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ENERGY CONSERVATION ACT
(CHAPTER 92C)

ENERGY CONSERVATION (REGULATED GOODS
AND REGISTERED SUPPLIERS) REGULATIONS 2017

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In exercise of the powers conferred by section 78 of the Energy Conservation Act, the Minister for the Environment and Water Resources makes the following Regulations:

PART 1
PRELIMINARY

Citation and commencement

1. These Regulations are the Energy Conservation (Regulated Goods and Registered Suppliers) Regulations 2017 and come into operation on 1 January 2018.

Definitions

2. In these Regulations, unless the context otherwise requires —
“energy efficiency” —

- (a) in relation to an air-conditioner, means the Coefficient of Performance as defined in the First Schedule;
- (b) in relation to a clothes dryer, means the Energy Consumption as defined in the First Schedule;
- (c) in relation to a lamp described in item 1, 2 or 3 of Part 1 of the Third Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017 (G.N. No. S 747/2017), means the Lamp Power Consumption as defined in the First Schedule;

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(ca) in relation to a lamp described in item 4, 5 or 6 of Part 1 of the Third Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017, means the Lamp Efficacy as defined in the First Schedule;

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(d) in relation to a refrigerator, means the Annual Energy Consumption as defined in the First Schedule;

[S 603/2018 wef 01/10/2018]

(e) in relation to a television, means the On-Mode Power Consumption as defined in the First Schedule;

[S 603/2018 wef 01/10/2018]

[S 730/2019 wef 01/11/2019]

(f) in relation to a motor, means the Nominal Efficiency as defined in the First Schedule; and

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[S 730/2019 wef 01/11/2019]

(g) in relation to a ballast, means the Ballast Efficiency as defined in the First Schedule;

[S 730/2019 wef 01/11/2019]

“Energy Label” means an energy label that is in accordance with the requirements in regulation 6;

“non-high frequency ballast” has the same meaning as in Part 2 of the Seventh Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

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“registered goods” means any regulated goods that are registered under regulation 4;

“regulated air-conditioner” means any air-conditioner described in Part 1 of the First Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017 (G.N. No. S 747/2017);

“regulated ballast” means any ballast described in Part 1 of the Seventh Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

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“regulated clothes dryer” means any clothes dryer described in Part 1 of the Second Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

“regulated lamp” means any lamp described in Part 1 of the Third Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

“regulated motor” means any motor described in Part 1 of the Sixth Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

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“regulated refrigerator” means any refrigerator described in Part 1 of the Fourth Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

“regulated television” means any television described in Part 1 of the Fifth Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

“specified laboratory”, in relation to a test report for any regulated goods, means any of the following:

- (a) an in-house testing laboratory operated by the manufacturer of the regulated goods;
- (b) a testing laboratory accredited by the Singapore Accreditation Council or any of its Mutual Recognition Arrangement partners as being able to perform the prevailing test standard or method specified in paragraph 5 of the First Schedule for the regulated goods;

“technical file”, in relation to any registered goods, means the file on the registered goods kept and maintained under regulation 12(1);

“test report”, in relation to any regulated goods, means —

- (a) the report of the test carried out for the regulated goods in accordance with the prevailing test standard or method, specified in paragraph 5 of the First Schedule; and

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- (b) where there is more than one such test report in respect of the regulated goods, the test report that is the most recent.

PART 2

REQUIREMENTS FOR REGULATED GOODS

Applicable requirements for regulated goods

3. For the purposes of section 12(3)(a) of the Act, the requirements that apply to regulated goods are as follows:

- (a) a regulated air-conditioner —
- (i) must be registered under regulation 4;
 - (ii) must comply with the applicable energy efficiency standards under regulation 5; and
 - (iii) must be labelled with an Energy Label in accordance with regulation 6;
- (b) a regulated clothes dryer —
- (i) must be registered under regulation 4;
 - (ii) must comply with the applicable energy efficiency standards under regulation 5; and
 - (iii) must be labelled with an Energy Label in accordance with regulation 6;
- (c) a regulated lamp —
- (i) must be registered under regulation 4;
 - (ii) must comply with the applicable energy efficiency standards under regulation 5; and
 - (iii) must be labelled with an Energy Label in accordance with regulation 6;
- (d) a regulated refrigerator —
- (i) must be registered under regulation 4;

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- (ii) must comply with the applicable energy efficiency standards under regulation 5; and
 - (iii) must be labelled with an Energy Label in accordance with regulation 6;
 - (e) a regulated television —
 - (i) must be registered under regulation 4; and
 - (ii) must be labelled with an Energy Label in accordance with regulation 6;

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 - (f) a regulated motor —
 - (i) must be registered under regulation 4;
 - (ii) must comply with the applicable energy efficiency standards under regulation 5; and
 - (iii) must be accompanied by the applicable product information in accordance with regulation 8A;

[S 730/2019 wef 01/11/2019]
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 - (g) a regulated ballast —
 - (i) must be registered under regulation 4; and
 - (ii) if the regulated ballast is a non-high frequency ballast, must comply with the applicable energy efficiency standards under regulation 5.

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Registration requirements

4.—(1) An application to register any regulated goods, or to renew the registration of any regulated goods, must be made —

- (a) using the electronic application service provided by the Agency at <http://www.nea.gov.sg>; or
- (b) where there is a malfunction or failure, or an imminent malfunction or failure, of the electronic application service, in such written form as the Director-General may require.

(2) Every application mentioned in paragraph (1) must be accompanied by —

- (a) a test report in respect of the regulated goods issued by a specified laboratory, showing the energy efficiency of such goods and such other information as the Director-General may require;
- (b) such other documents and information as the Director-General may require; and
- (c) the appropriate fee specified in the Second Schedule, which is not refundable.

(3) Upon the registration or renewal of the registration of any regulated goods, the Director-General must issue a certificate of registration to the registered supplier of those goods stating the validity period of the registration.

