



## RF TEST REPORT

**Applicant** Beijing Chusudu Technology Co., Ltd.  
**FCC ID** 2AQ5PAUTORINGA2  
**Product** Vehicular wireless terminal(with 4G function)  
**Brand** AutoRing  
**Model** A2  
**Report No.** R1807A0315-R1V1  
**Issue Date** October 24, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2017)/ FCC CFR 47 Part 22H (2017)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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### Summary of measurement results

| No.                                                                                                                                                             | Test Type                               | Clause in FCC rules               | Verdict |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------|---------|
| 1                                                                                                                                                               | RF power output                         | 2.1046                            | PASS    |
| 2                                                                                                                                                               | Effective Radiated Power                | 22.913(a)(5)                      | PASS    |
| 3                                                                                                                                                               | Occupied Bandwidth                      | 2.1049                            | PASS    |
| 4                                                                                                                                                               | Band Edge Compliance                    | 2.1051 / 22.917(a)                | PASS    |
| 5                                                                                                                                                               | Peak-to-Average Power Ratio             | 22.913(d)/<br>KDB 971168 D01(5.7) | PASS    |
| 6                                                                                                                                                               | Frequency Stability                     | 2.1055 / 22.355                   | PASS    |
| 7                                                                                                                                                               | Spurious Emissions at Antenna Terminals | 2.1051 / 22.917(a)                | PASS    |
| 8                                                                                                                                                               | Radiates Spurious Emission              | 2.1053 / 22.917 (a)               | PASS    |
| Date of Testing: July 8 ,2018 ~ August 1 ,2018                                                                                                                  |                                         |                                   |         |
| Note: PASS: The EUT complies with the essential requirements in the standard.<br>FAIL: The EUT does not comply with the essential requirements in the standard. |                                         |                                   |         |

## 1. Test Laboratory

### 1.1. Notes of the Test Report

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

### 1.2. Test facility

#### **CNAS (accreditation number: L2264)**

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

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

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

#### **IC (recognition number is 8510A)**

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

#### **VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)**

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

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

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

### 1.3. Testing Location

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

### Client Information

|                      |                                                                                         |
|----------------------|-----------------------------------------------------------------------------------------|
| Applicant            | Beijing Chusudu Technology Co., Ltd.                                                    |
| Applicant address    | Dongsheng Plaza A,5th Floor,8 Zhongguancun East Rd,<br>Haidian District, Beijing, China |
| Manufacturer         | Beijing Chusudu Technology Co., Ltd.                                                    |
| Manufacturer address | Dongsheng Plaza A,5th Floor,8 Zhongguancun East Rd,<br>Haidian District, Beijing, China |

### General Information

| EUT Description              |                                                                  |           |           |
|------------------------------|------------------------------------------------------------------|-----------|-----------|
| Model                        | A2                                                               |           |           |
| IMEI                         | 863346039069490                                                  |           |           |
| Hardware Version             | V3.1                                                             |           |           |
| Software Version             | RC108_D2_MT2_C1_BOM_V3.1_S20180622                               |           |           |
| Power Supply                 | External Power Supply                                            |           |           |
| Antenna Type                 | Internal Antenna                                                 |           |           |
| Antenna Gain                 | GSM 850: 1.0dBi<br>WCDMA Band V: 1.5dBi<br>LTE Band 5/26: 1.0dBi |           |           |
| Test Mode(s)                 | GSM 850: WCDMA Band V;LTE Band 5/26;                             |           |           |
| Test Modulation              | (GSM)GMSK,8PSK; (WCDMA)QPSK, 16QAM;<br>(LTE)QPSK,16QAM           |           |           |
| GPRS Multislot Class         | 12                                                               |           |           |
| EGPRS Multislot Class        | 12                                                               |           |           |
| HSDPA UE Category            | 24                                                               |           |           |
| HSUPA UE Category            | 7                                                                |           |           |
| LTE Category                 | 4                                                                |           |           |
| Maximum E.R.P.               | GSM 850:                                                         | 26.15dBm  |           |
|                              | WCDMA Band V:                                                    | 19.86dBm  |           |
|                              | LTE Band 5:                                                      | 19.84dBm  |           |
|                              | LTE Band 26:                                                     | 15.09dBm  |           |
| Rated Power Supply Voltage   | 3.7V                                                             |           |           |
| Extreme Voltage              | Minimum: 3.2V    Maximum: 4.2V                                   |           |           |
| Extreme Temperature          | Lowest:- 20°C    Highest: +70°C                                  |           |           |
| Operating Frequency Range(s) | Band                                                             | Tx (MHz)  | Rx (MHz)  |
|                              | GSM850                                                           | 824 ~ 849 | 869 ~ 894 |
|                              | WCDMA Band V                                                     | 824 ~ 849 | 869 ~ 894 |
|                              | LTE Band 5                                                       | 824 ~ 849 | 869 ~ 894 |

|                                                                   |                                                                                      |                            |           |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------|-----------|
| TCSA Test Report                                                  |                                                                                      | Report No: R1007A0010-R1V1 |           |
|                                                                   | LTE Band 26                                                                          | 824 ~ 849                  | 869 ~ 894 |
| EUT Accessory                                                     |                                                                                      |                            |           |
| AutoRing A2 Power Cable                                           | Manufacturer: Shenzhen GuanLiJie Technology Co.,Ltd<br>Model: AutoRing A2 Power cord |                            |           |
| Camera                                                            | Manufacturer: Beijing Chusudu Technology Co., Ltd.<br>Model: MMT-AHD-H65             |                            |           |
| Note: The information of the EUT is declared by the manufacturer. |                                                                                      |                            |           |

### 3. Applied Standards

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

**FCC CFR47 Part 2 (2017)**

**FCC CFR 47 Part 22H (2017)**

**ANSI/TIA-603-E (2016)**

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

## 4. Test Configuration

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

All mode and data rates and positions were investigated. Subsequently, only the worst case emissions are reported.

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

Test modes are chosen to be reported as the worst case configuration below:

| Test items                              | Modes/Modulation                  |                                      |
|-----------------------------------------|-----------------------------------|--------------------------------------|
|                                         | GSM 850                           | WCDMA Band V                         |
| RF power output                         | GPRS<br>EGPRS                     | RMC<br>HSDPA/HSUPA<br>DC-HSDPA/HSPA+ |
| Effective Radiated Power                | GPRS(1Tx slot)<br>EGPRS(1Tx slot) | RMC                                  |
| Occupied Bandwidth                      | GPRS(1Tx slot)<br>EGPRS(1Tx slot) | RMC                                  |
| Band Edge Compliance                    | GPRS(1Tx slot)<br>EGPRS(1Tx slot) | RMC                                  |
| Peak-to-Average Power Ratio             | GPRS(1Tx slot)<br>EGPRS(1Tx slot) | RMC                                  |
| Frequency Stability                     | GPRS(1Tx slot)<br>EGPRS(1Tx slot) | RMC                                  |
| Spurious Emissions at Antenna Terminals | GPRS(1Tx slot)                    | RMC                                  |
| Radiates Spurious Emission              | GPRS(1Tx slot)                    | RMC                                  |

Test modes are chosen as the worst case configuration below for LTE Band 5/26

| Test items                              | Modes                                                                                                                                 | Bandwidth (MHz) |   |   |    |    | Modulation |       | RB |     |      | Test Channel |   |   |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------|---|---|----|----|------------|-------|----|-----|------|--------------|---|---|
|                                         |                                                                                                                                       | 1.4             | 3 | 5 | 10 | 15 | QPSK       | 16QAM | 1  | 50% | 100% | L            | M | H |
| RF power output                         | LTE 5                                                                                                                                 | O               | O | O | O  | -  | O          | O     | O  | O   | O    | O            | O | O |
|                                         | LTE 26                                                                                                                                | O               | O | O | O  | O  | O          | O     | O  | O   | O    | O            | O | O |
| Effective Isotropic Radiated power      | LTE 5                                                                                                                                 | O               | O | O | O  | -  | O          | O     | O  | O   | O    | O            | O | O |
|                                         | LTE 26                                                                                                                                | O               | O | O | O  | O  | O          | O     | O  | O   | O    | O            | O | O |
| Occupied Bandwidth                      | LTE 5                                                                                                                                 | O               | O | O | O  | -  | O          | O     | -  | -   | O    | O            | O | O |
|                                         | LTE 26                                                                                                                                | O               | O | O | O  | O  | O          | O     | -  | -   | O    | O            | O | O |
| Band Edge Compliance                    | LTE 5                                                                                                                                 | O               | O | O | O  | -  | O          | O     | O  | -   | O    | O            | - | O |
|                                         | LTE 26                                                                                                                                | O               | O | O | O  | O  | O          | O     | O  | -   | O    | O            | - | O |
| Peak-to-Average Power Ratio             | LTE 5                                                                                                                                 | O               | O | O | O  | -  | O          | O     | -  | -   | O    | O            | O | O |
|                                         | LTE 26                                                                                                                                | O               | O | O | O  | O  | O          | O     | -  | -   | O    | O            | O | O |
| Frequency Stability                     | LTE 5                                                                                                                                 | O               | O | O | O  | -  | O          | O     | O  | O   | O    | O            | O | O |
|                                         | LTE 26                                                                                                                                | O               | O | O | O  | O  | O          | O     | O  | O   | O    | O            | O | O |
| Spurious Emissions at Antenna Terminals | LTE 5                                                                                                                                 | O               | O | O | O  | -  | O          | -     | O  | -   | -    | O            | O | O |
|                                         | LTE 26                                                                                                                                | O               | O | O | O  | O  | O          | -     | O  | -   | -    | O            | O | O |
| Radiates Spurious Emission              | LTE 5                                                                                                                                 | O               | - | O | O  | -  | O          | -     | O  | -   | -    | O            | O | O |
|                                         | LTE 26                                                                                                                                | O               | - | O | -  | O  | O          | -     | O  | -   | -    | O            | O | O |
| Note                                    | 1. The mark "O" means that this configuration is chosen for testing.<br>2. The mark "-" means that this configuration is not testing. |                 |   |   |    |    |            |       |    |     |      |              |   |   |

## 5. Test Case Results

### 5.1. RF Power Output

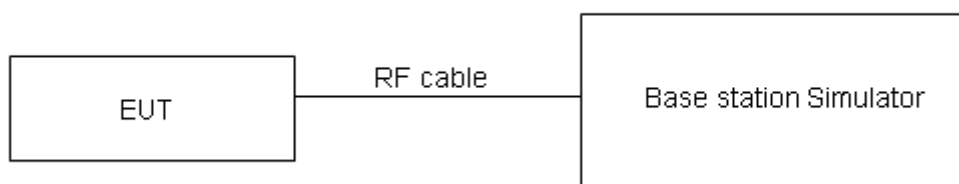
#### Ambient condition

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

#### Methods of Measurement

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

#### Test Setup



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

#### Limits

No specific RF power output requirements in part 2.1046.

#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.4$  dB.

**Test Results**

| <b>GSM 850</b>          |          | <b>Conducted Power(dBm)</b> |             |             |
|-------------------------|----------|-----------------------------|-------------|-------------|
|                         |          | Channel 128                 | Channel 190 | Channel 251 |
|                         |          | 824.2 (MHz)                 | 836.6 (MHz) | 848.8 (MHz) |
| <b>GPRS<br/>(GMSK)</b>  | 1TXslot  | 32.76                       | 32.87       | 32.81       |
|                         | 2TXslots | 32.16                       | 32.29       | 32.23       |
|                         | 3TXslots | 30.60                       | 30.71       | 30.69       |
|                         | 4TXslots | 29.50                       | 29.61       | 29.62       |
| <b>EGPRS<br/>(8PSK)</b> | 1TXslot  | 27.37                       | 27.35       | 27.34       |
|                         | 2TXslots | 26.50                       | 26.48       | 26.52       |
|                         | 3TXslots | 24.75                       | 24.76       | 24.81       |
|                         | 4TXslots | 23.77                       | 23.78       | 23.81       |

| <b>WCDMA Band V</b> |              | <b>Conducted Power(dBm)</b> |              |              |
|---------------------|--------------|-----------------------------|--------------|--------------|
|                     |              | Channel 4132                | Channel 4183 | Channel 4233 |
|                     |              | 826.4(MHz)                  | 836.6(MHz)   | 846.6(MHz)   |
| <b>RMC</b>          |              | 22.58                       | 22.53        | 22.64        |
| <b>HSDPA</b>        | Sub - Test 1 | 21.54                       | 21.56        | 21.64        |
|                     | Sub - Test 2 | 21.59                       | 21.59        | 21.69        |
|                     | Sub - Test 3 | 21.13                       | 21.13        | 21.23        |
|                     | Sub - Test 4 | 21.15                       | 21.09        | 21.19        |
| <b>HSUPA</b>        | Sub - Test 1 | 21.63                       | 21.59        | 21.70        |
|                     | Sub - Test 2 | 21.55                       | 21.56        | 21.64        |
|                     | Sub - Test 3 | 21.16                       | 21.13        | 21.21        |
|                     | Sub - Test 4 | 21.52                       | 21.55        | 21.63        |
|                     | Sub - Test 5 | 21.55                       | 21.54        | 21.61        |
| <b>DC-HSDPA</b>     | Sub - Test 1 | 22.45                       | 22.40        | 22.51        |
|                     | Sub - Test 2 | 22.54                       | 22.38        | 22.50        |
|                     | Sub - Test 3 | 22.03                       | 21.87        | 21.99        |
|                     | Sub - Test 4 | 22.02                       | 21.86        | 21.98        |
| <b>HSPA+</b>        | 16QAM        | 22.20                       | 22.23        | 22.33        |

| LTE Band 5 |            |         |           | Conducted Power(dBm)   |             |             |
|------------|------------|---------|-----------|------------------------|-------------|-------------|
| BW         | Modulation | RB size | RB offset | Channel/Frequency(MHz) |             |             |
|            |            |         |           | 20407/824.7            | 20525/836.5 | 20643/848.3 |
| 1.4MHz     | QPSK       | 1       | 0         | 23.61                  | 23.59       | 23.57       |
|            |            | 1       | 2         | 23.55                  | 23.51       | 23.60       |
|            |            | 1       | 5         | 23.55                  | 23.60       | 23.51       |
|            |            | 3       | 0         | 23.49                  | 23.54       | 23.52       |
|            |            | 3       | 2         | 23.51                  | 23.59       | 23.69       |
|            |            | 3       | 3         | 23.48                  | 23.51       | 23.57       |
|            |            | 6       | 0         | 22.52                  | 22.59       | 22.62       |
|            | 16QAM      | 1       | 0         | 22.93                  | 23.00       | 23.01       |
|            |            | 1       | 2         | 22.92                  | 22.94       | 23.02       |
|            |            | 1       | 5         | 22.87                  | 23.00       | 23.02       |
|            |            | 3       | 0         | 22.57                  | 22.52       | 22.53       |
|            |            | 3       | 2         | 22.56                  | 22.44       | 22.58       |
|            |            | 3       | 3         | 22.54                  | 22.54       | 22.58       |
|            |            | 6       | 0         | 21.63                  | 21.58       | 21.63       |
| BW         | Modulation | RB size | RB offset | Channel/Frequency(MHz) |             |             |
|            |            |         |           | 20415/825.5            | 20525/836.5 | 20635/847.5 |
| 3MHz       | QPSK       | 1       | 0         | 23.63                  | 23.63       | 23.60       |
|            |            | 1       | 7         | 23.58                  | 23.56       | 23.64       |
|            |            | 1       | 14        | 23.58                  | 23.65       | 23.55       |
|            |            | 8       | 0         | 22.59                  | 22.66       | 22.65       |
|            |            | 8       | 4         | 22.63                  | 22.69       | 22.81       |
|            |            | 8       | 7         | 22.58                  | 22.62       | 22.67       |
|            |            | 15      | 0         | 22.55                  | 22.63       | 22.65       |
|            | 16QAM      | 1       | 0         | 22.96                  | 23.02       | 23.04       |
|            |            | 1       | 7         | 22.95                  | 22.99       | 23.06       |
|            |            | 1       | 14        | 22.89                  | 23.04       | 23.05       |
|            |            | 8       | 0         | 21.68                  | 21.65       | 21.65       |
|            |            | 8       | 4         | 21.67                  | 21.57       | 21.70       |
|            |            | 8       | 7         | 21.64                  | 21.66       | 21.71       |
|            |            | 15      | 0         | 21.66                  | 21.62       | 21.66       |
| BW         | Modulation | RB size | RB offset | Channel/Frequency(MHz) |             |             |
|            |            |         |           | 20425/826.5            | 20525/836.5 | 20625/846.5 |
| 5MHz       | QPSK       | 1       | 0         | 23.60                  | 23.61       | 23.56       |



|       |            | 1       | 13        | 23.56                  | 23.52       | 23.61     |
|-------|------------|---------|-----------|------------------------|-------------|-----------|
|       |            | 1       | 24        | 23.55                  | 23.60       | 23.51     |
|       |            | 12      | 0         | 22.56                  | 22.61       | 22.61     |
|       |            | 12      | 6         | 22.61                  | 22.65       | 22.76     |
|       |            | 12      | 13        | 22.56                  | 22.60       | 22.63     |
|       |            | 25      | 0         | 22.53                  | 22.62       | 22.63     |
|       | 16QAM      | 1       | 0         | 22.93                  | 22.98       | 23.01     |
|       |            | 1       | 13        | 22.92                  | 22.97       | 23.03     |
|       |            | 1       | 24        | 22.86                  | 23.02       | 23.01     |
|       |            | 12      | 0         | 21.66                  | 21.61       | 21.62     |
|       |            | 12      | 6         | 21.64                  | 21.52       | 21.66     |
|       |            | 12      | 13        | 21.61                  | 21.61       | 21.67     |
|       |            | 25      | 0         | 21.64                  | 21.58       | 21.61     |
| BW    | Modulation | RB size | RB offset | Channel/Frequency(MHz) |             |           |
|       |            |         |           | 20450/829              | 20525/836.5 | 20600/844 |
| 10MHz | QPSK       | 1       | 0         | 23.58                  | 23.54       | 23.54     |
|       |            | 1       | 25        | 23.56                  | 23.52       | 23.60     |
|       |            | 1       | 49        | 23.52                  | 23.58       | 23.47     |
|       |            | 25      | 0         | 22.54                  | 22.57       | 22.58     |
|       |            | 25      | 13        | 22.59                  | 22.61       | 22.73     |
|       |            | 25      | 25        | 22.52                  | 22.56       | 22.60     |
|       |            | 50      | 0         | 22.56                  | 22.55       | 22.58     |
|       | 16QAM      | 1       | 0         | 22.88                  | 22.95       | 22.96     |
|       |            | 1       | 25        | 22.89                  | 22.96       | 23.00     |
|       |            | 1       | 49        | 22.84                  | 22.97       | 22.99     |
|       |            | 25      | 0         | 21.63                  | 21.60       | 21.60     |
|       |            | 25      | 13        | 21.60                  | 21.49       | 21.62     |
|       |            | 25      | 25        | 21.59                  | 21.57       | 21.64     |
|       |            | 50      | 0         | 21.62                  | 21.54       | 21.58     |

