# JCM Verification Report Form

## A. Summary of verification

A.1. General Information

| | |
|---|---|
| Title of the project | Introduction of Energy-Efficient Air Conditioners in RICOH IMAGING PRODUCTS (Vietnam) CO., LTD |
| Reference number | VN009 |
| Monitoring period | 06/12/2017 - 30/11/2018 |
| Date of completion of the monitoring report | 23/01/2019 |
| Third-party entity (TPE) | Lloyd's Register Quality Assurance Limited (LRQA) |
| Project participant contracting the TPE | RICOH COMPANY, LTD. |
| Date of completion of this report | 26/03/2019 |

A.2 Conclusion of verification and level of assurance

| | |
|---|---|
| Overall verification opinion | ☒ Positive<br>☐ Negative |
| ☒ Unqualified opinion | Based on the process and procedure conducted, *Lloyd's Register Quality Assurance Limited (LRQA)* (TPE's name) provides reasonable assurance that the emission reductions for *Introduction of Energy-Efficient Air Conditioners in RICOH IMAGING PRODUCTS (Vietnam) CO., LTD* (project name)<br>✓ Are free of material errors and are a fair representation of the GHG data and information, and<br>✓ Are prepared in line with the related JCM rules, procedure, guidelines, forms and other relevant documents |
| *(If overall verification opinion is negative, please check below and state its reasons.)*<br>☐ Qualified Opinion<br>☐ Adverse opinion<br>☐ Disclaimer | <State the reasons><br>Not applicable |

A.3. Overview of the verification results

| Item | Verification requirements | No CAR or CL remaining |
|---|---|---|
| The project implementation with the eligibility criteria of the applied methodology | The TPE determines the conformity of the actual project and its operation with the eligibility criteria of the applied methodology. | ☒ |
| The project implementation against the registered PDD or any approved revised PDD | The TPE assesses the status of the actual project and its operation with the registered/validated PDD or any approved revised PDD. | ☒ |
| Calibration frequency and correction of measured values with related requirements | If monitoring Option C is selected, the TPE determines whether the measuring equipments have been properly calibrated in line with the monitoring plan and whether measured values are properly corrected, where necessary, to calculate emission reductions in line with the PDD and Monitoring Guidelines. | ☒ |
| Data and calculation of GHG emission reductions | The TPE assesses the data and calculations of GHG emission reductions achieved by/resulting from the project by the application of the selected approved methodology. | ☒ |
| Avoidance of double registration | The TPE determines whether the project is not registered under other international climate mitigation mechanisms. | ☒ |
| Post registration changes | The TPE determines whether there are post registration changes from the registered PDD and/or methodology which prevent the use of the applied methodology. | ☒ |

| Authorised signatory: | Mr. ☒ Ms. ☐ |
|---|---|
| Last name: Chiba | First name: Michiaki |
| Title: Climate Change Manager - Asia & Pacific | |
| Specimen signature: [redacted] | Date: 26/03/2019 |

## B. Verification team and other experts

| | Name | Company | Function* | Scheme competence* | Technical competence* | On-site visit |
|---|---|---|---|---|---|---|
| Mr. ☒ Ms. ☐ | Michiaki Chiba | LRQA Ltd. | Team leader | ☒ | Technical competence authorised | ☒ |
| Mr. ☒ Ms. ☐ | Srikanth Meesa | LRQA India | Team member | ☐ | N/A | ☒ |
| Mr. ☒ Ms. ☐ | Nguyen Thang | LRQA Ltd. | Host country expert | ☐ | N/A | ☒ |
| Mr. ☒ Ms. ☐ | Stewart Niu | LRQA China | Internal reviewer | ☒ | N/A | ☐ |

*Please specify the following for each item.*

* *Function: Indicate the role of the personnel in the validation activity such as team leader, team member, technical expert, or internal reviewer.*

* *Scheme competence: Check the boxes if the personnel have sufficient knowledge on the JCM.*

* *Technical competence: Indicate if the personnel have sufficient technical competence related to the project under validation.*

## C. Means of verification, findings and conclusions based on reporting requirements

C.1. Compliance of the project implementation and operation with the eligibility criteria of the applied methodology

**<Means of verification>**

LRQA has determined during the verification process that the actual implementation and operation of the project has been conducted in conformance with the eligibility criteria of the applied methodology.

