FCC RF Exposure and Maximum Permissible Exposure Calculation

Project: E10508-1301
EUT Description: KilnScout Transmitter
Model No.: McPro2020
FCC ID: SGOMCPRO2020
IC: 11074A-MCPRO2020

1. FCC Applicable Standard
According to §1.1307(b)(5), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline. This is a Mobile device as defined in §2.1091. KDB 447498 D01 General RF Exposure Guidance v05 was used as the guidance.
According to §1.1310 and §2.1091 RF exposure is calculated.

2. RF Exposure Calculation Result:
Frequencies used: 907-924 MHz
Modulation:DSSS (FSK)
Mid-Channel: 915.2MHz (channel 13)
Antenna Gain: G = -1.0 dBi
Duty Cycle: Transmission is every 5 minutes, 3 transmissions of 20ms every 4 seconds apart.

Total duty cycle is 3 x 0.02s / 300s = 0.02%. Over the 4-sec repeat time it's 0.02s / 4s = 0.5%.

According to the requirement of KDB 447498 D01 General RF Exposure Guidance v05 Appendix B
SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 190 mm.
The Max Peak Power measured and achieved is: 2.26 dBm = 1.7 mW < 998 mW

The intended use of the Transmitter will be inside of a metal walled kiln oven used for drying stacks of lumber. Except for the momentary exposure during setup of the Transmitter, the expected occupancy range is greater than 190mm.
The SAR measurement is not necessary.

Calculations for Maximum Permissible Exposure Levels
Power Density = $Pd_{(mW/cm2)}$ = EIRP/($4\pi d^2$)
EIRP = P * G
P = Peak output power (mW)
G = Antenna numeric gain (numeric)
D = Seperation distance (cm)
G = $10^{(G_{(dBi)}/10)}$
Measurements were made directly at the Antenna Port.
The use of this EUT requires the use of the General Population/Uncontrolled Exposure limit power density charts as defined in FCC §1.1310 and IC RSS-102.
For the Frequency Range 902 to 928 is a maximum of 0.61mW/cm^2

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak output power (dBm)	Peak Output Power (mw)	Calculated MPE @ 20cm (mW/cm^2)
-1.0	0.794	2.26	1.68	.00036