RF TEST REPORT

Applicant	ZTE Corporation
FCC ID	SRQ-A31PLUS
Product	LTE/WCDMA/GSM(GPRS) Multi-Mode Digital Mobile Phone
Model	ZTE Blade A31 Plus
Report No.	R2206A0527-R6
Issue Date	June 24, 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.

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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(c)(13)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edge Compliance	27.53(g)	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(g)	PASS
7	Radiates Spurious Emission	2.1053 27.53(g)	PASS
Date of Testing:October 30, 2021 ~ November3, 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.:R2206A0527-R6) is a variant model of ZTE Blade A31 Plus (Report No.:R2108A0671-R7). There is only tested RF Power Output. 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. Test values partial duplicated from Original for variant. 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
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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 Generalinformation

EUT Description			
Model	ZTE Blade A31 Plus		
IMEI	862720050002617		
Hardware Version	z1kA		
Software Version	ENT_PE_A31_Plus_V1.0		
Power Supply	Battery / AC adapter		
Antenna Type	Internal Antenna		
Antenna Gain	-5.1 dBi		
Test Mode(s)	LTE Band 28;		
Test Modulation	QPSK, 16QAM, 64QAM;		
LTE Category	5		
Maximum E.R.P.	LTE Band 28	subset 1	15.08dBm
		subset 2	15.29dBm
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		
OperatingFrequency Range(s)	LTE Band 28	subset 1	703MHz ~ 716MHz
		subset 2	728MHz ~ 746MHz
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 theinformation 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)

FCC CFR47 Part 2 (2021)

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, horizontalpolarization) and the worst case was recorded.

All mode and data rates and positions andRB size and modulations were investigated.
Subsequently, only the worst case emissions are reported.
The following testing in LTE is set based on the maximum RF Output Power.
The following testing in different Bandwidth is set to detailin the following table:
Test modes are chosen to be reported as the worst case configuration below for LTE Band 28

Test items	Modes	Bandwidth (MHz)				Modulation			RB			Test Channel		
		3	5	10	15	QPSK	16QAM	64QAM	1	50%	100%	L	M	H
RF Power Output and Effective Isotropic Radiated Power	LTE 28 subset 1	O	O	O	-	O	O	O	O	O	O	O	O	O
	LTE 28 subset 2	O	O	O	O	O	O	O	O	O	O	O	O	O
Occupied Bandwidth	LTE 28 subset 1	O	O	O	-	O	O	O	-	-	O	O	O	O
	LTE 28 subset 2	O	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	LTE 28 subset 1	O	O	O	-	O	O	O	O	-	O	O	-	O
	LTE 28 subset 2	O	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	LTE 28 subset 1	O	O	O	-	O	O	O	-	-	O	O	O	O
	LTE 28 subset 2	O	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	LTE 28 subset 1	O	O	O	-	O	O	O	O	-	-	-	O	-
	LTE 28 subset 2	O	O	O	O	O	O	O	O	-	-	-	O	-
Spurious Emissions at Antenna Terminals	LTE 28 subset 1	O	O	O	-	O	-	-	O	-	-	O	O	O
	LTE 28 subset 2	O	O	O	O	O	-	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 28 subset 1	O	O	O	-	O	-	-	O	-	-	-	O	-
	LTE 28 subset 2	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

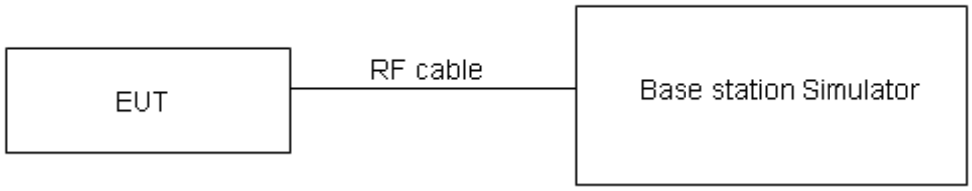
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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 (dBm) = Output Power (dBm) - Losses (dB) + Antenna Gain (dBi)
where:dBd refers to gain relative to an ideal dipole.
EIRP (dBm) = ERP (dBm) + 2.15 (dB.)

Test Setup



Limits

No specific RF power output requirements in part 2.1046.

Rule Part 27.50(c) (13) 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”

Part 27.50(c)(13)Limit	≤ 3 W (34.77 dBm)

Measurement Uncertainty

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

Test Results

LTE Band 28 subset 1								
Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	ERP (dBm)	Verdict	high Limit (dBm)
3	27225	1	#0	QPSK	22.33	15.08	PASS	37
3	27225	1	#Mid	QPSK	22.25	15.00	PASS	37
3	27225	1	#Max	QPSK	22.17	14.92	PASS	37
3	27225	8	#0	QPSK	21.23	13.98	PASS	37
3	27225	8	#Mid	QPSK	21.22	13.97	PASS	37
3	27225	8	#Max	QPSK	21.26	14.01	PASS	37
3	27225	15	#0	QPSK	21.30	14.05	PASS	37
3	27225	1	#0	QAM16	21.14	13.89	PASS	37
3	27225	1	#Mid	QAM16	21.03	13.78	PASS	37
3	27225	1	#Max	QAM16	21.05	13.80	PASS	37
3	27225	8	#0	QAM16	20.30	13.05	PASS	37
3	27225	8	#Mid	QAM16	20.26	13.01	PASS	37
3	27225	8	#Max	QAM16	20.72	13.47	PASS	37
3	27225	15	#0	QAM16	20.21	12.96	PASS	37
3	27275	1	#0	QPSK	22.12	14.87	PASS	37
3	27275	1	#Mid	QPSK	22.20	14.95	PASS	37
3	27275	1	#Max	QPSK	22.17	14.92	PASS	37
3	27275	8	#0	QPSK	21.21	13.96	PASS	37
3	27275	8	#Mid	QPSK	21.11	13.86	PASS	37
3	27275	8	#Max	QPSK	21.05	13.80	PASS	37
3	27275	15	#0	QPSK	21.13	13.88	PASS	37
3	27275	1	#0	QAM16	21.88	14.63	PASS	37
3	27275	1	#Mid	QAM16	21.70	14.45	PASS	37
3	27275	1	#Max	QAM16	21.69	14.44	PASS	37
3	27275	8	#0	QAM16	20.68	13.43	PASS	37
3	27275	8	#Mid	QAM16	20.62	13.37	PASS	37
3	27275	8	#Max	QAM16	20.54	13.29	PASS	37
3	27275	15	#0	QAM16	20.52	13.27	PASS	37
3	27325	1	#0	QPSK	22.09	14.84	PASS	37
3	27325	1	#Mid	QPSK	22.06	14.81	PASS	37
3	27325	1	#Max	QPSK	21.93	14.68	PASS	37
3	27325	8	#0	QPSK	20.89	13.64	PASS	37
3	27325	8	#Mid	QPSK	20.90	13.65	PASS	37
3	27325	8	#Max	QPSK	21.09	13.84	PASS	37
3	27325	15	#0	QPSK	21.05	13.80	PASS	37
3	27325	1	#0	QAM16	20.49	13.24	PASS	37
3	27325	1	#Mid	QAM16	20.44	13.19	PASS	37

3	27325	1	#Max	QAM16	20.70	13.45	PASS	37
3	27325	8	#0	QAM16	20.25	13.00	PASS	37
3	27325	8	#Mid	QAM16	20.14	12.89	PASS	37
3	27325	8	#Max	QAM16	20.21	12.96	PASS	37
3	27325	15	#0	QAM16	19.95	12.70	PASS	37
5	27235	1	#0	QPSK	22.16	14.91	PASS	37
5	27235	1	#Mid	QPSK	22.05	14.80	PASS	37
5	27235	1	#Max	QPSK	22.09	14.84	PASS	37
5	27235	12	#0	QPSK	21.17	13.92	PASS	37
5	27235	12	#Mid	QPSK	21.26	14.01	PASS	37
5	27235	12	#Max	QPSK	21.26	14.01	PASS	37
5	27235	25	#0	QPSK	21.27	14.02	PASS	37
5	27235	1	#0	QAM16	20.78	13.53	PASS	37
5	27235	1	#Mid	QAM16	20.87	13.62	PASS	37
5	27235	1	#Max	QAM16	20.73	13.48	PASS	37
5	27235	12	#0	QAM16	20.18	12.93	PASS	37
5	27235	12	#Mid	QAM16	20.13	12.88	PASS	37
5	27235	12	#Max	QAM16	20.47	13.22	PASS	37
5	27235	25	#0	QAM16	20.53	13.28	PASS	37
5	27275	1	#0	QPSK	22.09	14.84	PASS	37
5	27275	1	#Mid	QPSK	22.19	14.94	PASS	37
5	27275	1	#Max	QPSK	22.17	14.92	PASS	37
5	27275	12	#0	QPSK	21.19	13.94	PASS	37
5	27275	12	#Mid	QPSK	21.20	13.95	PASS	37
5	27275	12	#Max	QPSK	21.04	13.79	PASS	37
5	27275	25	#0	QPSK	21.22	13.97	PASS	37
5	27275	1	#0	QAM16	21.18	13.93	PASS	37
5	27275	1	#Mid	QAM16	21.07	13.82	PASS	37
5	27275	1	#Max	QAM16	21.07	13.82	PASS	37
5	27275	12	#0	QAM16	20.50	13.25	PASS	37
5	27275	12	#Mid	QAM16	20.48	13.23	PASS	37
5	27275	12	#Max	QAM16	20.53	13.28	PASS	37
5	27275	25	#0	QAM16	20.53	13.28	PASS	37
5	27315	1	#0	QPSK	22.07	14.82	PASS	37
5	27315	1	#Mid	QPSK	21.92	14.67	PASS	37
5	27315	1	#Max	QPSK	21.92	14.67	PASS	37
5	27315	12	#0	QPSK	21.07	13.82	PASS	37
5	27315	12	#Mid	QPSK	21.08	13.83	PASS	37
5	27315	12	#Max	QPSK	21.17	13.92	PASS	37
5	27315	25	#0	QPSK	21.12	13.87	PASS	37
5	27315	1	#0	QAM16	21.14	13.89	PASS	37
5	27315	1	#Mid	QAM16	19.09	11.84	PASS	37
5	27315	1	#Max	QAM16	19.14	11.89	PASS	37

5	27315	12	#0	QAM16	19.22	11.97	PASS	37
5	27315	12	#Mid	QAM16	19.26	12.01	PASS	37
5	27315	12	#Max	QAM16	18.90	11.65	PASS	37
5	27315	25	#0	QAM16	19.07	11.82	PASS	37
10	27260	1	#0	QPSK	20.25	13.00	PASS	37
10	27260	1	#Mid	QPSK	20.59	13.34	PASS	37
10	27260	1	#Max	QPSK	20.47	13.22	PASS	37
10	27260	25	#0	QPSK	19.56	12.31	PASS	37
10	27260	25	#Mid	QPSK	19.54	12.29	PASS	37
10	27260	25	#Max	QPSK	19.66	12.41	PASS	37
10	27260	50	#0	QPSK	19.61	12.36	PASS	37
10	27260	1	#0	QAM16	18.81	11.56	PASS	37
10	27260	1	#Mid	QAM16	19.44	12.19	PASS	37
10	27260	1	#Max	QAM16	19.38	12.13	PASS	37
10	27260	25	#0	QAM16	18.24	10.99	PASS	37
10	27260	25	#Mid	QAM16	18.27	11.02	PASS	37
10	27260	25	#Max	QAM16	19.48	12.23	PASS	37
10	27260	50	#0	QAM16	18.87	11.62	PASS	37
10	27275	1	#0	QPSK	17.50	10.25	PASS	37
10	27275	1	#Mid	QPSK	19.51	12.26	PASS	37
10	27275	1	#Max	QPSK	18.72	11.47	PASS	37
10	27275	25	#0	QPSK	18.12	10.87	PASS	37
10	27275	25	#Mid	QPSK	18.13	10.88	PASS	37
10	27275	25	#Max	QPSK	18.32	11.07	PASS	37
10	27275	50	#0	QPSK	18.24	10.99	PASS	37
10	27275	1	#0	QAM16	16.83	9.58	PASS	37
10	27275	1	#Mid	QAM16	18.79	11.54	PASS	37
10	27275	1	#Max	QAM16	18.10	10.85	PASS	37
10	27275	25	#0	QAM16	17.12	9.87	PASS	37
10	27275	25	#Mid	QAM16	17.13	9.88	PASS	37
10	27275	25	#Max	QAM16	17.33	10.08	PASS	37
10	27275	50	#0	QAM16	17.19	9.94	PASS	37
10	27290	1	#0	QPSK	18.63	11.38	PASS	37
10	27290	1	#Mid	QPSK	19.25	12.00	PASS	37
10	27290	1	#Max	QPSK	18.60	11.35	PASS	37
10	27290	25	#0	QPSK	18.53	11.28	PASS	37
10	27290	25	#Mid	QPSK	18.53	11.28	PASS	37
10	27290	25	#Max	QPSK	18.02	10.77	PASS	37
10	27290	50	#0	QPSK	19.58	12.33	PASS	37
10	27290	1	#0	QAM16	18.97	11.72	PASS	37
10	27290	1	#Mid	QAM16	19.06	11.81	PASS	37
10	27290	1	#Max	QAM16	18.48	11.23	PASS	37
10	27290	25	#0	QAM16	19.30	12.05	PASS	37

10	27290	25	#Mid	QAM16	19.32	12.07	PASS	37
10	27290	25	#Max	QAM16	18.88	11.63	PASS	37
10	27290	50	#0	QAM16	19.13	11.88	PASS	37
3	27225	1	#0	64QAM	20.76	13.51	PASS	37
3	27225	1	#Mid	64QAM	20.74	13.49	PASS	37
3	27225	1	#Max	64QAM	20.70	13.45	PASS	37
3	27225	8	#0	64QAM	19.92	12.67	PASS	37
3	27225	8	#Mid	64QAM	19.94	12.69	PASS	37
3	27225	8	#Max	64QAM	20.38	13.13	PASS	37
3	27225	15	#0	64QAM	19.81	12.56	PASS	37
3	27275	1	#0	64QAM	21.47	14.22	PASS	37
3	27275	1	#Mid	64QAM	21.36	14.11	PASS	37
3	27275	1	#Max	64QAM	21.33	14.08	PASS	37
3	27275	8	#0	64QAM	20.23	12.98	PASS	37
3	27275	8	#Mid	64QAM	20.28	13.03	PASS	37
3	27275	8	#Max	64QAM	20.21	12.96	PASS	37
3	27275	15	#0	64QAM	20.19	12.94	PASS	37
3	27325	1	#0	64QAM	20.08	12.83	PASS	37
3	27325	1	#Mid	64QAM	20.03	12.78	PASS	37
3	27325	1	#Max	64QAM	20.26	13.01	PASS	37
3	27325	8	#0	64QAM	19.77	12.52	PASS	37
3	27325	8	#Mid	64QAM	19.78	12.53	PASS	37
3	27325	8	#Max	64QAM	19.70	12.45	PASS	37
3	27325	15	#0	64QAM	19.57	12.32	PASS	37
5	27235	1	#0	64QAM	20.37	13.12	PASS	37
5	27235	1	#Mid	64QAM	20.32	13.07	PASS	37
5	27235	1	#Max	64QAM	20.40	13.15	PASS	37
5	27235	12	#0	64QAM	19.85	12.60	PASS	37
5	27235	12	#Mid	64QAM	19.78	12.53	PASS	37
5	27235	12	#Max	64QAM	20.08	12.83	PASS	37
5	27235	25	#0	64QAM	20.22	12.97	PASS	37
5	27275	1	#0	64QAM	20.87	13.62	PASS	37
5	27275	1	#Mid	64QAM	20.71	13.46	PASS	37
5	27275	1	#Max	64QAM	20.67	13.42	PASS	37
5	27275	12	#0	64QAM	20.10	12.85	PASS	37
5	27275	12	#Mid	64QAM	20.07	12.82	PASS	37
5	27275	12	#Max	64QAM	20.06	12.81	PASS	37
5	27275	25	#0	64QAM	20.08	12.83	PASS	37
5	27315	1	#0	64QAM	20.52	13.27	PASS	37
5	27315	1	#Mid	64QAM	20.55	13.30	PASS	37
5	27315	1	#Max	64QAM	20.70	13.45	PASS	37
5	27315	12	#0	64QAM	20.06	12.81	PASS	37
5	27315	12	#Mid	64QAM	20.07	12.82	PASS	37

5	27315	12	#Max	64QAM	19.62	12.37	PASS	37
5	27315	25	#0	64QAM	19.56	12.31	PASS	37
10	27260	1	#0	64QAM	20.59	13.34	PASS	37
10	27260	1	#Mid	64QAM	20.59	13.34	PASS	37
10	27260	1	#Max	64QAM	20.58	13.33	PASS	37
10	27260	25	#0	64QAM	20.21	12.96	PASS	37
10	27260	25	#Mid	64QAM	20.20	12.95	PASS	37
10	27260	25	#Max	64QAM	20.13	12.88	PASS	37
10	27260	50	#0	64QAM	20.11	12.86	PASS	37
10	27275	1	#0	64QAM	20.83	13.58	PASS	37
10	27275	1	#Mid	64QAM	20.84	13.59	PASS	37
10	27275	1	#Max	64QAM	20.74	13.49	PASS	37
10	27275	25	#0	64QAM	20.32	13.07	PASS	37
10	27275	25	#Mid	64QAM	20.34	13.09	PASS	37
10	27275	25	#Max	64QAM	20.23	12.98	PASS	37
10	27275	50	#0	64QAM	20.17	12.92	PASS	37
10	27290	1	#0	64QAM	20.21	12.96	PASS	37
10	27290	1	#Mid	64QAM	20.03	12.78	PASS	37
10	27290	1	#Max	64QAM	20.18	12.93	PASS	37
10	27290	25	#0	64QAM	20.19	12.94	PASS	37
10	27290	25	#Mid	64QAM	20.18	12.93	PASS	37
10	27290	25	#Max	64QAM	19.66	12.41	PASS	37
10	27290	50	#0	64QAM	20.09	12.84	PASS	37

LTE Band 28 subset 2								
Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	ERP	Verdict	high Limit (dBm)
3	27475	1	#0	QPSK	22.28	15.03	PASS	37
3	27475	1	#Mid	QPSK	22.37	15.12	PASS	37
3	27475	1	#Max	QPSK	22.33	15.08	PASS	37
3	27475	8	#0	QPSK	21.56	14.31	PASS	37
3	27475	8	#Mid	QPSK	21.40	14.15	PASS	37
3	27475	8	#Max	QPSK	21.21	13.96	PASS	37
3	27475	15	#0	QPSK	21.33	14.08	PASS	37
3	27475	1	#0	QAM16	21.20	13.95	PASS	37
3	27475	1	#Mid	QAM16	21.22	13.97	PASS	37
3	27475	1	#Max	QAM16	21.07	13.82	PASS	37
3	27475	8	#0	QAM16	20.44	13.19	PASS	37
3	27475	8	#Mid	QAM16	20.44	13.19	PASS	37
3	27475	8	#Max	QAM16	20.83	13.58	PASS	37
3	27475	15	#0	QAM16	20.29	13.04	PASS	37

3	27550	1	#0	QPSK	22.37	15.12	PASS	37
3	27550	1	#Mid	QPSK	22.34	15.09	PASS	37
3	27550	1	#Max	QPSK	22.38	15.13	PASS	37
3	27550	8	#0	QPSK	21.27	14.02	PASS	37
3	27550	8	#Mid	QPSK	21.28	14.03	PASS	37
3	27550	8	#Max	QPSK	21.27	14.02	PASS	37
3	27550	15	#0	QPSK	21.42	14.17	PASS	37
3	27550	1	#0	QAM16	21.73	14.48	PASS	37
3	27550	1	#Mid	QAM16	21.72	14.47	PASS	37
3	27550	1	#Max	QAM16	21.91	14.66	PASS	37
3	27550	8	#0	QAM16	20.39	13.14	PASS	37
3	27550	8	#Mid	QAM16	20.40	13.15	PASS	37
3	27550	8	#Max	QAM16	18.80	11.55	PASS	37
3	27550	15	#0	QAM16	18.90	11.65	PASS	37
3	27625	1	#0	QPSK	20.55	13.30	PASS	37
3	27625	1	#Mid	QPSK	20.95	13.70	PASS	37
3	27625	1	#Max	QPSK	20.94	13.69	PASS	37
3	27625	8	#0	QPSK	19.59	12.34	PASS	37
3	27625	8	#Mid	QPSK	19.60	12.35	PASS	37
3	27625	8	#Max	QPSK	19.89	12.64	PASS	37
3	27625	15	#0	QPSK	19.93	12.68	PASS	37
3	27625	1	#0	QAM16	19.04	11.79	PASS	37
3	27625	1	#Mid	QAM16	19.35	12.10	PASS	37
3	27625	1	#Max	QAM16	19.40	12.15	PASS	37
3	27625	8	#0	QAM16	19.50	12.25	PASS	37
3	27625	8	#Mid	QAM16	19.53	12.28	PASS	37
3	27625	8	#Max	QAM16	19.60	12.35	PASS	37
3	27625	15	#0	QAM16	19.57	12.32	PASS	37
5	27485	1	#0	QPSK	22.12	14.87	PASS	37
5	27485	1	#Mid	QPSK	22.16	14.91	PASS	37
5	27485	1	#Max	QPSK	22.26	15.01	PASS	37
5	27485	12	#0	QPSK	21.40	14.15	PASS	37
5	27485	12	#Mid	QPSK	21.40	14.15	PASS	37
5	27485	12	#Max	QPSK	21.15	13.90	PASS	37
5	27485	25	#0	QPSK	21.19	13.94	PASS	37
5	27485	1	#0	QAM16	21.36	14.11	PASS	37
5	27485	1	#Mid	QAM16	21.25	14.00	PASS	37
5	27485	1	#Max	QAM16	21.47	14.22	PASS	37
5	27485	12	#0	QAM16	20.29	13.04	PASS	37
5	27485	12	#Mid	QAM16	20.28	13.03	PASS	37
5	27485	12	#Max	QAM16	20.60	13.35	PASS	37
5	27485	25	#0	QAM16	20.60	13.35	PASS	37
5	27550	1	#0	QPSK	22.23	14.98	PASS	37

5	27550	1	#Mid	QPSK	22.27	15.02	PASS	37
5	27550	1	#Max	QPSK	22.25	15.00	PASS	37
5	27550	12	#0	QPSK	21.28	14.03	PASS	37
5	27550	12	#Mid	QPSK	21.30	14.05	PASS	37
5	27550	12	#Max	QPSK	21.36	14.11	PASS	37
5	27550	25	#0	QPSK	21.35	14.10	PASS	37
5	27550	1	#0	QAM16	21.03	13.78	PASS	37
5	27550	1	#Mid	QAM16	20.98	13.73	PASS	37
5	27550	1	#Max	QAM16	21.03	13.78	PASS	37
5	27550	12	#0	QAM16	20.40	13.15	PASS	37
5	27550	12	#Mid	QAM16	20.42	13.17	PASS	37
5	27550	12	#Max	QAM16	20.42	13.17	PASS	37
5	27550	25	#0	QAM16	20.29	13.04	PASS	37
5	27615	1	#0	QPSK	22.48	15.23	PASS	37
5	27615	1	#Mid	QPSK	22.41	15.16	PASS	37
5	27615	1	#Max	QPSK	22.54	15.29	PASS	37
5	27615	12	#0	QPSK	21.29	14.04	PASS	37
5	27615	12	#Mid	QPSK	21.45	14.20	PASS	37
5	27615	12	#Max	QPSK	21.32	14.07	PASS	37
5	27615	25	#0	QPSK	21.39	14.14	PASS	37
5	27615	1	#0	QAM16	20.96	13.71	PASS	37
5	27615	1	#Mid	QAM16	20.88	13.63	PASS	37
5	27615	1	#Max	QAM16	20.96	13.71	PASS	37
5	27615	12	#0	QAM16	20.60	13.35	PASS	37
5	27615	12	#Mid	QAM16	20.61	13.36	PASS	37
5	27615	12	#Max	QAM16	20.99	13.74	PASS	37
5	27615	25	#0	QAM16	19.31	12.06	PASS	37
10	27510	1	#0	QPSK	22.40	15.15	PASS	37
10	27510	1	#Mid	QPSK	22.49	15.24	PASS	37
10	27510	1	#Max	QPSK	22.51	15.26	PASS	37
10	27510	25	#0	QPSK	21.24	13.99	PASS	37
10	27510	25	#Mid	QPSK	21.26	14.01	PASS	37
10	27510	25	#Max	QPSK	21.39	14.14	PASS	37
10	27510	50	#0	QPSK	21.33	14.08	PASS	37
10	27510	1	#0	QAM16	21.29	14.04	PASS	37
10	27510	1	#Mid	QAM16	21.25	14.00	PASS	37
10	27510	1	#Max	QAM16	21.18	13.93	PASS	37
10	27510	25	#0	QAM16	20.65	13.40	PASS	37
10	27510	25	#Mid	QAM16	20.66	13.41	PASS	37
10	27510	25	#Max	QAM16	20.25	13.00	PASS	37
10	27510	50	#0	QAM16	20.31	13.06	PASS	37
10	27550	1	#0	QPSK	22.39	15.14	PASS	37
10	27550	1	#Mid	QPSK	22.45	15.20	PASS	37

