RF TEST REPORT

Applicant	ZTE Corporation
FCC ID	SRQ-ZTEA31
Product	LTE/WCDMA/GSM(GPRS) Multi-Mode Digital Mobile Phone
Model	ZTE Blade A31
Report No.	R2108A0673-R6
Issue Date	August 31, 2021

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

Prepared by: Peng Tao

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

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

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

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

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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(b)(10) 27.50(c)(10)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edge Compliance	27.53(g) 27.53(f) /27.53(c)	PASS
4	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
5	Frequency Stability	2.1055 / 27.54	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 27.53(g) 27.53(f) /27.53(c)	PASS
7	Radiates Spurious Emission	2.1053 27.53(g) 27.53(f) /27.53(c)	PASS
Date of Testing: August 15, 2021~August 22, 2021 Date of Sample Received: August 11, 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.			

This report only tests LTE Band 12/13/17. Other LTE test band referred to the SRTC report. (Report No. SRTC2021-9004(F)-21011203(C)).

1 Test Laboratory

1.1 Notes of the Test Report

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

1.2. Test facility

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

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

A2LA (Certificate Number: 3857.01)

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

1.3 Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City:	Shanghai
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	http://www.ta-shanghai.com
E-mail:	xukai@ta-shanghai.com

2 General Description of Equipment under Test

2.1 Applicant and Manufacturer Information

Applicant	ZTE Corporation
Applicant address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

2.2 General information

EUT Description			
Model	ZTE Blade A31		
IMEI	864210051724565		
Hardware Version	zf7A		
Software Version	FLOW_JM_A31_V1.0		
Power Supply	Battery / AC adapter		
Antenna Type	Internal Antenna		
Antenna Gain	-3.6dBi		
Test Mode(s)	LTE Band 12/13/17		
Test Modulation	(LTE)QPSK, 16QAM, 64QAM ;		
LTE Category	5		
Maximum E.R.P.	LTE Band 12	18.66dBm	
	LTE Band 13	18.73dBm	
	LTE Band 17	18.59dBm	
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		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	LTE Band 12	699 ~ 716	729 ~ 746
	LTE Band 13	777 ~ 787	746 ~ 756
	LTE Band 17	704~716	734~746
EUT Accessory			
Adapter 1	Manufacturer: Shenzhen Ruijing Industrial Co., Ltd Model: STC-A51D-Z		
Adapter 2	Manufacturer: Dongguan Aohai Power Technology Co., Ltd. Model: STC-A51D-Z		

Adapter 3	Manufacturer: HUIZHOU PUAN ELECTRONICS CO.,LTD Model: STC-A51D-Z
Battery	Manufacturer: Guangdong Fenghua New Energy Co.,Ltd. Model: Li3830T43P8h486375
Earphone 1	Manufacturer: JUWEI ELECTRONICS CO.,LTD Model: JWEP1091-Z01
Earphone 2	Manufacturer: ShenZhen FDC Electronic Co.,Ltd Model: DEM-8A
USB Cable 1	Manufacturer: Dongguan Guojun Plastic Electronic Co.,Ltd Model: USB-MU5-B-70-M-L
USB Cable 2	Manufacturer: Shenzhen Yihuaxing Electronic Co.,Ltd Model: USB-MU5-B-70-M-L
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant. 2. There is more than one SIM / Adapter /USB cable/ Battery/ Earphone, each one should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 3/ Earphone 2/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 (2020)

ANSI C63.26 (2015)

Reference standard:

FCC CFR47 Part 2 (2020)

KDB 971168 D01 Power Meas License Digital Systems v03r01

4 Test Configuration

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, horizontal polarization) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated.
Subsequently, only the worst case emissions are reported.
The following testing in LTE is set based on the maximum RF Output Power.

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

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

Spurious Emission	LTE 13	-	-	O	O	-	-	O	-	O	O	-	-	-	O	-
	LTE 17	-	-	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

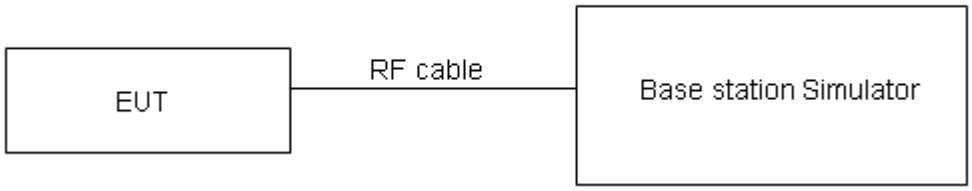
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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(b) (10) specifies that “Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP”
Rule Part 27.50(c) (10) specifies that “Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP”

Part 27.50(b)(10)Limit	≤ 3 W (34.77 dBm)
Part 27.50(c)(10)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 12				Maximum Output Power(dBm)			ERP (dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				23017/ 699.7	23095/ 707.5	23173/ 715.3	23017/ 699.7	23095/ 707.5	23173/ 715.3
1.4MHz	QPSK	1	0	24.38	24.35	24.24	18.63	18.60	18.49
		1	2	24.33	24.37	24.23	18.58	18.62	18.48
		1	5	24.33	24.14	24.21	18.58	18.39	18.46
		3	0	24.28	24.23	24.10	18.53	18.48	18.35
		3	2	24.14	24.26	23.96	18.39	18.51	18.21
		3	3	24.17	23.98	24.15	18.42	18.23	18.40
		6	0	23.28	23.30	23.05	17.53	17.55	17.30
	16QAM	1	0	23.20	23.28	23.35	17.45	17.53	17.60
		1	2	23.18	23.13	23.52	17.43	17.38	17.77
		1	5	23.59	23.50	22.51	17.84	17.75	16.76
		3	0	23.39	23.32	23.40	17.64	17.57	17.65
		3	2	23.32	23.18	23.29	17.57	17.43	17.54
		3	3	23.20	23.26	23.30	17.45	17.51	17.55
		6	0	22.20	22.25	22.20	16.45	16.50	16.45
	64QAM	1	0	22.41	22.38	22.19	16.66	16.63	16.44
		1	2	22.14	21.94	22.02	16.39	16.19	16.27
		1	5	22.09	22.04	22.04	16.34	16.29	16.29
		3	0	22.26	22.13	22.09	16.51	16.38	16.34
		3	2	22.14	22.03	21.98	16.39	16.28	16.23
		3	3	22.24	22.15	22.15	16.49	16.40	16.40
		6	0	21.02	21.18	21.35	15.27	15.43	15.60
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				23025/ 700.5	23095/ 707.5	23165/ 714.5	23025/ 700.5	23095/ 707.5	23165/ 714.5
3MHz	QPSK	1	0	24.39	24.38	24.26	18.64	18.63	18.51
		1	7	24.32	24.41	24.28	18.57	18.66	18.53
		1	14	24.35	24.18	24.24	18.60	18.43	18.49
		8	0	23.38	23.35	23.23	17.63	17.60	17.48
		8	4	23.27	23.37	23.07	17.52	17.62	17.32
		8	7	23.27	23.11	23.26	17.52	17.36	17.51
		15	0	23.32	23.35	23.10	17.57	17.60	17.35

	16QAM	1	0	23.22	23.29	23.37	17.47	17.54	17.62
		1	7	23.21	23.15	23.56	17.46	17.40	17.81
		1	14	23.61	23.54	22.53	17.86	17.79	16.78
		8	0	22.51	22.46	22.53	16.76	16.71	16.78
		8	4	22.42	22.30	22.40	16.67	16.55	16.65
		8	7	22.30	22.38	22.43	16.55	16.63	16.68
		15	0	22.24	22.30	22.22	16.49	16.55	16.47
	64QAM	1	0	22.43	22.39	22.21	16.68	16.64	16.46
		1	7	22.17	21.96	22.04	16.42	16.21	16.29
		1	14	22.11	22.03	22.06	16.36	16.28	16.31
		8	0	21.38	21.27	21.22	15.63	15.52	15.47
		8	4	21.24	21.15	21.09	15.49	15.40	15.34
		8	7	21.34	21.27	21.28	15.59	15.52	15.53
		15	0	21.06	21.23	21.37	15.31	15.48	15.62

BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				23035/ 701.5	23095/ 707.5	23155/ 713.5	23035/ 701.5	23095/ 707.5	23155/ 713.5
5MHz	QPSK	1	0	24.38	24.34	24.24	18.63	18.59	18.49
		1	13	24.30	24.40	24.25	18.55	18.65	18.50
		1	24	24.32	24.13	24.20	18.57	18.38	18.45
		12	0	23.36	23.31	23.20	17.61	17.56	17.45
		12	6	23.24	23.32	23.03	17.49	17.57	17.28
		12	13	23.24	23.08	23.22	17.49	17.33	17.47
		25	0	23.30	23.31	23.05	17.55	17.56	17.30
	16QAM	1	0	23.17	23.27	23.35	17.42	17.52	17.60
		1	13	23.19	23.12	23.54	17.44	17.37	17.79
		1	24	23.58	23.50	22.50	17.83	17.75	16.75
		12	0	22.48	22.44	22.50	16.73	16.69	16.75
		12	6	22.39	22.25	22.36	16.64	16.50	16.61
		12	13	22.28	22.34	22.40	16.53	16.59	16.65
		25	0	22.21	22.25	22.18	16.46	16.50	16.43
	64QAM	1	0	22.38	22.37	22.19	16.63	16.62	16.44
		1	13	22.15	21.93	22.02	16.40	16.18	16.27
		1	24	22.12	22.02	22.07	16.37	16.27	16.32
		12	0	21.37	21.29	21.23	15.62	15.54	15.48
		12	6	21.22	21.12	21.08	15.47	15.37	15.33
		12	13	21.32	21.23	21.25	15.57	15.48	15.50

		25	0	21.03	21.18	21.33	15.28	15.43	15.58
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				23060/ 704	23095/ 707.5	23130/ 711	23060/ 704	23095/ 707.5	23130/ 711
10MHz	QPSK	1	0	24.35	24.30	24.21	18.60	18.55	18.46
		1	25	24.29	24.36	24.23	18.54	18.61	18.48
		1	49	24.30	24.12	24.17	18.55	18.37	18.42
		25	0	23.33	23.26	23.16	17.58	17.51	17.41
		25	13	23.22	23.28	23.00	17.47	17.53	17.25
		25	25	23.21	23.03	23.18	17.46	17.28	17.43
		50	0	23.27	23.26	23.01	17.52	17.51	17.26
	16QAM	1	0	23.26	23.23	23.30	17.51	17.48	17.55
		1	25	23.15	23.10	23.50	17.40	17.35	17.75
		1	49	23.56	23.47	22.48	17.81	17.72	16.73
		25	0	22.45	22.40	22.47	16.70	16.65	16.72
		25	13	22.36	22.23	22.33	16.61	16.48	16.58
		25	25	22.25	22.29	22.36	16.50	16.54	16.61
		50	0	22.19	22.21	22.15	16.44	16.46	16.40
	64QAM	1	0	22.36	22.33	22.14	16.61	16.58	16.39
		1	25	22.11	21.91	21.98	16.36	16.16	16.23
		1	49	22.06	21.96	22.01	16.31	16.21	16.26
		25	0	21.32	21.21	21.16	15.57	15.46	15.41
		25	13	21.18	21.08	21.02	15.43	15.33	15.27
		25	25	21.29	21.18	21.21	15.54	15.43	15.46
		50	0	21.01	21.14	21.30	15.26	15.39	15.55

LTE Band 13				Maximum Output Power(dBm)			ERP (dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				23205/ 779.5	23230/ 782	23255/ 784.5	23205/ 779.5	23230/ 782	23255/ 784.5
5MHz	QPSK	1	0	23.77	23.93	23.80	18.32	18.48	18.35
		1	13	23.81	23.97	23.84	18.36	18.52	18.39
		1	24	23.94	24.10	23.97	18.49	18.65	18.52
		12	0	22.85	23.01	22.88	17.4	17.56	17.43
		12	6	22.72	22.88	22.75	17.27	17.43	17.3
		12	13	22.67	22.83	22.70	17.22	17.38	17.25
		25	0	22.76	22.92	22.79	17.31	17.47	17.34
	16QAM	1	0	23.18	23.34	23.21	17.73	17.89	17.76
		1	13	23.08	23.24	23.11	17.63	17.79	17.66
		1	24	22.92	23.08	22.95	17.47	17.63	17.5
		12	0	21.72	21.88	21.75	16.27	16.43	16.3
		12	6	21.68	21.84	21.71	16.23	16.39	16.26
		12	13	21.65	21.81	21.68	16.2	16.36	16.23
		25	0	21.69	21.85	21.72	16.24	16.4	16.27
	64QAM	1	0	21.73	21.89	21.76	16.28	16.44	16.31
		1	13	21.63	21.79	21.66	16.18	16.34	16.21
		1	24	21.66	21.82	21.69	16.21	16.37	16.24
		12	0	20.71	20.87	20.74	15.26	15.42	15.29
		12	6	20.53	20.69	20.56	15.08	15.24	15.11
		12	13	20.56	20.72	20.59	15.11	15.27	15.14
		25	0	20.44	20.60	20.47	14.99	15.15	15.02
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				/	23230/ 782	/	/	23230/ 782	/
10MHz	QPSK	1	0	/	23.96	/	/	18.51	/
		1	25	/	24.07	/	/	18.62	/
		1	49	/	24.18	/	/	18.73	/
		25	0	/	23.07	/	/	17.62	/
		25	13	/	22.94	/	/	17.49	/
		25	25	/	22.89	/	/	17.44	/
		50	0	/	22.95	/	/	17.5	/
	16QAM	1	0	/	23.41	/	/	17.96	/
		1	25	/	23.33	/	/	17.88	/

		1	49	/	23.13	/	/	17.68	/
		25	0	/	21.97	/	/	16.52	/
		25	13	/	21.91	/	/	16.46	/
		25	25	/	21.87	/	/	16.42	/
		50	0	/	21.91	/	/	16.46	/
	64QAM	1	0	/	21.92	/	/	16.47	/
		1	25	/	21.84	/	/	16.39	/
		1	49	/	21.87	/	/	16.42	/
		25	0	/	20.96	/	/	15.51	/
		25	13	/	20.76	/	/	15.31	/
		25	25	/	20.78	/	/	15.33	/
		50	0	/	20.66	/	/	15.21	/

LTE Band 17				Maximum Output Power(dBm)			ERP (dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				23755/ 706.5	23790/ 710	23825/ 713.5	23755/ 706.5	23790/ 710	23825/ 713.5
5MHz	QPSK	1	0	24.23	24.34	24.21	18.48	18.59	18.46
		1	13	24.25	24.25	24.24	18.50	18.50	18.49
		1	24	24.14	24.19	24.28	18.39	18.44	18.53
		12	0	23.20	23.24	23.25	17.45	17.49	17.50
		12	6	23.25	23.17	23.08	17.50	17.42	17.33
		12	13	23.14	23.20	23.12	17.39	17.45	17.37
		25	0	23.17	23.14	23.09	17.42	17.39	17.34
	16QAM	1	0	23.70	23.46	23.51	17.95	17.71	17.76
		1	13	23.68	23.69	23.43	17.93	17.94	17.68
		1	24	23.65	23.44	23.38	17.90	17.69	17.63
		12	0	22.09	22.05	22.17	16.34	16.30	16.42
		12	6	22.19	22.17	22.13	16.44	16.42	16.38
		12	13	22.13	22.22	22.19	16.38	16.47	16.44
		25	0	22.08	22.19	22.11	16.33	16.44	16.36
	64QAM	1	0	22.03	21.95	22.01	16.28	16.20	16.26
		1	13	21.99	21.96	21.92	16.24	16.21	16.17
		1	24	21.88	22.02	21.95	16.13	16.27	16.20
		12	0	21.04	21.07	21.08	15.29	15.32	15.33
		12	6	21.32	21.22	21.10	15.57	15.47	15.35

		12	13	21.38	21.47	21.55	15.63	15.72	15.80
		25	0	21.32	21.35	21.24	15.57	15.60	15.49
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)					
				23780/ 709	23790/ 710	23800/ 711	23780/ 709	23790/ 710	23800/ 711
10MHz	QPSK	1	0	24.21	24.27	24.19	18.46	18.52	18.44
		1	25	24.25	24.25	24.23	18.50	18.50	18.48
		1	49	24.11	24.17	24.24	18.36	18.42	18.49
		25	0	23.18	23.20	23.22	17.43	17.45	17.47
		25	13	23.23	23.13	23.05	17.48	17.38	17.30
		25	25	23.10	23.16	23.09	17.35	17.41	17.34
		50	0	23.16	23.07	23.04	17.41	17.32	17.29
	16QAM	1	0	23.45	23.43	23.46	17.70	17.68	17.71
		1	25	23.65	23.68	23.40	17.90	17.93	17.65
		1	49	23.63	23.39	23.36	17.88	17.64	17.61
		25	0	22.06	22.04	22.15	16.31	16.29	16.40
		25	13	22.15	22.14	22.09	16.40	16.39	16.34
		25	25	22.11	22.18	22.16	16.36	16.43	16.41
		50	0	22.06	22.15	22.08	16.31	16.40	16.33
	64QAM	1	0	21.98	21.88	21.96	16.23	16.13	16.21
		1	25	21.96	21.91	21.89	16.21	16.16	16.14
		1	49	21.82	21.97	21.93	16.07	16.22	16.18
		25	0	21.01	21.06	21.02	15.26	15.31	15.27
		25	13	21.28	21.19	21.06	15.53	15.44	15.31
		25	25	21.36	21.43	21.52	15.61	15.68	15.77
		50	0	21.30	21.31	21.21	15.55	15.56	15.46

5.2 Occupied Bandwidth

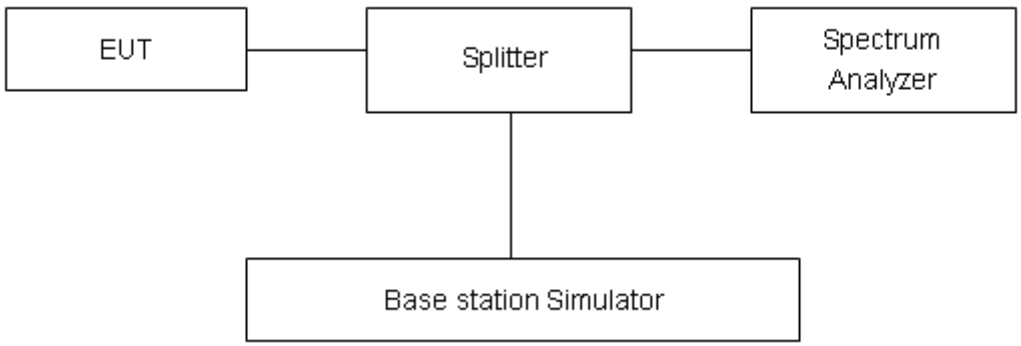
Ambient condition

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

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.
RBW is set to 30kHz, VBW is set to 91kHz for LTE Band 12 (1.4MHz).
RBW is set to 62kHz, VBW is set to 180kHz for LTE Band 12 (3MHz).
RBW is set to 100kHz, VBW is set to 300kHz for LTE Band 12/13/17 (5MHz).
RBW is set to 200kHz, VBW is set to 620kHz for LTE Band 12/13/17 (10MHz).
99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

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

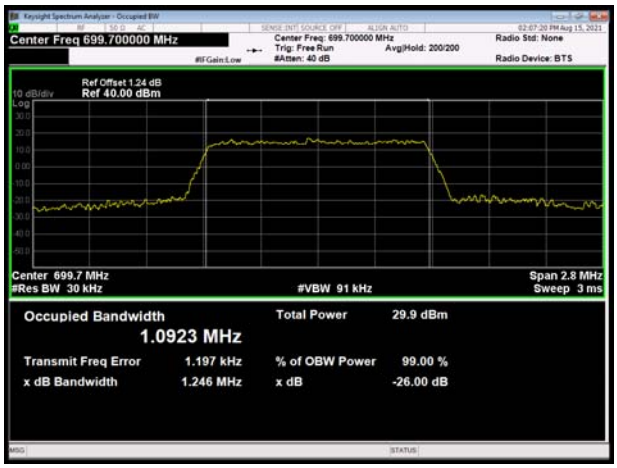
Test Result

LTE Band 12						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	23017	699.7	1.092	1.246
			23095	707.5	1.092	1.251
			23173	715.3	1.095	1.250
		3	23025	700.5	2.703	3.022
			23095	707.5	2.699	3.048
			23165	714.5	2.708	3.040
		5	23035	701.5	4.522	4.942
			23095	707.5	4.520	4.956
			23155	713.5	4.513	4.995
		10	23060	704	8.982	9.857
			23095	707.5	8.962	9.832
			23130	711	9.002	9.728
	16QAM	1.4	23017	699.7	1.100	1.256
			23095	707.5	1.094	1.242
			23173	715.3	1.099	1.249
		3	23025	700.5	2.719	3.050
			23095	707.5	2.708	3.045
			23165	714.5	2.703	3.031
		5	23035	701.5	4.502	4.980
			23095	707.5	4.535	4.978
			23155	713.5	4.513	4.955
		10	23060	704	8.968	9.794
			23095	707.5	8.997	9.889
			23130	711	8.997	9.864
	64QAM	1.4	23017	699.7	1.098	1.251
			23095	707.5	1.100	1.253
			23173	715.3	1.096	1.242
		3	23025	700.5	2.721	3.018
			23095	707.5	2.706	3.051
			23165	714.5	2.705	3.074
		5	23035	701.5	4.512	4.985
			23095	707.5	4.526	4.946
			23155	713.5	4.517	4.955
		10	23060	704	9.001	9.785
			23095	707.5	8.995	9.801
			23130	711	9.004	9.963

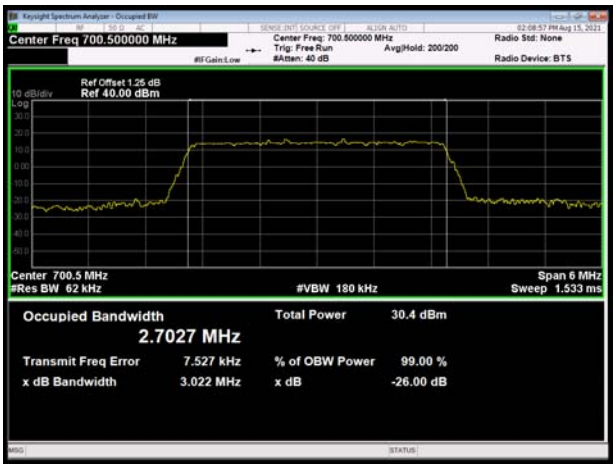
LTE Band 13						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	23205	779.5	4.528	4.957
			23230	782	4.526	4.982
			23255	784.5	4.500	4.965
		10	23230	782	9.044	9.969
	16QAM	5	23205	779.5	4.513	4.981
			23230	782	4.531	5.005
			23255	784.5	4.500	5.032
		10	23230	782	9.035	9.872
	64QAM	5	23205	779.5	4.516	4.968
			23230	782	4.537	4.958
			23255	784.5	4.516	4.970
		10	23230	782	9.035	9.952

LTE Band 17						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	23755	706.5	4.492	4.928
			23790	710	4.519	4.937
			23825	713.5	4.518	4.947
		10	23780	709	8.984	9.826
			23790	710	9.010	9.810
			23800	711	8.992	9.870
	16QAM	5	23755	706.5	4.504	4.905
			23790	710	4.500	4.972
			23825	713.5	4.511	4.980
		10	23780	709	9.031	9.824
			23790	710	8.990	9.744
			23800	711	8.998	9.791
	64QAM	5	23755	706.5	4.516	4.956
			23790	710	4.536	4.962
			23825	713.5	4.516	4.931
		10	23780	709	9.029	9.869
			23790	710	9.029	9.881
			23800	711	9.005	9.884

