



**ANTICSS Project
Deliverable D8 (D3.1):**

**Definition of 'circumvention' and
'jeopardy effects' in relation to
EU Ecodesign and Energy labelling
legislation**

**R. Stamminger, C. Pakula (UNIVERSITY OF BONN)
K. Graulich, I. Rüdener (OEKO-INSTITUTE)**

June 2019



**Horizon 2020 programme
Project acronym: ANTI-CSS
Project full name:**

ANTI-Circumvention of Standards for better market Surveillance



Co-funded by the Horizon 2020
Programme of the European Union

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement Number 780122.
The sole responsibility for the content of this document lies with the authors. It does not necessarily reflect the opinion of the European Union.
Neither the EASME, nor the European Commission are responsible for any use that may be made of the information contained therein.





Project Title	Anti-Circumvention of Standards for better market Surveillance
Deliverable Title	D8 (D3.1) Working paper with definition of circumvention
Due Date for Deliverable:	30.06.2019
Actual Submission date:	28.06.2019
Lead Beneficiary	UBONN
Author(s)	Rainer Stamminger, Christiane Pakula (UBONN) Kathrin Graulich, Ina Rüdener (OEKO)
Dissemination level	PU
Keywords	Standards, Circumvention, Market Surveillance, Testing, Europe, Energy, Ecodesign Directive, Energy Labels
Project duration	April 2018 – March 2021



Table of Content

1	About the ANTICSS project	4
2	Goal and approach of this deliverable	5
3	Definition of 'circumvention' and 'jeopardy effects' in relation to EU Ecodesign and Energy labelling legislation.....	7
3.1	'Circumvention'	7
3.1.1	Definition of 'Circumvention'	7
3.1.2	Exemplary cases of 'Circumvention'	7
3.2	'Jeopardy effects'	10
3.2.1	Definition of 'Jeopardy effects'	10
3.2.2	Exemplary cases of 'Jeopardy effects'	10
4	Delimitation to non-compliance	12



1 About the ANTICSS project

Objective of the research project 'Anti-Circumvention of Standards for better market Surveillance (ANTICSS)' is to assess and clearly define 'circumvention' in relation to EU Ecodesign and Energy labelling legislation and relevant harmonised standards.

The analysis of circumvention will be based on collecting and learning from cases of circumvention by literature research and dedicated expert interviews, as well as analysing existing EU Ecodesign and Energy labelling legislation and standards for possible loopholes. Also the potential relation between circumvention and so called 'smart' products with specific embedded software will be addressed by the project. Alternative test procedures to better detect circumvention by testing shall be developed and through testing a certain number of appliances within the ANTICSS project, the impacts 'if' and 'how much' energy consumption and/or functional performance modifications could be ascribed to circumvention will be assessed.

Based on the results, ANTICSS will provide practical capacity building measures for key actors of market surveillance and test laboratories, support communication and collaboration platforms between major stakeholders and provide policy recommendations for policy makers and standardisation bodies to prevent future circumvention under EU Ecodesign and Energy labelling. ANTICSS project is also designed to provide reliability to manufacturers by specifying potentially vague legislation and standards which might be interpreted differently by market actors and some of them taking unfair advantages so far. By overall awareness raising on circumvention among stakeholders, ANTICSS is supporting an effective EU legislation enforcement and thus increasing acceptance and trust of market actors and civil society into the Ecodesign and Energy labelling legislation.

