RF TEST REPORT

Applicant	Quectel Wireless Solutions Company Limited
FCC ID	XMR202012EC25T
Product	LTE Module
Brand	Quectel
Model	EC25-T
Marketing	Quectel EC25-T
Report No.	R2408A1028-R2V1
Issue Date	September 13, 2024

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2023)/ FCC CFR 47 Part 24E (2023)**. 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.	September 10, 2024
Rev.1	Updated information.	September 13, 2024
Note: This revised report (Report No.: R2408A1028-R2V1) supersedes and replaces the previously issued report (Report No.: R2408A1028-R2). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of measurement results

No.	Test Case	Clause in FCC rules	Verdict
1	RF Power Output and Effective Isotropic Radiated Power	2.1046 24.232(c)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edge Compliance	2.1051 /24.238(a)	PASS
4	Peak-to-Average Power Ratio	24.232/KDB 971168 D01(5.7)	PASS
5	Frequency Stability	2.1055 / 24.235	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 / 24.238(a)	PASS
7	Radiated Spurious Emission	2.1053 / 24.238(a)	PASS
Date of Testing: (Original) June 29, 2018~ July 16, 2018 and July 30, 2018~ July 31, 2018 (Variant 1) November 26, 2020 ~ December 7, 2020 Date of Sample Received: (Variant 1) November 25, 2020			
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 Eurofins 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.			

Variant 2

EC25-T (Report No.: R2408A1028-R2V1) is a variant model (Variant 2) of EC25-T, EC25-T MINIPCIE (Report No.: R2011A0762-R2).

This report verifies Output Power, powers of new variant are varied due to measurement uncertainty, and sample tolerance of the acceptance range, so they were not recorded in the report.

The detailed product change description please refers to the *Difference Declaration Letter (Variant 2)*.

Variant 1

EC25-T, EC25-T MINIPCIE (Report No.: R2011A0762-R2) is a variant model (Variant 1) of EC25-AF, EC25-AF MINIPCIE (Report No.: R1806A0301-R2V1).

There is only tested RF Power Output and Effective Isotropic Radiated Power, Occupied Bandwidth, Band Edge Compliance and Radiates Spurious Emission for variant in this report. Other test items please refer to the model of EC25-AF, EC25-AF MINIPCIE (Report No.: R1806A0301-R2V1).

The detailed product change description please refers to the *Difference Declaration Letter (Variant 1)*.

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 **Eurofins 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)

Eurofins 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)

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

1.3. Testing Location

Company:	Eurofins TA Technology (Shanghai) Co., Ltd.
Address:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
City:	Shanghai
Post code:	201201
Country:	P. R. China
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Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	https://www.eurofins.com/electrical-and-electronics
E-mail:	Kain.Xu@cpt.eurofinscn.com

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 Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Manufacturer	Quectel Wireless Solutions Company Limited
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-T		
IMEI	861041050000597		
Hardware Version	R1.1		
Software Version	EC25TFAR11A01M4G		
Power Supply	External power supply		
Antenna Type	Dipole Antenna		
Antenna Gain	Frequency (MHz)	Antenna Gain (dBi)	
	1860	1.25	
	1880	1.38	
	1900	1.59	
Test Mode(s)	LTE Band 2;		
Test Modulation	QPSK,16QAM		
LTE Category	4		
Maximum E.I.R.P	LTE Band 2:	25.09dBm	
Rated Power Supply Voltage	3.8V		
Operating Voltage	Minimum: 3.3V Maximum: 4.3V		
Operating Temperature	Lowest: -40°C Highest: +85°C		
Testing Temperature	Lowest: -30°C Highest: +50°C		
Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	LTE Band 2	1850 ~ 1910	1930 ~ 1990
Note: 1. The EUT is sent from the applicant to Eurofins 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 CFR 47 Part 24E (2023)

FCC CFR47 Part 2 (2023)

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 (X axis, horizontal polarization) and the worst case was recorded.

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

Test modes are chosen to be reported as the worst case configuration below for LTE Band 2:

Test items	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	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Occupied Bandwidth	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	O	O	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	O	O	O	O	O	O	O	O	O	-	-	-	O	-
Spurious Emissions at Antenna Terminals	O	O	O	O	O	O	O	-	O	-	-	O	O	O
Radiated Spurious Emission	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

5.1. RF Power Output and Effective Isotropic Radiated Power

Ambient condition

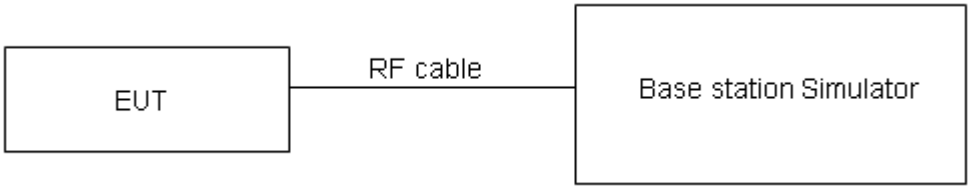
Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

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) + Antenna Gain (dBi)
EIRP (dBm) = ERP (dBm) + 2.15 (dB.)

Test Setup



Limits

No specific RF power output requirements in part 2.1046.

Rule Part 24.232(c) Mobile and portable stations are limited to 2 watts EIRP.
Rule Part 24.232(e) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

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 EIRP.

Test Results

Refer to the section 6.1 of this report for test data.

5.2. Occupied Bandwidth

Ambient condition

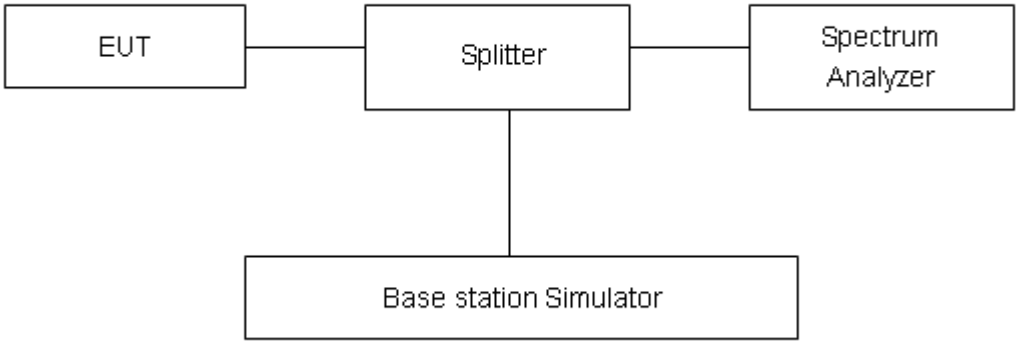
Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

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 ≥1%EBW, VBW is set to 3x RBW.

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 Results

Refer to the section 6.2 of this report for test data.

5.3. Band Edge Compliance

Ambient condition

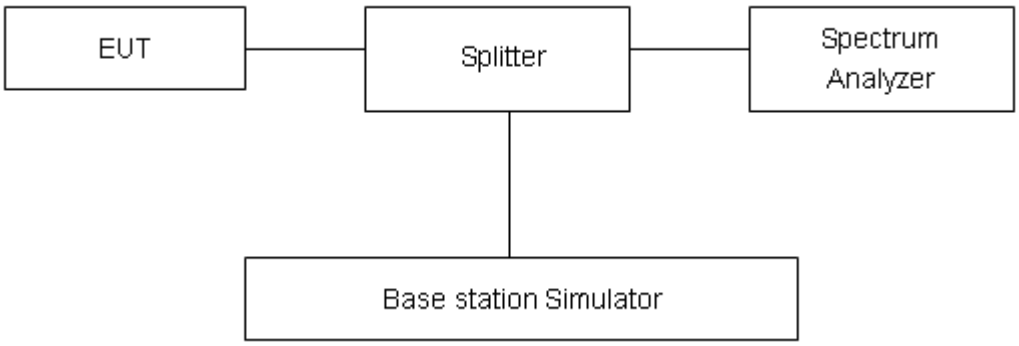
Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

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 Average detector is used and RBW is set to ≥1%EBW, VBW is set to 3x RBW.

Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (P) dB.”

Limit	-13 dBm

Measurement Uncertainty

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

Test Results

Refer to the section 6.3 of this report for test data.

5.4. Peak-to-Average Power Ratio (PAPR)

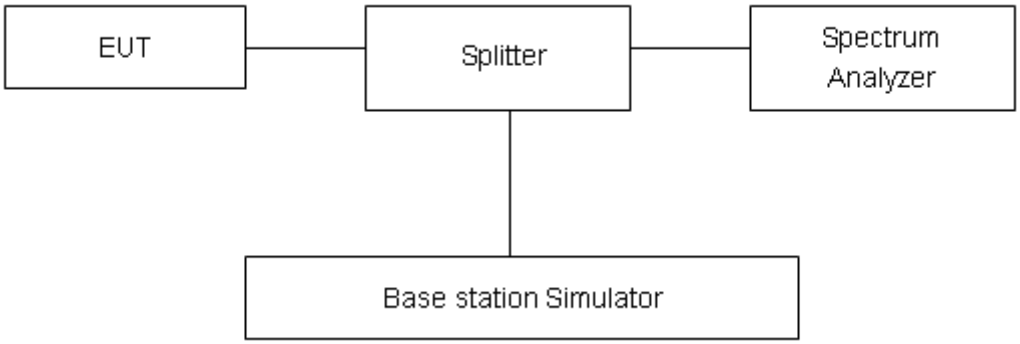
Ambient condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

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

In measuring transmissions in this band using an average power technique, the peakto-average ratio (PAR) of the transmission may not exceed 13 dB in 24.232(d).

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.

Test Results

Refer to the section 6.4 of this report for test data.

5.5. Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Method of Measurement

Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -40°C to +85°C in 10°C step size,

(1) With all power removed, the temperature was decreased to 0°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 -40°C to +85°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

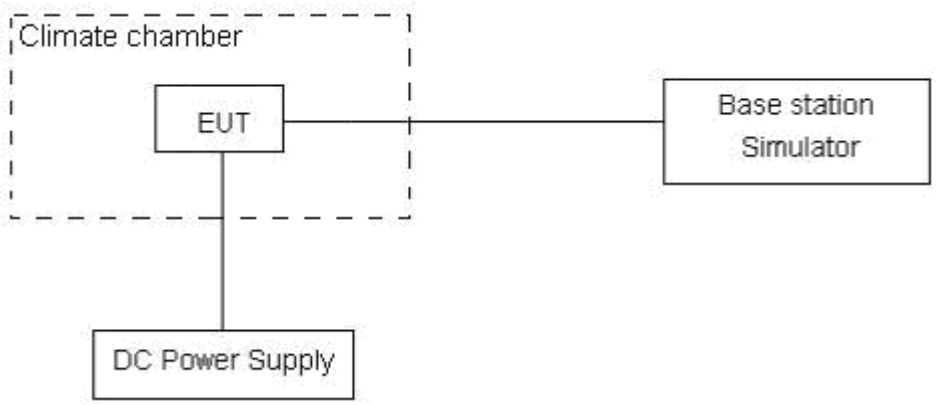
Frequency Stability (Voltage Variation)

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

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

This transceiver is specified to operate with an input voltage of between 3.3 V and 4.3 V, with a nominal voltage of 3.8V.

Test setup



Limits

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block

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 Results

Refer to the section 6.5 of this report for test data.

5.6. Spurious Emissions at Antenna Terminals

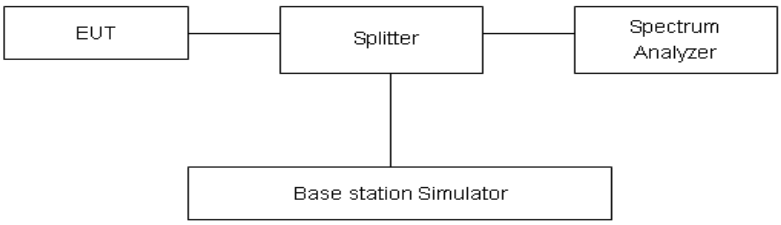
Ambient condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

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 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)
Sweep is set to AUTO.
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup



Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (P) dB.”

