

### FCC Report (LTE)

**Applicant:** Mason America, Inc.

**Address of Applicant:** 300 Park Street , Suite 380, Birmingham, Michigan 48009, United States

**Manufacturer:** Mason America, Inc.

**Address of Manufacturer:** 300 Park Street , Suite 380, Birmingham, Michigan 48009, United States

**Equipment Under Test (EUT)**

Product Name: Smart phone

Model No.: D450A

Trade Mark: MASON

**FCC ID:** 2AJZP-D450A

**Applicable standards:** FCC CFR Title 47 Part 2  
FCC CFR Title 47 Part 24 Subpart E  
FCC CFR Title 47 Part 27

**Date of sample receipt:** May 10, 2018

**Date of Test:** May 11, 2018-June 04, 2018

**Date of report issued:** June 05, 2018

**Test Result :** PASS \*

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



**Robinson Lo**

**Laboratory Manager**

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

## 2 Version

| Version No. | Date          | Description |
|-------------|---------------|-------------|
| 00          | June 05, 2018 | Original    |
|             |               |             |
|             |               |             |
|             |               |             |
|             |               |             |

Prepared By:

*Tiger Chen*

Date:

June 05, 2018

Project Engineer

Check By:

*Andy Wu*

Date:

June 05, 2018

Reviewer

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## 4 Test Summary

| Test Item                              | Section in CFR 47                                          | Result                     |
|----------------------------------------|------------------------------------------------------------|----------------------------|
| RF Exposure (SAR)                      | Part 1.1307<br>Part 2.1093                                 | Please refer to SAR report |
| RF Output Power                        | Part 2.1046<br>Part 24.232 (c)<br>Part 27.50(c)(10)/(d)(4) | Pass                       |
| Peak-to-Average Power Ratio            | Part 2.1046<br>Part 24.232 (d)                             | Pass                       |
| Modulation Characteristics             | Part 2.1047                                                | N/A                        |
| 99% & -26 dB Occupied Bandwidth        | Part 2.1049<br>Part 24.238<br>Part 27.53(h)/(g)            | Pass                       |
| Spurious Emissions at Antenna Terminal | Part 2.1051<br>Part 24.238 (a)<br>Part 27.53(h)/(g)        | Pass                       |
| Field Strength of Spurious Radiation   | Part 2.1053<br>Part 24.238 (a)<br>Part 27.53(h)/(g)        | Pass                       |
| Out of band emission, Band Edge        | Part 24.238 (a)<br>Part 27.53(h)/(g)                       | Pass                       |
| Frequency stability vs. temperature    | Part 2.1055(a)(1)(b)                                       | Pass                       |
| Frequency stability vs. voltage        | Part 2.1055(d)(1)(2)                                       | Pass                       |

*Pass: The EUT complies with the essential requirements in the standard.*

*N/A: Not applicable.*

## 5 General Information

### 5.1 General Description of EUT

|                      |                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name:        | Smart phone                                                                                                                                               |
| Model No.:           | D450A                                                                                                                                                     |
| Serial No.:          | MX-QD0201-R5FHN-7PAC8-VEFIPI                                                                                                                              |
| Tested Sample(s) ID: | GTS201805000172-1                                                                                                                                         |
| Sample(s) Status     | Engineer sample                                                                                                                                           |
| Hardware Version:    | H01                                                                                                                                                       |
| Software Version:    | D450A-H01-S005                                                                                                                                            |
| Support Networks:    | LTE                                                                                                                                                       |
| Support Bands:       | LTE Band 5, LTE Band 7                                                                                                                                    |
| Channel Bandwidth:   | LTE Band 5: 1.4MHz; 3MHz; 5MHz; 10MHz<br>LTE Band 7: 5MHz; 10MHz; 15MHz; 20MHz                                                                            |
| TX Frequency:        | LTE Band 5: 824MHz~849MHz<br>LTE Band 7: 2502.50MHz-2567.50MHz                                                                                            |
| Modulation type:     | LTE Band 5/7: QPSK, 16QAM                                                                                                                                 |
| Release              | R8                                                                                                                                                        |
| Antenna type:        | Integral antenna                                                                                                                                          |
| Antenna gain:        | LTE Band 5: -2.30dBi<br>LTE Band 7: 0.75dBi                                                                                                               |
| Power supply:        | ADAPTER POWER<br>Model: A138A-120150U-US2<br>Input: AC 100-240V, 50/60Hz, 0.5A<br>Output: DC 5V, 2.5A/9V, 2A/12V, 1.5A<br>DC 3.85V, 4000mAh Li-Pol 15.4Wh |

## 5.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 27 of the FCC CFR 47 Rules.

## 5.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA 603 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

## 5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383, January 08, 2018.

- **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

## 5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

## 6 Test Instruments list

| Item | Test Equipment                       | Manufacturer                   | Model No.                   | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
|------|--------------------------------------|--------------------------------|-----------------------------|---------------|---------------------|-------------------------|
| 1    | 3m Semi- Anechoic Chamber            | ZhongYu Electron               | 9.0(L)*6.0(W)* 6.0(H)       | GTS250        | July 03 2015        | July 02 2020            |
| 2    | Control Room                         | ZhongYu Electron               | 6.2(L)*2.5(W)* 2.4(H)       | GTS251        | N/A                 | N/A                     |
| 3    | EMI Test Receiver                    | Rohde & Schwarz                | ESU26                       | GTS203        | June 28 2017        | June 27 2018            |
| 4    | BiConiLog Antenna                    | SCHWARZBECK<br>MESS-ELEKTRONIK | VULB9163                    | GTS214        | June 28 2017        | June 27 2018            |
| 5    | Double -ridged waveguide horn        | SCHWARZBECK<br>MESS-ELEKTRONIK | 9120D-829                   | GTS208        | June 28 2017        | June 27 2018            |
| 6    | Horn Antenna                         | ETS-LINDGREN                   | 3160                        | GTS217        | June 28 2017        | June 27 2018            |
| 7    | EMI Test Software                    | AUDIX                          | E3                          | N/A           | N/A                 | N/A                     |
| 8    | Coaxial Cable                        | GTS                            | N/A                         | GTS213        | June 28 2017        | June 27 2018            |
| 9    | Coaxial Cable                        | GTS                            | N/A                         | GTS211        | June 28 2017        | June 27 2018            |
| 10   | Coaxial cable                        | GTS                            | N/A                         | GTS210        | June 28 2017        | June 27 2018            |
| 11   | Coaxial Cable                        | GTS                            | N/A                         | GTS212        | June 28 2017        | June 27 2018            |
| 12   | Amplifier(100kHz-3GHz)               | HP                             | 8347A                       | GTS204        | June 28 2017        | June 27 2018            |
| 13   | Amplifier(2GHz-20GHz)                | HP                             | 8349B                       | GTS206        | June 28 2017        | June 27 2018            |
| 14   | Amplifier (18-26GHz)                 | Rohde & Schwarz                | AFS33-18002<br>650-30-8P-44 | GTS218        | June 28 2017        | June 27 2018            |
| 15   | Band filter                          | Amindeon                       | 82346                       | GTS219        | June 28 2017        | June 27 2018            |
| 16   | Universal radio communication tester | Rohde & Schwarz                | CMU200                      | GTS235        | June 28 2017        | June 27 2018            |
| 17   | Signal Generator                     | Rohde & Schwarz                | SML03                       | GTS236        | June 28 2017        | June 27 2018            |
| 18   | Temp. Humidity/ Barometer            | Oregon Scientific              | BA-888                      | GTS248        | June 28 2017        | June 27 2018            |
| 19   | D.C. Power Supply                    | Instek                         | PS-3030                     | GTS232        | June 28 2017        | June 27 2018            |
| 20   | Splitter                             | Agilent                        | 11636B                      | GTS237        | June 28 2017        | June 27 2018            |
| 21   | Power meter                          | Anritsu                        | ML2495A                     | GTS540        | June 28 2017        | June 27 2018            |
| 22   | Power Sensor                         | Anritsu                        | MA2411B                     | GTS541        | June 28 2017        | June 27 2018            |
| 23   | Spectrum Analyzer                    | Agilent                        | E4440A                      | GTS533        | June 28 2017        | June 27 2018            |
| 24   | Temp.&Humidity chamber               | Chuang wei                     | GDS-225                     | GTS005-1      | June 28 2017        | June 27 2018            |
| 25   | Highpass filter                      | Micro-Tronics                  | HPM50108                    | GTS549        | June 28 2017        | June 27 2018            |
| 26   | Highpass filter                      | Micro-Tronics                  | HPM50111                    | GTS550        | June 28 2017        | June 27 2018            |

### General used equipment:

| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
|------|----------------|--------------|-----------|---------------|---------------------|-------------------------|
| 1    | Barometer      | ChangChun    | DYM3      | GTS257        | Jun. 28 2017        | Jun. 27 2018            |

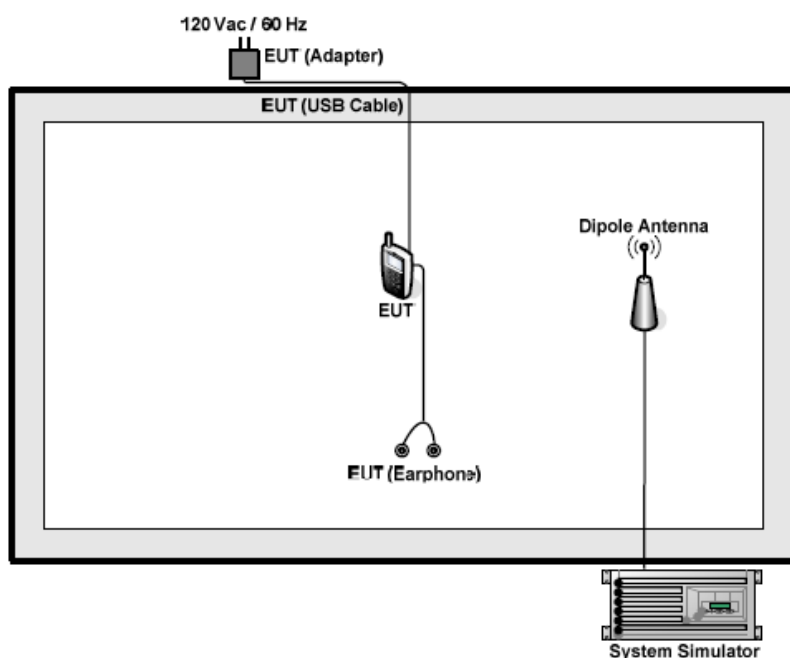
## 7 System test configuration

### 7.1 Test mode

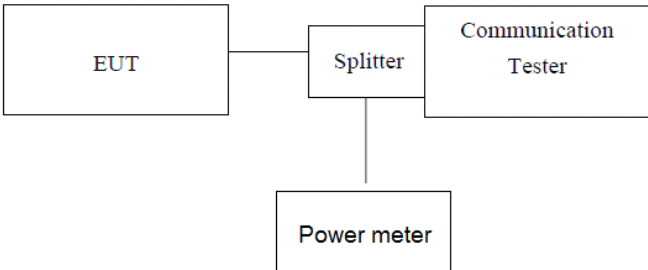
During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

| Test modes |                       |                       |
|------------|-----------------------|-----------------------|
| Band       | Radiated              | Conducted             |
| LTE Band 5 | ■ QPSK and 16QAM link | ■ QPSK and 16QAM link |
| LTE Band 7 | ■ QPSK and 16QAM link | ■ QPSK and 16QAM link |

### 7.2 Configuration of Tested System



## 7.3 Conducted Output Power

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 24.232 (c); Part 27.50(c)(10)/(d)(4)                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Test Method:      | FCC part2.1046                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Limit:            | LTE Band 5: 7W<br>LTE Band 7: 2W                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Test setup:       |  <p><i>Note: Measurement setup for testing on Antenna connector</i></p>                                                                                                                                                                                                                                                                                                                                        |
| Test Procedure:   | <ol style="list-style-type: none"> <li>1. The transmitter output port was connected to base station.</li> <li>2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.</li> <li>3. Set EUT at maximum power through base station.</li> <li>4. Select lowest, middle, and highest channels for each band and different modulation.</li> <li>5. Measure the maximum burst average power.</li> </ol> |
| Test Instruments: | Refer to section 6.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Test mode:        | Refer to section 7.1 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## Measurement Data

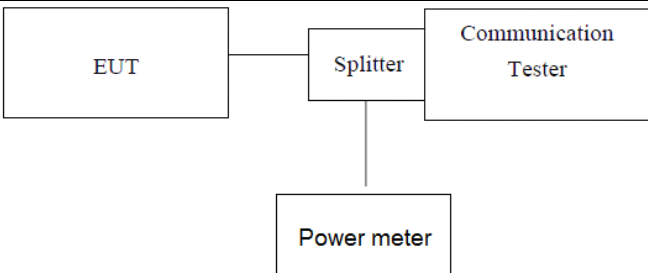
| Band 5    |       |         |           |                           |                           |                           |
|-----------|-------|---------|-----------|---------------------------|---------------------------|---------------------------|
| Bandwidth | Mode  | RB Size | RB Offset | Actual output power(dBm)  |                           |                           |
|           |       |         |           | Channel 20407<br>824.7MHz | Channel 20525<br>836.5MHz | Channel 20643<br>848.3MHz |
| 1.4MHz    | QPSK  | 1       | 0         | 23.61                     | 23.51                     | 23.67                     |
|           |       | 1       | 13        | 23.58                     | 23.64                     | 23.69                     |
|           |       | 1       | 24        | 23.59                     | 23.59                     | 23.59                     |
|           |       | 12      | 0         | 23.46                     | 23.57                     | 23.61                     |
|           |       | 12      | 6         | 23.57                     | 23.68                     | 23.23                     |
|           |       | 12      | 13        | 23.61                     | 23.29                     | 23.29                     |
|           |       | 25      | 0         | 23.25                     | 23.68                     | 23.16                     |
|           | 16QAM | 1       | 0         | 23.26                     | 23.98                     | 23.28                     |
|           |       | 1       | 13        | 23.25                     | 23.88                     | 23.40                     |
|           |       | 1       | 24        | 23.66                     | 23.91                     | 23.61                     |
|           |       | 12      | 0         | 23.55                     | 23.58                     | 23.51                     |
|           |       | 12      | 6         | 23.43                     | 23.67                     | 23.29                     |
|           |       | 12      | 13        | 23.39                     | 23.59                     | 23.51                     |
|           |       | 25      | 0         | 23.68                     | 23.67                     | 23.66                     |
| Bandwidth | Mode  | RB Size | RB Offset | Actual output power(dBm)  |                           |                           |
|           |       |         |           | Channel 20415<br>825.5MHz | Channel 20525<br>836.5MHz | Channel 20635<br>847.5MHz |
| 3MHz      | QPSK  | 1       | 0         | 23.84                     | 23.45                     | 23.61                     |
|           |       | 1       | 25        | 23.67                     | 23.63                     | 23.54                     |
|           |       | 1       | 49        | 23.55                     | 23.54                     | 23.55                     |
|           |       | 25      | 0         | 23.68                     | 23.32                     | 23.41                     |
|           |       | 25      | 13        | 23.59                     | 23.44                     | 23.55                     |
|           |       | 25      | 25        | 23.94                     | 23.51                     | 23.51                     |
|           |       | 50      | 0         | 23.15                     | 23.34                     | 23.99                     |
|           | 16QAM | 1       | 0         | 23.26                     | 23.58                     | 23.58                     |
|           |       | 1       | 25        | 23.51                     | 23.9                      | 23.67                     |
|           |       | 1       | 49        | 23.28                     | 23.52                     | 23.81                     |
|           |       | 25      | 0         | 23.84                     | 23.66                     | 23.83                     |
|           |       | 25      | 13        | 23.26                     | 23.64                     | 23.91                     |
|           |       | 25      | 25        | 23.61                     | 23.42                     | 23.64                     |
|           |       | 50      | 0         | 23.48                     | 23.61                     | 23.82                     |

| Bandwidth | Mode  | RB Size | RB Offset | Actual output power(dBm)  |                           |                           |
|-----------|-------|---------|-----------|---------------------------|---------------------------|---------------------------|
|           |       |         |           | Channel 20425<br>826.5MHz | Channel 20525<br>836.5MHz | Channel 20625<br>846.5MHz |
| 5MHz      | QPSK  | 1       | 0         | 23.56                     | 23.71                     | 23.57                     |
|           |       | 1       | 38        | 23.46                     | 23.71                     | 23.6                      |
|           |       | 1       | 74        | 23.54                     | 23.89                     | 23.77                     |
|           |       | 36      | 0         | 23.48                     | 23.59                     | 23.46                     |
|           |       | 36      | 18        | 23.59                     | 23.83                     | 23.74                     |
|           |       | 36      | 39        | 23.67                     | 23.69                     | 23.61                     |
|           |       | 75      | 0         | 23.82                     | 24.16                     | 23.92                     |
|           | 16QAM | 1       | 0         | 23.74                     | 23.94                     | 23.69                     |
|           |       | 1       | 38        | 23.57                     | 23.78                     | 23.54                     |
|           |       | 1       | 74        | 23.69                     | 23.91                     | 23.69                     |
|           |       | 36      | 0         | 23.55                     | 23.97                     | 23.76                     |
|           |       | 36      | 18        | 23.62                     | 23.88                     | 23.64                     |
|           |       | 36      | 39        | 23.88                     | 23.57                     | 23.8                      |
|           |       | 75      | 0         | 23.56                     | 23.71                     | 23.57                     |
| Bandwidth | Mode  | RB Size | RB Offset | Actual output power(dBm)  |                           |                           |
|           |       |         |           | Channel 20450<br>829MHz   | Channel 20525<br>836.5MHz | Channel 20600<br>844MHz   |
| 10MHz     | QPSK  | 1       | 0         | 23.55                     | 23.6                      | 23.35                     |
|           |       | 1       | 50        | 23.61                     | 23.87                     | 23.72                     |
|           |       | 1       | 99        | 23.25                     | 23.59                     | 23.35                     |
|           |       | 50      | 0         | 23.45                     | 23.67                     | 23.51                     |
|           |       | 50      | 25        | 23.61                     | 23.76                     | 23.58                     |
|           |       | 50      | 50        | 23.57                     | 23.66                     | 23.42                     |
|           |       | 100     | 0         | 23.52                     | 23.67                     | 23.36                     |
|           | 16QAM | 1       | 0         | 23.51                     | 23.73                     | 23.53                     |
|           |       | 1       | 50        | 23.58                     | 23.71                     | 23.49                     |
|           |       | 1       | 99        | 23.91                     | 24.12                     | 23.95                     |
|           |       | 50      | 0         | 23.85                     | 23.84                     | 23.83                     |
|           |       | 50      | 25        | 23.91                     | 23.84                     | 23.7                      |
|           |       | 50      | 50        | 23.62                     | 23.78                     | 23.53                     |
|           |       | 100     | 0         | 23.66                     | 23.77                     | 23.66                     |

| Band 7    |       |         |           |                            |                          |                            |
|-----------|-------|---------|-----------|----------------------------|--------------------------|----------------------------|
| Bandwidth | Mode  | RB Size | RB Offset | Actual output power(dBm)   |                          |                            |
|           |       |         |           | Channel 20775<br>2502.5MHz | Channel 21100<br>2535MHz | Channel 21425<br>2567.5MHz |
| 5MHz      | QPSK  | 1       | 0         | 23.59                      | 23.15                    | 23.22                      |
|           |       | 1       | 13        | 23.64                      | 23.19                    | 23.24                      |
|           |       | 1       | 24        | 23.23                      | 23.54                    | 23.15                      |
|           |       | 12      | 0         | 23.34                      | 23.26                    | 23.16                      |
|           |       | 12      | 6         | 23.51                      | 23.51                    | 23.25                      |
|           |       | 12      | 13        | 23.52                      | 23.43                    | 23.46                      |
|           |       | 25      | 0         | 23.34                      | 23.26                    | 23.58                      |
|           | 16QAM | 1       | 0         | 23.15                      | 23.51                    | 23.68                      |
|           |       | 1       | 13        | 23.54                      | 23.43                    | 23.49                      |
|           |       | 1       | 24        | 23.52                      | 23.22                    | 23.59                      |
|           |       | 12      | 0         | 23.58                      | 23.16                    | 23.61                      |
|           |       | 12      | 6         | 23.22                      | 23.15                    | 23.46                      |
|           |       | 12      | 13        | 23.11                      | 23.24                    | 23.25                      |
|           |       | 25      | 0         | 23.13                      | 23.15                    | 23.26                      |
| Bandwidth | Mode  | RB Size | RB Offset | Actual output power(dBm)   |                          |                            |
|           |       |         |           | Channel 20800<br>2505.0MHz | Channel 21100<br>2535MHz | Channel 21400<br>2565.0MHz |
| 10MHz     | QPSK  | 1       | 0         | 23.15                      | 23.73                    | 23.46                      |
|           |       | 1       | 25        | 23.57                      | 23.74                    | 23.59                      |
|           |       | 1       | 49        | 23.68                      | 23.71                    | 23.18                      |
|           |       | 25      | 0         | 23.49                      | 23.76                    | 23.66                      |
|           |       | 25      | 13        | 23.28                      | 23.59                    | 23.55                      |
|           |       | 25      | 25        | 23.49                      | 23.81                    | 23.53                      |
|           |       | 50      | 0         | 23.39                      | 23.59                    | 23.49                      |
|           | 16QAM | 1       | 0         | 23.19                      | 23.68                    | 23.58                      |
|           |       | 1       | 25        | 23.59                      | 23.59                    | 23.16                      |
|           |       | 1       | 49        | 23.68                      | 23.67                    | 23.13                      |
|           |       | 25      | 0         | 23.49                      | 23.19                    | 23.11                      |
|           |       | 25      | 13        | 23.83                      | 23.29                    | 23.12                      |
|           |       | 25      | 25        | 23.91                      | 23.67                    | 23.31                      |
|           |       | 50      | 0         | 23.81                      | 23.51                    | 23.33                      |

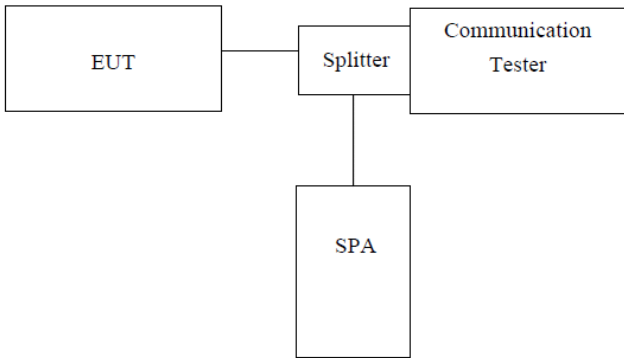
| Bandwidth | Mode  | RB Size | RB Offset | Actual output power(dBm)   |                          |                            |
|-----------|-------|---------|-----------|----------------------------|--------------------------|----------------------------|
|           |       |         |           | Channel 20825<br>2507.5MHz | Channel 21100<br>2535MHz | Channel 21375<br>2562.5MHz |
| 15MHz     | QPSK  | 1       | 0         | 23.64                      | 23.64                    | 23.59                      |
|           |       | 1       | 38        | 23.85                      | 23.52                    | 23.61                      |
|           |       | 1       | 74        | 23.91                      | 23.16                    | 23.49                      |
|           |       | 36      | 0         | 23.67                      | 23.55                    | 23.58                      |
|           |       | 36      | 18        | 23.81                      | 23.44                    | 23.61                      |
|           |       | 36      | 39        | 23.95                      | 23.38                    | 23.49                      |
|           |       | 75      | 0         | 23.59                      | 23.62                    | 23.51                      |
|           | 16QAM | 1       | 0         | 23.46                      | 23.53                    | 23.62                      |
|           |       | 1       | 38        | 23.59                      | 23.19                    | 23.24                      |
|           |       | 1       | 74        | 23.49                      | 23.58                    | 23.66                      |
|           |       | 36      | 0         | 23.68                      | 23.61                    | 23.28                      |
|           |       | 36      | 18        | 23.66                      | 23.53                    | 23.54                      |
|           |       | 36      | 39        | 23.77                      | 23.57                    | 23.39                      |
|           |       | 75      | 0         | 23.84                      | 23.19                    | 23.68                      |
| Bandwidth | Mode  | RB Size | RB Offset | Actual output power(dBm)   |                          |                            |
|           |       |         |           | Channel 20850<br>2510.0MHz | Channel 21100<br>2535MHz | Channel 21350<br>2560.0MHz |
| 20MHz     | QPSK  | 1       | 0         | 23.12                      | 23.15                    | 23.64                      |
|           |       | 1       | 50        | 23.26                      | 23.16                    | 23.59                      |
|           |       | 1       | 99        | 23.11                      | 23.52                    | 23.68                      |
|           |       | 50      | 0         | 23.62                      | 23.46                    | 23.51                      |
|           |       | 50      | 25        | 23.45                      | 23.29                    | 23.61                      |
|           |       | 50      | 50        | 23.92                      | 23.61                    | 23.59                      |
|           |       | 100     | 0         | 23.51                      | 23.52                    | 23.64                      |
|           | 16QAM | 1       | 0         | 23.26                      | 23.83                    | 23.15                      |
|           |       | 1       | 50        | 23.15                      | 23.73                    | 23.38                      |
|           |       | 1       | 99        | 23.26                      | 23.51                    | 23.95                      |
|           |       | 50      | 0         | 23.52                      | 23.46                    | 23.18                      |
|           |       | 50      | 25        | 23.36                      | 23.53                    | 23.16                      |
|           |       | 50      | 50        | 23.34                      | 23.18                    | 23.16                      |
|           |       | 100     | 0         | 23.13                      | 23.29                    | 23.18                      |

## 7.4 Peak-to-Average Power Ratio

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 27.50(d)(5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Test Method:      | FCC part2.1046                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Limit:            | 13db                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Test setup:       |  <p><i>Note: Measurement setup for testing on Antenna connector</i></p>                                                                                                                                                                                                                                                                                                                                                                                                    |
| Test Procedure:   | <ol style="list-style-type: none"> <li>1. The transmitter output port was connected to base station.</li> <li>2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.</li> <li>3. Set EUT at maximum power through base station.</li> <li>4. Select lowest, middle, and highest channels for each band and different modulation.</li> <li>5. Measure the maximum burst average power.</li> <li>6. Record the maximum peak-to-average ratio value.</li> </ol> |
| Test Instruments: | Refer to section 6.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Test mode:        | Refer to section 7.1 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Test Band  | Test mode            | Peak to Average Power Ratio<br>( dB ) |            |          | Limit<br>( dB ) | Result |
|------------|----------------------|---------------------------------------|------------|----------|-----------------|--------|
|            |                      | Low Ch.                               | Middle Ch. | High Ch. |                 |        |
| LTE Band 5 | LTE 1.4MHz Bandwidth | 3.59                                  | 4.57       | 4.19     | 13              | PASS   |
|            | LTE 3MHz Bandwidth   | 3.68                                  | 4.65       | 4.85     | 13              | PASS   |
|            | LTE 5MHz Bandwidth   | 3.58                                  | 4.47       | 4.49     | 13              | PASS   |
|            | LTE 10MHz Bandwidth  | 4.61                                  | 4.59       | 4.61     | 13              | PASS   |
| LTE Band 7 | LTE 5MHz Bandwidth   | 4.85                                  | 5.07       | 5.04     | 13              | PASS   |
|            | LTE 10MHz Bandwidth  | 4.62                                  | 4.58       | 4.59     | 13              | PASS   |
|            | LTE 15MHz Bandwidth  | 5.79                                  | 5.77       | 5.75     | 13              | PASS   |
|            | LTE 20MHz Bandwidth  | 6.56                                  | 6.53       | 6.54     | 13              | PASS   |

