JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Installation of High Efficiency Centrifugal Chiller for Air Conditioning System in Clothing Tag Factory in Bangladesh
Reference number	BD002
Third-party entity (TPE)	Lloyd's Register Quality Assurance Limited (LRQA)
Project participant contracting the TPE	Nippon Koei Co., Ltd.
Date of completion of this report	10/07/2017

A.2 Conclusion of validation

Overall validation opinion	☒ Positive ☐ Negative

A.3. Overview of final validation conclusion

Only when all of the checkboxes are checked, overall validation opinion is positive.

Item	Validation requirements	No CAR or CL remaining
Project design document form	The TPE determines whether the PDD was completed using the latest version of the PDD forms appropriate to the type of project and drafted in line with the Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan and Monitoring Report.	☒
Project description	The description of the proposed JCM project in the PDD is accurate, complete, and provides comprehension of the proposed JCM project.	☒
Application of approved JCM methodology (ies)	The project is eligible for applying applied methodology and that the applied version is valid at the time of submission of the proposed JCM project for validation.	☒
Emission sources and calculation of emission reductions	All relevant GHG emission sources covered in the methodology are addressed for the purpose of calculating project emissions and reference emissions for the proposed JCM project.	☒
	The values for project specific parameters to be fixed *ex ante* listed in the Monitoring Plan Sheet are appropriate, if applicable.	☒
Environmental impact assessment	The project participants conducted an environmental impact assessment, if required by the People's Republic of Bangladesh, in line with Bangladeshi procedures.	☒
Local	The project participants have completed a local stakeholder	☒

Item	Validation requirements	No CAR or CL remaining
stakeholder consultation	consultation process and that due steps were taken to engage stakeholders and solicit comments for the proposed project.	
Monitoring	The description of the Monitoring Plan (Monitoring Plan Sheet and Monitoring Structure Sheet) is based on the approved methodology and/or Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan, and Monitoring Report. The monitoring points for measurement are appropriate, as well as whether the types of equipment to be installed are appropriate if necessary.	☒
Public inputs	All inputs on the PDD of the proposed JCM project submitted in line with the Project Cycle Procedure are taken into due account by the project participants.	☒
Modalities of communications	The corporate identity of all project participants and focal points, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories are included in the MoC.	☒
	The MoC has been correctly completed and duly authorized.	☒
Avoidance of double registration	The proposed JCM project is not registered under other international climate mitigation mechanisms.	☒
Start of operation	The start of the operating date of the proposed JCM project does not predate January 1, 2013.	☒

Authorised signatory:	Mr. ☒ Ms. ☐
Last name: Chiba	First name: Michiaki
Title: Climate Change Manager - Asia & Pacific	
Specimen signat [redacted]	Date: 10/07/2017

B. Validation 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. ☐	Ankush Jain	LRQA Ltd.	Host country expert	☐	N/A	☐
Mr. ☒ Ms. ☐	Xianxin Yan	LRQA China	Internal reviewer	☒	N/A	☐
Mr. ☐ Ms. ☐				☐		☐

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 validation, findings, and conclusion based on reporting requirements

C.1. Project design document form

<Means of validation>

The PDD was checked and confirmed as complete against the JCM Guidelines for Developing PDD and MR No. JCM_BD_GL_PDD_MR_ver02.0. A valid form of the JCM PDD Form No. JCM_BD_F_PDD_ver02.0 is used for the PDD Version 1.0 dated 30/03/2017. The completeness was also checked for the revised version of the PDD Version 1.2 dated 19/06/2017.

The details of the persons interviewed and the documents reviewed are shown in the Section E 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 validation team confirmed that the PDD was completed using the valid form of the JCM PDD Form and in accordance with the JCM Guidelines for Developing PDD and MR.

C.2. Project description

<Means of validation>

The project is to introduce high efficiency centrifugal chillers in the clothing tag factory of Next Accessories Ltd. in Shawghat, Vulta, Rupganj, Narayanganj District, Dhaka Division in Bangladesh to reduce greenhouse gas (GHG) emissions from electricity consumption for the air-conditioning system. The project chillers have output capacity of 3 x 299.8 USRt and are made by Ebara Refrigeration Equipment & Systems Co., Ltd. (ERS), Japan.

