



# TEST REPORT

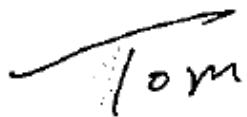
|           |                                                     |
|-----------|-----------------------------------------------------|
| Applicant | MTRLC LLC                                           |
| Address   | PO Box 121147 Boston, MA 02112-1147, United States. |

|                                     |                                                                                                    |
|-------------------------------------|----------------------------------------------------------------------------------------------------|
| Manufacturer or Supplier            | MTRLC LLC                                                                                          |
| Address                             | PO Box 121147 Boston, MA 02112-1147, United States.                                                |
| Product                             | 16x4 DOCSIS 3.0 Cable Modem plus AC1600 Router                                                     |
| Brand Name                          | Motorola                                                                                           |
| Model                               | MG7540                                                                                             |
| Additional Model & Model Difference | MG7540XY (Where X can be A, B, C, D or blank, and Y can be A, B, C, D or blank), See item 3.1 Note |
| Date of tests                       | Feb. 23, 2016 ~ Mar. 29, 2016                                                                      |

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart E, Section 15.407**

**CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

|                                                                                     |                                                                                                                 |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Tested by Blue zheng<br>Project Engineer / EMC Department                           | Approved by Chris Chen<br>Manager / EMC Department                                                              |
|  | <br><br>Date: Mar. 29, 2016 |

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification



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**BUREAU VERITAS** Test Report No.: RF160223N031-1

## RELEASE CONTROL RECORD

| ISSUE NO.      | REASON FOR CHANGE | DATE ISSUED   |
|----------------|-------------------|---------------|
| RF160223N031-1 | Original release  | Mar. 29, 2016 |



## 1. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407 UNDER NEW RULE) |                                            |        |                                                     |
|--------------------------------------------------------------------------|--------------------------------------------|--------|-----------------------------------------------------|
| STANDARD SECTION                                                         | TEST TYPE                                  | RESULT | REMARK                                              |
| 15.407(b)(6)                                                             | AC Power Conducted Emissions               | PASS   | Meet the requirement of limit.                      |
| 15.407(b)(1/2/3/4/6)                                                     | Radiated Emissions & Band Edge Measurement | PASS   | Meet the requirement of limit.                      |
| 15.407(a)(1/2/3)                                                         | Max Average Transmit Power                 | PASS   | Meet the requirement of limit.                      |
| 15.407(a)(1/2/3)                                                         | Peak Power Spectral Density                | PASS   | Meet the requirement of limit.                      |
| 15.407(g)                                                                | Frequency Stability                        | PASS   | Meet the requirement of limit.                      |
| 15.203                                                                   | Antenna Requirement                        | PASS   | Antenna connector is RSMA not a standard connector. |

### 1.1 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     | UNCERTAINTY |
|---------------------|---------------|-------------|
| Conducted emissions | 9kHz~30MHz    | 2.70dB      |
| Radiated emissions  | 9KHz ~ 30MHz  | 2.90dB      |
|                     | 30MHz ~ 1GMHz | 3.67dB      |
|                     | 1GHz ~ 18GHz  | 4.84dB      |
|                     | 18GHz ~ 40GHz | 4.84dB      |

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



## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

|                              |                                                                                                                |
|------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>EUT</b>                   | 16x4 DOCSIS 3.0 Cable Modem plus AC1600 Router                                                                 |
| <b>MODEL NO.</b>             | MG7540                                                                                                         |
| <b>ADDITIONAL MODEL</b>      | MG7540XY                                                                                                       |
| <b>FCC ID</b>                | 2AF5PMG7540                                                                                                    |
| <b>POWER SUPPLY</b>          | DC 12V from Adapter                                                                                            |
| <b>MODULATION TYPE</b>       | CCK, DQPSK, DBPSK, 64QAM, 16QAM, QPSK, BPSK                                                                    |
| <b>MODULATION TECHNOLOGY</b> | OFDM                                                                                                           |
| <b>TRANSFER RATE</b>         | 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps<br>802.11n: up to 150Mbps<br>802.11ac: up to 433Mbps |
| <b>OPERATING FREQUENCY</b>   | 5180 ~ 5240MHz; 5745 ~ 5825MHz                                                                                 |
| <b>NUMBER OF CHANNEL</b>     | 9 for 802.11a, 802.11n (20MHz)<br>4 for 802.11n (40MHz)<br>2 for 802.11ac (80MHz)                              |
| <b>OUTPUT POWER</b>          | 25.11dBm for 5180 ~ 5240MHz (Maximum Average Power)<br>24.97dBm for 5745 ~ 5825MHz (Maximum Average Power)     |
| <b>ANTENNA TYPE</b>          | Wire antenna with 2.8dBi gain                                                                                  |
| <b>DATA CABLE</b>            | RJ 45 Cable: Unshielded, Non-detachable, 1.48m                                                                 |
| <b>I/O PORTS</b>             | Refer to user's manual                                                                                         |

**NOTE:**

1. The EUT incorporates a MIMO function. Physically, the EUT provides 3 completed transmitters and 3 receivers.

| <b>MODULATION MODE</b>  | <b>TX FUNCTION</b> |
|-------------------------|--------------------|
| <b>802.11a</b>          | 3TX/3RX            |
| <b>802.11n (20MHz)</b>  | 3TX/3RX            |
| <b>802.11n (40MHz)</b>  | 3TX/3RX            |
| <b>802.11ac (80MHz)</b> | 3TX/3RX            |

The EUT has beam forming mode, the directional gain = 2.8dBi + 10log(3) = 7.57dBi

2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
4. Please refer to the EUT photo document (Reference No.: 160223N031) for detailed product photo.



5. MG7540XY (Where X can be A, B, C, D or blank, and Y can be A, B, C, D or blank) are identical with each other except the model no. for trading purpose.
6. The EUT can be powered by adapter as list as following:

| ADAPTER          |                                  |
|------------------|----------------------------------|
| <b>BRAND:</b>    | Gongjin                          |
| <b>MODEL:</b>    | S24B72-120A200-C4                |
| <b>INPUT:</b>    | AC 100-240V, 50/60Hz, 0.8A Max   |
| <b>OUTPUT:</b>   | DC 12.0V, 2A                     |
| <b>DC CABLE:</b> | Unshielded, Non-detachable, 1.5m |



## 2.2 DESCRIPTION OF TEST MODES

9 channels are provided for 802.11a, 802.11n (20MHz):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 36      | 5180 MHz  | 44      | 5220 MHz  |
| 40      | 5200 MHz  | 48      | 5240 MHz  |
| 149     | 5745 MHz  | 157     | 5785 MHz  |
| 153     | 5765 MHz  | 161     | 5805 MHz  |
| 165     | 5825 MHz  | --      | --        |

4 channels are provided for 802.11n (40MHz):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 38      | 5190 MHz  | 46      | 5230 MHz  |
| 151     | 5755 MHz  | 159     | 5795 MHz  |

2 channel is provided for 802.11ac (80MHz):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 42      | 5210MHz   | 155     | 5775MHz   |





## 2.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

| EUT<br>CONFIGURE<br>MODE | APPLICABLE TO |       |     |      | DESCRIPTION                           |
|--------------------------|---------------|-------|-----|------|---------------------------------------|
|                          | RE $\geq$ 1G  | RE<1G | PLC | APCM |                                       |
| -                        | √             | √     | √   | √    | Powered by adapter with WIFI function |

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz  
**PLC**: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

**NOTE:**

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

**NOTE:** "-" means no effect.

### RADIATED EMISSION TEST (ABOVE 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT<br>CONFIGURE<br>MODE | MODE             | FREQ. BAND<br>(MHz)    | AVAILABLE<br>CHANNEL   | TESTED<br>CHANNEL         | MODULATION<br>TECHNOLOGY | MODULATION<br>TYPE | DATA<br>RATE<br>(Mbps) |
|--------------------------|------------------|------------------------|------------------------|---------------------------|--------------------------|--------------------|------------------------|
| -                        | 802.11a          | 5180-5240<br>5745-5825 | 36 to 48<br>149 to 165 | 36, 40, 48<br>149,157,165 | OFDM                     | BPSK               | 6.0                    |
| -                        | 802.11n (20MHz)  |                        | 36 to 48<br>149 to 165 | 36, 40, 48<br>149,157,165 | OFDM                     | BPSK               | 6.5                    |
| -                        | 802.11n (40MHz)  |                        | 38 to 46<br>151 to 159 | 38, 46<br>151,159         | OFDM                     | BPSK               | 13.5                   |
| -                        | 802.11ac (80MHz) |                        | 42<br>155              | 42<br>155                 | OFDM                     | BPSK               | 29.3                   |

### RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT<br>CONFIGURE<br>MODE | MODE    | FREQ. BAND<br>(MHz)    | AVAILABLE<br>CHANNEL   | TESTED<br>CHANNEL | MODULATION<br>TECHNOLOGY | MODULATION<br>TYPE | DATA<br>RATE<br>(Mbps) |
|--------------------------|---------|------------------------|------------------------|-------------------|--------------------------|--------------------|------------------------|
| -                        | 802.11a | 5180-5240<br>5745-5825 | 36 to 48<br>149 to 165 | 36                | OFDM                     | BPSK               | 6.0                    |

### POWER LINE CONDUCTED EMISSION TEST:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT<br>CONFIGURE<br>MODE | MODE    | FREQ. BAND<br>(MHz)    | AVAILABLE<br>CHANNEL   | TESTED<br>CHANNEL | MODULATION<br>TECHNOLOGY | MODULATION<br>TYPE | DATA<br>RATE<br>(Mbps) |
|--------------------------|---------|------------------------|------------------------|-------------------|--------------------------|--------------------|------------------------|
| -                        | 802.11a | 5180-5240<br>5745-5825 | 36 to 48<br>149 to 165 | 36                | OFDM                     | BPSK               | 6.0                    |



**ANTENNA PORT CONDUCTED MEASUREMENT:**

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT CONFIGURE MODE | MODE             | FREQ. BAND (MHz)       | AVAILABLE CHANNEL      | TESTED CHANNEL            | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|--------------------|------------------|------------------------|------------------------|---------------------------|-----------------------|-----------------|------------------|
| -                  | 802.11a          | 5180-5240<br>5745-5825 | 36 to 48<br>149 to 165 | 36, 40, 48<br>149,157,165 | OFDM                  | BPSK            | 6.0              |
| -                  | 802.11n (20MHz)  |                        | 36 to 48<br>149 to 165 | 36, 40, 48<br>149,157,165 | OFDM                  | BPSK            | 6.5              |
| -                  | 802.11n (40MHz)  |                        | 38 to 46<br>151 to 159 | 38, 46<br>151,159         | OFDM                  | BPSK            | 13.5             |
| -                  | 802.11ac (80MHz) |                        | 42<br>155              | 42<br>155                 | OFDM                  | BPSK            | 29.3             |

**TEST CONDITION:**

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER           | TESTED BY  |
|---------------|--------------------------|-----------------------|------------|
| RE $\geq$ 1G  | 25deg. C, 55%RH          | DC 12.0V from Adapter | Sen He     |
| RE<1G         | 25deg. C, 55%RH          | DC 12.0V from Adapter | Sen He     |
| PLC           | 20deg. C, 56%RH          | DC 12.0V from Adapter | Blue Zheng |
| APCM          | 20deg. C, 55%RH          | DC 12.0V from Adapter | Blue Zheng |



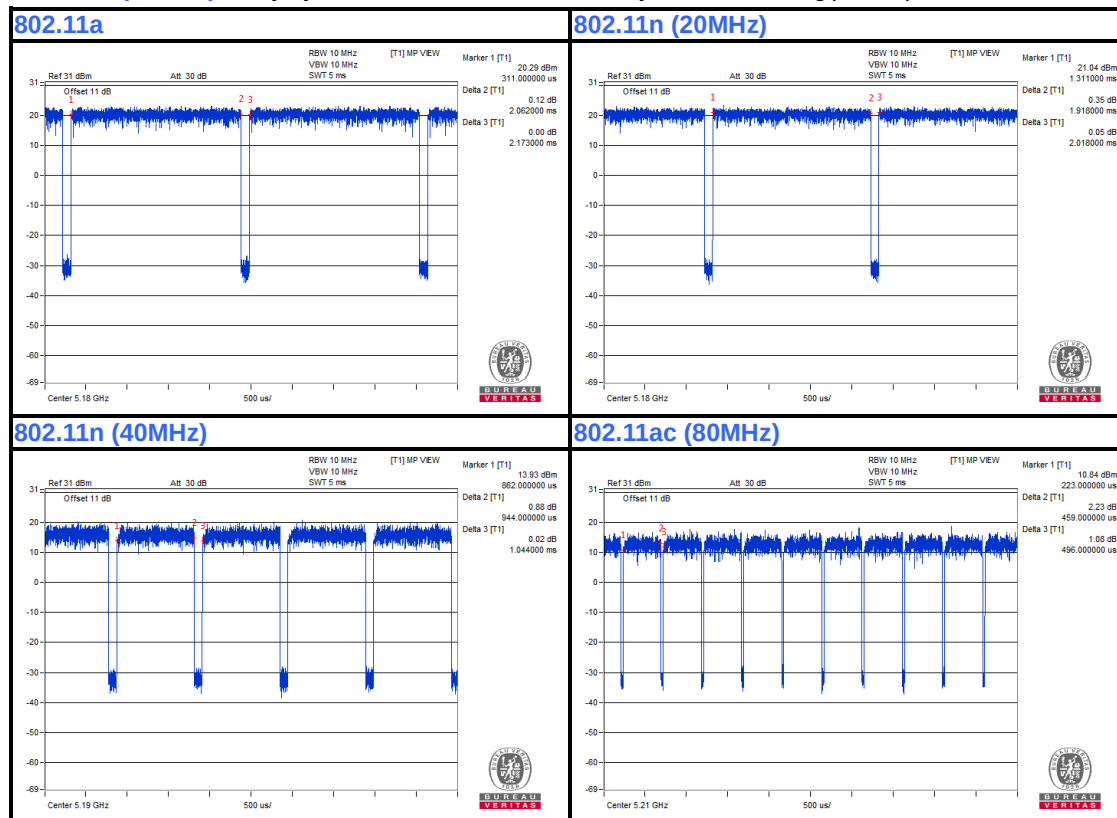
## 2.3 DUTY CYCLE OF TEST SIGNAL

**802.11a:** Duty cycle =  $2.062/2.173 = 0.95$ , Duty factor =  $10 * \log(1/0.95) = 0.22$

**802.11n (20MHz):** Duty cycle =  $1.918/2.018 = 0.95$ , Duty factor =  $10 * \log(1/0.87) = 0.22$

**802.11n (40MHz):** Duty cycle =  $0.944/1.044 = 0.90$ , Duty factor =  $10 * \log(1/0.90) = 0.46$

**802.11ac (80MHz):** Duty cycle =  $0.459/0.496 = 0.93$ , Duty factor =  $10 * \log(1/0.93) = 0.32$





## 2.4 DESCRIPTION OF SUPPORT UNITS

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

| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|-----|---------|-------|-----------|------------|--------|
| 1   | N/A     | N/A   | N/A       | N/A        | N/A    |

| NO. | DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|----------------------------------------|
| 1   | N/A                                    |

## 2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC Part 15, Subpart E (15.407)**

**789033 D02 General UNII Test Procedures New Rules v01**

**662911 D01 Multiple Transmitter Output v02r01**

**ANSI C63.10-2013**

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

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



### 3. TEST TYPES AND RESULTS

#### 3.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

##### 3.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

| FREQUENCIES<br>(MHz) | FIELD STRENGTH<br>(microvolts/meter) | MEASUREMENT DISTANCE<br>(meters) |
|----------------------|--------------------------------------|----------------------------------|
| 0.009 ~ 0.490        | 2400/F(kHz)                          | 300                              |
| 0.490 ~ 1.705        | 24000/F(kHz)                         | 30                               |
| 1.705 ~ 30.0         | 30                                   | 30                               |
| 30 ~ 88              | 100                                  | 3                                |
| 88 ~ 216             | 150                                  | 3                                |
| 216 ~ 960            | 200                                  | 3                                |
| Above 960            | 500                                  | 3                                |

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 30dB under any condition of modulation.



### 3.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

| APPLICABLE TO                                         | LIMIT                                                              |                                                                    |
|-------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|
| 789033 D02 General UNII Test Procedures New Rules v01 | FIELD STRENGTH AT 3m                                               |                                                                    |
|                                                       | PK: 74 (dBμV/m)                                                    | AV: 54 (dBμV/m)                                                    |
| APPLICABLE TO                                         | EIRP LIMIT                                                         | EQUIVALENT FIELD STRENGTH AT 3m                                    |
| 15.407(b)(1)                                          | PK: -27 (dBm/MHz)                                                  | PK: 68.3 (dBμV/m)                                                  |
| 15.407(b)(2)                                          |                                                                    |                                                                    |
| 15.407(b)(3)                                          |                                                                    |                                                                    |
| 15.407(b)(4)                                          | PK: -27 (dBm/MHz) <sup>*1</sup><br>PK: -17 (dBm/MHz) <sup>*2</sup> | PK: 68.3 (dBμV/m) <sup>*1</sup><br>PK: 78.3 (dBμV/m) <sup>*2</sup> |

**NOTE:** <sup>\*1</sup> beyond 10MHz of the band edge <sup>\*2</sup> within 10 MHz of band edge

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).}$$



### 3.1.3 TEST INSTRUMENTS

| Equipment                    | Manufacturer  | Model No.                | Serial No.  | Last Cal.    | Next Cal.    |
|------------------------------|---------------|--------------------------|-------------|--------------|--------------|
| EMI Test Receiver            | Rohde&Schwarz | ESR7                     | 101494      | Apr 27,15    | Apr 26,16    |
| Signal and Spectrum Analyzer | Rohde&Schwarz | FSV40                    | 101094      | Apr 23,15    | Apr 22,16    |
| Bilog Antenna                | Teseq         | CBL 6111D                | 30643       | Jul. 16, 15  | Jul. 15, 16  |
| Horn Antenna                 | ETS-Lindgren  | 3117                     | 00062558    | May 30,14    | May 29,16    |
| Amplifier (9kHz-1GHz)        | SONOMA        | 310D                     | 186955      | Mar. 04,16   | Mar. 03, 17  |
| Pre-Amplifier (0.5~18GHz)    | SCHWARZBECK   | BBV 9718                 | 9718-266    | Mar 26,15    | Mar 25,17    |
| GPS Generator+ Antenna       | TOJOIN        | GNSS-5000A               | E1-010119   | Mar 26,15    | Mar 25,17    |
| 3m Semi-anechoic Chamber     | ETS-LINDGREN  | 9m*6m*6m                 | NSEMC003    | April. 19,14 | April. 18,16 |
| Test Software                | ADT           | ADT_Radiated_V7.6.15.9.2 | N/A         | N/A          | N/A          |
| Horn Antenna (15GHz-40GHz)   | SCHWARZBECK   | BBHA 9170                | BBHA9170147 | Jan. 21,14   | Jan. 20,17   |
| Pre-Amplifier (18GHz-40GHz)  | EMCI          | EMC 184045               | 980102      | Nov. 20,15   | Nov. 19,16   |

**NOTE:**

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The FCC Site Registration No. is 494399.



### 3.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

#### NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle  $< 98\%$ ) or 10Hz (Duty cycle  $> 98\%$ ) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file Test Setup Photo.

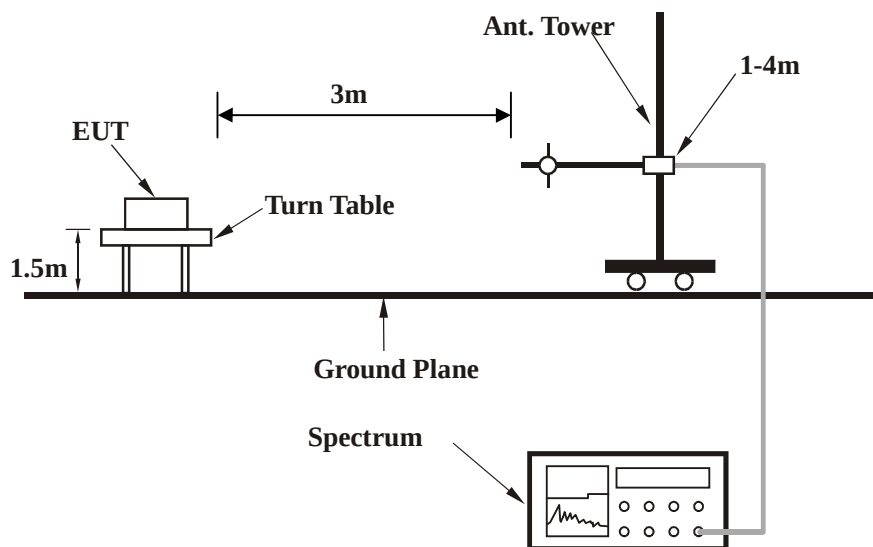
### 3.1.5 DEVIATION FROM TEST STANDARD

No deviation.





### 3.1.6 TEST SETUP



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

### 3.1.7 EUT OPERATING CONDITION

- Placed the EUT on the testing table.
- Prepared a notebook to act as a communication partner and placed it outside of testing area.
- The communication partner was connected with the EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable the EUT under transmission condition continuously at specific channel frequency.



