
The Hong Kong Voluntary Energy Efficiency Labelling Scheme

Washing Machines

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Energy Efficiency  **EMSD**

Electrical and Mechanical Services Department
3 Kai Shing Street, Kowloon, Hong Kong
Homepage: <http://www.emsd.gov.hk>

Preface

The Hong Kong Voluntary Energy Efficiency Scheme for “Washing Machine” (the voluntary Scheme) was revised to cover the types of washing machine not regulated under the Energy Efficiency (Labelling of Products) Ordinance since September 2011. Basically, it includes washing machines with a rated washing capacity larger than 7 kilograms but not exceeding 10 kilograms, which are not covered by the Ordinance

“Washing Machine” does not include washing machines that —

- (i) may also use other energy sources; or
- (ii) have no spin extraction capability.

For washing machines under the Energy Efficiency (Labelling of Products) Ordinance (cited as the Ordinance), please refer to the requirement under the Ordinance.

The importers or local manufacturers are encouraged to participate in the voluntary Scheme if their products fall into the classification of the Scheme.

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1. Purpose

This set of document is intended to give a general description on the introduction of the Hong Kong Voluntary Energy Efficiency Labelling Scheme (EELS) for Washing Machines.

2. Background

- 2.1 The EELS is an energy conservation initiative that the Government of the Hong Kong Special Administrative Region (HKSAR) has adopted. Under the scheme, some common types of household appliances and office equipment will incorporate an energy label that serves to inform consumers of the product's energy consumption and efficiency. Consumers should then be able to take those factors into account and make their purchasing decision.
- 2.2 The concept of EELS has been developed and implemented in several forms and in different stages of development. In some countries, it is a compulsory requirement for certain kinds of appliances to be provided with energy labels before they can be put on the market. The labelling requirements may apply to equipment such as household refrigerators / freezers, washing machines, room coolers, clothes dryers, compact fluorescent lamps, storage water heaters, etc. The EELS generally aims to achieve the following:
- greater public awareness of energy conservation and environmental improvement needs;
 - provision of readily available, pre-purchase information on energy consumption and efficiency data, where applicable, to enable ordinary consumers to select more energy efficient products;
 - stimulation to the manufacturers/market for phasing out less energy efficient models; and
 - actual energy savings and environment improvement.
- 2.3 Hong Kong also aims at achieving the above objectives and the Hong Kong Voluntary EELS now covers nineteen types of household appliances and office equipment. Eleven types of which are electrical appliances and seven types of office equipment. There is also one type of gas appliance for domestic gas instantaneous water heaters. The scope of EELS has also been extended to cover petrol passenger cars.

3. Scheme Outline

- Scope (section 4)
- Definitions (section 5)
- Appliance Classification (section 6)
- Test Methodology and Standard (section 7)
- Energy Efficiency Grading and Performance Requirements (section 8)
- Energy Label (section 9)
- Testing Facilities, Laboratories and Accreditation Bodies (section 10)
- Registration and Participation (section 11)
- Legal Provisions (section 12)
- Compliance Monitoring and Inspection (section 13)
- Complaints and Appeal (section 14)
- Maintenance of Scheme (section 15)
- Future Development (section 16)

4. Scope

- 4.1 The scheme will only apply to the manufacturers and importers (local agents, retailers and the related parties) who have participated in the voluntary scheme.
- 4.2 The scheme commenced from 15 December 1997. The revision of scheme has been implemented from 19 September 2011 and the energy labels will expire on 31 December 2013 when re-registration is necessary.
- 4.3 The scope of application covers all new registered appliances to be supplied in Hong Kong with effect from the date that is declared by the participants but does not cover second-hand products, products already in existing use, under trans-shipment or manufactured for export, etc.
- 4.4 The scheme is operated as a 'Grading Type' labelling system. All participating appliances will be registered under this scheme provided that they have met the testing requirement specified in the scheme.
- 4.5 Washing machines under this labelling scheme apply to all electrically operated clothes washing machines that have washing capacity larger than 7 kilograms but not exceeding 10 kg for household use. Appliances that have large capacity or for industrial use or those using non-electric energy sources, or have no spin extraction capability are excluded.

- 4.6 This scheme applies to top-loading agitator/impeller -type and top-loading/front-loading drum-type clothes washing machines.

5. Definitions

Unless otherwise specified, the following definitions shall apply throughout this document:-

<i>Agitator-type washing machine</i>	means washing machine in which the textiles are substantially immersed in the washing water, the mechanical action being produced by a device moving about or along its vertical axis with a reciprocating motion (an agitator).
<i>Appliance</i>	means household washing machines described under Section 4 (scope) of this scheme.
<i>Authority</i>	means the Electrical and Mechanical Services Department, the Government of the Hong Kong Special Administrative Region (HKSAR).
<i>base load</i>	means textiles load without strips of standardized soiling.
<i>cycle</i>	means a complete washing process, as defined by the programme selected, consisting of a series of different operations (wash, rinse, spin, etc.)
<i>Director</i>	means the Director of Electrical and Mechanical Services.
<i>Government</i>	means the Government of the Hong Kong Special Administrative Region.
<i>horizontal drum washing machine</i>	means washing machine in which the textiles are placed in a horizontal drum and partially immersed in the washing water, the mechanical action being produced by rotation of the drum about its axis, the movement being either continuous or periodically reversed.
<i>IEC</i>	means the International Electrotechnical Commission. (the latest edition of the standard shall be followed for test methodology)
<i>impeller-type washing machine</i>	means washing machine in which the textiles are substantially immersed in the washing water, the mechanical action being produced by a device rotating about its axis continuously or which reverses after a number of revolutions (an impeller). The uppermost point of this device is substantially below the water level.
<i>inspecting officer</i>	means the officer authorized by the Director to carry out inspection on appliances under this scheme.

<i>ISO</i>	means the International Organization for Standardization
<i>JIS</i>	means Japanese Industrial Standard (the latest edition of the standard shall be followed for test methodology)
<i>label</i>	means the energy label as described in Section 9.
<i>participants</i>	means the manufacturers, importers or the dealers of washing machines participating in the scheme.
<i>programme</i>	means series of operations which are pre-defined within the washing machine and which are declared as suitable for washing certain textiles.
<i>rated capacity</i>	means maximum mass of dry textiles which the manufacturer declares can be treated in a specific programme.
<i>rated frequency</i>	means the frequency shown on the nameplate of the equipment.
<i>rated voltage</i>	means the voltage shown on the nameplate of the equipment.
<i>recognized laboratory</i>	means a laboratory that complies with the requirements as stated in Section 10 and is acceptable to the Authority for carrying out tests and issuing test reports for washing machines.
<i>scheme</i>	means the Hong Kong Voluntary Energy Efficiency Labelling Scheme for Washing Machines.
<i>spin extractor</i>	means water-extracting appliance in which water is removed from textiles by centrifugal action.
<i>volume of a drum type washing machine or spin extractor</i>	means the inside volume, in litres, of the drum in which the textiles are placed, after subtraction of ribs of other inward forms, etc.
<i>volume of an agitator or impeller-type washing machine</i>	means the inside volume, in litres, of the tub available for the movement of the textiles up to the nominal water level as determined by the machine controls or the manufacturer instructions.
<i>test load</i>	means base load plus strips of standardized soiling.
<i>washing machine</i>	means appliance for cleaning and rinsing of textiles using water which may also have a means of extracting excess water from the textiles.