Limit	-13 dBm

Measurement Uncertainty

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

Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-20GHz	1.407 dB

Test Results

Refer to the section 6.6 of this report for test data.

5.7. Radiated Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

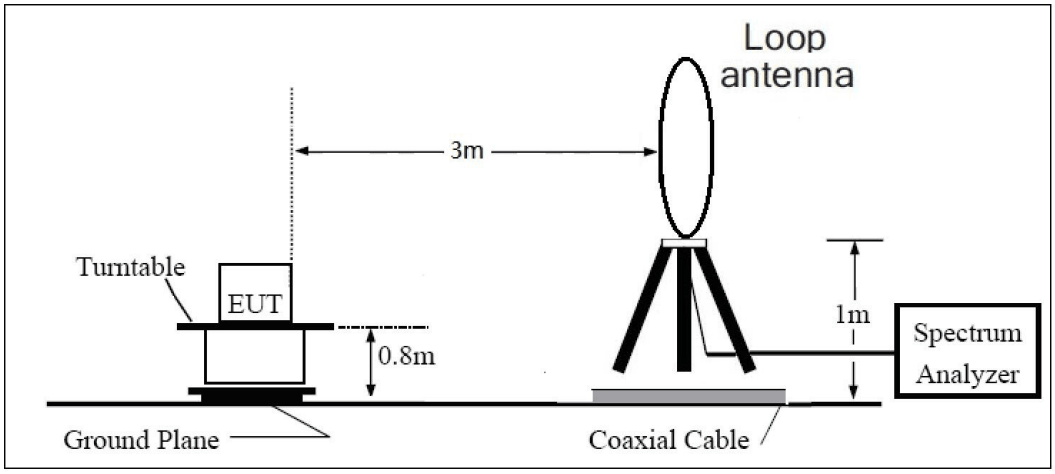
Method of Measurement

1. The testing follows FCC KDB 971168 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=1MHz, VBW=3MHz, 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 dB) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dB.

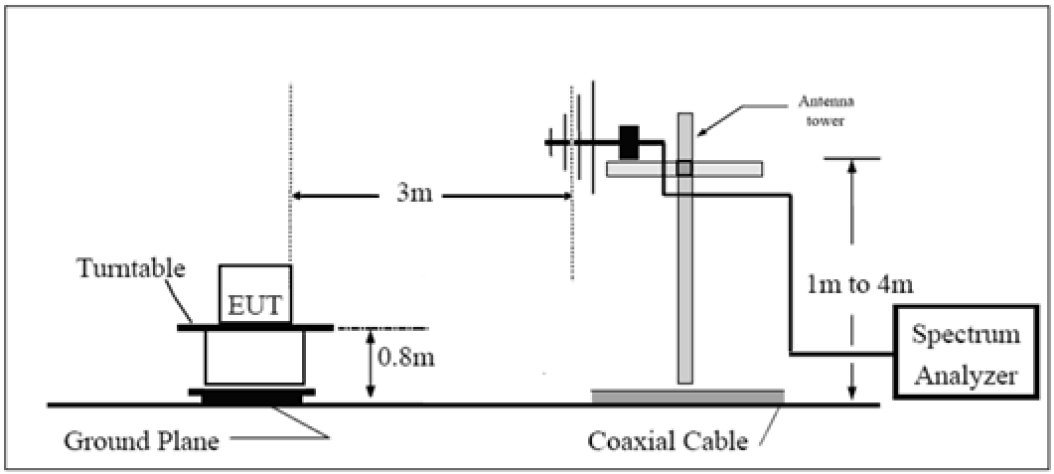
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

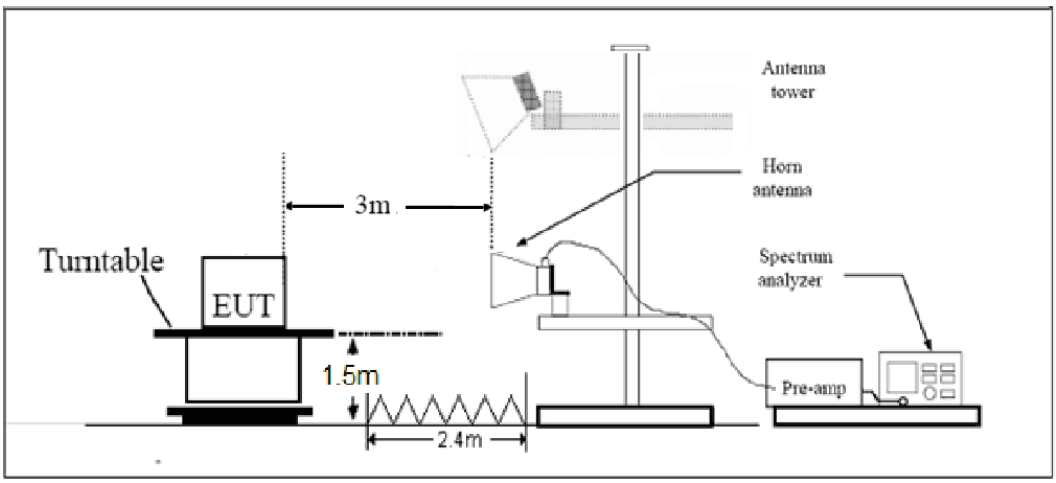
9KHz~ 30MHz



30MHz~ 1GHz



Above 1GHz



Note: Area side: 2.4mX3.6m

Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (P) dB.”

Limit	-13 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95％ confidence level for the normal distribution is with the coverage factor *k* = 1.96, *U*= 3.55 dB.

Test Results

Refer to the section 6.7 of this report for test data.

6. Test Results

6.1. RF Power Output and Effective Isotropic Radiated Power

Band	Bandwidth (MHz)	Modulation	Channel	RB Configuration	Maximum Output Power (dBm)	EIRP(dBm)	Verdict
LTE Band 2	1.4	QPSK	18607	1RB#0	23.40	24.65	PASS
LTE Band 2	1.4	QPSK	18607	1RB#2	23.47	24.72	PASS
LTE Band 2	1.4	QPSK	18607	1RB#5	23.47	24.72	PASS
LTE Band 2	1.4	QPSK	18607	3RB#0	22.40	23.65	PASS
LTE Band 2	1.4	QPSK	18607	3RB#2	22.45	23.70	PASS
LTE Band 2	1.4	QPSK	18607	3RB#3	22.32	23.57	PASS
LTE Band 2	1.4	QPSK	18607	6RB#0	22.38	23.63	PASS
LTE Band 2	1.4	QPSK	18900	1RB#0	23.34	24.72	PASS
LTE Band 2	1.4	QPSK	18900	1RB#2	23.40	24.78	PASS
LTE Band 2	1.4	QPSK	18900	1RB#5	23.10	24.48	PASS
LTE Band 2	1.4	QPSK	18900	3RB#0	22.27	23.65	PASS
LTE Band 2	1.4	QPSK	18900	3RB#2	22.27	23.65	PASS
LTE Band 2	1.4	QPSK	18900	3RB#3	22.28	23.66	PASS
LTE Band 2	1.4	QPSK	18900	6RB#0	22.39	23.77	PASS
LTE Band 2	1.4	QPSK	19193	1RB#0	23.42	25.01	PASS
LTE Band 2	1.4	QPSK	19193	1RB#2	23.11	24.70	PASS
LTE Band 2	1.4	QPSK	19193	1RB#5	23.18	24.77	PASS
LTE Band 2	1.4	QPSK	19193	3RB#0	22.36	23.95	PASS
LTE Band 2	1.4	QPSK	19193	3RB#2	22.46	24.05	PASS
LTE Band 2	1.4	QPSK	19193	3RB#3	22.43	24.02	PASS
LTE Band 2	1.4	QPSK	19193	6RB#0	22.42	24.01	PASS
LTE Band 2	1.4	16QAM	18607	1RB#0	22.24	23.49	PASS
LTE Band 2	1.4	16QAM	18607	1RB#2	22.38	23.63	PASS
LTE Band 2	1.4	16QAM	18607	1RB#5	22.10	23.35	PASS
LTE Band 2	1.4	16QAM	18607	3RB#0	21.34	22.59	PASS
LTE Band 2	1.4	16QAM	18607	3RB#2	21.31	22.56	PASS
LTE Band 2	1.4	16QAM	18607	3RB#3	21.29	22.54	PASS
LTE Band 2	1.4	16QAM	18607	6RB#0	21.29	22.54	PASS
LTE Band 2	1.4	16QAM	18900	1RB#0	22.26	23.64	PASS
LTE Band 2	1.4	16QAM	18900	1RB#2	22.01	23.39	PASS
LTE Band 2	1.4	16QAM	18900	1RB#5	22.20	23.58	PASS
LTE Band 2	1.4	16QAM	18900	3RB#0	21.18	22.56	PASS
LTE Band 2	1.4	16QAM	18900	3RB#2	21.09	22.47	PASS
LTE Band 2	1.4	16QAM	18900	3RB#3	21.22	22.60	PASS

LTE Band 2	1.4	16QAM	18900	6RB#0	21.20	22.58	PASS
LTE Band 2	1.4	16QAM	19193	1RB#0	22.19	23.78	PASS
LTE Band 2	1.4	16QAM	19193	1RB#2	22.24	23.83	PASS
LTE Band 2	1.4	16QAM	19193	1RB#5	22.12	23.71	PASS
LTE Band 2	1.4	16QAM	19193	3RB#0	21.23	22.82	PASS
LTE Band 2	1.4	16QAM	19193	3RB#2	21.43	23.02	PASS
LTE Band 2	1.4	16QAM	19193	3RB#3	21.39	22.98	PASS
LTE Band 2	1.4	16QAM	19193	6RB#0	21.41	23.00	PASS
LTE Band 2	3	QPSK	18615	1RB#0	23.42	24.67	PASS
LTE Band 2	3	QPSK	18615	1RB#7	23.50	24.75	PASS
LTE Band 2	3	QPSK	18615	1RB#14	23.50	24.75	PASS
LTE Band 2	3	QPSK	18615	8RB#0	22.48	23.73	PASS
LTE Band 2	3	QPSK	18615	8RB#4	22.55	23.80	PASS
LTE Band 2	3	QPSK	18615	8RB#7	22.40	23.65	PASS
LTE Band 2	3	QPSK	18615	15RB#0	22.41	23.66	PASS
LTE Band 2	3	QPSK	18900	1RB#0	23.38	24.76	PASS
LTE Band 2	3	QPSK	18900	1RB#7	23.45	24.83	PASS
LTE Band 2	3	QPSK	18900	1RB#14	23.15	24.53	PASS
LTE Band 2	3	QPSK	18900	8RB#0	22.37	23.75	PASS
LTE Band 2	3	QPSK	18900	8RB#4	22.35	23.73	PASS
LTE Band 2	3	QPSK	18900	8RB#7	22.37	23.75	PASS
LTE Band 2	3	QPSK	18900	15RB#0	22.43	23.81	PASS
LTE Band 2	3	QPSK	19185	1RB#0	23.45	25.04	PASS
LTE Band 2	3	QPSK	19185	1RB#7	23.15	24.74	PASS
LTE Band 2	3	QPSK	19185	1RB#14	23.22	24.81	PASS
LTE Band 2	3	QPSK	19185	8RB#0	22.47	24.06	PASS
LTE Band 2	3	QPSK	19185	8RB#4	22.56	24.15	PASS
LTE Band 2	3	QPSK	19185	8RB#7	22.51	24.10	PASS
LTE Band 2	3	QPSK	19185	15RB#0	22.45	24.04	PASS
LTE Band 2	3	16QAM	18615	1RB#0	22.27	23.52	PASS
LTE Band 2	3	16QAM	18615	1RB#7	22.41	23.66	PASS
LTE Band 2	3	16QAM	18615	1RB#14	22.12	23.37	PASS
LTE Band 2	3	16QAM	18615	8RB#0	21.43	22.68	PASS
LTE Band 2	3	16QAM	18615	8RB#4	21.40	22.65	PASS
LTE Band 2	3	16QAM	18615	8RB#7	21.37	22.62	PASS
LTE Band 2	3	16QAM	18615	15RB#0	21.32	22.57	PASS
LTE Band 2	3	16QAM	18900	1RB#0	22.28	23.66	PASS
LTE Band 2	3	16QAM	18900	1RB#7	22.06	23.44	PASS
LTE Band 2	3	16QAM	18900	1RB#14	22.24	23.62	PASS
LTE Band 2	3	16QAM	18900	8RB#0	21.29	22.67	PASS
LTE Band 2	3	16QAM	18900	8RB#4	21.20	22.58	PASS
LTE Band 2	3	16QAM	18900	8RB#7	21.32	22.70	PASS
LTE Band 2	3	16QAM	18900	15RB#0	21.24	22.62	PASS