### 3.1.8 TEST RESULTS

#### BELOW 1GHz WORST-CASE DATA

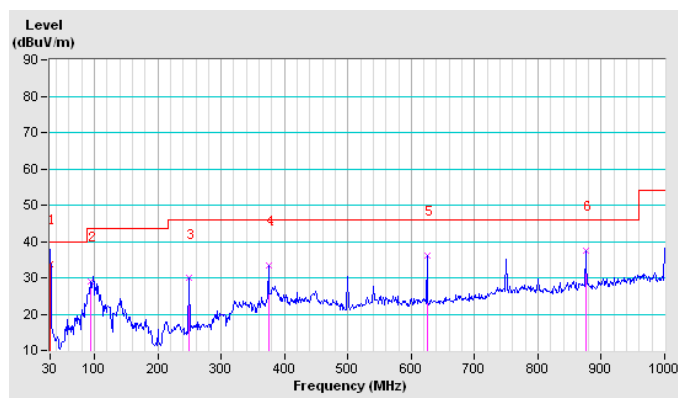
##### 802.11a

|                 |               |                   |                 |
|-----------------|---------------|-------------------|-----------------|
| CHANNEL         | TX Channel 36 | DETECTOR FUNCTION | Quasi-Peak (QP) |
| FREQUENCY RANGE | 30MHz ~ 1GHz  |                   |                 |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                     |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|---------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 30.62       | 33.69                   | 40.00          | -6.31       | 121                 | 264                  | 46.29            | -12.60                   |
| 2                                                   | 93.26       | 29.14                   | 43.50          | -14.36      | 100                 | 0                    | 49.45            | -20.31                   |
| 3                                                   | 249.30      | 29.84                   | 46.00          | -16.16      | 100                 | 0                    | 45.72            | -15.88                   |
| 4                                                   | 374.42      | 33.52                   | 46.00          | -12.48      | 100                 | 0                    | 45.33            | -11.81                   |
| 5                                                   | 624.65      | 36.08                   | 46.00          | -9.92       | 100                 | 0                    | 40.85            | -4.77                    |
| 6                                                   | 874.88      | 37.43                   | 46.00          | -8.57       | 100                 | 0                    | 38.01            | -0.58                    |

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



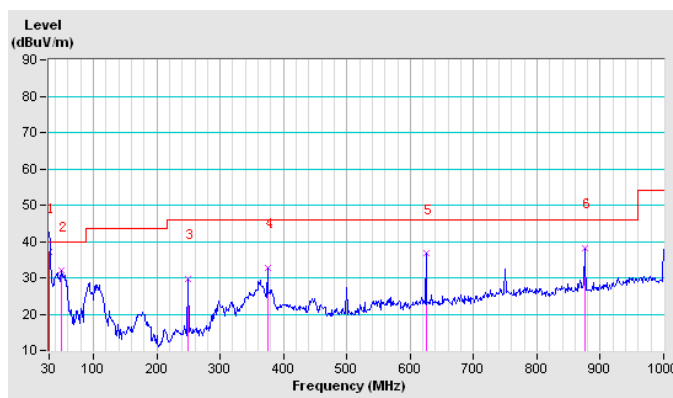


|                        |               |                              |                 |
|------------------------|---------------|------------------------------|-----------------|
| <b>CHANNEL</b>         | TX Channel 36 | <b>DETECTOR<br/>FUNCTION</b> | Quasi-Peak (QP) |
| <b>FREQUENCY RANGE</b> | 30MHz ~ 1GHz  |                              |                 |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                |                               |                   |                |                           |                            |                        |                                |
|---------------------------------------------------|----------------|-------------------------------|-------------------|----------------|---------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                               | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(cm) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                 | 30.14          | 37.00                         | 40.00             | -3.00          | 102                       | 214                        | 49.38                  | -12.38                         |
| 2                                                 | 49.68          | 31.91                         | 40.00             | -8.09          | 150                       | 0                          | 54.03                  | -22.12                         |
| 3                                                 | 249.30         | 29.69                         | 46.00             | -16.31         | 150                       | 0                          | 45.57                  | -15.88                         |
| 4                                                 | 374.42         | 32.76                         | 46.00             | -13.24         | 150                       | 0                          | 44.57                  | -11.81                         |
| 5                                                 | 624.65         | 36.62                         | 46.00             | -9.38          | 150                       | 0                          | 41.39                  | -4.77                          |
| 6                                                 | 874.88         | 38.07                         | 46.00             | -7.93          | 150                       | 0                          | 38.65                  | -0.58                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.





Band 1 (5180-5240MHz):

ABOVE 1GHz DATA

802.11a

|                        |               |                              |              |
|------------------------|---------------|------------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 36 | <b>DETECTOR<br/>FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz  |                              | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 5150.00        | 57.2 PK                       | 74.0              | -16.8          | 1.02 H                   | 21                         | 48.24                  | 8.96                           |
| 2                                                   | 5150.00        | 50.5 AV                       | 54.0              | -3.5           | 1.02 H                   | 21                         | 41.50                  | 8.96                           |
| 3                                                   | *5180.00       | 103.7 PK                      |                   |                | 1.12 H                   | 276                        | 94.62                  | 9.03                           |
| 4                                                   | *5180.00       | 96.2 AV                       |                   |                | 1.12 H                   | 276                        | 87.19                  | 9.03                           |
| 5                                                   | #10360.00      | 52.3 PK                       | 74.0              | -21.7          | 1.01 H                   | 46                         | 33.33                  | 18.97                          |
| 6                                                   | #10360.00      | 46.2 AV                       | 54.0              | -7.8           | 1.01 H                   | 46                         | 27.20                  | 18.97                          |
| 7                                                   | 15540.00       | 55.7 PK                       | 74.0              | -18.3          | 1.00 H                   | 300                        | 35.19                  | 20.51                          |
| 8                                                   | 15540.00       | 48.7 AV                       | 54.0              | -5.3           | 1.00 H                   | 300                        | 28.16                  | 20.51                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 5150.00        | 59.6 PK                       | 74.0              | -14.4          | 1.24 V                   | 262                        | 50.64                  | 8.96                           |
| 2                                                   | 5150.00        | 53.2 AV                       | 54.0              | -0.8           | 1.24 V                   | 262                        | 44.25                  | 8.96                           |
| 3                                                   | *5180.00       | 102.6 PK                      |                   |                | 1.02 V                   | 216                        | 93.57                  | 9.03                           |
| 4                                                   | *5180.00       | 95.2 AV                       |                   |                | 1.02 V                   | 216                        | 86.17                  | 9.03                           |
| 5                                                   | #10360.00      | 51.0 PK                       | 74.0              | -23.0          | 1.02 V                   | 214                        | 32.03                  | 18.97                          |
| 6                                                   | #10360.00      | 46.8 AV                       | 54.0              | -7.2           | 1.02 V                   | 214                        | 27.83                  | 18.97                          |
| 7                                                   | 15540.00       | 54.7 PK                       | 74.0              | -19.3          | 1.00 V                   | 174                        | 34.18                  | 20.51                          |
| 8                                                   | 15540.00       | 49.2 AV                       | 54.0              | -4.8           | 1.00 V                   | 174                        | 28.69                  | 20.51                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 40 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5200.00       | 104.6 PK                      |                   |                | 1.62 H                   | 287                        | 95.53                  | 9.07                           |
| 2                                                   | *5200.00       | 98.0 AV                       |                   |                | 1.62 H                   | 287                        | 88.93                  | 9.07                           |
| 3                                                   | #10400.00      | 53.4 PK                       | 74.0              | -20.6          | 1.02 H                   | 212                        | 34.40                  | 19.02                          |
| 4                                                   | #10400.00      | 48.2 AV                       | 54.0              | -5.8           | 1.02 H                   | 212                        | 29.19                  | 19.02                          |
| 5                                                   | 15600.00       | 57.8 PK                       | 74.0              | -16.2          | 1.02 H                   | 214                        | 37.16                  | 20.64                          |
| 6                                                   | 15600.00       | 50.1 AV                       | 54.0              | -3.9           | 1.02 H                   | 214                        | 29.47                  | 20.64                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5200.00       | 105.9 PK                      |                   |                | 1.74 V                   | 187                        | 96.87                  | 9.07                           |
| 2                                                   | *5200.00       | 98.7 AV                       |                   |                | 1.74 V                   | 187                        | 89.60                  | 9.07                           |
| 3                                                   | #10400.00      | 54.6 PK                       | 74.0              | -19.4          | 1.02 V                   | 23                         | 35.60                  | 19.02                          |
| 4                                                   | #10400.00      | 47.6 AV                       | 54.0              | -6.4           | 1.02 V                   | 23                         | 28.59                  | 19.02                          |
| 5                                                   | 15600.00       | 61.7 PK                       | 74.0              | -12.3          | 1.02 V                   | 3                          | 41.10                  | 20.64                          |
| 6                                                   | 15600.00       | 53.2 AV                       | 54.0              | -0.8           | 1.02 V                   | 3                          | 32.58                  | 20.64                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 48 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5240.00       | 105.4 PK                      |                   |                | 1.79 H                   | 317                        | 96.26                  | 9.16                           |
| 2                                                   | *5240.00       | 97.9 AV                       |                   |                | 1.79 H                   | 317                        | 88.70                  | 9.16                           |
| 3                                                   | #10480.00      | 53.7 PK                       | 74.0              | -20.3          | 1.07 H                   | 41                         | 34.56                  | 19.11                          |
| 4                                                   | #10480.00      | 45.8 AV                       | 54.0              | -8.2           | 1.07 H                   | 41                         | 26.68                  | 19.11                          |
| 5                                                   | 15720.00       | 58.4 PK                       | 74.0              | -15.6          | 1.00 H                   | 55                         | 37.52                  | 20.89                          |
| 6                                                   | 15720.00       | 49.7 AV                       | 54.0              | -4.3           | 1.00 H                   | 55                         | 28.82                  | 20.89                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5240.00       | 106.5 PK                      |                   |                | 1.02 V                   | 66                         | 97.29                  | 9.16                           |
| 2                                                   | *5240.00       | 99.0 AV                       |                   |                | 1.02 V                   | 66                         | 89.83                  | 9.16                           |
| 3                                                   | #10480.00      | 52.7 PK                       | 74.0              | -21.3          | 1.02 V                   | 44                         | 33.63                  | 19.11                          |
| 4                                                   | #10480.00      | 46.9 AV                       | 54.0              | -7.1           | 1.02 V                   | 44                         | 27.81                  | 19.11                          |
| 5                                                   | 15720.00       | 62.7 PK                       | 74.0              | -11.3          | 1.00 V                   | 162                        | 41.77                  | 20.89                          |
| 6                                                   | 15720.00       | 53.3 AV                       | 54.0              | -0.7           | 1.00 V                   | 162                        | 32.42                  | 20.89                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



**BUREAU VERITAS** Test Report No.: RF160223N031-1

802.11n (20MHz)

|                        |               |                              |              |
|------------------------|---------------|------------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 36 | <b>DETECTOR<br/>FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz  |                              | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5180.00       | 104.7 PK                      |                   |                | 1.43 H                   | 216                        | 95.66                  | 9.03                           |
| 2                                                   | *5180.00       | 95.2 AV                       |                   |                | 1.43 H                   | 216                        | 86.19                  | 9.03                           |
| 3                                                   | #10360.00      | 54.7 PK                       | 74.0              | -19.3          | 1.12 H                   | 27                         | 35.72                  | 18.97                          |
| 4                                                   | #10360.00      | 47.2 AV                       | 54.0              | -6.8           | 1.12 H                   | 27                         | 28.24                  | 18.97                          |
| 5                                                   | 15540.00       | 58.5 PK                       | 74.0              | -15.5          | 1.01 H                   | 44                         | 37.96                  | 20.51                          |
| 6                                                   | 15540.00       | 50.0 AV                       | 54.0              | -4.0           | 1.01 H                   | 44                         | 29.50                  | 20.51                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 5150.00        | 64.9 PK                       | 74.0              | -9.1           | 1.17 V                   | 211                        | 55.91                  | 8.96                           |
| 2                                                   | 5150.00        | 53.3 AV                       | 54.0              | -0.7           | 1.17 V                   | 211                        | 44.30                  | 8.96                           |
| 3                                                   | *5180.00       | 105.8 PK                      |                   |                | 1.94 V                   | 105                        | 96.81                  | 9.03                           |
| 4                                                   | *5180.00       | 96.8 AV                       |                   |                | 1.94 V                   | 105                        | 87.74                  | 9.03                           |
| 5                                                   | #10360.00      | 53.7 PK                       | 74.0              | -20.3          | 1.02 V                   | 200                        | 34.77                  | 18.97                          |
| 6                                                   | #10360.00      | 46.3 AV                       | 54.0              | -7.7           | 1.02 V                   | 200                        | 27.31                  | 18.97                          |
| 7                                                   | 15540.00       | 58.6 PK                       | 74.0              | -15.4          | 1.08 V                   | 355                        | 38.11                  | 20.51                          |
| 8                                                   | 15540.00       | 49.2 AV                       | 54.0              | -4.8           | 1.08 V                   | 355                        | 28.70                  | 20.51                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



|                        |               |                              |              |
|------------------------|---------------|------------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 40 | <b>DETECTOR<br/>FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz  |                              | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5200.00       | 106.2 PK                      |                   |                | 1.54 H                   | 216                        | 97.17                  | 9.07                           |
| 2                                                   | *5200.00       | 97.9 AV                       |                   |                | 1.54 H                   | 216                        | 88.81                  | 9.07                           |
| 3                                                   | #10400.00      | 55.7 PK                       | 74.0              | -18.3          | 1.02 H                   | 174                        | 36.64                  | 19.02                          |
| 4                                                   | #10400.00      | 46.2 AV                       | 54.0              | -7.8           | 1.02 H                   | 174                        | 27.19                  | 19.02                          |
| 5                                                   | 15600.00       | 58.6 PK                       | 74.0              | -15.4          | 1.01 H                   | 258                        | 38.00                  | 20.64                          |
| 6                                                   | 15600.00       | 49.8 AV                       | 54.0              | -4.2           | 1.01 H                   | 258                        | 29.12                  | 20.64                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5200.00       | 105.9 PK                      |                   |                | 1.17 V                   | 224                        | 96.81                  | 9.07                           |
| 2                                                   | *5200.00       | 95.7 AV                       |                   |                | 1.17 V                   | 224                        | 86.65                  | 9.07                           |
| 3                                                   | #10400.00      | 56.2 PK                       | 74.0              | -17.8          | 1.06 V                   | 94                         | 37.20                  | 19.02                          |
| 4                                                   | #10400.00      | 47.4 AV                       | 54.0              | -6.6           | 1.06 V                   | 94                         | 28.40                  | 19.02                          |
| 5                                                   | 15600.00       | 59.2 PK                       | 74.0              | -14.8          | 1.00 V                   | 147                        | 38.60                  | 20.64                          |
| 6                                                   | 15600.00       | 53.2 AV                       | 54.0              | -0.8           | 1.00 V                   | 147                        | 32.52                  | 20.64                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.





|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 48 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5240.00       | 106.0 PK                      |                   |                | 1.61 H                   | 208                        | 96.83                  | 9.16                           |
| 2                                                   | *5240.00       | 96.8 AV                       |                   |                | 1.61 H                   | 208                        | 87.68                  | 9.16                           |
| 3                                                   | #10480.00      | 57.0 PK                       | 74.0              | -17.0          | 1.07 H                   | 42                         | 37.87                  | 19.11                          |
| 4                                                   | #10480.00      | 47.9 AV                       | 54.0              | -6.1           | 1.07 H                   | 42                         | 28.77                  | 19.11                          |
| 5                                                   | 15720.00       | 59.3 PK                       | 74.0              | -14.7          | 1.02 H                   | 26                         | 38.36                  | 20.89                          |
| 6                                                   | 15720.00       | 51.2 AV                       | 54.0              | -2.8           | 1.02 H                   | 26                         | 30.33                  | 20.89                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5240.00       | 106.9 PK                      |                   |                | 1.29 V                   | 211                        | 97.71                  | 9.16                           |
| 2                                                   | *5240.00       | 97.1 AV                       |                   |                | 1.29 V                   | 211                        | 87.97                  | 9.16                           |
| 3                                                   | #10480.00      | 56.3 PK                       | 74.0              | -17.7          | 1.01 V                   | 222                        | 37.17                  | 19.11                          |
| 4                                                   | #10480.00      | 47.9 AV                       | 54.0              | -6.1           | 1.01 V                   | 222                        | 28.78                  | 19.11                          |
| 5                                                   | 15720.00       | 60.4 PK                       | 74.0              | -13.6          | 1.01 V                   | 112                        | 39.47                  | 20.89                          |
| 6                                                   | 15720.00       | 53.2 AV                       | 54.0              | -0.8           | 1.01 V                   | 112                        | 32.28                  | 20.89                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



**802.11n (40MHz)**

|                        |               |                              |              |
|------------------------|---------------|------------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 38 | <b>DETECTOR<br/>FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz  |                              | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 5150.00        | 69.4 PK                       | 74.0              | -4.6           | 1.42 H                   | 229                        | 60.46                  | 8.96                           |
| 2                                                   | 5150.00        | 51.6 AV                       | 54.0              | -2.4           | 1.42 H                   | 229                        | 42.66                  | 8.96                           |
| 3                                                   | *5190.00       | 102.7 PK                      |                   |                | 1.74 H                   | 52                         | 93.61                  | 9.05                           |
| 4                                                   | *5190.00       | 93.5 AV                       |                   |                | 1.74 H                   | 52                         | 84.42                  | 9.05                           |
| 5                                                   | #10380.00      | 55.5 PK                       | 74.0              | -18.5          | 1.02 H                   | 216                        | 36.49                  | 18.99                          |
| 6                                                   | #10380.00      | 45.9 AV                       | 54.0              | -8.1           | 1.02 H                   | 216                        | 26.95                  | 18.99                          |
| 7                                                   | 15570.00       | 58.6 PK                       | 74.0              | -15.4          | 1.00 H                   | 222                        | 38.06                  | 20.58                          |
| 8                                                   | 15570.00       | 48.7 AV                       | 54.0              | -5.3           | 1.00 H                   | 222                        | 28.08                  | 20.58                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 5150.00        | 70.4 PK                       | 74.0              | -3.6           | 1.18 V                   | 94                         | 61.46                  | 8.96                           |
| 2                                                   | 5150.00        | 53.4 AV                       | 54.0              | -0.6           | 1.18 V                   | 94                         | 44.46                  | 8.96                           |
| 3                                                   | *5190.00       | 103.6 PK                      |                   |                | 1.42 V                   | 218                        | 94.56                  | 9.05                           |
| 4                                                   | *5190.00       | 94.8 AV                       |                   |                | 1.42 V                   | 218                        | 85.75                  | 9.05                           |
| 5                                                   | #10380.00      | 56.9 PK                       | 74.0              | -17.1          | 1.01 V                   | 288                        | 37.89                  | 18.99                          |
| 6                                                   | #10380.00      | 47.2 AV                       | 54.0              | -6.8           | 1.01 V                   | 288                        | 28.22                  | 18.99                          |
| 7                                                   | 15570.00       | 60.7 PK                       | 74.0              | -13.3          | 1.14 V                   | 3                          | 40.12                  | 20.58                          |
| 8                                                   | 15570.00       | 49.7 AV                       | 54.0              | -4.3           | 1.14 V                   | 3                          | 29.08                  | 20.58                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 46 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5230.00       | 103.4 PK                      |                   |                | 1.24 H                   | 222                        | 94.28                  | 9.14                           |
| 2                                                   | *5230.00       | 94.0 AV                       |                   |                | 1.24 H                   | 222                        | 84.88                  | 9.14                           |
| 3                                                   | #10460.00      | 56.2 PK                       | 74.0              | -17.8          | 1.02 H                   | 4                          | 37.15                  | 19.09                          |
| 4                                                   | #10460.00      | 47.6 AV                       | 54.0              | -6.4           | 1.02 H                   | 4                          | 28.53                  | 19.09                          |
| 5                                                   | 15690.00       | 61.2 PK                       | 74.0              | -12.8          | 1.02 H                   | 44                         | 40.37                  | 20.83                          |
| 6                                                   | 15690.00       | 51.9 AV                       | 54.0              | -2.1           | 1.02 H                   | 44                         | 31.05                  | 20.83                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5230.00       | 105.8 PK                      |                   |                | 1.16 V                   | 312                        | 96.62                  | 9.14                           |
| 2                                                   | *5230.00       | 96.5 AV                       |                   |                | 1.16 V                   | 312                        | 87.33                  | 9.14                           |
| 3                                                   | #10460.00      | 57.2 PK                       | 74.0              | -16.8          | 1.02 V                   | 25                         | 38.15                  | 19.09                          |
| 4                                                   | #10460.00      | 48.6 AV                       | 54.0              | -5.4           | 1.02 V                   | 25                         | 29.53                  | 19.09                          |
| 5                                                   | 15690.00       | 62.7 PK                       | 74.0              | -11.3          | 1.09 V                   | 214                        | 41.82                  | 20.83                          |
| 6                                                   | 15690.00       | 53.3 AV                       | 54.0              | -0.7           | 1.09 V                   | 214                        | 32.50                  | 20.83                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



**802.11ac BW80**

|                        |               |                              |              |
|------------------------|---------------|------------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 42 | <b>DETECTOR<br/>FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz  |                              | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 5150.00        | 67.4 PK                       | 74.0              | -6.6           | 1.12 H                   | 25                         | 58.46                  | 8.96                           |
| 2                                                   | 5150.00        | 50.2 AV                       | 54.0              | -3.8           | 1.12 H                   | 25                         | 41.21                  | 8.96                           |
| 3                                                   | *5210.00       | 98.4 PK                       |                   |                | 1.21 H                   | 42                         | 89.33                  | 9.09                           |
| 4                                                   | *5210.00       | 87.7 AV                       |                   |                | 1.21 H                   | 42                         | 78.60                  | 9.09                           |
| 5                                                   | #10420.00      | 55.3 PK                       | 74.0              | -18.7          | 1.02 H                   | 14                         | 36.26                  | 19.04                          |
| 6                                                   | #10420.00      | 44.0 AV                       | 54.0              | -10.0          | 1.02 H                   | 14                         | 24.93                  | 19.04                          |
| 7                                                   | 15630.00       | 59.4 PK                       | 74.0              | -14.6          | 1.01 H                   | 24                         | 38.72                  | 20.70                          |
| 8                                                   | 15630.00       | 49.2 AV                       | 54.0              | -4.8           | 1.01 H                   | 24                         | 28.54                  | 20.70                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 5150.00        | 70.2 PK                       | 74.0              | -3.8           | 1.09 V                   | 42                         | 61.24                  | 8.96                           |
| 2                                                   | 5150.00        | 53.3 AV                       | 54.0              | -0.7           | 1.09 V                   | 42                         | 44.32                  | 8.96                           |
| 3                                                   | *5210.00       | 99.8 PK                       |                   |                | 1.31 V                   | 242                        | 90.75                  | 9.09                           |
| 4                                                   | *5210.00       | 89.4 AV                       |                   |                | 1.31 V                   | 242                        | 80.32                  | 9.09                           |
| 5                                                   | #10420.00      | 57.2 PK                       | 74.0              | -16.8          | 1.02 V                   | 21                         | 38.17                  | 19.04                          |
| 6                                                   | #10420.00      | 46.2 AV                       | 54.0              | -7.8           | 1.02 V                   | 21                         | 27.18                  | 19.04                          |
| 7                                                   | 15630.00       | 61.2 PK                       | 74.0              | -12.8          | 1.00 V                   | 174                        | 40.50                  | 20.70                          |
| 8                                                   | 15630.00       | 49.8 AV                       | 54.0              | -4.2           | 1.00 V                   | 174                        | 29.05                  | 20.70                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



Band 4 (5745-5825MHz):

ABOVE 1GHz DATA

802.11a

|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 149 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | #5714.90       | 58.4 PK                       | 68.3              | -9.9           | 1.12 H                   | 315                        | 47.74                  | 10.68                          |
| 2                                                   | #5722.89       | 76.2 PK                       | 78.3              | -2.1           | 1.24 H                   | 136                        | 65.49                  | 10.72                          |
| 3                                                   | *5745.00       | 102.4 PK                      |                   |                | 1.27 H                   | 46                         | 91.61                  | 10.81                          |
| 4                                                   | *5745.00       | 95.2 AV                       |                   |                | 1.27 H                   | 46                         | 84.41                  | 10.81                          |
| 5                                                   | 11490.00       | 54.9 PK                       | 74.0              | -19.1          | 1.02 H                   | 14                         | 37.55                  | 17.32                          |
| 6                                                   | 11490.00       | 43.0 AV                       | 54.0              | -11.0          | 1.02 H                   | 14                         | 25.68                  | 17.32                          |
| 7                                                   | #17235.00      | 60.5 PK                       | 82.4              | -21.9          | 1.00 H                   | 201                        | 37.40                  | 23.06                          |
| 8                                                   | #17235.00      | 48.9 AV                       | 75.2              | -26.3          | 1.00 H                   | 201                        | 25.88                  | 23.06                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | #5714.90       | 60.1 PK                       | 68.3              | -8.2           | 1.21 V                   | 318                        | 49.42                  | 10.68                          |
| 2                                                   | #5725.00       | 75.1 PK                       | 78.3              | -3.2           | 1.02 V                   | 8                          | 64.41                  | 10.73                          |
| 3                                                   | *5745.00       | 103.5 PK                      |                   |                | 1.19 V                   | 104                        | 92.71                  | 10.81                          |
| 4                                                   | *5745.00       | 96.4 AV                       |                   |                | 1.19 V                   | 104                        | 85.61                  | 10.81                          |
| 5                                                   | 11490.00       | 55.4 PK                       | 74.0              | -18.6          | 1.00 V                   | 157                        | 38.10                  | 17.32                          |
| 6                                                   | 11490.00       | 42.6 AV                       | 54.0              | -11.4          | 1.00 V                   | 157                        | 25.28                  | 17.32                          |
| 7                                                   | #17235.00      | 61.1 PK                       | 83.5              | -22.4          | 1.02 V                   | 52                         | 38.08                  | 23.06                          |
| 8                                                   | #17235.00      | 49.2 AV                       | 76.4              | -27.2          | 1.02 V                   | 52                         | 26.17                  | 23.06                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



|                        |                |                              |              |
|------------------------|----------------|------------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 157 | <b>DETECTOR<br/>FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz   |                              | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5785.00       | 105.8 PK                      |                   |                | 1.02 H                   | 216                        | 94.85                  | 10.99                          |
| 2                                                   | *5785.00       | 96.2 AV                       |                   |                | 1.02 H                   | 216                        | 85.25                  | 10.99                          |
| 3                                                   | 11570.00       | 58.4 PK                       | 74.0              | -15.6          | 1.01 H                   | 239                        | 40.97                  | 17.45                          |
| 4                                                   | 11570.00       | 50.1 AV                       | 54.0              | -3.9           | 1.01 H                   | 239                        | 32.69                  | 17.45                          |
| 5                                                   | #17355.00      | 60.6 PK                       | 85.8              | -25.2          | 1.00 H                   | 52                         | 37.49                  | 23.13                          |
| 6                                                   | #17355.00      | 49.0 AV                       | 76.2              | -27.2          | 1.00 H                   | 52                         | 25.91                  | 23.13                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5785.00       | 107.6 PK                      |                   |                | 1.62 V                   | 360                        | 96.63                  | 10.99                          |
| 2                                                   | *5785.00       | 98.6 AV                       |                   |                | 1.62 V                   | 360                        | 87.63                  | 10.99                          |
| 3                                                   | 11570.00       | 61.3 PK                       | 74.0              | -12.7          | 1.00 V                   | 122                        | 43.80                  | 17.45                          |
| 4                                                   | 11570.00       | 53.2 AV                       | 54.0              | -0.8           | 1.00 V                   | 122                        | 35.72                  | 17.45                          |
| 5                                                   | #17355.00      | 62.1 PK                       | 87.6              | -25.5          | 1.02 V                   | 22                         | 38.97                  | 23.13                          |
| 6                                                   | #17355.00      | 49.7 AV                       | 78.6              | -28.9          | 1.02 V                   | 22                         | 26.58                  | 23.13                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



|                        |                |                          |              |
|------------------------|----------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 165 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz   |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5825.00       | 104.6 PK                      |                   |                | 1.27 H                   | 46                         | 93.46                  | 11.16                          |
| 2                                                   | *5825.00       | 94.8 AV                       |                   |                | 1.27 H                   | 46                         | 83.66                  | 11.16                          |
| 3                                                   | #5850.00       | 75.3 PK                       | 78.3              | -3.0           | 1.08 H                   | 162                        | 64.05                  | 11.27                          |
| 4                                                   | #5860.10       | 58.1 PK                       | 68.3              | -10.2          | 1.01 H                   | 117                        | 46.78                  | 11.32                          |
| 5                                                   | 11650.00       | 55.1 PK                       | 74.0              | -18.9          | 1.00 H                   | 338                        | 37.51                  | 17.63                          |
| 6                                                   | 11650.00       | 45.1 AV                       | 54.0              | -8.9           | 1.00 H                   | 338                        | 27.50                  | 17.63                          |
| 7                                                   | #17475.00      | 60.7 PK                       | 84.6              | -23.9          | 1.01 H                   | 208                        | 37.50                  | 23.20                          |
| 8                                                   | #17475.00      | 49.6 AV                       | 74.8              | -25.2          | 1.01 H                   | 205                        | 26.42                  | 23.20                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5825.00       | 105.7 PK                      |                   |                | 1.19 V                   | 201                        | 94.52                  | 11.16                          |
| 2                                                   | *5825.00       | 95.6 AV                       |                   |                | 1.19 V                   | 201                        | 84.46                  | 11.16                          |
| 3                                                   | #5850.00       | 76.3 PK                       | 78.3              | -2.0           | 1.02 V                   | 21                         | 65.01                  | 11.27                          |
| 4                                                   | #5860.10       | 57.6 PK                       | 68.3              | -10.7          | 1.06 V                   | 61                         | 46.30                  | 11.32                          |
| 5                                                   | #5860.10       | 47.3 AV                       | 75.6              | -28.3          | 1.06 V                   | 61                         | 35.96                  | 11.32                          |
| 6                                                   | 11650.00       | 54.2 PK                       | 74.0              | -19.8          | 1.02 V                   | 216                        | 36.57                  | 17.63                          |
| 7                                                   | 11650.00       | 44.7 AV                       | 54.0              | -9.3           | 1.02 V                   | 216                        | 27.05                  | 17.63                          |
| 8                                                   | #17475.00      | 60.4 PK                       | 85.7              | -25.3          | 1.01 V                   | 112                        | 37.21                  | 23.20                          |
| 9                                                   | #17475.00      | 49.2 AV                       | 75.6              | -26.4          | 1.01 V                   | 112                        | 26.02                  | 23.20                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



**802.11n (20MHz)**

|                        |                |                              |              |
|------------------------|----------------|------------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 149 | <b>DETECTOR<br/>FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz   |                              | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | #5714.90       | 58.7 PK                       | 68.3              | -9.6           | 1.27 H                   | 84                         | 48.01                  | 10.68                          |
| 2                                                   | #5725.00       | 75.1 PK                       | 78.3              | -3.2           | 1.04 H                   | 75                         | 64.38                  | 10.73                          |
| 3                                                   | *5745.00       | 103.9 PK                      |                   |                | 1.90 H                   | 217                        | 93.13                  | 10.81                          |
| 4                                                   | *5745.00       | 94.2 AV                       |                   |                | 1.90 H                   | 217                        | 83.41                  | 10.81                          |
| 5                                                   | 11490.00       | 56.2 PK                       | 74.0              | -17.8          | 1.01 H                   | 242                        | 38.91                  | 17.32                          |
| 6                                                   | 11490.00       | 44.8 AV                       | 54.0              | -9.2           | 1.01 H                   | 242                        | 27.46                  | 17.32                          |
| 7                                                   | #17235.00      | 60.2 PK                       | 83.9              | -23.7          | 1.02 H                   | 226                        | 37.15                  | 23.06                          |
| 8                                                   | #17235.00      | 49.7 AV                       | 74.2              | -24.5          | 1.02 H                   | 226                        | 26.66                  | 23.06                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | #5714.90       | 60.2 PK                       | 68.3              | -8.1           | 1.21 V                   | 91                         | 49.52                  | 10.68                          |
| 2                                                   | #5725.00       | 77.0 PK                       | 78.3              | -1.3           | 1.02 V                   | 22                         | 66.28                  | 10.73                          |
| 3                                                   | *5745.00       | 105.8 PK                      |                   |                | 1.29 V                   | 315                        | 95.03                  | 10.81                          |
| 4                                                   | *5745.00       | 96.1 AV                       |                   |                | 1.29 V                   | 315                        | 85.30                  | 10.81                          |
| 5                                                   | 11490.00       | 57.9 PK                       | 74.0              | -16.1          | 1.03 V                   | 301                        | 40.55                  | 17.32                          |
| 6                                                   | 11490.00       | 45.2 AV                       | 54.0              | -8.8           | 1.03 V                   | 301                        | 27.89                  | 17.32                          |
| 7                                                   | #17235.00      | 60.4 PK                       | 85.8              | -25.4          | 1.00 V                   | 11                         | 37.34                  | 23.06                          |
| 8                                                   | #17235.00      | 49.4 AV                       | 76.1              | -26.7          | 1.00 V                   | 41                         | 26.36                  | 23.06                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.





|                        |                |                          |              |
|------------------------|----------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 157 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz   |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                 |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|-----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz)  | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5785.00        | 107.4 PK                      |                   |                | 1.14 H                   | 201                        | 96.43                  | 10.99                          |
| 2                                                   | *5785.00        | 98.7 AV                       |                   |                | 1.14 H                   | 201                        | 87.70                  | 10.99                          |
| 3                                                   | 11570.00        | 63.4 PK                       | 74.0              | -10.6          | 1.00 H                   | 17                         | 45.97                  | 17.45                          |
| 4                                                   | <b>11570.00</b> | <b>53.2 AV</b>                | <b>54.0</b>       | <b>-0.8</b>    | <b>1.00 H</b>            | <b>17</b>                  | <b>35.77</b>           | <b>17.45</b>                   |
| 5                                                   | #17355.00       | 61.8 PK                       | 87.4              | -25.6          | 1.00 H                   | 128                        | 38.71                  | 23.13                          |
| 6                                                   | #17355.00       | 50.2 AV                       | 78.7              | -28.5          | 1.00 H                   | 128                        | 27.11                  | 23.13                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                 |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz)  | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5785.00        | 109.2 PK                      |                   |                | 1.47 V                   | 218                        | 98.21                  | 10.99                          |
| 2                                                   | *5785.00        | 99.2 AV                       |                   |                | 1.47 V                   | 218                        | 88.25                  | 10.99                          |
| 3                                                   | 11570.00        | 59.4 PK                       | 74.0              | -14.6          | 1.01 V                   | 25                         | 41.97                  | 17.45                          |
| 4                                                   | 11570.00        | 50.4 AV                       | 54.0              | -3.6           | 1.01 V                   | 25                         | 32.97                  | 17.45                          |
| 5                                                   | #17355.00       | 60.7 PK                       | 89.2              | -28.5          | 1.00 V                   | 339                        | 37.57                  | 23.13                          |
| 6                                                   | #17355.00       | 49.8 AV                       | 79.2              | -29.4          | 1.00 V                   | 339                        | 26.69                  | 23.13                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



|                        |                |                          |              |
|------------------------|----------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 165 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz   |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | #5822.40       | 76.2 PK                       | 84.9              | -8.7           | 1.02 H                   | 36                         | 65.09                  | 11.15                          |
| 2                                                   | *5825.00       | 104.9 PK                      |                   |                | 1.27 H                   | 46                         | 93.71                  | 11.16                          |
| 3                                                   | *5825.00       | 96.5 AV                       |                   |                | 1.27 H                   | 46                         | 85.31                  | 11.16                          |
| 4                                                   | #5850.00       | 75.1 PK                       | 78.3              | -3.2           | 1.02 H                   | 174                        | 63.85                  | 11.27                          |
| 5                                                   | #5860.10       | 58.4 PK                       | 68.3              | -9.9           | 1.02 H                   | 217                        | 47.10                  | 11.32                          |
| 6                                                   | 11650.00       | 56.9 PK                       | 74.0              | -17.1          | 1.02 H                   | 216                        | 39.30                  | 17.63                          |
| 7                                                   | 11650.00       | 44.8 AV                       | 54.0              | -9.2           | 1.02 H                   | 216                        | 27.12                  | 17.63                          |
| 8                                                   | #17475.00      | 60.1 PK                       | 84.9              | -24.8          | 1.02 H                   | 2                          | 36.92                  | 23.20                          |
| 9                                                   | #17475.00      | 50.2 AV                       | 76.5              | -26.3          | 1.02 H                   | 2                          | 26.96                  | 23.20                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5825.00       | 106.4 PK                      |                   |                | 1.89 V                   | 61                         | 95.24                  | 11.16                          |
| 2                                                   | *5825.00       | 97.3 AV                       |                   |                | 1.89 V                   | 61                         | 86.15                  | 11.16                          |
| 3                                                   | #5850.00       | 77.8 PK                       | 78.3              | -0.5           | 1.21 V                   | 136                        | 66.53                  | 11.27                          |
| 4                                                   | #5860.10       | 60.1 PK                       | 68.3              | -8.2           | 1.33 V                   | 274                        | 48.78                  | 11.32                          |
| 5                                                   | 11650.00       | 55.2 PK                       | 74.0              | -18.8          | 1.05 V                   | 52                         | 37.57                  | 17.63                          |
| 6                                                   | 11650.00       | 44.1 AV                       | 54.0              | -9.9           | 1.05 V                   | 52                         | 26.47                  | 17.63                          |
| 7                                                   | #17475.00      | 60.2 PK                       | 86.4              | -26.2          | 1.00 V                   | 177                        | 37.03                  | 23.20                          |
| 8                                                   | #17475.00      | 49.2 AV                       | 77.3              | -28.1          | 1.00 V                   | 177                        | 26.01                  | 23.20                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



**802.11n (40MHz)**

|                        |                |                              |              |
|------------------------|----------------|------------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 151 | <b>DETECTOR<br/>FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz   |                              | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | #5714.90       | 67.4 PK                       | 68.3              | -0.9           | 1.07 H                   | 9                          | 56.74                  | 10.68                          |
| 2                                                   | #5725.00       | 76.8 PK                       | 78.3              | -1.5           | 1.08 H                   | 162                        | 66.09                  | 10.73                          |
| 3                                                   | *5755.00       | 103.3 PK                      |                   |                | 2.01 H                   | 247                        | 92.42                  | 10.86                          |
| 4                                                   | *5755.00       | 94.0 AV                       |                   |                | 2.01 H                   | 247                        | 83.18                  | 10.86                          |
| 5                                                   | 11510.00       | 55.5 PK                       | 74.0              | -18.5          | 1.00 H                   | 187                        | 38.17                  | 17.31                          |
| 6                                                   | 11510.00       | 45.0 AV                       | 54.0              | -9.0           | 1.00 H                   | 187                        | 27.70                  | 17.31                          |
| 7                                                   | #17265.00      | 60.3 PK                       | 83.3              | -23.0          | 1.01 H                   | 217                        | 37.21                  | 23.09                          |
| 8                                                   | #17265.00      | 49.9 AV                       | 74.0              | -24.1          | 1.01 H                   | 217                        | 26.77                  | 23.09                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | #5714.90       | 67.8 PK                       | 68.3              | -0.5           | 1.14 V                   | 42                         | 57.16                  | 10.68                          |
| 2                                                   | #5725.00       | 77.1 PK                       | 78.3              | -1.2           | 1.62 V                   | 223                        | 66.37                  | 10.73                          |
| 3                                                   | *5755.00       | 104.9 PK                      |                   |                | 1.74 V                   | 262                        | 94.05                  | 10.86                          |
| 4                                                   | *5755.00       | 95.8 AV                       |                   |                | 1.74 V                   | 262                        | 84.92                  | 10.86                          |
| 5                                                   | 11510.00       | 56.2 PK                       | 74.0              | -17.8          | 1.01 V                   | 222                        | 38.93                  | 17.31                          |
| 6                                                   | 11510.00       | 45.8 AV                       | 54.0              | -8.2           | 1.01 V                   | 222                        | 28.50                  | 17.31                          |
| 7                                                   | #17265.00      | 61.7 PK                       | 84.9              | -23.2          | 1.00 V                   | 112                        | 38.65                  | 23.09                          |
| 8                                                   | #17265.00      | 50.7 AV                       | 75.8              | -25.1          | 1.00 V                   | 112                        | 27.57                  | 23.09                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



|                        |                |                          |              |
|------------------------|----------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 159 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz   |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5795.00       | 103.7 PK                      |                   |                | 1.15 H                   | 217                        | 92.71                  | 11.03                          |
| 2                                                   | *5795.00       | 93.0 AV                       |                   |                | 1.15 H                   | 217                        | 81.96                  | 11.03                          |
| 3                                                   | #5850.00       | 76.2 PK                       | 78.3              | -2.1           | 1.22 H                   | 4                          | 64.90                  | 11.27                          |
| 4                                                   | #5860.10       | 64.2 PK                       | 68.3              | -4.1           | 1.39 H                   | 27                         | 52.88                  | 11.32                          |
| 5                                                   | 11590.00       | 53.7 PK                       | 74.0              | -20.3          | 1.00 H                   | 188                        | 36.22                  | 17.49                          |
| 6                                                   | 11590.00       | 43.9 AV                       | 54.0              | -10.1          | 1.00 H                   | 188                        | 26.41                  | 17.49                          |
| 7                                                   | #17385.00      | 60.4 PK                       | 83.7              | -23.3          | 1.00 H                   | 300                        | 37.27                  | 23.14                          |
| 8                                                   | #17385.00      | 49.9 AV                       | 73.0              | -23.1          | 1.00 H                   | 300                        | 26.73                  | 23.14                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | *5795.00       | 105.9 PK                      |                   |                | 1.98 V                   | 84                         | 94.84                  | 11.03                          |
| 2                                                   | *5795.00       | 94.2 AV                       |                   |                | 1.98 V                   | 84                         | 83.13                  | 11.03                          |
| 3                                                   | #5850.00       | 77.8 PK                       | 78.3              | -0.5           | 1.08 V                   | 106                        | 66.57                  | 11.27                          |
| 4                                                   | #5860.10       | 64.4 PK                       | 68.3              | -3.9           | 1.12 V                   | 41                         | 53.04                  | 11.32                          |
| 5                                                   | 11590.00       | 54.3 PK                       | 74.0              | -19.7          | 1.02 V                   | 21                         | 36.81                  | 17.49                          |
| 6                                                   | 11590.00       | 44.6 AV                       | 54.0              | -9.4           | 1.02 V                   | 21                         | 27.13                  | 17.49                          |
| 7                                                   | #17385.00      | 61.2 PK                       | 85.9              | -24.7          | 1.02 V                   | 217                        | 38.07                  | 23.14                          |
| 8                                                   | #17385.00      | 50.0 AV                       | 74.2              | -24.2          | 1.02 V                   | 217                        | 26.87                  | 23.14                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



**802.11ac BW80**

|                        |                |                              |              |
|------------------------|----------------|------------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 155 | <b>DETECTOR<br/>FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 40GHz   |                              | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | #5714.90       | 65.7 PK                       | 68.3              | -2.6           | 1.22 H                   | 84                         | 55.06                  | 10.68                          |
| 2                                                   | #5725.00       | 70.0 PK                       | 78.3              | -8.3           | 1.44 H                   | 124                        | 59.29                  | 10.73                          |
| 3                                                   | *5775.00       | 102.4 PK                      |                   |                | 1.74 H                   | 41                         | 91.47                  | 10.94                          |
| 4                                                   | *5775.00       | 91.4 AV                       |                   |                | 1.74 H                   | 41                         | 80.50                  | 10.94                          |
| 5                                                   | 11550.00       | 55.9 PK                       | 74.0              | -18.1          | 1.05 H                   | 351                        | 38.47                  | 17.40                          |
| 6                                                   | 11550.00       | 45.8 AV                       | 54.0              | -8.2           | 1.05 H                   | 351                        | 28.38                  | 17.40                          |
| 7                                                   | #17325.00      | 59.9 PK                       | 82.4              | -22.5          | 1.00 H                   | 154                        | 36.75                  | 23.12                          |
| 8                                                   | #17325.00      | 49.9 AV                       | 71.4              | -21.5          | 1.00 H                   | 154                        | 26.76                  | 23.12                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | #5714.90       | 67.0 PK                       | 68.3              | -1.3           | 1.11 V                   | 184                        | 56.29                  | 10.68                          |
| 2                                                   | #5725.00       | 71.9 PK                       | 78.3              | -6.4           | 1.62 V                   | 216                        | 61.21                  | 10.73                          |
| 3                                                   | *5775.00       | 101.3 PK                      |                   |                | 1.09 V                   | 61                         | 90.36                  | 10.94                          |
| 4                                                   | *5775.00       | 92.3 AV                       |                   |                | 1.09 V                   | 61                         | 81.40                  | 10.94                          |
| 5                                                   | 11550.00       | 56.2 PK                       | 74.0              | -17.8          | 1.02 V                   | 214                        | 38.80                  | 17.40                          |
| 6                                                   | 11550.00       | 46.9 AV                       | 54.0              | -7.1           | 1.02 V                   | 214                        | 29.50                  | 17.40                          |
| 7                                                   | #17325.00      | 60.4 PK                       | 81.3              | -20.9          | 1.01 V                   | 74                         | 37.30                  | 23.12                          |
| 8                                                   | #17325.00      | 50.2 AV                       | 72.3              | -22.1          | 1.01 V                   | 74                         | 27.10                  | 23.12                          |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



## 3.2 CONDUCTED EMISSION MEASUREMENT

### 3.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

| FREQUENCY OF EMISSION (MHz) | CONDUCTED LIMIT (dB $\mu$ V) |          |
|-----------------------------|------------------------------|----------|
|                             | Quasi-peak                   | Average  |
| 0.15 ~ 0.5                  | 66 to 56                     | 56 to 46 |
| 0.5 ~ 5                     | 56                           | 46       |
| 5 ~ 30                      | 60                           | 50       |

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 3.2.2 TEST INSTRUMENTS

| Equipment                | Manufacturer  | Model No.       | Serial No.  | Last Cal.  | Next Cal.  |
|--------------------------|---------------|-----------------|-------------|------------|------------|
| EMI Test Receiver        | Rohde&Schwarz | ESCI            | 100962      | Mar. 05,16 | Mar. 04,17 |
| Artificial Mains Network | Rohde&Schwarz | ENV216          | 101173      | Apr. 25,15 | Apr. 24,16 |
| Artificial Mains Network | Rohde&Schwarz | ESH3-Z5         | 100317      | Apr. 25,15 | Apr. 24,16 |
| Voltage probe            | SCHWARZBECK   | TK 9421         | TK 9421-176 | Jan. 08,16 | Jan. 07,17 |
| Test software            | ADT           | ADT_Cond_V7.3.7 | N/A         | N/A        | N/A        |

- NOTE:**
1. The test was performed in shielded room 553.
  2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.



### 3.2.3 TEST PROCEDURES

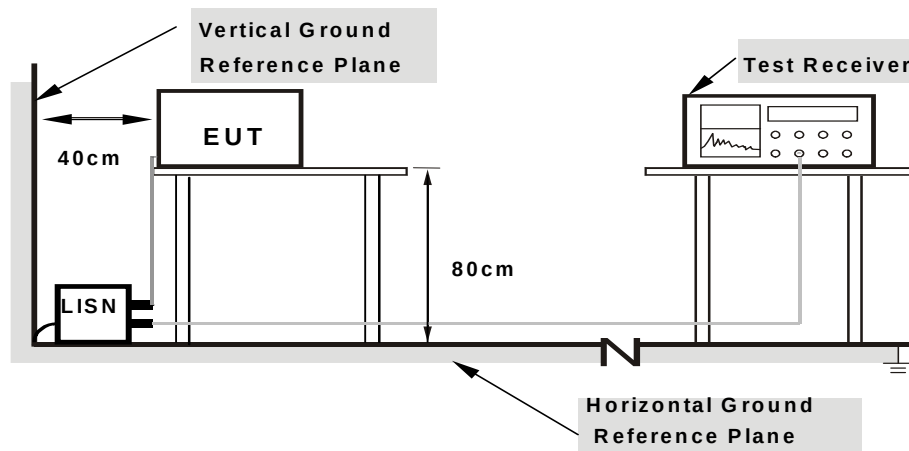
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

### 3.2.4 DEVIATION FROM TEST STANDARD

No deviation.

### 3.2.5 TEST SETUP



**Note:** 1.Support units were connected to second LISN.  
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80  
from other units and other metal planes

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

### 3.2.6 EUT OPERATING CONDITIONS

Same as 3.1.6



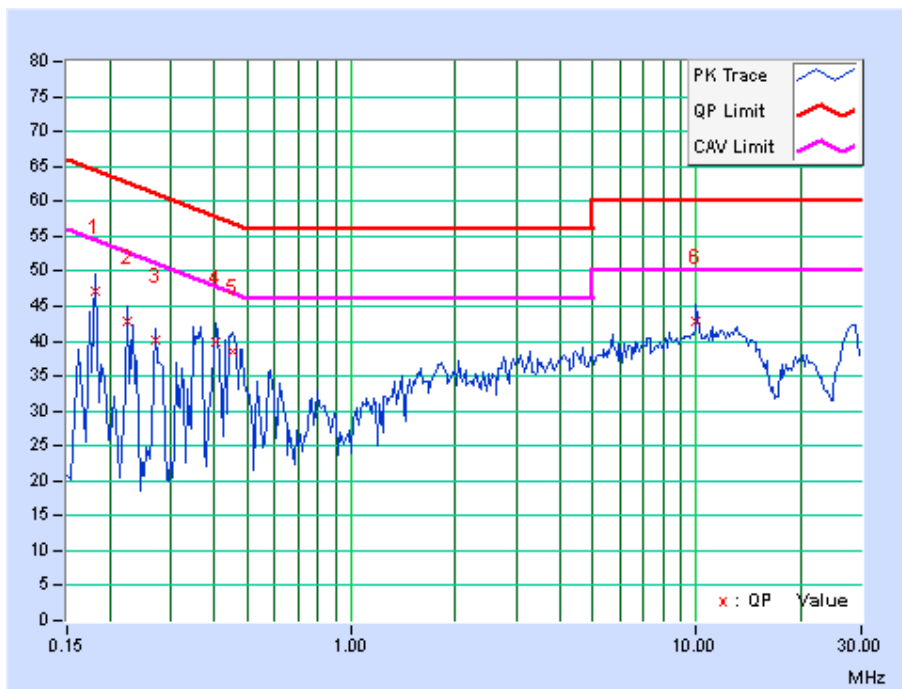
### 3.2.7 TEST RESULTS

#### CONDUCTED WORST-CASE DATA: WIFI LINK

| PHASE | Line | 6dB BANDWIDTH | 9kHz |
|-------|------|---------------|------|
|-------|------|---------------|------|

| No | Freq. [MHz]    | Corr. Factor (dB) | Reading Value [dB (uV)] |              | Emission Level [dB (uV)] |              | Limit [dB (uV)] |              | Margin (dB)   |              |
|----|----------------|-------------------|-------------------------|--------------|--------------------------|--------------|-----------------|--------------|---------------|--------------|
|    |                |                   | Q.P.                    | AV.          | Q.P.                     | AV.          | Q.P.            | AV.          | Q.P.          | AV.          |
| 1  | 0.18125        | 9.80              | 37.39                   | 28.86        | 47.19                    | 38.66        | 64.43           | 54.43        | -17.24        | -15.77       |
| 2  | 0.22422        | 9.80              | 33.00                   | 24.20        | 42.80                    | 34.00        | 62.66           | 52.66        | -19.86        | -18.66       |
| 3  | 0.27109        | 9.82              | 30.35                   | 26.00        | 40.17                    | 35.82        | 61.08           | 51.08        | -20.92        | -15.27       |
| 4  | <b>0.40391</b> | <b>9.88</b>       | <b>30.04</b>            | <b>27.97</b> | <b>39.92</b>             | <b>37.85</b> | <b>57.77</b>    | <b>47.77</b> | <b>-17.85</b> | <b>-9.92</b> |
| 5  | 0.45469        | 9.90              | 28.73                   | 25.16        | 38.63                    | 35.06        | 56.79           | 46.79        | -18.16        | -11.73       |
| 6  | 9.99609        | 10.15             | 32.76                   | 22.45        | 42.91                    | 32.60        | 60.00           | 50.00        | -17.09        | -17.40       |

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



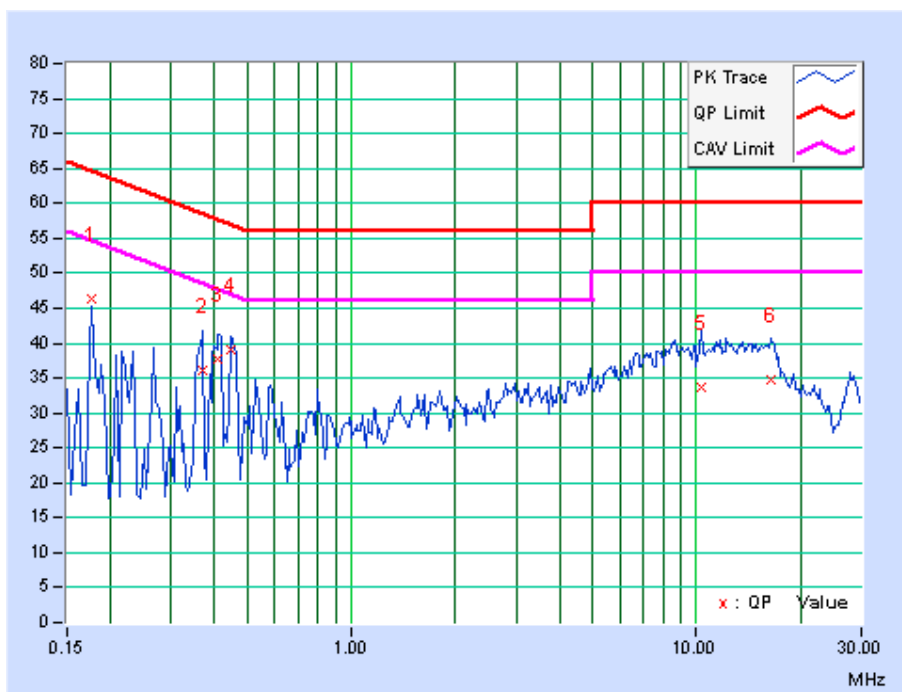




|       |         |               |      |
|-------|---------|---------------|------|
| PHASE | Neutral | 6dB BANDWIDTH | 9kHz |
|-------|---------|---------------|------|

| No | Freq. [MHz] | Corr. Factor (dB) | Reading Value [dB (uV)] |       | Emission Level [dB (uV)] |       | Limit [dB (uV)] |       | Margin (dB) |        |
|----|-------------|-------------------|-------------------------|-------|--------------------------|-------|-----------------|-------|-------------|--------|
|    |             |                   | Q.P.                    | AV.   | Q.P.                     | AV.   | Q.P.            | AV.   | Q.P.        | AV.    |
| 1  | 0.17734     | 9.50              | 36.96                   | 25.74 | 46.46                    | 35.24 | 64.61           | 54.61 | -18.15      | -19.37 |
| 2  | 0.37266     | 9.53              | 26.51                   | 15.27 | 36.04                    | 24.80 | 58.44           | 48.44 | -22.40      | -23.64 |
| 3  | 0.41172     | 9.54              | 28.29                   | 23.63 | 37.83                    | 33.17 | 57.61           | 47.61 | -19.78      | -14.44 |
| 4  | 0.44688     | 9.54              | 29.43                   | 24.55 | 38.97                    | 34.09 | 56.93           | 46.93 | -17.96      | -12.84 |
| 5  | 10.27344    | 9.89              | 23.76                   | 18.19 | 33.65                    | 28.08 | 60.00           | 50.00 | -26.35      | -21.92 |
| 6  | 16.44531    | 9.99              | 24.85                   | 20.20 | 34.84                    | 30.19 | 60.00           | 50.00 | -25.16      | -19.81 |

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.





### 3.3 TRANSMIT POWER MEASUREMENT

#### 3.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT

| Operation Band     | EUT Category |                                   | LIMIT                                                                                                                        |
|--------------------|--------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| U-NII-1<br>U-NII-3 |              | Outdoor Access Point              | 1 Watt (30 dBm)<br>(Max. e.i.r.p $\leq$ 125mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon) |
|                    |              | Fixed point-to-point Access Point | 1 Watt (30 dBm)                                                                                                              |
|                    | √            | Indoor Access Point               | 1 Watt (30 dBm)                                                                                                              |
|                    |              | Mobile and Portable client device | 250mW (24 dBm)                                                                                                               |

Per KDB 662911 D01 Multiple Transmitter Output v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

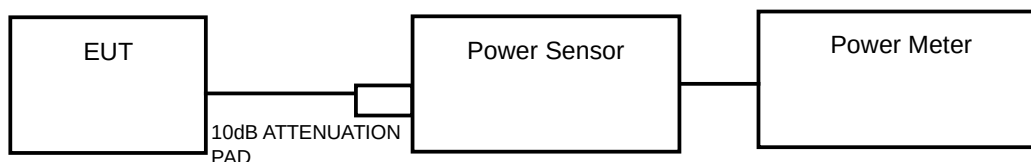
Array Gain = 0 dB (i.e., no array gain) for NANT  $\leq$  4;

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq$  40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT  $\geq$  5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

#### 3.3.2 TEST SETUP





### 3.3.3 TEST INSTRUMENTS

| Equipment                        | Manufacturer    | Model No. | Serial No. | Last Cal.   | Next Cal.   |
|----------------------------------|-----------------|-----------|------------|-------------|-------------|
| Power Sensor                     | Keysight        | U2021XA   | MY55060016 | Feb. 18,16  | Feb. 17,17  |
| Power Sensor                     | Keysight        | U2021XA   | MY55060018 | Feb. 18,16  | Feb. 17,17  |
| Digital Multimeter               | FLUKE           | 15B       | A1220010DG | Oct. 27,15  | Oct. 26,16  |
| Humid & Temp Programmable Tester | Haida           | HD-2257   | 110807201  | Sep.04,15   | Sep. 03,16  |
| Oscilloscope                     | Agilent         | DSO9254A  | MY51260160 | Oct. 17, 15 | Oct. 16, 16 |
| Signal Analyzer                  | Rohde & Schwarz | FSV7      | 102331     | Nov. 05,15  | Nov. 04,16  |
| Signal Generator                 | Agilent         | N5183A    | MY50140980 | Nov. 05,15  | Nov. 04,16  |
| ESG Vector Signal Generator      | Agilent         | E4438C    | MY49072505 | Apr. 22, 15 | Apr. 21, 16 |

**NOTE:**

1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

### 3.3.4 TEST PROCEDURE

**For 802.11a, 802.11n (20MHz), 802.11n (40MHz)**

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

**For 802.11ac (80MHz)**

- 1) Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- 2) Set sweep trigger to "free run".
- 3) Set RBW = 1 MHz.
- 4) Set VBW  $\geq$  3 MHz
- 5) Number of points in sweep  $\geq$  2 Span / RBW.
- 6) Sweep time  $\leq$  (number of points in sweep) \* T
- 7) Detector = RMS.
- 8) Trace mode = max hold.
- 9) Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.



**FOR 26dB BANDWIDTH**

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = RMS.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

**FOR 6dB BANDWIDTH**

- 1) Set RBW = 100 kHz.
- 2) Set the video bandwidth (VBW)  $\geq 3$  RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Sweep = auto couple.
- 6) Allow the trace to stabilize.
- 7) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



### 3.3.5 DEVIATION FROM TEST STANDARD

No deviation.

### 3.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.



### 3.3.7 TEST RESULTS

#### POWER OUTPUT:

##### 802.11a

| Channel Number | FREQ. (MHz) | AVG. CONDUCTED POWER (dBm) |        |        | Total Max. power output | LIMIT (dBm) | PASS /FAIL |
|----------------|-------------|----------------------------|--------|--------|-------------------------|-------------|------------|
|                |             | Chain0                     | Chain1 | Chain2 | dBm                     |             |            |
| 36             | 5180        | 19.26                      | 18.37  | 18.73  | 23.57                   | 30.00       | PASS       |
| 40             | 5200        | 19.78                      | 20.23  | 20.94  | <b>25.11</b>            | 30.00       | PASS       |
| 48             | 5240        | 12.98                      | 12.73  | 12.82  | 17.62                   | 30.00       | PASS       |
| 149            | 5745        | 16.79                      | 16.55  | 16.33  | 21.33                   | 30.00       | PASS       |
| 157            | 5785        | 19.46                      | 19.51  | 20.45  | 24.60                   | 30.00       | PASS       |
| 165            | 5825        | 17.85                      | 18.26  | 18.27  | 22.90                   | 30.00       | PASS       |

##### 802.11n (20MHz)

| Channel Number | FREQ. (MHz) | AVG. CONDUCTED POWER (dBm) |        |        | Total Max. power output | LIMIT (dBm) | PASS /FAIL |
|----------------|-------------|----------------------------|--------|--------|-------------------------|-------------|------------|
|                |             | Chain0                     | Chain1 | Chain2 | dBm                     |             |            |
| 36             | 5180        | 19.15                      | 19.08  | 19.49  | 24.01                   | 30.00       | PASS       |
| 40             | 5200        | 19.89                      | 19.97  | 20.84  | 25.03                   | 30.00       | PASS       |
| 48             | 5240        | 19.38                      | 20.26  | 20.81  | 24.96                   | 30.00       | PASS       |
| 149            | 5745        | 16.49                      | 15.84  | 15.81  | 20.83                   | 30.00       | PASS       |
| 157            | 5785        | 19.99                      | 20.02  | 20.55  | <b>24.97</b>            | 30.00       | PASS       |
| 165            | 5825        | 18.18                      | 18.45  | 18.24  | 23.06                   | 30.00       | PASS       |



**802.11n (40MHz)**

| Channel Number | FREQ. (MHz) | AVG. CONDUCTED POWER (dBm) |        |        | Total Max. power output | LIMIT (dBm) | PASS /FAIL |
|----------------|-------------|----------------------------|--------|--------|-------------------------|-------------|------------|
|                |             | Chain0                     | Chain1 | Chain2 | dBm                     |             |            |
| 38             | 5190        | 16.93                      | 16.38  | 16.72  | 21.45                   | 30.00       | PASS       |
| 46             | 5230        | 18.88                      | 18.44  | 19.16  | 23.61                   | 30.00       | PASS       |
| 151            | 5755        | 15.96                      | 15.59  | 15.63  | 20.50                   | 30.00       | PASS       |
| 159            | 5795        | 18.01                      | 17.78  | 17.54  | 22.55                   | 30.00       | PASS       |

**802.11ac (80MHz)**

| Channel Number | FREQ. (MHz) | AVG. CONDUCTED POWER (dBm) |        |        | Total Max. power output | LIMIT (dBm) | PASS /FAIL |
|----------------|-------------|----------------------------|--------|--------|-------------------------|-------------|------------|
|                |             | Chain0                     | Chain1 | Chain2 | dBm                     |             |            |
| 42             | 5210        | 17.61                      | 17.04  | 17.24  | 22.07                   | 30.00       | PASS       |
| 155            | 5775        | 16.20                      | 15.61  | 15.58  | 20.58                   | 30.00       | PASS       |



**26dB BANDWIDTH & 6dB BANDWIDTH:**

**Note: 26dB BANDWIDTH For U-NII-1, U-NII-2A, U-NII-2C band  
6dB BANDWIDTH U-NII-3C band**

**802.11a**

| Channel Number | Freq. (MHz) | 26dB DOWN BANDWIDTH (MHz) |        |        | LIMIT(MHz) | PASS /FAIL |
|----------------|-------------|---------------------------|--------|--------|------------|------------|
|                |             | Chain0                    | Chain1 | Chain2 | Minimum    |            |
| 36             | 5180        | 33.15                     | 28.99  | 23.30  | 0.5        | PASS       |
| 40             | 5200        | 38.25                     | 40.12  | 35.27  | 0.5        | PASS       |
| 48             | 5240        | 20.29                     | 20.45  | 20.37  | 0.5        | PASS       |

| Channel Number | Freq. (MHz) | 6dB DOWN BANDWIDTH (MHz) |        |        | LIMIT(MHz) | PASS /FAIL |
|----------------|-------------|--------------------------|--------|--------|------------|------------|
|                |             | Chain0                   | Chain1 | Chain2 | Minimum    |            |
| 149            | 5745        | 16.36                    | 16.36  | 16.40  | 0.5        | PASS       |
| 157            | 5785        | 15.20                    | 15.25  | 16.34  | 0.5        | PASS       |
| 165            | 5825        | 16.36                    | 16.33  | 16.41  | 0.5        | PASS       |

**802.11n (20MHz)**

| Channel Number | Freq. (MHz) | 26dB DOWN BANDWIDTH (MHz) |        |        | LIMIT(MHz) | PASS /FAIL |
|----------------|-------------|---------------------------|--------|--------|------------|------------|
|                |             | Chain0                    | Chain1 | Chain2 | Minimum    |            |
| 36             | 5180        | 39.31                     | 37.26  | 30.88  | 0.5        | PASS       |
| 40             | 5200        | 44.54                     | 42.69  | 41.21  | 0.5        | PASS       |
| 48             | 5240        | 43.43                     | 43.10  | 40.89  | 0.5        | PASS       |

| Channel Number | Freq. (MHz) | 6dB DOWN BANDWIDTH (MHz) |        |        | LIMIT(MHz) | PASS /FAIL |
|----------------|-------------|--------------------------|--------|--------|------------|------------|
|                |             | Chain0                   | Chain1 | Chain2 | Minimum    |            |
| 149            | 5745        | 17.65                    | 17.62  | 17.65  | 0.5        | PASS       |
| 157            | 5785        | 16.09                    | 15.25  | 17.57  | 0.5        | PASS       |
| 165            | 5825        | 17.61                    | 17.50  | 17.64  | 0.5        | PASS       |





802.11n (40MHz)

| Channel Number | Freq. (MHz) | 26dB DOWN BANDWIDTH (MHz) |        |        | LIMIT(MHz) | PASS /FAIL |
|----------------|-------------|---------------------------|--------|--------|------------|------------|
|                |             | Chain0                    | Chain1 | Chain2 | Minimum    |            |
| 38             | 5190        | 55.37                     | 55.42  | 41.34  | 0.5        | PASS       |
| 46             | 5230        | 85.82                     | 81.90  | 62.54  | 0.5        | PASS       |

| Channel Number | Freq. (MHz) | 6dB DOWN BANDWIDTH (MHz) |        |        | LIMIT(MHz) | PASS /FAIL |
|----------------|-------------|--------------------------|--------|--------|------------|------------|
|                |             | Chain0                   | Chain1 | Chain2 | Minimum    |            |
| 151            | 5755        | 36.46                    | 36.42  | 36.42  | 0.5        | PASS       |
| 159            | 5795        | 36.45                    | 35.96  | 36.43  | 0.5        | PASS       |

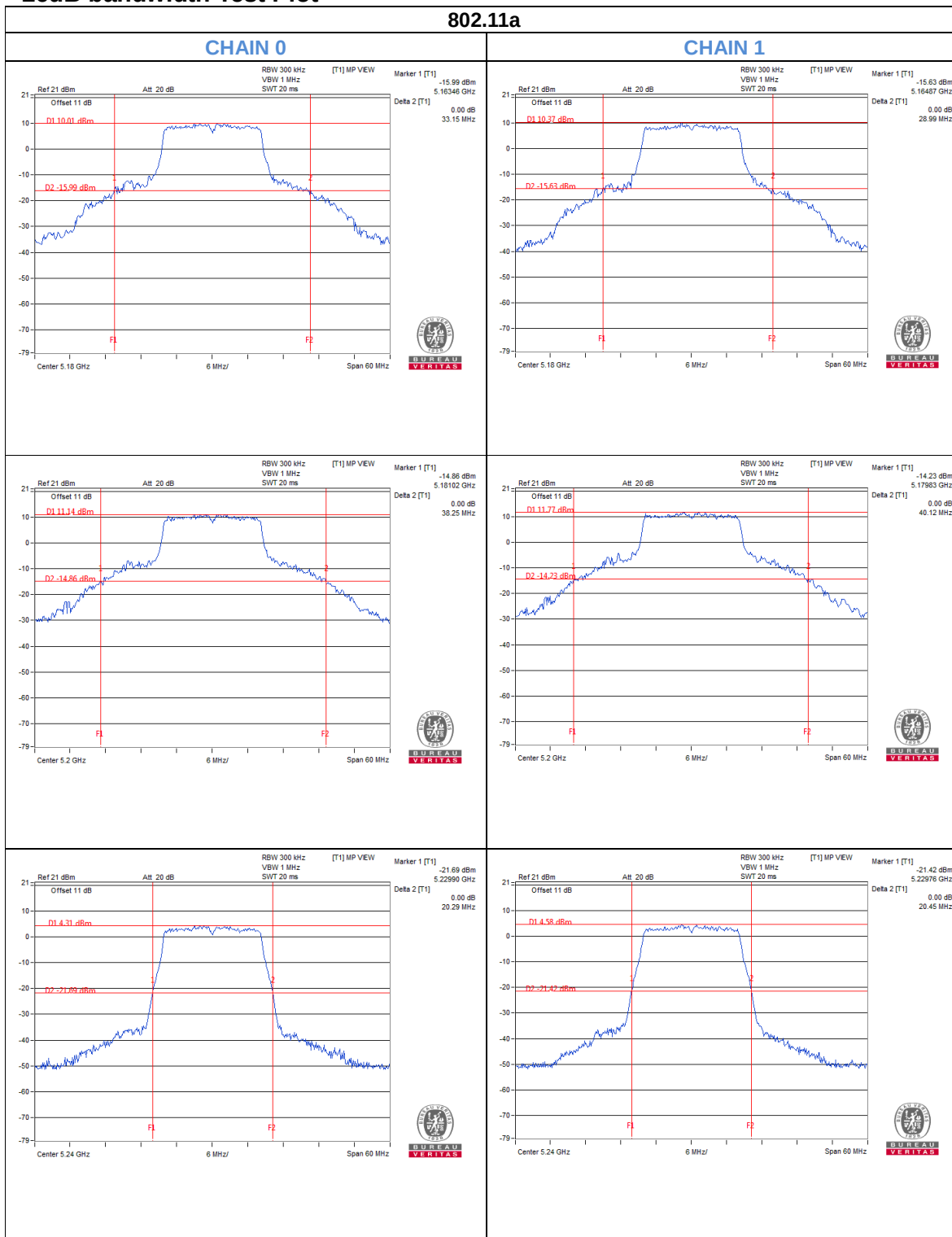
802.11ac (80MHz)

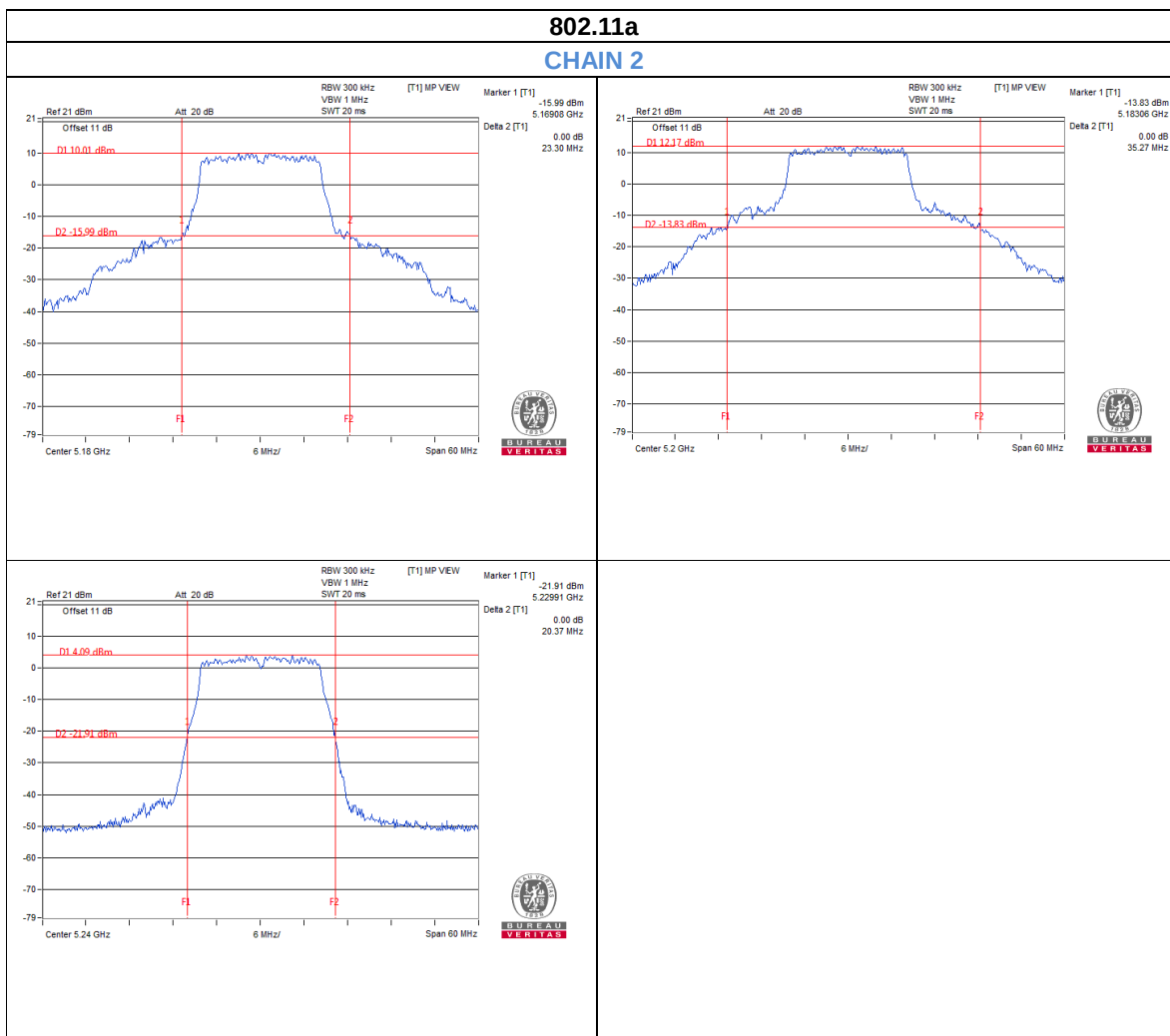
| Channel Number | Freq. (MHz) | 26dB DOWN BANDWIDTH (MHz) |        |        | LIMIT(MHz) | PASS /FAIL |
|----------------|-------------|---------------------------|--------|--------|------------|------------|
|                |             | Chain0                    | Chain1 | Chain2 | Minimum    |            |
| 42             | 5210        | 84.55                     | 90.44  | 82.30  | 0.5        | PASS       |

| Channel Number | Freq. (MHz) | 6dB DOWN BANDWIDTH (MHz) |        |        | LIMIT(MHz) | PASS /FAIL |
|----------------|-------------|--------------------------|--------|--------|------------|------------|
|                |             | Chain0                   | Chain1 | Chain2 | Minimum    |            |
| 155            | 5775        | 76.17                    | 76.06  | 76.40  | 0.5        | PASS       |



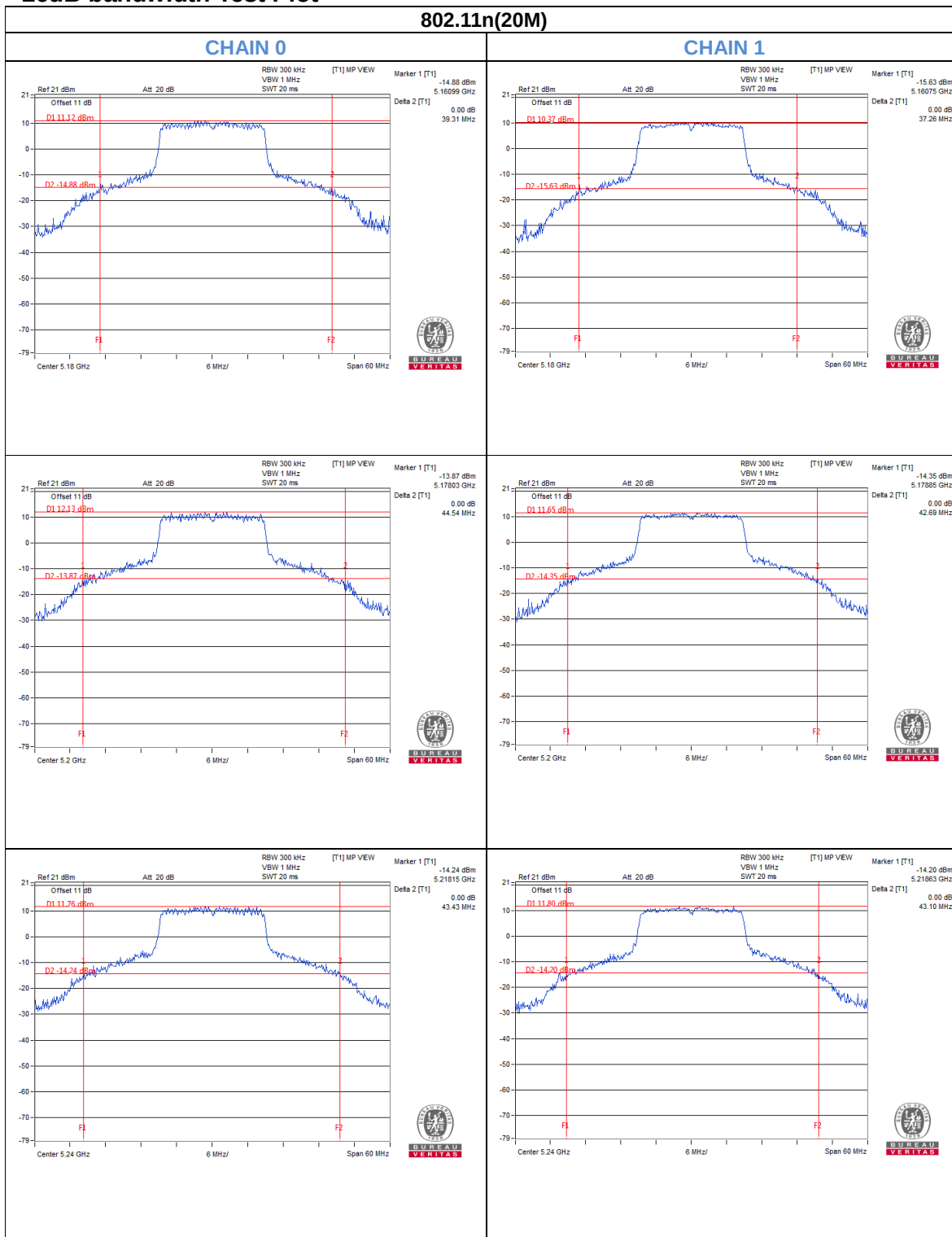
## 26dB bandwidth Test Plot

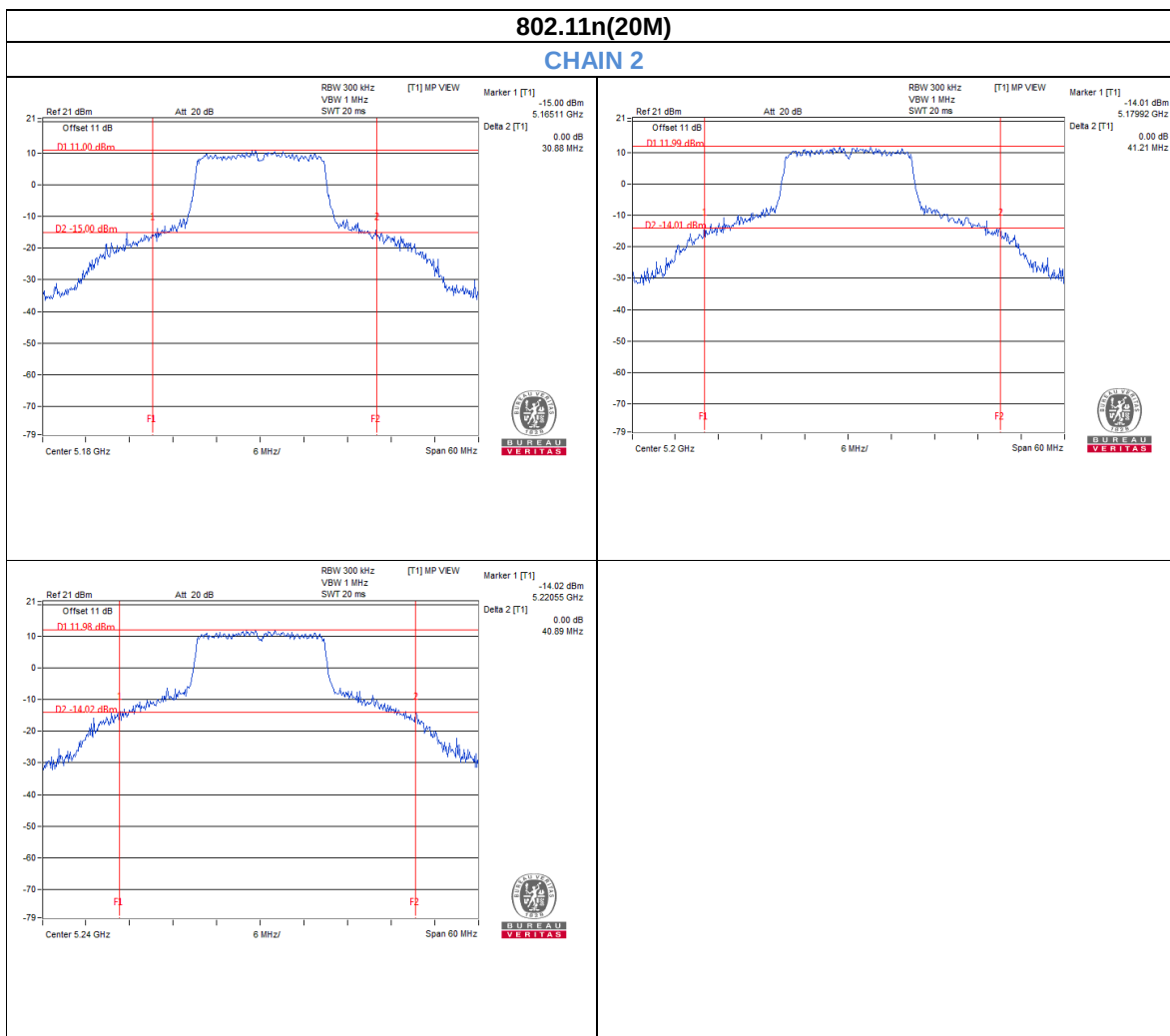






## 26dB bandwidth Test Plot

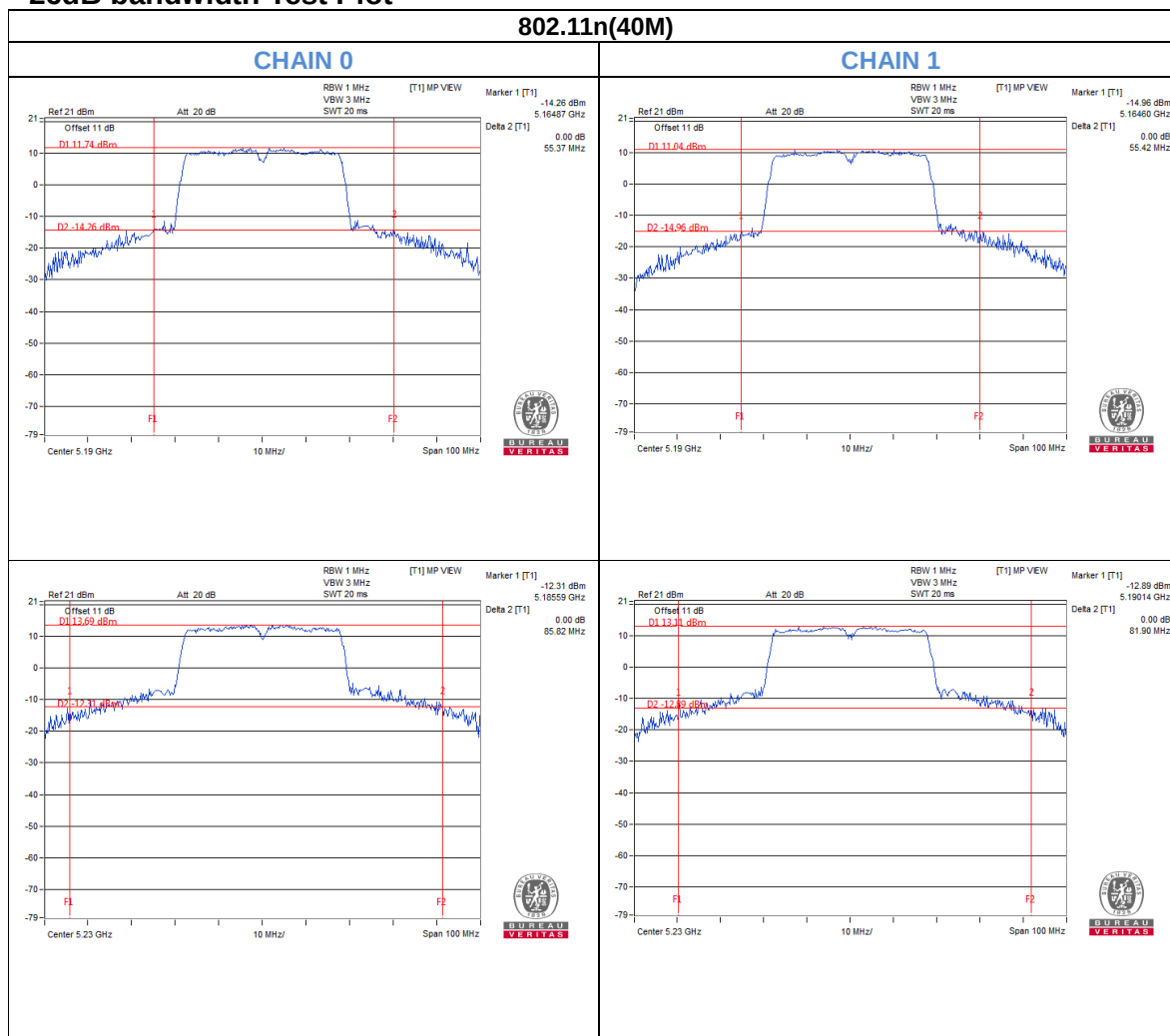






**BUREAU VERITAS** Test Report No.: RF160223N031-1

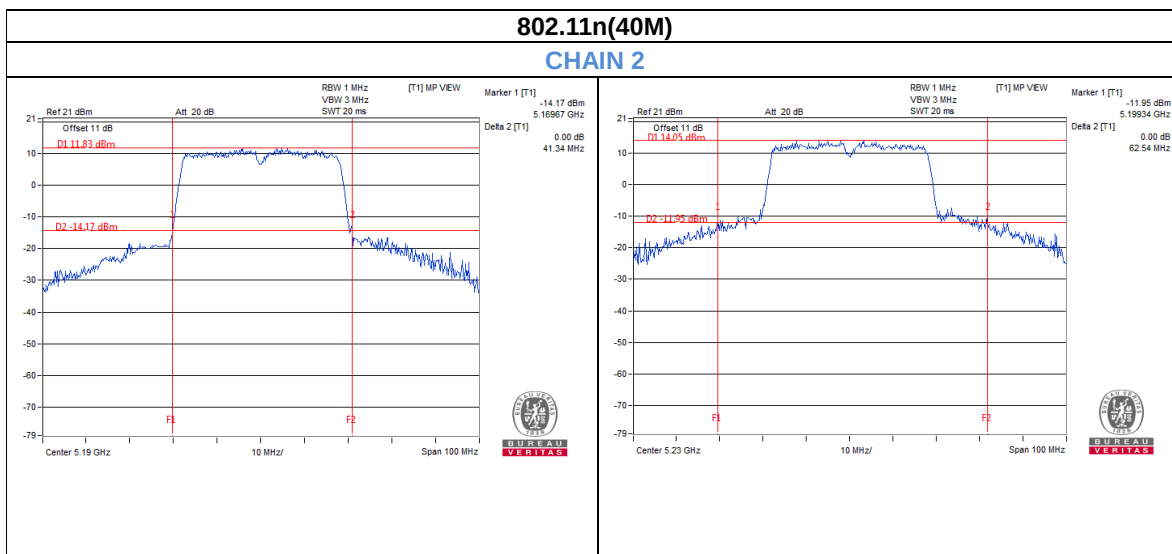
## 26dB bandwidth Test Plot



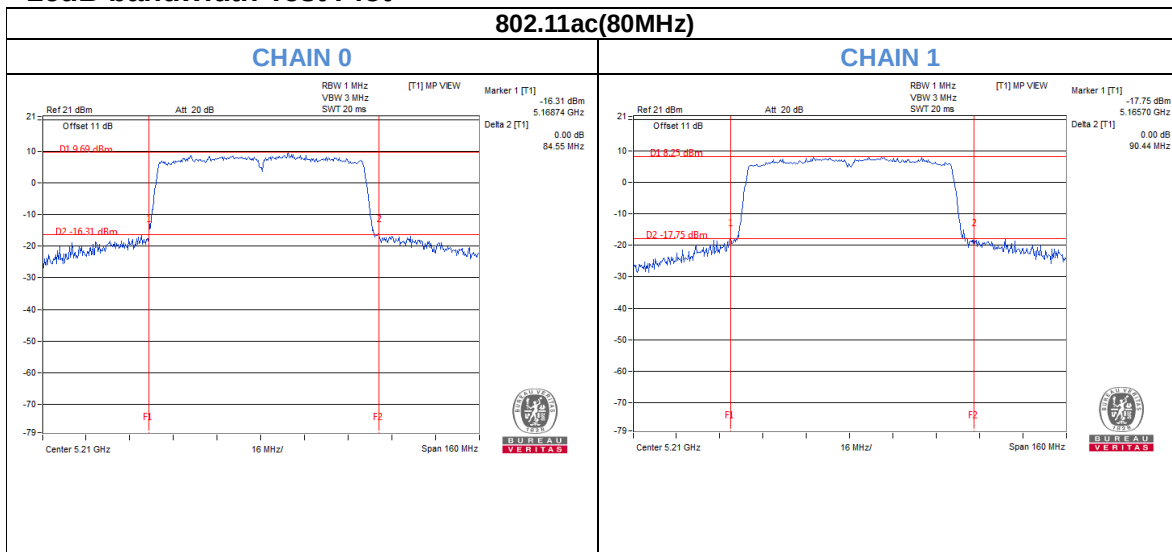
Bureau Veritas Shenzhen Co., Ltd.  
Dongguan Branch

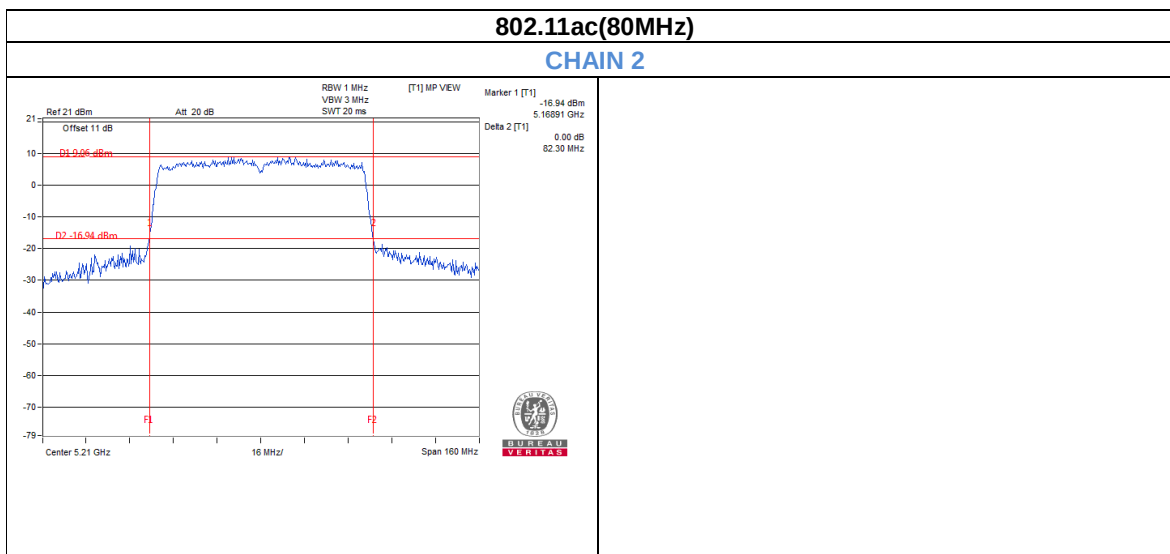
No. 34, Chenwulu Section, Guantai Rd., Houjie  
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### 26dB bandwidth Test Plot