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6. Appliance Classification

Basic Requirement on Classification

- 6.1 The classification of appliances shall be based on a common set of conditions so that meaningful comparison can be made. These basic requirements must cover the most vital aspects of the washing machines and shall ensure that consumers are provided with unambiguous information.

Mode of Operation

- 6.2 Washing machines are classified according to their operation principles:

(a) Agitator-type

A washing machine in which the textiles are substantially immersed in the washing water, the mechanical action being produced by a device moving about or along its vertical axis with a reciprocating motion (an agitator). This device usually extends above the maximum water level.

(b) Drum-type

A washing machine in which the textiles are placed in a horizontal drum and partially immersed in the washing water, the mechanical action being produced by rotation of the drum about its axis, the movement being either continuous or periodically reversed.

(c) Impeller-type

A washing machine in which the textiles are substantially immersed in the washing water, the mechanical action being produced by a device rotating about its axis continuously or which reverses after a number of revolutions (an impeller). The uppermost point of this device is substantially below the water level.

Overall Classification

- 6.3 All washing machines are to be evaluated based on appliance operation in accordance with the following classification scheme:

Table 1: Appliance Classification

Category	Description
1	Horizontal drum type washing machines
2	Impeller type or agitator type washing machines

Note: In each category, it also includes washing machines operating with similar working principle.

7. Test Methodology and Standard

General

- 7.1 Clothes washing machines have various designs and features. Apart from load capacity, their wash programmes are also different and many are selectable by the operator. For example, temperature, inclusion of pre-wash cycles etc. can all be modified according to the operator's needs. Virtually all these aspects would affect the energy consumption of the machine (and the wash result). Therefore a common base is critical for measuring the electrical consumption of such machines.
- 7.2 Household washing machines are produced and tested according to the manufacturers' national standards (e.g. IEC, JIS, AS and AHAM) and they are not governed by any ISO standard. In Hong Kong, two major types of appliances, Category 1 (drum type) and Category 2 (agitator or impeller type). In view of this market situation, the testing methodology is modelled along two standards. The testing methodology for measurement of energy consumption is based on the IEC 60456 for Category 1 or JIS C 9606 for Category 2.

Test Required to be Carried Out

- 7.3 The tests specified in this clause are required to be carried out, in accordance with IEC 60456 or JIS C 9606 or other equivalent international standards approved by the Director, in order to find out the energy efficiency and performance characteristics of a washing machine. The importer or manufacturer shall clearly indicate which test standard(s) they follow in testing their washing machines:
- (a) IEC 60456 applies to horizontal drum type washing machines (i.e. Category 1)
 - (b) JIS C 9606 applies to impeller type or agitator type washing machines (i.e. Category 2)

A test report required to be submitted to the Director shall contain the results of these tests:

- (a) Energy consumption;
- (b) Water consumption;
- (c) Washing performance; and
- (d) Spin extraction performance.

Test Conditions

- 7.4 In carrying out the tests as specified in clause 7.3 above, the washing machine shall be tested at a voltage of 380/220V and a frequency of 50Hz with tolerances as specified in the relevant IEC or JIS standards. Moreover, unless the Director approves otherwise, the following test conditions shall be followed.
- (a) In testing horizontal drum type washing machines (Category 1), the 60 °C cotton programme shall be used without pre-wash in accordance with the manufacturer's instruction.
 - (b) In testing impeller type or agitator type washing machines (Category 2), at the start of the test, the temperature of water shall be 30 ± 2 °C.

In cases of washing machines without any programmes, the recommended times for

washing, rinsing, and spin extracting operations shall be in accordance with the manufacturer's instructions for the rated washing capacity to be tested.

Measurement of Energy Consumption

7.5 Test results and data to be reported are provided in Annex 1.& 2 The methodology for measuring energy consumption (kWh) shall be based on:

- (a) IEC 60456;
- (b) JIS C 9606; or
- (c) Other equivalent international standards approved by the Director.

The specified international standards (IEC or JIS) shall be referred to for actual performance requirements and procedural descriptions.

The energy consumption shall be measured as follows:

- (i) For horizontal drum type washing machine with built-in water heating device, the measured energy consumption (E) of the washing machine shall include the energy consumptions of both the washing function (including washing, rinsing and spin extraction processes) and the built-in water heating device for heating water. This measured energy consumption (E) shall be shown on the energy label after it is calculated to annual energy consumption based on 260 washes / year operation.
- (ii) For horizontal drum type washing machine without built-in water heating device, only the measured energy consumption (E) of the washing machine shall be shown on the energy label after it is calculated to annual energy consumption based on 260 washes / year operation.
- (iii) For impeller type or agitator type washing machine, only the measured energy consumption (E) of the washing function (including washing, rinsing and spin extraction processes) shall be shown on the energy label after it is calculated to annual energy consumption based on 260 washes / year operation.

In cases of washing machines combined with built-in dryers for drying textiles by means of heating, only the energy consumption (E) of the washing machine shall be measured and the drying function is excluded.

Measurement of Water Consumption

7.6 The water consumption (litres/cycle) shall be measured during the energy consumption test in accordance with IEC 60456, JIS C 9606, or other equivalent international standards approved by the Director.

