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The maximum allowable values of energy performance and energy efficiency grades of commercial refrigerating appliances

Part 1: Refrigerated display cabinets with remote condensing unit

(Draft for Approval)

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Foreword

Section 4 is mandatory while the rest is recommended.

The following standard, divided into parts, is formulated for different types of commercial refrigerating appliances:

- Part 1: Refrigerated display cabinets with remote condensing unit
- Part 2: Self-contained refrigerated display cabinets
- Part 3: Refrigerated vending machines
- Part 4: Water dispensers

This is Part 1 of GBXXXXX.

This part is the standard for refrigerated display cabinets formulated on the basis of GB/T 21001 (refrigerated display cabinets) (ISO 23953:2005, IDT), and has drawn upon other standards on refrigerated display cabinets, including Australia's AS1731.14 and the US' ARI Standard 1200.

Appendices A and B of this part are informative.

This part has been put forward by the Department of Resource Conservation and Environmental Protection of the National Development and Reform Commission.

This part is under the jurisdiction of the National Standardization Technical Committee on Energy Fundamentals and Management.

This part has been drafted by the China Standards Research Institute, Chinese Association of Refrigeration, National Test Centre for Quality Inspection of Commercial Refrigeration Equipment, Carrier Air-Condition and Refrigeration R&D Management (Shanghai) Ltd., Dalian Sanyo Cold-China Co. Ltd., Shandong Xiaoya Group, Shanghai Furong Industry Co., Ltd., Beijing Er Shang-Fukushima Machinery Electric Co., Ltd., Shanghai Highly Nakano Refrigerators Co., Ltd., Heatcraft Worldwide Refrigeration (Wuxi), Shanghai Jiaotong University, Tianjin University of Commerce, and Jimei University.

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The maximum allowable values of energy performance and energy efficiency grades of commercial refrigerating appliances

Part 1: Refrigerated display cabinets with remote condensing unit

1. Scope

This part of GBXXXX specifies the maximum allowable values of energy consumption coefficient, energy efficiency grades, evaluating values of energy conservation, test method, and inspection rules regarding refrigerated display cabinets with remote condensing unit. It is applicable to such cabinets used for selling and displaying food. It is not applicable to refrigerated vending machines or non-retail refrigerated display cabinets.

2. Normative references

Some articles in the following documents have been quoted in this part and become its articles. For dated references, none of the later amended editions (excluding the correction of errors) or revised editions shall apply to this part. However, parties that have reached an agreement in accordance with this part are encouraged to consider the possibility of using the latest editions of these documents. For all undated references, the latest edition shall apply.

GB/T 21001.1-2007 Refrigerated display cabinets, Part 1: Terminology

GB/T 21001.2-2007 Refrigerated display cabinets, Part 2: Categories, Requirements, and Test Conditions

3. Terms and definitions

The following terms and definitions established by GB/T 21001.1-2007 and GB/T 21001.2-2007 are applicable to this part.

3.1 The energy consumption coefficient of refrigerated display cabinets with remote condensing unit (ECC)

The ratio of TEC to TDA under rated refrigerating conditions and specified conditions. The ECC shall be calculated with Formula (1):

$$ECC = TEC / TDA \quad \text{……} \quad (1)$$

In which:

ECC - energy consumption coefficient (kWh/24h/m^2)

TEC - total energy consumption (kwh/24h)

TDA - total display area (m^2)

3.2 The maximum allowable values of energy consumption coefficient of remote refrigerated display cabinets.

The maximum allowable values of the EEC under rated refrigerating conditions and specified conditions (ECC_{max}).

3.3 Energy efficiency index.

The ratio of the measured value of the ECC to the maximum allowable value of the ECC.

3.4 Energy efficiency grade.

A grading method indicating differences in the energy efficiency of products, determined by the energy efficiency index. There are five grades (1, 2, 3, 4, 5), where Grade 1 denotes the highest energy efficiency.