| LTE Band 26 |            |         |           | Conducted Power(dBm)   |             |             |
|-------------|------------|---------|-----------|------------------------|-------------|-------------|
| BW          | Modulation | RB size | RB offset | Channel/Frequency(MHz) |             |             |
|             |            |         |           | 26797/824.7            | 26915/836.5 | 27033/848.3 |
| 1.4MHz      | QPSK       | 1       | 0         | 23.63                  | 23.66       | 23.68       |
|             |            | 1       | 2         | 23.53                  | 23.56       | 23.62       |
|             |            | 1       | 5         | 23.30                  | 23.29       | 23.07       |
|             |            | 3       | 0         | 23.55                  | 23.67       | 23.60       |
|             |            | 3       | 2         | 23.55                  | 23.73       | 23.50       |
|             |            | 3       | 3         | 23.51                  | 23.63       | 23.56       |
|             |            | 6       | 0         | 22.56                  | 22.73       | 22.71       |
|             | 16QAM      | 1       | 0         | 22.76                  | 23.06       | 23.19       |
|             |            | 1       | 2         | 22.65                  | 23.04       | 22.96       |
|             |            | 1       | 5         | 22.61                  | 22.95       | 22.51       |
|             |            | 3       | 0         | 22.53                  | 22.58       | 22.55       |
|             |            | 3       | 2         | 22.54                  | 22.62       | 22.56       |
|             |            | 3       | 3         | 22.49                  | 22.62       | 22.59       |
|             |            | 6       | 0         | 21.60                  | 21.71       | 21.66       |
| BW          | Modulation | RB size | RB offset | Channel/Frequency(MHz) |             |             |
|             |            |         |           | 26805/825.5            | 26915/836.5 | 27025/847.5 |
| 3MHz        | QPSK       | 1       | 0         | 23.65                  | 23.70       | 23.71       |
|             |            | 1       | 7         | 23.56                  | 23.61       | 23.66       |
|             |            | 1       | 14        | 23.33                  | 23.34       | 23.11       |
|             |            | 8       | 0         | 22.65                  | 22.79       | 22.73       |
|             |            | 8       | 4         | 22.67                  | 22.83       | 22.62       |
|             |            | 8       | 7         | 22.61                  | 22.74       | 22.66       |
|             |            | 15      | 0         | 22.59                  | 22.77       | 22.74       |
|             | 16QAM      | 1       | 0         | 22.79                  | 23.08       | 23.22       |
|             |            | 1       | 7         | 22.68                  | 23.09       | 23.00       |
|             |            | 1       | 14        | 22.63                  | 22.99       | 22.54       |
|             |            | 8       | 0         | 21.64                  | 21.71       | 21.67       |
|             |            | 8       | 4         | 21.65                  | 21.75       | 21.68       |
|             |            | 8       | 7         | 21.59                  | 21.74       | 21.72       |
|             |            | 15      | 0         | 21.63                  | 21.75       | 21.69       |
| BW          | Modulation | RB size | RB offset | Channel/Frequency(MHz) |             |             |
|             |            |         |           | 26815/826.5            | 26915/836.5 | 27015/846.5 |
| 5MHz        | QPSK       | 1       | 0         | 23.64                  | 23.69       | 23.70       |



|       |            |         |           |                        |             |             |
|-------|------------|---------|-----------|------------------------|-------------|-------------|
|       |            | 1       | 13        | 23.57                  | 23.62       | 23.67       |
|       |            | 1       | 24        | 23.32                  | 23.33       | 23.10       |
|       |            | 12      | 0         | 22.65                  | 22.79       | 22.73       |
|       |            | 12      | 6         | 22.68                  | 22.84       | 22.61       |
|       |            | 12      | 13        | 22.61                  | 22.76       | 22.67       |
|       |            | 25      | 0         | 22.65                  | 22.78       | 22.76       |
|       | 16QAM      | 1       | 0         | 22.78                  | 23.07       | 23.21       |
|       |            | 1       | 13        | 22.68                  | 23.11       | 23.00       |
|       |            | 1       | 24        | 22.63                  | 22.99       | 22.53       |
|       |            | 12      | 0         | 21.65                  | 21.72       | 21.68       |
|       |            | 12      | 6         | 21.64                  | 21.74       | 21.67       |
|       |            | 12      | 13        | 21.59                  | 21.74       | 21.72       |
|       |            | 25      | 0         | 21.64                  | 21.76       | 21.68       |
| BW    | Modulation | RB size | RB offset | Channel/Frequency(MHz) |             |             |
|       |            |         |           | 26840/829              | 26915/836.5 | 26990/844   |
| 10MHz | QPSK       | 1       | 0         | 23.63                  | 23.65       | 23.68       |
|       |            | 1       | 25        | 23.55                  | 23.61       | 23.64       |
|       |            | 1       | 49        | 23.29                  | 23.28       | 23.06       |
|       |            | 25      | 0         | 22.63                  | 22.75       | 22.70       |
|       |            | 25      | 13        | 22.65                  | 22.79       | 22.57       |
|       |            | 25      | 25        | 22.58                  | 22.73       | 22.63       |
|       |            | 50      | 0         | 22.63                  | 22.74       | 22.71       |
|       | 16QAM      | 1       | 0         | 22.73                  | 23.05       | 23.19       |
|       |            | 1       | 25        | 22.66                  | 23.08       | 22.98       |
|       |            | 1       | 49        | 22.60                  | 22.95       | 22.50       |
|       |            | 25      | 0         | 21.62                  | 21.70       | 21.65       |
|       |            | 25      | 13        | 21.61                  | 21.69       | 21.63       |
|       |            | 25      | 25        | 21.57                  | 21.70       | 21.69       |
|       |            | 50      | 0         | 21.61                  | 21.71       | 21.64       |
| BW    | Modulation | RB size | RB offset | Channel/Frequency(MHz) |             |             |
|       |            |         |           | 26865/831.5            | 26915/836.5 | 26965/841.5 |
| 15MHz | QPSK       | 1       | 0         | 23.60                  | 23.61       | 23.65       |
|       |            | 1       | 38        | 23.54                  | 23.57       | 23.62       |
|       |            | 1       | 74        | 23.27                  | 23.27       | 23.03       |
|       |            | 36      | 0         | 22.60                  | 22.70       | 22.66       |
|       |            | 36      | 18        | 22.63                  | 22.75       | 22.54       |
|       |            | 36      | 39        | 22.55                  | 22.68       | 22.59       |



|  |       |    |    |       |       |       |
|--|-------|----|----|-------|-------|-------|
|  | 16QAM | 75 | 0  | 22.60 | 22.69 | 22.67 |
|  |       | 1  | 0  | 22.71 | 23.01 | 23.14 |
|  |       | 1  | 38 | 22.62 | 23.06 | 22.94 |
|  |       | 1  | 74 | 22.58 | 22.92 | 22.48 |
|  |       | 36 | 0  | 21.59 | 21.66 | 21.62 |
|  |       | 36 | 18 | 21.58 | 21.67 | 21.60 |
|  |       | 36 | 39 | 21.54 | 21.65 | 21.65 |
|  |       | 75 | 0  | 21.59 | 21.67 | 21.61 |

## 5.2. Effective Radiated Power

### Ambient condition

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

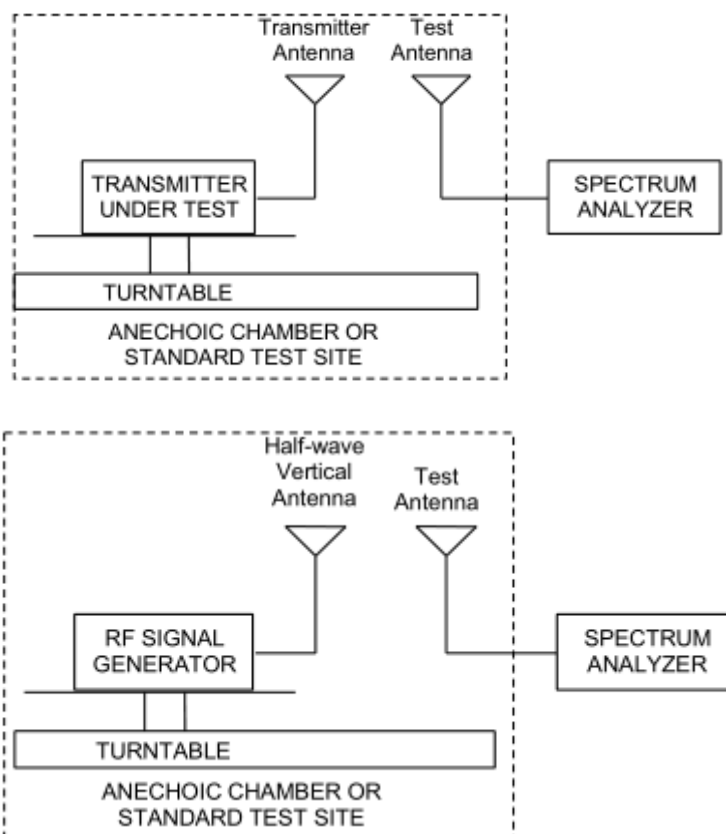
### Methods of Measurement

The testing follows FCC KDB 971168 v03r01 Section 5.8 and ANSI/TIA-603-E (2016).

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

The RB allocation refers to section 5.1, using the maximum output power configuration.

## Test setup



## Limits

Rule Part 22.913(a)(5) specifies that "Mobile/portable stations are limited to 7 watts ERP".

|       |                                |
|-------|--------------------------------|
| Limit | $\leq 7 \text{ W}$ (38.45 dBm) |
|-------|--------------------------------|

## Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 1.19 \text{ dB}$

**Test Results:**

The measurement is performed for both of horizontal and vertical antenna Polarization, and only the data of worst mode is recorded in this report.

| Mode         | Channel | Frequency (MHz) | Polarization | ERP (dBm) | Limit (dBm) | Conclusion |
|--------------|---------|-----------------|--------------|-----------|-------------|------------|
| GPRS 850     | Low     | 824.2           | Horizontal   | 24.68     | 38.45       | Pass       |
|              | Mid     | 836.6           | Horizontal   | 25.58     | 38.45       | Pass       |
|              | High    | 848.8           | Horizontal   | 26.15     | 38.45       | Pass       |
| EGPRS 850    | Low     | 824.2           | Horizontal   | 24.17     | 38.45       | Pass       |
|              | Mid     | 836.6           | Horizontal   | 25.39     | 38.45       | Pass       |
|              | High    | 848.8           | Horizontal   | 26.01     | 38.45       | Pass       |
| WCDMA Band V | Low     | 826.4           | Horizontal   | 19.61     | 38.45       | Pass       |
|              | Mid     | 836.6           | Horizontal   | 19.79     | 38.45       | Pass       |
|              | High    | 846.6           | Horizontal   | 19.86     | 38.45       | Pass       |

| <b>LTE Band 5</b>      |                |                        |                     |                  |                    |                   |
|------------------------|----------------|------------------------|---------------------|------------------|--------------------|-------------------|
| <b>bandwidth</b>       | <b>Channel</b> | <b>Frequency (MHz)</b> | <b>Polarization</b> | <b>ERP (dBm)</b> | <b>Limit (dBm)</b> | <b>Conclusion</b> |
| <b>1.4 MHz (QPSK)</b>  | Low            | 824.7                  | Horizontal          | 19.64            | 38.45              | Pass              |
|                        | Mid            | 836.5                  | Horizontal          | 18.84            | 38.45              | Pass              |
|                        | High           | 848.3                  | Horizontal          | 19.08            | 38.45              | Pass              |
| <b>3 MHz (QPSK)</b>    | Low            | 825.5                  | Horizontal          | 19.42            | 38.45              | Pass              |
|                        | Mid            | 836.5                  | Horizontal          | 18.88            | 38.45              | Pass              |
|                        | High           | 847.5                  | Horizontal          | 19.84            | 38.45              | Pass              |
| <b>5 MHz (QPSK)</b>    | Low            | 826.5                  | Horizontal          | 18.72            | 38.45              | Pass              |
|                        | Mid            | 836.5                  | Horizontal          | 17.09            | 38.45              | Pass              |
|                        | High           | 846.5                  | Horizontal          | 18.27            | 38.45              | Pass              |
| <b>10 MHz (QPSK)</b>   | Low            | 829                    | Horizontal          | 19.05            | 38.45              | Pass              |
|                        | Mid            | 836.5                  | Horizontal          | 17.16            | 38.45              | Pass              |
|                        | High           | 844                    | Horizontal          | 17.30            | 38.45              | Pass              |
| <b>1.4 MHz (16QAM)</b> | Low            | 824.7                  | Horizontal          | 19.19            | 38.45              | Pass              |
|                        | Mid            | 836.5                  | Horizontal          | 18.42            | 38.45              | Pass              |
|                        | High           | 848.3                  | Horizontal          | 18.74            | 38.45              | Pass              |
| <b>3 MHz (16QAM)</b>   | Low            | 825.5                  | Horizontal          | 18.88            | 38.45              | Pass              |
|                        | Mid            | 836.5                  | Horizontal          | 18.42            | 38.45              | Pass              |
|                        | High           | 847.5                  | Horizontal          | 19.21            | 38.45              | Pass              |
| <b>5 MHz (16QAM)</b>   | Low            | 826.5                  | Horizontal          | 18.22            | 38.45              | Pass              |
|                        | Mid            | 836.5                  | Horizontal          | 16.82            | 38.45              | Pass              |
|                        | High           | 846.5                  | Horizontal          | 17.88            | 38.45              | Pass              |
| <b>10 MHz (16QAM)</b>  | Low            | 829                    | Horizontal          | 18.74            | 38.45              | Pass              |
|                        | Mid            | 836.5                  | Horizontal          | 15.87            | 38.45              | Pass              |
|                        | High           | 844                    | Horizontal          | 16.86            | 38.45              | Pass              |

| LTE Band 26            |         |                 |              |           |             |            |
|------------------------|---------|-----------------|--------------|-----------|-------------|------------|
| bandwidth              | Channel | Frequency (MHz) | Polarization | ERP (dBm) | Limit (dBm) | Conclusion |
| <b>1.4 MHz (QPSK)</b>  | Low     | 824.7           | Horizontal   | 13.87     | 38.45       | Pass       |
|                        | Mid     | 836.5           | Horizontal   | 13.76     | 38.45       | Pass       |
|                        | High    | 848.3           | Horizontal   | 13.76     | 38.45       | Pass       |
| <b>3 MHz (QPSK)</b>    | Low     | 825.5           | Horizontal   | 13.76     | 38.45       | Pass       |
|                        | Mid     | 836.5           | Horizontal   | 14.28     | 38.45       | Pass       |
|                        | High    | 847.5           | Horizontal   | 13.69     | 38.45       | Pass       |
| <b>5 MHz (QPSK)</b>    | Low     | 826.5           | Horizontal   | 13.44     | 38.45       | Pass       |
|                        | Mid     | 836.5           | Horizontal   | 13.97     | 38.45       | Pass       |
|                        | High    | 846.5           | Horizontal   | 13.52     | 38.45       | Pass       |
| <b>10 MHz (QPSK)</b>   | Low     | 829             | Horizontal   | 14.32     | 38.45       | Pass       |
|                        | Mid     | 836.5           | Horizontal   | 15.09     | 38.45       | Pass       |
|                        | High    | 844             | Horizontal   | 14.60     | 38.45       | Pass       |
| <b>15 MHz (QPSK)</b>   | Low     | 831.5           | Horizontal   | 13.67     | 38.45       | Pass       |
|                        | Mid     | 836.5           | Horizontal   | 13.64     | 38.45       | Pass       |
|                        | High    | 841.5           | Horizontal   | 13.63     | 38.45       | Pass       |
| <b>1.4 MHz (16QAM)</b> | Low     | 824.7           | Horizontal   | 14.32     | 38.45       | Pass       |
|                        | Mid     | 836.5           | Horizontal   | 14.05     | 38.45       | Pass       |
|                        | High    | 848.3           | Horizontal   | 13.84     | 38.45       | Pass       |
| <b>3 MHz (16QAM)</b>   | Low     | 825.5           | Horizontal   | 13.55     | 38.45       | Pass       |
|                        | Mid     | 836.5           | Horizontal   | 13.56     | 38.45       | Pass       |
|                        | High    | 847.5           | Horizontal   | 13.55     | 38.45       | Pass       |
| <b>5 MHz (16QAM)</b>   | Low     | 826.5           | Horizontal   | 13.57     | 38.45       | Pass       |
|                        | Mid     | 836.5           | Horizontal   | 14.01     | 38.45       | Pass       |
|                        | High    | 846.5           | Horizontal   | 13.41     | 38.45       | Pass       |
| <b>10 MHz (16QAM)</b>  | Low     | 829             | Horizontal   | 13.15     | 38.45       | Pass       |
|                        | Mid     | 836.5           | Horizontal   | 13.67     | 38.45       | Pass       |
|                        | High    | 844             | Horizontal   | 13.21     | 38.45       | Pass       |
| <b>15 MHz (16QAM)</b>  | Low     | 831.5           | Horizontal   | 14.00     | 38.45       | Pass       |
|                        | Mid     | 836.5           | Horizontal   | 14.89     | 38.45       | Pass       |
|                        | High    | 841.5           | Horizontal   | 14.39     | 38.45       | Pass       |

### 5.3. Occupied Bandwidth

#### Ambient condition

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

#### Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.

