



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 (Senior EMC Engineer)	
Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section 3. 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	Cellular Modules Model Name : SKYWORKS Part Number : SKY66431-11 Wireless Technologies LTE FDD/TDD Band: 2,4,12,13
	915MHz Radio Model Name : SBAP Part Number : 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_{20cm} 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 $4.49/f0.5$ 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 $1.31 \times 10^{-2} f0.6834$ 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 _[GHz]	Pwr _[dBm]	Power _[W]	Ant-G _[dBi]	EIRP _[W]	ERP _[W]	ERP _[mW]	FCC 2.1093(c)(1) P _{th} _[mW] = ERP _{20cm}
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 _[GHz]	Pwr _[dBm]	Power _[W]	Ant-G _[dBi]	EIRP _[W]	ERP _[W]	ERP _[mW]	FCC 2.1093(c)(1) P _{th} _[mW] = ERP _{20cm}
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 _[dBm]	Power _[W]	Ant-G [dBi]	EIRP _[W]	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 _[dBm]	Power _[W]	Ant-G [dBi]	EIRP _[W]	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 fulfill 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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