3.5 Rated energy efficiency grade of remote refrigerated display cabinets.

The energy efficiency grade, as labelled on a refrigerated display cabinet by the manufacturer.

3.6 Evaluation values of energy conservation of remote refrigerated display cabinets.

The maximum allowable values of the ECC for energy-saving refrigerated display cabinets with remote condensing unit under rated refrigerating conditions and specified conditions.

4. Maximum allowable values of ECC

If the test conditions specified in GB/T 21001.1-2007 and GB/T 21001.2-2007 are met, the measured values of the ECC of refrigerated display cabinets with remote condensing units shall not exceed the maximum allowed values for the corresponding grades specified in Tables 1 and 2. The test shall be conducted in Type 3 climate specified in GB/T21001.2-2007. During the test, light devices and anti-condensation heaters shall be used, unless such devices are controlled by clocks, smart sensors, or similar automation devices. If the cabinet is fitted with a night cover/curtain, the test shall be conducted in accordance with the requirements for cabinets with night covers/curtains in GB/T 21001.2-2007 (5.3.2.7).

For the maximum allowable values of ECC of different refrigerated display cabinets at different temperature levels in Type 3 climate, see Tables 1 and 2.

ECC_{max} (maximum allowable values of ECC) shall be calculated with Formula (1) and expressed in kWh/24h/ m^2.

Table 1. ECC_{max} of medium temperature refrigerated display cabinets with remote condensing unit at different temperature levels

Temperature levels	Types of medium temperature refrigerated display cabinets with remote condensing unit	ECC_{max} (kWh/24h/m2) in Type 3 climate		
		M-pack temperature classification		
		M1	M2	H1, H2
Medium temperature	RS1- non-illuminated shelf	12.55	11.04	9.72
	RS1 - illuminated shelf	15.98	14.06	12.37
	RS2 - non-illuminated shelf	12.73	11.20	9.86
	RS2 - illuminated shelf	16.98	14.94	13.15
	RS3 - non-illuminated shelf	14.84	13.06	11.49
	RS3 - illuminated shelf	17.63	15.51	13.65
	RS4 - solid door	—	—	—
	RS4 - glass door	9.73	8.56	7.53
	RS5 - solid door	—	—	—
	RS5 - glass door	—	—	—
	RS6 - direct cooling calandria	14.21	12.50	11.00
	RS6 - fan coil	14.16	12.46	10.97
	RS7 - direct cooling calandria	—	—	—
	RS7 - fan coil	14.79	13.02	11.45
	RS8 - direct cooling calandria	12.25	10.78	9.49
	RS8 - fan coil	13.19	11.61	10.21
	RS9 - direct cooling calandria	—	—	—
	RS9 - fan coil	12.09	10.64	9.36
	RS10 - high	—	—	—
	RS10 - medium	—	—	—
	RS10 - low	18.67	16.43	14.46

Table 2. ECC_{max} of low temperature refrigerated display cabinets with remote condensing unit at different temperature levels

Temperature levels	Types of low temperature refrigerated display cabinets with remote condensing unit	ECC_{max} (kWh/24h/m2) in Type 3 climate		
		M-pack temperature classification		
		L1	L2	L3
Low temperature	RS11	38.13	30.50	24.40
	RS12	66.33	53.06	42.45
	RS13 - with solid envelope	19.48	15.58	12.47
	RS13 - with glass envelope	19.58	15.66	12.53
	RS14 - with solid envelope	17.17	13.74	10.99
	RS14 - with glass envelope	18.49	14.79	11.83
	RS15 - solid door	—	—	—
	RS15 - glass door	37.08	29.66	23.73
	RS16 - solid door	—	—	—
	RS16 - glass door	40.56	32.45	25.96
	RS17 - solid door	—	—	—
	RS17 - glass door	—	—	—
	RS18	48.58	38.86	31.09
	RS19	36.15	28.92	23.14
	RS20	—	—	—
Note: See Appendix A for RS classification codes				

