



RF TEST REPORT

Applicant Quectel Wireless Solutions Co., Ltd
FCC ID XMR202006EC25AUX
Product LTE Module
Brand Quectel
Model EC25-AUX, EC25-AUX MINIPCIE
Report No. R2108A0762-R3
Issue Date December 1, 2021

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

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Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	RF Power Output and Effective Isotropic Radiated Power	2.1046 27.50(d)(4) /27.50(h)(2)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edge Compliance	27.53(h) /27.53(m)	PASS
4	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
5	Frequency Stability	2.1055 / 27.54	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 /27.53(h) /27.53(m)	PASS
7	Radiates Spurious Emission	2.1053 /27.53(h) /27.53(m)	PASS

Date of Testing: (Original) April 12, 2018~ April 18, 2018 and May 12, 2020~ May 13, 2020
(Variant) September 28, 2021~ October 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.

EC25-AUX, EC25-AUX MINIPCIE (Report No.: R2108A0762-R3) is a variant model of EC25-AUX, EC25-AUX MINIPCIE (Report No.: R2005A0269-R3). There is only changed the Power Amplifier and Software Version of product.

Tested cases refer to the following table. Please refer to Appendix C for Verify data

Test Case	Original	Variant
RF Power Output and Effective Radiated Power	PASS	Retest(LTE band4/7)
Occupied Bandwidth	PASS	Verify the worst combination of each frequency band(LTE band4/7)
Band Edge Compliance	PASS	Verify the worst combination of each frequency band(LTE band4/7)
Peak-to-Average Power Ratio	PASS	Retest(LTE band4/7)
Frequency Stability	PASS	Retest(LTE band4/7)



Spurious Emissions at Antenna Terminals	PASS	Verify the worst combination of each frequency band(LTE band4/7)
Radiates Spurious Emission	PASS	Verify the worst combination of each frequency band(LTE band4/7)

The detailed product change description please refers to the Difference Declaration Letter.



1 Test Laboratory

1.1 Notes of the Test Report

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

1.2. Test facility

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

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

A2LA (Certificate Number: 3857.01)

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

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City: Shanghai
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E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

2.1 Applicant and Manufacturer Information

Applicant	Quectel Wireless Solutions Co., Ltd
Applicant address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Manufacturer	Quectel Wireless Solutions Co., Ltd
Manufacturer address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

2.2 General information

EUT Description			
Model	EC25-AUX, EC25-AUX MINIPCIE		
IMEI:	862708040005709		
Hardware Version	R2.0		
Software Version	EC25AUXGAR08A05M1G		
Power Supply	External supply power		
Antenna Type	The EUT don't have standard Antenna, The Antenna used for testing in this report is the after-market accessory (Dipole Antenna)		
Antenna Gain	Band	Gain(dBi)	
	LTE Band 4	1.94	
	LTE Band 7	2.44	
Test Mode(s)	LTE Band 4; LTE Band 7;		
Test Modulation	(LTE)QPSK 16QAM;		
LTE Category	4		
Maximum E.I.R.P./ E.R.P.	LTE Band 4:	25.65dBm	
	LTE Band 7:	25.92dBm	
Rated Power Supply Voltage:	3.8 V		
Extreme Voltage	Minimum: 3.3 V Maximum: 4.3V		
Extreme Temperature	Lowest: -40°C Highest: +85°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.			

The series model number is: EC25-AUX MINIPCIE. The difference of these models are have different marketing requirement.



3 Applied Standards

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

Test standards:

FCC CFR47 Part 27C (2020)

FCC CFR47 Part 2 (2020)

Reference standard:

ANSI C63.26 (2015)

KDB 971168 D01 Power Meas License Digital Systems v03r01

4 Test Configuration

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

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

Subsequently, only the worst case emissions are reported.

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

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

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

Test items	Modes	Bandwidth (MHz)						Modulation		RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF Power Output and Effective Isotropic Radiated Power	LTE 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	O	O	O	O	O	O
Occupied Bandwidth	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	LTE 4	O	O	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 7	-	-	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	LTE 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	O	O	O	O	O	O
Spurious Emissions at Antenna Terminals	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 7	-	-	O	O	O	O	O	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 4	O	-	O	-	-	O	O	-	O	-	-	-	O	-
	LTE 7	-	-	O	-	O	O	O	-	O	-	-	-	O	-
Note	1. The mark "O" means that this configuration is chosen for testing. 2. The mark "-" means that this configuration is not testing.														

5 Test Case Results

5.1 RF Power Output and Effective Isotropic Radiated Power

Ambient condition

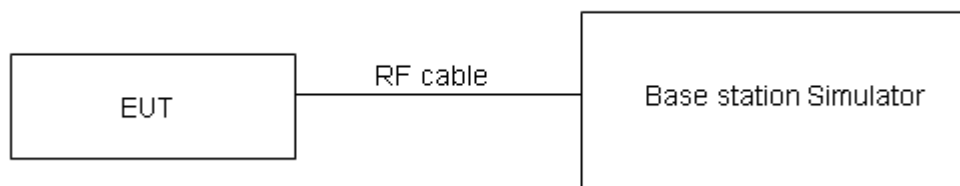
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

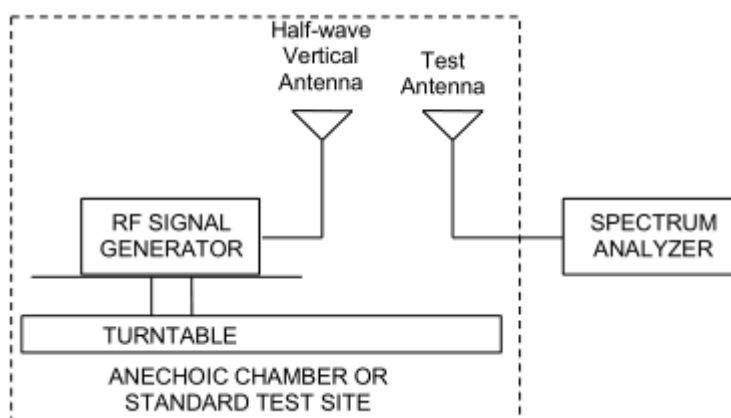
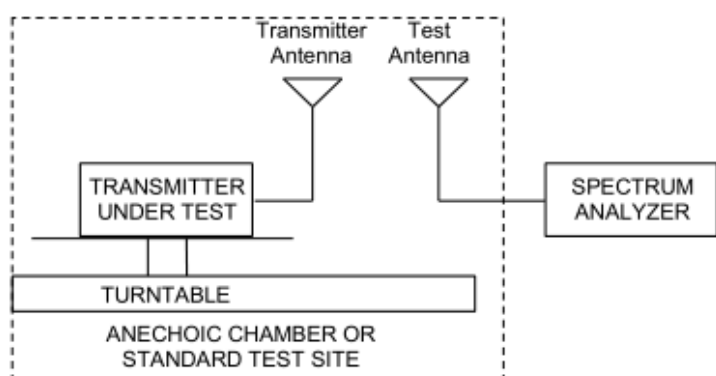
During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
 - a) Connect the equipment as illustrated. Mount the equipment with the manufacturer specified antenna in a vertical orientation on a manufacturer specified mounting surface located on a non-conducting rotating platform of a RF anechoic chamber (preferred) or a standard radiation site.
 - b) Key the transmitter, then rotate the EUT 360° azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading at each angular increment. (Note: several batteries may be needed to offset the effect of battery voltage droop, which should not exceed 5% of the manufactured specified battery voltage during transmission).
 - c) Replace the transmitter under test with a vertically polarized half-wave dipole (or an antenna whose gain is known relative to an ideal half-wave dipole). The center of the antenna should be at the same location as the center of the antenna under test.
 - d) Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading. $LOSS = \text{Generator Output Power (dBm)} - \text{Analyzer reading (dBm)}$
 - e) Determine the effective radiated output power at each angular position from the readings in steps b) and d) using the following equation: $ERP \text{ (dBm)} = LVL \text{ (dBm)} + LOSS \text{ (dB)}$
 - f) The maximum ERP is the maximum value determined in the preceding step.
 - g) When calculating ERP, in addition to knowing the antenna radiation and matching characteristics, it is necessary to know the loss values of all elements (e.g. transmission line attenuation, mismatches, filters, combiners) interposed between the point where transmitter output power is measured, and the point where power is applied to the antenna. ERP can then be calculated as follows:
 $EIRP \text{ (dBm)} = \text{Output Power (dBm)} - \text{Losses (dB)} + \text{Antenna Gain (dBi)}$
 where: dBd refers to gain relative to an ideal dipole.
 $EIRP \text{ (dBm)} = ERP \text{ (dBm)} + 2.15 \text{ (dB.)}$
- The RB allocation refers to section 5.1, using the maximum output power configuration.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.



Note: Area side:2.4mX3.6m

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

Limits

No specific RF power output requirements in part 2.1046.

Rule Part 27.50(d) (4) specifies that “Fixed, mobile and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP”

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



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

Measurement Uncertainty

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

**Test Results**

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	EIRP (dBm)	Verdict
LTE Band4	1.4	19957	1	#0	QPSK	23.35	25.29	PASS
LTE Band4	1.4	19957	1	#Mid	QPSK	23.43	25.37	PASS
LTE Band4	1.4	19957	1	#Max	QPSK	23.27	25.21	PASS
LTE Band4	1.4	19957	3	#0	QPSK	23.04	24.98	PASS
LTE Band4	1.4	19957	3	#Mid	QPSK	23.03	24.97	PASS
LTE Band4	1.4	19957	3	#Max	QPSK	22.99	24.93	PASS
LTE Band4	1.4	19957	6	#0	QPSK	22.18	24.12	PASS
LTE Band4	1.4	19957	1	#0	QAM16	22.21	24.15	PASS
LTE Band4	1.4	19957	1	#Mid	QAM16	22.40	24.34	PASS
LTE Band4	1.4	19957	1	#Max	QAM16	22.23	24.17	PASS
LTE Band4	1.4	19957	3	#0	QAM16	22.18	24.12	PASS
LTE Band4	1.4	19957	3	#Mid	QAM16	22.14	24.08	PASS
LTE Band4	1.4	19957	3	#Max	QAM16	22.05	23.99	PASS
LTE Band4	1.4	19957	6	#0	QAM16	21.26	23.20	PASS
LTE Band4	1.4	20175	1	#0	QPSK	22.83	24.77	PASS
LTE Band4	1.4	20175	1	#Mid	QPSK	23.07	25.01	PASS
LTE Band4	1.4	20175	1	#Max	QPSK	22.86	24.80	PASS
LTE Band4	1.4	20175	3	#0	QPSK	23.06	25.00	PASS
LTE Band4	1.4	20175	3	#Mid	QPSK	23.03	24.97	PASS
LTE Band4	1.4	20175	3	#Max	QPSK	22.99	24.93	PASS
LTE Band4	1.4	20175	6	#0	QPSK	22.08	24.02	PASS
LTE Band4	1.4	20175	1	#0	QAM16	22.68	24.62	PASS
LTE Band4	1.4	20175	1	#Mid	QAM16	22.84	24.78	PASS
LTE Band4	1.4	20175	1	#Max	QAM16	22.30	24.24	PASS
LTE Band4	1.4	20175	3	#0	QAM16	21.89	23.83	PASS
LTE Band4	1.4	20175	3	#Mid	QAM16	21.88	23.82	PASS
LTE Band4	1.4	20175	3	#Max	QAM16	21.88	23.82	PASS
LTE Band4	1.4	20175	6	#0	QAM16	20.85	22.79	PASS
LTE Band4	1.4	20393	1	#0	QPSK	23.45	25.39	PASS
LTE Band4	1.4	20393	1	#Mid	QPSK	23.71	25.65	PASS
LTE Band4	1.4	20393	1	#Max	QPSK	23.59	25.53	PASS
LTE Band4	1.4	20393	3	#0	QPSK	23.42	25.36	PASS
LTE Band4	1.4	20393	3	#Mid	QPSK	23.42	25.36	PASS
LTE Band4	1.4	20393	3	#Max	QPSK	23.58	25.52	PASS
LTE Band4	1.4	20393	6	#0	QPSK	22.37	24.31	PASS
LTE Band4	1.4	20393	1	#0	QAM16	22.15	24.09	PASS
LTE Band4	1.4	20393	1	#Mid	QAM16	22.61	24.55	PASS
LTE Band4	1.4	20393	1	#Max	QAM16	22.43	24.37	PASS
LTE Band4	1.4	20393	3	#0	QAM16	22.56	24.50	PASS