RBW is set to 3 kHz, VBW is set to 10 kHz for GSM 850,

RBW is set to 51 kHz, VBW is set to 160 kHz for WCDMA Band V,

RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 5/26 (1.4MHz),

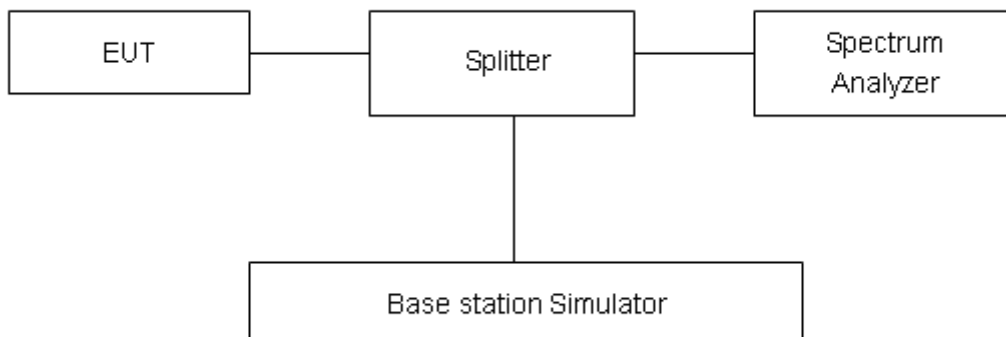
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 5/26 (3MHz/5MHz),

RBW is set to 300 kHz, VBW is set to 1 MHz for LTE Band 5/26 (10MHz),

RBW is set to 300 kHz, VBW is set to 1 MHz for LTE Band 26 (15MHz).

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

#### Test Setup



#### Limits

No specific occupied bandwidth requirements in part 2.1049.

#### Measurement Uncertainty

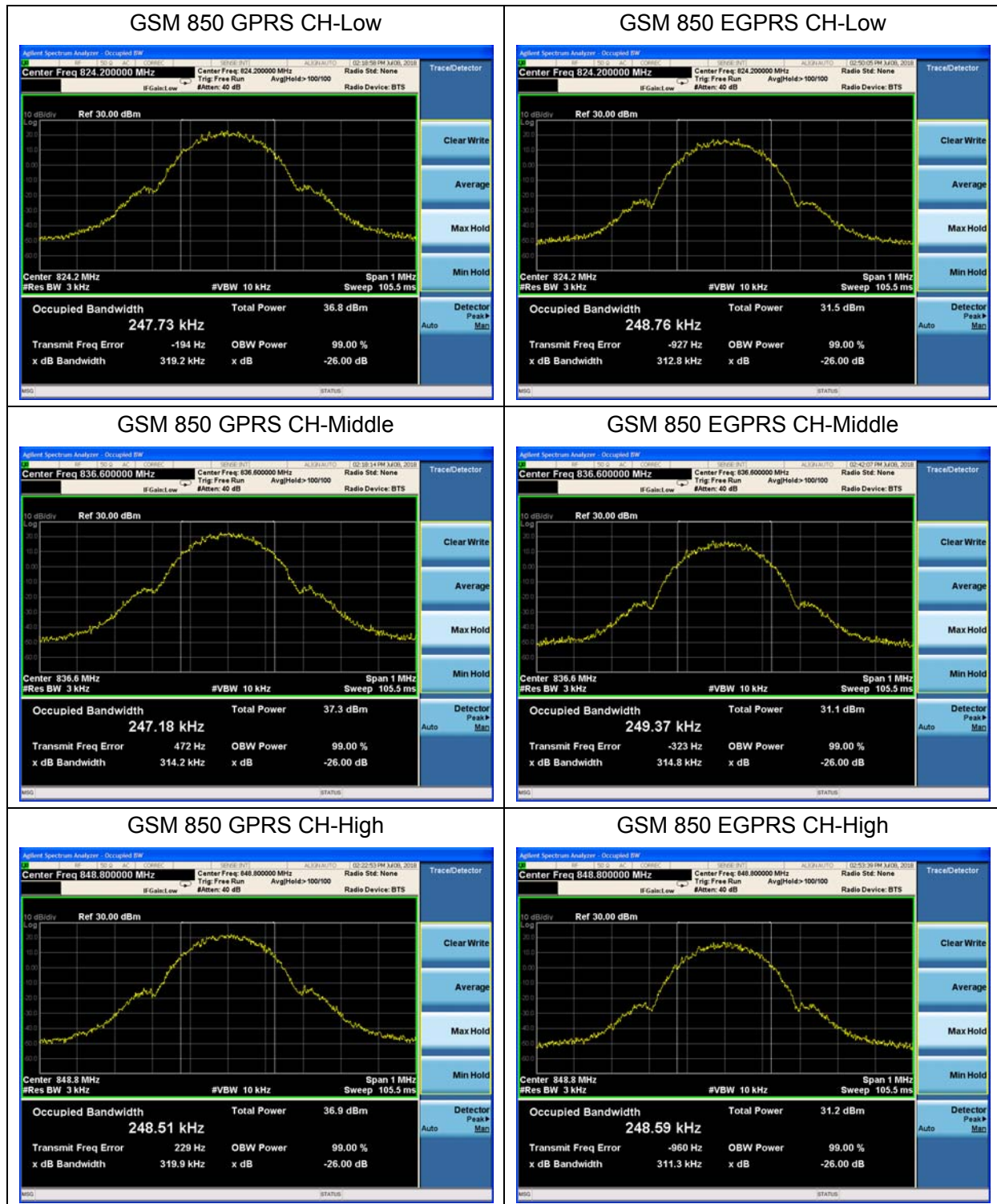
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 624\text{Hz}$ .

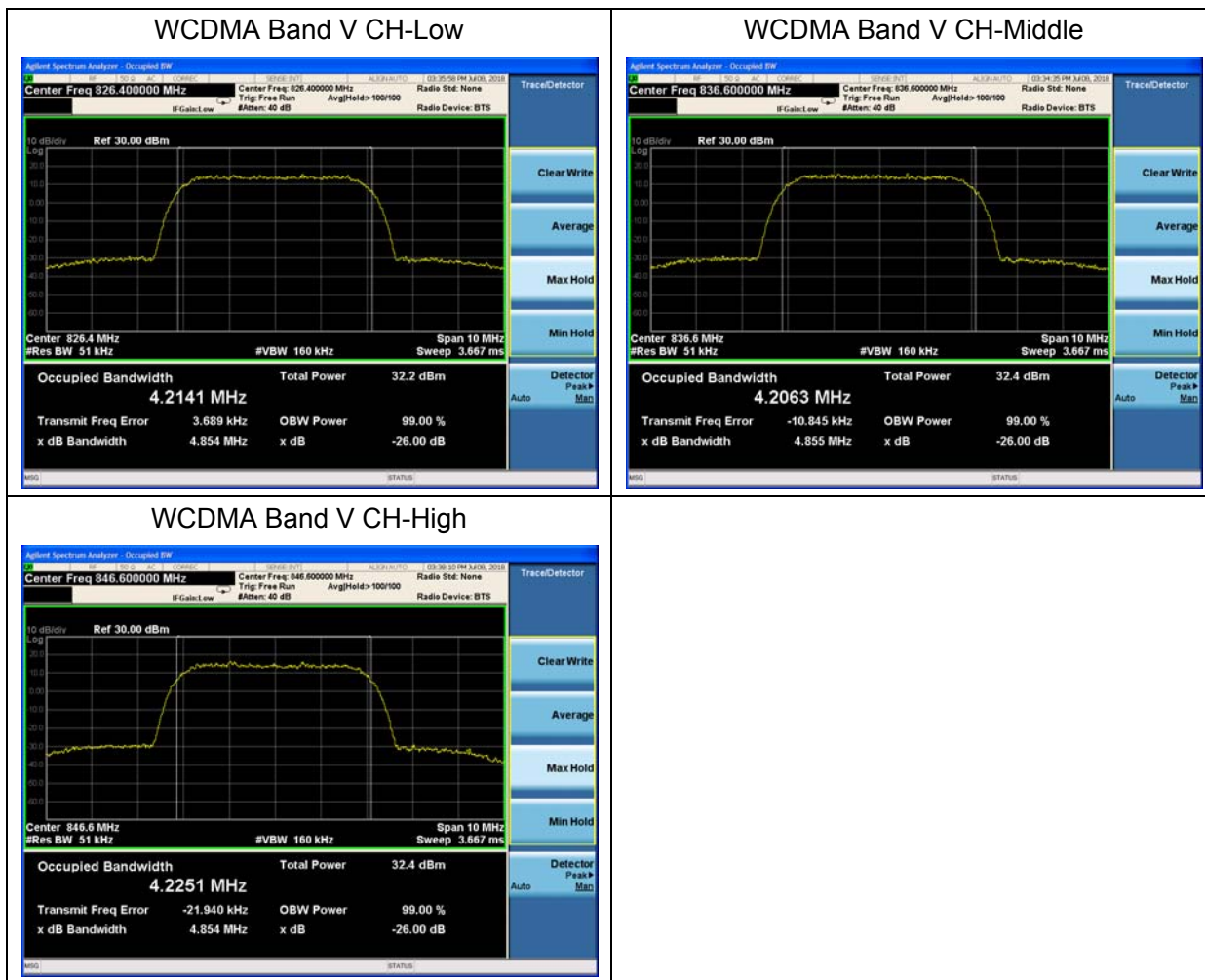
## Test Result

| Mode               | Channel | Frequency (MHz) | 99% Power Bandwidth (MHz) | -26dBc Bandwidth(MHz) |
|--------------------|---------|-----------------|---------------------------|-----------------------|
| GPRS 850 (GMSK)    | 128     | 824.2           | 0.24773                   | 0.3192                |
|                    | 190     | 836.6           | 0.24718                   | 0.3142                |
|                    | 251     | 848.8           | 0.24851                   | 0.3199                |
| EGPRS 850 (8-PSK)  | 128     | 824.2           | 0.24876                   | 0.3128                |
|                    | 190     | 836.6           | 0.24937                   | 0.3148                |
|                    | 251     | 848.8           | 0.24859                   | 0.3113                |
| WCDMA Band V (RMC) | 4132    | 826.4           | 4.2141                    | 4.854                 |
|                    | 4183    | 836.6           | 4.2063                    | 4.855                 |
|                    | 4233    | 846.6           | 4.2251                    | 4.854                 |

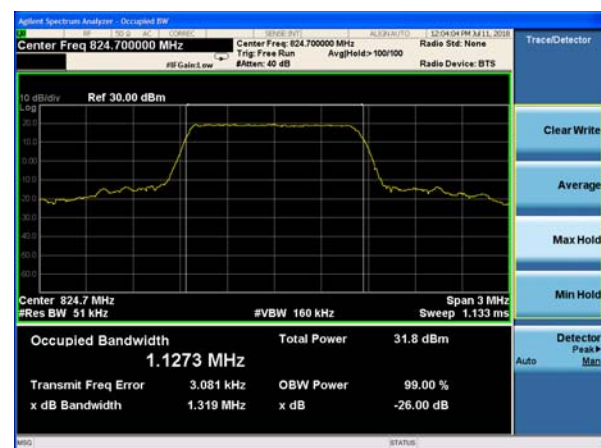
| LTE Band 5 |            |                 |         |                 |                          |                       |
|------------|------------|-----------------|---------|-----------------|--------------------------|-----------------------|
| RB         | Modulation | Bandwidth (MHz) | Channel | Frequency (MHz) | 99% Power Bandwidth(MHz) | -26dBc Bandwidth(MHz) |
| 100%       | QPSK       | 1.4             | 20407   | 824.7           | 1.1273                   | 1.319                 |
|            |            |                 | 20525   | 836.5           | 1.1221                   | 1.312                 |
|            |            |                 | 20643   | 848.3           | 1.1350                   | 1.315                 |
|            |            | 3               | 20415   | 825.5           | 2.7431                   | 3.034                 |
|            |            |                 | 20525   | 836.5           | 2.7376                   | 3.052                 |
|            |            |                 | 20635   | 847.5           | 2.7372                   | 3.039                 |
|            |            | 5               | 20425   | 826.5           | 4.5298                   | 5.099                 |
|            |            |                 | 20525   | 836.5           | 4.5438                   | 5.090                 |
|            |            |                 | 20625   | 846.5           | 4.5236                   | 5.067                 |
|            |            | 10              | 20450   | 829             | 9.0426                   | 10.080                |
|            |            |                 | 20525   | 836.5           | 9.0789                   | 10.180                |
|            |            |                 | 20600   | 844             | 9.0814                   | 10.190                |
|            | 16QAM      | 1.4             | 20407   | 824.7           | 1.1171                   | 1.298                 |
|            |            |                 | 20525   | 836.5           | 1.1248                   | 1.312                 |
|            |            |                 | 20643   | 848.3           | 1.1227                   | 1.308                 |
|            |            | 3               | 20415   | 825.5           | 2.7336                   | 3.041                 |
|            |            |                 | 20525   | 836.5           | 2.7507                   | 3.059                 |
|            |            |                 | 20635   | 847.5           | 2.7325                   | 3.053                 |
|            |            | 5               | 20425   | 826.5           | 4.5496                   | 5.091                 |
|            |            |                 | 20525   | 836.5           | 4.5241                   | 5.068                 |
|            |            |                 | 20625   | 846.5           | 4.5543                   | 5.097                 |
|            |            | 10              | 20450   | 829             | 9.0591                   | 10.140                |
|            |            |                 | 20525   | 836.5           | 9.0724                   | 10.050                |
|            |            |                 | 20600   | 844             | 9.0609                   | 10.110                |

| LTE Band 26 |            |                 |         |                 |                          |                       |
|-------------|------------|-----------------|---------|-----------------|--------------------------|-----------------------|
| RB          | Modulation | Bandwidth (MHz) | Channel | Frequency (MHz) | 99% Power Bandwidth(MHz) | -26dBc Bandwidth(MHz) |
| 100%        | QPSK       | 1.4             | 26797   | 824.7           | 1.1265                   | 1.316                 |
|             |            |                 | 26915   | 836.5           | 1.1210                   | 1.312                 |
|             |            |                 | 27033   | 848.3           | 1.1346                   | 1.314                 |
|             |            | 3               | 26805   | 825.5           | 2.7444                   | 3.038                 |
|             |            |                 | 26915   | 836.5           | 2.7398                   | 3.055                 |
|             |            |                 | 27025   | 847.5           | 2.7390                   | 3.049                 |
|             |            | 5               | 26815   | 826.5           | 4.5272                   | 5.096                 |
|             |            |                 | 26915   | 836.5           | 4.5410                   | 5.081                 |
|             |            |                 | 27015   | 846.5           | 4.5259                   | 5.092                 |
|             |            | 10              | 26840   | 829             | 9.0247                   | 10.100                |
|             |            |                 | 26915   | 836.5           | 9.0556                   | 10.170                |
|             |            |                 | 26990   | 844             | 9.0639                   | 10.160                |
|             |            | 15              | 26865   | 831.5           | 13.4620                  | 14.850                |
|             |            |                 | 26915   | 836.5           | 13.5080                  | 14.920                |
|             |            |                 | 26965   | 841.5           | 13.4930                  | 14.950                |
|             | 16QAM      | 1.4             | 26797   | 824.7           | 1.1196                   | 1.298                 |
|             |            |                 | 26915   | 836.5           | 1.1264                   | 1.310                 |
|             |            |                 | 27033   | 848.3           | 1.1234                   | 1.312                 |
|             |            | 3               | 26805   | 825.5           | 2.7344                   | 3.043                 |
|             |            |                 | 26915   | 836.5           | 2.7535                   | 3.061                 |
|             |            |                 | 27025   | 847.5           | 2.7341                   | 3.054                 |
|             |            | 5               | 26815   | 826.5           | 4.5476                   | 5.073                 |
|             |            |                 | 26915   | 836.5           | 4.5262                   | 5.073                 |
|             |            |                 | 27015   | 846.5           | 4.5598                   | 5.107                 |
|             |            | 10              | 26840   | 829             | 9.0412                   | 10.120                |
|             |            |                 | 26915   | 836.5           | 9.0664                   | 10.080                |
|             |            |                 | 26990   | 844             | 9.0475                   | 10.110                |
|             |            | 15              | 26865   | 831.5           | 13.5030                  | 14.820                |
|             |            |                 | 26915   | 836.5           | 13.5060                  | 14.780                |
|             |            |                 | 26965   | 841.5           | 13.4970                  | 14.820                |