Measurement of Washing Performance and Spin Extraction Performance

7.7 The washing performance and spin extraction performance shall be measured and evaluated during the test period in accordance with IEC 60456, JIS C 9606, or other equivalent international standards approved by the Director

Calculation of Specific Energy Consumption

7.8 The specific energy consumption of a washing machine shall be calculated as follows:

- (a) For horizontal drum type washing machine with built-in water heating device and impeller type or agitator type washing machine, the specific energy consumption is calculated as follows:

$$\text{Specific Energy Consumption } (E_{sp}) = \frac{E}{W_r} \dots\dots\dots(\text{Equation 1})$$

where E = measured energy consumption per cycle (kWh/cycle)
 W_r = rated washing capacity (kg)

- (c) For horizontal drum type washing machine without built-in water heating device, the specific energy consumption is calculated as follows:

$$\text{Specific Energy Consumption } (E_{sp}) = \frac{E + W_h}{W_r} \dots\dots\dots(\text{Equation. 2})$$

where E = measured energy consumption per cycle (kWh/cycle)
 W_r = rated washing capacity (kg)
 W_h = calculated hot water energy (kWh/cycle)

The calculated hot water energy is the theoretical energy requirement for heating water from 15 °C to 60 °C and shall be calculated as follows:

$$W_h = \frac{(V_h \times (t_h - 15))}{860} \dots\dots\dots(\text{Equation 3})$$

where W_h = the calculated hot water energy in kWh for the operation
 V_h = the volume of external hot water used in litres during the operation
 t_h = the hot water inlet temperature in °C, i.e. 60 °C

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Average Specific Energy Consumption

- 7.9 The average specific energy consumption (E_{av}) figures for washing machines are shown in Table 2.

Table 2: Average Specific Energy Consumption

Washing Machine Category	Average Specific Energy Consumption (kWh/kg/cycle)
Category 1	$E_{av} = 0.26$
Category 2	$E_{av} = 0.0264$

8. Energy Efficiency Grading and Performance Requirements

- 8.1 The availability of Table 2 enables formulation of a methodology to calculate the energy efficiency indices and the appliance efficiency grading. The methodology entails ultimate like-with-like meaningful comparison.

Energy Efficiency Indices (I_E)

- 8.2 The energy efficiency index (I_E) of an appliance is defined as the ratio of the actual specific energy consumption of the appliance to the average specific energy consumption. The indices are expressed in percentages. Thus, by comparing the energy efficiency indices, all appliances can have meaningful comparison of their energy efficiencies. In other words, within a category appliance that has a lower energy efficiency index (i.e. lower percentage) consumes less energy than an appliance of higher energy efficiency index (i.e. higher percentage). The energy efficiency index is calculated as follows: -

$$\text{Energy Consumption Index } (I_E) = \frac{E_{sp}}{E_{av}} \times 100\%$$

Where E_{sp} = the actual appliance "Specific Energy Consumption" obtained from energy consumption test per rated washing capacity.

E_{av} = Average Specific Energy Consumption as determined from Table 2.

Appliance Energy Efficiency Grading

- 8.3 To make the concept of appliance energy efficiency more readily understood by ordinary consumers, appliance energy efficiency grade is introduced by linking the energy consumption index (percentage) to the 5 grades as shown in Table 3, with Grade 1 being the most energy efficient and Grade 5 the least.

Table 3: Converting Energy Consumption Indices to Energy Efficiency Grades

Energy Consumption Index : I_E (%)	Energy Efficiency Grade
$I_E \leq 80$	1
$80 < I_E \leq 95$	2
$95 < I_E \leq 110$	3
$110 < I_E \leq 125$	4
$125 < I_E$	5

- 8.4 An example illustrating the method on how to determine the energy efficiency grade of an appliance is shown in Annex 3.
- 8.5 A flow chart for developing the complete appliance energy efficiency grading is shown in Annex 4.

Performance Requirements

8.6 In the test report submitted to the Director, the results of the tests carried out in accordance with IEC 60456 or JIS C 9606 or other equivalent international standards approved by the Director shall show that the concerned model conforms with the following performance requirements:

- (a) The measured energy consumption (kWh/cycle) shall not be greater than the rated energy consumption by more than 15%.
- (b) The measured water consumption (litres/cycle) shall not be greater than the rated water consumption by more than 15%.
- (c) The measured washing performance and measured spin extraction performance shall conform with the minimum requirements in accordance with the respective test standards as shown in Table 4 for Grade 1 to 4:

Table 4: Performance Requirements

Category	Category 1	Category 2
Performance Requirements ^{Note (1)}		
Test Standard	IEC 60456 ^{Note (4)}	JIS C 9606
Washing Performance ^{Note (2)}	$q \geq 0.7$	$C \geq 0.55$
Spin Extraction Performance ^{Note (3)}	$RM \leq 1.1$	Water extracting efficiency ≥ 0.47

Note:

- (1) Each of the performance shall be determined in accordance with the test standard of the respective category.
- (2) The washing performance shall be determined in accordance with the following equations (extracted from the respective test standards):

$$q = \frac{\bar{C}_{test}}{\bar{C}_{ref}} \quad , \quad \text{or} \quad C = \frac{D_r}{D_s}$$

where q = ratio of the average sum of the reflectance values

\bar{C}_{test} = average sum of the reflectance values for the washing machine under test

\bar{C}_{ref} = average sum of the reflectance values for the reference washing machine

C = washability ratio

D_r = washability by the washing machine under test

D_s = washability by the reference washing machine

For details on the definitions of the parameters and their calculation, the respective test standards shall be referred to.

- (3) *The spin extraction performance shall be determined in accordance with the following equations (extracted from the respective test standards):*

$$RM = \frac{M_r - M}{M} \quad , \text{ or}$$

$$\text{Water extracting efficiency} = \frac{\text{Mass of cloth in dry state}}{\text{Mass of cloth after water extraction}}$$

where RM = remaining moisture

M = the mass of the conditioned base load

M_r = the mass of the base load after spin extraction

For details on the definitions of the parameters and their calculation, the respective test standards shall be referred to.

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- (5) *In order to obtain Grade 1 to 4, the washing machine concerned shall also meet all the above performance requirements, i.e. washing performance and spin extraction performance. Only Grade 5 will be accorded if the washing machine does not meet anyone of the above performance requirements or $I_e > 125$.*

The rated energy consumption and rated water consumption as declared by the manufacturer or importer shall meet the requirements specified in Clause 8.6.

Safety Requirements

- 8.7 In addition to the energy efficiency performance requirements, all washing machines shall comply with the Electrical Products (Safety) Regulation, Chapter 406G of the Laws of Hong Kong, and the safety standards specified under the Regulation, and all other legislations concerning the safety of the washing machines.

Number of Samples to be Tested

- 8.8 A test report on one sample of the model shall be submitted. However, if the test results of one sample indicate that the measured energy consumption is greater than the rated energy consumption by more than 10%, the test report shall include the tests of two samples of the same model. In such case, each individual sample shall meet all the performance requirements in Clause 8.6. Also, the information on the energy label shall be based on the test results of the tested sample with a higher energy consumption index (I_e).

9. Energy Label

Label Location

- 9.1 The labels should be self-adhesive or otherwise approved by the Director and affixed to the appliance at a prominent location. The participant should ensure that the energy label appears on every registered appliance on display or sale and should be easily visible.