## 7.5 Occupy Bandwidth

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 24.238; FCC Part 27.53(h)/(g)                                                                                                                                                                                                                                                                                                                                                                                       |
| Test Method:      | FCC part2.1049                                                                                                                                                                                                                                                                                                                                                                                                           |
| Test setup:       |  <p><i>Note: Measurement setup for testing on Antenna connector</i></p>                                                                                                                                                                                                                                                                |
| Test Procedure:   | <ol style="list-style-type: none"> <li>1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer</li> <li>2. RBW was set to about 1% of emission BW, VBW= 3 times RBW.</li> <li>3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.</li> </ol> |
| Test Instruments: | Refer to section 6.0 for details                                                                                                                                                                                                                                                                                                                                                                                         |
| Test mode:        | Refer to section 7.1 for details                                                                                                                                                                                                                                                                                                                                                                                         |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Measurement Data

QPSK mode:

| EUT Mode   | Channel Bandwidth | Channel    | RB Configure |           | 99% Occupy bandwidth (KHz) | -26dB bandwidth (KHz) |
|------------|-------------------|------------|--------------|-----------|----------------------------|-----------------------|
|            |                   |            | RB Size      | RB Offset |                            |                       |
| LTE Band 5 | 1.4MHz            | Low range  | 6            | 0         | 1099.4                     | 1320                  |
|            |                   | Mid range  | 6            | 0         | 1097.1                     | 1306                  |
|            |                   | High range | 6            | 0         | 1104.5                     | 1314                  |
|            | 3MHz              | Low range  | 15           | 0         | 2688.6                     | 2949                  |
|            |                   | Mid range  | 15           | 0         | 2680.2                     | 2919                  |
|            |                   | High range | 15           | 0         | 2680.0                     | 2916                  |
|            | 5MHz              | Low range  | 25           | 0         | 4533.9                     | 4973                  |
|            |                   | Mid range  | 25           | 0         | 4527.4                     | 5016                  |
|            |                   | High range | 25           | 0         | 4504.0                     | 4955                  |
|            | 10MHz             | Low range  | 50           | 0         | 8293.8                     | 9667                  |
|            |                   | Mid range  | 50           | 0         | 8951.9                     | 9708                  |
|            |                   | High range | 50           | 0         | 8930.8                     | 9655                  |

| EUT Mode   | Channel Bandwidth | Channel    | RB Configure |           | 99% Occupy bandwidth (KHz) | -26dB bandwidth (KHz) |
|------------|-------------------|------------|--------------|-----------|----------------------------|-----------------------|
|            |                   |            | RB Size      | RB Offset |                            |                       |
| LTE Band 7 | 5MHz              | Low range  | 25           | 0         | 4511.6                     | 4970                  |
|            |                   | Mid range  | 25           | 0         | 4520.4                     | 5045                  |
|            |                   | High range | 25           | 0         | 4495.9                     | 4977                  |
|            | 10MHz             | Low range  | 50           | 0         | 8951.9                     | 9722                  |
|            |                   | Mid range  | 50           | 0         | 8933.2                     | 9688                  |
|            |                   | High range | 50           | 0         | 8947.3                     | 9765                  |
|            | 15MHz             | Low range  | 75           | 0         | 13471.4                    | 14793                 |
|            |                   | Mid range  | 75           | 0         | 13384.7                    | 14554                 |
|            |                   | High range | 75           | 0         | 13380.7                    | 14498                 |
|            | 20MHz             | Low range  | 100          | 0         | 17898.1                    | 19244                 |
|            |                   | Mid range  | 100          | 0         | 17799.3                    | 19205                 |
|            |                   | High range | 100          | 0         | 17847.1                    | 19213                 |

16QAM mode:

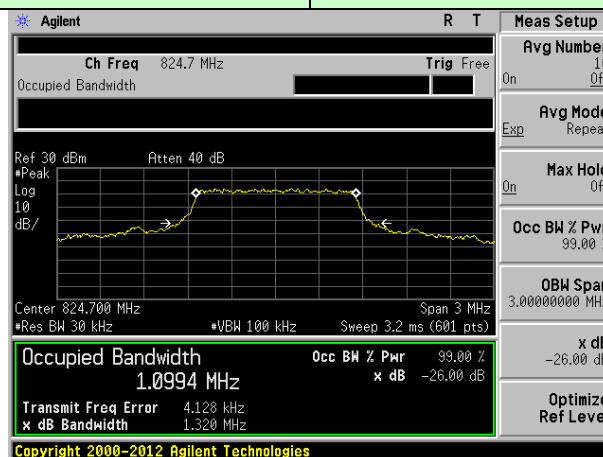
| EUT Mode   | Channel Bandwidth | Channel    | RB Configure |           | 99% Occupy bandwidth (KHz) | -26dB bandwidth (KHz) |
|------------|-------------------|------------|--------------|-----------|----------------------------|-----------------------|
|            |                   |            | RB Size      | RB Offset |                            |                       |
| LTE Band 5 | 1.4MHz            | Low range  | 6            | 0         | 1101.3                     | 1356                  |
|            |                   | Mid range  | 6            | 0         | 1097.4                     | 1293                  |
|            |                   | High range | 6            | 0         | 1102.8                     | 1317                  |
|            | 3MHz              | Low range  | 15           | 0         | 2692.2                     | 2938                  |
|            |                   | Mid range  | 15           | 0         | 2679.2                     | 2939                  |
|            |                   | High range | 15           | 0         | 2688.4                     | 2913                  |
|            | 5MHz              | Low range  | 25           | 0         | 4510.5                     | 5009                  |
|            |                   | Mid range  | 25           | 0         | 4519.0                     | 4992                  |
|            |                   | High range | 25           | 0         | 4503.6                     | 4970                  |
|            | 10MHz             | Low range  | 50           | 0         | 8931.6                     | 9756                  |
|            |                   | Mid range  | 50           | 0         | 8939.4                     | 9663                  |
|            |                   | High range | 50           | 0         | 8949.2                     | 9733                  |

| EUT Mode   | Channel Bandwidth | Channel    | RB Configure |           | 99% Occupy bandwidth (KHz) | -26dB bandwidth (KHz) |
|------------|-------------------|------------|--------------|-----------|----------------------------|-----------------------|
|            |                   |            | RB Size      | RB Offset |                            |                       |
| LTE Band 7 | 5MHz              | Low range  | 25           | 0         | 4506.3                     | 5059                  |
|            |                   | Mid range  | 25           | 0         | 4510.0                     | 4974                  |
|            |                   | High range | 25           | 0         | 4488.8                     | 4994                  |
|            | 10MHz             | Low range  | 50           | 0         | 8959.2                     | 9764                  |
|            |                   | Mid range  | 50           | 0         | 8935.1                     | 9633                  |
|            |                   | High range | 50           | 0         | 8953.5                     | 9627                  |
|            | 15MHz             | Low range  | 75           | 0         | 13445.3                    | 14692                 |
|            |                   | Mid range  | 75           | 0         | 13376.6                    | 14635                 |
|            |                   | High range | 75           | 0         | 13393.6                    | 14543                 |
|            | 20MHz             | Low range  | 100          | 0         | 17861.9                    | 19230                 |
|            |                   | Mid range  | 100          | 0         | 17801.4                    | 19346                 |
|            |                   | High range | 100          | 0         | 17830.0                    | 19257                 |

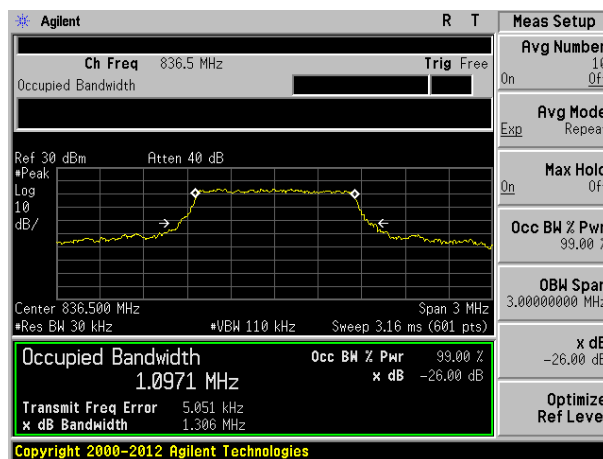
Test plot as follows:

QPSK mode:

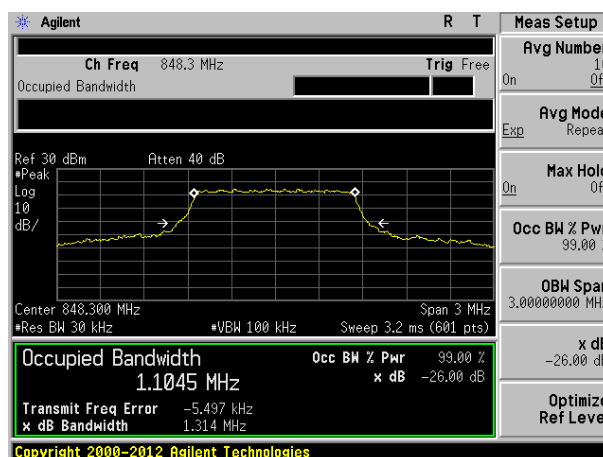
|                       |                           |
|-----------------------|---------------------------|
| Test band: LTE Band 5 | Channel Bandwidth: 1.4MHz |
|-----------------------|---------------------------|



Lowest channel

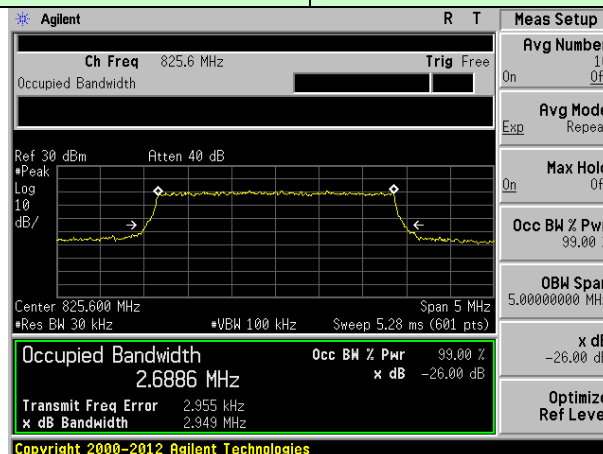


Middle channel

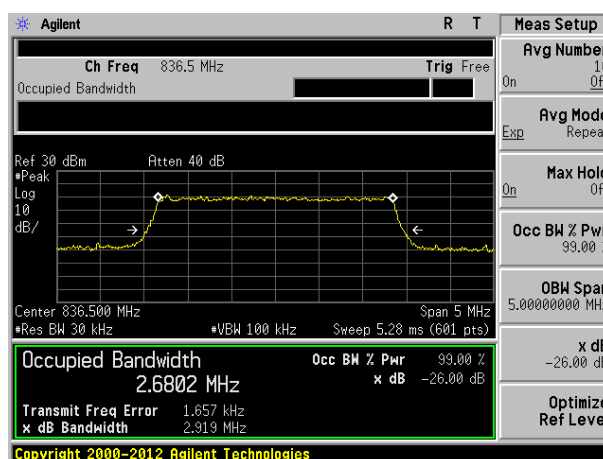


Highest channel

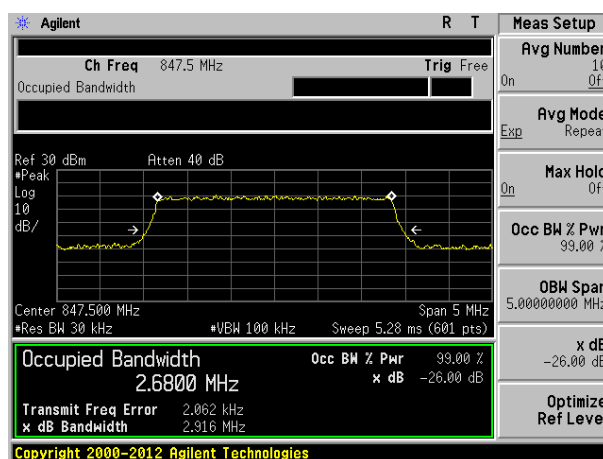
|                       |                         |
|-----------------------|-------------------------|
| Test band: LTE Band 5 | Channel Bandwidth: 3MHz |
|-----------------------|-------------------------|



Lowest channel



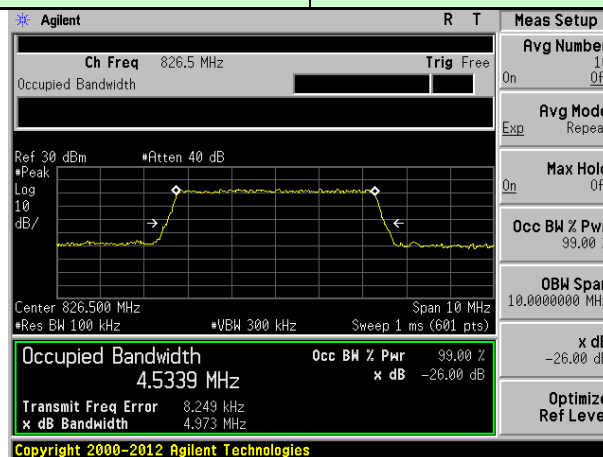
Middle channel



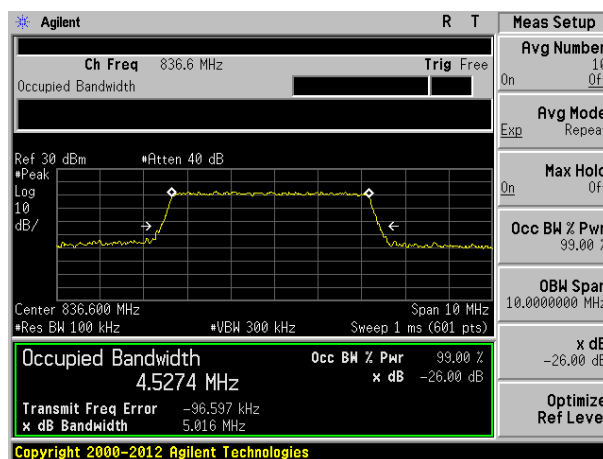
Highest channel

Test band: LTE Band 5

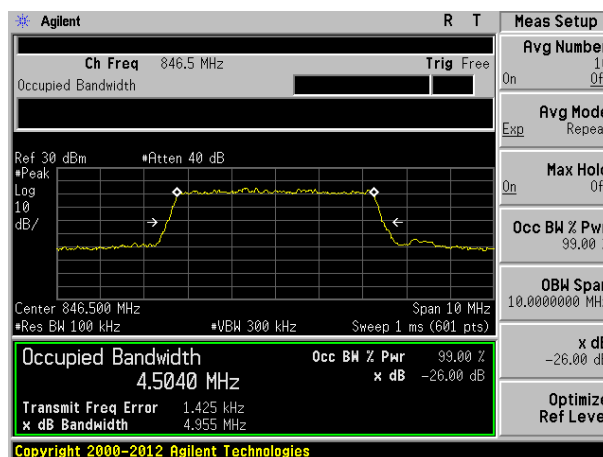
Channel Bandwidth: 5MHz



Lowest channel

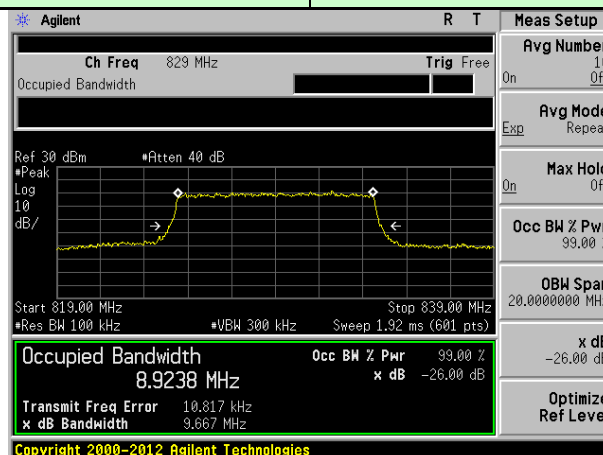


Middle channel

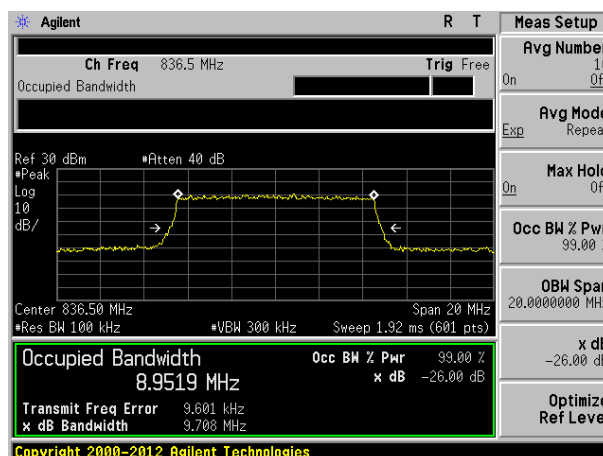


Highest channel

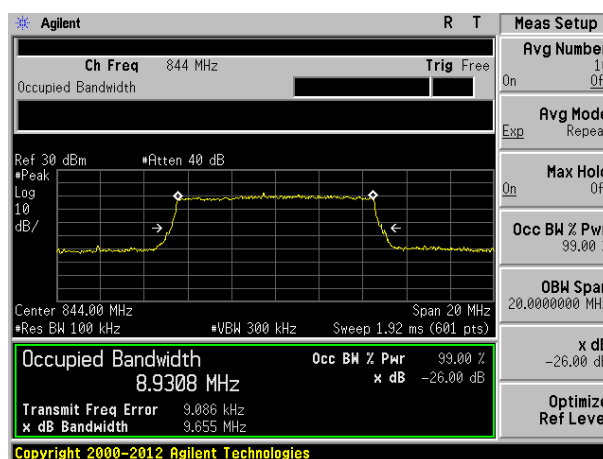
|                       |                          |
|-----------------------|--------------------------|
| Test band: LTE Band 5 | Channel Bandwidth: 10MHz |
|-----------------------|--------------------------|



