FCC ID: 2AD5K-CZ3730A

MPE Calculation : WLAN(2.4GHz)

RF function or Mode	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requriment (mW/cm^2)
802.11b	2412.00	~	2462.00	16.00	1.63	17.63	57.943	**0.012**	1.000
802.11g	2412.00	~	2462.00	16.00	1.63	17.63	57.943	0.012	1.000
802.11n(HT20) / Single transmit	2412.00	~	2462.00	16.00	1.63	17.63	57.943	0.012	1.000
802.11n(HT40)	2422.00	~	2452.00	14.50	1.63	16.13	41.021	0.009	1.000
802.11n(HT20) / Multiple transmit	2412.00	~	2462.00	16.50	1.63	18.13	65.013	**0.013**	1.000
		~							
		~							
		~							
		~							

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user.

The MPE sample calculation for this exposure is shown below.

▪ **S =** EIRP / (4 R^2 π)

= 57.943 / (4 X 20^2 X π)

= 0.012 mW/cm^2

- Note

S= Maximum power density(mW/cm^2)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenn

▪ Limits for General Population/Uncontrolled Exposure

Frequency range (MHz)			Electric Field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm^2)	Averageing time (minutes)
0.3	~	1.34	614	1.63	*100	30
1.34	~	30	824/f	2.19 / f	*180 / f^2	30
30	~	300	27.5	0.073	0.2	30
300	~	1,500			f / 1500	30
1,500	~	100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

Conclusion : The exposure condition of this device is compliant with FCC

FCC ID: 2AD5K-CZ3730A

MPE Calculation : WLAN(5GHz)

RF function or Mode	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requriment (mW/cm^2)
802.11a	5180.00	~	5240.00	13.50	1.16	14.66	29.242	0.006	1.000
802.11n(HT20)	5180.00	~	5240.00	13.50	1.16	14.66	29.242	**0.006**	1.000
802.11n(HT40)	5190.00	~	5230.00	14.00	1.16	15.16	32.810	0.007	1.000
802.11a	5745.00	~	5825.00	15.50	-0.08	15.42	34.834	**0.007**	1.000
802.11n(HT20)	5745.00	~	5825.00	15.50	-0.08	15.42	34.834	0.007	1.000
802.11n(HT40)	5755.00	~	5795.00	14.00	-0.08	13.92	24.661	0.005	1.000
		~							
		~							
		~							

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user.

The MPE sample calculation for this exposure is shown below.

▪ **S** = EIRP / (4 R^2 π)

= 29.242 / (4 X 20^2 X π)

= 0.006 mW/cm^2

- Note

S= Maximum power density(mW/cm^2)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenn

▪ Limits for General Population/Uncontrolled Exposure

Frequency range (MHz)			Electric Field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm^2)	Averageing time (minutes)
0.3	~	1.34	614	1.63	*100	30
1.34	~	30	824/f	2.19 / f	*180 / f^2	30
30	~	300	27.5	0.073	0.2	30
300	~	1,500			f / 1500	30
1,500	~	100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

Conclusion : The exposure condition of this device is compliant with FCC

FCC ID: 2AD5K-CZ3730A

MPE Calculation : BT, LE, Zigbee

RF function or Mode	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requriment (mW/cm^2)
BT	2402.00	~	2480.00	13.00	-1.07	11.93	15.596	0.004	1.000
LE	2402.00	~	2480.00	10.00	-1.07	8.93	7.817	0.002	1.000
Zigbee	2405.00	~	2480.00	3.00	2.75	5.75	3.759	0.001	1.000
		~							
		~							
		~							
		~							
		~							
		~							

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user.

The MPE sample calculation for this exposure is shown below.

▪ **S** = EIRP / (4 R^2 π)

= 15.596 / (4 X 20^2 X π)

= 0.004 mW/cm^2

- Note

S= Maximum power density(mW/cm^2)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenn

▪ Limits for General Population/Uncontrolled Exposure

Frequency range (MHz)			Electric Field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm^2)	Averageing time (minutes)
0.3	~	1.34	614	1.63	*100	30
1.34	~	30	824/f	2.19 / f	*180 / f^2	30
30	~	300	27.5	0.073	0.2	30
300	~	1,500			f / 1500	30
1,500	~	100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

Conclusion : The exposure condition of this device is compliant with FCC

RF Exposure Compliance for simultaneous operations

- **Configurations for simultaneous operations**
  - **Configuration 1:** Zigbee + WLAN 2.4GHz(Ant 1)
  - **Configuration 2:** Zigbee + WLAN 2.4GHz(Ant 1+2)
  - **Configuration 3:** Zigbee + WLAN 5GHz
  - **Configuration 4:** Zigbee + BT or LE

  Note: Above configuration was declared from applicant.

- **Configurations for simultaneous operations**

RF function or mode	Zigbee	WLAN (Single transmit)	WLAN (Multiple transmit)	WLAN (Single transmit)	WLAN (Single transmit)	BT	LE		Σ of MPE ratios
Frequency range (MHz)	2405~2480	2412~2462 2422~2452	2412~2462	5180~5240 5190~5230	5745~5825 5755~5795	2402~2480	2402~2480		
Power Density (mW/cm2)	0.001	0.012	0.013	0.006	0.007	0.004	0.002		
Requirement (mW/cm2)	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
MPE ratio (Power Density/Requirement)	0.001	0.012	0.013	0.006	0.007	0.004	0.002		
Configuration 1 (MPE ratio)	0.001	0.012							0.013
Configuration 2 (MPE ratio)	0.001		0.013						**0.014**
Configuration 3 (MPE ratio)	0.001			0.006					0.007
	0.001				0.007				0.008
Configuration 4 (MPE ratio)	0.001					0.004			0.005
	0.001						0.002		0.003

Note: The maximum power density in each RF function was used for above table.

▪ **Requirment = Σ of MPE ratios ≤ 1**

Conclusion : The exposure condition of this device is compliant with FCC rules.