FCC RADIO EXPOSURE TEST REPORT

FCC ID	:	Z8H89FT0053
Equipment	:	PMP450B
Brand Name	:	Cambium Networks
Model Name	:	PMP450B
Applicant	:	Cambium Networks Inc. 3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA
Manufacturer	:	Cambium Networks, Ltd. Ashburton, TQ13 7UP, UK
Standard	:	47 CFR Part 2.1091

The product was received on Aug. 01, 2019, and testing was started from Jan. 07, 2020 and completed on Jan. 07, 2020.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: Sam Chen

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

Table of Contents

History of this test report

Report No.	Version	Description	Issued Date
FA980817AB	01	Initial issue of report.	Oct. 18, 2019
FA980817AB	02	1. Adding the 5MHz. 2. Re-test the 10MHz and 40MHz.	Jan. 16, 2020

Summary of Test Result

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

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Cindy Peng

1 General Description

1.1 EUT General Information

RF General Information			
Evaluation Mode	**TX Frequency (MHz)**	**RX Frequency (MHz)**	**Modulation Type**
LTE Band 43	5MHz: 3652.5~3697.5 10MHz: 3655~3695 40MHz: 3670~3680	5MHz: 3652.5~3697.5 10MHz: 3655~3695 40MHz: 3670~3680	QPSK, 16QAM, 64QAM, 256QAM

1.2 Testing Location

Testing Location		
☐	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
☒	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 Condition	Test Site No.	Test Engineer	Test Environment	Test Date
Radiated	03CH04-CB	KJ Huang	17.9~18.4°C / 58~59%	Jan. 07, 2020

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

1.3 Support Equipment

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	Notebook	DELL	E4300	N/A
B	PoE	Cambium	NET-P15-30IN	N/A

Note: It was supplied power by PoE for EUT, and the PoE is for measurement only, would not be marketed.

2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

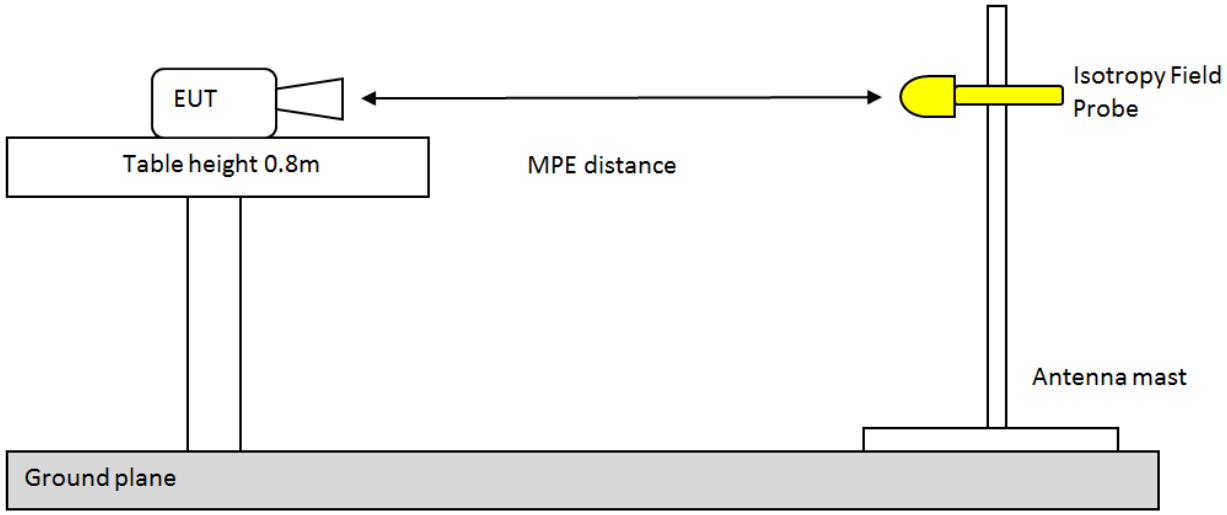
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(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/ cm²)	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 Measurement Method



Horizontal Plane

1. Align Probe with antenna axis. Probe should same height as Antenna axis.
   And take power density measurement with Probe.
2. Rotate table 45 degree (30 degree if MPE distance is more 60cm).
   Take power density measurement again.
3. Repeat step 2, until complete 360 degree.
   Each measured power density should be less than MPE limit.

Vertical Plane

1. Align Probe with antenna axis. Move probe to height of 10cm above ground plane.
   Take power density measurement.
   Then repeat measure with 10cm increment of probe height until 180 cm.
2. Rotate table 45 degree (30 degree if MPE distance is more 60cm).
   Repeat the power density measure from 10cm to 180cm
3. Repeat step 2, until complete 360 degree.

Spatial Average of same vertical plane should be less then MPE limit.

For Probe or measurement equipment requirement, please see FCC OET Bulletin 65 97-01

Note:

Either peak or spatially averaged results may be applied to determine compliance; and with respect to plane-wave equivalent power density limits when ≥ 300 MHz, and electric and magnetic field strength limits when < 300 MHz.

2.3 Measurement Result and Limit

Test Mode	Band 43_LTE_40MHz_QPSK	Test Frequency (MHz)	3675	MPE Distance (cm)	48	Power Setting	30/34	
EUT Plane	Horizontal							
Probe height (cm) \ Deg	0~45°	45~90°	90~135°	135~180°	180~225°	225~270°	270~315°	315~360°
	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)
199	0.00025	0.00239	0.00769	0.51552	0.62599	0.00781	0.00055	0.00044
Max PSD (mW/cm²)	0.62599							
MPE Limit (mW/cm²)	1							
EUT Plane	Vertical							
Probe height (cm) \ Deg	0~45°	45~90°	90~135°	135~180°	180~225°	225~270°	270~315°	315~360°
	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)	Max PSD (mW/cm²)
10	0.00015	0.00045	0.00035	0.00036	0.00019	0.00039	0.00047	0.00031
20	0.00024	0.00027	0.00023	0.00033	0.00044	0.00030	0.00035	0.00036
30	0.00033	0.00031	0.00037	0.00030	0.00039	0.00036	0.00017	0.00041
40	0.00047	0.00021	0.00043	0.00043	0.00026	0.00042	0.00019	0.00048
50	0.00025	0.00014	0.00021	0.00037	0.00036	0.00020	0.00032	0.00014
60	0.00046	0.00014	0.00565	0.00592	0.00331	0.00039	0.00044	0.00022
70	0.00033	0.00035	0.09144	0.07075	0.02722	0.01121	0.00027	0.00024
80	0.00038	0.00024	0.00107	0.00233	0.00792	0.00482	0.00050	0.00036
90	0.00017	0.00030	0.05610	0.51504	0.45588	0.06512	0.00013	0.00032
100	0.00044	0.00031	0.00820	0.00356	0.00476	0.00375	0.00022	0.00023
110	0.00035	0.00045	0.00457	0.00367	0.00644	0.00706	0.00031	0.00023
120	0.00027	0.00028	0.00168	0.00326	0.00310	0.00844	0.00018	0.00031
130	0.00044	0.00045	0.00537	0.00739	0.00590	0.00568	0.00018	0.00047
140	0.00035	0.00039	0.00055	0.00058	0.00052	0.00079	0.00036	0.00035
150	0.00025	0.00017	0.00014	0.00020	0.00038	0.00032	0.00049	0.00016
160	0.00046	0.00013	0.00020	0.00019	0.00037	0.00025	0.00040	0.00049
170	0.00033	0.00049	0.00043	0.00019	0.00015	0.00048	0.00040	0.00045
180	0.00040	0.00047	0.00015	0.00043	0.00021	0.00050	0.00015	0.00029
Spatial Average (mW/cm²)	0.00034	0.00031	0.00984	0.03418	0.02877	0.00614	0.00031	0.00032
Max Spatial Average (mW/cm²)	0.03418							
MPE Limit (mW/cm²)	1							

2.4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Isotropic Probe	ETS-LINDGREN	HI-6105	00130664	100kHz-6GHz	Sep. 05, 2019	Sep. 04, 2020	03CH04-CB

Note: Calibration Interval of instrument listed above is one year.