

# **FCC REPORT**

## **(LTE)**

**Applicant:** Xwireless LLC

**Address of Applicant:** 11565 Old Georgetown Road Rockville MD 20852

**Equipment Under Test (EUT)**

Product Name: Smart phone

Model No.: Sync

Trade mark: Vortex

**FCC ID:** 2ADLJSYNC

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

**Date of sample receipt:** 30 Sep., 2018

**Date of Test:** 08 Oct., to 29 Oct., 2018

**Date of report issued:** 30 Oct., 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          | 30 Oct., 2018 | Original    |
|             |               |             |
|             |               |             |
|             |               |             |
|             |               |             |

Tested by:

*Carey Chen*

**Test Engineer**

Date:

30 Oct., 2018

Reviewed by:

*Wimer Zhang*

**Project Engineer**

Date:

30 Oct., 2018

## 3. Contents

|                                                      | Page       |
|------------------------------------------------------|------------|
| <b>1. COVER PAGE</b>                                 | <b>1</b>   |
| <b>2. VERSION</b>                                    | <b>2</b>   |
| <b>3. CONTENTS</b>                                   | <b>3</b>   |
| <b>4. TEST SUMMARY</b>                               | <b>4</b>   |
| <b>5. GENERAL INFORMATION</b>                        | <b>5</b>   |
| 5.1 CLIENT INFORMATION                               | 5          |
| 5.2 GENERAL DESCRIPTION OF E.U.T                     | 5          |
| 5.3 TEST ENVIRONMENT AND MODE                        | 10         |
| 5.4 DESCRIPTION OF SUPPORT UNITS                     | 10         |
| 5.5 MEASUREMENT UNCERTAINTY                          | 10         |
| 5.6 RELATED SUBMITTAL(S) / GRANT (S)                 | 10         |
| 5.7 LABORATORY FACILITY                              | 10         |
| 5.8 LABORATORY LOCATION                              | 10         |
| 5.9 TEST INSTRUMENTS LIST                            | 11         |
| <b>6. TEST RESULTS</b>                               | <b>12</b>  |
| 6.1 CONDUCTED OUTPUT POWER, ERP AND EIRP             | 12         |
| 6.2 PEAK-TO-AVERAGE RATIO                            | 21         |
| 6.3 OCCUPY BANDWIDTH                                 | 24         |
| 6.4 OUT OF BAND EMISSION AT ANTENNA TERMINALS        | 60         |
| 6.5 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT | 157        |
| 6.6 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT | 174        |
| 6.7 FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT     | 178        |
| <b>7 TEST SETUP PHOTO</b>                            | <b>180</b> |
| <b>8 EUT CONSTRUCTIONAL DETAILS</b>                  | <b>181</b> |

## 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 (c)(10)<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(g)<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 (g)<br>Part 27.53 (h)        | Pass                                   |
| Field strength of spurious radiation                                    | Part 24.238 (a)<br>Part 27.53 (g)<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                                   |
| Pass: The EUT complies with the essential requirements in the standard. |                                                                           |                                        |

## 5. General Information

### 5.1 Client Information

|                        |                                                                                                                                        |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Applicant:             | Xwireless LLC                                                                                                                          |
| Address:               | 11565 Old Georgetown Road Rockville MD 20852                                                                                           |
| Manufacturer/ Factory: | Shenzhen LEAGOO Intelligence Co., Limited                                                                                              |
| Address:               | 2nd Floor of Building B, HongLianYing Technology Park, No.286 of SiLi Road, DaBuXiang Community, Longhua New District, Shenzhen, China |

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

|                            |                                                                                                                                                                   |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name:              | Smart phone                                                                                                                                                       |
| Model No.:                 | Sync                                                                                                                                                              |
| Operation Frequency range: | LTE Band 2: TX: 1850MHz-1910MHz, RX: 1930MHz-1990MHz<br>LTE Band 4: TX: 1710MHz-1755MHz, RX: 2110MHz-2155MHz<br>LTE Band 12: TX: 699MHz-716MHz, RX: 729MHz-746MHz |
| Modulation type:           | QPSK, 16QAM                                                                                                                                                       |
| Antenna type:              | Internal Antenna                                                                                                                                                  |
| Antenna gain:              | LTE Band 2: 0 dBi<br>LTE Band 4: 0 dBi<br>LTE Band 12: 0 dBi                                                                                                      |
| Power supply:              | Rechargeable Li-ion Battery DC3.8V 2000mAh                                                                                                                        |
| AC adapter:                | Model: ES007-U050100X0F<br>Input: AC100-240V, 50/60Hz, 0.3A<br>Output: DC 5.0V, 1000mA                                                                            |
| Test Sample Condition:     | The test samples were provided in good working order with no visible defects.                                                                                     |

## 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         |

| LTE Band 12 (1.4MHz) |                 | LTE Band 12 (3MHz)  |                 |
|----------------------|-----------------|---------------------|-----------------|
| Channel              | Frequency (MHz) | Channel             | Frequency (MHz) |
| 23017                | 699.70          | 23025               | 700.50          |
| 23756                | 699.80          | 23026               | 700.60          |
| ....                 | ....            | ....                | ....            |
| 23094                | 707.40          | 23094               | 707.40          |
| 23095                | 707.50          | 23095               | 707.50          |
| 23096                | 707.60          | 23096               | 707.60          |
| ...                  | ...             | ...                 | ...             |
| 23172                | 715.20          | 23164               | 714.40          |
| 23173                | 715.30          | 23165               | 714.50          |
| LTE Band 12 (5MHz)   |                 | LTE Band 12 (10MHz) |                 |
| Channel              | Frequency (MHz) | Channel             | Frequency (MHz) |
| 23035                | 701.50          | 23060               | 704.00          |
| 23036                | 701.60          | 23061               | 704.10          |
| ....                 | ....            | ....                | ....            |
| 23094                | 707.40          | 23094               | 707.40          |
| 23095                | 707.50          | 23095               | 707.50          |
| 23096                | 707.60          | 23096               | 707.60          |
| ...                  | ...             | ...                 | ...             |
| 23154                | 713.40          | 23129               | 710.90          |
| 23155                | 713.50          | 23130               | 711.00          |

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         |

| LTE Band 12(1.4MHz) |       |                 | LTE Band 12(3MHz)  |       |                 |
|---------------------|-------|-----------------|--------------------|-------|-----------------|
| Channel             |       | Frequency (MHz) | Channel            |       | Frequency (MHz) |
| Lowest channel      | 23017 | 699.70          | Lowest channel     | 23025 | 700.50          |
| Middle channel      | 23095 | 707.50          | Middle channel     | 23095 | 707.50          |
| Highest channel     | 23173 | 715.30          | Highest channel    | 23165 | 714.50          |
| LTE Band 12(5MHz)   |       |                 | LTE Band 12(10MHz) |       |                 |
| Channel             |       | Frequency (MHz) | Channel            |       | Frequency (MHz) |
| Lowest channel      | 23035 | 701.50          | Lowest channel     | 23060 | 704.00          |
| Middle channel      | 23095 | 707.50          | Middle channel     | 23095 | 707.50          |
| Highest channel     | 23155 | 713.50          | Highest channel    | 23130 | 711.00          |

## 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: 3.8Vdc, Extreme: Low 3.5Vdc, High 4.35Vdc               |
| 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

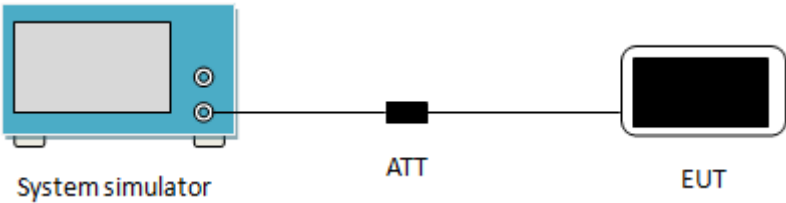
Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

## 5.9 Test Instruments list

| Test Equipment               | Manufacturer    | Model No.     | Serial No.         | Cal. Date<br>(mm-dd-yy) | Cal. Due date<br>(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                 |
|                              |                 |               |                    | 10-29-2018              | 10-28- 2019                 |
| 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             | 07-16-2018              | 07-15-2019                  |

## 6. Test results

### 6.1 Conducted Output Power, ERP and EIRP

|                   |                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 24.232(c), part 27.50(c)(10), Part 27.50(d)(4),                                                                                                                                                                                                                                                                                                                                                      |
| Test Method:      | ANSI/TIA-603-D 2010                                                                                                                                                                                                                                                                                                                                                                                       |
| Limit:            | LTE Band 2: 2W, LTE Band 4: 1W, LTE Band 12: 3W                                                                                                                                                                                                                                                                                                                                                           |
| Test Setup:       |  <p>The diagram illustrates the test setup. On the left is a blue rectangular box labeled 'System simulator'. A line connects its right side to a small black square labeled 'ATT' (attenuator). Another line connects the right side of the 'ATT' to a black rectangular box 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             | QPSK                | 1       | 0         | 23.79               | 23.13     | 23.05     |  |
|                                                              |                 |                     | 1       | 2         | 23.82               | 23.27     | 23.24     |  |
|                                                              |                 |                     | 1       | 5         | 23.68               | 23.05     | 23.15     |  |
|                                                              |                 |                     | 3       | 0         | 23.28               | 23.23     | 23.20     |  |
|                                                              |                 |                     | 3       | 1         | 23.24               | 23.13     | 23.33     |  |
|                                                              |                 |                     | 3       | 2         | 23.39               | 23.24     | 23.23     |  |
|                                                              |                 |                     | 6       | 0         | 22.81               | 22.17     | 22.39     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 23.82     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 22.81               | 22.21     | 22.94     |  |
|                                                              |                 |                     | 1       | 2         | 22.94               | 22.55     | 22.21     |  |
|                                                              |                 |                     | 1       | 5         | 22.79               | 22.41     | 22.20     |  |
|                                                              |                 |                     | 3       | 0         | 22.82               | 22.14     | 22.19     |  |
|                                                              |                 |                     | 3       | 1         | 22.97               | 22.41     | 22.29     |  |
|                                                              |                 |                     | 3       | 2         | 22.67               | 22.25     | 22.12     |  |
|                                                              |                 |                     | 6       | 0         | 21.82               | 21.23     | 21.15     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 22.97     |           |  |
|                                                              |                 | 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         | 23.87               | 23.10     | 23.13     |  |
|                                                              |                 |                     | 1       | 7         | 23.76               | 23.13     | 23.16     |  |
|                                                              |                 |                     | 1       | 14        | 23.67               | 23.15     | 23.15     |  |
|                                                              |                 |                     | 8       | 0         | 22.81               | 22.21     | 22.24     |  |
|                                                              |                 |                     | 8       | 4         | 22.85               | 22.22     | 22.17     |  |
|                                                              |                 |                     | 8       | 7         | 22.77               | 22.17     | 22.15     |  |
|                                                              |                 |                     | 15      | 0         | 22.76               | 22.28     | 22.12     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 23.87     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 22.82               | 22.21     | 22.43     |  |
|                                                              |                 |                     | 1       | 7         | 22.80               | 22.25     | 22.19     |  |
|                                                              |                 |                     | 1       | 14        | 22.73               | 22.24     | 22.09     |  |
|                                                              |                 |                     | 8       | 0         | 21.73               | 21.26     | 21.17     |  |
|                                                              |                 |                     | 8       | 4         | 21.74               | 21.16     | 21.24     |  |
|                                                              |                 |                     | 8       | 7         | 21.83               | 21.11     | 21.15     |  |
|                                                              |                 |                     | 15      | 0         | 21.79               | 21.03     | 21.02     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 22.82     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). |                 |                     |         |           |                     |           |           |  |

| 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         | 23.60               | 23.07     | 22.96     |  |
|                                                             |                 |                     | 1       | 12        | 23.81               | 23.25     | 23.15     |  |
|                                                             |                 |                     | 1       | 24        | 23.65               | 23.03     | 23.06     |  |
|                                                             |                 |                     | 12      | 0         | 22.81               | 22.18     | 22.15     |  |
|                                                             |                 |                     | 12      | 6         | 22.83               | 22.27     | 22.15     |  |
|                                                             |                 |                     | 12      | 11        | 22.76               | 22.24     | 22.02     |  |
|                                                             |                 |                     | 25      | 0         | 22.83               | 22.17     | 22.25     |  |
|                                                             |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                             |                 | Max. EIRP (dBm):    |         |           |                     | 23.81     |           |  |
|                                                             |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
|                                                             |                 | 16QAM               | 1       | 0         | 22.69               | 22.17     | 22.08     |  |
|                                                             |                 |                     | 1       | 12        | 22.62               | 22.21     | 22.19     |  |
|                                                             |                 |                     | 1       | 24        | 22.53               | 22.18     | 22.04     |  |
|                                                             |                 |                     | 12      | 0         | 21.68               | 21.22     | 21.15     |  |
|                                                             |                 |                     | 12      | 6         | 21.78               | 21.18     | 21.25     |  |
|                                                             |                 |                     | 12      | 11        | 21.73               | 21.26     | 21.04     |  |
|                                                             |                 |                     | 25      | 0         | 21.73               | 21.29     | 21.12     |  |
| Antenna Gain (dBi):                                         |                 |                     |         | 0.00      |                     |           |           |  |
| Max. EIRP (dBm):                                            |                 |                     |         | 22.69     |                     |           |           |  |
| 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         | 23.78               | 23.12     | 23.05     |  |
|                                                             |                 |                     | 1       | 24        | 23.85               | 23.30     | 23.15     |  |
|                                                             |                 |                     | 1       | 49        | 23.65               | 23.19     | 23.16     |  |
|                                                             |                 |                     | 25      | 0         | 23.01               | 22.29     | 22.34     |  |
|                                                             |                 |                     | 25      | 12        | 22.79               | 22.28     | 22.20     |  |
|                                                             |                 |                     | 25      | 24        | 22.75               | 22.29     | 22.16     |  |
|                                                             |                 |                     | 50      | 0         | 22.86               | 22.29     | 22.23     |  |
|                                                             |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                             |                 | Max. EIRP (dBm):    |         |           |                     | 23.85     |           |  |
|                                                             |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
|                                                             |                 | 16QAM               | 1       | 0         | 22.84               | 22.56     | 22.16     |  |
|                                                             |                 |                     | 1       | 24        | 23.15               | 22.27     | 22.08     |  |
|                                                             |                 |                     | 1       | 49        | 22.51               | 22.23     | 22.33     |  |
|                                                             |                 |                     | 25      | 0         | 21.75               | 21.25     | 21.07     |  |
|                                                             |                 |                     | 25      | 12        | 21.84               | 21.26     | 21.13     |  |
|                                                             |                 |                     | 25      | 24        | 21.82               | 21.19     | 21.12     |  |
|                                                             |                 |                     | 50      | 0         | 21.82               | 21.29     | 21.04     |  |
| Antenna Gain (dBi):                                         |                 |                     |         | 0.00      |                     |           |           |  |
| Max. EIRP (dBm):                                            |                 |                     |         | 23.15     |                     |           |           |  |
| EIRP Limit (dBm):                                           |                 |                     |         | 33.00     |                     |           |           |  |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi) |                 |                     |         |           |                     |           |           |  |

Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi).

| 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         | 23.76               | 23.12     | 23.31     |  |
|                                                              |                 |                     | 1       | 37        | 23.65               | 23.15     | 23.16     |  |
|                                                              |                 |                     | 1       | 74        | 23.25               | 23.41     | 23.15     |  |
|                                                              |                 |                     | 36      | 0         | 22.89               | 22.30     | 22.15     |  |
|                                                              |                 |                     | 36      | 16        | 22.75               | 22.21     | 22.17     |  |
|                                                              |                 |                     | 36      | 35        | 22.50               | 22.20     | 22.01     |  |
|                                                              |                 |                     | 75      | 0         | 22.74               | 22.28     | 22.22     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 23.76     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 23.19               | 22.36     | 22.05     |  |
|                                                              |                 |                     | 1       | 37        | 23.12               | 22.50     | 22.41     |  |
|                                                              |                 |                     | 1       | 74        | 22.45               | 22.11     | 22.06     |  |
|                                                              |                 |                     | 36      | 0         | 21.86               | 21.31     | 20.95     |  |
|                                                              |                 |                     | 36      | 16        | 21.71               | 21.29     | 20.97     |  |
|                                                              |                 |                     | 36      | 35        | 21.59               | 21.25     | 21.02     |  |
|                                                              |                 |                     | 75      | 0         | 21.76               | 21.21     | 21.01     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 23.19     |           |  |
|                                                              |                 | 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         | 23.56               | 23.01     | 22.81     |  |
|                                                              |                 |                     | 1       | 49        | 23.86               | 23.23     | 23.15     |  |
|                                                              |                 |                     | 1       | 99        | 23.15               | 22.81     | 22.85     |  |
|                                                              |                 |                     | 50      | 0         | 23.74               | 22.43     | 22.29     |  |
|                                                              |                 |                     | 50      | 24        | 23.63               | 22.33     | 22.33     |  |
|                                                              |                 |                     | 50      | 49        | 23.27               | 22.13     | 22.03     |  |
|                                                              |                 |                     | 100     | 0         | 22.69               | 22.21     | 22.07     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 23.86     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 22.77               | 22.06     | 22.01     |  |
|                                                              |                 |                     | 1       | 49        | 22.85               | 22.33     | 22.08     |  |
|                                                              |                 |                     | 1       | 99        | 22.14               | 22.00     | 21.86     |  |
|                                                              |                 |                     | 50      | 0         | 21.65               | 21.27     | 20.94     |  |
|                                                              |                 |                     | 50      | 24        | 21.63               | 21.25     | 20.98     |  |
|                                                              |                 |                     | 50      | 49        | 21.42               | 21.07     | 21.02     |  |
|                                                              |                 |                     | 100     | 0         | 21.52               | 21.23     | 20.90     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 22.85     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). |                 |                     |         |           |                     |           |           |  |

| 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         | 23.99               | 23.83     | 23.97     |  |
|                                                              |                 |                     | 1       | 2         | 24.12               | 23.87     | 24.12     |  |
|                                                              |                 |                     | 1       | 5         | 24.03               | 23.82     | 24.03     |  |
|                                                              |                 |                     | 3       | 0         | 22.11               | 23.12     | 23.12     |  |
|                                                              |                 |                     | 3       | 1         | 22.18               | 23.14     | 23.24     |  |
|                                                              |                 |                     | 3       | 2         | 23.08               | 23.14     | 23.07     |  |
|                                                              |                 |                     | 6       | 0         | 23.20               | 22.96     | 23.12     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 24.12     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 30.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 23.08               | 22.84     | 23.00     |  |
|                                                              |                 |                     | 1       | 2         | 23.15               | 22.90     | 23.16     |  |
|                                                              |                 |                     | 1       | 5         | 23.07               | 22.91     | 23.06     |  |
|                                                              |                 |                     | 3       | 0         | 23.04               | 22.95     | 23.13     |  |
|                                                              |                 |                     | 3       | 1         | 23.07               | 22.94     | 23.08     |  |
|                                                              |                 |                     | 3       | 2         | 23.17               | 22.88     | 23.13     |  |
|                                                              |                 |                     | 6       | 0         | 22.09               | 21.67     | 22.15     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 23.17     |           |  |
| 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         | 24.12               | 23.82     | 24.03     |  |
|                                                              |                 |                     | 1       | 7         | 24.25               | 23.97     | 24.07     |  |
|                                                              |                 |                     | 1       | 14        | 24.16               | 23.89     | 24.03     |  |
|                                                              |                 |                     | 8       | 0         | 23.23               | 22.85     | 23.06     |  |
|                                                              |                 |                     | 8       | 4         | 23.28               | 22.97     | 23.09     |  |
|                                                              |                 |                     | 8       | 7         | 23.10               | 22.89     | 23.03     |  |
|                                                              |                 |                     | 15      | 0         | 23.13               | 22.91     | 23.13     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 24.25     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 30.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 23.19               | 22.78     | 23.06     |  |
|                                                              |                 |                     | 1       | 7         | 23.08               | 22.84     | 23.11     |  |
|                                                              |                 |                     | 1       | 14        | 23.13               | 22.89     | 23.35     |  |
|                                                              |                 |                     | 8       | 0         | 22.21               | 21.88     | 21.98     |  |
|                                                              |                 |                     | 8       | 4         | 22.17               | 21.96     | 22.25     |  |
|                                                              |                 |                     | 8       | 7         | 22.11               | 21.80     | 22.04     |  |
|                                                              |                 |                     | 15      | 0         | 22.16               | 21.85     | 22.08     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 23.35     |           |  |
| EIRP Limit (dBm):                                            |                 |                     |         | 30.00     |                     |           |           |  |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). |                 |                     |         |           |                     |           |           |  |