5. The grading of energy efficiency

5.1 The grading of energy efficiency

The energy efficiency grade of a particular refrigerated display cabinet shall be judged according to the results of the ECC test and Table 3. The energy efficiency grade of the product shall not be lower than its rated energy efficiency grade. The energy efficiency index • shall be calculated with Formula (2):

$$\bullet = ECC / ECC_{max} \times 100\% \quad \text{(2)}$$

In which:

• - energy efficiency index (no dimension);

ECC - the energy consumption coefficient of a refrigerated display cabinet with remote condensing unit (kWh/24h/m^2);

ECC_{max} - the maximum allowable value of the energy consumption coefficient of a refrigerated display cabinet with remote condensing unit (kWh/24h/m^2).

Table 3. Energy efficiency grades of refrigerated display cabinets with remote condensing unit

Energy efficiency index	Energy efficiency grade
• • 55%	1
55% < • • 65%	2
65% < • • 80%	3
80% < • • 90%	4
90% < • • 100%	5

5.2 Evaluation values of energy conservation

The evaluation values of energy conservation of refrigerated display cabinets (ECC_{EVEC}) shall be calculated with Formula (3):

$$ECC_{EVEC} = ECC_{max} \times 65\% \quad \text{..... (3)}$$

In which:

ECC_{EVEC} - the evaluation value of energy conservation of a refrigerated display cabinet (kWh/24h/ m^2);

ECC_{max} - the maximum allowable evaluation value of energy conservation of a refrigerated display cabinet (kWh/24h/m^2)

If the measured value of ECC of a refrigerated display cabinet is lower than or equal to ECC_{EVEC} the product shall be judged to be compliant with the technical requirements for the certification of energy-saving products.

6. Test method and report format

The test shall be conducted in accordance with the applicable requirements in GB/T 21001.1-2007, GB/T 21001.2-2007, and Section 4. Refer to Appendix B for the format of the ECC test report. A separate test report is required for the test conducted with each device.

7. Test rules

Take a sample from among a batch of products and test its ECC. If the requirements are not met, take another two samples. All the measured values shall meet the requirements; otherwise the batch is to be judged as defective. For a single product, test its ECC; if the measured value does not meet the requirements, the product shall be judged as defective.

8. Energy efficiency grade labels

8.1 The manufacturer shall test its products for ECC in accordance with the requirements in this part.

8.2 The manufacturer shall determine the products' rated energy efficiency grades according to the test results

Appendix A
(Informative)
Names of refrigerated display cabinets with remote condensing unit

Table A.1 Medium temperature refrigerated display cabinets with remote condensing unit

Name	Model	Description	Classification		
Open multi-level upright cabinet • high •	RS1	Medium temperature multi-level cabinet, air curtain length 1.5–1.9 m; cabinet height 2.2–2.5 m, depth 0.6–1.2 m	Non-illuminated shelf		Illuminated shelf
Open multi-level upright cabinet • medium •	RS2	Medium temperature multi-level cabinet, air curtain length 1.0–1.5 m; cabinet height 1.8–2.19 m, depth 0.6–1.2 m	Non-illuminated shelf		Illuminated shelf
Open multi-level upright cabinet • low •	RS3	Medium temperature multi-level cabinet, air curtain length 0.8–1.2 m; cabinet height 0–1.79 m, depth 0.6–1.2 m	Non-illuminated shelf		Illuminated shelf
Enclosed self-service storage cabinet	RS4	Multiple shelves, glass door; cabinet height 1.8–2.2 m, depth 0.6–1.2 m	Solid door		Glass door
Enclosed self-service storage cabinet: lower counter	RS5	Multiple shelves, glass door; cabinet height 0–1.79 m, depth 0.6–1.2 m	Solid door		Glass door
Cabinet with front single-layer flat glass	RS6	Medium temperature single-level cabinet, with flat glass at the front and sliding door at the back; cabinet height 1.25–1.4 m, depth 0.8–1.2 m; this type of display cabinet can be divided into two sub-types according to the arrangement of the coils of its evaporator	Direct cooling calandria		Fan coil
Cabinet with front double or multi-layer flat glass	RS7	Medium-temperature double or multi-level cabinet, with flat glass at the front and sliding door at the back; cabinet height 1.25–1.4 m, depth 0.8–1.2 m; this type of display cabinet can be divided into two sub-types according to the arrangement of the coils of its evaporator	Direct cooling calandria		Fan coil
Cabinet with front single-layer curved glass	RS8	Medium temperature single-level cabinet with curved glass at the front and sliding door at the back; cabinet height 1.25–1.4 m, depth 0.8–1.2 m; this type of display cabinet can be divided into two sub-types according to the arrangement of the coils of its evaporator	Direct cooling calandria		Fan coil
Cabinet with front double or multi-layer curved glass	RS9	Medium temperature double or multi-level cabinet with curved glass at the front and sliding door at the back; cabinet height 1.25–1.4 m, depth 0.8–1.2 m; this type of display cabinet can be divided into two sub-types according to the arrangement of the coils of its evaporator	Direct cooling calandria		Fan coil
Upright cabinet with glass structure visible on four sides	RS10	Cabinet net 2.2–2.5 m (high), 1.8–2.19 m (medium), 0–1.79 m (low)	High	Medium	Low

