



# CTC Laboratories, Inc. (CAB Identifier: CN0029)

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## Maximum Permissible Exposure Evaluation

IC: 29127-SNZB06P

The calculations were performed according to following standard:  
RSS-102 — Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

### EUT Specification

Applicant	Shenzhen Sonoff Technologies Co.,Ltd.
Address	3F & 6F, Bldg A, No. 663, Bulong Rd, Shenzhen, Guangdong, China
Product Name:	Zigbee Human Presence Sensor
Trade Mark:	Sonoff
Model/Type Reference:	SNZB-06P
Listed Model(s):	/
Model Differences:	/
Frequency Band (Operating)	Zigbee: 2405~2480MHz FMCW: 5795MHz
Device Category	<input type="checkbox"/> Portable (<5mm separation) <input type="checkbox"/> Mobile (>20cm separation) <input checked="" type="checkbox"/> Fixed (>20cm separation) <input type="checkbox"/> Others ____
Exposure Classification	<input type="checkbox"/> Occupational/Controlled exposure (S=5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )
Antenna Diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Antenna Gain (Max)	Zigbee: 2.07dBi FMCW: 2.0dBi
Evaluation Applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

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**RF Exposure Evaluation Limits for IC**

According to RSS-102 section 2.5.2 as below:

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device’s radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $4.49/f^{0.5}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $1.31 \times 10^{-2} f^{0.6834}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

$$eirp = pt \times gt = (E \times d)^2/30$$

where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, ---  $10^{((dBuV/m)/20)}/10^6$

d = measurement distance in meters (m), --- 3m

$$So \ pt = (E \times d)^2/(30 \times gt)$$

FMCW 5795MHz Field strength = 91.86 dBuV/m @3m

Ant gain 2.0dBi, Ant numeric gain = 1.58

$$So \ pt = \{[10^{(91.86/20)}/10^6 \times 3]^2 / (30 \times 1.58)\} \times 1000 \text{ mW} = 0.2914 \text{ mW}$$

**Measurement Result**

Mode	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Tune Up Tolerance (dB)	Max. Tune Up Power (dBm)	E.I.R.P (mW) 20cm	Limit (W)
Zigbee	2405	2.07	5.289	± 1	6.00	6.41	2.68
FMCW	5795	2.0	-5.355	± 1	-4.50	0.36	4.89

Note:

1. Calculate in the worst-case mode.
2. Max. Tune Up Power is declared by manufacturer, and used to calculate.
3. For a more detailed features description, please refer to the RF Test Report.

\*\*\*\*\*THE END\*\*\*\*\*