



## FCC Part 15.247

## TEST REPORT

For

### Draytek Corporation

No. 26, Fu shing Rd., Hukou County, Hsinchu Industrial Park Hsinchu, 303, Taiwan

**FCC ID: VGY2862N**

|                                                                                                                                                                                                                     |                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>Report Type:</b><br>Original Report                                                                                                                                                                              | <b>Product Type:</b><br>VDSL2 & ADSL2 + Dual-WAN Security Router |
| <b>Report Producer:</b> Kaylee Chiang                                                                                                                                                                               | <i>Kaylee Chiang</i>                                             |
| <b>Report Number:</b> RTWA170214001-00F                                                                                                                                                                             |                                                                  |
| <b>Report Date:</b> 2017-09-28                                                                                                                                                                                      |                                                                  |
| <b>Reviewed By:</b> Jerry Chang                                                                                                                                                                                     | <i>Jerry Chang</i>                                               |
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**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Taiwan)

**REVISION HISTORY**

| Revision | Issue Date | Description |
|----------|------------|-------------|
| 1.0      | 2017.09.28 | Original    |
|          |            |             |
|          |            |             |

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## 1 General Information

### 1.1 Product Description for Equipment Under Test (EUT)

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Applicant:</b>             | Draytek Corporation<br>No. 26, Fu shing Rd., Hukou County, Hsinchu Industrial Park<br>Hsinchu, 303, Taiwan                                                                                                                                                                                                                                                                                                                                              |
| <b>Manufacturer:</b>          | Draytek Corporation<br>No. 26, Fu shing Rd., Hukou County, Hsinchu Industrial Park<br>Hsinchu, 303, Taiwan                                                                                                                                                                                                                                                                                                                                              |
| <b>Product:</b>               | VDSL2 & ADSL2 + Dual-WAN Security Router                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Model:</b>                 | Vigor2862BLgVn                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Series Model:</b>          | Please refer to <i>DECLARATION OF SIMILARITY</i>                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Trade Name:</b>            | DrayTek                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Frequency Range:</b>       | IEEE 802.11b/g / IEEE 802.11n HT20 MHz Mode: 2412 ~ 2462 MHz / IEEE 802.11n HT40 MHz Mode: 2422 ~ 2452 MHz                                                                                                                                                                                                                                                                                                                                              |
| <b>Transmit Power:</b>        | IEEE 802.11b Mode: 24.25 dBm (0.266W)<br>IEEE 802.11g Mode: 29.63 dBm (0.918W)<br>IEEE 802.11n HT20 MHz Mode: 29.88 dBm (0.972W)<br>IEEE 802.11n HT40 MHz Mode: 29.77 dBm (0.948W)                                                                                                                                                                                                                                                                      |
| <b>Modulation Technique:</b>  | IEEE 802.11b: DSSS<br>IEEE 802.11g: OFDM<br>IEEE 802.11n HT20 MHz Mode: OFDM<br>IEEE 802.11n HT40 MHz Mode: OFDM                                                                                                                                                                                                                                                                                                                                        |
| <b>Transmit Data Rate:</b>    | IEEE 802.11b Mode: 11, 5.5, 2, 1 Mbps<br>IEEE 802.11g Mode: 54, 48, 36, 24, 18, 12, 11, 9, 6Mbps<br>IEEE 802.11n HT 20 MHz Channel mode: 6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps<br>IEEE 802.11n HT 40 MHz Channel mode: 13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps |
| <b>Number of Channels:</b>    | IEEE 802.11b/g / IEEE 802.11n HT20 MHz Mode: 11 Channels<br>IEEE 802.11n HT40 MHz Mode: 7 Channels                                                                                                                                                                                                                                                                                                                                                      |
| <b>Antenna Specification:</b> | Diploe Antenna/Gain: 2.18 dBi                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Voltage Range:</b>         | I/P: 100-240Vac, 50-60Hz<br>O/P: 12Vdc                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Date of Test:</b>          | Feb 22, 2017 ~ Sep 25, 2017                                                                                                                                                                                                                                                                                                                                                                                                                             |

\*All measurement and test data in this report was gathered from production sample serial number: 17021401  
(Assigned by BACL, Taiwan) The EUT supplied by the applicant was received on 2017-02-14.

**Adaptor 1 Information:**

Model: WA-36A12FU

I/P: 100-240Vac, 50-60Hz, 0.9A Max

O/P: 12Vdc, 3A

**Adaptor 2 Information:**

Model: 2ABN036F US

I/P: 100-240Vac, 50-60Hz, 1.0A

O/P: 12Vdc, 3A

**Adaptor 3 Information:**

Model: 2ABB018F US

I/P: 100-240Vac, 50-60Hz, 0.6A

O/P: 12Vdc, 1.5A

**Adaptor 4 Information:**

Model: 2ABL030F US

I/P: 100-240Vac, 50-60Hz, 1.0A

O/P: 12Vdc, 2.5A

**1.2 Objective**

This report is prepared on behalf of *Draytek Corporation* in accordance with Part 2, Subpart J, Part 15, Subparts A and C of the Federal Communication Commission's rules.

The objective is to determine compliance with FCC Part 15.247 rules for Output Power, Antenna Requirements, 6 dB Bandwidth, power spectral density, 100 kHz Bandwidth of Band Edges Measurement, Conducted and Radiated Spurious Emissions.

**1.3 Related Submittal(s)/Grant(s)**

N/A

**1.4 Test Methodology**

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

KDB 662911 D01 Multiple Transmitter Output v02r01

KDB 558074 D01 DTS Meas Guidance v04

**1.5 Test Facility**

The Test site used by Bay Area Compliance Laboratories Corp. (Taiwan) to collect test data is located on

☒ 70, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C.☐ 68-3, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C.

Bay Area Compliance Laboratories Corp. (Taiwan) Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3180) and the FCC designation No. TW3180 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.10.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 974454. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

## 2 System Test Configuration

### 2.1 Description of Test Configuration

For WIFI mode, there are totally 11 channels.

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 1       | 2412            | 7       | 2442            |
| 2       | 2417            | 8       | 2447            |
| 3       | 2422            | 9       | 2452            |
| 4       | 2427            | 10      | 2457            |
| 5       | 2432            | 11      | 2462            |
| 6       | 2437            |         |                 |

For 802.11 b/g/n20 Modes were tested with channel 1, 6 and 11.

For 802.11n40 Mode were tested with channel 3, 6 and 9.

SISO mode and MIMO mode have the same power level setting and based on output power testing, MIMO mode power than SISO mode large, MIMO mode was selected for full testing.

The device supports MIMO (CDD) at all modes.

### 2.2 Equipment Modifications

No modification was made to the EUT

### 2.3 Test Mode

Mode 1: Full System (Vigor2862BLgVn, Adapter WA-36A12FU) tested all measure item.

Mode 2: Full System (Vigor2862BLgFVn, Adapter WA-36A12FU) tested Radiated Emission below 1GHz.

The mode difference is fiber function.

Mode 3: Full System (Vigor2862BLgVn, Adapter 2ABN036F US) tested Radiated Emission below 1GHz and AC Line Conducted Emissions.

Mode 4: Full System (Vigor2862BLgVn, Adapter 2ABB018F US) tested Radiated Emission below 1GHz and AC Line Conducted Emissions.

Mode 5: Full System (Vigor2862BLgVn, Adapter 2ABL030F US) tested Radiated Emission below 1GHz and AC Line Conducted Emissions.

## 2.4 EUT Exercise Software

Used “MP-Tool RTL819 x3.0” software.

| Engineering Mode    |                    | Chain 0 |     |      |
|---------------------|--------------------|---------|-----|------|
| Test Frequency      |                    | Low     | Mid | High |
| Power Level Setting | B Mode MIMO(CDD)   | 20      | 21  | 19   |
|                     | G Mode MIMO(CDD)   | 31      | 28  | 29   |
|                     | N20 Mode MIMO(CDD) | 31      | 28  | 28   |
|                     | N40 Mode MIMO(CDD) | 32      | 31  | 30   |
| Engineering Mode    |                    | Chain 1 |     |      |
| Test Frequency      |                    | Low     | Mid | High |
| Power Level Setting | B Mode MIMO(CDD)   | 23      | 25  | 22   |
|                     | G Mode MIMO(CDD)   | 31      | 28  | 29   |
|                     | N20 Mode MIMO(CDD) | 31      | 28  | 28   |
|                     | N40 Mode MIMO(CDD) | 32      | 31  | 30   |

The EUT was configured for testing in an engineering mode which was provided by the manufacturer. The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates bandwidths, and modulations.

802.11b: 1Mbps

802.11g: 6Mbps

802.11n ht20 MIMO: MCS0

802.11n ht40 MIMO: MCS0

## 2.5 Support Equipment List and Details

| Description | Manufacturer | Model Number | S/N          |
|-------------|--------------|--------------|--------------|
| Telephone   | ASITO        | AS-10301     | 3CN061J03758 |
| Telephone   | TECO         | N/A          | XYFXC601     |
| USB dongle  | Kingston     | N/A          | N/A          |
| USB dongle  | Kingston     | N/A          | N/A          |
| NB          | Dell         | E6410        | 10912240367  |
| PSTN        | Draytek      | N/A          | N/A          |

## 2.6 External Cable List and Details

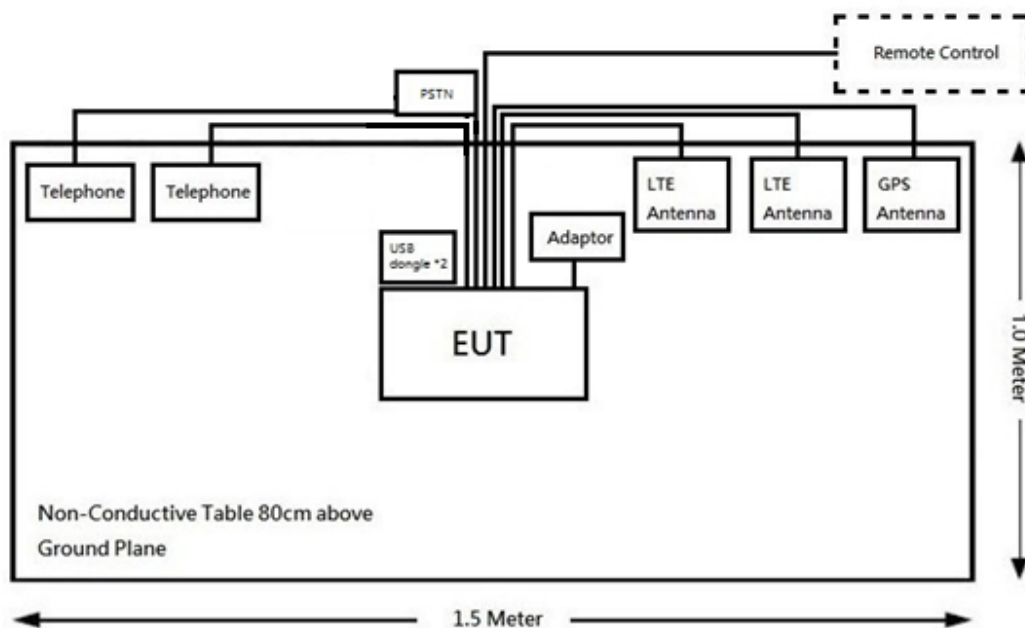
| Cable Description  | Length (m) | From           | To  |
|--------------------|------------|----------------|-----|
| RJ11 Cable * 2     | 2M         | Telephone      | EUT |
| LTE Extension cord | 1M         | LTE Antenna    | EUT |
| LTE Extension cord | 1M         | LTE Antenna    | EUT |
| GPS Extension cord | 1M         | GPS Antenna    | EUT |
| RJ45 Cable * 4     | 10M        | Remote Control | EUT |

## 2.7 Block Diagram of Test Setup

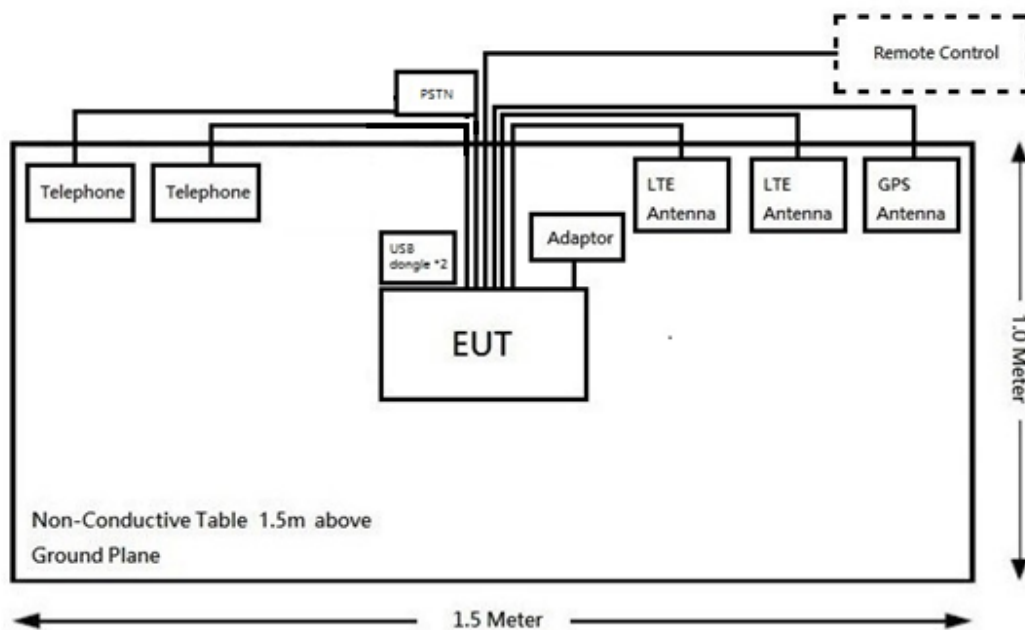
See test photographs attached in Exhibit A for the actual connections between EUT and support equipment.

