

Be noted this test is based on ISO 9050 standard .  
The most important page about U-Value is in Page10- item N.11

Data are calculated according to ISO9050 & WINDOW 6.3 software  
1 W/m<sup>2</sup> =0.317 BTU/ft<sup>2</sup> hr  
1 W/m<sup>2</sup>K=0.176 BTU/ft<sup>2</sup> hr°F

Our NA7960 U-value: 5.635 W/ m<sup>2</sup> K \*0.176 = around **0.99**

As our previous information, some items number are changed because of our test glass thickness and producer are different .  
Each test labs have different equipment .

Verification/Testing Laboratory  
No. 8, Lane 29, Wenming Rd.  
Guishan Dist. Taoyuan City  
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財團法人台灣電子檢驗中心

### 測試報告

### TESTING REPORT

ELECTRONICS TESTING CENTER, TAIWAN



檢定/測試實驗室  
33383 桃園市龜山區  
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工服 NO. 16-05-BAD-005-01L

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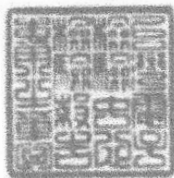
申請者(Applicant):

地址(Address):

測試名稱: Description	NA7960 玻璃遮蔽係數試驗 (NA7960 shading coefficients test)	製造商: Mfg.	寶雅工業股份有限公司
型號: Model No.	NA7960	序號: ID. No.	
測試依據: Testing Procedure Used	詳如 Page.11 說明 6所示 (As refer Page 11 Note 6)	收件日期: Receipt Date	APR. 04, 2016
周圍環境: Ambience	溫度 22 °C 相對濕度 55 % Temp. R. H.	測試日期: Testing Date	APR. 04, 2016
測試地點: Testing Area	財團法人台灣電子檢驗中心檢定/測試實驗室 (ELECTRONICS TESTING CENTER,TAIWAN Verification/Testing Laboratory)		

#### 測試時使用之標準器 Standards Employed

儀器名稱 Nomenclature	廠牌/型號 Mfg. / Model No.	序號 ID. No.	校正有效日 Due Date
穿透率光譜儀 (FT-IR Spectrophotometer)	HITACHI/U-4100	13512102-001	2017/03/27
傅立葉轉換紅外線光譜儀 (UV-Visible-NIR Spectrophotometer)	NICOLET 6700	APW100191	2019/04/27



