

RF EXPOSURE REPORT



FCC Applicant: Cisco Systems Inc.
125 West Tasman Dr, Bldg. P, San Jose, California, 95134
USA
Product Name: FM4500FIBER-HW
Brand Name: Cisco Fluidmesh FM4500 FIBER
Model No.: FM4500F
Model Difference: N/A
Report Number: ER/2021/A0121
FCC ID R5SX500F
Issue Date: March 23, 2022
Date of EUT Received: October 28, 2021

Approved By

John Yeh

We hereby certify that:

The above equipment was evaluate by SGS Taiwan Ltd. The evaluation in this report is in compliance with FCC Rule Part §2.1091.

The results of this report relate only to the sample identified in this report.

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
ER/2021/A0121	00	Original.	March 23, 2022	Karen Huang	

Note:

- 1、The remark "" indicates modification of the report upon requests from certification body.

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1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

1.1 Product Description

Product Name:	FM4500FIBER-HW
Brand Name:	Cisco Fluidmesh FM4500 FIBER
Model No.:	FM4500F
Model Difference:	N/A
Hardware Version:	N/A
Firmware Version:	N/A
Power Supply:	56Vdc

1.2 Evaluation site

Laboratory		Site Address	FCC Designation number	ISED Company Number	CAB Identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	☒	No. 134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, 24803, Taiwan.	TW0027	4620A	TW3702
	☐	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 333 Taiwan.	TW0028	4620E	
	☐	1F, No. 8, Alley 15, Lane 120, Sec. 1, Nei Hu Road, Nei Hu District, Taipei City, 222 Taiwan.	TW0029	23862	

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1.3 Antenna Information:

1.3.1 WLAN 5GHz

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
Omni-direction	Fluidmesh	FM-OMNI-5-V	5150~5250	4.0	7.52
			5250~5350	4.0	7.52
			5470~5725	4.0	7.52
			5725~5850	4.0	7.52
Omni-direction	Fluidmesh	FM-OMNI-5-H	5150~5250	5.0	7.52
			5250~5350	5.0	7.52
			5470~5725	5.0	7.52
			5725~5850	5.0	7.52
Omni-direction	Fluidmesh	FM-SHARK-DUAL	5150~5250	13.0	16.01
			5250~5350	13.0	16.01
			5470~5725	13.0	16.01
			5725~5850	13.0	16.01
Directional	Fluidmesh	FM-TUBE	5150~5250	14.6	17.61
			5250~5350	14.6	17.61
			5470~5725	14.6	17.61
			5725~5850	14.6	17.61

1.3.2 WLAN 4.9GHz

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
Omni-direction	Fluidmesh	FM-OMNI-5-V	4960~4980	4.0	7.52
Omni-direction	Fluidmesh	FM-OMNI-5-H	4960~4980	5.0	7.52
Omni-direction	Fluidmesh	FM-SHARK-DUAL	4960~4980	13.0	16.01
Directional	Fluidmesh	FM-TUBE	4960~4980	14.6	17.61

Note:

1. Antenna information is provided by the applicant.

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2 FCC MAXIMUM PERMISSIBLE EXPOSURE (MPE)

2.1 FCC Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
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
1500-100000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equipment power density

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

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2.2 Power Density Calculation (Worst Case)

FCC Standalone MPE

Operation Mode	Evaluation Frequency (MHz)	Operation Distance (cm)	Max. Output Power Include Tolerance (dBm)	Antenna Gain (dBi)	Max. EIRP (mW)	Power Density (PD) (mW/cm ²)	Limit (mW/cm ²)	Pass / Fail	Power Density / Limit	Collocated MPE
WLAN 5G	5785.00	40	18.39	17.61	3981.07	0.198	1.000	Pass	0.198	V
WLAN 4.9G	4980.00	40	24.41	17.61	15922.09	0.792	1.000	Pass	0.792	V

2.3 Collocated Power Density Calculation

FCC Collocated MPE

Operation Mode	Power Density / Limit	Σ (Power Density / Limit)
WLAN 5G	0.198	0.990
WLAN 4.9G	0.792	

Note:

1. Σ (Power Density / Limit): This is a summation of [(Power Density for each transmitter/antenna included in the simultaneous transmission) / (corresponding MPE limit)].
2. Considering the collocated transmitters, the aggregated (Power Density / limit) is smaller than 1, and MPE of collocated transmitters is compliant

~ End of Report ~

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