



June 12, 2020

Compliance Testing
 1724 S. Nevada Way
 Mesa, AZ 85204

RE: Maximum Permissible Exposure

To Whom It May Concern:

The equipment operating in 406 MHz to 411MHz passband in this application require a separation distance of at least **36.2cm**. This distance must be maintained between the user and antenna when the product is used with a 3.5dBi antenna.

This was calculated by:

MPE limit according to 47CFR §1.1310

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

The power density can be calculated from the equation below (equation #4 from OET Bulletin 65, 97-01 edition, page 19)

$$S = \frac{P \cdot G}{4 \cdot \pi \cdot R^2}$$

S Power Density (mW/cm²)

P Conducted Power (mW)

R Distande (cm)

G Numerical Antenna Gain

From this equation we can calculate the safety distance needed to fulfil the MPE limits
 We have assumed no feeder loss and a high directional antenna with 3.5dBi antenna gain at the installation.

				G	P	S	S	R
Amplifier	Freq (MHz)	Output power to antenna (dBm)	Antenna gain (typical) (dBi)	Antenna Gain Numerical	TX Power conducted (mW)	Power density limit* (mW/cm ²)	Power density calculated (mW/cm ²)	Calculated safety distance (cm)
406-411MHz	406	33	3.5	2.24	1995	0.271	0.89	36.2

* Limit for General Population/Uncontrolled Exposure

Note: If S calculated is less than S limit then the R distance meets the 20cm and the safety distance is then 20cm. The Uplink path in the EUT is not radiated by an antenna. It is connected directly to the Base station

Please contact me if there is any other information you may need.

Sincerely,



Amy L Sanvido

On behalf of Bird Technologies

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