

Radio Exposure Evaluation Report

FCC ID : Z8H89FT0066

Equipment : XV2-2T Outdoor Wi-Fi 6 Access point

Brand Name : Cambium Networks

Model Name : XV2-2T, XV2-2T1

Applicant : Cambium Networks Inc.
3800 Golf Road Suite 360 Rolling Meadows IL United States 60008

Manufacturer : Lite-On Network Communication (Dongguan) Limited
No.30 QingXi-Keji Road, QingXi Town, DongGuan City, Guangdong Province, P.R. China

Standard : 47 CFR FCC Part 2 Subpart J, section 2.1091

The product was received on Apr. 09, 2021, and testing was started from Apr. 09, 2021 and completed on Jan. 20, 2022. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR FCC Part 2 Subpart J, section 2.1091 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Hsinhua Laboratory, the test report shall not be reproduced except in full.



Approved by: Jackson Tsai

SPORTON INTERNATIONAL INC. Hsinhua Laboratory
No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)



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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:
None

Reviewed by: Sam Tsai
Report Producer: Debby Hung

1 General Description

1.1 Information

1.1.1 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) 802.11ax/VHT: 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) 802.11ax: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Bluetooth	2400-2483.5	2402-2480	BR / EDR: FHSS (GFSK / $\pi/4$ -DQPSK / 8DPSK) LE: DSSS (GFSK)

1.2 Antenna Information

Model:XV2-2T <Group 1>

Ant.	Brand	Model Name	Antenna Type	Connector	Support
1	LYNwave	Snow Leopard	PIFA antenna	I-PEX	2.4G
2	LYNwave	Snow Leopard	PIFA antenna	I-PEX	2.4G
3	LYNwave	Snow Leopard	PIFA antenna	I-PEX	5G
4	LYNwave	Snow Leopard	PIFA antenna	I-PEX	5G
5	LYNwave	Snow Leopard	PIFA antenna	I-PEX	BT

Ant.	Port	Gain (dBi)					BT
		2.4G	5G				
			U-NII-1	U-NII-2A	U-NII-2C	U-NII-3	
1	1	5.2	-	-	-	-	-
2	2	5.3	-	-	-	-	-
3	1	-	8.1	8.1	9.3	9.0	-
4	2	-	8.6	8.6	8.9	8.6	-
5	1	-	-	-	-	-	5.6



Note 1: The EUT has five antennas.

For 2.4GHz function:

For IEEE 802.11 b/g/n/VHT/ax mode (2TX/2RX)

Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 5 (port 1) could transmit/receive.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (2TX/2RX)

Ant. 3 (port 1) and Ant. 4 (port 2) could transmit/receive simultaneously.

Model:XV2-2T1 <Group 2>

Ant.	Brand	Model Name	Antenna Type	Connector	Support
1	M-gear	Snow leopard_120deg	Array patch	I-PEX	2.4G
2	M-gear	Snow leopard_120deg	Array patch	I-PEX	2.4G
3	M-gear	Snow leopard_120deg	Array patch	I-PEX	5G
4	M-gear	Snow leopard_120deg	Array patch	I-PEX	5G
5	LYNwave	Snow Leopard	PIFA antenna	I-PEX	BT

Ant.	Port	Gain (dBi)					BT
		2.4G	5G				
			U-NII-1	U-NII-2A	U-NII-2C	U-NII-3	
1	1	11.9	-	-	-	-	-
2	2	11.7	-	-	-	-	-
3	1	-	14.31	13.37	14.00	13.05	-
4	2	-	14.57	14.38	13.03	12	-
5	1	-	-	-	-	-	5.6

Note 1: The EUT has five antennas.

For 2.4GHz function:

For IEEE 802.11 b/g/n/VHT/ax mode (2TX/2RX)

Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 5 (port 1) could transmit/receive.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (2TX/2RX)

Ant. 3 (port 1) and Ant. 4 (port 2) could transmit/receive simultaneously.

1.3 Table for Multiple Listing

The brand/model names in the following table are all refer to the identical product.

Model Name	Antenna	Description
XV2-2T	Group 1	All the models are identical, the only difference is that the Wi-Fi antennas for each model are different.
XV2-2T1	Group 2	

1.4 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FA142329&FA142329-01

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

Modifications	Performance Checking
1. Model:XV2-2T1 was added. 2. Group 2 Antenna was added for XV2-2T1 used.	MPE was evaluated

1.5 Accessories

Accessories			
Mount kit	Brand Name	-	Model Name
			-

Reminder: Regarding to more detail and other information, please refer to user manual.

1.6 Testing Location

Test Lab. : Sporton International Inc. Hsinhua Laboratory			
<input checked="" type="checkbox"/>	Hsinhua (TAF: 3785)	ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.) TEL: 886-3-327-3456	FAX: 886-3-327-0973
Test site Designation No. TW3785 with FCC.			
<input type="checkbox"/>	Wen 33rd.St. (TAF: 3785)	ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: 886-3-318-0787	FAX: 886-3-318-0287
Test site Designation No. TW0008 with FCC.			

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 ²)*	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 ²)*	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

Multiple Transmitters Condition

Co-location as simultaneously transmitting (co-transmitting) and the evaluation shall be consider that simultaneous transmissions from co-located devices the individual transmitters are evaluated separately. After sum of the individual value (basic restriction / reference level) are measured/calculated also have to under basic restriction / reference level.

Co-transmitting mode: 2.4GHz WLAN+5GHz WLAN Mode +Bluetooth

2.2 MPE Calculation Method

The MPE was calculated at 26 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: Occupational / Controlled Exposure

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm2)	Limit (mW/cm2)	Ratio (S/Limit)
2.4G;D1D	14.81	20.67	35.48	0.50	35.98	3.96278	26	0.46649	1.00000	0.46649
5.8G;D1D	13.05	22.43	35.48	0.50	35.98	3.96278	26	0.46649	1.00000	0.46649
2.4G;BT-LE	5.60	7.71	13.31	0.50	13.81	0.02404	26	0.00283	1.00000	0.00283
									Sum Ratio	0.93581
									Ratio Limit	1

—————THE END—————