



# STS Association

---

## **STS 531-3**

Edition 1.9.6

April 2023

**Compliance Test Specification - Entity Type C – Token  
Carrier: Token Carrier for TCT = 01 and TCT=02**

---

**CONTENTS**

**FOREWORD..... 4**

**1 SCOPE..... 5**

    1.1 GENERAL..... 5

**2 NORMATIVE REFERENCES..... 5**

    2.1 GENERAL..... 5

**3 TERMS AND DEFINITIONS ..... 5**

    3.1 DEFINITIONS..... 5

    3.2 TERMS..... 5

    3.3 GENERAL..... 5

        3.3.1 *Test equipment required*..... 5

    3.4 ENTITY TYPE C: TOKEN CARRIER FOR TCT = 01 AND TCT=02..... 6

        3.4.1 *CTSC01 – Magnetic card token carrier – card characteristics, TCT = 01* ..... 6

        3.4.2 *CTSC02 – Numeric token carrier, TCT = 02*..... 6

**4 ANNEXURE A – COMPLIANCE VERIFICATION REQUEST ..... 8**

**5 ANNEXURE B – TEST OVERVIEWS ..... 9**

**Revision History**

| <b>Edition</b> | <b>Clause</b> | <b>Date</b> | <b>Change details from previous Edition</b>  |
|----------------|---------------|-------------|--|
| 1.1            | General       | 22 Feb 2015 | Updated Edition number from 1 to 1.1 to match document set                                   |
| 1.2            | General       | May 2015    | Edition number changed from 1.1 to 1.2 to match document set                                 |
| 1.3            | General       | July 2015   | Removed Annexure B and C since these forms are not used. Added Edition column to this table. |
| 1.4            | General       | Oct 2015    | Only Edition number changed from 1.3 to 1.4 to match the document suite                      |
| 1.5            | General       | April 2016  | Changed to new Logo  |
| 1.6            | General       | June 2016   | Only Edition number changed from 1.5 to 1.6 to match the document suite                      |
| 1.7            | General       | Nov 2016    | Only Edition number changed from 1.6 to 1.7 to match the document suite                      |
| 1.8            |               |             | Not published  |
| 1.8.1          | General       | Nov 2017    | Only Edition number changed from 1.7 to 1.8.1 to match the document suite                    |
| 1.8.2          | General       | Jan 2018    | Only Edition number changed from 1.8.1 to 1.8.2 to match the document suite                  |
| 1.9            | Annexure B    | May 2018    | Replaced clauses with a table of tests. Ed3 compliance                                       |

|       |               |            |   |
|-------|---------------|------------|---|
| 1.9.1 | General       | Jan 2019   | Added note to 3.3 regarding token combinations                  |
|       |               |            | Removed table in 1.1  |
| 1.9.2 | General       | July 2019  | Only Edition number changed to match the document suite         |
| 1.9.3 | CTSC02 Step 2 | Jan 2020   | Added test for DKGA04/EA07                                      |
|       | CTSA01 Step 3 |            | removed CTSC01 Step 3 since this is a hardware test.            |
| 1.9.4 | Foreword      | Jan 2021   | Added note on voting  |
| 1.9.5 | CTSA02 Step 2 | Apr 2022   | Corrected token   |
| 1.9.6 | Clause 3.4.2  | April 2023 | Corrected VK to the correct 160-bit value. Tokens not affected. |