Lowest channel



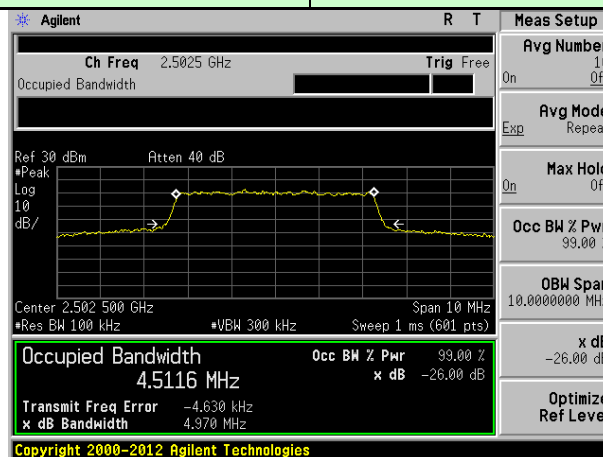
Middle channel



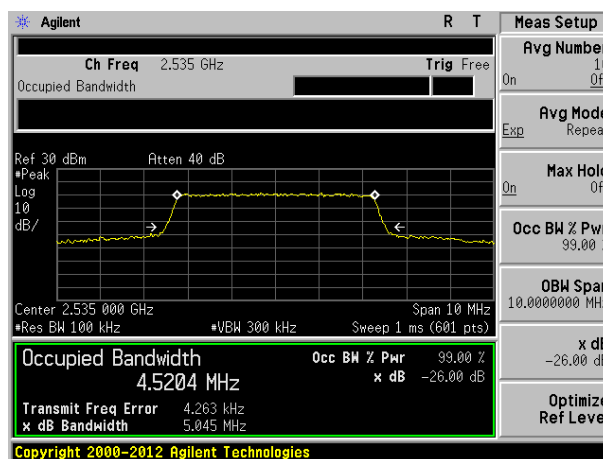
Highest channel

Test band: LTE Band 7

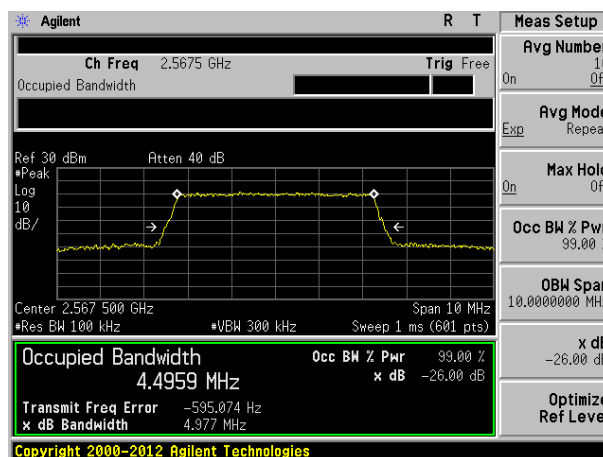
Channel Bandwidth: 5MHz



Lowest channel



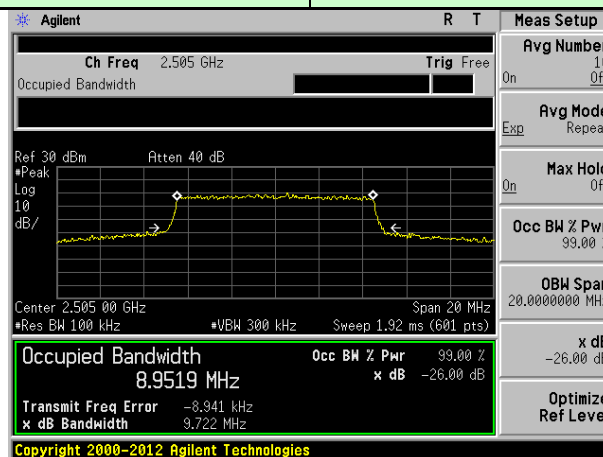
Middle channel



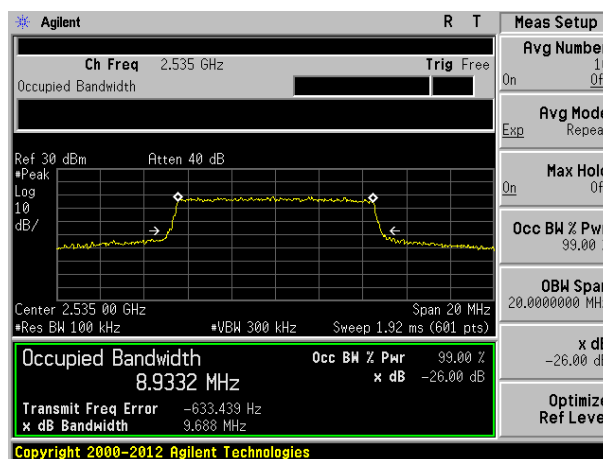
Highest channel

Test band: LTE Band 7

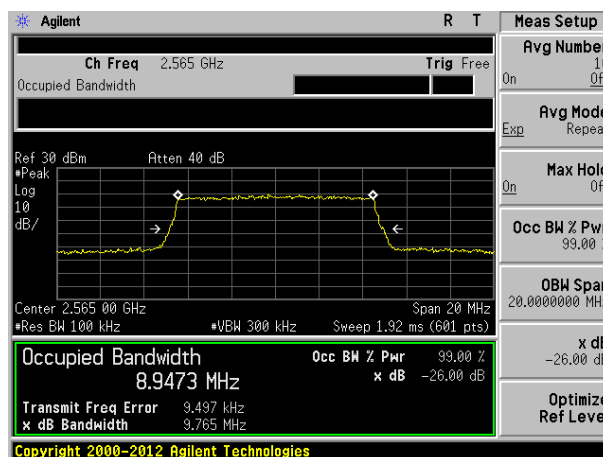
Channel Bandwidth: 10MHz



Lowest channel



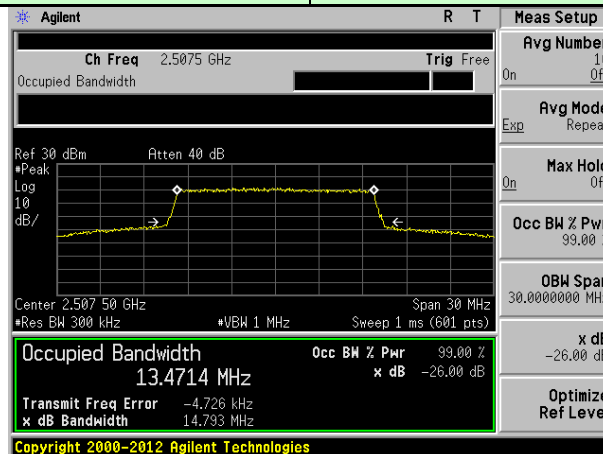
Middle channel



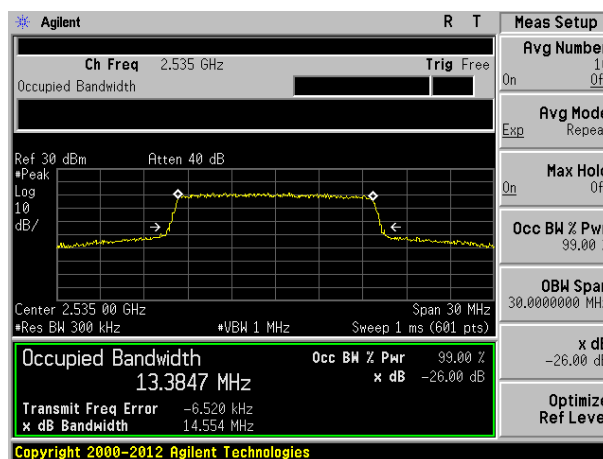
Highest channel

Test band: LTE Band 7

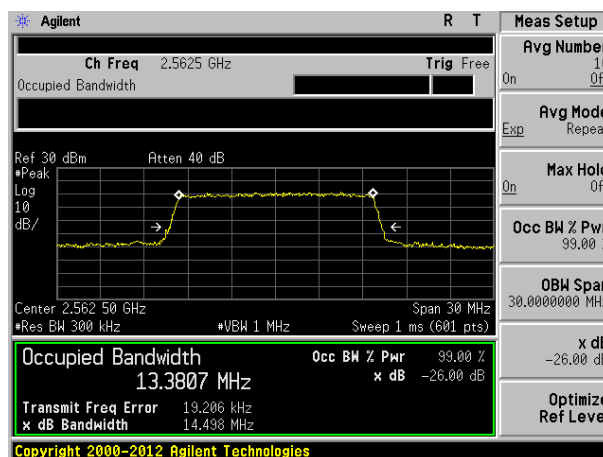
Channel Bandwidth: 15MHz



Lowest channel



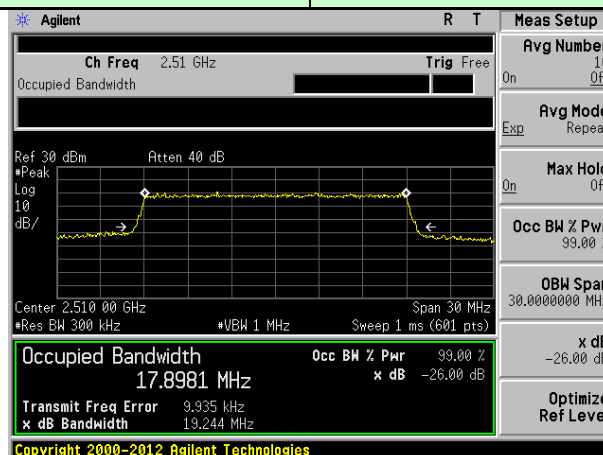
Middle channel



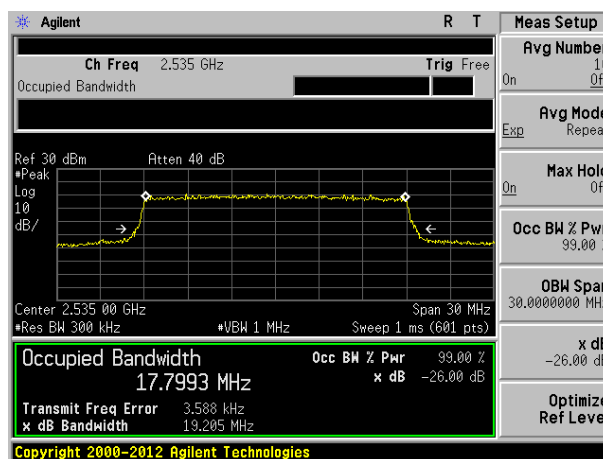
Highest channel

Test band: LTE Band 7

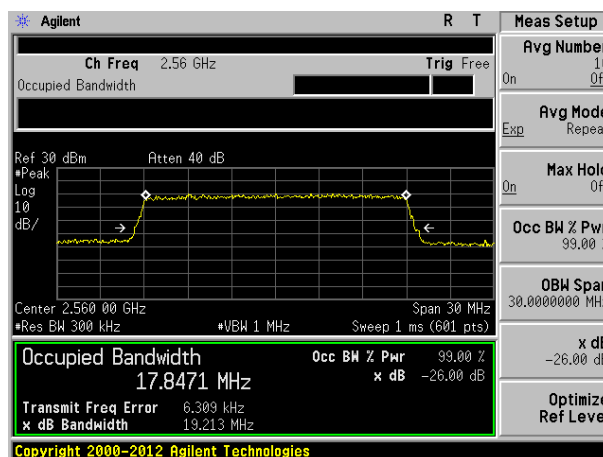
Channel Bandwidth: 20MHz



Lowest channel



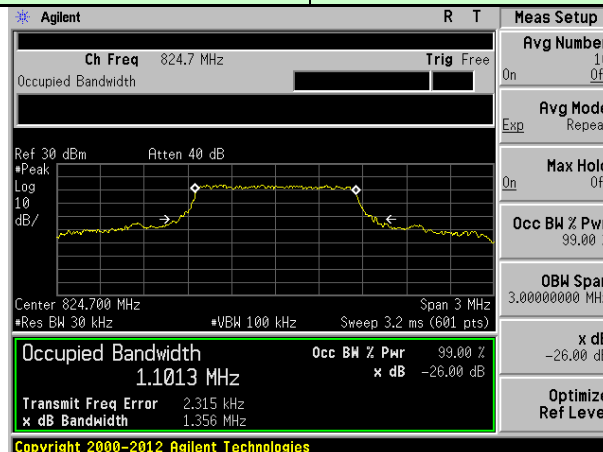
Middle channel



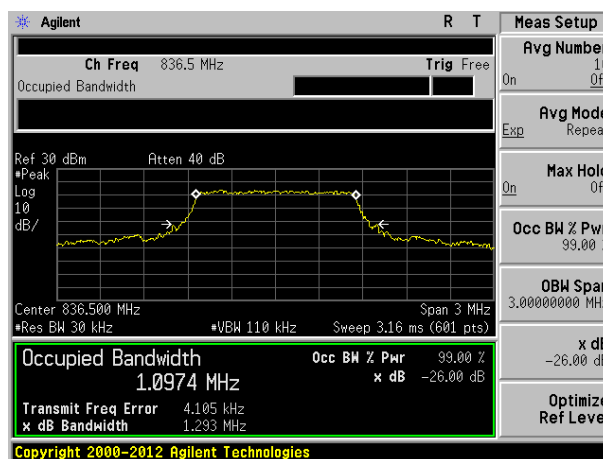
Highest channel

16QAM mode:

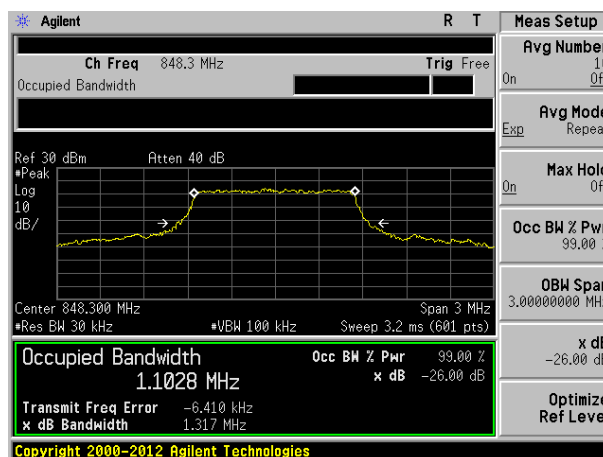
|                       |                           |
|-----------------------|---------------------------|
| Test band: LTE Band 5 | Channel Bandwidth: 1.4MHz |
|-----------------------|---------------------------|



Lowest channel

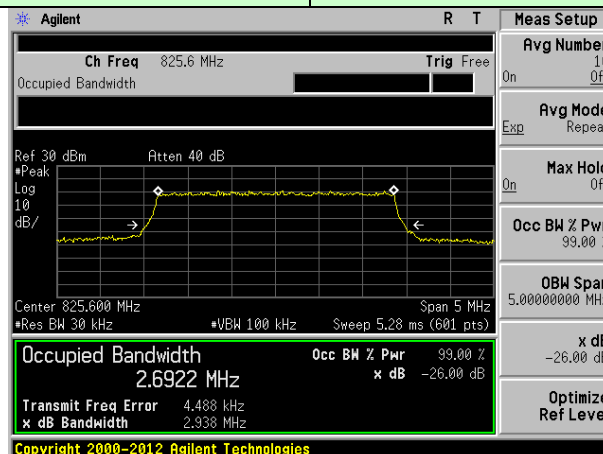


Middle channel

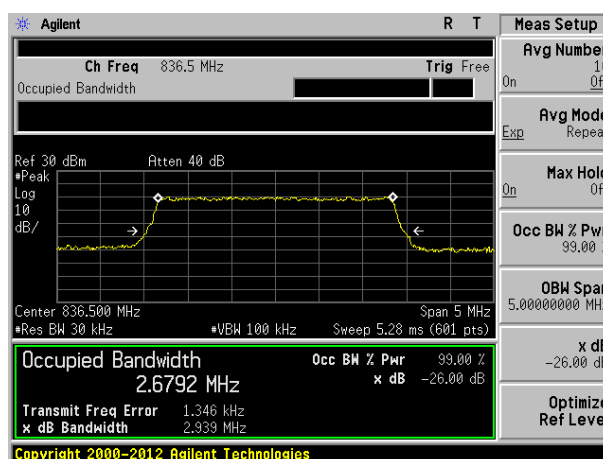


Highest channel

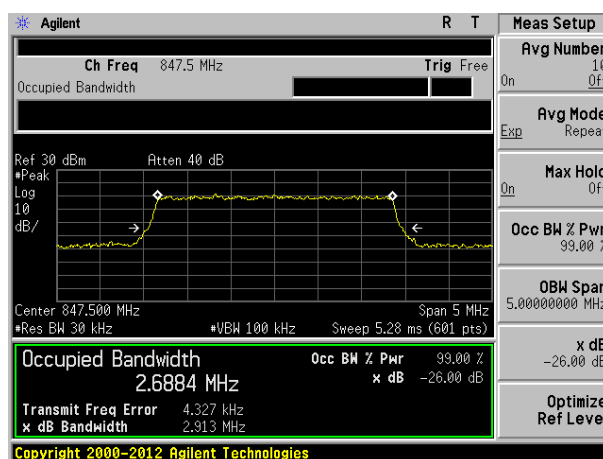
|                       |                         |
|-----------------------|-------------------------|
| Test band: LTE Band 5 | Channel Bandwidth: 3MHz |
|-----------------------|-------------------------|



Lowest channel



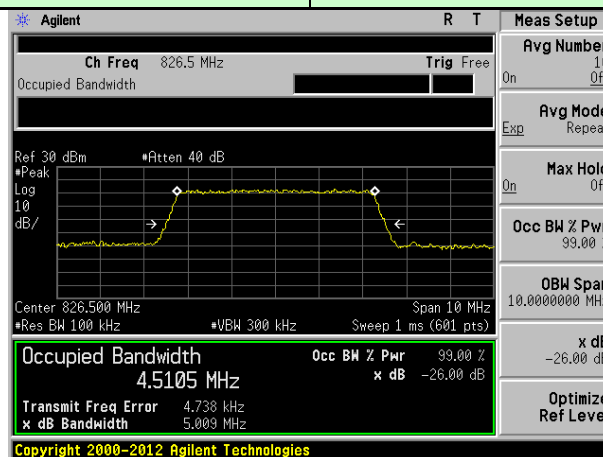
Middle channel



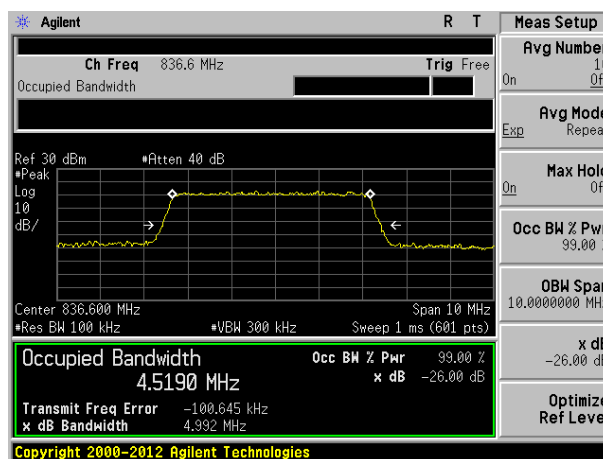
Highest channel

Test band: LTE Band 5

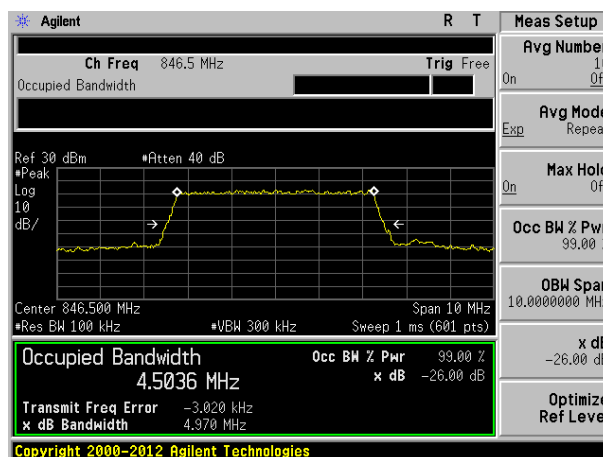
Channel Bandwidth: 5MHz



Lowest channel

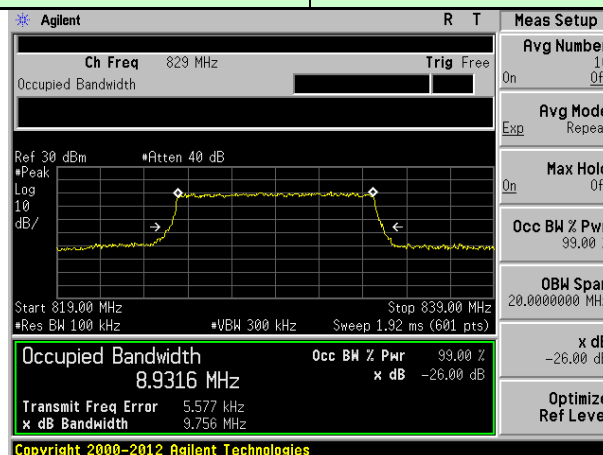


Middle channel

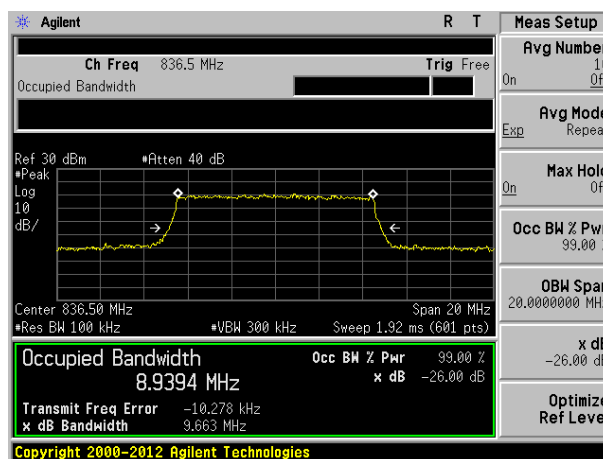


Highest channel

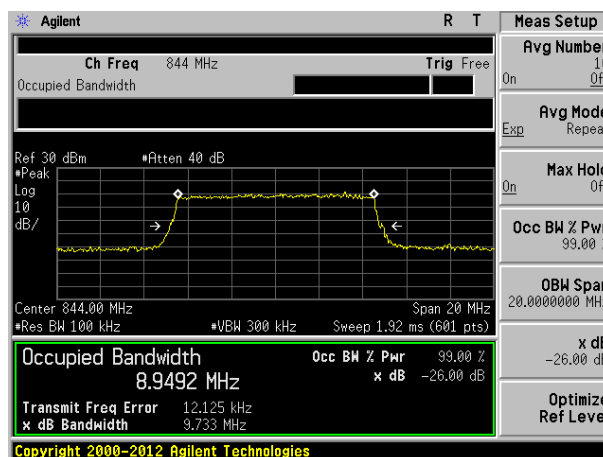
|                       |                          |
|-----------------------|--------------------------|
| Test band: LTE Band 5 | Channel Bandwidth: 10MHz |
|-----------------------|--------------------------|



Lowest channel

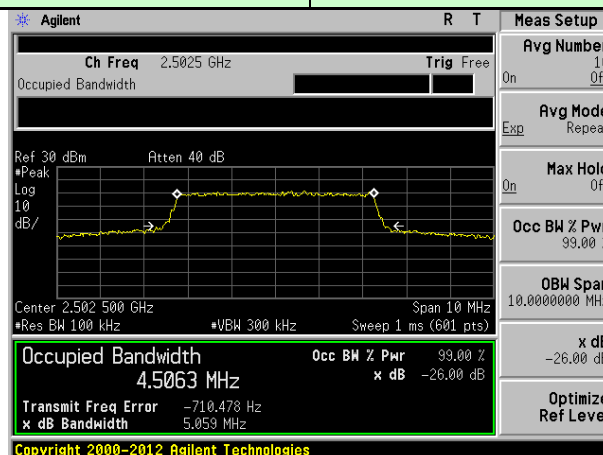


Middle channel

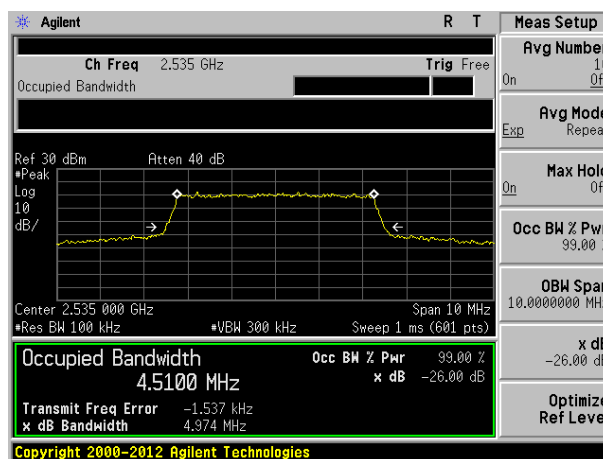


Highest channel

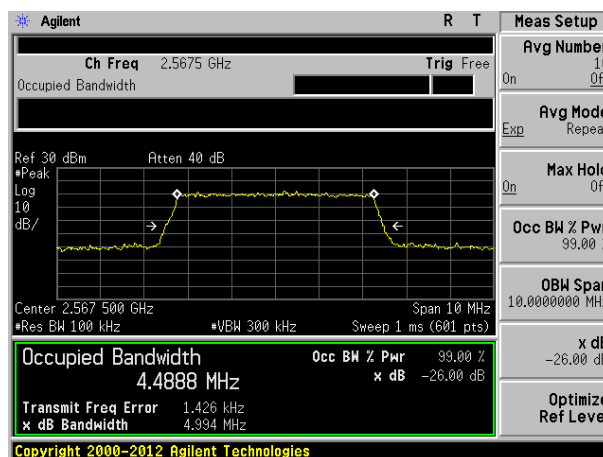
|                       |                         |
|-----------------------|-------------------------|
| Test band: LTE Band 7 | Channel Bandwidth: 5MHz |
|-----------------------|-------------------------|



Lowest channel



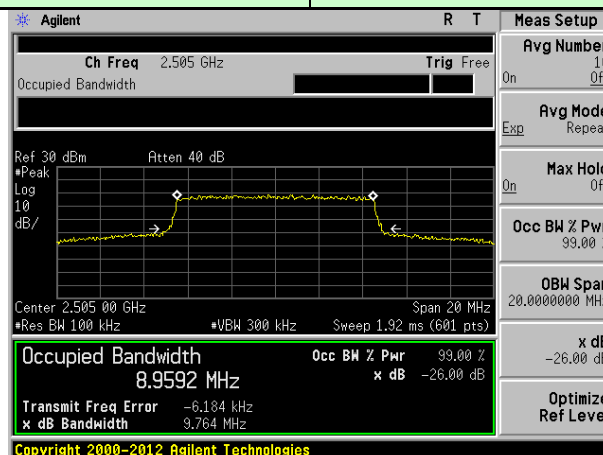
Middle channel



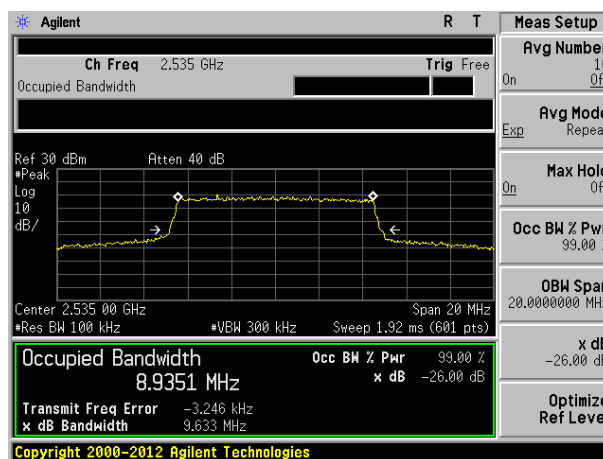
Highest channel

Test band: LTE Band 7

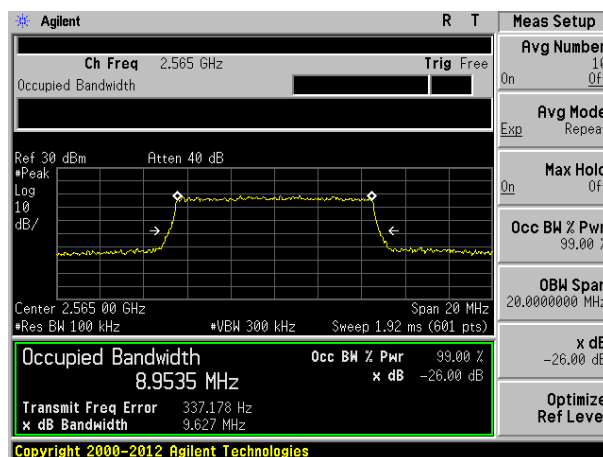
Channel Bandwidth: 10MHz



Lowest channel



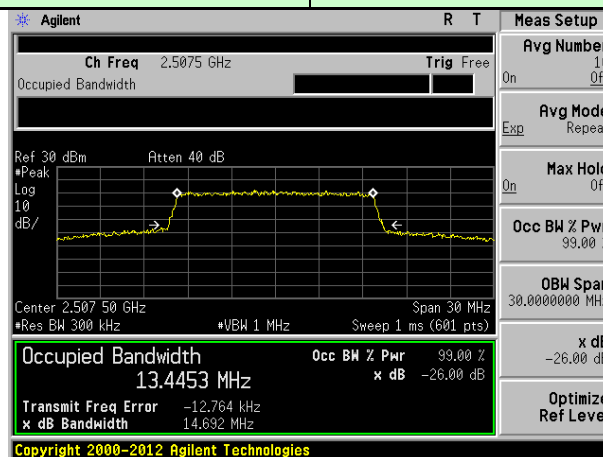
Middle channel



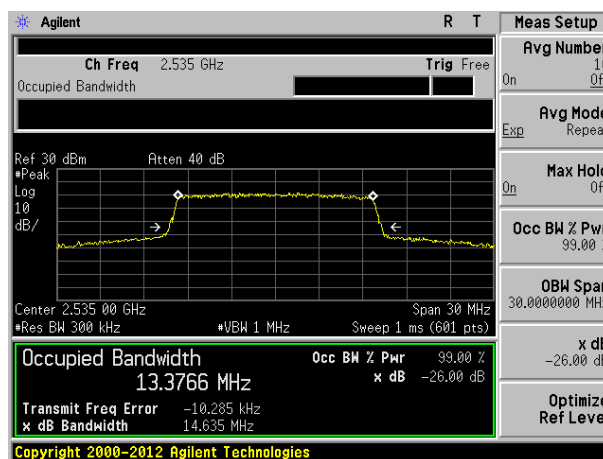
Highest channel

Test band: LTE Band 7

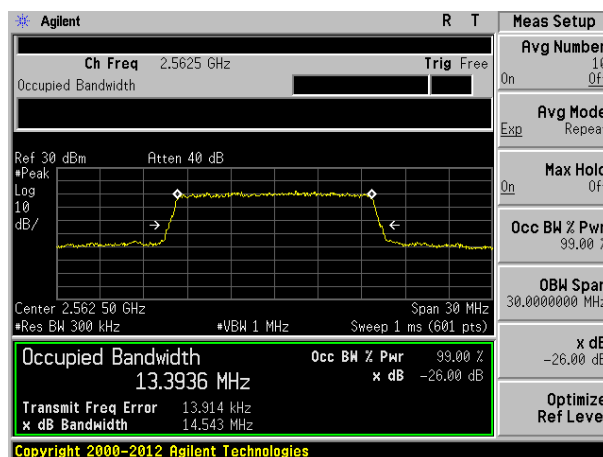
Channel Bandwidth: 15MHz



Lowest channel

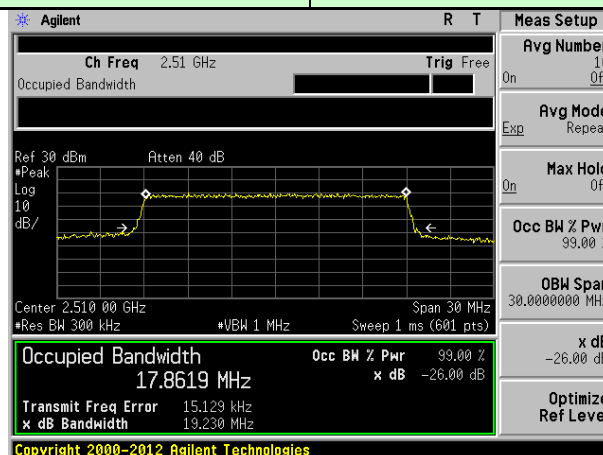


Middle channel

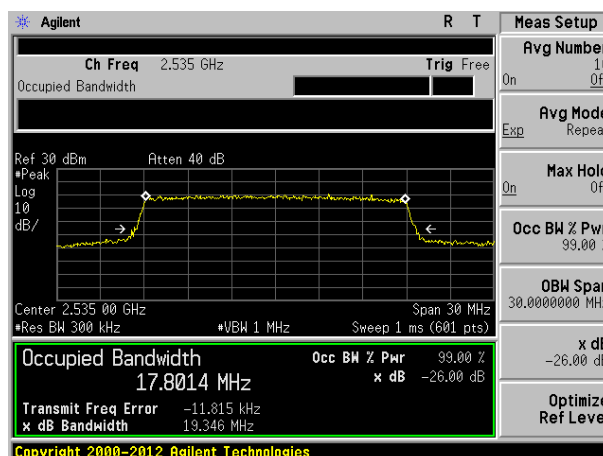


Highest channel

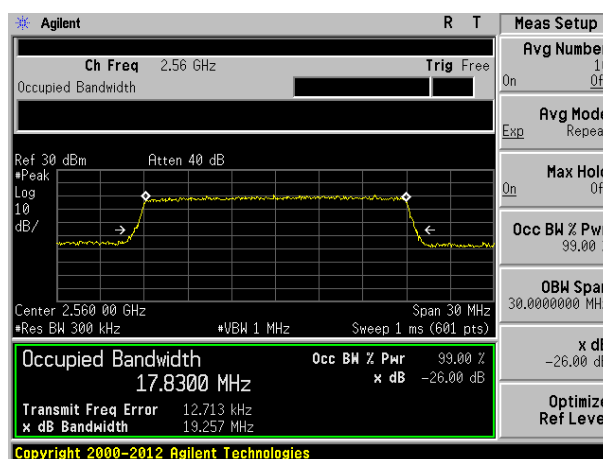
|                       |                          |
|-----------------------|--------------------------|
| Test band: LTE Band 7 | Channel Bandwidth: 20MHz |
|-----------------------|--------------------------|



