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**OPERATIONAL MANUAL
for the
CERTIFICATION
of
REMOTE
REFRIGERATED DISPLAY CABINETS**

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2	Update of the ISO 23953 Standard version	All document	
3	Clarification of rating rules	IV.4 d	9
4	Update of the auditing process	IV.5	10-14

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I. PURPOSE

The purpose of this Operational Manual is to prescribe procedures for the operation of the Eurovent Certita Certification Programme for Remote Refrigerated Display Cabinets, in accordance with the Certification Manual.

II. SCOPE

Table 1: Pre-defined categories and Basic Model Groups of RRDC to certify

Category 1 (R/WD): RVC4, RVF4 (Semi-vertical and Verticals) with doors									
Height (bottom to top)	Width (back to front)	Frozen or chilled	Loading	Number of shelves	Shelves with lighting		Total	Multiply	To certify
≤1800	≤900	Frozen	whatever	whatever	N				
1800-2150	900-1000	Chilled							
>2150	>1000								
3	3	2	1	1	1		18	2	36
Category 2 (R/O): RVC1, RVC2, RVC3 (Multideckers / Semiverticals open)									
Height (bottom to top)	Width (back to front)	Front height	Top width	Loading	Night curt.	Shelves with lighting	Total	Multiply	To certify
≤ 1800	≤ 900	≤ 250	> 700	All	Y if av.	N			
1800-2150	900-1000	250-440	≤ 700						
> 2150	> 1000	> 440							
3	3	3	2	1	1	1	54	2	108
Category 3 (R/I): RHF3, RHF4, RHF5, RHF6, RHC3, RHC4, RHC5, RHC6 (Islands)									
External width	Front glass	Lid	Loading depth	T range	Shelves with lighting	Night curt.	Total	Multiply	To certify
≤ 1400	Y	Y	whatever	whatever	N	Y if av.			
1400-1700	N	N							
> 1700									
3	2	2	1	1	1	1	12	2	24
Category 4 (R/SC): RHC1, RHC2, RHC3, RHF1 (Service counters)									
Display Width	Frozen or chilled	Superstructure				Total	Multiply	To certify	
≤ 930	Frozen	Traditional open							
> 930	Chilled	Traditional closed							
		Self-Service							
2	2	3				12	2	24	
Category 5 (R/CF): YF1, YF2, YF3, YF4 (Combi freezers)									
Height	Front glass height	Lid	Light: no at the bottom	Frozen or chilled	Total	Multiply	To certify		
≤ 2150	whatever	Y	N	Frozen					
> 2150		N							
2	1	2	1	1	4	2	8		

Cabinets with specific optional fittings with wood are excluded from the programme.

“Certify-all”: This programme covers 100 pre-defined Basic Model Groups (BMG) in 5 categories of Remote Refrigerated Display Cabinets (RRDC), as specified in Table 1 (see also APPENDIX C. However, all the other models are considered as certified excepting models out of the scope.

For each pre-defined BMG, the Applicant/Participant has to declare a minimum of two models. He may show evidence that he doesn't have a model that matches one or more categories.

In the case of Remote Refrigerated Display Cabinets, certify-all requirement as defined in the Certification Manual is applicable not only to the European market but worldwide.

III. BASIC OUTLINE OF THE PROGRAMME

The participation in this Certification Programme is described in Figure 1.

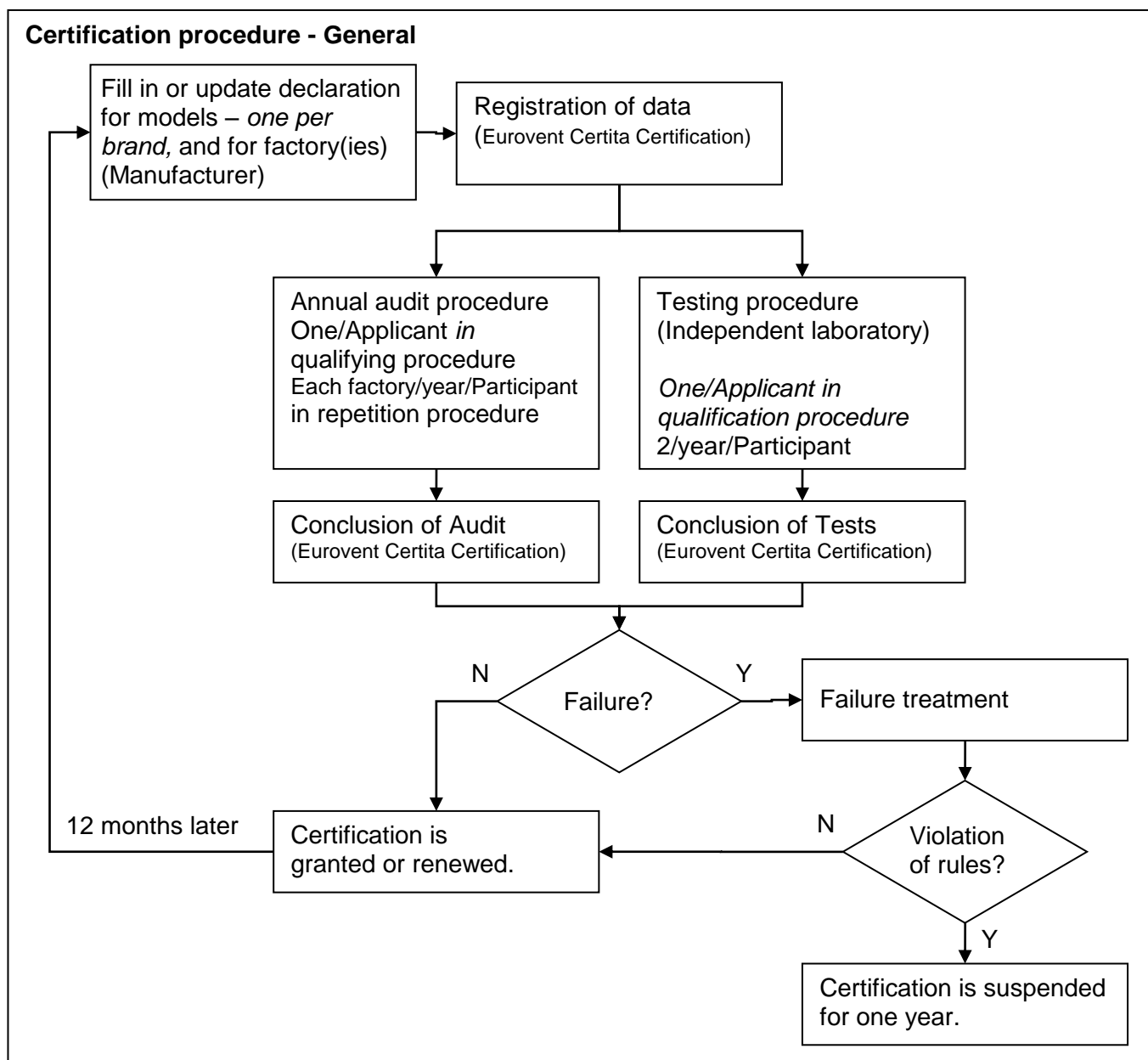


Figure 1: Certification procedure - General

The certification procedure consists of the following:

III.1 Application

After signing the Licence Agreement, the Applicant has to fill in the declaration files with all models within the scope of the programme and requirements of the relevant Rating Standard. One declaration list per brand is necessary.

