RF TEST REPORT

Applicant	Quectel Wireless Solutions Company Limited
FCC ID	XMR2021SC200LEM
Product	Multi-mode Smart LTE Module with Wi-Fi & Bluetooth
Brand	Quectel
Model	SC200L-EM
Report No.	R2101A0120-R3V1
Issue Date	March 11, 2021

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2019)/ FCC CFR47 Part 27C (2019)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Version	Revision description	Issue Date
Rev.0	Initial issue of report.	March 3, 2021
Rev.1	Update information of applicant and manufacture;	March 11, 2021
Note: This revised report (Report No. R2101A0120-R3V1) supersedes and replaces the previously issued report (Report No. R2101A0120-R3). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	RF Power Output and Effective Isotropic Radiated Power	2.1046 27.50(h)(2)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edge Compliance	27.53(m)	PASS
4	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
5	Frequency Stability	2.1055 / 27.54	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 27.53(m)	PASS
7	Radiates Spurious Emission	2.1053 /27.53(m)	PASS
Date of Testing: February 7, 2021~ February 25, 2021 Date of Sample Received: February 4, 2021			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

1 Test Laboratory

1.1 Notes of the Test Report

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

1.2. Test facility

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

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

A2LA (Certificate Number: 3857.01)

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

1.3 Testing Location

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

2.1 Applicant and Manufacturer Information

Applicant	Quectel Wireless Solutions Company Limited
Applicant address	Building 5, Shanghai Business Park PhaseIII (Area B),No.1016 Tianlin Road, Minhang District Shanghai China
Manufacturer	Quectel Wireless Solutions Company Limited
Manufacturer address	Building 5, Shanghai Business Park PhaseIII (Area B),No.1016 Tianlin Road, Minhang District Shanghai China

2.2 General information

EUT Description			
Model	SC200L-EM		
SN	P1C20KB30000013		
Hardware Version	R1.0		
Software Version	SC200LEMNAR02A04		
Power Supply	External power supply		
Antenna Type	The EUT don't have standard Antenna. The Antenna used for testing in this report is the after-market accessory.		
Antenna Gain	LTE Band 7: 2.6dBi LTE Band 38: 2.0dBi LTE Band 41: 2.0dBi		
Test Mode(s)	LTE Band 7/38/41		
Test Modulation	(LTE)QPSK 16QAM;		
LTE Category	4		
Maximum E.I.R.P.	LTE Band 7:	26.15dBm	
	LTE Band 38:	25.51dBm	
	LTE Band 41:	25.56dBm	
Rated Power Supply Voltage:	3.8V		
Extreme Voltage	Minimum: 3.23V Maximum: 4.37V		
Extreme Temperature	Lowest: -30°C Highest: +75°C		
Operating Voltage	Minimum: 3.5V Maximum: 4.2V		
Operating Temperature	Lowest: -30°C Highest: +75°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
	LTE Band 38	2570 ~ 2620	2570 ~ 2620
	LTE Band 41	2496 ~ 2690	2496 ~ 2690
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by			

the applicant.

3 Applied Standards

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

Test standards:

FCC CFR47 Part 27C (2019)

ANSI C63.26 (2015)

Reference standard:

FCC CFR47 Part 2 (2019)

KDB 971168 D01 Power Meas License Digital Systems v03r01

4 Test Configuration

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

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

Subsequently, only the worst case emissions are reported.

The following testing in LTE is set based on the maximum RF Output Power.

The following testing in different Bandwidth is set to detailin the following table:

Test modes are chosen to be reported as the worst case configuration below for LTE Band 7/38/41:

Test items	Modes	Bandwidth (MHz)				Modulation			RB			Test Channel		
		5	10	15	20	QPSK	16QAM	64QAM	1	50%	100%	L	M	H
RF Power Output and Effective Isotropic Radiated Power	LTE 7	O	O	O	O	O	O		O	O	O	O	O	O
	LTE 38	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 41	O	O	O	O	O	O	O	O	O	O	O	O	O
Occupied Bandwidth	LTE 7	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 38	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 41	O	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	LTE 7	O	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 38	O	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 41	O	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	LTE 7	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 38	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 41	O	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	LTE 7	O	O	O	O	O	O	O	O	-	-	-	O	-
	LTE 38	O	O	O	O	O	O	O	O	-	-	-	O	-
	LTE 41	O	O	O	O	O	O	O	O	-	-	-	O	-
Spurious Emissions at Antenna Terminals	LTE 7	O	O	O	O	O	-	-	O	-	-	O	O	O
	LTE 38	O	O	O	O	O	-	-	O	-	-	O	O	O
	LTE 41	O	O	O	O	O	-	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 7	O	-	-	O	O	-	-	O	-	-	-	O	-
	LTE 38	O	-	-	O	O	-	-	O	-	-	-	O	-
	LTE 41	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

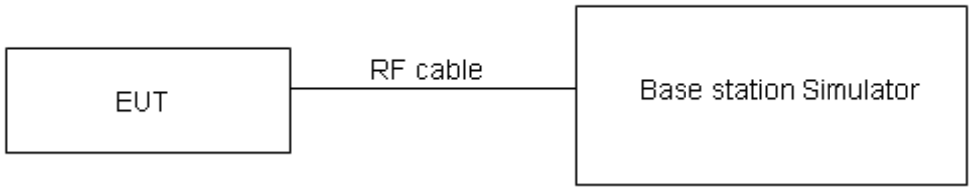
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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”
Rule Part 27.50(d) (4) specifies that “Fixed, mobile and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP”
Rule Part 27.50(h) (2) specifies that “Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.”
Rule Part 27.50(a) (3) specifies that “(i) For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations

compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. ”

Part 27.50(a)(3)Limit	≤ 250 mW (24 dBm)
Part 27.50(h)(2) Limit	≤ 2 W (33 dBm)

Measurement Uncertainty

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

Test Results

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	EIRP
LTE Band7	5	20775	1	#0	QPSK	22.98	25.58
LTE Band7	5	20775	1	#Mid	QPSK	22.98	25.58
LTE Band7	5	20775	1	#Max	QPSK	23.03	25.63
LTE Band7	5	20775	12	#0	QPSK	21.89	24.49
LTE Band7	5	20775	12	#Mid	QPSK	21.91	24.51
LTE Band7	5	20775	12	#Max	QPSK	22.05	24.65
LTE Band7	5	20775	25	#0	QPSK	21.97	24.57
LTE Band7	5	20775	1	#0	QAM16	21.93	24.53
LTE Band7	5	20775	1	#Mid	QAM16	21.96	24.56
LTE Band7	5	20775	1	#Max	QAM16	22.01	24.61
LTE Band7	5	20775	12	#0	QAM16	20.91	23.51
LTE Band7	5	20775	12	#Mid	QAM16	20.92	23.52
LTE Band7	5	20775	12	#Max	QAM16	21.02	23.62
LTE Band7	5	20775	25	#0	QAM16	21.14	23.74
LTE Band7	5	21100	1	#0	QPSK	23.12	25.72
LTE Band7	5	21100	1	#Mid	QPSK	23.14	25.74
LTE Band7	5	21100	1	#Max	QPSK	23.09	25.69
LTE Band7	5	21100	12	#0	QPSK	22.08	24.68
LTE Band7	5	21100	12	#Mid	QPSK	22.08	24.68
LTE Band7	5	21100	12	#Max	QPSK	22.29	24.89
LTE Band7	5	21100	25	#0	QPSK	22.24	24.84
LTE Band7	5	21100	1	#0	QAM16	22.17	24.77
LTE Band7	5	21100	1	#Mid	QAM16	22.17	24.77
LTE Band7	5	21100	1	#Max	QAM16	22.15	24.75
LTE Band7	5	21100	12	#0	QAM16	21.19	23.79
LTE Band7	5	21100	12	#Mid	QAM16	21.19	23.79
LTE Band7	5	21100	12	#Max	QAM16	21.17	23.77
LTE Band7	5	21100	25	#0	QAM16	21.24	23.84
LTE Band7	5	21425	1	#0	QPSK	22.85	25.45
LTE Band7	5	21425	1	#Mid	QPSK	22.84	25.44
LTE Band7	5	21425	1	#Max	QPSK	22.82	25.42
LTE Band7	5	21425	12	#0	QPSK	22.03	24.63
LTE Band7	5	21425	12	#Mid	QPSK	22.04	24.64
LTE Band7	5	21425	12	#Max	QPSK	22.06	24.66
LTE Band7	5	21425	25	#0	QPSK	21.98	24.58
LTE Band7	5	21425	1	#0	QAM16	21.87	24.47
LTE Band7	5	21425	1	#Mid	QAM16	21.80	24.40
LTE Band7	5	21425	1	#Max	QAM16	21.89	24.49
LTE Band7	5	21425	12	#0	QAM16	21.07	23.67
LTE Band7	5	21425	12	#Mid	QAM16	21.08	23.68

LTE Band7	5	21425	12	#Max	QAM16	21.01	23.61
LTE Band7	5	21425	25	#0	QAM16	20.97	23.57
LTE Band7	10	20800	1	#0	QPSK	22.85	25.45
LTE Band7	10	20800	1	#Mid	QPSK	22.92	25.52
LTE Band7	10	20800	1	#Max	QPSK	23.03	25.63
LTE Band7	10	20800	25	#0	QPSK	21.98	24.58
LTE Band7	10	20800	25	#Mid	QPSK	21.98	24.58
LTE Band7	10	20800	25	#Max	QPSK	22.00	24.60
LTE Band7	10	20800	50	#0	QPSK	22.00	24.60
LTE Band7	10	20800	1	#0	QAM16	22.15	24.75
LTE Band7	10	20800	1	#Mid	QAM16	22.08	24.68
LTE Band7	10	20800	1	#Max	QAM16	22.14	24.74
LTE Band7	10	20800	25	#0	QAM16	21.06	23.66
LTE Band7	10	20800	25	#Mid	QAM16	21.06	23.66
LTE Band7	10	20800	25	#Max	QAM16	21.19	23.79
LTE Band7	10	20800	50	#0	QAM16	21.11	23.71
LTE Band7	10	21100	1	#0	QPSK	23.14	25.74
LTE Band7	10	21100	1	#Mid	QPSK	23.22	25.82
LTE Band7	10	21100	1	#Max	QPSK	23.12	25.72
LTE Band7	10	21100	25	#0	QPSK	22.25	24.85
LTE Band7	10	21100	25	#Mid	QPSK	22.24	24.84
LTE Band7	10	21100	25	#Max	QPSK	22.27	24.87
LTE Band7	10	21100	50	#0	QPSK	22.12	24.72
LTE Band7	10	21100	1	#0	QAM16	22.46	25.06
LTE Band7	10	21100	1	#Mid	QAM16	22.40	25.00
LTE Band7	10	21100	1	#Max	QAM16	22.47	25.07
LTE Band7	10	21100	25	#0	QAM16	21.34	23.94
LTE Band7	10	21100	25	#Mid	QAM16	21.31	23.91
LTE Band7	10	21100	25	#Max	QAM16	21.42	24.02
LTE Band7	10	21100	50	#0	QAM16	21.30	23.90
LTE Band7	10	21400	1	#0	QPSK	23.29	25.89
LTE Band7	10	21400	1	#Mid	QPSK	23.24	25.84
LTE Band7	10	21400	1	#Max	QPSK	23.24	25.84
LTE Band7	10	21400	25	#0	QPSK	22.00	24.60
LTE Band7	10	21400	25	#Mid	QPSK	22.03	24.63
LTE Band7	10	21400	25	#Max	QPSK	22.01	24.61
LTE Band7	10	21400	50	#0	QPSK	22.01	24.61
LTE Band7	10	21400	1	#0	QAM16	21.47	24.07
LTE Band7	10	21400	1	#Mid	QAM16	21.55	24.15
LTE Band7	10	21400	1	#Max	QAM16	21.50	24.10
LTE Band7	10	21400	25	#0	QAM16	21.17	23.77
LTE Band7	10	21400	25	#Mid	QAM16	21.17	23.77
LTE Band7	10	21400	25	#Max	QAM16	21.18	23.78

LTE Band7	10	21400	50	#0	QAM16	21.16	23.76
LTE Band7	15	20825	1	#0	QPSK	22.97	25.57
LTE Band7	15	20825	1	#Mid	QPSK	23.07	25.67
LTE Band7	15	20825	1	#Max	QPSK	23.09	25.69
LTE Band7	15	20825	36	#0	QPSK	21.95	24.55
LTE Band7	15	20825	36	#Mid	QPSK	21.95	24.55
LTE Band7	15	20825	36	#Max	QPSK	22.14	24.74
LTE Band7	15	20825	75	#0	QPSK	21.98	24.58
LTE Band7	15	20825	1	#0	QAM16	21.95	24.55
LTE Band7	15	20825	1	#Mid	QAM16	21.98	24.58
LTE Band7	15	20825	1	#Max	QAM16	22.10	24.70
LTE Band7	15	20825	36	#0	QAM16	21.25	23.85
LTE Band7	15	20825	36	#Mid	QAM16	21.25	23.85
LTE Band7	15	20825	36	#Max	QAM16	21.25	23.85
LTE Band7	15	20825	75	#0	QAM16	21.17	23.77
LTE Band7	15	21100	1	#0	QPSK	23.10	25.70
LTE Band7	15	21100	1	#Mid	QPSK	23.16	25.76
LTE Band7	15	21100	1	#Max	QPSK	23.17	25.77
LTE Band7	15	21100	36	#0	QPSK	22.06	24.66
LTE Band7	15	21100	36	#Mid	QPSK	22.06	24.66
LTE Band7	15	21100	36	#Max	QPSK	22.16	24.76
LTE Band7	15	21100	75	#0	QPSK	22.19	24.79
LTE Band7	15	21100	1	#0	QAM16	22.52	25.12
LTE Band7	15	21100	1	#Mid	QAM16	22.65	25.25
LTE Band7	15	21100	1	#Max	QAM16	22.67	25.27
LTE Band7	15	21100	36	#0	QAM16	21.27	23.87
LTE Band7	15	21100	36	#Mid	QAM16	21.27	23.87
LTE Band7	15	21100	36	#Max	QAM16	21.31	23.91
LTE Band7	15	21100	75	#0	QAM16	21.25	23.85
LTE Band7	15	21375	1	#0	QPSK	23.22	25.82
LTE Band7	15	21375	1	#Mid	QPSK	23.21	25.81
LTE Band7	15	21375	1	#Max	QPSK	23.18	25.78
LTE Band7	15	21375	36	#0	QPSK	21.95	24.55
LTE Band7	15	21375	36	#Mid	QPSK	22.08	24.68
LTE Band7	15	21375	36	#Max	QPSK	22.06	24.66
LTE Band7	15	21375	75	#0	QPSK	21.97	24.57
LTE Band7	15	21375	1	#0	QAM16	22.20	24.80
LTE Band7	15	21375	1	#Mid	QAM16	22.11	24.71
LTE Band7	15	21375	1	#Max	QAM16	22.14	24.74
LTE Band7	15	21375	36	#0	QAM16	21.28	23.88
LTE Band7	15	21375	36	#Mid	QAM16	21.28	23.88
LTE Band7	15	21375	36	#Max	QAM16	21.21	23.81
LTE Band7	15	21375	75	#0	QAM16	21.20	23.80

LTE Band7	20	20850	1	#0	QPSK	23.07	25.67
LTE Band7	20	20850	1	#Mid	QPSK	23.15	25.75
LTE Band7	20	20850	1	#Max	QPSK	23.24	25.84
LTE Band7	20	20850	50	#0	QPSK	22.05	24.65
LTE Band7	20	20850	50	#Mid	QPSK	22.08	24.68
LTE Band7	20	20850	50	#Max	QPSK	22.09	24.69
LTE Band7	20	20850	100	#0	QPSK	22.05	24.65
LTE Band7	20	20850	1	#0	QAM16	21.70	24.30
LTE Band7	20	20850	1	#Mid	QAM16	21.72	24.32
LTE Band7	20	20850	1	#Max	QAM16	21.86	24.46
LTE Band7	20	20850	50	#0	QAM16	21.26	23.86
LTE Band7	20	20850	50	#Mid	QAM16	21.27	23.87
LTE Band7	20	20850	50	#Max	QAM16	21.36	23.96
LTE Band7	20	20850	100	#0	QAM16	21.11	23.71
LTE Band7	20	21100	1	#0	QPSK	23.47	26.07
LTE Band7	20	21100	1	#Mid	QPSK	23.50	26.10
LTE Band7	20	21100	1	#Max	QPSK	23.55	26.15
LTE Band7	20	21100	50	#0	QPSK	22.16	24.76
LTE Band7	20	21100	50	#Mid	QPSK	22.19	24.79
LTE Band7	20	21100	50	#Max	QPSK	22.23	24.83
LTE Band7	20	21100	100	#0	QPSK	22.15	24.75
LTE Band7	20	21100	1	#0	QAM16	22.04	24.64
LTE Band7	20	21100	1	#Mid	QAM16	22.13	24.73
LTE Band7	20	21100	1	#Max	QAM16	22.06	24.66
LTE Band7	20	21100	50	#0	QAM16	21.27	23.87
LTE Band7	20	21100	50	#Mid	QAM16	21.24	23.84
LTE Band7	20	21100	50	#Max	QAM16	21.27	23.87
LTE Band7	20	21100	100	#0	QAM16	21.28	23.88
LTE Band7	20	21350	1	#0	QPSK	23.31	25.91
LTE Band7	20	21350	1	#Mid	QPSK	23.24	25.84
LTE Band7	20	21350	1	#Max	QPSK	23.30	25.90
LTE Band7	20	21350	50	#0	QPSK	22.12	24.72
LTE Band7	20	21350	50	#Mid	QPSK	22.13	24.73
LTE Band7	20	21350	50	#Max	QPSK	22.09	24.69
LTE Band7	20	21350	100	#0	QPSK	22.10	24.70
LTE Band7	20	21350	1	#0	QAM16	22.10	24.70
LTE Band7	20	21350	1	#Mid	QAM16	21.97	24.57
LTE Band7	20	21350	1	#Max	QAM16	22.04	24.64
LTE Band7	20	21350	50	#0	QAM16	21.19	23.79
LTE Band7	20	21350	50	#Mid	QAM16	21.20	23.80
LTE Band7	20	21350	50	#Max	QAM16	21.19	23.79
LTE Band7	20	21350	100	#0	QAM16	21.30	23.90

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	EIRP
LTE Band38	5	37775	1	#0	QPSK	23.04	25.04
LTE Band38	5	37775	1	#Mid	QPSK	23.06	25.06
LTE Band38	5	37775	1	#Max	QPSK	22.96	24.96
LTE Band38	5	37775	12	#0	QPSK	22.03	24.03
LTE Band38	5	37775	12	#Mid	QPSK	22.02	24.02
LTE Band38	5	37775	12	#Max	QPSK	22.10	24.10
LTE Band38	5	37775	25	#0	QPSK	22.05	24.05
LTE Band38	5	37775	1	#0	QAM16	22.26	24.26
LTE Band38	5	37775	1	#Mid	QAM16	22.32	24.32
LTE Band38	5	37775	1	#Max	QAM16	22.33	24.33
LTE Band38	5	37775	12	#0	QAM16	20.97	22.97
LTE Band38	5	37775	12	#Mid	QAM16	20.92	22.92
LTE Band38	5	37775	12	#Max	QAM16	20.98	22.98
LTE Band38	5	37775	25	#0	QAM16	21.10	23.10
LTE Band38	5	38000	1	#0	QPSK	23.06	25.06
LTE Band38	5	38000	1	#Mid	QPSK	23.04	25.04
LTE Band38	5	38000	1	#Max	QPSK	23.01	25.01
LTE Band38	5	38000	12	#0	QPSK	22.28	24.28
LTE Band38	5	38000	12	#Mid	QPSK	22.28	24.28
LTE Band38	5	38000	12	#Max	QPSK	22.28	24.28
LTE Band38	5	38000	25	#0	QPSK	22.28	24.28
LTE Band38	5	38000	1	#0	QAM16	22.14	24.14
LTE Band38	5	38000	1	#Mid	QAM16	22.12	24.12
LTE Band38	5	38000	1	#Max	QAM16	22.11	24.11
LTE Band38	5	38000	12	#0	QAM16	21.33	23.33
LTE Band38	5	38000	12	#Mid	QAM16	21.33	23.33
LTE Band38	5	38000	12	#Max	QAM16	21.22	23.22
LTE Band38	5	38000	25	#0	QAM16	21.17	23.17
LTE Band38	5	38225	1	#0	QPSK	23.23	25.23
LTE Band38	5	38225	1	#Mid	QPSK	23.27	25.27
LTE Band38	5	38225	1	#Max	QPSK	23.35	25.35
LTE Band38	5	38225	12	#0	QPSK	22.26	24.26
LTE Band38	5	38225	12	#Mid	QPSK	22.27	24.27
LTE Band38	5	38225	12	#Max	QPSK	22.36	24.36
LTE Band38	5	38225	25	#0	QPSK	22.22	24.22
LTE Band38	5	38225	1	#0	QAM16	22.77	24.77
LTE Band38	5	38225	1	#Mid	QAM16	22.95	24.95
LTE Band38	5	38225	1	#Max	QAM16	22.58	24.58
LTE Band38	5	38225	12	#0	QAM16	21.21	23.21
LTE Band38	5	38225	12	#Mid	QAM16	21.22	23.22
LTE Band38	5	38225	12	#Max	QAM16	21.34	23.34

LTE Band38	5	38225	25	#0	QAM16	21.38	23.38
LTE Band38	10	37800	1	#0	QPSK	23.24	25.24
LTE Band38	10	37800	1	#Mid	QPSK	23.26	25.26
LTE Band38	10	37800	1	#Max	QPSK	23.25	25.25
LTE Band38	10	37800	25	#0	QPSK	21.98	23.98
LTE Band38	10	37800	25	#Mid	QPSK	22.13	24.13
LTE Band38	10	37800	25	#Max	QPSK	22.12	24.12
LTE Band38	10	37800	50	#0	QPSK	22.08	24.08
LTE Band38	10	37800	1	#0	QAM16	22.51	24.51
LTE Band38	10	37800	1	#Mid	QAM16	22.41	24.41
LTE Band38	10	37800	1	#Max	QAM16	22.50	24.50
LTE Band38	10	37800	25	#0	QAM16	21.19	23.19
LTE Band38	10	37800	25	#Mid	QAM16	21.18	23.18
LTE Band38	10	37800	25	#Max	QAM16	21.15	23.15
LTE Band38	10	37800	50	#0	QAM16	21.14	23.14
LTE Band38	10	38000	1	#0	QPSK	23.36	25.36
LTE Band38	10	38000	1	#Mid	QPSK	23.35	25.35
LTE Band38	10	38000	1	#Max	QPSK	23.47	25.47
LTE Band38	10	38000	25	#0	QPSK	22.26	24.26
LTE Band38	10	38000	25	#Mid	QPSK	22.27	24.27
LTE Band38	10	38000	25	#Max	QPSK	22.34	24.34
LTE Band38	10	38000	50	#0	QPSK	22.22	24.22
LTE Band38	10	38000	1	#0	QAM16	22.43	24.43
LTE Band38	10	38000	1	#Mid	QAM16	22.49	24.49
LTE Band38	10	38000	1	#Max	QAM16	22.49	24.49
LTE Band38	10	38000	25	#0	QAM16	21.46	23.46
LTE Band38	10	38000	25	#Mid	QAM16	21.33	23.33
LTE Band38	10	38000	25	#Max	QAM16	21.23	23.23
LTE Band38	10	38000	50	#0	QAM16	21.33	23.33
LTE Band38	10	38200	1	#0	QPSK	23.46	25.46
LTE Band38	10	38200	1	#Mid	QPSK	23.39	25.39
LTE Band38	10	38200	1	#Max	QPSK	23.35	25.35
LTE Band38	10	38200	25	#0	QPSK	22.35	24.35
LTE Band38	10	38200	25	#Mid	QPSK	22.35	24.35
LTE Band38	10	38200	25	#Max	QPSK	22.28	24.28
LTE Band38	10	38200	50	#0	QPSK	22.23	24.23
LTE Band38	10	38200	1	#0	QAM16	22.58	24.58
LTE Band38	10	38200	1	#Mid	QAM16	22.50	24.50
LTE Band38	10	38200	1	#Max	QAM16	22.43	24.43
LTE Band38	10	38200	25	#0	QAM16	21.49	23.49
LTE Band38	10	38200	25	#Mid	QAM16	21.52	23.52
LTE Band38	10	38200	25	#Max	QAM16	21.37	23.37
LTE Band38	10	38200	50	#0	QAM16	21.49	23.49

LTE Band38	15	37825	1	#0	QPSK	23.29	25.29
LTE Band38	15	37825	1	#Mid	QPSK	23.21	25.21
LTE Band38	15	37825	1	#Max	QPSK	23.32	25.32
LTE Band38	15	37825	36	#0	QPSK	22.12	24.12
LTE Band38	15	37825	36	#Mid	QPSK	22.13	24.13
LTE Band38	15	37825	36	#Max	QPSK	22.24	24.24
LTE Band38	15	37825	75	#0	QPSK	22.13	24.13
LTE Band38	15	37825	1	#0	QAM16	22.41	24.41
LTE Band38	15	37825	1	#Mid	QAM16	22.46	24.46
LTE Band38	15	37825	1	#Max	QAM16	22.47	24.47
LTE Band38	15	37825	36	#0	QAM16	21.23	23.23
LTE Band38	15	37825	36	#Mid	QAM16	21.20	23.20
LTE Band38	15	37825	36	#Max	QAM16	21.24	23.24
LTE Band38	15	37825	75	#0	QAM16	21.16	23.16
LTE Band38	15	38000	1	#0	QPSK	23.22	25.22
LTE Band38	15	38000	1	#Mid	QPSK	23.38	25.38
LTE Band38	15	38000	1	#Max	QPSK	23.30	25.30
LTE Band38	15	38000	36	#0	QPSK	22.23	24.23
LTE Band38	15	38000	36	#Mid	QPSK	22.25	24.25
LTE Band38	15	38000	36	#Max	QPSK	22.18	24.18
LTE Band38	15	38000	75	#0	QPSK	22.21	24.21
LTE Band38	15	38000	1	#0	QAM16	22.54	24.54
LTE Band38	15	38000	1	#Mid	QAM16	22.60	24.60
LTE Band38	15	38000	1	#Max	QAM16	22.75	24.75
LTE Band38	15	38000	36	#0	QAM16	21.32	23.32
LTE Band38	15	38000	36	#Mid	QAM16	21.34	23.34
LTE Band38	15	38000	36	#Max	QAM16	21.44	23.44
LTE Band38	15	38000	75	#0	QAM16	21.30	23.30
LTE Band38	15	38175	1	#0	QPSK	23.39	25.39
LTE Band38	15	38175	1	#Mid	QPSK	23.41	25.41
LTE Band38	15	38175	1	#Max	QPSK	23.37	25.37
LTE Band38	15	38175	36	#0	QPSK	22.32	24.32
LTE Band38	15	38175	36	#Mid	QPSK	22.24	24.24
LTE Band38	15	38175	36	#Max	QPSK	22.38	24.38
LTE Band38	15	38175	75	#0	QPSK	22.32	24.32
LTE Band38	15	38175	1	#0	QAM16	21.67	23.67
LTE Band38	15	38175	1	#Mid	QAM16	21.54	23.54
LTE Band38	15	38175	1	#Max	QAM16	21.36	23.36
LTE Band38	15	38175	36	#0	QAM16	21.41	23.41
LTE Band38	15	38175	36	#Mid	QAM16	21.44	23.44
LTE Band38	15	38175	36	#Max	QAM16	21.40	23.40
LTE Band38	15	38175	75	#0	QAM16	21.45	23.45
LTE Band38	20	37850	1	#0	QPSK	23.07	25.07

LTE Band38	20	37850	1	#Mid	QPSK	23.08	25.08
LTE Band38	20	37850	1	#Max	QPSK	23.30	25.30
LTE Band38	20	37850	50	#0	QPSK	22.17	24.17
LTE Band38	20	37850	50	#Mid	QPSK	22.17	24.17
LTE Band38	20	37850	50	#Max	QPSK	22.22	24.22
LTE Band38	20	37850	100	#0	QPSK	22.15	24.15
LTE Band38	20	37850	1	#0	QAM16	22.45	24.45
LTE Band38	20	37850	1	#Mid	QAM16	22.30	24.30
LTE Band38	20	37850	1	#Max	QAM16	22.70	24.70
LTE Band38	20	37850	50	#0	QAM16	21.37	23.37
LTE Band38	20	37850	50	#Mid	QAM16	21.36	23.36
LTE Band38	20	37850	50	#Max	QAM16	21.47	23.47
LTE Band38	20	37850	100	#0	QAM16	21.23	23.23
LTE Band38	20	38000	1	#0	QPSK	23.22	25.22
LTE Band38	20	38000	1	#Mid	QPSK	23.40	25.40
LTE Band38	20	38000	1	#Max	QPSK	23.48	25.48
LTE Band38	20	38000	50	#0	QPSK	22.22	24.22
LTE Band38	20	38000	50	#Mid	QPSK	22.23	24.23
LTE Band38	20	38000	50	#Max	QPSK	22.32	24.32
LTE Band38	20	38000	100	#0	QPSK	22.32	24.32
LTE Band38	20	38000	1	#0	QAM16	21.83	23.83
LTE Band38	20	38000	1	#Mid	QAM16	21.88	23.88
LTE Band38	20	38000	1	#Max	QAM16	21.96	23.96
LTE Band38	20	38000	50	#0	QAM16	21.28	23.28
LTE Band38	20	38000	50	#Mid	QAM16	21.28	23.28
LTE Band38	20	38000	50	#Max	QAM16	21.39	23.39
LTE Band38	20	38000	100	#0	QAM16	21.43	23.43
LTE Band38	20	38150	1	#0	QPSK	23.51	25.51
LTE Band38	20	38150	1	#Mid	QPSK	23.38	25.38
LTE Band38	20	38150	1	#Max	QPSK	23.48	25.48
LTE Band38	20	38150	50	#0	QPSK	22.31	24.31
LTE Band38	20	38150	50	#Mid	QPSK	22.31	24.31
LTE Band38	20	38150	50	#Max	QPSK	22.39	24.39
LTE Band38	20	38150	100	#0	QPSK	22.33	24.33
LTE Band38	20	38150	1	#0	QAM16	22.30	24.30
LTE Band38	20	38150	1	#Mid	QAM16	22.34	24.34
LTE Band38	20	38150	1	#Max	QAM16	22.43	24.43
LTE Band38	20	38150	50	#0	QAM16	21.38	23.38
LTE Band38	20	38150	50	#Mid	QAM16	21.39	23.39
LTE Band38	20	38150	50	#Max	QAM16	21.45	23.45
LTE Band38	20	38150	100	#0	QAM16	21.28	23.28

