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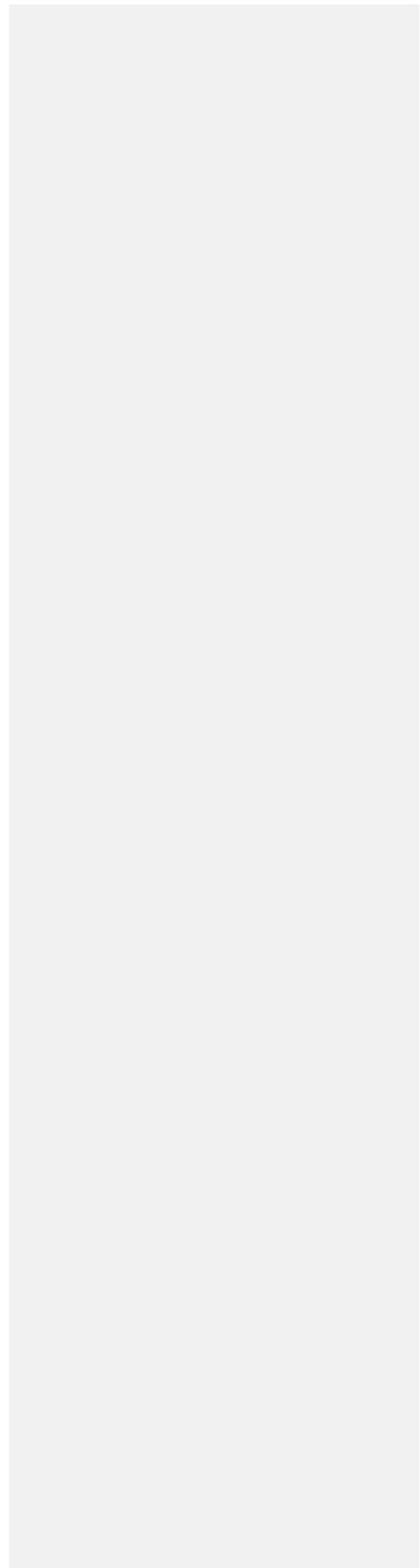
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*NOTE: This Technical Advisory describes a matter which may impact your product.*

# **TWIC Technical Advisory** TA-2012-TWIC001-V1.0

**MAY 2012 CLARIFICATION OF THE MAY 2008 READER HARDWARE  
AND CARD APPLICATION SPECIFICATION**

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## **Introduction**

This Technical Advisory details clarifications, minor renaming and acronym additions to the May 30, 2008 Reader Hardware and Card Application specification.

## **Background and Definition**

This Technical Advisory was precipitated by a need to address ambiguities in the 2008 specification prior to launching the Qualified Technology List (QTL) laboratory evaluation and certification program for the TWIC program.

## **Problem Statement**

The current TWIC reader specification has not changed since May of 2008.

## **Description of New or Unique Process**

This advisory provides notice that a new clarified specification is now available on the TWIC public website. The clarified specification has been carefully crafted so as to not introduce any new requirements from those explicitly stated or implied in the May 2008 edition of the specification.

## **Use of New or Unique Process**

The 2012 clarified version of the 2008 specification will be used as the technical requirements reference for the QTL testing initiative until superseded by a new edition of the TWIC reader specification.

This Technical Advisory details the 2012 clarifications applied to the May 2008 specification. TWIC has provided an annotated 2012 clarified specification on the TWIC website (see below).

## **Design Features of New or Unique Process**

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What is unique about the changes to the specification is the removal of ambiguity with respect to mandatory and conditional requirements .

### **Comments**

Questions on this Technical Advisory should be addressed to the TSA TWIC PMO TWIC Reader Hardware and Card Application Specification Project Editor, [Gerald.Smith@associates.dhs.gov](mailto:Gerald.Smith@associates.dhs.gov) .

### **Subject References**

TWIC Reader Hardware and Card Application Specification, Version 1.1 Amendment 1, 30 May 2008.

May 2012 Clarifications to the May 30, 2008 TWIC Reader Hardware and Card Application Specification.

### **Keywords**

TWIC  
FASC-N  
HOTLIST  
Canceled Card List  
CCL

### **Standard Details**

Refer to Section 2 *References* in the Subject Reference document.

