



# FCC RADIO TEST REPORT

**FCC ID** : S9GQ950US02  
**Equipment** : LTE Access Point  
**Brand Name** : RUCKUS  
**Model Name** : Q950-US02  
**Marketing Name** : Q950  
**Applicant** : Ruckus Wireless Inc.  
350 W. Java Dr., Sunnyvale CA 94089  
**Manufacturer** : Ruckus Wireless Inc.  
350 W. Java Dr., Sunnyvale CA 94089  
**Standard** : FCC 47 CFR Part 2, 96

The product was received on Oct. 14, 2020 and testing was started from Oct. 27, 2020 and completed on Dec. 04, 2020. We, Sporton International (USA) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (USA) Inc., the test report shall not be reproduced except in full.

Approved by: Neil Kao

**Sporton International (USA) Inc.**  
1175 Montague Expressway, Milpitas, CA 95035



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## History of this test report

| Report No.   | Version | Description             | Issued Date   |
|--------------|---------|-------------------------|---------------|
| FG200510001A | 01      | Initial issue of report | Dec. 17, 2020 |
|              |         |                         |               |
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|              |         |                         |               |

## Summary of Test Result

| Report Clause | Ref Std. Clause   | Test Items                         | Result (PASS/FAIL) | Remark                                     |
|---------------|-------------------|------------------------------------|--------------------|--------------------------------------------|
| 3.2           | §2.1046           | Conducted Output Power             | Reporting only     | -                                          |
| 3.3           | §96.41            | Peak-to-Average Ratio              | Pass               |                                            |
| 3.4           | §96.41            | Effective Isotropic Radiated Power | Pass               | -                                          |
|               |                   | Power Density                      | Pass               | -                                          |
| 3.5           | §2.1049<br>§96.41 | Occupied Bandwidth                 | Reporting only     | -                                          |
| 3.6           | §2.1051<br>§96.41 | Conducted Band Edge Measurement    | Pass               | -                                          |
| 3.7           | §2.1051<br>§96.41 | Conducted Spurious Emission        | Pass               |                                            |
| 4.4           | §2.1051<br>§96.41 | Radiated Spurious Emission         | Pass               | Under limit<br>0.50 dB at<br>10665.000 MHz |

### Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

### Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

This device is an LTE Class B CBSD.

It supports two cross-polarized antenna set that the transmitter outputs is a 90-degree phase-shifted replica of the other and the phase centers of the two antennas are co-located.

Antenna 1 and Antenna 2 always transmit on the same radio carrier frequency Fa.

Antenna 3 and Antenna 4 always transmit on the same radio carrier frequency Fb.

Ant. 1 and Ant. 3 are horizontal polarized and Ant. 2 and Ant. 4 are vertical polarized.

These two radio carrier frequencies, Fa and Fb, do not overlap to each other.

| Product Specification subjective to this standard |                                                                                                                                                          |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Antenna Type                                      | <Ant. 1>: Internal BeamFlex Antenna<br><Ant. 2>: Internal BeamFlex Antenna<br><Ant. 3>: Internal BeamFlex Antenna<br><Ant. 4>: Internal BeamFlex Antenna |
| Antenna Gain, polarity                            | <Ant. 1>: 13dBi, H<br><Ant. 2>: 13dBi, V<br><Ant. 3>: 13dBi, H<br><Ant. 4>: 13dBi, V                                                                     |

## 1.2 Modification of EUT

No modifications are made to the EUT during all test items.

## 1.3 Testing Location

|                       |                                                                     |            |
|-----------------------|---------------------------------------------------------------------|------------|
| Test Site             | SPORTON INTERNATIONAL (USA) INC.                                    |            |
| Test Site Location    | 1175 Montague Expressway, Milpitas, CA 95035<br>TEL: (408) 904-3300 |            |
| Test Site No.         | Sporton Site No.                                                    |            |
|                       | TH01-CA                                                             | 03CH02-CA  |
| Test Engineer         | Peter and Kaying Xiong                                              | Peter Liao |
| Temperature (°C)      | 21~25                                                               | 20~23      |
| Relative Humidity (%) | 42~53                                                               | 56~63      |



## **1.4 Applied Standards**

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

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 96
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 940660 D01 Part 96 CBRS Eqpt v03
- ♦ FCC KDB 662911 D02 MIMO with Cross Polarized Antenna v01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

## 2 Test Configuration of Equipment Under Test

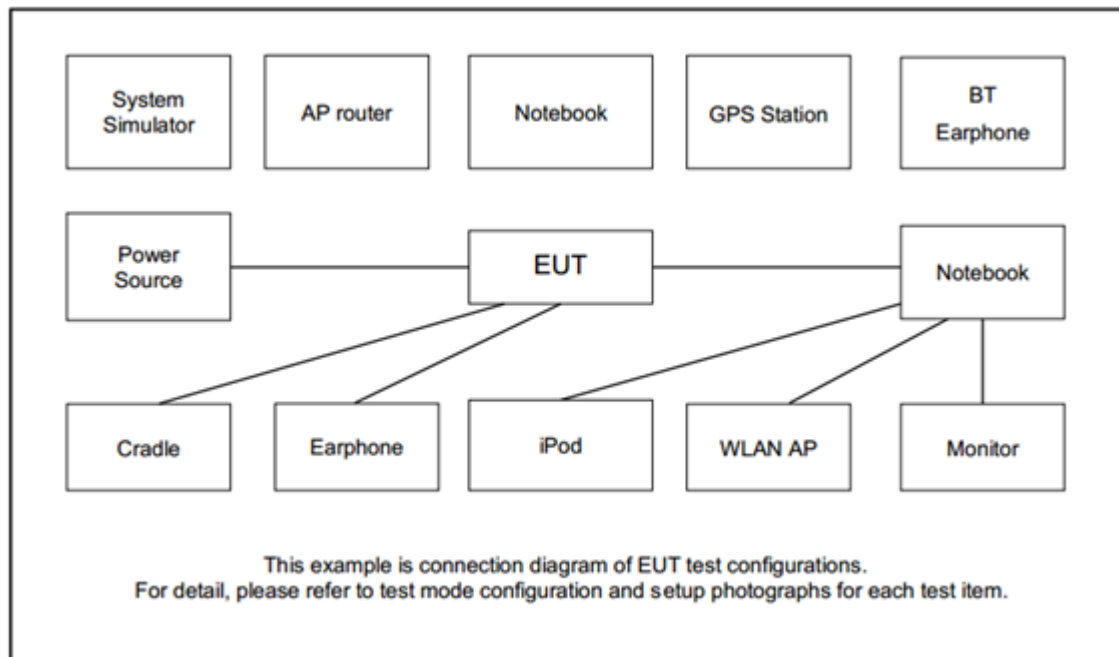
### 2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

| Test Items                  | Band                                                                                                                                                                                                                                                                                                            | Bandwidth (MHz) |    |       | Modulation |       |       |        | RB   | Test Channel |   |   |   |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|-------|------------|-------|-------|--------|------|--------------|---|---|---|
|                             |                                                                                                                                                                                                                                                                                                                 | 10              | 20 | 20+20 | QPSK       | 16QAM | 64QAM | 256QAM | Full | L            | M | H |   |
| Max. Output Power           | 48                                                                                                                                                                                                                                                                                                              | V               | V  | V     | V          | V     | V     | V      | V    | V            | V | V |   |
| E.I.R.P                     | 48                                                                                                                                                                                                                                                                                                              | V               | V  | V     | V          | V     | V     | V      | V    | V            | V | V |   |
| EIRP Density                | 48                                                                                                                                                                                                                                                                                                              | V               | V  | V     | V          | V     | V     | V      | V    | V            | V | V |   |
| 26dB and 99% Bandwidth      | 48                                                                                                                                                                                                                                                                                                              | V               | V  | V     | V          | V     | V     | V      | V    |              | V |   |   |
| Conducted Band Edge         | 48                                                                                                                                                                                                                                                                                                              | V               | V  | V     | V          | V     | V     | V      | V    | V            | V | V |   |
| Peak-to-Aver age Ratio      | 48                                                                                                                                                                                                                                                                                                              |                 | V  |       | V          | V     | V     | V      | V    |              | V |   |   |
| Conducted Spurious Emission | 48                                                                                                                                                                                                                                                                                                              | V               | V  | V     | V          | V     | V     |        | V    | V            | V | V |   |
| Radiated Spurious Emission  | 48                                                                                                                                                                                                                                                                                                              | Worst Case      |    |       |            |       |       |        |      |              | V | V | V |
| Remark                      | 1. The mark “v ” means that this configuration is chosen for testing<br>2. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different bandwidth and modulations in exploratory test. Subsequently, only the worst case emissions are reported. |                 |    |       |            |       |       |        |      |              |   |   |   |

## 2.2 Connection Diagram of Test System



## 2.3 Support Unit used in test configuration

| Item | Equipment | Trade Name | Model No.   | FCC ID | Data Cable | Power Cord                                                                |
|------|-----------|------------|-------------|--------|------------|---------------------------------------------------------------------------|
| 1.   | Adaptor   | MW         | HLG-100H-48 | N/A    | N/A        | AC I/P :<br>Unshielded, 0.2m<br>DC O/P :<br>Unshielded, 0.2m<br>with core |

## 2.4 Measurement Results Explanation Example

### For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\
 &= 4.2 + 10 = 14.2 \text{ (dB)}
 \end{aligned}$$

## 2.5 Frequency List of Low/Middle/High Channels

| LTE Band 48 Channel and Frequency List |                        |        |        |         |
|----------------------------------------|------------------------|--------|--------|---------|
| BW [MHz]                               | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20                                     | Channel                | 55340  | 55990  | 56640   |
|                                        | Frequency              | 3560   | 3625   | 3690    |
| 10                                     | Channel                | 55290  | 55990  | 56690   |
|                                        | Frequency              | 3555   | 3625   | 3695    |

| LTE Band 48_CA Channel and Frequency List |                        |           |        |        |         |
|-------------------------------------------|------------------------|-----------|--------|--------|---------|
| BW [MHz]                                  | Channel/Frequency(MHz) |           | Lowest | Middle | Highest |
| 20 + 20                                   | PCC                    | Channel   | 55340  | 55890  | 56440   |
|                                           |                        | Frequency | 3560   | 3615   | 3670    |
|                                           | SCC                    | Channel   | 55540  | 56090  | 56640   |
|                                           |                        | Frequency | 3580   | 3635   | 3690    |

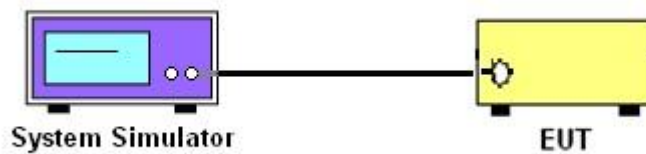
### 3 Conducted Test Items

#### 3.1 Measuring Instruments

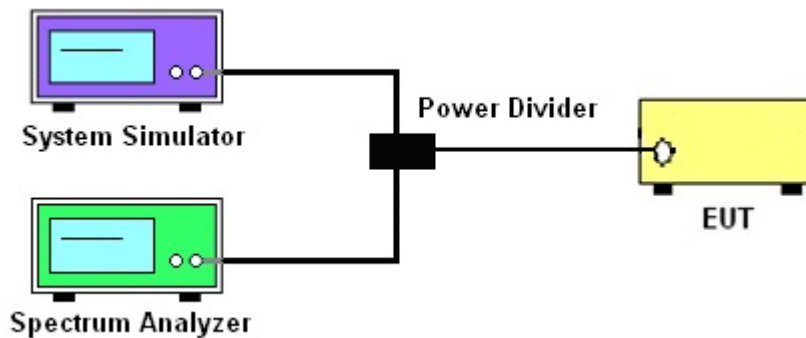
See list of measuring instruments of this test report.

##### 3.1.1 Test Setup

##### 3.1.2 Conducted Output Power



##### 3.1.3 EIRP, Power Density, Peak-to-Average Ratio, Occupied Bandwidth, Conducted Band-Edge, and Conducted Spurious Emission



##### 3.1.4 Test Result of Conducted Test

Please refer to Appendix A.



## **3.2 Conducted Output Power**

### **3.2.1 Description of the Conducted Output Power Measurement**

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

### **3.2.2 Test Procedures**

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

### 3.3 Peak-to-Average Ratio

#### 3.3.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. 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.

#### 3.3.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.6

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio

### 3.4 EIRP and Power Density

#### 3.4.1 Description of the EIRP and Power Density Measurement

The EIRP of mobile transmitters must not exceed 23 dBm /10 megahertz for LTE Band 42 and Band 43, and Band 48.

The testing follows ANSI C63.26-2015 Section 5.2.5.5

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$ , where

$P_T$  = transmitter output power in dBm

$G_T$  = gain of the transmitting antenna in dBi

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna in dB

EIRP and PSD limits for CBRS equipment as below tabel:

| Device          | Maximum EIRP<br>(dBm/10 MHz) | Maximum PSD<br>(dBm/MHz) |
|-----------------|------------------------------|--------------------------|
| End User Device | 23                           | n/a                      |
| Category A CBSD | 30                           | 20                       |
| Category B CBSD | 47                           | 37                       |

#### 3.4.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.4.5

1. Set instrument center frequency to OBW center frequency.
2. Set span to at least 1.5 times the OBW.
3. Set the RBW to the specified reference bandwidth (often 1 MHz).
4. Set VBW  $\geq 3 \times$  RBW.
5. Detector = RMS (power averaging).
6. Ensure that the number of measurement points in the sweep  $\geq 2 \times$  span/RBW.
7. Sweep time = auto couple.
8. Employ trace averaging (RMS) mode over a minimum of 100 traces.
9. Use the peak marker function to determine the maximum amplitude level within the reference bandwidth (PSD).
10. Determine the EIRP by adding the effective antenna gain to the adjusted power level.

## 3.5 Occupied Bandwidth

### 3.5.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

The occupied bandwidth shall not exceed the equipment's channel bandwidth, which is declared by the manufacturer.

### 3.5.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.  
The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
4. Set the detection mode to peak, and the trace mode to max hold.
5. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.  
(this is the reference value)
6. Determine the "-26 dB down amplitude" as equal to (Reference Value – X).
7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the "-X dB down amplitude" determined in step 6. If a marker is below this "-X dB down amplitude" value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

## 3.6 Conducted Band Edge

### 3.6.1 Description of Conducted Band Edge Measurement

The power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed  $-13$  dBm/MHz. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or less, but at least one percent of the emission bandwidth of the fundamental emission of the transmitter, provided the measured energy is integrated over a 1 MHz bandwidth.

### 3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW  $\geq 1\%$  EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used
5. Set spectrum analyzer with RMS detector.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. The conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed  $-13$  dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed  $-25$  dBm/MHz

## 3.7 Conducted Spurious Emission

### 3.7.1 Description of Conducted Spurious Emission Measurement

96.41 (e)(2)

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

### 3.7.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.  
The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
6. Set spectrum analyzer with RMS detector.
7. Taking the record of maximum spurious emission.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. The limit line is -40dBm/MHz.

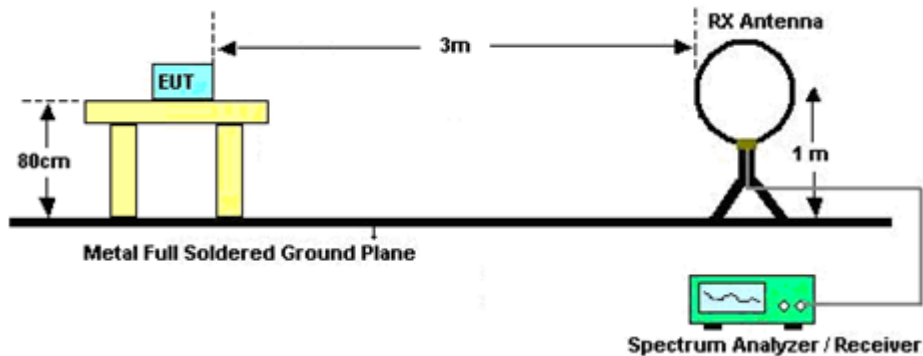
## 4 Radiated Test Items

### 4.1 Measuring Instruments

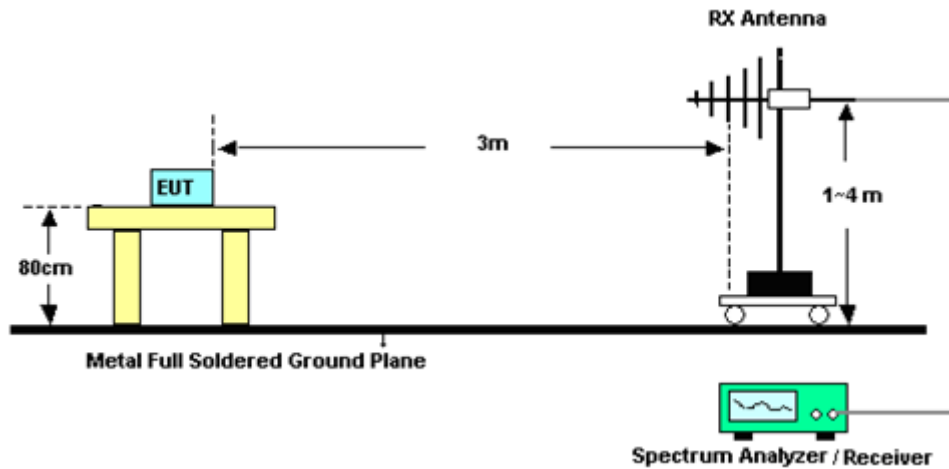
See list of measuring instruments of this test report.

### 4.2 Test Setup

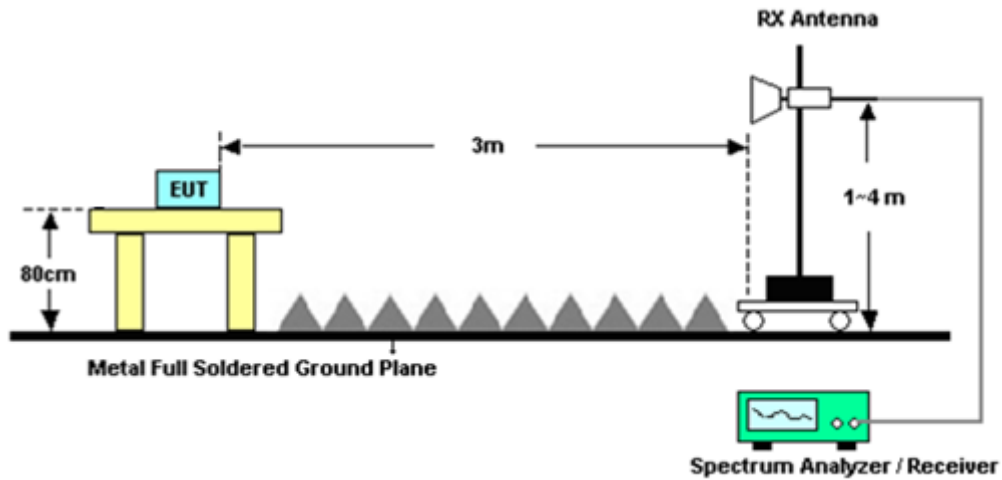
<For radiated emissions below 30MHz>



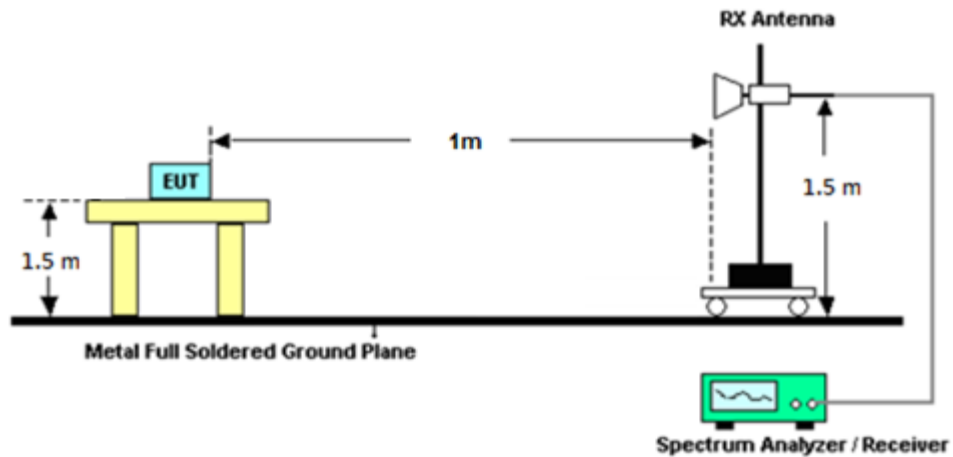
<For radiated emissions from 30MHz to 1GHz>



<For radiated emissions from 1 ~ 18GHz>



<For radiated emissions from 18 ~ 40GHz>



### 4.3 Test Result of Radiated Test

Please refer to Appendix B.