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	EIRP
LTE Band41	5	39675	1	#0	QPSK	23.04	25.04
LTE Band41	5	39675	1	#Mid	QPSK	23.01	25.01
LTE Band41	5	39675	1	#Max	QPSK	22.93	24.93
LTE Band41	5	39675	12	#0	QPSK	21.99	23.99
LTE Band41	5	39675	12	#Mid	QPSK	21.99	23.99
LTE Band41	5	39675	12	#Max	QPSK	21.96	23.96
LTE Band41	5	39675	25	#0	QPSK	21.88	23.88
LTE Band41	5	39675	1	#0	QAM16	22.42	24.42
LTE Band41	5	39675	1	#Mid	QAM16	22.05	24.05
LTE Band41	5	39675	1	#Max	QAM16	22.30	24.30
LTE Band41	5	39675	12	#0	QAM16	20.83	22.83
LTE Band41	5	39675	12	#Mid	QAM16	20.83	22.83
LTE Band41	5	39675	12	#Max	QAM16	20.99	22.99
LTE Band41	5	39675	25	#0	QAM16	21.14	23.14
LTE Band41	5	40620	1	#0	QPSK	23.07	25.07
LTE Band41	5	40620	1	#Mid	QPSK	23.08	25.08
LTE Band41	5	40620	1	#Max	QPSK	23.12	25.12
LTE Band41	5	40620	12	#0	QPSK	22.36	24.36
LTE Band41	5	40620	12	#Mid	QPSK	22.36	24.36
LTE Band41	5	40620	12	#Max	QPSK	22.36	24.36
LTE Band41	5	40620	25	#0	QPSK	22.33	24.33
LTE Band41	5	40620	1	#0	QAM16	22.22	24.22
LTE Band41	5	40620	1	#Mid	QAM16	22.26	24.26
LTE Band41	5	40620	1	#Max	QAM16	22.24	24.24
LTE Band41	5	40620	12	#0	QAM16	21.30	23.30
LTE Band41	5	40620	12	#Mid	QAM16	21.29	23.29
LTE Band41	5	40620	12	#Max	QAM16	21.38	23.38
LTE Band41	5	40620	25	#0	QAM16	21.26	23.26
LTE Band41	5	41565	1	#0	QPSK	23.25	25.25
LTE Band41	5	41565	1	#Mid	QPSK	23.16	25.16
LTE Band41	5	41565	1	#Max	QPSK	23.24	25.24
LTE Band41	5	41565	12	#0	QPSK	22.16	24.16
LTE Band41	5	41565	12	#Mid	QPSK	22.15	24.15
LTE Band41	5	41565	12	#Max	QPSK	22.23	24.23
LTE Band41	5	41565	25	#0	QPSK	22.19	24.19
LTE Band41	5	41565	1	#0	QAM16	22.77	24.77
LTE Band41	5	41565	1	#Mid	QAM16	22.78	24.78
LTE Band41	5	41565	1	#Max	QAM16	22.65	24.65
LTE Band41	5	41565	12	#0	QAM16	21.17	23.17
LTE Band41	5	41565	12	#Mid	QAM16	21.18	23.18

LTE Band41	5	41565	12	#Max	QAM16	21.25	23.25
LTE Band41	5	41565	25	#0	QAM16	21.22	23.22
LTE Band41	10	39700	1	#0	QPSK	23.16	25.16
LTE Band41	10	39700	1	#Mid	QPSK	23.15	25.15
LTE Band41	10	39700	1	#Max	QPSK	23.17	25.17
LTE Band41	10	39700	25	#0	QPSK	21.90	23.90
LTE Band41	10	39700	25	#Mid	QPSK	21.91	23.91
LTE Band41	10	39700	25	#Max	QPSK	21.96	23.96
LTE Band41	10	39700	50	#0	QPSK	21.91	23.91
LTE Band41	10	39700	1	#0	QAM16	21.95	23.95
LTE Band41	10	39700	1	#Mid	QAM16	21.91	23.91
LTE Band41	10	39700	1	#Max	QAM16	21.91	23.91
LTE Band41	10	39700	25	#0	QAM16	21.04	23.04
LTE Band41	10	39700	25	#Mid	QAM16	21.05	23.05
LTE Band41	10	39700	25	#Max	QAM16	21.15	23.15
LTE Band41	10	39700	50	#0	QAM16	20.99	22.99
LTE Band41	10	40620	1	#0	QPSK	23.32	25.32
LTE Band41	10	40620	1	#Mid	QPSK	23.40	25.40
LTE Band41	10	40620	1	#Max	QPSK	23.41	25.41
LTE Band41	10	40620	25	#0	QPSK	22.21	24.21
LTE Band41	10	40620	25	#Mid	QPSK	22.21	24.21
LTE Band41	10	40620	25	#Max	QPSK	22.40	24.40
LTE Band41	10	40620	50	#0	QPSK	22.27	24.27
LTE Band41	10	40620	1	#0	QAM16	22.44	24.44
LTE Band41	10	40620	1	#Mid	QAM16	22.46	24.46
LTE Band41	10	40620	1	#Max	QAM16	22.42	24.42
LTE Band41	10	40620	25	#0	QAM16	21.49	23.49
LTE Band41	10	40620	25	#Mid	QAM16	21.49	23.49
LTE Band41	10	40620	25	#Max	QAM16	21.51	23.51
LTE Band41	10	40620	50	#0	QAM16	21.48	23.48
LTE Band41	10	41540	1	#0	QPSK	23.18	25.18
LTE Band41	10	41540	1	#Mid	QPSK	23.12	25.12
LTE Band41	10	41540	1	#Max	QPSK	23.12	25.12
LTE Band41	10	41540	25	#0	QPSK	22.10	24.10
LTE Band41	10	41540	25	#Mid	QPSK	22.75	24.75
LTE Band41	10	41540	25	#Max	QPSK	22.03	24.03
LTE Band41	10	41540	50	#0	QPSK	21.94	23.94
LTE Band41	10	41540	1	#0	QAM16	22.02	24.02
LTE Band41	10	41540	1	#Mid	QAM16	21.97	23.97
LTE Band41	10	41540	1	#Max	QAM16	21.81	23.81
LTE Band41	10	41540	25	#0	QAM16	21.16	23.16
LTE Band41	10	41540	25	#Mid	QAM16	21.15	23.15
LTE Band41	10	41540	25	#Max	QAM16	21.07	23.07

LTE Band41	10	41540	50	#0	QAM16	21.13	23.13
LTE Band41	15	39725	1	#0	QPSK	23.15	25.15
LTE Band41	15	39725	1	#Mid	QPSK	23.16	25.16
LTE Band41	15	39725	1	#Max	QPSK	23.11	25.11
LTE Band41	15	39725	36	#0	QPSK	21.89	23.89
LTE Band41	15	39725	36	#Mid	QPSK	21.90	23.90
LTE Band41	15	39725	36	#Max	QPSK	22.04	24.04
LTE Band41	15	39725	75	#0	QPSK	22.06	24.06
LTE Band41	15	39725	1	#0	QAM16	21.83	23.83
LTE Band41	15	39725	1	#Mid	QAM16	21.87	23.87
LTE Band41	15	39725	1	#Max	QAM16	22.05	24.05
LTE Band41	15	39725	36	#0	QAM16	20.86	22.86
LTE Band41	15	39725	36	#Mid	QAM16	20.87	22.87
LTE Band41	15	39725	36	#Max	QAM16	21.00	23.00
LTE Band41	15	39725	75	#0	QAM16	21.10	23.10
LTE Band41	15	40620	1	#0	QPSK	23.27	25.27
LTE Band41	15	40620	1	#Mid	QPSK	23.31	25.31
LTE Band41	15	40620	1	#Max	QPSK	23.42	25.42
LTE Band41	15	40620	36	#0	QPSK	22.22	24.22
LTE Band41	15	40620	36	#Mid	QPSK	22.22	24.22
LTE Band41	15	40620	36	#Max	QPSK	22.24	24.24
LTE Band41	15	40620	75	#0	QPSK	22.19	24.19
LTE Band41	15	40620	1	#0	QAM16	22.59	24.59
LTE Band41	15	40620	1	#Mid	QAM16	22.99	24.99
LTE Band41	15	40620	1	#Max	QAM16	23.05	25.05
LTE Band41	15	40620	36	#0	QAM16	21.33	23.33
LTE Band41	15	40620	36	#Mid	QAM16	21.33	23.33
LTE Band41	15	40620	36	#Max	QAM16	21.34	23.34
LTE Band41	15	40620	75	#0	QAM16	21.31	23.31
LTE Band41	15	41515	1	#0	QPSK	23.34	25.34
LTE Band41	15	41515	1	#Mid	QPSK	23.31	25.31
LTE Band41	15	41515	1	#Max	QPSK	23.25	25.25
LTE Band41	15	41515	36	#0	QPSK	22.14	24.14
LTE Band41	15	41515	36	#Mid	QPSK	22.14	24.14
LTE Band41	15	41515	36	#Max	QPSK	22.27	24.27
LTE Band41	15	41515	75	#0	QPSK	22.19	24.19
LTE Band41	15	41515	1	#0	QAM16	21.66	23.66
LTE Band41	15	41515	1	#Mid	QAM16	21.59	23.59
LTE Band41	15	41515	1	#Max	QAM16	21.47	23.47
LTE Band41	15	41515	36	#0	QAM16	21.34	23.34
LTE Band41	15	41515	36	#Mid	QAM16	21.33	23.33
LTE Band41	15	41515	36	#Max	QAM16	21.36	23.36
LTE Band41	15	41515	75	#0	QAM16	21.28	23.28

LTE Band41	20	39750	1	#0	QPSK	23.04	25.04
LTE Band41	20	39750	1	#Mid	QPSK	23.08	25.08
LTE Band41	20	39750	1	#Max	QPSK	23.11	25.11
LTE Band41	20	39750	50	#0	QPSK	22.03	24.03
LTE Band41	20	39750	50	#Mid	QPSK	22.04	24.04
LTE Band41	20	39750	50	#Max	QPSK	22.18	24.18
LTE Band41	20	39750	100	#0	QPSK	22.10	24.10
LTE Band41	20	39750	1	#0	QAM16	22.34	24.34
LTE Band41	20	39750	1	#Mid	QAM16	22.32	24.32
LTE Band41	20	39750	1	#Max	QAM16	22.47	24.47
LTE Band41	20	39750	50	#0	QAM16	21.13	23.13
LTE Band41	20	39750	50	#Mid	QAM16	21.14	23.14
LTE Band41	20	39750	50	#Max	QAM16	21.29	23.29
LTE Band41	20	39750	100	#0	QAM16	21.13	23.13
LTE Band41	20	40620	1	#0	QPSK	23.36	25.36
LTE Band41	20	40620	1	#Mid	QPSK	23.46	25.46
LTE Band41	20	40620	1	#Max	QPSK	23.56	25.56
LTE Band41	20	40620	50	#0	QPSK	22.16	24.16
LTE Band41	20	40620	50	#Mid	QPSK	22.19	24.19
LTE Band41	20	40620	50	#Max	QPSK	22.25	24.25
LTE Band41	20	40620	100	#0	QPSK	22.34	24.34
LTE Band41	20	40620	1	#0	QAM16	21.97	23.97
LTE Band41	20	40620	1	#Mid	QAM16	22.09	24.09
LTE Band41	20	40620	1	#Max	QAM16	22.03	24.03
LTE Band41	20	40620	50	#0	QAM16	21.28	23.28
LTE Band41	20	40620	50	#Mid	QAM16	21.29	23.29
LTE Band41	20	40620	50	#Max	QAM16	21.34	23.34
LTE Band41	20	40620	100	#0	QAM16	21.25	23.25
LTE Band41	20	41490	1	#0	QPSK	23.26	25.26
LTE Band41	20	41490	1	#Mid	QPSK	23.17	25.17
LTE Band41	20	41490	1	#Max	QPSK	23.19	25.19
LTE Band41	20	41490	50	#0	QPSK	22.11	24.11
LTE Band41	20	41490	50	#Mid	QPSK	22.11	24.11
LTE Band41	20	41490	50	#Max	QPSK	22.10	24.10
LTE Band41	20	41490	100	#0	QPSK	22.02	24.02
LTE Band41	20	41490	1	#0	QAM16	22.08	24.08
LTE Band41	20	41490	1	#Mid	QAM16	22.01	24.01
LTE Band41	20	41490	1	#Max	QAM16	22.08	24.08
LTE Band41	20	41490	50	#0	QAM16	21.18	23.18
LTE Band41	20	41490	50	#Mid	QAM16	21.21	23.21
LTE Band41	20	41490	50	#Max	QAM16	21.18	23.18
LTE Band41	20	41490	100	#0	QAM16	21.06	23.06

5.2 Occupied Bandwidth

Ambient condition

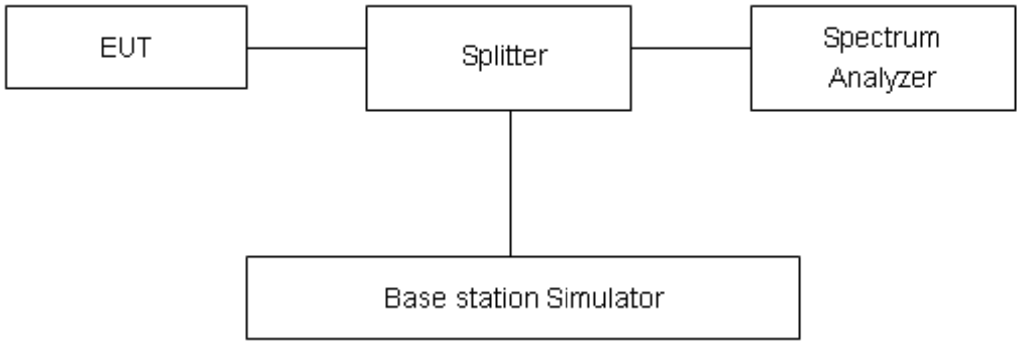
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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 100 kHz, VBW is set to 300 kHz for LTE Band 7/38/41 (5MHz).
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 7/38/41 (10MHz).
RBW is set to 300 kHz, VBW is set to 910 kHz for LTE Band 7/38/41 (15MHz).
RBW is set to 430 kHz, VBW is set to 1.2 MHz for LTE Band 7/38/41 (15MHz).

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.

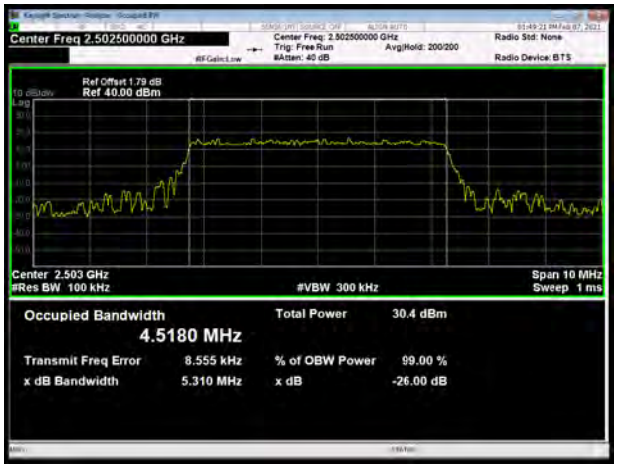
Test Result

LTE Band 7						
RB	**Modulation**	**Bandwidth (MHz)**	**Channel**	**Frequency (MHz)**	**99% Power Bandwidth(MHz)**	**-26dBc Bandwidth(MHz)**
100%	QPSK	5	20775	2502.5	4.5180	5.310
			21100	2535	4.5228	5.089
			21425	2567.5	4.5374	5.193
		10	20800	2505	8.9759	10.110
			21100	2535	8.9660	9.859
			21400	2565	9.0070	9.950
		15	20825	2507.5	13.4730	14.880
			21100	2535	13.4660	15.040
			21375	2562.5	13.4790	14.820
		20	20850	2510	17.9920	19.780
			21100	2535	18.0020	19.840
			21350	2560	17.9960	19.570
	16QAM	5	20775	2502.5	4.5201	5.086
			21100	2535	4.5151	5.229
			21425	2567.5	4.5098	5.236
		10	20800	2505	8.9799	10.020
			21100	2535	9.0085	9.866
			21400	2565	9.0033	10.020
		15	20825	2507.5	13.4430	14.630
			21100	2535	13.4770	14.700
			21375	2562.5	13.4870	14.740
		20	20850	2510	17.9820	19.880
			21100	2535	17.9950	19.850
			21350	2560	18.0030	19.520

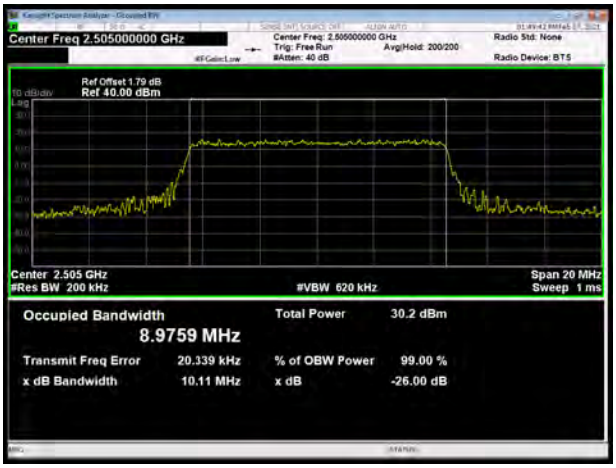
LTE Band 38						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	37775	2572.5	4.5085	4.997
			38000	2595	4.5205	4.962
			38225	2617.5	4.5043	4.968
		10	37800	2575	8.9992	9.788
			38000	2595	9.0065	9.841
			38200	2615	8.9933	10.410
		15	37825	2577.5	13.4400	15.160
			38000	2595	13.4360	14.440
			38175	2612.5	13.4430	14.880
		20	37850	2580	17.9420	19.880
			38000	2595	17.9600	19.260
			38150	2610	18.0060	19.640
	16QAM	5	37775	2572.5	4.5033	5.228
			38000	2595	4.5039	4.968
			38225	2617.5	4.5280	5.038
		10	37800	2575	9.0082	9.642
			38000	2595	8.9628	9.820
			38200	2615	9.0134	9.892
		15	37825	2577.5	13.5040	15.350
			38000	2595	13.4120	14.920
			38175	2612.5	13.4590	15.000
		20	37850	2580	17.9400	19.410
			38000	2595	17.9550	21.410
			38150	2610	17.9760	19.500

LTE Band 41						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	39675	2498.5	4.5064	4.943
			40620	2593	4.4942	4.879
			41565	2687.5	4.4970	4.889
		10	39700	2501	9.0011	9.728
			40620	2593	8.9932	9.948
			41540	2685	8.9973	10.170
		15	39725	2503.5	13.4650	15.160
			40620	2593	13.4830	14.560
			41515	2682.5	13.4830	14.870
		20	39750	2506	18.0470	19.420
			40620	2593	17.9790	19.660
			41490	2680	17.9550	19.730
	16QAM	5	39675	2498.5	4.4940	4.935
			40620	2593	4.5053	4.968
			41565	2687.5	4.4961	4.892
		10	39700	2501	8.9680	9.965
			40620	2593	8.9814	9.709
			41540	2685	8.9873	10.080
		15	39725	2503.5	13.4330	14.890
			40620	2593	13.4240	15.340
			41515	2682.5	13.4590	15.250
		20	39750	2506	17.9260	19.340
			40620	2593	18.0310	21.240
			41490	2680	17.9550	20.260

