Maximum Permissible Exposure Evaluation

FCC ID: 2APB4-MST20C18W

1. Client Information

Applicant	:	Cooper Lighting, LLC
Address	:	1121 Highway 74 South Peachtree City, GA 30269, USA.
Manufacturer	:	Cooper Lighting, LLC
Address	:	1121 Highway 74 South Peachtree City, GA 30269, USA.

2. General Description of EUT

EUT Name	:	LED FIXED LUMINAIRE	
Models No.	:	MST20C18W, MST20C18B	
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is appearance.	
Product Description	:	Operation Frequency:	Bluetooth 4.2(BLE): 2402MHz~2480MHz
		Number of Channel:	40 channels
		RF Output Power:	Module 1: -0.427dBm Conducted Power Module 2: -1.215 dBm Conducted Power
		Antenna Gain:	2dBi Internal Antenna
		Modulation Type:	GFSK
		Bit Rate of Transmitter:	1 Mbps
Power Supply	:	AC Voltage supplied	
Power Rating	:	Input: AC 120~277V, 50/60Hz, 18W	
Software Version	:	N/A	
Hardware Version	:	N/A	
Connecting I/O Port(S)	:	Please refer to the User's Manual	
Note: More information about the RF function, please refer the RF test reports.			

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MPE Calculations for BLE

1. **Antenna Gain:**
   Internal Antenna: 2dBi.

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:**

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]
BLE Module 1	1	2402	-1.875	-2±1	-1	2	20	0.00025
		2442	-0.805	-1±1	0	2	20	0.00032
		2480	-0.427	-1±1	0	2	20	0.00032
BLE Module 2	1	2402	-2.613	-2±1	-1	2	20	0.00025
		2442	-1.628	-1±1	0	2	20	0.00032
		2480	-1.215	-1±1	0	2	20	0.00032

Note:
(1) N_{TX}= Number of Transmit Antennas
(2) 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 (2402~2480 MHz)
MPE limit S: $1mW/cm^2$
The two Bluetooth Module can be operated simultaneously, So the MPE is calculated as ***0.00032+0.00032=0.00064***mW/cm^2 < limit $1 mW/cm^2$. 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.

Note

For a more detailed features description, please refer to the RF Test Report.

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