JCM Verification Report Form

A. Summary of verification

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
Monitoring period	01/03/2017 – 31/07/2019
Date of completion of the monitoring report	04/03/2020
Third-party entity (TPE)	Japan Quality Assurance Organization（JQA） TPE-BD-002
Project participant contracting the TPE	Ebara Refrigeration Equipment & Systems Co., Ltd.
Date of completion of this report	19/03/2020

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☒ Positive ☐ Negative
☒ Unqualified opinion	Based on the process and procedure conducted, JQA provides reasonable assurance that the emission reductions for Installation of High Efficiency Centrifugal Chiller for Air Conditioning System in Clothing Tag Factory in Bangladesh ✓ Are free of material errors and are a fair representation of the GHG data and information, and ✓ 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.) ☐ Qualified Opinion ☐ Adverse opinion ☐ Disclaimer	<State the reasons>

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: Asada	First name: Sumio
Title: Senior Executive	
Specimen signature:	Date: 19/03/2020

B. Verification team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Tadashi Yoshida	JQA	Team Leader	☒	Authorized	☒
Mr. ☐ Ms. ☒	Aya Watarai	JQA	Team Member	☐		☒
Mr. ☒ Ms. ☐	Hiroshi Motokawa	JQA	Internal Reviewer	☒	Authorized	☐

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>

The project was registered as a JCM project on 10/01/2018, which applied JCM approved methodologies BD_AM001_ver01.0 "Energy Saving by Introduction of High Efficiency Centrifugal Chiller" under the scheme of Joint Crediting Mechanism between People's Republic of Bangladesh and Japan.

The project participants (PPs) are Next Accessories Ltd. from People's Republic of Bangladesh and Ebara Refrigeration Equipment & Systems Co., Ltd. and Nippon Koei Co., Ltd. (Focal Point) from Japan.

The purpose of the project is to reduce CO_2 emissions from the consumption of grid electricity by replacing the reference chiller with high efficiency centrifugal chillers at the clothing tag factory which is located in Narayanganj District, Dhaka Division, Bangladesh. Next Accessories Ltd. decided to introduce three units of energy-saving centrifugal chiller in order to expand the production capacity of the factory in near future. The project centrifugal chillers are Model RTBF030 made by Ebara Refrigeration Equipment Systems Co., Ltd with a capacity of 299.8 USRt each for an air-conditioning system in three building of the factory. The first unit of the project chiller (No.1) was installed in February 2017 and starting date of project operation was set to be 01/03/2017. However, due to the lower production demand

from the clients, the operation of the project chiller was forced to postpone until 10/05/2017. The commencement of the monitoring on 10/05/2017 is confirmed by the review of logbook daily data and the interview with the PPs. Other two chillers (No.2 and No.3) were planned to be installed in May 2017, but some components of the chiller equipment were stolen and damaged during transportation. As such, these two chillers were installed in February 2018. However, the starting date of their operation were further forced to postpone until March 2019 due to the same reason as the No. 1 unit. Currently, three units of the chiller have been operated alternately to control their cooling capacities.

The existing chiller with a capacity of 290 USRt is not discarded and would be operated as a back-up when necessary. Accordingly, the refrigerant used in the existing chiller (HFC-134a) is not released to the air. The electricity meters to monitor electricity consumption of project chillers are located at the chiller control room.

The JCM website indicates that the starting date of project operation is 01/03/2017 after the commissioning of the project chiller No.1 on 26/02/2017. Hence, the first monitoring period was set from 01/03/2017 to 31/07/2019. As mentioned above, the actual operation of the project chiller No.1 was delayed until 10/05/2017 due to the lower tag production demand from the clients. It is confirmed through the review of relevant documents, on-site assessment and the interview with the PPs that the monitoring period was set from 01/03/2017 to 31/07/2019, but the actual operation of the chiller No.1 started on 10/05/2017. The total amount of electricity consumed during the 1st monitoring period is 1,089.86 MWh, which corresponds to the emission reductions of 144 tCO_2.

Ebara Refrigeration Equipment & Systems Co., Ltd. has conducted OJT training on the maintenance, operation and monitoring of centrifugal chiller for the staffs of Green Energy Engineering BD (GEE) who is contracted with Next Accessories Ltd.

