

# FCC REPORT

## (LTE)

**Applicant:** Sky Phone LLC

**Address of Applicant:** 1348 Washington Av. Suite 350, Miami Beach, Florida, United States

**Equipment Under Test (EUT)**

Product Name: 4G Smart Phone

Model No.: Elite E4

Trade mark: SKY DEVICES

**FCC ID:** 2ABOSSKYELITE4

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

**Date of sample receipt:** 03 Sep., 2018

**Date of Test:** 03 Sep., to 26 Sep., 2018

**Date of report issued:** 27 Sep., 2018

**Test Result:** PASS\*

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

Authorized Signature:



Bruce Zhang  
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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## 2. Version

| Version No. | Date          | Description |
|-------------|---------------|-------------|
| 00          | 27 Sep., 2018 | Original    |
|             |               |             |
|             |               |             |
|             |               |             |
|             |               |             |

**Tested by:**

*Carrey Chen*

**Date:**

27 Sep., 2018

**Test Engineer**

**Reviewed by:**

*Wimer Zhang*

**Date:**

27 Sep., 2018

**Project Engineer**

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## 4. Test Summary

| Test Items   | Section in CFR 47                                   | Result                                 |
|--|---|--|
| RF Exposure (SAR)  | Part 1.1307<br>Part 2.1093                          | Passed<br>(Please refer to SAR Report) |
| RF Output Power  | Part 2.1046<br>Part 24.232 (c)<br>Part 27.50 (d)(4) | Pass                                   |
| Peak-to-Average Ratio  | Part 24.232 (d)<br>Part 27.50(d)(5)                 | Pass                                   |
| Modulation Characteristics   | Part 2.1047   | Pass                                   |
| 99% & -26 dB Occupied Bandwidth  | Part 2.1049<br>Part 24.238(b)<br>Part 27.53(h)      | Pass                                   |
| Out of band emission at antenna terminals                                      | Part 2.1053<br>Part 24.238 (a)<br>Part 27.53 (h)    | Pass                                   |
| Field strength of spurious radiation   | Part 24.238 (a)<br>Part 27.53 (h)                   | Pass                                   |
| Frequency stability vs. temperature  | Part 24.235<br>Part 27.54<br>Part 2.1055(a)(1)(b)   | Pass                                   |
| Frequency stability vs. voltage  | Part 24.235<br>Part 27.54<br>Part 2.1055(d)(2)      | Pass                                   |
| <i>Pass: The EUT complies with the essential requirements in the standard.</i> |   |  |

## 5. General Information

### 5.1 Client Information

|               |  |
|---------------|--|
| Applicant:    | Sky Phone LLC  |
| Address:      | 1348 Washington Av. Suite 350, Miami Beach, Florida, United States                   |
| Manufacturer: | Shenzhen Tianruixiang Communication Equipment Co., Ltd                               |
| Address:      | 12F, Zhongshan University Science Building Xuefu Road, Hi-tech Park, Shenzhen, China |

### 5.2 General Description of E.U.T.

|                            |  |
|----------------------------|--|
| Product Name:              | 4G Smart Phone   |
| Model No.:                 | Elite E4   |
| Operation Frequency range: | LTE Band 2: TX: 1850MHz-1910MHz, RX: 1930MHz-1990MHz<br>LTE Band 4: TX: 1710MHz-1755MHz, RX: 2110MHz-2155MHz |
| Modulation type:           | QPSK, 16QAM  |
| Antenna type:              | Internal Antenna   |
| Antenna gain:              | LTE Band 2: -3.38dBi<br>LTE Band 4: -1.94dBi   |
| Power supply:              | Rechargeable Li-ion Battery DC3.7V-1400mAh   |
| AC adapter:                | Model: Elite E4<br>Input: AC100-240V, 50/60Hz, 0.15A<br>Output: DC 5.0V, 0.5A                                |

**Operation Frequency List:**

| LTE Band 2 (1.4MHz) |                 | LTE Band 2 (3MHz)  |                 |
|---------------------|-----------------|--------------------|-----------------|
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 18607               | 1850.70         | 18615              | 1851.50         |
| 18608               | 1850.80         | 18616              | 1851.60         |
| ....                | ....            | ....               | ....            |
| 18899               | 1879.90         | 18899              | 1879.90         |
| 18900               | 1880.00         | 18900              | 1880.00         |
| 18901               | 1880.10         | 18901              | 1880.10         |
| ...                 | ...             | ...                | ...             |
| 19193               | 1909.20         | 19185              | 1908.40         |
| 19194               | 1909.30         | 19186              | 1908.50         |
| LTE Band 2 (5MHz)   |                 | LTE Band 2 (10MHz) |                 |
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 18625               | 1852.50         | 18650              | 1855.00         |
| 18626               | 1852.60         | 18651              | 1855.10         |
| ....                | ....            | ....               | ....            |
| 18899               | 1879.90         | 18899              | 1879.90         |
| 18900               | 1880.00         | 18900              | 1880.00         |
| 18901               | 1880.10         | 18901              | 1880.10         |
| ...                 | ...             | ...                | ...             |
| 19175               | 1907.40         | 19150              | 1904.90         |
| 19176               | 1907.50         | 19151              | 1905.00         |
| LTE Band 2 (15MHz)  |                 | LTE Band 2 (20MHz) |                 |
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 18675               | 1857.50         | 18700              | 1860.00         |
| 18676               | 1857.60         | 18701              | 1860.10         |
| ....                | ....            | ....               | ....            |
| 18899               | 1879.90         | 18899              | 1879.90         |
| 18900               | 1880.00         | 18900              | 1880.00         |
| 18901               | 1880.10         | 18901              | 1880.10         |
| ...                 | ...             | ...                | ...             |
| 19125               | 1902.40         | 19100              | 1899.90         |
| 19126               | 1902.50         | 19101              | 1900.00         |

| LTE Band 4 (1.4MHz) |                 | LTE Band 4 (3MHz)  |                 |
|---------------------|-----------------|--------------------|-----------------|
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 19957               | 1710.70         | 19965              | 1711.50         |
| 19958               | 1710.80         | 19966              | 1711.60         |
| ....                | ....            | ....               | ....            |
| 20174               | 1732.40         | 20174              | 1732.40         |
| 20175               | 1732.50         | 20175              | 1732.50         |
| 20176               | 1732.60         | 20176              | 1732.60         |
| ...                 | ...             | ...                | ...             |
| 20392               | 1754.20         | 20384              | 1753.40         |
| 20393               | 1754.30         | 20385              | 1753.50         |
| LTE Band 4 (5MHz)   |                 | LTE Band 4 (10MHz) |                 |
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 19975               | 1712.50         | 20000              | 1715.00         |
| 19976               | 1712.60         | 20001              | 1715.10         |
| ....                | ....            | ....               | ....            |
| 20174               | 1732.40         | 20174              | 1732.40         |
| 20175               | 1732.50         | 20175              | 1732.50         |
| 20176               | 1732.60         | 20176              | 1732.60         |
| ...                 | ...             | ...                | ...             |
| 20374               | 1752.40         | 20349              | 1749.90         |
| 20375               | 1752.50         | 20350              | 1750.00         |
| LTE Band 4 (15MHz)  |                 | LTE Band 4 (20MHz) |                 |
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 20025               | 1717.50         | 20050              | 1720.00         |
| 20026               | 1717.60         | 20051              | 1720.10         |
| ....                | ....            | ....               | ....            |
| 20174               | 1732.40         | 20174              | 1732.40         |
| 20175               | 1732.50         | 20175              | 1732.50         |
| 20176               | 1732.60         | 20176              | 1732.60         |
| ...                 | ...             | ...                | ...             |
| 20324               | 1747.40         | 20299              | 1744.90         |
| 20325               | 1747.50         | 20300              | 1745.00         |

Regards to the operating frequency range, the lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channels as below:

| LTE Band 2 (1.4MHz) |                 |         | LTE Band 2 (3MHz)  |                 |         |
|---------------------|-----------------|---------|--------------------|-----------------|---------|
| Channel             | Frequency (MHz) |         | Channel            | Frequency (MHz) |         |
| Lowest channel      | 18607           | 1850.70 | Lowest channel     | 18615           | 1851.50 |
| Middle channel      | 18900           | 1880.00 | Middle channel     | 18900           | 1880.00 |
| Highest channel     | 19193           | 1909.30 | Highest channel    | 19185           | 1908.50 |
| LTE Band 2 (5MHz)   |                 |         | LTE Band 2 (10MHz) |                 |         |
| Channel             | Frequency (MHz) |         | Channel            | Frequency (MHz) |         |
| Lowest channel      | 18625           | 1852.50 | Lowest channel     | 18650           | 1855.00 |
| Middle channel      | 18900           | 1880.00 | Middle channel     | 18900           | 1880.00 |
| Highest channel     | 19175           | 1907.50 | Highest channel    | 19150           | 1905.00 |
| LTE Band 2 (15MHz)  |                 |         | LTE Band 2 (20MHz) |                 |         |
| Channel             | Frequency (MHz) |         | Channel            | Frequency (MHz) |         |
| Lowest channel      | 18675           | 1857.50 | Lowest channel     | 18700           | 1860.00 |
| Middle channel      | 18900           | 1880.00 | Middle channel     | 18900           | 1880.00 |
| Highest channel     | 19125           | 1902.50 | Highest channel    | 19100           | 1900.00 |

| LTE Band 4 (1.4MHz) |                 |         | LTE Band 4 (3MHz)  |                 |         |
|---------------------|-----------------|---------|--------------------|-----------------|---------|
| Channel:            | Frequency (MHz) |         | Channel            | Frequency (MHz) |         |
| Lowest channel      | 19957           | 1710.70 | Lowest channel     | 19965           | 1711.50 |
| Middle channel      | 20175           | 1732.50 | Middle channel     | 20175           | 1732.50 |
| Highest channel     | 20393           | 1754.30 | Highest channel    | 20385           | 1753.50 |
| LTE Band 4 (5MHz)   |                 |         | LTE Band 4 (10MHz) |                 |         |
| Channel             | Frequency (MHz) |         | Channel            | Frequency (MHz) |         |
| Lowest channel      | 19975           | 1712.50 | Lowest channel     | 20000           | 1715.00 |
| Middle channel      | 20175           | 1732.50 | Middle channel     | 20175           | 1732.50 |
| Highest channel     | 20375           | 1752.50 | Highest channel    | 20350           | 1750.00 |
| LTE Band 4 (15MHz)  |                 |         | LTE Band 4 (20MHz) |                 |         |
| Channel             | Frequency (MHz) |         | Channel            | Frequency (MHz) |         |
| Lowest channel      | 20025           | 1717.50 | Lowest channel     | 20050           | 1720.00 |
| Middle channel      | 20175           | 1732.50 | Middle channel     | 20175           | 1732.50 |
| Highest channel     | 20325           | 1747.50 | Highest channel    | 20300           | 1745.00 |

### 5.3 Test environment and mode

| Operating Environment:   |  |
|--|--|
| Temperature:   | Normal: 15°C ~ 35°C, Extreme: -30°C ~ +50°C                      |
| Humidity:  | 20 % ~ 75 % RH   |
| Atmospheric Pressure:  | 1008 mbar  |
| Voltage:   | Nominal: 3.7Vdc, Extreme: Low 3.5Vdc, High 4.2Vdc                |
| Test mode:   |  |
| LTE QPSK mode  | Keep the EUT communication with simulated station in QPSK mode   |
| LTE 16-QAM mode  | Keep the EUT communication with simulated station in 16-QAM mode |
| Remark: The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes with power adaptor, earphone and Data cable. Just the worst case position (H mode) shown in report. |  |



### 5.4 Description of Support Units

| Test Equipment    | Manufacturer | Model No. | Serial No. |
|-------------------|--------------|-----------|------------|
| Simulated Station | Anritsu      | MT8820C   | 6201026545 |

### 5.5 Measurement Uncertainty

| Parameters                          | Expanded Uncertainty |
|-------------------------------------|----------------------|
| Radiated Emission (9kHz ~ 30MHz)    | ±2.76 dB (k=2)       |
| Radiated Emission (30MHz ~ 1000MHz) | ±4.28 dB (k=2)       |
| Radiated Emission (1GHz ~ 18GHz)    | ±5.72 dB (k=2)       |
| Radiated Emission (18GHz ~ 40GHz)   | ±2.88 dB (k=2)       |

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

This is an original grant, no related submittals and grants.

### 5.7 Laboratory Facility

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

- FCC - Registration No.: 727551**  
 Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.
- IC - Registration No.: 10106A-1**  
 The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.
- CNAS - Registration No.: CNAS L6048**  
 Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.
- A2LA - Registration No.: 4346.01**  
 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

### 5.8 Laboratory Location

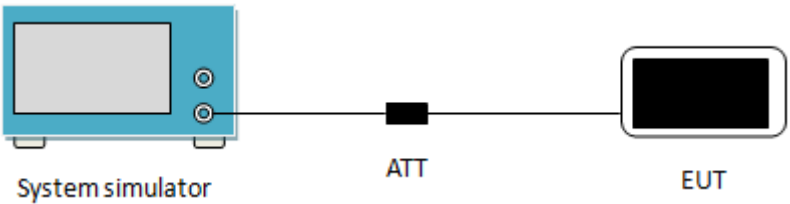
Shenzhen Zhongjian Nanfang Testing Co., Ltd.  
 Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China  
 Tel: +86-755-23118282, Fax: +86-755-23116366  
 Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

## 5.9 Test Instruments list

| Test Equipment               | Manufacturer    | Model No.     | Serial No.         | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
|------------------------------|-----------------|---------------|--------------------|----------------------|--------------------------|
| 3m SAC                       | SAEMC           | 9m*6m*6m      | 966                | 07-22-2017           | 07-21-2020               |
| BiConiLog Antenna            | SCHWARZBECK     | VULB9163      | 497                | 03-16-2018           | 03-15-2019               |
| Biconical Antenna            | SCHWARZBECK     | VUBA9117      | 359                | 06-22-2017           | 06-21-2020               |
| Horn Antenna                 | SCHWARZBECK     | BBHA9120D     | 916                | 03-16-2018           | 03-15-2019               |
| Horn Antenna                 | SCHWARZBECK     | BBHA9120D     | 1805               | 06-22-2017           | 06-21-2020               |
| Horn Antenna                 | SCHWARZBECK     | BBHA 9170     | BBHA9170582        | 11-21-2017           | 11-20-2018               |
| EMI Test Software            | AUDIX           | E3            | Version: 6.110919b |                      |                          |
| Pre-amplifier                | HP              | 8447D         | 2944A09358         | 03-07-2018           | 03-06-2019               |
| Pre-amplifier                | CD              | PAP-1G18      | 11804              | 03-07-2018           | 03-06-2019               |
| Spectrum analyzer            | Rohde & Schwarz | FSP30         | 101454             | 03-07-2018           | 03-06-2019               |
| EMI Test Receiver            | Rohde & Schwarz | ESRP7         | 101070             | 03-07-2018           | 03-06-2019               |
| Spectrum Analyzer            | Agilent         | N9020A        | MY50510123         | 10-29-2017           | 10-28-2018               |
| Signal Generator             | Rohde & Schwarz | SMX           | 835454/016         | 03-07-2018           | 03-06-2019               |
| Signal Generator             | R&S             | SMR20         | 1008100050         | 03-07-2018           | 03-06-2019               |
| RF Switch Unit               | MWRFTTEST       | MW200         | N/A                | N/A                  | N/A                      |
| Test Software                | MWRFTTEST       | MTS8200       | Version: 2.0.0.0   |                      |                          |
| Cable                        | ZDECL           | Z108-NJ-NJ-81 | 1608458            | 03-07-2018           | 03-06-2019               |
| Cable                        | MICRO-COAX      | MFR64639      | K10742-5           | 03-07-2018           | 03-06-2019               |
| Cable                        | SUHNER          | SUCOFLEX100   | 58193/4PE          | 03-07-2018           | 03-06-2019               |
| DC Power Supply              | XinNuoEr        | WYK-10020K    | 1409050110020      | 10-31-2017           | 10-30-2018               |
| Temperature Humidity Chamber | HengPu          | HPGDS-500     | 20140828008        | 09-24-2018           | 09-23-2019               |
| Simulated Station            | Rohde & Schwarz | CMW500        | 140493             | 06-24-2018           | 06-23-2019               |

## 6. Test results

### 6.1 Conducted Output Power, ERP and EIRP

|                   |   |
|-------------------|---|
| Test Requirement: | Part 24.232(c), Part 27.50(d)(4)  |
| Test Method:      | ANSI/TIA-603-D 2010   |
| Limit:            | LTE Band 2: 2W, LTE Band 4: 1W  |
| Test Setup:       |  <p>The diagram illustrates the test setup. On the left is a blue 'System simulator' with a screen and two ports. A line connects it to a black square labeled 'ATT' (attenuator). Another line connects the 'ATT' to a black rectangle labeled 'EUT' (Equipment Under Test).</p> |
| Test Procedure:   | The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the CMW500. Transmitter output power was read off in dBm.  |
| Test Instruments: | Refer to section 5.9 for details  |
| Test mode:        | Refer to section 5.3 for details  |
| Test results:     | Passed  |

**Measurement Data:**

| LTE Band | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |  |
|----------|-----------------|---------------------|---------|-----------|---------------------|-----------|-----------|--|--|
|          |                 |                     |         |           | 18607               | 18900     | 19193     |  |  |
|          |                 |                     |         |           | 1850.7MHz           | 1880.0MHz | 1909.3MHz |  |  |
| 2        | 1.4             | 16QAM               | 1       | 0         | 22.98               | 23.13     | 23.15     |  |  |
|          |                 |                     | 1       | 2         | 23.09               | 22.81     | 23.15     |  |  |
|          |                 |                     | 1       | 5         | 23.31               | 22.99     | 23.38     |  |  |
|          |                 |                     | 3       | 0         | 23.10               | 22.84     | 22.88     |  |  |
|          |                 |                     | 3       | 1         | 22.90               | 22.86     | 23.07     |  |  |
|          |                 |                     | 3       | 2         | 22.86               | 22.94     | 23.11     |  |  |
|          |                 |                     | 6       | 0         | 21.29               | 21.43     | 21.38     |  |  |
|          |                 | Antenna Gain (dBi): |         |           |                     |           | -3.38     |  |  |
|          |                 | Max. EIRP (dBm):    |         |           |                     |           | 20.00     |  |  |
|          |                 | EIRP Limit (dBm):   |         |           |                     |           | 33.00     |  |  |
| LTE Band | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |  |
|          |                 |                     |         |           | 18615               | 18900     | 19185     |  |  |
|          |                 |                     |         |           | 1851.5MHz           | 1880.0MHz | 1908.5MHz |  |  |
| 2        | 3               | 16QAM               | 1       | 0         | 22.88               | 22.81     | 22.76     |  |  |
|          |                 |                     | 1       | 7         | 22.92               | 23.12     | 22.95     |  |  |
|          |                 |                     | 1       | 14        | 22.65               | 23.13     | 22.86     |  |  |
|          |                 |                     | 8       | 0         | 21.29               | 21.30     | 21.31     |  |  |
|          |                 |                     | 8       | 4         | 21.22               | 21.18     | 21.40     |  |  |
|          |                 |                     | 8       | 7         | 21.21               | 21.33     | 21.16     |  |  |
|          |                 |                     | 15      | 0         | 21.44               | 21.42     | 21.38     |  |  |
|          |                 | Antenna Gain (dBi): |         |           |                     |           | -3.38     |  |  |
|          |                 | Max. EIRP (dBm):    |         |           |                     |           | 19.75     |  |  |
|          |                 | EIRP Limit (dBm):   |         |           |                     |           | 33.00     |  |  |

| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|---------------------|-----------------|------------|---------|-----------|---------------------|-----------|-----------|
|                     |                 |            |         |           | 18607               | 18900     | 19193     |
|                     |                 |            |         |           | 1850.7MHz           | 1880.0MHz | 1909.3MHz |
| 2                   | 1.4             | QPSK       | 1       | 0         | 23.19               | 23.30     | 23.18     |
|                     |                 |            | 1       | 2         | 23.25               | 23.22     | 23.29     |
|                     |                 |            | 1       | 5         | 23.31               | 23.37     | 23.29     |
|                     |                 |            | 3       | 0         | 22.39               | 22.43     | 22.36     |
|                     |                 |            | 3       | 1         | 22.40               | 22.31     | 22.37     |
|                     |                 |            | 3       | 2         | 22.36               | 22.28     | 22.40     |
|                     |                 |            | 6       | 0         | 22.90               | 22.75     | 22.84     |
| Antenna Gain (dBi): |                 |            |         |           | -3.38               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 19.99               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 33.00               |           |           |
| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|                     |                 |            |         |           | 18615               | 18900     | 19185     |
|                     |                 |            |         |           | 1851.5MHz           | 1880.0MHz | 1908.5MHz |
| 2                   | 3               | QPSK       | 1       | 0         | 23.32               | 23.35     | 23.16     |
|                     |                 |            | 1       | 7         | 23.37               | 23.31     | 23.20     |
|                     |                 |            | 1       | 14        | 23.27               | 23.31     | 23.23     |
|                     |                 |            | 8       | 0         | 22.82               | 22.85     | 22.90     |
|                     |                 |            | 8       | 4         | 22.78               | 22.83     | 22.88     |
|                     |                 |            | 8       | 7         | 22.92               | 22.85     | 22.79     |
|                     |                 |            | 15      | 0         | 22.87               | 22.90     | 22.82     |
| Antenna Gain (dBi): |                 |            |         |           | -3.38               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 19.99               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 33.00               |           |           |

| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|---------------------|-----------------|------------|---------|-----------|---------------------|-----------|-----------|
|                     |                 |            |         |           | 18625               | 18900     | 19175     |
|                     |                 |            |         |           | 1852.5MHz           | 1880.0MHz | 1907.5MHz |
| 2                   | 5               | 16QAM      | 1       | 0         | 23.11               | 22.85     | 23.10     |
|                     |                 |            | 1       | 12        | 23.12               | 22.67     | 23.11     |
|                     |                 |            | 1       | 24        | 22.82               | 22.83     | 23.01     |
|                     |                 |            | 12      | 0         | 21.46               | 21.35     | 21.57     |
|                     |                 |            | 12      | 6         | 21.33               | 21.36     | 21.59     |
|                     |                 |            | 12      | 11        | 21.13               | 21.07     | 21.57     |
|                     |                 |            | 25      | 0         | 21.30               | 21.30     | 21.48     |
| Antenna Gain (dBi): |                 |            |         |           | -3.38               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 19.74               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 33.00               |           |           |
| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|                     |                 |            |         |           | 18650               | 18900     | 19150     |
|                     |                 |            |         |           | 1855.0MHz           | 1880.0MHz | 1905.0MHz |
| 2                   | 10              | 16QAM      | 1       | 0         | 22.83               | 23.10     | 23.13     |
|                     |                 |            | 1       | 24        | 23.10               | 22.91     | 23.16     |
|                     |                 |            | 1       | 49        | 23.10               | 22.65     | 23.09     |
|                     |                 |            | 25      | 0         | 21.39               | 21.53     | 21.62     |
|                     |                 |            | 25      | 12        | 21.58               | 21.36     | 21.44     |
|                     |                 |            | 25      | 24        | 21.40               | 21.39     | 21.42     |
|                     |                 |            | 50      | 0         | 21.38               | 21.42     | 21.38     |
| Antenna Gain (dBi): |                 |            |         |           | -3.38               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 19.78               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 33.00               |           |           |

| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|---------------------|-----------------|------------|---------|-----------|---------------------|-----------|-----------|
|                     |                 |            |         |           | 18625               | 18900     | 19175     |
|                     |                 |            |         |           | 1852.5MHz           | 1880.0MHz | 1907.5MHz |
| 2                   | 5               | QPSK       | 1       | 0         | 23.20               | 23.13     | 23.08     |
|                     |                 |            | 1       | 12        | 23.24               | 23.19     | 23.22     |
|                     |                 |            | 1       | 24        | 23.23               | 23.15     | 23.17     |
|                     |                 |            | 12      | 0         | 22.76               | 22.82     | 22.84     |
|                     |                 |            | 12      | 6         | 22.75               | 22.70     | 22.83     |
|                     |                 |            | 12      | 11        | 22.78               | 22.74     | 22.86     |
|                     |                 |            | 25      | 0         | 22.73               | 22.70     | 22.71     |
| Antenna Gain (dBi): |                 |            |         |           | -3.38               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 19.86               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 33.00               |           |           |
| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|                     |                 |            |         |           | 18650               | 18900     | 19150     |
|                     |                 |            |         |           | 1855.0MHz           | 1880.0MHz | 1905.0MHz |
| 2                   | 10              | QPSK       | 1       | 0         | 23.10               | 23.05     | 23.17     |
|                     |                 |            | 1       | 24        | 23.16               | 23.12     | 23.12     |
|                     |                 |            | 1       | 49        | 23.08               | 23.08     | 23.19     |
|                     |                 |            | 25      | 0         | 22.69               | 22.64     | 22.79     |
|                     |                 |            | 25      | 12        | 22.69               | 22.78     | 22.75     |
|                     |                 |            | 25      | 24        | 22.70               | 22.77     | 22.76     |
|                     |                 |            | 50      | 0         | 22.69               | 22.78     | 22.66     |
| Antenna Gain (dBi): |                 |            |         |           | -3.38               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 19.81               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 33.00               |           |           |

| LTE Band | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |  |
|----------|-----------------|---------------------|---------|-----------|---------------------|-----------|-----------|--|--|
|          |                 |                     |         |           | 18675               | 18900     | 19125     |  |  |
|          |                 |                     |         |           | 1857.5MHz           | 1880.0MHz | 1902.5MHz |  |  |
| 2        | 15              | 16QAM               | 1       | 0         | 22.96               | 22.98     | 22.96     |  |  |
|          |                 |                     | 1       | 37        | 22.83               | 22.97     | 22.96     |  |  |
|          |                 |                     | 1       | 74        | 22.94               | 22.91     | 22.97     |  |  |
|          |                 |                     | 36      | 0         | 21.30               | 22.78     | 21.29     |  |  |
|          |                 |                     | 36      | 16        | 21.43               | 21.28     | 21.18     |  |  |
|          |                 |                     | 36      | 35        | 21.36               | 21.08     | 21.28     |  |  |
|          |                 |                     | 75      | 0         | 21.19               | 21.40     | 21.35     |  |  |
|          |                 | Antenna Gain (dBi): |         |           |                     |           | -3.38     |  |  |
|          |                 | Max. EIRP (dBm):    |         |           |                     |           | 19.60     |  |  |
|          |                 | EIRP Limit (dBm):   |         |           |                     |           | 33.00     |  |  |
| LTE Band | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |  |
|          |                 |                     |         |           | 18700               | 18900     | 19100     |  |  |
|          |                 |                     |         |           | 1860.0MHz           | 1880.0MHz | 1900.0MHz |  |  |
| 2        | 20              | 16QAM               | 1       | 0         | 22.93               | 22.70     | 22.91     |  |  |
|          |                 |                     | 1       | 49        | 22.85               | 22.59     | 22.55     |  |  |
|          |                 |                     | 1       | 99        | 22.75               | 22.82     | 22.59     |  |  |
|          |                 |                     | 50      | 0         | 21.40               | 21.40     | 21.57     |  |  |
|          |                 |                     | 50      | 24        | 21.34               | 21.12     | 21.40     |  |  |
|          |                 |                     | 50      | 49        | 21.40               | 21.19     | 21.28     |  |  |
|          |                 |                     | 100     | 0         | 21.25               | 21.35     | 21.44     |  |  |
|          |                 | Antenna Gain (dBi): |         |           |                     |           | -3.38     |  |  |
|          |                 | Max. EIRP (dBm):    |         |           |                     |           | 19.55     |  |  |
|          |                 | EIRP Limit (dBm):   |         |           |                     |           | 33.00     |  |  |



| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|---------------------|-----------------|------------|---------|-----------|---------------------|-----------|-----------|
|                     |                 |            |         |           | 18675               | 18900     | 19125     |
|                     |                 |            |         |           | 1857.5MHz           | 1880.0MHz | 1902.5MHz |
| 2                   | 15              | QPSK       | 1       | 0         | 23.18               | 23.17     | 23.11     |
|                     |                 |            | 1       | 37        | 23.06               | 23.10     | 23.10     |
|                     |                 |            | 1       | 74        | 23.09               | 22.99     | 23.12     |
|                     |                 |            | 36      | 0         | 22.76               | 22.78     | 22.85     |
|                     |                 |            | 36      | 16        | 22.65               | 22.81     | 22.83     |
|                     |                 |            | 36      | 35        | 22.78               | 22.63     | 22.74     |
|                     |                 |            | 75      | 0         | 22.70               | 22.84     | 22.73     |
| Antenna Gain (dBi): |                 |            |         |           | -3.38               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 19.80               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 33.00               |           |           |
| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|                     |                 |            |         |           | 18700               | 18900     | 19100     |
|                     |                 |            |         |           | 1860.0MHz           | 1880.0MHz | 1900.0MHz |
| 2                   | 20              | QPSK       | 1       | 0         | 23.35               | 23.24     | 23.19     |
|                     |                 |            | 1       | 49        | 23.18               | 23.19     | 23.22     |
|                     |                 |            | 1       | 99        | 23.12               | 23.06     | 23.19     |
|                     |                 |            | 50      | 0         | 22.67               | 22.69     | 22.89     |
|                     |                 |            | 50      | 24        | 22.69               | 22.82     | 22.77     |
|                     |                 |            | 50      | 49        | 22.67               | 22.62     | 22.75     |
|                     |                 |            | 100     | 0         | 22.65               | 22.69     | 22.68     |
| Antenna Gain (dBi): |                 |            |         |           | -3.38               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 19.97               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 33.00               |           |           |

| LTE Band | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |  |
|----------|-----------------|---------------------|---------|-----------|---------------------|-----------|-----------|--|--|
|          |                 |                     |         |           | 19957               | 20175     | 20393     |  |  |
|          |                 |                     |         |           | 1710.7MHz           | 1732.5MHz | 1754.3MHz |  |  |
| 4        | 1.4             | 16QAM               | 1       | 0         | 23.11               | 23.17     | 23.45     |  |  |
|          |                 |                     | 1       | 2         | 23.32               | 22.77     | 23.36     |  |  |
|          |                 |                     | 1       | 5         | 22.82               | 23.15     | 23.27     |  |  |
|          |                 |                     | 3       | 0         | 23.04               | 22.88     | 22.90     |  |  |
|          |                 |                     | 3       | 1         | 23.19               | 23.13     | 23.14     |  |  |
|          |                 |                     | 3       | 2         | 23.02               | 23.14     | 23.18     |  |  |
|          |                 |                     | 6       | 0         | 22.28               | 22.22     | 22.38     |  |  |
|          |                 | Antenna Gain (dBi): |         |           |                     |           | -1.94     |  |  |
|          |                 | Max. EIRP (dBm):    |         |           |                     |           | 21.51     |  |  |
|          |                 | EIRP Limit (dBm):   |         |           |                     |           | 30.00     |  |  |
| LTE Band | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |  |
|          |                 |                     |         |           | 19965               | 20175     | 20385     |  |  |
|          |                 |                     |         |           | 1711.5MHz           | 1732.5MHz | 1753.5MHz |  |  |
| 4        | 3               | 16QAM               | 1       | 0         | 23.41               | 22.81     | 23.36     |  |  |
|          |                 |                     | 1       | 7         | 23.04               | 23.35     | 23.55     |  |  |
|          |                 |                     | 1       | 14        | 23.37               | 23.02     | 23.30     |  |  |
|          |                 |                     | 8       | 0         | 21.84               | 21.98     | 22.07     |  |  |
|          |                 |                     | 8       | 4         | 22.15               | 21.98     | 22.09     |  |  |
|          |                 |                     | 8       | 7         | 22.08               | 22.06     | 22.08     |  |  |
|          |                 |                     | 15      | 0         | 22.28               | 22.40     | 22.37     |  |  |
|          |                 | Antenna Gain (dBi): |         |           |                     |           | -1.94     |  |  |
|          |                 | Max. EIRP (dBm):    |         |           |                     |           | 21.61     |  |  |
|          |                 | EIRP Limit (dBm):   |         |           |                     |           | 30.00     |  |  |

| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|---------------------|-----------------|------------|---------|-----------|---------------------|-----------|-----------|
|                     |                 |            |         |           | 19957               | 20175     | 20393     |
|                     |                 |            |         |           | 1710.7MHz           | 1732.5MHz | 1754.3MHz |
| 4                   | 1.4             | QPSK       | 1       | 0         | 23.44               | 23.50     | 23.46     |
|                     |                 |            | 1       | 2         | 23.31               | 23.55     | 23.52     |
|                     |                 |            | 1       | 5         | 23.35               | 23.55     | 23.61     |
|                     |                 |            | 3       | 0         | 23.17               | 23.04     | 23.15     |
|                     |                 |            | 3       | 1         | 23.17               | 23.07     | 23.17     |
|                     |                 |            | 3       | 2         | 23.17               | 23.13     | 23.29     |
|                     |                 |            | 6       | 0         | 23.05               | 23.15     | 23.24     |
| Antenna Gain (dBi): |                 |            |         |           | -1.94               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 21.67               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 30.00               |           |           |
| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|                     |                 |            |         |           | 19965               | 20175     | 20385     |
|                     |                 |            |         |           | 1711.5MHz           | 1732.5MHz | 1753.5MHz |
| 4                   | 3               | QPSK       | 1       | 0         | 23.31               | 23.52     | 23.51     |
|                     |                 |            | 1       | 7         | 23.43               | 23.44     | 23.48     |
|                     |                 |            | 1       | 14        | 23.43               | 23.44     | 23.51     |
|                     |                 |            | 8       | 0         | 23.09               | 23.10     | 23.14     |
|                     |                 |            | 8       | 4         | 22.92               | 23.11     | 23.04     |
|                     |                 |            | 8       | 7         | 23.04               | 23.02     | 23.14     |
|                     |                 |            | 15      | 0         | 22.94               | 23.05     | 23.13     |
| Antenna Gain (dBi): |                 |            |         |           | -1.94               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 21.58               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 30.00               |           |           |

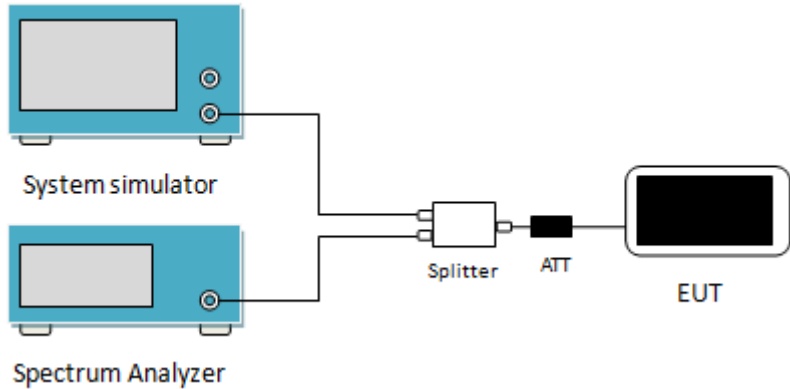
| LTE Band | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |  |
|----------|-----------------|---------------------|---------|-----------|---------------------|-----------|-----------|--|--|
|          |                 |                     |         |           | 19975               | 20175     | 20375     |  |  |
|          |                 |                     |         |           | 1712.5MHz           | 1732.5MHz | 1752.5MHz |  |  |
| 4        | 5               | 16QAM               | 1       | 0         | 23.04               | 23.19     | 22.92     |  |  |
|          |                 |                     | 1       | 12        | 23.43               | 23.39     | 23.01     |  |  |
|          |                 |                     | 1       | 24        | 23.13               | 23.08     | 23.07     |  |  |
|          |                 |                     | 12      | 0         | 21.99               | 22.09     | 22.32     |  |  |
|          |                 |                     | 12      | 6         | 21.95               | 22.00     | 22.29     |  |  |
|          |                 |                     | 12      | 11        | 21.91               | 22.07     | 22.37     |  |  |
|          |                 |                     | 25      | 0         | 22.04               | 22.22     | 22.41     |  |  |
|          |                 | Antenna Gain (dBi): |         |           |                     |           | -1.94     |  |  |
|          |                 | Max. EIRP (dBm):    |         |           |                     |           | 21.49     |  |  |
|          |                 | EIRP Limit (dBm):   |         |           |                     |           | 30.00     |  |  |
| LTE Band | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |  |
|          |                 |                     |         |           | 20000               | 20175     | 20350     |  |  |
|          |                 |                     |         |           | 1715.0MHz           | 1732.5MHz | 1750.0MHz |  |  |
| 4        | 10              | 16QAM               | 1       | 0         | 22.96               | 23.08     | 22.96     |  |  |
|          |                 |                     | 1       | 24        | 23.09               | 23.11     | 23.55     |  |  |
|          |                 |                     | 1       | 49        | 22.89               | 22.90     | 22.37     |  |  |
|          |                 |                     | 25      | 0         | 22.12               | 22.06     | 22.20     |  |  |
|          |                 |                     | 25      | 12        | 22.11               | 22.30     | 22.34     |  |  |
|          |                 |                     | 25      | 24        | 22.10               | 22.32     | 22.30     |  |  |
|          |                 |                     | 50      | 0         | 22.12               | 22.20     | 22.31     |  |  |
|          |                 | Antenna Gain (dBi): |         |           |                     |           | -1.94     |  |  |
|          |                 | Max. EIRP (dBm):    |         |           |                     |           | 21.61     |  |  |
|          |                 | EIRP Limit (dBm):   |         |           |                     |           | 30.00     |  |  |

| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|---------------------|-----------------|------------|---------|-----------|---------------------|-----------|-----------|
|                     |                 |            |         |           | 19975               | 20175     | 20375     |
|                     |                 |            |         |           | 1712.5MHz           | 1732.5MHz | 1752.5MHz |
| 4                   | 5               | QPSK       | 1       | 0         | 23.39               | 23.52     | 23.44     |
|                     |                 |            | 1       | 12        | 23.36               | 23.47     | 23.45     |
|                     |                 |            | 1       | 24        | 23.45               | 23.44     | 23.45     |
|                     |                 |            | 12      | 0         | 22.97               | 22.99     | 23.10     |
|                     |                 |            | 12      | 6         | 23.05               | 23.06     | 23.16     |
|                     |                 |            | 12      | 11        | 22.86               | 22.98     | 23.18     |
|                     |                 |            | 25      | 0         | 22.99               | 23.06     | 23.13     |
| Antenna Gain (dBi): |                 |            |         |           | -1.94               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 21.58               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 30.00               |           |           |
| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|                     |                 |            |         |           | 20000               | 20175     | 20350     |
|                     |                 |            |         |           | 1715.0MHz           | 1732.5MHz | 1750.0MHz |
| 4                   | 10              | QPSK       | 1       | 0         | 23.41               | 23.50     | 23.57     |
|                     |                 |            | 1       | 24        | 23.34               | 23.39     | 23.54     |
|                     |                 |            | 1       | 49        | 23.37               | 23.41     | 23.51     |
|                     |                 |            | 25      | 0         | 23.02               | 23.12     | 23.20     |
|                     |                 |            | 25      | 12        | 22.91               | 23.09     | 23.13     |
|                     |                 |            | 25      | 24        | 23.02               | 23.04     | 23.07     |
|                     |                 |            | 50      | 0         | 23.08               | 22.99     | 23.32     |
| Antenna Gain (dBi): |                 |            |         |           | -1.94               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 21.63               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 30.00               |           |           |

| LTE Band | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |  |
|----------|-----------------|---------------------|---------|-----------|---------------------|-----------|-----------|--|--|
|          |                 |                     |         |           | 20025               | 20175     | 20325     |  |  |
|          |                 |                     |         |           | 1717.5MHz           | 1732.5MHz | 1747.5MHz |  |  |
| 4        | 15              | 16QAM               | 1       | 0         | 23.02               | 23.27     | 23.16     |  |  |
|          |                 |                     | 1       | 37        | 23.24               | 23.02     | 23.24     |  |  |
|          |                 |                     | 1       | 74        | 23.30               | 23.48     | 23.01     |  |  |
|          |                 |                     | 36      | 0         | 22.20               | 22.21     | 22.28     |  |  |
|          |                 |                     | 36      | 16        | 22.13               | 22.09     | 22.27     |  |  |
|          |                 |                     | 36      | 35        | 22.22               | 22.13     | 22.25     |  |  |
|          |                 |                     | 75      | 0         | 22.13               | 22.24     | 22.26     |  |  |
|          |                 | Antenna Gain (dBi): |         |           |                     |           | -1.94     |  |  |
|          |                 | Max. EIRP (dBm):    |         |           |                     |           | 21.54     |  |  |
|          |                 | EIRP Limit (dBm):   |         |           |                     |           | 30.00     |  |  |
| LTE Band | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |  |
|          |                 |                     |         |           | 20050               | 20175     | 20300     |  |  |
|          |                 |                     |         |           | 1720.0MHz           | 1732.5MHz | 1745.0MHz |  |  |
| 4        | 20              | 16QAM               | 1       | 0         | 23.38               | 23.42     | 23.53     |  |  |
|          |                 |                     | 1       | 49        | 23.20               | 23.16     | 23.22     |  |  |
|          |                 |                     | 1       | 99        | 23.26               | 23.33     | 23.36     |  |  |
|          |                 |                     | 50      | 0         | 22.25               | 22.19     | 23.36     |  |  |
|          |                 |                     | 50      | 24        | 22.14               | 22.23     | 22.24     |  |  |
|          |                 |                     | 50      | 49        | 22.29               | 22.17     | 22.34     |  |  |
|          |                 |                     | 100     | 0         | 22.08               | 22.16     | 22.30     |  |  |
|          |                 | Antenna Gain (dBi): |         |           |                     |           | -1.94     |  |  |
|          |                 | Max. EIRP (dBm):    |         |           |                     |           | 21.59     |  |  |
|          |                 | EIRP Limit (dBm):   |         |           |                     |           | 30.00     |  |  |

| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|---------------------|-----------------|------------|---------|-----------|---------------------|-----------|-----------|
|                     |                 |            |         |           | 20025               | 20175     | 20325     |
|                     |                 |            |         |           | 1717.5MHz           | 1732.5MHz | 1747.5MHz |
| 4                   | 15              | QPSK       | 1       | 0         | 23.44               | 23.44     | 23.44     |
|                     |                 |            | 1       | 37        | 23.43               | 23.43     | 23.46     |
|                     |                 |            | 1       | 74        | 23.45               | 23.48     | 23.44     |
|                     |                 |            | 36      | 0         | 23.05               | 23.07     | 23.17     |
|                     |                 |            | 36      | 16        | 23.07               | 23.08     | 23.07     |
|                     |                 |            | 36      | 35        | 23.02               | 23.03     | 23.14     |
|                     |                 |            | 75      | 0         | 22.93               | 23.13     | 23.17     |
| Antenna Gain (dBi): |                 |            |         |           | -1.94               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 21.54               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 30.00               |           |           |
| LTE Band            | Bandwidth (MHz) | Modulation | RB Size | RB Offset | Average Power (dBm) |           |           |
|                     |                 |            |         |           | 20050               | 20175     | 20300     |
|                     |                 |            |         |           | 1720.0MHz           | 1732.5MHz | 1745.0MHz |
| 4                   | 20              | QPSK       | 1       | 0         | 23.42               | 23.42     | 23.63     |
|                     |                 |            | 1       | 49        | 23.47               | 23.44     | 23.49     |
|                     |                 |            | 1       | 99        | 23.36               | 23.37     | 23.48     |
|                     |                 |            | 50      | 0         | 23.07               | 23.08     | 23.21     |
|                     |                 |            | 50      | 24        | 22.97               | 22.97     | 23.02     |
|                     |                 |            | 50      | 49        | 23.00               | 23.02     | 23.09     |
|                     |                 |            | 100     | 0         | 23.09               | 23.10     | 23.11     |
| Antenna Gain (dBi): |                 |            |         |           | -1.94               |           |           |
| Max. EIRP (dBm):    |                 |            |         |           | 21.69               |           |           |
| EIRP Limit (dBm):   |                 |            |         |           | 30.00               |           |           |

## 6.2 Peak-to-Average Ratio

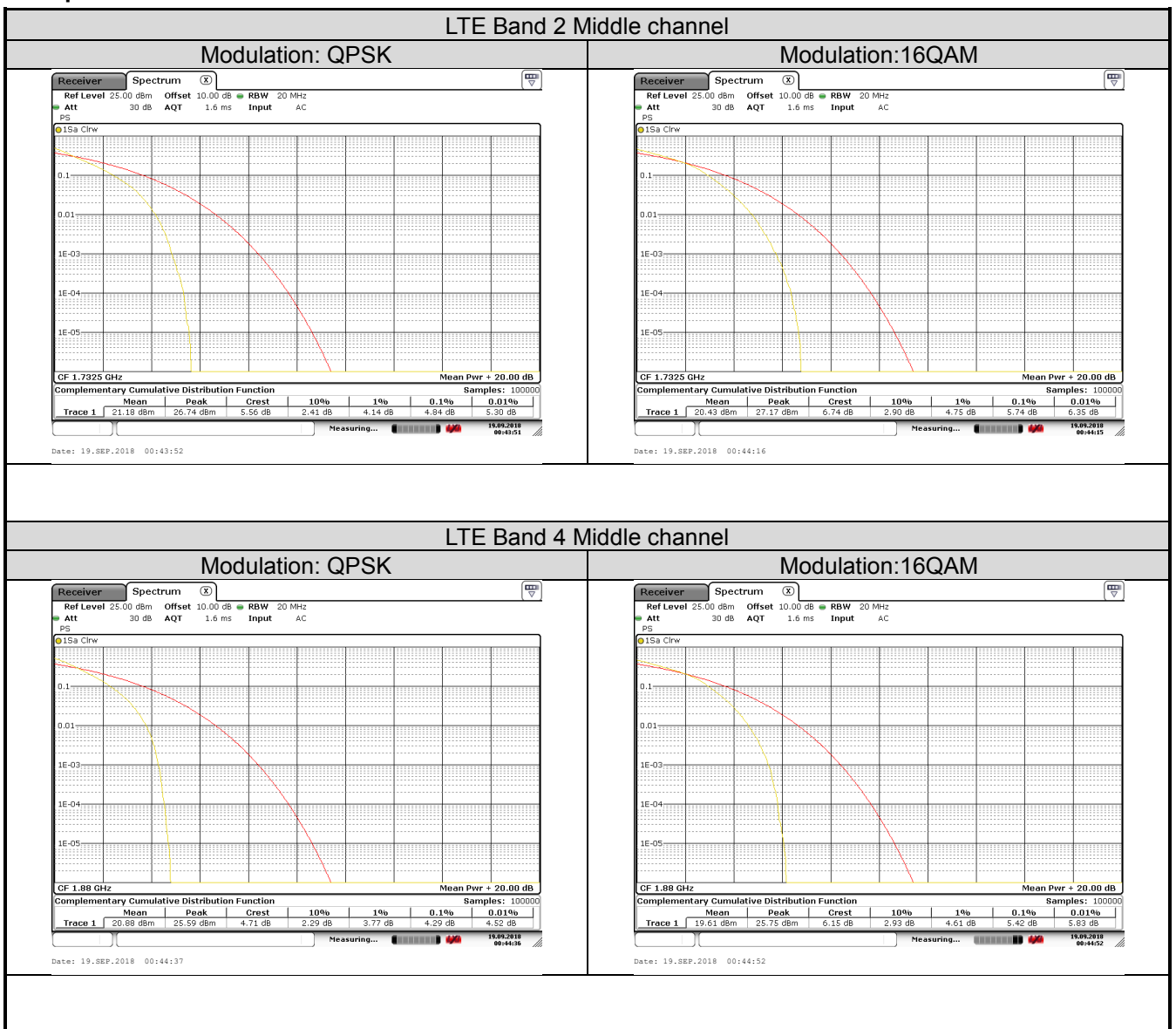
|                   |  |
|-------------------|--|
| Test Requirement: | Part 24.232 (d), Part 27.50(d)(5)  |
| Test Method:      | ANSI/TIA-603-D 2010  |
| Limit:            | The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.  |
| Test Setup:       |  <p>The diagram shows a test setup for measuring Peak-to-Average Ratio (PAR). It consists of a System simulator and a Spectrum Analyzer connected to a Splitter. The Splitter is connected to an ATT (Attenuator) and an EUT (Equipment Under Test).</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 Set the CCDF option in spectrum analyzer, <math>RBW \geq OBW</math>,</li> <li>3 Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level.</li> <li>4 Repeat step 1~3 at other frequency and modulations.</li> </ol> |
| Test Instruments: | Refer to section 5.9 for details   |
| Test mode:        | Refer to section 5.3 for details   |
| Test results:     | Passed   |



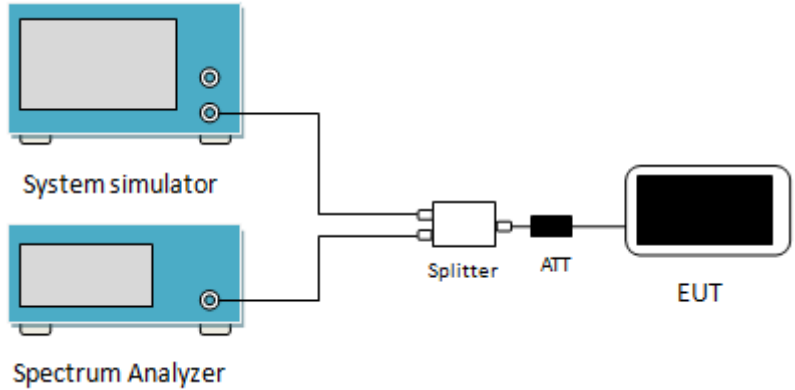
Measurement Data (Worst case):

| Bandwidth                   | Modulation | RB Size | RB Offset | PAPR |
|-----------------------------|------------|---------|-----------|------|
| LTE Band 2 (Middle Channel) |            |         |           |      |
| 20MHz                       | QPSK       | 100     | 0         | 4.84 |
|                             | 16QAM      | 100     | 0         | 5.74 |
| LTE Band 4 (Middle Channel) |            |         |           |      |
| 20MHz                       | QPSK       | 100     | 0         | 4.29 |
|                             | 16QAM      | 100     | 0         | 5.42 |

Test plots as below:



## 6.3 Occupy Bandwidth

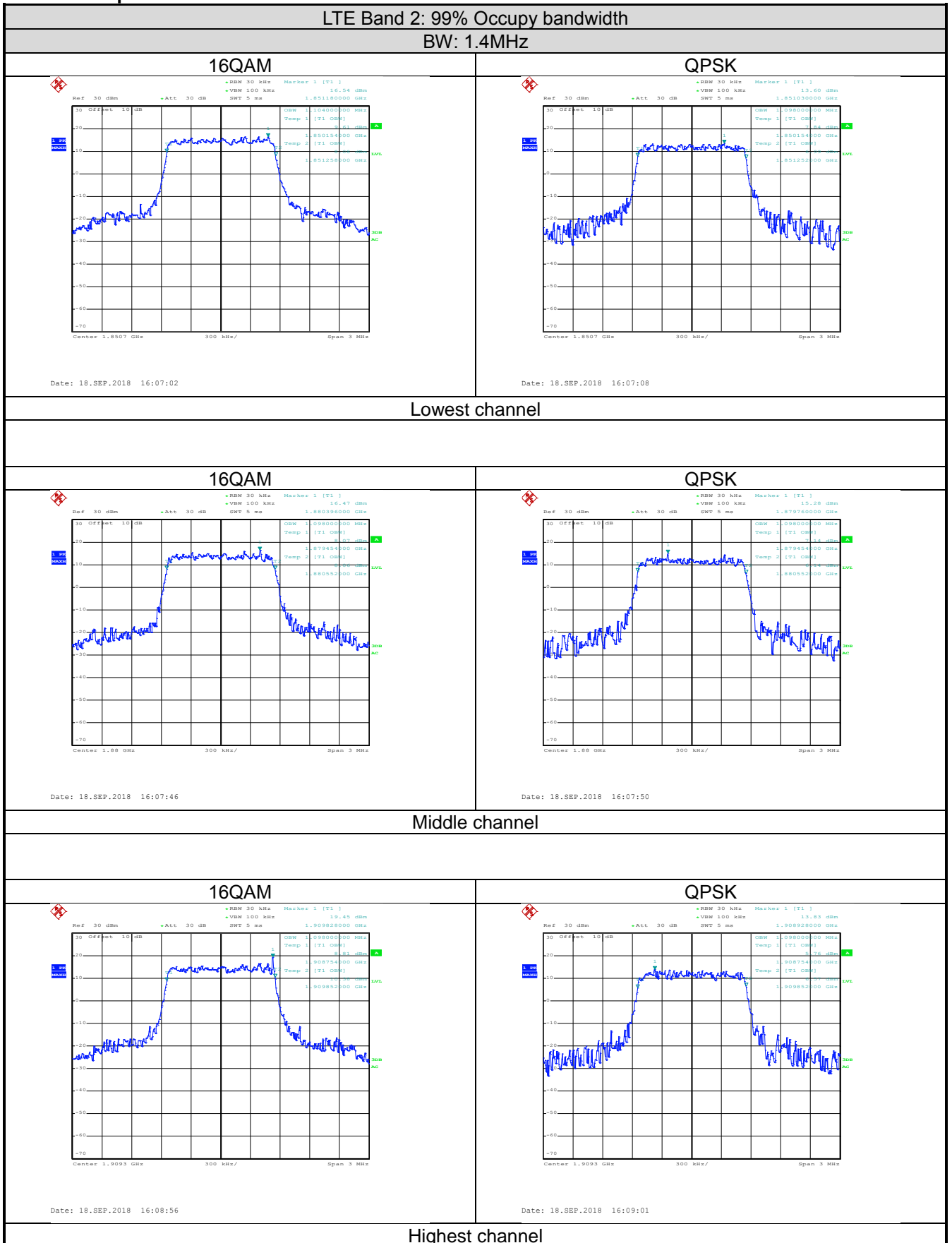
|                   |   |
|-------------------|---|
| Test Requirement: | Part 24.238(b), Part 27.53(h),  |
| Test Method:      | ANSI/TIA-603-D 2010   |
| Test Setup:       |  <p>The diagram illustrates the test setup. On the left, there are two blue rectangular units: the top one is labeled 'System simulator' and the bottom one is labeled 'Spectrum Analyzer'. Both have a screen and two circular ports on the right side. A single line from the top port of the System simulator and a single line from the top port of the Spectrum Analyzer merge into a single line that enters a white rectangular 'Splitter' box. From the right side of the Splitter, a line goes to a black rectangular 'ATT' (Attenuator) box. From the right side of the ATT, a line goes to a white rectangular 'EUT' (Equipment Under Test) box with a black screen.</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% ~ 5% 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 5.9 for details  |
| Test mode:        | Refer to section 5.3 for details  |
| Test results:     | Passed  |

**Measurement Data:**

| LTE Band 2 |         |                 |            |               |                 |
|------------|---------|-----------------|------------|---------------|-----------------|
| Bandwidth  | Channel | Frequency (MHz) | Modulation | 99% OBW (kHz) | -26dBcEBW (kHz) |
| 1.4MHz     | 18607   | 1850.70         | 16QAM      | 1104          | 1290            |
|            |         |                 | QPSK       | 1098          | 1302            |
|            | 18900   | 1880.00         | 16QAM      | 1098          | 1272            |
|            |         |                 | QPSK       | 1098          | 1260            |
|            | 19193   | 1909.30         | 16QAM      | 1098          | 1278            |
|            |         |                 | QPSK       | 1098          | 1278            |
| 3MHz       | 18615   | 1851.50         | 16QAM      | 2772          | 3192            |
|            |         |                 | QPSK       | 2748          | 3108            |
|            | 18900   | 1880.00         | 16QAM      | 2784          | 3120            |
|            |         |                 | QPSK       | 2760          | 3264            |
|            | 19185   | 1908.50         | 16QAM      | 2772          | 3324            |
|            |         |                 | QPSK       | 2760          | 3156            |
| 5MHz       | 18625   | 1852.50         | 16QAM      | 4540          | 5100            |
|            |         |                 | QPSK       | 4480          | 4900            |
|            | 18900   | 1880.00         | 16QAM      | 4520          | 5040            |
|            |         |                 | QPSK       | 4520          | 5000            |
|            | 19175   | 1907.50         | 16QAM      | 4520          | 4980            |
|            |         |                 | QPSK       | 4500          | 4920            |
| 10MHz      | 18650   | 1855.00         | 16QAM      | 9080          | 10320           |
|            |         |                 | QPSK       | 9080          | 10160           |
|            | 18900   | 1880.00         | 16QAM      | 9120          | 10160           |
|            |         |                 | QPSK       | 9120          | 10280           |
|            | 19150   | 1905.00         | 16QAM      | 9120          | 10240           |
|            |         |                 | QPSK       | 9120          | 10080           |
| 15MHz      | 18675   | 1857.50         | 16QAM      | 13500         | 15180           |
|            |         |                 | QPSK       | 13500         | 14760           |
|            | 18900   | 1880.00         | 16QAM      | 13560         | 14880           |
|            |         |                 | QPSK       | 13560         | 14880           |
|            | 19125   | 1902.50         | 16QAM      | 13560         | 15060           |
|            |         |                 | QPSK       | 13500         | 15060           |
| 20MHz      | 18700   | 1860.00         | 16QAM      | 18000         | 19600           |
|            |         |                 | QPSK       | 18000         | 19680           |
|            | 18900   | 1880.00         | 16QAM      | 18080         | 20160           |
|            |         |                 | QPSK       | 18000         | 20160           |
|            | 19100   | 1900.00         | 16QAM      | 18080         | 19760           |
|            |         |                 | QPSK       | 17920         | 19280           |

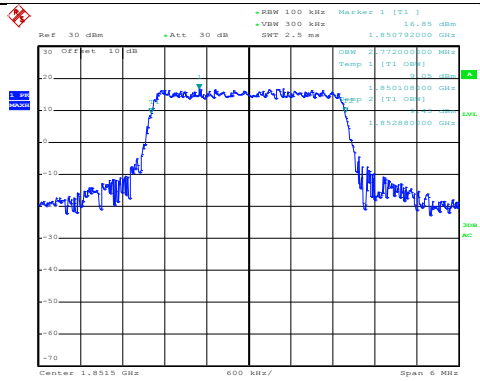
| LTE Band 4 |         |                 |            |               |                 |
|------------|---------|-----------------|------------|---------------|-----------------|
| Bandwidth  | Channel | Frequency (MHz) | Modulation | 99% OBW (kHz) | -26dBcEBW (kHz) |
| 1.4MHz     | 19957   | 1710.7          | 16QAM      | 1104          | 1272            |
|            |         |                 | QPSK       | 1098          | 1254            |
|            | 20175   | 1732.5          | 16QAM      | 1104          | 1242            |
|            |         |                 | QPSK       | 1104          | 1290            |
|            | 20393   | 1754.3          | 16QAM      | 1098          | 1302            |
|            |         |                 | QPSK       | 1104          | 1278            |
| 3MHz       | 19965   | 1711.5          | 16QAM      | 2760          | 3276            |
|            |         |                 | QPSK       | 2748          | 3168            |
|            | 20175   | 1732.5          | 16QAM      | 3144          | 2784            |
|            |         |                 | QPSK       | 3156          | 2748            |
|            | 20385   | 1750.5          | 16QAM      | 2760          | 3120            |
|            |         |                 | QPSK       | 2748          | 3123            |
| 5MHz       | 19975   | 1712.5          | 16QAM      | 4520          | 4980            |
|            |         |                 | QPSK       | 4500          | 5100            |
|            | 20175   | 1732.5          | 16QAM      | 4540          | 5000            |
|            |         |                 | QPSK       | 4520          | 5000            |
|            | 20375   | 1752.5          | 16QAM      | 4500          | 4940            |
|            |         |                 | QPSK       | 4500          | 4940            |
| 10MHz      | 20000   | 1715.0          | 16QAM      | 9080          | 10200           |
|            |         |                 | QPSK       | 9120          | 10080           |
|            | 20175   | 1732.5          | 16QAM      | 9160          | 10240           |
|            |         |                 | QPSK       | 9120          | 10160           |
|            | 20350   | 1750.0          | 16QAM      | 9080          | 10200           |
|            |         |                 | QPSK       | 9080          | 10080           |
| 15MHz      | 20025   | 1717.5          | 16QAM      | 13440         | 15000           |
|            |         |                 | QPSK       | 13500         | 14820           |
|            | 20175   | 1732.5          | 16QAM      | 13560         | 15000           |
|            |         |                 | QPSK       | 13560         | 14800           |
|            | 20325   | 1747.5          | 16QAM      | 13440         | 14760           |
|            |         |                 | QPSK       | 13500         | 14820           |
| 20MHz      | 20050   | 1720.0          | 16QAM      | 18000         | 19760           |
|            |         |                 | QPSK       | 17920         | 19680           |
|            | 20175   | 1732.5          | 16QAM      | 18080         | 19760           |
|            |         |                 | QPSK       | 18080         | 19680           |
|            | 20300   | 1745.0          | 16QAM      | 18000         | 19680           |
|            |         |                 | QPSK       | 18000         | 19440           |

Test plot as follows:  
LTE Band 2 part:



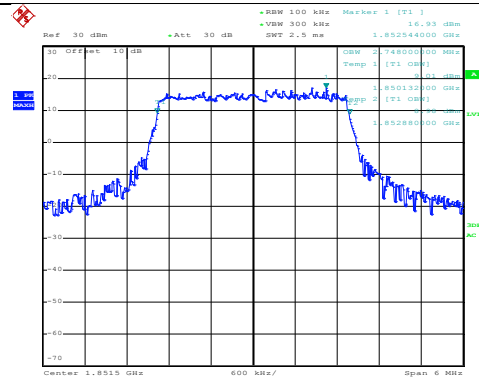
LTE Band 2: 99% Occupancy bandwidth  
BW: 3MHz

16QAM



Date: 18.SEP.2018 21:09:21

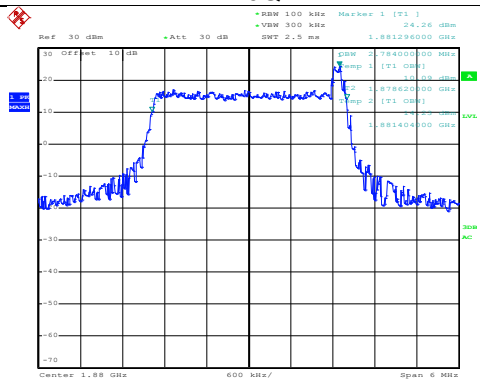
QPSK



Date: 18.SEP.2018 21:09:33

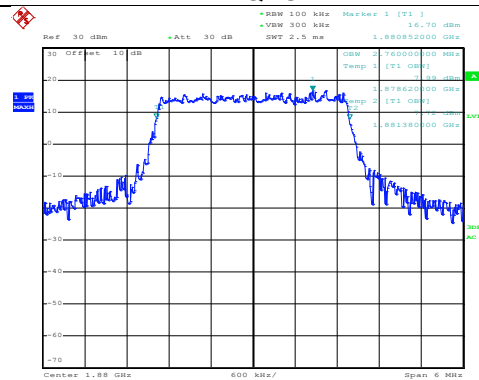
Lowest channel

16QAM



Date: 18.SEP.2018 21:09:48

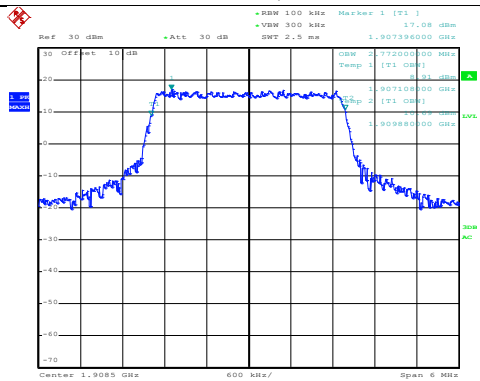
QPSK



Date: 18.SEP.2018 21:10:00

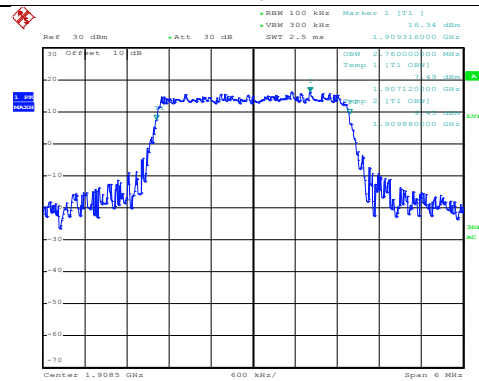
Middle channel

16QAM



Date: 18.SEP.2018 21:11:06

QPSK

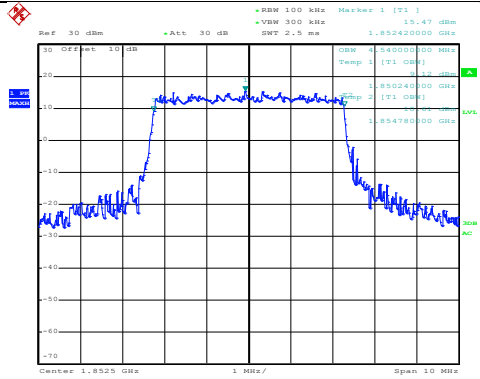


Date: 18.SEP.2018 21:11:18

Highest channel

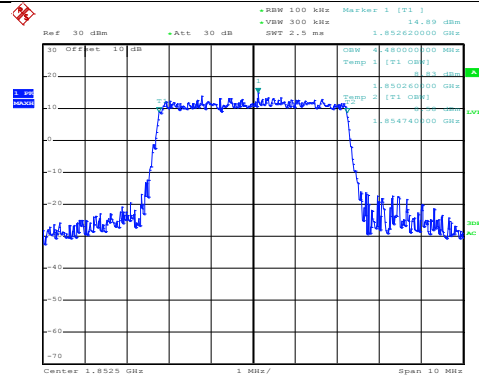
LTE Band 2: 99% Occupancy bandwidth  
BW: 5MHz

16QAM



Date: 18.SEP.2018 21:12:36

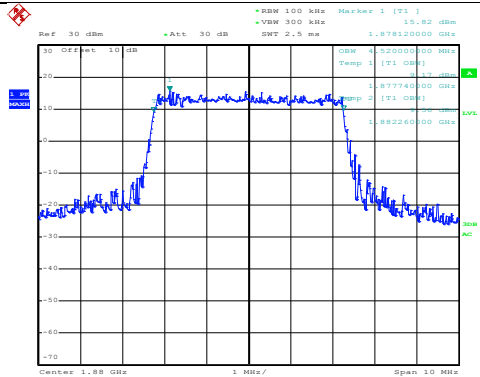
QPSK



Date: 18.SEP.2018 21:11:58

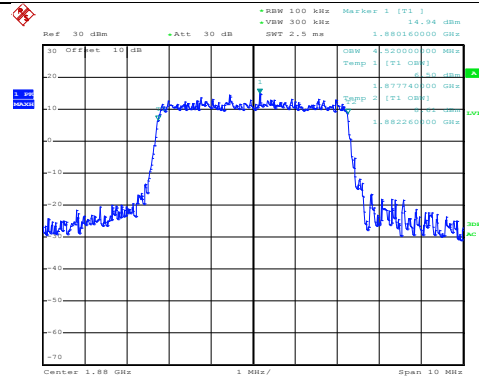
Lowest channel

16QAM



Date: 18.SEP.2018 21:12:58

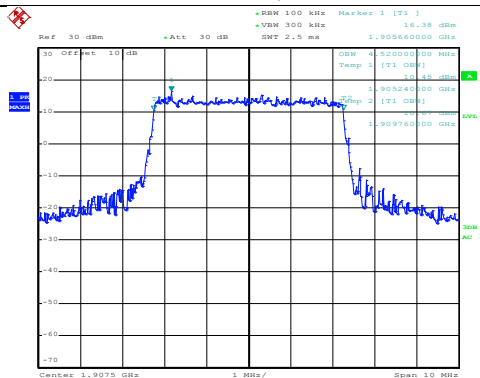
QPSK



Date: 18.SEP.2018 21:13:04

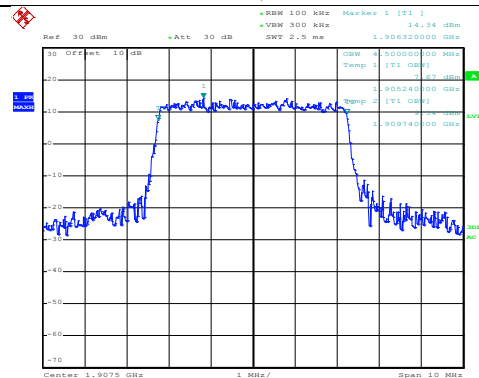
Middle channel

16QAM



Date: 18.SEP.2018 21:14:16

QPSK

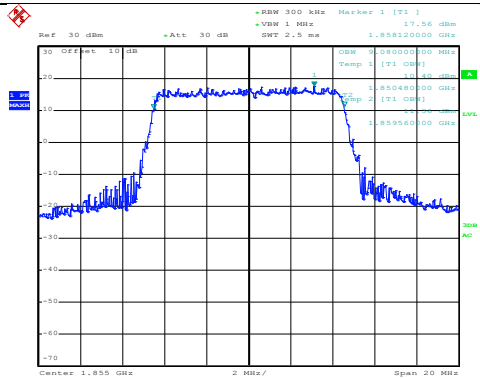


Date: 18.SEP.2018 21:14:28

Highest channel

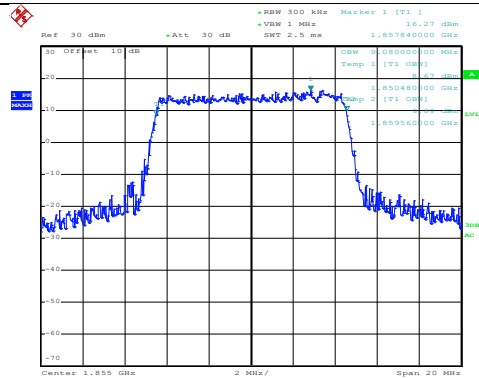
LTE Band 2: 99% Occupancy bandwidth  
BW: 10MHz

16QAM



Date: 18.SEP.2018 21:15:24

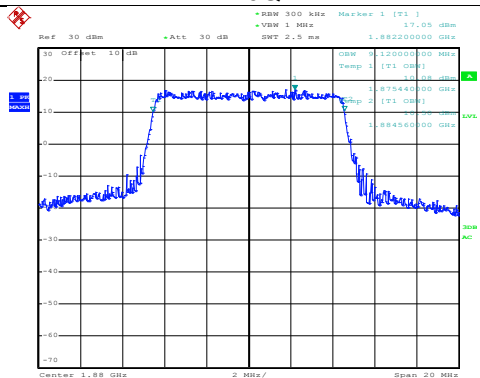
QPSK



Date: 18.SEP.2018 21:15:30

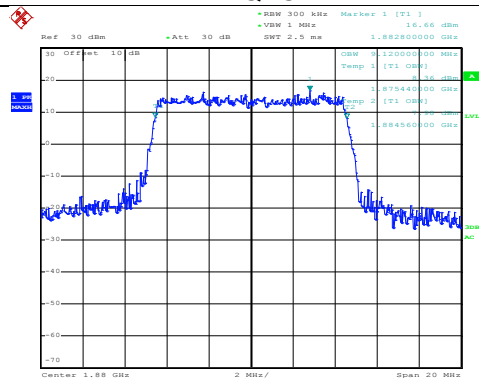
Lowest channel

16QAM



Date: 18.SEP.2018 21:16:54

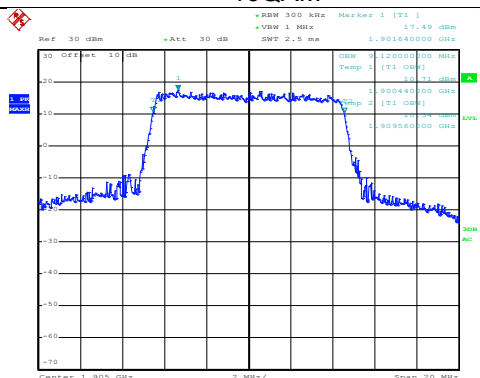
QPSK



Date: 18.SEP.2018 21:16:59

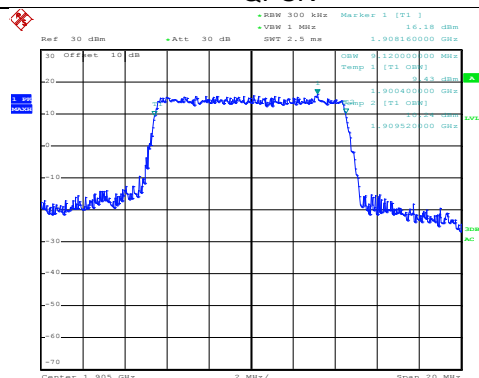
Middle channel

16QAM



Date: 18.SEP.2018 21:17:11

QPSK



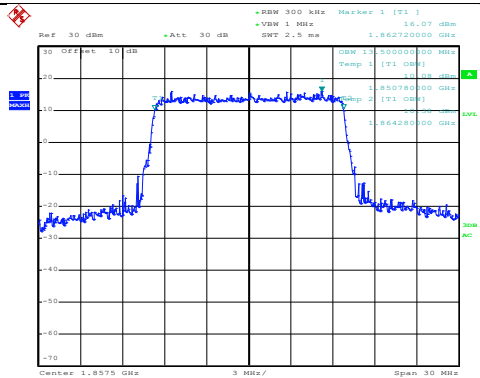
Date: 18.SEP.2018 21:17:18

Highest channel



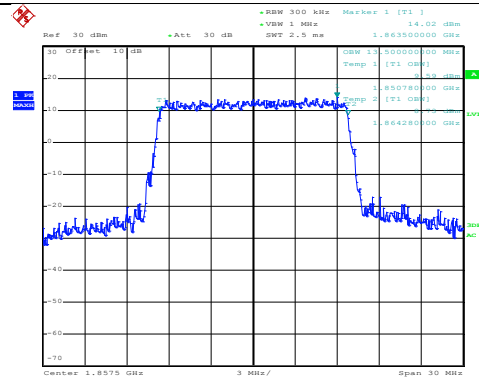
LTE Band 2: 99% Occupancy bandwidth  
BW: 15MHz

16QAM



Date: 18.SEP.2018 21:18:17

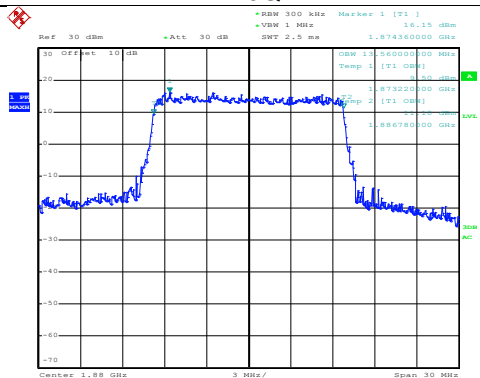
QPSK



Date: 18.SEP.2018 21:18:22

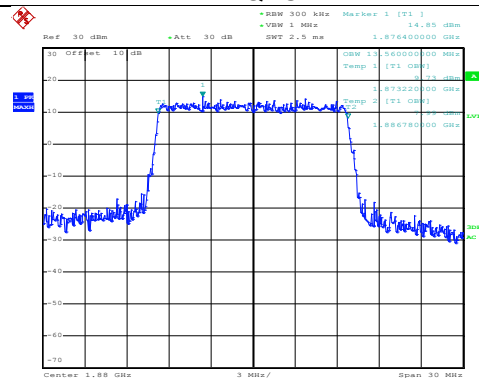
Lowest channel

16QAM



Date: 18.SEP.2018 21:18:36

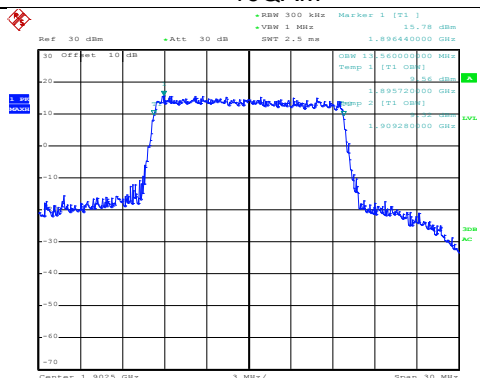
QPSK



Date: 18.SEP.2018 21:18:40

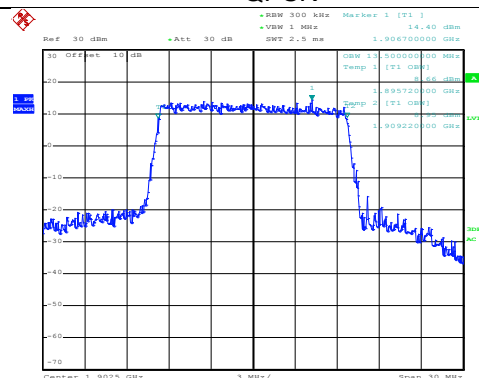
Middle channel

16QAM



Date: 18.SEP.2018 21:19:23

QPSK

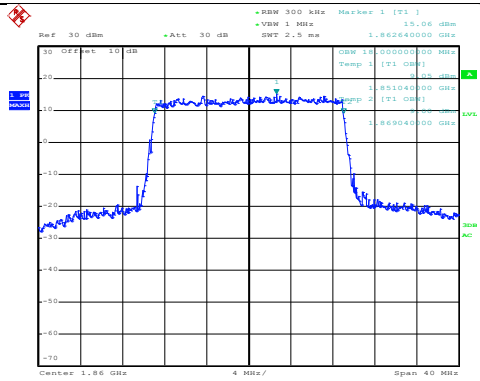


Date: 18.SEP.2018 21:19:27

Highest channel

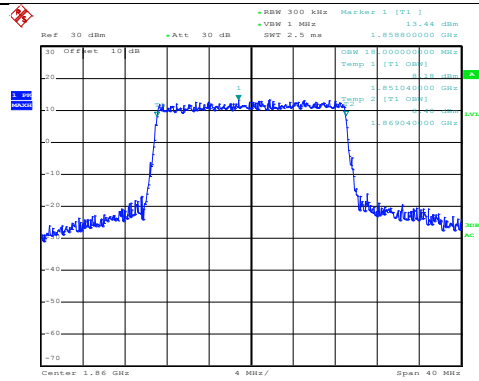
LTE Band 2: 99% Occupancy bandwidth  
BW: 20MHz

16QAM



Date: 18.SEP.2018 21:20:32

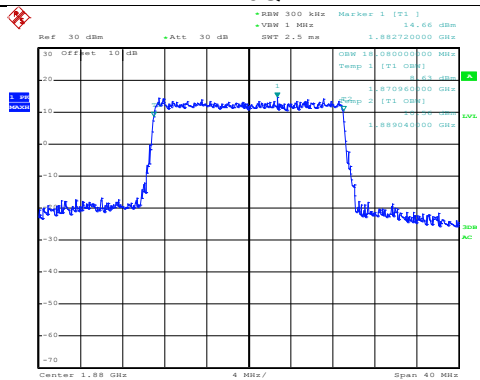
QPSK



Date: 18.SEP.2018 21:20:39

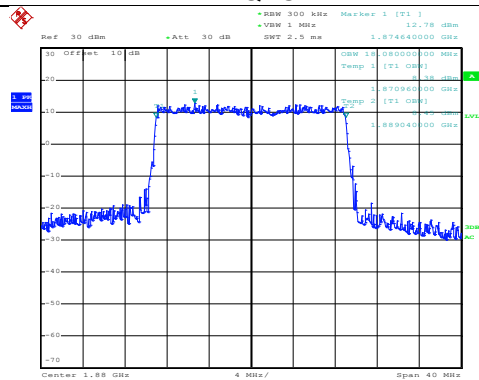
Lowest channel

16QAM



Date: 18.SEP.2018 21:21:48

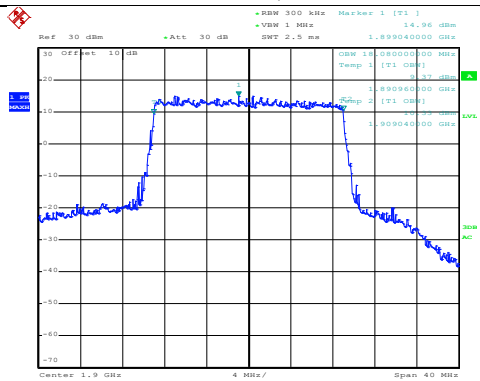
QPSK



Date: 18.SEP.2018 21:21:53

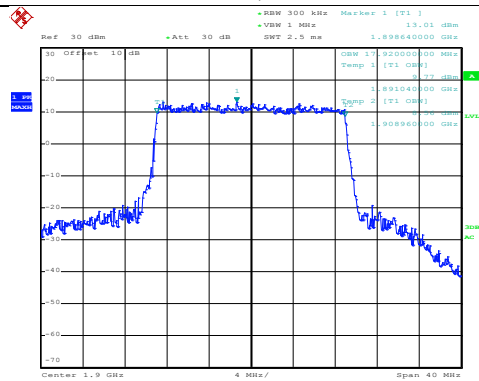
Middle channel

16QAM



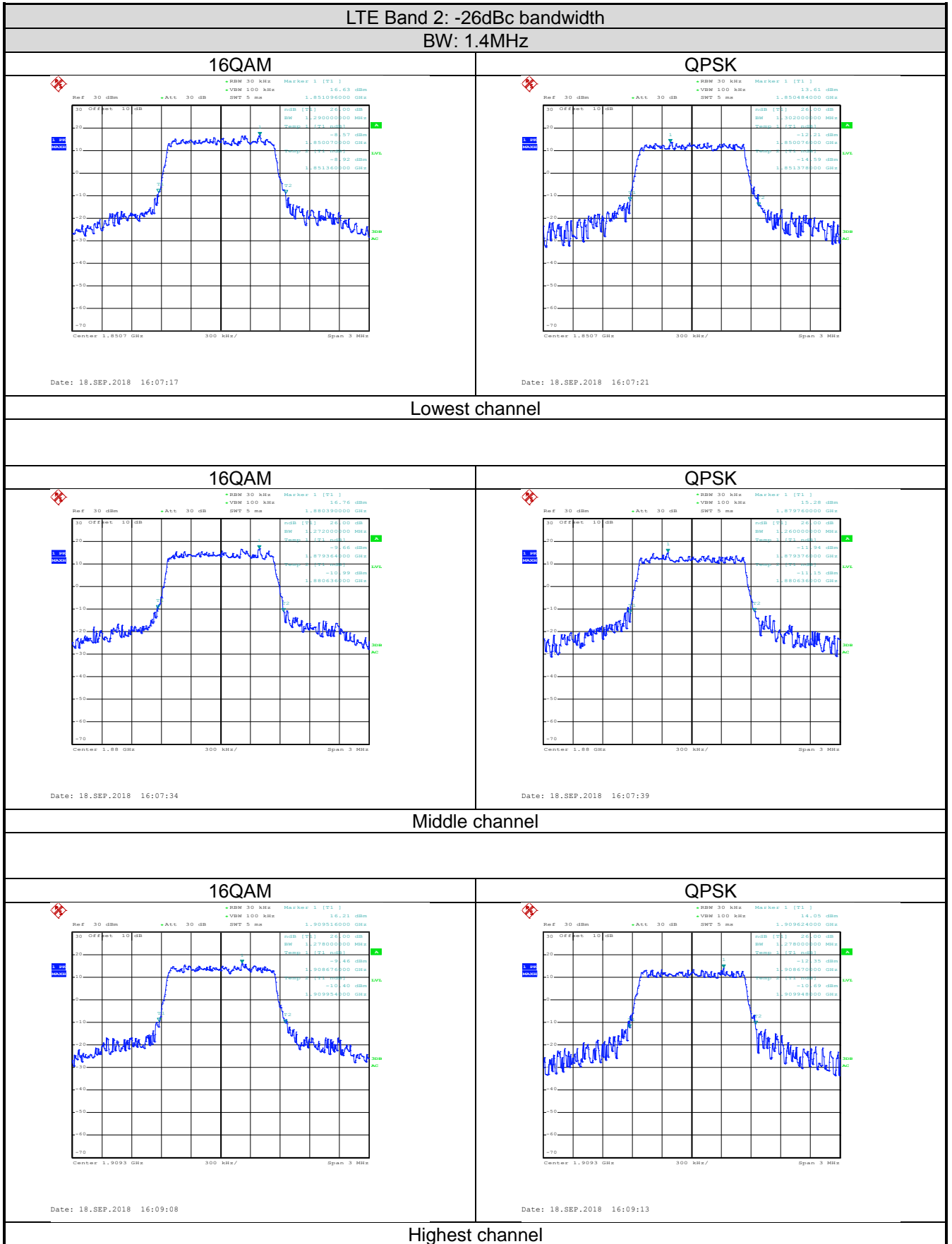
Date: 18.SEP.2018 21:22:08

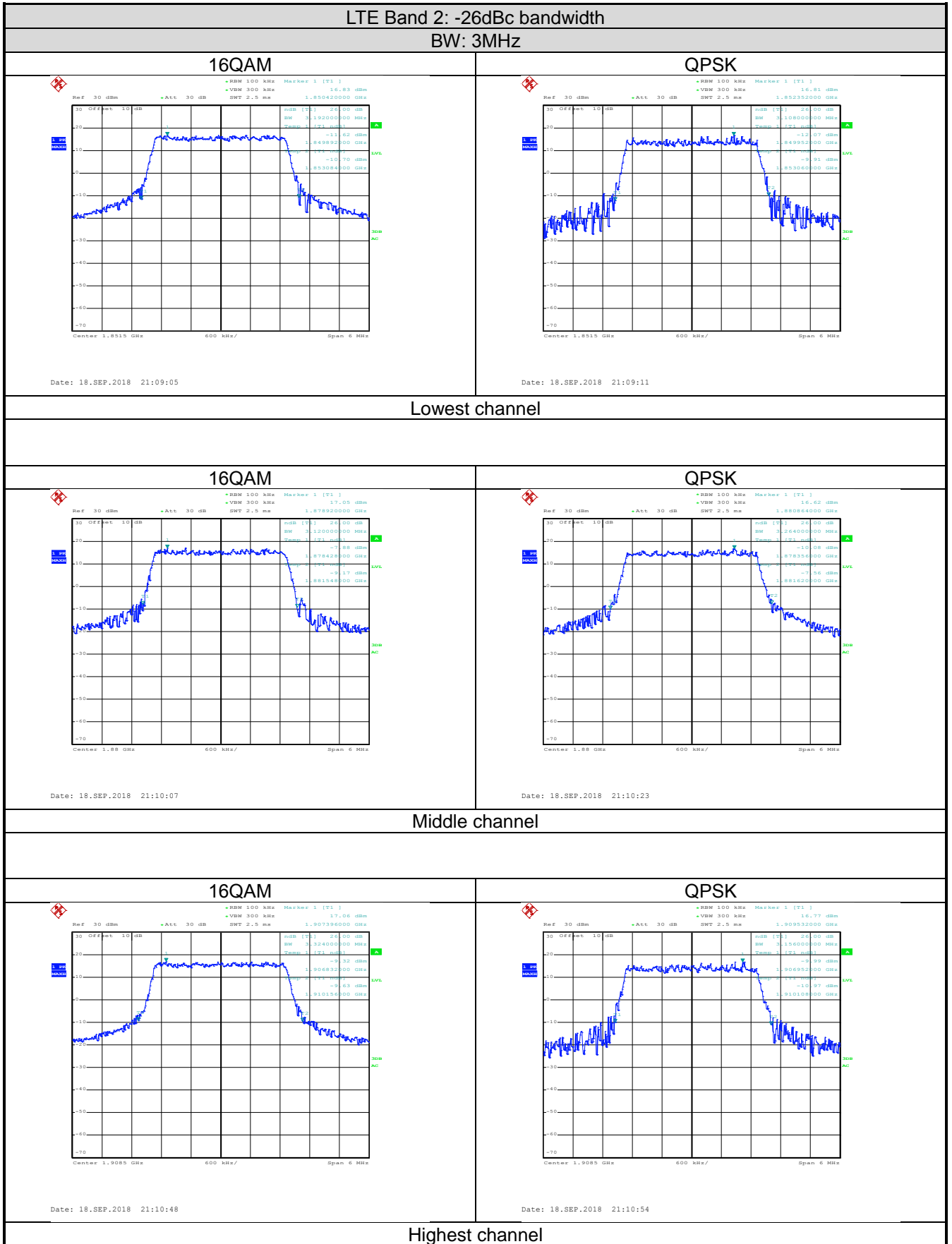
QPSK

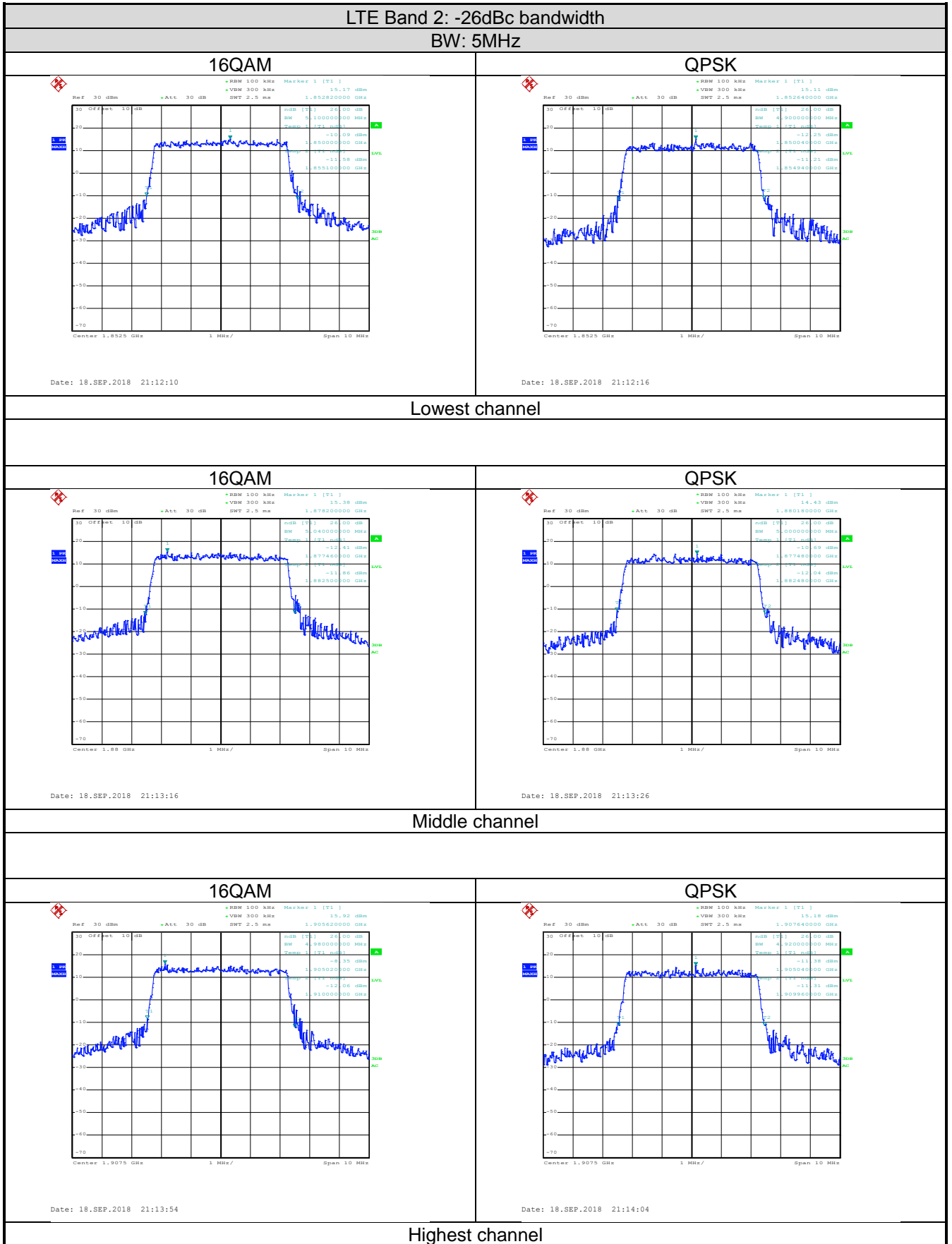


Date: 18.SEP.2018 21:22:15

Highest channel

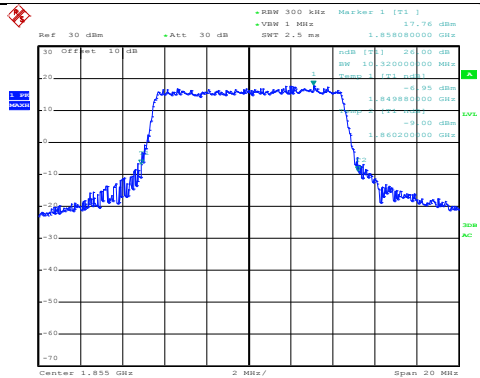




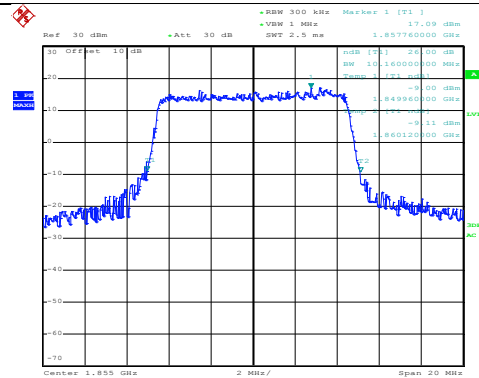


LTE Band 2: -26dBc bandwidth  
BW: 10MHz

16QAM

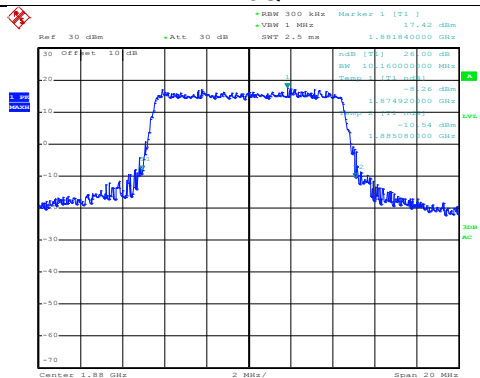


QPSK

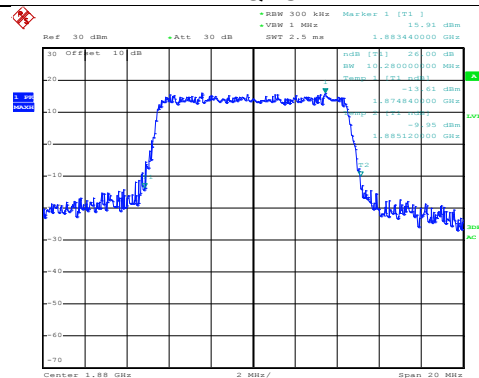


Lowest channel

16QAM

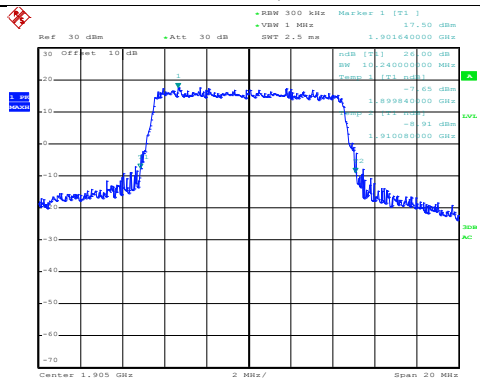


QPSK

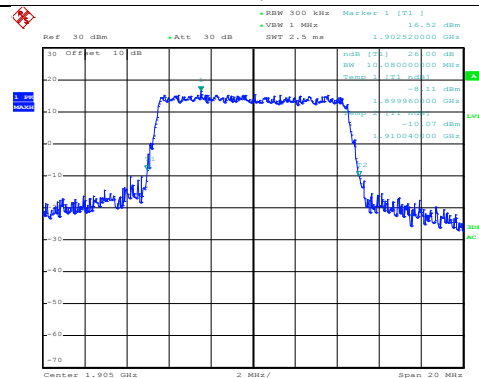


Middle channel

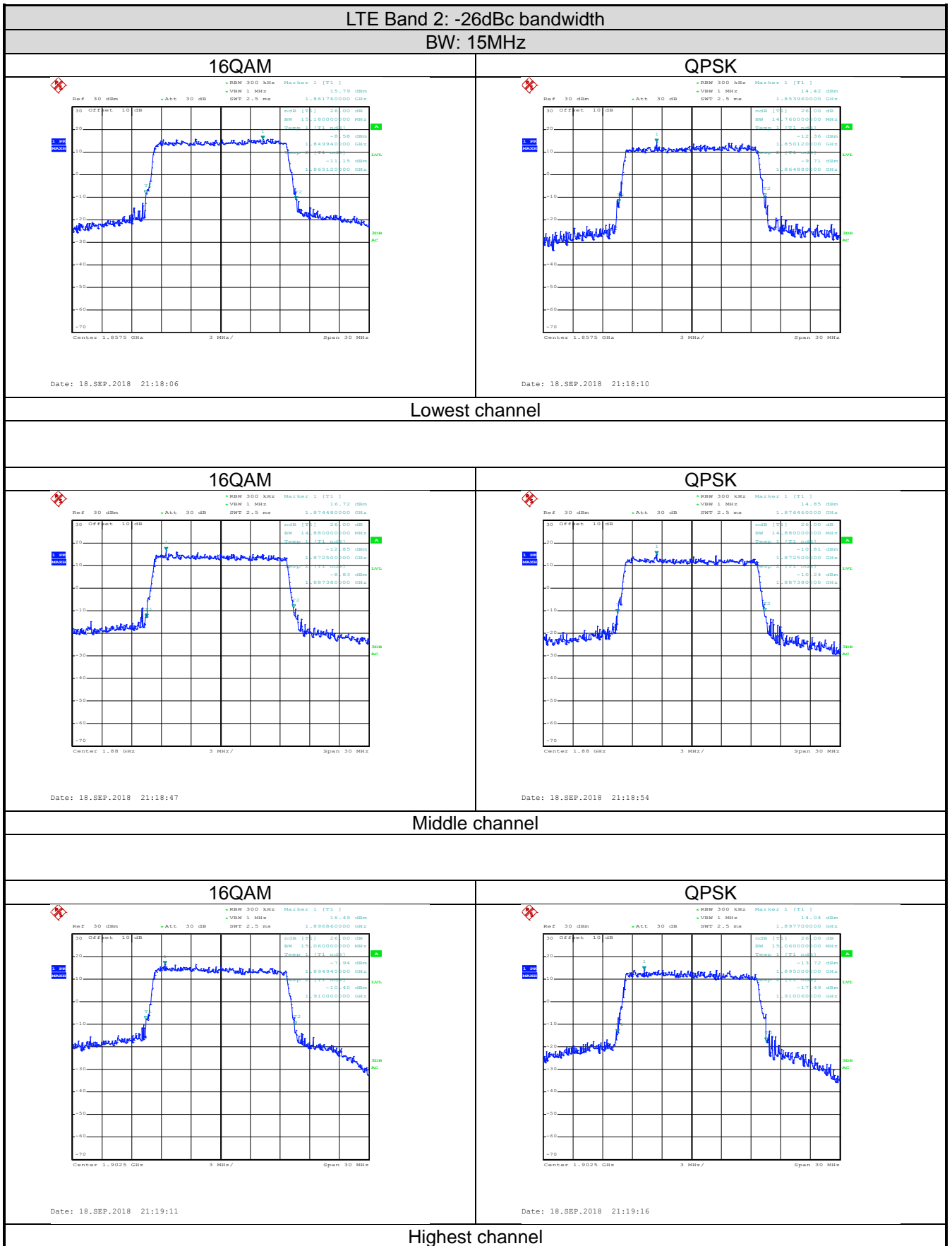
16QAM



QPSK

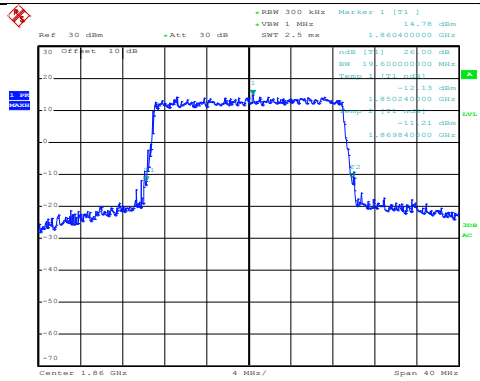


Highest channel



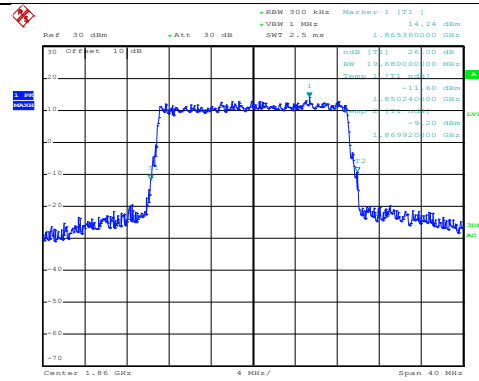
### LTE Band 2: -26dBc bandwidth BW: 20MHz

#### 16QAM



Date: 18.SEP.2018 21:20:50

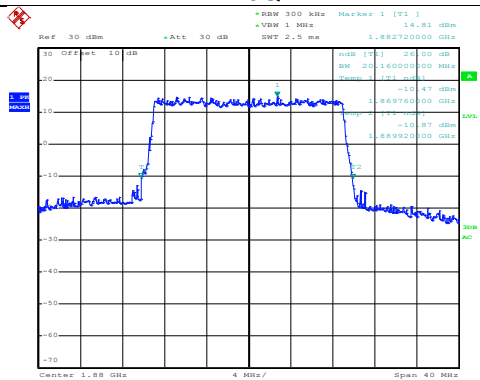
#### QPSK



Date: 18.SEP.2018 21:20:56

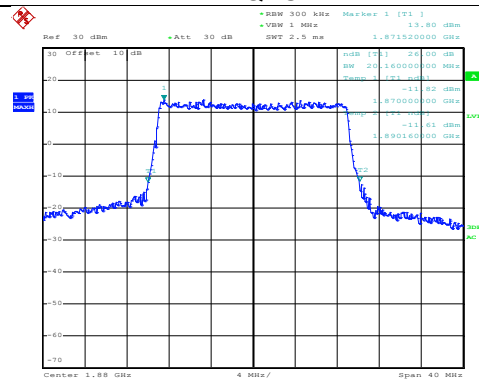
#### Lowest channel

#### 16QAM



Date: 18.SEP.2018 21:21:16

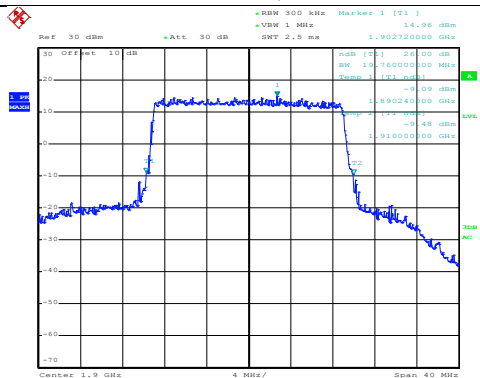
#### QPSK



Date: 18.SEP.2018 21:21:41

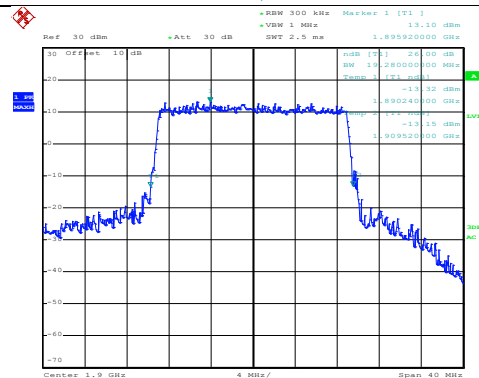
#### Middle channel

#### 16QAM



Date: 18.SEP.2018 21:22:26

#### QPSK

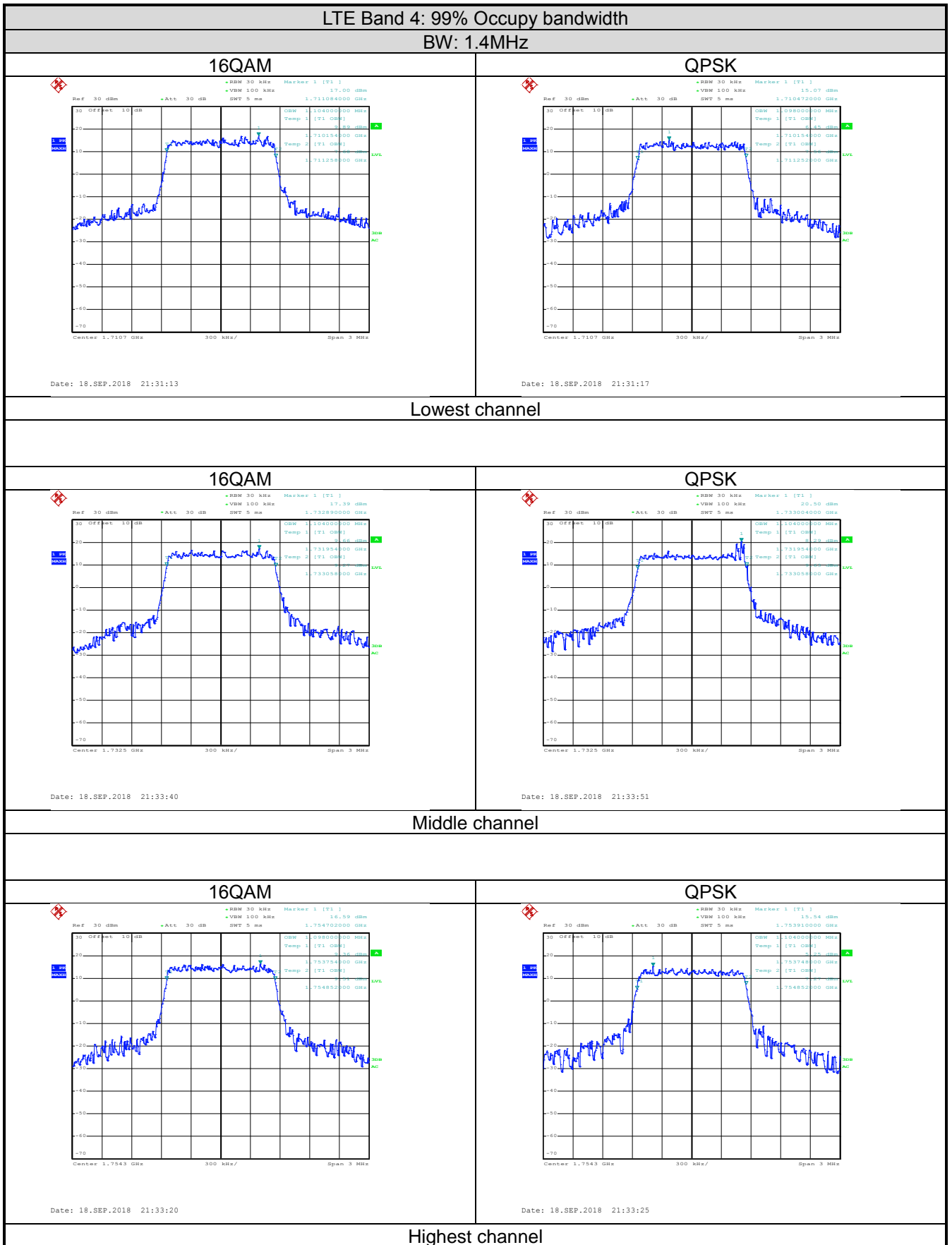


Date: 18.SEP.2018 21:22:32

#### Highest channel

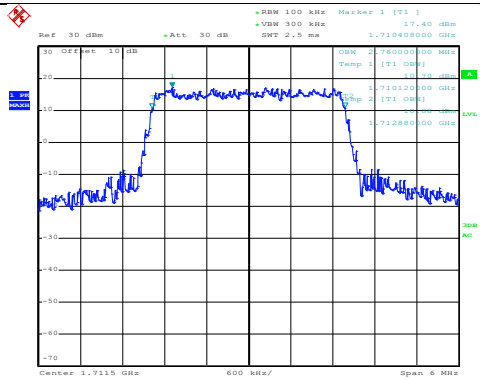


LTE Band 4 part:



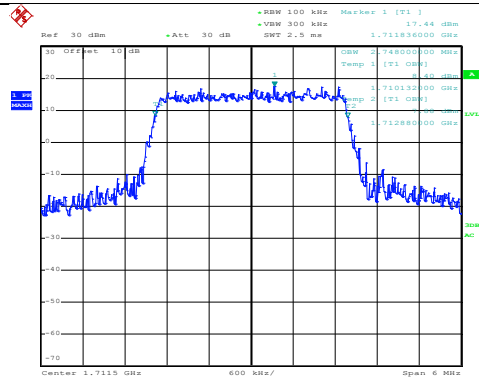
LTE Band 4: 99% Occupancy bandwidth  
BW: 3MHz

16QAM



Date: 18.SEP.2018 21:35:05

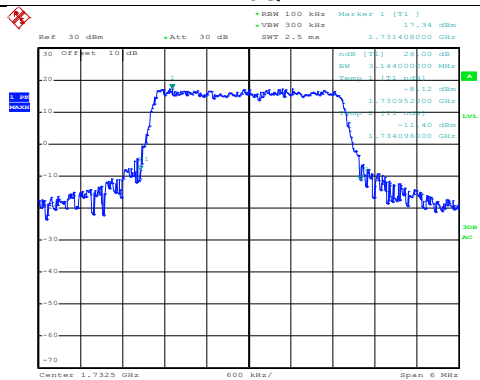
QPSK



Date: 18.SEP.2018 21:34:59

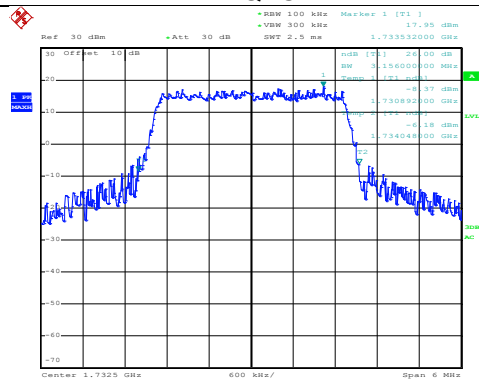
Lowest channel

16QAM



Date: 18.SEP.2018 21:35:31

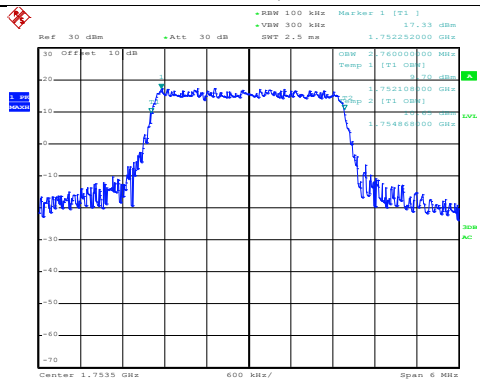
QPSK



Date: 18.SEP.2018 21:35:38

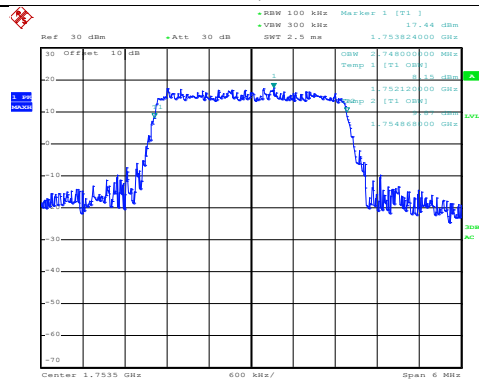
Middle channel

16QAM



Date: 18.SEP.2018 21:37:32

QPSK

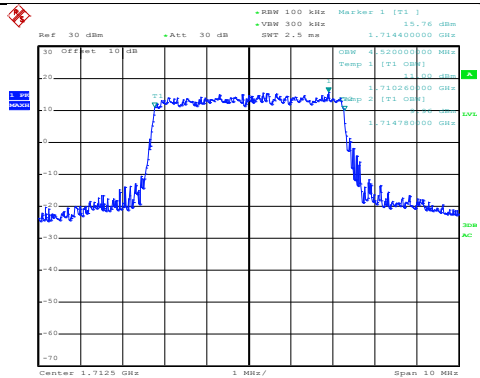


Date: 18.SEP.2018 21:37:43

Highest channel

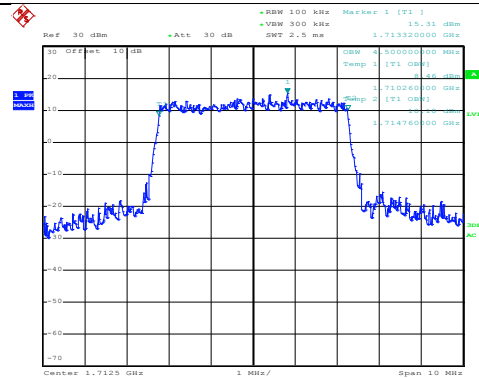
LTE Band 4: 99% Occupancy bandwidth  
 BW: 5MHz

16QAM



Date: 18.SEP.2018 21:45:39

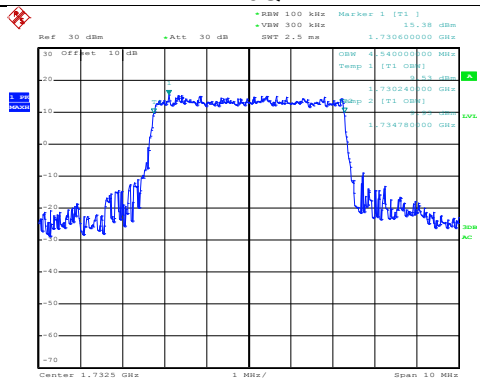
QPSK



Date: 18.SEP.2018 21:45:43

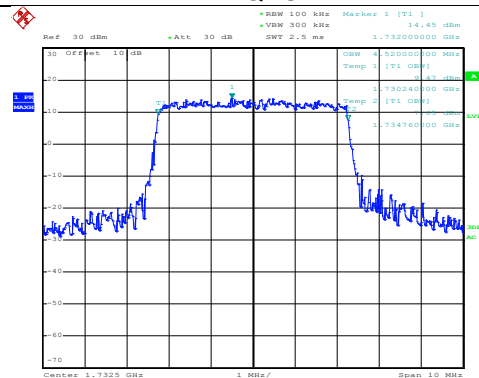
Lowest channel

16QAM



Date: 18.SEP.2018 21:48:39

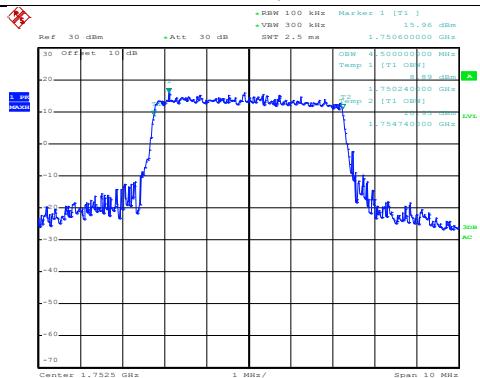
QPSK



Date: 18.SEP.2018 21:48:46

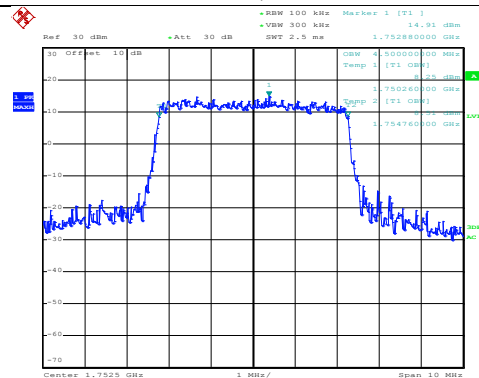
Middle channel

16QAM



Date: 18.SEP.2018 21:49:00

QPSK

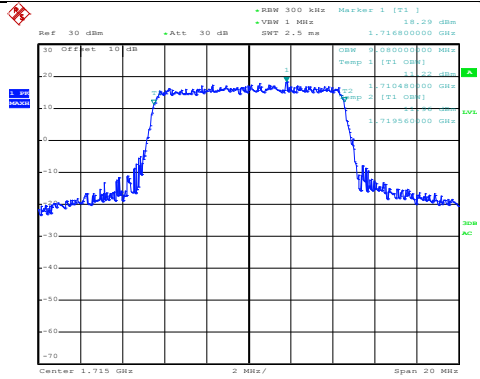


Date: 18.SEP.2018 21:49:04

Highest channel

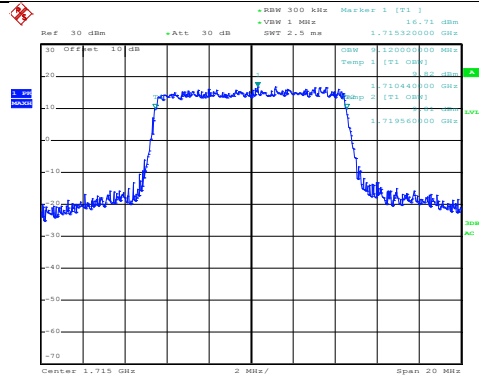
LTE Band 4: 99% Occupy bandwidth  
BW: 10MHz

16QAM



Date: 18.SEP.2018 21:49:57

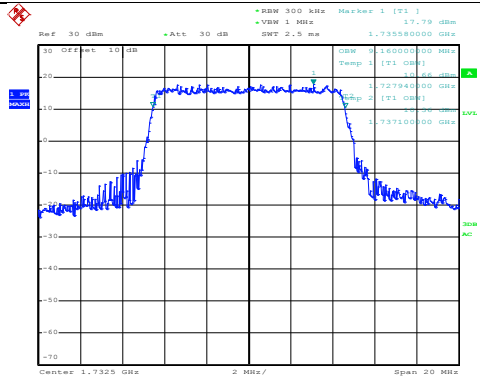
QPSK



Date: 18.SEP.2018 21:50:01

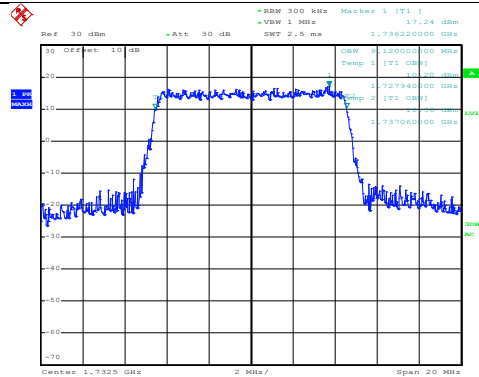
Lowest channel

16QAM



Date: 18.SEP.2018 21:50:14

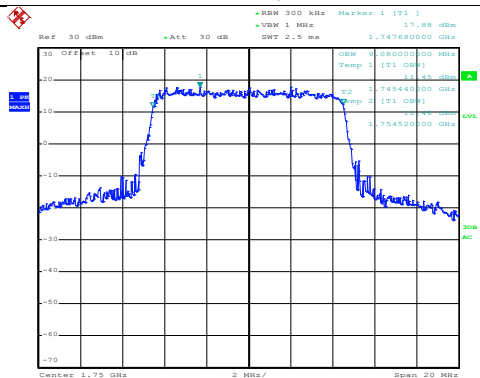
QPSK



Date: 18.SEP.2018 21:50:19

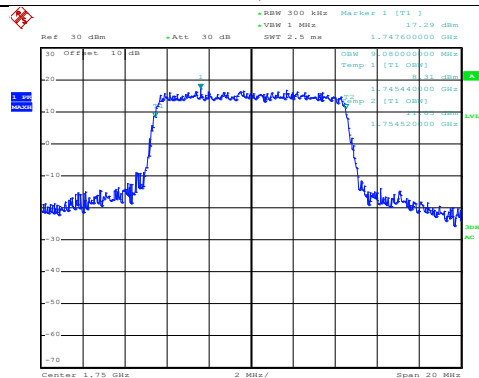
Middle channel

16QAM



Date: 18.SEP.2018 21:51:03

QPSK

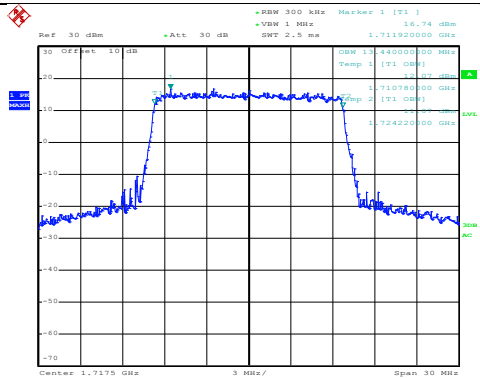


Date: 18.SEP.2018 21:51:09

Highest channel

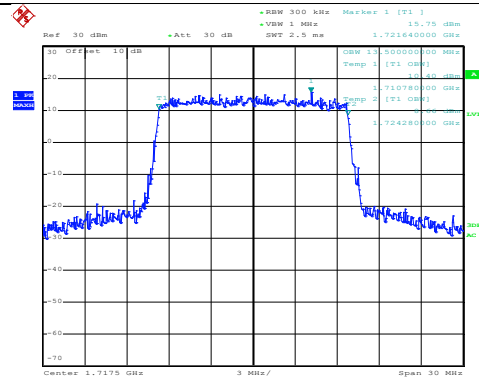
LTE Band 4: 99% Occupancy bandwidth  
BW: 15MHz

16QAM



Date: 18.SEP.2018 21:51:51

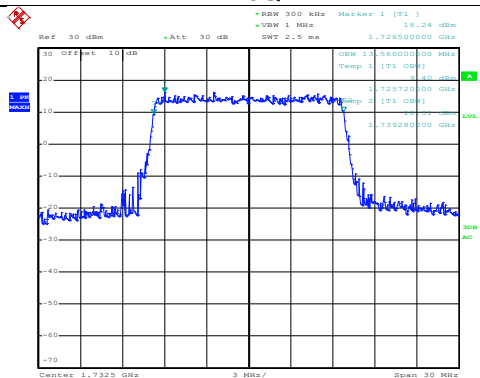
QPSK



Date: 18.SEP.2018 21:51:55

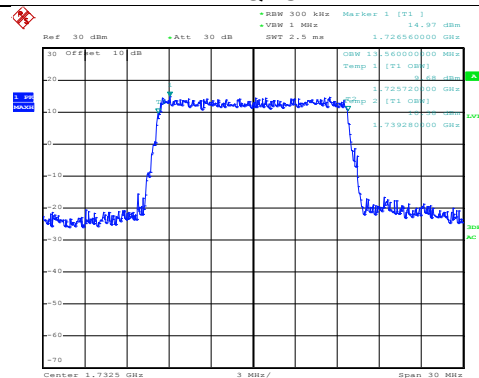
Lowest channel

16QAM



Date: 18.SEP.2018 21:52:32

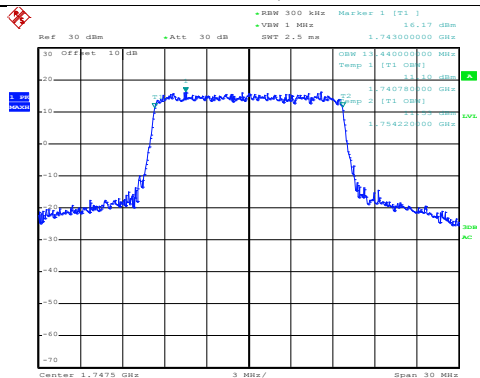
QPSK



Date: 18.SEP.2018 21:52:37

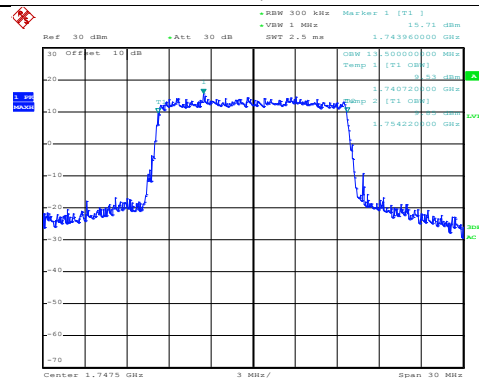
Middle channel

16QAM



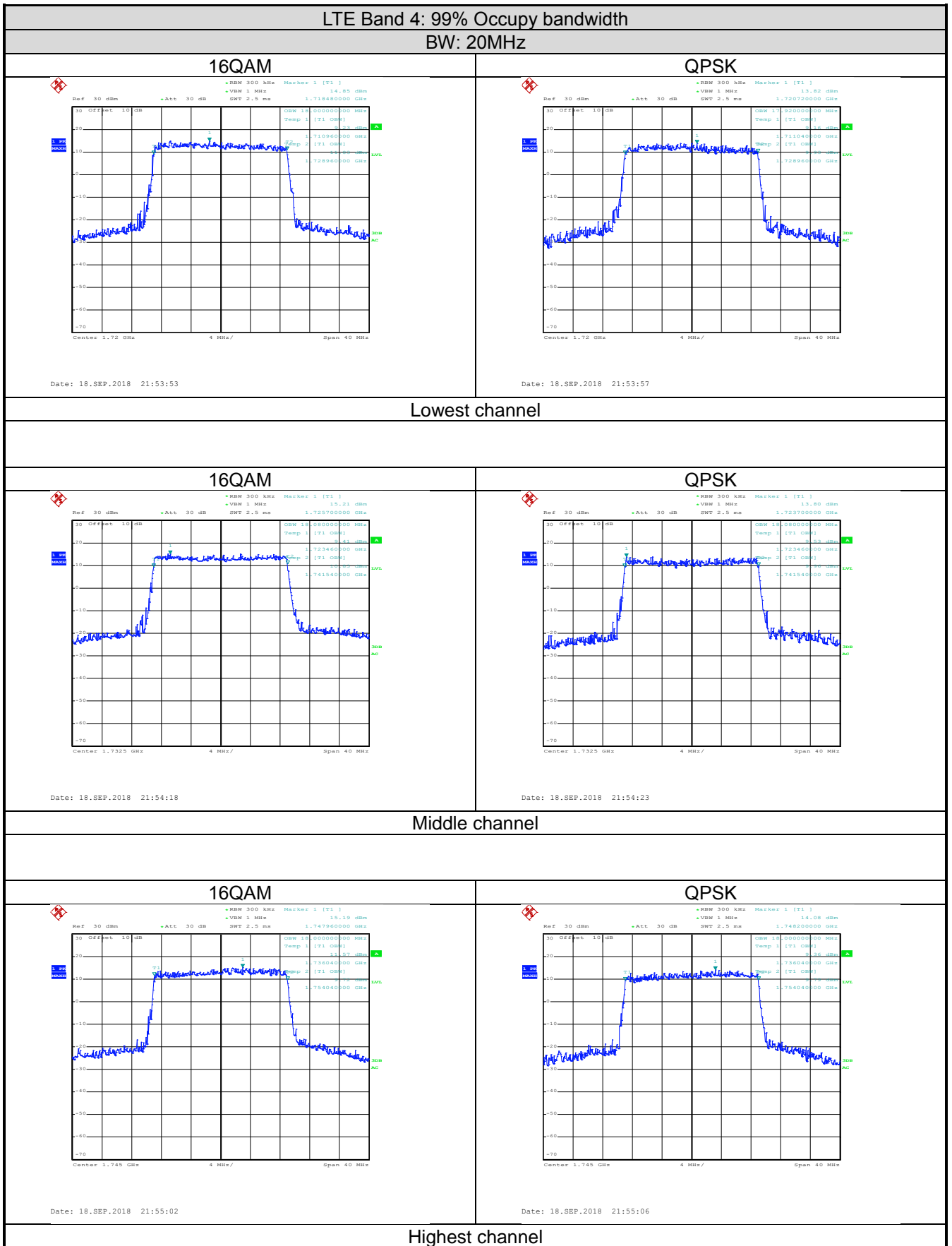
Date: 18.SEP.2018 21:52:53

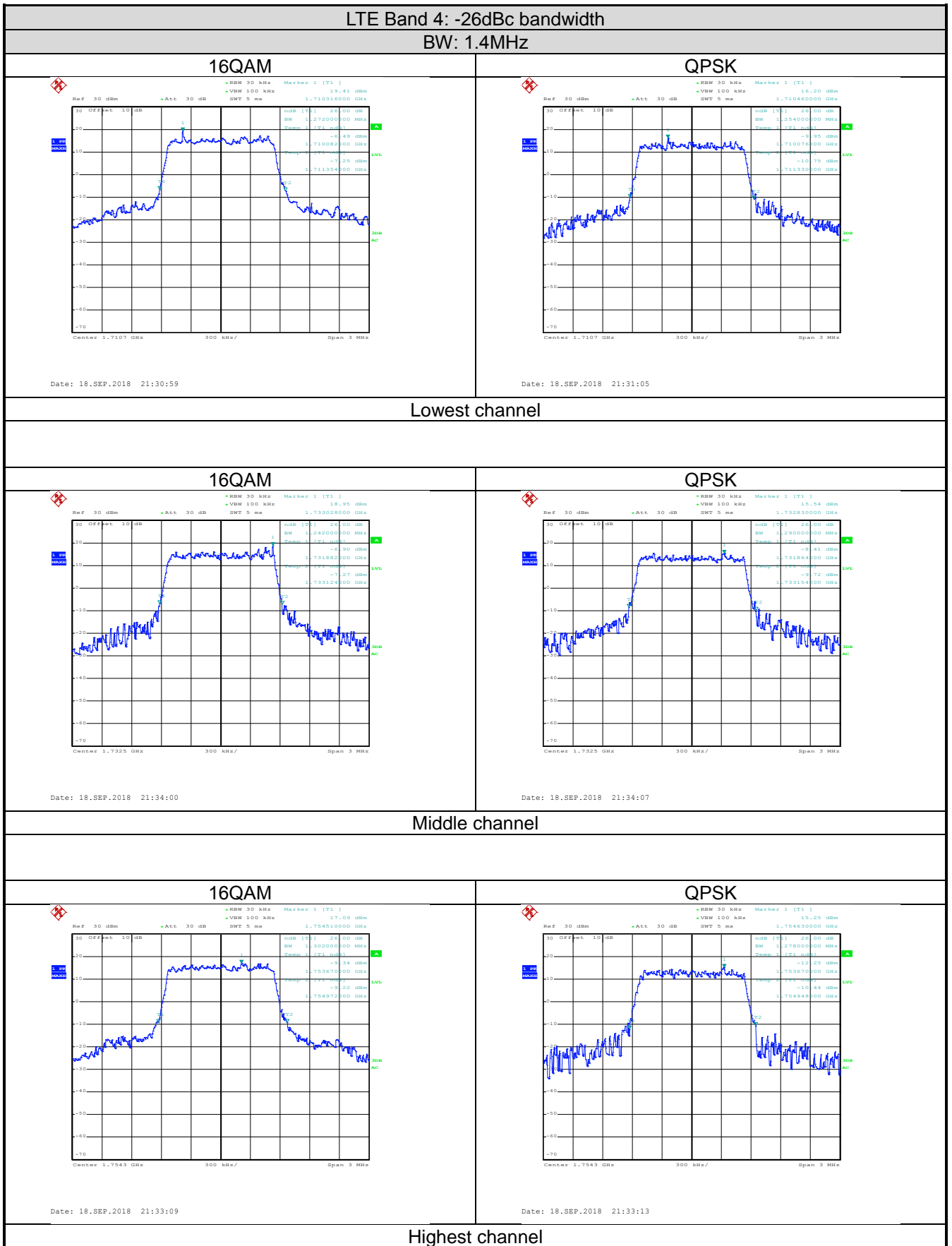
QPSK

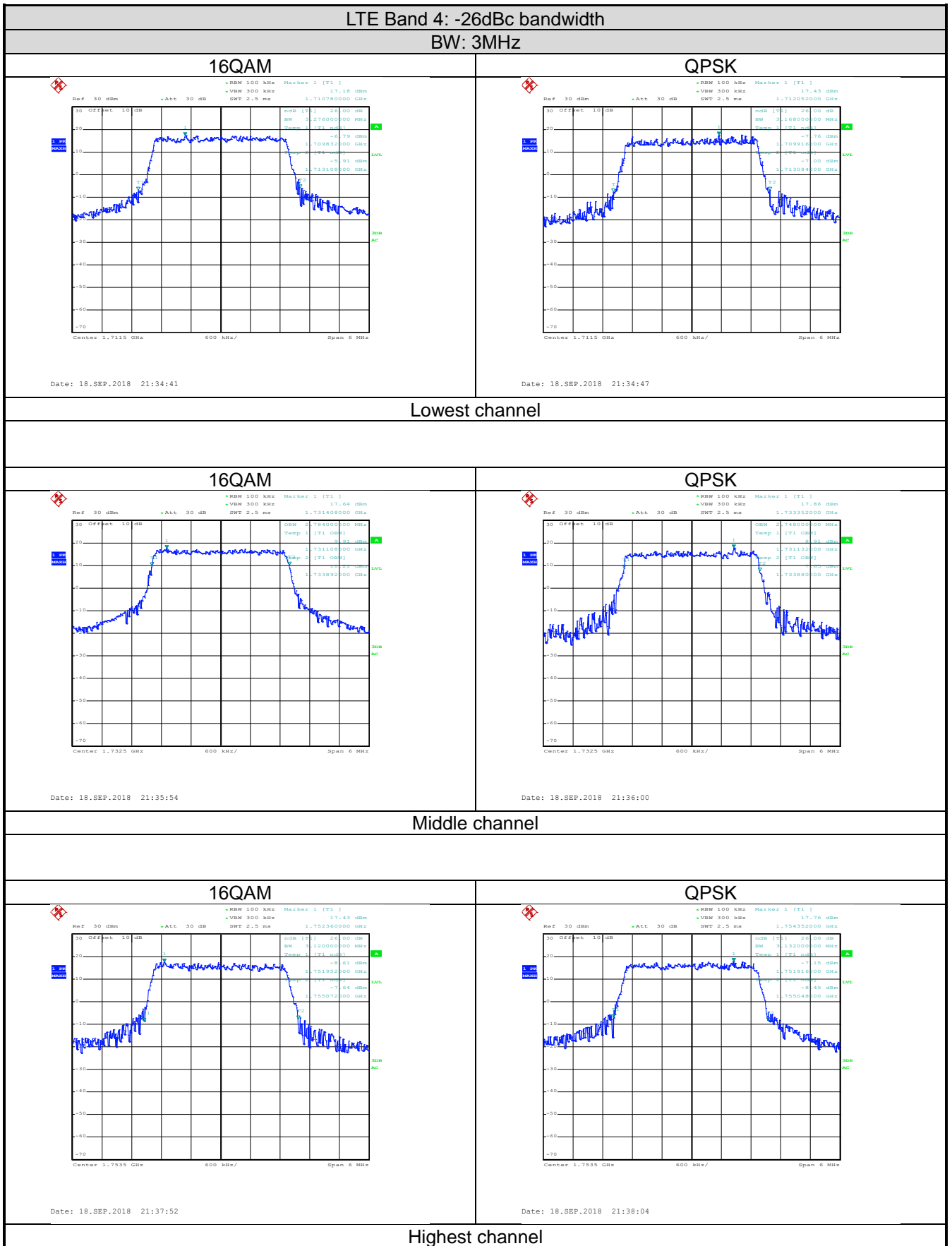


Date: 18.SEP.2018 21:52:58

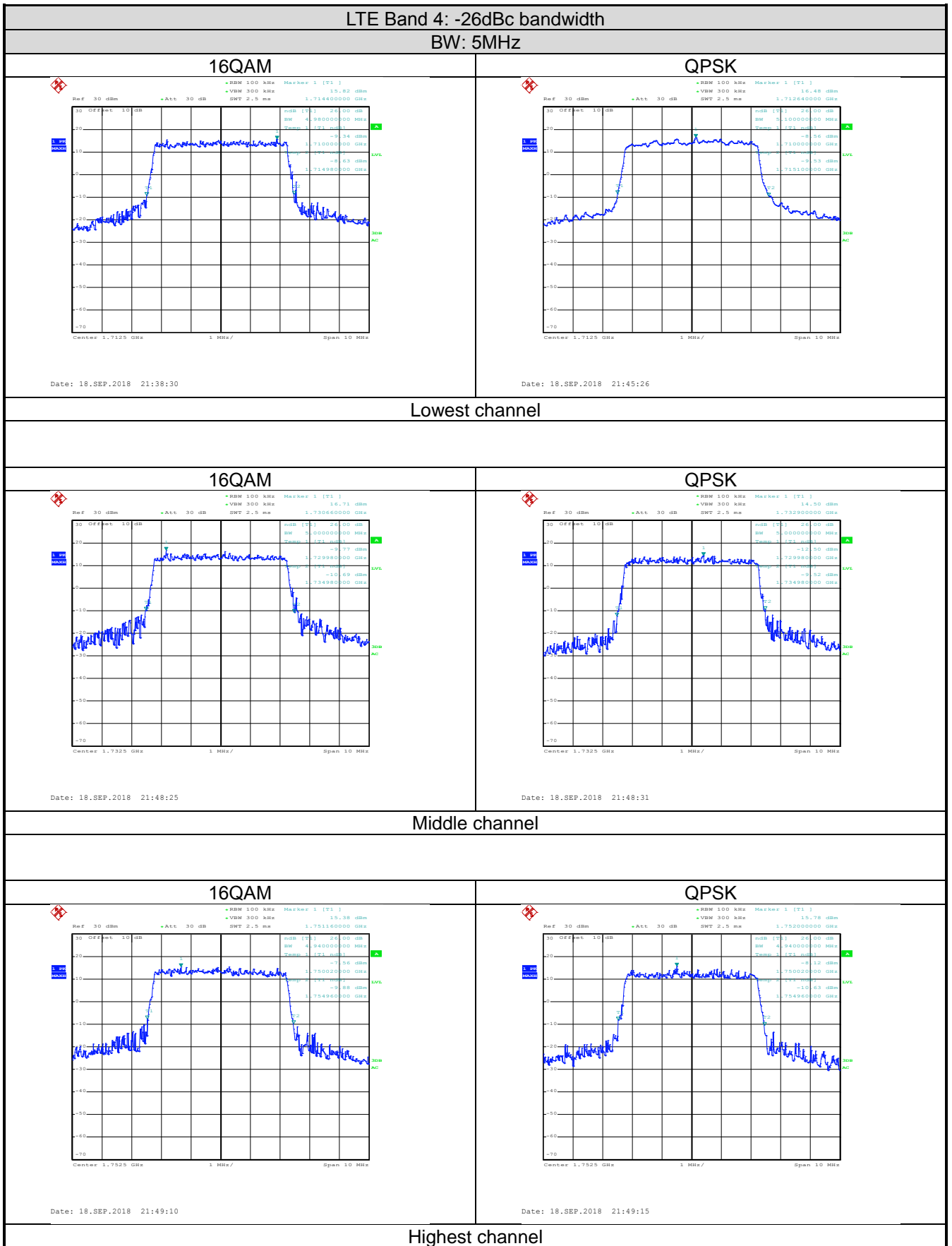
Highest channel





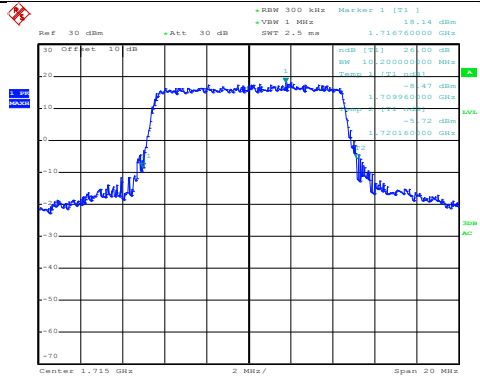






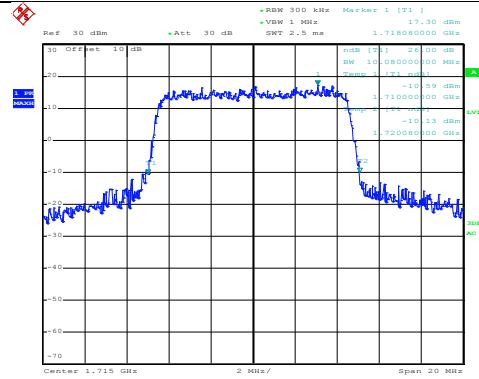
LTE Band 4: -26dBc bandwidth  
BW: 10MHz

16QAM



Date: 18.SEP.2018 21:49:46

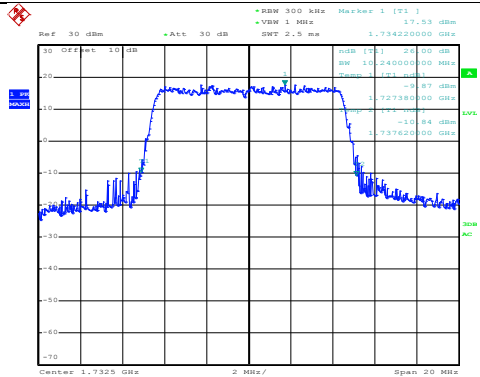
QPSK



Date: 18.SEP.2018 21:49:50

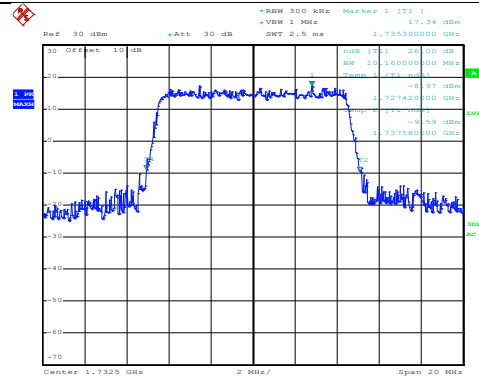
Lowest channel

16QAM



Date: 18.SEP.2018 21:50:27

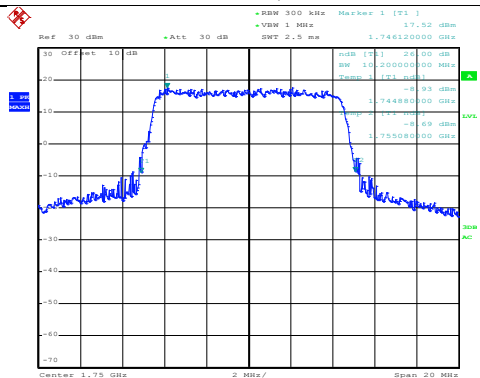
QPSK



Date: 18.SEP.2018 21:50:32

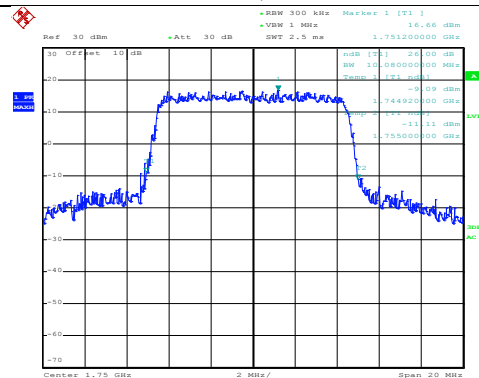
Middle channel

16QAM



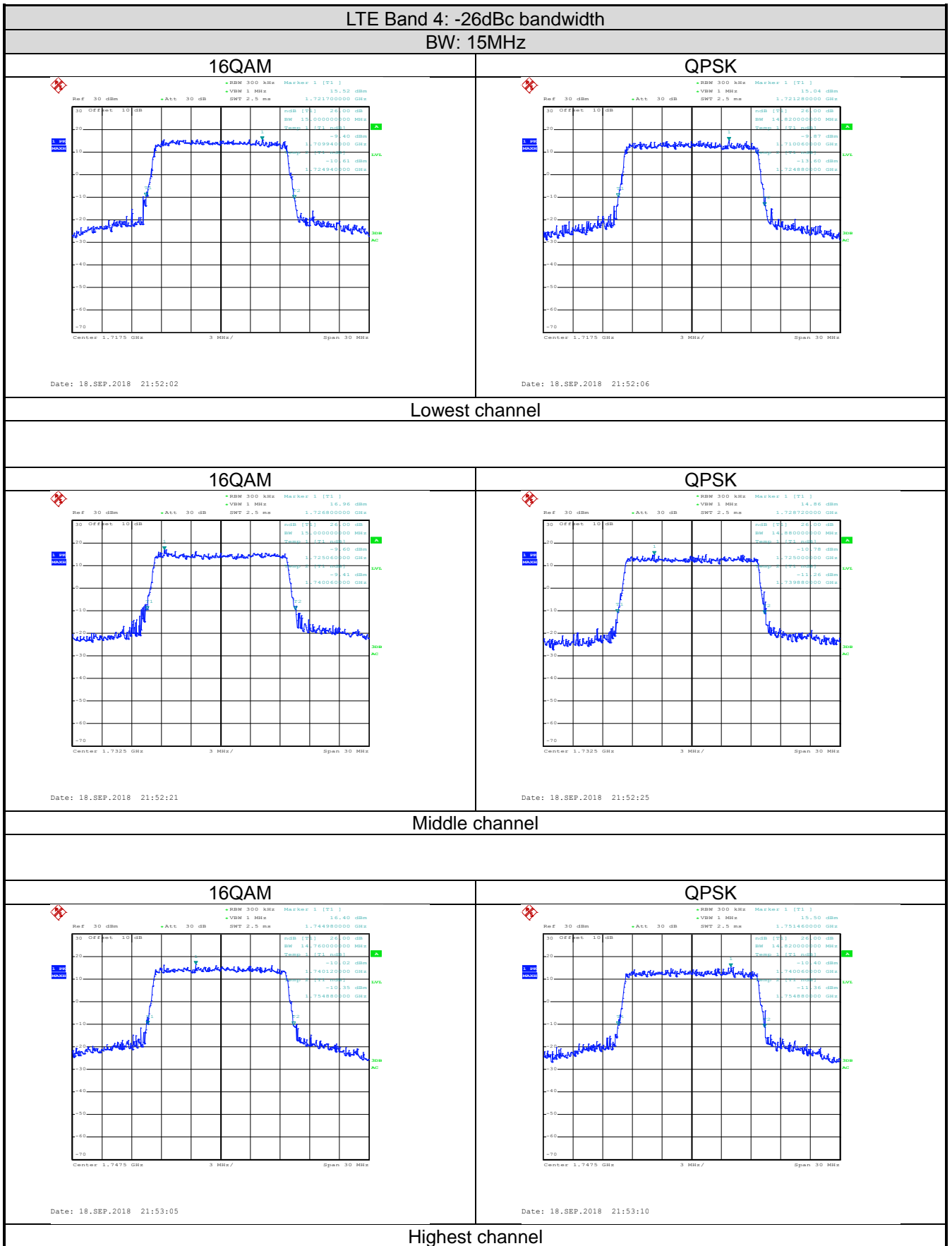
Date: 18.SEP.2018 21:50:53

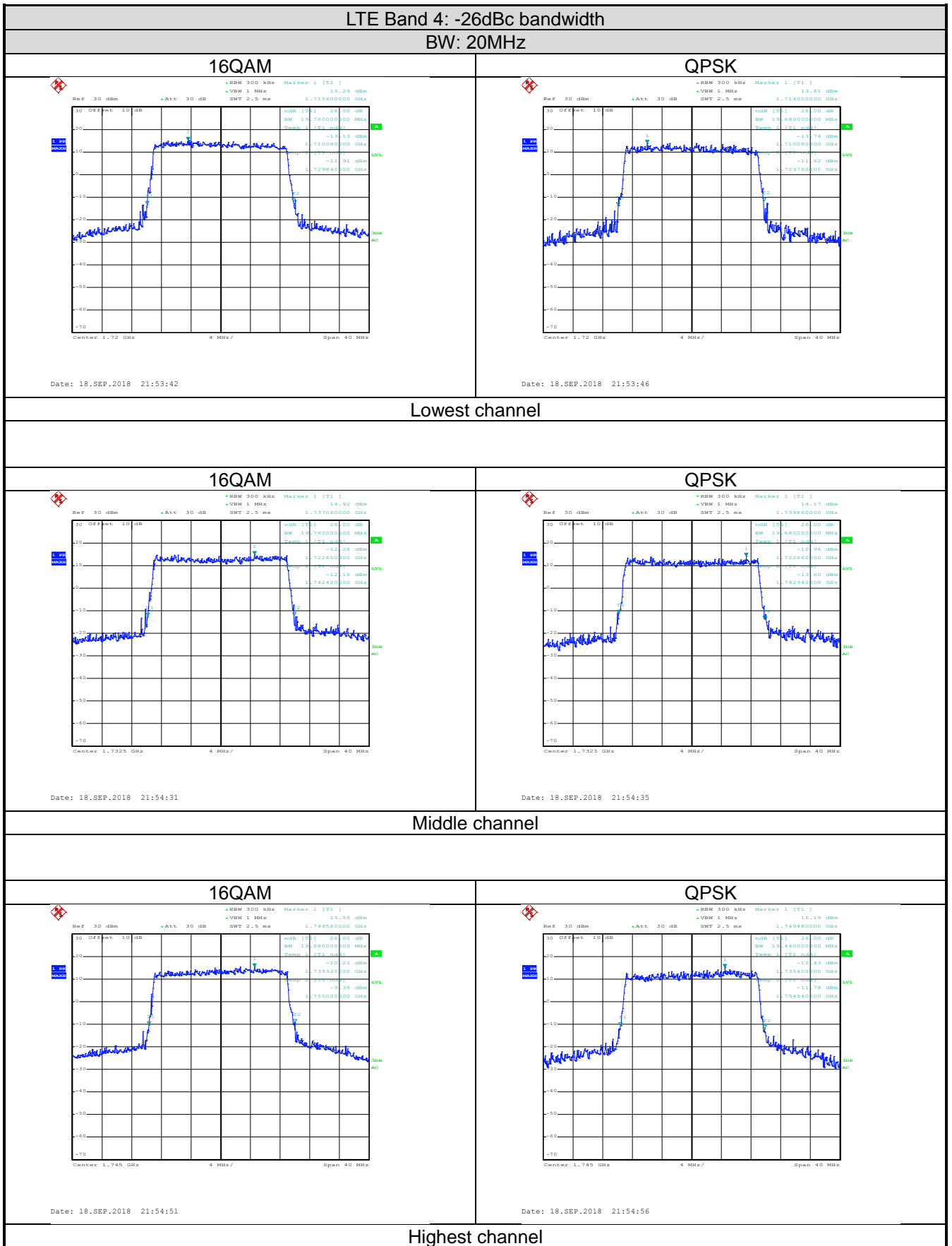
QPSK



Date: 18.SEP.2018 21:50:57

Highest channel

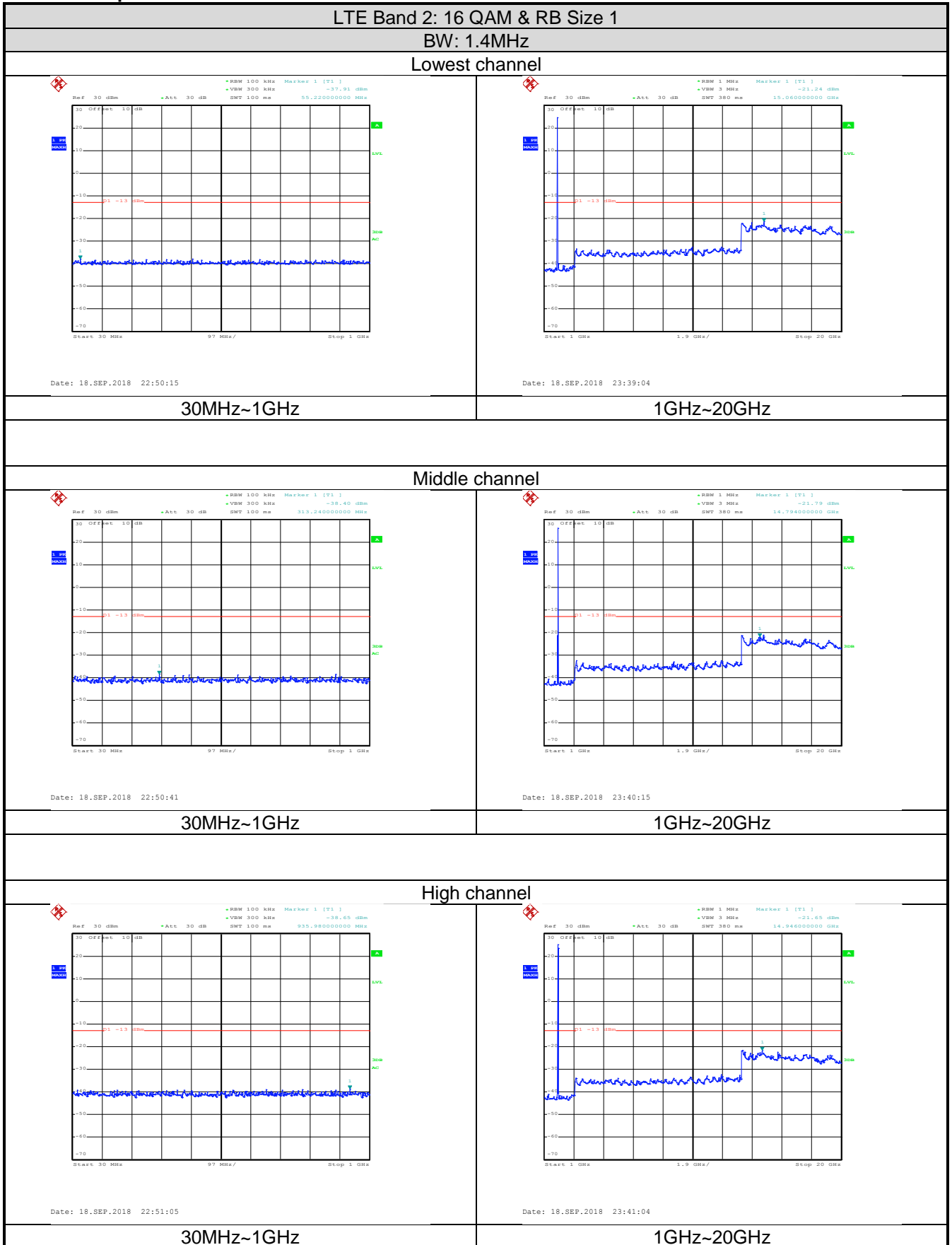


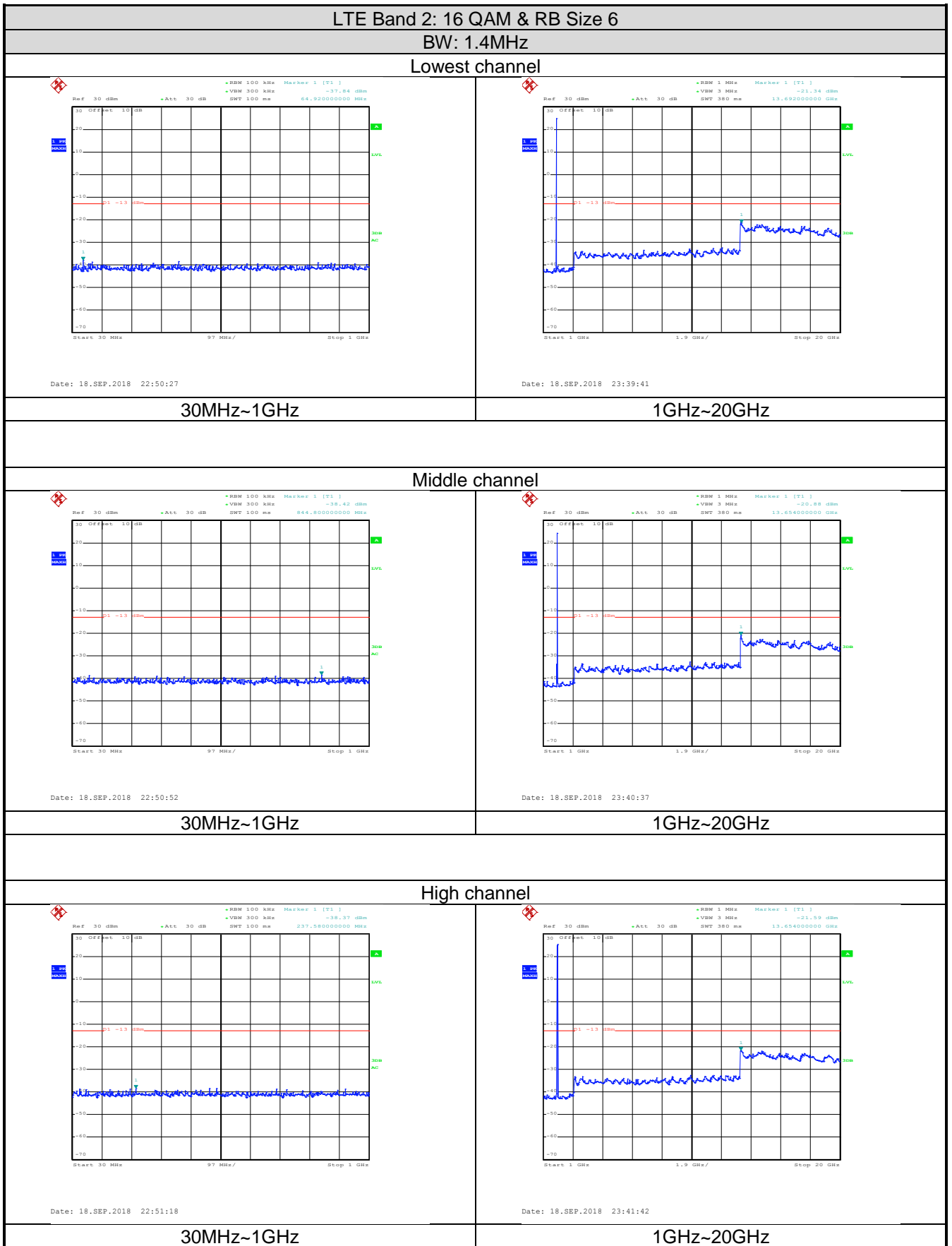


## 6.4 Out of band emission at antenna terminals

|                   |  |
|-------------------|--|
| Test Requirement: | Part 24.238 (a), part 27.53(h)   |
| Test Method:      | ANSI/TIA-603-D 2010  |
| Limit:            | LTE Band 2 & 4:<br>The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB (-13 dBm).  |
| Test Setup:       |  |
| 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 100 kHz when below 1GHz, 1MHz when above 1 GHz; 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=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, 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 5.9 for details   |
| Test mode:        | Refer to section 5.3 for details   |
| Test results:     | Passed   |
| Remark:           | Pre-scan all RB Size and offset, and found the RB Size and offset of worst case, so the report shows only the worst case test data.  |

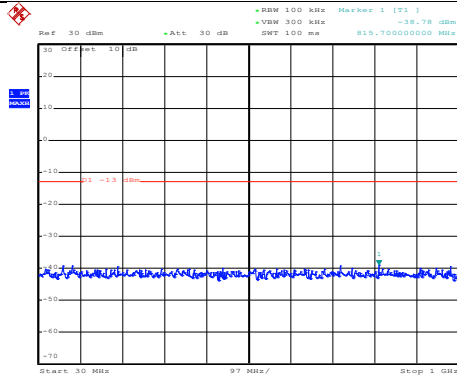
Test plots as follows (Conducted spurious emission) (worst case):  
 LTE Band 2 part:





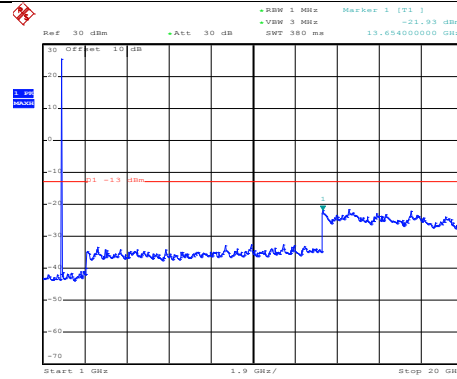
**LTE Band 2: QPSK & RB Size 1**  
**BW: 1.4MHz**

**Lowest channel**



Date: 18.SEP.2018 22:50:19

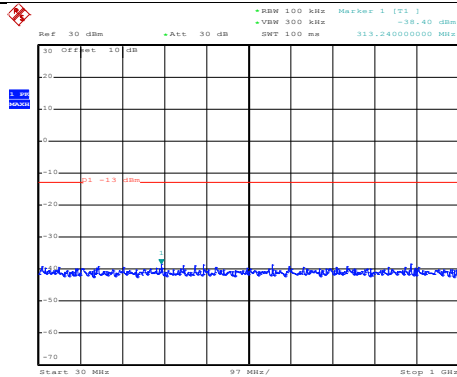
30MHz~1GHz



Date: 18.SEP.2018 23:39:14

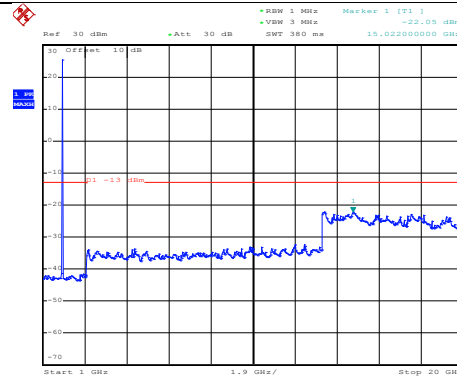
1GHz~20GHz

**Middle channel**



Date: 18.SEP.2018 22:50:41

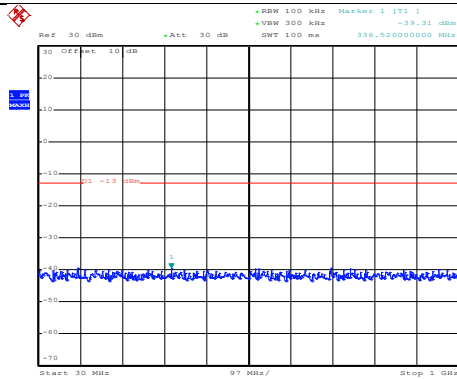
30MHz~1GHz



Date: 18.SEP.2018 23:40:25

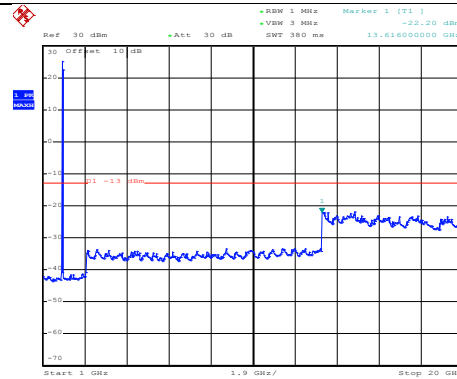
1GHz~20GHz

**High channel**



Date: 18.SEP.2018 22:51:09

30MHz~1GHz



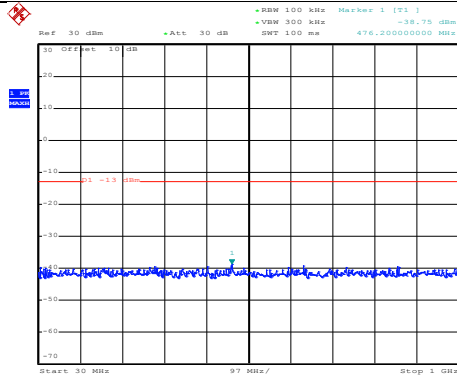
Date: 18.SEP.2018 23:41:14

1GHz~20GHz



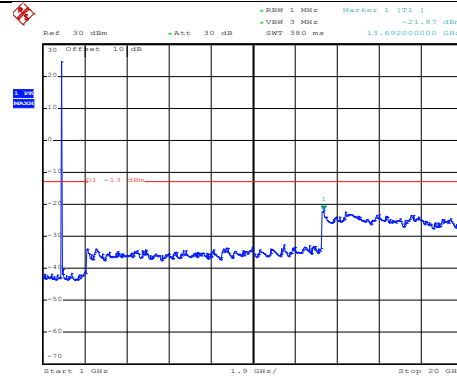
**LTE Band 2: QPSK & RB Size 6**  
**BW: 1.4MHz**

**Lowest channel**



Date: 18.SEP.2018 22:50:32

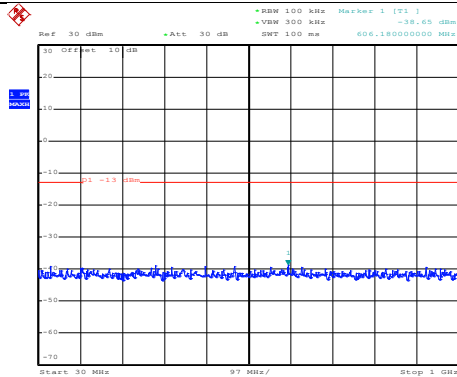
**30MHz~1GHz**



Date: 18.SEP.2018 23:39:50

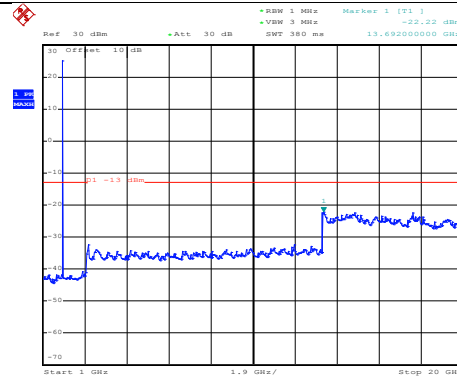
**1GHz~20GHz**

**Middle channel**



Date: 18.SEP.2018 22:50:56

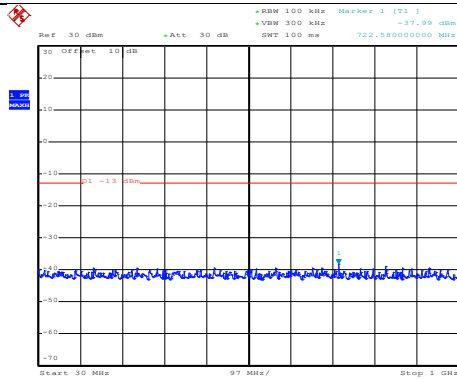
**30MHz~1GHz**



Date: 18.SEP.2018 23:40:47

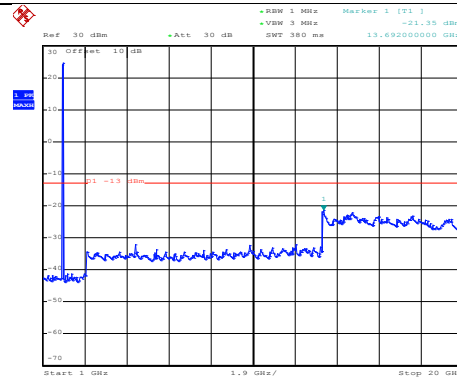
**1GHz~20GHz**

**High channel**



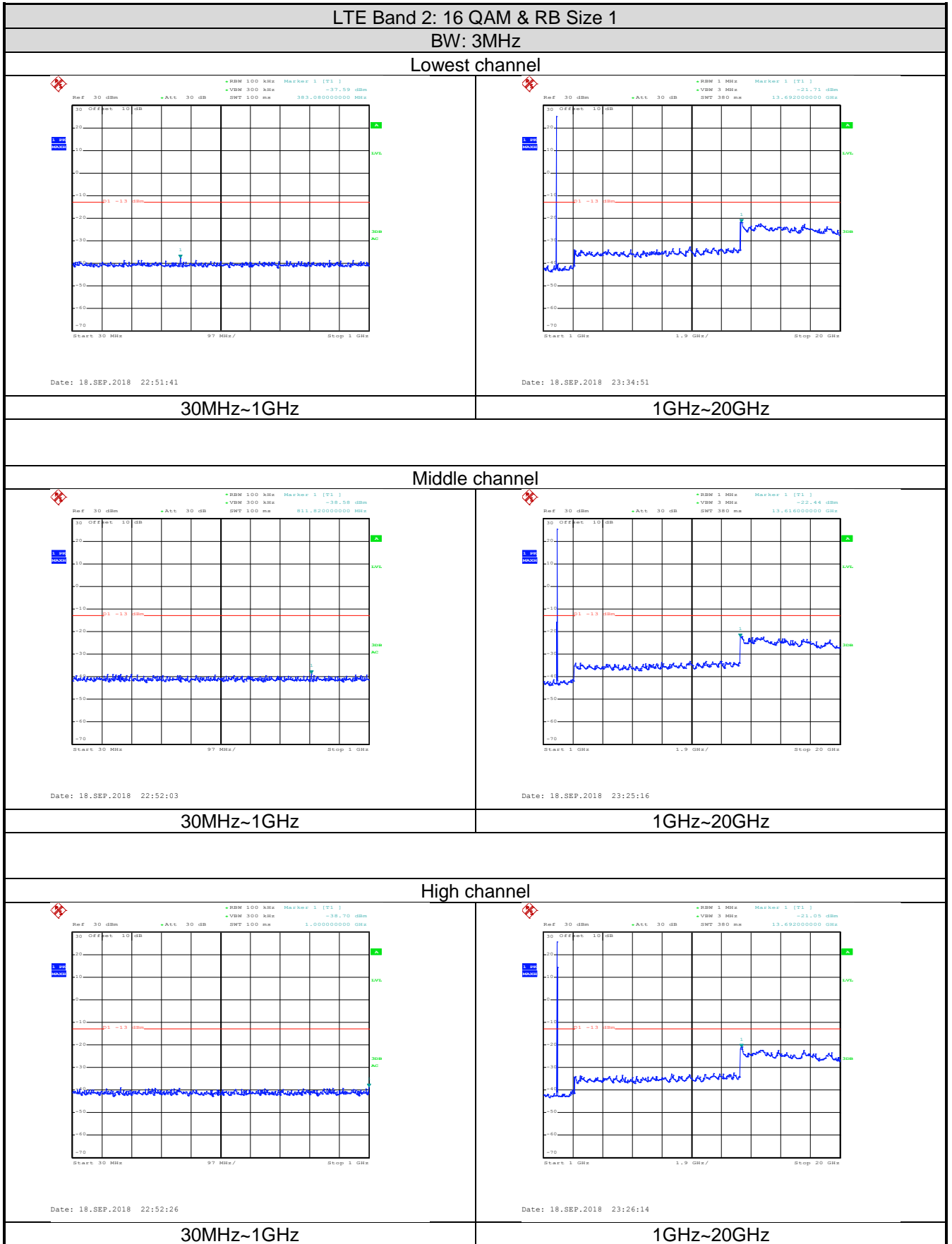
Date: 18.SEP.2018 22:51:22

**30MHz~1GHz**



Date: 18.SEP.2018 23:42:09

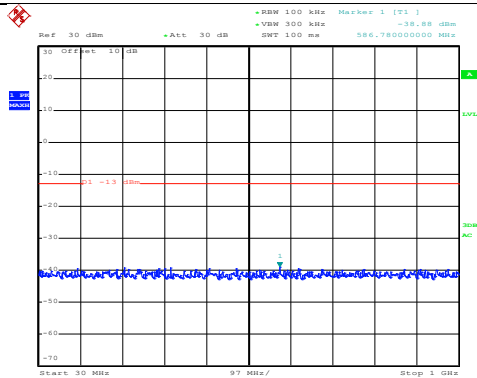
**1GHz~20GHz**



LTE Band 2: 16 QAM & RB Size 15

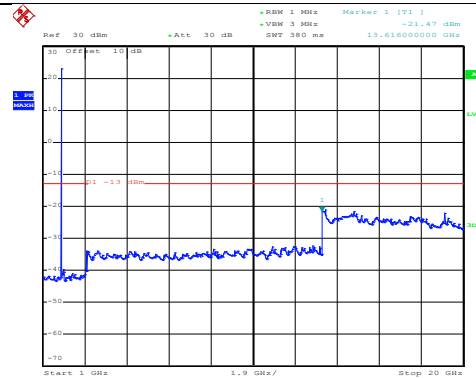
BW: 3MHz

Lowest channel



Date: 18.SEP.2018 22:51:50

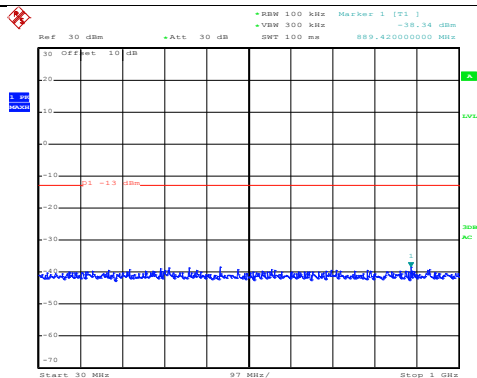
30MHz~1GHz



Date: 18.SEP.2018 23:43:11

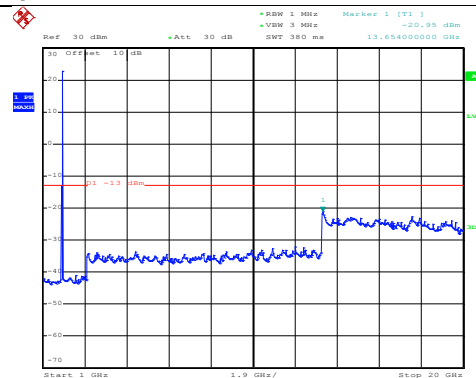
1GHz~20GHz

Middle channel



Date: 18.SEP.2018 22:52:14

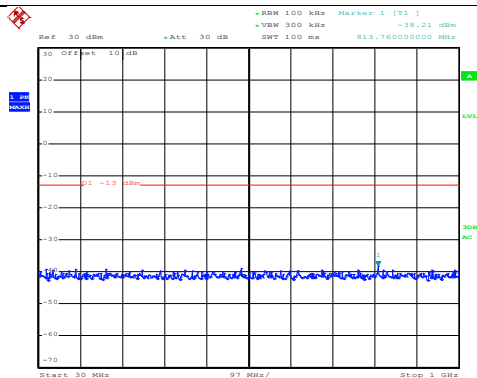
30MHz~1GHz



Date: 18.SEP.2018 23:25:36

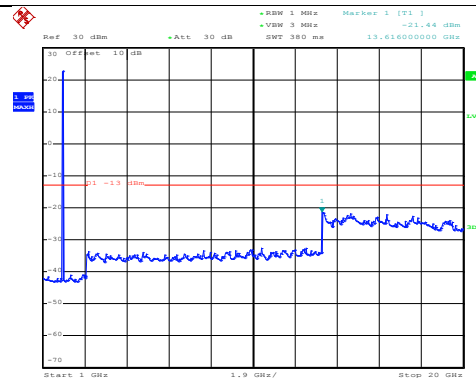
1GHz~20GHz

High channel



Date: 18.SEP.2018 22:52:36

30MHz~1GHz



Date: 18.SEP.2018 23:26:39

1GHz~20GHz

