



## IMPLEMENTING GUIDELINES OF THE PHILIPPINE ENERGY LABELING PROGRAM FOR ENERGY SAVING DEVICES (ESD) / LOW VOLTAGE SAVING DEVICES (LVSD) FOR DOMESTIC APPLICATION 2024, 1<sup>st</sup> EDITION

Pursuant to Sections 5 and 9 of Department Circular No. 2020-06-0015, as amended, entitled "Prescribing the Guidelines of the Philippine Energy Labeling Program (PELP) for Compliance of Importers, Manufacturers, Distributors and Dealers of Electrical Appliances and Other Energy-Consuming Products (ECP)", the Implementing Guidelines for Energy Saving Devices (ESD) / Low Voltage Saving Devices (LVSD), including the Particular Product Requirements and Code of Practice for ESD / LVSD are hereby issued for the information and guidance of all those concerned and for compliance by all manufacturers, importers, distributors, dealers, retailers, and other key stakeholders.

### 1. Particular Product Requirements (PPR)

The PPR provides the requirements for ESD / LVSD Products and other relevant information:

#### 1.1. Scope

This PPR provides performance requirements for ESD / LVSD for household appliances, lighting, and related equipment for use on single phase low voltage alternating current (AC) supply.

#### 1.2. Definition of Terms

For the purpose of this PPR, the following definitions and those in PNS 2080:2010 and its future amendments shall apply:

**Applicants** - refer to manufacturers, importers, distributors, dealers, and retailers.

**Decision Rule** - describes how measurement uncertainty is accounted for when stating conformity with specified requirements.

**Energy Efficiency Improvement** – refers to the increase in efficiency of the ECP due to the use of ESD / LVSD as presented in the formula clause 1.4.1.

**Energy Efficiency Performance Rating (EEPR)** – the product's star rating, which is based on the ranges of the percent of energy savings and is indicated on the energy label.

**Energy Efficiency Rating** – pertains to the percent energy savings of energy saving devices as indicated in the energy label.

**Energy Saving Device (ESD) / Low Voltage Saving Devices (LVSD)** - refers to all devices, gadgets, or apparatuses used under normal operating conditions in conjunction with a household appliance, lighting product, and related electrical equipment that reduces electrical energy without compromising the safety, efficiency, and overall performance.

**Generic Models** - refer to the range of models similar to the base model where all have the same major physical characteristics, construction, system design, and other performance characteristics.

**Load** – electrical component that consumes electric power, such as household appliances, lighting products, and related equipment.

**Load Performance Difference** – refers to the difference / improvement in the measured performance parameters of the ECP in using the ESD / LVSD.

**Low Voltage** - 0 to 1000 volts (V) alternating current (AC) root mean square (RMS) or 0 to 1500 V direct current (DC) as per the International Electrotechnical Commission (IEC) Standard IEC 61140:2016. Also, IEC 60038 define supply system low voltage as voltage in the range of 50 to 1000 V AC or 120 to 1500 V DC in IEC Standard Voltages which defines power.

**Output Current** - the current applied to the connected load measured from the output circuit / load side of the energy saving device.

**Output Voltage** - the voltage applied to the connected load measured from the output circuit / load side of the energy saving device.

**Percent Energy Savings** – the ratio between the difference of the electrical energy without ESD and the electrical energy with ESD to the electrical energy without ESD and then multiplied by one hundred (100).

**Supply Current** - the current supplied to the input circuit of the energy saving device.

**Supply Voltage** - the voltage applied to the input circuit of the energy saving devices.

### 1.3. Normative References

The following references are indispensable for the application of this document. The latest available edition of the referenced document (including any amendments) applies:

**PNS 2080:2010** - Energy saving device for electric household appliances, lighting products, and related equipment – Safety and performance requirements.

