**[6450-01-P]**

**DEPARTMENT OF ENERGY**

**[Case No. 2018-009; EERE-2018-BT-WAV-0013]**

**Notice of Petition for Waiver of TCL Air Conditioner (zhongshan) Co., Ltd. from the Department of Energy Central Air Conditioners and Heat Pumps Test Procedure, and Notice of Grant of Interim Waiver**

**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

**ACTION:** Notice of petition for waiver and grant of an interim waiver, and request for comments.

**SUMMARY:** This notice announces receipt of and publishes a petition for waiver from TCL air conditioner (zhongshan) Co., Ltd. ("TCL AC"), which seeks a waiver from the U.S. Department of Energy ("DOE") test procedure for determining the efficiency of central air conditioners ("CACs") and heat pumps ("HPs"). TCL AC seeks to use an alternate test procedure to address issues involved in testing certain basic models identified in its petition. According to TCL AC, the DOE test procedure does not include a method for testing specified CAC and HP basic models that use variable-speed compressors and are matched with a coil-only indoor unit (hereafter referred to as "variable-speed coil-only single-split systems"). TCL AC requests that it be permitted to test its variable-speed coil-only single-split systems with the cooling full-load air volume rate used as both the cooling intermediate and minimum air volume rates, and the heating full-load air volume rate used as the heating intermediate air volume rate. This notice announces that DOE grants TCL AC an interim waiver from the DOE CAC and HP test procedure for its specified basic models, subject to use of the alternate test procedure as set forth

in the Interim Waiver Order. DOE solicits comments, data, and information concerning TCL AC's petition and the alternate test procedure.

**DATES:** DOE will accept comments, data, and information with respect to the TCL AC petition until **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

**ADDRESSES:** Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at *http://www.regulations.gov*. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by case number "2018-009" and Docket number "EERE-2018-BT-WAV-0013," by any of the following methods:

- *Federal eRulemaking Portal*: *http://www.regulations.gov*. Follow the instructions for submitting comments.
- *E-mail: TCL2018WAV0013@ee.doe.gov*. Include the case number *[Case No. 2018-009]* in the subject line of the message.
- *Postal Mail*: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, Petition for Waiver Case No. 2018-009, 1000 Independence Avenue, SW., Washington, DC 20585-0121. If possible, please submit all items on a compact disc ("CD"), in which case it is not necessary to include printed copies.
- *Hand Delivery/Courier*: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, 950 L'Enfant Plaza, SW., 6th Floor,

Washington, DC, 20024. Telephone: (202) 287-1445. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

No telefacsimilies (faxes) will be accepted. For detailed instructions on submitting comments and additional information on this process, see section V of this document.

*Docket*: The docket, which includes *Federal Register* notices, comments, and other supporting documents/materials, is available for review at *http://www.regulations.gov*. All documents in the docket are listed in the *http://www.regulations.gov* index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

The docket Web page can be found *at http://www.regulations.gov/docket?D=EERE-2018-BT-WAV-0013*. The docket Web page contains instruction on how to access all documents, including public comments, in the docket. See section V for information on how to submit comments through *http://www.regulations.gov*.

**FOR FURTHER INFORMATION CONTACT:**

Ms. Lucy deButts, U.S. Department of Energy, Building Technologies Program, Mail Stop EE-5B, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121. E-mail: *AS_Waiver_Requests@ee.doe.gov*.

Mr. Pete Cochran, U.S. Department of Energy, Office of the General Counsel, Mail Stop GC-33, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0103. Telephone: (202) 586-9496. E-mail: *peter.cochran@hq.doe.gov*.

**SUPPLEMENTARY INFORMATION:**

## I. Background and Authority

Title III, Part B[1] of the Energy Policy and Conservation Act of 1975 (EPCA), Public Law 94-163 (42 U.S.C. 6291-6309, as codified)[2] established the Energy Conservation Program for Consumer Products Other Than Automobiles, which includes CACs and HPs. (42 U.S.C. 6292(a)(3)) Part B includes definitions, test procedures, labeling provisions, energy conservation standards, and the authority to require information and reports from manufacturers. Further, Part B requires the Secretary of Energy to prescribe test procedures that are reasonably designed to produce results that measure energy efficiency, energy use, or estimated operating costs during a representative average-use cycle, and that are not unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) The test procedure for CACs and HPs is contained in the Code of Federal Regulations ("CFR") at 10 CFR part 430, subpart B, appendix M (referred to in this notice as "appendix M").

[1] For editorial reasons, upon codification in the U.S. Code, Part B was re-designated as Part A.
[2] All references to EPCA in this document refer to the statute as amended through the EPS Improvement Act of 2017, Public Law 115–115 (January 12, 2018).