The project applied the approved methodology: JCM_VN_AM006_ver01.0 "Introduction of air conditioning system equipped with inverters, Version 01.0".

LRQA assessed by means of an on-site visit that the physical features of the project are in place and that the PPs have operated the project as per the eligibility criteria of the applied methodology. The steps taken to verify each eligibility criterion and the conclusions about implementation of the project are summarised as below.

Criterion 1: Air-conditioning system with inverter is newly installed or installed to replace existing non-inverter air conditioning system.

Justification in the PDD: Air-conditioning system with inverter is installed to replace existing non-inverter air conditioning system. All air-conditioning systems are products of Daikin

Industries, Ltd. and their code of outdoor units are:
RXQ20THY1
RXQ50THY1
RXQ12TAHYM
RXQ50TAHYM
RXQ16TAHYM
RXQ32TAHYM
Steps taken for assessment: The verification team assessed the project documentation, technical specification of the existing and project air conditioning system, the installation completion certificates, and conducted physical on site assessment.
Conclusion: The verification team confirmed that the project installs air-conditioning system with inverter to replace existing non-inverter air conditioning system at the factory of RICOH IMAGING PRODUCT (Vietnam) Co., Ltd and the criterion is met. Please refer to correction of the model number of outdoor unit for the project air conditioning system No. 7 in CAR 5 and the resolution details in below Section C.2. that the correct model number is RXYQ12TAHY1 instead of RXQ12TAHYM as indicated in the registered PDD. The verification team confirmed the air-conditioning system of correct model number is also equipped with inverter and the correction of the registered PDD does not affect the applicability of the methodology.

Criterion 2: Cooling capacity of project air conditioning system is more than or equal to 14kW.
Justification in the PDD: The cooling capacity of all project air conditioning systems installed are more than or equal to 14kW, as shown in the table below:

| Unit code | Cooling Capacity (kW) |
|---|---|
| RXQ20THY1 | 54.4 |
| RXQ50THY1 | 140 |
| RXQ12TAHYM | 32 |
| RXQ50TAHYM | 140 |
| RXQ16TAHYM | 44.8 |
| RXQ32TAHYM | 89.4 |

Steps taken for assessment: The verification team assessed the project documentation, technical specification, the installation completion certificates, and conducted physical on site assessment.
Conclusion: The verification team confirmed that the cooling capacity of all the project air conditioning system is greater than 14 kW and the criterion is met by the project. Please refer to correction of the model number of outdoor unit for the project air conditioning system No. 7

in CAR 5 and the resolution details in below Section C.2. that the correct model number is RXYQ12TAHY1 instead of RXQ12TAHYM as indicated in the registered PDD. The verification team confirmed that the cooling capacity of the air-conditioning system No. 7 of correct model number is the same as the one before correction indicated in the registered PDD and the correction does not affect the applicability of the methodology.

Criterion 3: COP of project air-conditioning system has a COP value higher than that of the value indicated in the table below.

COP for Reference Air Conditioning System (COP_RE,i)

| Cooling Capacity [kW] | Reference COP |
|---|---|
| 14 ≦ x < 28 | 2.97 |
| 28 ≦ x < 42 | 2.94 |
| 42 ≦ x < 56 | 2.91 |
| 56 ≦ x | 2.56 |

Justification in the PDD: The COP of all project air-conditioning systems are higher than the threshold values stated in this criteria as shown in the table below:

| Unit code | Cooling Capacity (kW) | COP |
|---|---|---|
| RXQ20THY1 | 54.4 | 4.35 |
| RXQ50THY1 | 140 | 3.38 |
| RXQ12TAHYM | 32 | 4.40 |
| RXQ50TAHYM | 140 | 3.38 |
| RXQ16TAHYM | 44.8 | 4.30 |
| RXQ32TAHYM | 89.4 | 3.85 |

Steps taken for assessment: The verification team reviewed the technical specification, and conducted physical on site assessment.

Conclusion: The verification team confirmed that the COP values of the project air conditioning systems are greater than the reference COP values of respective cooling capacity of air conditioning system. Therefore, the criterion is fulfilled by the project. Please refer to correction of the COP value for the project air conditioning system No. 8 in CAR 3 and the resolution details in below Section C.2. that the correct COP value is 3.92 instead of 3.85 as indicated in the registered PDD. The verification team confirmed the correct COP value of the air-conditioning system is also higher than the COP value of the reference air-conditioning system and the correction of the registered PDD does not affect the applicability of the methodology.

