Garmin International, Inc.
1200 East 151st Street
Olathe, Kansas 66062
P: 913-397-8200 F: 913-397-8282

March 23, 2020

Re: RF Exposure Statements for FCC ID: IPH-03941, IC: 1792A-03941

Pursuant to 47 CFR Section 1.1310 and RSS-102, the limits for RF Exposure are as follows:

FCC radio frequency radiation exposure limits per 1.1310		
Frequency (MHz)	Occupational Limit	Public Limit
300-1,500	f/300	f/1500
1,500-10,000	5	1

IC radio frequency radiation exposure limits per RSS-102		
Frequency (MHz)	cupational Limit (W/	Public Limit (W/m^2)
100-6,000	$0.6455f^{0.5}$	
6,000-15,000	50	
300-6,000		$0.02619f^{0.6834}$
6,000-15,000	50	10

To meet the power density limitation a safe distance determined by the following equation is required:

$$PD_{MPE} = P_{av} * G_t / 4\pi R^2$$

Where,
PD_{MPE} = *power density for maximum permissible exposure*
G_t = *transmitter gain*
P_{av} = *average power = peak power x duty cycle (D)*
$R = R_{safe}$ = *distance between transmitter and user*

In the case of directional scanning antennas, such as this one, the power at any point is varying with the rotation so the average power density at a fixed point is reduced by the antenna main lobe -3dB beam-width θ, divided by the scanning angle.

$$Pav(Scanning) = Pav(Fixed) \times \theta/360$$

Solving for R safe distance yields

$$R_{safe} = \sqrt{\frac{P_t \cdot D \cdot Gt}{PD_{MPE} \cdot \frac{360}{\theta} \cdot 4\pi}}$$

Where,
FCC Public Limit, $PD_{MPE} = 1mW/cm^2 = 10W/m^2$
FCC Occupational Limit, $PD_{MPE} = 5mW/cm^2 = 50W/m^2$
IC Public Limit, $PD_{MPE} = 10mW/cm^2 = 100W/m^2$

The R_{safe} distance for the transmitter referenced herein is as follows:

	Model:	27dBi Antenna	29dBi Antenna
P_t	Maximum Output Power [W]:	250	250
D	Maximum Duty Cycle [%]:	14.6	14.6
G_t	Maximum Antenna Gain [dBi]:	27	29
θ	Main Lobe -3dB Beam Width [Degrees]:	1.8	1.25
R_{safe}	User Distance at 100W/m² [m]:	0.27	0.28
	User Distance at 50W/m² [m]:	0.38	0.40
	User Distance at 10W/m² [m]:	0.85	0.90

Sincerely,

Hadid Jones
Team Lead Compliance Engineering