

Module ID: hdb16dyb0723
Manufacturer: HANSOL
Module Type/Description: HS250ME-V01
Testcenter Serial: 2010_Ina
Module Overall Judgement: CLASSB

Job ID: 2017_HANSOL-TEST
Address: Kmetrics / VOR. EPIROU 25
Country / City: GR 19100 MEGARA

Power

Pmpp @ STC IEC60891: 249.7W
Power mismatch: -0.1% to 250.0W (-3.0% -> +3.0%)
Tmod / Tref: 24.9C / 24.2C
Flash Time: 93.0ms
Flasher Parameter: C13640/Poly/175ms
Lowlight Performance: (200)=48.7W
Operator / Date Time: KONSTANTINOS KARYOTIS 6/22/2017 5:43 PM

Electrical

Connection Check: Successfull: 8.7A /41.1V
Diode Test: Successfull: 9.9A /1.3V

Electroluminescence

Cell Judgement Count: 0 very critical: $\geq 20\%$ cell area affected
1 critical: $< 20\%$ cell area affected
0 uncritical: no cell area affected
0 other EL abnormalities

No Judgment Count: 59
EL Parameter: 0.5s / 44.0V / 13.1A / Cell / Assisted no Setup
Operator / Date Time: KONSTANTINOS KARYOTIS 6/22/2017 5:52 PM
Reviewed / Date Time: KONSTANTINOS KARYOTIS 6/22/2017 5:58 PM

Thermography

Thermography Images: 3 dT max.: 3.6°C
Operator / Date Time: KONSTANTINOS KARYOTIS 6/22/2017 5:54 PM