Energy efficiency requirements

5. The minimum energy efficiency requirements and other requirements affecting or relating to the energy efficiency standard applicable to the regulated goods subject to this regulation are specified in paragraph 2 of the First Schedule.

[S 603/2018 wef 01/10/2018]

Energy Label requirements

6.—(1) An Energy Label must —

- (a) be of the dimensions as shown in paragraph 4 of the First Schedule or be proportionately larger;
- (b) be of the shape, colour and contain text that is of the typeface Arial, legible and in the English language only, as shown in paragraph 4 of the First Schedule;
- (c) contain information that is consistent with or drawn from the test report for the regulated goods to which the Energy Label relates;
- (d) be printed in an indelible manner and with a minimum resolution of 300 pixels per inch; and

(e) be made of such material as the Director-General may approve.

(2) The dimensions, shape, colour and text of the Energy Labels required for the different regulated goods are more particularly set out in paragraph 4 of the First Schedule.

(3) The number of ticks and energy efficiency rating to be shown on the Energy Label are specified in paragraph 3 of the First Schedule.

(4) The Energy Label must be affixed in accordance with regulation 7.

How Energy Label is to be affixed or displayed

7.—(1) Regulated goods subject to regulation 6 must have affixed to each of them an Energy Label that satisfies the following requirements:

- (a) the Energy Label is not damaged, defaced or obliterated so as to prevent any information on the Energy Label from being read;
- (b) the Energy Label is affixed in a conspicuous and unobstructed position on the regulated goods, or in a manner permitted or directed by the Director-General under paragraph (2).

(2) Where the Director-General is of the opinion that any regulated goods subject to regulation 6 —

- (a) are of such a nature as to prevent such goods from being affixed with the Energy Label in the manner specified in paragraph (1); or
- (b) are to be supplied in circumstances which do not require the Energy Label to be displayed to an intending purchaser or user,

the Director-General may, subject to such terms and conditions as the Director-General may impose, permit the Energy Label to be affixed —

- (i) to anything in or on the regulated goods or with which the regulated goods are supplied; or

(ii) in such other manner as the Director-General may direct so as to be easily read by an intending purchaser or user.

(3) Any person advertising any regulated goods subject to regulation 6 in an advertisement that has any visual element must ensure that —

(a) an Energy Label is, as far as practicable, displayed in the advertisement next to the image or description of the regulated goods; or

(b) where it is not practicable to comply with sub-paragraph (a), the tick rating for the regulated goods is prominently stated in the advertisement.

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Misuse of Energy Label, etc.

8.—(1) Any person who, without reasonable excuse —

(a) affixes an Energy Label or anything resembling an Energy Label on any regulated goods that do not comply with regulation 4 or 5 where the regulated goods are subject to such requirements under regulation 3; or

(b) affixes an Energy Label to any thing or matter other than in accordance with regulation 7,

shall be guilty of an offence and shall be liable on conviction to a fine not exceeding \$10,000.

(2) Where an Energy Label is affixed to any regulated goods or anything with which those goods are supplied, in accordance with regulation 7, any person who, without reasonable excuse —

(a) obscures the display of the Energy Label; or

(b) defaces or removes the Energy Label,

shall be guilty of an offence and shall be liable on conviction to a fine not exceeding \$10,000.

(3) Any person who forges or alters to make false any Energy Label shall be guilty of an offence and shall be liable on conviction to a fine

not exceeding \$5,000 or to imprisonment for a term not exceeding 3 months or to both.

Product information requirements

8A.—(1) The regulated goods subject to this regulation must be accompanied by the applicable product information specified in paragraph 4A of the First Schedule.

(2) For a regulated motor, the applicable product information must be marked durably in a visible manner on the rating plate of the regulated motor.

[S 603/2018 wef 01/10/2018]

PART 3

REGISTERED SUPPLIERS

Form and manner of registration

9.—(1) For the purposes of section 13 of the Act, an application to be registered as a registered supplier must be made —

- (a) using the electronic application service provided by the Agency at <http://www.nea.gov.sg>; or
- (b) where there is a malfunction or failure, or an imminent malfunction or failure, of the electronic application service, in such written form as the Director-General may require.

(2) Every application mentioned in paragraph (1) must be accompanied by such documents and information as may be required in the relevant form.

(3) Upon the registration of any person as a registered supplier, the Director-General must issue an identification number to the registered supplier in such form as the Director-General may determine.

Registered supplier to notify Director-General of change in particulars

10.—(1) A registered supplier must notify the Director-General of any change to any of the particulars provided to the Director-General in an application under regulation 9(1) not less than 14 days before the change.

(2) Any person who, without reasonable excuse, contravenes paragraph (1) shall be guilty of an offence and shall be liable on conviction to a fine not exceeding \$10,000.

Modification of registered goods

11.—(1) Where any registered goods are modified in any way by the manufacturer of those registered goods, the registered supplier concerned must do the following before the registered supplier supplies the registered goods (as modified) in Singapore:

- (a) notify the Director-General in writing of the modification to the registered goods;
- (b) where the modification alters the energy efficiency of the registered goods, submit to the Director-General a test report, issued by a specified laboratory, showing the energy efficiency of such goods, as modified, and such other information as the Director-General may require;
- (c) update the technical file on the registered goods mentioned in regulation 12 with details of the modification, including the test report mentioned in sub-paragraph (b).

(2) Any person who contravenes paragraph (1) shall be guilty of an offence and shall be liable on conviction to a fine not exceeding \$10,000.

Maintenance of records

12.—(1) For the purposes of section 18 of the Act, a registered supplier must keep and maintain a technical file on the registered goods imported or manufactured by it for the period of the registration of the registered goods.

- (2) The technical file must include —
- (a) the certificate of registration issued by the Director-General under regulation 4(3) in respect of the registered goods;
 - (b) the test report mentioned in regulation 4(2)(a);
 - (c) detailed records of any modification to the registered goods, including the test report mentioned in regulation 11(1)(b), where applicable; and
 - (d) such other documents and information as the Director-General may, from time to time, require by notice in writing.

