

Working document on possible ecodesign and energy labelling requirements for room air conditioning appliances, local air coolers and comfort fans.

Comments in preparation of the consultation forum of 22 June 2009

Brussels, 24 August 2009

Attn: Mr Gronroos-Saikkala
CC: Mr Brisaer, Mrs Lichtenvort, Mr Rivière, Mr Kemna, Mr Kolb, Mr De Wilt

Dear Mr Gronroos-Saikkala,

Herewith you can find the initial comments of the *European Partnership for Energy and Environment* (EPEE)¹.

We have reviewed the working document and the additional calculation sheet. We appreciate very much the fact that a lot of findings from the study have been reflected in this working document.

However we are surprised to see that the working document has already been distributed but task 8 of the preparatory study is still tentative and the final report has not been published yet.

During the process, we made efforts to follow the direction that the commission has given, to work parallel on standardisation and EUP, in order to get the standards in line with EUP. In this respect, we have made sure that the standards are under preparation and are ready to align with EUP. This work is done in TC113 WG07. Now we see that in an effort from the commission to have maximum alignment with EUP lot 1, the core calculation for determining the seasonal performance of air conditioners has been changed and sent out for review without prior consultation with Industry, although during the study phase it was commented as non realistic to make too strong links with lot 1. The commission needs to be aware that the calculation as agreed within the preparatory study of EUP lot 10 (final draft task 8 of march 2009) has been the result of long work, from the consultant, the involved test houses and Industry, and even has been passed on into the standardisation process. We regret to see that the current proposed document does not rely on these efforts.

In general we wish to emphasize that the typical characteristic of each EUP and EPBD needs to be maintained and we prefer to have a “product approach (generator approach)” for assessing the performance in view of EUP, rather than complete application performance considering buildings and building losses which is an aspect that needs to be dealt with in EPBD. As industry we understand that the establishment of the regulation is most important. As such we insist to consider the comments below as way to establish the regulation in a short term. A too complex and non proven and non transparent method may raise too many doubts and as such is not successful.

Herewith you can find a summary of our main comments:

1. The minimum efficiency requirements have to be aligned with the task 8 report (march 2009). Furthermore, requirements should be based on the capacity of the appliance.
2. The calculation method should be completely in line with task 8 report. Applying fixed sizes in the calculation (S, M, L; ...) is not relevant and should be abandoned. The calculation needs to be transparent and comprehensive.
3. The timing between the implementing measures should be increased. Re-design cycles of 5 years have to be considered.
4. The energy label should be clear and easy to understand for the enduser.

1. The European Partnership for Energy and the Environment (www.epeeglobal.org) was formed in September 2000 to represent the interests of the air-conditioning, heat pump and refrigeration industry. Our central mission is to contribute to the development of effective European policies which have the aim to reduce greenhouse gas emissions from the use of refrigerants.



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and the Environment

5. Product information should clearly specify the function, RAC, LAC, on the product. Clear definition of LAC is essential.
6. Clear definition of Pdesign is required. It needs to be clarified to assure a level playing field.
7. Tolerances should be clarified.
8. Test points should be limited.
9. Support of TEWI approach for calculation of the CO₂ emission indicator and consideration for additional class for hermetically sealed appliances for airconditioners and reversible heatpumps.
10. Self declaration should be supported by strong market surveillance to avoid free riders.
11. Clear definitions have to be maintained.

We trust that the information contained in this position paper will be of relevance and interest to you. Should you have any questions or require any additional input, please do not hesitate to contact us.

Yours sincerely,

Friedrich P Busch
Director General - EPEE

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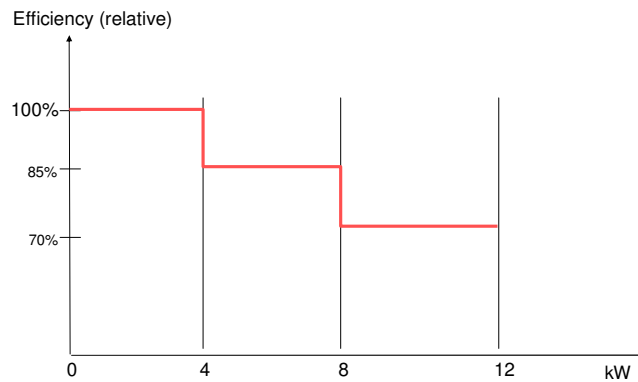
1. The minimum efficiency requirements have to be aligned with the task 8 report.

The minimum efficiency requirements specified in this working document are even more ambitious than the proposed measures in task 8 of the preparatory studies. Please explain about the data and your conclusions from this data that led to the increase of “Minimum energy efficiency performance requirements”.