III.2 Qualifying procedure

When the declaration file is completed, inspection of one factory is conducted, and in parallel, one unit shall be selected by Eurovent Certita Certification and tested in an independent laboratory approved by Eurovent Certita Certification. When the audit and the test show conformity with the relevant Rating Standard, certification is granted according to the certification schedule (see APPENDIX A).

III.3 Repetition procedure

Every year, Eurovent Certita Certification checks whether the certified characteristics of the certified products still fulfil the requirements. Inspections shall be conducted in order to check that declaration of models matches with declared data. Units selected from regular production shall be tested in the test facilities approved by Eurovent Certita Certification. When all elements are received for the corresponding testing campaign, the certification is renewed according to the certification schedule (see APPENDIX A).

III.4 Failure treatment

When the factory inspection or the test results fail to comply with the requirements of the relevant Rating Standard, the failure treatment is applied.

III.5 Challenge procedure

A challenge procedure can be carried out by Participants as described in the Certification Manual.

III.6 Responsibility and confidentiality of certification data

All ratings submitted for certification by participating manufacturers on their own models, and test data on competitive models, shall, in each case, be submitted to the signature of the person properly authorised by the company to undertake this responsibility.

Manufacturers are required to supply all relevant information to the auditor on request.

All data submitted to Eurovent Certita Certification shall be held confidential except for information authorised to be published on the Eurovent Certified Performance website.

III.7 Ethic code

The following code should be signed by a legally responsible person in each participating company:

“Core values of Eurovent Certita Certification working group integrity are honesty and trust. They lie at the heart of manufacturers’ enterprise, and they support all relations between the Eurovent Certita Certification participants and the customers. The Eurovent

Certita Certification values a culture of honesty and mutual trust, and it expects all members to respect and uphold these core values at all times and in everything they do.”

Consequently, the Eurovent Certita Certification members are committed to:

- defending the Eurovent Certita Certification credibility and reputation;
- protecting the standards;
- ensuring that customers receive due and correct information;
- advising customers of the Eurovent Certita Certification integrity, and providing them with guidance on best practice in using information provided by Eurovent Certita Certification itself;
- protecting the interests and integrity of Eurovent Certita Certification manufacturers to ensure the integrity of the declared data.

IV. OPERATION OF THE PROGRAMME

IV.1 Declaration of data

For submission of data, the Applicant/Participant shall provide:

- *Declaration form including performance data for models in the scope describing the declared models (Declaration list in excel format)*

a. Rated performance data

All characteristics shall be expressed in SI Units.

2 decimals shall be used for DEC, REC, TDA. TEC will be automatically calculated with 2 decimals. Efficiency = round (TEC/TDA,2) will be automatically calculated with 2 decimals and EEI = round(Eff/Effref,2) will be automatically calculated with 2 decimals (ex: 1.25)

When declared to Eurovent Certita Certification, performance shall be given in laboratory conditions. When published on Eurovent Certified Performance website and on Participant documentation, characteristics have to be displayed in one of the following ways:

- under laboratory conditions + under store conditions
- under laboratory conditions + the applicable coefficient
- only under store conditions.

Performance (Evaporation temperature and Heat Extraction Rate) under store conditions have to be equal to performances in laboratory conditions (as declared) corrected by a coefficient function of the temperature, detailed in §V of Rating Standard RS 14/C/001 – “Rating requirements”. Definition of store conditions can be found in *Annex B of ISO 23953-2:2015*

b. Certification forms

Submittal of all models (see II) and ratings shall be made by filling the .xls or .xlsx form provided by Eurovent Certita Certification (see APPENDIX B), including Bill of Material (BOM) for each declared unit. All models presented by the Applicant/Participant shall be listed together. **It is not acceptable to modify values on previously tested or re-rated models or ranges.**

The Applicant/Participant shall declare the lowest reachable temperature class when declaring performance data at class 3 (Example: when declaring a cabinet, if 3M1 has been declared, performances at 3M0 cannot be displayed on technical documentation).

The Applicant/Participant shall list all its production sites, giving address, phone and email for principal contact.

IV.2 Selection of units to be tested

The required number of units for scheduled tests is defined as one unit for the qualifying procedure and one unit every 6 months per participant for the repetition procedure.

IV.3 Tests at the laboratory

a. Laboratory

Units shall be tested in an independent laboratory approved and under contract with Eurovent Certita Certification. The choice of the independent laboratory is made by Eurovent Certita Certification in accordance with the Compliance Committee.

It is the responsibility of the laboratory to keep the test and the test results strictly confidential.

b. Selection, shipment, handling of test unit and return

Eurovent Certita Certification shall notify the Applicant/Participant of the intent to test specific models in accordance with the programme requirement. For each selected model, one unit shall be obtained from production lines, or any stocking point, and delivered by the Applicant/Participant to the laboratory within the certification schedule. Furthermore, no test will be ordered to the laboratory without prior payment to Eurovent Certita Certification.

In addition, the Applicant/Participant shall send to the independent laboratory:

- The specified model and internal fittings;
- *Filled technical data sheet (TDS, see appendix D)*
- All relevant installation and operation manuals;
- All the usual refrigeration engineer's tools or any type of condensing unit definition necessary for carrying out the test;
- Filled in BOM and attached drawings.

The Applicant/Participant shall ensure that a technician will manage on site for 5 days (10 days for frozen food cabinets):

- The receipt of the cabinet;
- The electrical and refrigeration installation and if necessary additional installation for defrost system (electric, pressure gas, etc.);
- For cabinets with remote condensing unit: the installation of the condensing unit in a separate climate room if not available in the laboratory;
- The settings to reach the expected M-package temperature classification;
- Assistance in loading the cabinet;
- The final adjustment of the superheat and settings;
- The final approval to begin recording test figures.

Without the applicant/participant approval, the laboratory is not allowed to start the testing process. In this case the laboratory must inform Eurovent Certita Certification.

No Applicant/Participant's personnel shall be permitted in the laboratory testing facility during the test.

Applicant/Participant shall organise the dismantling of the installation and the shipping of the model back to the participant.

c. Time limitation of acquisition of unit

If the laboratory is unable to obtain the unit and the relevant documentation within the time limitations defined by Eurovent Certita Certification (see APPENDIX A) it is considered as violation of rules.

IV.4 Test failure treatment

a. Component failure

If another cabinet than the one selected by Eurovent Certita Certification is sent to the independent laboratory and it cannot be changed in time, the Applicant/Participant must pay the full test costs to the independent laboratory, even if the said cabinet is not tested.

If any functional component is inoperative, or the unit is damaged and cannot be repaired and tested at the laboratory, then it is considered as a "component failure". The complete test shall then be carried out on the repaired unit or a new unit from the same model. The new unit shall be delivered within eight weeks from the notification of the failure.

b. General

If the value found by testing in the independent laboratory differs by more than the acceptable tolerance, the Applicant/Participant will have two working weeks from the notification of the failure to select one of the following alternatives:

- Ask for a second test (on the same unit)
- Ask for a second test (on a new unit). The new unit shall be delivered within six working weeks after reply
- Re-rate the same commercial range in accordance with the re-rating rules (see below)

c. Second test

If the second test is unsuccessful, the Applicant/Participant shall re-rate according to the results from the second test and the re-rating rules.

The repetition procedure does not allow for a third test.

d. Re-rating rules

The performance characteristics of the tested model shall be re-rated to the actual values obtained by testing. *In the same BMG, in same ISO family, all cabinets with the same value than the failed value (The same DEC, REC or ISO T class) must be also rerated*

If test results are better than claimed values for more than allowed tolerance, the Participants may up-rate the performance of the tested model to the measured value in the test report.

e. Penalty tests

For each failed unit, an additional test shall be scheduled for the next test campaign.