PART 4

MISCELLANEOUS

Exempted supply under section 12(6) of Act

12A. The supply of a regulated motor is a prescribed supply for the purposes of section 12(6) of the Act.

[S 603/2018 wef 01/10/2018]

Revocation

13. The Energy Conservation (Energy Labelling and Minimum Performance Standards for Registrable Goods) Regulations 2013 (G.N. No. S 557/2013) are revoked.

FIRST SCHEDULE

Regulations 2, 5, 6 and 8A

REQUIREMENTS FOR REGULATED GOODS

Definitions

1. In this Schedule, unless the context otherwise requires —

“Adjusted Volume” or “V_{adj}” means adjusted volume as defined in Part 2 of the Fourth Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

FIRST SCHEDULE — *continued*

“Annual Energy Consumption” or “AEC” means the amount of energy consumed over 8,760 hours expressed in kilowatt-hour as specified in the test report;

“Ballast Efficiency”, in relation to a ballast, means the ratio of P_{lamp} to P_{input} (the input power of the lamp-ballast circuit) with possible sensors, network connections and other auxiliary loads disconnected as specified in the test report, expressed in percentage;

[S 730/2019 wef 01/11/2019]

“casement or window type air-conditioner” has the same meaning as in Part 2 of the First Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

“CIE” means the International Commission on Illumination;

“Coefficient of Performance” or “COP” means the ratio of the total cooling capacity expressed in Watts to the total effective input power expressed in Watts, as specified in the test report;

“compact fluorescent lamp with integrated ballast” or “CFLi” has the same meaning as in Part 2 of the Third Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

“compact fluorescent lamp without integrated ballast” or “CFLni” has the same meaning as in Part 2 of the Third Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

[S 730/2019 wef 01/11/2019]

“covered CFLi” means a CFLi with an outer lamp envelope;

“EEI Class B1”, in relation to a non-high frequency ballast, means the minimum Ballast Efficiency required for the ballast to be rated as Class B1 under Table 17 of Commission Regulation (EC) No. 245/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council;

[S 730/2019 wef 01/11/2019]

“Energy Consumption” or “EC”, in relation to a clothes dryer, means the amount of energy consumed per cycle expressed in kilowatt-hour as specified in the test report;

FIRST SCHEDULE — *continued*

“incandescent lamp” has the same meaning as in Part 2 of the Third Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

“IEC” means the International Electrotechnical Commission;

“IEEE” means the Institute of Electrical and Electronics Engineers;

[S 603/2018 wef 01/10/2018]

“Integrated Energy Efficiency Ratio” or “IEER” means the number determined in accordance with the following formula:

$$(0.020 \times A) + (0.617 \times B) + (0.238 \times C) + (0.125 \times D),$$

where —

(a) A is COP at full load cooling capacity;

(b) B is COP at 75% part load cooling capacity;

(c) C is COP at 50% part load cooling capacity; and

(d) D is COP at 25% part load cooling capacity;

[S 199/2021 wef 01/04/2021]

“International Energy Efficiency class” or “IE”, in relation to a motor, has the same meaning as in IEC 60034-30-1 (2014);

[S 603/2018 wef 01/10/2018]

“ISO” means the International Organization for Standardization;

“Lamp Efficacy” or “ η_{lamp} ” means the ratio of the rated luminous flux, expressed in lumens, ϕ , to the rated P_{lamp} , expressed in Watts;

[S 730/2019 wef 01/11/2019]

“Lamp Power Consumption” or “ P_{lamp} ” means —

(a) for a covered CFLi, $P_{\text{covered CFLi}} \times 0.95$; and

(b) for any other lamp, the rated power consumed by the lamp, excluding power dissipated by non-integrated auxiliary equipment, such as ballasts, transformers or power supplies, expressed in Watts, as specified in the test report;

“LED lamp” has the same meaning as in Part 2 of the Third Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

FIRST SCHEDULE — *continued*

“linear, double-capped fluorescent lamp without integrated ballast” or “LFL” has the same meaning as in Part 2 of the Third Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;

[S 730/2019 wef 01/11/2019]

“ ϕ ” means the rated luminous flux of a lamp expressed in lumens, as specified in the test report;

“Minimum Nominal Efficiency” means the number determined in accordance with the following formula:

$$A \times \left[\log_{10} \left(\frac{P}{1kW} \right) \right]^3 + B \times \left[\log_{10} \left(\frac{P}{1kW} \right) \right]^2 + C \times \left[\log_{10} \left(\frac{P}{1kW} \right) \right] + D$$

where —

(a) A is 0.3569 for a 2-pole motor, 0.0773 for a 4-pole motor and 0.1252 for a 6-pole motor;

(b) B is -3.3076 for a 2-pole motor, -1.8951 for a 4-pole motor and -2.613 for a 6-pole motor;

(c) C is 11.6108 for a 2-pole motor, 9.2984 for a 4-pole motor and 11.9963 for a 6-pole motor;

(d) D is 82.2503 for a 2-pole motor, 83.7025 for a 4-pole motor and 80.4769 for a 6-pole motor; and

(e) P is the rated power output of the motor;

[S 603/2018 wef 01/10/2018]

“N”, in relation to a split type air-conditioner, means the total number of mountings which are assembled to form a matched functional unit;

“Nominal Efficiency” or “ η_N ”, in relation to a motor, means the ratio of mechanical output power to the electrical input power, expressed in percentage, as specified in the test report, and at rated voltage and frequency;

[S 603/2018 wef 01/10/2018]

“On-Mode Power Consumption” or “P”, in relation to a television, means the power consumed when the television produces sound and picture, expressed in Watts, as specified in the test report;

“P_{covered CFLi}” means rated power consumed by a covered CFLi, excluding power dissipated by non-integrated auxiliary equipment, such as ballasts, transformers or power supplies, expressed in Watts, as specified in the test report;

