Maximum Permissible Exposure Evaluation

FCC ID: 2AU4DDCA

1. Client Information

Applicant	:	X-Sense Innovations Co., Ltd.
Address	:	B4 503D,Tower B, Kexing Science Park, No15 Keyuan Road, Technology Park Community, Yuehai Avenue, Nanshan District, Shenzhen, China
Manufacturer	:	X-Sense Innovations Co., Ltd.
Address	:	B4 503D,Tower B, Kexing Science Park, No15 Keyuan Road, Technology Park Community, Yuehai Avenue, Nanshan District, Shenzhen, China

2. General Description of EUT

EUT Name	:	Smart Smoke and Carbon Monoxide Alarm Listener with Voice Alerts	
Models No.	:	SAL100	
Model Different		----	
Product Description	:	Operation Frequency:	912.375MHz
		Antenna Gain:	1dBi spring antenna
		Modulation Type:	FSK
Power Rating	:	LR03AM4 1.5V AAA battery*2, 1200mAh	
Software Version	:	SAL100_V1.0.2	
Hardware Version	:	SAL100_V1.2	
Connecting I/O Port(S)	:	Please refer to the User's Manual	
Remark	:	the evaluation report used the EUT(RW-C-202306-0105-2-2#).	

MPE Calculations for WIFI

1. **EUT Operation Condition:**
   Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

2. **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

3. **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

4. Test Result:

912.375MHz Worst Data								
Mode	Max. Output Power (dBuV/m)	Max. Output Power (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
912.375MHz	77.67	-22.29	-22±1	-21	1	20	0.000002	0.60825

Note:

N_{TX}= Number of Transmit Antennas

For conducted measurements below 1000 MHz, the field strength shall be computed as specified in item d), and then an additional 4.7 dB shall be added as an upper bound on the field strength that would be observed on a test range with a ground plane for frequencies between 30 MHz and 1000 MHz, or an additional 6 dB shall be added for frequencies below 30 MHz.

$$E = \mathrm{EIRP} - 20 \log d + 104.8$$

where

E is the electric field strength in dBμV/m
EIRP is the equivalent isotropically radiated power in dBm
d is the specified measurement distance in m

So: EIRP=E+20log3-104.8-(4.7 or 6)

5. Summary simultaneous transmission results

300-1500MHz:

The worst MPE is calculated as 0.000002mW / cm2 < limit 912.375/1500=0.60825 mW/cm^2. So, RF exposure limit warning or SAR test are not required.

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

Note

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

7. 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-----