REGULATORY REQUIREMENTS RELATED TO NATIONAL DIFFERENCES

<table>
<tr><th>No</th><th>Items</th><th>Requirements</th></tr>
<tr><td>1</td><td>Nominal Voltages and Frequency</td><td>(a) Nominal Voltage
The nominal voltage for low voltage supply in Malaysia is 230/400V (+10%, -6%) in accordance with MS IEC 60038. The details of voltages and variations are as below:-
<table>
<tr><th rowspan="2"></th><th rowspan="2">Nominal Voltage (V)</th><th colspan="2">Percentage of Variations (%)</th><th colspan="2">Voltage Variations (V)</th></tr>
<tr><th>+</th><th>-</th><th>Min.</th><th>Max.</th></tr>
<tr><td>Single phase,1 Ø</td><td>230</td><td>10</td><td>6</td><td>216</td><td>253</td></tr>
<tr><td>Three phase,3 Ø</td><td>400</td><td>10</td><td>6</td><td>376</td><td>440</td></tr>
</table>
(b) Nominal Frequency
Nominal frequency for low voltage supply voltage in Malaysia is allowed to fluctuate at ± 1% from 50Hz.</td></tr>
<tr><td>2</td><td>Voltages and Frequency Marking for Regulated Equipment</td><td>In line with (a) above, the electrical equipment to be used in Malaysia shall be designed to operate at the country's nominal voltage and frequency as follows:
(a) Voltage
Single-phase equipment shall be rated / marked at 230V or 240V. If the equipment is rated with multiple or a range of voltages, voltage of 230V shall be included.
Three-phase equipment shall be rated/marked at 400V or 415V. If the equipment is rated with multiple or a range of voltages, voltage of 400V shall be included.
(b) Frequency
Equipment shall be rated / marked at 50Hz. If the equipment is rated with multiple or a range of frequency, frequency of 50Hz shall be included.</td></tr>
</table>

<table>
<tr><th>No</th><th>Items</th><th>Requirements</th></tr>
<tr><td>3</td><td>Testing Voltage and Frequency on Electrical Equipment</td><td>
<u>Type Test Report for Equipment</u>
The test shall be conducted by the Conformity Assessment Body (CAB) at voltage variations as below:

a) Voltage
<u>Single-phase equipment</u>

Testing shall be conducted based on the equipment standard requirement and shall cover the supply voltage variations both at lower and upper value of 216V to 253V.

Test reports shall comprise of test data at upper and lowest range whichever is required in the specified equipment's standard.

Note:
The lower value is not applicable if equipment standard requirement does not include lower test voltage tolerance.

<table>
<tr><td rowspan="2"></td><td colspan="2">Voltage variations (V)</td></tr>
<tr><td>Lower</td><td>Upper</td></tr>
<tr><td>Single phase,1 Ø</td><td>216</td><td>253</td></tr>
</table>
<u>Three-phase equipment</u>

Testing shall be conducted based on the equipment standard requirement and shall cover the supply voltage variations both at lower and upper value of 376V to 440V.

Test reports shall comprise of test data at upper and lowest range whichever is required in the specified equipment's standard.

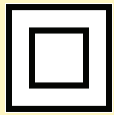
Note:
The lower value is not applicable if equipment standard requirement does not include lower test voltage tolerance.

<table>
<tr><td rowspan="2"></td><td colspan="2">Voltage variations (V)</td></tr>
<tr><td>Lower</td><td>Upper</td></tr>
<tr><td>Three phase,3 Ø</td><td>376</td><td>440</td></tr>
</table>
(b) Frequency
Testing shall be conducted at 50Hz. If the product is marked with 50/60Hz or 50-60Hz, then testing shall be conducted either at 50Hz or 60Hz, whichever is more unfavourable.
</td></tr>
</table>

<table>
<tr><th>No</th><th>Items</th><th>Requirements</th></tr>
<tr><td>4</td><td>Power supply cord and main plug requirements</td><td>Equipment shall be fitted with a suitable and appropriately approved power supply cord and mains plug. Both are regulated equipment and must be approved by the regulatory body before it can be used with the appliances.

(a) The Power Supply Cord shall be certified to:-
• MS2112-5 or BS EN 50525-2-11 or IEC 60227-5 (PVC insulated - flexible cables/cords);or
• or MS 2127-4 or IEC 60245-1 & IEC 60245-4 (Rubber insulated - flexible cables/cords)

(b) The mains Plug to be used in Malaysia shall be as follows:
• 13A fused plug complying with MS 589-1 or BS 1363-1;
• 15A plugs complying with MS 1577;
• 2.5A, 250V, flat non-rewireable two-pole plug with cord for the connection of class II equipment comply with MS 1578 or BS EN 50075.</td></tr>
<tr><td>5</td><td>Class I and Class II Equipment</td><td>Only Class I with symbol as in Figure 1 and Class II with symbol as in Figure 2 are allowed to be used in Malaysia.