## STANDARD TRANSFER SPECIFICATION –

### Compliance Test Specification – Entity Type C – Token Carrier: Token Carrier for TCT = 01 and TCT=02

#### FOREWORD

- 1) The Standard Transfer Specification Association (STSA) is a worldwide organization for standardization comprising all members of STSA. The object of STSA is to develop, maintain and promote international use of the Standard Transfer Specification (STS). To this end and in addition to other activities, STSA publishes Standards, Technical Specifications, Technical Reports, Codes of Practice and Guides (hereafter referred to as “STSA Publication(s)”). Their preparation is entrusted to technical working groups; any STSA member interested in the subject dealt with may participate in this preparatory work. STSA collaborates closely with the International Electrotechnical Commission (IEC) in accordance with conditions determined by agreement between the two organizations. As such STSA performs the role of Registration Authority of IEC 62055-41, IEC 62055-51 and IEC 62055-52 on behalf of IEC.
- 2) The formal decisions or agreements of STSA on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each working group has representation from all interested STSA members.
- 3) STSA Publications have the form of recommendations for international use and are accepted by STSA Board of Directors in that sense. While all reasonable efforts are made to ensure that the technical content of STSA Publications is accurate, STSA cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 5) STSA provides attestation of conformity. Independent testing bodies provide conformity assessment services and recommendations to STSA Board of Directors who provides conformance certificates and access to STSA marks of conformity.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to STSA or its directors, employees, servants or agents including individual experts and members of its technical working groups for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this STSA Publication or any other STSA Publications.
- 8) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this STSA Publication may be the subject of patent rights. STSA shall not be held responsible for identifying any or all such patent rights.

Standard Transfer Specification STS 531-3 has been prepared by working group 8.

The text of this standard is based on the following documents:

|             |                  |
|-------------|------------------|
| FDS         | Report on voting |
| STS531-0/CD | see note1        |

Note1: due to the large number of documents in the test set, member voting is not performed prior to publication. However, corrections will be made to the document set if errors are reported.

This publication has been drafted in accordance with STSA Directive STS 2100-1 with the exception of Note1

# 1 Scope

## 1.1 General

This document provides the compliance criteria and test descriptions for prepayment meters designed to accept tokens that comply with the STS and POS systems designed to produce STS-compliant tokens.

# 2 Normative references

## 2.1 General

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62051 - *ELECTRICITY METERING – Glossary of terms*

IEC 62055-41 Ed3 - *ELECTRICITY METERING – PAYMENT SYSTEMS – Part 41: Standard Transfer Specification – Application layer protocol for one-way token carrier systems*

IEC 62055-51 - *ELECTRICITY METERING – PAYMENT SYSTEMS – Part 51: Standard Transfer Specification – Physical layer protocol for one-way numeric and magnetic card token carriers*

ISO/IEC 7811-2 - *IDENTIFICATION CARDS — RECORDING TECHNIQUE — Part 2: Magnetic stripe — Low coercivity*

STS531-0 *Compliance Test Specification – Quality plan*

# 3 Terms and definitions

## 3.1 Definitions

For the purposes of this test specification, the definitions given in the normative references identified in paragraph 2 apply.

## 3.2 Terms

For the purposes of this test specification, the terms given in the normative references identified in paragraph 2 apply.

## 3.3 General

The test comprises a number of steps with associated recordings and expected results. Any deviation from these shall be interpreted as non-compliance and a failure recorded against that step.

Note: The tests in this document do not test all combinations of tokens. It is the manufacturer's responsibility to ensure that all the required tokens for the entity type, as specified in IEC62055-41, are supported.

### 3.3.1 Test equipment required

The following test equipment is required:

1. A method of generating tokens using EA=07 and DKGA=02.
2. A magnetic card reader to read the token data off the card.

Note: all data is recorded on a magnetic card according to the ISO/IEC7811-2 specification.

### 3.4 Entity type C: Token Carrier for TCT = 01 and TCT=02

#### 3.4.1 CTSC01 – Magnetic card token carrier – card characteristics, TCT = 01

If the TokencarrierType specified by the manufacturer is TCT=01, then perform this test. Otherwise, this test may be omitted.

APDU information to be used for this test:

|                    |                                  |
|--------------------|----------------------------------|
| MeterPAN           | 600727000000000009               |
| TCT                | 01                               |
| EA                 | 07                               |
| DKGA               | 02                               |
| SGC                | 123456                           |
| TI                 | 01                               |
| KRN                | 1                                |
| DOE                | 1203                             |
| Vending Key        | ABABABABABABAB                   |
| Token Issue Date   | 21/04/2005 10:00:00              |
| Decimal Token Data | 0286 4222 5674 7562 4534         |
| IDRecord           | 600727000000000009=0107123456011 |
| PRNRecord          | <Not specified>                  |

Notes:

- The TokenData specified above is a ClearCredit token with RegisterToClear value set at FFFF<sub>16</sub>.
- The TokenErase function is not tested in this specification as it is already covered in the Entity Type D tests.