LTE Band 2	3	16QAM	19185	1RB#0	22.22	23.81	PASS
LTE Band 2	3	16QAM	19185	1RB#7	22.28	23.87	PASS
LTE Band 2	3	16QAM	19185	1RB#14	22.15	23.74	PASS
LTE Band 2	3	16QAM	19185	8RB#0	21.33	22.92	PASS
LTE Band 2	3	16QAM	19185	8RB#4	21.53	23.12	PASS
LTE Band 2	3	16QAM	19185	8RB#7	21.50	23.09	PASS
LTE Band 2	3	16QAM	19185	15RB#0	21.44	23.03	PASS
LTE Band 2	5	QPSK	18625	1RB#0	23.46	24.71	PASS
LTE Band 2	5	QPSK	18625	1RB#13	23.57	24.82	PASS
LTE Band 2	5	QPSK	18625	1RB#24	23.56	24.81	PASS
LTE Band 2	5	QPSK	18625	12RB#0	22.55	23.80	PASS
LTE Band 2	5	QPSK	18625	12RB#6	22.60	23.85	PASS
LTE Band 2	5	QPSK	18625	12RB#13	22.47	23.72	PASS
LTE Band 2	5	QPSK	18625	25RB#0	22.49	23.74	PASS
LTE Band 2	5	QPSK	18900	1RB#0	23.50	24.88	PASS
LTE Band 2	5	QPSK	18900	1RB#13	23.50	24.88	PASS
LTE Band 2	5	QPSK	18900	1RB#24	23.22	24.60	PASS
LTE Band 2	5	QPSK	18900	12RB#0	22.41	23.79	PASS
LTE Band 2	5	QPSK	18900	12RB#6	22.40	23.78	PASS
LTE Band 2	5	QPSK	18900	12RB#13	22.47	23.85	PASS
LTE Band 2	5	QPSK	18900	25RB#0	22.52	23.90	PASS
LTE Band 2	5	QPSK	19175	1RB#0	23.50	25.09	PASS
LTE Band 2	5	QPSK	19175	1RB#13	23.22	24.81	PASS
LTE Band 2	5	QPSK	19175	1RB#24	23.31	24.90	PASS
LTE Band 2	5	QPSK	19175	12RB#0	22.53	24.12	PASS
LTE Band 2	5	QPSK	19175	12RB#6	22.60	24.19	PASS
LTE Band 2	5	QPSK	19175	12RB#13	22.51	24.10	PASS
LTE Band 2	5	QPSK	19175	25RB#0	22.46	24.05	PASS
LTE Band 2	5	16QAM	18625	1RB#0	22.29	23.54	PASS
LTE Band 2	5	16QAM	18625	1RB#13	22.43	23.68	PASS
LTE Band 2	5	16QAM	18625	1RB#24	22.14	23.39	PASS
LTE Band 2	5	16QAM	18625	12RB#0	21.47	22.72	PASS
LTE Band 2	5	16QAM	18625	12RB#6	21.42	22.67	PASS
LTE Band 2	5	16QAM	18625	12RB#13	21.42	22.67	PASS
LTE Band 2	5	16QAM	18625	25RB#0	21.35	22.60	PASS
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LTE Band 2	5	16QAM	18900	1RB#13	22.13	23.51	PASS
LTE Band 2	5	16QAM	18900	1RB#24	22.31	23.69	PASS
LTE Band 2	5	16QAM	18900	12RB#0	21.33	22.71	PASS
LTE Band 2	5	16QAM	18900	12RB#6	21.24	22.62	PASS
LTE Band 2	5	16QAM	18900	12RB#13	21.32	22.70	PASS
LTE Band 2	5	16QAM	18900	25RB#0	21.25	22.63	PASS
LTE Band 2	5	16QAM	19175	1RB#0	22.26	23.85	PASS

LTE Band 2	5	16QAM	19175	1RB#13	22.32	23.91	PASS
LTE Band 2	5	16QAM	19175	1RB#24	22.18	23.77	PASS
LTE Band 2	5	16QAM	19175	12RB#0	21.38	22.97	PASS
LTE Band 2	5	16QAM	19175	12RB#6	21.58	23.17	PASS
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LTE Band 2	5	16QAM	19175	25RB#0	21.45	23.04	PASS
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LTE Band 2	10	QPSK	18650	1RB#49	23.49	24.74	PASS
LTE Band 2	10	QPSK	18650	25RB#0	22.48	23.73	PASS
LTE Band 2	10	QPSK	18650	25RB#13	22.56	23.81	PASS
LTE Band 2	10	QPSK	18650	25RB#25	22.40	23.65	PASS
LTE Band 2	10	QPSK	18650	50RB#0	22.47	23.72	PASS
LTE Band 2	10	QPSK	18900	1RB#0	23.37	24.75	PASS
LTE Band 2	10	QPSK	18900	1RB#25	23.46	24.84	PASS
LTE Band 2	10	QPSK	18900	1RB#49	23.14	24.52	PASS
LTE Band 2	10	QPSK	18900	25RB#0	22.37	23.75	PASS
LTE Band 2	10	QPSK	18900	25RB#13	22.36	23.74	PASS
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LTE Band 2	10	QPSK	19150	1RB#0	23.44	25.03	PASS
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LTE Band 2	10	QPSK	19150	1RB#49	23.21	24.80	PASS
LTE Band 2	10	QPSK	19150	25RB#0	22.47	24.06	PASS
LTE Band 2	10	QPSK	19150	25RB#13	22.55	24.14	PASS
LTE Band 2	10	QPSK	19150	25RB#25	22.52	24.11	PASS
LTE Band 2	10	QPSK	19150	50RB#0	22.47	24.06	PASS
LTE Band 2	10	16QAM	18650	1RB#0	22.26	23.51	PASS
LTE Band 2	10	16QAM	18650	1RB#25	22.41	23.66	PASS
LTE Band 2	10	16QAM	18650	1RB#49	22.12	23.37	PASS
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LTE Band 2	10	16QAM	18650	25RB#13	21.39	22.64	PASS
LTE Band 2	10	16QAM	18650	25RB#25	21.37	22.62	PASS
LTE Band 2	10	16QAM	18650	50RB#0	21.33	22.58	PASS
LTE Band 2	10	16QAM	18900	1RB#0	22.27	23.65	PASS
LTE Band 2	10	16QAM	18900	1RB#25	22.08	23.46	PASS
LTE Band 2	10	16QAM	18900	1RB#49	22.24	23.62	PASS
LTE Band 2	10	16QAM	18900	25RB#0	21.30	22.68	PASS
LTE Band 2	10	16QAM	18900	25RB#13	21.19	22.57	PASS
LTE Band 2	10	16QAM	18900	25RB#25	21.32	22.70	PASS
LTE Band 2	10	16QAM	18900	50RB#0	21.25	22.63	PASS
LTE Band 2	10	16QAM	19150	1RB#0	22.21	23.80	PASS
LTE Band 2	10	16QAM	19150	1RB#25	22.28	23.87	PASS

LTE Band 2	10	16QAM	19150	1RB#49	22.14	23.73	PASS
LTE Band 2	10	16QAM	19150	25RB#0	21.34	22.93	PASS
LTE Band 2	10	16QAM	19150	25RB#13	21.52	23.11	PASS
LTE Band 2	10	16QAM	19150	25RB#25	21.50	23.09	PASS
LTE Band 2	10	16QAM	19150	50RB#0	21.43	23.02	PASS
LTE Band 2	15	QPSK	18675	1RB#0	23.40	24.65	PASS
LTE Band 2	15	QPSK	18675	1RB#38	23.49	24.74	PASS
LTE Band 2	15	QPSK	18675	1RB#74	23.46	24.71	PASS
LTE Band 2	15	QPSK	18675	36RB#0	22.46	23.71	PASS
LTE Band 2	15	QPSK	18675	36RB#18	22.53	23.78	PASS
LTE Band 2	15	QPSK	18675	36RB#39	22.37	23.62	PASS
LTE Band 2	15	QPSK	18675	75RB#0	22.45	23.70	PASS
LTE Band 2	15	QPSK	18900	1RB#0	23.33	24.71	PASS
LTE Band 2	15	QPSK	18900	1RB#38	23.45	24.83	PASS
LTE Band 2	15	QPSK	18900	1RB#74	23.09	24.47	PASS
LTE Band 2	15	QPSK	18900	36RB#0	22.33	23.71	PASS
LTE Band 2	15	QPSK	18900	36RB#18	22.31	23.69	PASS
LTE Band 2	15	QPSK	18900	36RB#39	22.36	23.74	PASS
LTE Band 2	15	QPSK	18900	75RB#0	22.40	23.78	PASS
LTE Band 2	15	QPSK	19125	1RB#0	23.42	25.01	PASS
LTE Band 2	15	QPSK	19125	1RB#38	23.13	24.72	PASS
LTE Band 2	15	QPSK	19125	1RB#74	23.17	24.76	PASS
LTE Band 2	15	QPSK	19125	36RB#0	22.44	24.03	PASS
LTE Band 2	15	QPSK	19125	36RB#18	22.51	24.10	PASS
LTE Band 2	15	QPSK	19125	36RB#39	22.48	24.07	PASS
LTE Band 2	15	QPSK	19125	75RB#0	22.42	24.01	PASS
LTE Band 2	15	16QAM	18675	1RB#0	22.21	23.46	PASS
LTE Band 2	15	16QAM	18675	1RB#38	22.39	23.64	PASS
LTE Band 2	15	16QAM	18675	1RB#74	22.09	23.34	PASS
LTE Band 2	15	16QAM	18675	36RB#0	21.41	22.66	PASS
LTE Band 2	15	16QAM	18675	36RB#18	21.36	22.61	PASS
LTE Band 2	15	16QAM	18675	36RB#39	21.35	22.60	PASS
LTE Band 2	15	16QAM	18675	75RB#0	21.30	22.55	PASS
LTE Band 2	15	16QAM	18900	1RB#0	22.25	23.63	PASS
LTE Band 2	15	16QAM	18900	1RB#38	22.05	23.43	PASS
LTE Band 2	15	16QAM	18900	1RB#74	22.20	23.58	PASS
LTE Band 2	15	16QAM	18900	36RB#0	21.28	22.66	PASS
LTE Band 2	15	16QAM	18900	36RB#18	21.14	22.52	PASS
LTE Band 2	15	16QAM	18900	36RB#39	21.28	22.66	PASS
LTE Band 2	15	16QAM	18900	75RB#0	21.20	22.58	PASS
LTE Band 2	15	16QAM	19125	1RB#0	22.19	23.78	PASS
LTE Band 2	15	16QAM	19125	1RB#38	22.26	23.85	PASS
LTE Band 2	15	16QAM	19125	1RB#74	22.11	23.70	PASS

