



**Shenzhen Global Test Service Co.,Ltd.**

No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road,  
Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

## FCC PART 27 TEST REPORT

### FCC Part 27

**Report Reference No.....: GTS20191021009-1-1-7**

**FCC ID..... 2AURV-DIGICELDL3**

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Date of issue..... Oct.25, 2019

**Testing Laboratory Name ..... Shenzhen Global Test Service Co.,Ltd.**

Address..... No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

**Applicant's name ..... BOPEL MOBILE TECHNOLOGY CO., LIMITED**

Address..... Room A205, 2nd Floor, R2-B Building, Hi-tech Industrial Park , Gaoxin south 7 road, Nanshan District, Shenzhen

**Test specification .....**

Standard ..... **FCC CFR Title 47 Part 2, Part 27**  
**ASNI/TIA-603-E-2016**  
**KDB 971168 D01**

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**Test item description ..... Smart Phone**

Trade Mark ..... Digicel

**Manufacturer ..... BOPEL MOBILE TECHNOLOGY CO., LIMITED**

Model/Type reference..... DL3

Listed Models ..... N/A

Modulation Type ..... QPSK, 16QAM

LTE Band 4..... 1710-1755MHz

ANT Gain ..... 3.30dBi

Rating ..... DC 3.8V From Battery and DC 5V from USB

Hardware version ..... J517C\_63\_32EMB\_D3EFV1.1

Software version ..... Digicel\_DL3\_V3.0\_10172019

**Result.....: PASS**

**TEST REPORT**

|                                                      |                              |
|------------------------------------------------------|------------------------------|
| <b>Test Report No. :</b> <b>GTS20191021009-1-1-7</b> | Oct.25,2019<br>Date of issue |
|------------------------------------------------------|------------------------------|

Equipment under Test                    :            Smart Phone

Model /Type                                :            DL3

Listed Models                             :            N/A

**Applicant**                                 :            **BOPEL MOBILE TECHNOLOGY CO., LIMITED**

Address                                     :            Room A205, 2nd Floor, R2-B Building, Hi-tech Industrial  
Park , Gaoxin south 7 road, Nanshan District, Shenzhen

**Manufacturer**                           :            **BOPEL MOBILE TECHNOLOGY CO., LIMITED**

Address                                     :            Room A205, 2nd Floor, R2-B Building, Hi-tech Industrial  
Park , Gaoxin south 7 road, Nanshan District, Shenzhen

|                    |               |
|--------------------|---------------|
| <b>Test result</b> | <b>Pass *</b> |
|--------------------|---------------|

\* In the configuration tested, the EUT complied with the standards specified page 4.

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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# 1 SUMMARY

## 1.1 TEST STANDARDS

The tests were performed according to following standards:

[FCC Part 27](#) : MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

[ANSI/TIA-603-E-2016](#): Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

47 CFR FCC Part 15 Subpart B: - Unintentional Radiators

[FCC Part 2](#): FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

[KDB971168 D01: v02r02](#) MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

[ANSI C63.26-2015](#): IEEE/ANSI Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

## 1.2 Test Description

| Test Item                              | Section in CFR 47               | Result |
|----------------------------------------|---------------------------------|--------|
| RF Output Power                        | Part 2.1046<br>Part 27.50(d)(4) | Pass   |
| Peak-to-Average Ratio                  | Part 27.50(d)(4)                | Pass   |
| 99% & -26 dB Occupied Bandwidth        | Part 2.1049<br>Part 27.53(h)    | Pass   |
| Spurious Emissions at Antenna Terminal | Part 2.1051<br>Part 27.53(h)    | Pass   |
| Field Strength of Spurious Radiation   | Part 2.1053<br>Part 27.53(h)    | Pass   |
| Out of band emission, Band Edge        | Part 2.1051<br>Part 27.53(h)    | Pass   |
| Frequency stability                    | Part 2.1055<br>Part 27.54       | Pass   |

### 1.3 Test Facility

#### 1.3.1 Address of the test laboratory

**Shenzhen Global Test Service Co.,Ltd.**

No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

### 1.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Global Test Service Co.,Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Global Test Service Co.,Ltd. is reported:

| Test                  | Range      | Measurement Uncertainty | Notes |
|-----------------------|------------|-------------------------|-------|
| Radiated Emission     | 30~1000MHz | 4.10dB                  | (1)   |
| Radiated Emission     | Above 1GHz | 4.32dB                  | (1)   |
| Conducted Disturbance | 0.15~30MHz | 3.20dB                  | (1)   |

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 2 GENERAL INFORMATION

### 2.1 General Remarks

|                                |   |              |
|--------------------------------|---|--------------|
| Date of receipt of test sample | : | Sep.20, 2019 |
|                                |   |              |
| Testing commenced on           | : | Sep.20, 2019 |
|                                |   |              |
| Testing concluded on           | : | Oct.25, 2019 |

### 2.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

|                     |         |
|---------------------|---------|
| Normal Temperature: | 25°C    |
| Relative Humidity:  | 55 %    |
| Air Pressure:       | 101 kPa |

### 2.3 Description of Test Modes

The EUT has been tested under typical operating condition. The CMW500 used to control the EUT staying in continuous transmitting and receiving mode for testing. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

Note:

1. For the ERP/EIRP and radiated emission test, every axis (X, Y, Z) was verified, and show the worst result on this report.
2. Test method and refer to 3GPP TS136521.

## 2.4 Equipments Used during the Test

| Test Equipment             | Manufacturer   | Model No.             | Serial No.   | Calibration Date | Calibration Due Date |
|----------------------------|----------------|-----------------------|--------------|------------------|----------------------|
| LISN                       | R&S            | ENV216                | 3560.6550.08 | 2019/09/20       | 2020/09/19           |
| LISN                       | R&S            | ESH2-Z5               | 893606/008   | 2019/09/20       | 2020/09/19           |
| Bilog Antenna              | Schwarzbeck    | VULB9163              | 976          | 2019/09/20       | 2020/09/19           |
| Bilog Antenna              | Schwarzbeck    | VULB9163              | 979          | 2019/09/20       | 2020/09/19           |
| EMI Test Receiver          | R&S            | ESCI7                 | 101102       | 2019/09/20       | 2020/09/19           |
| Spectrum Analyzer          | Agilent        | N9020A                | MY48010425   | 2019/09/20       | 2020/09/19           |
| Spectrum Analyzer          | R&S            | FSP40                 | 100019       | 2019/09/20       | 2020/09/19           |
| Controller                 | EM Electronics | Controller EM 1000    | N/A          | N/A              | N/A                  |
| Horn Antenna               | Schwarzbeck    | BBHA 9120D            | 01622        | 2019/09/20       | 2020/09/19           |
| Horn Antenna               | Schwarzbeck    | BBHA 9120D            | 01652        | 2019/09/20       | 2020/09/19           |
| Active Loop Antenna        | SCHWARZBEC K   | FMZB1519              | 1519-037     | 2019/09/20       | 2020/09/19           |
| Broadband Horn Antenna     | SCHWARZBEC K   | BBHA 9170             | 971          | 2019/09/20       | 2020/09/19           |
| Amplifier                  | Schwarzbeck    | BBV 9743              | #202         | 2019/09/20       | 2020/09/19           |
| Amplifier                  | EMCI           | EMC051845B            | 980355       | 2019/09/20       | 2020/09/19           |
| Temperature/Humidity Meter | Gangxing       | CTH-608               | 02           | 2019/09/20       | 2020/09/19           |
| High-Pass Filter           | K&L            | 9SH10-2700/X12750-O/O | KL142031     | 2019/09/20       | 2020/09/19           |
| High-Pass Filter           | K&L            | 41H10-1375/U12750-O/O | KL142032     | 2019/09/20       | 2020/09/19           |
| RF Cable(below 1GHz)       | HUBER+SUHNER   | RG214                 | RE01         | 2019/09/20       | 2020/09/19           |
| RF Cable(above 1GHz)       | HUBER+SUHNER   | RG214                 | RE02         | 2019/09/20       | 2020/09/19           |
| Data acquisition card      | Agilent        | U2531A                | TW53323507   | 2019/09/20       | 2020/09/19           |
| Power Sensor               | Agilent        | U2021XA               | MY5365004    | 2019/09/20       | 2020/09/19           |
| EMI Test Software          | R&S            | ES-K1                 | V1.7.1       | 2019/09/20       | 2020/09/19           |
| EMI Test Software          | JS Tonscend    | JS32-RE               | 2.0.1.5      | 2019/09/20       | 2020/09/19           |
| EMI Test Software          | Audix          | E3                    | 2..1.1       | 2019/09/20       | 2020/09/19           |

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

This submittal(s) (test report) is intended for FCC ID: 2AURV-DIGICELDL3 filing to comply with of the FCC Part 24 Rules.

## 2.6 Modifications

No modifications were implemented to meet testing criteria.

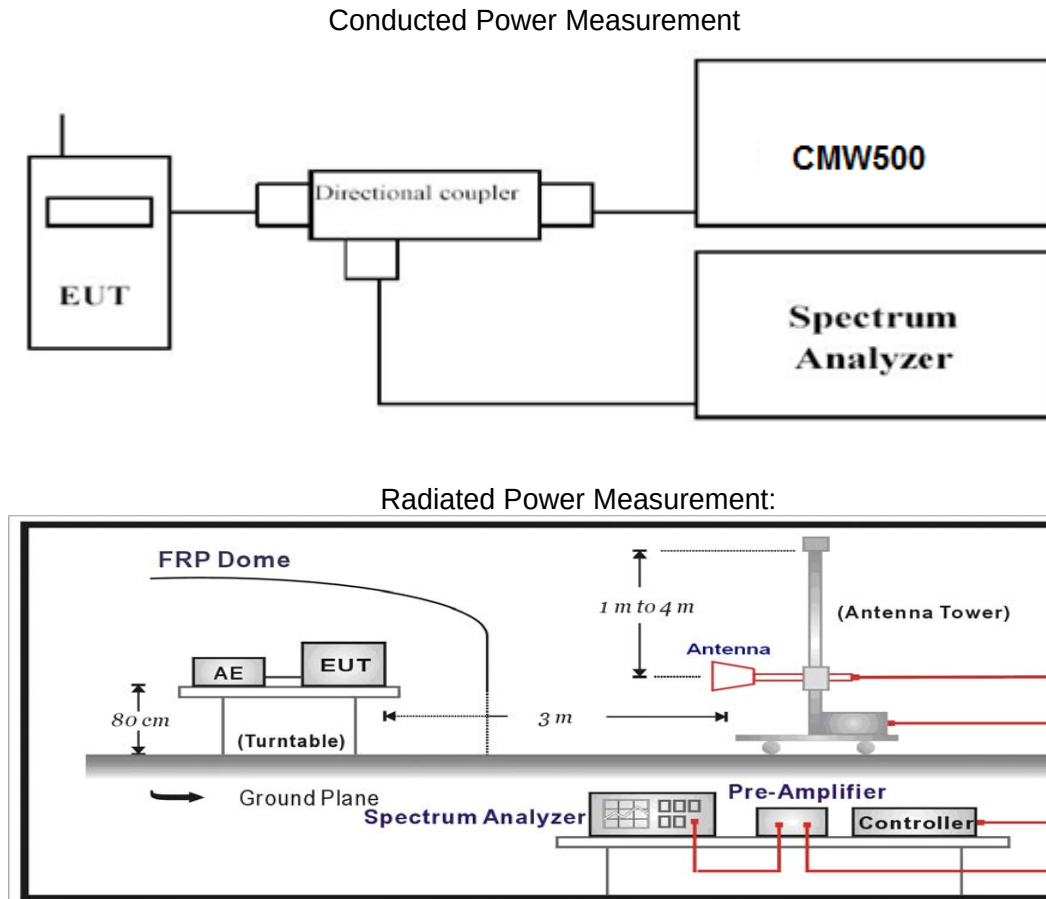
### 3 TEST CONDITIONS AND RESULTS

#### 3.1 Output Power

##### LIMIT

According to §27.50 (d) (4): Fixed, mobile, and portable (hand- held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

##### TEST CONFIGURATION



##### TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

##### **Conducted Power Measurement:**

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
- EUT Communicate with CMW500, then select a channel for testing.
- Add a correction factor to the display of spectrum, and then test.

