

# Certification Report

**BSI-DSZ-CC-0822-V4-2023**

for

**SMARTY IQ-LTE, Version 1.2**

from

**Sagemcom Dr. Neuhaus GmbH**

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**BSI-DSZ-CC-0822-V4-2023 (\*)**

Smart Meter Gateway

**SMARTY IQ-LTE**, Version 1.2

Hardware Version: DNT8209/3.3/A or DNT8209/3.3/B

Software Version: 2.1.3015

Operating System Version: DNT8233-03

from Sagemcom Dr. Neuhaus GmbH

PP Conformance: Protection Profile for the Gateway of a Smart  
Metering System, Version 1.3, 31 March 2014, BSI-  
CC-PP-0073-2014

Functionality: PP conformant  
Common Criteria Part 2 extended

Assurance: Common Criteria Part 3 conformant  
EAL 4 augmented by AVA\_VAN.5 and ALC\_FLR.2



SOGIS  
Recognition Agreement  
for components up to  
EAL 4



The IT Product identified in this certificate has been evaluated at an approved evaluation facility using the Common Methodology for IT Security Evaluation (CEM), Version 3.1 extended by Scheme Interpretations and by advice of the Certification Body for components beyond EAL 5 as listed in the Certification Report for conformance to the Common Criteria for IT Security Evaluation (CC), Version 3.1. CC and CEM are also published as ISO/IEC 15408 and ISO/IEC 18045.

(\*) This certificate applies only to the specific version and release of the product in its evaluated configuration and in conjunction with the complete Certification Report and Notification. For details on the validity see Certification Report part A chapter 5.

The evaluation has been conducted in accordance with the provisions of the certification scheme of the German Federal Office for Information Security (BSI) and the conclusions of the evaluation facility in the evaluation technical report are consistent with the evidence adduced.

This certificate is not an endorsement of the IT Product by the Federal Office for Information Security or any other organisation that recognises or gives effect to this certificate, and no warranty of the IT Product by the Federal Office for Information Security or any other organisation that recognises or gives effect to this certificate, is either expressed or implied.

Bonn, 4 May 2023

For the Federal Office for Information Security

Sandro Amendola  
Head of Division

L.S.



Common Criteria  
Recognition Arrangement  
recognition for components  
up to EAL 2 and ALC\_FLR  
only



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## Contents

A. Certification.....	6
1. Preliminary Remarks.....	6
2. Specifications of the Certification Procedure.....	6
3. Recognition Agreements.....	7
4. Performance of Evaluation and Certification.....	8
5. Validity of the Certification Result.....	8
6. Publication.....	9
B. Certification Results.....	10
1. Executive Summary.....	11
2. Identification of the TOE.....	13
3. Security Policy.....	14
4. Assumptions and Clarification of Scope.....	15
5. Architectural Information.....	16
6. Documentation.....	16
7. IT Product Testing.....	16
8. Evaluated Configuration.....	18
9. Results of the Evaluation.....	18
10. Obligations and Notes for the Usage of the TOE.....	21
11. Security Target.....	21
12. Definitions.....	21
13. Bibliography.....	23
C. Excerpts from the Criteria.....	26
D. Annexes.....	27

## A. Certification

### 1. Preliminary Remarks

Under the BSIG<sup>1</sup> Act, the Federal Office for Information Security (BSI) has the task of issuing certificates for information technology products.

Certification of a product is carried out on the instigation of the vendor or a distributor, hereinafter called the sponsor.

A part of the procedure is the technical examination (evaluation) of the product according to the security criteria published by the BSI or generally recognised security criteria.

The evaluation is normally carried out by an evaluation facility recognised by the BSI or by BSI itself.

The result of the certification procedure is the present Certification Report. This report contains among others the certificate (summarised assessment) and the detailed Certification Results.

The Certification Results contain the technical description of the security functionality of the certified product, the details of the evaluation (strength and weaknesses) and instructions for the user.

### 2. Specifications of the Certification Procedure

The certification body conducts the procedure according to the criteria laid down in the following:

- Act on the Federal Office for Information Security<sup>1</sup>
- BSI Certification and Approval Ordinance<sup>2</sup>
- BMI Regulations on Ex-parte Costs<sup>3</sup>
- Special decrees issued by the Bundesministerium des Innern und für Heimat (Federal Ministry of the Interior and Community)
- DIN EN ISO/IEC 17065 standard
- BSI certification: Scheme documentation describing the certification process (CC-Produkte) [3]
- BSI certification: Scheme documentation on requirements for the Evaluation Facility, its approval and licencing process (CC-Stellen) [3]
- Common Criteria for IT Security Evaluation (CC), Version 3.1<sup>4</sup> [1] also published as ISO/IEC 15408
- Common Methodology for IT Security Evaluation (CEM), Version 3.1 [2] also published as ISO/IEC 18045
- BSI certification: Application Notes and Interpretation of the Scheme (AIS) [4]

