USING ISO15693 TAGS

VERSION 100212

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1 Overview

1.1 Required Reading

This document assumes you have read and are familiar with the *SkyeTek Protocol V3 Guide* and the *SkyeTek Protocol V3 Basic Examples* documents.

1.2 Document Scope

This document covers the range of commands used to take advantage of the advanced features of ISO15693 compatible tags. Specifically, this document covers the commands to use the tag's Application Family Identifier (AFI), Device Format Structure Identification (DSFID), and Electronic Article Surveillance (EAS) capabilities.

1.3 Tag Information

These commands may or may not be compatible with your tags. See the *M2 Tag Support Matrix* for a list of your tags capabilities.

- AFI commands manipulate the Application Family Identifier (AFI) of a tag. You can write the AFI, read the AFI, or lock (permanently disable) writing of the AFI. The AFI bit field is typically a mechanism for categorizing cards and can be used as a filter in the tag selection process. For instance if you have tags for personnel and tags for merchandise you could assign them separate AFIs and then only select from the personnel tags at controlled access locations by passing the AFI in the select tag command.
- The DFI commands manipulate the reserved DSFID field. This field is used to store information identifying the structure of the user memory as you have personalized it.

All the AFI and DSFID examples in this document use the Tag-It HF-I Plus tag type (0x0111). The EAS examples use a SLI SL2 tag (0x0121).

2 Read AFI Command

2.1 Command Description

This command reads back the AFI field from a tag in the reader's field.

2.2 Command Structure

2.2.1 Flags

This command requires the TID (if RF flag is not set with a session) and CRC flags.

2.2.2 Fields

The TID length and TID must be included in the request.

2.3 Example 1 – Reading the AFI

2.3.1 Request

Start	Message Length	Flags	Command	Tag Type	TID Length	TID	CRC
02	0011	0060	0505	0111	08	E00700001E40CEBC	156F

This request instructs the reader to read the AFI from the tag with chosen TID.

2.3.2 Response

Start	Message Length	Command Response	Data Length	Data	CRC
02	0007	0505	0001	11	4C02

The reader echoes back the command indicating a success and the one byte AFI code is returned in the data of the response.

3 Write AFI Command

3.1 Command Description

This command writes a one byte AFI code to the selected tag.

3.2 Command Structure

3.2.1 Flags

This command requires the data, TID (if RF flag not set and a session started), and CRC flags.

3.2.2 Fields

This command adds the data length and data fields to the read AFI command.

3.3 Example 1 – Writing a new AFI to a tag

3.3.1 Request

Start	Message Length	Flags	Command	Tag Type	TID Length	TID	Data Length	Data	CRC
02	0014	0860	0504	0111	08	E00700001E40CEBC	0001	11	C559

This request tells the reader to change the chosen tags AFI to 0x11.

3.3.2 Response

Start	Message Length	Command Response	CRC
02	0004	0504	5BFD

The reader echoes back the command indicating a success.

3.4 Example 2 – Locking the AFI of a tag

3.4.1 Request

The request and response are identical to writing the AFI except that the lock flag is selected.

Note – The data in this command is NOT written to the AFI field. The old AFI is locked.

Start	Message Length	Flags	Command	Tag Type	TID Length	TID	Data Length	Data	CRC
02	0014	0864	0504	0111	08	E00700001E40CEBC	0001	11	8565

This request tells the reader to lock the AFI of the selected tag.

3.4.2 Response

Start	Message Length	Command Response	CRC
02	0004	0504	5BFD

The reader echoes back the command indicating a success.

4 Read DSFID Command

4.1 Command Description

This command reads back the DSFID field from a tag in the reader's field.

4.2 Command Structure

4.2.1 Flags

This command requires the TID (if RF flag is not set with a session) and CRC flags.

4.2.2 Fields

The TID length and TID must be included in the request.

4.3 Example 1 – Reading the DSFID

4.3.1 Request

Start	Message Length	Flags	Command	Tag Type	TID Length	TID	CRC
02	0011	0060	0507	0111	08	E00700001E40CEBC	EEE3

This request instructs the reader to read the DSFID from the tag with chosen TID.

4.3.2 Response

Start	Message Length	Command Response	Data Length	Data	CRC
02	0007	0507	0001	11	7574

The reader echoes back the command indicating a success and the one byte AFI code is returned in the data of the response.

5 Write DSFID Command

5.1 Command Description

This command writes a one byte AFI code to the selected tag.

5.2 Command Structure

5.2.1 Flags

This command requires the data, TID (if RF flag not set and a session started), and CRC flags.

5.2.2 Fields

This command adds the data length and data fields to the read AFI command.

5.3 Example 1 – Writing a new DSFID to a tag

5.3.1 Request

Start	Message Length	Flags	Command	Tag Type	TID Length	TID	Data Length	Data	CRC
02	0014	0860	0506	0111	08	E00700001E40CEBC	0001	11	550D

This request tells the reader to change the chosen tags DSFID to 0x11.

5.3.2 Response

Start	Message Length	Command Response	CRC
02	0004	0506	78EF

The reader echoes back the command indicating a success.

5.4 Example 2 – Locking the DSFID of a tag

5.4.1 Request

The request and response are identical to writing the DSFID except that the lock flag is selected.

