Maximum Permissible Exposure Evaluation

FCC ID: 2AXEK-N003

1. Client Information

Applicant	:	SHENZHEN GENERAL TECHNOLOGY CO.,LTD
Address	:	Floor 1-3, Building A, Floor 1-4, Building B, No. 11 Xiantian Road, Xinsheng Community, Longgang Sub-District, Longgang District , Shenzhen, China
Manufacturer	:	SHENZHEN GENERAL TECHNOLOGY CO.,LTD
Address	:	Floor 1-3, Building A, Floor 1-4, Building B, No. 11 Xiantian Road, Xinsheng Community, Longgang Sub-District, Longgang District , Shenzhen, China

2. General Description of EUT

EUT Name	:	Bird Feeder Camera	
Models No.	:	N003, N001, N002, N004, N005, N006, N007, N008, N009, N010, N011, N012, N013, N014, N015, N016, N017, N018, N019, N020	
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name.	
Sample ID	:	RW-C-202304-0229-1-1#&RW-C-202304-0229-1-2#	
Product Description	:	Operation Frequency:	Bluetooth 5.0(BLE): 2402MHz~2480MHz 802.11b/g/n(HT20): 2412MHz~2462MHz
Power Rating	:	USB Input: DC 5.0V DC 3.7V by 5200mAh 19.24Wh Rechargeable Li-ion battery	
Software Version	:	V1.1.0	
Hardware Version	:	----	
Connecting I/O Port(S)	:	Please refer to the User's Manual	
Remark	:	the MPE report used the EUT-2(RW-C-202304-0229-1-2#).	

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MPE Calculations

1. Antenna Gain:

Antenna	Brand	Model Name	Type	Antenna Gain(dBi)
Bluetooth	N/A	N/A	PCB	0.5

Antenna	Brand	Model Name	Type	Antenna Gain(dBi)
2.4G WIFI	N/A	N/A	Dipole	4.61

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

4. 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

5. Standalone MPE Evaluation:

Bluetooth Worst Maximum MPE Result								
Mode	N_{TX}	Freq. (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/cm^2) [S]
GFSK	1	2402	-0.893	0±1	1	0.5	20	0.00028
		2440	-0.914	0±1	1	0.5	20	0.00028
		2480	-0.729	0±1	1	0.5	20	0.00028
Note: N_{TX}= Number of Transmit Antennas RF Output power specifies that Maximum Conducted Peak Output Power.								

2.4G WiFi Worst Maximum MPE Result								
Mode	N_{TX}	Freq. (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/cm^2) [S]
802.11b	1	2412	16.311	16±1	17	4.61	20	0.02882
		2437	15.358	15±1	16	4.61	20	0.02289
		2462	16.081	16±1	17	4.61	20	0.02882
802.11g	1	2412	13.537	13±1	14	4.61	20	0.01445
		2437	12.328	12±1	13	4.61	20	0.01147
		2462	12.251	12±1	13	4.61	20	0.01147
802.11n (HT20)	1	2412	12.569	12±1	13	4.61	20	0.01147
		2437	12.474	12±1	13	4.61	20	0.01147
		2462	11.488	11±1	12	4.61	20	0.00911
Note: N_{TX}= Number of Transmit Antennas RF Output power specifies that Maximum Conducted Peak Output Power.								

Remark:
1. Output power including turn-up tolerance;
2. Output power was adjust to duty cycle at 100% if measured duty cycle less than 98%;
3. MPE evaluate distance is 20cm from user manual provide by manufacturer.
4. Only the worst power was evaluated for each wireless function

6. 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

7. Summary simultaneous transmission information

The sample supports two antennas for Bluetooth and WLAN. The Bluetooth and WLAN can transmit simultaneous. The Bluetooth and WLAN with two different Antenna.
According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;
∑ of MPE ratios ≤ 1.0

8. Summary simultaneous transmission results

Bluetooth + 2.4G WIFI Maximum Simultaneous transmission MPE Ratios is

0.00028+0.02882=0.0291⩽1.0.

9. Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

-----END OF THE REPORT-----