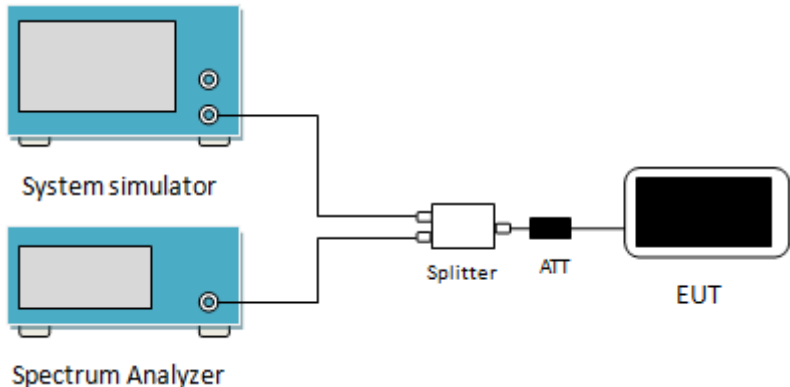
| LTE Band                                                     | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |
|--------------------------------------------------------------|-----------------|---------------------|---------|-----------|---------------------|-----------|-----------|--|
|                                                              |                 |                     |         |           | 19975               | 20175     | 20375     |  |
|                                                              |                 |                     |         |           | 1712.5MHz           | 1732.5MHz | 1752.5MHz |  |
| 4                                                            | 5               | QPSK                | 1       | 0         | 24.05               | 23.87     | 23.90     |  |
|                                                              |                 |                     | 1       | 12        | 24.13               | 23.96     | 24.03     |  |
|                                                              |                 |                     | 1       | 24        | 24.06               | 23.75     | 23.94     |  |
|                                                              |                 |                     | 12      | 0         | 23.20               | 22.98     | 23.03     |  |
|                                                              |                 |                     | 12      | 6         | 23.27               | 22.92     | 23.13     |  |
|                                                              |                 |                     | 12      | 11        | 23.19               | 22.82     | 23.05     |  |
|                                                              |                 |                     | 25      | 0         | 23.23               | 23.00     | 23.14     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 24.13     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 30.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 22.97               | 22.81     | 23.02     |  |
|                                                              |                 |                     | 1       | 12        | 23.26               | 22.92     | 23.02     |  |
|                                                              |                 |                     | 1       | 24        | 23.29               | 22.78     | 22.97     |  |
|                                                              |                 |                     | 12      | 0         | 22.18               | 21.90     | 21.85     |  |
|                                                              |                 |                     | 12      | 6         | 22.21               | 21.86     | 22.10     |  |
|                                                              |                 |                     | 12      | 11        | 22.05               | 21.88     | 21.89     |  |
|                                                              |                 |                     | 25      | 0         | 22.06               | 21.86     | 22.06     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 23.29     |           |  |
|                                                              |                 | 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         | 24.13               | 23.96     | 23.94     |  |
|                                                              |                 |                     | 1       | 24        | 24.13               | 24.03     | 24.03     |  |
|                                                              |                 |                     | 1       | 49        | 24.09               | 23.85     | 24.07     |  |
|                                                              |                 |                     | 25      | 0         | 23.12               | 23.01     | 23.20     |  |
|                                                              |                 |                     | 25      | 12        | 23.27               | 23.02     | 23.15     |  |
|                                                              |                 |                     | 25      | 24        | 23.25               | 22.86     | 23.09     |  |
|                                                              |                 |                     | 50      | 0         | 23.18               | 23.05     | 23.10     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 24.13     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 30.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 23.14               | 22.92     | 23.22     |  |
|                                                              |                 |                     | 1       | 24        | 23.09               | 23.07     | 23.02     |  |
|                                                              |                 |                     | 1       | 49        | 23.41               | 23.18     | 23.30     |  |
|                                                              |                 |                     | 25      | 0         | 22.12               | 21.95     | 21.99     |  |
|                                                              |                 |                     | 25      | 12        | 22.07               | 21.94     | 22.05     |  |
|                                                              |                 |                     | 25      | 24        | 22.12               | 21.86     | 22.11     |  |
|                                                              |                 |                     | 50      | 0         | 22.08               | 21.90     | 22.09     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 23.41     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 30.00     |           |  |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). |                 |                     |         |           |                     |           |           |  |

| 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         | 24.13               | 23.86     | 23.89     |  |
|                                                              |                 |                     | 1       | 37        | 24.16               | 23.94     | 24.03     |  |
|                                                              |                 |                     | 1       | 74        | 23.89               | 23.77     | 23.95     |  |
|                                                              |                 |                     | 36      | 0         | 23.06               | 23.10     | 23.16     |  |
|                                                              |                 |                     | 36      | 16        | 23.19               | 22.94     | 23.04     |  |
|                                                              |                 |                     | 36      | 35        | 23.10               | 22.89     | 23.02     |  |
|                                                              |                 |                     | 75      | 0         | 23.20               | 22.89     | 23.11     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 24.16     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 30.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 23.34               | 22.91     | 23.00     |  |
|                                                              |                 |                     | 1       | 37        | 23.23               | 22.72     | 23.25     |  |
|                                                              |                 |                     | 1       | 74        | 22.90               | 22.85     | 23.37     |  |
|                                                              |                 |                     | 36      | 0         | 22.12               | 22.01     | 22.00     |  |
|                                                              |                 |                     | 36      | 16        | 22.05               | 21.82     | 22.07     |  |
|                                                              |                 |                     | 36      | 35        | 22.05               | 21.88     | 21.94     |  |
|                                                              |                 |                     | 75      | 0         | 22.11               | 21.90     | 22.02     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 23.37     |           |  |
| 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         | 23.94               | 23.89     | 23.68     |  |
|                                                              |                 |                     | 1       | 49        | 24.23               | 23.91     | 24.13     |  |
|                                                              |                 |                     | 1       | 99        | 23.56               | 23.69     | 23.96     |  |
|                                                              |                 |                     | 50      | 0         | 23.25               | 23.09     | 23.13     |  |
|                                                              |                 |                     | 50      | 24        | 23.17               | 23.07     | 23.09     |  |
|                                                              |                 |                     | 50      | 49        | 23.12               | 22.95     | 23.10     |  |
|                                                              |                 |                     | 100     | 0         | 23.19               | 22.99     | 23.01     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 24.13     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 30.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 23.16               | 23.27     | 23.22     |  |
|                                                              |                 |                     | 1       | 49        | 23.33               | 23.41     | 23.11     |  |
|                                                              |                 |                     | 1       | 99        | 22.58               | 22.67     | 22.90     |  |
|                                                              |                 |                     | 50      | 0         | 22.19               | 22.00     | 22.01     |  |
|                                                              |                 |                     | 50      | 24        | 22.13               | 21.86     | 22.07     |  |
|                                                              |                 |                     | 50      | 49        | 21.96               | 21.85     | 21.97     |  |
|                                                              |                 |                     | 100     | 0         | 22.03               | 21.82     | 22.06     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | 0.00      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 23.41     |           |  |
| EIRP Limit (dBm):                                            |                 |                     |         | 30.00     |                     |           |           |  |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). |                 |                     |         |           |                     |           |           |  |

| LTE Band                                                                                             | Bandwidth (MHz) | Modulation         | RB Size | RB Offset | Average Power (dBm) |          |          |  |
|------------------------------------------------------------------------------------------------------|-----------------|--------------------|---------|-----------|---------------------|----------|----------|--|
|                                                                                                      |                 |                    |         |           | 23017               | 23095    | 23173    |  |
|                                                                                                      |                 |                    |         |           | 699.7MHz            | 707.5MHz | 715.3MHz |  |
| 12                                                                                                   | 1.4             | QPSK               | 1       | 0         | 23.95               | 23.95    | 24.52    |  |
|                                                                                                      |                 |                    | 1       | 2         | 24.12               | 24.12    | 24.72    |  |
|                                                                                                      |                 |                    | 1       | 5         | 24.13               | 24.13    | 24.68    |  |
|                                                                                                      |                 |                    | 3       | 0         | 23.03               | 23.20    | 23.81    |  |
|                                                                                                      |                 |                    | 3       | 1         | 23.16               | 23.14    | 23.69    |  |
|                                                                                                      |                 |                    | 3       | 2         | 23.17               | 23.15    | 23.59    |  |
|                                                                                                      |                 |                    | 6       | 0         | 23.14               | 23.20    | 24.00    |  |
|                                                                                                      |                 | Antenna Gain(dBi): |         |           |                     | 0.00     |          |  |
|                                                                                                      |                 | Max. ERP (dBm):    |         |           |                     | 22.57    |          |  |
|                                                                                                      |                 | ERP Limit (dBm):   |         |           |                     | 34.77    |          |  |
|                                                                                                      |                 | 16QAM              | 1       | 0         | 23.19               | 23.08    | 23.92    |  |
|                                                                                                      |                 |                    | 1       | 2         | 23.17               | 23.12    | 23.69    |  |
|                                                                                                      |                 |                    | 1       | 5         | 23.24               | 23.14    | 23.85    |  |
|                                                                                                      |                 |                    | 3       | 0         | 23.19               | 23.14    | 23.75    |  |
|                                                                                                      |                 |                    | 3       | 1         | 23.25               | 23.02    | 23.66    |  |
|                                                                                                      |                 |                    | 3       | 2         | 23.13               | 23.21    | 23.69    |  |
|                                                                                                      |                 |                    | 6       | 0         | 22.15               | 22.16    | 22.69    |  |
| Antenna Gain(dBi):                                                                                   |                 |                    |         | 0.00      |                     |          |          |  |
| Max. ERP (dBm):                                                                                      |                 |                    |         | 21.77     |                     |          |          |  |
| ERP Limit (dBm):                                                                                     |                 |                    |         | 34.77     |                     |          |          |  |
|                                                                                                      |                 |                    |         |           |                     |          |          |  |
| LTE Band                                                                                             | Bandwidth (MHz) | Modulation         | RB Size | RB Offset | Average Power (dBm) |          |          |  |
|                                                                                                      |                 |                    |         |           | 23025               | 23095    | 23165    |  |
|                                                                                                      |                 |                    |         |           | 700.5MHz            | 707.5MHz | 714.5MHz |  |
| 12                                                                                                   | 3               | QPSK               | 1       | 0         | 24.13               | 24.13    | 24.55    |  |
|                                                                                                      |                 |                    | 1       | 7         | 24.18               | 24.03    | 24.78    |  |
|                                                                                                      |                 |                    | 1       | 14        | 24.15               | 24.22    | 24.85    |  |
|                                                                                                      |                 |                    | 8       | 0         | 23.13               | 23.15    | 23.60    |  |
|                                                                                                      |                 |                    | 8       | 4         | 23.24               | 23.19    | 23.82    |  |
|                                                                                                      |                 |                    | 8       | 7         | 23.22               | 23.24    | 23.77    |  |
|                                                                                                      |                 |                    | 15      | 0         | 23.07               | 23.10    | 23.81    |  |
|                                                                                                      |                 | Antenna Gain(dBi): |         |           |                     | 0.00     |          |  |
|                                                                                                      |                 | Max. ERP (dBm):    |         |           |                     | 22.70    |          |  |
|                                                                                                      |                 | ERP Limit (dBm):   |         |           |                     | 34.77    |          |  |
|                                                                                                      |                 | 16QAM              | 1       | 0         | 23.44               | 23.42    | 23.60    |  |
|                                                                                                      |                 |                    | 1       | 7         | 23.22               | 23.20    | 23.64    |  |
|                                                                                                      |                 |                    | 1       | 14        | 23.45               | 23.29    | 23.67    |  |
|                                                                                                      |                 |                    | 8       | 0         | 22.90               | 22.34    | 22.61    |  |
|                                                                                                      |                 |                    | 8       | 4         | 22.15               | 22.15    | 22.69    |  |
|                                                                                                      |                 |                    | 8       | 7         | 22.29               | 22.13    | 22.84    |  |
|                                                                                                      |                 |                    | 15      | 0         | 22.01               | 22.12    | 22.63    |  |
| Antenna Gain(dBi):                                                                                   |                 |                    |         | 0.00      |                     |          |          |  |
| Max. ERP (dBm):                                                                                      |                 |                    |         | 21.52     |                     |          |          |  |
| ERP Limit (dBm):                                                                                     |                 |                    |         | 34.77     |                     |          |          |  |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi).<br>ERP (dBm ) = EIRP (dBm) - 2.15 (dB). |                 |                    |         |           |                     |          |          |  |

| LTE Band                                                                                             | Bandwidth (MHz) | Modulation         | RB Size | RB Offset | Average Power (dBm) |          |          |  |
|------------------------------------------------------------------------------------------------------|-----------------|--------------------|---------|-----------|---------------------|----------|----------|--|
|                                                                                                      |                 |                    |         |           | 23035               | 23095    | 23155    |  |
|                                                                                                      |                 |                    |         |           | 701.5MHz            | 707.5MHz | 713.5MHz |  |
| 12                                                                                                   | 5               | QPSK               | 1       | 0         | 23.69               | 23.95    | 24.20    |  |
|                                                                                                      |                 |                    | 1       | 12        | 24.03               | 24.19    | 24.56    |  |
|                                                                                                      |                 |                    | 1       | 24        | 24.06               | 24.12    | 24.78    |  |
|                                                                                                      |                 |                    | 12      | 0         | 23.04               | 23.16    | 23.45    |  |
|                                                                                                      |                 |                    | 12      | 6         | 23.14               | 23.19    | 23.72    |  |
|                                                                                                      |                 |                    | 12      | 11        | 23.07               | 23.21    | 23.65    |  |
|                                                                                                      |                 |                    | 25      | 0         | 23.04               | 23.18    | 23.65    |  |
|                                                                                                      |                 | Antenna Gain(dBi): |         |           |                     | 0.00     |          |  |
|                                                                                                      |                 | Max. ERP (dBm):    |         |           |                     | 22.63    |          |  |
|                                                                                                      |                 | ERP Limit (dBm):   |         |           |                     | 34.77    |          |  |
|                                                                                                      |                 | 16QAM              | 1       | 0         | 23.06               | 23.07    | 23.28    |  |
|                                                                                                      |                 |                    | 1       | 12        | 23.16               | 23.64    | 23.48    |  |
|                                                                                                      |                 |                    | 1       | 24        | 23.09               | 23.09    | 23.65    |  |
|                                                                                                      |                 |                    | 12      | 0         | 21.88               | 22.15    | 22.44    |  |
|                                                                                                      |                 |                    | 12      | 6         | 22.10               | 22.22    | 22.60    |  |
|                                                                                                      |                 |                    | 12      | 11        | 22.15               | 22.39    | 22.53    |  |
|                                                                                                      |                 |                    | 25      | 0         | 21.99               | 22.25    | 22.48    |  |
| Antenna Gain(dBi):                                                                                   |                 |                    |         | 0.00      |                     |          |          |  |
| Max. ERP (dBm):                                                                                      |                 |                    |         | 21.5      |                     |          |          |  |
| ERP Limit (dBm):                                                                                     |                 |                    |         | 34.77     |                     |          |          |  |
|                                                                                                      |                 |                    |         |           |                     |          |          |  |
| LTE Band                                                                                             | Bandwidth (MHz) | Modulation         | RB Size | RB Offset | Average Power (dBm) |          |          |  |
|                                                                                                      |                 |                    |         |           | 23060               | 23095    | 23130    |  |
|                                                                                                      |                 |                    |         |           | 704.0MHz            | 707.5MHz | 711.0MHz |  |
| 12                                                                                                   | 10              | QPSK               | 1       | 0         | 24.06               | 24.03    | 24.09    |  |
|                                                                                                      |                 |                    | 1       | 24        | 24.15               | 24.16    | 24.45    |  |
|                                                                                                      |                 |                    | 1       | 49        | 24.19               | 23.45    | 24.72    |  |
|                                                                                                      |                 |                    | 25      | 0         | 23.15               | 23.43    | 23.22    |  |
|                                                                                                      |                 |                    | 25      | 12        | 23.21               | 23.33    | 23.45    |  |
|                                                                                                      |                 |                    | 25      | 24        | 23.16               | 23.59    | 23.60    |  |
|                                                                                                      |                 |                    | 50      | 0         | 23.11               | 23.45    | 23.41    |  |
|                                                                                                      |                 | Antenna Gain(dBi): |         |           |                     | 0.00     |          |  |
|                                                                                                      |                 | Max. ERP (dBm):    |         |           |                     | 22.57    |          |  |
|                                                                                                      |                 | ERP Limit (dBm):   |         |           |                     | 34.77    |          |  |
|                                                                                                      |                 | 16QAM              | 1       | 0         | 23.15               | 22.98    | 23.49    |  |
|                                                                                                      |                 |                    | 1       | 24        | 23.49               | 23.68    | 23.52    |  |
|                                                                                                      |                 |                    | 1       | 49        | 23.23               | 23.54    | 23.69    |  |
|                                                                                                      |                 |                    | 25      | 0         | 22.14               | 22.24    | 22.12    |  |
|                                                                                                      |                 |                    | 25      | 12        | 22.16               | 22.25    | 22.43    |  |
|                                                                                                      |                 |                    | 25      | 24        | 22.19               | 22.54    | 22.63    |  |
|                                                                                                      |                 |                    | 50      | 0         | 22.20               | 22.52    | 22.30    |  |
| Antenna Gain(dBi):                                                                                   |                 |                    |         | 0.00      |                     |          |          |  |
| Max. ERP (dBm):                                                                                      |                 |                    |         | 21.54     |                     |          |          |  |
| ERP Limit (dBm):                                                                                     |                 |                    |         | 34.77     |                     |          |          |  |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi).<br>ERP (dBm ) = EIRP (dBm) - 2.15 (dB). |                 |                    |         |           |                     |          |          |  |

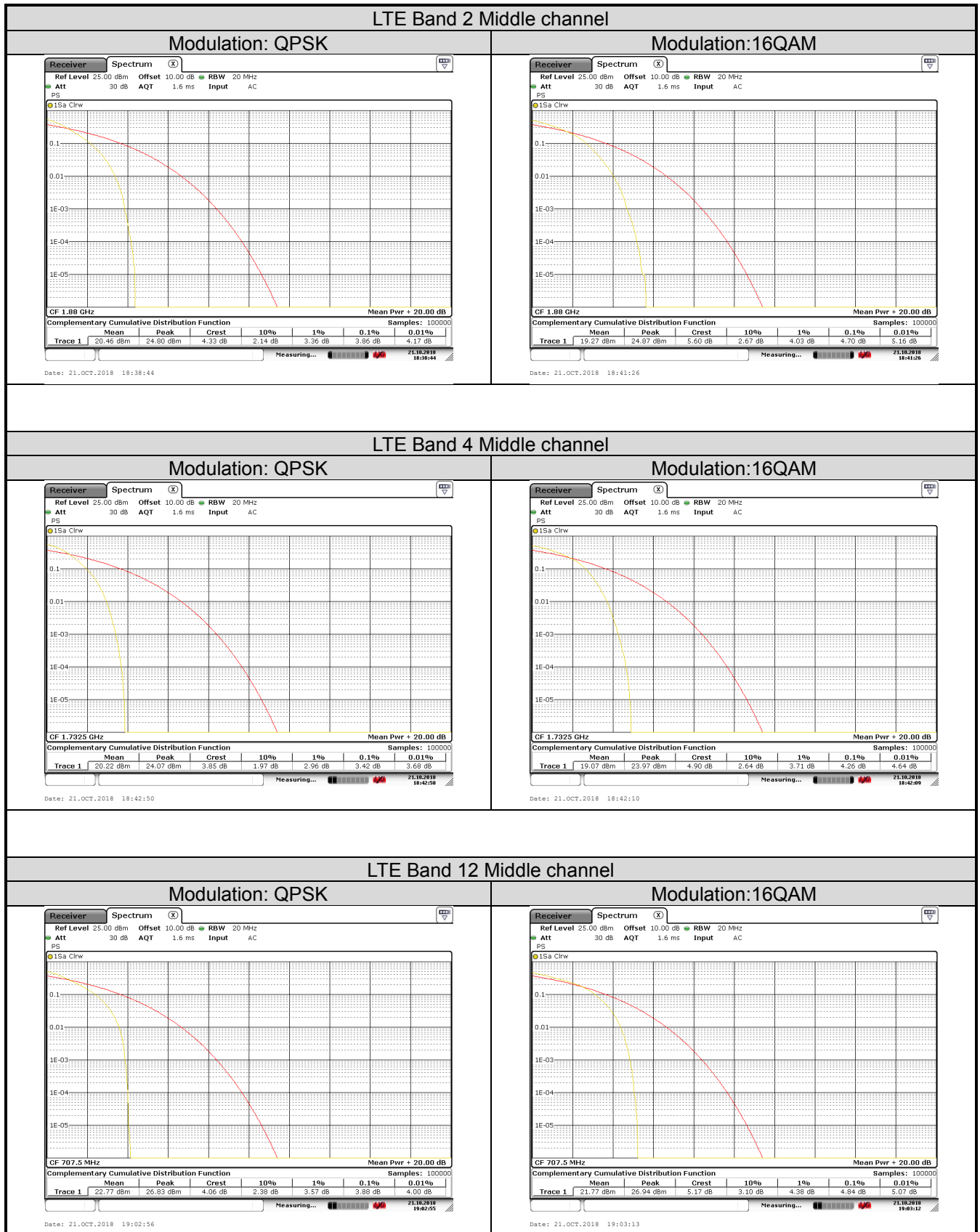
## 6.2 Peak-to-Average Ratio

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 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 single output port. These two ports are connected to a single input port of a white rectangular unit labeled 'Splitter'. The 'Splitter' has two output ports. One output port is connected to a black rectangular unit labeled 'ATT' (Attenuator). The other output port is connected to a black rectangular unit labeled '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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

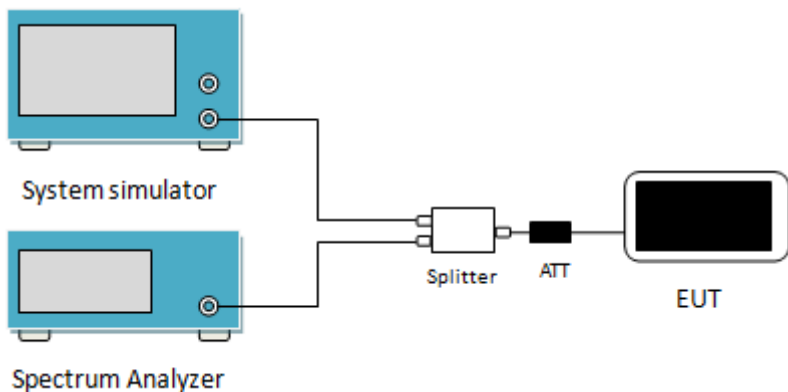
Measurement Data (Worst case):

| Bandwidth                    | Modulation | RB Size | RB Offset | PAPR |
|------------------------------|------------|---------|-----------|------|
| LTE Band 2 (Middle Channel)  |            |         |           |      |
| 20MHz                        | QPSK       | 100     | 0         | 3.86 |
|                              | 16QAM      | 100     | 0         | 4.70 |
| LTE Band 4 (Middle Channel)  |            |         |           |      |
| 20MHz                        | QPSK       | 100     | 0         | 3.42 |
|                              | 16QAM      | 100     | 0         | 4.26 |
| LTE Band 12 (Middle Channel) |            |         |           |      |
| 10MHz                        | QPSK       | 50      | 0         | 3.88 |
|                              | 16QAM      | 50      | 0         | 4.84 |