FIRST SCHEDULE — *continued*

- “screen area”, in relation to a television, means the area of the television screen expressed in square decimetres as specified in the test report;
- “split type (inverter) air-conditioner” has the same meaning as in Part 2 of the First Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;
- “split type (non-inverter) air-conditioner” has the same meaning as in Part 2 of the First Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;
- “standby mode” means a condition where the good is connected to the mains power source and consumes energy to do the following only:
- (a) allowing the activation of any other mode;
 - (b) displaying information, including time;
 - (c) indicating the status of the good;
 - (d) continuously regulating or monitoring internal components of the good, based on information collected by sensors;
 - (e) heating the crankcase;
- “standby power” means the power consumed when the good is in standby mode, expressed in Watts, as specified in the test report;
- “three-phase variable refrigerant flow (VRF) air-conditioner” has the meaning given by Part 2 of the First Schedule to the Energy Conservation (Prescribed Regulated Goods) Order 2017;
- [S 199/2021 wef 01/04/2021]*
- “tungsten filament lamp” means an incandescent lamp that has a filament made of tungsten and is operated in an evacuated bulb or surrounded by inert gas;
- “tungsten halogen lamp” means an incandescent lamp that has a filament made of tungsten and is surrounded by gas containing halogens or halogen compounds;
- “Weighted COP” means the sum of $0.4 \times \text{COP}$ at full load cooling capacity and $0.6 \times \text{COP}$ at part load cooling capacity.

Minimum energy efficiency standards, etc.

2. The minimum energy efficiency standard and other requirements affecting or relating to the energy efficiency standard set out in the second column applies to the regulated goods specified opposite in the first column:

FIRST SCHEDULE — *continued*

<i>First column</i>	<i>Second column</i>
1. Casement or window type air-conditioner	COP \geq 2.90
2. Split type (non-inverter) air-conditioner with one indoor unit	COP \geq 3.78
3. Split type (non-inverter) air-conditioner with more than one indoor unit	COP \geq 3.78
4. Split type (inverter) air-conditioner with one indoor unit	Weighted COP \geq 3.78 and COP \geq 3.34
5. Split type (inverter) air-conditioner with more than one indoor unit	Weighted COP \geq 3.78 and COP \geq 3.34
5A. Three-phase variable refrigerant flow (VRF) air-conditioner	IEER \geq 4.35
6. Refrigerator without freezer	$AEC \leq (368 + 0.892 \times V_{adj}) \times 0.551$
7. Refrigerator with freezer with adjusted volume of 300 litres or less	$AEC \leq (465 + 1.378 \times V_{adj}) \times 0.553$
8. Refrigerator with freezer with adjusted volume exceeding 300 litres	$AEC \leq (465 + 1.378 \times V_{adj}) \times 0.506$
9. Refrigerator with freezer and through-the-door ice dispenser	$AEC \leq (585 + 1.378 \times V_{adj}) \times 0.485$
10. Clothes dryer	EC per Wash \leq Rated Capacity \times 0.67
11. Incandescent lamp	$P_{lamp} \leq 0.24\sqrt{\phi} + 0.0103\phi$
12. CFLi (other than covered CFLi)	(a) $P_{lamp} \leq 0.24\sqrt{\phi} + 0.0103\phi$; (b) the ratio of luminous flux emitted by the lamp at 2,000 hours to its initial luminous flux is \geq 0.85; and

FIRST SCHEDULE — *continued*

- (c) the fraction of the total number of lamps that continue to operate (light output must be at least 50% of its initial luminous flux) at 6,000 hours is ≥ 0.5
13. Covered CFLi
- (a) $P_{\text{lamp}} \leq 0.24\sqrt{\phi} + 0.0103\phi$;
- (b) the ratio of luminous flux emitted by the lamp at 2,000 hours to its initial luminous flux is ≥ 0.80 ; and
- (c) the fraction of the total number of lamps that continue to operate (light output must be at least 50% of its initial luminous flux) at 6,000 hours is ≥ 0.5
14. LED lamp with an Edison screw or a bayonet lamp cap
- (a) $P_{\text{lamp}} \leq 0.24\sqrt{\phi} + 0.0103\phi$;
- (b) the ratio of luminous flux emitted by the lamp at 6,000 hours to its initial luminous flux is ≥ 0.80 ; and
- (c) the fraction of the total number of lamps that continue to operate (light output must be at least 70% of its initial luminous flux) at 6,000 hours is ≥ 0.9
- 14A. CFLni
- (a) the ratio of luminous flux emitted by the lamp at 2,000 hours to its initial

FIRST SCHEDULE — *continued*

- luminous flux is ≥ 0.80 ;
and
- (b) the fraction of the total number of lamps that continue to operate (light output must be at least 50% of its initial luminous flux) at 2,000 hours is ≥ 0.9
- 14B. LFL
- (a) the ratio of luminous flux emitted by the lamp at 2,000 hours to its initial luminous flux is ≥ 0.80 ;
and
- (b) the fraction of the total number of lamps that continue to operate (light output must be at least 50% of its initial luminous flux) at 2,000 hours is ≥ 0.9
- 14C. LED lamp designed as a direct replacement for CFLni and LFL without requiring any internal modification of the luminaires
- (a) the ratio of luminous flux emitted by the lamp at 6,000 hours to its initial luminous flux is ≥ 0.80 ;
and
- (b) the fraction of the total number of lamps that continue to operate (light output must be at least 70% of its initial luminous flux) at 6,000 hours is ≥ 0.9
15. Motors with rated output of or exceeding 0.75 kW and below 200 kW
- η_N at rated output \geq Minimum Nominal Efficiency
16. Motors with rated output of or exceeding 200 kW and not exceeding 375 kW
- (a) for 2-pole motors: η_N at rated output ≥ 95.8 ;

FIRST SCHEDULE — *continued*

(b) for 4-pole motors: η_N at rated output ≥ 96 ; and

(c) for 6-pole motors: η_N at rated output ≥ 95.8

17. Non-high frequency ballast

Ballast Efficiency \geq EEI Class B1

[S 199/2021 wef 01/04/2021]