| Step | Instruction   | Expected Result  |
|------|---|--|
| 1    | Examine the token for the manufacturer's statement/proof of compliance to the relevant portions of IEC62055-51 for TCT01 token types.   | This test step no longer done.   |
| 2    | According to the manufacturer's instructions, encode a token using the information given above (see ISP/IEC7811-2).<br><br>Read the encoded token using the magnetic card reader. | The data read off the token carrier (Track3) must be:<br><br>;02864222567475624534?<br><br>if IDRecord is not supported, or one of the following if IDRecord is supported:<br><br>;02864222567475624534?[0x55]00000000000000000000000000000000;600727000000000009=1203=0107123456011?[0x08]<br><br>if DOE is included, or<br><br>;02864222567475624534?[0x55]00000000000000000000000000000000;600727000000000009===0107123456011?[0x35]<br><br>if DOE is not included, where the [x] characters represent the LRC of the preceeding records. |

#### 3.4.2 CTSC02 – Numeric token carrier, TCT = 02

If the TokencarrierType specified by the manufacturer is TCT=02, the perform this test. Otherwise, this test may be omitted.

APDU information to be used for this test:

|                       |                                    |
|-----------------------|------------------------------------|
| MeterPAN              | 600727000000000009                 |
| TCT                   | 02                                 |
| EA                    | 07                                 |
| DKGA                  | 02 (step 1), 04 (step 2)           |
| SGC                   | 123456 (step 1), 123457 (step 2)   |
| TI                    | 01                                 |
| KRN                   | 1                                  |
| DOE                   | 1203                               |
| Vending Key1 (step 1) | ABABABABABABAB                     |
| Vending Key2 (step 2) | ABABABABABABAB94949494949401234567 |
| Token Issue Date      | 21/04/2005 10:00:00                |
| IDRecord              | 600727000000000009=0107123456011   |
| IDRecord              | 600727000000000009=0107123457011   |
| PRNRecord             | <Not specified>                    |

Notes:

- The TokenData specified above is a ClearCredit token with RegisterToClear value set at FFFF<sub>16</sub>.
- Do Step 1 if the UUT supports DKGA02, or Step 2 if the UUT supports DKGA04

| Step | Instruction  | Expected Result   |
|------|--|---|
| 1    | According to the manufacturer's instructions, encode a token using the information given above.  | The token that is printed must be:<br><b>0286 4222 5674 7562 4534</b> |
| 2    | According to the manufacturer's instructions, encode a token using the information given above for DKGA04. Using vending key 2 and a token issue date of 21/04/2005 10:01:00 | The token that is printed must be:<br><b>2427 3508 6966 3829 9687</b> |

## 4 Annexure A – Compliance Verification Request

|    |   |  |
|----|---|--|
| 1. | Manufacturer:   |  |
| 2. | Product Name/Model:   |  |
| 3. | Product Firmware Version:   |  |
| 4. | Contact Name:   |  |
| 5. | Mobile Number:<br>Phone Number:<br>Faximile Number:<br>Email Address: |  |
| 6. | Physical and/or Postal Address  |  |
| 7. | Date:   |  |

|    |  |                   |  |                  |                           |
|----|--|-------------------|--|------------------|---------------------------|
| 1. | Token Carrier Type   | TCT=01 (mag card) |  | TCT=02 (Numeric) |                           |
| 2. | Does the encoding equipment encode the optional IDRecord onto the token carrier: |                   | Yes  | No               | (Tick what is applicable) |
| 3. | Does the encoding equipment encode the PRNRecord onto the token carrier:         |                   | Yes  | No               | (Tick what is applicable) |
| 4. | Detailed instructions on how to encode the token:                                |                   |  |                  |                           |
| 5. | Statement of compliance for TokencarrierType TCT=01 (paper token)                |                   | By signing hereunder, the manufacturer warrants that the token carrier complies with IEC62055-51 Clauses 5.2.2 to 5.2.4 for TCT=01 |                  |                           |
| 6. | Signature of supplier  |                   | Signed:<br>Date:   |                  |                           |



## 5 Annexure B – Test overviews

| Test No | Description                 | IEC62055-51<br>Applicable Clause | Other implementations<br>tested |
|---------|-----------------------------|----------------------------------|---------------------------------|
| CTSC01  | Token Compliance for TCT=01 | 5                                | ClearCredit TCT01               |
| CTSC02  | Token Compliance for TCT=02 | 5.3                              | ClearCredit TCT02               |