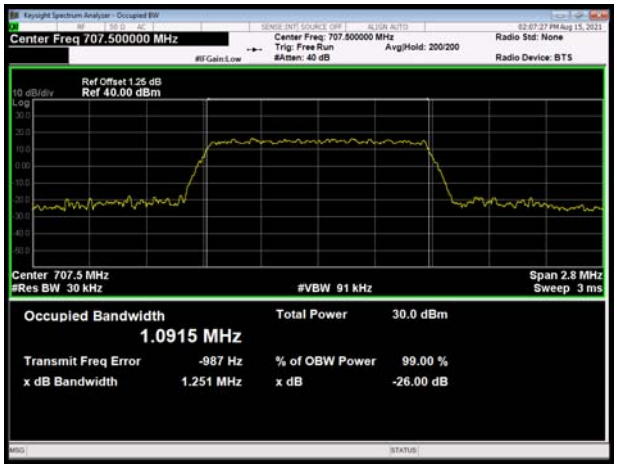
LTE Band 12 QPSK 1.4MHz CH-Low



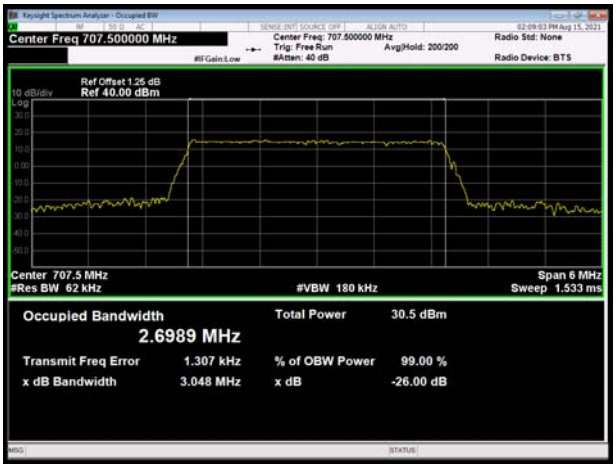
LTE Band 12 QPSK 3MHz CH-Low



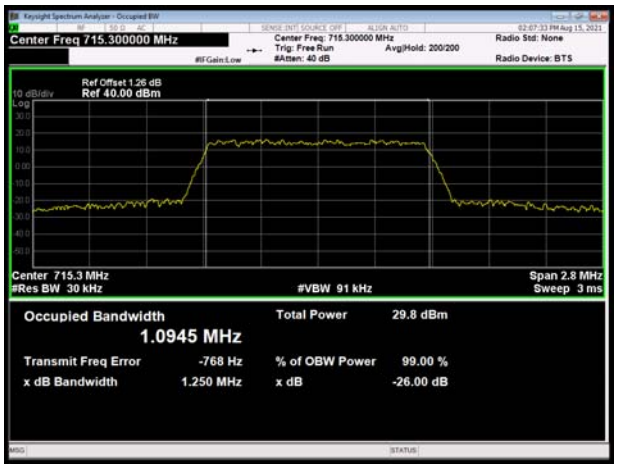
LTE Band 12 QPSK 1.4MHz CH-Middle



LTE Band 12 QPSK 3MHz CH-Middle

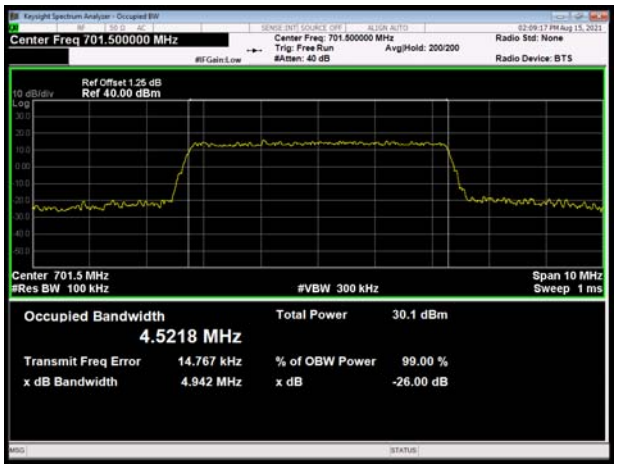


LTE Band 12 QPSK 1.4MHz CH-High

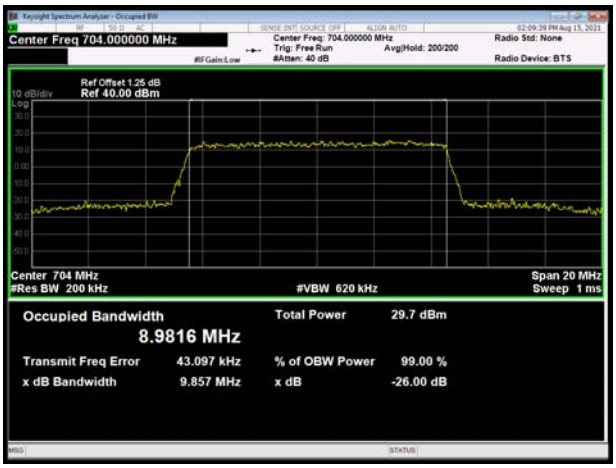


LTE Band 12 QPSK 3MHz CH-High

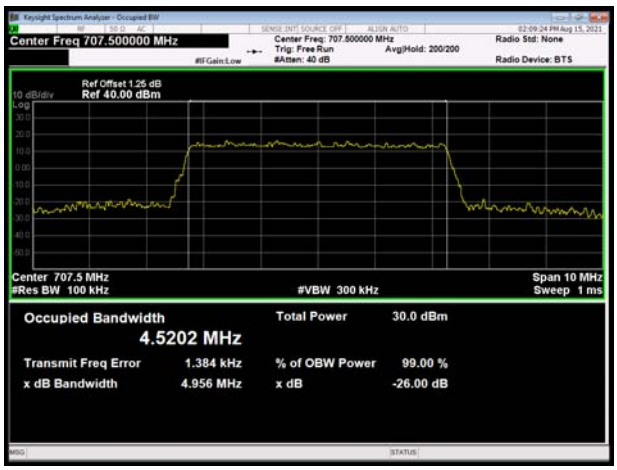
LTE Band 12 QPSK 5MHz CH-Low



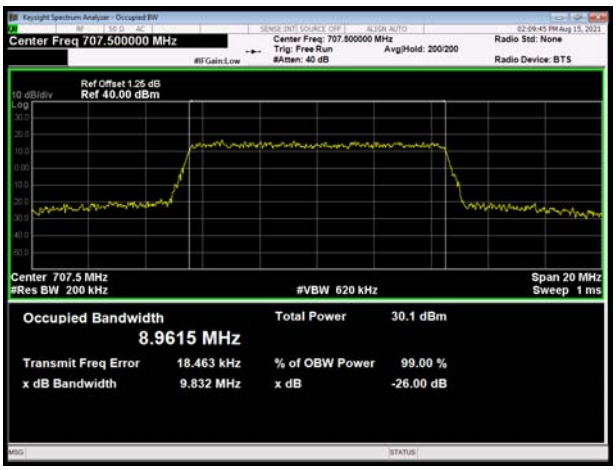
LTE Band 12 QPSK 10MHz CH-Low



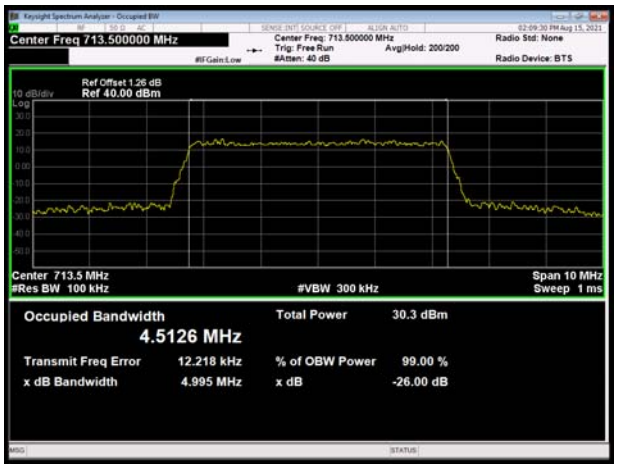
LTE Band 12 QPSK 5MHz CH-Middle



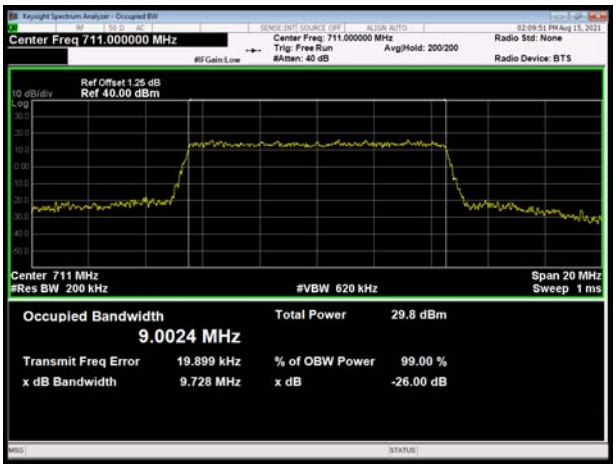
LTE Band 12 QPSK 10MHz CH-Middle



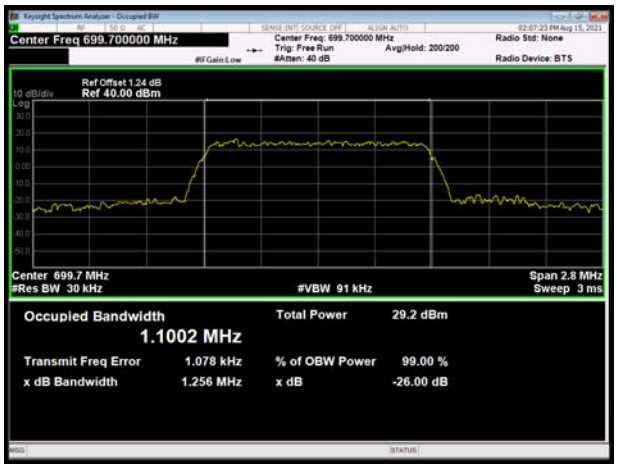
LTE Band 12 QPSK 5MHz CH-High



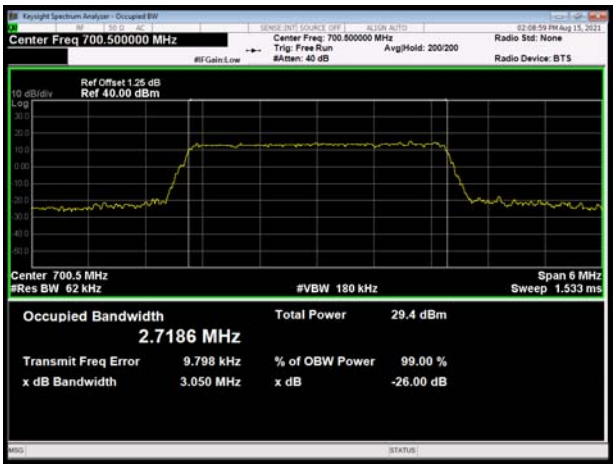
LTE Band 12 QPSK 10MHz CH-High



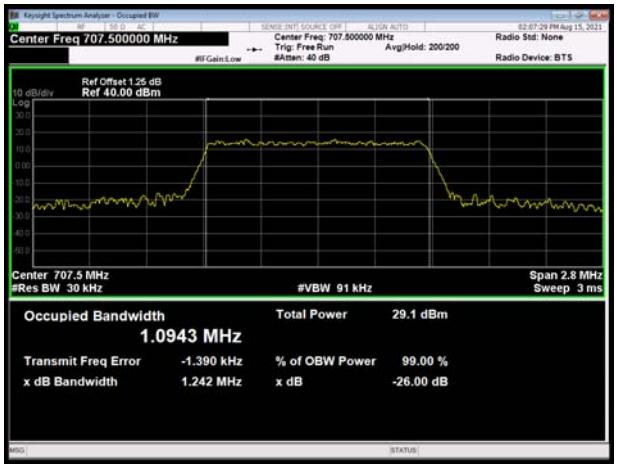
LTE Band 12 16QAM 1.4MHz CH-Low



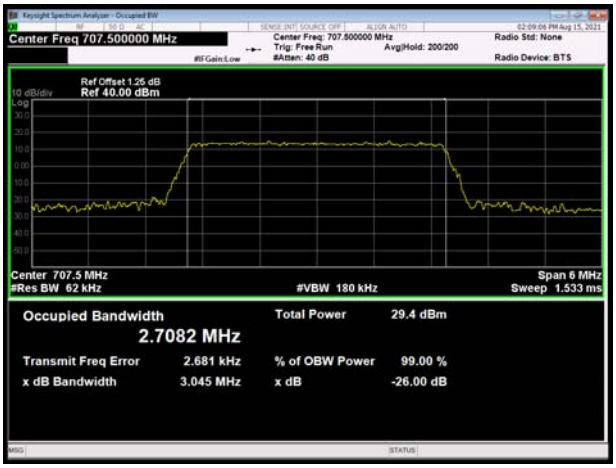
LTE Band 12 16QAM 3MHz CH-Low



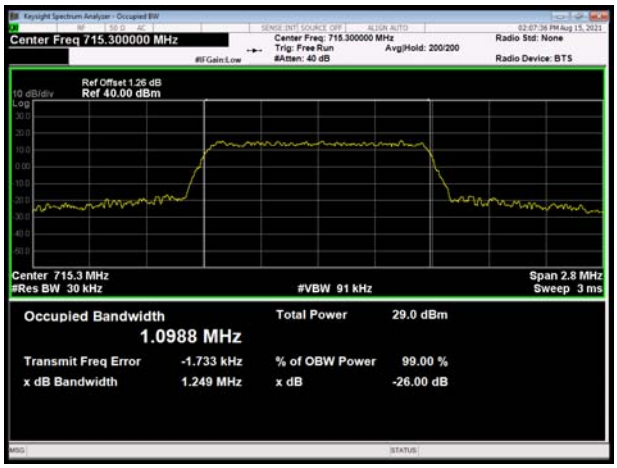
LTE Band 12 16QAM 1.4MHz CH-Middle



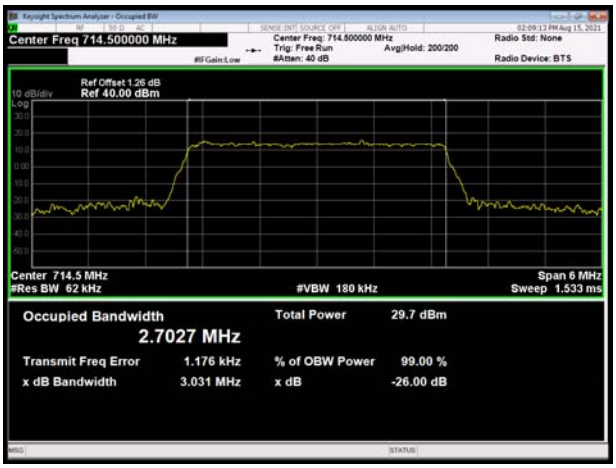
LTE Band 12 16QAM 3MHz CH-Middle



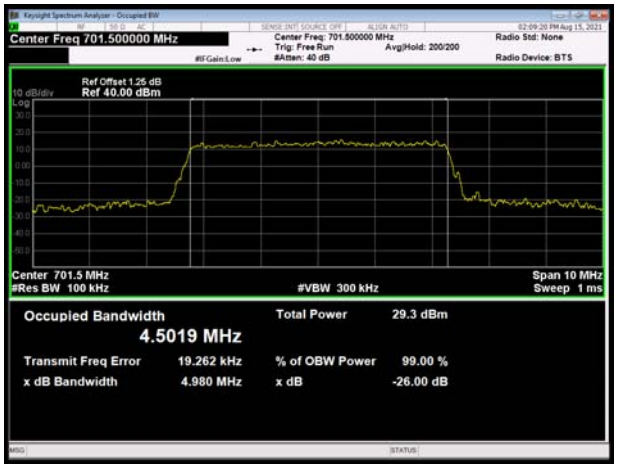
LTE Band 12 16QAM 1.4MHz CH-High



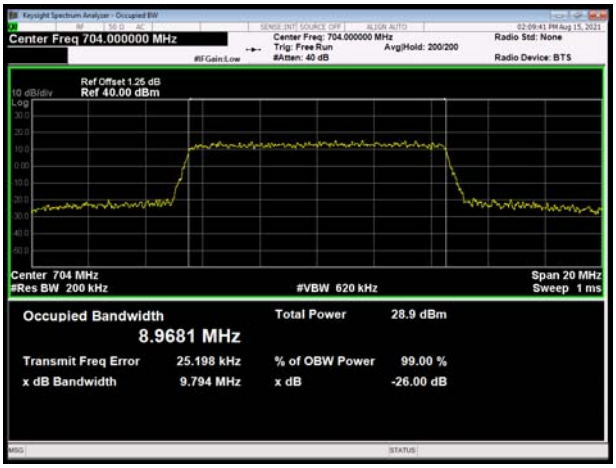
LTE Band 12 16QAM 3MHz CH-High



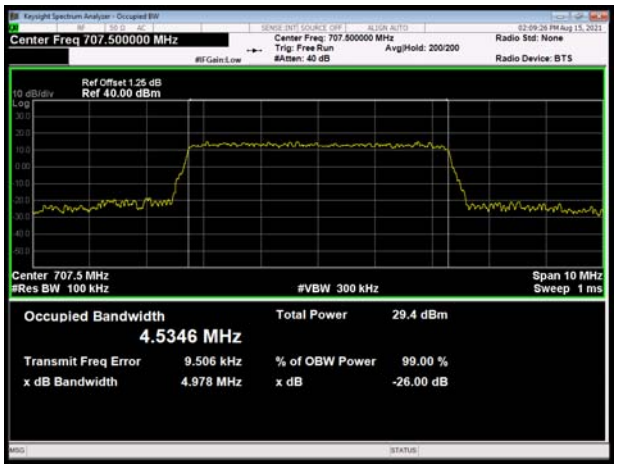
LTE Band 12 16QAM 5MHz CH-Low



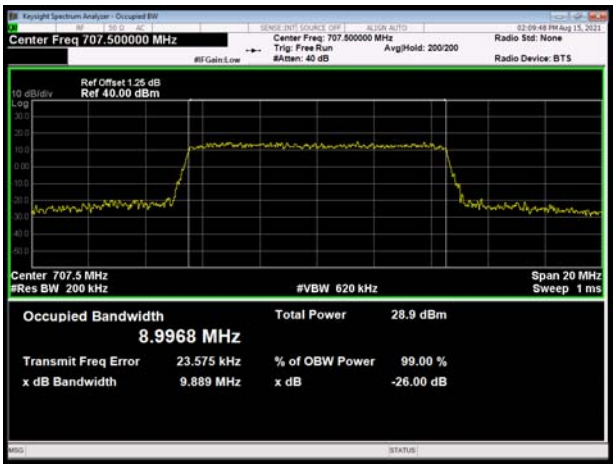
LTE Band 12 16QAM 10MHz CH-Low



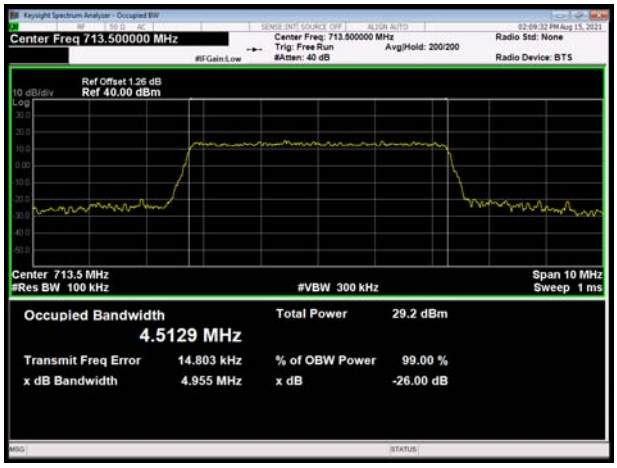
LTE Band 12 16QAM 5MHz CH-Middle



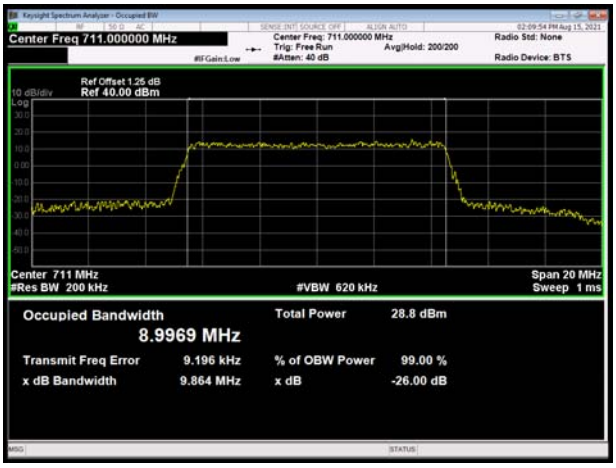
LTE Band 12 16QAM 10MHz CH-Middle



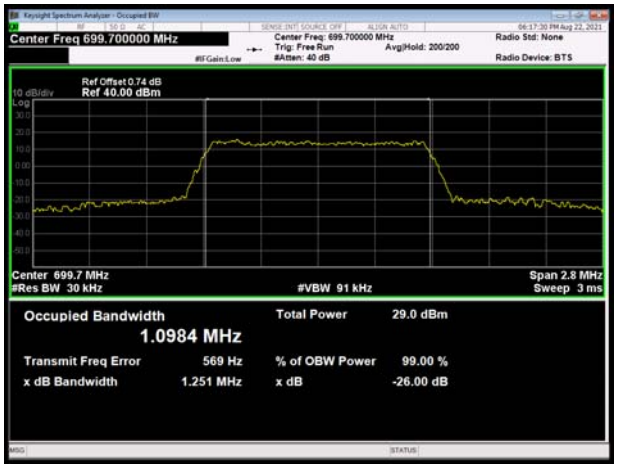
LTE Band 12 16QAM 5MHz CH-High



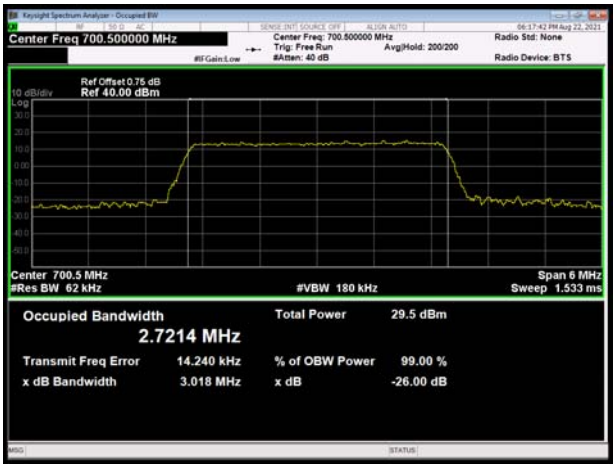
LTE Band 12 16QAM 10MHz CH-High



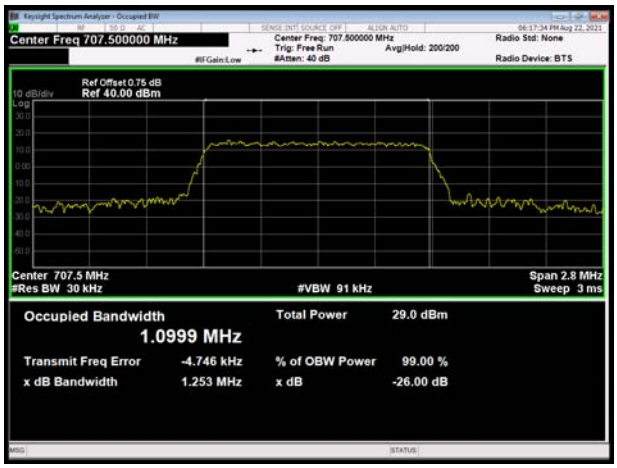
LTE Band 12 64QAM 1.4MHz CH-Low



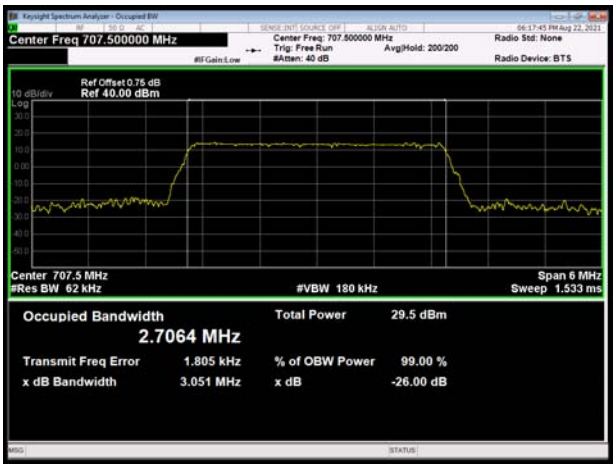
LTE Band 12 64QAM 3MHz CH-Low



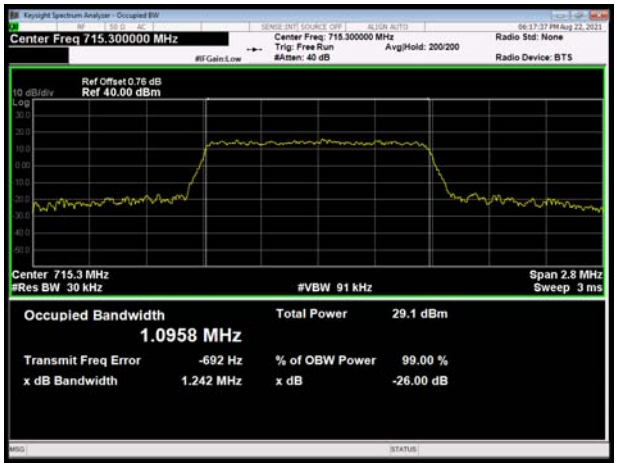
LTE Band 12 64QAM 1.4MHz CH-Middle



LTE Band 12 64QAM 3MHz CH-Middle

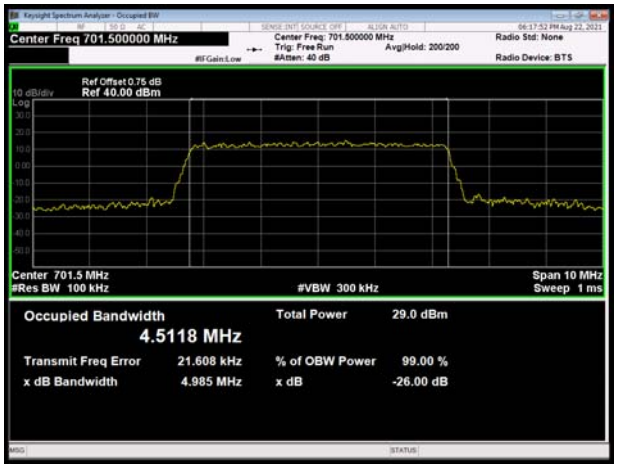


LTE Band 12 64QAM 1.4MHz CH-High

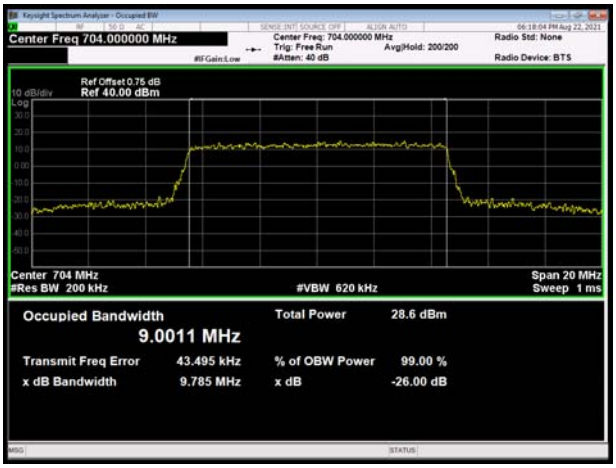


LTE Band 12 64QAM 3MHz CH-High

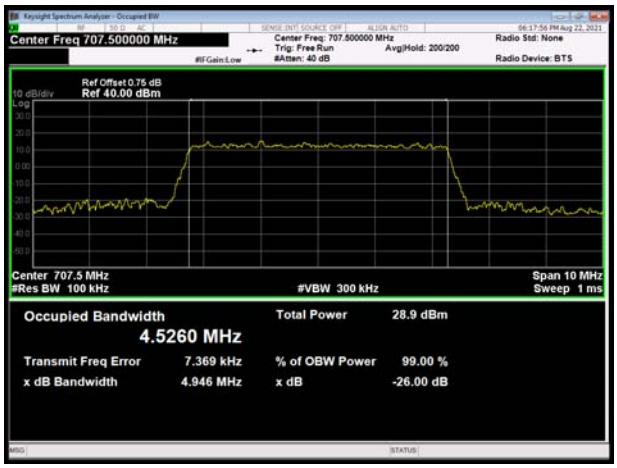
LTE Band 12 64QAM 5MHz CH-Low



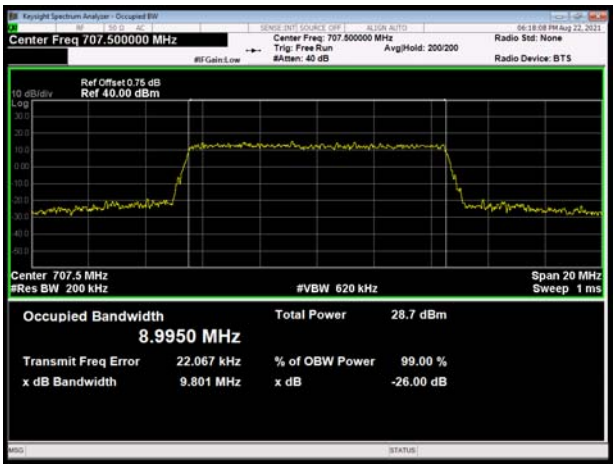
LTE Band 12 64QAM 10MHz CH-Low



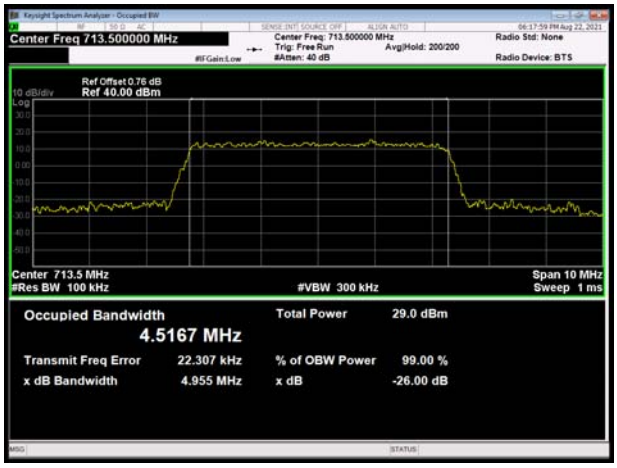
LTE Band 12 64QAM 5MHz CH-Middle



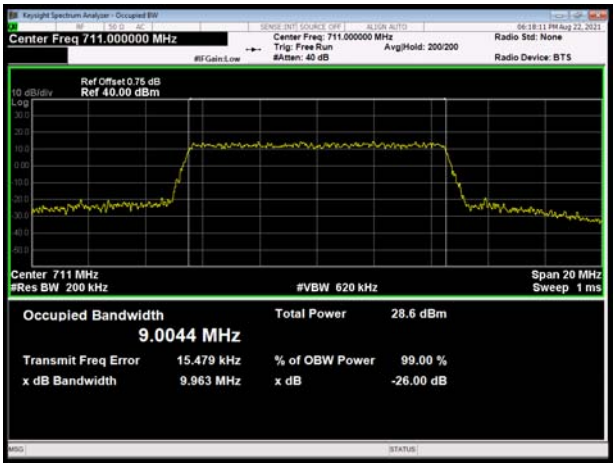
LTE Band 12 64QAM 10MHz CH-Middle



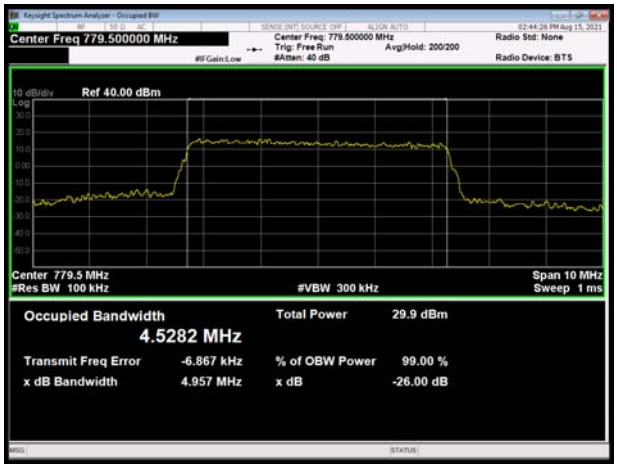
LTE Band 12 64QAM 5MHz CH-High



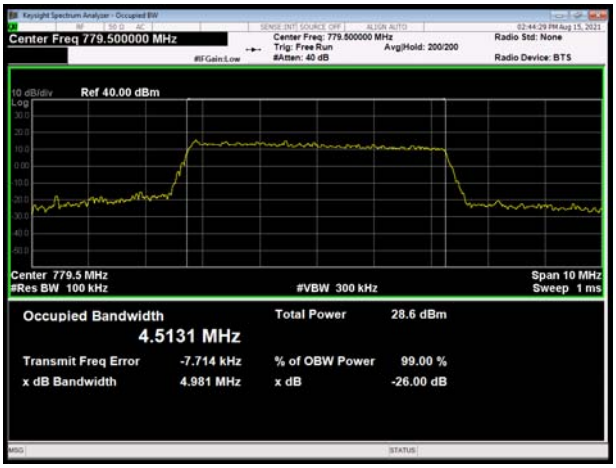
LTE Band 12 64QAM 10MHz CH-High



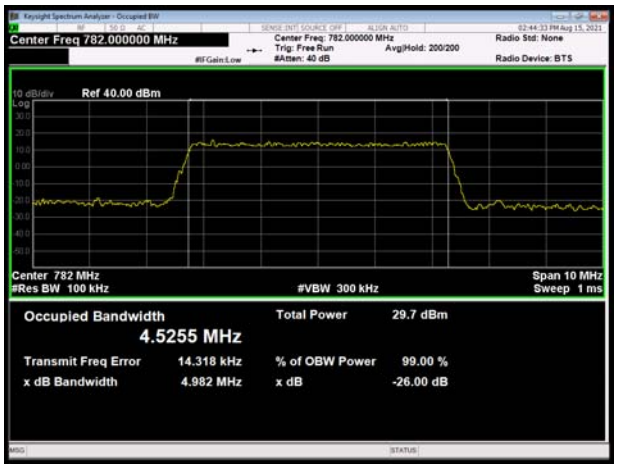
LTE Band 13 QPSK 5MHz CH-Low



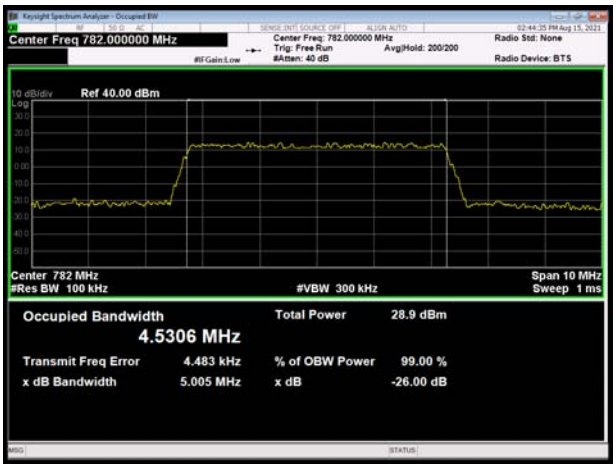
LTE Band 13 16QAM 5MHz CH-Low



LTE Band 13 QPSK 5MHz CH-Middle

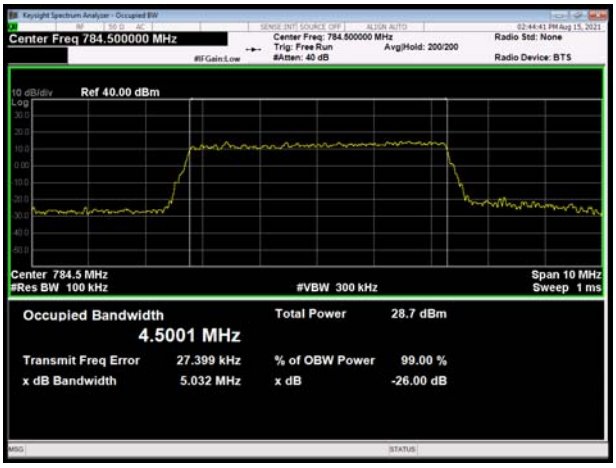