**Note:**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

## 4.4 Radiated Spurious Emission

### 4.4.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least -40dBm / MHz .

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

### 4.4.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

1. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.  
$$\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$$
$$\text{ERP (dBm)} = \text{EIRP} - 2.15$$
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.  
The limit line is -40dBm/MHz



## 5 List of Measuring Equipment

| Instrument           | Brand Name      | Model No.              | Serial No.    | Characteristics | Calibration Date | Test Date                     | Due Date      | Remark                |
|----------------------|-----------------|------------------------|---------------|-----------------|------------------|-------------------------------|---------------|-----------------------|
| Spectrum Analyzer    | Rohde & Schwarz | FSV40                  | 101089        | 10Hz~40GHz      | Sep. 14, 2020    | Oct. 27, 2020 ~ Dec. 02, 2020 | Sep. 13, 2021 | Conducted (TH01-CA)   |
| Spectrum Analyzer    | Keysight        | N9010A                 | MY57420221    | 10Hz~44GHz      | Sep. 11, 2019    | Oct. 27, 2020 ~ Dec. 02, 2020 | Sep. 10, 2021 | Conducted (TH01-CA)   |
| Power Sensor         | DARE!!          | RPR3006W               | RPR6W-1901027 | N/A             | Jun. 24, 2020    | Oct. 27, 2020 ~ Dec. 02, 2020 | Jun. 23, 2021 | Conducted (TH01-CA)   |
| Hygrometer           | TESTO           | 608-H1                 | 45141354      | N/A             | Aug. 05, 2020    | Oct. 27, 2020 ~ Dec. 02, 2020 | Aug. 04, 2021 | Conducted (TH01-CA)   |
| Bilog Antenna        | TESEQ           | 6111D                  | 50392         | 30MHz~1GHz      | Jul. 29, 2020    | Nov. 25, 2020 ~ Dec. 04, 2020 | Jul. 28, 2021 | Radiation (03CH02-CA) |
| Horn Antenna         | SCHWARZBECK     | BBHA 9120D             | 01895         | 1GHz~18GHz      | Aug. 28, 2020    | Nov. 25, 2020 ~ Dec. 04, 2020 | Aug. 27, 2021 | Radiation (03CH02-CA) |
| SHF-EHF Horn Antenna | SCHWARZBECK     | BBHA9170               | 00842         | 18GHz~40GHz     | Jul. 27, 2020    | Nov. 25, 2020 ~ Dec. 04, 2020 | Jul. 26, 2021 | Radiation (03CH02-CA) |
| Preamplifier         | SONOMA          | 310N                   | 372240        | N/A             | Aug. 12, 2020    | Nov. 25, 2020 ~ Dec. 04, 2020 | Aug. 11, 2021 | Radiation (03CH02-CA) |
| Preamplifier         | Keysight        | 83017A                 | MY53270323    | 1GHz~26.5GHz    | Jul. 28, 2020    | Nov. 25, 2020 ~ Dec. 04, 2020 | Jul. 27, 2021 | Radiation (03CH02-CA) |
| Preamplifier         | E-instrument    | ERA-100M-18G-56-01-A70 | EC1900251     | N/A             | Nov. 26, 2019    | Nov. 25, 2020 ~ Dec. 04, 2020 | Nov. 25, 2021 | Radiation (03CH02-CA) |
| Preamplifier         | EMEC            | EMC18G40G              | 060725        | 18G-40G         | Aug. 07, 2020    | Nov. 25, 2020 ~ Dec. 04, 2020 | Aug. 06, 2021 | Radiation (03CH02-CA) |
| Spectrum Analyzer    | Keysight        | N9010A                 | MY57420221    | 10Hz~44GHz      | Sep. 11, 2020    | Nov. 25, 2020 ~ Dec. 04, 2020 | Sep. 10, 2021 | Radiation (03CH02-CA) |
| Hygrometer           | TESTO           | 608-H1                 | 45142602      | N/A             | Aug. 05, 2020    | Nov. 25, 2020 ~ Dec. 04, 2020 | Aug. 04, 2021 | Radiation (03CH02-CA) |
| Signal Generator     | Rohde & Schwarz | SMF100A                | 105544        | 9kHz~44GHz      | Jun. 09, 2020    | Nov. 25, 2020 ~ Dec. 04, 2020 | Jun. 08, 2021 | Radiation (03CH02-CA) |
| Horn Antenna         | SCHWARZBECK     | BBHA 9120D             | 02140         | N/A             | Aug. 28, 2020    | Nov. 25, 2020 ~ Dec. 04, 2020 | Aug. 27, 2021 | Radiation (03CH02-CA) |
| Software             | Audix           | E3                     | N/A           | N/A             | N/A              | Nov. 25, 2020 ~ Dec. 04, 2020 | N/A           | Radiation (03CH02-CA) |

## 6 Uncertainty of Evaluation

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

|                                                                         |      |
|-------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 3.84 |
|-------------------------------------------------------------------------|------|

### Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

|                                                                         |      |
|-------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 4.53 |
|-------------------------------------------------------------------------|------|

### Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

|                                                                         |      |
|-------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 4.41 |
|-------------------------------------------------------------------------|------|



## **Appendix A. Test Results of Conducted of EIRP Test**

## &lt;Single Carrier Mode&gt;

| EIRP Power (dBm/10MHz) |                      |         |                 |          |                       |                       |                            |                            |                      |
|------------------------|----------------------|---------|-----------------|----------|-----------------------|-----------------------|----------------------------|----------------------------|----------------------|
| Carrier1               | Mode                 | Channel | Frequency (MHz) | DG (dBi) | Port 1<br>(dBm/10MHz) | Port 2<br>(dBm/10MHz) | Port 1 EIRP<br>(dBm/10MHz) | Port 2 EIRP<br>(dBm/10MHz) | Limit<br>(dBm/10MHz) |
|                        | LTE_10MHz_QPSK_2TX   | 55290   | 3555            | 13       | 31.85                 | 30.54                 | 44.85                      | 43.54                      | < 47 dBm             |
|                        | LTE_10MHz_QPSK_2TX   | 55990   | 3625            | 13       | 32.12                 | 31.14                 | 45.12                      | 44.14                      |                      |
|                        | LTE_10MHz_QPSK_2TX   | 56690   | 3695            | 13       | 31.82                 | 32.08                 | 44.82                      | 45.08                      |                      |
|                        | LTE_20MHz_QPSK_2TX   | 55340   | 3560            | 13       | 30.36                 | 29.65                 | 43.36                      | 42.65                      |                      |
|                        | LTE_20MHz_QPSK_2TX   | 55990   | 3625            | 13       | 32.04                 | 31.22                 | 45.04                      | 44.22                      |                      |
|                        | LTE_20MHz_QPSK_2TX   | 56640   | 3690            | 13       | 30.51                 | 30.37                 | 43.51                      | 43.37                      |                      |
|                        | LTE_10MHz_16QAM_2TX  | 55290   | 3555            | 13       | 31.77                 | 31.62                 | 44.77                      | 44.62                      |                      |
|                        | LTE_10MHz_16QAM_2TX  | 55990   | 3625            | 13       | 31.91                 | 31.48                 | 44.91                      | 44.48                      |                      |
|                        | LTE_10MHz_16QAM_2TX  | 56690   | 3695            | 13       | 31.77                 | 31.85                 | 44.77                      | 44.85                      |                      |
|                        | LTE_20MHz_16QAM_2TX  | 55340   | 3560            | 13       | 31.96                 | 31.34                 | 44.96                      | 44.34                      |                      |
|                        | LTE_20MHz_16QAM_2TX  | 55990   | 3625            | 13       | 31.74                 | 31.13                 | 44.74                      | 44.13                      |                      |
|                        | LTE_20MHz_16QAM_2TX  | 56640   | 3690            | 13       | 31.47                 | 32.05                 | 44.47                      | 45.05                      |                      |
|                        | LTE_10MHz_64QAM_2TX  | 55290   | 3555            | 13       | 32.56                 | 30.85                 | 45.56                      | 43.85                      |                      |
|                        | LTE_10MHz_64QAM_2TX  | 55990   | 3625            | 13       | 32.32                 | 31.51                 | 45.32                      | 44.51                      |                      |
|                        | LTE_10MHz_64QAM_2TX  | 56690   | 3695            | 13       | 31.81                 | 31.92                 | 44.81                      | 44.92                      |                      |
|                        | LTE_20MHz_64QAM_2TX  | 55340   | 3560            | 13       | 30.91                 | 30.28                 | 43.91                      | 43.28                      |                      |
|                        | LTE_20MHz_64QAM_2TX  | 55990   | 3625            | 13       | 31.77                 | 30.98                 | 44.77                      | 43.98                      |                      |
|                        | LTE_20MHz_64QAM_2TX  | 56640   | 3690            | 13       | 30.96                 | 30.80                 | 43.96                      | 43.80                      |                      |
|                        | LTE_10MHz_256QAM_2TX | 55290   | 3555            | 13       | 32.39                 | 31.33                 | 45.39                      | 44.33                      |                      |
|                        | LTE_10MHz_256QAM_2TX | 55990   | 3625            | 13       | 32.72                 | 32.05                 | 45.72                      | 45.05                      |                      |
|                        | LTE_10MHz_256QAM_2TX | 56690   | 3695            | 13       | 31.87                 | 32.19                 | 44.87                      | 45.19                      |                      |
|                        | LTE_20MHz_256QAM_2TX | 55340   | 3560            | 13       | 31.09                 | 30.48                 | 44.09                      | 43.48                      |                      |
|                        | LTE_20MHz_256QAM_2TX | 55990   | 3625            | 13       | 32.43                 | 31.36                 | 45.43                      | 44.36                      |                      |
|                        | LTE_20MHz_256QAM_2TX | 56640   | 3690            | 13       | 30.74                 | 30.97                 | 43.74                      | 43.97                      |                      |
| Carrier2               | Mode                 | Channel | Frequency (MHz) | DG (dBi) | Port 3<br>(dBm/10MHz) | Port 4<br>(dBm/10MHz) | Port 3 EIRP<br>(dBm/10MHz) | Port 4 EIRP<br>(dBm/10MHz) | Limit<br>(dBm/10MHz) |
|                        | LTE_10MHz_QPSK_2TX   | 55290   | 3555            | 13       | 31.80                 | 31.40                 | 44.80                      | 44.40                      | < 47 dBm             |
|                        | LTE_10MHz_QPSK_2TX   | 55990   | 3625            | 13       | 32.01                 | 31.85                 | 45.01                      | 44.85                      |                      |
|                        | LTE_10MHz_QPSK_2TX   | 56690   | 3695            | 13       | 31.16                 | 32.05                 | 44.16                      | 45.05                      |                      |
|                        | LTE_20MHz_QPSK_2TX   | 55340   | 3560            | 13       | 32.37                 | 31.87                 | 45.37                      | 44.87                      |                      |
|                        | LTE_20MHz_QPSK_2TX   | 55990   | 3625            | 13       | 32.27                 | 31.97                 | 45.27                      | 44.97                      |                      |
|                        | LTE_20MHz_QPSK_2TX   | 56640   | 3690            | 13       | 29.37                 | 29.23                 | 42.37                      | 42.23                      |                      |
|                        | LTE_10MHz_16QAM_2TX  | 55290   | 3555            | 13       | 31.75                 | 30.37                 | 44.75                      | 43.37                      |                      |
|                        | LTE_10MHz_16QAM_2TX  | 55990   | 3625            | 13       | 31.85                 | 31.76                 | 44.85                      | 44.76                      |                      |
|                        | LTE_10MHz_16QAM_2TX  | 56690   | 3695            | 13       | 31.54                 | 32.05                 | 44.54                      | 45.05                      |                      |
|                        | LTE_20MHz_16QAM_2TX  | 55340   | 3560            | 13       | 32.18                 | 32.12                 | 45.18                      | 45.12                      |                      |
|                        | LTE_20MHz_16QAM_2TX  | 55990   | 3625            | 13       | 31.90                 | 31.70                 | 44.90                      | 44.70                      |                      |
|                        | LTE_20MHz_16QAM_2TX  | 56640   | 3690            | 13       | 30.24                 | 30.37                 | 43.24                      | 43.37                      |                      |
|                        | LTE_10MHz_64QAM_2TX  | 55290   | 3555            | 13       | 31.78                 | 31.16                 | 44.78                      | 44.16                      |                      |
|                        | LTE_10MHz_64QAM_2TX  | 55990   | 3625            | 13       | 32.38                 | 32.25                 | 45.38                      | 45.25                      |                      |
|                        | LTE_10MHz_64QAM_2TX  | 56690   | 3695            | 13       | 31.89                 | 32.29                 | 44.89                      | 45.29                      |                      |
|                        | LTE_20MHz_64QAM_2TX  | 55340   | 3560            | 13       | 31.89                 | 31.87                 | 44.89                      | 44.87                      |                      |
|                        | LTE_20MHz_64QAM_2TX  | 55990   | 3625            | 13       | 31.77                 | 31.69                 | 44.77                      | 44.69                      |                      |
|                        | LTE_20MHz_64QAM_2TX  | 56640   | 3690            | 13       | 29.96                 | 30.59                 | 42.96                      | 43.59                      |                      |
|                        | LTE_10MHz_256QAM_2TX | 55290   | 3555            | 13       | 32.31                 | 31.29                 | 45.31                      | 44.29                      |                      |
|                        | LTE_10MHz_256QAM_2TX | 55990   | 3625            | 13       | 32.77                 | 32.22                 | 45.77                      | 45.22                      |                      |
|                        | LTE_10MHz_256QAM_2TX | 56690   | 3695            | 13       | 32.44                 | 32.62                 | 45.44                      | 45.62                      |                      |
|                        | LTE_20MHz_256QAM_2TX | 55340   | 3560            | 13       | 32.51                 | 31.62                 | 45.51                      | 44.62                      |                      |
|                        | LTE_20MHz_256QAM_2TX | 55990   | 3625            | 13       | 32.34                 | 31.61                 | 45.34                      | 44.61                      |                      |
|                        | LTE_20MHz_256QAM_2TX | 56640   | 3690            | 13       | 31.87                 | 31.97                 | 44.87                      | 44.97                      |                      |

