



Certification Report

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IT Product (TOE)

Reception Date of Application (Reception Number)	2020-05-13 (ITC-0754)
Certification Identification	JISEC-C0739
Product Name	Canon imageRUNNER ADVANCE DX C477 Series 2600 model
Version and Release Numbers	1.0
Product Manufacturer	Canon Inc.
Conformance of Functionality	PP conformant functionality, CC Part 2 Extended
Protection Profile Conformance	U.S. Government Approved Protection Profile - U.S. Government Protection Profile for Hardcopy Devices Version 1.0 (IEEE Std. 2600.2 TM -2009)
Assurance Package	EAL2 Augmented by ALC_FLR.2
Name of IT Security Evaluation Facility	ECSEC Laboratory Inc., Evaluation Center

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

2022-03-15

YANO Tatsuro, Technical Manager IT Security Technology Evaluation Department IT Security Center

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 5
- Common Methodology for Information Technology Security Evaluation Version 3.1 Release 5

Evaluation Result: Pass

"Canon imageRUNNER ADVANCE DX C477 Series 2600 model Version 1.0" 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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${\bf JISEC\text{-}CC\text{-}CRP\text{-}C0739\text{-}01\text{-}2022}$

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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 DX C477 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 2022-03-03 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 Protection Profile or Assurance Package

The TOE conforms to the following Protection Profile [14][15] (hereinafter referred to as the "Conformance PP").

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

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

1.1.2 TOE and Security Functionality

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

The TOE provides the security functions required by the conformance PP, and also provides the security functions to accomplish the necessary security policy for an organisation which manages the TOE.

For these security functionalities, the evaluation for the validity of the design policy and the correctness of the implementation is conducted in the scope of the assurance package. The next clause describes the threats and the assumptions that the TOE assumes:

1.1.2.1 Threats and Security Objectives

The TOE assumes the following threats and provides the security functions to counter them.

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 in the following configuration and assumptions.

It is assumed that the TOE is located in an environment where physical components and interfaces of the TOE are protected from the unauthorised access. For the operation, the TOE shall be properly configured, maintained, and managed 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 in 2022-03, 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 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 and fully concluded certification activities.

2. Identification

The TOE is identified as follows:

TOE Name: Canon imageRUNNER ADVANCE DX C477 Series 2600 model

TOE Version: 1.0

Developer: Canon Inc.

The TOE consists of the following software and hardware.

Table 2-1 Components of the TOE

Component Name	Identification
System Software imageRUNNER ADVANCE DX	[Controller Version 2208]
C477 Series 2600 model Ver 22.08	
Canon imageRUNNER ADVANCE DX C477	[iR-ADV C477], and [Super G3 FAX
Series with Fax	Board-AT]
Canon MFP Security Chip 2.11	[Canon MFP Security Chip 2.11]

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

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

In this document, the components indicated by "Canon imageRUNNER ADVANCE DX C477 Series with Fax" in Table 2-1 are referred to as the "MFP main body".

3. Security Policy

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

The TOE provides MFP functions such as a copy function, a print function, and a scan function, and has functions of storing the user's document data in an internal HDD device and communicating with the user's terminal and various servers via a network.

The PP to which the TOE conforms assumes an environment in which a relatively high level of security and accountability for operation are required, and specifies the security function requirements required in that environment. When the MFP function is used, the TOE provides a security function that satisfies the security function requirements required by the PP.

The security functions provided by the TOE include identification authentication and access control of the user, encryption of the stored data of the HDD device, overwrite erasure at the time of data deletion, encryption communication protocols, etc., and protect the document data of the user as a protected asset and setting data affecting the security.

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

- U.NORMAL

A TOE user who is authorized to use such as copy function, print function and scan function provided by the TOE.

- U.ADMINISTRATOR

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

- TOE Owner

A person or organisational 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 presumes 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.

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.	

Table 3-1 Assumed Threats

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 threats "T.DOC.DIS," "T.DOC.ALT," and "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," and "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 organisational security policies are the same as those described in the PP except for P.STORAGE.CRYPT.

Table 3-2 Organisational Security Policies

Identifier	Organisational 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: &}quot;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 organisational 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 organisational 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 organisational 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.

The TOE can send stored audit logs to the file server for audit log.

(4) Means for organisational 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 organisational 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 whether to use 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) 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.