Lowest channel



Middle channel



Highest channel

## 7.6 MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

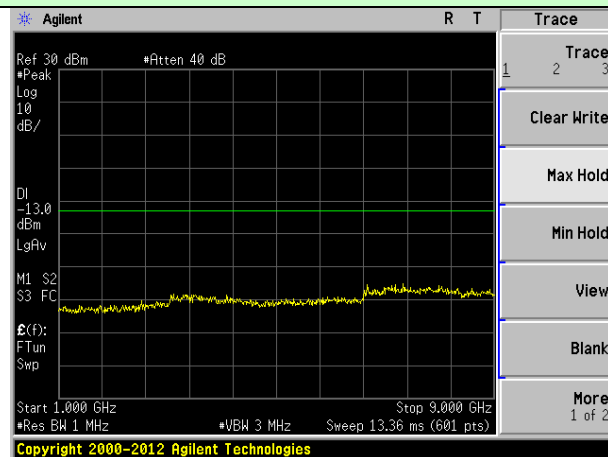
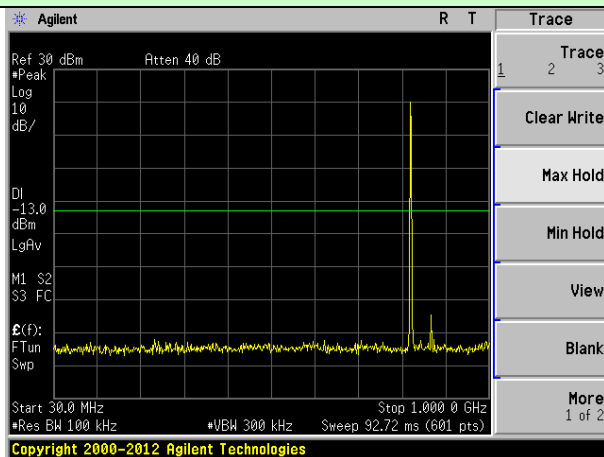
## 7.7 Out of band emission at antenna terminals

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 24.238 (a); FCC Part 27.53(h)/(g)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test Method:      | FCC part2.1051                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Limit:            | -13dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test setup:       | <p><i>Note: Measurement setup for testing on Antenna connector</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test Procedure:   | <ol style="list-style-type: none"> <li>1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.</li> <li>2 The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.</li> <li>3 For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10th harmonic.</li> <li>4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.</li> </ol> |
| Test Instruments: | Refer to section 6.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Test mode:        | Refer to section 7.1 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

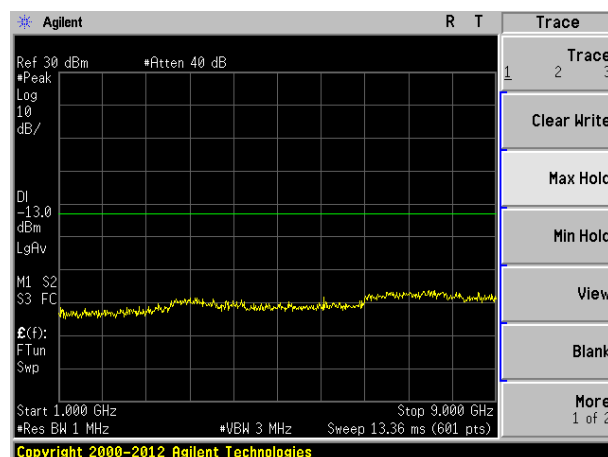
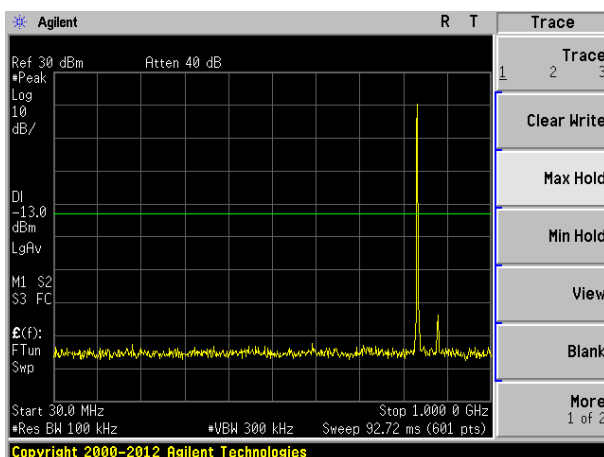
Test plot as follows:

Test Mode: LTE Band 5

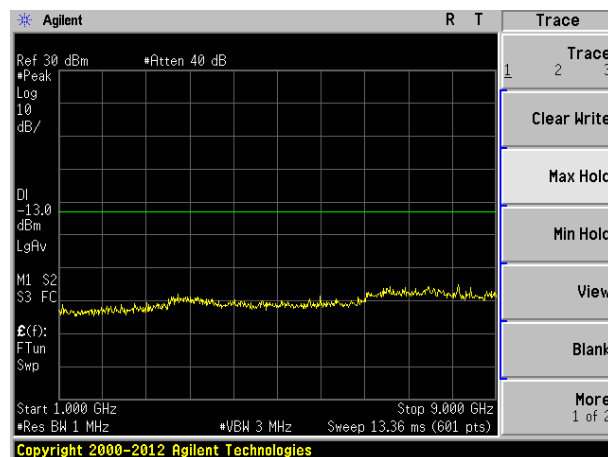
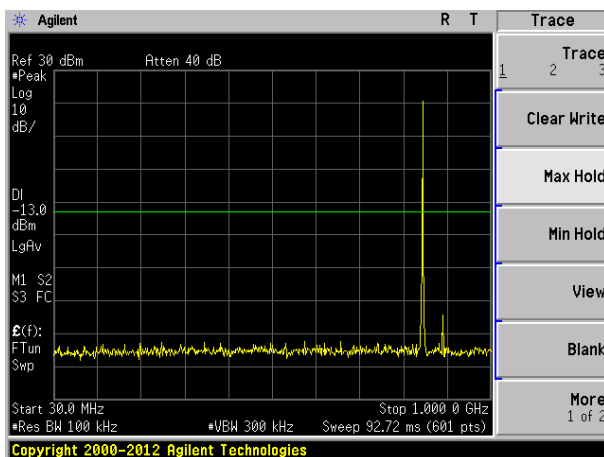
Channel Bandwidth: 1.4MHz



Lowest channel



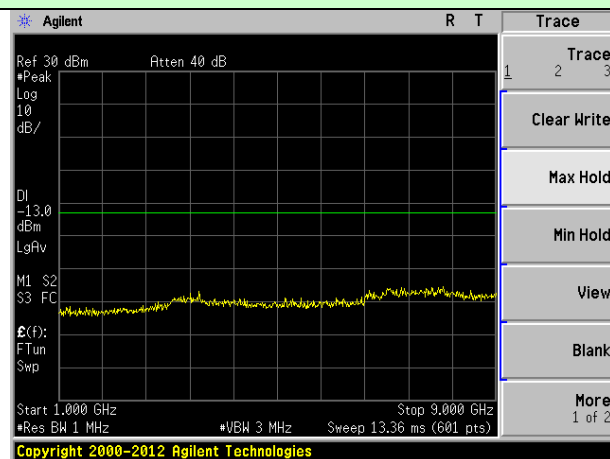
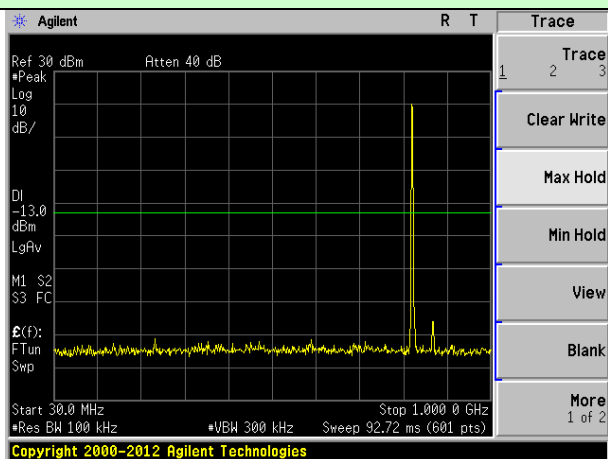
Middle channel



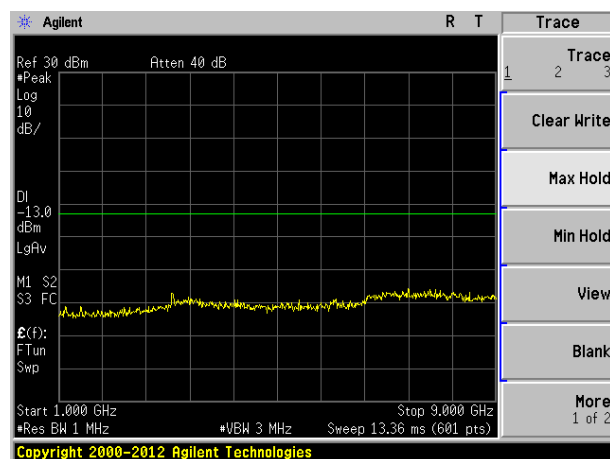
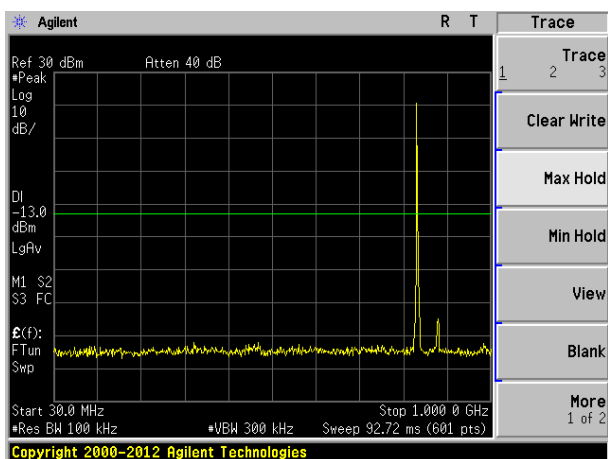
Highest channel

Test Mode: LTE Band 5

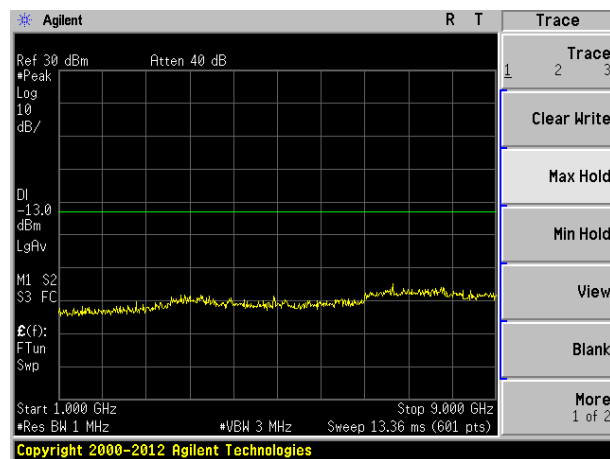
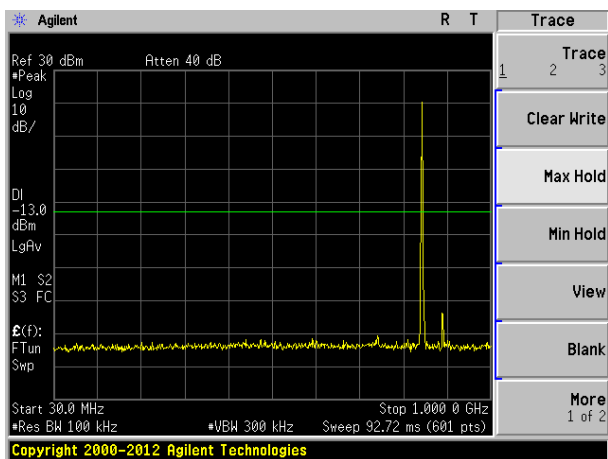
Channel Bandwidth: 3MHz



Lowest channel



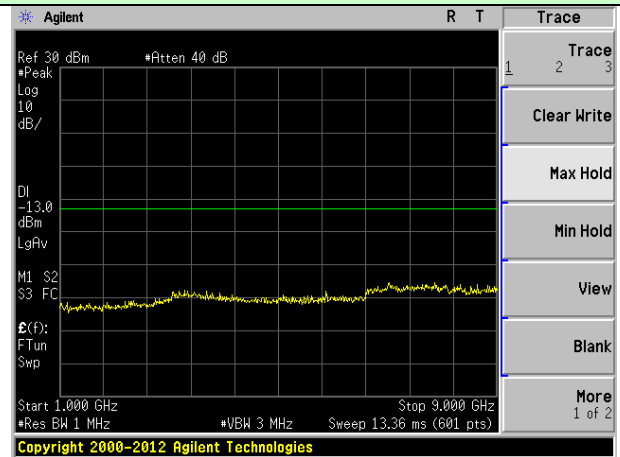
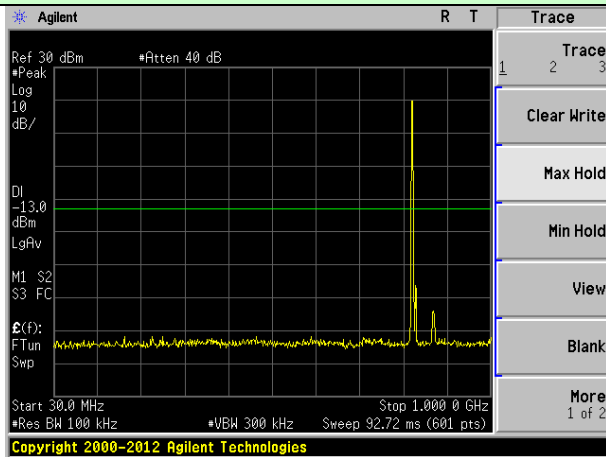
Middle channel



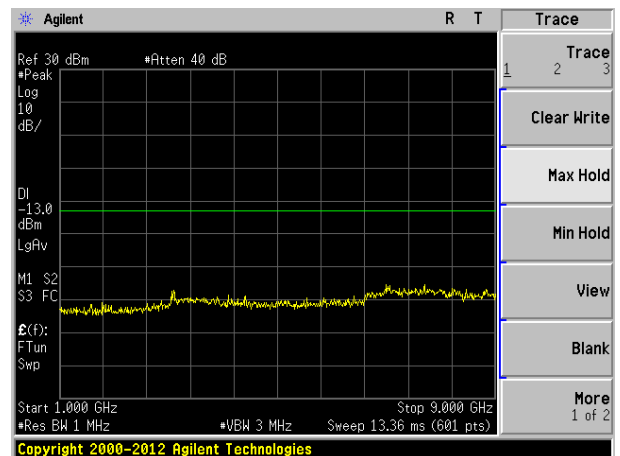
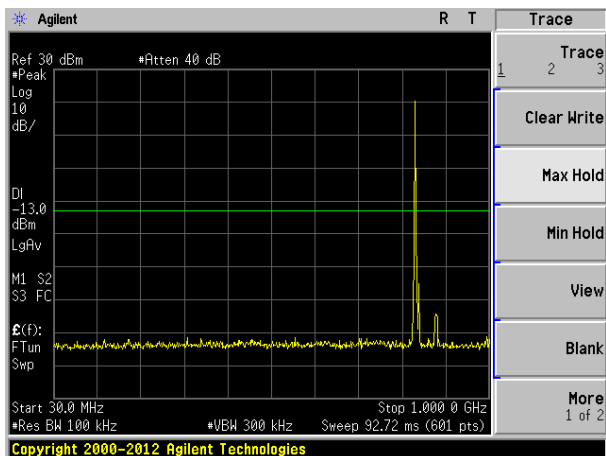
Highest channel

Test Mode: LTE Band 5

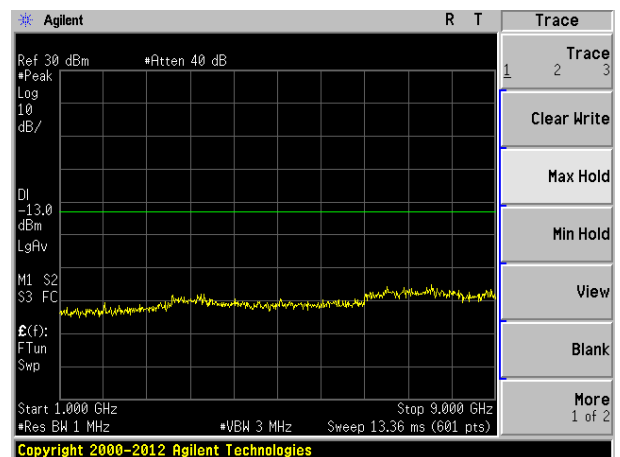
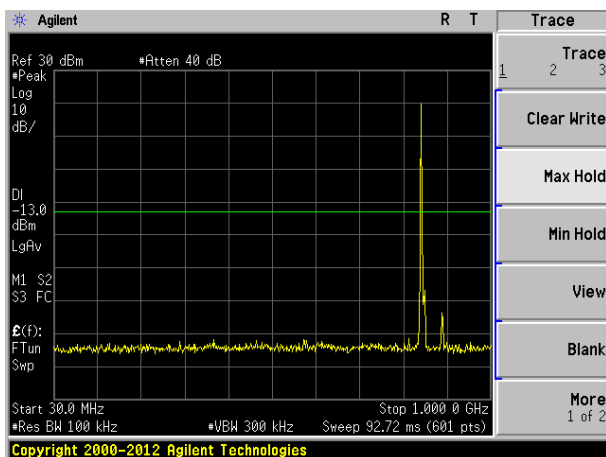
Channel Bandwidth: 5MHz



Lowest channel



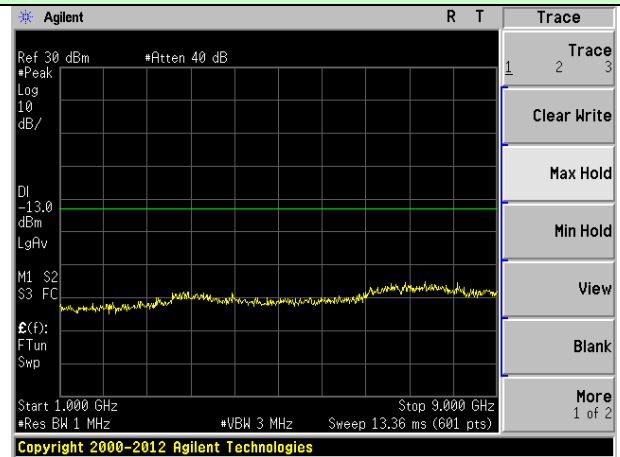
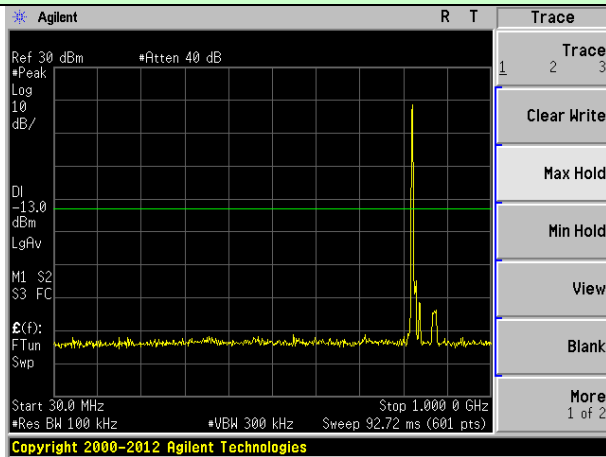
Middle channel



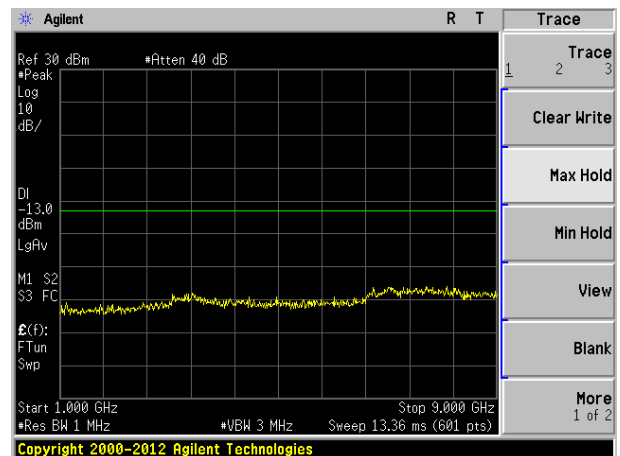
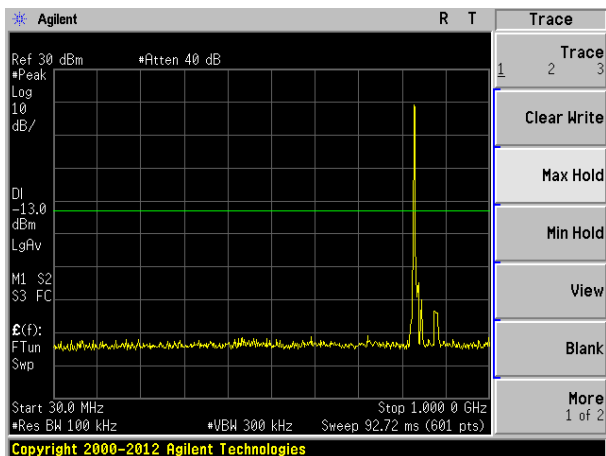
Highest channel

Test Mode: LTE Band 5

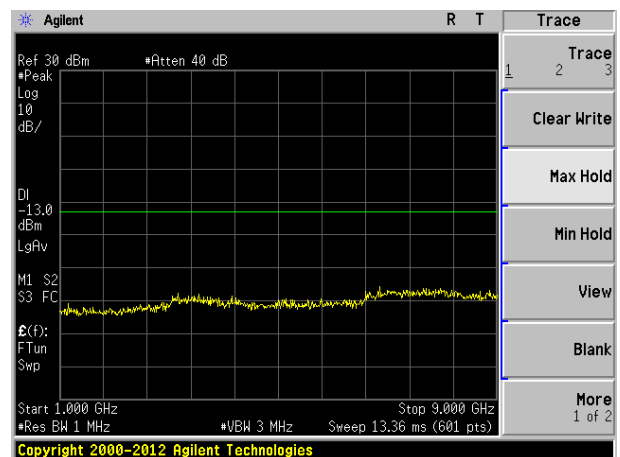
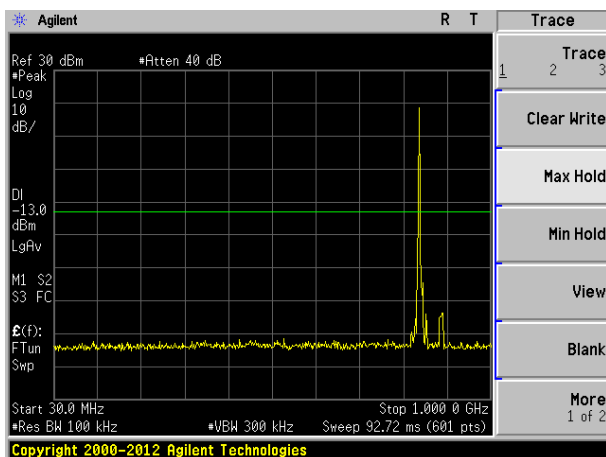
Channel Bandwidth: 10MHz



Lowest channel



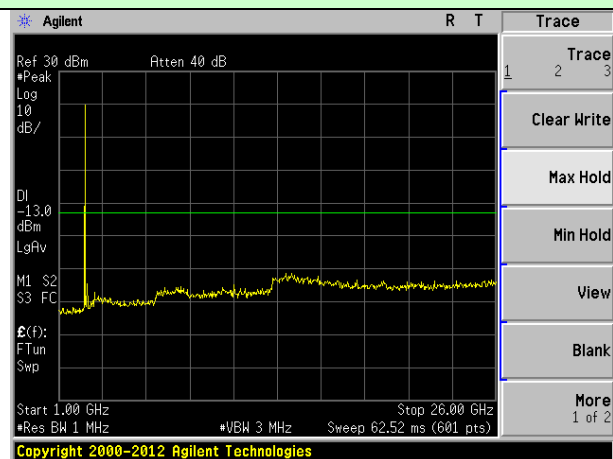
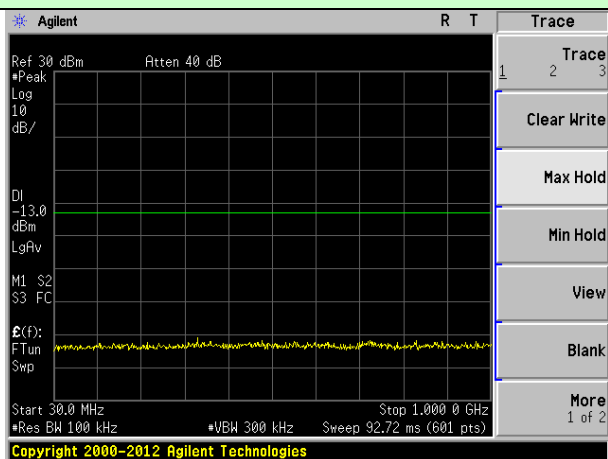
Middle channel



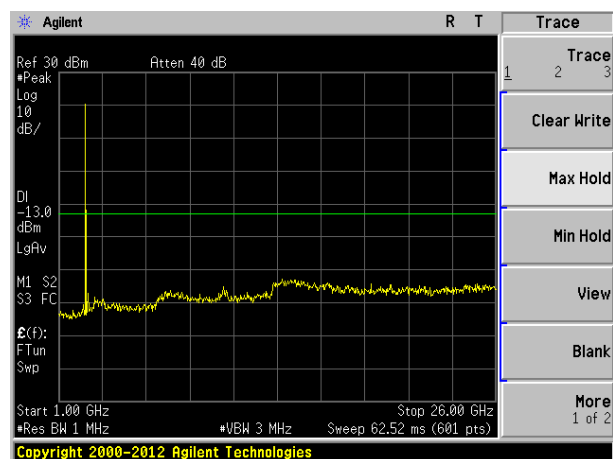
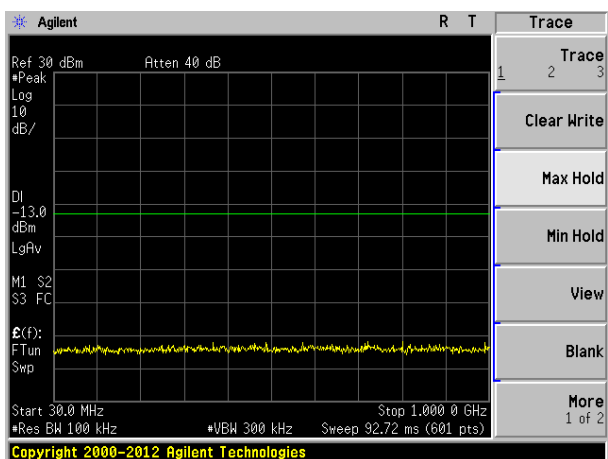
Highest channel

Test Mode: LTE Band 7

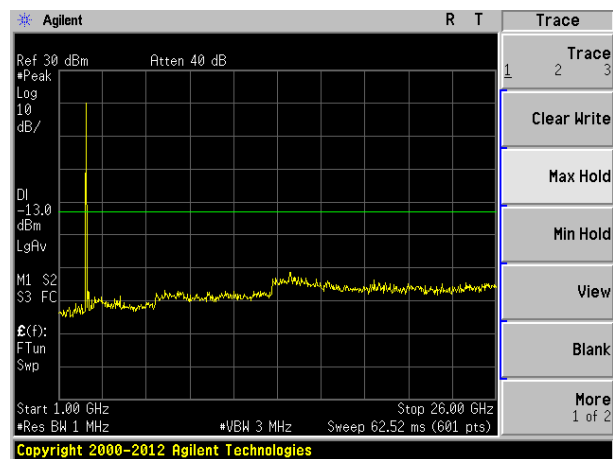
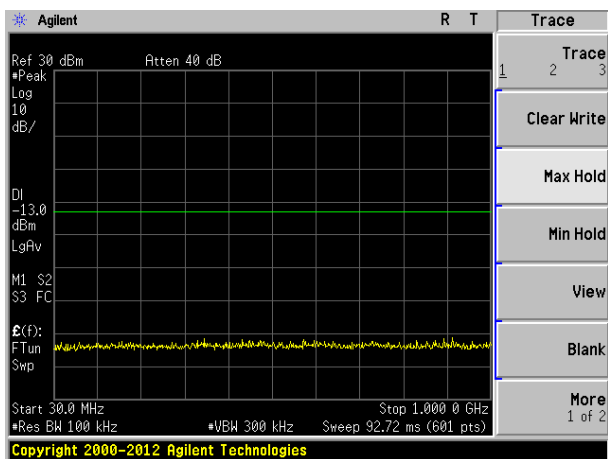
Channel Bandwidth: 5MHz