##### **Radiated Power Measurement:**

- The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- The output of the test antenna shall be connected to the measuring receiver.
- The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

- g. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h. The maximum signal level detected by the measuring receiver shall be noted.
- i. The transmitter shall be replaced by a substitution antenna.
- j. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k. The substitution antenna shall be connected to a calibrated signal generator.
- l. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p. The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- q. Test site anechoic chamber refer to ANSI C63.4.

## TEST RESULTS

### Conducted Measurement:

| LTE FDD Band 4       |                 |                |                     |       |
|----------------------|-----------------|----------------|---------------------|-------|
| TX Channel Bandwidth | Frequency (MHz) | RB Size/Offset | Average Power [dBm] |       |
|                      |                 |                | QPSK                | 16QAM |
| 1.4 MHz              | 1710.7          | 1 RB low       | 23.38               | 22.31 |
|                      |                 | 1 RB Mid       | 23.31               | 22.24 |
|                      |                 | 1 RB high      | 23.54               | 22.51 |
|                      |                 | 50% RB Low     | 23.44               | 22.41 |
|                      |                 | 50% RB mid     | 23.43               | 22.38 |
|                      |                 | 50% RB high    | 23.47               | 22.42 |
|                      |                 | 100% RB        | 22.51               | 21.39 |
|                      | 1732.5          | 1 RB low       | 23.34               | 22.48 |
|                      |                 | 1 RB Mid       | 23.48               | 21.84 |
|                      |                 | 1 RB high      | 23.54               | 22.66 |
|                      |                 | 50% RB Low     | 23.66               | 22.40 |
|                      |                 | 50% RB mid     | 23.42               | 22.37 |
|                      |                 | 50% RB high    | 23.26               | 22.29 |
|                      |                 | 100% RB        | 22.35               | 21.29 |
|                      | 1754.3          | 1 RB low       | 23.39               | 22.05 |
|                      |                 | 1 RB Mid       | 23.06               | 22.37 |
|                      |                 | 1 RB high      | 23.25               | 22.18 |
|                      |                 | 50% RB Low     | 23.47               | 22.29 |
|                      |                 | 50% RB mid     | 23.48               | 22.35 |
|                      |                 | 50% RB high    | 23.13               | 22.08 |
|                      |                 | 100% RB        | 22.35               | 21.16 |
| 3 MHz                | 1711.5          | 1 RB low       | 23.58               | 22.15 |
|                      |                 | 1 RB Mid       | 23.27               | 22.10 |
|                      |                 | 1 RB high      | 23.43               | 22.29 |
|                      |                 | 50% RB Low     | 22.17               | 21.13 |
|                      |                 | 50% RB mid     | 22.10               | 21.22 |
|                      |                 | 50% RB high    | 22.13               | 21.10 |
|                      |                 | 100% RB        | 21.43               | 20.42 |
|                      | 1732.5          | 1 RB low       | 23.45               | 22.04 |
|                      |                 | 1 RB Mid       | 23.64               | 22.51 |
|                      |                 | 1 RB high      | 23.38               | 21.92 |
|                      |                 | 50% RB Low     | 22.58               | 21.64 |
|                      |                 | 50% RB mid     | 22.79               | 21.74 |
|                      |                 | 50% RB high    | 22.58               | 21.54 |
|                      |                 | 100% RB        | 21.48               | 20.30 |
|                      | 1753.5          | 1 RB low       | 23.04               | 22.17 |

|        |        |             |       |       |
|--------|--------|-------------|-------|-------|
|        |        | 1 RB Mid    | 22.87 | 21.96 |
|        |        | 1 RB high   | 23.23 | 21.99 |
|        |        | 50% RB Low  | 22.01 | 21.01 |
|        |        | 50% RB mid  | 22.25 | 21.21 |
|        |        | 50% RB high | 21.87 | 20.76 |
|        |        | 100% RB     | 21.31 | 20.32 |
| 5 MHz  | 1712.5 | 1 RB low    | 23.32 | 22.32 |
|        |        | 1 RB Mid    | 23.38 | 22.44 |
|        |        | 1 RB high   | 23.37 | 22.54 |
|        |        | 50% RB Low  | 22.24 | 21.30 |
|        |        | 50% RB mid  | 22.32 | 21.29 |
|        |        | 50% RB high | 22.37 | 21.33 |
|        |        | 100% RB     | 21.36 | 20.22 |
|        | 1732.5 | 1 RB low    | 23.16 | 21.76 |
|        |        | 1 RB Mid    | 23.16 | 22.43 |
|        |        | 1 RB high   | 23.29 | 21.71 |
|        |        | 50% RB Low  | 22.18 | 21.14 |
|        |        | 50% RB mid  | 22.16 | 21.12 |
|        |        | 50% RB high | 22.18 | 21.15 |
|        |        | 100% RB     | 21.33 | 20.45 |
|        | 1752.5 | 1 RB low    | 23.35 | 22.45 |
|        |        | 1 RB Mid    | 23.22 | 22.14 |
|        |        | 1 RB high   | 23.49 | 22.16 |
|        |        | 50% RB Low  | 22.26 | 21.24 |
|        |        | 50% RB mid  | 22.42 | 21.39 |
|        |        | 50% RB high | 22.24 | 21.20 |
|        |        | 100% RB     | 21.42 | 20.49 |
| 10 MHz | 1715.0 | 1 RB low    | 23.09 | 22.18 |
|        |        | 1 RB Mid    | 23.14 | 22.21 |
|        |        | 1 RB high   | 23.22 | 22.32 |
|        |        | 50% RB Low  | 22.22 | 21.17 |
|        |        | 50% RB mid  | 22.22 | 21.18 |
|        |        | 50% RB high | 22.25 | 21.24 |
|        |        | 100% RB     | 21.25 | 20.25 |
|        | 1732.5 | 1 RB low    | 22.80 | 21.89 |
|        |        | 1 RB Mid    | 23.06 | 22.08 |
|        |        | 1 RB high   | 22.81 | 21.83 |
|        |        | 50% RB Low  | 22.02 | 21.01 |
|        |        | 50% RB mid  | 22.01 | 20.98 |
|        |        | 50% RB high | 21.79 | 20.77 |
|        |        | 100% RB     | 21.30 | 20.34 |
|        | 1750   | 1 RB low    | 22.83 | 21.77 |
|        |        | 1 RB Mid    | 22.81 | 21.71 |
|        |        | 1 RB high   | 22.93 | 21.94 |
|        |        | 50% RB Low  | 21.83 | 20.80 |
|        |        | 50% RB mid  | 21.97 | 20.93 |
|        |        | 50% RB high | 21.73 | 20.70 |
|        |        | 100% RB     | 21.40 | 20.43 |
| 15 MHz | 1717.5 | 1 RB low    | 23.49 | 21.91 |
|        |        | 1 RB Mid    | 23.61 | 21.90 |
|        |        | 1 RB high   | 23.74 | 21.93 |
|        |        | 50% RB Low  | 22.84 | 21.83 |
|        |        | 50% RB mid  | 23.01 | 22.01 |
|        |        | 50% RB high | 22.87 | 21.88 |
|        |        | 100% RB     | 22.06 | 20.93 |
|        | 1732.5 | 1 RB low    | 23.40 | 22.58 |
|        |        | 1 RB Mid    | 23.52 | 22.65 |
|        |        | 1 RB high   | 23.25 | 22.34 |
|        |        | 50% RB Low  | 22.82 | 21.74 |
|        |        | 50% RB mid  | 22.64 | 21.66 |
|        |        | 50% RB high | 22.32 | 21.28 |
|        |        | 100% RB     | 21.68 | 20.50 |

|        |        |             |       |       |
|--------|--------|-------------|-------|-------|
|        | 1747.5 | 1 RB low    | 23.38 | 22.43 |
|        |        | 1 RB Mid    | 23.32 | 22.32 |
|        |        | 1 RB high   | 23.30 | 22.14 |
|        |        | 50% RB Low  | 21.93 | 20.89 |
|        |        | 50% RB mid  | 22.18 | 21.13 |
|        |        | 50% RB high | 22.00 | 20.97 |
|        |        | 100% RB     | 21.19 | 20.02 |
| 20 MHz | 1720.0 | 1 RB low    | 23.22 | 22.31 |
|        |        | 1 RB Mid    | 23.55 | 22.69 |
|        |        | 1 RB high   | 23.24 | 22.32 |
|        |        | 50% RB Low  | 22.48 | 21.47 |
|        |        | 50% RB mid  | 22.47 | 21.42 |
|        |        | 50% RB high | 22.56 | 21.56 |
|        |        | 100% RB     | 21.77 | 20.53 |
|        | 1732.5 | 1 RB low    | 23.15 | 22.13 |
|        |        | 1 RB Mid    | 23.43 | 22.31 |
|        |        | 1 RB high   | 22.84 | 21.69 |
|        |        | 50% RB Low  | 22.38 | 21.30 |
|        |        | 50% RB mid  | 22.33 | 21.33 |
|        |        | 50% RB high | 21.99 | 20.96 |
|        |        | 100% RB     | 21.70 | 20.61 |
|        | 1745.0 | 1 RB low    | 22.95 | 21.93 |
|        |        | 1 RB Mid    | 23.21 | 21.98 |
|        |        | 1 RB high   | 23.07 | 21.99 |
|        |        | 50% RB Low  | 22.09 | 21.08 |
|        |        | 50% RB mid  | 22.26 | 21.20 |
|        |        | 50% RB high | 21.91 | 20.89 |
|        |        | 100% RB     | 21.17 | 20.04 |

**Radiated Measurement:**

Remark:

1. We were tested all RB Configuration for the model DL3 the Mode refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 4; recorded worst case for each Channel Bandwidth of LTE FDD Band 4 at the H Polarization
2.  $EIRP = P_{Mea}(dBm) - P_{cl}(dB) + P_{Ag}(dB) + G_a(dBi)$

