



# RF TEST REPORT

**Applicant**      MobiWire SAS

**FCC ID**          QPN-H6511

**Product**        4G Smart Phone

**Brand**            MobiWire; MobiWire; Vodafone

**Model**            MobiWire H6511; MBW Vodafone  
Smart T23; Vodafone Pro 4G

**Report No.**      R2209A0850-R3V1

**Issue Date**      November 25, 2022

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2021)/ FCC CFR47 Part 27C (2021)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Xu Ying

Approved by: Xu Kai

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Version	Revision description	Issue Date
Rev.0	Initial issue of report.	November 23, 2022
Rev.1	Update data.	November 25, 2022

Note: This revised report (Report No. R2209A0850-R3V1) supersedes and replaces the previously issued report (Report No. R2209A0850-R3). Please discard or destroy the previously issued report and dispose of it accordingly.



## Summary of Measurement Results

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

Date of Testing: September 17, 2022 ~ November 14, 2022

Date of Sample Received: September 15, 2022

Note: PASS: The EUT complies with the essential requirements in the standard.

FAIL: The EUT does not comply with the essential requirements in the standard.

All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.



# 1 Test Laboratory

## 1.1 Notes of the Test Report

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

## 1.2. Test facility

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

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

### **A2LA (Certificate Number: 3857.01)**

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

## 1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.  
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## 2 General Description of Equipment under Test

### 2.1 Applicant and Manufacturer Information

Applicant	MobiWire SAS
Applicant address	107 Boulevard de la Mission Marchand, 92400 Courbevoie, France.
Manufacturer	MobiWire SAS
Manufacturer address	107 Boulevard de la Mission Marchand, 92400 Courbevoie, France.

### 2.2 General information

EUT Description			
Model	MobiWire H6511; MBW Vodafone Smart T23; Vodafone Pro 4G		
IMEI	356662530000204		
Hardware Version	V00		
Software Version	MobiWire_H6511M_V01		
Power Supply	Battery / AC adapter		
Antenna Type	Fixed Internal Antenna		
Antenna Gain	Mode	Frequency (MHz)	Gain (dBi)
	LTE Band 4	1710	-4.10
		1720	-4.23
		1730	-4.11
		1740	-3.93
		1750	-4.00
		1760	-3.84
	LTE Band 7	2500	-2.31
		2510	-2.92
		2520	-3.25
		2530	-3.17
		2540	-3.35
		2550	-3.31
		2560	-2.97
		2570	-3.06
	LTE Band 40 Subset 1	2300	-3.14
		2310	-3.15
		2320	-2.83
	LTE Band 40 Subset 2	2350	-2.67
		2360	-2.57
Test Mode(s)	LTE Band 4/7/40;		
Test Modulation	(LTE) QPSK, 16QAM;		



LTE Category	4		
Maximum E.I.R.P./ E.R.P.	LTE Band 4:	19.63 dBm	
	LTE Band 7:	21.79 dBm	
	LTE Band 40 Subset 1:	20.68 dBm	
		20.38 mW/MHz	
		46.63 mW/5MHz	
	LTE Band 40 Subset 2:	21.30 dBm	
39.98 mW/MHz			
90.84 mW/5MHz			
Rated Power Supply Voltage	3.8V		
Operating Voltage	Minimum: 3.6V    Maximum: 4.35V		
Operating Temperature	Lowest:-10°C    Highest: +55°C		
Testing Temperature	Lowest: -30°C    Highest: +50°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
	LTE Band 40 Subset 1	2305 ~ 2315	2305 ~ 2315
	LTE Band 40 Subset 2	2350 ~ 2360	2350 ~ 2360
<b>EUT Accessory</b>			
Adapter 1	Manufacturer: Jiangxi Jian Aohai Technology Co., Ltd. Model: A103A-050100U-AU2		
Adapter 2	Manufacturer: Dongguan Aohai Technology Co., Ltd. Model: A18A-050100U-US2		
Battery	Manufacturer: Shenzhen Aerospace Electronic Co.,Ltd. Model: 178249224		
Earphone	Manufacturer: JIU JIANG JUWEI ELECTRONICS CO.,LTD Model: JWEP0957-M01R		
USB Cable	Manufacturer: SHENZHENFKY-QYHARDWARE ELECTRONIC CO.,LTD Model: AM/MICRO5P		
<p>Note:</p> <ol style="list-style-type: none"> <li>The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.</li> <li>Radio equipment in band 40 is only allowed to operate from 2305 MHz to 2315 MHz for Subset 1; 2350 MHz to 2360 MHz for Subset 2 for the transmitter and receiver.</li> <li>There is more than one Adapter, each one should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 2) will be recorded in this report.</li> </ol>			



Item	Configure 1	Configure 2
Components on PCB changes	/	add second flash
LCD changes	/	add second flash
Others	The same	The same

Note: Customer declaration, two configures is the same, except for flash. There are more than one Configure, each one should be applied throughout the compliance test respectively, and however, only the worst case (Configure 1) will be recorded in this report.

Three models: MobiWire H6511; Vodafone Pro 4G; MBW Vodafone Smart T23

The difference:

Vodafone Pro 4G; MBW Vodafone Smart T23:

1: Battery cover silkscreen logo is different.

MobiWire H6511 is same as Vodafone Pro 4G, no difference. And only the data for MobiWire H6511 is recorded in this report.





### 3 Applied Standards

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

**Test standards:**

**FCC CFR47 Part 27C (2021)**

**FCC CFR47 Part 2 (2021)**

**Reference standard:**

**ANSI C63.26-2015**

**KDB 971168 D01 Power Meas License Digital Systems v03r01**

## 4 Test Configuration

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

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:

Test modes are chosen to be reported as the worst case configuration below for LTE Band 4/7/ Band 40 Subset 1/ Band 40 Subset 2:

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
	LTE Band 40 Subset 1	-	-	O	O	-	-	O	O	O	O	O	O	O	O
	LTE Band 40 Subset 2	-	-	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
	LTE Band 40 Subset 1	-	-	O	O	-	-	O	O	O	O	-	O	O	O
	LTE Band 40 Subset 2	-	-	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
	LTE Band 40 Subset 1	-	-	O	O	-	-	O	O	O	-	O	O	-	O
	LTE Band 40 Subset 2	-	-	O	O	-	-	O	O	O	-	O	O	-	O
Peak-to-Average Power	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



Ratio	LTE Band 40 Subset 1	-	-	0	0	-	-	0	0	0	-	0	0	-	0
	LTE Band 40 Subset 2	-	-	0	0	-	-	0	0	0	-	0	0	-	0
Frequency Stability	LTE 4	0	0	0	0	0	0	0	0	0	-	-	-	0	-
	LTE 7	-	-	0	0	0	0	0	0	0	-	-	-	0	-
	LTE Band 40 Subset 1	-	-	0	0	-	-	0	0	0	-	0	0	-	0
	LTE Band 40 Subset 2	-	-	0	0	-	-	0	0	0	-	0	0	-	0
Spurious Emissions at Antenna Terminals	LTE 4	0	0	0	0	0	0	0	-	0	-	-	0	0	0
	LTE 7	-	-	0	0	0	0	0	-	0	-	-	0	0	0
	LTE Band 40 Subset 1	-	-	0	0	-	-	0	0	0	-	0	0	-	0
	LTE Band 40 Subset 2	-	-	0	0	-	-	0	0	0	-	0	0	-	0
Radiated Spurious Emission	LTE 4	0	-	0	-	-	0	0	-	0	-	-	-	0	-
	LTE 7	-	-	0	-	-	0	0	-	0	-	-	-	0	-
	LTE Band 40 Subset 1	-	-	0	-	-	0	0	0	0	-	-	-	0	-
	LTE Band 40 Subset 2	-	-	0	-	-	0	0	0	0	-	-	-	0	-
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
23°C ~25°C	45%~50%	101.5kPa

#### Methods of Measurement

During the process of the testing, The EUT was connected to the Base Station Simulator with a known loss. The EUT is controlled by the Base Station Simulator test set to ensure max power transmission with proper modulation.

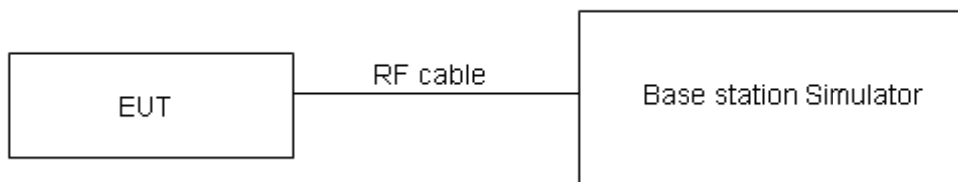
ERP can then be calculated as follows:

$$\text{EIRP (dBm)} = \text{Output Power (dBm)} + \text{Antenna Gain (dBi)}$$

where:dBd refers to gain relative to an ideal dipole.

$$\text{EIRP (dBm)} = \text{ERP (dBm)} + 2.15 \text{ (dB.)}$$

#### Test Setup



#### 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.”

Rule Part 27.50(a) (3) specifies that “(i) For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1



megahertz of authorized bandwidth. ”

Part 27.50(a)(3)Limit	$\leq 250 \text{ mW}$ (24 dBm)
Part 27.50(d)(4)Limit	$\leq 1 \text{ W}$ (30 dBm)
Part 27.50(h)(2) Limit	$\leq 2 \text{ W}$ (33 dBm)

For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

### 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

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

## 5.2 Occupied Bandwidth

### Ambient condition

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

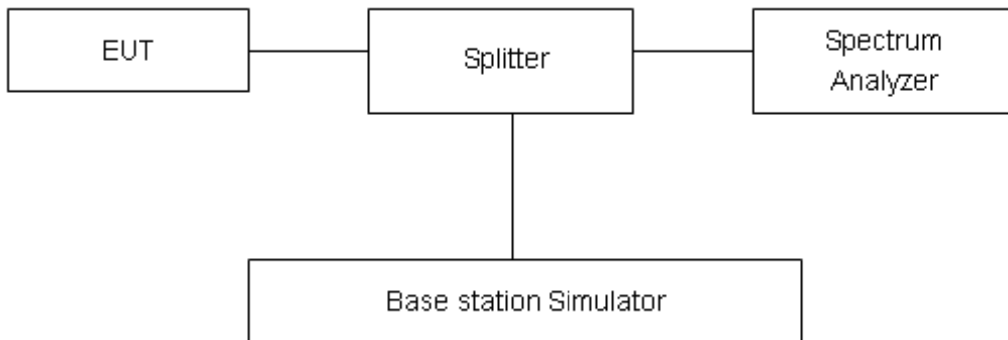
### Method of Measurement

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  $\geq 1\%EBW$ , 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  $k = 2$ ,  $U=624\text{Hz}$ .

### 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
23°C ~25°C	45%~50%	101.5kPa

#### Method of Measurement

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

The testing follows KDB 971168 D01 v03r01 Section 6.0

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

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

For LTE Band 7/38 set RBW  $\geq$  1% EBW in the 1MHz band immediately outside and adjacent to the band edge. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.

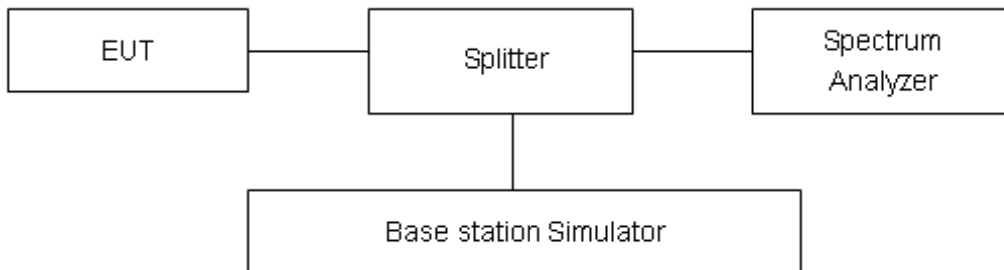
RBW is set to  $\geq$ 1%EBW, VBW is set to 3x RBW on spectrum analyzer.

Set spectrum analyzer with RMS detector.

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

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

#### Test Setup



#### Limits

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

Rule Part 27.53(a) (4) specifies that “By a factor of not less than:  $43 + 10 \log (P)$  dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than  $55 + 10 \log (P)$  dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than  $61 + 10 \log (P)$  dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than  $67 + 10 \log (P)$  dB on all frequencies between 2328 and 2337 MHz; ”

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

### Measurement Uncertainty

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

### Test Results

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



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

#### Ambient condition

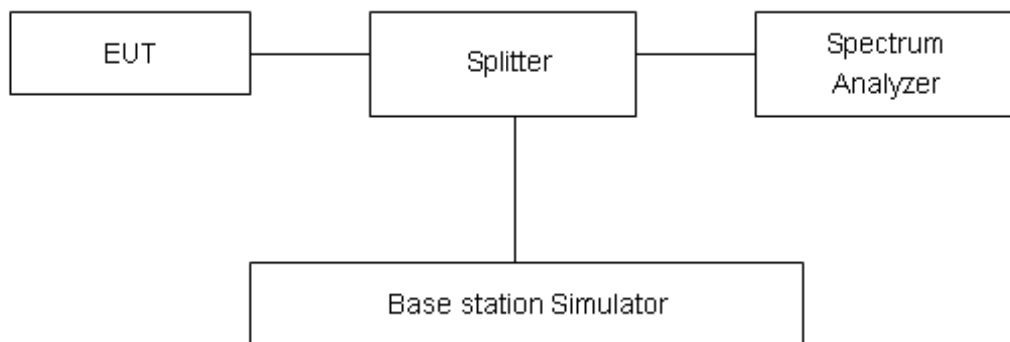
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

#### Methods of Measurement

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

$$PAPR (dB) = PPK (dBm) - PAvg (dBm).$$

#### Test Setup



#### Limits

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

#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for 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
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

#### Frequency Stability (Temperature Variation)

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

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

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

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

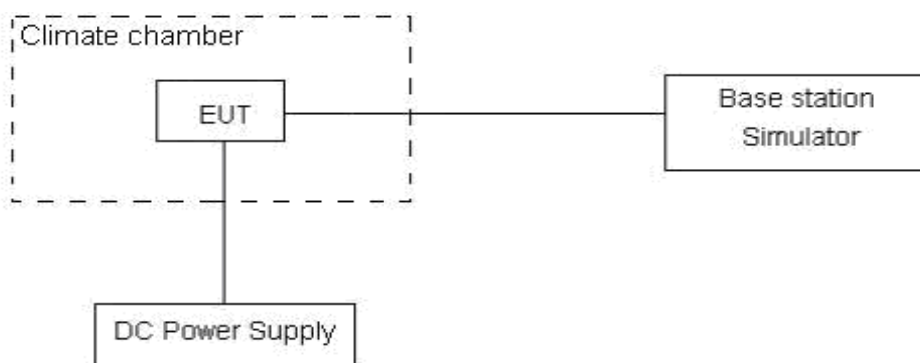
#### Frequency Stability (Voltage Variation)

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

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

This transceiver is specified to operate with an input voltage of between 3.6 V and 4.35 V, with a nominal voltage of 3.8V.

### Test setup



### Limits

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor  $k = 3, U=0.01\text{ppm}$ .