Under 10 CFR 430.27, any interested person may submit a petition for waiver from DOE's test procedure requirements. DOE will grant a waiver from the test procedure requirements if DOE determines either that the basic model for which the waiver was requested contains a design characteristic that prevents testing of the basic model according to the prescribed test procedures, or that the prescribed test procedures evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. 10 CFR 430.27(f)(2). A petitioner must include in its petition any alternate test procedures known to the petitioner to evaluate the basic model in a manner representative of its energy consumption. 10 CFR 430.27(b)(1)(iii).

DOE may grant a waiver subject to conditions, including adherence to alternate test procedures. 10 CFR 430.27(f)(2). As soon as practicable after the granting of any waiver, DOE will publish in the *Federal Register* a notice of proposed rulemaking to amend its regulations so as to eliminate any need for the continuation of such waiver. 10 CFR 430.27(l). As soon thereafter as practicable, DOE will publish in the *Federal Register* a final rule. *Id.*

The waiver process also allows DOE to grant an interim waiver if it appears likely that the petition for waiver will be granted and/or if DOE determines that it would be desirable for public policy reasons to grant immediate relief pending a determination on the petition for waiver. 10 CFR 430.27(e)(2). Within one year of issuance of an interim waiver, DOE will either: (i) publish in the *Federal Register* a determination on the petition for waiver; or (ii) publish in the *Federal Register* a new or amended test procedure that addresses the issues presented in the waiver. 10 CFR 430.27(h)(1). When DOE amends the test procedure to address

the issues presented in a waiver, the waiver will automatically terminate on the date on which use of that test procedure is required to demonstrate compliance. 10 CFR 430.27(h)(2).

## II. TCL AC's Petition for Waiver of Test Procedure and Application for Interim Waiver

On July 10, 2018, TCL AC filed a petition for waiver and an application for interim waiver from the CAC and HP test procedure set forth in Appendix M. According to TCL AC, Appendix M does not include provisions for determining cooling intermediate air volume rate, cooling minimum air volume rate, and heating intermediate air volume rate for the variable-speed coil-only single-split systems specified in its petition. Consequently, TCL AC asserted that it cannot test or rate these systems in accordance with the DOE test procedure. TCL AC stated that its variable-speed outdoor units are non-communicative systems (*i.e.*, the outdoor unit does not communicate with the indoor unit) for which compressor speed varies based only on controls located on the outdoor unit and the indoor unit maintains a constant indoor blower fan speed.

TCL AC seeks to use an alternate test procedure to test and rate specific CAC and HP basic models of its variable-speed coil-only single-split systems, which would specify the use of cooling full-load air volume rates as determined in section 3.1.4.1.1.c of Appendix M as cooling intermediate and cooling minimum air volume rates, and would specify the use of heating full-load air volume rates as determined in section 3.1.4.4.1.a of Appendix M as heating intermediate air volume rate.

TCL AC also requests an interim waiver from the existing DOE test procedure. DOE will grant an interim waiver if it appears likely that the petition for waiver will be granted, and/or if DOE determines that it would be desirable for public policy reasons to grant immediate relief pending a determination of the petition for waiver. See 10 CFR 430.27(e)(2).

DOE understands that absent an interim waiver, the specified variable-speed coil-only single-split models that are subject of the waiver cannot be tested under the existing test procedure because Appendix M does not include provisions for determining certain air volume rates for variable-speed coil-only single-split systems. Typical variable-speed single-split systems have a communicating system, *i.e.*, the outdoor units and indoor units communicate and indoor unit air flow varies based on the operation of the outdoor unit. However, as presented in TCL AC's petition, its variable-speed outdoor units are non-communicative systems and the indoor blower section maintains a constant indoor blower fan speed.

## III. Requested Alternate Test Procedure

EPCA requires that manufacturers use DOE test procedures to make representations about the energy consumption and energy consumption costs of products covered by the statute. (42 U.S.C. 6293(c)) Consistent representations are important for manufacturers to use in making representations about the energy efficiency of their products and to demonstrate compliance with applicable DOE energy conservation standards. Pursuant to its regulations applicable to waivers and interim waivers from applicable test procedures at 10 CFR 430.27, and after consideration of

public comments on the petition, DOE will consider setting an alternate test procedure for the equipment identified by TCL AC in a subsequent Decision and Order.

DOE recently granted to GD Midea Heating & Ventilating Equipment Co., Ltd. ("GD Midea") an interim waiver from the DOE CAC and HP test procedure for specific basic models, subject to use of an alternate test procedure. 83 FR 24767. In TCL AC's petition, TCL AC requests that it be allowed to use the same alternate test procedure as that granted to GD Midea. Specifically, TCL AC requests that specified basic models listed in the petition be tested according to the test procedure for central CACs and HPs prescribed by DOE at Appendix M, except that for coil-only systems, the cooling full-load air volume rate is also used as the cooling intermediate and cooling minimum air volume rates, and the heating full-load air volume rate is used as the heating intermediate air volume rate.