Colour Scheme & Dimensions

- 9.2 The energy labels should be printed on white-coloured self-adhesive sheet material and should have colour schemes and dimensions as shown in Annex 5. It should be printed in English and in Chinese.

Labels Quality

- 9.3 The paper or the material that is approved by the Director for the label should be durable and possess good wear and tear characteristics. It should stick tightly on the appliance packaging.

10. Testing Facilities, Laboratories and Accreditation Bodies

- 10.1 The testing is carried out either by independent test institutes or by the manufacturers or importers themselves at their own test facilities. The Authority will accept the results and certificates issued by the test laboratory which fulfills one of the following criteria as specified in Clause 10.2, 10.3 or 10.4.
- 10.2 The laboratory is accredited by the Hong Kong Accreditation Service (HKAS) for the relevant test under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) or a scheme for which HKAS has concluded a mutual recognition arrangement[#], and the results are issued in a test report or certificate bearing the accreditation mark.
- 10.3 The Authority will also consider the following arrangements:
- (a) Self-declaration by original manufacturer that the operations of their in-house laboratory followed principally the requirements of ISO/IEC 17025; and
 - (b) The manufacturer currently operating according to a recognized international quality system (such as ISO 9001); and
 - (c) The manufacturer's in-house laboratory had been successful in carrying out tests on washing machines based on internationally recognised washing machines standards and where these tests had been evaluated and certified by internationally recognised third party certification organisations.
- 10.4 The tests results are issued by a laboratory which achieves HOKLAS accreditation (or is accredited by a scheme for which HOKLAS has signed a mutual recognition agreement) for laboratory testing of electrical and mechanical appliances other than testing based on technical methods stipulated in this scheme, and the laboratory can demonstrate their capability of carrying out tests on washing machines in accordance with the technical standards.

: HKAS has concluded mutual recognition arrangements with overseas accreditation bodies for testing laboratory accreditation. The list of mutual recognition arrangement partners may change from time to time and the up-to-date list is available from the HKAS website of www.info.gov.hk/itc/hkas. Partners to these arrangements recognise the accreditations granted by one another as equivalent.

Laboratory Accreditation

- 10.5 The Government takes cognizance of the need to ensure acceptable and compatible quality standards of testing laboratories, and considers that they need to be accredited by some independent bodies.
- 10.6 The criteria of accreditation should be based on ISO/IEC 17025 and accreditation bodies should operate in accordance with ISO/IEC Guide 17011.

- 10.7 The Authority will recognize accreditation granted by the HOKLAS and by overseas accreditation bodies which have concluded mutual recognition arrangements with HKAS for accreditation of testing laboratories. The Authority will consider accreditation by other bodies on a case-by-case basis.

Energy Efficiency Verification Service

- 10.8 An increasing number of countries now accept, as proof of product conformance, energy efficiency verification services provided by third-party organisation that has been accredited as a certification organisation. In accordance with this trend, the Authority will consider seriously test results that have been evaluated and verified against the energy efficiency standards of the scheme by reputable third-party certification organisations.

11. Registration and Participation

Registration Procedures

- 11.1 All manufacturers, importers and the other parties involved in the appliance distribution network are welcomed and encouraged to participate in the scheme. For some known manufacturers and importers, invitation letters will be issued to them. However, any party may submit their applications for registration no matter whether they are invited or not.
- 11.2 The proforma letter of invitation is shown in Annex 6.
- 11.3 Applicant should submit formal application to

*Chief Engineer/Energy Efficiency A
Energy Efficiency Office
Electrical and Mechanical Services Department
3 Kai Shing Street, Kowloon
Hong Kong*

by means of an application letter through mail, facsimile or electronic mail. In order to ensure effective implementation of the scheme, the applicant must be committed to fully comply with the duties, responsibilities and obligations set out in this scheme. The proforma letter of application as shown in Annex 7 details the aforesaid obligations and should be used for application. To facilitate the application process, the application form can be downloaded from EMSD website.

Information/Documents to be Submitted for Registration

- 11.4 Each make and model of an appliance participating in the scheme should be provided with a test report issued by a recognized laboratory. The test report should contain energy consumption test and performance test results. The details of the technical information to be submitted together with the application are listed as follows:
- (a) Information on the company
- Name, Address, Telephone number, Fax, E-mail, Contact person, Importer,

- Distributor, etc.
- (b) Products to apply for participating in the scheme
Names of products, types, brand names, model references, countries of origin
- (c) Parties which will be responsible for making and fixing the Energy Label
- (d) Commencement date to affix energy label on appliance
Year _____, Month _____
- (e) Completion of the Information stated in the Energy Label for each product including the following:
Brand (English and Chinese)
Model
Country of Origin
Appliance Category
Annual Energy Consumption
Energy Efficiency Grade
Washing Capacity
Water Consumption
- (f) Supporting Technical Information and Calculations
Test reports: Energy Consumption Test * and Performance Tests
(* For test reports which indicate the measured energy consumption is 10% more than the rate value, additional test reports for the same model may be required.)
Calculations: Energy Consumption Index and Energy Efficiency Grading
- (g) Miscellaneous Technical Information:
Product information catalogue
Information of driving motor
Brand and model of the reference washing machine
Others
- (h) Certificate of Safety Compliance prescribed by the Electrical Products (Safety) Regulation.

The above list of information can also be found in Annex 8.

- 11.5 Company's name and chop should be stamped on all the documents provided. All photocopy test reports submitted to the Authority shall be certified true copy by appropriate organization.

Acceptance of Registration

- 11.6 On receipt of the application, the Authority will process the application and verify whether the appliance to be registered falls into the appropriate appliance category, and the energy efficiency grade is correctly obtained based on the submitted data. The accuracy of the energy consumption data and the washing performance, their

inconsistencies and non-compliance will be dealt with in accordance with Section 13.2.

- 11.7 If the application is accepted, the participants will be notified of the result in writing within 17 working days. The participants will then be allowed to affix the label onto the 'registered' appliances. Both manufacturer and importer of the registered appliance should ensure that the energy label is correctly printed and affixed on the appliance in accordance with Section 9. The proforma letter of acceptance is shown in Annex 9.
- 11.8 If the application is rejected, the notification letter as shown in Annex 10 will also be given within 17 working days upon receipt of all necessary information requested.
- 11.9 The flow chart for registration is shown in Annex 11.