### 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
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 9kHz to the 10th harmonic of the carrier. The peak detector is used.

RBW is set to 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)

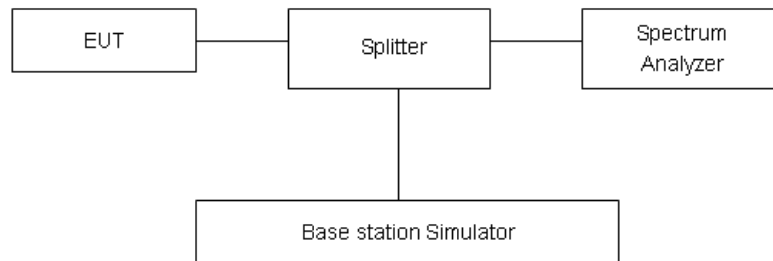
RBW is set to 1000 kHz (above 1000MHz)

Sweep is set to ATUO.

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.

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

### Test setup



### Limits

Rule Part 27.53(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)  $55 + 10 \log(P)$  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.

Rule Part 27.53(a) (4) specifies that “ (ii) By a factor of not less than  $43 + 10 \log(P)$  dB on all frequencies between 2300 and 2305 MHz,  $55 + 10 \log(P)$  dB on all frequencies between 2296 and 2300 MHz,  $61 + 10 \log(P)$  dB on all frequencies between 2292 and 2296 MHz,  $67 + 10 \log(P)$  dB on all frequencies between 2288 and 2292 MHz, and  $70 + 10 \log(P)$  dB below 2288 MHz;

(iii) By a factor of not less than  $43 + 10 \log(P)$  dB on all frequencies between 2360 and 2365 MHz, and not less than  $70 + 10 \log(P)$  dB above 2365 MHz.”



Part 27.53(h) Limit	-13 dBm
Part 27.53(a) Limit	-40 dBm
Part 27.53(m) Limit	-25 dBm

### Measurement Uncertainty

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

Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-30GHz	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
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

- The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26-2015.
- 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).
- 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.
- The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=100kHz, VBW=300kHz for 30MHz to 1GHz and RBW=1MHz, VBW=3MHz for above 1GHz, and the maximum value of the receiver should be recorded as (Pr).
- 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.
- 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.
- The measurement results are obtained as described below:  

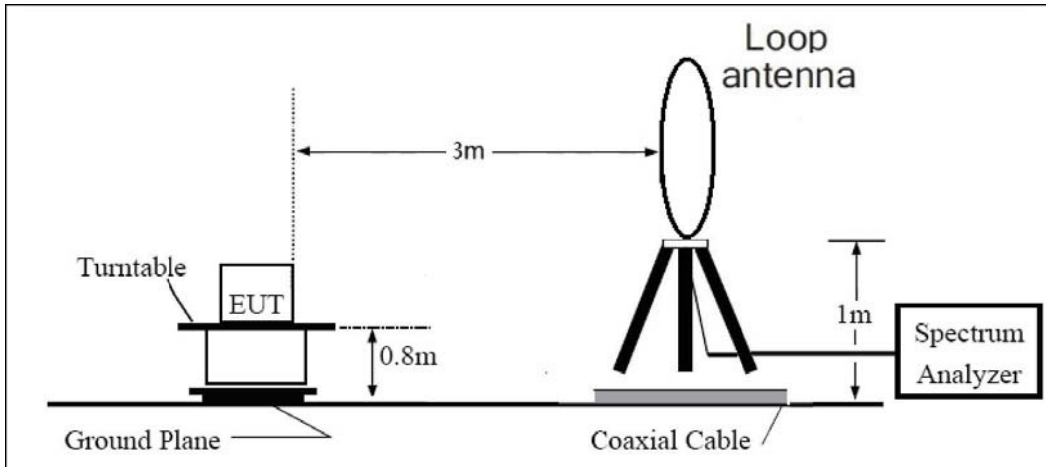
$$\text{Power(EIRP)} = \text{PMea} - \text{PAg} - \text{Pcl} + \text{Ga}$$
 The measurement results are amend as described below:  

$$\text{Power(EIRP)} = \text{PMea} - \text{Pcl} + \text{Ga}$$
- 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,  $\text{ERP} = \text{EIRP} - 2.15\text{dB}$ .

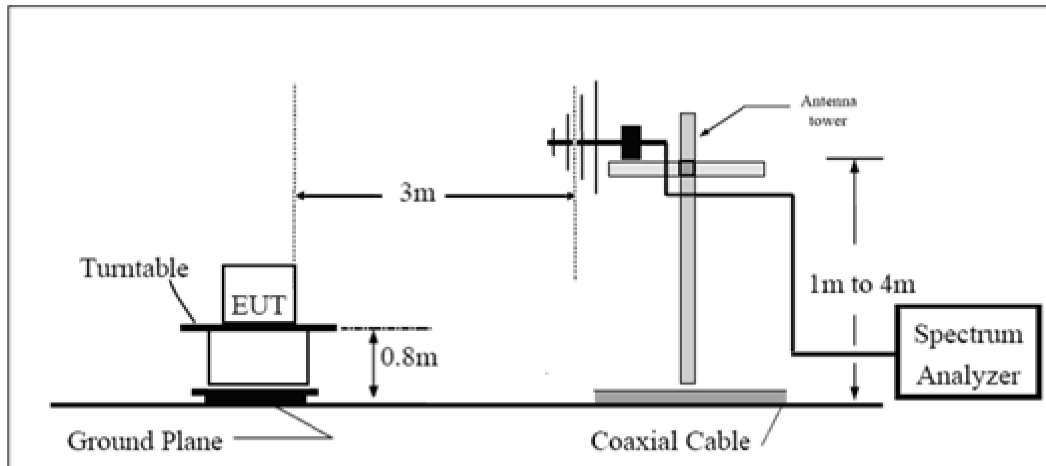
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

**Test setup**

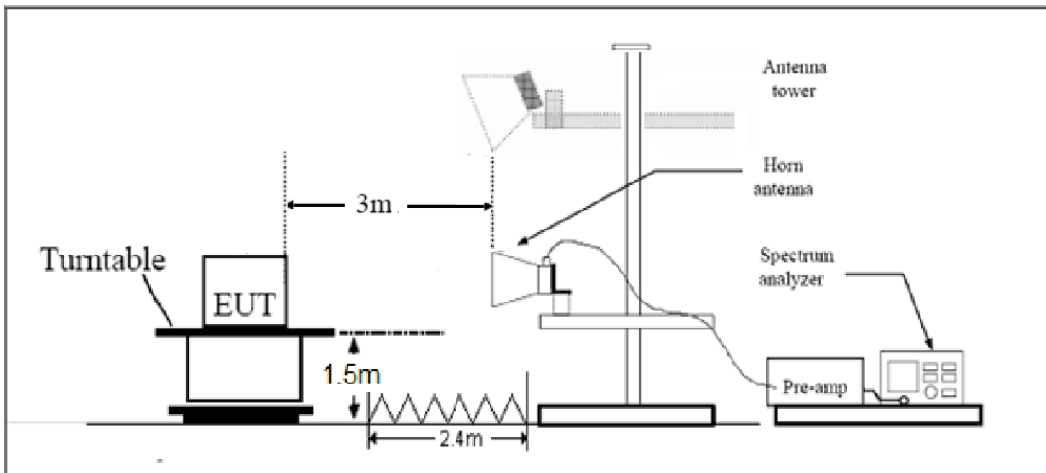
**9KHz~ 30MHz**



**30MHz~ 1GHz**



**Above 1GHz**



Note: Area side:2.4mX3.6m

**Limits**

Rule Part 27.53(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)  $55 + 10 \log(P)$  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.

Rule Part 27.53(a) (4) specifies that “(i) By a factor of not less than:  $43 + 10 \log(P)$  dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than  $55 + 10 \log(P)$  dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than  $61 + 10 \log(P)$  dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than  $67 + 10 \log(P)$  dB on all frequencies between 2328 and 2337 MHz; (ii) By a factor of not less than  $43 + 10 \log(P)$  dB on all frequencies between 2300 and 2305 MHz,  $55 + 10 \log(P)$  dB on all frequencies between 2296 and 2300 MHz,  $61 + 10 \log(P)$  dB on all frequencies between 2292 and 2296 MHz,  $67 + 10 \log(P)$  dB on all frequencies between 2288 and 2292 MHz, and  $70 + 10 \log(P)$  dB below 2288 MHz;

(iii) By a factor of not less than  $43 + 10 \log(P)$  dB on all frequencies between 2360 and 2365 MHz, and not less than  $70 + 10 \log(P)$  dB above 2365 MHz.”

Part 27.53 (h) Limit		-13 dBm
Part 27.53(a) Limit	Limit out of the band 2288-2360 MHz	-40 dBm
	2288-2292 MHz	-37 dBm
	2292-2296 MHz	-31 dBm
	2296-2300 MHz	-25 dBm
	2300-2305 MHz	-13 dBm
	2305-2315 MHz	NA
	2315-2320 MHz	-13 dBm
	2320-2324 MHz	-25 dBm
	2324-2328 MHz	-31 dBm
	2328-2337 MHz	-37 dBm
	2337--2341 MHz	-31 dBm
	2341-2345 MHz	-25 dBm
	2345-2350 MHz	-13 dBm
2350-2360 MHz	NA	
Part 27.53(m) Limit		-25 dBm

**Measurement Uncertainty**

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

LTE Band 4				Maximum Output Power (dBm)			EIRP(dBm)		
Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				19957/ 1710.7	20175/ 732.5	20393/ 1754.3	19957/ 1710.7	20175/ 1732.5	20393/ 1754.3
1.4MHz	QPSK	1	0	23.30	23.47	23.33	19.2	19.36	19.33
		1	2	23.64	23.69	23.58	19.54	19.58	19.58
		1	5	23.18	23.20	23.19	19.08	19.09	19.19
		3	0	23.66	23.60	23.57	19.56	19.49	19.57
		3	2	23.48	23.60	23.50	19.38	19.49	19.50
		3	3	23.53	23.60	23.33	19.43	19.49	19.33
		6	0	22.67	22.71	22.55	18.57	18.60	18.55
	16QAM	1	0	22.56	22.75	22.63	18.46	18.64	18.63
		1	2	22.92	22.97	22.87	18.82	18.86	18.87
		1	5	22.53	22.48	22.47	18.43	18.37	18.47
		3	0	22.75	22.59	22.62	18.65	18.48	18.62
		3	2	22.69	22.60	22.58	18.59	18.49	18.58
		3	3	22.64	22.70	22.36	18.54	18.59	18.36
		6	0	21.76	21.74	21.63	17.66	17.63	17.63
Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				19965/ 1711.5	20175/ 1732.5	20385/ 1753.5	19965/ 1711.5	20175/ 1732.5	20385/ 1753.5
3MHz	QPSK	1	0	23.32	23.51	23.36	19.22	19.40	19.36
		1	7	23.62	23.72	23.62	19.52	19.61	19.62
		1	14	23.21	23.25	23.23	19.11	19.14	19.23
		8	0	22.76	22.72	22.70	18.66	18.61	18.70
		8	4	22.60	22.70	22.62	18.5	18.59	18.62
		8	7	22.63	22.71	22.43	18.53	18.6	18.43
		15	0	22.67	22.75	22.58	18.57	18.64	18.58
	16QAM	1	0	22.56	22.77	22.66	18.46	18.66	18.66
		1	7	22.92	22.97	22.91	18.82	18.86	18.91
		1	14	22.55	22.52	22.50	18.45	18.41	18.50
		8	0	21.86	21.72	21.74	17.76	17.61	17.74
		8	4	21.80	21.73	21.70	17.70	17.62	17.70
		8	7	21.74	21.82	21.49	17.64	17.71	17.49
		15	0	21.79	21.78	21.66	17.69	17.67	17.66





Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				19975/1712.5	20175/1732.5	20375/1752.5	19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	23.29	23.49	23.32	19.19	19.38	19.32
		1	13	23.60	23.68	23.59	19.5	19.57	19.59
		1	24	23.18	23.20	23.19	19.08	19.09	19.19
		12	0	22.73	22.67	22.66	18.63	18.56	18.66
		12	6	22.58	22.66	22.57	18.48	18.55	18.57
		12	13	22.61	22.69	22.39	18.51	18.58	18.39
		25	0	22.67	22.74	22.56	18.57	18.63	18.56
	16QAM	1	0	22.56	22.73	22.63	18.46	18.62	18.63
		1	13	22.92	22.95	22.88	18.82	18.84	18.88
		1	24	22.52	22.50	22.46	18.42	18.39	18.46
		12	0	21.84	21.68	21.71	17.74	17.57	17.71
		12	6	21.77	21.68	21.66	17.67	17.57	17.66
		12	13	21.71	21.77	21.45	17.61	17.66	17.45
		25	0	21.77	21.74	21.61	17.67	17.63	17.61
Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				20000/1715	20175/1732.5	20350/1750	20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	23.31	23.50	23.35	19.08	19.39	19.35
		1	25	23.63	23.73	23.63	19.40	19.62	19.63
		1	49	23.20	23.24	23.22	18.97	19.13	19.22
		25	0	22.76	22.72	22.70	18.53	18.61	18.70
		25	13	22.61	22.71	22.61	18.38	18.60	18.61
		25	25	22.63	22.73	22.44	18.40	18.62	18.44
		50	0	22.71	22.76	22.60	18.48	18.65	18.60
	16QAM	1	0	22.60	22.76	22.65	18.37	18.65	18.65
		1	25	22.96	22.99	22.91	18.73	18.88	18.91
		1	49	22.55	22.52	22.49	18.32	18.41	18.49
		25	0	21.87	21.73	21.75	17.64	17.62	17.75
		25	13	21.79	21.72	21.69	17.56	17.61	17.69
		25	25	21.74	21.82	21.49	17.51	17.71	17.49
		50	0	21.80	21.79	21.65	17.57	17.68	17.65
Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				20025/1717.5	20175/1732.5	20325/1747.5	20025/1717.5	20175/1732.5	20325/1747.5
15MHz	QPSK	1	0	23.30	23.46	23.33	19.07	19.35	19.33
		1	38	23.61	23.72	23.60	19.38	19.61	19.60
		1	74	23.17	23.19	23.18	18.94	19.08	19.18
		36	0	22.74	22.68	22.67	18.51	18.57	18.67
		36	18	22.58	22.66	22.57	18.35	18.55	18.57
		36	39	22.60	22.70	22.40	18.37	18.59	18.40



Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				20050/1720	20175/1732.5	20300/1745	20050/1720	20175/1732.5	20300/1745
	16QAM	75	0	22.69	22.72	22.55	18.46	18.61	18.55
		1	0	22.58	22.74	22.63	18.35	18.63	18.63
		1	38	22.94	22.96	22.89	18.71	18.85	18.89
		1	74	22.53	22.48	22.46	18.30	18.37	18.46
		36	0	21.84	21.71	21.72	17.61	17.60	17.72
		36	18	21.76	21.67	21.65	17.53	17.56	17.65
		36	39	21.72	21.78	21.46	17.49	17.67	17.46
		75	0	21.77	21.74	21.61	17.54	17.63	17.61
20MHz	QPSK	1	0	23.27	23.42	23.30	19.04	19.31	19.30
		1	50	23.60	23.68	23.58	19.37	19.57	19.58
		1	99	23.15	23.18	23.15	18.92	19.07	19.15
		50	0	22.71	22.63	22.63	18.48	18.52	18.63
		50	25	22.56	22.62	22.54	18.33	18.51	18.54
		50	50	22.57	22.65	22.36	18.34	18.54	18.36
		100	0	22.66	22.67	22.51	18.43	18.56	18.51
	16QAM	1	0	22.55	22.70	22.58	18.32	18.59	18.58
		1	50	22.91	22.94	22.85	18.68	18.83	18.85
		1	99	22.50	22.45	22.44	18.27	18.34	18.44
		50	0	21.81	21.67	21.69	17.58	17.56	17.69
		50	25	21.73	21.65	21.62	17.50	17.54	17.62
		50	50	21.69	21.73	21.42	17.46	17.62	17.42
		100	0	21.75	21.70	21.58	17.52	17.59	17.58

LTE Band 7				Maximum Output Power (dBm)			EIRP(dBm)		
Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				20775/2502.5	21100/2535	21425/2567.5	20775/2502.5	21100/2535	21425/2567.5
5MHz	QPSK	1	0	23.69	23.71	23.68	21.38	20.36	20.62
		1	13	24.10	24.02	24.07	21.79	20.67	21.01
		1	24	23.76	23.75	23.77	21.45	20.4	20.71
		12	0	22.99	23.09	22.93	20.68	19.74	19.87
		12	6	23.05	23.08	23.10	20.74	19.73	20.04
		12	13	23.17	23.04	22.98	20.86	19.69	19.92
		25	0	23.07	23.08	23.02	20.76	19.73	19.96
	16QAM	1	0	22.98	22.97	23.14	20.67	19.62	20.08
		1	13	23.48	23.30	23.27	21.17	19.95	20.21
		1	24	23.07	23.13	23.12	20.76	19.78	20.06
		12	0	22.06	22.08	21.97	19.75	18.73	18.91
		12	6	22.12	22.10	22.09	19.81	18.75	19.03
		12	13	22.18	22.09	22.03	19.87	18.74	18.97



Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				20800/ 2505	21100/ 2535	21400 /2565	20800/ 2505	21100/ 2535	21400/ 2565
				25	0	22.10	22.05	22.01	19.79
10MHz	QPSK	1	0	23.71	23.72	23.71	20.79	20.37	20.65
		1	25	24.13	24.07	24.11	21.21	20.72	21.05
		1	49	23.78	23.79	23.80	20.86	20.44	20.74
		25	0	23.02	23.14	22.97	20.10	19.79	19.91
		25	13	23.08	23.13	23.14	20.16	19.78	20.08
		25	25	23.19	23.08	23.03	20.27	19.73	19.97
		50	0	23.11	23.10	23.06	20.19	19.75	20.00
	16QAM	1	0	23.02	23.00	23.16	20.10	19.65	20.10
		1	25	23.27	23.34	23.30	20.35	19.99	20.24
		1	49	23.10	23.15	23.15	20.18	19.80	20.09
		25	0	22.09	22.13	22.01	19.17	18.78	18.95
		25	13	22.14	22.14	22.12	19.22	18.79	19.06
		25	25	22.21	22.14	22.07	19.29	18.79	19.01
		50	0	22.13	22.10	22.05	19.21	18.75	18.99
Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				20825 /2507.5	21100/ 2535	21375/ 2562.5	20825/ 2507.5	21100/ 2535	21375/ 2562.5
15MHz	QPSK	1	0	23.70	23.68	23.69	20.78	20.33	20.72
		1	38	24.11	24.06	24.08	21.19	20.71	21.11
		1	74	23.75	23.74	23.76	20.83	20.39	20.79
		36	0	23.00	23.10	22.94	20.08	19.75	19.97
		36	18	23.05	23.08	23.10	20.13	19.73	20.13
		36	39	23.16	23.05	22.99	20.24	19.70	20.02
		75	0	23.09	23.06	23.01	20.17	19.71	20.04
	16QAM	1	0	23.00	22.98	23.14	20.08	19.63	20.17
		1	38	23.50	23.31	23.28	20.58	19.96	20.31
		1	74	23.08	23.11	23.12	20.16	19.76	20.15
		36	0	22.06	22.11	21.98	19.14	18.76	19.01
		36	18	22.11	22.09	22.08	19.19	18.74	19.11
		36	39	22.19	22.10	22.04	19.27	18.75	19.07
		75	0	22.10	22.05	22.01	19.18	18.70	19.04
Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				20850/ 2510	21100/ 2535	21350/ 2560	20850/ 2510	21100/ 2535	21350/ 2560
20MHz	QPSK	1	0	23.67	23.64	23.66	20.75	20.29	20.69
		1	50	24.10	24.02	24.06	21.18	20.67	21.09
		1	99	23.73	23.73	23.73	20.81	20.38	20.76
		50	0	22.97	23.05	22.90	20.05	19.70	19.93
		50	25	23.03	23.04	23.07	20.11	19.69	20.10



		50	50	23.13	23.00	22.95	20.21	19.65	19.98
		100	0	23.06	23.01	22.97	20.14	19.66	20.00
	16QAM	1	0	22.97	22.94	23.09	20.05	19.59	20.12
		1	50	23.47	23.29	23.24	20.55	19.94	20.27
		1	99	23.05	23.08	23.10	20.13	19.73	20.13
		50	0	22.03	22.07	21.95	19.11	18.72	18.98
		50	25	22.08	22.07	22.05	19.16	18.72	19.08
		50	50	22.16	22.05	22.00	19.24	18.7	19.03
		100	0	22.08	22.01	21.98	19.16	18.66	19.01

LTE Band 40 Subset 1				Maximum Output Power (dBm)			EIRP(dBm)		
Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				38725/ 2307.5	38750/ 2310.0	38775/ 2312.5	38725/ 2307.5	38750/ 2310.0	38775/ 2312.5
5MHz	QPSK	1	0	23.74	23.72	23.65	20.59	20.57	20.50
		1	13	23.54	23.54	23.54	20.39	20.39	20.39
		1	24	23.83	23.80	23.78	20.68	20.65	20.63
		12	0	22.79	22.77	22.73	19.64	19.62	19.58
		12	6	22.81	22.79	22.75	19.66	19.64	19.60
		12	13	22.76	22.72	22.68	19.61	19.57	19.53
		25	0	22.84	22.83	22.76	19.69	19.68	19.61
	16QAM	1	0	22.94	22.93	22.90	19.79	19.78	19.75
		1	13	22.93	22.92	22.91	19.78	19.77	19.76
		1	24	22.97	22.95	22.90	19.82	19.80	19.75
		12	0	21.85	21.82	21.81	18.70	18.67	18.66
		12	6	21.90	21.86	21.83	18.75	18.71	18.68
		12	13	21.85	21.83	21.79	18.70	18.68	18.64
		25	0	21.85	21.83	21.79	18.70	18.68	18.64
Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				/	38750/ 2310.0	/	/	38750/ 2310.0	/
10MHz	QPSK	1	0	/	23.59	/	/	20.44	/
		1	25	/	23.50	/	/	20.35	/
		1	49	/	23.70	/	/	20.55	/
		25	0	/	22.66	/	/	19.51	/
		25	13	/	22.67	/	/	19.52	/
		25	25	/	22.61	/	/	19.46	/
		50	0	/	22.69	/	/	19.54	/
	16QAM	1	0	/	22.82	/	/	19.67	/
		1	25	/	22.85	/	/	19.70	/
		1	49	/	22.84	/	/	19.69	/
		25	0	/	21.76	/	/	18.61	/
		25	13	/	21.75	/	/	18.60	/



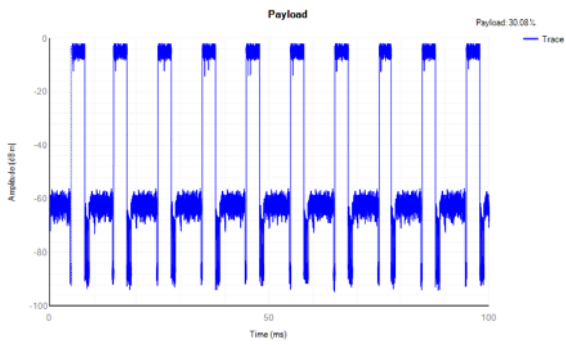
		25	25	/	21.72	/	/	18.57	/
		50	0	/	21.71	/	/	18.56	/

LTE Band 40 Subset 2				Maximum Output Power (dBm)			EIRP(dBm)		
Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				39175/2352.5	39200/2355.0	39225/2357.5	39175/2352.5	39200/2355.0	39225/2357.5
5MHz	QPSK	1	0	23.78	23.85	23.87	21.11	21.28	21.3
		1	13	23.76	23.76	23.76	21.09	21.19	21.19
		1	24	23.71	23.73	23.76	21.04	21.16	21.19
		12	0	22.79	22.83	22.85	20.12	20.26	20.28
		12	6	22.80	22.84	22.86	20.13	20.27	20.29
		12	13	22.76	22.80	22.84	20.09	20.23	20.27
		25	0	22.74	22.81	22.82	20.07	20.24	20.25
	16QAM	1	0	22.95	22.98	22.99	20.28	20.41	20.42
		1	13	22.94	22.95	22.96	20.27	20.38	20.39
		1	24	22.87	22.92	22.94	20.20	20.35	20.37
		12	0	21.89	21.90	21.93	19.22	19.33	19.36
		12	6	21.85	21.88	21.92	19.18	19.31	19.35
		12	13	21.81	21.85	21.87	19.14	19.28	19.30
		25	0	21.84	21.88	21.90	19.17	19.31	19.33
Bandwidth	Modulation	RB allocation	offset	Channel/Frequency(MHz)			Channel/Frequency(MHz)		
				/	39200/2355.0	/	/	39200/2355.0	/
10MHz	QPSK	1	0	/	23.73	/	/	21.16	/
		1	25	/	23.74	/	/	21.17	/
		1	49	/	23.65	/	/	21.08	/
		25	0	/	22.74	/	/	20.17	/
		25	13	/	22.76	/	/	20.19	/
		25	25	/	22.70	/	/	20.13	/
		50	0	/	22.73	/	/	20.16	/
	16QAM	1	0	/	22.94	/	/	20.37	/
		1	25	/	22.93	/	/	20.36	/
		1	49	/	22.82	/	/	20.25	/
		25	0	/	21.84	/	/	19.27	/
		25	13	/	21.78	/	/	19.21	/
		25	25	/	21.76	/	/	19.19	/
		50	0	/	21.80	/	/	19.23	/

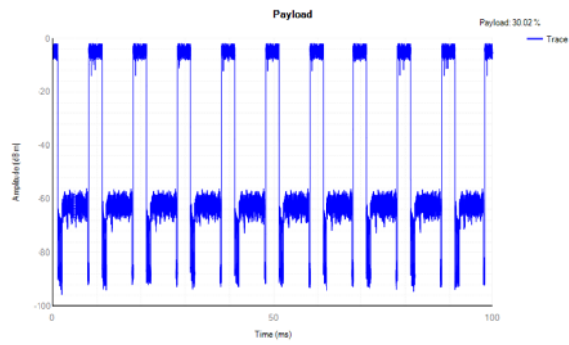


### Duty Cycle

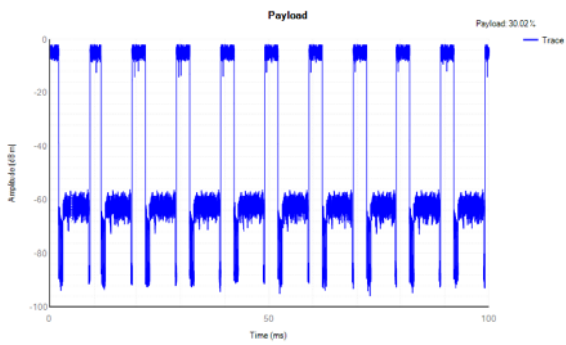
LTE Band 40 Subset 1 QPSK 5MHz CH-Low



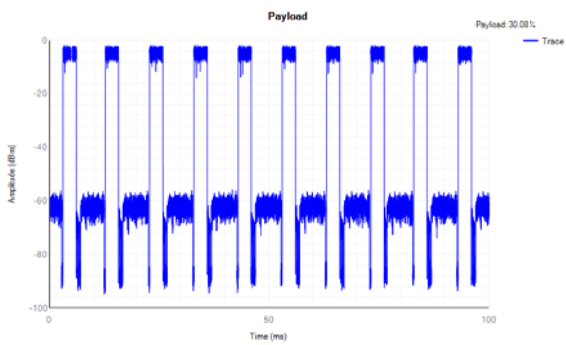
LTE Band 40 Subset 1 QPSK 10MHz



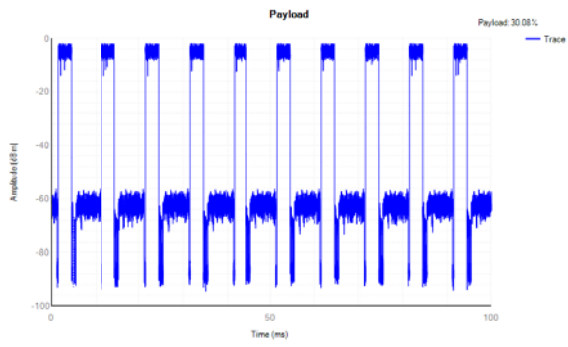
LTE Band 40 Subset 1 QPSK 5MHz CH-Middle