The present minimum requirements are based on energy use reduction scenarios that do not take into account the fact that heatpump technology has a beneficial effect on primary energy use and CO₂-reductions, in replacing conventional and electric heating systems. This is not well reflected and explained in the study, and now is also neglected in setting minimum efficiency requirements.

Appliances with higher capacity classes are restricted in improving energy efficiency due to building constraints. As such the measures should incorporate these differences in the implementing measure. Japanese Law is set up to consider these technical differences, and should be taken as an example to set up minimum efficiency requirements. In general, a difference in efficiency of 15% should be considered for each capacity step.

We propose to apply the following scenario:



This results in following minimum efficiency requirements:

		0-4kW	4-8kW	8-12kW
SEER	3 years	3.6	3.1	2.6
	8 years	4.3	3.7	3.1
SCOP	3 years	3.2	2.7	2.3
	8 years	3.5	3.0	2.5

exact values will be proposed later after calculation method is fully established.

Furthermore, for LAC, lower requirements have been set. The difference between the basecase and the minimum efficiency requirement for RAC is about 160%, while for LAC, this difference is 120%. We feel that the same relation between the basecase and RAC should be applied as for LAC. The difference between the requirements for LAC and RAC and as such the price level will become too different and may lead to misuse of LAC equipment for RAC applications. Consequently the total energy use will increase instead of reducing. Measures need to be taken to avoid this misuse as much as possible.

Furthermore, the minimum efficiency requirements are based on values from Eurovent database, and these declared values have tolerance included. This tolerance has been neglected when

defining the minimum efficiency requirements and as such the present minimum efficiency requirements should by definition be reduced to compensate for this tolerance.

2. The calculation method should be completely in line with task 8 report.

EPEE fully supports the fact that 3 climates are considered for calculating the efficiency of room airconditioners. Products optimised for warm or cold climate may not pass the minimum efficiency requirement on average climate but may be the best solution for that particular climate.

As pointed out in the introduction, EPEE has participated continuously throughout the study to ensure that the calculation of performance is correct and transparent. During the study we found it reasonable to apply the calculation as proposed in final draft of task 8 (march 2009). The negotiations on this calculation originate from **standardisation (TC113WG7, prEN 14825)**, and have been continued during the preparatory study, from which the result is now to be fed back into the standard. Main goal is to ensure that this standard is ready for use once the implementing measure enters into force. During the current process of evaluating the collated comments TC113WG7 already decided to revise the calculation method to the method introduced from Task 8 (version March 09).

EPEE welcomes the introduction of a tool to simplify the handling of the SCOP/SEER calculation. The present calculation tool has been evaluated and to some extent the calculation matches the task 8 report, although it is by far less transparent and needs extended study to be understood. We recommend to have a transparent calculation method. We are disappointed that the process as recommended by the commission is not respected in the last phase of the process.

If the new proposal need to be considered again by the industry we need more time to evaluate this calculation, together with the impact on efficiency for our products in relation with the proposed measures. The proposal is unnecessary complex and not transparent by using COP values instead of power input and power output. This has even lead to mathematical mistakes in the first proposal made. The seasonal efficiency calculation has to be calculated by dividing the total seasonal load by the total seasonal input. Simple weighting and averaging of COP is not correct and gives errors.

This is one of the points that have been discussed over the last 2.5 years to get this calculation in good order.

It is however not acceptable to include fixed sizes into the calculation tool. Current calculation is still assuming a predetermined load to evaluate equipment performance. However, we believe heating or cooling load should be assumed according to capacity of equipment, so equipment can be evaluated fairly. Current calculation (tool) may give the impression to be appropriate for EPBD calculation, but it gives disadvantages to equipment with mid-capacity of two predetermined load. All equipment should be evaluated with equally optimized conditions, but the current tool does not give equal optimization to equipment depending on capacity.

EPBD should control and define the efficiency of the product fitted into particular buildings. In addition, the sizes have no added value for the energy label, as the enduser will not comprehend what it means. The Energy Label should be fit for comparison and easy reading. Differentiation in sizing is not relevant and should be abandoned. It makes the calculation too complex while there is no proven merit for it. As it will be used for future developments to optimise the equipment performance, this complex method will need development power that can better be used. This method will be counterproductive and will give the false image of the energy label.

The draft of pr EN14825 clearly distinguishes between reference and application values with the definitions mentioned hereafter:

3.11

Reference SEERon (SCOPon)

The SEERon (SCOPon) determined from mandatory conditions that is used for marking, comparison and certification purposes

Note: These mandatory conditions represent the average conditions of use for Europe.

3.12

Application SEERon (SCOPon)

The SEERon (SCOPon) that takes into account the specific application and the specific location of the system, which are different from the ones used for determining the reference SEERon (SCOPon) given in this standard.