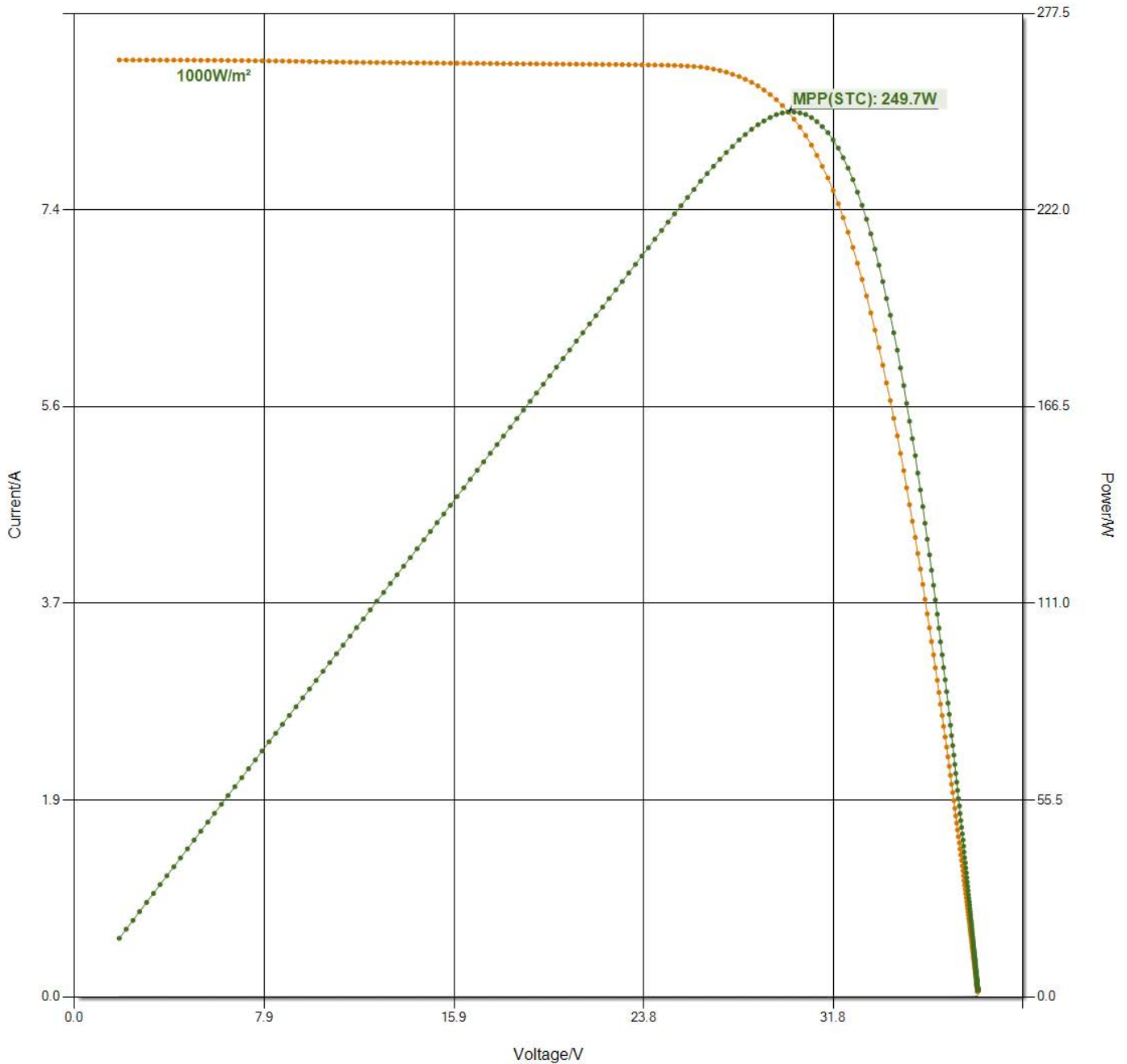
Photography

Images: 2
Operator / Date Time: KONSTANTINOS KARYOTIS 6/22/2017 6:05 PM

Module ID: hdb16dyb0723

Type ID: HANSOL / HS250ME-V01

I-V Curve

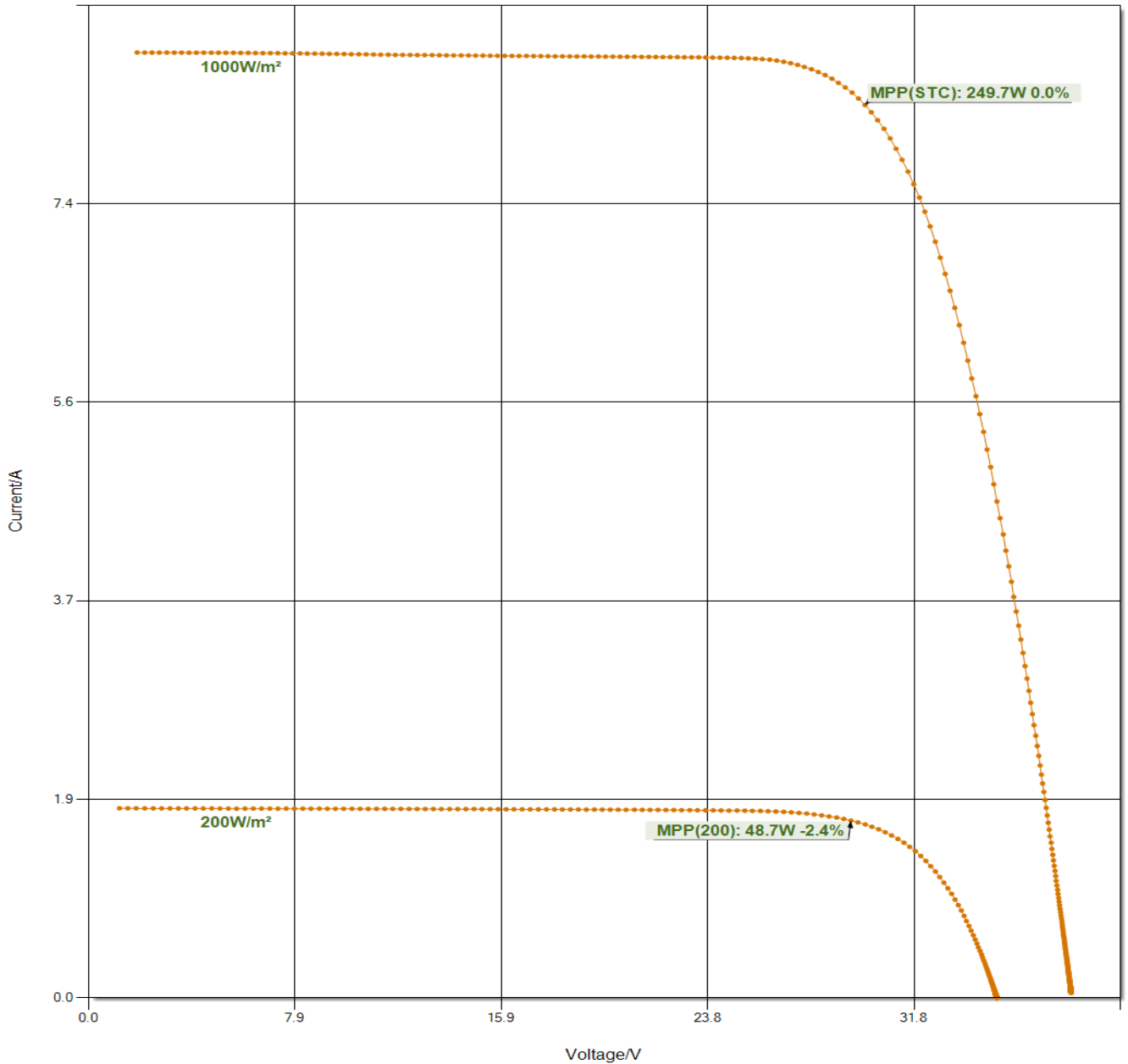


	Pmpp[W]	Impp[A]	Umpp[V]	Isc[A]	Uoc[V]	Irr[W/m2]	FF[%]
IEC60891 STC	249.7	8.31	30.04	8.84	37.86	1000.0	74.6
Measured	210.3	6.95	30.27	7.57	37.42	831.5	74.2
Tmod[°C]: 24.9		Tref[°C]: 24.2		Tdev[°C]: 22.0		Tout[°C]: 25.8	
Type: Poly		alpha[%]: 0.040		beta[%]: -0.330		T[ms]: 93.0	
IEC aICF: 0.060		IEC Rs[Ohm]: 0.52					
Software: 577p							