IV.5 Audit procedure

a. Definitions

Recent invoice: invoice or any other relevant documentation proving the traceability of the product (e.g.: transfer request, or internal selling document), not older than 24 months.

Family: as defined in ISO standard (HC1, YC1, etc.)

Categories: 5 categories have been defined:

- semi-vertical and vertical with doors
- multideckers and semi-vertical open
- islands
- service counters
- combi freezers

BMG: 100 Basic Model Groups have been defined in Table 1. To fall into a BMG, a model has to present a configuration which fits the corresponding description (Example: A service counter with a display width below 930 mm, Frozen, Traditional open falls into BMG 85).

Listed model: model on the declaration list and on the Eurovent Certified Performance website.

Certified model: model of the same BMG of one listed model.

Non-certified model: model which doesn't fall in a BMG.

Related: certified but not listed, and models that differ from the certified model due to the length.

Annual audit: regular audit in a factory, once per year per factory.

Additional audit: additional audit in a factory, due to important failure(s).

b. Audit procedure - General

Eurovent Certita Certification shall notify the Applicant/Participant of the intent to audit a factory. This notification shall request a settled date of audit and the order. Furthermore, no audit will take place without prior payment to Eurovent Certita Certification.

The process is globally described in Figure 2.

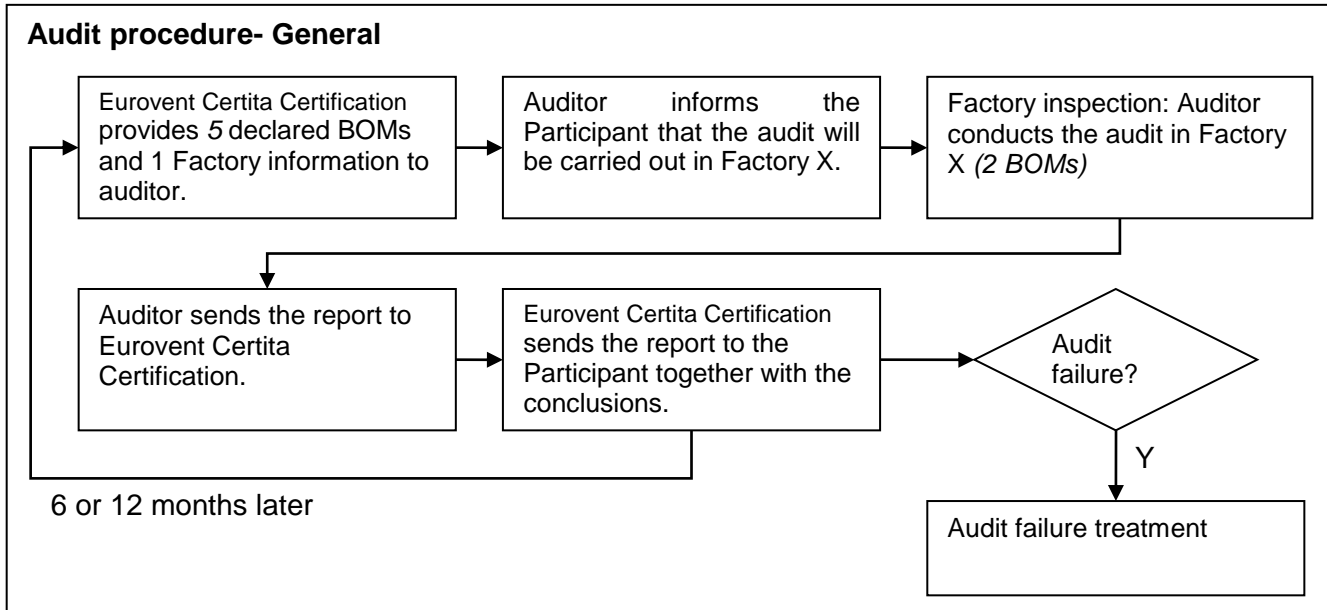


Figure 2: Audit procedure – General

c. Factory Inspection

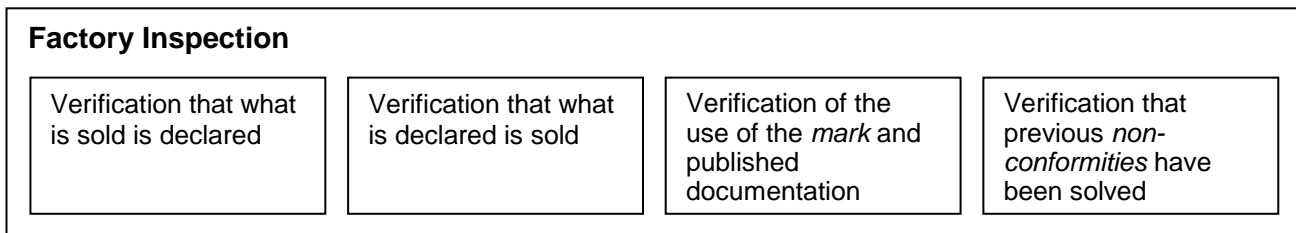


Figure 3: Factory Inspection

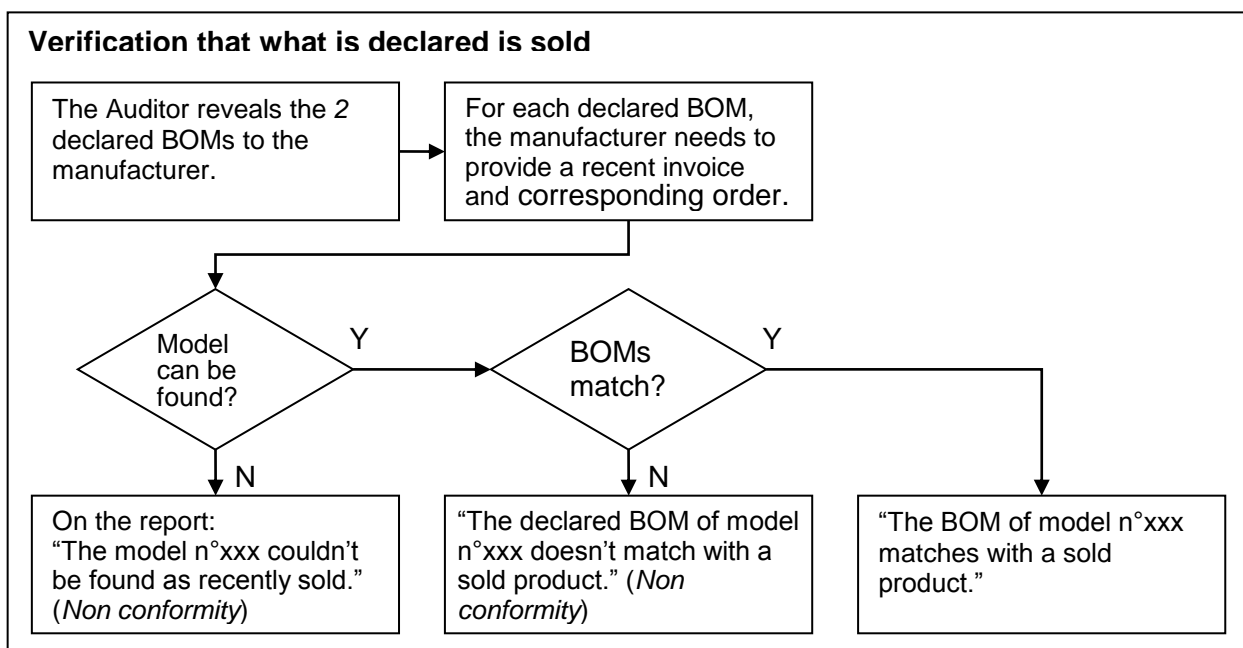


Figure 4: Verification that what is declared is sold

The verification that what is declared is sold (Figure 4) consists of the following:

- Eurovent Certita Certification has sent 5 BOMs to the Auditor. A model which has been put on the market and declared less than 6 months ago cannot be chosen.
- In the factory, the Auditor reveals the 5 declared BOM's to the manufacturer.
- For 2 of the 5 declared BOM, the manufacturer needs to provide a recent invoice (invoice not older than 24 months) and corresponding order.

