

MPE/RF EXPOSURE EVALUATION REPORT

FROM



Evaluation of: Itron Networked Solutions, Inc. NIC 414

to

To: FCC CFR 47 Part 15 RF Exposure requirements

Test Report Serial No.: ITRO15-U2 Rev A FCC MPE

This report supersedes: NONE

Applicant: Itron Networked Solutions, Inc.
230 West Tasman Drive
San Jose, California 95134
USA

Product Function: Plug in radio device, mesh and
HAN networks

Issue Date: 11th July 2019

This Test Report is Issued Under the Authority of:

MiCOM Labs, Inc.
575 Boulder Court
Pleasanton California 94566
USA
Phone: +1 (925) 462-0304
Fax: +1 (925) 462-0306
www.micomlabs.com



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1. MAXIMUM PERMISSABLE EXPOSURE

Calculations for Maximum Permissible Exposure Levels

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

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

$$P = \text{Peak output power (mW)}$$

$$G = \text{Antenna numeric gain (numeric)}$$

$$d = \text{Separation distance (cm)}$$

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

Because the EUT belongs to the General Population/Uncontrolled Exposure the limit of power density is 1 mW/cm²

These calculations represent worst case in terms of the exposure levels for the device.

Freq. Band (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	4.0	2.51	27.13	516.42	0.258	0.6	13.12
2400 - 2483.5	4.0	2.51	21.9	154.88	0.077	1.0	5.56

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 Table 1 (B) Limits for General Population/Uncontrolled Exposure

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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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Fax: +1 (925) 462 0306
www.micomlabs.com