[S 730/2019 wef 01/11/2019]

[S 603/2018 wef 01/10/2018]

Determination of energy efficiency ratings

3. The number of ticks and energy efficiency rating to be shown on the Energy Label for regulated goods are to be determined as follows:

(a) for casement and window type air-conditioners —

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>Coefficient of Performance (COP) and standby power range</i>
1	Low	$2.90 \leq \text{COP} < 3.78$
2	Fair	$3.78 \leq \text{COP} < 4.29$
3	Good	$4.29 \leq \text{COP} < 4.86$
4	Very Good	$\text{COP} \geq 4.86$
5	Excellent	$\text{COP} \geq 5.50$ and standby power ≤ 4

(b) for split type (non-inverter) air-conditioners with one indoor unit —

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>Coefficient of Performance (COP) and standby power range</i>
2	Fair	$3.78 \leq \text{COP} < 4.29$
3	Good	$4.29 \leq \text{COP} < 4.86$
4	Very Good	$\text{COP} \geq 4.86$
5	Excellent	$\text{COP} \geq 5.50$ and standby power ≤ 4

FIRST SCHEDULE — *continued*

(c) for split type (non-inverter) air-conditioners with more than one indoor unit —

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>Coefficient of Performance (COP) and standby power range</i>
2	Fair	$3.78 \leq \text{COP} < 4.29$
3	Good	$4.29 \leq \text{COP} < 4.86$
4	Very Good	$\text{COP} \geq 4.86$
5	Excellent	$\text{COP} \geq 5.50$ and standby power $\leq 9 \times \text{N}$

(d) for split type (inverter) air-conditioners with one indoor unit —

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>Coefficient of Performance (COP) and standby power range</i>
2	Fair	Weighted COP ≥ 3.78 and COP ≥ 3.34
3	Good	Weighted COP ≥ 4.29 and COP ≥ 3.78
4	Very Good	Weighted COP ≥ 4.86 and COP ≥ 4.29
5	Excellent	Weighted COP ≥ 5.50 , COP ≥ 4.86 and standby power ≤ 4

(e) for split type (inverter) air-conditioners with more than one indoor unit —

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>Coefficient of Performance (COP) and standby power range</i>
2	Fair	Weighted COP ≥ 3.78 and COP ≥ 3.34
3	Good	Weighted COP ≥ 4.29 and COP ≥ 3.78
4	Very Good	Weighted COP ≥ 4.86 and COP ≥ 4.29
5	Excellent	Weighted COP ≥ 5.50 , COP ≥ 4.86 and standby power $\leq 9 \times \text{N}$

(ea) for three-phase variable refrigerant flow (VRF) air-conditioners —

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>Integrated Energy Efficiency Ratio (IEER)</i>
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FIRST SCHEDULE — *continued*

1	Low	$4.80 > \text{IEER} \geq 4.35$
2	Fair	$5.25 > \text{IEER} \geq 4.80$
3	Good	$5.70 > \text{IEER} \geq 5.25$
4	Very Good	$6.15 > \text{IEER} \geq 5.70$
5	Excellent	$\text{IEER} \geq 6.15$

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(f) for refrigerators —

(i) without freezer:

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>Annual Energy Consumption (AEC) in kWh</i>
1	Low	$(368 + 0.892 \times V_{\text{adj}}) \times 0.551 \geq \text{AEC} > (368 + 0.892 \times V_{\text{adj}}) \times 0.461$
2	Fair	$(368 + 0.892 \times V_{\text{adj}}) \times 0.461 \geq \text{AEC} > (368 + 0.892 \times V_{\text{adj}}) \times 0.332$
3	Good	$(368 + 0.892 \times V_{\text{adj}}) \times 0.332 \geq \text{AEC} > (368 + 0.892 \times V_{\text{adj}}) \times 0.239$
4	Very Good	$(368 + 0.892 \times V_{\text{adj}}) \times 0.239 \geq \text{AEC}$

(ii) with freezer and an adjusted volume (V_{adj}) of 300 litres or less:

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>Annual Energy Consumption (AEC) in kWh</i>
1	Low	$(465 + 1.378 \times V_{\text{adj}}) \times 0.553 \geq \text{AEC} > (465 + 1.378 \times V_{\text{adj}}) \times 0.427$
2	Fair	$(465 + 1.378 \times V_{\text{adj}}) \times 0.427 \geq \text{AEC} > (465 + 1.378 \times V_{\text{adj}}) \times 0.312$
3	Good	$(465 + 1.378 \times V_{\text{adj}}) \times 0.312 \geq \text{AEC} > (465 + 1.378 \times V_{\text{adj}}) \times 0.228$
4	Very Good	$(465 + 1.378 \times V_{\text{adj}}) \times 0.228 \geq \text{AEC}$

(iii) with freezer and an adjusted volume (V_{adj}) of more than 300 litres:

FIRST SCHEDULE — *continued*

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>Annual Energy Consumption (AEC) in kWh</i>
1	Low	$(465 + 1.378 \times V_{\text{adj}}) \times 0.506 \geq \text{AEC} > (465 + 1.378 \times V_{\text{adj}}) \times 0.427$
2	Fair	$(465 + 1.378 \times V_{\text{adj}}) \times 0.427 \geq \text{AEC} > (465 + 1.378 \times V_{\text{adj}}) \times 0.312$
3	Good	$(465 + 1.378 \times V_{\text{adj}}) \times 0.312 \geq \text{AEC} > (465 + 1.378 \times V_{\text{adj}}) \times 0.228$
4	Very Good	$(465 + 1.378 \times V_{\text{adj}}) \times 0.228 \geq \text{AEC}$

(iv) with freezer and through-the-door ice dispenser:

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>Annual Energy Consumption (AEC) in kWh</i>
1	Low	$(585 + 1.378 \times V_{\text{adj}}) \times 0.485 \geq \text{AEC} > (585 + 1.378 \times V_{\text{adj}}) \times 0.409$
2	Fair	$(585 + 1.378 \times V_{\text{adj}}) \times 0.409 \geq \text{AEC} > (585 + 1.378 \times V_{\text{adj}}) \times 0.298$
3	Good	$(585 + 1.378 \times V_{\text{adj}}) \times 0.298 \geq \text{AEC} > (585 + 1.378 \times V_{\text{adj}}) \times 0.218$
4	Very Good	$(585 + 1.378 \times V_{\text{adj}}) \times 0.218 \geq \text{AEC}$

(g) for clothes dryers —

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>Energy Consumption (EC) per Wash in kWh</i>
1	Low	$\text{Rated Capacity} \times 0.67 \geq \text{EC} > \text{Rated Capacity} \times 0.55$
2	Fair	$\text{Rated Capacity} \times 0.55 \geq \text{EC} > \text{Rated Capacity} \times 0.45$
3	Good	$\text{Rated Capacity} \times 0.45 \geq \text{EC} > \text{Rated Capacity} \times 0.37$
4	Very Good	$\text{Rated Capacity} \times 0.37 \geq \text{EC} > \text{Rated Capacity} \times 0.30$
5	Excellent	$\text{Rated Capacity} \times 0.30 \geq \text{EC}$

(h) for televisions —

FIRST SCHEDULE — *continued*

<i>Ticks</i>	<i>Energy efficiency rating</i>	<i>On-Mode Power Consumption (P) in Watts</i>
1	Low	$P > 0.60 \times (20 + 4.3224 \times \text{screen area})$
2	Fair	$0.60 \times (20 + 4.3224 \times \text{screen area}) \geq P > 0.42 \times (20 + 4.3224 \times \text{screen area})$
3	Good	$0.42 \times (20 + 4.3224 \times \text{screen area}) \geq P > 0.30 \times (20 + 4.3224 \times \text{screen area})$
4	Very Good	$0.30 \times (20 + 4.3224 \times \text{screen area}) \geq P > 0.16 \times (20 + 4.3224 \times \text{screen area})$
5	Excellent	$P \leq 0.16 \times (20 + 4.3224 \times \text{screen area})$

(i) for incandescent lamps, CFLi, and LED lamps with an Edison screw or a bayonet lamp cap —

<i>Ticks</i>	<i>Lamp Power Consumption (P_{lamp}) in Watts</i>
2	$0.24\sqrt{\phi} + 0.0103\phi \geq P_{\text{lamp}} > 0.17 \times (0.88\sqrt{\phi} + 0.049\phi)$
3	$P_{\text{lamp}} \leq 0.17 \times (0.88\sqrt{\phi} + 0.049\phi)$

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(j) for CFLni, LFL, and LED lamp designed as a direct replacement for CFLni and LFL without requiring any internal modification of the luminaires —

<i>Ticks</i>	<i>Rated Lamp Efficacy (η_{lamp}) in Lumen/Watts</i>
1	$\eta_{\text{lamp}} < 110$
2	$110 \leq \eta_{\text{lamp}} < 135$
3	$\eta_{\text{lamp}} \geq 135$

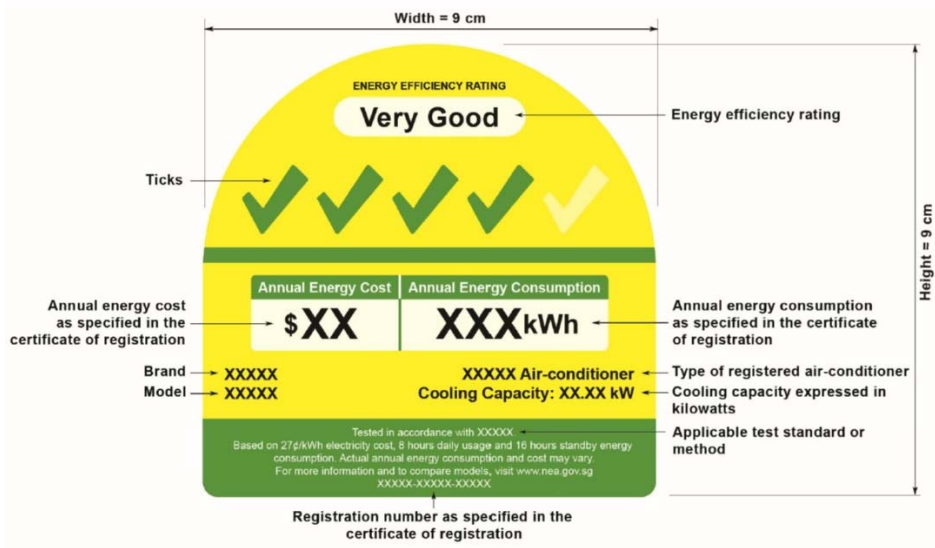
[S 730/2019 wef 01/11/2019]

Energy Labels

4. The Energy Labels to be used for regulated goods are as follows:

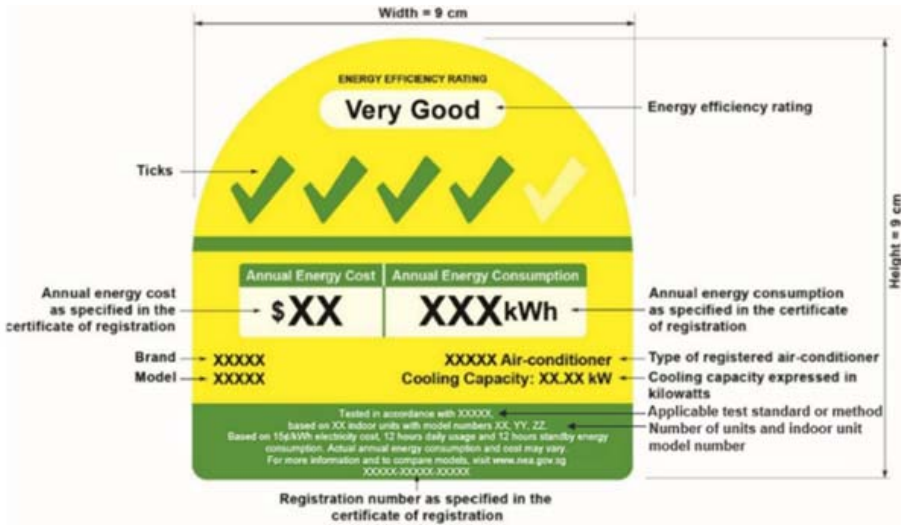
(a) air-conditioners (other than three-phase variable refrigerant flow (VRF) air-conditioners):

