Accelerated Capital Allowances Eligibility Criteria

***Category:*** **Information and Communications Technology (ICT)**

# ***Technology:*** **Precision Cooling**

*ICT Precision Cooling is defined as equipment that is designed to efficiently and effectively remove heat from enterprise IT equipment. This includes the most efficient cooling units and ancillary items designed to provide direct cooling and aid heat removal from IT rooms and cabinets.*

**ICT Precision Cooling equipment is considered to include the following:**

**Refrigerant based equipment -**

Computer Room Air Conditioners

Computer Room Air Conditioners (CRAC) are up-flow and down-flow units that use a refrigerant supply from an outside condenser and provide overall area cooling. CRAC and applicable condensers are appraised as a system and can include relevant containment equipment[1].

Cooling Modules and Coolant Distribution Units (CDU)

Cooling Modules are units designed to provide localised cooling and may be connected directly, or via a CDU, to an outside condenser supplying the refrigerant. A CDU is a circulation system that is designed to distribute coolant to cooling modules. Refrigerant based Cooling Modules are appraised as a system which can include CDU and outside condensers.. All units can include relevant containment equipment.

**Water based equipment –**

Computer Room Air Handlers

Computer Room Air Handlers (CRAH) are up-flow and down-flow units that use a chilled water supply from a separate liquid chilling package to provide overall area cooling. CRAH are appraised as individual units and can include relevant containment equipment.

Cooling Modules and Coolant Distribution Units (CDU)

Cooling Modules are units designed to provide localised cooling and may be connected directly, or via a CDU, to a chilled water system. A CDU is a circulation system that is designed to distribute coolant to cooling modules. Water based Cooling Modules are appraised as a complete system which can include applicable CDU.. All units can include relevant containment equipment.

[1] Containment Equipment are proprietary systems designed to channel air flow within IT rooms and cabinets with the aim of preventing hot and cold air streams mixing.

## Eligibility Criteria Overview

In order to be included on the ACA Specified List, the specific Precision Cooling equipment must meet *all* of the relevant requirements set out below.

***Note:*** *Supporting documentation that clearly demonstrates ACA compliance according to the conditions below will be required as part of the ACA checking process. Detailed information on the types of documents accepted can be found in the separate Supporting Documentation guidelines.*

### General Eligibility Criteria

(Applicable to all Precision Cooling equipment)

| No. | Condition |
|---|---|
| 1. | All equipment and/or components must be CE marked as required by the specific EU directive(s). |
| 2. | Relevant equipment must meet the cooling performance criteria, measured by the Energy Efficiency Ratio (EER) of the unit at 100% (full load) capacity, as indicated in Table 1. |
| 3. | Relevant equipment must have a Sensible Heat Ratio, obtained according to EN14511 and the test conditions stipulated therein and below, greater than or equal to 0.9. |
| 4. | Each system must include the following optimisation functions:<br>• Optimise operating parameters to match changes in load requirements<br>• Where applicable, be capable of communicating with other control and cooling equipment for the purposes of system optimisation. |

### CRAC specific Eligibility Criteria:

(To be met in addition to the general eligibility criteria)

| No. | Condition |
|---|---|
| 5. | Compressors must have Variable Speed Drive control. |
| 6. | EER values must be obtained according to appropriate test conditions included in EN14511 & EN14511-2 Table 4 "Standard Rating Conditions, Close Control", or scientific equivalent, as follows:<br>• Indoor Unit - Air entering 24°C Dry Bulb, 17°C Wet Bulb.<br>• Outdoor Unit - Air entering 35°C Dry Bulb, 24°C Wet Bulb. |

### CRAH specific Eligibility Criteria:

(To be met in addition to the general eligibility criteria)

| No. | Condition |
|---|---|
| 7. | EER values must be obtained according to appropriate test conditions included in EN14511 & EN14511-2 Table 6 & 8 "Standard Rating Conditions, Close Control" & Table 8 "Standard Rating Conditions, Water to Water", or scientific equivalent, as follows:<br>• Indoor Unit - Air entering 24°C Dry Bulb, 17°C Wet Bulb.<br>• Indoor Unit – Water entering 7°C, leaving 12°C. |

**Cooling Module & CDU specific Eligibility Criteria:**
(To be met in addition to the general eligibility criteria)

| No. | Condition |
|---|---|
| 8. | A means of maintaining the temperature of coolant loops above the dew point temperature in order to prevent condensation. |
| 9. | Compressors (if applicable) must have Variable Speed Drive control. |
| 10. | For refrigerant based equipment, EER values must be obtained according to appropriate test procedures outlined in EN14511, or scientific equivalent, and for test conditions as follows:<br>• Cooling Module - Air entering 37°C Dry Bulb, 20°C Wet Bulb.<br>• Outdoor Unit - Air entering 35°C Dry Bulb, 24°C Wet Bulb.<br>Or<br>For water based equipment, EER values must be obtained according to appropriate test procedures outlined in EN14511, or scientific equivalent, and for test conditions as follows:<br>• Cooling Module- Air entering 37°C Dry Bulb, 20°C Wet Bulb.<br>• Cooling Module/CDU – Water entering 7°C, leaving 12°C. |

**Table 1.:** Energy Efficiency Ratio (EER) requirements for cooling systems:

| Type | EER |
|---|---|
| CRAC | ≥3 |
| CRAH | ≥20 |
| Cooling Module and CDU - Refrigerant based | ≥2.0 |
| Cooling Module and CDU - Water based | ≥20 |

**Where:**

$$\text{Energy Efficiency Ratio (EER)} = \frac{\text{Total cooling capacity (kW)}}{\text{Effective power input (kW) in cooling mode.}}$$

---------- End of ACA eligibility criteria ----------
Please see next section for technical detail submission and supporting documentation guidance

***The following information is not part of the official criteria document published within the relevant statutory Instrument; it has been added here for guidance purposes only in order to provide assistance with the submission of product details and the provision of the required supporting documentation.***

***Note:*** *All information contained within this guidance document is subject to change without notice*

## Technical information required in product submission

The following are the specific technical values required as part of the product submission for this technology:

### Precision cooling product type

As part of the product submission you must first select which type of precision cooling unit your product is. Only one type can be chosen per product.

### EER

The EER for the product is required as a value for the product submission. It must be entered as number only without units. There should also be no spaces or full stops after the number submitted. The figure must comply with the criteria requirements for minimum EER values.

### SHR

For CRACs and CRAHs the SHR for the product required as a value for the product submission. It must be entered as number only without units. There should also be no spaces or full stops after the number submitted. The figure must comply with the criteria requirements for minimum SHR values.

## Supporting documentation required

Described below is the list of documents that are accepted as proof of compliance for the specific ICT Precision Cooling Equipment condition.

**Note: This information will only be requested AFTER you submit your product's basic details online**

**<u>Important Notes to Product Providers</u>**
**Please ensure that you read the "Important Notes to Product Providers" section at the end of this document prior to submitting documentation.**

**General Eligibility Criteria**
(Applicable to all Precision Cooling equipment)

| No. | Condition | Supporting Documentation Requirement |
|---|---|---|
| **1.** | All equipment and/or components must be CE marked as required by the specific EU directive(s). | Official and published manufacturer's technical data sheet or brochure that demonstrates CE marking compliance.<br><br>**OR**<br>A copy of an official signed declaration on headed paper which confirms CE marking compliance.<br><br>Official declarations should explicitly state the product for which CE marking is being confirmed (i.e. do not provide a letter simply stating general compliance with the relevant ACA Condition).<br><br>Where a document is used to demonstrate conformance for a number of products or range of products it should clearly specify each individual product covered by that document. |
| **2.** | Relevant equipment must meet the cooling performance criteria, measured by the Energy Efficiency Ratio (EER) of the unit at 100% (full load) capacity, as indicated in Table 1. | Official and published manufacturer's technical data sheet or brochure that shows the energy efficiency ratio (EER) of the precision cooling unit at full load capacity conforms with the specified value in Table 1. |
| **3.** | Relevant equipment must have a Sensible Heat Ratio, obtained according to EN14511 and the test conditions stipulated therein and below, greater than or equal to 0.9. | Official and published manufacturer's technical data sheet or brochure that shows the Sensible Heat Ratio (SHR) is greater than or equal to 0.9.<br><br>An official memorandum on headed paper is required if SHR values are not explicitly stated on datasheets but latent heat and sensible heat values are. In this case, the memorandum should detail the calculation and use the equation<br><br>Sensible Heat Ratio = Sensible Heat / Latent Heat<br><br>The memorandum should clearly reference the source of all figures used in the calculation and also supply the source material being referenced in the memorandum.<br><br>**NB**: SEI may request test reports to demonstrate where the data used to calculate the SHR has been derived. |

| No. | Condition | Supporting Documentation Requirement |
|---|---|---|
| 4. | Each system must include the following optimisation functions:<br>• Optimise operating parameters to match changes in load requirements<br>• Where applicable, be capable of communicating with other control and cooling equipment for the purposes of system optimisation. | Official and published manufacturer's technical data sheet or brochure that demonstrates compliance with the requirements of the condition. |

| Component List |
|---|
| The component list contains details and part numbers of any ancillary equipment that may be supplied to a customer as an additional component to the overall submitted system. It must be formatted according to the ACA component list template.<br><br>When components are detailed in a component list, reference must be made to official and published brochures or data sheets where these components are described. These brochures/datasheets must then be supplied in addition to the component list. |

**CRAC specific Eligibility Criteria:**

(To be met in addition to the general eligibility criteria)

| No. | Condition | Supporting Documentation Requirement |
|---|---|---|
| 5. | Compressors must have Variable Speed Drive control. | Official and published manufacturer's technical data sheet or brochure that demonstrates compliance with the requirements of the condition. |

| No. | Condition | Supporting Documentation Requirement |
|---|---|---|
| **6.** | EER values must be obtained according to appropriate test conditions included in EN14511 & EN14511-2 Table 4 "Standard Rating Conditions, Close Control", or scientific equivalent, as follows:<br>• Indoor Unit - Air entering 24°C Dry Bulb, 17°C Wet Bulb.<br>• Outdoor Unit - Air entering 35°C Dry Bulb, 24°C Wet Bulb. | Accredited certification that the product complies with EN14511 & EN14511-2 Table 4 "Standard Rating Conditions, Close Control" and for test conditions as follows:<br>• Indoor Unit - Air entering 24°C Dry Bulb, 17°C Wet Bulb.<br>• Outdoor Unit - Air entering 35°C Dry Bulb, 24°C Wet Bulb.<br><br>**OR**<br>Evidence of official testing by manufacturer or independent test lab carried out according to the principles outlined in the standard and conditions above. Test reports should be of the format described in the 'Important notes to Product Providers' section of this document.<br><br>See note on 'Scientific Equivalence' in the Important notes to Product Providers section of this document. |

**CRAH specific Eligibility Criteria (continued)**
(To be met in addition to the general eligibility criteria)

| No. | Condition | Supporting Documentation Requirement |
|---|---|---|
| **7.** | EER values must be obtained according to appropriate test conditions included in EN14511 & EN14511-2 Table 4 "Standard Rating Conditions, Close Control", or scientific equivalent, as follows:<br>• Indoor Unit - Air entering 24°C Dry Bulb, 17°C Wet Bulb.<br>• Indoor Unit – Water entering 7°C, leaving 12°C. | Accredited certification that the product complies with EN14511 & EN14511-2 Table 6 & 8 "Standard Rating Conditions, Close Control" & Table 8 "Standard Rating Conditions, Water to Water" and for test conditions as follows:<br>• Indoor Unit - Air entering 24°C Dry Bulb, 17°C Wet Bulb.<br>• Indoor Unit – Water entering 7°C, leaving 12°C.<br>**OR**<br>Evidence of official testing by manufacturer or independent test lab carried out according to the principles outlined in the standard and conditions above. Test reports should be of the format described in the 'Important notes to Product Providers' section of this document.<br><br>See note on 'Scientific Equivalence' in the Important notes to Product Providers section of this document. |

**Cooling Module & CDU specific Eligibility Criteria:**
(To be met in addition to the general eligibility criteria)

| No. | Condition | Supporting Documentation Requirement |
|---|---|---|
| **8.** | A means of maintaining the temperature of coolant loops above the dew point temperature in order to prevent condensation. | Official and published manufacturer's technical data sheet or brochure that demonstrates compliance with the requirements of the condition. |
| **9.** | Compressors (if applicable) must have Variable Speed Drive control. | Official and published manufacturer's technical data sheet or brochure that demonstrates compliance with the requirements of the condition. |
| **10.** | For refrigerant based equipment, EER values must be obtained according to appropriate test procedures outlined in EN14511, or scientific equivalent, and for test conditions as follows:<br>• Cooling Module - Air entering 37°C Dry Bulb, 20°C Wet Bulb.<br>• Outdoor Unit - Air entering 35°C Dry Bulb, 24°C Wet Bulb.<br>**OR**<br>For water based equipment, EER values must be obtained according to appropriate test procedures outlined in EN14511, or scientific equivalent, and for test conditions as follows:<br>• Cooling Module- Air entering 37°C Dry Bulb, 20°C Wet Bulb.<br>• Cooling Module/CDU – Water entering 7°C, leaving 12°C. | 1. For refrigerant based equipment:<br>Accredited certification that the product complies with EN14511and for test conditions as follows:<br>• Cooling Module - Air entering 37°C Dry Bulb, 20°C Wet Bulb.<br>• Outdoor Unit - Air entering 35°C Dry Bulb, 24°C Wet Bulb.<br>**OR**<br>Evidence of official testing by manufacturer or independent test lab carried out according to the principles outlined in the standard and conditions above. Test reports should be of the format described in the 'Important Notes to Product Providers' section of this document.<br>2. For water based equipment<br>Accredited certification that the product complies with EN14511and for test conditions as follows:<br>• Cooling Module- Air entering 37°C Dry Bulb, 20°C Wet Bulb.<br>• Cooling Module/CDU – Water entering 7°C, leaving 12°C.<br>**OR**<br>Evidence of official testing by manufacturer or independent test lab carried out according to the principles outlined in the standard and conditions above. Test reports should be of the format described in the 'Important Notes to Product Providers' section of this document.<br>See note on 'Scientific Equivalence' in the Important notes to Product Providers section of this document. |

# Important Notes to Product Providers

**General**

There should be a clear link between all supporting documentation supplied and the product being submitted. This will typically take the form of a product code or product name that can be cross referenced between the submitted product and relevant supporting documentation. If product codes / names have been changed since publication of the supporting documentation, then official evidence of this must be provided with the supporting documentation supplied.

Any deviation from these requirements will result in the supporting documentation not being considered adequate for the purposes of demonstrating compliance with the criteria conditions. This will in turn delay the submission and/or result in the product not being considered eligible.

Where the ACA criteria or help documentation reference compliance to appropriate rather than specific standards, the onus is on the product provider to ensure that supporting documentation supplied references recognised standards that apply to the submitted product, i.e. the product must be covered under the scope of a recognised standard.

If any product submitted is later found not to meet the performance or specification criteria, then this product will cease to be considered eligible for the ACA.

**Note:** When supplying the supporting documentation through the online process you must ensure that the correct page number(s) of the document is referenced when compliance with the relevant condition is being demonstrated. An explanatory note should also be given where more than one page number is referenced.

**Test Report**

A test report must comprise of the following elements:
An outline of the complete test including introduction, details on test conditions, the specific model details of the product tested, the steps taken in the test, the results, graphical representations, and a conclusion. All documents should be on headed paper and the document should be officially signed off. **All documentation must be in English,** or include adequate translation.

**Certification**

Where certificates are provided, all tests must be carried out by an organisation that is accredited by a national accreditation body recognised via the European Cooperation for Accreditation (preferred) or the International Accreditation Forum. . **All documentation must be in English,** or include adequate translation.

**Scientific Equivalence**

Some ACA criteria conditions allow for scientifically equivalent tests and/or standards to be used. In the event that a product has not been designed, manufactured or tested to the specific standard named, then documentation relating to an equivalent internationally recognised standard may be used (where the phrase 'Or scientific equivalent' is included in the ACA condition or help documentation). In such applications, the onus will be on the product submitter to demonstrate satisfactory equivalence of the

standards. However, submissions which reference such supporting documentation may take longer to process, and if the product provider does not provide satisfactory evidence of equivalence, then the product will not be considered eligible for the ACA. **All documentation must be in English,** or include adequate translation.

**Note:** Where specific standards are cited in a condition or in the ACA help documentation, then documentation demonstrating that the relevant products have been designed, manufactured or tested to these specific standards is preferred. Scientific equivalence is considered the exception rather than the norm.

**Representative testing**

Where test information is required for a range of technically similar products (e.g. configurations of one base product) then in exceptional instances a form of representative testing may be utilised once agreed in advance with SEI. Such testing is where only representative products are tested from a technically similar group or range of products. Provided a clear correlation can be demonstrated between the tested product and technically similar non-tested product, and that such a correlation clearly demonstrates the compliance of the non-tested product, representative testing may form an acceptable basis for supporting documentation.

**Note:** Where representative testing is used for a group or range of products, if the tested or representative product is removed from the list of eligible products then all related products are also removed.