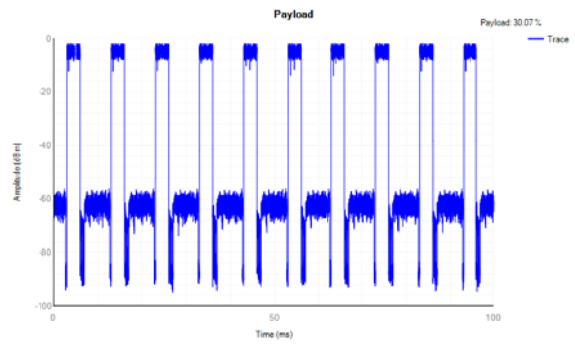
LTE Band 40 Subset 1 QPSK 5MHz CH-High



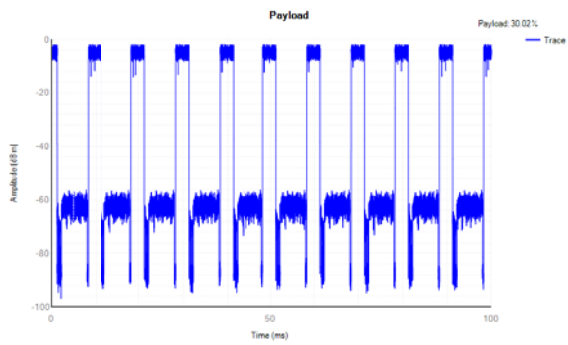
LTE Band 40 Subset 1 16QAM 5MHz CH-Low



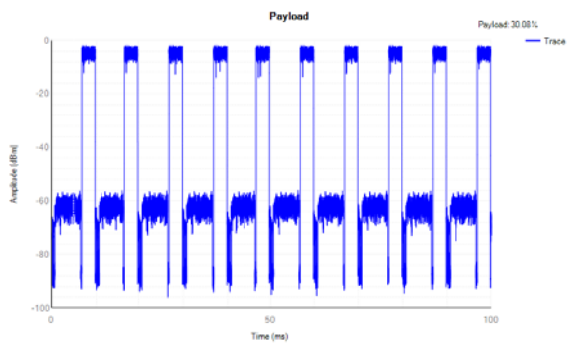
LTE Band 40 Subset 1 16QAM 10MHz



LTE Band 40 Subset 1 16QAM 5MHz CH-Middle

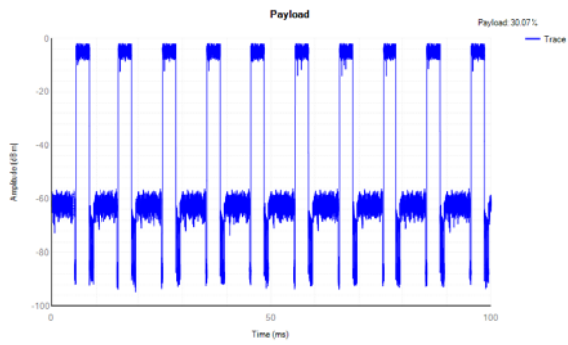


LTE Band 40 Subset 1 16QAM 5MHz CH-High

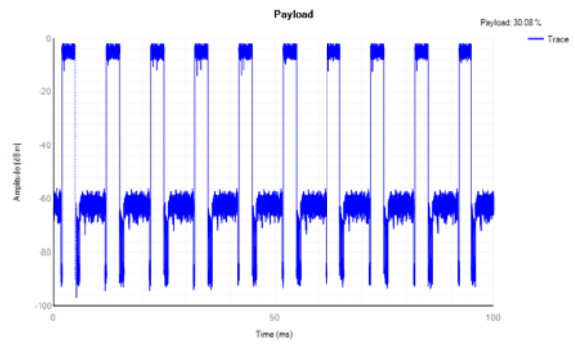




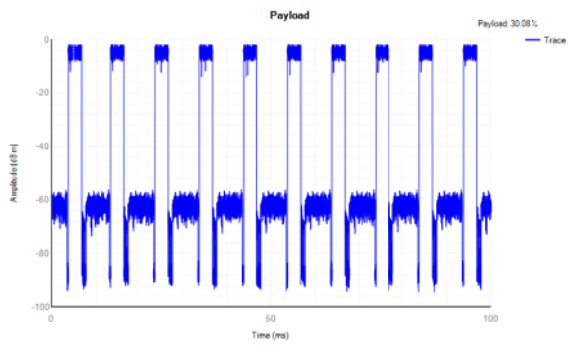
LTE Band 40 Subset 2 QPSK 5MHz CH-Low



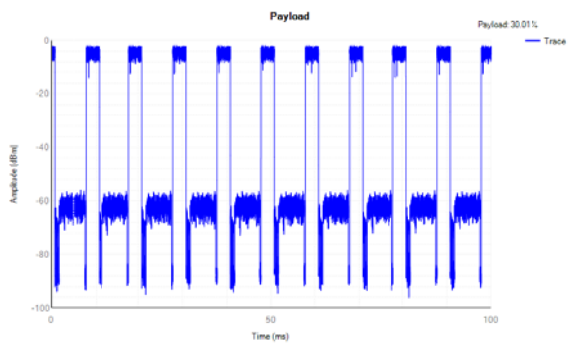
LTE Band 40 Subset 2 QPSK 10MHz



LTE Band 40 Subset 2 QPSK 5MHz CH-Middle

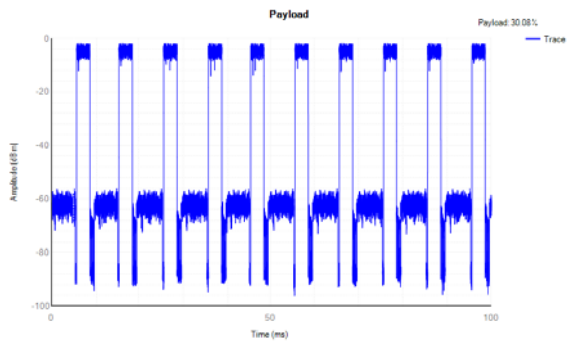


LTE Band 40 Subset 2 QPSK 5MHz CH-High

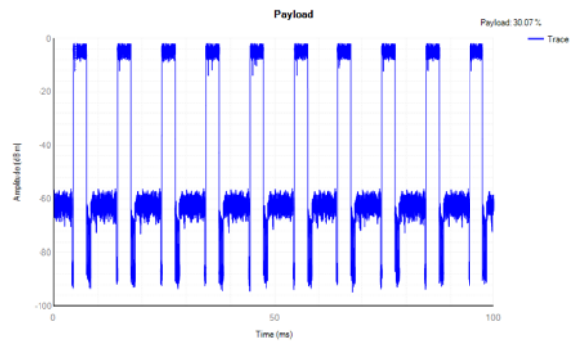




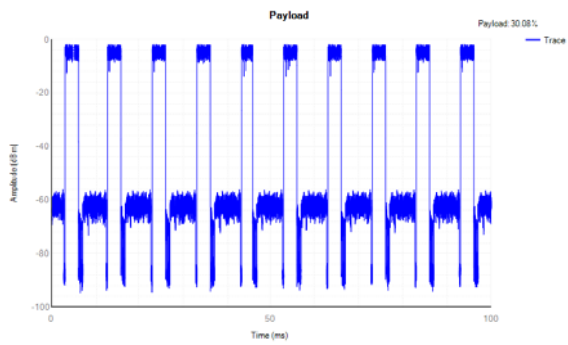
LTE Band 40 Subset 2 16QAM 5MHz CH-Low



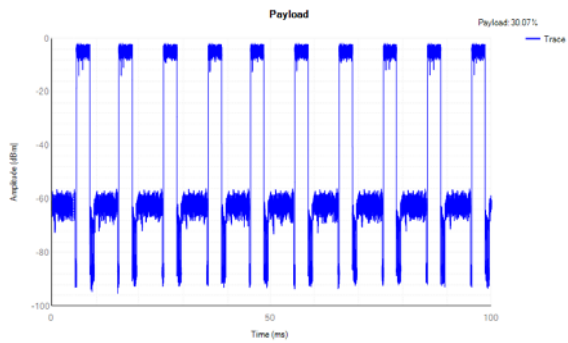
LTE Band 40 Subset 2 16QAM 10MHz



LTE Band 40 Subset 2 16QAM 5MHz CH-Middle



LTE Band 40 Subset 2 16QAM 5MHz CH-High





LTE Band 40 Subset 1				Conducted Power (dBm/MHz)			EIRP Power (dBm/MHz)			EIRP Power (mW/MHz)			Limit (mW /MHz)
BW	Mddulat ion	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)			Channel/Frequency (MHz)			
				38725/2307.5	38750/2310	38775/2312.5	38725/2307.5	38750/2310	38775/2312.5	38725/2307.5	38750/2310	38775/2312.5	
5MHz	QPSK	25	0	15.688	16.243	15.932	12.538	13.093	12.782	17.9391	20.3845	18.9758	250
	16QAM	25	0	15.396	15.841	15.864	12.246	12.691	12.714	16.7726	18.5823	18.6810	250
BW	Mddulat ion	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)			Channel/Frequency (MHz)			Limit (mW /MHz)
				38750/2310			38750/2310			38750/2310			
10MHz	QPSK	50	0	13.976			10.826			12.0948			250
	16QAM	50	0	12.654			9.504			8.9207			250

LTE Band 40 Subset 1				Conducted Power (dBm/5MHz)			EIRP Power (dBm/5MHz)			EIRP Power (mW/5MHz)			Limit (mW /5MHz)
BW	Mddulat ion	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)			Channel/Frequency (MHz)			
				38725/2307.5	38750/2310	38775/2312.5	38725/2307.5	38750/2310	38775/2312.5	38725/2307.5	38750/2310	38775/2312.5	
5MHz	QPSK	25	0	19.716	19.744	19.837	16.566	16.594	16.687	45.3524	45.6457	46.6337	250
	16QAM	25	0	19.664	19.446	19.183	16.514	16.296	16.033	44.8126	42.6187	40.1144	250
BW	Mddulat ion	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)			Channel/Frequency (MHz)			Limit (mW /5MHz)
				38750/2310			38750/2310			38750/2310			
10MHz	QPSK	50	0	18.399			15.249			33.4888			250
	16QAM	50	0	17.727			14.577			28.6880			250



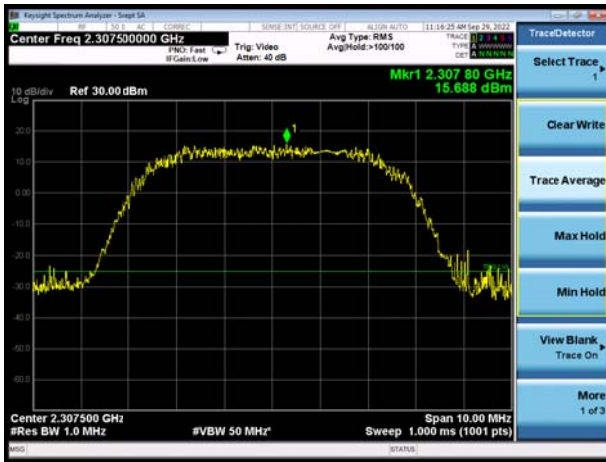
LTE Band 40 Subset 2				Conducted Power (dBm/MHz)			EIRP Power (dBm/MHz)			EIRP Power (mW/MHz)			Limit (mW /MHz)
BW	Mddulation	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)			Channel/Frequency (MHz)			
				39175/2352.5	39200/2355	39225/2357.5	39175/2352.5	39200/2355	39225/2357.5	39175/2352.5	39200/2355	39225/2357.5	
5MHz	QPSK	25	0	18.688	17.767	18.529	16.018	15.197	15.959	39.9761	33.0902	39.4366	250
	16QAM	25	0	17.991	17.957	18.268	15.321	15.387	15.698	34.0487	34.5700	37.1364	250
BW	Mddulation	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)			Channel/Frequency (MHz)			Limit (mW /MHz)
				39200/2355			39200/2355			39200/2355			
10MHz	QPSK	50	0	14.825			12.255			16.8074			250
	16QAM	50	0	14.669			12.099			16.2144			250

LTE Band 40 Subset 2				Conducted Power (dBm/5MHz)			EIRP Power (dBm/5MHz)			EIRP Power (mW/5MHz)			Limit (mW /5MHz)
BW	Mddulation	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)			Channel/Frequency (MHz)			
				39175/2352.5	39200/2355	39225/2357.5	39175/2352.5	39200/2355	39225/2357.5	39175/2352.5	39200/2355	39225/2357.5	
5MHz	QPSK	25	0	22.253	22.105	22.067	19.583	19.535	19.497	90.8448	89.8463	89.0635	250
	16QAM	25	0	21.651	22.087	21.824	18.981	19.517	19.254	79.0861	89.4746	84.2170	250
BW	Mddulation	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)			Channel/Frequency (MHz)			Limit (mW /5MHz)
				39200/2355			39200/2355			39200/2355			
10MHz	QPSK	50	0	20.728			18.158			65.4335			250
	16QAM	50	0	19.685			17.115			51.4636			250

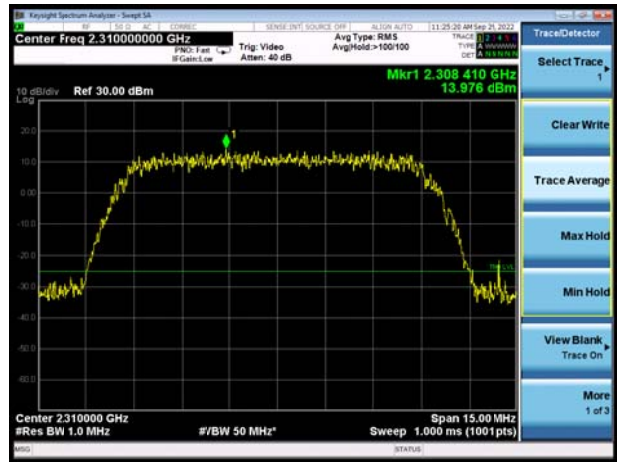


EIRP (dBm/MHz)

