


# FCC Radio Test Report

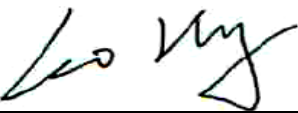
## FCC ID: T58WF2780R


This report concerns (check one):  Original Grant  Class II Change

**Project No.** : 1409C014  
**Equipment** : AC1200 Wireless Dual Band Gigabit Router  
**Model Name** : WF2880  
**Applicant** : NETIS SYSTEMS CO., LTD  
**Address** : 4F&5F R&D Building, Oriental Cyberport, High-Tech Industrial Park, Nanshan, Shenzhen, China.

**Date of Receipt** : Sep. 01, 2014  
**Date of Test** : Sep. 01, 2014 ~ Oct. 08, 2014  
**Issued Date** : Oct. 17, 2014  
**Tested by** : BTL Inc.

**Testing Engineer** :   
(David Mao)

**Technical Manager** :   
(Leo Hung)

**Authorized Signatory** :   
(Steven Lu)

# **B T L I N C .**

No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan,  
Guangdong, China.

TEL: +86-769-8318-3000 FAX: +86-769-8319-6000

### **Declaration**

**BTL** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C.**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

**BTL's** reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

**BTL's** reports must not be used by the client to claim product endorsement by the authorities or any agency of the Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **BTL-self**, extracts from the test report shall not be reproduced except in full with **BTL's** authorized written approval.

**BTL's** laboratory quality assurance procedures are in compliance with the **ISO Guide 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

### **Limitation**

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

| <b>Table of Contents</b>                                     | <b>Page</b> |
|--|-------------|
| <b>1 . CERTIFICATION</b>                                     | <b>5</b>    |
| <b>2 . SUMMARY OF TEST RESULTS</b>                           | <b>6</b>    |
| 2.1 TEST FACILITY  | 7           |
| 2.2 MEASUREMENT UNCERTAINTY                                  | 7           |
| <b>3 . GENERAL INFORMATION</b>                               | <b>8</b>    |
| 3.1 GENERAL DESCRIPTION OF EUT                               | 8           |
| 3.2 DESCRIPTION OF TEST MODES                                | 10          |
| 3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING             | 11          |
| 3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED | 12          |
| 3.5 DESCRIPTION OF SUPPORT UNITS                             | 12          |
| <b>4 . EMC EMISSION TEST</b>                                 | <b>13</b>   |
| 4.1 CONDUCTED EMISSION MEASUREMENT                           | 13          |
| 4.1.1 POWER LINE CONDUCTED EMISSION                          | 13          |
| 4.1.2 MEASUREMENT INSTRUMENTS LIST                           | 13          |
| 4.1.3 TEST PROCEDURE   | 14          |
| 4.1.4 DEVIATION FROM TEST STANDARD                           | 14          |
| 4.1.5 TEST SETUP   | 14          |
| 4.1.6 EUT OPERATING CONDITIONS                               | 14          |
| 4.1.7 TEST RESULTS   | 15          |
| 4.2 RADIATED EMISSION MEASUREMENT                            | 18          |
| 4.2.1 RADIATED EMISSION LIMITS                               | 18          |
| 4.2.2 MEASUREMENT INSTRUMENTS LIST                           | 19          |
| 4.2.3 TEST PROCEDURE   | 19          |
| 4.2.4 DEVIATION FROM TEST STANDARD                           | 20          |
| 4.2.5 TEST SETUP   | 20          |
| 4.2.6 EUT OPERATING CONDITIONS                               | 20          |
| 4.2.7 TEST RESULTS-BETWEEN 30MHZ - 1000MHZ                   | 21          |
| <b>5 . EUT TEST PHOTO</b>                                    | <b>28</b>   |

### REPORT ISSUED HISTORY

| Issued No.          | Description   | Issued Date   |
|---------------------|---|---------------|
| NEI-FCCP-2-1402C047 | Original Report.  | Apr. 10, 2014 |
| BTL-FCCP-2-1409C014 | Compared with previous report (NEI-FCCP-2-1402C047), added a USB port, the adapter and model name are changed, the RF module is the same, Conducted Emission and Radiated Emission (Below 1GHz) have been re-evaluated and recorded in the test report. | Oct. 17, 2014 |

## 1. CERTIFICATION

Equipment : AC1200 Wireless Dual Band Gigabit Router  
Brand Name : netis  
Model Name : WF2880  
Applicant : NETIS SYSTEMS CO., LTD  
Manufacturer : Shenzhen Netcore Industrial Ltd.  
Address : 4F&5F R&D Building, Oriental Cyberport, High-Tech Industrial Park, Nanshan, Shenzhen, China.  
Factory : Dongguan City Netcore Network Technology Co.,Ltd.  
Address : No. 10-1, Sankeng Road, Qinghutou, Tangxia Town, Dongguan City  
Date of Test : Sep. 01, 2014 ~ Oct. 08, 2014  
Test Item : ENGINEERING SAMPLE  
Standard(s) : FCC Part15, Subpart E(15.407) / ANSI C63.4 : 2009;  
FCC KDB 789033 D01 General UNII Test Procedures v01r03 .

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc..

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-2-1409C014) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

**Test result included in this report is only for the 5150MHz~5250MHz Mode part of the product.**

## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

| FCC Part15, Subpart E  |                                   |          |        |
|------------------------|-----------------------------------|----------|--------|
| Standard(s)<br>Section | Test Item                         | Judgment | Remark |
| 15.207                 | AC Power Line Conducted Emissions | PASS     |        |
| 15.407(a)              | 26dB Spectrum Bandwidth           | N/A      |        |
| 15.407(a)              | Maximum Conducted Output Power    | N/A      |        |
| 15.407(a)              | Power Spectral Density            | N/A      |        |
| 15.407(a)              | Peak Excursion                    | N/A      |        |
| 15.407(a)              | Radiated Emissions                | PASS     |        |
| 15.407(b)              | Band Edge Emissions               | N/A      |        |
| 15.407(g)              | Frequency Stability               | N/A      |        |
| 15.203                 | Antenna Requirements              | N/A      |        |

**NOTE:**

(1) "N/A" denotes test is not applicable in this test report.

## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-C02/DG-CB03** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.523792

BTL's test firm number for FCC: 319330

## 2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95%**.

### A. Conducted Measurement :

| Test Site | Method | Measurement Frequency Range | U , (dB) | NOTE |
|-----------|--------|-----------------------------|----------|------|
| DG-C02    | CISPR  | 150 KHz ~ 30MHz             | 1.94     |      |

### B. Radiated Measurement :

| Test Site | Method | Measurement Frequency Range | Ant. H / V | U , (dB) | NOTE |
|-----------|--------|-----------------------------|------------|----------|------|
| DG-CB03   | CISPR  | 9KHz~30MHz                  | V          | 3.79     |      |
|           |        | 9KHz~30MHz                  | H          | 3.57     |      |
|           |        | 30MHz ~ 200MHz              | V          | 3.82     |      |
|           |        | 30MHz ~ 200MHz              | H          | 3.60     |      |
|           |        | 200MHz ~ 1,000MHz           | V          | 3.86     |      |
|           |        | 200MHz ~ 1,000MHz           | H          | 3.94     |      |
|           |        | 1GHz~18GHz                  | V          | 3.12     |      |
|           |        | 1GHz~18GHz                  | H          | 3.68     |      |
|           |        | 18GHz~40GHz                 | V          | 4.15     |      |
|           |        | 18GHz~40GHz                 | H          | 4.14     |      |

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                     |   |   |
|---------------------|---|---|
| Equipment           | AC1200 Wireless Dual Band Gigabit Router  |   |
| Brand Name          | netis   |   |
| Model Name          | WF2880  |   |
| Mode Different      | N/A   |   |
| Product Description | Operation Frequency   | Band 1:5150MHz~5250MHz  |
|                     | Modulation Type   | OFDM  |
|                     | Bit Rate of Transmitter   | 300Mbps   |
|                     | Antenna Designation   | Please see note 3.(Page 10)   |
|                     | Antenna Gain(Peak)  |   |
|                     | Output Power (Max.)   | 802.11a: 13.72 dBm<br>802.11n (20M): 15.78 dBm<br>802.11n (40M): 15.63 dBm<br>802.11ac (20M): 15.84 dBm<br>802.11ac (40M): 15.63 dBm<br>802.11ac (80M): 15.64 dBm |
|                     | More details of EUT technical specification, please refer to the User's Manual. |   |
| Power Source        | DC Voltage Supplied from AC Adapter.<br>Brand/Model: GOSPELL / G0612U-120-150   |   |
| Power Rating        | I/P: AC 100-240V~ 50/60Hz 0.5A MAX O/P: DC 12V 1.5A                             |   |

**Note:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



2. Channel List:

| 802.11a / 802.11n<br>20MHz/802.11ac 20MHz |                    | 802.11n 40M/802.11ac<br>40MHz |                    | 802.11ac 80MHz |                    |
|---|--------------------|-------------------------------|--------------------|----------------|--------------------|
| Band 1                                    |                    | Band 1                        |                    | Band 1         |                    |
| Channel                                   | Frequency<br>(MHz) | Channel                       | Frequency<br>(MHz) | Channel        | Frequency<br>(MHz) |
| 36  | 5180               | 38                            | 5190               | 42             | 5210               |
| 40  | 5200               | 46                            | 5230               |                |                    |
| 44  | 5220               |                               |                    |                |                    |
| 48  | 5240               |                               |                    |                |                    |

3. Antenna Specification:

| Ant. | Manufacturer   | Model Name  | Antenna Type   | Connector | Gain<br>(dBi) |
|------|----------------|-------------|----------------|-----------|---------------|
| 6    | <i>RF link</i> | RF21C00077A | Dipole Antenna | N/A       | 5.88          |
| 7    | <i>RF link</i> | RF21C00073A | Dipole Antenna | N/A       | 5.88          |

Note:

The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R). all transmit signals are completely uncorrelated, then, **Direction gain = G<sub>ANT</sub>**, that is Directional gain=5.88dBi

4.

| Operating Mode  | 1TX       | 3TX               |
|-----------------|-----------|-------------------|
| 802.11a         | V (ANT 6) | -                 |
| 802.11n(20MHz)  | -         | V (ANT 6 + ANT 7) |
| 802.11n(40MHz)  | -         | V (ANT 6 + ANT 7) |
| 802.11ac(20MHz) | -         | V (ANT 6 + ANT 7) |
| 802.11ac(40MHz) | -         | V (ANT 6 + ANT 7) |
| 802.11ac(80MHz) | -         | V (ANT 6 + ANT 7) |

### 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

| Pretest Test Mode | Description                               |
|-------------------|---|
| Mode 1            | TX A Mode / CH36, CH40, CH48(Band 1)      |
| Mode 2            | TX N20 Mode / CH36, CH40, CH48(Band 1)    |
| Mode 3            | TX N40 Mode / CH38, CH46 (Band 1)         |
| Mode 4            | TX AC N20 Mode / CH36, CH40, CH48(Band 1) |
| Mode 5            | TX AC N40 Mode / CH38, CH46 (Band 1)      |
| Mode 6            | TX AC N80 Mode / CH42 (Band 1)            |
| Mode 7            | TX Mode                                   |

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

| For Conducted Test |             |
|--------------------|-------------|
| Final Test Mode    | Description |
| Mode 7             | TX Mode     |

| For Radiated Test |   |
|-------------------|---|
| Final Test Mode   | Description                               |
| Mode 1            | TX A Mode / CH36, CH40, CH48(Band 1)      |
| Mode 2            | TX N20 Mode / CH36, CH40, CH48(Band 1)    |
| Mode 3            | TX N40 Mode / CH38, CH46 (Band 1)         |
| Mode 4            | TX AC N20 Mode / CH36, CH40, CH48(Band 1) |
| Mode 5            | TX AC N40 Mode / CH38, CH46 (Band 1)      |
| Mode 6            | TX AC N80 Mode / CH42 (Band 1)            |

Note: For Radiated Below 1G test, the 802.11a mode is found to be the worst case and recorded.