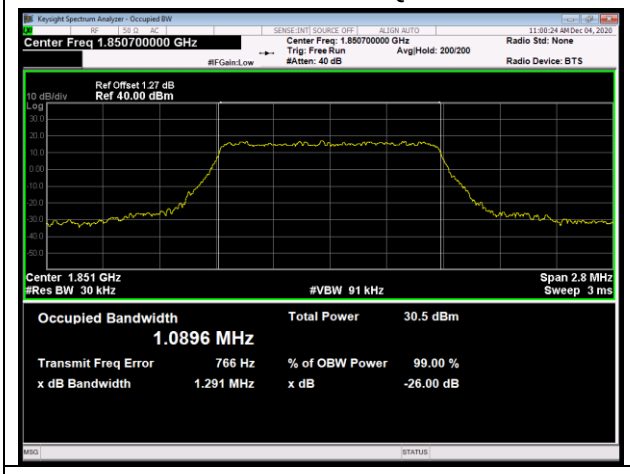
LTE Band 2	15	16QAM	19125	36RB#0	21.31	22.90	PASS
LTE Band 2	15	16QAM	19125	36RB#18	21.48	23.07	PASS
LTE Band 2	15	16QAM	19125	36RB#39	21.47	23.06	PASS
LTE Band 2	15	16QAM	19125	75RB#0	21.39	22.98	PASS
LTE Band 2	20	QPSK	18700	1RB#0	23.37	24.62	PASS
LTE Band 2	20	QPSK	18700	1RB#50	23.48	24.73	PASS
LTE Band 2	20	QPSK	18700	1RB#99	23.44	24.69	PASS
LTE Band 2	20	QPSK	18700	50RB#0	22.43	23.68	PASS
LTE Band 2	20	QPSK	18700	50RB#25	22.51	23.76	PASS
LTE Band 2	20	QPSK	18700	50RB#50	22.34	23.59	PASS
LTE Band 2	20	QPSK	18700	100RB#0	22.42	23.67	PASS
LTE Band 2	20	QPSK	18900	1RB#0	23.29	24.67	PASS
LTE Band 2	20	QPSK	18900	1RB#50	23.41	24.79	PASS
LTE Band 2	20	QPSK	18900	1RB#99	23.08	24.46	PASS
LTE Band 2	20	QPSK	18900	50RB#0	22.28	23.66	PASS
LTE Band 2	20	QPSK	18900	50RB#25	22.27	23.65	PASS
LTE Band 2	20	QPSK	18900	50RB#50	22.31	23.69	PASS
LTE Band 2	20	QPSK	18900	100RB#0	22.35	23.73	PASS
LTE Band 2	20	QPSK	19100	1RB#0	23.39	24.98	PASS
LTE Band 2	20	QPSK	19100	1RB#50	23.11	24.70	PASS
LTE Band 2	20	QPSK	19100	1RB#99	23.14	24.73	PASS
LTE Band 2	20	QPSK	19100	50RB#0	22.40	23.99	PASS
LTE Band 2	20	QPSK	19100	50RB#25	22.48	24.07	PASS
LTE Band 2	20	QPSK	19100	50RB#50	22.44	24.03	PASS
LTE Band 2	20	QPSK	19100	100RB#0	22.38	23.97	PASS
LTE Band 2	20	16QAM	18700	1RB#0	22.19	23.44	PASS
LTE Band 2	20	16QAM	18700	1RB#50	22.35	23.60	PASS
LTE Band 2	20	16QAM	18700	1RB#99	22.07	23.32	PASS
LTE Band 2	20	16QAM	18700	50RB#0	21.38	22.63	PASS
LTE Band 2	20	16QAM	18700	50RB#25	21.33	22.58	PASS
LTE Band 2	20	16QAM	18700	50RB#50	21.32	22.57	PASS
LTE Band 2	20	16QAM	18700	100RB#0	21.28	22.53	PASS
LTE Band 2	20	16QAM	18900	1RB#0	22.21	23.59	PASS
LTE Band 2	20	16QAM	18900	1RB#50	22.03	23.41	PASS
LTE Band 2	20	16QAM	18900	1RB#99	22.17	23.55	PASS
LTE Band 2	20	16QAM	18900	50RB#0	21.24	22.62	PASS
LTE Band 2	20	16QAM	18900	50RB#25	21.12	22.50	PASS
LTE Band 2	20	16QAM	18900	50RB#50	21.23	22.61	PASS
LTE Band 2	20	16QAM	18900	100RB#0	21.16	22.54	PASS
LTE Band 2	20	16QAM	19100	1RB#0	22.14	23.73	PASS
LTE Band 2	20	16QAM	19100	1RB#50	22.22	23.81	PASS
LTE Band 2	20	16QAM	19100	1RB#99	22.09	23.68	PASS
LTE Band 2	20	16QAM	19100	50RB#0	21.28	22.87	PASS

LTE Band 2	20	16QAM	19100	50RB#25	21.45	23.04	PASS
LTE Band 2	20	16QAM	19100	50RB#50	21.43	23.02	PASS
LTE Band 2	20	16QAM	19100	100RB#0	21.36	22.95	PASS

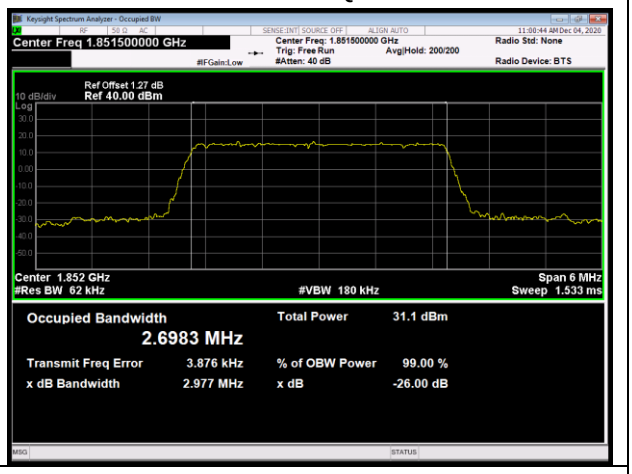
6.2. Occupied Bandwidth

LTE Band 2					
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
QPSK	1.4	18607	1850.7	1.0896	1.291
		18900	1880	1.0975	1.291
		19193	1909.3	1.1029	1.277
	3	18615	1851.5	2.6983	2.977
		18900	1880	2.7030	2.989
		19185	1908.5	2.7087	3.002
	5	18625	1852.5	4.5173	4.960
		18900	1880	4.5193	4.984
		19175	1907.5	4.5224	4.948
	10	18650	1855	8.9783	9.872
		18900	1880	8.9586	9.740
		19150	1905	8.9791	9.795
	15	18675	1857.5	13.3920	14.650
		18900	1880	13.4140	14.400
		19125	1902.5	13.4270	14.600
	20	18700	1860	17.9190	19.390
		18900	1880	17.8950	19.320
		19100	1900	17.8510	19.300
16QAM	1.4	18607	1850.7	1.1009	1.286
		18900	1880	1.0962	1.270
		19193	1909.3	1.0913	1.295
	3	18615	1851.5	2.6924	2.960
		18900	1880	2.6896	3.008
		19185	1908.5	2.6970	3.003
	5	18625	1852.5	4.5011	4.976
		18900	1880	4.5183	5.023
		19175	1907.5	4.5216	5.048
	10	18650	1855	8.9743	9.681
		18900	1880	8.9552	9.616
		19150	1905	8.9662	9.879
	15	18675	1857.5	13.4430	14.520
		18900	1880	13.4250	14.590
		19125	1902.5	13.4300	14.520
	20	18700	1860	17.9140	19.200
		18900	1880	17.8830	19.380
		19100	1900	17.8850	19.310

