



RF Exposure Evaluation Declaration

FCC ID: LDK-ONT4TVCW

Applicant: Cisco Systems, Inc.

Application Type: Certification

Product: GPON ONT

Model No.: CGP-ONT-4TVCW

Trademark: CISCO

FCC Classification: Digital Transmission System (DTS)
Unlicensed National Information Infrastructure (NII)

Test Date: December 30 ~ 31, 2020

Reviewed By:

Vincent Yu

Vincent Yu

Approved By:

Robin Wu

Robin Wu



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

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Revision History

Report No.	Version	Description	Issue Date	Note
2009RSU002-U4	Rev. 01	Initial Report	06-01-2021	Valid

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1. General Information

1.1. Applicant

Cisco Systems, Inc.
 125 West Tasman Drive, San Jose, California, United States 95134-1706

1.2. Manufacturer

Cisco Systems, Inc.
 125 West Tasman Drive, San Jose, California, United States 95134-1706

1.3. Testing Facility

<input checked="" type="checkbox"/>	<p>Test Site – MRT Suzhou Laboratory</p> <hr/> <p>Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China</p> <p>Laboratory Location (Suzhou - SIP) 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China</p> <hr/> <p>Laboratory Accreditations</p> <table border="0" style="width: 100%;"> <tr> <td>A2LA: 3628.01</td> <td>CNAS: L10551</td> </tr> <tr> <td>FCC: CN1166</td> <td>ISED: CN0001</td> </tr> <tr> <td colspan="2">VCCI: R-20025, G-20034, C-20020, T-20020</td> </tr> </table>	A2LA: 3628.01	CNAS: L10551	FCC: CN1166	ISED: CN0001	VCCI: R-20025, G-20034, C-20020, T-20020	
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<input type="checkbox"/>	<p>Test Site – MRT Shenzhen Laboratory</p> <hr/> <p>Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China</p> <hr/> <p>Laboratory Accreditations</p> <table border="0" style="width: 100%;"> <tr> <td>A2LA: 3628.02</td> <td>CNAS: L10551</td> </tr> <tr> <td>FCC: CN1284</td> <td>ISED: CN0105</td> </tr> </table>	A2LA: 3628.02	CNAS: L10551	FCC: CN1284	ISED: CN0105		
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FCC: CN1284	ISED: CN0105						
<input type="checkbox"/>	<p>Test Site – MRT Taiwan Laboratory</p> <hr/> <p>Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)</p> <hr/> <p>Laboratory Accreditations</p> <table border="0" style="width: 100%;"> <tr> <td colspan="2">TAF: L3261-190725</td> </tr> <tr> <td>FCC: 291082, TW3261</td> <td>ISED: TW3261</td> </tr> </table>	TAF: L3261-190725		FCC: 291082, TW3261	ISED: TW3261		
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2. Product Information

2.1. Feature of Equipment under Test

Product Name	GPON ONT
Model No.	CGP-ONT-4TVCW
Wi-Fi Specification	802.11a/b/g/n/ac
Operating Temp.	-5 ~ 45°C
Power Supply	External Power Adapter
Firmware Version	1.1.3.3_03
Accessories	
Adapter	MODEL: DSA-18PFR-12 FUS 120150 INPUT: 100-240V~50/60Hz 0.6A OUTPUT: 12VDC, 1.5A, 18.0W

2.2. Description of Available Antennas

Antenna Type	Frequency Band (MHz)	T _x Paths	Number of spatial streams	Max Antenna Gain (dBi)	CDD Directional Gain (dBi)	
					For Power	For PSD
PCB Antenna	2412 ~ 2462	2	1	3.80	3.80	6.81
	5180 ~ 5825	2	1	3.34	3.34	6.35

Note: The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

If all antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices,
 Array Gain = $10 \log_{10} (N_{ANT} / N_{SS})$ dB;
- For power measurements on IEEE 802.11 devices,
 Array Gain = 0 dB for $N_{ANT} \leq 4$;

3. RF Exposure Evaluation

3.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	6
1500-100,000	--	--	1	30

f= Frequency in MHz

Calculation Formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

r = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

3.2. Test Result of RF Exposure Evaluation

Product	GPON ONT
Test Item	RF Exposure Evaluation

Antenna Gain: Refer to clause 2.2.

Test Mode	Frequency Band (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Maximum EIRP (dBm)
802.11b/g/n	2412 ~ 2462	15.17	3.80	18.97
802.11a/n/ac	5180 ~ 5240 5260 ~ 5320 5500 ~ 5720 5745 ~ 5825	15.24	3.34	18.58

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Safety Distance (cm)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)
802.11b/g/n	2412 ~ 2462	18.97	20	0.0157	1
802.11a/n/ac	5180 ~ 5240 5260 ~ 5320 5500 ~ 5720 5745 ~ 5825	18.58	20	0.0143	1

CONCLUSION:

WLAN 2.4GHz Band and WLAN 5GHz can transmit simultaneously.

The max Power Density at R (20 cm) = $0.0157\text{mW/cm}^2 + 0.0143\text{mW/cm}^2 = 0.03\text{mW/cm}^2 < 1\text{mW/cm}^2$.

So the safety distance is 20cm for device installed without any other radio equipment.

Appendix - EUT Photograph

Refer to "2009RSU002-UE" file.