RF Exposure Evaluation

FCC ID: 2A9RT-DX19732 & IC:29794-DX19732

1. Client Information

Applicant	:	Bestgreen Novelties Company Limited
Address	:	22 Ke Kan Road, Dakan Cun, XiLi, Nan Shan District, Shenzhen, Guangdong, China 518055
Manufacturer	:	Bestgreen Novelties Company Limited
Address	:	22 Ke Kan Road, Dakan Cun, XiLi, Nan Shan District, Shenzhen, Guangdong, China 518055

2. General Description of EUT

EUT Name	:	Remote Control Rechargeable Butt Plug	
HVIN/Model No.	:	DX-1973-2	
Model Difference		----	
Product Description	:	Operation Frequency:	433.9 MHz
		RF Output Power:	62.57 dBuV/m (PK Max.) 53.30 dBuV/m (AV Max.)
		Antenna Gain:	Wire Antenna(-10.18 dBi)
		Modulation Type:	OOK
Power Rating		Input: DC 5V DC 3.7V by 50mAh Li-ion battery	
Software Version	:	v1.0	
Hardware Version	:	v1.0	
Remark: The antenna gain provided by the applicant, the adapter and verified for the RF conduction test and adapter provided by TOBY test lab.			

Note: More test information about the EUT please refer the RF Test Report.

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The RF Exposure Evaluation for FCC:

SAR Test Exclusion Calculations

1. **FCC: According to KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.**
   (1) Clause 4.3: General SAR test reduction and exclusion guidance
   Sub clause 4.31: Standalone SAR test exclusion considerations
   1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6GHz at test separation distance≤5 mm are determined by:
   [(max. power of channel, including tune-up tolerance, mW)/(min. test separation, mm)]*[$\sqrt{f_{(GHz)}}$] ≤3.0 for 1-g SAR
   [(max. power of channel, including tune-up tolerance, mW)/(min. test separation, mm)]*[$\sqrt{f_{(GHz)}}$] ≤7.5.0 for 10-g SAR

2. Calculation:

Frequency (MHz)	Max. Output Power (dBuV/m)	Max. Output Power (dBm)	Tolerance ± (dB)	Output power (Max. Turn-up Procedure) (mW)	Calculation Value	Threshold Value
433.9MHz	62.57	-37.39	-37±1	0.0003	0	**3.0**

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.

$$E = \mathrm{EIRP} - 20\log d + 104.8$$

where

E is the electric field strength in dBμV/m
EIRP is the equivalent isotropically radiated power in dBm
d is the specified measurement distance in m

So: EIRP=E+20log3-104.8-(4.7 or 6)

Note: At separation distance of ≤5 mm

The RF Exposure Evaluation for IC:

SAR Test Exclusion Calculations

3. IC: According to RSS-102 — Radio Frequency (RF) Exposure Compliance of Radio Communication Apparatus (All Frequency Bands) Issue 5: March 19, 2015

Clause 2.5.1: Exemption limits for Routine Evaluation – SAR Evaluation

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

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

Table 1: SAR evaluation — Exemption limits for routine evaluation based on frequency and separation distance

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ⩾50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

4. Calculation:

Frequency (MHz)	Max. Output Power (dBuV/m)	Max. Output Power (dBm)	Tolerance ± (dB)	Antenna Gain (dBi)	Output power (Max. Turn-up Procedure) (mW)	Limit (mW)
433.9	62.57	-37.39	-37±1	-10.18	0.0003	52

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.

$$E = \mathrm{EIRP} - 20\log d + 104.8$$

where

E is the electric field strength in dBμV/m
EIRP is the equivalent isotropically radiated power in dBm
d is the specified measurement distance in m

So: EIRP=E+20log3-104.8-(4.7 or 6)

Note: At separation distance of ≤5 mm

5. Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1093 and the RSS-102§4 Table 4 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06, No SAR is required.

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