LTE Band 13 16QAM 5MHz CH-Middle



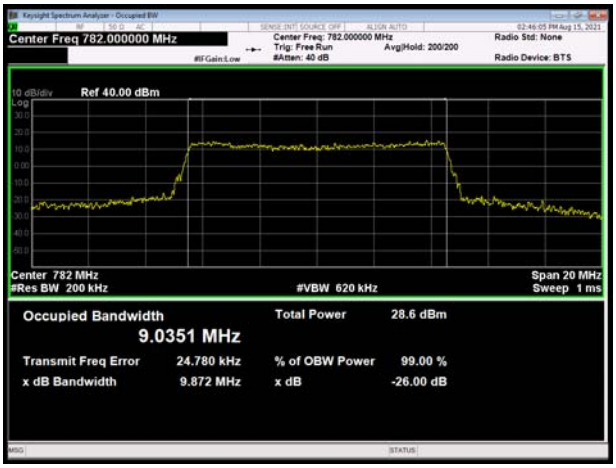
LTE Band 13 QPSK 5MHz CH-High

LTE Band 13 16QAM 5MHz CH-High

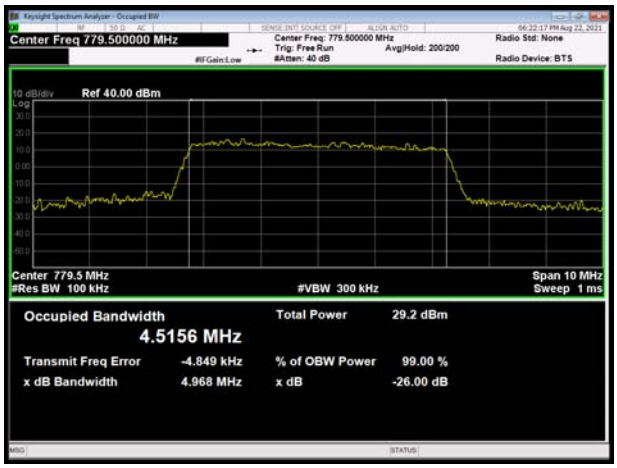


LTE Band 13 QPSK 10MHz CH-Middle

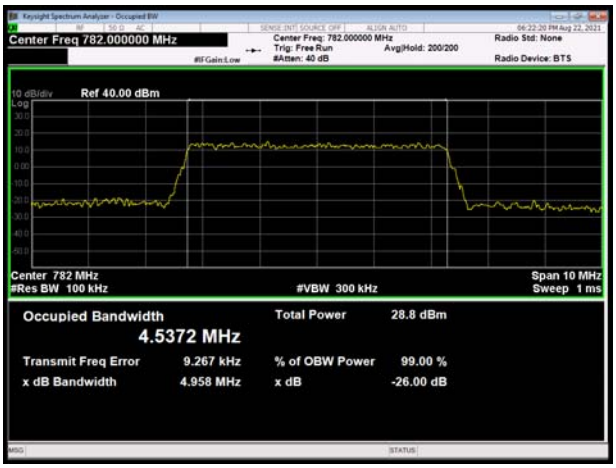
LTE Band 13 16QAM 10MHz CH-Middle



LTE Band 13 64QAM 5MHz CH-Low



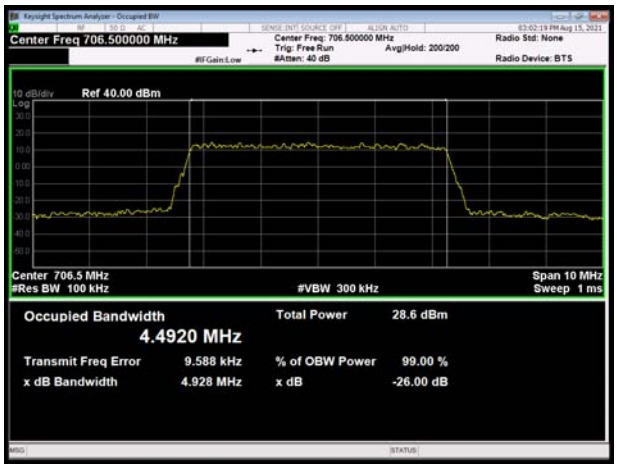
LTE Band 13 64QAM 5MHz CH-Middle



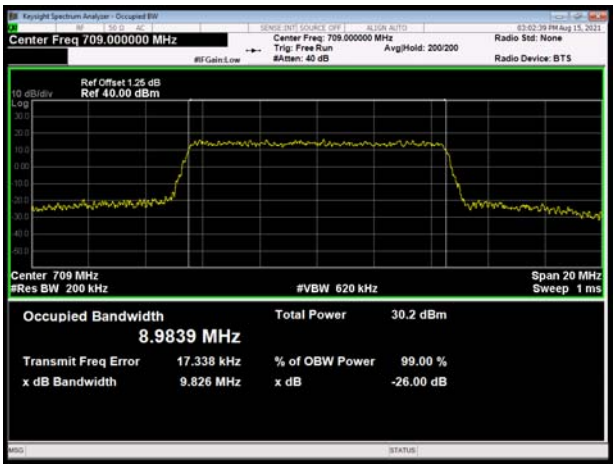
LTE Band 13 64QAM 5MHz CH-High

LTE Band 13 64QAM 10MHz CH-Middle

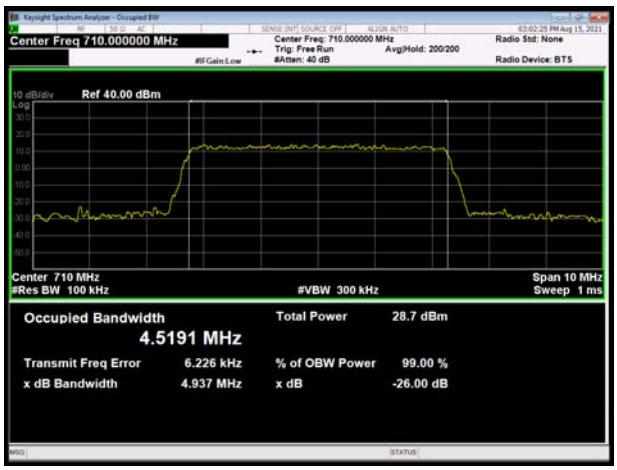
LTE Band 17 QPSK 5MHz CH-Low



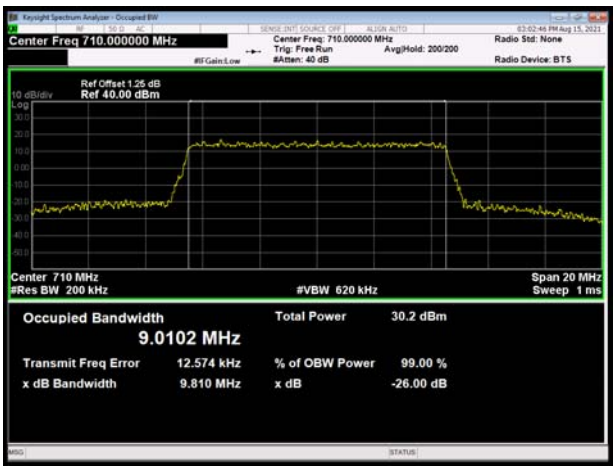
LTE Band 17 QPSK 10MHz CH-Low



LTE Band 17 QPSK 5MHz CH-Middle

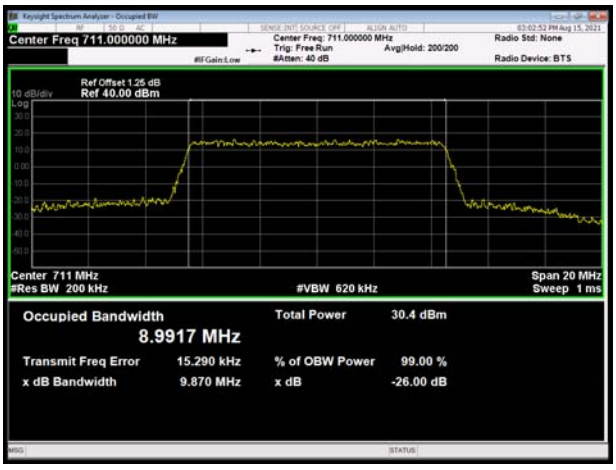


LTE Band 17 QPSK 10MHz CH-Middle

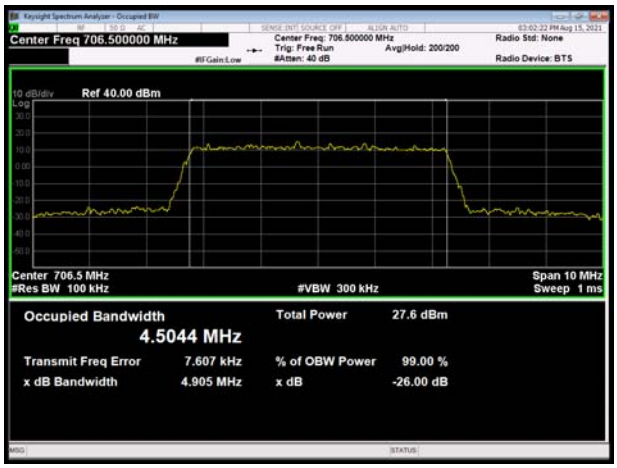


LTE Band 17 QPSK 5MHz CH-High

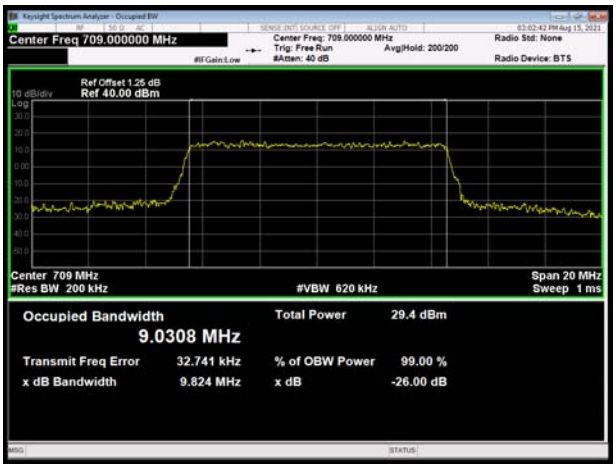
LTE Band 17 QPSK 10MHz CH-High



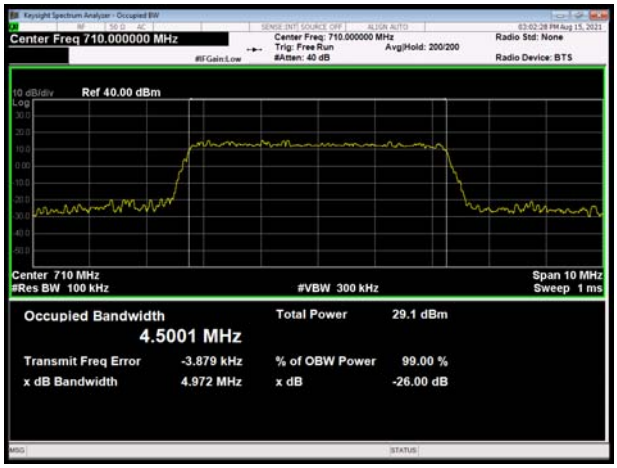
LTE Band 17 16QAM 5MHz CH-Low



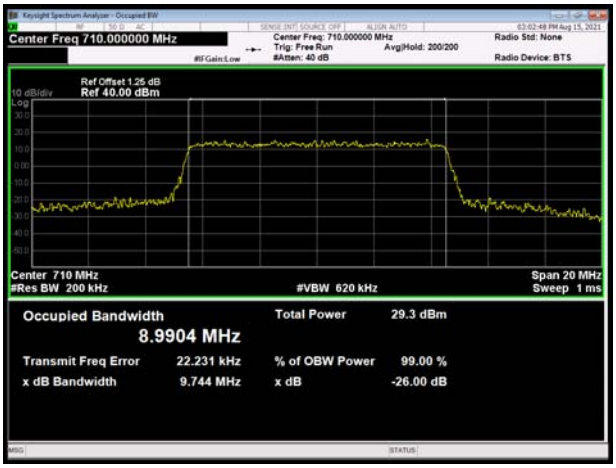
LTE Band 17 16QAM 10MHz CH-Low



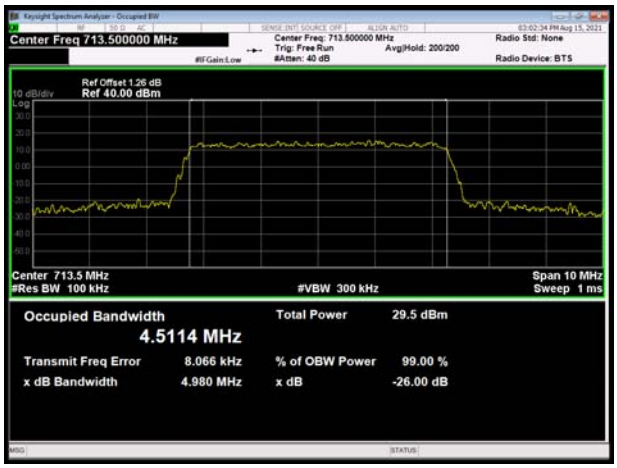
LTE Band 17 16QAM 5MHz CH-Middle



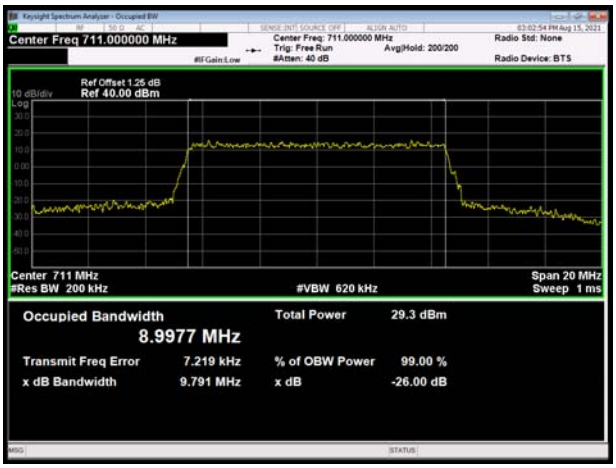
LTE Band 17 16QAM 10MHz CH-Middle



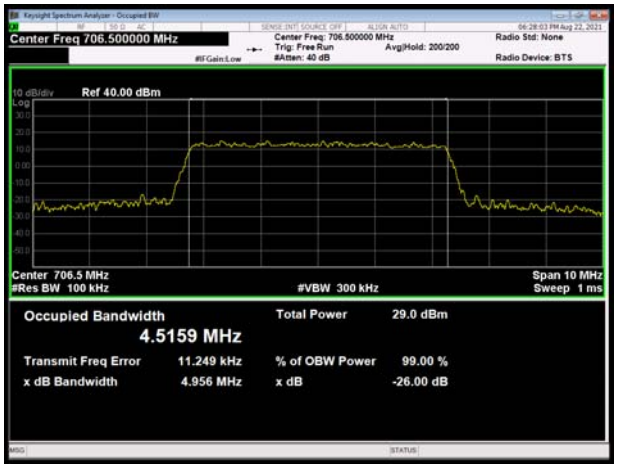
LTE Band 17 16QAM 5MHz CH-High



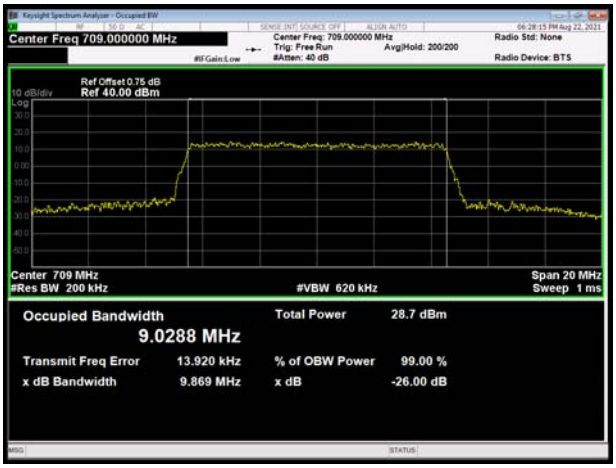
LTE Band 17 16QAM 10MHz CH-High



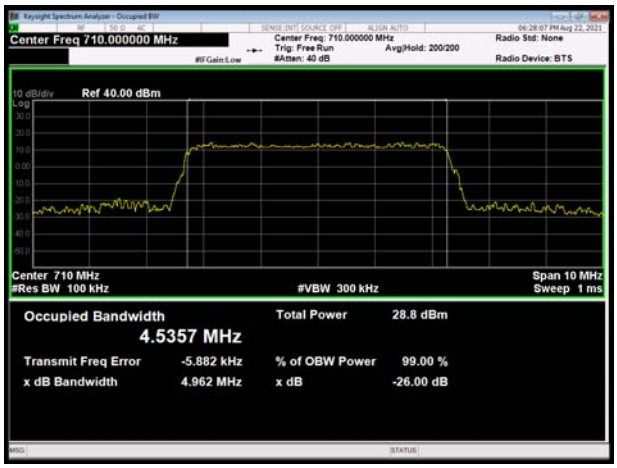
LTE Band 17 64QAM 5MHz CH-Low



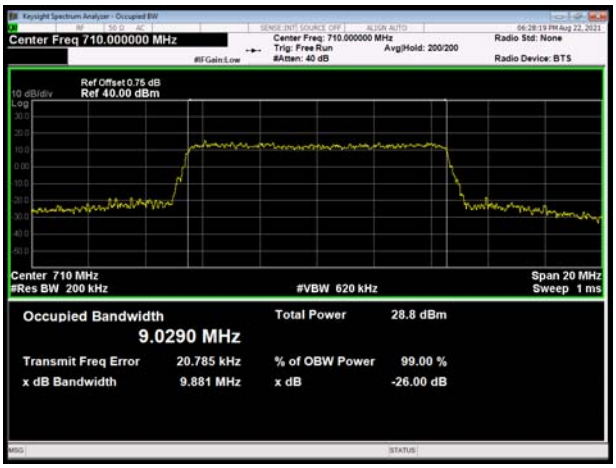
LTE Band 17 64QAM 10MHz CH-Low



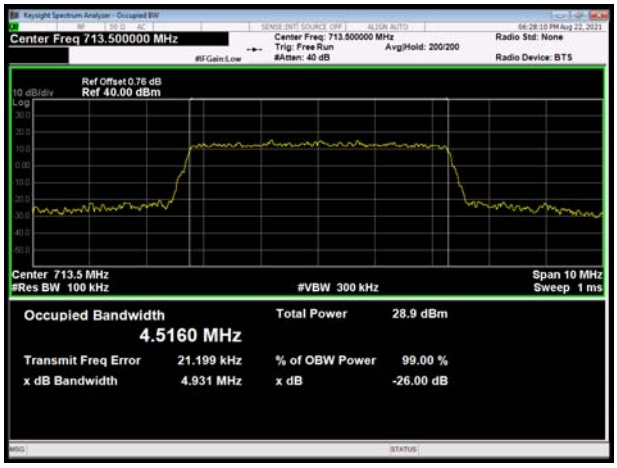
LTE Band 17 64QAM 5MHz CH-Middle



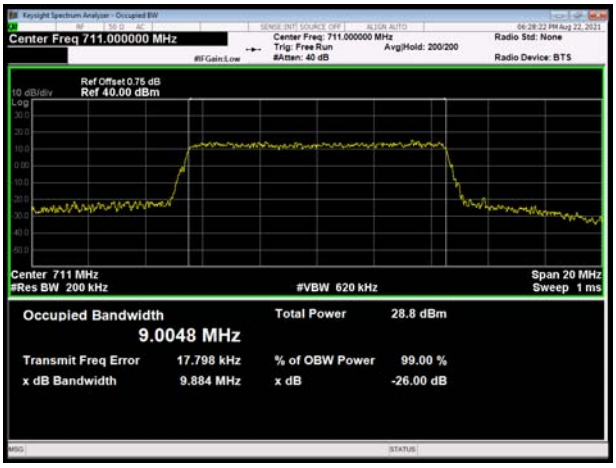
LTE Band 17 64QAM 10MHz CH-Middle



LTE Band 17 64QAM 5MHz CH-High



LTE Band 17 64QAM 10MHz CH-High



5.3 Band Edge Compliance

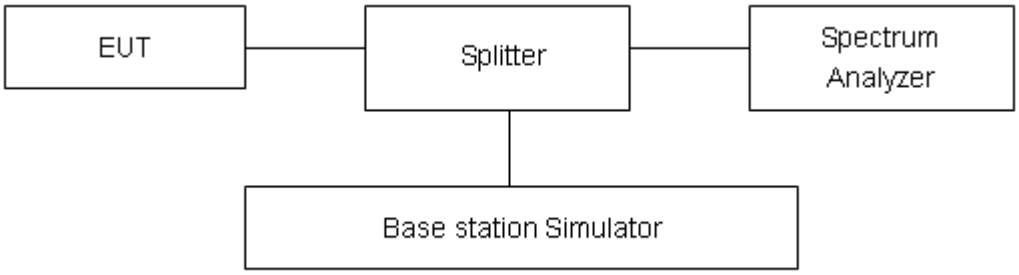
Ambient condition

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

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured.
The testing follows KDB 971168 D01 v03r01 Section 6.0
The EUT was connected to spectrum analyzer and system simulator via a power divider.
The band edges of low and high channels for the highest RF powers were measured.
RBW is set to ≥1%EBW, VBW is set to 3x RBW.
on spectrum analyzer.
Set spectrum analyzer with RMS detector.
The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
Checked that all the results comply with the emission limit line.

Test Setup



Limits

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

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

Rule Part 27.53(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically

radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Rule Part 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;
(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;
(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Measurement Uncertainty