### Radiation:

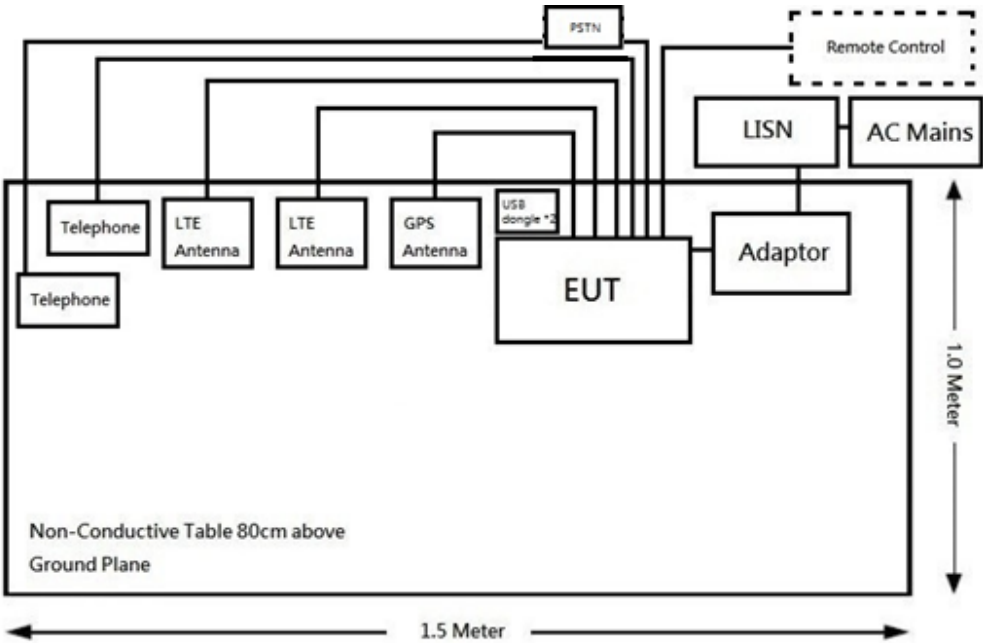
Below 1GHz:



Above 1GHz:



Conduction:



## 2.8 Duty Cycle

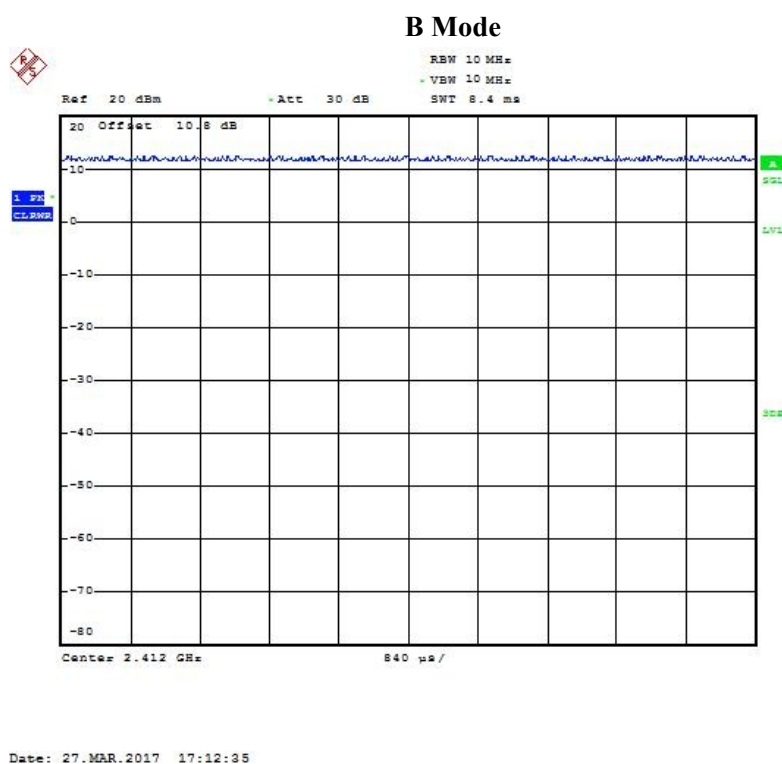
According to KDB 558074 D01 DTS Meas Guidance v04 section 6.0:

All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum power transmission duration, T, are required for each tested mode of operation.

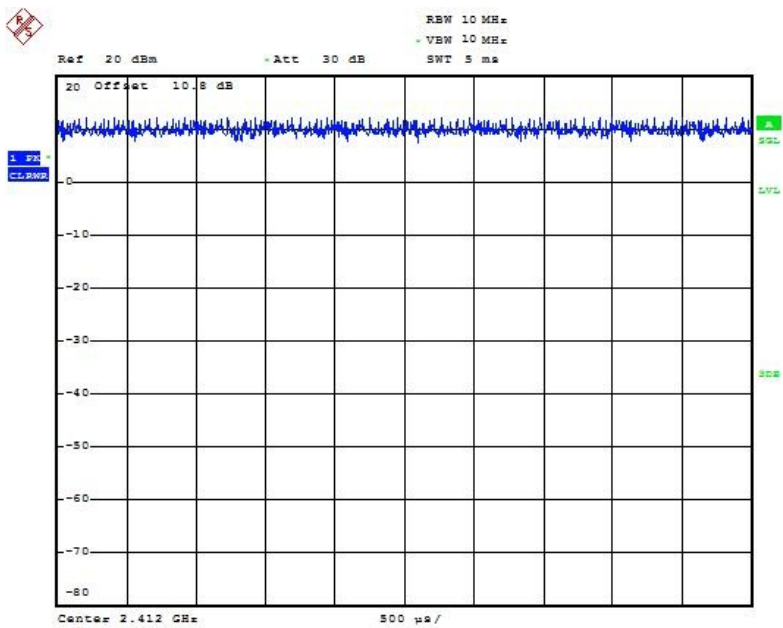
| Radio Mode | On Time (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) |
|------------|--------------|-------------|----------------|-----------------------------------|
| 802.11b    | 8.4          | 8.4         | 100            | 0                                 |
| 802.11g    | 5            | 5           | 100            | 0                                 |
| 802.11n20  | 5            | 5           | 100            | 0                                 |
| 802.11n40  | 5            | 5           | 100            | 0                                 |

Note: Duty Cycle Correction Factor =  $10 \cdot \log(1/\text{duty cycle})$

Please refer to the following plots.

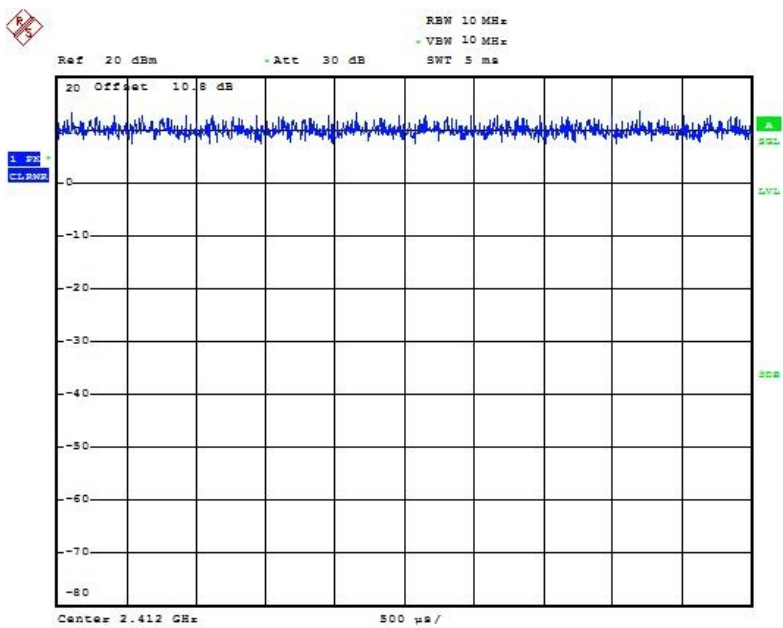


G Mode

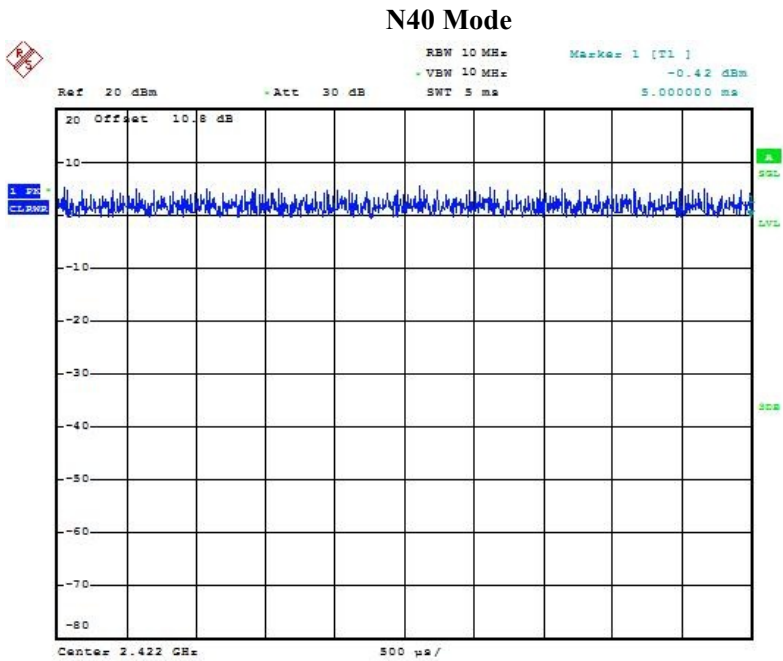


Date: 27.MAR.2017 17:13:34

N20 Mode



Date: 27.MAR.2017 17:14:00



Date: 27.MAR.2017 17:11:21

### 3 Summary of Test Results

| FCC Rules                     | Description of Test                      | Result      |
|-------------------------------|------------------------------------------|-------------|
| §15.247(i), §1.1310, § 2.1091 | Maximum Permissible Exposure (MPE)       | Compliance  |
| §15.203                       | Antenna Requirement                      | Compliance* |
| §15.207(a)                    | AC Line Conducted Emissions              | Compliance  |
| §15.205, §15.209, §15.247(d)  | Spurious Emissions                       | Compliance  |
| §15.247(a)(2)                 | 6 dB Emission Bandwidth                  | Compliance* |
| §15.247(b)(3)                 | Maximum Peak Output Power                | Compliance* |
| §15.247(d)                    | 100 kHz Bandwidth of Frequency Band Edge | Compliance* |
| §15.247(e)                    | Power Spectral Density                   | Compliance* |

Note:

Compliance\*: Refer to RTWA170214001-00A Report with FCC ID: VGY2862

## 4 FCC § 15.247(i), §1.1310, § 2.1091 - Maximum Permissible Exposure (MPE)

### 4.1 Applicable Standard

According to subpart 15.247(i) and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

| (B) Limits for General Population/Uncontrolled Exposure |                               |                               |                                     |                          |
|---------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Frequency Range (MHz)                                   | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Averaging Time (minutes) |
| 0.3–1.34                                                | 614                           | 1.63                          | *(100)                              | 30                       |
| 1.34–30                                                 | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                       |
| 30–300                                                  | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300–1500                                                | /                             | /                             | f/1500                              | 30                       |
| 1500–100,000                                            | /                             | /                             | 1.0                                 | 30                       |

f = frequency in MHz; \* = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

### Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$  = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

## 4.2 RF Exposure Evaluation Result

### MPE evaluation for single transmission:

| Mode       | Frequency Range (MHz) | Antenna Gain |           | Target Power |        | Evaluation Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | MPE Limit (mW/cm <sup>2</sup> ) |
|------------|-----------------------|--------------|-----------|--------------|--------|--------------------------|-------------------------------------|---------------------------------|
|            |                       | (dBi)        | (numeric) | (dBm)        | (mW)   |                          |                                     |                                 |
| 2.4G WIFI  | 2412-2462             | 2.18         | 1.65      | 23.5         | 223.87 | 20                       | 0.07                                | 1.0                             |
| WCDMA B V  | 826.4-846.6           | 2.13         | 1.63      | 23.5         | 223.87 | 20                       | 0.07                                | 0.551                           |
| WCDMA B II | 1852.4-1907.6         | 3.42         | 2.20      | 23.5         | 223.87 | 20                       | 0.10                                | 1.0                             |
| LTE B II   | 1850.7-1909.3         | 3.42         | 2.20      | 24.0         | 251.19 | 20                       | 0.11                                | 1.0                             |
| LTE B IV   | 1710.7-1754.3         | 3.68         | 2.33      | 24.0         | 251.19 | 20                       | 0.17                                | 1.0                             |
| LTE B XII  | 699.7-715.3           | 0.35         | 1.08      | 24.0         | 251.19 | 20                       | 0.05                                | 0.466                           |

### MPE evaluation for simultaneous transmission:

2.4G WIFI and 3G&4G can transmit at the same time, MPE evaluation is as below formula:

$PD1/Limit1 + PD2/Limit2 + \dots < 1$ , PD (Power Density)

