

1. RF Exposure Requirements

1.1 General Information

Client Information

Applicant:	CE LINK LIMITED
Address of applicant:	22 Dongkang Road, Dalingshan Town, Dongguan City, Guangdong Province, China.
Manufacturer:	DONGGUAN CE LINK LIMITED
Address of manufacturer:	22 Dongkang Road, Dalingshan Town, Dongguan City, Guangdong Province, China.
Factory 1#:	ANFU CE LINK LIMITED
Address of factory 1#:	Anfu County Industrial Zone, Ji'an city, Jiangxi Province, P.R. China.
Factory 2#:	CE LINK VIET NAM COMPANY LIMITED
Address of factory 2#:	Part of lots CNSG-04, CNSG-06 Van Trung Industrial Zone, Van Trung Ward, Viet Yen Town, Bac Giang Province, Vietnam

General Description of EUT:

Product Name:	Solar Battery Camera
Trade Name:	CE-LINK, 
Model No.:	L5102
Adding Model(s):	L5102-L, L5102-HB, L5102-LHB, GN-CW116-199, GN-CW216-199 Camera contains 7800mAh battery: DC5V from external power supply DC5V from Solar power supply powered by DC 3.65V Rechargeable Lithium-ion Battery
Rated Input:	Camera contains 5200mAh battery: DC5V from external power supply DC5V from Solar power supply powered by DC 3.65V Rechargeable Lithium-ion Battery Camera contains 7800mAh battery: 1.5A from external power supply 0.3A from Solar power supply
Rated Current:	Camera contains 5200mAh battery: 1.5A from external power supply 0.3A from Solar power supply
Battery Capacity:	powered by 7800mAh Rechargeable Lithium-ion Battery powered by 5200mAh Rechargeable Lithium-ion Battery
Adapter Model:	Model:NA010050015

	Input:AC100-240V 50/60Hz 0.5A
	Output:DC5.0V 1500mA
Software Version:	V1.0.5
	L5102_PIR_LED_R1V0_20250609
Hardware Version:	IPC-14LS_BAT_R1V0_20240421
	L5102_MAIN_R1V0_20250606
FCC ID:	A4X-L5102
Equipment Type:	Fixed device

Technical Characteristics of EUT:

Bluetooth (LE mode)

Bluetooth Version:	V5.2 (LE mode)
Frequency Range:	2402-2480MHz
RF Output Power:	1Mbps:1.44dBm (Conducted) 2Mbps:1.69dBm (Conducted)
Data Rate:	1Mbps, 2Mbps
Modulation:	GFSK
Quantity of Channels:	40
Channel Separation:	2MHz
Type of Antenna:	FPC Antenna
Antenna Gain:	3.28dBi

Bluetooth (BR/EDR mode)

Bluetooth Version:	V5.2 (BR/EDR mode)
Frequency Range:	2402-2480MHz
RF Output Power:	1.34dBm (Conducted)
Data Rate:	1Mbps, 2Mbps, 3Mbps
Modulation:	GFSK, $\pi/4$ DQPSK, 8DPSK
Quantity of Channels:	79
Channel Separation:	1MHz
Type of Antenna:	FPC Antenna
Antenna Gain:	3.28dBi

Wi-Fi(2.4G)

Support Standards:	802.11b, 802.11g, 802.11n, 802.11ax
Frequency Range:	2412-2462MHz for 802.11b/g/n/ax(HT/HE20) 2422-2452MHz for 802.11n/ax(HT/HE40)
RF Output Power:	18.47dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Quantity of Channels:	11 for 802.11b/g/n/ax(HT/HE20); 7 for 802.11n/ax(HT/HE40)
Channel Separation:	5MHz
Type of Antenna:	FPC Antenna
Antenna Gain:	3.28dBi

Wi-Fi(5G)

Support Standards:	802.11a, 802.11n-HT20, 802.11n-HT40, 802.11ac-VHT20/40, 802.11ax-HE20/40,
Frequency Range:	5180-5240MHz, 5260-5320MHz, 5500-5700MHz, 5745-5825MHz

	Band 1: 18.27dBm (Conducted)
	Band 2: 17.60dBm (Conducted)
Max. RF Output Power:	Band 3: 17.09dBm (Conducted)
	Band 4: 17.27dBm (Conducted)
Type of Modulation:	BPSK, QPSK, 16QAM, 64QAM
Type of Antenna:	FPC Antenna
	Band 1: 2.22dBi,
Antenna Gain:	Band 2: 4.08dBi,
	Band 3: 4.78dBi,
	Band 4: 4.16dBi,

1.2 RF Exposure Exemption

According to §1.1307(b)(3) and KDB 447498 D04 Interim General RF Exposure Guidance v01, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

Option A: FCC Rule Part 1.1307 (b)(3)(i)(A): The available maximum time-averaged power is no more than 1mW, regardless of separation distance.

Option B: FCC Rule Part 1.1307 (b)(3)(i)(B): The available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

Option C: FCC Rule Part 1.1307 (b)(3)(i)(C): The minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. R must be at least $\lambda/2\pi$, where λ is the free-space operating

wavelength in meters.

Single RF Sources Subject to Routine Environmental Evaluation	
RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R ²
1.34-30	3,450 R ² /f ²
30-300	3.83 R ²
300-1,500	0.0128 R ² f
1,500-100,000	19.2R ²

For Multiple RF sources: FCC Rule Part 1.1307(b)(3)(ii):

- (A) The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required).
- (B) In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

1.3 Calculated Result

Radio Access Technology	Prediction Frequency (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	Tune-Up Time-Averaged Power (dBm)	ERP (dBm)
Bluetooth	2402	1.69	3.28	100	2.00	3.13
Wi-Fi	2412	18.47	3.28	100	19.00	20.13
Wi-Fi	5180	18.27	2.22	100	19.00	19.07
Wi-Fi	5260	17.60	4.08	100	18.00	19.93
Wi-Fi	5500	17.09	4.78	100	18.00	20.63
Wi-Fi	5745	17.27	4.16	100	18.00	20.01

Frequency (MHz)	Option	Min. Distance (cm)	Max. Power (dBm) (mW)		Exposure Limit (mW)	Ratio	Result Pass/Fail
2402	C	20.00	3.13	2.06	768.00	0.01	Pass
2412	C	20.00	20.13	103.04	768.00	0.13	Pass
5180	C	20.00	19.07	80.72	768.00	0.11	Pass
5260	C	20.00	19.93	98.40	768.00	0.13	Pass
5500	C	20.00	20.63	115.61	768.00	0.15	Pass

5745	C	20.00	20.01	100.23	768.00	0.13	Pass
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*Note: 1. Time-Averaged Power=Output Power * Duty Cycle; ERP= Time-Averaged Power+ Antenna gain-2.15dB*

2. Option A, B and C refers as clause 1.2.

3. For option B, Max (time-averaged power, effective radiated power (ERP)) converts to Max. Power. For option C, ERP converts to Max. Power;

4. For option B, P_{th} (mW) converts to Exposure Limit (mW); For option C, ERP (W) converts to Exposure Limit (mW).

5. Ratio= Tune-Up ERP (mW)/ Exposure Limit (mW)

Mode for Simultaneous Multi-band Transmission:

Radio Access Technology	Ratio 1	Ratio 2	Simultaneous Ratio	Limit	Result
					Pass/Fail
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Note: Bluetooth and Wi-Fi can't transmit at the same time.

Result: Pass