STS Association

STS 531-4

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April 2023

Compliance Test Specification - Entity Type D: Token Carrier to Meter Interface Physical Layer Protocol for TCT = 01 and TCT = 02

CONTENTS

Revision History

Edition	Clause	Date	Change details from previous Edition
1.1	General	Feb 2015	Updated Edition number from 1 to 1.1 to match document set
1.1	Normative references	April 2015	Added IEC62055-51 to normative references
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 by test houses. Added Edition column to this table.
1.3	Annexure B	July 2015	Corrected test names in Annexure B.
1.3	4.1.4	July 2015	Added key values in the test text .
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	Highlighted UUT number in each test set

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	CTSD04 Step 9	Jan 2018	Changed token date to correct Key Expired error. Updated Annexure A1
1.9	various	May 2018	Changed descriptions in test steps (editorial only). Ed3 compliant. Reformatted test steps to remove unnecessary spaces
1.9.1	General	March 2019	Added note to 4.1.4 regarding token combinations, added foreword
	1.1		Removed table
	Annexure A		Added EA type, updated annexure
	CTSD04 Step 9		Updated TID of EA11 token
1.9.2	General		Only Edition number changed to match the document suite
1.9.3	General	Jan 2020	Replaced reference to ‘Table 2’ with ‘Annexure A’ in several tests
1.9.4	Foreword	Jan 2021	Added note on voting
1.9.5	General	Apr 2022	Only Edition number changed to match the document suite
	4.1.5		Added CTSD00 – DRN number check
1.9.6	CTSD01 Step 3	April 2023	Changed 2ndKCT to ACCEPT in the expected result

STANDARD TRANSFER SPECIFICATION ASSOCIATION

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STANDARD TRANSFER SPECIFICATION –

Compliance Test Specification – Entity Type D: Token Carrier to Meter Interface Physical Layer Protocol for TCT = 01 and TCT = 02

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Standard Transfer Specification STS 531-4 has been prepared by working group 8.

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

FDS	Report on voting
STS531-xx/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*

IEC62055-51 - Part 51: Standard transfer specification (STS) – Physical layer protocol for one-way numeric and magnetic card token carriers

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.

4 Entity type D: Token Carrier to Meter Interface – Physical layer protocol

4.1.1 Equipment to be submitted

The following equipment is required for certification:

1. A MeterInterface connected to a meter loaded with the $DITK_1$ as specified in Table1 below. The meter's entire TID stack shall, with the exception of the tokens used to fill up the meter with credit, be preloaded with the TID $5A45A1_{16}$; this TID corresponds to the token issue date and time of 2004-04-01 09:05.
2. The meter shall be loaded with its maximum credit value.
3. If the payment meter stores its manufacturing date in non-volatile RAM and uses this to determine the validity of a token, then the meters submitted must have this date set to 1st January 1993 00h00.
4. Depending on the meter type to be tested, the meters to be supplied are listed in Table1 below.

Table 1 - Meters to be supplied

Meter label	$DITK_1$	Algorithm Type
UUT01-07	$FFFFFFFFFFFFFFFF_{16}$	EA07 meter
UUT01-11	$FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF_{16}$	EA11 meter

The meters are to be marked as "Entity Type D - UUT01-xx" where 'xx' is "07" for EA07 meters, and "11" for EA11 meters.

4.1.2 Information to be submitted

Annexure A.1 must be completed by the manufacturer.

4.1.3 Test equipment required

The following test equipment is required:

For TCT=01 meters, the tokens required during the test must be encoded onto disposable magnetic token carriers compliant the requirements of IEC 62055-51 for TCT=01.

4.1.4 General

Each 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.
The following keys are used for these tests:

For EA=07
$DITK_1$ = FFFFFFFFFFFFFFFF
$DUTK_1$ = ABABABABABABABAB
$DUTK_2$ = 9494949494949494

For EA=11
$DITK_1$ = FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
$DUTK_1$ = ABABABABABABABAB9494949494949494
$DUTK_2$ = 9494949494949494ABABABABABABABAB

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.

4.1.5 CTSD00 – DRN Number

Check that the DRN number is a valid DRN number as per the requirements of IEC62055-41 6.1.2.3. and 8.3, and that it is clearly legible with the meter in the installed position. For two part meters, the DRN number must be available on the payment meter as indicated above, and in the CIU by way of an InitiateMeterTest/Display token, the push of a button, or a special code. The DRN number must also match the manufacturer code allocated to the manufacturer that appears on the payment meter.

