

MPE/RF EXPOSURE EVALUATION REPORT



Evaluation of: Itron Inc NIC-510

to

To: FCC CFR 47 Part 15 RF Exposure requirements

Test Report Serial No.: ITRO01-U2 900 MHz FHSS MPE Rev A

This report supersedes: NONE

Applicant: Itron, Inc.
230 W Tasman Dr
San Jose, California 95134
USA

Product Function: Modular radio device, will
communicate over 900 MHz.

Issue Date: 18th April 2018

This Test Report is Issued Under the Authority of:

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To: FCC CFR 47 Part 1.1310
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1. MAXIMUM PERMISSABLE EXPOSURE

Calculations for Maximum Permissible Exposure Levels

$$\text{Power Density} = P_d (\text{mW/cm}^2) = \text{EIRP} / (4 * \pi * d^2)$$

$$\text{EIRP} = P * G$$

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (cm)

$$\text{Numeric Gain} = 10 ^ { (G (\text{dBi}) / 10)}$$

Because the EUT belongs to the General Population/Uncontrolled Exposure the limit of power density is $f/1500 \text{ mW/cm}^2$

These calculations represent worst case in terms of the exposure levels for the device operating in the 900 MHz band in FHSS mode.

Freq. Band (MHz)	Frequency of Calculation (MHz)	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Power Density (mW/cm ²) @ 20cm	Power Density Limit (mW/cm ²)	Min Calculated safe distance for Limit (cm)
902 - 928	915.2	3.00	2.00	29.87	970.51	0.39	0.610	15.89

Note: for mobile or fixed location transmitters the minimum separation distance is 20cm, even if calculations indicate the MPE distance to be less.

Specification

Maximum Permissible Exposure Limits

FCC §1.1310 Limit = $f/1500 \text{ mW/cm}^2$ from 1.310 Table 1 for devices operating in the 900 MHz band



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Specification - Maximum Permissible Exposure Limits

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)
(A) Limits for Occupational/Controlled Exposure				
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
300-1,500	--	--	f/300	6
1,500-100,000	--	--	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
300-1,500	--	--	f/1500	30
1,500-100,000	--	--	1.0	30

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

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