FIRST SCHEDULE — *continued*



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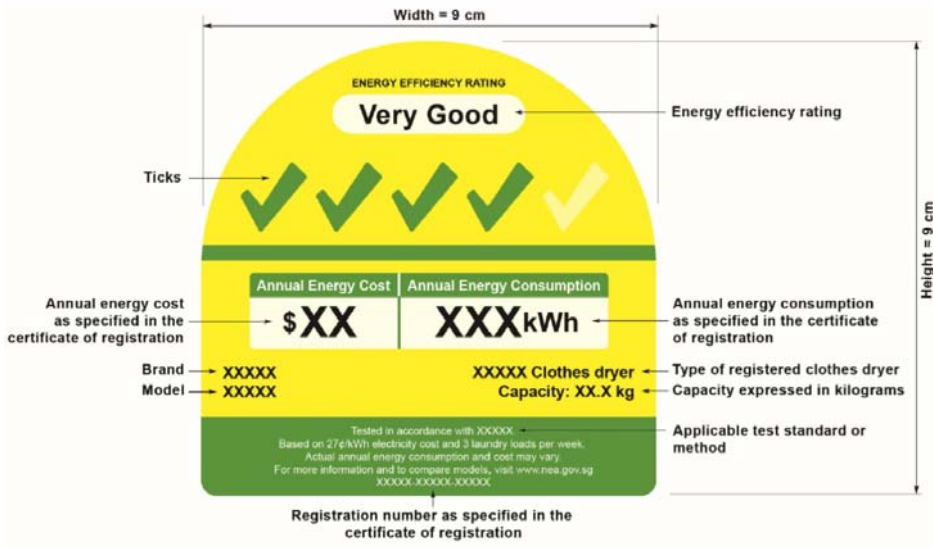
(a) three-phase variable refrigerant flow (VRF) air-conditioners:



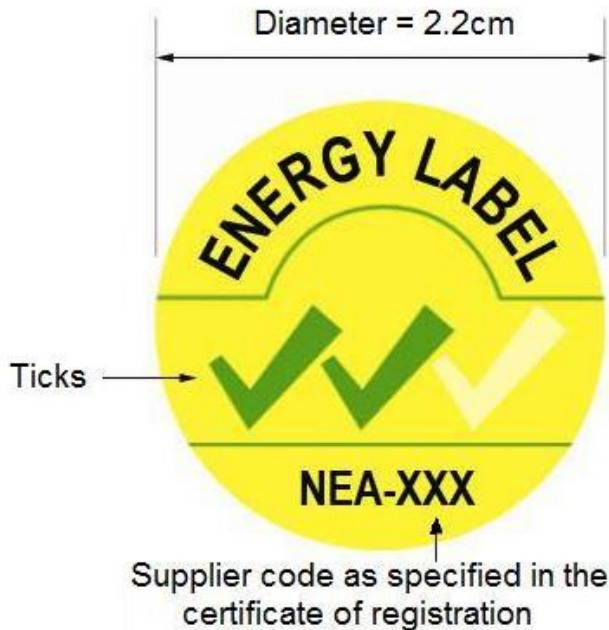
[S 199/2021 wef 01/04/2021]

(b) clothes dryers:

FIRST SCHEDULE — *continued*

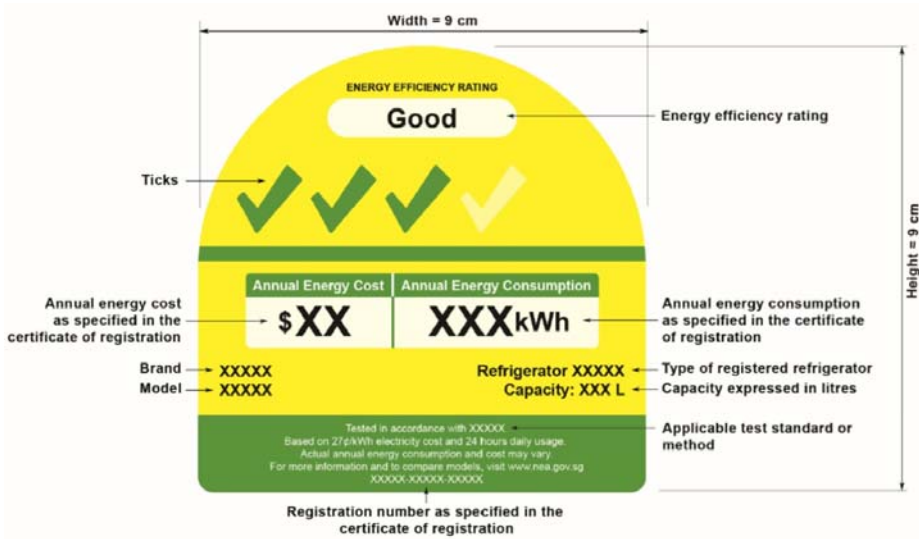


(c) lamps:

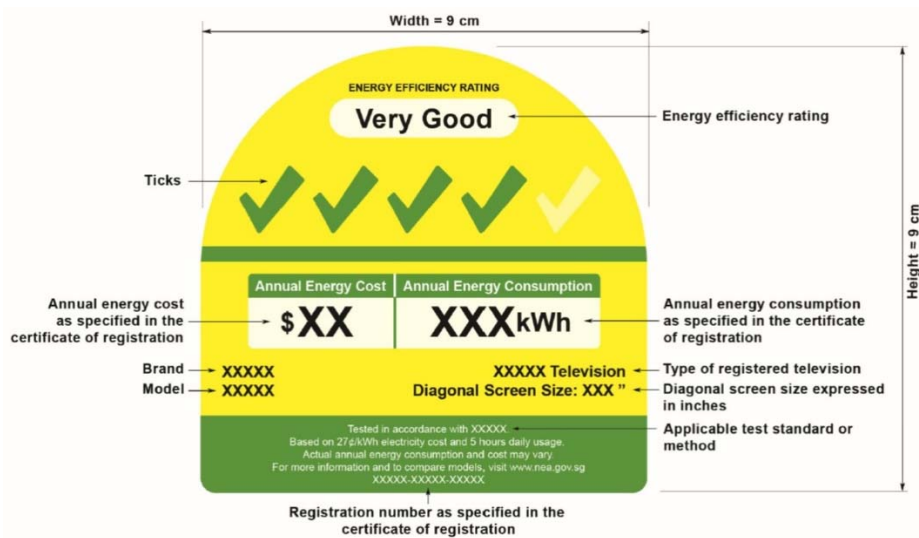


(d) refrigerators:

FIRST SCHEDULE — *continued*



(e) televisions:



Product information requirements

4A. The product information set out in the second column applies to the regulated goods set out opposite in the first column:

First column

Second column

1. Motor

(a) year of manufacture;

FIRST SCHEDULE — *continued*

- (b) International Energy Efficiency class, as specified in the test report; and
- (c) Nominal Efficiency at rated output power

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Test standard or method

5. A test report for any regulated goods must contain the results of tests carried out for the regulated goods in accordance with the applicable test standard or method, as follows:

<i>Regulated goods</i>	<i>Type</i>	<i>Applicable test standard or method</i>
(a) Air-conditioner	(i) Casement/ Window type	— ISO 5151 (2017)
	(ii) Split type (inverter) with more than one indoor unit	— ISO 15042 (2017) The cooling tests must be conducted at 2 points, namely, the full-load cooling capacity and the part-load cooling capacity
	(iii) Split type (inverter) with one indoor unit	— ISO 5151 (2017) The cooling tests must be conducted at 2 points, namely, the full-load cooling capacity and the part-load cooling capacity
	(iv) Split type (non-inverter) with more than one indoor unit	— ISO 15042 (2017)
	(v) Split type (non-inverter)	— ISO 5151 (2017)

FIRST SCHEDULE — *continued*

		with one indoor unit	
	(va)	Three-phase variable refrigerant flow (VRF) air-conditioner	— ISO 15042 (2017) The cooling tests must be conducted at 4 points, namely, the full-load cooling capacity and part-load cooling capacity at 75%, 50% and 25%. The tests must include a single outdoor unit that services the network of indoor units
	(vi)	All (for standby power)	— IEC 62301 (2005) or IEC 62301 (2011)
(b)		Clothes dryer	All — IEC 61121 (2005) The test must be conducted on cotton textiles using the dry cotton drying programme
(c)		Lamp	(i) Incandescent lamp — The luminous flux measurement test must be conducted in accordance with CIE 84 (1989) The test conditions for the luminous flux measurement test are as specified in —

FIRST SCHEDULE — *continued*

			(a) for tungsten filament lamps, IEC 60064 (2005); and
			(b) for tungsten halogen lamps, IEC 60064 (2005) or IEC 60357 (2003)
	(ii) CFLi	—	IEC 60969 (2001)
	(iii) LED lamp	—	IEC 62612 (2013) The luminous flux measurement test must be conducted in accordance with CIE S 025 (2015)
	(iv) CFLni	—	IEC 60901 (2001)
	(v) LFL	—	IEC 60081 (2002)
	(vi) LED lamp designed as a direct replacement for CFLni and LFL without requiring any internal modification of the luminaires	—	IEC 62612 (2013) The luminous flux measurement test must be conducted in accordance with CIE S 025 (2015)
(d) Refrigerator	All	—	ISO 15502 (2005) or IEC 62552 (2007)
(e) Television	All	—	IEC 62087 (2008) or IEC 62087 (2011)

FIRST SCHEDULE — *continued*

			The test must be conducted using dynamic broadcast-content video signal
(f) Motor	All	—	Method 2-1-1B of IEC 60034-2-1 (2014) or Method B of IEEE 112 (2004)
(g) Ballast	All	—	IEC 62442-1 (2011) or IEC 62442-1 (2018)

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[S 603/2018 wef 01/10/2018]

[S 603/2018 wef 01/10/2018]

SECOND SCHEDULE

Regulation 4(2)

FEES

1. Application to register the following regulated goods:

(a) air-conditioner (other than three-phase variable refrigerant flow (VRF) air-conditioner)	\$38
(aa) three-phase variable refrigerant flow (VRF) air-conditioner	\$85
(b) clothes dryer	\$38
(c) lamp	\$38
(d) refrigerator	\$38
(e) television	\$38
(f) motor	\$57
(g) ballast	\$38

SECOND SCHEDULE — *continued*

2. Application to renew the registration of the following regulated goods:

(a) air-conditioner (other than three-phase variable refrigerant flow (VRF) air-conditioner)	\$20
(aa) three-phase variable refrigerant flow (VRF) air-conditioner	\$55
(b) clothes dryer	\$20
(c) lamp	\$20
(d) refrigerator	\$20
(e) television	\$20
(f) motor	\$32
(g) ballast	\$20

[S 199/2021 wef 01/04/2021]

[S 730/2019 wef 01/11/2019]

[S 603/2018 wef 01/10/2018]

Made on 11 December 2017.

ALBERT CHUA
*Permanent Secretary,
Ministry of the Environment and
Water Resources,
Singapore.*

[MEWR C030/01/129 Vol. 6; NEA/LD/167 V.1; AG/LEGIS/SL/92C/2015/2 Vol. 2]