Participant's Duties, Responsibilities and Obligations

- 11.10 The participant is obliged to:
- (a) submit application and information including test results in accordance with format and procedures set out in Section 11.3 – 11.5;
 - (b) conduct tests via recognized laboratories and to comply with the specified test methodology and classification scheme;
 - (c) produce and affix labels at his own costs;
 - (d) fully inform other sales agents in his distribution network once the particular make and model of an appliance is registered under this scheme;
 - (e) allow random/ad-hoc inspection to be conducted by persons authorized by the Authority on registered appliance at his premises;
 - (f) conduct re-test(s) at his own costs at some recognized laboratories, if non-compliance is found on his appliance. The result of re-test(s) shall reach the Authority within the prescribed period of time specified by the Authority;
 - (g) inform the Authority of any change in the technical information and data that were previously submitted to the Authority together with the application letter;
 - (h) accept the fact that if appliance fails to perform in accordance with the requirements as given in Sections 6 and 7 and this cannot be readily rectified, the Authority may order it be de-registered from the scheme; and
 - (i) remove immediately all energy labels from appliances which had been de-registered.
- 11.11 The details of appliances registered under this scheme will be kept in a register maintained by the Authority. The registration records will be regularly uploaded and maintained in the EMSD internet for public and interested parties for access and information.

Termination

- 11.12 Under circumstances of poor performance such as:
- (a) (repeated) failure to fulfil obligations set out under Section 11.10; or
 - (b) once false or inaccurate or misleading information is given on a label; or

- (b) in any other case where the Director is of the opinion that registration of an appliance is contrary to the public interest

the Authority may de-register an appliance from the scheme with immediate effect by giving the participant notice in writing. Once an appliance is de-registered, no one is allowed to fix an energy label on it. However, participant will normally be given a grace period of three months to remove all labels from the de-registered appliances.

De-registration may occur even when there is no legal action taken under either the Trade Descriptions Ordinance or the Copyright Ordinance.

- 11.13 Participant who decides to discontinue participating in the scheme or to withdraw any registered model from the registered appliance list shall give at least three months' advance notice to the Authority.

12. Legal Provisions

- 12.1 This scheme is a voluntary scheme. However, a participant who abuses the scheme by giving false information on a label may contravene provisions of the Trade Descriptions Ordinance (Cap. 362).
- 12.2 No one could take advantage of the scheme by using the label on his appliances without authorization of the Authority as that may constitute an infringement of copyright under the Copyright Ordinance.

13. Compliance Monitoring and Inspection

Purpose

- 13.1 To uphold credibility of the scheme and to maintain continuous confidence of the consumers, compliance check on energy labels on those appliances participating in the scheme are needed. Also to avoid the unsatisfactory situation that the non-participating parties taking advantage of the scheme by using unauthorized labels, the Authority may also carry out suitable form of inspection on those appliances which have not been registered under the scheme.

Scope

- 13.2 The scope of inspection includes sample checking and testing the following items:
- (a) whether energy label is in fact placed on the registered appliance;
 - (b) whether the energy label is positioned as required in Section 9;
 - (c) whether the energy label being displayed is of correct format in accordance with Section 9;
 - (d) whether the information on energy label accords with record;
 - (e) whether the registered appliance complies with the energy consumption and performance requirements;
 - (f) whether the data submitted by the participants are correct by random

re-testing; and

(g) whether unregistered appliances display unauthorized energy label.

- 13.3 The participants will be requested to take immediate remedial action and report the follow-up action taken if non-compliance is found on their appliances.
- 13.4 For a registered appliance which is found giving wrong energy performance data on the label during random checking, the Authority may request the participant to conduct separate energy consumption test at his own cost, in accordance with the test methodology as stated in Section 7 in one of the testing laboratories agreed by the Authority. Otherwise, the Authority will require the participant to take appropriate remedial action including replacing a label with correct value for the registered appliance.
- 13.5 If a registered appliance carrying correct information energy label but found not meeting the requirements specified in accordance with the technical standards stipulated in Section 7, the participant will also be requested to conduct separate performance tests at his own costs, in accordance with the test methodology as stated in Section 7 in one of the test laboratories agreed by the Authority. If non-compliance is confirmed and no remedial action is to be taken by the applicant, the Authority may order it be de-registered from the scheme. Failure to remove energy labels from the de-registered appliances after the Director has withheld his authorization for using such labels may contravene the relevant ordinances.

Inspecting Officers

- 13.6 The Authority will authorize inspecting officers to carry out appliance compliance monitoring and inspection. The officers will carry proper identification cards which will be produced during their inspection operations. However, the officers will not inform the participants in advance of their intended inspection operation.
- 13.7 It is the participants' duty to allow the inspecting officers to gain access to their premises to carry out inspection.

Mode of Inspection

- 13.8 Inspections will be carried out on registered appliances under the scheme on random basis. Based on the record of the registration, random inspection programmes will be developed.
- 13.9 In addition to the random inspections, the inspecting officers will carry out ad-hoc inspections in response to complaints. The items to be inspected in such a case will depend upon the nature of complaint and may include all types of inspection as stated in Section 13.2.
- 13.10 Inspections will normally be carried out at the retail outlets and appliance showrooms. Where necessary, inspection will also be done at warehouses.
- 13.11 The inspection results will be properly recorded for future analysis as well as on evaluation of the effectiveness of the scheme.

Compliance

13.12 During the compliance monitoring testing carried out by the Director, a registered model of washing machine will be accepted as conformance if the test results of a single sample of the registered model meet the following criteria:

- (a) The tested energy consumption (kWh/cycle) being not greater than the rated energy consumption by more than 15%.
- (b) The tested water consumption (litres/cycle) being not greater than the rated water consumption by more than 15%.
- (c) The tested washing performance and tested spin extraction performance conforming with the minimum requirements in accordance with the respective test standards as shown in Table 4 for Grade 1 to 4.
- (d) The tested energy efficiency grade meeting either one of the following:
 - (i) The energy efficiency grade calculated in the compliance monitoring testing being equal to or better than the energy efficiency grade determined by the test results submitted to the Director; or
 - (ii) If the energy efficiency grade calculated in the compliance monitoring testing being not equal to nor better than the energy efficiency grade determined by the test results submitted to the Director, the tested energy consumption index calculated in the compliance monitoring testing being not greater than 115% of the measured energy consumption index calculated by the test results submitted to the Director.

13.13 The Director may remove from the registration record of a registered model of washing machine, if he has reasonable grounds to believe that the washing machine does not conform with the specified information or a specified document, or their updates if any, submitted to the Director. The participant may provide explanation on the failure of a product to pass the compliance monitoring testing stipulated in clause 13.12 above and apply for further testing of the concerned model for the Director's consideration.