Note – The data in this command is NOT written to the DSFID field. The old DSFID is locked.

Start	Message Length	Flags	Command	Tag Type	TID Length	TID	Data Length	Data	CRC
02	0014	0864	0506	0111	08	E00700001E40CEBC	0001	11	1531

This request tells the reader to lock the AFI of the selected tag.

5.4.2 Response

Start	Message Length	Command Response	CRC
02	0004	0506	78EF

The reader echoes back the command indicating a success.

6 Enable EAS Command

6.1 Command Description

Enable EAS sets a tag's EAS bit so that readers scanning for the bit report the presence of the tag.

EAS commands manipulate a tag's Electronic Article Surveillance (EAS) label or scan for the presence of EAS-enabled tags. DisableEAS disables the tag's EAS bit and prevents a reader from reporting the presence of an EAS tag.

6.2 Command Structure

6.2.1 Flags

This command requires the TID (if RF flag not set and a session started), and CRC flags.

6.2.2 Fields

This command requires the TID length and TID in addition to the standard fields.

6.3 Example 1 – Enabling the EAS Bit

6.3.1 Request

Start	Message Length	Flags	Command	Tag Type	TID Length	TID	CRC
02	0011	0060	0501	0121	08	E00401000A92C49C	9533

This request tells the reader to enable the EAS bit on the selected tag.

6.3.2 Response

Start	Message Length	Command Response	CRC
02	0004	0501	0C50

The reader echoes back the command indicating a success.

7 Disable EAS Command

7.1 Command Description

DisableEAS clears a tag's EAS bit so that readers scanning for the bit do not report the presence of the tag.

7.2 Command Structure

7.2.1 Flags

This command requires the TID (if RF flag not set and a session started), and CRC flags.

7.2.2 Fields

This command requires the TID length and TID in addition to the standard fields.

7.3 Example 1 – Disabling the EAS Bit

7.3.1 Request

Start	Message Length	Flags	Command	Tag Type	TID Length	TID	CRC
02	0011	0060	0502	0121	08	E00401000A92C49C	12DD

This request tells the reader to disable the EAS bit on the selected tag.

7.3.2 Response

Start	Message Length	Command Response	CRC
02	0004	0502	1B69

The reader echoes back the command indicating a success.

8 Scan EAS Command

8.1 Command Description

ScanEAS instructs the command to look for a tag with the EAS bit enabled and report the results.

8.2 Command Structure

8.2.1 Flags

This command requires the CRC flag.

8.2.2 Fields

This command requires the basic command fields.

8.3 Example 1 – Scanning for any EAS enabled tag

8.3.1 Request

Start	Message Length	Flags	Command	Tag Type	CRC
02	0008	0020	0503	0000	3F4E

This request tells the reader to look for EAS enabled tags of any type by using the tag type auto-detect.

8.3.2 Response

Start	Message Length	Command Response	CRC
02	0004	0503	2F42

The reader echoes back the command indicating a success.

8.4 Example 2 – Scanning for an EAS enabled tag by tag type

8.4.1 Request

Start	Message Length	Flags	Command	Tag Type	CRC
02	0008	0020	0503	0121	161D

This request tells the reader to look for EAS enabled SL2 tags of by using the tag type SL2 (0x0121).

Note – Using a specific tag type will cause the reader to ignore EAS enabled tags of different types.

8.4.2 Response

Start	Message Length	Command Response	CRC
02	0004	0503	2F42

The reader echoes back the command indicating a success.

9 Scan EAS Command - Loop Mode

9.1 Command Description

ScanEAS instructs the command to look for a tag with the EAS bit enabled and report the results. With the loop flag, the reader enters loop mode and will continuously scan for an EAS enabled tag without further requests from the reader.

9.2 Command Structure

9.2.1 Flags

This command requires the Loop and CRC flag.

9.2.2 Fields

This command requires the basic command fields.

9.3 Example 1 – Scanning for EAS enabled SL2 tag in Loop Mode

9.3.1 Loop On Request

Start	Message Length	Flags	Command	Tag Type	CRC
02	0008	0021	0503	0121	1D59

This request tells the reader to continuously look for EAS enabled SL2 tags.

Note – Using a specific tag type will cause the reader to ignore EAS enabled tags of different types.

9.3.2 Loop On Response

Start	Message Length	Command Response	CRC
02	0004	05C3	E94E

The reader immediately sends back the loop on command response (0x05C3) indicating that loop mode has been entered.

9.3.3 EAS Scan Success Response

Whenever an SL2 tag with an enabled EAS bit enters the antenna field, the following success response is sent:

Start	Message Length	Command Response	CRC
02	0004	0503	2F42

9.3.4 Loop Off Request

Start	Message Length	Flags	Command	Tag Type	CRC
02	0008	0021	0503	0121	1D59

This command is the same as the loop on command, and will halt Loop Mode.

9.3.5 Loop On Response

Start	Message Length	Command Response	CRC
02	0004	85C3	6582

The reader immediately sends back the loop off command response (0x85C3) indicating that loop mode has ended.

10 Revision History

Revision	Author	Change
100212	Ryan Smith	Initial release.

Table 10-1: Revision History