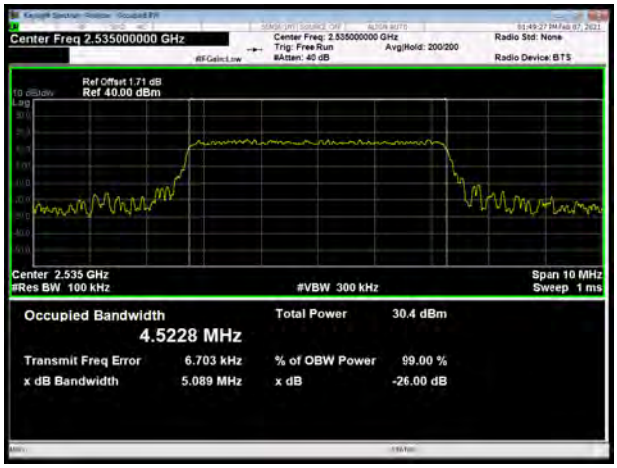
LTE Band 7 QPSK 5MHz CH-Low



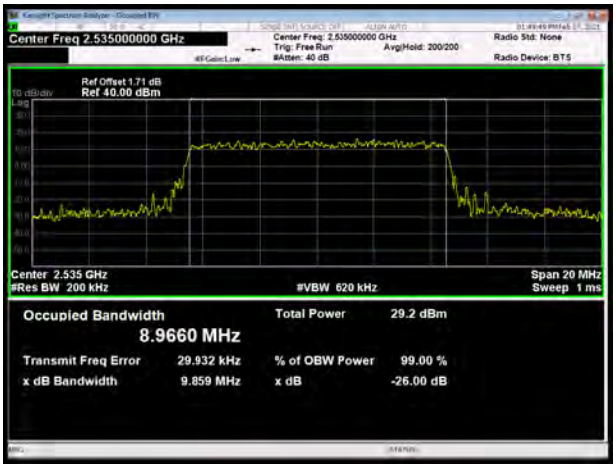
LTE Band 7 QPSK 10MHz CH-Low



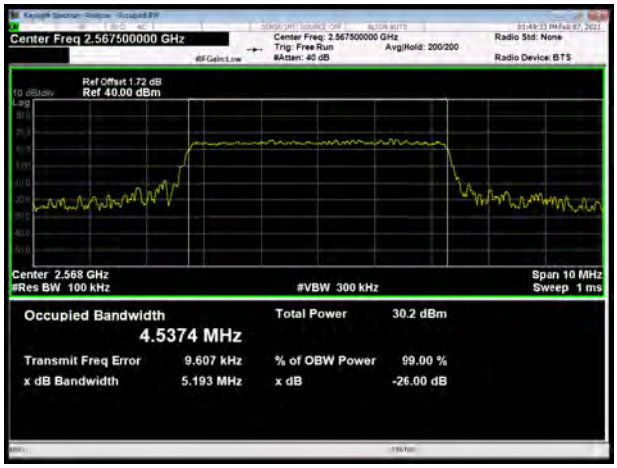
LTE Band 7 QPSK 5MHz CH-Middle



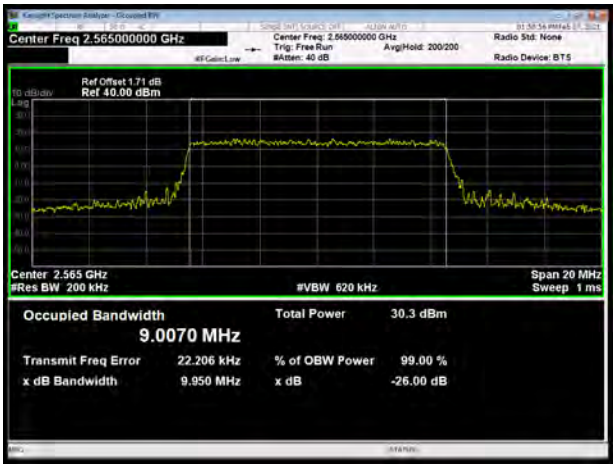
LTE Band 7 QPSK 10MHz CH-Middle



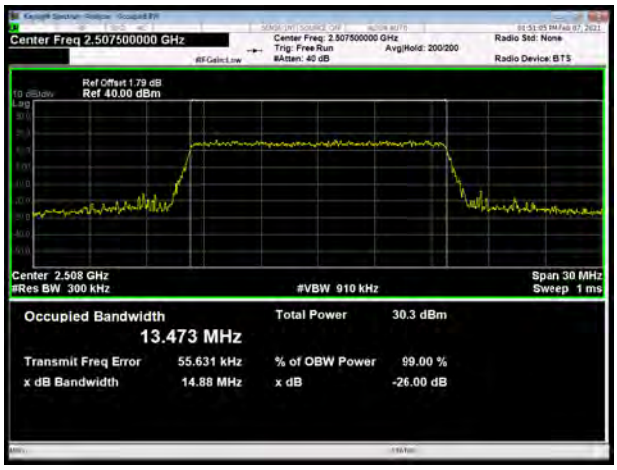
LTE Band 7 QPSK 5MHz CH-High



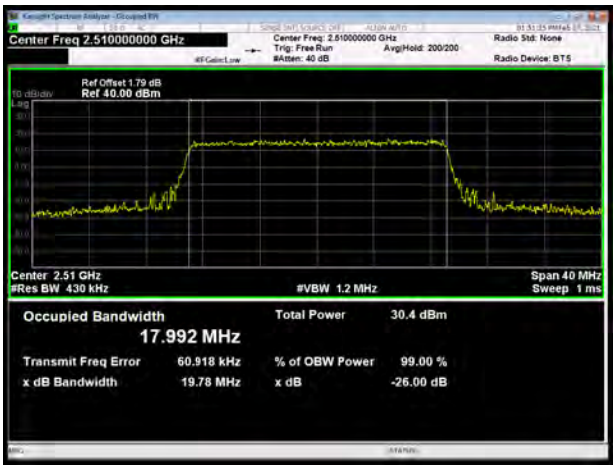
LTE Band 7 QPSK 10MHz CH-High



LTE Band 7 QPSK 15MHz CH-Low

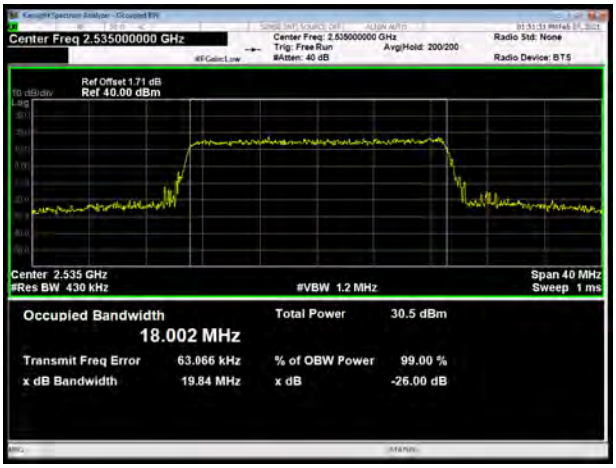


LTE Band 7 QPSK 20MHz CH-Low

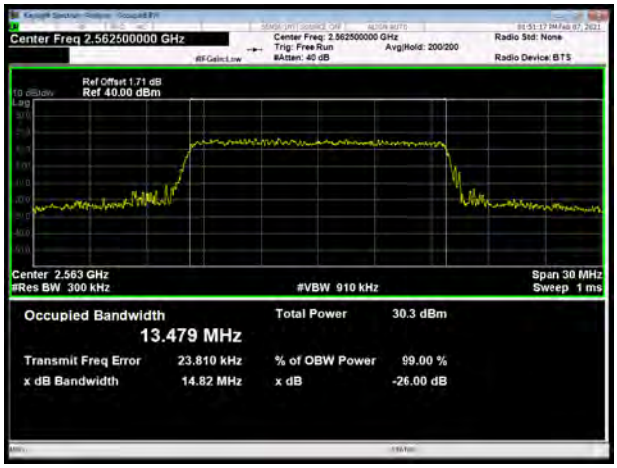


LTE Band 7 QPSK 15MHz CH-Middle

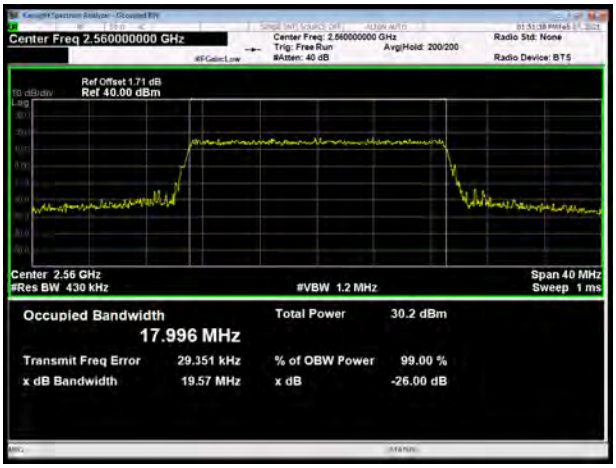
LTE Band 7 QPSK 20MHz CH-Middle



LTE Band 7 QPSK 15MHz CH-High

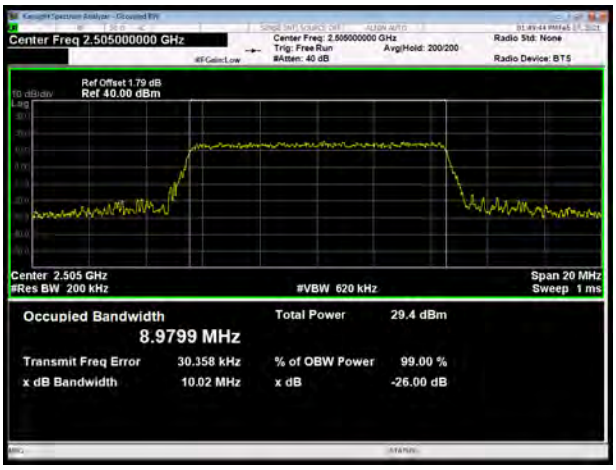


LTE Band 7 QPSK 20MHz CH-High

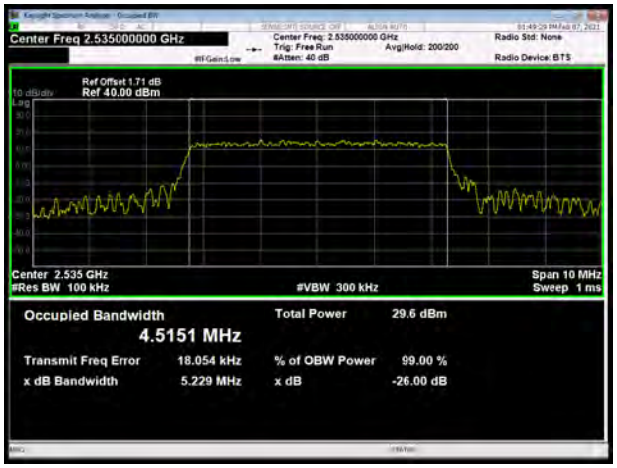


LTE Band 7 16QAM 5MHz CH-Low

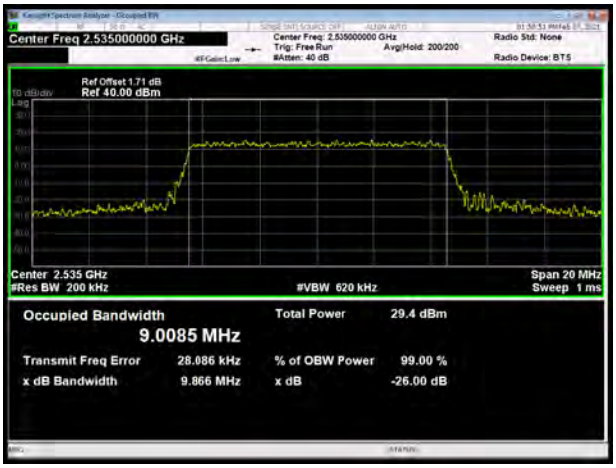
LTE Band 7 16QAM 10MHz CH-Low



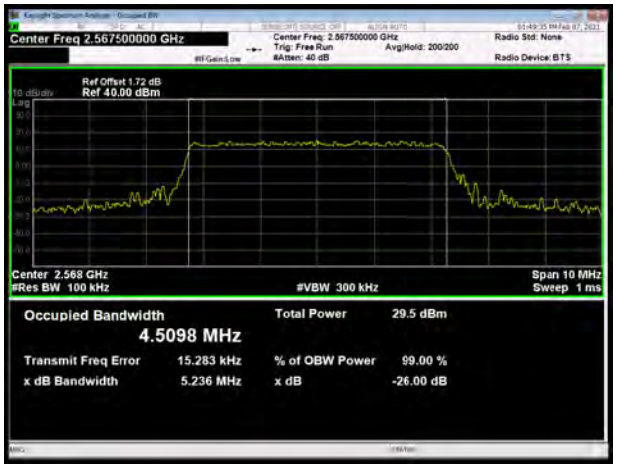
LTE Band 7 16QAM 5MHz CH-Middle



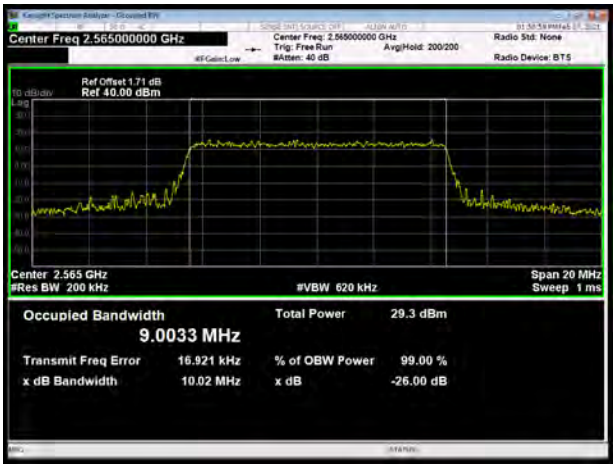
LTE Band 7 16QAM 10MHz CH-Middle



LTE Band 7 16QAM 5MHz CH-High

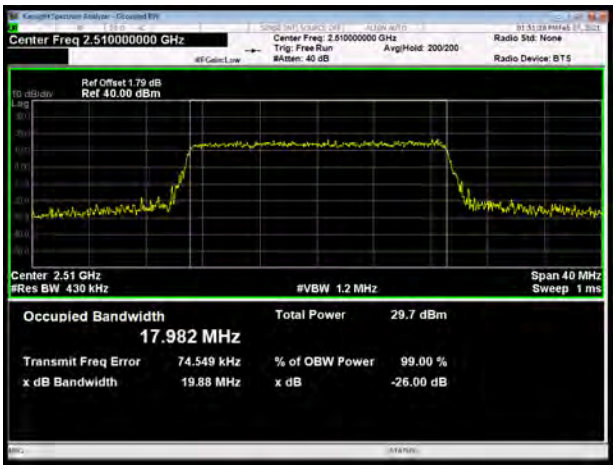


LTE Band 7 16QAM 10MHz CH-High

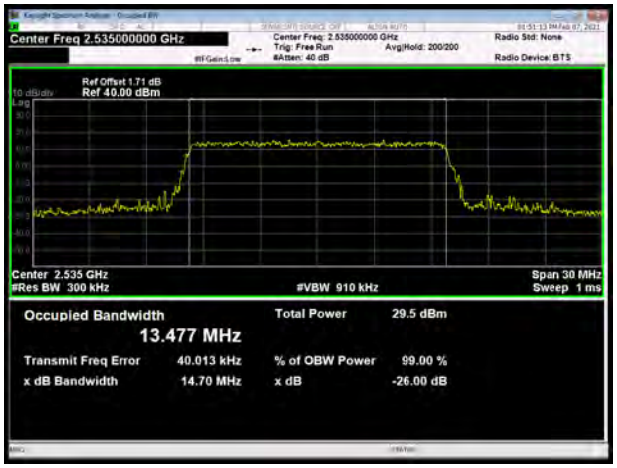


LTE Band 7 16QAM 15MHz CH-Low

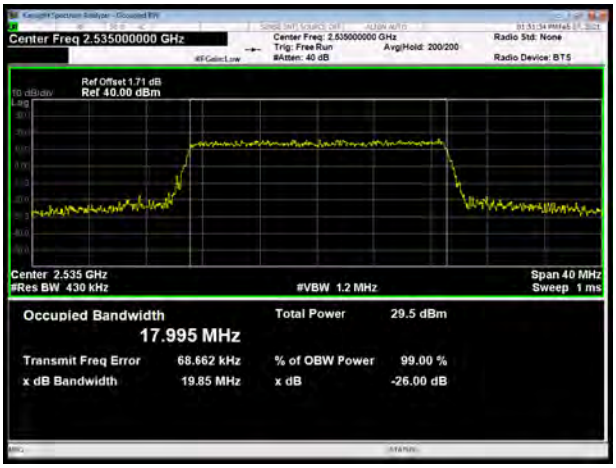
LTE Band 7 16QAM 20MHz CH-Low



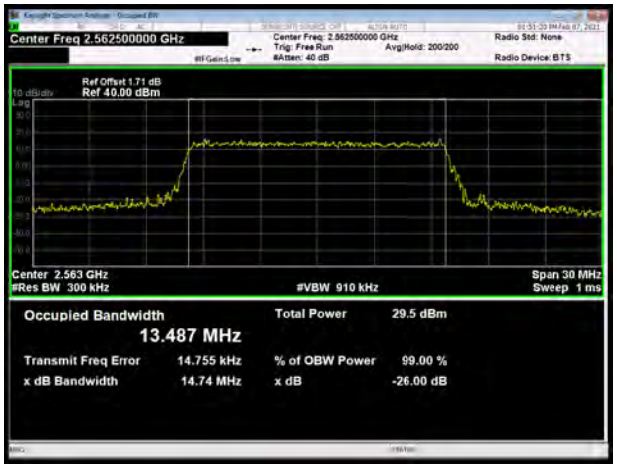
LTE Band 7 16QAM 15MHz CH-Middle



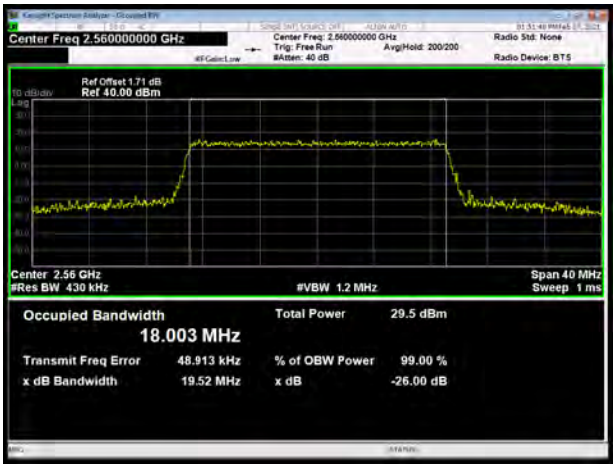
LTE Band 7 16QAM 20MHz CH-Middle



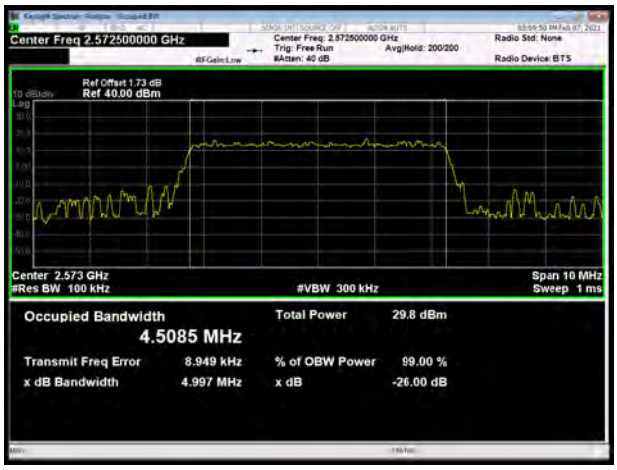
LTE Band 7 16QAM 15MHz CH-High



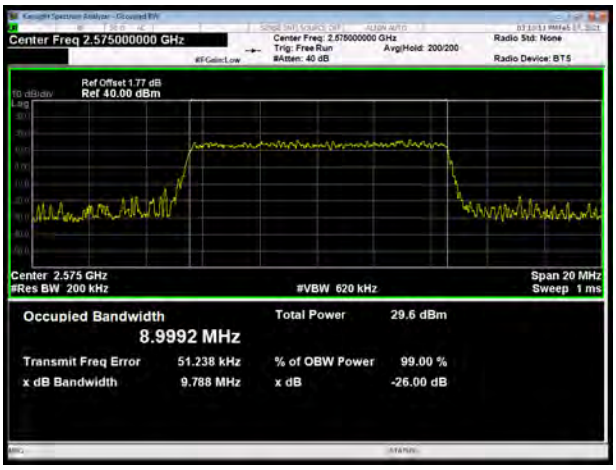
LTE Band 7 16QAM 20MHz CH-High



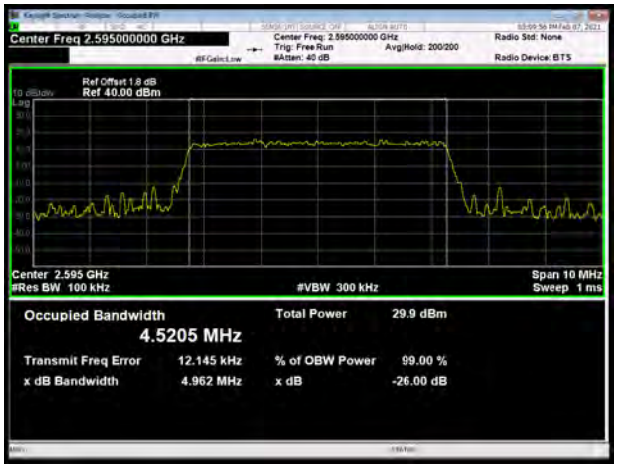
LTE Band 38 QPSK 5MHz CH-Low



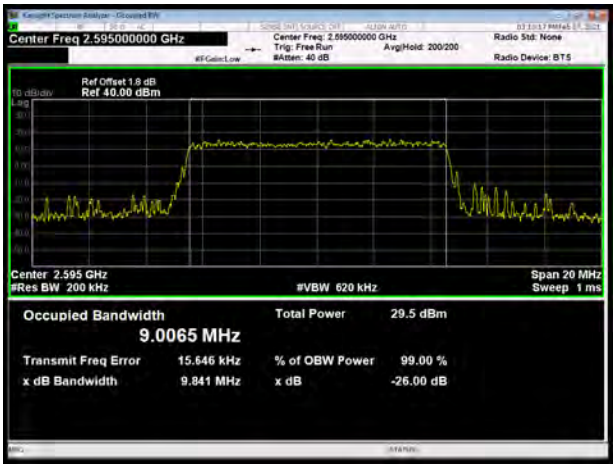
LTE Band 38 QPSK 10MHz CH-Low



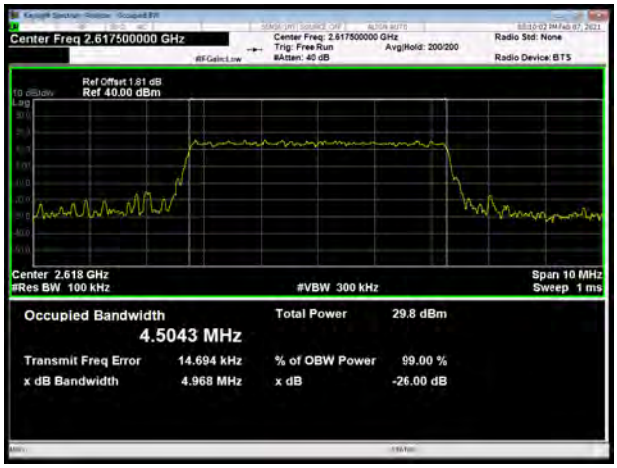
LTE Band 38 QPSK 5MHz CH-Middle



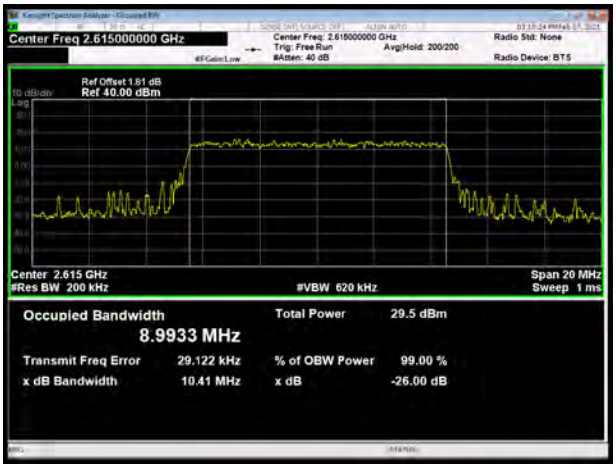
LTE Band 38 QPSK 10MHz CH-Middle



LTE Band 38 QPSK 5MHz CH-High

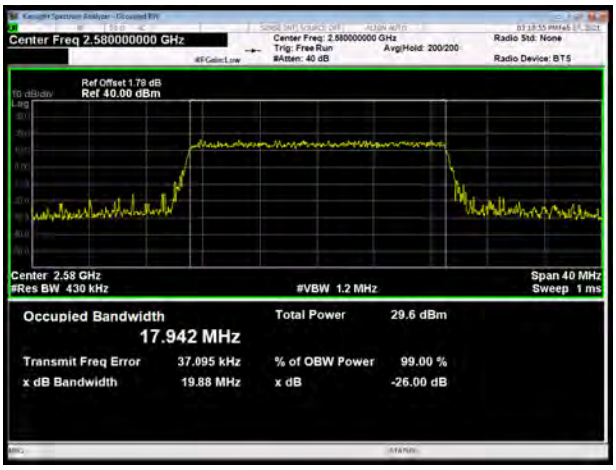


LTE Band 38 QPSK 10MHz CH-High



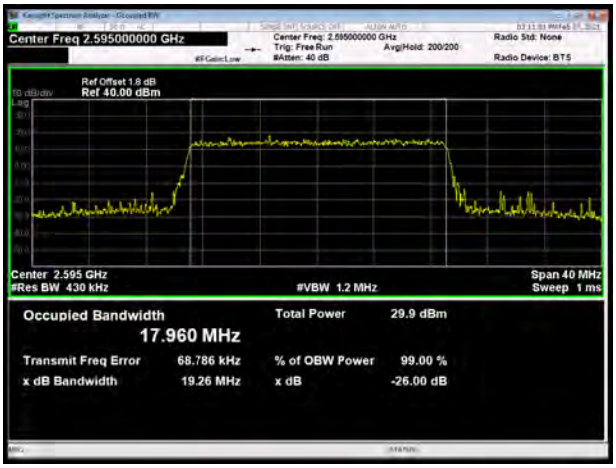
LTE Band 38 QPSK 15MHz CH-Low

LTE Band 38 QPSK 20MHz CH-Low

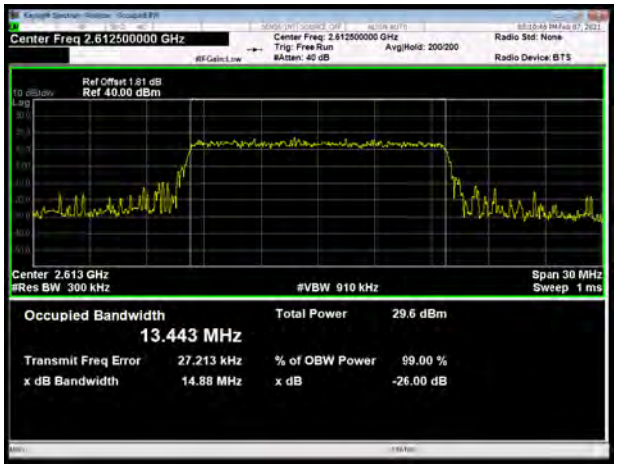


LTE Band 38 QPSK 15MHz CH-Middle

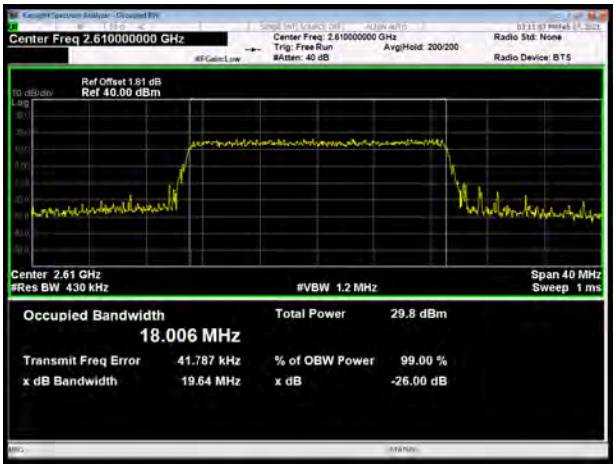
LTE Band 38 QPSK 20MHz CH-Middle



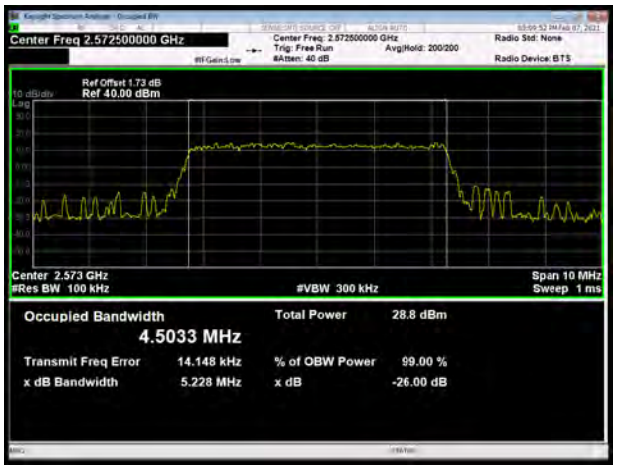
LTE Band 38 QPSK 15MHz CH-High



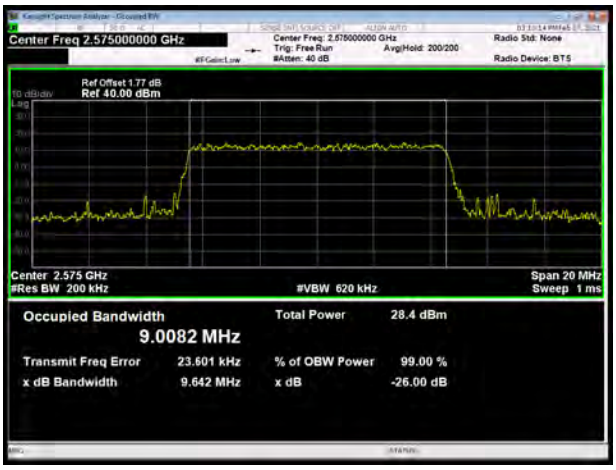
LTE Band 38 QPSK 20MHz CH-High



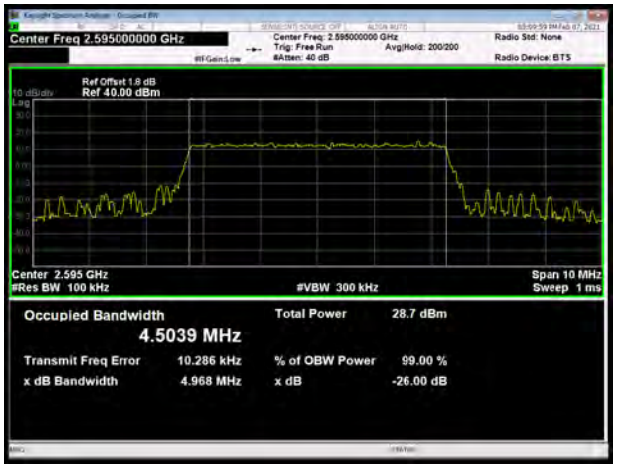
LTE Band 38 16QAM 5MHz CH-Low



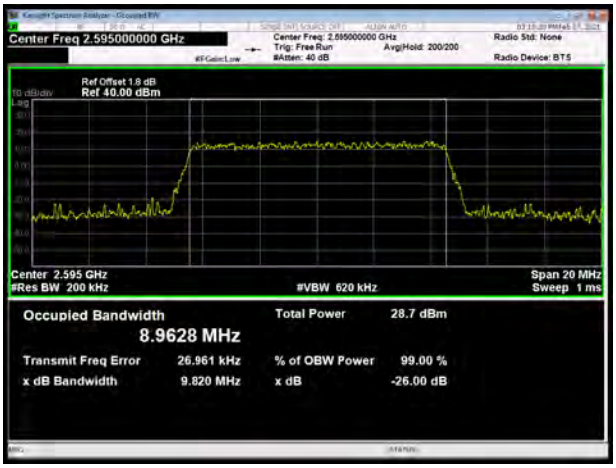
LTE Band 38 16QAM 10MHz CH-Low



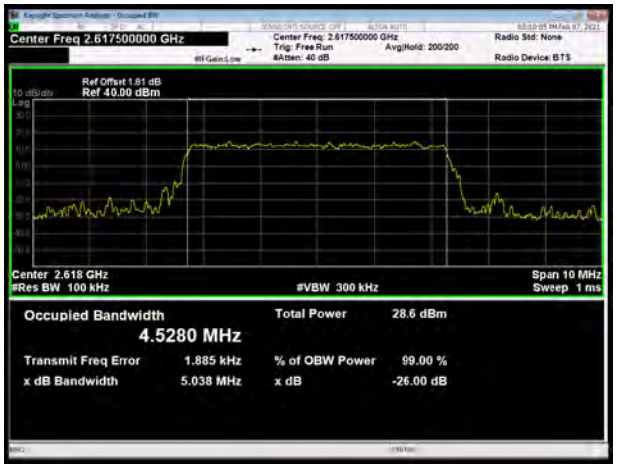
LTE Band 38 16QAM 5MHz CH-Middle



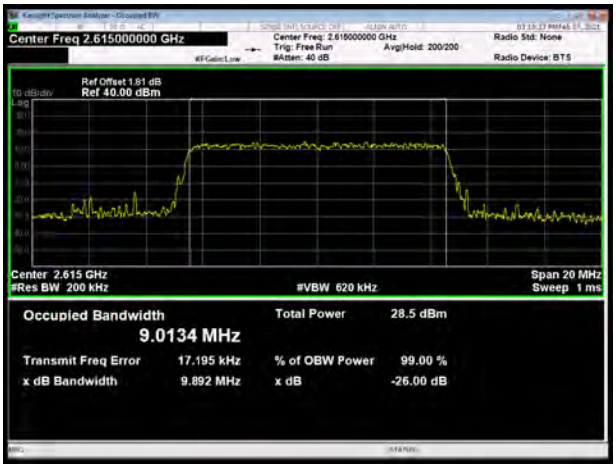
LTE Band 38 16QAM 10MHz CH-Middle



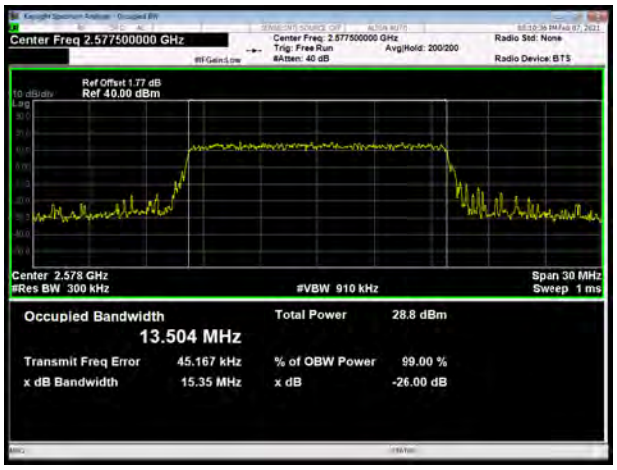
LTE Band 38 16QAM 5MHz CH-High



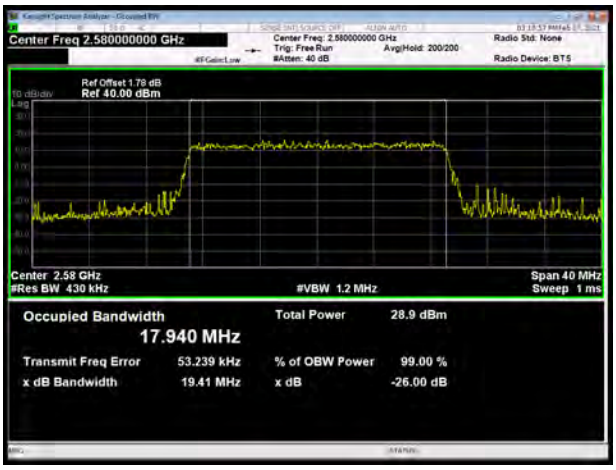
LTE Band 38 16QAM 10MHz CH-High



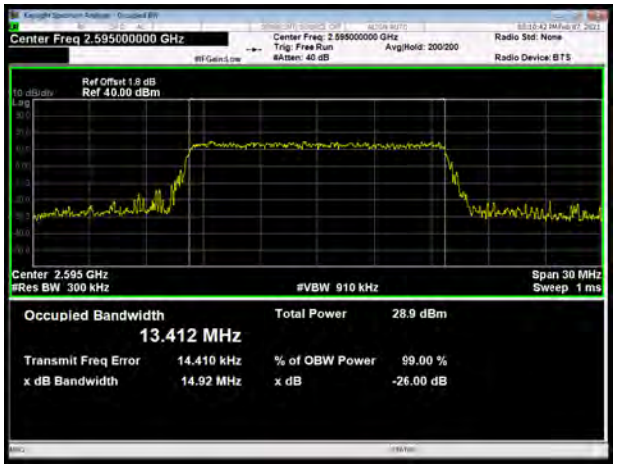
LTE Band 38 16QAM 15MHz CH-Low



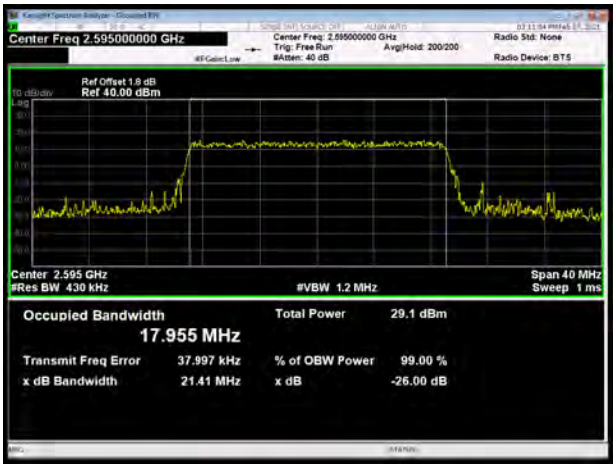
LTE Band 38 16QAM 20MHz CH-Low



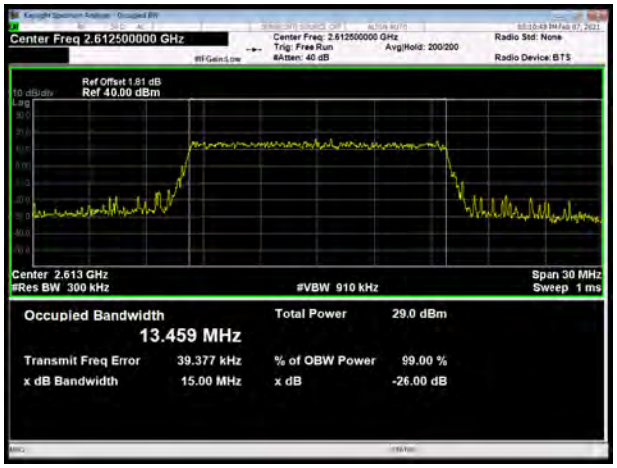
LTE Band 38 16QAM 15MHz CH-Middle



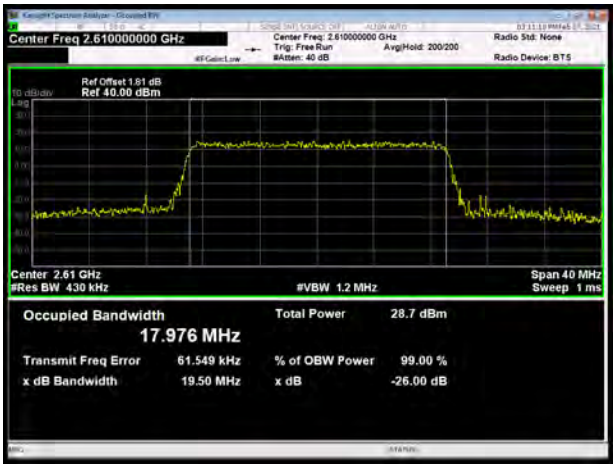
LTE Band 38 16QAM 20MHz CH-Middle



