



Maximum Permissible Exposure Evaluation

FCC ID: FA5CL5500CCW

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).

EUT Specification

Product Name:	Codelocks Connect Wireless Lock
Trade Mark:	 CODELOCKS control + convenience
Model/Type Reference:	CL5500 CC W
Listed Model(s):	CL4500 CC W
Model Differences:	All these models are identical in the same PCB, layout, electrical circuit. The CL5500 CC W is a larger model with an additional fixing point to attach to the door.
Frequency Band (Operating)	BT: 2402~2480MHz WIFI: 2412~2462MHz
Device Category	☐ Portable (<5mm separation) ☐ Mobile (>20cm separation) ☒ Fixed (>20cm separation) ☐ Others ____
Exposure Classification	☐ Occupational/Controlled exposure ($S=5\text{mW}/\text{cm}^2$) ☒ General Population/Uncontrolled exposure ($S=1\text{mW}/\text{cm}^2$)
Antenna Diversity	☒ Single antenna ☐ Multiple antennas ☐ TX diversity ☐ RX diversity ☐ TX/RX diversity
Antenna Gain (Max)	BT: 3.26dBi WIFI: 3.16dBi
Evaluation Applied	☒ MPE Evaluation ☐ SAR Evaluation

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**Limits for Maximum Permissible Exposure (MPE)**

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
(A) Limits for Occupational/Controlled Exposure				
300-1500	--	--	F/300	<6
1500-100000	--	--	5	<6
(B) Limits for General Population/Uncontrolled Exposure				
300-1500	--	--	F/1500	<30
1500-100000	--	--	1	<30

Calculation Method

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

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 limit of MPE is 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

Mode	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Target Power (dBm)	Tune Up Tolerance (dB)	Max. Tune Up Power (dBm)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
BLE 2M	2440	3.26	4.396	4.5	± 1	5.5	0.0015	1
802.11B	2412	3.16	18.46	18.5	± 1	19.5	0.0367	1

The BLE and WiFi can transmit simultaneously.

Mode	Frequency (MHz)	Power Density at 20cm (mW/cm ²)	Total Power density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Result
BLE 2M	2440	0.0015	0.0382	1	Pass
802.11B	2412	0.0367			

Note:

1. Calculate in the worst-case mode.
2. Max. Tune Up Power is declared by manufacturer, and used to calculate.
3. For a more detailed features description, please refer to the RF Test Report.

*****THE END*****

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