

Maximum Permissible Exposure Evaluation

FCC ID: 2BF5R-CQ3

1. Client Information

Applicant	:	Photon Sail Technologies Pte. Ltd.
Address	:	182 Cecil Street, #23-02 Frasers Tower, Singapore
Manufacturer	:	Photon Sail Technologies Pte. Ltd.
Address	:	182 Cecil Street, #23-02 Frasers Tower, Singapore

2. General Description of EUT

EUT Name	:	4G Battery Camera
HVIN	:	CQ3
Model(s) No.	:	CQ3, CQ1S, CQ1X, CQ1H, CQ1F, CQ1C, CQ1D, CQ1A, CQ1P
Model Difference	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is that names.
Product Description	:	Operation Frequency: Bluetooth (BLE):2402MHz~2480MHz LTE Band 2/4/5/12/13/66
Power Supply	:	USB Input: DC 5V1.5A or DC 3.6V 9200mAh by rechargeable Li-ion battery
Software Version	:	N/A
Hardware Version	:	N/A

Remark: The antenna gain provided by the applicant, the adapter and verified for the RF conduction test and adapter provided by TOBY test lab.

Note: More test information about the EUT please refer the RF Test Report.

MPE Calculations for WIFI

1. Antenna Gain:

BLE PCB Antenna: 0.5dBi.

LTE Dipole Antenna: LTE Band 2: 1.66dBi

LTE Band 4: 1.67dBi

LTE Band 5: -0.12dBi

LTE Band 12: -0.46dBi

LTE Band 13: 0.42dBi

LTE Band 66: 1.75dBi

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. Test Result:

Mode	N _{TX}	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]	limit (mW/cm2)
BLE (1Mbps)	1	0.04	0±1	1	0.5	20	0.0003	1
	1	0.16	0±1	1	0.5	20	0.0003	1
	1	-0.22	0±1	1	0.5	20	0.0003	1
LTE Band 2	1	24.24	24±1	25	1.66	20	0.0922	1
LTE Band 4	1	23.99	24±1	25	1.67	20	0.0924	1
LTE Band 5	1	24.24	24±1	25	-0.12	20	0.0612	0.55
LTE Band 12	1	24.82	25±1	26	-0.46	20	0.0712	0.47
LTE Band 13	1	23.44	23±1	24	0.42	20	0.0550	0.52
LTE Band 66	1	23.36	23±1	24	1.75	20	0.0748	1
Note: RF Output power specifies that Maximum Conducted Peak Output Power.								

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<E

MPE limit S: 1mW/ cm²

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6. Summary simultaneous transmission results

LTE and Bluetooth support simultaneous transmit the

LTEMPE (Ratio)	BLE MPE (Ratio)	simultaneous MPE (Ratio)	MPE Limits (Ratio)
0.0924	0.0003	0.0927	1.0000

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.

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