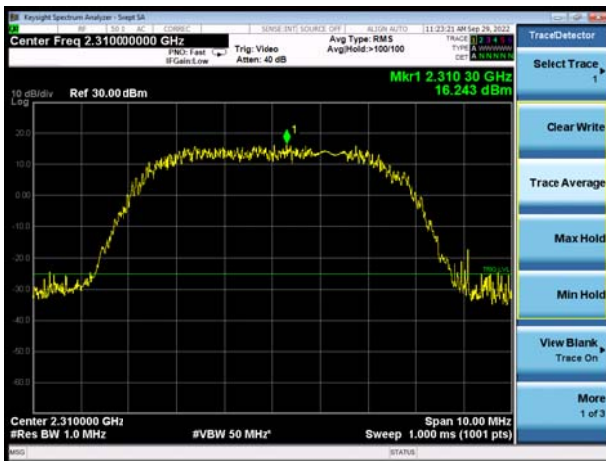
LTE Band 40 Subset 1 QPSK 5MHz CH-Low



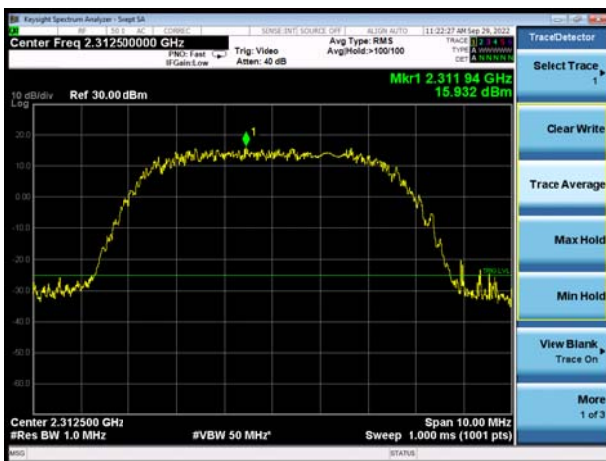
LTE Band 40 Subset 1 QPSK 10MHz



LTE Band 40 Subset 1 QPSK 5MHz CH-Middle

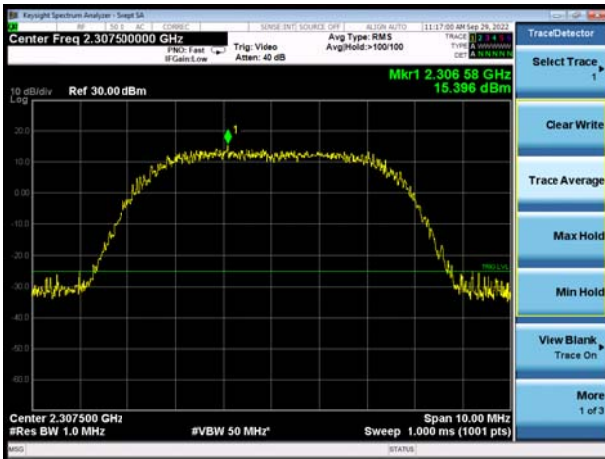


LTE Band 40 Subset 1 QPSK 5MHz CH-High

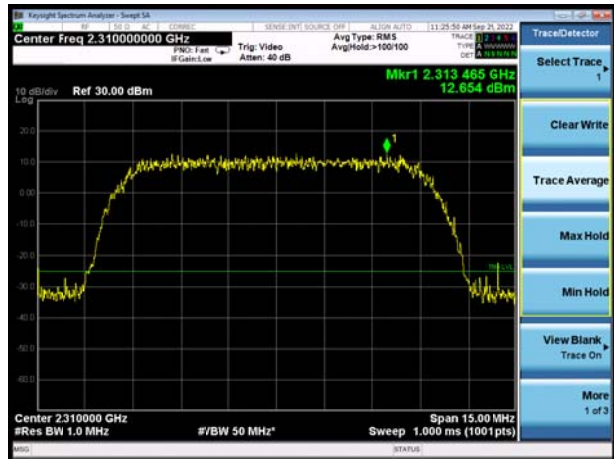




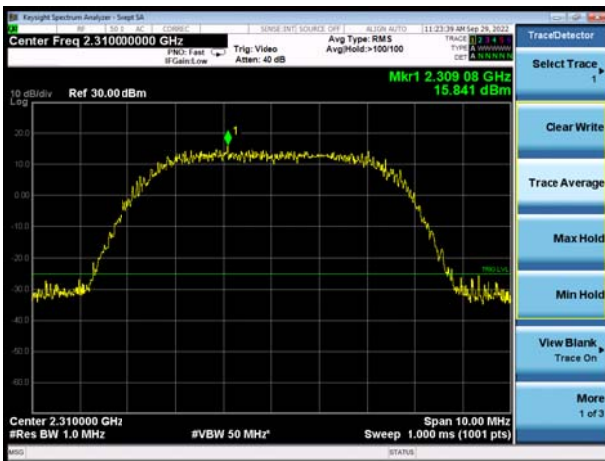
LTE Band 40 Subset 1 16QAM 5MHz CH-Low



LTE Band 40 Subset 1 16QAM 10MHz



LTE Band 40 Subset 1 16QAM 5MHz CH-Middle



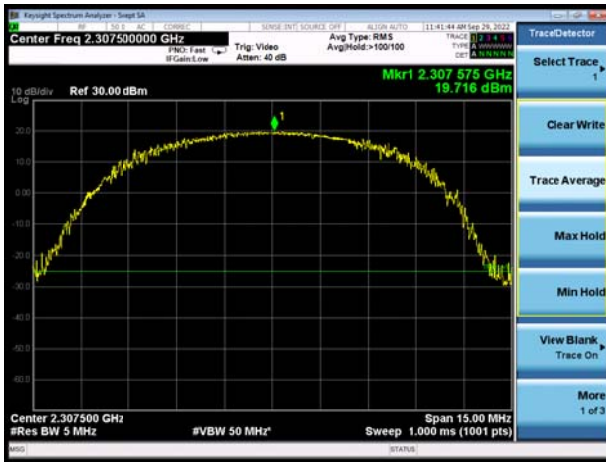
LTE Band 40 Subset 1 16QAM 5MHz CH-High





EIRP (dBm/5MHz)

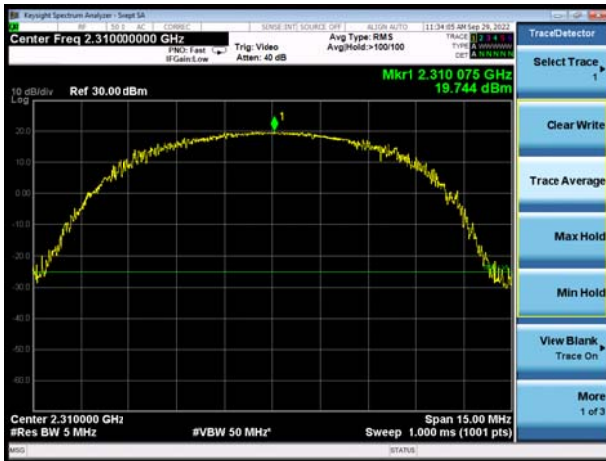
LTE Band 40 Subset 1 QPSK 5MHz CH-Low



LTE Band 40 Subset 1 QPSK 10MHz



LTE Band 40 Subset 2 QPSK 5MHz CH-Middle

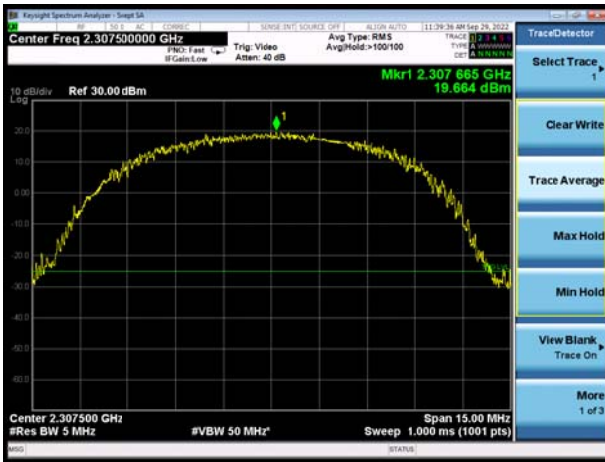


LTE Band 40 Subset 1 QPSK 5MHz CH-High

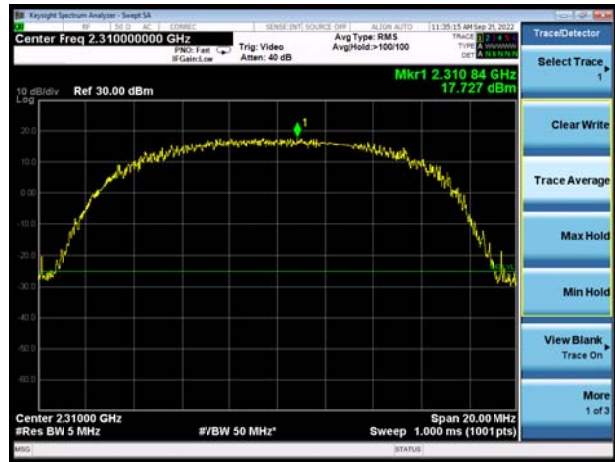




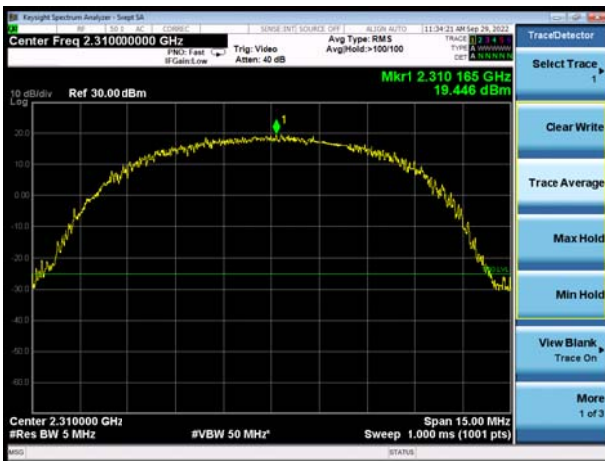
### LTE Band 40 Subset 1 16QAM 5MHz CH-Low



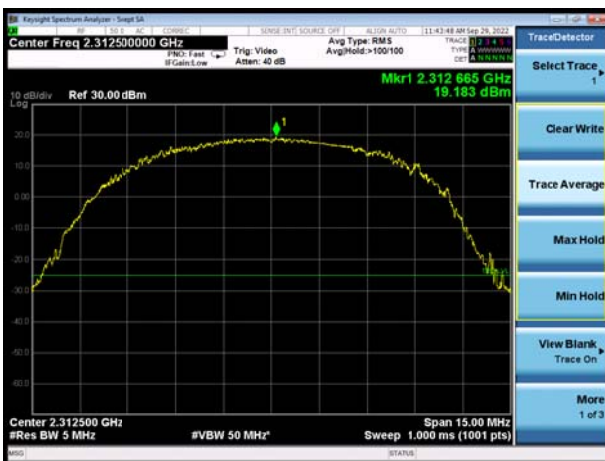
### LTE Band 40 Subset 1 16QAM 10MHz



### LTE Band 40 Subset 1 16QAM 5MHz CH-Middle

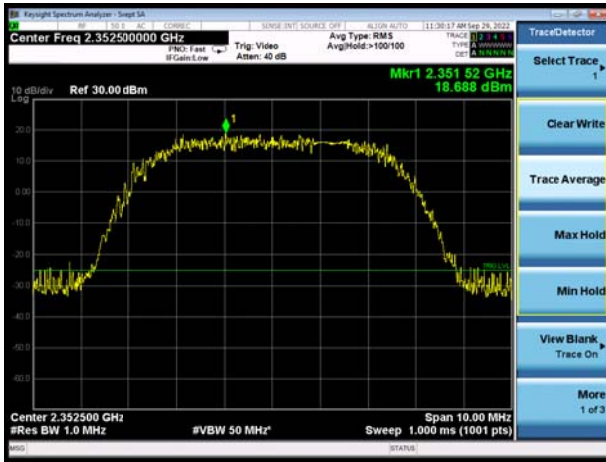


### LTE Band 40 Subset 1 16QAM 5MHz CH-High

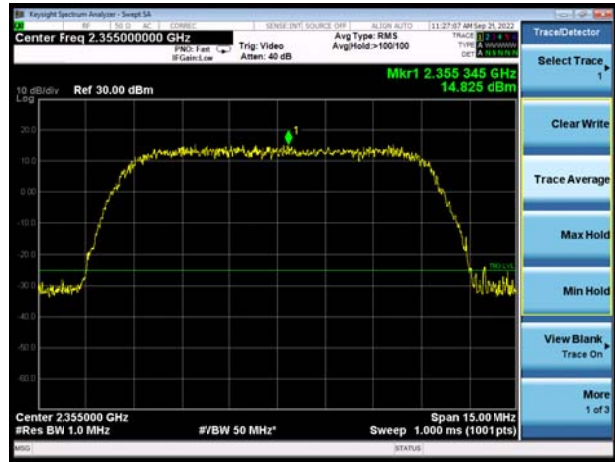


**EIRP (dBm/MHz)**

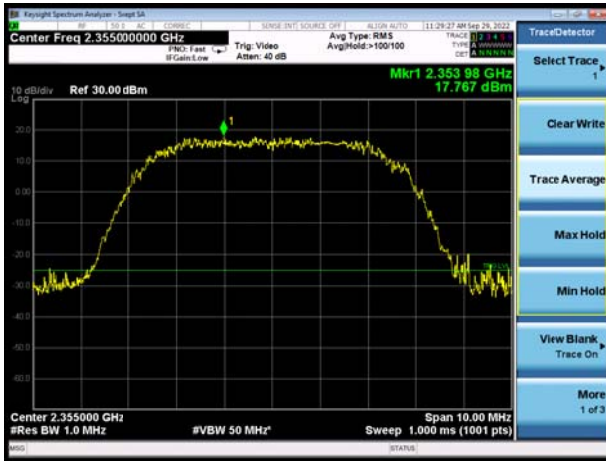
LTE Band 40 Subset 2 QPSK 5MHz CH-Low



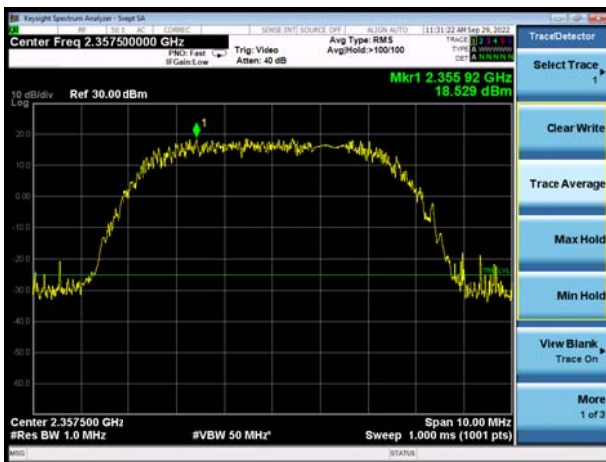
LTE Band 40 Subset 2 QPSK 10MHz



LTE Band 40 Subset 2 QPSK 5MHz CH-Middle



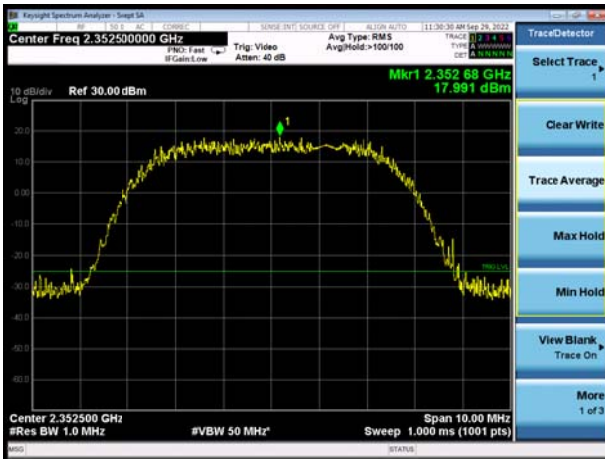
LTE Band 40 Subset 2 QPSK 5MHz CH-High



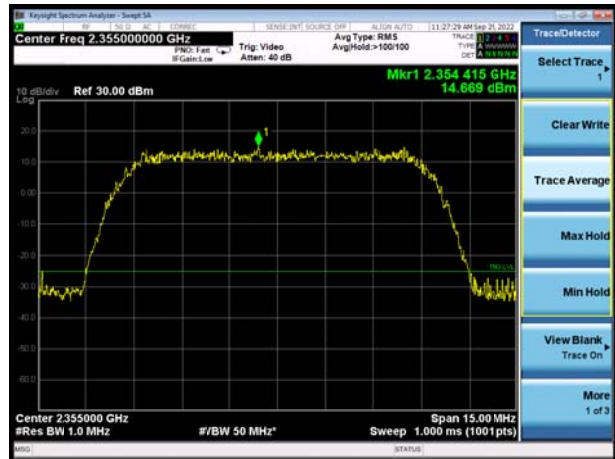




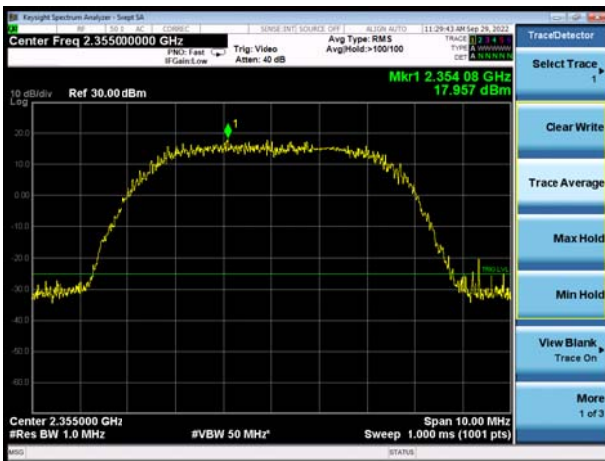
### LTE Band 40 Subset 2 16QAM 5MHz CH-Low



