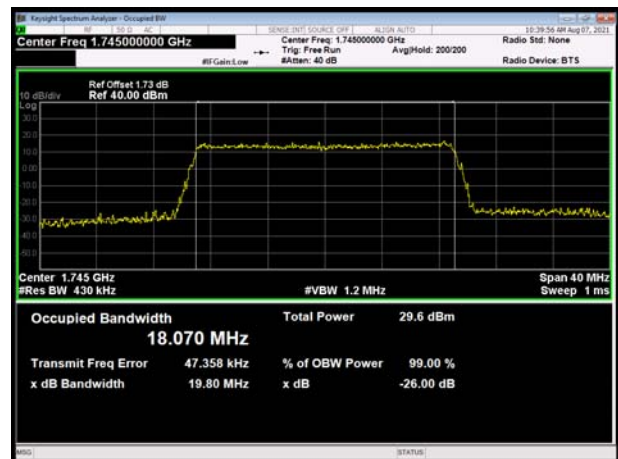
LTE Band 4 QPSK 20MHz CH-Middle



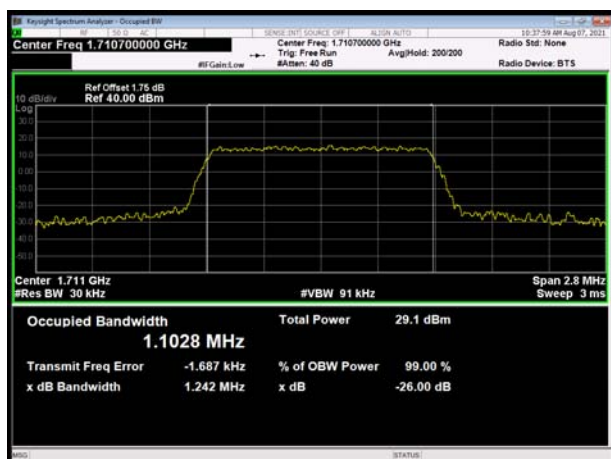
LTE Band 4 QPSK 15MHz CH-High



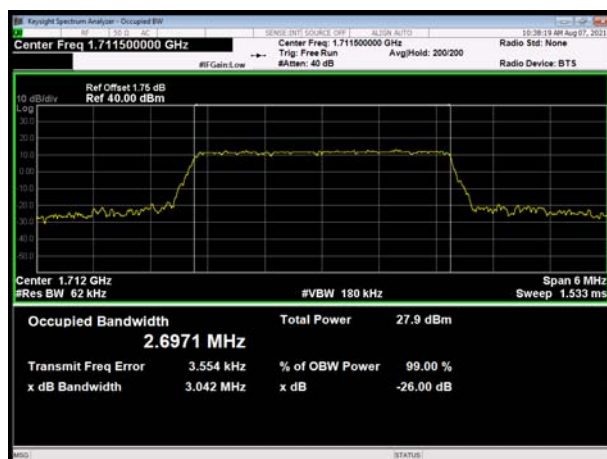
LTE Band 4 QPSK 20MHz CH-High



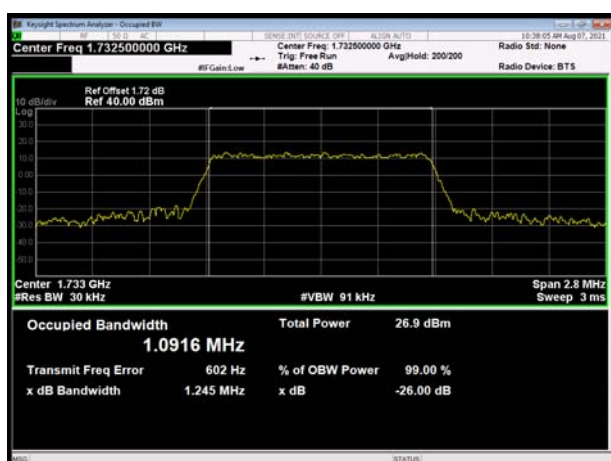
LTE Band 4 16QAM 1.4MHz CH-Low



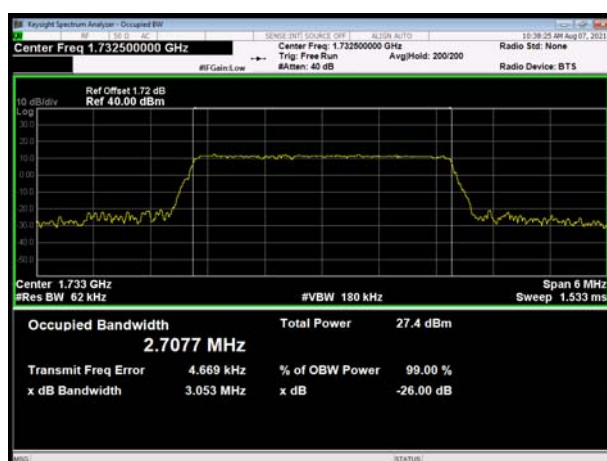
LTE Band 4 16QAM 3MHz CH-Low



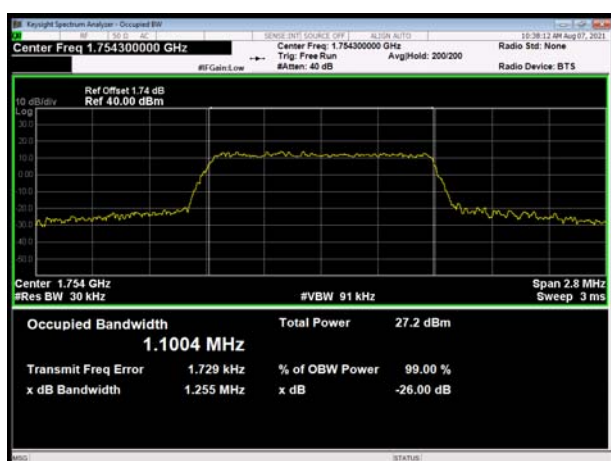
LTE Band 4 16QAM 1.4MHz CH-Middle



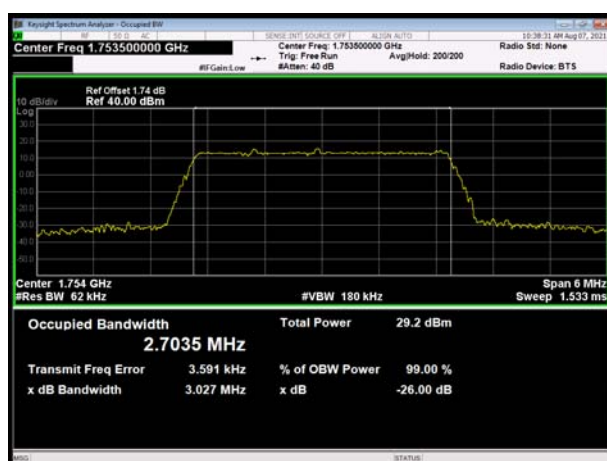
LTE Band 4 16QAM 3MHz CH-Middle



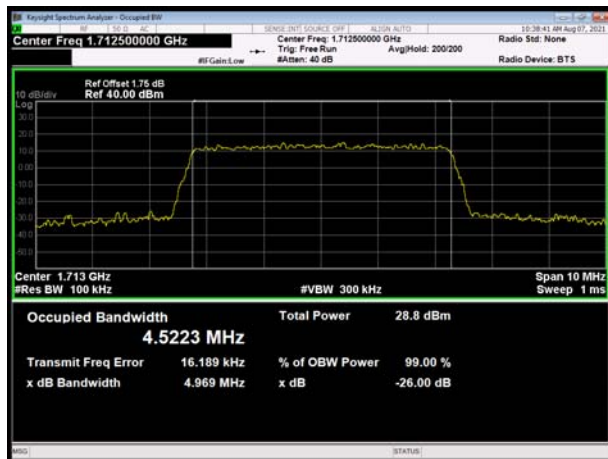
LTE Band 4 16QAM 1.4MHz CH-High



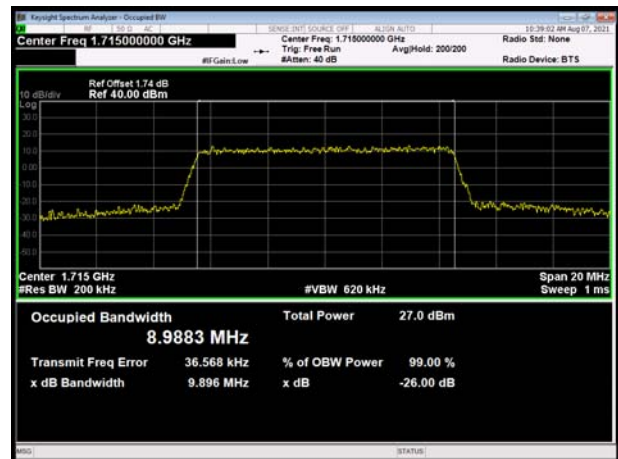
LTE Band 4 16QAM 3MHz CH-High



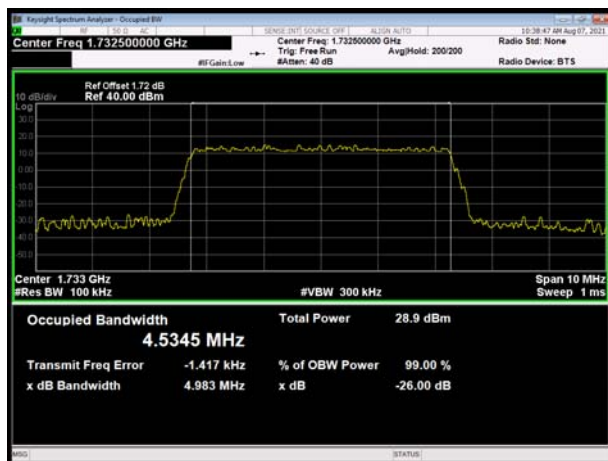
LTE Band 4 16QAM 5MHz CH-Low



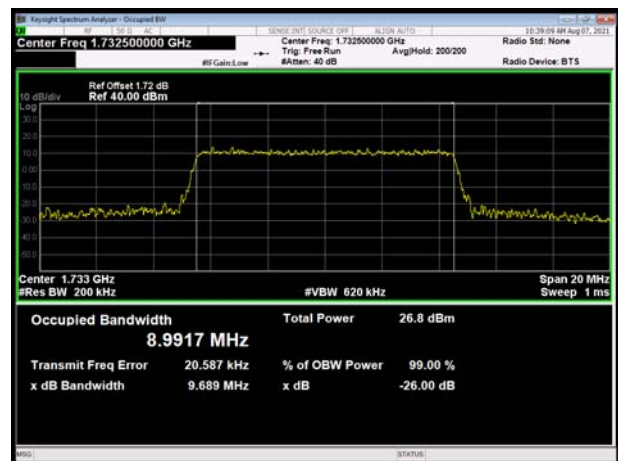
LTE Band 4 16QAM 10MHz CH-Low



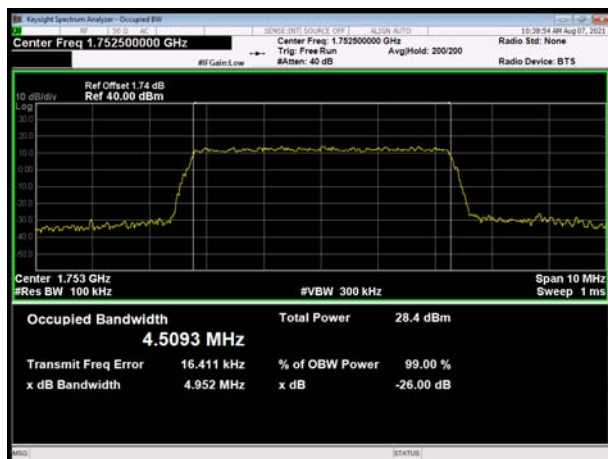
LTE Band 4 16QAM 5MHz CH-Middle



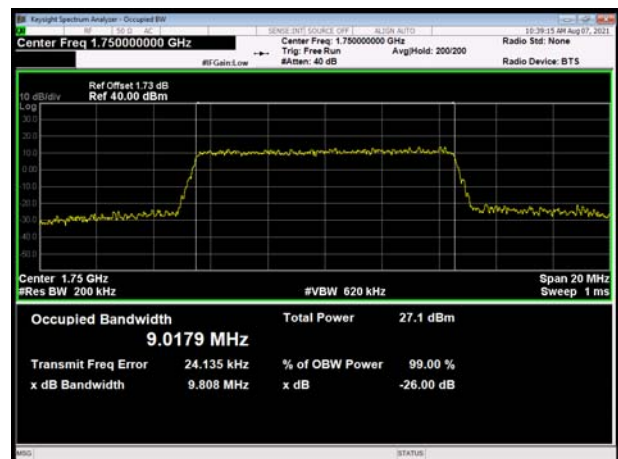
LTE Band 4 16QAM 10MHz CH-Middle



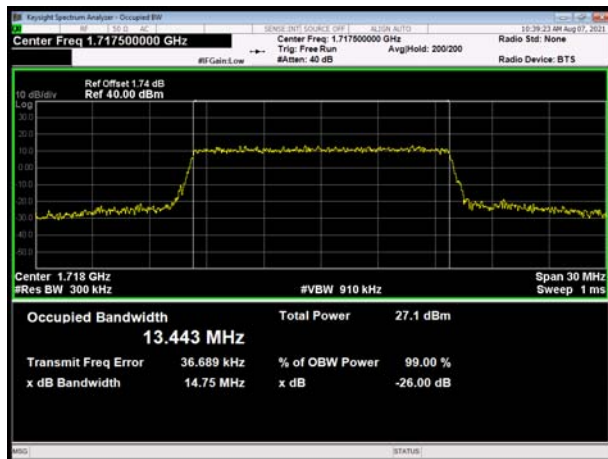
LTE Band 4 16QAM 5MHz CH-High



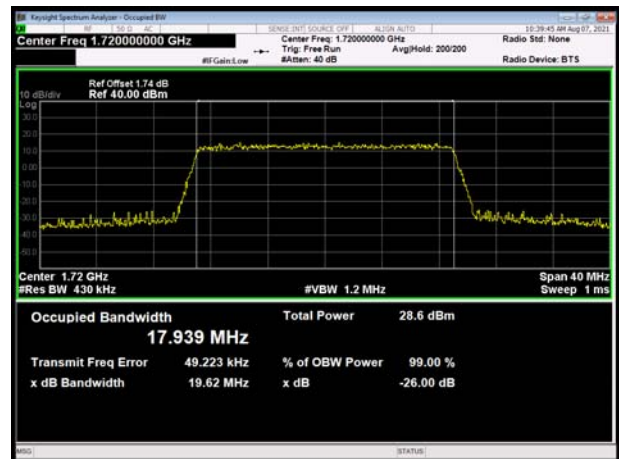
LTE Band 4 16QAM 10MHz CH-High



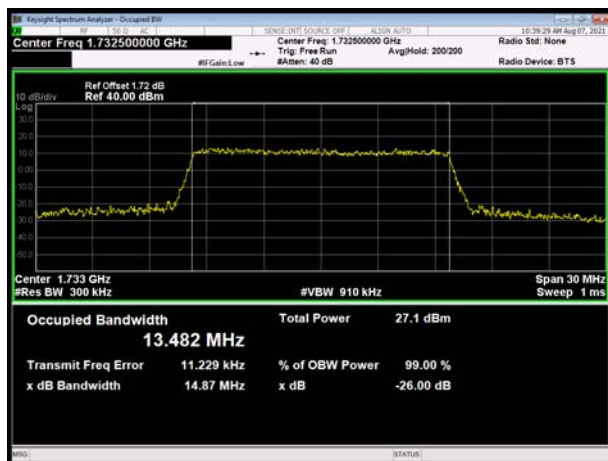
LTE Band 4 16QAM 15MHz CH-Low



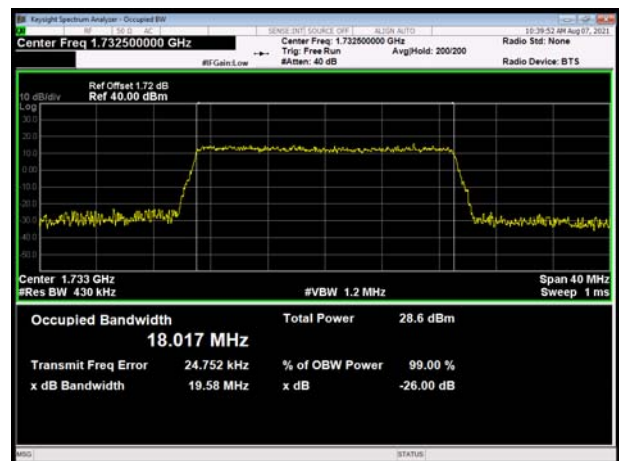
LTE Band 4 16QAM 20MHz CH-Low



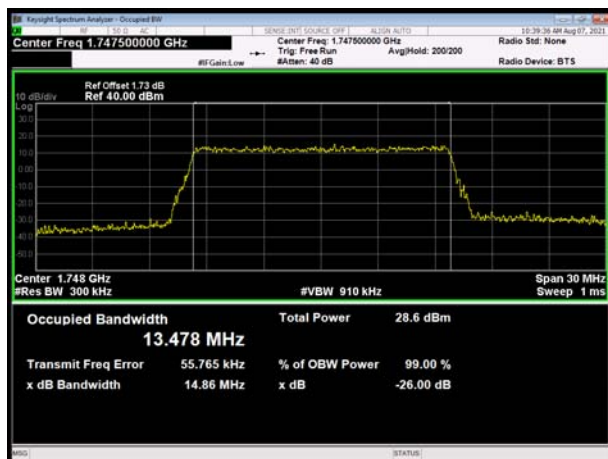
LTE Band 4 16QAM 15MHz CH-Middle



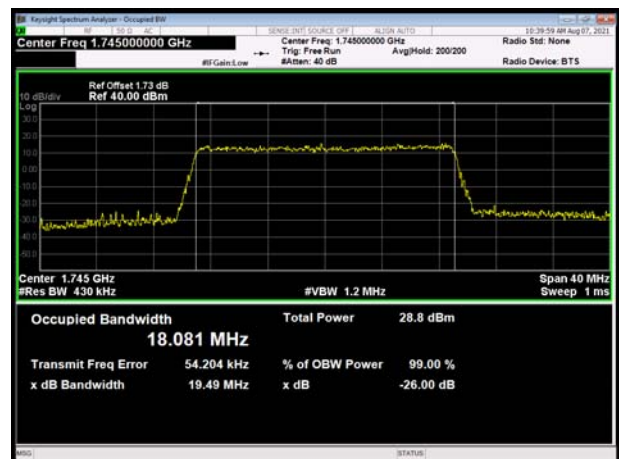
LTE Band 4 16QAM 20MHz CH-Middle



LTE Band 4 16QAM 15MHz CH-High

