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
Address:	18F-6, No.79, Sec.1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

Table of Contents

Release Control Record **3**

1 Certificate of Conformity **4**

2 RF Exposure **5**

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^2)	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	($180/f^2$)*	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^2

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	Connecter 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^2)	Limit (mW/cm^2)
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.

--- END ---