



SPORTON International Inc.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
Ph: 886-3-327-3456 / FAX: 886-3-327-0973 / www.sporton.com.tw

Project No: CB10608307

Maximum Permissible Exposure Report

Applicant's company	Cambium Networks Inc.
Applicant Address	3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA
FCC ID	Z8H89FT0032
Manufacturer's company	Cambium Networks Inc.
Manufacturer Address	3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA

Product Name	PMP450b
Brand Name	Cambium Networks
Model Name	PMP450b
Ref. Standard(s)	47 CFR FCC Part 2 Subpart J, section 2.1091
Received Date	May 05, 2017
Final Test Date	Aug. 29, 2017
Submission Type	Original Equipment

Sam Chen

SPORTON INTERNATIONAL INC.



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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA751045-02AB	Rev. 01	Initial issue of report	Aug. 30, 2017
FA751045-02AB	Rev. 02	Modifying the report of MPE results.	Sep. 04, 2017

1. GENERAL DESCRIPTION

1.1. EUT General Information

RF General Information			
Frequency Range (MHz)	Operating Frequency (MHz)		Modulation Type
4940 - 4990	5MHz	4942.5 / 4947.5 / 4952.5 4957.5 / 4962.5 / 4967.5 4972.5 / 4977.5 / 4982.5 4987.5	OFDM (BPSK / QPSK / 16QAM / 64QAM)
	20MHz	4950 / 4955 / 4960 4965 / 4970 / 4975 4980	

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 22 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

E = Electric field (V/m)

P = Peak 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

For Ant. 1 and Ant. 2:

Max Conducted Power for 5 MHz: 19.50dBm

Distance (cm)	Test Freq. (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Average Output Power (dBm)	Average Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
22	4987.5	2.00	1.58	19.50	89.21	0.0233	1	Complied

Max Conducted Power for 20 MHz: 20.91dBm

Distance (cm)	Test Freq. (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Average Output Power (dBm)	Average Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
22	4980	2.00	1.58	20.91	123.39	0.0322	1	Complied