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RF Exposure Analysis
for Silicon Rx

MPE Calculations

The MPE calculation used to calculate the safe operating distance for the user.

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

Where

S = Power density

EIRP = Effective Isotropic Radiated Power (EIRP = P x G)

P = Conducted Transmitter Power

G = Antenna Gain (relative to an isotropic radiator)

R = distance to the centre of radiation of the antenna (safe operating distance)

Values:

Transmitter Frequency=2MHz

P=10.29dbm (10.7mW)

G= 6.05e-6

R = 20cm

EIRP= -41.89dBm (0.0000647 mW)

Power Density Requirement

From table 1 (b) - Limits for General Population/ Uncontrolled Exposure of

FCC Rule Part 1.1310 for 2MHz

S = 180 mW/f²/cm²=180 mW/2²/cm²=45mW/cm²

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Calculation:

S=0.0000647 mW/4 π (20cm)²= 1.287e-8mW/cm²

Conclusion

It can be be seen that the actual power density is much smaller than the required limit of 45 mW/cm²

St. Wendel, February 25, 2020
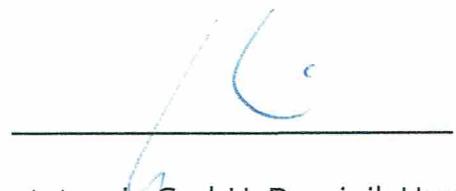
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