13.14 If further testing is approved to be carried out, three samples of the same model shall be tested at the participant's own costs. A registered model of washing machine will be accepted as conformance if the results of further testing meet the following criteria:

- (a) The tested energy consumption (kWh/cycle) of each sample being not greater than the rated energy consumption by more than 15%.
- (b) The tested water consumption (litres/cycle) of each sample being not greater than the rated water consumption by more than 15%.
- (c) The tested washing performance and tested spin extraction performance of each sample conforming with the minimum requirements in accordance with the respective test standards as shown in Table 4 for Grade 1 to 4.
- (d) The tested energy efficiency grade meeting either one of the following:
 - (i) The energy efficiency grade of each sample calculated in the further testing being equal to or better than the energy efficiency grade determined by the test results submitted to the Director by the participant; or
 - (ii) If the energy efficiency grade of any sample calculated in the further testing being not equal to nor better than the energy efficiency grade determined by the

test results submitted to the Director, the tested energy consumption index of that sample calculated in the further testing being not greater than 115% of the measured energy consumption index calculated by the test results submitted to the Director.

(Remark: The participant can choose to accept the results of further testing undertaken on fewer than three samples if the results of each sample subsequently tested also do not meet the acceptance criteria as stated above.)

14. Complaints and Appeal

- 14.1 The Authority will be responsible for dealing with complaints from participants and other parties against matters related to the scheme.

Complaints Handling Procedure

- 14.2 The Director shall ensure that complaints are properly recorded and handled without undue delay.
- 14.3 The Authority shall carry out preliminary investigation on complaints and reply to the complainants within a reasonable time. For complaints that require site inspection and laboratory test, the complainant shall be notified through an interim reply.
- 14.4 The Authority shall inform the complainant of the results or decisions made on the complaint.

Appeal Procedure

- 14.5 A participant who is aggrieved by a decision or action taken by the Authority may appeal to the Director in writing stating the reason for the appeal.
- 14.6 The Director may decide to suspend the decision or action given by the Authority from the day on which the appeal is made until such appeal is disposed of, withdrawn or abandoned unless such suspension would, in the opinion of the Director, be contrary to public interest.
- 14.7 The Director may by notice to the appellant require that appellant to attend meeting with him or his representatives and provide documents and give evidence relevant to the appeal.
- 14.8 The Director shall notify the appellant of his decision and reasons for it. The decision will be final and binding.

15. Maintenance of Scheme

- 15.1 To ensure that the scheme can continue to operate effectively and efficiently after its introduction, a proper system of maintenance is needed.
- 15.2 The maintenance system consists essentially of:
- (a) Continuous updating of the lists of participants in the scheme as follows:
 - i) registered appliances with details such as registration number in the scheme, date of registration or de-registration if it occurs, energy efficiency data, performance data, make, model and other related information; and
 - ii) registered importers, manufacturers, local agents etc. in the distribution network with details such as address, date of registration or de-registration if it occurs, etc.
 - (b) Periodic review of the test methodology, and procedures for application registration and compliance monitoring, etc., to bring them in line with the latest needs of the manufacturers, importers and retailers, etc.
 - (c) Continuous evaluation of the effectiveness of the scheme and assessment of what changes are necessary.

16. Future Development

- 16.1 It is hoped that following the implementation of the scheme, the market will phase out appliances of low efficiency and public awareness of using energy efficient products will be improved.
- 16.2 To further facilitate the public in choosing energy efficient appliances and raise public awareness on energy saving, the Government has introduced a mandatory Energy Efficiency Labelling Scheme (EELS) through the Energy Efficiency (Labelling of Products) Ordinance.
- 16.3 Under the mandatory EELS, energy labels are required to be shown on prescribed products for supply in Hong Kong to inform consumers of their energy efficiency performance. Five types of prescribed products covered in the mandatory EELS are room air conditioners, refrigerating appliances and compact fluorescent lamps, washing machines, dehumidifiers.

For Category 1 Washing Machines:

In relation to the IEC 60456 Standard

A1.1 Test Results and Data to be Reported

A minimum of five complete test cycles are required for each operating cycle being measured. The data to be reported are as below:

- (i) Name of cycle tested (i.e. wash programme for 60°C).
- (ii) Supply voltage at which measurements are made.
- (iii) Energy (kWh) consumed by the washing machine during the test. Kilowatt-hour are measured and reported to the second decimal place. The average of five or more tests is taken and reported as one value.
- (iv) Volume (litres) and temperature (°C) of the cold supply water used. Water measurement quantities are measured to 0.1 litre and the average of the five or more test measurements is reported to the nearest whole number of litres.
- (v) Temperature of supply water.
- (vi) Wash load (base load and soiled standard strips).
- (vii) Length of cycle, in minutes, to the nearest whole number.
- (viii) Suggested form in which data to be reported:

Cycle tested	Supply voltage during test	Washing machine operational energy	Total quantity of water used	Temperature of supply water	Wash load	Length of cycle
	(V)	W (kWh)	V_{tot} (litres)	t (°C)	(kg)	(min)
1.						
2.						
3.						
4.						
5.						
Average						

For Categories 2 Washing Machines:

**In relation to the
JIS C 9606 Standard**

A2.1 Test Results & Data to be reported

Results to be reported are not specified. However, a format similar to A1.1 is expected.

Example for Calculating the Energy Efficiency Grade

The given appliance is of Category 1 (i.e. drum type washing machine). The following data are measured according to the recommended standard:

Rated Washing Capacity (C)	8 kg
Energy consumption (E)	1.2 kWh
Specific energy consumption (Esp) = E / C	0.24 kWh/kg/cycle

From the Table 2 in Section 7, the Average Specific Energy Consumption (E_{av}) for Category 1 appliance is 0.26 kWh/kg/cycle:

Energy Consumption Index of the appliance I_{ε}

$$\text{where } I_{\varepsilon} = \frac{\text{Specific Energy Consumption}}{\text{Average Specific Energy Consumption}}$$