財團法人台灣電子檢驗中心  
ELECTRONICS TESTING CENTER,  
TAIWAN

辛萬超  
實驗室主管  
Laboratory Head

辛萬超  
報告簽署人  
Signature

## 一、測試項目(Test Items)

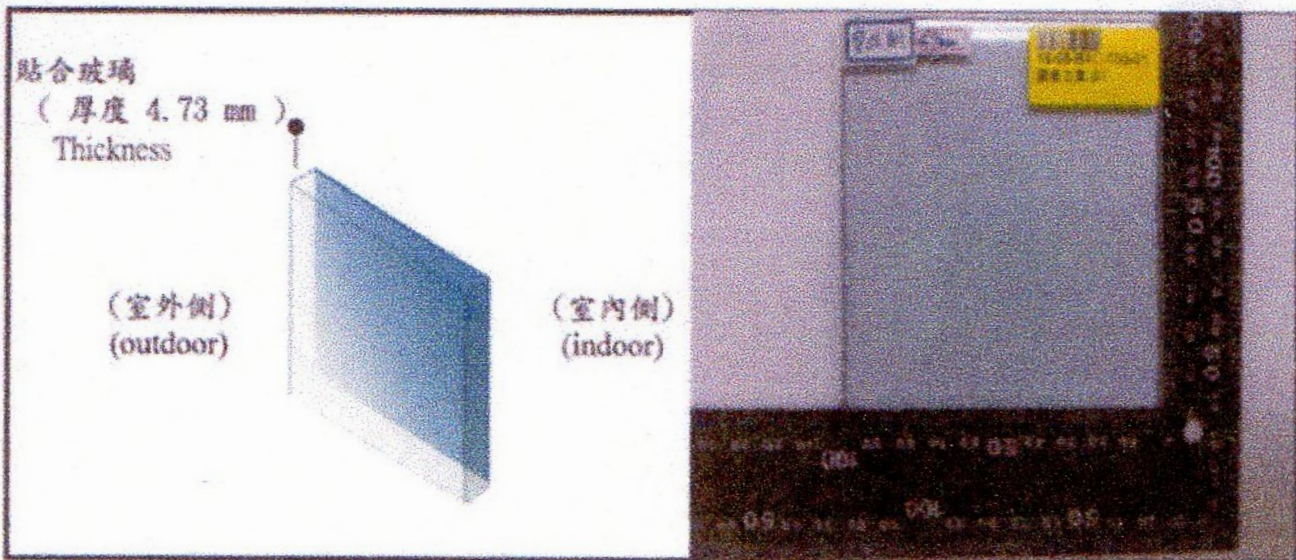
試驗項目 (Test Items)	量測標準 (Standard)	備註 (Note)
1. 可見光穿透率 (Visible light transmittance)	ISO 9050	
2. 可見光反射率 (Visible light reflectance)	ISO 9050	
3. 日光穿透率 (Solar radiation transmittance)	ISO 9050	
4. 日光反射率 (Solar radiation reflectance)	ISO 9050	
5. 半球輻射率 (Corrected emissivity)	ISO 9050	$e_o$ : 朝室外側(outside) $e_i$ : 朝室內側(inside)
6. 日光輻射熱取得率 SHGC (Solar heat gain coefficients)	ISO 9050	
7. 遮蔽係數 $Sc$ (Shading coefficients)	ISO 9050	$Sc=SHGC/0.87$
8. 紫外線穿透率 (UV transmittance)	ISO 9050	
9. CIE 傷害因子(300 nm ~ 600 nm) (CIE damage factor)	ISO 9050	
10. 皮膚傷害因子(300 nm ~ 400 nm) (Skin damage factor)	ISO 9050	
11. 總熱傳係數 $U$ (Thermal transmittance)	ISO 9050	

註：本報告之氣候條件係採 ISO 9050 規定計算

Note: Climatic conditions of this report is calculated in accordance with ISO 9050.

二、測試樣品資訊(Test sample information)：

1. 試件品名或型號： NA7960  
(Description of sample or model number)
2. 玻璃組合： 5 mm 台玻清玻璃 + 0.046 mm NA7960 隔熱膜  
(Composition of glass)
3. 玻璃種類： 貼合玻璃  
(Type of glass)
4. 玻璃規格： 100.00 mm(長) × 100.00 mm(寬) × 4.73 mm(厚)  
(Specification of glass)
5. 測試樣品示意圖： 測試樣品資訊由委託單位提供  
(Appearance) (The test sample information is provided by the customer)



測試樣品示意圖  
(Diagram of sample)

測試樣品照片  
(Photo of sample)

## 三、測試結果(Test Results)：

## 1. 日光穿透率光譜分布 (Solar transmittance values)

波長(nm) Wavelength	穿透率(%) Transmittance	波長(nm) Wavelength	穿透率(%) Transmittance	波長(nm) Wavelength	穿透率(%) Transmittance
300	0.08	530	84.19	1050	36.08
305	0.05	540	83.87	1100	35.13
310	0.03	550	83.33	1150	34.89
315	0.05	560	83.01	1200	34.06
320	0.13	570	82.75	1250	32.76
325	0.28	580	82.15	1300	32.13
330	0.51	590	81.19	1350	31.92
335	0.78	600	80.54	1400	31.76
340	1.06	610	80.11	1450	31.50
345	1.38	620	79.42	1500	31.43
350	1.81	630	78.28	1550	31.72
355	2.24	640	77.05	1600	32.16
360	2.37	650	76.12	1650	31.88
365	2.23	660	75.38	1700	32.65
370	2.83	670	74.45	1750	33.00
375	6.01	680	72.96	1800	33.51
380	13.12	690	71.14	1850	34.06
390	37.75	700	69.34	1900	34.17
400	65.11	710	67.78	1950	35.14
410	80.84	720	66.30	2000	36.59
420	82.50	730	64.62	2050	37.83
430	81.60	740	62.60	2100	38.46
440	82.56	750	60.32	2150	38.77
450	83.31	760	57.97	2200	39.93
460	83.99	770	55.84	2250	37.49
470	84.30	780	54.03	2300	37.64
480	84.41	800	51.04	2350	38.47
490	84.52	850	43.63	2400	39.64
500	84.54	900	40.06	2450	38.80
510	84.45	950	37.57	2500	41.90
520	84.29	1000	36.84		