The project is implemented by Next Accessories Ltd. from Bangladesh, Nippon Koei Co., Ltd. and ERS from Japan. The start date of project operation is on 01/03/2017 and the expected operational lifetime of the project is for 7 years. The 1st unit of project chiller was installed in February 2017 and started operation on 01/03/2017. The other 2 units of project chiller was planned to be installed in May 2017. The PPs referred to the Statutory useful life for the calculation of depreciation and amortization for machinery and equipment issued by Japan's Ministry of Finance for the basis of the expected operational lifetime of the project chiller indicated as for 7 years (facilities for textile industry other than carbon fibre production facilities and graphitization furnace). The project chillers applying the state-of-art design of the Japanese leading manufacturer will have a longer operational lifetime with sound operation and maintenance activities, but the PPs selected the shorter lifetime specified by the applicable regulations. That is conservative and considered acceptable as it fulfils the duration of the crediting period.

The project receives financial support for JCM model projects from the Ministry of the Environment, Japan. The PPs from Japan contribute in the project achieving GHG emission reductions by provision of high efficiency centrifugal chiller technology developed by ERS, supports for proper operation by direct instruction and use of the remote monitoring system. The remote monitoring system automatically detects potential error every hour and reports any abnormal condition of the chillers to ERS immediately.

The validation team assessed the PDD and the supporting documents, interacted with the PPs to validate the requirements concerning accuracy and completeness of the project description. The validation contract was signed with Nippon Koei Co., Ltd. representing the PPs on 22/12/2016.

It was determined that an on site visit was not required for the validation and it is justified considering the following conditions:

1) The Government of Japan requested to plan the validation without on site visit considering security requirements in the host country,

2) The project is implemented by the PPs led by Nippon Koei Co., Ltd. and ERS, applying the identical methodology and the same project technology (the same type chillers are applied) as the JCM projects ID# ID001 and ID#005,

3) The same validation team personnel engages in the validation as the JCM projects ID# ID001

and ID#005,
4) The project chillers and the other components are physically identical as JCM projects ID# ID001 and ID#005 as completed by the technology supplier ERS as those observed by the same validation team personnel, and
5) The validation requirements that are normally checked through an on site visit are substituted by the alternative means of assessment, i.e. by reviewing of documents, photographs, interviewing, and telephones/e-mails.
The validation elements for which an on site visit is deemed necessary as per the JCM Guidelines for Validation and Verification (VVG), including its para. 6.3. (Project description) and 6.12. (Start of operation) are addressed by the validation team based on the information made available to the team as above explained. The validation team assessed relevant documents based on the supporting information request and interviewed the PPs in Japan and by telephone and e-mails.
The details of the persons interviewed and documents reviewed are provided in the Section E 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 validation team assessed the project description provided in the PDD with the supporting documents to the requirements on the accuracy and completeness. The validation team confirmed that the proposed JCM project is described in accurate and complete manners in the PDD that is understandable the nature of the proposed project activity.

C.3. Application of approved methodology(ies)

<Means of validation>

The project applied the approved methodology JCM_BD_AM001_ver01.0 "Energy Saving by Introduction of High Efficiency Centrifugal Chiller".
LRQA assessed if the selected methodology is applicable to the proposed project. The project applicability was checked against each eligibility criterion in the selected approved methodology. The steps taken to validate each eligibility criterion and the conclusions about its applicability to the proposed project are summarised as below.

Criterion 1: Project Chiller is a centrifugal chiller with a capacity of less than 1,150 USRt. 1 USRt = 3.52 kW
Justification in the PDD: Three units of project chiller are centrifugal chillers with a capacity of

299.8 USRt each.
Steps taken for assessment: Document review was conducted on the technical specification, the records of factory acceptance tests, commissioning and the performance test results.
Conclusion: Based on the validation processes taken, the validation team confirmed that the project chillers are centrifugal chillers with a capacity of 299.8 USRt each and the criterion is met.