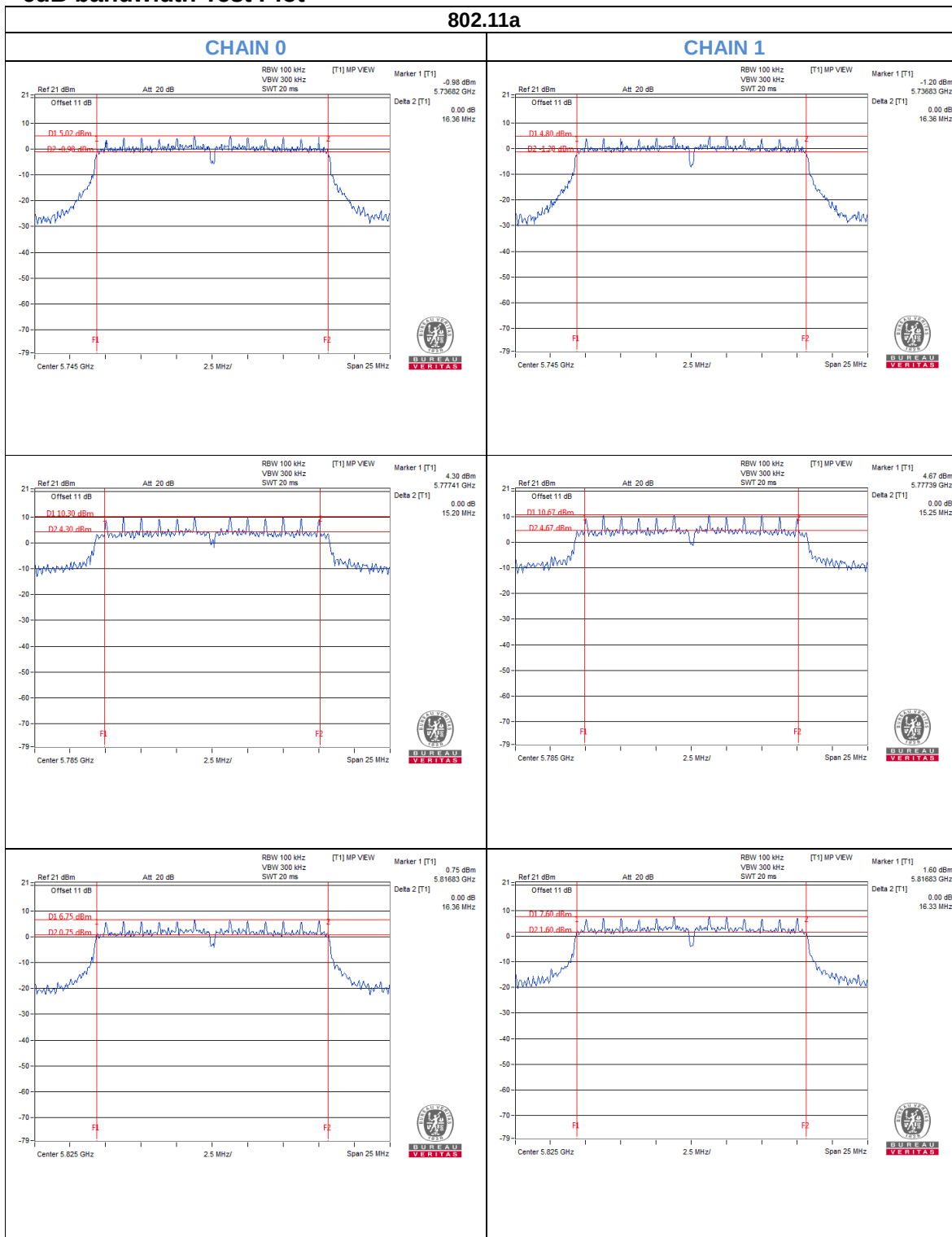


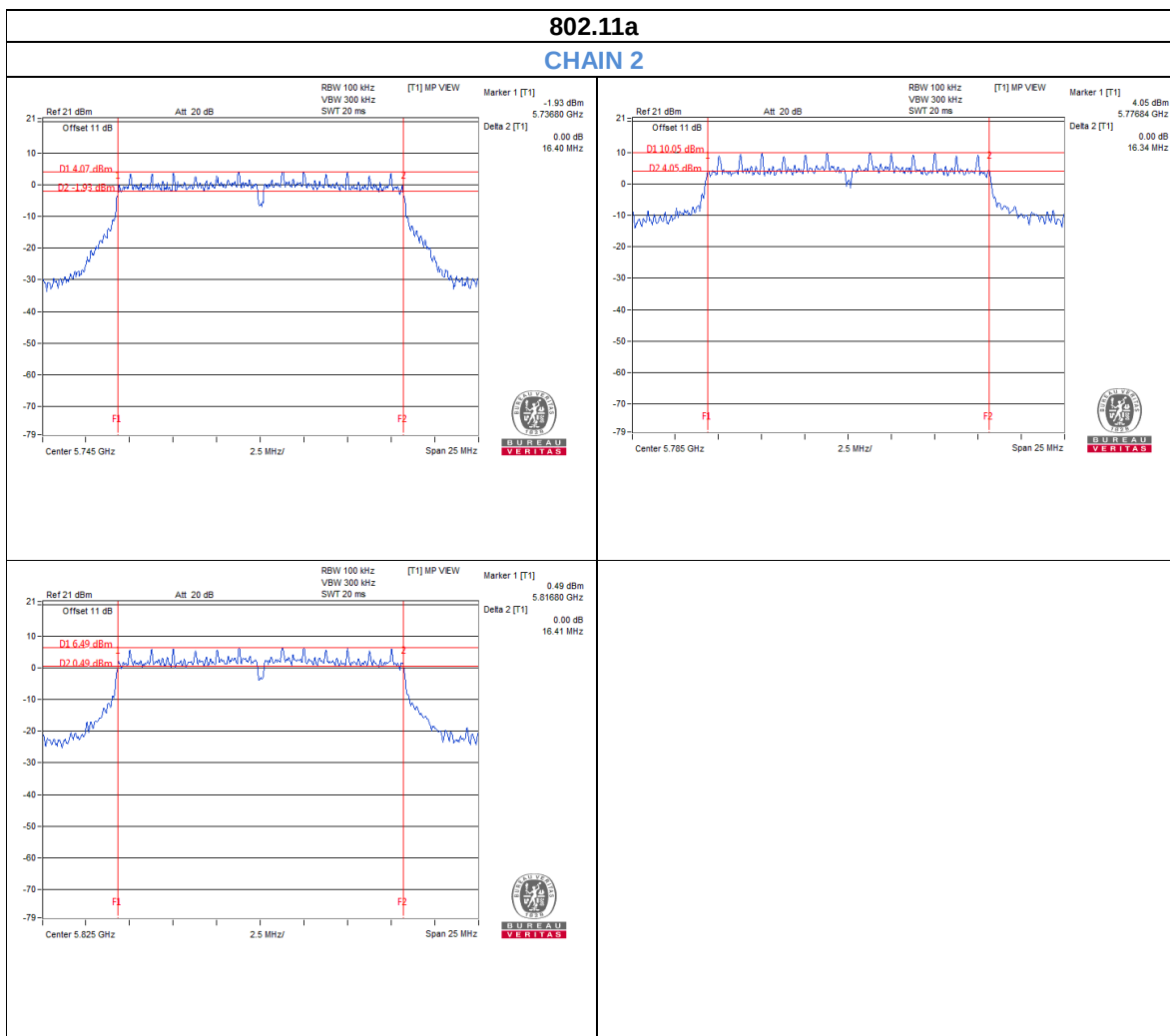






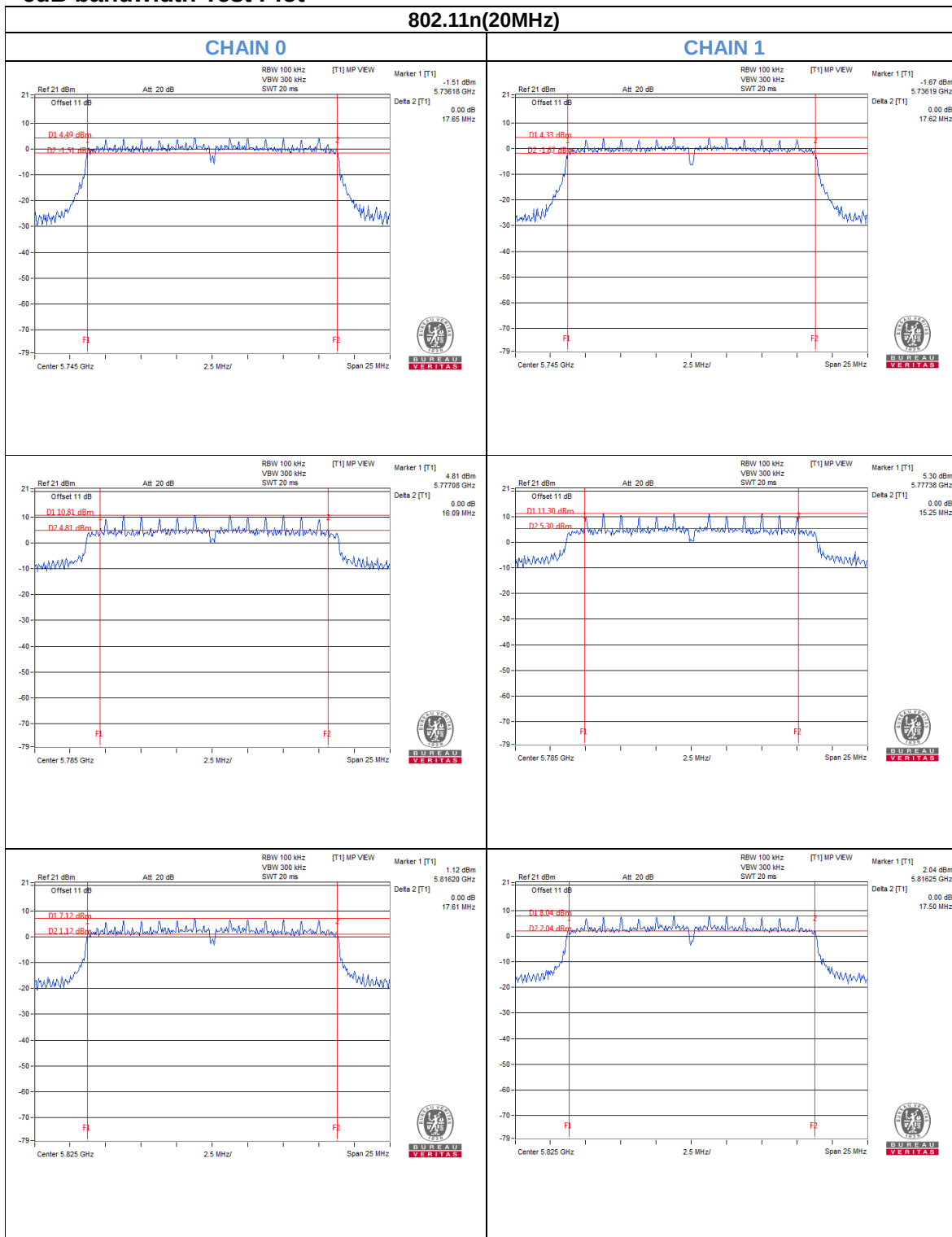
## 6dB bandwidth Test Plot

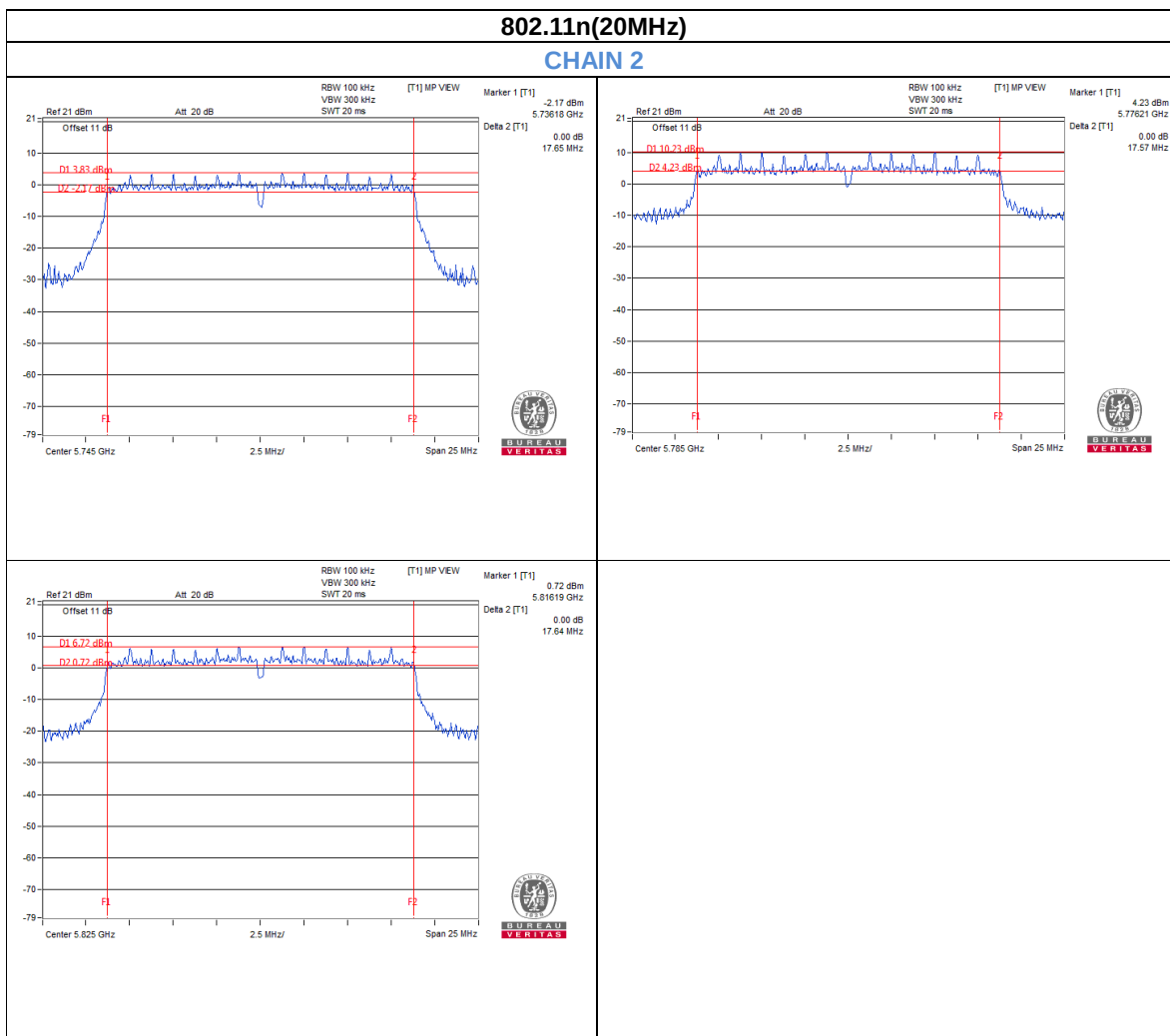






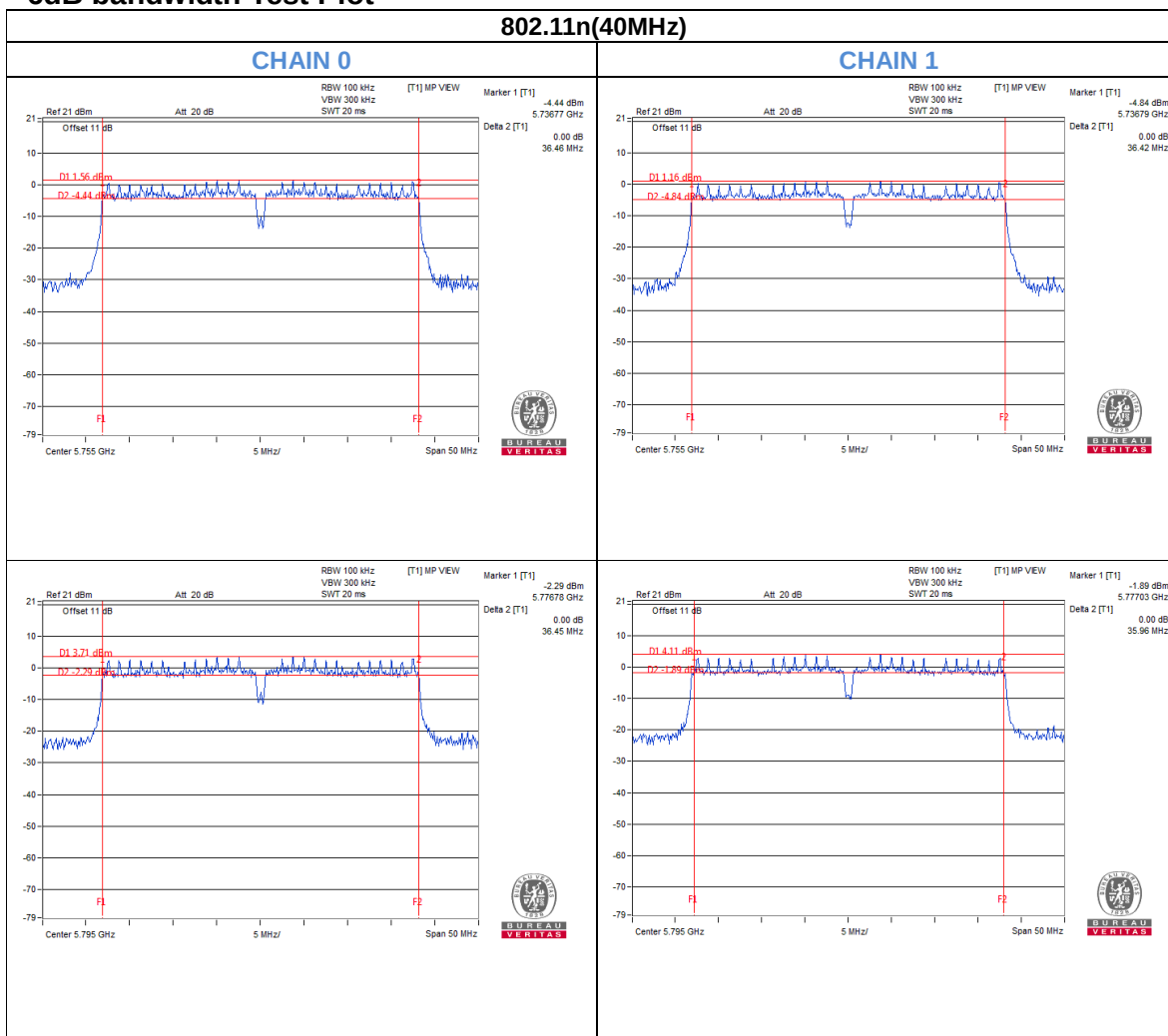
## 6dB bandwidth Test Plot

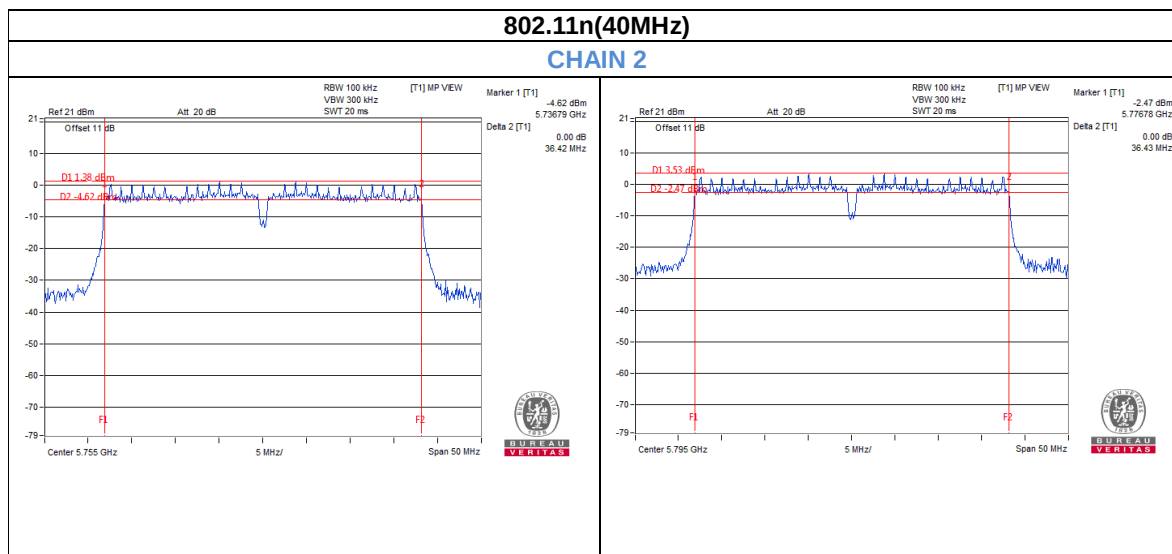






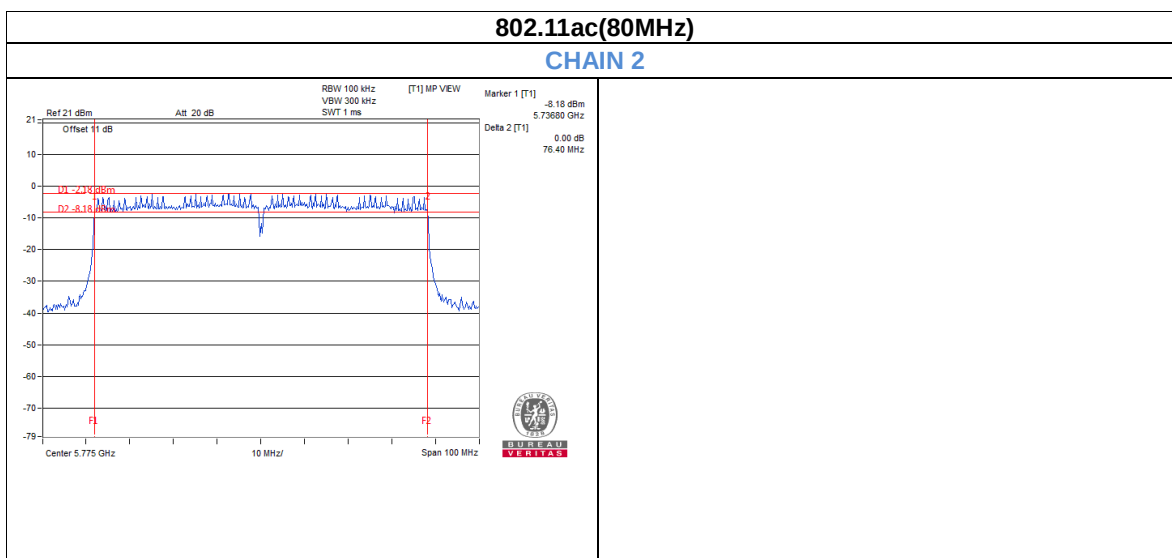
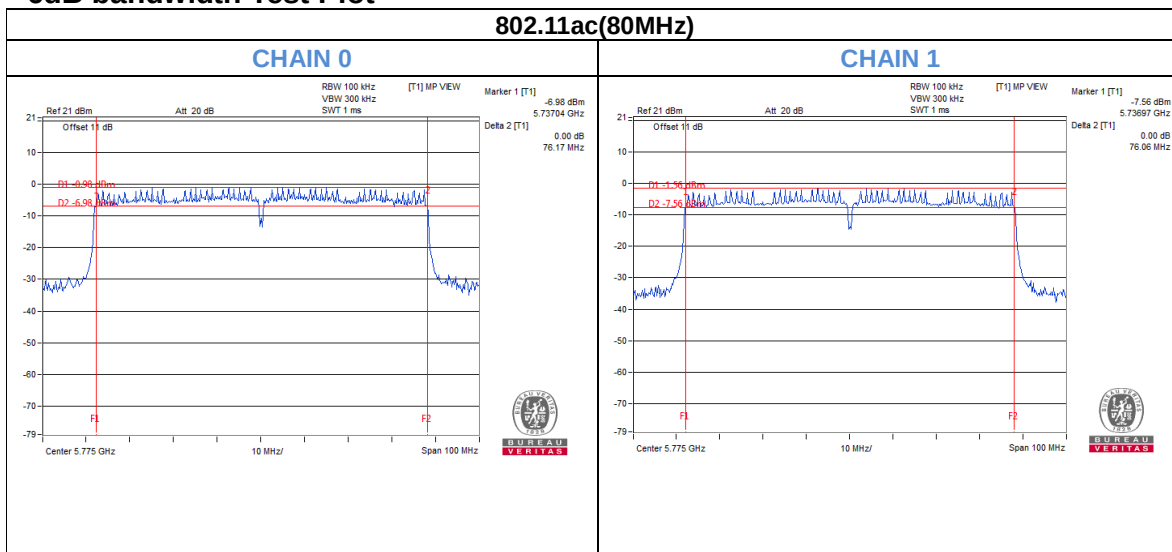
## 6dB bandwidth Test Plot







## 6dB bandwidth Test Plot



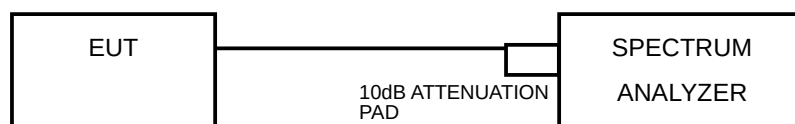


### 3.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

#### 3.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

| Operation Band | EUT Category |                                   | LIMIT        |
|----------------|--------------|-----------------------------------|--------------|
| U-NII-1        |              | Outdoor Access Point              | 17dBm/ MHz   |
|                |              | Fixed point-to-point Access Point |              |
|                | √            | Indoor Access Point               |              |
|                |              | Mobile and Portable client device | 11dBm/ MHz   |
| U-NII-3        | √            | All Category                      | 30dBm/500kHz |

#### 3.4.2 TEST SETUP



#### 3.4.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

#### 3.4.4 TEST PROCEDURES

##### **For U-NII-1, U-NII-2A, U-NII-2C, U-NII-3 band:**

Using method SA-1

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1MHz(Band 1) & 300KHz(Band 4), Set VBW = 3MHz(Band 1) & 1MHz(Band 4),, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = auto, trigger set to “free run”.
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value





Using method SA-2

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1MHz(Band 1) & 300KHz(Band 4), Set VBW = 3MHz(Band 1) & 1MHz(Band 4),, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = auto, trigger set to "free run".
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value and add 10 log (1/duty cycle)

#### 3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 3.4.6 EUT OPERATING CONDITIONS

Same as 3.3.6



### 3.4.7 TEST RESULTS

#### 802.11a

##### U-NII-1 (5180-5240MHz)

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm/MHz) |         |         | TOTAL POWER DENSITY (dBm/MHz) | MAX. LIMIT (dBm/MHz) | PASS / FAIL |
|-------|-------------------|---------------|---------|---------|-------------------------------|----------------------|-------------|
|       |                   | CHAIN 0       | CHAIN 1 | CHAIN 2 |                               |                      |             |
| 36    | 5180              | 5.87          | 5.64    | 5.26    | 10.37                         | 15.43                | PASS        |
| 40    | 5200              | 7.24          | 7.53    | 7.64    | 12.24                         | 15.43                | PASS        |
| 48    | 5240              | 0.13          | 0.07    | -0.75   | 4.61                          | 15.43                | PASS        |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**  
Directional gain =  $2.8\text{dBi} + 10\log(3) = 7.57\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $17 - (7.57 - 6) = 15.43\text{dBm/MHz}$ .

#### 802.11a

##### U-NII-3(5745-5825MHz)

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm/500KHz) |         |         | TOTAL POWER DENSITY (dBm/500KHz) | MAX. LIMIT (dBm/500KHz) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|----------------------------------|-------------------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                                  |                         |             |
| 149   | 5745              | -3.19            | -3.55   | -3.77   | 1.27                             | 28.43                   | PASS        |
| 157   | 5785              | -2.68            | -2.37   | -1.82   | 2.50                             | 28.43                   | PASS        |
| 165   | 5825              | -3.80            | -2.38   | -1.91   | 2.15                             | 28.43                   | PASS        |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**  
Directional gain =  $2.8\text{dBi} + 10\log(3) = 7.57\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $30 - (7.57 - 6) = 28.43\text{dBm/MHz}$ .



**802.11n(20M)**

**U-NII-1 (5180-5240MHz)**

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm/MHz) |         |         | TOTAL POWER DENSITY (dBm/MHz) | MAX. LIMIT (dBm/MHz) | PASS / FAIL |
|-------|-------------------|---------------|---------|---------|-------------------------------|----------------------|-------------|
|       |                   | CHAIN 0       | CHAIN 1 | CHAIN 2 |                               |                      |             |
| 36    | 5180              | 5.76          | 5.95    | 5.78    | 10.60                         | 15.43                | PASS        |
| 40    | 5200              | 6.72          | 7.23    | 7.01    | 11.76                         | 15.43                | PASS        |
| 48    | 5240              | 6.83          | 7.02    | 7.10    | 11.76                         | 15.43                | PASS        |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**  
Directional gain =  $5\text{dBi} + 10\log(3) = 7.57\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $17-(7.57-6) = 15.43\text{dBm/MHz}$ .

**802.11n(20M)**

**U-NII-3(5745-5825MHz)**

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm/500KHz) |         |         | TOTAL POWER DENSITY (dBm/500KHz) | MAX. LIMIT (dBm/500KHz) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|----------------------------------|-------------------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                                  |                         |             |
| 149   | 5745              | -4.04            | -3.95   | -4.51   | 0.61                             | 28.43                   | PASS        |
| 157   | 5785              | -2.91            | -2.32   | -2.13   | 2.33                             | 28.43                   | PASS        |
| 165   | 5825              | -3.17            | -3.31   | -3.85   | 1.34                             | 28.43                   | PASS        |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**  
Directional gain =  $2.8\text{dBi} + 10\log(3) = 7.57\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $30-(7.57-6) = 28.43\text{dBm/MHz}$ .



**802.11n (40MHz)**  
**U-NII-3 (5180-5240MHz)**

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm/MHz) |         |         | TOTAL POWER DENSITY (dBm/MHz) | MAX. LIMIT (dBm/MHz) | PASS / FAIL |
|-------|-------------------|---------------|---------|---------|-------------------------------|----------------------|-------------|
|       |                   | CHAIN 0       | CHAIN 1 | CHAIN 2 |                               |                      |             |
| 38    | 5190              | 0.32          | 0.19    | -0.40   | 4.82                          | 15.43                | PASS        |
| 46    | 5230              | 2.50          | 2.38    | 2.04    | 7.08                          | 15.43                | PASS        |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**  
Directional gain = 5dBi + 10log(3) = 7.57dBi > 6dBi , so the power density limit shall be reduced to 17-(7.57-6) = 15.43dBm/MHz.

**U-NII-3 (5745-5825MHz)**

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm/500KHz) |         |         | TOTAL POWER DENSITY (dBm/500KHz) | MAX. LIMIT (dBm/500KHz) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|----------------------------------|-------------------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                                  |                         |             |
| 151   | 5755              | -8.67            | -8.12   | -8.45   | -3.64                            | 28.43                   | PASS        |
| 159   | 5795              | -8.34            | -7.75   | -8.22   | -3.32                            | 28.43                   | PASS        |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**  
Directional gain = 2.8dBi + 10log(3) = 7.57dBi > 6dBi , so the power density limit shall be reduced to 30-(7.57-6) =28.43dBm/MHz.



**802.11ac (80MHz)**  
**U-NII-3 (5180-5240MHz)**

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm/MHz) |         |         | TOTAL POWER DENSITY (dBm/MHz) | MAX. LIMIT (dBm/MHz) | PASS / FAIL |
|-------|-------------------|---------------|---------|---------|-------------------------------|----------------------|-------------|
|       |                   | CHAIN 0       | CHAIN 1 | CHAIN 2 |                               |                      |             |
| 42    | 5210              | -2.03         | -2.24   | -2.97   | 2.38                          | 15.43                | PASS        |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**  
Directional gain = 5dBi + 10log(3) = 7.57dBi > 6dBi , so the power density limit shall be reduced to 17-(7.57-6) = 15.43dBm/MHz.

**U-NII-3 (5745-5825MHz)**

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm/500KHz) |         |         | TOTAL POWER DENSITY (dBm/500KHz) | MAX. LIMIT (dBm/500KHz) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|----------------------------------|-------------------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                                  |                         |             |
| 155   | 5775              | -12.60           | -13.25  | -13.72  | -8.39                            | 28.43                   | PASS        |

**NOTE:**

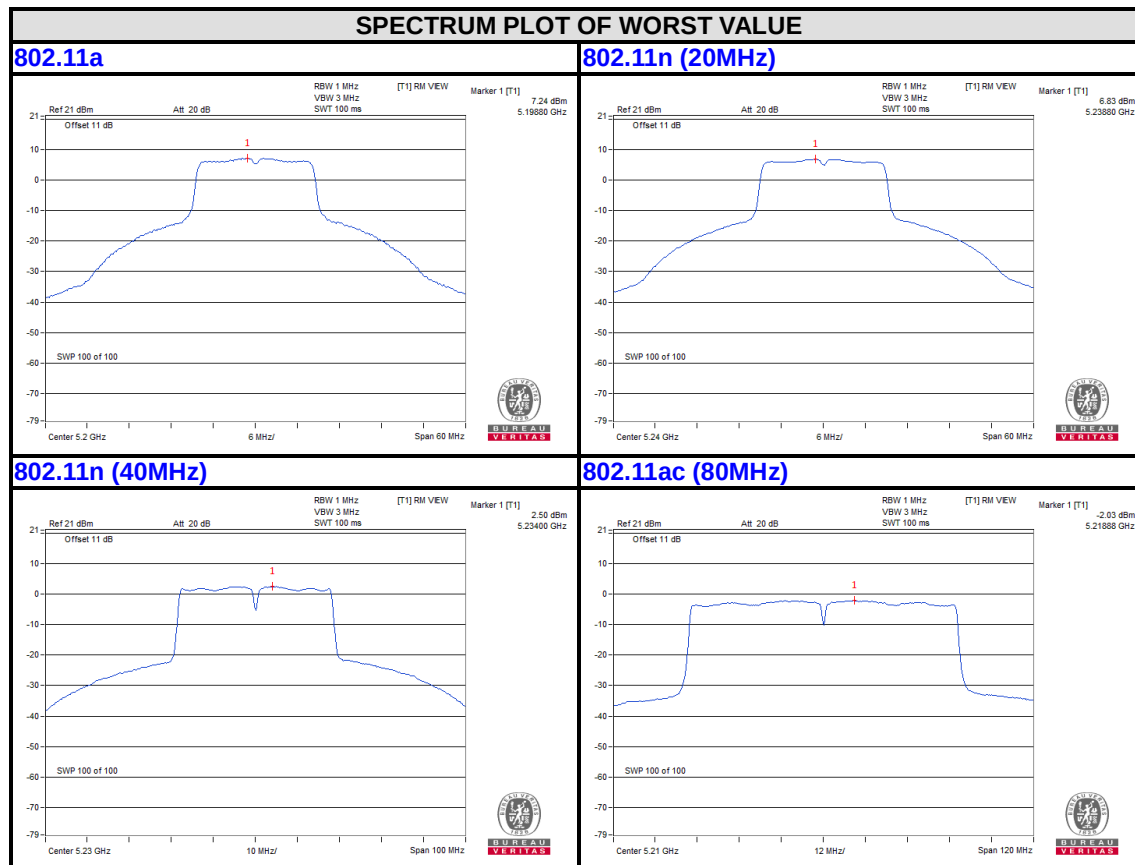
- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**  
Directional gain = 2.8dBi + 10log(3) = 7.57dBi > 6dBi , so the power density limit shall be reduced to 30-(7.57-6) =28.43dBm/MHz.



**BAND 1**

**U-NII-1 5180-5240MHz**

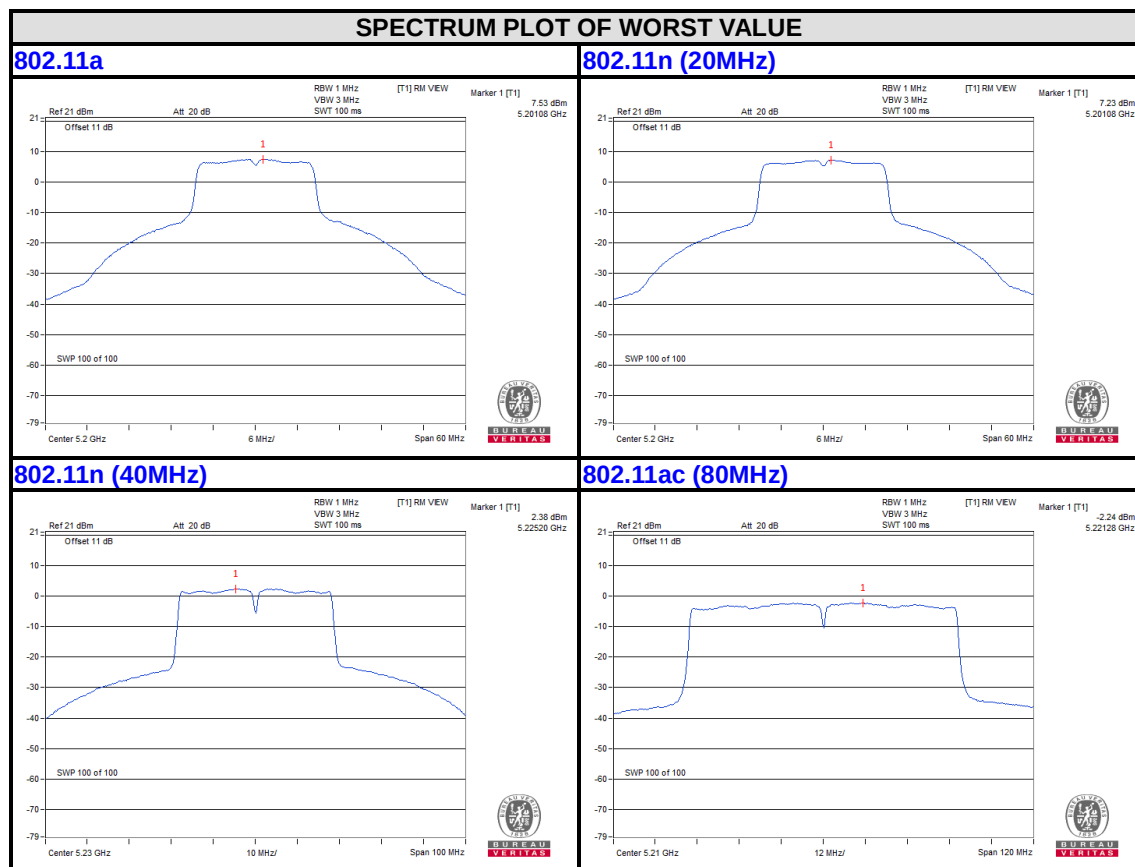
**CHAIN 0**





**BUREAU** Test Report No.: RF160223N031-1  
**VERITAS**

## CHAIN 1



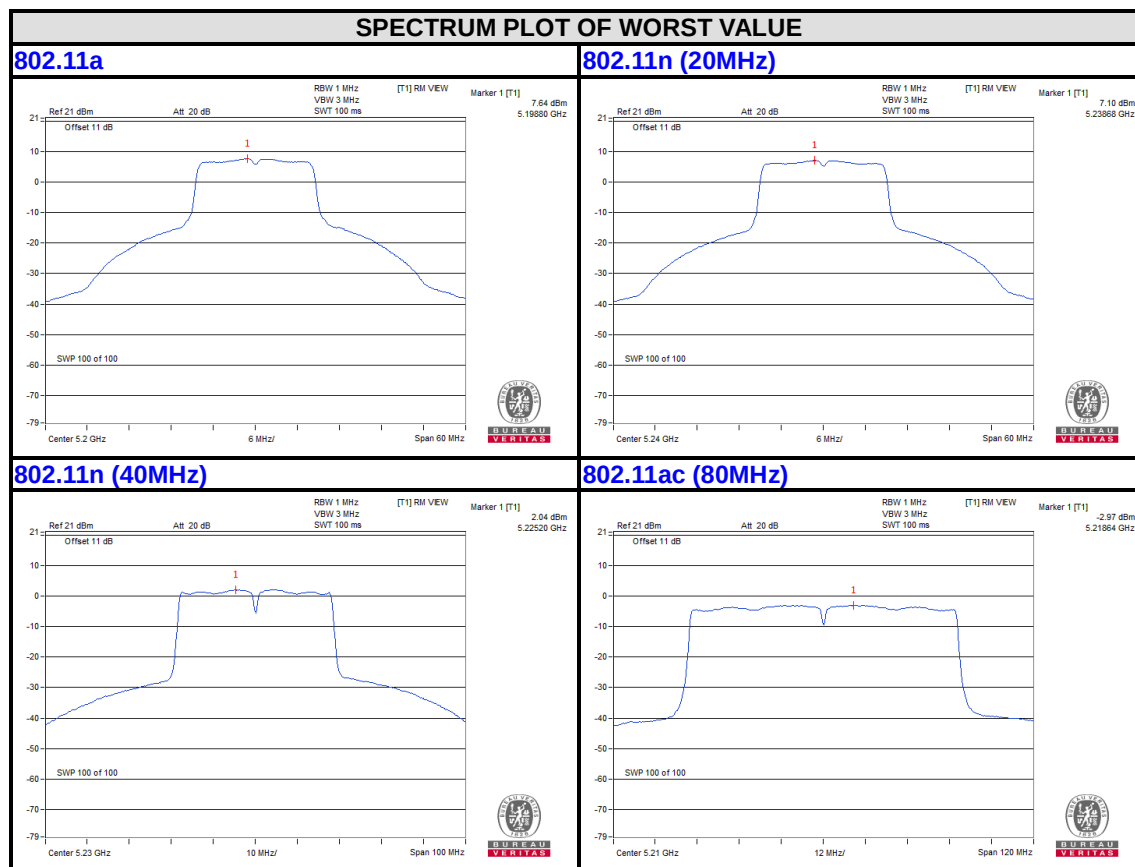
Bureau Veritas Shenzhen Co., Ltd.  
Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd., Houjie  
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Guangdong 523942, China

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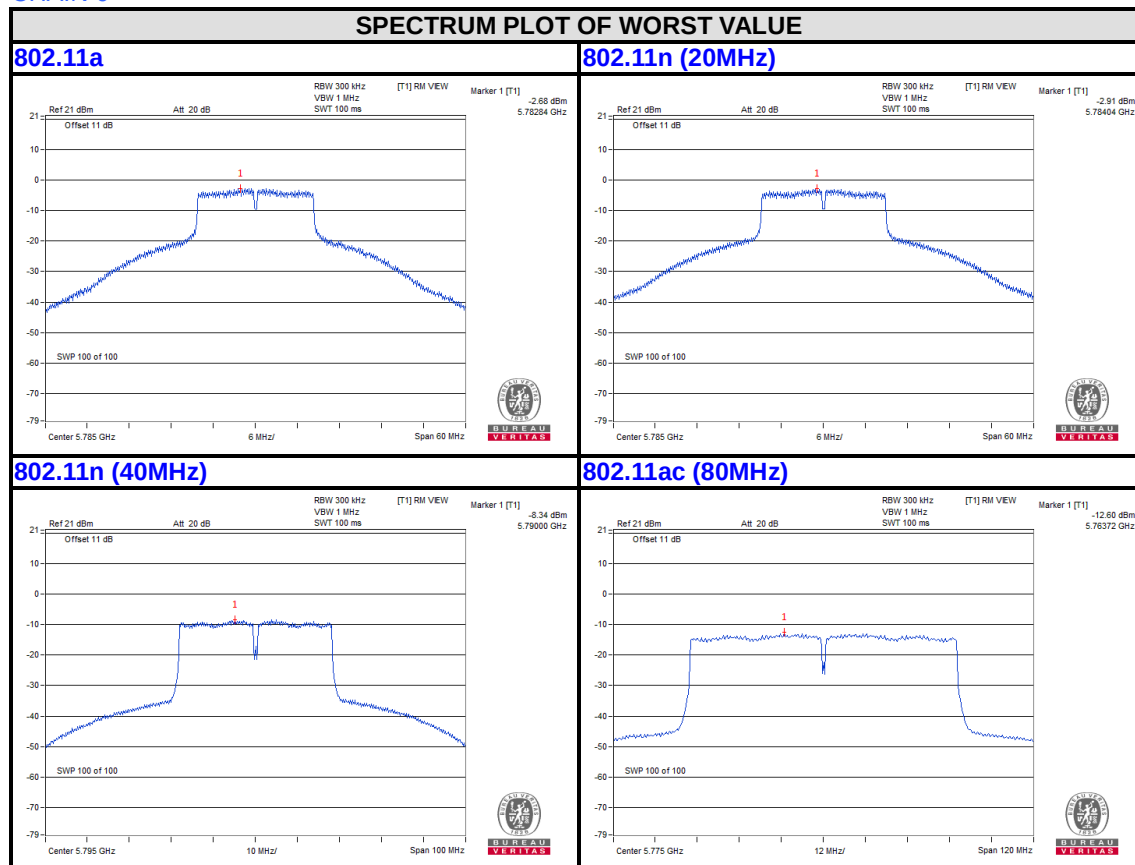
CHAIN 2





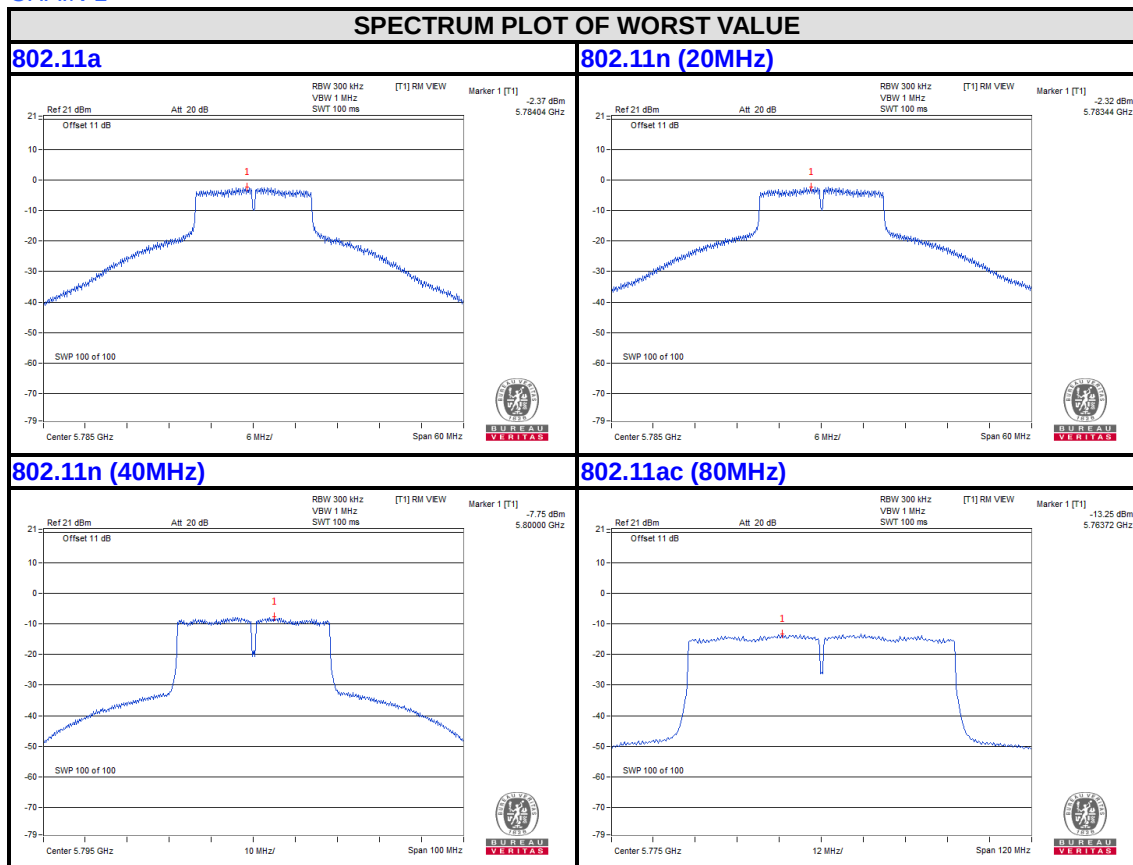


BAND4  
U-NII-3 5745-5825MHz  
CHAIN 0





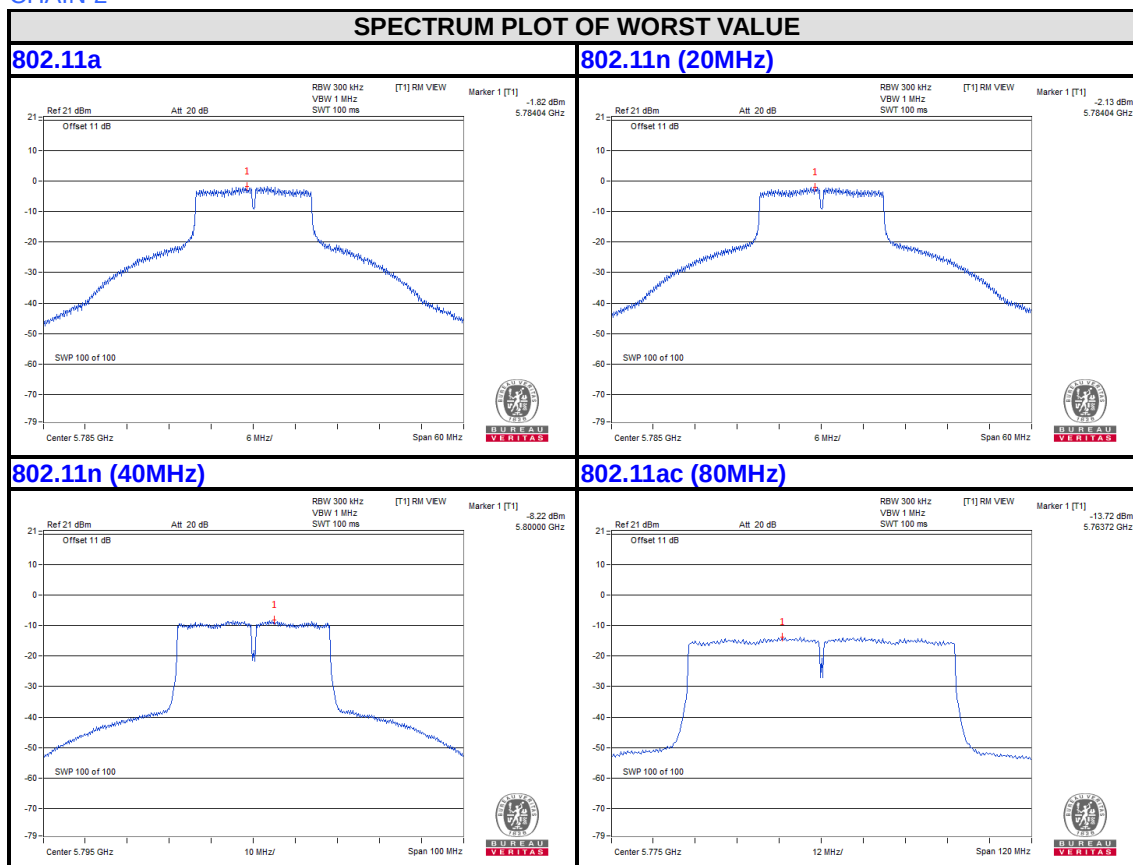
CHAIN 1





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CHAIN 2



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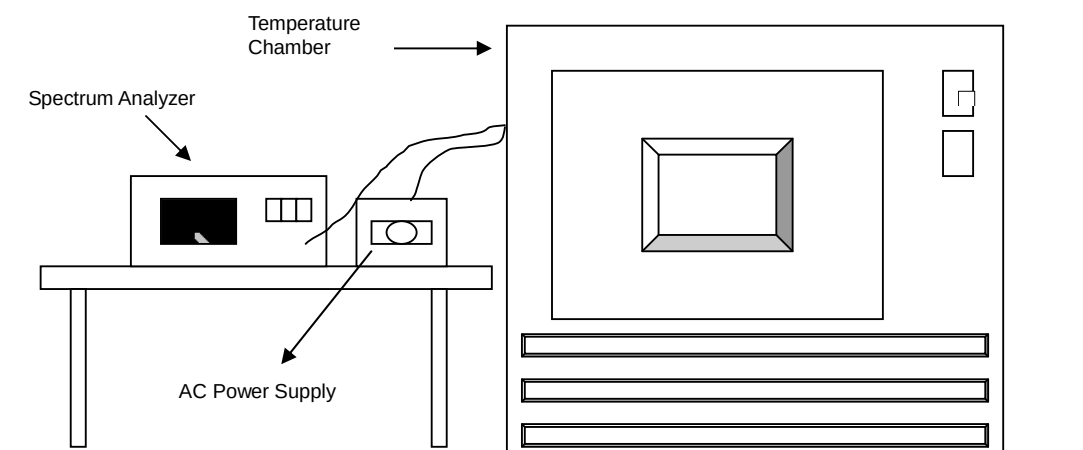


### 3.5 FREQUENCY STABILITY

#### 3.5.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency of the carrier signal shall be maintained within band of operation.

#### 3.5.2 TEST SETUP



#### 3.5.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.



#### 3.5.4 TEST PROCEDURE

- a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

#### 3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 3.5.6 EUT OPERATING CONDITION

Set the EUT transmit at un-modulation mode to test frequency stability.



### 3.5.7 TEST RESULTS

| FREQUENCY STABILITY VERSUS TEMP. |                          |                                |                             |                                |                             |                                |                             |                                |                             |
|----------------------------------|--------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|
| OPERATING FREQUENCY: 5180MHz     |                          |                                |                             |                                |                             |                                |                             |                                |                             |
| TEMP.<br>(°C)                    | POWER<br>SUPPLY<br>(Vac) | 0 MINUTE                       |                             | 2 MINUTE                       |                             | 5 MINUTE                       |                             | 10 MINUTE                      |                             |
|                                  |                          | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(ppm) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(ppm) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(ppm) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(ppm) |
| 50                               | 120                      | 5180.0213                      | 0.00041                     | 5180.0226                      | 0.00044                     | 5180.0211                      | 0.00041                     | 5180.0219                      | 0.00042                     |
| 40                               | 120                      | 5179.9981                      | -0.00004                    | 5179.9978                      | -0.00004                    | 5180.0009                      | 0.00002                     | 5180.0003                      | 0.00001                     |
| 30                               | 120                      | 5179.9811                      | -0.00036                    | 5179.9814                      | -0.00036                    | 5179.98                        | -0.00039                    | 5179.9816                      | -0.00036                    |
| 20                               | 120                      | 5180.0145                      | 0.00028                     | 5180.0161                      | 0.00031                     | 5180.0141                      | 0.00027                     | 5180.0135                      | 0.00026                     |
| 10                               | 120                      | 5179.9869                      | -0.00025                    | 5179.9864                      | -0.00026                    | 5179.9829                      | -0.00033                    | 5179.9861                      | -0.00027                    |
| 0                                | 120                      | 5179.9746                      | -0.00049                    | 5179.9742                      | -0.00050                    | 5179.9744                      | -0.00049                    | 5179.9762                      | -0.00046                    |
| -10                              | 120                      | 5179.9873                      | -0.00025                    | 5179.9875                      | -0.00024                    | 5179.9885                      | -0.00022                    | 5179.9867                      | -0.00026                    |
| -20                              | 120                      | 5179.9831                      | -0.00033                    | 5179.9809                      | -0.00037                    | 5179.9836                      | -0.00032                    | 5179.9845                      | -0.00030                    |
| -30                              | 120                      | 5180.0129                      | 0.00025                     | 5180.0121                      | 0.00023                     | 5180.0093                      | 0.00018                     | 5180.0109                      | 0.00021                     |

| FREQUENCY STABILITY VERSUS TEMP. |                          |                                |                             |                                |                             |                                |                             |                                |                             |
|----------------------------------|--------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|
| OPERATING FREQUENCY: 5180MHz     |                          |                                |                             |                                |                             |                                |                             |                                |                             |
| TEMP.<br>(°C)                    | POWER<br>SUPPLY<br>(Vac) | 0 MINUTE                       |                             | 2 MINUTE                       |                             | 5 MINUTE                       |                             | 10 MINUTE                      |                             |
|                                  |                          | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(ppm) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(ppm) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(ppm) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(ppm) |
| 20                               | 5180.014                 | 0.00028                        | 5180.0167                   | 0.00032                        | 5180.0135                   | 0.00026                        | 5180.0139                   | 0.00027                        | 5180.0144                   |
|                                  | 5180.015                 | 0.00028                        | 5180.0161                   | 0.00031                        | 5180.0141                   | 0.00027                        | 5180.0135                   | 0.00026                        | 5180.0145                   |
|                                  | 5180.014                 | 0.00028                        | 5180.016                    | 0.00031                        | 5180.0145                   | 0.00028                        | 5180.0145                   | 0.00028                        | 5180.0144                   |



#### **4. PHOTOGRAPHS OF THE TEST CONFIGURATION**

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



## **5. APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No modifications were made to the EUT by the lab during the test.

**---END---**