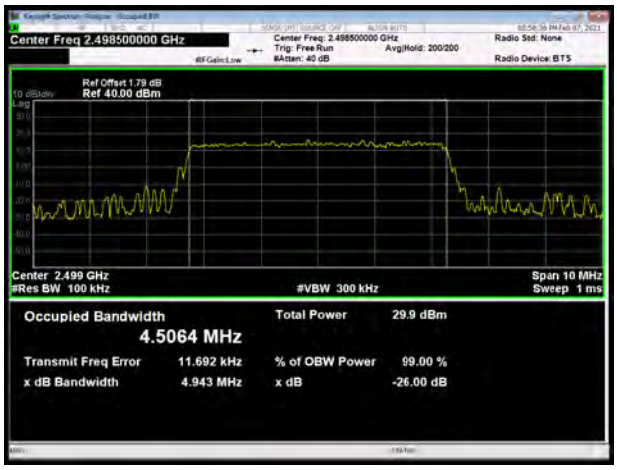
LTE Band 38 16QAM 15MHz CH-High



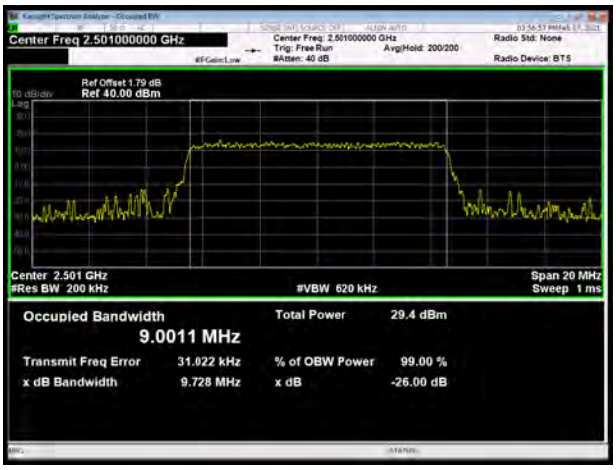
LTE Band 38 16QAM 20MHz CH-High



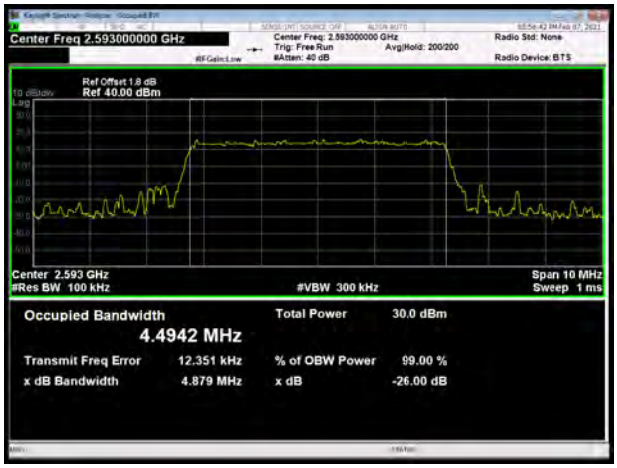
LTE Band 41 QPSK 5MHz CH-Low



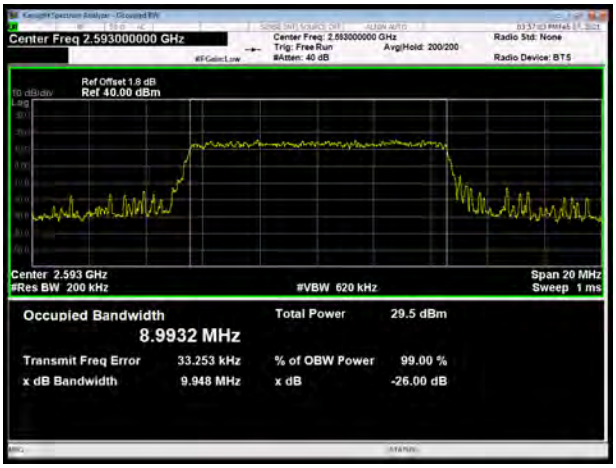
LTE Band 41 QPSK 10MHz CH-Low



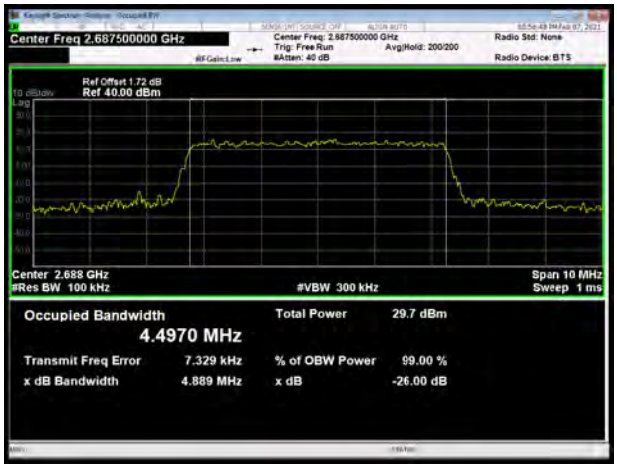
LTE Band 41 QPSK 5MHz CH-Middle



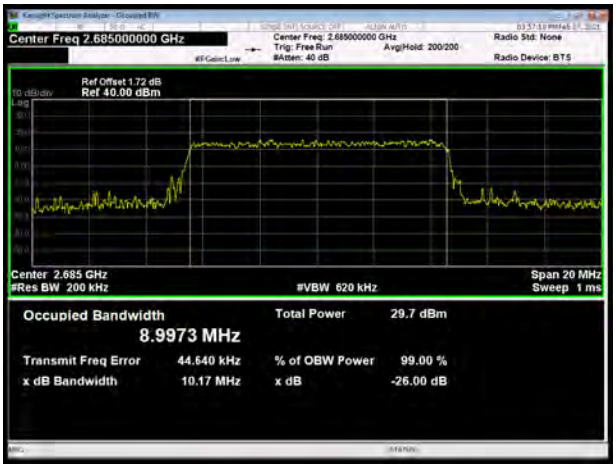
LTE Band 41 QPSK 10MHz CH-Middle



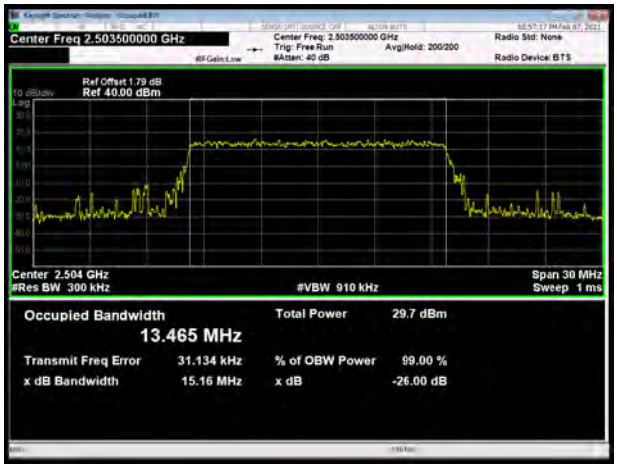
LTE Band 41 QPSK 5MHz CH-High



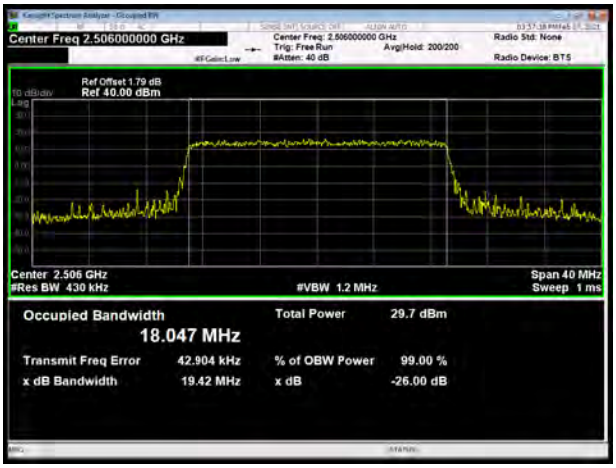
LTE Band 41 QPSK 10MHz CH-High



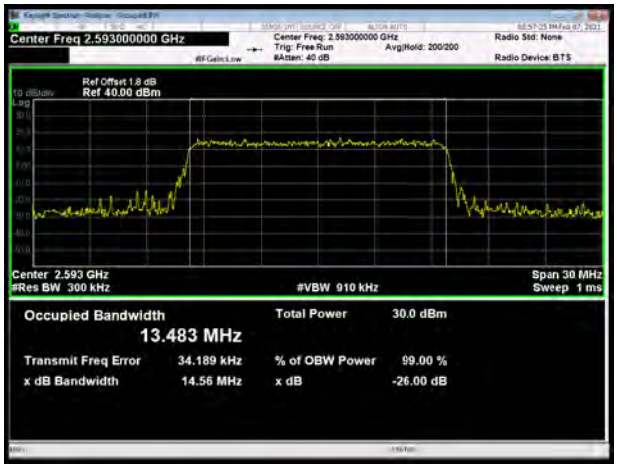
LTE Band 41 QPSK 15MHz CH-Low



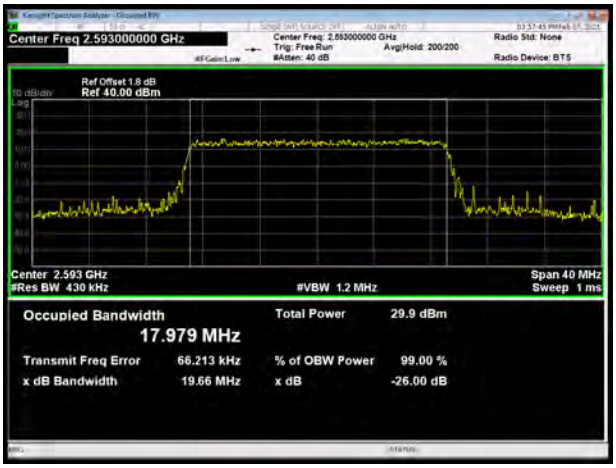
LTE Band 41 QPSK 20MHz CH-Low



LTE Band 41 QPSK 15MHz CH-Middle

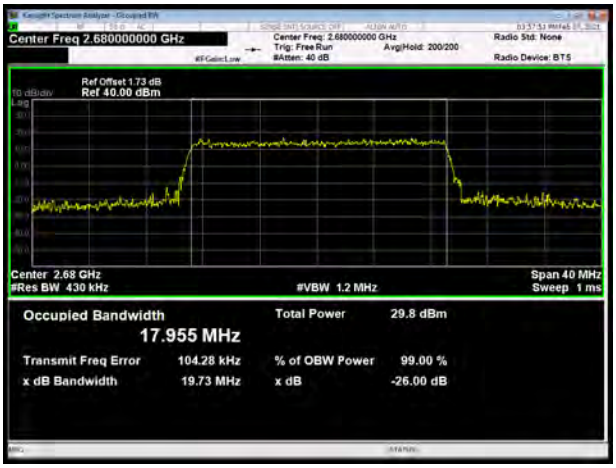


LTE Band 41 QPSK 20MHz CH-Middle

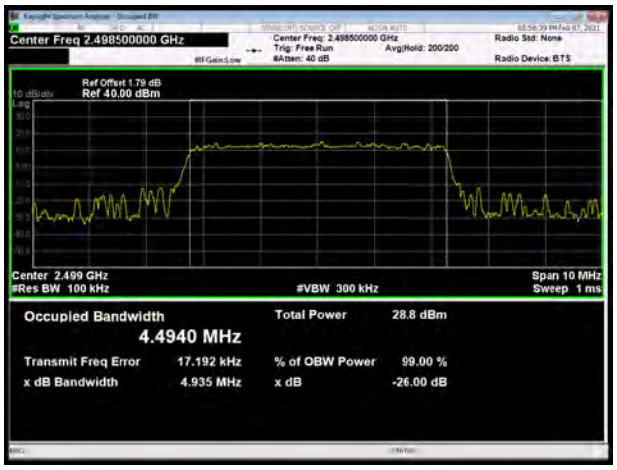


LTE Band 41 QPSK 15MHz CH-High

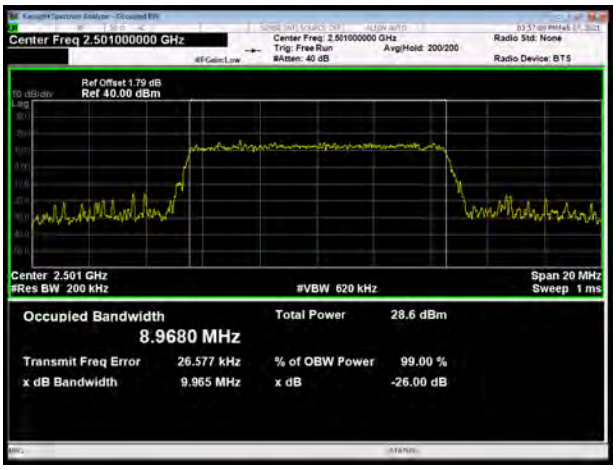
LTE Band 41 QPSK 20MHz CH-High



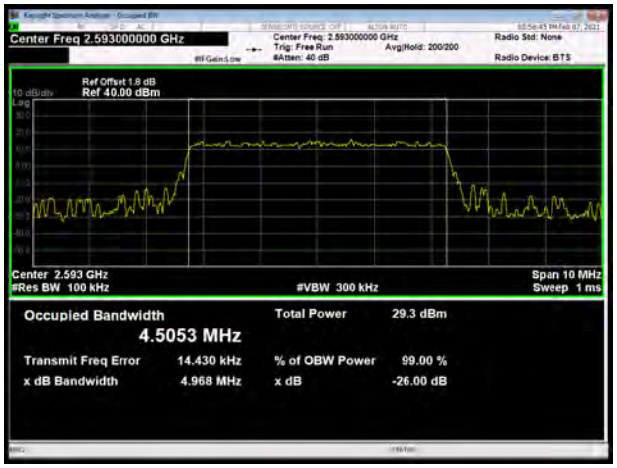
LTE Band 41 16QAM 5MHz CH-Low



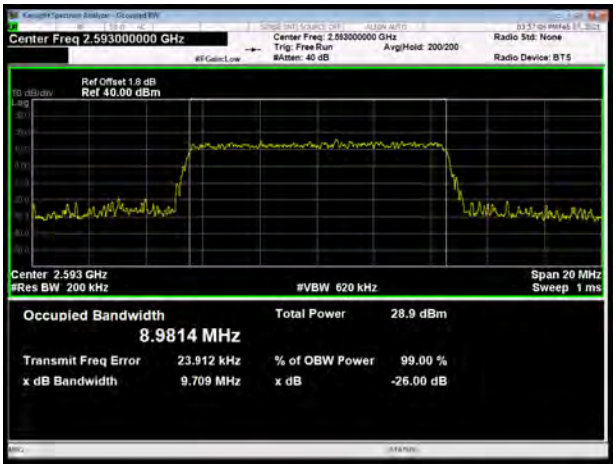
LTE Band 41 16QAM 10MHz CH-Low



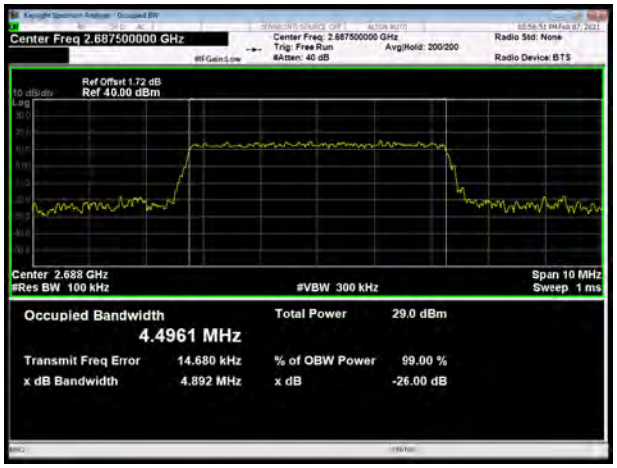
LTE Band 41 16QAM 5MHz CH-Middle



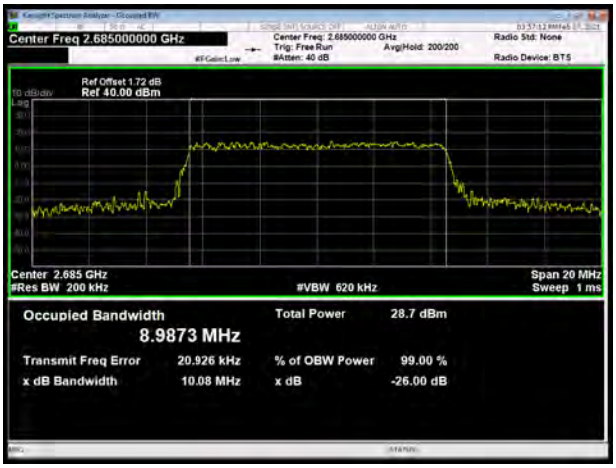
LTE Band 41 16QAM 10MHz CH-Middle



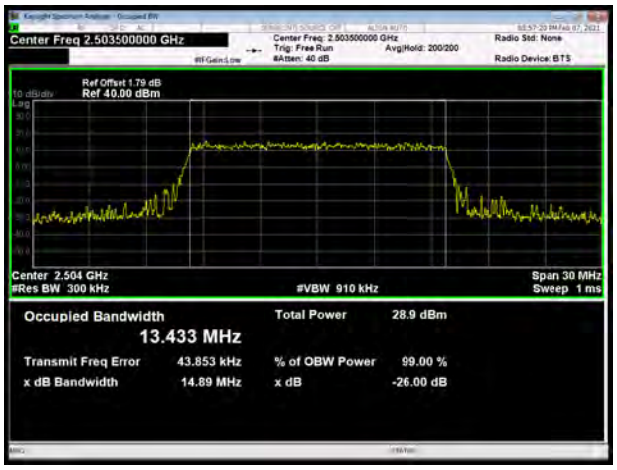
LTE Band 41 16QAM 5MHz CH-High



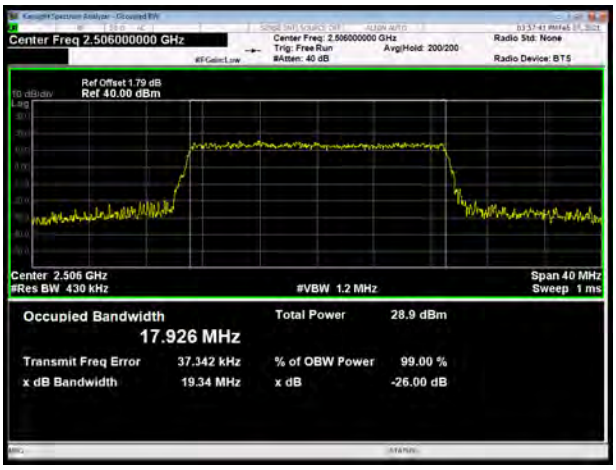
LTE Band 41 16QAM 10MHz CH-High



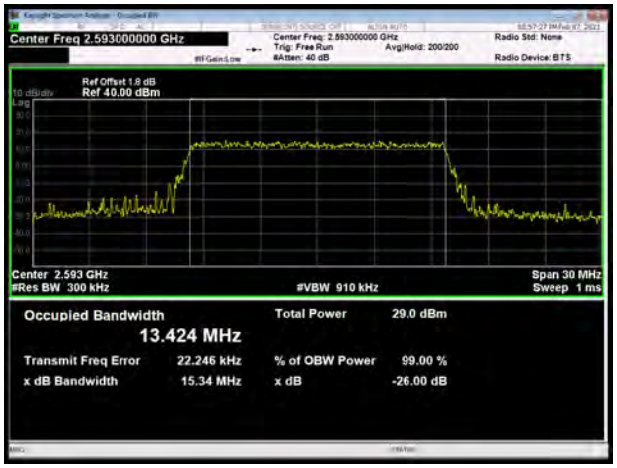
LTE Band 41 16QAM 15MHz CH-Low



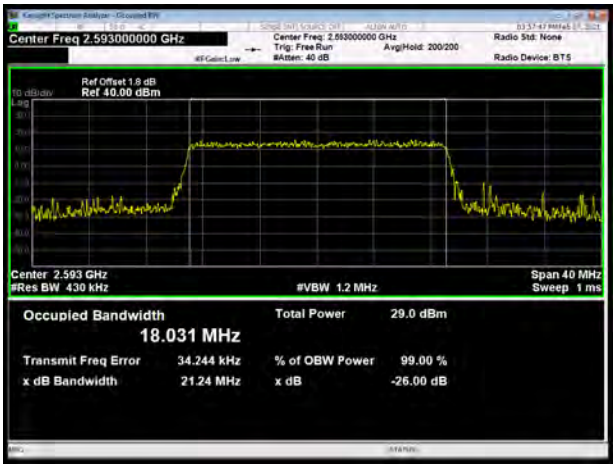
LTE Band 41 16QAM 20MHz CH-Low



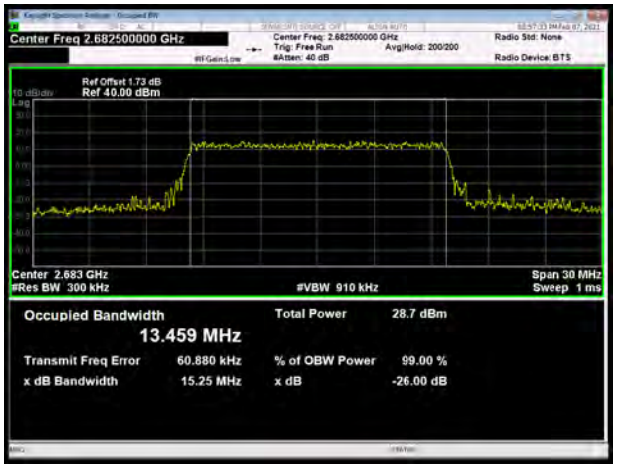
LTE Band 41 16QAM 15MHz CH-Middle



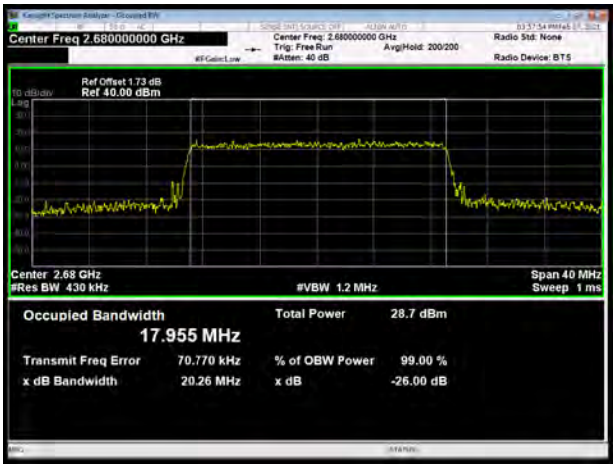
LTE Band 41 16QAM 20MHz CH-Middle



LTE Band 41 16QAM 15MHz CH-High



LTE Band 41 16QAM 20MHz CH-High



5.3 Band Edge Compliance

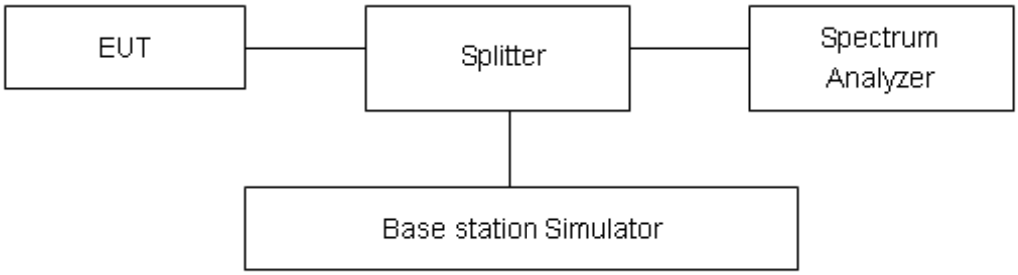
Ambient condition

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

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured.
The testing follows KDB 971168 D01 v03r01 Section 6.0
The EUT was connected to spectrum analyzer and system simulator via a power divider.
The band edges of low and high channels for the highest RF powers were measured.
For LTE Band 7/38/ the middle channel, high channel of LTE Band 41 set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
For LTE Band 41 low channel set RBW >= 2% EBW in the 1MHz band immediately outside and adjacent to the band edge. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
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(m) (4)/ specifies that “for BRS and EBS stations. For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section. In addition, the attenuation factor

shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
Example:
The limit line is derived from 43 + 10log (P) dB below the transmitter power P(Watts)
= P(W)- [43 + 10log(P)] (dB)
= [30 + 10log (P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.

Measurement Uncertainty

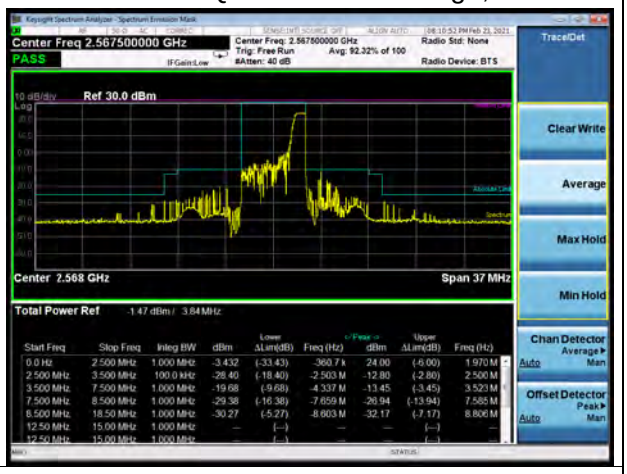
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U=0.684dB.

Test Result

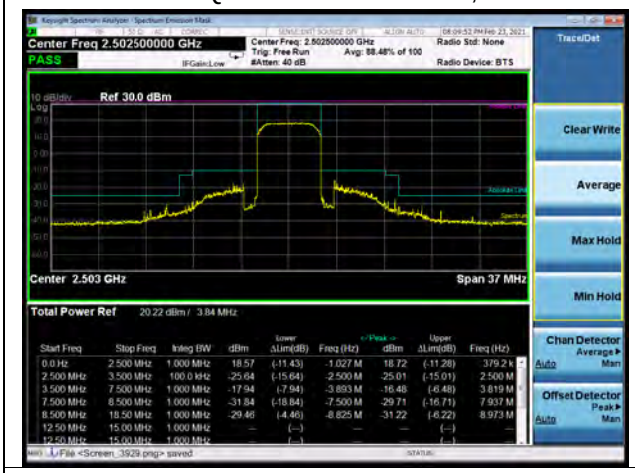
All the test traces in the plots shows the test results clearly.

