

The following samples were submitted and identified on behalf of the client as:

**COMMISSION DELEGATED REGULATION (EU) No 2019/2018
supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with
regard to energy labelling of refrigerating appliances with a direct sales function
COMMISSION REGULATION (EU) No 2019/2024
laying down ecodesign requirements for refrigerating appliances with a direct sales function
pursuant to Directive 2009/125/EC**

Report Reference No. :	ROTOR2240119000
Tested by (name + signature)..... :	Fang ya Chen Brad 
Approved by (+ signature) :	Yu 
Date of issue.....:	2024-11-9
Total number of pages.....	8 pages
Testing Laboratory:	Ningbo Rotor Electrical Appliances Co., Ltd. Testing Center.
Address.....:	West Zone, Industrial Park, Guanhaiwei, Cixi, Ningbo, 315315 Zhejiang, China
Accreditation to test to ISO 23953-2:	Yes

Applicant's name:	Ningbo Rotor Electrical Appliances Co., Ltd.
Address..... :	West Zone, Industrial Park, Guanhaiwei, Cixi, Ningbo, 315315 Zhejiang, China

Test specification:	
Standard	ISO 23953-1:2023 ISO 23953-2:2023 COMMISSION REGULATION (EU) 2019/2024 COMMISSION DELEGATED REGULATION (EU) 2019/2018
Test procedure	Testing Center
Non-standard test method.....:	None

Test Report Form No.:	ISO 23953-1/2:2023
Test Report Form(s) Originator.....:	Testing Center
Master TRF.....:	2011-09-06 (Updated to ISO 23953-1/-2:2023)

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Test item description:	Semi-vertical and combined supermarket refrigerator cabinets
Trade Mark.....:	--
Manufacturer.....:	Same as applicant
Model/Type reference.....:	RTW-160B
Ratings.....:	220-240 V; 50 Hz; R600a/65 g; Class I

Summary of testing:

Tests performed(name of test and test clause):

The submitted appliances comply with the specific standards.

Testing location:

West Zone, Industrial Park, Guanhaiwei, Cixi, Ningbo,
315315

Zhejiang, China

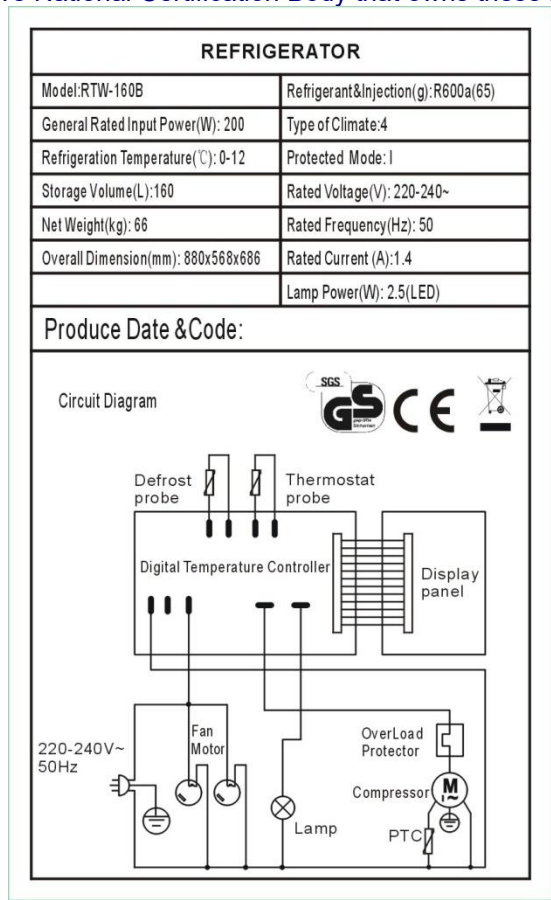
Tests according to the following standards were carried out:

COMMISSION REGULATION (EU) No
2019/2024 COMMISSION DELEGATED
REGULATION (EU) No 2019/2018 ISO 23953-1:
2023 ISO 23953-2: 2023

The tested energy consumption is: 2.94kWh/day/m².