Test plots as below:



## 6.3 Occupy Bandwidth

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 24.238(b), Part 27.53(g), 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 single output port. These two ports are connected to a single input port of a white rectangular unit labeled 'Splitter'. The 'Splitter' has two output ports. One output port is connected to a black rectangular unit labeled 'ATT' (Attenuator). The other output port is connected to the input of a black rectangular unit labeled 'EUT' (Equipment Under Test).</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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

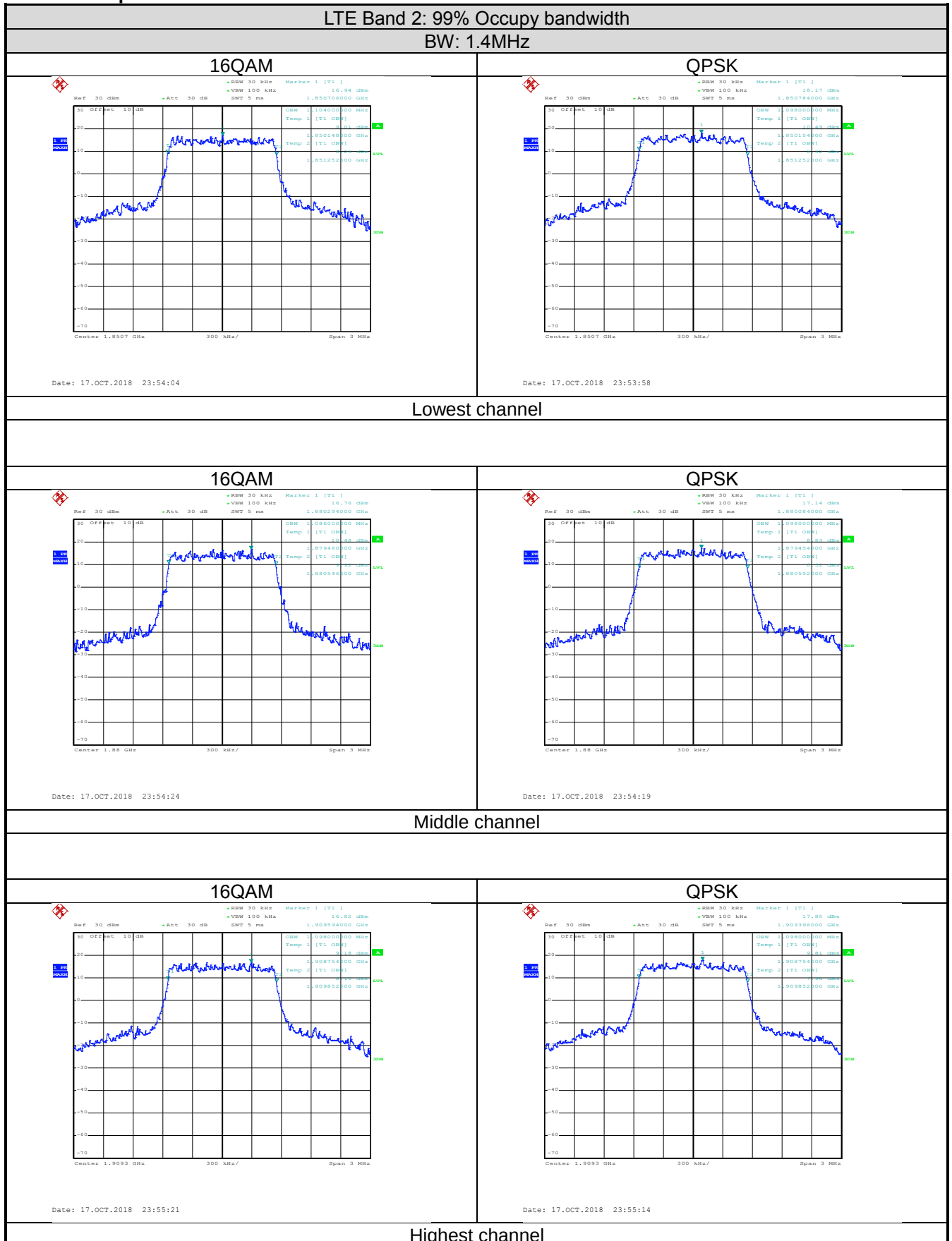
**Measurement Data:**

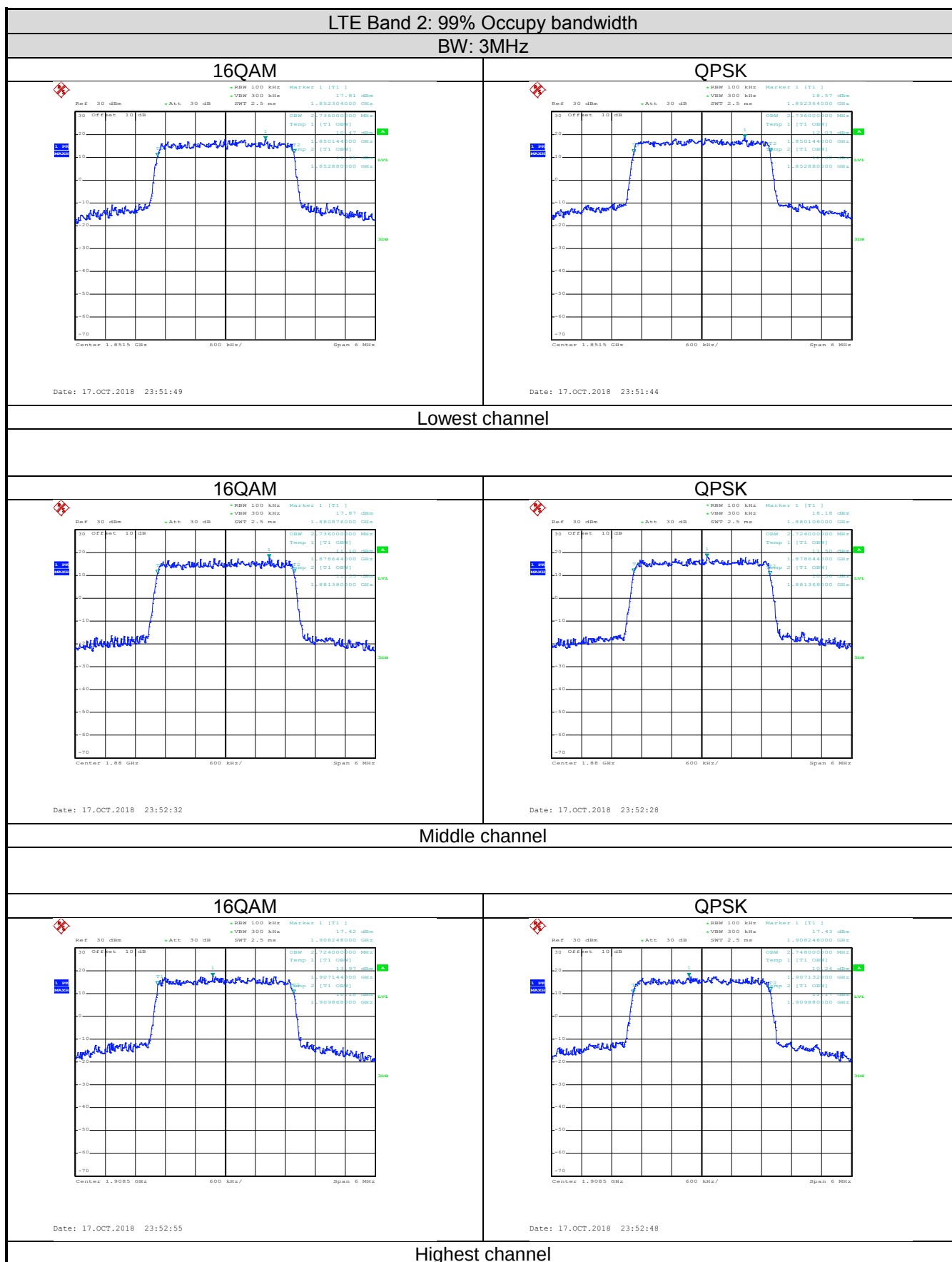
| LTE Band 2 |         |                 |            |               |                 |
|------------|---------|-----------------|------------|---------------|-----------------|
| Bandwidth  | Channel | Frequency (MHz) | Modulation | 99% OBW (kHz) | -26dBcEBW (kHz) |
| 1.4MHz     | 18607   | 1850.70         | 16QAM      | 1104          | 1296            |
|            |         |                 | QPSK       | 1098          | 1314            |
|            | 18900   | 1880.00         | 16QAM      | 1086          | 1248            |
|            |         |                 | QPSK       | 1098          | 1308            |
|            | 19193   | 1909.30         | 16QAM      | 1098          | 1272            |
|            |         |                 | QPSK       | 1098          | 1326            |
| 3MHz       | 18615   | 1851.50         | 16QAM      | 2736          | 2976            |
|            |         |                 | QPSK       | 2736          | 2976            |
|            | 18900   | 1880.00         | 16QAM      | 2736          | 2988            |
|            |         |                 | QPSK       | 2724          | 3012            |
|            | 19185   | 1908.50         | 16QAM      | 2724          | 2976            |
|            |         |                 | QPSK       | 2748          | 2988            |
| 5MHz       | 18625   | 1852.50         | 16QAM      | 4520          | 4920            |
|            |         |                 | QPSK       | 4540          | 5020            |
|            | 18900   | 1880.00         | 16QAM      | 4540          | 5060            |
|            |         |                 | QPSK       | 4540          | 5080            |
|            | 19175   | 1907.50         | 16QAM      | 4520          | 5060            |
|            |         |                 | QPSK       | 4520          | 5160            |
| 10MHz      | 18650   | 1855.00         | 16QAM      | 9120          | 10320           |
|            |         |                 | QPSK       | 9200          | 10480           |
|            | 18900   | 1880.00         | 16QAM      | 9120          | 10200           |
|            |         |                 | QPSK       | 9120          | 10280           |
|            | 19150   | 1905.00         | 16QAM      | 9120          | 10280           |
|            |         |                 | QPSK       | 9120          | 10320           |
| 15MHz      | 18675   | 1857.50         | 16QAM      | 13560         | 14760           |
|            |         |                 | QPSK       | 13560         | 15180           |
|            | 18900   | 1880.00         | 16QAM      | 13560         | 14760           |
|            |         |                 | QPSK       | 13560         | 15300           |
|            | 19125   | 1902.50         | 16QAM      | 13560         | 14940           |
|            |         |                 | QPSK       | 13560         | 14880           |
| 20MHz      | 18700   | 1860.00         | 16QAM      | 17920         | 19600           |
|            |         |                 | QPSK       | 18000         | 19680           |
|            | 18900   | 1880.00         | 16QAM      | 17920         | 19120           |
|            |         |                 | QPSK       | 18000         | 19600           |
|            | 19100   | 1900.00         | 16QAM      | 18000         | 19520           |
|            |         |                 | QPSK       | 18000         | 19680           |

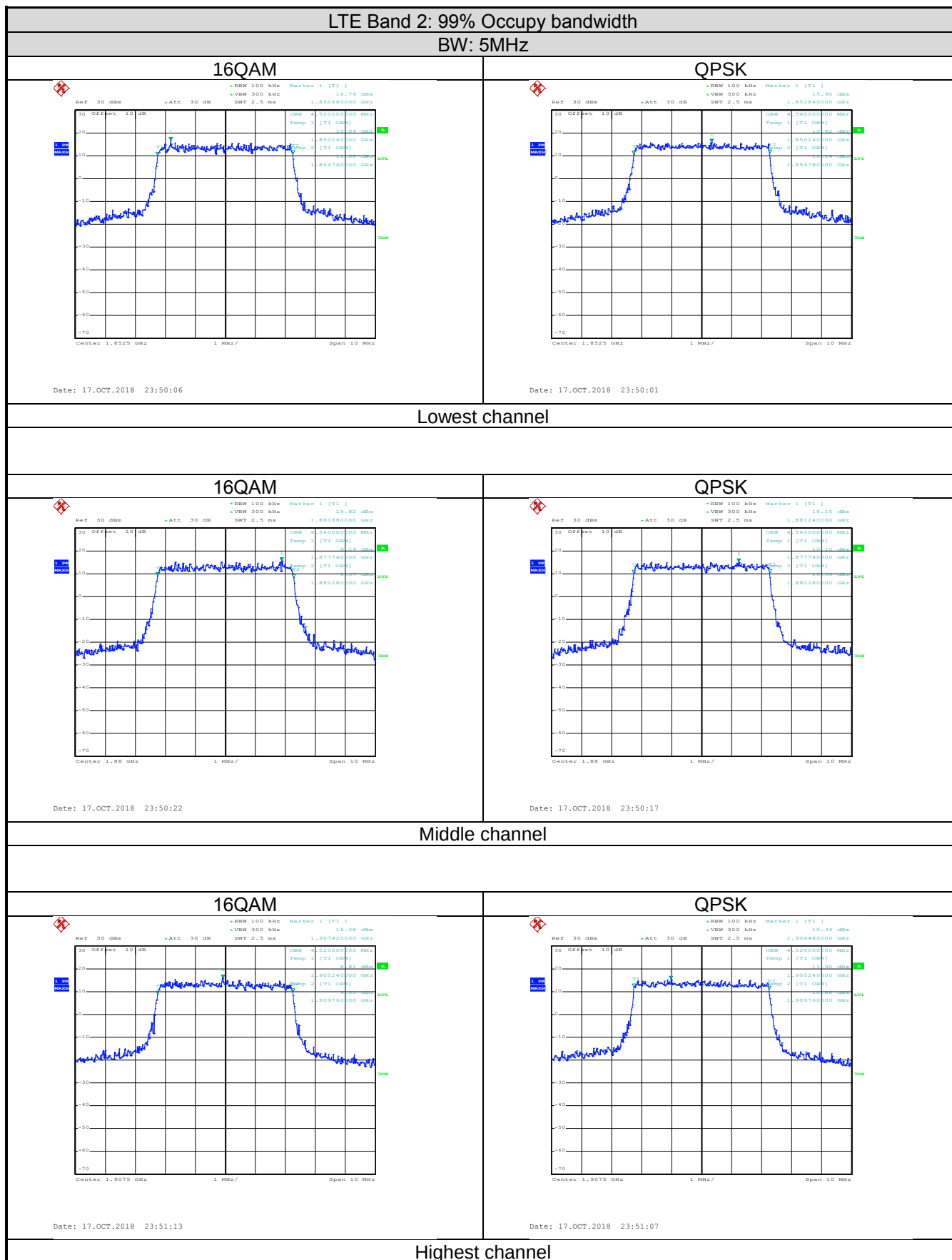
| LTE Band 4 |         |                 |            |               |                 |
|------------|---------|-----------------|------------|---------------|-----------------|
| Bandwidth  | Channel | Frequency (MHz) | Modulation | 99% OBW (kHz) | -26dBcEBW (kHz) |
| 1.4MHz     | 19957   | 1710.7          | 16QAM      | 1098          | 1284            |
|            |         |                 | QPSK       | 1092          | 1290            |
|            | 20175   | 1732.5          | 16QAM      | 1092          | 1266            |
|            |         |                 | QPSK       | 1092          | 1254            |
|            | 20393   | 1754.3          | 16QAM      | 1098          | 1260            |
|            |         |                 | QPSK       | 1092          | 1284            |
| 3MHz       | 19965   | 1711.5          | 16QAM      | 2724          | 2976            |
|            |         |                 | QPSK       | 2724          | 2988            |
|            | 20175   | 1732.5          | 16QAM      | 2748          | 2976            |
|            |         |                 | QPSK       | 2736          | 3000            |
|            | 20385   | 1750.5          | 16QAM      | 2736          | 2976            |
|            |         |                 | QPSK       | 2712          | 2976            |
| 5MHz       | 19975   | 1712.5          | 16QAM      | 4540          | 4880            |
|            |         |                 | QPSK       | 4520          | 5160            |
|            | 20175   | 1732.5          | 16QAM      | 4540          | 4960            |
|            |         |                 | QPSK       | 4540          | 5100            |
|            | 20375   | 1752.5          | 16QAM      | 4500          | 5060            |
|            |         |                 | QPSK       | 4540          | 5040            |
| 10MHz      | 20000   | 1715.0          | 16QAM      | 9120          | 10240           |
|            |         |                 | QPSK       | 9160          | 10240           |
|            | 20175   | 1732.5          | 16QAM      | 9120          | 10080           |
|            |         |                 | QPSK       | 9120          | 10400           |
|            | 20350   | 1750.0          | 16QAM      | 9120          | 10160           |
|            |         |                 | QPSK       | 9120          | 10280           |
| 15MHz      | 20025   | 1717.5          | 16QAM      | 13500         | 14880           |
|            |         |                 | QPSK       | 13560         | 15000           |
|            | 20175   | 1732.5          | 16QAM      | 13500         | 14940           |
|            |         |                 | QPSK       | 13500         | 15000           |
|            | 20325   | 1747.5          | 16QAM      | 13560         | 14700           |
|            |         |                 | QPSK       | 13560         | 15180           |
| 20MHz      | 20050   | 1720.0          | 16QAM      | 17920         | 19120           |
|            |         |                 | QPSK       | 18000         | 19920           |
|            | 20175   | 1732.5          | 16QAM      | 17920         | 19280           |
|            |         |                 | QPSK       | 17920         | 19840           |
|            | 20300   | 1745.0          | 16QAM      | 18000         | 19360           |
|            |         |                 | QPSK       | 18000         | 19760           |

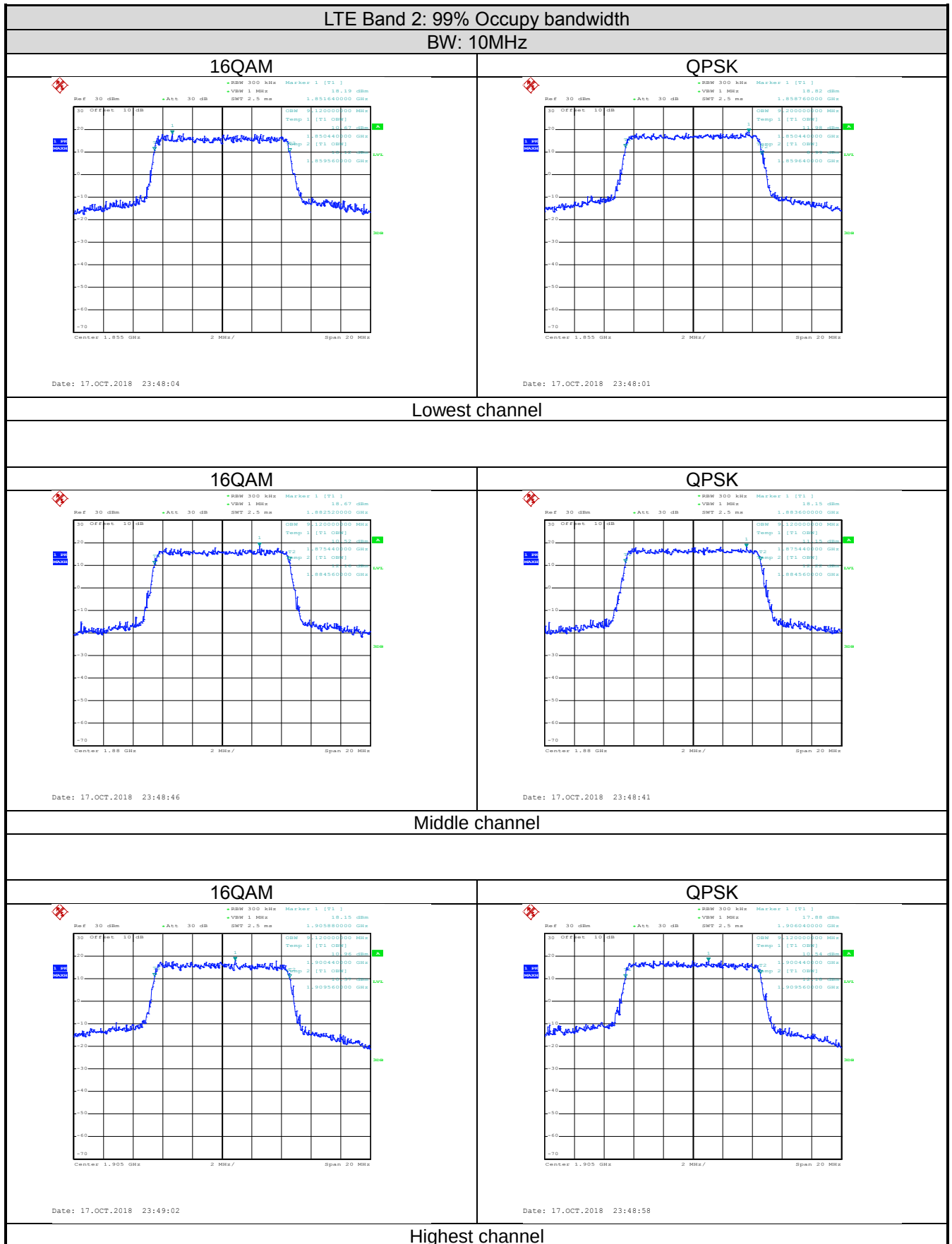
| LTE Band 12 |         |                 |            |               |                 |
|-------------|---------|-----------------|------------|---------------|-----------------|
| Bandwidth   | Channel | Frequency (MHz) | Modulation | 99% OBW (kHz) | -26dBcEBW (kHz) |
| 1.4MHz      | 23017   | 699.7           | 16QAM      | 1098          | 1278            |
|             |         |                 | QPSK       | 1092          | 1290            |
|             | 23095   | 707.5           | 16QAM      | 1092          | 1254            |
|             |         |                 | QPSK       | 1098          | 1278            |
|             | 23173   | 715.3           | 16QAM      | 1098          | 1320            |
|             |         |                 | QPSK       | 1098          | 1272            |
| 3MHz        | 23025   | 700.5           | 16QAM      | 2712          | 2940            |
|             |         |                 | QPSK       | 2712          | 2964            |
|             | 23095   | 707.5           | 16QAM      | 2724          | 2976            |
|             |         |                 | QPSK       | 2736          | 3000            |
|             | 23165   | 714.5           | 16QAM      | 2736          | 2964            |
|             |         |                 | QPSK       | 2736          | 3000            |
| 5MHz        | 23035   | 701.5           | 16QAM      | 4500          | 5000            |
|             |         |                 | QPSK       | 4500          | 5100            |
|             | 23095   | 707.5           | 16QAM      | 4540          | 4960            |
|             |         |                 | QPSK       | 4520          | 5140            |
|             | 23155   | 713.5           | 16QAM      | 4520          | 1980            |
|             |         |                 | QPSK       | 4520          | 5080            |
| 10MHz       | 23060   | 704.0           | 16QAM      | 9080          | 10280           |
|             |         |                 | QPSK       | 9080          | 10320           |
|             | 23095   | 707.5           | 16QAM      | 9120          | 10200           |
|             |         |                 | QPSK       | 9160          | 10320           |
|             | 23130   | 711.0           | 16QAM      | 9080          | 10120           |
|             |         |                 | QPSK       | 9080          | 10280           |