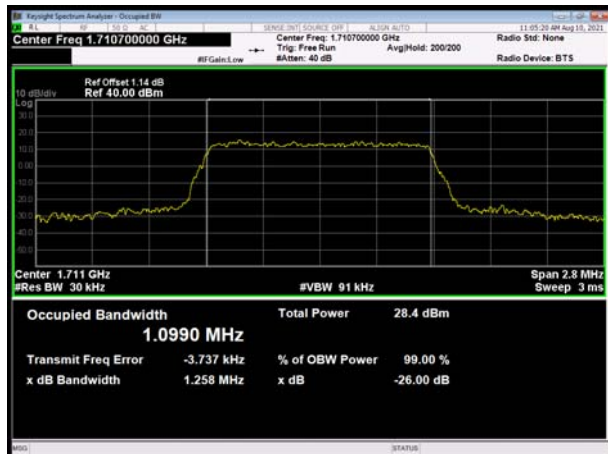


LTE Band 4 16QAM 20MHz CH-High





LTE Band 4 1.4MHz 64QAM CH-Low



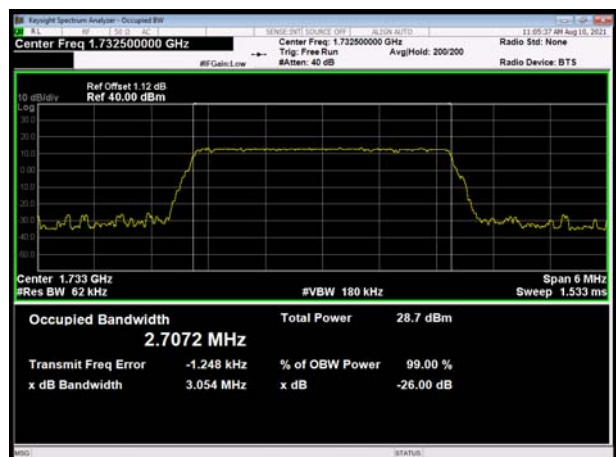
LTE Band 4 3MHz 64QAM CH-Low



LTE Band 4 1.4MHz 64QAM CH-Middle



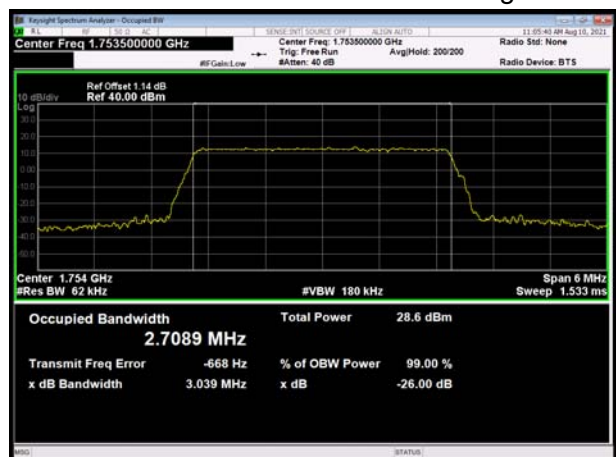
LTE Band 4 3MHz 64QAM CH-Middle



LTE Band 4 1.4MHz 64QAM CH-High

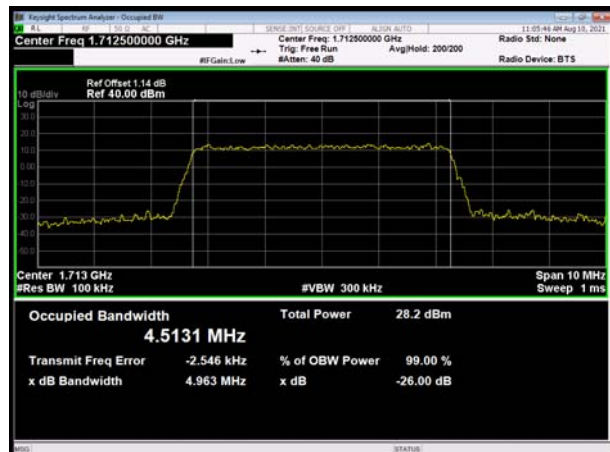


LTE Band 4 3MHz 64QAM CH-High

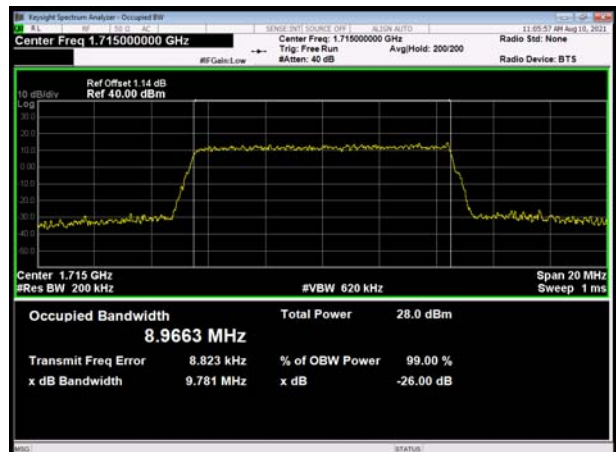




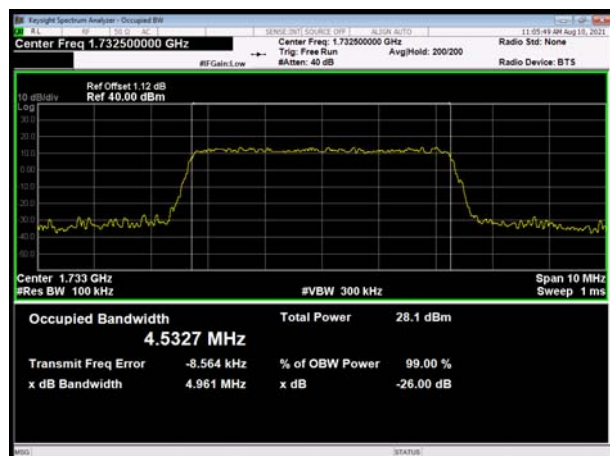
LTE Band 4 5MHz 64QAM CH-Low



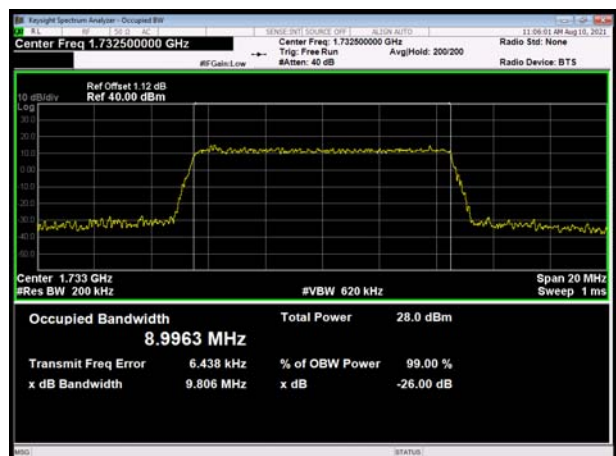
LTE Band 4 10MHz 64QAM CH-Low



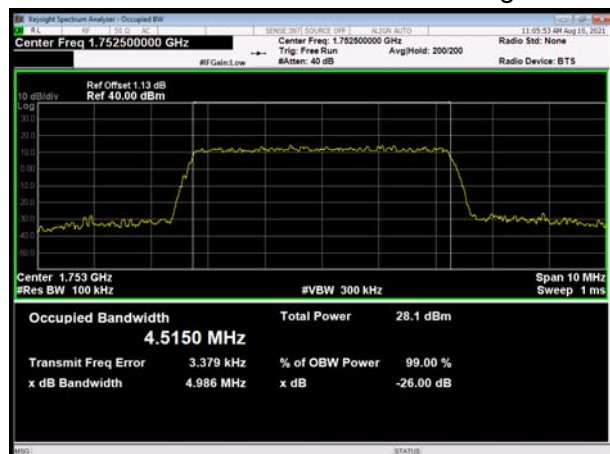
LTE Band 4 5MHz 64QAM CH-Middle



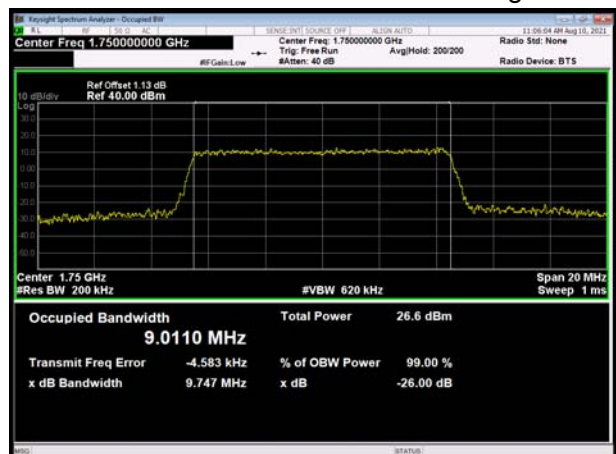
LTE Band 4 10MHz 64QAM CH-Middle



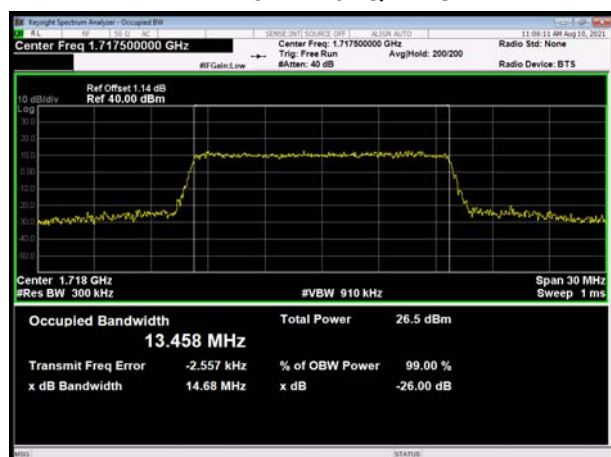
LTE Band 4 5MHz 64QAM CH-High



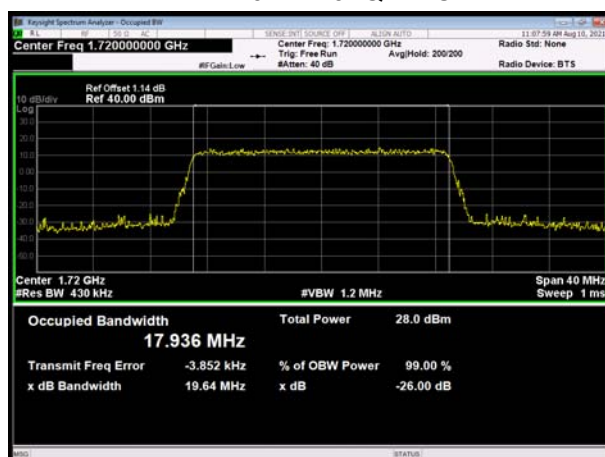
LTE Band 4 10MHz 64QAM CH-High



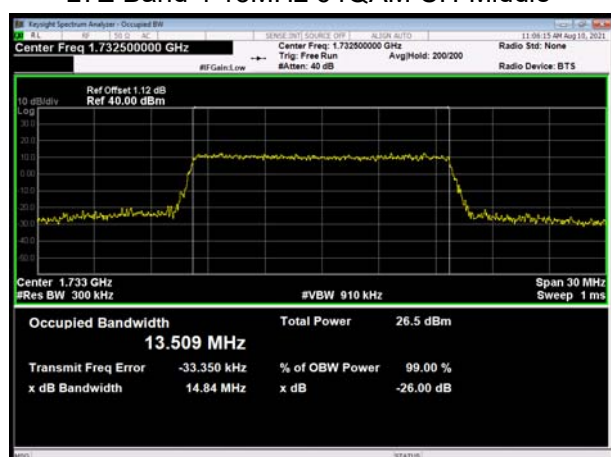
LTE Band 4 15MHz 64QAM CH-Low



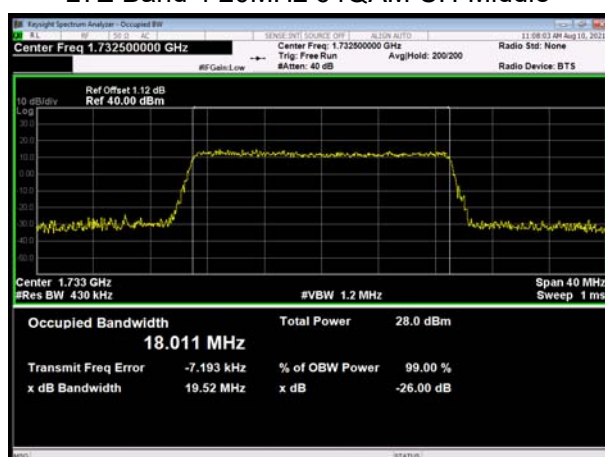
LTE Band 4 20MHz 64QAM CH-Low



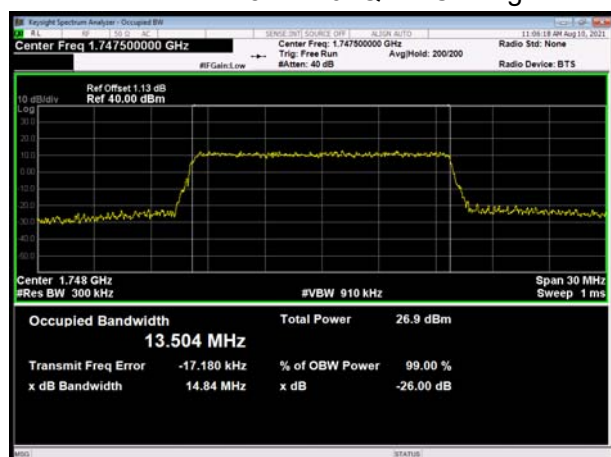
LTE Band 4 15MHz 64QAM CH-Middle



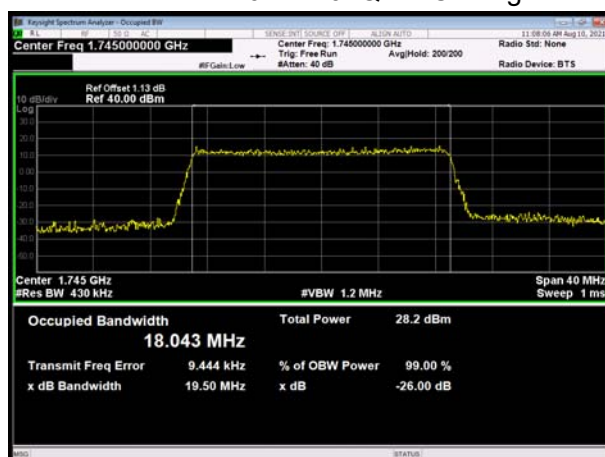
LTE Band 4 20MHz 64QAM CH-Middle



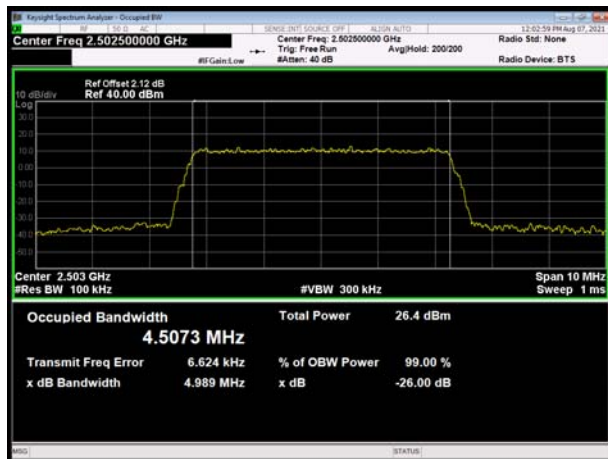
LTE Band 4 15MHz 64QAM CH-High



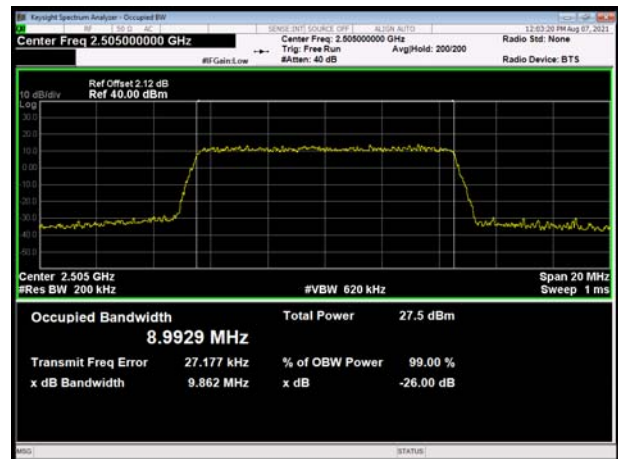
LTE Band 4 20MHz 64QAM CH-High



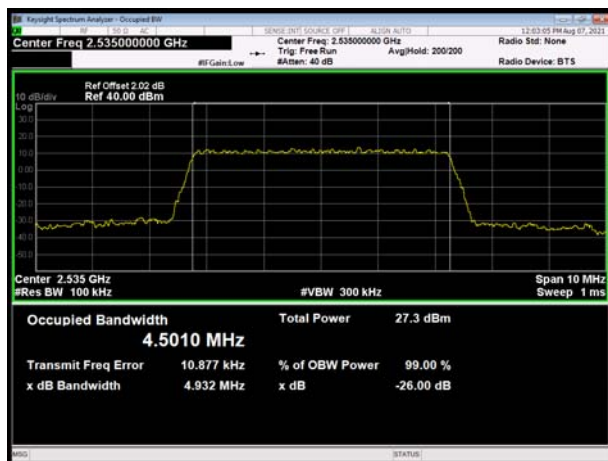
LTE Band 7 QPSK 5MHz CH-Low