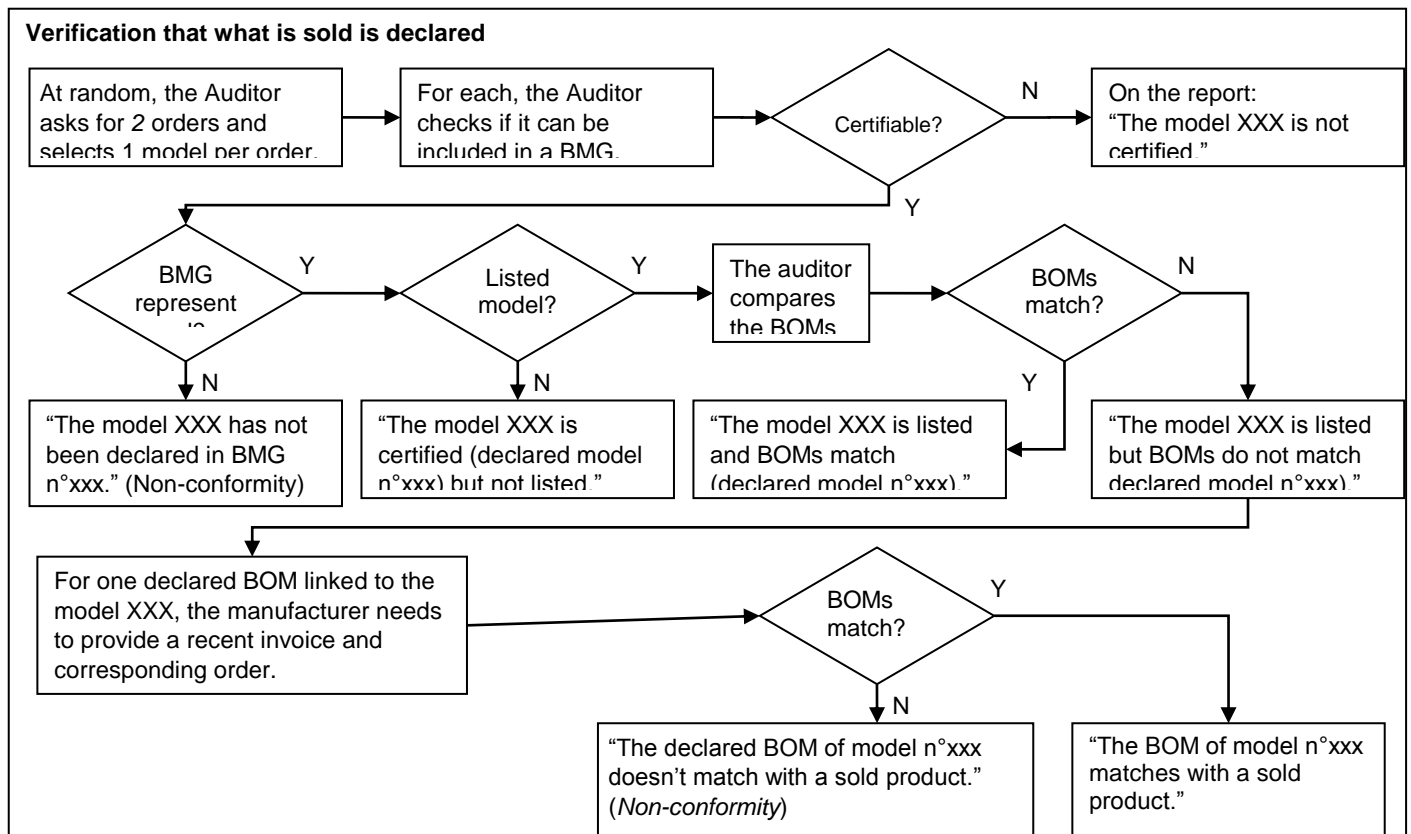


Figure 5: Verification that what is sold is declared

The verification that what is sold is declared (Figure 5) consists of the following:

- At random, the Auditor asks for 2 orders and selects one product per order.
- Then, for each selected product, the Auditor checks if the model is:
 - ♦ non-certified (could not have been declared because it doesn't fit with the BMGs)
 - ♦ missing in the declaration (could have been declared but the BMG is empty in the declaration, it is a failure)
 - ♦ certified and related (covered by a listed model)
 - ♦ certified and listed (the product is presented with the same performances as a listed one).
- When the model is listed, the BOMs are compared.
 - If the BOMs do not match, the manufacturer needs to provide a recent invoice and corresponding order that matches the BOM.

In the frame of comparison of BOMs, the Auditor can check the codes, the component orders, the "in/out register" of the store, the assembly lines.

When comparing the BOMs, if a discrepancy on the night cover or on the shelf lighting is found, it is not considered as *non-conformity*.

The Auditor shall check commercial and technical documentation and report any misuse of the mark.

The auditor shall check the management of customer claims, an example of claim management concerning a certified product must be checked each year.

d. Records

All information related to factory audit(s) shall be registered with appropriate record by each Participant. These records shall be made available to the auditor and shall be kept for a time which should be not less than the period between two inspection visits.

At least the following records shall be maintained:

- Audit report
- Any communication with auditor and Eurovent Certita Certification following corrective action used and/or Certified Product data updating.
- Any documentation necessary to prove or give evidence on corrective actions adopted for solving *non-conformities* detected during the audit.
- Eurovent Certified Declaration Files
- Eurovent Certified Product BOM's
- Eurovent Certified Product Technical data sheets

IV.6 Audit failure treatment

a. Classification of the non-conformities

The classification of non-conformities criticality is performed by the lead auditor in agreement with the members of the audit team. It depends on the certification scope (and the corresponding certification rules).

The non-conformity is classified as **critical (C)** when, on the basis of impartial evidences,

- there is a significant risk¹ to the product conformity regarding specified requirements
- or,
- there is a significant risk¹ for the ability of management system to manage the conformity of the product regarding the specified requirements ,
- or,
- A specified requirement is systematically and repetitively unmet.

In other cases, the non-conformity is classified as **non-critical (NC)**.

b. Management of non-conformities

The Audit failure treatment consists of the following:

- The manufacturer send within one month the filled out corrective actions report previously provided by Eurovent Certita Certification. In this way, corrective actions are proposed to solve detected non-conformities and deadlines.
- The auditor analyse the corrective actions report and validate the corrective actions and their deadline or ask for further information
- At the end of each proposed deadline, accepted by Eurovent Certita Certification, the manufacturer provides evidences of the implementation of the corrective actions
- The auditor validate the corrective actions regarding the provided evidences
- The audit is considered as positive when all corrective actions and their evidences are validated by the auditor. However the actual implementation of the corrective actions can be conducted during the next audit.
- If Eurovent Certita Certification is not able to validate corrective actions and their evidences :
 - it can ask for an additional audit in order to check the implementation of corrective actions before the next yearly audit
 - The certification of the manufacturer can be suspended until the solving of non-conformities

¹ The explanation of the risk must be written for each nonconformity, in the nonconformities sheet.