## 2. 日光反射率光譜分布：室外側 (Solar reflectance values : outdoor)

波長(nm) Wavelength	反射率(%) Reflectance	波長(nm) Wavelength	反射率(%) Reflectance	波長(nm) Wavelength	反射率(%) Reflectance
300	5.09	530	8.33	1050	5.18
305	5.06	540	8.49	1100	5.04
310	5.04	550	8.31	1150	5.21
315	5.01	560	7.98	1200	5.07
320	4.99	570	8.13	1250	4.96
325	4.96	580	8.41	1300	5.02
330	4.93	590	8.13	1350	5.09
335	4.90	600	7.66	1400	4.83
340	4.87	610	7.76	1450	4.62
345	4.83	620	8.09	1500	4.82
350	4.80	630	7.99	1550	4.90
355	4.80	640	7.47	1600	4.88
360	4.80	650	7.15	1650	4.83
365	4.74	660	7.39	1700	4.73
370	4.68	670	7.75	1750	4.80
375	4.68	680	7.71	1800	4.64
380	4.82	690	7.20	1850	4.67
390	5.84	700	6.69	1900	4.73
400	7.30	710	6.59	1950	5.08
410	8.33	720	6.78	2000	4.92
420	8.58	730	6.91	2050	5.01
430	8.38	740	6.81	2100	4.93
440	8.48	750	6.50	2150	4.68
450	8.46	760	6.14	2200	4.75
460	8.44	770	5.90	2250	4.47
470	8.61	780	5.86	2300	4.51
480	8.49	800	6.09	2350	4.85
490	8.51	850	5.21	2400	4.92
500	8.50	900	5.34	2450	4.66
510	8.44	950	5.09	2500	4.85
520	8.33	1000	5.34		

## 3. 日光反射率光譜分布：室內側 (Solar reflectance values : indoor)

波長(nm) Wavelength	反射率(%) Reflectance	波長(nm) Wavelength	反射率(%) Reflectance	波長(nm) Wavelength	反射率(%) Reflectance
300	5.35	530	8.44	1050	5.31
305	5.36	540	8.40	1100	5.21
310	5.38	550	8.30	1150	4.94
315	5.42	560	8.18	1200	5.03
320	5.44	570	8.22	1250	5.22
325	5.45	580	8.27	1300	5.04
330	5.43	590	8.07	1350	4.95
335	5.39	600	7.89	1400	4.40
340	5.35	610	7.90	1450	4.74
345	5.27	620	8.01	1500	5.05
350	5.21	630	7.91	1550	5.19
355	5.20	640	7.53	1600	5.03
360	5.17	650	7.34	1650	4.35
365	5.08	660	7.47	1700	4.25
370	5.01	670	7.67	1750	4.47
375	5.03	680	7.70	1800	4.69
380	5.21	690	7.25	1850	4.90
390	6.17	700	6.82	1900	5.43
400	7.52	710	6.63	1950	5.64
410	8.41	720	6.64	2000	5.13
420	8.60	730	6.81	2050	4.74
430	8.49	740	6.85	2100	4.34
440	8.50	750	6.65	2150	4.22
450	8.57	760	6.19	2200	4.21
460	8.52	770	5.83	2250	3.82
470	8.59	780	5.71	2300	4.38
480	8.56	800	5.90	2350	5.38
490	8.56	850	5.19	2400	5.22
500	8.52	900	5.34	2450	4.65
510	8.43	950	5.06	2500	6.76
520	8.41	1000	5.14		