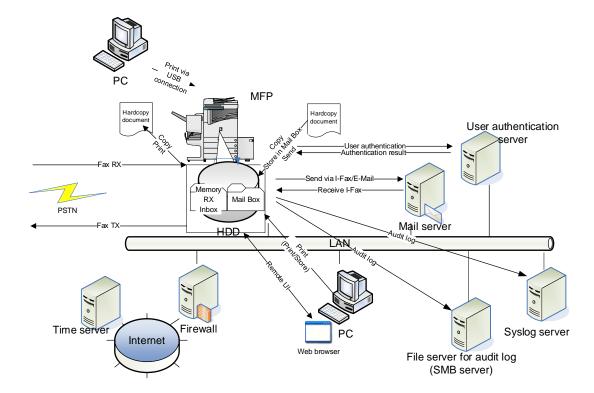


Figure 4-1 Operational Environment of the TOE

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

(1)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 Generic Plus LIPSLX Printer Driver Version 2.20
 - > Canon Generic Plus PS3 Printer Driver Version 2.20
 - > Canon Generic Plus PCL Printer Driver Version 2.20
- Web browser: Microsoft Internet Explorer 11 is assumed to be used.

(2) 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.

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 are assumed to be used.

(3) File Server for Audit Log

A SMB server to store audit logs sent from the TOE. Windows Server 2012 R2 Standard Edition is assumed to be used.

(4) syslog Server

A server to store audit logs sent from the TOE via syslog protocol. pSyslog v1.04 is assumed to be used.

(5) Mail Server

A Server is installed as required to facilitate the I-fax capability of the MFP. Microsoft Exchange Server 2013 is assumed to be used.

(6) 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. Windows Time is assumed to be used.

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

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 document data stored 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.

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, File Server for Audit Log, Syslog Server, Mail Server, PC, Fax, Time Server and User are not included in the TOE.

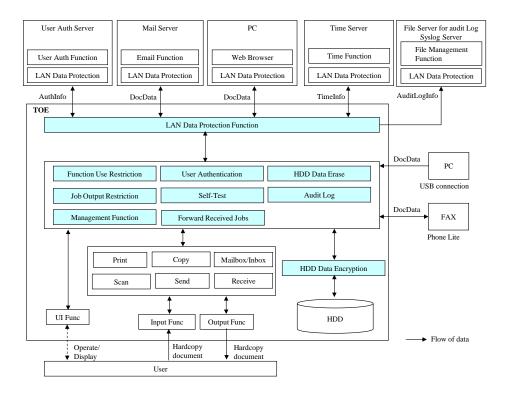


Figure 5-1 TOE Boundary

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. Audit logs are stored in the HDD. It is also possible to output the audit logs to the File Server for Audit Log and Syslog Server.

- (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 outputs audit logs using SMB protocol to the File Server for Audit Log and syslog protocol to the Syslog Server.

The TOE uses IPsec protocol to communicate with other external IT devices over the network.

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.

- iR-ADV Security Kit-AP1 for IEEE 2600 Common Criteria Certification Administrator Guide [FT6-2667 (000) , 20220208]
- Before Using the iR-ADV Security Kit-AP1 for IEEE 2600 Common Criteria Certification [FT6-2668(000), 20220208
- imageRUNNER ADVANCE DX C477 Series 2600 model (1.0) User's Guide [FT6-2671 (000)]

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 requirements 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 started in 2020-05 and concluded upon completion of the Evaluation Technical Report dated 2022-03. 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 evaluator directly visited the development and manufacturing sites in 2020-10 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 2020-10 and 2021-06.

7.4 IT Product Testing

The evaluator confirmed the validity of the testing that the developer had performed. As the verification results of the evidence shown in the evaluation process and the testing performed by the developer, 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 had performed and the documentation of actual test 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 the MFP model described in the TOE identification in Chapter 2.

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).

Component		Description	
-	-		
TOE	<u> </u>	Canon imageRUNNER ADVANCE DX C477 Series 2600 model	
	Version 1.0	()	
Server 1	Used as a User Authentication Server (Kerberos), Mail Server,		
	Time Server, File Server	for Audit logs, and Syslog Server	
	- OS:	Windows Sever 2012 R2 Standard	
		Edition	
	- User Authentication	Active Directory Domain Services	
	Server (Kerberos):		
	- Mail Server:	Microsoft Exchange Server 2013	
	- Time Server:	Windows Time	
	- File Server for Audit	SMB Server function on OS	
	logs:		
	- Syslog Server:	pSyslogv1.04	
Server 2	Used as a User Authentication Server (LDAP)		
	- OS:	Windows Sever 2012 R2 Standard	
		Edition	
	- User Authentication	eDirectory 8.8 SP8	
	Server (LDAP):	·	
PCs for tests	- OS:	Microsoft Windows 10	
	- Web Browser:	Microsoft Internet Explorer 11	

Table 7-1 Components of the Developer Testing

2) Summary of the Developer Testing

A summary of the developer testing is as follows.

a. Outline of the Independent Testing

An outline of the developer testing is as follows.

<Developer Testing Approach>

(1) By operating the user interfaces including the control panel, 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 behaviour 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.

