RF Exposure Evaluation Report

Equipment	: 2 Port Gigabit Ethernet 11ac/11n Wireless Router
Brand Name	: AirTies
Model No.	: Air 4920
FCC ID	: Z3WAIR49200
Standard	: 47 CFR Part 2.1091
Applicant	: AirTies Wireless Networks Mithat Uluunlu Sokak No. 23 Esentepe, Sisli Istanbul 34394 Turkey
Manufacturer	: AirTies Wireless Networks Mithat Uluunlu Sokak No. 23 Esentepe, Sisli Istanbul 34394 Turkey

The product sample received on Nov. 23, 2016 and completely tested on Nov. 25, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit.

Cliff Chang
SPORTON INTERNATIONAL INC.

Testing Laboratory
1190

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA552501-08	Rev. 01	Initial issue of report	Jan. 04, 2017

1 General Description

1.1 EUT General Information

RF General Information			
Evaluation Mode	**Frequency Range (MHz)**	**Operating Frequency (MHz)**	**Modulation Type**
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

1.2 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA552501-05.

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Changing Applicant's address to "Mithat Uluunlu Sokak No. 23 Esentepe, Sisli Istanbul 34394 Turkey" from "Gülbahar Mah. Avni Dilligil Sok. Celik Is Merkezi No 5 mecidiyekoy ISTANBUL, 34394 Turkey". 2. Changing manufacturer to "AirTies Wireless Networks" from "SHENZHEN GONGJIN ELECTRONICS CO.,LTD". 3. Changing manufacturer's address to "Mithat Uluunlu Sokak No. 23 Esentepe, Sisli Istanbul 34394 Turkey" from "2F/3F/4F Baiying Building,1019#Naihai RD, Nanshan Dist., Shenzhen, Guangdong, CHINA".	No influence for the original test results.
4. Adding straddle channel.	Re-evaluated MPE.

Note: The MPE results of 2.4GHz Band and 5GHz except the straddle channel are based on original test report.

Testing Location

Testing Location			
☐	HWA YA	ADD :	No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
		TEL :	886-3-327-3456 FAX : 886-3-327-0973
☒	JHUBEI	ADD :	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.
		TEL :	886-3-656-9065 FAX : 886-3-656-9085

2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

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

2.2 MPE Calculation Method

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

E (V/m) = $\frac{\sqrt{30 \times P \times G}}{d}$ Power Density: *Pd* (W/m²) = $\frac{E^2}{377}$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

Pd = $\frac{30 \times P \times G}{377 \times d^2}$

2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

For straddle channel:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm^2)	S Limit (mW/cm^2)
5.6G;D1D	4.77	23.80	28.57	0.71945	20	0.14313	1
5.8G;D1D	4.77	16.71	21.48	0.1406	20	0.02797	1

For colocation MPE:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm^2)	S Limit (mW/cm^2)	Ratio (S/Limit)
2.4GHz	2.50	24.5000	27.0000	553.0391	20	0.0997	1	0.0997
5GHz	4.77	27.4276	32.1976	281.8383	20	0.3302	1	0.3302
							Sum Ratio	0.4299
							Ratio Limit	1