Criterion 4: Ozone Depletion Potential (ODP) of the refrigerant used for project air conditioning

system is zero.
Justification in the PDD: Refrigerant of R-410A, whose ODP is zero, is used for all project air conditioning systems installed.
Steps taken for assessment: The verification team reviewed technical specification of project air conditioning system and the Safety Data Sheet of refrigerant used and physically observed through the on site assessment.
Conclusion: The verification team confirmed that the project air conditioning systems use R410A as the refrigerant and its ODP is zero. Therefore the requirement of the criterion is met by the project.

Criterion 5: Plans to prevent release of refrigerants into the atmosphere at the time of air conditioning system removal are prepared for both project air conditioning system and the existing air conditioning system replaced by the project. In the case of replacing existing air conditioning system by project air conditioning system, execution of the prevention plan is checked at the time of verification, e.g. re-use of the refrigerant, in order to confirm that refrigerant used for the existing air conditioning system removed by the project is not released to the air.
Justification in the PDD: Installation of project air conditioning system in the factory is conducted by Northstar construction - Trading JSC (Northstar), local associated company of Daikin Industries who has ability to recover and handle refrigerants properly. The refrigerants used in the existing air conditioning systems replaced by the project have been recovered by Northstar and are stored in refrigerant tanks.
When the project air conditioning systems will be replaced in the future, the refrigerants in the project air conditioning systems will be recovered and stored into refrigerant tanks by Northstar. Hence, no refrigerant from project air conditioning system is being released during the installation and storage process.
Steps taken for assessment: The verification team reviewed the procedures on recovery and treatment of recovered refrigerant, the records of refrigerant recovery and certificates of collection and re-use, and interviewed the PPs during the on site assessment.
Conclusion: The verification team confirmed that the PPs established the procedures to prevent release of refrigerant both from the project air-conditioning system and the existing air-conditioning system replaced by the project. The verification team raised CL 2 on the implementation of the recovery and treatment of the refrigerant from the replaced existing air-conditioning system and confirmed that the additional evidence requested was prepared by the PPs through resolution of CL 2 as below. The criterion was confirmed as satisfied by the project.

The verification team confirmed that the eligibility conditions are satisfied by the project by reviewing the supporting documents and the on site assessment.
The details of the persons interviewed and the documents reviewed are shown in the Section F of this report.

**<Findings>**

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

Grade / Ref: CL 2

Nature of the issue raised: Additional evidence was requested on recovery and re-use of refrigerant gas from the existing air-conditioning system replaced by the project air conditioning system Nos. 1 and 2.

Nature of responses provided by the PPs: The PPs provided certificate of refrigerant destruction/reuse issued by the contractor who conducted recovery of the refrigerant gas.

Assessment of the responses: The verification team reviewed confirmation letter from the contractor dated 16/05/2017 that confirmed recovery of all refrigerant gas and re-use of the same. The CL was closed.

**<Conclusion based on reporting requirements>**

*Please state conclusion based on reporting requirements.*

The verification team confirmed that the project has been implemented in conformity with the eligibility criteria of the applied methodology.

C.2. Assessment of the project implementation against the registered PDD or any approved revised PDD

**<Means of verification>**

The project replaces the existing air conditioners by high efficiency inverter air conditioners at the factory of RICOH IMAGING PRODUCTS (Vietnam) Co., Ltd in east of Hanoi City, Vietnam. The project includes 8 units of high efficiency air conditioners that contributes saving of electricity supplied by the public electricity grid system and reduces GHG emissions from generation of grid electricity. The project employs high efficiency air conditioning system of Daikin Industries, Ltd. There are other air-conditioning units not included in the project that service areas are separated and the electricity supply to those units is also separated from the project.

The project is implemented by RICOH IMAGING PRODUCTS (Vietnam) CO., LTD. from the Socialist Republic of Viet Nam and RICOH COMPANY, LTD. from Japan. The start date of project operation is on 06/12/2017 and the expected operational lifetime of the project is for 9 years.

The project receives financial support for JCM model projects from the Ministry of the Environment, Japan (MOE).