LTE Band4	1.4	20393	3	#Mid	QAM16	22.55	24.49	PASS
LTE Band4	1.4	20393	3	#Max	QAM16	22.74	24.68	PASS
LTE Band4	1.4	20393	6	#0	QAM16	21.31	23.25	PASS
LTE Band4	3	19965	1	#0	QPSK	22.61	24.55	PASS
LTE Band4	3	19965	1	#Mid	QPSK	22.53	24.47	PASS
LTE Band4	3	19965	1	#Max	QPSK	22.82	24.76	PASS
LTE Band4	3	19965	8	#0	QPSK	21.71	23.65	PASS
LTE Band4	3	19965	8	#Mid	QPSK	21.81	23.75	PASS
LTE Band4	3	19965	8	#Max	QPSK	21.93	23.87	PASS
LTE Band4	3	19965	15	#0	QPSK	21.96	23.90	PASS
LTE Band4	3	19965	1	#0	QAM16	21.92	23.86	PASS
LTE Band4	3	19965	1	#Mid	QAM16	21.78	23.72	PASS
LTE Band4	3	19965	1	#Max	QAM16	22.24	24.18	PASS
LTE Band4	3	19965	8	#0	QAM16	20.56	22.50	PASS
LTE Band4	3	19965	8	#Mid	QAM16	20.77	22.71	PASS
LTE Band4	3	19965	8	#Max	QAM16	20.67	22.61	PASS
LTE Band4	3	19965	15	#0	QAM16	21.00	22.94	PASS
LTE Band4	3	20175	1	#0	QPSK	22.84	24.78	PASS
LTE Band4	3	20175	1	#Mid	QPSK	22.58	24.52	PASS
LTE Band4	3	20175	1	#Max	QPSK	22.69	24.63	PASS
LTE Band4	3	20175	8	#0	QPSK	21.73	23.67	PASS
LTE Band4	3	20175	8	#Mid	QPSK	21.82	23.76	PASS
LTE Band4	3	20175	8	#Max	QPSK	21.88	23.82	PASS
LTE Band4	3	20175	15	#0	QPSK	21.86	23.80	PASS
LTE Band4	3	20175	1	#0	QAM16	22.22	24.16	PASS
LTE Band4	3	20175	1	#Mid	QAM16	22.61	24.55	PASS
LTE Band4	3	20175	1	#Max	QAM16	22.19	24.13	PASS
LTE Band4	3	20175	8	#0	QAM16	20.92	22.86	PASS
LTE Band4	3	20175	8	#Mid	QAM16	20.93	22.87	PASS
LTE Band4	3	20175	8	#Max	QAM16	20.89	22.83	PASS
LTE Band4	3	20175	15	#0	QAM16	20.94	22.88	PASS
LTE Band4	3	20385	1	#0	QPSK	23.43	25.37	PASS
LTE Band4	3	20385	1	#Mid	QPSK	23.01	24.95	PASS
LTE Band4	3	20385	1	#Max	QPSK	23.37	25.31	PASS
LTE Band4	3	20385	8	#0	QPSK	22.09	24.03	PASS
LTE Band4	3	20385	8	#Mid	QPSK	22.10	24.04	PASS
LTE Band4	3	20385	8	#Max	QPSK	22.17	24.11	PASS
LTE Band4	3	20385	15	#0	QPSK	22.24	24.18	PASS
LTE Band4	3	20385	1	#0	QAM16	22.13	24.07	PASS
LTE Band4	3	20385	1	#Mid	QAM16	21.86	23.80	PASS
LTE Band4	3	20385	1	#Max	QAM16	22.28	24.22	PASS
LTE Band4	3	20385	8	#0	QAM16	20.91	22.85	PASS
LTE Band4	3	20385	8	#Mid	QAM16	20.92	22.86	PASS



LTE Band4	3	20385	8	#Max	QAM16	20.79	22.73	PASS
LTE Band4	3	20385	15	#0	QAM16	21.15	23.09	PASS
LTE Band4	5	19975	1	#0	QPSK	23.10	25.04	PASS
LTE Band4	5	19975	1	#Mid	QPSK	23.18	25.12	PASS
LTE Band4	5	19975	1	#Max	QPSK	23.25	25.19	PASS
LTE Band4	5	19975	12	#0	QPSK	21.99	23.93	PASS
LTE Band4	5	19975	12	#Mid	QPSK	22.09	24.03	PASS
LTE Band4	5	19975	12	#Max	QPSK	22.16	24.10	PASS
LTE Band4	5	19975	25	#0	QPSK	22.12	24.06	PASS
LTE Band4	5	19975	1	#0	QAM16	22.55	24.49	PASS
LTE Band4	5	19975	1	#Mid	QAM16	21.92	23.86	PASS
LTE Band4	5	19975	1	#Max	QAM16	22.23	24.17	PASS
LTE Band4	5	19975	12	#0	QAM16	20.98	22.92	PASS
LTE Band4	5	19975	12	#Mid	QAM16	20.98	22.92	PASS
LTE Band4	5	19975	12	#Max	QAM16	20.95	22.89	PASS
LTE Band4	5	19975	25	#0	QAM16	21.18	23.12	PASS
LTE Band4	5	20175	1	#0	QPSK	23.11	25.05	PASS
LTE Band4	5	20175	1	#Mid	QPSK	22.94	24.88	PASS
LTE Band4	5	20175	1	#Max	QPSK	22.95	24.89	PASS
LTE Band4	5	20175	12	#0	QPSK	22.17	24.11	PASS
LTE Band4	5	20175	12	#Mid	QPSK	22.17	24.11	PASS
LTE Band4	5	20175	12	#Max	QPSK	22.09	24.03	PASS
LTE Band4	5	20175	25	#0	QPSK	22.12	24.06	PASS
LTE Band4	5	20175	1	#0	QAM16	22.29	24.23	PASS
LTE Band4	5	20175	1	#Mid	QAM16	21.85	23.79	PASS
LTE Band4	5	20175	1	#Max	QAM16	22.16	24.10	PASS
LTE Band4	5	20175	12	#0	QAM16	20.96	22.90	PASS
LTE Band4	5	20175	12	#Mid	QAM16	20.96	22.90	PASS
LTE Band4	5	20175	12	#Max	QAM16	20.87	22.81	PASS
LTE Band4	5	20175	25	#0	QAM16	21.04	22.98	PASS
LTE Band4	5	20375	1	#0	QPSK	23.25	25.19	PASS
LTE Band4	5	20375	1	#Mid	QPSK	23.00	24.94	PASS
LTE Band4	5	20375	1	#Max	QPSK	23.30	25.24	PASS
LTE Band4	5	20375	12	#0	QPSK	22.16	24.10	PASS
LTE Band4	5	20375	12	#Mid	QPSK	22.17	24.11	PASS
LTE Band4	5	20375	12	#Max	QPSK	22.09	24.03	PASS
LTE Band4	5	20375	25	#0	QPSK	22.18	24.12	PASS
LTE Band4	5	20375	1	#0	QAM16	22.20	24.14	PASS
LTE Band4	5	20375	1	#Mid	QAM16	22.21	24.15	PASS
LTE Band4	5	20375	1	#Max	QAM16	22.44	24.38	PASS
LTE Band4	5	20375	12	#0	QAM16	21.04	22.98	PASS
LTE Band4	5	20375	12	#Mid	QAM16	21.05	22.99	PASS
LTE Band4	5	20375	12	#Max	QAM16	21.05	22.99	PASS



LTE Band4	5	20375	25	#0	QAM16	21.14	23.08	PASS
LTE Band4	10	20000	1	#0	QPSK	22.98	24.92	PASS
LTE Band4	10	20000	1	#Mid	QPSK	23.34	25.28	PASS
LTE Band4	10	20000	1	#Max	QPSK	23.34	25.28	PASS
LTE Band4	10	20000	25	#0	QPSK	22.24	24.18	PASS
LTE Band4	10	20000	25	#Mid	QPSK	22.16	24.10	PASS
LTE Band4	10	20000	25	#Max	QPSK	22.26	24.20	PASS
LTE Band4	10	20000	50	#0	QPSK	22.13	24.07	PASS
LTE Band4	10	20000	1	#0	QAM16	22.09	24.03	PASS
LTE Band4	10	20000	1	#Mid	QAM16	22.26	24.20	PASS
LTE Band4	10	20000	1	#Max	QAM16	22.42	24.36	PASS
LTE Band4	10	20000	25	#0	QAM16	21.20	23.14	PASS
LTE Band4	10	20000	25	#Mid	QAM16	21.29	23.23	PASS
LTE Band4	10	20000	25	#Max	QAM16	21.15	23.09	PASS
LTE Band4	10	20000	50	#0	QAM16	21.12	23.06	PASS
LTE Band4	10	20175	1	#0	QPSK	23.01	24.95	PASS
LTE Band4	10	20175	1	#Mid	QPSK	23.03	24.97	PASS
LTE Band4	10	20175	1	#Max	QPSK	22.97	24.91	PASS
LTE Band4	10	20175	25	#0	QPSK	22.13	24.07	PASS
LTE Band4	10	20175	25	#Mid	QPSK	22.13	24.07	PASS
LTE Band4	10	20175	25	#Max	QPSK	22.05	23.99	PASS
LTE Band4	10	20175	50	#0	QPSK	22.11	24.05	PASS
LTE Band4	10	20175	1	#0	QAM16	22.71	24.65	PASS
LTE Band4	10	20175	1	#Mid	QAM16	22.70	24.64	PASS
LTE Band4	10	20175	1	#Max	QAM16	22.82	24.76	PASS
LTE Band4	10	20175	25	#0	QAM16	21.16	23.10	PASS
LTE Band4	10	20175	25	#Mid	QAM16	21.17	23.11	PASS
LTE Band4	10	20175	25	#Max	QAM16	21.19	23.13	PASS
LTE Band4	10	20175	50	#0	QAM16	21.17	23.11	PASS
LTE Band4	10	20350	1	#0	QPSK	23.02	24.96	PASS
LTE Band4	10	20350	1	#Mid	QPSK	23.03	24.97	PASS
LTE Band4	10	20350	1	#Max	QPSK	23.15	25.09	PASS
LTE Band4	10	20350	25	#0	QPSK	22.11	24.05	PASS
LTE Band4	10	20350	25	#Mid	QPSK	22.12	24.06	PASS
LTE Band4	10	20350	25	#Max	QPSK	22.22	24.16	PASS
LTE Band4	10	20350	50	#0	QPSK	22.23	24.17	PASS
LTE Band4	10	20350	1	#0	QAM16	21.86	23.80	PASS
LTE Band4	10	20350	1	#Mid	QAM16	21.51	23.45	PASS
LTE Band4	10	20350	1	#Max	QAM16	22.01	23.95	PASS
LTE Band4	10	20350	25	#0	QAM16	21.09	23.03	PASS
LTE Band4	10	20350	25	#Mid	QAM16	21.10	23.04	PASS
LTE Band4	10	20350	25	#Max	QAM16	21.12	23.06	PASS
LTE Band4	10	20350	50	#0	QAM16	21.21	23.15	PASS