The verification team has assessed whether the project implementation and operation during the monitoring period comply with the eligibility criteria of the applied methodology. After the desk review, an on-site assessment was conducted on 12/11/2019 and the verification team conducted a physical inspection and interviewed the PPs listed in Section F of this verification report.

The assessment results regarding the eligibility criteria are summarized as below:

Criterion 1

Project chiller is a centrifugal chiller with a capacity of less than 1,150 USRt.

**1 USRt = 3.52 kW.*

✓ *Three units of project chiller are centrifugal chillers with a capacity of 299.8 USRt each.*

Through the review of supporting documents and check of the nameplate of project chiller

during the on-site visit, the project information of Criterion 1 in the PDD is confirmed as follows;

- ✓ Three units of project chiller are centrifugal type with a capacity of 299.8 USRt each, less than 1,150 USRt.

Therefore, it is concluded that the project meets the criterion 1 with a satisfactory result.

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.*

[Equation to calculate $COP_{PJ,tc\ i}$]

$$COP_{PJ,tc\ i} = COP_{PJ,i} \times [(T_{cooling\text{-}out} - T_{chilled\text{-}out} + TD_{chilled} + TD_{cooling}) / (37\text{-}7 + TD_{chilled} + TD_{coolin})]$$

**The standardizing temperature conditions to calculate $COP_{PJ,tc,i}$:*

Chilled water:	*Output*	*7 °C*
	Input	*12 °C*
Cooling water:	*Output*	*37 °C*
	Input	*32 °C*

- ✓ COP's of project chillers are as follows:
  - Chiller unit #1: 6.16
  - Chiller unit #2: 6.18
  - Chiller unit #3: 6.16

Through the review of supporting documents and the interview with the PPs, the project information of Criterion 2 in the PDD is confirmed as follows;

- ✓ Ebara Refrigeration Equipment & Systems Co., Ltd. conducted the factory acceptance test to determine the COP value of the project chiller on 04/03/2016 for the unit No. 1, 08/04/2016 for the unit No. 2 and 05/07/2016 for the unit No. 3.
- ✓ The COP of the project chiller was determined to be 6.16, which is calculated from the cooler output of 1,055.2 kW divided by the motor input power of 171.2 kW. The COP value was then adjusted to the standardizing temperature conditions as 6.16 for the units No.1 & 3 and 6.18 for the unit No.2, respectively, in accordance with the applied methodology.

Therefore, it is concluded that the project meets the criterion 2 with a satisfactory result.

Criterion 3

Periodical check is conducted at least twice a year.

- ✓ *ERS will conduct periodical check twice a year.*

Through the review of supporting documents and the interview with the PPs, the project information of Criterion 3 in the PDD is confirmed as follows;

- ✓ According to the Routine Inspection Check List records, the chiller equipment has been inspected twice a year during the year of 2017 – 2019 by Ebara Refrigeration Equipment & Systems Co., Ltd (ERS) who made a contract for maintenance with Next Accessories Ltd.

Therefore, it is concluded that the project meets the criterion 3 with a satisfactory result.

Criterion 4

Ozone Depletion Potential (ODP) of the refrigerant used for project chiller is zero.

- ✓ *ODP of HFC-245fa used in the project chiller is zero.*

Through the review of supporting documents and the interview with the PPs, the project information of Criterion 4 in the PDD is confirmed as follows;

- ✓ According to Material Safety Data Sheet, the ODP of refrigerant (HFC-245fa) used for the project chiller is zero.

Therefore, it is concluded that the project meets the criterion 4 with a satisfactory result.

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.

- ✓ *Next Accessories Ltd. agreed to prepare Letter of Consent not to release refrigerant of existing equipment and project chiller.*

Through the review of supporting documents, the on-site inspection and the interview with the PPs, the project information of Criterion 5 in the PDD is confirmed as follows;

- ✓ Letter of Consent for not releasing refrigerant of existing chiller and project chiller to the air, including a plan, has been prepared by Next accessories Ltd.
- ✓ The existing chiller is not discarded and would be operated as a back-up when necessary. Accordingly, the refrigerant used in the existing chiller (HFC-134a) is not released to the air.

Therefore, it is concluded that the project meets the criterion 5 with a satisfactory result.