The verification team assessed the Monitoring Report (MR) that consists of Monitoring Report Sheet (MRS) parts of the Monitoring Spreadsheet and the supporting documents, conducted a physical site visit to assess the status of the actual project and its operation in accordance with the registered PDD. Corrections of description in the registered PDD and Monitoring Plan (MP) was requested as CAR 3 and CAR 5 that resolution details are provided below.

The verification team determined through the verification process that the implementation and operation of the project has been in accordance with the description contained in the registered PDD and the corrections. The verification team, by means of a desk review and an on-site visit, assessed that:

- all physical features of the JCM project described in the registered PDD with the corrections are in place, and
- the PPs have operated the JCM project as per the registered PDD with the corrections.

The MR follows the MP of the registered PDD that has been established based on the approved methodology. The parameters to be monitored ex-post are (1) EC_PJ,i,outdoor,p Electricity consumption of outdoor unit of project air conditioning system i during the period p (in MWh/p) and (2) EC_PJ,indoor,p Total electricity consumption of indoor units of project air conditioning system during the period p (in MWh/p). 8 electricity meters are installed to directly and continuously measure electricity consumption for each outdoor unit. Electricity consumption of indoor units is calculated by the rated power consumption of the indoor units and operating hours of the connected outdoor units monitored by the 8 electricity meters.

The roles and responsibilities of the persons are described in the Monitoring Structure Sheet (MSS) in accordance with the requirements of the applied methodology. There was no change in the organizational structure during the monitoring period.

Through the processes taken, CAR 1, CAR 3, CAR 4, CAR 5 and CL 1 were raised as the resolution detailed below.

The details of the persons interviewed and the documents reviewed are shown in the Section F of this report.

**<Findings>**

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

Grade / Ref: CAR 1

Nature of the issue raised: The MRS was not completed with the monitoring period.

The versions of MR should be given an identification when revised.

Nature of responses provided by the PPs: The PPs revised MRS and the monitoring period is added. The date of revision is provided for the revised MR.

Assessment of the responses: The verification team confirmed that the revised MRS is completed with the monitoring period as 06/12/2017 to 30/11/2018 and the date of completion of the MR is indicated. Although the monitoring period covers year 2017 and 2018, a single

MRS is accepted as the data of year 2018 only is available (Refer to below Section C.4).
The CAR was closed.

Grade / Ref: CAR 3
Nature of the issue raised: COP value of the project air conditioning system No. 4 was differently indicated in the PDD and the MP/MR. COP value of the project air conditioning system No. 8 was not indicated in the PDD, MP and MR as obtained from the technical specification.
Nature of responses provided by the PPs: The PPs corrected the PDD, MP and MR and submitted the revised versions for review by the verification team.
Assessment of the responses: The verification team reviewed the revised PDD, MP/MR and confirmed erroneous indications of COP values have been corrected. The verification team confirmed the corrections of the registered PDD and MP do not affect applicability of the approved methodology as above Section C.1.
The CAR was closed.

Grade / Ref: CAR 4
Nature of the issue raised: Identification number shown on some of the project air conditioning systems on site did not match with the corresponding equipment numbers.
Nature of responses provided by the PPs: The PPs confirmed the indications of identification numbers of the air conditioning system and provided documentation after correction of the indications on site including the list of equipment and photographs.
Assessment of the responses: The verification team reviewed the records of confirmation and corrections by the PPs for the equipment identification on site and confirmed that the identification numbers after corrected are provided in a way to prevent from misidentification of the project air conditioning system on site.
The CAR was closed.

Grade / Ref: CAR 5
Nature of the issue raised: The model number of the outdoor unit No. 7 of the project air conditioning system was found different from the one indicated in the PDD.
The model No. RXYQ12TAHY1 consists of 2 x RXYQ6TAY1 (instead of RXYQ12TAHYM consists of 2 x RXQ6TAYM) has a heating function. No data resulted in use of the heating function is included during the monitoring period under verification but the PPs should address the treatment.
Nature of responses provided by the PPs: The PPs corrected the model number in the revised PDD and clarified the procedures to record use of heating function and exclude the data from

calculation of the ERs in case heating function is used.
Assessment of the responses: The verification team reviewed the revised PDD and confirmed indication of model number has been corrected. The verification team also reviewed the procedures for recording time when heating function is used and the treatment to exclude the data from calculation of the ERs and confirmed appropriateness. The verification team confirmed that the correction of the registered PDD does not affect applicability of the approved methodology as above Section C.1.
The CAR was closed.