### **Specifications or Special Provision**

TWIC Reader Hardware and Card Application Specification, Version 1.1 Amendment 1, 30 May 2008.

May 2012 Clarifications to the May 30, 2008 TWIC Reader Hardware and Card Application Specification.

### **Supersedes Dates**

There is no previous Technical Advisory issued that addresses this unique change.

This Technical Advisory shall be active until further notice.

### **Obtain more Information**

The annotated, 2012 clarified specification and additional technical information on TWIC can be obtained at:

<http://www.tsa.gov/twic/ctl>

**END**

<b>Comment Type</b>	<b>Type Number</b>	<b>Change Applied</b>	<b>v- Location in Document -v</b>
Declaration	1	Clarification and technical corrigendum of Version 1.1.1 of the specification. Revisions are detailed in a separate TWIC Technical Advisory published in 2012. This clarified version represents the baseline to be used for testing TWIC Readers for inclusion on the TSA TWIC Qualified Technology List (QTL).	Version control Page 2

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| <b>Comment Type</b> | <b>Type Number</b> | <b>Change Applied</b>                                                                                                                                                                         | <b>v- Location in Document -v</b>                                           |
|---------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Renumbering         | 1                  | Renumbering of the Table of contents, List of figures and List of tables. The changes from the original document are shown for these items.                                                   | Table of Contents Page 3<br>List of Figures Page 5<br>List of tables Page 6 |
| Renaming            | 1                  | Deprecated use of Hotlist and replaced with Canceled Card List (CCL)                                                                                                                          | Acronyms and Abbreviations<br>Page 16                                       |
| Acronym Addition    | 1                  | CRL Certificate Revocation List                                                                                                                                                               | Acronyms and Abbreviations<br>Page 16                                       |
| Clarification       | 42                 | Deleted the sentence: TWIC physical access readers shall allow authentication modes to be configured for each MARSEC level, based upon Coast Guard and site requirements.                     | Section 4.1 Page 17                                                         |
| Clarification       | 1                  | TWIC Readers shall support configuration of one or more authentication modes per Table 4.1- TWIC Identification and Authentication Modes.                                                     | Section 4.1 Page 17                                                         |
| Clarification       | 2                  | A portable verification reader may also have the ability to wirelessly communicate with an external access control system to control a door, gate, etc, via a Wiegand or other output format. | Section 4.2, Page 18                                                        |

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|---------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Clarification | 3           | <p>A fixed TWIC reader may determine whether a card is on the CCL.</p> <p>A fixed TWIC reader may determine whether a certificate is on the CRL.</p> <p>If the TWIC reader is configured to use the TWIC CCL to check for card revocation, the TWIC reader checks to see if the FASC-N from the signed CHUID data object is listed on the latest version of the CCL accessible by the reader. If the FASC-N from the signed CHUID data object is listed on the latest version of the CCL accessed by the reader, the TWIC reader shall reject the presented card.</p> <p>If the TWIC reader is configured to use the TWIC CRL to check for card revocation, the TWIC reader checks to see if the Card Authentication certificate is listed on the latest version of the CRL accessible by the reader. If the Card Authentication certificate is listed on the latest version of the CRL accessible by the reader, the TWIC reader shall reject the presented card.</p> | Section 5 Page 23          |
| Clarification | 4           | <p>TWIC readers may support intrinsically safe operation in a hazardous materials environment where explosive vapors are present in the atmosphere. Intrinsically safe TWIC readers shall be certified for use in explosive atmospheres.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Section 5.1.3.1 Page 24    |

