



# Radio Frequency Exposure Evaluation Report

**For:**  
Itron, Inc.

**Brand:**  
Itron

**Marketing Name:**  
Solar Battery AP

**Model Name:**  
Solar Battery AP

**Product Description:**  
Solar battery access point

**FCC ID:** EWQ-SBAP  
**IC:** 864D-SBAP

**Applied Rules and Standards:**  
CFR Part Part1 (1.1307 & 1.1310), Part 2 (2.1091),  
FCC KDB 447498 D01 General RF Exposure Guidance v06  
ISED RSS-102 Issue 6

**Report number:** EMC\_ITRO1\_071\_23001\_RF\_Exposure\_Rev1

**DATE:** 2024-07-03



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1    **Assessment**

This RF Exposure evaluation report provides evidence for compliance of the below identified device with the RF Exposure limits for mobile devices as defined in FCC CFR Part 1 (1.1307 &1.1310), Part 2 (2.1091) and ISED standard RSS-102 issue 6 under worst case conditions (measured or rated RF output power, antenna gain, distance towards human body, multiple transmitter information as presented by the applicant).  
In addition, maximum antenna gain or minimum distance towards the human body is calculated respectively, where relevant.

The device meets the limits as stipulated by the above given FCC and ISED rule parts based on available specifications for worst-case conditions at 20 cm distance to the body.

| Company    | Description                | Module Model #   |
|------------|----------------------------|------------------|
| Itron, Inc | Solar Battery Access Point | Solar Battery AP |

**Responsible for the Report:**

| 2024-07-03 | Compliance | Art Thammanavarat<br>(Senior EMC Engineer) | art.<br>thammanavarat<br>@cetecom.com | <div>Digitally signed by: art.<br/>thammanavarat@cetecom.com<br/>DN: CN = art.<br/>thammanavarat@cetecom.com<br/>Date: 2024.07.03 17:23:11 -<br/>07'00'</div> |
|------------|------------|--------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date       | Section    | Name                                       | Signature                             |                                                                                                                                                               |

The test results of this test report relate exclusively to the test item specified in Section3.  
CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

## 2 Administrative Data

### 2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

|                             |                        |
|-----------------------------|------------------------|
| Company Name:               | CETECOM Inc.           |
| Department:                 | Compliance             |
| Street Address:             | 411 Dixon Landing Road |
| City/Zip Code               | Milpitas, CA 95035     |
| Country                     | USA                    |
| Telephone:                  | +1 (408) 586 6200      |
| Fax:                        | +1 (408) 586 6299      |
| EMC Lab Manager:            | Issa Ghama             |
| Responsible Project Leader: | Rami Saman             |

### 2.2 Identification of the Client

|                   |                     |
|-------------------|---------------------|
| Client Firm/Name: | Itron, Inc.         |
| Street Address:   | 2401 North State St |
| City/Zip Code     | Waseca, MN 56093    |
| Country           | USA                 |

### 2.3 Identification of the Manufacturer

|                        |                           |
|------------------------|---------------------------|
| Manufacturer's Name:   | Itron, Inc.               |
| Manufacturers Address: | 313 North Hwy 11          |
| City/Zip Code          | West Union, SC 29696-2706 |
| Country                | USA                       |

### 3 Equipment under Assessment

#### 3.1 EUT Specifications

|                                                                                               |                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model No:                                                                                     | Solar Battery AP                                                                                                                                           |
| Marketing Name:                                                                               | Solar Battery AP                                                                                                                                           |
| HW Version :                                                                                  | 3                                                                                                                                                          |
| SW Version :                                                                                  | CSL 10.0.7.0                                                                                                                                               |
| FCC ID :                                                                                      | EWQ-SBAP                                                                                                                                                   |
| IC                                                                                            | 864D-SBAP                                                                                                                                                  |
| FVIN:                                                                                         | CSL 10.0.7.0                                                                                                                                               |
| HVIN:                                                                                         | SBAP                                                                                                                                                       |
| PMN:                                                                                          | Solar Battery AP                                                                                                                                           |
| Product Description:                                                                          | Solar battery access point                                                                                                                                 |
| Bands/Modes Supported                                                                         | <b>Cellular Modules</b><br><b>Model Name :</b> SKYWORKS<br><b>Part Number :</b> SKY66431-11<br><b>Wireless Technologies</b><br>LTE FDD/TDD Band: 2,4,12,13 |
|                                                                                               | <b>915MHz Radio</b><br><b>Model Name :</b> SBAP<br><b>Part Number :</b> CC1354P10                                                                          |
| Power Supply / Rated operating Voltage Range:                                                 | 3.3V / 3.6V / 3.9V                                                                                                                                         |
| Operating Temperature Range                                                                   | -40C - 70C                                                                                                                                                 |
| Other Radios included in the device:                                                          | 900MHz Radio                                                                                                                                               |
| Sample Revision                                                                               | Pre-production                                                                                                                                             |
| EUT Dimensions                                                                                | 160 x 236 x 77 mm                                                                                                                                          |
| Note: The information of the EUT specifications in the table above is provided by the client. |                                                                                                                                                            |

## 4 RF Exposure Limits and FCC and ISED Basic Rules

### FCC

#### 4.1.1 § 2.1093(c)(1)

Evaluation of compliance with the exposure limits in § 1.1310 of this chapter, and preparation of an EA if the limits are exceeded, is necessary for mobile devices with single RF sources having either more than an available maximum time-averaged power of 1 mW or more than the ERP listed in Table 1 to § 1.1307(b)(3)(i)(C), whichever is greater. For mobile devices not exempt by § 1.1307(b)(3)(i)(C) at distances from 20 centimeters to 40 centimeters and frequencies from 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in § 1.1310 of this chapter is necessary if the ERP of the device is greater than ERP<sub>20cm</sub> in the formula below. If the ERP of a single RF source at distances from 20 centimeters to 40 centimeters and frequencies from 0.3 GHz to 6 GHz is not easily obtained, then the available maximum time-averaged power may be used (i.e., without consideration of ERP) in comparison with the following formula only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of  $\lambda/4$  or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

$$P_{th}(\text{mW}) = ERP_{20\text{ cm}}(\text{mW}) = \begin{cases} 2040f & 0.3\text{ GHz} \leq f < 1.5\text{ GHz} \\ 3060 & 1.5\text{ GHz} \leq f \leq 6\text{ GHz} \end{cases}$$

