

# MPE/RF EXPOSURE EVALUATION REPORT



Evaluation of: Itron Inc NIC 531-0601

to

To: FCC CFR 47 Part 15 RF Exposure requirements

Test Report Serial No.: ITRO18-U5 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: 29th April 2019

## **This Test Report is Issued Under the Authority of:**

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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 1 mW/cm<sup>2</sup>

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 <sup>2</sup> ) @ 20cm | Power Density Limit (mW/cm <sup>2</sup> ) | Min Calculated safe distance for Limit (cm) |
|------------------|----------------|------------------------|-------------------------|------------------------|-------------------------------------------------------|-------------------------------------------|---------------------------------------------|
| 902- 928 (DSSS)  | 1.0            | 1.26                   | 27.70                   | 588.8                  | 0.147                                                 | 0.6                                       | 9.92                                        |
| 902- 928 (FHSS)  | 1.0            | 1.26                   | 29.88                   | 972.7                  | 0.244                                                 | 0.6                                       | 12.75                                       |
| 2400 - 2483.5    | 0.0            | 1.0                    | 26.40                   | 436.5                  | 0.09                                                  | 1.0                                       | 5.89                                        |

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



**Title:** ITRON Inc. NIC 531-0601  
**To:** FCC CFR 47 Part 1.1310  
**Serial #:** ITRO18-U5 Rev A FCC MPE  
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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 <sup>2</sup> ) | Averaging time (minutes) |
|----------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(A) Limits for Occupational/Controlled Exposure</b>         |                               |                               |                                     |                          |
| 0.3-3.0                                                        | 614                           | 1.63                          | *100                                | 6                        |
| 3.0-30                                                         | 1842/f                        | 4.89/f                        | *900/f <sup>2</sup>                 | 6                        |
| 30-300                                                         | 61.4                          | 0.163                         | 1.0                                 | 6                        |
| 300-1,500                                                      | --                            | --                            | f/300                               | 6                        |
| 1,500-100,000                                                  | --                            | --                            | 5                                   | 6                        |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 0.3-1.34                                                       | 614                           | 1.63                          | *100                                | 30                       |
| 1.34-30                                                        | 824/f                         | 2.19/f                        | *180/f <sup>2</sup>                 | 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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