

Maximum Permissible Exposure to RF (MPE) CFR 15.247 (i), CFR 1.1310 (e)

The maximum exposure level to the public from the RF power of the EUT shall not exceed a power density, **S** as per the respective limits in Table 1 below, at a distance, d, of 20 cm (Mobile condition) from the EUT.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
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
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

Therefore, for:

MPE for 902 MHz – 928 MHz for the Cognoscos, Inc RT-300 radio device:

Limit: 0.61 mW/cm²

Peak Power (dBm) = 11.55 dBm

Peak Power (Watts) = 0.0143 W

Gain of Transmit Antenna = -2.0 dB_i = 0.63 numeric

d = Distance = 20 cm = 0.2 m

$$\begin{aligned}
 S &= (PG / 4\pi d^2) = \text{EIRP}/4A = 0.0143 (0.63) / 4 * \pi * 0.2 * 0.2 \\
 &= 0.009 / 0.5030 = 0.0179 \text{ W/m}^2 \\
 &= (0.0179 \text{ W/m}^2) (1\text{m}^2/\text{W}) (0.1 \text{ mW/cm}^2) \\
 &= 0.00179 \text{ mW/cm}^2
 \end{aligned}$$

which is << less than S = 1.0 mW/cm²

Simultaneous transmission MPE calculation for Cognoscos, Inc RT-300 radio device.

The device has two radios on board, however each radio transmits in a separate frequency band either 902-928 MHz or 2400-2483.5 MHz. The radios also do not share a common antenna. Each radio broadcast from its own antenna.

US Tech Test Report:
Report Number:
Issue Date:
Customer:
Models:

FCC Part 15 and IC RSS Certification
19-0422
December 6, 2019
Cognosos, Inc.
RT-300

RSS-102, 2.5.2 compliance for 902 MHz – 928 MHz for the Cognosos, Inc RT-300 radio device:

At or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;

In this case $f = 915$ MHz

$$1.31 * 10^{-2} * 915^{0.6834} = 1.38 \text{ W}$$

$$\text{EUT max EIRP} = 11.55 \text{ dBm} + (-2.0 \text{ dBi}) = 9.55 \text{ dBm EIRP} = 0.09 \text{ W}$$

Which is << than 1.38 W

All calculations performed by:
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Signature:  _____