Certification Report

Huawei iMaster MAE-CN version V100R021C10

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Foreword

The Netherlands Scheme for Certification in the Area of IT Security (NSCIB) provides a third-party evaluation and certification service for determining the trustworthiness of Information Technology (IT) security products. Under this NSCIB, TÜV Rheinland Nederland B.V. has the task of issuing certificates for IT security products, as well as for protection profiles and sites.

Part of the procedure is the technical examination (evaluation) of the product, protection profile or site according to the Common Criteria assessment guidelines published by the NSCIB. Evaluations are performed by an IT Security Evaluation Facility (ITSEF) under the oversight of the NSCIB Certification Body, which is operated by TÜV Rheinland Nederland B.V. in cooperation with the Ministry of the Interior and Kingdom Relations.

An ITSEF in the Netherlands is a commercial facility that has been licensed by TÜV Rheinland Nederland B.V. to perform Common Criteria evaluations; a significant requirement for such a licence is accreditation to the requirements of ISO Standard 17025 “General requirements for the accreditation of calibration and testing laboratories”.

By awarding a Common Criteria certificate, TÜV Rheinland Nederland B.V. asserts that the product or site complies with the security requirements specified in the associated (site) security target, or that the protection profile (PP) complies with the requirements for PP evaluation specified in the Common Criteria for Information Security Evaluation. A (site) security target is a requirements specification document that defines the scope of the evaluation activities.

The consumer should review the (site) security target or protection profile, in addition to this certification report, to gain an understanding of any assumptions made during the evaluation, the IT product's intended environment, its security requirements, and the level of confidence (i.e., the evaluation assurance level) that the product or site satisfies the security requirements stated in the (site) security target.

Recognition of the Certificate

The presence of the Common Criteria Recognition Arrangement (CCRA) and the SOG-IS logos on the certificate indicates that this certificate is issued in accordance with the provisions of the CCRA and the SOG-IS Mutual Recognition Agreement (SOG-IS MRA) and will be recognised by the participating nations.

International recognition

The CCRA was signed by the Netherlands in May 2000 and provides mutual recognition of certificates based on the Common Criteria (CC). Since September 2014 the CCRA has been updated to provide mutual recognition of certificates based on cPPs (exact use) or STs with evaluation assurance components up to and including EAL2+ALC_FLR.

For details of the current list of signatory nations and approved certification schemes, see http://www.commoncriteriaportal.org.

European recognition

The SOG-IS MRA Version 3, effective since April 2010, provides mutual recognition in Europe of Common Criteria and ITSEC certificates at a basic evaluation level for all products. A higher recognition level for evaluation levels beyond EAL4 (respectively E3-basic) is provided for products related to specific technical domains. This agreement was signed initially by Finland, France, Germany, The Netherlands, Norway, Spain, Sweden and the United Kingdom. Italy joined the SOG-IS MRA in December 2010.

For details of the current list of signatory nations, approved certification schemes and the list of technical domains for which the higher recognition applies, see https://www.sogis.eu.

1 Executive Summary

This Certification Report states the outcome of the Common Criteria security evaluation of the Huawei iMaster MAE-CN version V100R021C10. The developer of the Huawei iMaster MAE-CN version V100R021C10 is Huawei Technologies Co., Ltd. located in Shenzhen, China and they also act as the sponsor of the evaluation and certification A Certification Report is intended to assist prospective consumers when judging the suitability of the IT security properties of the product for their particular requirements.

The TOE is the software for managing core networks. It provides a centralized network management platform for supporting telecom operators in their long-term network evolution and shielding the differences between various network technologies. The MAE-CN provides various Operation and Maintenance (OM) solutions and meets various requirements, such as network deployment, network monitoring, network adjustment, and service management.

The TOE has been evaluated by SGS Brightsight B.V. located in Delft, The Netherlands. The evaluation was completed on 5 October 2021 with the approval of the ETR. The certification procedure has been conducted in accordance with the provisions of the Netherlands Scheme for Certification in the Area of IT Security *[NSCIB]*.

The scope of the evaluation is defined by the security target *[ST]*, which identifies assumptions made during the evaluation, the intended environment for the Huawei iMaster MAE-CN version V100R021C10, the security requirements, and the level of confidence (evaluation assurance level) at which the product is intended to satisfy the security requirements. Consumers of the Huawei iMaster MAE-CN version V100R021C10 are advised to verify that their own environment is consistent with the security target, and to give due consideration to the comments, observations and recommendations in this certification report.

