SAGEMCOM

MPE Calculation for FCC ID: VW3FAST3965CV

The FCC requires that the calculated MPE be equal to or less than a given limit dependent on frequency at a distance of 20 cm from the device to the body of the user. The equation for the calculation is given in OET Bulletin 65, page 19 as:

$$S = EIRP/4 \pi R^2$$

Where   S = Power density

EIRP = Effective Isotropically Radiated Power

R = distance to the centre of radiation of the antenna

For 2.4 GHz band:

Values   S = 1.0 mW/cm^2 for General population uncontrolled exposure (FCC Part 1.1310 Radiofrequency radiation exposure limits)

S = 1.0 mW/cm^2

P_T = 25.7 dBm (372 mW) – measured maximum combined conducted power (P_1 + P_2).

G = Antenna gain (total array gain) = 7.2 dBi (5.25 in linear terms)

EIRP = (P_1 + P_2)G = P_T x G

R = 20 cm

Calculation:

EIRP = 372 x 5.25 = 1953 mW

S = 1953/12.56 x (20)^2

S = 1953/5026

S = 0.389 mW/cm^2

For 5 GHz band:

Values   S = 1.0 mW/cm^2 for General population uncontrolled exposure (FCC Part 1.1310 Radiofrequency radiation exposure limits)

S = 1.0 mW/cm^2

P_T = 17.3 dBm (54 mW) - measured maximum combined conducted power ($P_1 + P_2 + P_3$).

G = Antenna gain (total array gain) = 9.7 dBi (9.34 in linear terms)

EIRP = $(P_1 + P_2 + P_3)$G = P_T x G

R = 20 cm

Calculation:

EIRP = 54 x 9.34 = 504 mW

S = 504/12.56 x $(20)^2$

S = 504/5026

S = 0.100 mW/cm^2

Conclusion

This confirms compliance to the required FCC Part 1.1310 Radiofrequency radiation exposure limit of 1.0m W/cm^2 at 20 cm operation.