RF EXPOSURE REPORT

Testing Laboratory
3702

FCC Applicant:	Cisco Systems Inc. 125 West Tasman Dr, Bldg. P, San Jose, California, 95134 USA
Product Name:	ER/2021/A0112
Brand Name:	Cisco Fluidmesh FM4500 EMBEDDED
Model No.:	FM4500EMB
Model Difference:	N/A
Report Number:	ER/2021/A0112
FCC ID	R5SX500E
Issue Date:	February 22, 2022
Date of EUT Received:	October 28, 2021

Approved By John Yeh

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.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
ER/2021/A0112	00	Original.	January 28, 2022	Karen Huang	*
ER/2021/A0112	01	Update the value of max. output power include tolerance	February 22, 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:	FM4500EMB-HW
Brand Name:	Cisco Fluidmesh FM4500 EMBEDDED
Model No.:	FM4500EMB
Model Difference:	N/A
Hardware Version:	N/A
Firmware Version:	N/A
EUT Series No.:	4500152873
Power Supply:	56Vdc

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1.2 Antenna Information:

1.2.1 WLAN 5GHz

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
Omnidirection	MP Antenna, LTD.	08-ANT-0985	5150~5250	3.0	6.01
			5250~5350	3.0	6.01
			5475~5725	3.0	6.01
			5475~5825	3.0	6.01
Omnidirection	Fluidmesh	FM-OMNI-5-V	5150~5250	4.0	7.52
			5250~5350	4.0	7.52
			5475~5725	4.0	7.52
			5475~5825	4.0	7.52
Omnidirection	Fluidmesh	FM-OMNI-5-H	5150~5250	5.0	7.52
			5250~5350	5.0	7.52
			5475~5725	5.0	7.52
			5475~5825	5.0	7.52

1.2.2 WLAN 4.9GHz

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
Omnidirection	MP Antenna, LTD.	08-ANT-0985	4960~4980	3.0	6.01
Omnidirection	Fluidmesh	FM-OMNI-5-V	4960~4980	4.0	7.52
Omnidirection	Fluidmesh	FM-OMNI-5-H	4960~4980	5.0	7.52

Note: 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 Permissive 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	5240.00	20	22.01	7.52	897.43	0.179	1.000	Pass	0.179	V
WLAN 4.9G	4980.00	20	23.51	7.52	1267.65	0.252	1.000	Pass	0.252	V

2.3 Collocated Power Density Calculation

FCC Collocated MPE

Operation Mode	Power Density / Limit	Σ (Power Density / Limit)
WLAN 5G	0.179	0.431
WLAN 4.9G	0.252	

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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