**Remark:** The reported test results are within the scope of the declared tolerances by the Manufacturer.

| EIRP PSD (dBm/MHz) |                      |         |                 |          |                     |                     |                          |                          |                         |
|--------------------|----------------------|---------|-----------------|----------|---------------------|---------------------|--------------------------|--------------------------|-------------------------|
| Carrier1           | Mode                 | Channel | Frequency (MHz) | DG (dBi) | Port 1<br>(dBm/MHz) | Port 2<br>(dBm/MHz) | Port 1 EIRP<br>(dBm/MHz) | Port 2 EIRP<br>(dBm/MHz) | Total EIRP<br>(dBm/MHz) |
|                    | LTE_10MHz_QPSK_2TX   | 55290   | 3555            | 13       | 23.77               | 22.40               | 36.77                    | 35.40                    | < 37 dBm                |
|                    | LTE_10MHz_QPSK_2TX   | 55990   | 3625            | 13       | 23.89               | 23.04               | 36.89                    | 36.04                    |                         |
|                    | LTE_10MHz_QPSK_2TX   | 56690   | 3695            | 13       | 23.68               | 23.84               | 36.68                    | 36.84                    |                         |
|                    | LTE_20MHz_QPSK_2TX   | 55340   | 3560            | 13       | 22.20               | 21.62               | 35.20                    | 34.62                    |                         |
|                    | LTE_20MHz_QPSK_2TX   | 55990   | 3625            | 13       | 23.22               | 22.27               | 36.22                    | 35.27                    |                         |
|                    | LTE_20MHz_QPSK_2TX   | 56640   | 3690            | 13       | 21.71               | 21.49               | 34.71                    | 34.49                    |                         |
|                    | LTE_10MHz_16QAM_2TX  | 55290   | 3555            | 13       | 23.87               | 23.55               | 36.87                    | 36.55                    |                         |
|                    | LTE_10MHz_16QAM_2TX  | 55990   | 3625            | 13       | 23.89               | 23.40               | 36.89                    | 36.40                    |                         |
|                    | LTE_10MHz_16QAM_2TX  | 56690   | 3695            | 13       | 23.72               | 23.77               | 36.72                    | 36.77                    |                         |
|                    | LTE_20MHz_16QAM_2TX  | 55340   | 3560            | 13       | 23.23               | 22.92               | 36.23                    | 35.92                    |                         |
|                    | LTE_20MHz_16QAM_2TX  | 55990   | 3625            | 13       | 23.12               | 22.40               | 36.12                    | 35.40                    |                         |
|                    | LTE_20MHz_16QAM_2TX  | 56640   | 3690            | 13       | 22.81               | 23.52               | 35.81                    | 36.52                    |                         |
|                    | LTE_10MHz_64QAM_2TX  | 55290   | 3555            | 13       | 23.95               | 22.13               | 36.95                    | 35.13                    |                         |
|                    | LTE_10MHz_64QAM_2TX  | 55990   | 3625            | 13       | 23.50               | 22.55               | 36.50                    | 35.55                    |                         |
|                    | LTE_10MHz_64QAM_2TX  | 56690   | 3695            | 13       | 23.31               | 23.27               | 36.31                    | 36.27                    |                         |
|                    | LTE_20MHz_64QAM_2TX  | 55340   | 3560            | 13       | 22.48               | 21.81               | 35.48                    | 34.81                    |                         |
|                    | LTE_20MHz_64QAM_2TX  | 55990   | 3625            | 13       | 23.23               | 22.57               | 36.23                    | 35.57                    |                         |
|                    | LTE_20MHz_64QAM_2TX  | 56640   | 3690            | 13       | 22.60               | 22.28               | 35.60                    | 35.28                    |                         |
|                    | LTE_10MHz_256QAM_2TX | 55290   | 3555            | 13       | 23.74               | 22.66               | 36.74                    | 35.66                    |                         |
|                    | LTE_10MHz_256QAM_2TX | 55990   | 3625            | 13       | 23.82               | 23.10               | 36.82                    | 36.10                    |                         |
|                    | LTE_10MHz_256QAM_2TX | 56690   | 3695            | 13       | 23.18               | 23.71               | 36.18                    | 36.71                    |                         |
|                    | LTE_20MHz_256QAM_2TX | 55340   | 3560            | 13       | 22.76               | 21.91               | 35.76                    | 34.91                    |                         |
|                    | LTE_20MHz_256QAM_2TX | 55990   | 3625            | 13       | 23.93               | 22.87               | 36.93                    | 35.87                    |                         |
|                    | LTE_20MHz_256QAM_2TX | 56640   | 3690            | 13       | 22.04               | 22.59               | 35.04                    | 35.59                    |                         |
| Carrier2           | Mode                 | Channel | Frequency (MHz) | DG (dBi) | Port 3<br>(dBm/MHz) | Port 4<br>(dBm/MHz) | Port 3 EIRP<br>(dBm/MHz) | Port 4 EIRP<br>(dBm/MHz) | Total EIRP<br>(dBm/MHz) |
|                    | LTE_10MHz_QPSK_2TX   | 55290   | 3555            | 13       | 23.82               | 23.53               | 36.82                    | 36.53                    | < 37 dBm                |
|                    | LTE_10MHz_QPSK_2TX   | 55990   | 3625            | 13       | 23.77               | 23.48               | 36.77                    | 36.48                    |                         |
|                    | LTE_10MHz_QPSK_2TX   | 56690   | 3695            | 13       | 23.44               | 23.91               | 36.44                    | 36.91                    |                         |
|                    | LTE_20MHz_QPSK_2TX   | 55340   | 3560            | 13       | 23.53               | 22.95               | 36.53                    | 35.95                    |                         |
|                    | LTE_20MHz_QPSK_2TX   | 55990   | 3625            | 13       | 23.21               | 23.09               | 36.21                    | 36.09                    |                         |
|                    | LTE_20MHz_QPSK_2TX   | 56640   | 3690            | 13       | 20.65               | 20.62               | 33.65                    | 33.62                    |                         |
|                    | LTE_10MHz_16QAM_2TX  | 55290   | 3555            | 13       | 23.85               | 22.79               | 36.85                    | 35.79                    |                         |
|                    | LTE_10MHz_16QAM_2TX  | 55990   | 3625            | 13       | 23.83               | 23.65               | 36.83                    | 36.65                    |                         |
|                    | LTE_10MHz_16QAM_2TX  | 56690   | 3695            | 13       | 23.61               | 23.93               | 36.61                    | 36.93                    |                         |
|                    | LTE_20MHz_16QAM_2TX  | 55340   | 3560            | 13       | 23.48               | 23.39               | 36.48                    | 36.39                    |                         |
|                    | LTE_20MHz_16QAM_2TX  | 55990   | 3625            | 13       | 23.15               | 23.03               | 36.15                    | 36.03                    |                         |
|                    | LTE_20MHz_16QAM_2TX  | 56640   | 3690            | 13       | 21.65               | 21.67               | 34.65                    | 34.67                    |                         |
|                    | LTE_10MHz_64QAM_2TX  | 55290   | 3555            | 13       | 23.02               | 22.37               | 36.02                    | 35.37                    |                         |
|                    | LTE_10MHz_64QAM_2TX  | 55990   | 3625            | 13       | 23.41               | 23.34               | 36.41                    | 36.34                    |                         |
|                    | LTE_10MHz_64QAM_2TX  | 56690   | 3695            | 13       | 23.13               | 23.62               | 36.13                    | 36.62                    |                         |
|                    | LTE_20MHz_64QAM_2TX  | 55340   | 3560            | 13       | 23.32               | 23.35               | 36.32                    | 36.35                    |                         |
|                    | LTE_20MHz_64QAM_2TX  | 55990   | 3625            | 13       | 23.26               | 23.30               | 36.26                    | 36.30                    |                         |
|                    | LTE_20MHz_64QAM_2TX  | 56640   | 3690            | 13       | 21.38               | 22.45               | 34.38                    | 35.45                    |                         |
|                    | LTE_10MHz_256QAM_2TX | 55290   | 3555            | 13       | 23.68               | 22.36               | 36.68                    | 35.36                    |                         |
|                    | LTE_10MHz_256QAM_2TX | 55990   | 3625            | 13       | 23.85               | 23.25               | 36.85                    | 36.25                    |                         |
|                    | LTE_10MHz_256QAM_2TX | 56690   | 3695            | 13       | 23.79               | 23.96               | 36.79                    | 36.96                    |                         |
|                    | LTE_20MHz_256QAM_2TX | 55340   | 3560            | 13       | 23.98               | 23.07               | 36.98                    | 36.07                    |                         |
|                    | LTE_20MHz_256QAM_2TX | 55990   | 3625            | 13       | 23.85               | 23.17               | 36.85                    | 36.17                    |                         |
|                    | LTE_20MHz_256QAM_2TX | 56640   | 3690            | 13       | 23.77               | 23.72               | 36.77                    | 36.72                    |                         |

**Remark:** The reported test results are within the scope of the declared tolerances by the Manufacturer.

| Total EIRP Power (dBm) for certificate |                      |         |                 |          |                  |                  |                       |                       |                  |
|----------------------------------------|----------------------|---------|-----------------|----------|------------------|------------------|-----------------------|-----------------------|------------------|
| Carrier1                               | Mode                 | Channel | Frequency (MHz) | DG (dBi) | Port 1 (dBm)     | Port 2 (dBm)     | Port 1 EIRP (dBm)     | Port 2 EIRP (dBm)     | Total EIRP (dBm) |
|                                        | LTE_10MHz_QPSK_2TX   | 55290   | 3555            | 13       | 32.10            | 30.80            | 45.10                 | 43.80                 | 47.51            |
|                                        | LTE_10MHz_QPSK_2TX   | 55990   | 3625            | 13       | 32.40            | 31.30            | 45.40                 | 44.30                 | 47.90            |
|                                        | LTE_10MHz_QPSK_2TX   | 56690   | 3695            | 13       | 32.10            | 32.30            | 45.10                 | 45.30                 | 48.21            |
|                                        | LTE_20MHz_QPSK_2TX   | 55340   | 3560            | 13       | 33.80            | 32.90            | 46.80                 | 45.90                 | 49.38            |
|                                        | LTE_20MHz_QPSK_2TX   | 55990   | 3625            | 13       | 34.80            | 34.10            | 47.80                 | 47.10                 | 50.47            |
|                                        | LTE_20MHz_QPSK_2TX   | 56640   | 3690            | 13       | 32.70            | 33.40            | 45.70                 | 46.40                 | 49.07            |
|                                        | LTE_10MHz_16QAM_2TX  | 55290   | 3555            | 13       | 32.20            | 31.90            | 45.20                 | 44.90                 | 48.06            |
|                                        | LTE_10MHz_16QAM_2TX  | 55990   | 3625            | 13       | 31.90            | 31.40            | 44.90                 | 44.40                 | 47.67            |
|                                        | LTE_10MHz_16QAM_2TX  | 56690   | 3695            | 13       | 31.60            | 31.80            | 44.60                 | 44.80                 | 47.71            |
|                                        | LTE_20MHz_16QAM_2TX  | 55340   | 3560            | 13       | 34.50            | 34.00            | 47.50                 | 47.00                 | 50.27            |
|                                        | LTE_20MHz_16QAM_2TX  | 55990   | 3625            | 13       | 34.20            | 33.80            | 47.20                 | 46.80                 | 50.01            |
|                                        | LTE_20MHz_16QAM_2TX  | 56640   | 3690            | 13       | 33.60            | 34.60            | 46.60                 | 47.60                 | 50.14            |
|                                        | LTE_10MHz_64QAM_2TX  | 55290   | 3555            | 13       | 32.50            | 30.80            | 45.50                 | 43.80                 | 47.74            |
|                                        | LTE_10MHz_64QAM_2TX  | 55990   | 3625            | 13       | 32.30            | 31.40            | 45.30                 | 44.40                 | 47.88            |
|                                        | LTE_10MHz_64QAM_2TX  | 56690   | 3695            | 13       | 31.50            | 31.90            | 44.50                 | 44.90                 | 47.71            |
|                                        | LTE_20MHz_64QAM_2TX  | 55340   | 3560            | 13       | 33.70            | 32.90            | 46.70                 | 45.90                 | 49.33            |
|                                        | LTE_20MHz_64QAM_2TX  | 55990   | 3625            | 13       | 34.20            | 33.50            | 47.20                 | 46.50                 | 49.87            |
|                                        | LTE_20MHz_64QAM_2TX  | 56640   | 3690            | 13       | 33.50            | 33.20            | 46.50                 | 46.20                 | 49.36            |
|                                        | LTE_10MHz_256QAM_2TX | 55290   | 3555            | 13       | 32.60            | 31.70            | 45.60                 | 44.70                 | 48.18            |
|                                        | LTE_10MHz_256QAM_2TX | 55990   | 3625            | 13       | 32.70            | 32.40            | 45.70                 | 45.40                 | 48.56            |
|                                        | LTE_10MHz_256QAM_2TX | 56690   | 3695            | 13       | 32.20            | 32.40            | 45.20                 | 45.40                 | 48.31            |
|                                        | LTE_20MHz_256QAM_2TX | 55340   | 3560            | 13       | 33.70            | 33.00            | 46.70                 | 46.00                 | 49.37            |
|                                        | LTE_20MHz_256QAM_2TX | 55990   | 3625            | 13       | 35.10            | 34.30            | 48.10                 | 47.30                 | 50.73            |
|                                        | LTE_20MHz_256QAM_2TX | 56640   | 3690            | 13       | 33.20            | 33.40            | 46.20                 | 46.40                 | 49.31            |
| Carrier2                               | Mode                 | Channel | Frequency (MHz) | DG (dBi) | Port 3 (dBm/MHz) | Port 4 (dBm/MHz) | Port 3 EIRP (dBm/MHz) | Port 4 EIRP (dBm/MHz) | Total EIRP (dBm) |
|                                        | LTE_10MHz_QPSK_2TX   | 55290   | 3555            | 13       | 32.00            | 31.60            | 45.00                 | 44.60                 | 47.81            |
|                                        | LTE_10MHz_QPSK_2TX   | 55990   | 3625            | 13       | 32.30            | 32.20            | 45.30                 | 45.20                 | 48.26            |
|                                        | LTE_10MHz_QPSK_2TX   | 56690   | 3695            | 13       | 31.30            | 32.00            | 44.30                 | 45.00                 | 47.67            |
|                                        | LTE_20MHz_QPSK_2TX   | 55340   | 3560            | 13       | 34.90            | 34.40            | 47.90                 | 47.40                 | 50.67            |
|                                        | LTE_20MHz_QPSK_2TX   | 55990   | 3625            | 13       | 35.00            | 34.50            | 48.00                 | 47.50                 | 50.77            |
|                                        | LTE_20MHz_QPSK_2TX   | 56640   | 3690            | 13       | 32.10            | 32.50            | 45.10                 | 45.50                 | 48.31            |
|                                        | LTE_10MHz_16QAM_2TX  | 55290   | 3555            | 13       | 31.80            | 31.30            | 44.80                 | 44.30                 | 47.57            |
|                                        | LTE_10MHz_16QAM_2TX  | 55990   | 3625            | 13       | 31.80            | 31.80            | 44.80                 | 44.80                 | 47.81            |
|                                        | LTE_10MHz_16QAM_2TX  | 56690   | 3695            | 13       | 31.50            | 32.00            | 44.50                 | 45.00                 | 47.77            |
|                                        | LTE_20MHz_16QAM_2TX  | 55340   | 3560            | 13       | 34.40            | 34.50            | 47.40                 | 47.50                 | 50.46            |
|                                        | LTE_20MHz_16QAM_2TX  | 55990   | 3625            | 13       | 34.30            | 34.20            | 47.30                 | 47.20                 | 50.26            |
|                                        | LTE_20MHz_16QAM_2TX  | 56640   | 3690            | 13       | 32.40            | 32.60            | 45.40                 | 45.60                 | 48.51            |
|                                        | LTE_10MHz_64QAM_2TX  | 55290   | 3555            | 13       | 31.70            | 31.10            | 44.70                 | 44.10                 | 47.42            |
|                                        | LTE_10MHz_64QAM_2TX  | 55990   | 3625            | 13       | 32.40            | 32.20            | 45.40                 | 45.20                 | 48.31            |
|                                        | LTE_10MHz_64QAM_2TX  | 56690   | 3695            | 13       | 31.70            | 32.20            | 44.70                 | 45.20                 | 47.97            |
|                                        | LTE_20MHz_64QAM_2TX  | 55340   | 3560            | 13       | 34.20            | 34.40            | 47.20                 | 47.40                 | 50.31            |
|                                        | LTE_20MHz_64QAM_2TX  | 55990   | 3625            | 13       | 34.30            | 34.20            | 47.30                 | 47.20                 | 50.26            |
|                                        | LTE_20MHz_64QAM_2TX  | 56640   | 3690            | 13       | 32.20            | 32.50            | 45.20                 | 45.50                 | 48.36            |
|                                        | LTE_10MHz_256QAM_2TX | 55290   | 3555            | 13       | 32.50            | 31.50            | 45.50                 | 44.50                 | 48.04            |
|                                        | LTE_10MHz_256QAM_2TX | 55990   | 3625            | 13       | 33.10            | 32.40            | 46.10                 | 45.40                 | 48.77            |
|                                        | LTE_10MHz_256QAM_2TX | 56690   | 3695            | 13       | 32.50            | 32.60            | 45.50                 | 45.60                 | 48.56            |
|                                        | LTE_20MHz_256QAM_2TX | 55340   | 3560            | 13       | 35.10            | 34.40            | 48.10                 | 47.40                 | 50.77            |
|                                        | LTE_20MHz_256QAM_2TX | 55990   | 3625            | 13       | 35.10            | 34.40            | 48.10                 | 47.40                 | 50.77            |
|                                        | LTE_20MHz_256QAM_2TX | 56640   | 3690            | 13       | 34.80            | 34.50            | 47.80                 | 47.50                 | 50.66            |

**Remark:** The reported test results are within the scope of the declared tolerances by the Manufacturer.

<Multi Carrier Mode>

| EIRP Power (dBm/10MHz) |                            |               |                 |         |                        |                    |                    |                    |                         |                         |                         |                         |          |
|------------------------|----------------------------|---------------|-----------------|---------|------------------------|--------------------|--------------------|--------------------|-------------------------|-------------------------|-------------------------|-------------------------|----------|
|                        | Mode                       | Channel       | Frequency (MHz) | DG (dB) | EIRP Power (dBm/10MHz) |                    |                    |                    | Port 1 EIRP (dBm/10MHz) | Port 2 EIRP (dBm/10MHz) | Port 3 EIRP (dBm/10MHz) | Port 4 EIRP (dBm/10MHz) | Limit    |
|                        |                            |               |                 |         | Port 1 (dBm/10MHz)     | Port 2 (dBm/10MHz) | Port 3 (dBm/10MHz) | Port 4 (dBm/10MHz) |                         |                         |                         |                         |          |
| Multi Carrier          | LTE 20MHz+20MHz QPSK 4TX   | 55340 + 55540 | 3560 + 3580     | 13      | 31.50                  | 30.74              | 31.55              | 31.57              | 44.50                   | 43.74                   | 44.56                   | 44.57                   | < 47 dBm |
|                        | LTE 20MHz+20MHz QPSK 4TX   | 55890 + 56090 | 3615 + 3635     | 13      | 31.91                  | 31.03              | 31.57              | 31.57              | 44.91                   | 44.03                   | 44.57                   | 44.57                   |          |
|                        | LTE 20MHz+20MHz QPSK 4TX   | 56440 + 56640 | 3670 + 3690     | 13      | 30.41                  | 30.18              | 30.95              | 30.95              | 43.41                   | 43.18                   | 43.95                   | 43.95                   |          |
|                        | LTE 20MHz+20MHz QPSK 4TX   | 55340 + 56640 | 3560 + 3690     | 13      | 31.15                  | 30.34              | 30.89              | 30.79              | 44.15                   | 43.34                   | 43.89                   | 43.79                   |          |
|                        | LTE 20MHz+20MHz 16QAM 4TX  | 55340 + 55540 | 3560 + 3580     | 13      | 31.03                  | 30.18              | 31.19              | 30.41              | 44.03                   | 43.18                   | 44.19                   | 43.41                   |          |
|                        | LTE 20MHz+20MHz 16QAM 4TX  | 55890 + 56090 | 3615 + 3635     | 13      | 30.73                  | 30.08              | 32.47              | 32.22              | 43.73                   | 43.08                   | 45.47                   | 45.22                   |          |
|                        | LTE 20MHz+20MHz 16QAM 4TX  | 56440 + 56640 | 3670 + 3690     | 13      | 29.48                  | 29.56              | 31.92              | 31.84              | 42.48                   | 42.56                   | 44.92                   | 44.84                   |          |
|                        | LTE 20MHz+20MHz 16QAM 4TX  | 55340 + 56640 | 3560 + 3690     | 13      | 30.81                  | 30.37              | 31.86              | 31.67              | 43.81                   | 43.37                   | 44.86                   | 44.67                   |          |
|                        | LTE 20MHz+20MHz 64QAM 4TX  | 55340 + 55540 | 3560 + 3580     | 13      | 30.85                  | 30.17              | 31.07              | 30.86              | 43.85                   | 43.17                   | 44.07                   | 43.86                   |          |
|                        | LTE 20MHz+20MHz 64QAM 4TX  | 55890 + 56090 | 3615 + 3635     | 13      | 30.66                  | 30.10              | 30.60              | 30.82              | 43.66                   | 43.10                   | 43.60                   | 43.82                   |          |
|                        | LTE 20MHz+20MHz 64QAM 4TX  | 56440 + 56640 | 3670 + 3690     | 13      | 30.12                  | 30.87              | 31.97              | 31.78              | 43.12                   | 43.87                   | 44.97                   | 44.78                   |          |
|                        | LTE 20MHz+20MHz 64QAM 4TX  | 55340 + 56640 | 3560 + 3690     | 13      | 30.42                  | 30.28              | 31.73              | 31.72              | 43.42                   | 43.28                   | 44.73                   | 44.72                   |          |
|                        | LTE 20MHz+20MHz 256QAM 4TX | 55340 + 55540 | 3560 + 3580     | 13      | 30.83                  | 29.05              | 30.99              | 30.77              | 43.83                   | 42.06                   | 43.99                   | 43.77                   |          |
|                        | LTE 20MHz+20MHz 256QAM 4TX | 55890 + 56090 | 3615 + 3635     | 13      | 30.72                  | 29.95              | 30.64              | 30.85              | 43.72                   | 42.95                   | 43.64                   | 43.85                   |          |
|                        | LTE 20MHz+20MHz 256QAM 4TX | 56440 + 56640 | 3670 + 3690     | 13      | 30.05                  | 30.67              | 31.41              | 30.31              | 43.05                   | 43.67                   | 44.41                   | 43.31                   |          |
|                        | LTE 20MHz+20MHz 256QAM 4TX | 55340 + 56640 | 3560 + 3690     | 13      | 31.07                  | 29.24              | 31.53              | 31.52              | 44.07                   | 42.24                   | 44.53                   | 44.52                   |          |

