



الجمعية العلمية الملكية
Royal Scientific Society

Test Report

Department / Center: Research and Development / NERC

Division: Energy Efficiency and Solar Thermal

Sample Designation No.: 18/04/2017/29084

Laboratory: Solar thermal Testing Lab

Lab Report No.: 2

تقرير الفحص غير
رسمي مالم يحمل
التوقيع المعتمد
وختم القسم

Client

Address

مجموعة حنانيا للاستثمارات
عمان - الأردن

لا ينسخ التقرير
بشكل مجزأ إلا
بأخذ موافقة
خطية من الجهة
المصدرة للشهادة

Our Reference No.: (180400) 550/55/1/2 788

Type of sample: Solar collector

Date: 23/1 / 2018

Sample brought by: The client

Your Reference No.: -

Date of Receipt: 11/12/2017

Date: 5/12/2017

Date of end of test: 27/12/2017

نتائج الفحص
تمثل العينة
المفحوصة فقط

أي كشط أو تعديل
يلغي هذا التقرير

Test Method : ISO 9806:2013

Type of test:

1. External thermal shock
2. Internal thermal shock

According to: ISO 9806:2013

Test report is
only valid
with
division-
stamp and
signature

1. Collector description:

Type:	Galvanized solar panel
Brand name:	HANANIA investment group
Serial No.:	1951200755
Production year:	2017
Collector dimensions:	1720mm x 925 mm x 76mm
Collector's gross area:	1.591 m ²

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approval of
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party

The test
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Lab Head: Eng. Nidal Abdalla

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National Energy Research Center
(NERC / RSS)
Manager: Eng. Muhieddin Tawalbeh

FORM NO. RSS/MP1302, ISSUE (5), REV. (1)

Any erasure
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will invalidate it



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Test Method : ISO 9806:2013

2. External thermal shock test:

2.1 First external shock:

Test Conditions:

Test performed:	Outdoor
Test combined with short-term exposure test:	No
Collector's tilt angle:	45°
Average irradiance during test:	1043.8 W/m ²
Minimum irradiance during test:	972 W/m ²
Average surrounding air temperature:	11.09 °C
Minimum surrounding air temperature:	10.7 °C
Flow-rate of water spray:	0.08 Kg/s
Temperature of water spray:	12.4 °C
Duration of water spray:	15 min
Surface Temperature of collector immediately prior to the water spray:	30.1 °C
Period during which steady-state conditions were maintained prior to external thermal shock:	1 hr

Test Results:

By visual inspection, the solar collector was not affected after the first external thermal shock test

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Test Method : ISO 9806:2013

2.2 Second external shock:

Test Conditions:

Test performed:	Outdoor
Test combined with short-term exposure test:	No
Collector's tilt angle:	45°
Average irradiance during test:	1036.9 W/m ²
Minimum irradiance during test:	972 W/m ²
Average surrounding air temperature:	11.43 °C
Minimum surrounding air temperature:	10.6 °C
Flow-rate of water spray:	0.08 Kg/s
Temperature of water spray:	12.4 °C
Duration of water spray:	15 min
Surface Temperature of collector immediately prior to the water spray:	27.5 °C
Period during which steady-state conditions were maintained prior to external thermal shock:	1 hr

Test Results:

By visual inspection, the solar collector was not affected after the second external thermal shock test

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Test Method : ISO 9806:2013

3. Internal thermal shock test:

Test Conditions:

Test performed:	Outdoor
Collector's tilt angle:	45°
Average irradiance during test:	892 W/m ²
Minimum irradiance during test:	821 W/m ²
Average surrounding air temperature:	10.9 °C
Minimum surrounding air temperature:	10.3 °C
Flow-rate of heat transfer fluid:	0.08 Kg/s
Temperature of heat transfer fluid:	12.3 °C
Duration of heat transfer fluid:	15 min
Period during which steady-state conditions were maintained prior to external thermal shock:	1 hr

Test Results:

By visual inspection, the solar collector was not affected after the internal thermal shock test

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Figure (1): Solar collectors name plate



Figure (2): Collectors front view



Figure (3): Collector under testing

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