Criterion 2: COP for project chiller i calculated under the standardizing temperature conditions (COP_PJ,tc,i) is more than 6.0. COP_PJ,tc,i is a recalculation of COP of project chiller i (COP_PJ,i) adjusting temperature conditions from the project specific condition to the standardizing conditions. COP_PJ,i is derived in specifications prepared for the quotation or factory acceptance test data at the time of shipment by manufacturer.
The standardizing temperature conditions to calculate COP_PJ,tc,i

Chilled water: Output 7 ℃
Input 12 ℃
Cooling water: Output 37 ℃
Input 32 ℃

Justification in the PDD: COP's of project chillers are as follows:
Chiller unit #1 : 6.16
Chiller unit #2 : 6.18
Chiller unit #3 : 6.16
Steps taken for assessment: Document review was conducted on the technical specification, the records of the factory acceptance tests, and the performance test results.
Conclusion: Based on the validation processes taken, the validation team confirmed that COP of the project chillers was determined as 6.16 by results of the factory acceptance tests, i.e. the cooler output of 1055.2 kW divided by the input motor power of 171.2 kW. The COP value is then adjusted to the standardizing temperature conditions as 6.16 for the units 1 and 3 and 6.18 for the unit 2 following the procedures stipulated in the approved methodology using output cooling water temperature of the condenser at 37 ℃ for all the units and output chilled water temperature of the cooler at 7.0 ℃ for the units 1 and 3 and 6.9 ℃ for the unit 2 as obtained in the factory acceptance tests. Thus the criterion is met by the proposed project.

Criterion 3: Periodical check is conducted at least twice a year.
Justification in the PDD: ERS will conduct periodical check twice a year.
Steps taken for assessment: Document review was conducted on the letter of consent from ERS and the supporting information submitted by the PPs.
Conclusion: The validation team assessed letter of consent, the supporting information and

documents received from the PPs and confirmed the periodical check is planned to be conducted at least twice a year that satisfies the criterion.

Criterion 4: Ozone Depletion Potential (ODP) of the refrigerant used for project chiller is zero.
Justification in the PDD: ODP of HFC-245fa used in the project chiller is zero.
Steps taken for assessment: Document review was conducted on the technical specification, SDS of refrigerant (HFC 245fa) and the other supporting information.
Conclusion: The project chiller uses the refrigerant HFC 245fa whose ODP is zero as confirmed in the supporting documents. Thus the criterion was confirmed as satisfied by the project.

Criterion 5: A plan for not releasing refrigerant used for project chiller is prepared. In the case of replacing the existing chiller with the project chiller, a plan is prepared in which refrigerant used in the existing chiller is not released to the air e.g. re-use of the refrigerant. Execution of the prevention plan is checked at the time of verification, in order to confirm that refrigerant used for the existing one replaced by the project is not released to the air.
Justification in the PDD: Next Accessories Ltd. agreed to prepare Letter of Consent not to release refrigerant of existing equipment and project chiller.
Steps taken for assessment: Document review was conducted on the plan of Next Accessories Ltd.
Conclusion: The validation team assessed the supporting information and documents received from the PPs and confirmed a plan is prepared not to release refrigerant. Therefore the criterion is satisfied.

<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 validation team confirmed that the project applied the valid version of the approved methodology and the applicability was demonstrated to the eligibility criteria as appropriate.

C.4. Emission sources and calculation of emission reductions

<Means of validation>

The project provides the cooling services by application of high efficiency chillers. The sources of GHG emissions are electric power consumption by the reference chiller and the project chiller. The annual electricity consumption by each project chiller is estimated at 1,425 (1,424.73) MWh. The project chillers are expected to be supplied grid electricity only and the CO2 emission factor is determined as 0.67 t-CO2/MWh referring to Grid Emission Factor

(GEF) of Bangladesh endorsed by National CDM Committee Letter No. DOE/International Convention/2012/21/07 dated 19.08.2013. The COP of the reference chiller is determined as 5.13 applying the default value. The COP of the project chillers is 6.16 based on the result of the factory acceptance test that is adjusted to 6.16 for 1st and 3rd units and 6.18 for 2nd unit following the standardizing temperature conditions. The GHG emission reductions during the period p are calculated as: ERp = REp - PEp = EC_PJ,i,p x (COP_PJ,tc,i / COP_RE,i) x EFelec – EC_PJ,i,p x EFelec. The annual GHG emission reductions are calculated using the estimated annual electricity consumption of project chiller for each of the 1st and 3rd unit as: 1,424.73 MWh x (6.16 / 5.13) x 0.67 – 1,424.73 MWh x 0.67 = 1,146.22 – 954.57 = 191.7 t-CO2e, and for 2nd unit as: 1,424.73 MWh x (6.18 / 5.13) x 0.67 – 1,424.73 MWh x 0.67 = 1,149.95 – 954.57 = 195.4 t-CO2e. The sum of the 3 units is calculated for Reference Emissions (REs): 1,146.22 + 1,149.95 + 1,146.22 = 3,442.3 tCO2e, Project Emissions (PEs): 3 x 954.57 = 2,863.7 tCO2e, and Emission Reductions (ERs): 191.7 + 195.4 + 191.7 = 578 tCO2e. In the first year of operation, only the first unit will be operated from March to September (7 months) along with the existing 200 USRt chiller and 2 of the 3 units are expected to be operated from October to December (3 months) where the existing chiller will stop operation according to the project plan. Based on the assumption, sum of the first year is estimated for REs: 1,242.3 t-CO2e, PEs: 1,034.1 t-CO2e, and ERs: 1,242.3 – 1,034.1 = 208 tCO2e.

