

## FCC Test Report (Part 24)

**Report No.:** RF200513C20

**FCC ID:** H8NSFE3056

**Test Model:** SS2FII Femtocell Multi-band SOHO

**Received Date:** May 13, 2020

**Test Date:** Jun. 02 ~ Jun. 08, 2020

**Issued Date:** Jul. 06, 2020

**Applicant:** ASKEY COMPUTER CORP.

**Address:** 10F, No. 119, Jiankang Rd., Zhonghe Dist., New Taipei City 23585, Taiwan

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

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

**Test Location:** No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City  
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**FCC Registration /** 788550 / TW0003

**Designation Number:**



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## Table of Contents

|                                                             |           |
|-------------------------------------------------------------|-----------|
| <b>Release Control Record</b>                               | <b>4</b>  |
| <b>1 Certificate of Conformity</b>                          | <b>5</b>  |
| <b>2 Summary of Test Results</b>                            | <b>6</b>  |
| 2.1 Measurement Uncertainty                                 | 6         |
| 2.2 Test Site and Instruments                               | 7         |
| <b>3 General Information</b>                                | <b>8</b>  |
| 3.1 General Description of EUT                              | 8         |
| 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       | 11        |
| 3.4 EUT Operating Conditions                                | 13        |
| 3.5 General Description of Applied Standards and References | 13        |
| <b>4 Test Types and Results</b>                             | <b>14</b> |
| 4.1 Output Power Measurement                                | 14        |
| 4.1.1 Limits of Output Power Measurement                    | 14        |
| 4.1.2 Test Procedures                                       | 14        |
| 4.1.3 Test Setup                                            | 15        |
| 4.1.4 Test Results                                          | 16        |
| 4.2 Modulation Characteristics Measurement                  | 24        |
| 4.2.1 Limits of Modulation Characteristics                  | 24        |
| 4.2.2 Test Procedure                                        | 24        |
| 4.2.3 Test Setup                                            | 24        |
| 4.2.4 Test Results                                          | 25        |
| 4.3 Frequency Stability Measurement                         | 27        |
| 4.3.1 Limits of Frequency Stability Measurement             | 27        |
| 4.3.2 Test Procedure                                        | 27        |
| 4.3.3 Test Setup                                            | 27        |
| 4.3.4 Test Results                                          | 28        |
| 4.4 Emission Bandwidth Measurement                          | 33        |
| 4.4.1 Test Procedure                                        | 33        |
| 4.4.2 Test Setup                                            | 33        |
| 4.4.3 Test Result                                           | 34        |
| 4.5 Band Edge Measurement                                   | 41        |
| 4.5.1 Limits of Band Edge Measurement                       | 41        |
| 4.5.2 Test Setup                                            | 41        |
| 4.5.3 Test Procedures                                       | 41        |
| 4.5.4 Test Results                                          | 42        |
| 4.6 Peak to Average Ratio                                   | 46        |
| 4.6.1 Limits of Peak to Average Ratio Measurement           | 46        |
| 4.6.2 Test Setup                                            | 46        |
| 4.6.3 Test Procedures                                       | 46        |
| 4.6.4 Test Results                                          | 47        |
| 4.7 Conducted Spurious Emissions                            | 50        |
| 4.7.1 Limits of Conducted Spurious Emissions Measurement    | 50        |
| 4.7.2 Test Setup                                            | 50        |
| 4.7.3 Test Procedure                                        | 50        |
| 4.7.4 Test Results                                          | 51        |
| 4.8 Radiated Emission Measurement                           | 60        |
| 4.8.1 Limits of Radiated Emission Measurement               | 60        |
| 4.8.2 Test Procedure                                        | 60        |
| 4.8.3 Deviation from Test Standard                          | 60        |
| 4.8.4 Test Setup                                            | 61        |
| 4.8.5 Test Results                                          | 62        |

|          |                                                                 |           |
|----------|-----------------------------------------------------------------|-----------|
| <b>5</b> | <b>Pictures of Test Arrangements.....</b>                       | <b>71</b> |
|          | <b>Appendix – Information of the Testing Laboratories .....</b> | <b>72</b> |

### Release Control Record

| Issue No.   | Description      | Date Issued   |
|-------------|------------------|---------------|
| RF200513C20 | Original release | Jul. 06, 2020 |

## 1 Certificate of Conformity

**Product:** Femtocell

**Brand:** Nokia

**Test Model:** SS2FII Femtocell Multi-band SOHO

**Sample Status:** Engineering sample

**Applicant:** ASKEY COMPUTER CORP.

**Test Date:** Jun. 02 ~ Jun. 08, 2020

**Standards:** FCC Part 24, Subpart E  
FCC Part 2

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 :** Pettie Chen, **Date:** Jul. 06, 2020  
Pettie Chen / Senior Specialist

**Approved by :** Bruce Chen, **Date:** Jul. 06, 2020  
Bruce Chen / Senior Project Engineer

## 2 Summary of Test Results

| Applied Standard: FCC Part 24 & Part 2 |                              |        |                                                                                   |
|----------------------------------------|------------------------------|--------|-----------------------------------------------------------------------------------|
| FCC Clause                             | Test Item                    | Result | Remarks                                                                           |
| 2.1046<br>24.232                       | Output power                 | Pass   | Meet the requirement of limit.                                                    |
| 2.1046<br>24.232(d)                    | Peak To Average Ratio        | Pass   | Meet the requirement of limit.                                                    |
| 2.1047                                 | Modulation characteristics   | Pass   | Meet the requirement                                                              |
| 2.1055<br>24.235                       | Frequency Stability          | Pass   | Meet the requirement of limit.                                                    |
| 2.1049<br>24.238(b)                    | Occupied Bandwidth           | Pass   | Meet the requirement of limit.                                                    |
| 24.238(b)                              | Band Edge Measurements       | Pass   | Meet the requirement of limit.                                                    |
| 2.1051<br>24.238                       | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                    |
| 2.1053<br>24.238                       | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -35.1dB at 111.48MHz. |

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 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 (k=2) (±) |
|--------------------------------|------------------|--------------------------------|
| Radiated Emissions up to 1 GHz | 9kHz ~ 30MHz     | 3.04 dB                        |
|                                | 30MHz ~ 200MHz   | 3.86 dB                        |
|                                | 200MHz ~ 1000MHz | 3.87 dB                        |
| Radiated Emissions above 1 GHz | 1GHz ~ 18GHz     | 2.29 dB                        |
|                                | 18GHz ~ 40GHz    | 2.29 dB                        |

## 2.2 Test Site and Instruments

| Description & Manufacturer                          | Model No.                          | Serial No.                      | Cal. Date     | Cal. Due      |
|-----------------------------------------------------|------------------------------------|---------------------------------|---------------|---------------|
| Test Receiver<br>KEYSIGHT                           | N9038A                             | MY55420137                      | Apr. 16, 2020 | Apr. 15, 2021 |
| Spectrum Analyzer<br>ROHDE & SCHWARZ                | FSP40                              | 100040                          | Sep. 23, 2019 | Sep. 22, 2020 |
| BILOG Antenna<br>SCHWARZBECK                        | VULB9168                           | 9168-160                        | Nov. 07, 2019 | Nov. 06, 2020 |
| HORN Antenna<br>SCHWARZBECK                         | BBHA 9120 D                        | 9120D-1169                      | Nov. 24, 2019 | Nov. 23, 2020 |
| HORN Antenna<br>SCHWARZBECK                         | BBHA 9170                          | BBHA9170241                     | Nov. 24, 2019 | Nov. 23, 2020 |
| Loop Antenna<br>TESEQ                               | HLA 6121                           | 45745                           | Jul. 01, 2019 | Jun. 30, 2020 |
| Preamplifier<br>Agilent<br>(Below 1GHz)             | 8447D                              | 2944A10638                      | Jul. 11, 2019 | Jul. 10, 2020 |
| Preamplifier<br>Agilent<br>(Above 1GHz)             | 8449B                              | 3008A02367                      | Feb. 18, 2020 | Feb. 17, 2021 |
| RF signal cable<br>HUBER+SUHNER&EMCI                | SUCOFLEX 104 &<br>EMC104-SM-SM8000 | CABLE-CH9-02<br>(248780+171006) | Jan. 18, 2020 | Jan. 17, 2021 |
| RF signal cable<br>HUBER+SUHNER                     | SUCOFLEX 104                       | CABLE-CH9-(250795/4)            | Jul. 11, 2019 | Jul. 10, 2020 |
| RF signal cable<br>Woken                            | 8D-FB                              | Cable-CH9-01                    | Jul. 30, 2019 | Jul. 29, 2020 |
| Software<br>BV ADT                                  | ADT_Radiated_<br>V7.6.15.9.5       | NA                              | NA            | NA            |
| Antenna Tower<br>EMCO                               | 2070/2080                          | 512.835.4684                    | NA            | NA            |
| Turn Table<br>EMCO                                  | 2087-2.03                          | NA                              | NA            | NA            |
| Antenna Tower & Turn<br>BV ADT                      | AT100                              | AT93021705                      | NA            | NA            |
| Turn Table<br>BV ADT                                | TT100                              | TT93021705                      | NA            | NA            |
| Turn Table Controller<br>BV ADT                     | SC100                              | SC93021705                      | NA            | NA            |
| Boresight Antenna Fixture                           | FBA-01                             | FBA-SIP01                       | NA            | NA            |
| WIT Standard<br>Temperature And Humidity<br>Chamber | TH-4S-C                            | W981030                         | Jun. 01, 2020 | May 31, 2021  |
| JFW 20dB attenuation                                | 50HF-020-SMA                       | NA                              | NA            | NA            |
| Digital Multimeter<br>Fluke                         | 87-III                             | 70360742                        | Jun. 27, 2019 | Jun. 26, 2020 |
| Radio Communication<br>Analyzer                     | MT8821C                            | 6261786083                      | Jan. 18, 2020 | Jan. 17, 2021 |

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
2. The test was performed in HwaYa Chamber 9.

### 3 General Information

#### 3.1 General Description of EUT

|                     |                                                                                                                                                                                                                                                                                         |                     |                     |                     |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------|---------------------|
| Product             | Femtocell                                                                                                                                                                                                                                                                               |                     |                     |                     |
| Brand               | Nokia                                                                                                                                                                                                                                                                                   |                     |                     |                     |
| Test Model          | SS2FII Femtocell Multi-band SOHO                                                                                                                                                                                                                                                        |                     |                     |                     |
| Sample Status       | Engineering sample                                                                                                                                                                                                                                                                      |                     |                     |                     |
| Power Supply Rating | 12Vdc (Adapter)                                                                                                                                                                                                                                                                         |                     |                     |                     |
| Modulation Type     | WCDMA: BPSK, QPSK<br>LTE: QPSK, 16QAM, 64QAM                                                                                                                                                                                                                                            |                     |                     |                     |
| Operating Frequency | WCDMA: 1932.4MHz ~ 1987.6MHz<br>LTE Band 2 (Channel Bandwidth 5MHz): 1932.5MHz ~ 1987.5MHz<br>LTE Band 2 (Channel Bandwidth 10MHz): 1935.0MHz ~ 1985.0MHz<br>LTE Band 2 (Channel Bandwidth 15MHz): 1937.5MHz ~ 1982.5MHz<br>LTE Band 2 (Channel Bandwidth 20MHz): 1940.0MHz ~ 1980.0MHz |                     |                     |                     |
| Max. EIRP Power     | WCDMA                                                                                                                                                                                                                                                                                   | 295.121mW (24.7dBm) |                     |                     |
|                     |                                                                                                                                                                                                                                                                                         | QPSK                | 16QAM               | 64QAM               |
|                     | LTE Band 2 (Channel Bandwidth 5MHz)                                                                                                                                                                                                                                                     | 346.737mW (25.4dBm) | 288.403mW (24.6dBm) | 263.027mW (24.2dBm) |
|                     | LTE Band 2 (Channel Bandwidth 10MHz)                                                                                                                                                                                                                                                    | 316.228mW (25.0dBm) | 257.040mW (24.1dBm) | 229.087mW (23.6dBm) |
|                     | LTE Band 2 (Channel Bandwidth 15MHz)                                                                                                                                                                                                                                                    | 346.737mW (25.4dBm) | 301.995mW (24.8dBm) | 257.040mW (24.1dBm) |
|                     | LTE Band 2 (Channel Bandwidth 20MHz)                                                                                                                                                                                                                                                    | 363.078mW (25.6dBm) | 288.403mW (24.6dBm) | 223.872mW (23.5dBm) |
| Emission Designator | WCDMA                                                                                                                                                                                                                                                                                   | 4M15F9W             |                     |                     |
|                     |                                                                                                                                                                                                                                                                                         | QPSK                | 16QAM               | 64QAM               |
|                     | LTE Band 2 (Channel Bandwidth 5MHz)                                                                                                                                                                                                                                                     | 4M44G7D             | 4M44W7D             | 4M44W7D             |
|                     | LTE Band 2 (Channel Bandwidth 10MHz)                                                                                                                                                                                                                                                    | 8M93G7D             | 8M91W7D             | 8M93W7D             |
|                     | LTE Band 2 (Channel Bandwidth 15MHz)                                                                                                                                                                                                                                                    | 13M3G7D             | 13M3W7D             | 13M3W7D             |
|                     | LTE Band 2 (Channel Bandwidth 20MHz)                                                                                                                                                                                                                                                    | 17M9G7D             | 17M9W7D             | 17M8W7D             |
| Antenna Type        | WCDMA: Antenna 1: PIFA antenna with 2.6dBi gain<br>LTE Band 2:<br>Antenna 2: PIFA antenna with 2.9dBi gain<br>Antenna 4: PIFA antenna with 3.7dBi gain                                                                                                                                  |                     |                     |                     |
| Antenna Connector   | NA                                                                                                                                                                                                                                                                                      |                     |                     |                     |
| Accessory Device    | Adapter, GPS antenna (Brand: INPAQ, model: GPSGLONASS15D-S6-0341-A, cable: 4.55m non-shielded cable w/o core)                                                                                                                                                                           |                     |                     |                     |
| Data Cable Supplied | 2.95m non-shielded RJ45 cable w/o core                                                                                                                                                                                                                                                  |                     |                     |                     |

Note:

- The EUT uses following adapters.

|              |                                                |
|--------------|------------------------------------------------|
| Adapter 1    |                                                |
| Brand        | Asian Power Devices Inc.                       |
| Model        | WB-24J12FU                                     |
| Input Power  | 100-240Vac~50-60Hz 0.7A Max.                   |
| Output Power | 12Vdc / 2A                                     |
| Power Line   | 1.5m DC cable without core attached on adapter |



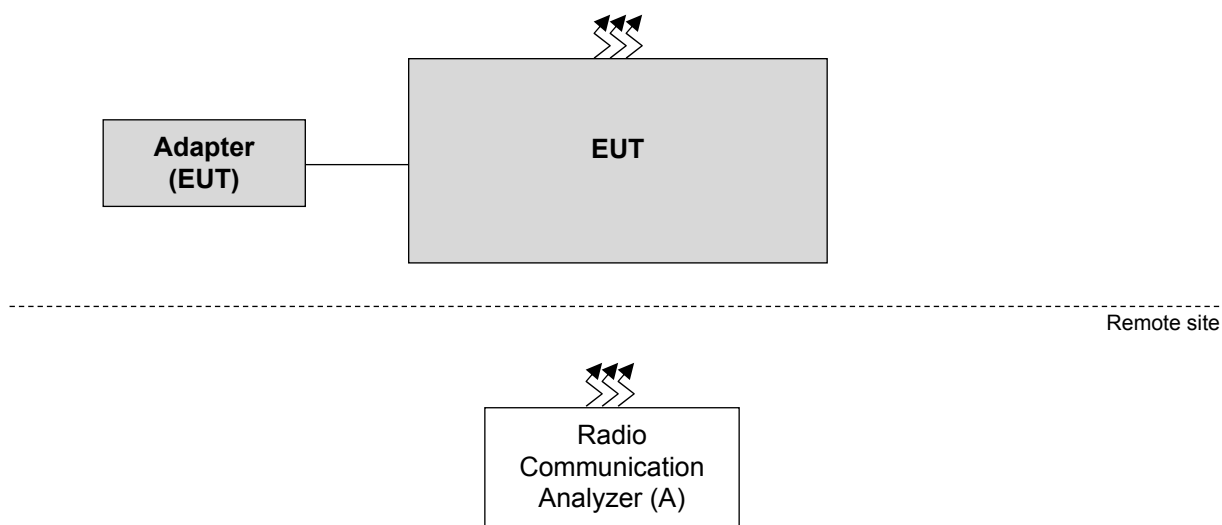
| Adapter 2    |                                                |
|--------------|------------------------------------------------|
| Brand        | AOEM                                           |
| Model        | ADS0248T-W120200(H)                            |
| Input Power  | 100-240Vac~50-60Hz 0.6A                        |
| Output Power | 12Vdc / 2.0A                                   |
| Power Line   | 1.5m DC cable without core attached on adapter |

| Adapter 3    |                                                |
|--------------|------------------------------------------------|
| Brand        | ChenZhou Frecom electronics Co., Ltd.          |
| Model        | F24L9-120200SPA                                |
| Input Power  | 100-240Vac~50/60Hz 0.6A                        |
| Output Power | 12Vdc / 2A                                     |
| Power Line   | 1.5m DC cable without core attached on adapter |

\*After pre-testing, adapter 1 was the worst case for the final tests.

2. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.
3. Carrier Aggregation technology supported for this device, the operation behavior is WCDMA Band 2 + LTE Band 4 and LTE Band 2 + LTE Band 4, for more details information please refer to "CA Mode" of test report.

### 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.

| ID | Product                      | Brand   | Model No. | Serial No. | FCC ID | Remarks |
|----|------------------------------|---------|-----------|------------|--------|---------|
| A. | Radio Communication Analyzer | Anritsu | MT8821C   | 6261786083 | NA     | -       |

Note: 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 on X-plane. Following channel(s) was (were) selected for the final test as listed below:

#### WCDMA Mode

| EUT Configure Mode | Test Item                    | Available Channel | Tested Channel                                          | Mode         |
|--------------------|------------------------------|-------------------|---------------------------------------------------------|--------------|
| -                  | EIRP                         | 9662 to 9938      | 9662(1932.4MHz),<br>9800(1960.0MHz),<br>9938(1987.6MHz) | WCDMA (BPSK) |
| -                  | Modulation characteristics   | 9662 to 9938      | 9800(1960.0MHz)                                         | WCDMA (BPSK) |
| -                  | Frequency Stability          | 9662 to 9938      | 9662(1932.4MHz),<br>9938(1987.6MHz)                     | WCDMA (BPSK) |
| -                  | Emission Bandwidth           | 9662 to 9938      | 9662(1932.4MHz),<br>9800(1960.0MHz),<br>9938(1987.6MHz) | WCDMA (BPSK) |
| -                  | Band Edge                    | 9662 to 9938      | 9662(1932.4MHz),<br>9938(1987.6MHz)                     | WCDMA (BPSK) |
| -                  | Peak To Average Ratio        | 9662 to 9938      | 9662(1932.4MHz),<br>9800(1960.0MHz),<br>9938(1987.6MHz) | WCDMA (BPSK) |
| -                  | Conducted Emission           | 9662 to 9938      | 9662(1932.4MHz),<br>9800(1960.0MHz),<br>9938(1987.6MHz) | WCDMA (BPSK) |
| -                  | Radiated Emission Below 1GHz | 9662 to 9938      | 9800(1960.0MHz)                                         | WCDMA (BPSK) |
| -                  | Radiated Emission Above 1GHz | 9662 to 9938      | 9662(1932.4MHz),<br>9800(1960.0MHz),<br>9938(1987.6MHz) | WCDMA (BPSK) |

## LTE Band 2

| Test item                       | Available channel | Tested channel                                        | Channel Bandwidth | Modulation           |
|---------------------------------|-------------------|-------------------------------------------------------|-------------------|----------------------|
| Output Power                    | 625 to 1175       | 625(1932.5MHz),<br>900(1960.0MHz),<br>1175(1987.5MHz) | 5MHz              | QPSK / 16QAM / 64QAM |
|                                 | 650 to 1150       | 650(1935.0MHz),<br>900(1960.0MHz),<br>1150(1985.0MHz) | 10MHz             | QPSK / 16QAM / 64QAM |
|                                 | 675 to 1125       | 675(1937.5MHz),<br>900(1960.0MHz),<br>1125(1982.5MHz) | 15MHz             | QPSK / 16QAM / 64QAM |
|                                 | 700 to 1100       | 700(1940.0MHz),<br>900(1960.0MHz),<br>1100(1980.0MHz) | 20MHz             | QPSK / 16QAM / 64QAM |
| Modulation characteristics      | 625 to 1175       | 900(1960.0MHz)                                        | 5MHz              | QPSK / 16QAM / 64QAM |
| Frequency Stability             | 625 to 1175       | 625(1932.5MHz),<br>1175(1987.5MHz)                    | 5MHz              | QPSK                 |
|                                 | 650 to 1150       | 650(1935.0MHz),<br>1150(1985.0MHz)                    | 10MHz             | QPSK                 |
|                                 | 675 to 1125       | 675(1937.5MHz),<br>1125(1982.5MHz)                    | 15MHz             | QPSK                 |
|                                 | 700 to 1100       | 700(1940.0MHz),<br>1100(1980.0MHz)                    | 20MHz             | QPSK                 |
| Emission Bandwidth              | 625 to 1175       | 625(1932.5MHz),<br>900(1960.0MHz),<br>1175(1987.5MHz) | 5MHz              | QPSK / 16QAM / 64QAM |
|                                 | 650 to 1150       | 650(1935.0MHz),<br>900(1960.0MHz),<br>1150(1985.0MHz) | 10MHz             | QPSK / 16QAM / 64QAM |
|                                 | 675 to 1125       | 675(1937.5MHz),<br>900(1960.0MHz),<br>1125(1982.5MHz) | 15MHz             | QPSK / 16QAM / 64QAM |
|                                 | 700 to 1100       | 700(1940.0MHz),<br>900(1960.0MHz),<br>1100(1980.0MHz) | 20MHz             | QPSK / 16QAM / 64QAM |
| Band Edge                       | 625 to 1175       | 625(1932.5MHz),<br>1175(1987.5MHz)                    | 5MHz              | QPSK                 |
|                                 | 650 to 1150       | 650(1935.0MHz),<br>1150(1985.0MHz)                    | 10MHz             | QPSK                 |
|                                 | 675 to 1125       | 675(1937.5MHz),<br>1125(1982.5MHz)                    | 15MHz             | QPSK                 |
|                                 | 700 to 1100       | 700(1940.0MHz),<br>1100(1980.0MHz)                    | 20MHz             | QPSK                 |
| Peak to Average Ratio           | 625 to 1175       | 625(1932.5MHz),<br>900(1960.0MHz),<br>1175(1987.5MHz) | 5MHz              | QPSK / 16QAM / 64QAM |
|                                 | 650 to 1150       | 650(1935.0MHz),<br>900(1960.0MHz),<br>1150(1985.0MHz) | 10MHz             | QPSK / 16QAM / 64QAM |
|                                 | 675 to 1125       | 675(1937.5MHz),<br>900(1960.0MHz),<br>1125(1982.5MHz) | 15MHz             | QPSK / 16QAM / 64QAM |
|                                 | 700 to 1100       | 700(1940.0MHz),<br>900(1960.0MHz),<br>1100(1980.0MHz) | 20MHz             | QPSK / 16QAM / 64QAM |
| Conducuted Emission             | 625 to 1175       | 625(1932.5MHz),<br>900(1960.0MHz),<br>1175(1987.5MHz) | 5MHz              | QPSK                 |
|                                 | 650 to 1150       | 650(1935.0MHz),<br>900(1960.0MHz),<br>1150(1985.0MHz) | 10MHz             | QPSK                 |
|                                 | 675 to 1125       | 675(1937.5MHz),<br>900(1960.0MHz),<br>1125(1982.5MHz) | 15MHz             | QPSK                 |
|                                 | 700 to 1100       | 700(1940.0MHz),<br>900(1960.0MHz),<br>1100(1980.0MHz) | 20MHz             | QPSK                 |
| Radiated Emission<br>Below 1GHz | 625 to 1175       | 900(1960.0MHz)                                        | 5MHz              | QPSK                 |
|                                 | 700 to 1100       | 900(1960.0MHz)                                        | 20MHz             | QPSK                 |

| Test item                       | Available channel | Tested channel                                        | Channel Bandwidth | Modulation |
|---------------------------------|-------------------|-------------------------------------------------------|-------------------|------------|
| Radiated Emission<br>Above 1GHz | 625 to 1175       | 625(1932.5MHz),<br>900(1960.0MHz),<br>1175(1987.5MHz) | 5MHz              | QPSK       |
|                                 | 700 to 1100       | 700(1940.0MHz),<br>900(1960.0MHz),<br>1100(1980.0MHz) | 20MHz             | QPSK       |

Note:

1. The conducted output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM and 64QAM mode. Therefore, Frequency Stability, Channel edge, Conducted Emission, Radiated Emission were presented under QPSK mode only.

Test Condition:

| Test Item                  | Environmental Conditions | Input Power (System) | Tested By  |
|----------------------------|--------------------------|----------------------|------------|
| EIRP                       | 22deg. C, 66%RH          | 120Vac, 60Hz         | Han Wu     |
| Modulation characteristics | 24deg. C, 64%RH          | 120Vac, 60Hz         | James Yang |
| Frequency Stability        | 24deg. C, 64%RH          | 120Vac, 60Hz         | James Yang |
| Emission Bandwidth         | 24deg. C, 64%RH          | 120Vac, 60Hz         | James Yang |
| Band Edge                  | 24deg. C, 64%RH          | 120Vac, 60Hz         | James Yang |
| Peak To Average Ratio      | 24deg. C, 64%RH          | 120Vac, 60Hz         | James Yang |
| Conducted Emission         | 24deg. C, 64%RH          | 120Vac, 60Hz         | James Yang |
| Radiated Emission          | 22deg. C, 66%RH          | 120Vac, 60Hz         | Han Wu     |

### 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 and References

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

**Test Standard:**

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 24**

**ANSI 63.26-2015**

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

**References Test Guidance:**

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

**KDB 412172 D01 Determining ERP and EIRP v01r01**

**KDB 662911 D01 multiple transmitter output v02r01**

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

All test items have been performed as a reference to the above KDB test guidance.

## 4 Test Types and Results

### 4.1 Output Power Measurement

#### 4.1.1 Limits of Output Power Measurement

Base stations with an emission bandwidth greater than 1MHz are limited to 1640 watts/MHz EIRP with an antenna height up to 300 meters HAAT.

#### 4.1.2 Test Procedures

##### EIRP / ERP Measurement:

- All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1MHz and 3MHz for WCDMA 5MHz, 3MHz and 10MHz for LTE 20MHz.
- Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m 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 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- 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
- $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ . E.R.P power can be calculated from E.I.R.P power by subtracting the gain of dipole,  $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15\text{dB}$ .

Where:

$$ERP/EIRP = P_{Meas} + G_T - L_C$$

$P_{Meas}$  : Measure transmitter output power.

$G_T$  : Gain of the transmitting antenna.

$L_C$  : signal attenuation in the connecting cable between the transmitter and antenna.

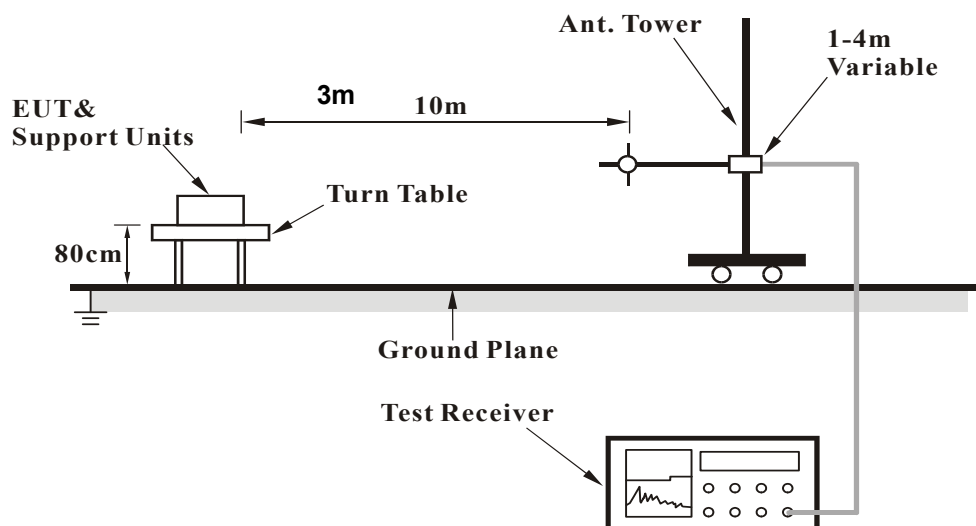
##### Conducted Power Measurement:

The EUT was set up for the maximum power with WCDMA, LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

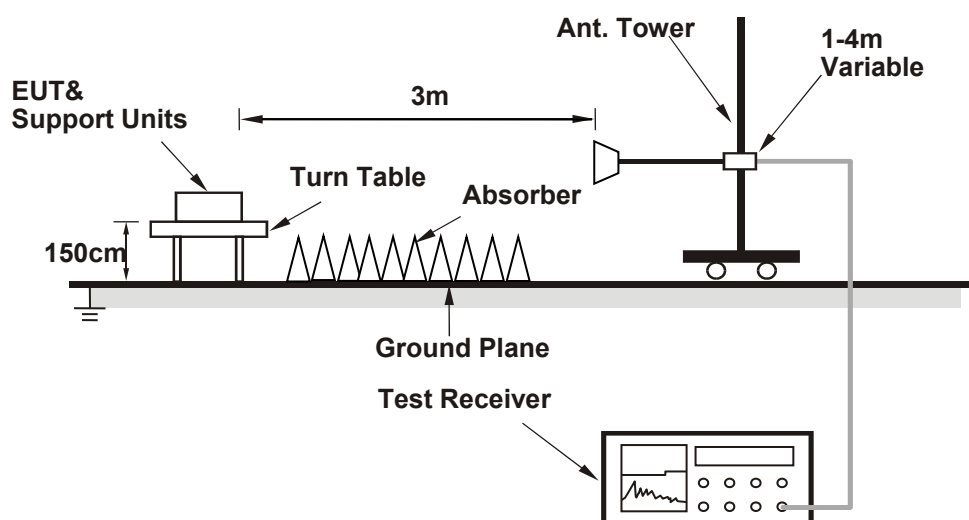
### 4.1.3 Test Setup

EIRP / ERP Measurement:

**For Radiated Emission below or equal 1GHz**



**For Radiated Emission above 1GHz**



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

**CONDUCTED POWER MEASUREMENT:**



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

#### 4.1.4 Test Results

Conducted Output Power (dBm)

| Band      | WCDMA II |       |        |
|-----------|----------|-------|--------|
| Channel   | 9662     | 9800  | 9938   |
| Frequency | 1932.4   | 1960  | 1987.6 |
| RMC 12.2K | 20.03    | 20.81 | 20.74  |

#### LTE Band 2

| Band       | BW | Chain | QPSK       |          |            | 16QAM      |          |            | 64QAM      |          |            |
|------------|----|-------|------------|----------|------------|------------|----------|------------|------------|----------|------------|
|            |    |       | Low CH     | Mid CH   | High CH    | Low CH     | Mid CH   | High CH    | Low CH     | Mid CH   | High CH    |
|            |    |       | 625        | 900      | 1175       | 625        | 900      | 1175       | 625        | 900      | 1175       |
|            |    |       | 1932.5 MHz | 1960 MHz | 1987.5 MHz | 1932.5 MHz | 1960 MHz | 1987.5 MHz | 1932.5 MHz | 1960 MHz | 1987.5 MHz |
| LTE Band 2 | 5M | 0     | 19.86      | 20.16    | 20.03      | 18.92      | 19.62    | 19.47      | 18.85      | 19.17    | 19.07      |
|            |    | 1     | 19.25      | 20.57    | 20.48      | 18.75      | 20.17    | 20.11      | 18.41      | 19.35    | 19.75      |
|            |    | Total | 22.58      | 23.38    | 23.27      | 21.85      | 22.91    | 22.81      | 21.65      | 22.27    | 22.43      |

| Band       | BW  | Chain | QPSK     |          |          | 16QAM    |          |          | 64QAM    |          |          |
|------------|-----|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|            |     |       | Low CH   | Mid CH   | High CH  | Low CH   | Mid CH   | High CH  | Low CH   | Mid CH   | High CH  |
|            |     |       | 650      | 900      | 1150     | 650      | 900      | 1150     | 650      | 900      | 1150     |
|            |     |       | 1935 MHz | 1960 MHz | 1985 MHz | 1935 MHz | 1960 MHz | 1985 MHz | 1935 MHz | 1960 MHz | 1985 MHz |
| LTE Band 2 | 10M | 0     | 19.85    | 20.29    | 20.85    | 18.92    | 20.16    | 20.11    | 18.97    | 19.88    | 19.68    |
|            |     | 1     | 19.22    | 20.48    | 20.77    | 19.07    | 20.07    | 20.44    | 18.75    | 19.72    | 19.81    |
|            |     | Total | 22.56    | 23.40    | 23.82    | 22.01    | 23.13    | 23.29    | 21.87    | 22.81    | 22.76    |

| Band       | BW  | Chain | QPSK       |          |            | 16QAM      |          |            | 64QAM      |          |            |
|------------|-----|-------|------------|----------|------------|------------|----------|------------|------------|----------|------------|
|            |     |       | Low CH     | Mid CH   | High CH    | Low CH     | Mid CH   | High CH    | Low CH     | Mid CH   | High CH    |
|            |     |       | 675        | 900      | 1125       | 675        | 900      | 1125       | 675        | 900      | 1125       |
|            |     |       | 1937.5 MHz | 1960 MHz | 1982.5 MHz | 1937.5 MHz | 1960 MHz | 1982.5 MHz | 1937.5 MHz | 1960 MHz | 1982.5 MHz |
| LTE Band 2 | 15M | 0     | 20.78      | 21.72    | 21.88      | 20.07      | 21.27    | 21.55      | 19.98      | 20.46    | 21.03      |
|            |     | 1     | 20.89      | 21.64    | 21.97      | 20.38      | 21.05    | 21.41      | 19.85      | 20.69    | 21.00      |
|            |     | Total | 23.85      | 24.69    | 24.94      | 23.24      | 24.17    | 24.49      | 22.93      | 23.59    | 24.03      |

| Band       | BW  | Chain | QPSK     |          |          | 16QAM    |          |          | 64QAM    |          |          |
|------------|-----|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|            |     |       | Low CH   | Mid CH   | High CH  | Low CH   | Mid CH   | High CH  | Low CH   | Mid CH   | High CH  |
|            |     |       | 700      | 900      | 1100     | 700      | 900      | 1100     | 700      | 900      | 1100     |
|            |     |       | 1940 MHz | 1960 MHz | 1980 MHz | 1940 MHz | 1960 MHz | 1980 MHz | 1940 MHz | 1960 MHz | 1980 MHz |
| LTE Band 2 | 20M | 0     | 19.85    | 20.22    | 20.94    | 19.50    | 19.88    | 20.23    | 18.88    | 19.27    | 19.87    |
|            |     | 1     | 19.76    | 20.37    | 20.86    | 19.41    | 19.83    | 20.45    | 19.04    | 19.55    | 19.93    |
|            |     | Total | 22.82    | 23.31    | 23.91    | 22.47    | 22.87    | 23.35    | 21.97    | 22.42    | 22.91    |



EIRP Power (dBm)

WCDMA Mode

|                                                     |             |                             |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|-----------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 9662, 9800, 9938 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                             |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)               | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1932.40     | -18.8                       | 21.8                  | -0.2                   | 21.6       | 62.1        | -40.5       |
| 2                                                   | 1960.00     | -18.2                       | 22.3                  | -0.3                   | 22.0       | 62.1        | -40.1       |
| 3                                                   | 1987.60     | -18.2                       | 22.2                  | -0.4                   | 21.8       | 62.1        | -40.3       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                             |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)               | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1932.40     | -16.4                       | 24.6                  | -0.2                   | 24.4       | 62.1        | -37.7       |
| 2                                                   | 1960.00     | -16.2                       | 25.0                  | -0.3                   | 24.7       | 62.1        | -37.4       |
| 3                                                   | 1987.60     | -16.5                       | 24.9                  | -0.4                   | 24.5       | 62.1        | -37.6       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 2

**Modulation Type: QPSK**

Channel Bandwidth: 5MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 625, 900, 1175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1932.5      | -19.2                     | 21.4                  | -0.2                   | 21.2       | 62.1        | -40.9       |
| 2                                                   | 1960.0      | -18.9                     | 21.6                  | -0.3                   | 21.3       | 62.1        | -40.8       |
| 3                                                   | 1987.5      | -19.4                     | 21.0                  | -0.4                   | 20.6       | 62.1        | -41.5       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1932.5      | -16.2                     | 24.8                  | -0.2                   | 24.6       | 62.1        | -37.5       |
| 2                                                   | 1960.0      | -15.5                     | 25.7                  | -0.3                   | 25.4       | 62.1        | -36.7       |
| 3                                                   | 1987.5      | -15.7                     | 25.7                  | -0.4                   | 25.3       | 62.1        | -36.8       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 10MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 650, 900, 1150 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1935.0      | -19.5                     | 21.1                  | -0.2                   | 20.9       | 62.1        | -41.2       |
| 2                                                   | 1960.0      | -19.2                     | 21.3                  | -0.3                   | 21.0       | 62.1        | -41.1       |
| 3                                                   | 1985.0      | -19.4                     | 21.0                  | -0.4                   | 20.6       | 62.1        | -41.5       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1935.0      | -15.9                     | 25.1                  | -0.2                   | 24.9       | 62.1        | -37.2       |
| 2                                                   | 1960.0      | -16.0                     | 25.2                  | -0.3                   | 24.9       | 62.1        | -37.2       |
| 3                                                   | 1985.0      | -16.0                     | 25.4                  | -0.4                   | 25.0       | 62.1        | -37.1       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 15MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 675, 900, 1125 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1937.5      | -19.6                     | 21.1                  | -0.3                   | 20.8       | 62.1        | -41.3       |
| 2                                                   | 1960.0      | -18.9                     | 21.6                  | -0.3                   | 21.3       | 62.1        | -40.8       |
| 3                                                   | 1982.5      | -19.2                     | 21.3                  | -0.4                   | 20.9       | 62.1        | -41.2       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1937.5      | -16.0                     | 25.1                  | -0.3                   | 24.8       | 62.1        | -37.3       |
| 2                                                   | 1960.0      | -16.1                     | 25.1                  | -0.3                   | 24.8       | 62.1        | -37.3       |
| 3                                                   | 1982.5      | -15.6                     | 25.8                  | -0.4                   | 25.4       | 62.1        | -36.7       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 20MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 700, 900, 1100 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1940.0      | -19.4                     | 21.2                  | -0.3                   | 20.9       | 62.1        | -41.2       |
| 2                                                   | 1960.0      | -18.7                     | 21.8                  | -0.3                   | 21.5       | 62.1        | -40.6       |
| 3                                                   | 1980.0      | -19.9                     | 20.6                  | -0.4                   | 20.2       | 62.1        | -41.9       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1940.0      | -17.8                     | 23.3                  | -0.3                   | 23.0       | 62.1        | -39.1       |
| 2                                                   | 1960.0      | -15.3                     | 25.9                  | -0.3                   | 25.6       | 62.1        | -36.5       |
| 3                                                   | 1980.0      | -17.0                     | 24.4                  | -0.4                   | 24.0       | 62.1        | -38.1       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## Modulation Type: 16QAM

Channel Bandwidth: 5MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 625, 900, 1175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1932.5      | -20.4                     | 20.2                  | -0.2                   | 20.0       | 62.1        | -42.1       |
| 2                                                   | 1960.0      | -20.1                     | 20.4                  | -0.3                   | 20.1       | 62.1        | -42.0       |
| 3                                                   | 1987.5      | -20.3                     | 20.1                  | -0.4                   | 19.7       | 62.1        | -42.4       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1932.5      | -17.4                     | 23.6                  | -0.2                   | 23.4       | 62.1        | -38.7       |
| 2                                                   | 1960.0      | -16.3                     | 24.9                  | -0.3                   | 24.6       | 62.1        | -37.5       |
| 3                                                   | 1987.5      | -16.6                     | 24.8                  | -0.4                   | 24.4       | 62.1        | -37.7       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 10MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 650, 900, 1150 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1935.0      | -20.7                     | 19.9                  | -0.2                   | 19.7       | 62.1        | -42.4       |
| 2                                                   | 1960.0      | -20.0                     | 20.5                  | -0.3                   | 20.2       | 62.1        | -41.9       |
| 3                                                   | 1985.0      | -20.4                     | 20.0                  | -0.4                   | 19.6       | 62.1        | -42.5       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1935.0      | -16.8                     | 24.2                  | -0.2                   | 24.0       | 62.1        | -38.1       |
| 2                                                   | 1960.0      | -17.0                     | 24.2                  | -0.3                   | 23.9       | 62.1        | -38.2       |
| 3                                                   | 1985.0      | -16.9                     | 24.5                  | -0.4                   | 24.1       | 62.1        | -38.0       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 15MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 675, 900, 1125 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1937.5      | -20.4                     | 20.3                  | -0.3                   | 20.0       | 62.1        | -42.1       |
| 2                                                   | 1960.0      | -19.7                     | 20.8                  | -0.3                   | 20.5       | 62.1        | -41.6       |
| 3                                                   | 1982.5      | -20.0                     | 20.5                  | -0.4                   | 20.1       | 62.1        | -42.0       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1937.5      | -16.9                     | 24.2                  | -0.3                   | 23.9       | 62.1        | -38.2       |
| 2                                                   | 1960.0      | -16.9                     | 24.3                  | -0.3                   | 24.0       | 62.1        | -38.1       |
| 3                                                   | 1982.5      | -16.2                     | 25.2                  | -0.4                   | 24.8       | 62.1        | -37.3       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 20MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 700, 900, 1100 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1940.0      | -20.1                     | 20.5                  | -0.3                   | 20.2       | 62.1        | -41.9       |
| 2                                                   | 1960.0      | -20.3                     | 20.2                  | -0.3                   | 19.9       | 62.1        | -42.2       |
| 3                                                   | 1980.0      | -20.5                     | 20.0                  | -0.4                   | 19.6       | 62.1        | -42.5       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1940.0      | -18.2                     | 22.9                  | -0.3                   | 22.6       | 62.1        | -39.5       |
| 2                                                   | 1960.0      | -16.3                     | 24.9                  | -0.3                   | 24.6       | 62.1        | -37.5       |
| 3                                                   | 1980.0      | -17.4                     | 24.0                  | -0.4                   | 23.6       | 62.1        | -38.5       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

### Modulation Type: 64QAM

Channel Bandwidth: 5MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 625, 900, 1175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1932.5      | -21.0                     | 19.6                  | -0.2                   | 19.4       | 62.1        | -42.7       |
| 2                                                   | 1960.0      | -20.7                     | 19.8                  | -0.3                   | 19.5       | 62.1        | -42.6       |
| 3                                                   | 1987.5      | -20.7                     | 19.7                  | -0.4                   | 19.3       | 62.1        | -42.8       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1932.5      | -17.8                     | 23.2                  | -0.2                   | 23.0       | 62.1        | -39.1       |
| 2                                                   | 1960.0      | -16.7                     | 24.5                  | -0.3                   | 24.2       | 62.1        | -37.9       |
| 3                                                   | 1987.5      | -17.0                     | 24.4                  | -0.4                   | 24.0       | 62.1        | -38.1       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 10MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 650, 900, 1150 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1935.0      | -21.1                     | 19.5                  | -0.2                   | 19.3       | 62.1        | -42.8       |
| 2                                                   | 1960.0      | -20.4                     | 20.1                  | -0.3                   | 19.8       | 62.1        | -42.3       |
| 3                                                   | 1985.0      | -21.0                     | 19.4                  | -0.4                   | 19.0       | 62.1        | -43.1       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1935.0      | -17.2                     | 23.8                  | -0.2                   | 23.6       | 62.1        | -38.5       |
| 2                                                   | 1960.0      | -17.4                     | 23.8                  | -0.3                   | 23.5       | 62.1        | -38.6       |
| 3                                                   | 1985.0      | -17.4                     | 24.0                  | -0.4                   | 23.6       | 62.1        | -38.5       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 15MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 675, 900, 1125 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1937.5      | -21.0                     | 19.7                  | -0.3                   | 19.4       | 62.1        | -42.7       |
| 2                                                   | 1960.0      | -20.3                     | 20.2                  | -0.3                   | 19.9       | 62.1        | -42.2       |
| 3                                                   | 1982.5      | -20.6                     | 19.9                  | -0.4                   | 19.5       | 62.1        | -42.6       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1937.5      | -17.5                     | 23.6                  | -0.3                   | 23.3       | 62.1        | -38.8       |
| 2                                                   | 1960.0      | -17.2                     | 24.0                  | -0.3                   | 23.7       | 62.1        | -38.4       |
| 3                                                   | 1982.5      | -16.9                     | 24.5                  | -0.4                   | 24.1       | 62.1        | -38.0       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 20MHz

|                                                     |             |                           |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 700, 900, 1100 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1940.0      | -20.7                     | 19.9                  | -0.3                   | 19.6       | 62.1        | -42.5       |
| 2                                                   | 1960.0      | -20.8                     | 19.7                  | -0.3                   | 19.4       | 62.1        | -42.7       |
| 3                                                   | 1980.0      | -20.9                     | 19.6                  | -0.4                   | 19.2       | 62.1        | -42.9       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                           |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)             | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1940.0      | -18.8                     | 22.3                  | -0.3                   | 22.0       | 62.1        | -40.1       |
| 2                                                   | 1960.0      | -17.4                     | 23.8                  | -0.3                   | 23.5       | 62.1        | -38.6       |
| 3                                                   | 1980.0      | -17.9                     | 23.5                  | -0.4                   | 23.1       | 62.1        | -39.0       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## 4.2 Modulation Characteristics Measurement

### 4.2.1 Limits of Modulation Characteristics

N/A

### 4.2.2 Test Procedure

Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

### 4.2.3 Test Setup



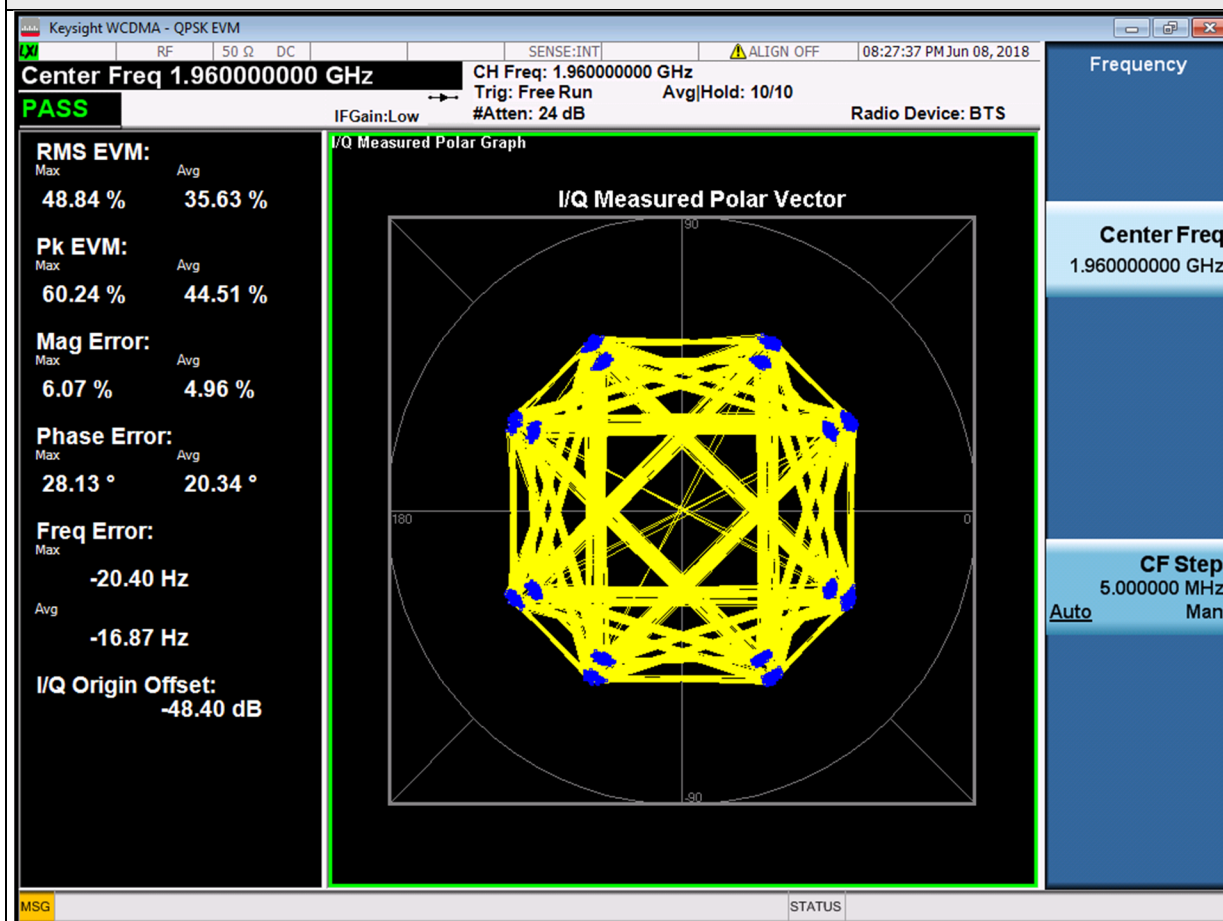


#### 4.2.4 Test Results

##### Spectrum Plot of Measurement Value

Channel: 9800 / Frequency (MHz): 1960.0MHz

##### WCDMA



## LTE Band 2

### Spectrum Plot of Measurement Value

Channel: 900 / Frequency (MHz): 1960.0MHz

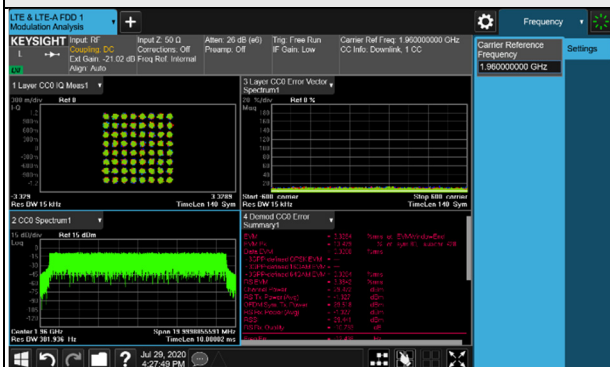
#### QPSK



#### 16QAM



#### 64QAM



### 4.3 Frequency Stability Measurement

#### 4.3.1 Limits of Frequency Stability Measurement

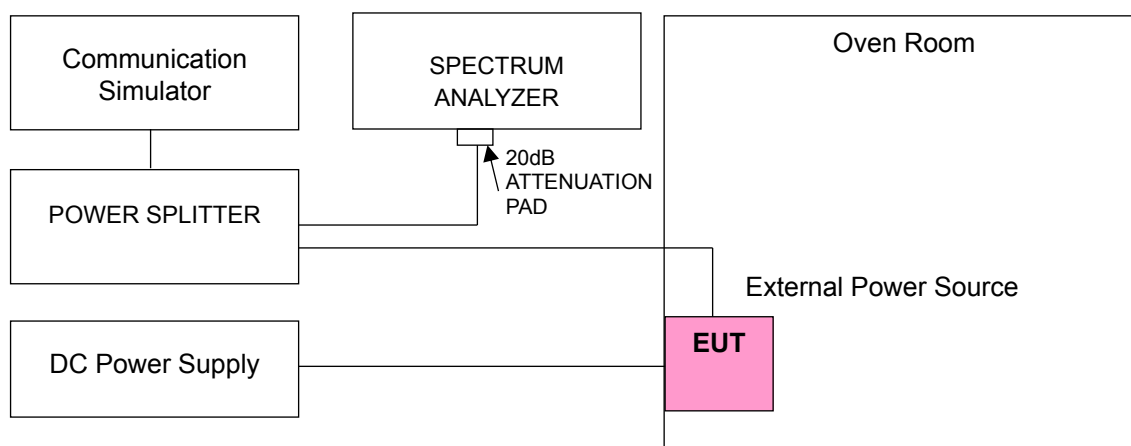
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

#### 4.3.2 Test Procedure

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the AC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5^{\circ}\text{C}$  during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

#### 4.3.3 Test Setup



#### 4.3.4 Test Results

##### Frequency Error vs. Voltage

| Voltage<br>(Volts) | WCDMA Band 2    |                       |                 |                       |
|--------------------|-----------------|-----------------------|-----------------|-----------------------|
|                    | Low Channel     |                       | High Channel    |                       |
|                    | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1932.400002     | 0.001                 | 1987.600001     | 0.001                 |
| 102                | 1932.400003     | 0.002                 | 1987.600004     | 0.002                 |
| 138                | 1932.400003     | 0.001                 | 1987.600003     | 0.001                 |

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

##### Frequency Error vs. Temperature

| Temp. (°C) | WCDMA Band 2    |                       |                 |                       |
|------------|-----------------|-----------------------|-----------------|-----------------------|
|            | Low Channel     |                       | High Channel    |                       |
|            | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1932.400002     | 0.001                 | 1987.600002     | 0.001                 |
| -20        | 1932.400002     | 0.001                 | 1987.600001     | 0.001                 |
| -10        | 1932.400001     | 0.001                 | 1987.600003     | 0.001                 |
| 0          | 1932.400002     | 0.001                 | 1987.600003     | 0.001                 |
| 10         | 1932.400003     | 0.002                 | 1987.600001     | 0.001                 |
| 20         | 1932.399998     | -0.001                | 1987.599999     | -0.001                |
| 30         | 1932.399997     | -0.002                | 1987.599996     | -0.002                |
| 40         | 1932.399997     | -0.001                | 1987.599999     | -0.001                |
| 50         | 1932.399999     | -0.001                | 1987.599997     | -0.002                |

#### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2               |                       |                 |                       |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |
|                    | Low Channel              |                       | High Channel    |                       |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1932.500003              | 0.001                 | 1987.500002     | 0.001                 |
| 102                | 1932.500001              | 0.001                 | 1987.500001     | 0.001                 |
| 138                | 1932.500001              | 0.001                 | 1987.500003     | 0.002                 |

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

#### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2               |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1932.500004              | 0.002                 | 1987.500004     | 0.002                 |
| -20        | 1932.500003              | 0.001                 | 1987.500003     | 0.001                 |
| -10        | 1932.500004              | 0.002                 | 1987.500004     | 0.002                 |
| 0          | 1932.500002              | 0.001                 | 1987.500001     | 0.001                 |
| 10         | 1932.500002              | 0.001                 | 1987.500004     | 0.002                 |
| 20         | 1932.499997              | -0.001                | 1987.499998     | -0.001                |
| 30         | 1932.499997              | -0.002                | 1987.499998     | -0.001                |
| 40         | 1932.499999              | -0.001                | 1987.499999     | -0.001                |
| 50         | 1932.499996              | -0.002                | 1987.499996     | -0.002                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                |                       |                 |                       |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 10 MHz |                       |                 |                       |
|                    | Low Channel               |                       | High Channel    |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1935.000001               | 0.001                 | 1985.000002     | 0.001                 |
| 102                | 1935.000001               | 0.001                 | 1985.000002     | 0.001                 |
| 138                | 1935.000004               | 0.002                 | 1985.000001     | 0.001                 |

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 10 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1935.000003               | 0.001                 | 1985.000004     | 0.002                 |
| -20        | 1935.000004               | 0.002                 | 1985.000003     | 0.001                 |
| -10        | 1935.000002               | 0.001                 | 1985.000002     | 0.001                 |
| 0          | 1935.000004               | 0.002                 | 1985.000002     | 0.001                 |
| 10         | 1935.000003               | 0.002                 | 1985.000003     | 0.002                 |
| 20         | 1934.999998               | -0.001                | 1984.999999     | -0.001                |
| 30         | 1934.999998               | -0.001                | 1984.999998     | -0.001                |
| 40         | 1934.999998               | -0.001                | 1984.999999     | -0.001                |
| 50         | 1934.999998               | -0.001                | 1984.999997     | -0.002                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                |                       |                 |                       |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 15 MHz |                       |                 |                       |
|                    | Low Channel               |                       | High Channel    |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1937.500001               | 0.001                 | 1982.500002     | 0.001                 |
| 102                | 1937.500004               | 0.002                 | 1982.500003     | 0.002                 |
| 138                | 1937.500002               | 0.001                 | 1982.500002     | 0.001                 |

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 15 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1937.500002               | 0.001                 | 1982.500002     | 0.001                 |
| -20        | 1937.500003               | 0.001                 | 1982.500003     | 0.002                 |
| -10        | 1937.500001               | 0.001                 | 1982.500003     | 0.002                 |
| 0          | 1937.500001               | 0.001                 | 1982.500002     | 0.001                 |
| 10         | 1937.500001               | 0.001                 | 1982.500004     | 0.002                 |
| 20         | 1937.499997               | -0.001                | 1982.499997     | -0.002                |
| 30         | 1937.499998               | -0.001                | 1982.499997     | -0.002                |
| 40         | 1937.499997               | -0.002                | 1982.499999     | -0.001                |
| 50         | 1937.499997               | -0.002                | 1982.499999     | -0.001                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 2                |                       |                 |                       |
|--------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 20 MHz |                       |                 |                       |
|                    | Low Channel               |                       | High Channel    |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 120                | 1940.000003               | 0.001                 | 1980.000002     | 0.001                 |
| 102                | 1940.000003               | 0.001                 | 1980.000001     | 0.001                 |
| 138                | 1940.000003               | 0.002                 | 1980.000002     | 0.001                 |

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 20 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30        | 1940.000003               | 0.002                 | 1980.000003     | 0.001                 |
| -20        | 1940.000002               | 0.001                 | 1980.000002     | 0.001                 |
| -10        | 1940.000004               | 0.002                 | 1980.000001     | 0.001                 |
| 0          | 1940.000003               | 0.001                 | 1980.000003     | 0.001                 |
| 10         | 1940.000002               | 0.001                 | 1980.000003     | 0.002                 |
| 20         | 1939.999997               | -0.001                | 1979.999997     | -0.001                |
| 30         | 1939.999998               | -0.001                | 1979.999998     | -0.001                |
| 40         | 1939.999998               | -0.001                | 1979.999997     | -0.001                |
| 50         | 1939.999996               | -0.002                | 1979.999997     | -0.002                |

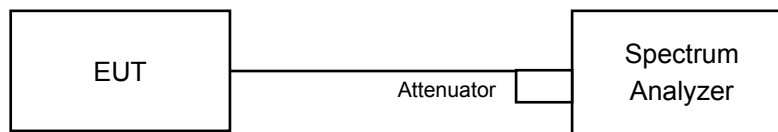


## 4.4 Emission Bandwidth Measurement

### 4.4.1 Test Procedure

The EUT connected with Spectrum Analyzer. All measurements were done at low, middle and high operational frequency range. The control system connected a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

### 4.4.2 Test Setup



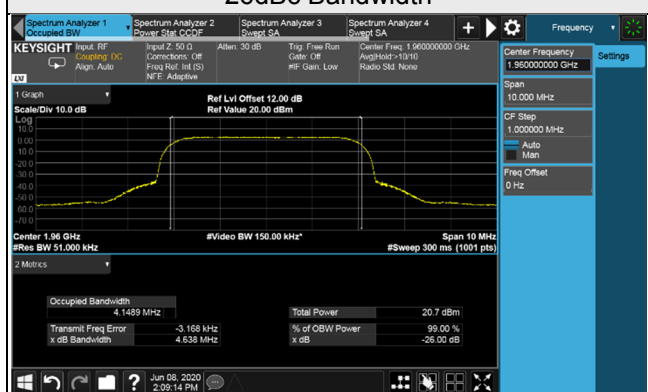
#### 4.4.3 Test Result

| Channel | Frequency (MHz) | WCDMA                 |                              |
|---------|-----------------|-----------------------|------------------------------|
|         |                 | 26dBc Bandwidth (MHz) | 99% Occupied Bandwidth (MHz) |
| 9662    | 1932.4          | 4.63                  | 4.14                         |
| 9800    | 1960.0          | 4.64                  | 4.15                         |
| 9938    | 1987.6          | 4.63                  | 4.14                         |

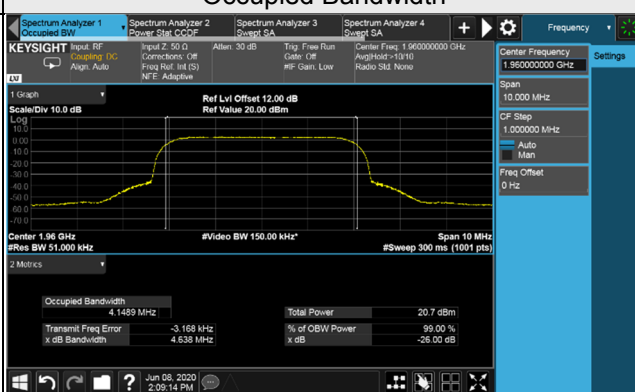
#### Spectrum Plot of Worst Value

##### WCDMA

##### 26dBc Bandwidth



##### Occupied Bandwidth



LTE Band 2 / Chain 0

| Channel Bandwidth 5MHz |                 |                       |       |       |                          |       |       |
|------------------------|-----------------|-----------------------|-------|-------|--------------------------|-------|-------|
| Channel                | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       | Occupied Bandwidth (MHz) |       |       |
|                        |                 | QPSK                  | 16QAM | 64QAM | QPSK                     | 16QAM | 64QAM |
| 625                    | 1932.5          | 4.64                  | 4.64  | 4.64  | 4.43                     | 4.42  | 4.43  |
| 900                    | 1960.0          | 4.64                  | 4.64  | 4.63  | 4.43                     | 4.43  | 4.43  |
| 1175                   | 1987.5          | 4.64                  | 4.65  | 4.65  | 4.43                     | 4.44  | 4.43  |

| Channel Bandwidth 10MHz |                 |                       |       |       |                          |       |       |
|-------------------------|-----------------|-----------------------|-------|-------|--------------------------|-------|-------|
| Channel                 | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       | Occupied Bandwidth (MHz) |       |       |
|                         |                 | QPSK                  | 16QAM | 64QAM | QPSK                     | 16QAM | 64QAM |
| 650                     | 1935.0          | 9.30                  | 9.30  | 9.32  | 8.91                     | 8.90  | 8.93  |
| 900                     | 1960.0          | 9.32                  | 9.29  | 9.30  | 8.91                     | 8.91  | 8.91  |
| 1150                    | 1985.0          | 9.34                  | 9.33  | 9.35  | 8.89                     | 8.89  | 8.89  |

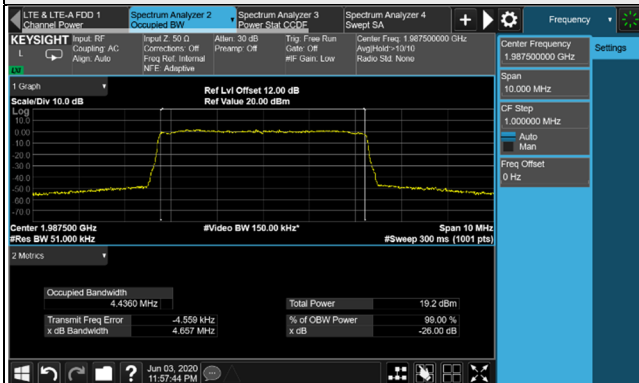
| Channel Bandwidth 15MHz |                 |                       |       |       |                          |       |       |
|-------------------------|-----------------|-----------------------|-------|-------|--------------------------|-------|-------|
| Channel                 | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       | Occupied Bandwidth (MHz) |       |       |
|                         |                 | QPSK                  | 16QAM | 64QAM | QPSK                     | 16QAM | 64QAM |
| 675                     | 1937.5          | 13.87                 | 13.91 | 13.90 | 13.28                    | 13.28 | 13.29 |
| 900                     | 1960.0          | 13.89                 | 13.88 | 13.87 | 13.30                    | 13.30 | 13.30 |
| 1125                    | 1982.5          | 13.87                 | 13.87 | 13.88 | 13.27                    | 13.27 | 13.27 |

| Channel Bandwidth 20MHz |                 |                       |       |       |                          |       |       |
|-------------------------|-----------------|-----------------------|-------|-------|--------------------------|-------|-------|
| Channel                 | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       | Occupied Bandwidth (MHz) |       |       |
|                         |                 | QPSK                  | 16QAM | 64QAM | QPSK                     | 16QAM | 64QAM |
| 700                     | 1940.0          | 18.59                 | 18.59 | 18.53 | 17.85                    | 17.85 | 17.84 |
| 900                     | 1960.0          | 18.54                 | 18.54 | 18.55 | 17.83                    | 17.83 | 17.83 |
| 1100                    | 1980.0          | 18.59                 | 18.63 | 18.65 | 17.83                    | 17.83 | 17.83 |

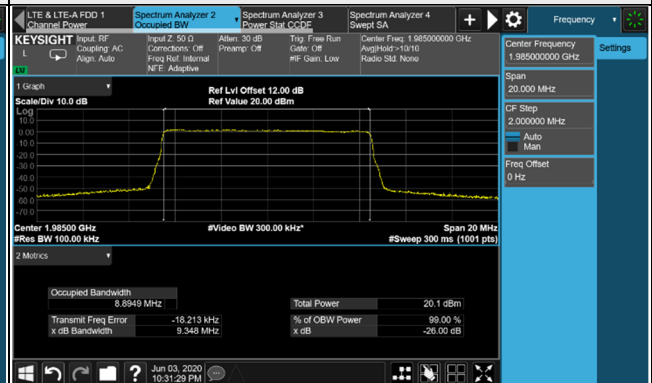
## Spectrum Plot of Worst Value

### 26dBc Bandwidth

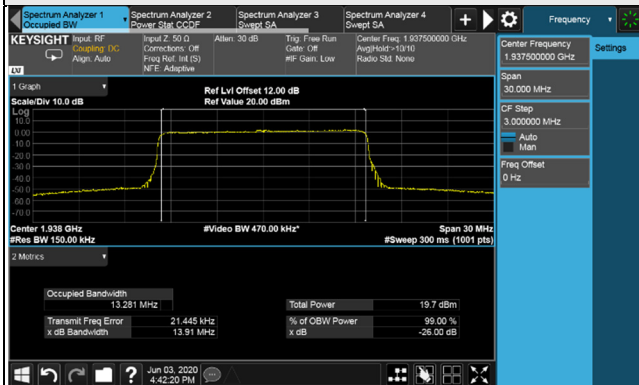
#### 5MHz / 16QAM / Ch 1175



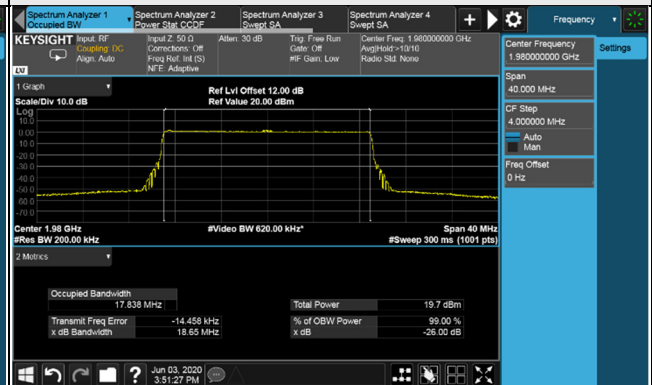
#### 10MHz / 64QAM / Ch 1150



#### 15MHz / 16QAM / Ch 675



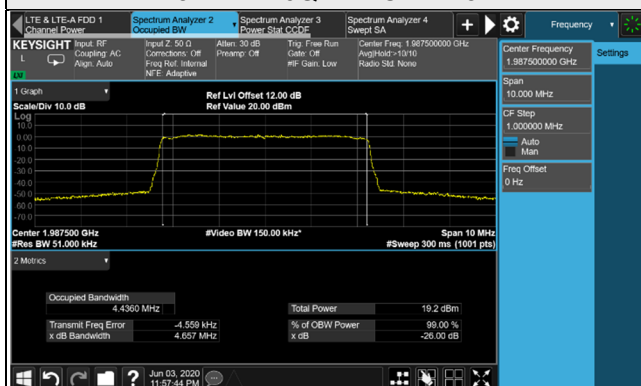
#### 20MHz / 64QAM / Ch 1100



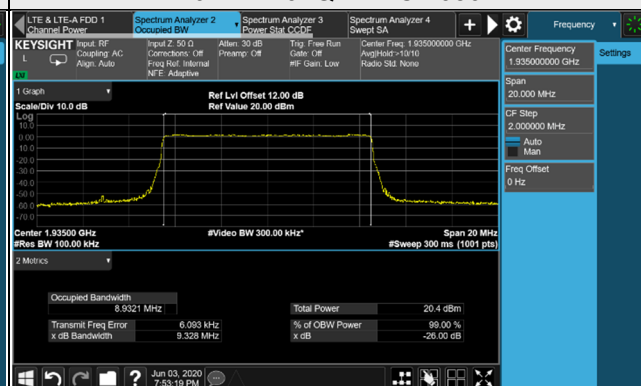
## Spectrum Plot of Worst Value

### Occupied Bandwidth

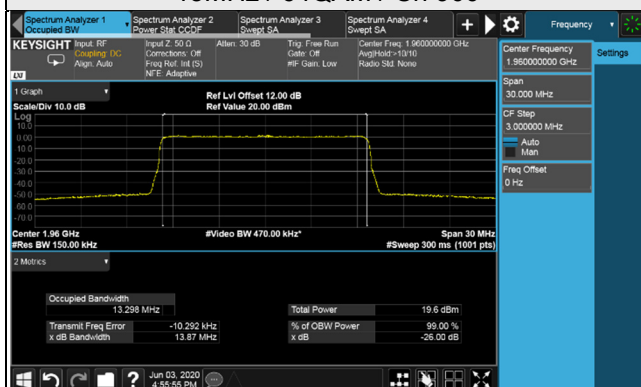
#### 5MHz / 16QAM / Ch 1175



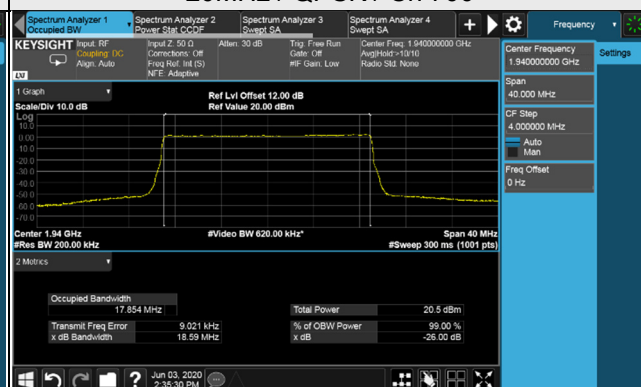
#### 10MHz / 64QAM / Ch 650



#### 15MHz / 64QAM / Ch 900



#### 20MHz / QPSK / Ch 700



## LTE Band 2 / Chain 1

| Channel Bandwidth 5MHz |                 |                       |       |       |                          |       |       |
|------------------------|-----------------|-----------------------|-------|-------|--------------------------|-------|-------|
| Channel                | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       | Occupied Bandwidth (MHz) |       |       |
|                        |                 | QPSK                  | 16QAM | 64QAM | QPSK                     | 16QAM | 64QAM |
| 625                    | 1932.5          | 4.65                  | 4.65  | 4.65  | 4.43                     | 4.43  | 4.43  |
| 900                    | 1960.0          | 4.65                  | 4.66  | 4.64  | 4.44                     | 4.44  | 4.44  |
| 1175                   | 1987.5          | 4.64                  | 4.64  | 4.63  | 4.43                     | 4.43  | 4.43  |

| Channel Bandwidth 10MHz |                 |                       |       |       |                          |       |       |
|-------------------------|-----------------|-----------------------|-------|-------|--------------------------|-------|-------|
| Channel                 | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       | Occupied Bandwidth (MHz) |       |       |
|                         |                 | QPSK                  | 16QAM | 64QAM | QPSK                     | 16QAM | 64QAM |
| 650                     | 1935.0          | 9.33                  | 9.32  | 9.31  | 8.93                     | 8.91  | 8.91  |
| 900                     | 1960.0          | 9.32                  | 9.31  | 9.31  | 8.91                     | 8.91  | 8.91  |
| 1150                    | 1985.0          | 9.31                  | 9.36  | 9.33  | 8.91                     | 8.91  | 8.91  |

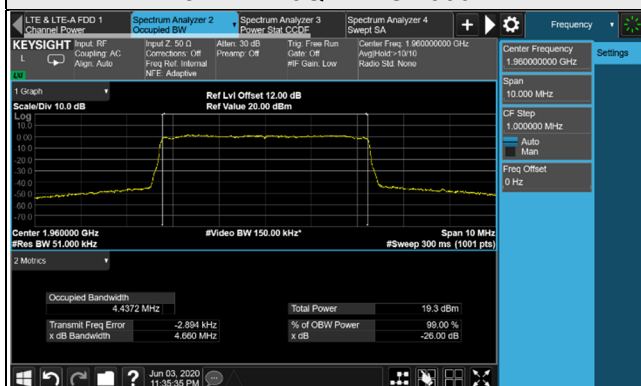
| Channel Bandwidth 15MHz |                 |                       |       |       |                          |       |       |
|-------------------------|-----------------|-----------------------|-------|-------|--------------------------|-------|-------|
| Channel                 | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       | Occupied Bandwidth (MHz) |       |       |
|                         |                 | QPSK                  | 16QAM | 64QAM | QPSK                     | 16QAM | 64QAM |
| 675                     | 1937.5          | 13.96                 | 13.94 | 13.96 | 13.29                    | 13.29 | 13.29 |
| 900                     | 1960.0          | 13.88                 | 13.88 | 13.87 | 13.30                    | 13.30 | 13.30 |
| 1125                    | 1982.5          | 13.87                 | 13.88 | 13.88 | 13.29                    | 13.29 | 13.29 |

| Channel Bandwidth 20MHz |                 |                       |       |       |                          |       |       |
|-------------------------|-----------------|-----------------------|-------|-------|--------------------------|-------|-------|
| Channel                 | Frequency (MHz) | 26dBc Bandwidth (MHz) |       |       | Occupied Bandwidth (MHz) |       |       |
|                         |                 | QPSK                  | 16QAM | 64QAM | QPSK                     | 16QAM | 64QAM |
| 700                     | 1940.0          | 18.53                 | 18.52 | 18.53 | 17.79                    | 17.80 | 17.80 |
| 900                     | 1960.0          | 18.57                 | 18.56 | 18.56 | 17.84                    | 17.84 | 17.84 |
| 1100                    | 1980.0          | 18.61                 | 18.59 | 18.61 | 17.78                    | 17.78 | 17.78 |

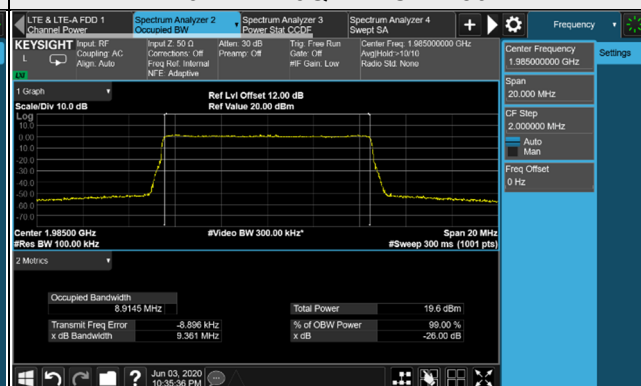
## Spectrum Plot of Worst Value

### 26dBc Bandwidth

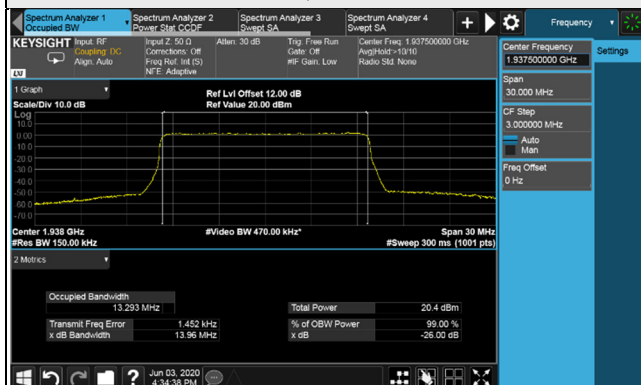
#### 5MHz / 16QAM / Ch 900



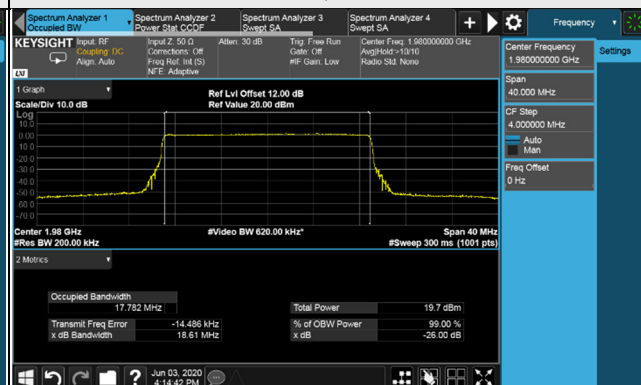
#### 10MHz / 16QAM / Ch 1150



#### 15MHz / QPSK / Ch 675



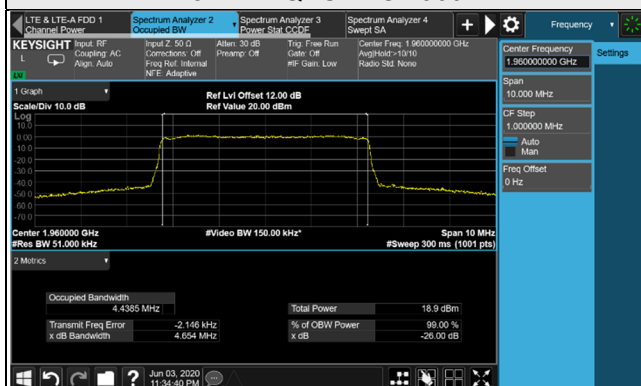
#### 20MHz / 64QAM / Ch 1100



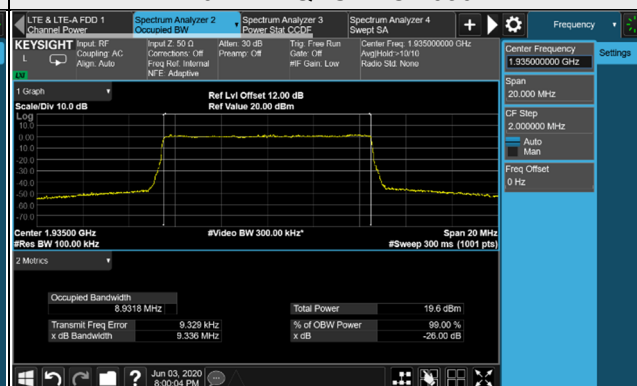
## Spectrum Plot of Worst Value

### Occupied Bandwidth

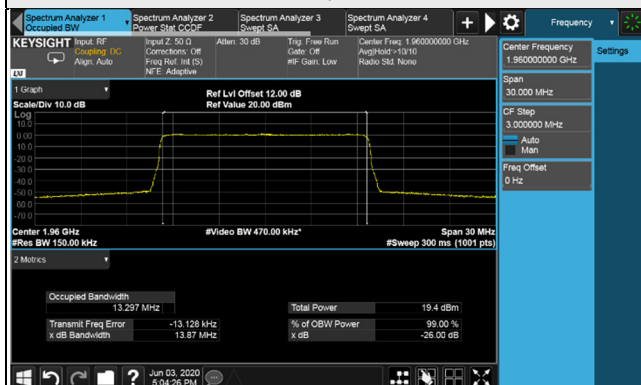
5MHz / QPSK / Ch 900



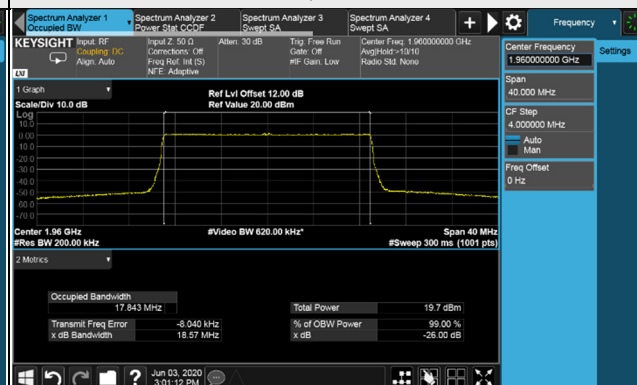
10MHz / QPSK / Ch 650



15MHz / 64QAM / Ch 900



20MHz / QPSK / Ch 900





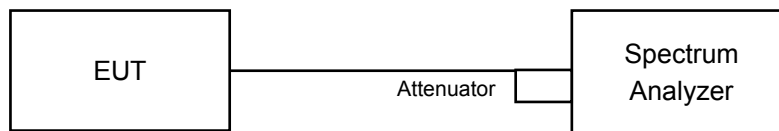
## 4.5 Band Edge Measurement

### 4.5.1 Limits of Band Edge Measurement

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

This device can be implement MIMO function, so the limit of spurious emissions needs to be reduced by  $10\log(\text{Numbers}_{\text{Ant}})$  according to FCC KDB 662911 D01 guidance.

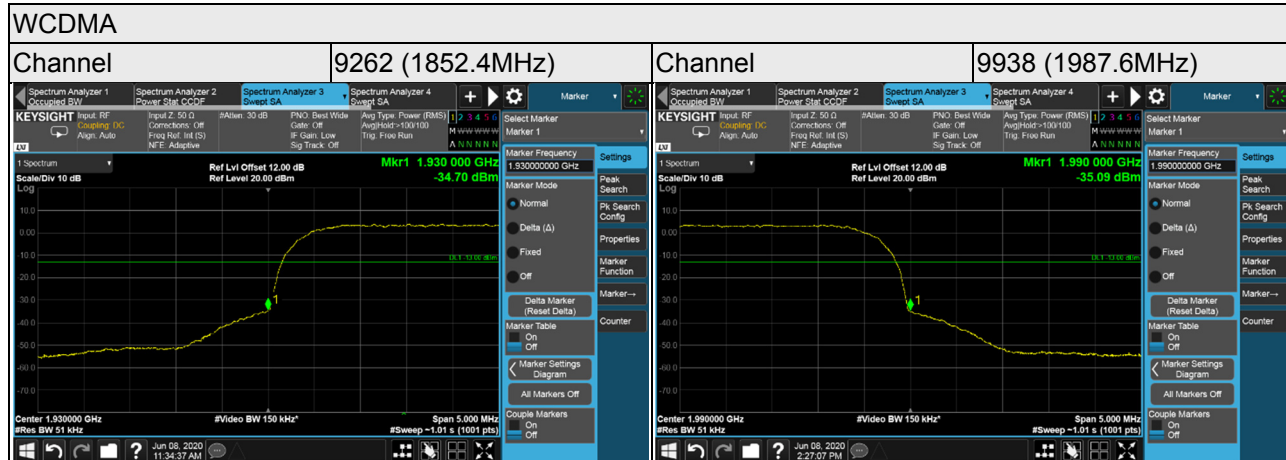
### 4.5.2 Test Setup



### 4.5.3 Test Procedures

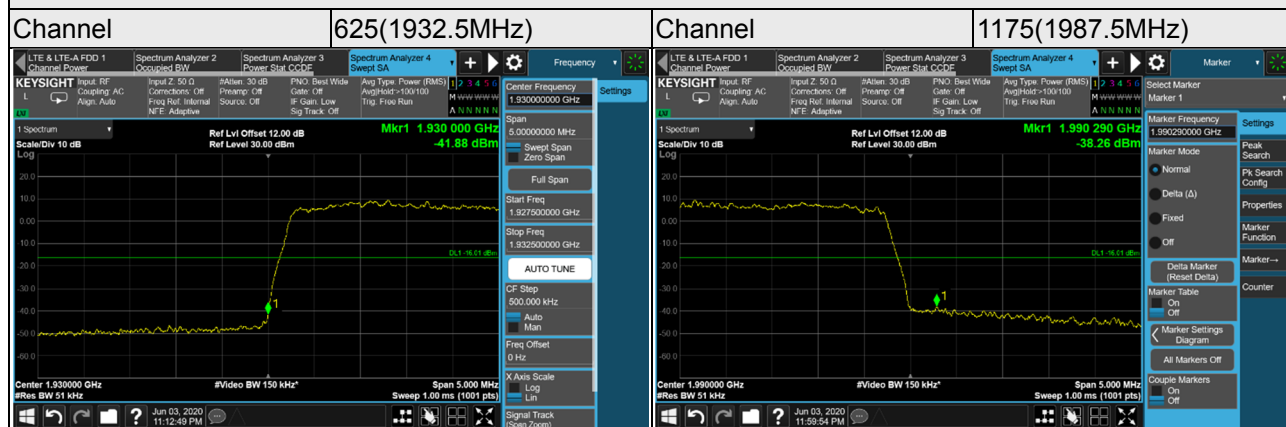
- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 5MHz. RB of the spectrum is 51kHz and VB of the spectrum is 150kHz (WCDMA).
- The center frequency of spectrum is the band edge frequency and span is 5MHz. RB of the spectrum is 51kHz and VB of the spectrum is 150kHz (LTE Channel Bandwidth 5MHz).
- The center frequency of spectrum is the band edge frequency and span is 5MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Channel Bandwidth 10MHz).
- The center frequency of spectrum is the band edge frequency and span is 5MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (LTE Channel Bandwidth 15MHz).
- The center frequency of spectrum is the band edge frequency and span is 5MHz. RB of the spectrum is 200kHz and VB of the spectrum is 620kHz (LTE Channel Bandwidth 20MHz).
- Record the max trace plot into the test report.

## 4.5.4 Test Results



## LTE Band 2 / Chain 0

### Channel Bandwidth 5MHz



### Channel Bandwidth 10MHz