V. PROMOTION OF THE PROGRAMME

V.1 By Eurovent Certita Certification

The list of Participants and the following information are published on the Eurovent Certified Performance Website: www.eurovent-certification.com:

- Name of Participant
- Trade or Brand name of model
- Model reference
- Category
- ISO laboratory temperature class
- Certified characteristics for all models (See §VI of Rating Standard RS 14/C/001)
- *Performance items* only when displaying comparable models (meaning with the same BMG n°, see appendix C and following table), including energy efficiency label (from A to E).
- Sketch of the cabinet (see Figure 6 and Figure 7), ISO class of cabinet, dimensions, refrigerant, fan type, lighting type, glass door type, only when clicking on the name of the model.

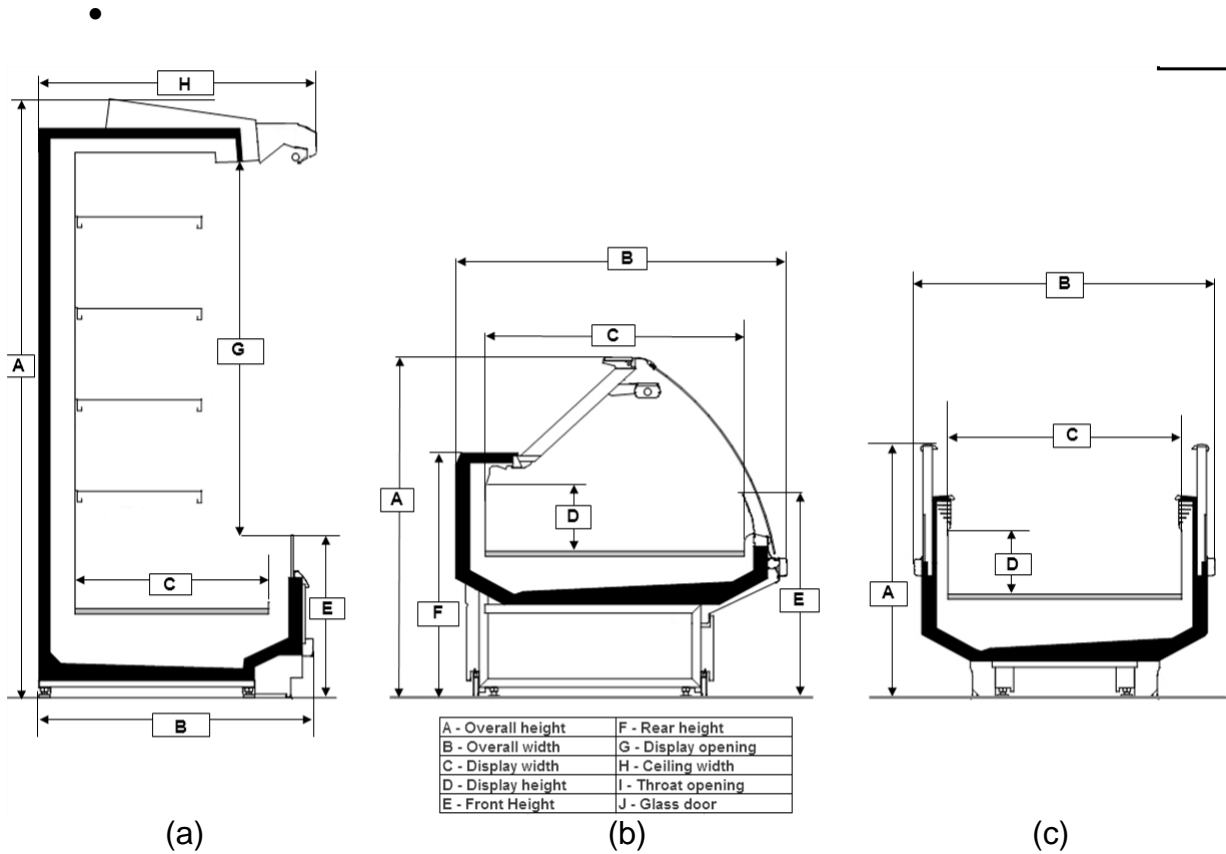


Figure 6: Sketches with certified cross-sections for (a) Multi-deckers and semi-verticals open (b) Service counters (c) Islands

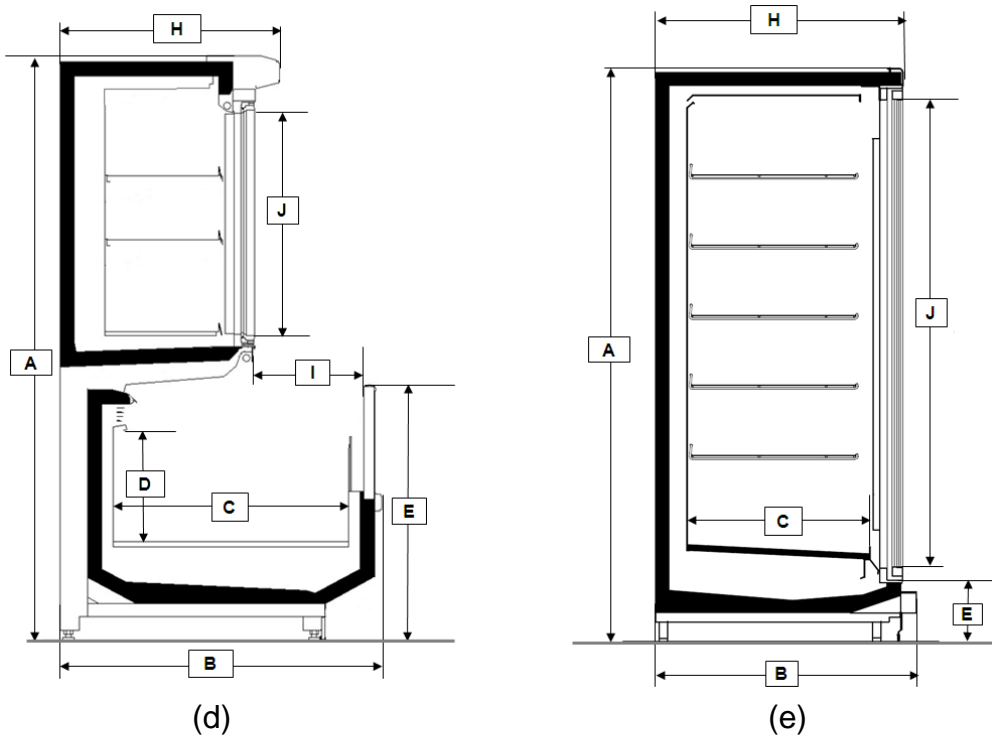


Figure 7: Sketches with certified cross-sections for (d) Combi-freezers (e) Semi-verticals with doors and verticals with doors

V.2 By Participants

Use of mark is detailed in Certification Manual.

- On a generic documentation without any technical data, the Eurovent Certita Certification mark can be used as defined in the Certification Manual.
- On any public documentation carrying performance data these should be published in accordance with Eurovent Certified Performance website data. In other words, in order to display the Eurovent Certita Certification mark, published technical documentation shall include standard ratings. Mark is mandatory on quotations and in commercial literature.

In addition:

- On commercial documentation, if there are certified models in it, it is highly recommended to use the Eurovent Certita Certification mark.
- On a commercial documentation which carries the Eurovent Certita Certification mark, each listed model shall carry a footnote “published on the Eurovent Certified Performance website.”