The validation team assessed the documented evidence and confirmed that all the relevant GHG emission sources covered in the applied methodology are addressed, and the steps taken and the equations applied to calculate REs and PEs for the proposed project comply with the requirements of the approved methodology.

The details of the persons interviewed and the documents reviewed are shown in the Section E 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 validation team confirmed that:

- The methodology was applied correctly to calculate REs and PEs and no other significant emission source was identified that would be affected and reasonably attributed by implementation of the proposed project but not addressed by the applied methodology;
- The choice of whether an emission source or gas is to be included where the applied methodology allows was reasonably justified by the PPs;
- The Monitoring Plan Sheet (MPS) was not altered and the fields were filled in as required so that all estimates of the REs could be replicated using the data and parameter values provided in

the PDD;
- The values for the project specific parameters fixed ex ante listed in the MPS were appropriate with all the data sources and assumptions and the calculations were correct to the proposed JCM project;
- All assumptions and data used by the PPs were listed in the PDD, including their references and sources; and
- All values used in the PDD were considered reasonable in the context of the proposed JCM project.

C.5. Environmental impact assessment

<Means of validation>

The proposed project is to adopt high efficiency chillers in a clothing tag factory and the PDD stated that an environmental impact assessment is not required by laws of the host country. An environmental clearance has been obtained for construction of the clothing tag factory and the proposed project of applying the high efficiency chillers for air conditioning inside the factory does not affect the conditions of the environmental clearance. The validation team assessed the applicable legal requirements in the host country using its local sources/expertise and confirmed that an environmental impact assessment is not required to be conducted for implementation of the project.

The details of the persons interviewed and documents reviewed are provided in the Section E 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 validation team confirmed by assessing the relevant documents and using the local sources/expertise that the project does not need an environmental impacts assessment to be conducted to meet the legal requirement of the host country and the PDD satisfies the requirements of the JCM.

C.6. Local stakeholder consultation

<Means of validation>

The validation team confirmed by assessing the relevant documents and using the local sources/expertise that the project does not need an environmental impacts assessment to be conducted to meet the legal requirement of the host country and the PDD satisfies the requirements of the JCM.

<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 validation team confirmed that the PPs have invited comments to the proposed project from the relevant local stakeholders, the summary of the comments received is provided in the PDD in a complete manner and the PPs have taken due account of all the comments received from the local stakeholders as the processes described in the PDD.

C.7. Monitoring

<Means of validation>

The Monitoring Plan (MP) consisting of the MPS and Monitoring Structure Sheet (MSS) was based on the approved methodology. There are three monitoring points as the methodology provides, namely No. 1: Power consumption of project chiller, No. 2: The amount of fuel input for power generation, and No. 3: The amount of electricity generated.

The power consumption of the project chillers is directly and continuously measured by electricity meters. The measured data is recorded and stored in the measuring equipment. The recorded data is to be checked on a monthly basis by the responsible staff. The electricity meters are to be certified in compliance with national/international standards and calibrated for accuracy.

The project uses grid electricity only. The CO2 emission factor is sourced from Grid Emission Factor (GEF) of Bangladesh endorsed by National CDM Committee Letter No. DOE/International Convention/2012/21/07 dated 19.08.2013. The diesel based emergency generator is only used for safety and not for production. The PPs provided the letter of consent and will follow the requirements of approved methodology to account captive electricity if it is supplied to the project chillers in the future. Supply of natural gas fuel to industrial sector is restricted in Bangladesh and introduction of captive power generation in the clothing tag factory is not expected in a foreseeable future.

