RF EXPOSURE EVALUATION

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)

FCC ID：**2AI65-AIRMESH**

EUT Specification

EUT	**Smart Wireless Router**
Frequency band (Operating)	☒WLAN: 2.412GHz ~ 2.462GHz ☒WLAN: 5.745GHz ~ 5.825GHz ☐Others: 2.402GHz~2.480GHz (BT4.2)
Device category	☐Portable (<20cm separation) ☒Mobile (>20cm separation) ☐Others ___
Exposure classification	☐Occupational/Controlled exposure (S = 5mW/cm2) ☒General Population/Uncontrolled exposure (S=1mW/cm2)
Antenna diversity	☐Single antenna ☒Multiple antennas ☐Tx diversity ☐Rx diversity ☐Tx/Rx diversity
Max. output power	2.4GWIFI: 11.43dBm (0.0139W) 5G WIFI: 21.41dBm (0.1384W)
Antenna gain (Max)	2.4G WIFI: Internal antenna 2X2 MIMO 7.0 dBi 5G WIFI: Internal antenna 2X2 MIMO 7.0 dBi
Evaluation applied	☒MPE Evaluation ☐SAR Evaluation

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
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

Friis transmission formula: Pd=(Pout*G)\(4*pi*R2)

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

Measurement Result

2.4GHz WiFi:
The Max Measured power is 11.43dBm (Mode: 802.11n20, CH Freq. 2462MHz)
Directional gain=10.1dBi

Operating Mode	Channel Frequency (MHz)	Measured Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Antenna Gain (dBi)	Directional gain (dBi)	Power density at 20cm (mW/ cm2)	Power density Limits (mW/cm2)
802.11n20	2462	11.43	±1	12.43	7.0	10.1	0.0356	1

5.8GHz WiFi:
The Max Measured power is 21.41dBm (Mode: 802.11ac20, CH Freq. 5745MHz)
Directional gain=10.1dBi

Operating Mode	Channel Frequency (MHz)	Measured Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Antenna Gain (dBi)	Directional gain (dBi)	Power density at 20cm (mW/ cm2)	Power density Limits (mW/cm2)
802.11ac20	5745	21.41	±1	22.41	7.0	10.1	0.3546	1

Collocated Power Density Calculation

Maximum 2.4G ANT Power density at 20cm (mW/ cm2)	Maximum 5G ANT Power density at 20cm (mW/ cm2)	Power density at 20cm (mW/ cm2)	Power density Limits (mW/cm2)
0.0356	0.3546	**0.3902**	1