#### MPE evaluation=

MPE of 2.4G WIFI/1 + MPE of 3G&4G/0.551  
 $= 0.07/1 + 0.07/0.551 = 0.20 < 1.0$

**Result:** MPE evaluation of single and simultaneous transmission meet the requirement of standard.

## 5 FCC §15.207 - AC Line Conducted Emissions

### 5.1 Applicable Standard

According to FCC §15.207 Conducted limits:

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

| Frequency of Emission<br>(MHz) | Conducted Limit (dBuV)     |                            |
|--------------------------------|----------------------------|----------------------------|
|                                | Quasi-Peak                 | Average                    |
| 0.15-0.5                       | 66 to 56 <sup>Note 1</sup> | 56 to 46 <sup>Note 2</sup> |
| 0.5-5                          | 56                         | 46                         |
| 5-30                           | 60                         | 50                         |

*Note 1: Decreases with the logarithm of the frequency.*

*Note 2: A linear average detector is required*

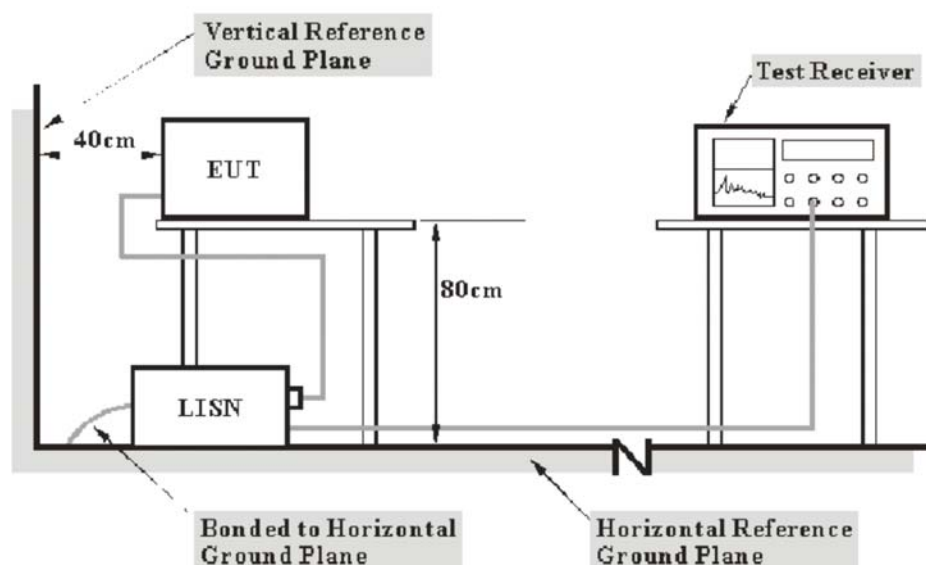
### 5.2 Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN/ISN and receiver, LISN/ISN voltage division factor, LISN/ISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Taiwan) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report

| Port     | Expanded Measurement uncertainty       |
|----------|----------------------------------------|
| AC Mains | 4.64 dB (k=2, 95% level of confidence) |

### 5.3 EUT Setup



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

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

### 5.4 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz. During the conducted emission test, the EMI test receiver was set with the following configurations

| Frequency Range  | Receiver RBW |
|------------------|--------------|
| 150 kHz - 30 MHz | 9 kHz        |

### 5.5 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN. Maximizing procedure was performed on the six (6) highest emissions of the EUT. All data was recorded in the Quasi-peak and average detection mode.

### 5.6 Corrected Factor & Margin Calculation

The factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

The “Over Limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for Over Limit calculation is as follows:

$$\text{Over Limit} = \text{Level} - \text{Limit Line}$$

### 5.7 Test Equipment List and Details

| Manufacturers     | Descriptions    | Models  | Serial Numbers | Calibration Date | Calibration Due Date |
|-------------------|-----------------|---------|----------------|------------------|----------------------|
| LISN              | Rohde & Schwarz | ENV216  | 101248         | 2017/07/20       | 2018/07/19           |
| LISN              | EMCO            | 3816/2  | 00075848       | 2017/08/02       | 2018/08/01           |
| EMI Test Receiver | Rohde & Schwarz | ESR7    | 101419         | 2016/11/03       | 2017/11/02           |
| Pulse Limiter     | Rohde & Schwarz | ESH3Z2  | TXZEM025       | 2017/08/11       | 2018/08/10           |
| RF Cable          | EMEC            | EM-CB5D | 001            | 2017/07/24       | 2018/07/23           |
| Software          | AUDIX           | E3      | V9.150826k     | N.C.R            | N.C.R                |

\* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed according to TAF requirements, traceable to the ETC.

### 5.8 Test Environmental Conditions

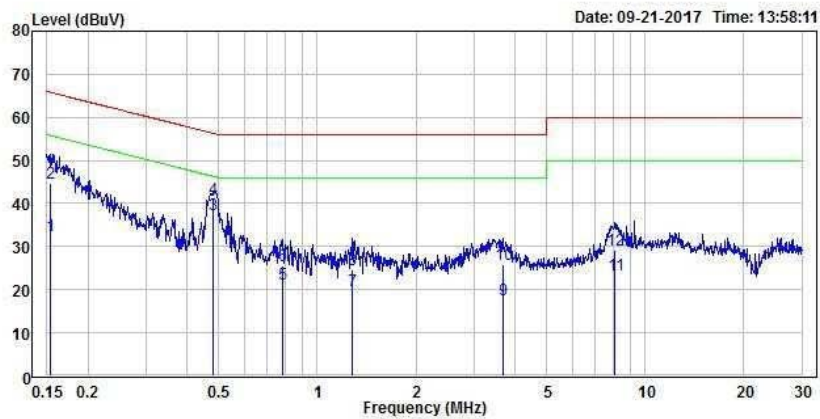
|                    |          |
|--------------------|----------|
| Temperature:       | 25 °C    |
| Relative Humidity: | 58 %     |
| ATM Pressure:      | 1020 hPa |

The testing was performed by David Hsu on 2017-09-21.

### 5.9 Test Results

Mode: Transmitting Mode

Please refer to the following plots and tables.

**Main: AC 120V/60 Hz, Line (Mode 1)**

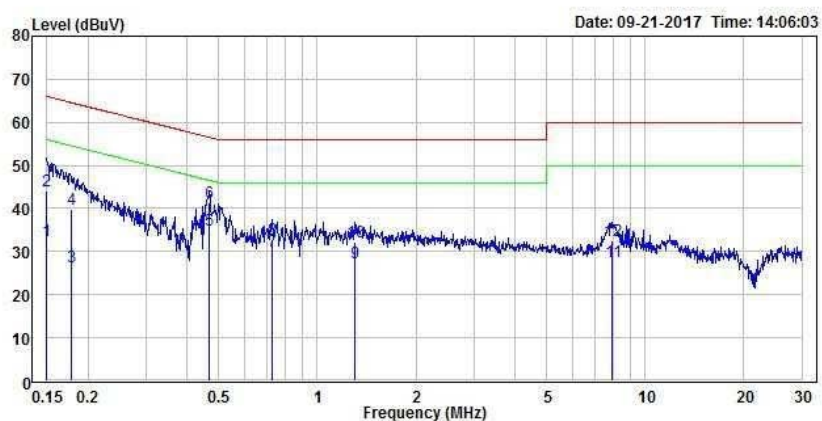
Condition: Line

EUT :

Mode :

Note : 120V/60Hz,

|    | Freq  | Level | Limit | Over   |        | Read  |         |           |
|----|-------|-------|-------|--------|--------|-------|---------|-----------|
|    | MHz   | dBuV  | Line  | Limit  | Factor | Level | Remark  | Pol/Phase |
|    | MHz   | dBuV  | dBuV  | dB     | dB     | dBuV  |         |           |
| 1  | 0.154 | 32.60 | 55.80 | -23.20 | 19.56  | 13.04 | Average | Line      |
| 2  | 0.154 | 44.86 | 65.80 | -20.94 | 19.56  | 25.30 | QP      | Line      |
| 3  | 0.483 | 37.31 | 46.28 | -8.97  | 19.55  | 17.76 | Average | Line      |
| 4  | 0.483 | 41.20 | 56.28 | -15.08 | 19.55  | 21.65 | QP      | Line      |
| 5  | 0.783 | 21.17 | 46.00 | -24.83 | 19.58  | 1.59  | Average | Line      |
| 6  | 0.783 | 25.43 | 56.00 | -30.57 | 19.58  | 5.85  | QP      | Line      |
| 7  | 1.275 | 19.75 | 46.00 | -26.25 | 19.61  | 0.14  | Average | Line      |
| 8  | 1.275 | 24.49 | 56.00 | -31.51 | 19.61  | 4.88  | QP      | Line      |
| 9  | 3.688 | 17.67 | 46.00 | -28.33 | 19.63  | -1.96 | Average | Line      |
| 10 | 3.688 | 25.76 | 56.00 | -30.24 | 19.63  | 6.13  | QP      | Line      |
| 11 | 8.098 | 23.51 | 50.00 | -26.49 | 19.77  | 3.74  | Average | Line      |
| 12 | 8.098 | 29.19 | 60.00 | -30.81 | 19.77  | 9.42  | QP      | Line      |

**Main: AC 120V/60 Hz, Neutral**

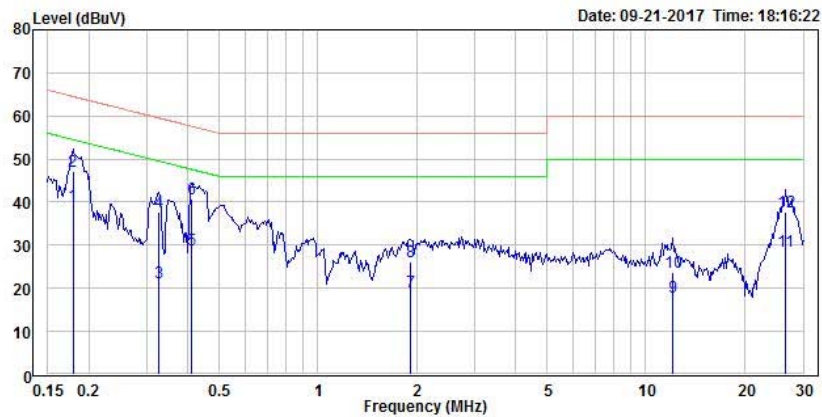
Condition: Neutral

EUT :

Mode :

Note : 120V/60Hz,

|    | Freq  | Level | Limit | Over   |        | Read  |         |           |
|----|-------|-------|-------|--------|--------|-------|---------|-----------|
|    | MHz   | dBuV  | Line  | Limit  | Factor | Level | Remark  | Pol/Phase |
|    | MHz   | dBuV  | dBuV  | dB     | dB     | dBuV  |         |           |
| 1  | 0.150 | 32.52 | 56.00 | -23.48 | 19.56  | 12.96 | Average | Neutral   |
| 2  | 0.150 | 44.08 | 66.00 | -21.92 | 19.56  | 24.52 | QP      | Neutral   |
| 3  | 0.177 | 26.40 | 54.61 | -28.21 | 19.54  | 6.86  | Average | Neutral   |
| 4  | 0.177 | 39.90 | 64.61 | -24.71 | 19.54  | 20.36 | QP      | Neutral   |
| 5  | 0.468 | 35.09 | 46.55 | -11.46 | 19.55  | 15.54 | Average | Neutral   |
| 6  | 0.468 | 41.29 | 56.55 | -15.26 | 19.55  | 21.74 | QP      | Neutral   |
| 7  | 0.726 | 29.97 | 46.00 | -16.03 | 19.57  | 10.40 | Average | Neutral   |
| 8  | 0.726 | 32.71 | 56.00 | -23.29 | 19.57  | 13.14 | QP      | Neutral   |
| 9  | 1.306 | 27.35 | 46.00 | -18.65 | 19.60  | 7.75  | Average | Neutral   |
| 10 | 1.306 | 32.38 | 56.00 | -23.62 | 19.60  | 12.78 | QP      | Neutral   |
| 11 | 7.938 | 27.60 | 50.00 | -22.40 | 19.81  | 7.79  | Average | Neutral   |
| 12 | 7.938 | 32.66 | 60.00 | -27.34 | 19.81  | 12.85 | QP      | Neutral   |

**Main: AC 120V/60 Hz, Line (Mode 3)**

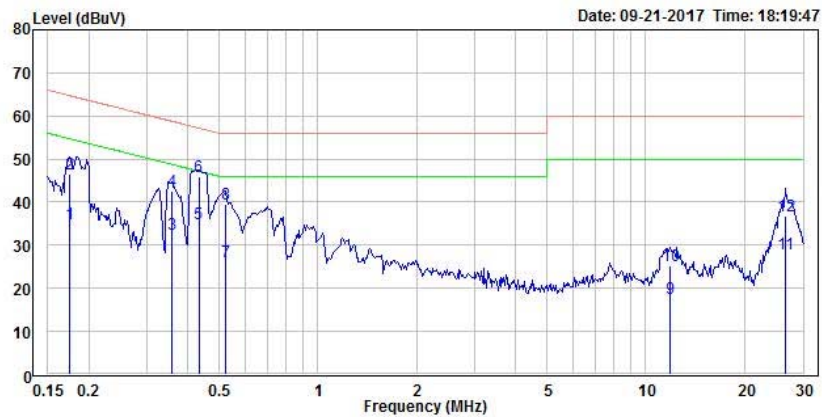
Condition: Line

EUT :

Mode :