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

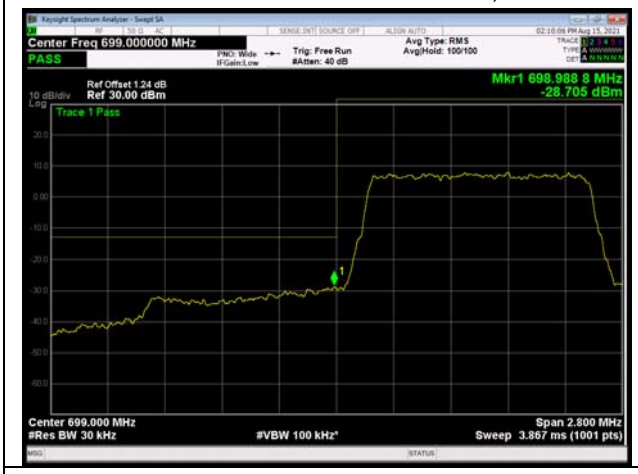
Test Result

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

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

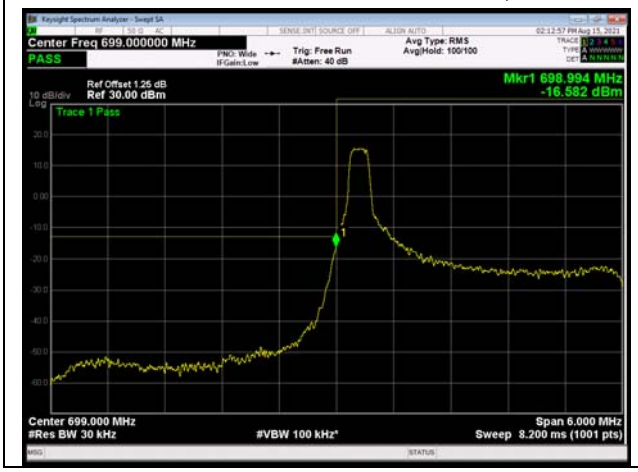
LTE Band 12 QPSK 1.4MHz CH-High, 1 RB

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



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

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

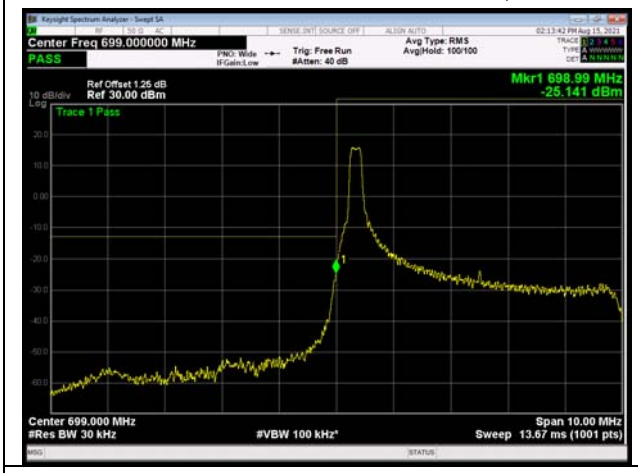


LTE Band 12 QPSK 3MHz CH-High, 1 RB

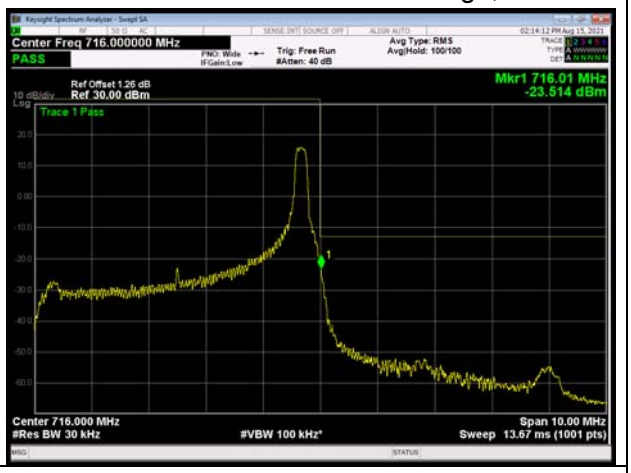
LTE Band 12 QPSK 3MHz CH-Low, 100%RB

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

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

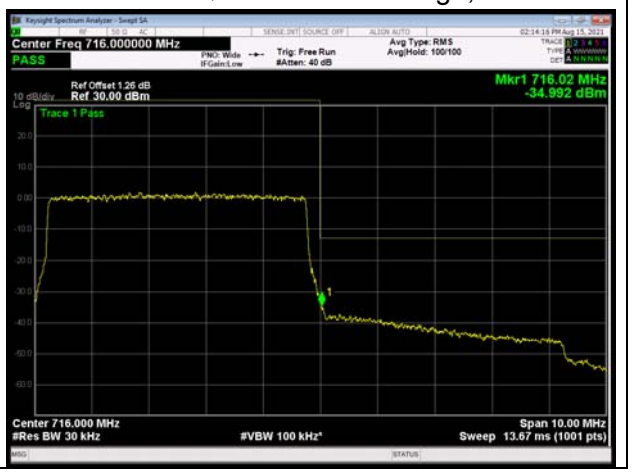


LTE Band 12 QPSK 5MHz CH-High, 1 RB

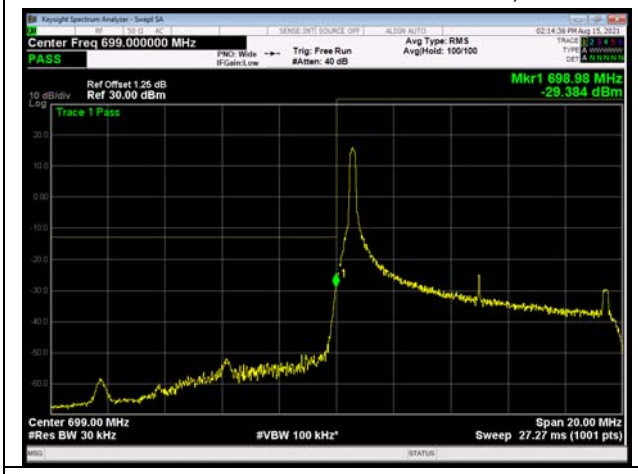


LTE Band 12 QPSK 5MHz CH-Low, 100%RB

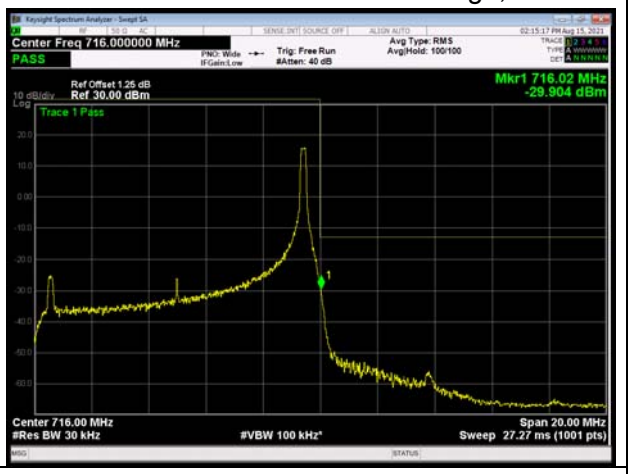
LTE Band 12 QPSK 5MHz CH-High, 100%RB



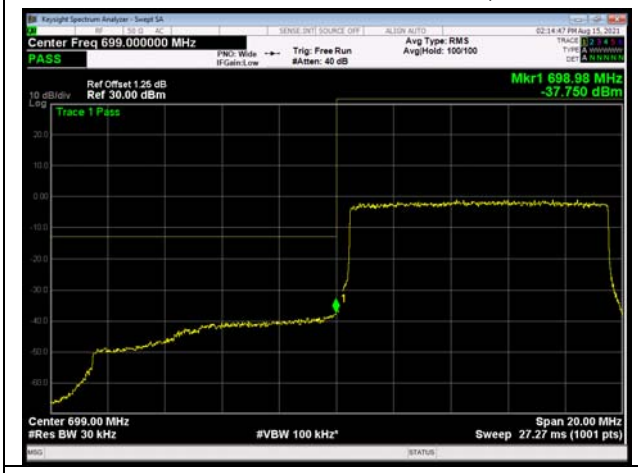
LTE Band 12 QPSK 10MHz CH-Low, 1 RB



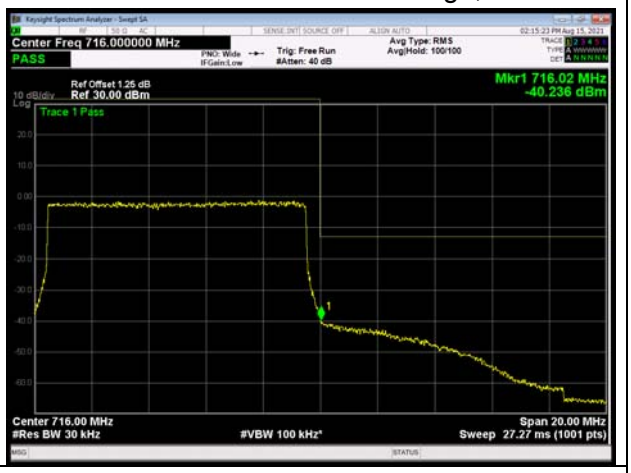
LTE Band 12 QPSK 10MHz CH-High, 1 RB



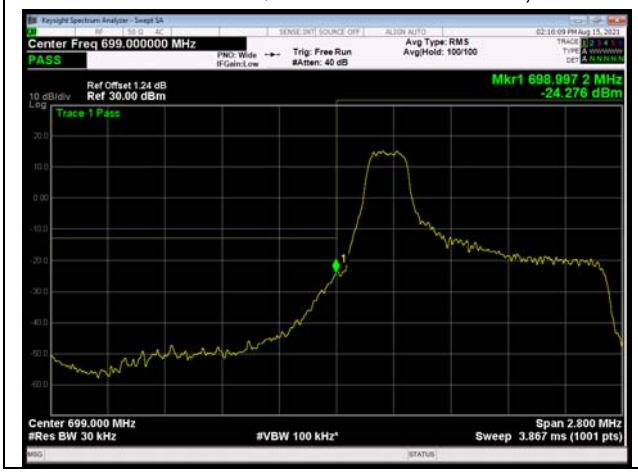
LTE Band 12 QPSK 10MHz CH-Low, 100%RB



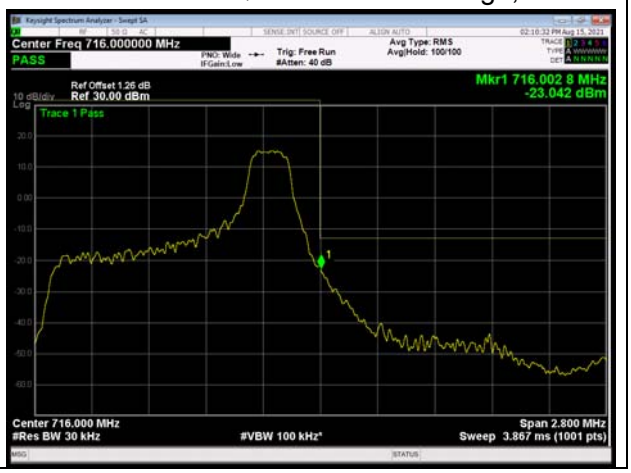
LTE Band 12 QPSK 10MHz CH-High, 100%RB



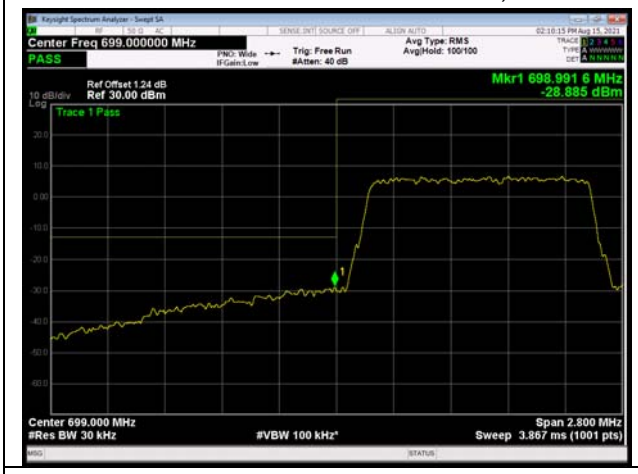
LTE Band 12 16QAM 1.4MHz CH-Low, 1 RB



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

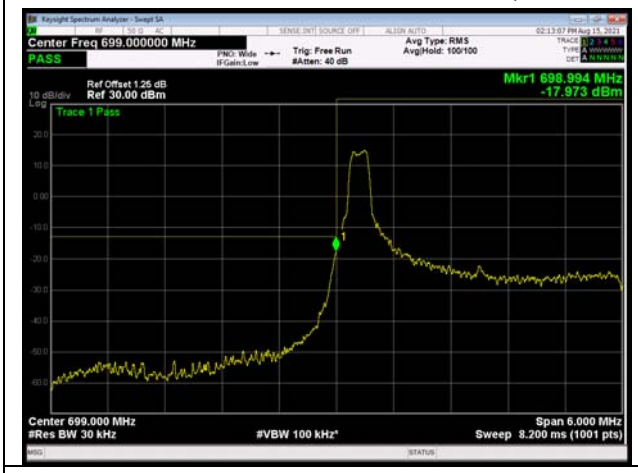


LTE Band 12 16QAM 1.4MHz CH-Low, 100%RB

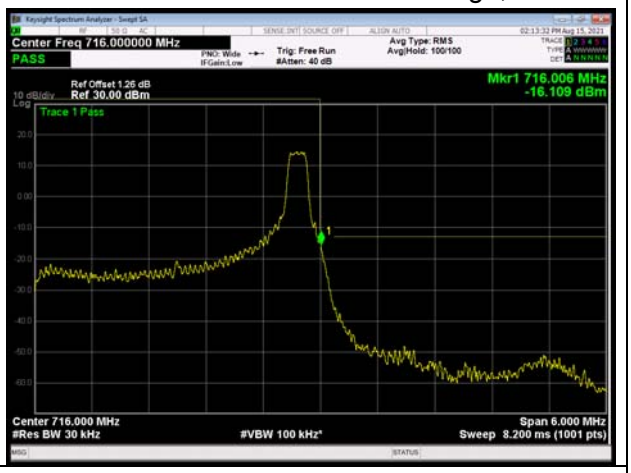


LTE Band 12 16QAM 1.4MHz CH-High, 100%RB

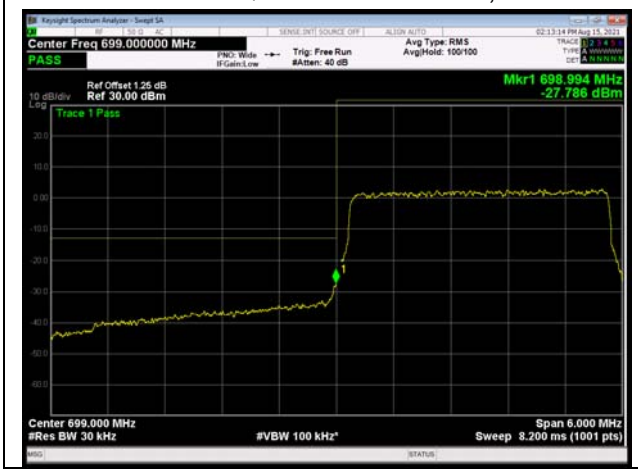
LTE Band 12 16QAM 3MHz CH-Low, 1 RB



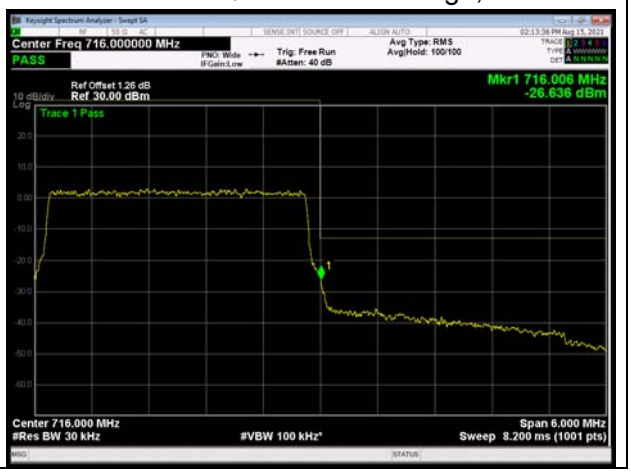
LTE Band 12 16QAM 3MHz CH-High, 1 RB



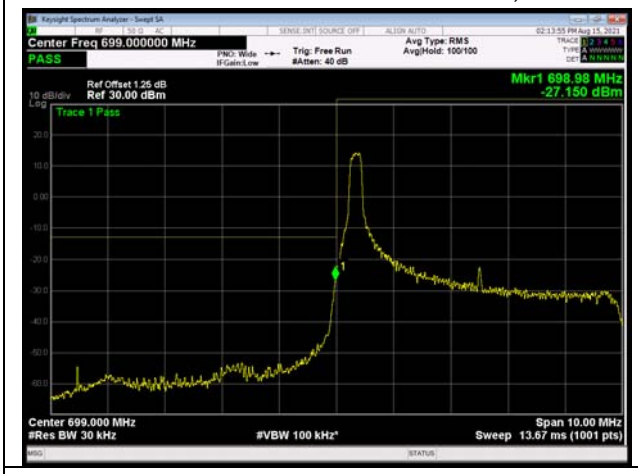
LTE Band 12 16QAM 3MHz CH-Low, 100%RB



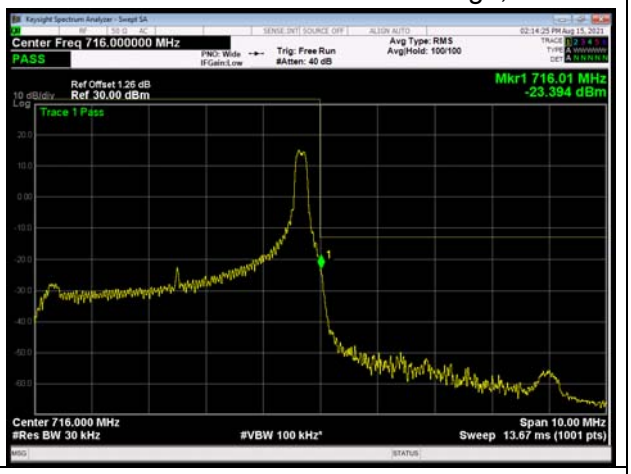
LTE Band 12 16QAM 3MHz CH-High, 100%RB



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

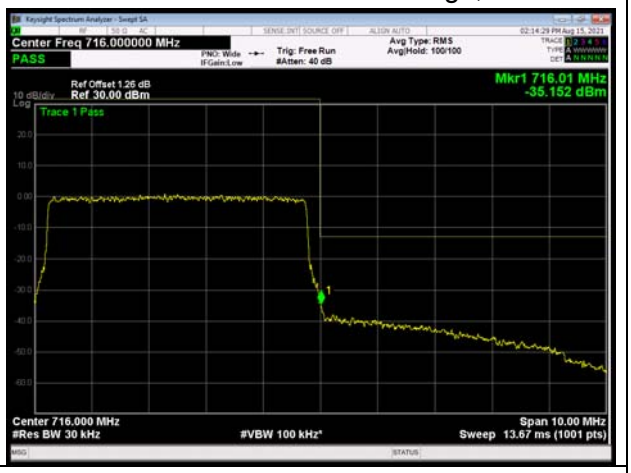


LTE Band 12 16QAM 5MHz CH-High, 1 RB

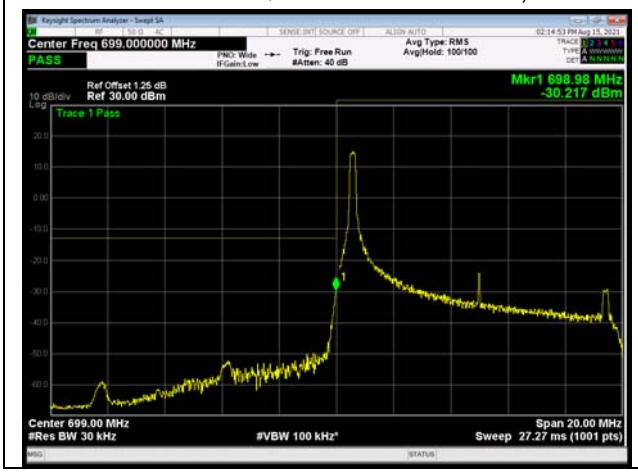


LTE Band 12 16QAM 5MHz CH-Low, 100%RB

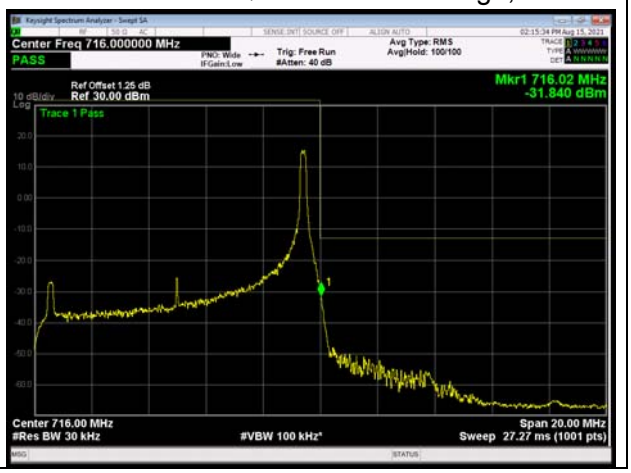
LTE Band 12 16QAM 5MHz CH-High, 100%RB



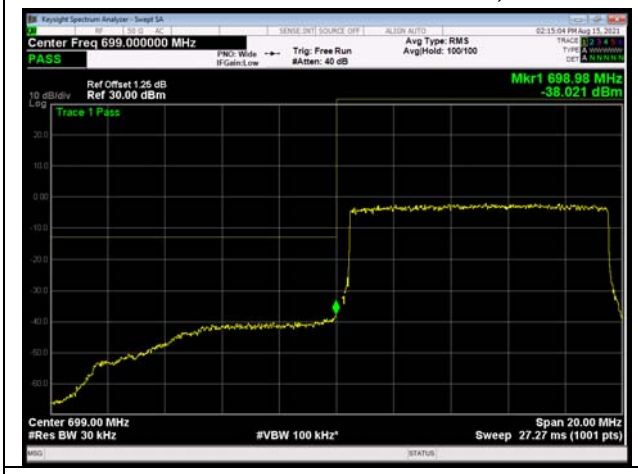
LTE Band 12 16QAM 10MHz CH-Low, 1 RB



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



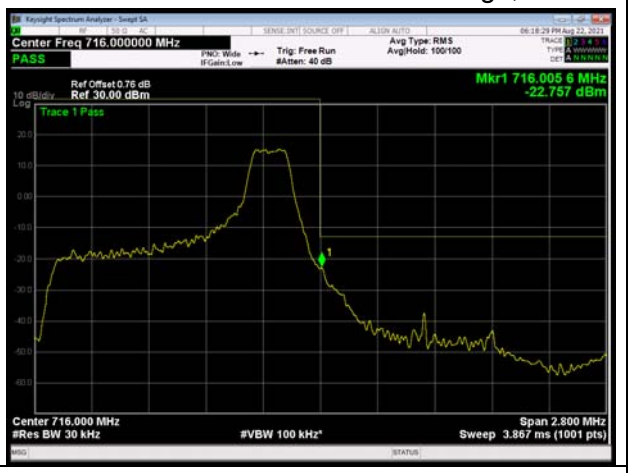
LTE Band 12 16QAM 10MHz CH-Low, 100%RB



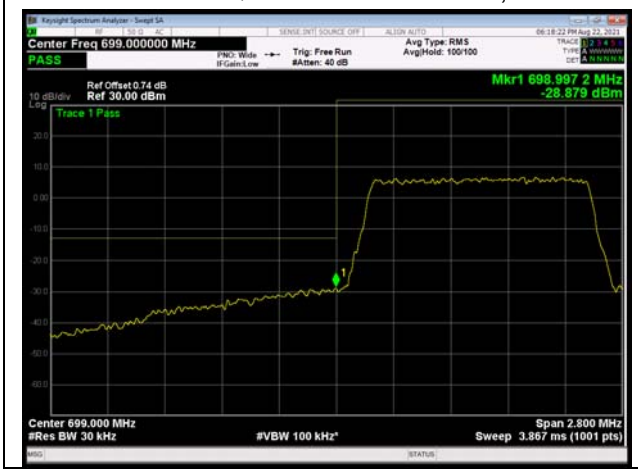
LTE Band 12 16QAM 10MHz CH-High, 100%RB

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

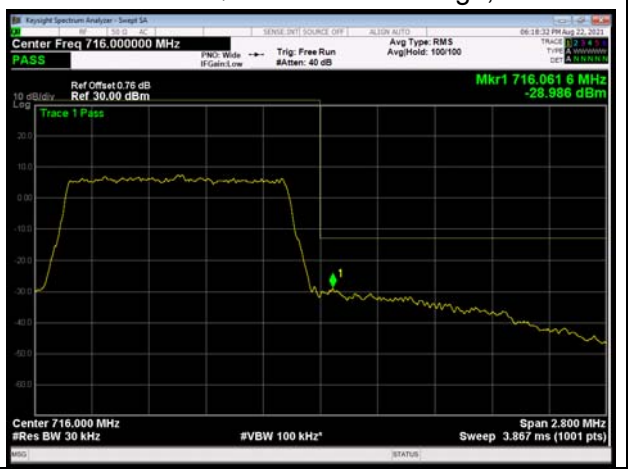
LTE Band 12 64QAM 1.4MHz CH-High, 1 RB



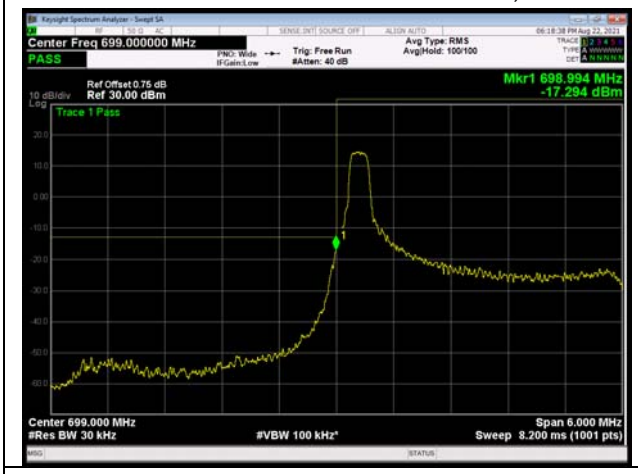
LTE Band 12 64QAM 1.4MHz CH-Low, 100%RB



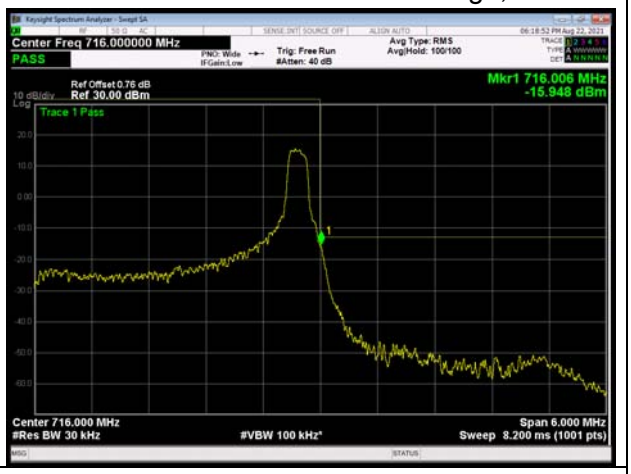
LTE Band 12 64QAM 1.4MHz CH-High, 100%RB



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

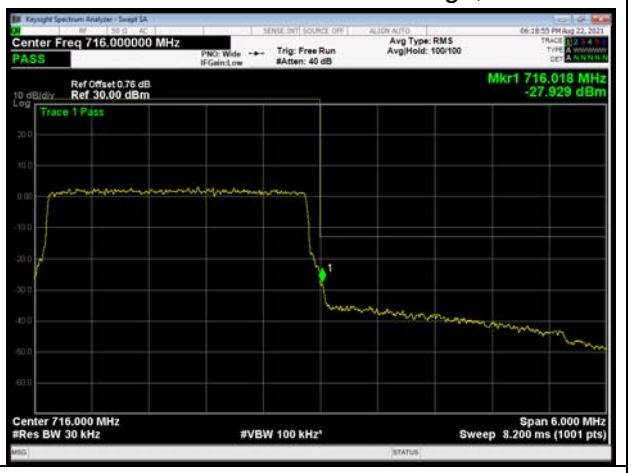


LTE Band 12 64QAM 3MHz CH-High, 1 RB



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

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



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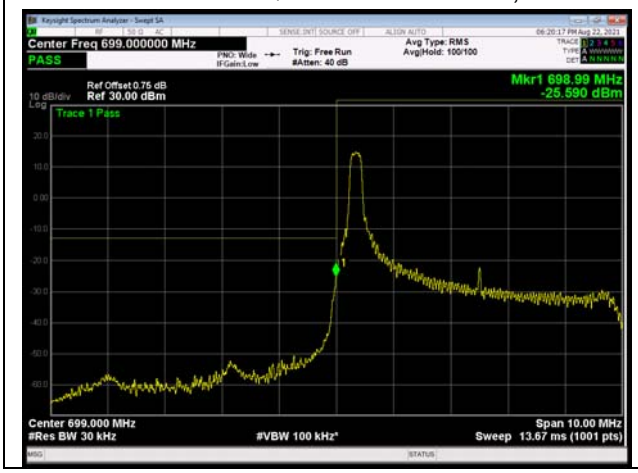
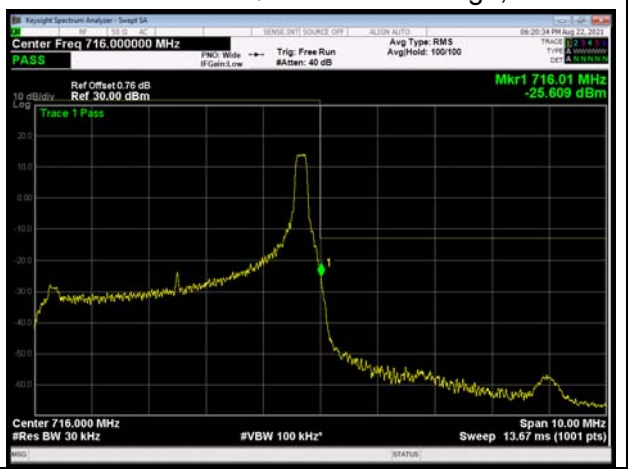
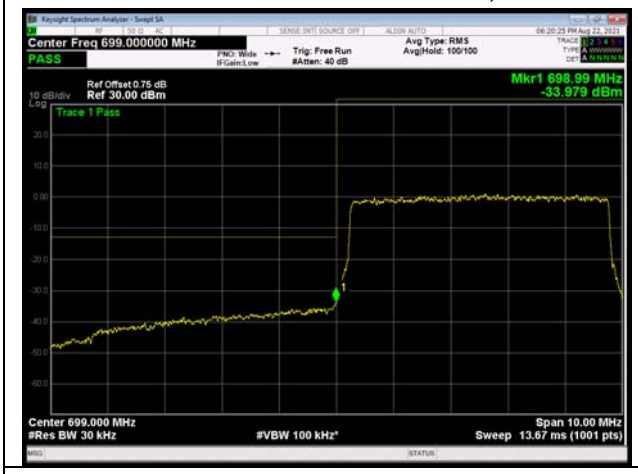