Table A.2 Low temperature refrigerated display cabinets with remote condensing unit

Name	Model	Description	Classification	
Open multi-level upright cabinet (medium)	RS11	Low temperature multi-level cabinet, air curtain length 1.0–1.5 m; cabinet height 1.8–2.19 m, depth 0.6–1.2 m	No classification	
Open multi-level upright cabinet (low)	RS12	Low temperature multi-level cabinet, air curtain length 0.6–1.0 m; cabinet height 0–1.79 m, depth 0.6–1.2 m	No classification	
Single-width open cabinet	RS13	Low temperature self-service open cabinet with horizontal air curtain (length: 0.75–0.85 m) at the opening	With solid envelope	With glass envelope
Double-width open cabinet	RS14	Low temperature self-service open cabinet with horizontal air curtain (length: 2x(0.75–0.85 m) at the opening	With solid envelope	With solid envelope
Enclosed self-service storage cabinet (high)	RS15	Low temperature, cabinet height 2.2–2.8 m, depth 0.6–1.2 m	Solid door	Glass door
Enclosed self-service storage cabinet (medium)	RS16	Low temperature, cabinet height 1.8–2.19 m, depth 0.6–1.2 m	Solid door	Glass door
Enclosed self-service storage cabinet (low)	RS17	Low temperature, cabinet height 0–1.79 m, depth 0.6–1.2 m	Solid door	Glass door
Composite cabinet with glass door in the upper part and open lower part	RS18	Cabinet height 1.8–2.2 m, with glass door in the upper part and open lower part	No classification	
Enclosed self-service storage cabinet with glass structure visible on four sides (high)	RS19	Low temperature, glass door, cabinet height 2.2–2.8 m, depth 1.9–2.1 m	No classification	
Enclosed self-service storage cabinet with glass structure visible on four sides (medium)	RS20	Low temperature, glass door, cabinet height 1.8–2.19 m, depth 1.9–2.1 m	No classification	

Table A.3 TDA parameters of refrigerated display cabinets with remote condensing unit