The Participant may indicate his participation by:

- Displaying the appropriate Eurovent Certita Certification mark on units of certified models by means of a sticker or by application directly on the nameplate.
- Displaying the appropriate Eurovent Certita Certification mark in documentation.

APPENDIX A. CERTIFICATION SCHEDULE

For repetition campaigns, the following schedule shall be applied.

Testing rounds	1 st round	2 nd Round
Eurovent Certita Certification asks for the up-dating of product list before	01/11/n-1	-
Participant confirms up-dating of products list before	01/12/n-1	-
Eurovent Certita Certification sends selection list for testing before	31/12/n-1	
The Participant confirms selection list before + invoicing of the first round	31/01/n	
Payment	28/02/n	31/07/n
<i>Publication of updated certified performances in ECC website</i>	01/03/n	
Delivery of units + Technical Data Sheets + Additive information sheets	30/03/n	14/09/2n
The Laboratory carries out all first tests and send all test reports	01/04/n (3 weeks/test)	15/09/n (3 weeks/test)
Eurovent Certita Certification sends the test reports and results	1 week	
The Participant can ask for a second test	2 weeks	
Theoretical End of the test round (Excepted penalty tests)	31/05/n	15/11/n
Eurovent Certita Certification sends the diplomas if delivery, TDS and payments are completed	30/11/n	
Diplomas are valid until	30/11/n+1	

Table 2: Certification Schedule

APPENDIX B. FORMS

B.I. Declaration list

The form is an .xls or .xlsx sheet, composed of the following columns (merged with BOM).

RDC (I, R) - 2017 GENERIC	Product Number	Unique ECC number in its own database. This will be created during the first import and will not change anymore			Multi-deckers and semi-verticals open	Semi-verticals with door & verticals with doors	Islands	Combi-freezers	Service counters
	Master product number	In case applicant/participant presents, as distributor (Brand name) a product which is manufactured and certified by another participant, here should be inserted the product number of the master product							
	Tested On	Date of last test							
	Rerated on	Date of last rerate (Degradation of data after test)							
	Created on	Date of creation of the product							
	Last update on	date of last modification of the product							
	Status	Status of the product [DVP, NEW, Certified, Deleted, Obsolete, IVP]							
	Participant Name	Name of the holder of the contract							
	Product Name	Name of the product, this has to be unique							
	Trade Name	Also called "Brand"							
Type of product	Name of the range								
Range Name	ECC codification for types of products [R/0, R/WD, R/I, R/CF, R/SC]								
BMG	Basic model group. (See OM for definition)			C	C	C	C	C	
Additional GENERIC (ADG)	BOM ref			D	D	D	D	D	
	ISO family [R/(+V/H/C+N)]			D&P	D&P	D&P	D&P	D&P	
Laboratory conditions (LAB)	Test load config	mm		D&P	D&P	D&P	D&P	D&P	
	TDA	m ²	-3%	D&P	D&P	D&P	D&P	D&P	
	ISO T class			D&P	D&P	D&P	D&P	D&P	
	heat extraction without night curtain	W		D		D	D		
	Evap temp without night curtain	°C		D		D	D		
	heat extraction with night curtain	W		D		D	D		
	Evap temp with night curtain	°C		D		D	D		
	heat extraction average 24h	W		D	D	D	D	D	
	Evap temp average 24h	°C		D	D	D	D	D	
	DEC	kWh/day		D&P	D&P	D&P	D&P	D&P	
REC	kWh/day		D&P	D&P	D&P	D&P	D&P		
General (GEN)	DimA	mm	± 50mm	D&P	D&P	D&P	D&P	D&P	
	DimB	mm	± 20mm	D&P	D&P	D&P	D&P	D&P	
	DimC	mm	± 20mm	D&P	D&P	D&P	D&P	D&P	
	DimD	mm	± 20mm		D&P	D&P	D&P		
	DimE	mm	± 20mm	D&P	D&P		D&P	D&P	
	DimF	mm	± 20mm		D&P				
	DimG	mm	± 50mm	D&P					
	DimH	mm	± 20mm	D&P			D&P	D&P	
	DimI	mm	± 20mm	D	D	D	D	D	
	DimJ	mm	± 20mm	D	D	D	D	D	
	Length	mm		D&P	D&P	D&P	D&P	D&P	
	Refrigerant			D	D	D	D	D	
	Side wall type			D	D	D	D	D	
Side wall thickness	mm	± 5 mm	D	D	D	D	D		
Shelves (SHE)	Internal fitting type			D	D	D	D	D	
	Shelves No.			D	D	D	D	D	
	Topshelf depth	mm	± 10mm	D	D	D	D	D	
	Topshelf angle	°	± 5°	D	D	D	D	D	
	2ndshelf depth	mm	± 10mm	D	D	D	D	D	
	2ndshelf angle	°	± 5°	D	D	D	D	D	
	3rdShelf depth	mm	± 10mm	D	D	D	D	D	
	3rdshelf angle	°	± 5°	D	D	D	D	D	
	4thshelf depth	mm	± 10mm	D	D	D	D	D	
	4thshelf angle	°	± 5°	D	D	D	D	D	
	5thshelf depth	mm	± 10mm	D	D	D	D	D	
	5thshelf angle	°	± 5°	D	D	D	D	D	
	6thshelf depth	mm	± 10mm	D	D	D	D	D	
6thshelf angle	°	± 5°	D	D	D	D	D		
Deckshelf angle	°	± 5°	D	D	D	D	D		
Lighting (LIG)	Light (true or false)				D	D		D&P	
	Shelves with lighting (true or false)			D					
	Lighting no. of rows			D	D	D		D	
	Lighting type			D&P	D&P	D&P	D&P	D&P	
	Type of ballast			D	D	D	D	D	
Evaporator fans (EVF)	Tot nom lighting pow			W	D	D	D	D	
	No. of evaporator fans				D	D	D	D	
	Fan type			D&P	D&P	D&P	D&P	D&P	
	Evap fan manufact			W	D	D	D	D	
	Nom abs pow per fan			W	nameplate	D	D	D	
	Possible other manuf2			W	nameplate	D	D	D	
	Nom abs pow per fan2			W	nameplate	D	D	D	
	Possible other manuf3			W	nameplate	D	D	D	
	Nom abs power per fan3			W	nameplate	D	D	D	
No. of other fans				D	D	D	D		
Other fan manufact			W	nameplate	D	D	D		
Nom abs pow per other fan			W	nameplate	D	D	D		