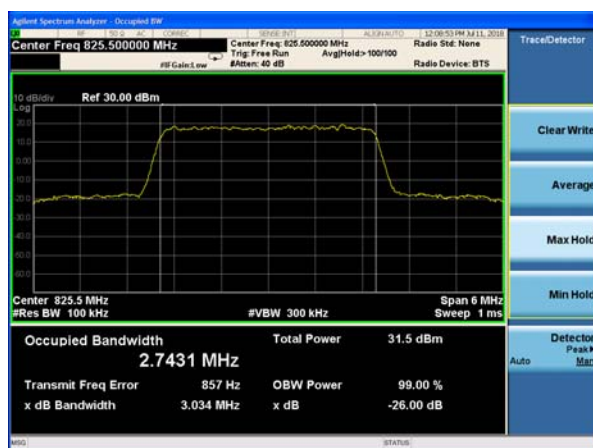




### LTE Band 5 QPSK 1.4MHz CH-Low



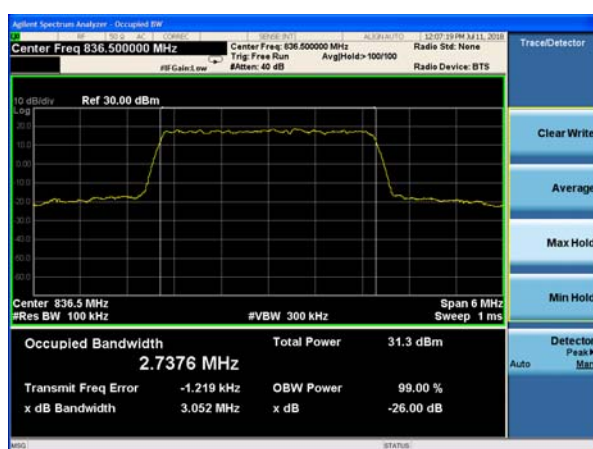
### LTE Band 5 QPSK 3MHz CH-Low



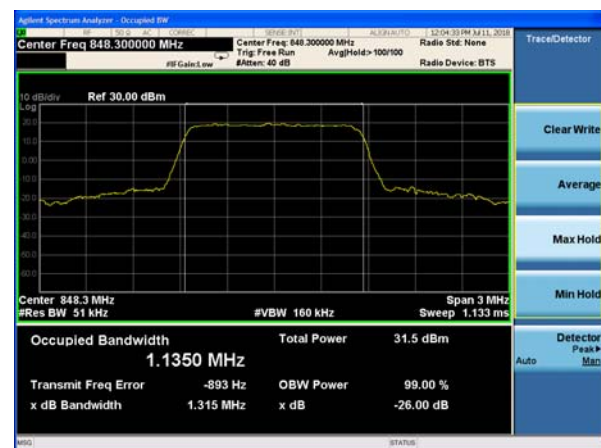
### LTE Band 5 QPSK 1.4MHz CH-Middle



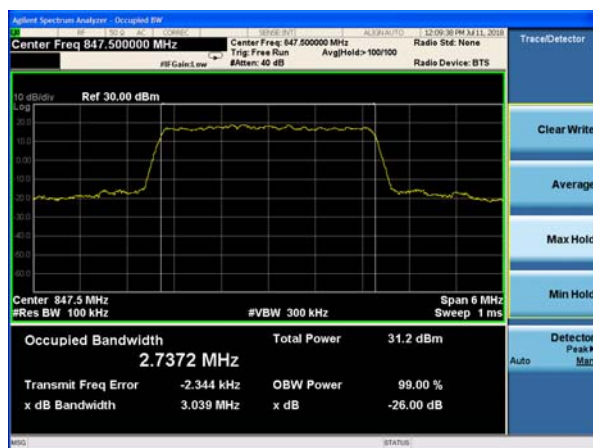
### LTE Band 5 QPSK 3MHz CH-Middle



### LTE Band 5 QPSK 1.4MHz CH-High



### LTE Band 5 QPSK 3MHz CH-High



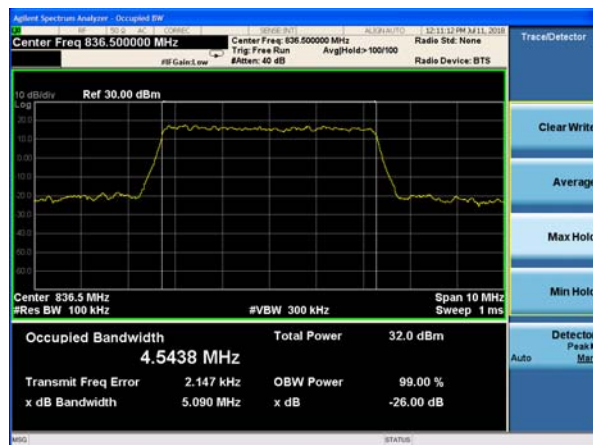
### LTE Band 5 QPSK 5MHz CH-Low



### LTE Band 5 QPSK 10MHz CH-Low



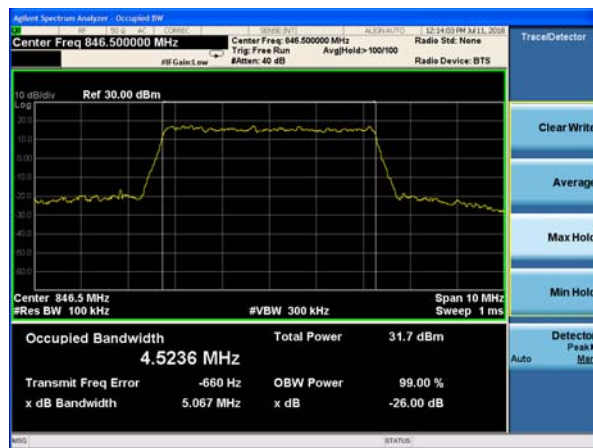
### LTE Band 5 QPSK 5MHz CH-Middle



### LTE Band 5 QPSK 10MHz CH-Middle

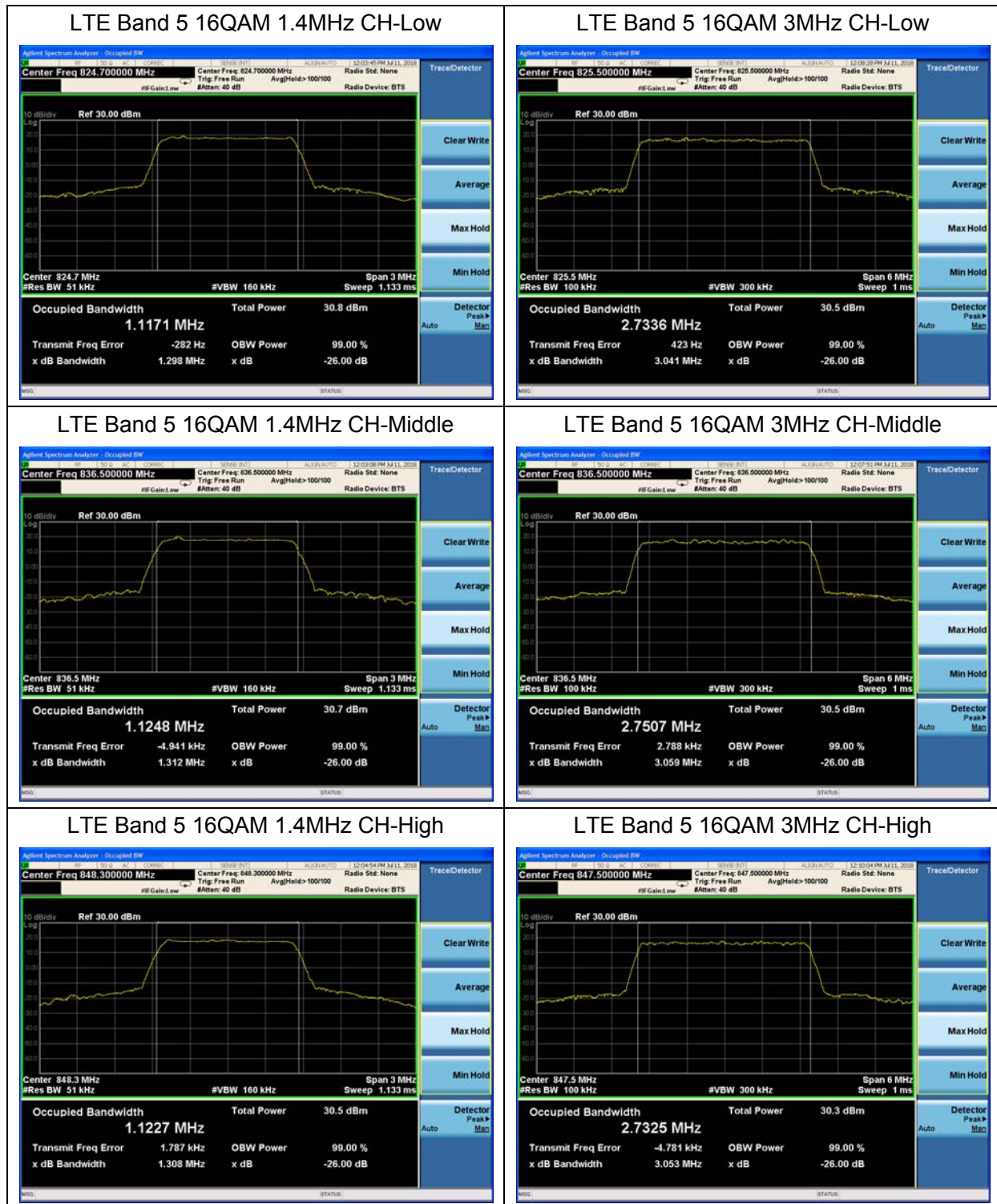


### LTE Band 5 QPSK 5MHz CH-High

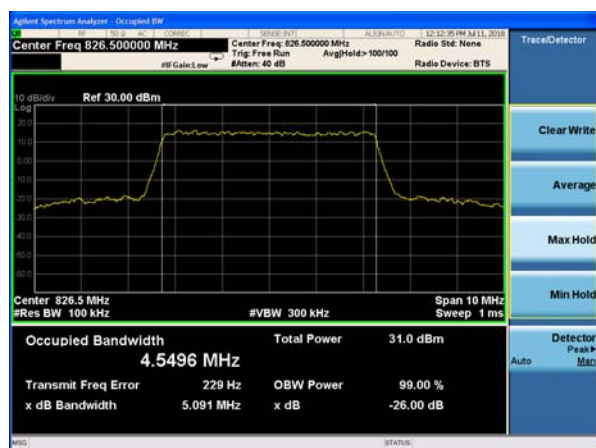


### LTE Band 5 QPSK 10MHz CH-High

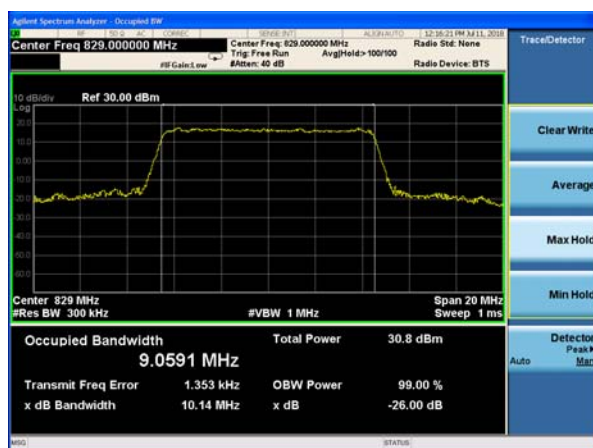




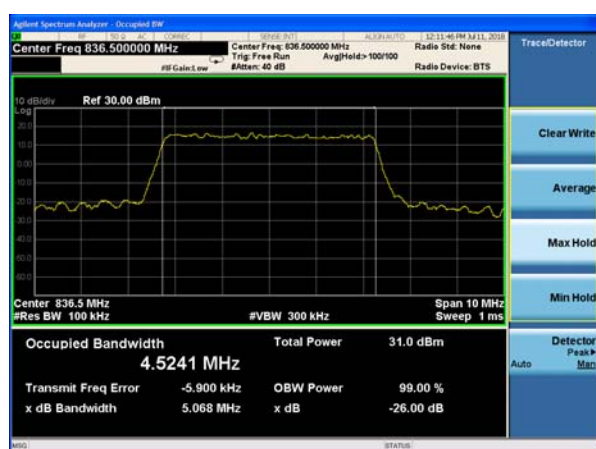
### LTE Band 5 16QAM 5MHz CH-Low



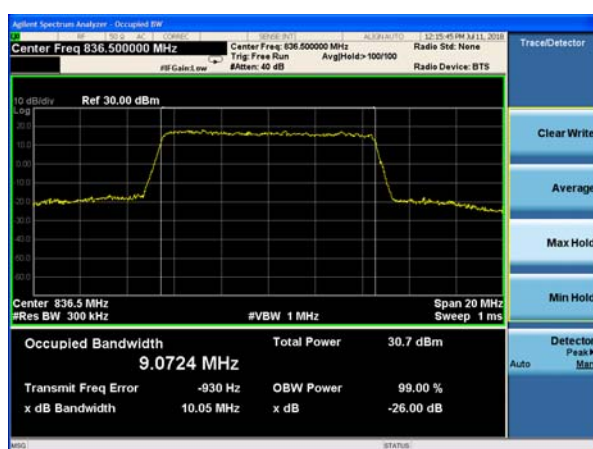
### LTE Band 5 16QAM 10MHz CH-Low



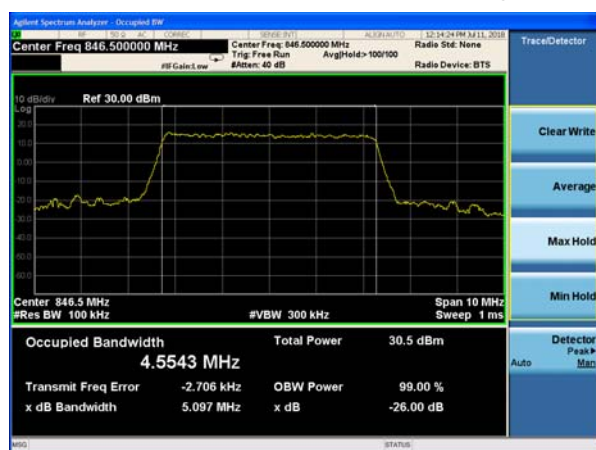
### LTE Band 5 16QAM 5MHz CH-Middle



### LTE Band 5 16QAM 10MHz CH-Middle



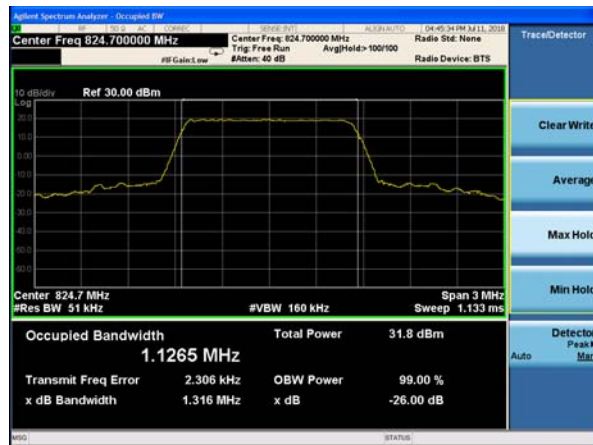
### LTE Band 5 16QAM 5MHz CH-High



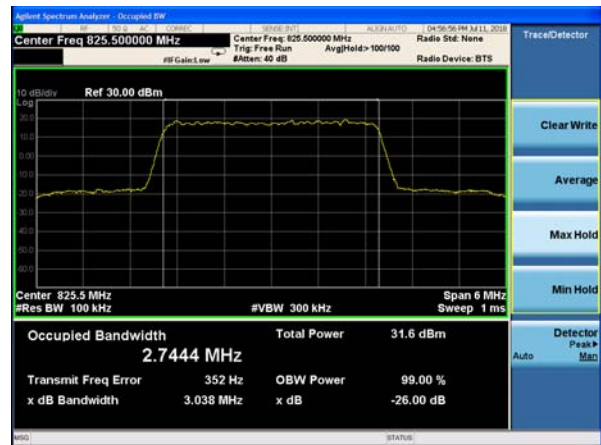
### LTE Band 5 16QAM 10MHz CH-High



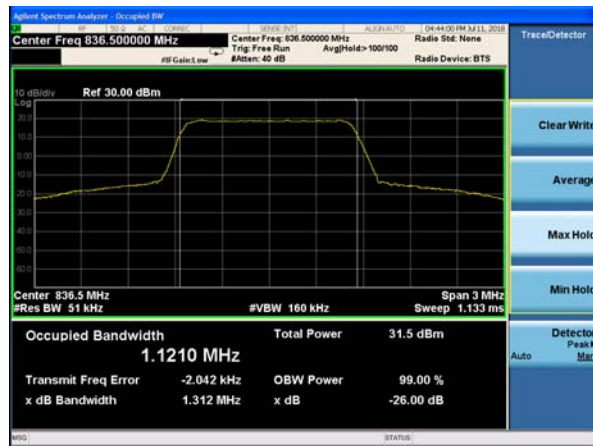
### LTE Band 26 QPSK 1.4MHz CH-Low



### LTE Band 26 QPSK 3MHz CH-Low



### LTE Band 26 QPSK 1.4MHz CH-Middle



### LTE Band 26 QPSK 3MHz CH-Middle

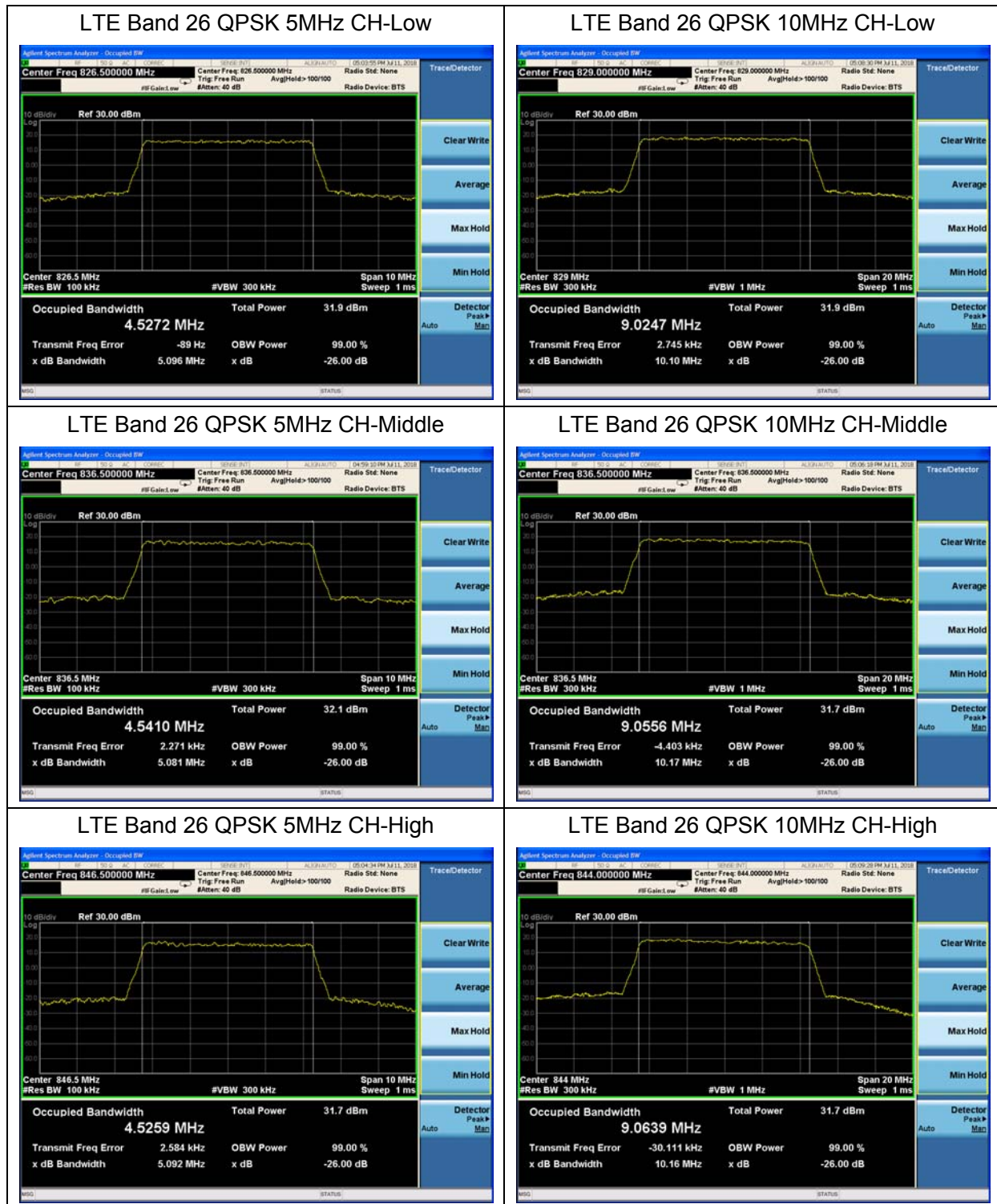


### LTE Band 26 QPSK 1.4MHz CH-High

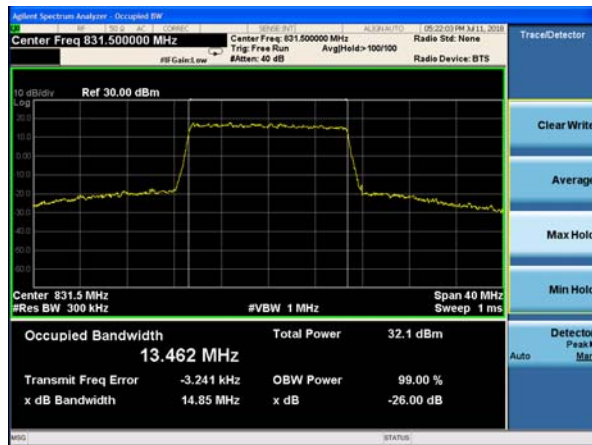


### LTE Band 26 QPSK 3MHz CH-High

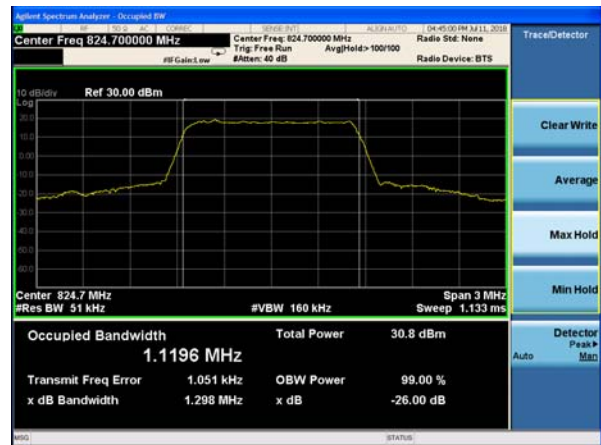




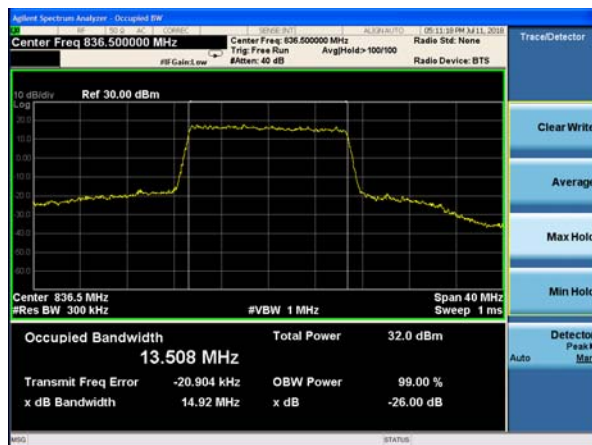
### LTE Band 26 QPSK 15MHz CH-Low



### LTE Band 26 16QAM 1.4MHz CH-Low



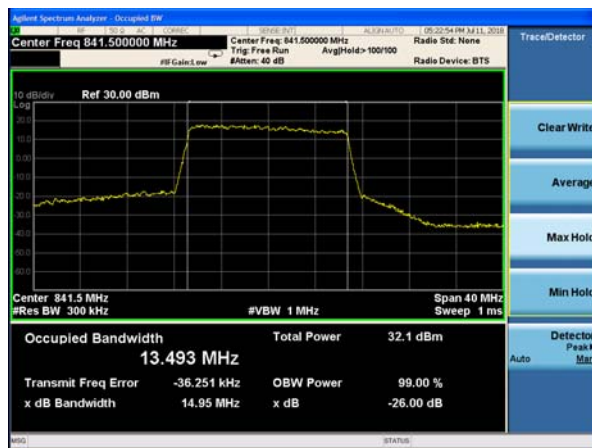
### LTE Band 26 QPSK 15MHz CH-Middle



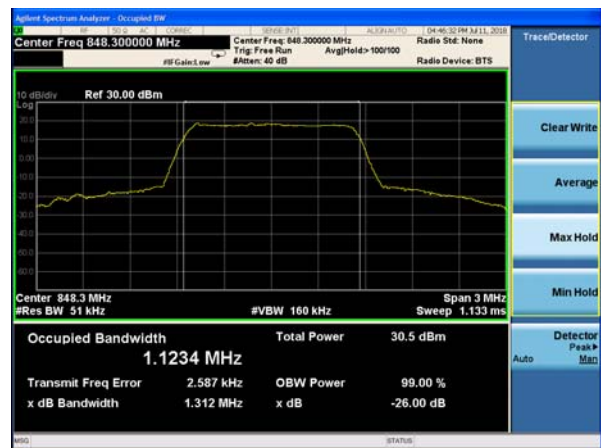
### LTE Band 26 16QAM 1.4MHz CH-Middle



### LTE Band 26 QPSK 15MHz CH-High



### LTE Band 26 16QAM 1.4MHz CH-High



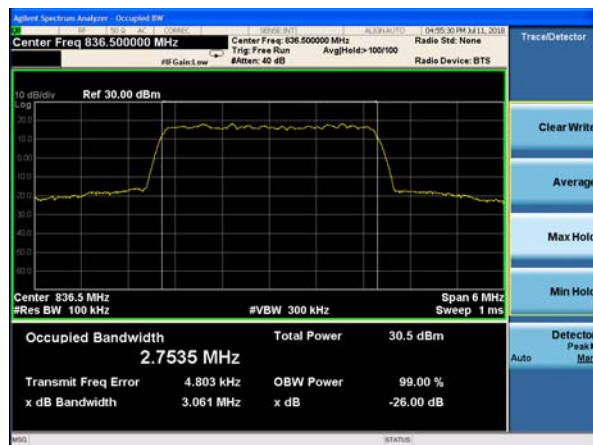
