

SOLARTESTER TEST REPORT



Project Details

Client	R&H Solartechnik Dresden GmbH	Test Date	woensdag 9 december 2020
Test Location	Kaiserslautern	Operator	Rogier Vugts
Address	Denisstraße 12-14 67663 Kaiserslautern Germany		

Module Details

Module Brand	Canadian Solar	Number of modules tested	60
Module Type	CS6P-265P	Number of Modules in project	
Nominal power STC (nameplate)	265	Percentage of batch/Container	
Number of cells per module	60		

Calibration module C52908191230110389232362

Average power at STC

241,95 Watt
91,3% of nom
↓ -8,70% deviation

Lowest STC power

222,72 Watt
84,0% of nom
↓ -15,95% deviation

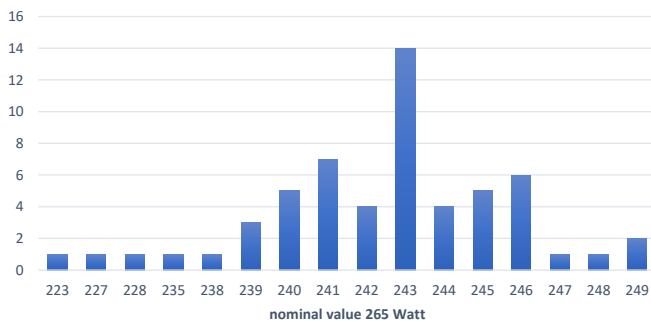
Highest STC power

249,46 Watt
94,1% of nom
↓ -5,86% deviation

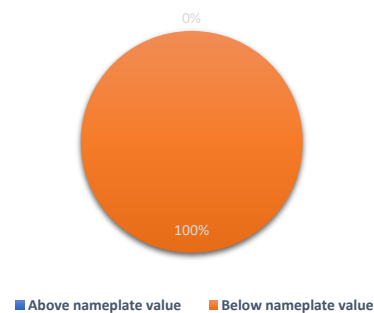
Module classification

66,67% Class A
30,00% Class B
3,33% Class C
0,00% Class D

Power measurement distribution



MPP versus Nameplate value



Conclusion

Power Measurement

The test shows average module power is 8,7% lower than nameplate value. This needs to be matched against the expected normal degradation of the modules. The data sheet does not mention details about the normal degradation.

Electroluminescence imaging

40 out of 60 modules have been classified as Class A. 2 modules have been classified as Class C, 11607320420529 due to 1 cell that is completely shattered, module 11607210580782 due to a large number of "Yellow" critical cracks.

Detailed test results Electroluminescence imaging

Evaluation protocol:		Standard MBJ / TÜV version 3.4 - www.solartester.nl/downloads
Cell classification		# cells found percentage
Unmarked	No abnormalities	3496 97,11%
EL green	Uncritical cracks; do not lead directly to a degradation of the module. Other cracks and cell breaks are acceptable if they are not able to disconnect cell areas larger than 1 %.	48 1,33%
EL yellow	Critical: All cell areas that can potentially disconnect cell areas larger 1 % and smaller 20 % from power supply or which already do so.	0 0,00%
EL red	Very critical: Cell breaks that can potentially disconnect more than 20% of the cell area from the power supply are classified in the 'very critical' category and marked red. This category includes above all comminuted or fan-like breaks. Red cells lead directly to the classification of a PV module in the class C	0 0,00%
EL blue	Other EL abnormalities (shunts, dark cells, printing failures, edge contamination, ...). This category includes all defects which have occurred in the module manufacturing process and which have no negative impact on performance within the lifetime of the photovoltaic module. Such defects are normally uncritical and marked blue, since the power loss of the cell is already entered in the performance specified by the manufacturer. Consequential damages are not expected.	14 0,39%

Module Classification

		# of modules percentage
A	less than 10% green marked cells, no yellow or red	40 66,67%
B	less than 20% green marked cells, less than 10% yellow, no red, total # marked cells less than 20%	0 0,00%
C	more than 20% green marked, more than 10% yellow marked, less than 10% red marked, total # marked cells less than 30%	0 0,00%
D	more than 10% red marked, total # marked cells more than 30%	0 0,00%