Lowest channel



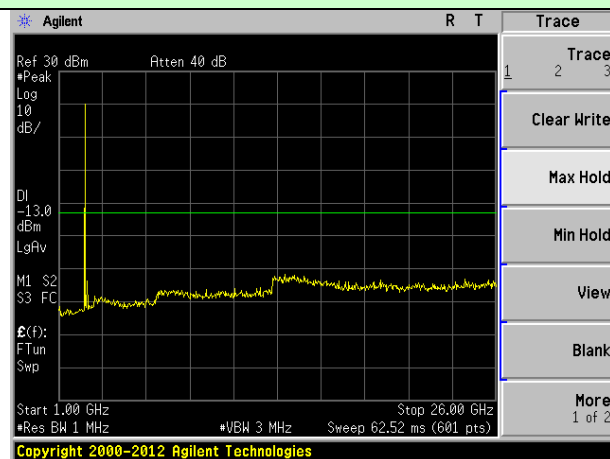
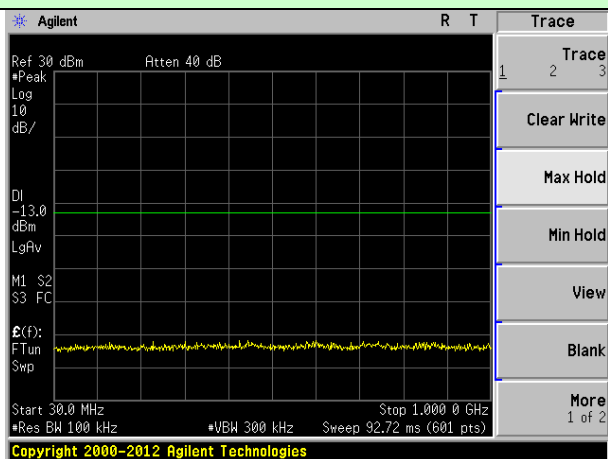
Middle channel



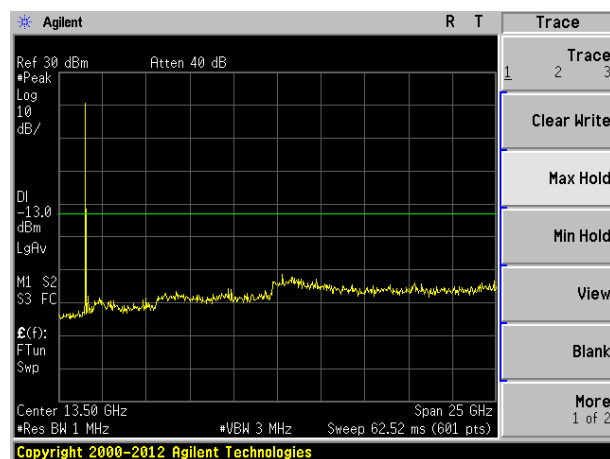
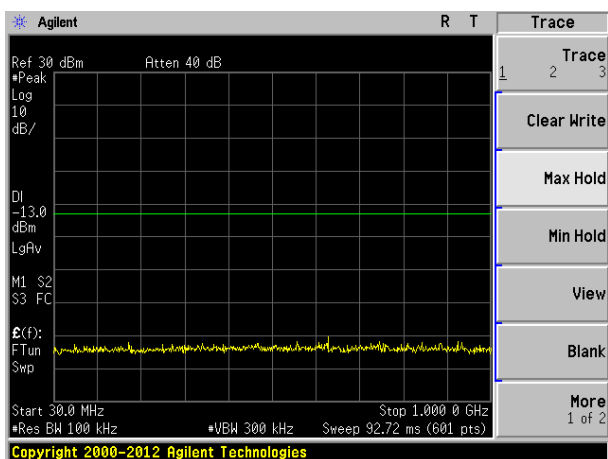
Highest channel

Test Mode: LTE Band 7

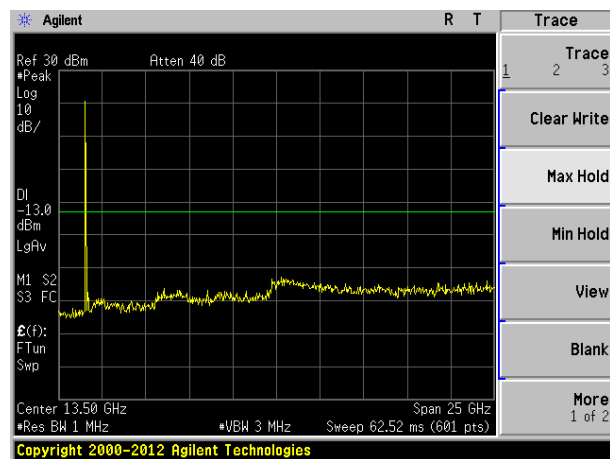
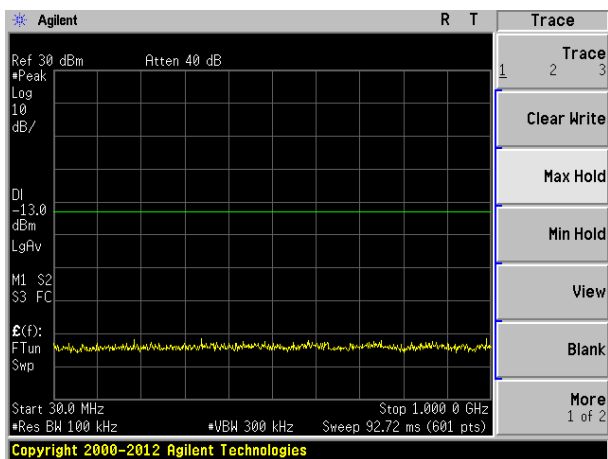
Channel Bandwidth: 10MHz



Lowest channel



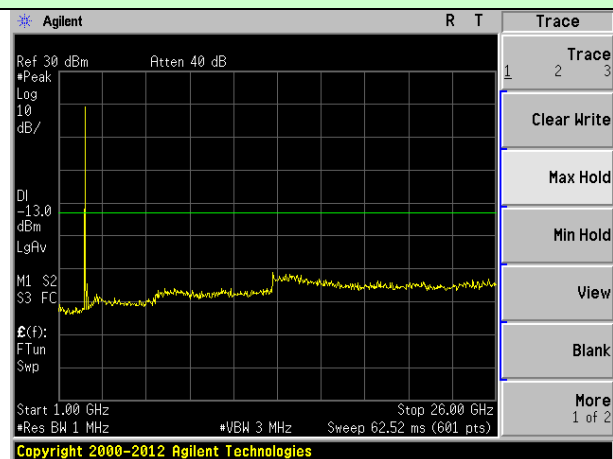
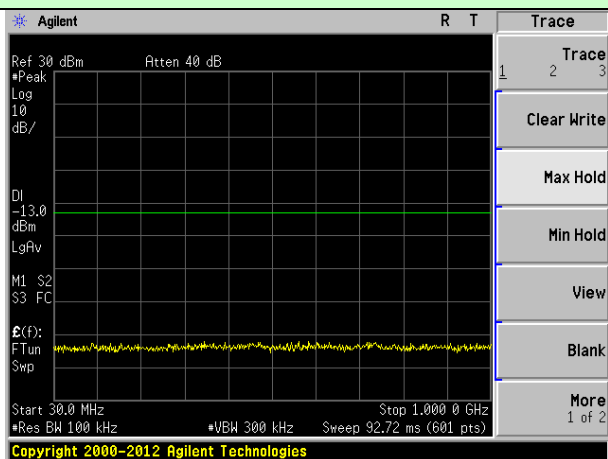
Middle channel



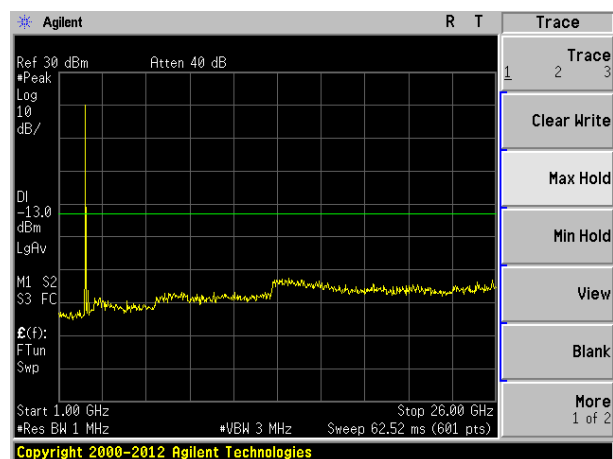
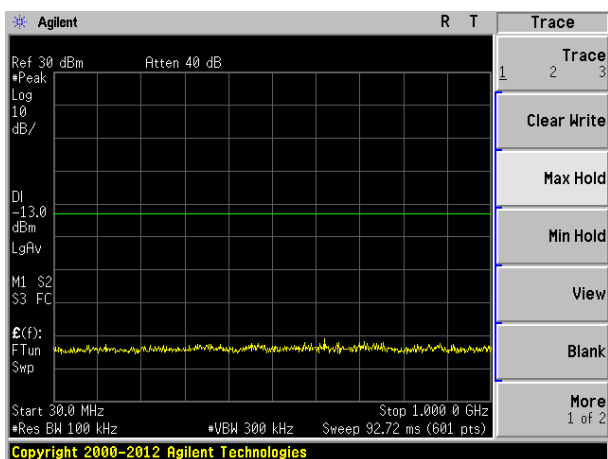
Highest channel

Test Mode: LTE Band 7

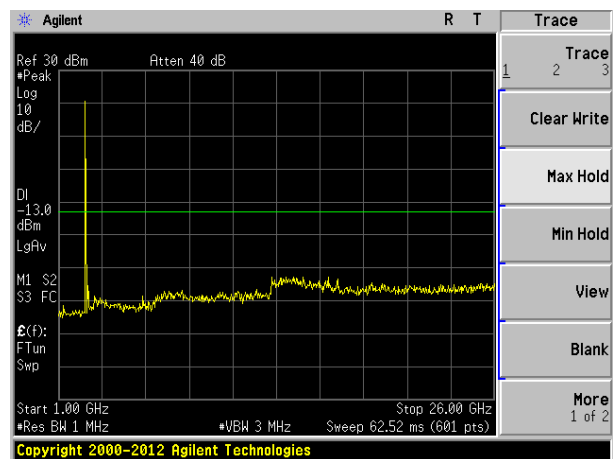
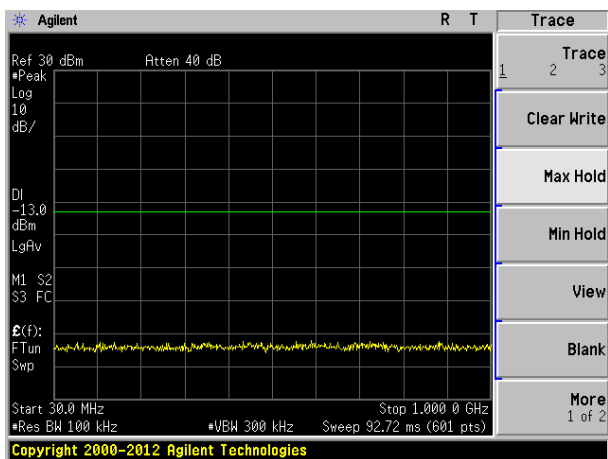
Channel Bandwidth: 15MHz



Lowest channel



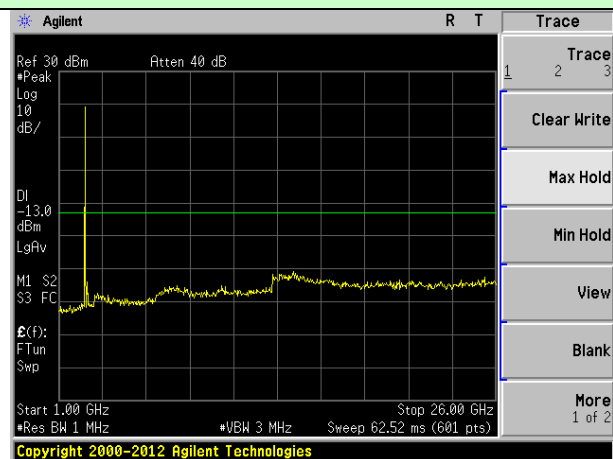
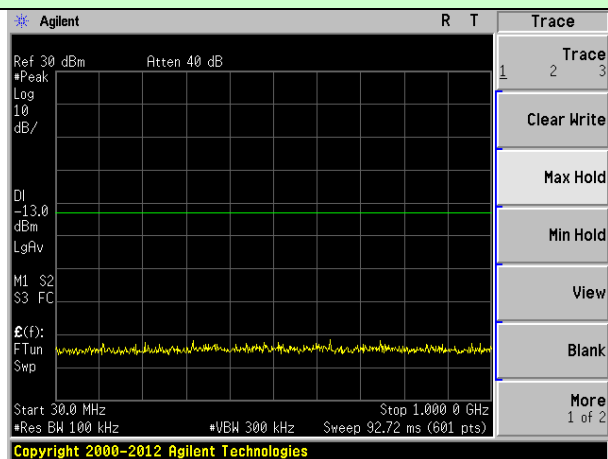
Middle channel



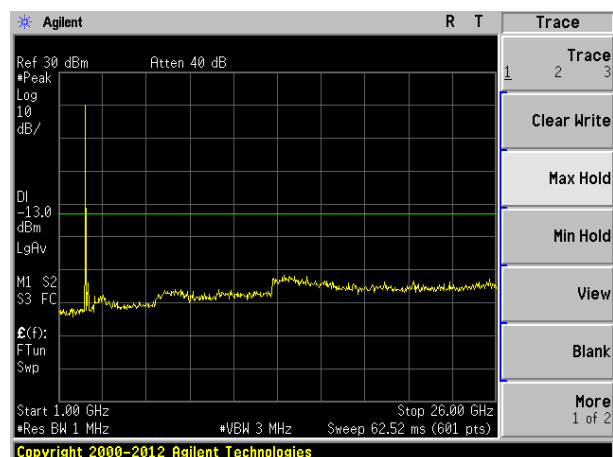
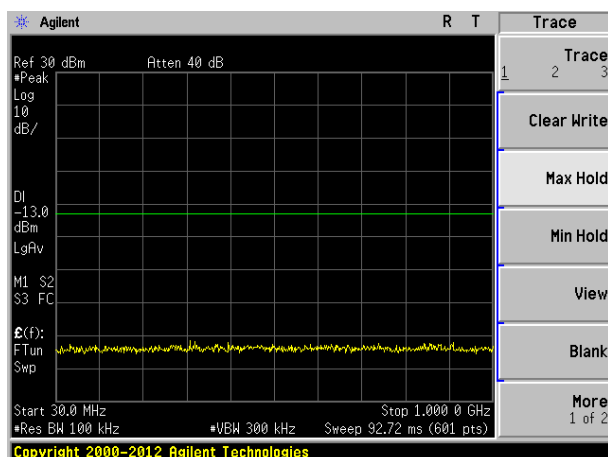
Highest channel

Test Mode: LTE Band 7

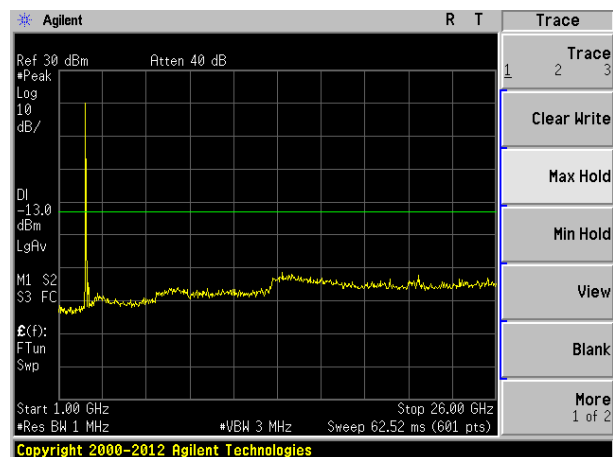
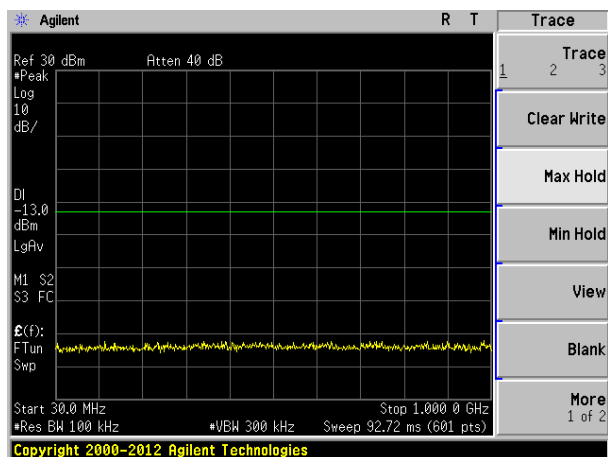
Channel Bandwidth: 20MHz



Lowest channel



Middle channel

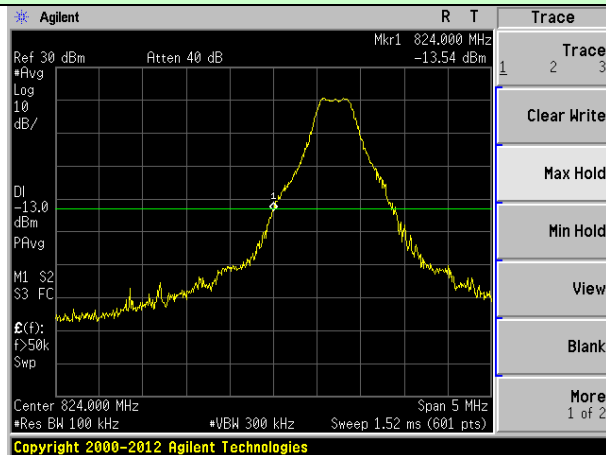


Highest channel

## Band Edge:

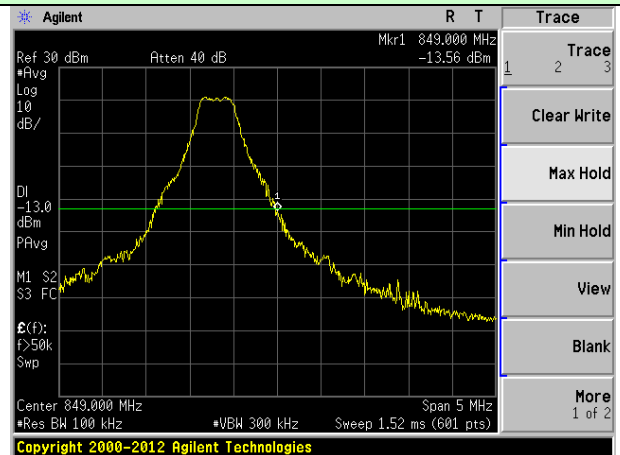
LTE Band 5(QPSK mode):

1.4MHz Bandwidth (RB size:1# RB offset:0#)



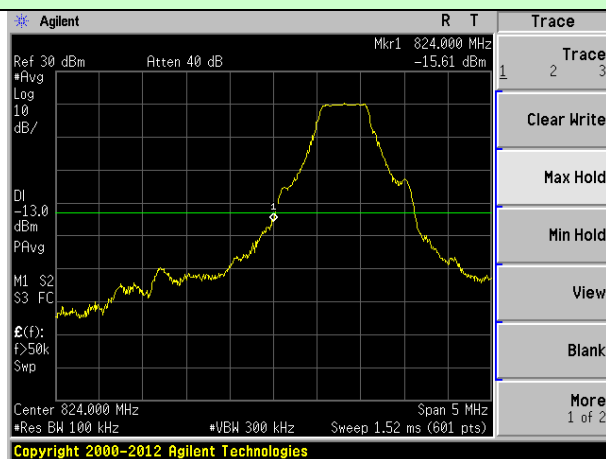
Lowest channel

1.4MHz Bandwidth (RB size:1# RB offset:5#)



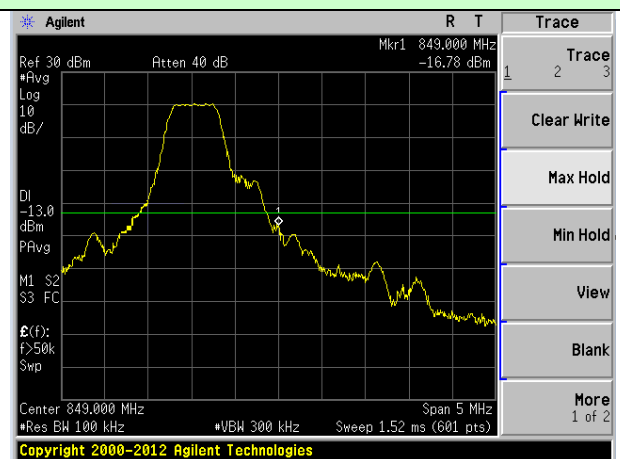
Highest channel

1.4MHz Bandwidth (RB size:3# RB offset:0#)



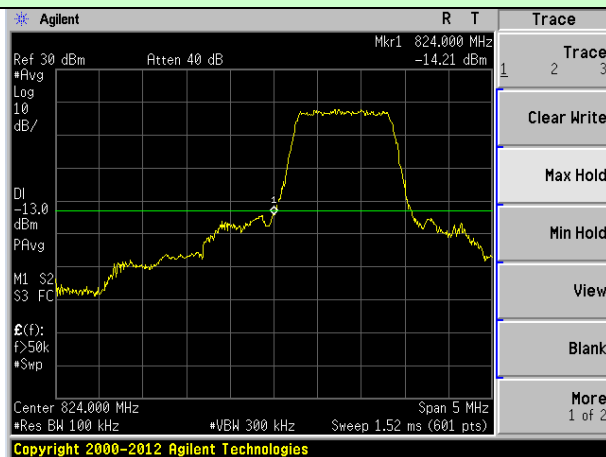
Lowest channel

1.4MHz Bandwidth (RB size:3# RB offset:2#)



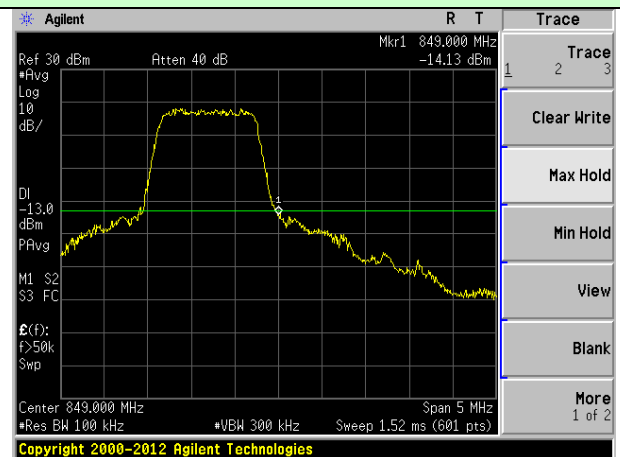
Highest channel

1.4MHz Bandwidth (RB size:6# RB offset:0#)



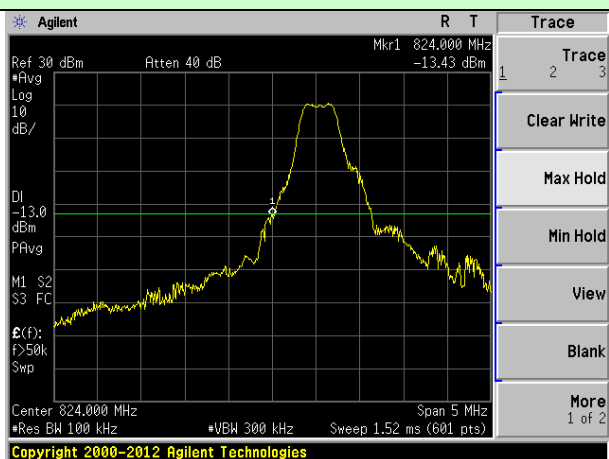
Lowest channel

1.4MHz Bandwidth (RB size:6# RB offset:0#)

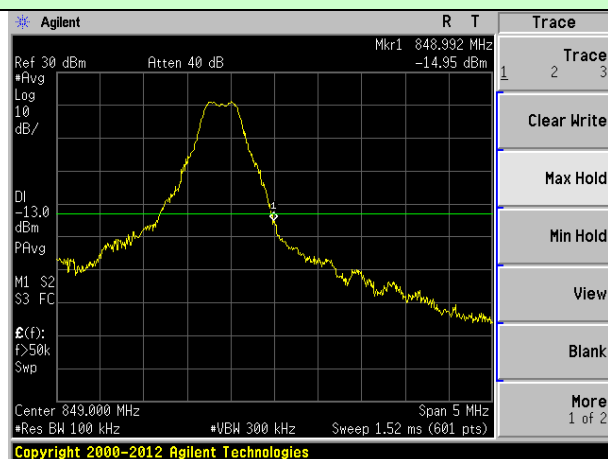


Highest channel

3MHz Bandwidth (RB size:1# RB offset:0#)



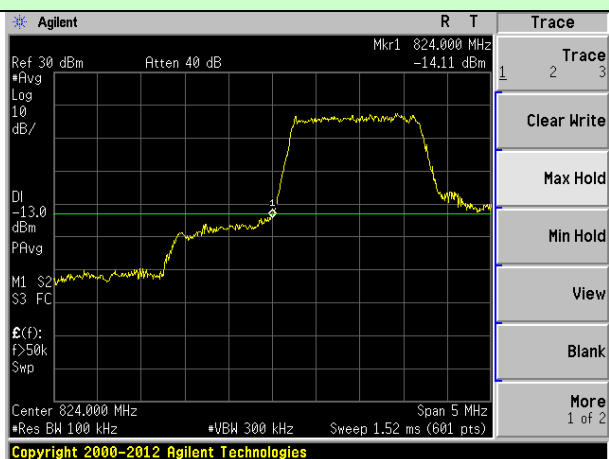
3MHz Bandwidth (RB size:1# RB offset:14#)