### 3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

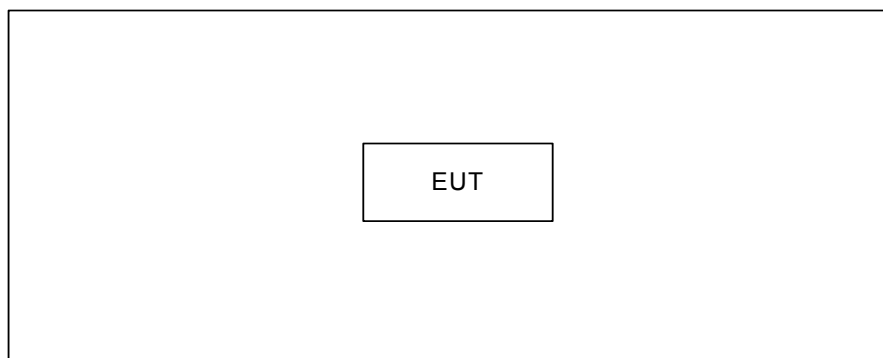
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product

| Test software version | Cart     |         |          |
|-----------------------|----------|---------|----------|
| Frequency             | 5180 MHz | 5200MHz | 5240 MHz |
| A Mode                | 23       | 22      | 21       |
| N20 Mode              | 30       | 29      | 28       |
| AC 20 Mode            | 20       | 19      | 17       |

| Test software version | Cart     |         |  |
|-----------------------|----------|---------|--|
| Frequency             | 5190 MHz | 5230MHz |  |
| N40 Mode              | 30       | 29      |  |
| AC 40 Mode            | 27       | 27      |  |

| Test software version | Cart     |  |  |
|-----------------------|----------|--|--|
| Frequency             | 5210 MHz |  |  |
| AC 80 Mode            | 23       |  |  |

### 3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



### 3.5 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.

| Item | Equipment | Mfr/Brand | Model/Type No. | FCC ID/IC | Series No. | Note |
|------|-----------|-----------|----------------|-----------|------------|------|
| -    | -         | -         | -              | -         | -          |      |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
| -    | -             | -            | -      | -    |

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.

## 4. EMC EMISSION TEST

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

| FREQUENCY (MHz) | Class A (dBuV) |         | Class B (dBuV) |           |
|-----------------|----------------|---------|----------------|-----------|
|                 | Quasi-peak     | Average | Quasi-peak     | Average   |
| 0.15 -0.5       | 79.00          | 66.00   | 66 - 56 *      | 56 - 46 * |
| 0.50 -5.0       | 73.00          | 60.00   | 56.00          | 46.00     |
| 5.0 -30.0       | 73.00          | 60.00   | 60.00          | 50.00     |

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

#### 4.1.2 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment    | Manufacturer | Type No.                 | Serial No. | Calibrated until |
|------|----------------------|--------------|--------------------------|------------|------------------|
| 1    | LISN                 | EMCO         | 3816/2                   | 00052765   | Mar. 29, 2015    |
| 2    | LISN                 | R&S          | ENV216                   | 101447     | Mar. 29, 2015    |
| 3    | Test Cable           | N/A          | C_17                     | N/A        | Mar. 14, 2015    |
| 4    | EMI TEST RECEIVER    | R&S          | ESCS30                   | 833364/017 | Mar. 29, 2015    |
| 5    | 50Ω Terminator       | SHX          | TF2-3G-A                 | 08122902   | Mar. 29, 2015    |
| 6    | Measurement Software | Fara         | EZ-EMC<br>Ver.NB-03A1-01 | N/A        | N/A              |

Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

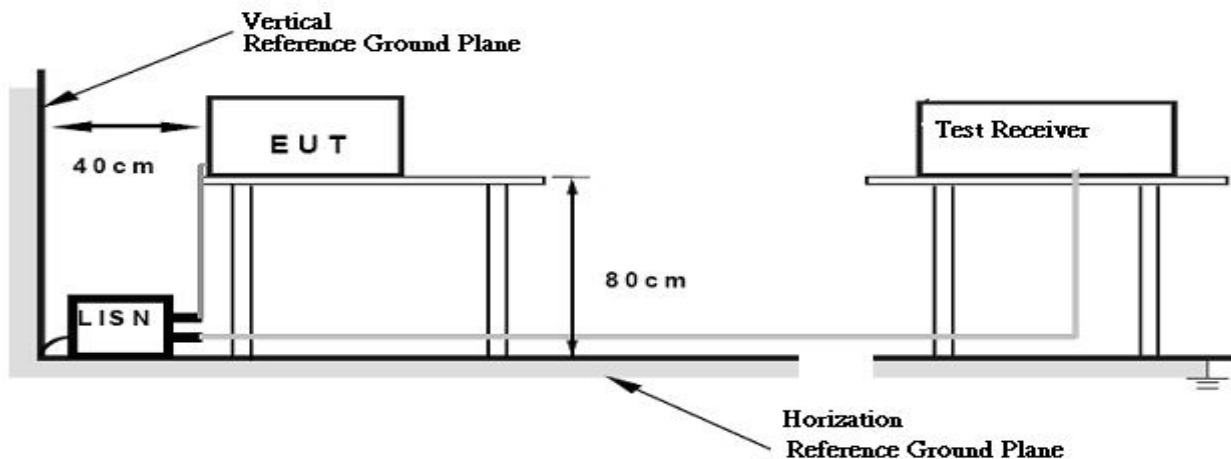
### 4.1.3 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.1.5 TEST SETUP



### 4.1.6 EUT OPERATING CONDITIONS

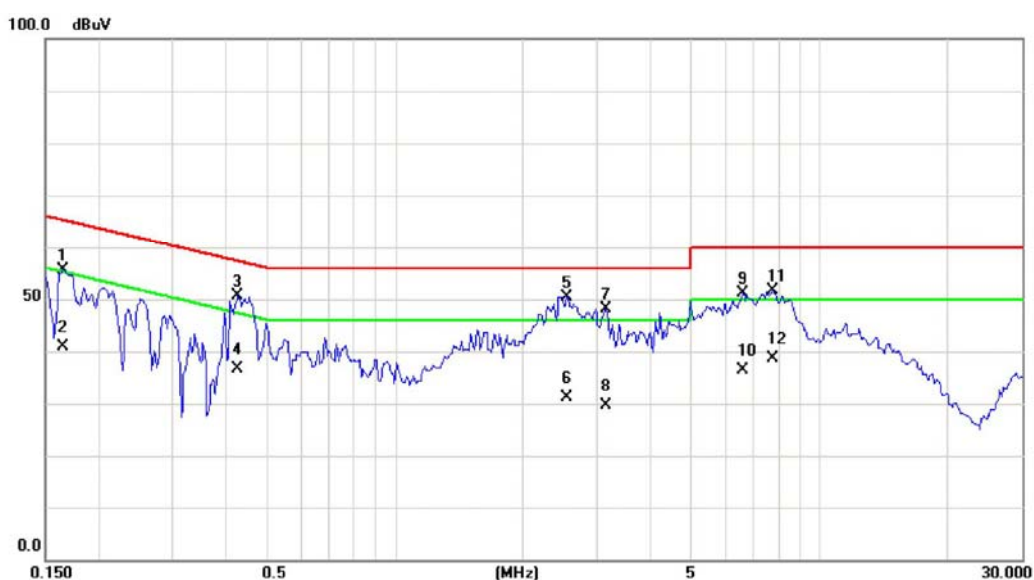
The EUT was configured for testing in a typical function (as a customer would normally use it). The EUT was programmed to be in continuously transmitting/TX Mode mode.

#### 4.1.7 TEST RESULTS

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of "Note". If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " \* " marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150KHz to 30MHz.

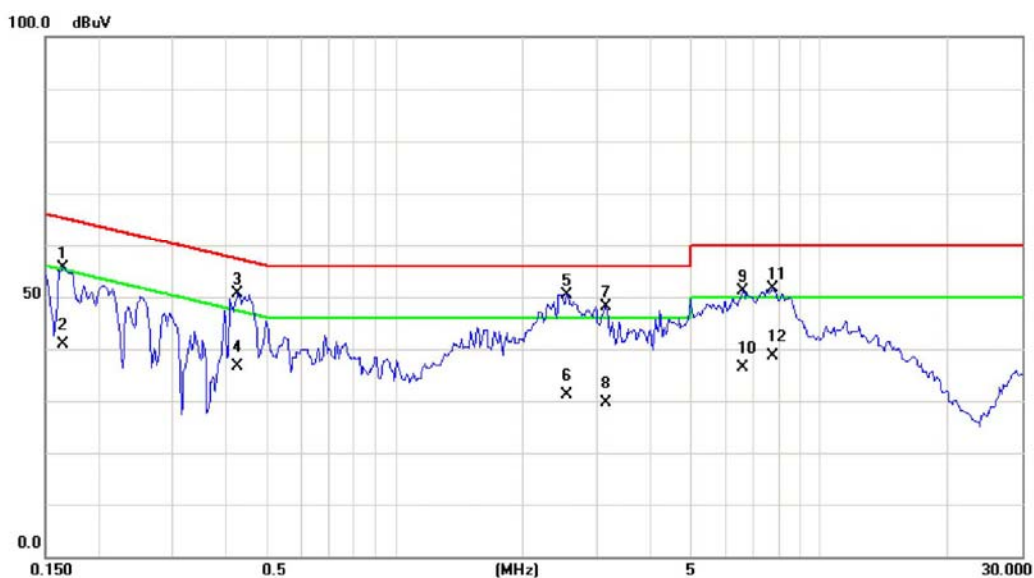
|              |  |                    |        |
|--------------|--|--------------------|--------|
| EUT:         | AC1200 Wireless Dual Band Gigabit Router | Model Name:        | WF2880 |
| Temperature: | 24 °C                                    | Relative Humidity: | 55 %   |
| Test Power:  | AC 120V/60Hz                             | Phase:             | Line   |
| Test Mode :  | TX Mode                                  |                    |        |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1   |     | 0.1655       | 46.08                    | 9.52                    | 55.60                    | 65.18         | -9.58      | peak     |         |
| 2   |     | 0.1655       | 31.30                    | 9.52                    | 40.82                    | 55.18         | -14.36     | AVG      |         |
| 3   |     | 0.4273       | 41.15                    | 9.57                    | 50.72                    | 57.31         | -6.59      | peak     |         |
| 4   |     | 0.4273       | 27.10                    | 9.57                    | 36.67                    | 47.31         | -10.64     | AVG      |         |
| 5   | *   | 2.5522       | 40.62                    | 9.74                    | 50.36                    | 56.00         | -5.64      | peak     |         |
| 6   |     | 2.5522       | 21.40                    | 9.74                    | 31.14                    | 46.00         | -14.86     | AVG      |         |
| 7   |     | 3.1396       | 38.48                    | 9.76                    | 48.24                    | 56.00         | -7.76      | peak     |         |
| 8   |     | 3.1396       | 19.80                    | 9.76                    | 29.56                    | 46.00         | -16.44     | AVG      |         |
| 9   |     | 6.6250       | 41.07                    | 9.97                    | 51.04                    | 60.00         | -8.96      | peak     |         |
| 10  |     | 6.6250       | 26.50                    | 9.97                    | 36.47                    | 50.00         | -13.53     | AVG      |         |
| 11  |     | 7.7576       | 41.65                    | 10.04                   | 51.69                    | 60.00         | -8.31      | peak     |         |
| 12  |     | 7.7576       | 28.70                    | 10.04                   | 38.74                    | 50.00         | -11.26     | AVG      |         |



|              |  |                    |         |
|--------------|--|--------------------|---------|
| EUT:         | AC1200 Wireless Dual Band Gigabit Router | Model Name:        | WF2880  |
| Temperature: | 24 °C                                    | Relative Humidity: | 55 %    |
| Test Power:  | AC 120V/60Hz                             | Phase:             | Neutral |
| Test Mode :  | TX Mode                                  |                    |         |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1   |     | 0.1655       | 46.08                    | 9.52                    | 55.60                    | 65.18         | -9.58      | peak     |         |
| 2   |     | 0.1655       | 31.30                    | 9.52                    | 40.82                    | 55.18         | -14.36     | AVG      |         |
| 3   |     | 0.4273       | 41.15                    | 9.57                    | 50.72                    | 57.31         | -6.59      | peak     |         |
| 4   |     | 0.4273       | 27.10                    | 9.57                    | 36.67                    | 47.31         | -10.64     | AVG      |         |
| 5   | *   | 2.5522       | 40.62                    | 9.74                    | 50.36                    | 56.00         | -5.64      | peak     |         |
| 6   |     | 2.5522       | 21.40                    | 9.74                    | 31.14                    | 46.00         | -14.86     | AVG      |         |
| 7   |     | 3.1396       | 38.48                    | 9.76                    | 48.24                    | 56.00         | -7.76      | peak     |         |
| 8   |     | 3.1396       | 19.80                    | 9.76                    | 29.56                    | 46.00         | -16.44     | AVG      |         |
| 9   |     | 6.6250       | 41.07                    | 9.97                    | 51.04                    | 60.00         | -8.96      | peak     |         |
| 10  |     | 6.6250       | 26.50                    | 9.97                    | 36.47                    | 50.00         | -13.53     | AVG      |         |
| 11  |     | 7.7576       | 41.65                    | 10.04                   | 51.69                    | 60.00         | -8.31      | peak     |         |
| 12  |     | 7.7576       | 28.70                    | 10.04                   | 38.74                    | 50.00         | -11.26     | AVG      |         |

## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 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                             |

#### Notes

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.

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

| Frequencies (MHz) | EIRP Limit (dBm) | Equivalent Field Strength at 3m (dBμV/m) |
|-------------------|------------------|--|
| 5150~5250         | -27              | 68.3                                     |
| 5250~5350         | -27              | 68.3                                     |
| 5470~5725         | -27              | 68.3                                     |
| 5725~5825         | -27              | 68.3                                     |
|                   | -17              | 78.3                                     |

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

$$E = \frac{100000 \sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$

#### 4.2.2 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment    | Manufacturer | Type No.                 | Serial No. | Calibrated until |
|------|----------------------|--------------|--------------------------|------------|------------------|
| 1    | Antenna              | Schwarbeck   | VULB9160                 | 9160-3232  | Mar. 29, 2015    |
| 2    | Amplifier            | HP           | 8447D                    | 2944A09673 | Mar. 29, 2015    |
| 3    | Receiver             | AGILENT      | N9038A                   | MY52130039 | Sep. 30, 2015    |
| 4    | Test Cable           | N/A          | C-01_CB03                | N/A        | Jul. 01, 2015    |
| 5    | Controller           | CT           | SC100                    | N/A        | N/A              |
| 6    | Measurement Software | Fara         | EZ-EMC<br>Ver.NB-03A1-01 | N/A        | N/A              |

Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

#### 4.2.3 TEST PROCEDURE

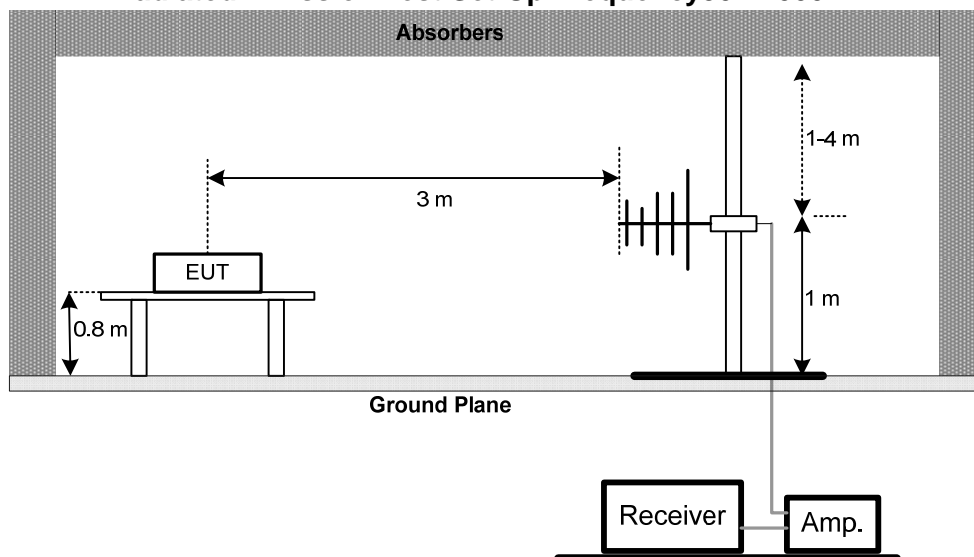
- a. The measuring distance of at 1.5m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.2.4 DEVIATION FROM TEST STANDARD

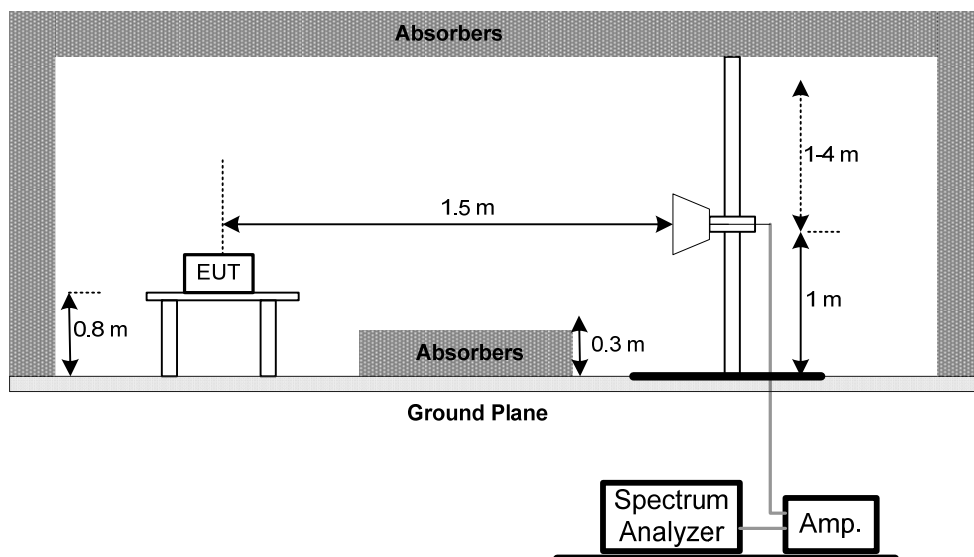
No deviation

#### 4.2.5 TEST SETUP

##### Radiated Emission Test Set-Up Frequency 30 - 1000MHz



##### Radiated Emission Test Set-Up Frequency Above 1 GHz



#### 4.2.6 EUT OPERATING CONDITIONS

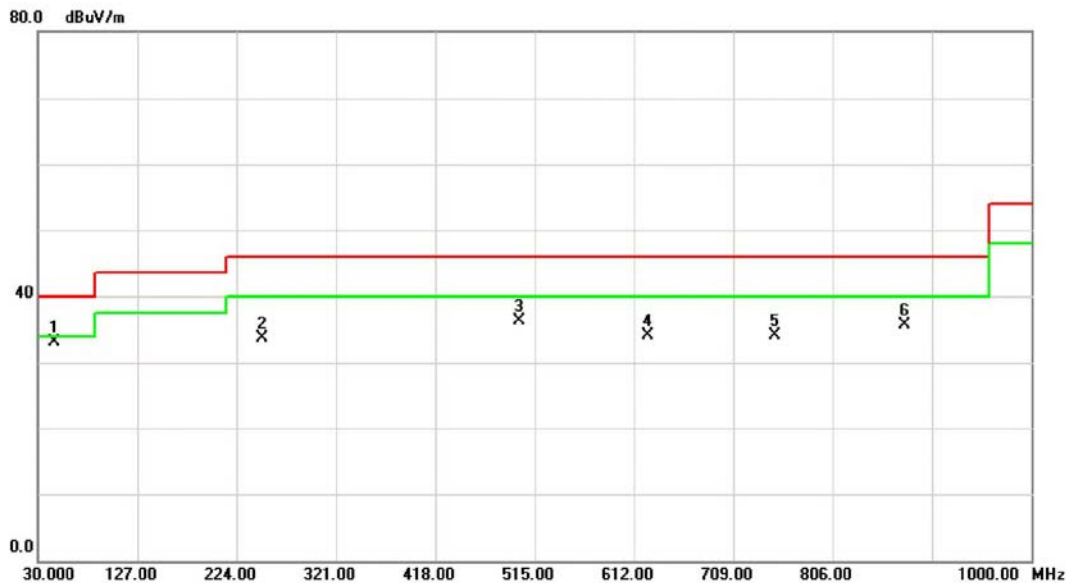
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

#### 4.2.7 TEST RESULTS-BETWEEN 30MHZ - 1000MHZ

Remark:

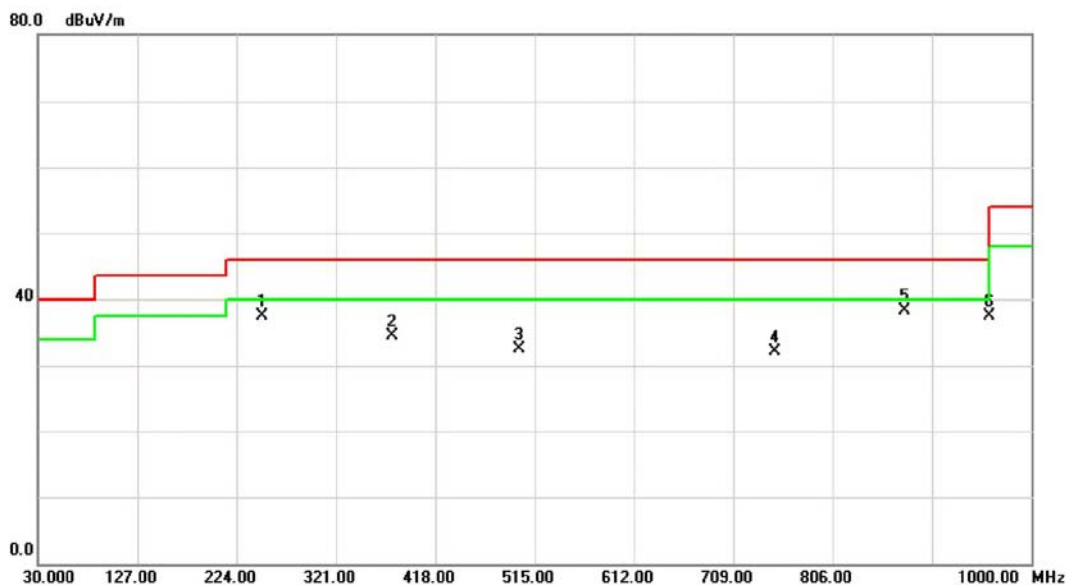
- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz.
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

|              |  |                    |              |
|--------------|--|--------------------|--------------|
| EUT:         | AC1200 Wireless Dual Band Gigabit Router | Model Name :       | WF2880       |
| Temperature: | 25°C                                     | Relative Humidity: | 58 %         |
| Pressure:    | 1010 hPa                                 | Test Voltage :     | AC 120V/60Hz |
| Test Mode :  | Band 1/TX A Mode 5180MHz                 |                    |              |
| Phase:       | Vertical                                 |                    |              |



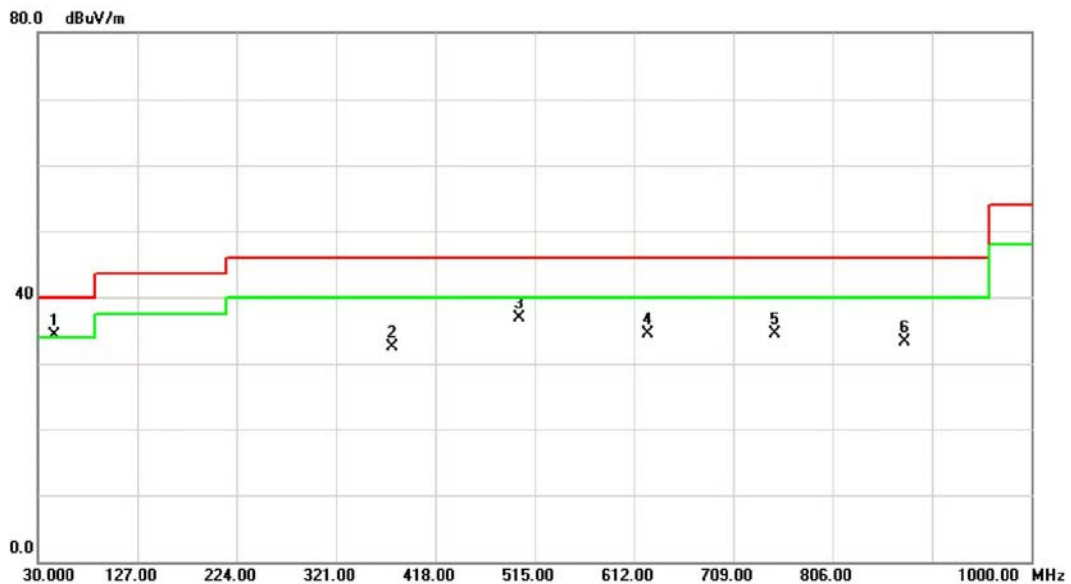
| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|---------|
| 1   | *   | 45.5200      | 45.01                    | -11.93                  | 33.08                      | 40.00           | -6.92      | peak     |         |
| 2   |     | 249.2200     | 46.98                    | -13.26                  | 33.72                      | 46.00           | -12.28     | peak     |         |
| 3   |     | 499.4800     | 43.82                    | -7.53                   | 36.29                      | 46.00           | -9.71      | peak     |         |
| 4   |     | 625.5800     | 37.51                    | -3.38                   | 34.13                      | 46.00           | -11.87     | peak     |         |
| 5   |     | 749.7400     | 35.31                    | -1.12                   | 34.19                      | 46.00           | -11.81     | peak     |         |
| 6   |     | 875.8400     | 33.98                    | 1.72                    | 35.70                      | 46.00           | -10.30     | peak     |         |

|              |  |                    |              |
|--------------|--|--------------------|--------------|
| EUT:         | AC1200 Wireless Dual Band Gigabit Router | Model Name :       | WF2880       |
| Temperature: | 25°C                                     | Relative Humidity: | 58 %         |
| Pressure:    | 1010 hPa                                 | Test Voltage :     | AC 120V/60Hz |
| Test Mode :  | Band 1/TX A Mode 5180MHz                 |                    |              |
| Phase:       | Horizontal                               |                    |              |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|---------|
| 1   |     | 249.2200     | 50.68                    | -13.26                  | 37.42                      | 46.00           | -8.58      | peak     |         |
| 2   |     | 375.3200     | 43.36                    | -8.83                   | 34.53                      | 46.00           | -11.47     | peak     |         |
| 3   |     | 499.4800     | 39.94                    | -7.53                   | 32.41                      | 46.00           | -13.59     | peak     |         |
| 4   |     | 749.7400     | 33.28                    | -1.12                   | 32.16                      | 46.00           | -13.84     | peak     |         |
| 5   | *   | 875.8400     | 36.62                    | 1.72                    | 38.34                      | 46.00           | -7.66      | peak     |         |
| 6   |     | 959.2600     | 34.95                    | 2.63                    | 37.58                      | 46.00           | -8.42      | peak     |         |

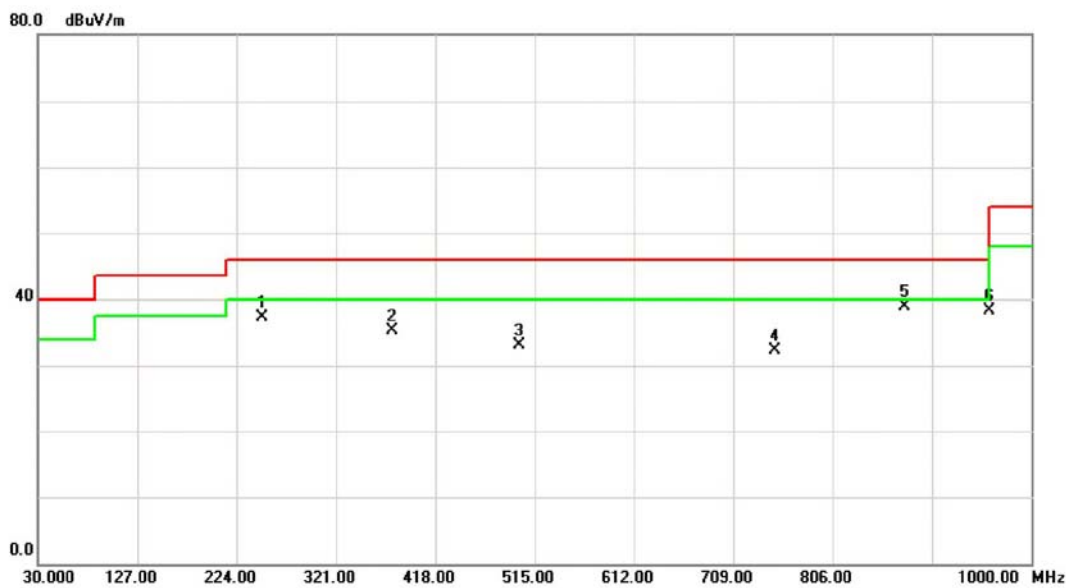
|              |  |                    |              |
|--------------|--|--------------------|--------------|
| EUT:         | AC1200 Wireless Dual Band Gigabit Router | Model Name :       | WF2880       |
| Temperature: | 25°C                                     | Relative Humidity: | 58 %         |
| Pressure:    | 1010 hPa                                 | Test Voltage :     | AC 120V/60Hz |
| Test Mode :  | Band 1/TX A Mode 5200MHz                 |                    |              |
| Phase:       | Vertical                                 |                    |              |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|---------|
| 1   | *   | 45.5200      | 46.20                    | -11.93                  | 34.27                      | 40.00           | -5.73      | peak     |         |
| 2   |     | 375.3200     | 41.27                    | -8.83                   | 32.44                      | 46.00           | -13.56     | peak     |         |
| 3   |     | 499.4800     | 44.44                    | -7.53                   | 36.91                      | 46.00           | -9.09      | peak     |         |
| 4   |     | 625.5800     | 37.93                    | -3.38                   | 34.55                      | 46.00           | -11.45     | peak     |         |
| 5   |     | 749.7400     | 35.63                    | -1.12                   | 34.51                      | 46.00           | -11.49     | peak     |         |
| 6   |     | 875.8400     | 31.60                    | 1.72                    | 33.32                      | 46.00           | -12.68     | peak     |         |

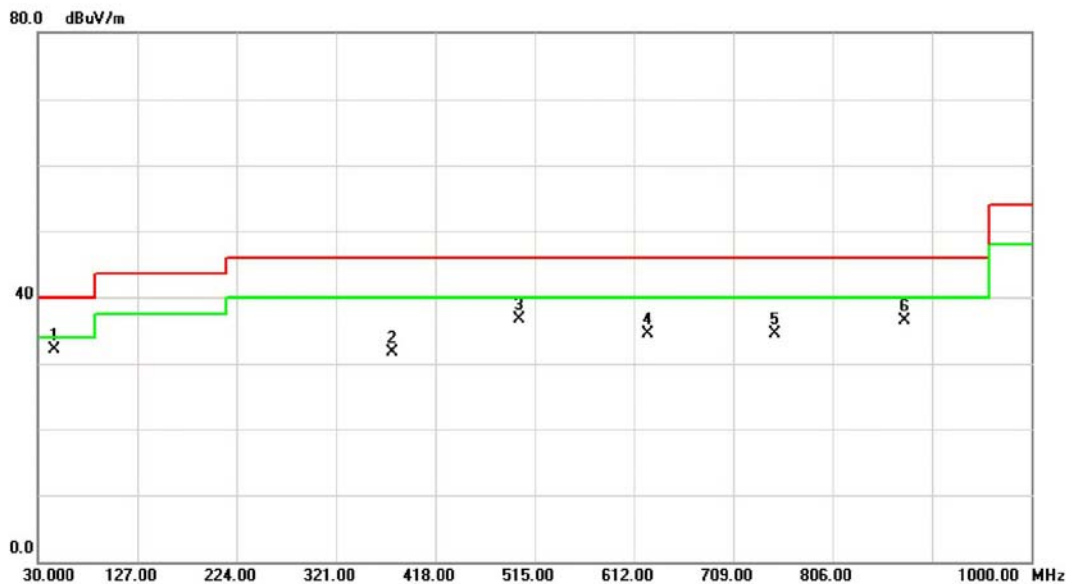


|              |  |                    |              |
|--------------|--|--------------------|--------------|
| EUT:         | AC1200 Wireless Dual Band Gigabit Router | Model Name :       | WF2880       |
| Temperature: | 25°C                                     | Relative Humidity: | 58 %         |
| Pressure:    | 1010 hPa                                 | Test Voltage :     | AC 120V/60Hz |
| Test Mode :  | Band 1/TX A Mode 5200MHz                 |                    |              |
| Phase:       | Horizontal                               |                    |              |



