

INTERTEK TESTING SERVICES

RF Exposure

The Equipment Under Test (EUT) is a Wireless doorbell with 433 MHz transmitter. The EUT is powered by the weak electrical signal of the piezoelectric chip is collected. For more detailed features description, please refer to the user's manual.

For 433 transmitter:

Antenna Type: Integral Antenna

Antenna Gain: 0.0dBi Max

Modulation Type: ASK

The nominal radiated output power (e.i.r.p) specified: -1.0dBm (+/- 6dB)

Max e.i.r.p = e.i.r.p-2.15= -1.0-2.15= -3.15dBm=0.47mW

The maximum peak radiated emission for the EUT is 98.04dBμV/m at 3m in the frequency 433.92MHz.

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = 2.81dBm

The ERP= 2.81-2.15= 0.66dBm=1.164mW

The maximum conducted output power specified is 2.81dBm= 1.910mW

The SAR Exclusion Threshold Level:

$$\begin{aligned} P_{th}(mW) &= ERP_{20cm} * (d/20cm)^x \quad (X = -\log_{10} \left(\frac{60}{ERP_{20cm} \sqrt{f}} \right)) \\ &= 2040f * (0.5/20)^{1.9} mW \\ &= 23 mW \end{aligned}$$

Since max. conducted output power and effective radiated power (ERP) is well below the SAR low threshold level, so the EUT is considered to comply with SAR requirement without testing.

Note: EIRP is higher than ERP, thus EIRP is compared with the Exclusion Threshold.