



# RF Exposure Evaluation Report

**Equipment** : Wi-Fi Repeater  
**Brand Name** : Hughes  
**Model No.** : RE2000  
**FCC ID** : RAXWE410443  
**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 Mar. 09, 2017 and completely tested on May 24, 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.





## TABLE OF CONTENTS

<b>1</b>	<b>GENERAL DESCRIPTION .....</b>	<b>4</b>
1.1	EUT General Information .....	4
1.2	Table for Class II Change.....	4
1.3	Testing Location .....	4
<b>2</b>	<b>MAXIMUM PERMISSIBLE EXPOSURE .....</b>	<b>5</b>
2.1	Limit of Maximum Permissible Exposure .....	5
2.2	MPE Calculation Method.....	5
2.3	Calculated Result and Limit.....	6
<b>APPENDIX A. PHOTOGRAPHS OF EUT V01</b>		





# 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) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5700 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: FA730945

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

Description	Performance Checking
Adding 5GHz Band 2 and Band 3(5250~5350MHz, 5470~5725MHz)	RF Exposure Evaluation

Note: Maximum Permissible Exposure of 2.4GHz and 5GHz Band 1, Band 4 is based on original test.

## 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 25 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**

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;D1D	9.30	26.30	35.60	0.2	35.80	3.80189	25	0.48431	1.00000
5.2G;D1D	9.57	26.41	35.98	0.02	36.00	3.98107	25	0.50714	1.00000
5.3G;D1D	9.57	20.40	29.97	0.02	29.99	0.99770	25	0.12709	1.00000
5.6G;D1D	9.57	20.29	29.86	0.02	29.88	0.97275	25	0.12391	1.00000
5.8G;D1D	9.57	24.89	34.46	0.02	34.48	2.80543	25	0.35738	1.00000

**Simultaneous Transmission Analysis Mode: WLAN 2.4GHz+WLAN 5GHz**

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;D1D	9.30	26.30	35.60	0.2	35.80	3.80189	25	0.48431	1	0.48431
5.2G;D1D	9.57	26.41	35.98	0.02	36.00	3.98107	25	0.50714	1	0.50714
									Sum Ratio	0.99145
									Ratio Limit	1