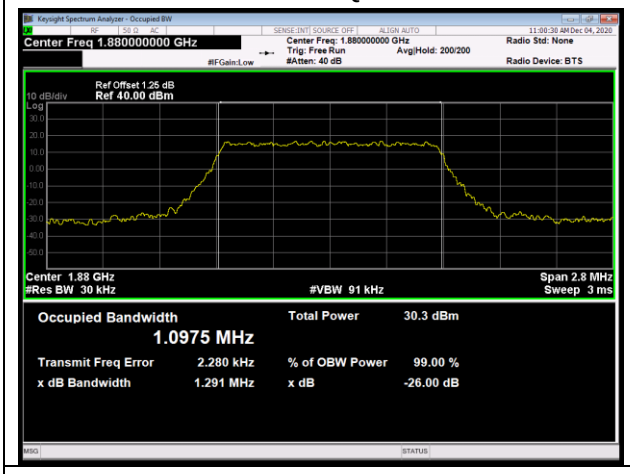
LTE Band 2 1.4MHz QPSK CH-Low



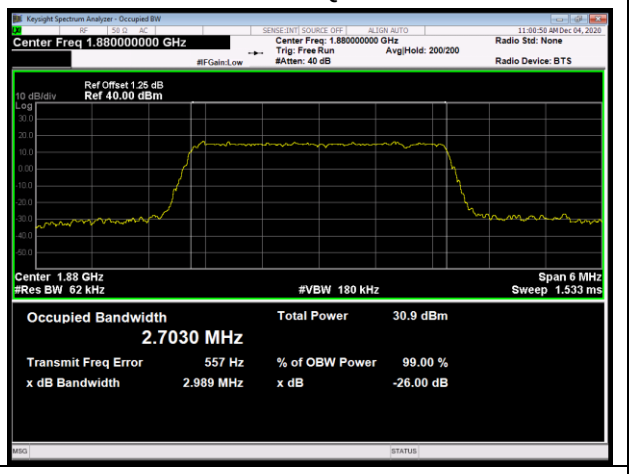
LTE Band 2 3MHz QPSK CH-Low



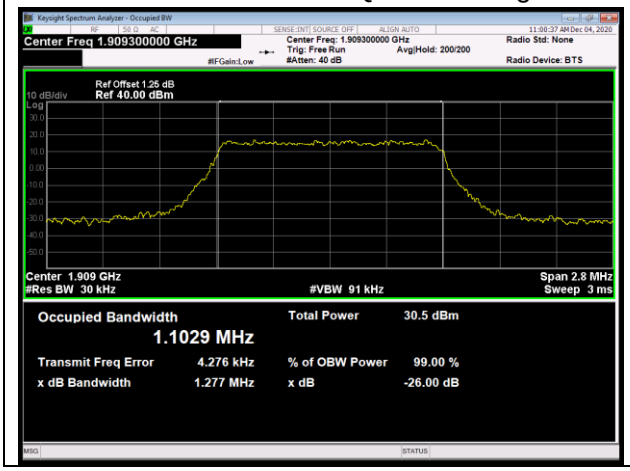
LTE Band 2 1.4MHz QPSK CH-Middle



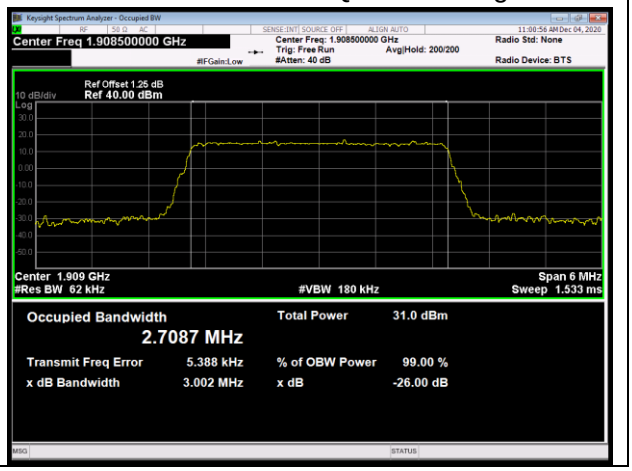
LTE Band 2 3MHz QPSK CH-Middle



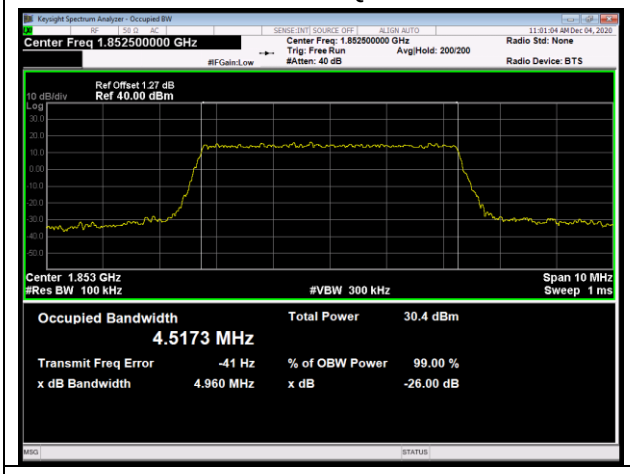
LTE Band 2 1.4MHz QPSK CH-High



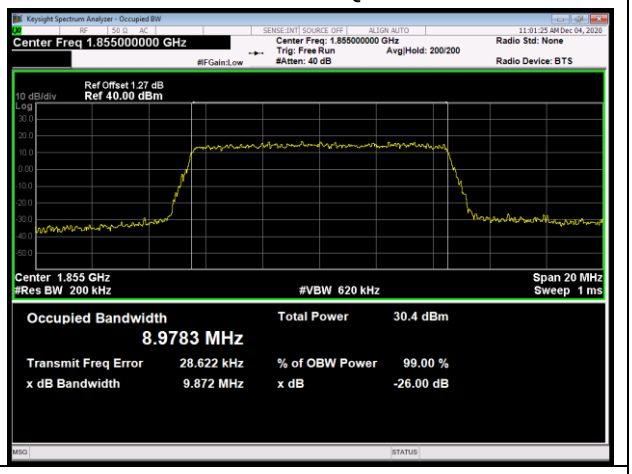
LTE Band 2 3MHz QPSK CH-High



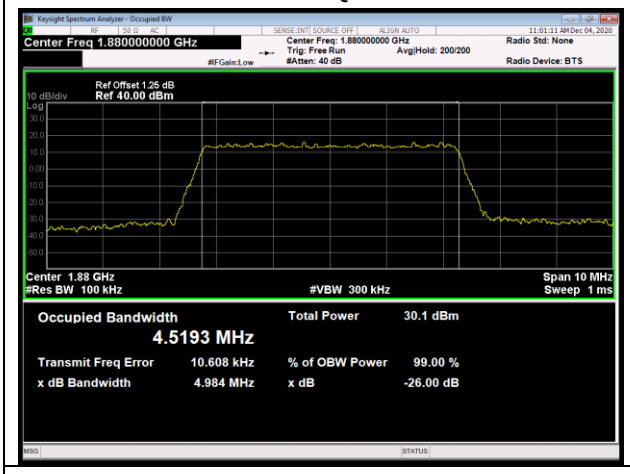
LTE Band 2 5MHz QPSK CH-Low



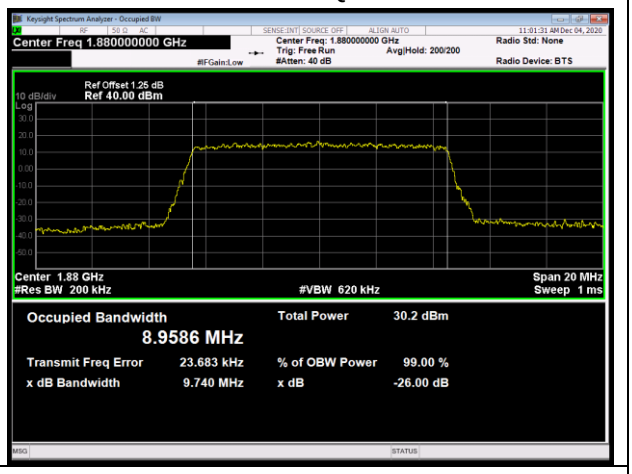
LTE Band 2 10MHz QPSK CH-Low



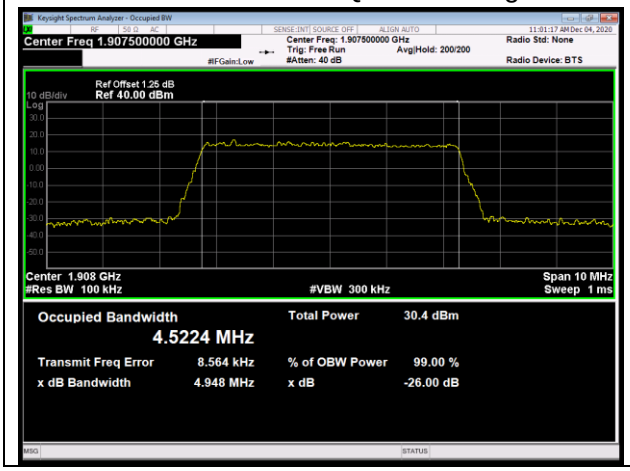
LTE Band 2 5MHz QPSK CH-Middle



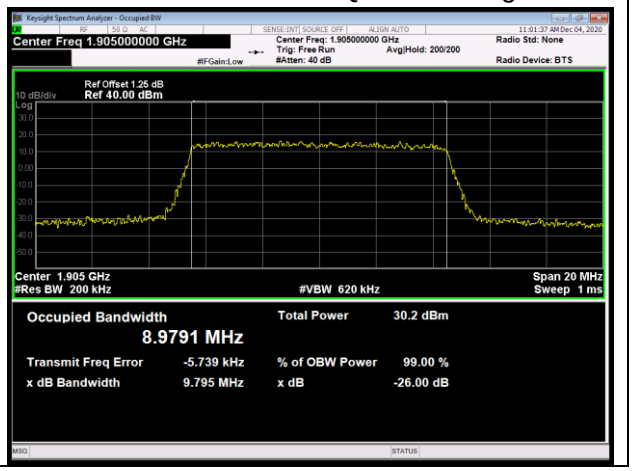
LTE Band 2 10MHz QPSK CH-Middle



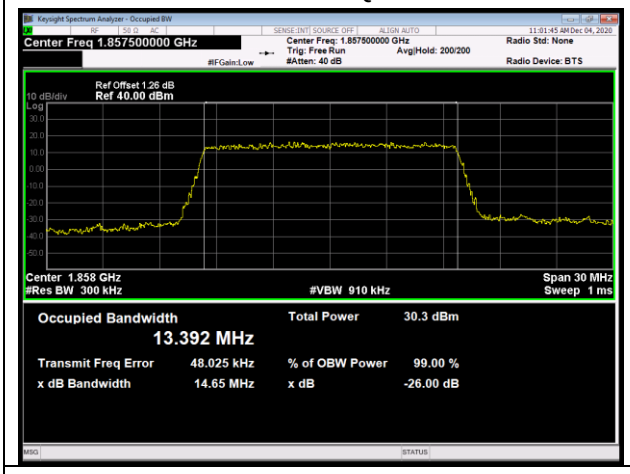
LTE Band 2 5MHz QPSK CH-High



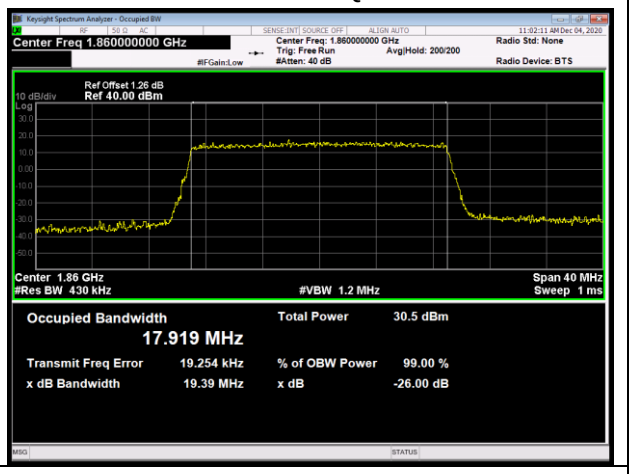
LTE Band 2 10MHz QPSK CH-High



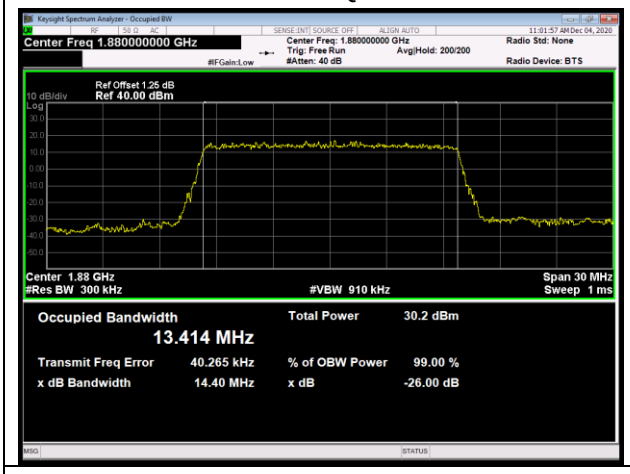
LTE Band 2 15MHz QPSK CH-Low