isplay abinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
Iedium temperature														
Open ıulti-level upright cabinet (high)	RS1 & VC2	Fig. A.3	Cabinet height 2.2–2.5 m, depth 0.6–1.2 m	Horizontal depth of visible food, from the front end of the first shelf at or slightly lower than 1.550 m to the front edge of the loading line of the bottom board	H_o length does not include the end plate	0	0	Vertical height of visible food, from the upper loading line to the upper surface of the bottom board, the cabinet opening, or the front glass (the highest visible point at the bottom)	V_o length does not include the end plate	Vertical height of food visible through the front glass, from the highest point of the front glass to the upper surface of the bottom board, the cabinet opening, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length does not include the end plate	100%	Depends on glass structure	100 %
Open ıulti-level upright cabinet medium)	RS2 & VC2	Fig. A.3	Cabinet height 1.8–2.19 m, depth 0.6–1.2 m	Horizontal depth of visible food, from the front end of the first shelf at or slightly lower than 1.550 m to the front edge of the loading line of the bottom board	H_o length does not include the end plate	0	0	Vertical height of visible food, from the upper loading line to the upper surface of the bottom board, the cabinet opening, or the front glass (the highest visible point at the bottom)	V_o length does not include the end plate	Vertical height of food visible through the front glass, from the highest point of the front glass to the upper surface of the bottom board, the cabinet opening, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length does not include the end plate	100%	Depends on glass structure	100 %

Table A.3 (Continued)

ispla abinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
Iedium temperature														
Open ulti-level upright cabinet (low)	RS3 & VC1	Fig. A.3	Cabinet height 0–1.79 m, depth 0.6–1.2 m	Horizontal depth of visible food, from the front edge of the upper panel (if the cabinet height is less than 1.550 m) or from the front end of the first shelf at or slightly lower than 1.550 m to the front edge of the bottom board or to the glass board, depending on which is smaller	H_o length does not include the end plate	0	0	Vertical height of visible food, from the upper loading line to the upper surface of the bottom board, the cabinet opening, or the front glass (the highest visible point at the bottom)	V_o length does not include the end plate	Vertical height of food visible through the front glass, from the highest point of the front glass to the upper surface of the bottom board, the cabinet opening, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length does not include the end plate	100%	Depends on glass structure	100 %
Enclosed elf-service storage cabinet	RS4 & VC4	Fig. A.7	Multiple shelves, glass door; cabinet height 1.8–2.2 m, depth 0.6–1.2 m	0	0	0	0	0	0	Vertical height of food visible through the front glass, from the upper loading line to the upper surface of the bottom board, the steel wire plate/shelf, or the lowest point of the front glass (the height visible point at the bottom)	V_g length: total length of food visible through front glass, excluding the frame/ornament	100%	Depends on glass structure	100 %

Table A.3 (Continued)

isplay abinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
Iedium temperature														
Lower ounter of enclosed elf-service storage cabinet	RS5	Fig. A.7	Multiple shelves, glass door; cabinet height 0–1.79 m, depth 0.6–1.2 m	0	0	0	0	0	0	Vertical height of food visible through the front glass, from the upper loading line to the upper surface of the bottom board, the steel wire plate/shelf, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length: total length of food visible through front glass, excluding the frame/ornament	100%	Depends on glass structure	100 %
Ion-self-service cabinet vith front ingle-laye flat glass	RS6, HC1 & HC7	Fig. A.1	Cabinet height 1.25–1.40 m, depth 0.8–1.2 m	Horizontal depth of food visible from the back opening (fitted with glass or otherwise)	H_o length does not include the end plate, the structural frame, or the parts/ornaments around the glass	Horizontal depth of food visible through the front glass, from the top of the front edge of the panel structure to the loading line of the bottom board (product not working)	H_g length does not include the end plate, the structural frame, or the parts/ornaments around the glass	0	0	Vertical height of food visible through the front glass, from the upper loading line to the upper surface of the bottom board, the inner air lattice, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length does not include the end plate, the structural frame, or the parts/ornaments around the glass	Depends on front glass structure	Depends on front glass structure	Depends on back glass structure

Table A.3 (Continued)

ìisplay ıbinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
Iedium temperature														
Ion-self-service cabinet vith front louble or ıulti-layer flat glass	RS7, HC1 & HC7	Fig. A.1	Cabinet height 1.25–1.40 m, depth 0.8–1.2 m	Horizontal depth of food visible from the back opening (fitted with glass or otherwise)	H_o length does not include the end plate, the structural frame, or the parts/ornaments around the glass	Horizontal depth of food visible through the front glass, from the top of the front edge of the panel structure to the loading line of the bottom board (product not working)	H_g length does not include the end plate, the structural frame, or the parts/ornaments around the glass	0	0	Vertical height of food visible through the front glass, from the upper loading line to the shelf above the bottom board, the inner air lattice, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length does not include the end plate, the structural frame, or the parts/ornaments around the glass	Depends on front glass structure	Depends on front glass structure	Depends on back glass structure