Regarding the current status of refrigerant used in the existing chiller, the verification team raised CL 05 and this issue was resolved as explained in "Findings".

<Findings>

< *CL 05* >

The PPs are requested to clarify the current status of refrigerant used in the existing chiller (Criterion 5).

< Comments from the PPs >

Currently refrigerant is properly used in the existing chiller, so it doesn't leak out to the air.

< Assessment by the TPE >

It is confirmed through the on-site inspection and the interview with the PPs that the existing chiller is still under the operating status as a back-up when necessary and hence the refrigerant in the existing chiller has not been withdrawn from the chiller during the monitoring period. Thus, CL 05 is closed.

< Conclusion based on reporting requirements >

The verification team concludes that the implementation and the operation of the registered project are in compliance with five eligibility criteria of the applied methodology BD_AM001 during this monitoring period.

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

<Means of verification>

The verification team has assessed the status of the actual project and its operation with the registered PDD through the review of the relevant documents, the on-site assessment and the interview with the PPs. The project is implemented by Next Accessories Ltd. from the People's Republic of Bangladesh and Ebara Refrigeration Equipment & Systems Co., Ltd. / Nippon Koei Co., Ltd. from Japan.

Next Accessories Ltd. has replaced the existing chiller with high efficiency centrifugal chiller for air conditioning system in the clothing tag factory to reduce CO_2 emissions from the consumption of national grid electricity.

It is confirmed through the review of the monthly electricity consumption data, on-site inspection and the interview with the PPs for the first verification that the installation of the project chiller No. 1 was completed on 26/02/2017. However, its operation start date was

postponed until 10/05/2017 due to the reduced tag production demand from the clients although starting date of project operation was set to be 01/03/2017 in the PDD. In addition, the operation start date of the project chillers No.2 and No.3 was also delayed for about 2 years than planned schedule due to the unexpected troubles happened during the transportation for delivery and less operation demand than expected. Since March 2019, three units of the project chiller have been operated in rotation to meet the decreased demand for the air-conditioning system of the factory. The existing chiller was not discarded and would be operated as a back-up when necessary. The verification team concludes that the physical features of the project are in place and the PPs have implemented the project as per the registered PDD.

[Monitoring points]

Monitoring parameter described below is measured by the electricity meter (Model: 53U-1206-AD4/H/Q made by M-System Co., Ltd.), in accordance with the monitoring plan.

1. $EC_{PJ,i,p}$: Power consumption of project chiller *i* during the period *p* [MWh/p]

It is confirmed through the review of the specification, on-site inspection and the interview with the PPs that the electricity meters are installed at the chiller control room to measure the amount of power consumption of each project chiller. The power consumption is continuously monitored by the electricity meter and is manually recorded once a day by the responsible staff. The daily data is aggregated on a monthly basis to make monthly report.

[Monitoring structure]

The monitoring structure has been established and the roles and responsibilities of the personnel are consistent with the description in Monitoring Structure Sheet. The staff training on the operation, maintenance and monitoring of the chiller system was conducted for the engineers of Green Energy Engineering BD (GEE) in January 2016 who made a contract for maintenance with Next Accessories Ltd.

It is confirmed through the review of the relevant documents and the interview with the PPs that the monitoring activity has been appropriately implemented during the monitoring period, in line with the monitoring plan of the registered PDD.

Regarding the delay of starting date of project operation and the installation of the chiller units No.2 and No.3, the verification team raised CAR 01 and CL 01 and these issues were resolved as explained in “Findings”.

<Findings>

< *CAR 01* >

The PPs are requested to clarify the delay of starting date of project operation (01/03/2017)

until 10/05/2017.

< Comments from the PPs >

Based on the production plan which would be increased, the PP has decided to install three chillers beforehand. Actual order from the client has however not turned out yet as planned.

< Assessment by the TPE >

It is confirmed through the review of supporting documents and the interview with the PPs that the starting date of project operation was set to be 01/03/2017 as the installation of the project chiller No.1 was completed on 26/02/2017, but the actual operation start of the chiller was postponed until 10/05/2017 due to the reduced tag production demand from the clients. Thus, CAR 01 is closed.

< *CL 01* >

The PPs are requested to clarify the delay of installation of project chillers No.2 and No. 3 in February 2018 which were to be installed in May 2017.

