RF Exposure Evaluation Declaration

FCC ID:	P27OT221
APPLICANT:	Sercomm Corporation
Application Type:	C3PC Certification
Product:	Dual Band ONT
Model No.:	AOT-4221SR
Brand Name:	Airtel
FCC Classification:	Unlicensed National Information Infrastructure (NII)
FCC Rule Part(s):	2.1091
Test Date:	January 25~27, 2021

Reviewed By: oscar shi
Oscar Shi

Approved By: Robin Wu
Robin Wu

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

Revision History

Report No.	Version	Description	Issue Date	Note
2012RSU016-U3	Rev. 01	Initial Report	03-29-2021	Valid

Note: Adding band U-NII-2A and U-NII-2C, requests a Class III Permissive Change for its application with FCC ID: P27OT221 granted on 10-26-2020 and 12-07-2020.

CONTENTS

1. GENERAL INFORMATION

1.1. Applicant

Sercomm Corporation

8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.

1.2. Manufacturer

Sercomm Corporation

8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.

1.3. Testing Facility

☒	**Test Site – MRT Suzhou Laboratory**	
	Laboratory Location (Suzhou – Wuzhong)	
	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China	
	Laboratory Location (Suzhou – SIP)	
	4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China	
	Laboratory Accreditations	
	A2LA: 3628.01	CNAS: L10551
	FCC: CN1166	ISED: CN0001
	VCCI: R-20025, G-20034, C-20020, T-20020	
☐	**Test Site – MRT Shenzhen Laboratory**	
	Laboratory Location (Shenzhen)	
	1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China	
	Laboratory Accreditations	
	A2LA: 3628.02	CNAS: L10551
	FCC: CN1284	ISED: CN0105
☐	**Test Site – MRT Taiwan Laboratory**	
	Laboratory Location (Taiwan)	
	No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)	
	Laboratory Accreditations	
	TAF: L3261-190725	
	FCC: 291082, TW3261	ISED: TW3261

2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name	Dual Band ONT
Model No.	AOT-4221SR
Brand Name	Airtel
Serial No.	20210126Sample#01 (Conducted Sample)
Hardware Version	8.0
Software Version	AOT4221SR_R1.9
Wi-Fi Specification	802.11a/b/g/n/ac
Antenna Delivery	2*T_X + 2*R_X

2.2. Description of Available Antennas

Antenna Type	Frequency Band (MHz)	T_X Paths	Max Antenna Gain (dBi)	Beamforming Directional Gain (dBi)	CDD Directional Gain (dBi)	
					For Power	For PSD
PIFA Antenna	2412 ~ 2462	2	3.50	6.51	3.50	6.51
	5150 ~ 5850	2	3.30	6.31	3.30	6.31

Note 1: The EUT supports Cyclic Delay Diversity (CDD) technology for 802.11a/b/g/n/ac mode.

Note 2: 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 (N_{ANT}/ N_{SS}) dB = 3.01;

- For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB for $N_{ANT} \leq 4$;

If antenna gains are not equal, Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Note 3: The antenna gain is declared by manufacture

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: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

Pd is the limit of MPE, $1mW/cm^2$. 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	Dual Band ONT
Test Item	RF Exposure Evaluation

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)
Wi-Fi	2412 ~ 2462	33.46	0.4415	1
	5250 ~ 5350 5470 ~ 5725	29.94	0.1962	1

CONCLUSION:

2.4G Wi-Fi and 5G Wi-Fi can transmit simultaneously.

Therefore, the Max Power Density at R (20 cm) = 0.4415 mW/cm^2 + 0.1962 mW/cm^2 = 0.6377mW/cm^2 < 1 mW/cm^2.

So the safety distance is 20cm for **Dual Band ONT** installed without any other radio equipment

The End

Appendix - EUT Photograph

Refer to “2101RSU065-UE” file.