FCC Part 1 Subpart I
FCC Part 2 Subpart J

RF EXPOSURE REPORT

FOR

SMART BADGE

MODEL NAME: SMC-T3

FCC ID: 2AS3XSMCT3

REPORT NUMBER: R13104940-E1

ISSUE DATE: 2019-11-05

Prepared for
CERTIFIED SAFETY
1177 BUTLER ROAD
LEAGUE CITY, TX 77573, USA

Prepared by
UL LLC
12 LABORATORY DR.
RESEARCH TRIANGLE PARK, NC 27709 USA
TEL: (919) 549-1400

NVLAP LAB CODE 200246-0

REVISION HISTORY

Ver.	Issue Date	Revisions	Revised By
1	2019-11-05	Original issue	Brian T. Kiewra
2	2019-11-18	Rounded 10.17 to 10.2 in table to match test reports.	Brian T. Kiewra

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Certified Safety, Inc.
1177 Butler Road
League City, TX 77573, USA

EUT DESCRIPTION: Smart Badge

MODEL NAME: SMC-T3

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 1 SUBPART I & PART 2 SUBPART J	Complies

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. government.

Approved & Released
For UL LLC By:

Jeffrey Moser
Operations Manager
UL – Consumer Technology Division

Prepared By:

Brian T. Kiewra
Project Engineer
UL – Consumer Technology Division

2. TEST METHODOLOGY

All calculations were made in accordance with FCC KDB 447498.

3. REFERENCES

Output power, Duty cycle and Antenna gain data is excerpted from the applicable test reports or client documentation.

4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 12 Laboratory Dr., Research Triangle Park, NC 27709, USA and 2800 Perimeter Park Dr., Suite B, Morrisville, NC 27560, USA.

UL LLC (RTP) is accredited by NVLAP, Laboratory Code 200246-0.

5. DEVICE UNDER TEST

The EUT is a smart badge with 2.4GHz LoRa and 900MHz radios.

6. STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

6.1. FCC

SAR test exclusion in accordance with KDB 447498.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]·[√f(GHz)] ≤ 3.0, for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f_{(GHz)}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

This test exclusion is applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances > 50 mm are determined by:

1. {[Power allowed at numeric threshold for 50 mm)] + [(test separation distance – 50 mm)·(f(MHz)/150)]} mW, for 100 MHz to 1500 MHz
    - $f_{(MHz)}$ is the RF channel transmit frequency in MHz
2. {[Power allowed at numeric threshold for 50 mm)] + [(test separation distance – 50 mm)·10]} mW, for > 1500 MHz and ≤ 6 GHz

SAR Exclusion Calculation Table for Portable Devices (separation distance < 50mm)

Tx	Frequency (MHz)	Avg Output power		Separation distances (mm)	Calculated Threshold
		dBm	mW		
2.4 GHz LoRa	2405	-4.1	0.39	5	0.1
900MHz	903.9	10.2	10.4	5	2.0

Conclusion:

The computed values are < 3; therefore, the device qualifies for Standalone SAR test exclusion.

Note: the 2.4GHz LoRa power was corrected using the manufacturer's declared duty cycle of 2.5%.
Actual Use Worst-Case Duty Cycle = 2.5%
Max. Source based time average power = Avg Output power from grant – 10*log (1/DC)
11.90 dBm – 10*log (1/0.025) = -4.12dBm (0.39mW)

END OF REPORT