RF Exposure Evaluation Declaration

FCC ID	:	2ALGLS2000
APPLICANT	:	CASSIA NETWORKS INC.
Application Type	:	Certification
Product	:	Cassia Bluetooth Router
Model No.	:	S2000, S2000-10, S2000-20
Brand Name	:	CASSIA
FCC Classification	:	Digital Transmission System (DTS)

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Revision History

Report No.	Version	Description	Issue Date	Note
1803RSU028-U4	Rev. 01	Initial report	04-17-2018	Valid

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name	Cassia Bluetooth Router
Model No.	S2000, S2000-10, S2000-20
Brand Name	CASSIA
Wi-Fi Specification	802.11b/g/n
Bluetooth Version:	v4.2
Components	
Adapter	M/N: A8A-050200U-US1 INPUT: 100-240V ~ 50/60Hz, 0.35A OUTPUT: 5Vdc, 2.0A

Note: The different of models only for marketing different client, the other was the same.

1.2. Antenna Description

Antenna Type	Antenna Model	Mode	Frequency Band (MHz)	Max Peak Gain (dBi)
Omni	N2430H2	802.11b/g/n	2400 ~ 2483.5	3.2
	M2450DBHSUM	Bluetooth-LE	2402 ~ 2480	5.0

2. RF Exposure Evaluation

2.1. 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.

2.2. Test Result of RF Exposure Evaluation

Product	Cassia Bluetooth Router
Test Item	RF Exposure Evaluation

Antenna Gain: Refer to Clause 1.2 of antenna description.

Test Mode	Frequency Band (MHz)	Maximum Total Average Output Power (dBm)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)
802.11b/g/n	2412 ~ 2462	17.45	0.0231	1
Bluetooth-LE	2400 ~ 2480	17.95	0.0392	1

CONCLUSION:

The WLAN 2.4GHz and BLE can transmit simultaneously. Therefore, the Max Power Density at R (20 cm) = $0.0231mW/cm^2 + 0.0392mW/cm^2 = 0.0623mW/cm^2 < 1mW/cm^2$.

So the EUT complies with the requirement.

The End