PERFORMANCES OF THE PRODUCT										
Other cabinet fans	No. of other cabinet fans			D	D	D	D	D	D	
	Other cabinet Fan type			D	D	D	D	D	D	
	Other cabinet fan manuf			D	D	D	D	D	D	
	Possible other manuf5			D	D	D	D	D	D	
	Nom abs pow perFan5	W	nameplate	D	D	D	D	D	D	
	Possible other manuf6			D	D	D	D	D	D	
	Nom abs pow per fan6	W	nameplate	D	D	D	D	D	D	
	Anti cond syst heaters [true/false]			D	D	D	D	D	D	
	Anti cond syst heaters power	W	+20 / -10 %	D	D	D	D	D	D	
	Defrost syst heater total power	W	±10%	D	D	D	D	D	D	
Evaporators	No. of evaporators			D	D	D	D	D	D	
	Evap1 fin package length	mm	± 10mm	D	D	D	D	D	D	
	Evap1 fin height	mm	± 5mm	D	D	D	D	D	D	
	Evap1 fin depth	mm	± 5mm	D	D	D	D	D	D	
	Evap1 fin space fin angle	mm	± 10mm	D	D	D	D	D	D	
	Evap1 fin material			D	D	D	D	D	D	
	Evap1 no. of tubes			D	D	D	D	D	D	
	Evap1 ext tubeØ	mm	± 5%	D	D	D	D	D	D	
	Evap1 tube material			D	D	D	D	D	D	
	Evaporator2	Evap2 fin package length	mm	± 10mm	D	D	D	D	D	D
Evap2 fin height		mm	± 5mm	D	D	D	D	D	D	
Evap2 fin depth		mm	± 5mm	D	D	D	D	D	D	
Evap2 fin space fin angle		mm	± 10mm	D	D	D	D	D	D	
Evap2 fin material				D	D	D	D	D	D	
Evap2 no. of tubes				D	D	D	D	D	D	
Evap2 ext tubeØ		mm	± 5%	D	D	D	D	D	D	
Evap2 tube material				D	D	D	D	D	D	
Evaporator3		Evap3 fin package length	mm	± 10mm	D	D	D	D	D	D
		Evap3 fin height	mm	± 5mm	D	D	D	D	D	D
	Evap3 fin depth	mm	± 5mm	D	D	D	D	D	D	
	Evap3 fin space fin angle	mm	± 10mm	D	D	D	D	D	D	
	Evap3 fin material			D	D	D	D	D	D	
	Evap3 no. of tubes			D	D	D	D	D	D	
	Evap3 ext tubeØ	mm	± 5%	D	D	D	D	D	D	
	Evap3 tube material			D	D	D	D	D	D	
	Front glass	FrontGlass			D	D	D	D	D	D
		Front glass height	mm	± 10mm	D	D	D	D	D	D
Air discharge	Air discharge no.			D	D	D	D	D	D	
	Air discharge 1 type			D	D	D	D	D	D	
	Air discharge 1 net width	mm	± 5mm	D	D	D	D	D	D	
	Air discharge 1 from...			D	D	D	D	D	D	
	Air discharge 2 type			D	D	D	D	D	D	
	Air discharge 2 net width	mm	± 5mm	D	D	D	D	D	D	
	Air discharge 2 from...			D	D	D	D	D	D	
	Air discharge 3 type			D	D	D	D	D	D	
	Air discharge 3 net width	mm	± 5mm	D	D	D	D	D	D	
	Air discharge 3 from...			D	D	D	D	D	D	
Night cover	Night curtain			D	D					
	Night cover type			D	D					
	Night cover length	mm	± 50mm	D	D					
Glass door	No. of night covers			D	D	D	D	D	D	
	Glass type			D&P	D&P	D&P	D&P	D&P	D&P	
	Door type			D	D	D	D	D	D	
	Lid			D	D	D	D	D	D	
Cross-section	Internal storage			D	D	D	D	D	D	
	Display width type	mm							C&P	
	Ext width type	mm				C&P				
	Front height type	mm		C&P						
	Frozen or chilled				C&P	C&P	C&P	C&P	C&P	
	Height type	mm		C&P	C&P					
	Top width type	mm		C&P						
	Width type	mm		C&P	C&P					
	Calculated items (CALC)	TEC	kWh/day		C&P	C&P		C&P	C&P	C&P
		Efficiency (lab)	%		C&P	C&P		C&P	C&P	C&P
Energy efficiency Index				C&P	C&P	C&P	C&P	C&P	C&P	
Efficiency reference				C&P	C&P	C&P	C&P	C&P	C&P	
Energy efficiency class				C&P	C&P	C&P	C&P	C&P	C&P	
BMG for control				C	C	C	C	C	C	
Deck shelf depth		mm		C	C	C	C	C	C	
Display width		mm		C	C	C	C	C	C	
Ext width		mm		C	C	C	C	C	C	
Front height		mm		C	C	C	C	C	C	
Temperatures from Tclasses (TCLASSES)	Height	m		C	C	C	C	C	C	
	Loading depth	mm		C	C	C	C	C	C	
	Structure			C	C	C	C	C	C	
	Top width	mm		C	C	C	C	C	C	
	Width	mm		C	C	C	C	C	C	
	Lowest temp of coldest MPackage	°C	± 0,5°C	C	C	C	C	C	C	
	Highest temp of the warmest M-Package	°C	± 0,5°C	C	C	C	C	C	C	
	Lowest temp fo warmest MPackage	°C	± 0,5°C	C	C	C	C	C	C	
	TECH NICAL	General (GEN)	Factory city		D	D	D	D	D	D
			OutOfEU		C	C	C	C	C	C