## IV. Summary of Grant of an Interim Waiver

DOE has reviewed TCL AC's application for interim waiver, the alternate procedure requested by TCL AC, and public-facing materials (*e.g.*, marketing materials, product specification sheets, and installation manuals) for the units identified in its petition. The basic models specified in TCL AC's application appear to contain similar technology and barriers to testing as those specified in the GD Midea interim waiver order. The public-facing materials that DOE reviewed support TCL AC's assertion that the units it identifies are installed as variable-speed coil-only systems, in which the indoor fan speed remains constant at full and part-load operation. Using the cooling full-load air volume rate for the cooling intermediate and cooling

minimum air volume rates, and the heating full load air volume rate as the heating intermediate air volume rate appears appropriate because there is no variability in indoor fan speed. Based on this review, the alternate test procedure appears to allow for the accurate measurement of efficiency of the specified basic models, while alleviating the testing problems associated with TCL AC's implementation of CAC and HP testing for the basic models specified in TCL AC's petition. Consequently, TCL AC's petition for waiver will likely be granted. Furthermore, DOE has determined that it is desirable for public policy reasons to grant TCL AC immediate relief pending a determination on the petition for waiver.

For the reasons stated above, DOE has granted an interim waiver to TCL AC for the specified CAC and HP basic models in TCL AC's petition. Therefore, DOE has issued an **Order**, stating:

(1) TCL AC must test and rate the TCL air conditioner (zhongshan) Co., Ltd. brand and Ecoer Inc. brand single-split CAC and HP basic models TCE-36HA/DV20 and TCE-60HA/DV20, which are comprised of the individual combinations listed below,[3] using the alternate test procedure set forth in paragraph (2):

| Brand | Basic Model Number | Outdoor Unit | Indoor Unit |
|---|---|---|---|
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-36HA/DV20 | TCE-36HA/DV20 | TCE-2430D6HWA/DVOE(01) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-36HA/DV20 | TCE-36HA/DV20 | TCE-2430D6HWA/DVOE(02) |

[3] The specified basic models contain individual combinations, which do not specify a particular air mover, and that each consist of an outdoor unit that (1) uses a variable speed compressor matched with a coil-only indoor unit, and (2) is designed to operate as part of a non-communicative system in which the compressor speed varies based only on controls located in the outdoor unit such that the indoor blower unit maintains a constant indoor blower fan speed.

| | | | |
|---|---|---|---|
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-36HA/DV20 | TCE-36HA/DV20 | TCE-3036D6HWA/DVOE(02) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-36HA/DV20 | TCE-36HA/DV20 | TCE-2430D6HWA/DV2I(01) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-36HA/DV20 | TCE-36HA/DV20 | TCE-2430D6HWA/DV2I(02) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-36HA/DV20 | TCE-36HA/DV20 | TCE-3036D6HWA/DV2I(01) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-36HA/DV20 | TCE-36HA/DV20 | TCE-3036D6HWA/DV2I(02) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-36HA/DV20 | TCE-36HA/DV20 | TCE-3036D6HWA/DV2I(03) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-60HA/DV20 | TCE-60HA/DV20 | TCE-4248D6HWA/DVOE(03) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-60HA/DV20 | TCE-60HA/DV20 | TCE-4860D6HWA/DVOE(03) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-60HA/DV20 | TCE-60HA/DV20 | TCE-4860D6HWA/DVOE(04) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-60HA/DV20 | TCE-60HA/DV20 | TCE-4248D6HWA/DV2I(02) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-60HA/DV20 | TCE-60HA/DV20 | TCE-4248D6HWA/DV2I(03) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-60HA/DV20 | TCE-60HA/DV20 | TCE-4248D6HWA/DV2I(04) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-60HA/DV20 | TCE-60HA/DV20 | TCE-4860D6HWA/DV2I(03) |
| TCL air conditioner (zhongshan) Co., Ltd. | TCE-60HA/DV20 | TCE-60HA/DV20 | TCE-4860D6HWA/DV2I(04) |
| Ecoer Inc. | TCE-36HA/DV20 | EODA18H-2436 | GNC2430APT |
| Ecoer Inc. | TCE-36HA/DV20 | EODA18H-2436 | GNC2430BPT |
| Ecoer Inc. | TCE-36HA/DV20 | EODA18H-2436 | GNC3036BPT |
| Ecoer Inc. | TCE-36HA/DV20 | EODA18H-2436 | EACT2430A |
| Ecoer Inc. | TCE-36HA/DV20 | EODA18H-2436 | EACT2430B |
| Ecoer Inc. | TCE-36HA/DV20 | EODA18H-2436 | EACT3036A |
| Ecoer Inc. | TCE-36HA/DV20 | EODA18H-2436 | EACT3036B |
| Ecoer Inc. | TCE-36HA/DV20 | EODA18H-2436 | EACT3036C |
| Ecoer Inc. | TCE-60HA/DV20 | EODA18H-4860 | GNC4248CPT |
| Ecoer Inc. | TCE-60HA/DV20 | EODA18H-4860 | GNC4860CPT |
| Ecoer Inc. | TCE-60HA/DV20 | EODA18H-4860 | GNC4860DPT |
| Ecoer Inc. | TCE-60HA/DV20 | EODA18H-4860 | EACT4248B |
| Ecoer Inc. | TCE-60HA/DV20 | EODA18H-4860 | EACT4248C |
| Ecoer Inc. | TCE-60HA/DV20 | EODA18H-4860 | EACT4248D |
| Ecoer Inc. | TCE-60HA/DV20 | EODA18H-4860 | EACT4860C |
| Ecoer Inc. | TCE-60HA/DV20 | EODA18H-4860 | EACT4860D |

