

BCA Green Mark Certification Standard for New Buildings

Addendum No. 1

Effective from 1 September 2014

Applicable to GM Version 3.0

This Addendum shall be read in conjunction with the BCA Green Mark Certification Standard for New Buildings and shall form part of the Certification Standard.

Amendments to the BCA Green Mark Certification Standard

(1) Purpose of amendments

The purpose of the amendments is to allow alternative scoring methodology for meeting the criteria under 'RB 1-2 Dwelling Unit Indoor Comfort'.

(2) List of amendments

(a) Item 1-2(a)(i) under the 'RB 1-2 Dwelling Unit Indoor Comfort' in Table 5.3.8(a) on Page 8 of the Standard shall be replaced as provided below. Changes are highlighted in blue.

Table 5.3.8(a) : Residential Building Criteria

Part 1 - Energy Efficiency	Green Mark Points								
<p>RB 1-2 Dwelling Unit Indoor Comfort</p> <p>Enhance dwelling unit indoor comfort either through the provision of better efficient air-conditioners or good natural ventilation design.</p> <p>(a)(i) Use of energy efficient air-conditioners that meet the prescribed energy performance standards.</p>	<p>Extent of Coverage : At least 90% of the air-conditioners used in all dwelling units</p> <p>Air-conditioners labelled with :</p> <p>Two Ticks – 2 points Three Ticks – 6 points Four Ticks – 12 points</p> <p>OR</p> <table border="1" data-bbox="855 990 1391 1305"> <thead> <tr> <th data-bbox="855 990 1203 1077">Coefficient of Performance (COP) range</th> <th data-bbox="1209 990 1391 1077">Point Allocation</th> </tr> </thead> <tbody> <tr> <td data-bbox="855 1086 1203 1140">3.34 > Weighted COP ≥ 2.92</td> <td data-bbox="1209 1086 1391 1140">2</td> </tr> <tr> <td data-bbox="855 1149 1203 1225">COP_{100%} ≥ 3.06 & 3.76 > Weighted COP ≥ 3.34</td> <td data-bbox="1209 1149 1391 1225">6</td> </tr> <tr> <td data-bbox="855 1234 1203 1305">COP_{100%} ≥ 3.34 & Weighted COP ≥ 3.76</td> <td data-bbox="1209 1234 1391 1305">12</td> </tr> </tbody> </table>	Coefficient of Performance (COP) range	Point Allocation	3.34 > Weighted COP ≥ 2.92	2	COP _{100%} ≥ 3.06 & 3.76 > Weighted COP ≥ 3.34	6	COP _{100%} ≥ 3.34 & Weighted COP ≥ 3.76	12
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(b) Item 1-2(a)(i) under the 'RB 1-2 Dwelling Unit Indoor Comfort' on Page 32 of the Standard shall be replaced as provided below. Changes are highlighted in blue.

RB 1-2 DWELLING UNIT INDOOR COMFORT

Requirements	<p>For development with provision of air-conditioners</p> <p>Extent of coverage : At least 90% of air-conditioners used in all dwelling units.</p> <p>1-2 (a)(i) Up to 12 points can be scored for the use of the air-conditioners that are certified under the Singapore Energy Labelling Scheme based on the following rating.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #e0f7fa;">Rating</th> <th style="background-color: #e8f5e9;">Point Allocation</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">✓✓</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">✓✓✓</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;">✓✓✓✓</td> <td style="text-align: center;">12</td> </tr> </tbody> </table> <p style="text-align: center; margin-top: 20px;">OR</p> <p>Up to 12 points can be scored for the provision of air-conditioning system with Coefficient of Performance (COP) that meet the prescribed energy performance standards stated in the following Table 1-2.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr style="background-color: #546e7a; color: white;"> <th colspan="2">Table 1-2 – Prescribed Energy Performance Standards for Air-Conditioning System</th> </tr> <tr> <th style="color: #0070c0;">Coefficient of Performance (COP) range</th> <th style="color: #0070c0;">Point Allocation</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3.34 > Weighted COP ≥ 2.92</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">COP_{100%} ≥ 3.06 & 3.76 > Weighted COP ≥ 3.34</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;">COP_{100%} ≥ 3.34 & Weighted COP ≥ 3.76</td> <td style="text-align: center;">12</td> </tr> </tbody> </table> <p>Notes :</p> <p>(1) Coefficient of Performance or COP refers to the ratio of the total cooling capacity expressed in Watts to the total effective input power expressed in Watts, and as specified in the test report.</p> <p>(2) Weighted COP refers to the sum of 0.4 × COP at full-load cooling capacity and 0.6 × COP at part-load cooling capacity i.e. Weighted COP = 0.4 x COP_{100%} + 0.6 x COP_{50%}</p>	Rating	Point Allocation	✓✓	2	✓✓✓	6	✓✓✓✓	12	Table 1-2 – Prescribed Energy Performance Standards for Air-Conditioning System		Coefficient of Performance (COP) range	Point Allocation	3.34 > Weighted COP ≥ 2.92	2	COP _{100%} ≥ 3.06 & 3.76 > Weighted COP ≥ 3.34	6	COP _{100%} ≥ 3.34 & Weighted COP ≥ 3.76	12
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(c) Documentary evidence requirements for Item 1-2(a)(i) under the 'RB 1-2 Dwelling Unit Indoor Comfort' on Page 35 of the Standard shall be replaced as provided below. Changes are highlighted in blue.

Documentary Evidences	<p><u>For 1-2(a)(i) – For dwelling units with provision of air-conditioners</u></p> <ul style="list-style-type: none">• Extracts of the tender specification showing the types of air-conditioners provided for all dwelling units of the development;• Technical product information and schedule of air-conditioners showing the numbers, types and approved tick-rating as registered; and• Testing report endorsed by the testing laboratory showing the results of tests carried out in accordance with applicable test standards as prescribed in the Energy Conservation (Energy Labelling and Minimum Performance Standards for Registrable Goods) Regulation.
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