### LTE Band 40 Subset 2 16QAM 10MHz



### LTE Band 40 Subset 2 16QAM 5MHz CH-Middle



### LTE Band 40 Subset 2 16QAM 5MHz CH-High



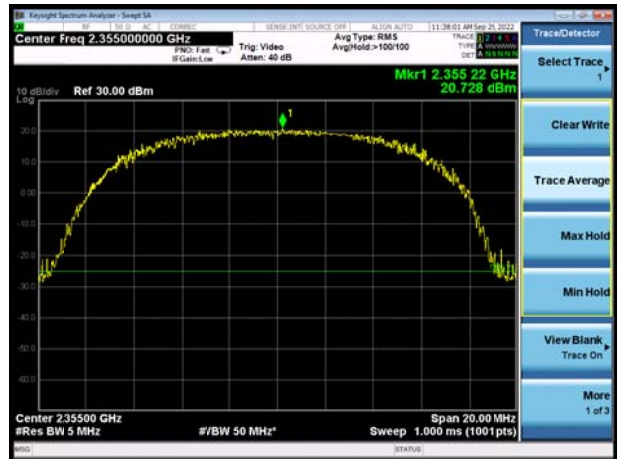


EIRP (dBm/5MHz)

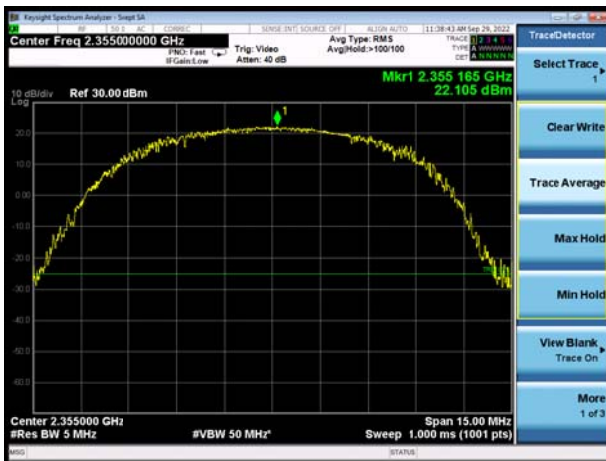
LTE Band 40 Subset 2 QPSK 5MHz CH-Low



LTE Band 40 Subset 2 QPSK 10MHz



LTE Band 40 Subset 2 QPSK 5MHz CH-Middle



LTE Band 40 Subset 2 QPSK 5MHz CH-High





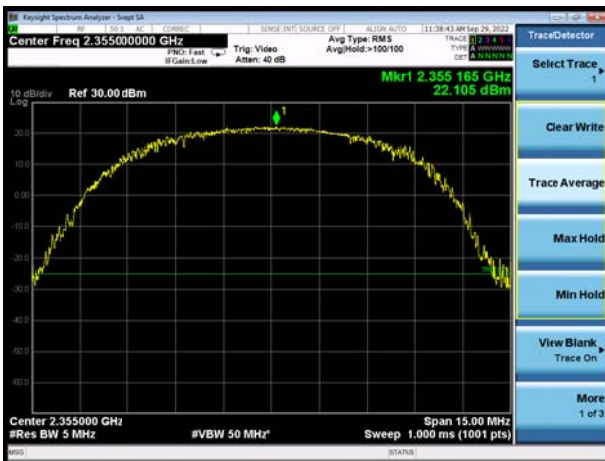
LTE Band 40 Subset 2 16QAM 5MHz CH-Low



LTE Band 40 Subset 2 16QAM 10MHz



LTE Band 40 Subset 2 16QAM 5MHz CH-Middle



LTE Band 40 Subset 2 16QAM 5MHz CH-High



## 6.2 Occupied Bandwidth

LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.100	1.266
			20175	1732.5	1.087	1.272
			20393	1754.3	1.098	1.292
		3	19965	1711.5	2.692	2.921
			20175	1732.5	2.688	2.926
			20385	1753.5	2.695	2.943
		5	19975	1712.5	4.497	4.895
			20175	1732.5	4.497	4.888
			20375	1752.5	4.507	4.932
		10	20000	1715	8.951	9.743
			20175	1732.5	8.983	9.769
			20350	1750	8.980	9.634
		15	20025	1717.5	13.446	14.498
			20175	1732.5	13.442	14.549
			20325	1747.5	13.445	14.416
		20	20050	1720	17.964	19.369
			20175	1732.5	17.987	19.342
			20300	1745	17.905	19.203
	16QAM	1.4	19957	1710.7	1.091	1.280
			20175	1732.5	1.092	1.279
			20393	1754.3	1.089	1.273
		3	19965	1711.5	2.685	2.894
			20175	1732.5	2.697	2.910
			20385	1753.5	2.697	2.939
		5	19975	1712.5	4.503	4.872
			20175	1732.5	4.503	4.911
			20375	1752.5	4.504	4.871
		10	20000	1715	8.969	9.694
			20175	1732.5	8.962	9.682
			20350	1750	8.952	9.612
15		20025	1717.5	13.481	14.439	
		20175	1732.5	13.454	14.391	
		20325	1747.5	13.436	14.459	
20		20050	1720	17.986	19.429	



			20175	1732.5	17.982	19.227
			20300	1745	17.917	19.220

LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.496	4.870
			21100	2535	4.518	4.912
			21425	2567.5	4.516	4.895
		10	20800	2505	8.985	9.757
			21100	2535	8.997	9.676
			21400	2565	8.966	9.554
		15	20825	2507.5	13.459	14.689
			21100	2535	13.439	14.479
			21375	2562.5	13.453	14.606
		20	20850	2510	17.930	19.181
			21100	2535	17.982	19.285
			21350	2560	17.930	19.144
	16QAM	5	20775	2502.5	4.497	4.930
			21100	2535	4.504	4.911
			21425	2567.5	4.501	4.935
		10	20800	2505	8.997	9.760
			21100	2535	8.990	9.695
			21400	2565	8.974	9.592
		15	20825	2507.5	13.488	14.454
			21100	2535	13.481	14.585
			21375	2562.5	13.440	14.573
		20	20850	2510	18.006	19.083
			21100	2535	17.994	19.358
			21350	2560	17.929	19.247



LTE Band 40 Subset 1								
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)		
100%	QPSK	5	38725	2307.5	4.513	5.087		
			38750	2310	4.515	4.954		
			38775	2312.5	4.508	5.022		
	16QAM	5	10	38750	2310	8.999	9.840	
				5	38725	2307.5	4.502	4.999
					38750	2310	4.499	5.155
			38775	2312.5	4.525	4.947		
			10	38750	2310	8.987	9.905	

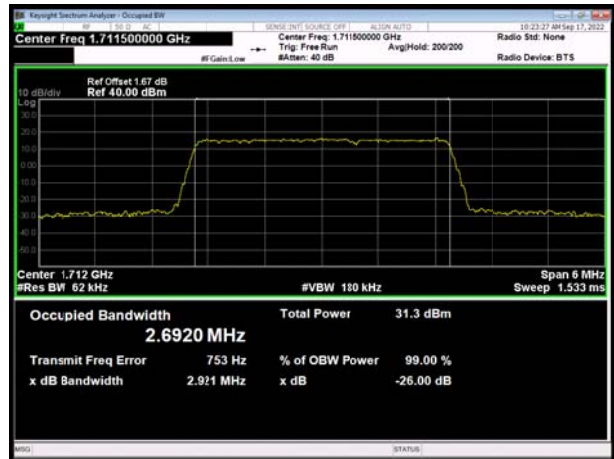
LTE Band 40 Subset 2							
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)	
100%	QPSK	5	39175	2352.5	4.535	5.113	
			39200	2355	4.526	4.995	
			39225	2357.5	4.507	5.112	
		10	39200	2355	8.986	10.120	
	16QAM	5	10	39175	2352.5	4.515	5.066
				39200	2355	4.500	5.066
				39225	2357.5	4.520	4.980
			10	39200	2355	8.985	9.796