Grade / Ref: CL 1
Nature of the issue raised: The PPs were requested to clarify implementation of the procedures to keep data monitored and required for verification and issuance be kept and archived electronically for two years after the final issuance of credits.
Nature of responses provided by the PPs: The PPs added statement in the revised PDD to clarify fulfilment of the requirements.
Assessment of the responses: The verification team confirmed fulfilment of the requirements were clarified by the revised PDD and the procedures for implementation as provided by the PPs.
The CL was closed.

**<Conclusion based on reporting requirements>**

*Please state conclusion based on reporting requirements.*

The verification team confirmed that the project was implemented and operated in accordance with the registered PDD with the corrections and a revision was reviewed by the verification team as the post registration changes that were confirmed as not preventing from application of the approved methodology as the below Section C.6.

C.3. Compliance of calibration frequency and correction of measured values with related requirements

**<Means of verification>**

The parameter Nos. (1) EC_PJ,i,outdoor,p and (2) EC_PJ,indoor,p apply the monitoring Option C and the monitoring of the parameters uses electricity meters as the measuring equipment. The electricity meters measure electricity consumed by the project air conditioning systems out of the total electricity imported from the public electricity grid system, that are not for trade measurement and subject of regulations in the host country. Calibration of the electricity meters was conducted at the shipment from the factory and periodical calibration is not required by the host country regulations, the manufacturer or the approved methodology. No correction was required to the measured values to calculate emission reductions in line with the PDD and

Monitoring Guidelines during the monitoring period.

CAR 6 was raised as the resolution details below.

The details of the persons interviewed and the documents reviewed are shown in the Section F of this report.

<**Findings**>

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

Grade / Ref: CAR 6

Nature of the issue raised: The details of the electricity meters were not indicated in the MRS for the monitoring parameter EC_PJ,i,outdoor,p including the accuracy level and calibration information. Relevant evidence was not provided to demonstrate how the calibration requirements of the electricity meters have been fulfilled.

Nature of responses provided by the PPs: The PPs revised the MRS and added the calibration information for the measuring equipment for which the PPs provided below evidence.

- Clarification from the equipment supplier
- Certificate for factory inspection
- Name plate of the measuring equipment indicating the production number of the equipment.

Assessment of the responses: The verification team reviewed the revised MR and supporting evidence, and confirmed that the information of accuracy level and calibration of the measuring equipment are described in the revised MRS and the measuring equipment has been calibrated by the manufacturer on 25/05/2015 that fulfilled the requirements of the registered MP.

The CAR was closed.

<**Conclusion based on reporting requirements**>

*Please state conclusion based on reporting requirements.*

The verification team confirmed that the measuring equipment applied for the parameters satisfied the requirements of the MP concerning the regular calibration and no correction was required to the measured values during the monitoring period.

C.4. Assessment of data and calculation of GHG emission reductions

<**Means of verification**>

The MR is developed using the MRS applied to the registered JCM project that is confirmed fulfilment of the requirements of the MRS of the applied methodology.

LRQA has determined that:

1. a complete set of data for the specified monitoring period is available,
2. information provided in the MR has been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis,
3. calculations of reference emissions (REs) and project emissions (PEs), as appropriate, have been carried out in accordance with the formulae and methods described in the MP and the

applied methodology,

4. any assumptions used in emission calculations have been justified, and

5. appropriate emission factors, default values and other reference values have been correctly applied.

The sources of GHG emissions are consumption of grid electricity and CO2 emissions by the reference air conditioning systems to determine the REs and consumption of grid electricity and CO2 emissions by the project air conditioning systems including the indoor units and outdoor units to determine the PEs in accordance with the applied methodology.

The REs are calculated by electricity consumption of project air conditioning systems, ratio of COPs of project and reference air conditioning systems, and CO2 emission factor of the electricity. The CO2 emission factor of the grid electricity is 0.8154 tCO2/MWh as fixed ex-ante at the validation.