Test plot as follows:  
LTE Band 2 part:



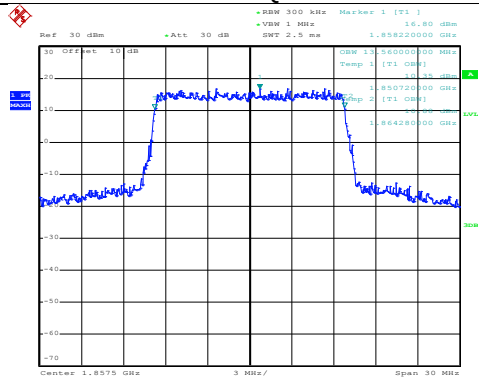






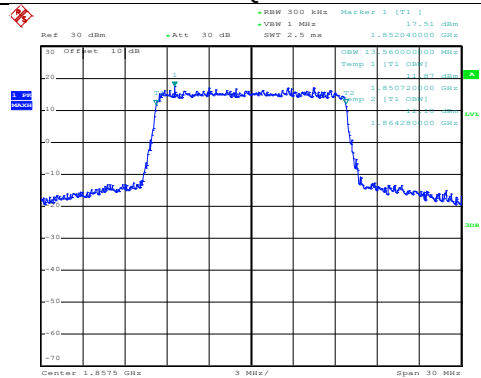
LTE Band 2: 99% Occupancy bandwidth  
BW: 15MHz