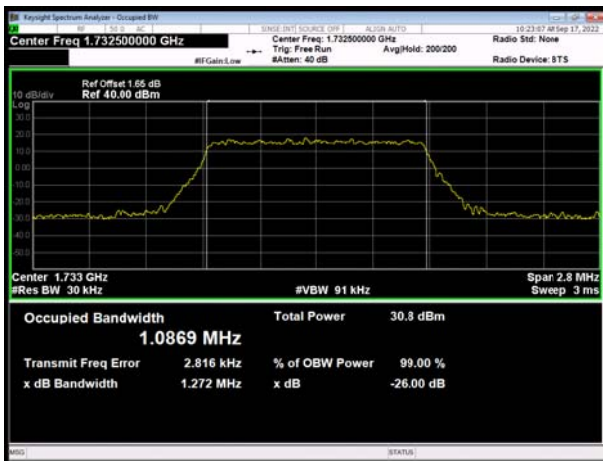
LTE Band 4 QPSK 1.4MHz CH-Low



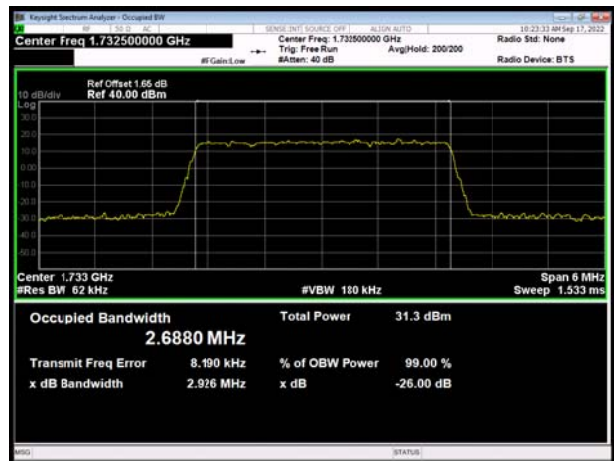
LTE Band 4 QPSK 3MHz CH-Low



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



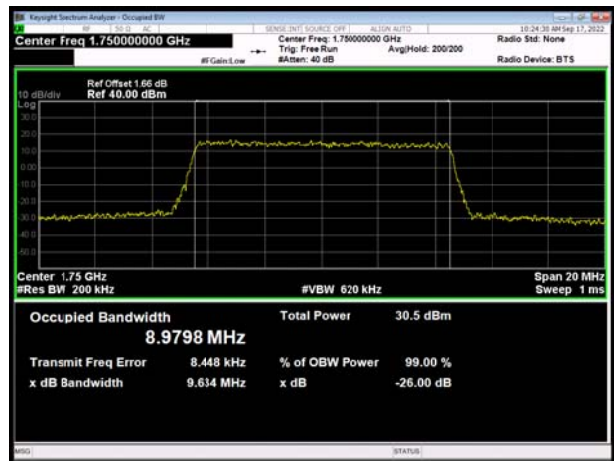
### LTE Band 4 QPSK 10MHz CH-Middle



### LTE Band 4 QPSK 5MHz CH-High



### LTE Band 4 QPSK 10MHz CH-High







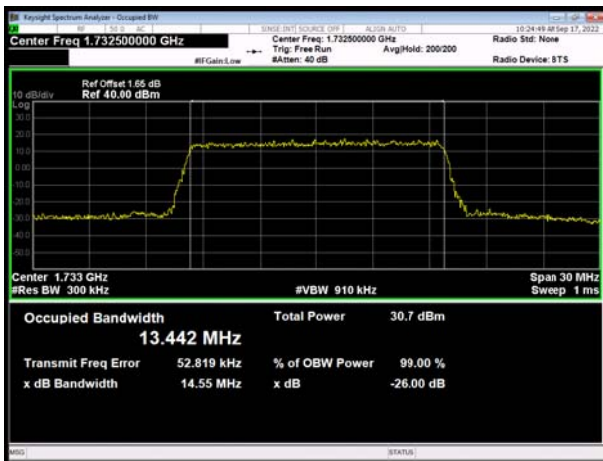
### LTE Band 4 QPSK 15MHz CH-Low



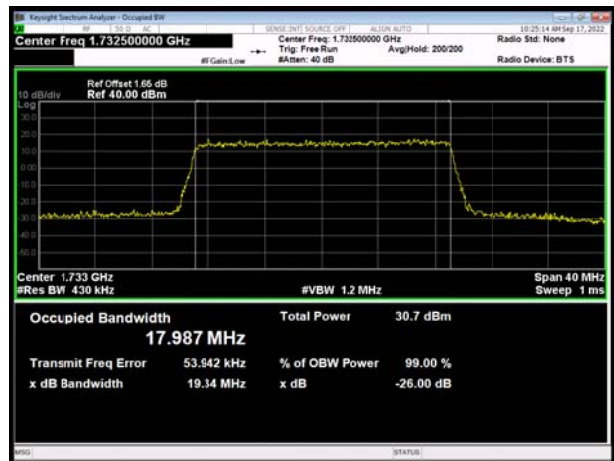
### LTE Band 4 QPSK 20MHz CH-Low



### LTE Band 4 QPSK 15MHz CH-Middle



### LTE Band 4 QPSK 20MHz CH-Middle



### LTE Band 4 QPSK 15MHz CH-High

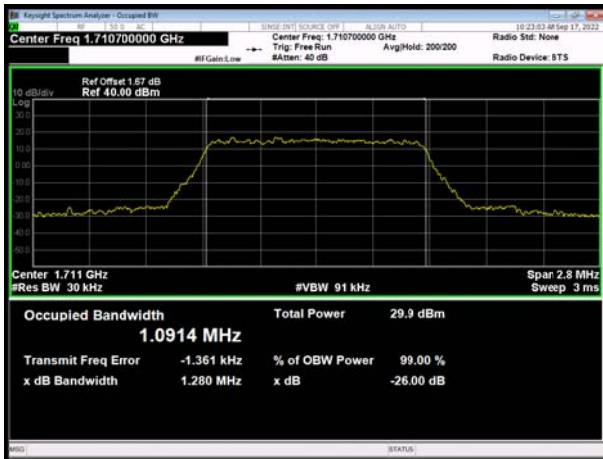


### LTE Band 4 QPSK 20MHz CH-High





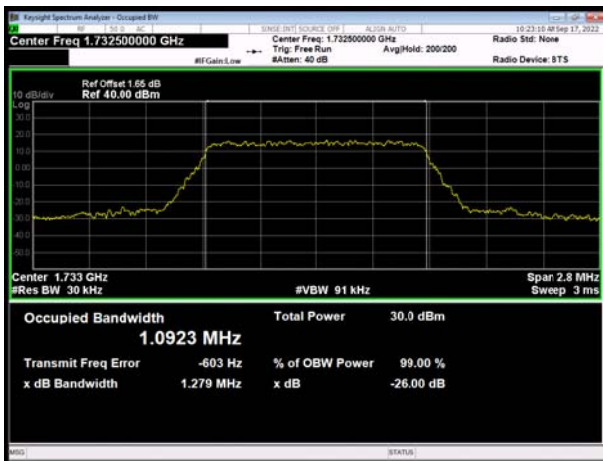
LTE Band 4 16QAM 1.4MHz CH-Low



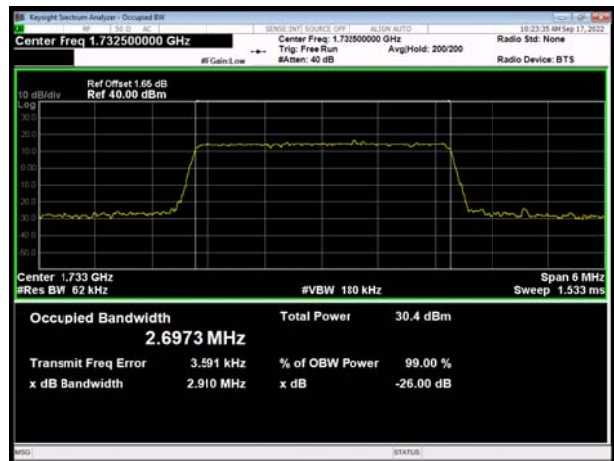
LTE Band 4 16QAM 3MHz CH-Low



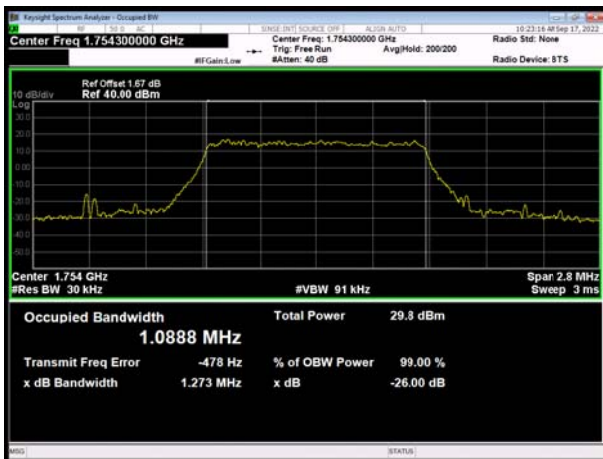
LTE Band 4 16QAM 1.4MHz CH-Middle



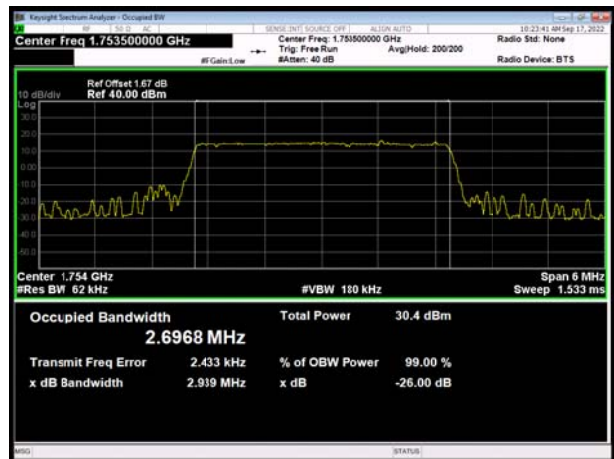
LTE Band 4 16QAM 3MHz CH-Middle



LTE Band 4 16QAM 1.4MHz CH-High



LTE Band 4 16QAM 3MHz CH-High





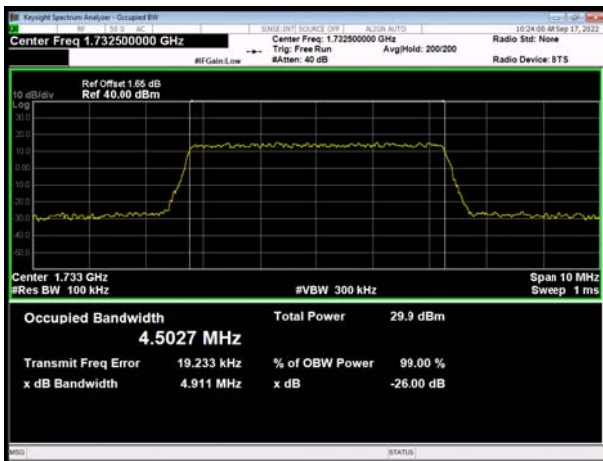
### LTE Band 4 16QAM 5MHz CH-Low



### LTE Band 4 16QAM 10MHz CH-Low



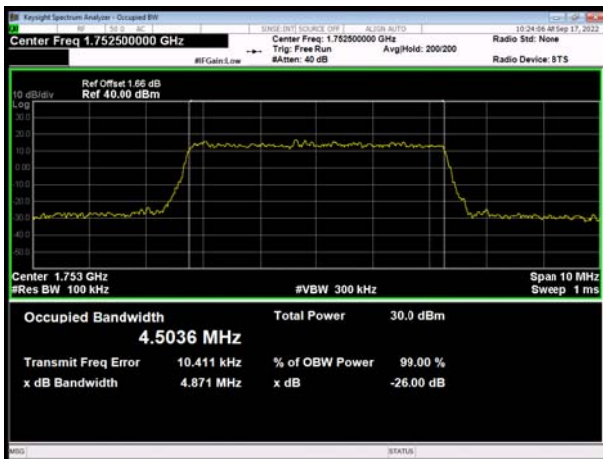
### LTE Band 4 16QAM 5MHz CH-Middle



### 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



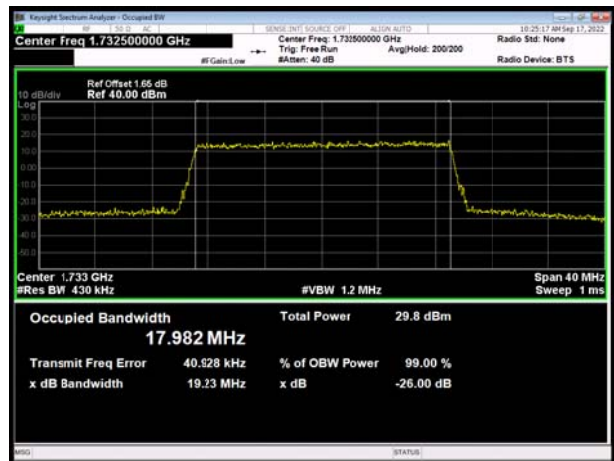
LTE Band 4 16QAM 20MHz CH-Low



LTE Band 4 16QAM 15MHz CH-Middle



LTE Band 4 16QAM 20MHz CH-Middle



LTE Band 4 16QAM 15MHz CH-High

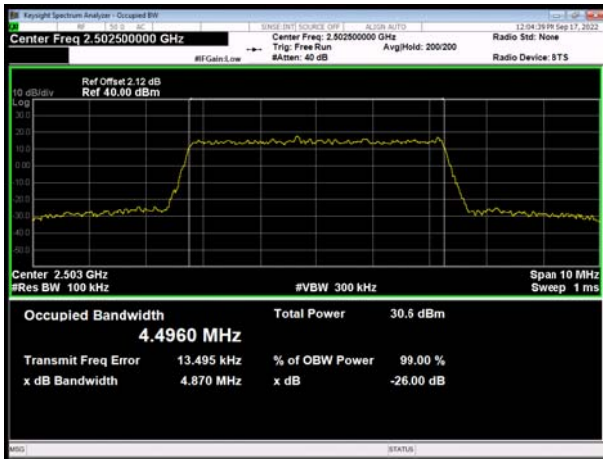


LTE Band 4 16QAM 20MHz CH-High





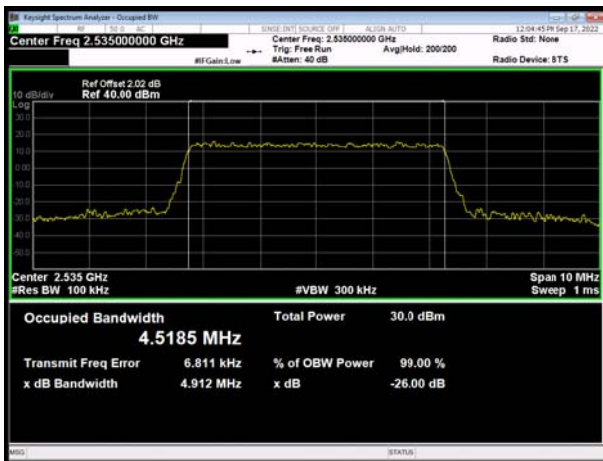
### LTE Band 7 QPSK 5MHz CH-Low



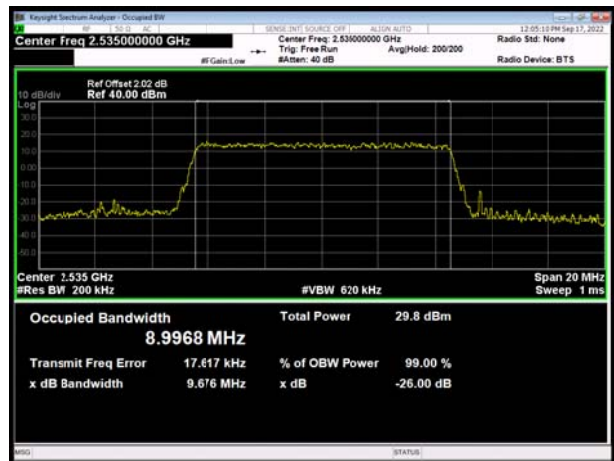
### LTE Band 7 QPSK 10MHz CH-Low



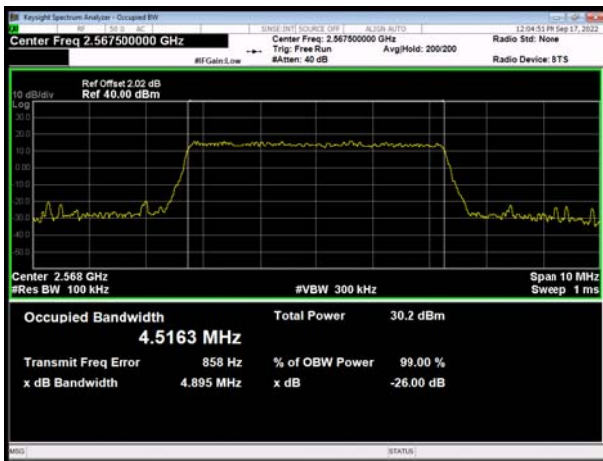
### LTE Band 7 QPSK 5MHz CH-Middle



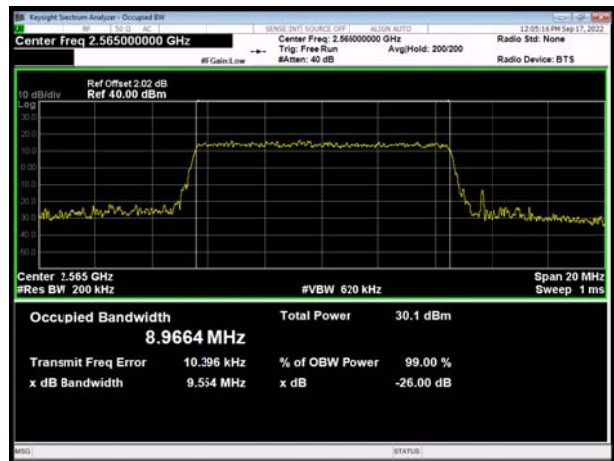
### LTE Band 7 QPSK 10MHz CH-Middle



### LTE Band 7 QPSK 5MHz CH-High

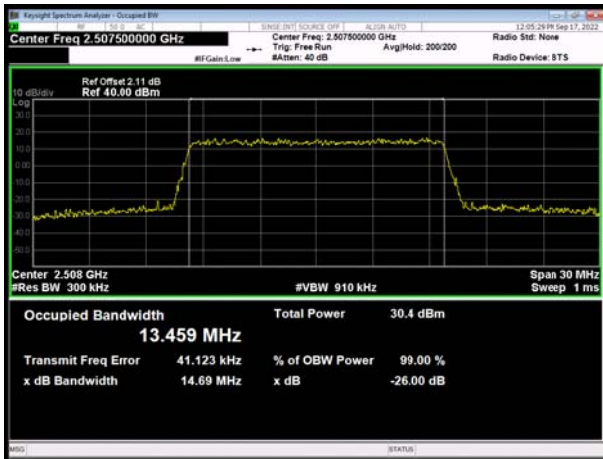


### LTE Band 7 QPSK 10MHz CH-High





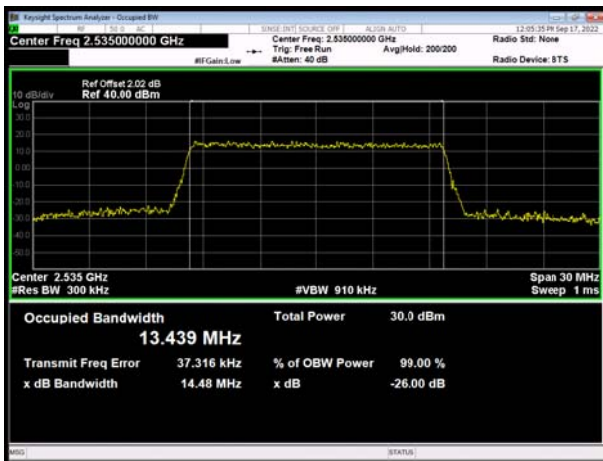