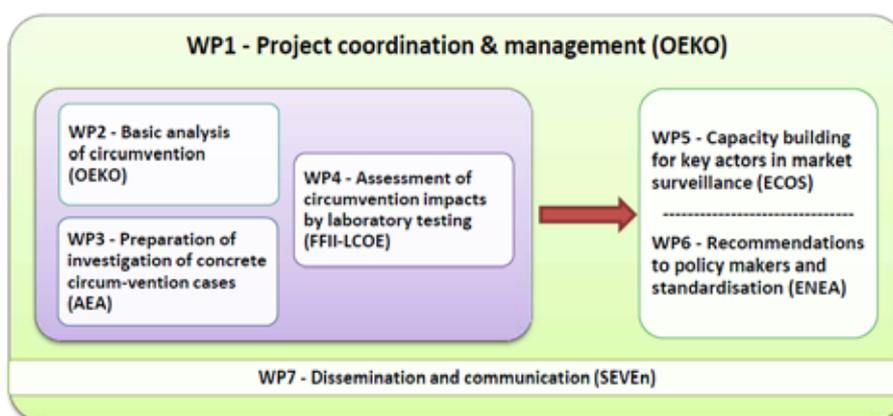


Figure 1-1: ANTICSS Work Packages



2 Goal and approach of this deliverable

The topic of manipulated test results, or 'circumvention' is currently exposed to the highest attention of the public and media, not only for the emission of cars ('dieselgate') but also with regard to other EU legislation. So far, however, current legislation still uses rather different terms and explanations to describe the acts that shall be prohibited. Thus, one of the main tasks of the ANTICSS project is to elaborate a comprehensive and robust understanding and resulting definition to clearly delimitate the act of 'circumvention' under EU Ecodesign and Energy label regulations and relevant harmonised standards from non-compliance and other effects that can be considered suspicious in terms of reaching a more favourable level for any of the parameters measured in a test and declared by the manufacturer.

The definition process started with literature research to ensure that the current knowledge about circumvention is taken into account. Based on the expert knowledge of the ANTICSS project partners¹ as well as selected stakeholder interviews, an initial collection of 25 suspect behaviour cases with regard to Ecodesign and Energy labelling of appliances was then used to elaborate a comprehensive picture and categorisation of certain acts that might affect the resource consumption and/or performance of a product during testing. A preliminary definition of 'circumvention' (1st level) as well as 'suspect behaviour' categories (2nd level) was developed.²

Taking into account feedback of the ANTICSS Advisory Board members³, the preliminary definition was adapted and aligned to the meanwhile revised Article 6 on circumvention as included in some ecodesign Regulations under preparation within the so called 'Ecodesign package' to be adopted in July 2019 by the European Commission.

However, based on the previously collected cases of suspect behaviour, the ANTICSS project team considered Article 6 too restrictive, since it is focusing only on automatic performance alterations during test (i.e. achieved through the presence of software). A broader definition of circumvention was prepared, including also manual and/or pre-set alterations of the product or performance, and including those alterations within a short period after putting the product into service.

Additionally, within ANTICSS several acts have been detected that formally might not be found non-compliant to legislation but nevertheless do not follow the goal of the EU ecodesign and/or energy labelling legislation by exploiting loopholes or other weaknesses in standards or regulations. Against this background the ANTICSS project team introduced the category of 'jeopardy effects' (corresponding to the 2nd level of the initial draft definitions).

¹ The ANTICSS project team with 19 partners is composed of research institutions, National Energy Agencies, Market Surveillance Authorities, Standardisation organisations and independent test laboratories.

² See https://www.anti-circumvention.eu/storage/app/media/uploaded-files/ANTICSS_Definition_circumvention_Preliminary_Long.pdf

³ See <https://www.anti-circumvention.eu/contacts/advisory-board>



Through a broad stakeholder consultation⁴, 39 further cases of suspect behaviour⁵ were collected and thirteen stakeholders used the possibility to provide feedback on the draft definitions of circumvention and jeopardy effects. Based on this additional information as well as concluding feedback of the ANTICSS Advisory Board members, the final definitions of 'circumvention' and 'jeopardy effects' as presented in the following sections were developed.

The definitions are complemented by selected exemplary product cases, enabling to gain a better insight and understanding of the definitions' nature.