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| Renaming      | 2           | Hotlist is replaced by the term Canceled Card List (refer to the 2011 Technical Advisory entitled: <b>TA-2011-TWIC001-V1.0</b> )                                                                                                                                                                                                                                                                                                                            | Section 6 Page 27                      |
| Clarification | 5           | Low temperature (to -10°C/+14°F).                                                                                                                                                                                                                                                                                                                                                                                                                           | Section 6.1.2 Page 27                  |
| Clarification | 6           | Battery operated portable TWIC readers are not required to comply with UL 294, Standard of Safety for Access Control System Units.<br>Portable TWIC readers that support connection to a PACS to operate access control devices shall comply with UL 294, Standard for Safety of Access Control System Units, or internationally recognized equivalent.                                                                                                     | Added NEW Section 6.1.4 Safety Page 28 |
| Clarification | 40          | Expiration checking is needed to verify that the expiration date on a presented TWIC credential is not before the current date (an expired credential). Portable TWIC readers shall support expiration checking. Fixed TWIC readers may support expiration checking.<br>Fixed TWIC readers may support a configurable option to disable reader expiration checking for use in installations where expiration date is transmitted to and verified by a PACS. | Addition to Section 7 Page 29          |

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| Clarification | 7           | Fixed TWIC readers shall have communications ports as required by the PACS cable plant and control panels. Communication ports supported by fixed TWIC readers shall include: <ul style="list-style-type: none"> <li>• A unidirectional Wiegand port for connection to standard access control panels.</li> <li>• A bidirectional RS-485 or 10/100baseT (Ethernet) for connection to computer systems or access control systems.</li> </ul>                                                                                                       | Section 7 Page 29             |
| Clarification | 41          | The TWIC reader log of operations shall include the current date as year, month and day and the current time as hours, minutes and seconds<br><br>The TWIC reader log of operations shall include the card FASC-N of each TWIC card presented, the operation performed using the card (reader mode) and the status of the operation (success or failure) with an indication of the reason for any failures.<br><br>TWIC readers shall provide a means to export the TWIC reader log of operations in human-readable form in the English language. | Addition to Section 7 Page 31 |
| Clarification | 8           | TWIC readers shall support the “V1.0” and “V2.0” marked TWIC cards in all supported modes of operation.                                                                                                                                                                                                                                                                                                                                                                                                                                           | Section 11 Page 35            |

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| Renaming      | 3           | Annex replaced with Appendix                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Section 11 Page 35                 |
| Clarification | 9           | The following steps apply to a TWIC reader operating in signed CHUID Mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Appendix A A.1 Page 45             |
| Clarification | 10          | 3) TWIC reader decodes...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Appendix A A.1 Page 45             |
| Clarification | 11          | <p>4) If a TWIC reader is configured for expiration checking using the signed CHUID, the date encoded in the signed CHUID data object is compared to the current date/time. If the date encoded in the signed CHUID data object is before the current date/time, the reader shall reject the card.</p> <p>5) The TWIC reader verifies that the id-TWIC-content-signing object identifier is present in the card issuer's digital signature certificate for the document signer. If the id-TWIC-content-signing object identifier is not present in the card issuer's digital signature certificate for the document signer, the TWIC reader shall reject the card.</p> | Addition to Appendix A A.1 Page 45 |
| Clarification | 12          | 8) ... shall decode the FASC-N TLV record and extract ...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Appendix A A.1 Page 46             |

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| Clarification | 13          | 9) If the TWIC reader is configured to use the TWIC Canceled Card List to check for card revocation using the signed CHUID, the TWIC reader checks to see if the FASC-N from the signed CHUID data object is listed on the latest version of the CCL accessed by the reader. If the FASC-N from the signed CHUID data object is listed on the latest version of the CCL accessed by the reader, the TWIC reader shall reject the presented card. | Appendix A A.1 Page 46     |

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| Clarification | 14          | <p>Alternatively, A TWIC reader may perform Unsigned CHUID signature verification using the Security Data Object. When configured for unsigned CHUID signature verification using the Security Data Object, the TWIC reader shall verify the signature and origin of the unsigned CHUID, up to and including the trust anchor using the Security Data Object.</p> <p>When configured for unsigned CHUID signature verification using the Security Data Object, if the id-TWIC-content-signing object identifier is not present in the card issuer's digital signature certificate for the document signer of the Security Data Object, the TWIC reader shall reject the card.</p> | Appendix A A.1 Page 46     |
| Clarification | 39          | <p>The TWIC reader may support use of the unsigned CHUID without signature verification for use in cases where the CHUID signature has been previously verified by and registered in the PACS.</p> <p>The following steps apply to a TWIC reader using the unsigned CHUID, with or without signature verification.</p>                                                                                                                                                                                                                                                                                                                                                            | Appendix A A.1 Page 46     |