<sup>1</sup> Act on the Federal Office for Information Security (BSI-Gesetz - BSIG) of 14 August 2009, Bundesgesetzblatt I p. 2821

<sup>2</sup> Ordinance on the Procedure for Issuance of Security Certificates and approval by the Federal Office for Information Security (BSI-Zertifizierungs- und -Anerkennungsverordnung - BSIZertV) of 17 December 2014, Bundesgesetzblatt 2014, part I, no. 61, p. 2231

<sup>3</sup> BMI Regulations on Ex-parte Costs - Besondere Gebührenverordnung des BMI für individuell zurechenbare öffentliche Leistungen in dessen Zuständigkeitsbereich (BMIBGebV), Abschnitt 7 (BSI-Gesetz) - dated 2 September 2019, Bundesgesetzblatt I p. 1365

<sup>4</sup> Proclamation of the Bundesministerium des Innern und für Heimat of 12 February 2007 in the Bundesanzeiger dated 23 February 2007, p. 3730

### 3. Recognition Agreements

In order to avoid multiple certification of the same product in different countries a mutual recognition of IT security certificates - as far as such certificates are based on ITSEC or CC - under certain conditions was agreed.

#### 3.1. European Recognition of CC – Certificates (SOGIS-MRA)

The SOGIS-Mutual Recognition Agreement (SOGIS-MRA) Version 3 became effective in April 2010. It defines the recognition of certificates for IT-Products at a basic recognition level and, in addition, at higher recognition levels for IT-Products related to certain SOGIS Technical Domains only.

The basic recognition level includes Common Criteria (CC) Evaluation Assurance Levels EAL 1 to EAL 4. For "Smartcards and similar devices" a SOGIS Technical Domain is in place. For "HW Devices with Security Boxes" a SOGIS Technical Domains is in place, too. In addition, certificates issued for Protection Profiles based on Common Criteria are part of the recognition agreement.

The current list of signatory nations and approved certification schemes, details on recognition, and the history of the agreement can be seen on the website at <https://www.sogis.eu>.

The SOGIS-MRA logo printed on the certificate indicates that it is recognised under the terms of this agreement by the related bodies of the signatory nations. A disclaimer beneath the logo indicates the specific scope of recognition.

This certificate is recognized according to the rules of SOGIS-MRA, i.e. up to and including CC part 3 EAL 4 components. The evaluation contained the component AVA\_VAN.5 that is not mutually recognised in accordance with the provisions of the SOGIS MRA. For mutual recognition the EAL 4 component of this assurance family is relevant.

#### 3.2. International Recognition of CC – Certificates (CCRA)

The international arrangement on the mutual recognition of certificates based on the CC (Common Criteria Recognition Arrangement, CCRA-2014) has been ratified on 08 September 2014. It covers CC certificates based on collaborative Protection Profiles (cPP) (exact use), CC certificates based on assurance components up to and including EAL 2 or the assurance family Flaw Remediation (ALC\_FLR) and CC certificates for Protection Profiles and for collaborative Protection Profiles (cPP).

The current list of signatory nations and approved certification schemes can be seen on the website: <https://www.commoncriteriaportal.org>.

The Common Criteria Recognition Arrangement logo printed on the certificate indicates that this certification is recognised under the terms of this agreement by the related bodies of the signatory nations. A disclaimer beneath the logo indicates the specific scope of recognition.

This certificate is recognized according to the rules of CCRA-2014, i. e. up to and including CC part 3 EAL 2 and ALC\_FLR components.

## 4. Performance of Evaluation and Certification

The certification body monitors each individual evaluation to ensure a uniform procedure, a uniform interpretation of the criteria and uniform ratings.

The product SMARTY IQ-LTE, Version 1.2 has undergone the certification procedure at BSI. This is a re-certification based on BSI-DSZ-CC-0822-V3-2021. Specific results from the evaluation process BSI-DSZ-CC-0822-V3-2021 were re-used.

The evaluation of the product SMARTY IQ-LTE, Version 1.2 was conducted by TÜV Informationstechnik GmbH. The evaluation was completed on 4 April 2023. TÜV Informationstechnik GmbH is an evaluation facility (ITSEF)<sup>5</sup> recognised by the certification body of BSI.

For this certification procedure the sponsor and applicant is:  
Sagemcom Dr. Neuhaus GmbH.

The product was developed by: Sagemcom Dr. Neuhaus GmbH.

The certification is concluded with the comparability check and the production of this Certification Report. This work was completed by the BSI.

## 5. Validity of the Certification Result

This Certification Report applies only to the version of the product as indicated. The confirmed assurance package is valid on the condition that

- all stipulations regarding generation, configuration and operation, as given in the following report, are observed,
- the product is operated in the environment described, as specified in the following report and in the Security Target.

For the meaning of the assurance components and assurance levels please refer to CC itself. Detailed references are listed in part C of this report.