| EIRP PSD (dBm/MHz) |                            |               |                 |         |                    |                  |                  |                  |                       |                       |                       |                       |          |
|--------------------|----------------------------|---------------|-----------------|---------|--------------------|------------------|------------------|------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------|
|                    | Mode                       | Channel       | Frequency (MHz) | DG (dB) | EIRP PSD (dBm/MHz) |                  |                  |                  | Port 1 EIRP (dBm/MHz) | Port 2 EIRP (dBm/MHz) | Port 3 EIRP (dBm/MHz) | Port 4 EIRP (dBm/MHz) | Limit    |
|                    |                            |               |                 |         | Port 1 (dBm/MHz)   | Port 2 (dBm/MHz) | Port 3 (dBm/MHz) | Port 4 (dBm/MHz) |                       |                       |                       |                       |          |
| Multi Carrier      | LTE 20MHz+20MHz QPSK 4TX   | 55340 + 55540 | 3560 + 3580     | 13      | 22.71              | 22.23            | 22.73            | 22.76            | 35.71                 | 35.23                 | 35.73                 | 35.76                 | < 37 dBm |
|                    | LTE 20MHz+20MHz QPSK 4TX   | 55890 + 56090 | 3615 + 3635     | 13      | 23.01              | 21.88            | 22.52            | 23.00            | 36.01                 | 34.88                 | 35.52                 | 36.00                 |          |
|                    | LTE 20MHz+20MHz QPSK 4TX   | 56440 + 56640 | 3670 + 3690     | 13      | 21.77              | 21.39            | 22.16            | 22.17            | 34.77                 | 34.39                 | 35.16                 | 35.17                 |          |
|                    | LTE 20MHz+20MHz QPSK 4TX   | 55340 + 56640 | 3560 + 3690     | 13      | 22.18              | 21.51            | 22.23            | 22.18            | 35.18                 | 34.51                 | 35.23                 | 35.18                 |          |
|                    | LTE 20MHz+20MHz 16QAM 4TX  | 55340 + 55540 | 3560 + 3580     | 13      | 22.18              | 21.55            | 22.32            | 21.67            | 35.18                 | 34.55                 | 35.32                 | 34.67                 |          |
|                    | LTE 20MHz+20MHz 16QAM 4TX  | 55890 + 56090 | 3615 + 3635     | 13      | 22.16              | 21.48            | 23.90            | 23.51            | 35.16                 | 34.48                 | 36.90                 | 36.51                 |          |
|                    | LTE 20MHz+20MHz 16QAM 4TX  | 56440 + 56640 | 3670 + 3690     | 13      | 20.88              | 21.17            | 23.31            | 23.20            | 33.88                 | 34.17                 | 36.31                 | 36.20                 |          |
|                    | LTE 20MHz+20MHz 16QAM 4TX  | 55340 + 56640 | 3560 + 3690     | 13      | 22.18              | 21.70            | 22.92            | 23.13            | 35.18                 | 34.70                 | 35.92                 | 36.13                 |          |
|                    | LTE 20MHz+20MHz 64QAM 4TX  | 55340 + 55540 | 3560 + 3580     | 13      | 22.45              | 22.02            | 22.52            | 22.53            | 35.45                 | 35.02                 | 35.52                 | 35.53                 |          |
|                    | LTE 20MHz+20MHz 64QAM 4TX  | 55890 + 56090 | 3615 + 3635     | 13      | 22.38              | 21.61            | 22.03            | 22.47            | 35.38                 | 34.61                 | 35.03                 | 35.47                 |          |
|                    | LTE 20MHz+20MHz 64QAM 4TX  | 56440 + 56640 | 3670 + 3690     | 13      | 21.75              | 22.25            | 23.48            | 23.53            | 34.75                 | 35.25                 | 36.48                 | 36.53                 |          |
|                    | LTE 20MHz+20MHz 64QAM 4TX  | 55340 + 56640 | 3560 + 3690     | 13      | 21.98              | 21.98            | 23.56            | 23.24            | 34.98                 | 34.98                 | 36.56                 | 36.24                 |          |
|                    | LTE 20MHz+20MHz 256QAM 4TX | 55340 + 55540 | 3560 + 3580     | 13      | 22.37              | 20.90            | 22.68            | 22.35            | 35.37                 | 33.90                 | 35.68                 | 35.35                 |          |
|                    | LTE 20MHz+20MHz 256QAM 4TX | 55890 + 56090 | 3615 + 3635     | 13      | 22.45              | 21.39            | 22.32            | 22.47            | 35.45                 | 34.39                 | 35.32                 | 35.47                 |          |
|                    | LTE 20MHz+20MHz 256QAM 4TX | 56440 + 56640 | 3670 + 3690     | 13      | 21.37              | 22.23            | 23.08            | 22.93            | 34.37                 | 35.23                 | 36.08                 | 35.93                 |          |
|                    | LTE 20MHz+20MHz 256QAM 4TX | 55340 + 56640 | 3560 + 3690     | 13      | 22.54              | 20.75            | 23.18            | 23.06            | 35.54                 | 33.75                 | 36.18                 | 36.06                 |          |

| Total EIRP Power (dBm) for certificate |                            |               |                 |         |                        |              |              |              |                   |                   |                   |                   |                  |
|----------------------------------------|----------------------------|---------------|-----------------|---------|------------------------|--------------|--------------|--------------|-------------------|-------------------|-------------------|-------------------|------------------|
|                                        | Mode                       | Channel       | Frequency (MHz) | DG (dB) | Total EIRP Power (dBm) |              |              |              | Port 1 EIRP (dBm) | Port 2 EIRP (dBm) | Port 3 EIRP (dBm) | Port 4 EIRP (dBm) | Total EIRP (dBm) |
|                                        |                            |               |                 |         | Port 1 (dBm)           | Port 2 (dBm) | Port 3 (dBm) | Port 4 (dBm) |                   |                   |                   |                   |                  |
| Multi Carrier                          | LTE 20MHz+20MHz QPSK 4TX   | 55340 + 55540 | 3560 + 3580     | 13      | 33.8                   | 33.2         | 34.1         | 34.0         | 46.8              | 46.2              | 47.1              | 47.0              | 52.81            |
|                                        | LTE 20MHz+20MHz QPSK 4TX   | 55890 + 56090 | 3615 + 3635     | 13      | 34.4                   | 33.5         | 34.30        | 34.30        | 47.4              | 46.5              | 47.3              | 47.3              | 53.16            |
|                                        | LTE 20MHz+20MHz QPSK 4TX   | 56440 + 56640 | 3670 + 3690     | 13      | 33.0                   | 32.8         | 33.3         | 33.2         | 46.0              | 45.8              | 46.3              | 46.2              | 52.10            |
|                                        | LTE 20MHz+20MHz QPSK 4TX   | 55340 + 56640 | 3560 + 3690     | 13      | 33.7                   | 32.8         | 33.0         | 32.9         | 46.7              | 45.8              | 46.0              | 45.9              | 52.14            |
|                                        | LTE 20MHz+20MHz 16QAM 4TX  | 55340 + 55540 | 3560 + 3580     | 13      | 34.0                   | 33.2         | 33.8         | 33.8         | 47.0              | 46.2              | 46.8              | 46.8              | 52.73            |
|                                        | LTE 20MHz+20MHz 16QAM 4TX  | 55890 + 56090 | 3615 + 3635     | 13      | 32.9                   | 32.5         | 35.2         | 35.3         | 45.9              | 45.5              | 48.2              | 48.3              | 53.18            |
|                                        | LTE 20MHz+20MHz 16QAM 4TX  | 56440 + 56640 | 3670 + 3690     | 13      | 32.4                   | 32.5         | 34.5         | 34.3         | 45.4              | 45.5              | 47.5              | 47.3              | 52.55            |
|                                        | LTE 20MHz+20MHz 16QAM 4TX  | 55340 + 56640 | 3560 + 3690     | 13      | 33.5                   | 32.9         | 34.5         | 34.1         | 46.5              | 45.9              | 47.5              | 47.1              | 52.81            |
|                                        | LTE 20MHz+20MHz 64QAM 4TX  | 55340 + 55540 | 3560 + 3580     | 13      | 33.9                   | 33.0         | 33.6         | 33.8         | 46.9              | 46.0              | 46.6              | 46.8              | 52.61            |
|                                        | LTE 20MHz+20MHz 64QAM 4TX  | 55890 + 56090 | 3615 + 3635     | 13      | 33.0                   | 32.8         | 33.0         | 33.4         | 46.0              | 45.8              | 46.0              | 46.4              | 52.08            |
|                                        | LTE 20MHz+20MHz 64QAM 4TX  | 56440 + 56640 | 3670 + 3690     | 13      | 32.9                   | 32.6         | 34.5         | 34.3         | 45.9              | 45.6              | 47.5              | 47.3              | 52.68            |
|                                        | LTE 20MHz+20MHz 64QAM 4TX  | 55340 + 56640 | 3560 + 3690     | 13      | 33.3                   | 32.8         | 34.3         | 34.3         | 46.3              | 45.8              | 47.3              | 47.3              | 52.74            |
|                                        | LTE 20MHz+20MHz 256QAM 4TX | 55340 + 55540 | 3560 + 3580     | 13      | 33.0                   | 32.4         | 33.4         | 33.4         | 46.0              | 45.4              | 46.4              | 46.4              | 52.09            |
|                                        | LTE 20MHz+20MHz 256QAM 4TX | 56440 + 56640 | 3670 + 3690     | 13      | 32.8                   | 33.4         | 33.7         | 33.0         | 45.8              | 46.4              | 46.7              | 46.0              | 52.26            |
|                                        | LTE 20MHz+20MHz 256QAM 4TX | 55340 + 56640 | 3560 + 3690     | 13      | 33.9                   | 32.2         | 34.3         | 34.4         | 46.9              | 45.2              | 47.3              | 47.4              | 52.80            |

Remark: The reported test results are within the scope of the declared tolerances by the Manufacturer.

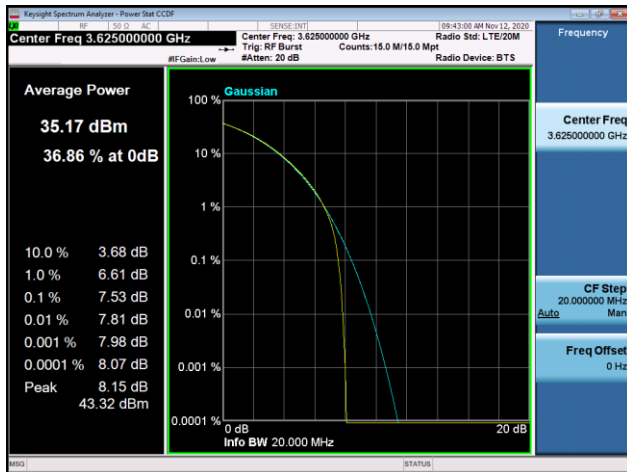
**LTE Band 48****Peak-to-Average Ratio**

| Mode           | LTE Band 48 / 20MHz |      |      |      | Limit: 13dB |
|----------------|---------------------|------|------|------|-------------|
| Channel        | Middle CH           |      |      |      |             |
| Conducted Port | 1                   | 2    | 3    | 4    |             |
| Mod. QPSK      | 7.81                | 8.08 | 7.95 | 7.92 | PASS        |
| Mod. 16QAM     | 7.95                | 8.16 | 7.92 | 7.92 | PASS        |
| Mod. 64QAM     | 7.94                | 8.08 | 8.02 | 7.94 | PASS        |
| Mod. 256QAM    | 8.06                | 8.08 | 8.05 | 7.95 | PASS        |