### LTE Band 26 16QAM 3MHz CH-Low



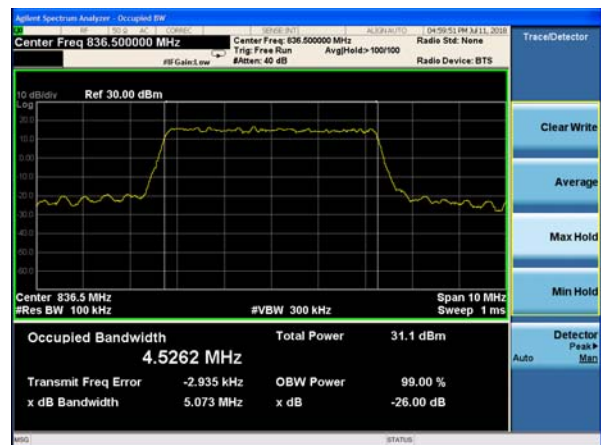
### LTE Band 26 16QAM 5MHz CH-Low



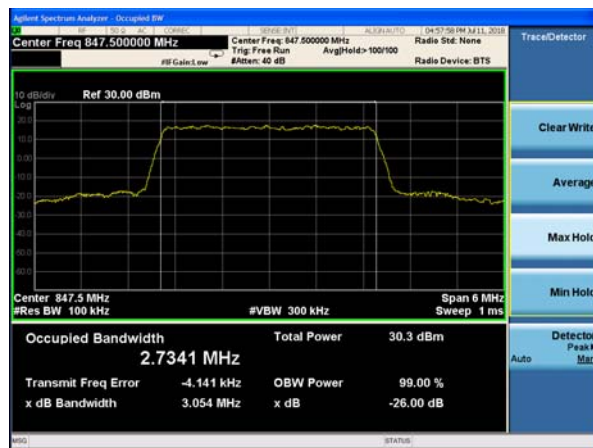
### LTE Band 26 16QAM 3MHz CH-Middle



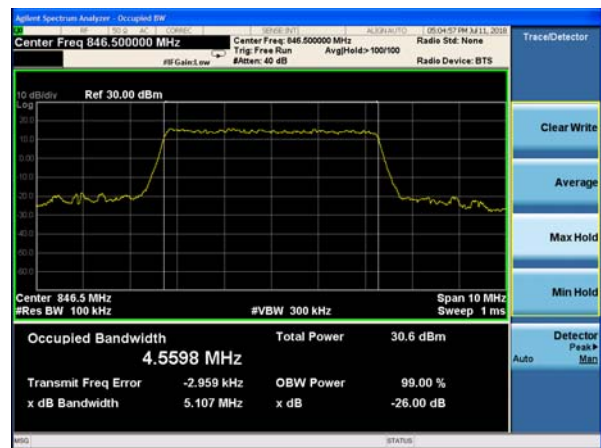
### LTE Band 26 16QAM 5MHz CH-Middle



### LTE Band 26 16QAM 3MHz CH-High



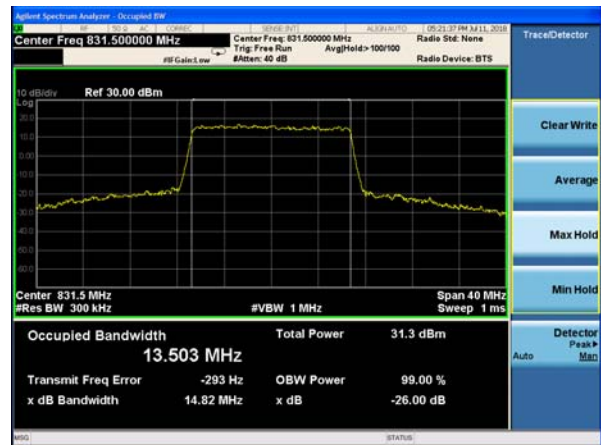
### LTE Band 26 16QAM 5MHz CH-High



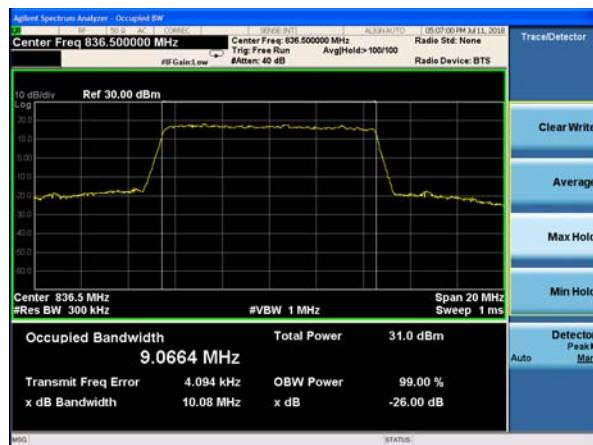
### LTE Band 26 16QAM 10MHz CH-Low



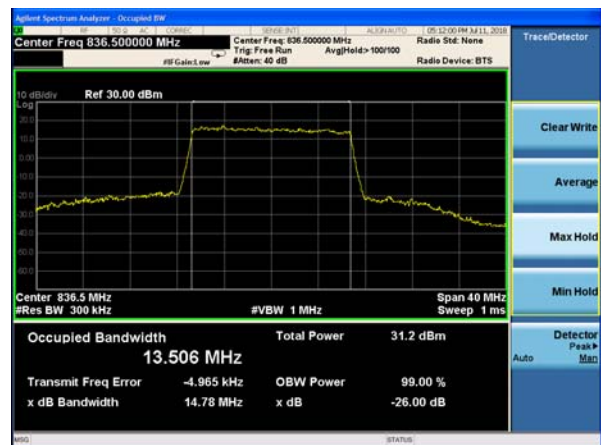
### LTE Band 26 16QAM 15MHz CH-Low



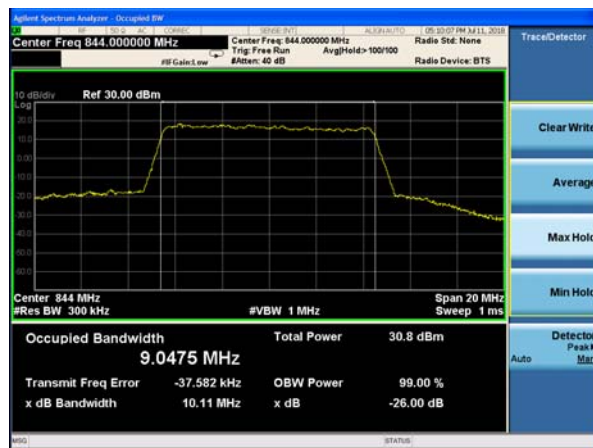
### LTE Band 26 16QAM 10MHz CH-Middle



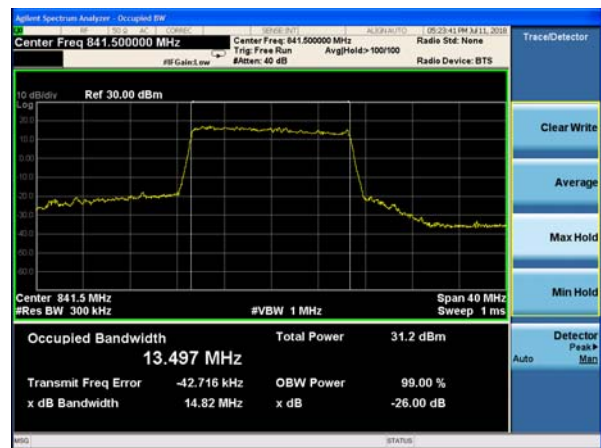
### LTE Band 26 16QAM 15MHz CH-Middle



### LTE Band 26 16QAM 10MHz CH-High



### LTE Band 26 16QAM 15MHz CH-High



## 5.4. Band Edge Compliance

### Ambient condition

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

### Method of Measurement

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

RBW is set to 3kHz,VBW is set to 10kHz for GSM 850,

RBW is set to 51kHz,VBW is set to 160kHz for WCDMA Band V,

RBW is set to 15 kHz, VBW is set to 51 kHz for LTE Band 5/26 (1.4MHz),

RBW is set to 30 kHz, VBW is set to 100 kHz for LTE Band 5/26 (3MHz),

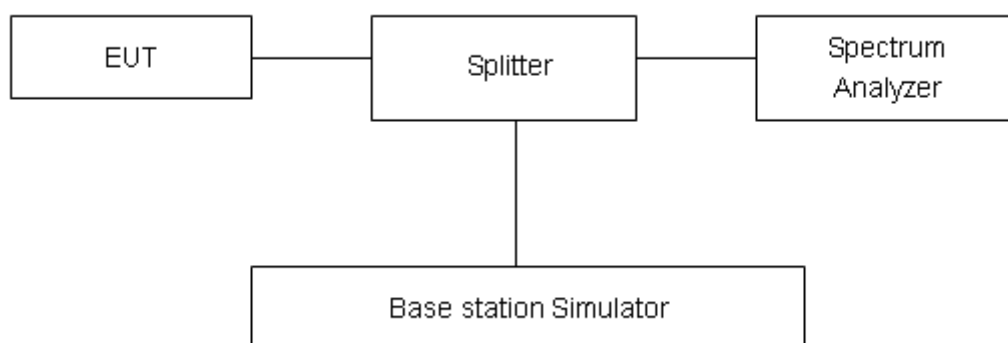
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 5/26 (5MHz),

RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 5/26 (10MHz),

RBW is set to 150 kHz, VBW is set to 510kHz for LTE Band 26 (15MHz).

Spectrum analyzer plots are included on the following pages.

### Test Setup



### Limits

Rule Part 22.917(a) specifies that “The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.”

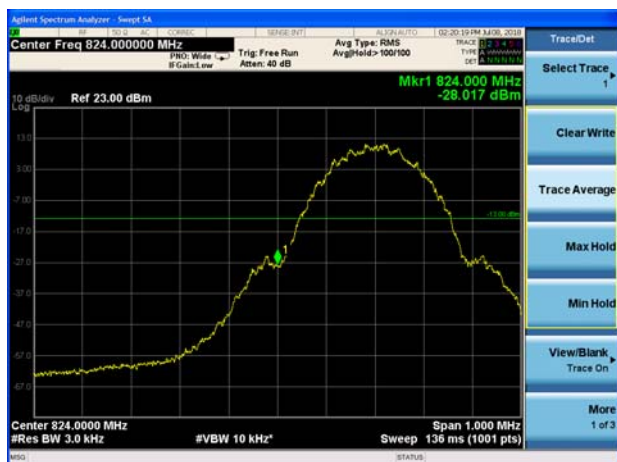
| Limit | -13 dBm |
|-------|---------|
|-------|---------|

### Measurement Uncertainty

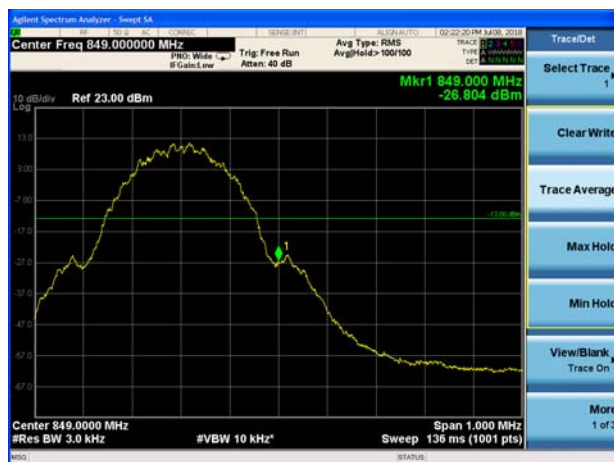
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ ,  $U=0.684$ dB.