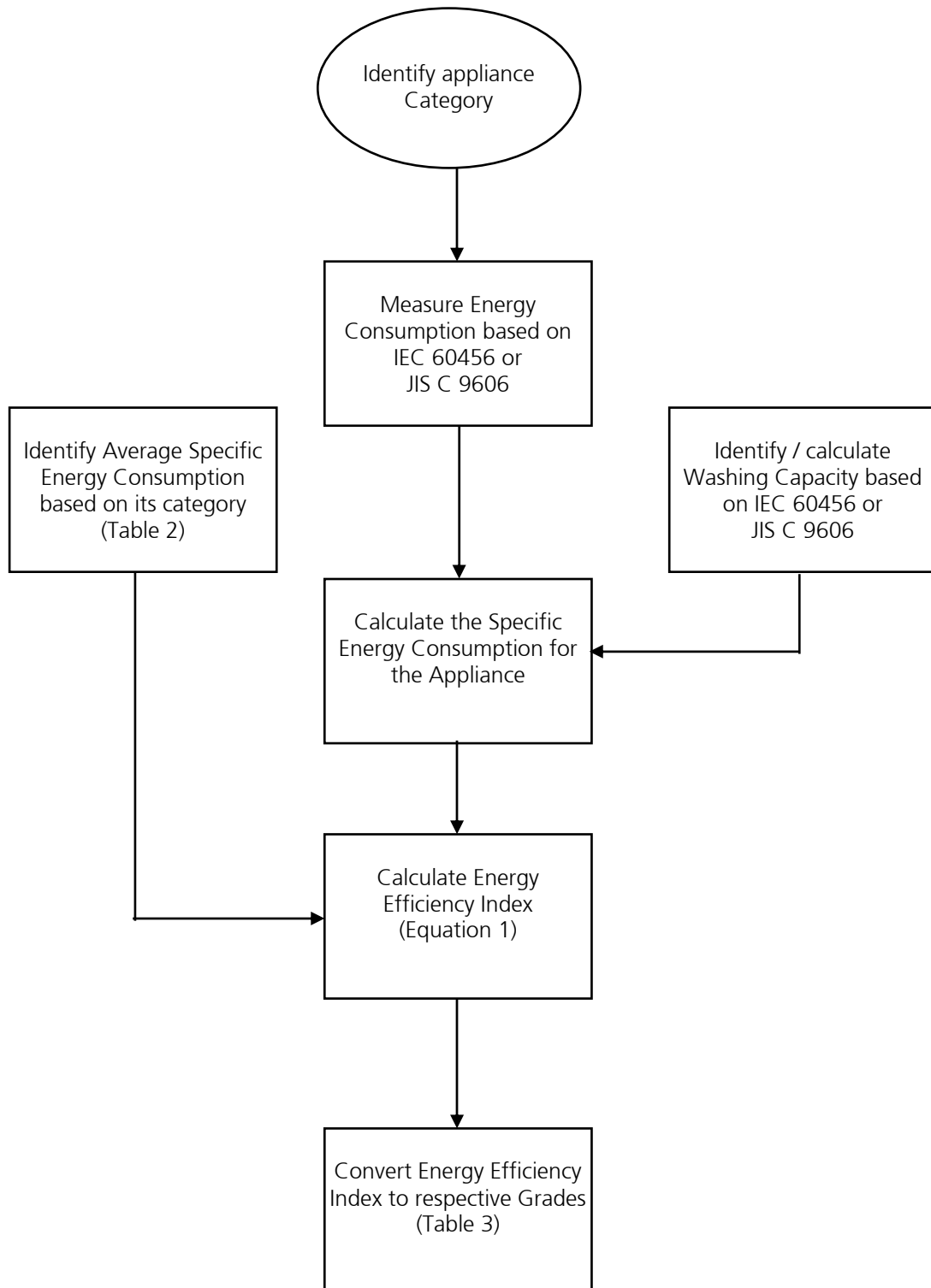
$$I_{\varepsilon} = \frac{E_{sp}}{E_{av}}$$

$$I_{\varepsilon} = \frac{0.24}{0.26}$$

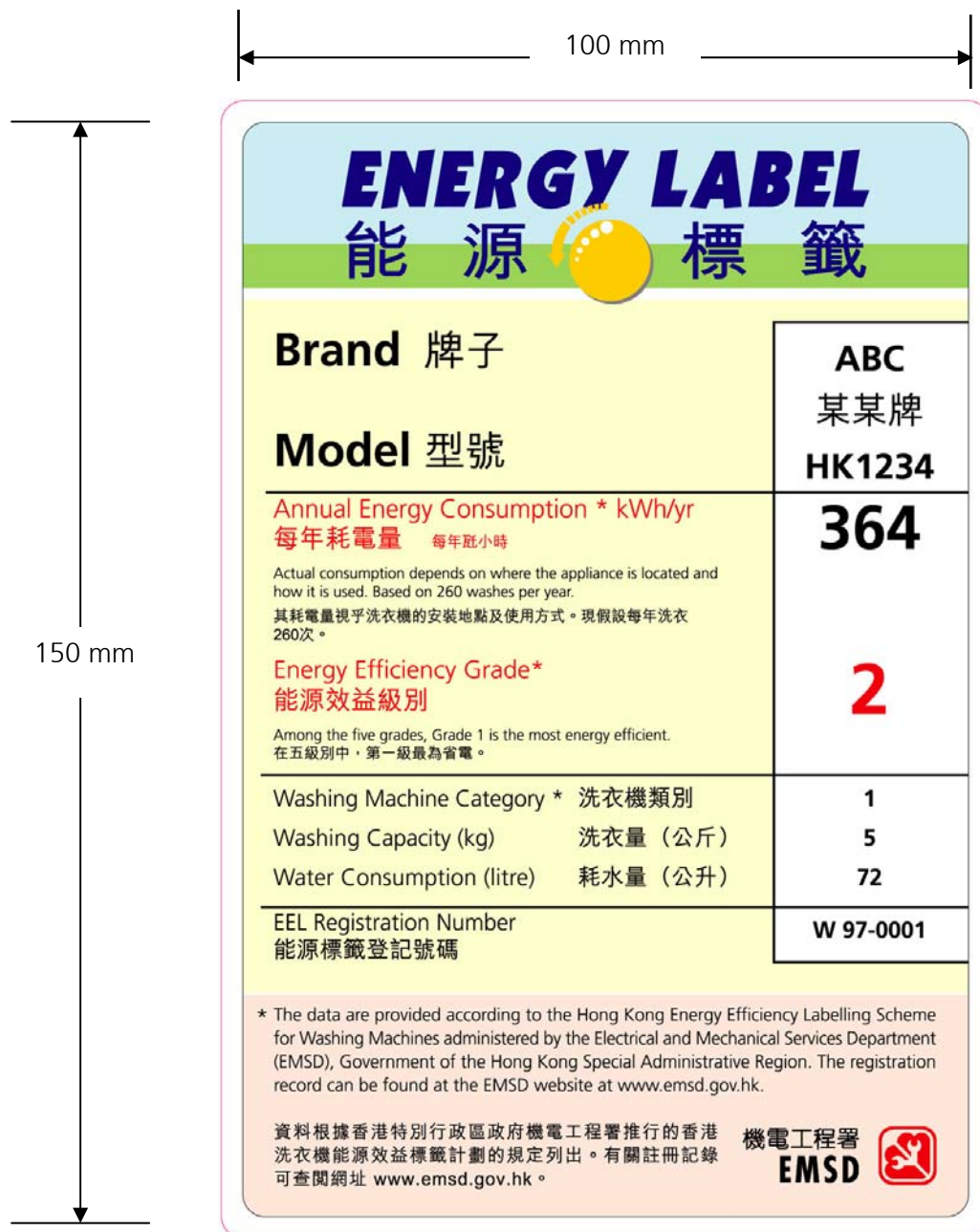
$$I_{\varepsilon} = 92.3 \%$$

$$80 < I_{\varepsilon} < 95 \%$$

The value of energy efficiency index of the appliance is 92.3%, which is more than 80% and less than 95%. According to the Table 3 in Section 8, it should be rated as **Grade 2** appliance.