The roles and responsibilities of the persons are described in the MSS in accordance with the requirements of the applied methodology. The monitored data is compiled by Chiller Operators, checked by Assistant Manager – Utility, and reported to Assistant General Manager – Sustainability for approval.

The validation team confirmed that the MP complied with the requirements in the approved methodology and that the PPs will be able to apply the MP following the monitoring arrangements described in it. CAR 2 and CAR 3 were issued that the details of resolution are as described below.

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

<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 indication of the monitoring points in the figure of PDD C.2. did not match with those in the MPS.

The MPS was separated for 3 chillers and the monitoring point No. of the parameter EC_PJ,i,p was all (1) in the MPS of each chiller.

Electricity supply from captive power plant was given the monitoring point No. 4 in the figure of PDD C.2. but the same was not included in the MPS that is not completed for the parameters related to captive electricity.

Nature of responses provided by the PPs:

The PPs modified indication in the figure of PDD C.2. to make the parameter EC_PJ,i,p be identifiable for each of the 3 chillers.

The PPs also confirmed there is no captive electricity supply planned in the project site and the monitoring parameter was deleted in the revised PDD and MPS.

Assessment of the responses:

The validation team reviewed the revised PDD and MPS and confirmed issues raised on the monitoring points were addressed. CAR 2 was closed.

Grade / Ref: CAR 3

Nature of the issue raised:

The Measurement methods and procedures of the MPS did not include description of the details of the measuring equipment on accuracy level and calibration information (frequency, date of calibration and validity).

Nature of responses provided by the PPs:

The description of Measurement methods and procedures of the MPS was revised to add the information of the accuracy level and calibration information for the parameter EC_PJ,i,p.

Assessment of the responses:

The validation team reviewed the revised MPS and confirmed that the accuracy of the electricity meter and the calibration information was added for the parameter EC_PJ,i,p. The other parameters for monitoring ex post, i.e. FC_PJ,p and EG_PJ,p are not applicable to the project. The accuracy of the electricity meter is indicated as +/- 0.5% in accordance with the specification. The electricity meters were calibrated at the time of shipment from the factory on 06/01/2016. The meters will be re-calibrated when the meters show unnatural value in the

periodical checks. The CAR was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the MP was described in compliance with the requirements of the approved methodology and the Guidelines for developing PDD and MR, and the PPs have demonstrated feasibility of the monitoring structure and their ability to implement the MP.

C.8. Modalities of Communication

<Means of validation>

The MoC was submitted to LRQA in the form JCM_ID_F_MoC_ver01.0 that nominates Nippon Koei Co., Ltd. and Next Accessories Ltd. as the focal points and was signed by the authorized representatives of all the PPs with the contact details. The form used is the latest one as of the time of validation.

The validation team assessed the personal identities including specimen signatures and employment status of the authorized signatories through reviewing the written confirmation from the PP with whom LRQA contracted the validation, namely Nippon Koei Co., Ltd. The written confirmation was issued by Mr. Tetsuya Saito whose authorization by Nippon Koei Co., Ltd., the focal point of the PPs, was confirmed by the power of attorney, and it confirms that all corporate and personal details including specimen signatures are valid and accurate as requested in the JCM Guidelines for Validation and Verification. The validation team also confirmed through reviewing the corporate information of the PPs and by meeting the persons representing the PPs that the information provided in the MoC is correct.

CAR 1 was issued that the details of resolution are as described below.

The details of the persons interviewed and the documents reviewed are shown in the Section E 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 MoC form was not completed with:

1) Date of Submission in Section 1, and

2) Check either Mr. or Ms. for Alternate authorised signatory of ERS in Section 5.

Nature of responses provided by the PPs:

1) The Date of submission, 30/03/2017,was added in MoC.

2) Check in “Mr.” for Alternate authorized signatory of ERS in Section 5 was put in MoC.

Assessment of the responses:

The validation team reviewed the revised MoC received from the PPs and confirmed the missed

information has been added. The CAR was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the MoC was completed using the latest form after assessment conducted on relevance of the MoC in compliance with the requirements of the JCM Guidelines.

C.9. Avoidance of double registration

<Means of validation>

The validation team assessed and confirmed relevance of the written confirmation in the MoC from the PPs that the proposed JCM project was 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.