 
Figure 1 : Class 1 Figure 2 : Class 11

Class 0 and Class 01 appliances as defined in MS IEC 60335 series or IEC 60335 series are NOT ALLOWED to be used in Malaysia.</td></tr>
<tr><td>6</td><td>Minimum Regulated Fans Performance</td><td>(a) Minimum Co-efficient of performance (COP) for ceiling fan, pedestal fan, table/desk fan, wall fan and box fan are as follows:

<table>
<tr><th>No</th><th>Type of fans</th><th>Minimum Co-efficient of performance (COP) (m^3/min/W)</th></tr>
<tr><td>1.</td><td>Ceiling Fan
(1200 mm /48 inch – 1500 mm /60 inch)</td><td>2.58</td></tr>
<tr><td>2.</td><td>Pedestal Fan
(250 mm /10 inch – 400 mm /16 inch)</td><td>1.01</td></tr>
<tr><td>3.</td><td>Table / Desk Fan
(250 mm /10 inch – 400 mm /16 inch)</td><td>1.01</td></tr>
<tr><td>4.</td><td>Wall Fan
(250 mm /10 inch – 400 mm /16 inch)</td><td>1.01</td></tr>
<tr><td>5.</td><td>Box Fan
(250 mm /10 inch – 350 mm /14 inch)</td><td>0.5</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>No</th><th>Items</th><th>Requirements</th></tr>
<tr><td></td><td></td><td>Where, COP = $\frac{\text{Air Delivery } (m^3/min)}{\text{Input Wattage (W)}}$

Note: The test method used to determine COP is in accordance with MS1220:2010 or IEC 60879:1986 with modification.

The acceptable value of COP must be at least or above the stated value shown.

Note : Value of COP for No.1,2,3 & 4 are included in the MEPS requirements

(b) Suspension System for Electric Ceiling Fans.

Electric ceiling fans must be provided with a special wire as a secondary suspension system. The test method used to check that the secondary suspension system of the electric ceiling fan has adequate mechanical strength is in accordance with MS 1597: Part 2-80 or IEC 60335-2-80 with modification for ceiling fan only.</td></tr>
<tr><td>7</td><td>(a) Component used for Fluorescent Lamp Fitting</td><td>Standards for Fluorescent Lamp Fitting are MS IEC 60598-2-1 or IEC 60598-2-1 (for fixed luminaries) and MS IEC 60598-2-2 or IEC 60598-2-2 (for recessed luminaries). Components such as glow starter, starter holder, lamp holder, capacitor, connecting device, ballast and internal wiring are used as part of the fitting. Thus, the components used for both standards mentioned shall comply to the following standards:

<table>
<tr><th>Components</th><th>Standards</th></tr>
<tr><td>Glow-Starters</td><td>MS IEC 60155 or IEC 60155</td></tr>
<tr><td>Starterholder</td><td>MS IEC 60400 or IEC 60400</td></tr>
<tr><td>Lampholders</td><td>MS IEC 60400 or IEC 60400</td></tr>
<tr><td>Capacitors</td><td>MS IEC 61048 or IEC 61048
& MS IEC 61049 or IEC 61049</td></tr>
<tr><td>Connecting devices</td><td>MS IEC 60998 (Series) or IEC 60998 (Series)</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>No</th><th>Items</th><th>Requirements</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Components</th><th>Standards</th></tr>
<tr><td>Magnetic/conventional Ballast</td><td>Safety test:
MS IEC 61347-1 or IEC 61347-1
+ MS IEC 61347-2-8 or IEC 61347-2-8
and
Performance test:
MS 141 with MS IEC 60921 or IEC 60921

Note : Ballast Watt Loss shall not be more than 6W for all fluorescent lamps ballast.</td></tr>
<tr><td>Electronic Ballast</td><td>Safety test:
MS IEC 61347-1 or IEC 61347-1
+ MS IEC 61347-2-3 or IEC 61347-2-3
and
Performance test:
MS IEC 60929 with MS IEC 61000-3-2
or IEC 60929 with IEC 61000-3-2</td></tr>
<tr><td>Internal Wiring</td><td>MS 2112-3 or IEC 60227-3, MS 2112-4 or IEC 60227-4
The insulating material of internal wiring must be capable of withstanding the maximum temperature to which it is subjected (heat resistance).</td></tr>
</table>
</td></tr>
<tr><td></td><td>(b) Component used for LED Lamp Fitting</td><td>Standards for LED Lamp Fitting are MS IEC 60598-2-1 or IEC 60598-2-1 (for fixed luminaries), MS IEC 60598-2-2 or IEC 60598-2-2 (for recessed luminaries), MS IEC 60598-2-4 or IEC 60598-2-4 (Portable LED Lamp), MS IEC 60598-2-12 or IEC 60598-2-12 (LED Night Lamp) and MS IEC 60598-2-8 or IEC 60598-2-8 (LED hand lamp).