10	27550	1	#Max	QPSK	22.45	15.20	PASS	37
10	27550	25	#0	QPSK	21.41	14.16	PASS	37
10	27550	25	#Mid	QPSK	21.43	14.18	PASS	37
10	27550	25	#Max	QPSK	21.45	14.20	PASS	37
10	27550	50	#0	QPSK	21.35	14.10	PASS	37
10	27550	1	#0	QAM16	21.26	14.01	PASS	37
10	27550	1	#Mid	QAM16	21.17	13.92	PASS	37
10	27550	1	#Max	QAM16	21.25	14.00	PASS	37
10	27550	25	#0	QAM16	20.44	13.19	PASS	37
10	27550	25	#Mid	QAM16	20.44	13.19	PASS	37
10	27550	25	#Max	QAM16	20.47	13.22	PASS	37
10	27550	50	#0	QAM16	20.22	12.97	PASS	37
10	27590	1	#0	QPSK	20.20	12.95	PASS	37
10	27590	1	#Mid	QPSK	20.82	13.57	PASS	37
10	27590	1	#Max	QPSK	20.84	13.59	PASS	37
10	27590	25	#0	QPSK	19.39	12.14	PASS	37
10	27590	25	#Mid	QPSK	19.42	12.17	PASS	37
10	27590	25	#Max	QPSK	19.63	12.38	PASS	37
10	27590	50	#0	QPSK	19.77	12.52	PASS	37
10	27590	1	#0	QAM16	19.68	12.43	PASS	37
10	27590	1	#Mid	QAM16	20.26	13.01	PASS	37
10	27590	1	#Max	QAM16	20.40	13.15	PASS	37
10	27590	25	#0	QAM16	19.79	12.54	PASS	37
10	27590	25	#Mid	QAM16	19.83	12.58	PASS	37
10	27590	25	#Max	QAM16	20.04	12.79	PASS	37
10	27590	50	#0	QAM16	19.90	12.65	PASS	37
15	27535	1	#0	QPSK	20.31	13.06	PASS	37
15	27535	1	#Mid	QPSK	20.48	13.23	PASS	37
15	27535	1	#Max	QPSK	20.59	13.34	PASS	37
15	27535	36	#0	QPSK	19.39	12.14	PASS	37
15	27535	36	#Mid	QPSK	19.09	11.84	PASS	37
15	27535	36	#Max	QPSK	18.04	10.79	PASS	37
15	27535	75	#0	QPSK	18.61	11.36	PASS	37
15	27535	1	#0	QAM16	19.04	11.79	PASS	37
15	27535	1	#Mid	QAM16	18.51	11.26	PASS	37
15	27535	1	#Max	QAM16	17.86	10.61	PASS	37
15	27535	36	#0	QAM16	17.86	10.61	PASS	37
15	27535	36	#Mid	QAM16	17.87	10.62	PASS	37
15	27535	36	#Max	QAM16	16.76	9.51	PASS	37
15	27535	75	#0	QAM16	17.35	10.10	PASS	37
15	27550	1	#0	QPSK	19.89	12.64	PASS	37
15	27550	1	#Mid	QPSK	18.97	11.72	PASS	37
15	27550	1	#Max	QPSK	18.67	11.42	PASS	37

15	27550	36	#0	QPSK	18.85	11.60	PASS	37
15	27550	36	#Mid	QPSK	18.86	11.61	PASS	37
15	27550	36	#Max	QPSK	17.72	10.47	PASS	37
15	27550	75	#0	QPSK	18.87	11.62	PASS	37
15	27550	1	#0	QAM16	19.90	12.65	PASS	37
15	27550	1	#Mid	QAM16	19.52	12.27	PASS	37
15	27550	1	#Max	QAM16	19.78	12.53	PASS	37
15	27550	36	#0	QAM16	19.66	12.41	PASS	37
15	27550	36	#Mid	QAM16	19.69	12.44	PASS	37
15	27550	36	#Max	QAM16	18.64	11.39	PASS	37
15	27550	75	#0	QAM16	19.20	11.95	PASS	37
15	27565	1	#0	QPSK	20.82	13.57	PASS	37
15	27565	1	#Mid	QPSK	20.60	13.35	PASS	37
15	27565	1	#Max	QPSK	21.07	13.82	PASS	37
15	27565	36	#0	QPSK	19.28	12.03	PASS	37
15	27565	36	#Mid	QPSK	19.30	12.05	PASS	37
15	27565	36	#Max	QPSK	19.55	12.30	PASS	37
15	27565	75	#0	QPSK	19.61	12.36	PASS	37
15	27565	1	#0	QAM16	19.55	12.30	PASS	37
15	27565	1	#Mid	QAM16	19.30	12.05	PASS	37
15	27565	1	#Max	QAM16	21.27	14.02	PASS	37
15	27565	36	#0	QAM16	20.46	13.21	PASS	37
15	27565	36	#Mid	QAM16	20.50	13.25	PASS	37
15	27565	36	#Max	QAM16	20.65	13.40	PASS	37
15	27565	75	#0	QAM16	20.49	13.24	PASS	37
3	27475	1	#0	64QAM	20.72	13.47	PASS	37
3	27475	1	#Mid	64QAM	20.80	13.55	PASS	37
3	27475	1	#Max	64QAM	20.69	13.44	PASS	37
3	27475	8	#0	64QAM	20.01	12.76	PASS	37
3	27475	8	#Mid	64QAM	20.01	12.76	PASS	37
3	27475	8	#Max	64QAM	20.45	13.20	PASS	37
3	27475	15	#0	64QAM	19.86	12.61	PASS	37
3	27550	1	#0	64QAM	21.34	14.09	PASS	37
3	27550	1	#Mid	64QAM	21.38	14.13	PASS	37
3	27550	1	#Max	64QAM	21.45	14.20	PASS	37
3	27550	8	#0	64QAM	20.02	12.77	PASS	37
3	27550	8	#Mid	64QAM	20.03	12.78	PASS	37
3	27550	8	#Max	64QAM	19.95	12.70	PASS	37
3	27550	15	#0	64QAM	19.94	12.69	PASS	37
3	27625	1	#0	64QAM	20.94	13.69	PASS	37
3	27625	1	#Mid	64QAM	20.78	13.53	PASS	37
3	27625	1	#Max	64QAM	20.89	13.64	PASS	37
3	27625	8	#0	64QAM	20.26	13.01	PASS	37

3	27625	8	#Mid	64QAM	20.24	12.99	PASS	37
3	27625	8	#Max	64QAM	20.70	13.45	PASS	37
3	27625	15	#0	64QAM	20.47	13.22	PASS	37
5	27485	1	#0	64QAM	20.95	13.70	PASS	37
5	27485	1	#Mid	64QAM	20.79	13.54	PASS	37
5	27485	1	#Max	64QAM	20.93	13.68	PASS	37
5	27485	12	#0	64QAM	19.89	12.64	PASS	37
5	27485	12	#Mid	64QAM	19.92	12.67	PASS	37
5	27485	12	#Max	64QAM	20.31	13.06	PASS	37
5	27485	25	#0	64QAM	20.30	13.05	PASS	37
5	27550	1	#0	64QAM	20.40	13.15	PASS	37
5	27550	1	#Mid	64QAM	20.40	13.15	PASS	37
5	27550	1	#Max	64QAM	20.50	13.25	PASS	37
5	27550	12	#0	64QAM	20.15	12.90	PASS	37
5	27550	12	#Mid	64QAM	20.11	12.86	PASS	37
5	27550	12	#Max	64QAM	20.13	12.88	PASS	37
5	27550	25	#0	64QAM	19.87	12.62	PASS	37
5	27615	1	#0	64QAM	21.05	13.80	PASS	37
5	27615	1	#Mid	64QAM	20.97	13.72	PASS	37
5	27615	1	#Max	64QAM	21.11	13.86	PASS	37
5	27615	12	#0	64QAM	20.03	12.78	PASS	37
5	27615	12	#Mid	64QAM	20.01	12.76	PASS	37
5	27615	12	#Max	64QAM	20.41	13.16	PASS	37
5	27615	25	#0	64QAM	20.06	12.81	PASS	37
10	27510	1	#0	64QAM	20.81	13.56	PASS	37
10	27510	1	#Mid	64QAM	20.70	13.45	PASS	37
10	27510	1	#Max	64QAM	20.65	13.40	PASS	37
10	27510	25	#0	64QAM	20.34	13.09	PASS	37
10	27510	25	#Mid	64QAM	20.33	13.08	PASS	37
10	27510	25	#Max	64QAM	19.99	12.74	PASS	37
10	27510	50	#0	64QAM	19.83	12.58	PASS	37
10	27550	1	#0	64QAM	21.19	13.94	PASS	37
10	27550	1	#Mid	64QAM	21.13	13.88	PASS	37
10	27550	1	#Max	64QAM	21.25	14.00	PASS	37
10	27550	25	#0	64QAM	19.99	12.74	PASS	37
10	27550	25	#Mid	64QAM	20.05	12.80	PASS	37
10	27550	25	#Max	64QAM	20.11	12.86	PASS	37
10	27550	50	#0	64QAM	19.83	12.58	PASS	37
10	27590	1	#0	64QAM	20.50	13.25	PASS	37
10	27590	1	#Mid	64QAM	20.56	13.31	PASS	37
10	27590	1	#Max	64QAM	20.54	13.29	PASS	37
10	27590	25	#0	64QAM	19.97	12.72	PASS	37
10	27590	25	#Mid	64QAM	19.99	12.74	PASS	37

10	27590	25	#Max	64QAM	20.04	12.79	PASS	37
10	27590	50	#0	64QAM	20.51	13.26	PASS	37
15	27535	1	#0	64QAM	20.87	13.62	PASS	37
15	27535	1	#Mid	64QAM	20.74	13.49	PASS	37
15	27535	1	#Max	64QAM	20.81	13.56	PASS	37
15	27535	36	#0	64QAM	19.99	12.74	PASS	37
15	27535	36	#Mid	64QAM	19.91	12.66	PASS	37
15	27535	36	#Max	64QAM	20.09	12.84	PASS	37
15	27535	75	#0	64QAM	20.04	12.79	PASS	37
15	27550	1	#0	64QAM	21.43	14.18	PASS	37
15	27550	1	#Mid	64QAM	21.27	14.02	PASS	37
15	27550	1	#Max	64QAM	21.57	14.32	PASS	37
15	27550	36	#0	64QAM	19.75	12.50	PASS	37
15	27550	36	#Mid	64QAM	19.77	12.52	PASS	37
15	27550	36	#Max	64QAM	20.42	13.17	PASS	37
15	27550	75	#0	64QAM	19.91	12.66	PASS	37
15	27565	1	#0	64QAM	20.79	13.54	PASS	37
15	27565	1	#Mid	64QAM	20.91	13.66	PASS	37
15	27565	1	#Max	64QAM	20.92	13.67	PASS	37
15	27565	36	#0	64QAM	20.16	12.91	PASS	37
15	27565	36	#Mid	64QAM	20.08	12.83	PASS	37
15	27565	36	#Max	64QAM	20.17	12.92	PASS	37
15	27565	75	#0	64QAM	20.14	12.89	PASS	37

5.2 Occupied Bandwidth

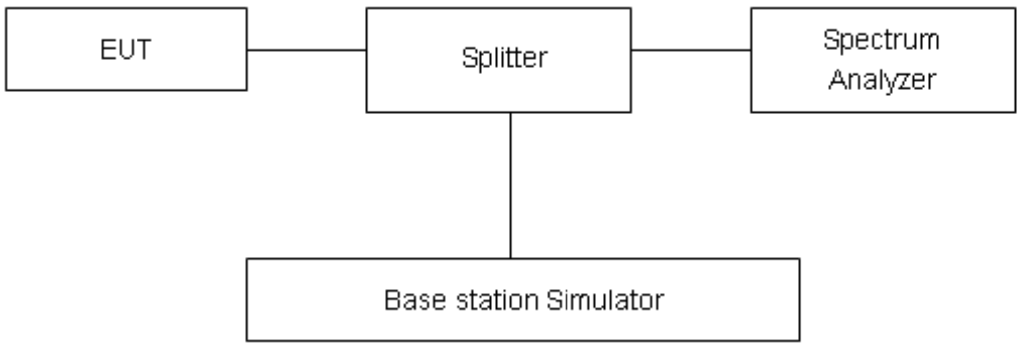
Ambient condition

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 ismeasured using spectrum analyzer.
RBW is set to 62 kHz, VBW is set to 200 kHz for LTE Band 28 subset 1/ subset 2 (3MHz).
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 28 subset 1/ subset 2 (5MHz).
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 28 subset 1/ subset 2 (10MHz).
RBW is set to 300 kHz, VBW is set to 910 kHz for LTE Band 28 subset 2 (15MHz).
99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots areincluded on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

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

Test Result

LTE Band 28 subset 1:

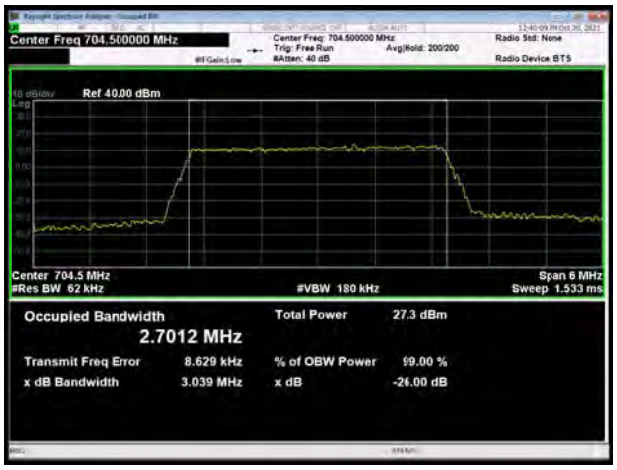
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	3	27225	704.5	2.701	3.039
			27275	709	2.698	3.001
			27325	714.5	2.715	3.031
		5	27235	705.5	4.511	4.961
			27275	709	4.502	4.953
			27315	713.5	4.498	4.957
		10	27260	708	8.949	9.797
			27275	709	8.942	9.820
			27290	711	8.968	9.848
	16QAM	3	27225	704.5	2.700	3.060
			27275	709	2.714	3.056
			27325	714.5	2.717	3.080
		5	27235	705.5	4.493	4.913
			27275	709	4.514	4.907
			27315	713.5	4.522	4.991
		10	27260	708	8.920	9.783
			27275	709	8.955	9.827
			27290	711	8.973	9.913
	64QAM	3	27225	704.5	2.708	3.037
			27275	709	2.698	3.035
			27325	714.5	2.713	3.052
		5	27235	705.5	4.511	4.935
			27275	709	4.500	4.950
			27315	713.5	4.511	4.969
		10	27260	708	8.964	9.770
			27275	709	8.952	9.781
			27290	711	8.974	9.761

LTE Band 28 subset 2:

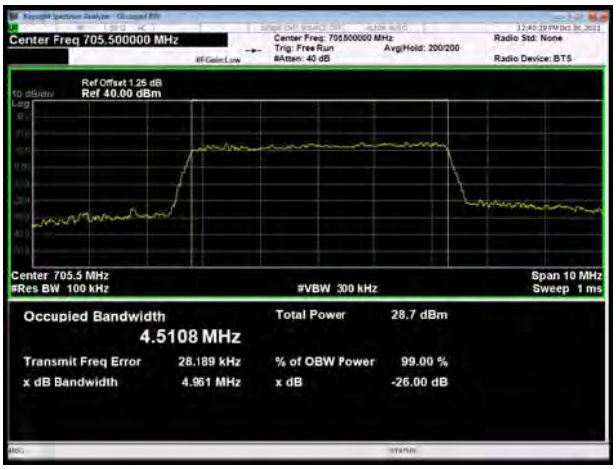
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	3	27475	729.5	2.708	3.038
			27550	737	2.706	3.041
			27625	744.5	2.705	3.035
		5	27485	730.5	4.515	5.007
			27550	737	4.519	4.911
			27615	743.5	4.510	4.934
		10	27510	733	8.978	9.812
			27550	737	8.977	9.864
			27590	741	9.041	9.919
		15	27535	735.5	13.514	14.860
			27550	737	13.478	14.620
			27565	738.5	13.542	14.790
	16QAM	3	27475	729.5	2.707	3.076
			27550	737	2.695	3.040
			27625	744.5	2.694	3.029
		5	27485	730.5	4.510	4.920
			27550	737	4.522	4.985
			27615	743.5	4.516	4.992
		10	27510	733	8.973	9.844
			27550	737	8.974	9.897
			27590	741	9.028	9.957
		15	27535	735.5	13.486	14.750
			27550	737	13.487	14.850
			27565	738.5	13.487	14.660
	64QAM	3	27475	729.5	2.708	3.055
			27550	737	2.713	3.029
			27625	744.5	2.701	3.042
		5	27485	730.5	4.498	4.911
			27550	737	4.520	4.983
			27615	743.5	4.527	5.002
		10	27510	733	9.003	9.934
			27550	737	8.999	9.912
			27590	741	8.983	9.862
		15	27535	735.5	13.452	14.870
			27550	737	13.442	14.840
			27565	738.5	13.501	14.830

LTE Band 28 subset 1:

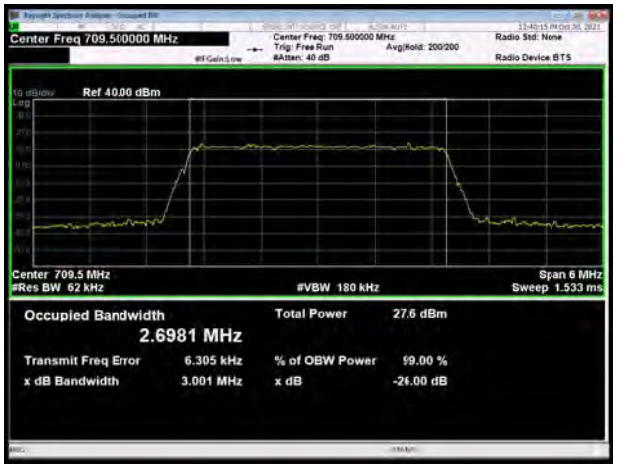
LTE Band 28 QPSK 3MHz CH-Low



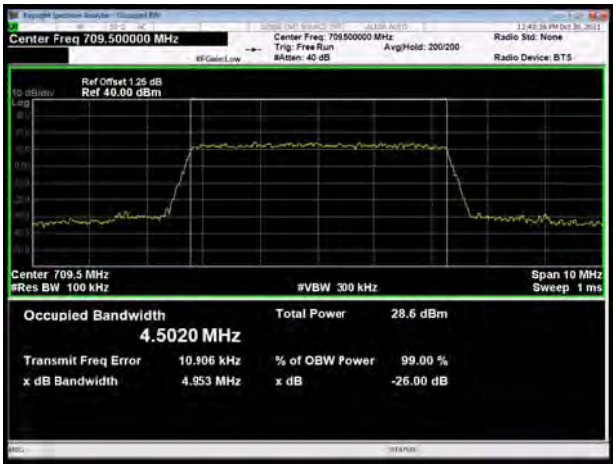
LTE Band 28 QPSK 5MHz CH-Low



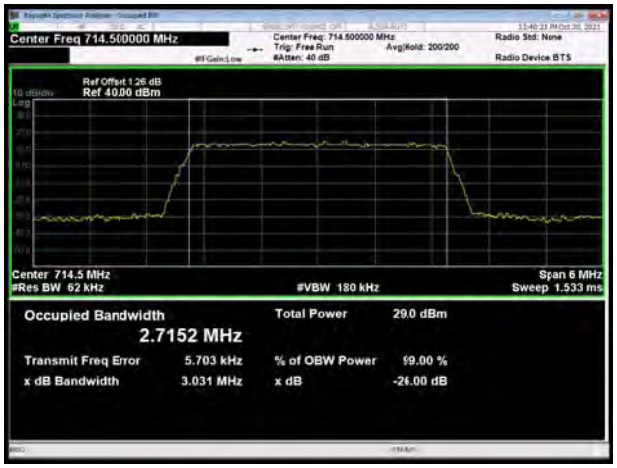
LTE Band 28 QPSK 3MHz CH-Middle



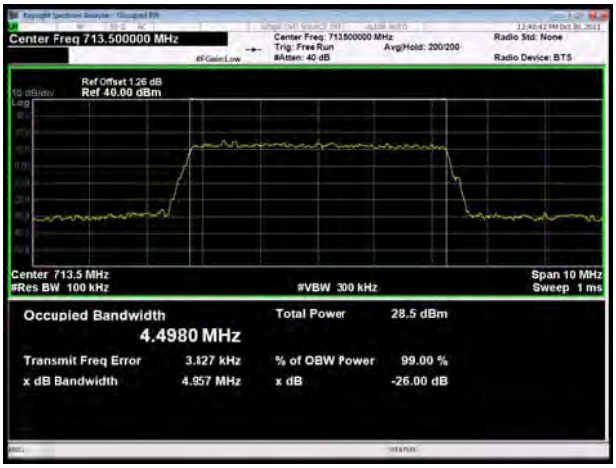
LTE Band 28 QPSK 5MHz CH-Middle



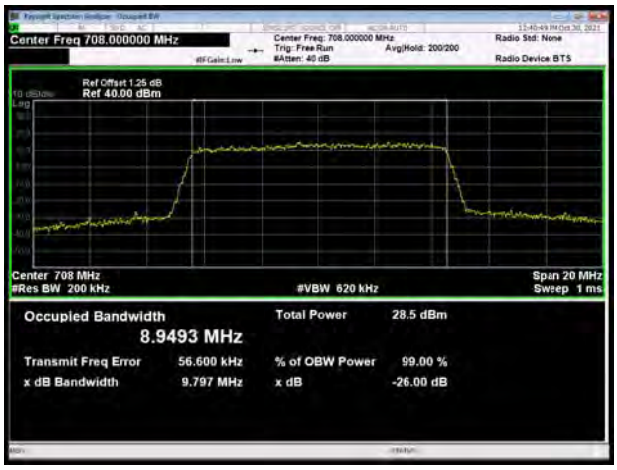
LTE Band 28 QPSK 3MHz CH-High



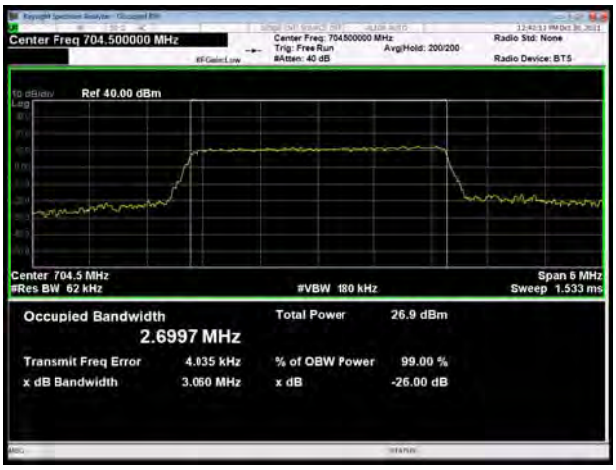
LTE Band 28 QPSK 5MHz CH-High



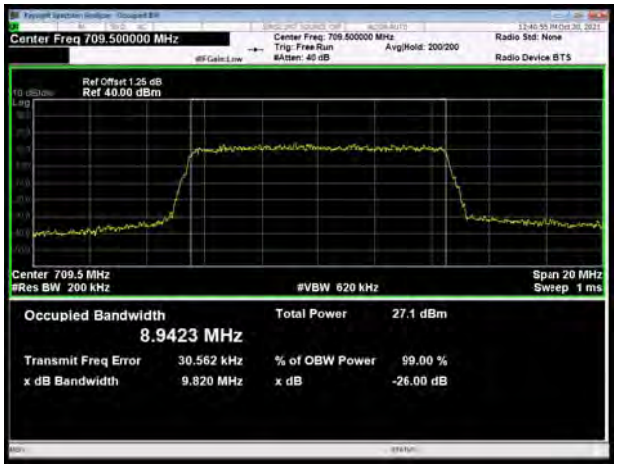
LTE Band 28 QPSK 10MHz CH-Low



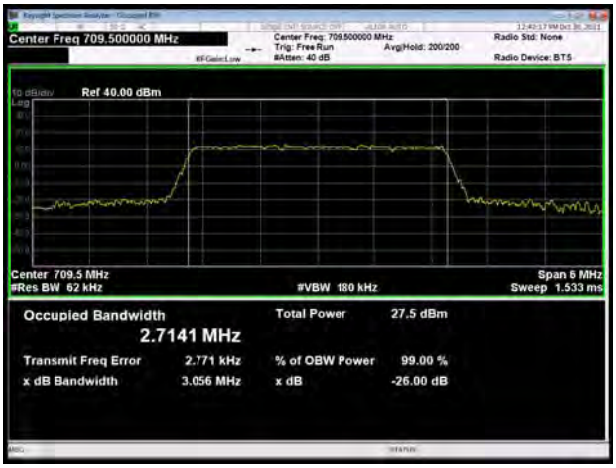
LTE Band 28 16QAM 3MHz CH-Low



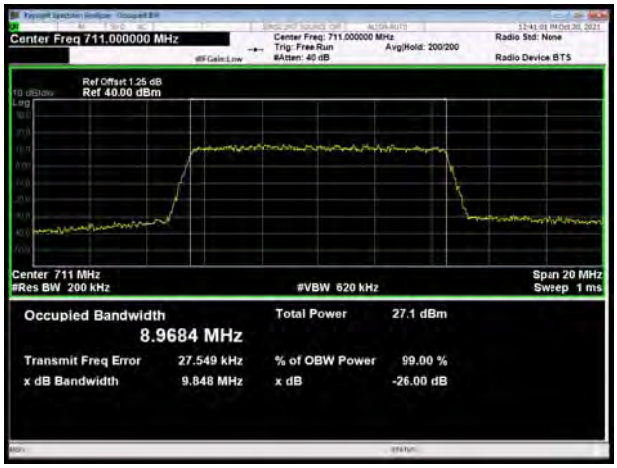
LTE Band 28 QPSK 10MHz CH-Middle



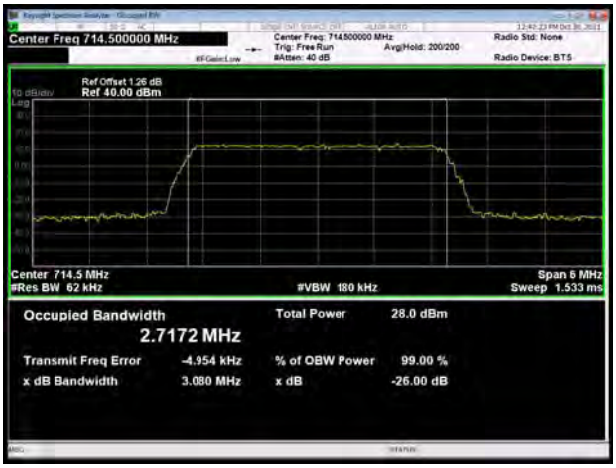
LTE Band 28 16QAM 3MHz CH-Middle



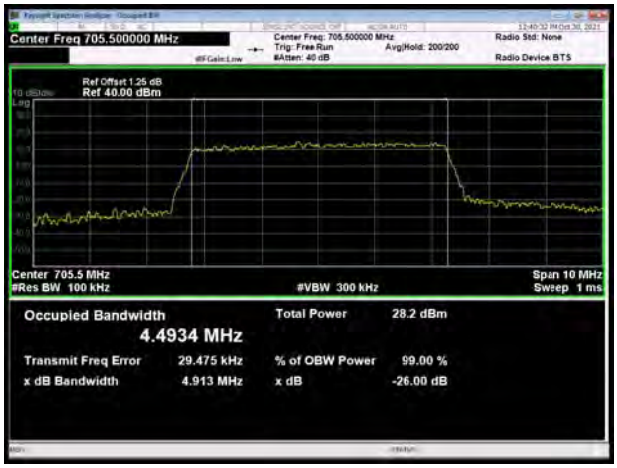
LTE Band 28 QPSK 10MHz CH-High



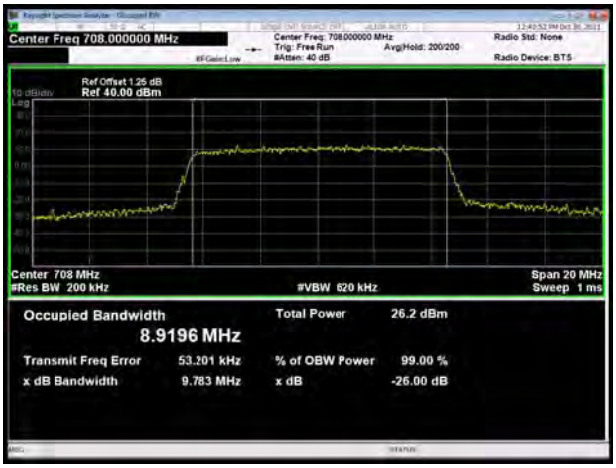
LTE Band 28 16QAM 3MHz CH-High



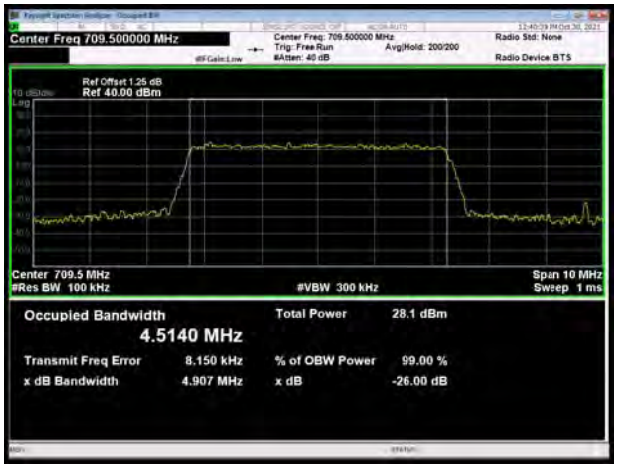
LTE Band 28 16QAM 5MHz CH-Low



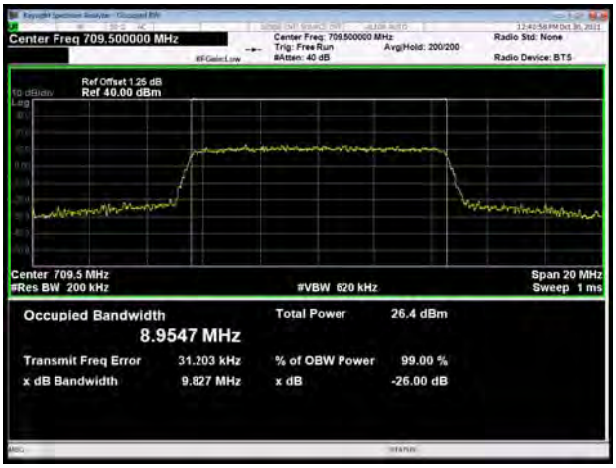
LTE Band 28 16QAM 10MHz CH-Low



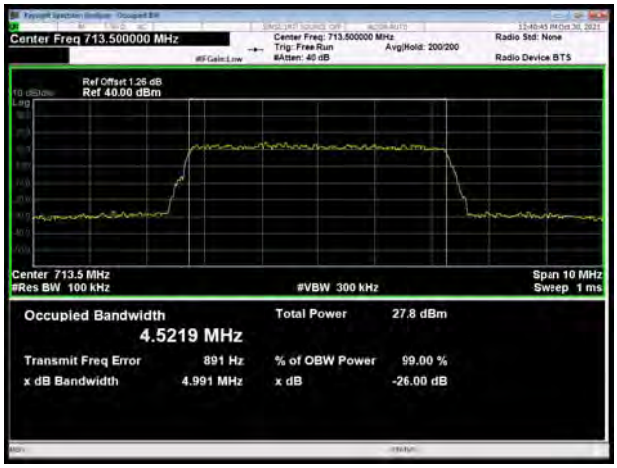
LTE Band 28 16QAM 5MHz CH-Middle



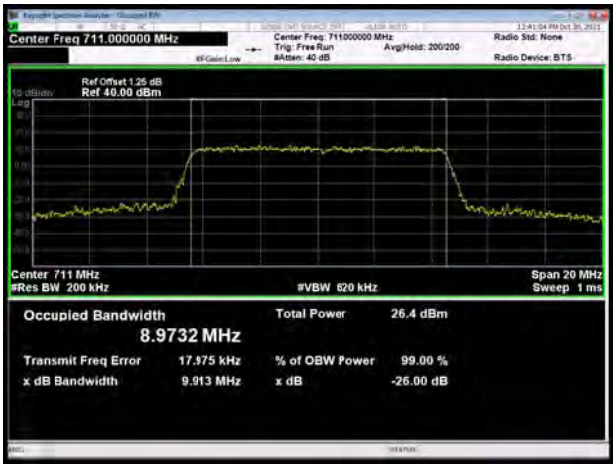
LTE Band 28 16QAM 10MHz CH-Middle



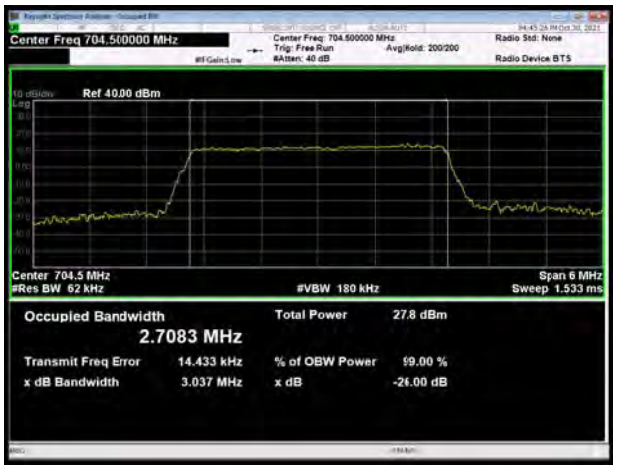
LTE Band 28 16QAM 5MHz CH-High



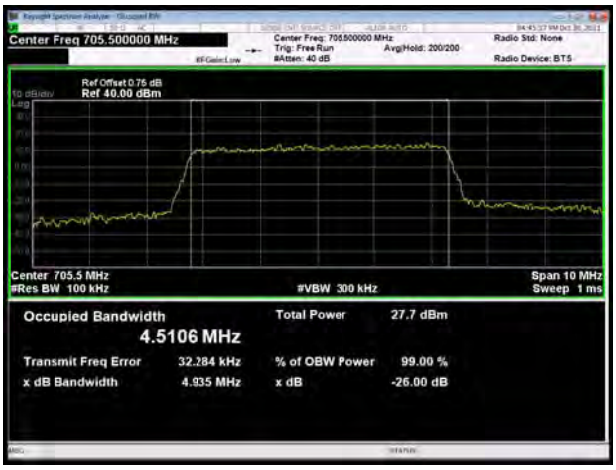
LTE Band 28 16QAM 10MHz CH-High



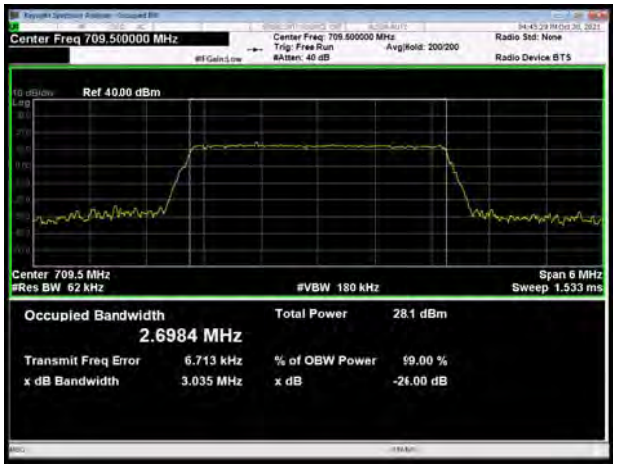
LTE Band 28 64QAM3MHz CH-Low



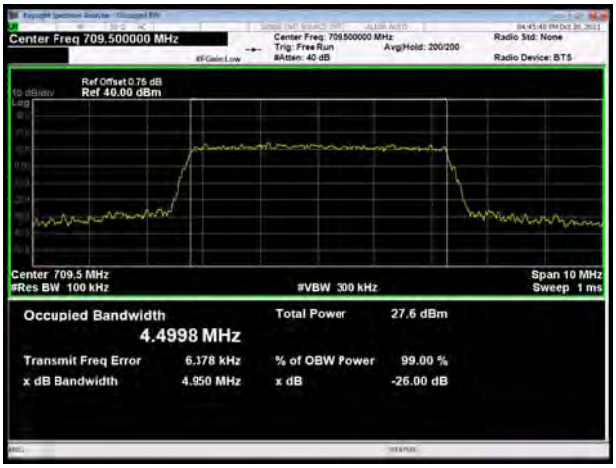
LTE Band 28 64QAM5MHz CH-Low



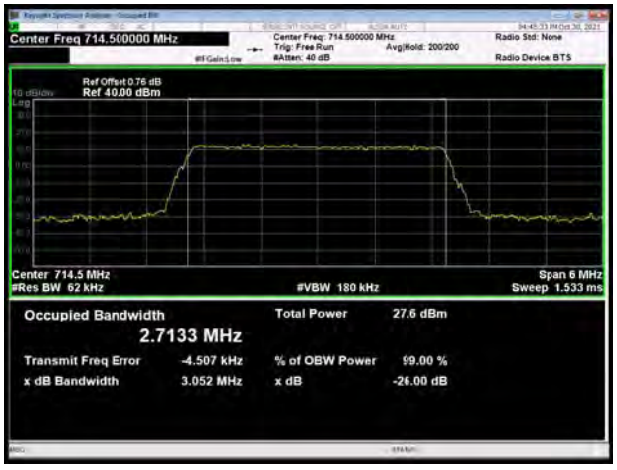
LTE Band 28 64QAM3MHz CH-Middle



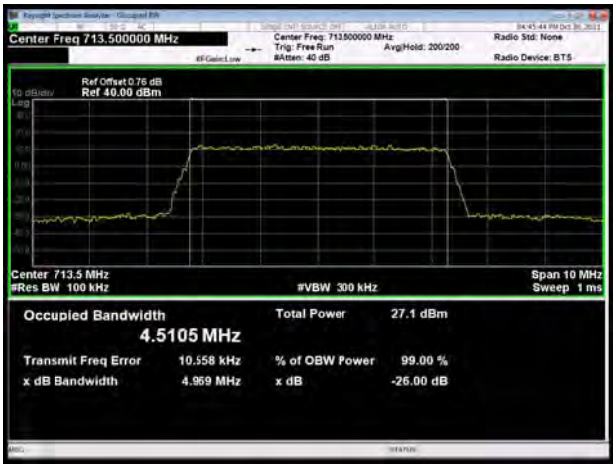
LTE Band 28 64QAM5MHz CH-Middle



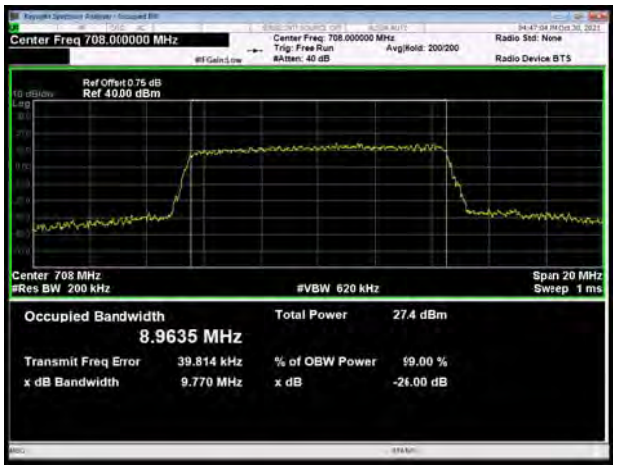
LTE Band 28 64QAM3MHz CH-High



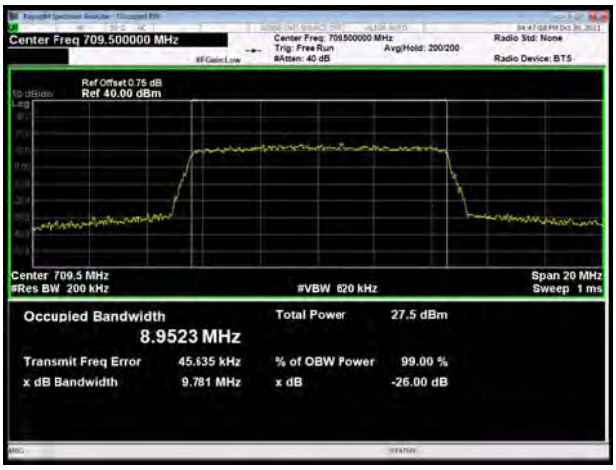
LTE Band 28 64QAM5MHz CH-High



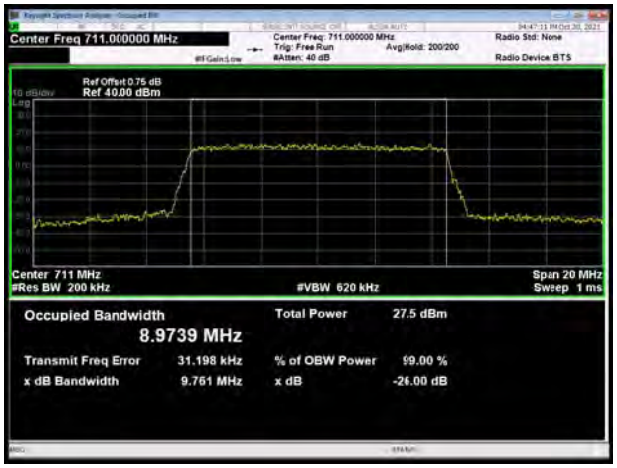
LTE Band 28 64QAM10MHz CH-Low



LTE Band 28 64QAM10MHz CH-Middle

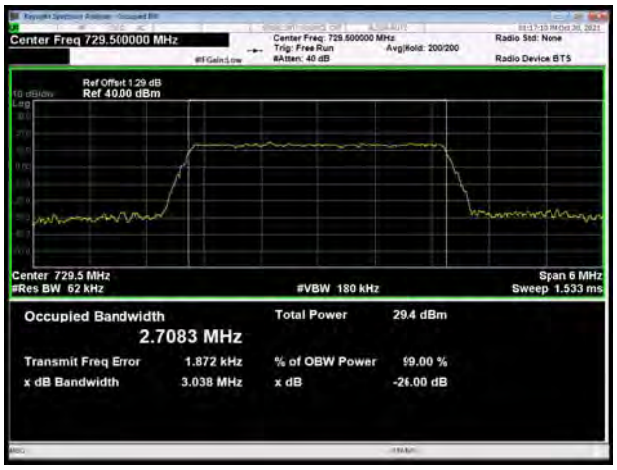


LTE Band 28 64QAM10MHz CH-High

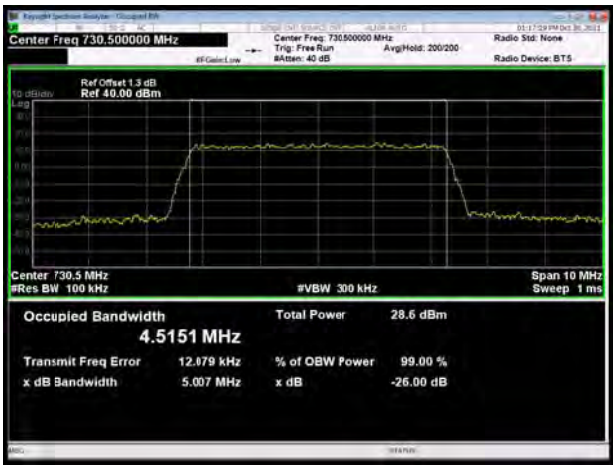


LTE Band 28 subset 2:

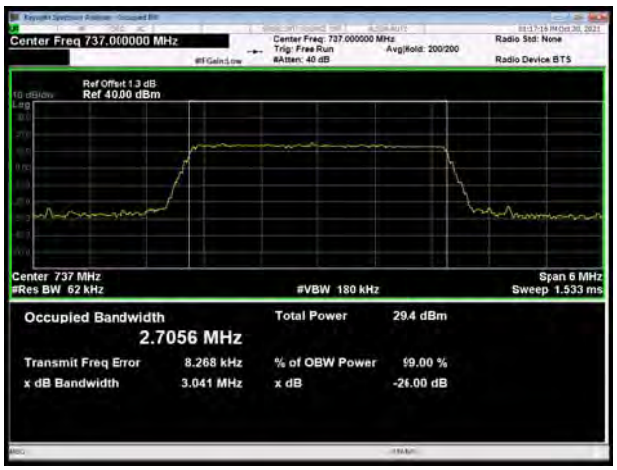
LTE Band 28 QPSK 3MHz CH-Low



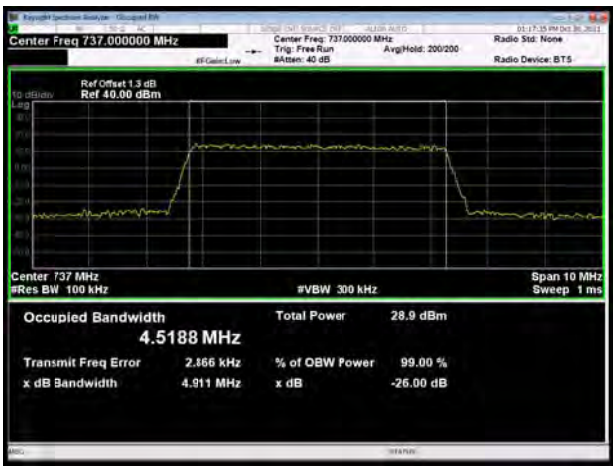
LTE Band 28 QPSK 5MHz CH-Low



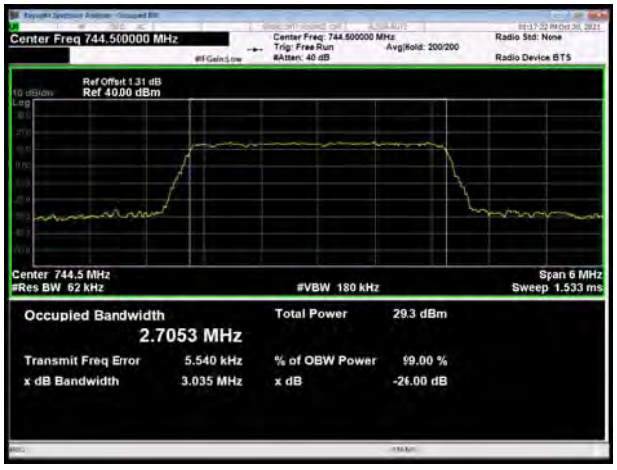
LTE Band 28 QPSK 3MHz CH-Middle



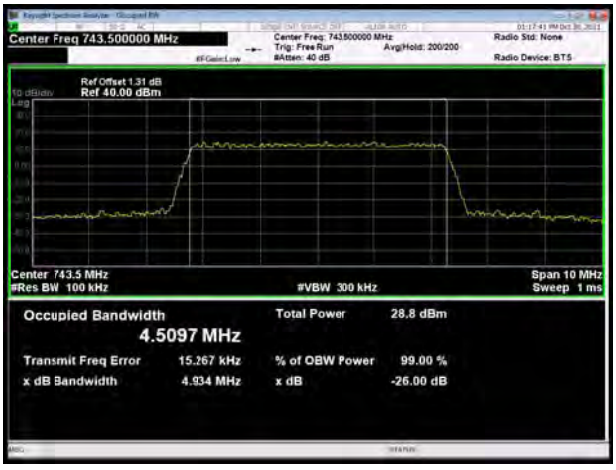
LTE Band 28 QPSK 5MHz CH-Middle



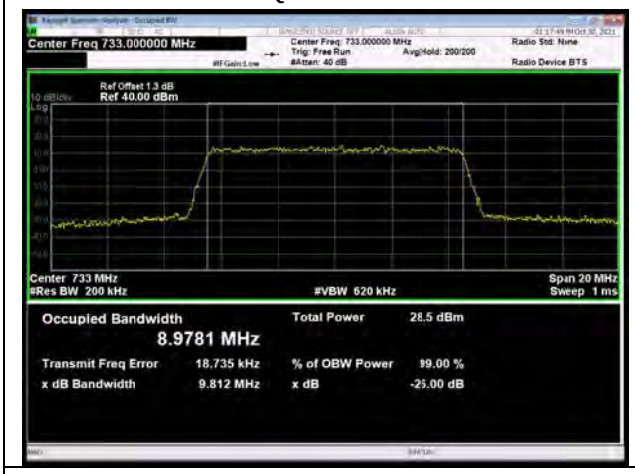
LTE Band 28 QPSK 3MHz CH-High



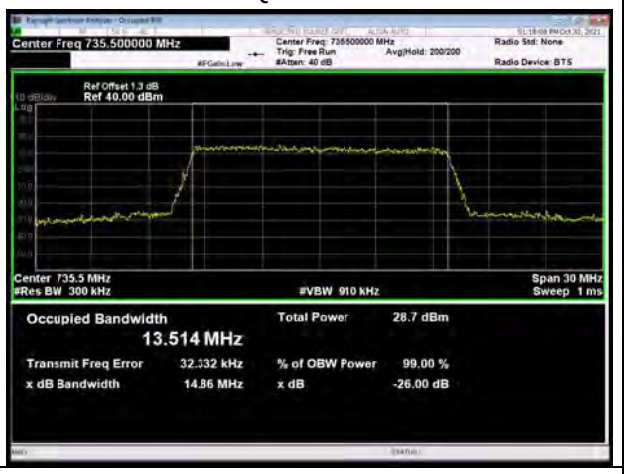
LTE Band 28 QPSK 5MHz CH-High



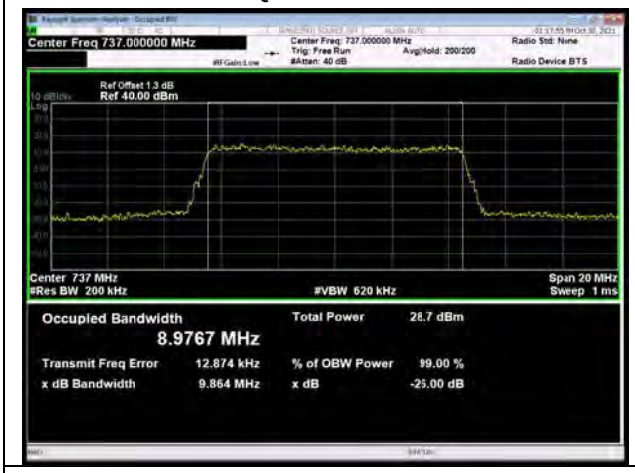
LTE Band 28 QPSK 10MHz CH-Low



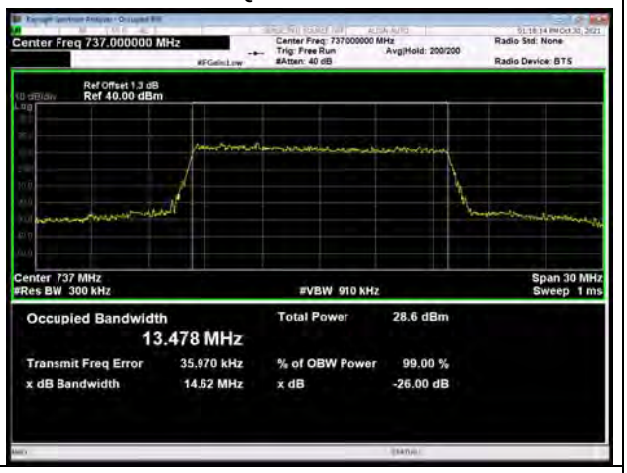
LTE Band 28 QPSK 15MHz CH-Low



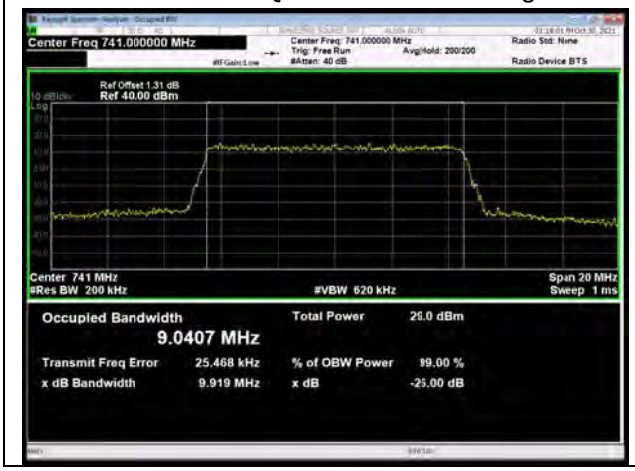
LTE Band 28 QPSK 10MHz CH-Middle



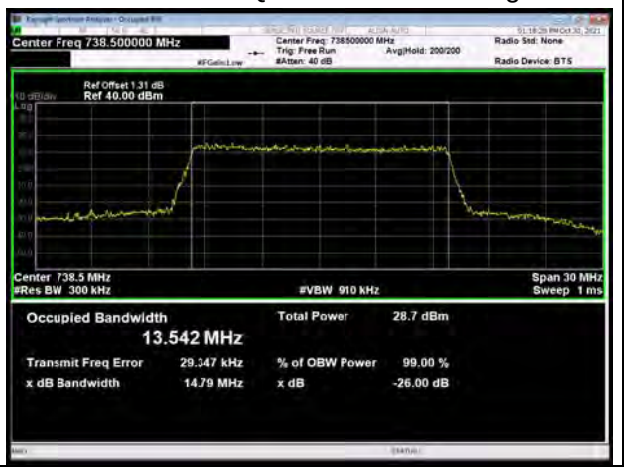
LTE Band 28 QPSK 15MHz CH-Middle



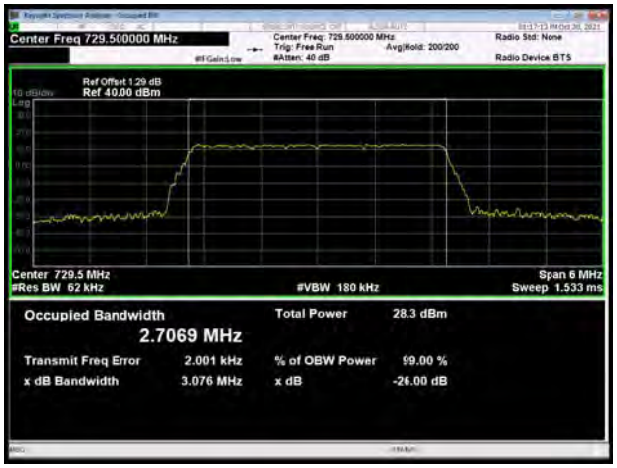
LTE Band 28 QPSK 10MHz CH-High



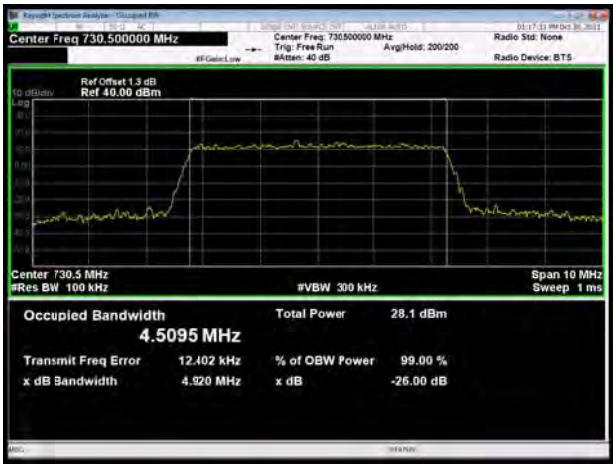
LTE Band 28 QPSK 15MHz CH-High



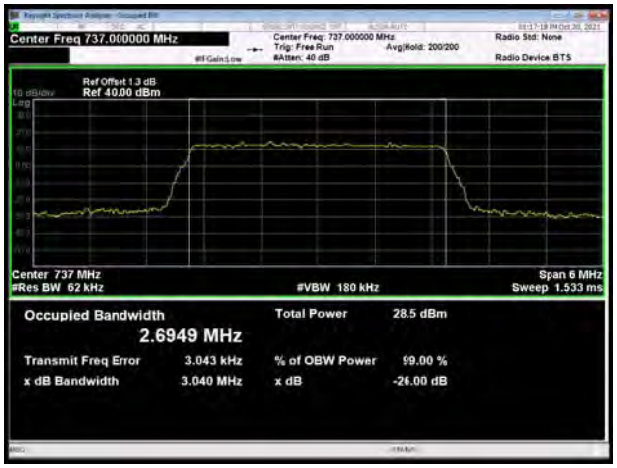
LTE Band 28 16QAM 3MHz CH-Low



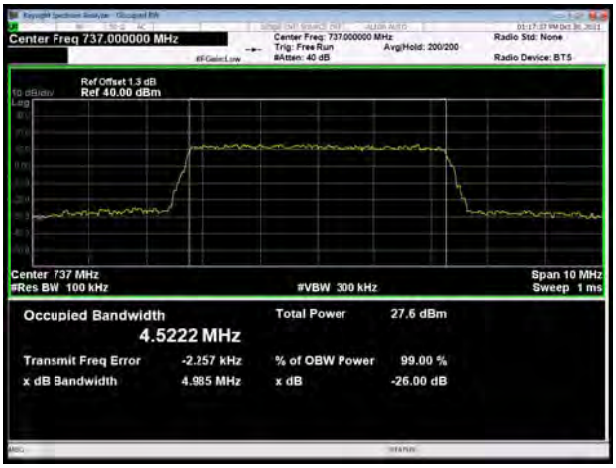
LTE Band 28 16QAM 5MHz CH-Low



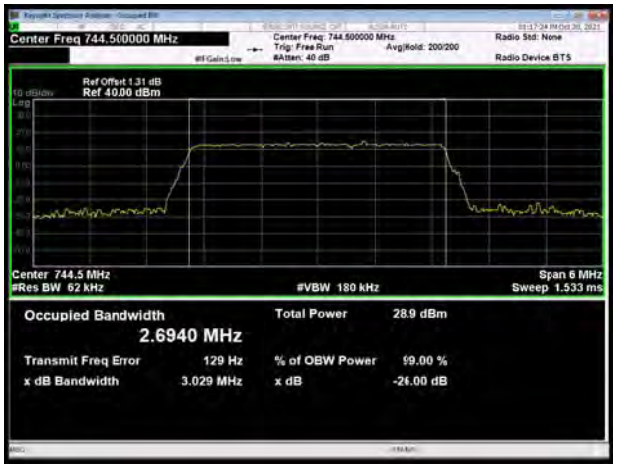
LTE Band 28 16QAM 3MHz CH-Middle



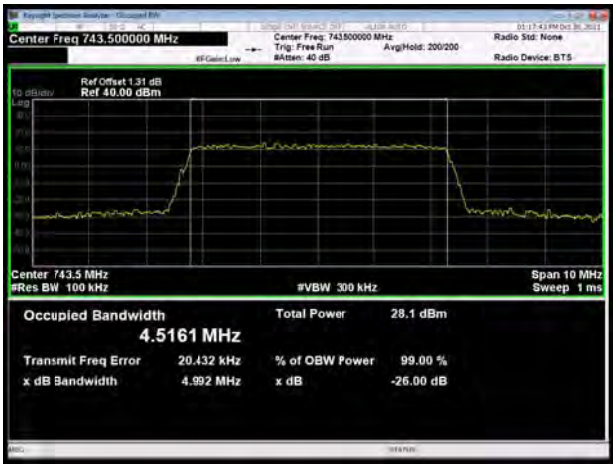
LTE Band 28 16QAM 5MHz CH-Middle



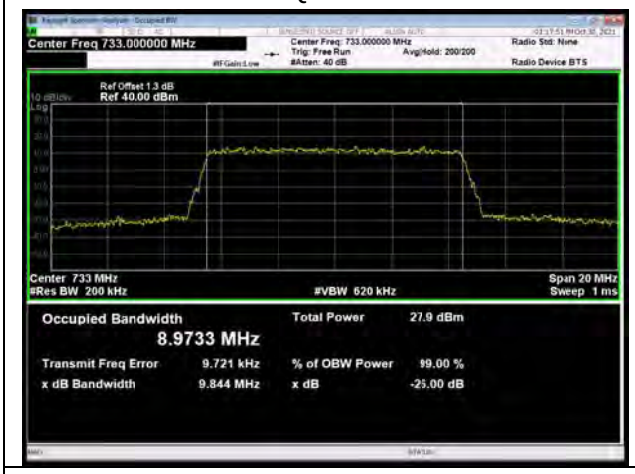
LTE Band 28 16QAM 3MHz CH-High



LTE Band 28 16QAM 5MHz CH-High

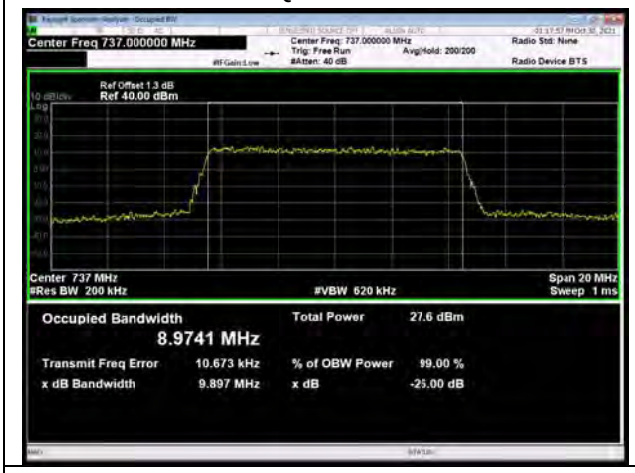


LTE Band 28 16QAM 10MHz CH-Low

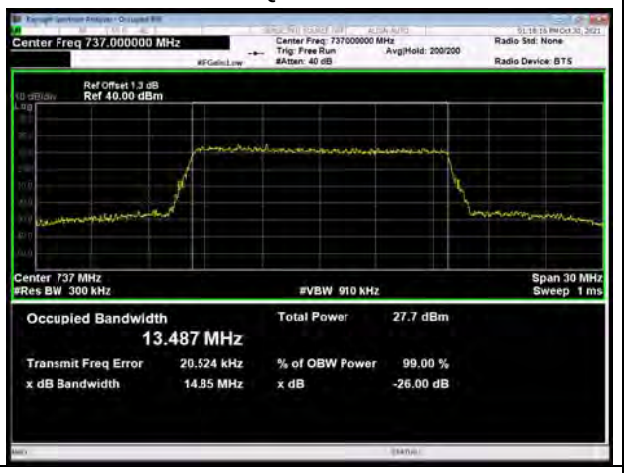


LTE Band 28 16QAM 15MHz CH-Low

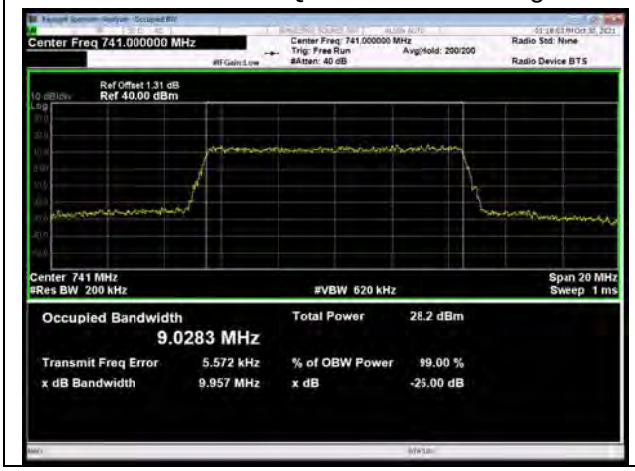
LTE Band 28 16QAM 10MHz CH-Middle



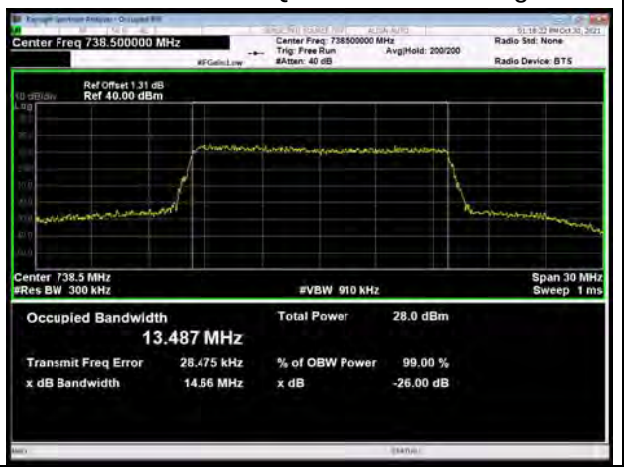
LTE Band 28 16QAM 15MHz CH-Middle



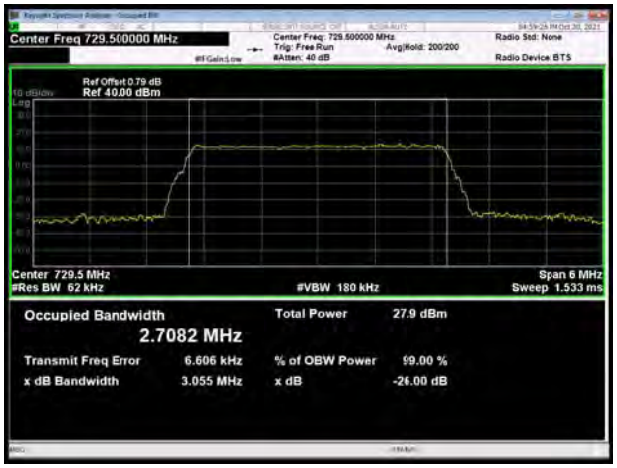
LTE Band 28 16QAM 10MHz CH-High



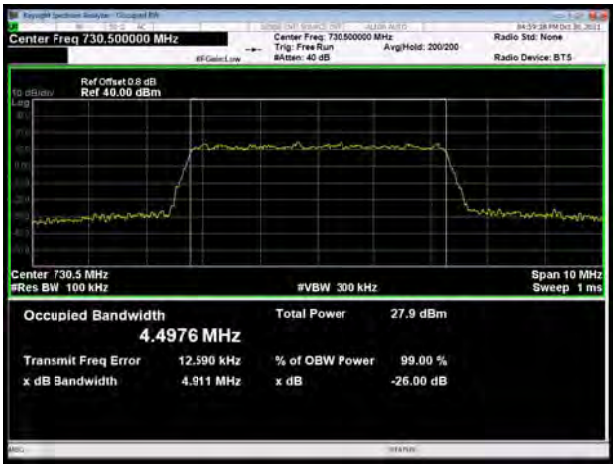
LTE Band 28 16QAM 15MHz CH-High



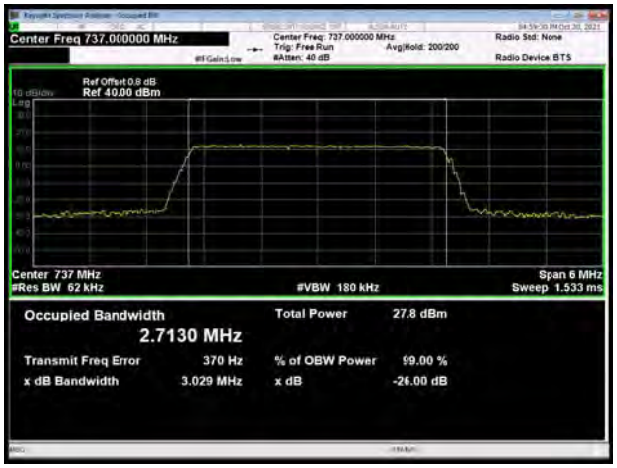
LTE Band 28 64QAM 3MHz CH-Low



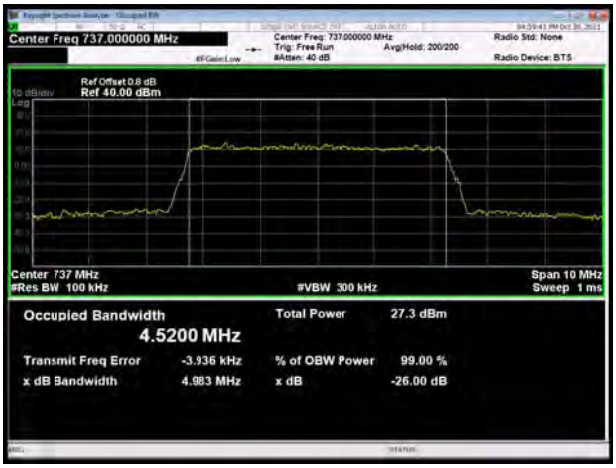
LTE Band 28 64QAM 5MHz CH-Low



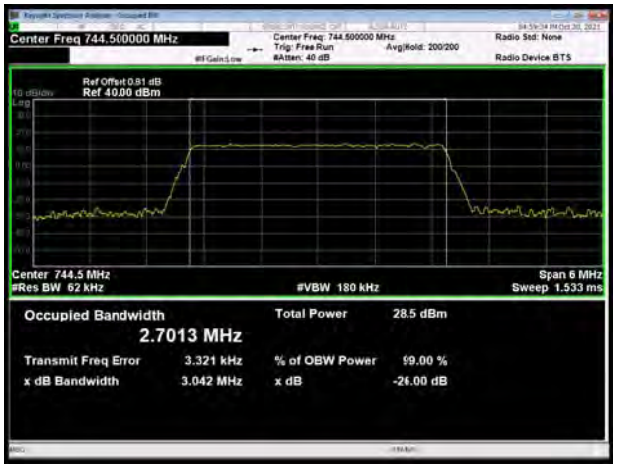
LTE Band 28 64QAM 3MHz CH-Middle



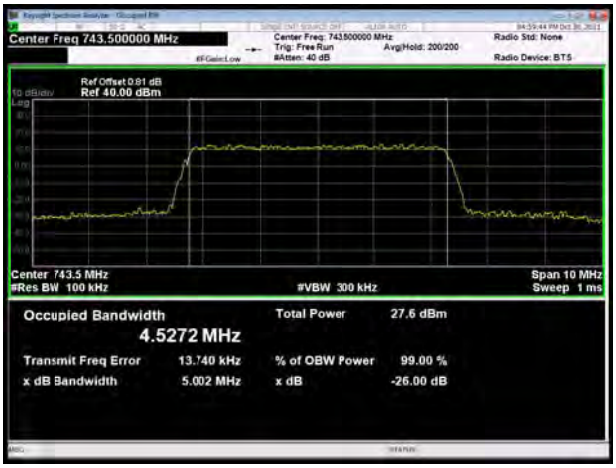
LTE Band 28 64QAM 5MHz CH-Middle



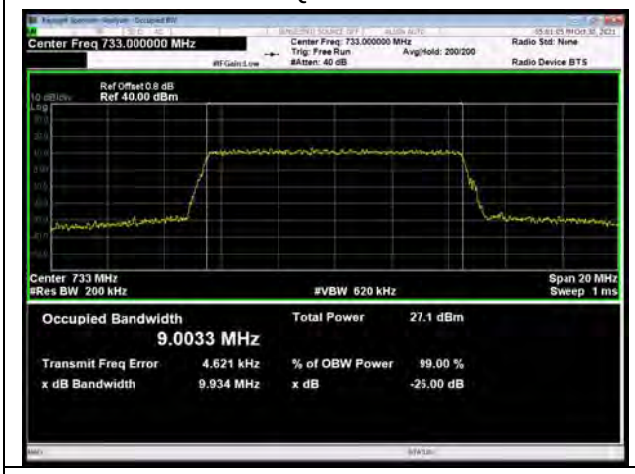
LTE Band 28 64QAM 3MHz CH-High



LTE Band 28 64QAM 5MHz CH-High

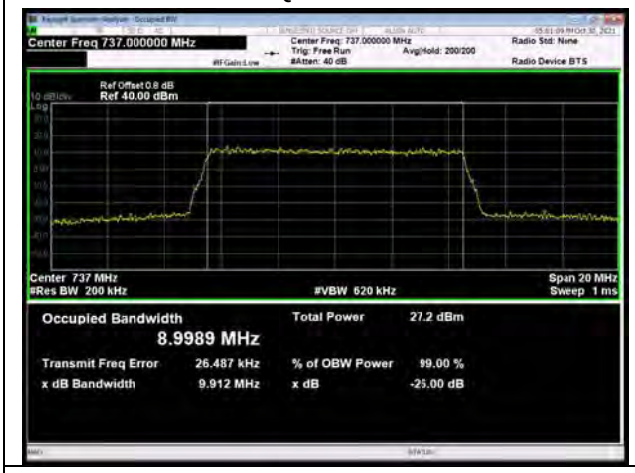


LTE Band 28 64QAM 10MHz CH-Low

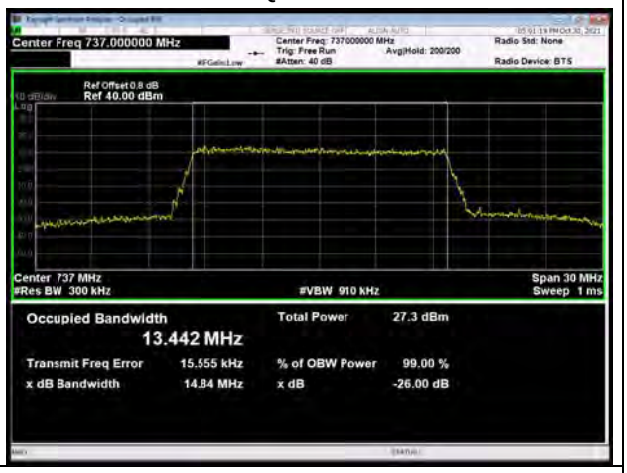


LTE Band 28 64QAM 15MHz CH-Low

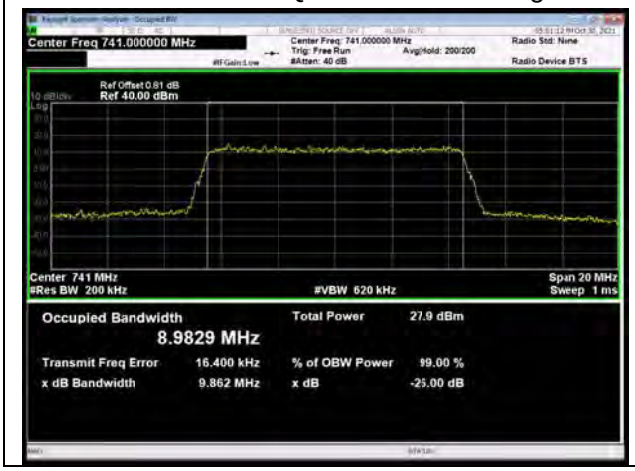
LTE Band 28 64QAM 10MHz CH-Middle



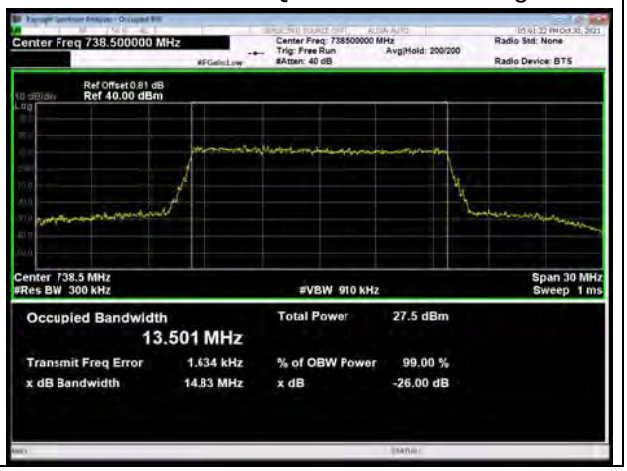
LTE Band 28 64QAM 15MHz CH-Middle



LTE Band 28 64QAM 10MHz CH-High



LTE Band 28 64QAM 15MHz CH-High



5.3 Band Edge Compliance

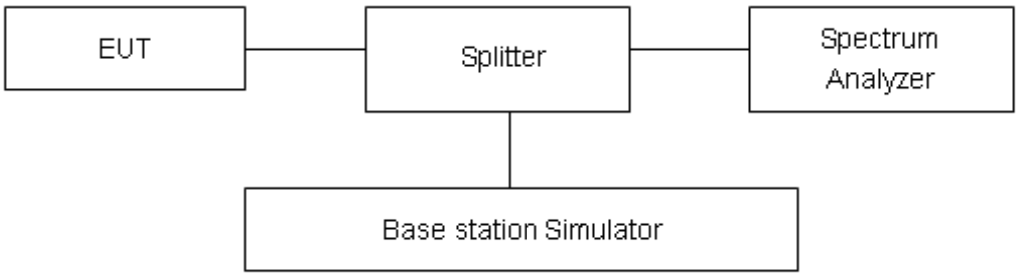
Ambient condition

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 D01v03r01 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 30 kHz, VBW is set to100kHz for LTE Band 28 onspectrumanalyzer.
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(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee'sfrequency 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 measurementinstrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediatelyoutside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

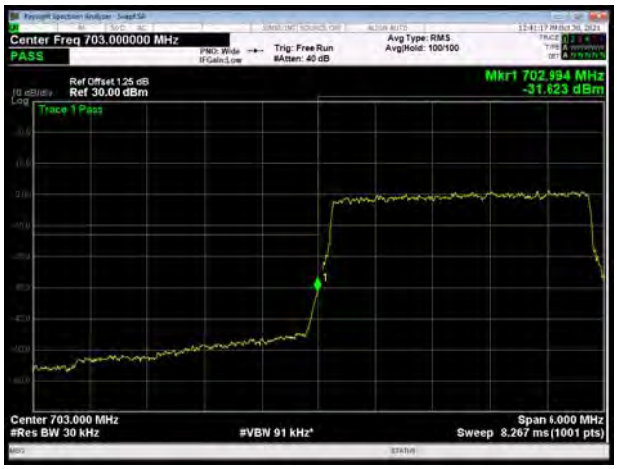
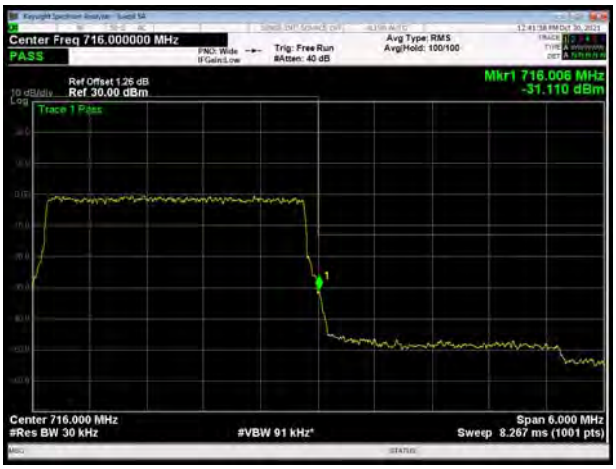
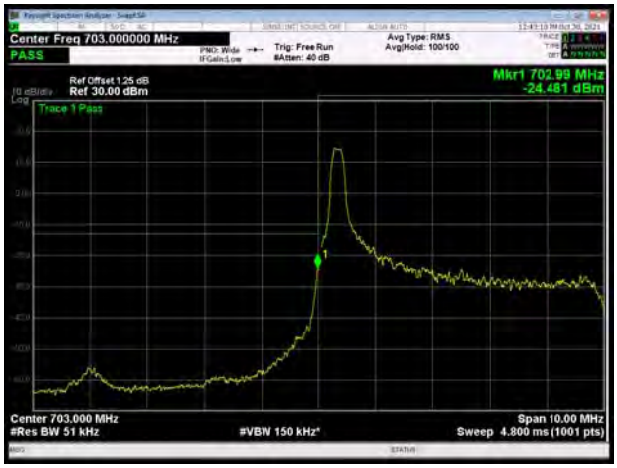
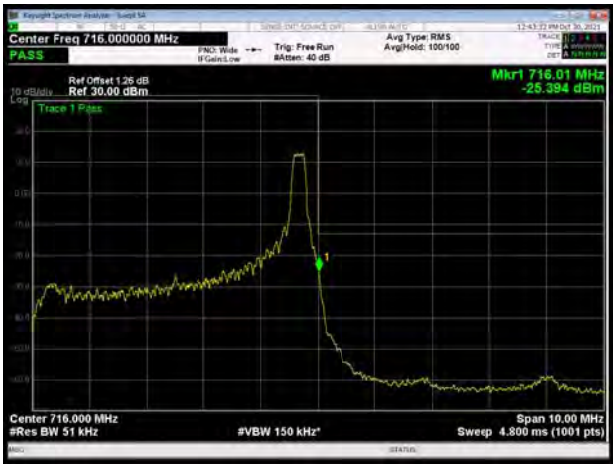
Measurement Uncertainty

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

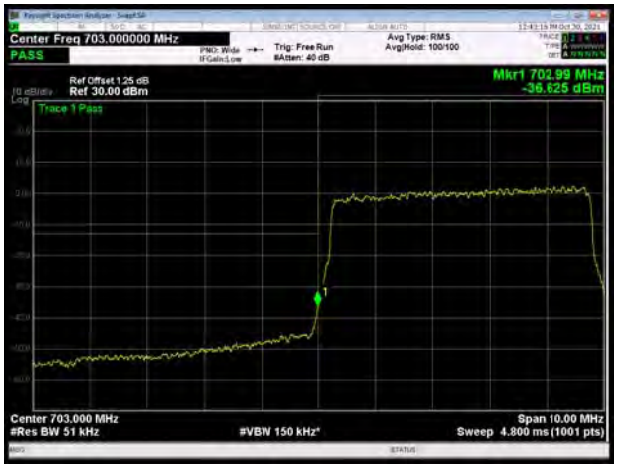
Test Result

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

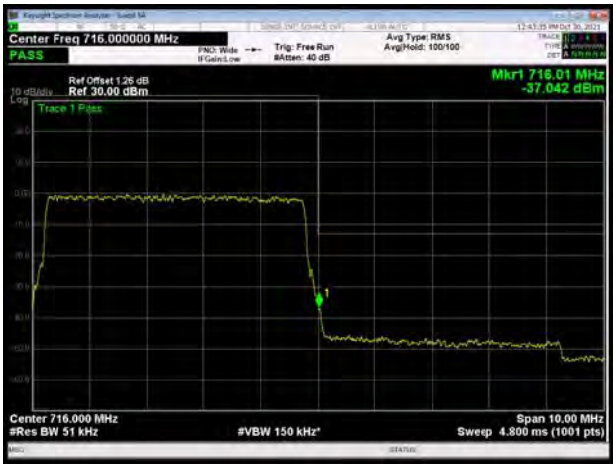
LTE Band 28 subset 1:

LTE Band 28 QPSK 3MHz CH-Low, 1 RB	LTE Band 28 QPSK 3MHz CH-High, 1 RB
	
LTE Band 28 QPSK 3MHz CH-Low, 100%RB	LTE Band 28 QPSK 3MHz CH-High, 100%RB
	
LTE Band 28 QPSK 5MHz CH-Low, 1 RB	LTE Band 28 QPSK 5MHz CH-High, 1 RB
	

LTE Band 28 QPSK 5MHz CH-Low, 100%RB



LTE Band 28 QPSK 5MHz CH-High, 100%RB



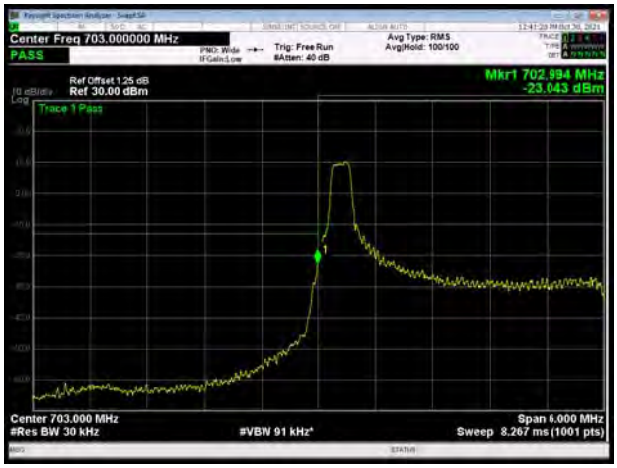
LTE Band 28 QPSK 10MHz CH-Low, 1 RB

LTE Band 28 QPSK 10MHz CH-High, 1 RB

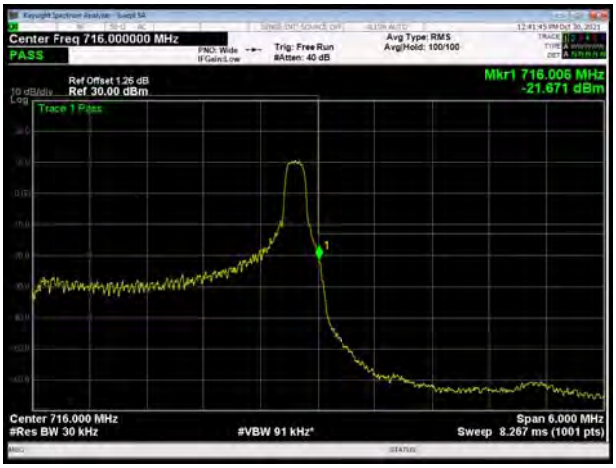
LTE Band 28 QPSK 10MHz CH-Low, 100%RB

LTE Band 28 QPSK 10MHz CH-High, 100%RB

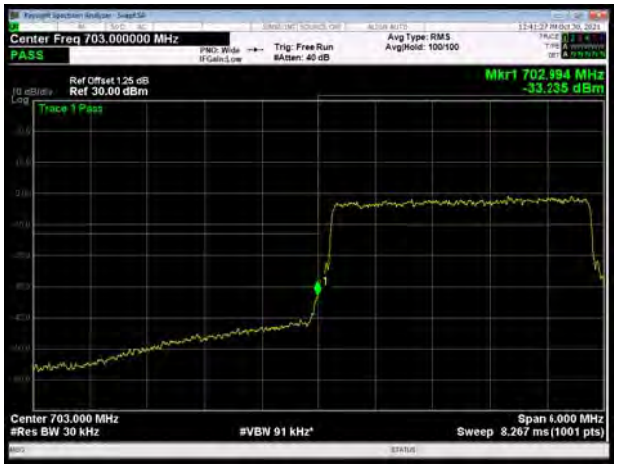
LTE Band 28 16QAM 3MHz CH-Low, 1 RB



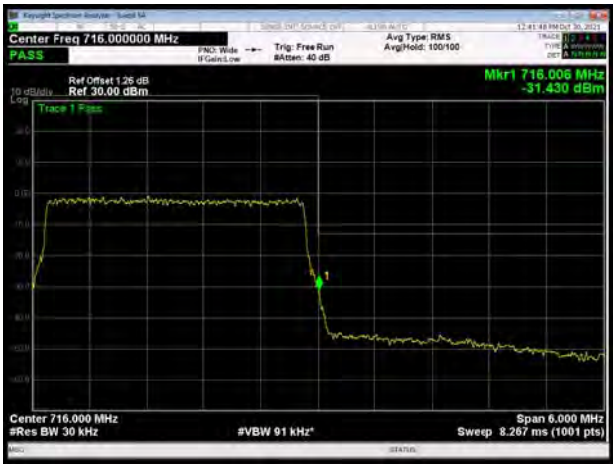
LTE Band 28 16QAM 3MHz CH-High, 1 RB



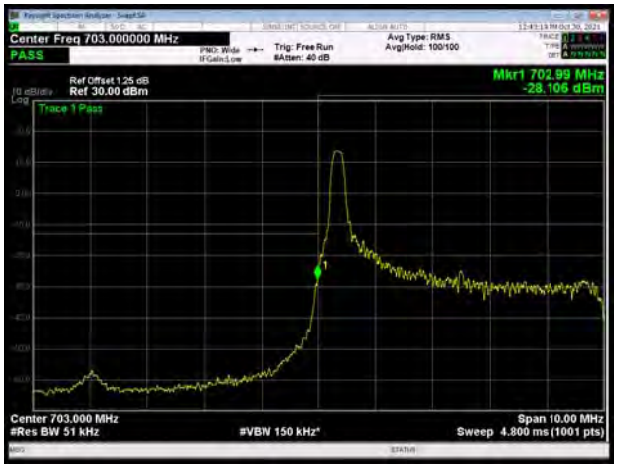
LTE Band 28 16QAM 3MHz CH-Low, 100%RB



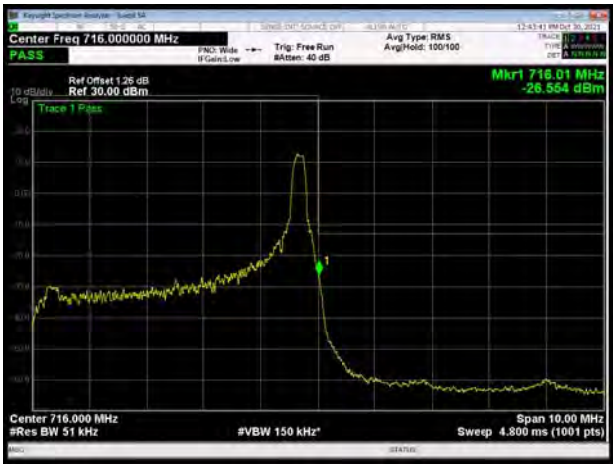
LTE Band 28 16QAM 3MHz CH-High, 100%RB



LTE Band 28 16QAM 5MHz CH-Low, 1 RB



LTE Band 28 16QAM 5MHz CH-High, 1 RB

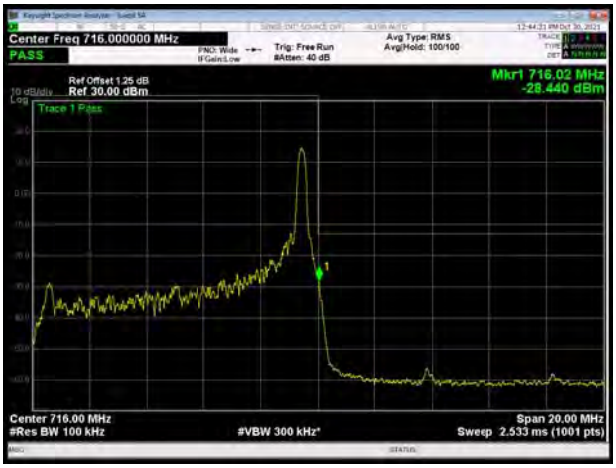


LTE Band 28 16QAM 5MHz CH-Low, 100%RB

LTE Band 28 16QAM 5MHz CH-High, 100%RB

LTE Band 28 16QAM 10MHz CH-Low, 1 RB

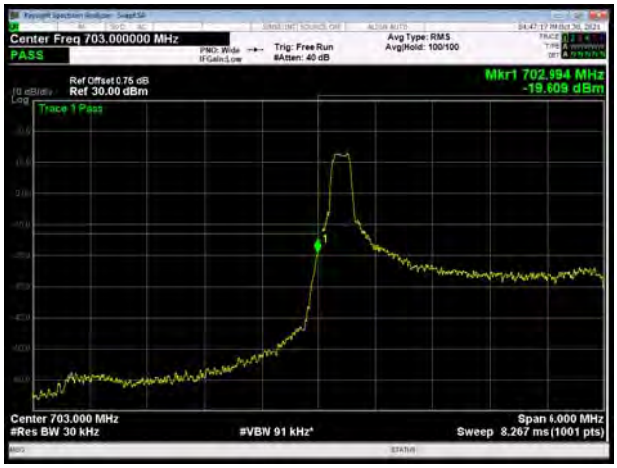
LTE Band 28 16QAM 10MHz CH-High, 1 RB



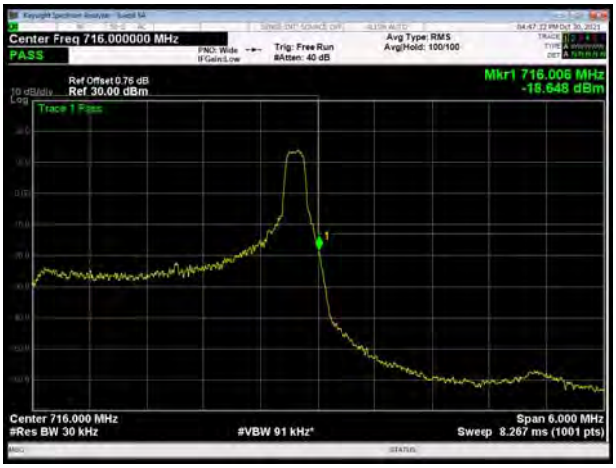
LTE Band 28 16QAM 10MHz CH-Low, 100%RB

LTE Band 28 16QAM 10MHz CH-High, 100%RB

LTE Band 28 64QAM 3MHz CH-Low, 1 RB



LTE Band 28 64QAM 3MHz CH-High, 1 RB

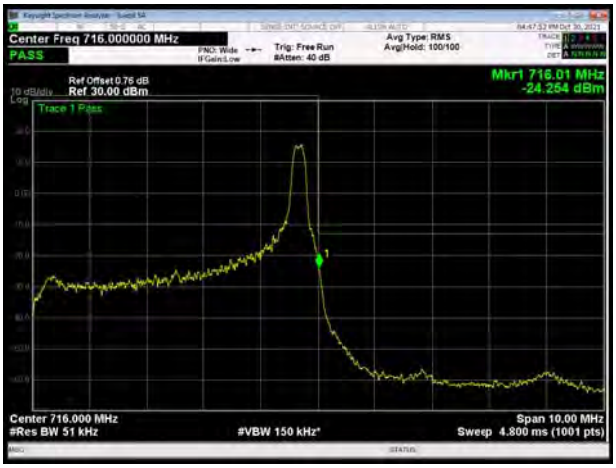


LTE Band 28 64QAM 3MHz CH-Low, 100%RB

LTE Band 28 64QAM 3MHz CH-High, 100%RB

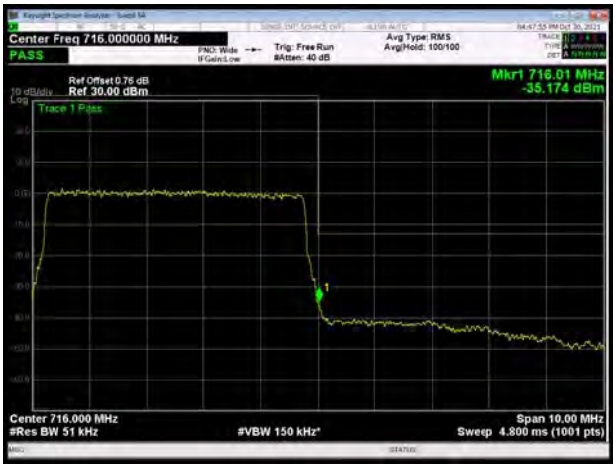
LTE Band 28 64QAM 5MHz CH-Low, 1 RB

LTE Band 28 64QAM 5MHz CH-High, 1 RB

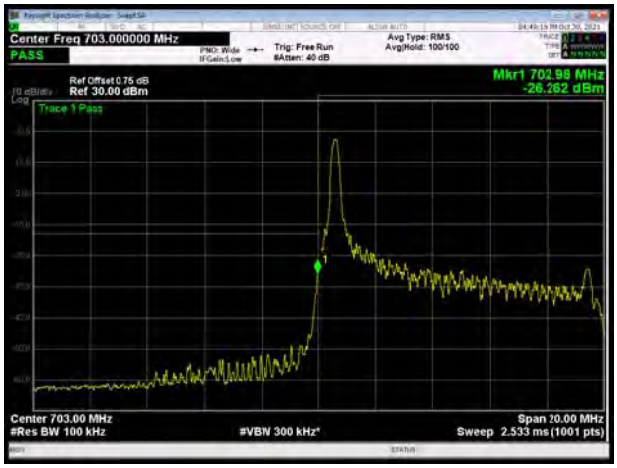


LTE Band 28 64QAM 5MHz CH-Low, 100%RB

LTE Band 28 64QAM 5MHz CH-High, 100%RB



LTE Band 28 64QAM 10MHz CH-Low, 1 RB

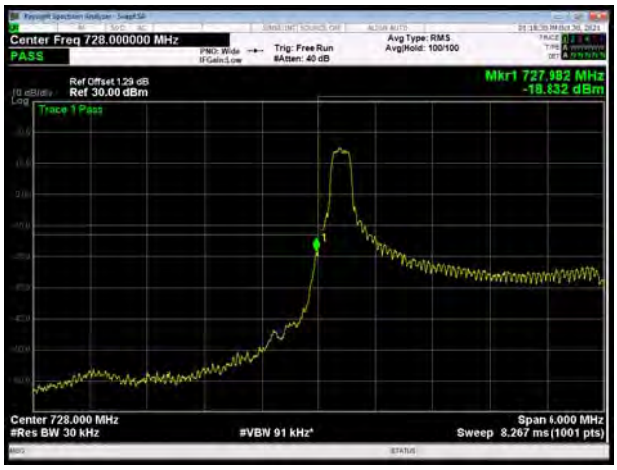
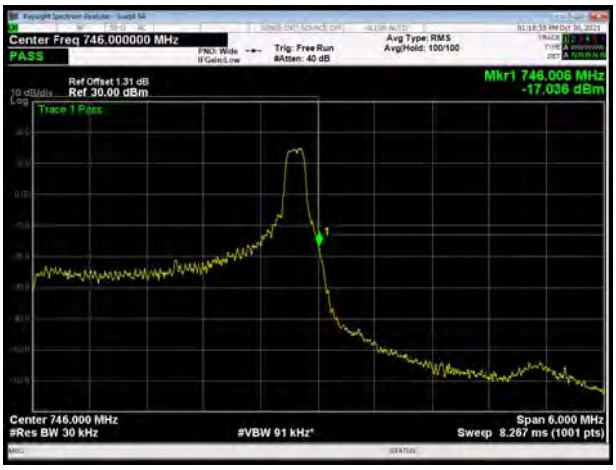
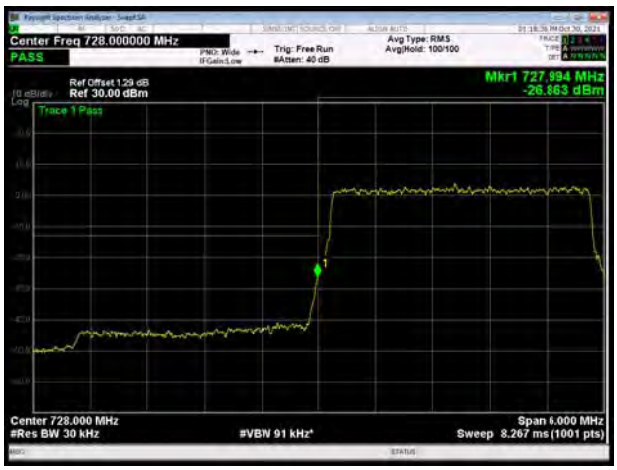
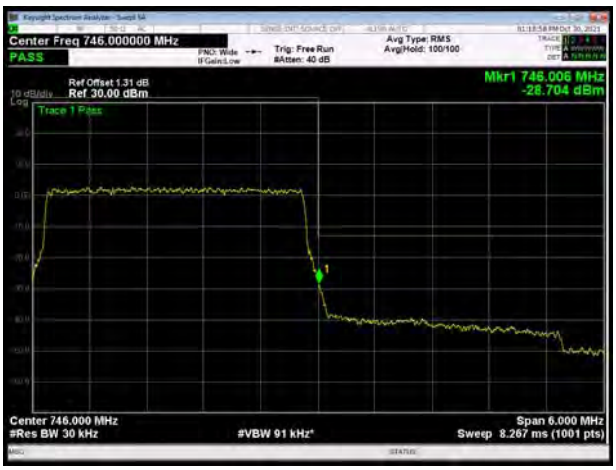
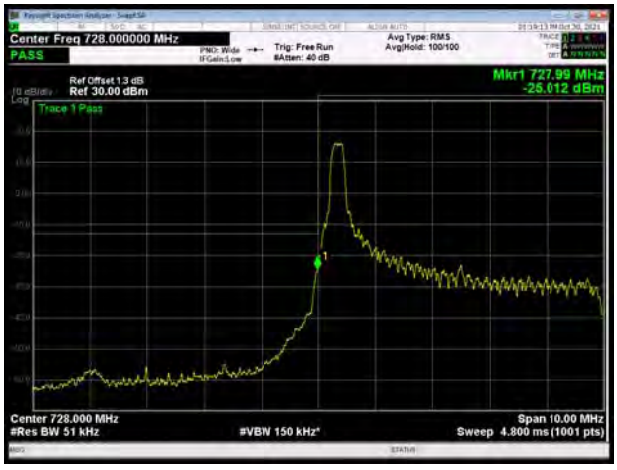
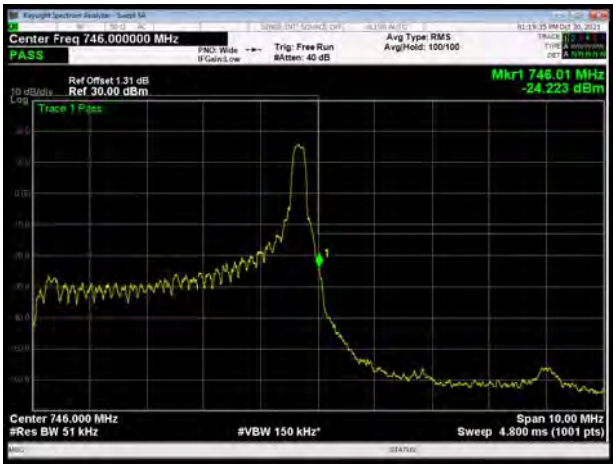


LTE Band 28 64QAM 10MHz CH-High, 1 RB

LTE Band 28 64QAM 10MHz CH-Low, 100%RB

LTE Band 28 64QAM 10MHz CH-High, 100%RB

LTE Band 28 subset 2:

LTE Band 28 QPSK 3MHz CH-Low, 1 RB	LTE Band 28 QPSK 3MHz CH-High, 1 RB
	
LTE Band 28 QPSK 3MHz CH-Low, 100%RB	LTE Band 28 QPSK 3MHz CH-High, 100%RB
	
LTE Band 28 QPSK 5MHz CH-Low, 1 RB	LTE Band 28 QPSK 5MHz CH-High, 1 RB
	

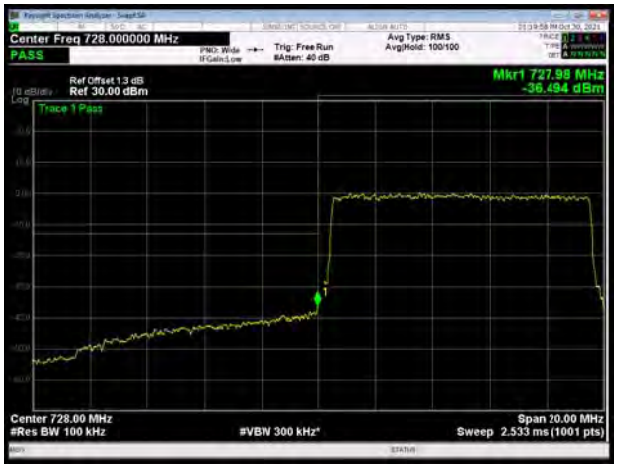
LTE Band 28 QPSK 5MHz CH-Low, 100%RB

LTE Band 28 QPSK 5MHz CH-High, 100%RB

LTE Band 28 QPSK 10MHz CH-Low, 1 RB

LTE Band 28 QPSK 10MHz CH-High, 1 RB

LTE Band 28 QPSK 10MHz CH-Low, 100%RB



LTE Band 28 QPSK 10MHz CH-High, 100%RB

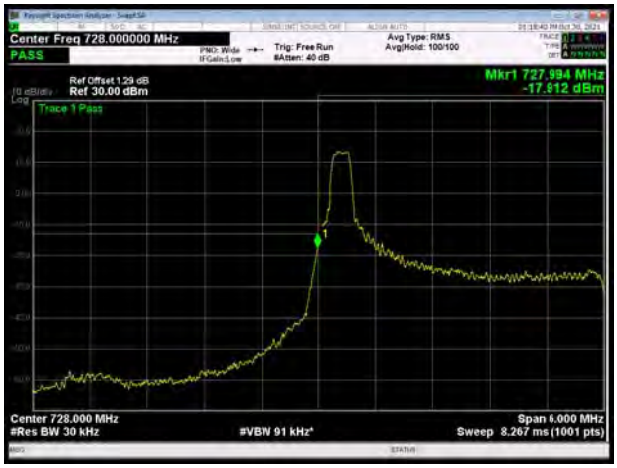
LTE Band 28 QPSK 15MHz CH-Low, 1 RB

LTE Band 28 QPSK 15MHz CH-High, 1 RB

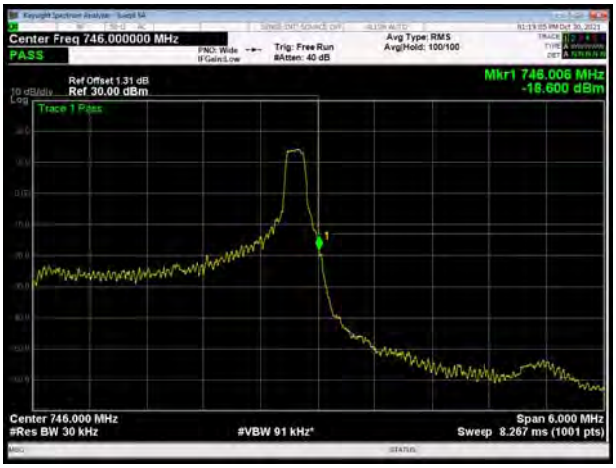
LTE Band 28 QPSK 15MHz CH-Low, 100%RB

LTE Band 28 QPSK 15MHz CH-High, 100%RB

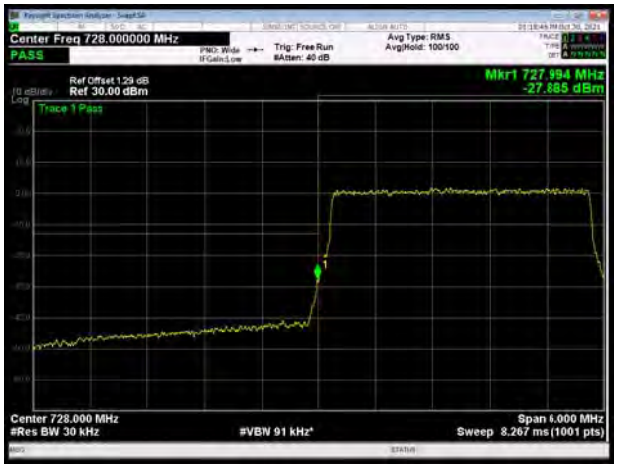
LTE Band 28 16QAM 3MHz CH-Low, 1 RB



LTE Band 28 16QAM 3MHz CH-High, 1 RB

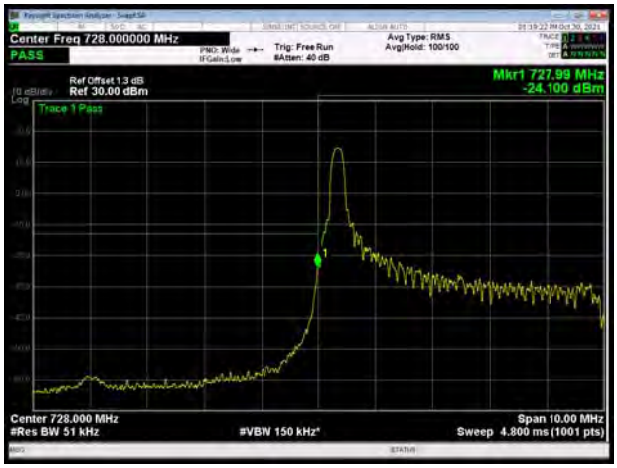


LTE Band 28 16QAM 3MHz CH-Low, 100%RB

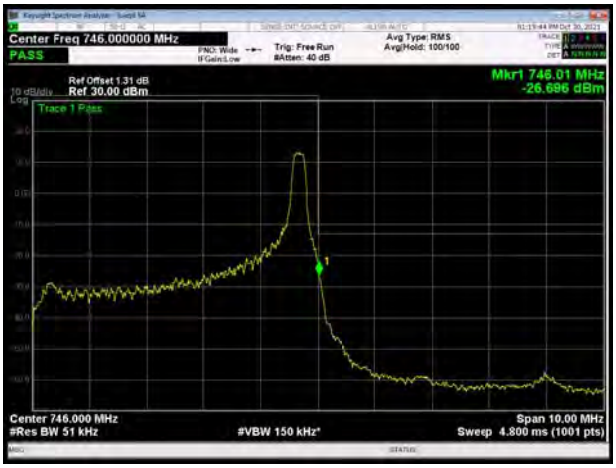


LTE Band 28 16QAM 3MHz CH-High, 100%RB

LTE Band 28 16QAM 5MHz CH-Low, 1 RB



LTE Band 28 16QAM 5MHz CH-High, 1 RB



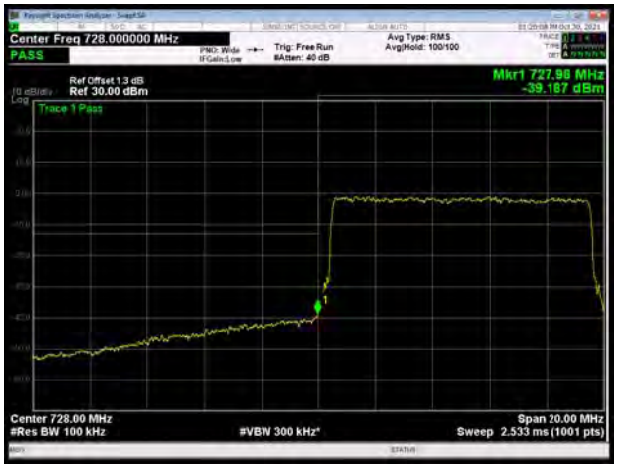
LTE Band 28 16QAM 5MHz CH-Low, 100%RB

LTE Band 28 16QAM 5MHz CH-High, 100%RB

LTE Band 28 16QAM 10MHz CH-Low, 1 RB

LTE Band 28 16QAM 10MHz CH-High, 1 RB

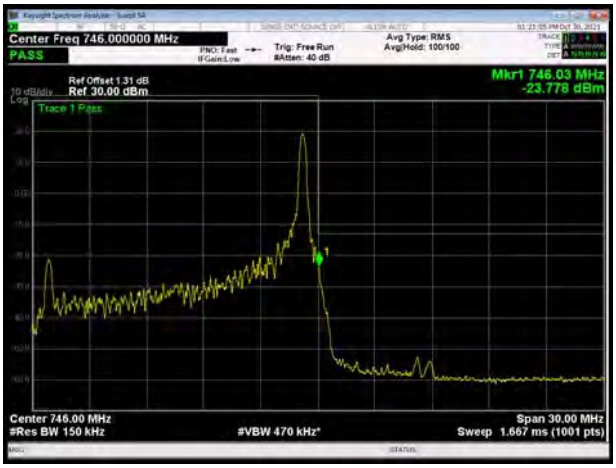
LTE Band 28 16QAM 10MHz CH-Low, 100%RB



LTE Band 28 16QAM 10MHz CH-High, 100%RB

LTE Band 28 16QAM 15MHz CH-Low, 1 RB

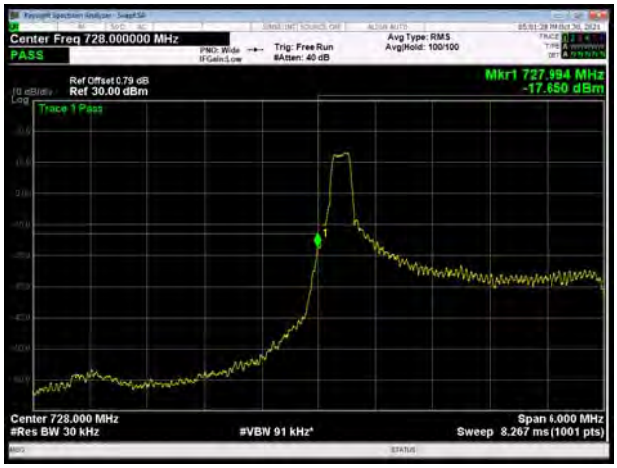
LTE Band 28 16QAM 15MHz CH-High, 1 RB



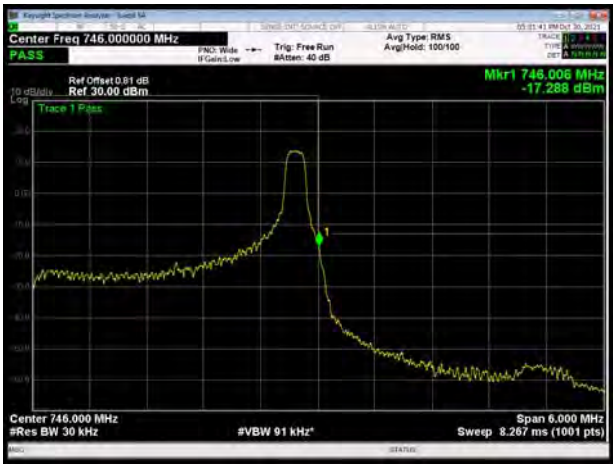
LTE Band 28 16QAM 15MHz CH-Low, 100%RB

LTE Band 28 16QAM 15MHz CH-High, 100%RB

LTE Band 28 64QAM 3MHz CH-Low, 1 RB



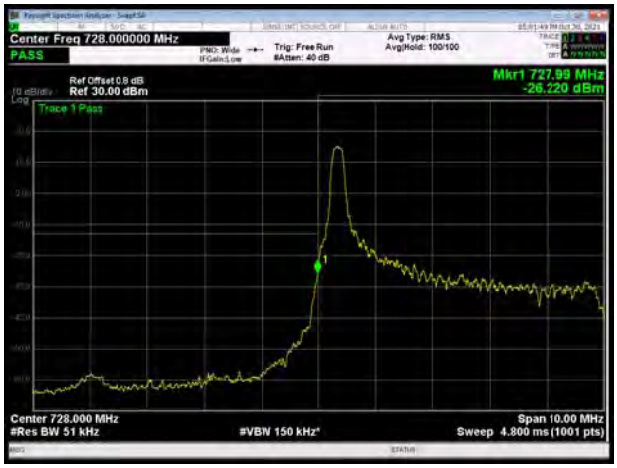
