



Certification Report

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Target of Evaluation (TOE)

Application Date/ID	2016-10-12 (ITC-6613)
Certification No.	C0561
Sponsor	Canon Inc.
TOE Name	Canon imageRUNNER ADVANCE 45900KG/4500 Series 2600 model
TOE Version	1.0
PP Conformance	U.S. Government Approved Protection Profile - U.S. Government Protection Profile for Hardcopy Devices Version 1.0 (IEEE Std. 2600.2™-2009)
Assurance Package	EAL2 augmented by ALC_FLR.2
Developer	Canon Inc.
Evaluation Facility	ECSEC Laboratory Inc. Evaluation Center

This is to report that the evaluation result for the above TOE is certified as follows.

2017-06-28

Takumi Yamasato, Technical Manager
Information Security Certification Office
IT Security Center
Technology Headquarters

Evaluation Criteria, etc.: This TOE is evaluated in accordance with the following standards prescribed in the "IT Security Evaluation and Certification Scheme Document."

- Common Criteria for Information Technology Security Evaluation
Version 3.1 Release 4
- Common Methodology for Information Technology Security Evaluation
Version 3.1 Release 4

Evaluation Result: Pass

"Canon imageRUNNER ADVANCE 45900KG/4500 Series 2600 model" has been evaluated based on the standards required, in accordance with the provisions of the "Requirements for IT Security Certification" by Information-technology Promotion Agency, Japan, and has met the specified assurance requirements.

Notice:

This document is the English translation version of the Certification Report published by the Certification Body of Japan Information Technology Security Evaluation and Certification Scheme.

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1. Executive Summary

This Certification Report describes the content of the certification result in relation to IT Security Evaluation of "Canon imageRUNNER ADVANCE 45900KG/4500 Series 2600 model Version 1.0" (hereinafter referred to as the "TOE") developed by Canon Inc., and the evaluation of the TOE was finished on 2017-06 by ECSEC Laboratory Inc. Evaluation Center (hereinafter referred to as the "Evaluation Facility"). It is intended to report to the sponsor, Canon Inc., and provide security information to procurement entities and consumers who are interested in this TOE.

Readers of the Certification Report are advised to read the Security Target (hereinafter referred to as the "ST") described in Chapter 10. Especially, details of security functional requirements, assurance requirements and rationale for sufficiency of these requirements of the TOE are described in the ST.

This Certification Report assumes "procurement entities and general consumers who purchase the TOE" to be readers. Note that the Certification Report presents the certification result based on assurance requirements to which the TOE conforms, and does not guarantee an individual IT product itself.

1.1 Product Overview

An overview of the TOE functions and operational conditions is described as follows. Refer to Chapter 2 and subsequent chapters for details.

1.1.1 Assurance Package

Assurance Package of the TOE is EAL2 augmented by ALC_FLR.2.

1.1.2 TOE and Security Functionality

The TOE is a multifunction printer (hereinafter referred to as "MFP") that offers Copy, Print, Universal Send, Fax, Internet Fax ("I-fax"), and Mail Box capabilities.

The security functions provided by the TOE satisfy all the security functional requirements, as required in the Protection Profile for Hardcopy Devices, U.S. Government Approved Protection Profile – U.S. Government Protection Profile for Hardcopy Devices Version 1.0 (IEEE Std. 2600.2™-2009) [14] (hereinafter referred to as "the PP") and ensure the security policy in the organization that uses the TOE.

For these security functionalities, the validity of the design policy and the accuracy of the implementation were evaluated within the scope of the assurance package. The TOE assumes threats and assumptions as described in the following sections.

1.1.2.1 Threats and Security Objectives

The TOE assumes threats as described below and provides the functions to counter these threats.

The assets of the TOE, namely user document data and the data that have an effect on security functions, are susceptible to unauthorized disclosure or alteration through manipulation of the TOE, or through access to the TOE's network communications data.

To prevent such unauthorized disclosure or alteration of those assets, the TOE provides security functions such as identification and authentication, access control, and encryption.

1.1.2.2 Configuration and Assumptions

The evaluated product is assumed to be operated under the following configuration and assumptions.

It is assumed that the TOE will be located in an environment where physical components of the TOE and its interfaces are protected from unauthorized access. The TOE shall be properly configured and maintained according to the guidance documents.

1.1.3 Disclaimers

- The Identification and Authentication Function contained in the target of this evaluation does not apply to incoming print jobs. Although the protocol used in the submission of the print job contains an identification and authentication mechanism, that mechanism is outside the scope of this evaluation.

1.2 Conduct of Evaluation

Under the IT Security Evaluation and Certification Scheme that the Certification Body operates, the Evaluation Facility conducted IT security evaluation and completed on 2017-06, based on functional requirements and assurance requirements of the TOE according to the publicised documents "IT Security Evaluation and Certification Scheme Document"[1], "Requirements for IT Security Certification"[2], and "Requirements for Approval of IT Security Evaluation Facility"[3] provided by the Certification Body.

1.3 Certification

The Certification Body verified the Evaluation Technical Report [13] prepared by the Evaluation Facility as well as evaluation documentation, and confirmed that the TOE evaluation was conducted in accordance with the prescribed procedure. The certification oversight reviews were also prepared for those concerns found in the certification process. Those concerns pointed out by the Certification Body were fully resolved, and the Certification Body confirmed that the TOE evaluation had been appropriately conducted in accordance with the CC ([4][5][6] or [7][8][9]) and the CEM (either of [10][11]). The Certification Body prepared this Certification Report based on the Evaluation Technical Report submitted by the Evaluation Facility and fully concluded certification activities.

2. Identification

The TOE is identified as follows:

TOE Name:	Canon imageRUNNER ADVANCE 45900KG/4500 Series 2600 model
TOE Version:	1.0
Developer:	Canon Inc.

The TOE consists of the following software and hardware.

Note that the Japanese names are originally written in Japanese and translated into English.

Table 2-1 Components of the TOE

Component Name	Description
(Japanese Name) Canon imageRUNNER ADVANCE 45900KG/4500 Series (English Name) Canon imageRUNNER ADVANCE 45900KG/4500 Series	Any of the following MFPs: <ul style="list-style-type: none"> - iR-ADV 45951KG/45945KG/45935KG/45925KG - iR-ADV 4551/4551i - iR-ADV 4545/4545i/4545F - iR-ADV 4535/4535i/4535F - iR-ADV 4525/4525i/4525F The models with the character "i," "F" or "KG" at the end of their names are called "i models, F models or Korean Government models," respectively.
(Japanese Name) iR-ADV Security Kit-S1 for IEEE 2600 Ver 1.00 (English Name) iR-ADV Security Kit-S1 for IEEE 2600 Common Criteria Certification Ver 1.00	It contains the control software and guidance document (hardcopy, CD) for "Canon imageRUNNER ADVANCE 45900KG/4500 Series."
(Japanese Name) Canon Security Chip V2.10 (English Name) Canon Security Chip V2.10	A hardware to encrypt/decrypt the data to be stored in the HDD. It is embedded in "Canon imageRUNNER ADVANCE 45900KG/4500 Series".