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| Clarification | 15          | 3) If a TWIC reader is configured for expiration checking using the unsigned CHUID, the date encoded in the unsigned CHUID data object is compared to the current date/time. If the date encoded in the unsigned CHUID data object is before the current date/time, the reader shall reject the card.                                                                                                                                                  | Addition to Appendix A A.1 Page 46 |
| Clarification | 16          | 6) If the TWIC reader is configured to use the TWIC Canceled Card List to check for card revocation using the unsigned CHUID, the TWIC reader checks to see if the FASC-N from the unsigned CHUID data object is listed on the latest version of the CCL accessed by the reader. If the FASC-N from the unsigned CHUID data object is listed on the latest version of the CCL accessed by the reader, the TWIC reader shall reject the presented card. | Addition to Appendix A A.1 Page 46 |
| Clarification | 17          | A TWIC reader, or the system to which the TWIC reader is connected , shall support asymmetric cryptographic operations.                                                                                                                                                                                                                                                                                                                                | Appendix A A.2 Page 47             |

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| Clarification | 18          | Deleted the remainder of the paragraph beginning with “This means that ...”                                                                                                                                                                                                                                                                                                                                                                                                                             | Appendix A A.2 Page 47     |
| Clarification | 19          | A TWIC reader (or panel, with bi-directional wiring) shall be locally configured with X.509 certificates containing the public key for all currently active Certificate Authorities (CAs) that are trusted for issuance of TWIC Card Authentication certificates.                                                                                                                                                                                                                                       | Appendix A A.2 Page 47     |
| Clarification | 20          | The following steps apply to a TWIC reader operating in Active Card Authentication Mode.                                                                                                                                                                                                                                                                                                                                                                                                                | Appendix A A.2 Page 47     |
| Clarification | 21          | 7) TWIC reader shall compare the “issuer” name in the Certificate against the “subject” name in each trusted issuing CA Certificate stored on a TWIC reader. For each CA with a matching name, the Public Key is used to attempt to verify the signature on the token’s Certificate. If no matching CA Certificate is found on a TWIC reader with the same name and with a Public Key that verifies the signature on the Certificate, then the reader shall reject the card containing the Certificate. | Appendix A A.2 Page 47     |

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| Clarification | 22          | 7) If a TWIC reader is configured for expiration checking using card authentication, the date encoded in the Card Authentication Certificate's "notBefore" validity date is after the current date/time, or if the Certificate's "notAfter" validity date is before the current date/time, the reader shall reject the card containing the Certificate. | Appendix A A.2 Page 48     |
| Clarification | 23          | 10) The Certificate's "subjectAltName" extension identified as "twicFASC-N" (1.3.6.1.4.1.29138.6.6) name entry shall be retrieved from the certificate and used as the unique credential number (e.g. for optional transmission to a panel or back-end or to IDMS infrastructure).                                                                      | Appendix A A.2 Page 48     |

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| Clarification | 24          | 13) The response (i.e. the card's signature) from the GENERAL AUTHENTICATE APDU command shall be verified using the Public Key from the Certificate. If verification of the response (i.e. the card's signature) from the GENERAL AUTHENTICATE APDU command fails, the TWIC reader shall reject the card.                                                                                                                                                              | Appendix A A.2 Page 48     |
| Clarification | 25          | 15) If the TWIC reader is configured to use the TWIC Canceled Card List to check for card revocation using card authentication, the TWIC reader checks to see if the FASC-N from the Card Authentication Certificate is listed on the latest version of the CCL accessible by the reader. If the FASC-N from the Card Authentication Certificate is listed on the latest version of the CCL accessible by the reader, the TWIC reader shall reject the presented card. | Appendix A A.2 Page 48     |