***LTE FDD Band 4\_Channel Bandwidth 1.4MHz\_QPSK***

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1710.7          | -22.09                 | 3.06                 | 9.68                            | 34.80                | 19.33      | 33.01       | 13.68       | H            |
| 1732.5          | -22.78                 | 3.17                 | 9.68                            | 34.80                | 18.53      | 33.01       | 14.48       | H            |
| 1754.3          | -21.31                 | 3.22                 | 9.75                            | 34.80                | 20.02      | 33.01       | 12.99       | H            |

***LTE FDD Band 4\_Channel Bandwidth 3MHz\_QPSK***

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1711.5          | -22.03                 | 3.06                 | 9.68                            | 34.80                | 19.39      | 33.01       | 13.62       | H            |
| 1732.5          | -21.55                 | 3.17                 | 9.68                            | 34.80                | 19.76      | 33.01       | 13.25       | H            |
| 1753.5          | -19.84                 | 3.22                 | 9.75                            | 34.80                | 21.49      | 33.01       | 11.52       | H            |

***LTE FDD Band 4\_Channel Bandwidth 5MHz\_QPSK***

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1712.5          | -21.04                 | 3.06                 | 9.68                            | 34.80                | 20.38      | 33.01       | 12.63       | H            |
| 1732.5          | -20.39                 | 3.17                 | 9.68                            | 34.80                | 20.92      | 33.01       | 12.09       | H            |
| 1752.5          | -19.09                 | 3.22                 | 9.75                            | 34.80                | 22.24      | 33.01       | 10.77       | H            |

***LTE FDD Band 4\_Channel Bandwidth 10MHz\_QPSK***

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1715.0          | -21.11                 | 3.06                 | 9.68                            | 34.80                | 20.31      | 33.01       | 12.70       | H            |
| 1732.5          | -20.36                 | 3.17                 | 9.68                            | 34.80                | 20.95      | 33.01       | 12.06       | H            |
| 1750.0          | -19.25                 | 3.22                 | 9.75                            | 34.80                | 22.08      | 33.01       | 10.93       | H            |

***LTE FDD Band 4\_Channel Bandwidth 15MHz\_QPSK***

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1717.5          | -20.99                 | 3.06                 | 9.68                            | 34.80                | 20.43      | 33.01       | 12.58       | H            |
| 1732.5          | -20.35                 | 3.17                 | 9.68                            | 34.80                | 20.96      | 33.01       | 12.05       | H            |
| 1747.5          | -18.83                 | 3.22                 | 9.75                            | 34.80                | 22.50      | 33.01       | 10.51       | H            |

***LTE FDD Band 4\_Channel Bandwidth 20MHz\_QPSK***

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1720.0          | -21.07                 | 3.06                 | 9.68                            | 34.80                | 20.35      | 33.01       | 12.66       | H            |
| 1732.5          | -20.24                 | 3.17                 | 9.68                            | 34.80                | 21.07      | 33.01       | 11.94       | H            |
| 1745.0          | -18.91                 | 3.22                 | 9.75                            | 34.80                | 22.42      | 33.01       | 10.59       | H            |

***LTE FDD Band 4\_Channel Bandwidth 1.4MHz\_16QAM***

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1710.7          | -22.69                 | 3.06                 | 9.68                            | 34.80                | 18.73      | 33.01       | 14.28       | H            |
| 1732.5          | -23.30                 | 3.17                 | 9.68                            | 34.80                | 18.01      | 33.01       | 15.00       | H            |
| 1754.3          | -22.08                 | 3.22                 | 9.75                            | 34.80                | 19.25      | 33.01       | 13.76       | H            |

*LTE FDD Band 4\_Channel Bandwidth 3MHz\_16QAM*

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1711.5          | -22.98                 | 3.06                 | 9.68                            | 34.80                | 18.44      | 33.01       | 14.57       | H            |
| 1732.5          | -22.44                 | 3.17                 | 9.68                            | 34.80                | 18.87      | 33.01       | 14.14       | H            |
| 1753.5          | -20.57                 | 3.22                 | 9.75                            | 34.80                | 20.76      | 33.01       | 12.25       | H            |

*LTE FDD Band 4\_Channel Bandwidth 5MHz\_16QAM*

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1712.5          | -21.22                 | 3.06                 | 9.68                            | 34.80                | 20.20      | 33.01       | 12.81       | H            |
| 1732.5          | -21.14                 | 3.17                 | 9.68                            | 34.80                | 20.18      | 33.01       | 12.83       | H            |
| 1752.5          | -19.84                 | 3.22                 | 9.75                            | 34.80                | 21.49      | 33.01       | 11.52       | H            |

*LTE FDD Band 4\_Channel Bandwidth 10MHz\_16QAM*

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1715.0          | -21.47                 | 3.06                 | 9.68                            | 34.80                | 19.95      | 33.01       | 13.06       | H            |
| 1732.5          | -21.29                 | 3.17                 | 9.68                            | 34.80                | 20.02      | 33.01       | 12.99       | H            |
| 1750.0          | -19.69                 | 3.22                 | 9.75                            | 34.80                | 21.64      | 33.01       | 11.37       | H            |

*LTE FDD Band 4\_Channel Bandwidth 15MHz\_16QAM*

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1717.5          | -21.28                 | 3.06                 | 9.68                            | 34.80                | 20.14      | 33.01       | 12.87       | H            |
| 1732.5          | -22.00                 | 3.17                 | 9.68                            | 34.80                | 19.31      | 33.01       | 13.70       | H            |
| 1747.5          | -19.47                 | 3.22                 | 9.75                            | 34.80                | 21.86      | 33.01       | 11.15       | H            |

*LTE FDD Band 4\_Channel Bandwidth 20MHz\_16QAM*

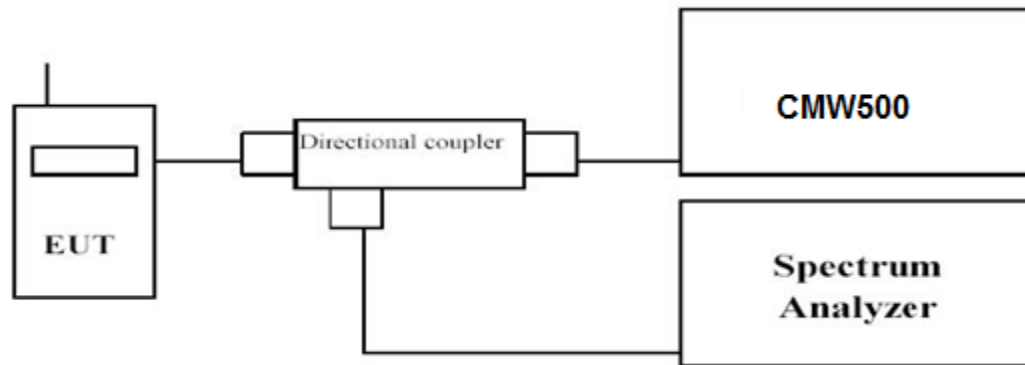
| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | P <sub>Ag</sub> (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|---------------------------------|----------------------|------------|-------------|-------------|--------------|
| 1720.0          | -22.45                 | 3.06                 | 9.68                            | 34.80                | 18.97      | 33.01       | 14.04       | H            |
| 1732.5          | -21.22                 | 3.17                 | 9.68                            | 34.80                | 20.09      | 33.01       | 12.92       | H            |
| 1745.0          | -19.58                 | 3.22                 | 9.75                            | 34.80                | 21.75      | 33.01       | 11.26       | H            |

### 3.3 Peak-to-Average Ratio (PAR)

#### LIMIT

The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

#### TEST CONFIGURATION



#### TEST PROCEDURE

1. Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
2. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
3. Set the number of counts to a value that stabilizes the measured CCDF curve;
4. Set the measurement interval as follows:
  - 1). for continuous transmissions, set to 1 ms,
  - 2). for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
5. Record the maximum PAPR level associated with a probability of 0.1%.

#### TEST RESULTS

Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 4; recorded worst case for each Channel Bandwidth of LTE FDD Band 4.

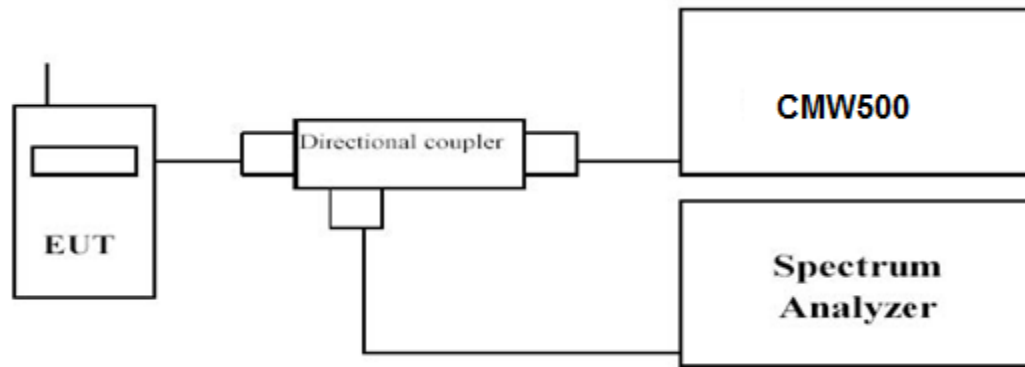
| LTE FDD Band 4       |                 |                |           |       |
|----------------------|-----------------|----------------|-----------|-------|
| TX Channel Bandwidth | Frequency (MHz) | RB Size/Offset | PAPR (dB) |       |
|                      |                 |                | QPSK      | 16QAM |
| 1.4 MHz              | 1710.7          | 1RB#0          | 4.38      | 5.42  |
|                      | 1732.5          |                | 4.42      | 5.37  |
|                      | 1754.3          |                | 4.39      | 5.32  |
| 3 MHz                | 1711.5          | 1RB#0          | 4.39      | 5.42  |
|                      | 1732.5          |                | 4.45      | 5.49  |
|                      | 1753.5          |                | 4.43      | 5.43  |
| 5 MHz                | 1712.5          | 1RB#0          | 4.48      | 5.51  |
|                      | 1732.5          |                | 4.49      | 5.26  |
|                      | 1752.5          |                | 4.37      | 5.39  |
| 10 MHz               | 1715.0          | 1RB#0          | 3.92      | 4.32  |
|                      | 1732.5          |                | 3.87      | 4.25  |
|                      | 1750.0          |                | 3.79      | 4.20  |
| 15 MHz               | 1717.5          | 1RB#0          | 4.32      | 5.09  |
|                      | 1732.5          |                | 4.43      | 5.25  |
|                      | 1747.5          |                | 4.25      | 4.97  |
| 20 MHz               | 1720.0          | 1RB#0          | 4.63      | 5.02  |
|                      | 1732.5          |                | 4.51      | 4.79  |
|                      | 1745.0          |                | 4.29      | 4.98  |

### 3.4 Occupied Bandwidth and Emission Bandwidth

#### LIMIT

N/A

#### TEST CONFIGURATION



#### TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at low, middle and high channel in each band. The -26dBc Emission bandwidth was also measured and recorded.

Set RBW was set to about 1% of emission BW, VBW $\geq$ 3 times RBW.

-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.

