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..... :	**ROTOR22401190012**
Tested by (name + signature)..... :	Fang ya Chen
Approved by (+ signature) ..... :	Brad Yu
Date of issue.....:	09/12/2024
Total number of pages.....	8 pages
Testing Laboratory.....:	Ningbo Rotor Electrical Appliances Co Ltd 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)

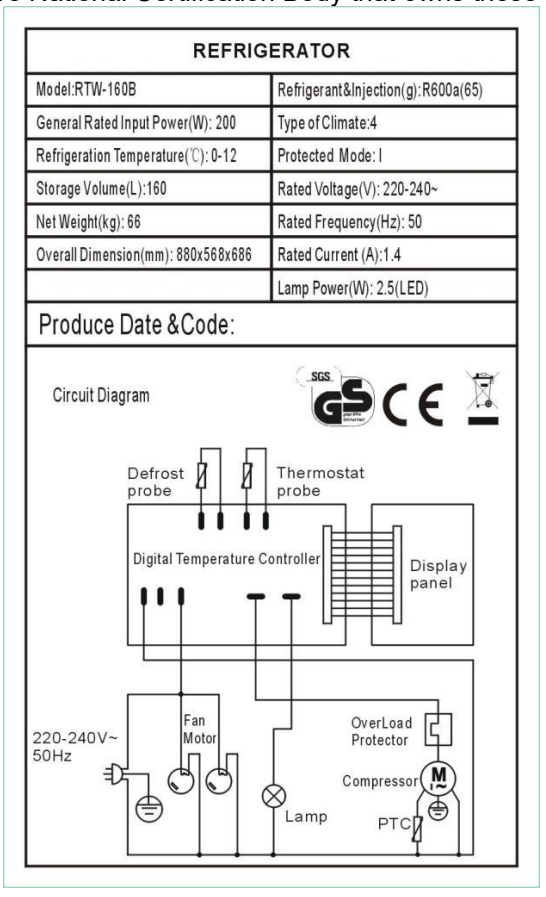
Test item description.....:	Semi-vertical and combined supermarket refrigerator cabinets
Trade Mark.....:	ROTOR
Manufacturer.....:	Same as applicant
Model/Type reference.....:	RTW-160B
Ratings.....:	220-240 V; 50 Hz; R600a/65 g; Class I

Summary of testing:

Tests performed(name of test and test clause):	**Testing location:**
The submitted appliances comply with the specific standards. Tests according to the following standards were carried out: COMMISSION REGULATION (EU) No 2019/2024COMMISSION DELEGATED REGULATION (EU) No 2019/2018 ISO 23953-1: 2023 ISO 23953-2: 2023 The tested energy consumption is: 3.73 kWh/day.	West Zone, Industrial Park, Guanhaiwei, Cixi, Ningbo, 315315 Zhejiang, China

Copy of marking plate

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□ Self-contained☒
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□ No □×
Manual light switch fitted	Yes□ No☒
Lighting, or part of the lighting controlled by a time- clock,	
Smart sensor or similar device.....	Yes□ No☒
Anti-sweat heaters controlled by a time-clock,	
smart sensor or similar automatic device	Yes□ No □×
Type of light source：	LED
Directional or Non Directional ：	Non Directional
Mains or Non-Mains ：	Non-Mains
Connected Light Source ：	Yes□ No □× N/A□
Colour Tunable light source ：	Yes□ No □× N/A□
High luminance light source ：	Yes□ No □× N/A□
Anti-glare shield ：	Yes□ No □× N/A□
Dimmable ：	Yes□ No □× N/A□
Light source energy dfficiency class：	□Not check □N/A ☒ 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): 48 W
Additional equipment energy: Included in Edaily
Test performed under Climate Class 4 (30°C ± 0.5°C / 55% ± 5% RH) as per

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	6,7°C	≤ 7°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)	3.73

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, Edaily×365)	1361.45 kWh/a	
SAE (kwh/a): (Standard annual energy consumption, SAE=365×P×(M+N×Y)×C.)	P value (correction factor)……..:	1.0
	M value (modelling parameters)……...:	8.8
	N value (modelling parameters)……:	8.8
	Y value (TDA)……..:	1.17
	C value (temperature coefficient)……:	1.0
	Calculated SAEC: 6970.04 kWh/a	
EEI: (Energy efficiency index, EEI = AE/SAE.)	19.53	

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	19.53	<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	19.53	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 ≤ EEI < 20
C	20 ≤ EEI < 35
D	35 ≤ EEI < 50
E	50 ≤ EEI < 65
F	65 ≤ EEI < 80
G	EEI ≥ 80

Test Result:

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	8.8	From EU 2019/2018 Annex D - Vertical & combined supermarket refrigerator cabinets
N value	8.8	From EU 2019/2018 Annex D
Y value (TDA)	1.17 m²	As measured in Section 2 of report
C value (temperature coefficient)	1.0	Climate Class 4 (30 °C / 55 % RH)
Calculated SAEC (kWh/a)	6970.04	Calculated using 365 × P × (M + N × Y) × C
AE (kWh/a)	1361.45	Measured annual energy consumption (Edaily × 365)
EEI (%)	19.53	EEI = AE / SAEC × 100
Energy Class	B	According to EU 2019/2018 Table 1 (10 ≤ 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 = 19.53 → Energy Efficiency Class B (10 ≤ EEI < 20).

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