Maximum Permissible Exposure Evaluation

FCC ID: 2A8XQ-IOT-WB2S-LC3

1. Client Information

Applicant	:	Hangzhou Jiefeng Technology Co. , Ltd.
Address	:	No. 1, Jiulong Avenue, Yinhu Street, Fuyang District, Hangzhou City, China
Manufacturer	:	Hangzhou Kuoheng Technology Co. LTD
Address	:	No. 2, Dongqiao Road, Dongzhou Industrial Functional Area, Dongzhou Street, Fuyang District, Hangzhou.China.

2. General Description of EUT

EUT Name	:	IOT	
Models No.	:	IOT-WB2S-LC3, IOT-WB2S-XXX (X stands for letters A-Z Or stands for numbers 0-9)	
Model Difference	:	All PCB boards and circuit diagrams are the same, the only difference is that names.	
Product Description	:	Operation Frequency:	Bluetooth (BLE) V5.0:2402MHz~2480MHz 802.11b/g/n(HT20):2412MHz~2462Mz 802.11n(HT40): 2422MHz~2452MHz
		Number of Channel:	BLE: 40 channels 802.11b/g/n(HT20):11 channels 802.11n(HT40): 7 channels
		RF Output Power:	BLE: 3.614dBm 802.11b: 17.338dBm 802.11g: 17.831dBm 802.11n (HT20): 17.006dBm 802.11n (HT40): 14.58dBm
		Antenna Gain:	4.16dBi PCB Antenna
Power Rating	:	Input: DC 3.3V	
Software Version	:	V1_01	
Hardware Version	:	V1_01	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

MPE Calculations for WIFI

1. **Antenna Gain:**
   PCB Antenna:4.16dBi.

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 1Mbps	1	2402	3.51	4±1	5	4.16	20	0.0016
		2440	2.696	3±1	4	4.16	20	0.0013
		2480	2.374	2±1	3	4.16	20	0.0010
BLE 2Mbps	1	2402	3.614	4±1	5	4.16	20	0.0016
		2440	2.85	3±1	4	4.16	20	0.0013
		2480	2.898	3±1	4	4.16	20	0.0013
802.11b	1	2412	17.338	17±1	18	4.16	20	0.0327
		2437	16.427	16±1	17	4.16	20	0.0260
		2462	16.463	16±1	17	4.16	20	0.0260
802.11g	1	2412	17.427	17±1	18	4.16	20	0.0327
		2437	17.777	18±1	19	4.16	20	0.0412
		2462	17.831	18±1	19	4.16	20	0.0412
802.11n(HT20)	1	2412	16.966	17±1	18	4.16	20	0.0327
		2437	17.006	17±1	18	4.16	20	0.0327

		2462	16.92	17±1	18	4.16	20	0.0327
802.11n(HT40)	1	2422	13.886	14±1	15	4.16	20	0.0164
		2437	14.58	15±1	16	4.16	20	0.0206
		2452	14.52	15±1	16	4.16	20	0.0206

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 2.4WIFI:2412~2462 MHz
MPE limit S: 1mW/ cm^2
The MPE is calculated as **0.0412 *mW / 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.

Note

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

6. Conclusion:

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

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