< Comments from the PPs >

Due to the theft of some parts during transportation, the installation of the project chillers (No. 2 and No.3) were delayed until February 2018. The report on the theft is attached.

< Assessment by the TPE >

It is confirmed through the review of supporting documents and the interview with the PPs that the delivery of the project chillers No. 2 and No. 3 was delayed for nine months due to the unexpected troubles happened during the transportation and the installation of them was completed on 07/02/2018. Details of these troubles and damages of some parts are confirmed through the review of the report provided by the PPs. In addition to this, the start of their operation was forced to postpone until March 2018 due to the tag production demand from the clients less than expected in the market and hence the operation of the chillers was remarkably suppressed during the monitoring period. Thus, CL 01 is closed.

< Conclusion based on reporting requirements >

The verification team concludes that the project has been implemented in accordance with the registered PDD during the monitoring period, and no changes are found from the description of the registered PDD.

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

<Means of verification>

The electricity consumed by the project chillers during the monitoring period is measured by the electricity meter (Model: 53U-1206-AD4/H/Q made by M-System Co., Ltd.) which is installed and managed by the PPs. As per the monitoring plan, the electricity meter for the chiller No.1 was calibrated at the time of shipment from the manufacturer on 06/01/2016. The accuracy of the meter is ±0.5% in accordance with the monitoring plan. The meters for the chillers No. 2 and No. 3 were also calibrated at the time of shipment from the manufacturer on 11/09/2017.

It is confirmed through the review of the calibration certificates issued by the manufacturer that the electricity meters to measure the amount of electricity consumed by the project chillers were appropriately calibrated in line with the monitoring plan.

Regarding the periodical check of the meter, the verification team raised CL 02 and this issue was resolved as explained in "Findings".

<Findings>

< *CL 02* >

The PPs are requested to clarify whether the electricity meter was checked periodically during the monitoring period in accordance with the monitoring plan.

< Comments from the PPs >

According to the IGES comment, it is not necessary to conduct calibration of the meter if it has international certificate. Taking into consideration this comment, please check the inspection sheet of electricity meters No. 1-3.

< Assessment by the TPE >

It is confirmed through the review of the relevant documents that the electricity meters for the Chiller units No.1- No.3 comply with IEC 62053-22:2003 and IEC 62053-23:2003, and were inspected and certified by the manufacturer on 06/01/2016, 11/09/2017 and 11/09/2017, respectively, at the time of shipment from the factory. As such, the periodical check of the meter is not required. Thus, CL 02 is closed.

<Conclusion based on reporting requirements>

The verification team confirms that the monitoring parameter ($EC_{PJ,i,p}$), *i.e.*, Power consumption of project chiller *i* during the period *p*, is monitored by electricity meter which complies with IEC standard. The calibration of the meters were conducted by the manufacturer at the time of shipment from the factory, in line with the monitoring plan, and the test results of them stayed within the permissible error of ±0.5%. Therefore, no correction of the measured values is required.

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

<Means of verification>

The verification team has assessed the data and calculation of GHG emission reductions achieved by the project activity as follows;

(a) The corresponding Monitoring report Sheet of the applied methodology has been used;

Through the review of the monitoring reports for the project which are titled as JCM_BD002_MP_FY2017_NK 200318.xlsx, JCM_BD002_MP_FY2018_NK 200318.xlsx and JCM_BD002_MP_FY2019_NK 200318.xlsx, it is confirmed that the Monitoring Report Sheets (MRS(input) and MRS(calc_process)) of applied methodology BD_AM001 are appropriately used.

(b) A complete set of data for the monitoring period for all parameters monitored ex post was provided to the verification team in the form of several kinds of files;

Monitoring Report Sheet (MRS) provided by the PPs contains a complete set of the monitored data on the power consumption of project chillers during the monitoring period of 01/03/2017 - 31/07/2019. These data are separately provided for each year of 2017, 2018 and 2019. It is confirmed through the review of these monitored data that the power consumption data are fully provided for the monitoring period.

(c) Information provided in the monitoring report has been checked with sources such as plant logbooks, inventories, purchase records, laboratory analysis;

The verification team has reviewed the correctness of monitored data of the power consumption given in the MRSs through cross-checking with their monthly data and logbook data provided by the PPs.