16QAM



Date: 17.OCT.2018 23:46:25

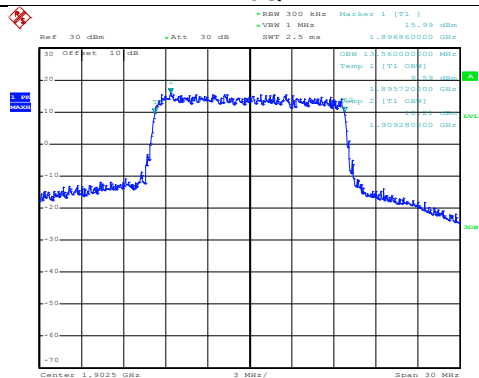
QPSK



Date: 17.OCT.2018 23:46:20

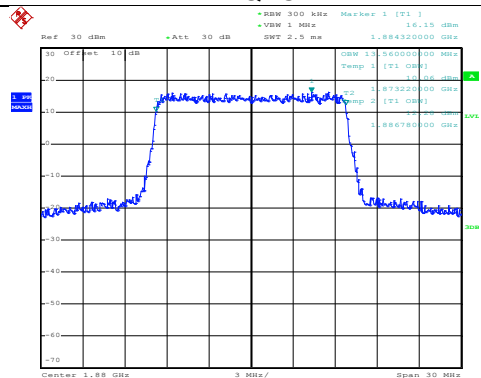
Lowest channel

16QAM



Date: 17.OCT.2018 23:47:36

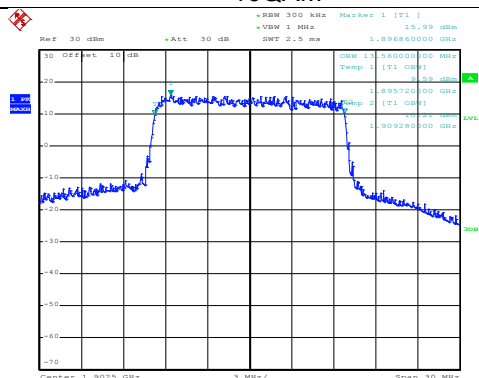
QPSK



Date: 17.OCT.2018 23:46:35

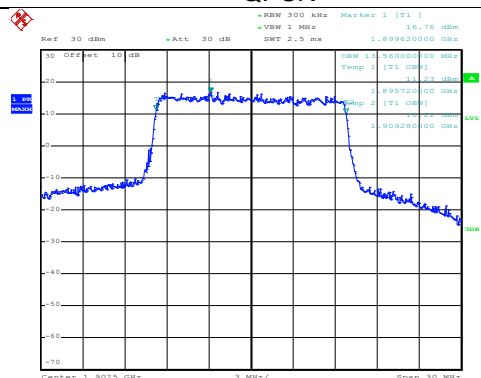
Middle channel

16QAM



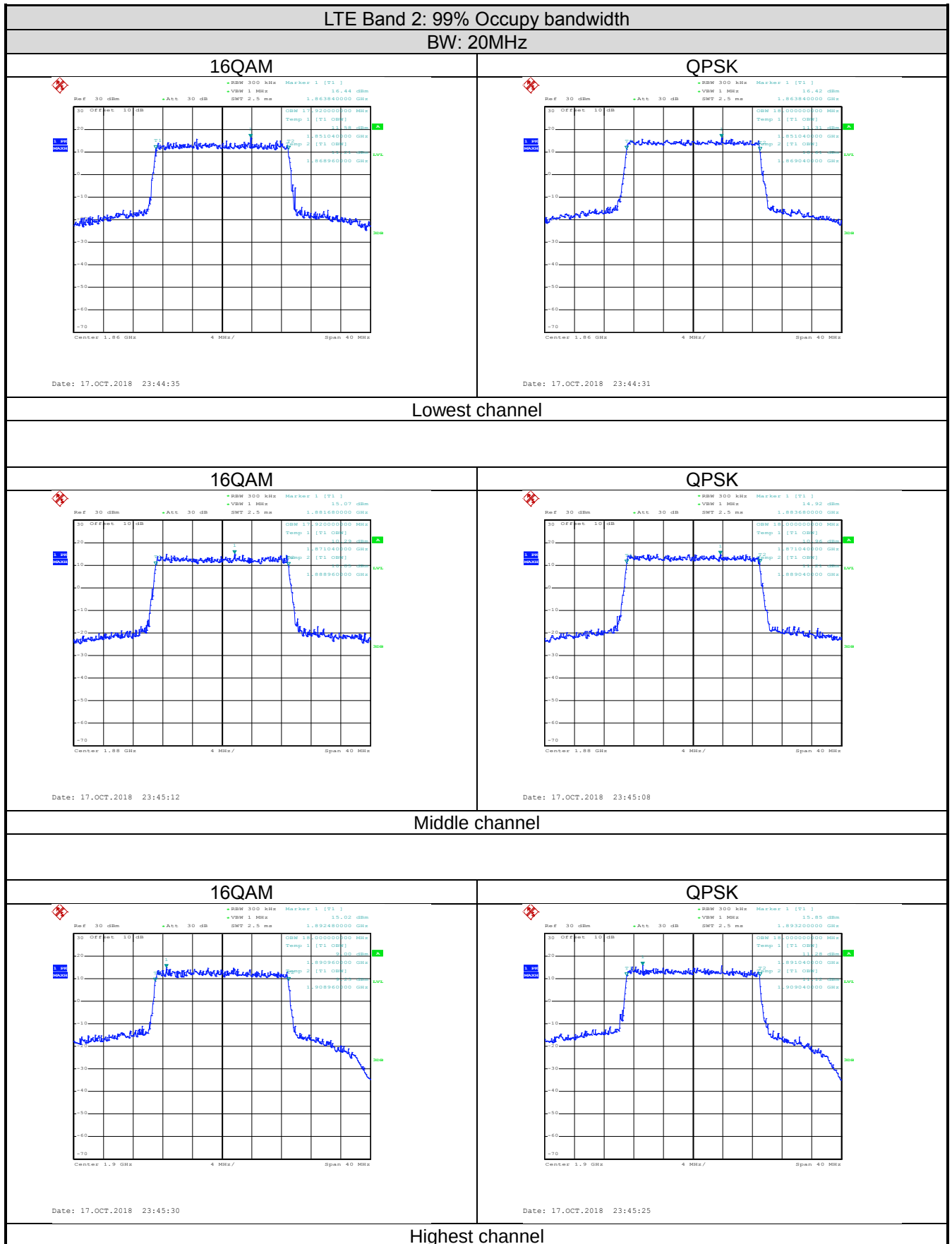
Date: 17.OCT.2018 23:47:36

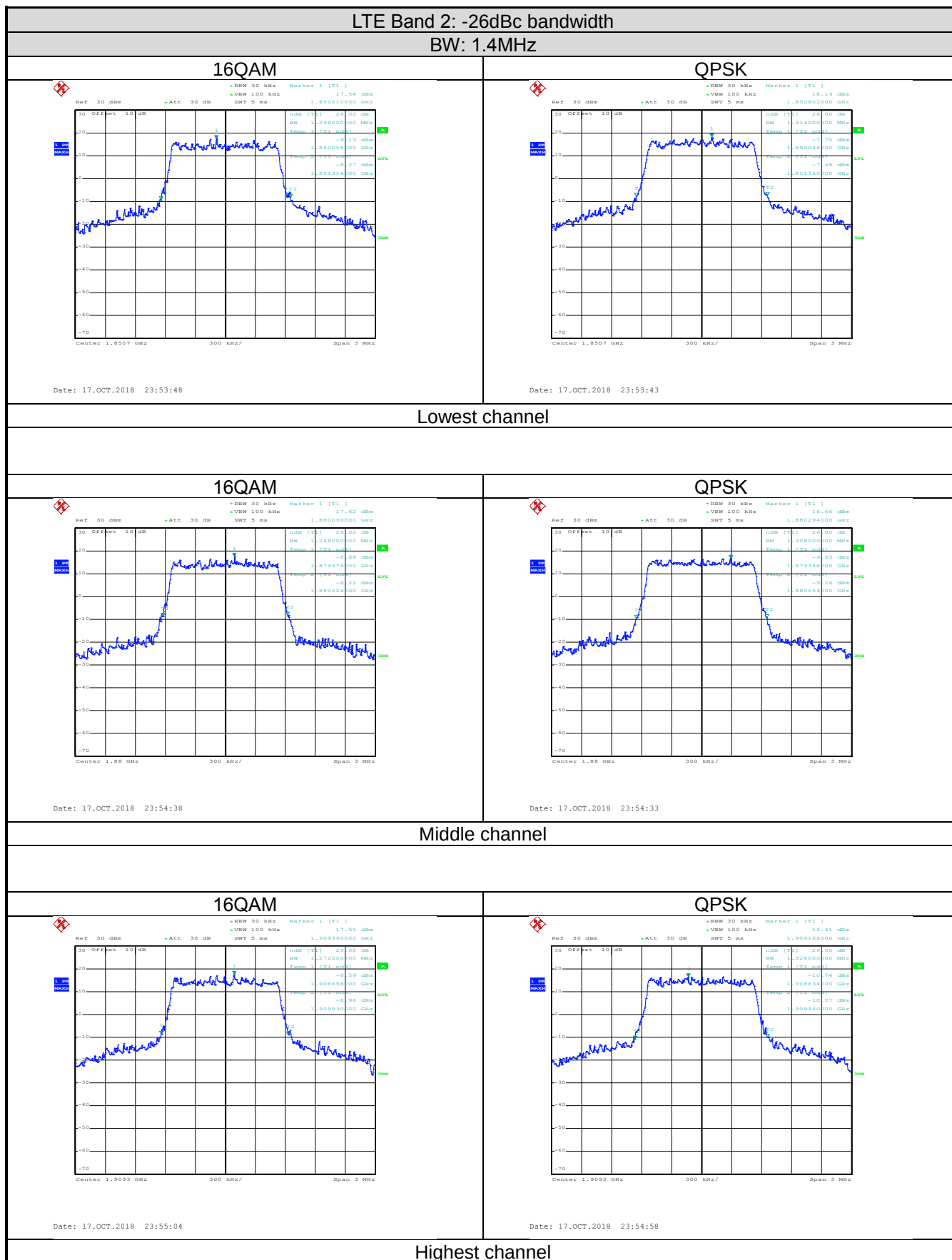
QPSK



Date: 17.OCT.2018 23:47:32

Highest channel

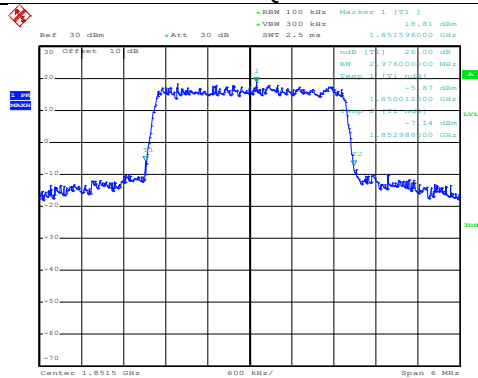




## LTE Band 2: -26dBc bandwidth

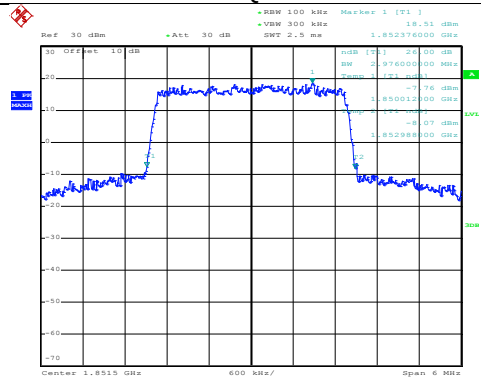
BW: 3MHz

## 16QAM



Date: 17.OCT.2018 23:52:02

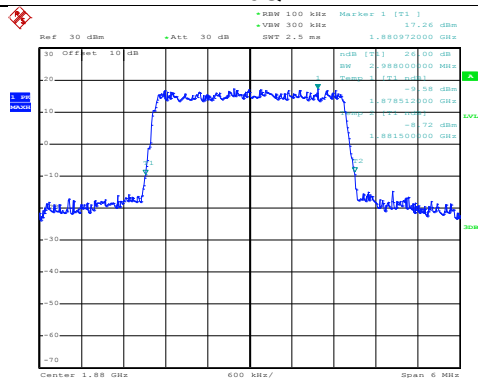
## QPSK



Date: 17.OCT.2018 23:51:57

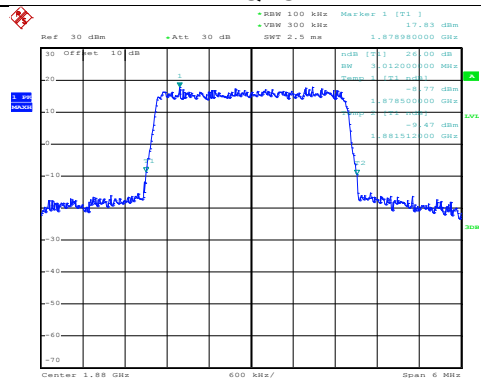
## Lowest channel

## 16QAM



Date: 17.OCT.2018 23:52:19

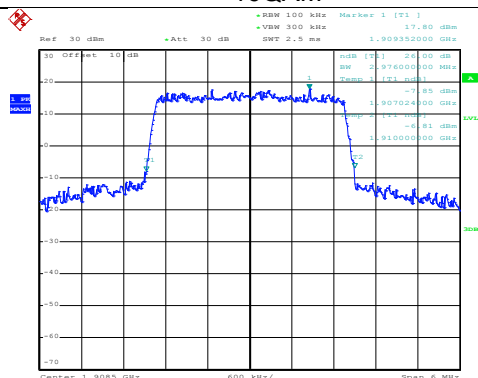
## QPSK



Date: 17.OCT.2018 23:52:14

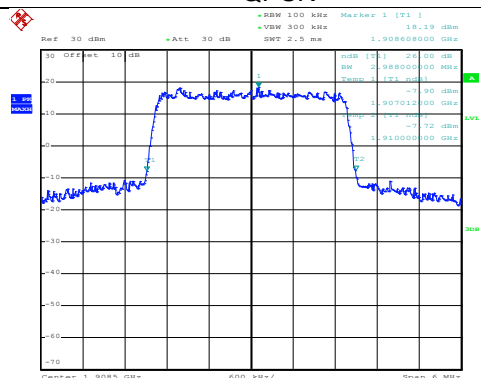
## Middle channel

## 16QAM



Date: 17.OCT.2018 23:53:08

## QPSK



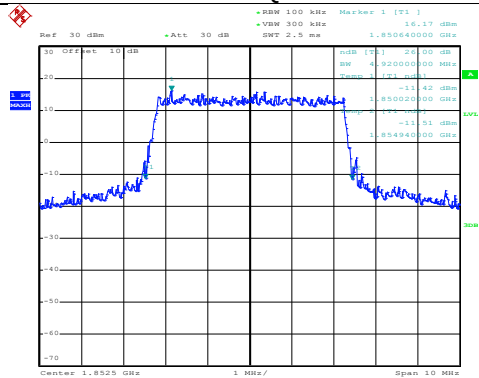
Date: 17.OCT.2018 23:53:03

## Highest channel

## LTE Band 2: -26dBc bandwidth

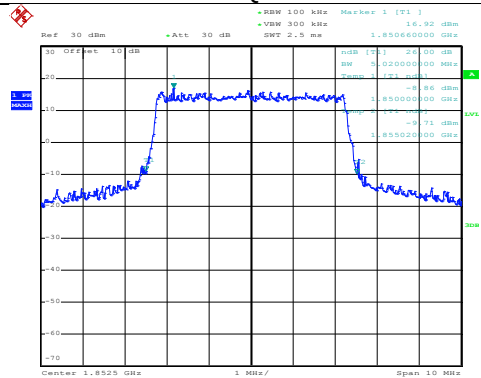
BW: 5MHz

## 16QAM



Date: 17.OCT.2018 23:49:52

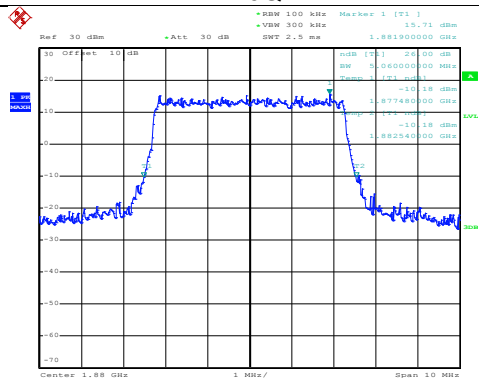
## QPSK



Date: 17.OCT.2018 23:49:48

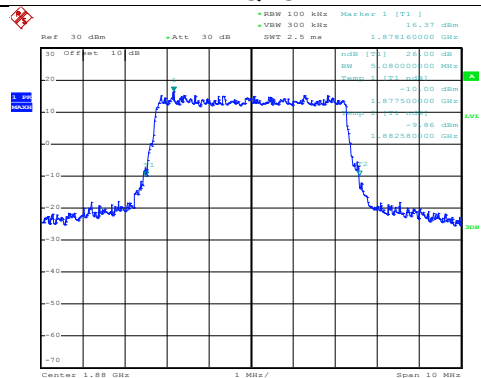
## Lowest channel

## 16QAM



Date: 17.OCT.2018 23:50:36

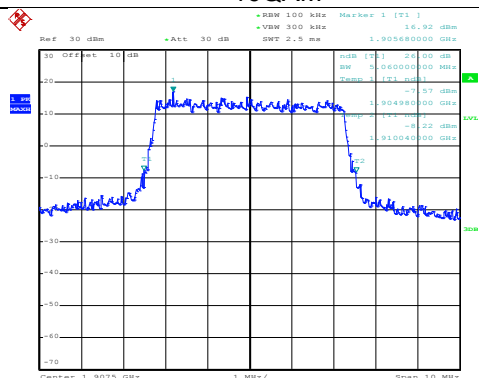
## QPSK



Date: 17.OCT.2018 23:50:30

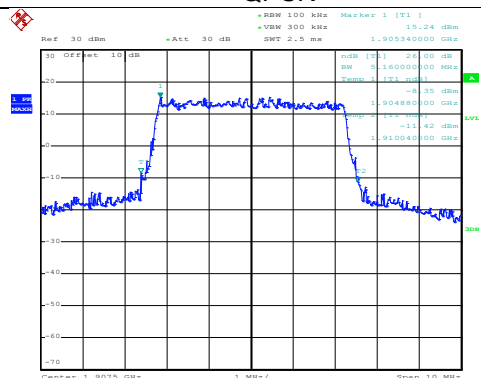
## Middle channel

## 16QAM



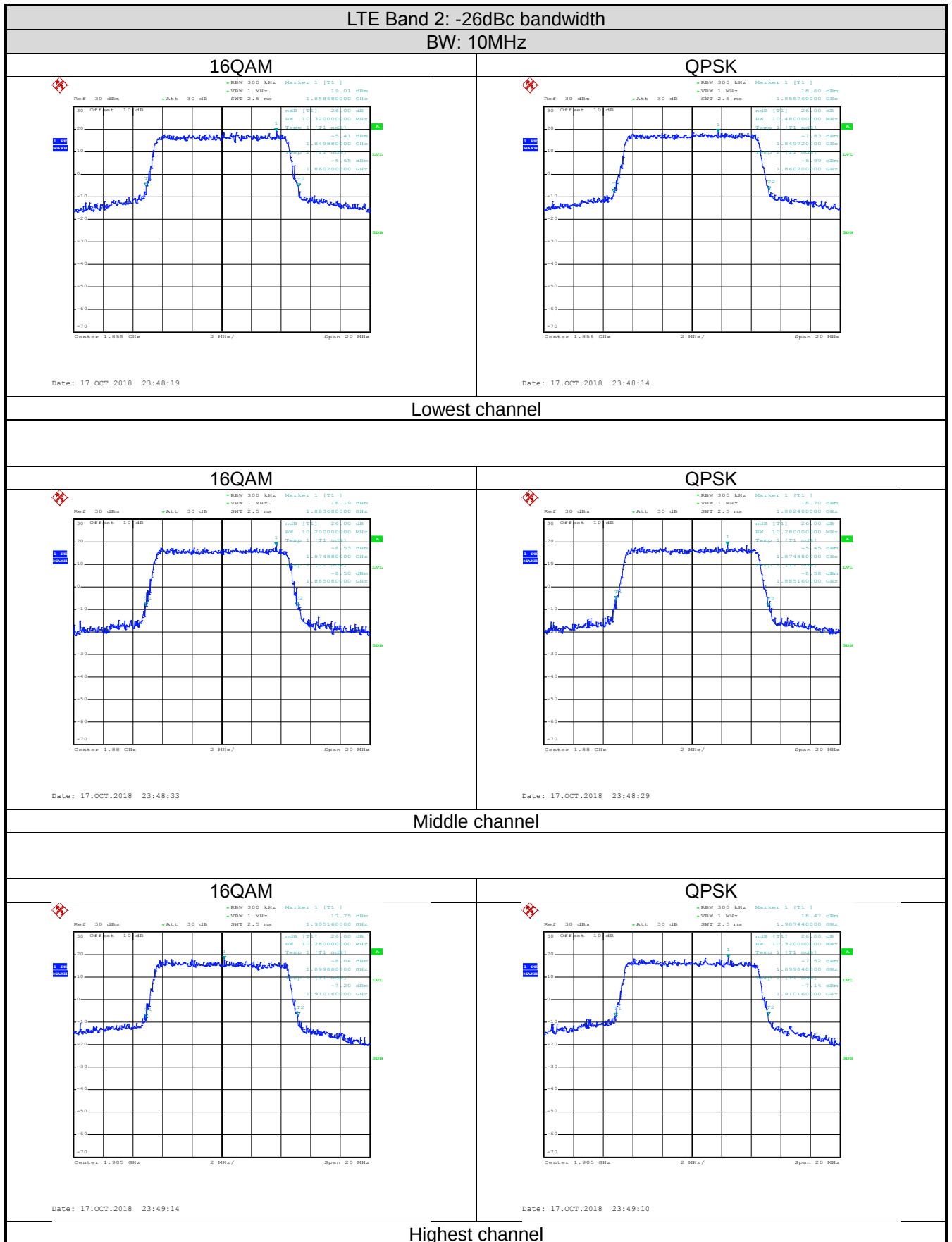
Date: 17.OCT.2018 23:50:58

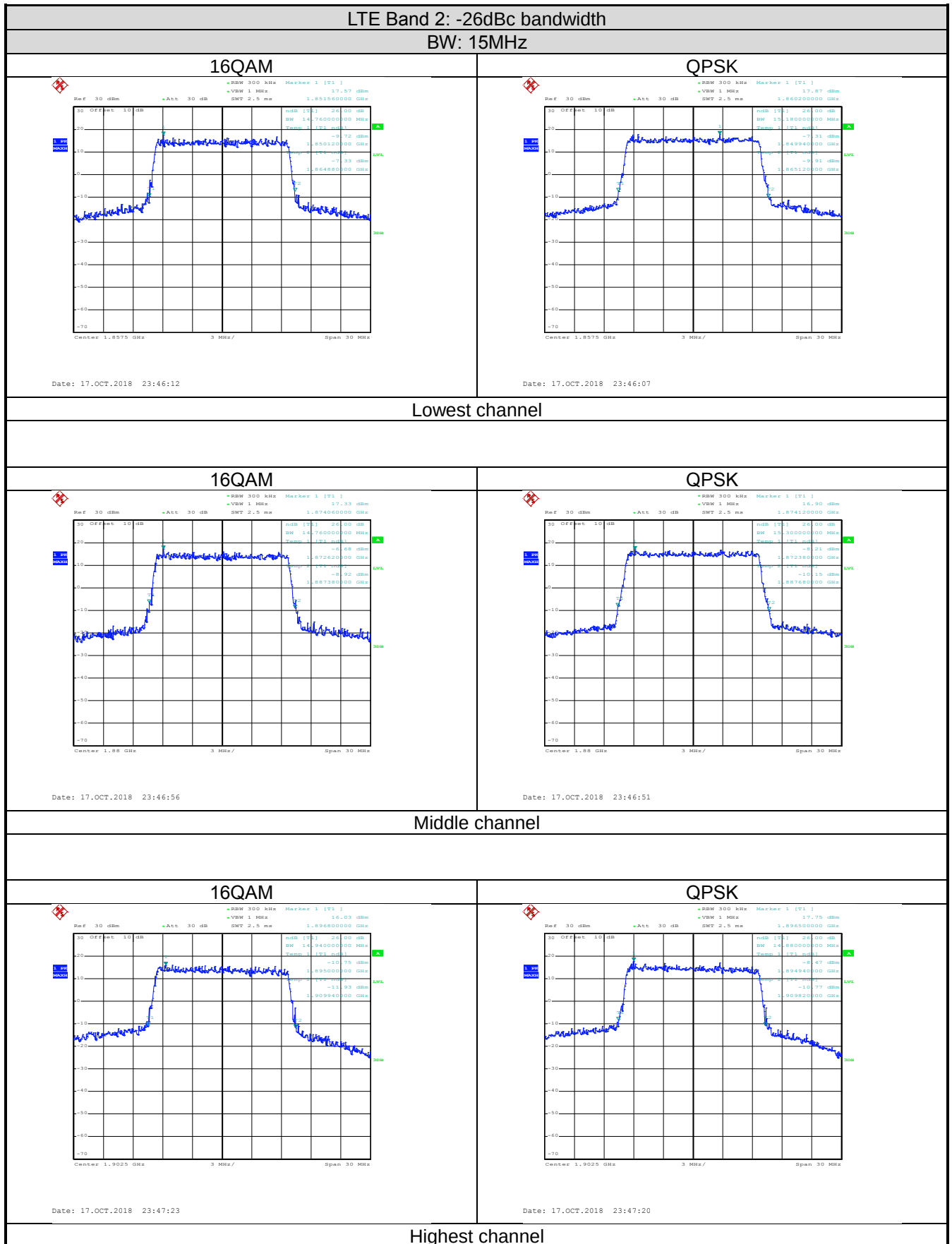
## QPSK



Date: 17.OCT.2018 23:50:53

## Highest channel

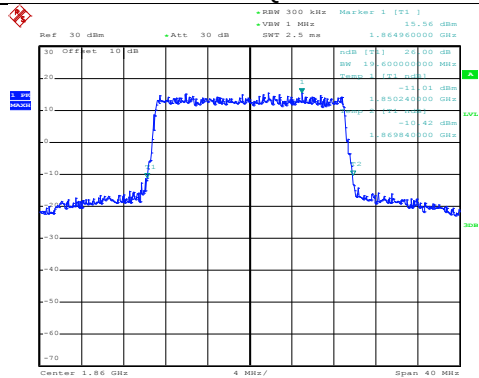




## LTE Band 2: -26dBc bandwidth

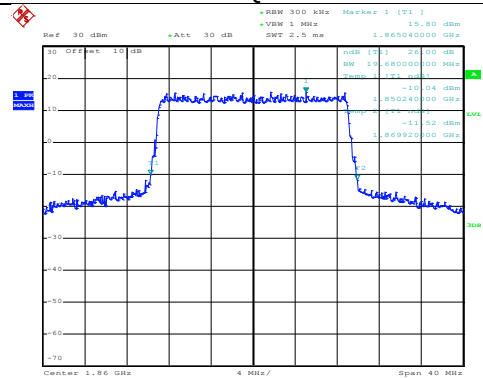
BW: 20MHz

## 16QAM



Date: 17.OCT.2018 23:44:47

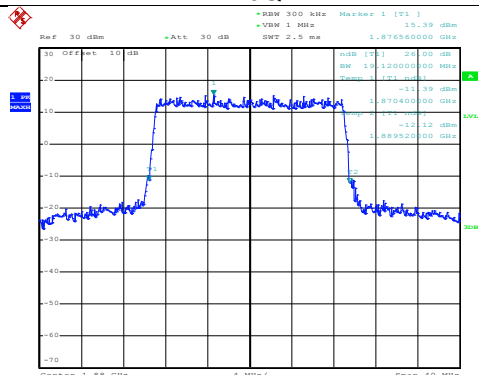
## QPSK



Date: 17.OCT.2018 23:44:43

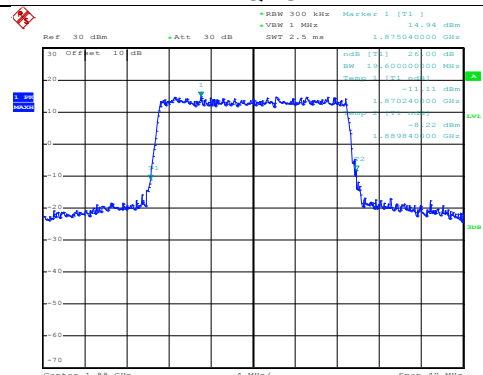
## Lowest channel

## 16QAM



Date: 17.OCT.2018 23:45:01

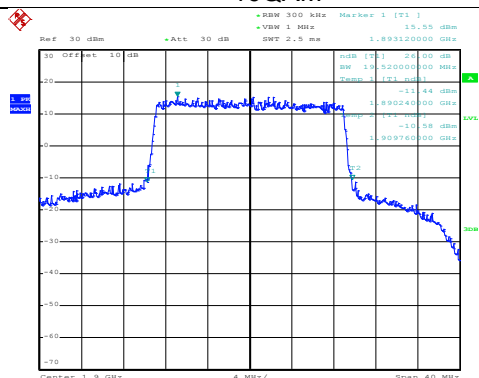
## QPSK



Date: 17.OCT.2018 23:44:57

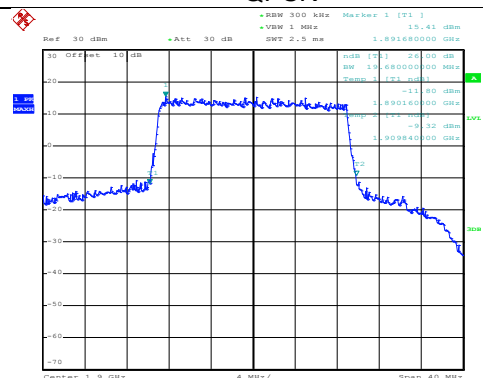
## Middle channel

## 16QAM



Date: 17.OCT.2018 23:45:42

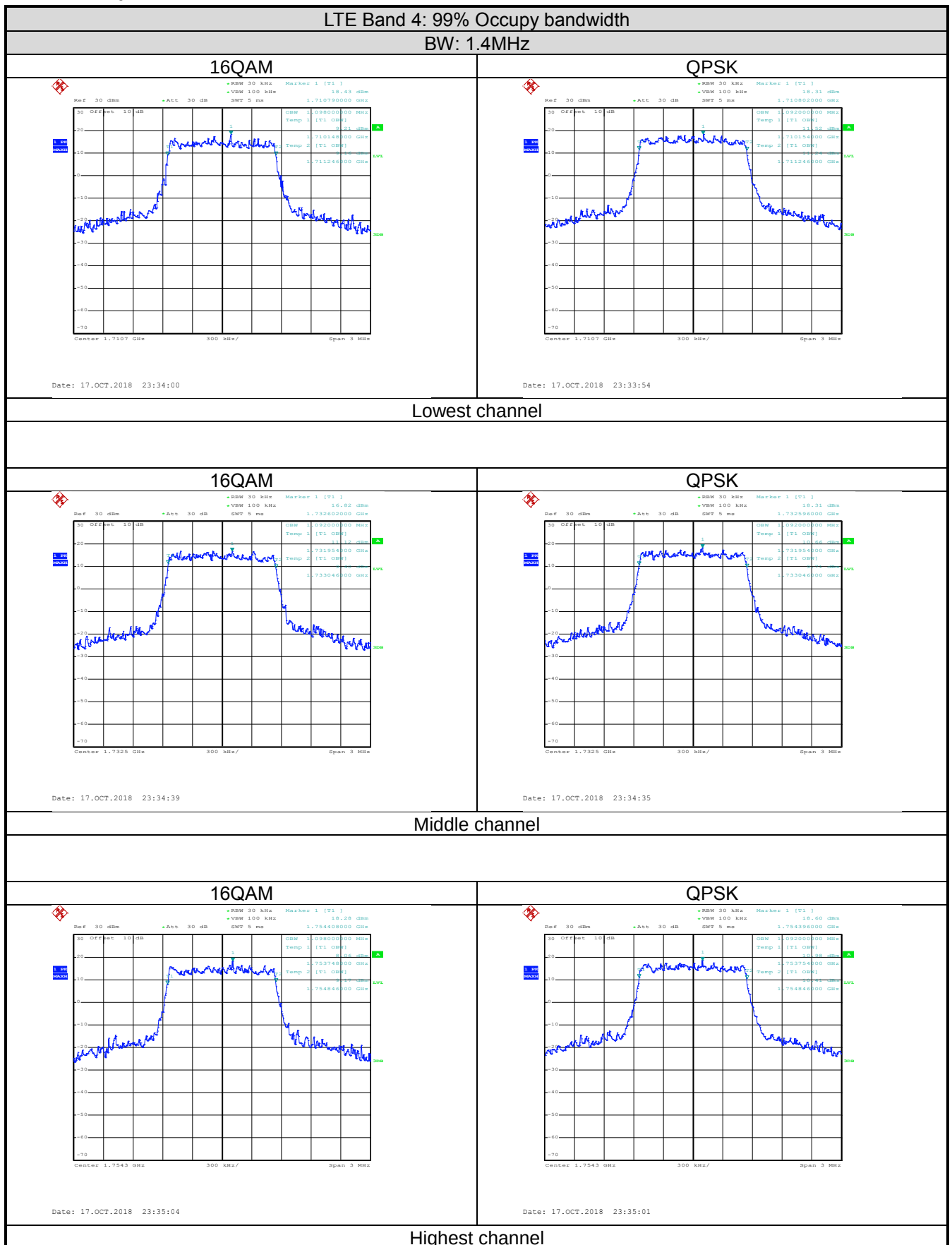
## QPSK



Date: 17.OCT.2018 23:45:37

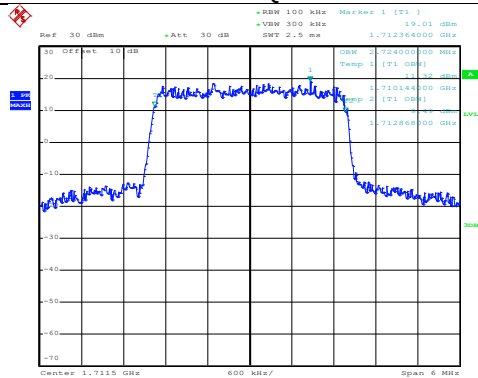
## Highest channel

## LTE Band 4 part:



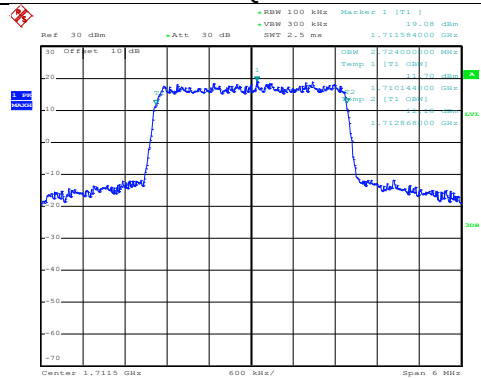
LTE Band 4: 99% Occupancy bandwidth  
BW: 3MHz

## 16QAM



Date: 17.OCT.2018 23:36:02

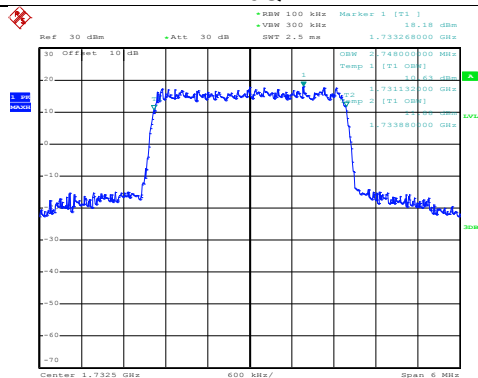
## QPSK



Date: 17.OCT.2018 23:35:58

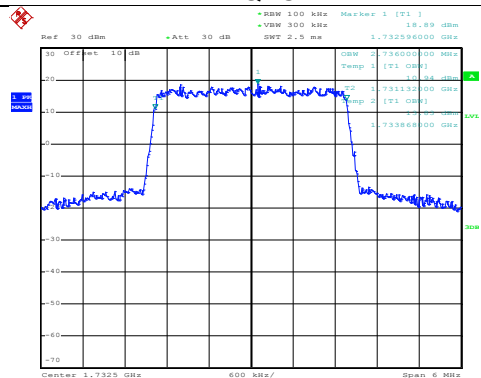
## Lowest channel

## 16QAM



Date: 17.OCT.2018 23:36:17

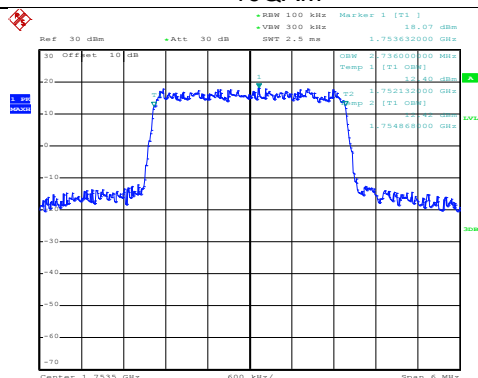
## QPSK



Date: 17.OCT.2018 23:36:14

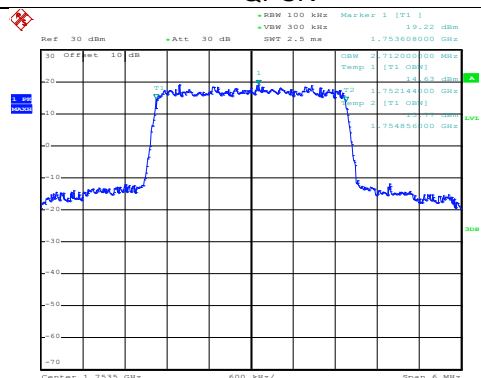
## Middle channel

## 16QAM



Date: 17.OCT.2018 23:37:00

## QPSK

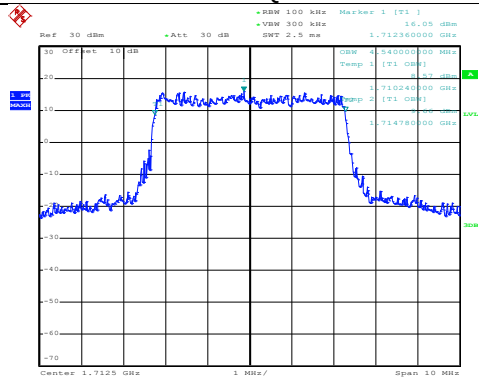


Date: 17.OCT.2018 23:36:56

## Highest channel

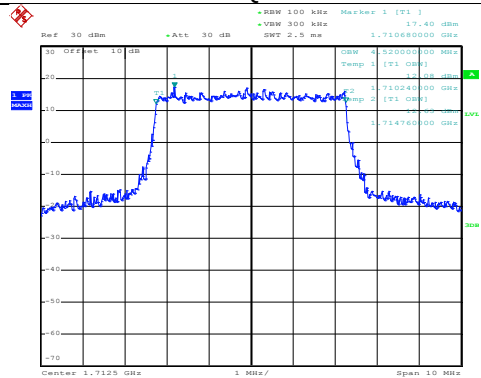
LTE Band 4: 99% Occupancy bandwidth  
BW: 5MHz

