

## Supplemental “Transmit Simultaneously” Test Report

**Report No.:** RF160530E01-2 R1

**FCC ID:** 2AD8UFZCWI4A1

**Test Model:** WI4A-AC400i

**Received Date:** May 30, 2016

**Test Date:** June 21 to Aug. 18, 2016

**Issued Date:** Sep. 28, 2017

**Applicant:** Nokia Solutions and Networks.OY

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

| Issue No.        | Description         | Date Issued   |
|------------------|---------------------|---------------|
| RF160530E01-2    | Original release.   | Sep. 30, 2016 |
| RF160530E01-2 R1 | Revised section 3.1 | Sep. 28, 2017 |

## 1 Certificate of Conformity

**Product:** Wireless Access Point

**Brand:** NOKIA

**Test Model:** WI4A-AC400i

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Nokia Solutions and Networks.OY

**Test Date:** June 21 to Aug. 18, 2016

**Standards:** 47 CFR FCC Part 15, Subpart C (Section 15.247)  
ANSI C63.10: 2013

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

**Prepared by :** Wendy Wu , **Date:** Sep. 28, 2017  
Wendy Wu / Specialist

**Approved by :** May Chen , **Date:** Sep. 28, 2017  
May Chen / Manager

## 2 Summary of Test Results

| 47 CFR FCC Part 15, Subpart C (SECTION 15.247) |                     |  |        |  |
|--|---------------------|--|--------|--|
| FCC Clause                                     | FCC KDB 558074      | Test Item                                    | Result | Remarks  |
| 15.207   | -                   | AC Power Conducted Emission                  | PASS   | Meet the requirement of limit. Minimum passing margin is -4.80dB at 24.00000MHz. |
| 15.205 / 15.209 / 15.247(d)                    | Section 11, 12 & 13 | Radiated Emissions and Band Edge Measurement | PASS   | Meet the requirement of limit. Minimum passing margin is -1.2dB at 40.54MHz      |

### 2.1 Measurement Uncertainty

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

| Measurement                        | Frequency      | Expanded Uncertainty (k=2) (±) |
|------------------------------------|----------------|--------------------------------|
| Conducted Emissions at mains ports | 150kHz ~ 30MHz | 1.83 dB                        |
| Radiated Emissions up to 1 GHz     | 30MHz ~ 1GHz   | 5.31 dB                        |
| Radiated Emissions above 1 GHz     | 1GHz ~ 6GHz    | 3.40 dB                        |
|                                    | 6GHz ~ 18GHz   | 3.73 dB                        |
|                                    | 18GHz ~ 40GHz  | 4.11 dB                        |

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

|                       |   |
|-----------------------|---|
| Product               | Wireless Access Point   |
| Brand                 | NOKIA   |
| Test Model            | WI4A-AC400i   |
| Test Sample S/N       | NH162800087   |
| Hardware Version      | AM2   |
| Status of EUT         | ENGINEERING SAMPLE  |
| Power Supply Rating   | 12Vdc from power adapter or 54Vdc from POE  |
| Modulation Type       | CCK, DQPSK, DBPSK for DSSS<br>64QAM, 16QAM, QPSK, BPSK for OFDM<br>256QAM for OFDM in 11ac mode   |
| Modulation Technology | DSSS, OFDM  |
| Transfer Rate         | 802.11b: up to 11Mbps<br>802.11a/g: up to 54Mbps<br>802.11n: up to 600Mbps<br>802.11ac: up to 1733.3Mbps  |
| Operating Frequency   | <b>For 15.407</b><br>5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz   |
|                       | <b>For 15.247</b><br>2.412 ~ 2.462GHz   |
| Number of Channel     | <b>For 15.407</b><br>802.11a, 802.11n (HT20), 802.11ac (VHT20): 9<br>802.11n (HT40), 802.11ac (VHT40): 4<br>802.11ac (VHT80): 2<br>802.11ac (VHT80+80): 2   |
|                       | <b>For 15.247</b><br>802.11b, 802.11g, 802.11n (HT20): 11<br>802.11n (HT40): 7  |
| Output Power          | <b>For 15.407</b><br><b>5.18GHz ~ 5.24GHz:</b><br><b>CDD Mode:</b><br>534.298mW<br><b>Beamforming Mode:</b><br>283.263mW<br><b>5.745GHz ~ 5.825GHz:</b><br><b>CDD Mode:</b><br>951.593mW<br><b>Beamforming Mode:</b><br>280.374mW |
|                       | <b>For 15.247</b><br><b>CDD Mode</b><br>884.423mW<br><b>Beamforming Mode</b><br>420.146mW   |
|                       |   |
| Antenna Type          | Refer to Note   |
| Antenna Connector     | Refer to Note   |
| Accessory Device      | NA  |
| Data Cable Supplied   | NA  |

Note:

1. The antennas provided to the EUT, please refer to the following table:

**Antenna spec.**

| Antenna No | PCB Chain No. | Brand      | Model            | Antenna Type | Gain(dBi) | Frequency (MHz) |
|------------|---------------|------------|------------------|--------------|-----------|-----------------|
| 1          | Chain 2       | Galtronics | 02102140-06226A1 | PIFA         | 3.92      | 2400            |
|            |               |            |                  |              | 3.99      | 2450            |
|            |               |            |                  |              | 4.28      | 2500            |
|            |               |            |                  |              | 3.81      | 5150            |
|            |               |            |                  |              | 3.71      | 5250            |
|            |               |            |                  |              | 4.06      | 5350            |
|            |               |            |                  |              | 5.83      | 5725            |
| 2          | Chain 3       | Galtronics | 02102140-06226A2 | PIFA         | 6.21      | 5825            |
|            |               |            |                  |              | 2.27      | 2400            |
|            |               |            |                  |              | 1.81      | 2450            |
|            |               |            |                  |              | 1.84      | 2500            |
|            |               |            |                  |              | 5.67      | 5150            |
|            |               |            |                  |              | 5.95      | 5250            |
|            |               |            |                  |              | 5.83      | 5350            |
| 3          | Chain 1       | Galtronics | 02102140-06226A3 | PIFA         | 5.38      | 5725            |
|            |               |            |                  |              | 5.38      | 5825            |
|            |               |            |                  |              | 2.42      | 2400            |
|            |               |            |                  |              | 2.45      | 2450            |
|            |               |            |                  |              | 2.71      | 2500            |
|            |               |            |                  |              | 5.69      | 5150            |
|            |               |            |                  |              | 5.41      | 5250            |
| 4          | Chain 0       | Galtronics | 02102140-06226A4 | PIFA         | 5.2       | 5350            |
|            |               |            |                  |              | 4.92      | 5725            |
|            |               |            |                  |              | 5.07      | 5825            |
|            |               |            |                  |              | 2.88      | 2400            |
|            |               |            |                  |              | 3.22      | 2450            |
|            |               |            |                  |              | 3.82      | 2500            |
|            |               |            |                  |              | 4.85      | 5150            |
|            |               |            |                  |              | 4.66      | 5250            |
|            |               |            |                  |              | 4.32      | 5350            |
|            |               |            |                  |              | 5.02      | 5725            |
|            |               |            |                  |              | 4.87      | 5825            |

**Cable Spec.**

| Antenna No | Brand      | Model  | Connector Type | Cable Loss(dB) | Cable Length (mm) |
|------------|------------|--------|----------------|----------------|-------------------|
| 1          | Galtronics | RG-137 | i-pex(MHF)     | 1.5            | 175               |
| 2          | Galtronics | RG-137 | i-pex(MHF)     | 1.3            | 130               |
| 3          | Galtronics | RG-137 | i-pex(MHF)     | 0.5            | 50                |
| 4          | Galtronics | RG-137 | i-pex(MHF)     | 0.8            | 75                |

2. Simultaneously transmission condition.

| Condition | Technology    |             |
|-----------|---------------|-------------|
| 1         | WLAN (2.4GHz) | WLAN (5GHz) |

3. The EUT incorporates a MIMO function.

| 2.4GHZ Band                          |                 |                       |     |
|--------------------------------------|-----------------|-----------------------|-----|
| MODULATION MODE                      | DATA RATE (MCS) | TX & RX CONFIGURATION |     |
| 802.11b                              | 1 ~ 11Mbps      | 4TX                   | 4RX |
| 802.11g                              | 6 ~ 54Mbps      | 4TX                   | 4RX |
| 802.11n (HT20)                       | MCS 0~7         | 4TX                   | 4RX |
|                                      | MCS 8~15        | 4TX                   | 4RX |
|                                      | MCS16~23        | 4TX                   | 4RX |
|                                      | MCS 24~31       | 4TX                   | 4RX |
| 802.11n (HT40)                       | MCS 0~7         | 4TX                   | 4RX |
|                                      | MCS 8~15        | 4TX                   | 4RX |
|                                      | MCS16~23        | 4TX                   | 4RX |
|                                      | MCS 24~31       | 4TX                   | 4RX |
| 5GHz Band                            |                 |                       |     |
| MODULATION MODE                      | DATA RATE (MCS) | TX & RX CONFIGURATION |     |
| 802.11a                              | 6 ~ 54Mbps      | 4TX                   | 4RX |
| 802.11n (HT20)                       | MCS 0~7         | 4TX                   | 4RX |
|                                      | MCS 8~15        |                       |     |
|                                      | MCS16~23        |                       |     |
|                                      | MCS 24~31       |                       |     |
| 802.11n (HT40)                       | MCS 0~7         | 4TX                   | 4RX |
|                                      | MCS 8~15        |                       |     |
|                                      | MCS16~23        |                       |     |
|                                      | MCS 24~31       |                       |     |
| 802.11ac (VHT20)                     | MCS 0~8, Nss=1  | 4TX                   | 4RX |
|                                      | MCS 0~8, Nss=2  |                       |     |
|                                      | MCS 0~9, Nss=3  |                       |     |
|                                      | MCS 0~8, Nss=4  |                       |     |
| 802.11ac (VHT40)                     | MCS 0~9, Nss=1  | 4TX                   | 4RX |
|                                      | MCS 0~9, Nss=2  |                       |     |
|                                      | MCS 0~9, Nss=3  |                       |     |
|                                      | MCS 0~9, Nss=4  |                       |     |
| 802.11ac (VHT80)                     | MCS 0~9, Nss=1  | 4TX                   | 4RX |
|                                      | MCS 0~9, Nss=2  |                       |     |
|                                      | MCS 0~9, Nss=3  |                       |     |
|                                      | MCS 0~9, Nss=4  |                       |     |
| 802.11ac (VHT80+VHT80) noncontigurus | MCS 0~9, Nss=1  | 4TX                   | 4RX |
|                                      | MCS 0~9, Nss=2  | 4TX                   | 4RX |

Note:  
1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.



4. The EUT was tested in both DC powered and PoE powered modes of operation using the representative AC/DC power converter and PoE injector listed below:

| POE     |                 |  |
|---------|-----------------|--|
| Brand   | Model No.       | Spec.  |
| UE      | PoE35-54A       | Input: 100-240V, 1.0A, 50/60Hz<br>AC input cable(1.0m, unshielded)<br>Output: 54V, 0.65A                                     |
| Adapter |                 |  |
| Brand   | Model No.       | Spec.  |
| UE      | UES36-120300SPA | Input: 100-240V, 1.0A, 50/60Hz<br>AC input cable(1.5m, unshielded)<br>Output: 12V, 3.0A<br>DC output cable(1.0m, unshielded) |

5. The EUT was pre-tested under following test modes :

| Test Mode     | Description     |
|---------------|-----------------|
| <b>Mode 1</b> | <b>With POE</b> |
| Mode 2        | With adapter    |

For the above modes, the worst radiated emission (above 1GHz) test was found in **Mode 1**. Therefore only the test data of the modes were recorded in this report.

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

### 3.1.1 Test Mode Applicability and Tested Channel Detail

| EUT<br>CONFIGURE<br>MODE | APPLICABLE TO |       |     |    | DESCRIPTION  |
|--------------------------|---------------|-------|-----|----|--------------|
|                          | RE $\geq$ 1G  | RE<1G | PLC | OB |              |
| 1                        | √             | √     | √   | √  | With POE     |
| 2                        | -             | √     | √   | -  | With adapter |

Where **RE $\geq$ 1G: Radiated Emission above 1GHz** **RE<1G: Radiated Emission below 1GHz**  
**PLC: Power Line Conducted Emission** **OB: Conducted Out-Band Emission Measurement**

#### **Radiated Emission Test (Above 1GHz):**

☒ Following channel(s) was (were) selected for the final test as listed below.

| MODE   | AVAILABLE<br>CHANNEL | TESTED<br>CHANNEL | MODULATION<br>TECHNOLOGY | MODULATION TYPE | DATA RATE<br>(Mbps) |
|--|----------------------|-------------------|--------------------------|-----------------|---------------------|
| 2.4GHz (802.11g) +<br>5GHz (802.11ac(VHT20)) | 1 to 11              | 6                 | OFDM                     | BPSK            | 6                   |
|  | 149 to 165           | 165               | OFDM                     | BPSK            | 6.5                 |

#### **Radiated Emission Test (Below 1GHz):**

☒ Following channel(s) was (were) selected for the final test as listed below.

| MODE   | AVAILABLE<br>CHANNEL | TESTED<br>CHANNEL | MODULATION<br>TECHNOLOGY | MODULATION TYPE | DATA RATE<br>(Mbps) |
|--|----------------------|-------------------|--------------------------|-----------------|---------------------|
| 2.4GHz (802.11g) +<br>5GHz (802.11ac(VHT20)) | 1 to 11              | 6                 | OFDM                     | BPSK            | 6                   |
|  | 149 to 165           | 165               | OFDM                     | BPSK            | 6.5                 |

#### **Power Line Conducted Emission Test:**

☒ Following channel(s) was (were) selected for the final test as listed below.

| MODE   | AVAILABLE<br>CHANNEL | TESTED<br>CHANNEL | MODULATION<br>TECHNOLOGY | MODULATION TYPE | DATA RATE<br>(Mbps) |
|--|----------------------|-------------------|--------------------------|-----------------|---------------------|
| 2.4GHz (802.11g) +<br>5GHz (802.11ac(VHT20)) | 1 to 11              | 6                 | OFDM                     | BPSK            | 6                   |
|  | 149 to 165           | 165               | OFDM                     | BPSK            | 6.5                 |

#### **Conducted Out-Band Emission Measurement:**

☒ Following channel(s) was (were) selected for the final test as listed below.

| MODE   | AVAILABLE<br>CHANNEL | TESTED<br>CHANNEL | MODULATION<br>TECHNOLOGY | MODULATION TYPE | DATA RATE<br>(Mbps) |
|--|----------------------|-------------------|--------------------------|-----------------|---------------------|
| 2.4GHz (802.11g) +<br>5GHz (802.11ac(VHT20)) | 1 to 11              | 6                 | OFDM                     | BPSK            | 6                   |
|  | 149 to 165           | 165               | OFDM                     | BPSK            | 6.5                 |

# Test Condition:

## Input Power to POE

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER  | TESTED BY    |
|---------------|--------------------------|--------------|--------------|
| RE $\geq$ 1G  | 23deg. C, 63%RH          | 120Vac, 60Hz | Jyunchun Lin |
| RE<1G         | 24deg. C, 62%RH          | 120Vac, 60Hz | Jyunchun Lin |
| PLC           | 25deg. C, 61%RH          | 120Vac, 60Hz | Jyunchun Lin |
| OB            | 25deg. C, 60%RH          | 120Vac, 60Hz | Robert Cheng |

## Input Power to Adapter

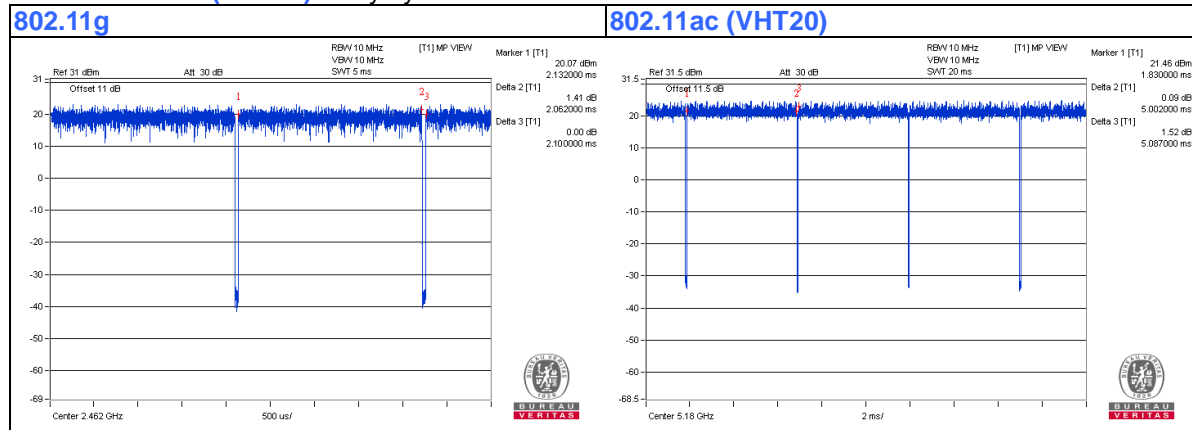
| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER  | TESTED BY    |
|---------------|--------------------------|--------------|--------------|
| RE<1G         | 24deg. C, 62%RH          | 120Vac, 60Hz | Jyunchun Lin |
| PLC           | 25deg. C, 61%RH          | 120Vac, 60Hz | Jyunchun Lin |

### 3.2 Duty Cycle of Test Signal

Duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.

**2.4GHz: 802.11g**: Duty cycle =  $2.062/2.100 = 0.982$

**5GHz: 802.11ac (VHT20)**: Duty cycle =  $5.002\text{ms}/2.087\text{ms} = 0.983$



### 3.3 Description of Support Units

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

| ID | Product           | Brand | Model No. | Serial No.    | FCC ID  | Remarks         |
|----|-------------------|-------|-----------|---------------|---------|-----------------|
| A. | Notebook Computer | DELL  | E5430     | HYV4VY1       | FCC DoC | Provided by Lab |
| B. | HUB               | ZyXEL | ES-116P   | S060H02000215 | FCC DoC | Provided by Lab |
| C. | iPod shuffle      | Apple | MC749TA/A | CC4DMFKUDFDM  | NA      | Provided by Lab |

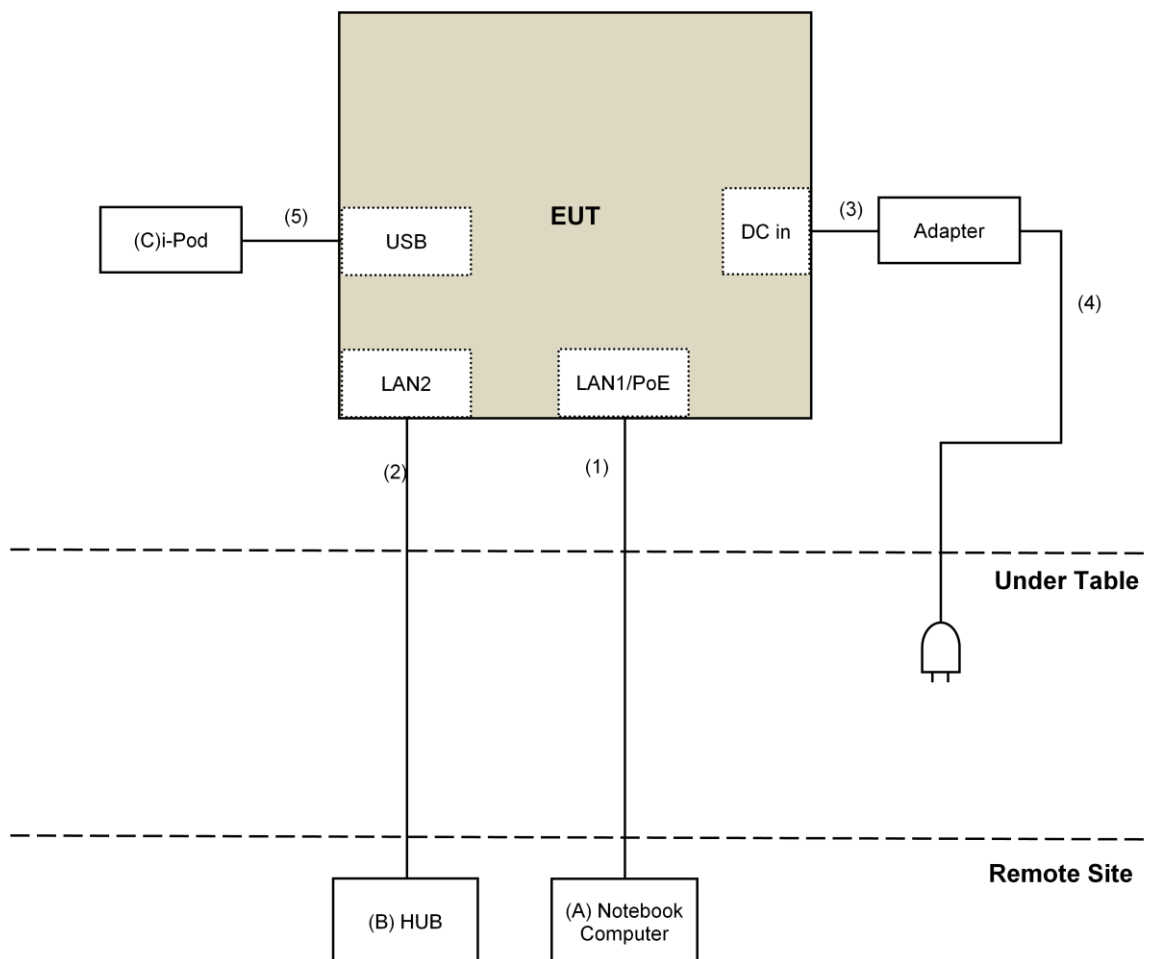
Note:

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

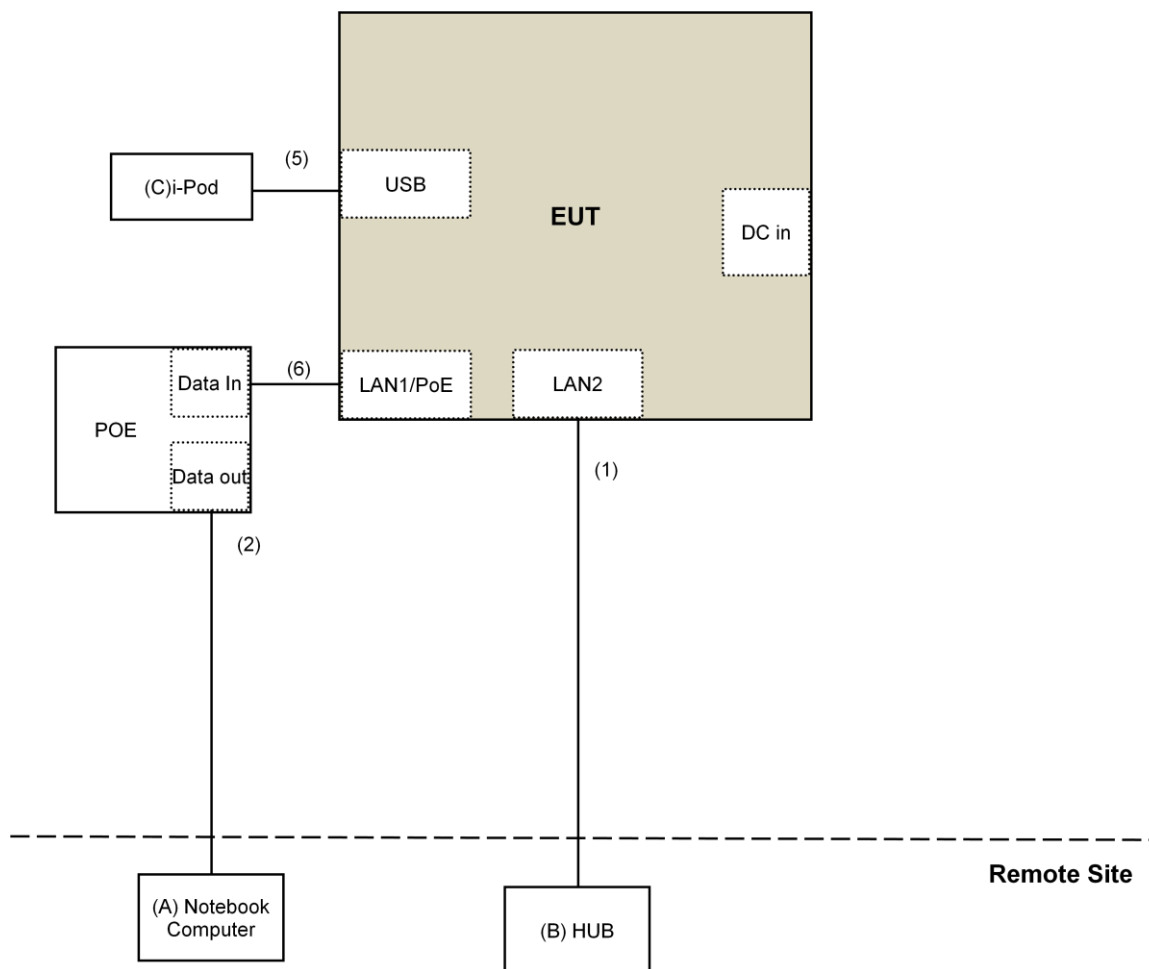
| ID | Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks            |
|----|--------------|------|------------|--------------------|--------------|--------------------|
| 1. | RJ-45 Cable  | 1    | 10         | No                 | 0            | Provided by Lab    |
| 2. | RJ-45 Cable  | 1    | 10         | No                 | 0            | Provided by Lab    |
| 3. | DC Cable     | 1    | 1.0        | No                 | 0            | Supplied by client |
| 4. | AC Cable     | 1    | 1.5        | No                 | 0            | Supplied by client |
| 5. | USB Cable    | 1    | 0.1        | Yes                | 0            | Provided by Lab    |
| 6. | RJ-45 Cable  | 1    | 1.5        | No                 | 0            | Provided by Lab    |

### 3.3.1 Configuration of System under Test

With adapter mode:



**With POE mode:**



### 3.4 General Description of Applied Standards

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

**FCC Part 15, Subpart C (15.247)**  
ANSI C63.10-2013

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



## 4 Test Types and Results

### 4.1 Radiated Emission and Bandedge Measurement

#### 4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

| Frequencies (MHz) | Field Strength (microvolts/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                             |

#### NOTE:

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

#### 4.1.2 Test Instruments

| DESCRIPTION & MANUFACTURER                     | MODEL NO.   | SERIAL NO.                    | CALIBRATED DATE | CALIBRATED UNTIL |
|--|---|-------------------------------|-----------------|------------------|
| Pre-Amplifier <sup>(*)</sup><br>EMCI           | EMC001340   | 980142                        | Jan. 20, 2016   | Jan. 19, 2018    |
| Loop Antenna <sup>(*)</sup><br>Electro-Metrics | EM-6879   | 264                           | Dec. 16, 2014   | Dec. 15, 2016    |
| RF Cable                                       | NA  | LOOPCAB-001<br>LOOPCAB-002    | Jan. 18, 2016   | Jan. 17, 2017    |
| Pre-Amplifier<br>Mini-Circuits                 | ZFL-1000VH2<br>B  | AMP-ZFL-05                    | May 07, 2016    | May 06, 2017     |
| Trilog Broadband Antenna<br>SCHWARZBECK        | VULB 9168   | 9168-156                      | Jan. 04, 2016   | Jan. 03, 2017    |
| RF Cable                                       | 8D  | 966-3-1<br>966-3-2<br>966-3-3 | Apr. 02, 2016   | Apr. 01, 2017    |
| Horn_Antenna<br>SCHWARZBECK                    | BBHA9120-D  | 9120D-406                     | Jan. 20, 2016   | Jan. 19, 2017    |
| Pre-Amplifier<br>Agilent                       | 8449B   | 3008A02465                    | Apr. 05, 2016   | Apr. 04, 2017    |
| RF Cable                                       | EMC104-SM-<br>SM-2000<br>EMC104-SM-<br>SM-5000<br>EMC104-SM-<br>SM-5000 | 150317<br>150321<br>150322    | Mar. 30, 2016   | Mar. 29, 2017    |
| Spectrum Analyzer<br>Keysight                  | N9030A  | MY54490520                    | July 29, 2016   | July 28, 2017    |
| Pre-Amplifier<br>EMCI                          | EMC184045   | 980143                        | Jan. 15, 2016   | Jan. 14, 2017    |
| Horn_Antenna<br>SCHWARZBECK                    | BBHA 9170   | BBHA9170608                   | Jan. 08, 2016   | Jan. 07, 2017    |
| RF Cable                                       | SUCOFLEX<br>102   | 36432/2<br>36441/2            | Jan. 16, 2016   | Jan. 15, 2017    |
| Software                                       | ADT_Radiated<br>_V8.7.07  | NA                            | NA              | NA               |
| Antenna Tower & Turn Table<br>Max-Full         | MF-7802   | MF780208406                   | NA              | NA               |
| Boresight Antenna Fixture                      | FBA-01  | FBA-SIP01                     | NA              | NA               |
| Spectrum Analyzer<br>R&S                       | FSP40   | 100036                        | Jan. 27, 2016   | Jan. 26, 2017    |

#### Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. \*The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Loop antenna was used for all emissions below 30 MHz.
4. The test was performed in 966 Chamber No. 3.
5. The FCC Site Registration No. is 147459
6. The CANADA Site Registration No. is 20331-1
7. Tested Date: Aug. 16 to 18, 2016

#### 4.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

**Note:**

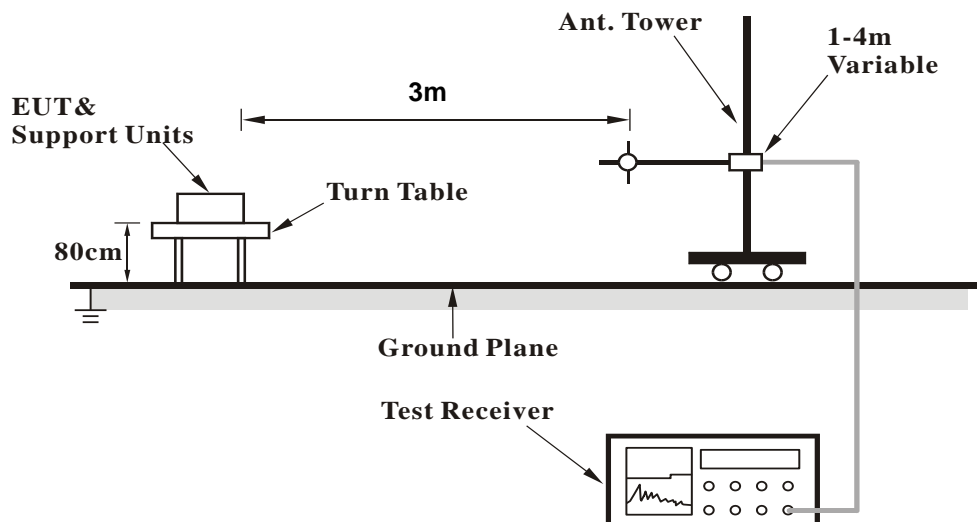
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 Deviation from Test Standard

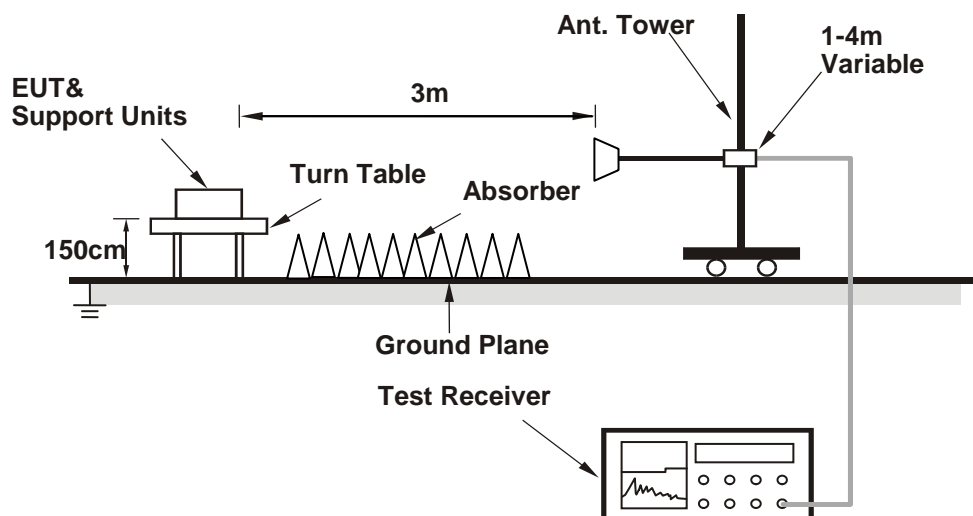
No deviation.

#### 4.1.5 Test Setup

##### <Frequency Range below 1GHz>



##### <Frequency Range above 1GHz>



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

#### 4.1.6 EUT Operating Conditions

- Connect the EUT with the support unit A (Notebook Computer) which is placed outside of testing area.
- The communication partner run test program "QRCT.exe[Ver3.0.174.0]" to enable EUT under transmission/receiving condition continuously at specific channel frequency.
- Support unit C (iPod shuffle) was connected to EUT via one USB cable to simulate real connection.

#### 4.1.7 Test Results (Mode 1)

##### Above 1GHz Data:

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

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|---|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.   | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1   | 4874.00     | 45.4 PK                 | 74.0           | -28.6       | 1.02 H             | 132                  | 42.9             | 2.5                      |
| 2   | 4874.00     | 34.0 AV                 | 54.0           | -20.0       | 1.02 H             | 132                  | 31.5             | 2.5                      |
| 3   | 7311.00     | 49.1 PK                 | 74.0           | -24.9       | 2.12 H             | 225                  | 40.2             | 8.9                      |
| 4   | 7311.00     | 37.4 AV                 | 54.0           | -16.6       | 2.12 H             | 225                  | 28.5             | 8.9                      |
| 5   | 11590.00    | 53.3 PK                 | 74.0           | -20.7       | 1.22 H             | 209                  | 38.2             | 15.1                     |
| 6   | 11590.00    | 41.1 AV                 | 54.0           | -12.9       | 1.22 H             | 209                  | 26.0             | 15.1                     |
| 7   | 17385.00    | 59.6 PK                 | 74.0           | -14.4       | 3.36 H             | 257                  | 39.0             | 20.6                     |
| 8   | 17385.00    | 48.2 AV                 | 54.0           | -5.8        | 3.36 H             | 257                  | 27.6             | 20.6                     |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.   | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1   | 4874.00     | 45.8 PK                 | 74.0           | -28.2       | 1.00 V             | 151                  | 43.3             | 2.5                      |
| 2   | 4874.00     | 34.6 AV                 | 54.0           | -19.4       | 1.00 V             | 151                  | 32.1             | 2.5                      |
| 3   | 7311.00     | 48.0 PK                 | 74.0           | -26.0       | 1.50 V             | 196                  | 39.1             | 8.9                      |
| 4   | 7311.00     | 36.6 AV                 | 54.0           | -17.4       | 1.50 V             | 196                  | 27.7             | 8.9                      |
| 5   | 11590.00    | 50.0 PK                 | 74.0           | -24.0       | 1.25 V             | 172                  | 34.9             | 15.1                     |
| 6   | 11590.00    | 40.5 AV                 | 54.0           | -13.5       | 1.25 V             | 172                  | 25.4             | 15.1                     |
| 7   | 17385.00    | 60.4 PK                 | 74.0           | -13.6       | 2.10 V             | 210                  | 39.8             | 20.6                     |
| 8   | 17385.00    | 47.0 AV                 | 54.0           | -7.0        | 2.10 V             | 210                  | 26.4             | 20.6                     |

#### REMARKS:

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

**Below 1GHz Data:**

|                        |            |                          |                 |
|------------------------|------------|--------------------------|-----------------|
| <b>FREQUENCY RANGE</b> | Below 1GHz | <b>DETECTOR FUNCTION</b> | Quasi-Peak (QP) |
|------------------------|------------|--------------------------|-----------------|

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|---|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.   | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1   | 80.71       | 31.7 QP                 | 40.0           | -8.3        | 2.00 H             | 199                  | 44.6             | -12.9                    |
| 2   | 153.72      | 40.0 QP                 | 43.5           | -3.5        | 2.00 H             | 87                   | 48.3             | -8.3                     |
| 3   | 216.83      | 38.1 QP                 | 46.0           | -7.9        | 1.50 H             | 180                  | 49.4             | -11.3                    |
| 4   | 257.96      | 36.8 QP                 | 46.0           | -9.2        | 1.00 H             | 271                  | 46.0             | -9.2                     |
| 5   | 375.02      | 40.0 QP                 | 46.0           | -6.0        | 1.00 H             | 217                  | 45.5             | -5.5                     |
| 6   | 500.03      | 37.9 QP                 | 46.0           | -8.1        | 2.00 H             | 181                  | 40.2             | -2.3                     |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.   | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1   | 52.85       | 36.4 QP                 | 40.0           | -3.6        | 1.00 V             | 238                  | 44.7             | -8.3                     |
| 2   | 73.50       | 36.5 QP                 | 40.0           | -3.5        | 1.00 V             | 205                  | 47.6             | -11.1                    |
| 3   | 125.00      | 34.9 QP                 | 43.5           | -8.6        | 1.00 V             | 236                  | 45.4             | -10.5                    |
| 4   | 154.92      | 35.4 QP                 | 43.5           | -8.1        | 1.00 V             | 161                  | 43.8             | -8.4                     |
| 5   | 375.02      | 35.4 QP                 | 46.0           | -10.6       | 1.00 V             | 328                  | 40.9             | -5.5                     |
| 6   | 500.00      | 33.7 QP                 | 46.0           | -12.3       | 1.00 V             | 56                   | 36.0             | -2.3                     |

**REMARKS:**

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

#### 4.1.8 Test Results (Mode 2)

##### Below 1GHz Data:

|                        |            |                          |                 |
|------------------------|------------|--------------------------|-----------------|
| <b>FREQUENCY RANGE</b> | Below 1GHz | <b>DETECTOR FUNCTION</b> | Quasi-Peak (QP) |
|------------------------|------------|--------------------------|-----------------|

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|---|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.   | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1   | 66.44       | 31.8 QP                 | 40.0           | -8.2        | 1.00 H             | 340                  | 41.6             | -9.8                     |
| 2   | 93.45       | 30.8 QP                 | 43.5           | -12.7       | 1.00 H             | 200                  | 44.7             | -13.9                    |
| 3   | 209.22      | 33.9 QP                 | 43.5           | -9.6        | 1.00 H             | 211                  | 45.3             | -11.4                    |
| 4   | 236.10      | 36.5 QP                 | 46.0           | -9.5        | 1.00 H             | 202                  | 46.7             | -10.2                    |
| 5   | 330.62      | 36.5 QP                 | 46.0           | -9.5        | 1.50 H             | 110                  | 43.0             | -6.5                     |
| 6   | 370.10      | 33.8 QP                 | 46.0           | -12.2       | 1.00 H             | 280                  | 39.4             | -5.6                     |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.   | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1   | 40.54       | 38.8 QP                 | 40.0           | -1.2        | 1.00 V             | 100                  | 47.8             | -9.0                     |
| 2   | 66.40       | 35.8 QP                 | 40.0           | -4.2        | 1.50 V             | 210                  | 45.6             | -9.8                     |
| 3   | 125.11      | 33.8 QP                 | 43.5           | -9.7        | 1.00 V             | 114                  | 44.3             | -10.5                    |
| 4   | 146.34      | 32.4 QP                 | 43.5           | -11.1       | 1.40 V             | 120                  | 41.0             | -8.6                     |
| 5   | 329.77      | 30.5 QP                 | 46.0           | -15.5       | 1.00 V             | 112                  | 37.0             | -6.5                     |
| 6   | 625.11      | 30.4 QP                 | 46.0           | -15.6       | 1.50 V             | 160                  | 30.0             | 0.4                      |

## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

| Frequency (MHz) | Conducted Limit (dBuV) |         |
|-----------------|------------------------|---------|
|                 | Quasi-peak             | Average |
| 0.15 - 0.5      | 66 - 56                | 56 - 46 |
| 0.50 - 5.0      | 56                     | 46      |
| 5.0 - 30.0      | 60                     | 50      |

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.2.2 Test Instruments

| DESCRIPTION & MANUFACTURER                                  | MODEL NO.               | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|---|-------------------------|------------|-----------------|------------------|
| Test Receiver<br>R&S  | ESCS 30                 | 847124/029 | Oct. 23, 2015   | Oct. 22, 2016    |
| Line-Impedance<br>Stabilization Network<br>(for EUT)<br>R&S | ESH3-Z5                 | 848773/004 | Oct. 28, 2015   | Oct. 27, 2016    |
| RF Cable  | 5D-FB                   | COACAB-002 | Mar. 04, 2016   | Mar. 03, 2017    |
| 10 dB PAD<br>Mini-Circuits                                  | HAT-10+                 | CONATT-004 | Jun. 20, 2016   | Jun. 19, 2017    |
| Software<br>BVADT   | BVADT_Cond_<br>V7.3.7.3 | NA         | NA              | NA               |

**Note:**

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. 1.
- 3 Tested Date: June 21 to Aug. 16, 2016



#### 4.2.3 Test Procedures

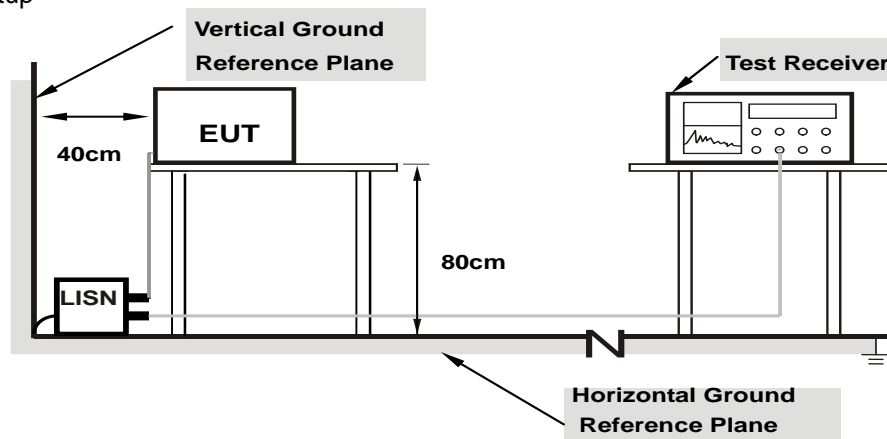
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

**NOTE:** The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

#### 4.2.4 Deviation from Test Standard

No deviation.

#### 4.2.5 Test Setup



**Note:** 1.Support units were connected to second LISN.

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

#### 4.2.6 EUT Operating Conditions

Same as 4.1.6.

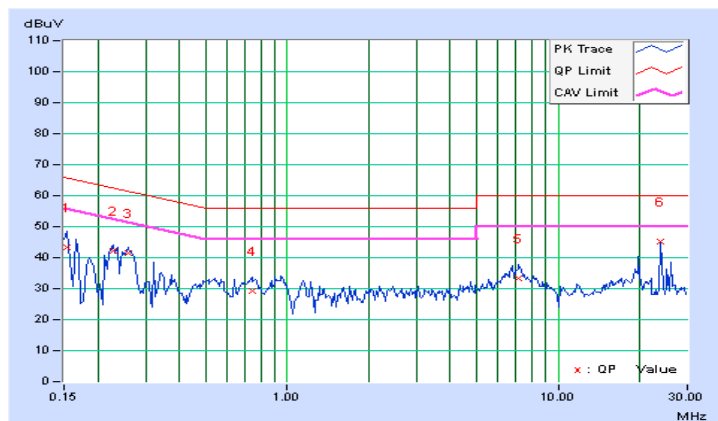
#### 4.2.7 Test Results (Mode 1)

| Phase | Line (L) | Detector Function | Quasi-Peak (QP) / Average (AV) |
|-------|----------|-------------------|--------------------------------|
|-------|----------|-------------------|--------------------------------|

| Phase Of Power : Line (L) |                 |                        |                      |       |                       |       |              |       |             |        |
|---------------------------|-----------------|------------------------|----------------------|-------|-----------------------|-------|--------------|-------|-------------|--------|
| No                        | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBuV) |       | Emission Level (dBuV) |       | Limit (dBuV) |       | Margin (dB) |        |
|                           |                 |                        | Q.P.                 | AV.   | Q.P.                  | AV.   | Q.P.         | AV.   | Q.P.        | AV.    |
| 1                         | 0.15391         | 10.21                  | 32.97                | 22.59 | 43.18                 | 32.80 | 65.79        | 55.79 | -22.61      | -22.99 |
| 2                         | 0.22812         | 10.22                  | 31.97                | 24.34 | 42.19                 | 34.56 | 62.52        | 52.52 | -20.33      | -17.96 |
| 3                         | 0.25938         | 10.22                  | 31.10                | 26.58 | 41.32                 | 36.80 | 61.45        | 51.45 | -20.13      | -14.65 |
| 4                         | 0.73984         | 10.24                  | 18.98                | 10.13 | 29.22                 | 20.37 | 56.00        | 46.00 | -26.78      | -25.63 |
| 5                         | 7.17969         | 10.46                  | 22.99                | 17.42 | 33.45                 | 27.88 | 60.00        | 50.00 | -26.55      | -22.12 |
| 6                         | 24.00000        | 11.43                  | 33.77                | 33.77 | 45.20                 | 45.20 | 60.00        | 50.00 | -14.80      | -4.80  |

#### Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

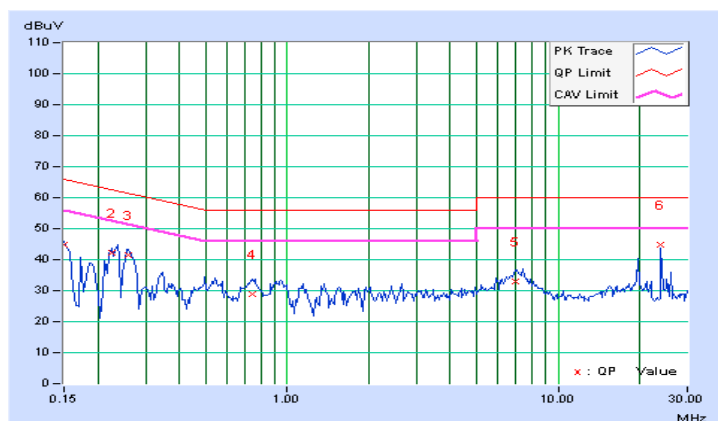


|       |             |                   |                                   |
|-------|-------------|-------------------|-----------------------------------|
| Phase | Neutral (N) | Detector Function | Quasi-Peak (QP) /<br>Average (AV) |
|-------|-------------|-------------------|-----------------------------------|

| Phase Of Power : Neutral (N) |                    |                              |                         |       |                          |       |                 |       |                |        |
|------------------------------|--------------------|------------------------------|-------------------------|-------|--------------------------|-------|-----------------|-------|----------------|--------|
| No                           | Frequency<br>(MHz) | Correction<br>Factor<br>(dB) | Reading Value<br>(dBuV) |       | Emission Level<br>(dBuV) |       | Limit<br>(dBuV) |       | Margin<br>(dB) |        |
|                              |                    |                              | Q.P.                    | AV.   | Q.P.                     | AV.   | Q.P.            | AV.   | Q.P.           | AV.    |
| 1                            | 0.15000            | 10.19                        | 34.49                   | 25.09 | 44.68                    | 35.28 | 66.00           | 56.00 | -21.32         | -20.72 |
| 2                            | 0.22594            | 10.21                        | 32.19                   | 25.31 | 42.40                    | 35.52 | 62.60           | 52.60 | -20.20         | -17.08 |
| 3                            | 0.25938            | 10.21                        | 31.19                   | 26.82 | 41.40                    | 37.03 | 61.45           | 51.45 | -20.05         | -14.42 |
| 4                            | 0.73984            | 10.22                        | 18.72                   | 10.21 | 28.94                    | 20.43 | 56.00           | 46.00 | -27.06         | -25.57 |
| 5                            | 6.97656            | 10.37                        | 22.47                   | 16.98 | 32.84                    | 27.35 | 60.00           | 50.00 | -27.16         | -22.65 |
| 6                            | 24.00000           | 11.13                        | 33.77                   | 33.04 | 44.90                    | 44.17 | 60.00           | 50.00 | -15.10         | -5.83  |

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



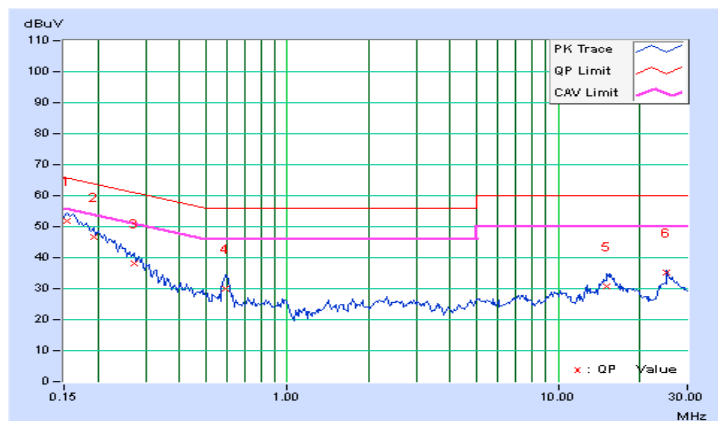
#### 4.2.8 Test Results (Mode 2)

| Phase | Line (L) | Detector Function | Quasi-Peak (QP) / Average (AV) |
|-------|----------|-------------------|--------------------------------|
|-------|----------|-------------------|--------------------------------|

| Phase Of Power : Line (L) |                 |                        |                      |       |                       |       |              |       |             |        |
|---------------------------|-----------------|------------------------|----------------------|-------|-----------------------|-------|--------------|-------|-------------|--------|
| No                        | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBuV) |       | Emission Level (dBuV) |       | Limit (dBuV) |       | Margin (dB) |        |
|                           |                 |                        | Q.P.                 | AV.   | Q.P.                  | AV.   | Q.P.         | AV.   | Q.P.        | AV.    |
| 1                         | 0.15391         | 10.21                  | 41.65                | 28.33 | 51.86                 | 38.54 | 65.79        | 55.79 | -13.93      | -17.25 |
| 2                         | 0.19297         | 10.22                  | 36.35                | 22.09 | 46.57                 | 32.31 | 63.91        | 53.91 | -17.34      | -21.60 |
| 3                         | 0.27109         | 10.22                  | 28.05                | 14.79 | 38.27                 | 25.01 | 61.08        | 51.08 | -22.81      | -26.07 |
| 4                         | 0.59531         | 10.23                  | 19.82                | 13.84 | 30.05                 | 24.07 | 56.00        | 46.00 | -25.95      | -21.93 |
| 5                         | 15.16797        | 11.07                  | 19.66                | 14.65 | 30.73                 | 25.72 | 60.00        | 50.00 | -29.27      | -24.28 |
| 6                         | 25.23047        | 11.45                  | 23.72                | 21.22 | 35.17                 | 32.67 | 60.00        | 50.00 | -24.83      | -17.33 |

#### Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

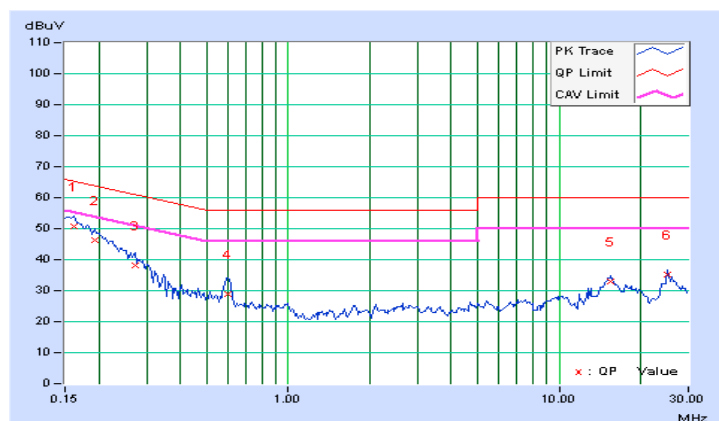


|       |             |                   |                                   |
|-------|-------------|-------------------|-----------------------------------|
| Phase | Neutral (N) | Detector Function | Quasi-Peak (QP) /<br>Average (AV) |
|-------|-------------|-------------------|-----------------------------------|

| Phase Of Power : Neutral (N) |                    |                              |                         |       |                          |       |                 |       |                |        |
|------------------------------|--------------------|------------------------------|-------------------------|-------|--------------------------|-------|-----------------|-------|----------------|--------|
| No                           | Frequency<br>(MHz) | Correction<br>Factor<br>(dB) | Reading Value<br>(dBuV) |       | Emission Level<br>(dBuV) |       | Limit<br>(dBuV) |       | Margin<br>(dB) |        |
|                              |                    |                              | Q.P.                    | AV.   | Q.P.                     | AV.   | Q.P.            | AV.   | Q.P.           | AV.    |
| 1                            | 0.16172            | 10.19                        | 40.55                   | 26.62 | 50.74                    | 36.81 | 65.38           | 55.38 | -14.63         | -18.56 |
| 2                            | 0.19297            | 10.21                        | 36.23                   | 21.99 | 46.44                    | 32.20 | 63.91           | 53.91 | -17.47         | -21.71 |
| 3                            | 0.27109            | 10.21                        | 27.88                   | 15.07 | 38.09                    | 25.28 | 61.08           | 51.08 | -23.00         | -25.81 |
| 4                            | 0.59922            | 10.21                        | 18.82                   | 13.24 | 29.03                    | 23.45 | 56.00           | 46.00 | -26.97         | -22.55 |
| 5                            | 15.48047           | 10.91                        | 21.93                   | 17.85 | 32.84                    | 28.76 | 60.00           | 50.00 | -27.16         | -21.24 |
| 6                            | 25.23047           | 11.13                        | 24.10                   | 21.72 | 35.23                    | 32.85 | 60.00           | 50.00 | -24.77         | -17.15 |

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

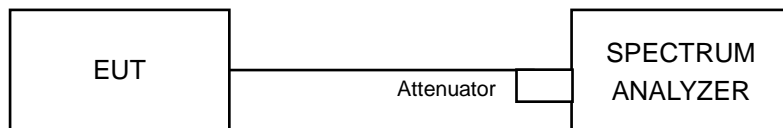


### 4.3 Conducted Out of Band Emission Measurement

#### 4.3.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

#### 4.3.2 Test Setup



#### 4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

#### 4.3.4 Test Procedure

##### MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

##### MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

#### 4.3.5 Deviation from Test Standard

No deviation.

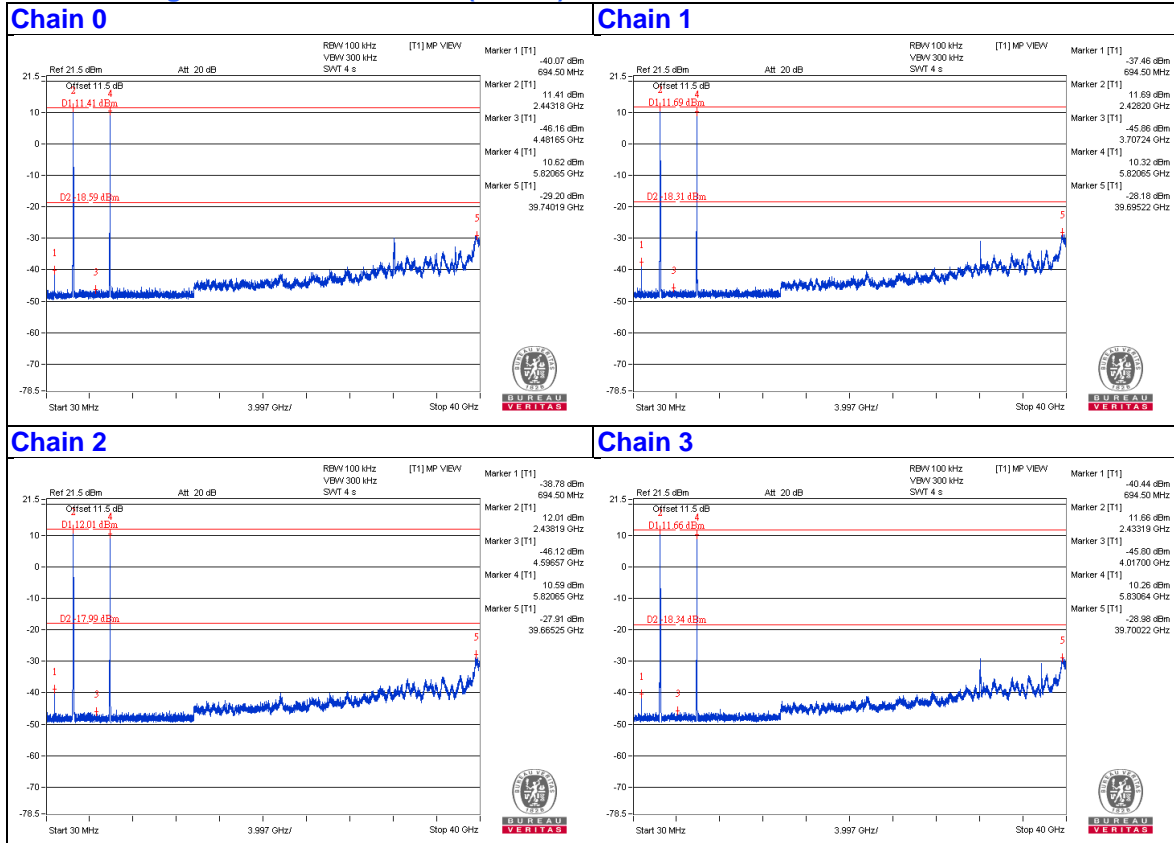
#### 4.3.6 EUT Operating Condition

Same as Item 4.3.6

#### 4.3.7 Test Results (Overall Spurious Emission Test)

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

#### 2.4GHz 802.11g CH 6 + 5GHz 802.11ac(VHT20) CH 165



## 5 Pictures of Test Arrangements

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



## Appendix – Information on the Testing Laboratories

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

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

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

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