



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

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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
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.

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

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	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	29.94	0.1962	1
	5470 ~ 5725			

CONCLUSION:

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

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

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.