16QAM



Date: 17.OCT.2018 23:37:31

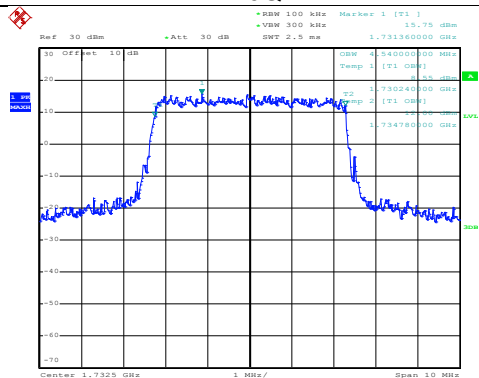
QPSK



Date: 17.OCT.2018 23:37:27

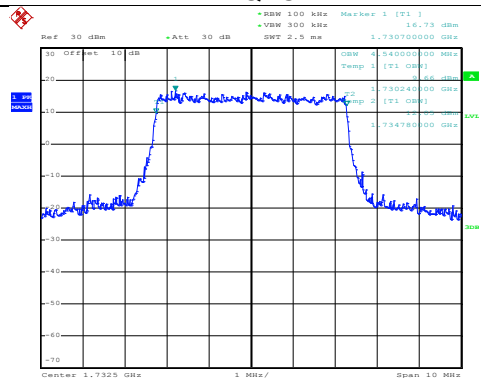
Lowest channel

16QAM



Date: 17.OCT.2018 23:38:12

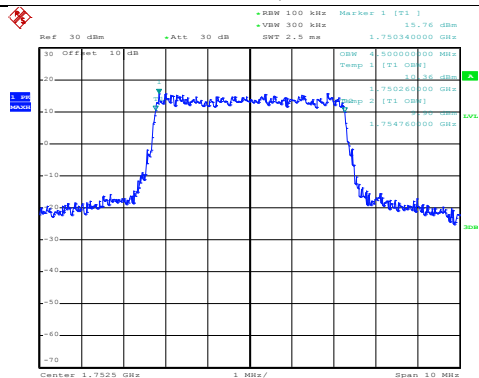
QPSK



Date: 17.OCT.2018 23:38:08

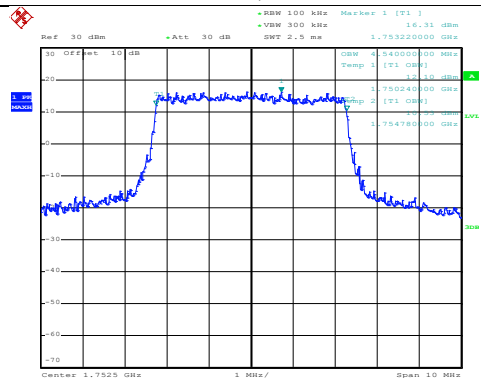
Middle channel

16QAM



Date: 17.OCT.2018 23:38:26

QPSK

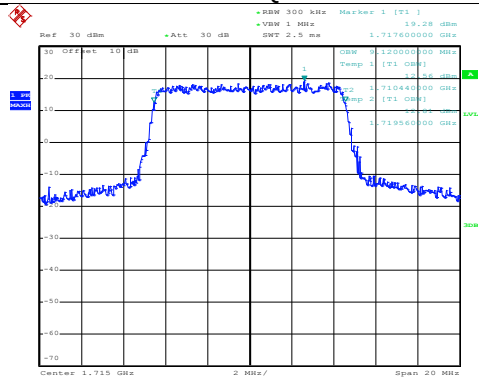


Date: 17.OCT.2018 23:38:22

Highest channel

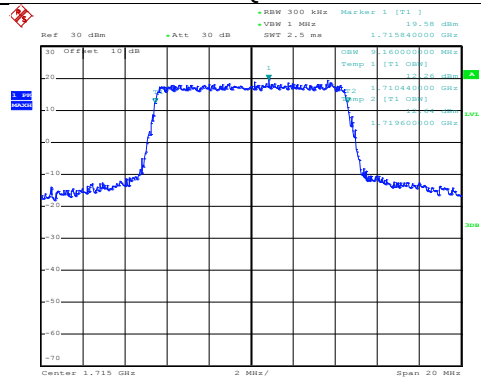
LTE Band 4: 99% Occupancy bandwidth  
BW: 10MHz

16QAM



Date: 17.OCT.2018 23:39:34

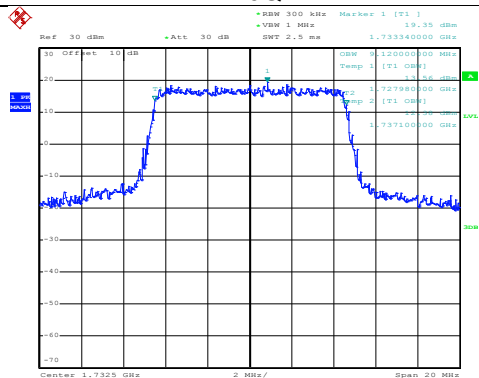
QPSK



Date: 17.OCT.2018 23:39:30

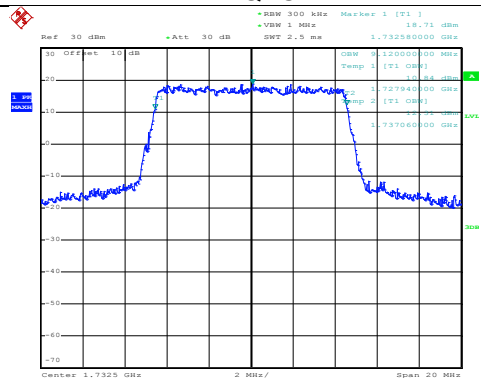
Lowest channel

16QAM



Date: 17.OCT.2018 23:39:49

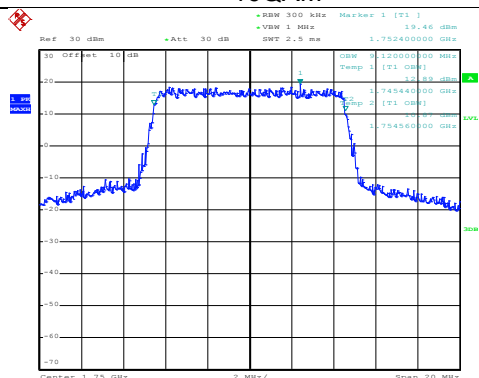
QPSK



Date: 17.OCT.2018 23:39:45

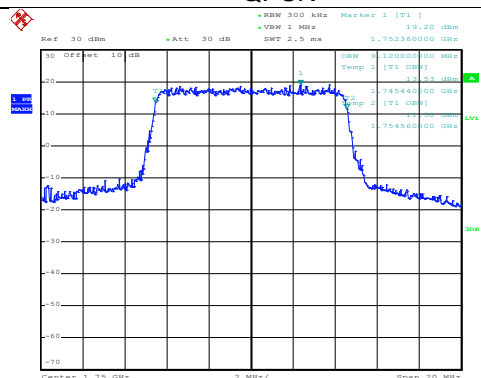
Middle channel

16QAM



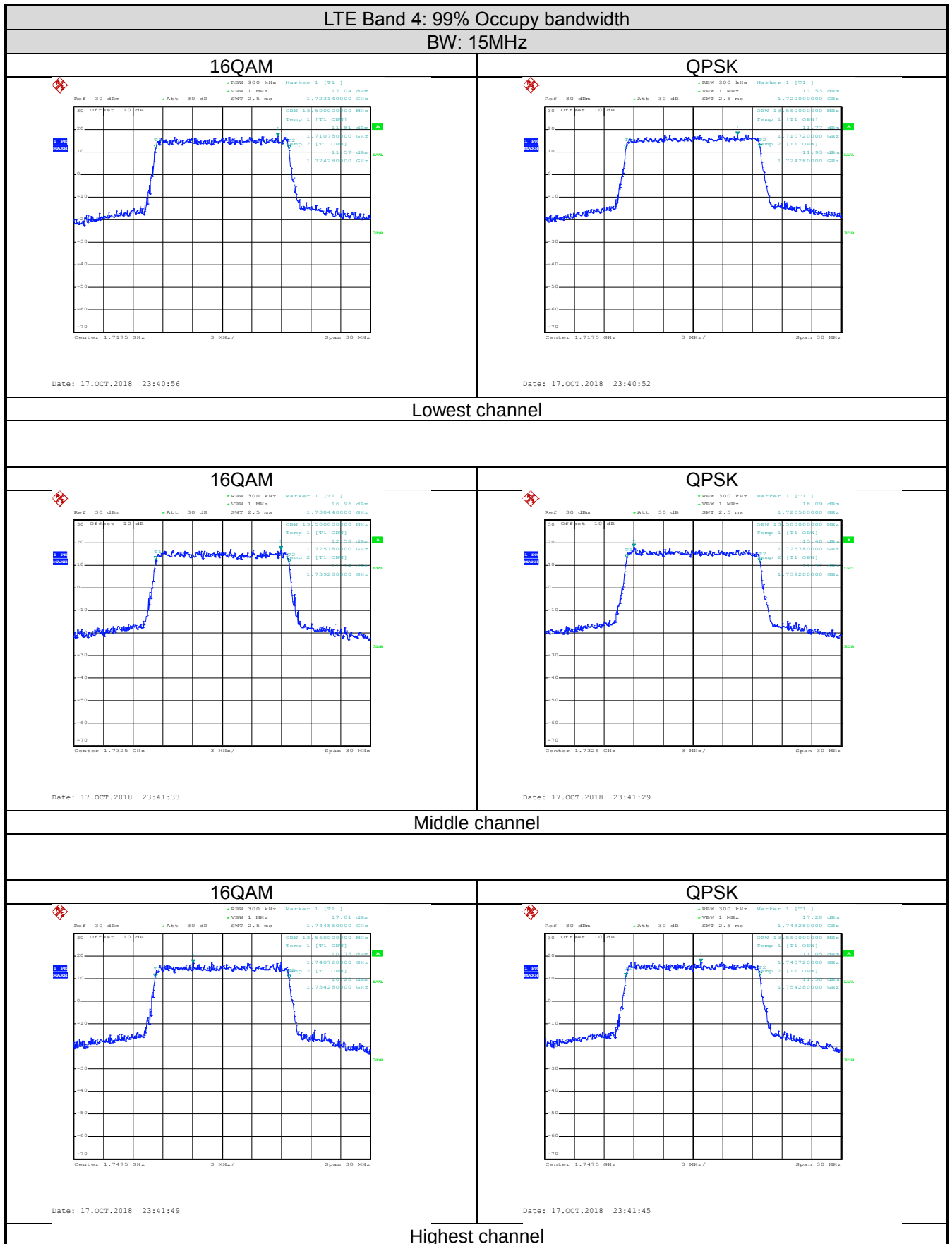
Date: 17.OCT.2018 23:40:26

QPSK



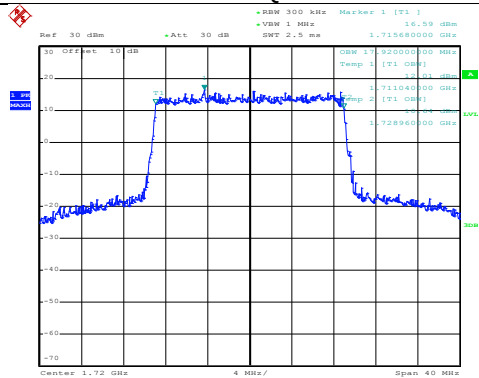
Date: 17.OCT.2018 23:40:22

Highest channel



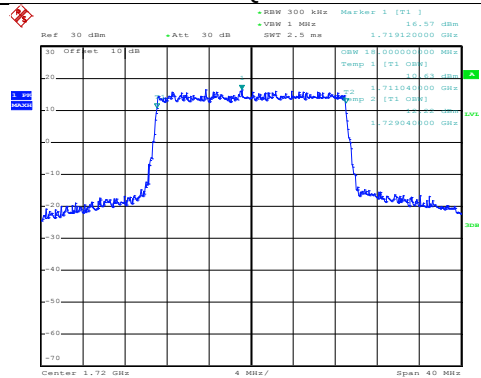
LTE Band 4: 99% Occupancy bandwidth  
BW: 20MHz