Test Result:

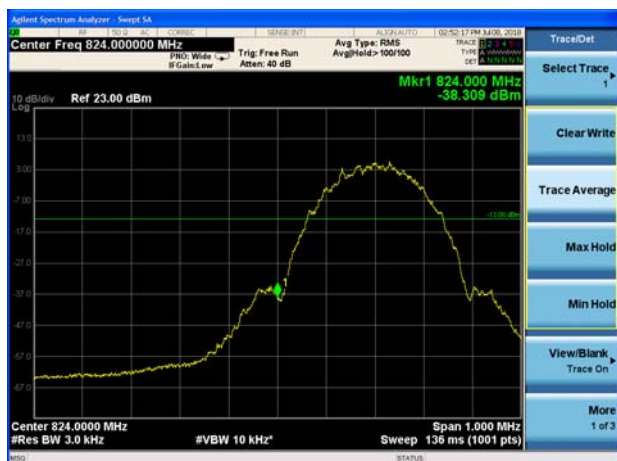
GSM 850 GPRS CH-Low



GSM 850 GPRS CH-High



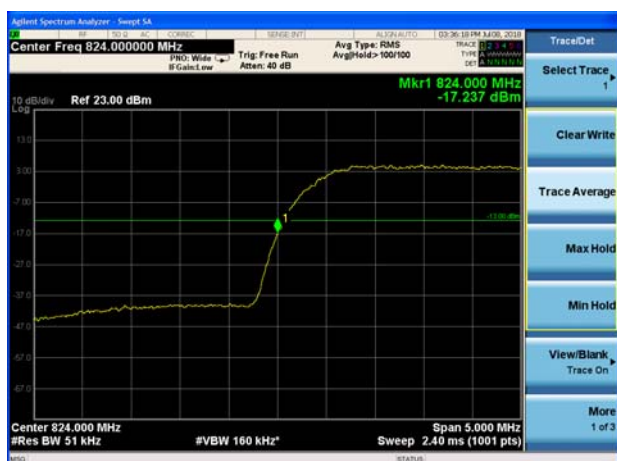
GSM 850 EGPRS CH-Low



GSM 850 EGPRS CH-High



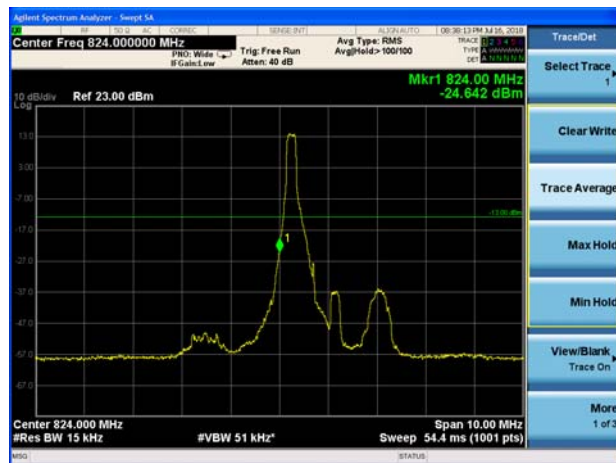
WCDMA Band V CH-Low



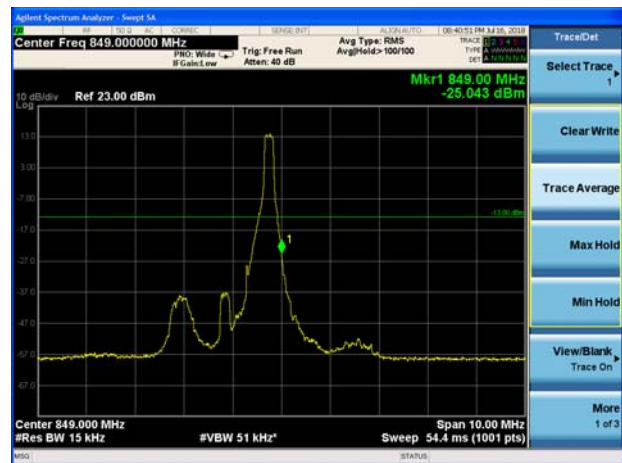
WCDMA Band V CH-High



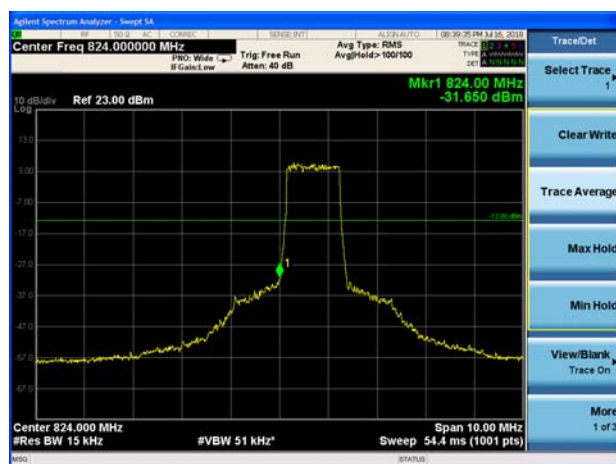
LTE Band 5 QPSK 1.4MHz CH-Low 1RB



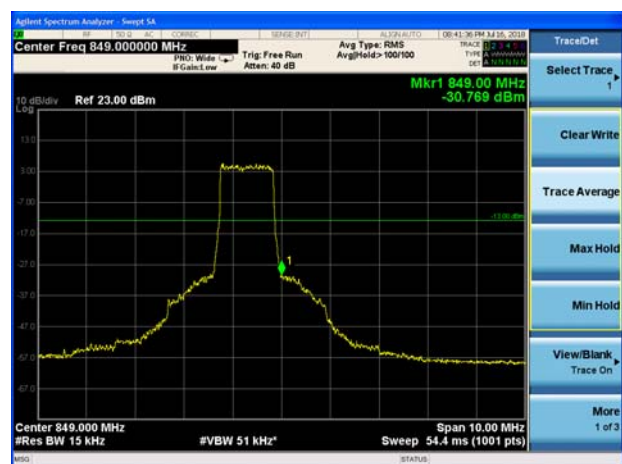
LTE Band 5 QPSK 1.4MHz CH-High 1RB



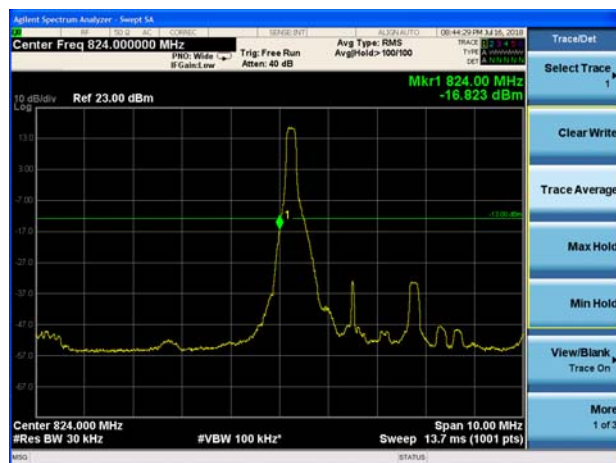
LTE Band 5 QPSK 1.4MHz CH-Low 100%RB



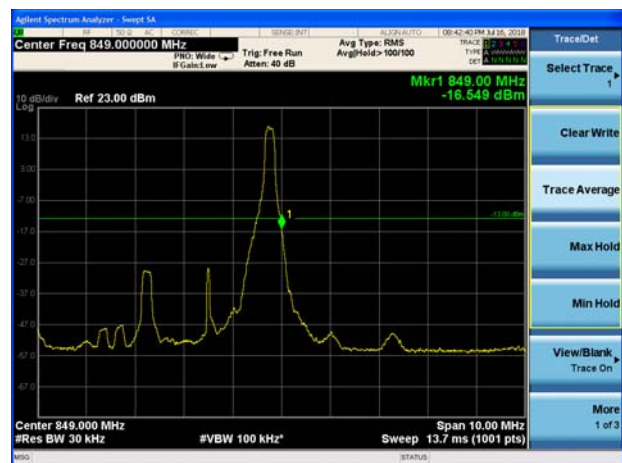
LTE Band 5 QPSK 1.4MHz CH-High 100%RB



LTE Band 5 QPSK 3MHz CH-Low 1RB



LTE Band 5 QPSK 3MHz CH-High 1RB



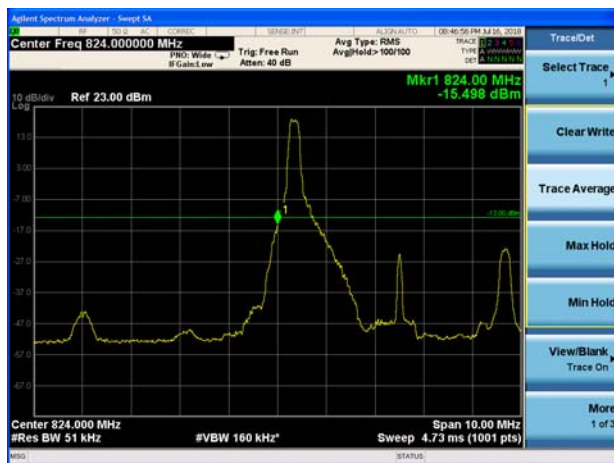
LTE Band 5 QPSK 3MHz CH-Low 100%RB



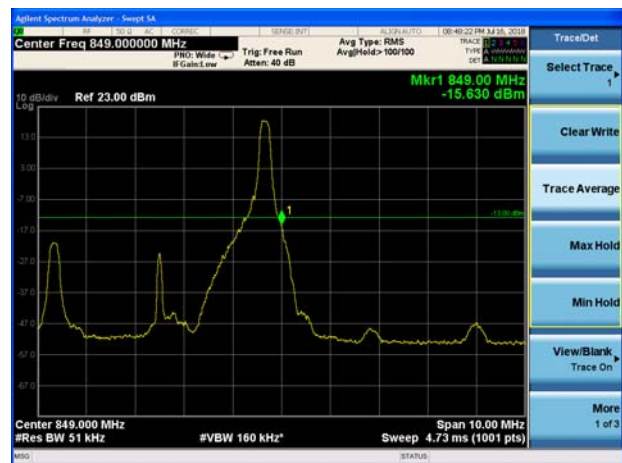
LTE Band 5 QPSK 3MHz CH-High 100%RB



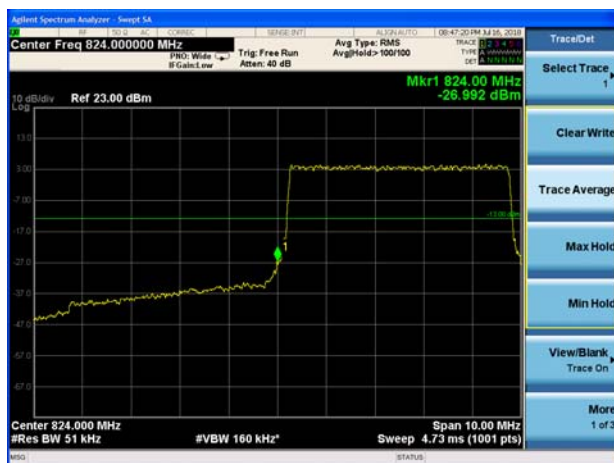
LTE Band 5 QPSK 5MHz CH-Low 1RB



LTE Band 5 QPSK 5MHz CH-High 1RB



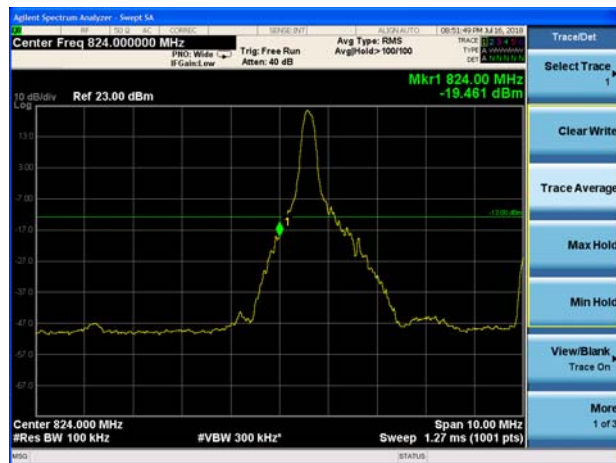
LTE Band 5 QPSK 5MHz CH-Low 100%RB



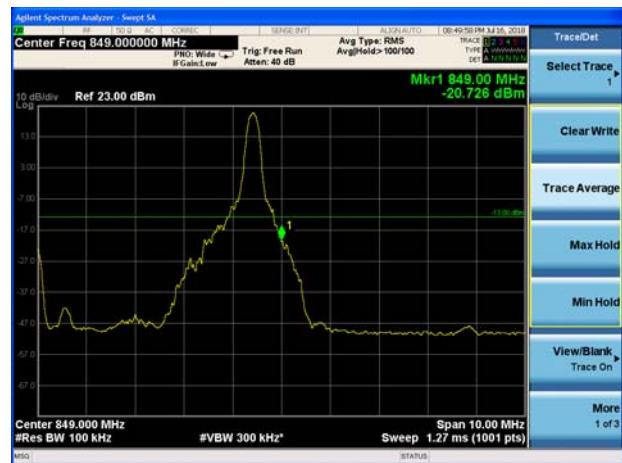
LTE Band 5 QPSK 5MHz CH-High 100%RB



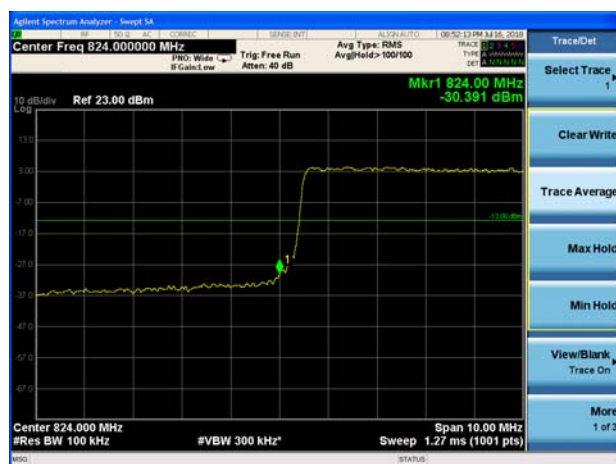
LTE Band 5 QPSK 10MHz CH-Low 1RB



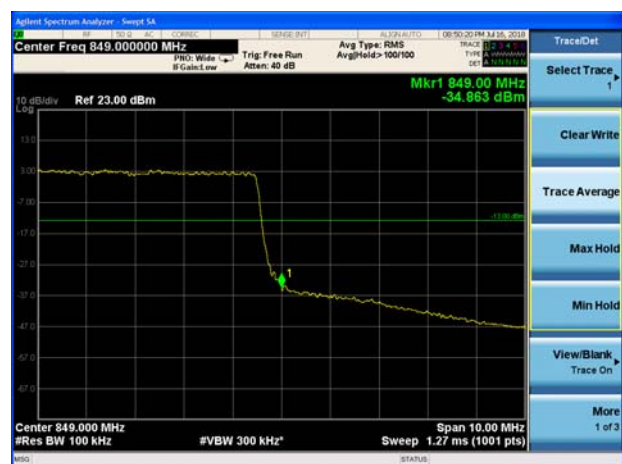
LTE Band 5 QPSK 10MHz CH-High 1RB



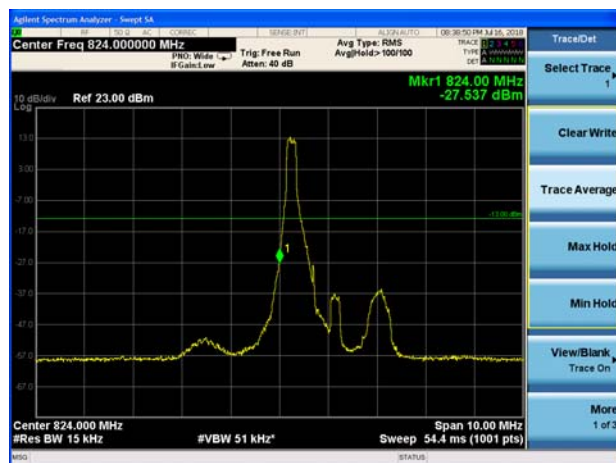
LTE Band 5 QPSK 10MHz CH-Low 100%RB



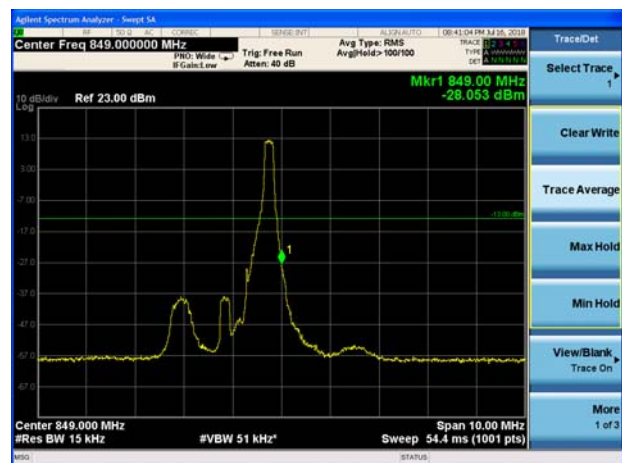
LTE Band 5 QPSK 10MHz CH-High 100%RB



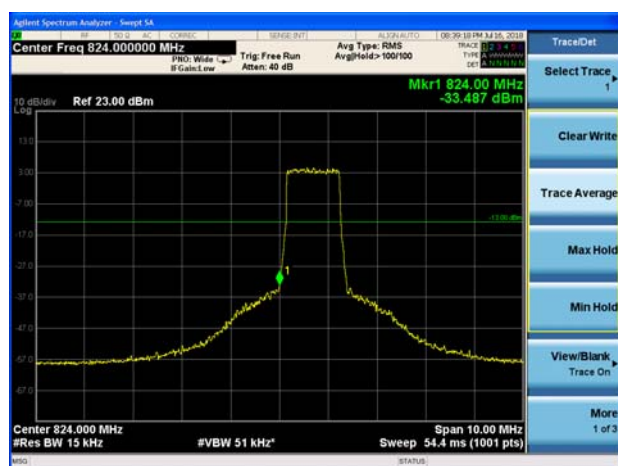
LTE Band 5 16QAM 1.4MHz CH-Low 1RB



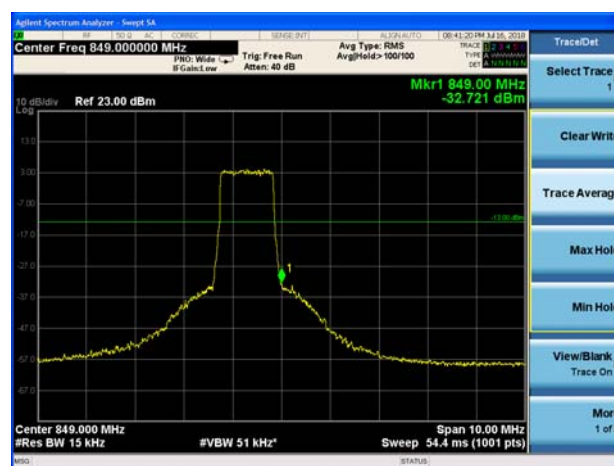
LTE Band 5 16QAM 1.4MHz CH-High 1RB



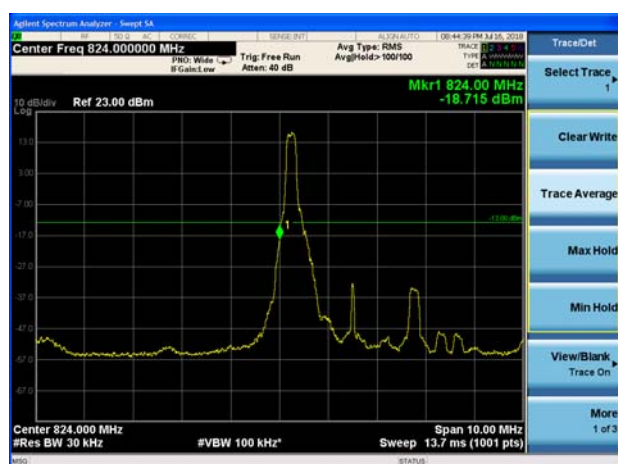