The Certificate issued confirms the assurance of the product claimed in the Security Target at the date of certification. As attack methods evolve over time, the resistance of the certified version of the product against new attack methods needs to be re-assessed. Therefore, the sponsor should apply for the certified product being monitored within the assurance continuity program of the BSI Certification Scheme (e.g. by a re-assessment or re-certification). Specifically, if results of the certification are used in subsequent evaluation and certification procedures, in a system integration process or if a user's risk management needs regularly updated results, it is recommended to perform a re-assessment on a regular e.g. annual basis.

In order to avoid an indefinite usage of the certificate when evolved attack methods would require a re-assessment of the products resistance to state of the art attack methods, the maximum validity of the certificate has been limited. Considering the specific legal circumstances this certificate will have a validity of 8 years combined with a regular mandatory re-assessment after every 2 years. The certificate issued on 4 May 2023 is valid until 3 May 2031. Validity can be re-newed by re-certification.

<sup>5</sup> Information Technology Security Evaluation Facility



The owner of the certificate is obliged:

1. when advertising the certificate or the fact of the product's certification, to refer to the Certification Report as well as to provide the Certification Report, the Security Target and user guidance documentation mentioned herein to any customer of the product for the application and usage of the certified product,
2. to inform the Certification Body at BSI immediately about vulnerabilities of the product that have been identified by the developer or any third party after issuance of the certificate,
3. to inform the Certification Body at BSI immediately in the case that security relevant changes in the evaluated life cycle, e.g. related to development and production sites or processes, occur, or the confidentiality of documentation and information related to the Target of Evaluation (TOE) or resulting from the evaluation and certification procedure where the certification of the product has assumed this confidentiality being maintained, is not given any longer. In particular, prior to the dissemination of confidential documentation and information related to the TOE or resulting from the evaluation and certification procedure that do not belong to the deliverables according to the Certification Report part B, or for those where no dissemination rules have been agreed on, to third parties, the Certification Body at BSI has to be informed,
4. to monitor the resistance of the certified product against new attack methods and to provide a qualified positive confirmation by applying for a re-certification or re-assessment process on a regular basis every two years starting from the issuance of the certificate.

In case of changes to the certified version of the product, the validity can be extended to the new versions and releases, provided the sponsor applies for assurance continuity (i.e. re-certification or maintenance) of the modified product, in accordance with the procedural requirements, and the evaluation does not reveal any security deficiencies.

## 6. Publication

The product SMARTY IQ-LTE, Version 1.2 has been included in the BSI list of certified products, which is published regularly (see also Internet: <https://www.bsi.bund.de> and [5]). Further information can be obtained from BSI-Infoline +49 228 9582-111.

Further copies of this Certification Report can be requested from the developer<sup>6</sup> of the product. The Certification Report may also be obtained in electronic form at the internet address stated above.

<sup>6</sup> Sagemcom Dr. Neuhaus GmbH  
Papenreye 65  
22453 Hamburg  
Deutschland

## **B. Certification Results**

The following results represent a summary of

- the Security Target of the sponsor for the Target of Evaluation,
- the relevant evaluation results from the evaluation facility, and
- complementary notes and stipulations of the certification body.

## 1. Executive Summary

The Target of Evaluation (TOE), the SMARTY IQ-LTE, Version 1.2, is an electronic unit comprising hardware, software and firmware. It serves as a Gateway in a complex Smart Metering Infrastructure, which is used for collection, storage and provision of meter data from one or more meters of one or multiple commodities to potentially multiple external entities. A complete system for smart metering comprises different functional units, whereby only the functionality of the Smart Meter Gateway is in the focus of the evaluated TOE.

The hardware device also contains a certified security module (product name "TCOS Smart Meter Security Module Version 1.0 Release 2/P60C144PVE", BSI-DSZ-CC-0957-V2-2016), which is not part of the TOE, but used by the TOE for specific cryptographic services.

The Security Target [6] is the basis for this certification. It is based on the certified Protection Profile for the Gateway of a Smart Metering System, Version 1.3, 31 March 2014, BSI-CC-PP-0073-2014 [8].

The TOE Security Assurance Requirements (SAR) are based entirely on the assurance components defined in Part 3 of the Common Criteria (see part C or [1], Part 3 for details). The TOE meets the assurance requirements of the Evaluation Assurance Level EAL 4 augmented by AVA\_VAN.5 and ALC\_FLR.2.

The TOE Security Functional Requirements (SFR) relevant for the TOE are outlined in the Security Target [6], chapter 6. They are selected from Common Criteria Part 2 and some of them are newly defined. Thus the TOE is CC Part 2 extended.