4.1.6 CTSD01 – Magnetic card token carrier, TCT = 01 for meters supporting EA=07

Overview: This test verifies general compliance with respect to the physical processing of the TokenCarrier via the TokenCarrierToMeterInterface. For this test, use UUT01.

Note: This test need only be done if the UUT supports TCT = 01. This test supports electricity, gas, water, and time payment meters. Only do the tests for the supported utility type.

Step	Instruction	Expected Result
1	**Power up UUT01**	The meter interface shall, after a period of time, indicate that token insertion may commence.
2	Insert the following token: **5768 5041 9538 4660 7141** First token of Set PM Key token pair. $DITK_1$ to $DUTK_1$ key-change token. (KENHO = 5, KRN = 1, RO = 0, Res = 0, KT = 2)	The meter interface shall indicate a TokenResult status of 1stKCT.
3	Insert the following token: **4650 4546 3830 9141 4966** Second token of Set PM Key token pair. $DITK_1$ to $DUTK_1$ key-change token. (KENLO = B, TI = 01)	The meter interface shall indicate a TokenResult status of ACCEPT. The meter interface shall also indicate that the token has been erased.
4	Insert the following token encoded using $DUTK_1$: electricity payment meter, 5kWh credit token **3358 3222 0216 4538 3325** water payment meter, 5 kl credit token. **1908 9061 1106 3978 6720** gas payment meter, 5 m^3 credit token. **1096 4160 0094 7636 9690** time payment meter, 5 min credit token. **6422 8688 5714 3562 2129**	The meter interface shall indicate a TokenResult status of CreditOverflow. The token shall not be erased.

Step	Instruction	Expected Result
5	Insert the following token: **4361 9685 0324 4838 6302** Clear all credit token encoded using the $DUTK_1$	The meter interface shall indicate a TokenResult status of Accept. The meter interface shall also indicate that the token has been erased.
6	Insert the following token encoded using $DUTK_1$: electricity payment meter, 5 kWh credit token. **3358 3222 0216 4538 3325** water payment meter, 5 kl credit token. **1908 9061 1106 3978 6720** gas payment meter, 5 m^3 credit token. **1096 4160 0094 7636 9690** time payment meter, 5 min credit token. **6422 8688 5714 3562 2129**	The meter interface shall indicate a TokenResult status of Accept. The meter interface shall also indicate that the token has been erased.
7	Insert the following token encoded using $DUTK_1$: electricity payment meter, 5 kWh credit token. **4737 5109 3430 2907 3521** water payment meter, 5 kl credit token. **6609 5150 4370 4067 2512** gas payment meter, 5 m^3 credit token. **2915 5280 4551 1897 1618** time payment meter, 5 min credit token **5738 4080 7924 7970 6287**	The meter interface shall indicate a ValidationResult status of Old. The token shall not be erased.
8	Insert the following token encoded using $DUTK_1$: electricity payment meter, 5 kWh credit token. **1464 8242 6651 5173 5146** water payment meter, 5 kl credit token. **7034 4123 9992 1325 1735** gas payment meter, 5 m3 credit token. **2939 4160 5059 6054 2639** time payment meter, 5 min credit token. **7128 5777 1770 9865 7732**	If the manufacturer indicated In Annexure A that key expiry is supported, the meter interface shall indicate a ValidationResult status of KeyExpired. Otherwise, the meter interface shall indicate a TokenResult status of Accept. The token shall not be erased.

Step	Instruction	Expected Result
9	Insert the following token encoded using $DUTK_2$ electricity payment meter, 5 kWh credit token. **5172 0814 8180 8449 1168** water payment meter, 5 kl credit token. **6111 9740 3348 7200 5955** gas payment meter, 5 m^3 credit token. **5079 3558 6900 7383 5091** time payment meter, 5 min credit token. **6984 6694 6331 3680 9557**	The meter interface shall indicate an AuthenticationResult status of NotAuthentic. The token shall not be erased.
10	Insert the following token encoded using $DUTK_1$: electricity payment meter, 5 kWh credit token. **3358 3222 0216 4538 3325** water payment meter, 5 kl credit token. **1908 9061 1106 3978 6720** gas payment meter, 5 m^3 credit token. **1096 4160 0094 7636 9690** time payment meter, 5 min credit token. **6422 8688 5714 3562 2129**	The meter interface shall indicate a TokenResult status of Used. The token shall not be erased.
11	Insert the following Test 0 token for 2-digit manufacturer code meters: **5649 3153 7254 5031 3471** Insert the following Test 0 token for 4-digit manufacturer code meters: **0230 5843 0050 5295 1967**	The meter interface shall indicate a TokenResult status of Accept. The token shall not be erased.