## 4. 垂直反射率 (Normal reflectance)

No	波長 (μm) (Wavelength)	朝室外側 反射率(%) (outside) Reflectance	朝室內側 反射率(%) (inside) Reflectance	備註(Note)
1	5.5	2.78	3.40	半球輻射率 (Corrected emissivity) $\epsilon_c = 0.837$ (室外側) (outside) $\epsilon_i = 0.889$ (室內側) (inside)
2	6.7	1.71	4.51	
3	7.4	0.58	2.56	
4	8.1	1.33	6.06	
5	8.6	12.89	4.89	
6	9.2	25.76	8.25	
7	9.7	28.44	5.59	
8	10.2	23.05	5.21	
9	10.7	18.34	6.57	
10	11.3	12.07	4.30	
11	11.8	8.09	4.74	
12	12.4	6.46	4.00	
13	12.9	7.59	4.41	
14	13.5	7.31	4.65	
15	14.2	6.29	4.65	
16	14.8	5.52	3.79	
17	15.6	4.70	6.24	
18	16.3	3.91	2.22	
19	17.2	2.96	3.80	
20	18.1	2.57	7.57	
21	19.2	8.90	3.91	
22	20.3	19.54	5.88	
23	21.7	23.52	6.55	
24	23.3	20.08	5.50	
25	25.2	15.73	5.11	
26	27.7	13.90	5.44	
27	30.9	12.07	7.39	
28	35.7	10.68	12.70	
29	43.9	10.25	7.91	
30	50.0	11.83	6.00	