Table A.3 (Continued)

isplay abinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
Iedium temperature														
Ion-self-service cabinet with front ingle-layer curved glass	RS8, HC1 & HC7	Fig. A.1	Cabinet height 1.25–1.40 m, depth 0.8–1.2 m	Horizontal depth of food visible from the back opening (fitted with glass or otherwise)	H_o length does not include the end plate, the structural frame, or the parts/ornaments around the glass	Horizontal depth of food visible through the front glass, from the top of the front edge of the panel structure to the loading line of the bottom board (product not working)	H_g length does not include the end plate, the structural frame, or the parts/ornaments around the glass	0	0	Vertical height of food visible through the front glass, from the highest loading line to the upper surface of the bottom board, the inner air lattice, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length does not include the end plate, the structural frame, or the parts/ornaments around the glass	Depends on front glass structure	Depends on front glass structure	Depends on back glass structure

Table A.3 (Continued)

ìisplay ıbinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
Iedium temperature														
Ion-self-service cabinet vith front louble or ıulti-layer curved glass	RS9, HC1 & HC7	Fig. A.1	Cabinet height 1.25–1.40 m, depth 0.8–1.2 m	Horizontal depth of food visible from the back opening (fitted with glass or otherwise)	H_o length does not include the end plate, the structural frame, or the parts/ornaments around the glass	Horizontal depth of food visible through the front glass, from the top of the front edge of the panel structure to the loading line of the bottom board (product not working)	H_g length does not include the end plate, the structural frame, or the parts/ornaments around the glass	0	0	Vertical height of food visible through the front glass, from the highest loading line to the upper surface of the bottom board, the inner air lattice, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length does not include the end plate, the structural frame, or the parts/ornaments around the glass	Depends on front glass structure	Depends on front glass structure	Depends on back glass structure
Upright cabinet vith glass structure ⁄isible on our sides	RS10		Cabinet height 2.2–2.5m (high) 1.8–2.19m (medium);	Horizontal depth of visible food (side and end) from the front end of the first shelf at or slightly lower than 1.550 m to the front edge of the loading line of the bottom board	H_o length does not include the end plate	0	0	Vertical height of the cabinet opening, from the lower edge of the front of the upper panel to the upper surface of the bottom board, the	V_o length does not include the end plate	Vertical height of food visible from the front glass, from the highest point of the front glass to the upper surface of the bottom board, the cabinet opening, or the lowest point of the front	V_g length does not include the end plate	100%	Depends on glass structure	100 %

Table A.3 (Continued)

ıisplay ıbinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
Iedium temperature														
			0–1.79m (low)					cabinet opening, or the front glass (the highest visible point at the bottom)		glass (the highest visible point at the bottom)				

Table A.3 (Continued)

ıisplay ıbinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
ow temperature														
Open ıulti-level upright cabinet medium)	RS11 & VF2	Fig. A.3	Cabinet height 1.8–2.19 m, depth 0.6–1.2 m	Horizontal depth of visible food, from the front end of the first shelf at or slightly lower than 1.550 m to the front edge of the loading line of the bottom board	H_o length does not include the end plate	0	0	Vertical height of the cabinet opening, from the lower edge of the front of the upper panel to the upper surface of the bottom board, the cabinet opening, or the front glass (the highest visible point at the bottom)	V_o length does not include the end plate	Vertical height of food visible from the front glass, from the highest point of the front glass to the upper surface of the bottom board, the cabinet opening, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length does not include the end plate	100%	Depends on glass structure	100 %
Open ıulti-level upright cabinet (low)	RS12 & VF1	Fig. A.3	Cabinet height 0–1.79 m, depth 0.6–1.2 m	Horizontal depth of visible food, from the front end of the first shelf at or slightly lower than 1.550 m to the front edge of the loading line of the bottom board	H_o length does not include the end plate	0	0	Vertical height of the cabinet opening, from the lower edge of the front of the upper panel to the upper surface of the bottom board, the cabinet opening, or the front glass (the highest visible point at the bottom)	V_o length does not include the end plate	Vertical height of food visible from the front glass, from the highest point of the front glass to the upper surface of the bottom board, the cabinet opening, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length does not include the end plate	100%	Depends on glass structure	100 %

