

Maximum Permissible Exposure Report

FCC ID: 2ATYCHMX03

Report No. : BTL-FCCP-6-2101T110
Equipment : HIPCAM
Model Name : Indoor Camera Max
Brand Name : HIPCAM
Applicant : Hipcam Global LLC
Address : 112 Capitol Trail, Newark, Delaware, 19711 United States
Manufacturer : Goldtek Technology Co., Ltd.
Address : 16F., No.166, Jian 1st Rd., Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C.)

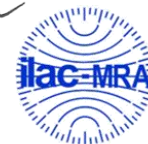
FCC Rule Part(s) : FCC CFR Title 47, Part 2 (2.1091)
FCC Guidelines for Human Exposure IEEE C95.1

Date of Receipt : 2021/2/2
Date of Test : 2021/2/2 ~ 2021/3/17
Issued Date : 2021/4/16


The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

Prepared by :


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REVISION HISTORY


Report No.	Version	Description	Issued Date
BTL-FCCP-6-2101T110	R00	Original Report.	2021/4/9
BTL-FCCP-6-2101T110	R01	Revised report to address TCB's comments.	2021/4/16

Table for Filed Antenna


For LoRa:

Ant.	Manufacture	Product	Type	Connector	Frequency Range (MHz)	Gain (dBi)
1		Lora US915	FPCB	N/A	902-928	0.67


For BLE:

Ant.	Manufacture	Product	Type	Connector	Frequency Range (MHz)	Gain (dBi)
1		Wi-Fi Ant.	PCB	N/A	2400-2500	3.91

For 2.4GHz WLAN:

Ant.	Manufacture	Product	Type	Connector	Frequency Range (MHz)	Gain (dBi)
1		Wi-Fi Ant.	PCB	N/A	2400-2500	3.91

For 5GHz RLAN:

Ant.	Manufacture	Product	Type	Connector	Frequency Range (MHz)	Gain (dBi)
1		Wi-Fi Ant.	PCB	N/A	5150-5250	4.69
					5250-5350	5.40
					5470-5725	5.25
					5725-5850	5.25

Maximum RF OUTPUT POWER

Mode		Maximum Average Power (dBm)
WLAN 2.4 GHz	IEEE 802.11b	17.89
	IEEE 802.11g	21.99
	IEEE 802.11n (HT20)	22.42
RLAN 5 GHz	IEEE 802.11a	13.61
	IEEE 802.11n (HT20)	13.06
	IEEE 802.11n (HT40)	10.44
BLE		5.16
Lora		17.78

MPE CALCULATION METHOD:

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi^2} = \frac{EIRP}{4\pi^2}$$

where:

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

RESULTS

For BLE:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
3.91	2.4604	5.16	3.2810	0.00160676	1	Complies

For 2.4G WLAN:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
3.91	2.4604	22.42	174.5822	0.08549690	1	Complies

For 5G RLAN:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
5.40	3.4674	13.61	22.9615	0.01584712	1	Complies

Note:

1. The calculated distance is 20 cm.

For LoRa :

Limit

Frequency Range (MHz)	Power Density (mW /cm ²)	Averaging Time (minutes)
300~1500	F/1500	30
1500~100000	1.0	30

MPE EVALUATION FORMULA

$$Pd = \frac{Pt}{4 * Pi * R^2}$$

where:
 Pd= Power density in mW/cm²
 Pt= EIRP in Mw
 Pi= 3.1416
 R= Measurement distance

RESULTS

Frequency (MHz)	Maximum Output Power (dBm)	Maximum Output Power (mW)	Antenna gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Power Density Limit (mW/cm ²)
902.3	17.78	59.979	0.67	20.0	0.014	0.602

Simultaneous Transmission:

Both of the Lora, Bluetooth and Wi-Fi can transmit simultaneously, the formula of calculated the MPE is:
 CPD1 / LPD1 + CPD2 / LPD2 +etc. <1

CPD: Calculation power density
 LPD: Limit of power density

Therefore, the worst –case situation calculated as below, which the result is less than “1”.
 0.00160676/1+ 0.08549690/1 + 0.01584712/1 + 0.014/1= 0.11695078 < 1

End of Test Report