# 測試報告

財團法人台灣電子檢驗中心

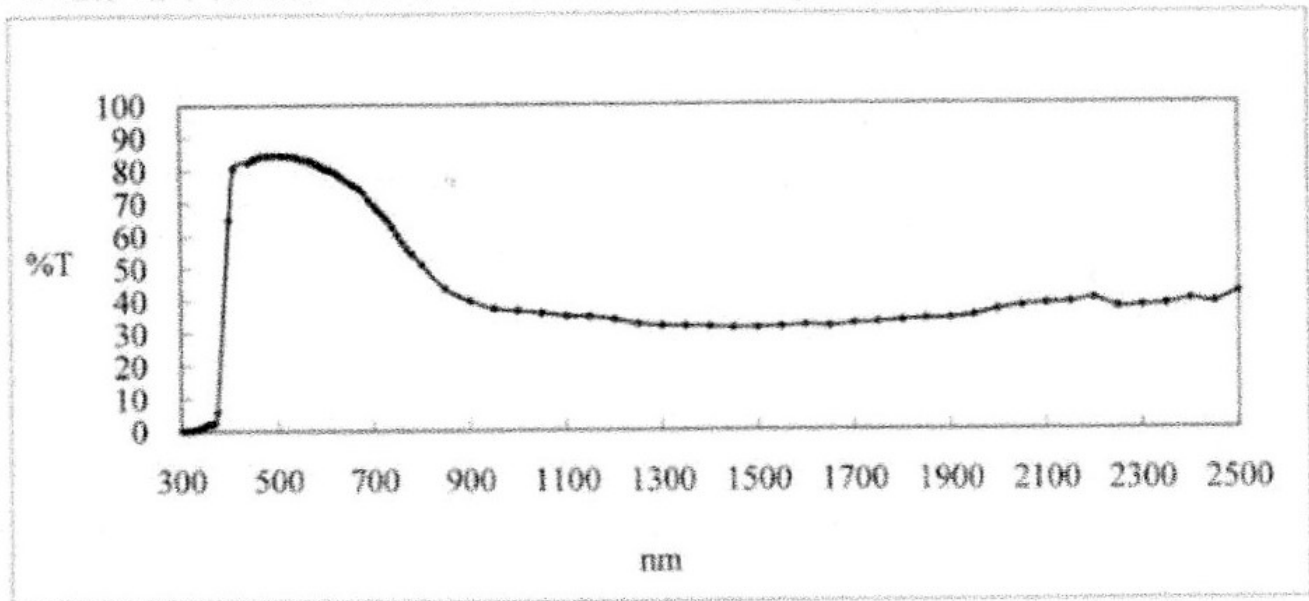
工 服NO.16-05-BAD-005-01L

ELECTRONICS TESTING  
CENTER, TAIWAN

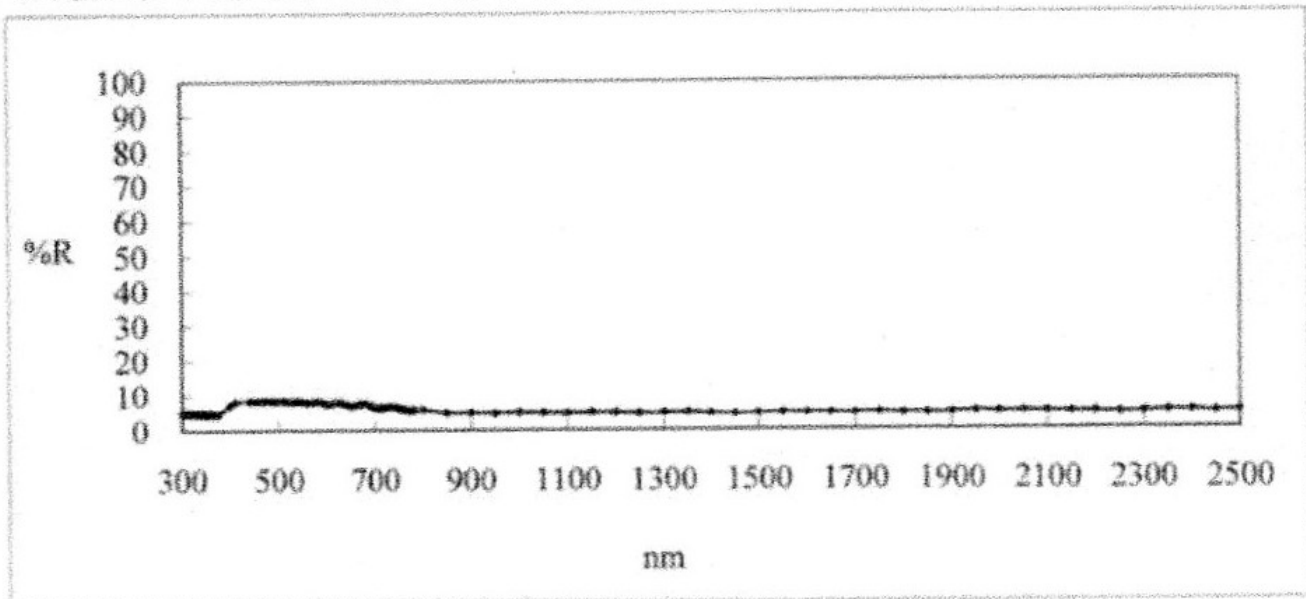
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## 5. 日光穿透率光譜分布圖 (Solar transmittance diagram)



