



RF Exposure Evaluation Report

Equipment : Wireless LAN Network Module
Brand Name : Arcadyan
Model No. : WN9711BTAAC-YA
FCC ID : RAXWN9711
Standard : 47 CFR Part 2.1091
Applicant : Arcadyan Technology Corporation
No.8, Sec.2, Guangfu Rd.,Hsinchu, 30071 Taiwan
Manufacturer : Arcadyan Technology Corporation
No.8, Sec.2, Guangfu Rd.,Hsinchu, 30071 Taiwan

The product sample received on Jun. 05, 2017 and completely tested on Aug. 29, 2017. 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.

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Cliff Chang
SPORTON INTERNATIONAL INC.





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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA770523	Rev. 01	Initial issue of report	Sep. 19, 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)
Bluetooth	2400-2483.5	2402-2480	BR / EDR: FHSS (GFSK / $\pi/4$ -DQPSK / 8DPSK) LE: DSSS (GFSK)

1.2 Testing Location

Testing Location		
<input type="checkbox"/>	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
<input checked="" type="checkbox"/>	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/ cm ²)	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/ cm ²)	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:

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

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 Radio 1:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;G1D	3.16	19.87	23.03	0.20091	20	0.03997	1.00000
5.2G;D1D	4.42	20.15	24.57	0.28642	20	0.05698	1.00000
2.4G;BT-EDR	3.16	4.55	7.71	0.0059	20	0.00117	1.00000

For Radio 2:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
5.3G;D1D	4.42	20.59	25.01	0.31696	20	0.06306	1.00000

Simultaneous Transmission Analysis Mode:

1. Radio 1 (2.4GHz + Bluetooth) + Radio 2 (5GHz)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
(Radio 1) 2.4G;G1D	3.16	19.87	23.03	0.20091	20	0.03997	1.00000	0.03997
(Radio 1) 2.4G;BT-EDR	3.16	4.55	7.71	0.00590	20	0.00117	1.00000	0.00117
(Radio 2) 5.3G;D1D	4.42	20.59	25.01	0.31696	20	0.06306	1.00000	0.06306
							Sum Ratio	0.1042
							Ratio Limit	1

2. Radio 1 (5GHz + Bluetooth) + Radio 2 (5GHz)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
(Radio 1) 5.2G;D1D	4.42	20.15	24.57	0.28642	20	0.05698	1.00000	0.05698
(Radio 1) 2.4G;BT-EDR	3.16	4.55	7.71	0.00590	20	0.00117	1.00000	0.00117
(Radio 2) 5.3G;D1D	4.42	20.59	25.01	0.31696	20	0.06306	1.00000	0.06306
							Sum Ratio	0.12121
							Ratio Limit	1