Note : 120V/60Hz,

|    | Freq   | Level | Limit | Over   |        | Read  |         |           |
|----|--------|-------|-------|--------|--------|-------|---------|-----------|
|    | MHz    | dBuV  | Line  | Limit  | Factor | Level | Remark  | Pol/Phase |
|    | MHz    | dBuV  | dBuV  | dB     | dB     | dBuV  |         |           |
| 1  | 0.179  | 39.21 | 54.54 | -15.33 | 19.50  | 19.71 | Average | Line      |
| 2  | 0.179  | 47.04 | 64.54 | -17.50 | 19.50  | 27.54 | QP      | Line      |
| 3  | 0.327  | 21.40 | 49.51 | -28.11 | 19.51  | 1.89  | Average | Line      |
| 4  | 0.327  | 37.87 | 59.51 | -21.64 | 19.51  | 18.36 | QP      | Line      |
| 5  | 0.413  | 28.95 | 47.60 | -18.65 | 19.51  | 9.44  | Average | Line      |
| 6  | 0.413  | 40.86 | 57.60 | -16.74 | 19.51  | 21.35 | QP      | Line      |
| 7  | 1.920  | 19.20 | 46.00 | -26.80 | 19.58  | -0.38 | Average | Line      |
| 8  | 1.920  | 26.10 | 56.00 | -29.90 | 19.58  | 6.52  | QP      | Line      |
| 9  | 12.096 | 17.92 | 50.00 | -32.08 | 19.77  | -1.85 | Average | Line      |
| 10 | 12.096 | 23.67 | 60.00 | -36.33 | 19.77  | 3.90  | QP      | Line      |
| 11 | 26.409 | 28.54 | 50.00 | -21.46 | 19.87  | 8.67  | Average | Line      |
| 12 | 26.409 | 37.71 | 60.00 | -22.29 | 19.87  | 17.84 | QP      | Line      |

**Main: AC 120V/60 Hz, Neutral**

Condition: Neutral

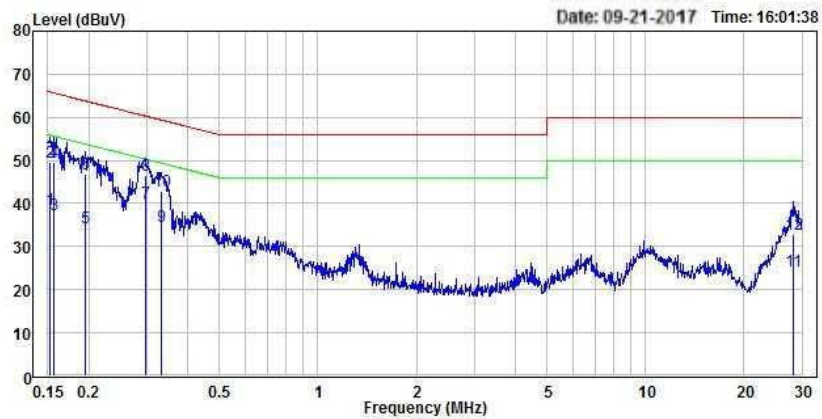
EUT :

Mode :

Note : 120V/60Hz,

|    | Freq   | Level | Limit | Over   |        | Read  |         |           |
|----|--------|-------|-------|--------|--------|-------|---------|-----------|
|    | MHz    | dBuV  | Line  | Limit  | Factor | Level | Remark  | Pol/Phase |
|    | MHz    | dBuV  | dBuV  | dB     | dB     | dBuV  |         |           |
| 1  | 0.175  | 34.97 | 54.74 | -19.77 | 19.63  | 15.34 | Average | Neutral   |
| 2  | 0.175  | 46.66 | 64.74 | -18.08 | 19.63  | 27.03 | QP      | Neutral   |
| 3  | 0.357  | 32.50 | 48.79 | -16.29 | 19.64  | 12.86 | Average | Neutral   |
| 4  | 0.357  | 42.66 | 58.79 | -16.13 | 19.64  | 23.02 | QP      | Neutral   |
| 5  | 0.433  | 35.06 | 47.20 | -12.14 | 19.64  | 15.42 | Average | Neutral   |
| 6  | 0.433  | 45.98 | 57.20 | -11.22 | 19.64  | 26.34 | QP      | Neutral   |
| 7  | 0.524  | 26.18 | 46.00 | -19.82 | 19.64  | 6.54  | Average | Neutral   |
| 8  | 0.524  | 39.68 | 56.00 | -16.32 | 19.64  | 20.04 | QP      | Neutral   |
| 9  | 11.905 | 17.62 | 50.00 | -32.38 | 19.93  | -2.31 | Average | Neutral   |
| 10 | 11.905 | 25.10 | 60.00 | -34.90 | 19.93  | 5.17  | QP      | Neutral   |
| 11 | 26.409 | 28.11 | 50.00 | -21.89 | 20.11  | 8.00  | Average | Neutral   |
| 12 | 26.409 | 36.74 | 60.00 | -23.26 | 20.11  | 16.63 | QP      | Neutral   |

**Main: AC 120V/60 Hz, Line (Mode 4)**



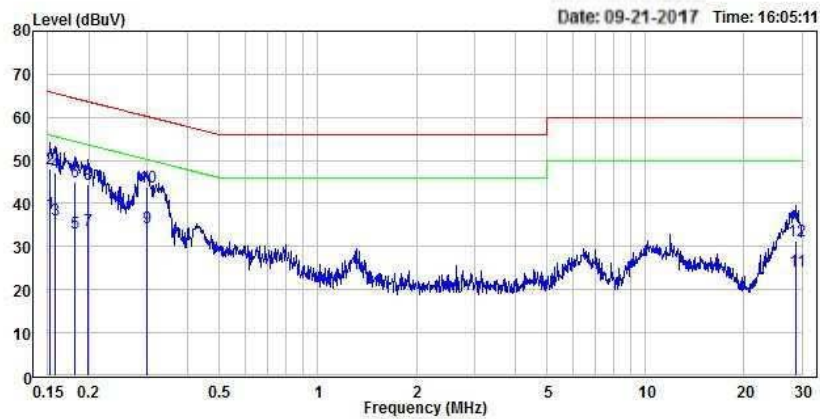
Condition: Line

EUT :

Mode :

Note : 120V/60Hz,

|    | Freq   | Level | Limit | Over   |        | Read  |         |           |
|----|--------|-------|-------|--------|--------|-------|---------|-----------|
|    | MHz    | dBuV  | Line  | Limit  | Factor | Level | Remark  | Pol/Phase |
|    | MHz    | dBuV  | dBuV  | dB     | dB     | dBuV  |         |           |
| 1  | 0.152  | 38.77 | 55.87 | -17.10 | 19.56  | 19.21 | Average | Line      |
| 2  | 0.152  | 49.63 | 65.87 | -16.24 | 19.56  | 30.07 | QP      | Line      |
| 3  | 0.157  | 37.33 | 55.64 | -18.31 | 19.56  | 17.77 | Average | Line      |
| 4  | 0.157  | 49.43 | 65.64 | -16.21 | 19.56  | 29.87 | QP      | Line      |
| 5  | 0.195  | 34.23 | 53.81 | -19.58 | 19.58  | 14.65 | Average | Line      |
| 6  | 0.195  | 46.83 | 63.81 | -16.98 | 19.58  | 27.25 | QP      | Line      |
| 7  | 0.297  | 40.05 | 50.33 | -10.28 | 19.55  | 20.50 | Average | Line      |
| 8  | 0.297  | 46.41 | 60.33 | -13.92 | 19.55  | 26.86 | QP      | Line      |
| 9  | 0.333  | 34.70 | 49.37 | -14.67 | 19.55  | 15.15 | Average | Line      |
| 10 | 0.333  | 42.91 | 59.37 | -16.46 | 19.55  | 23.36 | QP      | Line      |
| 11 | 28.256 | 24.38 | 50.00 | -25.62 | 19.92  | 4.46  | Average | Line      |
| 12 | 28.256 | 32.87 | 60.00 | -27.13 | 19.92  | 12.95 | QP      | Line      |

**Main: AC 120V/60 Hz, Neutral**

Condition: Neutral

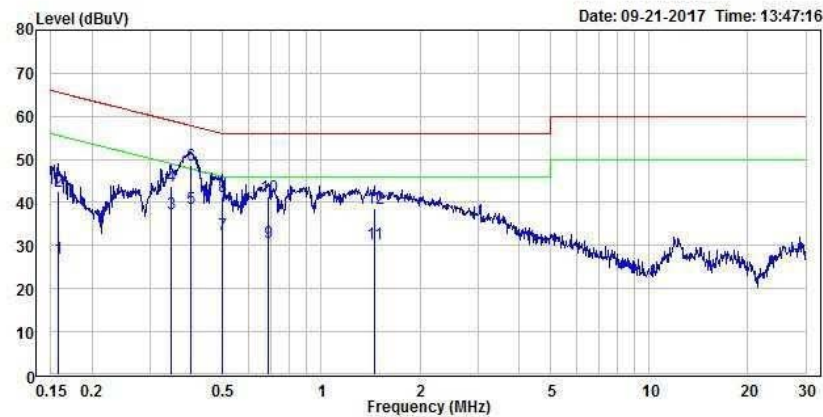
EUT :

Mode :

Note : 120V/60Hz,

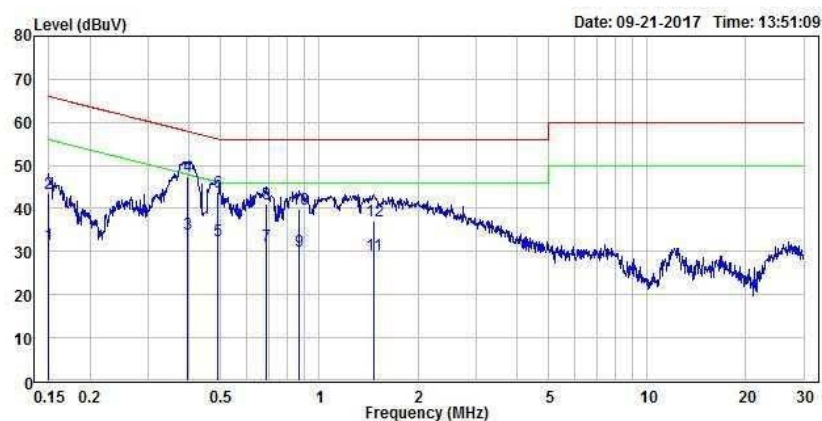
|    | Freq   | Level | Limit | Over   |        | Read  |         |           |
|----|--------|-------|-------|--------|--------|-------|---------|-----------|
|    | MHz    | dBuV  | Line  | Limit  | Factor | Level | Remark  | Pol/Phase |
|    | MHz    | dBuV  | dBuV  | dB     | dB     | dBuV  |         |           |
| 1  | 0.152  | 37.62 | 55.87 | -18.25 | 19.56  | 18.06 | Average | Neutral   |
| 2  | 0.152  | 48.06 | 65.87 | -17.81 | 19.56  | 28.50 | QP      | Neutral   |
| 3  | 0.157  | 36.20 | 55.60 | -19.40 | 19.55  | 16.65 | Average | Neutral   |
| 4  | 0.157  | 47.24 | 65.60 | -18.36 | 19.55  | 27.69 | QP      | Neutral   |
| 5  | 0.181  | 33.01 | 54.44 | -21.43 | 19.53  | 13.48 | Average | Neutral   |
| 6  | 0.181  | 44.97 | 64.44 | -19.47 | 19.53  | 25.44 | QP      | Neutral   |
| 7  | 0.199  | 33.68 | 53.65 | -19.97 | 19.52  | 14.16 | Average | Neutral   |
| 8  | 0.199  | 44.40 | 63.65 | -19.25 | 19.52  | 24.88 | QP      | Neutral   |
| 9  | 0.300  | 34.36 | 50.23 | -15.87 | 19.53  | 14.83 | Average | Neutral   |
| 10 | 0.300  | 43.83 | 60.23 | -16.40 | 19.53  | 24.30 | QP      | Neutral   |
| 11 | 28.826 | 24.23 | 50.00 | -25.77 | 20.03  | 4.20  | Average | Neutral   |
| 12 | 28.826 | 31.22 | 60.00 | -28.78 | 20.03  | 11.19 | QP      | Neutral   |

Main: AC 120V/60 Hz, Line (Mode 5)



Condition: Line  
EUT :  
Mode :  
Note : 120V/60Hz,

|    | Freq  | Level | Limit | Over   |        | Read  |         |           |
|----|-------|-------|-------|--------|--------|-------|---------|-----------|
|    | MHz   | dBuV  | Line  | Limit  | Factor | Level | Remark  | Pol/Phase |
|    |       |       | dBuV  | dB     | dB     | dBuV  |         |           |
| 1  | 0.157 | 27.15 | 55.60 | -28.45 | 19.56  | 7.59  | Average | Line      |
| 2  | 0.157 | 42.59 | 65.60 | -23.01 | 19.56  | 23.03 | QP      | Line      |
| 3  | 0.350 | 37.43 | 48.97 | -11.54 | 19.55  | 17.88 | Average | Line      |
| 4  | 0.350 | 43.86 | 58.97 | -15.11 | 19.55  | 24.31 | QP      | Line      |
| 5  | 0.401 | 38.58 | 47.84 | -9.26  | 19.54  | 19.04 | Average | Line      |
| 6  | 0.401 | 48.78 | 57.84 | -9.06  | 19.54  | 29.24 | QP      | Line      |
| 7  | 0.499 | 32.54 | 46.02 | -13.48 | 19.55  | 12.99 | Average | Line      |
| 8  | 0.499 | 41.38 | 56.02 | -14.64 | 19.55  | 21.83 | QP      | Line      |
| 9  | 0.689 | 30.68 | 46.00 | -15.32 | 19.56  | 11.12 | Average | Line      |
| 10 | 0.689 | 41.46 | 56.00 | -14.54 | 19.56  | 21.90 | QP      | Line      |
| 11 | 1.449 | 30.38 | 46.00 | -15.62 | 19.64  | 10.74 | Average | Line      |
| 12 | 1.449 | 38.54 | 56.00 | -17.46 | 19.64  | 18.90 | QP      | Line      |