Parameters	Monitored values	Method to check values in the monitoring report with sources
$EC_{PJ,i,p}$ (2017)	250.169 MWh/p	The quantity of power consumption of project chillers in the MRS is cross-checked with monthly data and logbook data manually recorded by the PPs.
$EC_{PJ,i,p}$ (2018)	532.428 MWh/p	
$EC_{PJ,i,p}$ (2019)	307.269 MWh/p	

It is confirmed through the cross-check of the monitored data in the revised MRS with the monthly data and logbook data that the amount of power consumption of the project chillers in the MRS is fully consistent with the sum of its monthly data and logbook data manually recorded by the PPs, and further reference emissions (RE_p), project emissions (PE_p) and emission reductions (ER_p) in the MRS are correctly calculated.

(d) Any assumptions used in emission calculations have been justified;

Through the review of the MRS and the interview with the PPs, it is confirmed that no assumption has been used in the calculations of emission reductions and hence no justification is required.

(e) Appropriate emission factors, default values, and other reference values have been correctly applied.

Through the review of the MRS and the interview with the PPs, it is confirmed that the project-specific parameters fixed *ex-ante* such as CO_2 emission factor for consumed electricity (EF_{elec}), output cooling water temperature and output chilled water temperature of project chiller set under the project specific condition ($T_{cooling\text{-}out,j}$ and $T_{chilled\text{-}out,j}$), COP of reference chiller under the standardizing temperature conditions ($COP_{RE,i}$) in case where the cooling capacity of the project chiller is less than 300 USRt, COP of the project chiller under the project specific conditions ($COP_{PJ,i}$) and COP of the project chiller calculated under the standardizing temperature conditions ($COP_{PJ,tc,i}$) tested by the manufacturer at the time of shipment from the factory, which were determined at the time of validation and provided in the MPS, have been correctly applied in the calculation of reference emissions.

The data monitored and required for verification and issuance is to be kept and archived electronically for two years after the final issuance of credits.

Regarding the correctness of the Monthly Monitoring Data, operation status of the chillers and large difference between *ex-ante* and *ex-post* values of emission reductions, the verification team raised CAR 02, CL 03 and CL 04 and these issues were resolved as explained in "Findings".

<Findings>

< *CAR 02* >

The monitoring data of electricity consumed by the project chillers No.2 and No.3 in 2019 is not consistent between Monthly Monitoring Data and Logbook daily data.

< Comments from the PPs >

Monthly Monitoring Data of Chillers No.2 and No.3 in 2019 were properly revised based on Logbook daily data.

< Assessment by the TPE >

It is confirmed through the review of the revised Monthly Monitoring Data that the monthly monitoring data of Chillers No.2 and No.3 in 2019 are correctly calculated based on the logbook daily data, and hence the total amount of electricity consumed by the project chillers No.1 - No.3 in 2019 is appropriately corrected in the MRS for 2019. Thus, CAR 02 is closed.

< *CL 03* >

The PPs are requested to explain why the electricity consumption is zero in April - July 2019 for Chiller No.1, in June 2019 for Chiller No.2 and June - July 2019 for Chiller No.3 in the Monthly Monitoring Data.

< Comments from the PPs >

Due to customer's situation, the PP was forced to reduce the production volume in the following periods: Apr-Jul 2019 for No.1, Jun 2019 for No.2 and Jun-July 2019 for No.3.

< Assessment by the TPE >

It is confirmed through the interview with the PPs that the tag production demand from the clients has been still lower than planned during 2019 and hence three units of the project chiller have been operated in rotation to meet the decreased demand for the air-conditioning system of the factory. The values of monthly monitoring data for Chillers No.2 and No.3 in 2019 are also corrected appropriately based on the logbook daily data. Thus, CL 03 is closed.

< *CL 04* >

The PPs are requested to clarify why the ex-post values of emission reductions are much less than the ex-ante estimated ones. When compare the ER by Chiller No.1 in 2018, the ex-ante value is ca.192 tCO_2 (=578/3) and the ex-post value is 71 tCO_2, which corresponds to 37%.

< Comments from the PPs >

Actually the PP has already constructed new buildings, then new three chillers were installed taking into account the production increase from the client. However, actual order was not increased yet.