LTE Band 12 64QAM 5MHz CH-High, 1 RB

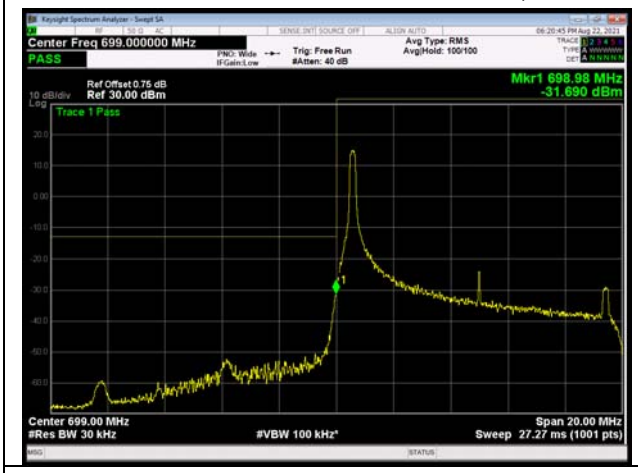


LTE Band 12 64QAM 5MHz CH-Low, 100%RB

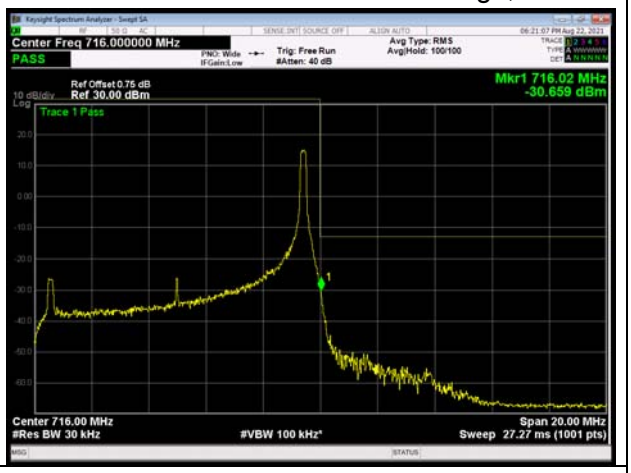


LTE Band 12 64QAM 5MHz CH-High, 100%RB

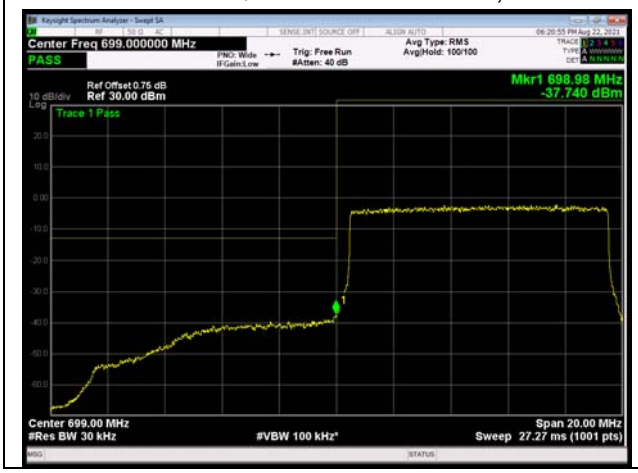
LTE Band 12 64QAM 10MHz CH-Low, 1 RB



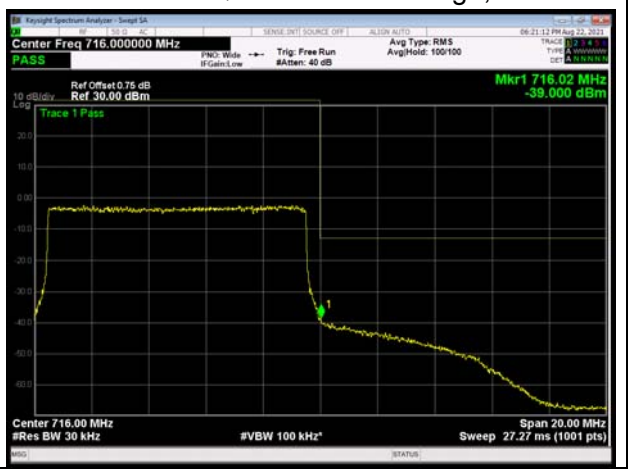
LTE Band 12 64QAM 10MHz CH-High, 1 RB



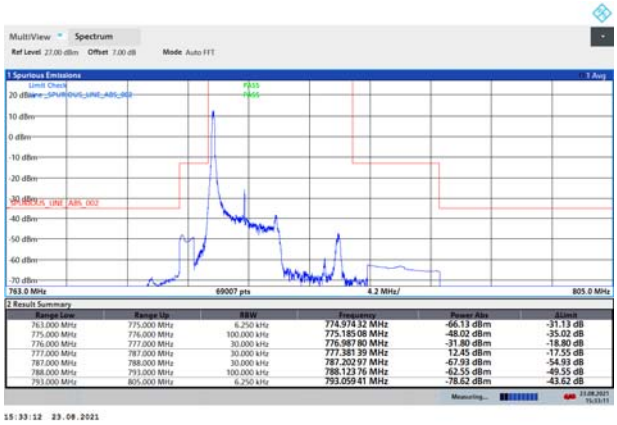
LTE Band 12 64QAM 10MHz CH-Low, 100%RB



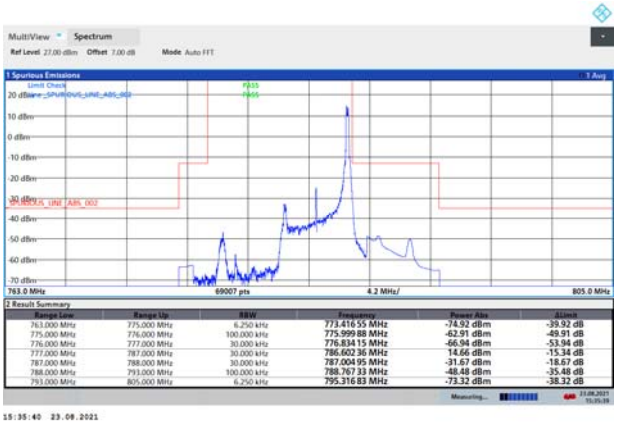
LTE Band 12 64QAM 10MHz CH-High, 100%RB



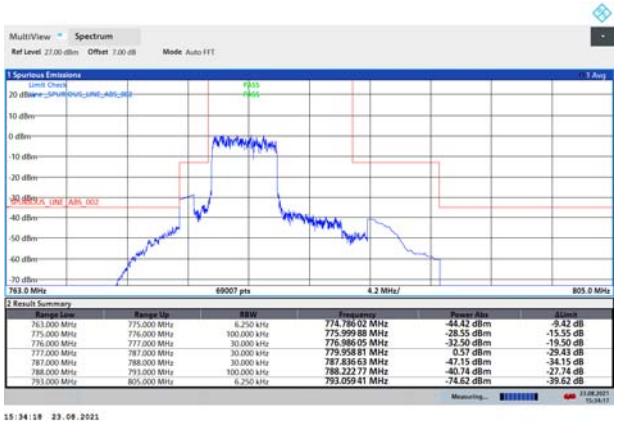
LTE Band 13 QPSK 5MHz CH-Low, 1 RB



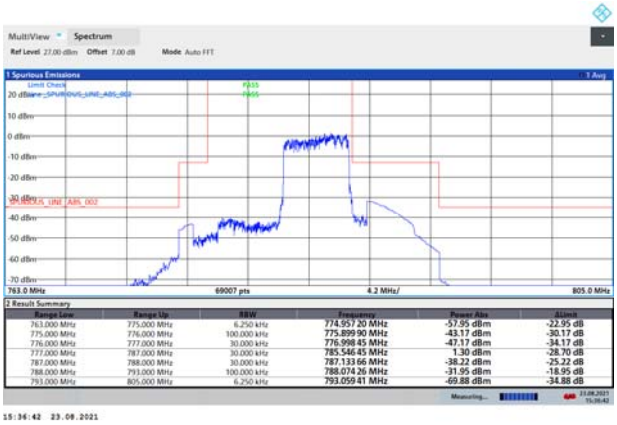
LTE Band 13 QPSK 5MHz CH-High, 1 RB



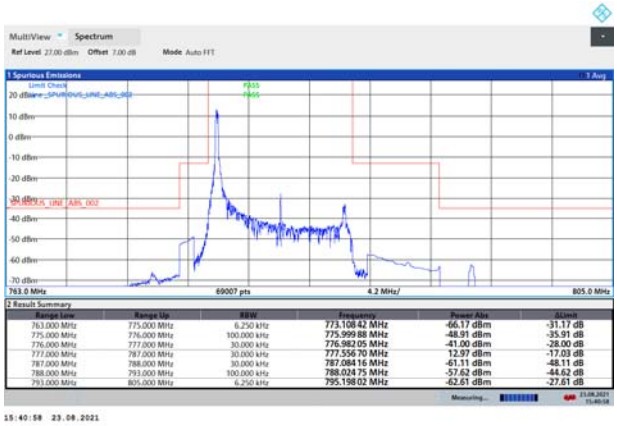
LTE Band 13 QPSK 5MHz CH-Low, 100%RB



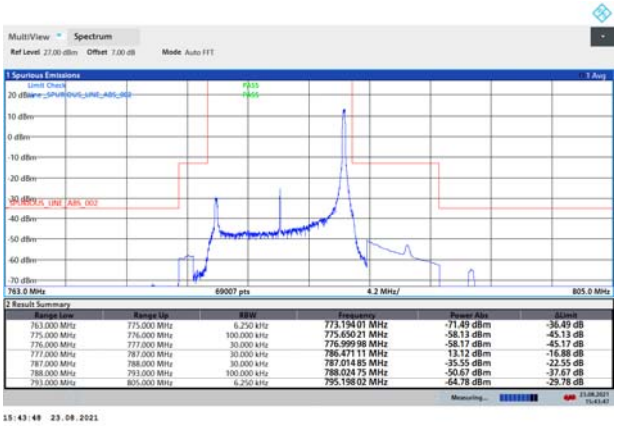
LTE Band 13 QPSK 5MHz CH-High, 100%RB



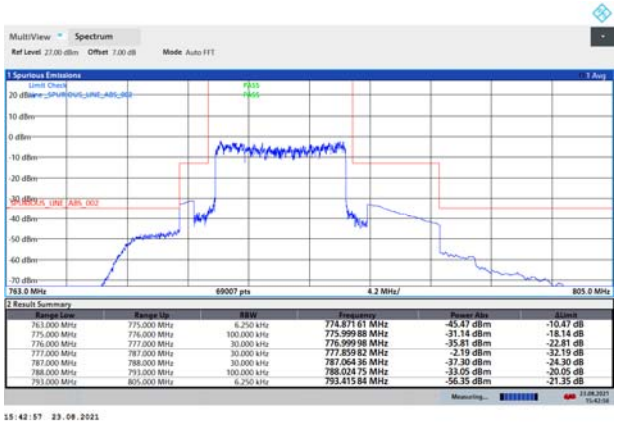
LTE Band 13 QPSK 10MHz CH-Low, 1 RB



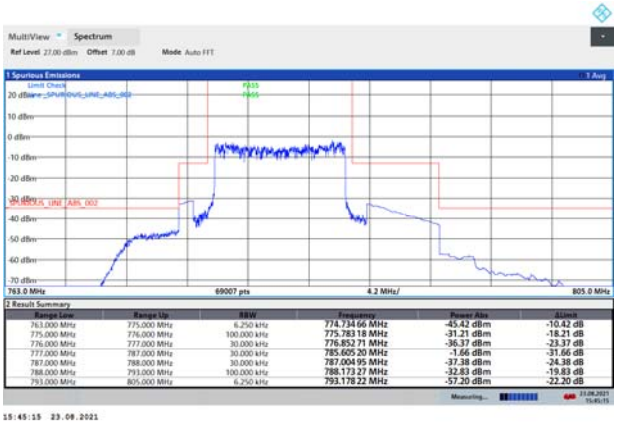
LTE Band 13 QPSK 10MHz CH-High, 1 RB



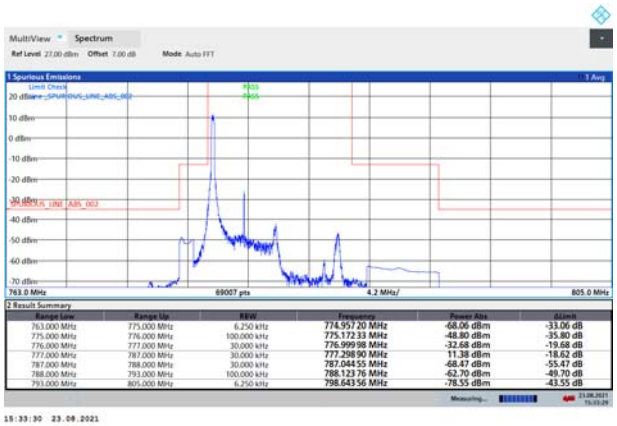
LTE Band 13 QPSK 10MHz CH-Low, 100%RB



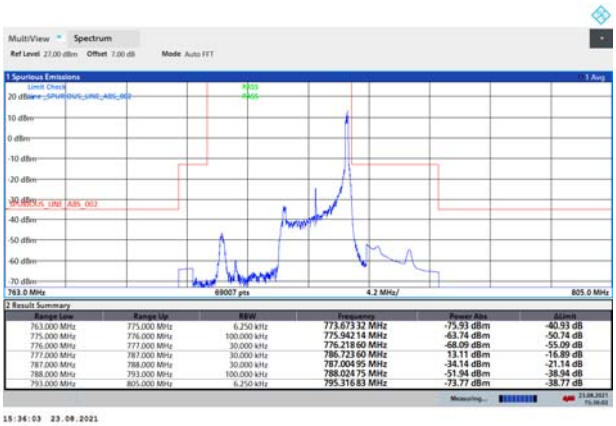
LTE Band 13 QPSK 10MHz CH-High, 100%RB



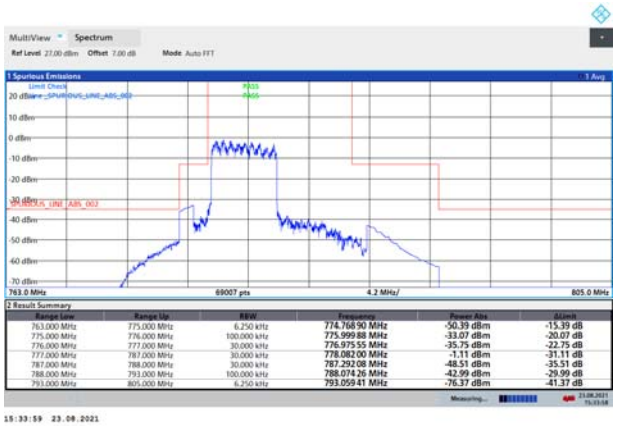
LTE Band 13 16QAM 5MHz CH-Low, 1 RB



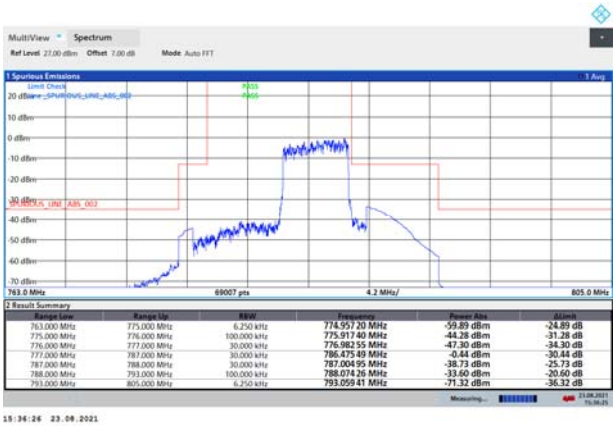
LTE Band 13 16QAM 5MHz CH-High, 1 RB



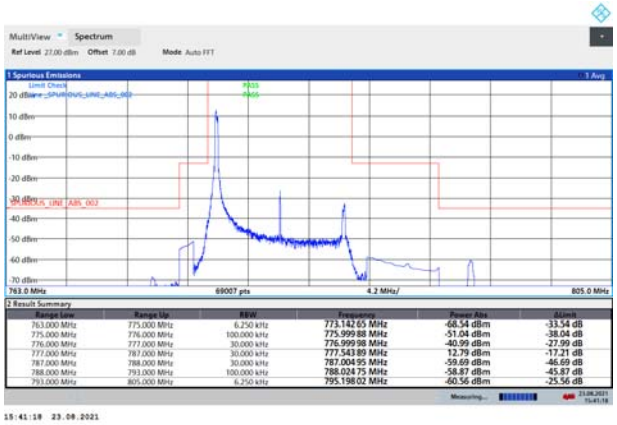
LTE Band 13 16QAM 5MHz CH-Low, 100%RB



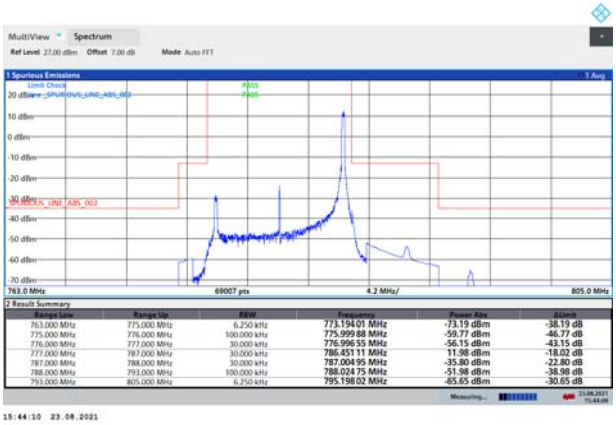
LTE Band 13 16QAM 5MHz CH-High, 100%RB



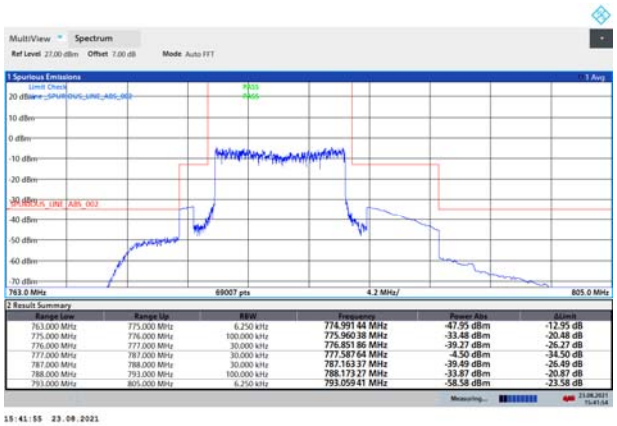
LTE Band 13 16QAM 10MHz CH-Low, 1 RB



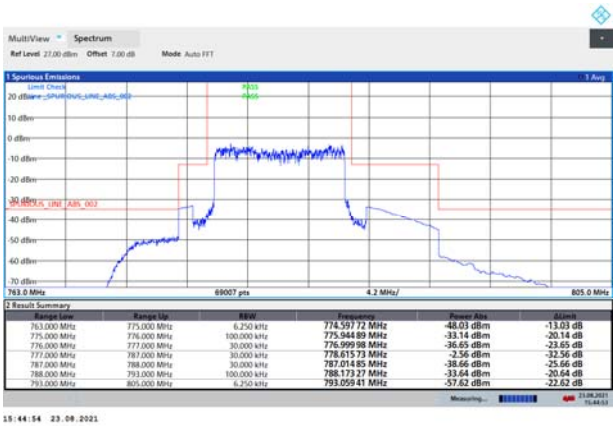
LTE Band 13 16QAM 10MHz CH-High, 1 RB



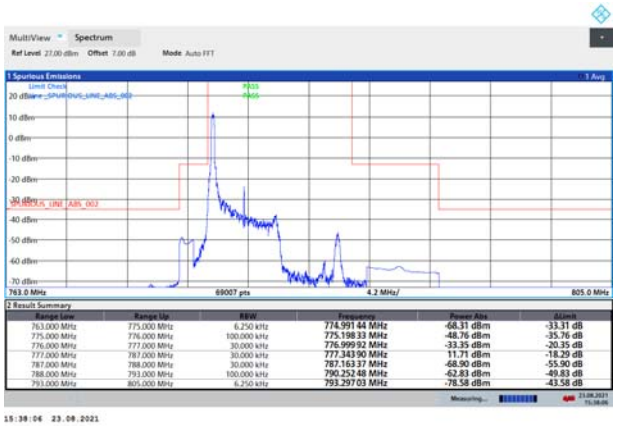
LTE Band 13 16QAM 10MHz CH-Low, 100%RB



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

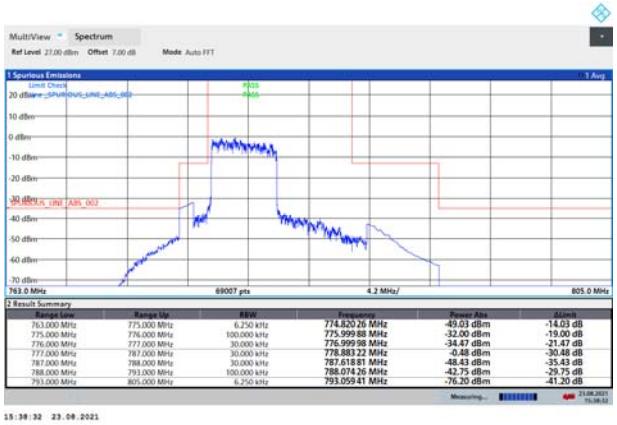


LTE Band 13 64QAM 5MHz CH-Low, 1 RB

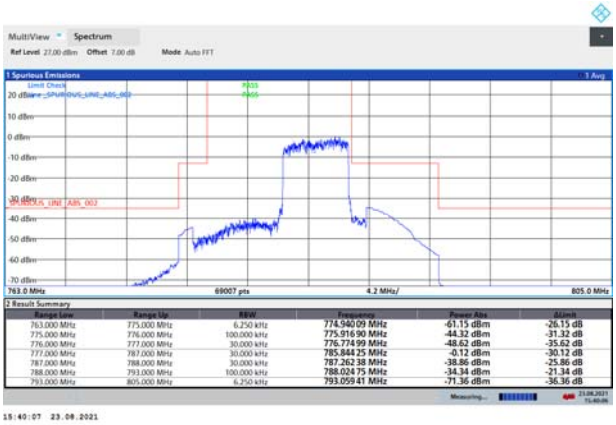


LTE Band 13 64QAM 5MHz CH-High, 1 RB

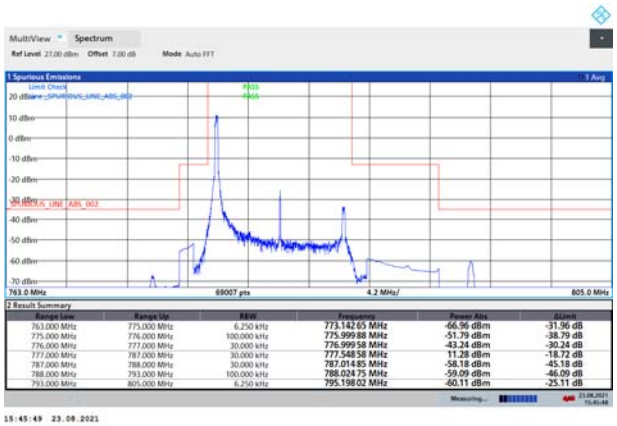
LTE Band 13 64QAM 5MHz CH-Low, 100%RB



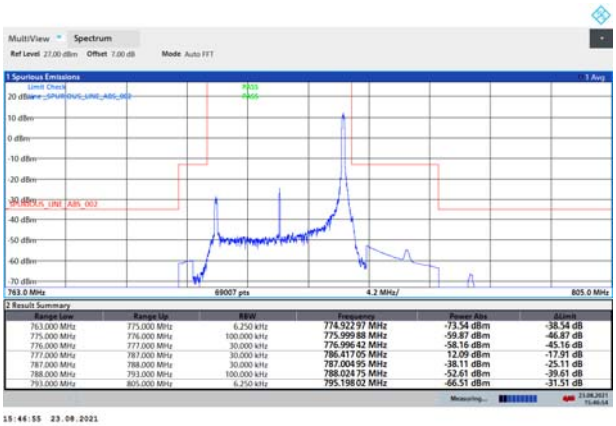
LTE Band 13 64QAM 5MHz CH-High, 100%RB



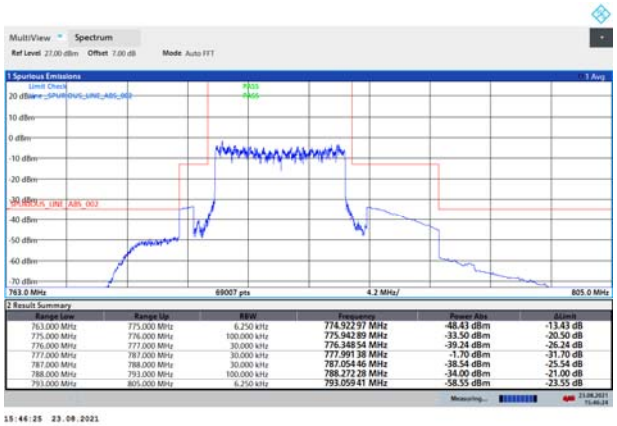
LTE Band 13 64QAM 10MHz CH-Low, 1 RB



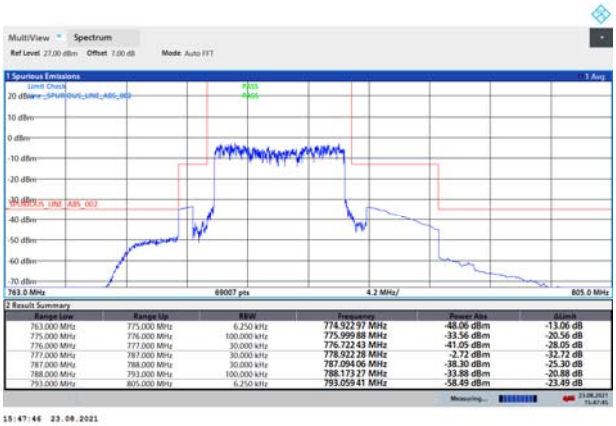
LTE Band 13 64QAM 10MHz CH-High, 1 RB



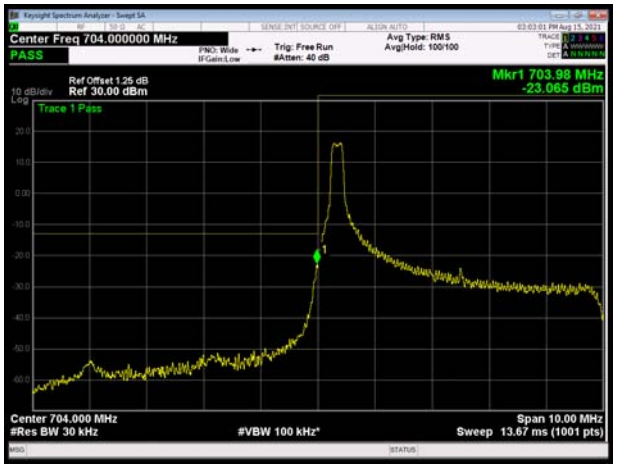
LTE Band 13 64QAM 10MHz CH-Low, 100%RB



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



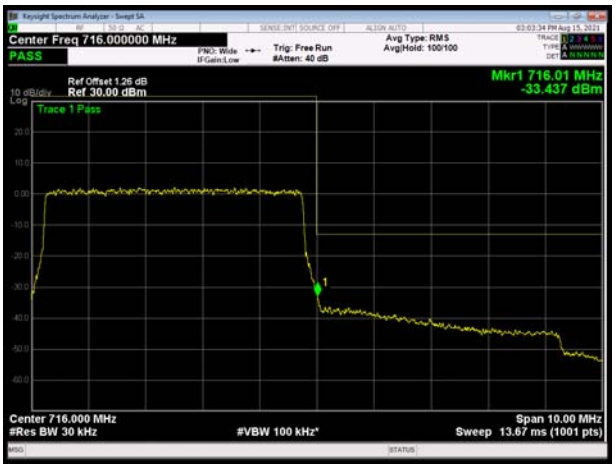
LTE Band 17 QPSK 5MHz CH-Low, 1 RB



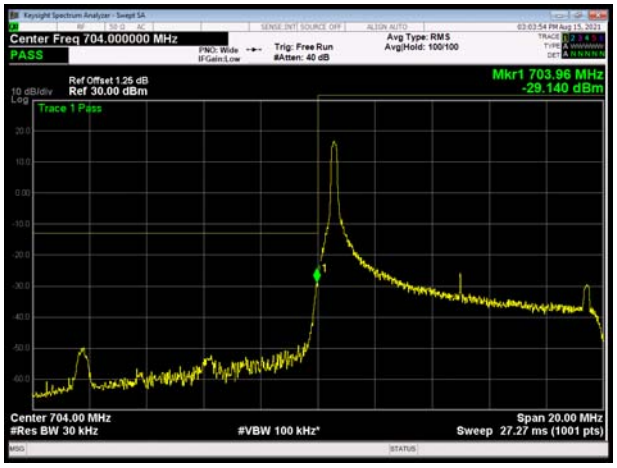
LTE Band 17 QPSK 5MHz CH-High, 1 RB

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

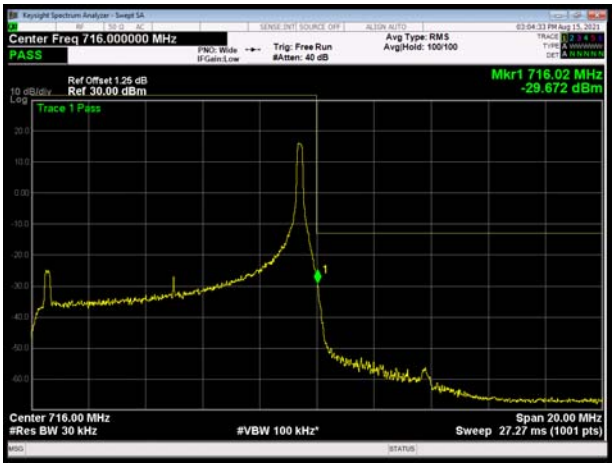
LTE Band 17 QPSK 5MHz CH-High, 100%RB



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



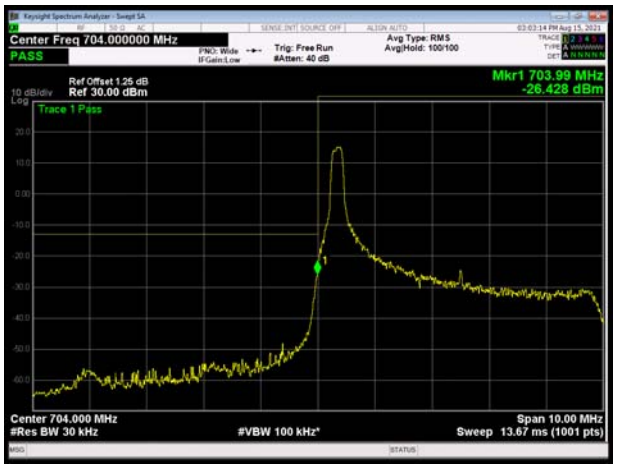
LTE Band 17 QPSK 10MHz CH-High, 1 RB



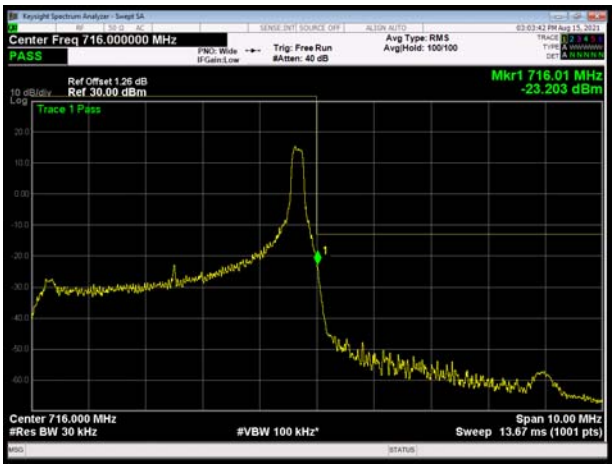
LTE Band 17 QPSK 10MHz CH-Low, 100%RB

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

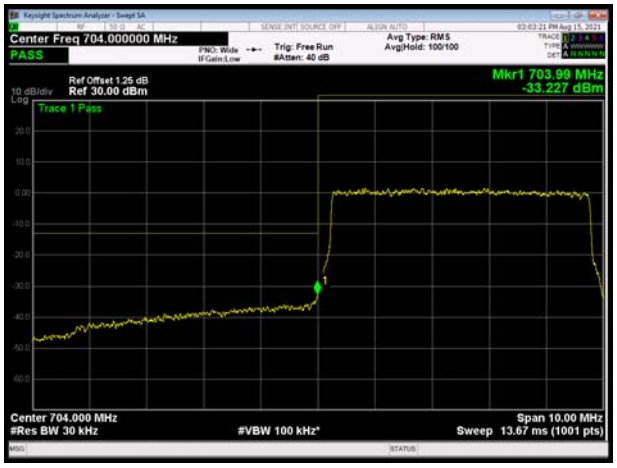
LTE Band 17 16QAM 5MHz CH-Low, 1 RB



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

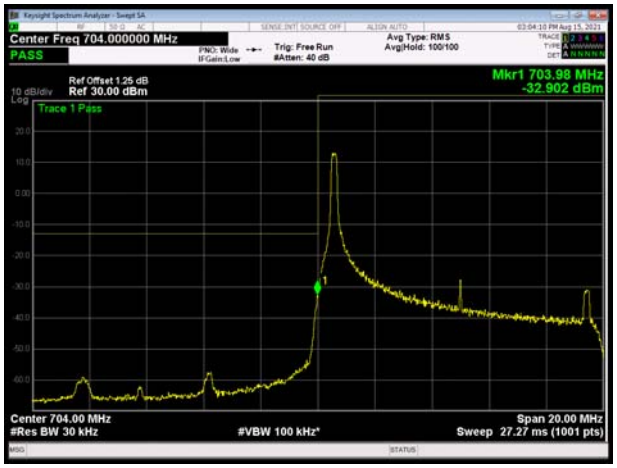


LTE Band 17 16QAM 5MHz CH-Low, 100%RB

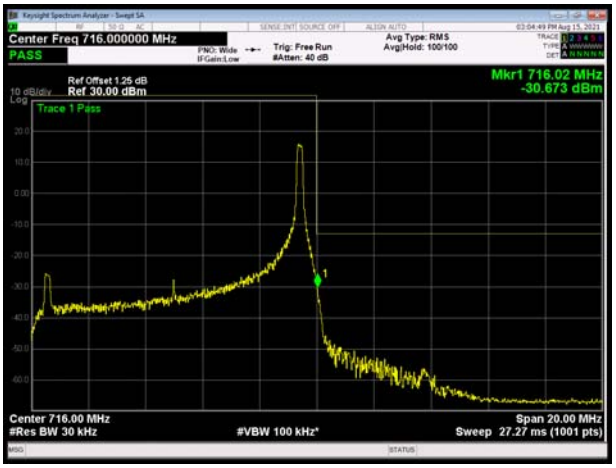


LTE Band 17 16QAM 5MHz CH-High, 100%RB

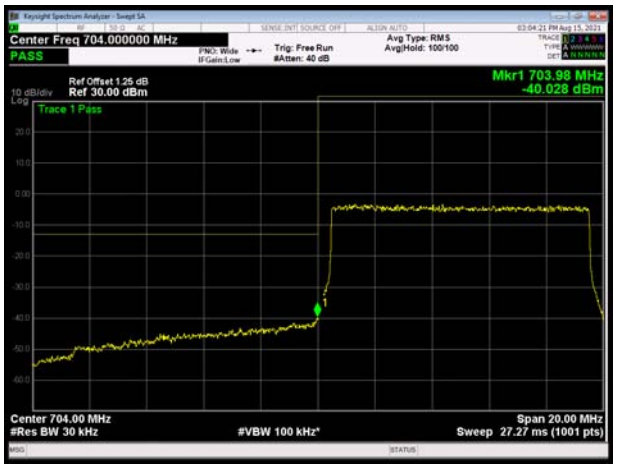
LTE Band 17 16QAM 10MHz CH-Low, 1 RB



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

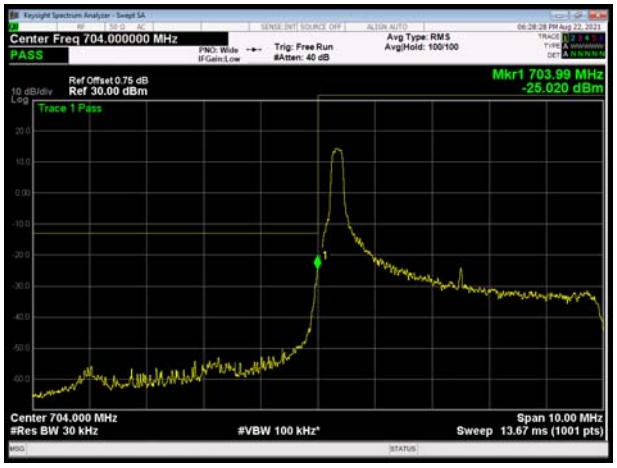


LTE Band 17 16QAM 10MHz CH-Low, 100%RB

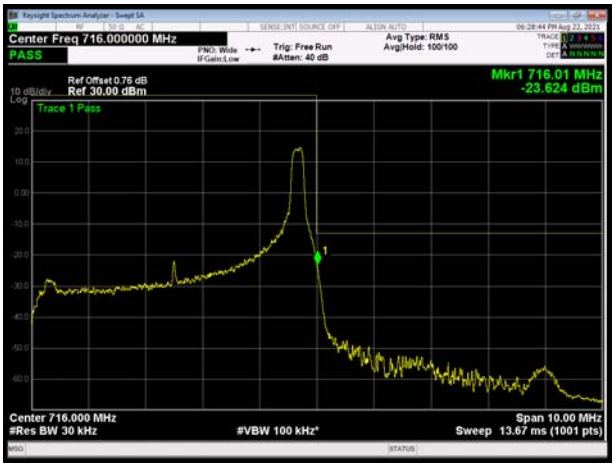


LTE Band 17 16QAM 10MHz CH-High, 100%RB

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



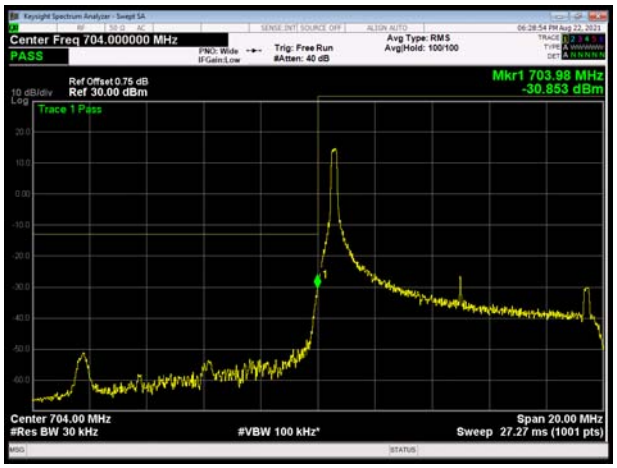
LTE Band 17 64QAM 5MHz CH-High, 1 RB



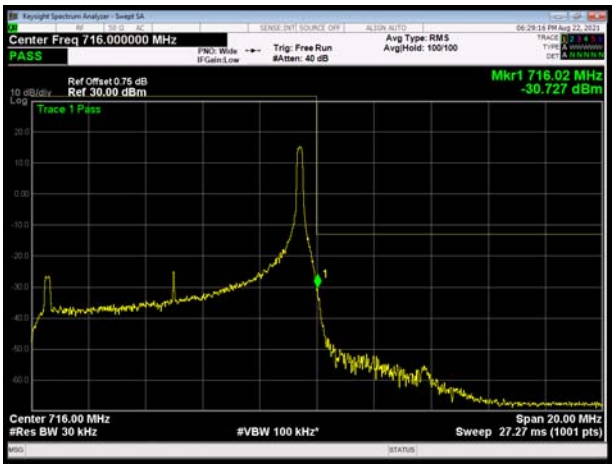
LTE Band 17 64QAM 5MHz CH-Low, 100%RB

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

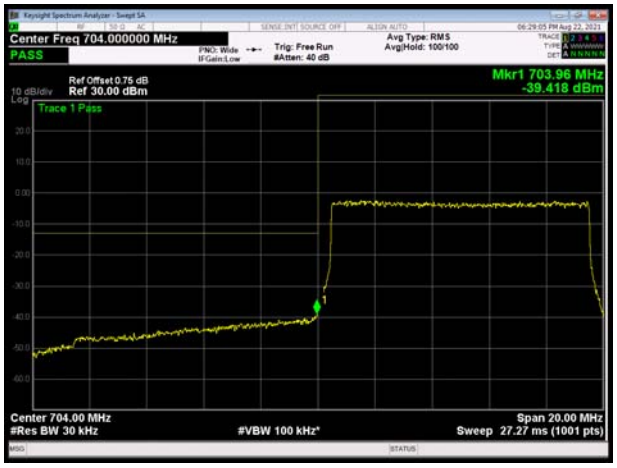
LTE Band 17 64QAM 10MHz CH-Low, 1 RB



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



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



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

5.4 Peak-to-Average Power Ratio (PAPR)

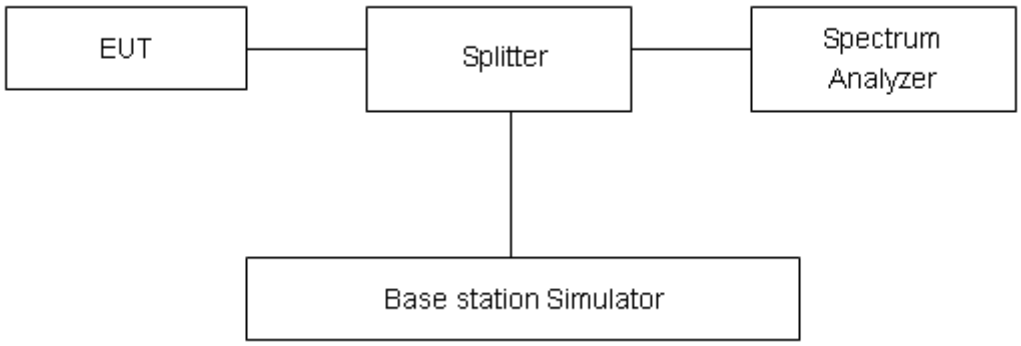
Ambient condition

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 12								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	23017	699.7	25.90	20.29	5.61	≤13	PASS
		23095	707.5	25.89	20.35	5.54	≤13	PASS
		23173	715.3	26.36	21.82	4.54	≤13	PASS
	3	23025	700.5	26.68	22.03	4.65	≤13	PASS
		23095	707.5	26.54	21.87	4.67	≤13	PASS
		23165	714.5	26.48	21.74	4.74	≤13	PASS
	5	23035	701.5	26.50	21.87	4.63	≤13	PASS
		23095	707.5	26.63	21.85	4.78	≤13	PASS
		23155	713.5	26.60	21.83	4.77	≤13	PASS
	10	23060	704	26.69	21.84	4.85	≤13	PASS
		23095	707.5	26.78	21.96	4.82	≤13	PASS
		23130	711	26.80	21.84	4.96	≤13	PASS
16QAM	1.4	23017	699.7	25.81	19.36	6.45	≤13	PASS
		23095	707.5	26.47	21.07	5.40	≤13	PASS
		23173	715.3	26.30	20.96	5.34	≤13	PASS
	3	23025	700.5	26.53	20.93	5.60	≤13	PASS
		23095	707.5	26.44	20.82	5.62	≤13	PASS
		23165	714.5	26.33	20.72	5.61	≤13	PASS
	5	23035	701.5	26.32	20.80	5.52	≤13	PASS
		23095	707.5	26.45	20.80	5.65	≤13	PASS
		23155	713.5	26.48	20.88	5.60	≤13	PASS
	10	23060	704	26.50	20.88	5.62	≤13	PASS
		23095	707.5	26.62	20.94	5.68	≤13	PASS