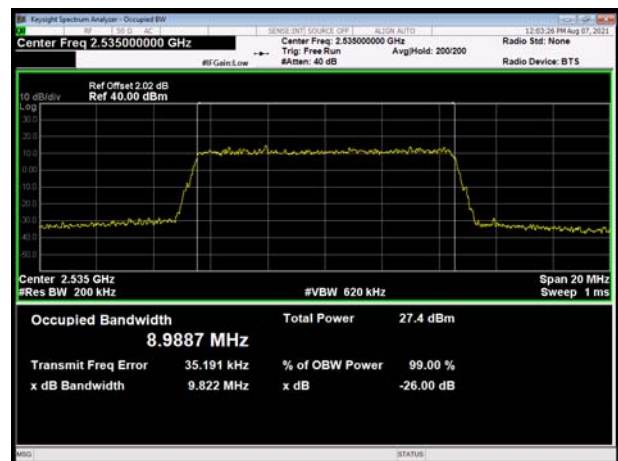
LTE Band 7 QPSK 10MHz CH-Low



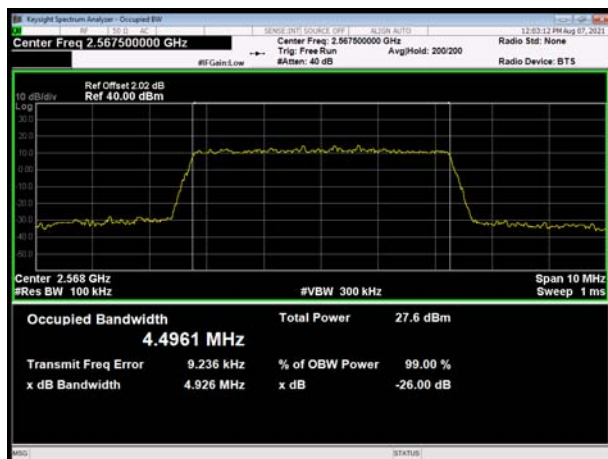
LTE Band 7 QPSK 5MHz CH-Middle



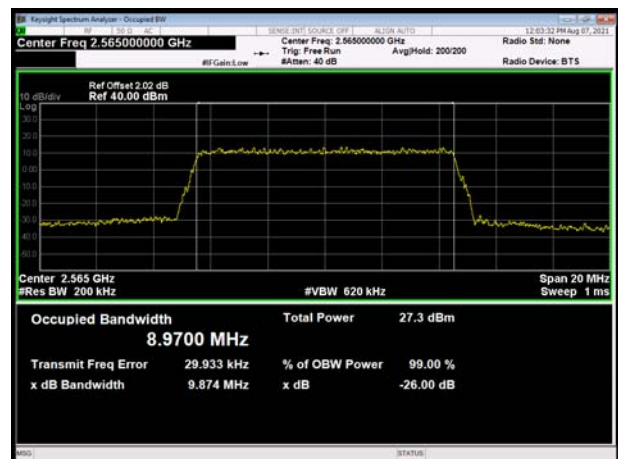
LTE Band 7 QPSK 10MHz CH-Middle



LTE Band 7 QPSK 5MHz CH-High

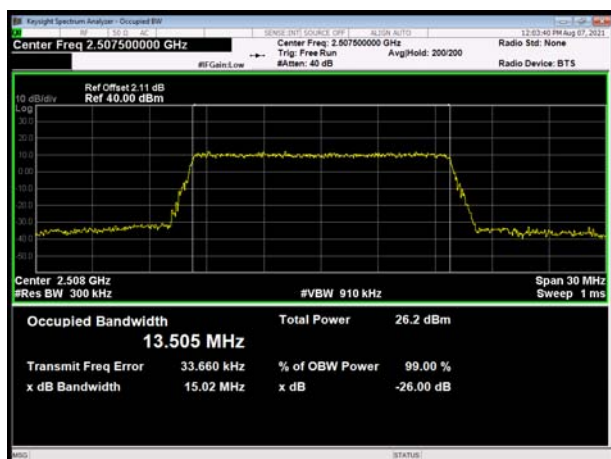


LTE Band 7 QPSK 10MHz CH-High

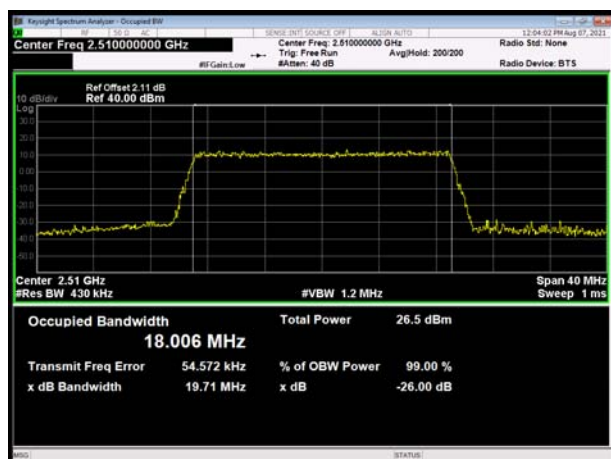




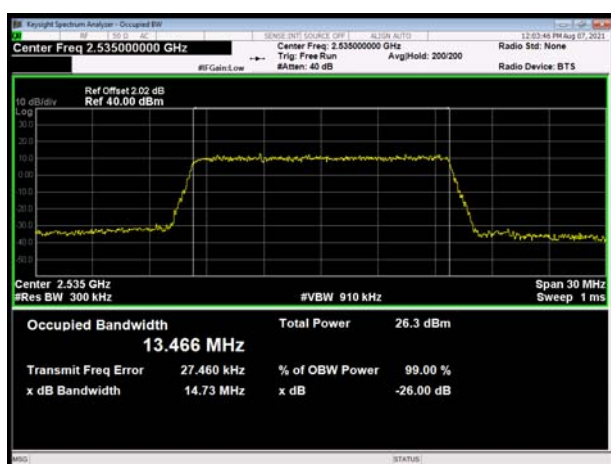
LTE Band 7 QPSK 15MHz CH-Low



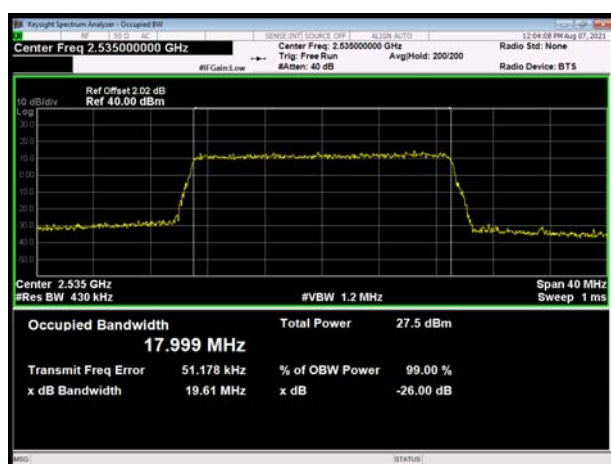
LTE Band 7 QPSK 20MHz CH-Low



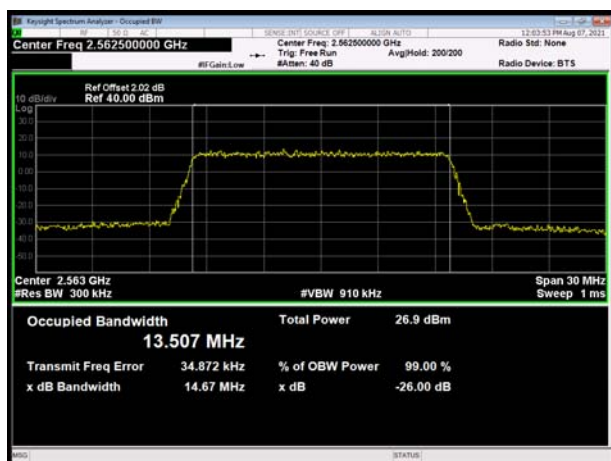
LTE Band 7 QPSK 15MHz CH-Middle



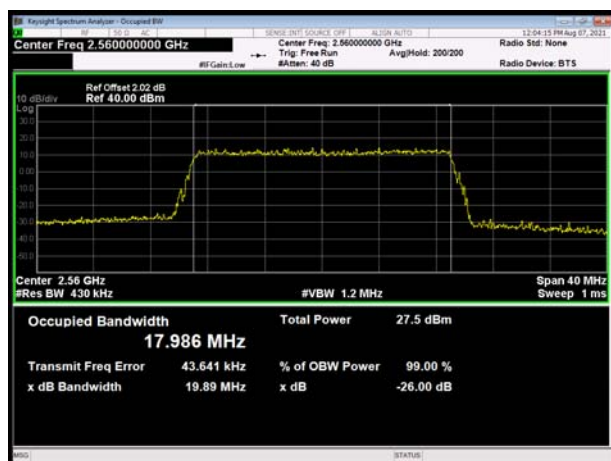
LTE Band 7 QPSK 20MHz CH-Middle



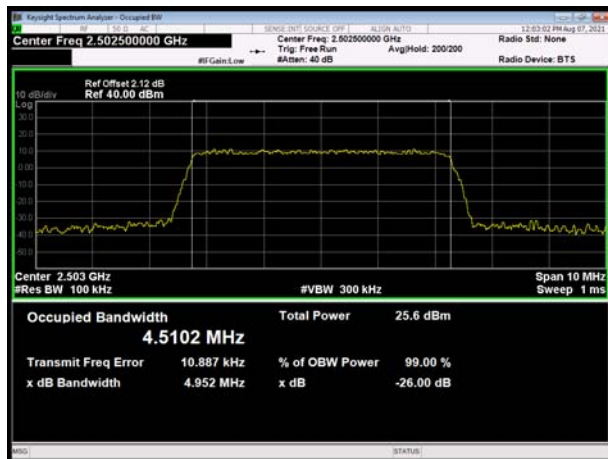
LTE Band 7 QPSK 15MHz CH-High



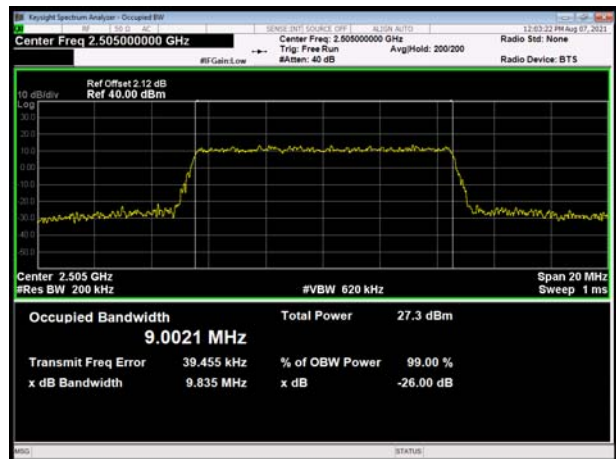
LTE Band 7 QPSK 20MHz CH-High



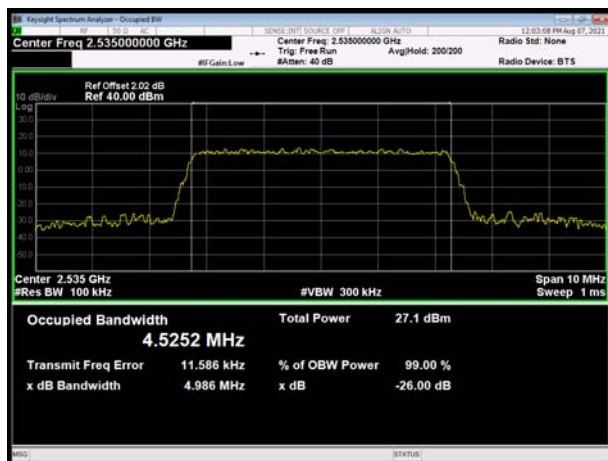
LTE Band 7 16QAM 5MHz CH-Low



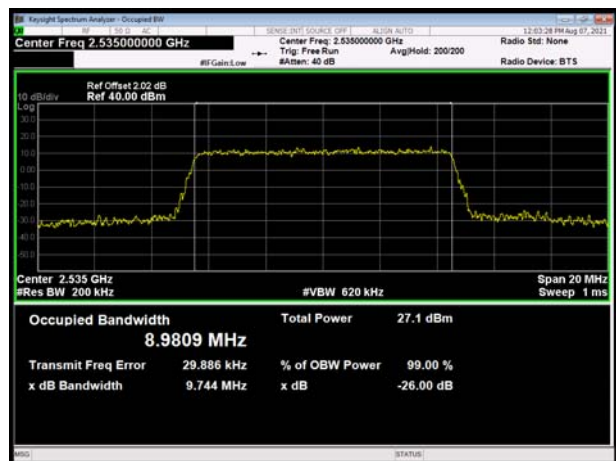
LTE Band 7 16QAM 10MHz CH-Low



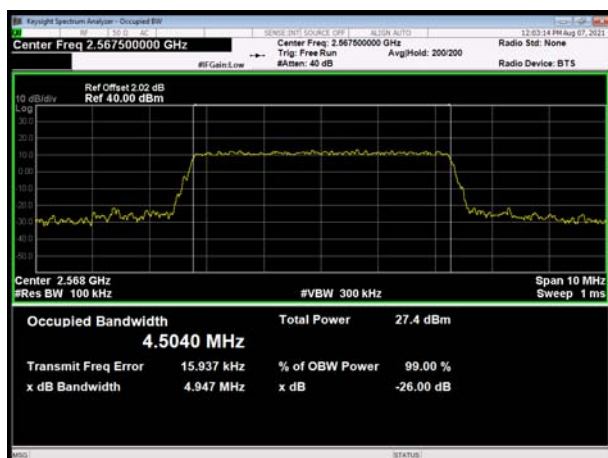
LTE Band 7 16QAM 5MHz CH-Middle



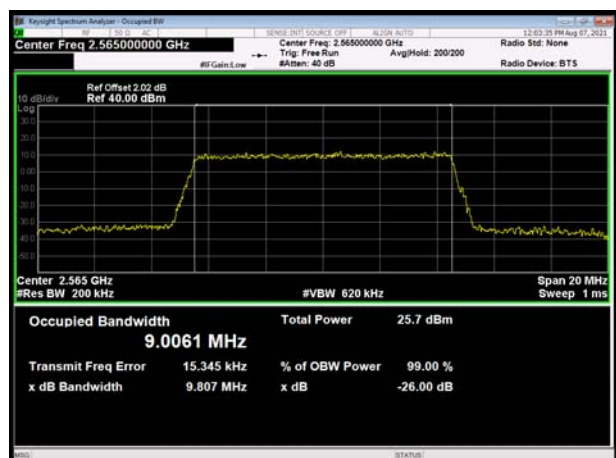
LTE Band 7 16QAM 10MHz CH-Middle



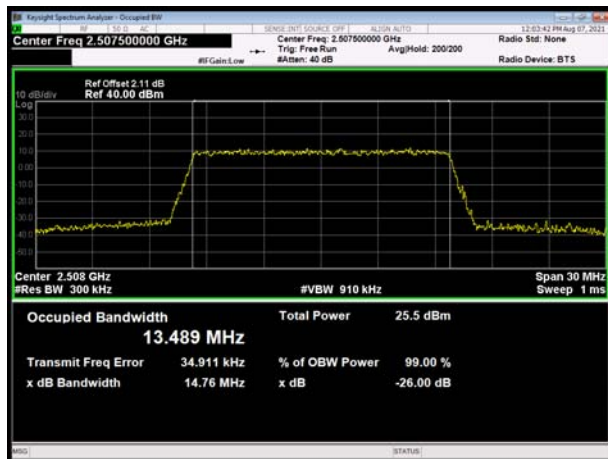
LTE Band 7 16QAM 5MHz CH-High



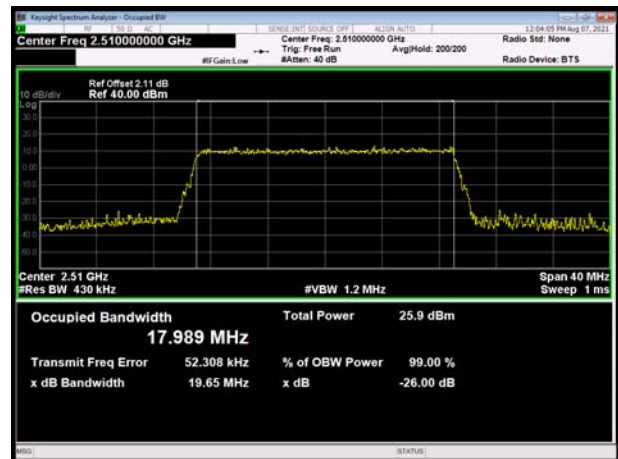
LTE Band 7 16QAM 10MHz CH-High



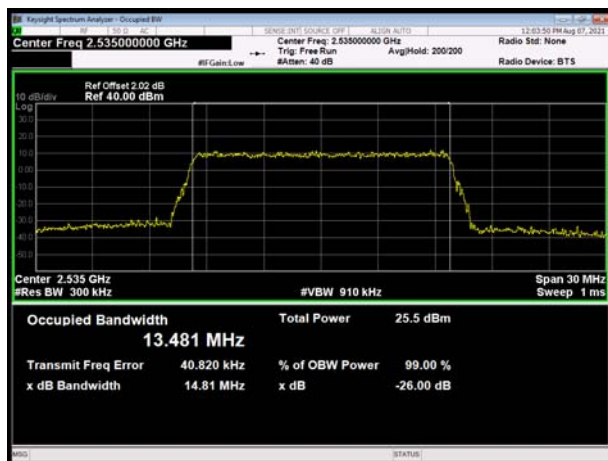
LTE Band 7 16QAM 15MHz CH-Low



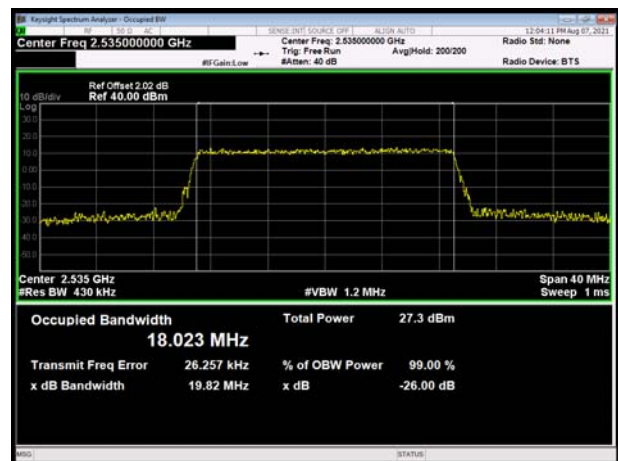
LTE Band 7 16QAM 20MHz CH-Low



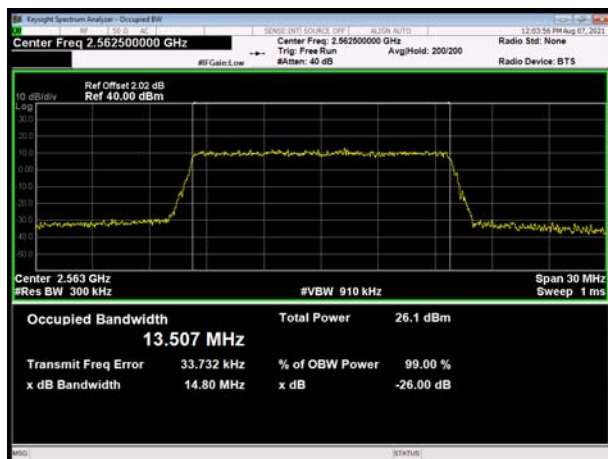