(2) The alternate test procedure for the TCL AC basic models identified in paragraph (1) is the test procedure for CACs and HPs prescribed by DOE at 10 CFR part 430, subpart B, Appendix M, except that, for coil-only combinations: the cooling full-load air volume rate as determined in section 3.1.4.1.1.c of Appendix M shall also be used as the cooling intermediate and cooling minimum air volume rates, and the heating full-load air volume rate as determined in section 3.1.4.4.1.a of Appendix M shall also be used as the heating intermediate air volume rate, as

detailed below. All other requirements of Appendix M and DOE's regulations remain applicable.

In 3.1.4.2, *Cooling Minimum Air Volume Rate*, include:

f. For ducted variable-speed compressor systems tested with a coil-only indoor unit, the cooling minimum air volume rate is the same as the cooling full-load air volume rate determined in section 3.1.4.1.1.c.

In 3.1.4.3, *Cooling Intermediate Air Volume Rate*, include:

d. For ducted variable-speed compressor systems tested with a coil-only indoor unit, the cooling intermediate air volume rate is the same as the cooling full-load air volume rate determined in section 3.1.4.1.1.c.

In 3.1.4.6, *Heating Intermediate Air Volume Rate,* include*:*

d. For ducted variable-speed compressor systems tested with a coil-only indoor unit, the heating intermediate air volume rate is the same as the heating full-load air volume rate determined in section 3.1.4.4.1.a.

(3) *Representations*. TCL AC is permitted to make representations about the efficiency of basic models identified in paragraph (1) for compliance, marketing, or other purposes only to the extent that the basic model has been tested in accordance with the provisions set forth in the alternate test procedure and such representations fairly disclose the results of such testing in accordance with 10 CFR 429.16 and 10 CFR part 430, subpart B, Appendix M.

(4) This interim waiver shall remain in effect consistent with the provisions of 10 CFR 430.27.

(5) If TCL AC makes any modifications to the controls or configurations of these basic models, the interim waiver would no longer be valid and TCL AC would either be required to use the current Federal test method or submit a new application for a test procedure waiver. DOE may revoke or modify this interim waiver at any time if it determines the factual basis underlying the petition for waiver is incorrect, or the results from the alternate test procedure are unrepresentative of the basic models' true energy consumption characteristics. 10 CFR 430.27(k)(1). Likewise, TCL AC may request that DOE rescind or modify the interim waiver if TCL AC discovers an error in the information provided to DOE as part of its petition, determines that the interim waiver is no longer needed, or for other appropriate reasons. 10 CFR 430.27(k)(2).

(6) Granting of this interim waiver does not release TCL AC from the certification requirements set forth at 10 CFR part 429.

DOE makes decisions on waivers and interim waivers for only those basic models specifically set out in the petition, not future basic models that may be manufactured by the petitioner. TCL AC may submit a new or amended petition for waiver and request for grant of

interim waiver, as appropriate, for additional basic models of central air conditioners and heat pumps. Alternatively, if appropriate, TCL AC may request that DOE extend the scope of a waiver or an interim waiver to include additional basic models employing the same technology as the basic model(s) set forth in the original petition consistent with 10 CFR 430.27(g).

## V. Request for Comments

DOE is publishing TCL AC's petition for waiver in its entirety, pursuant to 10 CFR 430.27(b)(1)(iv). The petition did not identify any information as confidential business information. The petition includes a suggested alternate test procedure, as specified in section III of this notice, to determine the energy consumption of TCL AC's specified CAC and HP basic models. DOE may consider including the alternate procedure specified in the Interim Waiver Order in a subsequent Decision and Order.

DOE invites all interested parties to submit in writing by [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER***], comments and information on all aspects of the petition, including the alternate test procedure. Pursuant to 10 CFR 430.27(d), any person submitting written comments to DOE must also send a copy of such comments to the petitioner. The contact information for the petitioner is Kevin Zheng, Certification Engineer, TCL Air Conditioner (zhongshan) Co., Ltd., No. 59. Nantou Road West, Nantou, Zhongshan, Guangdong, P.R. China, *kt_zhengkai@tcl.com*.