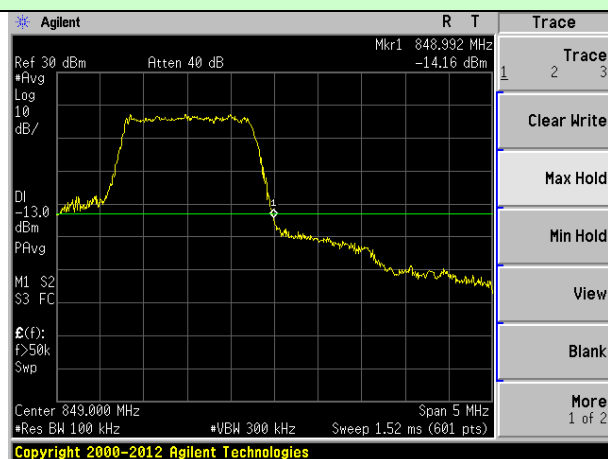
Lowest channel

Highest channel

3MHz Bandwidth (RB size:8# RB offset:0#)



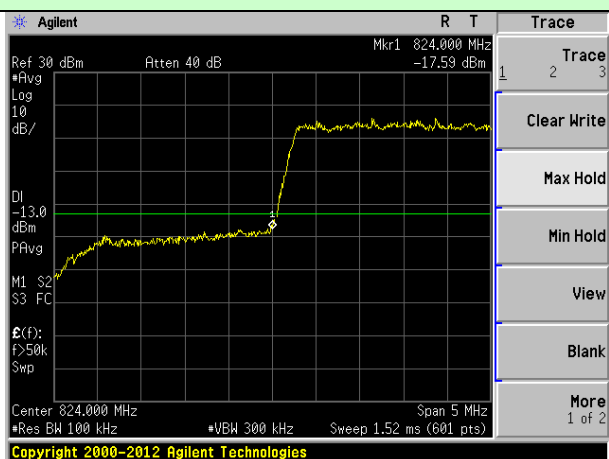
3MHz Bandwidth (RB size:8# RB offset:7#)



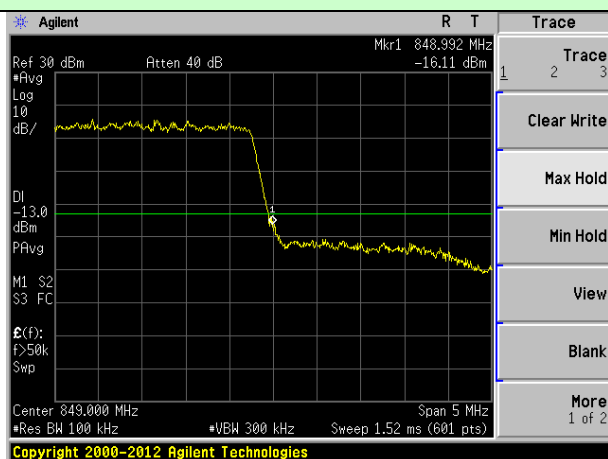
Lowest channel

Highest channel

3MHz Bandwidth (RB size:15# RB offset:0#)



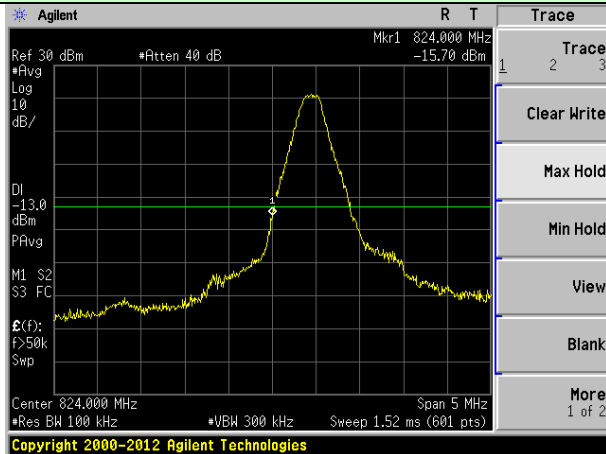
3MHz Bandwidth (RB size:15# RB offset:0#)



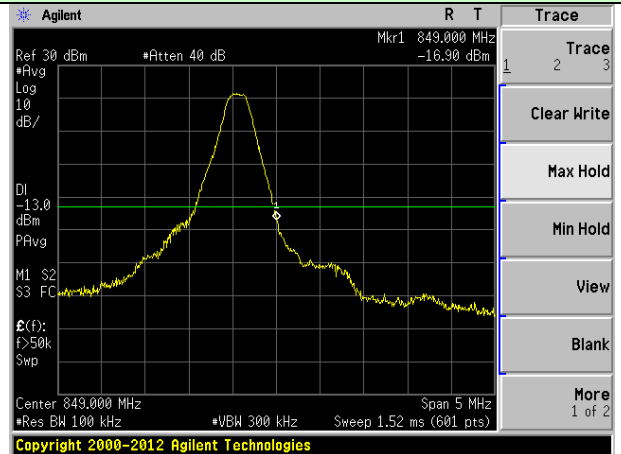
Lowest channel

Highest channel

5MHz Bandwidth (RB size:1# RB offset:0#)



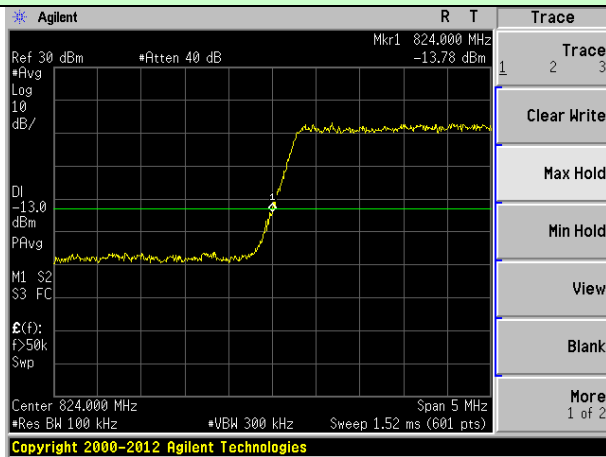
5MHz Bandwidth (RB size:1# RB offset:24#)



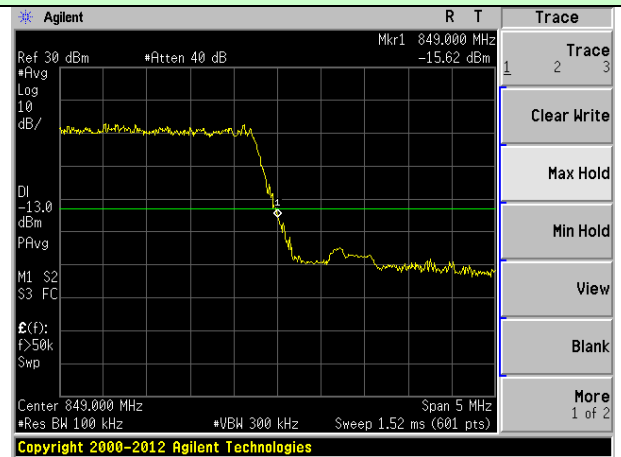
Lowest channel

Highest channel

5MHz Bandwidth (RB size:12# RB offset:0#)



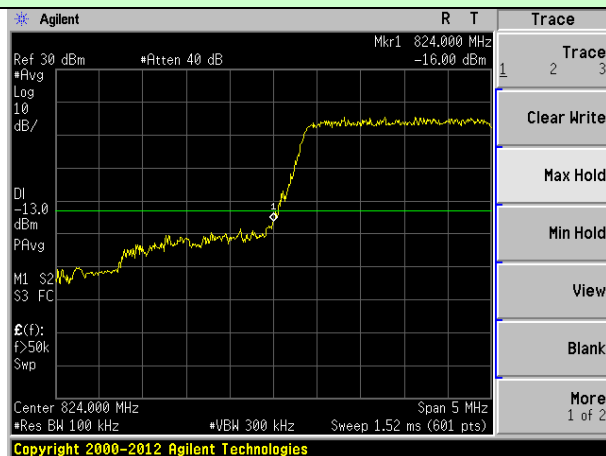
5MHz Bandwidth (RB size:12# RB offset:13#)



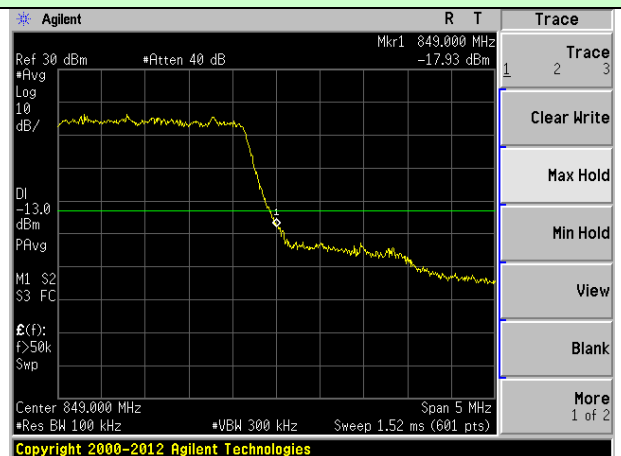
Lowest channel

Highest channel

5MHz Bandwidth (RB size:25# RB offset:0#)



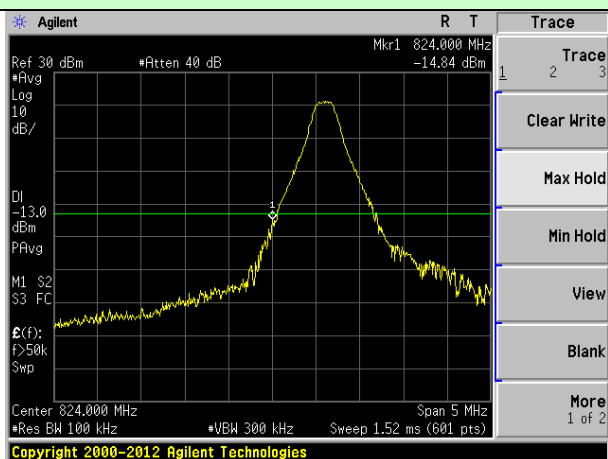
5MHz Bandwidth (RB size:25# RB offset:0#)



Lowest channel

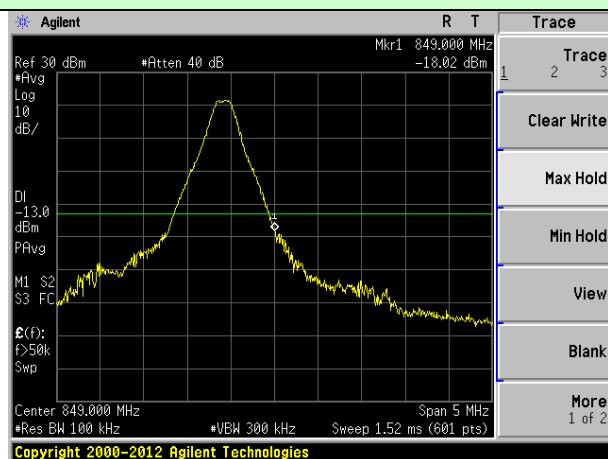
Highest channel

10MHz Bandwidth (RB size:1# RB offset:0#)



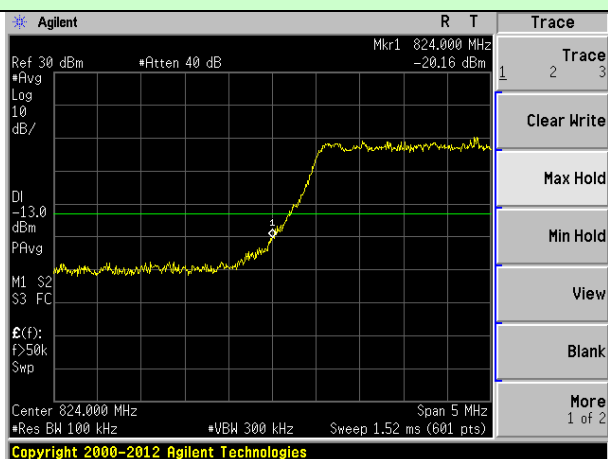
Lowest channel

10MHz Bandwidth (RB size:1# RB offset:49#)



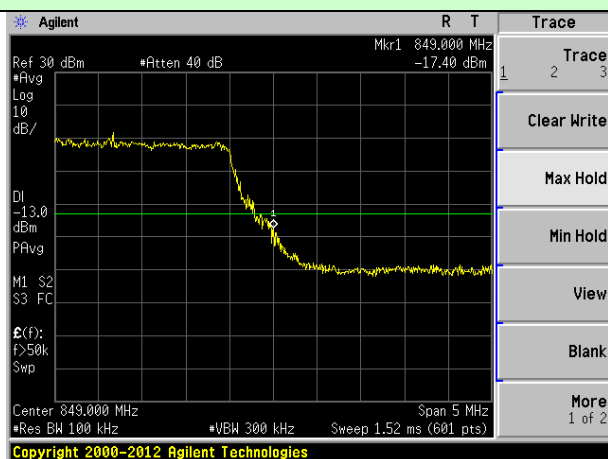
Highest channel

10MHz Bandwidth (RB size:25# RB offset:0#)



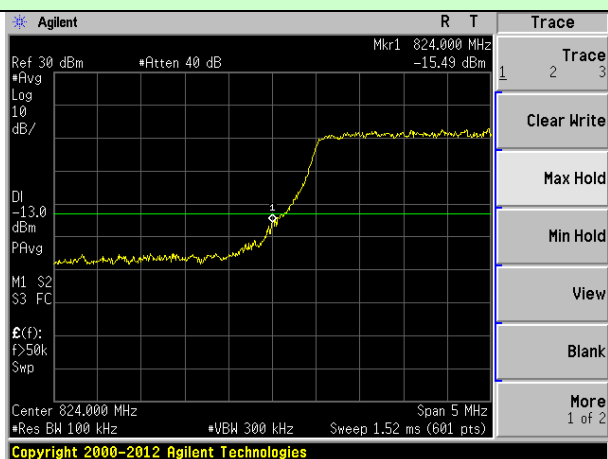
Lowest channel

10MHz Bandwidth (RB size:25# RB offset:25#)



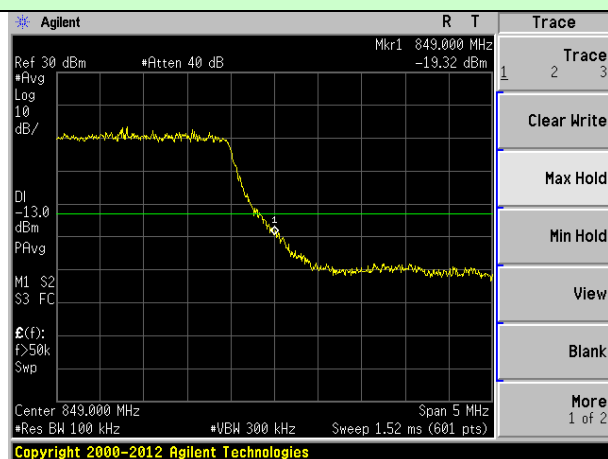
Highest channel

10MHz Bandwidth (RB size:50# RB offset:0#)



Lowest channel

10MHz Bandwidth (RB size:50# RB offset:0#)

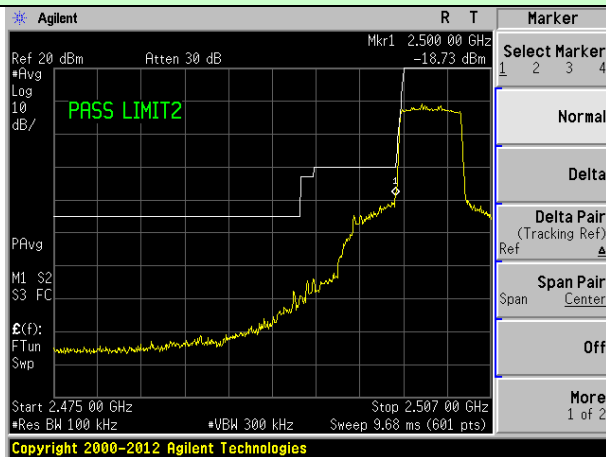


Highest channel

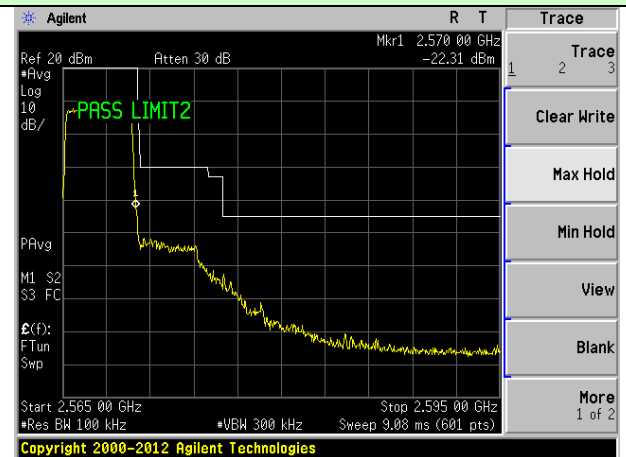
LTE Band 7(QPSK mode)

Test Mode: LTE Band 7

Channel Bandwidth: 5MHz



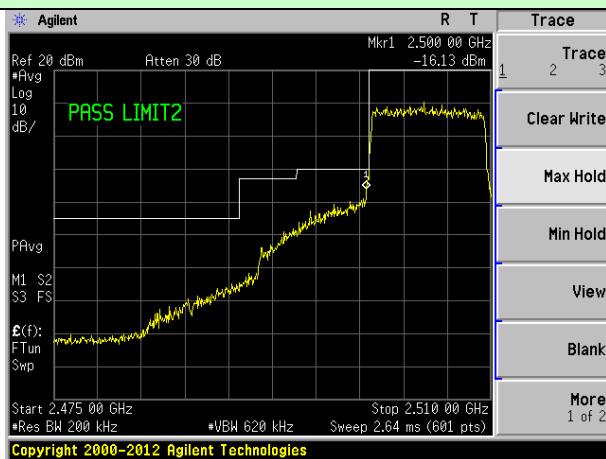
Lowest channel



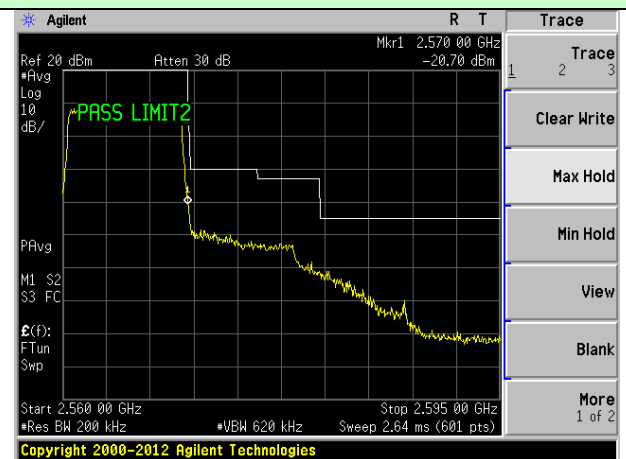
Highest channel

Test Mode: LTE Band 7

Channel Bandwidth: 10MHz



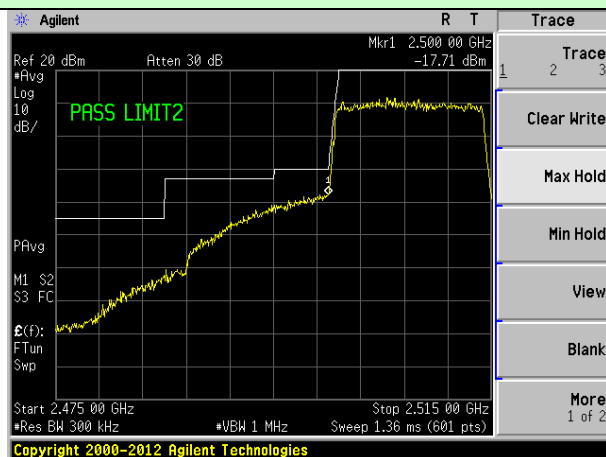
Lowest channel



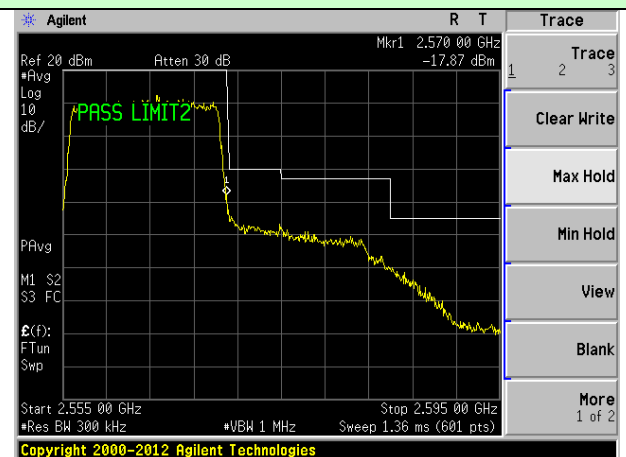
Highest channel

Test Mode: LTE Band 7

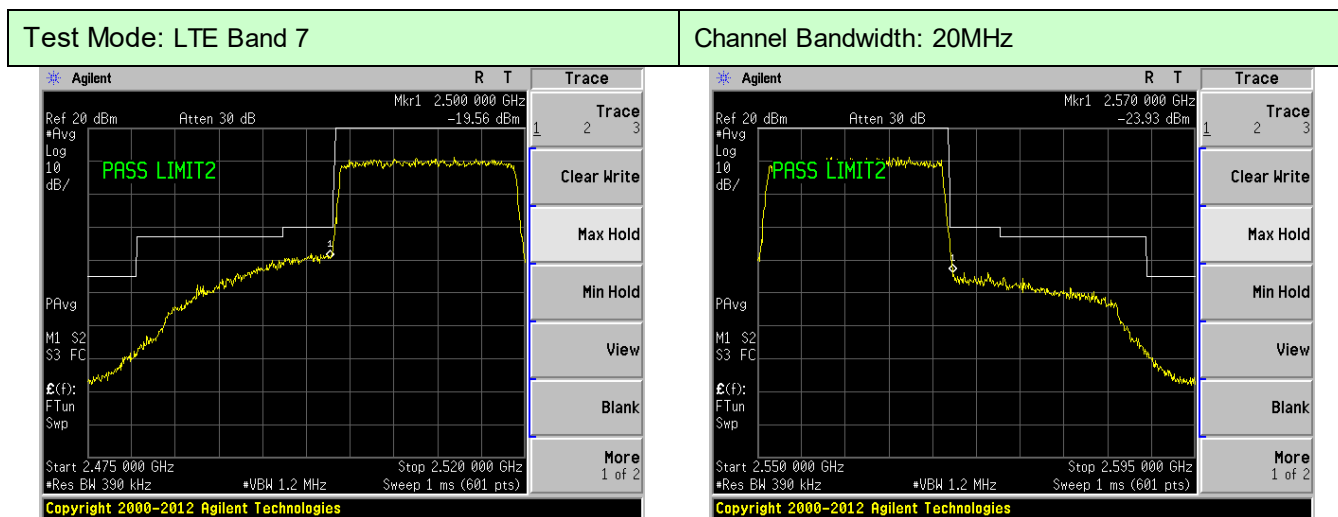
Channel Bandwidth: 15MHz



Lowest channel



Highest channel

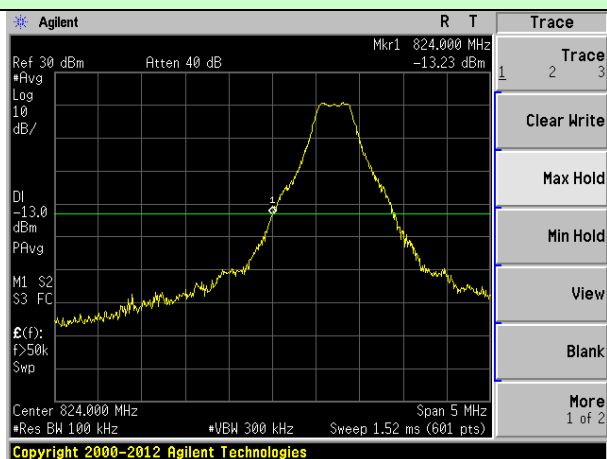


Lowest channel

Highest channel

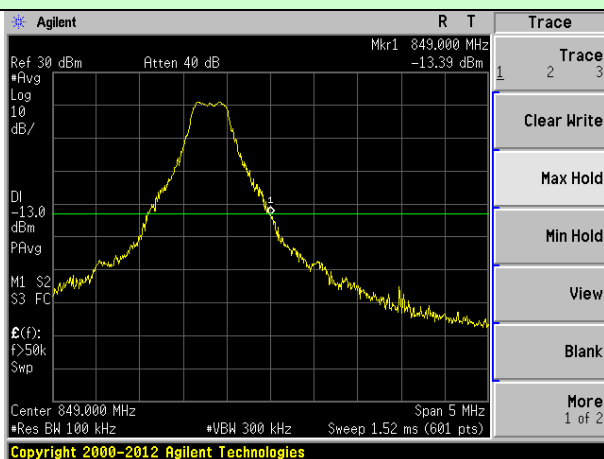
LTE Band 5 (16QAM mode):

1.4MHz Bandwidth (RB size:1# RB offset:0#)



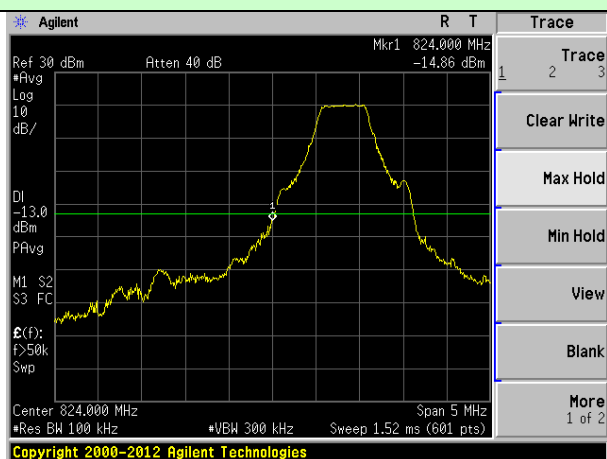
Lowest channel

1.4MHz Bandwidth (RB size:1# RB offset:5#)



Highest channel

1.4MHz Bandwidth (RB size:3# RB offset:0#)



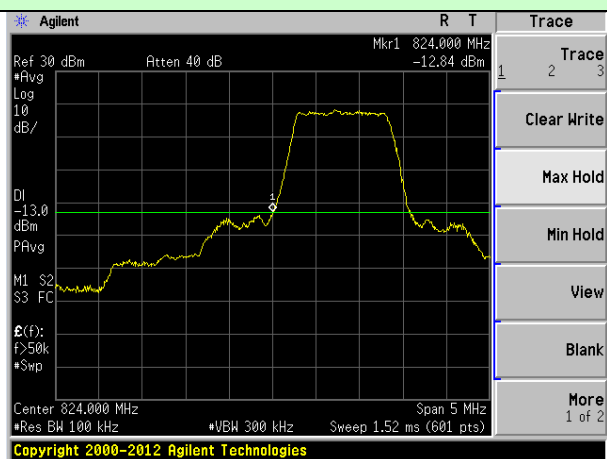
Lowest channel

1.4MHz Bandwidth (RB size:3# RB offset:2#)