COP values of outdoor unit of the project air conditioning systems are determined based on the manufacturer's specification and the default values are applied for COP values of the reference air conditioning systems that are fixed ex-ante at the validation as below (corrections of values indicated in the registered PDD are applied as the post registration changes not affecting applicability of the approved methodology as below Section C.6.).

| Identification No. | Cooling capacity (kW) | COP of project air-conditioning system | COP of reference air-conditioning system |
|---|---|---|---|
| i = 1 | 54.4 | 4.35 | 2.91 |
| i = 2 | 140 | 3.38 | 2.56 |
| i = 3 | 32 | 4.40 | 2.94 |
| i = 4 | 140 | 3.38 | 2.56 |
| i = 5 | 44.8 | 4.30 | 2.91 |
| i = 6 | 44.8 | 4.30 | 2.91 |
| i = 7 | 32 | 4.40 | 2.94 |
| i = 8 | 89.4 | 3.92 | 2.56 |

The GHG emission reductions during the monitoring period are calculated as: ERp = REp - PEp = $\Sigma$ _i (EC_PJ,i,outdoor,p × COP_PJ,i,outdoor ÷ COP_RE,i) × EF_elec - $\Sigma$ _i (EC_PJ,i,outdoor,p + EC_PJ,indoor,p) × EF_elec

{(8.226 x 4.35 / 2.91) + (119.198 x 3.38 / 2.56) + (12.465 x 4.40 / 2.94) + (77.989 x 3.38 / 2.56) + (11.157 x 4.30 / 2.91) + (1.146 x 4.30 / 2.91) + (4.513 x 4.40 / 2.94) + (48.780 x 3.92 / 2.56)} x 0.8154 tCO2/MWh – (8.226 + 119.198 + 12.465 + 77.989 + 11.157 + 1.146 + 4.513 + 48.780 + 71.978) x 0.8154 tCO2/MWh

= (12.297 + 157.379 + 18.655 + 102.970 + 16.486 + 1.693 + 6.754 + 74.694) x 0.8154 tCO2/MWh – 355.452 x 0.8154 tCO2/MWh

= 390.928 MWh x 0.8154 tCO2/MWh – 355.452 MWh x 0.8154 tCO2/MWh = 318.76 – 289.84 = 28.9 tCO2e

The project air-conditioning systems started the operation on 06/12/2017 but the correct data was not obtained until 31/03/2018 due to the wrong setting of the measuring equipment and the time spent to solve the problem. The PPs decided to assume the data is zero during the period from 06/12/2017 to 31/03/2018 for calculation of the ERs for conservativeness (please refer to the post registration change and the determination in below Section C.6.) and the monitored data is available only from 01/04/2018 to 30/11/2018. Total electricity consumption in first monitoring period of 8 months excluding the period data was not correctly monitored is 355.45 MWh that is 533.18 MWh in a year (355.45 MWh x 12/8 months = 533.18 MWh) and it is 37.6 % of ex-ante estimation in the registered PDD of 1,419 MWh. In the absence of data and information for accurate estimation, the PPs calculated the electricity consumption by the rated electricity consumption of the equipment and 24 hours a day and 319 working days a year. The project air conditioning systems are operated in a various load conditions under the actual operation. The actual electricity consumption of the air conditioning systems is considered as reasonable on the basis of the current working load and energy saving actions having been taken in the factory, though the GHG emission reductions that will be achieved by the project will be dependent on the working load of the factory that is expected to increase over the crediting period.

The verification team assessed the reported data with documented evidence and by means of on site visit. Through the processes taken, CAR 2 was raised as the resolution detailed below. The details of the persons interviewed and the documents reviewed are shown in the Section F of this report.

| Parameters | Monitored values | Method to check values in the monitoring report with sources |
|---|---|---|
| EC_PJ,outdoor,p | 283.47 MWh/p | Assessment was conducted based on records of meter readings and on site assessment. |
| EC_PJ,indoor,p | 71.98 MWh/p | Assessment was conducted based on records of meter readings and on site assessment. |
| | | |

<**Findings**>

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

Grade / Ref: CAR 2

Nature of the issue raised: The value of electricity consumption was not reported as monitored for the outdoor unit No. 8 of the project air conditioning system in May 2018.
Nature of responses provided by the PPs: The PPs corrected the data and provided the revised MR and calculation spreadsheet.
Assessment of the responses: The verification team checked the revised MR with the supporting evidence and confirmed the erroneous data has been corrected.
The CAR was closed.

<**Conclusion based on reporting requirements**>

*Please state conclusion based on reporting requirements.*

The verification team confirmed that appropriate methods and formulae for calculating REs and PEs have been followed. The verification team is of the opinion that all assumptions, emissions factors and default values that were applied in calculations have been justified.

