Maximum Permissible Exposure Evaluation

FCC ID:2AUDF-CG925

1. Client Information

Applicant	:	Shenzhen ADDX Innovation Technology co., LTD.
Address	:	NO.2013, Building 9B-3. Shenzhen Bay, Technology and Ecological Park, Nanshan District, shenzhen, China
Manufacturer	:	Shenzhen ADDX Innovation Technology co., LTD.
Address	:	NO.2013, Building 9B-3. Shenzhen Bay, Technology and Ecological Park, Nanshan District, shenzhen, China

2. General Description of EUT

EUT Name	:	Smart Battery Camera	
Models No.	:	CG9, CG9S,CG9F,CG9H, X72,X71	
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is model name, brand name and product name.	
Brand Name	:	N/A	
Sample ID	:	HC-C-202409-0195-01-02	
Product Description	:	Operation Frequency:	2.4G WIFI: 2412MHz~2462MHz BLE: 2402MHz~2480MHz
Power Rating	:	USB Input:5V DC 3.7V 4400mAh Rechargeable Li-ion battery（XL18650-2200-2P） DC 3.6V 4400mAh Rechargeable Li-ion battery（INR18650） （Battery differences are mainly based on the applicant and model and capacity differences, only the worst mode is assessed (XL18650-2200-2P））	
Software Version	:	1.8.27	
Hardware Version	:	CG925_C01_V2	
Remark	:	The antenna gain provided by the manufacturer, the verified for the RF conduction test provided by TOBY test lab.	

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Method of Measurement for FCC

1. Max. Antenna Gain:

Mode	Antenna Type	Antenna Gain(dBi)
Bluetooth	PCB	0.5
2.4G WIFI	Sheet Steel Antenna	2.55

2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

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

Simultaneous transmission MPE Considerations

According to KDB447498: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0.
This means that:

∑ of MPE ratios ≤ 1.0

4. Test Result:

Worst MPE Result							
Test Mode	Frequency (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]
BLE	2402	1.082	1±1	2	0.5	20	0.00035
	2440	1.188	1±1	2	0.5	20	0.00035
	2480	1.273	1±1	2	0.5	20	0.00035
Test Mode	Frequency (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]
2.4G WIFI b	2412	15.73	15±1	16	2.55	20	0.01425
	2437	15.43	15±1	16	2.55	20	0.01425
	2462	15.55	15±1	16	2.55	20	0.01425
Test Mode	Frequency (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]
2.4G WIFI g	2412	15.73	15±1	16	2.55	20	0.01425
	2437	15.43	15±1	16	2.55	20	0.01425
	2462	15.55	15±1	16	2.55	20	0.01425
Test Mode	Frequency (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]
2.4G WIFI n20	2412	12.95	12±1	13	2.55	20	0.00714
	2437	12.85	12±1	13	2.55	20	0.00714
	2462	12.82	12±1	13	2.55	20	0.00714

5. Conclusion:

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/ cm^2)
300-1,500	F/1500
1,500-100,000	1.0

For: BLE:2402~2480MHz ,2.4G WIFI :2412-2462MHz
MPE limit S: 1mW/ cm^2
The MPE is calculated as ***0.01425mW / cm^2 < limit 1mW / cm^2***.

So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b). The RF Exposure Information page from the manual is included here for reference.

6. Summary simultaneous transmission results

Bluetooth and WiFi support Synchronization transmitther

Maximum MPE ratio $_{Bluetooth}$	Maximum MPE ratio $_{WiFi}$	∑MPE ratios	Limit	Results
0.00035	0.01425	0.0146	1	PASS

So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b). The RF Exposure Information page from the manual is included here for reference.

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