The TOE Security Functional Requirements are implemented by the following TOE Security Functionality:

TOE Security Functionality	Addressed issue
SF.CR Cryptographic Support	The TOE implements the cryptographic functionality as required by [17, TR-3109]. As defined by [8] this functionality covers the symmetric parts of the required cryptographic primitives. The TOE utilizes the services of the security module for all asymmetric cryptographic primitives. The TOE encrypts all TSF and user data if they are not in use. The TOE will use the Security Module to generate all necessary random numbers.
SF.IA Identification Authentication	and The TOE authenticates every user and external entity before allowing any other action on behalf of that user. User identities have the following security attributes: identity, status of identity, connecting network, role membership, blocking flag, login and logout time. The Gateway Administrator can configure consumers with a username/password combination based identification/authentication or with a certificate based identification/authentication. The Gateway Administrator can configure Service Technicians only with a certificate based identification/ authentication. The identification/authentication of the Gateway Administrator is implemented as certification-based, bidirectional mechanism according [17, TR-03109].
SF.PR Privacy	The TOE provides mechanisms for communication concealing and pseudonymity. The communication to external Entities is performed over packet oriented networks. To conceal the communication the packet size is mutable, also the transmitted content is padded to random size.

TOE Security Functionality	Addressed issue
	When the TOE submits information about the consumption or production of a certain commodity that is not relevant for the billing process nor for a secure operation of the Grid, there is no need that this information is sent with a direct link to the identity of the consumer. In this case the submitted data contains no link to the consumer ID, but a special pseudonymous identifier determined by the Gateway Administrator.
SF.AU Security Audit	The TOE implements three different audit logs: a) System Log, b) Consumer Log, and c) Calibration Log. All audit messages/entries contain information about the accountable user or event and they further contain the following information: domain (log name), date, time, event type, level, subject identity, operation result, causing component, description. Furthermore, the consumer log contains all entries that are required for a billing verification, the system log includes all system relevant events and the calibration log persists of all information that is relevant for calibration purposes.
SF.SM Security Management	The TOE only provides authorized users with security management functions. Hereby, all authorized users have the capability to trigger self-tests. Additionally, the consumer may also display the current version number of the TOE and the current time. Concerning management functionalities, the Service Technician may only change the parameters for the network access for WAN during the installation process and the Gateway Administrator may configure all aspects of the SMGW, which is exclusively possible via IF_GW_WAN. For documentation, see the corresponding HGP protocol [13].
SF.SP Self-Protection	The TOE implements functionality for self-protection, for instance preserving a secure state in case of failures (for example integrity errors). If the system time is not valid, all recorded measurement data will be marked for the EMT.
SF.UD User Data Protection	The TOE provides functionality to logically remove unused information by zeroization. All objects within the used databases are integrity protected. Furthermore, access control and firewall policies protect the corresponding data.

Table 1: TOE Security Functionalities

For more details please refer to the Security Target [6], chapter 7.

The assets to be protected by the TOE are defined in the Security Target [6], chapter 3.2. Based on these assets the TOE Security Problem is defined in terms of Assumptions, Threats and Organisational Security Policies. This is outlined in the Security Target [6], chapters 3.3 to 3.5.

This certification covers the configurations of the TOE as outlined in chapter 8.

The vulnerability assessment results as stated within this certificate do not include a rating for those cryptographic algorithms and their implementation suitable for encryption and decryption (see BSIG Section 9, Para. 4, Clause 2).

The certification results only apply to the version of the product indicated in the certificate and on the condition that all the stipulations are kept as detailed in this Certification Report. This certificate is not an endorsement of the IT product by the Federal Office for Information Security (BSI) or any other organisation that recognises or gives effect to this certificate, and no warranty of the IT product by BSI or any other organisation that recognises or gives effect to this certificate, is either expressed or implied.

## 2. Identification of the TOE

The Target of Evaluation (TOE) is called:

### SMARTY IQ-LTE, Version 1.2

The following table outlines the TOE deliverables:

No	Type	Identifier	Release	Form of Delivery
1	HW	SMARTY IQ-LTE Version 1.2	DNT8209/3.3/A or DNT8209/3.3/B	Secure delivery process as described below this table
2	SW	Operating System	DNT8233-03	Pre-Installed on the HW
3	SW	SMGW Application	2.1.3015	Pre-Installed on the HW
4	DOC	Anleitung zur IT-Sicherheit / Guidance Document – Anleitung zum Betrieb, [10]	1.107	Download from https secured website Hash SHA256: 6200a4ccd91ec718836aa7 4ae3db5976e0087d5d0ee 7b4ed71d6b66d29ae69f6
5	DOC	Anleitung zur IT-Sicherheit / Guidance Document – Vorbereitende Maßnahmen, [11]	1.106	Download from https secured website Hash SHA256: 3fa5686993e5202c1601b5 e414b023dd241e649512ff bdc39f64d828bcd06570
6	DOC	Sichere Lieferkette, [12]	1.100	Download from https secured website Hash SHA256: 0abde18fd000bc8fd2e873 565459cca8793094e4176 ecaebf29f8513016296f3
7	DOC	Anlage zum AGD: - Http Gateway Protocol 2.5, [13]	2.5.013	Download from https secured website Hash SHA256: c54b476dd89384081e672 acd4952047040a3d03057 7175900496590fec808267
8	DOC	Anlage zum AGD: Übersicht der Audit Records, [14]	1.108	Download from https secured website Hash SHA256: a368e901f418bcc5ef0c04f d586c11a874a40e279c079 d0bdfe50a9490d0b32f
9	DOC	Anlage zum AGD: Übersicht der versendeten Events, [15]	1.108	Download from https secured website Hash SHA256: cc3e1e35df6858da5d47d2 9723de925b7c28b897a4e 56e82b4e70c55d018aa4f