Module ID: hdb16dyb0723

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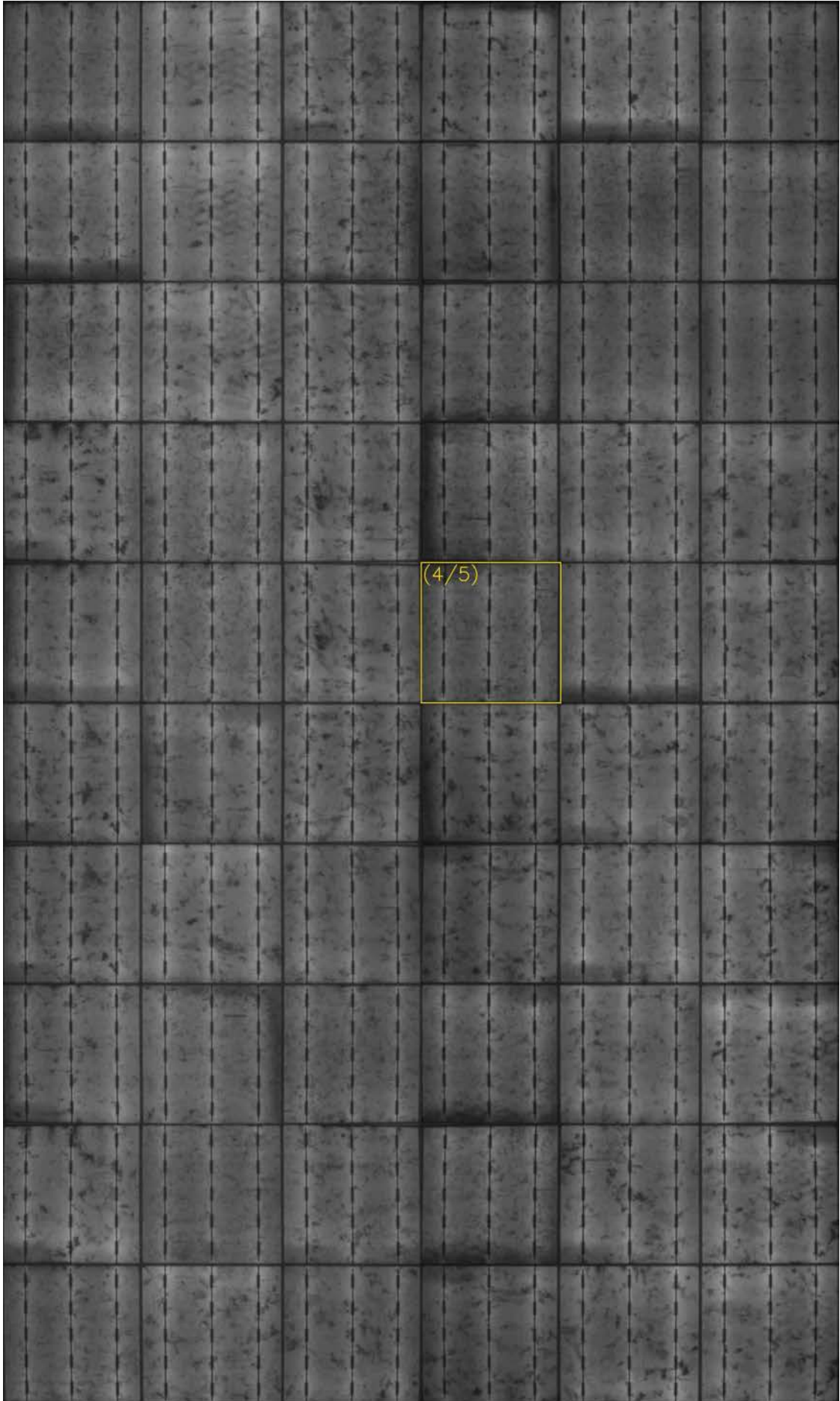
I-V Curve



IEC60891 Irr [W/m2]	200	1000
IEC60891 Pmpp [W]	48.7	249.7
Module Eff [%]	15.2	15.6
Norm. Delta [%]	-2.4	0.0