LTE Band 7 QPSK 5MHz CH-Low, 1 RB

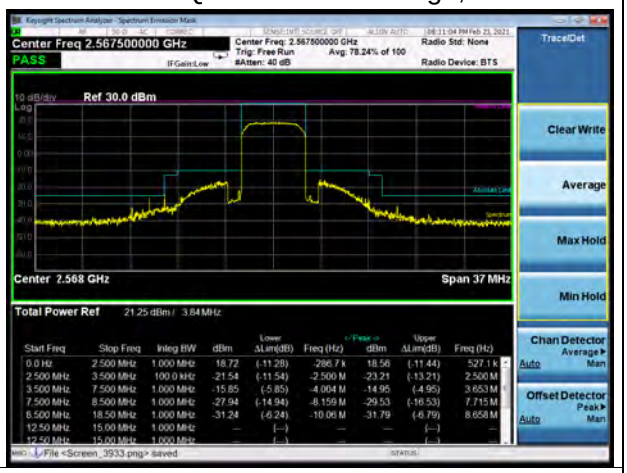
LTE Band 7 QPSK 5MHz CH-High, 1 RB



LTE Band 7 QPSK 5MHz CH-Low, 100%RB

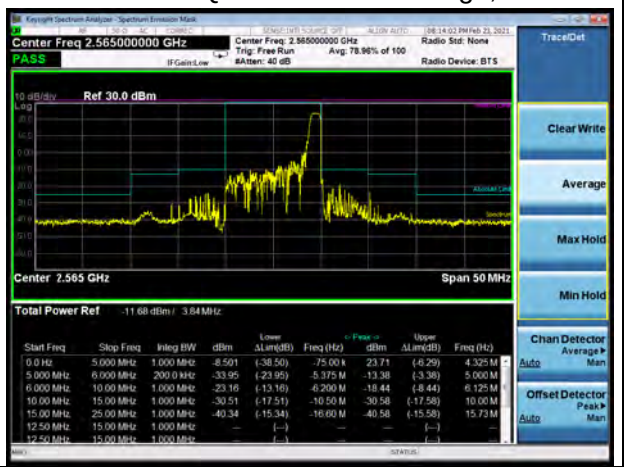


LTE Band 7 QPSK 5MHz CH-High, 100%RB



LTE Band 7 QPSK 10MHz CH-Low, 1 RB

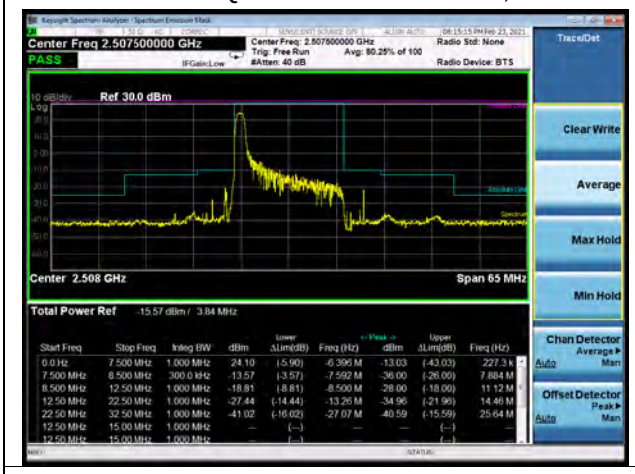
LTE Band 7 QPSK 10MHz CH-High, 1 RB



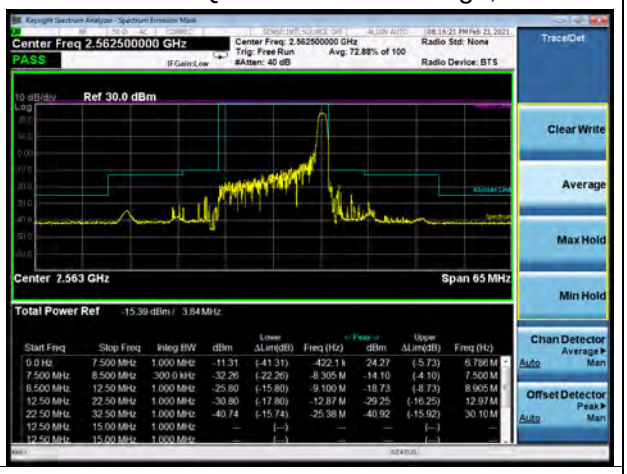
LTE Band 7 QPSK 10MHz CH-Low, 100%RB

LTE Band 7 QPSK 10MHz CH-High, 100%RB

LTE Band 7 QPSK 15MHz CH-Low, 1 RB



LTE Band 7 QPSK 15MHz CH-High, 1 RB

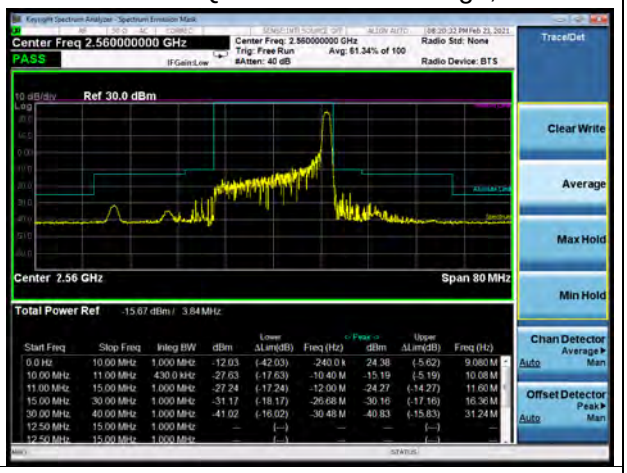


LTE Band 7 QPSK 15MHz CH-Low, 100%RB

LTE Band 7 QPSK 15MHz CH-High, 100%RB

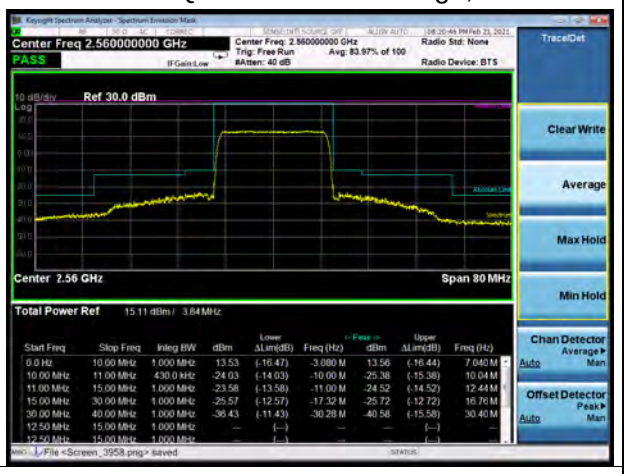
LTE Band 7 QPSK 20MHz CH-Low, 1 RB

LTE Band 7 QPSK 20MHz CH-High, 1 RB



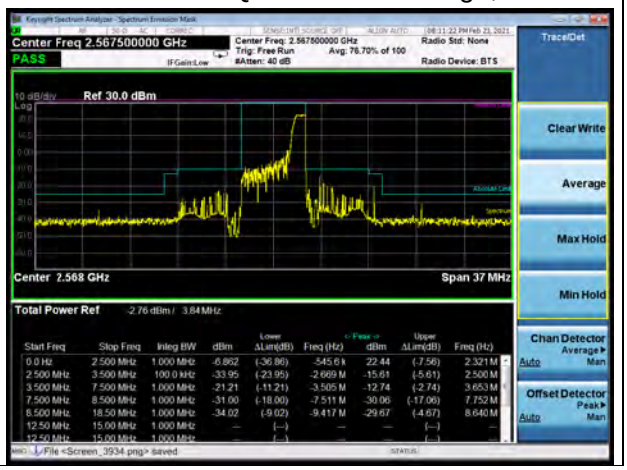
LTE Band 7 QPSK 20MHz CH-Low, 100%RB

LTE Band 7 QPSK 20MHz CH-High, 100%RB

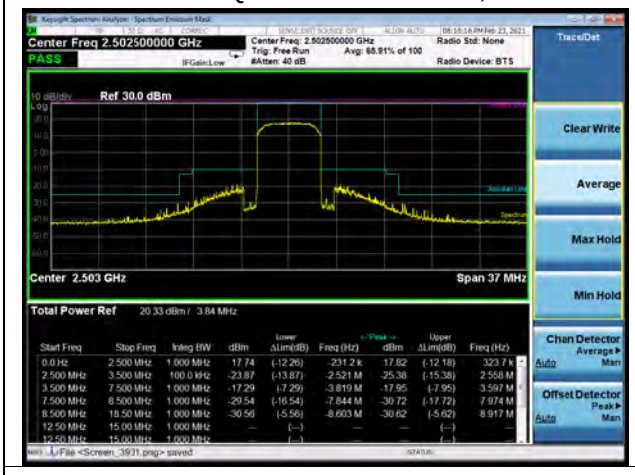


LTE Band 7 16QAM 5MHz CH-Low, 1 RB

LTE Band 7 16QAM 5MHz CH-High, 1 RB



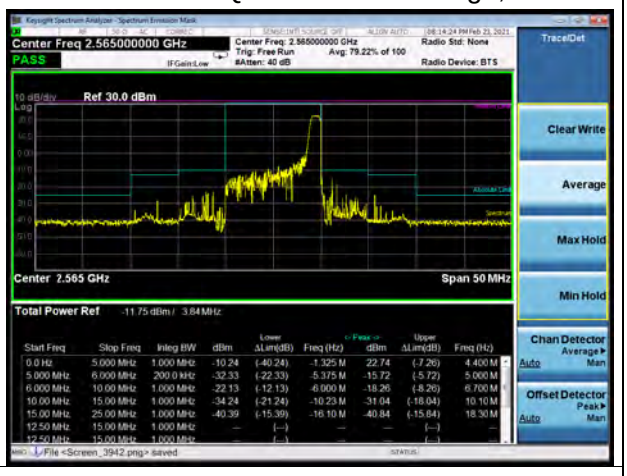
LTE Band 7 16QAM 5MHz CH-Low, 100%RB



LTE Band 7 16QAM 5MHz CH-High, 100%RB

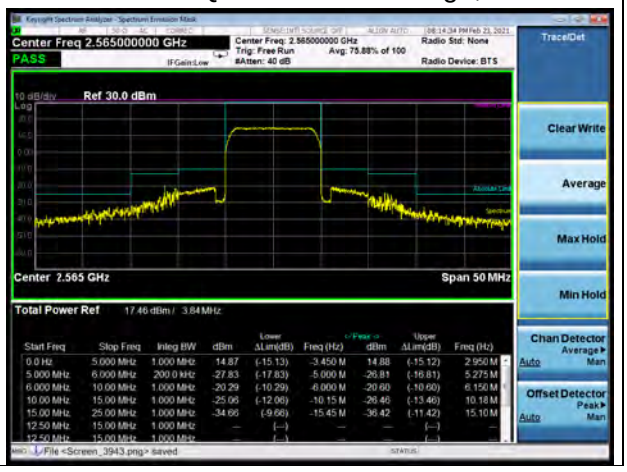
LTE Band 7 16QAM 10MHz CH-Low, 1 RB

LTE Band 7 16QAM 10MHz CH-High, 1 RB

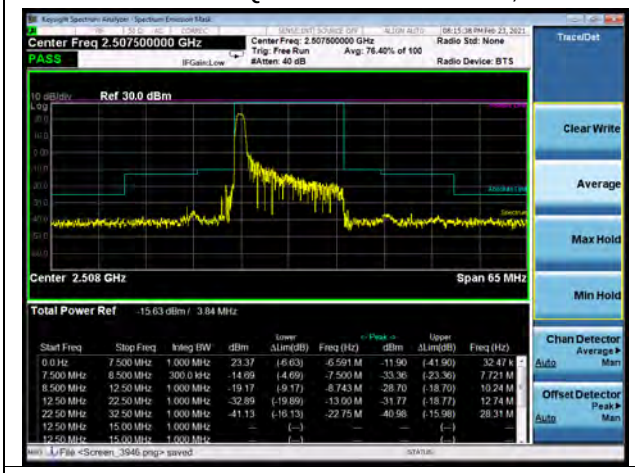


LTE Band 7 16QAM 10MHz CH-Low, 100%RB

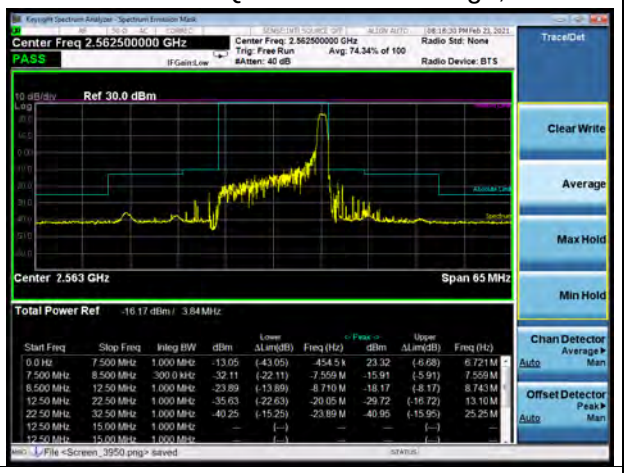
LTE Band 7 16QAM 10MHz CH-High, 100%RB



LTE Band 7 16QAM 15MHz CH-Low, 1 RB



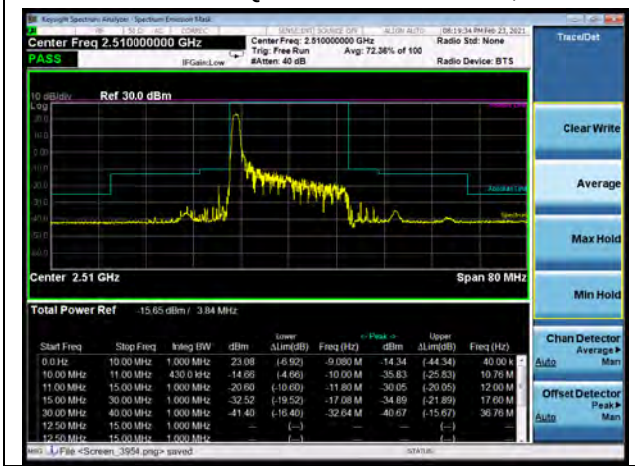
LTE Band 7 16QAM 15MHz CH-High, 1 RB



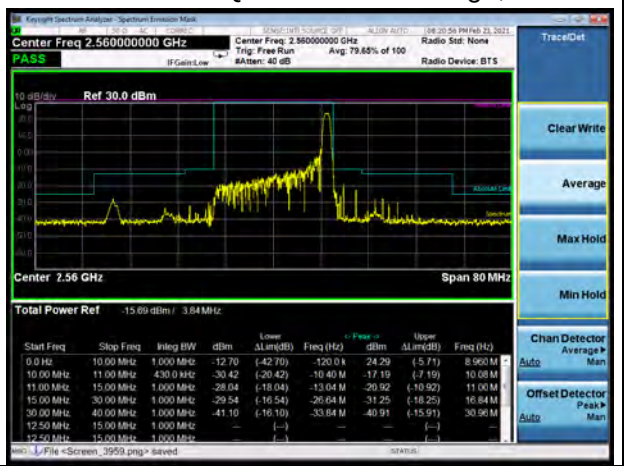
LTE Band 7 16QAM 15MHz CH-Low, 100%RB

LTE Band 7 16QAM 15MHz CH-High, 100%RB

LTE Band 7 16QAM 20MHz CH-Low, 1 RB



LTE Band 7 16QAM 20MHz CH-High, 1 RB

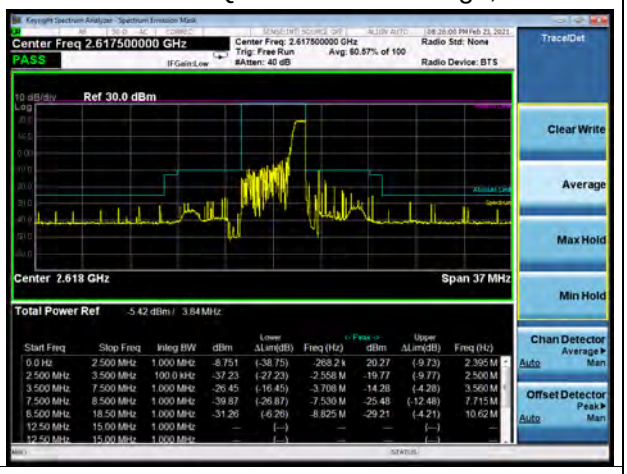


LTE Band 7 16QAM 20MHz CH-Low, 100%RB

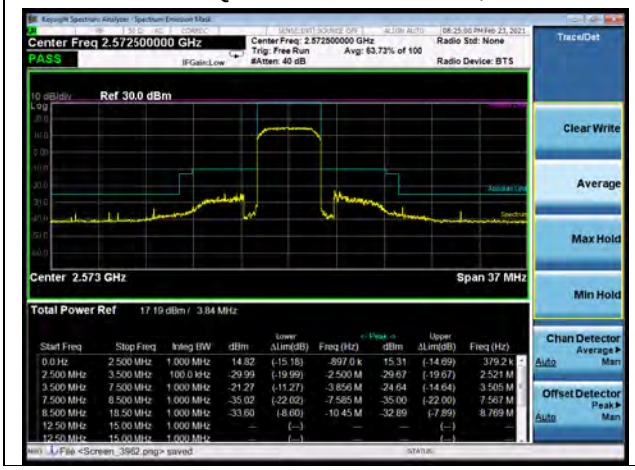
LTE Band 7 16QAM 20MHz CH-High, 100%RB

LTE Band 38 QPSK 5MHz CH-Low, 1 RB

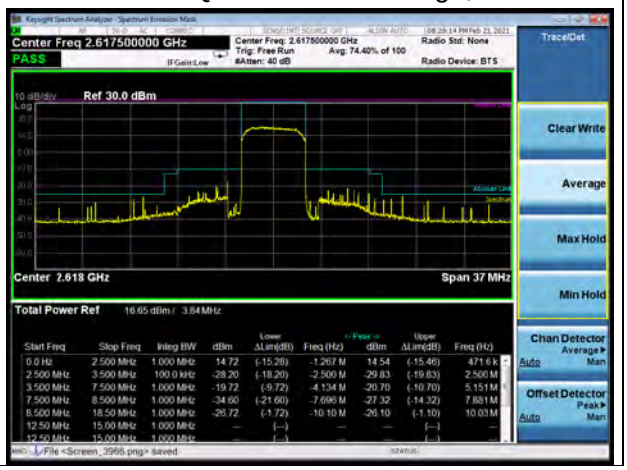
LTE Band 38 QPSK 5MHz CH-High, 1 RB



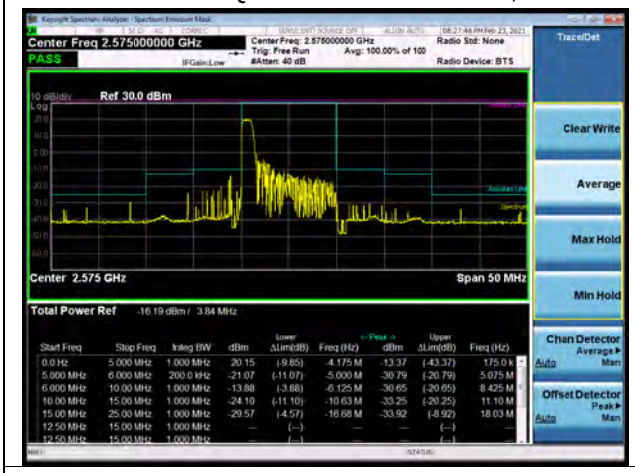
LTE Band 38 QPSK 5MHz CH-Low, 100%RB



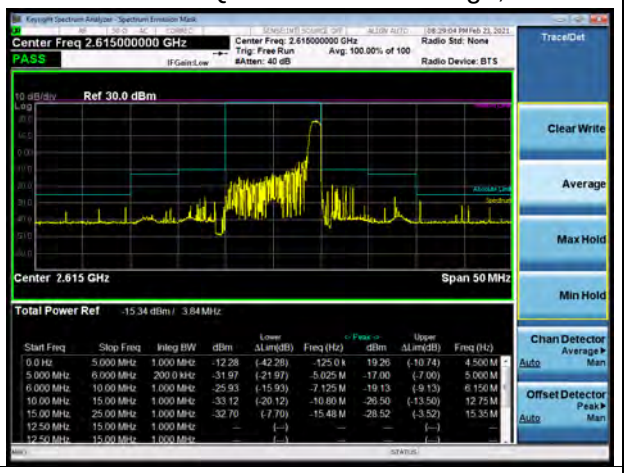
LTE Band 38 QPSK 5MHz CH-High, 100%RB



LTE Band 38 QPSK 10MHz CH-Low, 1 RB

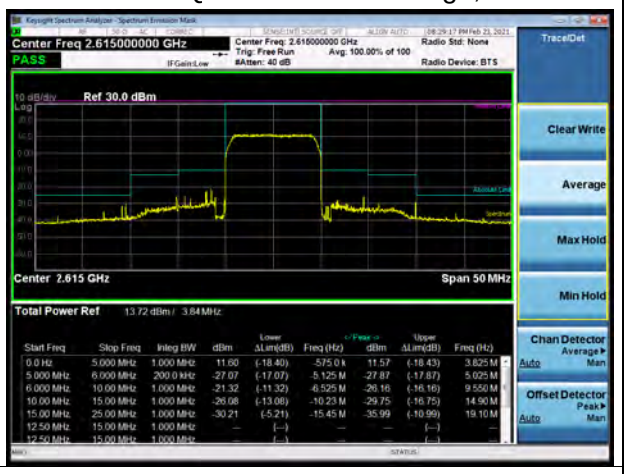


LTE Band 38 QPSK 10MHz CH-High, 1 RB

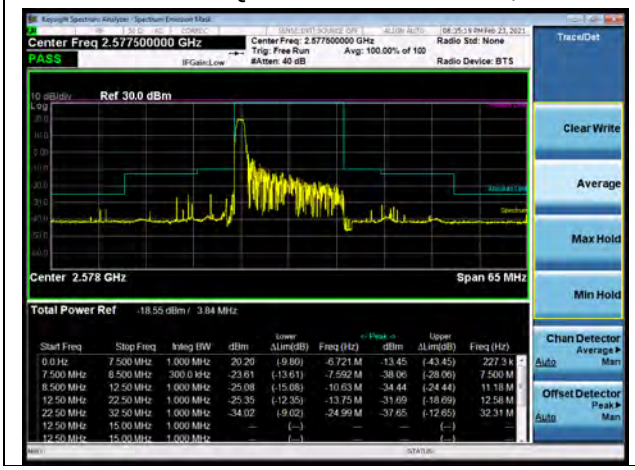


LTE Band 38 QPSK 10MHz CH-Low, 100%RB

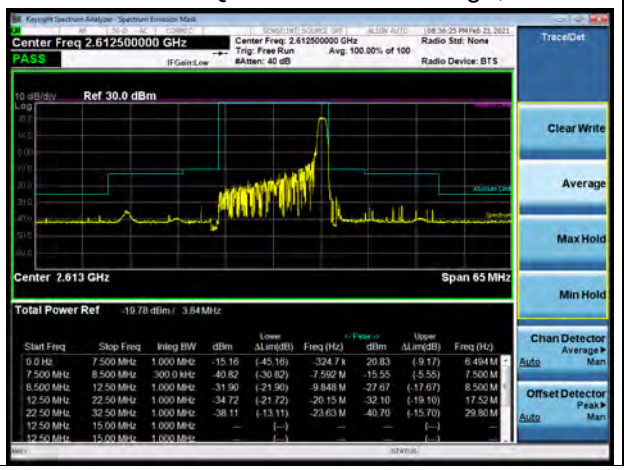
LTE Band 38 QPSK 10MHz CH-High, 100%RB



LTE Band 38 QPSK 15MHz CH-Low, 1 RB

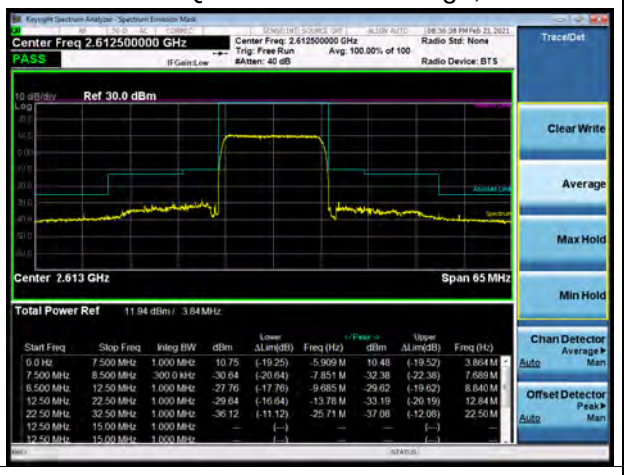


LTE Band 38 QPSK 15MHz CH-High, 1 RB

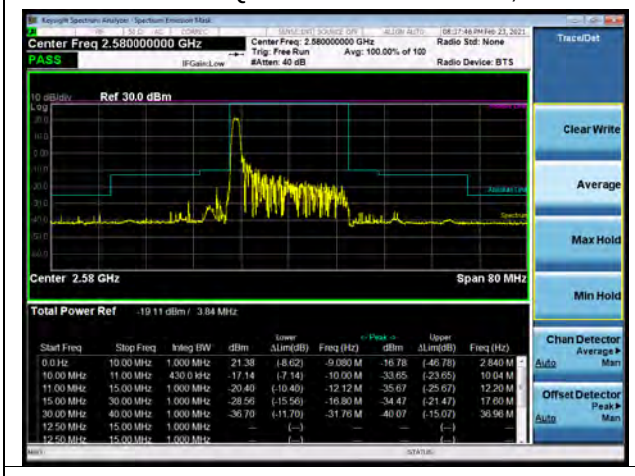


LTE Band 38 QPSK 15MHz CH-Low, 100%RB

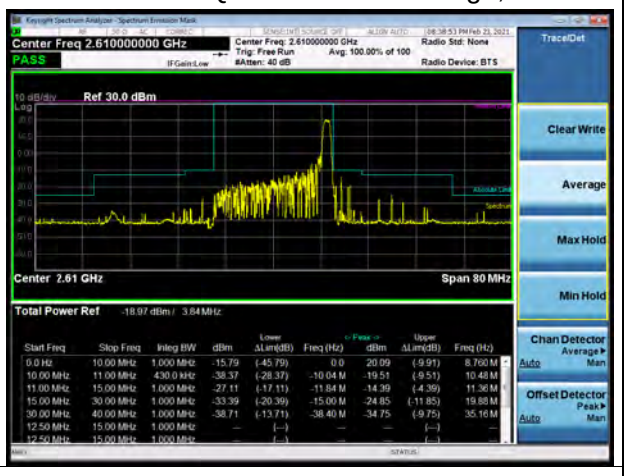
LTE Band 38 QPSK 15MHz CH-High, 100%RB



LTE Band 38 QPSK 20MHz CH-Low, 1 RB

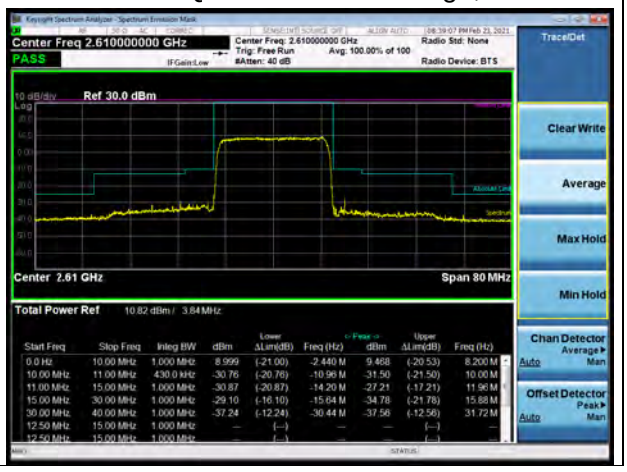


LTE Band 38 QPSK 20MHz CH-High, 1 RB

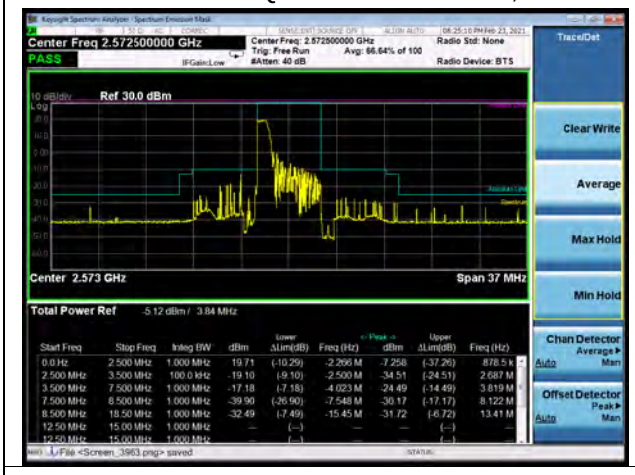


LTE Band 38 QPSK 20MHz CH-Low, 100%RB

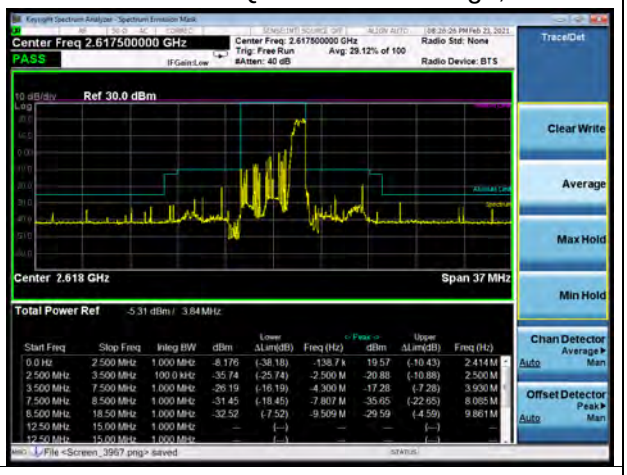
LTE Band 38 QPSK 20MHz CH-High, 100%RB



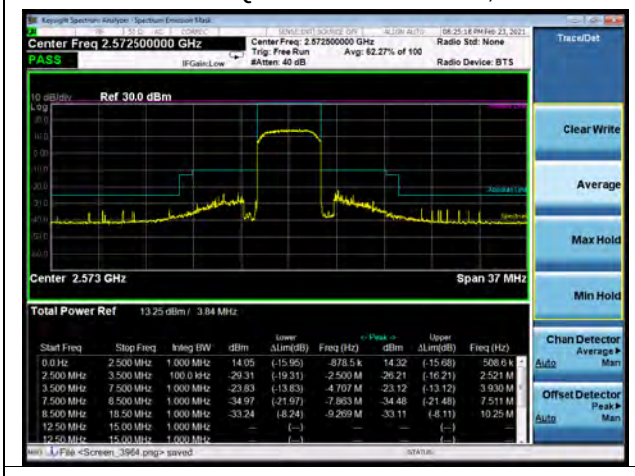
LTE Band 38 16QAM 5MHz CH-Low, 1 RB



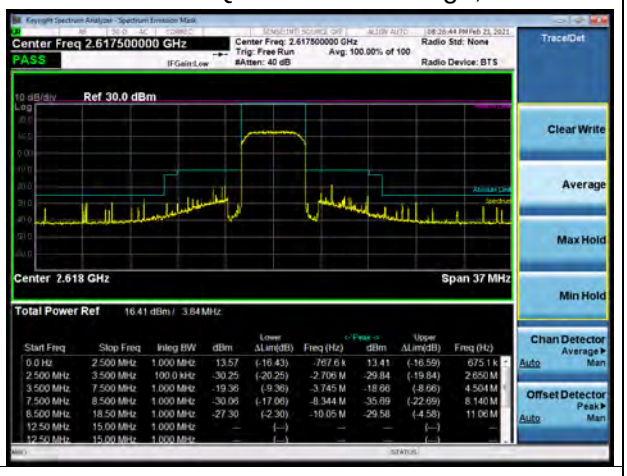
LTE Band 38 16QAM 5MHz CH-High, 1 RB



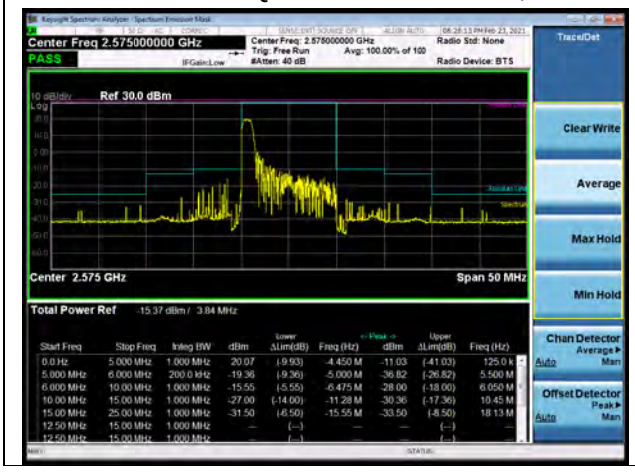
LTE Band 38 16QAM 5MHz CH-Low, 100%RB



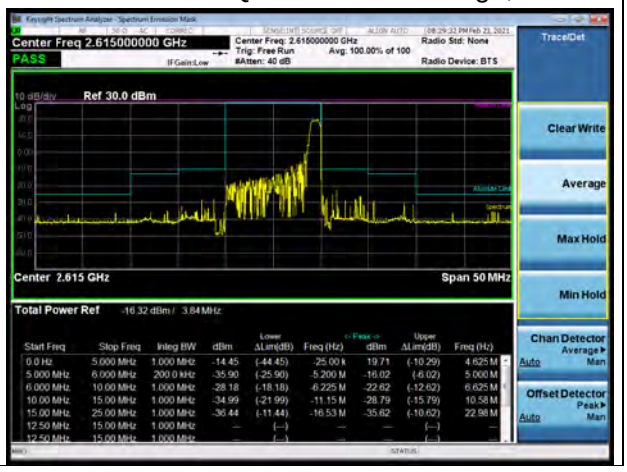
LTE Band 38 16QAM 5MHz CH-High, 100%RB



LTE Band 38 16QAM 10MHz CH-Low, 1 RB



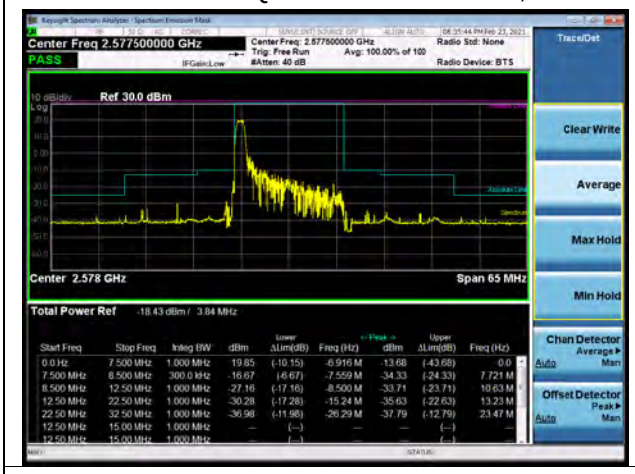
LTE Band 38 16QAM 10MHz CH-High, 1 RB



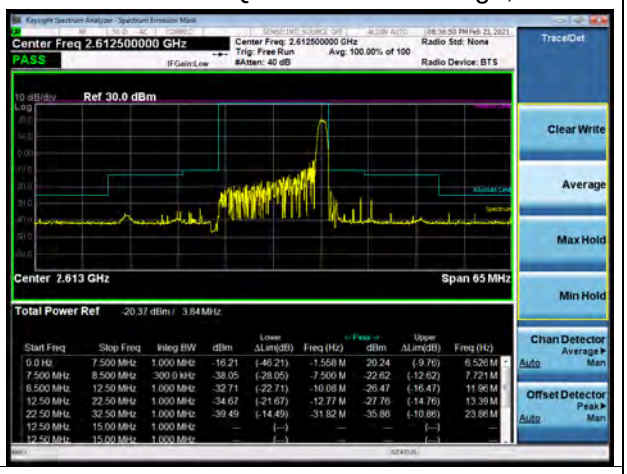
LTE Band 38 16QAM 10MHz CH-Low, 100%RB

LTE Band 38 16QAM 10MHz CH-High, 100%RB

LTE Band 38 16QAM 15MHz CH-Low, 1 RB

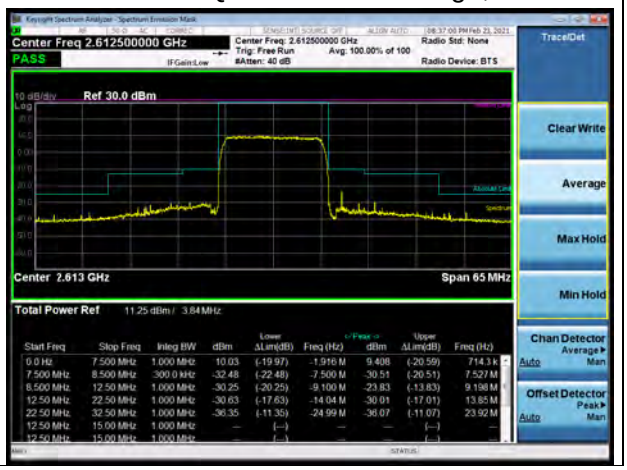


LTE Band 38 16QAM 15MHz CH-High, 1 RB



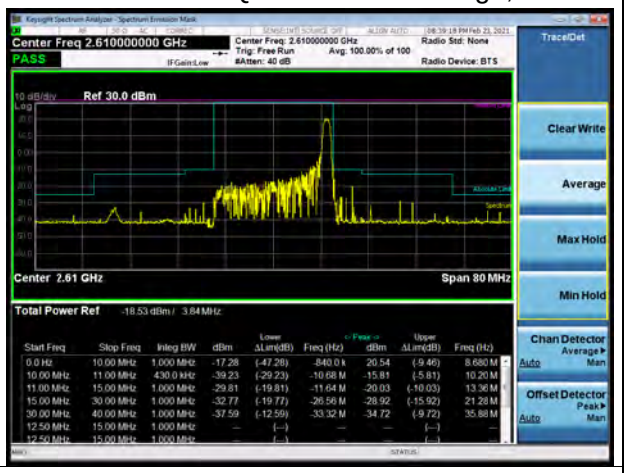
LTE Band 38 16QAM 15MHz CH-Low, 100%RB

LTE Band 38 16QAM 15MHz CH-High, 100%RB



LTE Band 38 16QAM 20MHz CH-Low, 1 RB

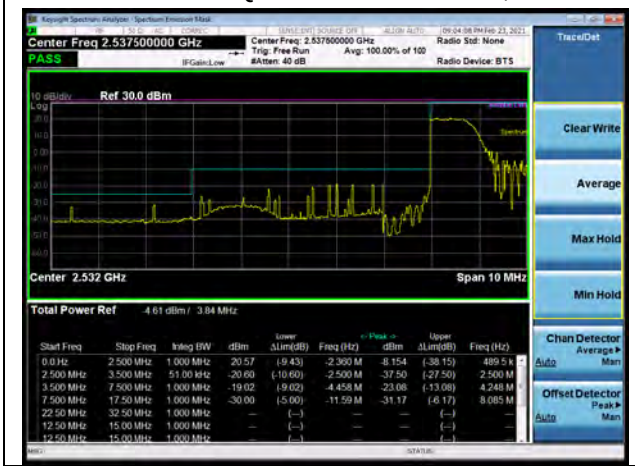
LTE Band 38 16QAM 20MHz CH-High, 1 RB



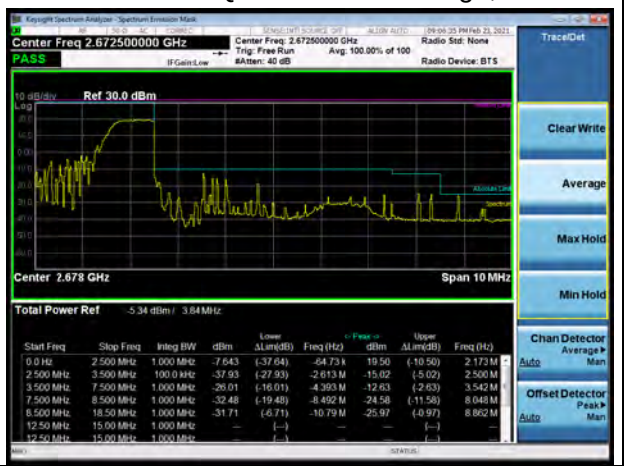
LTE Band 38 16QAM 20MHz CH-Low, 100%RB

LTE Band 38 16QAM 20MHz CH-High, 100%RB

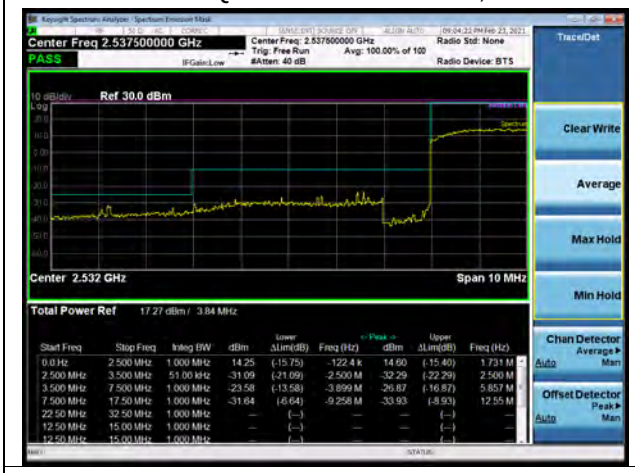
LTE Band 41 QPSK 5MHz CH-Low, 1 RB



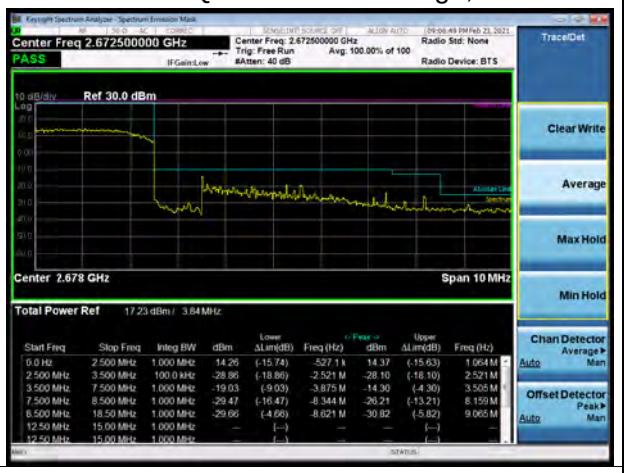
LTE Band 41 QPSK 5MHz CH-High, 1 RB



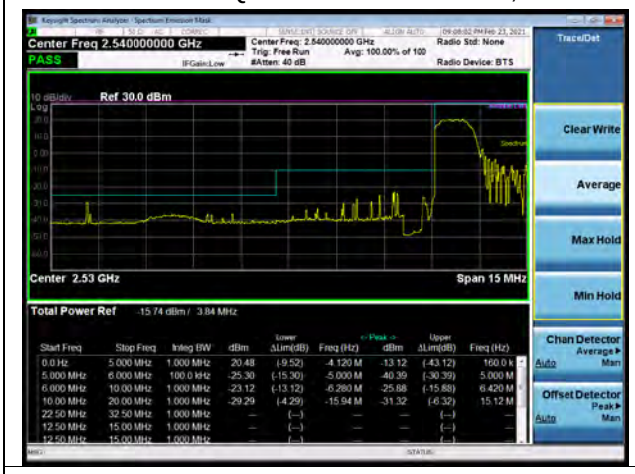
LTE Band 41 QPSK 5MHz CH-Low, 100%RB



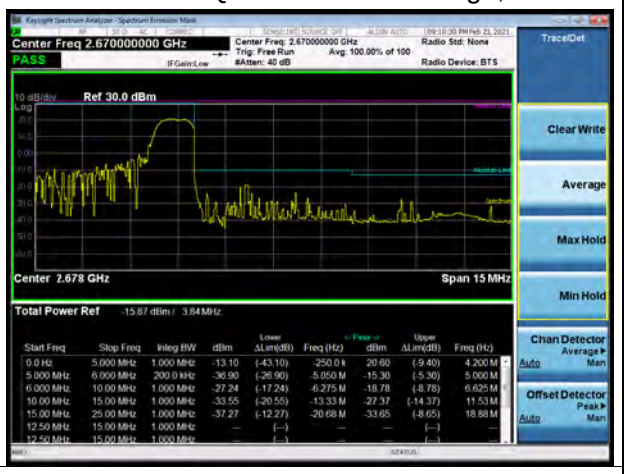
LTE Band 41 QPSK 5MHz CH-High, 100%RB



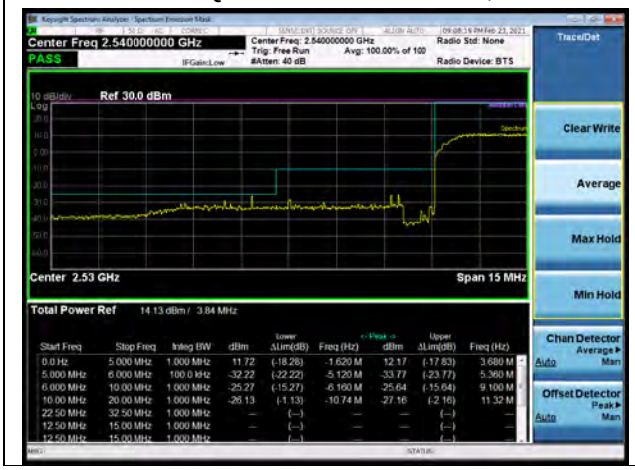
LTE Band 41 QPSK 10MHz CH-Low, 1 RB



LTE Band 41 QPSK 10MHz CH-High, 1 RB

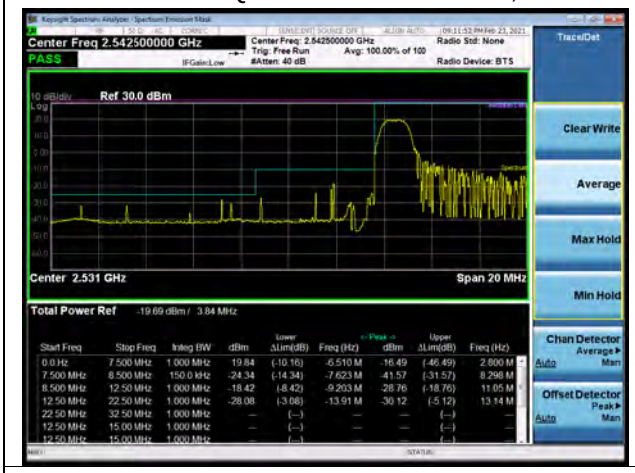


LTE Band 41 QPSK 10MHz CH-Low, 100%RB

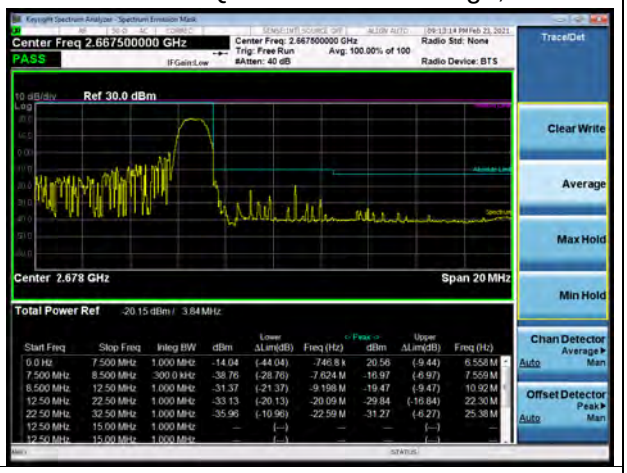


LTE Band 41 QPSK 10MHz CH-High, 100%RB

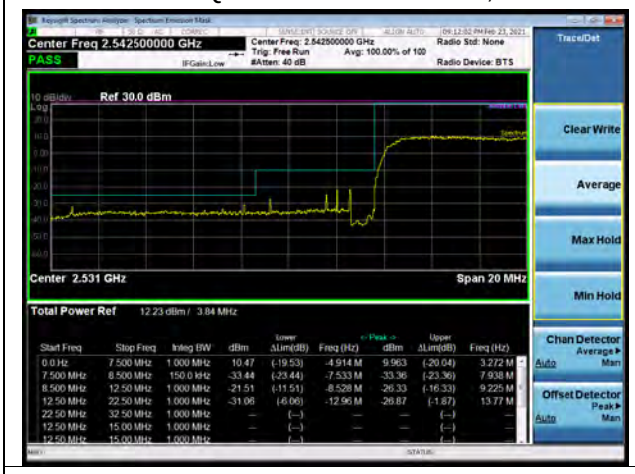
LTE Band 41 QPSK 15MHz CH-Low, 1 RB



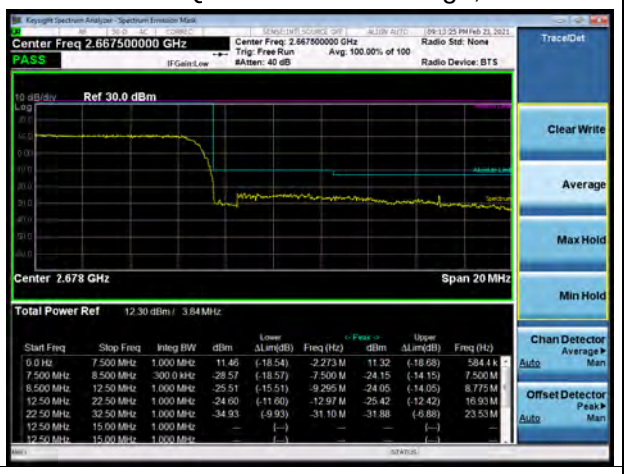
LTE Band 41 QPSK 15MHz CH-High, 1 RB



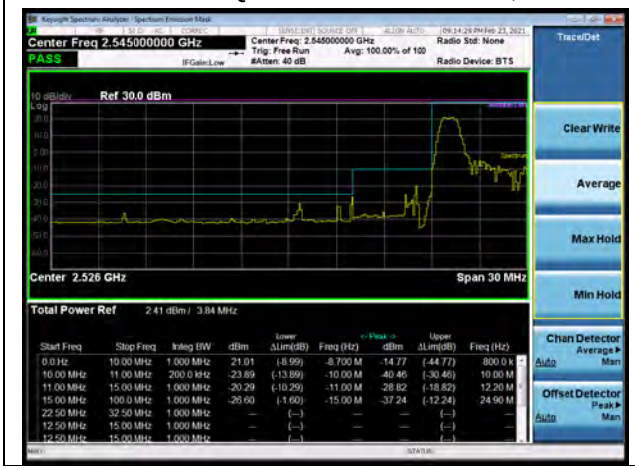
LTE Band 41 QPSK 15MHz CH-Low, 100%RB



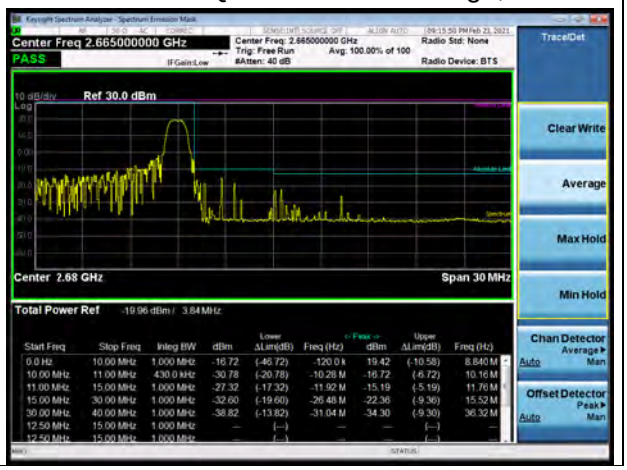
LTE Band 41 QPSK 15MHz CH-High, 100%RB



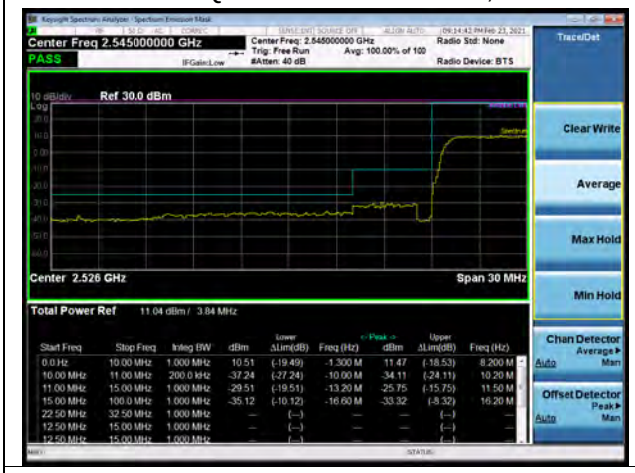
LTE Band 41 QPSK 20MHz CH-Low, 1 RB