Table A.3 (Continued)

isplay abinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
ow temperature														
ingle-width open cabinet	RS13, HF4 & HF6	Fig. A.6	Self-service cabinet with horizontal air curtain (length: 0.75–0.85 m)	Horizontal depth of the opening surface of visible food, excluding the dimensions of the return air duct	H_o length does not include the end plate	0	0	0	0	Vertical height of food visible from side glass, from the highest point of the loading line to the lowest part of the glass	V_g length does not include the end plate or the parts/ornaments around the glass	100%	Depends on glass structure	100 %
)ouble-width open cabinet	RS14 & HF4	Fig. A.6	Self-service cabinet with horizontal air curtain (length: 0.75–0.85 m)	Horizontal depth of the opening surface of visible food, excluding central vertical dimension	H_o length does not include the end plate	0	0	0	0	Vertical height of food visible from side glass, from the highest point of the loading line to the lowest part of the glass	V_g length does not include the end plate or the parts/ornaments around the glass	100%	Depends on glass structure	100 %

Table A.3 (Continued)

ıisplay ıbinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
ow temperature														
Enclosed elf-service storage cabinet (high)	RS15 & VF4	Fig. A.7	Multiple shelves, glass door, cabinet height 2.2–2.8 m, depth 0.6–1.2 m	0	0	0	0	0	0	Vertical height of food visible through the front glass, from the upper loading line to the upper surface of the bottom board, the steel wire plate/shelf, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length: total length of food visible from the front glass, excluding the part/ornaments around it	100%	Depends on glass structure	100 %
Enclosed elf-service storage cabinet medium)	RS16 & VF4	Fig. A.7	Multiple shelves, glass door, cabinet height 1.8–2.19 m, depth 0.6–1.2 m	0	0	0	0	0	0	Vertical height of food visible through the front glass, from the upper loading line to the upper surface of the bottom board, the steel wire plate/shelf, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length: total length of food visible from the front glass, excluding the part/ornaments around it	100%	Depends on glass structure	100 %

Table A.3 (Continued)

isplay abinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
ow temperature														
Enclosed elf-service storage cabinet (low)	RS17 & VF4	Fig. A.7	Multiple shelves, glass door, cabinet height 0–1.79 m, depth 0.6–1.2 m	0	0	0	0	0	0	V_{gt} = vertical height of food visible through the front glass, from the upper loading line to the upper surface of the bottom board, the steel wire plate/shelf, or the lowest point of the front glass (the highest visible point at the bottom)	V_{gb} length: total length of food visible from the front glass, excluding the part/ornaments around it	100%	T_{gvt} depends on glass structure	100 %
Open omposite cabinet vith glass oor in the pper part and open ower part	RS18 & YF3	Fig. A.5	Cabinet height 1.8–2.19 m, with glass door in the upper part and an open lower part	Horizontal depth of visible food, from the lower front edge of the glass door to the front edge of the loading line of the bottom board	H_o length does not include the end plate	0	0	0	0	V_{gt} = vertical height of food visible through the front glass, from the upper loading line to the upper surface of the bottom board, the steel wire plate/shelf, or the lowest point of the front glass (the highest visible point at the bottom)	V_{gt} length: total length of food visible from the front glass, excluding the part/ornaments around it	100%	T_{gvt} depends on glass structure	100 %

Table A.3 (Continued)