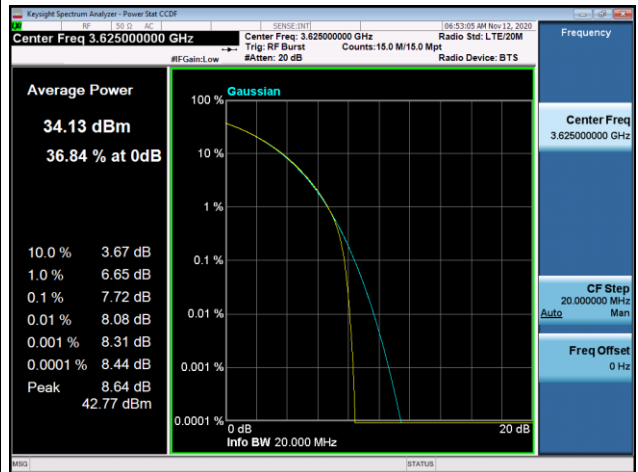


## LTE Band 48 / 20MHz / QPSK

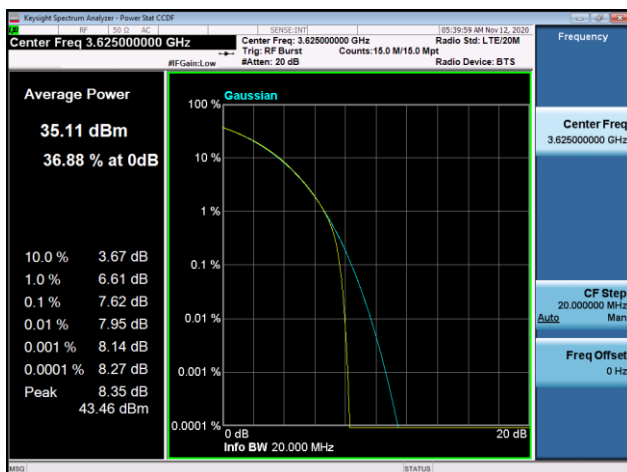
Port 1



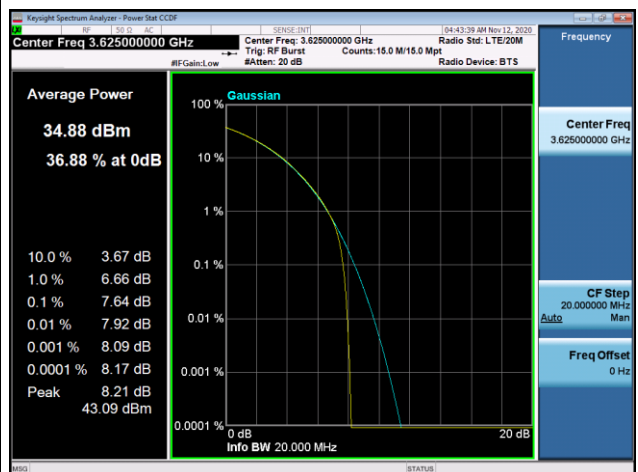
Port 2



Port 3



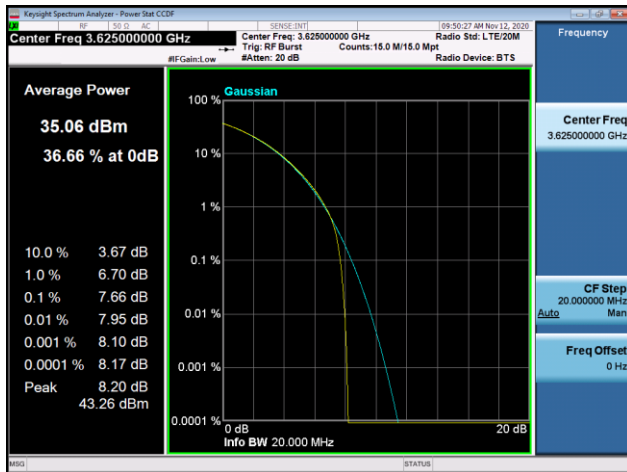
Port 4



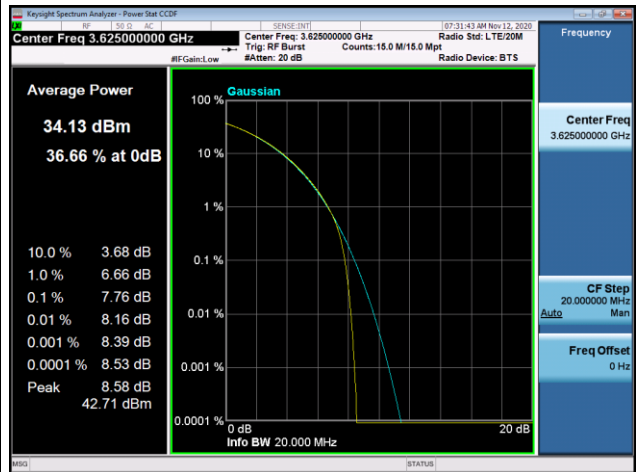


## LTE Band 48 / 20MHz / 16QAM

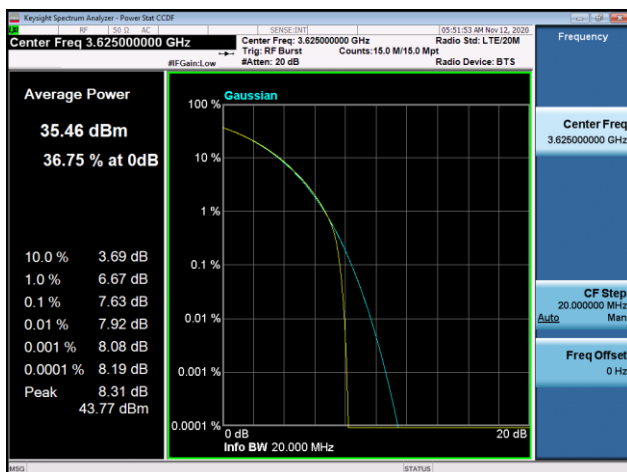
Port 1



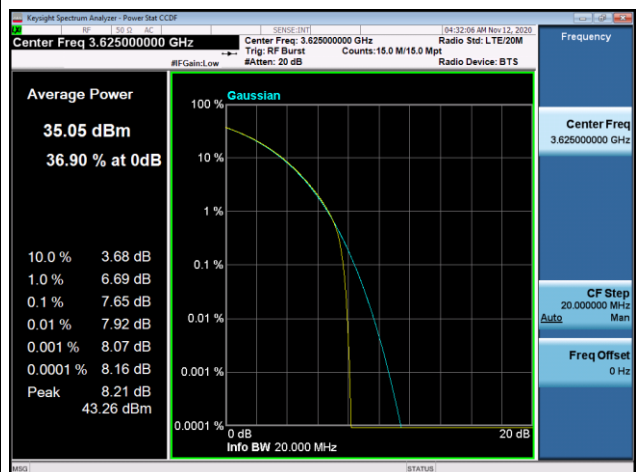
Port 2



Port 3



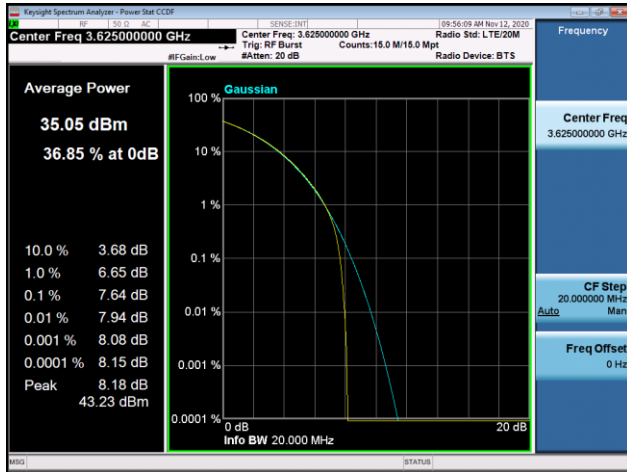
Port 4



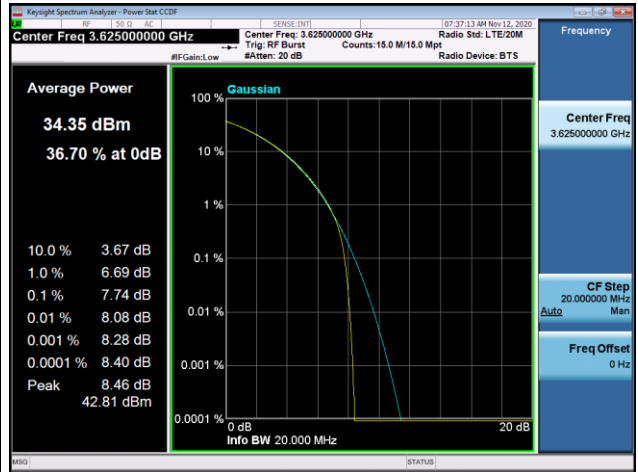


## LTE Band 48 / 20MHz / 64QAM

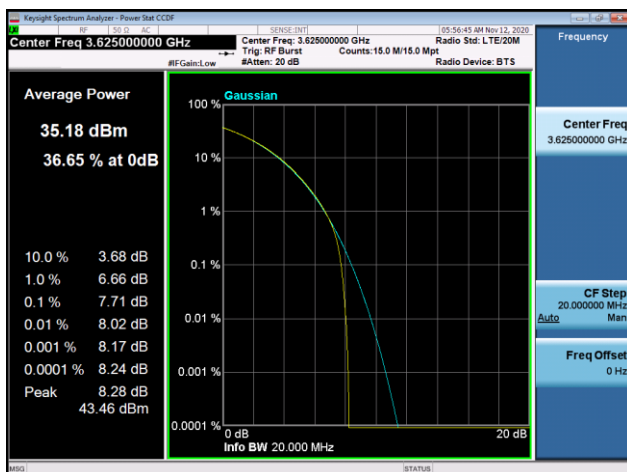
Port 1



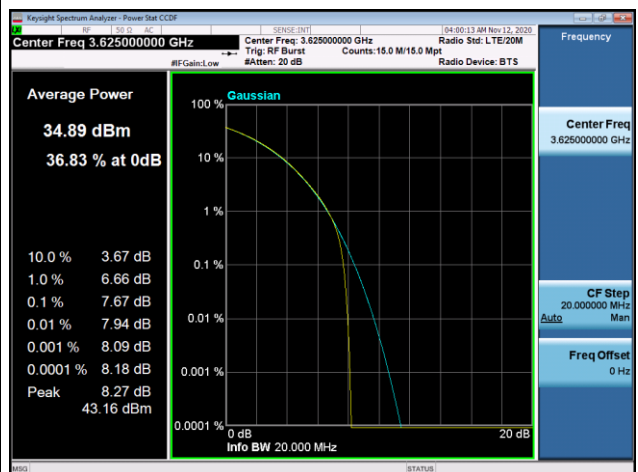
Port 2



Port 3



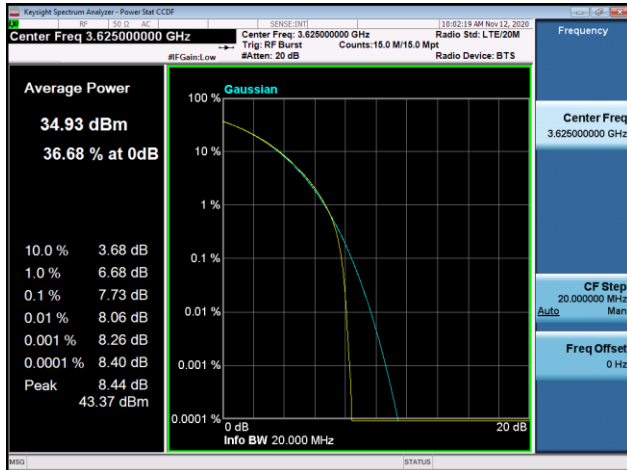
Port 4



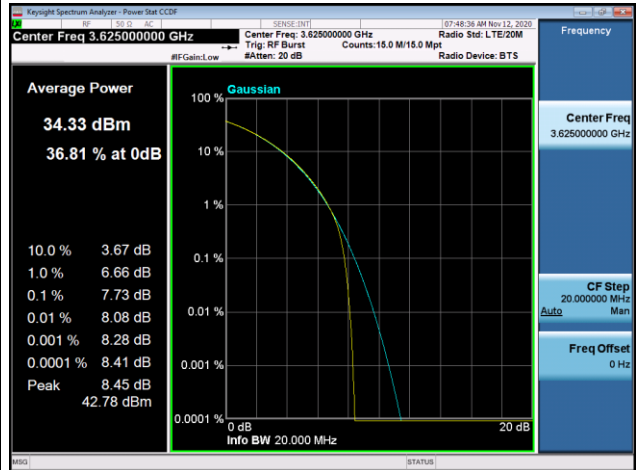


## LTE Band 48 / 20MHz / 256QAM

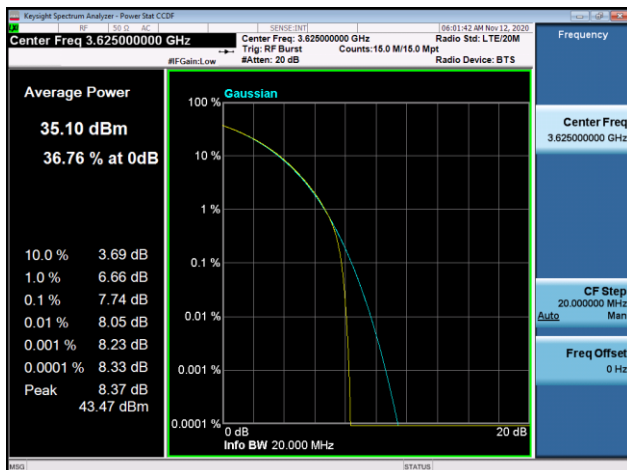
Port 1



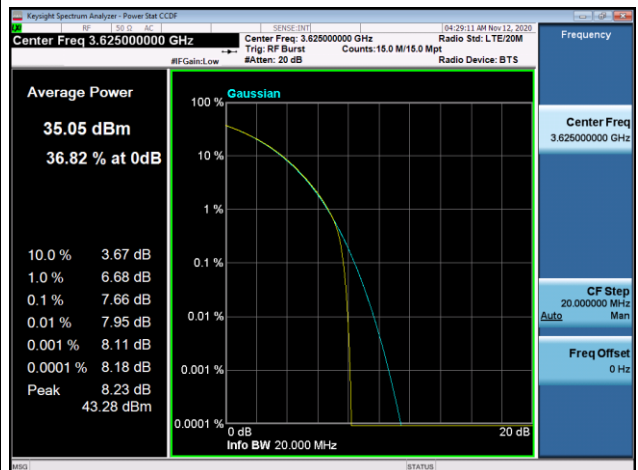
Port 2



Port 3



Port 4



## 26dB Bandwidth

| Mode           | LTE Band 48 : 26dB BW(MHz) |      |      |      |
|----------------|----------------------------|------|------|------|
| Bandwidth      | 10 MHz                     |      |      |      |
| Conducted Port | 1                          | 2    | 3    | 4    |
| Mod. QPSK      | 9.63                       | 9.65 | 9.63 | 9.63 |
| Mod. 16QAM     | 9.69                       | 9.63 | 9.59 | 9.59 |
| Mod. 64QAM     | 9.61                       | 9.67 | 9.67 | 9.63 |
| Mod. 256QAM    | 9.75                       | 9.73 | 9.73 | 9.71 |

| Mode           | LTE Band 48 : 26dB BW(MHz) |        |        |        |
|----------------|----------------------------|--------|--------|--------|
| Bandwidth      | 20 MHz                     |        |        |        |
| Conducted Port | 1                          | 2      | 3      | 4      |
| Mod. QPSK      | 18.701                     | 18.781 | 18.741 | 18.741 |
| Mod. 16QAM     | 18.781                     | 18.661 | 18.701 | 18.661 |
| Mod. 64QAM     | 18.701                     | 18.621 | 18.701 | 18.741 |
| Mod. 256QAM    | 18.661                     | 18.821 | 18.781 | 18.981 |

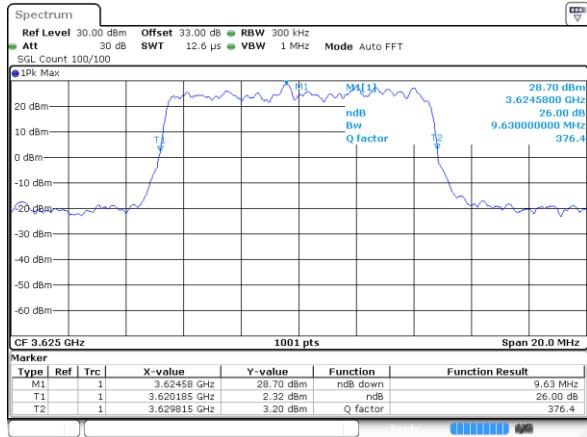
| Mode           | LTE Band 48 : 26dB BW(MHz)      |        |
|----------------|---------------------------------|--------|
| Bandwidth      | 20MHz + 20MHz (Port 1 + Port 3) |        |
| Conducted Port | 1                               | 3      |
| Mod. QPSK      | 18.821                          | 18.621 |
| Mod. 16QAM     | 18.701                          | 18.821 |
| Mod. 64QAM     | 18.861                          | 18.941 |
| Mod. 256QAM    | 18.661                          | 18.741 |

| Mode           | LTE Band 48 : 26dB BW(MHz)      |        |
|----------------|---------------------------------|--------|
| Bandwidth      | 20MHz + 20MHz (Port 2 + Port 4) |        |
| Conducted Port | 2                               | 4      |
| Mod. QPSK      | 18.781                          | 18.941 |
| Mod. 16QAM     | 18.661                          | 18.701 |
| Mod. 64QAM     | 18.701                          | 18.821 |
| Mod. 256QAM    | 18.701                          | 18.861 |

