



Maximum Permissible Exposure Evaluation

FCC ID:2ALN5-RL24002

1. Client Information

Applicant	:	Siffron
Address	:	8181 Darrow Road Twinsburg, OH 44087 USA
Manufacturer	:	Shenzhen Allcomm Electronic Co. Ltd.
Address	:	Block A,101A,302,401 of Block B, No.272 Guangtian Road, Tangxiayong,Yanluo Street,Baoan District, Shenzhen City, Guangdong Province,China

2. General Description of EUT

EUT Name	:	LoRa Sonr Echo Box
Models No.	:	RL-24002-0
Model Different	:	N/A
Brand Name	:	Siffron
Sample ID	:	HC-C-202409-0108-01-01
Product Description	:	Operation Frequency: 434MHz
Power Rating	:	4.5V DC (powered by 3pcs AA batteries)
Software Version	:	V1.0
Hardware Version	:	V1.0
Remark	:	The antenna gain provided by the manufacturer, the verified for the RF conduction test provided by TOBY test lab.

Method of Measurement for FCC

1. Max. Antenna Gain:

Mode	Antenna Type	Antenna Gain(dBi)
434	Copper Rod Antenna	5

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

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:

$\sum \text{ of MPE ratios } \leq 1.0$



4. Test Result:

Worst MPE Result							
Frequency (MHz)	Max. Output Power (dBuV/m)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm ²) [S]
434	67.58	-33.67	-33±1	-32	5	20	0.0000004
Note: The antenna gain used max. antenna gain							
<p>Note: 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.</p> $E = \text{EIRP} - 20 \log d + 104.8$ <p>where</p> <p>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</p> <p>So: $\text{EIRP} = E + 20 \log 3 - 104.8 - (4.7 \text{ or } 6)$</p>							

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: 2402~2480MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as **0.0000004mW / cm² < limit 1mW / cm².**

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-----