4.1.7 CTSD02 – Numeric token carrier, TCT = 02 for meters supporting EA=07

Overview: This test verifies general compliance with respect to the physical processing of the TokenCarrier via the TokenCarrierToMeterInterface. For this test, use UUT02.

Note: This test need only be done if the UUT supports TCT = 02. This test supports electricity, gas, water, and time payment meters. Only do the tests for the supported utility type.

Step	Instruction	Expected Result
1	**Power up UUT02**	The meter interface shall, after a period of time, indicate that token insertion may commence.

Step	Instruction	Expected Result
2	Enter the first 6 digits of token **5768 5041 9538 4660 7141** First token of Set PM Key token pair. $DITK_1$ to $DUTK_1$ = ABABABABABABABAB key-change token. (KENHO = 5, KRN = 1, RO = 0, Res = 0, KT = 2) When the 6 digits have been entered, clear all the digits entered.	The meter interface shall, after a period of time, indicate that token insertion may commence.
3	Insert token **5768 5041 9538 4660 7141** When entering the token, backspace and retype every one of the first 19 digits.	The meter interface shall display each digit entered during token entry. On successful entry of the token, the meter interface shall indicate a TokenResult status of 1stKCT.
4	Insert token **4650 4546 3830 9141 4966** Second token of Set PM Key token pair. $DITK_1$ to $DUTK_1$ key-change token. (KENLO = B, TI = 01)	The meter interface shall indicate a TokenResult status of 2ndKCT.
5	Re-insert the token used in step 2 above.	The meter interface shall indicate a TokenResult of Reject.
6	Insert the following token encoded using $DUTK_1$ electricity payment meter, 5 kWh credit token **3358 3222 0216 4538 3325** water payment meter, 5 kl credit token **1908 9061 1106 3978 6720** gas payment meter, 5 m^3 credit token **1077 2415 9631 1398 7066** time payment meter, 5 min credit token **7246 2838 9781 7504 5942**	The meter interface shall indicate a TokenResult status of CreditOverflow.
7	Insert token **4922 2173 2805 9681 1422** Clear all credit token encoded using the $DUTK_1$.	The meter interface shall indicate a TokenResult status of Accept.

Step	Instruction	Expected Result
8	Insert the following token encoded using $DUTK_1$ electricity payment meter, 5 kWh credit token **3358 3222 0216 4538 3325** water payment meter, 5 kl credit token **1908 9061 1106 3978 6720** . gas payment meter, 5 m^3 credit token **1077 2415 9631 1398 7066** time payment meter, 5 min credit token **7246 2838 9781 7504 5942**	The meter interface shall indicate a TokenResult status of Accept.
9	Insert the following token encoded using $DUTK_1$ electricity payment meter, 5 kWh credit token **0010 1395 8746 9765 9187** water payment meter, 5 kl credit token **1129 9875 7298 8133 0100** gas payment meter, 5 m^3 credit token **0420 7416 4697 8308 6798** time payment meter, 5 min credit token **7363 6687 7807 0793 7860**	The meter interface shall indicate a ValidationResult status of Old.
10	Insert the following token encoded using DUTK1 electricity payment meter, 5 kWh credit token **1752 6618 8412 9645 5257** water payment meter, 5 kl credit token encoded **6887 4317 9746 9397 7872** gas payment meter, 5 m^3 credit token **3144 8110 8526 7882 2186** time payment meter, 5 min credit token **2667 4242 3127 3229 5716**	If the manufacturer indicated in Annexure A that key expiry is supported, the meter interface shall indicate a ValidationResult status of KeyExpired. Otherwise, the meter interface shall indicate a TokenResult status of Accept.