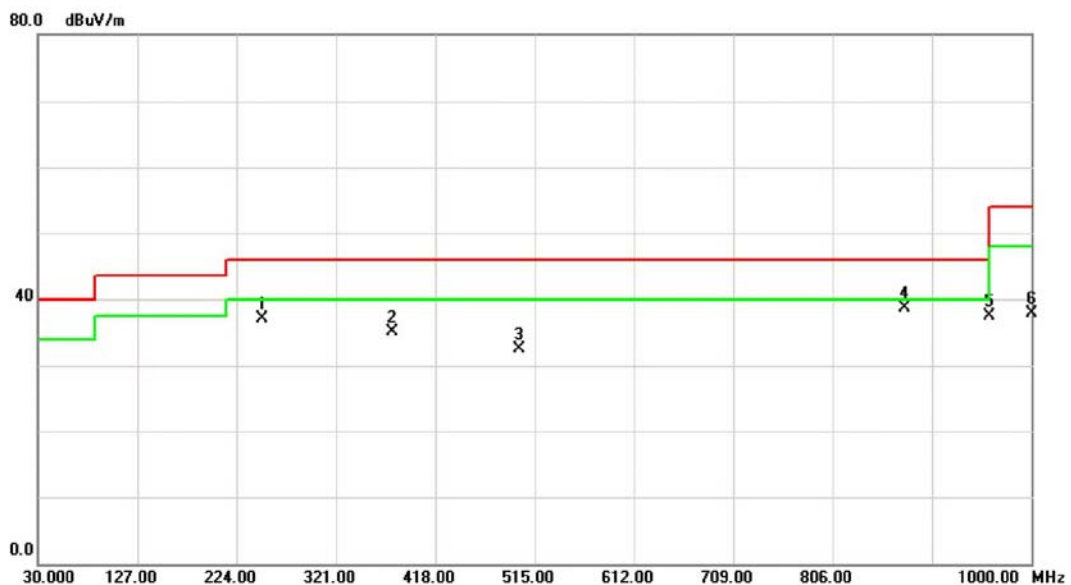
| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|---------|
| 1   |     | 249.2200     | 50.54                    | -13.26                  | 37.28                      | 46.00           | -8.72      | peak     |         |
| 2   |     | 375.3200     | 44.23                    | -8.83                   | 35.40                      | 46.00           | -10.60     | peak     |         |
| 3   |     | 499.4800     | 40.58                    | -7.53                   | 33.05                      | 46.00           | -12.95     | peak     |         |
| 4   |     | 749.7400     | 33.44                    | -1.12                   | 32.32                      | 46.00           | -13.68     | peak     |         |
| 5   | *   | 875.8400     | 37.19                    | 1.72                    | 38.91                      | 46.00           | -7.09      | peak     |         |
| 6   |     | 959.2600     | 35.71                    | 2.63                    | 38.34                      | 46.00           | -7.66      | peak     |         |

|              |  |                    |              |
|--------------|--|--------------------|--------------|
| EUT:         | AC1200 Wireless Dual Band Gigabit Router | Model Name :       | WF2880       |
| Temperature: | 25°C                                     | Relative Humidity: | 58 %         |
| Pressure:    | 1010 hPa                                 | Test Voltage :     | AC 120V/60Hz |
| Test Mode :  | Band 1/TX A Mode 5240MHz                 |                    |              |
| Phase:       | Vertical                                 |                    |              |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|---------|
| 1   | *   | 45.5200      | 43.96                    | -11.93                  | 32.03                      | 40.00           | -7.97      | peak     |         |
| 2   |     | 375.3200     | 40.57                    | -8.83                   | 31.74                      | 46.00           | -14.26     | peak     |         |
| 3   |     | 499.4800     | 44.26                    | -7.53                   | 36.73                      | 46.00           | -9.27      | peak     |         |
| 4   |     | 625.5800     | 37.86                    | -3.38                   | 34.48                      | 46.00           | -11.52     | peak     |         |
| 5   |     | 749.7400     | 35.66                    | -1.12                   | 34.54                      | 46.00           | -11.46     | peak     |         |
| 6   |     | 875.8400     | 34.87                    | 1.72                    | 36.59                      | 46.00           | -9.41      | peak     |         |

|              |  |                    |              |
|--------------|--|--------------------|--------------|
| EUT:         | AC1200 Wireless Dual Band Gigabit Router | Model Name :       | WF2880       |
| Temperature: | 25°C                                     | Relative Humidity: | 58 %         |
| Pressure:    | 1010 hPa                                 | Test Voltage :     | AC 120V/60Hz |
| Test Mode :  | Band 1/TX A Mode 5240MHz                 |                    |              |
| Phase:       | Horizontal                               |                    |              |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|---------|
| 1   |     | 249.2200     | 50.35                    | -13.26                  | 37.09                      | 46.00           | -8.91      | peak     |         |
| 2   |     | 375.3200     | 43.85                    | -8.83                   | 35.02                      | 46.00           | -10.98     | peak     |         |
| 3   |     | 499.4800     | 40.05                    | -7.53                   | 32.52                      | 46.00           | -13.48     | peak     |         |
| 4   | *   | 875.8400     | 37.03                    | 1.72                    | 38.75                      | 46.00           | -7.25      | peak     |         |
| 5   |     | 959.2600     | 34.95                    | 2.63                    | 37.58                      | 46.00           | -8.42      | peak     |         |
| 6   |     | 1000.000     | 35.51                    | 2.41                    | 37.92                      | 54.00           | -16.08     | peak     |         |

## 5. EUT TEST PHOTO

### Conducted Measurement Photos



## Radiated Measurement Photos

30MHz to 1000MHz