LTE Band 7 16QAM 15MHz CH-Middle



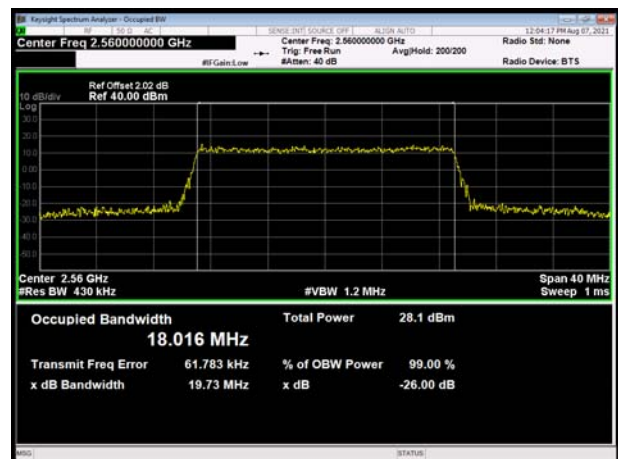
LTE Band 7 16QAM 20MHz CH-Middle



LTE Band 7 16QAM 15MHz CH-High

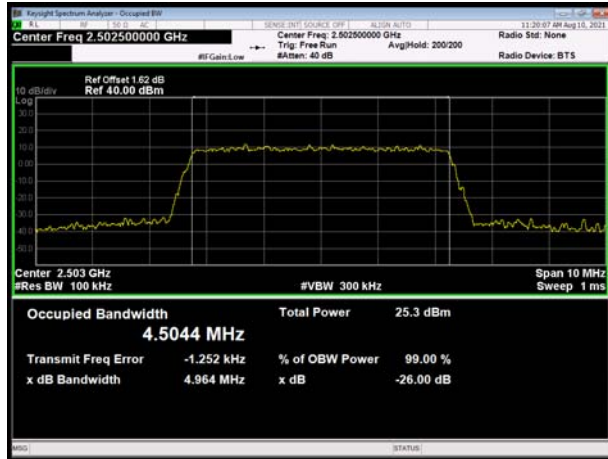


LTE Band 7 16QAM 20MHz CH-High

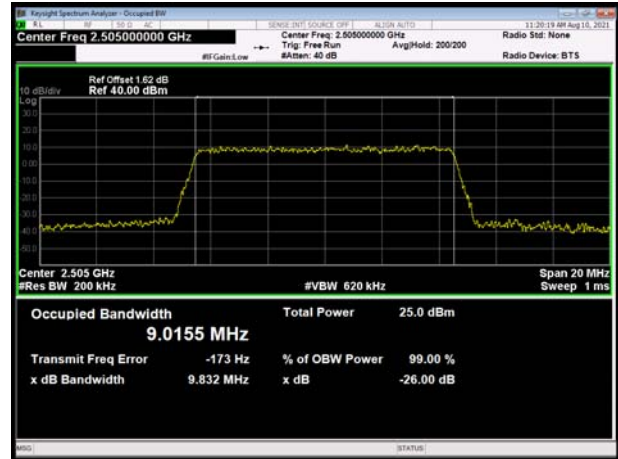




LTE Band 7 64QAM 5MHz CH-Low



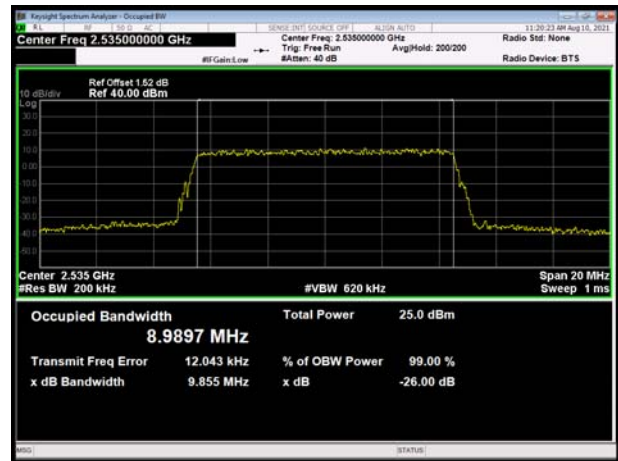
LTE Band 7 64QAM 10MHz CH-Low



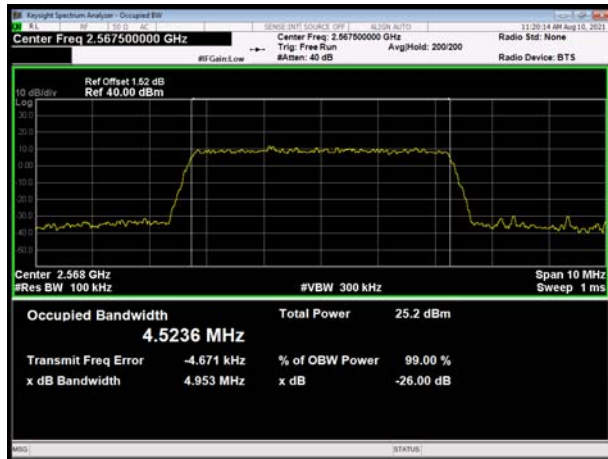
LTE Band 7 64QAM 5MHz CH-Middle



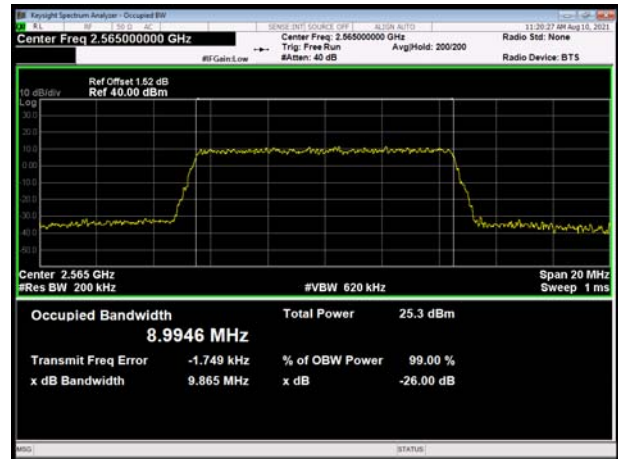
LTE Band 7 64QAM 10MHz CH-Middle



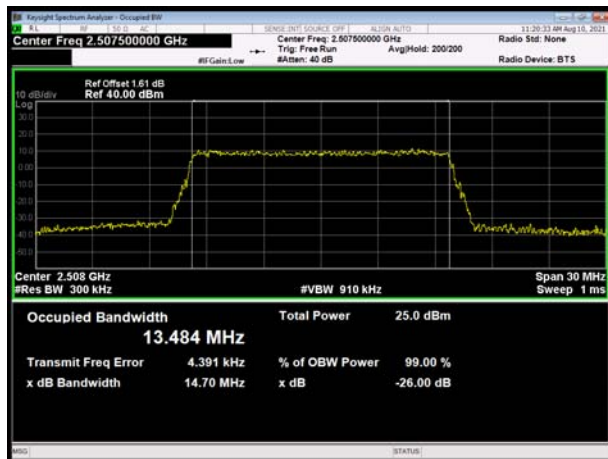
LTE Band 7 64QAM 5MHz CH-High



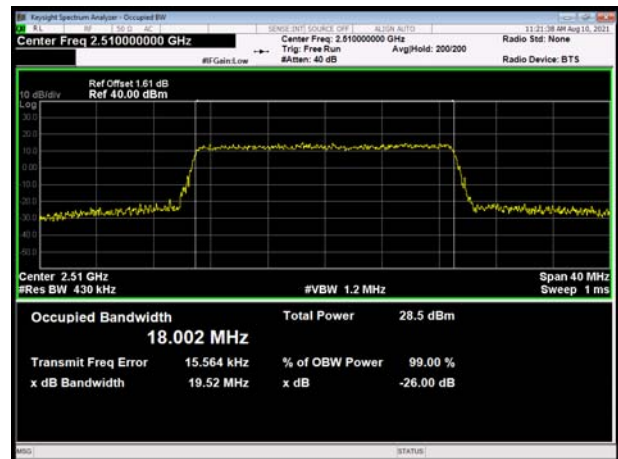
LTE Band 7 64QAM 10MHz CH-High



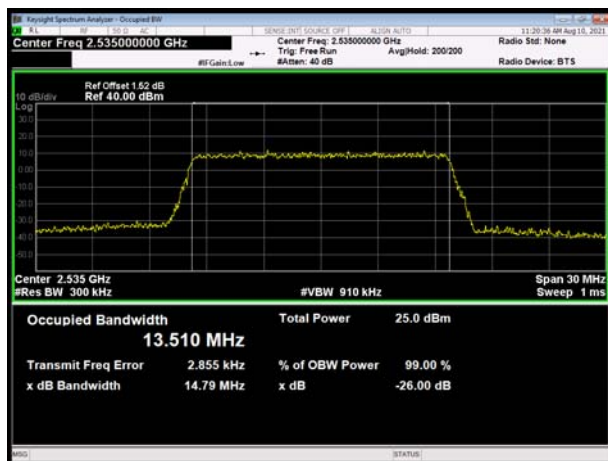
LTE Band 7 64QAM 15MHz CH-Low



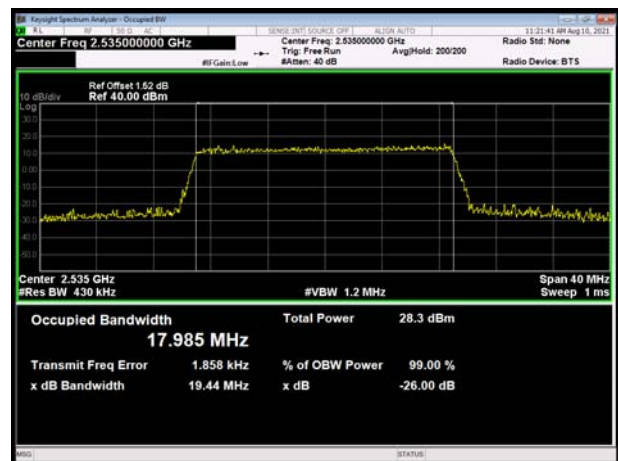
LTE Band 7 64QAM 20MHz CH-Low



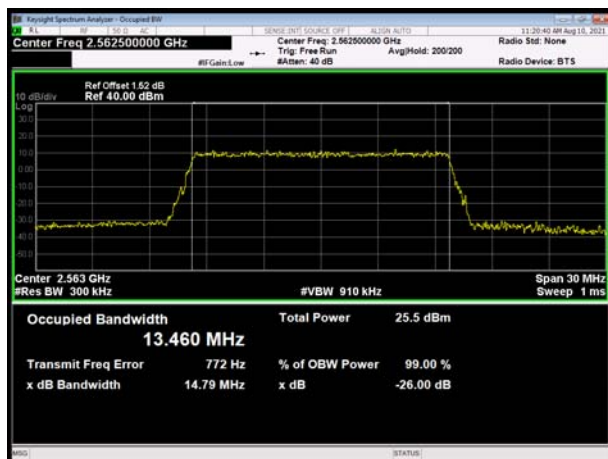
LTE Band 7 64QAM 15MHz CH-Middle



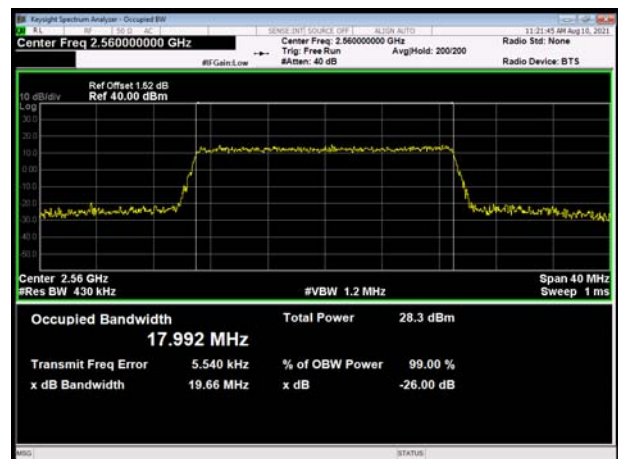
LTE Band 7 64QAM 20MHz CH-Middle



LTE Band 7 64QAM 15MHz CH-High

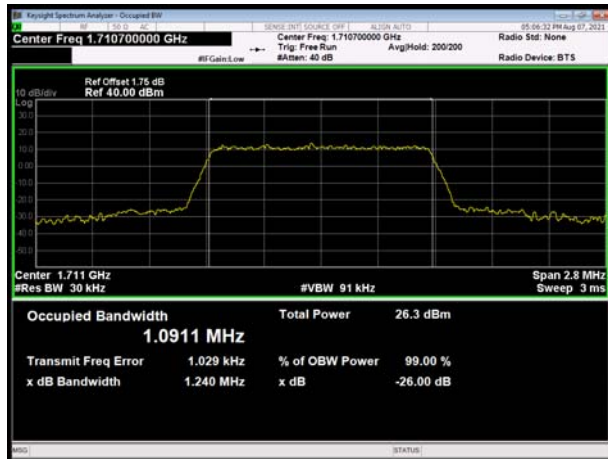


LTE Band 7 64QAM 20MHz CH-High

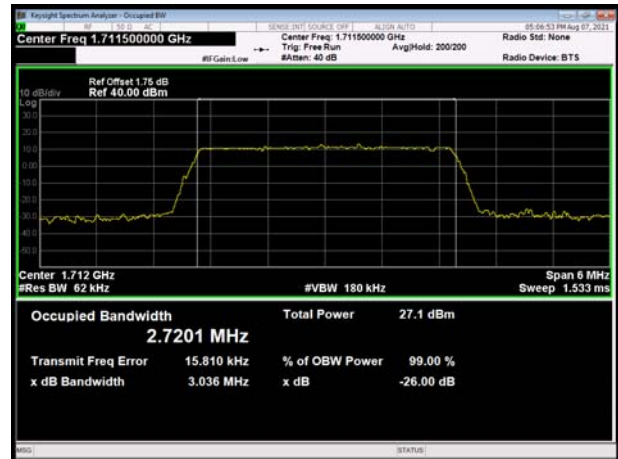




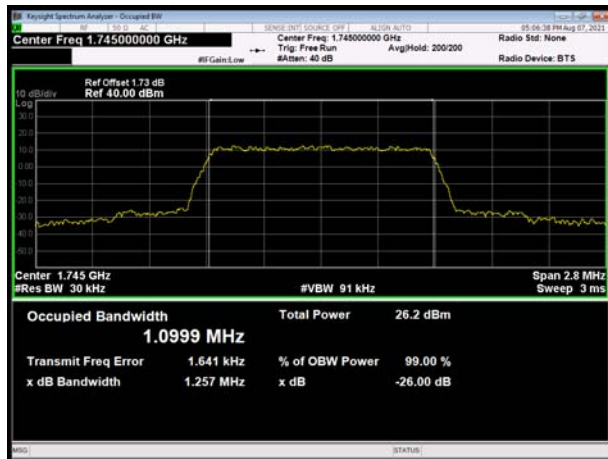
LTE Band 66 QPSK 1.4MHz CH-Low



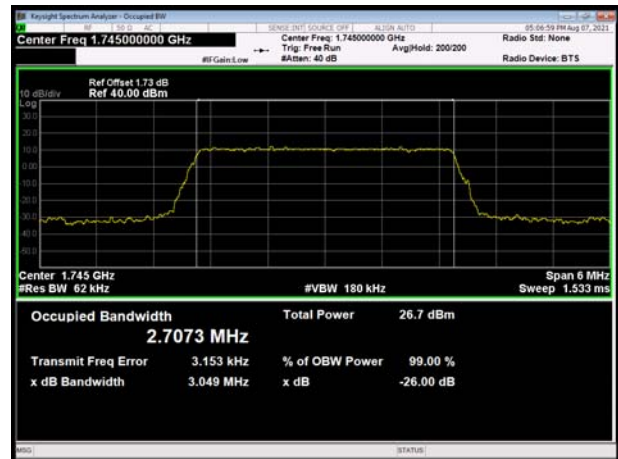
LTE Band 66 QPSK 3MHz CH-Low



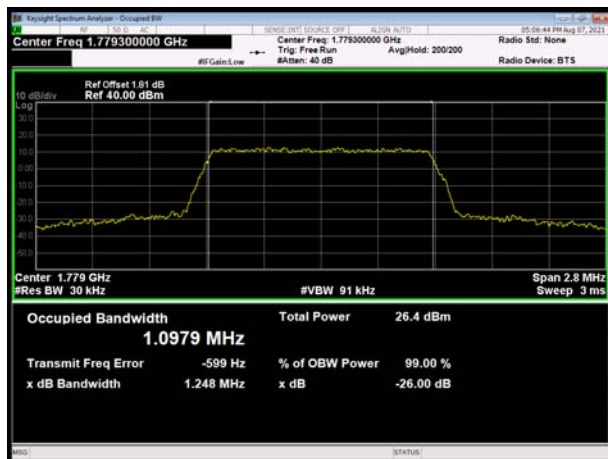
LTE Band 66 QPSK 1.4MHz CH-Middle



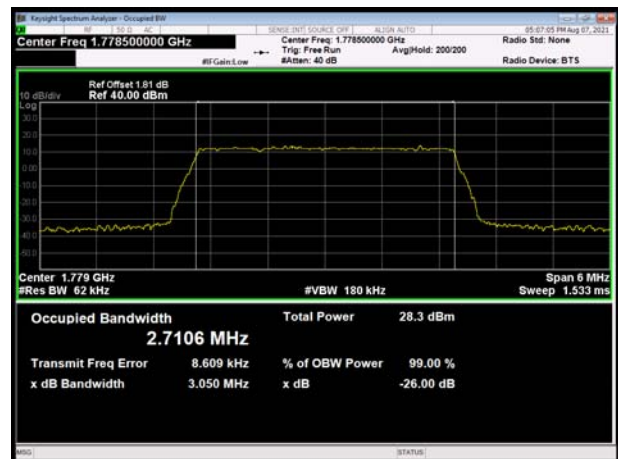
LTE Band 66 QPSK 3MHz CH-Middle



LTE Band 66 QPSK 1.4MHz CH-High



