

Application Note



# Stray Tag Elimination Technology



# Application Note for Stray Tag Elimination Technology

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This product is covered by one or more of the following patents: U.S. Patent No. 7,199,713, 7,209,040, 6,346,881, and 6,617,962.

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Sirit Technologies designs, develops, manufactures and sells Radio Frequency Identification (RFID) technology. Targeted at a diverse set of markets RFID technology has become a core technology for applications including: electronic toll collection, access control, cashless payment systems, product identification, and supply chain management systems including logistics, warehousing and manufacturing, and asset management.

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# 1 Introduction

Stray-Tag Elimination (STE) technology increases confidence that tags read by *portal* readers have actually passed through the system portal gates and are not nearby stray tags. STE eliminates the need to handle this common problem in your backend system by only reporting tags that have the Radio Frequency (RF) environmental characteristics of a tag physically moving through the portal gate.

In the past, tag arrival events (`event.tag.arrive`) were registered in the application and then used as a trigger for an action that a new tag has entered their system through a *portal* gate. With STE, you register for the STE portal crossing event (`event.tag.portal_cross`) in place of the arrival event.

As a result, only tags determined to have passed through the portal gate are reported by the reader in the STE events (see Figure 1). Note that arrival events (`event.tag.arrive`) will continue to be generated for stray tags and tags crossing the portal gate.

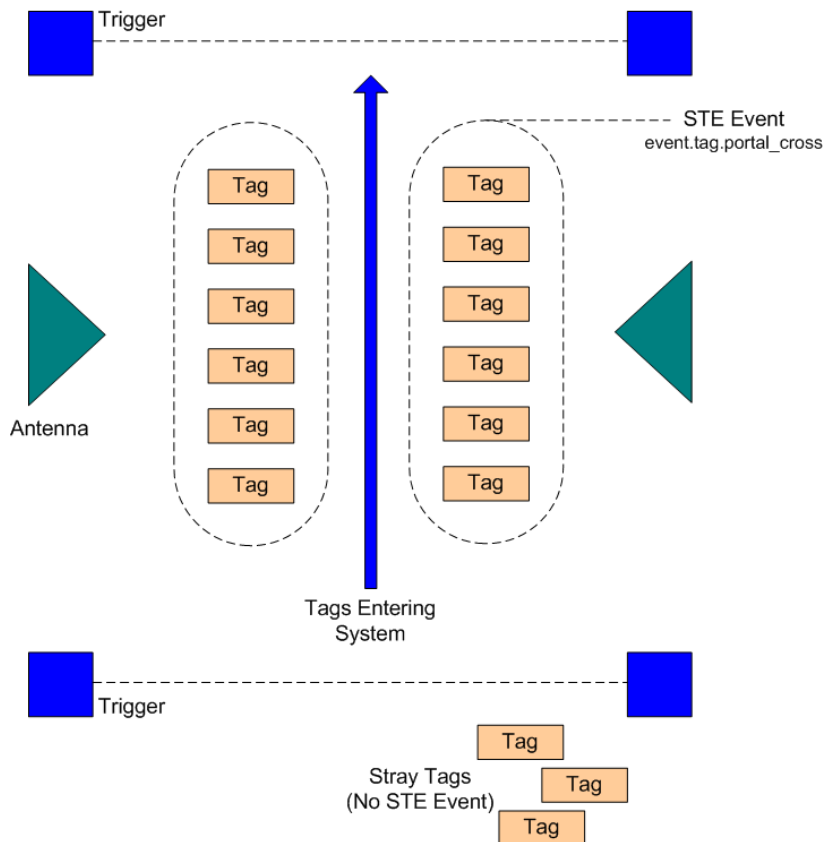


Figure 1 Example System Gate Using Stray-Tag Elimination Technology

## 2 Requirements

### NOTE

STE depends on the reader operating in a standard Gen2 Dense Reader Mode. Set your reader to Gen2 Dense Reader Mode.

This feature requires Sirit 3.0 reader firmware as well as a software license for the STE technology. Please contact your local Sirit partner or representative to determine how to obtain and install the feature on your readers. Note this feature only works for tags compliant with the ISO-18000-6C (Gen2) protocol.

## 3 Setup



**Caution:** Ensure your reader is set to use the following Gen2 Physical Layer settings (default settings when reader installation type is portal):

- 12.5us tari, LF256, M4 for FCC-like regions
- 12.5us tari, LF320, M4 for ETSI-like regions

To utilize STE technology, perform the following:

- 1 Install the feature license.
  - a. Launch the Reader Startup Tool (RST) and select your reader.
  - b. Select **Configure** to access the embedded Reader Configuration Tool (RCT).
  - c. Under **Advanced Functions** select **Import/Export Configuration**.
  - d. Under **Import Licenses**, browse to the license file and press **Import License**.

### NOTE

If a specific application requires **tid** and **user\_data**, the external host or an embedded application can perform an explicit tag read (**tag.read**) of these fields for only the specific tags which have associated **event.tag.portal\_cross** events.

- 2 Register for the STE event from the reader.
- 3 Using a Sirit C2 command/response channel or the web page, activate STE, by entering the enable command.

```
tag.filter.portal_cross.enabled=true
```

- 4 To prevent failure, verify the **tid** and **user\_data** fields are removed from the following:
  - tag.reporting.arrive\_fields
  - tag.reporting.depart\_fields
  - tag.reporting.report\_fields
  - tag.reporting.taglist\_fields

## 4 Optimization

STE performance may begin to degrade when the total tag population seen by the reader, both stray and portal tags, reaches approximately forty tags. If the level of performance does not meet the application needs, examine the number of tags visible in the reader's field of view during typical operation. Use the Reader Startup Tool (RST) or simply activate the reader and observe occurrences of event.tag.arrive events.

This `tag.reporting.portal_cross_fields` variable contains the fields to be reported with event.tag.portal\_cross events. Supported fields are tag\_id, type, antenna, freq, and rssi.

Always utilize RF transmit power levels sufficient for the application. You may be able to reduce the visibility of stray tags by reducing RF transmit power levels.

## 5 Summary

STE Technology provides a solution to know if a tag has physically entered into the system via a *portal* gate by inhibiting the reporting of tags that have been unintentionally left nearby to the system gates. This technology is easily enabled and utilized.

For additional information or engineering assistance in maximizing the use of the STE solution in your environment, please contact your local Sirit partner or representative.



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