APPENDIX C. List of BMG numbers

BMG n°	Category	Height type (bottom to top) [mm]	Width type (back to front) [mm]	Front height type [mm]	Top width type [mm]	External width type [mm]	Display width type [mm]	Front Glas type [Y/N/ <=300/>300]	Lid [Y/N]	Frozen or chilled	Superstructure	Shelves with lighting [Y/N]	Light [Y/N]	
1	RVC4, RVF4 (Semi-vertical and Verticals) with doors	≤1800	≤900	-	-	-	-	-	-	Frozen	-	N	-	
2		≤1800	≤900	-	-	-	-	-	-	Chilled	-	N	-	
3		≤1800	900-1000	-	-	-	-	-	-	Frozen	-	N	-	
4		≤1800	900-1000	-	-	-	-	-	-	Chilled	-	N	-	
5		≤1800	>1000	-	-	-	-	-	-	Frozen	-	N	-	
6		≤1800	>1000	-	-	-	-	-	-	Chilled	-	N	-	
7		1800-2100	≤900	-	-	-	-	-	-	Frozen	-	N	-	
8		1800-2100	≤900	-	-	-	-	-	-	Chilled	-	N	-	
9		1800-2100	900-1000	-	-	-	-	-	-	Frozen	-	N	-	
10		1800-2100	900-1000	-	-	-	-	-	-	Chilled	-	N	-	
11		1800-2100	>1000	-	-	-	-	-	-	Frozen	-	N	-	
12		1800-2100	>1000	-	-	-	-	-	-	Chilled	-	N	-	
13		>2100	≤900	-	-	-	-	-	-	Frozen	-	N	-	
14		>2100	≤900	-	-	-	-	-	-	Chilled	-	N	-	
15		>2100	900-1000	-	-	-	-	-	-	Frozen	-	N	-	
16		>2100	900-1000	-	-	-	-	-	-	Chilled	-	N	-	
17		>2100	>1000	-	-	-	-	-	-	Frozen	-	N	-	
18		>2100	>1000	-	-	-	-	-	-	Chilled	-	N	-	
19	RVC1, RVC2, RVC3 (Multideckers / Semiverticals open)	≤1800	≤900	≤250	>700	-	-	-	-	-	-	N	-	
20		≤1800	≤900	≤250	≤700	-	-	-	-	-	-	N	-	
21		≤1800	≤900	250-450	>700	-	-	-	-	-	-	N	-	
22		≤1800	≤900	250-450	≤700	-	-	-	-	-	-	N	-	
23		≤1800	≤900	>450	>700	-	-	-	-	-	-	N	-	
24		≤1800	≤900	>450	≤700	-	-	-	-	-	-	N	-	
25		≤1800	900-1000	≤250	>700	-	-	-	-	-	-	N	-	
26		≤1800	900-1000	≤250	≤700	-	-	-	-	-	-	N	-	
27		≤1800	900-1000	250-450	>700	-	-	-	-	-	-	N	-	
28		≤1800	900-1000	250-450	≤700	-	-	-	-	-	-	N	-	
29		≤1800	900-1000	>450	>700	-	-	-	-	-	-	N	-	
30		≤1800	900-1000	>450	≤700	-	-	-	-	-	-	N	-	
31		≤1800	>1000	≤250	>700	-	-	-	-	-	-	N	-	
32		≤1800	>1000	≤250	≤700	-	-	-	-	-	-	N	-	
33		≤1800	>1000	250-450	>700	-	-	-	-	-	-	N	-	
34		≤1800	>1000	250-450	≤700	-	-	-	-	-	-	N	-	
35		≤1800	>1000	>450	>700	-	-	-	-	-	-	N	-	
36		≤1800	>1000	>450	≤700	-	-	-	-	-	-	N	-	
37		1800-2100	≤900	≤250	>700	-	-	-	-	-	-	N	-	
38		1800-2100	≤900	≤250	≤700	-	-	-	-	-	-	N	-	
39		1800-2100	≤900	250-450	>700	-	-	-	-	-	-	N	-	
40		1800-2100	≤900	250-450	≤700	-	-	-	-	-	-	N	-	
41		1800-2100	≤900	>450	>700	-	-	-	-	-	-	N	-	
42		1800-2100	≤900	>450	≤700	-	-	-	-	-	-	N	-	
43		1800-2100	900-1000	≤250	>700	-	-	-	-	-	-	N	-	
44		1800-2100	900-1000	≤250	≤700	-	-	-	-	-	-	N	-	
45		1800-2100	900-1000	250-450	>700	-	-	-	-	-	-	N	-	
46		1800-2100	900-1000	250-450	≤700	-	-	-	-	-	-	N	-	
47		1800-2100	900-1000	>450	>700	-	-	-	-	-	-	N	-	
48		1800-2100	900-1000	>450	≤700	-	-	-	-	-	-	N	-	
49		1800-2100	>1000	≤250	>700	-	-	-	-	-	-	N	-	
50		1800-2100	>1000	≤250	≤700	-	-	-	-	-	-	N	-	
51		1800-2100	>1000	250-450	>700	-	-	-	-	-	-	N	-	
52		1800-2100	>1000	250-450	≤700	-	-	-	-	-	-	N	-	
53		1800-2100	>1000	>450	>700	-	-	-	-	-	-	N	-	
54		1800-2100	>1000	>450	≤700	-	-	-	-	-	-	N	-	
55		>2100	≤900	≤250	>700	-	-	-	-	-	-	N	-	
56		>2100	≤900	≤250	≤700	-	-	-	-	-	-	N	-	
57		>2100	≤900	250-450	>700	-	-	-	-	-	-	N	-	
58		>2100	≤900	250-450	≤700	-	-	-	-	-	-	N	-	
59		>2100	≤900	>450	>700	-	-	-	-	-	-	N	-	
60		>2100	≤900	>450	≤700	-	-	-	-	-	-	N	-	
61		>2100	900-1000	≤250	>700	-	-	-	-	-	-	N	-	
62		>2100	900-1000	≤250	≤700	-	-	-	-	-	-	N	-	
63		>2100	900-1000	250-450	>700	-	-	-	-	-	-	N	-	
64		>2100	900-1000	250-450	≤700	-	-	-	-	-	-	N	-	
65		>2100	900-1000	>450	>700	-	-	-	-	-	-	N	-	
66		>2100	900-1000	>450	≤700	-	-	-	-	-	-	N	-	
67		>2100	>1000	≤250	>700	-	-	-	-	-	-	N	-	
68		>2100	>1000	≤250	≤700	-	-	-	-	-	-	N	-	
69		>2100	>1000	250-450	>700	-	-	-	-	-	-	N	-	
70		>2100	>1000	250-450	≤700	-	-	-	-	-	-	N	-	
71	>2100	>1000	>450	>700	-	-	-	-	-	-	N	-		
72	>2100	>1000	>450	≤700	-	-	-	-	-	-	N	-		
73	RHF3, RHF4, RHF5, RHF6, RHC3, RHC4, RHC5, RHC6 (Islands)	-	-	-	-	≤1400	-	Y	Y	-	-	N	-	
74		-	-	-	-	≤1400	-	Y	N	-	-	N	-	
75		-	-	-	-	≤1400	-	N	Y	-	-	N	-	
76		-	-	-	-	≤1400	-	N	N	-	-	N	-	
77		-	-	-	-	1400-1700	-	Y	Y	-	-	N	-	
78		-	-	-	-	1400-1700	-	Y	N	-	-	N	-	
79		-	-	-	-	1400-1700	-	N	Y	-	-	N	-	
80		-	-	-	-	1400-1700	-	N	N	-	-	N	-	
81		-	-	-	-	>1700	-	Y	Y	-	-	N	-	
82		-	-	-	-	>1700	-	Y	N	-	-	N	-	
83		-	-	-	-	>1700	-	N	Y	-	-	N	-	
84		-	-	-	-	>1700	-	N	N	-	-	N	-	
85		-	-	-	-	-	≤930	-	-	-	Frozen	Traditional open	-	-
86		-	-	-	-	-	≤930	-	-	-	Frozen	Traditional closed	-	-
87	-	-	-	-	-	≤930	-	-	-	Frozen	Self-Service	-	-	
88	-	-	-	-	-	≤930	-	-	-	Chilled	Traditional open	-	-	
89	-	-	-	-	-	≤930	-	-	-	Chilled	Traditional closed	-	-	
90	-	-	-	-	-	≤930	-	-	-	Chilled	Self-Service	-	-	
91	-	-	-	-	-	>930	-	-	-	Frozen	Traditional open	-	-	
92	-	-	-	-	-	>930	-	-	-	Frozen	Traditional closed	-	-	
93	-	-	-	-	-	>930	-	-	-	Frozen	Self-Service	-	-	
94	-	-	-	-	-	>930	-	-	-	Chilled	Traditional open	-	-	
95	-	-	-	-	-	>930	-	-	-	Chilled	Traditional closed	-	-	
96	-	-	-	-	-	>930	-	-	-	Chilled	Self-Service	-	-	
97	YF1, YF2, YF3, YF4 (Combi freezers)	≤2100	-	-	-	-	-	-	Y	Frozen	-	-	No at the bottom	
98	-	≤2100	-	-	-	-	-	-	N	Frozen	-	-	No at the bottom	
99	-	>2100	-	-	-	-	-	-	Y	Frozen	-	-	No at the bottom	
100	-	>2100	-	-	-	-	-	-	N	Frozen	-	-	No at the bottom	

APPENDIX D. TECHNICAL DATA SHEET (TDS)

TECHNICAL DATA SHEET	
ADDITIONAL DOCUMENTATION	
Set-up (timers, thermostat, etc...)	
Instruction for use (optional)	
Load plan (Optional)	
Evaporator drawing	
Data Sheet	
APPLICANT DETAILS	
Company name	
Contact person	
Address	
P.O. Box	
Postal code/city	
Country	
Phone	
Fax	
E-mail	
PRODUCT GENERAL INFORMATION	
Number of Doors	
Cabinet for sensitive food products (yes/no)	
Voltage range (V)	
Power input (W) during day (light + 5 fans)	
Power input (W) during night (no light and 4 fans)	
TEST CONDITIONS	
Temperature control, cut in (°C)	
Defrost process (Natural, Electrical, Hot gas,....)	
Defrost number/24 hours	
Defrost termination type (time, temperature)	
Defrost termination setting	