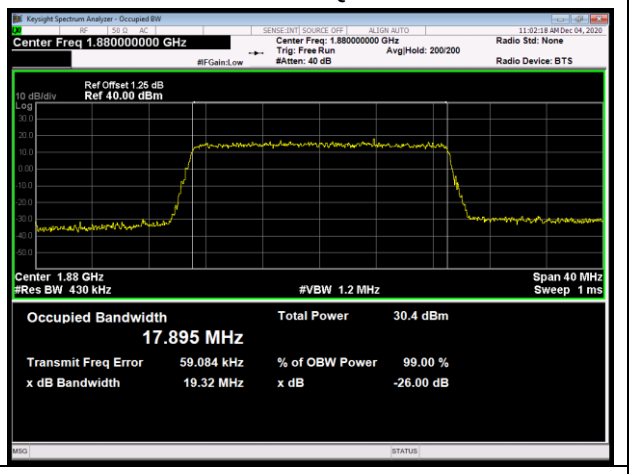
LTE Band 2 20MHz QPSK CH-Low



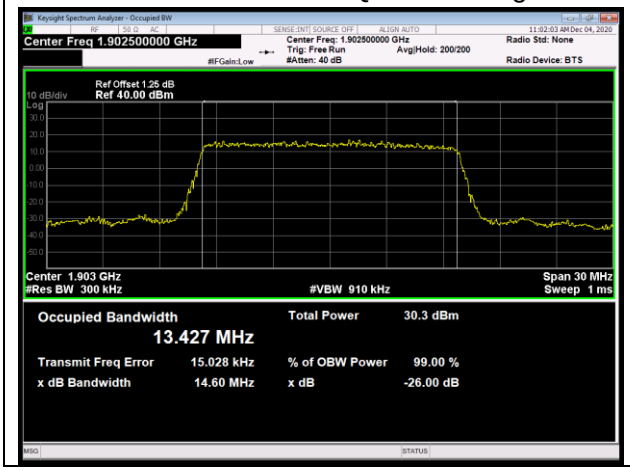
LTE Band 2 15MHz QPSK CH-Middle



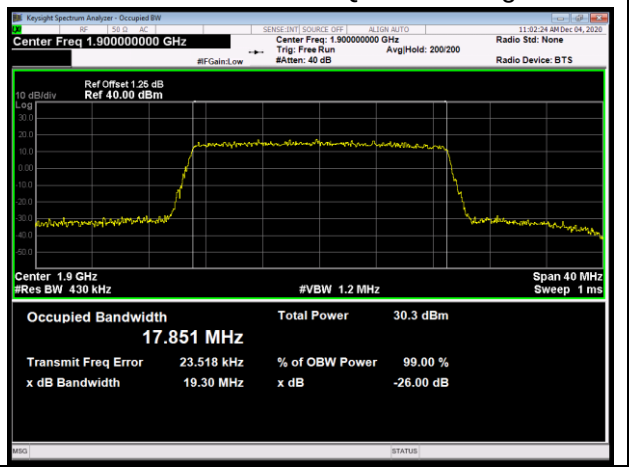
LTE Band 2 20MHz QPSK CH-Middle



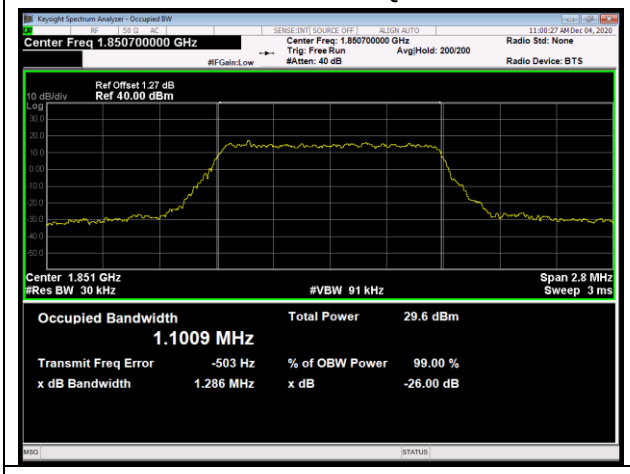
LTE Band 2 15MHz QPSK CH-High



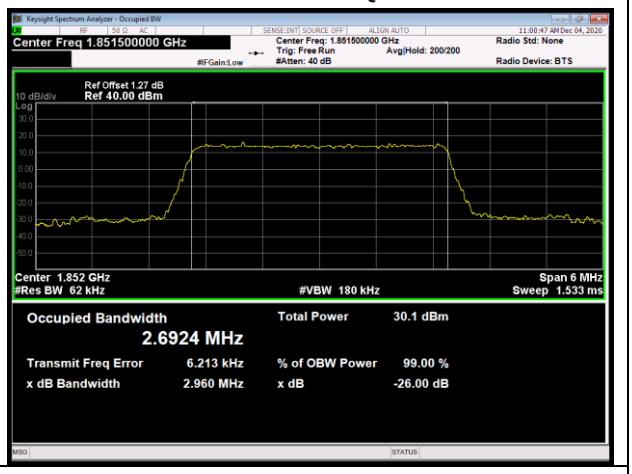
LTE Band 2 20MHz QPSK CH-High



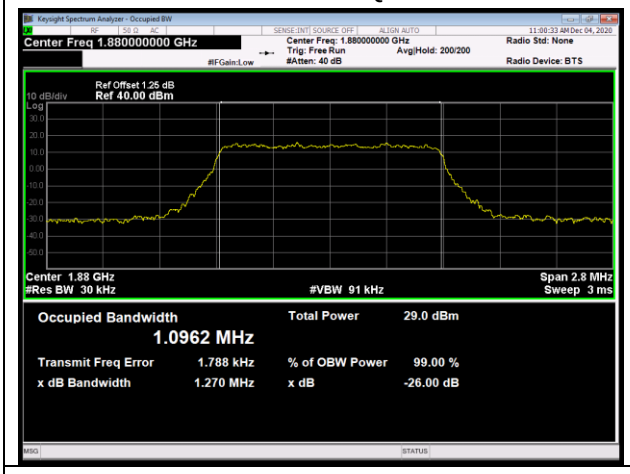
LTE Band 2 1.4MHz 16QAM CH-Low



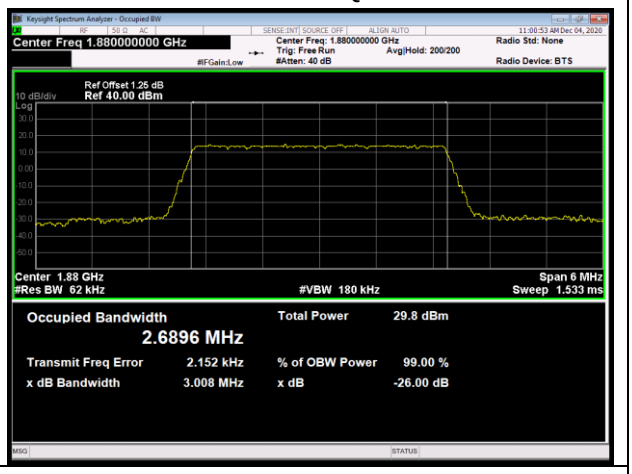
LTE Band 2 3MHz 16QAM CH-Low



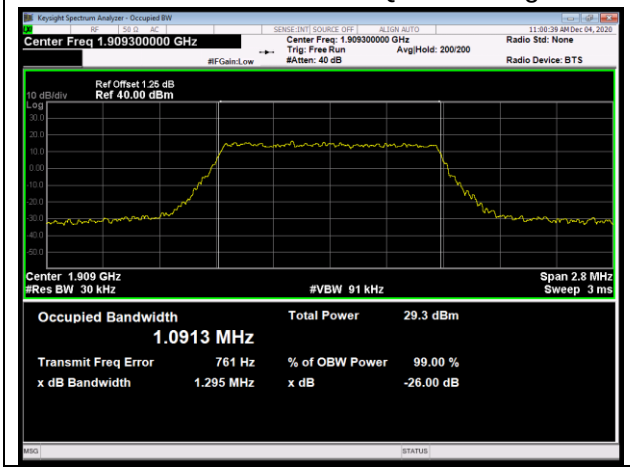
LTE Band 2 1.4MHz 16QAM CH-Middle



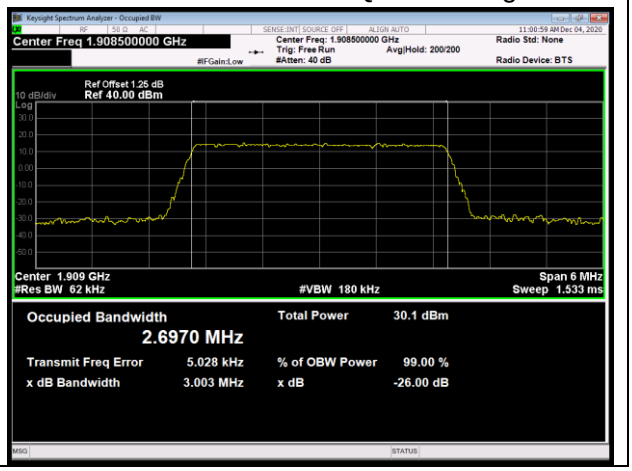
LTE Band 2 3MHz 16QAM CH-Middle



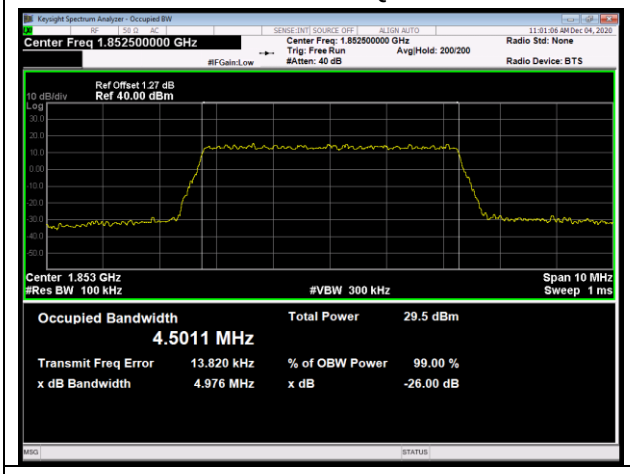
LTE Band 2 1.4MHz 16QAM CH-High



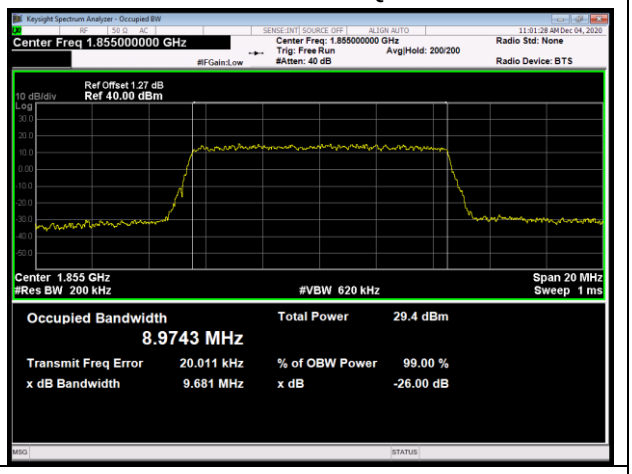
LTE Band 2 3MHz 16QAM CH-High



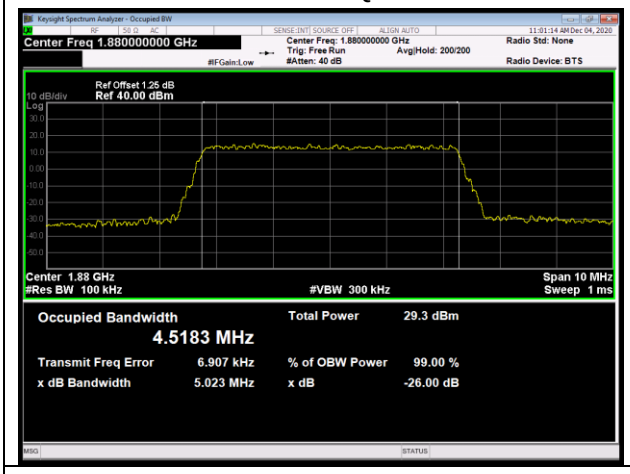
LTE Band 2 5MHz 16QAM CH-Low



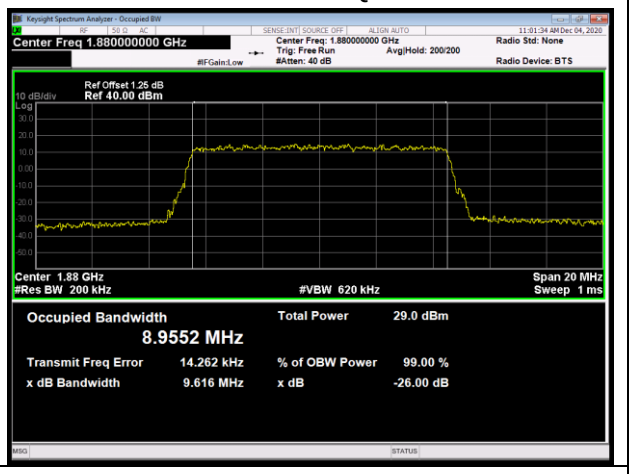
LTE Band 2 10MHz 16QAM CH-Low



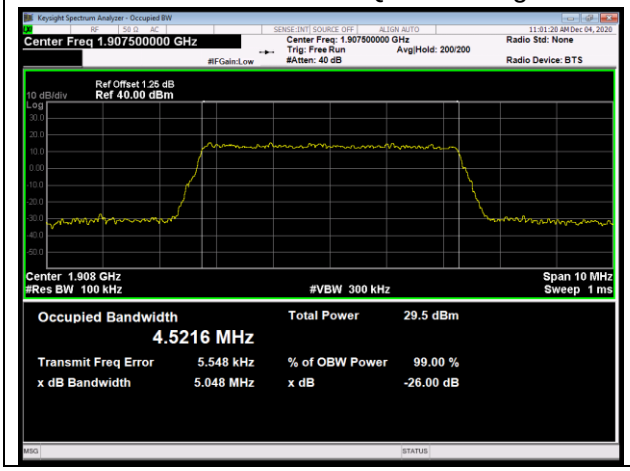