16QAM



Date: 17.OCT.2018 23:42:46

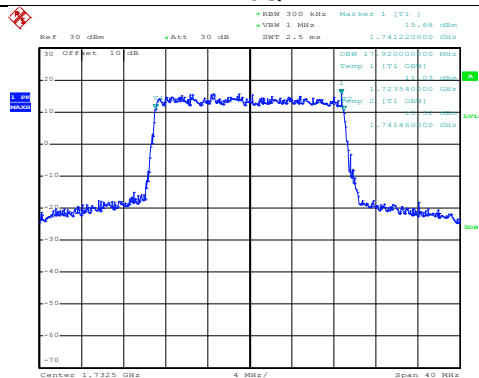
QPSK



Date: 17.OCT.2018 23:42:41

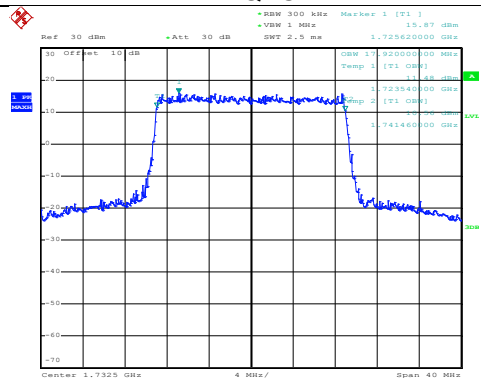
Lowest channel

16QAM



Date: 17.OCT.2018 23:43:01

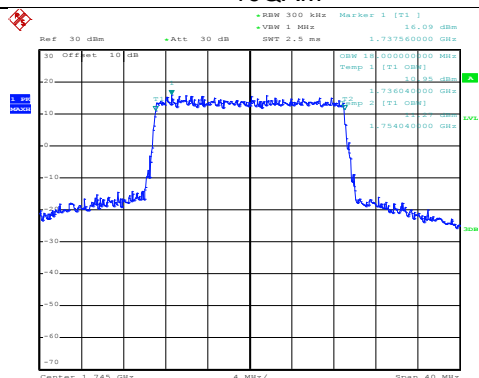
QPSK



Date: 17.OCT.2018 23:42:56

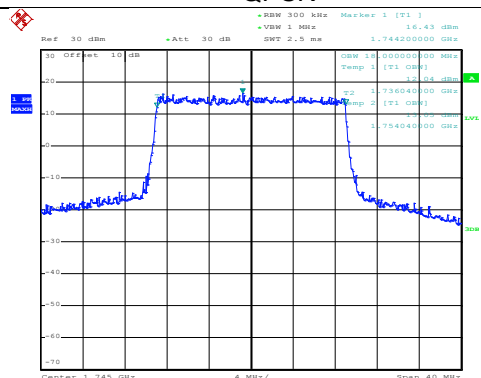
Middle channel

16QAM



Date: 17.OCT.2018 23:43:51

QPSK



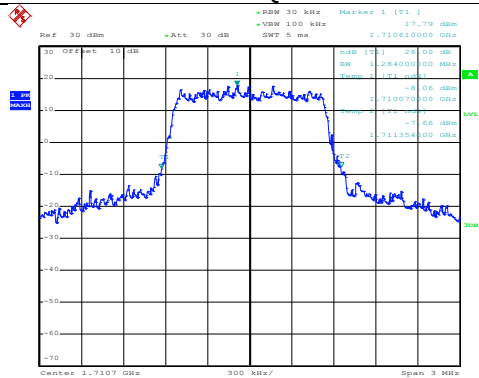
Date: 17.OCT.2018 23:43:46

Highest channel

## LTE Band 4: -26dBc bandwidth

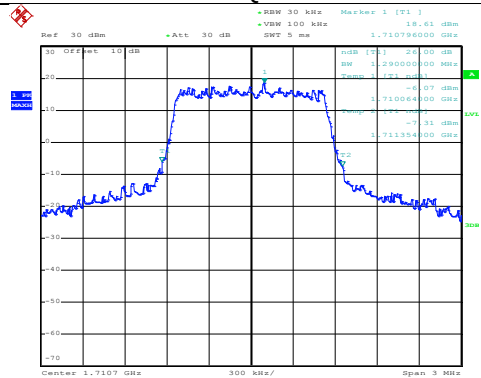
BW: 1.4MHz

## 16QAM



Date: 17.OCT.2018 23:34:11

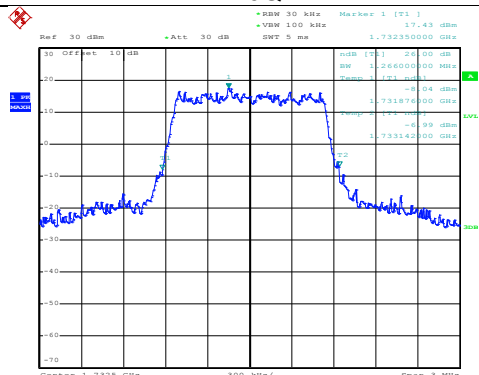
## QPSK



Date: 17.OCT.2018 23:34:07

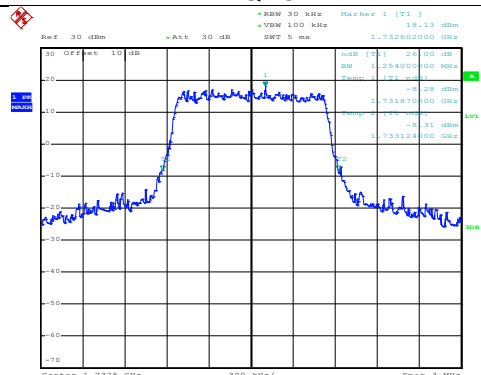
## Lowest channel

## 16QAM



Date: 17.OCT.2018 23:34:27

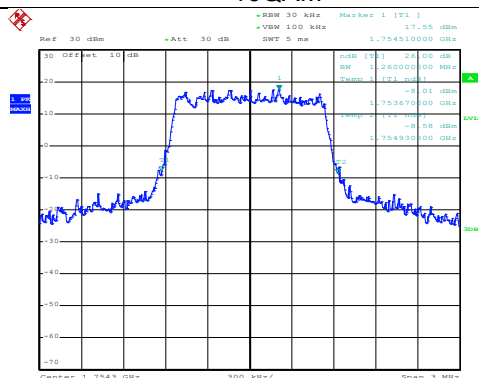
## QPSK



Date: 17.OCT.2018 23:34:23

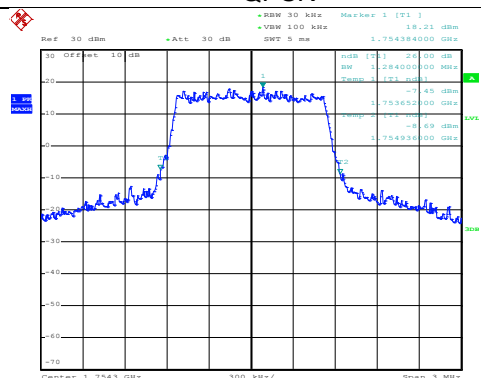
## Middle channel

## 16QAM



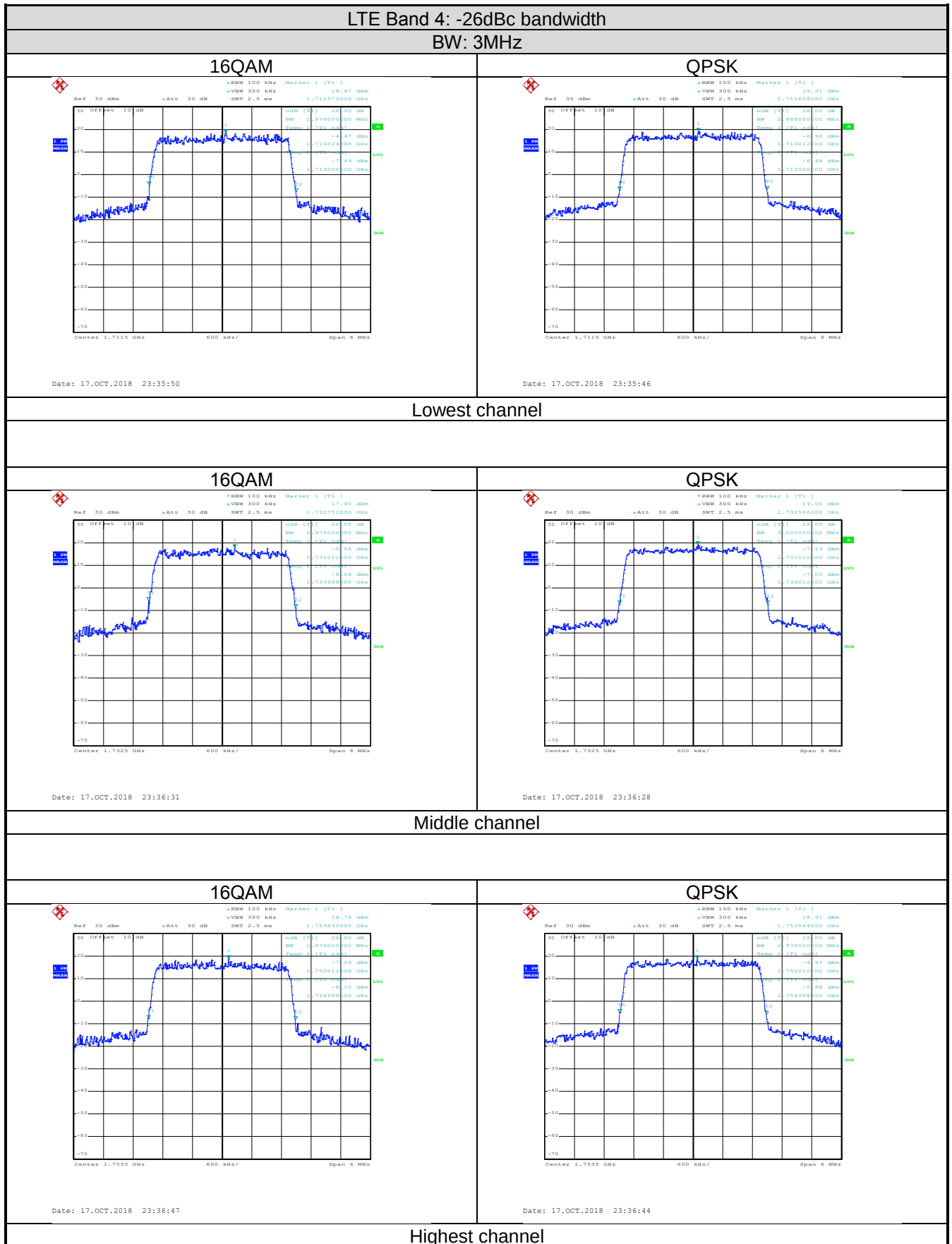
Date: 17.OCT.2018 23:35:15

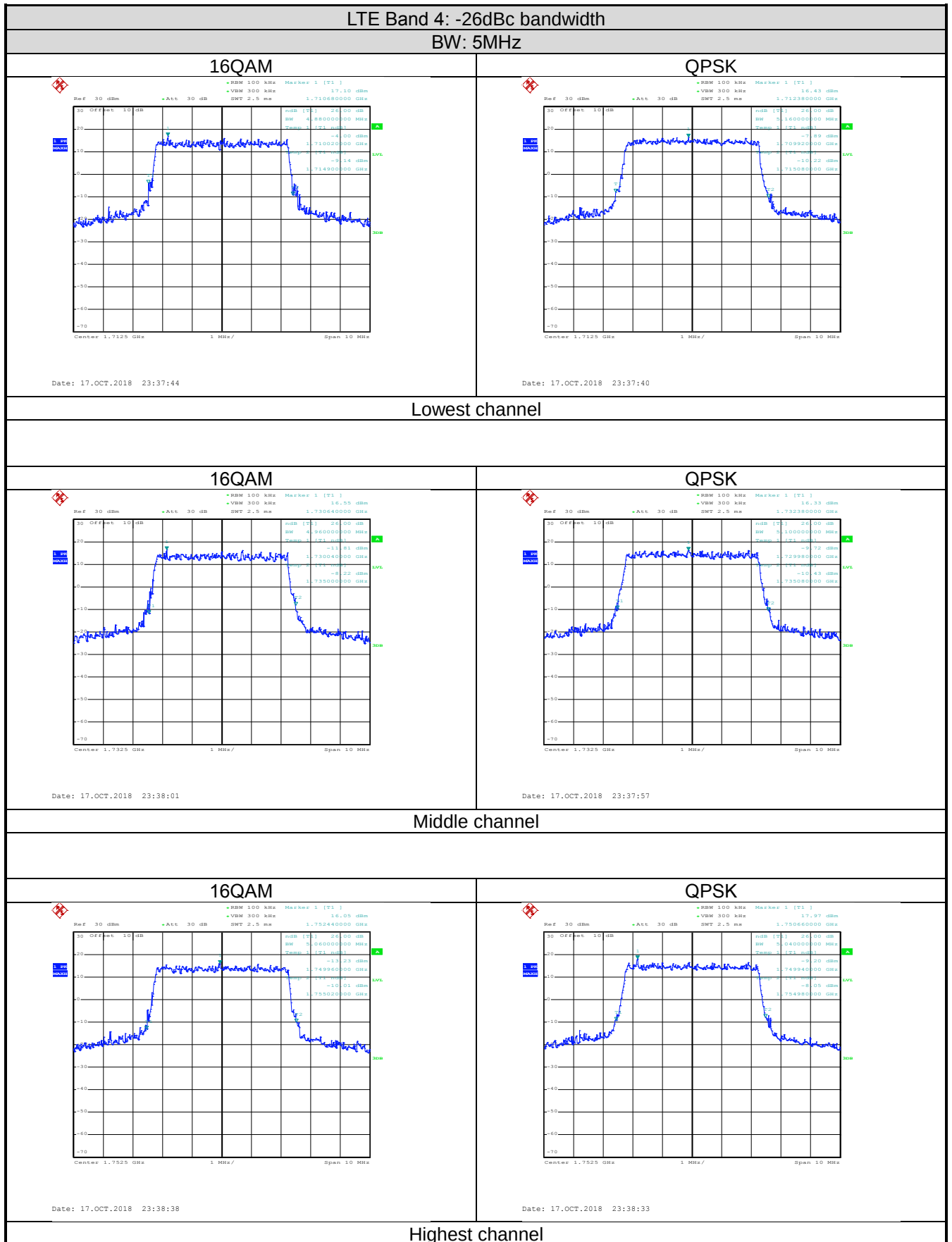
## QPSK

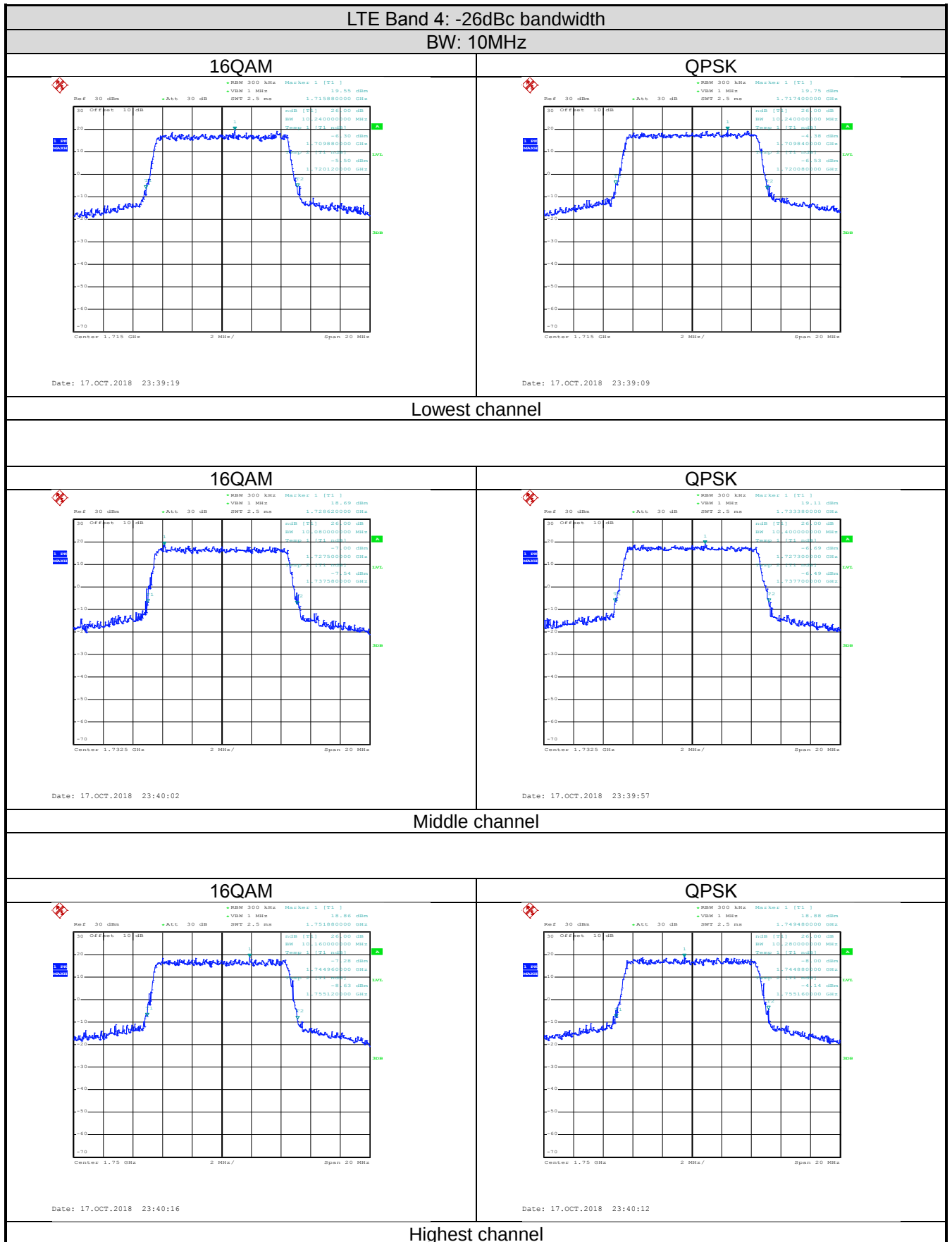


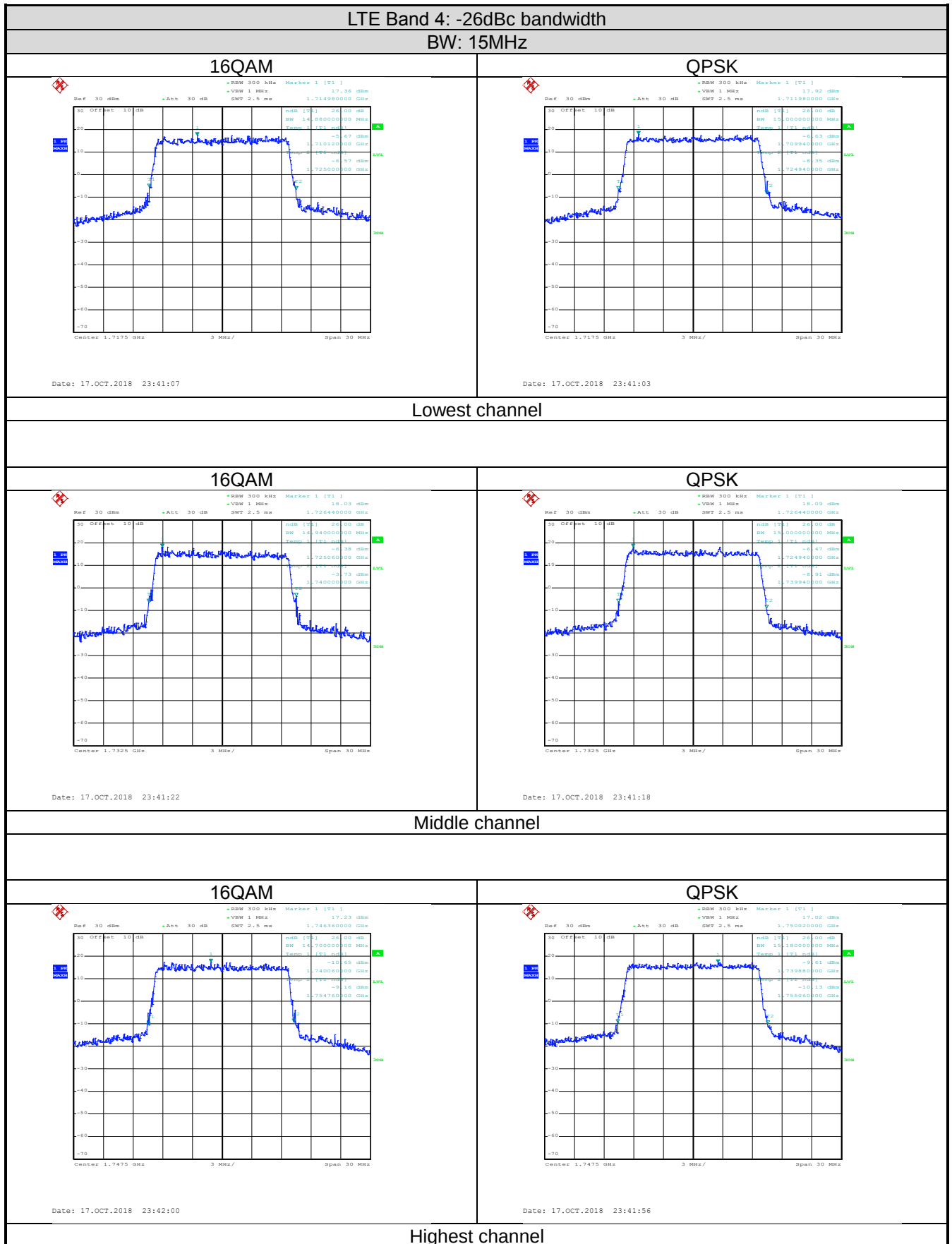
Date: 17.OCT.2018 23:35:11

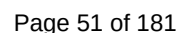
## Highest channel



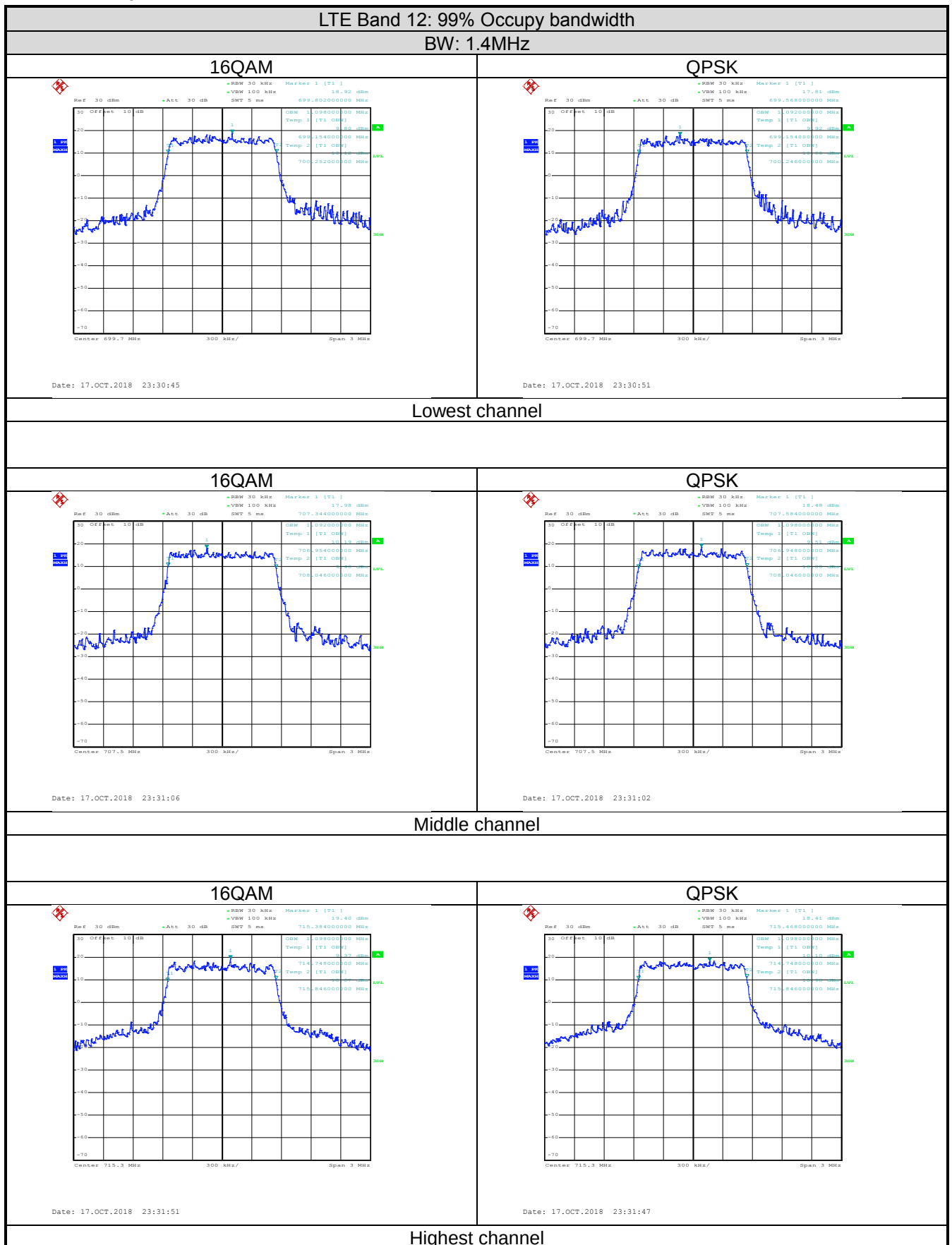


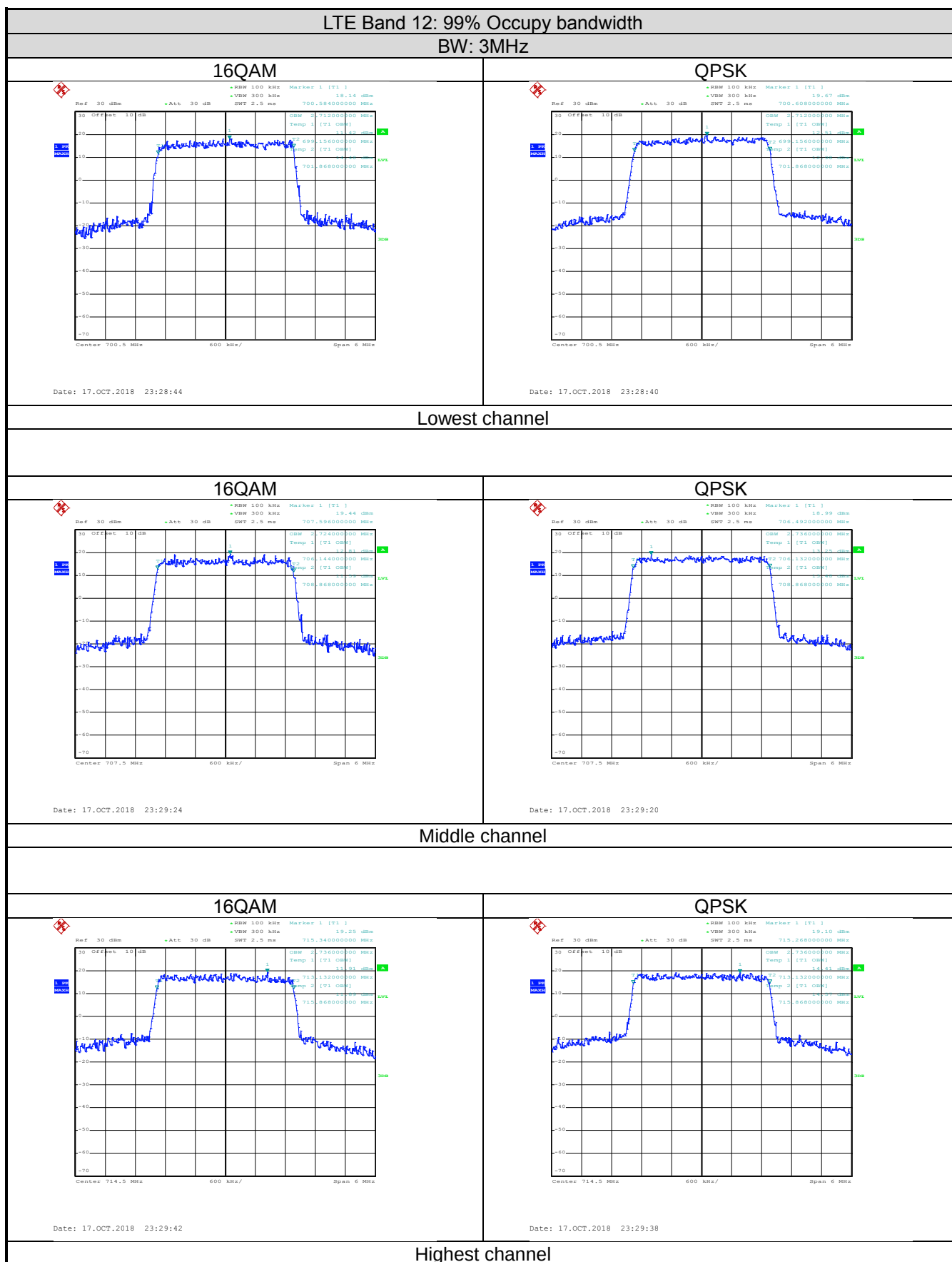






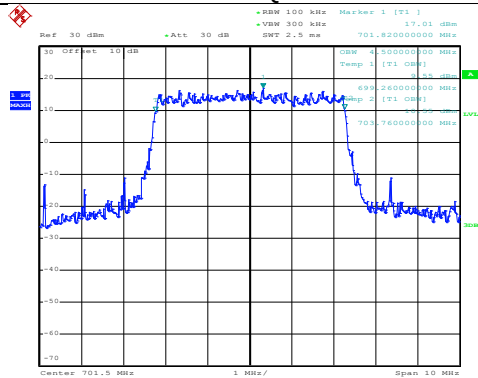
## LTE Band 12 part:





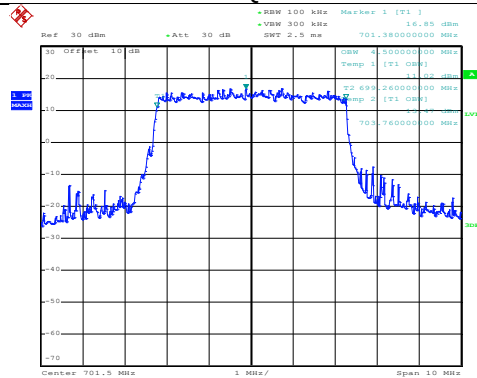
LTE Band 12: 99% Occupy bandwidth  
BW: 5MHz

16QAM



Date: 17.OCT.2018 23:26:48

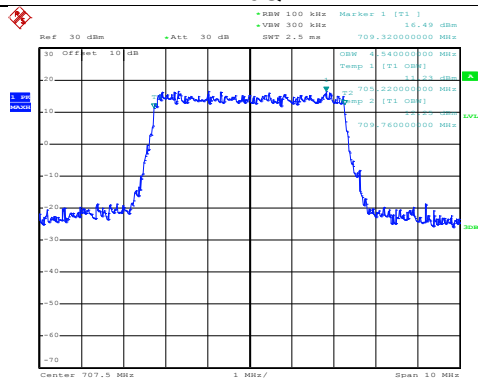
QPSK



Date: 17.OCT.2018 23:26:43

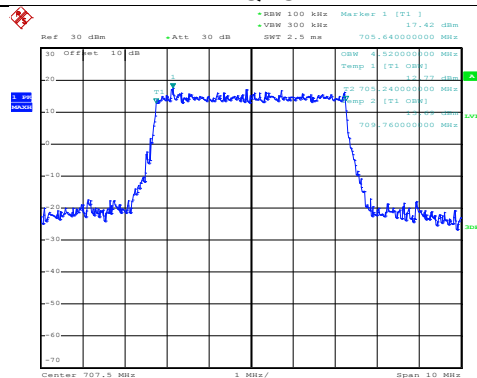
Lowest channel

16QAM



Date: 17.OCT.2018 23:27:13

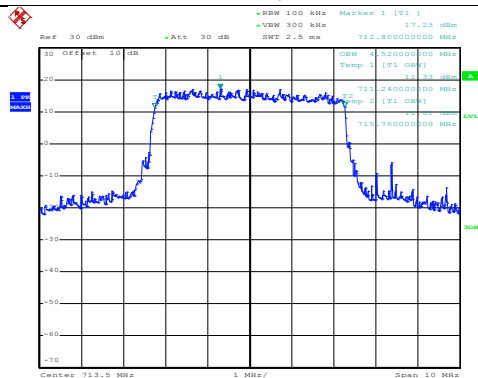
QPSK



Date: 17.OCT.2018 23:27:08

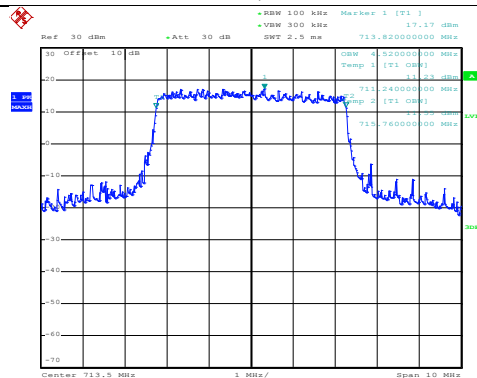
Middle channel

16QAM



Date: 17.OCT.2018 23:28:00

QPSK

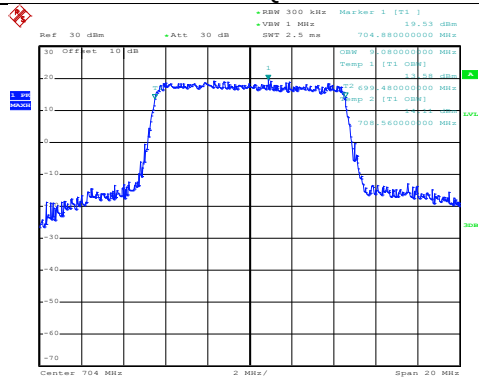


Date: 17.OCT.2018 23:27:51

Highest channel

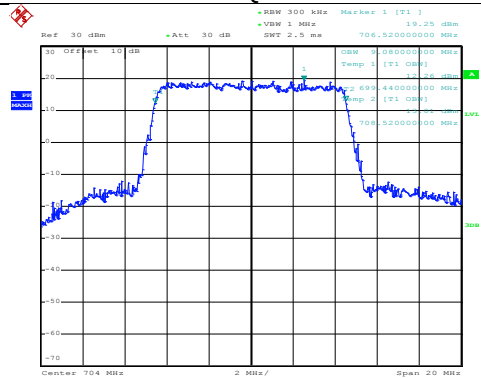
LTE Band 12: 99% Occupy bandwidth  
BW: 10MHz

16QAM



Date: 17.OCT.2018 23:25:30

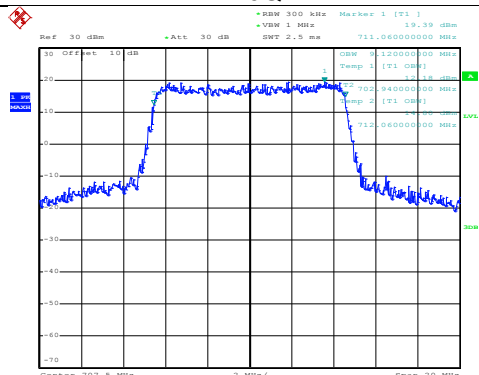
QPSK



Date: 17.OCT.2018 23:25:24

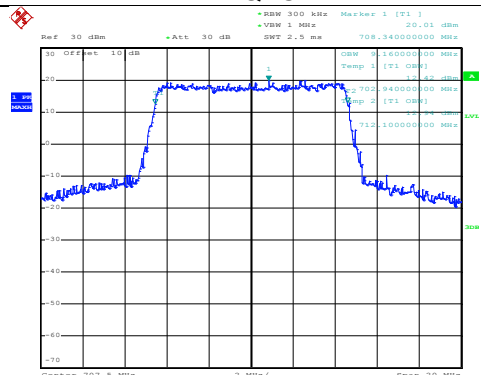
Lowest channel

16QAM



Date: 17.OCT.2018 23:25:11

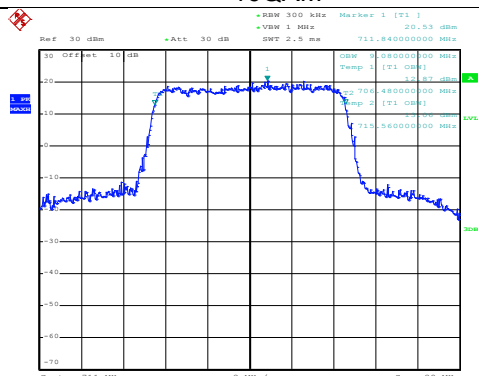
QPSK



Date: 17.OCT.2018 23:25:07

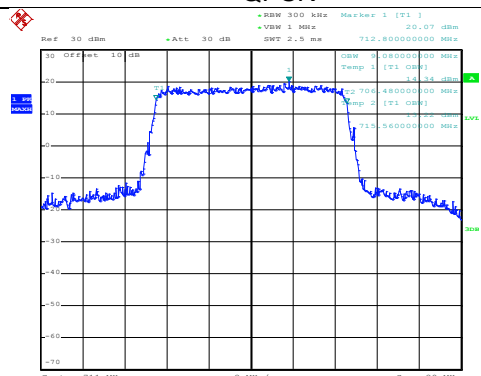
Middle channel

16QAM



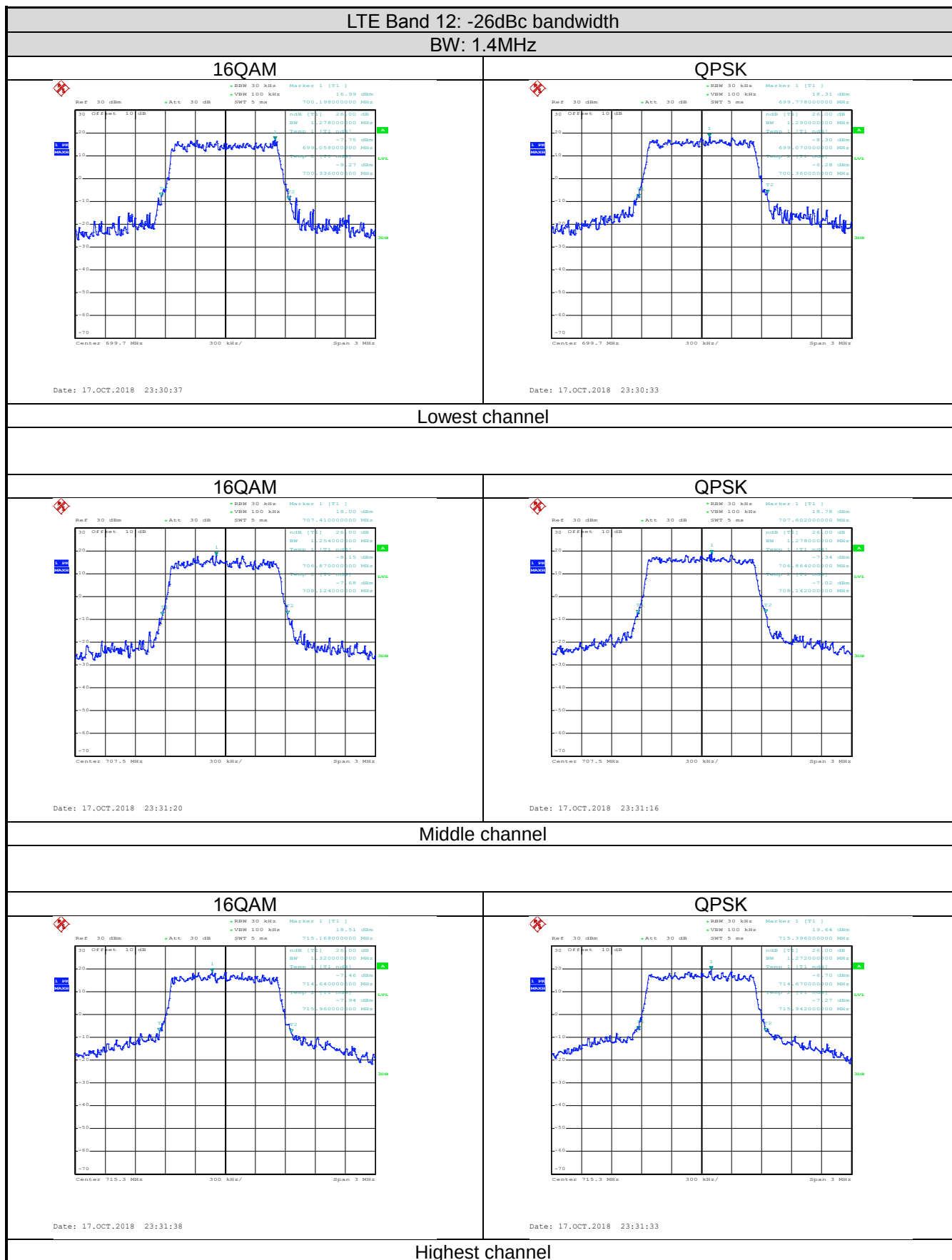
Date: 17.OCT.2018 23:24:14

QPSK



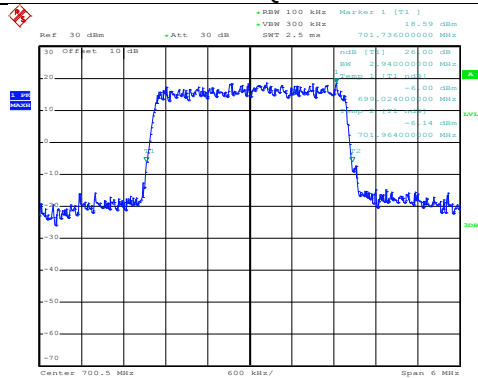
Date: 17.OCT.2018 23:24:29

Highest channel



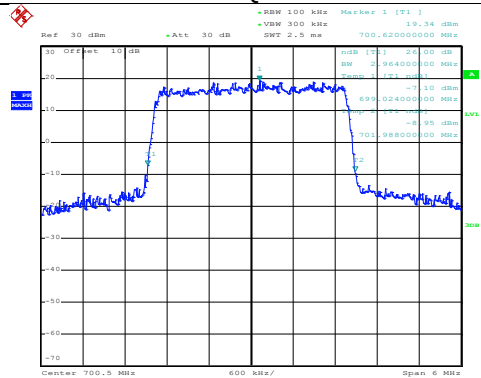
LTE Band 12: -26dBc bandwidth  
BW: 3MHz

## 16QAM



Date: 17.OCT.2018 23:28:55

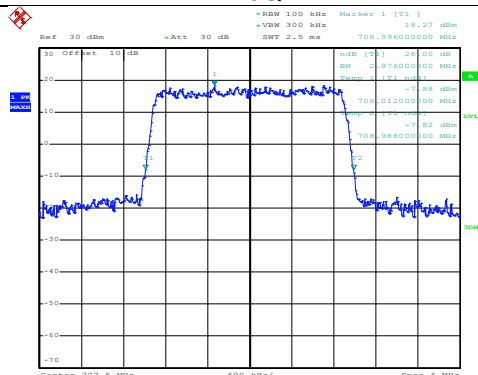
## QPSK



Date: 17.OCT.2018 23:28:51

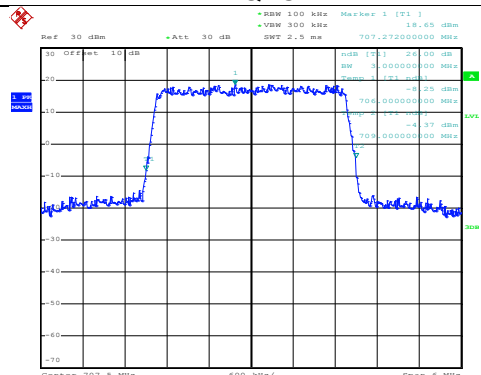
## Lowest channel

## 16QAM



Date: 17.OCT.2018 23:29:12

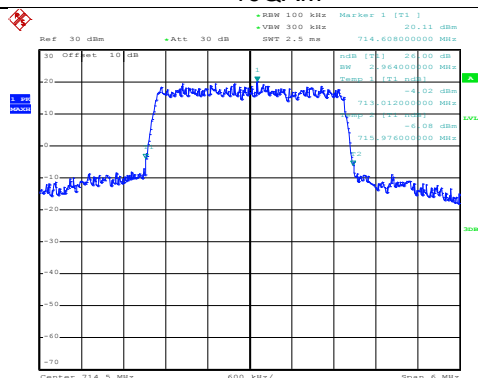
## QPSK



Date: 17.OCT.2018 23:29:07

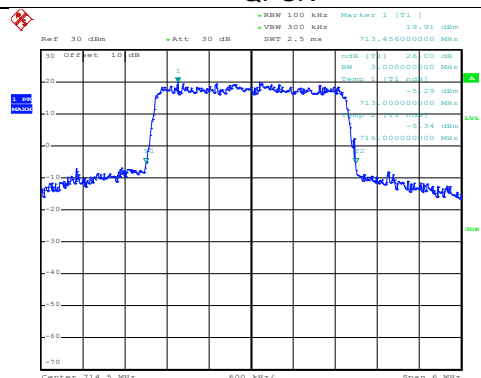
## Middle channel

## 16QAM



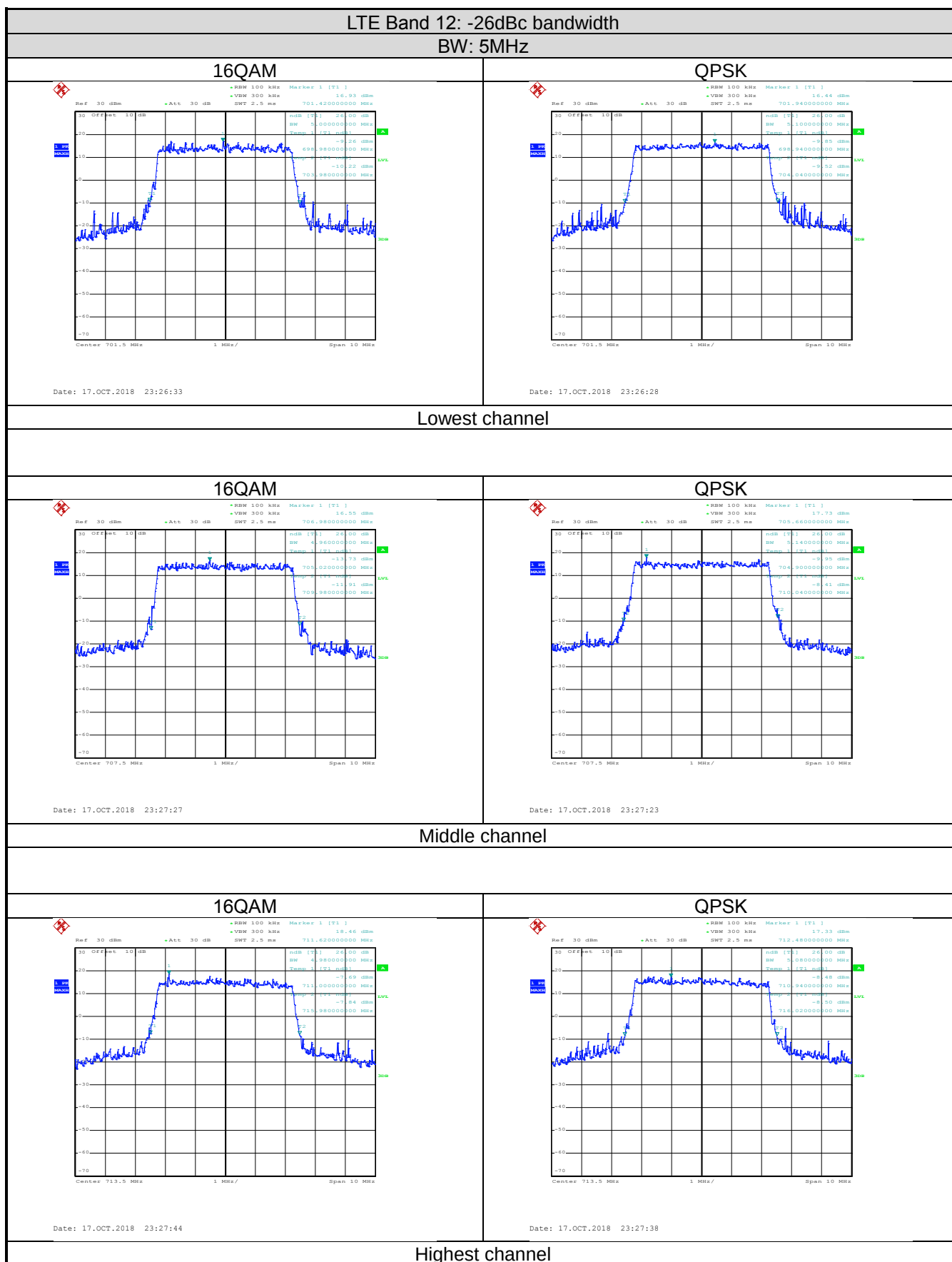
Date: 17.OCT.2018 23:29:54

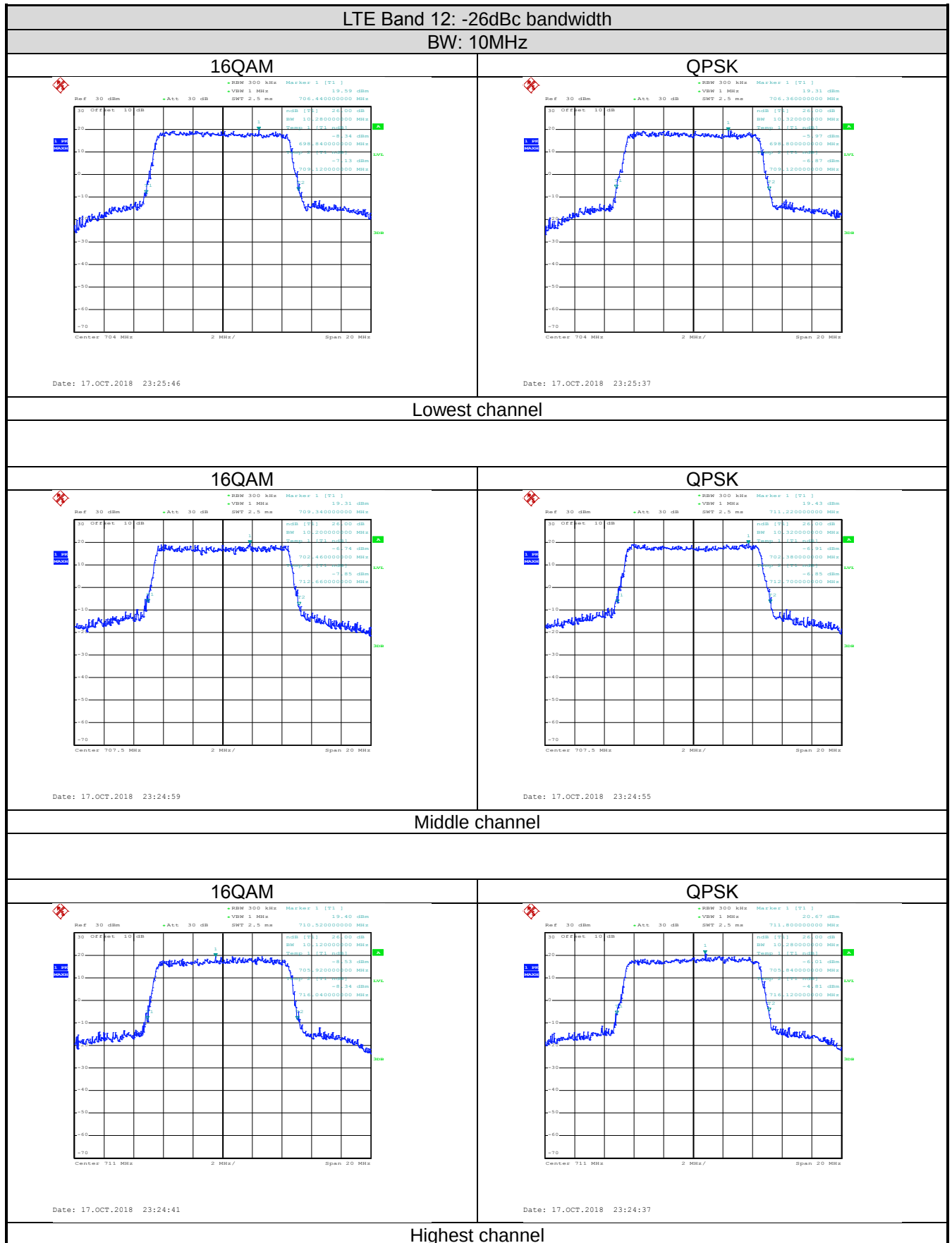
## QPSK



Date: 17.OCT.2018 23:29:50

## Highest channel





## 6.4 Out of band emission at antenna terminals

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 24.238 (a), part 27.53(g), part 27.53(h),                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Test Method:      | ANSI/TIA-603-D 2010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Limit:            | 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:       | <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'. A cable connects the output of the System simulator to a 'Splitter'. From the Splitter, one cable goes to an 'ATT' (attenuator) block, and another cable goes to the 'EUT' (Equipment Under Test), which is represented by a black rectangular block with rounded corners.</p>                                                                                                                                                                                                                                                                                                                                                            |
| Test Procedure:   | <ol style="list-style-type: none"> <li>1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.</li> <li>2 The resolution bandwidth of the spectrum analyzer was set at 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |