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# RF EXPOSURE EVALUATION

## 1. PRODUCT INFORMATION

| | |
|---|---|
| Product Description | Smart Cat Litter Box Toilet |
| Model Name | PW5, PW*,PW**,PW***(*=9-0 or A-Z,represent different color/accessories) |
| FCC ID | 2BBKS-PW |

## 2. EVALUATION METHOD AND LIMIT

Human exposure to RF emissions from mobile devices (47 CFR §2.1091) may be evaluated based on the MPE limits adopted by the FCC for electric and magnetic field strength and/or power density, as appropriate, since exposures are assumed to occur at distances of 20 cm or more from persons.

§ 1.1310(e)(1) LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE

| Frequency Range (MHz) | E-field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) ($mW/cm^2$) | Averaging Time $\|E\|^2$, $\|H\|^2$ or S (Minutes) |
|---|---|---|---|---|
| 0.3 -- 1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34 -- 30 | 824/f | 2.19/f | ($180/f^2$)* | 30 |
| 30 -- 300 | 27.5 | 0.073 | 0.2 | 30 |
| 300 -- 1500 | -- | -- | f/1500 | 30 |
| 1500 -- 100,000 | -- | -- | 1.0 | 30 |

*Note:

1. f= Frequency in MHz
   *=Plane-wave Equivalent Power Density
2. The MPE limit for General Population/Uncontrolled exposure to fixed transmitters is not applicable for portable transmitters. Portable devices evaluation shall be performed according to the SAR provisions in 47 CFR § 2.1093.

$S=PG/4\pi R^2$

Where:

S=power density (in appropriate units, e.g. $mw/cm^2$)

P=power input to antenna (in appropriate units , e.g. , mW)

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 (in appropriate units ,e.g., cm )

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## 3. CALCULATION

A minimum test separation distance ≥ 20 cm is required between the antenna and radiating structures of the device and nearby persons to apply mobile device exposure limits. The distance must be at least 20 cm and fully supported by the operating and installation configurations of the transmitter and its antenna(s), according to the source-based time-averaged maximum power requirements of § 2.1091(d)(2). In cases where cable losses or other attenuations are applied to determine compliance, the most conservative operating configurations and exposure conditions must be evaluated.

WIFI PART(Can not transmit at different band simultaneously )

802.11G Single mode(Worst case) For 2.4GHz WIFI
Antenna Gain=2.78dBi (Numeric 1.90), π=3.14

| Frequency | Output Power | Output Power | Power Density | Power Density Limit |
|---|---|---|---|---|
| MHz | dBm | mW | mW/cm2 | mW/cm2 |
| 2437 | 15.64 | 36.64 | 0.0138 | 1 |

BLE (Worst case 2402MHz)
Antenna Gain=1.7dBi (Numeric 1.48), π=3.14

| Frequency | Output Power | Output Power | Power Density | Power Density Limit |
|---|---|---|---|---|
| MHz | dBm | mW | mW/cm2 | mW/cm2 |
| 2402 | -0.024 | 0.95 | 0.0004 | 1 |

Note:
1. Antenna gain provided by the applicant.Can affect the validity of results.
2. Only the worst case recorded.
3. 2.4G WIFI and BLE can simultaneous transmission .

MPE ratio (BLE + 2.4GWIFI)=0.0004/1+ 0.0138/1= 0.0142< 1

it satisfy the RF exposure requirements for simultaneous transmission that the sum of the MPE radios < 1.

**Result:**Compliant

**--THE END--**