Calculating the Dipole moment.

D = Drag ($\frac{kg*m}{s^2}$)
$C_d$ = Coefficient of Drag ($unitless$)
V = Velocity ($m/s$)
A = Area normal to Velocity vector ($m^2$)
ρ = Atmosphere Density ($kg/m^3$)
B = Earth's Magnetic Strength ($T$)
μ = Magnetorquer dipole moment
τ = Atmospheric Torque

Unit Conversions

$$A * m^2 = \frac{N*m}{T} = \frac{kg*m^2}{s^2*T}$$

Finding the density of atmosphere at orbital altitude
{ref: http://www.braeunig.us/space/atmos.htm }

To make a conservative estimate, I used the 360 km data for atmospheric density. This will give me a higher density that the estimated 450 km orbital path density, thus a higher drag force.

$$\rho = 7.99 * 10^{-12} \frac{kg}{m^3}$$

Velocity for this altitude was attained from
{ref: http://www.calctool.org/CALC/phys/astronomy/earth_orbit } but a formula could be used to achieve the same values.

$$V = 7695.3 \frac{m}{s}$$

The Coefficient of Drag value was taken from page 5 of
{ref: https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19710016459.pdf }

$$C_d = 2.6$$

The magnetic field strength of the Earth was attained from
{ref: https://academic.oup.com/gji/article/183/3/1216/637157#ss8 } and I used the minimum value of

$$B = 2.5 * 10^{-5}\, T$$

The Area of the cube was generalized at 10 cm per side resulting in

$$A = 0.01\, m^2$$

Putting all this into the drag force equation

$$D_{360\ km} = \frac{1}{2} C_d \rho_{360\ km} A V_{360\ km}^2$$

$$D_{360\ km} = \frac{1}{2}(2.6)\left(7.99 * 10^{-12} \frac{kg}{m^3}\right)(0.01\ m^2)\left(7695.3 \frac{m}{s}\right)^2 = 6.15 * 10^{-6} \frac{kg*m}{s^2}$$

Then using the moment arm estimation from page 8 of
{ref: https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19710016459.pdf }

$$l = \frac{(maximum\ Dimension\ of\ spacecraft)}{3}$$

The maximum dimension was calculated from the cube shape and using the distance between opposite corners

$$distance = \sqrt{3}\ (0.1\ m) = 0.1732\ m$$

Therefor the Atmospheric torque is calculated by

$$\tau = \frac{distance}{3}(D_{360}) = \left(\frac{0.1732}{3}\ m\right)\left(6.15 * 10^{-6} \frac{kg * m}{s^2}\right) = 3.551 * 10^{-7} \frac{kg * m^2}{s^2}$$

The dipole moment would then just be a small manipulation to the torque equation here

$$\tau = \mu\ x\ B$$

$$\mu = \frac{\tau}{B} = \frac{3.551 * 10^{-7} \frac{kg*m^2}{s^2}}{2.5 * 10^{-5}\ T} = 0.0142\ A * m^2$$