**PNS IEC 62301:2021** - Household electric appliances - Measurement of standby power.

Considering the regular updating of the standards, the latest edition of the PNS shall be used as reference. It is understood that future amendments of the PNS indicated in this PPR shall be applied after its effectivity. A transition period coinciding with the transition period indicated in the PNS shall be provided to give ample time for all stakeholders to adjust and conform to the new requirements, if any.

#### 1.4. Code of Practice on Energy Labeling of Products

Pursuant to Section 15 of the Energy Efficiency and Conservation (EEC) Act, the Code of Practice on Energy Labeling of Products (COPE) provides the calculation methods of the following:

1.4.1. ESD / LVSD shall yield energy efficiency improvement which is calculated as follows:

**Energy Efficiency Improvement** is equal to:

Energy Efficiency with ESD / LVSD – Energy Efficiency without ESD / LVSD

1.4.2. ESD / LVSD shall not compromise the overall performance of the load which is calculated as follows:

**Load Performance Difference** is equal to:

Load Performance with ESD / LVSD – Load Performance without ESD / LVSD

1.4.3. Measured Percent Energy Savings for ESD shall be calculated as follows:

**% Energy Savings** is equal to:

$$\frac{\text{kWh without ESD / LVSD} - \text{kWh with ESD / LVSD}}{\text{kWh without ESD / LVSD}} \times 100\%$$

Notes:

- a. Calculation of Energy Efficiency shall be based on the load identified by the applicant.
- b. Calculated Energy Efficiency Improvement must be greater than zero.
- c. Calculation of Load Performance shall be based on the load identified by the applicant.
- d. Load Performance Improvement must be equal to or greater than zero.

#### 1.5. Minimum Energy Performance

The Percent Energy Savings of the ESD / LVSD that will be declared at any identified load shall be at least 20%.

#### 1.6. Energy Efficiency Performance Rating (EEPR) of ESD / LVSD

The rating classification of ESD / LVSD shall be in accordance with Table 1 shown below:

**Table 1. EEPR for ESD / LVSD**

Rating Classification	Percent Energy Savings at Specified Load
One-Star	20 - 24%
Two-Star	25 - 29%
Three-Star	30 - 34%
Four-Star	35 - 40 %
Five-Star	41% and above

### 1.7. Tolerance

The Percent Energy Savings, calculated from the measured value, shall not be less than 90% of the claimed energy savings.

*Note: All the conditions under clauses 1.4.1, 1.4.2, 1.4.3, 1.5, and 1.6. shall be satisfied in order to qualify as an ESD / LVSD.*

## 2. Product Verification Testing

### 2.1. Sampling Method for Verification Testing

- 2.1.1. The number of samples to be drawn from the market for performance verification shall be three (3) samples per model.
- 2.1.2. At least two (2) out of the three (3) samples drawn in the market must pass the verification testing to comply with the conformance requirements (Table 2. Conformance Requirements).
- 2.1.3. Conformance shall be evaluated according to the cases shown below:

**Table 2. Conformance Requirements**

CASE CONDITION	SAMPLE UNIT			CONFORMANCE (VERDICT)
	1	2	3	
Case 1	Passed	Passed	Not required	Passed
Case 2	Passed	Failed	Passed	Passed
Case 3	Failed	Passed	Failed	Failed
Case 4	Failed	Failed	Not required	Failed

- 2.1.4. The tests in this IG are for performance verification for each distinct load identified by the applicant for the energy saving products.

### 2.2. Specific Guidelines on the Conduct of Verification Testing

- 2.2.1. Selected models for local market sampling shall be tested by the Department of Energy - Lighting and Appliances Testing Division (DOE-LATD) or a DOE- Recognized Testing Laboratory (DOE-RTL).
- 2.2.2. The DOE-LATD or DOE-RTL shall subject the market sample to performance verification test in accordance with PNS 2080:2010 and the result shall be submitted directly to the DOE-Energy Efficiency and Conservation Performance Regulation and Enforcement Division (DOE - EPRED).

Whenever applicable, the ESD / LVSD must be tested at any percentage load capacity using a single-type load or a combination of different loads.