Step	Instruction	Expected Result
11	Insert the following token encoded using DUTK2 electricity payment meter, 5 kWh credit token **5172 0814 8180 8449 1168** water payment meter, 5 kl credit token **3813 6349 5174 4309 5909** gas payment meter, 5 m^3 credit token **5473 3659 0778 6060 7093** time payment meter, 5 min credit token **6984 6694 6331 3680 9557**	The meter interface shall indicate an AuthenticationResult status of NotAuthentic.
12	Insert the following token encoded using DUTK1 electricity payment meter, 5 kWh credit token **3358 3222 0216 4538 3325** water payment meter, 5 kl credit token **1908 9061 1106 3978 6720** gas payment meter, 5 m^3 credit token **1077 2415 9631 1398 7066** time payment meter, 5 min credit token **7246 2838 9781 7504 5942**	The meter interface shall indicate a TokenResult status of Used.
13	Insert the following Test 0 token for 2-digit manufacturer code meters: **5649 3153 7254 5031 3471** Insert the following Test 0 token for 4-digit manufacturer code meters: **0230 5843 0050 5295 1967**	The meter interface shall indicate a TokenResult status of Accept.

4.1.8 CTSD03 – Numeric token carrier, TCT = 02 for Currency Based Payment Meters supporting EA=07

Overview: This test verifies general compliance with respect to the physical processing of the TokenCarrier via the TokenCarrierToMeterInterface. For this test, use UUT03.

Note: This test need only be done if the UUT supports TCT = 02. This test supports electricity, gas, time, and water currency payment meters. Only do the tests for the supported currency type.

Step	Instruction	Expected Result
1	Power up UUT03	The meter interface shall, after a period of time, indicate that token insertion may commence.
2	Enter the first 6 digits of token **5768 5041 9538 4660 7141** First token of Set PM Key token pair. $DITK_1$ to $DUTK_1$ key-change token. (KENHO = 5, KRN = 1, RO = 0, Res = 0, KT = 2) When the 6 digits have been entered, clear all the digits entered.	The meter interface shall, after a period of time, indicate that token insertion may commence.
3	Insert token **5768 5041 9538 4660 7141** When entering the token, backspace and retype every one of the first 19 digits.	The meter interface shall display each digit entered during token entry. On successful entry of the token, the meter interface shall indicate a TokenResult status of 1stKCT.
4	Insert token **4650 4546 3830 9141 4966** Second token of Set PM Key token pair. $DITK_1$ to $DUTK_1$ key-change token. (KENLO = B, TI = 01)	The meter interface shall indicate a TokenResult status of 2ndKCT.
5	Re-insert the token used in step 2 above.	The meter interface shall ignore the token or indicate a TokenResult of Reject.
6	Insert the following 5000 unit currency token encoded using $DUTK_1$ electricity currency meter, **5130 5194 3778 0316 3697** water currency meter, **1480 6945 6727 1026 3607** gas currency meter, **6727 3176 9343 0424 3423** time currency meter, **2253 6769 1266 9791 6288**	The meter interface shall indicate a TokenResult status of CreditOverflow.

Step	Instruction	Expected Result
7	Insert token **4922 2173 2805 9681 1422** Clear all credit token encoded using the $DUTK_1$.	The meter interface shall indicate a TokenResult status of Accept.
8	Insert the following 5000 unit currency token encoded using $DUTK_1$ electricity currency meter, **5130 5194 3778 0316 3697** water currency meter, **1480 6945 6727 1026 3607** gas currency meter, **6727 3176 9343 0424 3423** time currency meter, **2253 6769 1266 9791 6288**	The meter interface shall indicate a TokenResult status of Accept.
9	Insert the following 5000 unit currency token encoded using $DUTK_1$ electricity currency meter, **3223 8756 9687 2590 1659** water currency meter, **4305 9760 5793 6757 6368** gas currency meter, **6799 6526 2129 8978 1307** time currency meter, **5004 1772 8349 9236 0424**	The meter interface shall indicate a ValidationResult status of Old.
10	Insert the following 5000 unit currency token encoded using $DUTK_1$ electricity currency meter, **1351 5851 4221 5145 4417** water currency meter, **0085 1462 6523 5577 5237** gas currency meter, **1888 4972 3172 4068 5972** time currency meter, **4997 3200 4727 9401 2271**	If the manufacturer indicated In Annexure A that key expiry is supported, the meter interface shall indicate a ValidationResult status of KeyExpired. Otherwise, the meter interface shall indicate a TokenResult status of Accept.