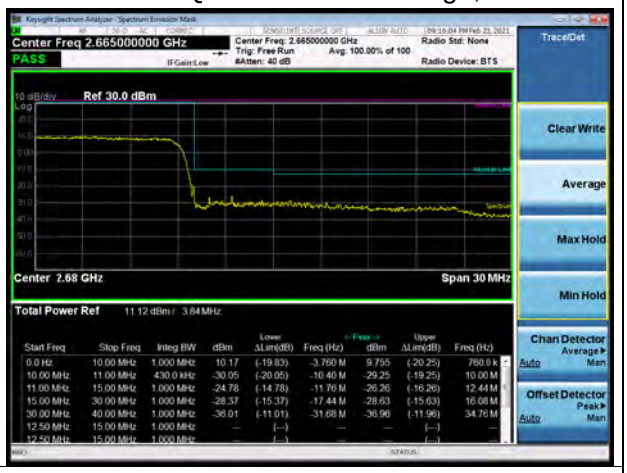
LTE Band 41 QPSK 20MHz CH-High, 1 RB



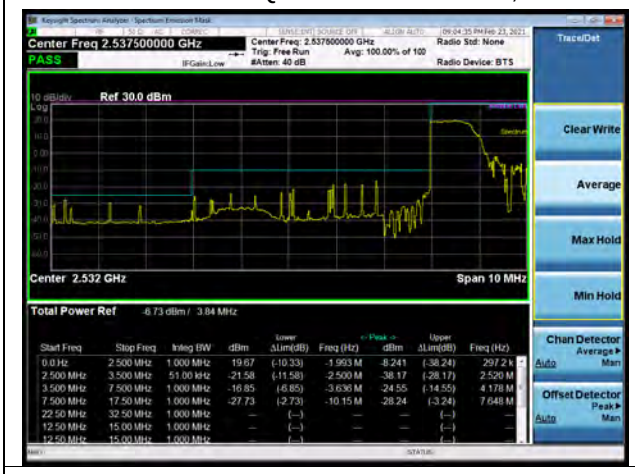
LTE Band 41 QPSK 20MHz CH-Low, 100%RB



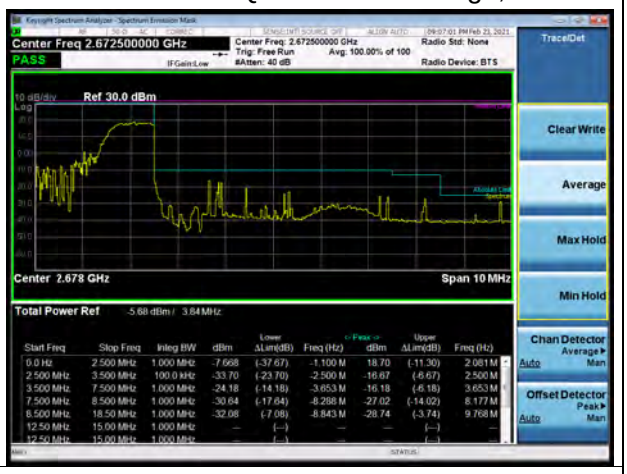
LTE Band 41 QPSK 20MHz CH-High, 100%RB



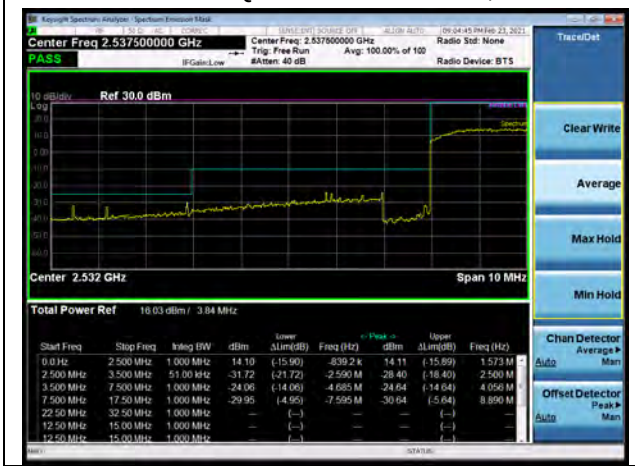
LTE Band 41 16QAM 5MHz CH-Low, 1 RB



LTE Band 41 16QAM 5MHz CH-High, 1 RB

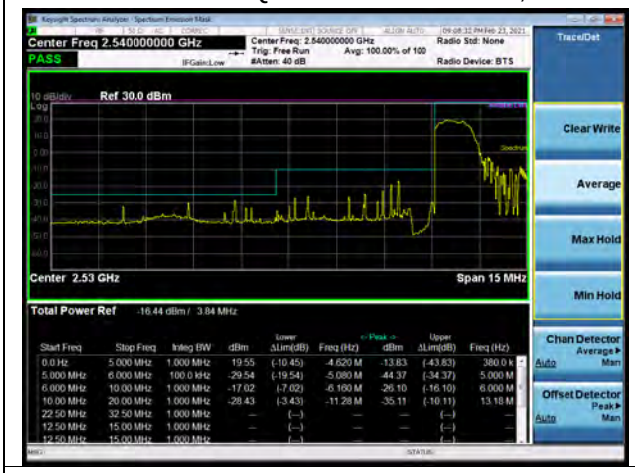


LTE Band 41 16QAM 5MHz CH-Low, 100%RB

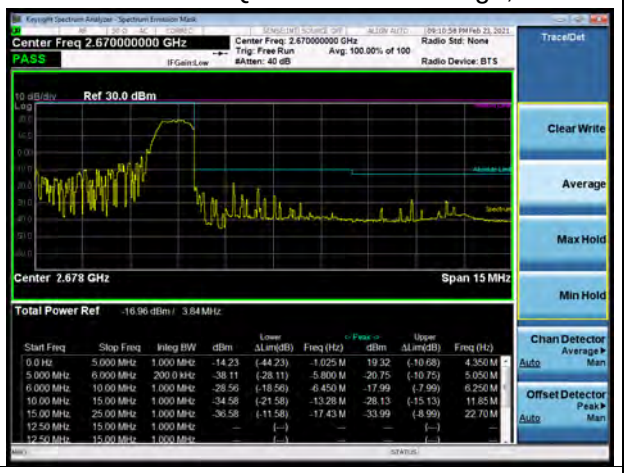


LTE Band 41 16QAM 5MHz CH-High, 100%RB

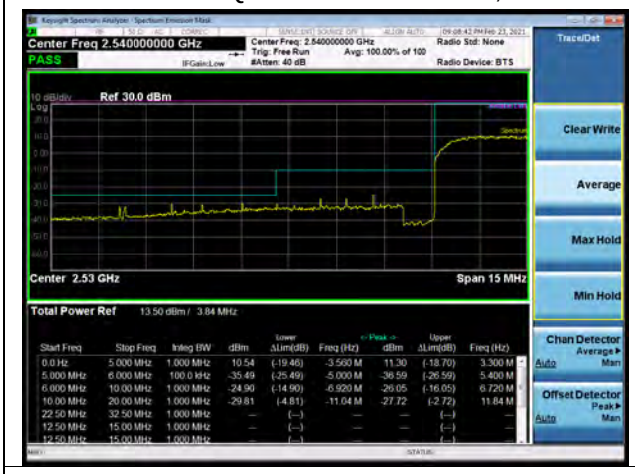
LTE Band 41 16QAM 10MHz CH-Low, 1 RB



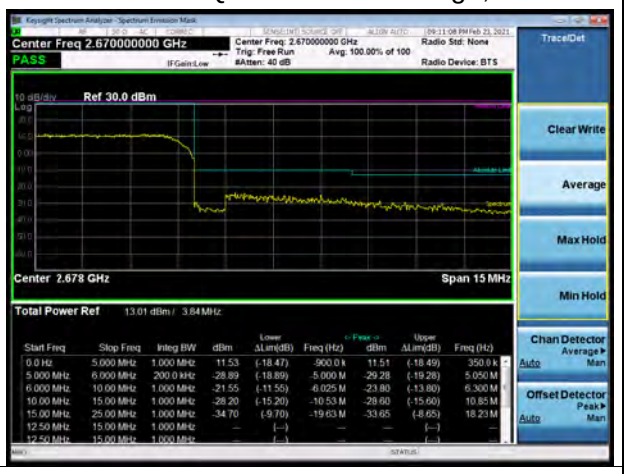
LTE Band 41 16QAM 10MHz CH-High, 1 RB



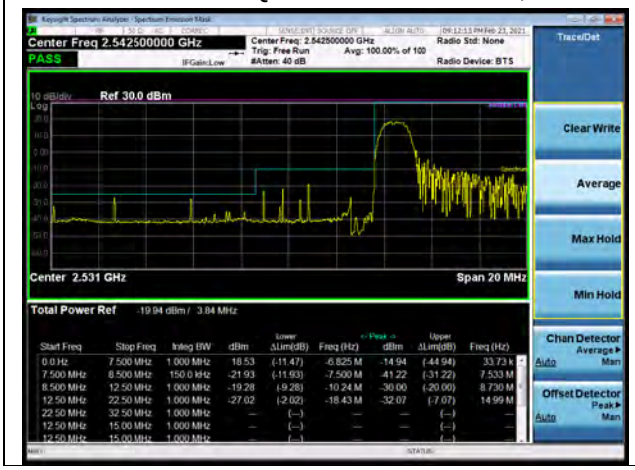
LTE Band 41 16QAM 10MHz CH-Low, 100%RB



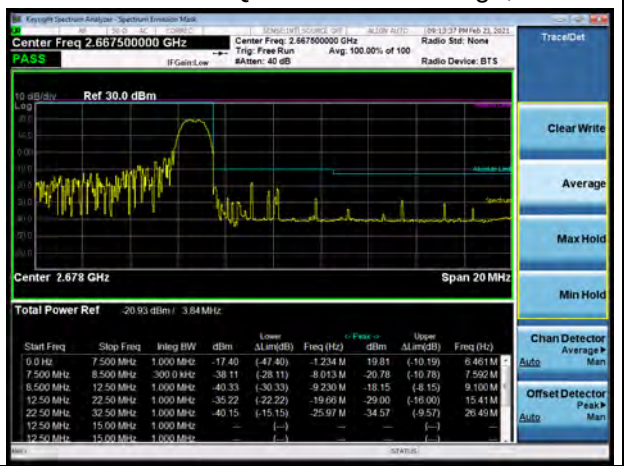
LTE Band 41 16QAM 10MHz CH-High, 100%RB



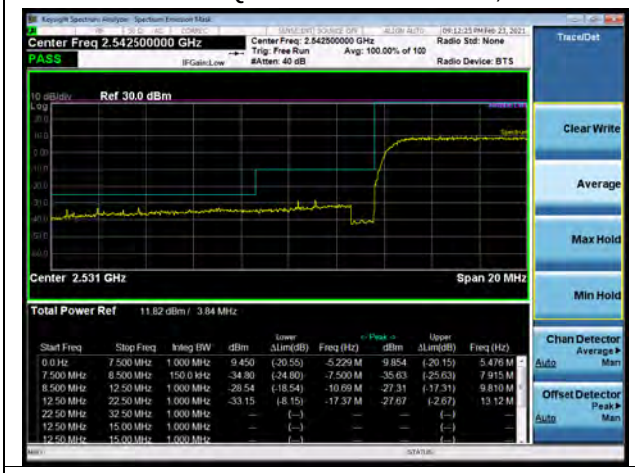
LTE Band 41 16QAM 15MHz CH-Low, 1 RB



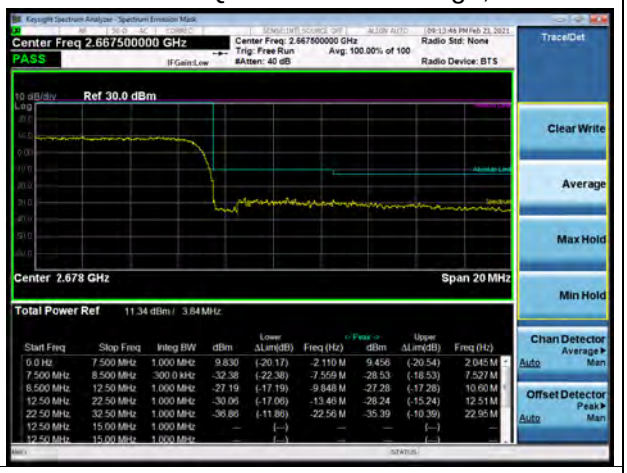
LTE Band 41 16QAM 15MHz CH-High, 1 RB



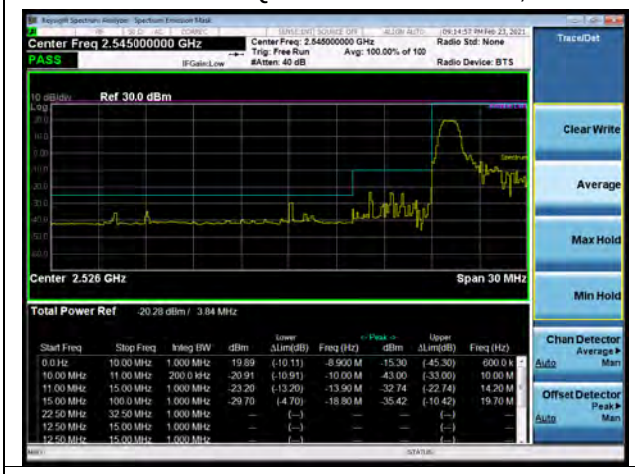
LTE Band 41 16QAM 15MHz CH-Low, 100%RB



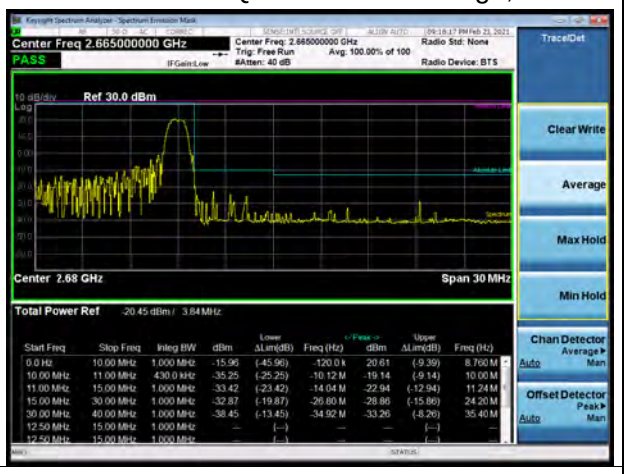
LTE Band 41 16QAM 15MHz CH-High, 100%RB



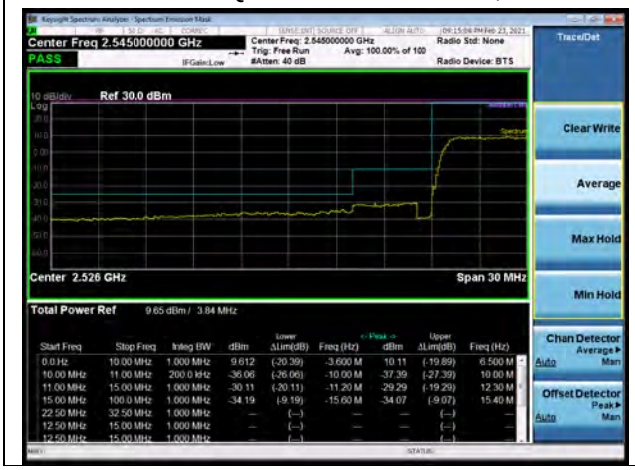
LTE Band 41 16QAM 20MHz CH-Low, RB 1



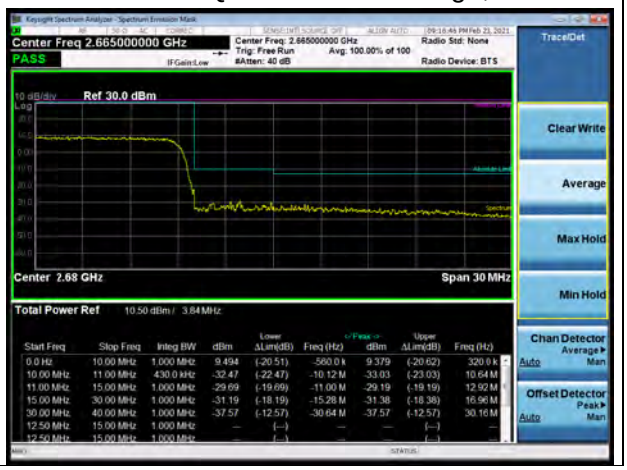
LTE Band 41 16QAM 20MHz CH-High, RB 1



LTE Band 41 16QAM 20MHz CH-Low, 100%RB



LTE Band 41 16QAM 20MHz CH-High, 100%RB



5.4 Peak-to-Average Power Ratio (PAPR)

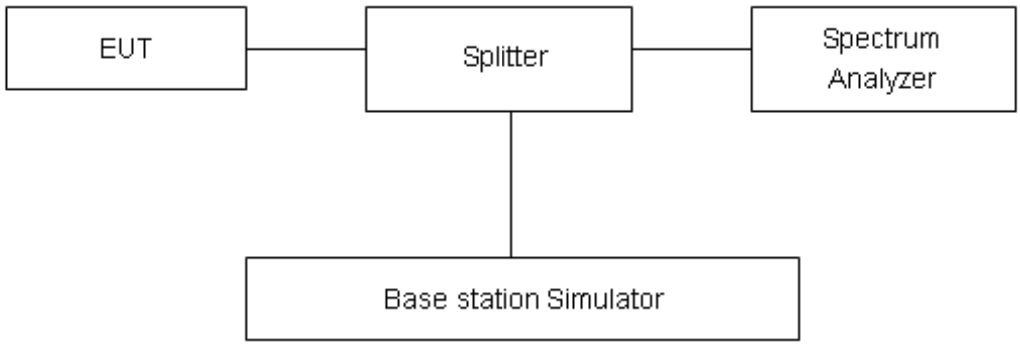
Ambient condition

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

Methods of Measurement

Measure the total peak power and record as PPk. And measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (*e.g.*, dBm). Determine the PAPR from:
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 7								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	20775	2502.5	27.46	22.45	5.01	≤13	PASS
		21100	2535	27.60	22.40	5.20	≤13	PASS
		21425	2567.5	27.18	22.31	4.87	≤13	PASS
	10	20800	2505	27.56	22.41	5.15	≤13	PASS
		21100	2535	27.55	22.36	5.19	≤13	PASS
		21400	2565	27.28	22.36	4.92	≤13	PASS
	15	20825	2507.5	27.95	22.32	5.63	≤13	PASS
		21100	2535	27.93	22.35	5.58	≤13	PASS
		21375	2562.5	27.77	22.33	5.44	≤13	PASS
	20	20850	2510	27.80	22.42	5.38	≤13	PASS
		21100	2535	27.91	22.48	5.43	≤13	PASS
		21350	2560	27.61	22.23	5.38	≤13	PASS
16QAM	5	20775	2502.5	27.37	21.48	5.89	≤13	PASS
		21100	2535	27.43	21.47	5.96	≤13	PASS
		21425	2567.5	27.17	21.50	5.67	≤13	PASS
	10	20800	2505	27.43	21.51	5.92	≤13	PASS
		21100	2535	27.59	21.62	5.97	≤13	PASS
		21400	2565	27.09	21.36	5.73	≤13	PASS
	15	20825	2507.5	27.60	21.47	6.13	≤13	PASS
		21100	2535	27.63	21.53	6.10	≤13	PASS
		21375	2562.5	27.47	21.53	5.94	≤13	PASS
	20	20850	2510	27.67	21.50	6.17	≤13	PASS
		21100	2535	27.72	21.58	6.14	≤13	PASS
		21350	2560	27.58	21.52	6.06	≤13	PASS

LTE Band 38								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	37775	2572.5	27.21	17.97	9.24	≤13	PASS
		38000	2595	27.42	17.98	9.44	≤13	PASS
		38225	2617.5	27.52	18.22	9.30	≤13	PASS
	10	37800	2575	27.33	18.46	8.87	≤13	PASS
		38000	2595	27.53	18.35	9.18	≤13	PASS
		38200	2615	27.52	18.49	9.03	≤13	PASS
	15	37825	2577.5	27.68	17.94	9.74	≤13	PASS
		38000	2595	27.80	17.95	9.85	≤13	PASS
		38175	2612.5	27.87	18.68	9.19	≤13	PASS
	20	37850	2580	27.54	18.53	9.01	≤13	PASS
		38000	2595	27.48	16.91	10.57	≤13	PASS
		38150	2610	27.76	18.90	8.86	≤13	PASS
16QAM	5	37775	2572.5	27.00	16.37	10.63	≤13	PASS
		38000	2595	27.36	18.69	8.67	≤13	PASS
		38225	2617.5	27.20	18.06	9.14	≤13	PASS
	10	37800	2575	27.12	17.59	9.53	≤13	PASS
		38000	2595	27.42	18.01	9.41	≤13	PASS
		38200	2615	27.19	16.37	10.82	≤13	PASS
	15	37825	2577.5	27.39	17.79	9.60	≤13	PASS
		38000	2595	27.53	18.64	8.89	≤13	PASS
		38175	2612.5	27.61	18.61	9.00	≤13	PASS
	20	37850	2580	27.21	17.65	9.56	≤13	PASS
		38000	2595	27.32	17.24	10.08	≤13	PASS
		38150	2610	27.38	18.29	9.09	≤13	PASS

LTE Band 41								
Modulation	Bandwidth ((MHz))	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	39675	2498.5	27.23	17.65	9.58	≤13	PASS
		40620	2593	27.53	18.27	9.26	≤13	PASS
		41565	2687.5	27.03	17.79	9.24	≤13	PASS
	10	39700	2501	27.32	18.32	9.00	≤13	PASS
		40620	2593	27.61	19.54	8.07	≤13	PASS
		41540	2685	27.04	18.08	8.96	≤13	PASS
	15	39725	2503.5	27.76	18.89	8.87	≤13	PASS
		40620	2593	27.94	18.62	9.32	≤13	PASS
		41515	2682.5	27.53	18.53	9.00	≤13	PASS
	20	39750	2506	27.53	18.29	9.24	≤13	PASS
		40620	2593	27.75	18.95	8.80	≤13	PASS
		41490	2680	27.42	18.40	9.02	≤13	PASS
16QAM	5	39675	2498.5	26.93	15.70	11.23	≤13	PASS
		40620	2593	27.39	17.82	9.57	≤13	PASS
		41565	2687.5	26.85	17.19	9.66	≤13	PASS
	10	39700	2501	27.18	17.65	9.53	≤13	PASS
		40620	2593	27.50	18.39	9.11	≤13	PASS
		41540	2685	27.01	18.57	8.44	≤13	PASS
	15	39725	2503.5	27.18	14.96	12.22	≤13	PASS
		40620	2593	27.53	18.07	9.46	≤13	PASS
		41515	2682.5	27.31	17.54	9.77	≤13	PASS
	20	39750	2506	27.29	17.27	10.02	≤13	PASS
		40620	2593	27.56	18.87	8.69	≤13	PASS
		41490	2680	27.35	18.51	8.84	≤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 +75°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 +75C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