Component Name	Description
(Japanese Name) Super G3 FAX Board-AS (English Name) Super G3 FAX Board-AS	A FAX Board that is attached to the MFP. Standard-equipment on "F models" (the following MFPs): <ul style="list-style-type: none"> - iR-ADV 4545F - iR-ADV 4535F - iR-ADV 4525F

Users can verify that a product is the TOE, which is evaluated and certified, by the following means.

Using the control panel and guidance document, the user confirms the identification information of the TOE components.

Identification information which is different from the name in Table 2-1 is displayed on the control panel for a part of components. It is, therefore, necessary to refer to the guidance document to find out how to confirm the identification information.

3. Security Policy

This chapter describes security function policies that the TOE adopts to counter threats, and organisational security policies.

In addition to offering MFP capabilities such as Copy, Print, and Scan, the TOE is capable of storing user document data in its internal HDD device, and has the functionality for interacting with user terminals and various servers over the network.

The PP, to which the TOE is conformant, assumes an environment where a relatively high level of security is ensured and where accountability for actions is required, and specifies the security functional requirements for such an environment. When using the MFP functions, the TOE offers security functions that satisfy the security functional requirements specified in the PP.

These include user identification and authentication, access control, HDD data encryption and data erase functions by overwriting, and secure cryptographic communication protocols, which protect user document data and configuration data that affect TOE security functions.

In terms of the use of the TOE, the following roles are assumed.

- U.NORMAL

A User who is authorized to perform User Document Data processing functions of the TOE, such as Copy, Print, and Scan.

- U.ADMINISTRATOR

The TOE user in this role has special privileges that allow configuration of security functions.

- TOE Owner

A person or organizational entity responsible for protecting TOE assets and establishing related security policies.

The TOE assets are defined as follows.

- User Document Data

User Document Data consist of the information contained in a user's document.

- User Function Data

User Function Data are the information about a user's document or job to be processed by the TOE. This includes information such as print priority and print settings.

- TSF Confidential Data

TSF Confidential Data are data used by the security functions, and for which integrity and confidentiality must be preserved. This includes information such as user password, Box PIN, and audit logs. This does not, however, include cryptographic keys, since the user has no interface available to its access.

- TSF Protected Data

TSF Protected Data are data used by the security functions, and for which only integrity must be preserved. This includes information such as user identification and access privilege information.

3.1 Security Function Policies

The TOE possesses the security functions to counter the threats shown in Section 3.1.1 and to satisfy the organisational security policies shown in Section 3.1.2.

3.1.1 Threats and Security Function Policies

3.1.1.1 Threats

The TOE assumes the threats shown in Table 3-1 and provides the security functions to counter them. These threats are the same as those specified in the PP.

Table 3-1 Assumed Threats

Identifier	Threat
T.DOC.DIS	User Document Data may be disclosed to unauthorized persons.
T.DOC.ALT	User Document Data may be altered by unauthorized persons.
T.FUNC.ALT	User Function Data may be altered by unauthorized persons.
T.PROT.ALT	TSF Protected Data may be altered by unauthorized persons.
T.CONF.DIS	TSF Confidential Data may be disclosed to unauthorized persons.
T.CONF.ALT	TSF Confidential Data may be altered by unauthorized persons.

3.1.1.2 Security Function Policies against Threats

The TOE counters the threats shown in Table 3-1 by the following security function policies.

(1) Countermeasures against threat "T.DOC.DIS," "T.DOC.ALT," "T.FUNC.ALT"

These are threats to user data. The TOE counters the threats by the following functions: "User Authentication," "Function Use Restriction," "Job Output Restriction," "HDD Data Erase," and "LAN Data Protection."

"User Authentication" and "Function Use Restriction" functions of the TOE allow only the authorized users to use the TOE functions. For details of these functions, refer to the description of P.USER_AUTHORIZATION in Section 3.1.2.2.

"Job Output Restriction" function of the TOE enforces access control when an identified and authenticated user performs the operation such as Print, Preview, Send to Network, Fax TX (send), Delete, Change Print Priority, and Change Print Settings on print jobs and fax/I-fax jobs stored in the TOE or document data stored in a box, thereby ensuring that only the owner of the documents or U.ADMINISTRATOR gains access to perform these operations. The TOE determines that the identified and authenticated user is the authorized document owner as follows:

- For documents submitted as print jobs, the identified and authenticated user is determined to be the owner of the document if his/her user name matches the user name information of the document specified upon submission of the print job.
- In the case of the document data stored by using the scan function or received by fax/I-fax, other than print jobs, the user is required to enter the correct box PIN when the user operates the document data. The box where the document data are stored is assigned per user and pre-configured with a 7-digit box PIN. If the user enters the correct PIN, then the user is determined to be the owner of the document data stored in the box.

"HDD Data Erase" function of the TOE permanently erases the HDD area where the document data are stored, by overwriting with random data upon deleting the document data, to prevent the deleted document data from being read from the HDD.

"LAN Data Protection" function of the TOE uses the cryptographic communication protocol, IPsec, when the TOE communicates with other IT devices over the LAN, and protects the communicated data from unauthorized disclosure and alteration.

With the above functions, the TOE prevents unauthorized use of the TOE, unauthorized access to data stored in the HDD and communication data; thus, the TOE protects the data to be protected from unauthorized disclosure and alteration.

(2) Countermeasures against threat "T.PROT.ALT," "T.CONF.DIS," "T.CONF.ALT"

These are threats to TSF data that affects the security functions. The TOE counters the threats by the following functions: "User Authentication," "Management," and "LAN Data Protection."

"Management" function of the TOE allows only the authorized U.ADMINISTRATOR to manage user information and various configuration data. Note, however, that the authorized U.NORMAL can change their own passwords and the PINs for the mail boxes they use.

"User Authentication," and "LAN Data Protection" work as described in (1).

With the above functions, the TOE prevents unauthorized use of the TOE, unauthorized access to data stored in the HDD and communication data; thus, the TOE protects the data to be protected from unauthorized disclosure and alteration.

3.1.2 Organisational Security Policies and Security Function Policies

3.1.2.1 Organisational Security Policies

Organisational security policies required in use of the TOE are shown in Table 3-2. These organizational security policies are the same as specified in the PP except P.STORAGE.CRYPT.

Table 3-2 Organizational Security Policies

Identifier	Organizational Security Policy
P.USER.AUTHORIZATION	To preserve operational accountability and security, Users will be authorized to use the TOE only as permitted by the TOE Owner.
P.SOFTWARE.VERIFICATION	To detect corruption of the executable code in the TSF, procedures will exist to self-verify executable code in the TSF.
P.AUDIT.LOGGING	To preserve operational accountability and security, records that provide an audit trail of TOE use and security-relevant events will be created, maintained, and protected from unauthorized disclosure or alteration, and will be reviewed by authorized personnel.
P.INTERFACE.MANAGEMENT	To prevent unauthorized use of the external interfaces of the TOE, operation of those interfaces will be controlled by the TOE and its IT environment.
P.STORAGE.CRYPT*1	The data to be stored in the HDD of the TOE must be encrypted.