These definitions of 'circumvention' and 'jeopardy effects' in relation to EU Ecodesign and Energy labelling legislation and related harmonised standards build the basis for the further research within the ANTICSS project, namely the categorisation of collected suspect behaviour cases and the assessment of circumvention impacts in laboratory testing.

Finally, the definitions shall also be fed into capacity building processes for key actors in Market Surveillance and test organisations to facilitate better detection of possible circumvention, as well as deliver recommendations to policy makers and standardisation bodies by calling attention to possible loopholes and weaknesses of current legislation and standards with the aim of preventing future circumvention under EU Ecodesign and Energy labelling.

⁴ In total, 39 Market Surveillance Authorities, 61 industry representatives (associations, manufacturers, technical committees) and 178 consumer organisations, test organisations and environmental NGOs at European level were approached.

⁵ ANTICSS partners conducted a quality check of the cases received in WP3 to avoid double counting with the cases received in WP2, disregard cases not sufficiently substantiated or being out of scope. In total, the information received on 22 cases has been used for further analysis in relation to the ANTICSS definitions of circumvention and jeopardy effects.



3 Definition of 'circumvention' and 'jeopardy effects' in relation to EU Ecodesign and Energy labelling legislation

In the following sections the final ANTICSS definitions of 'circumvention' and 'jeopardy effects' are presented. To enable better insight and understanding of the definitions' nature they are illustrated by selected exemplary product cases gained through stakeholder consultation.

3.1 'Circumvention'

3.1.1 Definition of 'Circumvention'

„Circumvention is the act of designing a product or prescribing test instructions, leading to an alteration of the behaviour or the properties of the product, specifically in the test situation, in order to reach more favourable results for any of the parameters specified in the relevant delegated or implemented act, or included in any of the documentations provided for the product.“

The act of circumvention is relevant only under test conditions and can be executed e.g.

- a) by automatic detection of the test situation and alteration of the product performance and/or resource consumption during test, or*
- b) by pre-set or manual alteration of the product, affecting performance and/or resource consumption during test or*
- c) by pre-set alteration of the performance within a short period after putting the product into service.*

3.1.2 Exemplary cases of 'Circumvention'

- a) Automatic detection of the test situation and alteration of the product performance and/or resource consumption during test*

THEORETICAL CIRCUMVENTION CASE WHITE GOODS

White goods are tested for performance, according to certain ambient conditions, and within certain grid voltage and frequency limits (usually 230 V +/- 1 %; 50 Hz +/- 1 %). Thus, testing conditions vary within a very narrow tolerance range. Although the same conditions can be met in consumer use, most of the time they go out of this range.



White goods may – at least theoretically – be equipped with hidden software or algorithms and sensors that detect the ambient testing conditions, e.g. narrow voltage or frequency range and trigger the execution of specific hidden instructions that result in lower resource consumption (energy, water, etc.).

This illustrative example for white good is also valid for most other product groups in the scope of ecodesign and energy labelling regulation.

b) Pre-set or manual alteration of the product, affecting performance and/or resource consumption during test

REPORTED CIRCUMVENTION CASE TELEVISION

According to standard IEC 62087-2:2015, TV's power input is measured at factory setting. In the reported case, it was observed that power consumption increased, if the factory setting was adjusted for the first time. In concrete terms, brightness value is 45 in factory setting, corresponding to 71 W. However, if the brightness decreases by one point to a value of 44, TV's power increases to 90 W. Even if the brightness is set back to the factory setting (45), the power consumption remains high.

REPORTED CIRCUMVENTION CASE DISHWASHER

For energy consumption and performance tests, automatic dishwashers have to be loaded with the indicated number of place settings which are soiled in accordance with standard EN 50242. With regard to the loading and the settings of the machine, the standard requests to follow manufacturer's instructions.

In the reported case, a separate 'bowl' support, which is marked as 'only for standard tests' or similar on the packaging, is supplied with the machine. This support is attached to the saucer support prongs in the upper rack when loading to the full 15 place settings (Energy Label load as specified by the manufacturer). The support is not mentioned anywhere else than in the standard loading plan supplied separately by the manufacturer meaning that it is not intended for use by consumers.