- 2.2.3. The test methods to be used are composed of laboratory test procedures and performance parameters based on the international and national standards of a particular load with and without the ESD / LVSD.

- 2.2.4. Samples shall be tested at a standard test voltage of 230V  $\pm$ 1%, 60 Hz  $\pm$ 1%.
- 2.2.5. The applicant shall identify and provide the load/s to be used to test and evaluate the performance of the ESD / LVSD.
- 2.2.6. The ESD / LVSD models should pass the claimed Percent Energy Savings based on the test report issued by DOE-LATD or DOE-RTL prior to the issuance of the energy label.
- 2.2.7. The basis of EEPR must come from the claimed percent energy savings.
- 2.2.8. In cases where a measured value falls within the guard band, as defined in this IG, the DOE-RTL that conducted the test shall be responsible for issuing the final verdict. The final verdict shall be in accordance with *Annex A: Guidelines on the Decision Rule* of this IG to account for measurement uncertainty.

### 2.3. Presentation of Results

- 2.3.1. Percent energy savings must be written as a whole number, rounded to the nearest ones computed from the measured value.
- 2.3.2. Claimed Load must be consistent with the energy consuming products, indicated in Annex B: "Matrix of Covered ECPs" of DC2022-11-0035, "Expanding the Coverage of the Philippine Energy Labeling Program for the Compliance of Importers, Manufacturers, Distributors, Dealers and Retailers of Energy Consuming Products".

### 2.4. Correction of Performance Ratings

Applicant has the option to change their claimed energy savings in order to comply with the requirements of the implementing guidelines based on the result of the test.

## 3. Specification and Dimensions of the Energy Label

### 3.1. Energy Label Design

- 3.1.1. The dimension shall not be less than 40 mm (width) x 60 mm (height). Applicants shall use one side panel of the packaging for the energy label.
- 3.1.2. The size of the energy label may vary according to the size of the side panel maintaining the same aspect ratio. The energy label provided by the DOE in electronic copy is ready for resizing and shall always maintain the aspect ratio for the desired size.



Swatches



### 3.2. Presentation of Energy Label



#### 4. Product Registration

Only PELP registered companies can proceed to the per model PELP Online Product Registration, applicable to both manufactured and imported institutional products, using the Product Registration Form – Energy Saving Device / Low Voltage Saving Device, as shown below and are available online.

##### 4.1. Product Registration Form: ESD / LVSD

The Product Registration Form (as shown below) shall be the basis of the online product registration form and should serve as a reference for applicants in determining the parameters required by DOE during the product registration. Furthermore, the test report must, at least, contain the performance parameters required within the said form and should be based on the normative references stated in clause 1.3.

Product Test Report Details		
Name of Testing Laboratory		
Country of Testing Laboratory		
ISO 17025 Accreditation Body		
Accreditation Membership / Affiliation		
Laboratory Report Issuance Date		
Accreditation Certificate Expiration Date		
Product Details		
Product	Energy Saving Devices	Energy Saving Devices
Particular Load	<b>Claimed Load &amp; % Energy Savings</b>	<b>Other Applicable Load &amp; % Energy Savings</b>
	<input type="checkbox"/> Air-conditioner ____ <input type="checkbox"/> Television Set ____ <input type="checkbox"/> Lighting Product ____ <input type="checkbox"/> Refrigerating Appliance _ <input type="checkbox"/> Washing Machine ____ <input type="checkbox"/> Electric Fan ____ <input type="checkbox"/> Others __	<input type="checkbox"/> Air-conditioner ____ <input type="checkbox"/> Television Set ____ <input type="checkbox"/> Lighting Product ____ <input type="checkbox"/> Refrigerating Appliance_ <input type="checkbox"/> Washing Machine ____ <input type="checkbox"/> Electric Fan ____ <input type="checkbox"/> Others ____
Brand Name		
Model Number / Code		
Product Name		
Year Model		
Country of Origin		
Original Equipment Manufacturer (OEM)		
Product Performance Specification		
Load Performance Difference		
Energy Efficiency Improvement		
% Energy Saving		
Voltage (V)		
Frequency (Hz)		
Other Parameters		

Notes:

- a. The validity of the test report shall be one (1) year from the date of issuance.
- b. Applicant must provide test analysis of the ESD / LVSD with respect to the results associated with the identified load.