*1: "P.STORAGE CRYPT" is set on the assumption that customers will require the function to encrypt the data to be stored in the HDD.

3.1.2.2 Security Function Policies to Organisational Security Policies

The TOE provides the security functions to satisfy the organisational security policies shown in Table 3-2.

(1) Means for organizational security policy "P.USER.AUTHORIZATION"

This policy is realized by "User Authentication" and "Function Use Restriction" functions of the TOE.

"User Authentication" function of the TOE only permits the users who are successfully identified and authenticated to use the TOE. To enhance the identification and authentication mechanism, the TOE enforces a password policy to use passwords of a certain minimum length containing a mixture of character types, and a lockout policy whereby a lockout of certain duration is imposed upon a certain number of failed authentication attempts.

Incoming print jobs or fax/I-fax jobs are accepted without requiring identification and authentication. The resulting document data are stored within the TOE, and not automatically printed out or transmitted. To print out or transmit document data stored in the TOE, the users must operate the control panel of the TOE, which will require identification and authentication.

"Function Use Restriction" function of the TOE performs access restriction on the use of the TOE functions, so that only the identified and authorized users with appropriate permissions are permitted to use the functions. For access restriction, users are

assigned "roles" which are bound to permission information. This information is used to determine whether the use of the function is permitted to each user or not.

With the above functions, the TOE ensures that only the authorized users are permitted to use the TOE.

- (2) Means for organizational security policy "P.SOFTWARE.VERIFICATION"

This policy is realized by "Self-Test" function of the TOE.

"Self-Test" function of the TOE checks the integrity of the cryptographic algorithm that are used by LAN Data Protection function and the integrity of the audit log, after decrypting the executable code which is encrypted and stored in the HDD, at start-up. Thereby the integrity of the executable code of the TOE security functions is ensured.

Note that the self-test function does not check all executable codes of the TOE security functions; however, the evaluator evaluates that if the integrity of the part of the TOE security functions is verified, the integrity of all other executable codes decrypted by the same mechanisms is also ensured.

- (3) Means for organizational security policy "P.AUDIT.LOGGING"

This policy is realized by "Audit Log" function of the TOE.

"Audit Log" function of the TOE generates and stores audit logs in the TOE's HDD at the occurrence of security-relevant events when security functions are used. The stored audit logs can be viewed by an authorized U.ADMINISTRATOR only, via a Web browser.

- (4) Means for organizational security policy "P.INTERFACE.MANAGEMENT"

This policy is realized by "User Authentication" and "Forward Received Jobs" functions of the TOE.

"User Authentication" function of the TOE ensures that only identified and authenticated users are allowed to use the TOE. Additionally, a session will be terminated, if a user leaves the session inactive longer than the specified time.

"Forward Received Jobs" function of the TOE restricts data received from various interfaces to be directly forwarded to the LAN without prior processing by the TOE.

These functions prevent the unauthorized use of the interfaces of the TOE.

- (5) Means for organizational security policy "P.STORAGE.CRYPT"

This policy is realized by "HDD Encryption" function of the TOE.

"HDD Encryption" function of the TOE ensures the confidentiality of data by encrypting all the data stored in the internal HDD of the TOE. 256 bit AES is used as the cryptographic algorithm, and the cryptographic key is generated in accordance with the deterministic random number generation mechanism of NIST SP800-90A upon start-up and is erased when the power is turned off.

4. Assumptions and Clarification of Scope

This chapter describes the assumptions and the operational environment to operate the TOE as useful information for the assumed readers to determine the use of the TOE.

4.1 Usage Assumptions

Table 4-1 shows assumptions to operate the TOE. These assumptions are the same as specified in the PP.

The effective performances of the TOE security functions are not assured unless these assumptions are satisfied.

Table 4-1 Assumptions

Identifier	Assumptions
A.ACCESS.MANAGED	The TOE is located in a restricted or monitored environment that provides protection from unmanaged access to the physical components and data interfaces of the TOE.
A.USER.TRAINING	TOE Users are aware of the security policies and procedures of their organization, and are trained and competent to follow those policies and procedures.
A.ADMIN.TRAINING	Administrators are aware of the security policies and procedures of their organization, are trained and competent to follow the manufacturer's guidance and documentation, and correctly configure and operate the TOE in accordance with those policies and procedures. * The meaning of "correctly configure" includes the description specified in (1) and (2) of Section 8.2 "Recommendations."
A.ADMIN.TRUST	Administrators do not use their privileged access rights for malicious purposes.

4.2 Environmental Assumptions

The TOE is an MFP designed to operate in a typical office environment, where the MFP is connected by an internal LAN, and the internal LAN is protected by Firewall, etc., from threats from the external network. The assumed operational environment of the TOE is shown in Figure 4-1.

TOE users can operate the TOE from its control panel, from a PC connected via USB, or from a PC connected to the LAN.