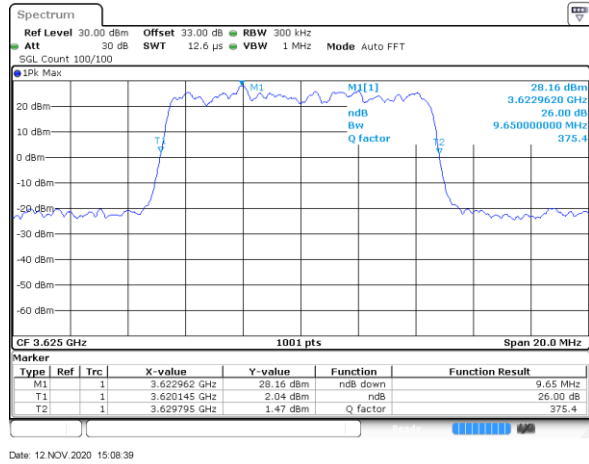


## LTE Band 48 / 10MHz / QPSK

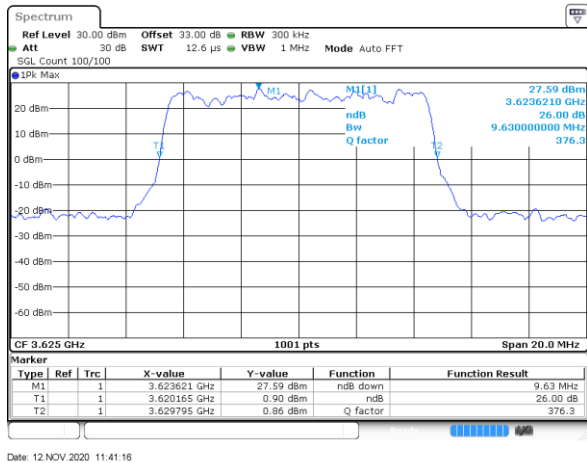
Port 1



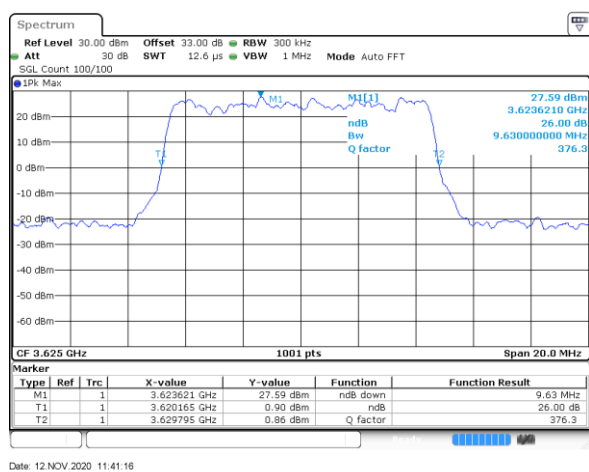
Port 2



Port 3

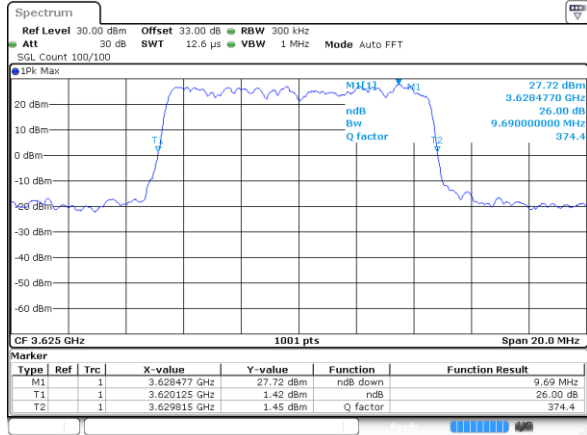


Port 4

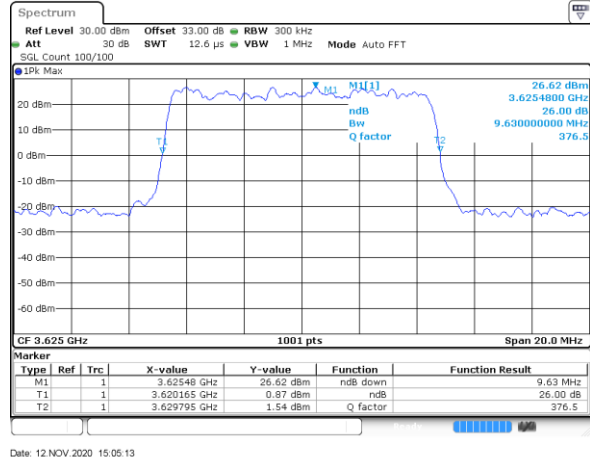


### LTE Band 48 / 10MHz / 16QAM

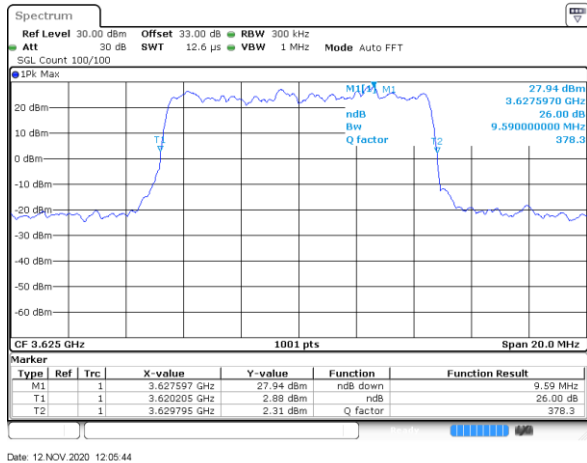
#### Port 1



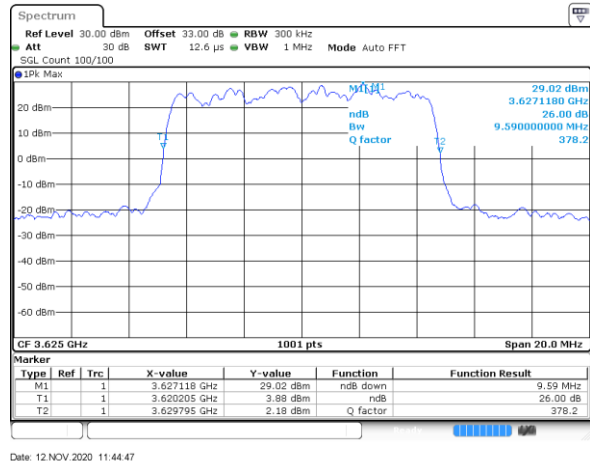
#### Port 2



#### Port 3

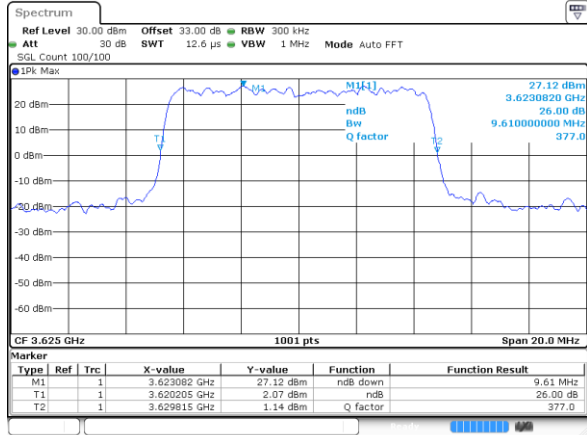


#### Port 4

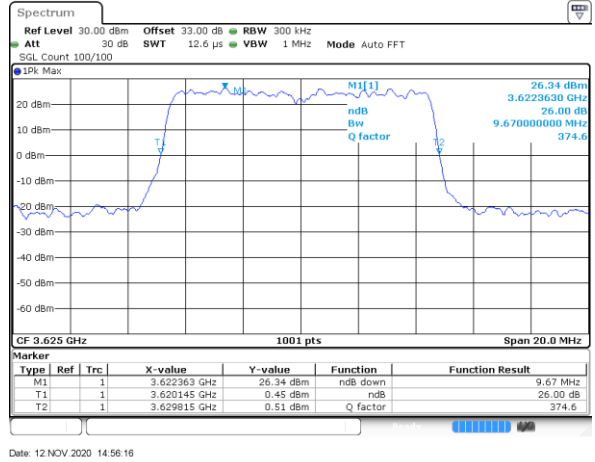


### LTE Band 48 / 10MHz / 64QAM

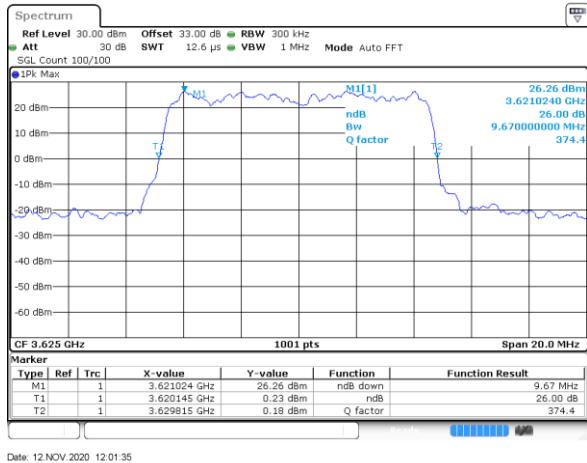
#### Port 1



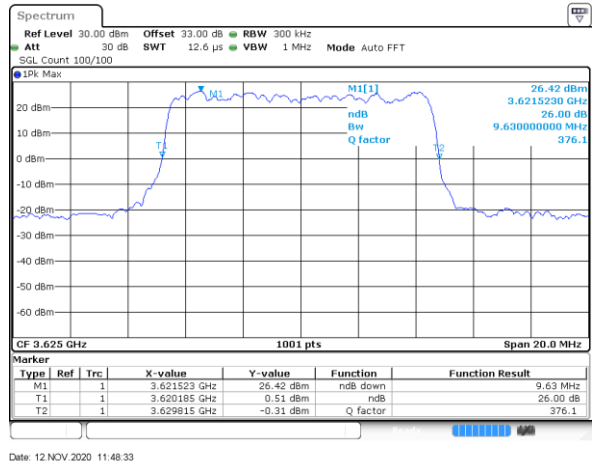
#### Port 2



#### Port 3



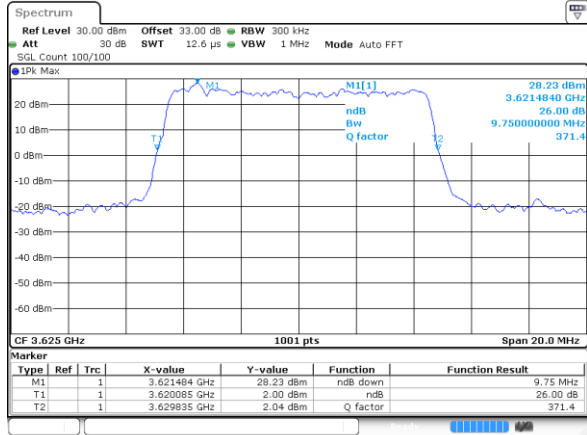
#### Port 4



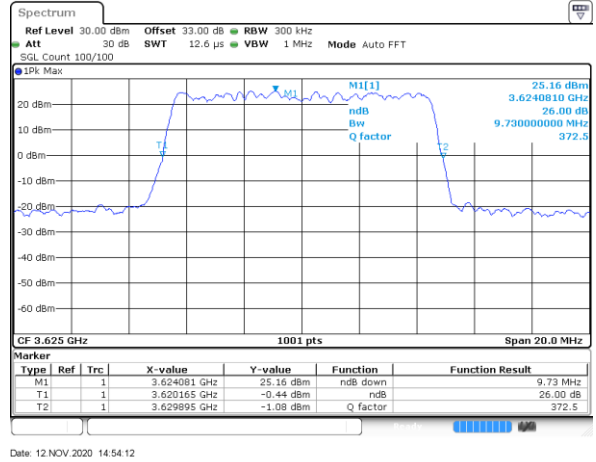


## LTE Band 48 / 10MHz / 256QAM

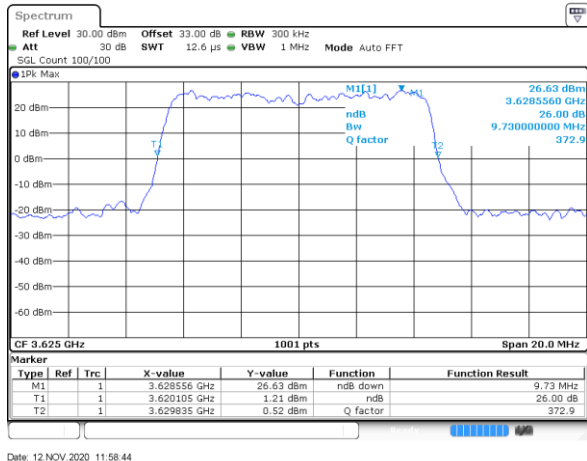
Port 1



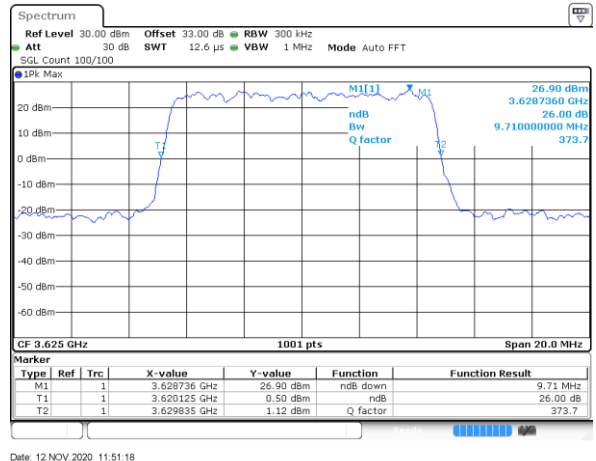
Port 2



Port 3

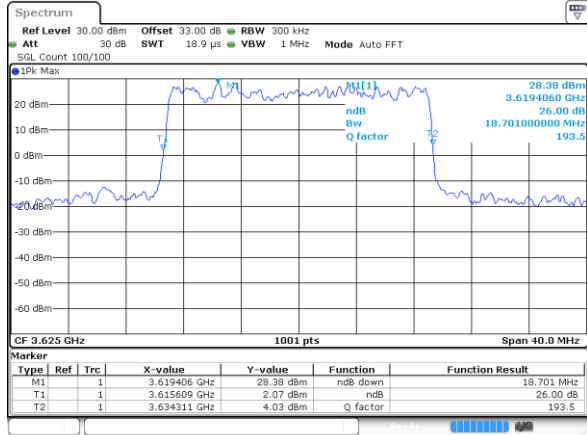


Port 4



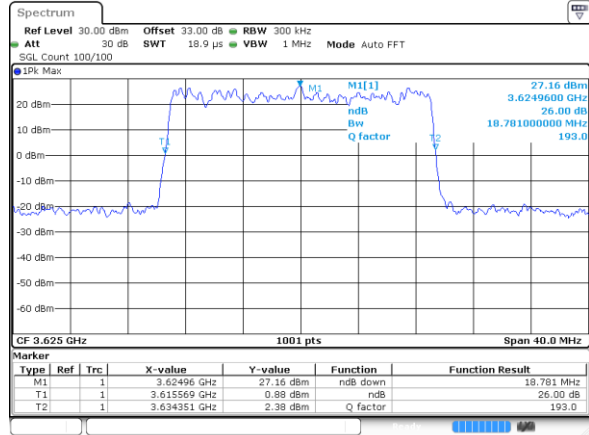
### LTE Band 48 / 20MHz / QPSK

#### Port 1



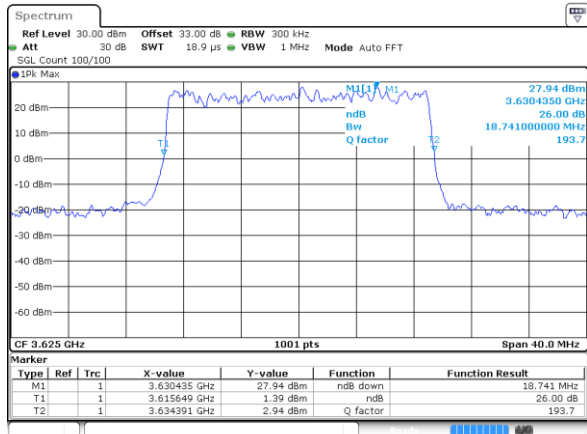
Date: 12.NOV.2020 16:37:42

#### Port 2



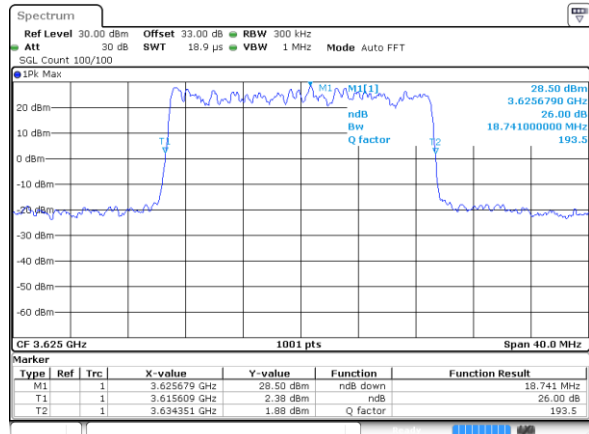
Date: 12.NOV.2020 13:50:40

#### Port 3



Date: 12.NOV.2020 12:31:19

#### Port 4

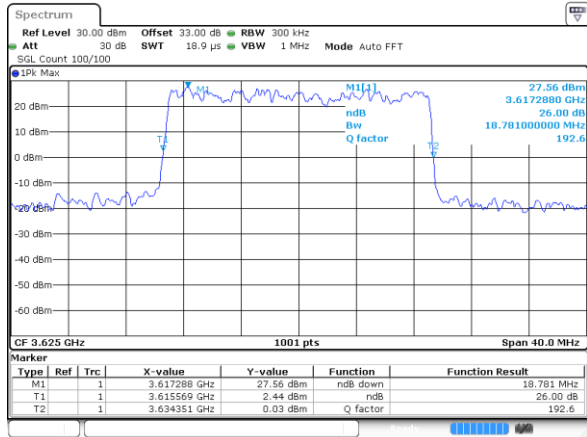


Date: 12.NOV.2020 11:38:36

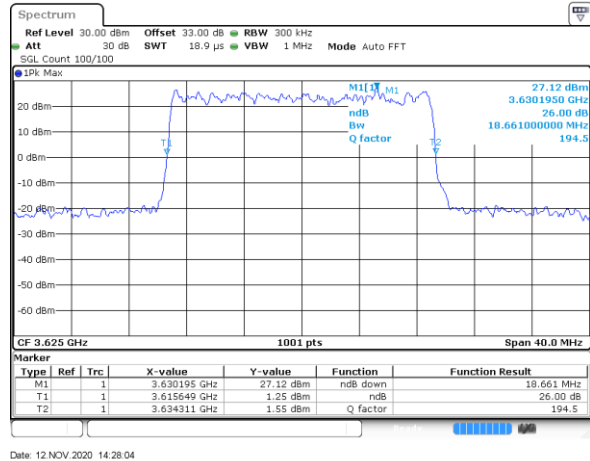


## LTE Band 48 / 20MHz / 16QAM

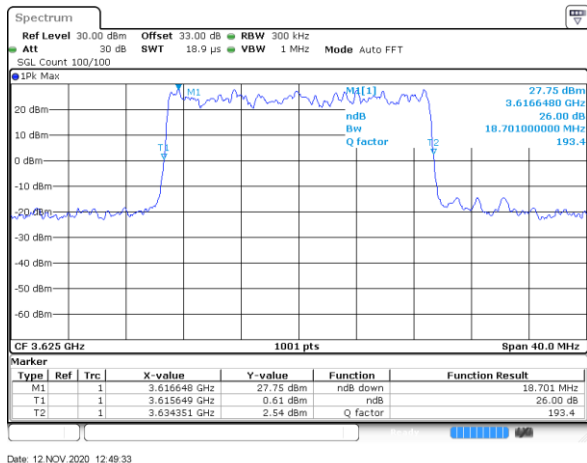
Port 1



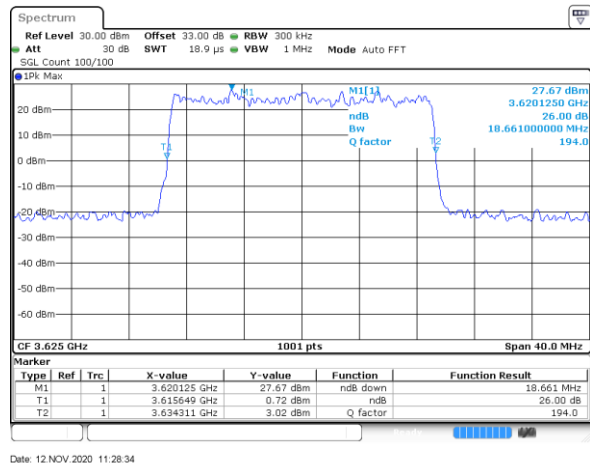
Port 2



Port 3



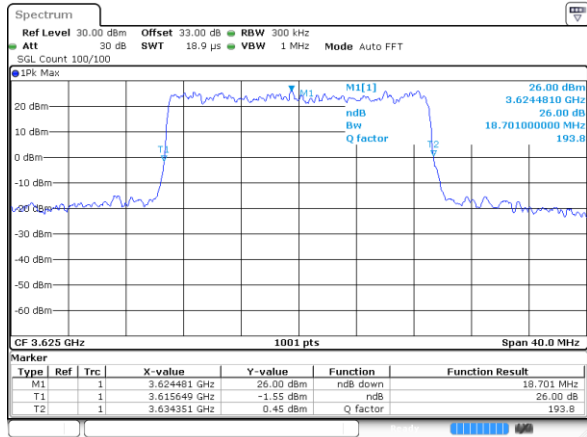
Port 4



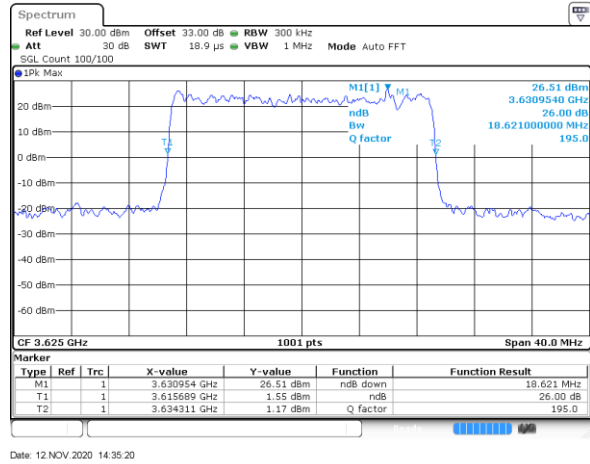


## LTE Band 48 / 20MHz / 64QAM

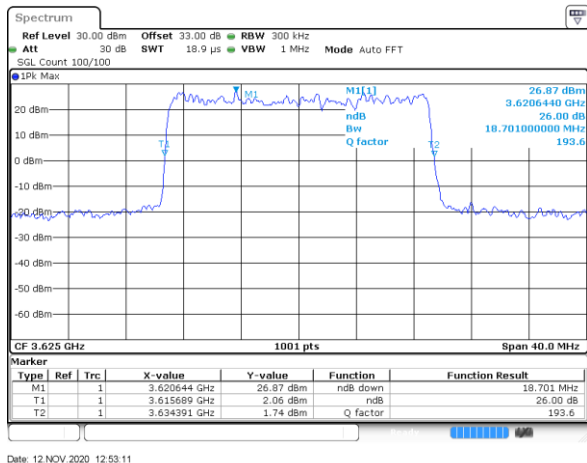
## Port 1



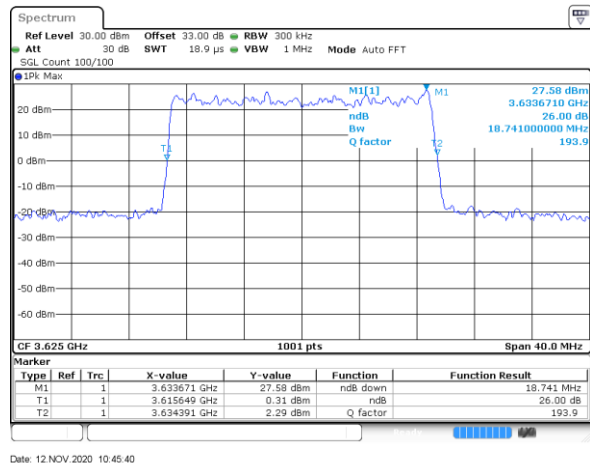
## Port 2



## Port 3



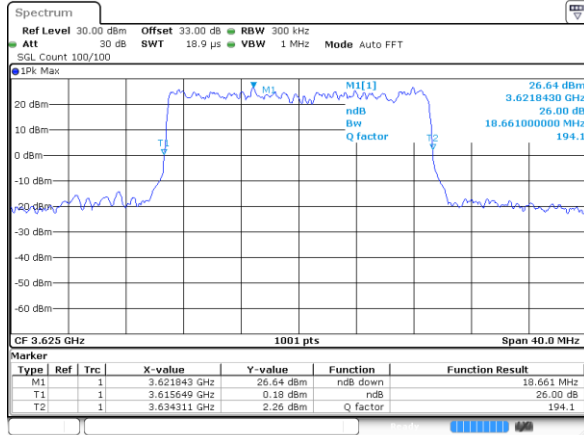
## Port 4





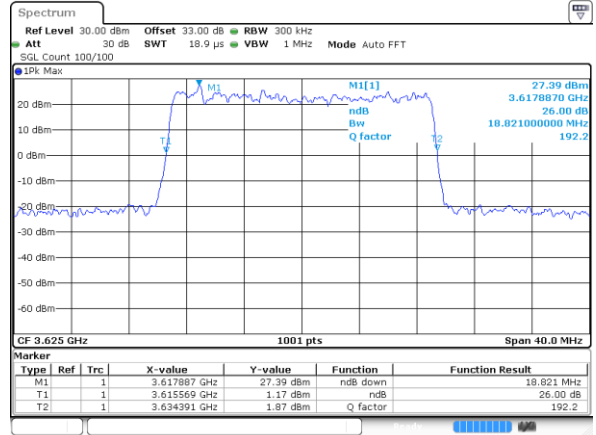
## LTE Band 48 / 20MHz / 256QAM

## Port 1



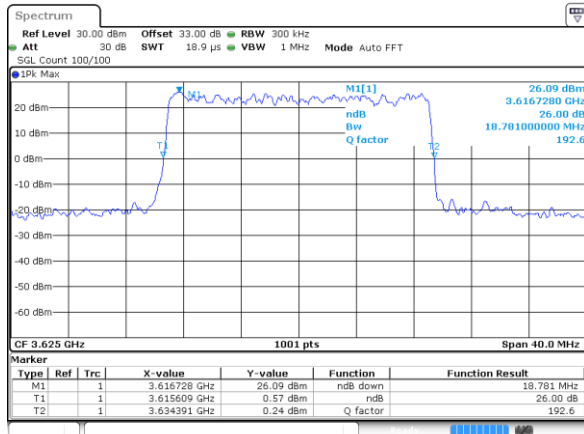
Date: 12.NOV.2020 17:00:10

## Port 2



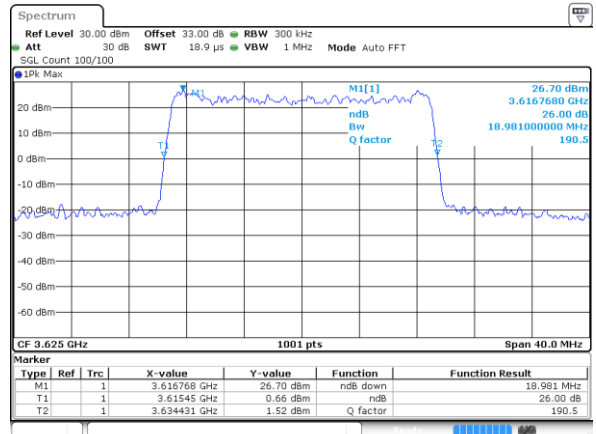
Date: 12.NOV.2020 14:45:10

## Port 3



Date: 12.NOV.2020 12:57:58

## Port 4



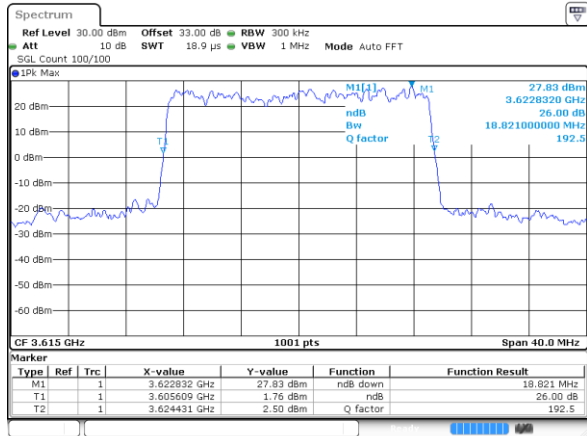
Date: 12.NOV.2020 10:39:32



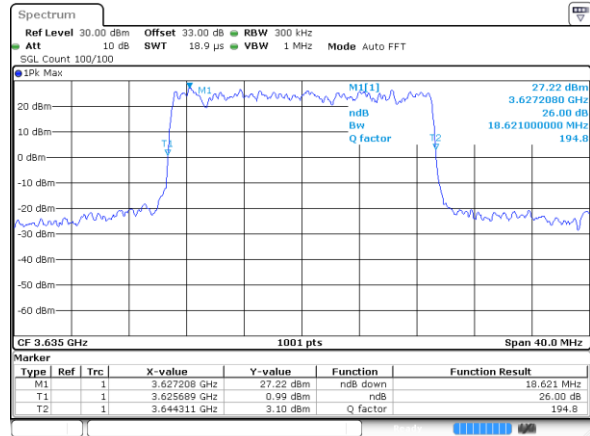
## LTE Band 48 / QPSK

## 20MHz + 20MHz (Port 1 + Port 3)

## Port 1

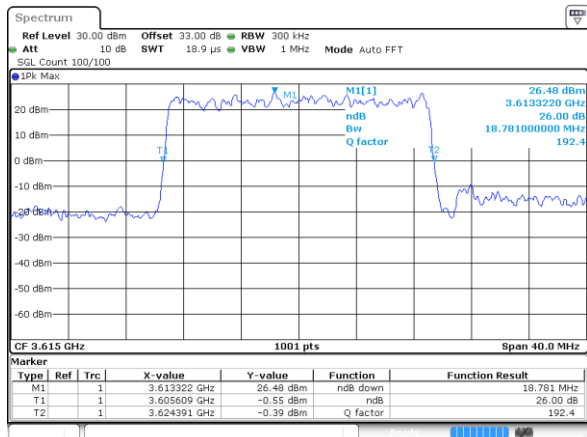


## Port 3

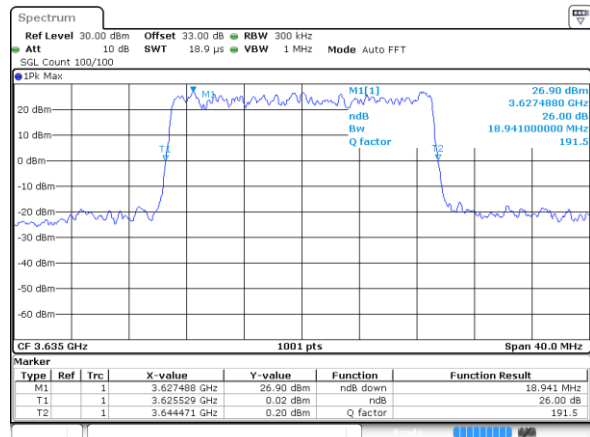


## 20MHz + 20MHz (Port 2 + Port 4)

## Port 2



## Port 4

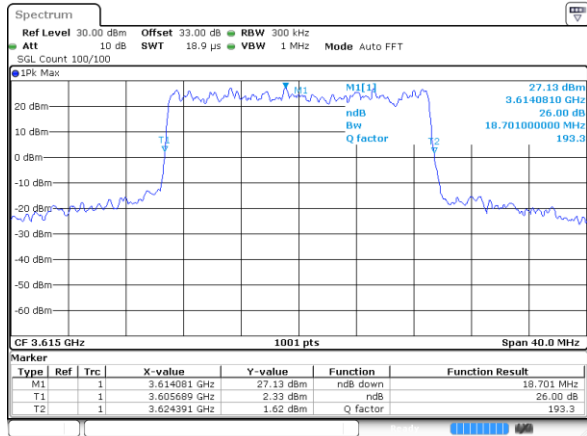




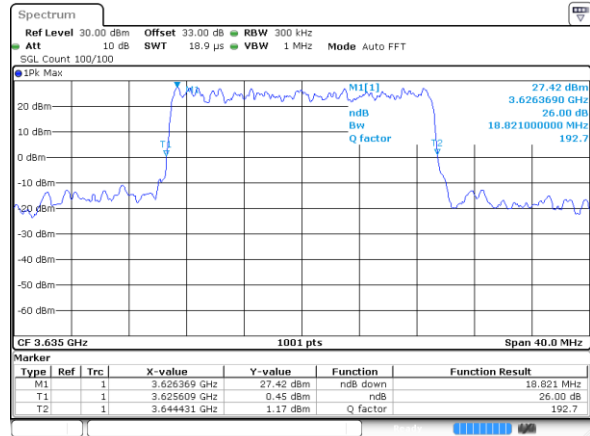
## LTE Band 48 / 16QAM

## 20MHz + 20MHz (Port 1 + Port 3)

## Port 1

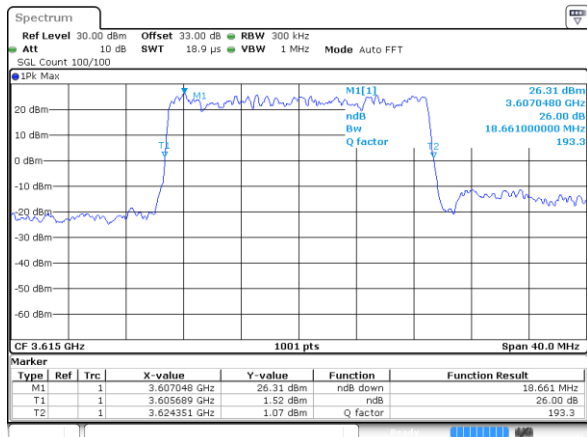


## Port 3

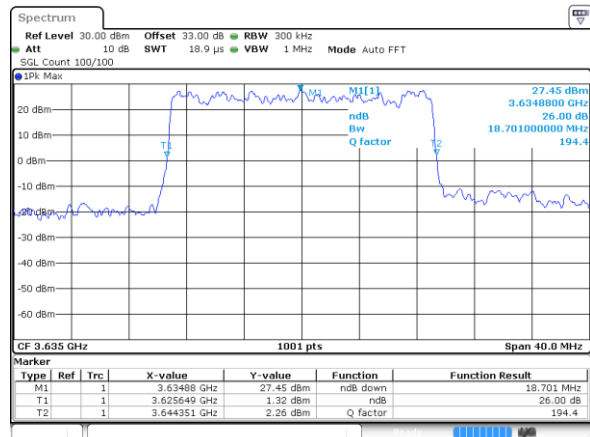


## 20MHz + 20MHz (Port 2 + Port 4)

## Port 2



## Port 4

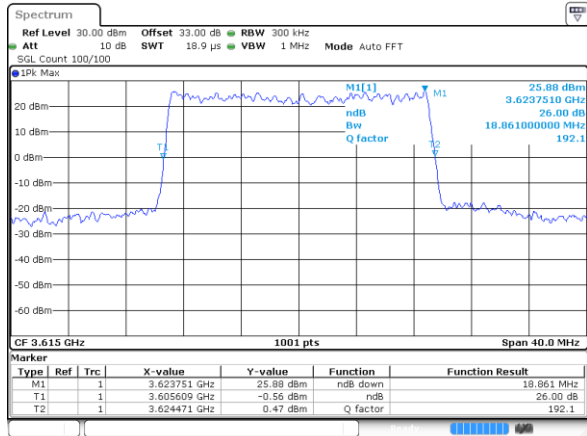