Components such has driver, module, lampholder, connecting device and internal wiring are used as part of the fitting. Thus, the components used for above standards mentioned shall comply to the following standards:
<table>
<tr><th>Components</th><th>Standards</th></tr>
<tr><td>Driver</td><td>MS IEC 61347-1 and MS IEC 61347-2-13</td></tr>
<tr><td>Module / Lamp</td><td>MS IEC 62031 or MS IEC 62776 or MS IEC 62560

Requirement of the blue light hazard (Photobiological Safety) shall be assessed according to IEC/TR 62778 and classified as Risk Group 0 or Risk Group 1.</td></tr>
<tr><td>Lampholders</td><td>MS IEC 60400 or MS IEC 60238</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>No</th><th>Items</th><th>Requirements</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Components</th><th>Standards</th></tr>
<tr><td>Connecting Devices</td><td>MS IEC 60838-1 and MS IEC 60838-2-2
or IEC 61984</td></tr>
<tr><td>Internal Wiring</td><td>MS 2112-3 or IEC 60227-3,
MS 2112-4 or IEC 60227-4</td></tr>
</table>
</td></tr>
<tr><td>8</td><td>Requirement for electric vehicle system equipment charger</td><td>Equipment shall be fitted with a suitable and appropriately approved cable and mains plug/socket.

(a) The charging cable shall be certified to IEC 62893-1, IEC 62893-2 and IEC 62893-3.

(b) The mains Plug to be used in Malaysia shall be as follows:
• 13 A fused plug complying with MS 589-1 or BS 1363-1; or
• 15 A fused plug complying with MS 1577; or
• Up to 32 A appliance inlet complying with MS IEC 60309-1 and MS IEC 60309-2 or IEC 60309-1 and IEC 60309-2

(c) Mode 1 charger is prohibited.</td></tr>
<tr><td>9</td><td>Manufacturing requirements</td><td>(a) Manufactured regulated equipment shall participate in Product Certification Scheme (PCS) by SIRIM and electrical equipment shall be affixed with label issued by SIRIM or bear SIRIM Certification Mark (under Label Licensing Programme). The sample of ST-SIRIM label and SIRIM Certification Mark can be referred in Chapter 9.

(b) Manufacturer of regulated electrical equipment that are approved to the specified Minimum Energy Performance Standard (MEPS) must also affix the Energy Efficiency Label onto the equipment before it can be sold to the consumer. The samples of Energy Efficiency (EE) label are shown in Figure 6 in Chapter 9.</td></tr>
</table>

No	Items	Requirements
10	Importing requirements	(a) Imported regulated electrical equipment shall undergo Consignment Test conducted by SIRIM or participate in Product Certification Scheme (PCS) by SIRIM. Electrical equipment which passes the Consignment Test shall be affixed with the ST-SIRIM label. The sample of ST-SIRIM label can be referred in Chapter 9. Electrical equipment which fails the Consignment Test need to be sent to the country of origin or shall be destroyed. Electrical equipment shall be constructed to be used with power supply cord and power plug which comply with Malaysia's requirements and standards. The requirements and standards of power supply cord and power plug are stated as in item No.4 above. (b) Importers of regulated electrical equipment that are approved to the specified Minimum Energy Performance Standard (MEPS) must also affix the Energy Efficiency Label onto the equipment before it can be sold to the consumer. The samples of Energy Efficiency (EE) label are shown in Figure 6 in Chapter 9.
11	Climate Conditions	Equipment to be used in Malaysia shall be subjected to tests under tropical conditions as specified in the related standards.
12	Requirements for MEPS	To meet the requirements of the MEPS, the performance criteria when tested using the relevant testing standards has to be met. The testing standards and performance criteria have been set as prescribed in Chapter 4.1.
13	Requirement for Luminaires	To meet the requirements of the Photobiological Safety: (a) the blue light hazard for LED lamp and luminaire (with LED light source) shall be assessed according to IEC/TR 62778 and shall be classified as Risk Group 0 or Risk Group 1. (b) the ultraviolet hazard for luminaire with UV lamp (tungsten halogen, metal halide and other significant UV light) shall be assessed according to IEC 62471 and the ultraviolet hazard efficacy of luminous radiation of lamp shall not exceed 2 mW/klm.
14.	Regulated Accessories incorporated with main products (eg. Accessories such as Lamp, usb adaptor/ charger, etc)	To meet the requirement of related accessories standards.