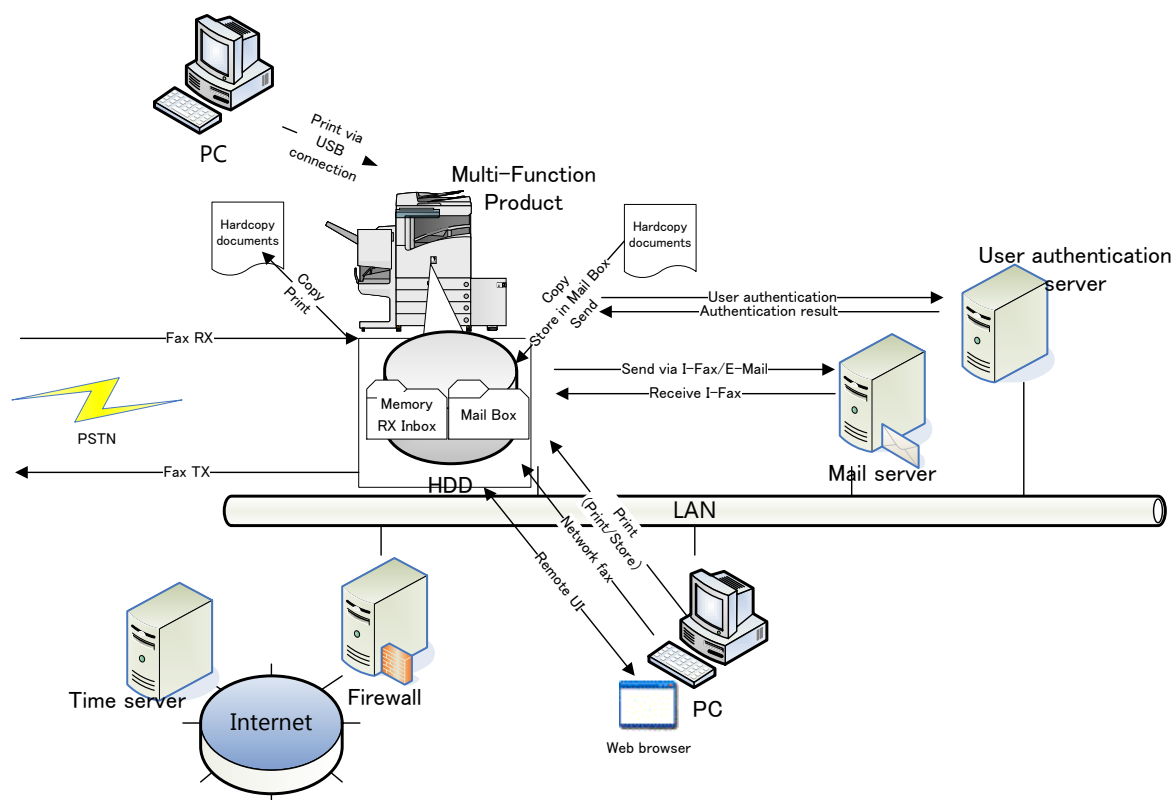


Figure 4-1 Operational Environment of the TOE

The operational environment of the TOE consists of the following components.

(1) Fax Board (Optional for using FAX with 2 or more lines)

As necessary, the following FAX Board can be attached to the TOE. The Fax Board is outside the scope of the TOE.

- Super G3 2nd Line Fax Board-AS
- Super G3 3rd/ 4th Line Fax Board-AS

(2) PC

It is a generic PC used by a user to connect to the TOE, via USB or internal LAN. This evaluation was performed using the following software.

- Printer driver: This evaluation was performed using the following printer driver.
 - > Canon LIPSLX Printer Driver Version 21.75
 - > Canon PS Printer Driver Ver 21.75
 - > Canon PCL Printer Driver Version 21.75
- Web browser: Microsoft Internet Explorer 11

(3) User Authentication Server

The TOE supports two methods of "User Authentication" of the TOE explained in Chapter 3: "Internal Authentication" where authentication takes place using user information stored within the TOE, and "External Authentication" where authentication takes place using user information stored in an external server.

The User Authentication Server is the server that is necessary for the TOE when using "External Authentication," and the authentication protocol to be used is either Kerberos or LDAP.

This evaluation was performed using eDirectory 8.8 SP8 as the authentication server software for LDAP authentication, and using Active Directory Domain Service as the authentication server software for Kerberos authentication.

(4) Mail Server

A Server is installed as required to facilitate the I-fax capability of the MFP.

(5) Time Server

It is the NTP service commonly provided over the Internet. As long as the environment allows, it is recommended that a time server be configured in the TOE, to synchronize the time in the MFP that is used as the time stamp of audit logs. Otherwise, the time that is configured and maintained by the TOE's Management function is used instead.

Note that the reliability of software and hardware other than the TOE shown in this configuration is outside the scope of this evaluation.

4.3 Clarification of Scope

In this evaluation, it is considered that the security functional requirements for the identification and authentication specified in the PP regarding the MFP's Print function do not apply to the operations on submitting print jobs; rather, they apply only to the operations on document data accumulated in the MFP, created by the submitted print jobs. As such, the following security functions are considered outside the scope of this evaluation.

- (1) The TOE supports various print protocols for the submission of print jobs. Some protocols have their own identification and authentication mechanisms, and those mechanisms are outside the scope of this evaluation. Examples of this include the identification and authentication mechanism in the IPP protocol.

5. Architectural Information

This chapter explains the scope and the main components (subsystems) of the TOE.

5.1 TOE Boundary and Components

The configuration of the MFP or TOE as well as the IT environment other than the MFP is shown in Figure 5-1. In Figure 5-1, the TOE is shown within the bold line box marked as the TOE. User Authentication Server, Mail Server, PC, Time Server and User are not included in the TOE.

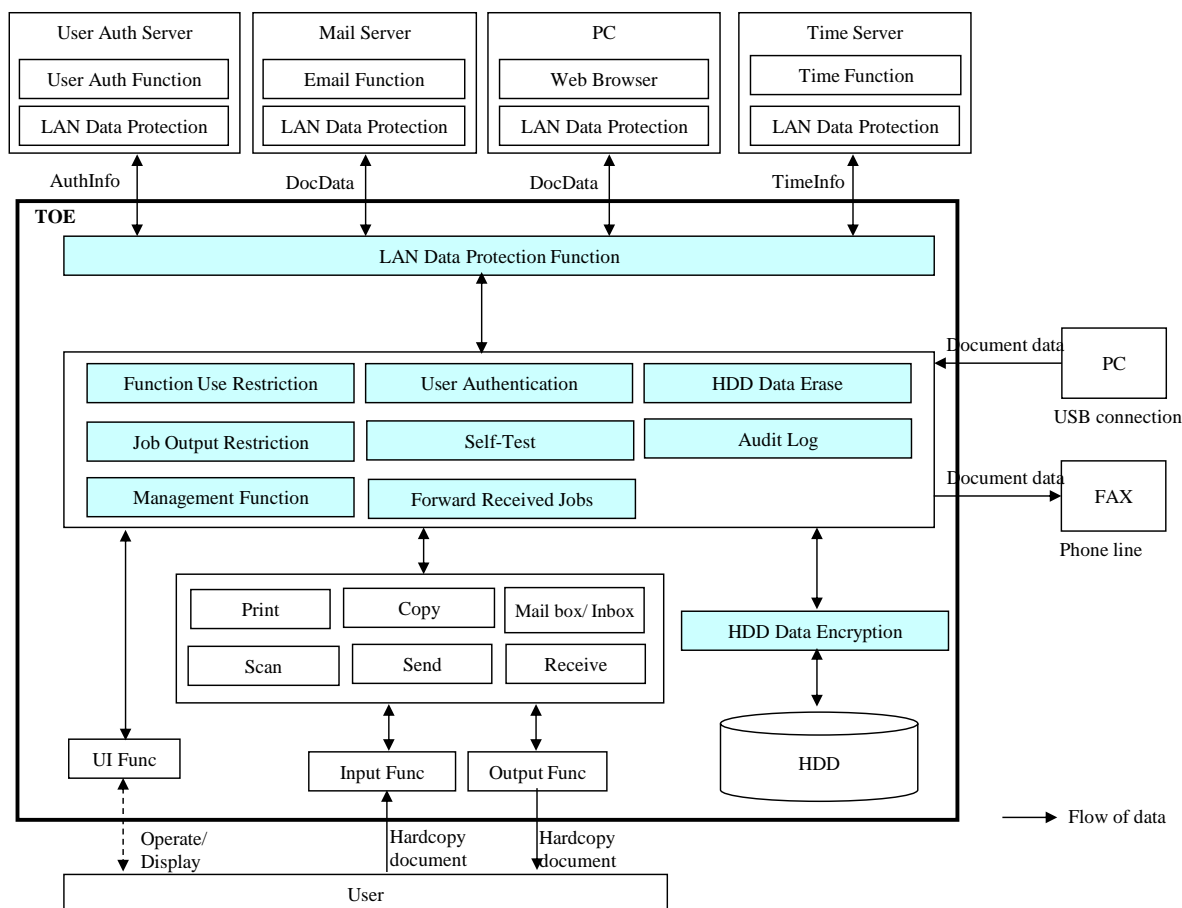


Figure 5-1 TOE Boundary

In Figure 5-1, the components shown in blue box within the TOE are the security functions of the TOE described in Chapter 3, and the remaining components shown in white box within the TOE are the basic functions of the MFP. For details on the basic MFP functions, see Glossary in Chapter 11.

