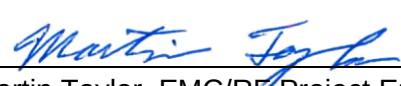


# RF Exposure Report

**Project Number: 5181325****Proposal: SUW-202310005501****Report Number: 5181325EMC02****Revision Level: 2****Client: Marshall Radio Telemetry, Inc****Equipment Under Test: Tracking Device****Model: Atos Tag****FCC ID: Z4Q-G2-100****Applicable Standards: 47 C.F.R. §§ 2.1091 and 2.1093; FCC KDB 447498****FCC KDB 447498 D01 General RF Exposure Guidance v06****Report issued on: 30 July 2024****Report revised on: 08 January 2025****Test Result: Compliant**

FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER: 3212.01

This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the Federal Government.

**Prepared by:**  
Daniel Alvarez, RF/EMC Sr Staff Engineer**Approved by:**  
Martin Taylor, EMC/RF Project Engineer

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# 1 General Information

## 1.1 Client Information

Company Name: Marshall Radio Telemetry, Inc  
Address: 845 W. Center St.  
City, State, Zip, Country: North Salt Lake, UT 84054

## 1.1 Test Laboratory

Name: SGS North America, Inc.  
Address: 620 Old Peachtree Road NW, Suite 100  
City, State, Zip, Country: Suwanee, GA 30024, USA

Accrediting Body: A2LA  
Type of lab: Testing Laboratory  
Certificate Number: 3212.01  
FCC Designation Number: US1126

## 1.2 General Information of EUT

Manufacturer: Marshall Radio Telemetry, Inc  
Type of Product: Tracking Device  
Lot Number: Atos Tag  
Serial Number: 20016735

Frequency Range: 432-437 MHz  
Data Modes: FSK  
Antenna/Gain\*: Linear Antenna (0 dBi gain)

Rated Voltage: Rated Voltage:  
Test Voltage: Test Voltage:

Sample Received Date: 29 May 2024  
Dates of testing: 29 May 2024 to 08 July 2024

*\*Data was not measured; therefore, the lab is not responsible for accuracy. Data was obtained via customer, specification sheet, previous regulatory filing, or other means.*

## 1.3 Operating Modes and Conditions

Manufacturer provided method and commands to put the EUT into the following TX modes for testing transmitter parameters:

- a. Analog Mode, 25 kHz - FM modulated carrier with a 1 kHz sine wave tone in a 25 kHz channel.

## 2 RF Exposure

### 2.1 Test Result

| Test Description | Product Specific Standard | Test Result |
|------------------|---------------------------|-------------|
| RF Exposure      | FCC Part 1.1310           | Compliant   |

### 2.2 SAR Exclusion Calculations

The highest conducted output power in conjunction with the Upper and Lower frequency boundaries have been used to demonstrate compliance for the transmission mode.

The EUT was considered for body application.

### 2.3 Single transmission RF Exposure Levels

#### 447498 D01 General RF Exposure Guidance v06

##### SAR test exclusion calculations

##### Section 4.3: General SAR test exclusion guidance / Section 4.3.1: Standalone SAR test exclusion considerations

|                          | Input  | Select Units |
|--------------------------|--------|--------------|
| Max Power:               | -0.37  | dBm          |
| Duty Cycle:              | 100.0% |              |
| Min separation distance: | 20     | mm           |
| Frequency, f:            | 432    | MHz          |

<== Source based time average duty cycle

| Value reference Number | Values used for Calculation | Reference number definition                                                      |
|------------------------|-----------------------------|----------------------------------------------------------------------------------|
| v1                     | 1.000 mW                    | [max. power of channel, including tune-up tolerance, mW] 'Rounded to nearest mW' |
| v2                     | 20 mm                       | [min. test separation distance, mm] 'Rounded to nearest mm'                      |
| v3                     | 0.657                       | [ $\sqrt{f(\text{GHz})}$ ]                                                       |

- a) For 100 MHz to 6 GHz and test separation distances  $\leq 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:  

$$\left[ \frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot \left[ \sqrt{f(\text{GHz})} \right] \leq 3.0 \text{ for 1-g SAR, and } \leq 7.5 \text{ for 10-g extremity SAR,}$$

|                             |        |        |                                       |
|-----------------------------|--------|--------|---------------------------------------|
| Exclusion Calculation(1g):  | 0.0329 | number | <== $[v2 / v3]$ must be less than 3   |
| Exclusion Calculation(10g): | 0.0329 | number | <== $[v2 / v3]$ must be less than 7.5 |

|                          |                                                                                                  |
|--------------------------|--------------------------------------------------------------------------------------------------|
| Conclusions (Body):      | The EUT max power is BELOW the threshold. SAR Testing is NOT required for Body applications      |
| Conclusions (Extremity): | The EUT max power is BELOW the threshold. SAR Testing is NOT required for Extremity applications |

## 447498 D01 General RF Exposure Guidance v06

## SAR test exclusion calculations

## Section 4.3: General SAR test exclusion guidance / Section 4.3.1: Standalone SAR test exclusion considerations

|                          | Input  | Select Units |                                          |
|--------------------------|--------|--------------|------------------------------------------|
| Max Power:               | -0.37  | dBm          |                                          |
| Duty Cycle:              | 100.0% |              | <== Source based time average duty cycle |
| Min separation distance: | 20     | mm           |                                          |
| Frequency, f:            | 437    | MHz          |                                          |

| Value reference Number | Values used for Calculation |    | Reference number definition                                                     |
|------------------------|-----------------------------|----|---------------------------------------------------------------------------------|
| v1                     | 1.000                       | mW | [max. power of channel, including tune-up tolerance, mW] 'Rounded to nearest mW |
| v2                     | 20                          | mm | [min. test separation distance, mm] 'Rounded to nearest mm                      |
| v3                     | 0.661                       |    | [√f(GHz)]                                                                       |

- a) For 100 MHz to 6 GHz and test separation distances  $\leq 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:  

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$
for 1-g SAR, and  $\leq 7.5$  for 10-g extremity SAR,

|                             |        |        |                                     |
|-----------------------------|--------|--------|-------------------------------------|
| Exclusion Calculation(1g):  | 0.0331 | number | <== [v2 / v3] must be less than 3   |
| Exclusion Calculation(10g): | 0.0331 | number | <== [v2 / v3] must be less than 7.5 |

|                                 |                                                                                                  |
|---------------------------------|--------------------------------------------------------------------------------------------------|
| <b>Conclusions (Body):</b>      | The EUT max power is BELOW the threshold. SAR Testing is NOT required for Body applications      |
| <b>Conclusions (Extremity):</b> | The EUT max power is BELOW the threshold. SAR Testing is NOT required for Extremity applications |

### 3 Revision History

| Revision Level | Description of changes                       | Revision Date   |
|----------------|----------------------------------------------|-----------------|
| Draft          | Draft Release                                | 23 July 2024    |
| 0              | Initial Release                              | 30 July 2024    |
| 1              | Section 2.3 updated with use distance of 2cm | 03 January 2024 |
| 2              | SAR exemption calculation was used.          | 08 January 2025 |
|                |                                              |                 |
|                |                                              |                 |
|                |                                              |                 |
|                |                                              |                 |
|                |                                              |                 |