<Developer Testing Tools>

Table 7-2 shows tools used in the developer testing.

Table 7-2 Developer Testing Tools

Tool Name	Outline and Purpose of Use
- Wireshark Ver.1.12.5	A tool to monitor and analyze
	communication data over LAN.
- SierraM6-2 SAS-M006-802-X	A tool to connect between SATA
(LeCroy)	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 behaviour of
	pseudorandom number generator for
	IPsec.
- Phone line pseudo-exchanger	A unit that pseudo-exchanges the
	phone line.
- Canon Generic Plus LIPSLX	Printer Driver
Printer Driver Version 2.20	
- Canon Generic Plus PS3 Printer	
Driver Version 2.20	
- Canon Generic Plus PCL Printer	
Driver Version 2.20	

<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 396 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 validity 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 implementation of security functions using 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 confidence 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, behaviour tests, and calibration for the devices and testing tools used were performed by the evaluator.

The TOE tested by the evaluator is the MFP model described in the TOE identification 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 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 59 items based on the developer testing and evaluation documentation provided. The evaluator also designed an additional independent testing on 8 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 which cannot be observed from outside by people, an approach to confirm the behaviour of such functions by using packet capture software (Wireshark) 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

Tool Name	Outline and Purpose of Use
Wireshark Ver. 3.2.4	A tool to monitor and analyze communication data over LAN.
Burp Suite Pro Ver 1.7.37	Proxy type vulnerability analysis tool. It is used to confirm session ID that cannot be confirmed by browser.
Generic Fax Driver Ver 10.40	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 contents of the independent testing corresponding to the viewpoints.

Table 7-4 Content of the Performed Independent Testing

Outline of the Independent Testing	Viewpoint of independent testing
Functional testing for management function, and Function Use Restriction access control	(1)
(e.g., to confirm that a user assigned a general user role is unable to access the management function specified in the ST)	
Functional testing for user authentication screen	(1)
(e.g., to confirm the operation for character-length check of user name and password)	
Functional test for functions related to editing of user information	(1)
(e.g., to confirm the variations of the characters to be used for a general user's password)	
Functional testing for the session management function of Remote UI	(3)
(e.g., to confirm the authentication function by observing and/or changing session ID)	
Functional testing for Job Output Restriction access control	(1)
(e.g., to confirm that the behaviour 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)	
Functional testing for simultaneous use of user privilege	(2)
(e.g., to confirm that administrators cannot log in simultaneously)	
Functional testing for external interfaces	(4)
(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)	
Functional testing for the Box function	(1), (5)
(e.g., to confirm that only Administrator can access Remote UI, and to confirm the time required to attempt to enter box PIN)	

c. Result

All the independent testing performed by the evaluator was correctly completed, and the evaluator confirmed the behaviour of the TOE. The evaluator confirmed consistencies

between the expected behaviour 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 behaviour 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, behaviour tests, and calibration for these tools were performed by the evaluator.

Table 7-5 Penetration Testing Tools

Tool Name	Outline and Purpose of Use	
Nmap Ver 7.8.0	A tool to detect available network service ports.	
Nessus Ver 8.11.0	A tool to detect known vulnerabilities at network ports.	
BurpSuite Pro Ver. 1.7.37	The tool is used to refer and alter the communication	
	data between Web browser and Web server (TOE).	
PRET V0.40	A tool to inspect various vulnerabilities in a printing	
	processing.	

<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	Outline of the Penetration Testing
(1)	The evaluator performed a port scan on the TOE using a port scan tool (Nmap). No unexpected network service was found.
(2)	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.
	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 cannot be executed. PRET was used to confirm that no unauthorized process is executed by inputting print job commands and print files that contain unauthorized process to the TOE.
(3)	The evaluator examined the URLs of screens accessible after authentication using Burp Suite.
	The evaluator tried to access such screens by specifying URLs without authentication and confirmed that these screens could be accessed only after authentication. (The behaviour of the check function of the session information was confirmed.)

Vulnerability	Outline of the Penetration Testing
(4)	Burp Suite Pro was used to confirm the following points:
	> 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 this TOE satisfies all work units prescribed in the CEM as per 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. 2600.2TM-2009)

The TOE also conforms to the following SFR packages 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

There is no evaluator recommendation to be addressed to procurement entities.

8. Certification

Based on the evidence submitted by the Evaluation Facility during the evaluation process, the Certification Body has performed certification by checking that the following requirements are satisfied:

- 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 they 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 Evaluation Technical Report and related evaluation documentation submitted by the Evaluation Facility, 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 as a separate document from this Certification Report.

Canon image RUNNER ADVANCE DX C477 Series 2600 model Security Target, Version 1.09, February 08, 2022, 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 Product
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	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 (HCD)	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 behaviour 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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