Copy of marking plate	
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The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective National Certification Body that owns these marks



Section1: Product specification

Product	Semi-vertical and combined supermarket refrigerator cabinets		
Cabinet type	Remote <input type="checkbox"/>	Self-contained <input checked="" type="checkbox"/>	
Brand name			
Designation of the appliance	VC4		
Model No.	RTW-160B		
Serials No.	N/A		
Rating(s)	220-240V~;50Hz		
M-package Temperature class(for self-contained M2 display cabinets only)			
Designated Climate class	Tested under Climate Class4(30 °C ± 0.5 °C / 55 % ± 5 % RH)		
Thermostat-setting(SP)	2°C ± 1°C		
Refrigerant type	R600a / 65g		
Appliance external dimensions(advisory only)			
Width(mm)	880		
Height(mm)	686		
Depth(mm)	568		
Night-cover supplied with the unit	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Manual light switch fitted	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Lighting, or part of the lighting controlled by a time- clock,			
Smart sensor or similar device.....	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Anti-sweat heaters controlled by a time-clock,			
smart sensor or similar automatic device	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Type of light source:	LED		
Directional or Non Directional :	Non Directional		
Mains or Non-Mains :	Non-Mains		
Connected Light Source :	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
Colour Tunable light source :	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
High luminance light source :	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
Anti-glare shield :	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
Dimmable :	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
Light source energy dfficiency class:	<input type="checkbox"/> Not check <input type="checkbox"/> N/A <input checked="" type="checkbox"/> G		

Defrost type: Automatic Electric

Defrost frequency: 2 cycles / 24 h

Fan type: EC Axial

Door or cover type: Sliding glass cover

Lighting power (W): 15 W

Additional equipment energy: Included in Edaily

Test performed under Climate Class 4 (30°C ± 0.5°C / 55% ± 5% RH) as per ISO

23953-2:2023 TRF No. EU No. ISO 23953_A (2023)

Section2:

General testing conditions:					
Item	Description	Unit	Measurement/ Result	Requirements	Inspection
1	Climate class for testing room where the test was carried out	°C	30 °C	Set 1	OK
2	Measurement of temperature in climate measuring point	°C	30 °C	30 °C	OK
3	Measurement of relative humidity in climate measuring point	%R.H.	54%	55%	OK
Cabinet Preparation:					
Item	Description	Unit	Measurement/ Result	Requirements	Inspection
	The cabinet location according to	-	-	-	
1	X	mm	2000	2000	OK
2	B	mm	1600	≥1000 (recommended)	OK
3	Y	mm	2000	≥1500	OK
4	A	mm	1000	≥800	OK

Test result:

Description	Measurement/Result	Requirement Special classification	Inspection
Highest temperature of warmest M-package	7.50 °C	≤ 10 °C	OK
Lowest temperature of coldest M-package	1.5 °C	≥ -1 °C	OK
Highest minimum temperature of all M-package	N/A	N/A	N/A

Total Display Area (TDA) (m2)	1.17
The total energy consumption of the refrigerated cabinet (kWh/day) (Edaily)	2.94

Average M-package

temperature range 4.5 °C

Defrost cycle included in test OK

Lighting / control energy included OK

Measurements revised in accordance with ISO 23953-2:2023. Energy consumption includes defrost, lighting and auxiliary components. Test conducted under Class 4 (30 °C / 55% RH) environment.

Test Summary:		
Kind of product	Semi-vertical and combined supermarket refrigerator cabinets	
M-package Class	M2	
AE (kwh/a): (refrigerated cabinet's annual energy consumption, $E_{daily} \times 365$)	1023.46kwh/a	
SAE (kwh/a): (Standard annual energy consumption, $SAE=365 \times P \times (M+N \times Y) \times C$.)	P value (correction factor).....:	1.0
	M value (modelling parameters).....:	9.1
	N value (modelling parameters).....:	9.1
	Y value (TDA).....:	0,98
	C value (temperature coefficient).....:	1.0
	Calculated SAEC: 6576.57 kWh/a	
EEL: (Energy efficiency index, $EEL = AE/SAE$.)	15.56	

Additional Information	Value	
-----	-----	
Test climate class	Class 4 (30 °C / 55 % RH)	
Defrost cycle included	Yes	
Lighting & control energy included	Yes	

Category	Value for M	Value for N
Beverage coolers	2.2	0.006
Ice-cream freezers	2.1	0.009
Refrigerated vending machines	4.3	0.004
Gelato-scooping cabinets	25.0	30.4
Vertical & combined supermarket refrigerator cabinets	8.8	8.8
Horizontal supermarket refrigerator cabinets	3.7	3.5
Vertical & combined supermarket freezer cabinets	7.3	19.0
Horizontal supermarket freezer cabinets	4.0	10.3
Roll-in cabinets (from 1 March 2021)	9.2	11.6
Roll-in cabinets (from 1 September 2023)	9.1	9.1

Note: Coefficients M and N are derived from EU Regulation 2019/2018 Annex D. They are applied with correction (P) and temperature (C) factors defined in ISO 23953-2:2023. For roll-in cabinets, the applicable set (March 2021 or September 2023) depends on the product placing date on the EU market.

Ecode sign requirements Compliance:			
Energy efficiency index	Value	Verifying limit	Verdict (Pass/False)
EEI	15.56	<100(from 2021.03.01)	Pass
		<80(from 2023.09.01)	Pass
From 1 March 2021, the EEI of refrigerating appliances with a direct sales function shall not be above the values as set out in Table 1 :			
Table 1			
Maximum EEI for refrigerating appliances with a direct sales function, expressed in %			
			EEI
Ice-cream freezers			80
All other refrigerating appliances with a direct sales function			100
From 1 September 2023, the EEI of refrigerating appliances with a direct sales function, except for refrigerated drum vending machines, shall not be above the values as set out in Table 2.			
Table 2			
Maximum EEI for refrigerating appliances with a direct sales function, expressed in %			
			EEI
Ice-cream freezers			50
All other refrigerating appliances with a direct sales function, except refrigerated drum vending machines			80

Energy efficiency classes:		
Energy efficiency index	Value	Number of stars
EEI	15.56	B

The energy efficiency class of a refrigerating appliance with a direct sales function shall be determined on the basis of its EEI as set out in Table 1.

Table 1

Energy efficiency classes of refrigerating appliances with a direct sales function

Energy Efficiency Class	EEI
A	$EEI < 10$
B	$10 \leq EEI < 20$
C	$20 \leq EEI < 35$
D	$35 \leq EEI < 50$
E	$50 \leq EEI < 65$
F	$65 \leq EEI < 80$
G	$EEI \geq 80$

RTW-160B – Energy Efficiency Calculation (ISO 23953-1/-2:2023)

Parameter	Value	Notes
P value (correction factor)	1.00	Self-contained cabinet, default Class 4 (30 °C / 55 % RH)
M value	9.1	From EU 2019/2018 Annex D – Vertical & Combined Supermarket Cabinets
N value	9.1	From EU 2019/2018 Annex D
Y value (TDA)	0.98 m ²	As measured in Section 2 of report
C value (temperature coefficient)	1.0	Climate Class 4 (30 °C / 55 % RH)
Calculated SAEC (kWh/a)	6 576.57	Calculated using $365 \times P \times (M + N \times Y) \times C$
AE (kWh/a)	1 023.46	Measured annual energy consumption ($E_{\text{daily}} \times 365$)
EEI (%)	15.56	$EEI = AE / SAEC \times 100$
Energy Class	B	According to EU 2019/2018 Table 1 ($10 \leq EEI < 20$)

Notes:

All calculations revised according to ISO 23953-1:2023 and ISO 23953-2:2023 (Annex C).

Test conducted under Climate Class 4 (30 °C / 55 % RH).

Resulting EEI = 15.56 → Energy Efficiency Class B ($10 \leq EEI < 20$).

This revision aligns the final test result with the “Test Summary” on page 5 of the report.