Submitting comments via *http://www.regulations.gov*. The *http://www.regulations.gov* web page will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. Persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to *http://www.regulations.gov* information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information (CBI)). Comments submitted through *http://www.regulations.gov* cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section.

DOE processes submissions made through *http://www.regulations.gov* before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that *http://www.regulations.gov* provides after you have successfully uploaded your comment.

Submitting comments via email, hand delivery, or mail. Comments and documents submitted via email, hand delivery, or mail also will be posted to *http://www.regulations.gov*. If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information on a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information each time you submit comments, data, documents, and other information to DOE. If you submit via mail or hand delivery, please provide all items on a CD, if feasible. It is not necessary to submit printed copies. No facsimiles (faxes) will be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, written in English and free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

Confidential Business Information. According to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email, postal mail, or hand delivery two well-marked copies: one copy of the document marked confidential including all the information believed to be confidential, and one copy of the document marked "non-confidential" with the information believed to be confidential deleted. Submit these documents via email or on a CD, if feasible. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

Factors of interest to DOE when evaluating requests to treat submitted information as confidential include (1) a description of the items, (2) whether and why such items are customarily treated as confidential within the industry, (3) whether the information is generally known by or available from other sources, (4) whether the information has previously been made available to others without obligation concerning its confidentiality, (5) an explanation of the competitive injury to the submitting person which would result from public disclosure, (6) when such information might lose its confidential character due to the passage of time, and (7) why disclosure of the information would be contrary to the public interest.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

Signed in Washington, DC, on
November 1, 2018.

Kathleen B. Hogan, Ph.D.
Deputy Assistant Secretary for Energy Efficiency
Energy Efficiency and Renewable Energy

TCL air conditioner(zhongshan) Co.,Ltd.
No.59.Nantou Road West, Nantou, Zhongshan, Guangdong, P.R. China

July 19, 2018

Lucy deButts
U.S. Department of Energy
Building Technologies Program, Mail Stop EE-5B
1000 Independence Avenue. SW
Washington DC 20585-0121
Submitted via email to the following address: AS_Waiver_Requests@ee.doe.gov
Waiver Petition for TCL AC's variable speed coil-only single-split systems.

Dear Ms. Lucy Debutts:

Pursuant to 10 CFR 430.27, TCL air conditioner(zhongshan) Co.,Ltd. (hereinafter abbreviated as "TCL AC") respectfully submits this waiver petition on its non-communicative variable speed systems with coil-only configuration listed in Table 3-1. The scope of the test procedure for central air conditioners (CACs) and heat pumps(HPs) found in Appendix M to Subpart B of 10 CFR Part 430 (hereinafter referred to as "Appendix M") includes single-split air-conditioners and heat pumps that are coil-only systems with a variable-speed compressor (hereinafter referred to as "variable-speed coil-only single-split systems"). However, whereas Appendix M provides some provisions to test variable-speed coil-only single-split system overall, it does not provide specific coverage for determining cooling intermediate air volume rate, cooling minimum air volume rate and heating intermediate air volume rate for these products. It makes some difficulties in applying Appendix M to test variable-speed coil-only single-split systems.

TCL AC seeks a test procedure waiver to apply its variable-speed coil-only single-split systems using the alternative test procedure proposed by GD Midea Heating & Ventilating Equipment Co., Ltd.(GD Midea) presenting in section II of this petition. We hereby also request a waiver for TCL AC's variable-speed coil-only single-split systems. The granting of

waiver is very crucial to us as well. Because it will allow us to accurately rate, certify, and provide US consumers with highly efficient and smart variable-speed coil-only single-split systems.

*I. TCL air conditioner(zhongshan) CO.,Ltd.*

TCL air conditioner(zhongshan) Co.,Ltd. is a division of the TCL group founded in 1981. TCL group is one of the world's leading manufacturers focusing on MULTI-MEDIA, CSOT, COMMUNICATION, TONLY ELECTRONICS and HVAC equipment with 21 manufacturing & processing bases, 80 sales organizations and 10 strategic partners around the world. TCL AC, one of the leading air conditioner manufacturers with capability of producing all kinds of residential air conditioners, commercial air conditioners, dehumidifiers and compressors, was established in 1999. TCL AC has been ranking the 3rd company of China air conditioner export since 2014 and providing true intelligent air conditioners based on inverter variable speed technology. Through its R&D division, TCL strives to develop and manufacture the most energy-efficient CACs and HPs for residential application, including high efficiency variable speed single-split systems.