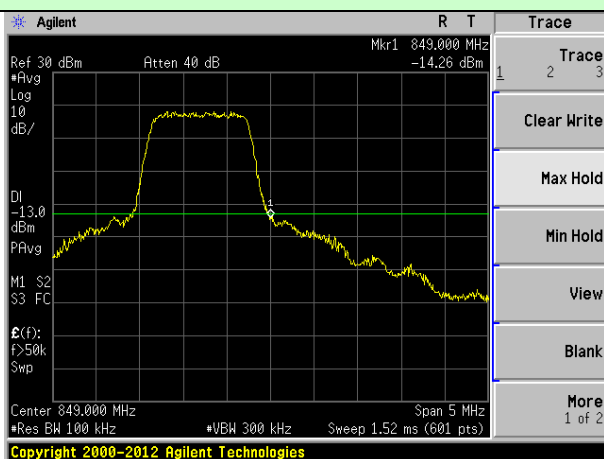
Highest channel

1.4MHz Bandwidth (RB size:6# RB offset:0#)



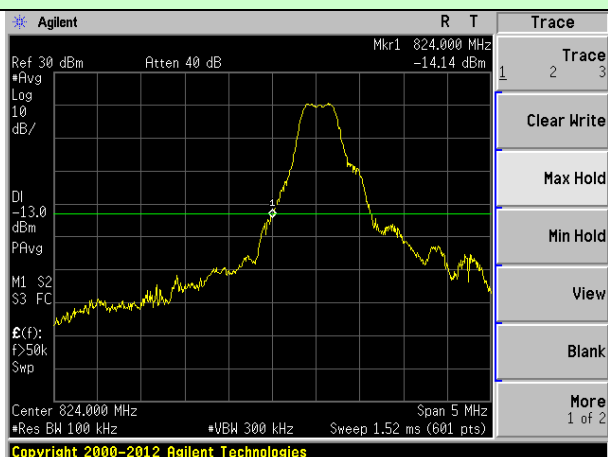
Lowest channel

1.4MHz Bandwidth (RB size:6# RB offset:0#)

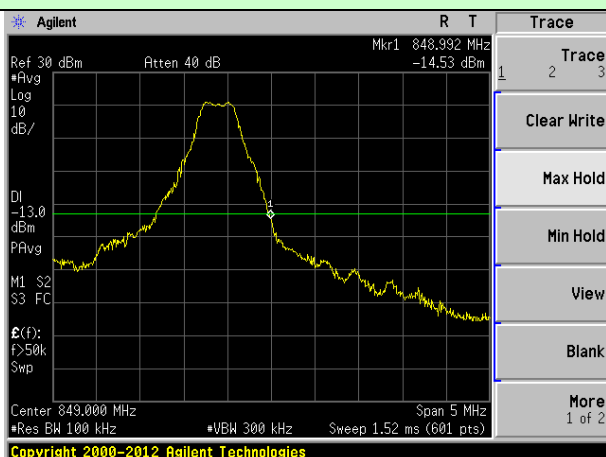


Highest channel

3MHz Bandwidth (RB size:1# RB offset:0#)



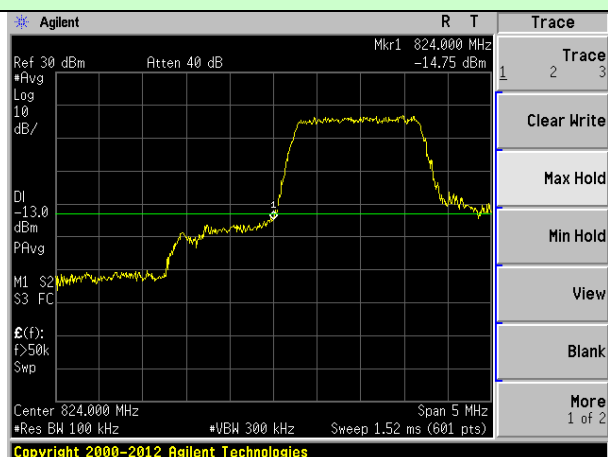
3MHz Bandwidth (RB size:1# RB offset:14#)



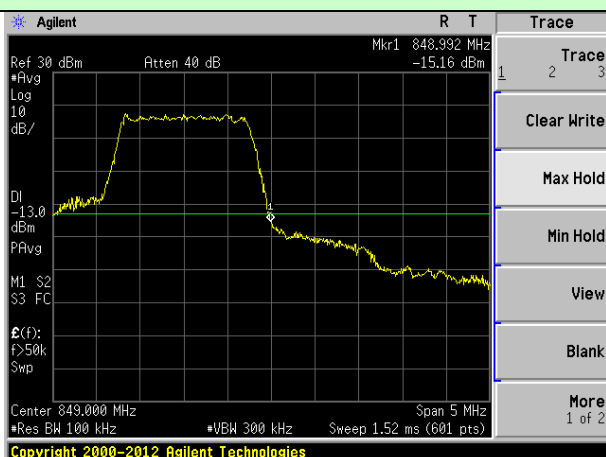
Lowest channel

Highest channel

3MHz Bandwidth (RB size:8# RB offset:0#)



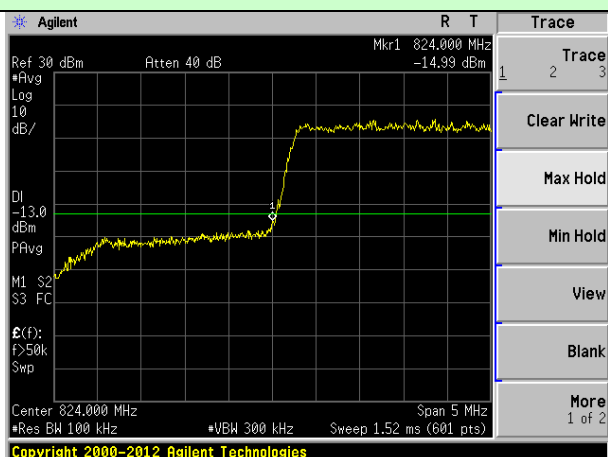
3MHz Bandwidth (RB size:8# RB offset:7#)



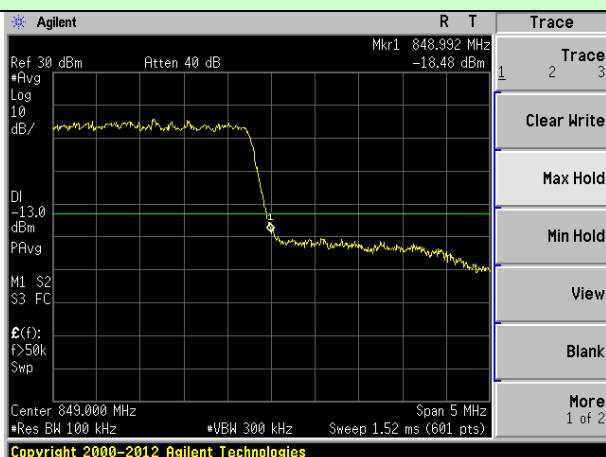
Lowest channel

Highest channel

3MHz Bandwidth (RB size:15# RB offset:0#)

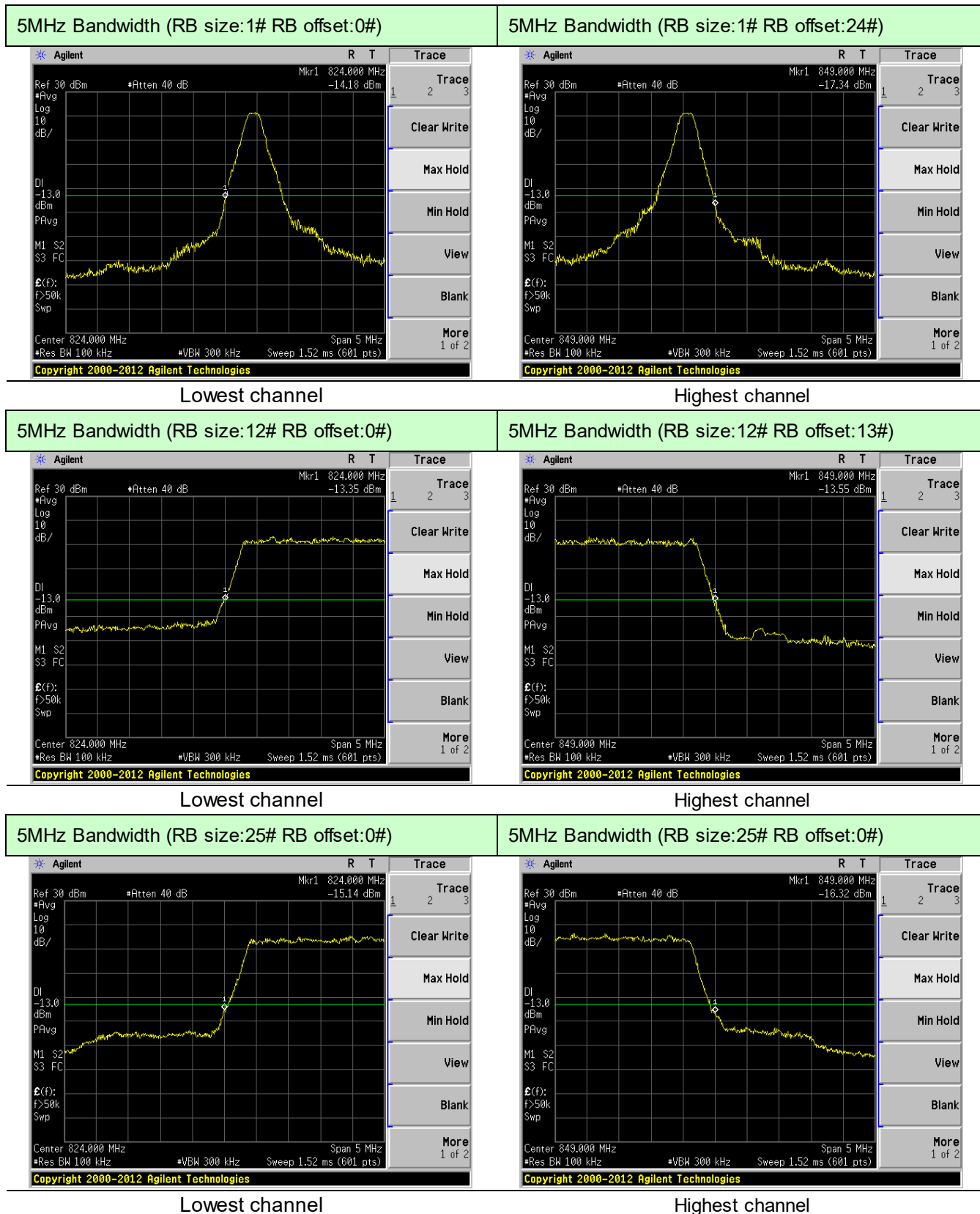


3MHz Bandwidth (RB size:15# RB offset:0#)

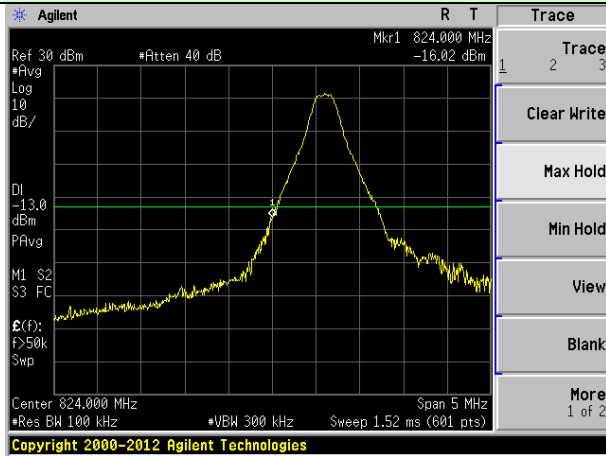


Lowest channel

Highest channel

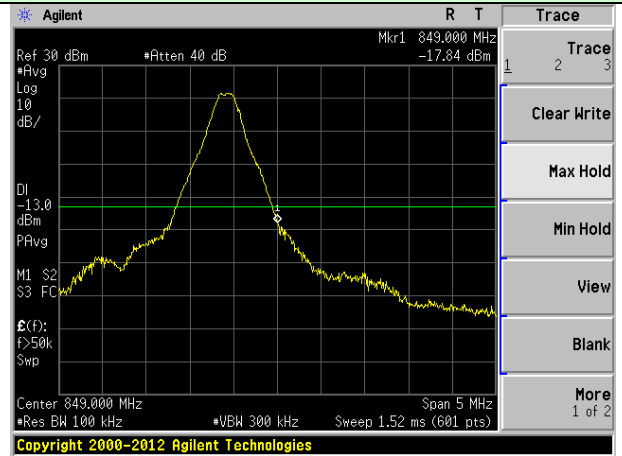


10MHz Bandwidth (RB size:1# RB offset:0#)



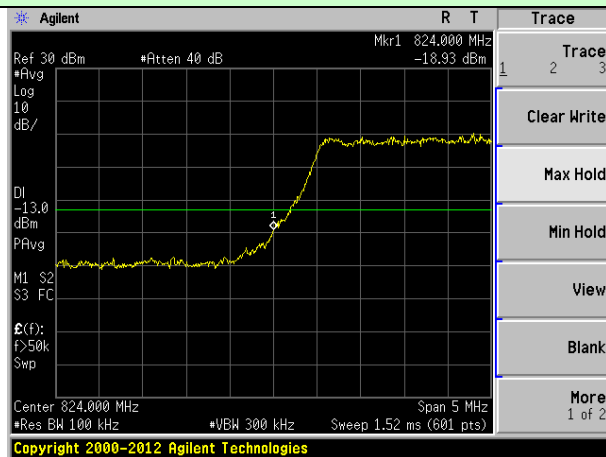
Lowest channel

10MHz Bandwidth (RB size:1# RB offset:49#)



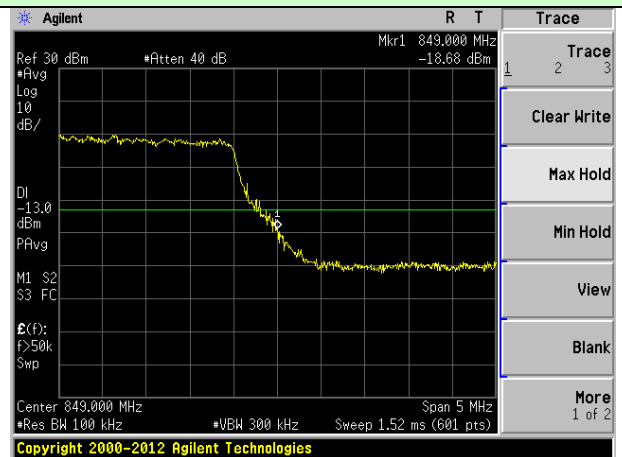
Highest channel

10MHz Bandwidth (RB size:25# RB offset:0#)



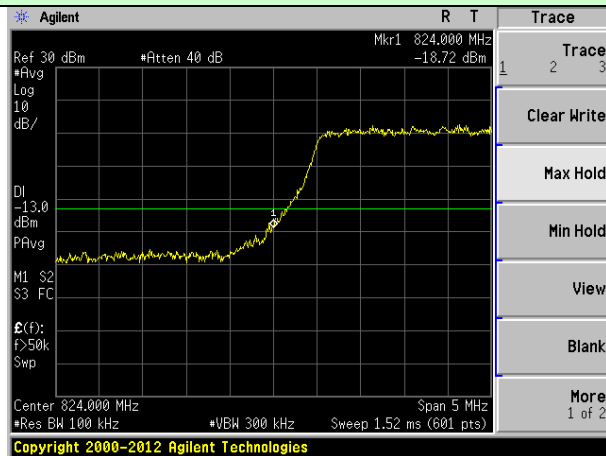
Lowest channel

10MHz Bandwidth (RB size:25# RB offset:25#)



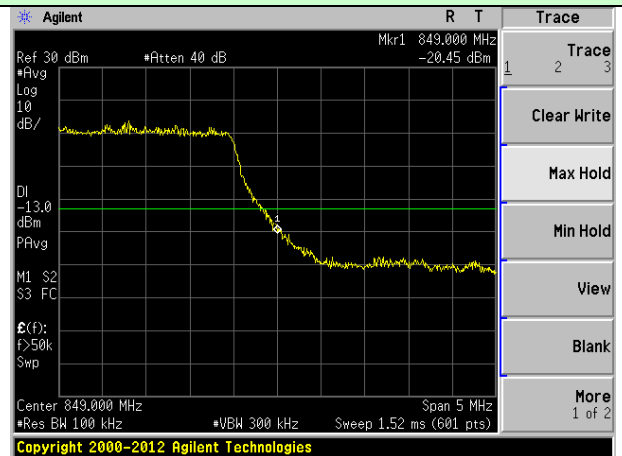
Highest channel

10MHz Bandwidth (RB size:50# RB offset:0#)



Lowest channel

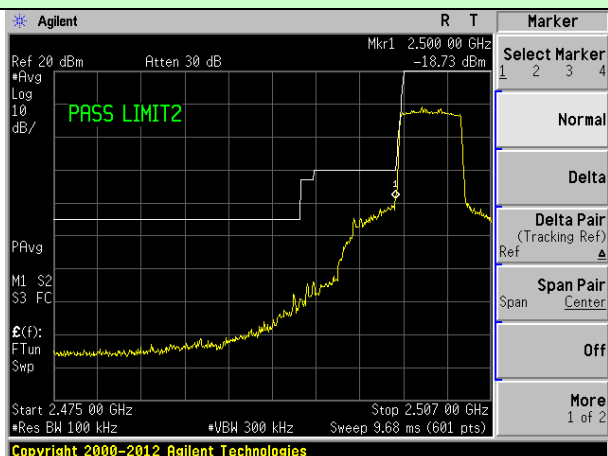
10MHz Bandwidth (RB size:50# RB offset:0#)



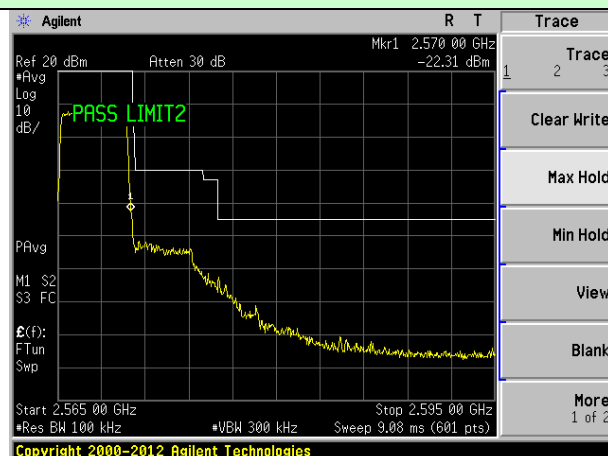
Highest channel

LTE Band 7(16QAM mode):

|                       |                         |
|-----------------------|-------------------------|
| Test Mode: LTE Band 7 | Channel Bandwidth: 5MHz |
|-----------------------|-------------------------|

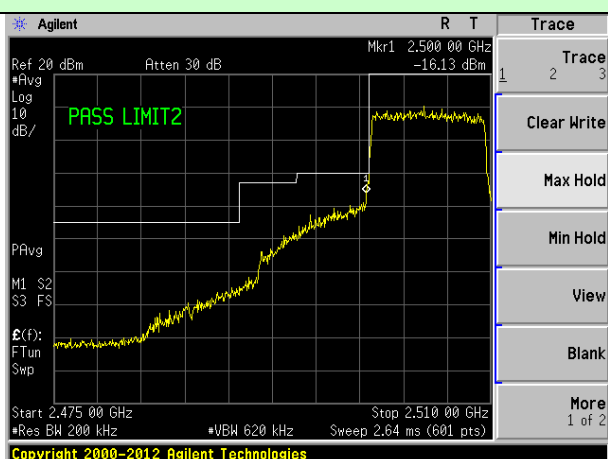


Lowest channel

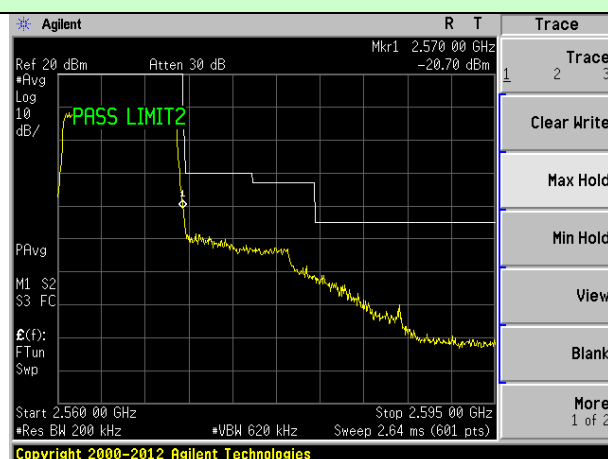


Highest channel

|                       |                          |
|-----------------------|--------------------------|
| Test Mode: LTE Band 7 | Channel Bandwidth: 10MHz |
|-----------------------|--------------------------|

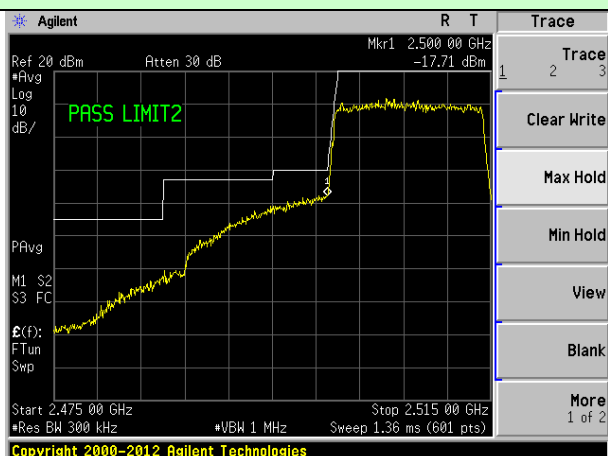


Lowest channel

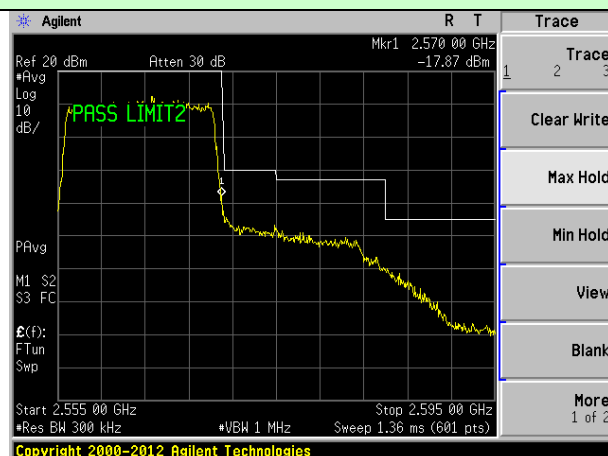


Highest channel

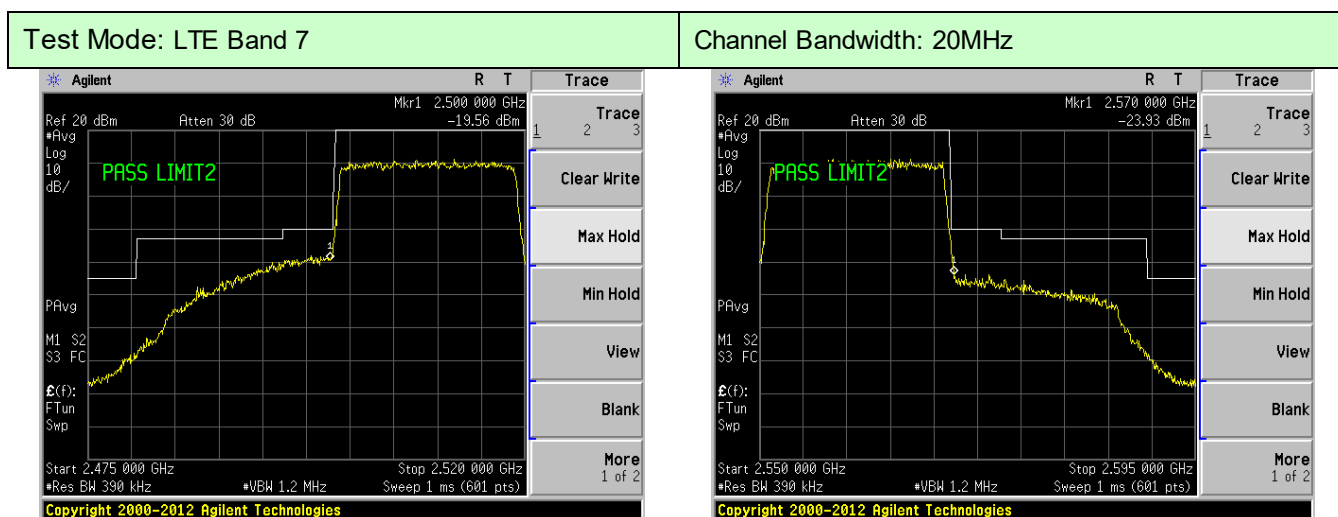
|                       |                          |
|-----------------------|--------------------------|
| Test Mode: LTE Band 7 | Channel Bandwidth: 15MHz |
|-----------------------|--------------------------|



Lowest channel



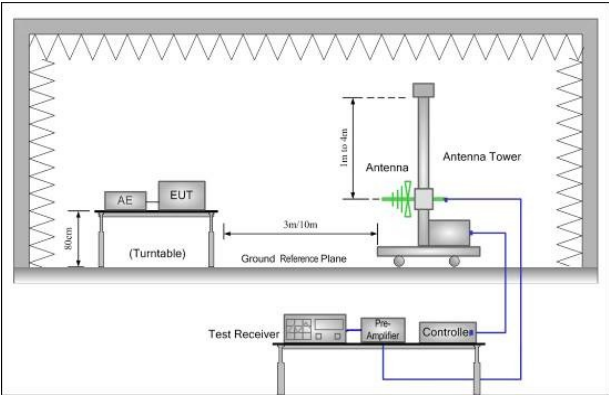
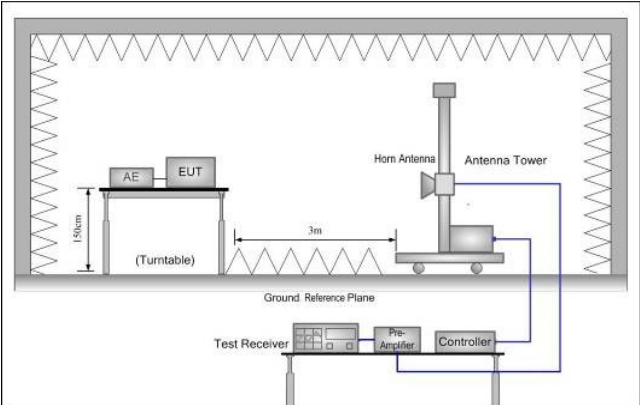
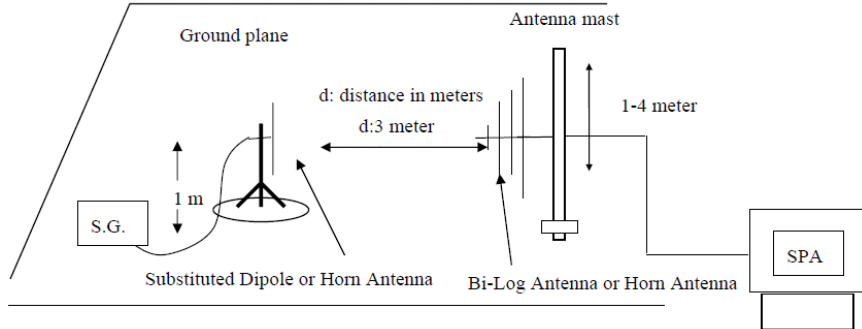
Highest channel



Lowest channel

Highest channel

## 7.8 ERP, EIRP Measurement

|                   |                                                                                                                                                                                                                                                                                                                              |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 24.238 (a); Part 27.50(c)(10)/(d)(4)                                                                                                                                                                                                                                                                                    |
| Test Method:      | FCC part2.1046                                                                                                                                                                                                                                                                                                               |
| Limit:            | LTE Band 5: 7W (EIRP)<br>LTE Band 7: 2W (EIRP)                                                                                                                                                                                                                                                                               |
| Test setup:       | <p>Below 1GHz</p>  <p>Above 1GHz</p>  <p>Substituted method:</p>  |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Procedure:   | <ol style="list-style-type: none"> <li>1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.</li> <li>2. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.</li> <li>3. ERP in frequency band 777–787MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:<br/> <math display="block">\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}</math> </li> <li>4. EIRP in frequency band 1710–1755MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:<br/> <math display="block">\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}</math> </li> </ol> |
| Test Instruments: | Refer to section 6.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Test mode:        | Refer to section 7.1 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## Measurement Data

Remark: All conditions have been considered and test, only the worst case report.

| EUT mode               | Channel | EUT Pol. | Antenna Pol. | EIRP(dBm) | Limit (dBm) | Result |
|------------------------|---------|----------|--------------|-----------|-------------|--------|
| LTE Band 5<br>(1.4MHz) | Lowest  | H        | V            | 20.25     | 33.00       | Pass   |
|                        |         |          | H            | 21.50     |             |        |
|                        | Middle  | H        | V            | 21.56     | 33.00       | Pass   |
|                        |         |          | H            | 21.07     |             |        |
|                        | Highest | H        | V            | 21.28     | 33.00       | Pass   |
|                        |         |          | H            | 21.08     |             |        |

|         | S.G. output (dBm) |       | Antenna gain(dBi) | Cable loss(dB) |
|---------|-------------------|-------|-------------------|----------------|
| Lowest  | V                 | 22.3  | 2.5               | 4.55           |
|         | H                 | 23.55 |                   |                |
| Middle  | V                 | 23.66 | 2.5               | 4.6            |
|         | H                 | 23.17 |                   |                |
| Highest | V                 | 23.43 | 2.5               | 4.65           |
|         | H                 | 23.23 |                   |                |

| EUT mode             | Channel | EUT Pol. | Antenna Pol. | EIRP(dBm) | Limit (dBm) | Result |
|----------------------|---------|----------|--------------|-----------|-------------|--------|
| LTE Band 5<br>(3MHz) | Lowest  | H        | V            | 20.18     | 33.00       | Pass   |
|                      |         |          | H            | 21.22     |             |        |
|                      | Middle  | H        | V            | 20.46     | 33.00       | Pass   |
|                      |         |          | H            | 21.30     |             |        |
|                      | Highest | H        | V            | 21.18     | 33.00       | Pass   |
|                      |         |          | H            | 20.97     |             |        |

|         | S.G. output (dBm) |       | Antenna gain(dBi) | Cable loss(dB) |
|---------|-------------------|-------|-------------------|----------------|
| Lowest  | V                 | 22.23 | 2.5               | 4.55           |
|         | H                 | 23.27 |                   |                |
| Middle  | V                 | 22.56 | 2.5               | 4.6            |
|         | H                 | 23.4  |                   |                |
| Highest | V                 | 23.33 | 2.5               | 4.65           |
|         | H                 | 23.12 |                   |                |

| EUT mode             | Channel | EUT Pol. | Antenna Pol. | EIRP(dBm) | Limit (dBm) | Result |
|----------------------|---------|----------|--------------|-----------|-------------|--------|
| LTE Band 5<br>(5MHz) | Lowest  | H        | V            | 20.13     | 33.00       | Pass   |
|                      |         |          | H            | 21.95     |             |        |
|                      | Middle  | H        | V            | 21.38     | 33.00       | Pass   |
|                      |         |          | H            | 20.86     |             |        |
|                      | Highest | H        | V            | 21.49     | 33.00       | Pass   |
|                      |         |          | H            | 20.89     |             |        |

|         | S.G. output (dBm) |       | Antenna gain(dBi) | Cable loss(dB) |
|---------|-------------------|-------|-------------------|----------------|
| Lowest  | V                 | 22.18 | 2.5               | 4.55           |
|         | H                 | 24    |                   |                |
| Middle  | V                 | 23.48 | 2.5               | 4.6            |
|         | H                 | 22.96 |                   |                |
| Highest | V                 | 23.64 | 2.5               | 4.65           |
|         | H                 | 23.04 |                   |                |

| EUT mode              | Channel | EUT Pol. | Antenna Pol. | EIRP (dBm) | Limit (dBm) | Result |
|-----------------------|---------|----------|--------------|------------|-------------|--------|
| LTE Band 5<br>(10MHz) | Lowest  | H        | V            | 21.09      | 33.00       | Pass   |
|                       |         |          | H            | 21.25      |             |        |
|                       | Middle  | H        | V            | 21.32      | 33.00       | Pass   |
|                       |         |          | H            | 20.79      |             |        |
|                       | Highest | H        | V            | 21.96      | 33.00       | Pass   |
|                       |         |          | H            | 21.05      |             |        |

|         | S.G. output (dBm) |       | Antenna gain(dBi) | Cable loss(dB) |
|---------|-------------------|-------|-------------------|----------------|
| Lowest  | V                 | 23.14 | 2.5               | 4.55           |
|         | H                 | 23.3  |                   |                |
| Middle  | V                 | 23.42 | 2.5               | 4.6            |
|         | H                 | 22.89 |                   |                |
| Highest | V                 | 24.11 | 2.5               | 4.65           |
|         | H                 | 23.2  |                   |                |

| EUT mode         | Channel | EUT Pol. | Antenna Pol. | EIRP(dBm) | Limit (dBm) | Result |
|------------------|---------|----------|--------------|-----------|-------------|--------|
| LTE Band 7(5MHz) | Lowest  | H        | V            | 20.06     | 30.00       | Pass   |
|                  |         |          | H            | 21.21     |             |        |
|                  | Middle  | H        | V            | 20.28     | 30.00       | Pass   |
|                  |         |          | H            | 20.76     |             |        |
|                  | Highest | H        | V            | 21.91     | 30.00       | Pass   |
|                  |         |          | H            | 20.78     |             |        |

|         | S.G. output (dBm) |       | Antenna gain(dBi) | Cable loss(dB) |
|---------|-------------------|-------|-------------------|----------------|
| Lowest  | V                 | 22.15 | 3.4               | 5.49           |
|         | H                 | 23.3  |                   |                |
| Middle  | V                 | 22.4  | 3.4               | 5.52           |
|         | H                 | 22.88 |                   |                |
| Highest | V                 | 24.06 | 3.4               | 5.55           |
|         | H                 | 22.93 |                   |                |

| EUT mode          | Channel | EUT Pol. | Antenna Pol. | EIRP(dBm) | Limit (dBm) | Result |
|-------------------|---------|----------|--------------|-----------|-------------|--------|
| LTE Band 7(10MHz) | Lowest  | H        | V            | 21.03     | 30.00       | Pass   |
|                   |         |          | H            | 21.17     |             |        |
|                   | Middle  | H        | V            | 21.77     | 30.00       | Pass   |
|                   |         |          | H            | 21.71     |             |        |
|                   | Highest | H        | V            | 21.97     | 30.00       | Pass   |
|                   |         |          | H            | 20.74     |             |        |

|         | S.G. output (dBm) |       | Antenna gain(dBi) | Cable loss(dB) |
|---------|-------------------|-------|-------------------|----------------|
| Lowest  | V                 | 23.12 | 3.4               | 5.49           |
|         | H                 | 23.26 |                   |                |
| Middle  | V                 | 23.89 | 3.4               | 5.52           |
|         | H                 | 23.83 |                   |                |
| Highest | V                 | 24.12 | 3.4               | 5.55           |
|         | H                 | 22.89 |                   |                |

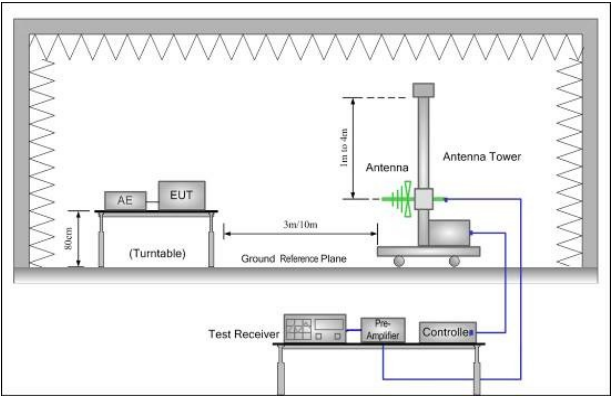
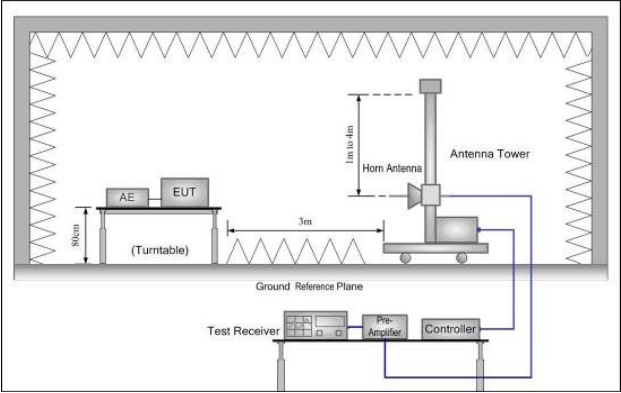
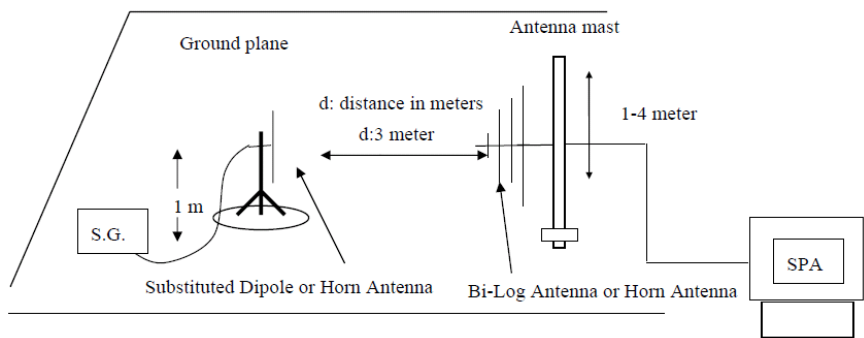
| EUT mode          | Channel | EUT Pol. | Antenna Pol. | EIRP(dBm) | Limit (dBm) | Result |
|-------------------|---------|----------|--------------|-----------|-------------|--------|
| LTE Band 7(15MHz) | Lowest  | H        | V            | 20.03     | 30.00       | Pass   |
|                   |         |          | H            | 21.83     |             |        |
|                   | Middle  | H        | V            | 21.78     | 30.00       | Pass   |
|                   |         |          | H            | 20.70     |             |        |
|                   | Highest | H        | V            | 21.98     | 30.00       | Pass   |
|                   |         |          | H            | 20.75     |             |        |

|         | S.G. output (dBm) |       | Antenna gain(dBi) | Cable loss(dB) |
|---------|-------------------|-------|-------------------|----------------|
| Lowest  | V                 | 22.12 | 3.4               | 5.49           |
|         | H                 | 23.92 |                   |                |
| Middle  | V                 | 23.9  | 3.4               | 5.52           |
|         | H                 | 22.82 |                   |                |
| Highest | V                 | 24.13 | 3.4               | 5.55           |
|         | H                 | 22.9  |                   |                |

| EUT mode          | Channel | EUT Pol. | Antenna Pol. | EIRP(dBm) | Limit (dBm) | Result |
|-------------------|---------|----------|--------------|-----------|-------------|--------|
| LTE Band 7(20MHz) | Lowest  | H        | V            | 20.14     | 30.00       | Pass   |
|                   |         |          | H            | 21.57     |             |        |
|                   | Middle  | H        | V            | 21.40     | 30.00       | Pass   |
|                   |         |          | H            | 20.88     |             |        |
|                   | Highest | H        | V            | 20.12     | 30.00       | Pass   |
|                   |         |          | H            | 21.51     |             |        |

|         | S.G. output (dBm) |       | Antenna gain(dBi) | Cable loss(dB) |
|---------|-------------------|-------|-------------------|----------------|
| Lowest  | V                 | 22.23 | 3.4               | 5.49           |
|         | H                 | 23.66 |                   |                |
| Middle  | V                 | 23.52 | 3.4               | 5.52           |
|         | H                 | 23    |                   |                |
| Highest | V                 | 22.27 | 3.4               | 5.55           |
|         | H                 | 23.66 |                   |                |

## 7.9 Field strength of spurious radiation measurement

|                   |                                                                                                                                                                                                                                                                                                                              |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 24.238 (a); FCC Part 27.53(h)/(g)                                                                                                                                                                                                                                                                                       |
| Test Method:      | FCC part2.1053                                                                                                                                                                                                                                                                                                               |
| Limit:            | Band 5/7:-13dBm                                                                                                                                                                                                                                                                                                              |
| Test setup:       | <p>Below 1GHz</p>  <p>Above 1GHz</p>  <p>Substituted method:</p>  |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Procedure:   | <ol style="list-style-type: none"> <li>1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.</li> <li>2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.</li> <li>3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.</li> <li>4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.<br/> <math display="block">\text{ERP / EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}</math> </li> </ol> |
| Test Instruments: | Refer to section 6.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Test mode:        | Refer to section 7.1 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Measurement Data

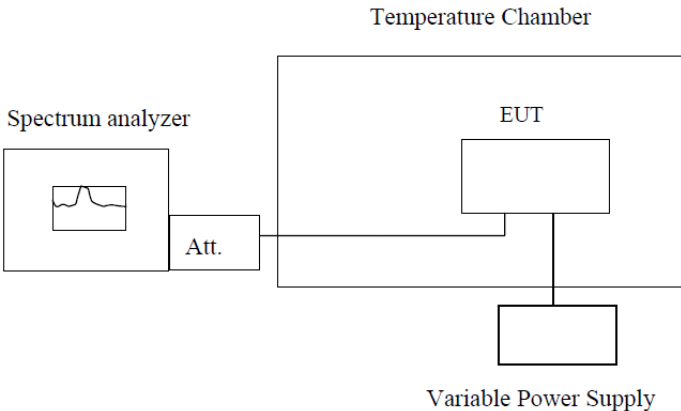
### Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

| Test mode:      | LTE Band 5(10MHz) |             | Test channel: | Lowest  |
|-----------------|-------------------|-------------|---------------|---------|
| Frequency (MHz) | Spurious Emission |             | Limit (dBm)   | Result  |
|                 | Polarization      | Level (dBm) |               |         |
| 1658.00         | Vertical          | -56.04      | -13.00        | Pass    |
| 2487.00         | V                 | -58.77      |               |         |
| 3316.00         | V                 | -51.03      |               |         |
| 4145.00         | V                 | -53.19      |               |         |
| 4974.00         | V                 | -50.33      |               |         |
| 1658.00         | Horizontal        | -51.27      | -13.00        | Pass    |
| 2487.00         | H                 | -50.14      |               |         |
| 3316.00         | H                 | -52.70      |               |         |
| 4145.00         | H                 | -50.43      |               |         |
| 4974.00         | H                 | -50.96      |               |         |
| Test mode:      | LTE Band 5(10MHz) |             | Test channel: | Middle  |
| Frequency (MHz) | Spurious Emission |             | Limit (dBm)   | Result  |
|                 | Polarization      | Level (dBm) |               |         |
| 1673.00         | Vertical          | -57.16      | -13.00        | Pass    |
| 2509.50         | V                 | -59.44      |               |         |
| 3346.00         | V                 | -51.34      |               |         |
| 4182.50         | V                 | -53.15      |               |         |
| 5019.00         | V                 | -50.95      |               |         |
| 1673.00         | Horizontal        | -54.54      | -13.00        | Pass    |
| 2509.50         | H                 | -54.78      |               |         |
| 3346.00         | H                 | -56.09      |               |         |
| 4182.50         | H                 | -58.38      |               |         |
| 5019.00         | H                 | -53.12      |               |         |
| Test mode:      | LTE Band 5(10MHz) |             | Test channel: | Highest |
| Frequency (MHz) | Spurious Emission |             | Limit (dBm)   | Result  |
|                 | Polarization      | Level (dBm) |               |         |
| 1688.00         | Vertical          | -57.20      | -13.00        | Pass    |
| 2532.00         | V                 | -53.24      |               |         |
| 3376.00         | V                 | -50.93      |               |         |
| 4220.00         | V                 | -52.55      |               |         |
| 5064.00         | V                 | -52.14      |               |         |
| 1688.00         | Horizontal        | -51.11      | -13.00        | Pass    |
| 2532.00         | H                 | -52.01      |               |         |
| 3376.00         | H                 | -53.18      |               |         |
| 4220.00         | H                 | -54.23      |               |         |
| 5064.00         | H                 | -50.11      |               |         |

| Test mode:      | LTE Band 7(20MHz) |             | Test channel: | Lowest  |
|-----------------|-------------------|-------------|---------------|---------|
| Frequency (MHz) | Spurious Emission |             | Limit (dBm)   | Result  |
|                 | Polarization      | Level (dBm) |               |         |
| 5020.00         | Vertical          | -53.53      | -13.00        | Pass    |
| 7530.00         | V                 | -52.97      |               |         |
| 10040.00        | V                 | -50.02      |               |         |
| 12550.00        | V                 | -51.94      |               |         |
| 15060.00        | V                 | -50.69      |               |         |
| 5020.00         | Horizontal        | -50.22      | -13.00        | Pass    |
| 7530.00         | H                 | -53.68      |               |         |
| 10040.00        | H                 | -55.10      |               |         |
| 12550.00        | H                 | -54.56      |               |         |
| 15060.00        | H                 | -51.33      |               |         |
| Test mode:      | LTE Band 7(20MHz) |             | Test channel: | Middle  |
| Frequency (MHz) | Spurious Emission |             | Limit (dBm)   | Result  |
|                 | Polarization      | Level (dBm) |               |         |
| 5070.00         | Vertical          | -53.49      | -13.00        | Pass    |
| 7605.00         | V                 | -53.00      |               |         |
| 10140.00        | V                 | -50.10      |               |         |
| 12675.00        | V                 | -51.09      |               |         |
| 15210.00        | V                 | -51.41      |               |         |
| 5070.00         | Horizontal        | -53.32      | -13.00        | Pass    |
| 7605.00         | H                 | -51.87      |               |         |
| 10140.00        | H                 | -53.34      |               |         |
| 12675.00        | H                 | -54.87      |               |         |
| 15210.00        | H                 | -50.18      |               |         |
| Test mode:      | LTE Band 7(20MHz) |             | Test channel: | Highest |
| Frequency (MHz) | Spurious Emission |             | Limit (dBm)   | Result  |
|                 | Polarization      | Level (dBm) |               |         |
| 5120.00         | Vertical          | -54.54      | -13.00        | Pass    |
| 7680.00         | V                 | -53.98      |               |         |
| 10240.00        | V                 | -51.03      |               |         |
| 12800.00        | V                 | -50.95      |               |         |
| 15360.00        | V                 | -50.44      |               |         |
| 5120.00         | Horizontal        | -52.23      | -13.00        | Pass    |
| 7680.00         | H                 | -52.69      |               |         |
| 10240.00        | H                 | -54.11      |               |         |
| 12800.00        | H                 | -51.57      |               |         |
| 15360.00        | H                 | -50.39      |               |         |

## 7.10 Frequency stability V.S. Temperature measurement

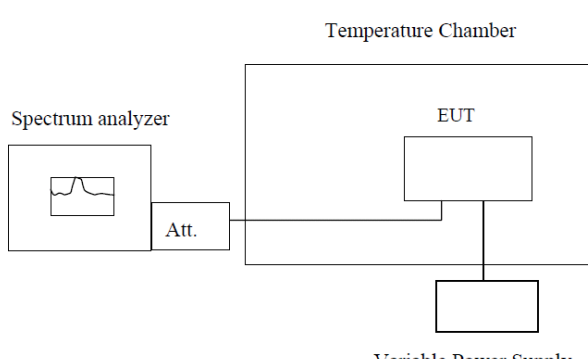
|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | FCC Part2.1055(a)(1)(b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Test Method:      | FCC Part2.1055(a)(1)(b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Limit:            | 2.5ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test setup:       |  <p><b>Note :</b> Measurement setup for testing on Antenna connector</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Test procedure:   | <ol style="list-style-type: none"> <li>1. The equipment under test was connected to an external DC power supply and input rated voltage.</li> <li>2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.</li> <li>3. The EUT was placed inside the temperature chamber.</li> <li>4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency.</li> <li>5. Turn EUT off and set the chamber temperature to -20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency.</li> <li>6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.</li> </ol> |
| Test Instruments: | Refer to section 6.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Test mode:        | Refer to section 7.1 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Measurement Data

Measurement Data

| Reference Frequency: LTE Band 5 Middle channel=20525 channel=836.5MHz |                  |                 |        |             |        |
|-----------------------------------------------------------------------|------------------|-----------------|--------|-------------|--------|
| Power supplied (Vdc)                                                  | Temperature (°C) | Frequency error |        | Limit (ppm) | Result |
|                                                                       |                  | Hz              | ppm    |             |        |
| 3.85                                                                  | -30              | 29              | 0.0155 | 2.5         | Pass   |
|                                                                       | -20              | 33              | 0.0175 |             |        |
|                                                                       | -10              | 28              | 0.0148 |             |        |
|                                                                       | 0                | 23              | 0.0122 |             |        |
|                                                                       | 10               | 27              | 0.0142 |             |        |
|                                                                       | 20               | 23              | 0.0122 |             |        |
|                                                                       | 30               | 38              | 0.0201 |             |        |
|                                                                       | 40               | 34              | 0.0181 |             |        |
|                                                                       | 50               | 33              | 0.0175 |             |        |
| Reference Frequency: LTE Band7 Middle channel=21100 channel=2535MHz   |                  |                 |        |             |        |
| Power supplied (Vdc)                                                  | Temperature (°C) | Frequency error |        | Limit (ppm) | Result |
|                                                                       |                  | Hz              | ppm    |             |        |
| 3.85                                                                  | -30              | 24              | 0.0140 | 2.5         | Pass   |
|                                                                       | -20              | 27              | 0.0154 |             |        |
|                                                                       | -10              | 23              | 0.0132 |             |        |
|                                                                       | 0                | 20              | 0.0118 |             |        |
|                                                                       | 10               | 22              | 0.0125 |             |        |
|                                                                       | 20               | 19              | 0.0111 |             |        |
|                                                                       | 30               | 33              | 0.0190 |             |        |
|                                                                       | 40               | 28              | 0.0161 |             |        |
|                                                                       | 50               | 27              | 0.0154 |             |        |

## 7.11 Frequency stability V.S. Voltage measurement

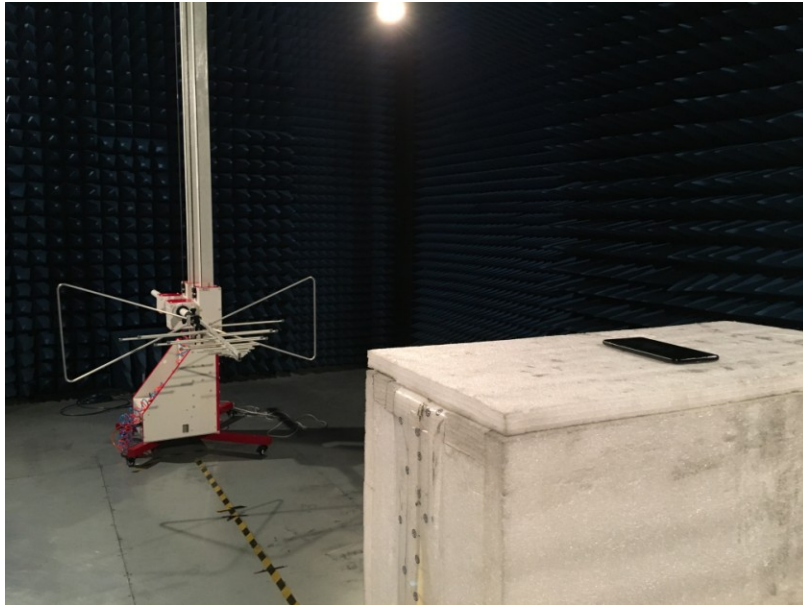
|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | FCC Part2.1055(d)(1)(2)                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Test Method:      | FCC Part2.1055(d)(1)(2)                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Limit:            | 2.5ppm                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Test setup:       |  <p><b>Note :</b> Measurement setup for testing on Antenna connector</p>                                                                                                                                                                                                                                                                                       |
| Test procedure:   | <ol style="list-style-type: none"> <li>1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage.</li> <li>2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.</li> <li>3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.</li> </ol> |
| Test Instruments: | Refer to section 6.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Test mode:        | Refer to section 7.1 for details                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## Measurement Data

| Reference Frequency: LTE Band 5 Middle channel=20525 channel=836.5MHz |                      |                 |        |             |        |
|-----------------------------------------------------------------------|----------------------|-----------------|--------|-------------|--------|
| Temperature (°C)                                                      | Power supplied (Vdc) | Frequency error |        | Limit (ppm) | Result |
|                                                                       |                      | Hz              | ppm    |             |        |
| 25                                                                    | 4.25                 | 18              | 0.0096 | 2.5         | Pass   |
|                                                                       | 3.85                 | 21              | 0.0110 |             |        |
|                                                                       | 3.5                  | 23              | 0.0124 |             |        |
| Reference Frequency: LTE Band 7 Middle channel=21100 channel=2535MHz  |                      |                 |        |             |        |
| Temperature (°C)                                                      | Power supplied (Vdc) | Frequency error |        | Limit (ppm) | Result |
|                                                                       |                      | Hz              | ppm    |             |        |
| 25                                                                    | 4.25                 | 30              | 0.0172 | 2.5         | Pass   |
|                                                                       | 3.85                 | 22              | 0.0127 |             |        |
|                                                                       | 3.5                  | 25              | 0.0142 |             |        |

## 8 Test Setup Photo

Radiated Emission



## 9 EUT Constructional Details

Reference to the test report No. : GTS201805000172F01

-----End-----