TOE users operate the TOE from its control panel ("UI Func" in Figure 5-1), from a PC connected to the LAN using a Web browser ("Web Browser" contained in "PC" in Figure 5-1), or from a PC connected via LAN or USB using a print driver (indicated only as the "PC" and a print driver is not illustrated in Figure 5-1).

The security functions of the TOE are applied when the user uses basic MFP functions. The following describes the relation between the security functions and the basic MFP functions.

- (1) When a user submits a print job from a PC connected via LAN or USB, or when a fax/I-fax job is received, the jobs are accepted without requiring identification and authentication, and the resulting document data are stored within the TOE. The user may perform operations on the document data in the TOE later, using the control panel or from a Web browser.

When the user attempts to access the basic MFP functions from the control panel or from a Web browser, "User Authentication" and "Function Use Restriction" functions are applied, so that only authorized users are allowed to use the TOE. Subsequently, when the user attempts to execute an operation on a document data stored in the TOE, "Job Output Restriction" function is applied, so that only the owner of the document data or the Administrator is allowed to operate the document data.

When the user attempts to use "Management" function or the function to browse audit logs provided by "Audit Log" function from the control panel or a Web browser, "User Authentication" function is applied, so that only the identified and authenticated users with Administrator privileges can gain access to the TOE.

Note that audit logs are generated by "Audit Log" function when these security functions are used.

- (2) In the use described in (1) above, "HDD Data Encryption" function is applied to all data stored in the internal HDD device, and "HDD Data Erase" function is applied when document data are deleted.
- (3) In the use described in (1) above, "LAN Data Protection" function is applied when the TOE communicates with other IT devices over the LAN. In addition, "Forward Received Jobs" function restricts data received from various interfaces to be forwarded without any TOE security functions applied.

5.2 IT Environment

When the external authentication method is used for "User Authentication" function of the TOE, Kerberos or LDAP protocol is used to query the information contained in the User Authentication Server to perform user identification and authentication. User account information is registered in the User Authentication Server through the management function of the User Authentication Server.

The time information recorded on the TOE's audit logs is provided by the TOE. The time information of the TOE is set and maintained by the Management function of the TOE, or can be synchronized with an external time server using the NTP protocol.

The TOE uses IPsec protocol to communicate with other external IT devices over the network. As such, those external IT devices need to have IPsec protocol configured as well.

6. Documentation

The identification of documents attached to the TOE is listed below. TOE users are required to fully understand and comply with the following documents in order to satisfy the assumptions.

(Japanese name)

- iR-ADV Security Kit-S1 for IEEE 2600 Administrator Guide [FT6-1876 (000)]
- Before Using the iR-ADV Security Kit-S1 for IEEE 2600 [FT6-1877 (000)]
- imageRUNNER ADVANCE 4500 Series 2600 model User's Guide CD [FT6-1878 (000)]

(English name)

- iR-ADV Security Kit-S1 for IEEE 2600 Common Criteria Certification Administrator Guide [FT6-1879 (000)]
- Before Using the iR-ADV Security Kit-S1 for IEEE 2600 Common Criteria Certification [FT6-1880 (000)]
- imageRUNNER ADVANCE 4500 Series 2600 model User's Guide CD (USE Version) [FT6-1881 (000)]
- imageRUNNER ADVANCE 4500 Series 2600 model User's Guide CD (APE Version) [FT6-1882 (000)]

(Supplementary note)

"APE" in the above identification of documents represents a product for Asia-Pacific. "USE," on the other hand, represents a product for United States.

7. Evaluation conducted by Evaluation Facility and Results

7.1 Evaluation Facility

ECSEC Laboratory Inc. Evaluation Center that conducted the evaluation as the Evaluation Facility is approved under JISEC and is accredited by NITE (National Institute of Technology and Evaluation), the Accreditation Body, which joins Mutual Recognition Arrangement of ILAC (International Laboratory Accreditation Cooperation). It is periodically confirmed that the above Evaluation Facility meets the requirements on the appropriateness of the management and evaluators for maintaining the quality of evaluation.

7.2 Evaluation Approach

Evaluation was conducted by using the evaluation methods prescribed in the CEM in accordance with the assurance components in the CC Part 3. Details for evaluation activities were reported in the Evaluation Technical Report. The Evaluation Technical Report explains the summary of the TOE as well as the content of the evaluation and the verdict of each work unit in the CEM.

7.3 Overview of Evaluation Activity

The history of the evaluation conducted is described in the Evaluation Technical Report as follows.

The evaluation has started on 2016-10 and concluded upon completion of the Evaluation Technical Report dated 2017-06. The Evaluation Facility received a full set of evaluation deliverables necessary for evaluation provided by the developer, and examined the evidence in relation to a series of evaluation conducted. Additionally, the evaluators directly visited the development and manufacturing sites on 2017-01, and examined procedural status conducted in relation to each work unit for configuration management and delivery, by investigating records and interviewing staff. For a part of process, site visits have been omitted, and the Evaluation Facility determined with its responsibility that the examination details on those of the past CC-certified products could be reused. Furthermore, the evaluator conducted the sampling check of the developer testing and the evaluator testing by using the developer testing environment at the developer site on 2016-11.

Concerns that the Certification Body found in the evaluation process were described as the certification oversight reviews, and those were sent to the Evaluation Facility.

After the Evaluation Facility and the developer examined them, those concerns were reflected in the Evaluation Technical Report.

7.4 IT Product Testing

The evaluator confirmed the validity of the testing that the developer had performed. As a result of the evidence shown in the process of the evaluation and those confirmed validity, the evaluator performed the reproducibility testing, additional testing and penetration testing based on vulnerability assessments judged to be necessary.

7.4.1 Developer Testing

The evaluator evaluated the integrity of the developer testing that the developer performed and the documentation of actual testing results. The content of the developer testing evaluated by the evaluator is explained as follows.

1) Developer Testing Environment

The TOE used in the developer testing is iR-ADV 4551 among the MFP models in the TOE identification as described in Chapter 2.

Based on the following reasons, the evaluator evaluated that the testing configuration was sufficient.