Particular attention was given to that there are approved CDM methodologies,

AM0060 - Power saving through replacement by energy efficient chillers,

AM0070 - Manufacturing of energy efficient domestic refrigerators,

AM0071 - Manufacturing and servicing of domestic and/or small commercial refrigeration appliances using a low GWP refrigerant,

AMS II.C - Demand-side energy efficiency activities for specific technologies, and

AMS II.E - Energy efficiency and fuel switching measures for buildings

2 projects applying AM0070 and number of projects applying AMS II.E inclusive of efficient chillers as a project component have been registered under CDM, but all are in India.

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

<Findings>

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

No issue was raised to the requirement of the section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the proposed JCM project was not registered under the other international climate mitigation mechanisms.

C.10. Start of operation

<Means of validation>

The start date for the operation of the proposed JCM project is indicated as 01/03/2017 in the PDD. The commissioning test of the project chiller unit 1 was completed on 20/02/2017 and the operation of the project system started with the first unit of the chiller from 01/03/2017.

The validation team confirmed that the date is not before 01/01/2013 as required to be eligible as a JCM project.

<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 validation team confirmed that the start date of operation of the proposed JCM project is 01/03/2017 and not before 01/01/2013 as required to be eligible as a JCM project.

C.11. Other issues

<Means of validation>

No issue was identified as relevant element not covered above.

<Findings>

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

Not applicable

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Not applicable

D. Information on public inputs

D.1. Summary of public inputs

In line with the JCM Project Cycle Procedure, the PDD is to be made publicly available for 30 days to invite public comments. The PDD was made publicly available in line with the requirements of the procedure for the period of 01/04/2017 to 30/04/2017 as per https://www.jcm.go.jp/bd-jp/projects/26.

D.2. Summary of how inputs received have been taken into account by the project participants

No comment was received during the above period to receive public inputs.
Thus no action was required to be taken by the PPs to satisfy the JCM requirement.

E. List of interviewees and documents received

E.1. List of interviewees

Next Accessories Ltd.
Mr. K. M. Mazharul Islam Raj, Assistant General Manager

Nippon Koei Co., Ltd.
Mr. Tetsuya Saito, Environmental Science & Engineering Dept., International Consulting Operations
Ms. Yuka Nakagawa, Environmental Science & Engineering Dept., International Consulting Operations

Ebara Refrigeration Equipment & Systems Co., Ltd.
Mr. Toshihiro Okuda, Executive Expert Manager, Engineering & Sales Group, Engineering & Sales Department, Overseas Business Division

Green Energy Engineering BD
Mr. S.M. Iftekhar ul haque, Senior Engineer

E.2. List of documents received

Category A documents (documents prepared by the PP)
- PDD Version 1.0 dated 30/03/2017, Version 1.1 dated 10/04/2017 and Version 1.2 dated 19/06/2017 with the Monitoring Spreadsheet
- MoC
- Company overview of Next Accessories Ltd
- Corporate profile of Nippon Koei Co., Ltd.
- Power of Attorney, Nippon Koei Co., Ltd.
- Specifications of chiller units
- Chilled water schematic diagram
- Plant lay out

- Project implementation plan
- Project schedule
- Commissioning report for Ebara Centrifugal Chiller S/N B15V026701
- Operator's manual for the chillers
- Records of training
- Annexes 1 and 2 to the Act of Japan's Ministry of Finance concerning Statutory useful life for the calculation of depreciation and amortization
- Refrigerator test records
- Letter of Consent on periodical checks, data storage, and monitoring report dated 27/02/2017 by Ebara Refrigeration Equipment & Systems Co., Ltd
- Letter of Consent on not releasing refrigerant dated 28/02/2017 by Next Accessories Ltd.
- Letter of Consent on sole supply of grid electricity to the project chillers dated 28/02/2017 by Next Accessories Ltd.
- Memo of visit to facility of local refrigerant recovery company on 24/01/2017
- ODS Rules 2014
- Instruction for use of multi power meter model 53U, MSYSTEM
- Performance test results of Multi Power Meter Model 53U-1206-AD4/H/Q Nos. 5L048550, 6A013816 and 6A013817, MSYSTEM
- About accuracy management and calibration for MSYSTEM products
- The Standards of Weights and Measures Ordinance, 1982
- Details of calculation of the estimated emission reductions
- Grid Emission Factor (GEF) of Bangladesh, Reference No. DOE/International Convention/2012/21/07, Department of Environment, dated 19/08/2013
- The Environment Conservation Rules, 1997
- Records of Local Stakeholder Consultation meeting
- Environmental clearance dated 18/05/2017 (for the clothing tag factory)
- Electricity line diagram