#### TEST RESULTS

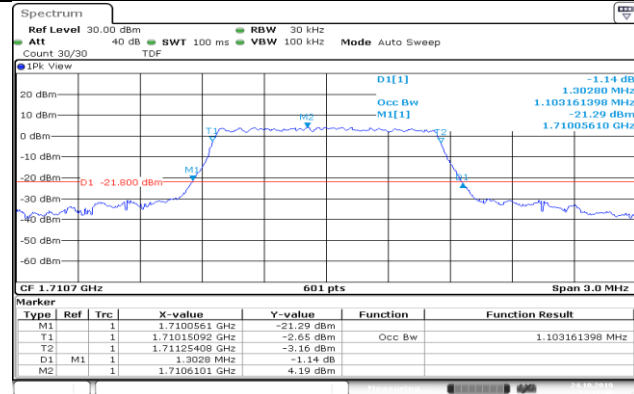
Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 4; recorded worst case for each Channel Bandwidth of LTE FDD Band 4.

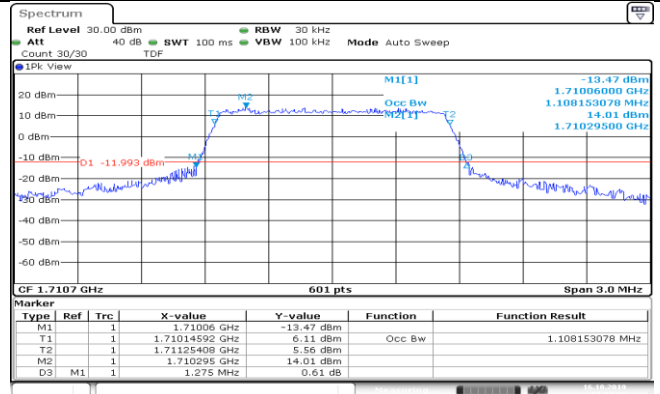
| LTE FDD Band 4       |                |                 |                                 |        |                              |        |
|----------------------|----------------|-----------------|---------------------------------|--------|------------------------------|--------|
| TX Channel Bandwidth | RB Size/Offset | Frequency (MHz) | -26dBc Emission bandwidth (MHz) |        | 99% Occupied bandwidth (MHz) |        |
|                      |                |                 | QPSK                            | 16QAM  | QPSK                         | 16QAM  |
| 1.4 MHz              | 6RB#0          | 1710.7          | 1.303                           | 1.275  | 1.103                        | 1.108  |
|                      |                | 1732.5          | 1.295                           | 1.275  | 1.098                        | 1.098  |
|                      |                | 1754.3          | 1.310                           | 1.285  | 1.098                        | 1.098  |
| 3 MHz                | 15RB#0         | 1711.5          | 3.080                           | 3.070  | 2.715                        | 2.715  |
|                      |                | 1732.5          | 3.100                           | 3.170  | 2.715                        | 2.715  |
|                      |                | 1753.5          | 3.060                           | 3.050  | 2.715                        | 2.715  |
| 5 MHz                | 25RB#0         | 1712.5          | 5.470                           | 5.440  | 4.525                        | 4.555  |
|                      |                | 1732.5          | 5.250                           | 5.520  | 4.515                        | 4.545  |
|                      |                | 1752.5          | 5.360                           | 5.290  | 4.535                        | 4.525  |
| 10 MHz               | 50RB#0         | 1715.0          | 10.333                          | 10.700 | 9.052                        | 9.018  |
|                      |                | 1732.5          | 10.100                          | 10.100 | 9.018                        | 8.985  |
|                      |                | 1750.0          | 10.167                          | 10.233 | 8.985                        | 8.985  |
| 15 MHz               | 75RB#0         | 1717.5          | 15.950                          | 15.150 | 13.577                       | 13.478 |
|                      |                | 1732.5          | 15.550                          | 15.500 | 13.428                       | 13.527 |
|                      |                | 1747.5          | 15.600                          | 15.100 | 13.478                       | 13.478 |
| 20 MHz               | 100RB#0        | 1720.0          | 20.600                          | 20.300 | 18.103                       | 18.103 |
|                      |                | 1732.5          | 20.467                          | 20.533 | 18.103                       | 18.037 |
|                      |                | 1745.0          | 20.267                          | 20.667 | 18.103                       | 18.170 |

## LTE FDD Band 4-1.4MHz Channel Bandwidth

## QPSK

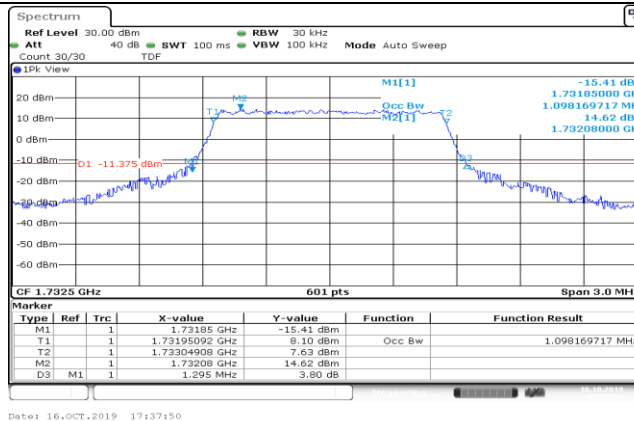


## 16QAM

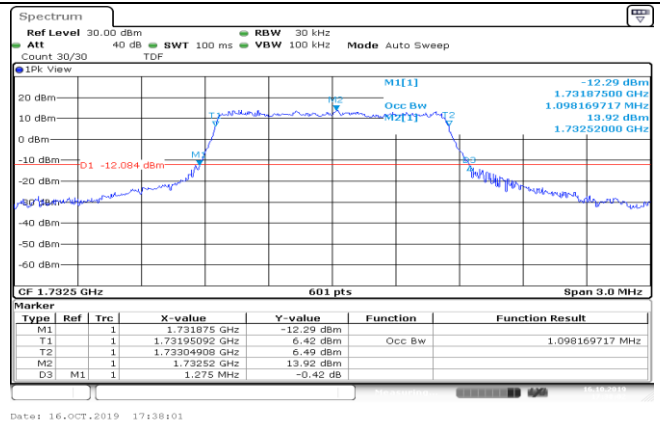


## 6RB#0

## Low Channel

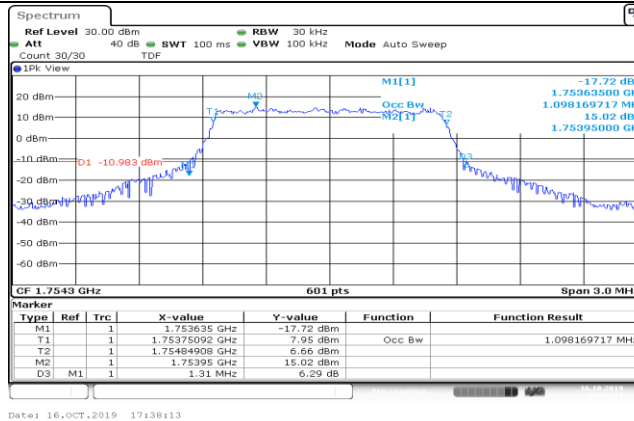


## 6RB#0

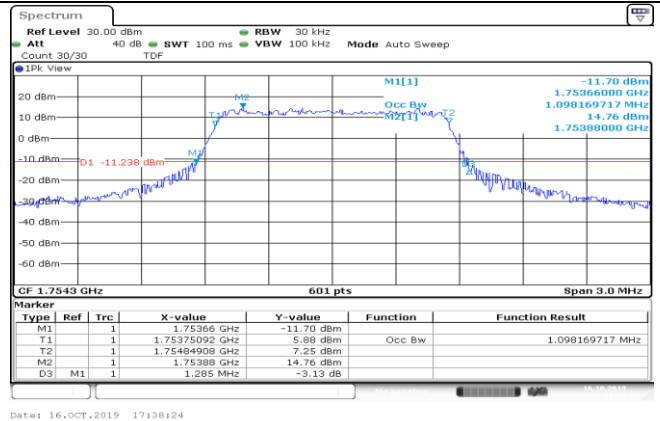


## 6RB#0

## Middle Channel



## 6RB#0

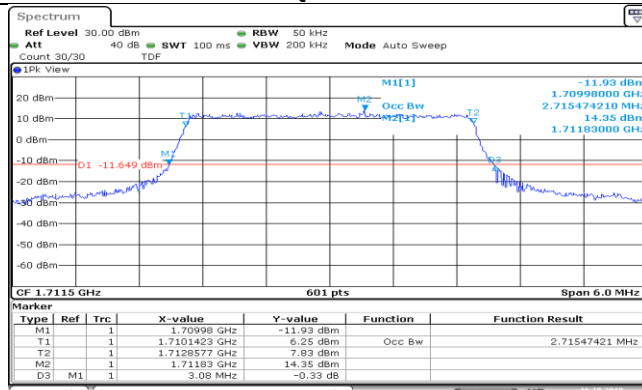


## 6RB#0

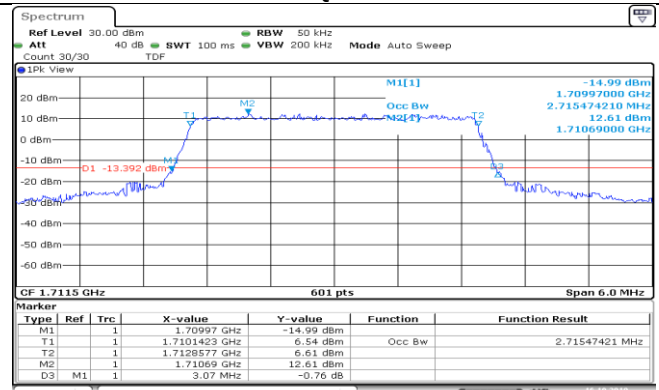
## High Channel

## LTE FDD Band 4-3MHz Channel Bandwidth

## QPSK



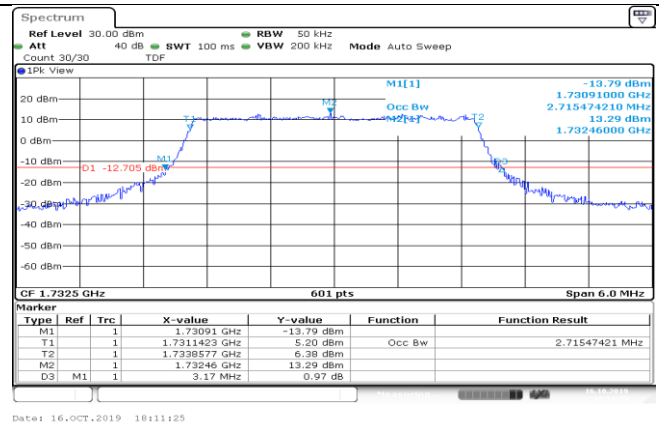
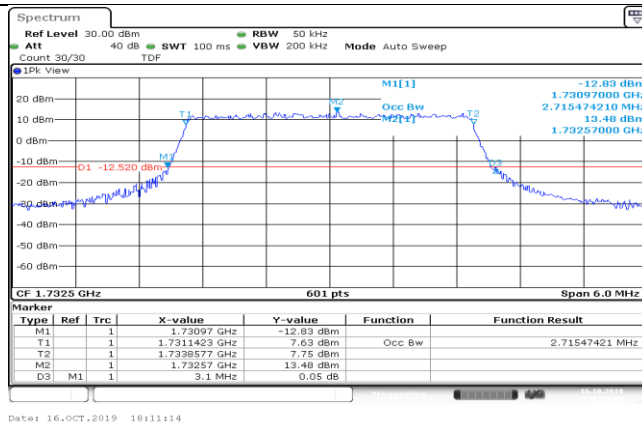
## 16QAM