LTE Band 66 QPSK 3MHz CH-High

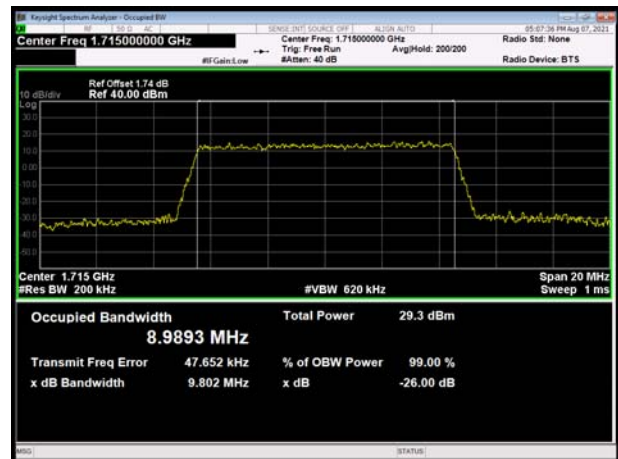




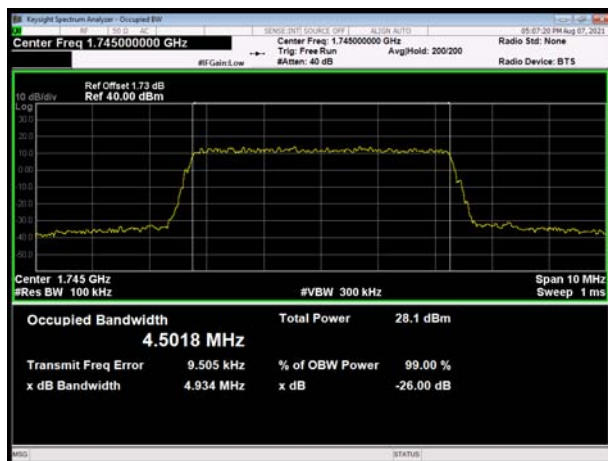
LTE Band 66 QPSK 5MHz CH-Low



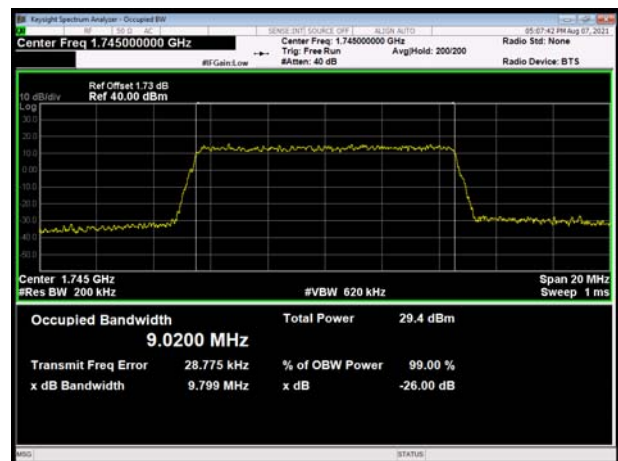
LTE Band 66 QPSK 10MHz CH-Low



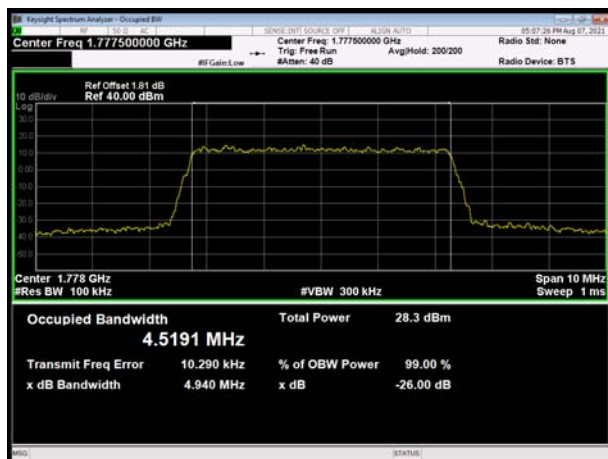
LTE Band 66 QPSK 5MHz CH-Middle



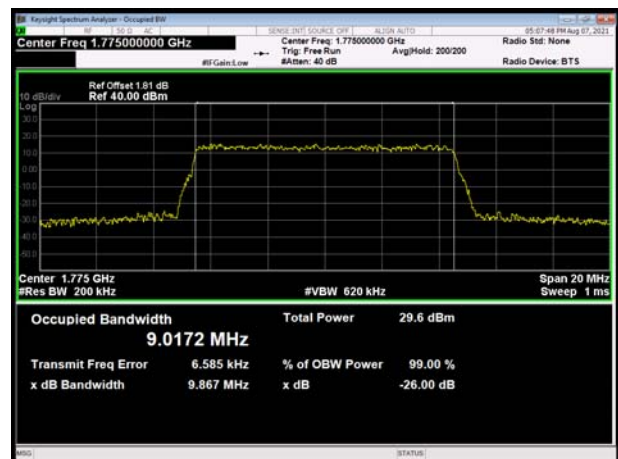
LTE Band 66 QPSK 10MHz CH-Middle



LTE Band 66 QPSK 5MHz CH-High

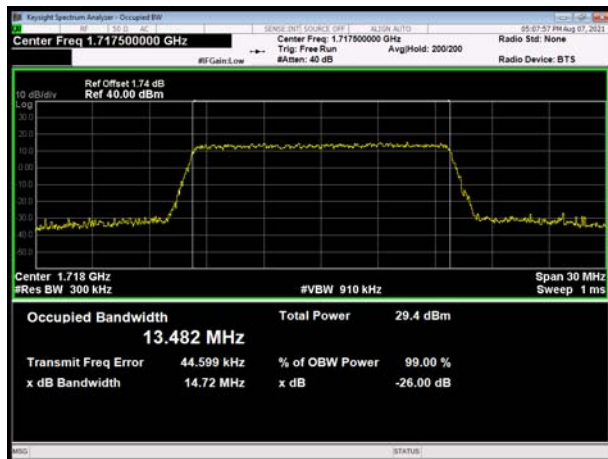


LTE Band 66 QPSK 10MHz CH-High

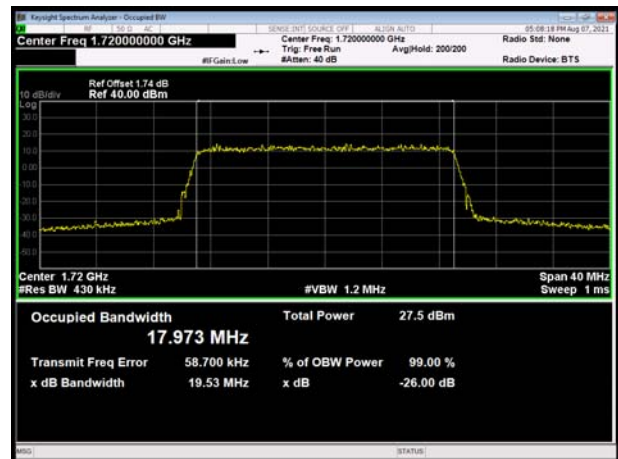




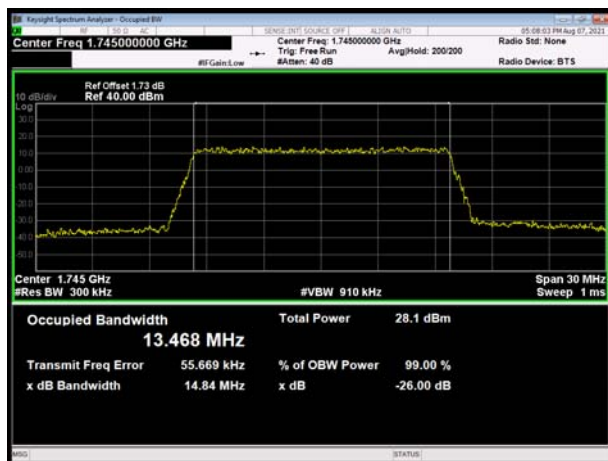
LTE Band 66 QPSK 15MHz CH-Low



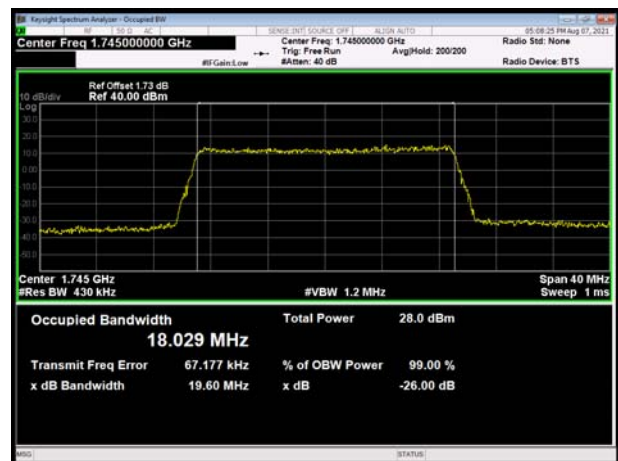
LTE Band 66 QPSK 20MHz CH-Low



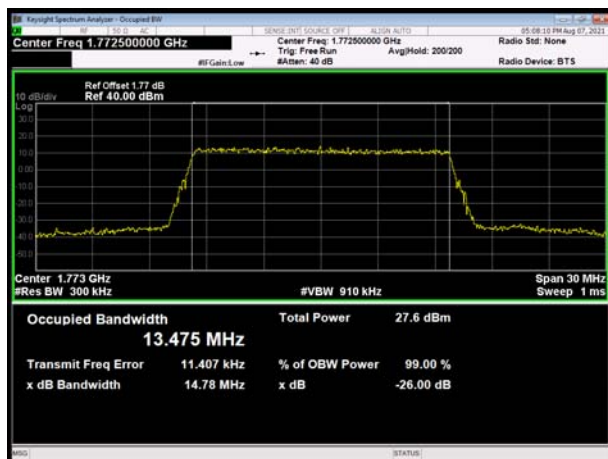
LTE Band 66 QPSK 15MHz CH-Middle



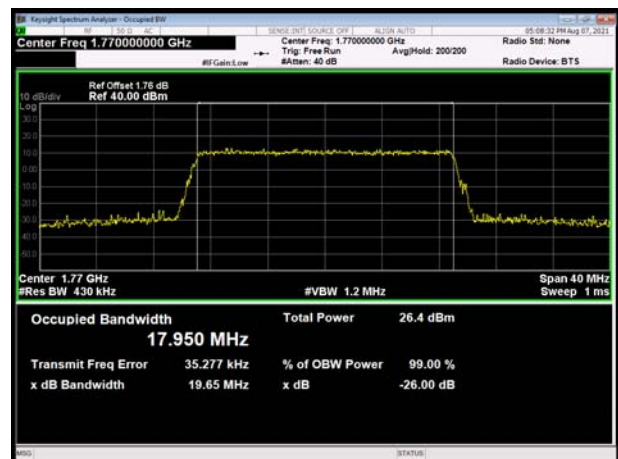
LTE Band 66 QPSK 20MHz CH-Middle



LTE Band 66 QPSK 15MHz CH-High

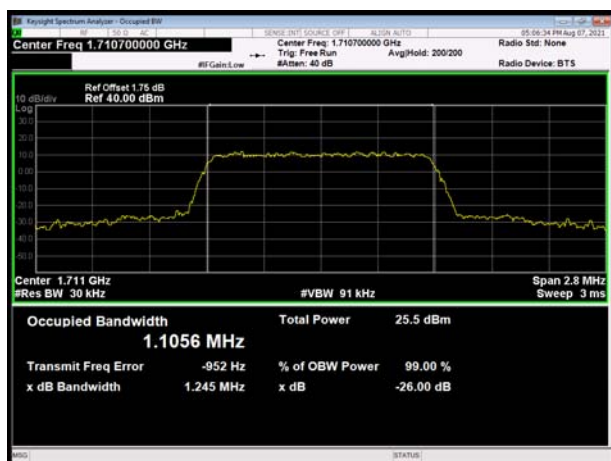


LTE Band 66 QPSK 20MHz CH-High

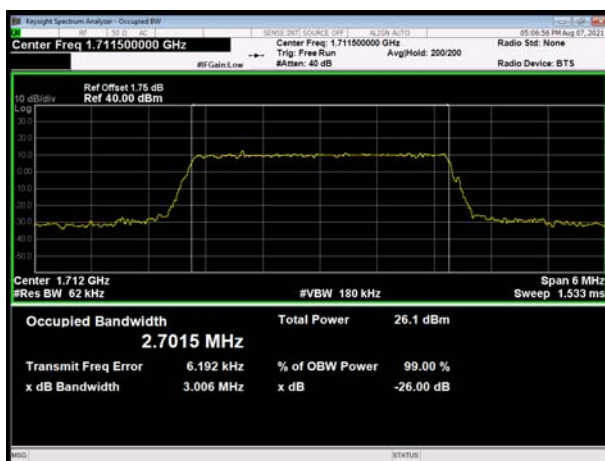




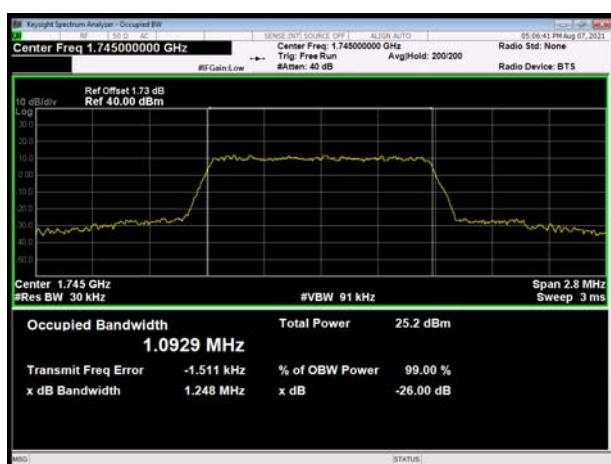
LTE Band 66 64QAM 1.4MHz CH-Low



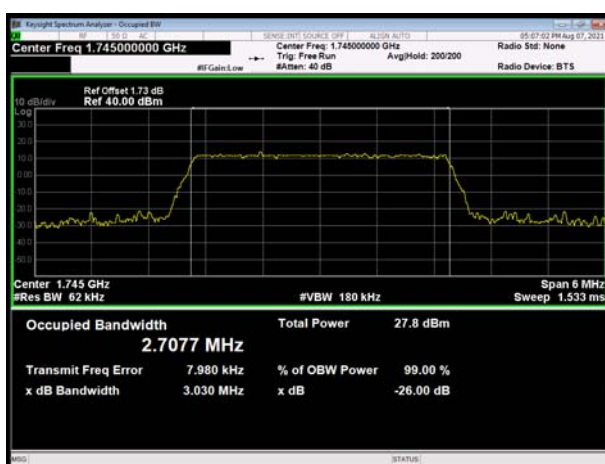
LTE Band 66 64QAM 3MHz CH-Low



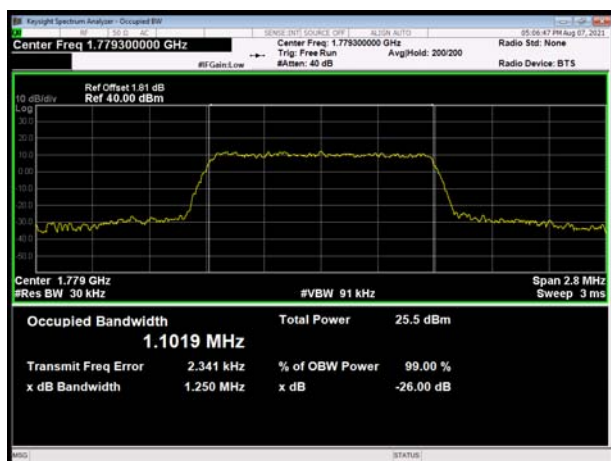
LTE Band 66 64QAM 1.4MHz CH-Middle



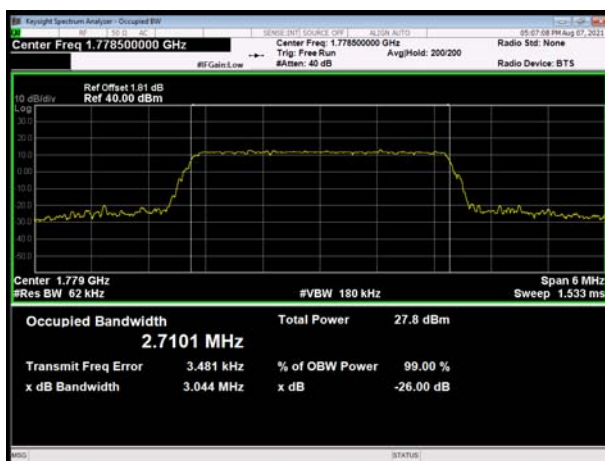
LTE Band 66 64QAM 3MHz CH-Middle



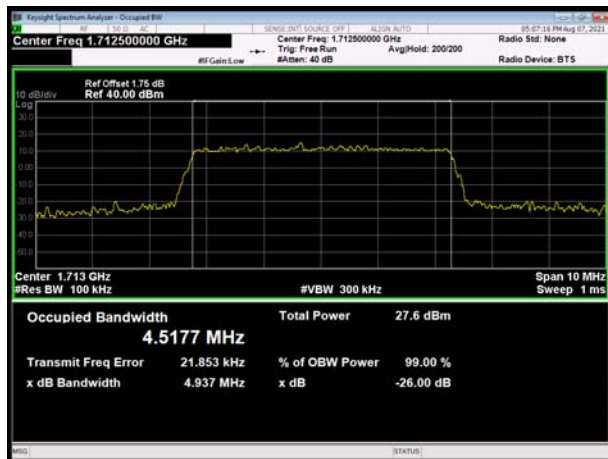
LTE Band 66 64QAM 1.4MHz CH-High



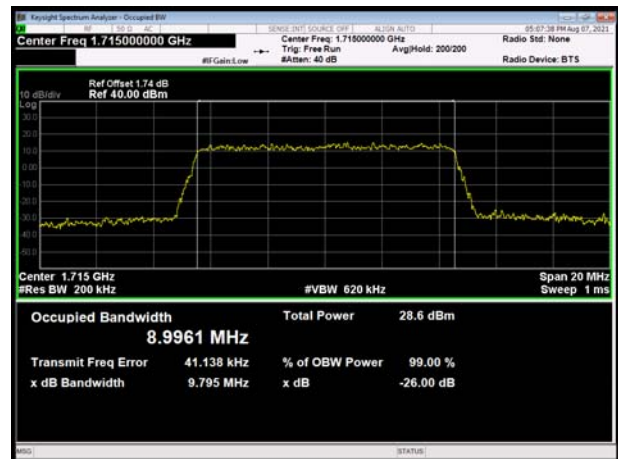
LTE Band 66 64QAM 3MHz CH-High



