

RF Exposure evaluation

Product Name: KARING 2.0 INTELLIGENT TOILET REMOTE CONTROL

Model Number: 1283748

FCC ID: N82-KOHLER019

IC ID: 4554A-KOHLER019

According to 447498 D01 General RF Exposure Guidance v06

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

The result is rounded to one decimal place for comparison

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

Where:

Pt = transmitter output power in watts,

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

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

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

$$\text{So Pt} = (\text{E} \times \text{d})^2 / 30 \times \text{gt}$$

2.4GHz Maximum Field strength for 1283748: 95.665 dBuV/m @3m --Channel 8:2449.5MHz

Refer to 708881622804-00 Report 03 FCC Part 15C 15.249 Test Report page 11.

Ant gain = 4dBi; so Ant numeric gain=2.51

$$\text{So, for 1283748 2.4GHz, Pt} = \{[(10^{(95.665/20)} / 10^6) \times 3]^2 / 30 \times 2.51\} \times 1000 \text{mW} = 2.78 \text{ mW}$$

$$(2.78 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.4495} = 0.87 < 3$$

Industry Canada MPE / Health Hazard

Requirement for the 2.4GHz

According to Industry Canada RSS-102 Issue 5, Section 2.5.1, SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Per the test report included herein,

$$\text{EIRP (PK)} = 2.78 \text{ mW} < 4 \text{ mW (At separation distance of } \leq 5 \text{ mm)}$$