Step	Instruction	Expected Result
11	Insert the following 5000 unit currency token encoded using $DUTK_2$ electricity currency meter, **7267 8594 5068 6668 9870** water currency meter, **4115 4307 5243 0785 6610** gas currency meter, **3361 4441 7587 8529 5824** time currency meter, **6527 4400 1026 2288 8633**	The meter interface shall indicate an AuthenticationResult status of NotAuthentic.
12	Insert the following 5000 unit currency token encoded using $DUTK_1$ electricity currency meter, **5130 5194 3778 0316 3697** water currency meter, **1480 6945 6727 1026 3607** gas currency meter, **6727 3176 9343 0424 3423** time currency meter, **2253 6769 1266 9791 6288**	The meter interface shall indicate a TokenResult status of Used.
13	Insert the following Test 0 token for 2-digit manufacturer code meters: **5649 3153 7254 5031 3471** Insert the following Test 0 token for 4-digit manufacturer code meters: **0230 5843 0050 5295 1967**	The meter interface shall indicate a TokenResult status of Accept.

4.1.9 CTSD04 – Numeric token carrier, TCT = 02 for Payment Meters supporting EA = 11

Overview: This test verifies general compliance with respect to the physical processing of the TokenCarrier via the TokenCarrierToMeterInterface. For this test, use UUT04.

Note: This test need only be done if the UUT supports EA=11. This test supports electricity, gas, water, time, and currency-based payment meters. Only do the tests for the supported payment meter type.

Step	Instruction	Expected Result
1	**Power up UUT04**	The meter interface shall, after a period of time, indicate that token insertion may commence.
2	Enter the first 6 digits of token **2291 6963 4448 2292 7939** First token of Set PM Key token set. $DITK_1$ to $DUTK_1$ key-change token. (KENHO = 5, KRN = 1, RO = 0, Res = 0, KT = 2) When the 6 digits have been entered, clear all the digits entered.	The meter interface shall, after a period of time, indicate that token insertion may commence.
3	Insert token **2291 6963 4448 2292 7939** When entering the token, backspace and retype every one of the first 19 digits.	The meter interface shall display each digit entered during token entry. On successful entry of the token, the meter interface shall indicate a TokenResult status of 1stKCT.
4	Insert token **6728 0242 0220 9073 6407** Second token of Set PM Key token set. DITK1 to DUTK1 key-change token. (SGCHO = 01E Hex)	The meter interface shall indicate a TokenResult status of 2ndKCT.
5	Insert token **4207 4630 2896 1422 7140** Third token of Set PM Key token set. $DITK_1$ to $DUTK_1$ key-change token. (SGCLO = 240 Hex)	The meter interface shall indicate a TokenResult status of 3rdKCT.
6	Insert token **3622 5115 1667 3089 6429** Fourth token of Set PM Key token set. $DITK_1$ to $DUTK_1$ key-change token. (KENLO = B, TI = 01)	The meter interface shall indicate a TokenResult status of 4thKCT.
7	Re-insert the token used in step 2 above.	The meter interface shall ignore the token or indicate a TokenResult of Reject.

Step	Instruction	Expected Result
8	Insert the following token encoded using $DUTK_1$ electricity payment meter, 5 kWh credit token **5359 9855 9689 8295 1626** water payment meter, 5 kl credit token **5672 4776 1736 3542 3229** gas payment meter, 5 m^3 credit token **5974 0555 8600 2700 6145** time payment meter, 5 min credit token **1641 3172 2570 5068 0008** electricity currency meter, 5000 units electricity currency token **2020 8614 8769 0099 0265** water currency meter, 5000 units water currency token **0477 6002 7693 5795 0185** gas currency meter, 5000 units gas currency token **1760 8338 3507 3757 0812** time currency meter, 5000 units time currency token **5012 4686 4302 9357 0867**	The meter interface shall indicate a TokenResult status of CreditOverflow.
9	Insert token **2095 7434 8919 1260 9652** Clear all credit token encoded using the $DUTK_1$.	The meter interface shall indicate a TokenResult status of Accept.

Step	Instruction	Expected Result
10	Insert the following token encoded using $DUTK_1$ electricity payment meter, 5 kWh credit token **5359 9855 9689 8295 1626** water payment meter, 5 kl credit token **5672 4776 1736 3542 3229** gas payment meter, 5 m^3 credit token **5974 0555 8600 2700 6145** time payment meter, 5 min credit token **1641 3172 2570 5068 0008** electricity currency meter, 5000 units electricity currency token **2020 8614 8769 0099 0265** water currency meter, 5000 units water currency token **0477 6002 7693 5795 0185** gas currency meter, 5000 units gas currency token **1760 8338 3507 3757 0812** time currency meter, 5000 units time currency token **5012 4686 4302 9357 0867**	The meter interface shall indicate a TokenResult status of Accept.