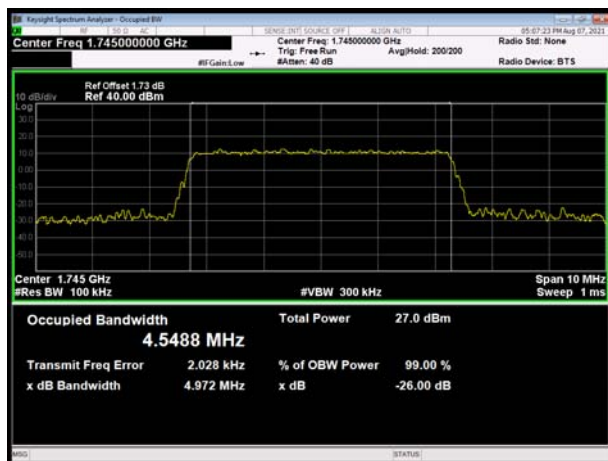
LTE Band 66 64QAM 5MHz CH-Low



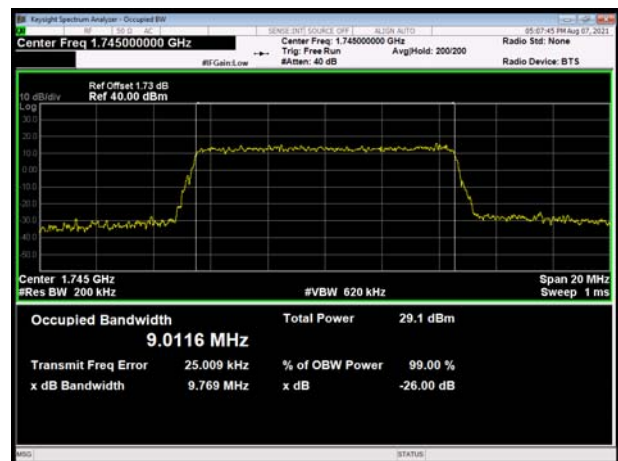
LTE Band 66 64QAM 10MHz CH-Low



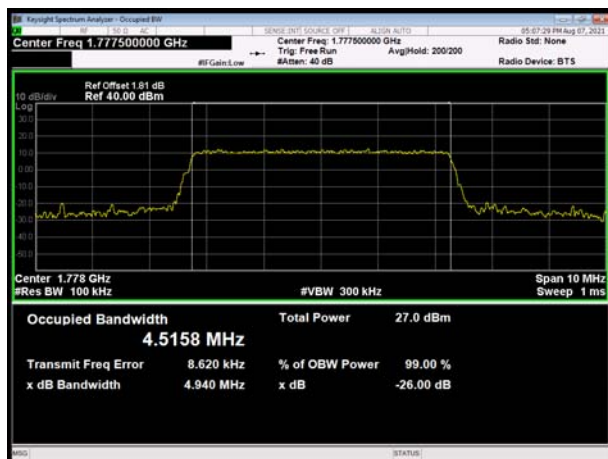
LTE Band 66 64QAM 5MHz CH-Middle



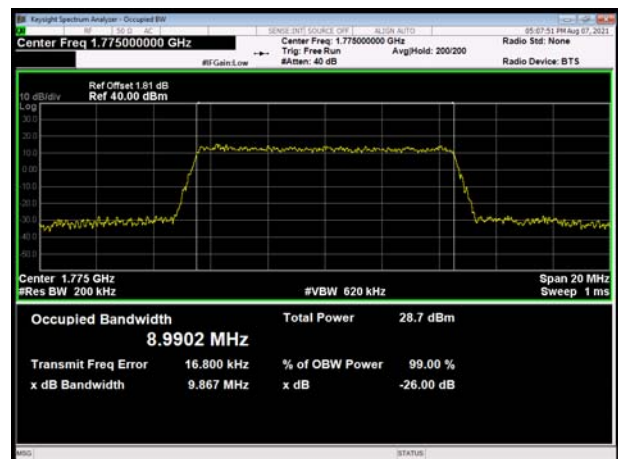
LTE Band 66 64QAM 10MHz CH-Middle



LTE Band 66 64QAM 5MHz CH-High

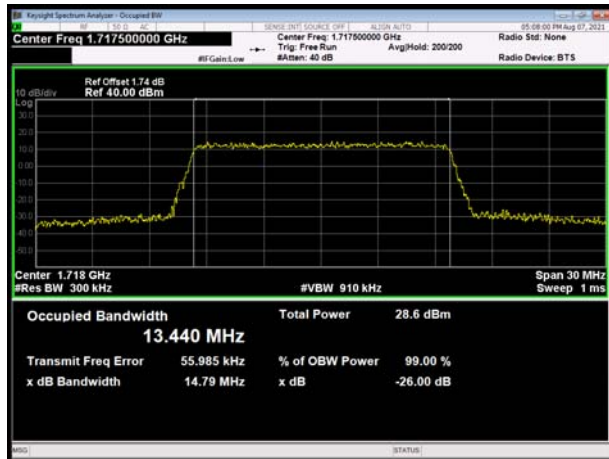


LTE Band 66 64QAM 10MHz CH-High

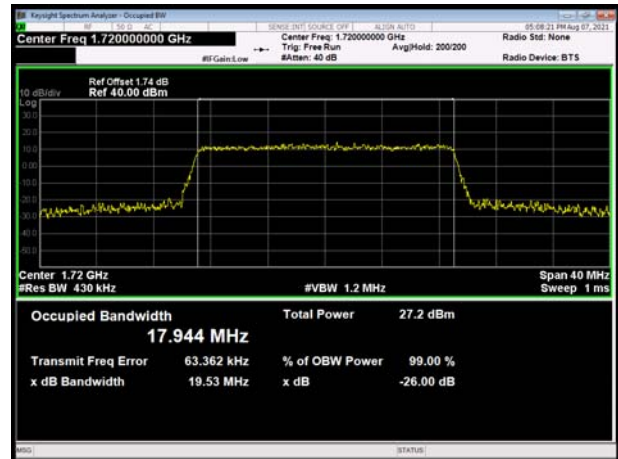




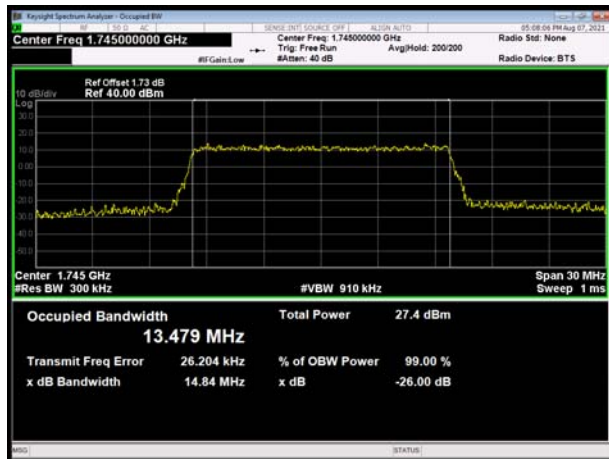
LTE Band 66 64QAM 15MHz CH-Low



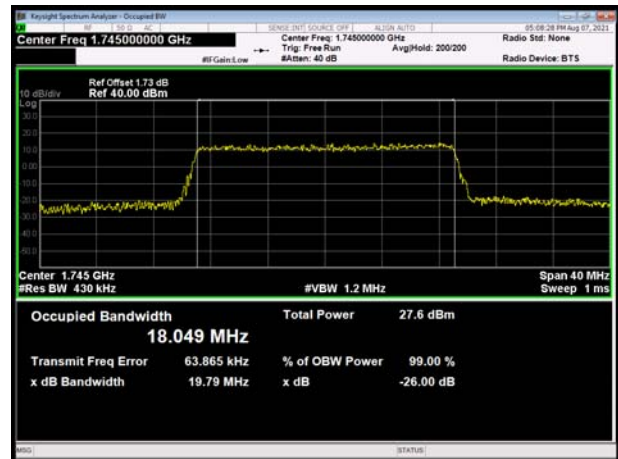
LTE Band 66 64QAM 20MHz CH-Low



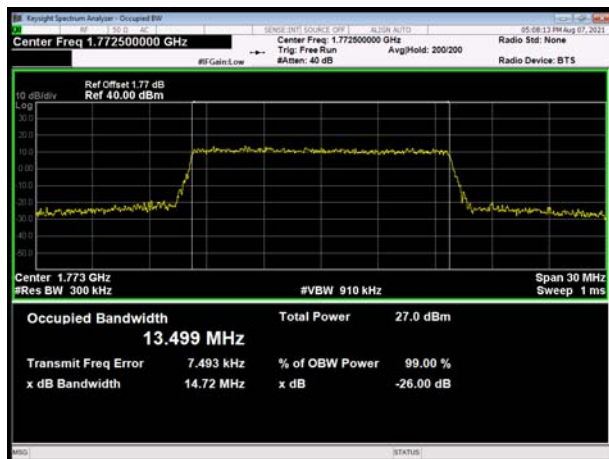
LTE Band 66 64QAM 15MHz CH-Middle



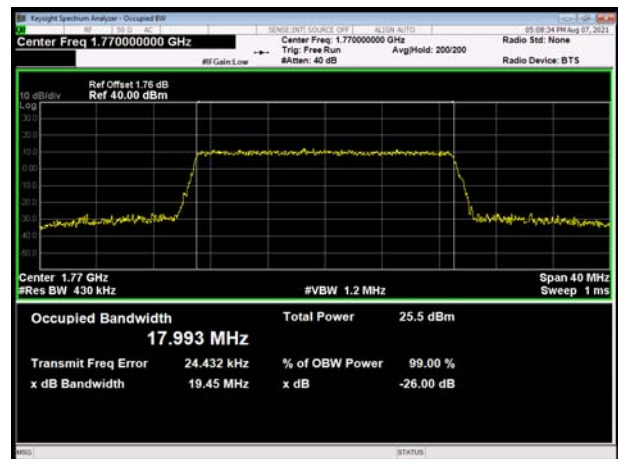
LTE Band 66 64QAM 20MHz CH-Middle



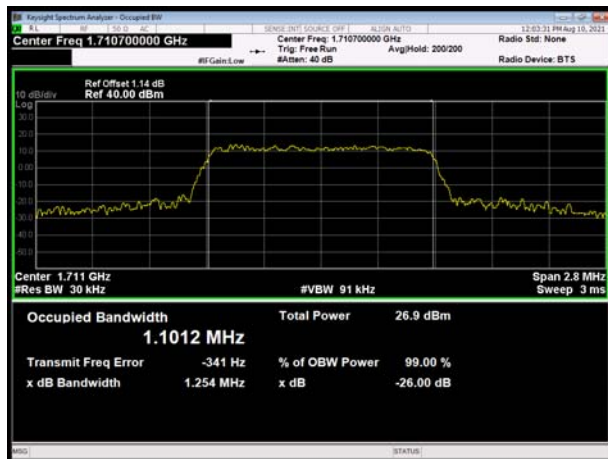
LTE Band 66 64QAM 15MHz CH-High



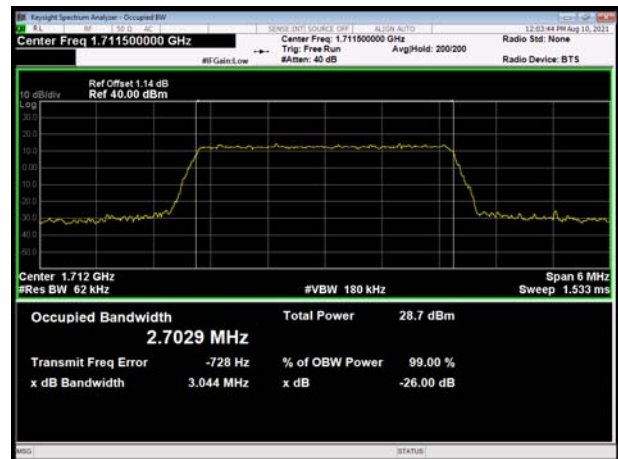
LTE Band 66 64QAM 20MHz CH-High



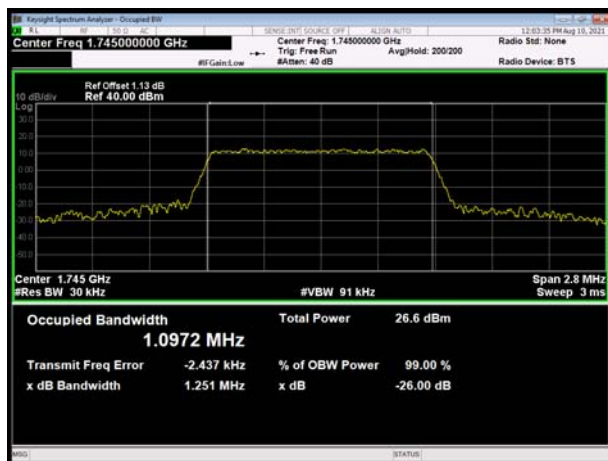
LTE Band 66 64QAM 1.4MHz CH-Low



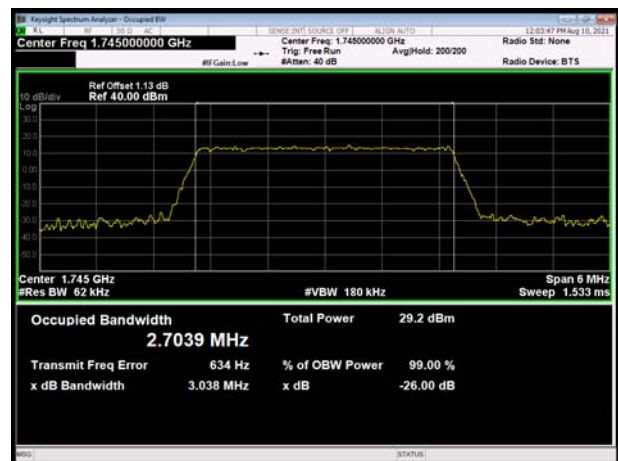
LTE Band 66 64QAM 3MHz CH-Low



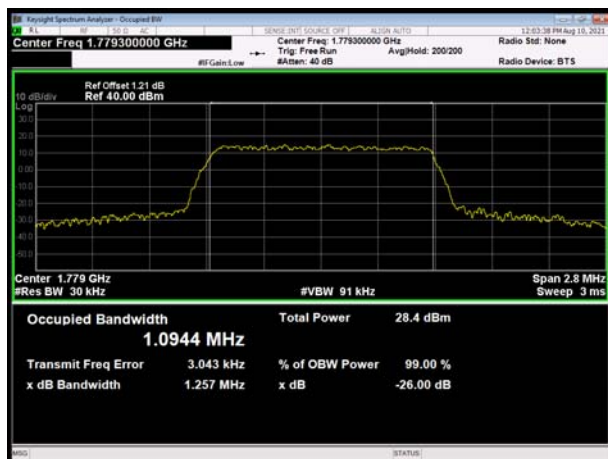
LTE Band 66 64QAM 1.4MHz CH-Middle



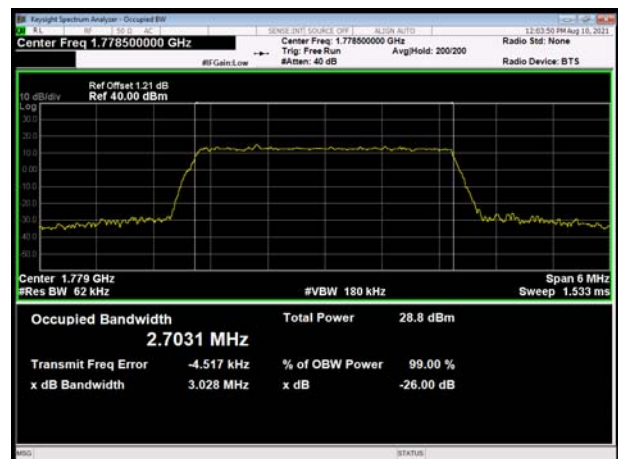
LTE Band 66 64QAM 3MHz CH-Middle



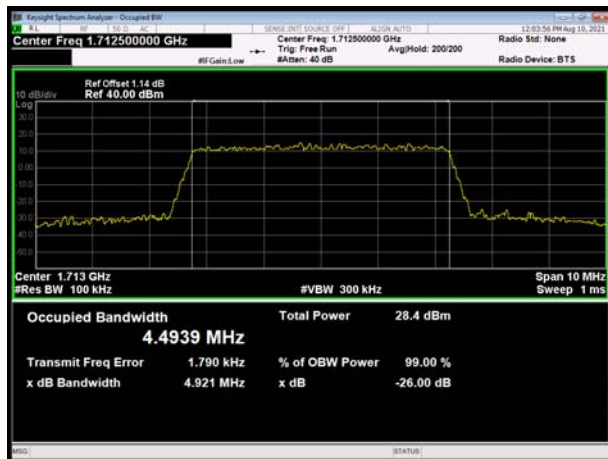
LTE Band 66 64QAM 1.4MHz CH-High



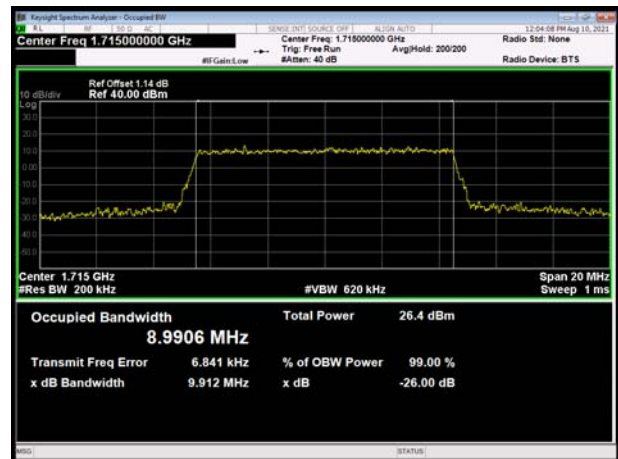
LTE Band 66 64QAM 3MHz CH-High



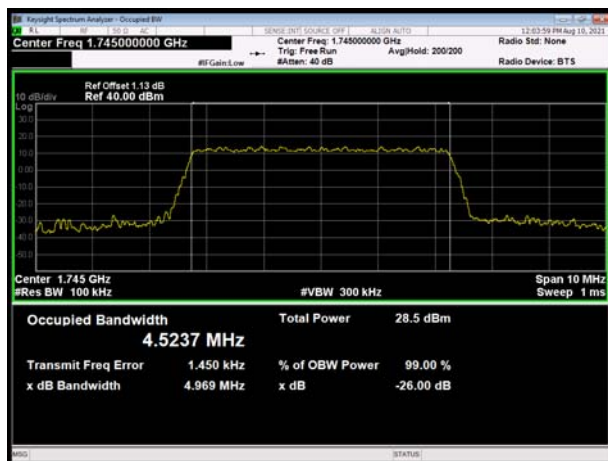
LTE Band 66 64QAM 5MHz CH-Low



