RF Exposure Report

Report No.: SA171005C05A

FCC ID: REP-8020-1

Test Model: HotPort 8020

Received Date: Oct. 05, 2017

Test Date: Oct. 23 ~ Dec. 22, 2017

Issued Date: Jan. 03, 2018

Applicant: Firetide Inc.

Address: Firetide Inc. A Division of UNICOM GLOBAL 2105, South Bascom Avenue, Suite 220, Campbell, California, United States, 950008

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

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

FCC Registration / Designation Number: 788550 / TW0003

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
SA171005C05A	Original release.	Jan. 03, 2018

1 Certificate of Conformity

Product:	Firetide Wireless Mesh Node
Brand:	Firetide
Test Model:	HotPort 8020
Sample Status:	Engineering sample
Applicant:	Firetide Inc.
Test Date:	Oct. 23 ~ Dec. 22, 2017
Standards:	FCC Part 2 (Section 2.1091)
	KDB 447498 D01 General RF Exposure Guidance v06
	IEEE C95.1

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 RF characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** _____ Jan. 03, 2018 _____

Suntee Liu / Specialist

Approved by : _____ , **Date:** _____ Jan. 03, 2018 _____

Bruce Chen / Project Engineer

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				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

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 51cm away from the body of the user. So, this device is classified as Mobile Device.

3 Calculation Result of Maximum Conducted Power

Function	Frequency Band (MHz)	Mode	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN 5GHz				Radio 1, Antenna 1			
	5180~5240	CDD	10.92	13.02	51	0.008	1
		Beamforming	4.90	13.02	51	0.002	1
	5260~5320	CDD	19.56	13.02	51	0.055	1
		Beamforming	13.54	13.02	51	0.014	1
	5500~5720	CDD	21.36	13.02	51	0.084	1
		Beamforming	15.34	13.02	51	0.021	1
	5745~5825	CDD	25.98	13.02	51	**0.243**	1
		Beamforming	19.96	13.02	51	0.061	1
				Radio 1, Antenna 2			
	5180~5240	CDD	13.95	23.27	51	0.161	1
		Beamforming	7.93	23.27	51	0.040	1
	5260~5320	CDD	8.39	23.27	51	0.045	1
		Beamforming	2.36	23.27	51	0.011	1
	5500~5720	CDD	8.43	23.27	51	0.045	1
		Beamforming	2.41	23.27	51	0.011	1
	5745~5825	CDD	14.32	23.27	51	**0.176**	1
		Beamforming	8.16	23.27	51	0.043	1
				Radio 2, Antenna 1			
	5180~5240	CDD	10.94	13.02	51	0.008	1
		Beamforming	4.72	13.02	51	0.002	1
	5260~5320	CDD	19.29	13.02	51	0.052	1
		Beamforming	13.27	13.02	51	0.013	1
	5500~5720	CDD	21.36	13.02	51	0.084	1
		Beamforming	15.34	13.02	51	0.021	1
	5745~5825	CDD	26.05	13.02	51	**0.247**	1
		Beamforming	20.03	13.02	51	0.062	1
				Radio 2, Antenna 2			
	5180~5240	CDD	13.78	23.27	51	0.155	1
		Beamforming	7.76	23.27	51	0.039	1
	5260~5320	CDD	8.35	23.27	51	0.044	1
		Beamforming	2.33	23.27	51	0.011	1
	5500~5720	CDD	8.40	23.27	51	0.045	1
		Beamforming	2.38	23.27	51	0.011	1
	5745~5825	CDD	14.27	23.27	51	**0.174**	1
		Beamforming	8.25	23.27	51	0.043	1
WLAN 4.9GHz				Radio 1, Antenna 1			
	4942.5~4987.5	-	17.62	12.52	51	**0.032**	1
				Radio 1, Antenna 2			
	4942.5~4987.5	-	17.62	22.27	51	**0.298**	1
				Radio 2, Antenna 1			
	4942.5~4987.5	-	19.15	12.52	51	**0.045**	1
				Radio 2, Antenna 2			
	4942.5~4987.5	-	19.15	22.27	51	**0.424**	1

Note:
5GHz:
Antenna 1 max. directional gain = 7dBi + 10log(4) = 13.02dBi
Antenna 2 max. directional gain = 18.5dBi + 10log(3) = 23.27dBi
4.9GHz:
Antenna 1 max. directional gain = 6.5dBi + 10log(4) = 12.52dBi
Antenna 2 max. directional gain = 17.5dBi + 10log(3) = 22.27dBi

Frequency Band	Max Power (dBm)		Total Power (dBm)	Power Limit (dBm)
	Radio 1	Radio 2		
WLAN 5GHz	25.98	26.05	29.03	30
WLAN 4.9GHz	17.62	19.15	21.46	27

Conclusion:
The formula of calculated the MPE is:
CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1
CPD = Calculation power density
LPD = Limit of power density

Max.: Radio 1, Antenna 1, 5GHz   +   Radio 2, Antenna 1, 5GHz   = 0.243 + 0.247 = 0.490   < 1
Max.: Radio 1, Antenna 2, 5GHz   +   Radio 2, Antenna 2, 5GHz   = 0.176 + 0.174 = 0.350   < 1
Max.: Radio 1, Antenna 1, 4.9GHz +   Radio 2, Antenna 1, 4.9GHz = 0.032 + 0.045 = 0.077   < 1
Max.: Radio 1, Antenna 2, 4.9GHz +   Radio 2, Antenna 2, 4.9GHz = 0.298 + 0.424 = 0.722   < 1
Max.: Radio 1, Antenna 1, 5GHz   +   Radio 2, Antenna 1, 4.9GHz = 0.243 + 0.045 = 0.288   < 1
Max.: Radio 1, Antenna 2, 5GHz   +   Radio 2, Antenna 2, 4.9GHz = 0.176 + 0.424 = 0.600   < 1
Max.: Radio 1, Antenna 1, 4.9GHz +   Radio 2, Antenna 1, 5GHz   = 0.032 + 0.247 = 0.279   < 1
Max.: Radio 1, Antenna 2, 4.9GHz +   Radio 2, Antenna 2, 5GHz   = 0.298 + 0.174 = 0.472   < 1

---END---