REPORTED CIRCUMVENTION CASE TUMBLE DRYER

According to standard EN 61121, the dry cotton programme shall be selected to measure condensation efficiency of condensation tumble dryers in the drying test. Both, the mass of the test load before and after drying and the mass of condensed water collected inside the container shall be determined. If the appliance has not been operated for more than 36 hours, the first drying cycle shall not be evaluated.

In the reported case, certain household tumble dryers have a statement in the instructions regarding specific preparation before commencing tests according to standard EN 61121. It is required that a 3 kg load is prepared to 70% residual moisture content and the tumble dryer is loaded with this load. After this, the tumble dryer shall be operated in the normal cotton programme before commencing EN 61121 tests. It is possible that this specific set of requirements could trigger a different performance profile to get an advantage in Ecodesign and Energy labelling.

c) Pre-set alteration of the performance within a short period after putting the product into service

THEORETICAL CIRCUMVENTION CASE 'CYCLE BASED WHITE GOODS'

Cycle based white goods are tested in the labs for a number of test rounds as specified in the related standards. White goods may theoretically comprise hidden software that runs a certain algorithm for a pre-set number of cycles that consumes significantly less resources. Since products tested by MSAs are 'new' products, this algorithm may cover all test runs performed within market surveillance testing. However, in real life conditions, although consumers will experience this reduced consumption, it will be for a limited time only and the device will revert to a different algorithm and run it for the rest of its use life.

Summarising the information from all reported cases classified as circumvention, the following features of products and/or acts of manufacturers can be considered as indicators for **circumvention**:

- Hidden software or hardware
- Specific design or accessories for testing only
- Modified test samples
- Requests by manufacturer beyond specific requests by standard or legislation



3.2 'Jeopardy effects'

3.2.1 Definition of 'Jeopardy effects'

"Jeopardy effects encompass all aspects of products or test instructions, or interpretation of test results, which do not follow the goal of the EU ecodesign and/or energy labelling legislation of setting ecodesign requirements and providing reliable information about the resource consumption and/or performance of a product. These effects may not be classified as circumvention, but become possible due to loopholes or other weaknesses in standards or regulations."

3.2.2 Exemplary cases of 'Jeopardy effects'

REPORTED JEOPARDY CASE REFRIGERATOR

In refrigerators, 'chill compartments' are defined as compartments intended for storing highly perishable food. The storage temperature of such compartments should be within the range of -2 to +3 °C as specified in standard EN 62552:2013. Two aspects were observed:

For some appliances, it was observed that the temperature within the chill compartment is maintained at temperatures above 0 and below +3 °C (thus within the temperature range specified in EN 62552:2013). According to regulations 643/2009 and 1060/2010, the nominal temperature of chill compartments for calculating the energy efficiency index (EEI) is set at 0 °C, while the test is considered valid as long as the temperature of the compartment is between -2 and +3 °C. Since the temperature of the compartment is maintained above 0 °C (and below 3 °C), the resulting EEI is slightly better for this product than if the actual temperature of the compartment were kept at the nominal temperature of 0 °C. This happens because the energy consumption of the appliance is (slightly) lower when the temperature of the chill compartment is higher than the nominal temperature.

Due to the fact that the volume of refrigerators determined according to the provisions given in standard EN 62552:2013 is often larger than it is in reality, the aforementioned effect is even more pronounced. When measuring the volume of the refrigerator in accordance to the standard, neither the walls of the chill compartment (if they are less than 13 mm, which is usually most common) nor the space between the chill drawer and the walls of the refrigerator are deducted, resulting in a total refrigerator volume greater than the real volume. This implies a better EEI.