Measured [W/m2] 207.3 831.5
 Module Width/Height (Portrait) [mm]: 982*1630

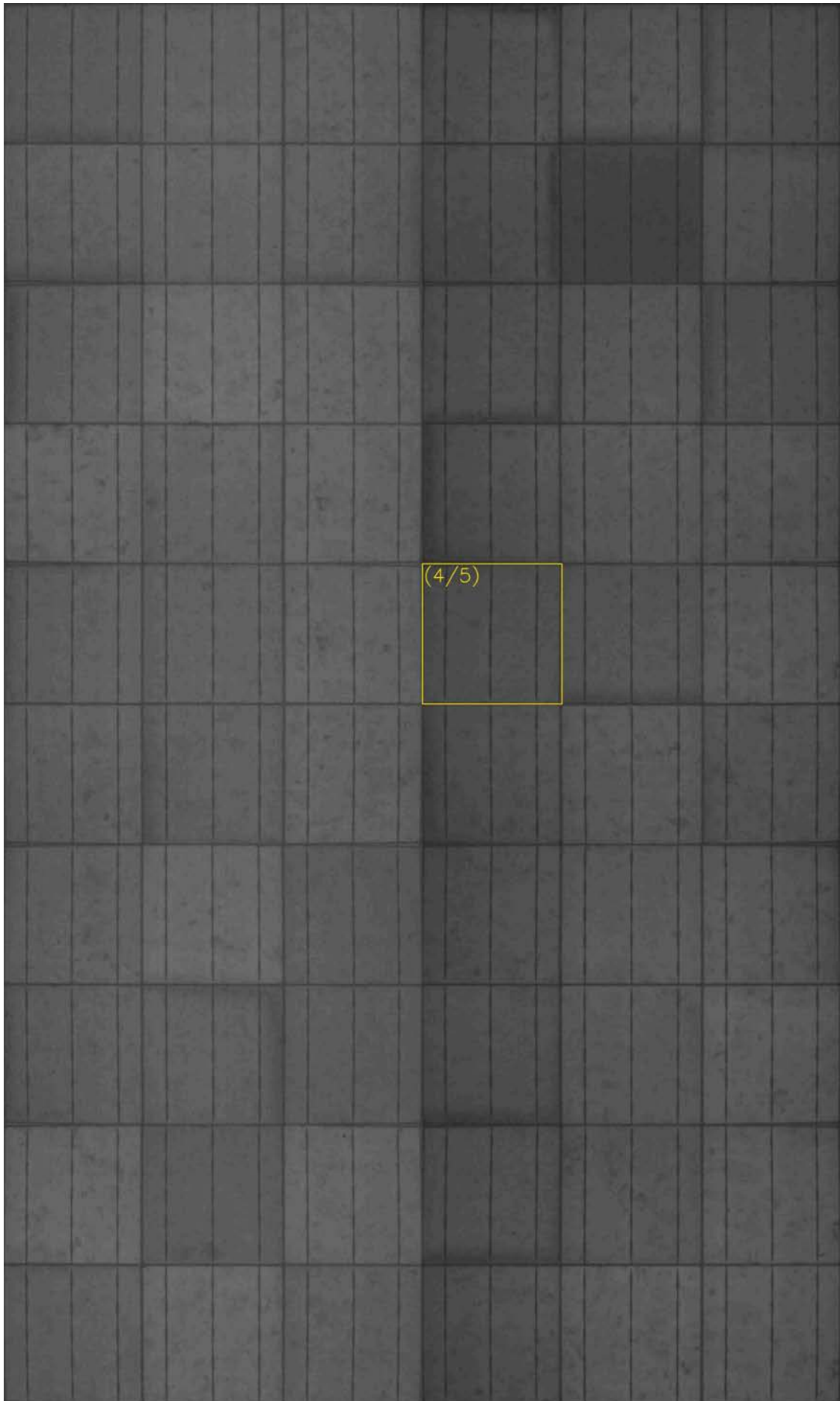
Electroluminescence for hdb16dyb0723



Current[A]: 13.103
Exposure Time [ms]: 450

Voltage[V]: 43.954
KONSTANTINOS KARYOTIS 6/22/2017 5:52 PM