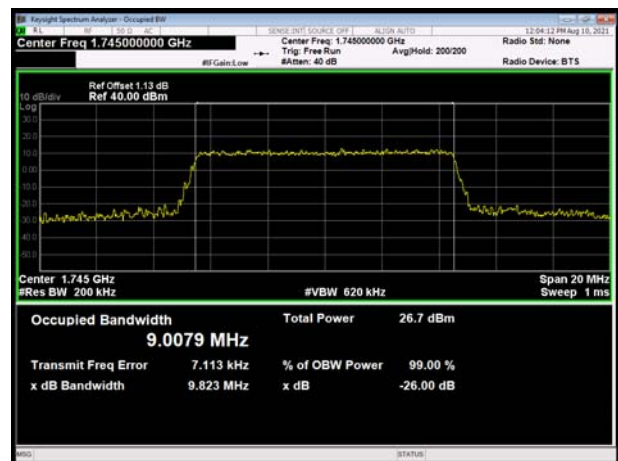
LTE Band 66 64QAM 10MHz CH-Low



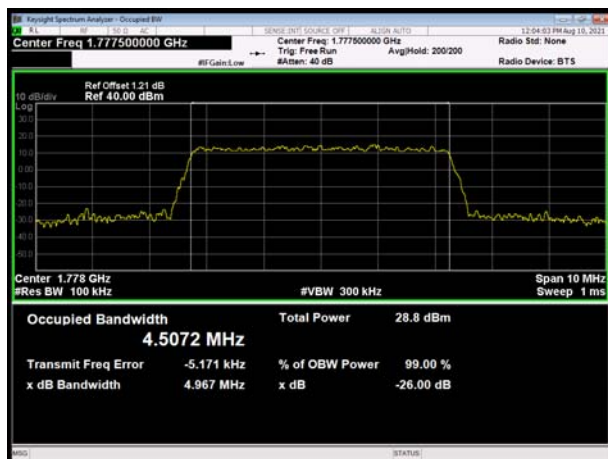
LTE Band 66 64QAM 5MHz CH-Middle



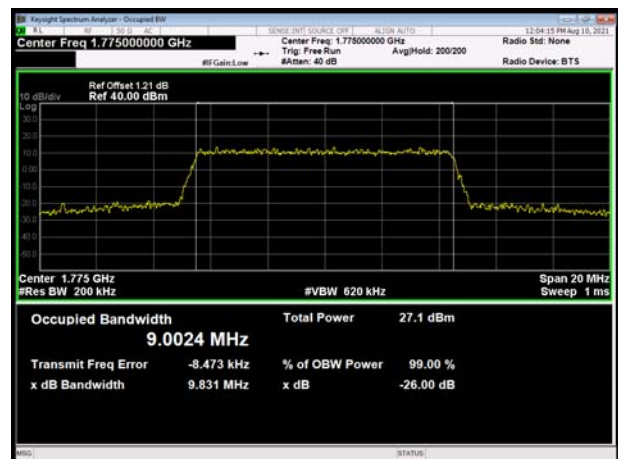
LTE Band 66 64QAM 10MHz CH-Middle



LTE Band 66 64QAM 5MHz CH-High



LTE Band 66 64QAM 10MHz CH-High

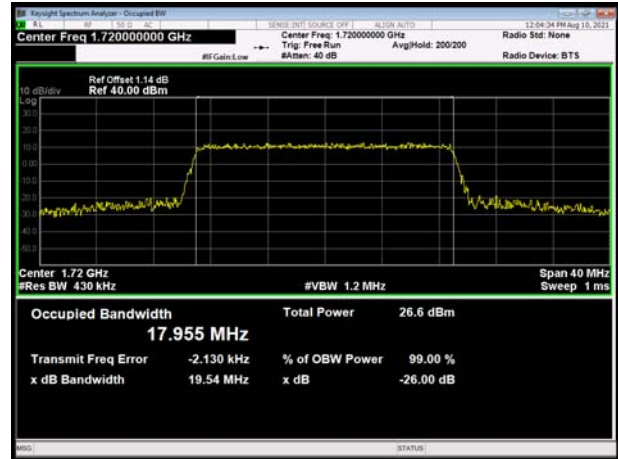




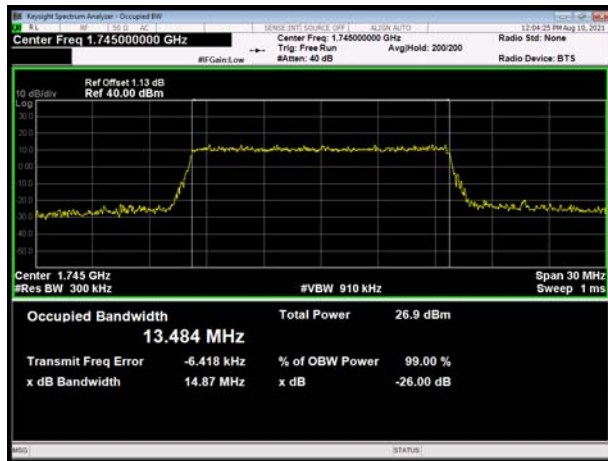
LTE Band 66 64QAM 15MHz CH-Low



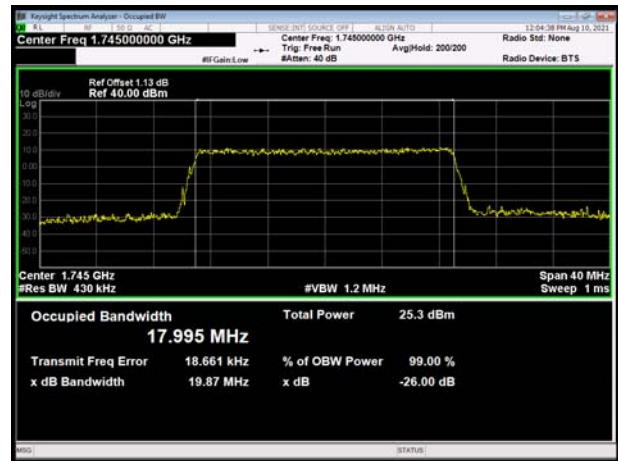
LTE Band 66 64QAM 20MHz CH-Low



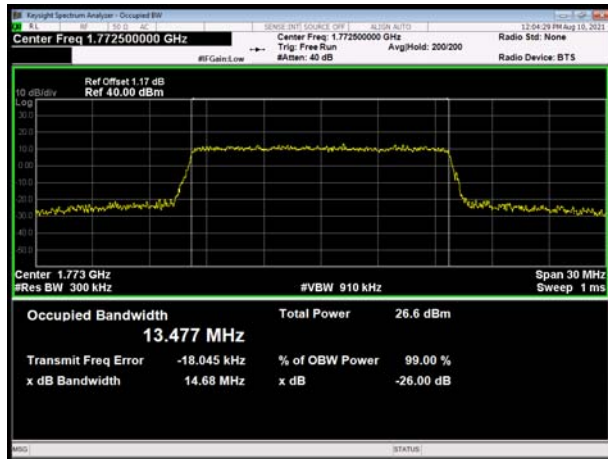
LTE Band 66 64QAM 15MHz CH-Middle



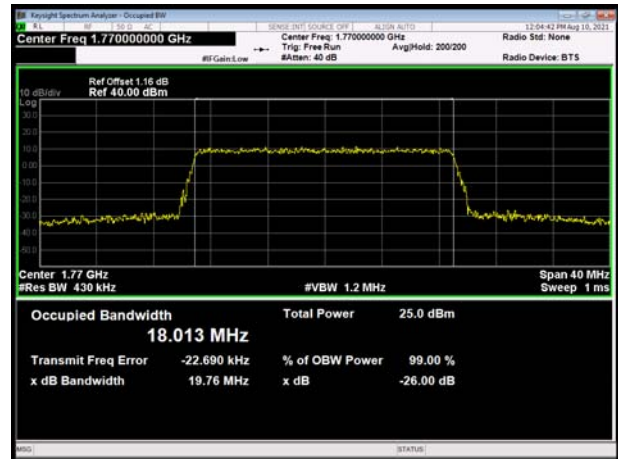
LTE Band 66 64QAM 20MHz CH-Middle



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.

For LTE Band 7 set RBW $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.

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

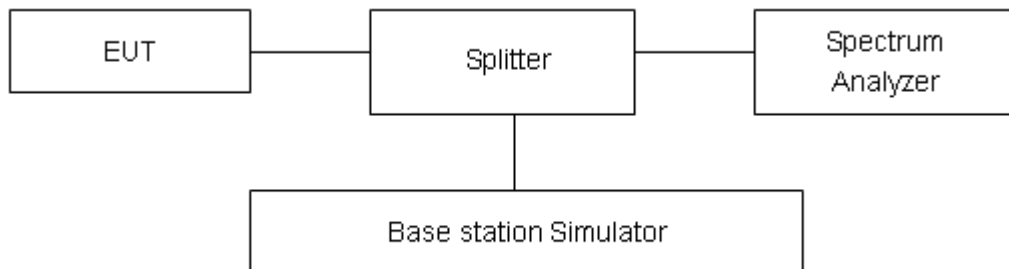
on spectrum analyzer.

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(h) specifies that “ for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB”

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

immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

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

Example:

The limit line is derived from $43 + 10 \log (P)$ dB below the transmitter power P(Watts)

$$= P(W) - [43 + 10 \log (P)] \text{ (dB)}$$

$$= [30 + 10 \log (P)] \text{ (dBm)} - [43 + 10 \log (P)] \text{ (dB)} = -13 \text{ dBm}.$$