Table 2: Deliverables of the TOE

The TOE itself consists of the hardware, firmware and software parts of the Smart Meter Gateway accompanied by the different guidance documents. For the physical parts (hardware parts) two different delivery ways exist. In the first scenario, SMGWs are delivered within a special and secure transport box (pylocx Box) by a standard transportation service. The secure transport box can only be opened by authorized individuals by using a special key pad and a valid and individual one time PIN. Due to the mandatory instructions of the developer it is not allowed to remove SMGWs from the secure transport box outside a secure storage room (e.g. at the premise of the energy company) or at the place of installation at the consumers premise where it is installed by a service technician. In the second scenario, SMGWs can be delivered without such secure boxes but the general requirements for the transport are increased. For example the freight hold needs to be sealed and the transport needs to be supervised by two drivers. Furthermore, the transport time is limited to 36 hours and overnight breaks are not allowed. If the SMGWs shall be stored without secure transport box, the store has to be certified against Common Criteria. All places, where SMGWs will be stored during the delivery, need to provide a basic protection against possible attackers (e.g. concrete walls, doors need to be locked, and a physical inventory needs to be performed). Thereby it is ensured that no manipulation of the SMGWs can take place on the complete track of delivery (starting with the manufacturer, through the different stages of storages to the final place of installation).

The hardware version of the TOE can be identified by the laser engraving showing the hardware information as described in the following example "DNT8233-03".

In the table above the "A" stands for a housing with raised interface designations and "B" stands for a housing with seal nests and lasered interface designations.

The firmware and software are pre-installed on the hardware and therefore part of the physical delivery. All users can uniquely identify their version by connecting to the TOE and using the commands described in the relevant guidance document.

The guidance documents can be downloaded by a https secured website (standard delivery). After they are downloaded they can be uniquely identified by checking the hash sum which is also included in the Security Target and the Certification Report (which both will be published on the website of the BSI).

### **3. Security Policy**

The Security Policy is expressed by the set of Security Functional Requirements and implemented by the TOE. It covers the following issues:

Security audit, communication, cryptographic support, user data protection, identification and authentication, security management, privacy, protection of the TSF and trusted path/channels.

Specific details concerning the above mentioned security policies can be found in the Security Target [6], chapter 7.

## 4. Assumptions and Clarification of Scope

The Assumptions defined in the Security Target and some aspects of Threats and Organisational Security Policies are not covered by the TOE itself. These aspects lead to specific security objectives to be fulfilled by the TOE-Environment. The following topics are of relevance:

- OE.ExternalPrivacy: Authorised and authenticated external entities receiving any kind of private or billing-relevant data shall be trustworthy and shall not perform unauthorised analyses of these data with respect to the corresponding consumer(s).
- OE.TrustedAdmins: The Gateway Administrator and the Service Technician shall be trustworthy and well-trained.
- OE.PhysicalProtection: The TOE shall be installed in a non-public environment within the premises of the consumer that provides a basic level of physical protection. This protection shall cover the TOE, the Meters that the TOE communicates with and the communication channel between the TOE and its Security Module. Only authorised individuals may physically access the TOE.
- OE.Profile: The Processing Profiles that are used when handling data shall be obtained from a trustworthy and reliable source only.
- OE.SM: The environment shall provide the services of a certified Security Module for verification of digital signatures, generation of digital signatures, key agreement, key transport, key storage and Random Number Generation. The Security Module used shall be certified according to Common Criteria Protection Profile for a Security Module for Smart Metering Systems (BSI-CC-PP-0077-V2-2015), Version 1.03, 11.12.2014, Bundesamt für Sicherheit in der Informationstechnik [16] and shall be used in accordance with its relevant guidance documentation.
- OE.Update: The firmware updates for the Gateway that can be provided by an authorised external entity shall undergo a certification process according to the SMGW Protection Profile [8] before they are issued to show that the update is implemented correctly. The external entity that is authorised to provide the update shall be trustworthy and ensure that no malware is introduced via a firmware update.
- OE.Network: It shall be ensured that
  - a WAN network connection with a sufficient reliability and bandwidth for the individual situation is available,
  - one or more trustworthy sources for an update of the system time are available in the WAN,
  - the Gateway is the only communication gateway for Meters in the LMN,
  - if devices in the HAN have a separate connection to parties in the WAN (beside the Gateway) this connection is appropriately protected.
- OE.Keygen: It shall be ensured that the ECC key pair for a Meter (TLS) is generated securely. It shall also be ensured that the keys are brought into the Gateway in a secure way by the Gateway Administrator.

Details can be found in the Security Target [6], chapter 4.2.