REPORTED JEOPARDY CASE TELEVISION

According to standard IEC 62087-2:2015, the energy consumption of TVs is tested with default settings. In the reported case, an automatic brightness adjustment function is activated by default. This function analyses the broadcast program and when fast moving images are detected, the brightness of the television is reduced automatically. As a result, the measured energy consumption of the television is significantly lower compared to a broadcast without fast moving images. The standardised test movie, which is used for measuring the energy consumption, only consists of fast moving images. Prior to the start of the standardised test movie, a countdown clip is shown. This countdown lasts for 10 seconds and does not contain any fast moving images. After the 10 seconds, the movie content is played and the automatic brightness adjustment function is triggered. This results in a reduction of the input power of approximately 35%.

REPORTED JEOPARDY CASE REFRIGERATOR

In the reported case, a display of a controller is activated each time the door of the refrigerator is opened and remains active for a period of 24 h. According to the user manual, the display can be switched-off temporarily by pressing a button next to the controller. However, the display cannot be deactivated permanently. The user manual additionally states that the energy consumption is increased if the display of the controller is activated; it has a rated power of 2 W, corresponding to an energy consumption of 0.048 kWh per 24 h. The declared energy consumption is measured without activation of the display (because these appliances are measured without door openings). According to standard EN 62552:2013 (paragraph 15.2.2 and 13.2), 'The refrigerating appliance shall be set up as in service in accordance with the manufacturer's instructions.' The procedure to obtain the declared energy consumption is described in the manual and therefore it complies with the standard. Also the impact on the energy consumption is stated in the user manual. However, it is most likely that the consumer will not continuously repeat the extra action required to obtain the declared energy consumption.

REPORTED JEOPARDY CASE ELECTRIC MOTORS

Standard EN 60034-2-1 specifies: 'Tests shall be conducted on an assembled machine with the essential components in place, to obtain test conditions equal or very similar to normal operating conditions. Externally accessible sealing elements may be removed for the tests, if an additional test on machines of similar design has shown that friction is insignificant after adequately long operation.'

The removal of externally accessible sealing elements may have an influence on the energy consumption. Although the difference may be small, it can be enough to claim compliance or not.



4 Delimitation to non-compliance

To facilitate a better understanding of circumvention and jeopardy effects and clearly delimitate these from other effects, this section presents also examples of product cases assessed as non-compliant.

According to the understanding of the ANTICSS project team ecodesign and energy labelling legislation states that 'non-compliance' can be determined only by Market Surveillance Authorities through product inspection, i.e. laboratory testing, and/or checking of the data and information provided in the technical documentation and/or any other information provided by the manufacturer or supplier against the requirements and conditions as defined in the legislation and standards.

In contrast, circumvention and jeopardy effects do not make a product appear as non-compliant during testing. In the first instance products appear to comply with all the requirements and conditions, but the test results are specifically influenced, resulting more favourable for the manufacturer, by the use of circumvention behaviour or by the exploitation of (possible) weaknesses or loopholes in standards and legislation.

REPORTED NON-COMPLIANCE CASE REFRIGERATOR

For wine coolers, regulation 643/2009 (Annex I) defines specific requirements for temperature stability and humidity range. The temperature within the cabinet may vary by 0.5 K, whereas relative humidity should be within the range of 50-80 %. For category 10 refrigerators (multi-use and other refrigerating appliances with nominal temperature of 15 °C) of Ecodesign regulation 643/2009 and Energy labelling delegated regulation 1060/2010, requirements are not that strict. Relative humidity inside the cabinet is not further specified and the internal temperature may vary during testing, as long as the average temperature meets the requirements. A further difference between wine coolers and category 10 appliances is that the latter have to respect minimum energy efficiency requirements, whereas the first ones do not have to.

In the reported case, an EU manufacturer, who sells a 'wine cooler' of its own brand, drew up the declaration of conformity and the product technical file. These documents were sent together with the technical documentation and test report of an appliance of a non-EU producer where the test report refers to a 'category 10 refrigerator' and not to a 'wine cooler'; however, there is a declaration of identity between both products. In addition, the EU manufacturer submitted another test report from a different EU laboratory (dated after the wine cooler model was placed on the EU market), which describes and treats that product as a wine storage appliance.