*II. Background*

Variable speed compressor technology has been proven to be an effective way to improve both the seasonal energy efficiency ratio(SEER) and heating seasonal performance factor(HSPF) for air-conditioning products. But most of residential CACs and HPs installed in the US market are single or two-stage systems. Undoubtedly, Inverter variable speed CACs and HPs shall be a trend for consumer updates in the next decades. Besides Midea/Bosch inverter variable-speed single-split systems, the vast majority variable speed split systems require a proprietary communicating method and exclusively works with a specific blower-coil unit from the same manufacturer. To provide US customers a more convenient energy-saving retrofit application of their single or two-stage systems, TCL AC's variable speed outdoor condensing units are also designed as non-communicative control systems. What's more, Integrated and safety protection PCB design makes TCL AC's variable-speed single-split systems easy to install and service with incredible comfort.

The scope of Appendix M includes variable-speed coil-only single-split systems. However, Appendix M lacks coverage for manufacturers to test these systems to the fullest extent of the test procedure. For example, Appendix M does not provide specific coverage for these products to determine cooling intermediate air volume rate, cooling minimum air volume rate and heating intermediate air volume rate. So it's impossible for manufacturers to test a

variable-speed system in a coil-only configuration in full compliance with the test procedure. More specifically, Table 8 and Table 14 present in Appendix M provide respectively cooling and heating mode test conditions for units having a variable-speed compressor. These tables prescribe six air volume rates (cooling minimum, cooling intermediate, cooling full-load, heating minimum, heating intermediate, heating full-load) at which units with variable speed compressor need to be tested. These six air volume rates are then determined using sections 3.1.4.1 through 3.1.4.6. However, problem arises when trying to determine cooling minimum, cooling intermediate, and heating intermediate for variable-speed coil-only single-split systems, as respective sections 3.1.4.2, 3.1.4.3 and 3.1.4.6 do not provide coverage for these systems.

Fortunately, GD Midea had proposed an alternative test procedure that provides additional coverage to Appendix M for variable-speed coil-only single-split systems meanwhile preserving the spirit and intent of the test procedure. Note that GD Midea has only evaluated and confirmed the suitability and practicability on its products in which are listed Section III that have the characteristics: 1) No communication between the variable-speed outdoor condensing unit and the indoor unit; 2)The air volume rates of indoor units remain constant at all time. Considering the unique technical characteristics of these non-communicative variable speed systems, GD Midea had proposed the alternative test procedure to determine the six air volume rates in Table 8 and Table 14 as follow:

- Cooling full-load air volume rate: Determined using 3.1.4.1.1.c
- Cooling intermediate air volume rate: Use the cooling full-load air volume rate as the cooling intermediate air volume rate. Use the final control settings as determined when setting the cooling full-load air volume rate, if necessary to reset to the cooling full-load air volume rate obtained in section 3.1.4.1.1.c
- Cooling minimum air volume rate: Use the cooling full-load air volume rate as the cooling minimum air volume rate. Use the final control settings as determined when setting the cooling full-load air volume rate, if necessary to reset to the cooling full-load air volume rate obtained in section 3.1.4.1.1.c
- Heating full-load air volume rate: Determined using 3.1.4.4.1.a
- Heating intermediate air volume rate: Use the heating full-load air volume rate as the heating intermediate air volume rate. Use the final control settings as determined when setting the heating full-load air volume rate, if necessary to reset to the heating full-load air volume rate obtained in section 3.1.4.4.1.a
- Heating minimum air volume rate: Determined using 3.1.4.5.1.a

DOE has granted the waiver for GD Midea from DOE test procedure for basic models MOVA-36HDN1-M18M and MOVA-60HDN1-M18M, which contain individual combinations as below table. Each combination consists of an outdoor unit that uses a variable speed compressor matched with a coil-only indoor unit and is designed to operate as part of a non-communicative system in which the compressor speed varies based only on controls located in the outdoor unit and the indoor blower unit maintains a constant indoor blower fan speed. According to docket number EERE-2017-BT-WAV-0060, for coil-only combinations with non-communicative inverter variable speed condensing units: the cooling full-load air volume rate as determined in section 3.1.4.1.1.c of Appendix M shall also be used as the cooling intermediate and cooling minimum air volume rates, and the heating full-load air volume rate as determined in section 3.1.4.4.1.a of Appendix M shall also be used as the heating intermediate air volume rate.