- The differences between the TOE models (see Table 2-1) are: the presence or absence of the specific license (i model); whether or not they are equipped with fax function as standard (F model); the changes in model names for the specific destination (Korean Government model); and hardware performances such as printing speeds. Since the differences in the fax function, model names for certain destinations, and hardware performances such as printing speeds do not affect the security functions, the evaluator evaluated that it was sufficient to test a representative model from the model group without license specific to "i-models" (non i-model group) and a representative model from the model group with license specific to "i-models" (i-model group).
 - > As a representative model for non i-model group, iR-ADV 4551 was tested.
 - > As a representative model for i-model group, iR-ADV 4551 with the appropriate license applied to make the configuration the same as iR-ADV 4551i was tested.

Details of the components of the developer testing environment are given in Table 7-1. The configuration for this testing corresponds to the operational environment of the TOE as described in Figure 4-1, except for the following differences. Besides these differences, this configuration is identical to the configuration specified in the ST, and the evaluator evaluates that these differences do not affect the purpose, which is to test the TOE's functions.

- Although included in the description in the ST, no firewall is used in the testing environment since it was not connected to the Internet.
- The phone line pseudo-exchanger, which can emulate the same fax communication protocol as a public telephone line, is used instead of the public telephone network (PSTN).
- The optional Fax Board (for using two or more fax lines) is attached to the MFP.

Table 7-1 Components of the Developer Testing

Component	Description
TOE	iR-ADV 4551 (MFP) iR-ADV Security Kit-S1 for IEEE 2600 Common Criteria Certification Ver 1.00 Super G3 FAX Board-AS
Optional Fax Board	Super G3 2nd Line FAX Board-AS Super G3 3rd/ 4th Line FAX Board-AS
Mail Server	Windows Server 2012 R2 Standard Edition - Microsoft Exchange Server 2013
User Authentication (Kerberos) Server 1 / Time Server	Windows Server 2012 R2 Standard Edition - Active Directory Domain Services - Windows Time
User Authentication (LDAP) Server 2	Windows Sever 2012 R2 Standard Edition - eDirectory 8.8 SP8
PCs for tests	Microsoft Windows 7 Professional - Microsoft Internet Explorer 11 (Web Browser)

2) Summary of the Developer Testing

A summary of the developer testing is as follows.

a. Developer Testing Outline

An outline of the developer testing is as follows.

<Developer Testing Approach>

- (1) By operating the user interfaces including the control panel, hard keys (such as power switch), and Remote UI, the developer confirmed the result of the operation (such as normal end, abnormal end, and error messages) and audit logs.
- (2) To confirm the HDD Data Erase function, the developer used the SATA analyzer and captured to confirm the input/output data to/from the HDD.
- (3) To confirm the HDD Data Encryption function, the developer replaced the firmware of the chip to implement the encryption function with the firmware to which commands for testing are added, and conducted a known answer test using the added commands.
- (4) To confirm the IPsec communication function, the developer captured the communication data on the network by using packet capture software and confirmed the behavior of the IPsec function. The developer also verified that the cryptographic key used for IPsec communication was generated using the specified algorithm by confirming that the assumed pseudorandom number to be output against the specified input, using a program for testing to invoke the portion to generate the cryptographic key.

- (5) To confirm the behavior of "i-models" (See Table 2-1) among the MFP models, the developer performed the testing with the license specific to "i-models" activated.

<Developer Testing Tools>

The tools used for the developer testing are shown in Table 7-2 below.

Table 7-2 Developer Testing Tools

Tool Name	Description
Wireshark (Ver.1.2.11 Rev.34007)	A tool to monitor and analyze communication data over LAN.
SierraM6-2 SAS-M006-802-X (LeCroy)	A tool to connect between SATA cables and capture SATA interface signal.
SATA Protocol Suite (Ver.4.00)	A tool to analyze data captured from SATA interface.
Pseudorandom number testing tool	A tool developed by the Developer to confirm the behavior of pseudorandom number generator for IPsec.
Phone line pseudo-exchanger	A unit that pseudo-exchanges the phone line.
Printer Driver	Canon LIPSLX Printer Driver Version 21.75 Canon PS Printer Driver Ver 21.75 Canon PCL Printer Driver Version 21.75

<Content of the Performed Developer Testing>

It was confirmed that the security functions to be applied to various input parameters operate according to the specification by operating the basic MFP functions and security management functions from various interfaces.

b. Scope of the Performed Developer Testing

The developer testing was performed on 569 items by the developer. By the coverage analysis, the coverage of the testing for the security functions described in the functional specification and external interfaces was confirmed. For a part of the external interfaces, the coverage was found insufficient and was supplemented by the evaluator independent testing.

c. Result

The evaluator confirmed the approach of the performed developer testing and the legitimacy of tested items, and confirmed consistencies between the testing approach described in the testing plan and the actual testing approach. The evaluator confirmed consistencies between the testing results expected by the developer and the actual testing results performed by the developer.

7.4.2 Evaluator Independent Testing

The evaluator performed the sample testing to reconfirm the execution of security functions by the test items extracted from the developer testing. In addition, the evaluator performed the evaluator independent testing (hereinafter referred to as the "independent testing") to gain further assurance that security functions are certainly implemented, based on the evidence shown in the process of the evaluation. The independent testing performed by the evaluator is explained as follows.

1) Independent Testing Environment

The testing environment for the developer testing was used as the configuration of the independent testing performed by the evaluator. The specification confirmation, behavior tests, and calibration for the devices and testing tools used were performed by the evaluator.

The TOEs tested by the evaluator are iR-ADV 4551 or iR-ADV 4525 among the MFP models in the TOE identification as described in Chapter 2.

The independent testing was performed in the same environment as TOE configuration identified in the ST.

2) Summary of the Independent Testing

A summary of the independent testing is as follows.

a. Viewpoints of the Independent Testing

The evaluator devised the independent testing in terms of the following viewpoints, based on the developer testing and the provided evaluation documentation, in order for the evaluator him/herself to demonstrate that the TOE security functions work as specified.

<Independent Testing Viewpoints>

- (1) The evaluator reinforces the developer testing by conducting testing with added variations for parameters, string entry patterns, and exception and cancellation handling of complex interfaces with many parameters.
- (2) The evaluator reinforces the developer testing by conducting testing in the case where multiple related functions are used simultaneously.
- (3) The evaluator reinforces the developer testing by conducting testing with a method different from the one used by the developer.
- (4) The evaluator conducts testing for the functions that may affect the assets if the developer testing is insufficient for such functions.
- (5) The evaluator adds testing for the TOE configuration not tested in the developer testing to confirm that the difference in the configuration does not affect the behavior of the security functions.
- (6) The evaluator independently verifies that the assumption for passwords (such as the time for entry attempts) is correct.

b. Independent Testing Outline

The evaluator performed sample testing on 65 items based on the developer testing and evaluation documentation provided. The evaluator also designed an additional independent testing on 9 items based on the developer testing and evaluation documentation provided, from the following viewpoints. An outline of the independent testing that the evaluator performed is as follows.

<Independent Testing Approach>

Results for operations of functions accessed through Web browser or control panel can be observed from the error messages returned or state of the screen, etc. Therefore, an approach to confirm responses for operations was used.

