



RF Exposure Evaluation

FCC ID: 2BCLG-BC601801

1. Client Information

Applicant	:	Shenzhen Julan Electronics Co., Ltd
Address	:	Floor 9, 2 Building, LangKou Industrial zone, Langkou community, Dalang Street, LongHua, Shenzhen, China
Manufacturer	:	Shenzhen Julan Electronics Co., Ltd
Address	:	Floor 9, 2 Building, LangKou Industrial zone, Langkou community, Dalang Street, LongHua, Shenzhen, China

2. General Description of EUT

EUT Name	:	DOG TRAINING COLLAR
HVIN/Model(s) No.	:	BC601, F21, BC101, BC102, BC103, BC104, BC105, BC201, BC202, BC203, BC204, BC205, BC301, BC302, BC303, BC304, BC305, BC401, BC402, BC403, BC404, BC405, BC501, BC502, BC503, BC504, BC505, BC602, BC603, BC604, BC605, BC701, BC702, BC703, BC704, BC705, BC801, BC802, BC803, BC804, BC805, BC901, BC902, BC903, BC904, BC905, LLX01
Model Different	:	All of these models are identical, on the same PCB, layout and circuit, the only difference is the different model names.
Product Description	:	Operation Frequency: 433.92MHz
	:	Antenna Gain: Spring Antenna(1 dBi)
Power Supply	:	Input: DC 5V DC 3.7V by 300mAh Rechargeable Li-ion battery
Software Version	:	N/A
Hardware Version	:	N/A
Note: More test information about the EUT please refer the RF Test Report.		
Flipper Zero: Portable handheld electronic device featuring virtual pet, designed for education, development and prototyping of electronics and software.		

The RF Exposure Evaluation for FCC:

SAR Test Exclusion Calculations

FCC: According to 447498 D04 Interim General RF Exposure Guidance v01.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169



Calculation:

Frequency (MHz)	Max. Output Power (dBuV/m)	Max. Output Power (dBm)	Tolerance \pm (dB)	Output power (Max. Turn-up Procedure) (mW)	Limit P_{th} (mW)
433.92MHz	67.95	-22.61	-22 ± 1	0.007	22
<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> $E = EIRP - 20 \log d + 104.8$ <p>where</p> <p>E is the electric field strength in dBuV/m $EIRP$ is the equivalent isotropically radiated power in dBm d is the specified measurement distance in m</p> <p>So: $EIRP = E + 20 \log 3 - 104.8 - (4.7 \text{ or } 6)$</p> <p>Note: At separation distance of ≤ 5 mm</p>					

Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06.

-----END OF REPORT-----