**Main: AC 120V/60 Hz, Neutral**

Condition: Neutral

EUT :

Mode :

Note : 120V/60Hz,

|    | Freq  | Level | Limit | Over   |        | Read  |         |           |
|----|-------|-------|-------|--------|--------|-------|---------|-----------|
|    | MHz   | dBuV  | Line  | Limit  | Factor | Level | Remark  | Pol/Phase |
|    | MHz   | dBuV  | dBuV  | dB     | dB     | dBuV  |         |           |
| 1  | 0.150 | 31.51 | 56.00 | -24.49 | 19.56  | 11.95 | Average | Neutral   |
| 2  | 0.150 | 43.57 | 66.00 | -22.43 | 19.56  | 24.01 | QP      | Neutral   |
| 3  | 0.397 | 34.22 | 47.91 | -13.69 | 19.54  | 14.68 | Average | Neutral   |
| 4  | 0.397 | 47.54 | 57.91 | -10.37 | 19.54  | 28.00 | QP      | Neutral   |
| 5  | 0.491 | 32.54 | 46.15 | -13.61 | 19.55  | 12.99 | Average | Neutral   |
| 6  | 0.491 | 43.68 | 56.15 | -12.47 | 19.55  | 24.13 | QP      | Neutral   |
| 7  | 0.687 | 31.18 | 46.00 | -14.82 | 19.56  | 11.62 | Average | Neutral   |
| 8  | 0.687 | 41.05 | 56.00 | -14.95 | 19.56  | 21.49 | QP      | Neutral   |
| 9  | 0.869 | 30.14 | 46.00 | -15.86 | 19.58  | 10.56 | Average | Neutral   |
| 10 | 0.869 | 39.86 | 56.00 | -16.14 | 19.58  | 20.28 | QP      | Neutral   |
| 11 | 1.466 | 29.21 | 46.00 | -16.79 | 19.63  | 9.58  | Average | Neutral   |
| 12 | 1.466 | 37.05 | 56.00 | -18.95 | 19.63  | 17.42 | QP      | Neutral   |

## 6 FCC §15.209, §15.205, §15.247(d) – Spurious Emissions

### 6.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz.

As Per FCC §15.205(a) and RSS-Gen except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                 | MHz                   | MHz             | GHz           |
|---------------------|-----------------------|-----------------|---------------|
| 0.090 – 0.110       | 16.42 – 16.423        | 960 – 1240      | 4.5 – 5.15    |
| 0.495 – 0.505       | 16.69475 – 16.69525   | 1300 – 1427     | 5.35 – 5.46   |
| 2.1735 – 2.1905     | 25.5 – 25.67          | 1435 – 1626.5   | 7.25 – 7.75   |
| 4.125 – 4.128       | 37.5 – 38.25          | 1645.5 – 1646.5 | 8.025 – 8.5   |
| 4.17725 – 4.17775   | 73 – 74.6             | 1660 – 1710     | 9.0 – 9.2     |
| 4.20725 – 4.20775   | 74.8 – 75.2           | 1718.8 – 1722.2 | 9.3 – 9.5     |
| 6.215 – 6.218       | 108 – 121.94          | 2200 – 2300     | 10.6 – 12.7   |
| 6.26775 – 6.26825   | 123 – 138             | 2310 – 2390     | 13.25 – 13.4  |
| 6.31175 – 6.31225   | 149.9 – 150.05        | 2483.5 – 2500   | 14.47 – 14.5  |
| 8.291 – 8.294       | 156.52475 – 156.52525 | 2690 – 2900     | 15.35 – 16.2  |
| 8.362 – 8.366       | 156.7 – 156.9         | 3260 – 3267     | 17.7 – 21.4   |
| 8.37625 – 8.38675   | 162.0125 – 167.17     | 3.332 – 3.339   | 22.01 – 23.12 |
| 8.41425 – 8.41475   | 167.72 – 173.2        | 3.3458 – 3.358  | 23.6 – 24.0   |
| 12.29 – 12.293      | 240 – 285             | 3.600 – 4.400   | 31.2 – 31.8   |
| 12.51975 – 12.52025 | 322 – 335.4           |                 | 36.43 – 36.5  |
| 12.57675 – 12.57725 | 399.9 – 410           |                 | Above 38.6    |
| 13.36 – 13.41       | 608 – 614             |                 |               |

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength (micro volts/meter) | Measurement Distance (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                             |

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As per FCC §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

## 6.2 Measurement Uncertainty

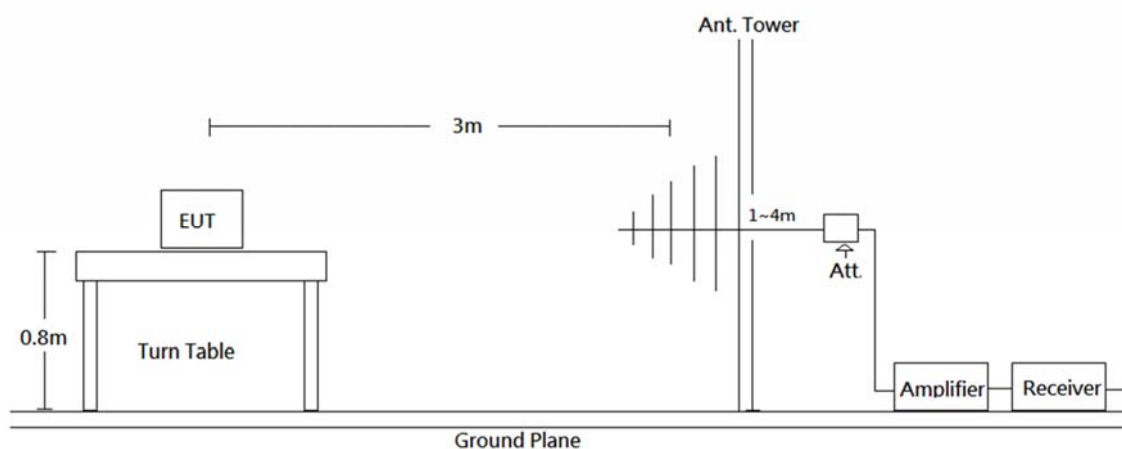
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Taiwan) is shown in below table. And the uncertainty will not be taken into consideration for the test data recorded in the report.

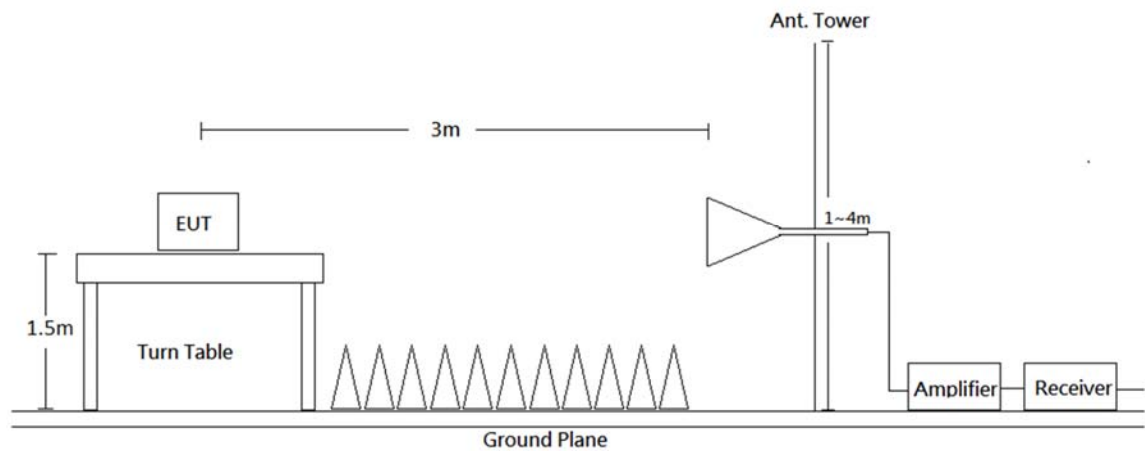
| Frequency      | Measurement uncertainty                |
|----------------|----------------------------------------|
| 30 MHz~200 MHz | 3.76 dB (k=2, 95% level of confidence) |
| 200 MHz~1 GHz  | 4.12 dB (k=2, 95% level of confidence) |
| 1 GHz~6 GHz    | 4.84 dB (k=2, 95% level of confidence) |
| 6 GHz~18 GHz   | 5.16 dB (k=2, 95% level of confidence) |
| 18 GHz~26 GHz  | 4.84 dB (k=2, 95% level of confidence) |
| 26 GHz~40 GHz  | 4.30 dB (k=2, 95% level of confidence) |

## 6.3 EUT Setup

Below 1 GHz:



Above 1 GHz:



Radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part 15.209 and FCC 15.247 Limits.

#### 6.4 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 26.5 GHz. During the radiated emission test, the EMI test receiver was set with the following configurations measurement method 6.3 in ANSI C63.10.

| Frequency Range | RBW     | VBW   | Detector | Duty cycle |
|-----------------|---------|-------|----------|------------|
| 30-1000 MHz     | 120 kHz | /     | QP       |            |
| Above 1 GHz     | 1 MHz   | 3 MHz | PK       |            |
|                 | 1 MHz   | 10 Hz | Ave      | >98%       |
|                 | 1 MHz   | 1/T   | Ave      | <98%       |

#### 6.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

## 6.6 Corrected Factor & Margin Calculation

The Correct Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Correct Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain} + \text{Attenuator}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Result} - \text{Limit}$$

## 6.7 Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.209 Limit. Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U(L_m) \leq L_{\text{lim}} + U_{\text{Cispr}}$$

In BACL,  $U(L_m)$  is less than  $U_{\text{Cispr}}$ , if  $L_m$  is less than  $L_{\text{lim}}$ , it implies that the EUT complies with the limit.

## 6.8 Test Equipment List and Details

| Description       | Manufacturer    | Model                    | Serial Number          | Calibration Date | Calibration Due Date |
|-------------------|-----------------|--------------------------|------------------------|------------------|----------------------|
| 966A Room         |                 |                          |                        |                  |                      |
| Broadband Antenna | Sunol Sciences  | JB6                      | A050115                | 2016/11/16       | 2017/11/15           |
| Amplifier         | Sonoma          | 310N                     | 130602                 | 2016/7/15        | 2017/7/14            |
| EMI Test Receiver | Rohde & Schwarz | ESR7                     | 101419                 | 2016/11/3        | 2017/11/2            |
| Mircoflex Cable   | UTIFLEX         | UFB311A-Q-1440-300300    | 220490-006             | 2016/11/2        | 2017/11/1            |
| Mircoflex Cable   | UTIFLEX         | UFB197C-1-2362-70U-70U   | 225757-001             | 2016/7/15        | 2017/7/14            |
| Mircoflex Cable   | UTIFLEX         | UFA210A-1-3149-300300    | MFR64639<br>226389-001 | 2016/12/1        | 2017/11/30           |
| Turn Table        | Champro         | TT-2000                  | 060772-T               | N.C.R            | N.C.R                |
| Antenna Tower     | Champro         | AM-BS-4500-B             | 060772-A               | N.C.R            | N.C.R                |
| Controller        | Champro         | EM1000                   | 060772                 | N.C.R            | N.C.R                |
| Software          | Farad           | EZ EMC                   | BACL-03A1              | N.C.R            | N.C.R                |
| Broadband Antenna | Sunol Sciences  | JB6                      | A050115                | 2016/11/16       | 2017/11/15           |
| Horn Antenna      | EMCO            | 3115                     | 9311-4158              | 2016/5/10        | 2017/5/9             |
| Horn Antenna      | ETS-Lindgren    | 3116                     | 00062638               | 2016/9/5         | 2017/9/4             |
| Preamplifier      | EMEC            | EM01G18G                 | 060657                 | 2016/12/13       | 2017/12/12           |
| Preamplifier      | EMEC            | EM18G40G                 | 060656                 | 2016/12/13       | 2017/12/12           |
| Spectrum Analyzer | Rohde & Schwarz | FSV40                    | 101203                 | 2016/07/13       | 2017/07/12           |
| Mircoflex Cable   | ROSNAL          | K1K50-UP0264-K1K50-80CM  | 160309-2               | 2017/1/18        | 2018/1/17            |
| Mircoflex Cable   | ROSNAL          | K1K50-UP0264-K1K50-450CM | 160309-1               | 2017/3/24        | 2018/3/23            |

**\* Statement of Traceability:** BACL Corp. attests that all calibrations have been performed according to TAF requirements, traceable to the ETC.

## 6.9 Test Environmental Conditions

|                    |          |
|--------------------|----------|
| Temperature:       | 24 ° C   |
| Relative Humidity: | 57 %     |
| ATM Pressure:      | 1020 hPa |

The testing was performed by David Hsu on 2017-03-27.

## 6.10 Test Results

**Below 1 GHz****Test Mode:** *Transmitting Mode.***Mode 1****Horizontal**

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 171.62             | 37.67             | -12.44                  | 25.23              | 43.50             | -18.27         | 100            | 77            | QP     |
| 399.57             | 36.36             | -7.74                   | 28.62              | 46.00             | -17.38         | 100            | 87            | QP     |
| 450.01             | 36.36             | -6.54                   | 29.82              | 46.00             | -16.18         | 100            | 360           | QP     |
| 616.85             | 27.95             | -3.76                   | 24.19              | 46.00             | -21.81         | 100            | 57            | QP     |
| 700.27             | 35.73             | -2.83                   | 32.90              | 46.00             | -13.10         | 100            | 48            | QP     |
| 750.71             | 41.93             | -1.79                   | 40.14              | 46.00             | -5.86          | 100            | 43            | QP     |

**Vertical**

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 151.25             | 36.60             | -11.22                  | 25.38              | 43.50             | -18.12         | 100            | 359           | QP     |
| 263.77             | 29.32             | -10.94                  | 18.38              | 46.00             | -27.62         | 100            | 350           | QP     |
| 350.10             | 41.04             | -8.78                   | 32.26              | 46.00             | -13.74         | 100            | 59            | QP     |
| 419.94             | 36.89             | -7.25                   | 29.64              | 46.00             | -16.36         | 100            | 127           | QP     |
| 504.33             | 29.92             | -5.66                   | 24.26              | 46.00             | -21.74         | 100            | 348           | QP     |
| 594.54             | 28.32             | -4.08                   | 24.24              | 46.00             | -21.76         | 100            | 208           | QP     |

**Mode 2****Horizontal**

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 219.15             | 41.99             | -12.77                  | 29.22              | 46.00             | -16.78         | 100            | 94            | QP     |
| 427.70             | 30.81             | -7.07                   | 23.74              | 46.00             | -22.26         | 100            | 102           | QP     |
| 652.74             | 28.24             | -3.32                   | 24.92              | 46.00             | -21.08         | 100            | 30            | QP     |
| 696.39             | 30.56             | -2.87                   | 27.69              | 46.00             | -18.31         | 100            | 40            | QP     |
| 781.75             | 28.54             | -1.02                   | 27.52              | 46.00             | -18.48         | 100            | 52            | QP     |
| 916.58             | 25.01             | 1.82                    | 26.83              | 46.00             | -19.17         | 100            | 324           | QP     |

**Vertical**

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 110.51             | 36.64             | -11.90                  | 24.74              | 43.50             | -18.76         | 100            | 359           | QP     |
| 344.28             | 32.21             | -8.89                   | 23.32              | 46.00             | -22.68         | 100            | 61            | QP     |
| 410.24             | 30.43             | -7.48                   | 22.95              | 46.00             | -23.05         | 100            | 101           | QP     |
| 583.87             | 29.82             | -4.30                   | 25.52              | 46.00             | -20.48         | 100            | 26            | QP     |
| 773.99             | 35.54             | -1.21                   | 34.33              | 46.00             | -11.67         | 100            | 217           | QP     |
| 900.09             | 29.43             | 1.40                    | 30.83              | 46.00             | -15.17         | 100            | 338           | QP     |

**Mode 3****Horizontal**

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 162.89             | 35.12             | -11.58                  | 23.54              | 43.50             | -19.96         | 100            | 50            | QP     |
| 249.22             | 51.78             | -12.05                  | 39.73              | 46.00             | -6.27          | 100            | 80            | QP     |
| 387.93             | 29.00             | -7.98                   | 21.02              | 46.00             | -24.98         | 100            | 324           | QP     |
| 536.34             | 29.00             | -5.19                   | 23.81              | 46.00             | -22.19         | 100            | 204           | QP     |
| 704.15             | 32.99             | -2.74                   | 30.25              | 46.00             | -15.75         | 100            | 116           | QP     |
| 805.03             | 35.31             | -0.47                   | 34.84              | 46.00             | -11.16         | 100            | 348           | QP     |

**Vertical**

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 110.51             | 36.19             | -11.90                  | 24.29              | 43.50             | -19.21         | 100            | 359           | QP     |
| 232.73             | 36.41             | -12.24                  | 24.17              | 46.00             | -21.83         | 100            | 72            | QP     |
| 285.11             | 33.26             | -9.97                   | 23.29              | 46.00             | -22.71         | 100            | 84            | QP     |
| 423.82             | 32.17             | -7.16                   | 25.01              | 46.00             | -20.99         | 100            | 104           | QP     |
| 583.87             | 26.29             | -4.30                   | 21.99              | 46.00             | -24.01         | 100            | 26            | QP     |
| 793.39             | 28.63             | -0.73                   | 27.90              | 46.00             | -18.10         | 100            | 263           | QP     |

**Mode 4****Horizontal**

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 182.29             | 38.77             | -13.01                  | 25.76              | 43.50             | -17.74         | 100            | 69            | QP     |
| 357.86             | 31.16             | -8.61                   | 22.55              | 46.00             | -23.45         | 100            | 73            | QP     |
| 462.62             | 29.88             | -6.33                   | 23.55              | 46.00             | -22.45         | 100            | 353           | QP     |
| 576.11             | 29.43             | -4.46                   | 24.97              | 46.00             | -21.03         | 100            | 48            | QP     |
| 700.27             | 36.07             | -2.83                   | 33.24              | 46.00             | -12.76         | 100            | 48            | QP     |
| 834.13             | 38.30             | 0.10                    | 38.40              | 46.00             | -7.60          | 100            | 325           | QP     |

**Vertical**

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 327.79             | 29.77             | -9.25                   | 20.52              | 46.00             | -25.48         | 100            | 135           | QP     |
| 365.62             | 26.81             | -8.45                   | 18.36              | 46.00             | -27.64         | 100            | 65            | QP     |
| 438.37             | 32.36             | -6.81                   | 25.55              | 46.00             | -20.45         | 100            | 15            | QP     |
| 540.22             | 35.86             | -5.14                   | 30.72              | 46.00             | -15.28         | 100            | 15            | QP     |
| 571.26             | 27.15             | -4.55                   | 22.60              | 46.00             | -23.40         | 100            | 108           | QP     |
| 720.64             | 32.48             | -2.40                   | 30.08              | 46.00             | -15.92         | 100            | 133           | QP     |

**Mode 5****Horizontal**

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 59.10              | 45.87             | -17.42                  | 28.45              | 40.00             | -11.55         | 100            | 345           | QP     |
| 250.19             | 53.84             | -12.06                  | 41.78              | 46.00             | -4.22          | 100            | 97            | QP     |
| 413.15             | 30.39             | -7.42                   | 22.97              | 46.00             | -23.03         | 100            | 75            | QP     |
| 552.83             | 27.03             | -4.93                   | 22.10              | 46.00             | -23.90         | 100            | 56            | QP     |
| 684.75             | 35.47             | -2.99                   | 32.48              | 46.00             | -13.52         | 100            | 38            | QP     |
| 900.09             | 30.41             | 1.40                    | 31.81              | 46.00             | -14.19         | 100            | 171           | QP     |

**Vertical**

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 105.66             | 38.01             | -13.06                  | 24.95              | 43.50             | -18.55         | 100            | 178           | QP     |
| 263.77             | 29.06             | -10.94                  | 18.12              | 46.00             | -27.88         | 100            | 350           | QP     |
| 517.91             | 31.57             | -5.46                   | 26.11              | 46.00             | -19.89         | 100            | 87            | QP     |
| 684.75             | 28.90             | -2.99                   | 25.91              | 46.00             | -20.09         | 100            | 258           | QP     |
| 848.68             | 28.75             | 0.39                    | 29.14              | 46.00             | -16.86         | 100            | 332           | QP     |
| 919.49             | 26.25             | 1.89                    | 28.14              | 46.00             | -17.86         | 100            | 5             | QP     |

**Above 1 GHz****Test Mode:** *Transmitting Mode.***Mode 1****Horizontal**

| Frequency<br>(MHz)     | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|------------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| B Mode, Low Channel    |                   |                         |                    |                   |                |                |               |        |
| 2390.00                | 29.71             | 32.82                   | 62.53              | 74.00             | -11.47         | 120            | 83            | peak   |
| 2390.00                | 18.95             | 32.82                   | 51.77              | 54.00             | -2.23          | 120            | 83            | AVG    |
| 2412.00                | 88.75             | 32.88                   | 121.63             | N/A               | N/A            | 120            | 83            | peak   |
| 2412.00                | 85.43             | 32.88                   | 118.31             | N/A               | N/A            | 120            | 83            | AVG    |
| 4824.00                | 55.03             | 1.05                    | 56.08              | 74.00             | -17.92         | 138            | 106           | peak   |
| 4824.00                | 52.60             | 1.05                    | 53.65              | 54.00             | -0.35          | 138            | 106           | AVG    |
| B Mode, Middle Channel |                   |                         |                    |                   |                |                |               |        |
| 2390.00                | 30.84             | 32.82                   | 63.66              | 74.00             | -10.34         | 127            | 269           | peak   |
| 2390.00                | 16.50             | 32.82                   | 49.32              | 54.00             | -4.68          | 127            | 269           | AVG    |
| 2437.00                | 91.53             | 32.94                   | 124.47             | N/A               | N/A            | 127            | 269           | peak   |
| 2437.00                | 88.39             | 32.94                   | 121.33             | N/A               | N/A            | 127            | 269           | AVG    |
| 2483.50                | 28.05             | 33.05                   | 61.10              | 74.00             | -12.90         | 127            | 269           | peak   |
| 2483.50                | 14.77             | 33.05                   | 47.82              | 54.00             | -6.18          | 127            | 269           | AVG    |
| 4874.00                | 54.07             | 1.23                    | 55.30              | 74.00             | -18.70         | 133            | 285           | peak   |
| 4874.00                | 51.95             | 1.23                    | 53.18              | 54.00             | -0.82          | 133            | 285           | AVG    |
| B Mode, High Channel   |                   |                         |                    |                   |                |                |               |        |
| 2462.00                | 91.05             | 33.01                   | 124.06             | N/A               | N/A            | 137            | 91            | peak   |
| 2462.00                | 87.54             | 33.01                   | 120.55             | N/A               | N/A            | 137            | 91            | AVG    |
| 2483.50                | 29.61             | 33.05                   | 62.66              | 74.00             | -11.34         | 131            | 149           | peak   |
| 2483.50                | 14.85             | 33.05                   | 47.90              | 54.00             | -6.10          | 131            | 149           | AVG    |
| 4924.00                | 53.52             | 1.40                    | 54.92              | 74.00             | -19.08         | 125            | 86            | peak   |
| 4924.00                | 51.74             | 1.40                    | 53.14              | 54.00             | -0.86          | 125            | 86            | AVG    |

Note: Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

**Vertical**

| Frequency<br>(MHz)     | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|------------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| B Mode, Low Channel    |                   |                         |                    |                   |                |                |               |        |
| 2390.00                | 28.00             | 32.82                   | 60.82              | 74.00             | -13.18         | 188            | 172           | peak   |
| 2390.00                | 15.88             | 32.82                   | 48.70              | 54.00             | -5.30          | 188            | 172           | AVG    |
| 2412.00                | 79.31             | 32.88                   | 112.19             | N/A               | N/A            | 188            | 172           | peak   |
| 2412.00                | 75.78             | 32.88                   | 108.66             | N/A               | N/A            | 188            | 172           | AVG    |
| 4824.00                | 52.05             | 1.05                    | 53.10              | 74.00             | -20.90         | 134            | 186           | peak   |
| 4824.00                | 51.78             | 1.05                    | 52.83              | 54.00             | -1.17          | 134            | 186           | AVG    |
| 7236.00                | 47.41             | 6.69                    | 54.10              | 74.00             | -19.90         | 144            | 36            | peak   |
| 7236.00                | 44.11             | 6.69                    | 50.80              | 54.00             | -3.20          | 144            | 36            | AVG    |
| B Mode, Middle Channel |                   |                         |                    |                   |                |                |               |        |
| 2390.00                | 27.99             | 32.82                   | 60.81              | 74.00             | -13.19         | 172            | 193           | peak   |
| 2390.00                | 14.91             | 32.82                   | 47.73              | 54.00             | -6.27          | 172            | 193           | AVG    |
| 2437.00                | 82.01             | 32.94                   | 114.95             | N/A               | N/A            | 172            | 193           | peak   |
| 2437.00                | 79.68             | 32.94                   | 112.62             | N/A               | N/A            | 172            | 193           | AVG    |
| 2483.50                | 27.74             | 33.05                   | 60.79              | 74.00             | -13.21         | 172            | 193           | peak   |
| 2483.50                | 14.39             | 33.05                   | 47.44              | 54.00             | -6.56          | 172            | 193           | AVG    |
| 4874.00                | 53.26             | 1.23                    | 54.49              | 74.00             | -19.51         | 137            | 357           | peak   |
| 4874.00                | 49.63             | 1.23                    | 50.86              | 54.00             | -3.14          | 137            | 357           | AVG    |
| 7311.00                | 47.59             | 6.97                    | 54.56              | 74.00             | -19.44         | 128            | 280           | peak   |
| 7311.00                | 41.87             | 6.97                    | 48.84              | 54.00             | -5.16          | 128            | 280           | AVG    |
| B Mode, High Channel   |                   |                         |                    |                   |                |                |               |        |
| 2462.00                | 80.50             | 33.01                   | 113.51             | N/A               | N/A            | 177            | 162           | peak   |
| 2462.00                | 78.23             | 33.01                   | 111.24             | N/A               | N/A            | 177            | 162           | AVG    |
| 2483.50                | 27.00             | 33.05                   | 60.05              | 74.00             | -13.95         | 177            | 162           | peak   |
| 2483.50                | 14.73             | 33.05                   | 47.78              | 54.00             | -6.22          | 177            | 162           | AVG    |
| 4924.00                | 53.37             | 1.40                    | 54.77              | 74.00             | -19.23         | 136            | 357           | peak   |
| 4924.00                | 51.34             | 1.40                    | 52.74              | 54.00             | -1.26          | 136            | 357           | AVG    |
| 7386.00                | 45.61             | 7.28                    | 52.89              | 74.00             | -21.11         | 114            | 186           | peak   |
| 7386.00                | 40.70             | 7.28                    | 47.98              | 54.00             | -6.02          | 114            | 186           | AVG    |

Note: Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

**Horizontal**

| Frequency<br>(MHz)     | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|------------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| G Mode, Low Channel    |                   |                         |                    |                   |                |                |               |        |
| 2390.00                | 37.60             | 32.82                   | 70.42              | 74.00             | -3.58          | 128            | 280           | peak   |
| 2390.00                | 19.45             | 32.82                   | 52.27              | 54.00             | -1.73          | 128            | 280           | AVG    |
| 2412.00                | 87.02             | 32.88                   | 119.90             | N/A               | N/A            | 128            | 280           | peak   |
| 2412.00                | 77.88             | 32.88                   | 110.76             | N/A               | N/A            | 128            | 280           | AVG    |
| 4824.00                | 56.89             | 1.05                    | 57.94              | 74.00             | -16.06         | 133            | 79            | peak   |
| 4824.00                | 45.31             | 1.05                    | 46.36              | 54.00             | -7.64          | 133            | 79            | AVG    |
| 7236.00                | 54.92             | 6.69                    | 61.61              | 74.00             | -12.39         | 153            | 107           | peak   |
| 7236.00                | 42.67             | 6.69                    | 49.36              | 54.00             | -4.64          | 153            | 107           | AVG    |
| G Mode, Middle Channel |                   |                         |                    |                   |                |                |               |        |
| 2390.00                | 28.35             | 32.82                   | 61.17              | 74.00             | -12.83         | 151            | 269           | peak   |
| 2390.00                | 17.30             | 32.82                   | 50.12              | 54.00             | -3.88          | 151            | 269           | AVG    |
| 2437.00                | 86.22             | 32.94                   | 119.16             | N/A               | N/A            | 151            | 269           | peak   |
| 2437.00                | 78.34             | 32.94                   | 111.28             | N/A               | N/A            | 151            | 269           | AVG    |
| 2483.50                | 27.25             | 33.05                   | 60.30              | 74.00             | -13.70         | 151            | 269           | peak   |
| 2483.50                | 17.64             | 33.05                   | 50.69              | 54.00             | -3.31          | 151            | 269           | AVG    |
| 4874.00                | 52.98             | 1.23                    | 54.21              | 74.00             | -19.79         | 133            | 116           | peak   |
| 4874.00                | 40.93             | 1.23                    | 42.16              | 54.00             | -11.84         | 133            | 116           | AVG    |
| 7311.00                | 51.48             | 6.98                    | 58.46              | 74.00             | -15.54         | 147            | 329           | peak   |
| 7311.00                | 41.61             | 6.98                    | 48.59              | 54.00             | -5.41          | 147            | 329           | AVG    |
| G Mode, High Channel   |                   |                         |                    |                   |                |                |               |        |
| 2462.00                | 85.65             | 33.01                   | 118.66             | N/A               | N/A            | 139            | 91            | peak   |
| 2462.00                | 77.69             | 33.01                   | 110.70             | N/A               | N/A            | 139            | 91            | AVG    |
| 2483.50                | 37.06             | 33.05                   | 70.11              | 74.00             | -3.89          | 139            | 91            | peak   |
| 2483.50                | 18.47             | 33.05                   | 51.52              | 54.00             | -2.48          | 139            | 91            | AVG    |
| 4924.00                | 52.18             | 1.40                    | 53.58              | 74.00             | -20.42         | 125            | 27            | peak   |
| 4924.00                | 41.41             | 1.40                    | 42.81              | 54.00             | -11.19         | 125            | 27            | AVG    |

Note: Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

**Vertical**

| Frequency<br>(MHz)     | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|------------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| G Mode, Low Channel    |                   |                         |                    |                   |                |                |               |        |
| 2390.00                | 30.88             | 32.82                   | 63.70              | 74.00             | -10.30         | 163            | 191           | peak   |
| 2390.00                | 17.06             | 32.82                   | 49.88              | 54.00             | -4.12          | 163            | 191           | AVG    |
| 2412.00                | 77.50             | 32.88                   | 110.38             | N/A               | N/A            | 163            | 191           | peak   |
| 2412.00                | 69.13             | 32.88                   | 102.01             | N/A               | N/A            | 163            | 191           | AVG    |
| 4824.00                | 60.21             | 1.05                    | 61.26              | 74.00             | -12.74         | 154            | 33            | peak   |
| 4824.00                | 48.42             | 1.05                    | 49.47              | 54.00             | -4.53          | 154            | 33            | AVG    |
| 7236.00                | 62.57             | 6.69                    | 69.26              | 74.00             | -4.74          | 141            | 98            | peak   |
| 7236.00                | 46.37             | 6.69                    | 53.06              | 54.00             | -0.94          | 141            | 98            | AVG    |
| G Mode, Middle Channel |                   |                         |                    |                   |                |                |               |        |
| 2390.00                | 26.92             | 32.82                   | 59.74              | 74.00             | -14.26         | 185            | 197           | peak   |
| 2390.00                | 14.50             | 32.82                   | 47.32              | 54.00             | -6.68          | 185            | 197           | AVG    |
| 2437.00                | 78.64             | 32.94                   | 111.58             | N/A               | N/A            | 185            | 197           | peak   |
| 2437.00                | 69.60             | 32.94                   | 102.54             | N/A               | N/A            | 185            | 197           | AVG    |
| 2483.50                | 28.71             | 33.05                   | 61.76              | 74.00             | -12.24         | 185            | 197           | peak   |
| 2483.50                | 14.83             | 33.05                   | 47.88              | 54.00             | -6.12          | 185            | 197           | AVG    |
| 4874.00                | 55.96             | 1.23                    | 57.19              | 74.00             | -16.81         | 143            | 112           | peak   |
| 4874.00                | 42.37             | 1.23                    | 43.60              | 54.00             | -10.40         | 143            | 112           | AVG    |
| 7311.00                | 58.02             | 6.98                    | 65.00              | 74.00             | -9.00          | 147            | 196           | peak   |
| 7311.00                | 43.93             | 6.98                    | 50.91              | 54.00             | -3.09          | 147            | 196           | AVG    |
| G Mode, High Channel   |                   |                         |                    |                   |                |                |               |        |
| 2462.00                | 77.04             | 33.01                   | 110.05             | N/A               | N/A            | 180            | 160           | peak   |
| 2462.00                | 68.33             | 33.01                   | 101.34             | N/A               | N/A            | 180            | 160           | AVG    |
| 2483.50                | 28.63             | 33.05                   | 61.68              | 74.00             | -12.32         | 180            | 160           | peak   |
| 2483.50                | 15.33             | 33.05                   | 48.38              | 54.00             | -5.62          | 180            | 160           | AVG    |
| 4924.00                | 57.49             | 1.40                    | 58.89              | 74.00             | -15.11         | 152            | 220           | peak   |
| 4924.00                | 44.31             | 1.40                    | 45.71              | 54.00             | -8.29          | 152            | 220           | AVG    |
| 7386.00                | 57.76             | 7.28                    | 65.04              | 74.00             | -8.96          | 138            | 123           | peak   |
| 7386.00                | 42.36             | 7.28                    | 49.64              | 54.00             | -4.36          | 138            | 123           | AVG    |

Note: Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

**Horizontal**

| Frequency<br>(MHz)       | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| N20 Mode, Low Channel    |                   |                         |                    |                   |                |                |               |        |
| 2390.00                  | 35.65             | 32.82                   | 68.47              | 74.00             | -5.53          | 132            | 185           | peak   |
| 2390.00                  | 17.78             | 32.82                   | 50.60              | 54.00             | -3.40          | 132            | 185           | AVG    |
| 2412.00                  | 85.29             | 32.88                   | 118.17             | N/A               | N/A            | 135            | 283           | peak   |
| 2412.00                  | 75.17             | 32.88                   | 108.05             | N/A               | N/A            | 135            | 283           | AVG    |
| 4824.00                  | 55.51             | 1.05                    | 56.56              | 74.00             | -17.44         | 127            | 313           | peak   |
| 4824.00                  | 40.96             | 1.05                    | 42.01              | 54.00             | -11.99         | 127            | 313           | AVG    |
| 7236.00                  | 51.04             | 6.69                    | 57.73              | 74.00             | -16.27         | 134            | 149           | peak   |
| 7236.00                  | 38.69             | 6.69                    | 45.38              | 54.00             | -8.62          | 134            | 149           | AVG    |
| N20 Mode, Middle Channel |                   |                         |                    |                   |                |                |               |        |
| 2390.00                  | 35.94             | 32.82                   | 68.76              | 74.00             | -5.24          | 139            | 84            | peak   |
| 2390.00                  | 20.04             | 32.82                   | 52.86              | 54.00             | -1.14          | 139            | 84            | AVG    |
| 2437.00                  | 88.38             | 32.94                   | 121.32             | N/A               | N/A            | 139            | 84            | peak   |
| 2437.00                  | 77.17             | 32.94                   | 110.11             | N/A               | N/A            | 139            | 84            | AVG    |
| 2483.50                  | 30.37             | 33.05                   | 63.42              | 74.00             | -10.58         | 139            | 84            | peak   |
| 2483.50                  | 15.03             | 33.05                   | 48.08              | 54.00             | -5.92          | 139            | 84            | AVG    |
| 4874.00                  | 48.82             | 1.23                    | 50.05              | 74.00             | -23.95         | 135            | 218           | peak   |
| 4874.00                  | 38.51             | 1.23                    | 39.74              | 54.00             | -14.26         | 135            | 218           | AVG    |
| 7311.00                  | 49.69             | 6.98                    | 56.67              | 74.00             | -17.33         | 146            | 354           | peak   |
| 7311.00                  | 37.11             | 6.98                    | 44.09              | 54.00             | -9.91          | 146            | 354           | AVG    |
| N20 Mode, High Channel   |                   |                         |                    |                   |                |                |               |        |
| 2462.00                  | 84.77             | 33.01                   | 117.78             | N/A               | N/A            | 131            | 286           | peak   |
| 2462.00                  | 75.16             | 33.01                   | 108.17             | N/A               | N/A            | 131            | 286           | AVG    |
| 2483.50                  | 33.63             | 33.05                   | 66.68              | 74.00             | -7.32          | 131            | 286           | peak   |
| 2483.50                  | 20.14             | 33.05                   | 53.19              | 54.00             | -0.81          | 131            | 286           | AVG    |
| 4924.00                  | 49.73             | 1.40                    | 51.13              | 74.00             | -22.87         | 135            | 146           | peak   |
| 4924.00                  | 39.32             | 1.40                    | 40.72              | 54.00             | -13.28         | 135            | 146           | AVG    |

Note: Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

**Vertical**

| Frequency<br>(MHz)       | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| N20 Mode, Low Channel    |                   |                         |                    |                   |                |                |               |        |
| 2390.00                  | 29.57             | 32.82                   | 62.39              | 74.00             | -11.61         | 192            | 189           | peak   |
| 2390.00                  | 15.57             | 32.82                   | 48.39              | 54.00             | -5.61          | 192            | 189           | AVG    |
| 2412.00                  | 77.76             | 32.88                   | 110.64             | N/A               | N/A            | 192            | 189           | peak   |
| 2412.00                  | 66.40             | 32.88                   | 99.28              | N/A               | N/A            | 192            | 189           | AVG    |
| 4824.00                  | 59.22             | 1.05                    | 60.27              | 74.00             | -13.73         | 169            | 270           | peak   |
| 4824.00                  | 44.49             | 1.05                    | 45.54              | 54.00             | -8.46          | 169            | 270           | AVG    |
| 7236.00                  | 58.21             | 6.69                    | 64.90              | 74.00             | -9.10          | 153            | 326           | peak   |
| 7236.00                  | 45.96             | 6.69                    | 52.65              | 54.00             | -1.35          | 153            | 326           | AVG    |
| N20 Mode, Middle Channel |                   |                         |                    |                   |                |                |               |        |
| 2390.00                  | 27.93             | 32.82                   | 60.75              | 74.00             | -13.25         | 179            | 170           | peak   |
| 2390.00                  | 14.76             | 32.82                   | 47.58              | 54.00             | -6.42          | 179            | 170           | AVG    |
| 2437.00                  | 80.01             | 32.94                   | 112.95             | N/A               | N/A            | 185            | 197           | peak   |
| 2437.00                  | 68.93             | 32.94                   | 101.87             | N/A               | N/A            | 185            | 197           | AVG    |
| 2483.50                  | 27.67             | 33.05                   | 60.72              | 74.00             | -13.28         | 182            | 161           | peak   |
| 2483.50                  | 14.72             | 33.05                   | 47.77              | 54.00             | -6.23          | 182            | 161           | AVG    |
| 4874.00                  | 55.70             | 1.23                    | 56.93              | 74.00             | -17.07         | 158            | 321           | peak   |
| 4874.00                  | 38.43             | 1.23                    | 39.66              | 54.00             | -14.34         | 158            | 321           | AVG    |
| 7311.00                  | 56.47             | 6.98                    | 63.45              | 74.00             | -10.55         | 144            | 55            | peak   |
| 7311.00                  | 43.12             | 6.98                    | 50.10              | 54.00             | -3.90          | 144            | 55            | AVG    |
| N20 Mode, High Channel   |                   |                         |                    |                   |                |                |               |        |
| 2462.00                  | 76.54             | 33.01                   | 109.55             | N/A               | N/A            | 177            | 159           | peak   |
| 2462.00                  | 65.15             | 33.01                   | 98.16              | N/A               | N/A            | 177            | 159           | AVG    |
| 2483.50                  | 28.80             | 33.05                   | 61.85              | 74.00             | -12.15         | 193            | 346           | peak   |
| 2483.50                  | 15.65             | 33.05                   | 48.70              | 54.00             | -5.30          | 193            | 346           | AVG    |
| 4924.00                  | 53.13             | 1.40                    | 54.53              | 74.00             | -19.47         | 156            | 113           | peak   |
| 4924.00                  | 42.19             | 1.40                    | 43.59              | 54.00             | -10.41         | 156            | 113           | AVG    |
| 7386.00                  | 52.46             | 7.28                    | 59.74              | 74.00             | -14.26         | 171            | 108           | peak   |
| 7386.00                  | 40.77             | 7.28                    | 48.05              | 54.00             | -5.95          | 171            | 108           | AVG    |

Note: Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

**Horizontal**

| Frequency<br>(MHz)       | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| N40 Mode, Low Channel    |                   |                         |                    |                   |                |                |               |        |
| 2390.00                  | 31.81             | 32.82                   | 64.63              | 74.00             | -9.37          | 125            | 291           | peak   |
| 2390.00                  | 19.58             | 32.82                   | 52.40              | 54.00             | -1.60          | 125            | 291           | AVG    |
| 2422.00                  | 82.06             | 32.91                   | 114.97             | N/A               | N/A            | 125            | 80            | peak   |
| 2422.00                  | 71.07             | 32.91                   | 103.98             | N/A               | N/A            | 125            | 80            | AVG    |
| 4844.00                  | 48.24             | 1.12                    | 49.36              | 74.00             | -24.64         | 116            | 67            | peak   |
| 4844.00                  | 33.19             | 1.12                    | 34.31              | 54.00             | -19.69         | 116            | 67            | AVG    |
| N40 Mode, Middle Channel |                   |                         |                    |                   |                |                |               |        |
| 2390.00                  | 29.47             | 32.82                   | 62.29              | 74.00             | -11.71         | 115            | 83            | peak   |
| 2390.00                  | 17.24             | 32.82                   | 50.06              | 54.00             | -3.94          | 115            | 83            | AVG    |
| 2437.00                  | 82.42             | 32.94                   | 115.36             | N/A               | N/A            | 115            | 83            | peak   |
| 2437.00                  | 70.62             | 32.94                   | 103.56             | N/A               | N/A            | 115            | 83            | AVG    |
| 2483.50                  | 34.86             | 33.05                   | 67.91              | 74.00             | -6.09          | 115            | 83            | peak   |
| 2483.50                  | 18.58             | 33.05                   | 51.63              | 54.00             | -2.37          | 115            | 83            | AVG    |
| 4893.00                  | 49.29             | 1.23                    | 50.64              | 74.00             | -23.36         | 111            | 184           | peak   |
| 4893.00                  | 34.50             | 1.23                    | 35.85              | 54.00             | -18.15         | 111            | 184           | AVG    |
| N40 Mode, High Channel   |                   |                         |                    |                   |                |                |               |        |
| 2452.00                  | 79.94             | 32.98                   | 112.92             | N/A               | N/A            | 117            | 266           | peak   |
| 2452.00                  | 69.32             | 32.98                   | 102.30             | N/A               | N/A            | 117            | 266           | AVG    |
| 2483.50                  | 34.99             | 33.05                   | 68.04              | 74.00             | -5.96          | 117            | 288           | peak   |
| 2483.50                  | 18.36             | 33.05                   | 51.41              | 54.00             | -2.59          | 117            | 288           | AVG    |
| 4904.00                  | 49.00             | 1.33                    | 50.33              | 74.00             | -23.67         | 123            | 248           | peak   |
| 4904.00                  | 36.41             | 1.33                    | 37.74              | 54.00             | -16.26         | 123            | 248           | AVG    |

Note: Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

**Vertical**

| Frequency<br>(MHz)       | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| N40 Mode, Low Channel    |                   |                         |                    |                   |                |                |               |        |
| 2390.00                  | 28.24             | 32.82                   | 61.06              | 74.00             | -12.94         | 184            | 169           | peak   |
| 2390.00                  | 15.90             | 32.82                   | 48.72              | 54.00             | -5.28          | 184            | 169           | AVG    |
| 2422.00                  | 72.24             | 32.91                   | 105.15             | N/A               | N/A            | 184            | 169           | peak   |
| 2422.00                  | 62.71             | 32.91                   | 95.62              | N/A               | N/A            | 184            | 169           | AVG    |
| 4844.00                  | 51.55             | 1.12                    | 52.67              | 74.00             | -21.33         | 166            | 240           | peak   |
| 4844.00                  | 36.29             | 1.12                    | 37.41              | 54.00             | -16.59         | 166            | 240           | AVG    |
| 7266.00                  | 52.18             | 6.80                    | 58.98              | 74.00             | -15.02         | 123            | 211           | peak   |
| 7266.00                  | 39.97             | 6.80                    | 46.77              | 54.00             | -7.23          | 123            | 211           | AVG    |
| N40 Mode, Middle Channel |                   |                         |                    |                   |                |                |               |        |
| 2390.00                  | 27.71             | 32.82                   | 60.53              | 74.00             | -13.47         | 144            | 201           | peak   |
| 2390.00                  | 14.87             | 32.82                   | 47.69              | 54.00             | -6.31          | 144            | 201           | AVG    |
| 2437.00                  | 74.11             | 32.94                   | 107.05             | N/A               | N/A            | 165            | 197           | peak   |
| 2437.00                  | 63.22             | 32.94                   | 96.16              | N/A               | N/A            | 165            | 197           | AVG    |
| 2483.50                  | 27.79             | 33.05                   | 60.84              | 74.00             | -13.16         | 172            | 356           | peak   |
| 2483.50                  | 15.52             | 33.05                   | 48.57              | 54.00             | -5.43          | 172            | 356           | AVG    |
| 4874.00                  | 49.66             | 1.23                    | 50.89              | 74.00             | -23.11         | 171            | 324           | peak   |
| 4874.00                  | 38.29             | 1.23                    | 39.52              | 54.00             | -14.48         | 171            | 324           | AVG    |
| 7311.00                  | 51.92             | 6.98                    | 58.90              | 74.00             | -15.10         | 168            | 202           | peak   |
| 7311.00                  | 41.84             | 6.98                    | 48.82              | 54.00             | -5.18          | 168            | 202           | AVG    |
| N40 Mode, High Channel   |                   |                         |                    |                   |                |                |               |        |
| 2452.00                  | 70.38             | 32.98                   | 103.36             | N/A               | N/A            | 170            | 193           | peak   |
| 2452.00                  | 60.31             | 32.98                   | 93.29              | N/A               | N/A            | 170            | 193           | AVG    |
| 2483.50                  | 27.69             | 33.05                   | 60.74              | 74.00             | -13.26         | 170            | 193           | peak   |
| 2483.50                  | 14.67             | 33.05                   | 47.72              | 54.00             | -6.28          | 170            | 193           | AVG    |
| 4904.00                  | 48.23             | 1.33                    | 49.56              | 74.00             | -24.44         | 122            | 182           | peak   |
| 4904.00                  | 37.11             | 1.33                    | 38.44              | 54.00             | -15.56         | 122            | 182           | AVG    |

Note: Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

**Test Mode: simultaneous transmissions (LTE+2.4G WIFI) was worst case**

### Mode 1

#### Horizontal

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 319.06             | 36.21             | -9.44                   | 26.77              | 46.00             | -19.23         | 100            | 90            | QP     |
| 455.83             | 31.39             | -6.44                   | 24.95              | 46.00             | -21.05         | 100            | 269           | QP     |
| 587.75             | 26.86             | -4.23                   | 22.63              | 46.00             | -23.37         | 100            | 39            | QP     |
| 672.14             | 34.08             | -3.12                   | 30.96              | 46.00             | -15.04         | 100            | 29            | QP     |
| 790.48             | 32.85             | -0.80                   | 32.05              | 46.00             | -13.95         | 100            | 357           | QP     |
| 893.30             | 26.90             | 1.28                    | 28.18              | 46.00             | -17.82         | 100            | 318           | QP     |
| 3760.00            | 32.12             | -0.6                    | 31.52              | 74.00             | -42.48         | 100            | 222           | peak   |
| 3760.00            | 30.81             | -0.6                    | 30.21              | 54.00             | -23.79         | 100            | 222           | AVG    |
| 4824.00            | 30.87             | 1.05                    | 31.92              | 74.00             | -42.08         | 100            | 179           | peak   |
| 4824.00            | 29.19             | 1.05                    | 30.24              | 54.00             | -23.76         | 100            | 179           | AVG    |

#### Vertical

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 280.26             | 32.04             | -10.08                  | 21.96              | 46.00             | -24.04         | 100            | 49            | QP     |
| 475.23             | 34.11             | -6.12                   | 27.99              | 46.00             | -18.01         | 100            | 139           | QP     |
| 551.86             | 27.74             | -4.95                   | 22.79              | 46.00             | -23.21         | 100            | 12            | QP     |
| 674.08             | 28.46             | -3.10                   | 25.36              | 46.00             | -20.64         | 100            | 266           | QP     |
| 755.56             | 28.73             | -1.67                   | 27.06              | 46.00             | -18.94         | 100            | 208           | QP     |
| 950.53             | 26.24             | 2.68                    | 28.92              | 46.00             | -17.08         | 100            | 348           | QP     |
| 3760.00            | 30.55             | -0.6                    | 29.95              | 74.00             | -44.05         | 100            | 165           | peak   |
| 3760.00            | 28.97             | -0.6                    | 28.37              | 54.00             | -25.63         | 100            | 165           | AVG    |
| 4824.00            | 29.74             | 1.05                    | 30.79              | 74.00             | -43.21         | 100            | 298           | peak   |
| 4824.00            | 27.84             | 1.05                    | 28.89              | 54.00             | -25.11         | 100            | 298           | AVG    |

Note: Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

## 7 DECLARATION OF SIMILARITY

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Draytek Corporation  
No. 26, Fu Shing Rd., Hukou County, Hsinchu  
Industrial Park, Hsinchu 303 Taiwan

### DECLARATION OF SIMILARITY

May 12, 2017

FEDERAL COMMUNICATIONS COMMISSIONS  
Authorization and Evaluation Division  
7435 Oakland Mills Road  
Columbia, MD 21046

We Draytek Corporation hereby declare that product: VDSL2 & ADSL2+ Dual-WAN Security Router, model(s): Vigor2862BLgVn, Series Model: Vigor2862Ln, Vigor2862LVn, Vigor2862LFn, Vigor2862LFVn, Vigor2862Lgn, Vigor2862LgVn, Vigor2862LgFn, Vigor2862LgFVn, Vigor2862BLn, Vigor2862BLVn, Vigor2862BLFn, Vigor2862BLFVn, Vigor2862BLgn, Vigor2862BLgVn, Vigor2862BLgFn, Vigor2862BLgFVn, Vigor2926Ln, Vigor2926LVn, Vigor2926LFn, Vigor2926LFVn, Vigor2926Lgn, Vigor2926LgVn, Vigor2926LgFn, Vigor2926LgFVn, Vigor2860Ln, Vigor2860LVn, Vigor2860LFn, Vigor2860LFVn, Vigor2860Lgn, Vigor2860LgVn, Vigor2860LgFn, Vigor2860LgFVn, Vigor2860BLn, Vigor2860BLVn, Vigor2860BLFn, Vigor2860BLFVn, Vigor2860BLgn, Vigor2860BLgVn, Vigor2860BLgFn, Vigor2860BLgFVn, Vigor2925Ln, Vigor2925LVn, Vigor2925LFn, Vigor2925LFVn, Vigor2925Lgn, Vigor2925LgVn, Vigor2925LgFn, Vigor2925LgFVn, Vigor2862n, Vigor2862Vn, Vigor2862Fn, Vigor2862FVn, Vigor2862Bn, Vigor2862BVn, Vigor2862BFn, Vigor2862BFVn, Vigor2926n, Vigor2926Vn, Vigor2926Fn, Vigor2926FVn, Vigor2860n, Vigor2860Vn, Vigor2860Fn, Vigor2860FVn, Vigor2860Bn, Vigor2860BVn, Vigor2860BFn, Vigor2860BFVn, Vigor2925n, Vigor2925Vn, Vigor2925Fn, Vigor2925FVn, Vigor2832n, Vigor2832Vn are electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics as model: Vigor2862BLgVn tested by BACL, the results of which are featured in BACL project: RTWA170214001.

A description of the differences between the tested model and those that are declared similar are as follows:

2862, 2860, 2832, has dsl function  
2926, 2925 didn't has dsl function  
2862, 2860, 2832 for different marketing  
2926, 2925 for different marketing

n Only 2.4G Wi-fi function  
F Fiber function  
V VoIP function  
L LTE function  
B Bonding VDSL function  
g GPS function

Please contact me should there be need for any additional clarification or information.  
Best Regards,



Abbott Yu/ HW manager

No. 26, Fu Shing Rd., Hukou County, Hsinchu Industrial Park, Hsinchu 303 Taiwan

\*\*\*\*\* END OF REPORT \*\*\*\*\*