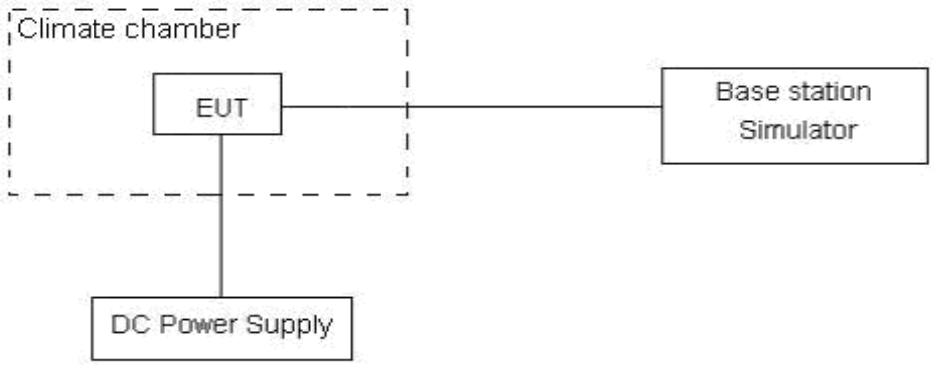
Frequency Stability (Voltage Variation)

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 3.23 V and 4.37 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 7						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	5MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	15.90	17.66	0.00846	0.00940	PASS
Extreme（75℃）		17.64	3.72	0.00938	0.00198	PASS
Extreme（70℃）		12.99	1.32	0.00691	0.00070	PASS
Extreme（60℃）		9.98	10.43	0.00531	0.00555	PASS
Extreme（50℃）		2.29	6.15	0.00122	0.00327	PASS
Extreme（40℃）		15.95	9.01	0.00849	0.00479	PASS
Extreme（30℃）		9.21	15.96	0.00490	0.00849	PASS
Extreme（20℃）		14.77	9.74	0.00786	0.00518	PASS
Extreme（10℃）		17.20	9.22	0.00915	0.00490	PASS
Extreme（0℃）		5.30	2.81	0.00282	0.00149	PASS
Extreme（-10℃）		1.93	15.84	0.00102	0.00843	PASS
Extreme（-20℃）		15.23	12.94	0.00810	0.00688	PASS
Extreme（-30℃）		7.16	6.84	0.00381	0.00364	PASS
25℃	LV	3.59	14.87	0.00191	0.00791	PASS
	HV	17.56	6.95	0.00934	0.00370	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	10MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	1.35	3.52	0.00072	0.00187	PASS
Extreme（75℃）		17.15	5.00	0.00912	0.00266	PASS
Extreme（70℃）		4.19	5.32	0.00223	0.00283	PASS
Extreme（60℃）		9.05	13.40	0.00482	0.00713	PASS
Extreme（50℃）		2.75	3.55	0.00146	0.00189	PASS
Extreme（40℃）		11.30	17.71	0.00601	0.00942	PASS
Extreme（30℃）		15.31	12.72	0.00814	0.00676	PASS
Extreme（20℃）		1.95	2.96	0.00104	0.00157	PASS
Extreme（10℃）		15.89	3.31	0.00845	0.00176	PASS
Extreme（0℃）		9.19	6.62	0.00489	0.00352	PASS
Extreme（-10℃）		13.37	11.83	0.00711	0.00629	PASS
Extreme（-20℃）		3.51	16.64	0.00187	0.00885	PASS
Extreme（-30℃）		13.87	5.05	0.00738	0.00269	PASS
25℃	LV	3.63	9.65	0.00193	0.00513	PASS
	HV	2.90	12.67	0.00154	0.00674	PASS
Condition		Freq.Error	Freq.Error	Frequency	Frequency	Verdict

		(Hz)	(Hz)	Stability （ppm）	Stability （ppm）	
BANDWIDTH	15MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	4.23	9.23	0.00225	0.00491	PASS
Extreme（75℃）		16.70	2.27	0.00888	0.00121	PASS
Extreme（70℃）		12.05	5.53	0.00641	0.00294	PASS
Extreme（60℃）		9.08	8.63	0.00483	0.00459	PASS
Extreme（50℃）		16.30	6.98	0.00867	0.00371	PASS
Extreme（40℃）		1.30	6.98	0.00069	0.00371	PASS
Extreme（30℃）		2.79	11.31	0.00149	0.00602	PASS
Extreme（20℃）		11.43	14.99	0.00608	0.00797	PASS
Extreme（10℃）		7.00	17.18	0.00373	0.00914	PASS
Extreme（0℃）		2.41	12.52	0.00128	0.00666	PASS
Extreme（-10℃）		5.34	12.52	0.00284	0.00666	PASS
Extreme（-20℃）		6.12	17.63	0.00326	0.00938	PASS
Extreme（-30℃）		13.00	12.30	0.00691	0.00654	PASS
25℃	LV	15.83	6.94	0.00842	0.00369	PASS
	HV	12.89	17.16	0.00685	0.00913	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	20MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	8.27	17.31	0.00440	0.00921	PASS
Extreme（75℃）		12.91	2.06	0.00687	0.00110	PASS
Extreme（70℃）		12.29	9.63	0.00654	0.00512	PASS
Extreme（60℃）		7.58	15.63	0.00403	0.00831	PASS
Extreme（50℃）		16.78	11.47	0.00893	0.00610	PASS
Extreme（40℃）		16.79	7.66	0.00893	0.00407	PASS
Extreme（30℃）		2.09	11.89	0.00111	0.00632	PASS
Extreme（20℃）		7.30	4.54	0.00388	0.00241	PASS
Extreme（10℃）		14.01	8.91	0.00745	0.00474	PASS
Extreme（0℃）		5.47	7.78	0.00291	0.00414	PASS
Extreme（-10℃）		10.76	7.20	0.00572	0.00383	PASS
Extreme（-20℃）		3.51	17.23	0.00187	0.00916	PASS
Extreme（-30℃）		3.41	12.87	0.00181	0.00685	PASS
25℃	LV	5.54	14.09	0.00295	0.00750	PASS
	HV	12.51	8.93	0.00665	0.00475	PASS

LTE Band 38						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	5MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	14.88	11.49	0.00791	0.00611	PASS
Extreme（75℃）		13.43	16.61	0.00714	0.00883	PASS
Extreme（70℃）		11.42	13.99	0.00607	0.00744	PASS
Extreme（60℃）		17.10	3.41	0.00910	0.00181	PASS
Extreme（50℃）		10.26	2.73	0.00546	0.00145	PASS
Extreme（40℃）		3.13	1.85	0.00166	0.00099	PASS
Extreme（30℃）		12.72	3.61	0.00677	0.00192	PASS
Extreme（20℃）		9.88	8.03	0.00525	0.00427	PASS
Extreme（10℃）		7.34	14.67	0.00391	0.00780	PASS
Extreme（0℃）		10.81	10.70	0.00575	0.00569	PASS
Extreme（-10℃）		1.71	16.46	0.00091	0.00876	PASS
Extreme（-20℃）		4.18	2.77	0.00222	0.00147	PASS
Extreme（-30℃）		6.14	8.48	0.00327	0.00451	PASS
25℃	LV	3.53	8.30	0.00188	0.00442	PASS
	HV	10.35	17.28	0.00551	0.00919	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	10MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	9.79	5.58	0.00521	0.00297	PASS
Extreme（75℃）		14.14	15.72	0.00752	0.00836	PASS
Extreme（70℃）		1.75	10.34	0.00093	0.00550	PASS
Extreme（60℃）		12.95	13.36	0.00689	0.00711	PASS
Extreme（50℃）		16.91	10.28	0.00899	0.00547	PASS
Extreme（40℃）		14.36	17.99	0.00764	0.00957	PASS
Extreme（30℃）		2.99	12.97	0.00159	0.00690	PASS
Extreme（20℃）		2.75	5.13	0.00146	0.00273	PASS
Extreme（10℃）		9.99	10.42	0.00531	0.00554	PASS
Extreme（0℃）		7.55	6.84	0.00401	0.00364	PASS
Extreme（-10℃）		4.91	10.17	0.00261	0.00541	PASS
Extreme（-20℃）		8.98	10.08	0.00478	0.00536	PASS
Extreme（-30℃）		1.16	5.50	0.00062	0.00293	PASS
25℃	LV	4.54	9.75	0.00241	0.00519	PASS
	HV	6.30	14.44	0.00335	0.00768	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability	Frequency Stability	Verdict

BANDWIDTH	15MHz			（ppm）	（ppm）	
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	2.44	4.95	0.00130	0.00263	PASS
Extreme（75℃）		5.87	11.18	0.00312	0.00595	PASS
Extreme（70℃）		7.77	13.84	0.00414	0.00736	PASS
Extreme（60℃）		17.46	2.14	0.00929	0.00114	PASS
Extreme（50℃）		8.30	9.76	0.00441	0.00519	PASS
Extreme（40℃）		5.51	13.95	0.00293	0.00742	PASS
Extreme（30℃）		3.34	13.10	0.00178	0.00697	PASS
Extreme（20℃）		16.91	12.63	0.00899	0.00672	PASS
Extreme（10℃）		12.89	12.35	0.00685	0.00657	PASS
Extreme（0℃）		9.16	11.35	0.00487	0.00603	PASS
Extreme（-10℃）		12.34	3.01	0.00656	0.00160	PASS
Extreme（-20℃）		8.88	6.98	0.00472	0.00371	PASS
Extreme（-30℃）		8.41	3.58	0.00447	0.00190	PASS
25℃	LV	9.05	10.02	0.00481	0.00533	PASS
	HV	14.30	9.63	0.00761	0.00512	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	20MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	11.30	5.44	0.00601	0.00289	PASS
Extreme（75℃）		7.51	15.86	0.00399	0.00844	PASS
Extreme（70℃）		4.69	17.90	0.00250	0.00952	PASS
Extreme（60℃）		16.65	1.26	0.00886	0.00067	PASS
Extreme（50℃）		4.56	10.67	0.00242	0.00567	PASS
Extreme（40℃）		13.25	7.88	0.00705	0.00419	PASS
Extreme（30℃）		1.02	2.41	0.00055	0.00128	PASS
Extreme（20℃）		9.44	4.44	0.00502	0.00236	PASS
Extreme（10℃）		6.44	7.20	0.00343	0.00383	PASS
Extreme（0℃）		4.83	2.75	0.00257	0.00146	PASS
Extreme（-10℃）		8.41	3.16	0.00448	0.00168	PASS
Extreme（-20℃）		1.55	17.33	0.00082	0.00922	PASS
Extreme（-30℃）		10.67	7.99	0.00567	0.00425	PASS
25℃	LV	13.80	11.16	0.00734	0.00594	PASS
	HV	11.60	14.74	0.00617	0.00784	PASS

LTE Band 41						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	5MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	10.98	5.11	0.00584	0.00272	PASS
Extreme（75℃）		16.56	2.81	0.00881	0.00149	PASS
Extreme（70℃）		8.53	12.20	0.00454	0.00649	PASS
Extreme（60℃）		4.60	5.05	0.00245	0.00268	PASS
Extreme（50℃）		13.19	16.45	0.00702	0.00875	PASS
Extreme（40℃）		11.48	11.91	0.00610	0.00633	PASS
Extreme（30℃）		8.72	9.93	0.00464	0.00528	PASS
Extreme（20℃）		7.69	13.04	0.00409	0.00694	PASS
Extreme（10℃）		14.48	9.14	0.00770	0.00486	PASS
Extreme（0℃）		5.19	6.06	0.00276	0.00322	PASS
Extreme（-10℃）		8.99	12.65	0.00478	0.00673	PASS
Extreme（-20℃）		12.40	8.84	0.00660	0.00470	PASS
Extreme（-30℃）		11.45	15.91	0.00609	0.00846	PASS
25℃	LV	3.87	10.26	0.00206	0.00546	PASS
	HV	3.58	13.28	0.00190	0.00706	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	10MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	13.40	1.02	0.00713	0.00054	PASS
Extreme（75℃）		10.84	7.91	0.00577	0.00421	PASS
Extreme（70℃）		1.29	10.56	0.00069	0.00562	PASS
Extreme（60℃）		11.92	2.92	0.00634	0.00155	PASS
Extreme（50℃）		3.86	10.47	0.00205	0.00557	PASS
Extreme（40℃）		7.94	15.34	0.00422	0.00816	PASS
Extreme（30℃）		8.60	13.71	0.00458	0.00729	PASS
Extreme（20℃）		17.55	3.64	0.00934	0.00193	PASS
Extreme（10℃）		13.51	16.56	0.00718	0.00881	PASS
Extreme（0℃）		4.88	16.69	0.00260	0.00888	PASS
Extreme（-10℃）		13.98	16.00	0.00744	0.00851	PASS
Extreme（-20℃）		17.79	13.82	0.00946	0.00735	PASS
Extreme（-30℃）		1.13	2.59	0.00060	0.00138	PASS
25℃	LV	7.71	9.88	0.00410	0.00525	PASS
	HV	7.65	14.37	0.00407	0.00764	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability	Frequency Stability	Verdict

BANDWIDTH	15MHz			（ppm）	（ppm）	
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	14.60	3.43	0.00776	0.00183	PASS
Extreme（75℃）		14.69	5.39	0.00781	0.00287	PASS
Extreme（70℃）		5.52	11.49	0.00293	0.00611	PASS
Extreme（60℃）		16.25	6.31	0.00864	0.00336	PASS
Extreme（50℃）		10.32	2.26	0.00549	0.00120	PASS
Extreme（40℃）		6.22	15.13	0.00331	0.00805	PASS
Extreme（30℃）		14.74	5.59	0.00784	0.00297	PASS
Extreme（20℃）		10.47	5.03	0.00557	0.00267	PASS
Extreme（10℃）		7.20	16.04	0.00383	0.00853	PASS
Extreme（0℃）		6.62	10.47	0.00352	0.00557	PASS
Extreme（-10℃）		2.44	10.95	0.00130	0.00582	PASS
Extreme（-20℃）		1.91	13.77	0.00102	0.00733	PASS
Extreme（-30℃）		3.88	9.81	0.00207	0.00522	PASS
25℃	LV	1.39	2.66	0.00074	0.00141	PASS
	HV	14.31	16.35	0.00761	0.00870	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	20MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	7.69	5.53	0.00409	0.00294	PASS
Extreme（75℃）		13.36	8.46	0.00710	0.00450	PASS
Extreme（70℃）		10.77	12.45	0.00573	0.00662	PASS
Extreme（60℃）		4.59	13.93	0.00244	0.00741	PASS
Extreme（50℃）		10.37	17.48	0.00551	0.00930	PASS
Extreme（40℃）		2.16	8.97	0.00115	0.00477	PASS
Extreme（30℃）		7.81	14.59	0.00416	0.00776	PASS
Extreme（20℃）		7.15	3.65	0.00380	0.00194	PASS
Extreme（10℃）		16.08	10.11	0.00856	0.00538	PASS
Extreme（0℃）		17.11	1.99	0.00910	0.00106	PASS
Extreme（-10℃）		9.70	5.56	0.00516	0.00296	PASS
Extreme（-20℃）		13.16	15.81	0.00700	0.00841	PASS
Extreme（-30℃）		8.52	10.99	0.00453	0.00585	PASS
25℃	LV	3.97	1.92	0.00211	0.00102	PASS
	HV	14.20	4.05	0.00755	0.00216	PASS

5.6 Spurious Emissions at Antenna Terminals

Ambient condition

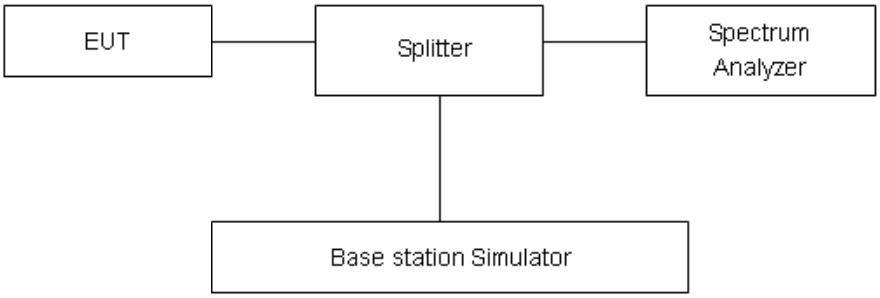
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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(m) 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section.

Part 27.53(a)/(h)/(g) Limit	-13 dBm
Part 27.53(m) Limit	-25 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.

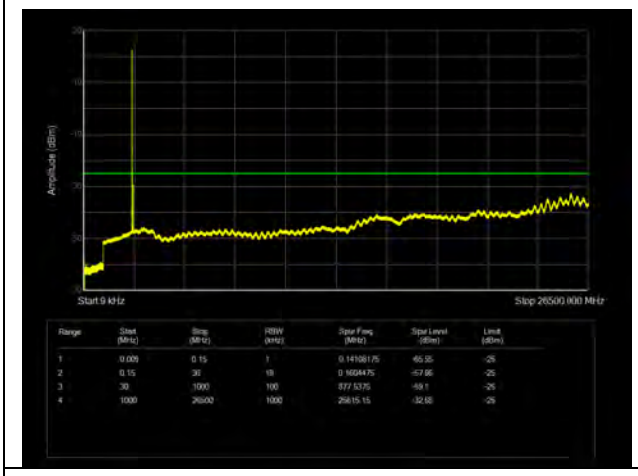
Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-27GHz	1.407 dB

Test Result

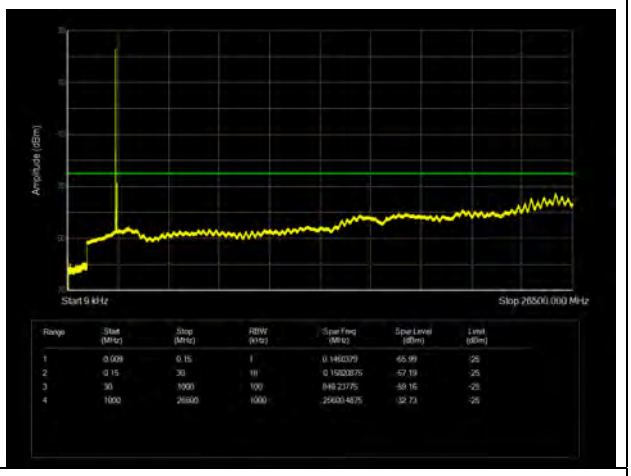
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

The signal beyond the limit is carrier.

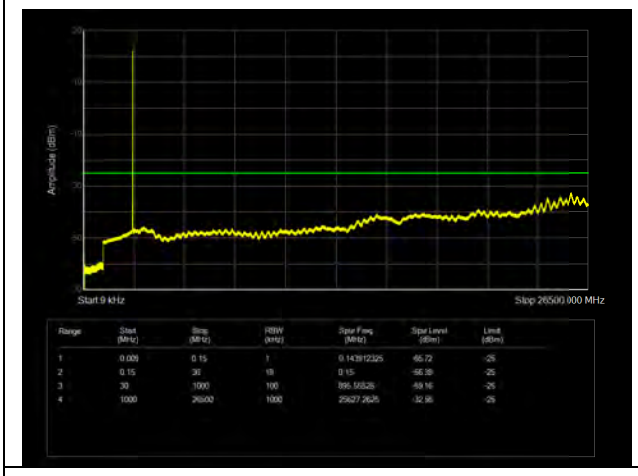
LTE Band 7 5MHz CH-Low 9kHz~26.5GHz



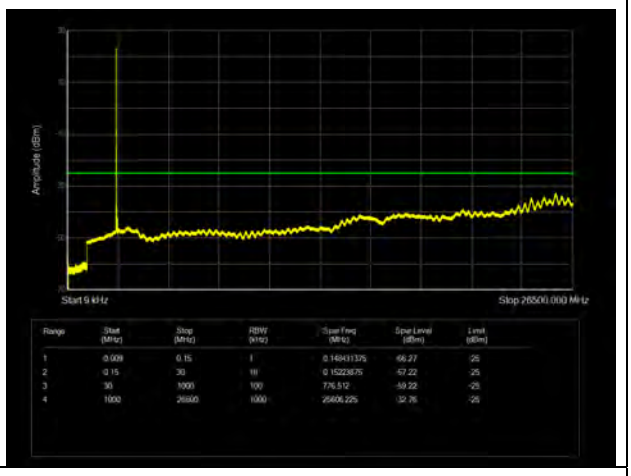
LTE Band 7 10MHz CH- Low 9kHz~26.5GHz



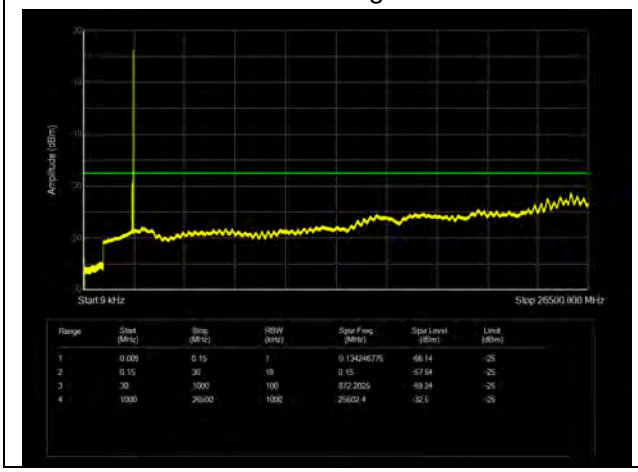
LTE Band 7 5MHz CH- Middle 9kHz~26.5GHz



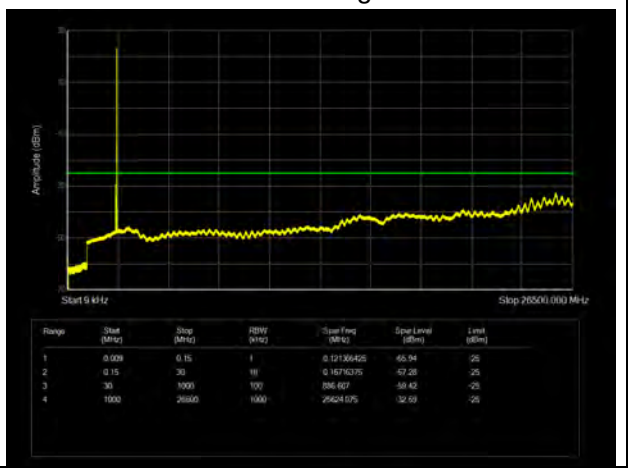
LTE Band 7 10MHz CH- Middle 9kHz~26.5GHz



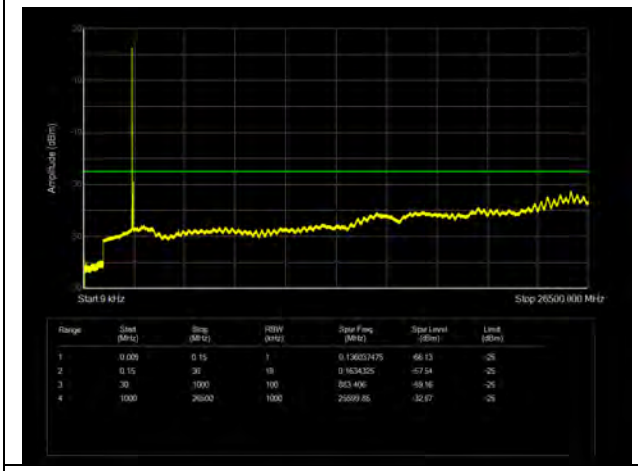
LTE Band 7 5MHz CH- High 9kHz~26.5GHz



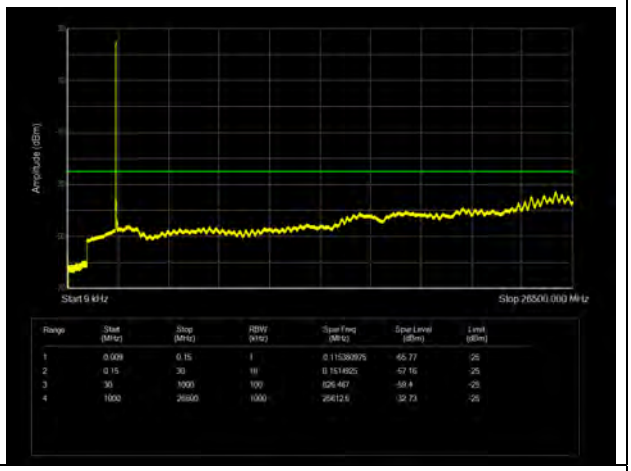
LTE Band 7 10MHz CH-High 9kHz~26.5GHz



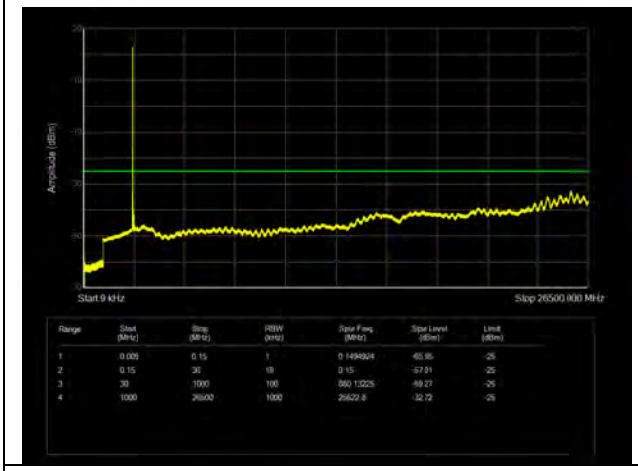
LTE Band 7 15MHz CH- Low 9kHz~26.5GHz



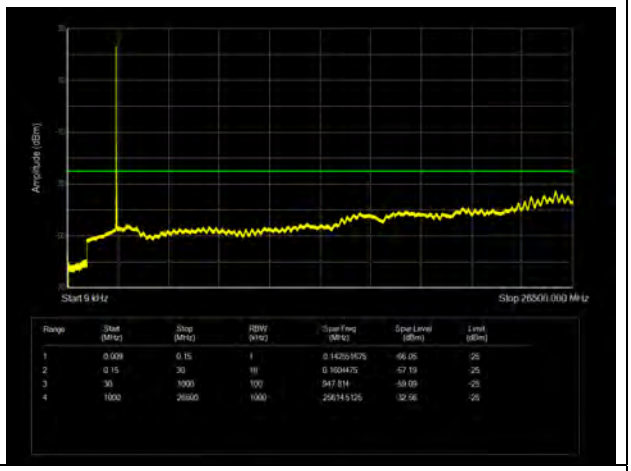
LTE Band 7 20MHz CH-Low 9kHz~26.5GHz



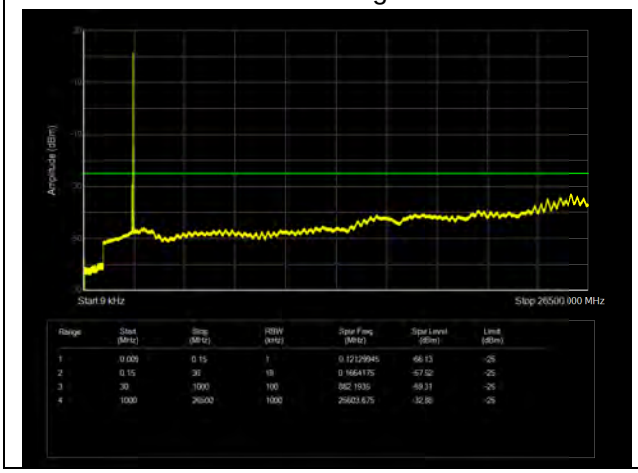
LTE Band 7 15MHz CH- Middle 9kHz~26.5GHz



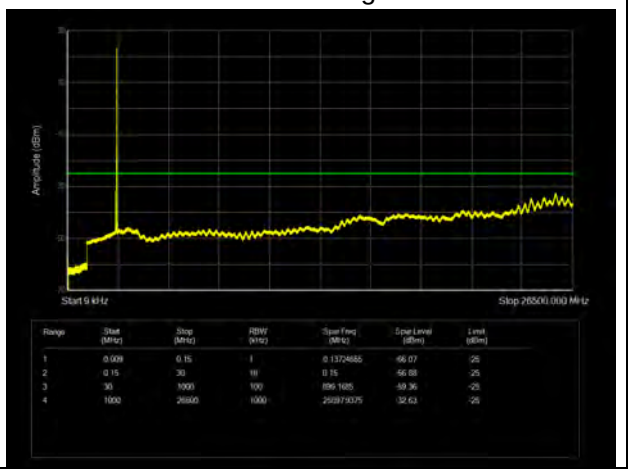
LTE Band 7 20MHz CH- Middle 9kHz~26.5GHz



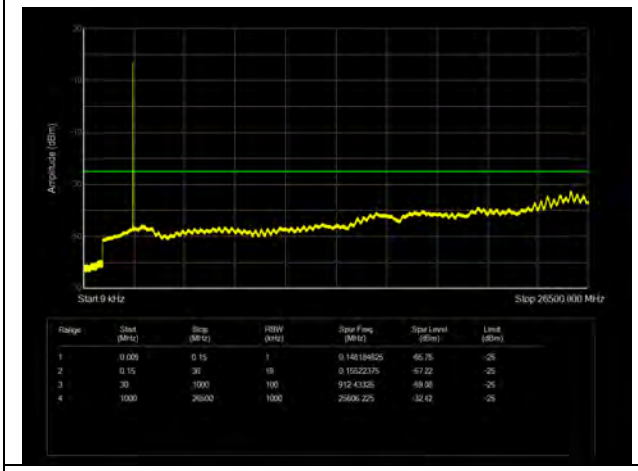
LTE Band 7 15MHz CH-High 9kHz~26.5GHz



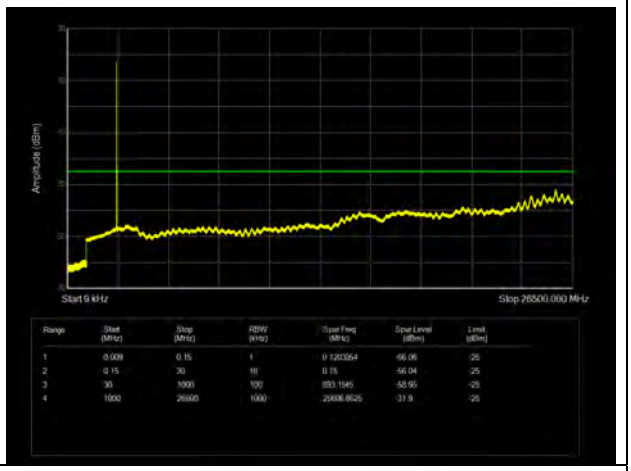
LTE Band 7 20MHz CH- High 9kHz~26.5GHz



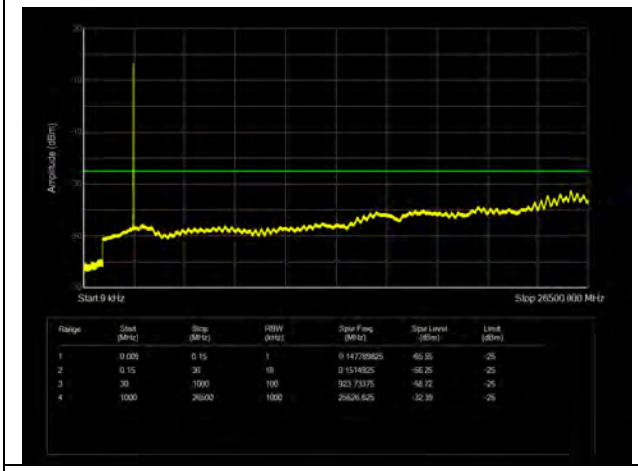
LTE Band 38 5MHz CH-Low 9kHz~26.5GHz



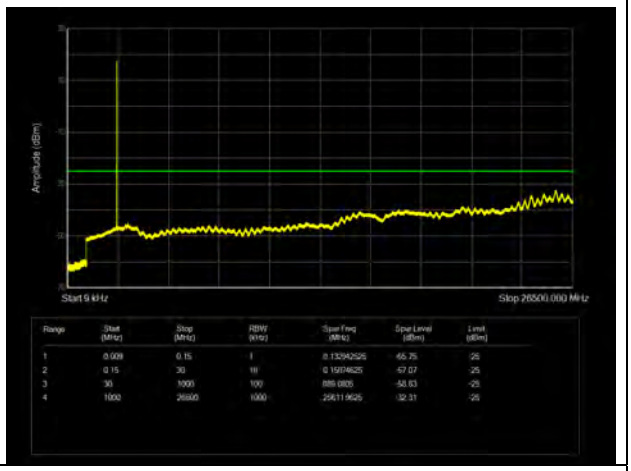
LTE Band 38 10MHz CH- Low 9kHz~26.5GHz



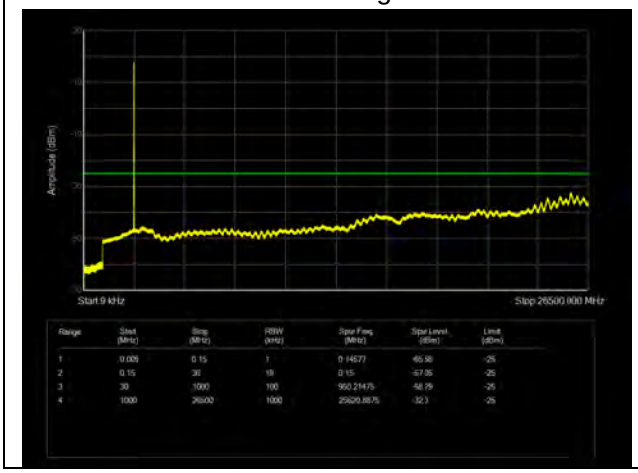
LTE Band 38 5MHz CH- Middle 9kHz~26.5GHz