LTE Band 2 5MHz 16QAM CH-Middle



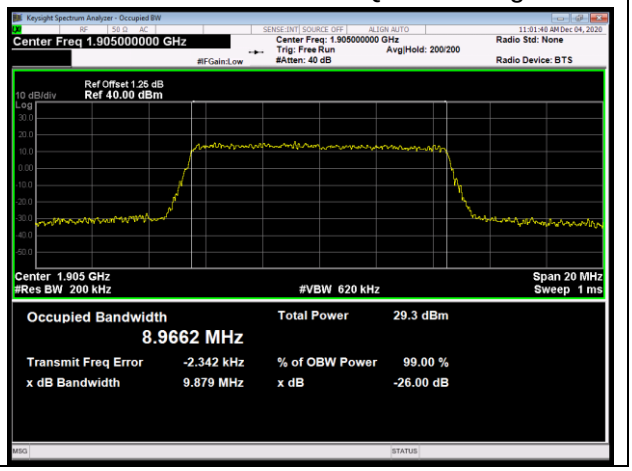
LTE Band 2 10MHz 16QAM CH-Middle



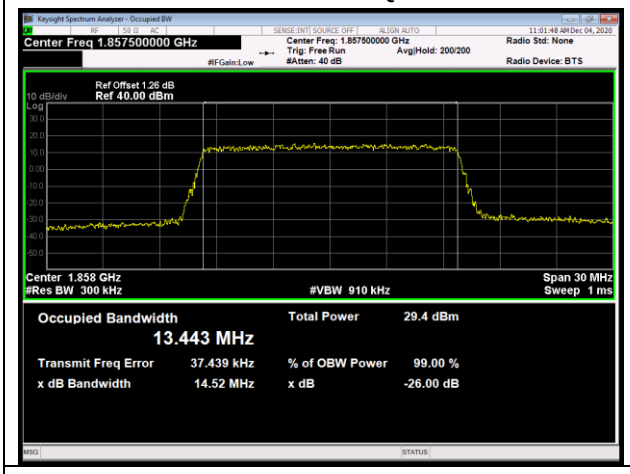
LTE Band 2 5MHz 16QAM CH-High



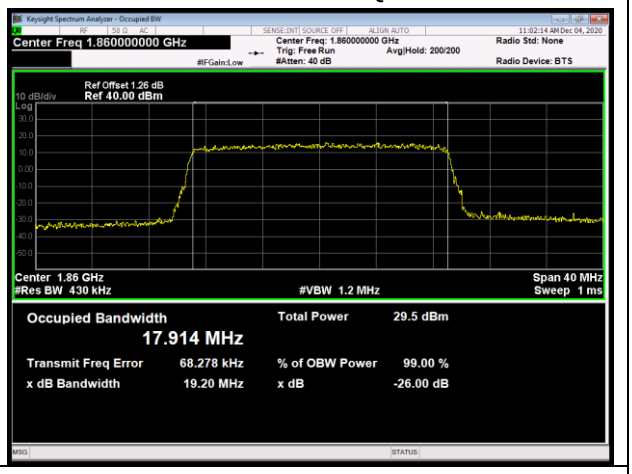
LTE Band 2 10MHz 16QAM CH-High



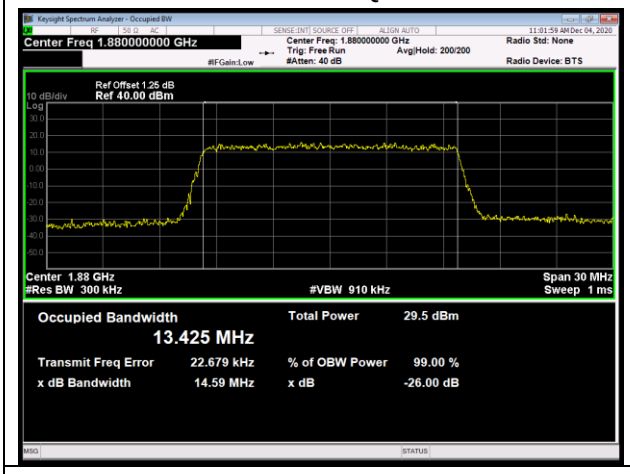
LTE Band 2 15MHz 16QAM CH-Low



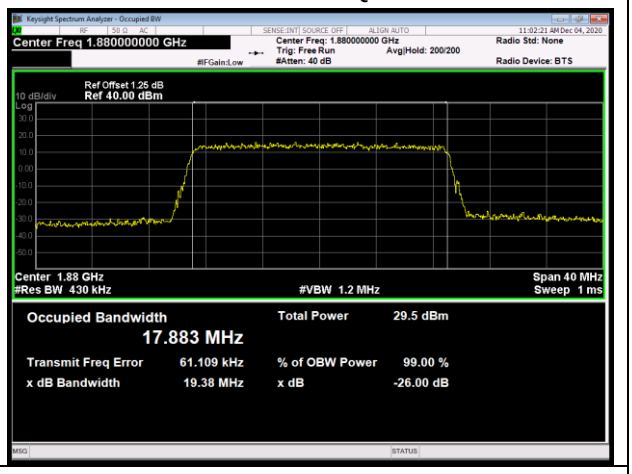
LTE Band 2 20MHz 16QAM CH-Low



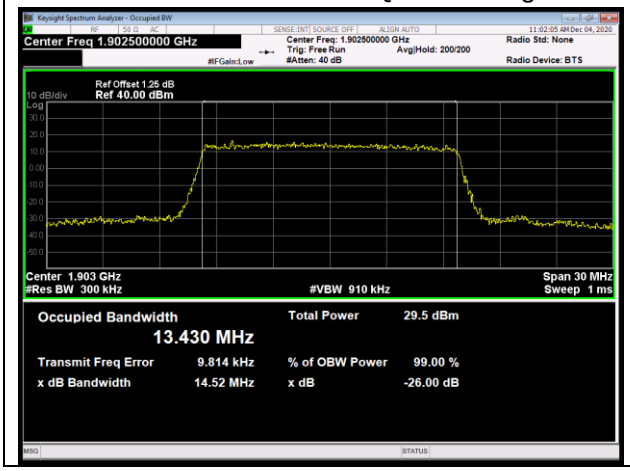
LTE Band 2 15MHz 16QAM CH-Middle



LTE Band 2 20MHz 16QAM CH-Middle



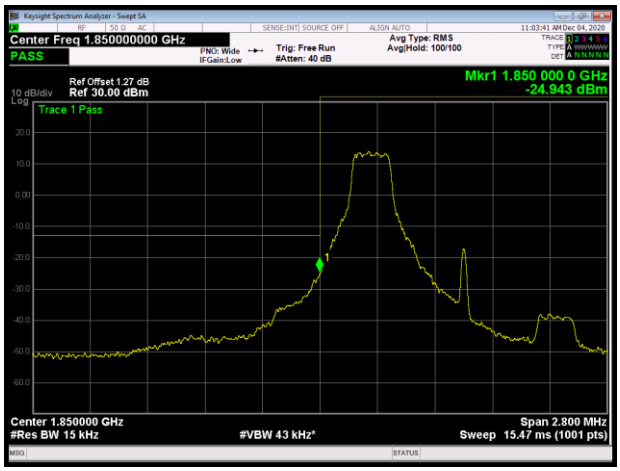
LTE Band 2 15MHz 16QAM CH-High



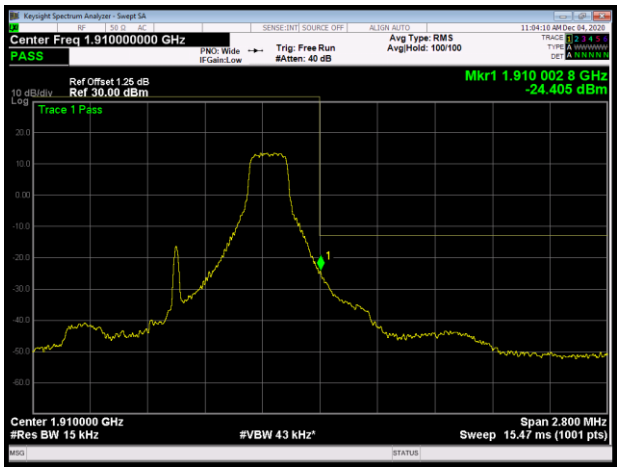
LTE Band 2 20MHz 16QAM CH-High

6.3. Band Edge Compliance

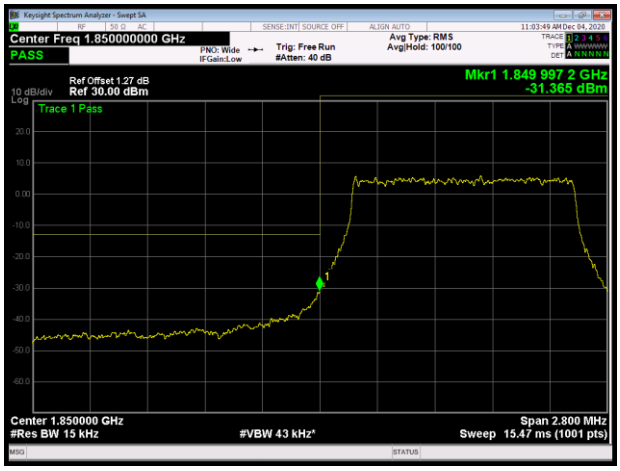
LTE Band 2 1.4MHz QPSK 1RB CH-Low



LTE Band 2 1.4MHz QPSK 1RB CH-High

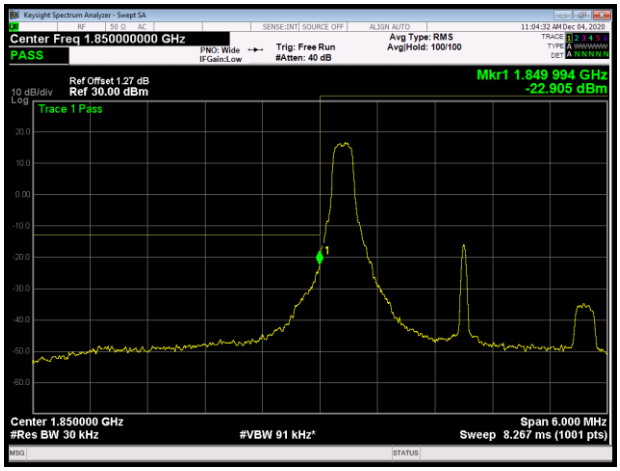


LTE Band 2 1.4MHz QPSK 100%RB CH-Low

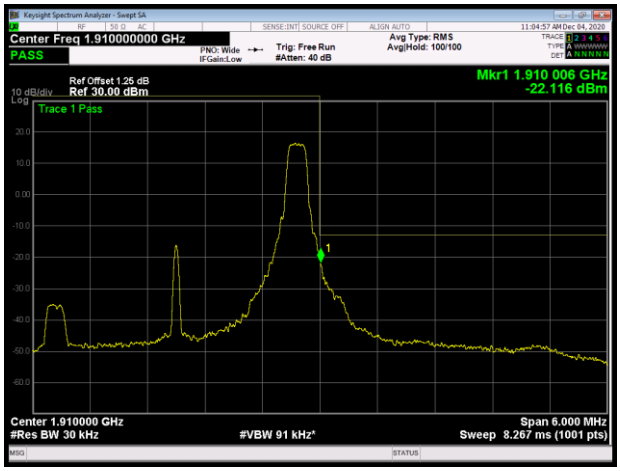


LTE Band 2 1.4MHz QPSK 100%RB CH-High