Flow Chart for Developing the Appliance Energy Efficiency Grade

Energy Label Format




100 mm

150 mm

ENERGY LABEL


能源標籤



Brand 牌子	ABC 某某牌
Model 型號	HK1234
Annual Energy Consumption * kWh/yr 每年耗電量 每年班小時 <small>Actual consumption depends on where the appliance is located and how it is used. Based on 260 washes per year. 其耗電量視乎洗衣機的安裝地點及使用方式。現假設每年洗衣260次。</small>	364
Energy Efficiency Grade* 能源效益級別 <small>Among the five grades, Grade 1 is the most energy efficient. 在五級別中，第一級最為省電。</small>	2
Washing Machine Category * 洗衣機類別 Washing Capacity (kg) 洗衣量 (公斤) Water Consumption (litre) 耗水量 (公升)	1 5 72
EEL Registration Number 能源標籤登記號碼	W 97-0001

* The data are provided according to the Hong Kong Energy Efficiency Labelling Scheme for Washing Machines administered by the Electrical and Mechanical Services Department (EMSD), Government of the Hong Kong Special Administrative Region. The registration record can be found at the EMSD website at www.emsd.gov.hk.

資料根據香港特別行政區政府機電工程署推行的香港洗衣機能源效益標籤計劃的規定列出。有關註冊記錄可查閱網址 www.emsd.gov.hk。

機電工程署
EMSD 

Soft copy of this label can be obtained from Energy Efficiency Office, Electrical and Mechanical Services Department.

Proforma Letter of Invitation

Our ref. EEO/LB/03

Your ref.

Tel.

Fax.

Date

[Name and Address of
Manufacturers/Importers/Agents]

Dear Sir/Madam,

Invitation of Application for Registration to Participate in Voluntary Energy Efficiency Labelling Scheme for Washing Machines

Having gone through the necessary consultations and duly considered the views from various concerned parties, the government has decided to introduce a voluntary energy efficiency labelling scheme for washing machines to Hong Kong with effect from (_____). The details of the scheme^① have been finalized and I enclose herewith a guide of the scheme for your reference.

Being one of the major washing machine manufacturers / importers / agents^② in Hong Kong, you are invited to participate in the scheme so as to take part in promoting public awareness in energy conservation and environmental improvement to Hong Kong. If you are interested to participate in the scheme, please apply in accordance with the proforma letter of application (Annex 7) and submit details including technical information in accordance with the attached Annex 8 to the 'Chief Engineer / Energy Efficiency A' at the following address.

Energy Efficiency Office
Electrical and Mechanical Services Department
3 Kai Shing Street, Kowloon
Hong Kong

Please be reminded to submit accurate test data to support your application. Under this Scheme, routine compliance monitoring and checking will be performed and if a registered washing machine is found to be non-compliant, we may consider deregistering the washing machine from the Scheme.

Should you need further clarification or information, you are most welcome to contact the undersigned or Mr. _____, at the telephone number _____.

Yours faithfully,

for Director of Electrical & Mechanical Services

(Note : ^① 'scheme' means 'The Voluntary Energy Efficiency Labelling Scheme for Washing Machines')

^② delete as appropriate)

Information to be Submitted to Energy Efficiency Office

1. Information on the company:
Name, Address, Telephone number, Fax, E-mail, Contact person, Importer, Distributor, etc.

2. Product to apply for participating in the scheme:
Name of products, types, make, model references, countries of origin

3. Parties which will be responsible for making and fixing the Energy Label

4. Commencement date to affix Energy Labels on appliance
Year _____, Month _____

5. Completion of the Information stated in the Energy Label for each product including the following:
Brand (English & Chinese)
Model
Countries of origin
Appliance category
Annual energy consumption
Energy efficiency grading
Washing capacity
Water consumption

6. Supporting Technical Information and Calculations:

Test reports: Energy Consumption Test *
Performance Tests

(* For test reports which indicate the measured energy consumption is 10% more than the rate value, additional test reports for the same model may be required.)

Calculations: Specific energy consumption
Washing capacity, if by calculation
Energy consumption index
Energy efficiency grading

7. Miscellaneous Technical Information:

Product information catalogue
Information of driving motor
Brand and model of the reference washing machine
Others

8. Certificate of Safety Compliance prescribed by the Electrical Products (Safety) Regulation.

*Note: Company's name and chop should be stamped on the all documents provided.
All test reports submitted to the office should be certified true copy by appropriate organization.*

Proforma Letter of Acceptance

Your ref.
Our ref. EEO/LB/03

Tel:
Fax:

Date

[
Manufacturers/Importers/Agents
]

Dear Sir/Madam,

Acceptance of Application for Registration to Participate in Voluntary Energy Efficiency Labelling Scheme for Washing Machines

With reference to your letter of ref. _____ dated _____, I am pleased to inform you that your application to participate in the captioned scheme has been accepted.

I enclose herewith the registration certificates of washing machines registered. The registered washing machines are as follows :

<u>Brand/Make/Model</u>	<u>Registration No.</u>	<u>Effective date</u>
()	()	()

You are allowed to affix a specified energy label onto each and every appliance registered under the scheme. The contents of the energy label should be based on the information that you have provided in your application ref. _____ and dated _____.

Should you have any queries regarding the scheme, please contact this office.

Yours faithfully,

for Director of Electrical & Mechanical Services

Proforma letter of Rejection

Your ref.
Our ref. EEO/LB/03

Tel.
Fax.

Date

[
Manufacturers/Importers/Agents

]

Dear Sir/Madam,

Rejection of Application for Registration to Participate in Voluntary Energy Efficiency Labelling Scheme for Washing Machines

With reference to your letter of application ref. _____ dated _____, I regret to inform you that your application for registration to participate in the scheme has not been accepted for the following reasons:-

1. _____ etc.

You are most welcome to submit new application again in future, when you have the necessary documents / information to support your application.

Yours faithfully,

for Director of Electrical & Mechanical Services

Flow Chart for Registration