LOW Electroluminescence for hdb16dyb0723

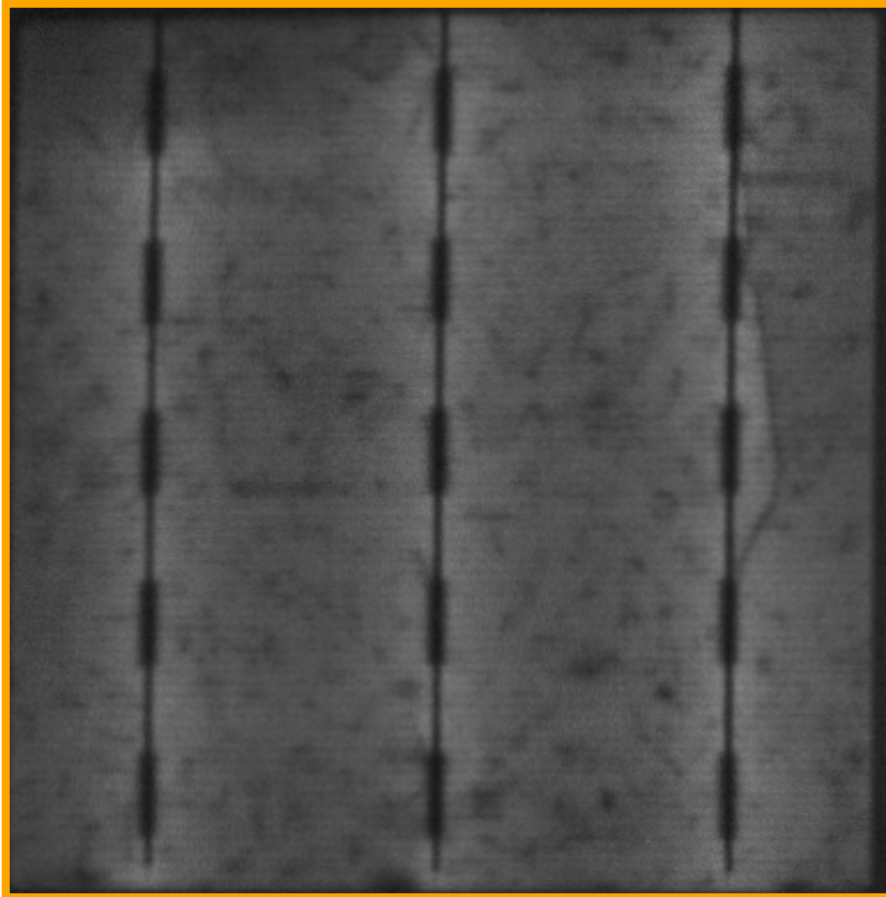


Current[A]: 1.303
Exposure Time [ms]: 4000

Voltage[V]: 34.791
KONSTANTINOS KARYOTIS 6/22/2017 5:52 PM

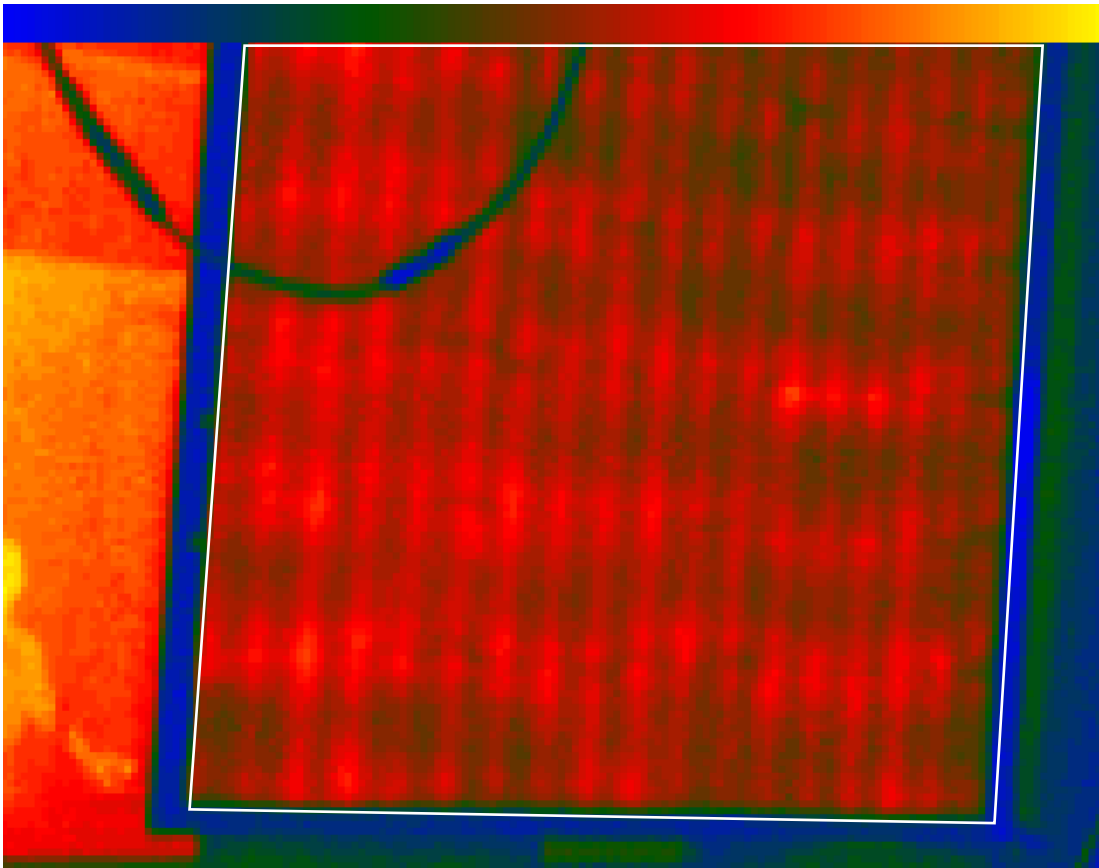
EL details for hdb16dyb0723

EL Image of Cell (4/5)