The results documented in the evaluation technical report *[ETR]* [1] for this product provide sufficient evidence that the TOE meets the EAL4 augmented (EAL4+) assurance requirements for the evaluated security functionality. This assurance level is augmented with ALC_FLR.2 (Flaw reporting procedures).

The evaluation was conducted using the Common Methodology for Information Technology Security Evaluation, Version 3.1 Revision 5 *[CEM]* for conformance to the Common Criteria for Information Technology Security Evaluation, Version 3.1 Revision 5 *[CC]* (Parts I, II and III).

TÜV Rheinland Nederland B.V., as the NSCIB Certification Body, declares that the evaluation meets all the conditions for international recognition of Common Criteria Certificates and that the product will be listed on the NSCIB Certified Products list. Note that the certification results apply only to the specific version of the product as evaluated.

[1] The Evaluation Technical Report contains information proprietary to the developer and/or the evaluator, and is not available for public review.

2 Certification Results

2.1 Identification of Target of Evaluation

The Target of Evaluation (TOE) for this evaluation is the Huawei iMaster MAE-CN version V100R021C10 from Huawei Technologies Co., Ltd. located in Shenzhen, China.

The TOE is comprised of the following main components:

Delivery item type	Identifier	Version
Software	Huawei iMaster MAE-CN	V100R021C10SPC250

To ensure secure usage a set of guidance documents is provided, together with the Huawei iMaster MAE-CN version V100R021C10. For details, see section 2.5 “Documentation” of this report.

2.2 Security Policy

The TOE is a centralized network management software. The MAE-CN is located at the management and control layer of the cloud network. It can manage and control Huawei 2G/3G/4G/5G mobile network devices, including LTE/EPC network devices, 5G core network devices, NGN network devices, CS network devices, STP network devices, IoM network devices, IMS network devices, and auxiliary networking devices used on mobile networks. It provides open interfaces to quickly integrate with upper-layer application systems such as BSS and OSS. Various apps can be developed and customized to accelerate service innovation and achieve e-commerce-style operations.

MAE-CN is a cloud-based system that uses a service-oriented software architecture. It is deployed on a virtualized platform and can be scaled flexibly.

2.3 Assumptions and Clarification of Scope

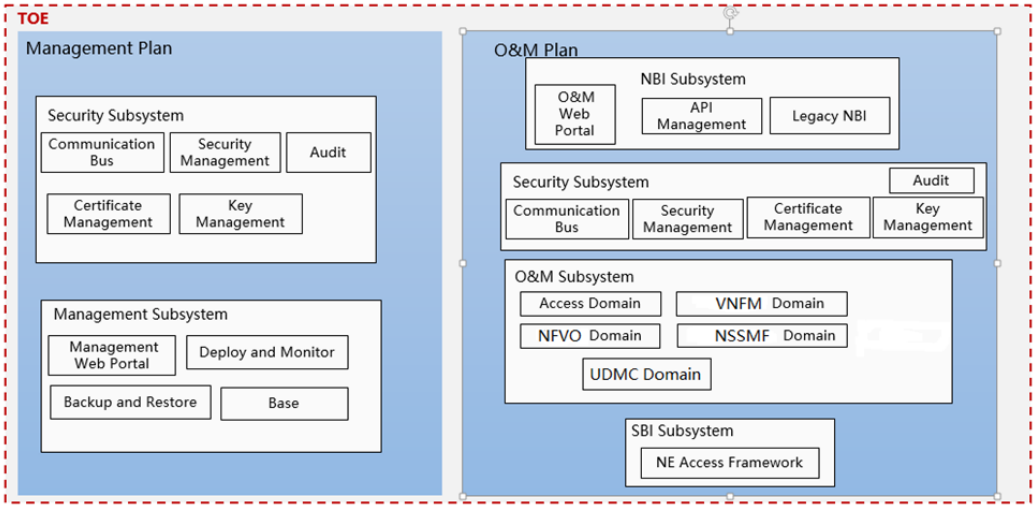
2.3.1 Assumptions

The assumptions defined in the Security Target are not covered by the TOE itself. These aspects lead to specific Security Objectives to be fulfilled by the TOE-Environment. For detailed information on the security objectives that must be fulfilled by the TOE environment, see section 4.2 of the *[ST]*.

2.3.2 Clarification of scope

The evaluation did not reveal any threats to the TOE that are not countered by the evaluated security functions of the product.