< Assessment by the TPE >

It is confirmed through the review of relevant documents, on-site inspection and the interview with the PPs that Next Accessories Ltd. has planned to increase the production capacity of the factory forecasting the market growth in near future and installed three units of the project chiller in advance at the factory. However, the actual market growth is not come yet despite initial expectation. Hence, it is found that Next Accessories Ltd. is forced to operate the chillers at the minimum level during this monitoring period. Thus, CL 04 is closed.

<Conclusion based on reporting requirements>

The verification team has confirmed that Monitoring Report Sheet of the applied

methodology BD_AM001 has been used and a set of data for the first monitoring period provided by the PPs was complete. In addition, the verification team has confirmed the correctness of the monitored data in the MRS through the check of the monthly data and logbook data manually recorded by the PPs. The verification team concludes that the monitored data and the project-specific parameters fixed *ex-ante* are appropriately and correctly applied in the calculation of GHG emission reductions achieved by the project activity, in accordance with the applied methodology BD_AM001 and the monitoring plan of the registered PDD.

C.5. Assessment of avoidance of double registration

<Means of verification>

The verification team received a written confirmation dated 18/02/2020 from the PPs which is signed by the primary authorized signatory of Nippon Koei Co., Ltd. It declares that the registered JCM project is not registered under any other international climate mitigation mechanisms other than the JCM, therefore, the project will not result in double counting of GHG emission reductions. It also declares that the same registered JCM project will not be registered under other international climate mitigation mechanisms.

It is confirmed through the review of the written confirmation, the check of the relevant website and the interview with the PPs that the JCM project is not registered under any other international climate mitigation mechanisms other than the JCM.

<Findings>

No issues was raised to the requirement.

<Conclusion based on reporting requirements>

The verification team concludes that the project has not been registered under other international climate mitigation mechanisms.

C.6. Post registration changes

<Means of verification>

It is confirmed through the review of relevant documents, the on-site assessment and the interview with the PPs that the project has not been changed from the registered PDD and/or methodology.

<Findings>

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

The verification team concludes that the project has not been changed from the registered PDD and/or 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 issues including FAR from the validation are remained. As this is the first verification, no issues from the previous verification are also remained.

E. Verified amount of emission reductions achieved

Year	Verified Reference Emissions (tCO_2e)	Verified Project Emissions (tCO_2e)	Verified Emission Reductions (tCO_2e)
2013	N/A	N/A	N/A
2014	N/A	N/A	N/A
2015	N/A	N/A	N/A
2016	N/A	N/A	N/A
2017	201.2	167.6	33
2018	428.3	356.7	71
2019	247.4	205.8	40
2020	N/A	N/A	N/A
2021	N/A	N/A	N/A
2022	N/A	N/A	N/A
2023	N/A	N/A	N/A
2024	N/A	N/A	N/A
2025	N/A	N/A	N/A
2026	N/A	N/A	N/A
2027	N/A	N/A	N/A
2028	N/A	N/A	N/A
2029	N/A	N/A	N/A
2030	N/A	N/A	N/A
Total (tCO_2e)			144

F. List of interviewees and documents received

F.1. List of interviewees

- Ashraful Islam Mamun	MD & CEO, Next Accessories Ltd.
- Md. Shadiqullah	AGM (Business Development), Next Accessories Ltd.
- Md. Maqsudur Rahman	Assistant Manager (Mechanical), Next Accessories Ltd.
- Syed Kamruddin Kashem	Executive Director (Operation), Green Energy Engineering BD
- Engr. Md. Azizur Rahman	Managing Director, Green Energy Engineering BD
- Engr. S.M. Iftekhar ul Haque	Assistant Sales & Service), Green Energy Engineering BD
- Masaru Ishikawa	Manger, Climate Group, Environmental Science & Eng. Dept., Nippon Koei Co., Ltd.