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Flash / EL Data summary

ModuleID	ParameterSetName	Judgement	MPP@STC	ELRed	ELYellow	ELGreen	ELBlue	CommentJudgment
11607320350718	Canadian Solar / CS6P-265P	CLASSB	242,77	0	0	1	0	
11607320412990	Canadian Solar / CS6P-265P	CLASSA	237,03	0	0	0	0	
11606320140344	Canadian Solar / CS6P-265P	CLASSA	239,26	0	0	3	0	
11606320140493	Canadian Solar / CS6P-265P	CLASSA	240,24	0	0	2	3	
11607320420433	Canadian Solar / CS6P-265P	CLASSB	228,26	0	0	1	0	
11607320420352	Canadian Solar / CS6P-265P	CLASSA	242,63	0	0	0	0	
11607320360001	Canadian Solar / CS6P-265P	CLASSA	241,44	0	0	1	0	
11607320360010	Canadian Solar / CS6P-265P	CLASSA	245,08	0	0	0	0	
11607320350992	Canadian Solar / CS6P-265P	CLASSA	243,79	0	0	0	0	
11607320360015	Canadian Solar / CS6P-265P	CLASSA	239,93	0	0	1	0	
11607320351092	Canadian Solar / CS6P-265P	CLASSA	240,31	0	0	0	0	
11607320351023	Canadian Solar / CS6P-265P	CLASSA	238,9	0	0	0	0	
11607320412889	Canadian Solar / CS6P-265P	CLASSA	240,58	0	0	1	0	
11607320412963	Canadian Solar / CS6P-265P	CLASSA	241,92	0	0	0	0	
11607320412823	Canadian Solar / CS6P-265P	CLASSB	242,87	0	0	1	0	
11607320412857	Canadian Solar / CS6P-265P	CLASSA	240,16	0	0	2	0	
11607320412684	Canadian Solar / CS6P-265P	CLASSB	241,66	0	0	1	0	
11607320412827	Canadian Solar / CS6P-265P	CLASSA	240,58	0	0	0	0	
11607320412907	Canadian Solar / CS6P-265P	CLASSB	226,63	0	0	1	0	
11607320412781	Canadian Solar / CS6P-265P	CLASSA	242,75	0	0	1	0	
11607320420079	Canadian Solar / CS6P-265P	CLASSC	242,90	0	0	0	0	
11606320140807	Canadian Solar / CS6P-265P	CLASSA	244,04	0	0	0	0	
11606320140728	Canadian Solar / CS6P-265P	CLASSA	245,7	0	0	0	0	
11606320140548	Canadian Solar / CS6P-265P	CLASSA	244,72	0	0	0	0	
11606320140730	Canadian Solar / CS6P-265P	CLASSA	245,82	0	0	0	0	
11607320430746	Canadian Solar / CS6P-265P	CLASSA	248,91	0	0	0	0	
11607320412993	Canadian Solar / CS6P-265P	CLASSA	247,45	0	0	1	0	
11607320430496	Canadian Solar / CS6P-265P	CLASSA	249,46	0	0	0	0	
11607320413087	Canadian Solar / CS6P-265P	CLASSB	222,74	0	0	0	3	
11607320430991	Canadian Solar / CS6P-265P	CLASSB	249,27	0	0	0	0	
11607320412944	Canadian Solar / CS6P-265P	CLASSA	246,26	0	0	0	0	
11606320140764	Canadian Solar / CS6P-265P	CLASSA	244,9	0	0	1	0	
11607320430991	Canadian Solar / CS6P-265P	CLASSB	249,27	0	0	1	0	
11606320140559	Canadian Solar / CS6P-265P	CLASSA	242,84	0	0	1	2	
11607320431162	Canadian Solar / CS6P-265P	CLASSA	249,26	0	0	1	0	
11606320140696	Canadian Solar / CS6P-265P	CLASSB	236,11	0	0	0	1	
11606320140709	Canadian Solar / CS6P-265P	CLASSA	245,53	0	0	0	0	
11606320140760	Canadian Solar / CS6P-265P	CLASSB	235,45	0	0	0	0	
11606320140689	Canadian Solar / CS6P-265P	CLASSA	245,33	0	0	2	5	
11607320413327	Canadian Solar / CS6P-265P	CLASSA	242,8	0	0	1	0	
11607320413203	Canadian Solar / CS6P-265P	CLASSA	242,91	0	0	1	0	
11607320351092	Canadian Solar / CS6P-265P	CLASSB	240,31	0	0	1	0	
11607320413031	Canadian Solar / CS6P-265P	CLASSA	242,93	0	0	0	0	
11607320413037	Canadian Solar / CS6P-265P	CLASSB	224,70	0	0	0	0	
11607320413329	Canadian Solar / CS6P-265P	CLASSB	229,86	0	0	1	0	
11606320140508	Canadian Solar / CS6P-265P	CLASSA	242,38	0	0	0	0	
11607320413038	Canadian Solar / CS6P-265P	CLASSA	242,2	0	0	0	0	
11607320412685	Canadian Solar / CS6P-265P	CLASSA	242,2	0	0	0	0	
11607320413230	Canadian Solar / CS6P-265P	CLASSB	239,05	0	0	0	0	
11607320412644	Canadian Solar / CS6P-265P	CLASSB	237,6	0	0	1	0	
11606320140418	Canadian Solar / CS6P-265P	CLASSA	242,76	0	0	0	0	
11606320140462	Canadian Solar / CS6P-265P	CLASSA	241,96	0	0	0	0	
11607320413171	Canadian Solar / CS6P-265P	CLASSB	231,57	0	0	1	0	
11607210581065	Canadian Solar / CS6P-265P	CLASSA	234,65	0	0	0	0	
11607320413161	Canadian Solar / CS6P-265P	CLASSA	227,21	0	0	0	0	
11607320413136	Canadian Solar / CS6P-265P	CLASSA	242,85	0	0	0	0	
11607320413046	Canadian Solar / CS6P-265P	CLASSC	232,71	0	0	8	0	
11607320413246	Canadian Solar / CS6P-265P	CLASSB	232,52	0	0	2	0	
11606320140511	Canadian Solar / CS6P-265P	CLASSA	239,12	0	0	2	0	
11607320413101	Canadian Solar / CS6P-265P	CLASSB	226,64	0	0	7	0	