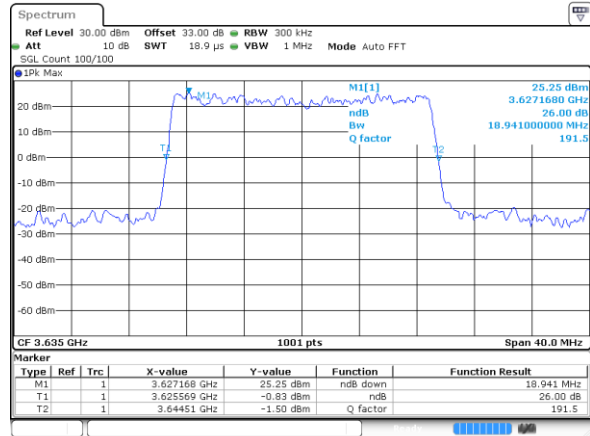
## LTE Band 48 / 64QAM

## 20MHz + 20MHz (Port 1 + Port 3)

## Port 1

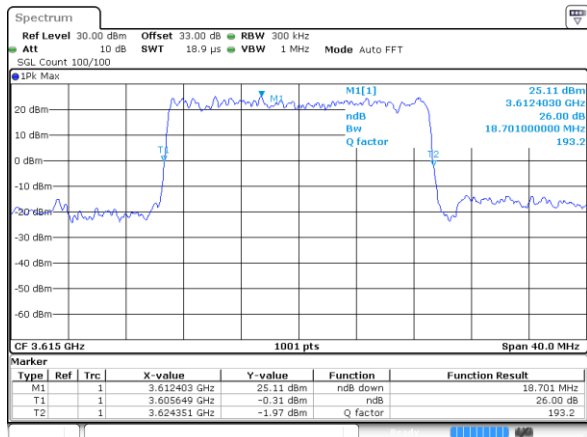


## Port 3

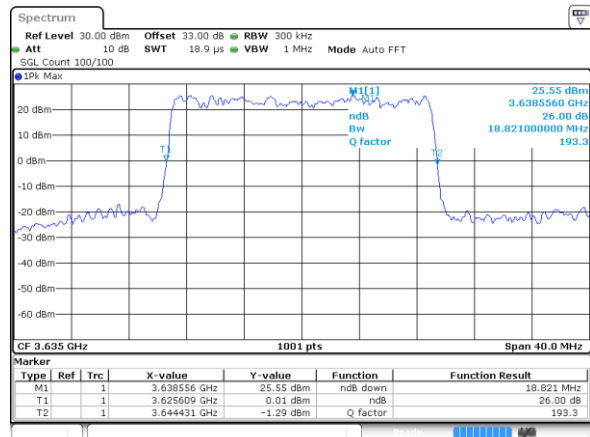


## 20MHz + 20MHz (Port 2 + Port 4)

## Port 2



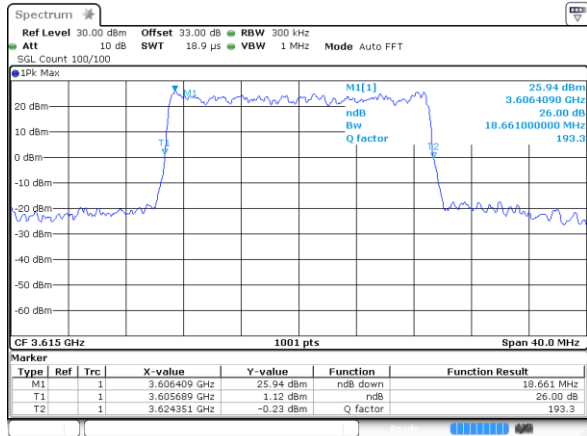
## Port 4



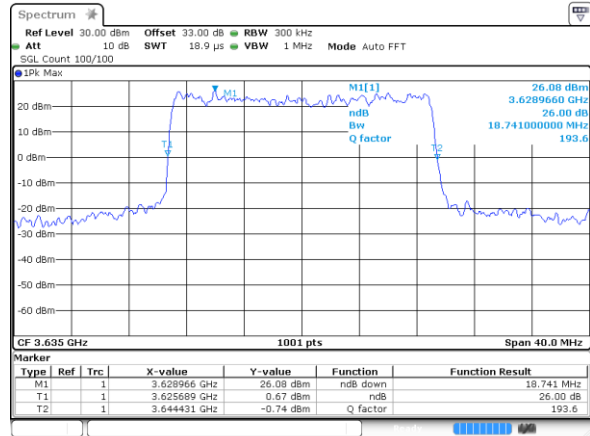
### LTE Band 48 / 256QAM

#### 20MHz + 20MHz (Port 1 + Port 3)

##### Port 1

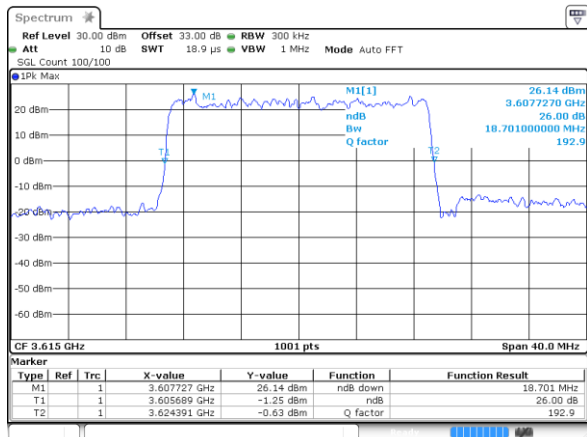


##### Port 3

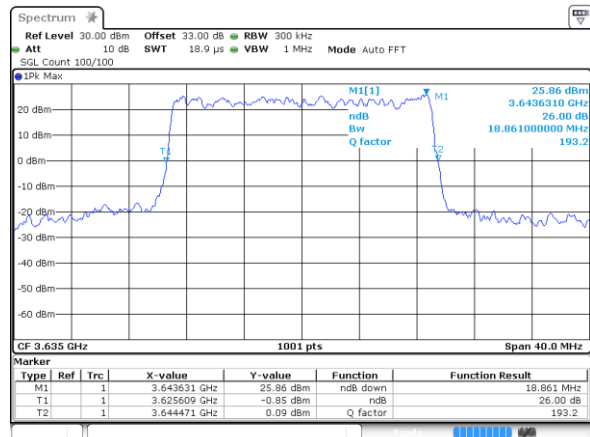


#### 20MHz + 20MHz (Port 2 + Port 4)

##### Port 2



##### Port 4



## Occupied Bandwidth

| Mode           | LTE Band 48 : 99% OBW(MHz) |       |       |       |
|----------------|----------------------------|-------|-------|-------|
| Bandwidth      | 10 MHz                     |       |       |       |
| Conducted Port | 1                          | 2     | 3     | 4     |
| Mod. QPSK      | 8.991                      | 8.951 | 8.991 | 8.931 |
| Mod. 16QAM     | 8.991                      | 9.031 | 8.951 | 8.951 |
| Mod. 64QAM     | 8.991                      | 8.971 | 8.971 | 9.011 |
| Mod. 256QAM    | 9.011                      | 8.951 | 9.011 | 9.031 |

| Mode           | LTE Band 48 : 99% OBW(MHz) |        |        |        |
|----------------|----------------------------|--------|--------|--------|
| Bandwidth      | 20 MHz                     |        |        |        |
| Conducted Port | 1                          | 2      | 3      | 4      |
| Mod. QPSK      | 17.902                     | 17.982 | 17.902 | 17.902 |
| Mod. 16QAM     | 17.942                     | 17.942 | 17.902 | 17.862 |
| Mod. 64QAM     | 17.982                     | 17.982 | 17.942 | 17.902 |
| Mod. 256QAM    | 17.902                     | 17.862 | 17.902 | 17.942 |

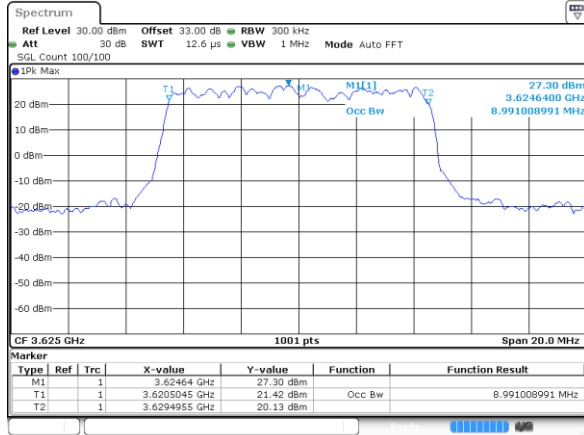
| Mode           | LTE Band 48 : 99% OBW(MHz)      |        |
|----------------|---------------------------------|--------|
| Bandwidth      | 20MHz + 20MHz (Port 1 + Port 3) |        |
| Conducted Port | 1                               | 3      |
| Mod. QPSK      | 17.862                          | 17.902 |
| Mod. 16QAM     | 17.942                          | 17.942 |
| Mod. 64QAM     | 17.862                          | 17.902 |
| Mod. 256QAM    | 17.862                          | 17.862 |

| Mode           | LTE Band 48 : 99% OBW(MHz)      |        |
|----------------|---------------------------------|--------|
| Bandwidth      | 20MHz + 20MHz (Port 2 + Port 4) |        |
| Conducted Port | 2                               | 4      |
| Mod. QPSK      | 17.862                          | 17.902 |
| Mod. 16QAM     | 17.862                          | 17.902 |
| Mod. 64QAM     | 17.902                          | 17.862 |
| Mod. 256QAM    | 17.862                          | 17.862 |