LTE Band 28 64QAM 3MHz CH-High, 1 RB



LTE Band 28 64QAM 3MHz CH-Low, 100%RB

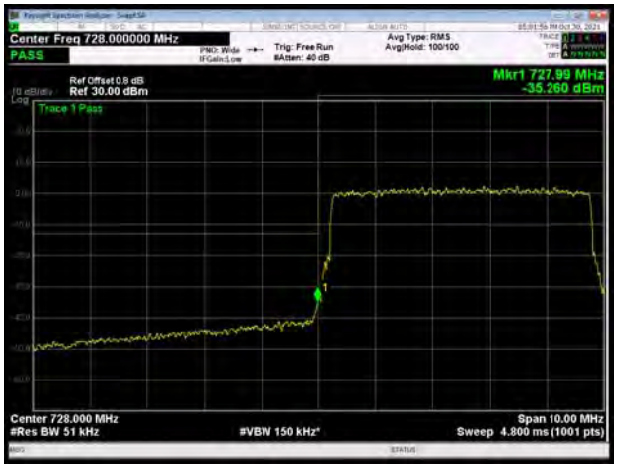
LTE Band 28 64QAM 3MHz CH-High, 100%RB

LTE Band 28 64QAM 5MHz CH-Low, 1 RB



LTE Band 28 64QAM 5MHz CH-High, 1 RB

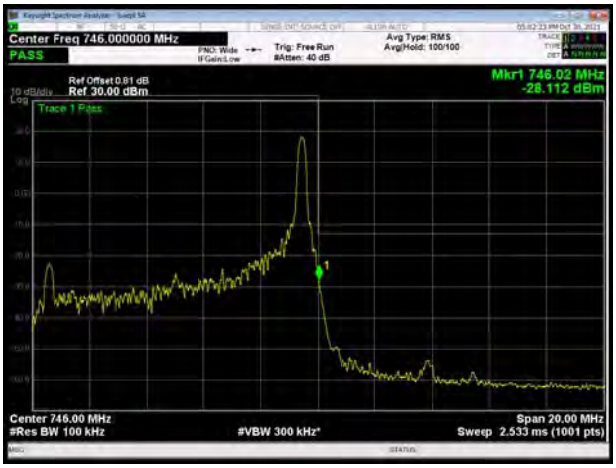
LTE Band 28 64QAM 5MHz CH-Low, 100%RB



LTE Band 28 64QAM 5MHz CH-High, 100%RB

LTE Band 28 64QAM 10MHz CH-Low, 1 RB

LTE Band 28 64QAM 10MHz CH-High, 1 RB



LTE Band 28 64QAM 10MHz CH-Low, 100%RB

LTE Band 28 64QAM 10MHz CH-High, 100%RB

LTE Band 28 64QAM 15MHz CH-Low, 1 RB

LTE Band 28 64QAM 15MHz CH-High, 1 RB

LTE Band 28 64QAM 15MHz CH-Low, 100%RB

LTE Band 28 64QAM 15MHz CH-High, 100%RB

5.4 Peak-to-Average Power Ratio (PAPR)

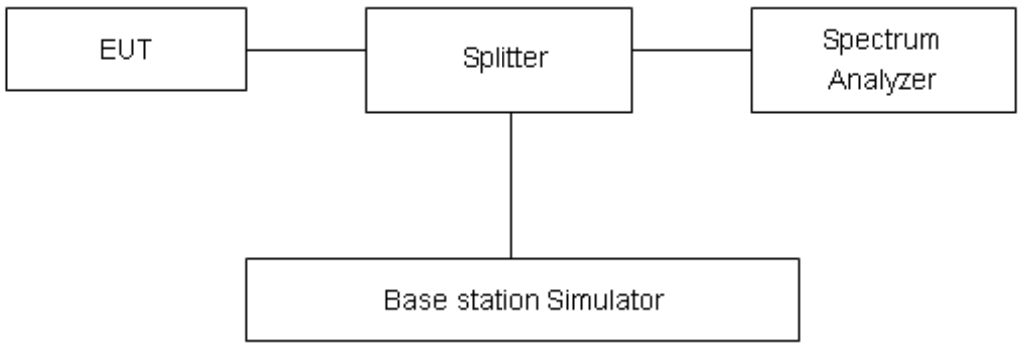
Ambient condition

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

Methods of Measurement

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

Test Setup



Limits

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

Measurement Uncertainty

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

Test Results

LTE Band 28 subset 1								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	3	27225	704.5	24.43	18.69	5.74	≤13	PASS
		27375	719.5	24.70	19.18	5.52	≤13	PASS
		27645	746.5	24.35	18.65	5.70	≤13	PASS
	5	27235	705.5	26.15	20.79	5.36	≤13	PASS
		27385	720.5	25.98	20.53	5.45	≤13	PASS
		27635	745.5	26.11	20.51	5.60	≤13	PASS
	10	27260	708	26.05	20.71	5.34	≤13	PASS
		27410	723	24.68	19.20	5.48	≤13	PASS
		27610	743	24.76	19.18	5.58	≤13	PASS
16QAM	3	27225	704.5	23.61	18.37	5.24	≤13	PASS
		27375	719.5	24.04	19.01	5.03	≤13	PASS
		27645	746.5	25.92	19.52	6.40	≤13	PASS
	5	27235	705.5	26.14	20.17	5.97	≤13	PASS
		27385	720.5	26.19	20.04	6.15	≤13	PASS
		27635	745.5	26.15	19.73	6.42	≤13	PASS
	10	27260	708	26.12	19.79	6.33	≤13	PASS
		27410	723	24.05	18.61	5.44	≤13	PASS
		27610	743	24.26	18.63	5.63	≤13	PASS
64QAM	3	27225	704.5	25.53	19.21	6.32	≤13	PASS
		27375	719.5	25.86	19.65	6.21	≤13	PASS
		27645	746.5	25.49	19.09	6.40	≤13	PASS
	5	27235	705.5	25.66	19.63	6.03	≤13	PASS
		27385	720.5	25.63	19.51	6.12	≤13	PASS
		27635	745.5	25.54	19.13	6.41	≤13	PASS
	10	27260	708	25.66	19.57	6.09	≤13	PASS
		27410	723	25.66	19.53	6.13	≤13	PASS
		27610	743	25.86	19.58	6.28	≤13	PASS

LTE Band 28 subset 2								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	3	27225	704.5	26.29	20.89	5.40	≤13	PASS
		27375	719.5	26.15	20.80	5.35	≤13	PASS
		27645	746.5	26.10	20.78	5.32	≤13	PASS
	5	27235	705.5	24.78	19.18	5.60	≤13	PASS
		27385	720.5	24.35	18.77	5.58	≤13	PASS
		27635	745.5	24.66	19.04	5.62	≤13	PASS
	10	27260	708	26.21	20.91	5.30	≤13	PASS
		27410	723	26.35	20.85	5.50	≤13	PASS
		27610	743	26.58	21.06	5.52	≤13	PASS
	15	27285	710.5	26.55	20.78	5.77	≤13	PASS
		27435	725.5	26.64	20.79	5.85	≤13	PASS
		27585	740.5	26.75	20.81	5.94	≤13	PASS
16QAM	3	27225	704.5	26.03	19.84	6.19	≤13	PASS
		27375	719.5	25.98	19.79	6.19	≤13	PASS
		27645	746.5	26.37	20.33	6.04	≤13	PASS
	5	27235	705.5	23.92	19.04	4.88	≤13	PASS
		27385	720.5	23.84	18.41	5.43	≤13	PASS
		27635	745.5	24.20	18.85	5.35	≤13	PASS
	10	27260	708	26.02	19.92	6.10	≤13	PASS
		27410	723	25.93	19.76	6.17	≤13	PASS
		27610	743	26.54	20.36	6.18	≤13	PASS
	15	27285	710.5	26.13	19.90	6.23	≤13	PASS
		27435	725.5	26.12	19.81	6.31	≤13	PASS
		27585	740.5	26.34	19.98	6.36	≤13	PASS
64QAM	3	27225	704.5	25.65	19.42	6.23	≤13	PASS
		27375	719.5	25.48	19.30	6.18	≤13	PASS
		27645	746.5	25.93	19.87	6.06	≤13	PASS
	5	27235	705.5	25.88	19.86	6.02	≤13	PASS
		27385	720.5	25.44	19.38	6.06	≤13	PASS
		27635	745.5	25.53	19.37	6.16	≤13	PASS
	10	27260	708	25.40	19.30	6.10	≤13	PASS
		27410	723	25.53	19.32	6.21	≤13	PASS
		27610	743	26.14	19.94	6.20	≤13	PASS
	15	27285	710.5	25.74	19.52	6.22	≤13	PASS
		27435	725.5	25.60	19.28	6.32	≤13	PASS
		27585	740.5	25.88	19.52	6.36	≤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 ofpowering 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 eachtemperature, un-powered, before making measurements.

