MPE Calculation

Applicant:	Rollease Acmeda Inc
Address:	7th Floor / 750 East Main Street, Stamford, CT 06902, USA
Product:	DC 1.1Nm ARC Motor
FCC ID:	2AGGZ003B9ACA4C
Model No.:	MT01-1225-069002-S, MT01-1225-069004-S
Reference RF report #	709502303618-00A

According to subpart 15.247(i)and subpart §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f²)	30
30–300	27.5	0.073	0.2	30
300–1,500	/	/	f/1500	30
1,500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:
Predication of MPE limit at a given distance
$S = PG/4 \pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculation method for 433.92MHz

Per the test report included herein, for 433.92MHz

According to C63.10 Annex G

EIRP = pt × gt =(E × d)^2 /30

where
pt is the transmitter output power in watts
gt is the numeric gain of the transmitting antenna (dimensionless)
E is the electric field strength in V/m
d is the measurement distance in meters (m)
transmitter output power for 433.92MHz Function

Field strength (E):	83.404 (dBuV/m) = 0.0148 (V/m)
Measurement Distance(dMeas):	3 (m)
Equivalent Isotropically Radiated Power(EIRP):	0.000066W=0.066mW

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:
Predication of MPE limit at a given distance
S = PG/4 π R² = power density (in appropriate units, e.g. mW/cm^2);
PG = 0.066mW (in appropriate units, e.g., mW);
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:
The max power density 0.066/4 π R²= 1.313*10^{-5}(mW/cm^2) < 0.28928 (mW/cm^2)

Result: Compliant

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by: Prepared by: Tested by:

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Date: 2023-07-03   Date: 2027-07-03   Date: 2023-07-03