Category B documents (other documents referenced)
- Nippon Koei Co., Ltd. Corporate Profile
- JCM_BD_AM001_ver01.0 Energy Saving by Introduction of High Efficiency Centrifugal Chiller
- Additional Information for Reference Emissions, BD_PM001
- RTBF Series High-Efficiency Centrifugal Chiller (Using Low-Pressure Refrigerant HFC-245fa) Specifications
- HFC-245fa: An Overview of Properties and Applications
- An Overview Of The Properties And Applications of HFC-245fa

- HFC-245fa Product Stewardship Summary, Honewell
- Safety Data Sheet HFC-245fa, Honewell
- IPCC Forth Assessment Report
- JCM Project Cycle Procedure JCM_BD_PCP_ver02.0
- JCM Guidelines for Validation and Verification JCM_BD_GL_VV_ver02.0
- JCM Guidelines for Developing PDD and MR JCM_BD_GL_PDD_MR_ver02.0
- JCM Glossary of Terms JCM_BD_Glossary_ver02.0
- JCM PDD Form JCM_BD_F_PDD_ver02.0
- JCM MoC Statement Form JCM_BD_F_MoC_ver01.0
- JCM Validation Report Form JCM_BD_F_Val_Rep_ver01.0
- Approved Methodology AM0060 Power saving through replacement by energy efficient chillers
- Approved Methodology AM0070 Manufacturing of energy efficient domestic refrigerators
- Approved Methodology AM0071 Manufacturing and servicing of domestic and/or small commercial refrigeration appliances using a low GWP refrigerant
- Approved Small Scale Methodology AMS II.C. Demand-side energy efficiency activities for specific technologies
- AM_REV_0148 Response to request for modification of procedure for accounting of leakage of emissions from physical leakage of the initial charge of refrigerant in the new chiller
- SSC_510 Clarification on the applicability of AMS-II.C to a project activity replacing multiple low efficiency equipment with a single high efficient equipment
- SSC_539 Clarification on identification of baseline scenario and demonstration of additionality for chiller programme under AMS-II.C
- SSC_540 Clarification on calculation of baseline emissions for chiller programme under AMS-II.C
- SSC_580 Clarification on the requirement of AMS-II.C for project activity replacing inefficient refrigerators
- Chiller Energy Efficiency Project, Philippines, the World Bank
- The Chiller Energy Efficiency Project, Republic of India, the World Bank
- CDM-SSC-PoA-DD/CDM-SSC-CPA-DD Demand Side Management (DSM) for accelerating the diffusion of energy efficient chiller technology
- CDM-PoA-DD/CDM-CPA-DD Philippines – Chiller Energy Efficiency Programme (PCEEP)
- CDM-SSC-PoA-DD/CDM-SSC-CPA-DD Climate Action Response Enterprise (CARE) for Energy Efficiency in Chiller Plants
- Proposed and registered projects under CDM, VCS, Gold Standard, and the other international schemes
- IEC 62053-22:2003, Electricity metering equipment (ac) - Particular requirements. Part 22:

Static meters for active energy (classes 0,2 S and 0,5 S)

- Bangladesh Tax Book 2015-2016
- The Bangladesh Environment Conservation Act, 1995
- Electricity (Amendment) Act, 2012
- List of Grid Emission Factors, Institute for Global Environmental Strategies (IGES)
- CDM-PDD of Greenhouse Gas Abatement through waste energy based power generation

Annex Certificates or curricula vitae of TPE's validation 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: Validation for Installation of High Efficiency Centrifugal Chiller for Air Conditioning System in Clothing Tag Factory in Bangladesh

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

Name of Person	Assigned Roles
Michiaki Chiba	Team Leader
Ankush Jain	Host Country Expert
Xianxin Yan	Technical Reviewer

Signed by

[redacted]

Michiaki Chiba
Climate Change Manager – Asia & Pacific
26/12/2016