## 5. Architectural Information

The TOE is decomposed into the following subsystems:

- cryptmgr: Contains all functionalities to realize the cryptographic security functionalities together with the non-TOE Security Module.
- dataproc: Persists all configuration profiles and other settings in an encrypted database.
- hanmgr: Contains all functionalities to set up encrypted connections in the LAN.
- hardware: Includes the SMGW hardware: circuit boards, active and passive components including enclosures.
- lmn485: Contains all functionalities to use the LMN network.
- lmnmgr: Contains all functionalities to capture and process metrics.
- lmnwmbus: Contains all functionalities to use the wireless LMN network.
- logctrl: Accepts the audit records generated in the other subsystem and stores them accordingly in System, Calibration log and Consumer log required by TR.
- middleware: Contains general functionalities that are provided to other subsystems.
- miscmgr: Miscmgr is a summary of necessary functionalities, which are not related to the meter data acquisition.
- netmgr: Contains all functionalities to manage the physical network interfaces in the LAN and WAN.
- OS: Provides the basis for running applications. It manages the system resources of main memory, non-volatile memory and connected interface blocks.
- wanmgr: Contains all functionalities to set up and manage encrypted connections to the Gateway Administrator and the External Market Participant.

## 6. Documentation

The evaluated documentation as outlined in table 2 is being provided with the product to the customer. This documentation contains the required information for secure usage of the TOE in accordance with the Security Target.

Additional obligations and notes for secure usage of the TOE as outlined in chapter 10 of this report have to be followed.

## 7. IT Product Testing

### 7.1. Test configuration

The TOE in the evaluated configuration has been tested (see also chapter 8).

Only where necessary in order to enable detailed testing, slightly modified TOE configurations (e.g. a TOE with SSH capabilities) were used, demonstrably without influencing the tested security functionality.



## 7.2. Functional Developer testing

The developer's testing approach was to systematically test all the TSFI next to a deeper consideration of all TOE subsystems, internal interactions and concrete SFR tests.

The main testing tool is a proprietary test tool (WANSIM) developed and provided by the developer. With it, all tests can be executed.

The developer's testing effort has been proven sufficient to demonstrate that the security functionality and TSFI perform as specified.

## 7.3. Independent and penetration testing

The evaluation body used the same TOE variants, test configurations and test environment as the developer during functional testing. Additionally, the evaluation body used an independent test system (Exceeding Solutions) to perform the independent tests of the ITSEF and used additional modification of the TOE for testing of the case seal.

All TSFI have been tested by the evaluation body.

The evaluation body chose to repeat a defined subset of the developer tests with the intent to cover the existing interfaces and the implemented security functionality.

Independent and penetration tests of the evaluation body are mainly performed on stand-alone test equipment, containing approx. 3000 automated test cases in about 150 test suites developed by TÜVIT, partitioned according to the security functions established in [6], chapter 7. Using this environment, every necessary role (Gateway Administrator, Service Technician, Consumer) with corresponding rights and meters might be emulated at the appropriate interface. In particular, for testing IF\_GW\_MTR, it contains a "meter simulator", which allows to emulate and connect multiple meters, controlling their behaviour (e.g. for inducing errors). Using a dedicated crypto proxy, it is further possible to extract the nested CMS data, supported by the enhanced Wireshark, which was enriched by the implementation of various dissectors.

The overall test result is that no security-relevant deviations were found between the expected and the actual test results.

The evaluation body conducted penetration testing based on functional areas of concern derived from SFRs and architectural mechanisms. These areas were prioritized with regard to various factors, e.g. attack surface, estimated flaw likelihood, developer testing coverage, detectability of flaws during developer testing.

Medium and high areas were guaranteed to be penetration tested, with a stronger emphasis on high priorities. Low priorities were also considered during penetration, but could be less emphasized if developer tests were found to be sufficient.

The penetration testing activities were performed as tests and as analytical tasks. Whenever an analysis was estimated to yield better results, the evaluators chose the analytical approach. Analytical activities were especially applied in the areas secure boot, self-protection, domain separation, kernel and system hardening as well as non-bypassability. Combined approaches were also applied.

The overall test result is that no deviations were found between the expected and the actual test results. No attack scenario with the attack potential High was actually successful in the TOE's operational environment.

## 8. Evaluated Configuration

This certification covers the following configuration of the TOE:

SMARTY IQ-LTE, Version 1.2

Hardware Version: DNT8209/3.3/A or DNT8209/3.3/B

Software Version: 2.1.3015

Operating System Version: DNT8233-03

## 9. Results of the Evaluation

### 9.1. CC specific results

The Evaluation Technical Report (ETR) [7] was provided by the ITSEF according to the Common Criteria [1], the Methodology [2], the requirements of the Scheme [3] and all interpretations and guidelines of the Scheme (AIS) [4] as relevant for the TOE.

The Evaluation Methodology CEM [2] was used for those components up to EAL 5 extended by advice of the Certification Body for components beyond EAL 5 [4] (AIS 34) and guidance specific for the technology of the product [4] (AIS 46, 48).