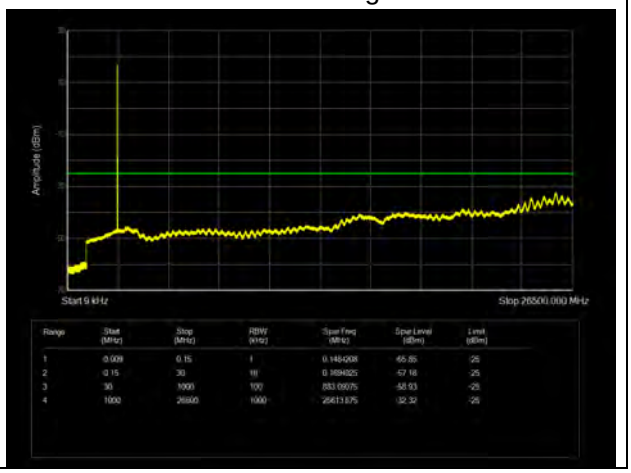
LTE Band 38 10MHz CH- Middle 9kHz~26.5GHz



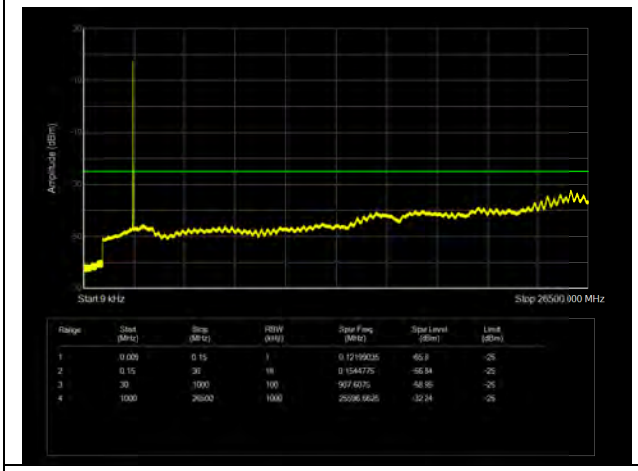
LTE Band 38 5MHz CH- High 9kHz~26.5GHz



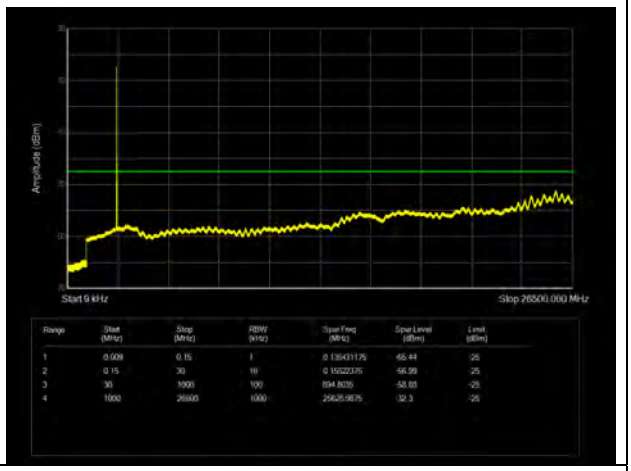
LTE Band 38 10MHz CH-High 9kHz~26.5GHz



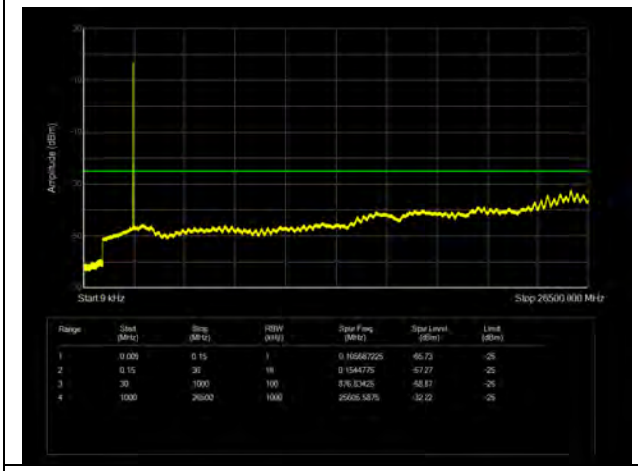
LTE Band 38 15MHz CH- Low 9kHz~26.5GHz



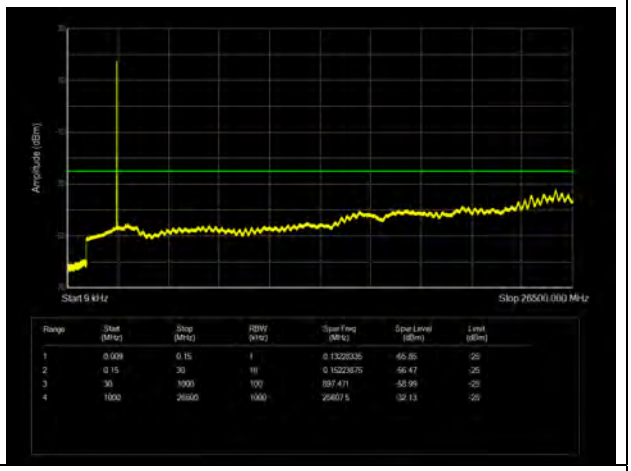
LTE Band 38 20MHz CH-Low 9kHz~20GHz



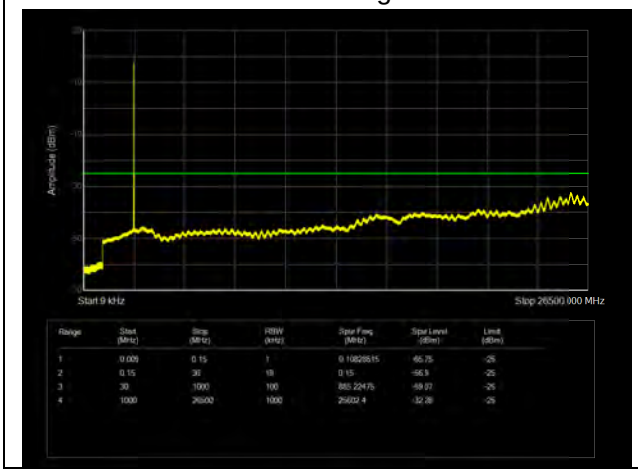
LTE Band 38 15MHz CH- Middle 9kHz~26.5GHz



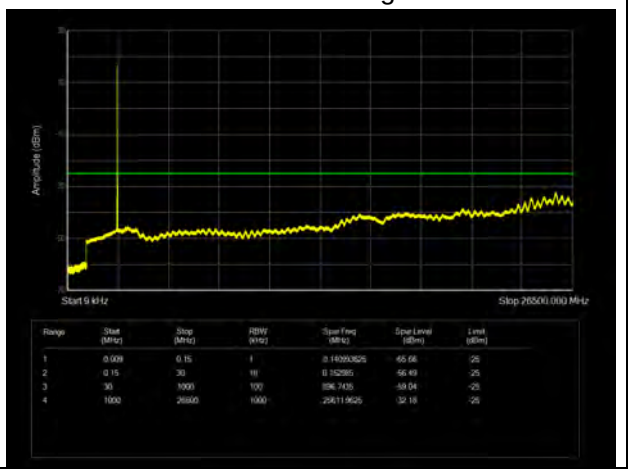
LTE Band 38 20MHz CH- Middle 9kHz~20GHz



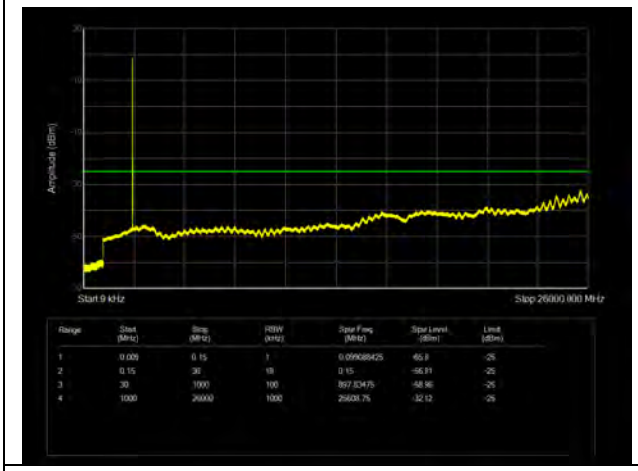
LTE Band 3815MHz CH-High 9kHz~26.5GHz



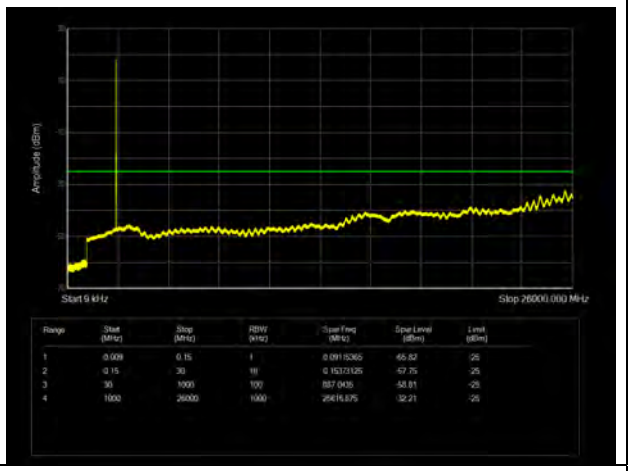
LTE Band 38 20MHz CH- High 9kHz~20GHz



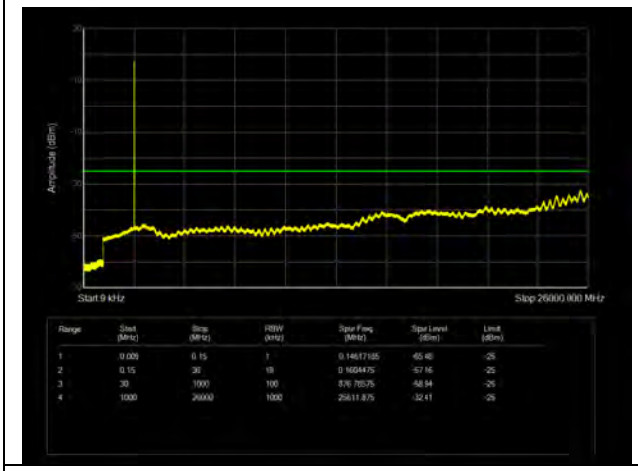
LTE Band 41 5MHz CH-Low 9kHz~26GHz



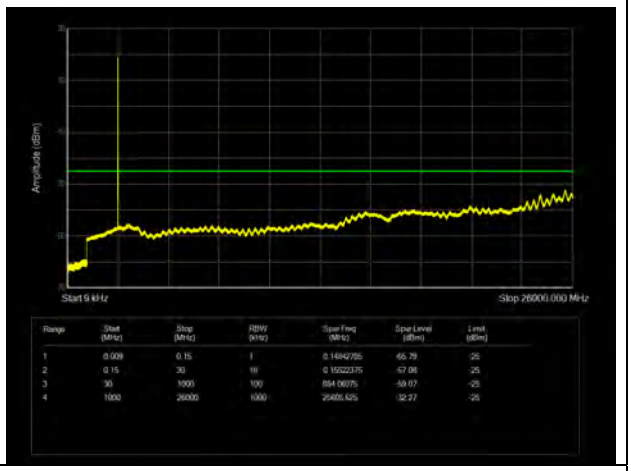
LTE Band 41 10MHz CH- Low 9kHz~26GHz



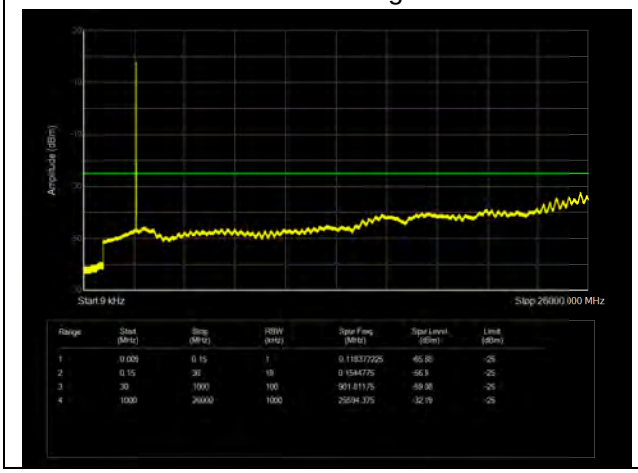
LTE Band 41 5MHz CH- Middle 9kHz~26GHz



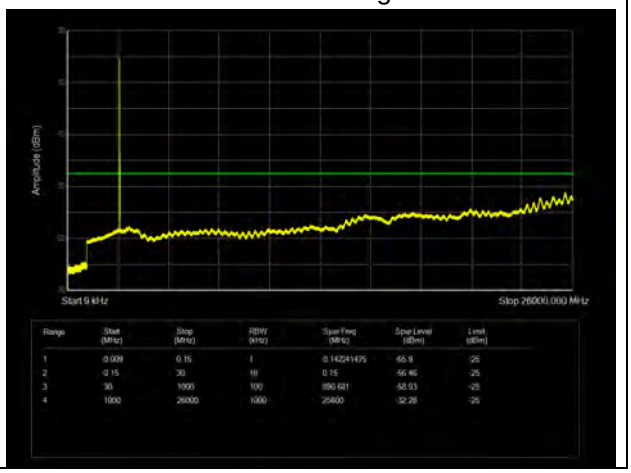
LTE Band 41 10MHz CH- Middle 9kHz~26GHz



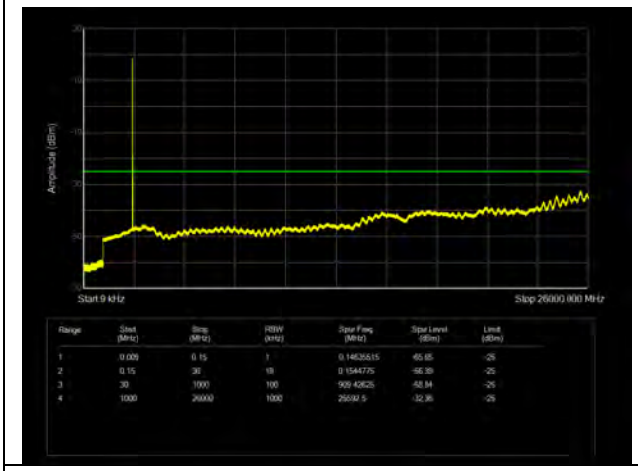
LTE Band 41 5MHz CH- High 9kHz~26GHz



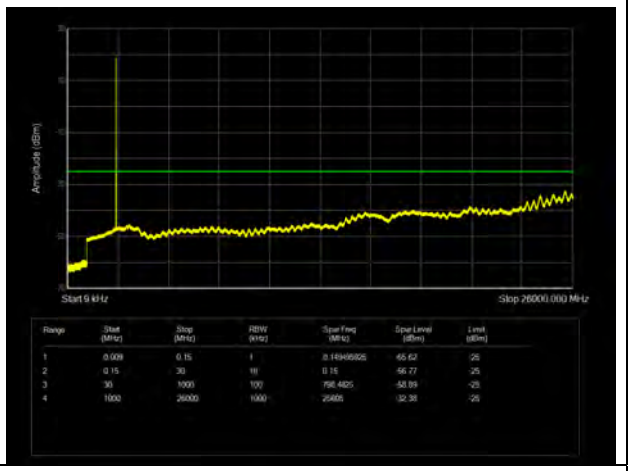
LTE Band 41 10MHz CH-High 9kHz~26GHz



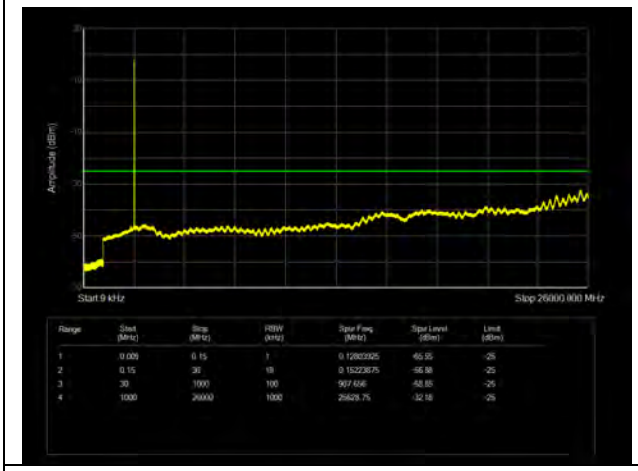
LTE Band 41 15MHz CH- Low 9kHz~26GHz



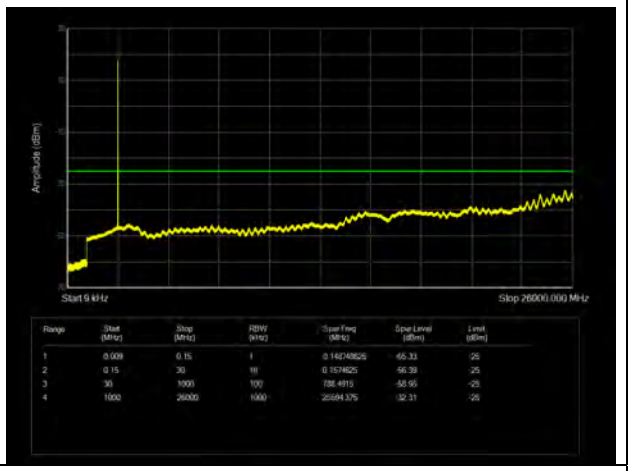
LTE Band 41 20MHz CH-Low 9kHz~26GHz



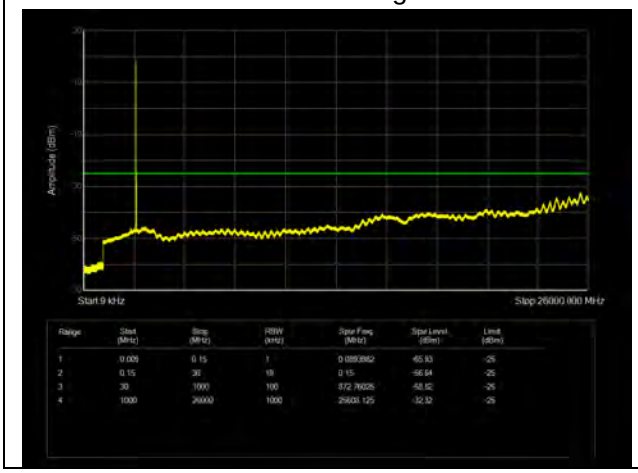
LTE Band 41 15MHz CH- Middle 9kHz~26GHz



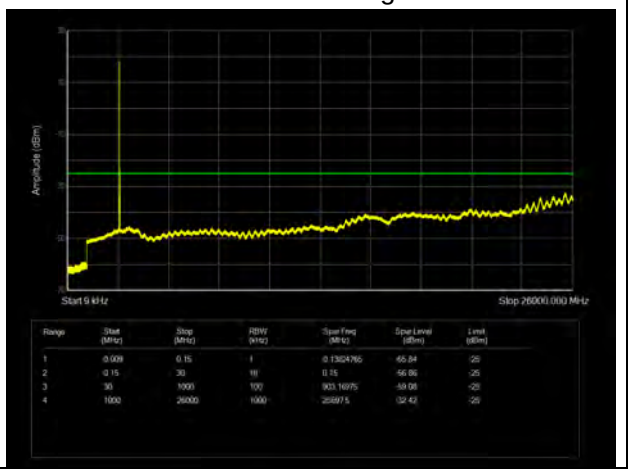
LTE Band 41 20MHz CH- Middle 9kHz~26GHz



LTE Band 41 15MHz CH-High 9kHz~26GHz



LTE Band 41 20MHz CH- High 9kHz~26GHz



5.7 Radiates Spurious Emission

Ambient condition

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

Method of Measurement

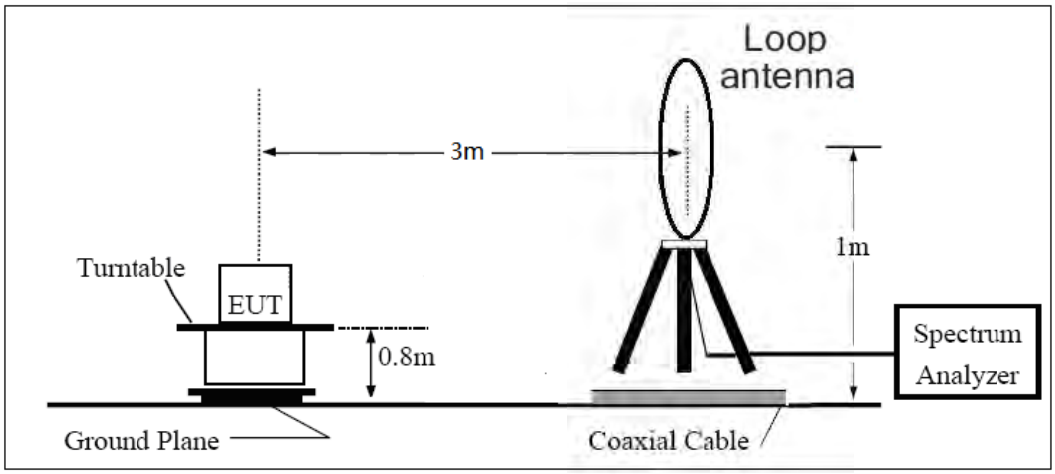
1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable 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=200Hz,VBW=600Hz for 9kHz-150kHz , RBW=10kHz, VBW=30kHz 150kHz-30MHz ,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.

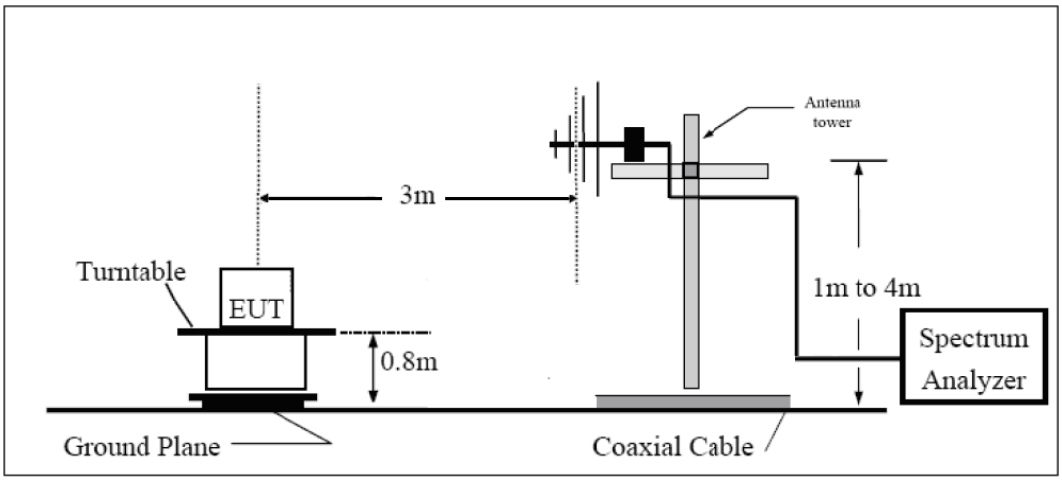
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

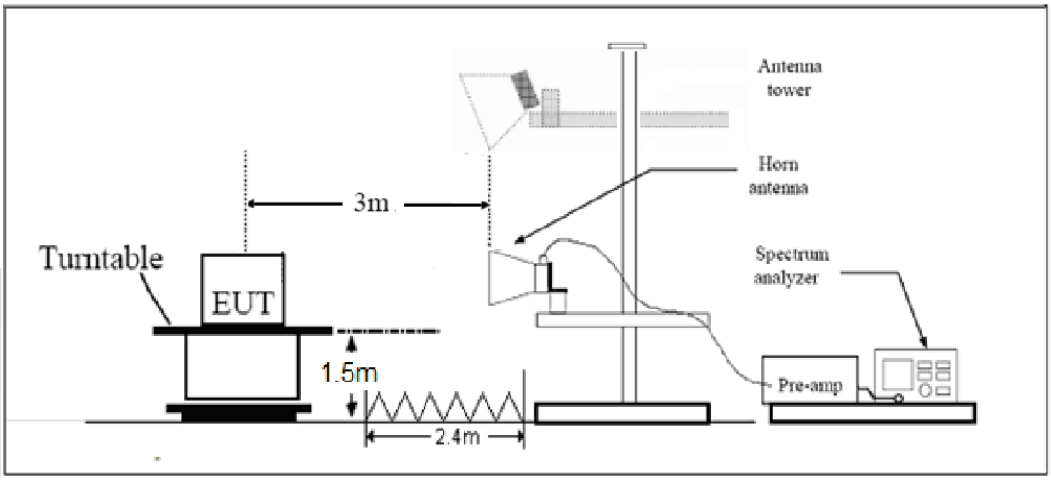
9KHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

Rule Part 27.53(m) 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section.

Part 27.53(a)/(h)/(g) Limit	-13 dBm
Part 27.53(m) Limit	-25 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 7 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	5065.80	-48.66	3.40	12.50	Horizontal	-39.56	-25.0	14.56	180
3	7598.60	-38.84	4.40	12.20	Horizontal	-31.04	-25.0	6.04	135
4	10130.63	-46.75	4.70	11.30	Horizontal	-40.15	-25.0	15.15	315
5	12675.00	-52.54	5.40	13.20	Horizontal	-44.74	-25.0	19.74	180
6	15210.00	-48.47	6.10	13.10	Horizontal	-41.47	-25.0	16.47	45
7	17745.00	-50.05	6.10	14.20	Horizontal	-41.95	-25.0	16.95	0
8	20280.00	--	--	--	--	--	--	--	--
9	22815.00	--	--	--	--	--	--	--	--
10	25350.00	--	--	--	--	--	--	--	--
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 7 QPSK 20MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5052.38	-48.72	3.40	12.50	Horizontal	-39.62	-25.0	14.62	180
3	7605.00	-38.53	4.40	12.20	Horizontal	-30.73	-25.0	5.73	45
4	10140.00	-46.52	4.70	11.30	Horizontal	-39.92	-25.0	14.92	90
5	12675.00	-51.74	5.40	13.20	Horizontal	-43.94	-25.0	18.94	90
6	15210.00	-48.96	6.10	13.10	Horizontal	-41.96	-25.0	16.96	315
7	17745.00	-50.99	6.10	14.20	Horizontal	-42.89	-25.0	17.89	0
8	20280.00	--	--	--	--	--	--	--	--
9	22815.00	--	--	--	--	--	--	--	--
10	25350.00	--	--	--	--	--	--	--	--
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 38 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	5190.00	-46.59	3.20	12.50	Horizontal	-37.29	-25.0	12.29	270
3	7785.00	-38.99	4.40	12.30	Horizontal	-31.09	-25.0	6.09	180
4	10380.00	-47.57	4.70	11.80	Horizontal	-40.47	-25.0	15.47	315
5	12975.00	-52.31	5.40	14.00	Horizontal	-43.71	-25.0	18.71	135
6	15570.00	-52.18	6.10	16.80	Horizontal	-41.48	-25.0	16.48	45
7	18165.00	--	--	--	--	--	--	--	--
8	20760.00	--	--	--	--	--	--	--	--
9	23355.00	--	--	--	--	--	--	--	--
10	25950.00	--	--	--	--	--	--	--	--
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 38 QPSK 20MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5190.00	-40.95	3.20	12.50	Horizontal	-31.65	-25.0	6.65	45
3	7785.00	-46.01	4.40	12.30	Horizontal	-38.11	-25.0	13.11	90
4	10380.00	-48.03	4.70	11.80	Horizontal	-40.93	-25.0	15.93	180
5	12975.00	-52.72	5.40	14.00	Horizontal	-44.12	-25.0	19.12	315
6	15570.00	-52.69	6.10	16.80	Horizontal	-41.99	-25.0	16.99	0
7	18165.00	--	--	--	--	--	--	--	--
8	20760.00	--	--	--	--	--	--	--	--
9	23355.00	--	--	--	--	--	--	--	--
10	25950.00	--	--	--	--	--	--	--	--
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 41 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	5181.75	-47.05	3.20	12.50	Horizontal	-37.75	-25.0	12.75	45
3	7772.25	-40.35	4.40	12.30	Horizontal	-32.45	-25.0	7.45	180
4	9994.00	-53.48	4.70	11.80	Horizontal	-46.38	-25.0	21.38	270
5	12492.50	-53.65	5.40	14.00	Horizontal	-45.05	-25.0	20.05	45
6	14991.00	-53.08	6.10	16.80	Horizontal	-42.38	-25.0	17.38	0
7	17489.50	-50.32	5.70	14.15	Horizontal	-41.87	-25.0	16.87	90
8	19988.00	--	--	--	--	--	--	--	--
9	22486.50	--	--	--	--	--	--	--	--
10	24985.00	--	--	--	--	--	--	--	--
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 41 QPSK 20MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5186.00	-47.26	3.20	12.50	Horizontal	-37.96	-25.0	12.96	45
3	7779.00	-39.66	4.40	12.30	Horizontal	-31.76	-25.0	6.76	90
4	10372.00	-46.90	4.70	11.80	Horizontal	-39.80	-25.0	14.80	180
5	12965.00	-52.36	5.40	14.00	Horizontal	-43.76	-25.0	18.76	315
6	15558.00	-52.10	6.10	16.80	Horizontal	-41.40	-25.0	16.40	270
7	18151.00	--	--	--	--	--	--	--	--
8	20744.00	--	--	--	--	--	--	--	--
9	23337.00	--	--	--	--	--	--	--	--
10	25930.00	--	--	--	--	--	--	--	--
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2020-05-18	2021-05-17
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	/	/
Spectrum Analyzer	Key sight	N9010A	MY50210259	2020-05-18	2021-05-17
Signal Analyzer	R&S	FSV30	100815	2020-12-13	2021-12-12
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2020-04-02	2023-04-01
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	391	2019-12-16	2021-12-15
Horn Antenna	R&S	HF907	102723	2018-08-11	2021-08-10
Horn Antenna	ETS-Lindgren	3160-09	00102643	2018-06-20	2021-06-19
Signal generator	R&S	SMB 100A	102594	2020-05-18	2021-05-17
Climatic Chamber	ESPEC	SU-242	93000506	2020-12-13	2021-12-12
Preampflier	R&S	SCU18	102327	2020-05-18	2021-05-17
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2020-05-18	2021-05-17
RF Cable	Agilent	SMA 15cm	0001	2020-06-12	2020-12-11
Software	R&S	EMC32	9.26.0	/	/

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

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.