C.5. Assessment of avoidance of double registration

<**Means of verification**>

The verification team assessed and confirmed relevance of the written confirmation from the PPs that the project is not registered under the other international climate mitigation mechanisms.
The team, in addition to the interviews with the PPs, checked publicly accessible information of Clean Development Mechanism (CDM), Joint Implementation (JI), Verified Carbon Standard (VCS) and Gold Standard (GS) and found no identical project as the proposed JCM project in terms of the name of entities, applied technology, scale and the location. The result of researches confirmed that the proposed project was not registered under the other international climate mitigation mechanisms than JCM and it will not result in a double counting of GHG emission reductions.
The details of the persons interviewed and the documents reviewed are shown in the Section F of this report.

<**Findings**>

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

No issue was raised to the requirements of this section.

<**Conclusion based on reporting requirements**>

*Please state conclusion based on reporting requirements.*

The verification team confirmed that the project is not registered under other international climate mitigation programs.

C.6. Post registration changes

<**Means of verification**>

The verification team assessed the post registration changes as below.

1) The COP value of the project air conditioning system No. 4 was differently indicated in the registered PDD and MP.

2) The COP value of the project air conditioning system No. 8 was not indicated in the registered PDD and MP as obtained from the technical specification.

3) The model number of the outdoor unit of the project air conditioning system No. 7 was not correctly indicated in the registered PDD.

4) The monitoring parameters were not monitored in accordance with the registered MP from 06/12/2017 to 31/03/2018 due to wrong settings of the measuring equipment and the time required to solve the problem that prevented from obtaining of normal data during the period.

The verification team assessed the project documentation, conducted the on site visit and confirmed that the post registration changes from the registered PDD and MP do not prevent application of the approved methodology. Corrections were made to the incorrect indications of COP values and model number of the project air conditioning systems in the revised PDD and MP. For the period data was not monitored from 06/12/2017 to 31/03/2018, the PPs assumed the data is zero for calculation of the ERs and the verification team confirmed that the treatment is conservative as the data is used for calculation of both REs and PEs.

<**Findings**>

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

Please refer to CAR 3, CAR 5 and the resolution details in the above Section C.2. on the corrections of the registered PDD and MP.

<**Conclusion based on reporting requirements**>

*Please state conclusion based on reporting requirements.*

The verification team through the verification processes determined that there was no post registration change from the registered PDD or approved methodology which prevent from use of the applied methodology.

## D. Assessment of response to remaining issues

An assessment of response to the remaining issues including FARs from the validation and/or previous verification period, if appropriate

No FAR was issued in the validation and this is the first verification of the project.

## E. Verified amount of emission reductions achieved

| Year | Verified Reference Emissions ($tCO_2e$) | Verified Project Emissions ($tCO_2e$) | Verified Emission Reductions ($tCO_2e$) |
|---|---|---|---|
| 2013 | | | |
| 2014 | | | |
| 2015 | | | |
| 2016 | | | |
| 2017 | 0 | 0 | 0 |
| 2018 | 318.8 | 289.8 | 28 |
| 2019 | | | |
| 2020 | | | |
| Total ($tCO_2e$) | | | 28 |

## F. List of interviewees and documents received

F.1. List of interviewees

RICOH IMAGING PRODUCTS (Vietnam) CO., Ltd.
Yuichi Ihara, General Director
Tran Quynh Trang, Manager, Administration Dept.

RICOH Company, Ltd.
Kazuhiro Etoh, Specialist, Process Enhancement Group, Environmental Evolution Office, Sustainability Management Division
Kimihiko Komada, Process Enhancement Group, Environmental Evolution Office, Sustainability Management Division

Mitsubishi UFJ Research and Consulting Co., Ltd.
Kei Sato, Consultant, Consulting Business Division, Optimum Solution Business Unit, Social Innovation Co-Creation Dept., Environment and Energy Business Consulting Group
Fumiya Sato, Associate, Consulting Business Division, Optimum Solution Business Unit, Social Innovation Co-Creation Dept.