LTE Band 5 16QAM 1.4MHz CH-Low 100%RB



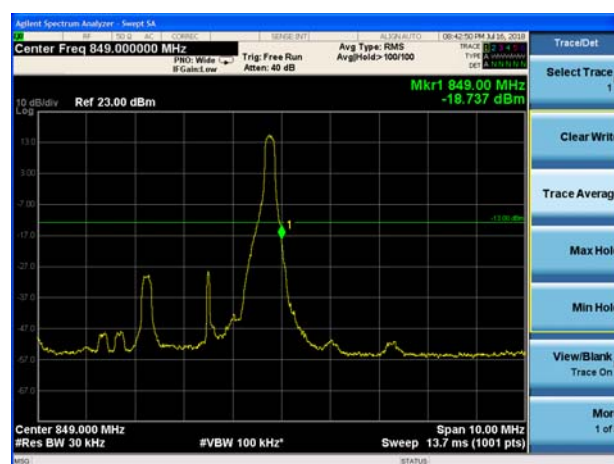
LTE Band 5 16QAM 1.4MHz CH-High 100%RB



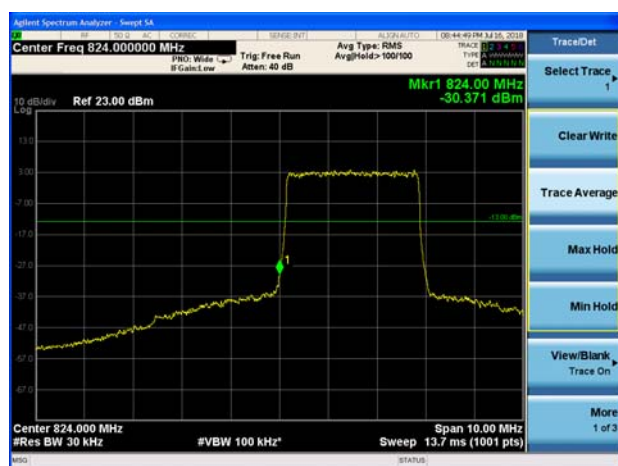
LTE Band 5 16QAM 3MHz CH-Low 1RB



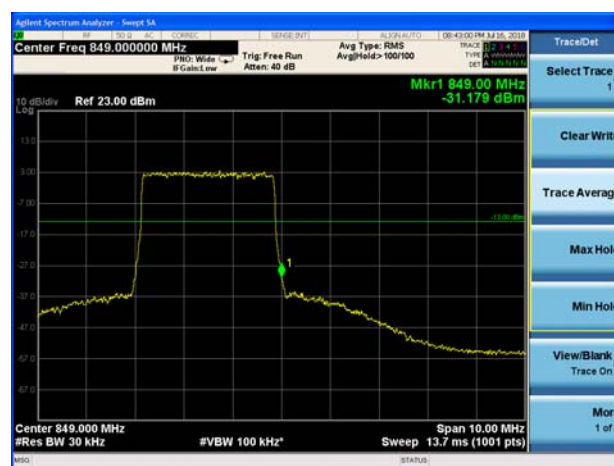
LTE Band 5 16QAM 3MHz CH-High 1RB



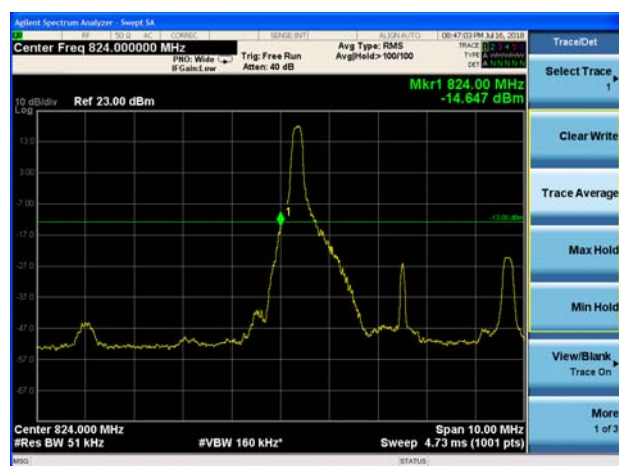
LTE Band 5 16QAM 3MHz CH-Low 100%RB



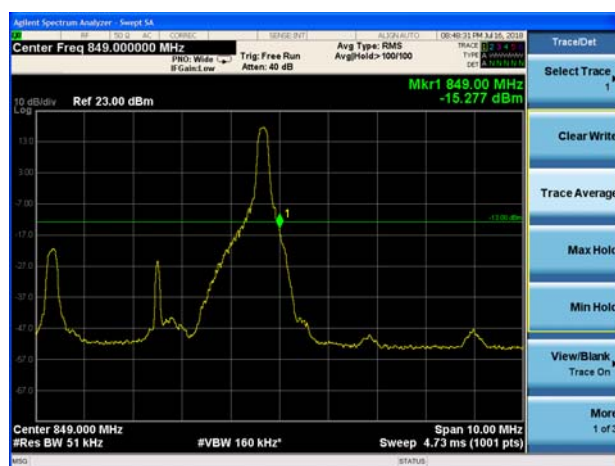
LTE Band 5 16QAM 3MHz CH-High 100%RB



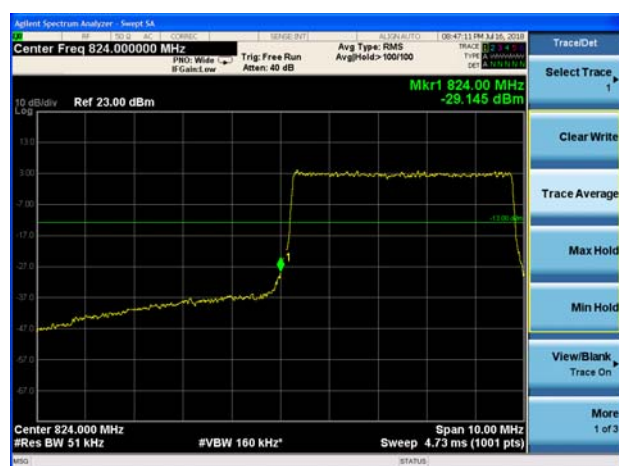
LTE Band 5 16QAM 5MHz CH-Low 1RB



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



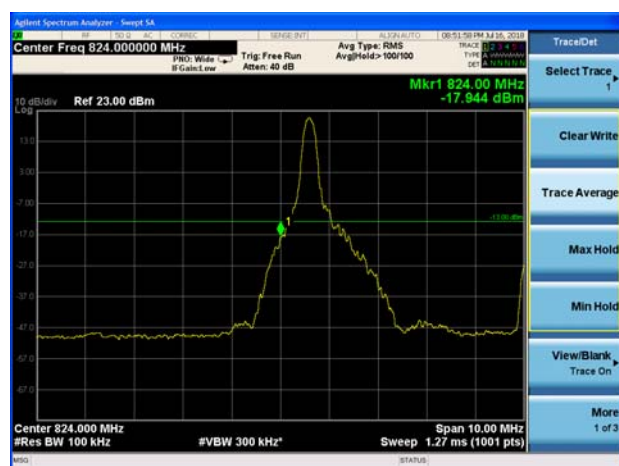
LTE Band 5 16QAM 5MHz CH-Low 100%RB



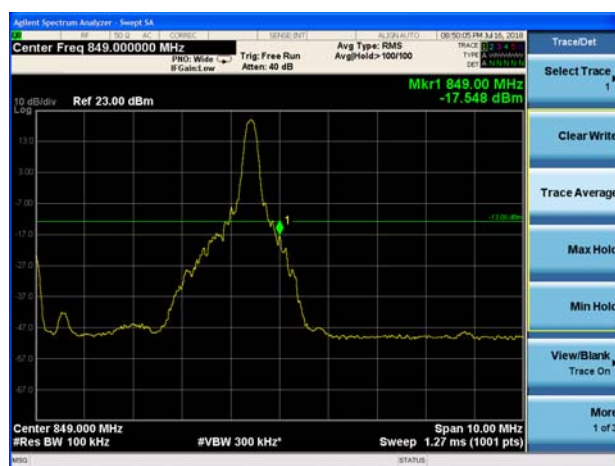
LTE Band 5 16QAM 5MHz CH-High 100%RB



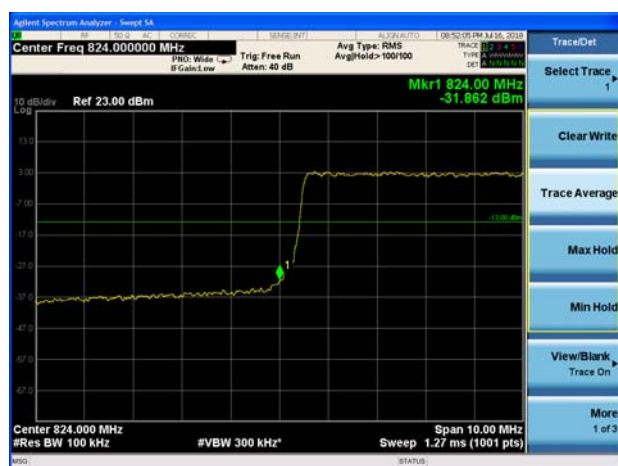
LTE Band 5 16QAM 10MHz CH-Low 1RB



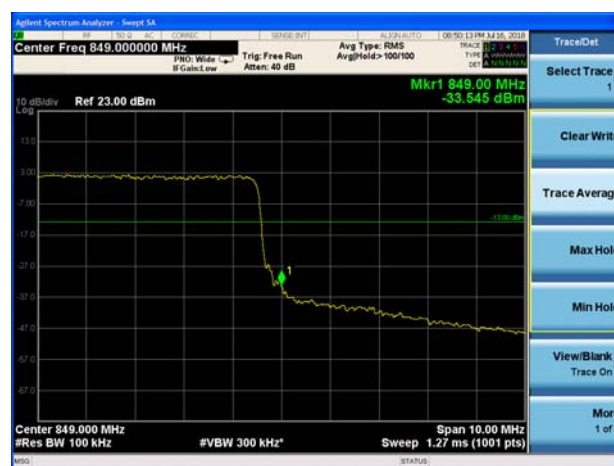
LTE Band 5 16QAM 10MHz CH-High 1RB



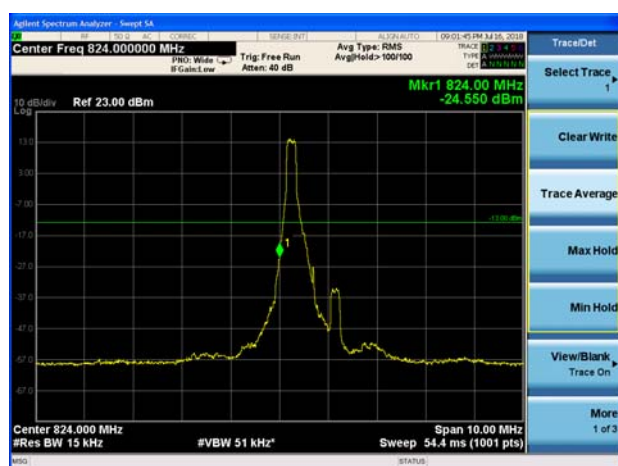
LTE Band 5 16QAM 10MHz CH-Low 100%RB



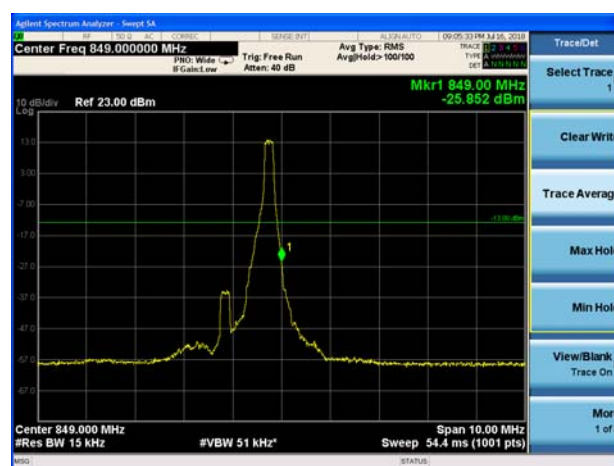
LTE Band 5 16QAM 10MHz CH-High 100%RB



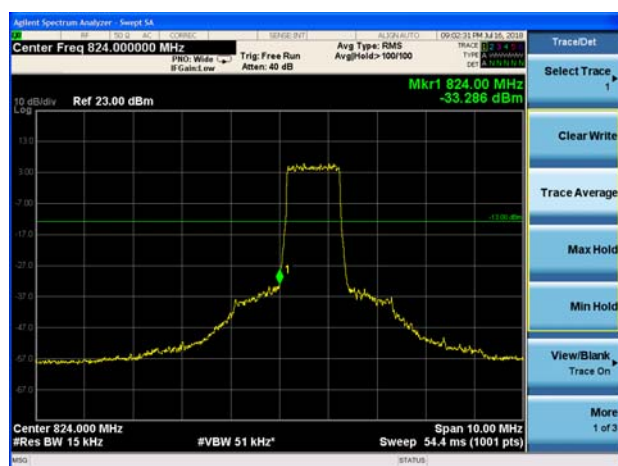
LTE Band 26 QPSK 1.4MHz CH-Low 1RB



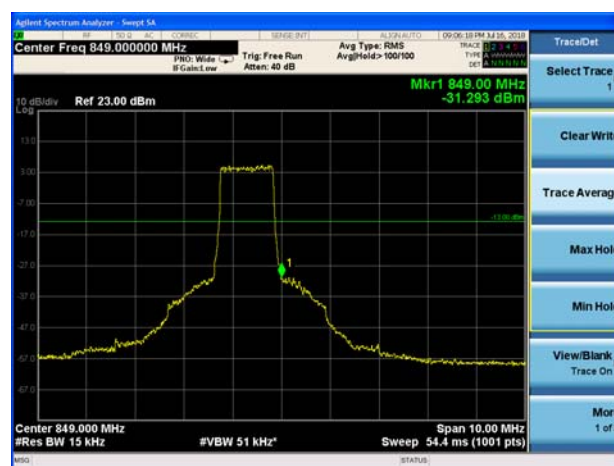
LTE Band 26 QPSK 1.4MHz CH-High 1RB



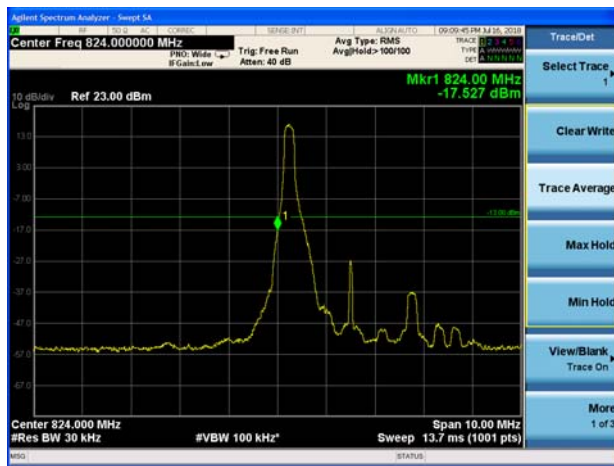
LTE Band 26 QPSK 1.4MHz CH-Low 100%RB



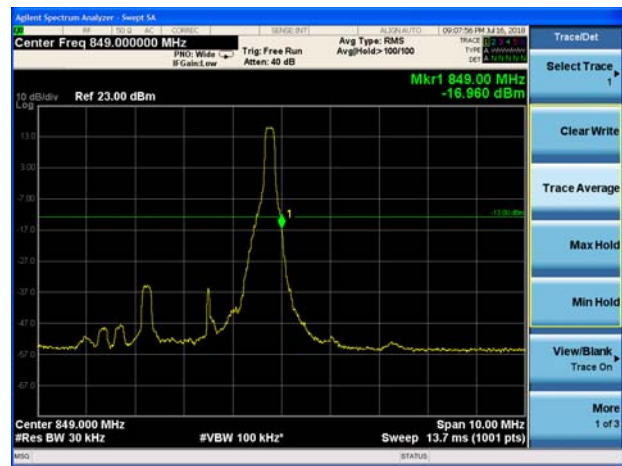
LTE Band 26 QPSK 1.4MHz CH-High 100%RB



### LTE Band 26 QPSK 3MHz CH-Low 1RB



### LTE Band 26 QPSK 3MHz CH-High 1RB



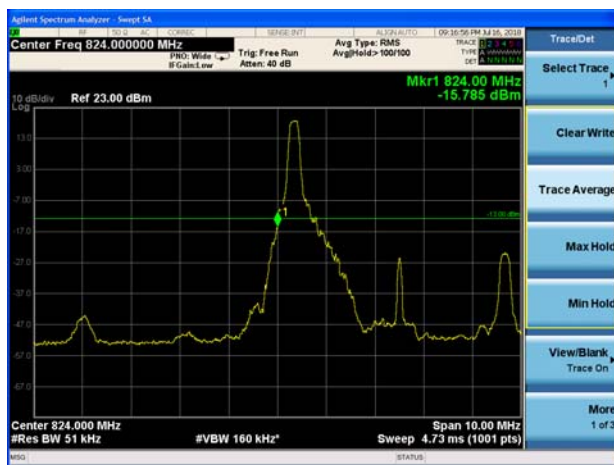
### LTE Band 26 QPSK 3MHz CH-Low 100%RB



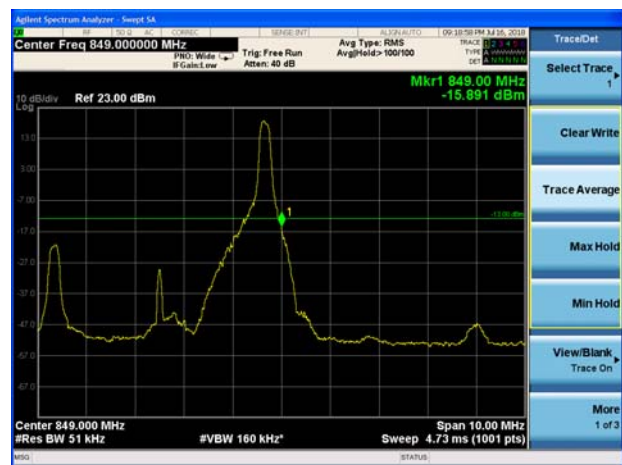
### LTE Band 26 QPSK 3MHz CH-High 100%RB