The declared values of the energy consumption in kWh/24h are enormously different from those resulting from MSA tests. Energy efficiency class goes from declared B to measured G.



REPORTED NON-COMPLIANCE CASE ROOM AIR CONDITIONING

In this case, the suspect behaviour concerns the cooling and heating capacities. The declared value of cooling power is 2.5 kW. The measured value in the manufacturer test report is 2.37=2.4 kW. This value is not supporting the declared value. The declared heating power in the warmer season is 2.4 kW. The measured value in the manufacturer test report is 2.2 kW (13.6% lower than declared). The declared heating power in the colder season is 4.0 kW, the measured value in the manufacturer test report is 1.72 kW (much lower than declared). This means that the consumer purchases a model with lower cooling and heating capacities than declared by the manufacturer. Because of the reduced cooling and heating power in comparison to the declared values, it is easier to achieve compliance with ecodesign requirements and labelling.

REPORTED NON-COMPLIANCE CASE DOMESTIC LIGHTING

Domestic lighting, non-directional lamps: The stated lamp was considered a special purpose lamp (SPL) as it was declared as a lamp for traffic lights. However, the technical documents of the lamp did not show any technical features why this lamp should be a special lamp for traffic lights. Lamps for special purposes (such as for traffic signals) are not subject to the ecodesign requirements.

REPORTED NON-COMPLIANCE CASE DOMESTIC LIGHTING

The Swedish Consumer Association tests, conducted between 2012 and 2014, found that a specific halogen lamp consumed 25% more energy than claimed on the label to achieve its declared 630 lumens of brightness. The discrepancy is caused by manufacturers abusing verification tolerances in official testing procedures for bulbs.

Summarising the information from all reported cases, the following acts can be considered as examples for **non-compliance**:

- Ignorance of legislation
- Ignorance of standardisation
- Misrepresentation
- Wrong reference to legislation
- Exclusion from scope



Contact:

www.anti-circumvention.eu
<https://twitter.com/anticircumvent>
<https://linkedin.com/company/anticss>

Project coordinator:

Ms. Kathrin Graulich
Deputy Head of Sustainable Products and Material Flows Division
Oeko-Institut e.V.
P.O. Box 17 71 | 79017 Freiburg Germany
Email: K.Graulich@oeko.de
www.oeko.de

List of project partners:

Austria: AEA - Österreichische Energieagentur
Austria: BMDW - Bundesministerium für Digitalisierung und Wirtschaftsstandort
Belgium: ECOS - European Environmental Citizens Organisation for Standardisation
Belgium: BHTC - Service public federal sante publique, securite de la chaine alimentaire et environnement
Czech Republic: SEVEN - SEVEN, the Energy Efficiency Center, z.u.
Czech Republic: SEIA - Státní energetická inspekce
Germany: UBONN - Rheinische Friedrich-Wilhelms-Universität Bonn
Germany: OEKO - Oeko-Institut e.V., Institute for Applied Ecology
Germany: GRS - Regierung von Schwaben – Gewerbeaufsichtsamt
Germany: VDE - VDE Prüf- und Zertifizierungsinstitut GmbH
Italy: ENEA- Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile
Italy: CCIAA Mi - Camera di commercio industria artigianato agricoltura
Italy: IMQ - Istituto Italiano del Marchio di Qualità S.p.A.
Netherlands: Re/gent - Re/gent B.V.
Netherlands: NVWA - Nederlandse voedsel en Warenautoriteit
Portugal: ADENE - Adene-agencia para a energia
Portugal: ASAE - Autoridade segurança alimentar e económica
Spain: FFII – LCOE - Fundación para el fomento de la innovación industrial
Spain: CM - Comunidad de Madrid