As a result of the evaluation the verdict PASS is confirmed for the following assurance components:

- All components of the EAL 4 package including the class ASE as defined in the CC (see also part C of this report)
- The components AVA\_VAN.5 and ALC\_FLR.2 augmented for this TOE evaluation.

As the evaluation work performed for this certification procedure was carried out as a re-evaluation based on the certificate BSI-DSZ-CC-0822-V3-2021, re-use of specific evaluation tasks was possible. The focus of this re-evaluation was on the update of the operating system and some libraries, the implementation of changed and added tariff use cases (TAF 2, TAF 9, TAF 10, TAF 14), the support of IPv6, the support of firmware download and the fixing of different bugs.

The evaluation has confirmed:

- PP Conformance: Protection Profile for the Gateway of a Smart Metering System, Version 1.3, 31 March 2014, BSI-CC-PP-0073-2014 [8]
- for the Functionality: PP conformant  
Common Criteria Part 2 extended
- for the Assurance: Common Criteria Part 3 conformant  
EAL 4 augmented by AVA\_VAN.5 and ALC\_FLR.2

The results of the evaluation are only applicable to the TOE as defined in chapter 2 and the configuration as outlined in chapter 8 above.

## 9.2. Results of cryptographic assessment

The following table gives an overview of the cryptographic functionalities inside the TOE to enforce the security policy and outlines the standard of application where its specific appropriateness is stated.

Purpose	Cryptographic Mechanism	Standard of Implementation [17]	Key Size in Bits	Standard of Application [17]	Validity Period
Basic support of integrity, authenticity	SHA-256, SHA-384	[FIPS180-4]	Hash length = 256, 384	TR-03109	2029+
Encryption / decryption, integrity of TSFI	AES-GCM	[FIPS-197] [SP800-38D]	256	TR-03116	2029+
Key generation for CMS containers	ECKA-EG	[RFC5652] [RFC5639] [RFC6161] [X9.62] [FIPS 186-4]	128, 192 and 256	TR-03111	2029+
Encryption / decryption /integrity of CMS container	AES-CBC-CMAC	[RFC5652] [RFC6033] [FIPS-197] [RFC4493] [SP800-38A]	128, 192 and 256	TR-03109	2029+
Encryption / decryption / integrity of CMS container	AES-GCM	[RFC5652] [RFC5084] [FIPS-197] [SP800-38D]	128, 192 and 256	TR-03109	2029+
Key generation for meter data	AES-CMAC	[RFC4493] [FIPS-197]	128, 256	TR-03109	2029+
Encryption/ decryption, integrity of meter data	AES-CBC	[RFC4493] [FIPS-197] [SP800-38A]	128	TR-03109	2029+
TLS key establishment	TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256, TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384, TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256, TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384	[RFC5246] [RFC8422] [RFC5639] [FIPS-180-4] [FIPS-186-4] [RFC 2104]	256, 384	TR-03109	2029+
TLS peer authentication	TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256, TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384, TLS_ECDHE_ECDSA_WITH	[RFC5246] [RFC6090] [RFC5639] [FIPS-186-4]	256, 384	TR-03109	2029+

Purpose	Cryptographic Mechanism	Standard of Implementation [17]	Key Size in Bits	Standard of Application [17]	Validity Period
	_AES_128_GCM_SHA256, _TLS_ECDHE_ECDSA_WITH _AES_256_GCM_SHA384	[FIPS-197]			
TLS record layer encryption	TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256, _TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384, _TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256, _TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384	[RFC5246] [FIPS-197] [SP800-38A]	AES-CBC: 128, 256	TR-03109	2029+
TLS record layer encryption and integrity	TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256, _TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384, _TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256, _TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384	[RFC5246] [FIPS-197] [RFC5288] [SP800-38D]	AES-GCM: 128, 256	TR-03109	2029+
TLS record integrity	TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256, _TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384, _TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256, _TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384	[RFC5246] [FIPS180-4] [RFC2104] [RFC5289]	HMAC-SHA: 256, 384	TR-03109	2029+
Integrity of configuration data	CMAC	[SP-800-38B] [RFC4493]	128	TR-02102-2	2029+
Integrity of firmware updates	ECDSA	[X9.62] [RFC6090] [RFC5639]	256	TR-02102-2	2029+
Integrity of TSFI	ECDSA	[X9.62] [RFC6090] [RFC5639]	256	TR-02102-2	2029+

Table 3: TOE cryptographic functionality

The strength of these cryptographic algorithms was not rated in the course of this certification procedure (see BSIG Section 9, Para. 4, Clause 2).

## 10. Obligations and Notes for the Usage of the TOE

The documents as outlined in table 2 contain necessary information about the usage of the TOE and all security hints therein have to be considered. In addition all aspects of Assumptions, Threats and OSPs as outlined in the Security Target not covered by the TOE itself need to be fulfilled by the operational environment of the TOE.

The customer or user of the product shall consider the results of the certification within his system risk management process. In order for the evolution of attack methods and techniques to be covered, he should define the period of time until a re-assessment of the TOE is required and thus requested from the sponsor of the certificate.