Step	Instruction	Expected Result
11	Insert the following token encoded using $DUTK_1$ electricity payment meter, 5 kWh credit token **6053 8586 7693 0150 8601** water payment meter, 5 kl credit token **5352 2196 6059 0246 2380** gas payment meter, 5 m^3 credit token **2379 0573 3410 7158 7689** time payment meter, 5 min credit token **3848 5175 9814 5884 2611** electricity currency meter, 5000 units electricity currency token **5354 6306 7655 5347 5621** water currency meter, 5000 units water currency token **5549 0510 7834 2034 2673** gas currency meter, 5000 units gas currency token **3884 3276 5554 2445 4467** time currency meter, 5000 units time currency token **2172 3126 2786 6457 3897**	The meter interface shall indicate a ValidationResult status of Old.

Step	Instruction	Expected Result
12	Insert the following token encoded using $DUTK_1$ electricity payment meter, 5 kWh credit token **7214 0026 4353 0326 8732** water payment meter, 5 kl credit token **4409 8224 8407 0660 0768** gas payment meter, 5 m^3 credit token **4707 3083 6806 7085 5412** time payment meter, 5 min credit token **5757 2561 7567 6481 1353** electricity currency meter, 5000 units electricity currency token **1485 1826 1841 3428 9087** water currency meter, 5000 units water currency token **7013 8580 7001 1892 1163** gas currency meter, 5000 units gas currency token **3265 7242 2483 7234 3235** time currency meter, 5000 units time currency token **6442 6084 5017 9351 8360**	If the manufacturer indicated in Annexure A that key expiry is supported, the meter interface shall indicate a ValidationResult status of KeyExpired. Otherwise, the meter interface shall indicate a TokenResult status of Accept.

Step	Instruction	Expected Result
13	Insert the following token encoded using DUTK2 electricity payment meter, 5 kWh credit token **4078 5483 0435 1589 0781** water payment meter, 5 kl credit token **2358 4224 2573 0509 3105** gas payment meter, 5 m^3 credit token **2110 0250 3436 8328 4884** time payment meter, 5 min credit token **3244 6408 5346 3447 7713** electricity currency meter, 5000 units electricity currency token **0793 9698 1949 6339 9987** water currency meter, 5000 units water currency token **4786 4527 3582 4006 9623** gas currency meter, 5000 units gas currency token **5835 7430 0821 8911 6630** time currency meter, 5000 units time currency token **5647 1829 3560 3567 4220**	The meter interface shall indicate an AuthenticationResult status of NotAuthentic.

Step	Instruction	Expected Result
14	Insert the following token encoded using $DUTK_1$ electricity payment meter, 5 kWh credit token **5359 9855 9689 8295 1626** water payment meter, 5 kl credit token **5672 4776 1736 3542 3229** gas payment meter, 5 m^3 credit token **5974 0555 8600 2700 6145** time payment meter, 5 min credit token **1641 3172 2570 5068 0008** electricity currency meter, 5000 units electricity currency token **2020 8614 8769 0099 0265** water currency meter, 5000 units water currency token **0477 6002 7693 5795 0185** gas currency meter, 5000 units gas currency token **1760 8338 3507 3757 0812** time currency meter, 5000 units time currency token **5012 4686 4302 9357 0867**	The meter interface shall indicate a TokenResult status of Used.
15	Insert the following Test 0 token for 2-digit manufacturer code meters: **5649 3153 7254 5031 3471** Insert the following Test 0 token for 4-digit manufacturer code meters: **0230 5843 0050 5295 1967**	The meter interface shall indicate a TokenResult status of Accept.

5 Annexure A – Compliance Verification Request

1.	Manufacturer:		
2.	Product Name/Model:		
3.	Product Firmware Version:		
4.	Contact Name:		
5.	Mobile Number: Phone Number: Faxcimile Number: Email Address:		
6.	Physical and/or Postal Address		
7.	Date:		
8	Indicate if the samples will be collected or destroyed after test	Collected	Destroyed

1.	Allocated Manufacturer Code:					
2.	Key Expiry Supported (Tick applicable)		NO			
3.	Supported TCT Types	TCT=01	TCT=02			
4.	Algorithm Supported	EA07	EA11			
5.	State which Utility is Supported if this is a unit based meter	Electricity		Water	Gas	Time
6.	State which Currency is Supported if this is a currency based meter	Electricity		Water	Gas	Time

6 Annexure B – Test overviews

Test No	Description	IEC62055-51 Applicable Clause	Other implementations tested
CTSD01 - CTSD04	Token carrier TCT = 01 and TCT = 02	7, 8	