F.2. List of documents received

1-1. Monitoring Report Sheet, JCM_BD002_MP_FY2017_NK 200318.xlsx,
1-2. Monitoring Report Sheet, JCM_BD002_MP_FY2018_NK 200318.xlsx,
1-3. Monitoring Report Sheet, JCM_BD002_MP_FY2019_NK 200318.xlsx,
2. Monthly monitoring data of power consumption of project chillers during the 1st monitoring period (01/03/2017 – 31/07/2019)
3. Logbook daily data of power consumption of project chillers during the 1st monitoring period (01/03/2017 – 31/07/2019)
4. Registered PDD (BD002), ver1.2, 19/06/2017, registered on 10/01/2018
5. JCM Validation Report (BD002), 10/07/2017, prepared by LRQA
6. JCM Modalities of Communication Statement Form (BD002) (JCM_BD_F_MoC_ ver01.0)
7. JCM Approved Methodology JCM_BD_AM_001_ver01.0, approved on 09/03/2016
8. JCM Glossary of Terms (JCM_BD_Glossary_ver02.0)
9. JCM Project Cycle Procedure (JCM_BD_PCP_ver03.0)
10. JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_BD_GL_PDD_MR_ver03.0)
11. JCM Guidelines for Validation and Verification (JCM_BD_GL_VV_ver02.0)
12. JCM Verification Report Form (JCM_BD_F_Vrf_Rep_ver02.0)
13. Outline of the registered project "Installation of high efficiency centrifugal chiller for air conditioning system in clothing tag factory in Bangladesh"
14. Layout of the project chillers installed at the project site
15-1. Commissioning report of the project chiller No.1 installed at Next Accessories Ltd., dated 26/02/2017
15-2. Commissioning report of the project chillers No.2 and No.3 installed at Next

Accessories Ltd., dated 07/02/2018

16. Company profile of Next Accessories Ltd.
17. Company profile of Nippon Koei Co., Ltd.
18. Company profile of Ebara Refrigeration Equipment & Systems Co., Ltd.
19. Specification of the project centrifugal chiller (RTBF030 made by Ebara) installed at the project site, including its capacity (299.8 USRt) (Criterion 1)
20. Test result of COP for the project chillers No.1, No.2 and No.3 installed at the project site, including the source data used for the calculation (Criterion 2)
21. Letter of Consent on periodical checks after installation (Criterion 3) dated 27/02/2017
22. Record on the periodical check conducted during the monitoring period (Criterion 3)
23. Specification and ODP value of the refrigerant (HFC-245fa) used for the project chiller (Criterion 4)
24. Plan for not releasing refrigerant used for the project chiller and the existing chiller (Criterion 5) dated 28/02/2017
25. Operation & Maintenance manual of the project chiller units prepared by Ebara Refrigeration Equipment & Systems, dated 07/01/2015
26. Records and text of project staff training for the project activity conducted at Next Accessories Ltd., including attendee's list
27. Grid Emission Factor (0.670 tCO2/MWh) of Bangladesh endorsed by National CDM Committee
28. Catalogue and specification of electricity meter (53U-1 made by M-System) to monitor power consumption of the project chillers, including accuracy (±0.5%)

29-1. Inspection report of power meter for Chiller No.1 issued by the manufacture at the time of shipment from the factory, dated 06/01/2016

29-2. Inspection report of power meter for Chillers No.2 and No.3 issued by the manufacture at the time of shipment from the factory, dated 11/09/2017

30. Schematic diagram of monitoring structure including data flow information
31. Reports on the parts of the project chiller units No.2 and No.3 stolen and damaged during transportation for delivery
32. Declaration of avoidance of double registration submitted by Nippon Koei Co., Ltd., dated 18/02/2020
33. IEC standard for electricity meter

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.

Statement of competence

Name: Dr. Tadashi Yoshida

Qualified and authorized by Japan Quality Assurance Organization.

Function	Date of qualification
Validator	2014/12/22
Verifier	2014/12/22
Team leader	2014/12/22

Technical area within sectoral scopes	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	2015/11/12
TA 5.1. Chemical industry	2014/12/22
TA 10.1. Fugitive emissions from oil and gas	2014/12/22
TA 13.1. Solid waste and wastewater	2014/12/22
TA 14.1. Afforestation and reforestation	-

Statement of competence

Name: Mr. Hiroshi Motokawa

Qualified and authorized by Japan Quality Assurance Organization.

Function	Date of qualification
Validator	2014/12/22
Verifier	2014/12/22
Team leader	2014/12/22

Technical area within sectoral scopes	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	2014/12/22
TA 5.1. Chemical industry	-
TA 10.1. Fugitive emissions from oil and gas	-
TA 13.1. Solid waste and wastewater	2014/12/22
TA 14.1. Afforestation and reforestation	-