The limited validity for the usage of cryptographic algorithms as outlined in chapter 9 has to be considered by the user and his system risk management process, too.

If available, certified updates of the TOE should be used. If non-certified updates or patches are available the user of the TOE should request the sponsor to provide a re-certification. In the meantime a risk management process of the system using the TOE should investigate and decide on the usage of not yet certified updates and patches or take additional measures in order to maintain system security.

## 11. Security Target

For the purpose of publishing, the Security Target [6] of the Target of Evaluation (TOE) is provided within a separate document as Annex A of this report.

## 12. Definitions

### 12.1. Acronyms

<b>AIS</b>	Application Notes and Interpretations of the Scheme
<b>BSI</b>	Bundesamt für Sicherheit in der Informationstechnik / Federal Office for Information Security, Bonn, Germany
<b>BSIG</b>	BSI-Gesetz / Act on the Federal Office for Information Security
<b>CCRA</b>	Common Criteria Recognition Arrangement
<b>CC</b>	Common Criteria for IT Security Evaluation
<b>CEM</b>	Common Methodology for Information Technology Security Evaluation
<b>CLS</b>	Controllable Local System
<b>CMS</b>	Cryptographic Message Syntax
<b>cPP</b>	Collaborative Protection Profile
<b>EAL</b>	Evaluation Assurance Level
<b>ECC</b>	Elliptic Curve Cryptography
<b>ETR</b>	Evaluation Technical Report
<b>FLR</b>	Flaw Remediation
<b>GWA</b>	Gateway Administrator

<b>HAN</b>	Home Area Network
<b>HGP</b>	HTTP Gateway Protocol
<b>HTTP</b>	Hypertext Transfer Protocol
<b>HW</b>	Hardware
<b>IP</b>	Internet Protocol
<b>IT</b>	Information Technology
<b>ITSEF</b>	Information Technology Security Evaluation Facility
<b>LAN</b>	Local Area Network
<b>LMN</b>	Local Metrological Network
<b>LTE</b>	Long Term Evolution – Mobile Radio Communication Standard
<b>OSP</b>	Organisational Security Policy
<b>PP</b>	Protection Profile
<b>SAR</b>	Security Assurance Requirement
<b>SFP</b>	Security Function Policy
<b>SFR</b>	Security Functional Requirement
<b>SMGW</b>	Smartmeter Gateway
<b>ST</b>	Security Target
<b>TLS</b>	Transport Layer Security protocol
<b>TOE</b>	Target of Evaluation
<b>TSF</b>	TOE Security Functionality
<b>WAN</b>	Wide Area Network

## 12.2. Glossary

**Augmentation** - The addition of one or more requirement(s) to a package.

**Collaborative Protection Profile** - A Protection Profile collaboratively developed by an International Technical Community endorsed by the Management Committee.

**Extension** - The addition to an ST or PP of functional requirements not contained in CC part 2 and/or assurance requirements not contained in CC part 3.

**Formal** - Expressed in a restricted syntax language with defined semantics based on well-established mathematical concepts.

**Informal** - Expressed in natural language.

**Object** - A passive entity in the TOE, that contains or receives information, and upon which subjects perform operations.

**Package** - named set of either security functional or security assurance requirements

**Protection Profile** - A formal document defined in CC, expressing an implementation independent set of security requirements for a category of IT Products that meet specific consumer needs.

**Security Target** - An implementation-dependent statement of security needs for a specific identified TOE.

**Semiformal** - Expressed in a restricted syntax language with defined semantics.

**Subject** - An active entity in the TOE that performs operations on objects.

**Target of Evaluation** - An IT Product and its associated administrator and user guidance documentation that is the subject of an Evaluation.

**TOE Security Functionality** - Combined functionality of all hardware, software, and firmware of a TOE that must be relied upon for the correct enforcement of the SFRs.

### 13. Bibliography

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<sup>7</sup>specifically

- AIS 32, Version 7, CC-Interpretationen im deutschen Zertifizierungsschema
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- AIS 38, Version 2, Reuse of evaluation results
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## C. Excerpts from the Criteria

For the meaning of the assurance components and levels the following references to the Common Criteria can be followed:

- On conformance claim definitions and descriptions refer to CC part 1 chapter 10.5
- On the concept of assurance classes, families and components refer to CC Part 3 chapter 7.1
- On the concept and definition of pre-defined assurance packages (EAL) refer to CC Part 3 chapters 7.2 and 8
- On the assurance class ASE for Security Target evaluation refer to CC Part 3 chapter 12
- On the detailed definitions of the assurance components for the TOE evaluation refer to CC Part 3 chapters 13 to 17
- The table in CC part 3 , Annex E summarizes the relationship between the evaluation assurance levels (EAL) and the assurance classes, families and components.

The CC are published at <https://www.commoncriteriaportal.org/cc/>

## **D. Annexes**

### **List of annexes of this certification report**

Annex A: Security Target provided within a separate document.

Note: End of report