

## Partial FCC Test Report

### (PART 27)

**Report No.:** RF180817C04-6

**FCC ID:** NKS-DUO-LTE

**Test Model:** Trimble Duo

**Received Date:** Aug. 17, 2018

**Test Date:** Aug. 29, 2018 ~ Aug. 30, 2018

**Issued Date:** Sep. 12, 2018

**Applicant:** PeopleNet Communications Corporation

**Address:** 4400 Baker Road, Minnetonka, MN 55343, USA

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan  
( R.O.C )

**Test Location:** No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City  
33383, Taiwan, R.O.C.

**FCC Registration /**  
**Designation Number:** 788550 / TW0003



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## Table of Contents

|                                                                 |           |
|-----------------------------------------------------------------|-----------|
| <b>Release Control Record .....</b>                             | <b>3</b>  |
| <b>1 Certificate of Conformity .....</b>                        | <b>4</b>  |
| <b>2 Summary of Test Results .....</b>                          | <b>5</b>  |
| 2.1 Measurement Uncertainty .....                               | 7         |
| 2.2 Test Site and Instruments .....                             | 8         |
| <b>3 General Information .....</b>                              | <b>9</b>  |
| 3.1 General Description of EUT .....                            | 9         |
| 3.2 Configuration of System under Test .....                    | 10        |
| 3.2.1 Description of Support Units .....                        | 10        |
| 3.3 Test Mode Applicability and Tested Channel Detail .....     | 10        |
| 3.4 EUT Operating Conditions .....                              | 12        |
| 3.5 General Description of Applied Standards .....              | 12        |
| <b>4 Test Types and Results .....</b>                           | <b>13</b> |
| 4.1 Output Power Measurement .....                              | 13        |
| 4.1.1 Limits of Output Power Measurement .....                  | 13        |
| 4.1.2 Test Procedures .....                                     | 13        |
| 4.1.3 Test Setup .....                                          | 14        |
| 4.1.4 Test Results .....                                        | 15        |
| 4.2 Radiated Emission Measurement .....                         | 21        |
| 4.2.1 Limits of Radiated Emission Measurement .....             | 21        |
| 4.2.2 Test Procedure .....                                      | 21        |
| 4.2.3 Deviation from Test Standard .....                        | 21        |
| 4.2.4 Test Setup .....                                          | 22        |
| 4.2.5 Test Results .....                                        | 23        |
| <b>5 Pictures of Test Arrangements .....</b>                    | <b>59</b> |
| <b>Appendix – Information on the Testing Laboratories .....</b> | <b>60</b> |

### Release Control Record

| Issue No.     | Description      | Date Issued   |
|---------------|------------------|---------------|
| RF180817C04-6 | Original Release | Sep. 12, 2018 |

## 1 Certificate of Conformity

**Product:** Tablet

**Brand:** Trimble

**Test Model:** Trimble Duo

**Sample Status:** Mass product

**Applicant:** PeopleNet Communications Corporation

**Test Date:** Aug. 29, 2018 ~ Aug. 30, 2018

**Standards:** FCC Part 27, Subpart C, F, L

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

**Prepared by :** Rona Chen, **Date:** Sep. 12, 2018  
Rona Chen / Specialist

**Approved by :** Dylan Chiou, **Date:** Sep. 12, 2018  
Dylan Chiou / Project Engineer

## 2 Summary of Test Results

| Applied Standard: FCC Part 27 & Part 2 (WCDMA) |                                     |        |                                                                                       |
|------------------------------------------------|-------------------------------------|--------|---------------------------------------------------------------------------------------|
| FCC Clause                                     | Test Item                           | Result | Remarks                                                                               |
| 2.1046<br>27.50(d)(4)                          | Equivalent Isotropic Radiated Power | Pass   | Meet the requirement of limit.                                                        |
| 2.1047                                         | Modulation Characteristics          | N/A    | Refer to Note                                                                         |
| 2.1055<br>27.54                                | Frequency Stability                 | N/A    | Refer to Note                                                                         |
| 2.1049<br>27.53(h)                             | Occupied Bandwidth                  | N/A    | Refer to Note                                                                         |
| 27.50(d)(5)                                    | Peak to Average Ratio               | N/A    | Refer to Note                                                                         |
| 27.53(h)                                       | Band Edge Measurements              | N/A    | Refer to Note                                                                         |
| 2.1051<br>27.53(h)                             | Conducted Spurious Emissions        | N/A    | Refer to Note                                                                         |
| 2.1053<br>27.53(h)                             | Radiated Spurious Emissions         | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -38.40 dB at 3465.20 MHz. |

| Applied Standard: FCC Part 27 & Part 2 (LTE 4) |                              |        |                                                                                     |
|------------------------------------------------|------------------------------|--------|-------------------------------------------------------------------------------------|
| FCC Clause                                     | Test Item                    | Result | Remarks                                                                             |
| 2.1046<br>27.50(d)(4)                          | Maximum Peak Output Power    | Pass   | Meet the requirement of limit.                                                      |
| 2.1047                                         | Modulation Characteristics   | N/A    | Refer to Note                                                                       |
| 2.1055<br>27.54                                | Frequency Stability          | N/A    | Refer to Note                                                                       |
| 2.1049<br>27.53(h)                             | Occupied Bandwidth           | N/A    | Refer to Note                                                                       |
| 27.50(d)(5)                                    | Peak to Average Ratio        | N/A    | Refer to Note                                                                       |
| 27.53(h)                                       | Band Edge Measurements       | N/A    | Refer to Note                                                                       |
| 2.1051<br>27.53(h)                             | Conducted Spurious Emissions | N/A    | Refer to Note                                                                       |
| 2.1053<br>27.53(h)                             | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -40.00 dB at 44.55 MHz. |

| Applied Standard: FCC Part 27 & Part 2 (LTE 17) |                              |        |                                                                                       |
|-------------------------------------------------|------------------------------|--------|---------------------------------------------------------------------------------------|
| FCC Clause                                      | Test Item                    | Result | Remarks                                                                               |
| 2.1046<br>27.50(c)(10)                          | Maximum Peak Output Power    | Pass   | Meet the requirement of limit.                                                        |
| 2.1047                                          | Modulation Characteristics   | N/A    | Refer to Note                                                                         |
| 2.1055<br>27.54                                 | Frequency Stability          | N/A    | Refer to Note                                                                         |
| 2.1049<br>27.53(g)                              | Occupied Bandwidth           | N/A    | Refer to Note                                                                         |
| 27.50(d)(5)                                     | Peak to Average Ratio        | N/A    | Refer to Note                                                                         |
| 27.53(g)                                        | Band Edge Measurements       | N/A    | Refer to Note                                                                         |
| 2.1051<br>27.53(g)                              | Conducted Spurious Emissions | N/A    | Refer to Note                                                                         |
| 2.1053<br>27.53(g)                              | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -28.42 dB at 2130.00 MHz. |

**Note:**

This report is a partial report. Therefore, only test item of Effective Radiated Power / Effective Isotropic Radiated Power and Radiated Spurious Emissions tests were performed for this report. Other testing data please refer to CETECOM™ report no.: 20835060b/15-C1 and 1-9521/15-01-04-A for module (Brand: GEMALTO, Model: PLS8-X)

## 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement                    | Frequency          | Expanded Uncertainty<br>(k=2) ( $\pm$ ) |
|--------------------------------|--------------------|-----------------------------------------|
| Radiated Emissions up to 1 GHz | 30 MHz ~ 200 MHz   | 2.93 dB                                 |
|                                | 200 MHz ~ 1000 MHz | 2.95 dB                                 |
| Radiated Emissions above 1 GHz | 1 GHz ~ 18 GHz     | 2.26 dB                                 |
|                                | 18 GHz ~ 40 GHz    | 1.94 dB                                 |

## 2.2 Test Site and Instruments

| Description & Manufacturer                     | Model No.                  | Serial No.                    | Date of Calibration | Due Date of Calibration |
|------------------------------------------------|----------------------------|-------------------------------|---------------------|-------------------------|
| Test Receiver<br>Agilent                       | N9038A                     | MY51210203                    | Mar. 16, 2018       | Mar. 15, 2019           |
| Spectrum Analyzer<br>Agilent                   | N9010A                     | MY52220314                    | Nov. 24, 2017       | Nov. 23, 2018           |
| HORN Antenna<br>Schwarzbeck                    | BBHA 9120D                 | 9120D-969                     | Dec. 12, 2017       | Dec. 11, 2018           |
| Horn Antenna<br>SCHWARZBECK                    | BBHA 9170                  | 148                           | Dec. 13, 2017       | Dec. 12, 2018           |
| BILOG Antenna<br>SCHWARZBECK                   | VULB 9168                  | 9168-472                      | Dec. 06, 2017       | Dec. 05, 2018           |
| Fixed Attenuator<br>Mini-Circuits              | MDCS18N-10                 | MDCS18N-10-01                 | Apr. 16, 2018       | Apr. 15, 2019           |
| Preamplifier<br>EMCI                           | EMC 012645                 | 980115                        | Oct. 20, 2017       | Oct. 19, 2018           |
| Preamplifier<br>EMCI                           | EMC 184045                 | 980116                        | Oct. 20, 2017       | Oct. 19, 2018           |
| Preamplifier<br>EMCI                           | EMC 330H                   | 980112                        | Oct. 13, 2017       | Oct. 12, 2018           |
| Signal generator<br>KEYSIGHT                   | N5173B                     | MY53270724                    | Apr. 05, 2018       | Apr. 04, 2019           |
| RF Coaxial Cable<br>HUBER+SUHNNER              | EMC104-SM-SM-800<br>0&3000 | 140811+170717                 | Oct. 20, 2017       | Oct. 19, 2018           |
| RF Coaxial Cable<br>HUBER+SUHNNER              | SUCOFLEX 104               | EMC104-SM-SM-<br>1000(140807) | Oct. 20, 2017       | Oct. 19, 2018           |
| RF Coaxial Cable<br>Worken                     | 8D-FB                      | Cable-Ch10-01                 | Oct. 20, 2017       | Oct. 19, 2018           |
| Software<br>BV ADT                             | E3<br>6.120103             | NA                            | NA                  | NA                      |
| Antenna Tower<br>MF                            | MFA-440H                   | NA                            | NA                  | NA                      |
| Turn Table<br>MF                               | MFT-201SS                  | NA                            | NA                  | NA                      |
| Antenna Tower & Turn<br>Table Controller<br>MF | MF-7802                    | NA                            | NA                  | NA                      |
| Radio Communication<br>Analyzer                | MT8820C                    | 6201300640                    | Aug. 16, 2017       | Aug. 15, 2019           |

- Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is IC7450F-10.

### 3 General Information

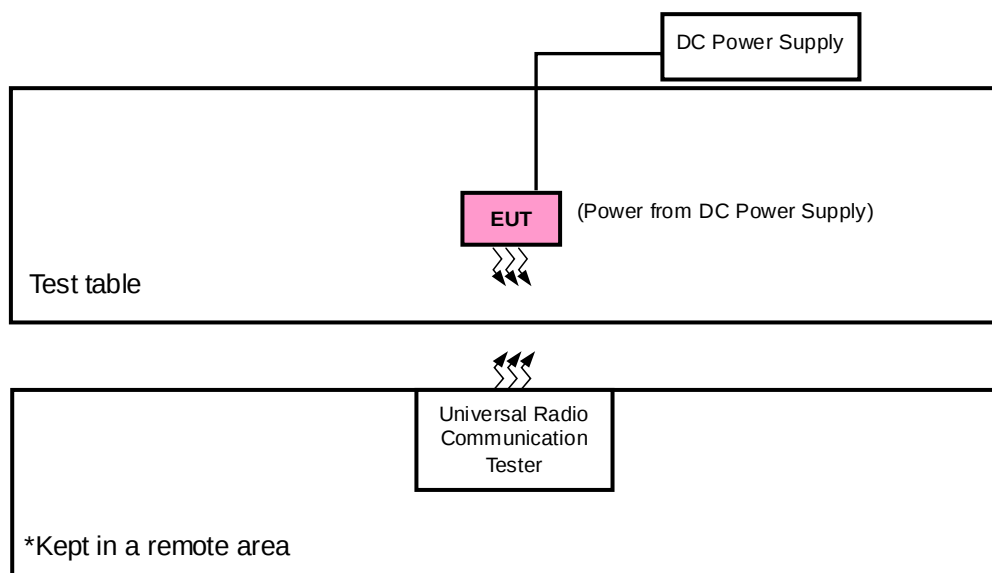
#### 3.1 General Description of EUT

|                            |                                         |                     |
|----------------------------|-----------------------------------------|---------------------|
| <b>Product</b>             | Tablet                                  |                     |
| <b>Brand</b>               | Trimble                                 |                     |
| <b>Test Model</b>          | Trimble Duo                             |                     |
| <b>Status of EUT</b>       | Mass product                            |                     |
| <b>Power Supply Rating</b> | 12.0 Vdc (DC Power Supply)              |                     |
| <b>Modulation Type</b>     | WCDMA                                   | QPSK                |
|                            | LTE                                     | QPSK, 16QAM         |
| <b>Frequency Range</b>     | WCDMA                                   | 1712.4 ~ 1752.6 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 1.4 MHz) | 1710.7 ~ 1754.3 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 3 MHz)   | 1711.5 ~ 1753.5 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 5 MHz)   | 1712.5 ~ 1752.5 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 10 MHz)  | 1715.0 ~ 1750.0 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 15 MHz)  | 1717.5 ~ 1747.5 MHz |
|                            | LTE Band 4 (Channel Bandwidth: 20 MHz)  | 1720.0 ~ 1745.0 MHz |
|                            | LTE Band 17 (Channel Bandwidth: 5 MHz)  | 706.5 ~ 713.5 MHz   |
|                            | LTE Band 17 (Channel Bandwidth: 10 MHz) | 709.0 ~ 711.0 MHz   |
| <b>Max. ERP Power</b>      | LTE Band 17 (Channel Bandwidth: 5 MHz)  | 7.73 mW             |
|                            | LTE Band 17 (Channel Bandwidth: 10 MHz) | 8.15 mW             |
| <b>Max. EIRP Power</b>     | WCDMA                                   | 325.09 mW           |
|                            | LTE Band 4 (Channel Bandwidth: 1.4 MHz) | 106.91 mW           |
|                            | LTE Band 4 (Channel Bandwidth: 3 MHz)   | 112.98 mW           |
|                            | LTE Band 4 (Channel Bandwidth: 5 MHz)   | 118.85 mW           |
|                            | LTE Band 4 (Channel Bandwidth: 10 MHz)  | 125.89 mW           |
|                            | LTE Band 4 (Channel Bandwidth: 15 MHz)  | 133.05 mW           |
|                            | LTE Band 4 (Channel Bandwidth: 20 MHz)  | 140.28 mW           |
| <b>Antenna Type</b>        | PIFA Antenna                            |                     |
| <b>Antenna Gain</b>        | WCDMA                                   | 1.24 dBi            |
|                            | LTE Band 4                              | 1.24 dBi            |
|                            | LTE Band 17                             | 2.28 dBi            |
| <b>Accessory Device</b>    | N/A                                     |                     |
| <b>Data Cable Supplied</b> | N/A                                     |                     |

