



# FCC RADIO EXPOSURE TEST REPORT

FCC ID : RAXWN8122B  
Equipment : Wi-Fi MODU  
Brand Name : Arcadyan  
Model Name : WN8122BTEAC-HF-CP  
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  
Standard : 47 CFR Part 2.1091

The product was received on Apr. 20, 2018, and testing was started from Apr. 20, 2018 and completed on Jun. 04, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Cliff Chang

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**  
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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## History of this test report

Report No.	Version	Description	Issued Date
FA842718	01	Initial issue of report	Jun. 21, 2018



## Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

**Reviewed by: Sam Chen**

**Report Producer: Viola Huang**



# 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 5725-5850	5180-5240 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 Table for Multiple Listing

Brand Name	Model Name	EUT No.	Description
Arcadyan	WN8122BTEAC-HF-CP	EUT 1	The EUT equips internal antenna for WLAN function.
		EUT 2	The EUT equips external antenna for WLAN function.

## 1.3 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

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.



## 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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> 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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> 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 EUT 1

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )
2.4G;G1D	3.50	21.61	25.11	0.50	25.61	0.36392	20	0.07240	1.00000
2.4G;BT-EDR	2.04	5.21	7.25	0.50	7.75	0.00596	20	0.00119	1.00000
2.4G;BT-LE	2.04	5.19	7.23	0.50	7.73	0.00593	20	0.00118	1.00000
5.2G;D1D	4.70	18.80	23.50	0.50	24.00	0.25119	20	0.04997	1.00000
5.8G;D1D	4.70	18.54	23.24	0.50	23.74	0.23659	20	0.04707	1.00000

For EUT 2

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )
2.4G;G1D	0.10	21.61	21.71	0.50	22.21	0.16634	20	0.03309	1.00000
2.4G;BT-EDR	2.04	5.21	7.25	0.50	7.75	0.00596	20	0.00119	1.00000
2.4G;BT-LE	2.04	5.19	7.23	0.50	7.73	0.00593	20	0.00118	1.00000
5.2G;D1D	3.25	21.61	24.86	0.50	25.36	0.34356	20	0.06835	1.00000
5.8G;D1D	3.25	18.54	21.79	0.50	22.29	0.16943	20	0.03371	1.00000

Test Mode: Mode 1

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Ratio (S/Limit)
2.4G;G1D	3.50	21.61	25.11	0.50	25.61	0.36392	20	0.07240	1.00000	0.07240
2.4G;BT-EDR	2.04	5.21	7.25	0.50	7.75	0.00596	20	0.00119	1.00000	0.00119
									Sum Ratio	0.07359
									Ratio Limit	1

Test Mode: Mode 2

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Ratio (S/Limit)
5.2G;D1D	4.70	18.80	23.50	0.50	24.00	0.25119	20	0.04997	1.00000	0.04997
2.4G;BT-EDR	2.04	5.21	7.25	0.50	7.75	0.00596	20	0.00119	1.00000	0.00119
									Sum Ratio	0.05116
									Ratio Limit	1



Test Mode: Mode 3

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Ratio (S/Limit)
2.4G;G1D	0.10	21.61	21.71	0.50	22.21	0.16634	20	0.03309	1.00000	0.03309
2.4G;BT-EDR	2.04	5.21	7.25	0.50	7.75	0.00596	20	0.00119	1.00000	0.00119
									Sum Ratio	0.03428
									Ratio Limit	1

Test Mode: Mode 4

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Ratio (S/Limit)
5.2G;D1D	3.25	21.61	24.86	0.50	25.36	0.34356	20	0.06835	1	0.06835
2.4G;BT-EDR	2.04	5.21	7.25	0.50	7.75	0.00596	20	0.00119	1	0.00119
									Sum Ratio	0.06954
									Ratio Limit	1