

# Radio Exposure Evaluation Report

**FCC ID** : Z8H89FT0050  
**Equipment** : cnPilot e505 Outdoor  
**Brand Name** :  Cambium Networks  
**Model Name** : REG-PL-E505  
**Applicant** : Cambium Networks Inc.  
3800 Golf Road, Suite 360 Rolling Meadows, IL  
60008, USA  
**Manufacturer** : Cambium Networks Ltd.  
Unit B2 Linhay Business Park Eastern Rd  
Ashburton, Devon TQ13 7UP United Kingdom  
**Standard** : 47 CFR Part 2.1091

The product was received on Sep. 11, 2019, and testing was started from Sep. 19, 2019 and completed on Nov. 06, 2019. 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 United States government.

The test results in this variant 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: Allen Lin

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



## Table of Contents

<b>HISTORY OF THIS TEST REPORT .....</b>	<b>3</b>
<b>1 GENERAL DESCRIPTION .....</b>	<b>5</b>
1.1 EUT General Information .....	5
1.2 Testing Location .....	5
<b>2 MAXIMUM PERMISSIBLE EXPOSURE .....</b>	<b>6</b>
2.1 Limit of Maximum Permissible Exposure .....	6
2.2 MPE Calculation Method .....	6
2.3 Calculated Result and Limit.....	7
<b>Photographs of EUT V01</b>	



**History of this test report**

Report No.	Version	Description	Issued Date
FA991013-01	01	Initial issue of report	Nov. 12, 2019



### Summary of Test Result

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

<b>Declaration of Conformity:</b>
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
<b>Comments and Explanations:</b>
None.

Reviewed by: Jackson Tsai

Report Producer: Kate Lo

# 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 5500-5700 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

## 1.2 Testing Location

Testing Location					
<input checked="" type="checkbox"/>	HWA YA	ADD	:	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL	:	886-3-327-3456	FAX : 886-3-327-0973
Test site Designation No. TW1190 with FCC.					
<input type="checkbox"/>	JHUBEI	ADD	:	No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL	:	886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.					

## 1.3 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FA991013

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

Modifications	Performance Checking
Frequency bands U-NII-2A and U-NII-2C was added.	All

## 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 <sup>2</sup> )*	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 <sup>2</sup> )*	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

### WLAN 2.4G

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	4.91	25.12	30.03	0.50	30.53	1.12980	20	0.22477	1.00000
2.4G;D1D	4.91	23.15	28.06	0.50	28.56	0.71779	20	0.14280	1.00000

### WLAN 5G\_Non-Beamforming

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> )
5.2G;D1D	4.74	23.52	28.26	0.50	28.76	0.75162	20	0.14953	1.00000
5.3G;D1D	5.31	23.86	29.17	0.50	29.67	0.92683	20	0.18439	1.00000
5.6G;D1D	5.31	23.97	29.28	0.50	29.78	0.95060	20	0.18912	1.00000
5.8G;D1D	5.31	23.89	29.20	0.50	29.70	0.93325	20	0.18566	1.00000

### WLAN 5G\_Beamforming

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> )
5.2G;D1D	8.32	15.97	24.29	0.50	24.79	0.30130	20	0.05994	1.00000
5.3G;D1D	8.32	20.14	28.46	0.50	28.96	0.78705	20	0.15658	1.00000
5.6G;D1D	8.32	20.27	28.59	0.50	29.09	0.81096	20	0.16134	1.00000
5.8G;D1D	8.32	20.90	29.22	0.50	29.72	0.93756	20	0.18652	1.00000



WLAN 2.4G + WLAN 5G

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	5.31	25.56	30.87	0.50	31.37	1.37088	20	0.27273	1.00000	0.27273
2.4G;G1D	4.91	25.12	30.03	0.50	30.53	1.12980	20	0.22477	1.00000	0.22477
									Sum Ratio	0.4975
									Ratio Limit	1

—————THE END—————