ìsplay ıbinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
ow temperature														
										V_{gb}= vertical height of food visible from the front glass, from the highest point of the front glass to the upper surface of the bottom board, the cabinet opening, or the lowest point of the front glass (the highest visible point at the bottom)	V_{gb} length does not include the end plate or the part/ornaments around the glass	100%	T_{gvb} depends on glass structure	100 %
Enclosed elf-service storage cabinet vith glass structure on four sides (high)	RS19		Multiple shelves, glass door, cabinet height 2.2–2.8 m, depth 1.9–2.1 m	0	0	0	0	0	0	Vertical height of food visible through the front glass, from the upper loading line to the upper surface of the bottom board, steel wire plate/shelf, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length: total length of food visible through front glass (side and end), excluding the edge around the glass/ornaments	100%	Depends on glass structure	100 %

Table A.3 (Continued)

isplay abinet	Type	Corresponding image in GB/T2100 1.2	Description	Dimensions										
				H_o	Description relating to H_o length measurement	H_g	Description relating to H_g length measurement	V_o	Description relating to V_o length measurement	V_g	Description relating to V_g length measurement	T_{gh}	T_{gv}	T_{g1}
ow temperature														
Enclosed elf-service storage cabinet vith glass structure on four sides medium)	RS20		Multiple shelves, glass door, cabinet height 1.8–2.19 m, depth 1.9–2.1 m	0	0	0	0	0	0	Vertical height of food visible through the front glass, from the upper loading line to the upper surface of the bottom board, steel wire plate/shelf, or the lowest point of the front glass (the highest visible point at the bottom)	V_g length: total length of food visible through front glass (side and end), excluding the edge around the glass/ornaments	100%	Depends on glass structure	100 %

ote: for definitions of types other than RS, see Appendix A of GB/T 21001.1-2007.

Appendix B
(informative)
Test report format

B.1 Applicant information

Name of applicant	……	
Company name	……	
Company address	……	
Contact (detailed information about one person in China)	Name:	……...
	Address:	……...
	Position/professional title:	……...
	Tel.:	……...
	Fax:	……...
	Email:	……...

B.2 Information about refrigerated display cabinet

Trademark: _____
Model name (if applicable): _____
Model: _____
Type of display cabinet: _____
With remote condensing unit •
Self-contained •
Serial number of tested appliance: _____
Rated voltage: _____ V
NRP _____ Hz
Name of the type as specified in Appendix A of this part: _____
Dimensions: width (mm): __ Height (mm): __ Depth (mm):_ (for reference only)
Rated climate type: _____
Total display area as specified in Appendix A of GB/T 21001.2-2007: _____ m^2
With night cover/curtain Yes • No •
With manual lighting switch Yes • No •
Lighting controlled by clock, smart sensor, or similar automation device Yes • No •
Anti-condensation heater controlled by clock, smart sensor, or similar automation device Yes • No •
International number of refrigerant: _____
Highest temperature of hottest M-pack during test: _____ Ž
Average temperature of all M-packs during test: _____ Ž
Lowest temperature of coolest M-pack during test: _____ Ž

B.3 Test and test report

Is there a complete test report in compliance with GB/T 21001.2-2007? Yes • No •
If not, state the reason: ……
Was the test conducted in the applicant's factory? Yes • No •
The person(s) who conducted the test and contact information: ……

The name and address of the lab that conducted the test:
……..
……..
Credentials of test lab (authorization number):……
Test report number: …….
Test voltage and frequency: ……

B.4 Power consumption test

Refrigerated display cabinet with remote condensing unit

DEC:	…… kWh/24h
Heat rate for calculation • $_{24\text{-deft}}$:	…… kW
REC:	…… kWh/24h
TEC:	…… kWh/24h

Self-contained refrigerated display cabinet

DEC=TEC:	…… kWh/24h

B.5 Statement

I hereby declare that the information above is truthful and accurate.
Applicant's signature …… Date ……

(For office only)
Date of receipt: Registration number: