

## RF Exposure Report

**Report No.:** SA170109E09B

**FCC ID:** 2ALIE-FWR531X

**Test Model:** FWR5-3105SFP

**Received Date:** Jan. 09, 2017

**Test Date:** Feb. 14, 2017

**Issued Date:** July 19, 2017

**Applicant:** Connection Technology System Inc

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(R.O.C.)

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

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## Table of Contents

|                                                           |          |
|-----------------------------------------------------------|----------|
| <b>Release Control Record .....</b>                       | <b>3</b> |
| <b>1     Certificate of Conformity.....</b>               | <b>4</b> |
| <b>2     RF Exposure.....</b>                             | <b>5</b> |
| 2.1   Limits For Maximum Permissible Exposure (MPE).....  | 5        |
| 2.2   MPE Calculation Formula .....                       | 5        |
| 2.3   Classification .....                                | 5        |
| 2.4   Antenna Gain .....                                  | 5        |
| 2.5   Calculation Result Of Maximum Conducted Power ..... | 6        |

### Release Control Record

| Issue No.    | Description       | Date Issued   |
|--------------|-------------------|---------------|
| SA170109E09B | Original release. | July 19, 2017 |

## 1 Certificate of Conformity

**Product:** Wireless Home Gateway

**Brand:** CTS

**Test Model:** FWR5-3105SFP

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Connection Technology System Inc

**Test Date:** Feb. 14, 2017

**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

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 :**



**Date:**

July 19, 2017

Wendy Wu / Specialist

**Approved by :**



**Date:**

July 19, 2017

May Chen / Manager

## 2 RF Exposure

### 2.1 Limits For Maximum Permissible Exposure (MPE)

| Frequency Range (MHz)                                 | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Average Time (minutes) |
|-------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| Limits For General Population / Uncontrolled Exposure |                               |                               |                                     |                        |
| 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

### 2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user.  
So, this device is classified as **Mobile Device**.

### 2.4 Antenna Gain

| Antenna No. | Brand       | Antenna Net. Gain(dBi) | Frequency range (GHz) | Antenna Type | Connector Type | Cable Length (mm) |
|-------------|-------------|------------------------|-----------------------|--------------|----------------|-------------------|
| 1           | Master Wave | 5.14                   | 2.4~2.4835            | Dipole       | i-pex(MHF)     | 190               |
|             |             | 5.56                   | 5.15~5.85             |              |                |                   |
| 2           | Master Wave | 5.14                   | 2.4~2.4835            | Dipole       | i-pex(MHF)     | 190               |
|             |             | 5.56                   | 5.15~5.85             |              |                |                   |

## 2.5 Calculation Result of Maximum Conducted Power

| Frequency Band (MHz) | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|----------------------|----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412-2462            | 502.463        | 8.15               | 20            | 0.65288                             | 1                           |
| 5180-5240            | 55.918         | 8.57               | 20            | 0.08004                             | 1                           |
| 5745-5825            | 59.365         | 8.57               | 20            | 0.08497                             | 1                           |

NOTE:

2.4GHz: Directional gain = 5.14dBi + 10log(2) = 8.15dBi

5GHz: Directional gain = 5.56dBi + 10log(2) = 8.57dBi

### Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + .....etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz = 0.65288 / 1 + 0.08497 / 1 = 0.73785

**Therefore the maximum calculations of above situations are less than the “1” limit.**

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