2.4 Architectural Information



The TOE logical architecture consists of two independent planes, and each plane consists of a number of subsystems and modules:

- Management plane
  - The plane that is responsible to manage the TOE itself. It consists the following subsystems:
  - Security subsystem
    - Responsible for providing the security features of the TOE (I&A, communication security, security management, certification management, key management, and audit logs).
  - Management subsystem
    - Functional subsystem to perform management tasks of the TOE, such as performing the backup or monitoring the system usage.
- O&M plane
  - The plane that is responsible for providing main functionalities of the TOE, that is, managing the network elements (NE). It consists of the following subsystems:
    - NBI subsystem
    - Provides north bound interfaces (e.g. SNMPv3, CORBA, etc.) to the north bound device OSS (Operation Support System).
  - Security subsystem
    - Responsible for providing the security features of the TOE (I&A, communication security, security management, certification management, key management, and audit logs).
  - O&M subsystem
    - Provides the business functionalities for the TOE to manage the network elements.
  - SBI subsystem
    - Provides access channels and secure channels for the TOE and NEs to communicate in a protected manner.

2.5 Documentation

The following documentation is provided with the product by the developer to the customer:

Reference	Name	Version
[PROD-x86]	iMaster MAE Product Documentation (EulerOS, x86) - V100R021C10	V100R021C10SPC250 Issue 02, 05 May 2021

Reference	Name	Version
[PROD-TaiShan]	iMaster MAE Product Documentation (EulerOS, TaiShan) - V100R021C10	V100R021C10SPC250 Issue 03, 05 May 2021
[PROD-2288X]	iMaster MAE Product Documentation (EulerOS, 2288X) - V100R021C10	V100R021C10SPC250 Issue 02, 20 April 2021
[OPE]	HUAWEI iMaster MAE-CN V100R021C10 - CC Certification AGD_OPE	Version v1.2, 28 September 2021
[PRE]	HUAWEI iMaster MAE-CN V100R021C10 - CC Certification AGD_PRE	Version 1.3, 28 September 2021

2.6 IT Product Testing

Testing (depth, coverage, functional tests, independent testing): The evaluators examined the developer's testing activities documentation and verified that the developer has met their testing responsibilities.

2.6.1 Testing approach and depth

The developer tested all TSFIs and all subsystems and subsystem interactions.

The evaluator defined eleven (11) independent-defined tests. The general strategy for defining the independent evaluator tests are:

- Extend the developer's test cases for authentication, and also complement the developer's test plan with additional test cases
- Verify the AGD_PRE.1.2E activity
- Negative tests on the access control features (cross-domain user(s), privilege escalation)
- Scanning and fingerprinting for libraries/services searching for public known vulnerabilities to include in the vulnerability assessment

The TOE was tested as defined in *[ST]*:

- MAE-CN V100R021C10SPC250

The sampling strategy for defining the repeated evaluator tests was to assess the access control and secure channel establishment features and cover a broad range of protocols. The evaluator chose to repeated eleven (11) of the developer's test cases.

For test coverage the evaluator chose two different TOE deployments to increase the test coverage of the developer. As the hardware models are out of scope for this evaluation the evaluator verified that the firmware packages have been sufficiently covered. Therefore the evaluator requested access to all TOE deployments for testing. This ensured that the firmware packages are sufficiently covered. This rationale was used for both ATE and AVA testing.

2.6.2 Independent penetration testing

To identify potential vulnerabilities the evaluator performed the following activities:

- SFR design analysis: Based on the information obtained in the evaluation evidence, the SFR implementation details were examined. The aspects described in CEM annex B were considered. During this examination several potential vulnerabilities were identified.
- Additional security analysis: When the implementation of the SFR was understood, a coverage check were performed on the relevant aspects of all SFRs. This expanded the list of potential vulnerabilities.
- Scanning the TOE using the applicable vulnerability scanning tools (e.g., NMAP, NESSUS) to collect information about the TOE and identify potential vulnerabilities.

- Public vulnerability search: The evaluator performed public domain vulnerability search based on the TOE name, TOE type, and identified 3rd party security relevant libraries and/or services. Several additional potential vulnerabilities were identified during a search in the public domain.
- The potential vulnerabilities identified were analyzed, and some of the potential vulnerabilities were concluded not exploitable within in the Enhanced-Basic attack potential, or covered by guidance. For remaining potential vulnerabilities, penetration tests were devised.

The evaluator devised ten (10) penetration tests were created to verify that the TOE, in its operational environment is resistant to an attacker possessing Enhanced-Basic attack potential.

The total test effort expended by the evaluators was 1 week. During that test campaign, 100% of the total time was spent on logical tests.

