

## MPE Calculation

Applicant:	Markisol USA Inc
Address:	700 Pinnacle Ct Suite 170 Norcross GEORGIA 30071 USA
Product:	DC Tubular Motor
FCC ID:	2A27UMARK20
Model No.:	DM20LEU/S-0.5/28
Reference RF report #	709502301627-00B

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 <sup>2</sup> )	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f <sup>2</sup> )	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;

Calculation method for 433.92MHz

$$EIRP = p_t \times g_t = (E \times d)^2 / 30$$

where

$p_t$	is the transmitter output power in watts
$g_t$	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)

For 433.92MHz.

Field Strength (EMeas):	80.25(dBuV/m)=0.0103V/m (f=433.92 MHz)
Measurement Distance(dMeas):	3 (m)
Equivalent Isotropically Radiated Power(EIRP):	0.000031827W=0.031827mW



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<sup>2</sup>);

PG =0.031827mW (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  $0.031827mW/4 \pi R^2 = 6.334 \cdot 10^{-6} (mW/cm^2) < 0.28928 (mW/cm^2)$

Result: Compliant

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

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