The application SEER can take into account:

The actual building, the actual location and the actual user behaviour (temperature settings etc.).

But this calculation is specific and much too extensive to be performed for labeling use and should be done only for local EPBD design.

The calculation introduced in the working document is not a true EPBD calculation as it is only considering nine load profiles and therefore assumes that all houses in Europe, from Sweden to Cyprus and Ireland to Romania can be fitted into one these categories.

As EPBD is an Article 175 directive, it's interpretation can differ in between member states. Therefore the current calculation can not fit to this purpose and will lead to miscalculations and wrongly applied units.

The degradation factor introduced in the working document is based on a different concept and is not correct. The former method for degradation factor calculation in task 8 has to be maintained.

As the evaluation of the degradation factor has been studied indeep by numerous experts from industry and test houses from around the world and the result of this process was inducted into pr EN14825, we are wondering why this point was discussed again in the present document.

Please inform about the scientific background, that let to your different interpretation of determining this factor.

The present working document requires that the degradation factor needs to be tested for all appliances. It is not possible for small capacity ranges to test at such a low capacity. The tolerance on measurement would be too large, and as such, a standard value is as appropriate, even more stringent than the tested value. prEN 14825 has provided adequate provisions for these technical difficulties by defining a standard value for the Cd factor of 0.25 based on the conventional method and and this should as such be considered when defining such requirements.

Other comments of concern on the calculation

- The P_{design} understood by the calculation tool (linked with the sizes) is different than the P_{design} applied in the working document.
- The calculation tool assumes that maximum capacity values are completed, while for inverter technology, this is not suitable.
- Passive mode testing and calculation are not consistent
- Ambient temperature capacity and load should have one clear correlation. Current working document changes this correlation easily, but proper prediction of performance with different load is not that simple and easy.
- The turndownratio is not correctly used in relation to the input values. If minimum capacities are completed in the calculation tool (what is usually done for calculating the efficiency of the product), then turndownratio is of no use.
- Understanding how to complete the tool is not the same from author side and manufacturers side.

3. The timing between the implementing measures should be increased.

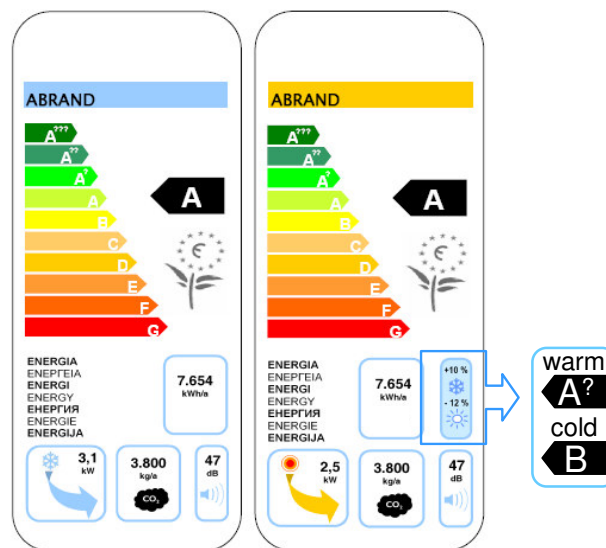
2 years is not considering the redesign-cycles of the appliances, and do not allow the market to settle on the improvements.

Our proposal is to foresee at least 5 years inbetween measure, in line with the re-design cycles stated in the task 8 report.

4. The energy label should be clear for the enduser

- The symbols chosen for warm and cold climate are not clear it is easy to misread it, for example “when it snows, the appliance uses more energy”
- The symbol for cold climate is confusing with the label for cooling where the snowcrystal is used for cooling but also for cold climate
- For climates, we propose to indicate the energy label indication instead of percentages. It is a stronger message to the consumer and easy to understand.
- The working hours should be indicated with the CO₂ emission indicator.
- The sizes S, M, L etc should be removed from the label.
- The noise label should be indicated for both indoor and outdoor part of the product.
- Provision should be made for multisplit appliances that only certain standard combinations have to be labeled, and that the information of the label for other combination possibilities are reflected in the product information by means of combination tables.
- The energy label should be designed as such that all variable data can be added on a strip. In the present format, this is not possible.
- The amount of kWh/a is derived from seasonal function, not from a yearly viewpoint. This might be confusing for the endusers.

In following figure you can find a proposal for indicating the climate



5. Differentiation with LAC

Window and double ducted systems have the same functionality as RAC and should be submitted to the same minimum efficiency requirements. If a product is promoted as RAC, it should be subjected to RAC requirements.

Next to that, the function of the appliance, if it is a LAC or RAC has to be clearly specified on the product, energy label, and product information.

This is a requirement that will enhance market surveillance, and also allow the consumer to clearly understand the appliance.

As already mentioned under paragraph 1 this may lead to misuse of LAC equipment for RAC applications.

6. Clear definition of P_{design} is required.

P_{design} is considered to be the declared heating capacity between -7°C and 2°C . What value needs to be declared has to be clearly specified.

As industry we wish to have a more clear definition, as such we will make a definition soon.

7. Tolerances

It should be clarified what is the meaning of the tolerances. The correlation between tolerance and uncertainty of measurement should be clearly defined.

The tolerance of 8% should be evaluated from the declared value from the manufacturer, which takes into account his own measurement uncertainty. The laboratories testing the appliance have to take into account their own uncertainty of measurement when assessing compliance of the product.

Following example illustrates our point, and we would like to ask if this is the same understanding:

The Manufacturer declares:	10.2 kW	
Tolerance on the declared Value is 8%:	9.38 kW minimum acceptable capacity	
The Lab measures:	9.0kW	
Measuring accuracy of lab:	5%	
The maximum possible unit Performance taking into account measuring accuracy:	9.45kW	
Result:	9.45 > 9.38	Unit will pass!

Please clarify in the legal text how this tolerance has to be evaluated.

Furthermore, the standard EN 14511 and ISO 5151 are specified but are not the same and apply different methodology. EN 14511 is the appropriate standard to refer to in case of European legislation.

8. Testing

It is presumed that 4 points have to be tested, however these values need to be considered as declared values, where the manufacturer chooses to test one or more of these 4 points and calculates the other. Not necessarily all points are tested since the other points may be determined by interpolation.

Also for series of similar models, it is not required to test all products in detail, performance can be predicted precisely without testing from data of other model in the same series.

The test methods prescribed are not in line with prEN 14825, and should be included. prEN 14825 is for the moment in draft but specifies how to test appliances for part load conditions. This draft should be considered when defining this implementing measure.

9. Carbon emission indicator

EPEE fully supports the fact that the carbon emission indicator is based on TEWI values.

We do recommend to add, in view of the present F-gas definition a classification for hermetically sealed appliances as well. In this case, the leakage rate of the appliance is 1%, and 1% should be taken into account for calculating the carbon emission indicator.

The refrigerant charge should be clearly defined. Sometimes RAC products are charged on site, so it should be clarified what refrigerant charge has to be taken into account. We propose to use the refrigerant charge as defined according to EN 14511 (refrigerant charge considering standard piping (length)).

In case of reversible RAC, the leakage rate for appliances is estimated over 1 year, but the indicator is calculated for cooling and heating function. As such, the leakage rate has to be attributed on a time-weighted base for cooling and heating.

10. Noise requirements

EPEE is not supporting the fact that noise requirements have been set. Showing the noise levels on the energy label is in principle enough since the market will create the necessary demand to reduce the noise levels as far as possible.

If anyhow the noise requirements remain, we have to consider the technological issues for bigger capacity classes. We propose to define minimum efficiency requirements as follows:

Sound power level	RAC					
	≤ 4 kW		4 - 8 kW		8 - 12 kW	
	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor
Db-A (EN 12102)	60	65	65	70	70	75

11. Self declaration

EPEE supports the fact that self declaration has been proposed as the method for compliance with this proposal of implementing measure.

Nevertheless, we would like to emphasize that strong market surveillance has to be set in place to avoid free riders on the market.

12. definitions need to be clear

The definition of **nominal cooling capacity** has to be changed: maximum cooling output has to be changed to “declared” cooling output. This is in line with the present European standards.

Window and double duct products have to be categorised as room airconditioners and comply with the requirements. Otherwise market shift may occur to produce more of these products, since efficiency requirement is much lower. Technically, these products are room airconditioners.

We also recommend to use the definitions applied in 14511 to align the definitions.

Also, these products should have the same labelling classes to avoid consumer misunderstanding that these appliances appear to be more efficient than room airconditioners (while in reality these are not more efficient)

13. Other comments

- Noise requirements for LAC are set in line with the outdoor requirements of RAC. However these appliances are always used indoors and hence need to have the same indoor requirements as RAC.
- It is not clear in the working document, due to editing, whether multisplits are in scope and considered RAC or not.
- The full load hours in average and warm climate are the same, however this seems to be incorrect. Please correct or clarify.
- Terminology and abbreviations used should be more clear: for example,
 - a. RES for resistive heating is confusing in view of RES-directive.
 - b. Binlimit is not the correct term, the binlimit reflects the minimum operation range of the product. Our proposal would be to change binlimit to minimum operation range.

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