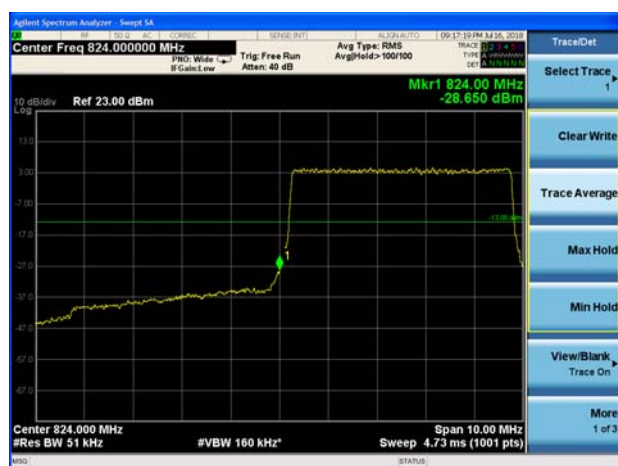
### LTE Band 26 QPSK 5MHz CH-Low 1RB



### LTE Band 26 QPSK 5MHz CH-High 1RB



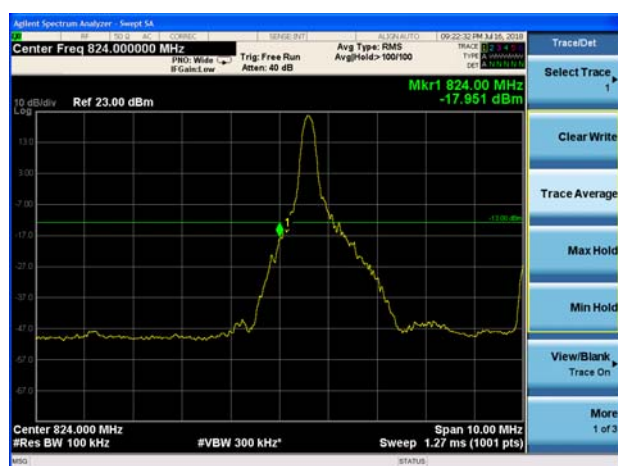
LTE Band 26 QPSK 5MHz CH-Low 100%RB



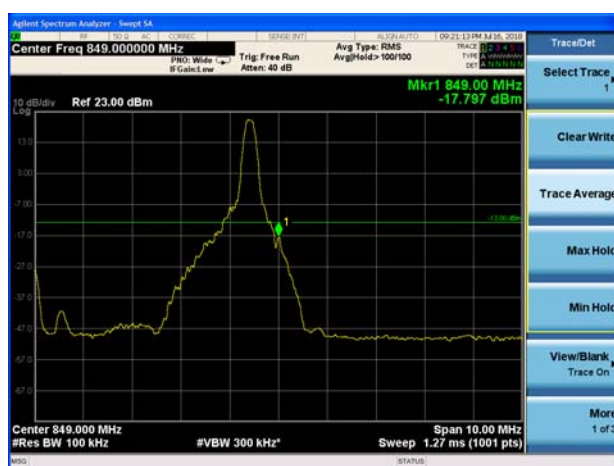
LTE Band 26 QPSK 5MHz CH-High 100%RB



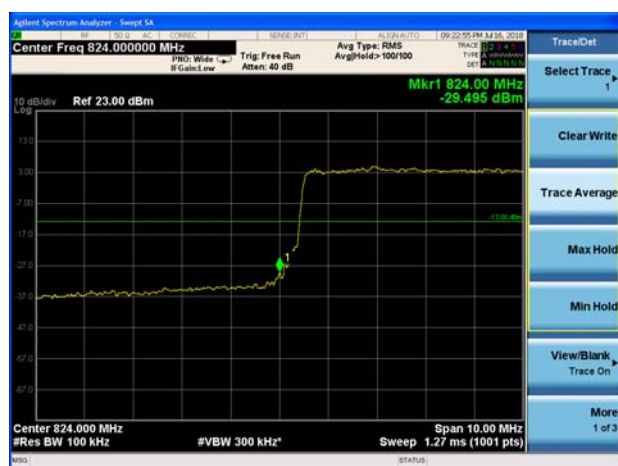
LTE Band 26 QPSK 10MHz CH-Low 1RB



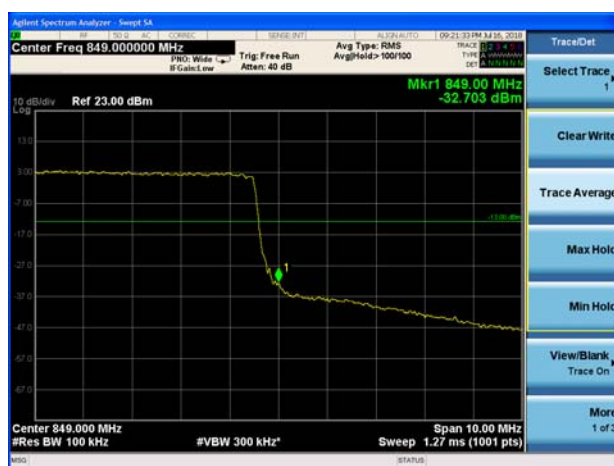
LTE Band 26 QPSK 10MHz CH-High 1RB



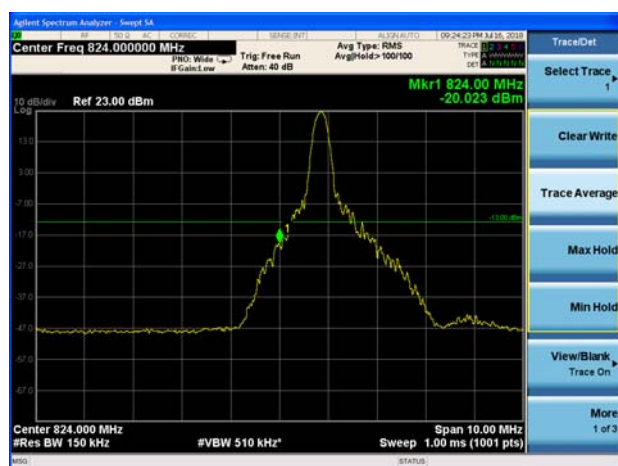
LTE Band 26 QPSK 10MHz CH-Low 100%RB



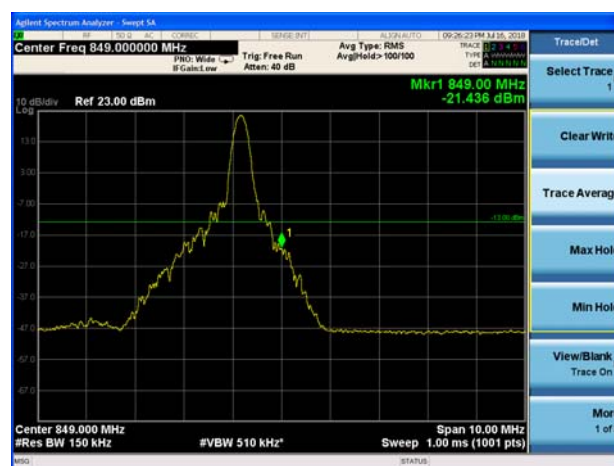
LTE Band 26 QPSK 10MHz CH-High 100%RB



### LTE Band 26 QPSK 15MHz CH-Low 1RB



### LTE Band 26 QPSK 15MHz CH-High 1RB



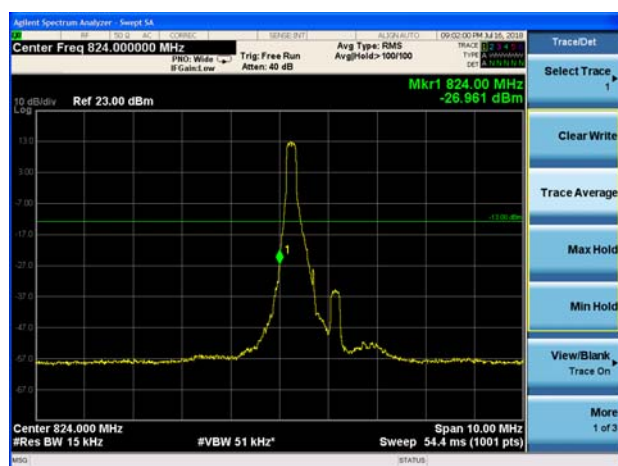
### LTE Band 26 QPSK 15MHz CH-Low 100%RB



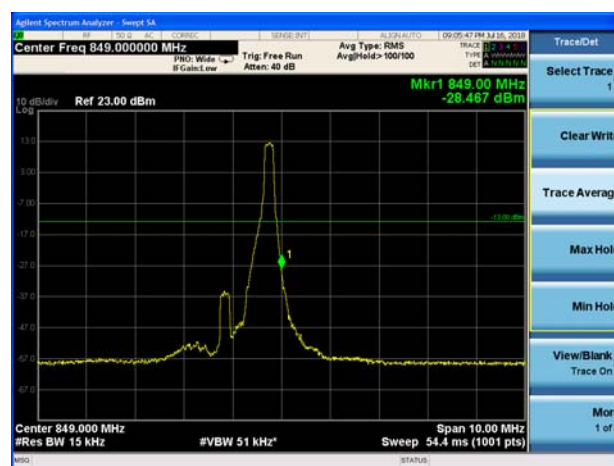
### LTE Band 26 QPSK 15MHz CH-High 100%RB



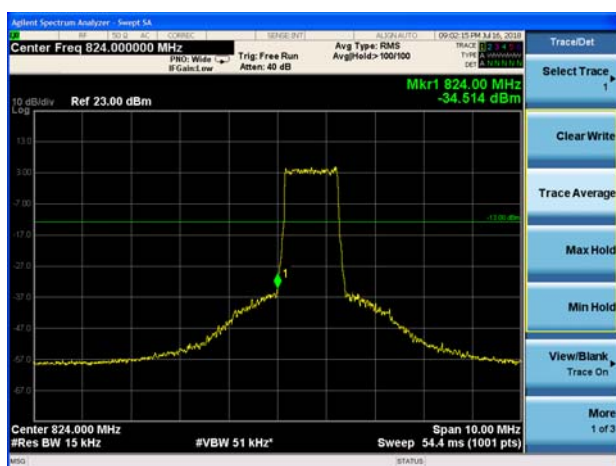
### LTE Band 26 16QAM 1.4MHz CH-Low 1RB



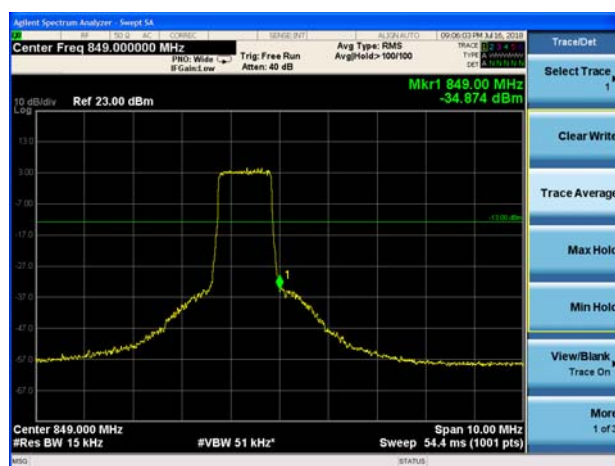
### LTE Band 26 16QAM 1.4MHz CH-High 1RB



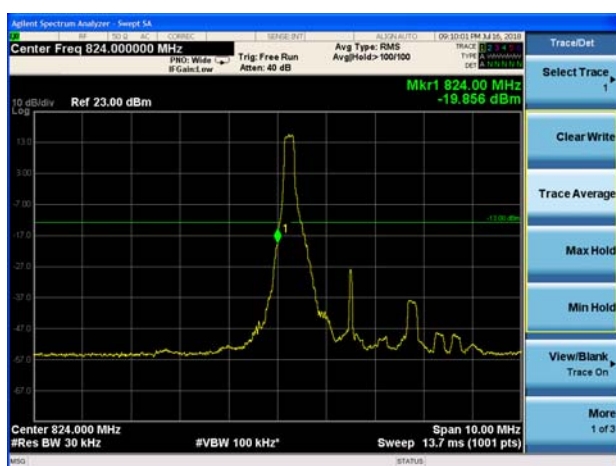
LTE Band 26 16QAM 1.4MHz CH-Low 100%RB



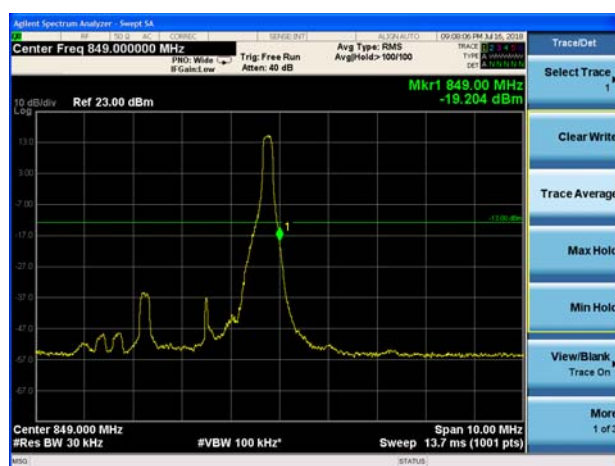
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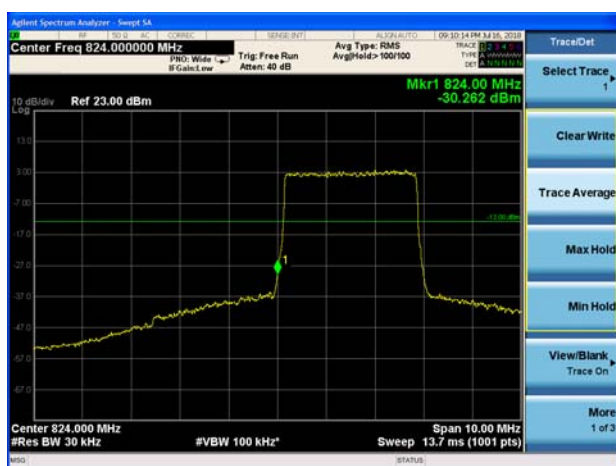
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LTE Band 26 16QAM 3MHz CH-High 1RB



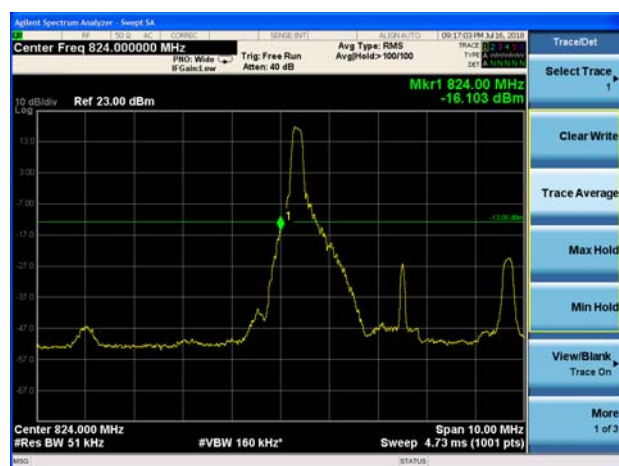
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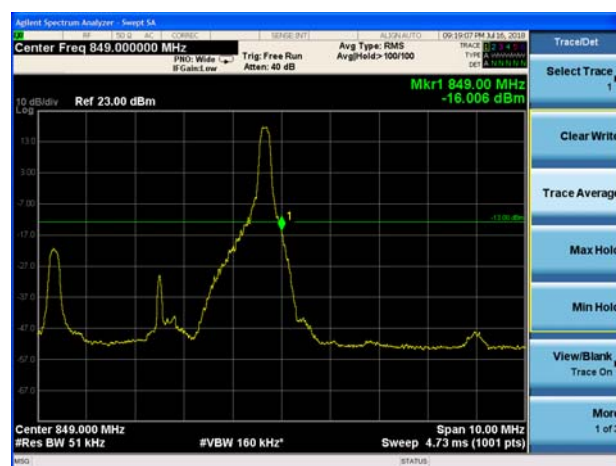
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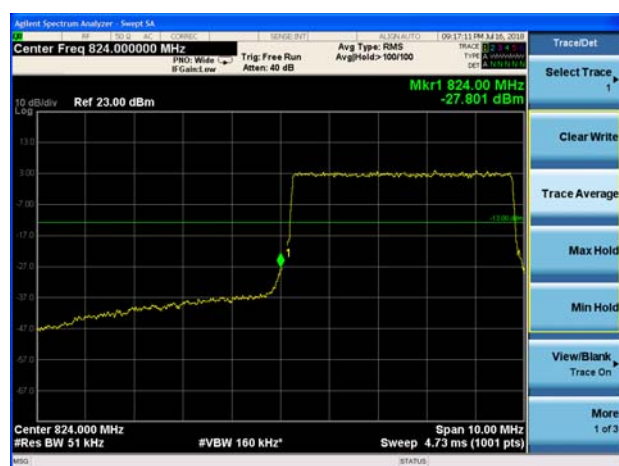
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LTE Band 26 16QAM 5MHz CH-High 1RB



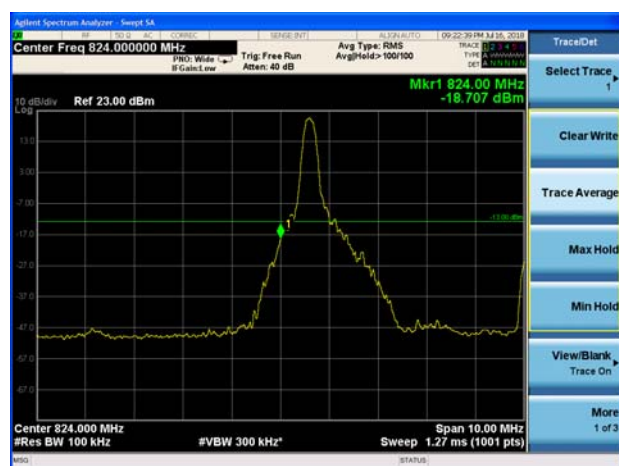
LTE Band 26 16QAM 5MHz CH-Low 100%RB



LTE Band 26 16QAM 5MHz CH-High 100%RB



LTE Band 26 16QAM 10MHz CH-Low 1RB



LTE Band 26 16QAM 10MHz CH-High 1RB

