



RF Exposure Evaluation Report

Equipment : AC3000 Tri-Band Wireless Gigabit Dual-WAN VPN
SMB Router

Brand Name : TRENDnet

Model No. : TEW-829DRU

FCC ID : XU8TEW829DRU

Standard : 47 CFR Part 2.1091

Applicant : TRENDnet, Inc.
20675 Manhattan, Place, Torrance, CA, 90501

The product sample received on Dec. 20, 2017 and completely tested on Feb. 09, 2018. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091, pass the limit.

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Cliff Chang
SPORTON INTERNATIONAL INC.





TABLE OF CONTENTS

1 GENERAL DESCRIPTION4

1.1 EUT General Information4

1.2 Table for Radio type4

1.3 Testing Location4

2 MAXIMUM PERMISSIBLE EXPOSURE5

2.1 Limit of Maximum Permissible Exposure5

2.2 MPE Calculation Method5

2.3 Calculated Result and Limit.....6

PHOTOGRAPHS OF EUT V01



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)

1.2 Table for Radio type

Radio No.	function	Chip brand Name
Radio 1	2.4GHz	IPQ4019
Radio 2	5GHz Band 1	QCA9984
Radio 3	5GHz Band 4	IPQ4019

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 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 21 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 ²)	S Limit (mW/cm ²)
2.4G;D1D	2.90	25.49	28.39	0.5	28.89	0.77446	21	0.13982	1.00000
5.2;D1D	10.46	25.51	35.97	0.03	36.00	3.98107	21	0.71873	1.00000
5.8G;D1D	7.41	20.98	28.39	0.5	28.89	0.77446	21	0.13982	1.00000

Simultaneous Transmission Analysis Mode:

Radio 1 (WLAN 2.4GHz) + Radio 2 (WLAN 5GHz Band 1) + Radio 3 (WLAN 5GHz Band 4)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	2.90	25.49	28.39	0.5	28.89	0.77446	21	0.13982	1.00000	0.13982
5.2;D1D	10.46	25.51	35.97	0.03	36.00	3.98107	21	0.71873	1.00000	0.71873
5.8G;D1D	7.41	20.98	28.39	0.5	28.89	0.77446	21	0.13982	1.00000	0.13982
									Sum Ratio	0.99837
									Ratio Limit	1