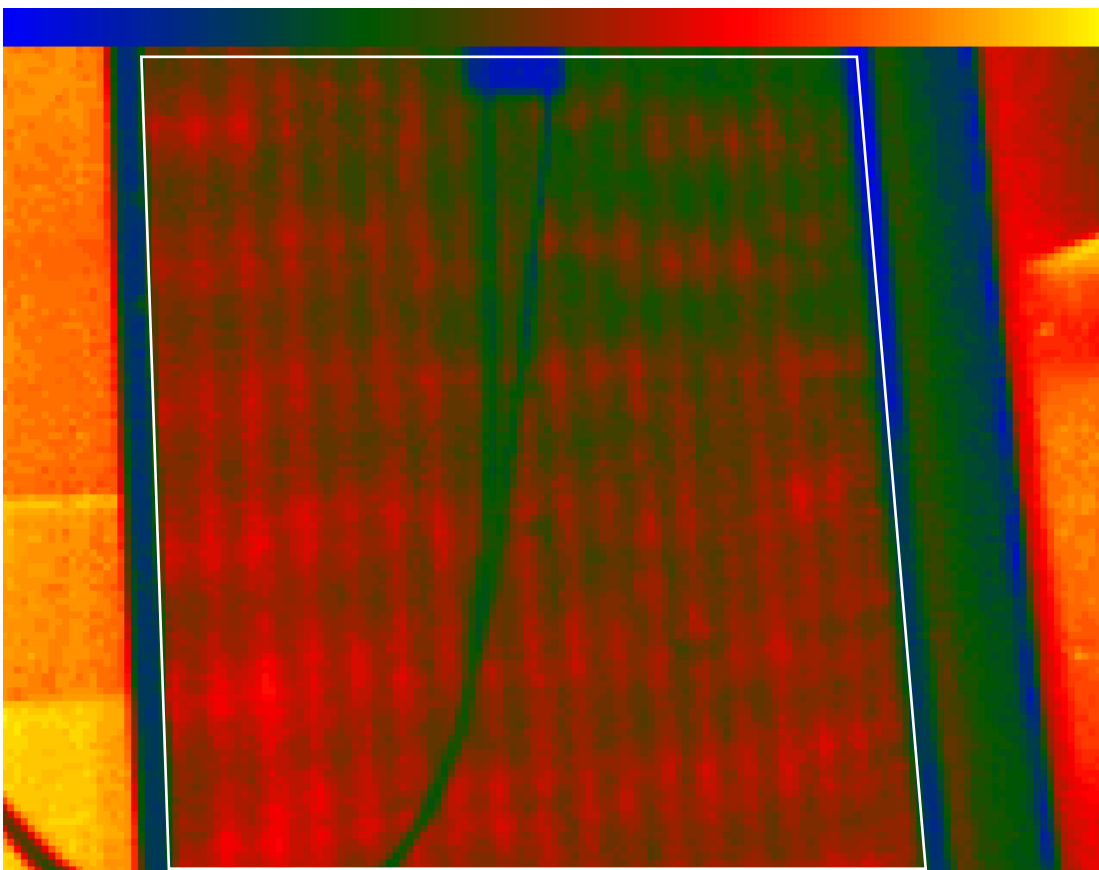


critical: <20% cell area affected

Thermography for hdb16dyb0723

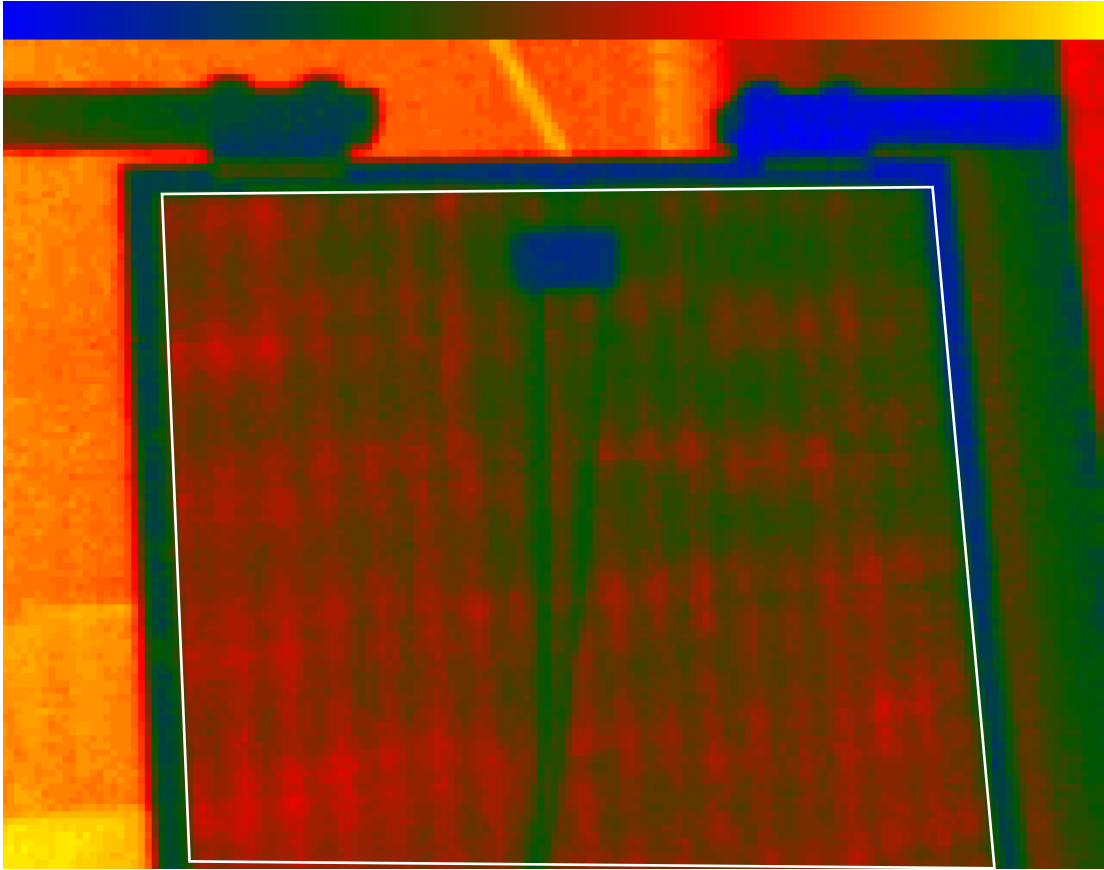


Palet Low: 24.3°C High: 29.2°C Temperature Lowest: 24.4°C Highest: 28.0°C
I[A]: 13.1 U[V]: 43.6 t[s]: 53 dT[°C]: 3.6



Palet Low: 23.4°C High: 28.6°C Temperature Lowest: 23.4°C Highest: 27.0°C
I[A]: 13.1 U[V]: 43.7 t[s]: 37 dT[°C]: 3.6

Thermography for hdb16dyb0723



Palet Low: 22.8°C High: 28.7°C Temperature Lowest: 23.4°C Highest: 26.6°C
I[A]: 13.1 U[V]: 43.7 t[s]: 32 dT[°C]: 3.2

Photos for hdb16dyb0723