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| Clarification | 26          | 16) If the TWIC reader is configured to use the TWIC Certificate Revocation List (CRL) to check for card revocation, the TWIC reader checks to see if the Card Authentication Certificate is listed on the latest version of the CRL accessible by the reader. If the Card Authentication Certificate is listed on the latest version of the CCL accessible by the reader, the TWIC reader shall reject the presented card. | Appendix A A.2 Page 48             |
| Clarification | 27          | Deleted the last paragraph starting with "If the biometric authentication factor..."                                                                                                                                                                                                                                                                                                                                        | Appendix A A.2 Page 48             |
| Clarification | 28          | The following steps apply to a TWIC reader operating in CHUID Verification + Biometric User Authentication Mode.                                                                                                                                                                                                                                                                                                            | Appendix A A.3 Page 48             |
| Clarification | 29          | 1) The TWIC reader performs signed CHUID Verification as defined in A.1.                                                                                                                                                                                                                                                                                                                                                    | Addition to Appendix A A.3 Page 48 |
| Clarification | 30          | Delete the original 2) TWIC reader selects...                                                                                                                                                                                                                                                                                                                                                                               | Appendix A A.3 Page 49             |
| Clarification | 31          | Delete "and CHUID" from end of 4)                                                                                                                                                                                                                                                                                                                                                                                           | Appendix A A.3 Page 49             |

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| Clarification | 32          | 8) TWIC reader verifies that the digital signature on the CBEFF record was produced by an authorized document signer. This requires that the TWIC reader have a verified copy of the document signer's X.509 digital certificate. If signature verification of the CBEFF record using the public key from this verified document signing certificate fails, the TWIC reader shall reject the card. | Appendix A A.3 Page 49     |
| Clarification | 33          | 9) TWIC reader compares the FASC-N from signed CHUID with the FASC-N from the CBEFF record. If the FASC-N from the signed CHUID and the FASC-N from the CBEFF record do not match, the TWIC reader shall reject the card.                                                                                                                                                                          | Appendix A A.3 Page 49     |

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| Clarification | 34          | 10) TWIC reader acquires a fingerprint image from the cardholder. The TWIC reader shall convert the sampled image to a minutiae template and match the template against the fingerprint minutiae templates stored in finger view records in the signed biometric object at an appropriate level of confidence (see Section 8). If the fingerprint does not match one of the templates on the first attempt, the TWIC reader shall prompt the cardholder for subsequent attempts without requiring the TWIC card to be read again. If the number of subsequent matching failures exceeds the readers configurable retry counter, the TWIC reader shall reject the card. | Appendix A A.3 Page 49     |
| Clarification | 35          | 11) If the fingerprint matches successfully, then the authentication factor is successful, and the FASC-N from the data object may be used as the identification number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Appendix A A.3 Page 49     |

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| Clarification | 36          | Delete original item 9) beginning with “TWIC reader verifies that the digital signature...”                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Appendix A A.4 Page 50                                                                                                 |
| Clarification | 37          | <p>9) TWIC reader retrieves the document signer’s certificate from the CHUID signature field, since the CHUID is signed by the same entity as the biometric.</p> <p>10) TWIC reader verifies that the id-TWIC-content-signing object identifier is present in the card issuer’s digital signature certificate for the document signer. If the id-TWIC-content-signing object identifier is not present in the card issuer’s digital signature certificate for the document signer, the TWIC reader shall reject the card.</p> <p>11) TWIC reader shall verify the CBEFF signature and origin up to and including the trust anchor. If signature verification of the CBEFF record using the public key from the verified document signing certificate fails, the TWIC reader shall reject the card.</p> <p>12) TWIC reader compares the FASC-N from Card Authentication Certificate with the FASC-N from the</p> | <p>Appendix A A.4 Page 50<br/>                     (Change Applied field continues on the next page for this item)</p> |

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|                      |             | <p>CBEFF record. If the FASC-N from the Card Authentication Certificate and the FASC-N from the CBEFF record do not match, the TWIC reader shall reject the card.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                               |
| <p>Clarification</p> | <p>38</p>   | <p>13) TWIC reader acquires a fingerprint image from the cardholder. The TWIC reader shall convert the sampled image to a minutiae template and match the template against the fingerprint minutiae templates stored in finger view records in the signed biometric object at an appropriate level of confidence (see Section 8). If the fingerprint does not match one of the templates on the first attempt, the TWIC reader shall prompt the cardholder for subsequent attempts without requiring the TWIC card to be read again. If the number of subsequent matching failures exceeds the readers configurable retry counter, the TWIC reader shall reject the card.</p> | <p>Appendix A A.4 Page 50</p> |