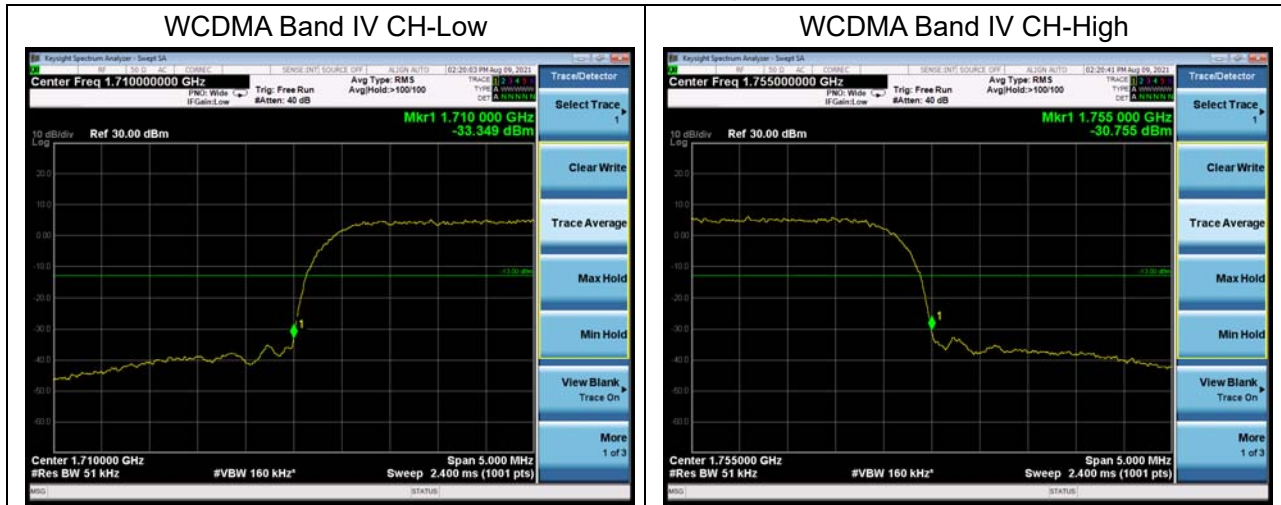
Measurement Uncertainty

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



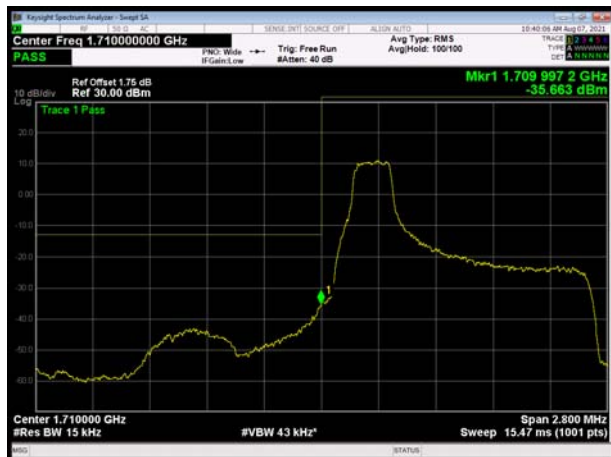
Test Result

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

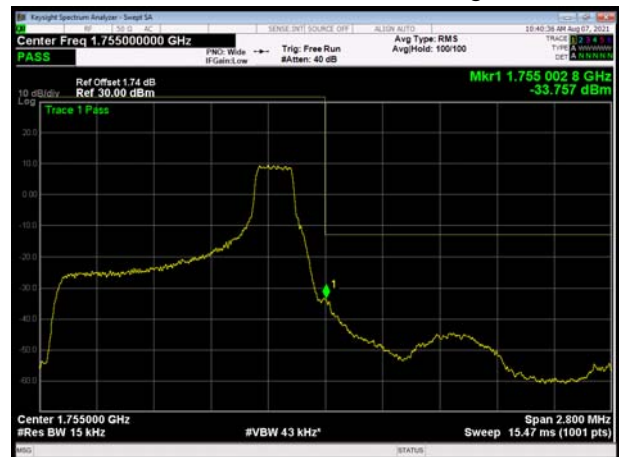




LTE Band 4 QPSK 1.4MHz CH-Low, 1 RB



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



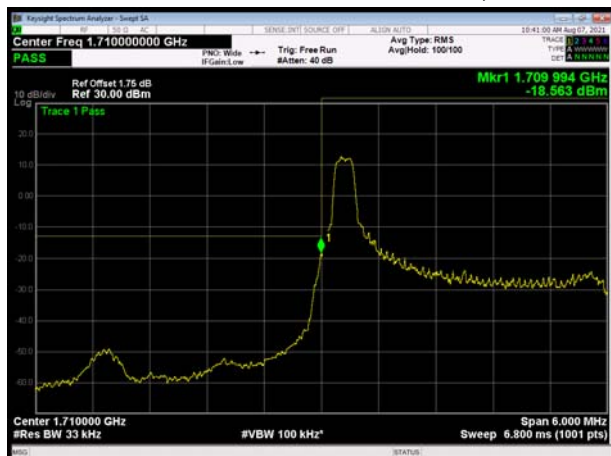
LTE Band 4 QPSK 1.4MHz CH-Low, 100%RB



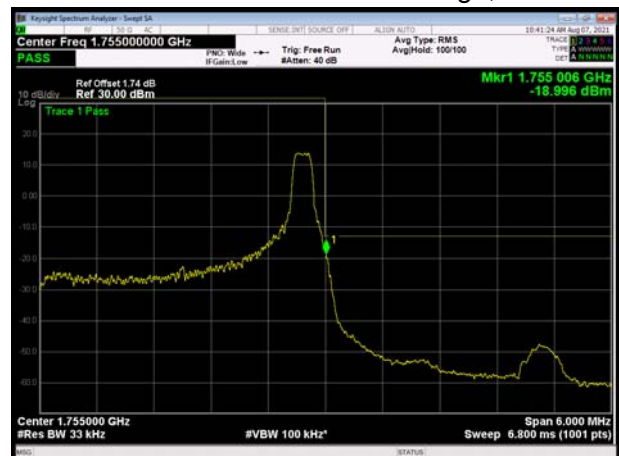
LTE Band 4 QPSK 1.4MHz CH-High, 100%RB



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

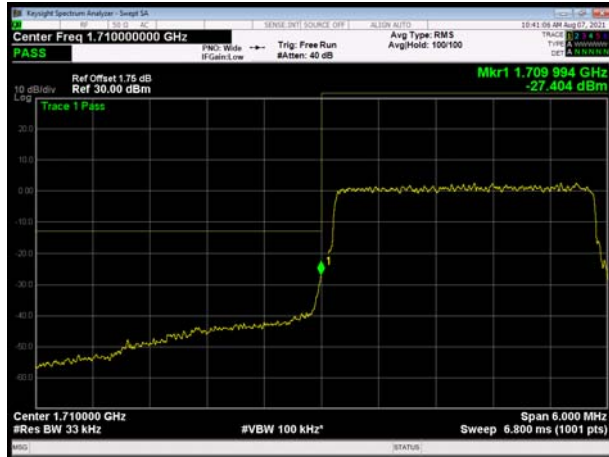


LTE Band 4 QPSK 3MHz CH-High, 1 RB

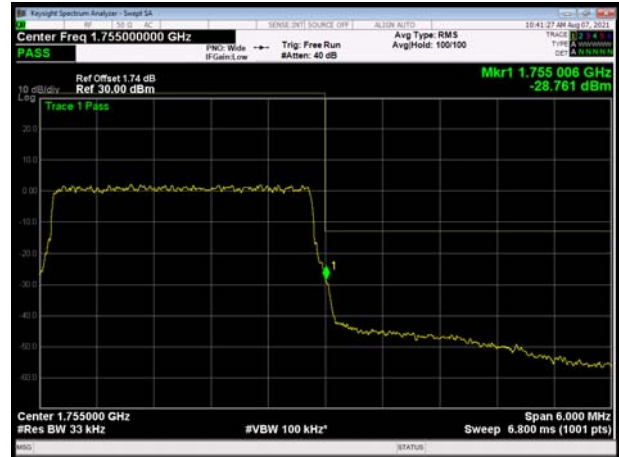




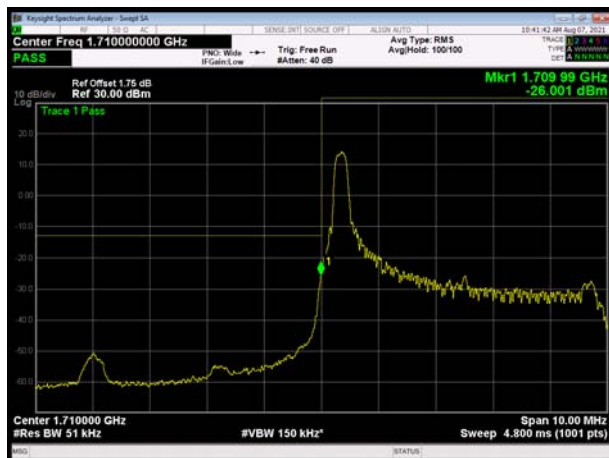
LTE Band 4 QPSK 3MHz CH-Low, 100%RB



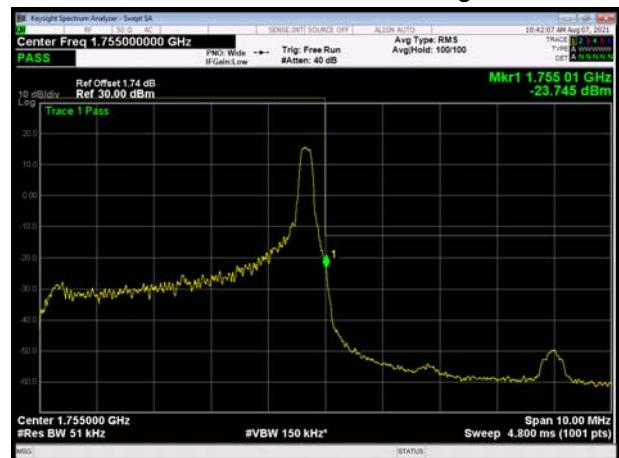
LTE Band 4 QPSK 3MHz CH-High, 100%RB



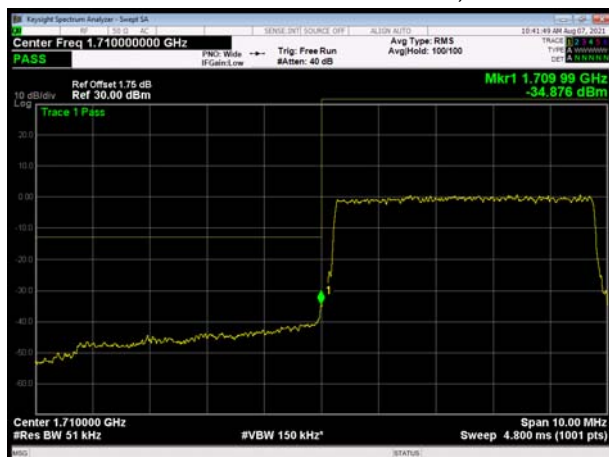
LTE Band 4 QPSK 5MHz CH-Low, 1 RB



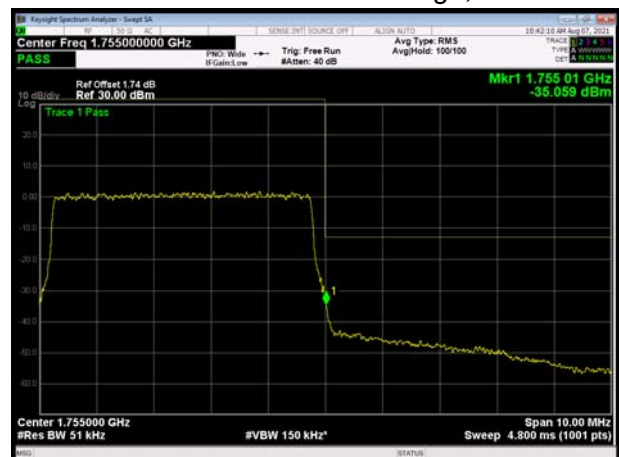
LTE Band 4 QPSK 5MHz CH-High, 1 RB



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

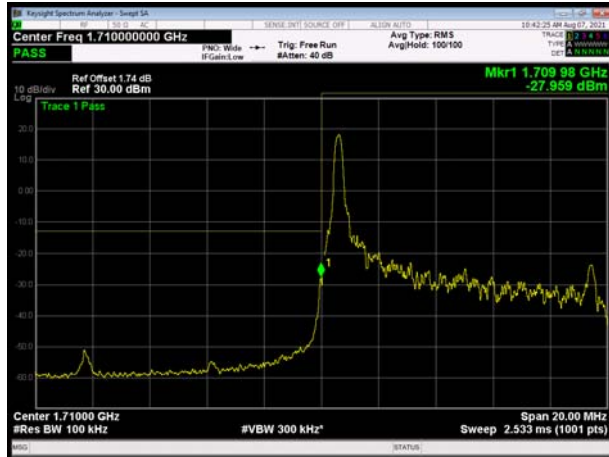


LTE Band 4 QPSK 5MHz CH-High, 100%RB

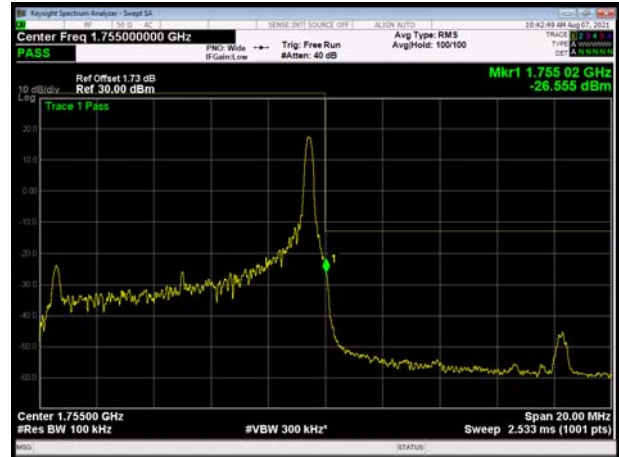




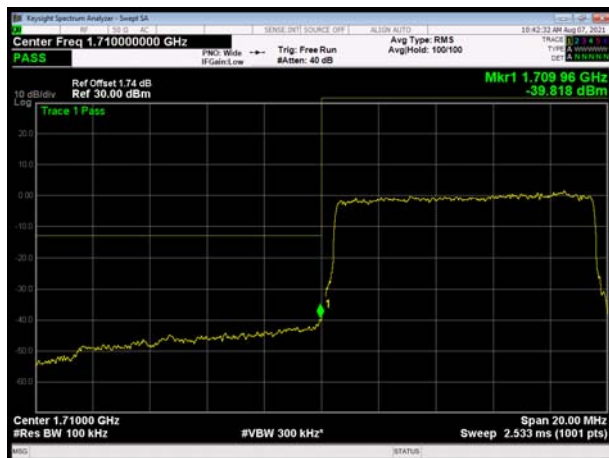
LTE Band 4 QPSK 10MHz CH-Low, 1 RB



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



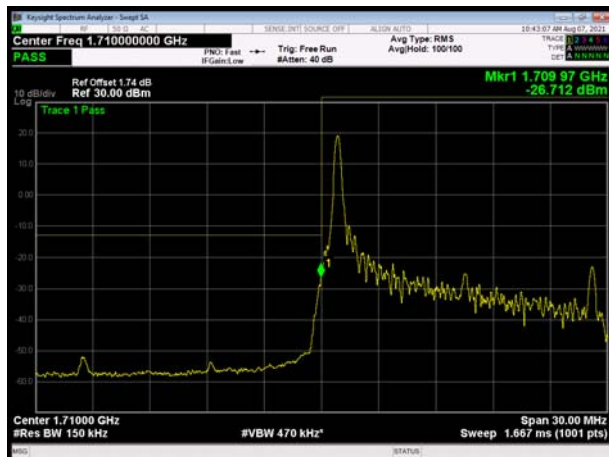
LTE Band 4 QPSK 10MHz CH-Low, 100%RB



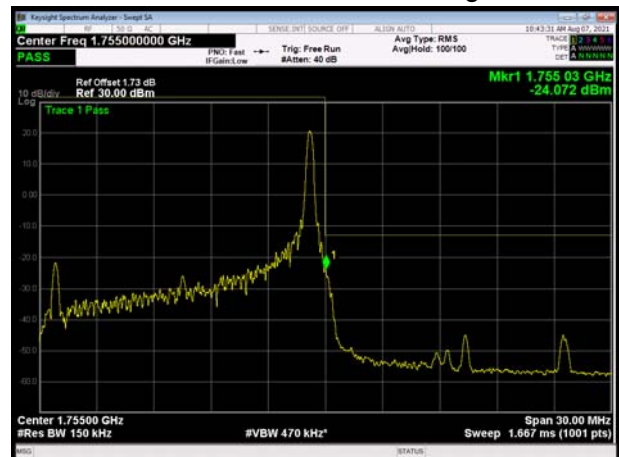
LTE Band 4 QPSK 10MHz CH-High, 100%RB



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

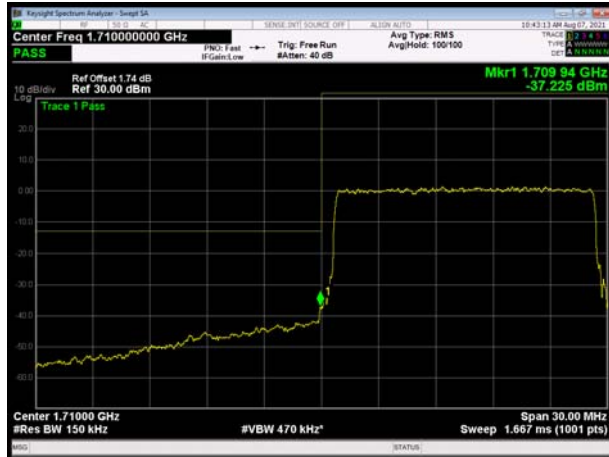


LTE Band 4 QPSK 15MHz CH-High, 1 RB

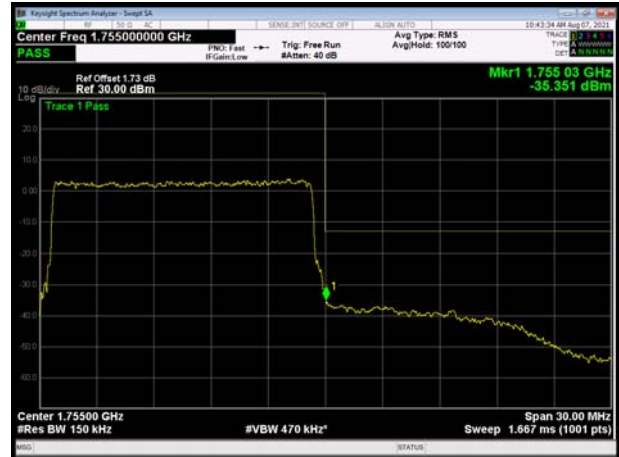




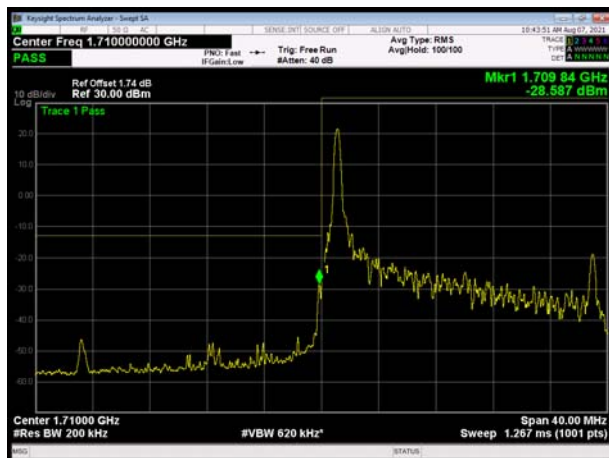
LTE Band 4 QPSK 15MHz CH-Low, 100%RB



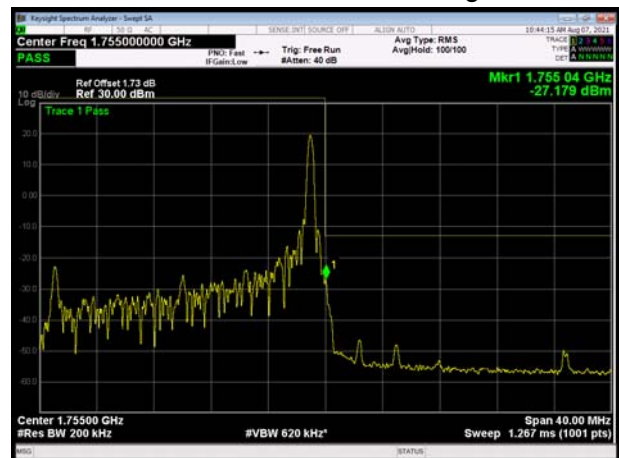
LTE Band 4 QPSK 15MHz CH-High, 100%RB



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



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



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



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