**5. Effectivity**

This IG shall take effect fifteen (15) days following its publication in at least two (2) newspapers of general circulation. Copies of this IG shall be filed with the University of the Philippines Law Center – Office of the National Administrative Register.

Issued at Energy Center, Bonifacio Global City, Taguig City.

  
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## ANNEX A GUIDELINES ON DECISION RULE

This document will provide the decision rule that will be used to account for measurement uncertainty, based on ILAC-G8:09/2019.

### Definition of Terms:

**Acceptance Interval** - interval of permissible measured quantity values.

**Acceptance Limit (AL)** - specified upper or lower bound of permissible measured quantity values.

**Guard Band (w)** – interval between a tolerance limit (TL) and a corresponding acceptance limit (AL) where length  $w = |TL - AL|$ .

**Measured Quantity Value** - quantity value representing a measured result.

**Rejection Interval** - interval of non-permissible measured quantity values.

**Specific Risk** - is the probability that an accepted item is non-conforming, or that a rejected item does conform. This risk is based on measurements of a single item.

**Tolerance Interval / Specification Interval** - interval of permissible values of property.

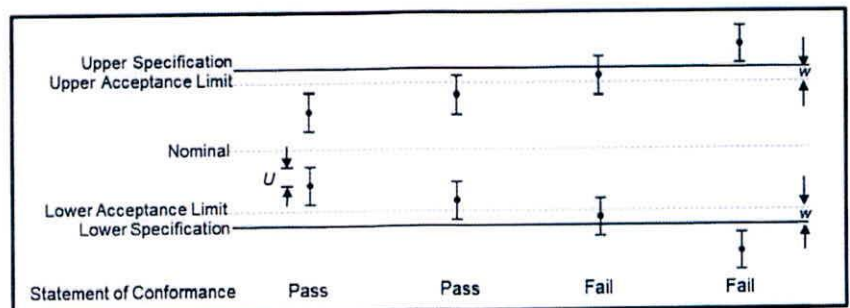
**Tolerance Limit (TL) / Specification Limit** - specified upper or lower bound of permissible values of a property.

### Decision Rule

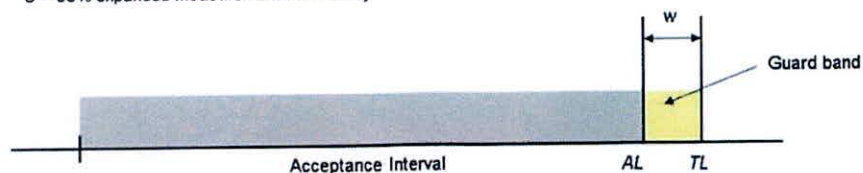
A Binary decision rule is when the result is limited to two choices (pass or fail). As explained below, the declaration of conformity is binary acceptance.

### Binary Acceptance based on Guard Band

The decisions are based on guard-banded acceptance limits. The acceptance limits,  $AL = TL - w$ , where  $U$  is the expanded measurement uncertainty or equivalent to  $w$ . The estimate of the measurand is assumed to have a normal probability distribution and specific risk is used for the risk calculation. In this case, the risk of accepted items being outside the tolerance limit is less than or equal to 2.5%.



$U = 95\%$  expanded measurement uncertainty



Statements of Conformity are reported as follows:

- Pass – acceptance based on guard band; the measurement result being below the acceptance limit,  $AL = TL - w$ .
- Fail – rejection based on guard band; if the measurement result is above the acceptance limit,  $AL = TL - w$