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

### 3.2 Configuration of System under Test



#### 3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| No. | Product         | Brand   | Model No. | Serial No. | FCC ID |
|-----|-----------------|---------|-----------|------------|--------|
| 1.  | DC Power Supply | Topward | 33010D    | 807748     | N/A    |

| No. | Signal Cable Description Of The Above Support Units |
|-----|-----------------------------------------------------|
| 1.  | N/A                                                 |

Note:

1. All power cords of the above support units are non-shielded (1.8m).

### 3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis, and antenna ports

The worst case was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below.

| Band        | ERP / EIRP | Radiated Emission |
|-------------|------------|-------------------|
| WCDMA       | X-plane    | Z-axis            |
| LTE Band 4  | X-plane    | Z-axis            |
| LTE Band 17 | Z-plane    | X-axis            |

## WCDMA

| EUT Configure Mode | Test Item         | Available Channel | Tested Channel   | Mode  |
|--------------------|-------------------|-------------------|------------------|-------|
| -                  | EIRP              | 1312 to 1513      | 1312, 1413, 1513 | WCDMA |
| -                  | Radiated Emission | 1312 to 1513      | 1312, 1413, 1513 | WCDMA |

## LTE Band 4

| EUT Configure Mode | Test Item         | Available Channel | Tested Channel      | Channel Bandwidth | Modulation  | Mode               |
|--------------------|-------------------|-------------------|---------------------|-------------------|-------------|--------------------|
| -                  | EIRP              | 19957 to 20393    | 19957, 20175, 20393 | 1.4 MHz           | QPSK, 16QAM | 1 RB / 0 RB Offset |
|                    |                   | 19965 to 20385    | 19965, 20175, 20385 | 3 MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset |
|                    |                   | 19975 to 20375    | 19975, 20175, 20375 | 5 MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset |
|                    |                   | 20000 to 20350    | 20000, 20175, 20350 | 10 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset |
|                    |                   | 20025 to 20325    | 20025, 20175, 20325 | 15 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset |
|                    |                   | 20050 to 20300    | 20050, 20175, 20300 | 20 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset |
| -                  | Radiated Emission | 19957 to 20393    | 19957, 20175, 20393 | 1.4 MHz           | QPSK        | 1 RB / 0 RB Offset |
|                    |                   | 19975 to 20375    | 19975, 20175, 20375 | 5 MHz             | QPSK        | 1 RB / 0 RB Offset |
|                    |                   | 20050 to 20300    | 20050, 20175, 20300 | 20 MHz            | QPSK        | 1 RB / 0 RB Offset |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

## LTE Band 17

| EUT Configure Mode | Test Item         | Available Channel | Tested Channel      | Channel Bandwidth | Modulation  | Mode               |
|--------------------|-------------------|-------------------|---------------------|-------------------|-------------|--------------------|
| -                  | ERP               | 23755 to 23825    | 23755, 23790, 23825 | 5 MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset |
|                    |                   | 23780 to 23800    | 23780, 23790, 23800 | 10 MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset |
| -                  | Radiated Emission | 23755 to 23825    | 23755, 23790, 23825 | 5 MHz             | QPSK        | 1 RB / 0 RB Offset |
|                    |                   | 23780 to 23800    | 23780, 23790, 23800 | 10 MHz            | QPSK        | 1 RB / 0 RB Offset |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

### Test Condition:

| Test Item         | Environmental Conditions | Input Power    | Tested By    |
|-------------------|--------------------------|----------------|--------------|
| ERP / EIRP        | 25 deg. C, 65 % RH       | 12 Vdc         | Jisyong Wang |
| Radiated Emission | 25 deg. C, 65 % RH       | 120 Vac, 60 Hz | Jisyong Wang |

### **3.4 EUT Operating Conditions**

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

### **3.5 General Description of Applied Standards**

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 27**

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

**ANSI/TIA/EIA-603-E 2016**

**ANSI 63.26-2015**

**Note:** All test items have been performed and recorded as per the above standards.

## 4 Test Types and Results

### 4.1 Output Power Measurement

#### 4.1.1 Limits of Output Power Measurement

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

Portable stations (hand-held devices) operating in the 698-746 MHz band are limited to 3 watts ERP

#### 4.1.2 Test Procedures

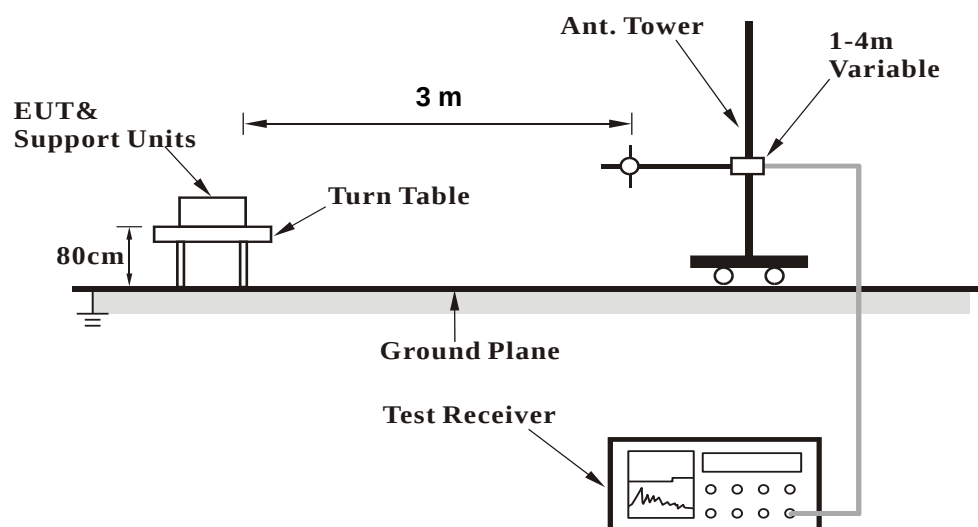
##### **EIRP / ERP Measurement:**

- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5 MHz for WCDMA and 10 MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step b. Record the power level of S.G.
- d.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ . E.R.P power can be calculated from E.I.R.P power by subtracting the gain of dipole,  $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15 \text{ dB}$ .

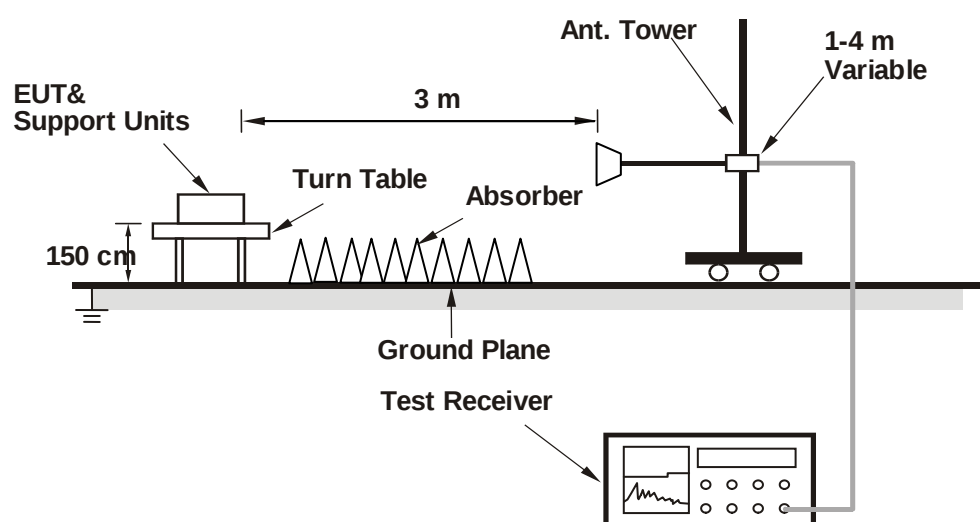
#### 4.1.3 Test Setup

##### EIRP / ERP Measurement:

<Radiated Emission below or equal 1 GHz>



<Radiated Emission above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.4 Test Results

##### ERP Power (dBm)

| LTE Band 17                      |         |                 |               |                        |           |          |                    |
|----------------------------------|---------|-----------------|---------------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |               |                        |           |          |                    |
| Plane                            | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| Z                                | 23755   | 706.5           | -19.33        | 30.36                  | 8.88      | 7.73     | H                  |
|                                  | 23790   | 710.0           | -21.36        | 30.17                  | 6.66      | 4.63     |                    |
|                                  | 23825   | 713.5           | -19.73        | 30.17                  | 8.29      | 6.75     |                    |
|                                  | 23755   | 706.5           | -23.10        | 32.03                  | 6.78      | 4.76     | V                  |
|                                  | 23790   | 710.0           | -25.24        | 31.98                  | 4.59      | 2.88     |                    |
|                                  | 23825   | 713.5           | -23.65        | 32.06                  | 6.26      | 4.23     |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |               |                        |           |          |                    |
| Z                                | 23755   | 706.5           | -20.32        | 30.36                  | 7.89      | 6.15     | H                  |
|                                  | 23790   | 710.0           | -22.35        | 30.17                  | 5.67      | 3.69     |                    |
|                                  | 23825   | 713.5           | -20.72        | 30.17                  | 7.30      | 5.37     |                    |
|                                  | 23755   | 706.5           | -24.09        | 32.03                  | 5.79      | 3.79     | V                  |
|                                  | 23790   | 710.0           | -26.23        | 31.98                  | 3.60      | 2.29     |                    |
|                                  | 23825   | 713.5           | -24.64        | 32.06                  | 5.27      | 3.37     |                    |

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

| LTE Band 17                       |         |                 |               |                        |           |          |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |               |                        |           |          |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| Z                                 | 23780   | 709.0           | -18.91        | 30.17                  | 9.11      | 8.15     | H                  |
|                                   | 23790   | 710.0           | -21.13        | 30.17                  | 6.89      | 4.89     |                    |
|                                   | 23800   | 711.0           | -19.51        | 30.18                  | 8.52      | 7.11     |                    |
|                                   | 23780   | 709.0           | -22.80        | 31.96                  | 7.01      | 5.02     | V                  |
|                                   | 23790   | 710.0           | -25.01        | 31.98                  | 4.82      | 3.03     |                    |
|                                   | 23800   | 711.0           | -23.39        | 32.03                  | 6.49      | 4.46     |                    |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |               |                        |           |          |                    |
| Z                                 | 23780   | 709.0           | -20.02        | 30.17                  | 8.00      | 6.31     | H                  |
|                                   | 23790   | 710.0           | -22.24        | 30.17                  | 5.78      | 3.78     |                    |
|                                   | 23800   | 711.0           | -20.62        | 30.18                  | 7.41      | 5.51     |                    |
|                                   | 23780   | 709.0           | -23.91        | 31.96                  | 5.90      | 3.89     | V                  |
|                                   | 23790   | 710.0           | -26.12        | 31.98                  | 3.71      | 2.35     |                    |
|                                   | 23800   | 711.0           | -24.50        | 32.03                  | 5.38      | 3.45     |                    |

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

### EIRP Power (dBm)

| WCDMA |         |                 |               |                        |            |           |                    |
|-------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Plane | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| X     | 1312    | 1712.4          | -11.40        | 36.29                  | 24.89      | 308.32    | H                  |
|       | 1413    | 1732.6          | -11.57        | 36.69                  | 25.12      | 325.09    |                    |
|       | 1513    | 1752.6          | -12.66        | 36.98                  | 24.32      | 270.40    |                    |
|       | 1312    | 1712.4          | -17.39        | 37.11                  | 19.72      | 93.76     | V                  |
|       | 1413    | 1732.6          | -17.58        | 37.60                  | 20.02      | 100.46    |                    |
|       | 1513    | 1752.6          | -18.42        | 37.65                  | 19.23      | 83.75     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 4                         |         |                 |               |                        |            |           |                    |
|------------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 1.4 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                              | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| X                                  | 19957   | 1710.7          | -17.41        | 36.45                  | 19.04      | 80.17     | H                  |
|                                    | 20175   | 1732.5          | -16.51        | 36.80                  | 20.29      | 106.91    |                    |
|                                    | 20393   | 1754.3          | -17.40        | 36.94                  | 19.54      | 89.95     |                    |
|                                    | 19957   | 1710.7          | -23.25        | 37.28                  | 14.03      | 25.29     | V                  |
|                                    | 20175   | 1732.5          | -22.33        | 37.63                  | 15.30      | 33.88     |                    |
|                                    | 20393   | 1754.3          | -23.13        | 37.64                  | 14.51      | 28.25     |                    |
| Channel Bandwidth: 1.4 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| X                                  | 19957   | 1710.7          | -18.38        | 36.45                  | 18.07      | 64.12     | H                  |
|                                    | 20175   | 1732.5          | -17.48        | 36.80                  | 19.32      | 85.51     |                    |
|                                    | 20393   | 1754.3          | -18.37        | 36.94                  | 18.57      | 71.94     |                    |
|                                    | 19957   | 1710.7          | -24.22        | 37.28                  | 13.06      | 20.23     | V                  |
|                                    | 20175   | 1732.5          | -23.30        | 37.63                  | 14.33      | 27.10     |                    |
|                                    | 20393   | 1754.3          | -24.10        | 37.64                  | 13.54      | 22.59     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 4                       |         |                 |               |                        |            |           |                    |
|----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 3 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| X                                | 19965   | 1711.5          | -17.17        | 36.45                  | 19.28      | 84.72     | H                  |
|                                  | 20175   | 1732.5          | -16.27        | 36.80                  | 20.53      | 112.98    |                    |
|                                  | 20385   | 1753.5          | -17.16        | 36.94                  | 19.78      | 95.06     |                    |
|                                  | 19965   | 1711.5          | -23.01        | 37.28                  | 14.27      | 26.73     | V                  |
|                                  | 20175   | 1732.5          | -22.09        | 37.63                  | 15.54      | 35.81     |                    |
|                                  | 20385   | 1753.5          | -22.89        | 37.64                  | 14.75      | 29.85     |                    |
| Channel Bandwidth: 3 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| X                                | 19965   | 1711.5          | -18.06        | 36.45                  | 18.39      | 69.02     | H                  |
|                                  | 20175   | 1732.5          | -17.16        | 36.80                  | 19.64      | 92.04     |                    |
|                                  | 20385   | 1753.5          | -18.05        | 36.94                  | 18.89      | 77.45     |                    |
|                                  | 19965   | 1711.5          | -23.90        | 37.28                  | 13.38      | 21.78     | V                  |
|                                  | 20175   | 1732.5          | -22.98        | 37.63                  | 14.65      | 29.17     |                    |
|                                  | 20385   | 1753.5          | -23.78        | 37.64                  | 13.86      | 24.32     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 4                       |         |                 |               |                        |            |           |                    |
|----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                            | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| X                                | 19975   | 1712.5          | -16.95        | 36.45                  | 19.50      | 89.13     | H                  |
|                                  | 20175   | 1732.5          | -16.05        | 36.80                  | 20.75      | 118.85    |                    |
|                                  | 20375   | 1752.5          | -16.94        | 36.94                  | 20.00      | 100.00    |                    |
|                                  | 19975   | 1712.5          | -22.79        | 37.28                  | 14.49      | 28.12     | V                  |
|                                  | 20175   | 1732.5          | -21.87        | 37.63                  | 15.76      | 37.67     |                    |
|                                  | 20375   | 1752.5          | -22.67        | 37.64                  | 14.97      | 31.41     |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| X                                | 19975   | 1712.5          | -17.94        | 36.45                  | 18.51      | 70.96     | H                  |
|                                  | 20175   | 1732.5          | -17.04        | 36.80                  | 19.76      | 94.62     |                    |
|                                  | 20375   | 1752.5          | -17.93        | 36.94                  | 19.01      | 79.62     |                    |
|                                  | 19975   | 1712.5          | -23.78        | 37.28                  | 13.50      | 22.39     | V                  |
|                                  | 20175   | 1732.5          | -22.86        | 37.63                  | 14.77      | 29.99     |                    |
|                                  | 20375   | 1752.5          | -23.66        | 37.64                  | 13.98      | 25.00     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 4                        |         |                 |               |                        |            |           |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| X                                 | 20000   | 1715.0          | -16.89        | 36.64                  | 19.75      | 94.41     | H                  |
|                                   | 20175   | 1732.5          | -15.80        | 36.80                  | 21.00      | 125.89    |                    |
|                                   | 20350   | 1750.0          | -16.55        | 36.80                  | 20.25      | 105.93    |                    |
|                                   | 20000   | 1715.0          | -22.70        | 37.44                  | 14.74      | 29.79     | V                  |
|                                   | 20175   | 1732.5          | -21.62        | 37.63                  | 16.01      | 39.90     |                    |
|                                   | 20350   | 1750.0          | -22.42        | 37.64                  | 15.22      | 33.27     |                    |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| X                                 | 20000   | 1715.0          | -17.86        | 36.64                  | 18.78      | 75.51     | H                  |
|                                   | 20175   | 1732.5          | -16.77        | 36.80                  | 20.03      | 100.69    |                    |
|                                   | 20350   | 1750.0          | -17.52        | 36.80                  | 19.28      | 84.72     |                    |
|                                   | 20000   | 1715.0          | -23.67        | 37.44                  | 13.77      | 23.82     | V                  |
|                                   | 20175   | 1732.5          | -22.59        | 37.63                  | 15.04      | 31.92     |                    |
|                                   | 20350   | 1750.0          | -23.39        | 37.64                  | 14.25      | 26.61     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 4                        |         |                 |               |                        |            |           |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 15 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| X                                 | 20025   | 1717.5          | -16.46        | 36.45                  | 19.99      | 99.77     | H                  |
|                                   | 20175   | 1732.5          | -15.56        | 36.80                  | 21.24      | 133.05    |                    |
|                                   | 20325   | 1747.5          | -16.45        | 36.94                  | 20.49      | 111.94    |                    |
|                                   | 20025   | 1717.5          | -22.30        | 37.28                  | 14.98      | 31.48     | V                  |
|                                   | 20175   | 1732.5          | -21.38        | 37.63                  | 16.25      | 42.17     |                    |
|                                   | 20325   | 1747.5          | -22.18        | 37.64                  | 15.46      | 35.16     |                    |
| Channel Bandwidth: 15 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| X                                 | 20025   | 1717.5          | -17.45        | 36.45                  | 19.00      | 79.43     | H                  |
|                                   | 20175   | 1732.5          | -16.55        | 36.80                  | 20.25      | 105.93    |                    |
|                                   | 20325   | 1747.5          | -17.44        | 36.94                  | 19.50      | 89.13     |                    |
|                                   | 20025   | 1717.5          | -23.29        | 37.28                  | 13.99      | 25.06     | V                  |
|                                   | 20175   | 1732.5          | -22.37        | 37.63                  | 15.26      | 33.57     |                    |
|                                   | 20325   | 1747.5          | -23.17        | 37.64                  | 14.47      | 27.99     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

| LTE Band 4                        |         |                 |               |                        |            |           |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|------------|-----------|--------------------|
| Channel Bandwidth: 20 MHz / QPSK  |         |                 |               |                        |            |           |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | EIRP (dBm) | EIRP (mW) | Polarization (H/V) |
| X                                 | 20050   | 1720.0          | -16.23        | 36.45                  | 20.22      | 105.20    | H                  |
|                                   | 20175   | 1732.5          | -15.33        | 36.80                  | 21.47      | 140.28    |                    |
|                                   | 20300   | 1745.0          | -16.22        | 36.94                  | 20.72      | 118.03    |                    |
|                                   | 20050   | 1720.0          | -22.07        | 37.28                  | 15.21      | 33.19     | V                  |
|                                   | 20175   | 1732.5          | -21.15        | 37.63                  | 16.48      | 44.46     |                    |
|                                   | 20300   | 1745.0          | -21.95        | 37.64                  | 15.69      | 37.07     |                    |
| Channel Bandwidth: 20 MHz / 16QAM |         |                 |               |                        |            |           |                    |
| X                                 | 20050   | 1720.0          | -17.24        | 36.45                  | 19.21      | 83.37     | H                  |
|                                   | 20175   | 1732.5          | -16.34        | 36.80                  | 20.46      | 111.17    |                    |
|                                   | 20300   | 1745.0          | -17.23        | 36.94                  | 19.71      | 93.54     |                    |
|                                   | 20050   | 1720.0          | -23.08        | 37.28                  | 14.20      | 26.30     | V                  |
|                                   | 20175   | 1732.5          | -22.16        | 37.63                  | 15.47      | 35.24     |                    |
|                                   | 20300   | 1745.0          | -22.96        | 37.64                  | 14.68      | 29.38     |                    |

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

## 4.2 Radiated Emission Measurement

### 4.2.1 Limits of Radiated Emission Measurement

- a. The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB. The limit of emission is equal to -13 dBm.

### 4.2.2 Test Procedure

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- c.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15 \text{ dB}.$

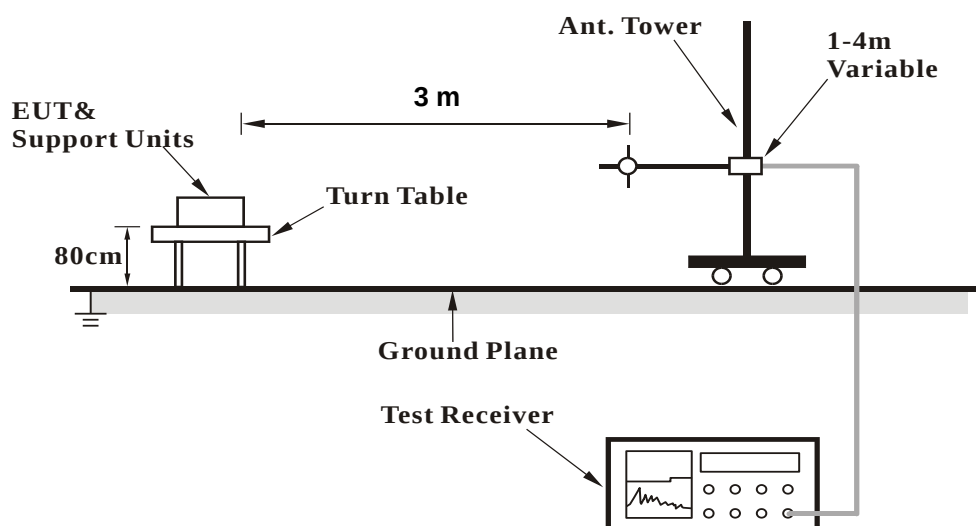
**Note:** The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

### 4.2.3 Deviation from Test Standard

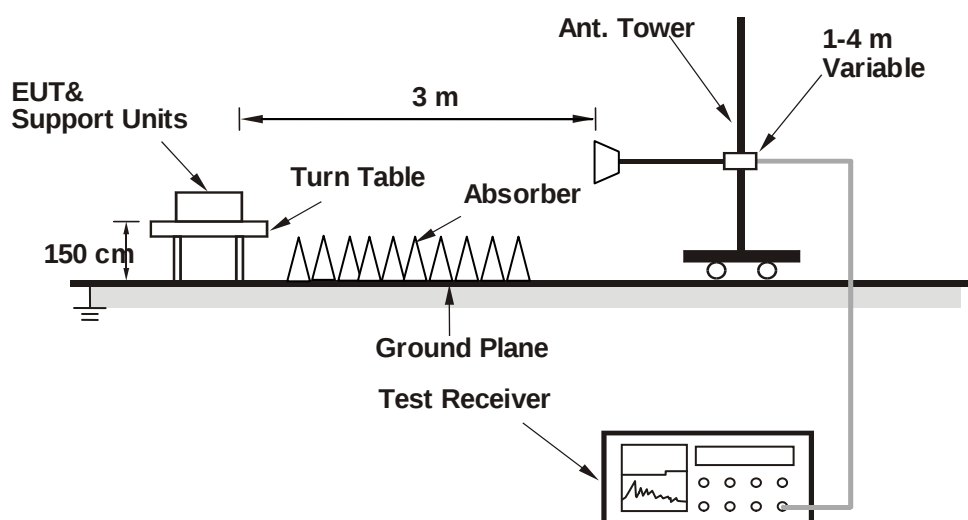
No deviation.

#### 4.2.4 Test Setup

##### <Radiated Emission below or equal 1 GHz>



##### <Radiated Emission above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

# 4.2.5 Test Results

WCDMA:

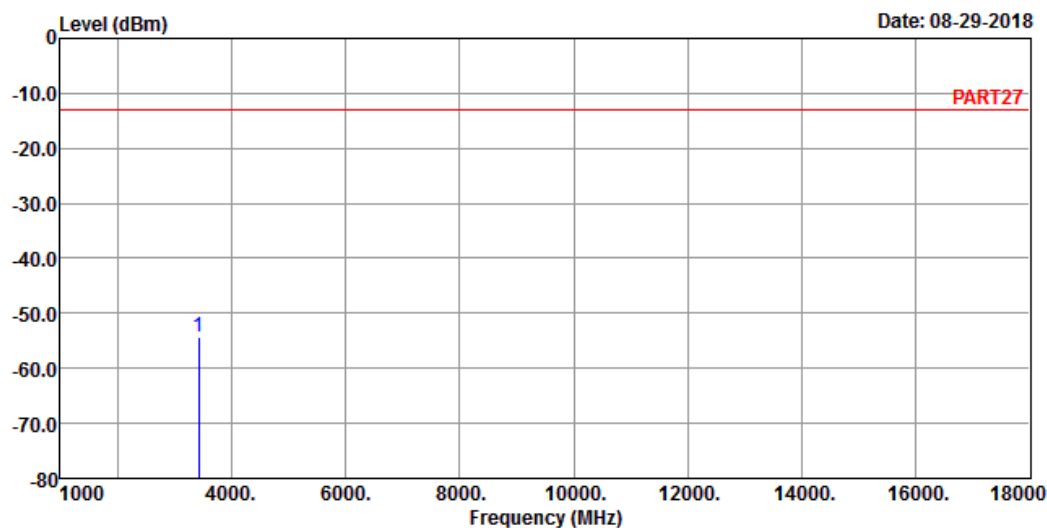
Low Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5

Condition: PART27 HORIZONTAL

Remark : WCDMA Band 4 Link\_L-CH

Tested by: Jisyong Wang

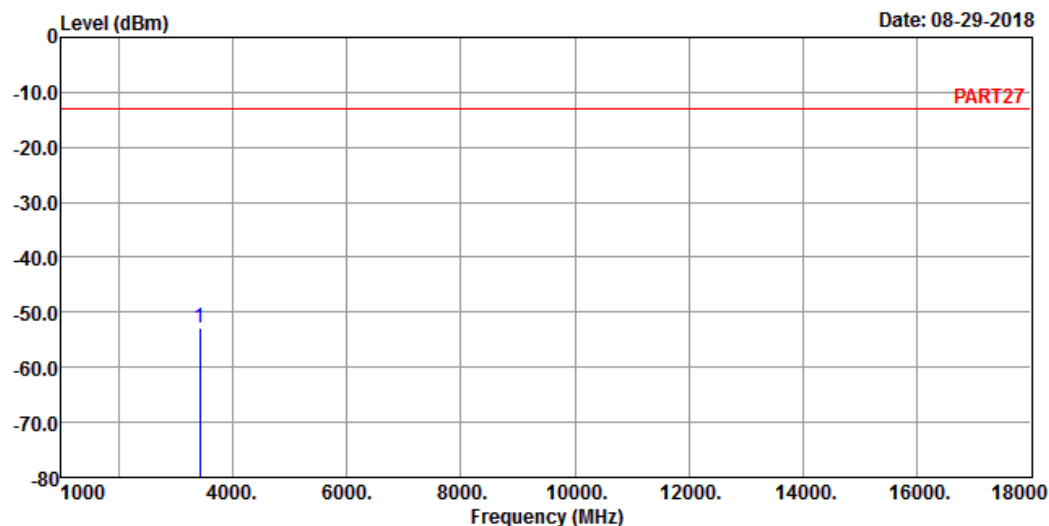
| Freq         | Level  | Read   | Limit  | Over   | Factor | Remark |
|--------------|--------|--------|--------|--------|--------|--------|
|              |        | Level  | Line   | Limit  |        |        |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3424.80 | -54.46 | -46.12 | -13.00 | -41.46 | -8.34  | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remark : WCDMA Band 4 Link\_L-CH  
 Tested by: Jisyong Wang

| Freq         | Level  | Read   | Limit  | Over   | Factor | Remark |
|--------------|--------|--------|--------|--------|--------|--------|
|              |        | Level  | Line   | Limit  |        |        |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3424.80 | -52.93 | -44.59 | -13.00 | -39.93 | -8.34  | Peak   |

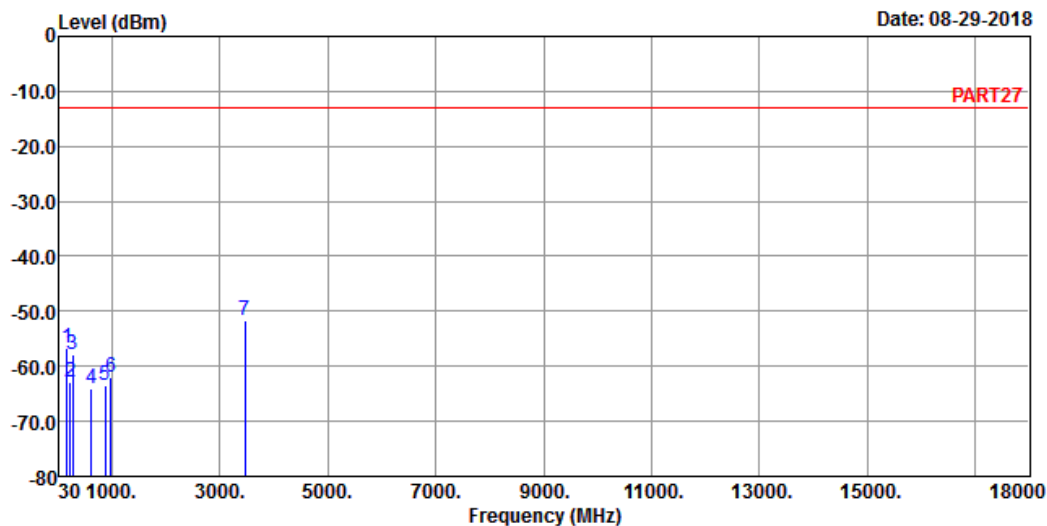
# Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 7



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remark : WCDMA Band 4 Link\_M-CH  
Tested by: Jisyoung Wang

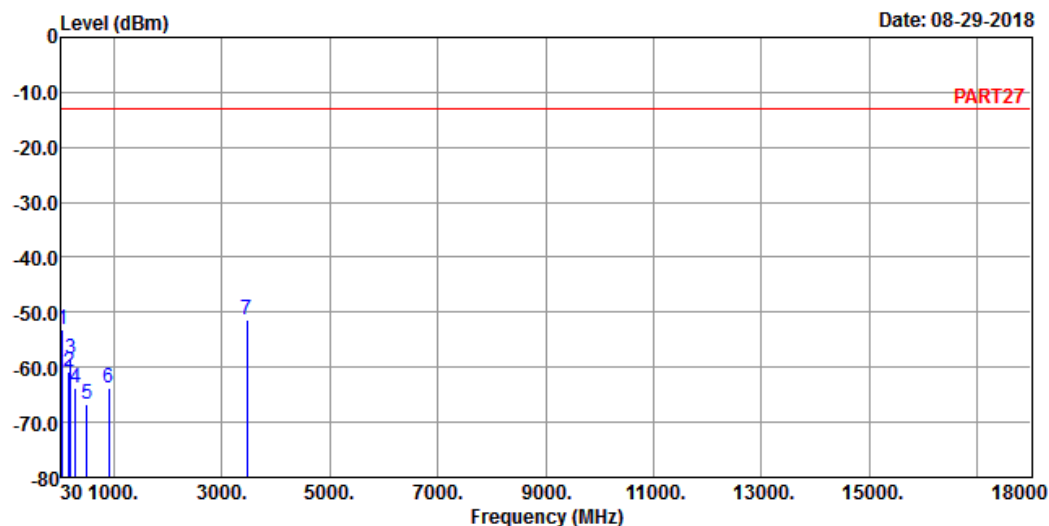
|      |         |        | Read   | Limit  | Over   |         |        |
|------|---------|--------|--------|--------|--------|---------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor  | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB      |        |
| 1    | 168.71  | -56.55 | 443.45 | -13.00 | -43.55 | -500.00 | Peak   |
| 2    | 227.88  | -62.82 | 437.18 | -13.00 | -49.82 | -500.00 | Peak   |
| 3    | 281.23  | -57.86 | 442.14 | -13.00 | -44.86 | -500.00 | Peak   |
| 4    | 616.85  | -64.04 | 435.96 | -13.00 | -51.04 | -500.00 | Peak   |
| 5    | 873.90  | -63.42 | 436.58 | -13.00 | -50.42 | -500.00 | Peak   |
| 6    | 984.48  | -62.05 | 437.95 | -13.00 | -49.05 | -500.00 | Peak   |
| 7 pp | 3465.20 | -51.77 | -43.89 | -13.00 | -38.77 | -7.88   | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 8



Site : 966 Chamber 5  
Condition: PART27 VERTICAL  
Remark : WCDMA Band 4 Link\_M-CH  
Tested by: Jisyong Wang

|      |         |        | Read   | Limit  | Over   |         |        |
|------|---------|--------|--------|--------|--------|---------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor  | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB      |        |
| 1    | 44.55   | -53.00 | 447.00 | -13.00 | -40.00 | -500.00 | Peak   |
| 2    | 168.71  | -60.87 | 439.13 | -13.00 | -47.87 | -500.00 | Peak   |
| 3    | 198.78  | -58.32 | 441.68 | -13.00 | -45.32 | -500.00 | Peak   |
| 4    | 286.08  | -63.66 | 436.34 | -13.00 | -50.66 | -500.00 | Peak   |
| 5    | 503.36  | -66.86 | 433.14 | -13.00 | -53.86 | -500.00 | Peak   |
| 6    | 902.03  | -63.71 | 436.29 | -13.00 | -50.71 | -500.00 | Peak   |
| 7 pp | 3465.20 | -51.40 | -43.52 | -13.00 | -38.40 | -7.88   | Peak   |

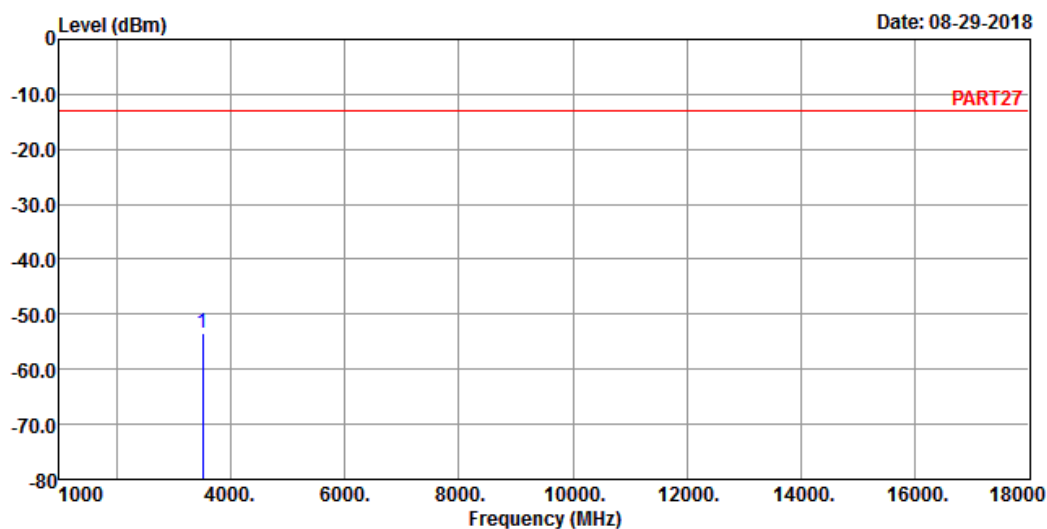
# High Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remark : WCDMA Band 4 Link\_H-CH  
Tested by: Jisyong Wang

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

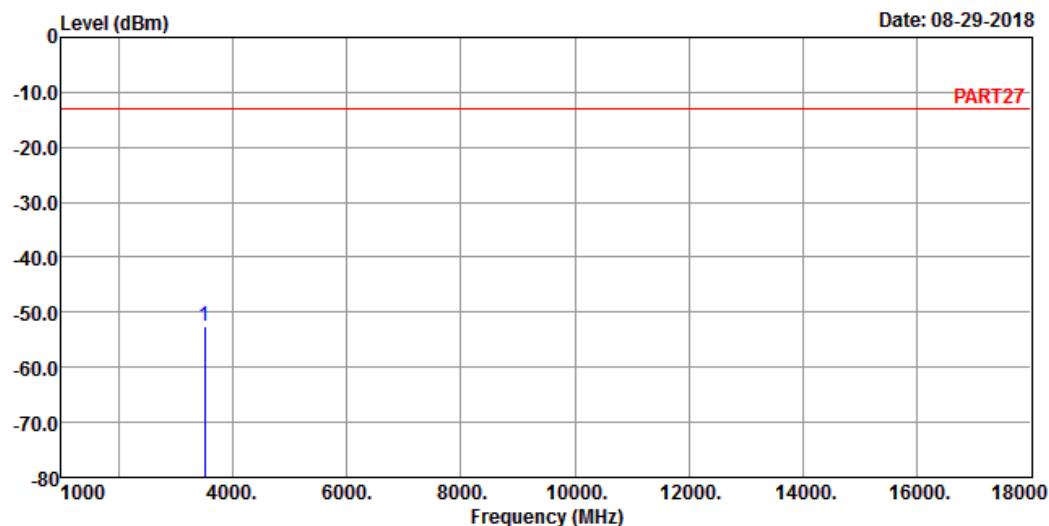
1 pp 3505.20 -53.55 -46.10 -13.00 -40.55 -7.45 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remark : WCDMA Band 4 Link\_H-CH  
 Tested by: Jisyong Wang

| Freq         | Level  | Read   | Limit  | Over   | Factor | Remark |
|--------------|--------|--------|--------|--------|--------|--------|
|              |        | Level  | Line   | Limit  |        |        |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3505.20 | -52.50 | -45.05 | -13.00 | -39.50 | -7.45  | Peak   |

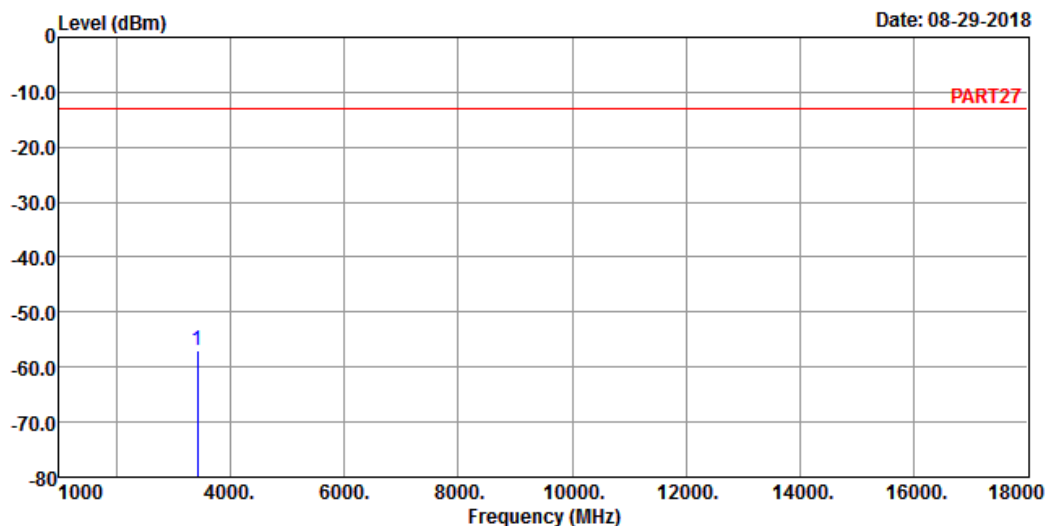
LTE Band 4  
Channel Bandwidth: 1.4 MHz / QPSK  
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 4 QPSK\_1.4M Link\_L-CH  
Tested by: Thomas Wei

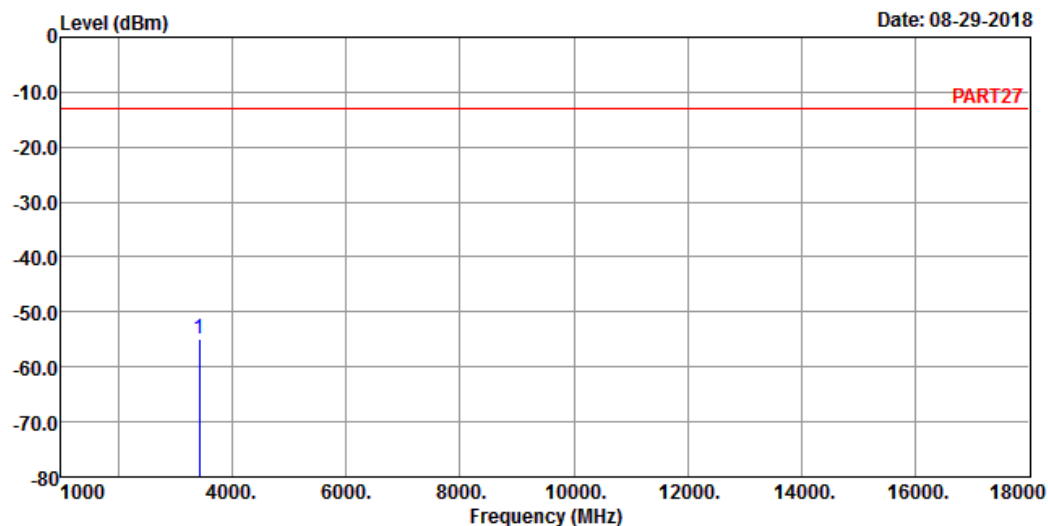
|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3421.40 | -56.89 | -48.55 | -13.00 | -43.89 | -8.34  | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 4 QPSK\_1.4M Link\_L-CH  
 Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3421.40 | -54.95 | -46.61 | -13.00 | -41.95 | -8.34  | Peak   |

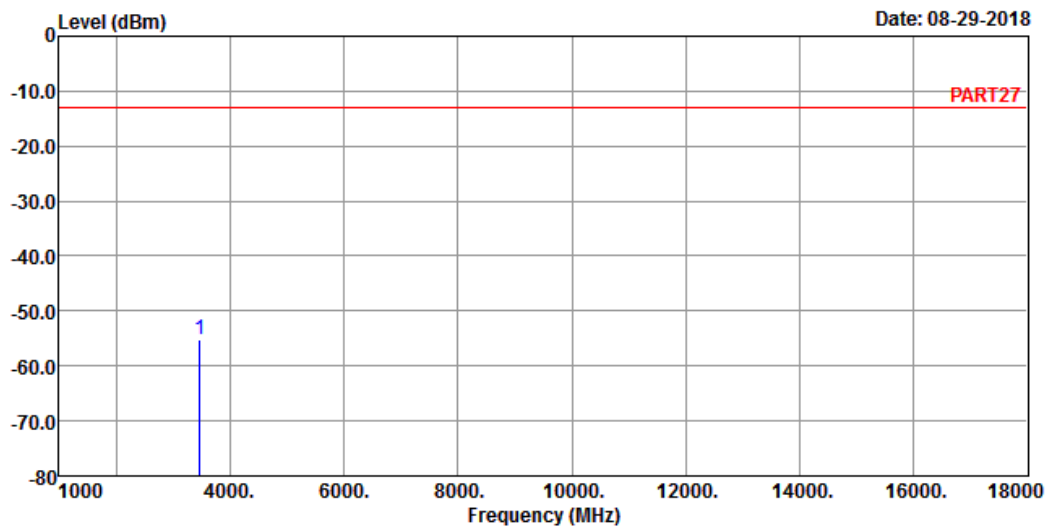
# Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
 Condition: PART27 HORIZONTAL  
 Remak : LTE Band 4 QPSK\_1.4M Link\_M-CH  
 Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

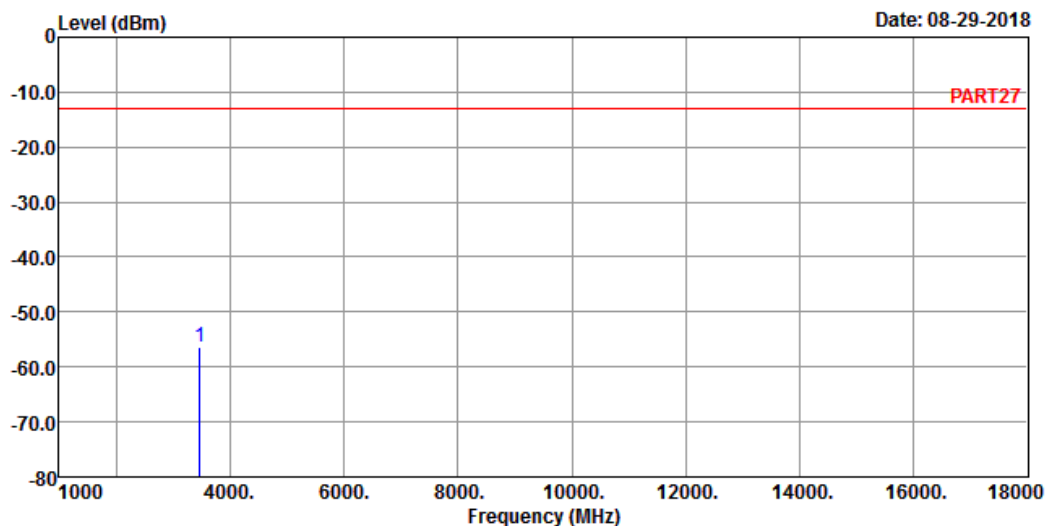
1 pp 3465.00 -55.16 -47.28 -13.00 -42.16 -7.88 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 4 QPSK\_1.4M Link\_M-CH  
 Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3465.00 | -56.38 | -48.50 | -13.00 | -43.38 | -7.88  | Peak   |

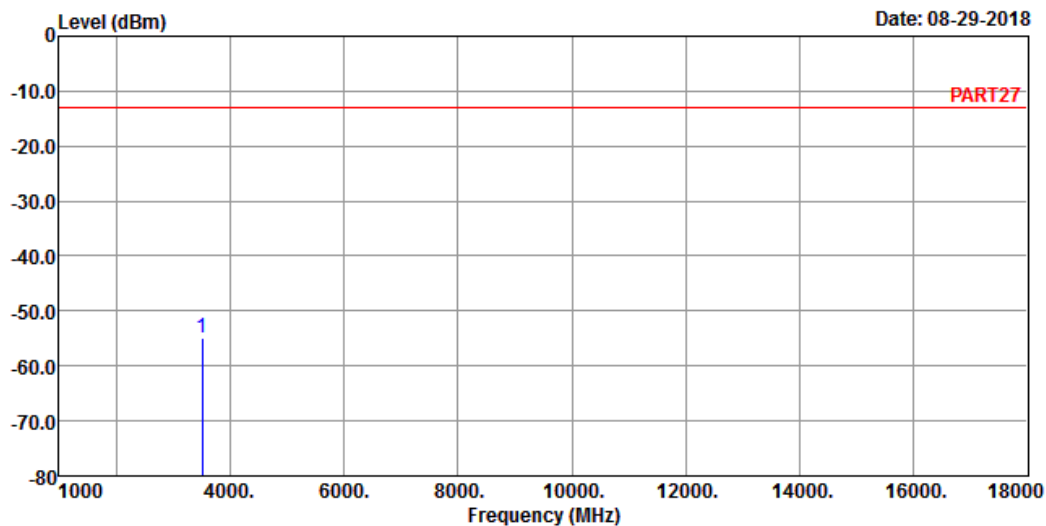
# High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 4 QPSK\_1.4M Link\_H-CH  
Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

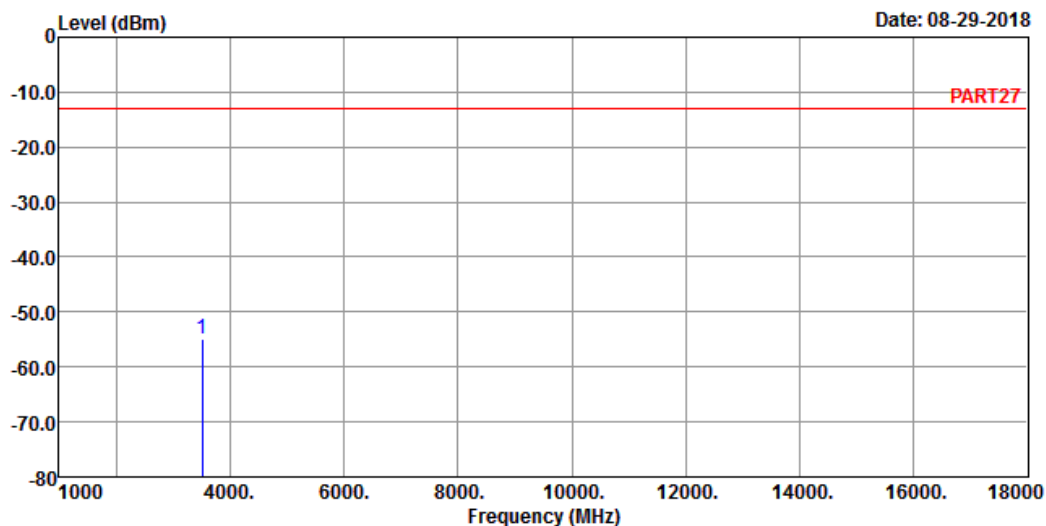
1 pp 3508.60 -55.04 -47.59 -13.00 -42.04 -7.45 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 4 QPSK\_1.4M Link\_H-CH  
 Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3508.60 | -54.82 | -47.37 | -13.00 | -41.82 | -7.45  | Peak   |

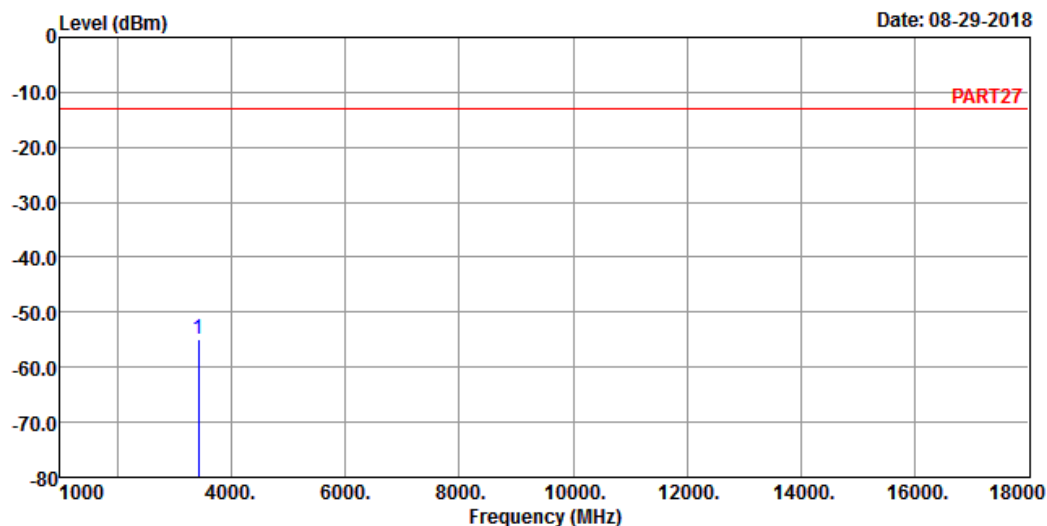
Channel Bandwidth: 5 MHz / QPSK  
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 4 QPSK\_5M Link\_L-CH  
Tested by: Thomas Wei

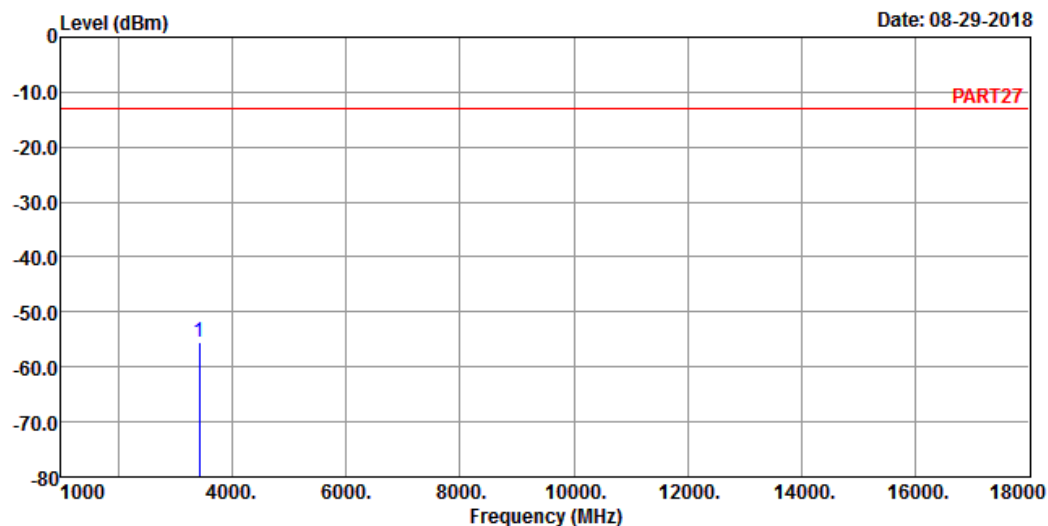
| Freq         | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|--------------|--------|------------|------------|------------|--------|--------|
| MHz          | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1 pp 3425.00 | -54.91 | -46.57     | -13.00     | -41.91     | -8.34  | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5

Condition: PART27 VERTICAL

Remak : LTE Band 4 QPSK\_5M Link\_L-CH

Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3425.00 | -55.56 | -47.22 | -13.00 | -42.56 | -8.34  | Peak   |

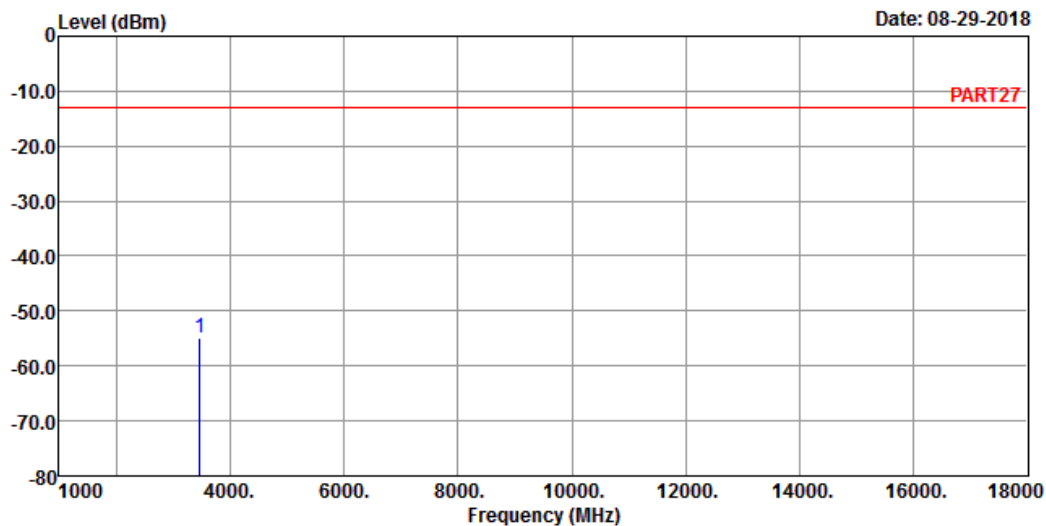
# Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5

Condition: PART27 HORIZONTAL

Remak : LTE Band 4 QPSK\_5M Link\_M-CH

Tested by: Thomas Wei

| Freq | Level | Read  | Limit | Over  |        |  | Remark |
|------|-------|-------|-------|-------|--------|--|--------|
|      |       | Level | Line  | Limit | Factor |  |        |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |  |        |

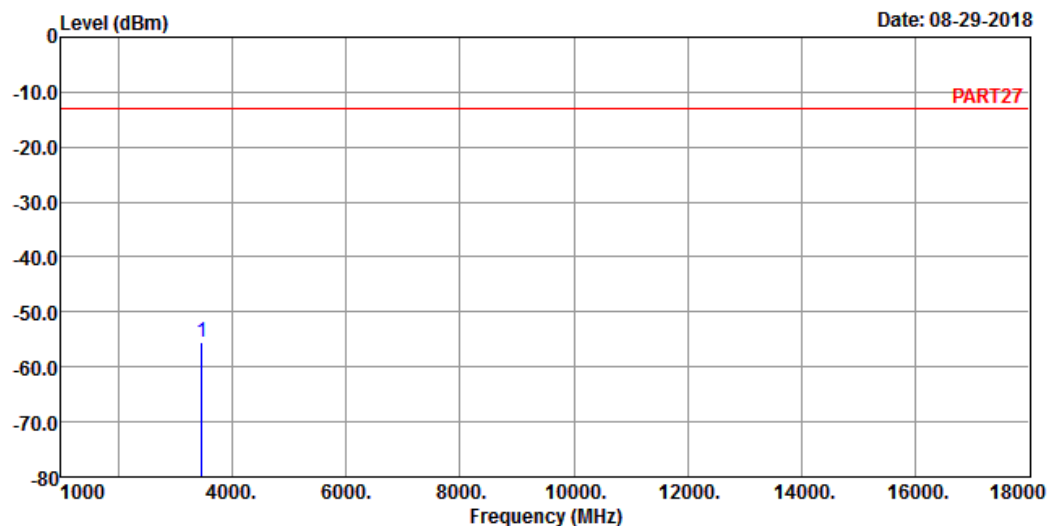
1 pp 3465.00 -54.91 -47.03 -13.00 -41.91 -7.88 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5

Condition: PART27 VERTICAL

Remak : LTE Band 4 QPSK\_5M Link\_M-CH

Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3465.00 | -55.62 | -47.74 | -13.00 | -42.62 | -7.88  | Peak   |

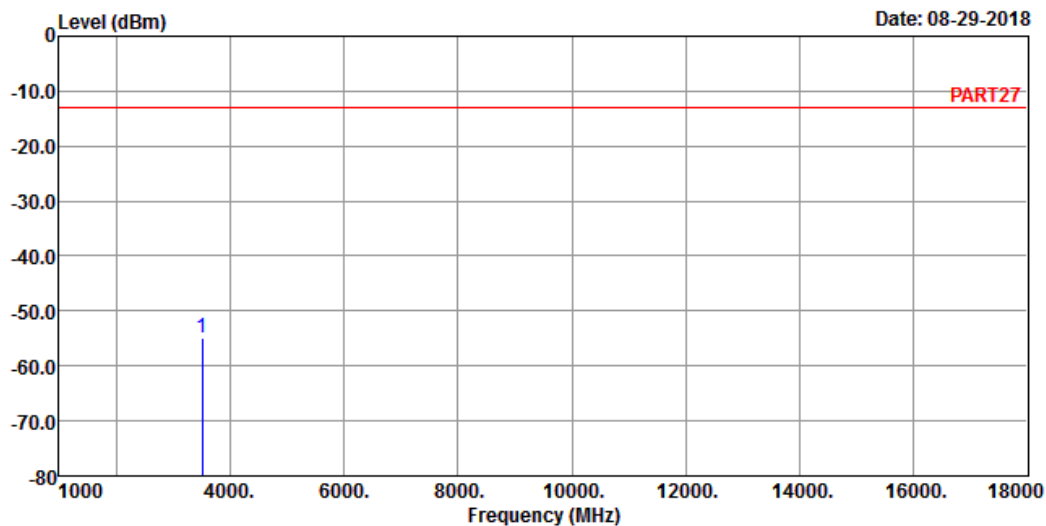
# High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 4 QPSK\_5M Link\_H-CH  
Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

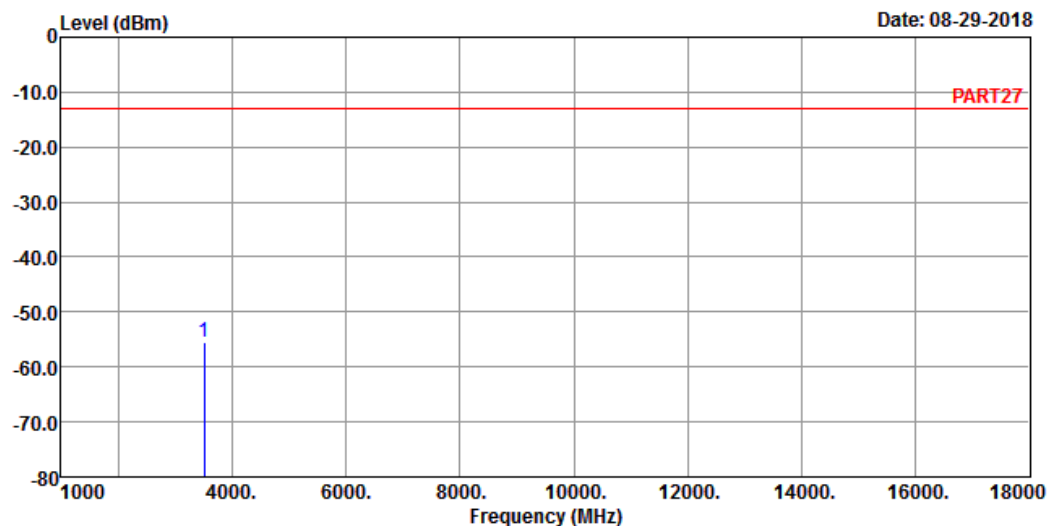
1 pp 3505.00 -54.90 -47.45 -13.00 -41.90 -7.45 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5

Condition: PART27 VERTICAL

Remak : LTE Band 4 QPSK\_5M Link\_H-CH

Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3505.00 | -55.58 | -48.13 | -13.00 | -42.58 | -7.45  | Peak   |

Channel Bandwidth: 20 MHz / QPSK  
Low Channel

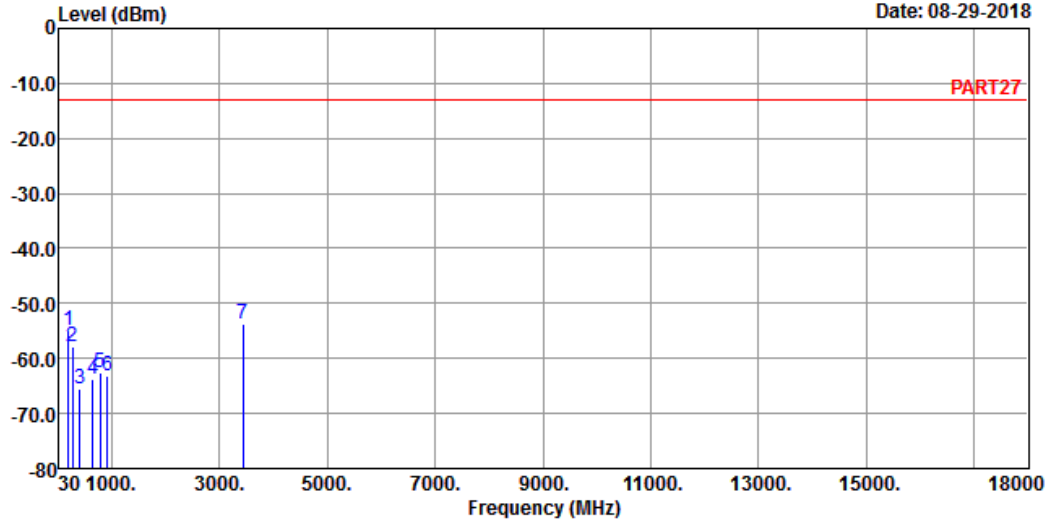


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 08-29-2018



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 4 QPSK\_20M Link\_L-CH  
Tested by: Thomas Wei

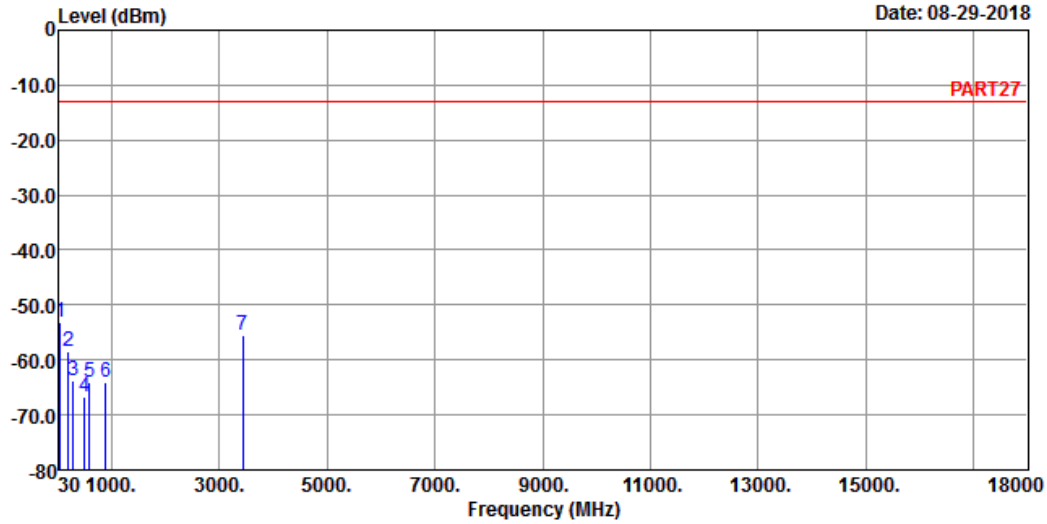
|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1    | 199.75  | -54.86 | -46.84     | -13.00     | -41.86     | -8.02  | Peak   |
| 2    | 281.23  | -57.86 | -51.23     | -13.00     | -44.86     | -6.63  | Peak   |
| 3    | 405.39  | -65.60 | -59.70     | -13.00     | -52.60     | -5.90  | Peak   |
| 4    | 648.86  | -63.91 | -63.03     | -13.00     | -50.91     | -0.88  | Peak   |
| 5    | 792.42  | -62.59 | -63.35     | -13.00     | -49.59     | 0.76   | Peak   |
| 6    | 921.43  | -63.16 | -64.26     | -13.00     | -50.16     | 1.10   | Peak   |
| 7 pp | 3440.00 | -53.85 | -45.63     | -13.00     | -40.85     | -8.22  | Peak   |



# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5  
Condition: PART27 VERTICAL  
Remak : LTE Band 4 QPSK\_20M Link\_L-CH  
Tested by: Thomas Wei

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1 pp | 44.55   | -53.00 | -51.01     | -13.00     | -40.00     | -1.99  | Peak   |
| 2    | 198.78  | -58.32 | -50.39     | -13.00     | -45.32     | -7.93  | Peak   |
| 3    | 286.08  | -63.66 | -56.93     | -13.00     | -50.66     | -6.73  | Peak   |
| 4    | 503.36  | -66.86 | -62.35     | -13.00     | -53.86     | -4.51  | Peak   |
| 5    | 594.54  | -64.00 | -63.01     | -13.00     | -51.00     | -0.99  | Peak   |
| 6    | 890.39  | -63.96 | -64.48     | -13.00     | -50.96     | 0.52   | Peak   |
| 7    | 3440.00 | -55.64 | -47.42     | -13.00     | -42.64     | -8.22  | Peak   |

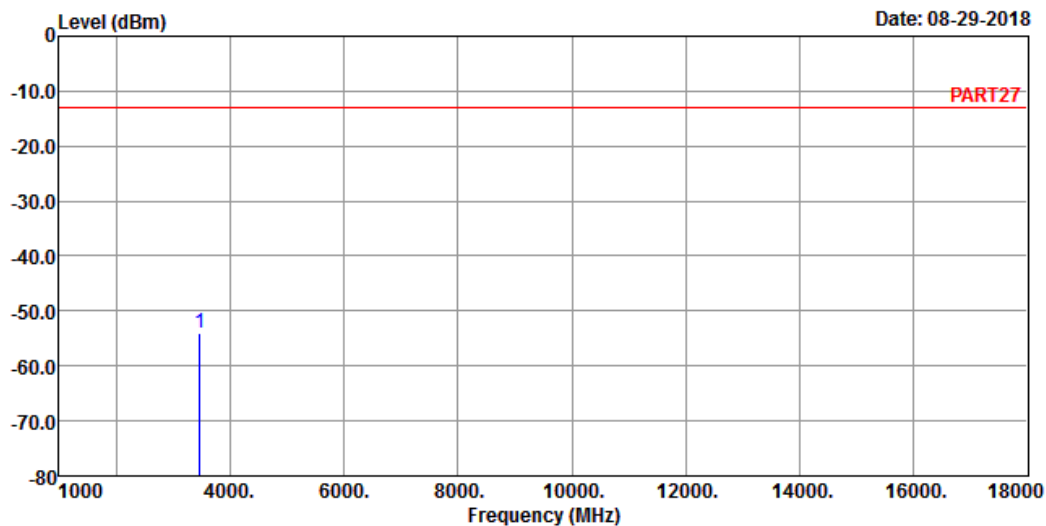
# Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 4 QPSK\_20M Link\_M-CH  
Tested by: Thomas Wei

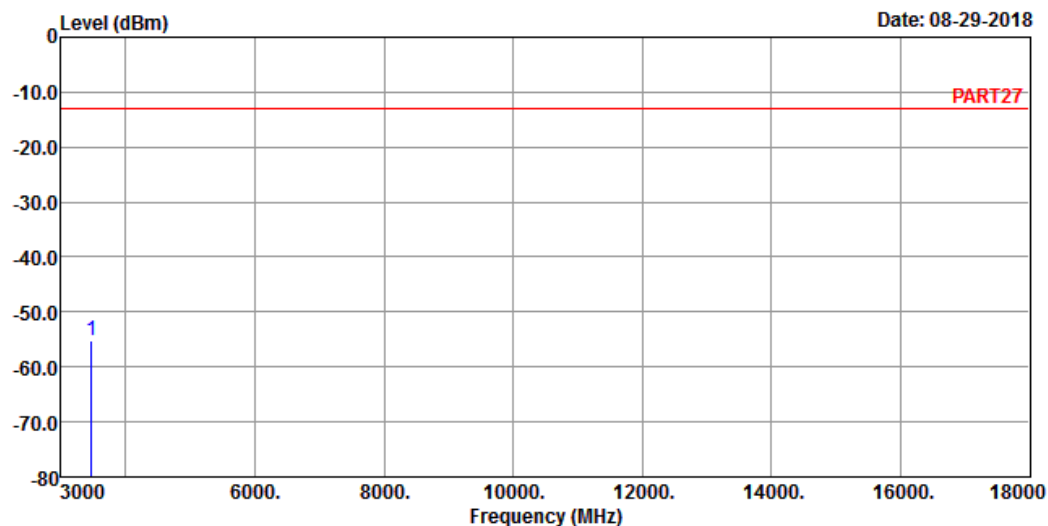
| Freq         | Level  | Read   | Limit  | Over   |        |      | Remark |
|--------------|--------|--------|--------|--------|--------|------|--------|
|              |        | Level  | Line   | Limit  | Factor |      |        |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |      |        |
| 1 pp 3465.00 | -54.09 | -46.21 | -13.00 | -41.09 | -7.88  | Peak |        |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 4 QPSK\_20M Link\_M-CH  
 Tested by: Thomas Wei

|              |        |        | Read   | Limit  | Over   |        |  |
|--------------|--------|--------|--------|--------|--------|--------|--|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |  |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |  |
| 1 pp 3465.00 | -55.12 | -47.24 | -13.00 | -42.12 | -7.88  | Peak   |  |

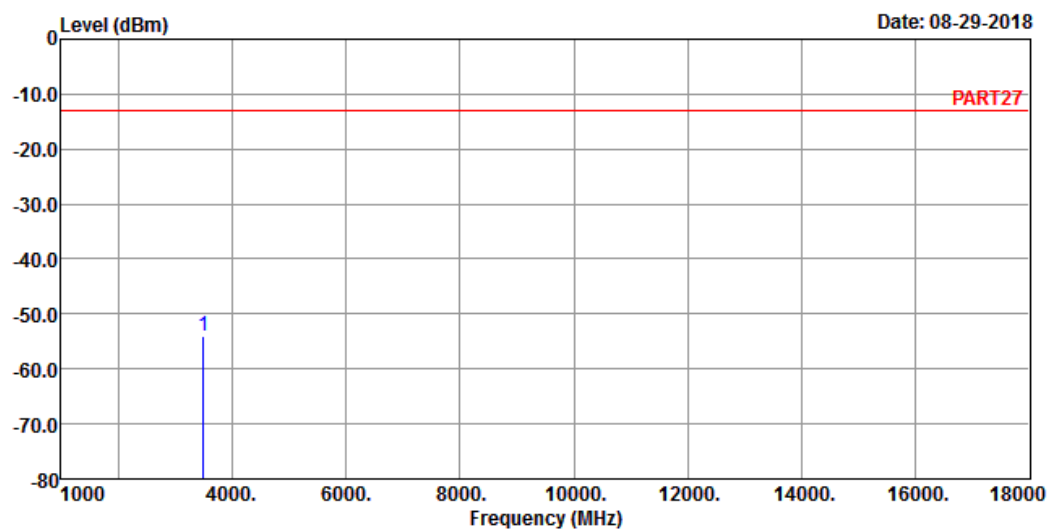
# High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 4 QPSK\_20M Link\_H-CH  
Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

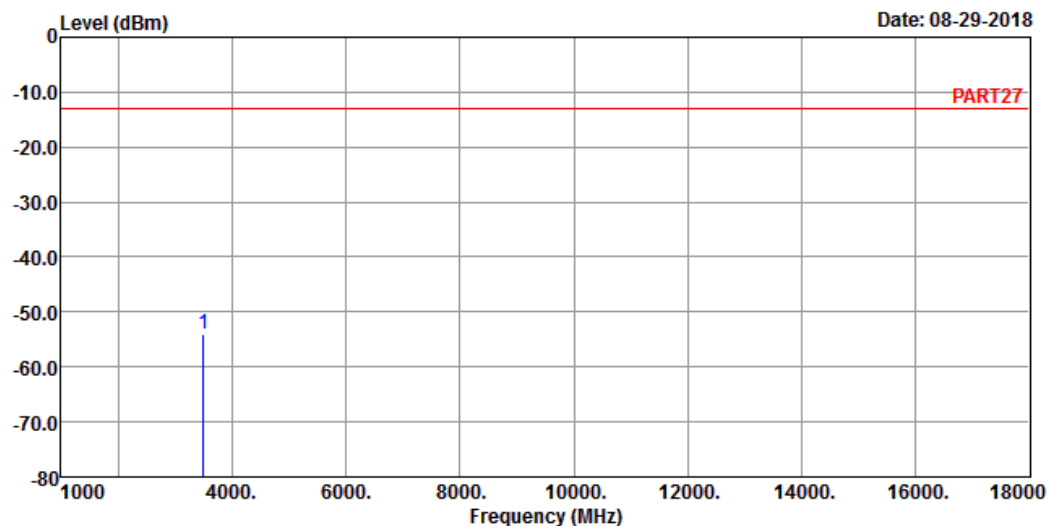
1 pp 3490.00 -54.15 -46.50 -13.00 -41.15 -7.65 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 4 QPSK\_20M Link\_H-CH  
 Tested by: Thomas Wei

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 3490.00 | -54.02 | -46.37 | -13.00 | -41.02 | -7.65  | Peak   |

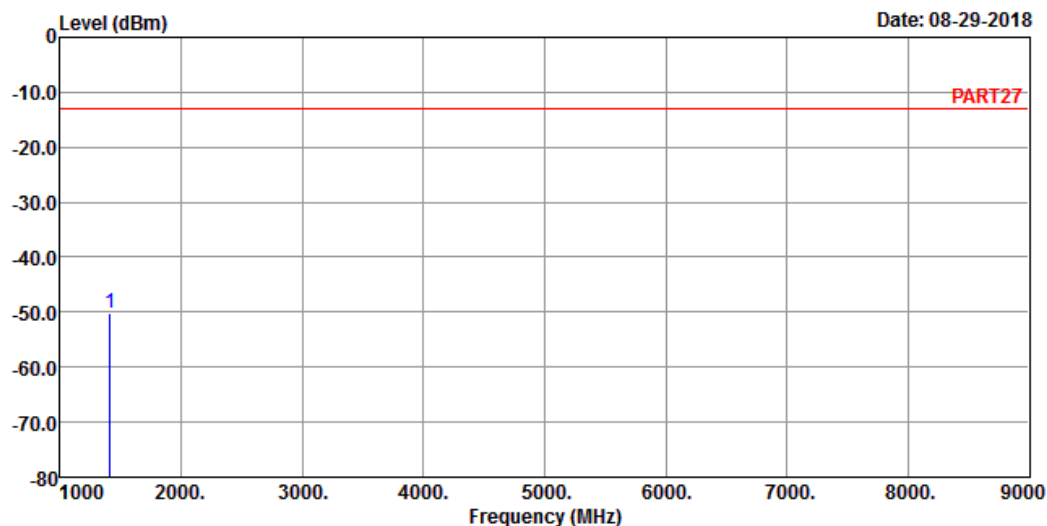
LTE Band 17  
Channel Bandwidth: 5 MHz / QPSK  
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 17 QPSK\_5M Link\_L-CH  
Tested by: Jisyong Wang

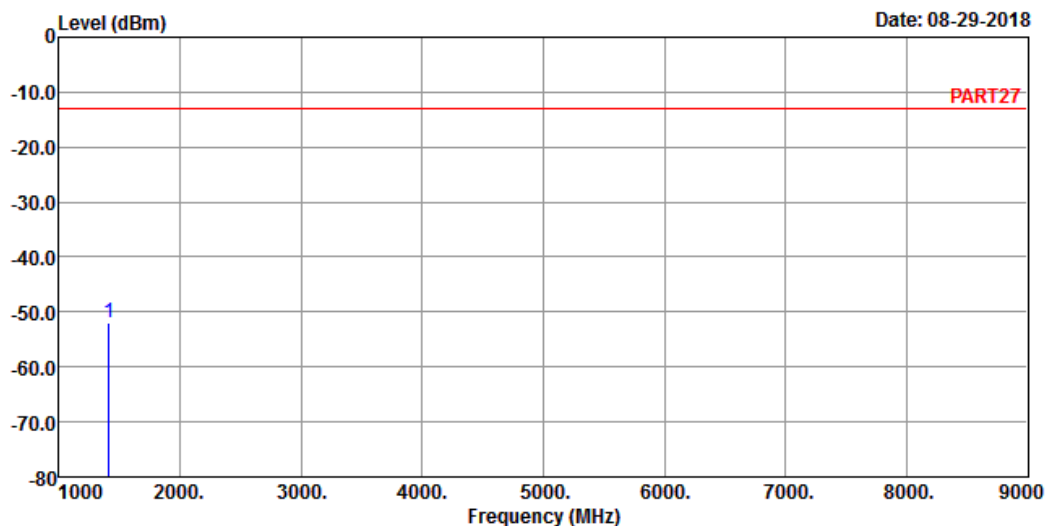
| Freq         | Level  | Read   | Limit  | Over   | Factor | Remark |
|--------------|--------|--------|--------|--------|--------|--------|
|              |        | Level  | Line   | Limit  |        |        |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 1413.00 | -50.12 | -38.10 | -13.00 | -37.12 | -12.02 | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5  
 Condition: PART27 VERTICAL  
 Remak : LTE Band 17 QPSK\_5M Link\_L-CH  
 Tested by: Jisyong Wang

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 1413.00 | -51.99 | -39.97 | -13.00 | -38.99 | -12.02 | Peak   |

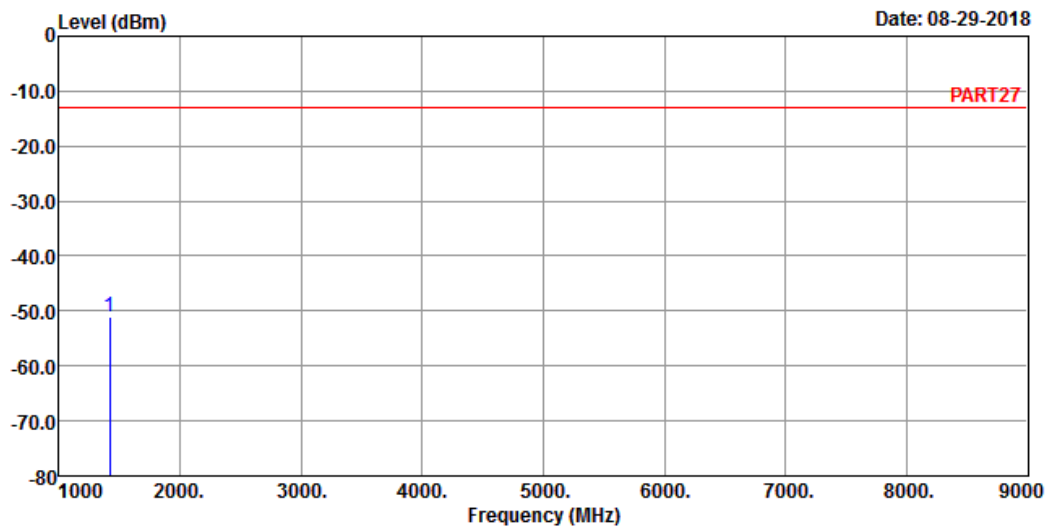
# Middle Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 17 QPSK\_5M Link\_M-CH  
Tested by: Jisyong Wang

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

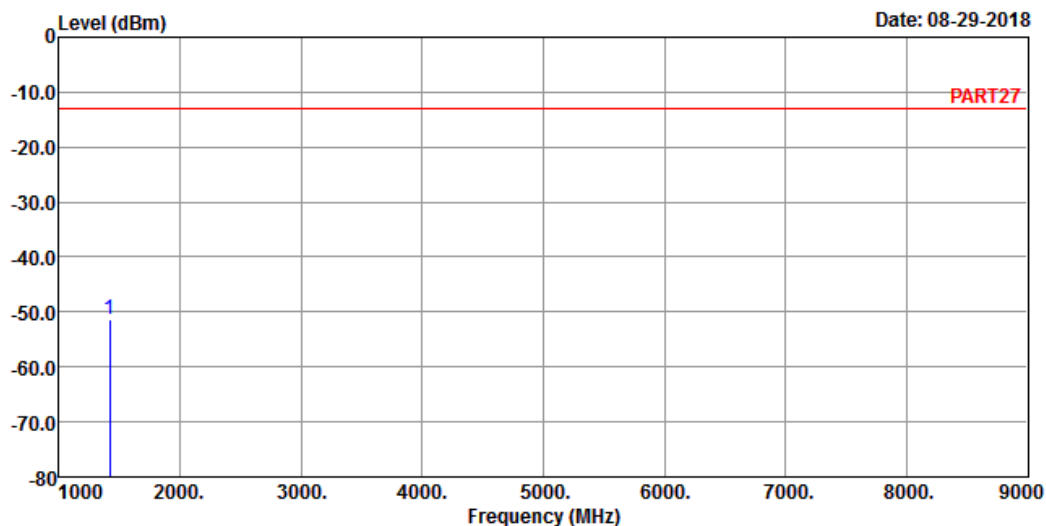
1 pp 1420.00 -50.98 -38.84 -13.00 -37.98 -12.14 Peak



# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5  
Condition: PART27 VERTICAL  
Remak : LTE Band 17 QPSK\_5M Link\_M-CH  
Tested by: Jisyong Wang

|              |        | Read   | Limit  | Over   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|
| Freq         | Level  | Level  | Line   | Limit  | Factor | Remark |
| MHz          | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1 pp 1420.00 | -51.23 | -39.09 | -13.00 | -38.23 | -12.14 | Peak   |

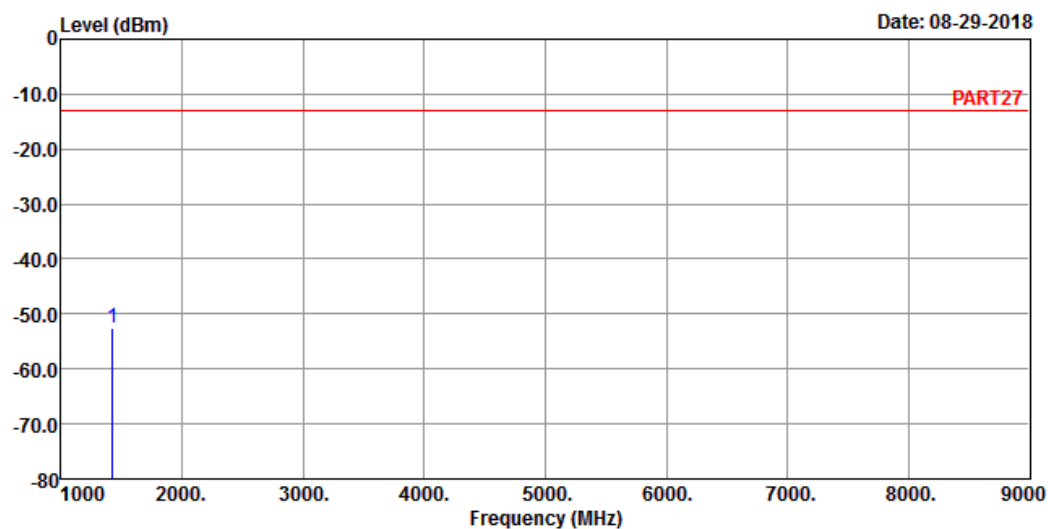
# High Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 17 QPSK\_5M Link\_H-CH  
Tested by: Jisyong Wang

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

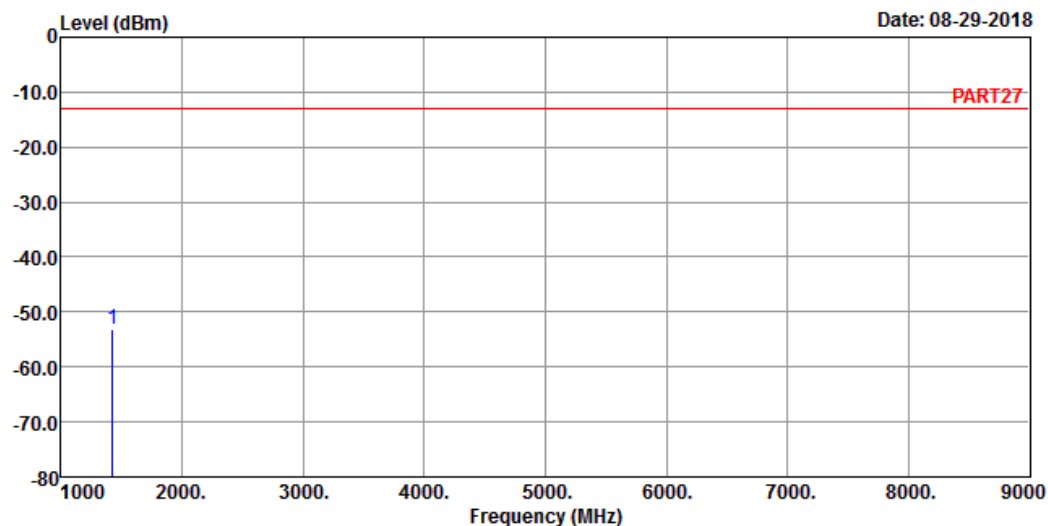
1 pp 1427.00 -52.45 -40.20 -13.00 -39.45 -12.25 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART27 VERTICAL

Remak : LTE Band 17 QPSK\_5M Link\_H-CH

Tested by: Jisyong Wang

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1427.00 -53.11 -40.86 -13.00 -40.11 -12.25 Peak

Channel Bandwidth: 10 MHz / QPSK  
Low Channel

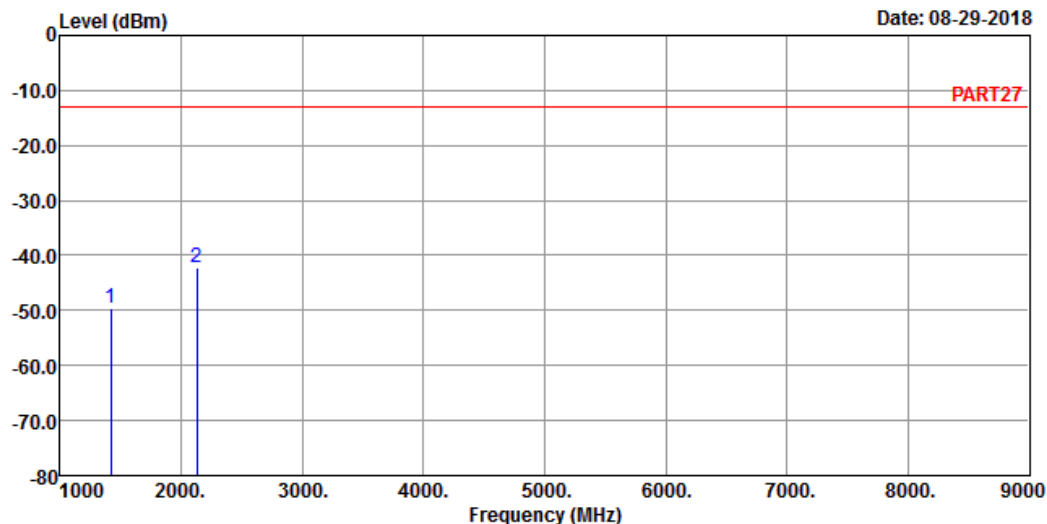


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 08-29-2018



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 17 QPSK\_10M Link\_L-CH  
Tested by: Jisyong Wang

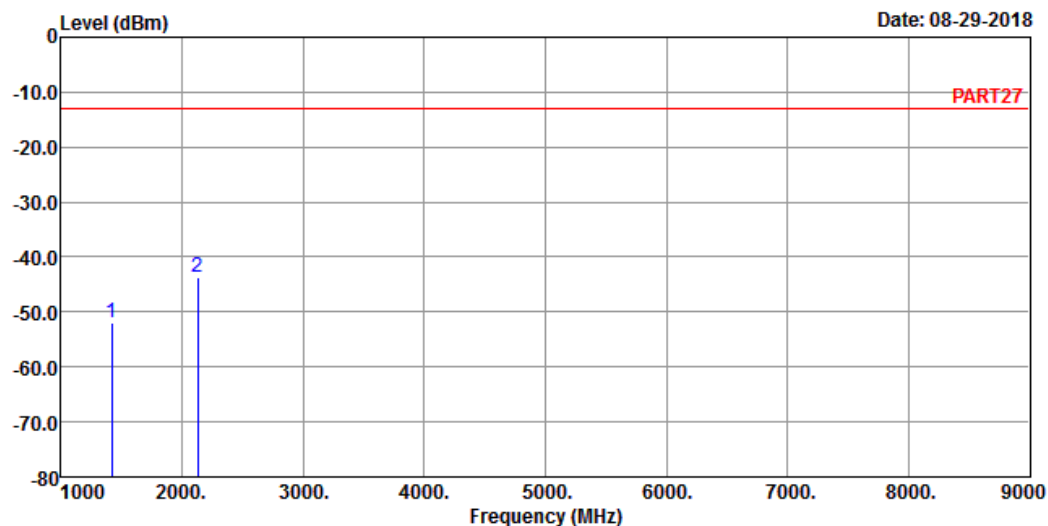
|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 1418.00 | -49.74 | -37.60 | -13.00 | -36.74 | -12.14 | Peak   |
| 2 pp | 2127.00 | -42.17 | -32.40 | -13.00 | -29.17 | -9.77  | Peak   |



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART27 VERTICAL

Remak : LTE Band 17 QPSK\_10M Link\_L-CH

Tested by: Jisyong Wang

|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 1418.00 | -51.81 | -39.67 | -13.00 | -38.81 | -12.14 | Peak   |
| 2 pp | 2127.00 | -43.74 | -33.97 | -13.00 | -30.74 | -9.77  | Peak   |

# Middle Channel

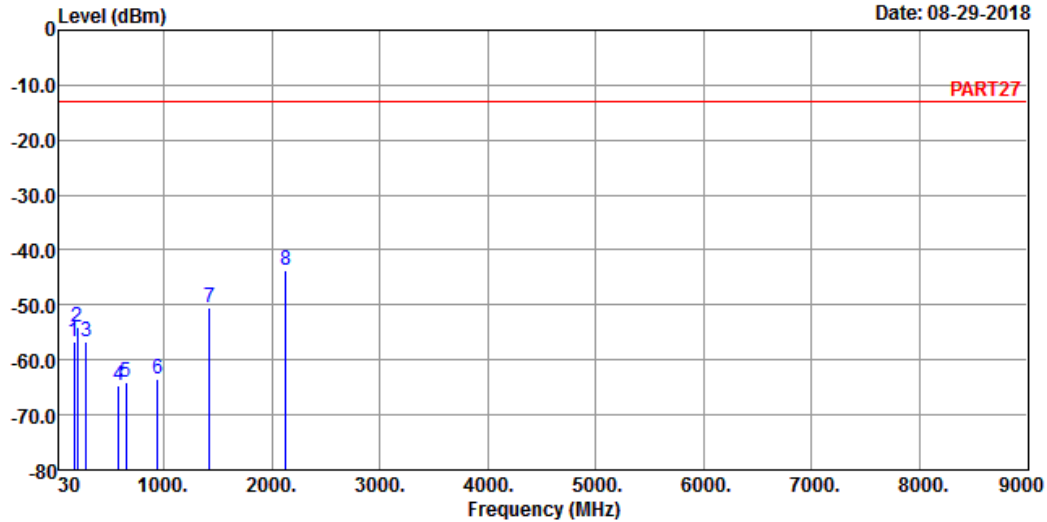


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 08-29-2018



Site : 966 Chamber 5  
Condition: PART27 HORIZONTAL  
Remak : LTE Band 17 QPSK\_10M Link\_M-CH  
Tested by: Jisyoung Wang

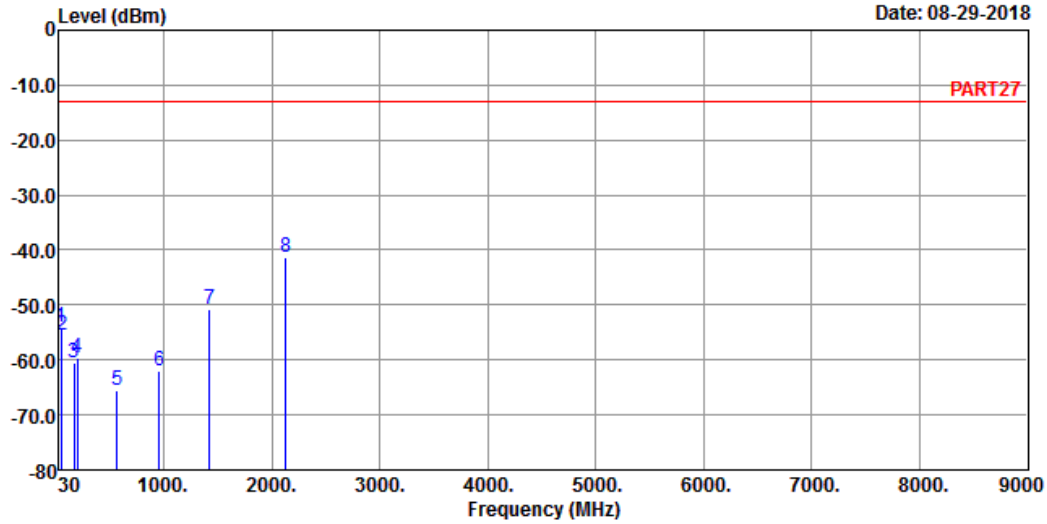
|      |         | Read   | Limit  | Over   |        |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 169.68  | -56.82 | -51.29 | -13.00 | -43.82 | -5.53  | Peak   |
| 2    | 200.72  | -54.10 | -46.12 | -13.00 | -41.10 | -7.98  | Peak   |
| 3    | 283.17  | -56.72 | -50.05 | -13.00 | -43.72 | -6.67  | Peak   |
| 4    | 580.96  | -64.60 | -63.04 | -13.00 | -51.60 | -1.56  | Peak   |
| 5    | 647.89  | -64.02 | -63.14 | -13.00 | -51.02 | -0.88  | Peak   |
| 6    | 940.83  | -63.37 | -64.95 | -13.00 | -50.37 | 1.58   | Peak   |
| 7    | 1420.00 | -50.59 | -38.45 | -13.00 | -37.59 | -12.14 | Peak   |
| 8 pp | 2130.00 | -43.63 | -33.86 | -13.00 | -30.63 | -9.77  | Peak   |



# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5  
Condition: PART27 VERTICAL  
Remak : LTE Band 17 QPSK\_10M Link\_M-CH  
Tested by: Jisyong Wang

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1    | 43.58   | -53.88 | -52.41     | -13.00     | -40.88     | -1.47  | Peak   |
| 2    | 53.28   | -55.53 | -49.72     | -13.00     | -42.53     | -5.81  | Peak   |
| 3    | 168.71  | -60.40 | -54.94     | -13.00     | -47.40     | -5.46  | Peak   |
| 4    | 197.81  | -59.54 | -51.71     | -13.00     | -46.54     | -7.83  | Peak   |
| 5    | 565.44  | -65.68 | -63.48     | -13.00     | -52.68     | -2.20  | Peak   |
| 6    | 957.32  | -62.10 | -64.17     | -13.00     | -49.10     | 2.07   | Peak   |
| 7    | 1420.00 | -50.72 | -38.58     | -13.00     | -37.72     | -12.14 | Peak   |
| 8 pp | 2130.00 | -41.42 | -31.65     | -13.00     | -28.42     | -9.77  | Peak   |

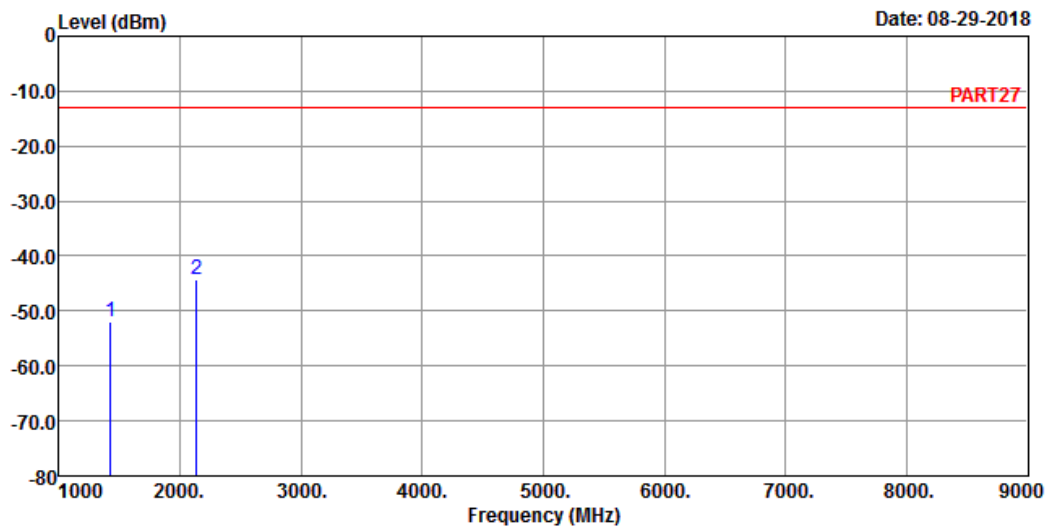
## High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5

Condition: PART27 HORIZONTAL

Remak : LTE Band 17 QPSK\_10M Link\_H-CH

Tested by: Jisyong Wang

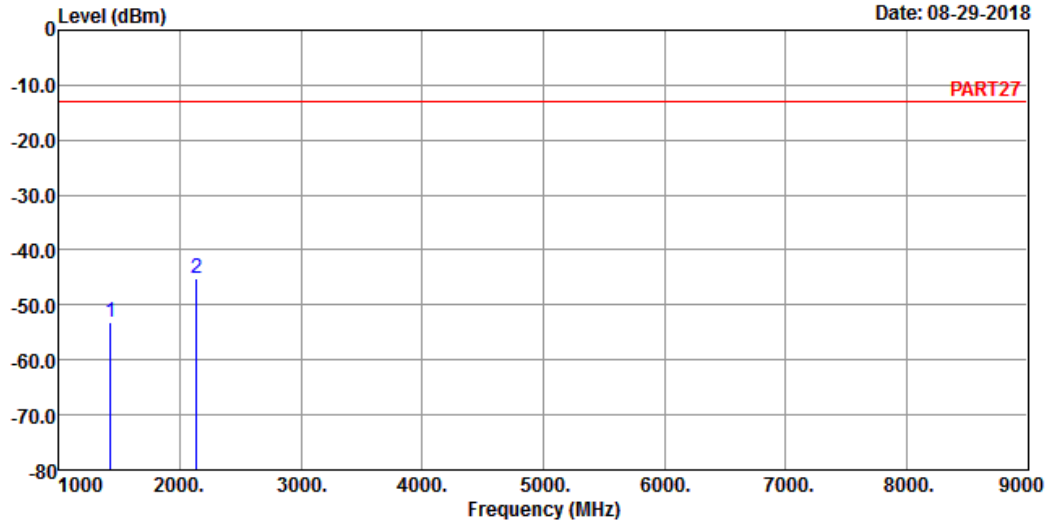
|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 1422.00 | -51.87 | -39.68 | -13.00 | -38.87 | -12.19 | Peak   |
| 2 pp | 2133.00 | -44.34 | -34.67 | -13.00 | -31.34 | -9.67  | Peak   |



# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5  
Condition: PART27 VERTICAL  
Remak : LTE Band 17 QPSK\_10M Link\_H-CH  
Tested by: Jisyong Wang

|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 1422.00 | -53.00 | -40.81 | -13.00 | -40.00 | -12.19 | Peak   |
| 2 pp | 2133.00 | -45.06 | -35.39 | -13.00 | -32.06 | -9.67  | Peak   |

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab**

Tel: 886-2-26052180

Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**

Tel: 886-3-6668565

Fax: 886-3-6668323

**Hwa Ya EMC/RF/Safety**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

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