Maximum Permissible Exposure Evaluation

FCC ID:2A7ZM-SOPRANOX1

1. Client Information

Applicant	:	JBU GLOBAL LLC
Address	:	19416 NE 26th Ave, 114B, Miami, Florida 33180
Manufacturer	:	SHENZHEN KOVIKE TECHNOLOGY CO., LTD
Address	:	Room 1313-068, Overseas Lianyi Building, No.12, Yingchun Road, Jiapei Community, Nanhu Street, Luohu District, Shenzhen.China.

2. General Description of EUT

EUT Name	:	Soprano X1	
Model(s) No.	:	Soprano X1	
Product Description	:	Operation Frequency:	Bluetooth V5.0: 2402MHz~2480MHz
		Number of Channel:	Bluetooth 5.0(BDR+EDR): 79 channels
		RF Output Power:	1.199dBm (Max)
		Antenna Gain:	2dBi PCB Antenna
		Modulation Type:	GFSK, π/4-DQPSK, 8-DPSK
		Bit Rate of Transmitter:	1/2/3Mbps
Power Supply	:	For adapter (Model: QD-SPQ-05) Input: AC 110-240V, 50/60Hz Output:15V, 2A	
Software Version	:	BT5.0	
Hardware Version	:	----	
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:**

   PCB 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]
GFSK	1	2402	-1.492	-1±1	0	2	20	0.0003
		2441	-3.283	-3±1	-2	2	20	0.0002
		2480	-4.685	-5±1	-4	2	20	0.0001
π/4-DQPSK	1	2402	0.579	1±1	2	2	20	0.0005
		2441	-1.21	-1±1	0	2	20	0.0003
		2480	-2.599	-3±1	-2	2	20	0.0002
8-DPSK	1	2402	1.199	1±1	2	2	20	0.0005
		2441	-0.638	-1±1	0	2	20	0.0003
		2480	-2.054	-2±1	-1	2	20	0.0003

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 BT:2402~2480 MHz

MPE limit S: 1mW/ cm^2

The MPE is calculated as **0.0005 *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.

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