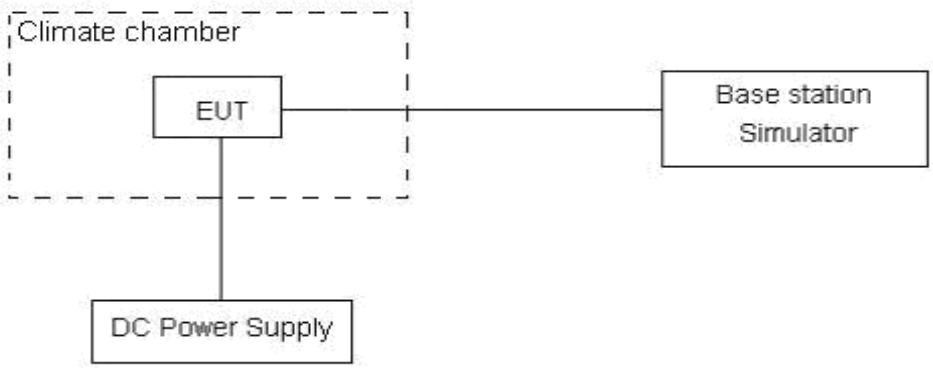
Frequency Stability (Voltage Variation)

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 themanufacturer.

This transceiver is specified to operate with an input voltage of between 3.4 Vand 4.35V, with a nominal voltage of 3.8V.

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=0.01ppm.

Test Result

LTE Band 28 subset 1								
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	10.42	15.11	17.27	0.01469	0.02130	0.02434	PASS
Extreme（50℃）		4.61	12.30	17.43	0.00650	0.01733	0.02457	PASS
Extreme（40℃）		17.45	16.22	16.49	0.02459	0.02286	0.02324	PASS
Extreme（30℃）		1.16	16.75	16.78	0.00163	0.02360	0.02365	PASS
Extreme（20℃）		15.61	3.32	7.84	0.02200	0.00468	0.01104	PASS
Extreme（10℃）		13.32	16.22	8.20	0.01878	0.02286	0.01156	PASS
Extreme（0℃）		7.83	9.64	15.09	0.01104	0.01358	0.02126	PASS
Extreme（-10℃）		9.02	2.68	1.46	0.01271	0.00378	0.00206	PASS
Extreme（-20℃）		15.17	8.21	16.93	0.02139	0.01158	0.02386	PASS
Extreme（-30℃）		2.02	8.32	6.97	0.00285	0.01172	0.00983	PASS
25℃	LV	7.83	6.48	9.67	0.01104	0.00914	0.01363	PASS
	HV	6.31	15.57	3.75	0.00890	0.02194	0.00528	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	9.48	1.38	15.33	0.01337	0.00195	0.02161	PASS
Extreme（50℃）		14.39	13.96	17.06	0.02028	0.01967	0.02404	PASS
Extreme（40℃）		8.89	10.49	10.93	0.01254	0.01478	0.01540	PASS
Extreme（30℃）		11.67	12.57	15.71	0.01644	0.01772	0.02214	PASS
Extreme（20℃）		1.73	9.19	11.19	0.00244	0.01295	0.01577	PASS
Extreme（10℃）		5.32	3.59	10.09	0.00750	0.00506	0.01423	PASS
Extreme（0℃）		1.45	4.24	14.65	0.00205	0.00597	0.02064	PASS
Extreme（-10℃）		5.47	15.16	16.04	0.00771	0.02137	0.02261	PASS
Extreme（-20℃）		1.42	14.57	5.96	0.00201	0.02054	0.00840	PASS
Extreme（-30℃）		2.70	2.71	4.77	0.00381	0.00382	0.00673	PASS
25℃	LV	1.97	14.57	9.17	0.00278	0.02053	0.01293	PASS
	HV	5.40	2.92	7.74	0.00761	0.00412	0.01090	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	6.48	14.15	13.74	0.00913	0.01994	0.01937	PASS
Extreme（50℃）		8.77	15.82	9.88	0.01236	0.02229	0.01393	PASS

Extreme（40℃）		15.53	7.31	8.87	0.02189	0.01030	0.01251	PASS
Extreme（30℃）		8.10	12.20	16.61	0.01141	0.01720	0.02341	PASS
Extreme（20℃）		1.57	17.10	5.41	0.00221	0.02410	0.00763	PASS
Extreme（10℃）		14.76	12.75	13.47	0.02081	0.01797	0.01898	PASS
Extreme（0℃）		5.98	13.86	2.56	0.00843	0.01953	0.00360	PASS
Extreme（-10℃）		10.07	16.27	15.45	0.01419	0.02293	0.02178	PASS
Extreme（-20℃）		3.11	5.23	8.99	0.00438	0.00738	0.01267	PASS
Extreme（-30℃）		10.94	15.38	9.03	0.01542	0.02168	0.01272	PASS
25℃	LV	17.87	11.83	9.44	0.02518	0.01668	0.01331	PASS
	HV	9.89	4.13	6.18	0.01394	0.00582	0.00872	PASS

LTE Band 28 subset 2								
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	13.00	16.00	17.00	0.01764	0.02171	0.02307	PASS
Extreme（50℃）		13.00	11.00	5.00	0.01764	0.01493	0.00678	PASS
Extreme（40℃）		12.00	11.00	13.00	0.01628	0.01493	0.01764	PASS
Extreme（30℃）		5.00	7.00	7.00	0.00678	0.00950	0.00950	PASS
Extreme（20℃）		10.00	1.00	14.00	0.01357	0.00136	0.01900	PASS
Extreme（10℃）		9.00	12.00	5.00	0.01221	0.01628	0.00678	PASS
Extreme（0℃）		16.00	9.00	5.00	0.02171	0.01221	0.00678	PASS
Extreme（-10℃）		11.00	13.00	7.00	0.01493	0.01764	0.00950	PASS
Extreme（-20℃）		6.00	7.00	3.00	0.00814	0.00950	0.00407	PASS
Extreme（-30℃）		16.00	15.00	17.00	0.02171	0.02035	0.02307	PASS
25℃	LV	15.00	7.00	6.00	0.02035	0.00950	0.00814	PASS
	HV	16.00	9.00	7.00	0.02171	0.01221	0.00950	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	2.00	6.00	13.00	0.00271	0.00814	0.01764	PASS
Extreme（50℃）		9.00	17.00	12.00	0.01221	0.02307	0.01628	PASS
Extreme（40℃）		6.00	9.00	17.00	0.00814	0.01221	0.02307	PASS
Extreme（30℃）		6.00	2.00	6.00	0.00814	0.00271	0.00814	PASS
Extreme（20℃）		16.00	5.00	1.00	0.02171	0.00678	0.00136	PASS
Extreme（10℃）		6.00	11.00	8.00	0.00814	0.01493	0.01085	PASS
Extreme（0℃）		9.00	4.00	14.00	0.01221	0.00543	0.01900	PASS
Extreme（-10℃）		17.00	7.00	3.00	0.02307	0.00950	0.00407	PASS

Extreme（-20℃）		2.00	12.00	12.00	0.00271	0.01628	0.01628	PASS
Extreme（-30℃）		9.00	9.00	8.00	0.01221	0.01221	0.01085	PASS
25℃	LV	3.00	10.00	8.00	0.00407	0.01357	0.01085	PASS
	HV	17.00	12.00	4.00	0.02307	0.01628	0.00543	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	5.00	13.00	8.00	0.00678	0.01764	0.01085	PASS
Extreme（50℃）		4.00	17.00	10.00	0.00543	0.02307	0.01357	PASS
Extreme（40℃）		17.00	9.00	5.00	0.02307	0.01221	0.00678	PASS
Extreme（30℃）		1.00	13.00	4.00	0.00136	0.01764	0.00543	PASS
Extreme（20℃）		3.00	4.00	1.00	0.00407	0.00543	0.00136	PASS
Extreme（10℃）		12.00	8.00	10.00	0.01628	0.01085	0.01357	PASS
Extreme（0℃）		12.00	8.00	5.00	0.01628	0.01085	0.00678	PASS
Extreme（-10℃）		11.00	12.00	17.00	0.01493	0.01628	0.02307	PASS
Extreme（-20℃）		10.00	7.00	6.00	0.01357	0.00950	0.00814	PASS
Extreme（-30℃）		15.00	2.00	5.00	0.02035	0.00271	0.00678	PASS
25℃	LV	11.00	8.00	15.00	0.01493	0.01085	0.02035	PASS
	HV	16.00	9.00	16.00	0.02171	0.01221	0.02171	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	8.00	7.00	0.01493	0.01085	0.00950	PASS
Extreme（50℃）		15.00	8.00	1.00	0.02035	0.01085	0.00136	PASS
Extreme（40℃）		16.00	7.00	11.00	0.02171	0.00950	0.01493	PASS
Extreme（30℃）		16.00	5.00	2.00	0.02171	0.00678	0.00271	PASS
Extreme（20℃）		2.00	13.00	1.00	0.00271	0.01764	0.00136	PASS
Extreme（10℃）		6.00	12.00	11.00	0.00814	0.01628	0.01493	PASS
Extreme（0℃）		13.00	11.00	3.00	0.01764	0.01493	0.00407	PASS
Extreme（-10℃）		15.00	15.00	2.00	0.02035	0.02035	0.00271	PASS
Extreme（-20℃）		2.00	1.00	13.00	0.00271	0.00136	0.01764	PASS
Extreme（-30℃）		12.00	7.00	12.00	0.01628	0.00950	0.01628	PASS
25℃	LV	6.00	11.00	7.00	0.00814	0.01493	0.00950	PASS
	HV	9.00	15.00	15.00	0.01221	0.02035	0.02035	PASS

5.6 Spurious Emissions at Antenna Terminals

Ambient condition

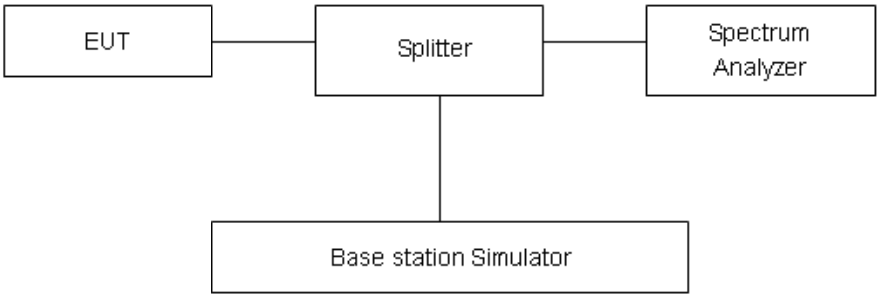
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement iscarried out using a spectrum analyzer. The spectrum analyzer scans from9kHz to the 10th harmonic of the carrier. The peakdetector is used.
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 (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.

Part 27.53(g)Limit	-13 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

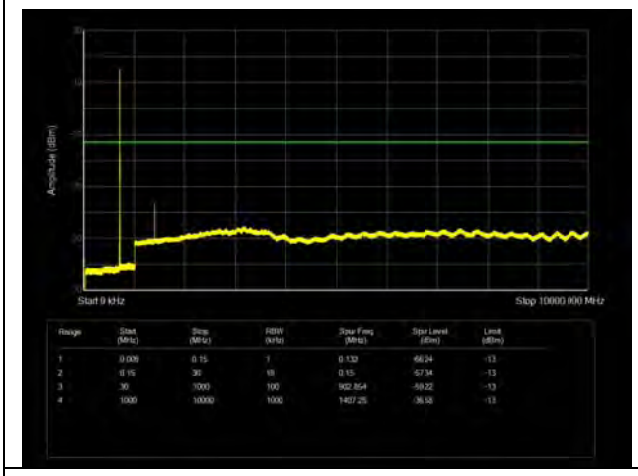
Test Result

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.

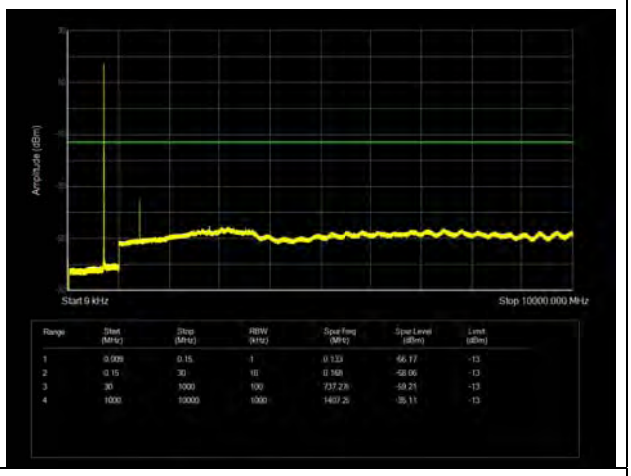
The signal beyond the limit is carrier.

LTE Band 28 subset 1:

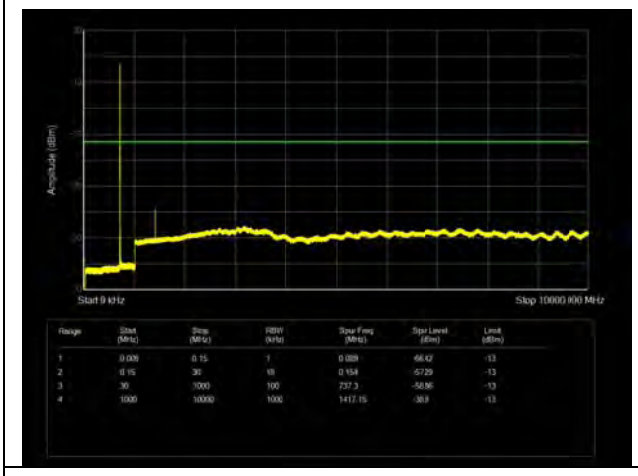
LTE Band 283MHz CH-Low 9kHz~10.00GHz



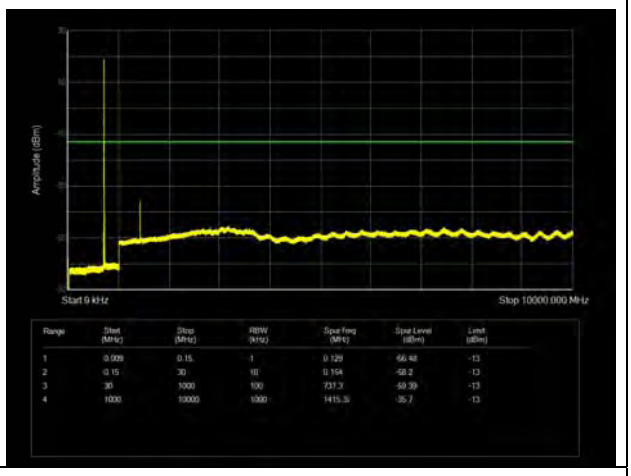
LTE Band 28 5MHz CH- Low 9kHz~10.00GHz



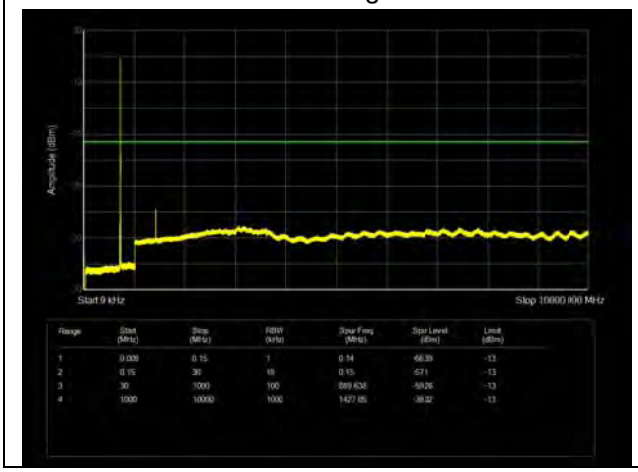
LTE Band 283MHz CH-Middle 9kHz~10.00GHz



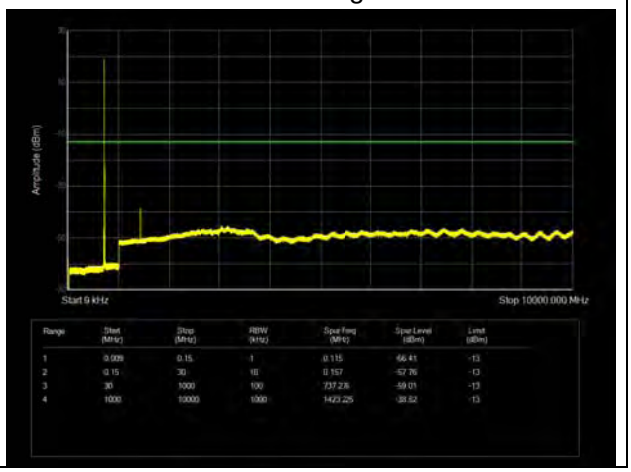
LTE Band 28 5MHz CH-Middle 9kHz~10.00GHz



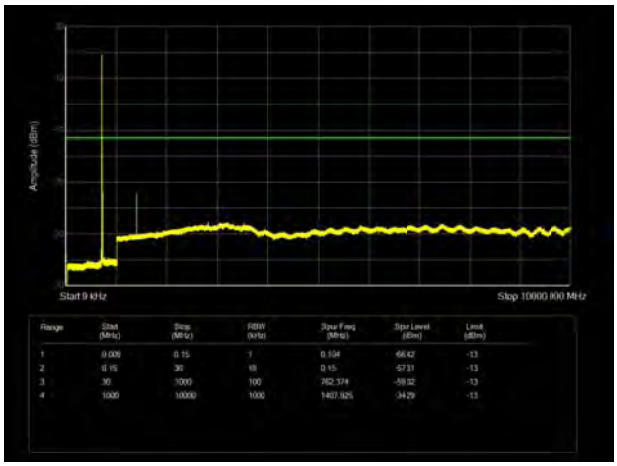
LTE Band 283MHz CH- High 9kHz~10.00GHz



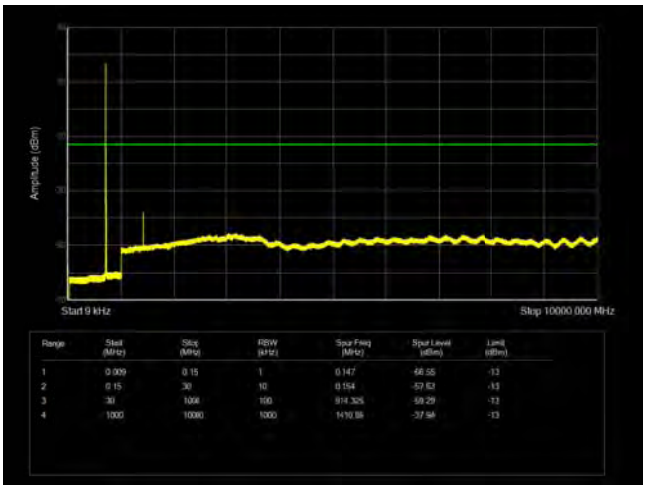
LTE Band 28 5MHz CH-High 9kHz~10.00GHz



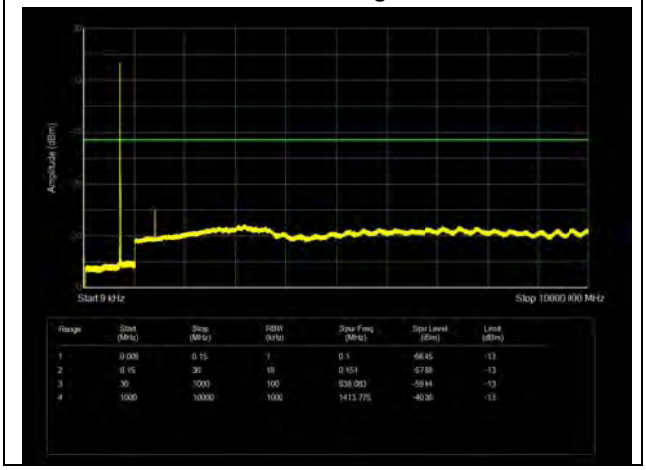
LTE Band 28 10MHz CH- Low 9kHz~10.00GHz



LTE Band 28 10MHz CH- Middle 9kHz~10.00GHz

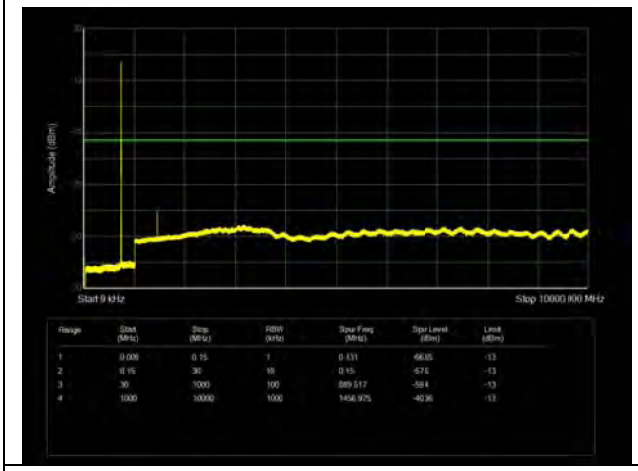


LTE Band 28 10MHz CH-High 9kHz~10.00GHz

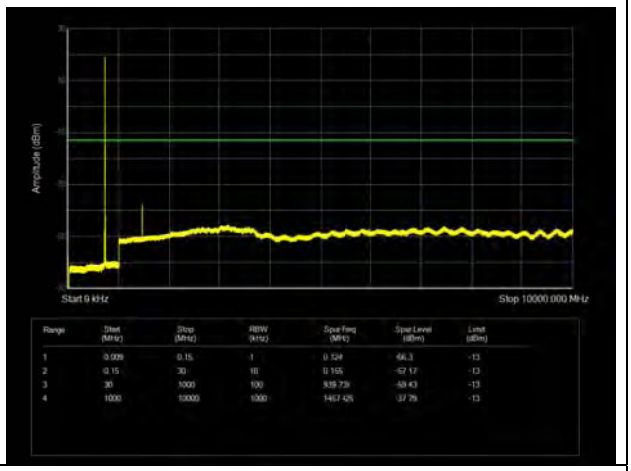


LTE Band 28 subset 2:

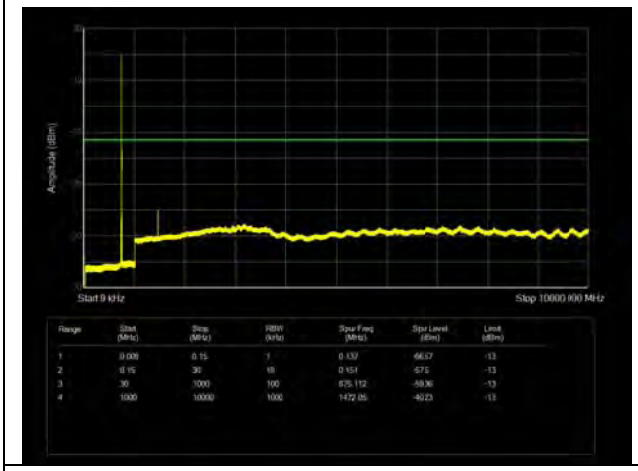
LTE Band 283MHz CH-Low 9kHz~10.00GHz



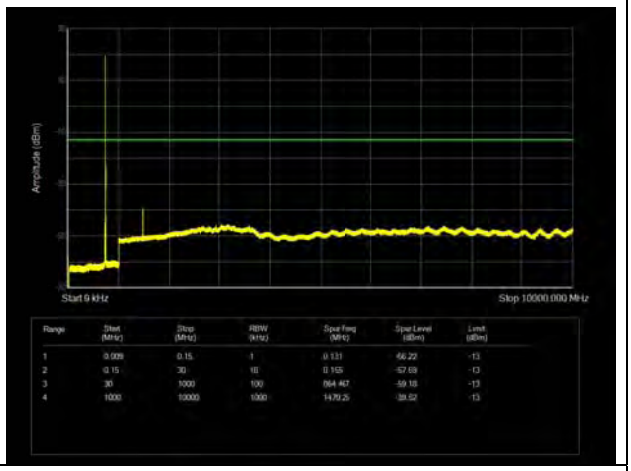
LTE Band 28 5MHz CH- Low 9kHz~10.00GHz



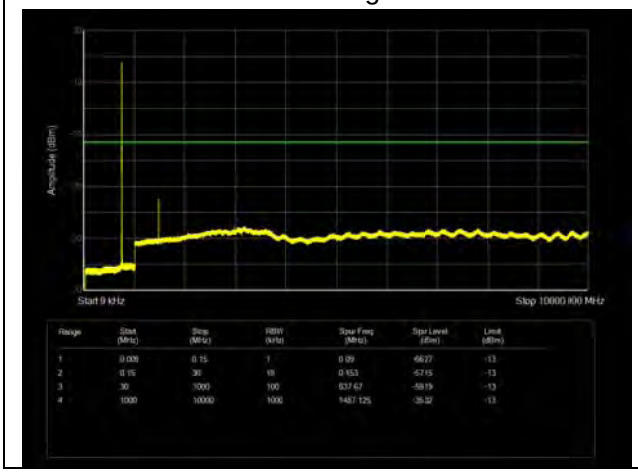
LTE Band 283MHz CH-Middle 9kHz~10.00GHz



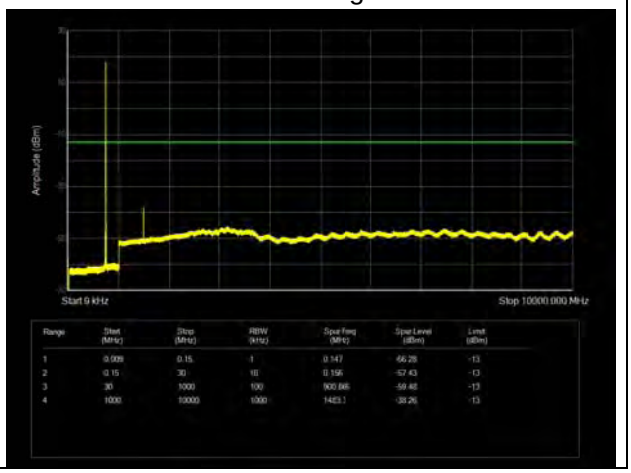
LTE Band 28 5MHz CH-Middle 9kHz~10.00GHz



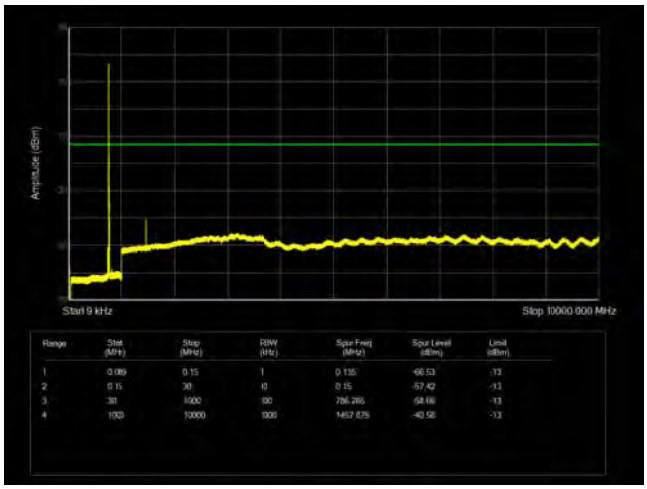
LTE Band 283MHz CH- High 9kHz~10.00GHz



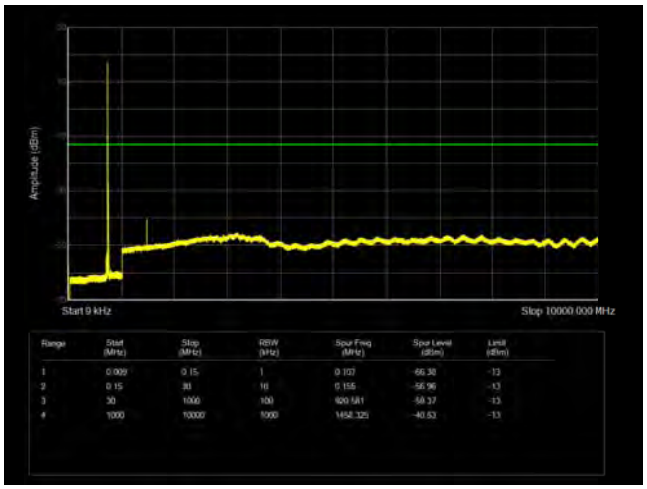
LTE Band 28 5MHz CH-High 9kHz~10.00GHz



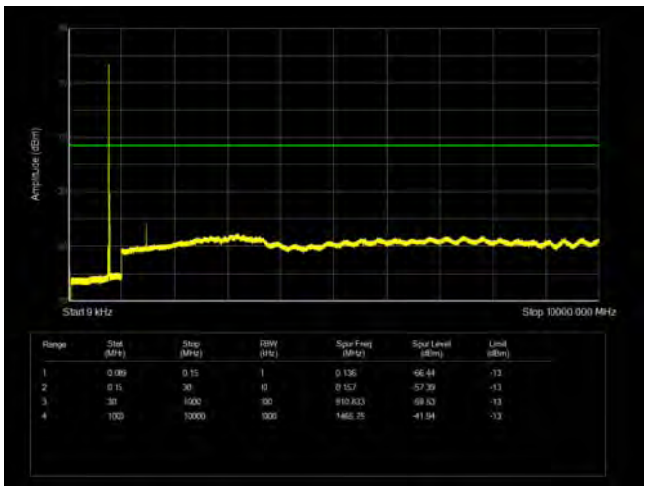
LTE Band 28 10MHz CH- Low 9kHz~10.00GHz



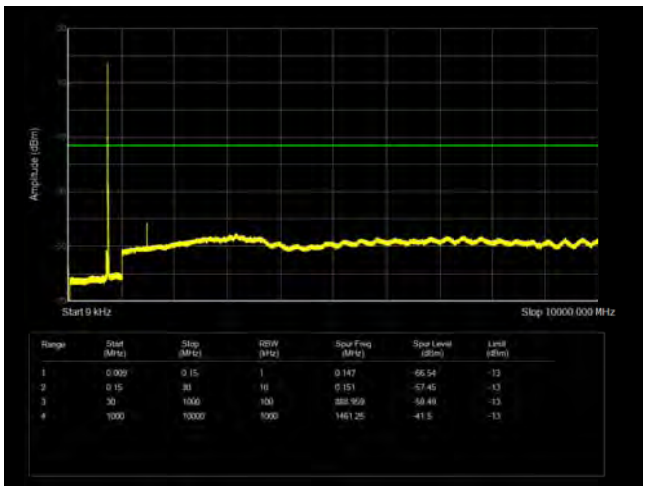
LTE Band 28 15MHz CH- Low 9kHz~10.00GHz



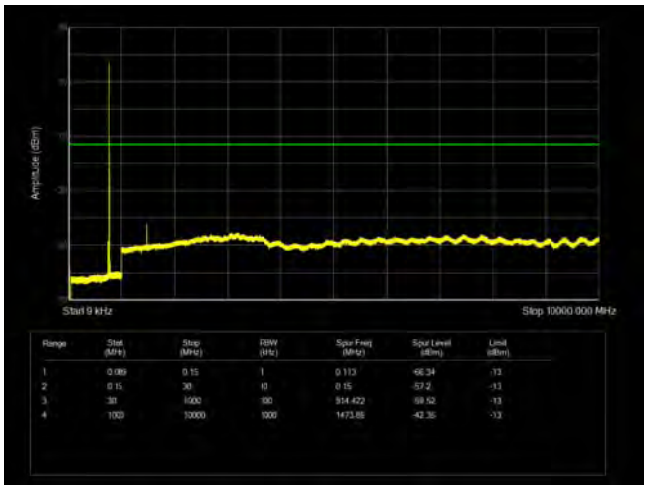
LTE Band 28 10MHz CH- Middle 9kHz~10.00GHz



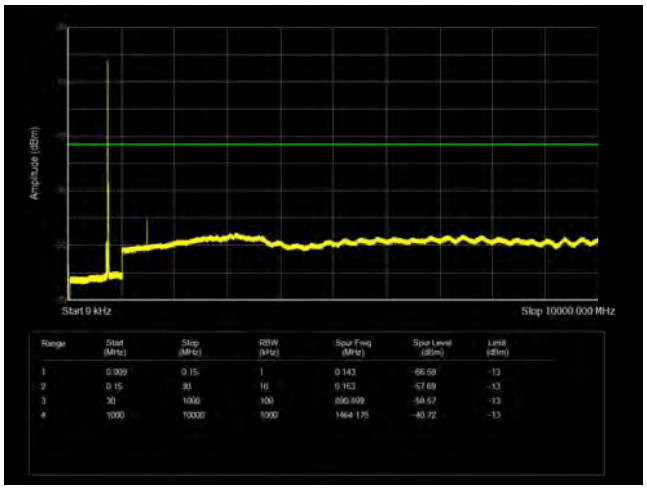
LTE Band 28 15MHz CH- Middle 9kHz~10.00GHz



LTE Band 28 10MHz CH-High 9kHz~10.00GHz



LTE Band 28 15MHz CH-High 9kHz~10.00GHz



5.7 Radiates Spurious Emission

Ambient condition

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

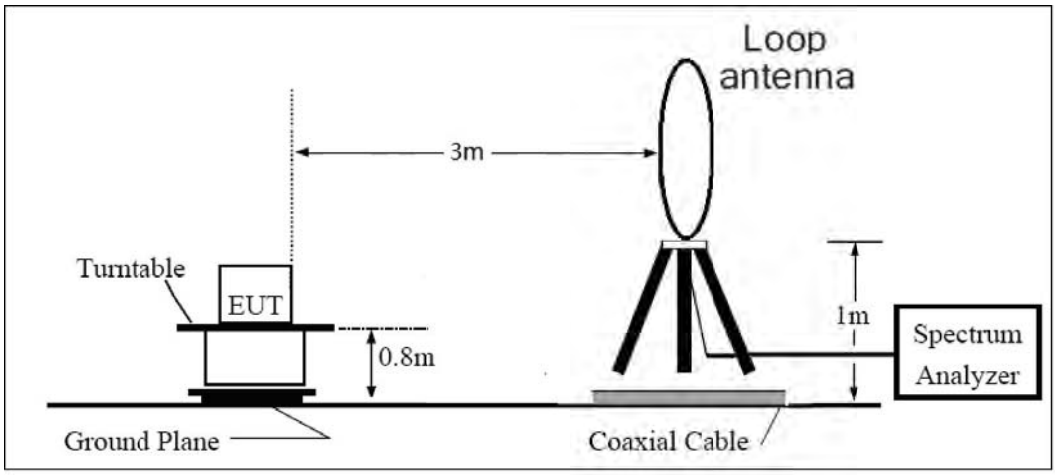
Method of Measurement

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 theantenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntableazimuth. 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 theantenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntableazimuth. 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 samepower value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculatedthrough the level of the signal generator, cable loss, the gain of the substitution antenna and the readingof the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test.SetTest Receiver or SpectrumRBW=100kHz,VBW=300kHz,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 thefrequency band of interest is placed at the reference point of the chamber. An RF Signal source for thefrequency band of interest is connected to the substitution antenna with a cable that has been constructedto not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of thesubstitution antenna, and adjust the level of the signal generator output until the value of the receiverreach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should beperformed 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 connectbetween 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:
Power(EIRP)=PMea- PAg - Pcl + Ga
The measurement results are amend as described below:
Power(EIRP)=PMea- Pcl + Ga
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) andknown input power.ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

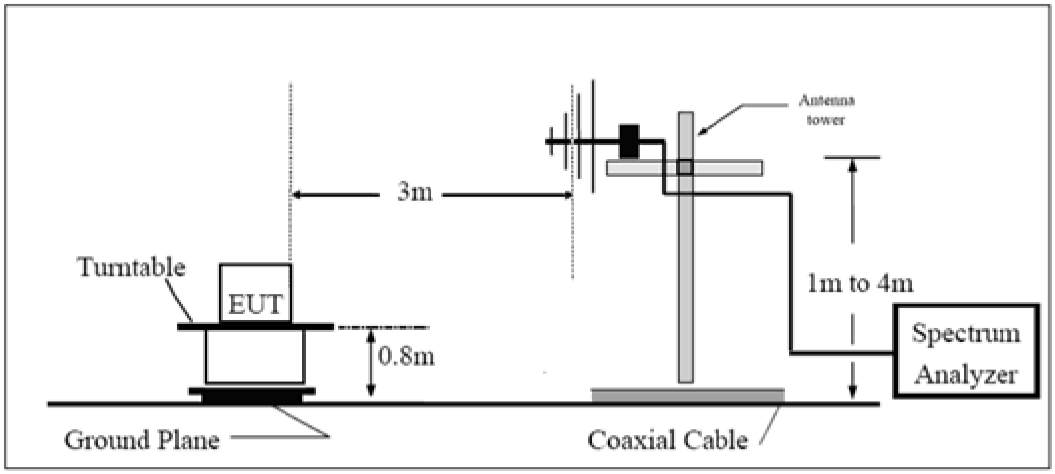
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

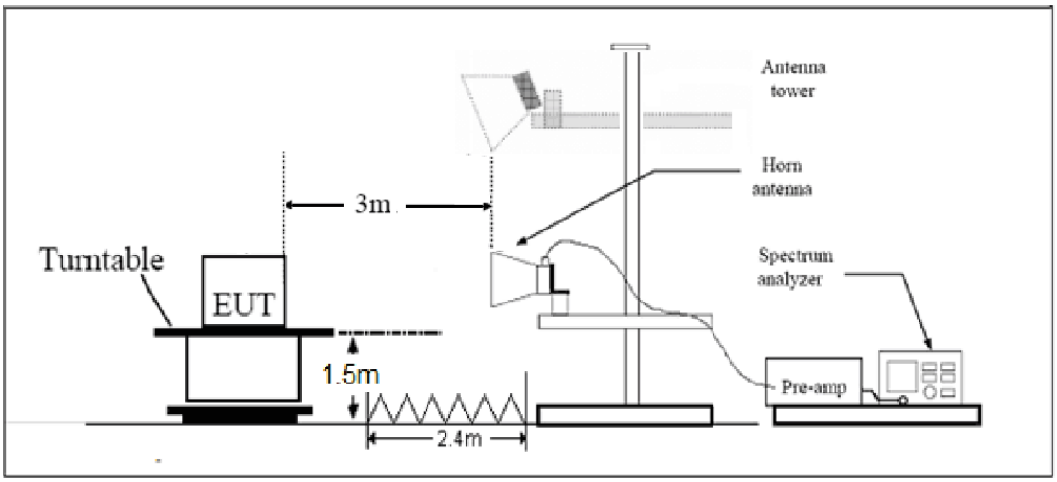
9KHz~ 30MHz



30MHz~ 1GHz



Above 1GHz



Note: Area side: 2.4mX3.6m

Limits

Rule Part 27.53 (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.

Part 27.53(a)/(h)/(g)Limit	-13 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= ±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.

LTE Band 28 subset 1:

LTE Band 28 QPSK 3MHz 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	1433.20	-54.05	1.50	8.70	Horizontal	-49.00	-13.00	36.00	225
3	2150.73	-60.07	2.10	11.10	Horizontal	-53.22	-13.00	40.22	90
4	2867.20	-56.46	2.50	13.10	Horizontal	-48.01	-13.00	35.01	90
5	3582.50	-52.05	2.60	12.70	Horizontal	-44.10	-13.00	31.10	0
6	4299.00	-63.10	3.00	12.50	Horizontal	-55.75	-13.00	42.75	45
7	5015.50	-59.51	3.40	12.50	Horizontal	-52.56	-13.00	39.56	180
8	5732.00	-59.45	3.30	12.50	Horizontal	-52.40	-13.00	39.40	90
9	6448.50	-60.86	3.50	12.80	Horizontal	-53.71	-13.00	40.71	90
10	7165.00	-55.09	4.40	12.20	Horizontal	-49.44	-13.00	36.44	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 28 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	1431.60	-53.18	1.50	8.70	Horizontal	-48.13	-13.00	35.13	315
3	2147.73	-59.40	2.10	11.10	Horizontal	-52.55	-13.00	39.55	315
4	2863.60	-54.44	2.50	13.10	Horizontal	-45.99	-13.00	32.99	135
5	3577.50	-52.27	2.60	12.70	Horizontal	-44.32	-13.00	31.32	270
6	4293.00	-63.24	3.00	12.50	Horizontal	-55.89	-13.00	42.89	135
7	5008.50	-58.43	3.40	12.50	Horizontal	-51.48	-13.00	38.48	180
8	5724.00	-59.37	3.30	12.50	Horizontal	-52.32	-13.00	39.32	315
9	6439.50	-61.12	3.50	12.80	Horizontal	-53.97	-13.00	40.97	0
10	7155.00	-54.55	4.40	12.20	Horizontal	-48.90	-13.00	35.90	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.									

LTE Band 28 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	1418.06	-57.47	1.50	8.70	Horizontal	-52.42	-13.00	39.42	135
3	2126.86	-62.91	2.10	11.10	Horizontal	-56.06	-13.00	43.06	0
4	2836.20	-60.68	2.50	13.10	Horizontal	-52.23	-13.00	39.23	225
5	3545.00	-56.79	2.60	12.70	Horizontal	-48.84	-13.00	35.84	135
6	4248.00	-62.89	3.00	12.50	Horizontal	-55.54	-13.00	42.54	270
7	4956.00	-60.31	3.40	12.50	Horizontal	-53.36	-13.00	40.36	225
8	5664.00	-59.97	3.30	12.50	Horizontal	-52.92	-13.00	39.92	270
9	6372.00	-60.45	3.50	12.80	Horizontal	-53.30	-13.00	40.30	225
10	7080.00	-55.00	4.40	12.20	Horizontal	-49.35	-13.00	36.35	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 28 subset 2:

LTE Band 28 QPSK 3MHz 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	1463.40	-56.14	1.50	8.70	Horizontal	-51.09	-13.00	38.09	225
3	2195.33	-59.81	2.10	11.10	Horizontal	-52.96	-13.00	39.96	90
4	2926.93	-57.38	2.50	13.10	Horizontal	-48.93	-13.00	35.93	270
5	3658.66	-57.81	2.60	12.70	Horizontal	-49.86	-13.00	36.86	315
6	4389.00	-62.31	3.00	12.50	Horizontal	-54.96	-13.00	41.96	135
7	5120.50	-58.49	3.40	12.50	Horizontal	-51.54	-13.00	38.54	225
8	5852.00	-59.14	3.30	12.50	Horizontal	-52.09	-13.00	39.09	225
9	6583.50	-60.52	3.50	12.80	Horizontal	-53.37	-13.00	40.37	90
10	7315.00	-54.18	4.40	12.20	Horizontal	-48.53	-13.00	35.53	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 28 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	1461.66	-56.42	1.50	8.70	Horizontal	-51.37	-13.00	38.37	45
3	2188.60	-61.03	2.10	11.10	Horizontal	-54.18	-13.00	41.18	315
4	2923.33	-57.11	2.50	13.10	Horizontal	-48.66	-13.00	35.66	45
5	3654.16	-58.41	2.60	12.70	Horizontal	-50.46	-13.00	37.46	0
6	4383.00	-62.03	3.00	12.50	Horizontal	-54.68	-13.00	41.68	180
7	5113.50	-58.19	3.40	12.50	Horizontal	-51.24	-13.00	38.24	45
8	5844.00	-59.43	3.30	12.50	Horizontal	-52.38	-13.00	39.38	225
9	6574.50	-59.85	3.50	12.80	Horizontal	-52.70	-13.00	39.70	315
10	7305.00	-54.82	4.40	12.20	Horizontal	-49.17	-13.00	36.17	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 28 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	1448.13	-60.62	1.50	8.70	Horizontal	-55.57	-13.00	42.57	270
3	2172.13	-57.87	2.10	11.10	Horizontal	-51.02	-13.00	38.02	0
4	2896.46	-56.54	2.50	13.10	Horizontal	-48.09	-13.00	35.09	45
5	3620.50	-51.42	2.60	12.70	Horizontal	-43.47	-13.00	30.47	90
6	4338.00	-61.48	3.00	12.50	Horizontal	-54.13	-13.00	41.13	225
7	5061.00	-58.01	3.40	12.50	Horizontal	-51.06	-13.00	38.06	135
8	5784.00	-57.52	3.30	12.50	Horizontal	-50.47	-13.00	37.47	135
9	6507.00	-61.22	3.50	12.80	Horizontal	-54.07	-13.00	41.07	135
10	7230.00	-54.50	4.40	12.20	Horizontal	-48.85	-13.00	35.85	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.									

6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2021-05-15	2022-05-14
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	/	/
Spectrum Analyzer	Key sight	N9010A	MY50210259	2021-05-15	2022-05-14
Signal Analyzer	R&S	FSV3030	101411	2020-12-13	2021-12-12
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2020-04-02	2023-04-01
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	391	2019-12-16	2022-12-15
Horn Antenna	R&S	HF907	100125	2020-05-25	2023-05-24
Signal generator	R&S	SMB 100A	102594	2021-05-15	2022-05-14
Climatic Chamber	ESPEC	SU-242	93000506	2020-12-13	2021-12-12
Preampflier	R&S	SCU18	102327	2021-05-15	2022-05-14
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2021-06-09	2021-12-08
RF Cable	Agilent	SMA 15cm	0001	2021-06-09	2021-12-08
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.

ANNEX C: Product Change Description

The Product Change Description are submitted separately.