## 15RB#0

## 15RB#0

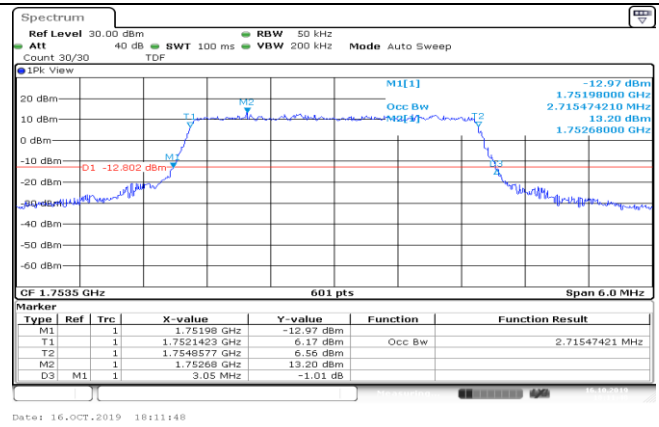
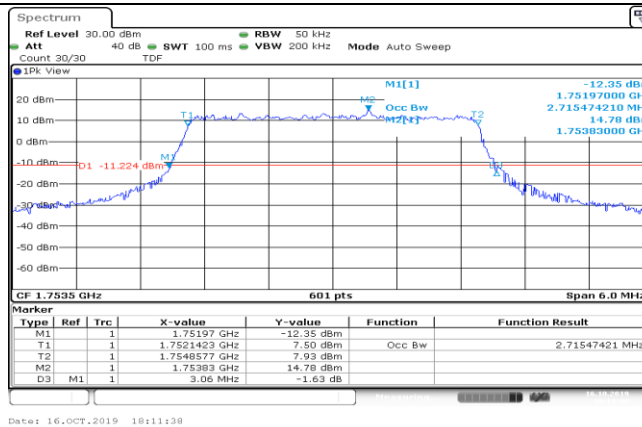
## Low Channel



## 15RB#0

## 15RB#0

## Middle Channel



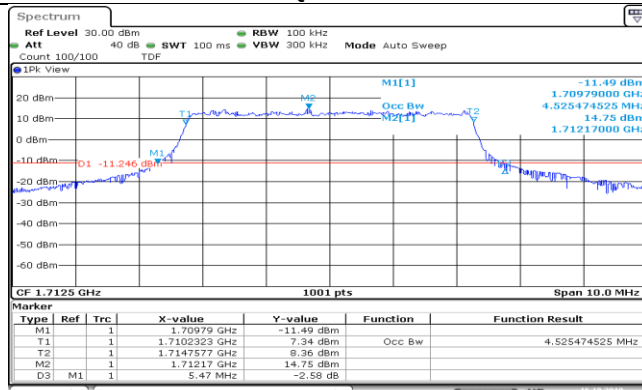
## 15RB#0

## 15RB#0

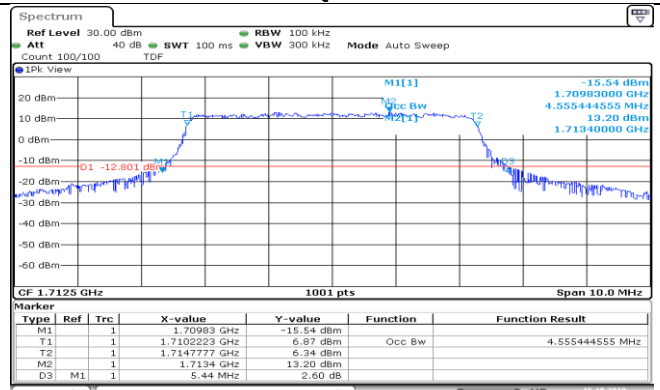
## High Channel

## LTE FDD Band 4-5MHz Channel Bandwidth

## QPSK



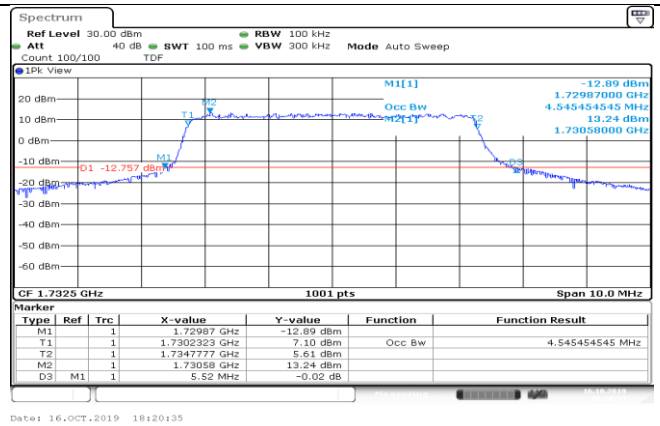
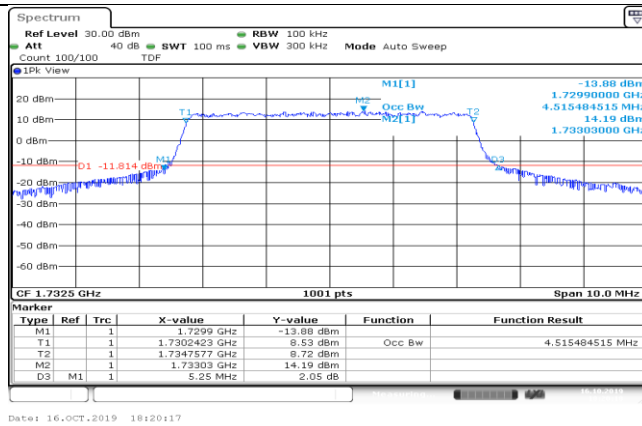
## 16QAM



## 25RB#0

## 25RB#0

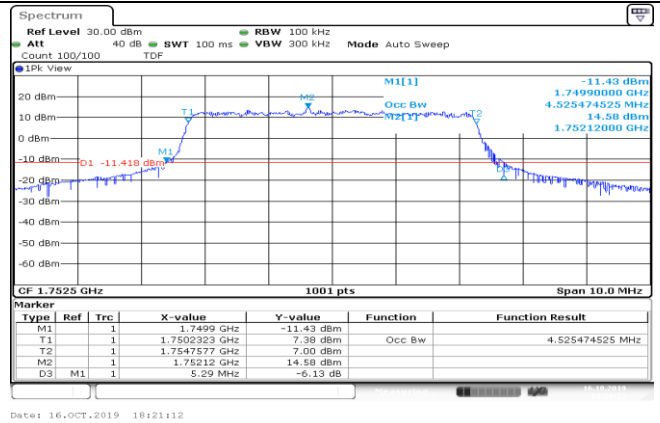
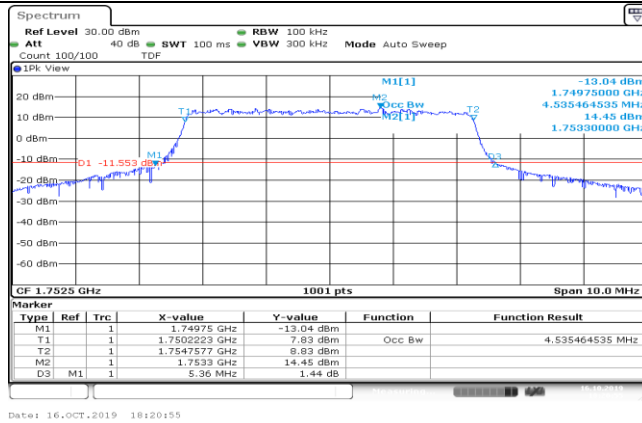
## Low Channel



## 25RB#0

## 25RB#0

## Middle Channel



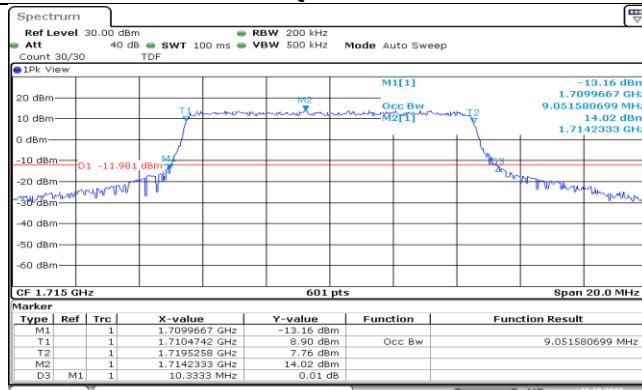
## 25RB#0

## 25RB#0

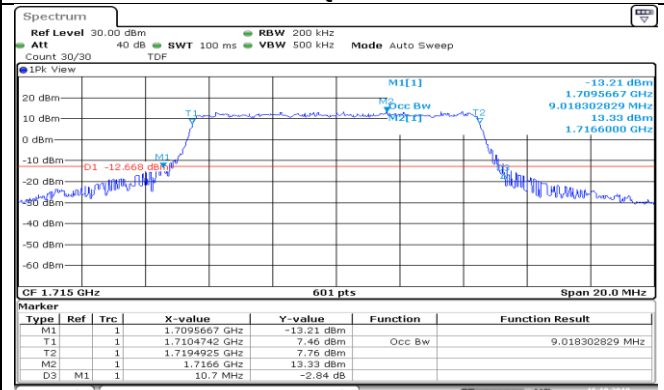
## High Channel

## LTE FDD Band 4-10MHz Channel Bandwidth

## QPSK



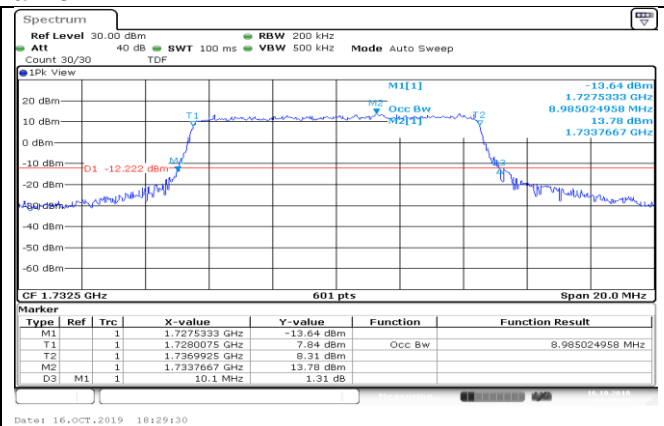
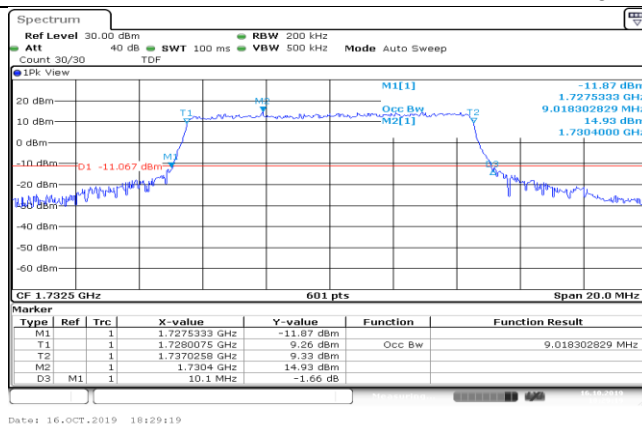
## 16QAM



## 50RB#0

## 50RB#0

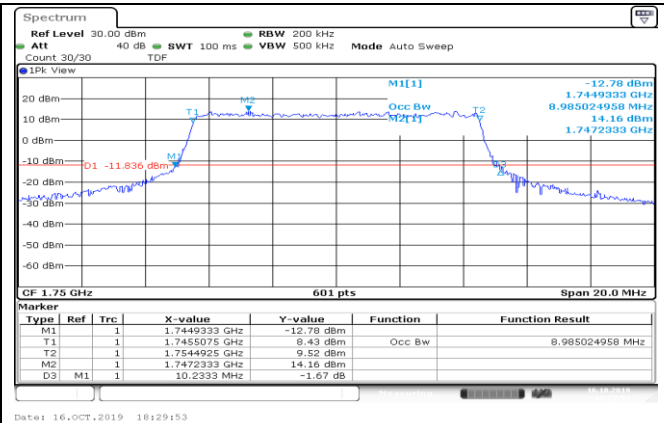
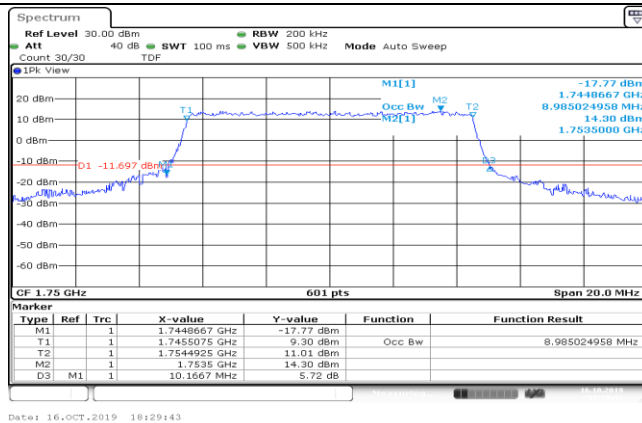
## Low Channel



## 50RB#0

## 50RB#0

## Middle Channel



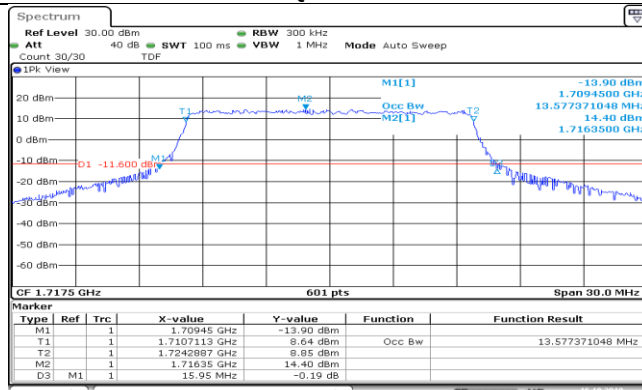
## 50RB#0

## 50RB#0

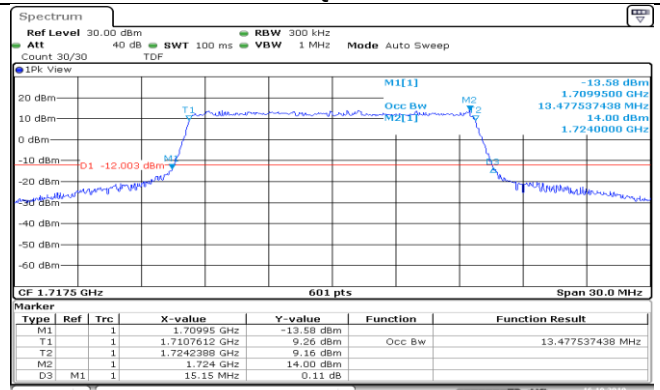
## High Channel

## LTE FDD Band 4-15MHz Channel Bandwidth

## QPSK



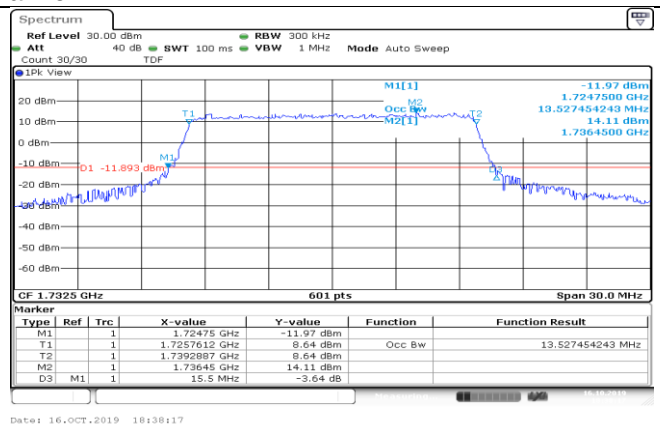
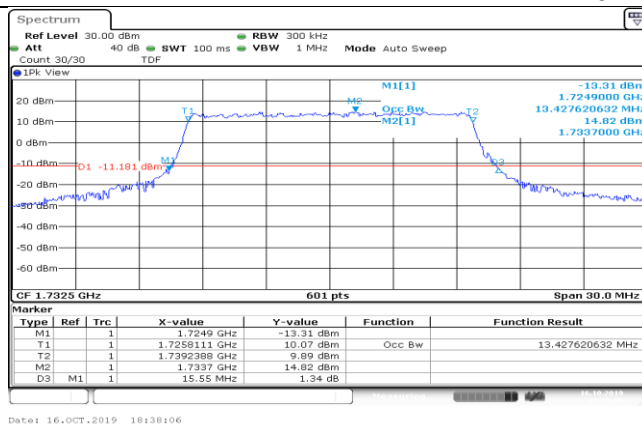
## 16QAM



## 75RB#0

## 75RB#0

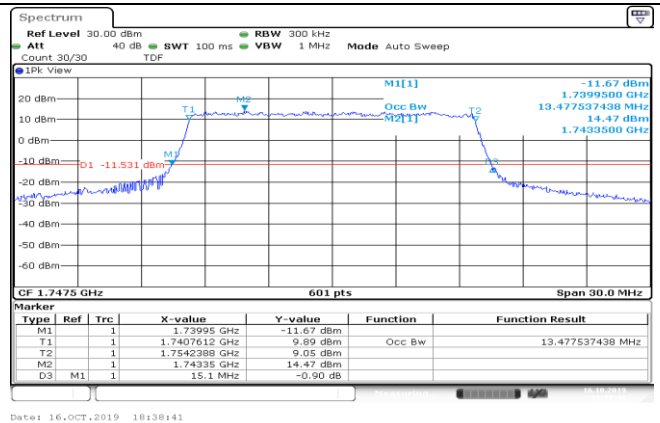
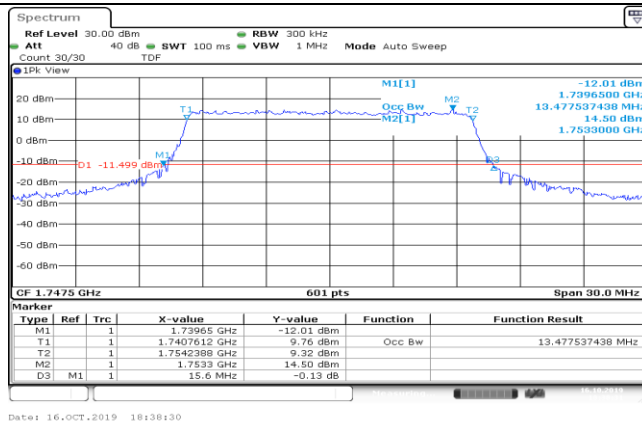
## Low Channel



## 75RB#0

## 75RB#0

## Middle Channel



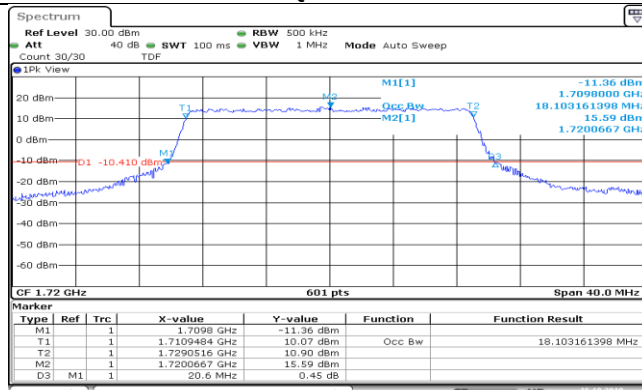
## 75RB#0

## 75RB#0

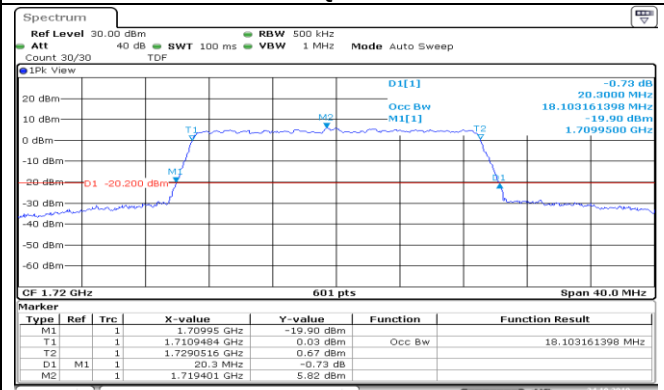
## High Channel

## LTE FDD Band 4-20MHz Channel Bandwidth

## QPSK



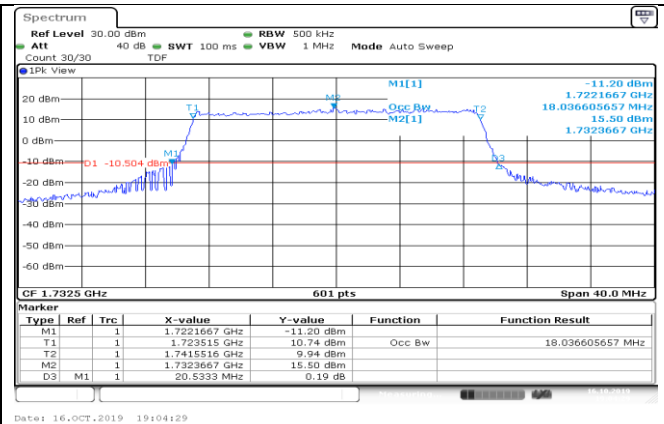
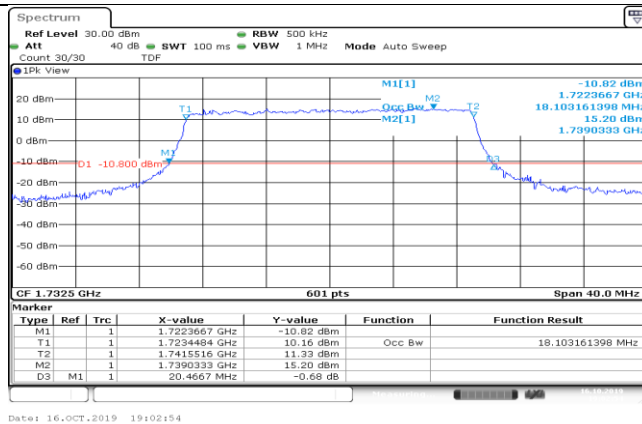
## 16QAM



100RB#0

100RB#0

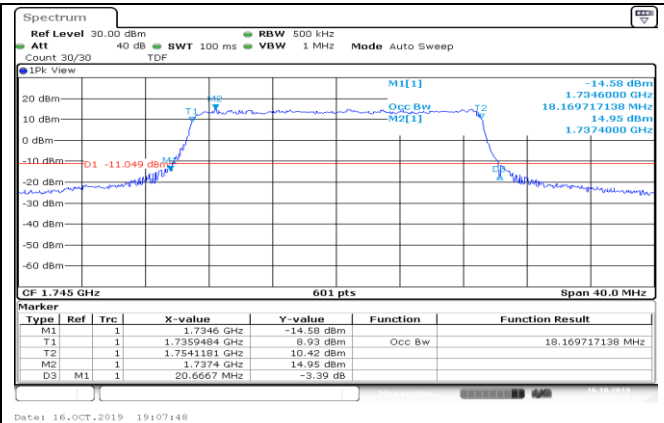
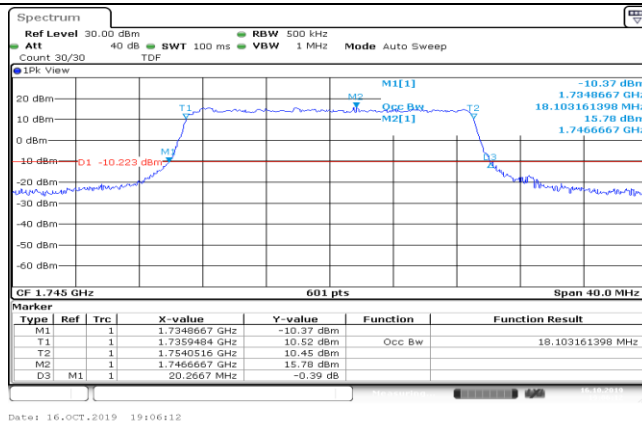
## Low Channel



100RB#0

100RB#0

## Middle Channel



100RB#0

100RB#0

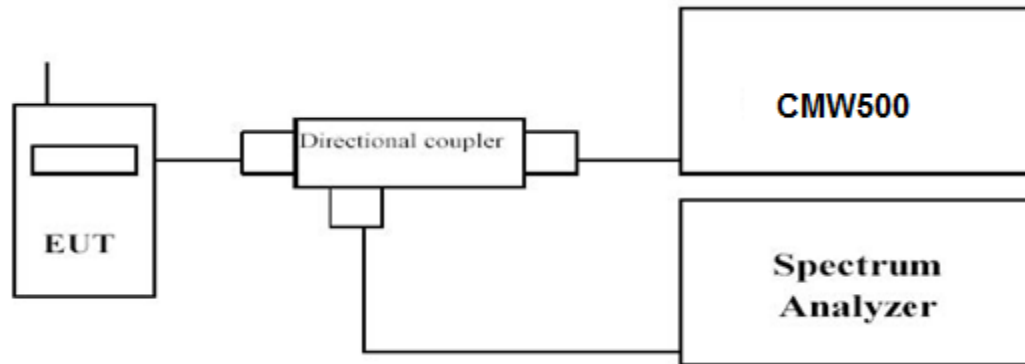
## High Channel

### 3.5 Band Edge compliance

#### LIMIT

According to §27.53 (h): For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB.

#### TEST CONFIGURATION



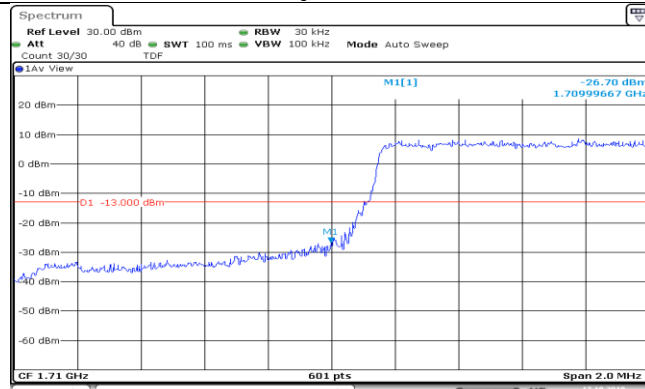
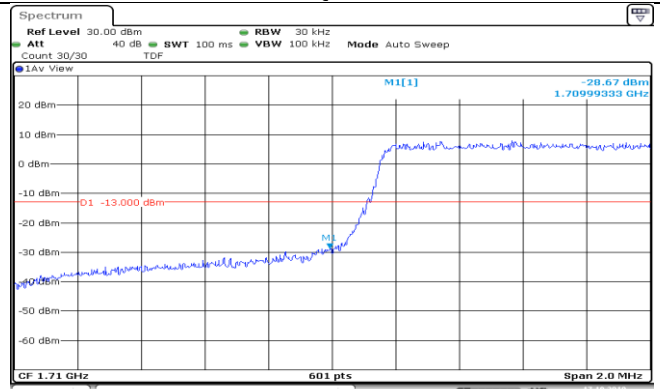
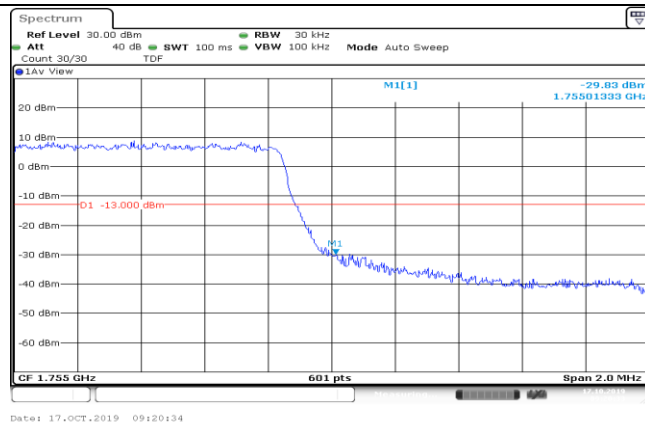
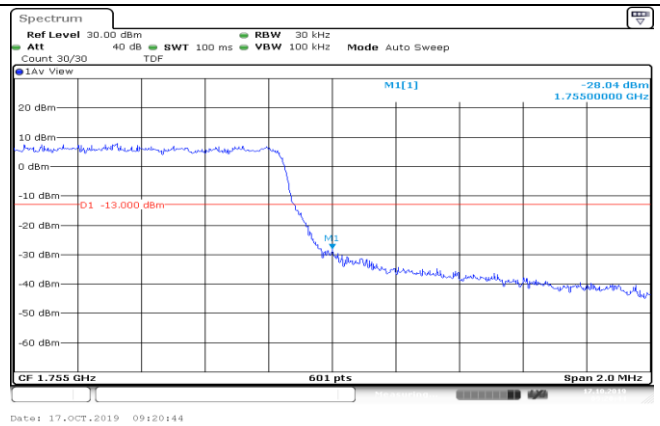
#### TEST PROCEDURE

1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest and highest channels for each band and different modulation.
5. Measure Band edge using RMS (Average) detector by spectrum

#### TEST RESULTS

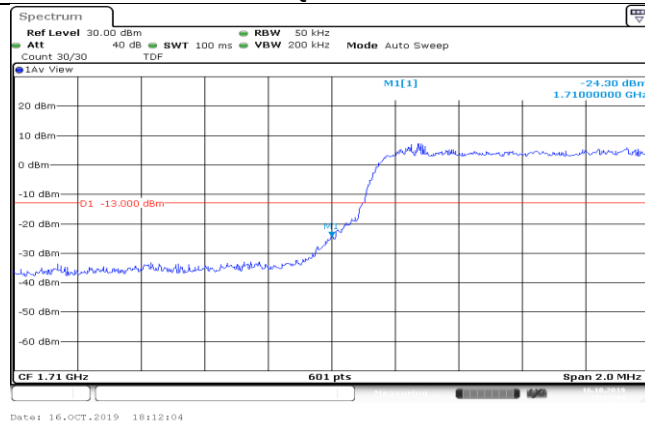
Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 4; recorded worst case for each Channel Bandwidth of LTE FDD Band 4.

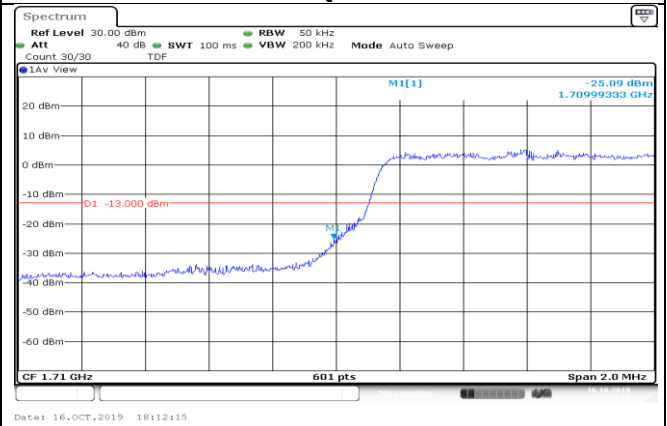
**LTE FDD Band 4-1.4MHz Channel Bandwidth Band Edge Compliance****QPSK****16QAM****6RB#0****6RB#0****Low Channel****6RB#0****6RB#0****High Channel**

## LTE FDD Band 4-3MHz Channel Bandwidth Band Edge Compliance

QPSK



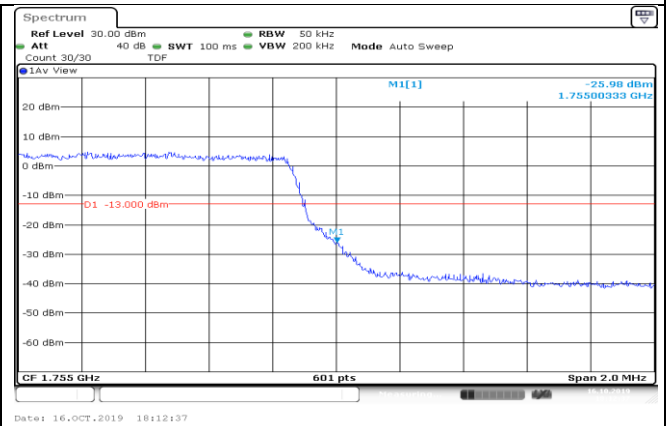
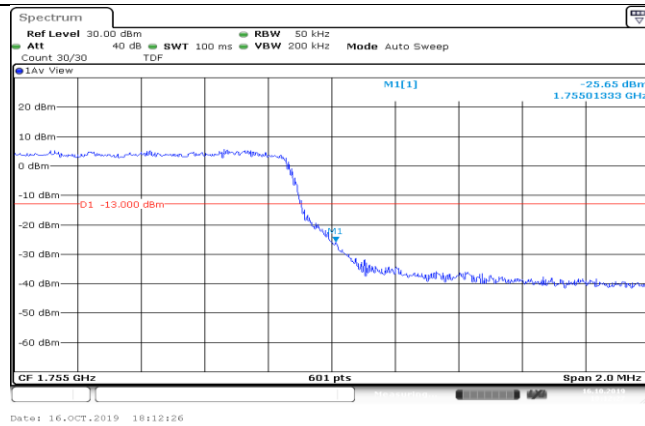
16QAM



15RB#0

15RB#0

Low Channel



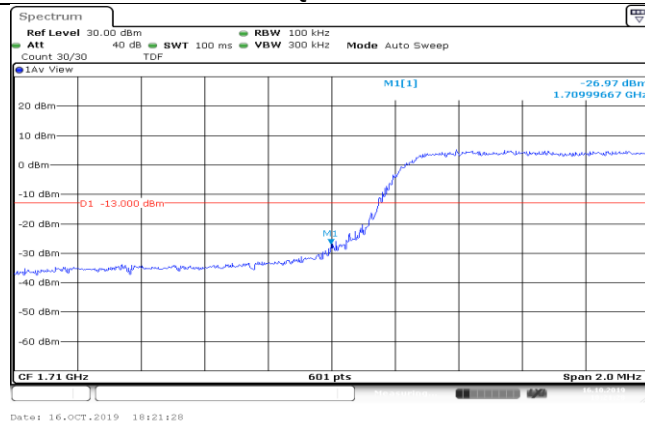
15RB#0

15RB#0

High Channel

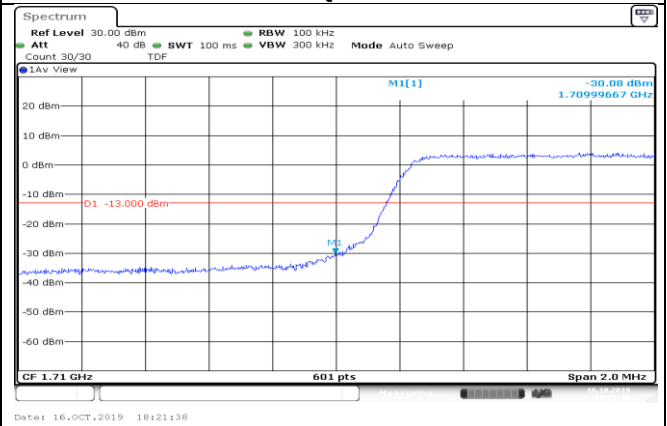
## LTE FDD Band 4-5MHz Channel Bandwidth Band Edge Compliance

QPSK



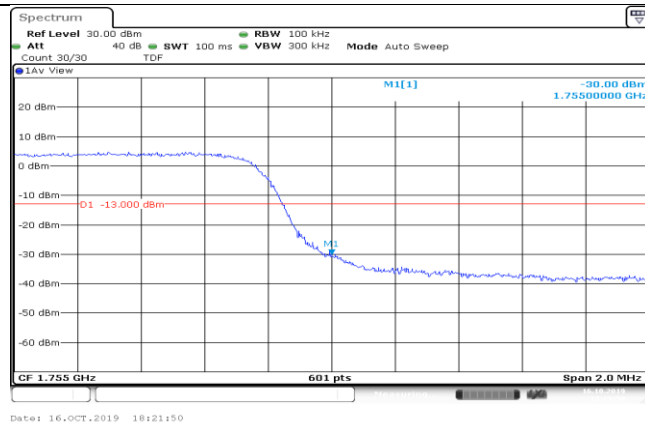
25RB#0

16QAM

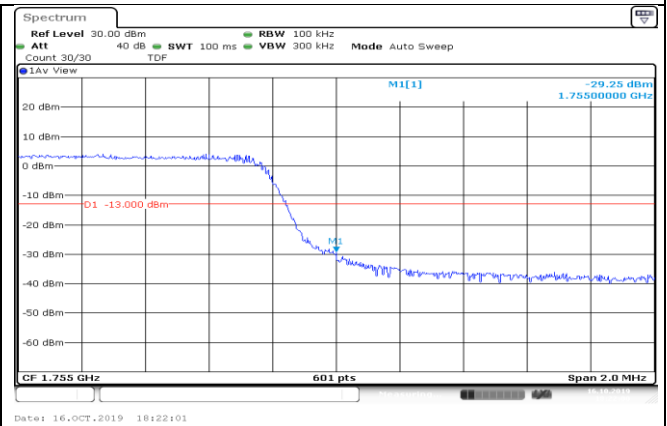


25RB#0

Low Channel



25RB#0

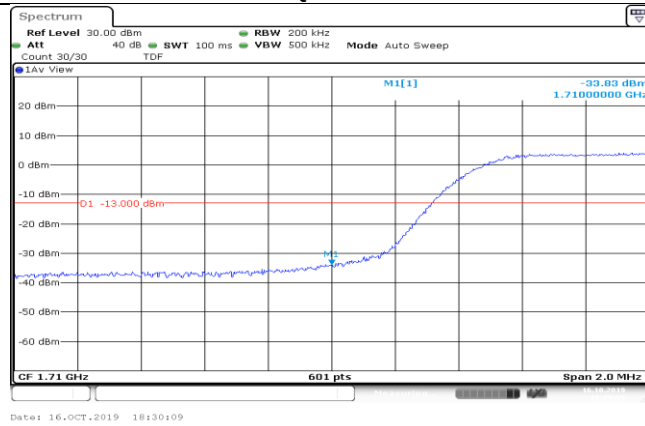


25RB#0

High Channel

## LTE FDD Band 4-10MHz Channel Bandwidth Band Edge Compliance

QPSK



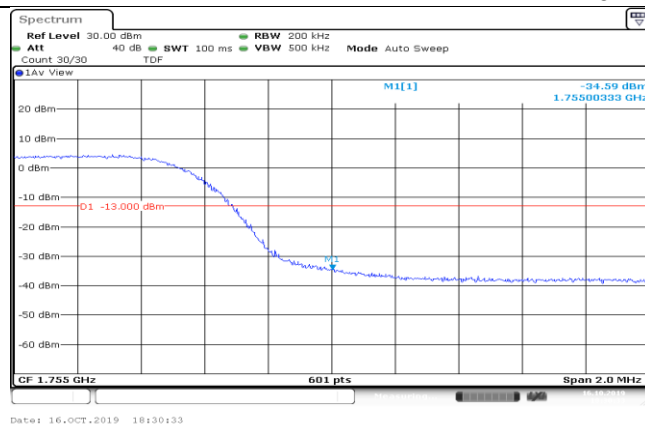
50RB#0

16QAM

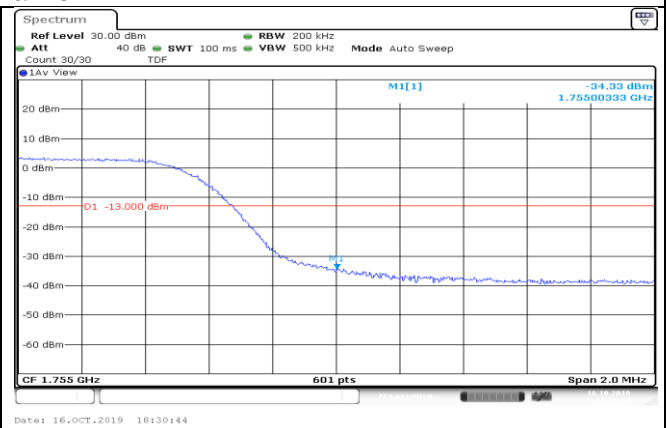


50RB#0

Low Channel



50RB#0

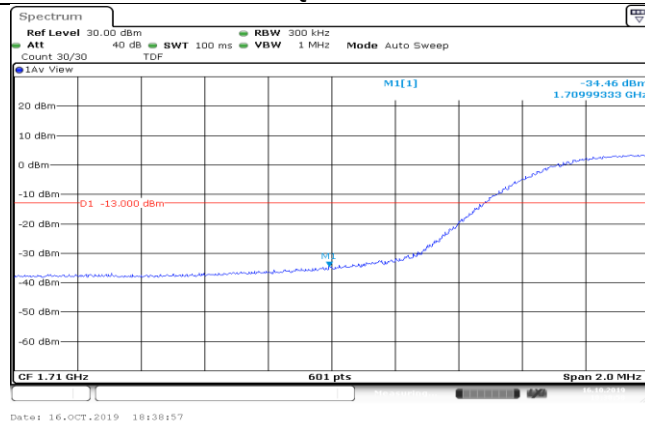


50RB#0

High Channel

## LTE FDD Band 4-15MHz Channel Bandwidth Band Edge Compliance

QPSK



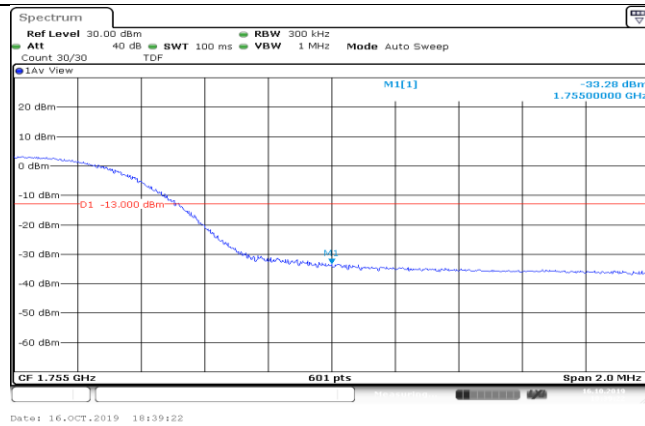
75RB#0

16QAM

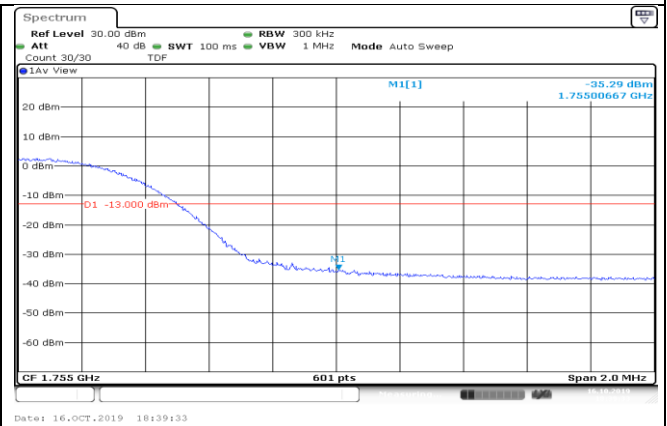


75RB#0

Low Channel



75RB#0



75RB#0

High Channel