LTE Band4	15	20025	1	#0	QPSK	23.35	25.29	PASS
LTE Band4	15	20025	1	#Mid	QPSK	23.32	25.26	PASS
LTE Band4	15	20025	1	#Max	QPSK	23.07	25.01	PASS
LTE Band4	15	20025	36	#0	QPSK	21.98	23.92	PASS
LTE Band4	15	20025	36	#Mid	QPSK	22.22	24.16	PASS
LTE Band4	15	20025	36	#Max	QPSK	22.23	24.17	PASS
LTE Band4	15	20025	75	#0	QPSK	22.34	24.28	PASS
LTE Band4	15	20025	1	#0	QAM16	21.91	23.85	PASS
LTE Band4	15	20025	1	#Mid	QAM16	21.99	23.93	PASS
LTE Band4	15	20025	1	#Max	QAM16	22.09	24.03	PASS
LTE Band4	15	20025	36	#0	QAM16	21.19	23.13	PASS
LTE Band4	15	20025	36	#Mid	QAM16	21.10	23.04	PASS
LTE Band4	15	20025	36	#Max	QAM16	21.28	23.22	PASS
LTE Band4	15	20025	75	#0	QAM16	21.18	23.12	PASS
LTE Band4	15	20175	1	#0	QPSK	22.99	24.93	PASS
LTE Band4	15	20175	1	#Mid	QPSK	22.85	24.79	PASS
LTE Band4	15	20175	1	#Max	QPSK	22.94	24.88	PASS
LTE Band4	15	20175	36	#0	QPSK	22.03	23.97	PASS
LTE Band4	15	20175	36	#Mid	QPSK	22.03	23.97	PASS
LTE Band4	15	20175	36	#Max	QPSK	22.03	23.97	PASS
LTE Band4	15	20175	75	#0	QPSK	22.00	23.94	PASS
LTE Band4	15	20175	1	#0	QAM16	22.57	24.51	PASS
LTE Band4	15	20175	1	#Mid	QAM16	22.41	24.35	PASS
LTE Band4	15	20175	1	#Max	QAM16	22.55	24.49	PASS
LTE Band4	15	20175	36	#0	QAM16	20.85	22.79	PASS
LTE Band4	15	20175	36	#Mid	QAM16	20.86	22.80	PASS
LTE Band4	15	20175	36	#Max	QAM16	20.86	22.80	PASS
LTE Band4	15	20175	75	#0	QAM16	21.03	22.97	PASS
LTE Band4	15	20325	1	#0	QPSK	23.09	25.03	PASS
LTE Band4	15	20325	1	#Mid	QPSK	22.93	24.87	PASS
LTE Band4	15	20325	1	#Max	QPSK	22.94	24.88	PASS
LTE Band4	15	20325	36	#0	QPSK	22.12	24.06	PASS
LTE Band4	15	20325	36	#Mid	QPSK	22.13	24.07	PASS
LTE Band4	15	20325	36	#Max	QPSK	22.00	23.94	PASS
LTE Band4	15	20325	75	#0	QPSK	22.12	24.06	PASS
LTE Band4	15	20325	1	#0	QAM16	21.70	23.64	PASS
LTE Band4	15	20325	1	#Mid	QAM16	21.85	23.79	PASS
LTE Band4	15	20325	1	#Max	QAM16	21.86	23.80	PASS
LTE Band4	15	20325	36	#0	QAM16	21.00	22.94	PASS
LTE Band4	15	20325	36	#Mid	QAM16	21.00	22.94	PASS
LTE Band4	15	20325	36	#Max	QAM16	21.00	22.94	PASS
LTE Band4	15	20325	75	#0	QAM16	21.16	23.10	PASS
LTE Band4	20	20050	1	#0	QPSK	22.99	24.93	PASS



LTE Band4	20	20050	1	#Mid	QPSK	23.13	25.07	PASS
LTE Band4	20	20050	1	#Max	QPSK	22.84	24.78	PASS
LTE Band4	20	20050	50	#0	QPSK	22.23	24.17	PASS
LTE Band4	20	20050	50	#Mid	QPSK	22.22	24.16	PASS
LTE Band4	20	20050	50	#Max	QPSK	22.07	24.01	PASS
LTE Band4	20	20050	100	#0	QPSK	22.14	24.08	PASS
LTE Band4	20	20050	1	#0	QAM16	21.92	23.86	PASS
LTE Band4	20	20050	1	#Mid	QAM16	22.06	24.00	PASS
LTE Band4	20	20050	1	#Max	QAM16	21.88	23.82	PASS
LTE Band4	20	20050	50	#0	QAM16	21.23	23.17	PASS
LTE Band4	20	20050	50	#Mid	QAM16	21.23	23.17	PASS
LTE Band4	20	20050	50	#Max	QAM16	21.32	23.26	PASS
LTE Band4	20	20050	100	#0	QAM16	21.36	23.30	PASS
LTE Band4	20	20175	1	#0	QPSK	23.20	25.14	PASS
LTE Band4	20	20175	1	#Mid	QPSK	23.07	25.01	PASS
LTE Band4	20	20175	1	#Max	QPSK	23.07	25.01	PASS
LTE Band4	20	20175	50	#0	QPSK	22.00	23.94	PASS
LTE Band4	20	20175	50	#Mid	QPSK	21.96	23.90	PASS
LTE Band4	20	20175	50	#Max	QPSK	21.97	23.91	PASS
LTE Band4	20	20175	100	#0	QPSK	22.10	24.04	PASS
LTE Band4	20	20175	1	#0	QAM16	21.71	23.65	PASS
LTE Band4	20	20175	1	#Mid	QAM16	21.73	23.67	PASS
LTE Band4	20	20175	1	#Max	QAM16	21.78	23.72	PASS
LTE Band4	20	20175	50	#0	QAM16	21.09	23.03	PASS
LTE Band4	20	20175	50	#Mid	QAM16	20.93	22.87	PASS
LTE Band4	20	20175	50	#Max	QAM16	21.14	23.08	PASS
LTE Band4	20	20175	100	#0	QAM16	21.18	23.12	PASS
LTE Band4	20	20300	1	#0	QPSK	23.09	25.03	PASS
LTE Band4	20	20300	1	#Mid	QPSK	23.13	25.07	PASS
LTE Band4	20	20300	1	#Max	QPSK	22.98	24.92	PASS
LTE Band4	20	20300	50	#0	QPSK	22.20	24.14	PASS
LTE Band4	20	20300	50	#Mid	QPSK	22.21	24.15	PASS
LTE Band4	20	20300	50	#Max	QPSK	22.22	24.16	PASS
LTE Band4	20	20300	100	#0	QPSK	22.26	24.20	PASS
LTE Band4	20	20300	1	#0	QAM16	21.97	23.91	PASS
LTE Band4	20	20300	1	#Mid	QAM16	22.24	24.18	PASS
LTE Band4	20	20300	1	#Max	QAM16	22.05	23.99	PASS
LTE Band4	20	20300	50	#0	QAM16	21.22	23.16	PASS
LTE Band4	20	20300	50	#Mid	QAM16	21.23	23.17	PASS
LTE Band4	20	20300	50	#Max	QAM16	21.25	23.19	PASS
LTE Band4	20	20300	100	#0	QAM16	21.25	23.19	PASS



Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	EIRP (dBm)	Verdict
LTE Band7	5	20775	1	#0	QPSK	22.90	25.34	PASS
LTE Band7	5	20775	1	#Mid	QPSK	22.99	25.43	PASS
LTE Band7	5	20775	1	#Max	QPSK	23.05	25.49	PASS
LTE Band7	5	20775	12	#0	QPSK	22.27	24.71	PASS
LTE Band7	5	20775	12	#Mid	QPSK	22.27	24.71	PASS
LTE Band7	5	20775	12	#Max	QPSK	22.30	24.74	PASS
LTE Band7	5	20775	25	#0	QPSK	22.29	24.73	PASS
LTE Band7	5	20775	1	#0	QAM16	21.90	24.34	PASS
LTE Band7	5	20775	1	#Mid	QAM16	21.95	24.39	PASS
LTE Band7	5	20775	1	#Max	QAM16	22.15	24.59	PASS
LTE Band7	5	20775	12	#0	QAM16	21.05	23.49	PASS
LTE Band7	5	20775	12	#Mid	QAM16	21.11	23.55	PASS
LTE Band7	5	20775	12	#Max	QAM16	21.14	23.58	PASS
LTE Band7	5	20775	25	#0	QAM16	21.17	23.61	PASS
LTE Band7	5	21100	1	#0	QPSK	23.17	25.61	PASS
LTE Band7	5	21100	1	#Mid	QPSK	23.22	25.66	PASS
LTE Band7	5	21100	1	#Max	QPSK	23.27	25.71	PASS
LTE Band7	5	21100	12	#0	QPSK	22.17	24.61	PASS
LTE Band7	5	21100	12	#Mid	QPSK	22.18	24.62	PASS
LTE Band7	5	21100	12	#Max	QPSK	22.32	24.76	PASS
LTE Band7	5	21100	25	#0	QPSK	22.29	24.73	PASS
LTE Band7	5	21100	1	#0	QAM16	22.21	24.65	PASS
LTE Band7	5	21100	1	#Mid	QAM16	22.11	24.55	PASS
LTE Band7	5	21100	1	#Max	QAM16	22.16	24.60	PASS
LTE Band7	5	21100	12	#0	QAM16	21.10	23.54	PASS
LTE Band7	5	21100	12	#Mid	QAM16	21.10	23.54	PASS
LTE Band7	5	21100	12	#Max	QAM16	21.14	23.58	PASS
LTE Band7	5	21100	25	#0	QAM16	21.16	23.60	PASS
LTE Band7	5	21425	1	#0	QPSK	23.09	25.53	PASS
LTE Band7	5	21425	1	#Mid	QPSK	22.90	25.34	PASS
LTE Band7	5	21425	1	#Max	QPSK	23.07	25.51	PASS
LTE Band7	5	21425	12	#0	QPSK	22.13	24.57	PASS
LTE Band7	5	21425	12	#Mid	QPSK	22.16	24.60	PASS
LTE Band7	5	21425	12	#Max	QPSK	22.06	24.50	PASS
LTE Band7	5	21425	25	#0	QPSK	22.09	24.53	PASS
LTE Band7	5	21425	1	#0	QAM16	22.29	24.73	PASS
LTE Band7	5	21425	1	#Mid	QAM16	22.08	24.52	PASS
LTE Band7	5	21425	1	#Max	QAM16	22.35	24.79	PASS
LTE Band7	5	21425	12	#0	QAM16	20.88	23.32	PASS
LTE Band7	5	21425	12	#Mid	QAM16	20.79	23.23	PASS



LTE Band7	5	21425	12	#Max	QAM16	20.81	23.25	PASS
LTE Band7	5	21425	25	#0	QAM16	20.95	23.39	PASS
LTE Band7	10	20800	1	#0	QPSK	23.24	25.68	PASS
LTE Band7	10	20800	1	#Mid	QPSK	23.09	25.53	PASS
LTE Band7	10	20800	1	#Max	QPSK	22.99	25.43	PASS
LTE Band7	10	20800	25	#0	QPSK	22.27	24.71	PASS
LTE Band7	10	20800	25	#Mid	QPSK	22.26	24.70	PASS
LTE Band7	10	20800	25	#Max	QPSK	22.23	24.67	PASS
LTE Band7	10	20800	50	#0	QPSK	22.25	24.69	PASS
LTE Band7	10	20800	1	#0	QAM16	22.10	24.54	PASS
LTE Band7	10	20800	1	#Mid	QAM16	22.34	24.78	PASS
LTE Band7	10	20800	1	#Max	QAM16	22.16	24.60	PASS
LTE Band7	10	20800	25	#0	QAM16	21.01	23.45	PASS
LTE Band7	10	20800	25	#Mid	QAM16	21.01	23.45	PASS
LTE Band7	10	20800	25	#Max	QAM16	21.04	23.48	PASS
LTE Band7	10	20800	50	#0	QAM16	21.14	23.58	PASS
LTE Band7	10	21100	1	#0	QPSK	23.26	25.70	PASS
LTE Band7	10	21100	1	#Mid	QPSK	23.41	25.85	PASS
LTE Band7	10	21100	1	#Max	QPSK	23.22	25.66	PASS
LTE Band7	10	21100	25	#0	QPSK	22.14	24.58	PASS
LTE Band7	10	21100	25	#Mid	QPSK	22.15	24.59	PASS
LTE Band7	10	21100	25	#Max	QPSK	22.26	24.70	PASS
LTE Band7	10	21100	50	#0	QPSK	22.25	24.69	PASS
LTE Band7	10	21100	1	#0	QAM16	22.70	25.14	PASS
LTE Band7	10	21100	1	#Mid	QAM16	23.13	25.57	PASS
LTE Band7	10	21100	1	#Max	QAM16	23.22	25.66	PASS
LTE Band7	10	21100	25	#0	QAM16	21.28	23.72	PASS
LTE Band7	10	21100	25	#Mid	QAM16	21.30	23.74	PASS
LTE Band7	10	21100	25	#Max	QAM16	21.41	23.85	PASS
LTE Band7	10	21100	50	#0	QAM16	21.17	23.61	PASS
LTE Band7	10	21400	1	#0	QPSK	23.27	25.71	PASS
LTE Band7	10	21400	1	#Mid	QPSK	23.28	25.72	PASS
LTE Band7	10	21400	1	#Max	QPSK	23.48	25.92	PASS
LTE Band7	10	21400	25	#0	QPSK	22.25	24.69	PASS
LTE Band7	10	21400	25	#Mid	QPSK	22.29	24.73	PASS
LTE Band7	10	21400	25	#Max	QPSK	22.15	24.59	PASS
LTE Band7	10	21400	50	#0	QPSK	22.15	24.59	PASS
LTE Band7	10	21400	1	#0	QAM16	22.02	24.46	PASS
LTE Band7	10	21400	1	#Mid	QAM16	22.11	24.55	PASS
LTE Band7	10	21400	1	#Max	QAM16	21.60	24.04	PASS
LTE Band7	10	21400	25	#0	QAM16	21.23	23.67	PASS
LTE Band7	10	21400	25	#Mid	QAM16	21.26	23.70	PASS
LTE Band7	10	21400	25	#Max	QAM16	21.33	23.77	PASS



LTE Band7	10	21400	50	#0	QAM16	21.19	23.63	PASS
LTE Band7	15	20825	1	#0	QPSK	23.29	25.73	PASS
LTE Band7	15	20825	1	#Mid	QPSK	23.17	25.61	PASS
LTE Band7	15	20825	1	#Max	QPSK	23.06	25.50	PASS
LTE Band7	15	20825	36	#0	QPSK	22.26	24.70	PASS
LTE Band7	15	20825	36	#Mid	QPSK	22.25	24.69	PASS
LTE Band7	15	20825	36	#Max	QPSK	22.26	24.70	PASS
LTE Band7	15	20825	75	#0	QPSK	22.20	24.64	PASS
LTE Band7	15	20825	1	#0	QAM16	22.28	24.72	PASS
LTE Band7	15	20825	1	#Mid	QAM16	22.25	24.69	PASS
LTE Band7	15	20825	1	#Max	QAM16	22.16	24.60	PASS
LTE Band7	15	20825	36	#0	QAM16	21.21	23.65	PASS
LTE Band7	15	20825	36	#Mid	QAM16	21.21	23.65	PASS
LTE Band7	15	20825	36	#Max	QAM16	21.33	23.77	PASS
LTE Band7	15	20825	75	#0	QAM16	21.28	23.72	PASS
LTE Band7	15	21100	1	#0	QPSK	23.07	25.51	PASS
LTE Band7	15	21100	1	#Mid	QPSK	22.88	25.32	PASS
LTE Band7	15	21100	1	#Max	QPSK	22.87	25.31	PASS
LTE Band7	15	21100	36	#0	QPSK	22.14	24.58	PASS
LTE Band7	15	21100	36	#Mid	QPSK	22.15	24.59	PASS
LTE Band7	15	21100	36	#Max	QPSK	22.27	24.71	PASS
LTE Band7	15	21100	75	#0	QPSK	22.24	24.68	PASS
LTE Band7	15	21100	1	#0	QAM16	22.74	25.18	PASS
LTE Band7	15	21100	1	#Mid	QAM16	22.58	25.02	PASS
LTE Band7	15	21100	1	#Max	QAM16	22.58	25.02	PASS
LTE Band7	15	21100	36	#0	QAM16	21.09	23.53	PASS
LTE Band7	15	21100	36	#Mid	QAM16	21.08	23.52	PASS
LTE Band7	15	21100	36	#Max	QAM16	21.22	23.66	PASS
LTE Band7	15	21100	75	#0	QAM16	21.20	23.64	PASS
LTE Band7	15	21375	1	#0	QPSK	22.98	25.42	PASS
LTE Band7	15	21375	1	#Mid	QPSK	22.91	25.35	PASS
LTE Band7	15	21375	1	#Max	QPSK	22.95	25.39	PASS
LTE Band7	15	21375	36	#0	QPSK	22.12	24.56	PASS
LTE Band7	15	21375	36	#Mid	QPSK	22.14	24.58	PASS
LTE Band7	15	21375	36	#Max	QPSK	22.03	24.47	PASS
LTE Band7	15	21375	75	#0	QPSK	22.02	24.46	PASS
LTE Band7	15	21375	1	#0	QAM16	21.84	24.28	PASS
LTE Band7	15	21375	1	#Mid	QAM16	21.85	24.29	PASS
LTE Band7	15	21375	1	#Max	QAM16	21.67	24.11	PASS
LTE Band7	15	21375	36	#0	QAM16	20.80	23.24	PASS
LTE Band7	15	21375	36	#Mid	QAM16	20.83	23.27	PASS
LTE Band7	15	21375	36	#Max	QAM16	20.85	23.29	PASS
LTE Band7	15	21375	75	#0	QAM16	20.92	23.36	PASS



LTE Band7	20	20850	1	#0	QPSK	23.16	25.60	PASS
LTE Band7	20	20850	1	#Mid	QPSK	23.15	25.59	PASS
LTE Band7	20	20850	1	#Max	QPSK	22.93	25.37	PASS
LTE Band7	20	20850	50	#0	QPSK	22.18	24.62	PASS
LTE Band7	20	20850	50	#Mid	QPSK	22.17	24.61	PASS
LTE Band7	20	20850	50	#Max	QPSK	22.13	24.57	PASS
LTE Band7	20	20850	100	#0	QPSK	22.11	24.55	PASS
LTE Band7	20	20850	1	#0	QAM16	22.28	24.72	PASS
LTE Band7	20	20850	1	#Mid	QAM16	22.47	24.91	PASS
LTE Band7	20	20850	1	#Max	QAM16	22.12	24.56	PASS
LTE Band7	20	20850	50	#0	QAM16	21.31	23.75	PASS
LTE Band7	20	20850	50	#Mid	QAM16	21.31	23.75	PASS
LTE Band7	20	20850	50	#Max	QAM16	21.18	23.62	PASS
LTE Band7	20	20850	100	#0	QAM16	21.15	23.59	PASS
LTE Band7	20	21100	1	#0	QPSK	22.99	25.43	PASS
LTE Band7	20	21100	1	#Mid	QPSK	23.44	25.88	PASS
LTE Band7	20	21100	1	#Max	QPSK	23.23	25.67	PASS
LTE Band7	20	21100	50	#0	QPSK	22.04	24.48	PASS
LTE Band7	20	21100	50	#Mid	QPSK	22.05	24.49	PASS
LTE Band7	20	21100	50	#Max	QPSK	22.18	24.62	PASS
LTE Band7	20	21100	100	#0	QPSK	22.15	24.59	PASS
LTE Band7	20	21100	1	#0	QAM16	21.74	24.18	PASS
LTE Band7	20	21100	1	#Mid	QAM16	21.68	24.12	PASS
LTE Band7	20	21100	1	#Max	QAM16	21.68	24.12	PASS
LTE Band7	20	21100	50	#0	QAM16	20.94	23.38	PASS
LTE Band7	20	21100	50	#Mid	QAM16	20.95	23.39	PASS
LTE Band7	20	21100	50	#Max	QAM16	21.19	23.63	PASS
LTE Band7	20	21100	100	#0	QAM16	21.22	23.66	PASS
LTE Band7	20	21350	1	#0	QPSK	22.89	25.33	PASS
LTE Band7	20	21350	1	#Mid	QPSK	23.07	25.51	PASS
LTE Band7	20	21350	1	#Max	QPSK	23.24	25.68	PASS
LTE Band7	20	21350	50	#0	QPSK	22.09	24.53	PASS
LTE Band7	20	21350	50	#Mid	QPSK	22.12	24.56	PASS
LTE Band7	20	21350	50	#Max	QPSK	22.04	24.48	PASS
LTE Band7	20	21350	100	#0	QPSK	22.04	24.48	PASS
LTE Band7	20	21350	1	#0	QAM16	22.21	24.65	PASS
LTE Band7	20	21350	1	#Mid	QAM16	22.11	24.55	PASS
LTE Band7	20	21350	1	#Max	QAM16	22.39	24.83	PASS
LTE Band7	20	21350	50	#0	QAM16	21.05	23.49	PASS
LTE Band7	20	21350	50	#Mid	QAM16	21.09	23.53	PASS
LTE Band7	20	21350	50	#Max	QAM16	21.06	23.50	PASS
LTE Band7	20	21350	100	#0	QAM16	21.02	23.46	PASS

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

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

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

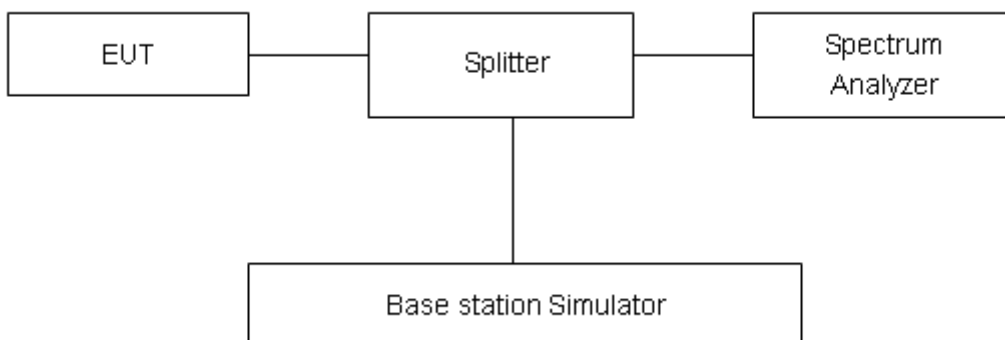
RBW is set to 200 kHz, VBW is set to 620kHz for LTE Band 4/7 (10MHz).

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

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

99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

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



Test Result

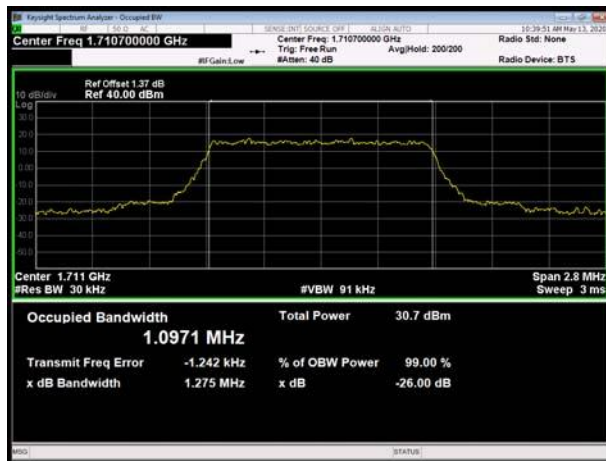
LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.0971	1.275
			20175	1732.5	1.0913	1.296
			20393	1754.3	1.0949	1.286
		3	19965	1711.5	2.7068	2.983
			20175	1732.5	2.7132	2.972
			20385	1753.5	2.6975	2.966
		5	19975	1712.5	4.5223	5.001
			20175	1732.5	4.5097	4.976
			20375	1752.5	4.4971	4.930
		10	20000	1715	8.9761	9.908
			20175	1732.5	8.9532	9.716
			20350	1750	8.9363	9.787
		15	20025	1717.5	13.444	14.63
			20175	1732.5	13.384	14.54
			20325	1747.5	13.415	14.56
		20	20050	1720	17.866	19.44
			20175	1732.5	17.907	19.23
			20300	1745	17.867	19.51
	16QAM	1.4	19957	1710.7	1.0998	1.289
			20175	1732.5	1.1018	1.293
			20393	1754.3	1.0961	1.278
		3	19965	1711.5	2.6908	3.013
			20175	1732.5	2.7016	2.98
			20385	1753.5	2.7053	3.005
		5	19975	1712.5	4.5391	5.025
			20175	1732.5	4.5229	4.992
			20375	1752.5	4.5034	5.066
		10	20000	1715	8.9448	9.745
			20175	1732.5	8.9739	9.778
			20350	1750	8.9784	9.707
		15	20025	1717.5	13.451	14.66
			20175	1732.5	13.417	14.54
			20325	1747.5	13.454	14.65
		20	20050	1720	17.891	19.33
			20175	1732.5	17.883	19.41
			20300	1745	17.866	19.32



LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.516	4.992
			21100	2535	4.513	4.946
			21425	2567.5	4.504	4.936
		10	20800	2505	8.979	9.836
			21100	2535	8.963	9.884
			21400	2565	8.972	9.801
		15	20825	2507.5	13.432	14.730
			21100	2535	13.419	14.580
			21375	2562.5	13.441	14.600
		20	20850	2510	17.928	19.210
			21100	2535	17.908	19.360
			21350	2560	17.886	19.490
	16QAM	5	20775	2502.5	4.508	4.961
			21100	2535	4.538	5.011
			21425	2567.5	4.514	4.948
		10	20800	2505	8.966	9.720
			21100	2535	8.974	9.648
			21400	2565	8.981	9.863
		15	20825	2507.5	13.423	14.580
			21100	2535	13.396	14.610
			21375	2562.5	13.404	14.490
		20	20850	2510	17.900	19.300
			21100	2535	17.883	19.380
			21350	2560	17.881	19.330



LTE Band 4 QPSK 1.4MHz CH-Low



LTE Band 4 QPSK 3MHz CH-Low



LTE Band 4 QPSK 1.4MHz CH-Middle



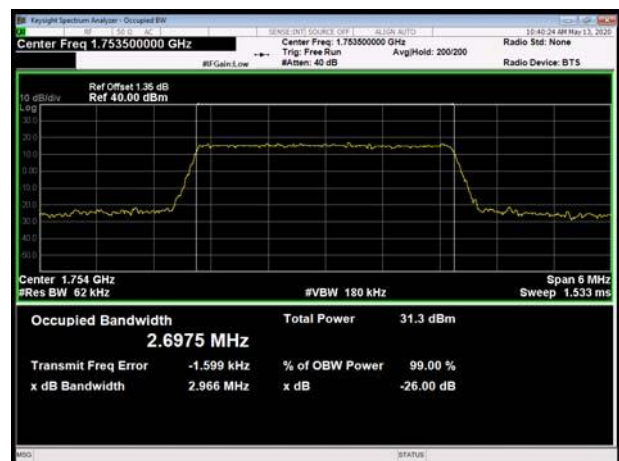
LTE Band 4 QPSK 3MHz CH-Middle



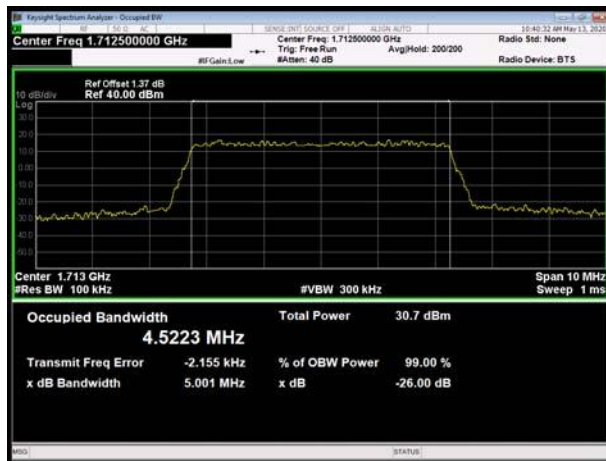
LTE Band 4 QPSK 1.4MHz CH-High



LTE Band 4 QPSK 3MHz CH-High



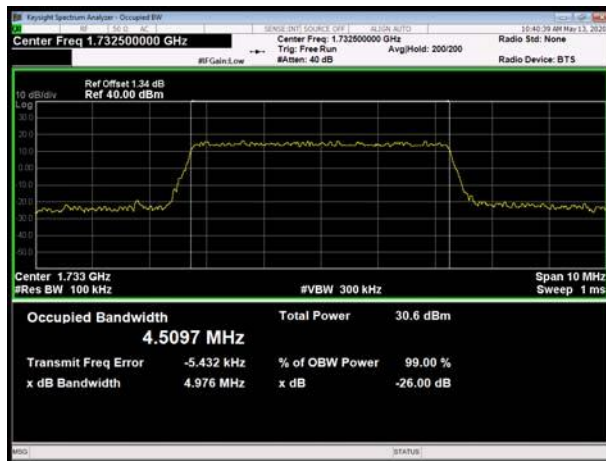
LTE Band 4 QPSK 5MHz CH-Low



LTE Band 4 QPSK 10MHz CH-Low



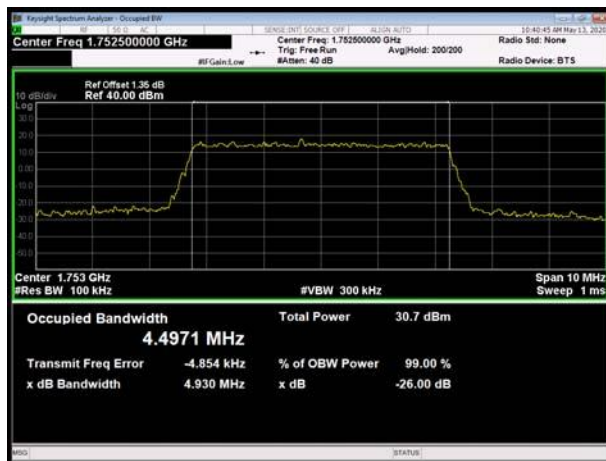
LTE Band 4 QPSK 5MHz CH-Middle



LTE Band 4 QPSK 10MHz CH-Middle



LTE Band 4 QPSK 5MHz CH-High



LTE Band 4 QPSK 10MHz CH-High





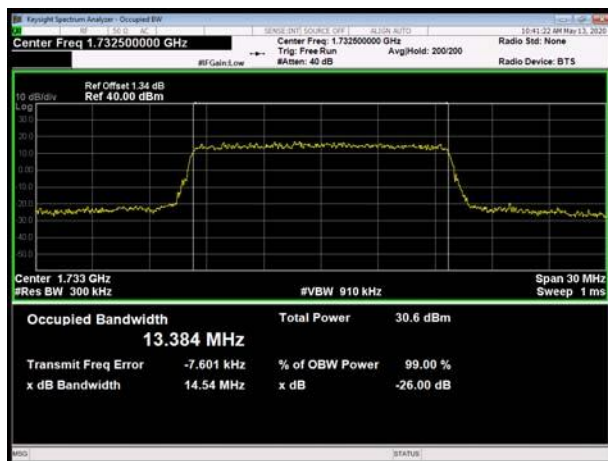
LTE Band 4 QPSK 15MHz CH-Low



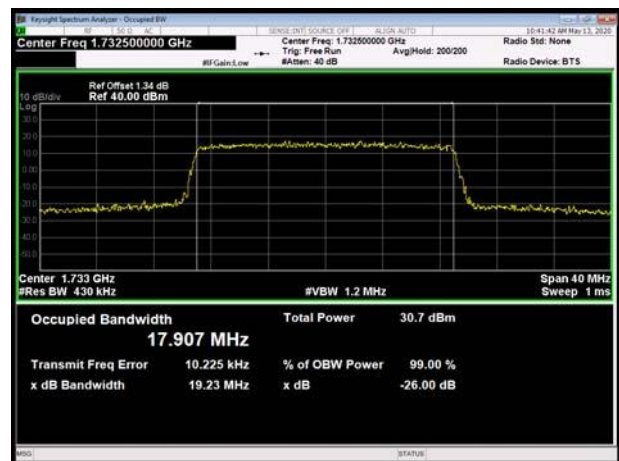
LTE Band 4 QPSK 20MHz CH-Low



LTE Band 4 QPSK 15MHz CH-Middle



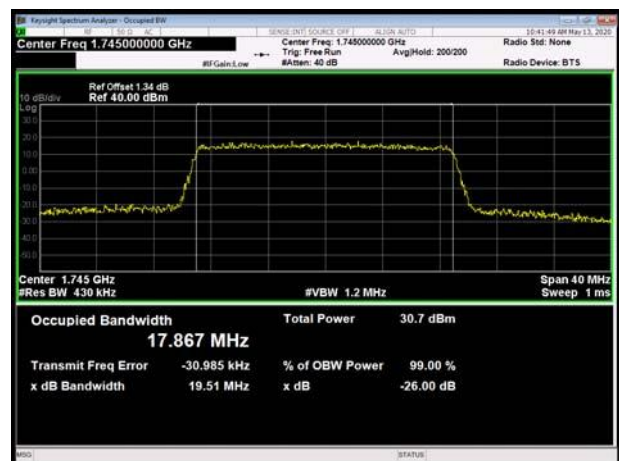
LTE Band 4 QPSK 20MHz CH-Middle



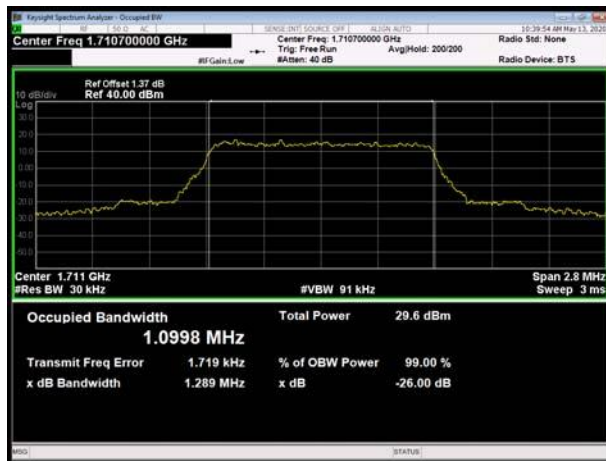
LTE Band 4 QPSK 15MHz CH-High



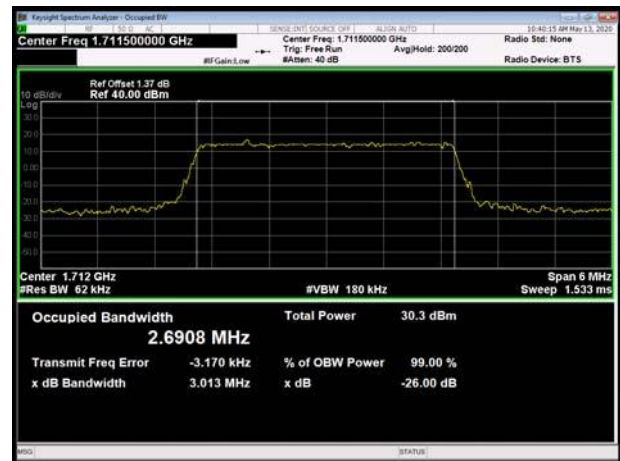
LTE Band 4 QPSK 20MHz CH-High



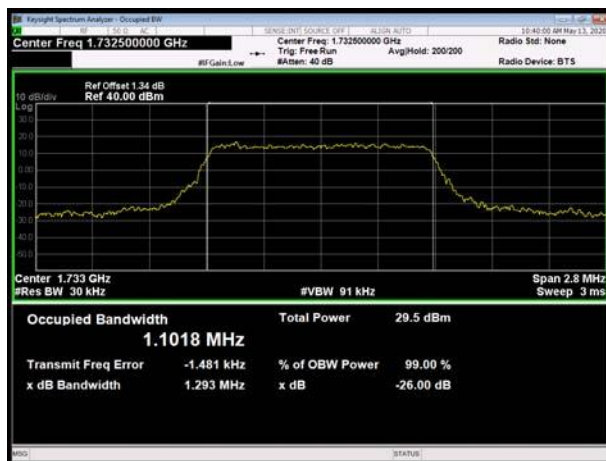
LTE Band 4 16QAM 1.4MHz CH-Low



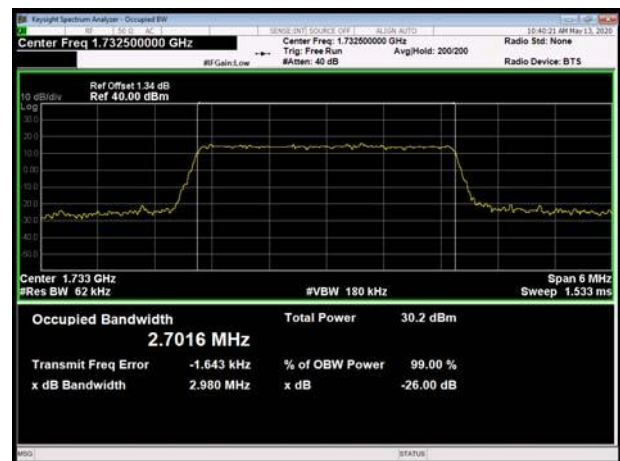
LTE Band 4 16QAM 3MHz CH-Low



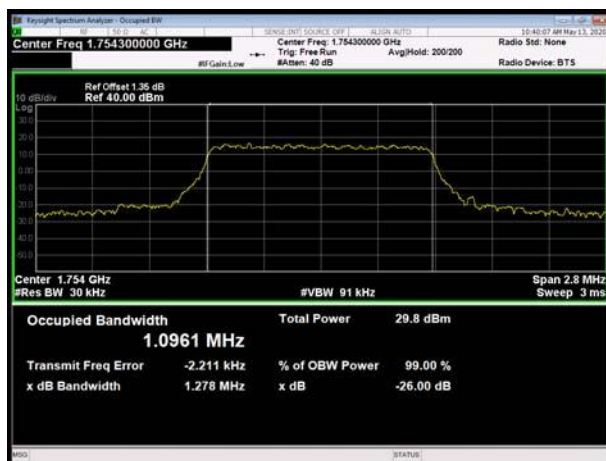
LTE Band 4 16QAM 1.4MHz CH-Middle



LTE Band 4 16QAM 3MHz CH-Middle



LTE Band 4 16QAM 1.4MHz CH-High



LTE Band 4 16QAM 3MHz CH-High





LTE Band 4 16QAM 5MHz CH-Low



LTE Band 4 16QAM 10MHz CH-Low



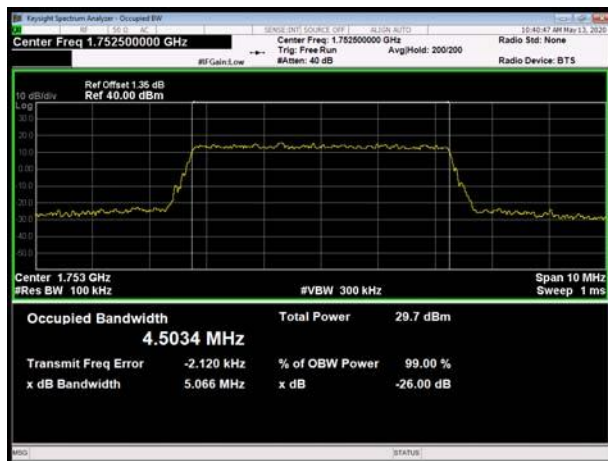
LTE Band 4 16QAM 5MHz CH-Middle



LTE Band 4 16QAM 10MHz CH-Middle



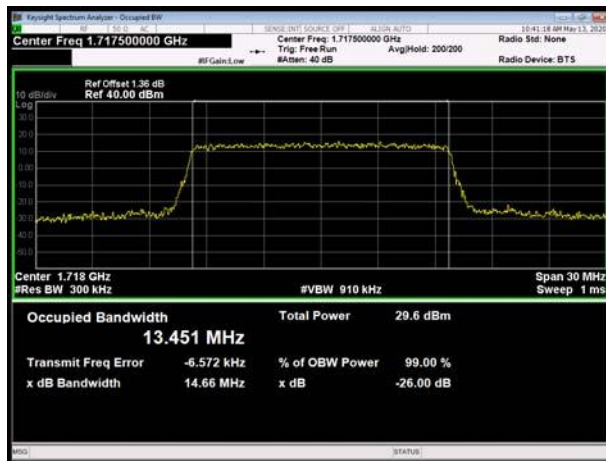
LTE Band 4 16QAM 5MHz CH-High



LTE Band 4 16QAM 10MHz CH-High



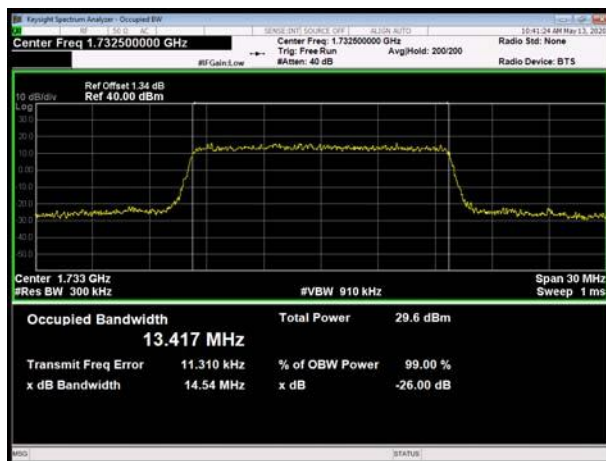
LTE Band 4 16QAM 15MHz CH-Low



LTE Band 4 16QAM 20MHz CH-Low



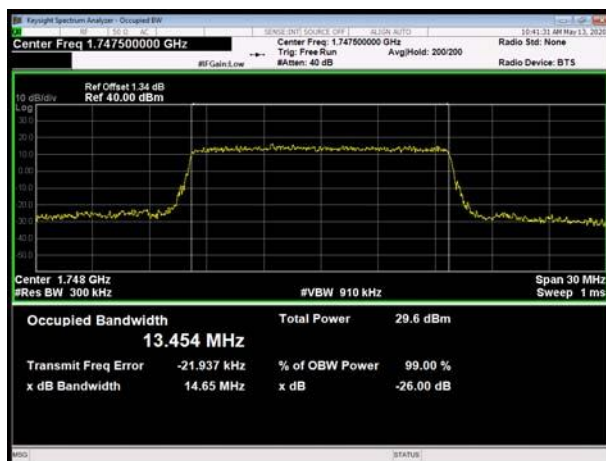
LTE Band 4 16QAM 15MHz CH-Middle



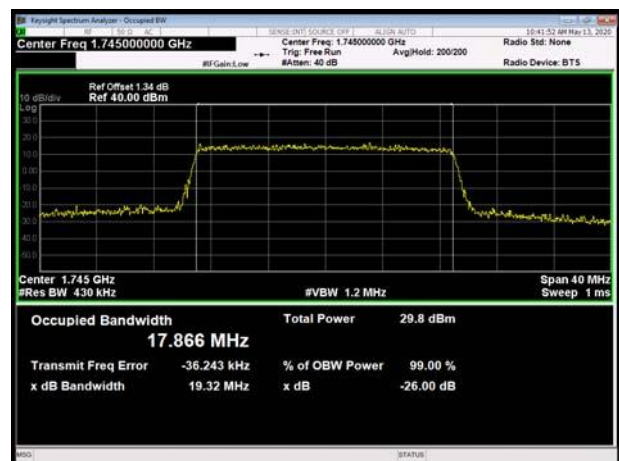
LTE Band 4 16QAM 20MHz CH-Middle



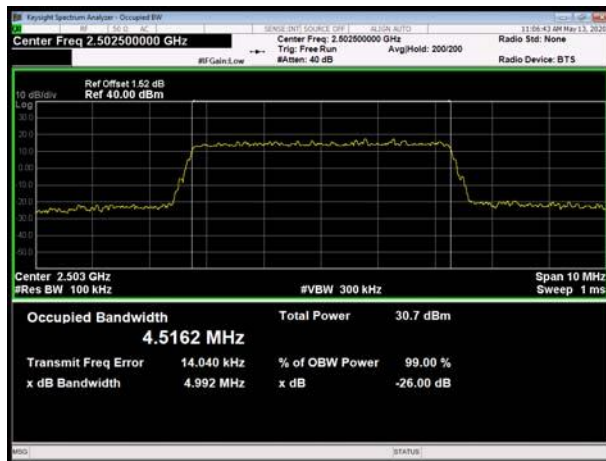
LTE Band 4 16QAM 15MHz CH-High



LTE Band 4 16QAM 20MHz CH-High



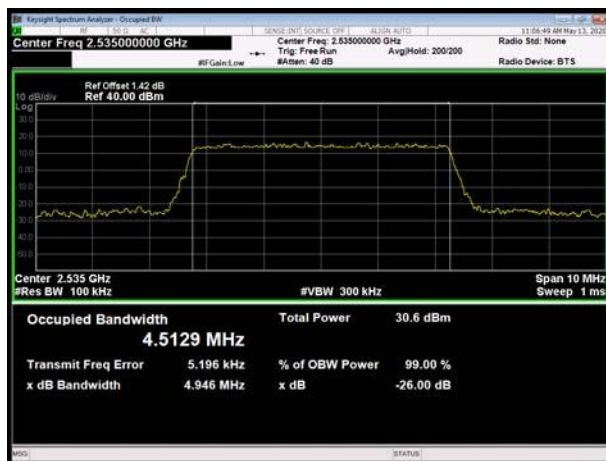
LTE Band 7 QPSK 5MHz CH-Low



LTE Band 7 QPSK 10MHz CH-Low



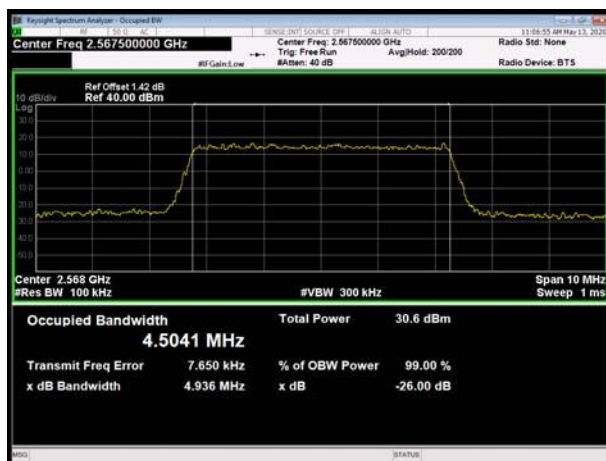
LTE Band 7 QPSK 5MHz CH-Middle



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



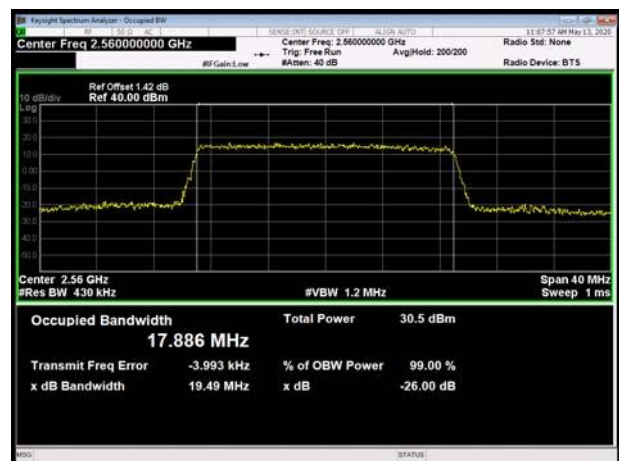
LTE Band 7 QPSK 20MHz CH-Middle



LTE Band 7 QPSK 15MHz CH-High



LTE Band 7 QPSK 20MHz CH-High



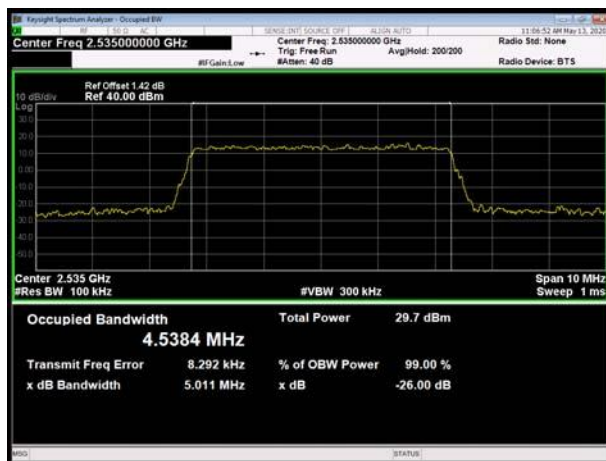
LTE Band 7 16QAM 5MHz CH-Low



LTE Band 7 16QAM 10MHz CH-Low



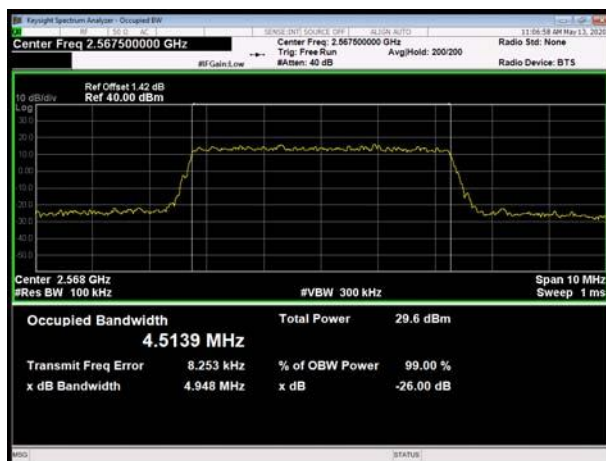
LTE Band 7 16QAM 5MHz CH-Middle



LTE Band 7 16QAM 10MHz CH-Middle



LTE Band 7 16QAM 5MHz CH-High



LTE Band 7 16QAM 10MHz CH-High



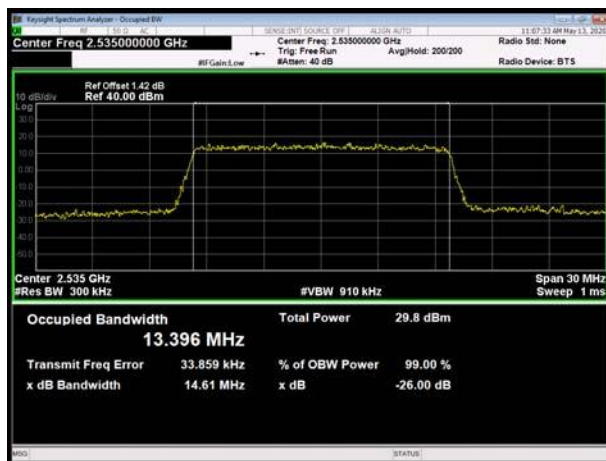
LTE Band 7 16QAM 15MHz CH-Low



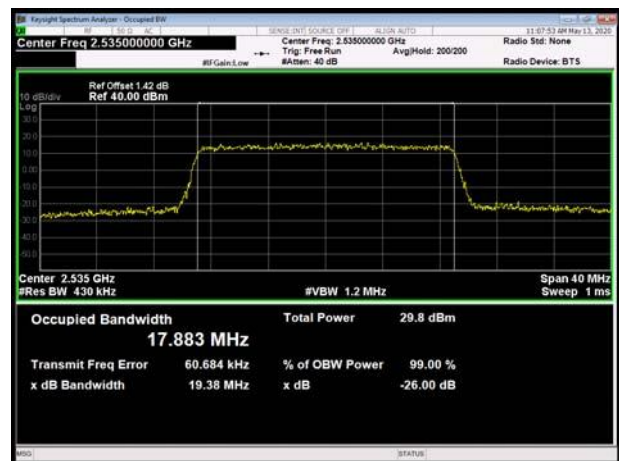
LTE Band 7 16QAM 20MHz CH-Low



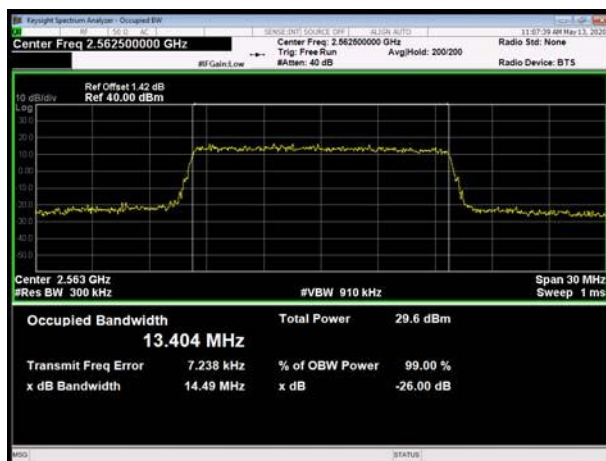
LTE Band 7 16QAM 15MHz CH-Middle



LTE Band 7 16QAM 20MHz CH-Middle



LTE Band 7 16QAM 15MHz CH-High



LTE Band 7 16QAM 20MHz CH-High



5.3 Band Edge Compliance

Ambient condition

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

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured.

The testing follows KDB 971168 D01 v03r01 Section 6.0

The EUT was connected to spectrum analyzer and system simulator via a power divider.

The band edges of low and high channels for the highest RF powers were measured.

RBW is set to 15 kHz, VBW is set to 43 kHz for LTE Band 4 (1.4MHz).

RBW is set to 30 kHz, VBW is set to 91 kHz for LTE Band 4 (3MHz).

RBW is set to 51 kHz, VBW is set to 150 kHz for LTE Band 4 (5MHz).

RBW is set to 50 kHz, VBW is set to 200 kHz for LTE Band 7 (5MHz).

RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 4/7 (10MHz).

RBW is set to 150 kHz, VBW is set to 470 kHz for LTE Band 4 (15MHz).

RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 4 (20MHz).

RBW is set to 200 kHz, VBW is set to 1 MHz for LTE Band 7 (15MHz/20MHz).

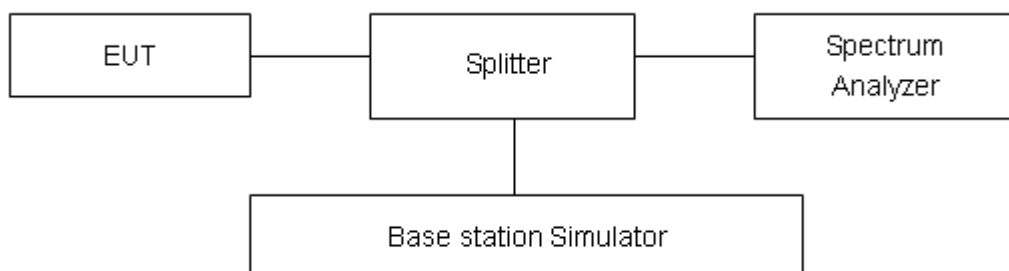
on spectrum analyzer.

Set spectrum analyzer with RMS detector.

The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

Checked that all the results comply with the emission limit line.

Test Setup



Limits

Rule Part 27.53(h) specifies that “ for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB”

Rule Part 27.53(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 $43 + 10 \log (P)$ dB below the transmitter power P(Watts)

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

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

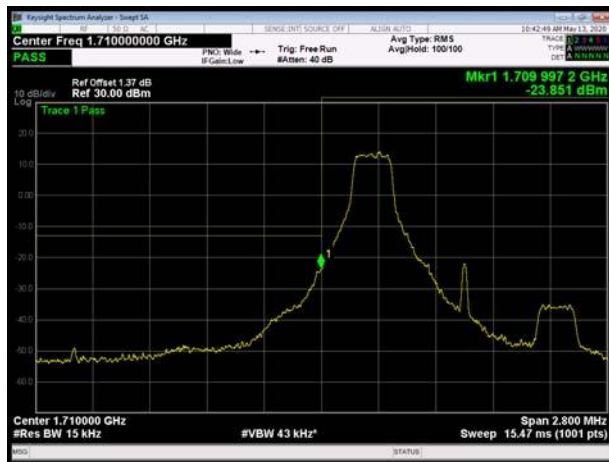
Measurement Uncertainty

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

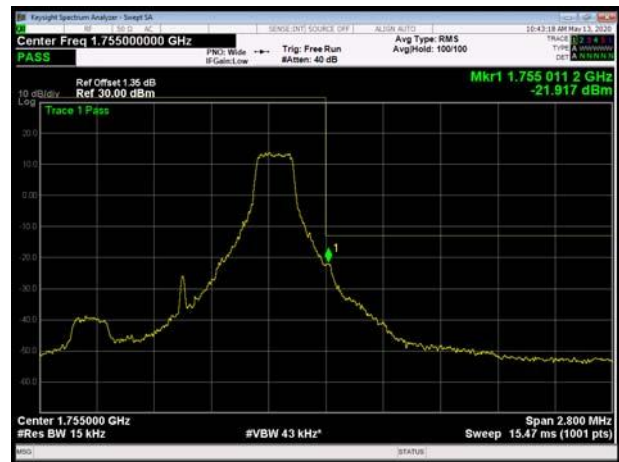
Test Result

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

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



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



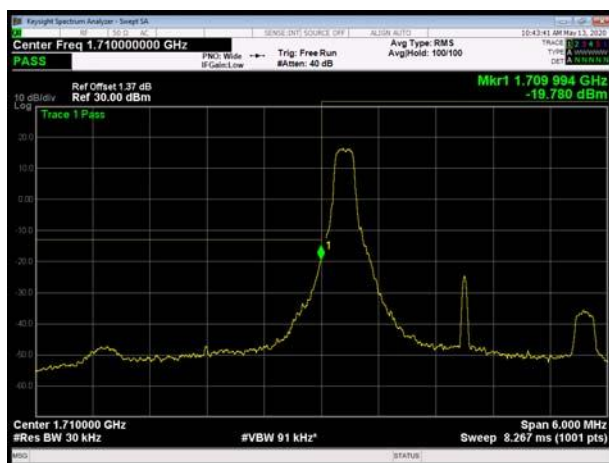
LTE Band 4 QPSK 1.4MHz CH-Low, 100%RB



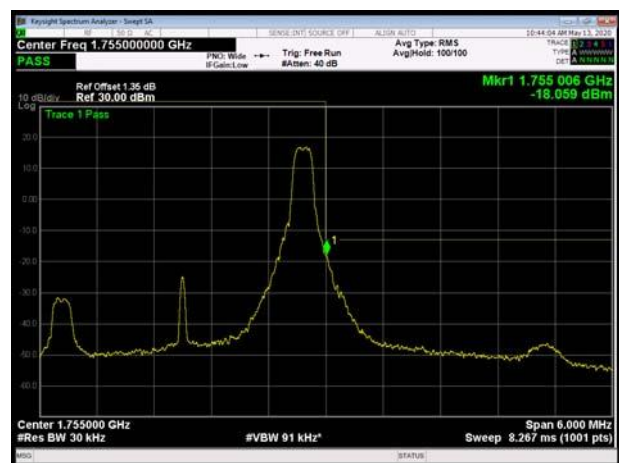
LTE Band 4 QPSK 1.4MHz CH-High, 100%RB



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



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





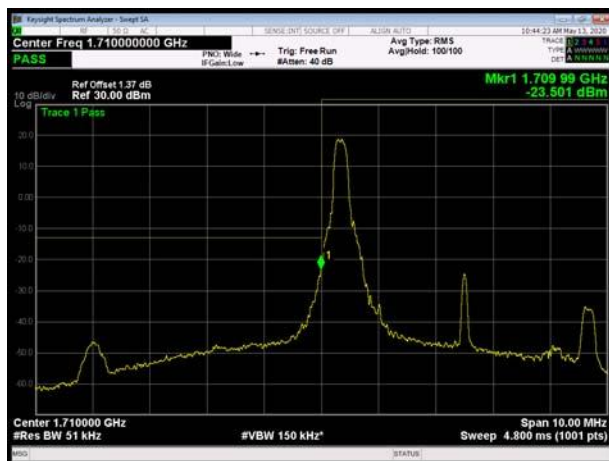
LTE Band 4 QPSK 3MHz CH-Low, 100%RB



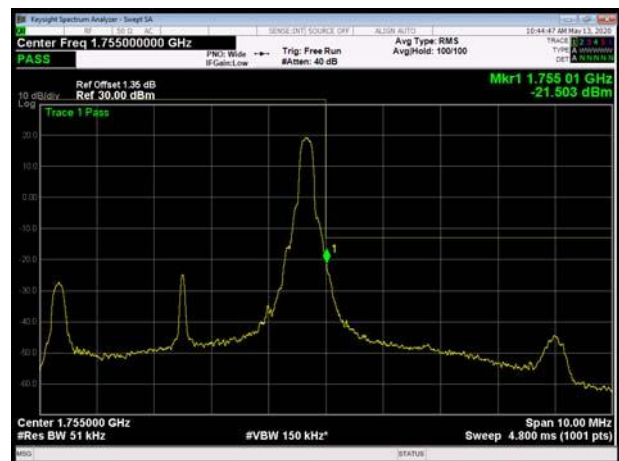
LTE Band 4 QPSK 3MHz CH-High, 100%RB



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



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



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

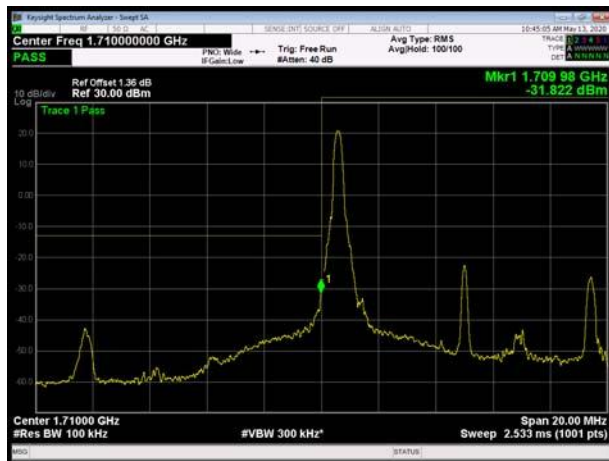


LTE Band 4 QPSK 5MHz CH-High, 100%RB

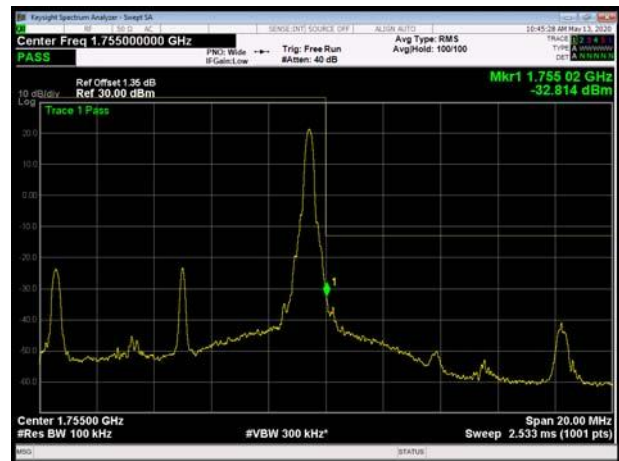




LTE Band 4 QPSK 10MHz CH-Low, 1 RB



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



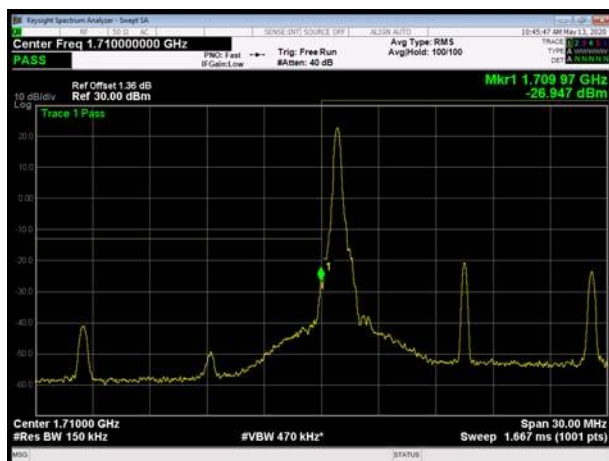
LTE Band 4 QPSK 10MHz CH-Low, 100%RB



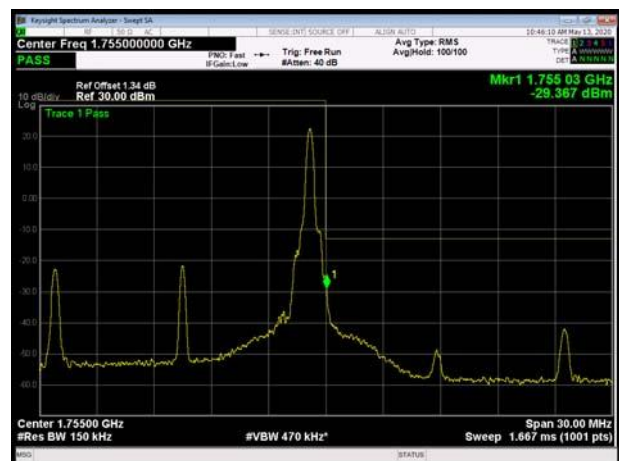
LTE Band 4 QPSK 10MHz CH-High, 100%RB



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



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





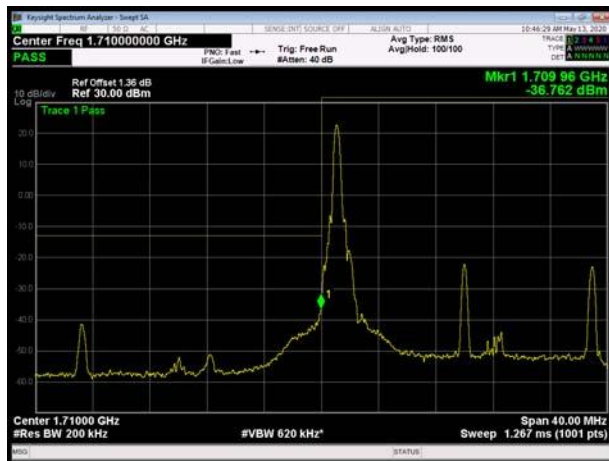
LTE Band 4 QPSK 15MHz CH-Low, 100%RB



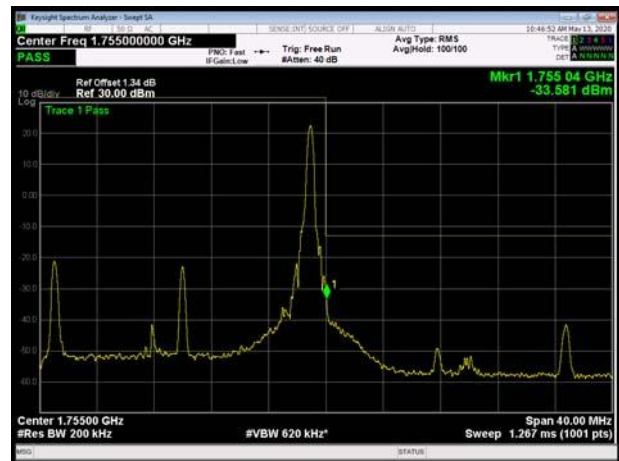
LTE Band 4 QPSK 15MHz CH-High, 100%RB



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



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



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

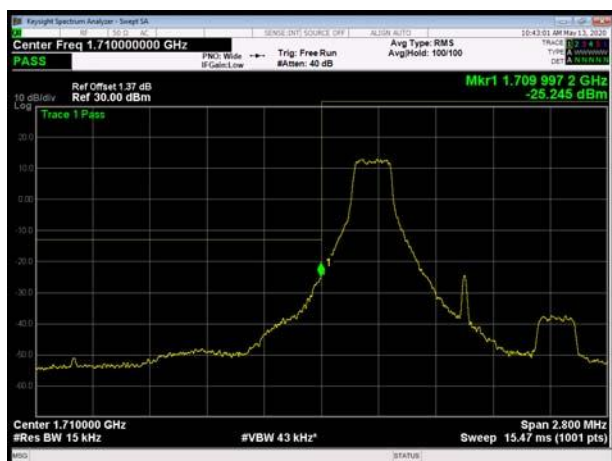


LTE Band 4 QPSK 20MHz CH-High, 100%RB

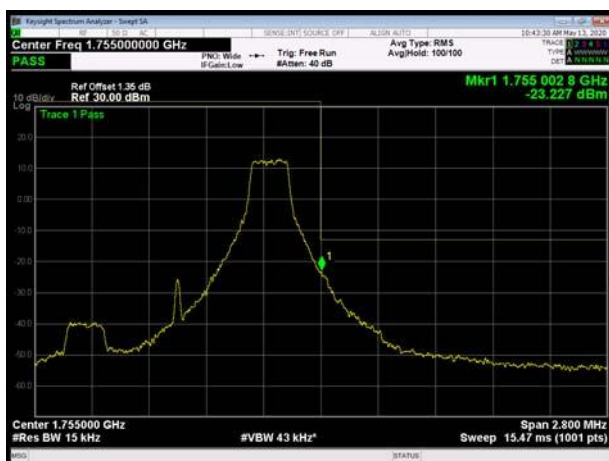




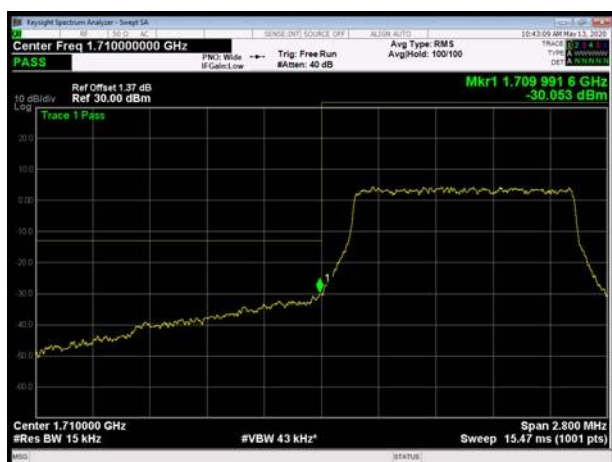
LTE Band 4 16QAM 1.4MHz CH-Low, 1 RB



LTE Band 4 16QAM 1.4MHz CH-High, 1 RB



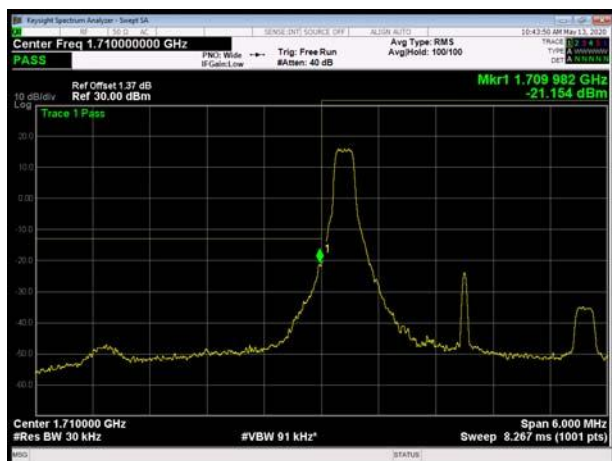
LTE Band 4 16QAM 1.4MHz CH-Low, 100%RB



LTE Band 4 16QAM 1.4MHz CH-High, 100%RB



LTE Band 4 16QAM 3MHz CH-Low, 1 RB



LTE Band 4 16QAM 3MHz CH-High, 1 RB