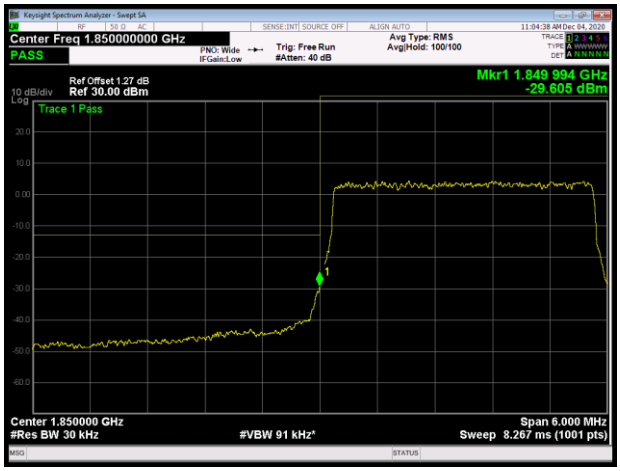
LTE Band 2 3MHz QPSK 1RB CH-Low



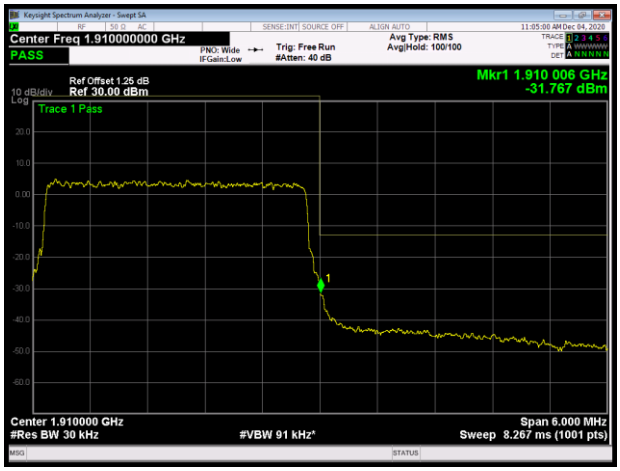
LTE Band 2 3MHz QPSK 1RB CH-High



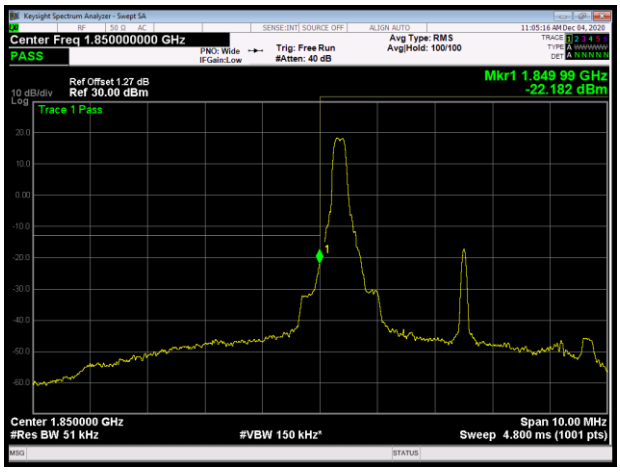
LTE Band 2 3MHz QPSK 100%RB CH-Low



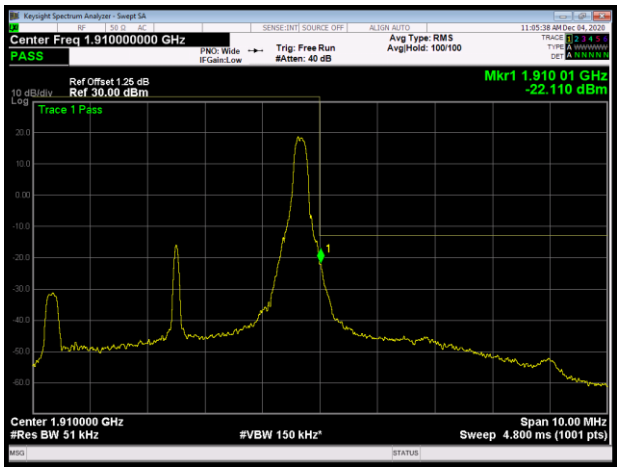
LTE Band 2 3MHz QPSK 100%RB CH-High



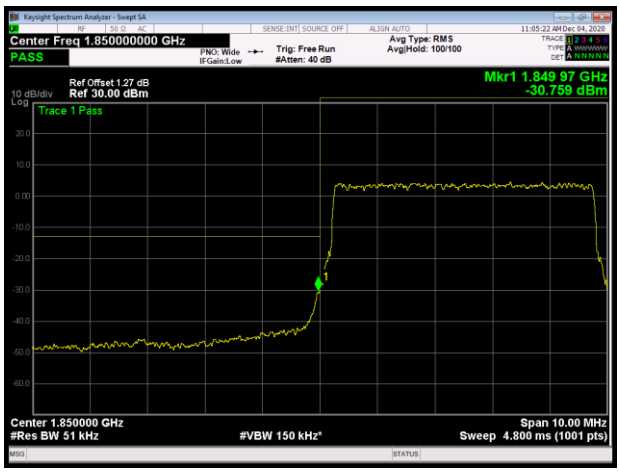
LTE Band 2 5MHz QPSK 1RB CH-Low



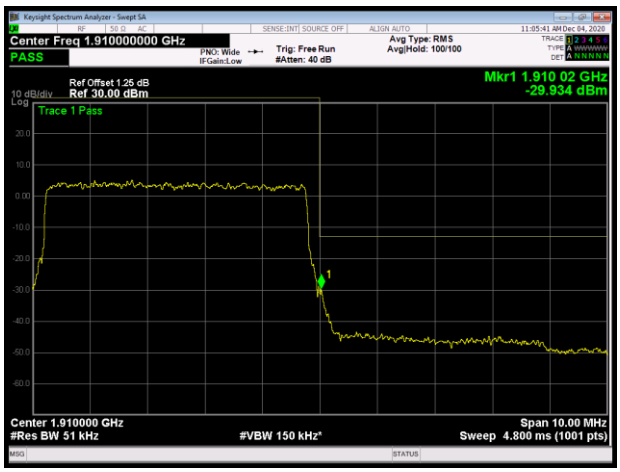
LTE Band 2 5MHz QPSK 1RB CH-High



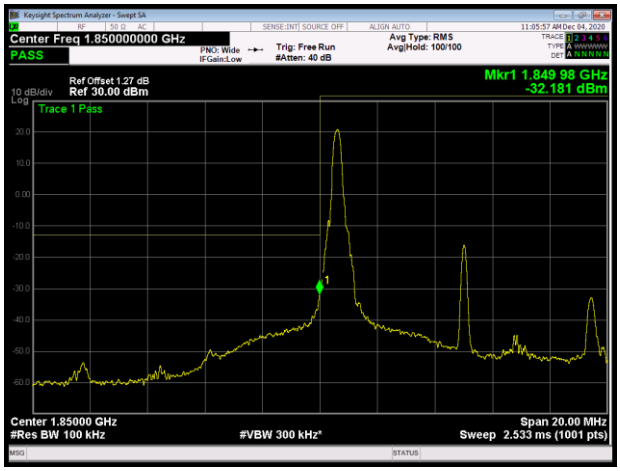
LTE Band 2 5MHz QPSK 100%RB CH-Low



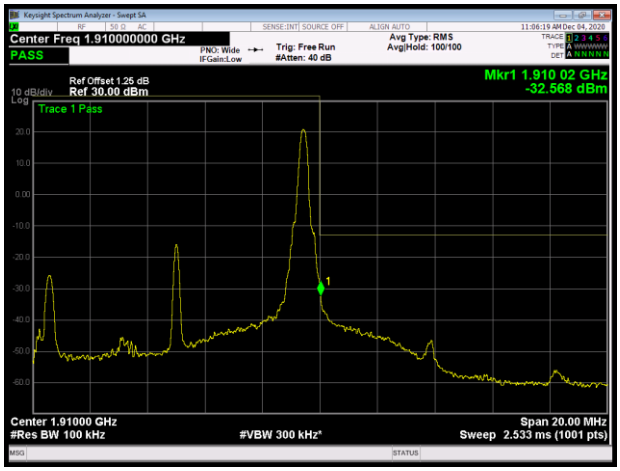
LTE Band 2 5MHz QPSK 100%RB CH-High



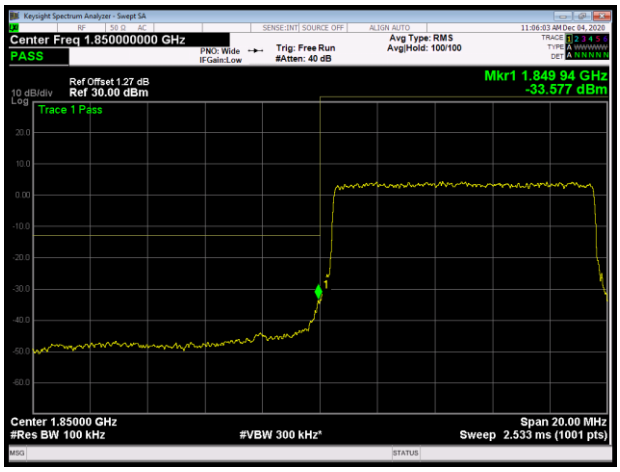
LTE Band 2 10MHz QPSK 1RB CH-Low



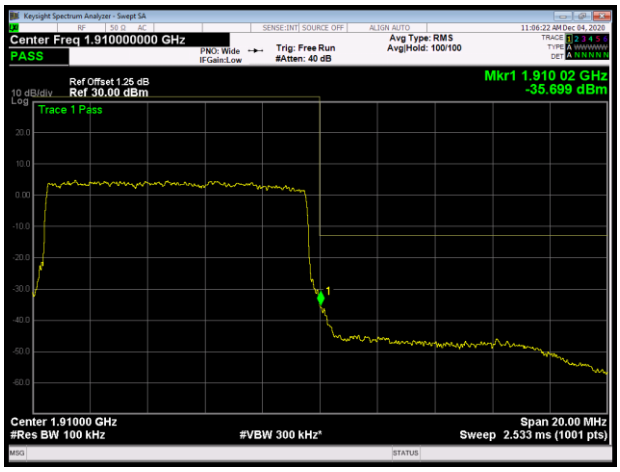
LTE Band 2 10MHz QPSK 1RB CH-High



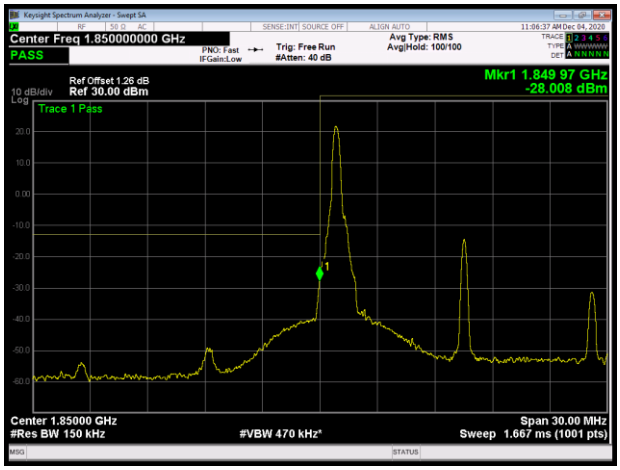
LTE Band 2 10MHz QPSK 100%RB CH-Low



LTE Band 2 10MHz QPSK 100%RB CH-High



LTE Band 2 15MHz QPSK 1RB CH-Low



LTE Band 2 15MHz QPSK 1RB CH-High