For external interfaces, the state and audit log of the TOE change by stimulating the TOE via the devices connected to the TOE. Therefore, a testing approach to observe the results of the state and audit log results was used.

For the functions related to communication functions, such as IPsec communication and communication with SNMP, which cannot be observed from outside by people, an approach to confirm the behavior of such functions by using packet capture software (Wireshark) and SNMP-related tools (Net-snmp) was used as an alternative method.

For the management of session ID, a proxy type vulnerability analysis tool (Burp Suite) was used to confirm the behaviour.

<Independent Testing Tools>

For the independent testing, testing tools shown in Table 7-3 were added to the tools used for the developer testing.

Table 7-3 Independent Testing Tools Used

Tool Name (Version)	Description/Purpose of Use
Net-snmp (Ver.5.6.1.1)	Application software which implements each version of SNMP. Only command functions, such as MIB browser function, are used in this testing (snmpwalk, snmpset, etc.).
Burp Suite Pro (Ver. 1.7.11)	Proxy type vulnerability analysis tool. It is used to confirm session ID that cannot be confirmed by browser.
AMS Printer Driver Add-in Ver 3.10	It restricts the use of functions from printer driver. It is used to perform testing with increased parameters for external interfaces.
Canon Generic FAX Driver Ver 10.20	It is used to confirm that functions which are prohibited to use actually cannot be used.
USB Memory	It is used to confirm that functions which are prohibited to use actually cannot be used.

<Content of the Performed Independent Testing>

Table 7-4 shows viewpoints of the independent testing conducted by the evaluator with the corresponding testing contents.

Table 7-4 Independent Testing Performed

Outline of independent testing	Viewpoint of independent testing
Functional testing for user management function, and Function Use Restriction access control (e.g., to confirm that a user assigned a general user role is unable to access the management function specified in the ST)	(1)
Functional testing for user authentication screen (e.g., to confirm the operation for character-length check of user name and password)	(1)
Functional test for functions related to editing of user information (e.g., to confirm the variations of the characters to be used for a general user's password)	(1)
Functional testing for the session management function of Remote UI (e.g., to confirm the authentication function by observing and/or changing session ID)	(3)
Functional testing for Job Output Restriction access control (e.g., to confirm that the behavior of an output job is not changed by variations of incoming job from PC, such as protocols and drivers, and to confirm that the functions which are prohibited to use, such as fax transmission from PC via driver, cannot be used)	(1)
Functional testing for simultaneous use of user privilege (e.g., to confirm that administrators cannot log in simultaneously)	(2)
Functional testing for external interfaces (e.g., to confirm that only information specified in the functional specification can be acquired with SNMP, and to confirm that USB memory cannot be used)	(4)
Functional testing for the Box function (e.g., to confirm that only Administrator can access Remote UI, and to confirm the time required to attempt to enter box PIN)	(1), (6)
Testing to confirm that same results are obtained even if the MFP model and/or Fax Board are different from those used in the developer testing, by selecting test items that are likely to show hardware dependence and conducting part of the test items of the developer testing.	(5)

c. Result

All the independent testing performed by the evaluator was correctly completed, and the evaluator confirmed the behavior of the TOE. The evaluator confirmed consistencies between the expected behavior and all the testing results.

7.4.3 Evaluator Penetration Testing

The evaluator devised and performed the necessary evaluator penetration testing (hereinafter referred to as the "penetration testing") on the potentially exploitable vulnerabilities of concern under the assumed environment of use and attack level from the evidence shown in the process of the evaluation. The penetration testing performed by the evaluator is explained as follows.

1) Summary of the Penetration Testing

A summary of the penetration testing performed by the evaluator is as follows.

a. Vulnerability of Concern

The evaluator searched into the provided documentation and the publicly available information for the potential vulnerabilities, and then identified the following vulnerabilities which require the penetration testing.

- (1) There is a concern when network services other than the functions provided by the TOE as specified in the design document are activated, security functions may be bypassed, resulting in the assets of the TOE being compromised.
- (2) Since there are publicly-known vulnerabilities on the running network service, unintended operation may be possible, which may, in turn, result in the assets of the TOE being accessed by bypassing security functions of the TOE.
- (3) There is a possibility that identification and authentication and/or access control functions may be bypassed in Remote UI, since there are pages (functions) that do not check the session information.
- (4) There is a possibility that bypassing checks provided by Remote UI and specifying an incorrect value as an input value may cause unexpected behavior of the TOE, which may, in turn, result in affecting the secure use of the TOE by bypassing security functions of the TOE.

b. Penetration Testing Outline

The evaluator performed the following penetration testing to identify potentially exploitable vulnerabilities.

<Penetration Testing Environment>

The penetration testing was performed by using additional testing tools shown in Table 7-5 to the evaluator independent testing environment. The specification confirmation, behavior tests, and calibration for these tools were performed by the evaluator.

Table 7-5 Penetration Testing Tools

Tool Name	Description
Nmap (Ver.7.31)	Port Scan Tool
Nessus (Ver.6.9.1)	Vulnerability Scanner
Netcat (Ver.1.11)	General TCP/UDP Communication tool

<Content of the Performed Penetration Testing>

Table 7-6 shows an outline of the penetration testing for the vulnerability of concern.

Table 7-6 Outline of the Penetration Testing

Vulnerability of Concern	Outline of the Penetration Testing
(1)	<p>The evaluator performed a port scan on the TOE using a port scan tool (Nmap). No unexpected network service was found.</p> <p>Netcat was used as needed to attempt to execute commands.</p>
(2)	<p>The evaluator performed a scan using a vulnerability scanner (Nessus) and confirmed that publicly-known vulnerability which can be exploited did not exist on the network services provided by the TOE.</p> <p>For the network services provided by the TOE, it was confirmed, for the interfaces which may have functions to disclose files or execute commands (such as FTP), that prohibited commands (OS or protocol) cannot be executed.</p>
(3)	<p>The evaluator examined the URLs of screens accessible after authentication using Burp Suite.</p> <p>The evaluator tried to access such screens by specifying URLs without authentication and confirmed that these screens could be accessed only after authentication. (The behavior of the check function of the session information was confirmed.)</p>
(4)	<p>Burp Suite (proxy type vulnerability inspection tool) was used to confirm the following points:</p> <ul style="list-style-type: none"> > For the input items of the screens which the use the TOE is not allowed or which can be operated by general users (login screen, password change screen, address book, etc.), the evaluator used the above tool to confirm that no problem occurs when inputting characters prohibited to use or long character strings. > For the input items which can be operated by Administrator (user management function and various setting functions), the evaluator used the above tool to confirm that no problem occurs when inputting characters prohibited to use or long character strings.

c. Result

In the penetration testing performed by the evaluator, the evaluator did not find any exploitable vulnerabilities that attackers who have the assumed attack potential could exploit.