		23130	711	26.67	20.82	5.85	≤13	PASS
64QAM	1.4	23017	699.7	26.66	20.91	5.75	≤13	PASS
		23095	707.5	26.51	21.10	5.41	≤13	PASS
		23173	715.3	26.40	21.01	5.39	≤13	PASS
	3	23025	700.5	26.58	20.89	5.69	≤13	PASS
		23095	707.5	26.48	20.94	5.54	≤13	PASS
		23165	714.5	26.43	20.79	5.64	≤13	PASS
	5	23035	701.5	26.45	20.87	5.58	≤13	PASS
		23095	707.5	26.46	20.78	5.68	≤13	PASS
		23155	713.5	26.53	20.89	5.64	≤13	PASS
	10	23060	704	26.58	20.91	5.67	≤13	PASS
		23095	707.5	26.70	21.01	5.69	≤13	PASS
		23130	711	26.70	20.87	5.83	≤13	PASS

LTE Band 13								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	23205	779.5	25.31	19.81	5.50	≤13	PASS
		23230	782	26.06	20.14	5.92	≤13	PASS
		23255	784.5	25.75	20.13	5.62	≤13	PASS
	10	23230	782	24.50	18.76	5.74	≤13	PASS
16QAM	5	23205	779.5	25.11	18.90	6.21	≤13	PASS
		23230	782	25.79	19.19	6.60	≤13	PASS
		23255	784.5	23.91	17.58	6.33	≤13	PASS
	10	23230	782	24.22	17.82	6.40	≤13	PASS
64QAM	5	23205	779.5	26.29	21.01	5.28	≤13	PASS
		23230	782	26.89	20.76	6.13	≤13	PASS
		23255	784.5	26.69	20.74	5.95	≤13	PASS
	10	23230	782	26.73	20.87	5.86	≤13	PASS

LTE Band 17								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	23755	706.5	27.12	22.43	4.69	≤13	PASS
		23790	710	27.20	22.41	4.79	≤13	PASS
		23825	713.5	27.21	22.43	4.78	≤13	PASS
	10	23780	709	27.37	22.34	5.03	≤13	PASS
		23790	710	26.50	20.88	5.62	≤13	PASS
		23800	711	26.45	20.85	5.60	≤13	PASS
16QAM	5	23755	706.5	27.06	21.64	5.42	≤13	PASS
		23790	710	27.05	21.37	5.68	≤13	PASS
		23825	713.5	27.02	21.42	5.60	≤13	PASS
	10	23780	709	26.22	19.86	6.36	≤13	PASS
		23790	710	26.30	19.92	6.38	≤13	PASS
		23800	711	26.20	19.80	6.40	≤13	PASS
64QAM	5	23755	706.5	26.49	21.11	5.38	≤13	PASS
		23790	710	26.59	20.81	5.78	≤13	PASS
		23825	713.5	26.57	20.94	5.63	≤13	PASS
	10	23780	709	26.65	20.89	5.76	≤13	PASS
		23790	710	26.74	20.98	5.76	≤13	PASS
		23800	711	26.71	20.88	5.83	≤13	PASS

5.5 Frequency Stability

Ambient condition

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

Method of Measurement

Frequency Stability (Temperature Variation)

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

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

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

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

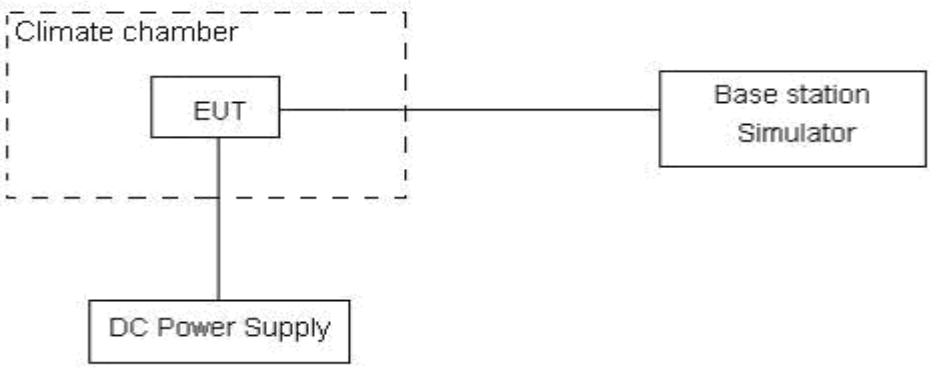
Frequency Stability (Voltage Variation)

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

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

This transceiver is specified to operate with an input voltage of between 3.4 V and 4.35 V, 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 12								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	1.4MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	5.90	17.84	11.18	0.00834	0.02522	0.01580	PASS
Extreme（50℃）		4.98	13.16	2.57	0.00704	0.01860	0.00364	PASS
Extreme（40℃）		12.08	12.90	10.02	0.01708	0.01823	0.01416	PASS
Extreme（30℃）		16.28	2.31	13.74	0.02301	0.00326	0.01942	PASS
Extreme（20℃）		6.19	5.03	11.01	0.00875	0.00711	0.01556	PASS
Extreme（10℃）		15.62	8.81	4.91	0.02208	0.01245	0.00694	PASS
Extreme（0℃）		12.48	17.65	11.63	0.01763	0.02494	0.01644	PASS
Extreme（-10℃）		13.31	1.76	4.65	0.01881	0.00248	0.00658	PASS
Extreme（-20℃）		7.53	8.09	12.34	0.01065	0.01144	0.01744	PASS
Extreme（-30℃）		2.90	8.13	8.56	0.00410	0.01150	0.01210	PASS
25℃	LV	8.95	9.14	7.59	0.01266	0.01293	0.01073	PASS
	HV	6.02	8.35	2.35	0.00851	0.01180	0.00333	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	3MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	11.09	14.02	15.89	0.01567	0.01982	0.02246	PASS
Extreme（50℃）		10.23	5.49	12.68	0.01445	0.00777	0.01793	PASS
Extreme（40℃）		13.15	9.34	13.08	0.01858	0.01320	0.01849	PASS
Extreme（30℃）		10.25	13.58	17.83	0.01448	0.01919	0.02521	PASS
Extreme（20℃）		14.93	8.18	11.84	0.02111	0.01156	0.01673	PASS
Extreme（10℃）		7.75	11.92	7.90	0.01095	0.01685	0.01117	PASS
Extreme（0℃）		6.29	9.29	6.18	0.00889	0.01312	0.00873	PASS
Extreme（-10℃）		9.82	12.02	14.66	0.01388	0.01699	0.02072	PASS
Extreme（-20℃）		1.27	12.67	14.77	0.00179	0.01791	0.02087	PASS
Extreme（-30℃）		9.50	15.08	16.03	0.01342	0.02132	0.02266	PASS
25℃	LV	3.69	10.57	2.17	0.00522	0.01494	0.00306	PASS
	HV	11.68	3.05	14.72	0.01651	0.00431	0.02081	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	3.87	9.92	9.21	0.00547	0.01402	0.01302	PASS
Extreme（50℃）		4.10	5.73	8.58	0.00579	0.00810	0.01213	PASS

Extreme（40℃）		4.03	6.33	2.12	0.00570	0.00894	0.00299	PASS
Extreme（30℃）		7.15	15.06	4.57	0.01011	0.02129	0.00647	PASS
Extreme（20℃）		14.77	4.80	4.87	0.02088	0.00678	0.00688	PASS
Extreme（10℃）		7.79	8.28	16.28	0.01101	0.01171	0.02301	PASS
Extreme（0℃）		13.11	13.07	13.49	0.01853	0.01847	0.01907	PASS
Extreme（-10℃）		10.24	10.05	2.25	0.01447	0.01421	0.00319	PASS
Extreme（-20℃）		7.10	16.72	17.36	0.01004	0.02363	0.02454	PASS
Extreme（-30℃）		11.27	5.63	3.69	0.01593	0.00796	0.00522	PASS
25℃	LV	17.24	11.41	14.28	0.02437	0.01613	0.02018	PASS
	HV	1.22	11.49	4.56	0.00173	0.01624	0.00645	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	14.34	6.69	6.00	0.02026	0.00946	0.00848	PASS
Extreme（50℃）		1.59	15.02	15.22	0.00224	0.02122	0.02152	PASS
Extreme（40℃）		4.52	6.55	17.43	0.00639	0.00925	0.02463	PASS
Extreme（30℃）		12.44	11.47	4.78	0.01759	0.01621	0.00675	PASS
Extreme（20℃）		8.02	5.98	16.08	0.01134	0.00845	0.02273	PASS
Extreme（10℃）		12.98	17.72	1.23	0.01835	0.02504	0.00174	PASS