2.6.3 Test configuration

The test configuration was the same as the evaluator setup described in 2.6.1.

2.6.4 Test results

The testing activities, including configurations, procedures, test cases, expected results and observed results are summarised in the *[ETR]*, with references to the documents containing the full details.

The developer's tests and the independent functional tests produced the expected results, giving assurance that the TOE behaves as specified in its *[ST]* and functional specification.

No exploitable vulnerabilities were found with the independent penetration tests.

The algorithmic security level of cryptographic functionality has not been rated in this certification process, but the current consensus on the algorithmic security level in the open domain, i.e., from the current best cryptanalytic attacks published, has been taken into account.

2.7 Reused Evaluation Results

There has been extensive reuse of the ALC aspects for the sites involved in the development and production of the TOE, by use of 6 Site Audit reports These where the data centre from CC-21-0351632 *[CR_0351632]*, Software development and data centre from NSCIB-CC-0132795, Software development and data centre CC-20-0132795 *[CR_0132795]*, Software development and data centre from CC-20-0132795 *[CR_0132795]*, data centre from NSCIB-CC-0138342 and data centre from CC-21-0351632 *[CR_0351632]*.

2.8 Evaluated Configuration

The TOE is defined uniquely by its name and version number Huawei iMaster MAE-CN version V100R021C10.

2.9 Evaluation Results

The evaluation lab documented their evaluation results in the *[ETR]*, which references an ASE Intermediate Report and other evaluator documents.

The verdict of each claimed assurance requirement is "**Pass**".

Based on the above evaluation results the evaluation lab concluded the Huawei iMaster MAE-CN version V100R021C10, to be **CC Part 2 conformant, CC Part 3 conformant**, and to meet the requirements of **EAL 4 augmented with ALC_FLR.2**. This implies that the product satisfies the security requirements specified in Security Target *[ST]*.

2.10 Comments/Recommendations

The user guidance as outlined in section 2.5 "Documentation" contains necessary information about the usage of the TOE.

In addition, all aspects of assumptions, threats and policies as outlined in the Security Target not covered by the TOE itself must 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. For the evolution of attack methods and techniques to be covered, the customer should define the period of time until a re-assessment for the TOE is required and thus requested from the sponsor of the certificate.

The strength of the cryptographic algorithms and protocols was not rated in the course of this evaluation. This specifically applies to the following proprietary or non-standard algorithms, protocols and implementations: none.

3 Security Target

The CC HUAWEI iMaster MAE-CN V100R021C10 - Security Target, version 1.8, 28 September 2021 *[ST]* is included here by reference.

4 Definitions

This list of acronyms and definitions contains elements that are not already defined by the CC or CEM:

BSS	Business Support System
CS	Circuit Switched
IMS	IP Multimedia System
IoM	Internet of Mobility
IT	Information Technology
ITSEF	IT Security Evaluation Facility
JIL	Joint Interpretation Library
LTE/EPC	Long-term Evolution/Evolved Packet Core
NE	Network Element
NGN	Next-Generation Network
NSCIB	Netherlands Scheme for Certification in the area of IT Security
OM	Operation and Maintenance
OSS	Operations Support System
PP	Protection Profile
STP	Signalling Transfer Point
TOE	Target of Evaluation

5 Bibliography

This section lists all referenced documentation used as source material in the compilation of this report.

[CC]	Common Criteria for Information Technology Security Evaluation, Parts I, II and III, Version 3.1 Revision 5, April 2017
[CEM]	Common Methodology for Information Technology Security Evaluation, Version 3.1 Revision 5, April 2017
[CR_0132795]	Certification Report Huawei iMaster MAE V100R020C10, NSCIB-CC-0312795-CR, version 1, 30 November 2020
[CR_0351632]	Certification Report Huawei iMaster NCE V100R020C10 for NCE-Fabric, NCE-FabricInsight, NCE-CampusInsight, NCE-WAN Version V100R20C10SPC100 and iMaster NCE V300R020C10 for NCE-Campus Version V300R020C10SPC100, NSCIB-CC-0351632-CR, version 1, 20 September 2021
[ETR]	Huawei iMaster MAE-CN V100R020C10 – Evaluation Technical Report EAL4+, 21-RPT-359, Version 4.0, 05 October 2021
[NSCIB]	Netherlands Scheme for Certification in the Area of IT Security, Version 2.5, 28 March 2019
[ST]	CC HUAWEI iMaster MAE-CN V100R021C10 - Security Target, version 1.8, 28 September 2021

(This is the end of this report.)