### LTE Band 7 QPSK 15MHz CH-Low



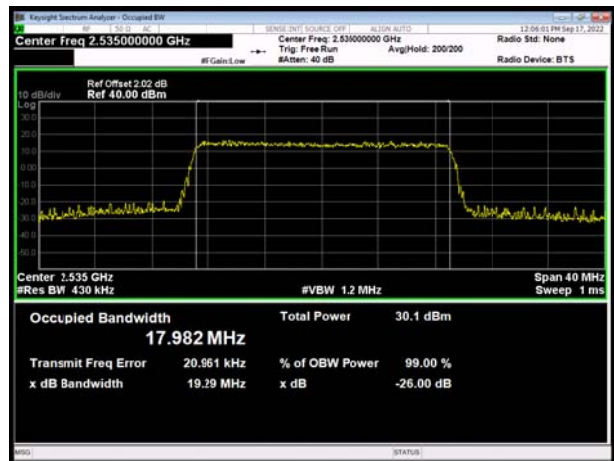
### LTE Band 7 QPSK 20MHz CH-Low



### LTE Band 7 QPSK 15MHz CH-Middle



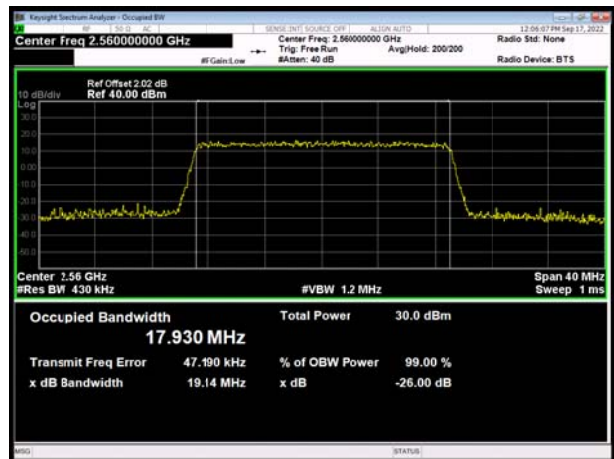
### LTE Band 7 QPSK 20MHz CH-Middle



### LTE Band 7 QPSK 15MHz CH-High



### LTE Band 7 QPSK 20MHz CH-High

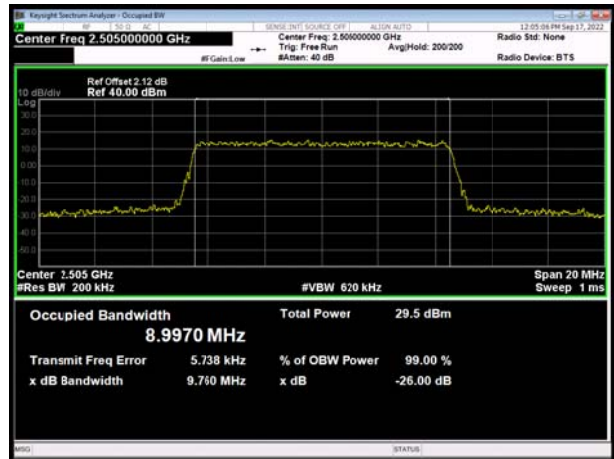




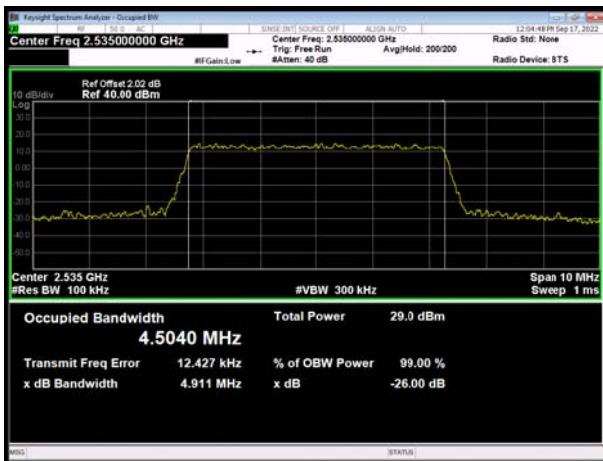
### LTE Band 7 16QAM 5MHz CH-Low



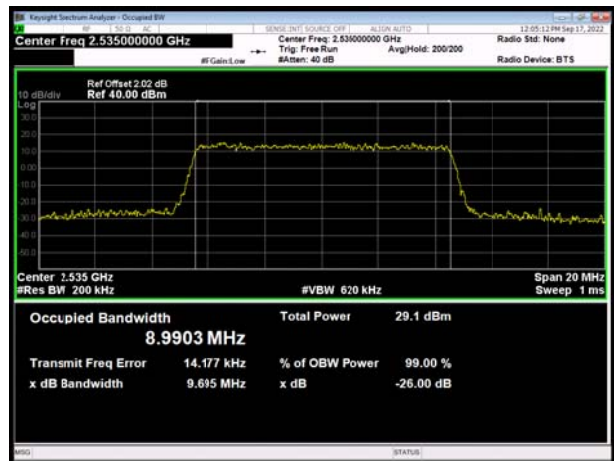
### LTE Band 7 16QAM 10MHz CH-Low



### 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

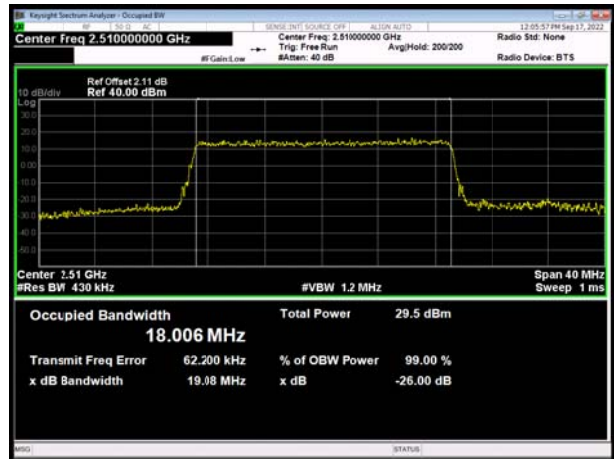




### LTE Band 7 16QAM 15MHz CH-Low



### LTE Band 7 16QAM 20MHz CH-Low



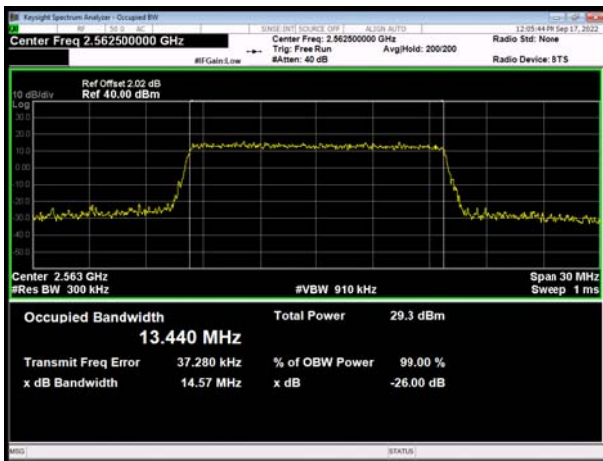
### LTE Band 7 16QAM 15MHz CH-Middle



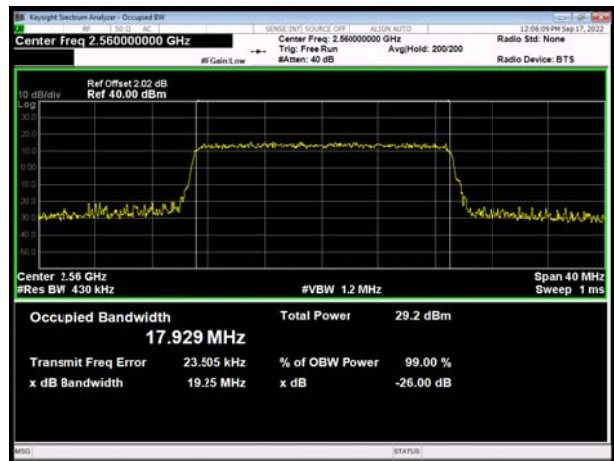
### LTE Band 7 16QAM 20MHz CH-Middle



### LTE Band 7 16QAM 15MHz CH-High



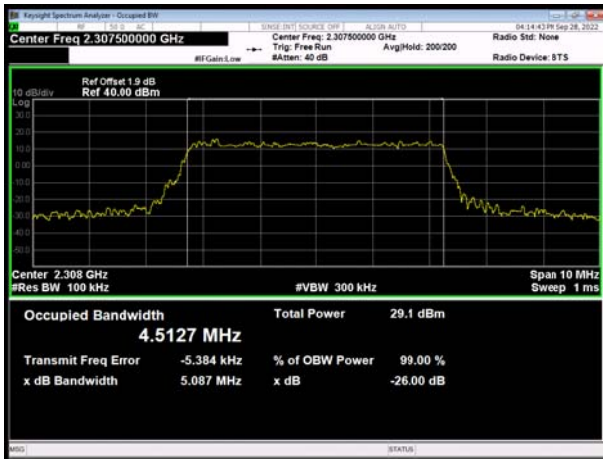
### LTE Band 7 16QAM 20MHz CH-High







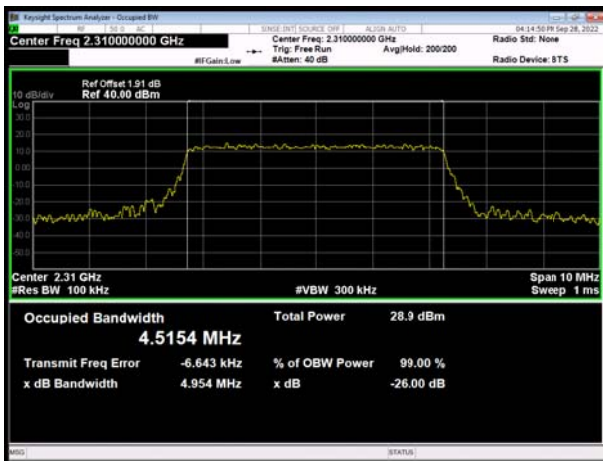
### LTE Band 40 Subset 1 QPSK 5MHz CH-Low



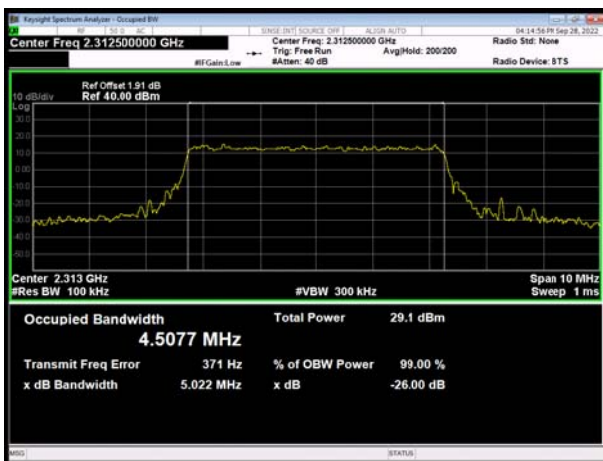
### LTE Band 40 Subset 1 QPSK 10MHz



### LTE Band 40 Subset 1 QPSK 5MHz CH-Middle



### LTE Band 40 Subset 1 QPSK 5MHz CH-High





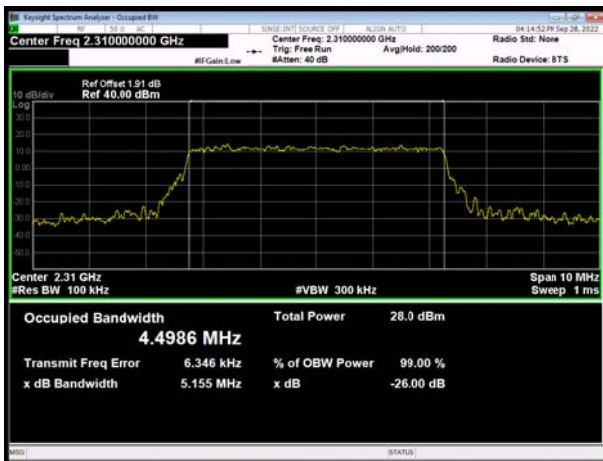
### LTE Band 40 Subset 1 16QAM 5MHz CH-Low



### LTE Band 40 Subset 1 16QAM 10MHz



### LTE Band 40 Subset 1 16QAM 5MHz CH-Middle



### LTE Band 40 Subset 1 16QAM 5MHz CH-High

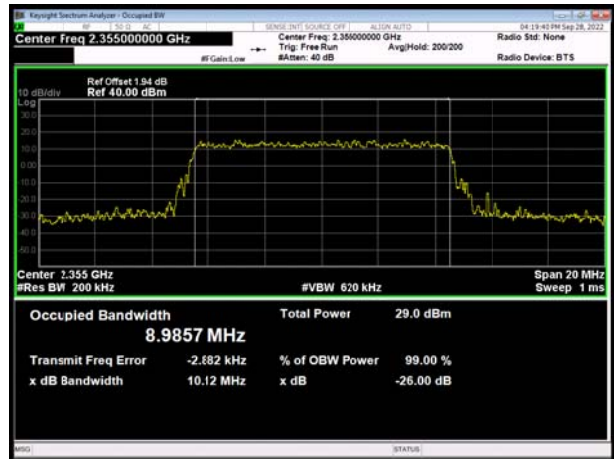




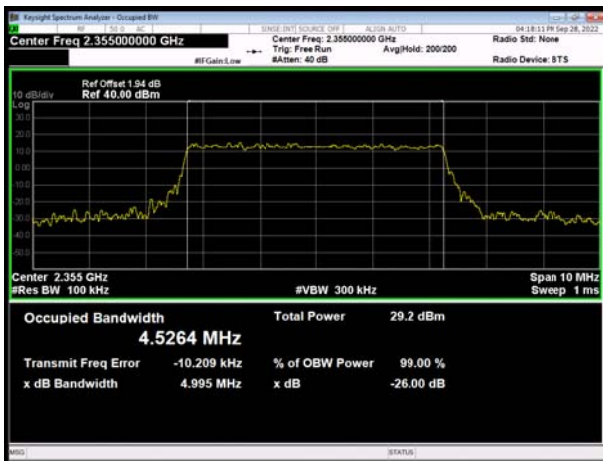
### LTE Band 40 Subset 2 QPSK 5MHz CH-Low



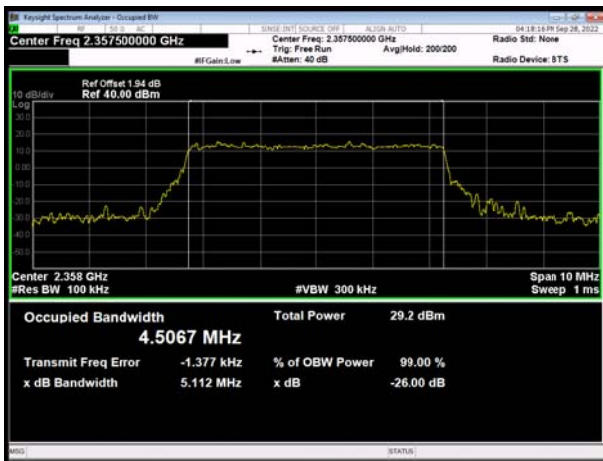
### LTE Band 40 Subset 2 QPSK 10MHz



### LTE Band 40 Subset 2 QPSK 5MHz CH-Middle

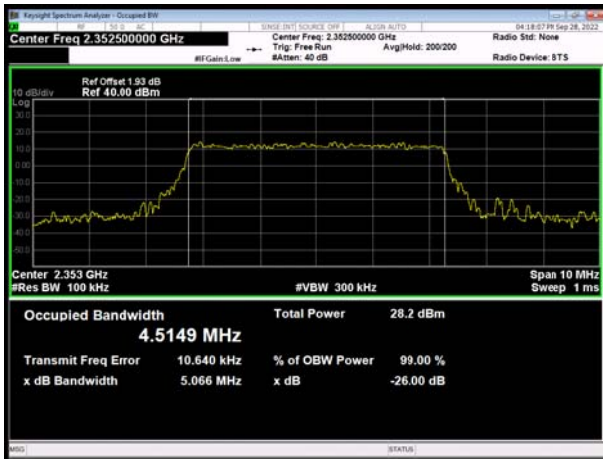


### LTE Band 40 Subset 2 QPSK 5MHz CH-High





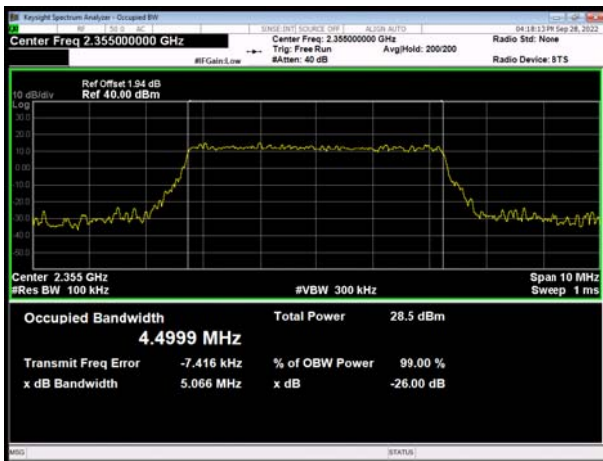
### LTE Band 40 Subset 2 16QAM 5MHz CH-Low



### LTE Band 40 Subset 2 16QAM 10MHz



### LTE Band 40 Subset 2 16QAM 5MHz CH-Middle



### LTE Band 40 Subset 2 16QAM 5MHz CH-High