| **GD MIDEA HEATINGT & VENTILATING EQUIPMENT CO., LTD. (Brand)** | | | **BOSCH THERMOTECHNOLOGY CORP (Brand)** | | |
|---|---|---|---|---|---|
| Basic Model Number | Outdoor Unit | Indoor Unit | Basic Model Number | Outdoor Unit | Indoor Unit |
| MOVA-36HDN1-M18M | MOVA-36HDN1-M18M | MC**2430ANTF | MOVA-36HDN1-M18M | BOVA-36HDN1-M18M | BMA*2430ANTD |
| MOVA-36HDN1-M18M | MOVA-36HDN1-M18M | MC**2430BNTF | MOVA-36HDN1-M18M | BOVA-36HDN1-M18M | BMA*2430BNTD |
| MOVA-36HDN1-M18M | MOVA-36HDN1-M18M | MC**3036ANTD | MOVA-36HDN1-M18M | BOVA-36HDN1-M18M | BMA*3036ANTD |
| MOVA-36HDN1-M18M | MOVA-36HDN1-M18M | MC**3036BNTD | MOVA-36HDN1-M18M | BOVA-36HDN1-M18M | BMA*3036BNTD |
| MOVA-36HDN1-M18M | MOVA-36HDN1-M18M | MC**3036CNTD | MOVA-36HDN1-M18M | BOVA-36HDN1-M18M | BMA*3036CNTD |
| MOVA-60HDN1-M18M | MOVA-60HDN1-M18M | MC**4248BNTF | MOVA-60HDN1-M18M | BOVA-60HDN1-M18M | BMA*4248BNTF |
| MOVA-60HDN1-M18M | MOVA-60HDN1-M18M | MC**4248CNTF | MOVA-60HDN1-M18M | BOVA-60HDN1-M18M | BMA*4248CNTF |
| MOVA-60HDN1-M18M | MOVA-60HDN1-M18M | MC**4248DNTF | MOVA-60HDN1-M18M | BOVA-60HDN1-M18M | BMA*4248DNTF |
| MOVA-60HDN1-M18M | MOVA-60HDN1-M18M | MC**4860CNTF | MOVA-60HDN1-M18M | BOVA-60HDN1-M18M | BMA*4860CNTF |
| MOVA-60HDN1-M18M | MOVA-60HDN1-M18M | MC**4860DNTF | MOVA-60HDN1-M18M | BOVA-60HDN1-M18M | BMA*4860DNTF |

*III. Basic Models for Waiver Application*

TCL AC is requesting a waiver to test its single-split CACs and HPs outdoor condensing unit basic models equipping variable speed compressors, with which match coil-only indoor units. Using the alternative test procedure proposed by GD Midea described in section V of this petition.

Specifically, TCL AC waiver request covers the following basic models.

Table 3-1 Waiver applying Basic models

| TCL air conditioner(zhongshan) Co.,Ltd. (Brand) | | | Ecoer INC. (Brand) | | |
|---|---|---|---|---|---|
| Basic Model Number | Outdoor Unit | Indoor Unit | Basic Model Number | Outdoor Unit | Indoor Unit |
| TCE-36HA/DV2O | TCE-36HA/DV2O | TCE-2430D6HWA/DVOE(01) | TCE-36HA/DV2O | EODA18H-2436 | GNC2430APT |
| TCE-36HA/DV2O | TCE-36HA/DV2O | TCE-2430D6HWA/DVOE(02) | TCE-36HA/DV2O | EODA18H-2436 | GNC2430BPT |
| TCE-36HA/DV2O | TCE-36HA/DV2O | TCE-3036D6HWA/DVOE(02) | TCE-36HA/DV2O | EODA18H-2436 | GNC3036BPT |
| TCE-36HA/DV2O | TCE-36HA/DV2O | TCE-2430D6HWA/DV2I(01) | TCE-36HA/DV2O | EODA18H-2436 | EACT2430A |
| TCE-36HA/DV2O | TCE-36HA/DV2O | TCE-2430D6HWA/DV2I(02) | TCE-36HA/DV2O | EODA18H-2436 | EACT2430B |
| TCE-36HA/DV2O | TCE-36HA/DV2O | TCE-3036D6HWA/DV2I(01) | TCE-36HA/DV2O | EODA18H-2436 | EACT3036A |
| TCE-36HA/DV2O | TCE-36HA/DV2O | TCE-3036D6HWA/DV2I(02) | TCE-36HA/DV2O | EODA18H-2436 | EACT3036B |
| TCE-36HA/DV2O | TCE-36HA/DV2O | TCE-3036D6HWA/DV2I(03) | TCE-36HA/DV2O | EODA18H-2436 | EACT3036C |
| TCE-60HA/DV2O | TCE-60HA/DV2O | TCE-4248D6HWA/DVOE(03) | TCE-60HA/DV2O | EODA18H-4860 | GNC4248CPT |
| TCE-60HA/DV2O | TCE-60HA/DV2O | TCE-4860D6HWA/DVOE(03) | TCE-60HA/DV2O | EODA18H-4860 | GNC4860CPT |
| TCE-60HA/DV2O | TCE-60HA/DV2O | TCE-4860D6HWA/DVOE(04) | TCE-60HA/DV2O | EODA18H-4860 | GNC4860DPT |
| TCE-60HA/DV2O | TCE-60HA/DV2O | TCE-4248D6HWA/DV2I(02) | TCE-60HA/DV2O | EODA18H-4860 | EACT4248B |
| TCE-60HA/DV2O | TCE-60HA/DV2O | TCE-4248D6HWA/DV2I(03) | TCE-60HA/DV2O | EODA18H-4860 | EACT4248C |
| TCE-60HA/DV2O | TCE-60HA/DV2O | TCE-4248D6HWA/DV2I(04) | TCE-60HA/DV2O | EODA18H-4860 | EACT4248D |
| TCE-60HA/DV2O | TCE-60HA/DV2O | TCE-4860D6HWA/DV2I(03) | TCE-60HA/DV2O | EODA18H-4860 | EACT4860C |
| TCE-60HA/DV2O | TCE-60HA/DV2O | TCE-4860D6HWA/DV2I(04) | TCE-60HA/DV2O | EODA18H-4860 | EACT4860D |

These systems have the following characteristics:

1. No communication between the inverter variable-speed outdoor condensing unit and the indoor unit
2. Once the systems have been installed, the air volume rate remains constant at all time.