#### 4.1.2 § 2.1093(c)(2)

For multiple mobile or portable RF sources within a device operating in the same time averaging period, routine environmental evaluation is required if the formula in § 1.1307(b)(3)(ii)(B) of this chapter is applied to determine the exemption ratio and the result is greater than 1.

#### 4.1.3 § 1.1307(b)(3)(ii)(B)

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

### ISED RSS 102

#### 4.1.4 Clause 2.5.2 Exemption Limits for Routine Evaluation – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $4.49/f^{0.5}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- 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;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived

## 5 Evaluations

### 5.1 Analysis of RF Exposure

### 5.2 FCC RF Exposure (Standalone)

| Radio    | Tech-Band  | Freq-Low <sub>[GHz]</sub> | Pwr <sub>[dBm]</sub> | Power <sub>[W]</sub> | Ant-G <sub>[dBi]</sub> | EIRP <sub>[W]</sub> | ERP <sub>[W]</sub> | ERP <sub>[mW]</sub> | FCC 2.1093(c)(1)<br>P <sub>th</sub> <sub>[mW]</sub> = ERP <sub>20cm</sub> |
|----------|------------|---------------------------|----------------------|----------------------|------------------------|---------------------|--------------------|---------------------|---------------------------------------------------------------------------|
| Cellular | LTE 2      | 1.8550                    | 23.73                | 0.236                | 2.50                   | 0.420               | 0.256              | 255.86              | 3060.00                                                                   |
|          | LTE 4      | 1.7150                    | 23.46                | 0.222                | 2.20                   | 0.368               | 0.224              | 224.39              | 3060.00                                                                   |
|          | LTE 12     | 0.7040                    | 23.78                | 0.239                | 2.40                   | 0.415               | 0.253              | 252.93              | 1436.16                                                                   |
|          | LTE 13     | 0.7820                    | 23.18                | 0.208                | 2.60                   | 0.378               | 0.231              | 230.67              | 1595.28                                                                   |
| Radio    | Modulation | Freq-Low <sub>[GHz]</sub> | Pwr <sub>[dBm]</sub> | Power <sub>[W]</sub> | Ant-G <sub>[dBi]</sub> | EIRP <sub>[W]</sub> | ERP <sub>[W]</sub> | ERP <sub>[mW]</sub> | FCC 2.1093(c)(1)<br>P <sub>th</sub> <sub>[mW]</sub> = ERP <sub>20cm</sub> |
| 900 ISM  | GFSK       | 0.9024                    | 26.79                | 0.4775               | 3.30                   | 1.0209              | 0.6223             | 622.3003            | 1840.90                                                                   |
|          | OOK        | 0.9030                    | 26.82                | 0.4808               | 3.30                   | 1.0280              | 0.6266             | 626.6139            | 1842.12                                                                   |

### 5.3 ISED RF Exposure (Standalone)

|           |                |                      |                      |             |                     | RSS-102 2.5.2 D>20 cm (300 ≤ Freq < 6000 MHz) |                 |
|-----------|----------------|----------------------|----------------------|-------------|---------------------|-----------------------------------------------|-----------------|
| Tech-Band | Freq-Low [MHz] | Pwr <sub>[dBm]</sub> | Power <sub>[W]</sub> | Ant-G [dBi] | EIRP <sub>[W]</sub> | Exemption limit for Routine Evaluation        | Exemption (Y/N) |
| LTE 2     | 1855.00        | 23.73                | 0.24                 | 2.50        | 0.42                | 2.24                                          | Yes             |
| LTE 4     | 1715.00        | 23.46                | 0.22                 | 2.20        | 0.37                | 2.13                                          | Yes             |
| LTE 12    | 704.00         | 23.78                | 0.24                 | 2.40        | 0.41                | 1.16                                          | Yes             |
| LTE 13    | 782.00         | 23.18                | 0.21                 | 2.60        | 0.38                | 1.24                                          | Yes             |
| Tech-Band | Freq-Low [MHz] | Pwr <sub>[dBm]</sub> | Power <sub>[W]</sub> | Ant-G [dBi] | EIRP <sub>[W]</sub> | Exemption limit for Routine Evaluation        | Exemption (Y/N) |
| GFSK      | 902.40         | 26.79                | 0.48                 | 3.30        | 1.021               | 1.37                                          | Yes             |
| OOK       | 903.00         | 26.82                | 0.48                 | 3.30        | 1.028               | 1.37                                          | Yes             |

## Conclusion:

- The maximum RF emissions from this equipment fulfills the RF exclusion threshold limits for separation distance between the antenna and the human body greater than 20 cm. No RF Exposure evaluation is required.

## 6 Revision History

| Date       | Report Name                          | Changes to report                  | Report prepared by |
|------------|--------------------------------------|------------------------------------|--------------------|
| 2024-06-03 | EMC_ITRO1_071_23001_RF_Exposure      | Initial Version                    | Art Thammanavarat  |
| 2024-07-03 | EMC_ITRO1_071_23001_RF_Exposure_Rev1 | Section 5.2 & 5.3: Updated tables. | Art Thammanavarat  |
|            |                                      |                                    |                    |

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