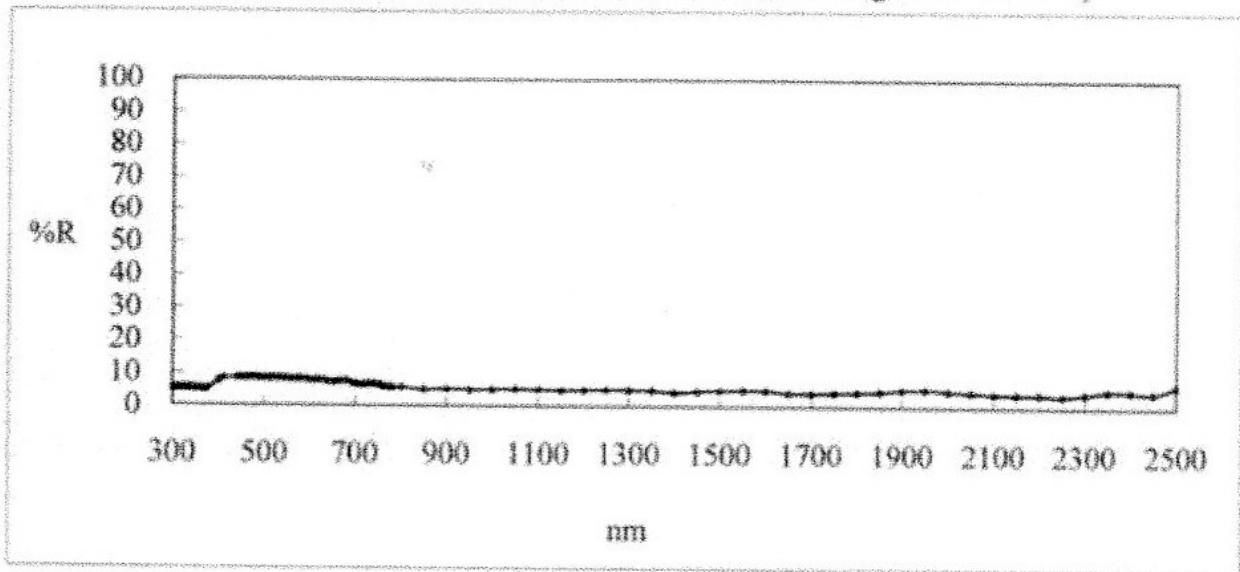
## 6. 日光反射率光譜分布圖：室外側 (Solar reflectance diagram : outdoor)



## 四、玻璃測試總表 (Glass data)

試驗項目 (Test Items)	測試結果 (Test Results)	備註 (Note)
1. 可見光穿透率 (380 nm ~ 780 nm) (Visible light transmittance)	82.61 %	
2. 可見光反射率 (380 nm ~ 780 nm) (Visible light reflectance)	8.20 %	
3. 日光穿透率 (300 nm ~ 2500 nm) (Solar radiation transmittance)	43.29 %	
4. 日光反射率 (300 nm ~ 2500 nm) (Solar radiation reflectance)	6.43 %	
5. 半球輻射率 (Corrected emissivity)	$\epsilon_e = 0.837$ $\epsilon_i = 0.889$	$\epsilon_e$ : 朝室外側 (outside) $\epsilon_i$ : 朝室內側 (inside)
6. 日光輻射熱取得率 SHGC (Solar heat gain coefficients)	0.550	
7. 遮蔽係數 Sc (Shading coefficients)	0.632	
8. 紫外線穿透率 (300 nm ~ 380 nm) (UV transmittance)	2.79 %	
9. CIE damage factor (300 nm ~ 600 nm)	53.20 %	
10. Skin damage factor (300 nm ~ 400 nm)	1.80 %	
11. 總熱傳係數 U (Thermal transmittance)	5.635 W/(m <sup>2</sup> K)	

7. 日光反射率光譜分布圖：室內側 (Solar reflectance diagram : indoor)

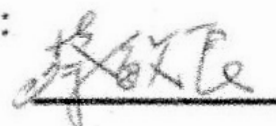


五、說明(Note)：

1. 本測試報告所列之測試項目及測試方法係經委託與受託單位雙方認可執行。  
(Test items and test methods listed in the test report were approved each other to perform.)
2. 使用本報告時須整份使用，分離使用無效，不得任意摘錄，測試結果僅對測試件有效。  
(When using this report, be use the whole one ; It's invalid when separated using ; Shall not be arbitrarily extracted ; Test results is only effective to the test sample.)
3. 試件名稱、試件說明、送樣人資料係由委託單位提供。  
(The name and description of the sample and the data of sample provider is provided by the requester.)
4. 本報告僅供參考，不得作為商業廣告或訴訟之用。  
(This report is for reference only, shall not be used as a commercial or litigation.)
5. 「財團法人台灣電子檢驗中心」稱謂，不得在任何廣告、傳單或產品宣傳文件上使用。  
(“Electronics Testing Center, TAIWAN” the title should not be used in any advertising, promotional flyers or product documentation.)
6. 本測試依據係遵循 ISO 9050 ( 2003 ) 執行測試。  
(This testing is based on ISO 9050.)

測試者：

(Tester)



--- The End of Test Report ---













