Maximum Permissible Exposure Report

FCC ID: 2ATYCHMX01

Report No.	:	BTL-FCCP-6-2101T112
Equipment	:	HIPCAM
Model Name	:	Video Doorbell 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 ~ 2021/3/30
Issued Date	:	2021/5/11

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

Prepared by	:	Peter Chen, Engineer
Approved by	:	Scott Hsu, Manager

BTL Inc.

No.18, Ln. 171, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 114, Taiwan

Tel: +886-2-2657-3299   Fax: +886-2-2657-3331   Web: www.newbtl.com

REVISON HISTORY

Report No.	Version	Description	Issued Date
BTL-FCCP-6-2101T112	R00	Original Report.	2021/4/9
BTL-FCCP-6-2101T112	R01	Revised report to address TCB's comments.	2021/5/5
BTL-FCCP-6-2101T112	R02	Revised report to address TCB's comments.	2021/5/11

Table for Filed Antenna

For LoRa:

Ant.	Manufacture	Product	Type	Connector	Frequency Range (MHz)	Gain (dBi)
1	PSA	Lora US915	FPCB	N/A	902-928	0.65

For BLE:

Ant.	Manufacture	Product	Type	Connector	Frequency Range (MHz)	Gain (dBi)
1	PSA	Wi-Fi Ant.	PCB	N/A	2400-2500	3.39

For 2.4GHz WLAN:

Ant.	Manufacture	Product	Type	Connector	Frequency Range (MHz)	Gain (dBi)
1	PSA	Wi-Fi Ant.	PCB	N/A	2400-2500	3.39

For 5GHz RLAN:

Ant.	Manufacture	Product	Type	Connector	Frequency Range (MHz)	Gain (dBi)
1	PSA	Wi-Fi Ant.	PCB	N/A	5150-5250	4.79
					5250-5350	5.50
					5470-5725	5.35
					5725-5850	5.35

Maximum RF OUTPUT POWER

Mode		Maximum Average Power (dBm)
WLAN 2.4 GHz	IEEE 802.11b	17.91
	IEEE 802.11g	20.85
	IEEE 802.11n (HT20)	22.16
RLAN 5 GHz	IEEE 802.11a	13.51
	IEEE 802.11n (HT20)	13.14
	IEEE 802.11n (HT40)	10.03
BLE		5.06
Lora		17.63

MPE CALCULATION METHOD:

Calculation Method of RF Safety Distance:

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

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
3.39	2.1827	5.06	3.2063	0.00139300	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
3.39	2.1827	22.16	164.4372	0.07144147	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
5.50	3.5481	13.51	22.4388	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	17.63	57.943	0.65	20.0	0.013	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".
0.00139300/1+ 0.07144147/1 + 0.01584712/1 + 0.013/0.602= 0.110276274 < 1

End of Test Report