7.5 Evaluated Configuration

The conditions for the evaluated configuration of the TOE in this evaluation are as described in the guidance documents, and users must follow the guidance documents to set up the TOE. Some of the TOE settings values include enabling/disabling of the security functions, and there are some fixed values in this evaluation. If any setting values that affect security are changed to the value that is advised not to set in the guidance documents, then the MFP with those settings is no longer regarded as the evaluated configuration.

7.6 Evaluation Results

The evaluator had concluded that the TOE satisfies all work units prescribed in the CEM by submitting the Evaluation Technical Report.

In the evaluation, the following were confirmed.

- PP Conformance:

U.S. Government Approved Protection Profile - U.S. Government Protection Profile for Hardcopy Devices Version 1.0 (IEEE Std. 2600.2™-2009)

SFR packages conformance defined in the above PP:

- 2600.2-PRT, SFR Package for Hardcopy Device Print Functions, Operational Environment B: Conformant
- 2600.2-SCN, SFR Package for Hardcopy Device Scan Functions, Operational Environment B: Conformant
- 2600.2-CPY, SFR Package for Hardcopy Device Copy Functions, Operational Environment B: Conformant
- 2600.2-FAX, SFR Package for Hardcopy Device Fax Functions, Operational Environment B: Conformant
- 2600.2-DSR, SFR Package for Hardcopy Device Document Storage and Retrieval (DSR) Functions, Operational Environment B: Conformant
- 2600.2-SMI, SFR Package for Hardcopy Device Shared-medium Interface Functions, Operational Environment B: Augmented
- Security functional requirements: Common Criteria Part 2 Extended
- Security assurance requirements: Common Criteria Part 3 Conformant

As a result of the evaluation, the verdict "PASS" was confirmed for the following assurance components.

- All assurance components of EAL2 package
- Additional assurance component ALC_FLR.2

The result of the evaluation is only applied to those which are composed by the TOE corresponding to the identification described in Chapter 2.

7.7 Evaluator Comments/Recommendations

No particular recommendations for users (procurement entities) are provided by the evaluator.

8. Certification

The Certification Body conducted the following certification based on the materials submitted by the Evaluation Facility during the evaluation process.

1. The submitted documentation was sampled, the content was examined, and the related work units shall be evaluated as presented in the Evaluation Technical Report.
2. Rationale of the evaluation verdict by the evaluator presented in the Evaluation Technical Report shall be adequate.
3. The evaluator's evaluation methodology presented in the Evaluation Technical Report shall conform to the CEM.

Concerns found in the certification process were prepared as the certification oversight reviews, and those were sent to the Evaluation Facility. The Certification Body confirmed such concerns pointed out in the certification oversight reviews were solved in the ST and the Evaluation Technical Report and issued this Certification Report.

8.1 Certification Result

As a result of verification of the submitted Evaluation Technical Report and related evaluation documentation, the Certification Body determined that the TOE satisfies all assurance requirements for EAL2 augmented by ALC_FLR.2 in the CC Part 3.

8.2 Recommendations

- (1) This evaluation was performed with the use of Fax Inbox disabled. If the use of Fax Inbox is enabled, then that is no longer considered as the configuration assured in this evaluation.
- (2) In terms of the security functional requirements specified in the PP, this evaluation acknowledges that the requirements for identification and authentication do not apply to incoming print jobs. Consumers expecting identification and authentication to be enforced for incoming print jobs are therefore advised to take note that the TOE specification may not be consistent with their needs.
- (3) When "external authentication" is used in the TOE, Kerberos or LDAP can be used to communicate with the user authentication server. Where this is the case, the assurance provided by this evaluation specifically applies only when Kerberos with Active Directory Domain Services or LDAP with eDirectory 8.8 SP8 is used as the authentication server software.

9. Annexes

There is no annex.

10. Security Target

The Security Target [12] of the TOE is provided below as a separate document from this Certification Report.

Canon imageRUNNER ADVANCE 45900KG/4500 Series 2600 model
Security Target, Version 1.08 (March 21, 2017) Canon Inc.

11. Glossary

The abbreviations relating to the CC used in this report are listed below.

CC	Common Criteria for Information Technology Security Evaluation
CEM	Common Methodology for Information Technology Security Evaluation
EAL	Evaluation Assurance Level
PP	Protection Profile
ST	Security Target
TOE	Target of Evaluation
TSF	TOE Security Functionality

The abbreviations relating to the TOE used in this report are listed below.

MFP	Multifunction Peripheral
HCD	A Hardcopy Device

The definitions of terms used in this report are listed below.

Box	It refers to the mail box/inbox where document data created by scan, print, and fax jobs, are stored in the TOE.
Box function (Mail box/inbox)	It allows scanned document data or document data specified from a PC to be stored in a mail box, or documents received by I-fax to be stored in an inbox. It allows for operations such as print, send and delete of document data stored in a mail box or inbox.
Box PIN	PIN used for access to mail boxes and inboxes where document data are stored. It is used to control access to document data.
Copy function	It produces duplicates of the hardcopy documents by scanning and printing.
External interface	An interface to transmit print and fax/I-fax jobs and receive data from time server.
Fax Inbox	A box to store document data received through fax/I-fax, which enables to print the stored document data.
Hardcopy Device	A system producing or utilizing a physical embodiment of an electronic document or image. These systems include printers, scanners, fax machines, digital copiers, MFPs (multifunction peripherals), MFDs (multifunction devices), "all-in-ones," and other similar products.

I-fax	Short for Internet Fax, which uses the Internet to receive and send fax documents, instead of telephone line.
Print function	It produces a hardcopy document from its electronic form stored in the TOE.
Print Setting	It contains various print setting options for selecting color/monochrome, paper type, and duplex printing, etc.
Remote UI	An interface to access the MFP from Web browser over LAN; it confirms the behavior of the MFP, operates jobs, operate box functionalities, and enables various settings.
Scan function	It allows the conversion of data from its hardcopy form to its electronic form, to create document data.
Send (Universal Send) function	It allows scanned document data or document data stored in a mail box/inbox to be received for transmission to an email address, shared folder on a PC, or I-fax transmission.
TOE Owner	A person or organizational entity responsible for protecting TOE assets and establishing related security policies.
TSF Confidential Data	Assets for which either disclosure or alteration by a User who is not an Administrator or the owner of the data would have an effect on the operational security of the TOE.
TSF Protected Data	Assets for which alteration by a User who is not an Administrator or the owner of the data would have an effect on the operational security of the TOE, but for which disclosure is acceptable.
U.ADMINISTRATOR	A User who has been specifically granted the authority to manage some portion or all of the TOE and whose actions may affect the TOE security policy (TSP). Administrators may possess special privileges that provide capabilities to override portions of the TSP.
UI function	It allows users to operate the TOE from the control panel, and the TOE to display information on the control panel.
U.NORMAL	A User who is authorized to perform User Document Data processing functions of the TOE.
User Document Data	The asset that consists of the information contained in a user's document.
User Function Data	The asset that consists of the information about a user's document or job to be processed by the TOE.

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