F.2. List of documents received

Category A documents (documents prepared by the PPs)

- Monitoring Report
- Revised Monitoring Report completed on 23/01/2019
- Revised PDD Version 4.0 dated 08/01/2019 with the revised Monitoring Spreadsheet
- Electricity consumption of indoor units
- Records of operating hour
- Monthly report & calculation sheet for electricity consumption of indoor unit
- Electricity consumption of outdoor units
- Records of electricity consumption
- Comparison table for existing equipment, new outdoor and indoor units
- Certificate of completion FY2015
- Certificate of completion FY2016
- Certificate of completion FY2017
- Air Conditioning System General Plan
- List of monitoring equipment
- Location of monitoring equipment
- Letter from the supplier on evaluation of power meter accuracy
- Specifications for VRV Indoor Units
- Specifications for Outdoor Units
- Air conditioning system catalogue Feb 2014
- Air conditioning system catalogue Jul 2016
- Energy saving equipment catalogue, Panasonic
- Company Profile – RICOH IMAGING PRODUCTS (Vietnam) CO., Ltd.
- Contract on supply and installation of air conditioning system dated 01/08/2017
- Procedures for recovery of refrigerant gases
- Status of refrigerant gas recovery & re-use
- Report for status of refrigerant gas recovery FY2015 (Japanese)
- Reports on re-use of recovered refrigerant gas, tanks 1-6
- Photograph during refrigerant gas recovery
- Photograph of storage tank after refrigerant gas recovery
- Monitor unit layout
- JCM Monitoring procedures
- Staff training plan
- Staff education and training records
- Written confirmation from the PPs on avoidance of double registration dated 30/11/2018
- Confirmation letter from the contractor dated 16/05/2017 that confirmed recovery of all refrigerant gas and re-use of the same
- Factory inspection report for Eco Power Meter

- Clarification from the supplier on inspection of power meters

Category B documents (other documents referenced)

- PDD Version 3.0 dated 20/02/2018 including the annexes
- Validation Report dated 21/02/2018
- JCM_VN_AM006_ver01.0 Introduction of air conditioning system equipped with inverters, Version 01.0
- JCM Project Cycle Procedure JCM_VN_PCP_ver03.0
- JCM Guidelines for Validation and Verification JCM_VN_GL_VV_ver01.0
- JCM Guidelines for Developing PDD and MR JCM_VN_GL_PDD_MR_ver02.0
- JCM Glossary of Terms JCM_VN_Glossary_ver01.0
- JCM Verification Report Form JCM_VN_F_Vrf_Rep_ver02.0
- TCVN 5687: 2010 Ventilation-air conditioning Design standards
- JIS C 1216-1: 2009 Alternating-current watt-hour meters (for connection through instrument transformer) - Part 1: General measuring instrument
- Approved Small Scale Methodology AMS II.C. Demand-side energy efficiency activities for specific technologies
- Safety Data Sheet of R410A refrigerant
- The Ministry of Science and Technology Circular No. 23/2013/TT-BKHCN on Group 2 Measuring Instruments dated 26/09/2013
- Decision No.02/2007/QD-BCN Issuing the provisions required technical equipment for electricity meters counting the power plant, the Ministry of Industry, 09/01/2007
- DLVN 07:2012 Alternating current induction watt-hour meters Verification procedures, 2012
- DLVN 39:2012 Alternating current static watt-hour meters Verification procedures, 2012
- TCVN 7589-11:2007 (IEC 62053-11:2003) Electricity metering equipment (a.c.) – Particular requirements - Part 11: Electromechanical meter for active energy (classes 0.5, 1 and 2)

## Annex Certificates or curricula vitae of TPE's verification team members, technical experts and internal technical reviewers

*Please attach certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers.*

Certificate of Appointment is attached to this report.

## Joint Crediting Mechanism Certificate of Appointment

Title of Project: Introduction of Energy-Efficient Air Conditioners in RICOH IMAGING PRODUCTS (Vietnam) Co., Ltd (Ref# VN009)
Verification for the first monitoring period: 06/12/2017 – 30/11/2018

We hereby certify that the following personnel have engaged in the verification process that has fully satisfied the competence requirements of the verification of the JCM project.

| Name of Person | Assigned Roles |
|---|---|
| Michiaki Chiba | Team Leader |
| Srikanth Meesa | Team Member |
| Nguyen Tri Thang | Host Country Expert |
| Stewart Niu | Technical Reviewer |

Signed by

Michiaki Chiba
Climate Change Manager – Asia & Pacific
03/12/2018