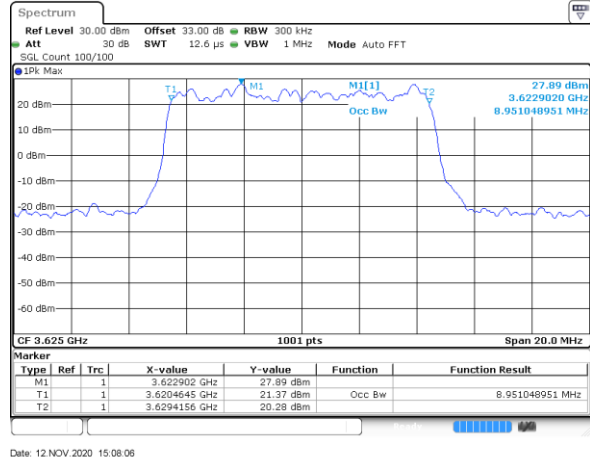


## LTE Band 48 / 10MHz / QPSK

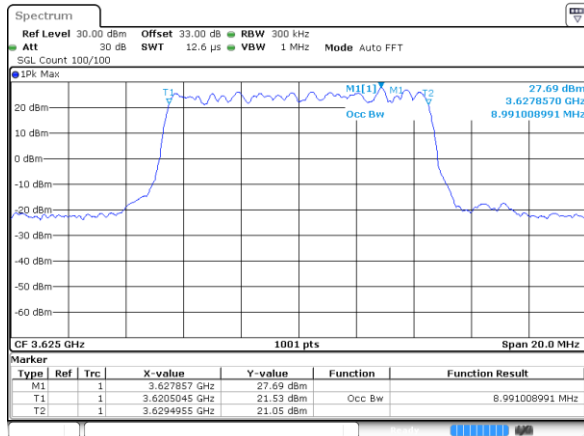
## Port 1



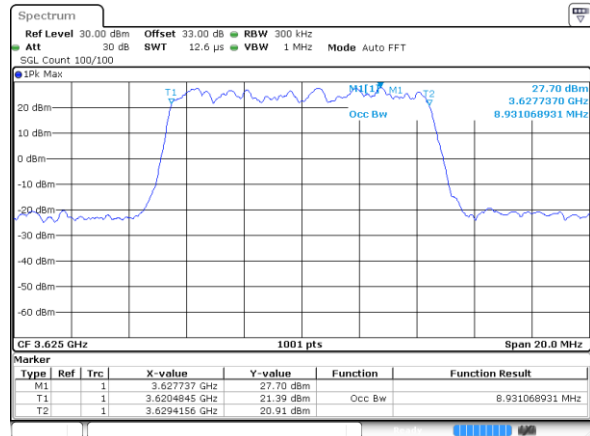
## Port 2



## Port 3



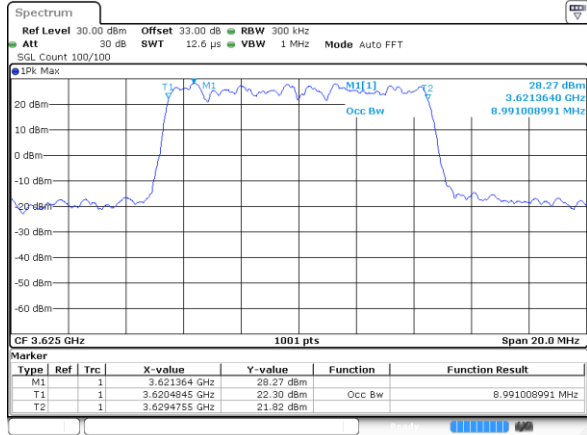
## Port 4



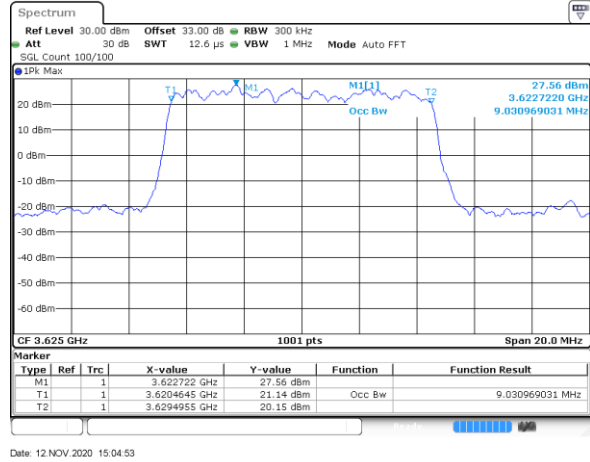


## LTE Band 48 / 10MHz / 16QAM

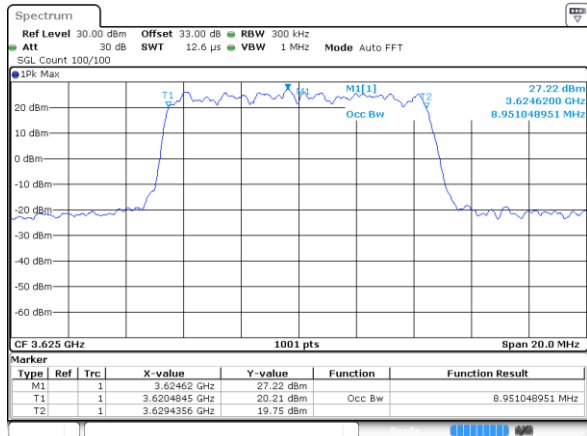
## Port 1



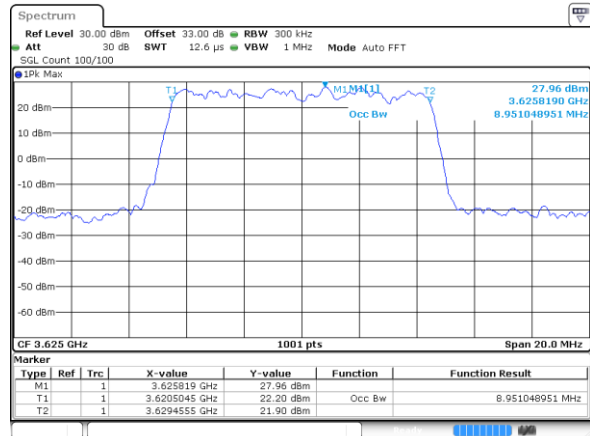
## Port 2



## Port 3



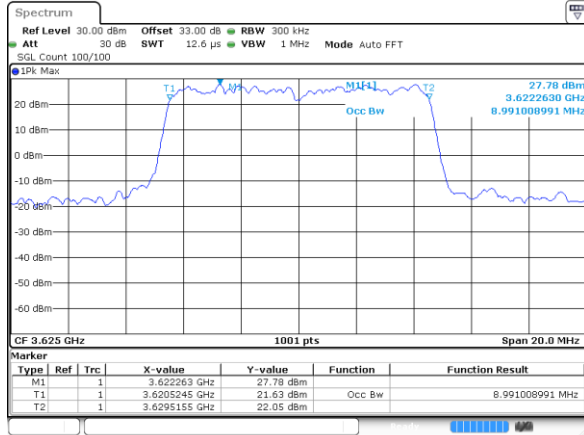
## Port 4



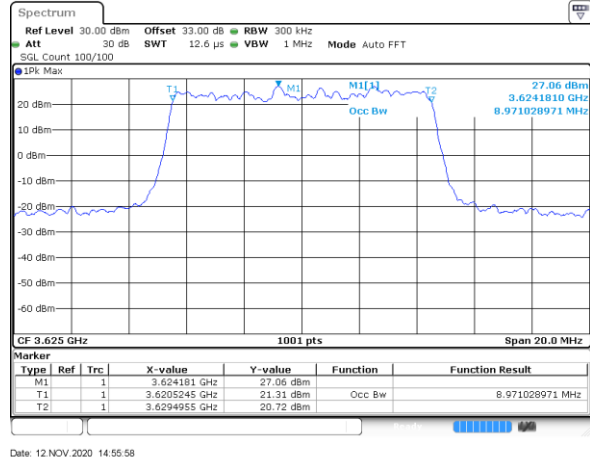


## LTE Band 48 / 10MHz / 64QAM

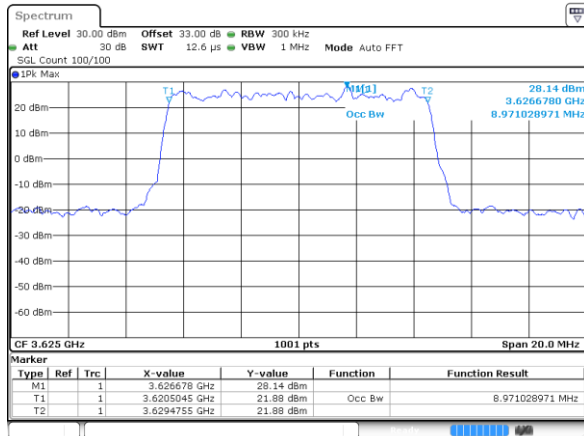
## Port 1



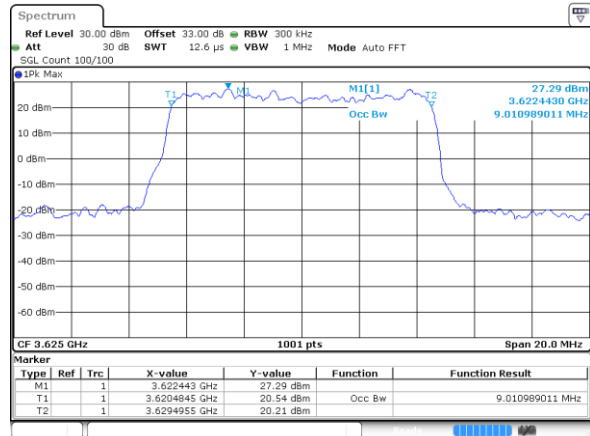
## Port 2



## Port 3



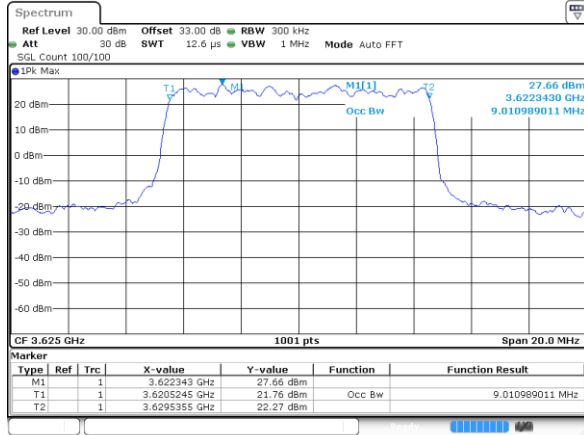
## Port 4





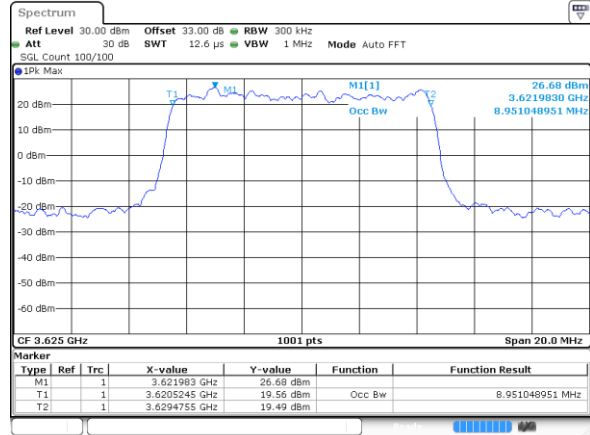
## LTE Band 48 / 10MHz / 256QAM

Port 1



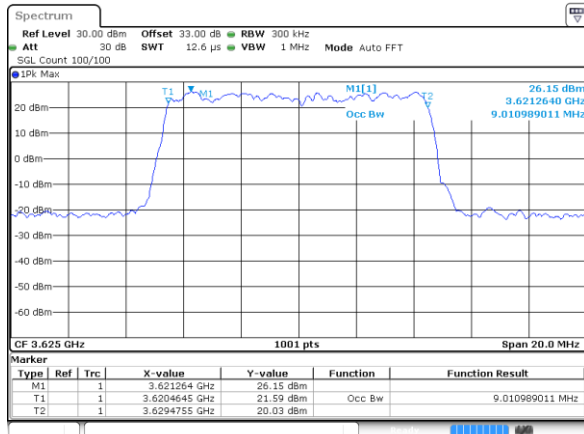
Date: 12.NOV.2020 16:26:14

Port 2



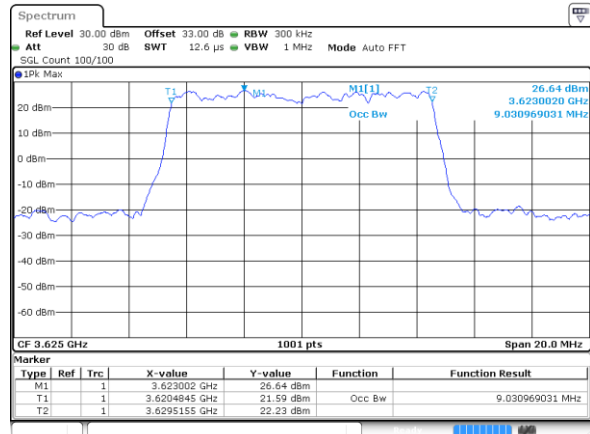
Date: 12.NOV.2020 14:53:48

Port 3



Date: 12.NOV.2020 11:58:28

Port 4

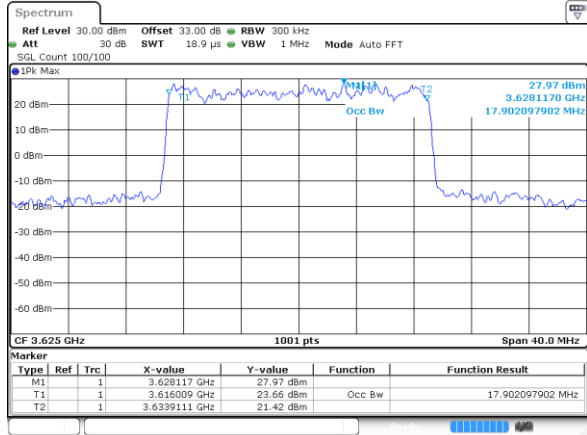


Date: 12.NOV.2020 11:50:56



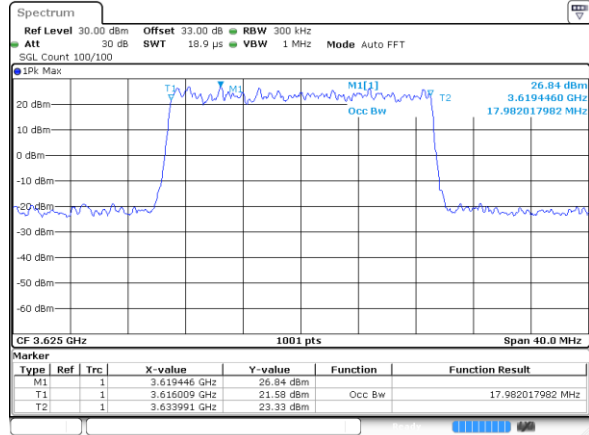
## LTE Band 48 / 20MHz / QPSK

## Port 1



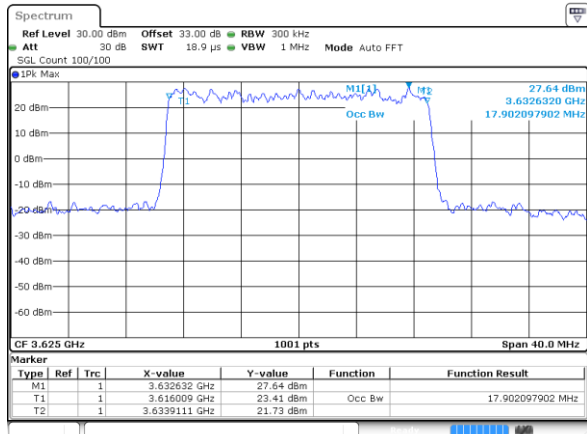
Date: 12.NOV.2020 16:37:12

## Port 2



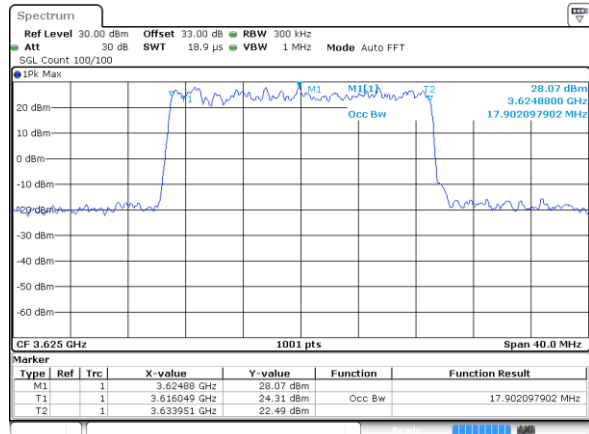
Date: 12.NOV.2020 13:49:06

## Port 3



Date: 12.NOV.2020 12:30:44

## Port 4

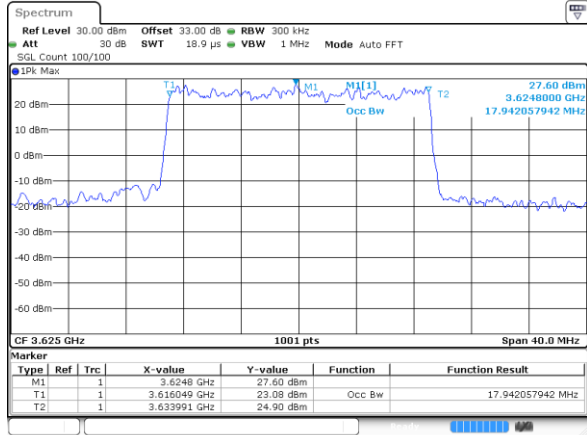


Date: 12.NOV.2020 11:38:23

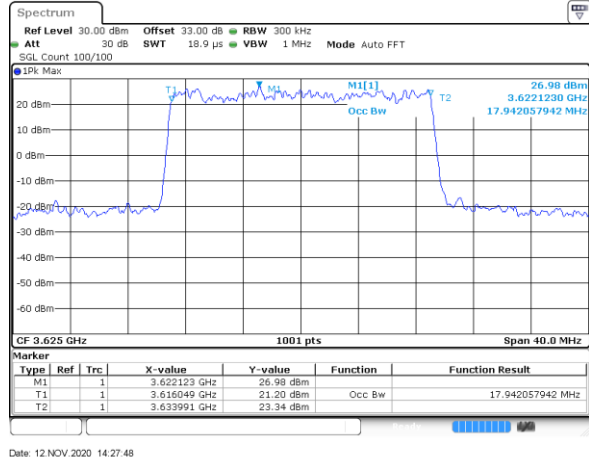


## LTE Band 48 / 20MHz / 16QAM

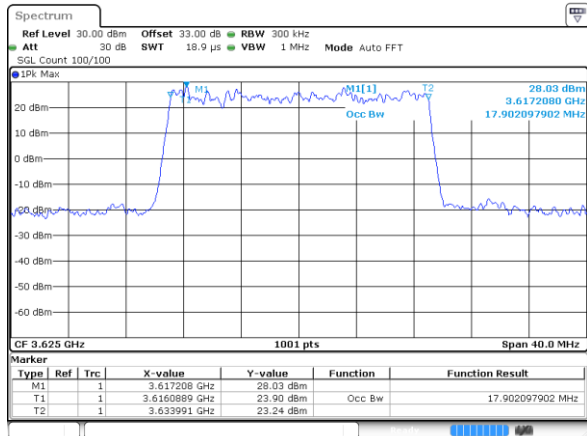
Port 1



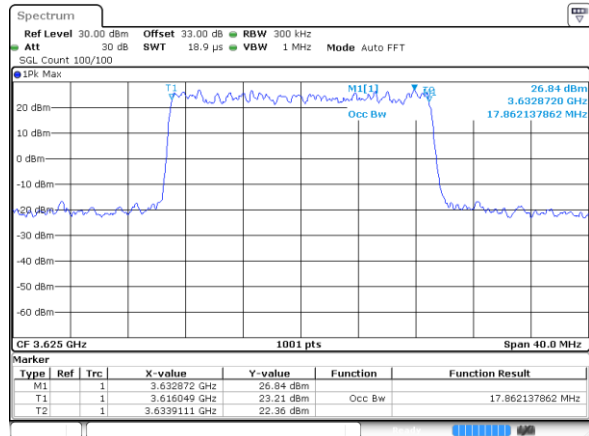
Port 2



Port 3



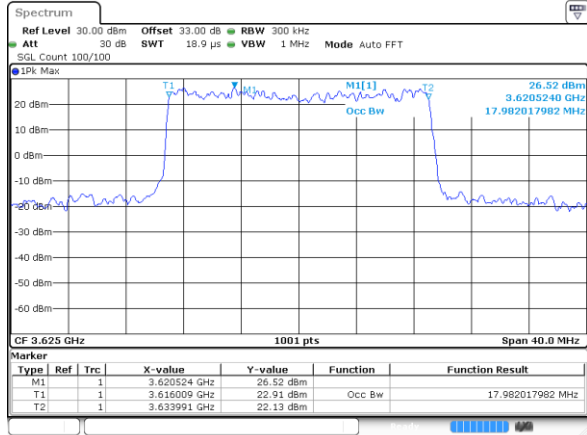
Port 4



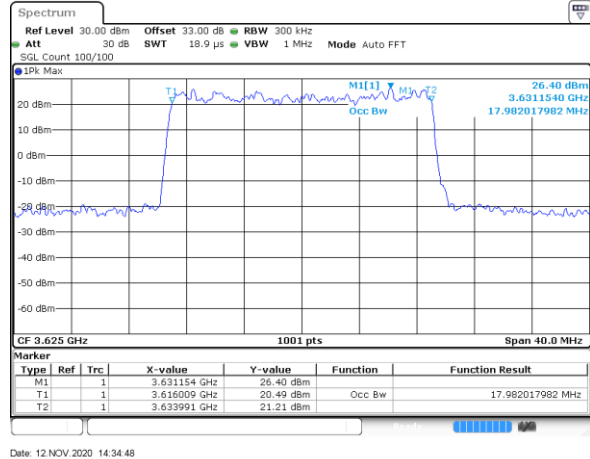


## LTE Band 48 / 20MHz / 64QAM

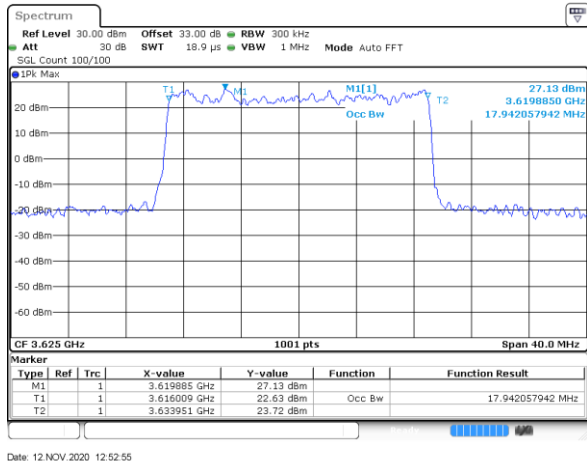
## Port 1



## Port 2



## Port 3



## Port 4