*IV. Backgrounds for Test Procedure Waiver*

Appendix M prescribes that on or after July 5, 2017 and prior to January 1, 2023, any representations, including compliance certifications, made with respect to the energy use,

power, or efficiency of central air conditioners and central air conditioning heat pumps must be based on the results of testing pursuant to appendix M. In addition, ratings referring to Appendix M are used to determine compliance with the provisions of paragraph (c) of 10 CFR 430.32, energy and water conservation standards for air-conditioners and heat pumps.

Given the fact that variable-speed coil-only single-split systems are included in the scope of Appendix M and 10 CFR 430.32, absence of comprehensive coverage for these products in Appendix M hinders manufacturers in

1) establishing ratings in compliance with federal law,
2) determining compliance with DOE's minimum efficiency standards present in 10 CFR 430.32,
3) complying with DOE's certification requirements set forth in 10 CFR 429,
4) distributing these products in commerce.

*V. Technical Justification for Alternative Test Procedure*

TCL AC's variable speed coil-only single-split systems that are going to be listed in Section III of this petition have the similar technical controls to GD Midea, but have a significantly difference from conventional variable speed systems:

- Conventional variable speed single-split systems are typically communicating systems. Firstly, the outdoor condensing units acquire the states of indoor side through proprietary communication method to control the whole system. Moreover, the indoor unit air volume rates vary according to not only return air temperature and setting temperature of indoor side but also the condensing units' states on some conditions. TCL AC has noticed that the following manufacturers of single-split residential CACs and HPs offer systems by communication control: Carrier Corporation, Daikin Industries, Lennox International Inc., Nortek Global HVAC, Rheem Sales Company, Trane and York by Johnson Controls.
- TCL AC's variable-speed single-split systems differ from the conventional one descripted above. No communication is required between indoor unit and outdoor condensing unit, and the indoor air volume rates never vary based on outdoor condensing units' state. The outdoor condensing unit automatically adjusts compressor speeds and fan rotation speeds in response to the different building loads. This is similar to Midea/Bosch non-communicative variable-speed single-split systems in the current US market.

*VI. Petition for Waiver*

Pursuant to 10 CFR 430.27, TCL AC is requesting an waiver to test TCL AC's variable coil-only systems. Waiver granting is important to ensure that TCL AC can

1) establish ratings in compliance with federal law,
2) determine compliance with DOE's minimum efficiency standards present in 10 CFR 430.32,
3) comply with DOE's certification requirements set forth in 10 CFR 429,
4) distribute its products in commerce and provide US customers with systems that offer ease of use and installation, as well as significant energy-efficiency savings.

*VII. Arguments for Granting Waiver*

TCL AC believes there are strong arguments for granting its petition:

- From a procedural stand-point, TCL AC has identified a void in the current test procedure.
- DOE has granted GD Midea's alternative test procedure that is technically sound, proven, easily justifiable, aligned with the spirit and intent of the existing Appendix M test procedure.
- From a competitive stand-point, the current void in the test procedure puts TCL AC and any other manufacturers whose products may be similar, at a significant competitive disadvantage.
- From a public policy stand-point, the current void in the test procedure prevents TCL AC's distribution in commerce of products that offer US costumers with systems that are easy to install and use, and which provide significant energy-efficiency savings.

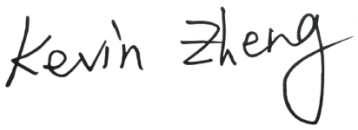
*VIII. Conclusion*

TCL AC is the second manufacturer to develop the non-communicative variable-speed outdoor condensing unit. As mentioned above, the main issue both GD Midea and TCL AC encountered when trying to rate the variable-speed coil-only single-split systems to appendix M is the absence of specific provisions for cooling intermediate air volume rate, cooling minimum air volume rate and heating intermediate air volume rate.

For the reasons stated above, TCL AC respectfully requests that DOE grants this petition for waiver to test its variable-speed coil-only single-split systems using Appendix M to Subpart B of 10 CFR part 430 with the supplemental instructions provided by GD Midea in section II of this petition.

Should you have any questions or would like to discuss this request, please contact me at kt_zhengkai@tcl.com. We greatly appreciate your attention to this matter.

Sincerely,



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