Extreme（0℃）		10.33	1.84	6.45	0.01461	0.00261	0.00912	PASS
Extreme（-10℃）		13.94	3.85	5.82	0.01970	0.00544	0.00823	PASS
Extreme（-20℃）		6.09	13.58	3.84	0.00861	0.01920	0.00543	PASS
Extreme（-30℃）		16.72	12.53	16.84	0.02364	0.01771	0.02381	PASS
25℃	LV	1.34	3.55	7.93	0.00189	0.00502	0.01121	PASS
	HV	1.43	1.78	15.09	0.00202	0.00252	0.02133	PASS

LTE Band 13								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	15.34	6.60	14.75	0.01962	0.00844	0.01886	PASS
Extreme（50℃）		4.70	7.79	16.85	0.00601	0.00996	0.02155	PASS
Extreme（40℃）		16.80	6.63	11.09	0.02149	0.00847	0.01419	PASS
Extreme（30℃）		14.05	17.99	7.36	0.01797	0.02301	0.00941	PASS
Extreme（20℃）		4.78	7.56	10.14	0.00611	0.00967	0.01297	PASS
Extreme（10℃）		10.72	13.37	5.38	0.01371	0.01709	0.00688	PASS
Extreme（0℃）		6.58	3.11	15.72	0.00841	0.00398	0.02010	PASS
Extreme（-10℃）		4.28	9.21	17.99	0.00548	0.01178	0.02300	PASS
Extreme（-20℃）		10.91	15.25	11.37	0.01395	0.01951	0.01454	PASS

Extreme（-30℃）		15.41	7.60	1.35	0.01971	0.00971	0.00172	PASS
25℃	LV	7.31	13.16	17.90	0.00935	0.01683	0.02289	PASS
	HV	9.07	7.36	17.95	0.01160	0.00941	0.02295	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	10.75	15.63	16.65	0.01375	0.01999	0.02129	PASS
Extreme（50℃）		7.35	4.41	4.17	0.00940	0.00564	0.00533	PASS
Extreme（40℃）		7.59	10.54	14.82	0.00971	0.01347	0.01895	PASS
Extreme（30℃）		4.94	5.95	14.85	0.00631	0.00760	0.01899	PASS
Extreme（20℃）		13.36	7.71	6.88	0.01708	0.00986	0.00880	PASS
Extreme（10℃）		13.85	12.53	8.73	0.01772	0.01602	0.01116	PASS
Extreme（0℃）		4.85	17.96	7.49	0.00620	0.02297	0.00958	PASS
Extreme（-10℃）		8.88	13.29	14.71	0.01136	0.01699	0.01881	PASS
Extreme（-20℃）		2.47	13.76	8.99	0.00316	0.01759	0.01149	PASS
Extreme（-30℃）		13.50	17.32	13.48	0.01726	0.02215	0.01723	PASS
25℃	LV	4.08	10.64	12.22	0.00521	0.01360	0.01562	PASS
	HV	6.03	3.04	3.00	0.00771	0.00389	0.00384	PASS

LTE Band 17								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	2.33	3.06	6.54	0.00328	0.00431	0.00921	PASS
Extreme（50℃）		1.75	4.57	14.47	0.00246	0.00644	0.02038	PASS
Extreme（40℃）		16.22	11.83	10.87	0.02285	0.01666	0.01531	PASS
Extreme（30℃）		11.00	9.68	9.67	0.01549	0.01363	0.01362	PASS
Extreme（20℃）		4.92	8.06	11.34	0.00693	0.01135	0.01597	PASS
Extreme（10℃）		5.61	11.03	4.17	0.00790	0.01554	0.00587	PASS
Extreme（0℃）		15.65	1.13	10.48	0.02204	0.00159	0.01476	PASS
Extreme（-10℃）		12.45	10.15	2.66	0.01754	0.01430	0.00375	PASS
Extreme（-20℃）		5.61	10.67	4.38	0.00790	0.01503	0.00617	PASS
Extreme（-30℃）		9.55	13.64	17.57	0.01344	0.01921	0.02475	PASS
25℃	LV	8.83	5.55	2.67	0.01244	0.00782	0.00377	PASS
	HV	15.04	16.93	15.83	0.02118	0.02385	0.02230	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	2.05	10.88	17.41	0.00288	0.01533	0.02452	PASS
Extreme（50℃）		15.67	4.96	8.07	0.02208	0.00699	0.01137	PASS
Extreme（40℃）		3.21	17.89	7.72	0.00452	0.02519	0.01088	PASS
Extreme（30℃）		2.92	3.18	14.57	0.00411	0.00447	0.02052	PASS
Extreme（20℃）		13.07	17.33	12.06	0.01841	0.02441	0.01699	PASS
Extreme（10℃）		8.70	7.01	12.22	0.01225	0.00988	0.01722	PASS
Extreme（0℃）		13.10	2.47	16.78	0.01846	0.00347	0.02363	PASS
Extreme（-10℃）		8.73	14.67	2.71	0.01230	0.02066	0.00382	PASS
Extreme（-20℃）		16.48	7.14	3.42	0.02322	0.01006	0.00482	PASS
Extreme（-30℃）		2.66	15.89	10.87	0.00374	0.02238	0.01531	PASS
25℃	LV	3.36	9.95	5.73	0.00473	0.01401	0.00808	PASS
	HV	13.86	17.48	5.13	0.01953	0.02462	0.00722	PASS

5.6 Spurious Emissions at Antenna Terminals

Ambient condition

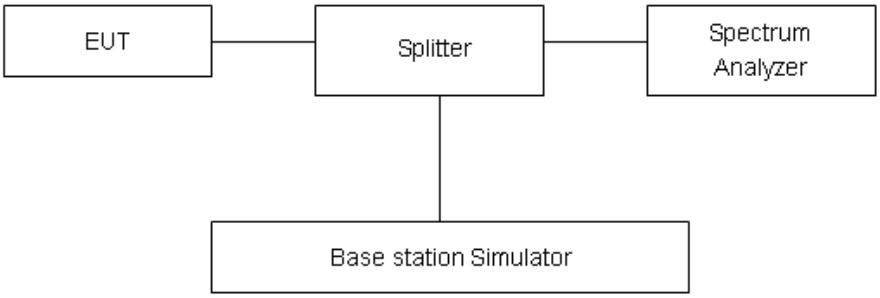
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 9kHz to the 10th harmonic of the carrier. The peak detector is used.
RBW is set to 100kHz, VBW is set to 300kHz for 30MHz~1GHz
RBW is set to 1MHz, VBW is set to 3MHz for above 1GHz, Sweep is set to ATUO.
RBW is set to 1 kHz (0.009MHz~ 0.15 MHz),
RBW is set to 10 kHz (0.15 MHz~ 30 MHz)
RBW is set to 100 kHz (30MHz~1000 MHz)
RBW is set to 1000 kHz (above 1000MHz)

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup



Limits

Rule Part 27.53 (g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.
Rule Part 27.53(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than

700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.
Part 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;
(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;
(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

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

Measurement Uncertainty

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

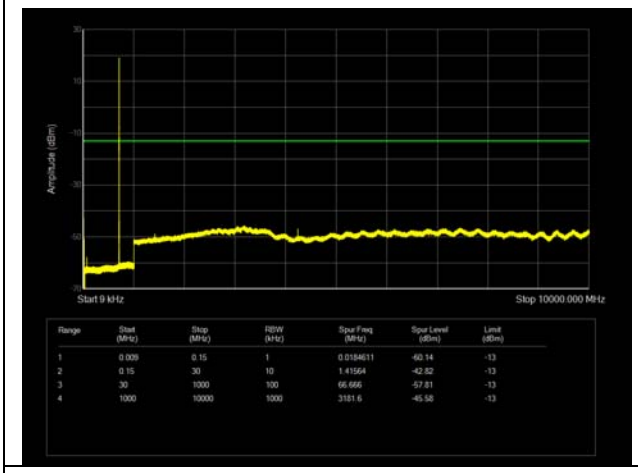
Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-27GHz	1.407 dB

Test Result

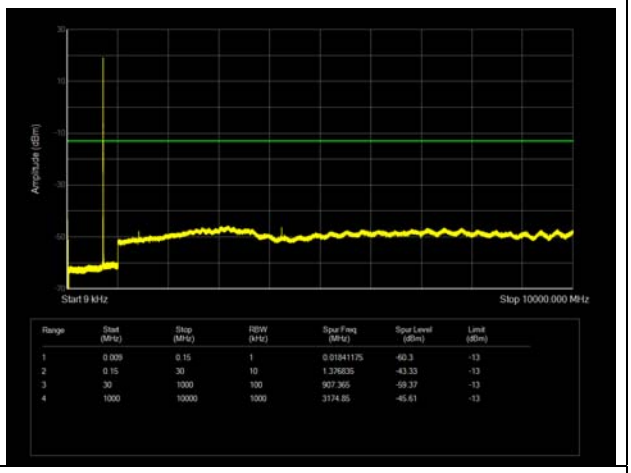
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

The signal beyond the limit is carrier.

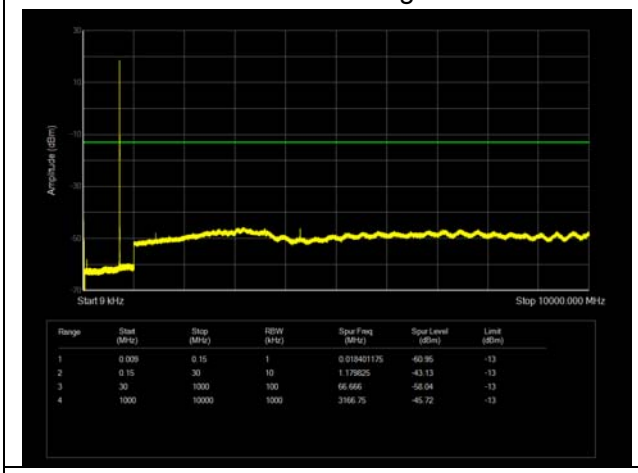
LTE Band 12 1.4MHz CH- Middle 9kHz~10GHz



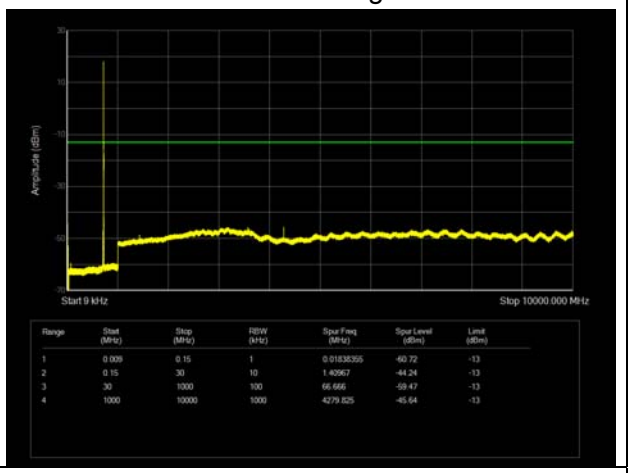
LTE Band 12 3MHz CH- Middle 9kHz~10GHz



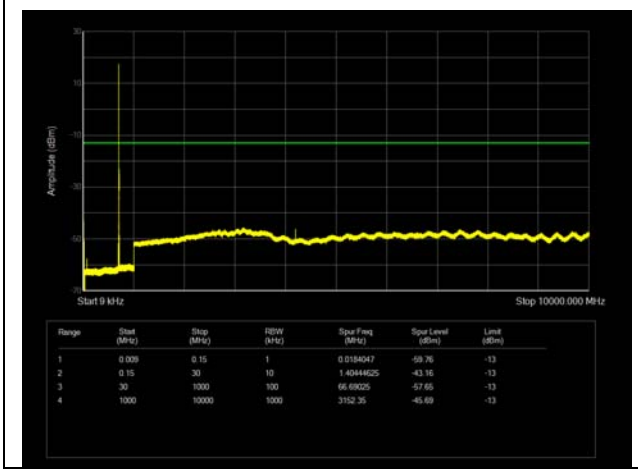
LTE Band 12 1.4MHz CH- High 9kHz~10GHz



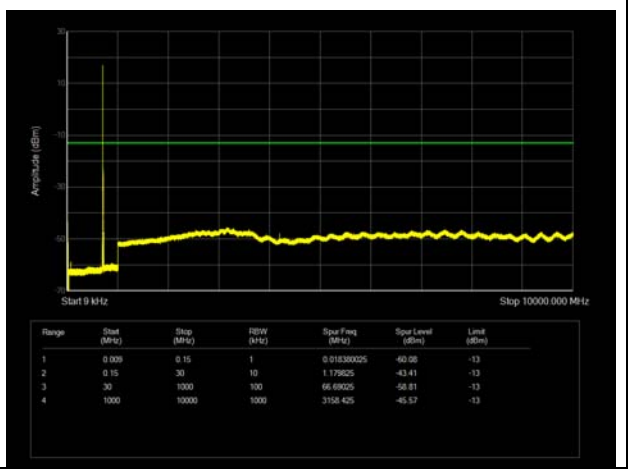
LTE Band 12 3MHz CH-High 9kHz~10GHz



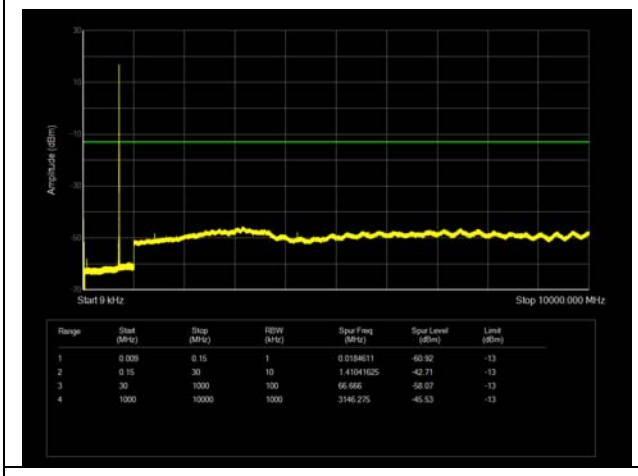
LTE Band 12 5MHz CH-Low 9kHz~10GHz



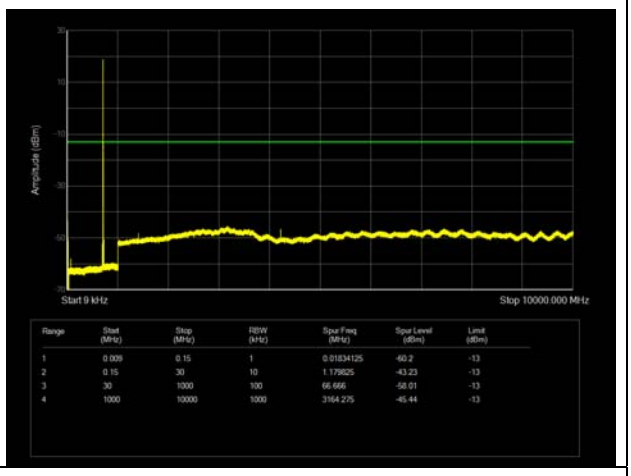
LTE Band 12 10MHz CH- Low 9kHz~10GHz



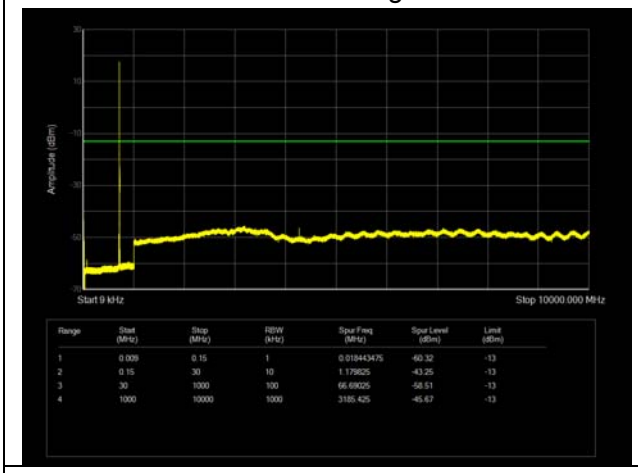
LTE Band 7 12 5MHz CH- Middle 9kHz~10GHz



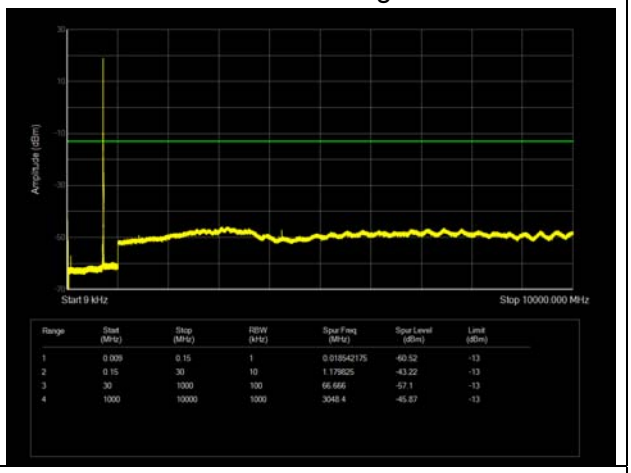
LTE Band 12 10MHz CH- Middle 9kHz~10GHz



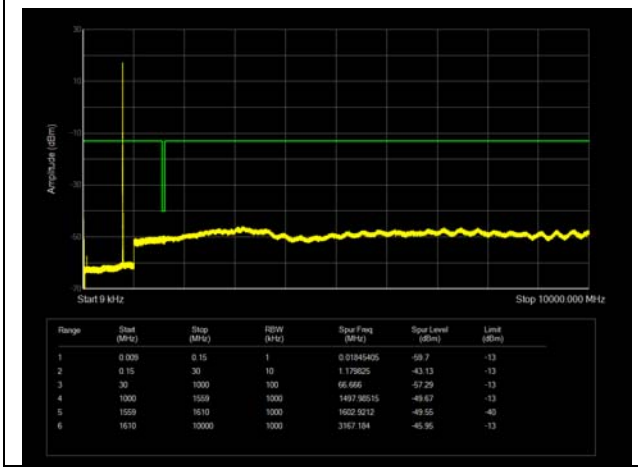
LTE Band 12 5MHz CH- High 9kHz~10GHz



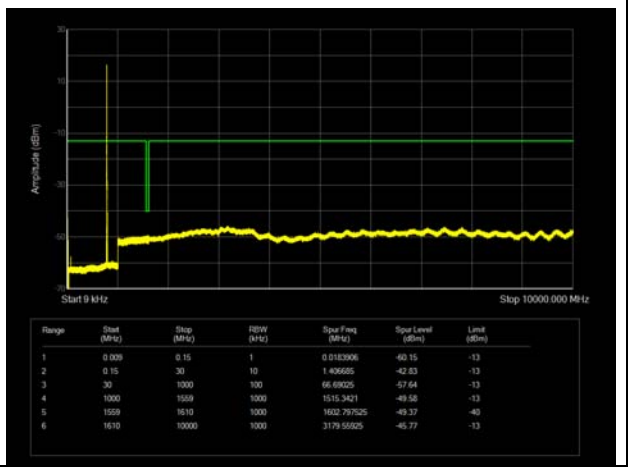
LTE Band 12 10MHz CH-High 9kHz~10GHz



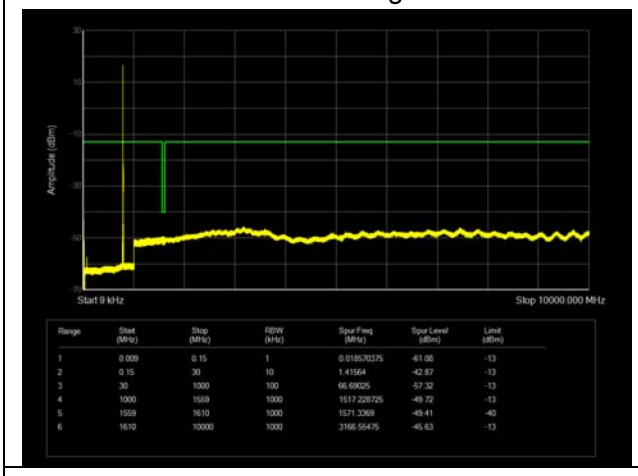
LTE Band 13 5MHz CH-Low 9kHz~10GHz



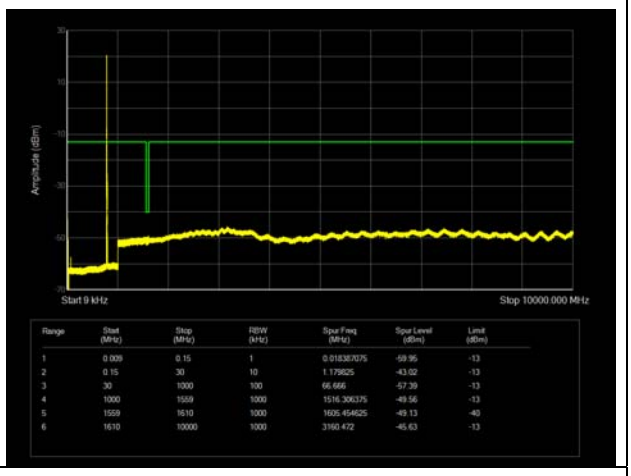
LTE Band 7 13 5MHz CH- Middle 9kHz~10GHz



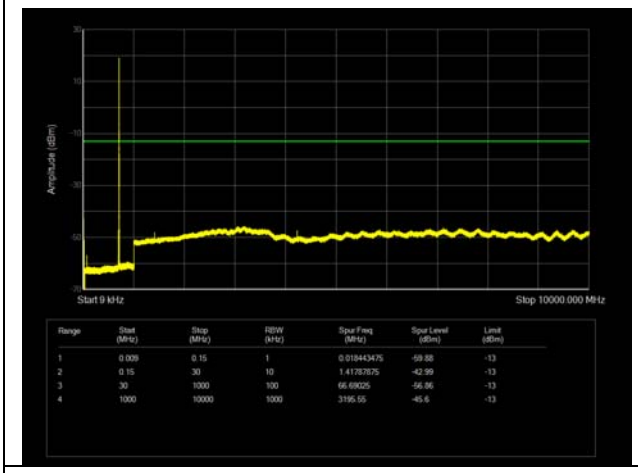
LTE Band 13 5MHz CH- High 9kHz~10GHz



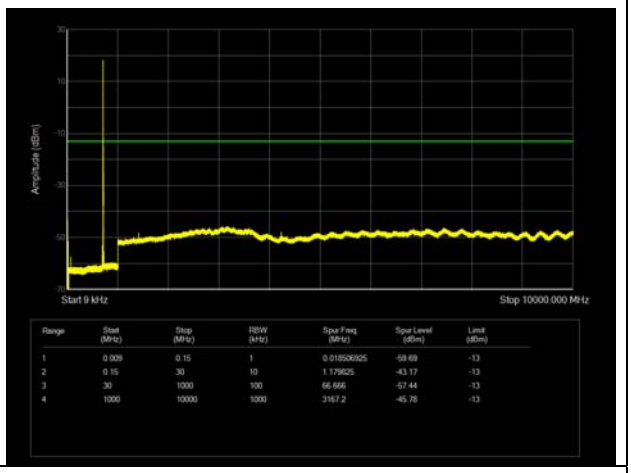
LTE Band 13 10MHz CH- Middle 9kHz~10GHz



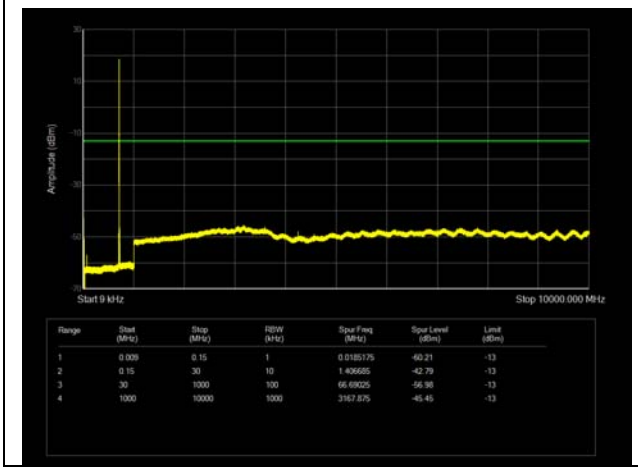
LTE Band 17 5MHz CH-Low 9kHz~10GHz



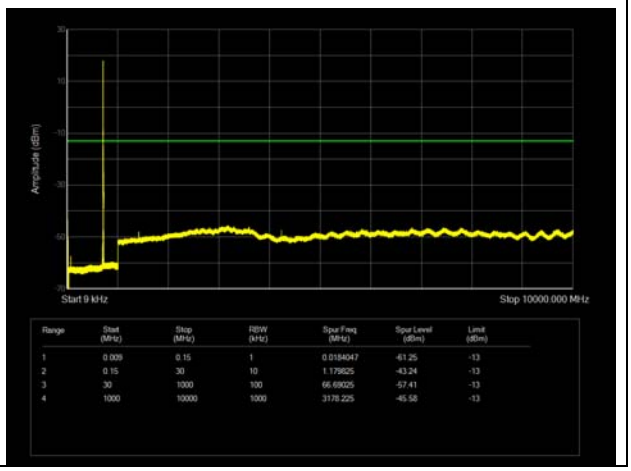
LTE Band 17 10MHz CH- Low 9kHz~10GHz

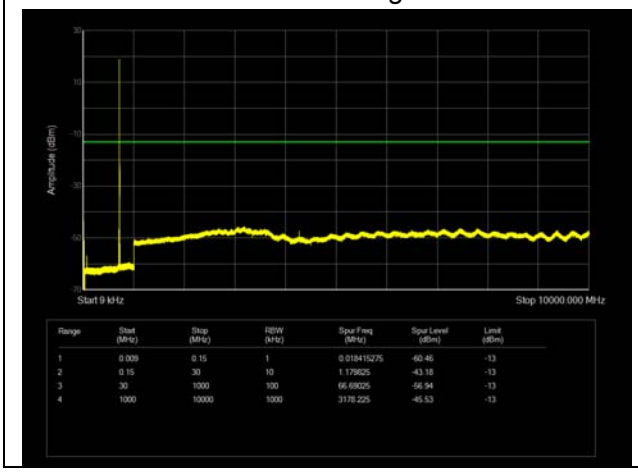
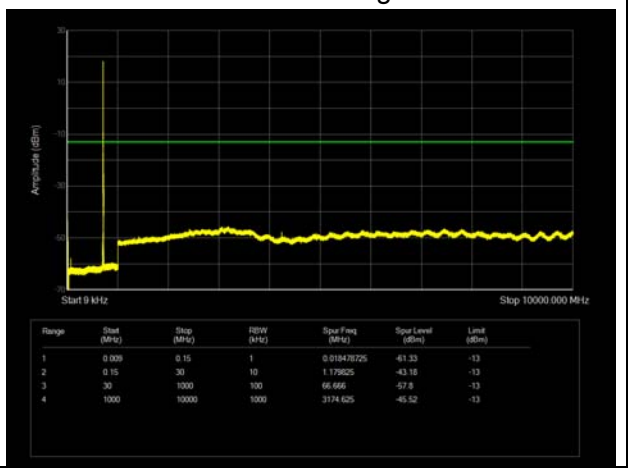


LTE Band 7 17 5MHz CH- Middle 9kHz~10GHz



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



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

5.7 Radiates Spurious Emission

Ambient condition

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

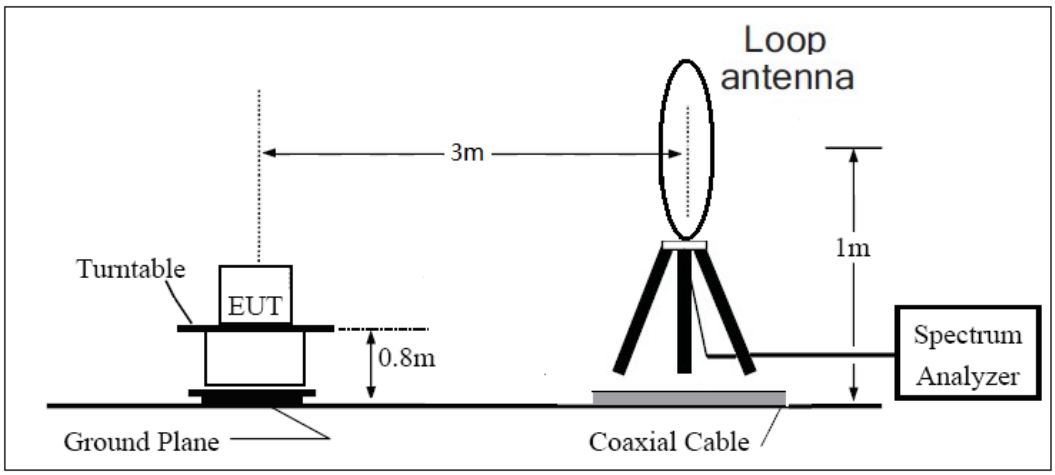
Method of Measurement

1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A loop antenna, A log-periodic antenna or horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=100kHz, VBW=300kHz for 30MHz to 1GHz and RBW=1MHz, VBW=3MHz for above 1GHz, and the maximum value of the receiver should be recorded as (Pr).
5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
7. The measurement results are obtained as described below:
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) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

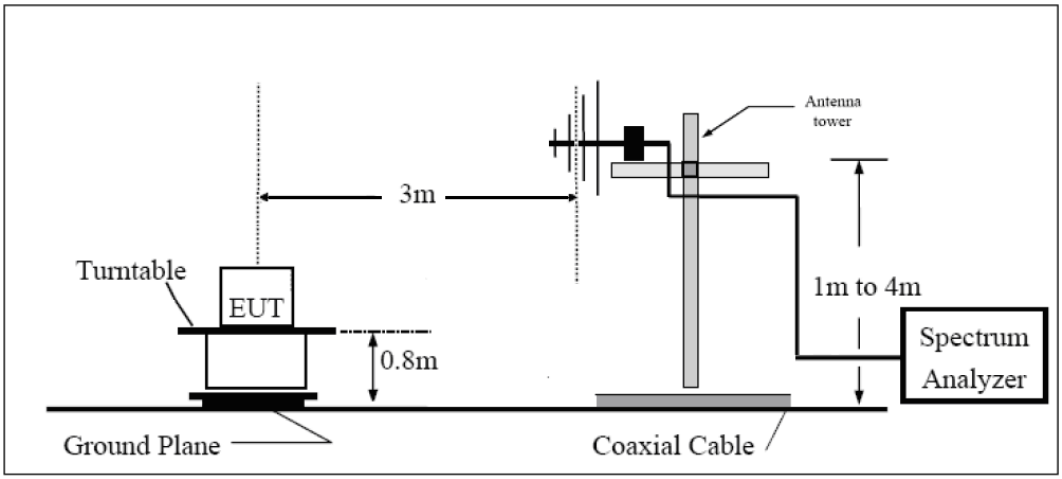
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

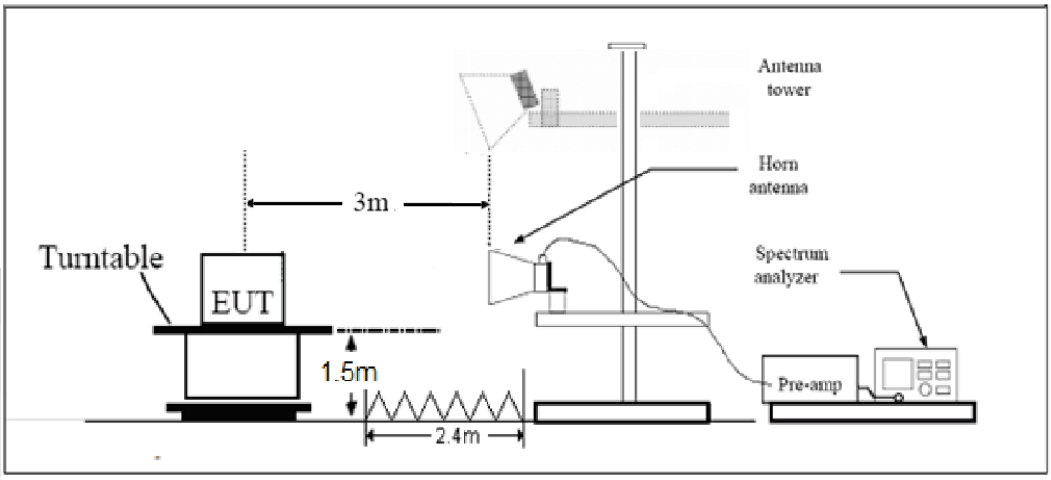
9KHz ~ 30MHz



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.

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

Part 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

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

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

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95％ confidence level for the normal distribution is with the coverage factor k = ±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 12 QPSK 1.4MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.00	-54.29	1.70	8.70	Horizontal	-49.44	-13.00	36.44	180
3	2122.50	-66.00	2.10	11.10	Horizontal	-59.15	-13.00	46.15	0
4	2830.00	-69.08	2.30	13.10	Horizontal	-60.43	-13.00	47.43	270
5	3537.50	-67.37	2.60	12.70	Horizontal	-59.42	-13.00	46.42	45
6	4245.00	-59.02	3.30	12.50	Horizontal	-51.97	-13.00	38.97	90
7	4952.50	-62.90	3.40	12.50	Horizontal	-55.95	-13.00	42.95	90
8	5660.00	-64.24	3.30	12.50	Horizontal	-57.19	-13.00	44.19	180
9	6367.50	-59.10	3.80	11.50	Horizontal	-53.55	-13.00	40.55	45
10	7075.00	-55.54	4.20	11.80	Horizontal	-50.09	-13.00	37.09	0
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1410.60	-66.44	1.70	8.70	Horizontal	-61.59	-13.00	48.59	0
3	2115.90	-67.58	2.10	11.10	Horizontal	-60.73	-13.00	47.73	45
4	2821.20	-69.23	2.30	13.10	Horizontal	-60.58	-13.00	47.58	225
5	3537.50	-69.08	2.60	12.70	Horizontal	-61.13	-13.00	48.13	135
6	4245.00	-56.72	3.30	12.50	Horizontal	-49.67	-13.00	36.67	135
7	4952.50	-64.10	3.40	12.50	Horizontal	-57.15	-13.00	44.15	135
8	5660.00	-64.00	3.30	12.50	Horizontal	-56.95	-13.00	43.95	225
9	6367.50	-59.34	3.80	11.50	Horizontal	-53.79	-13.00	40.79	270
10	7075.00	-54.97	4.20	11.80	Horizontal	-49.52	-13.00	36.52	135
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1406.40	-66.67	1.70	8.70	Horizontal	-61.82	-13.00	48.82	315
3	2109.60	-65.83	2.10	11.10	Horizontal	-58.98	-13.00	45.98	315
4	2812.80	-65.62	2.30	13.10	Horizontal	-56.97	-13.00	43.97	90
5	3537.50	-64.20	2.60	12.70	Horizontal	-56.25	-13.00	43.25	270
6	4245.00	-53.70	3.30	12.50	Horizontal	-46.65	-13.00	33.65	0
7	4952.50	-63.54	3.40	12.50	Horizontal	-56.59	-13.00	43.59	180
8	5660.00	-63.72	3.30	12.50	Horizontal	-56.67	-13.00	43.67	135
9	6367.50	-60.48	3.80	11.50	Horizontal	-54.93	-13.00	41.93	0
10	7075.00	-54.77	4.20	11.80	Horizontal	-49.32	-13.00	36.32	180
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1559.00	-65.00	1.70	8.70	Horizontal	-60.15	-40.00	20.15	45
3	2338.50	-68.14	2.10	12.00	Horizontal	-60.39	-13.00	47.39	90
4	3128.00	-67.03	2.30	13.10	Horizontal	-58.38	-13.00	45.38	45
5	3910.00	-65.69	2.90	12.50	Horizontal	-58.24	-13.00	45.24	0
6	4692.00	-64.14	3.10	12.50	Horizontal	-56.89	-13.00	43.89	135
7	5414.00	-64.03	3.30	12.50	Horizontal	-56.98	-13.00	43.98	225
8	6256.00	-60.89	3.50	12.80	Horizontal	-53.74	-13.00	40.74	315
9	7038.00	-57.06	4.20	11.80	Horizontal	-51.61	-13.00	38.61	225
10	7820.00	-56.82	4.40	12.30	Horizontal	-51.07	-13.00	38.07	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 13 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1554.00	-63.71	1.70	8.70	Horizontal	-58.86	-13.00	45.86	135
3	2331.00	-66.60	2.10	12.00	Horizontal	-58.85	-13.00	45.85	45
4	3128.00	-67.84	2.30	13.10	Horizontal	-59.19	-13.00	46.19	45
5	3910.00	-65.23	2.90	12.50	Horizontal	-57.78	-13.00	44.78	45
6	4692.00	-64.42	3.10	12.50	Horizontal	-57.17	-13.00	44.17	90
7	5414.00	-63.30	3.30	12.50	Horizontal	-56.25	-13.00	43.25	180
8	6256.00	-60.64	3.50	12.80	Horizontal	-53.49	-13.00	40.49	180
9	7038.00	-56.61	4.20	11.80	Horizontal	-51.16	-13.00	38.16	45
10	7820.00	-54.54	4.40	12.30	Horizontal	-48.79	-13.00	35.79	0
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1420.00	-70.37	1.70	8.70	Horizontal	-65.52	-13.00	52.52	45
3	2130.00	-66.39	2.10	11.10	Horizontal	-59.54	-13.00	46.54	180
4	2840.00	-66.74	2.50	13.10	Horizontal	-58.29	-13.00	45.29	270
5	3550.00	-65.99	2.60	12.70	Horizontal	-58.04	-13.00	45.04	225
6	4260.00	-60.25	3.30	12.50	Horizontal	-53.20	-13.00	40.20	225
7	4970.00	-64.03	3.40	12.50	Horizontal	-57.08	-13.00	44.08	135
8	5680.00	-62.96	3.40	12.80	Horizontal	-55.71	-13.00	42.71	180
9	6390.00	-59.64	4.10	11.50	Horizontal	-54.39	-13.00	41.39	315
10	7100.00	-55.41	4.20	12.20	Horizontal	-49.56	-13.00	36.56	0
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1420.00	-67.49	1.70	8.70	Horizontal	-62.64	-13.00	49.64	225
3	2130.00	-64.59	2.10	11.10	Horizontal	-57.74	-13.00	44.74	180
4	2840.00	-66.74	2.50	13.10	Horizontal	-58.29	-13.00	45.29	270
5	3550.00	-60.23	2.60	12.70	Horizontal	-52.28	-13.00	39.28	45
6	4260.00	-45.49	3.30	12.50	Horizontal	-38.44	-13.00	25.44	225
7	4970.00	-62.64	3.40	12.50	Horizontal	-55.69	-13.00	42.69	135
8	5680.00	-62.49	3.40	12.80	Horizontal	-55.24	-13.00	42.24	315
9	6390.00	-59.28	4.10	11.50	Horizontal	-54.03	-13.00	41.03	90
10	7100.00	-54.30	4.20	12.20	Horizontal	-48.45	-13.00	35.45	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.

6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Universal Radio Communication Tester	R&S	CMW500	150415	2021-05-15	2022-05-14
Spectrum Analyzer	Keysight	N9020A	MY52330084	2021-05-15	2022-05-14
Universal Radio Communication Tester	Agilent	E5515C	GB44400275	2021-05-15	2022-05-14
Spectrum Analyzer	R&S	FSV3030	101411	2020-12-13	2021-12-12
Horn Antenna	Schwarzbeck	BBHA 9120D	01799	2019--9-21	2021-09-21
Signal Analyzer	R&S	FSV30	100815	2020-12-17	2021-12-16
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	01439	2021-06-30	2024-06-29
Software	R&S	EMC32	10.35.10	/	/

********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.