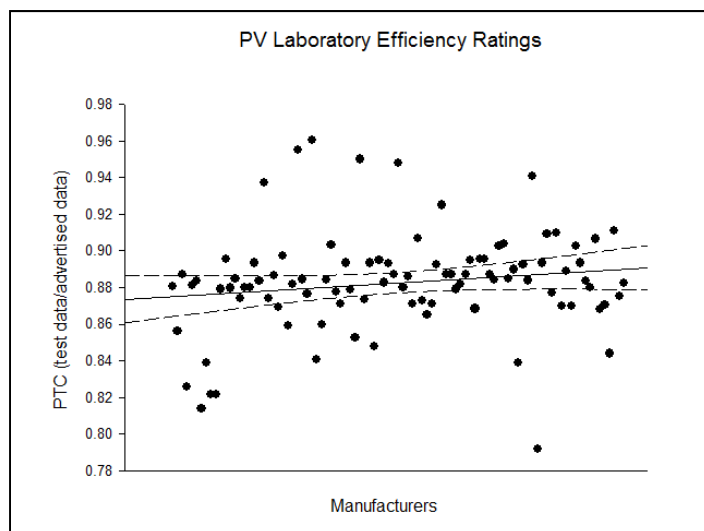


## PV Panel Data

Using data from the California Solar Initiative Program (<http://www.gosolarcalifornia.org/equipment/pvmodule.html>), we examined 964 different photovoltaic panels from 95 different suppliers. We compared the advertised output of the panel with the observed output under Photovoltaics for Utility Scale Applications Test Conditions (PTC). The measure derived was the proportion of the advertised output that as calculated in the laboratory compared to the manufacturer's advertised output. If the laboratory output was equal to the advertised output the efficiency value = 1.00. Of the 964 types of photovoltaic cells measured, none achieved a score of 1.0.

This graph below shows the distribution of the average efficiency score for each of the 95 manufacturers along with the 95% confidence interval. That is, we calculated an average score for each manufacturer across all of the different panel wattages that they produced. That average is plotted on the chart. The point is to show that there is considerable variation in the efficiency of panel manufacturers, and that from an economic perspective it is important to evaluate quantitative measures of efficiency

The Table below lists those manufacturers with a 90% efficiency rating or higher out of the 96 total. Keep in mind, HeliosSouth uses only those manufacturers with a 95% or higher efficiency rating. See Appendix 1 for the specific data on each of the manufacturers displayed in this graph.



### PV Cell Manufacturers With 0.90 Efficiency Rating for Their Products

Manufacturer	Average Efficiency	Country of Origin
First Solar	0.960	Ohio, USA
EPV Solar	0.955	New Jersey, USA
Kaneka	0.950	Osaka, Japan
Nexpower Technology	0.948	Taichung , Taiwan
Solyndra	0.941	California, USA
Chi Mei Energy	0.937	Tainan, Taiwan
Sanyo Electric	0.925	Osaka, Japan
Zhejiang ERA Solar Technology	0.911	Zhejiang, China
Symphony Energy	0.910	Gwangju, South Korea
SunPower	0.909	California, USA
Phono Solar Technology	0.907	Nanjing, China
Yes! Solar	0.907	California, USA
Solar Power (SPI)	0.904	California , USA
Hyundai Heavy Industries	0.903	Seoul, South Korea
Solar Integrated Technologies	0.903	California, USA
United Solar Ovonix	0.903	Michigan, USA

See Appendix 2 of this document for data on each specific manufacturer and panel evaluated.

## Appendix 1

Manufacturer	Average
Sun Energy Engineering	0.792
Applied Solar	0.814
Atlantis Energy	0.821
Atlantis Energy	0.821
Alps Technology	0.826
ASUN Energy	0.839
Solartech Power	0.839
GE Energy	0.840
Zerquest Solar	0.844
Ligitek Photovoltaic	0.848
Jumao Photonics (Xiamen)	0.853
Advanced Renewable Energy	0.856
DelSolar	0.859
Gloria Solar	0.860
Quantum Technologies	0.865
Yingli Green Energy	0.868
Sharp	0.868
Chint Solar (Zhejiang)	0.869
TynSolar	0.870
Tianwei New Energy (Chengdu) PV Module	0.870
Yunnan Tianda Photovoltaic	0.871
REC ScanModule	0.871
Ningbo Ulica Solar Science & Technology	0.871
Isoton	0.871
Powercom	0.873
Kyocera Solar	0.874
CEEG Solar Science and Technology	0.874
China Sunergy	0.874
Zhejiang Global Photovoltaic Technology	0.875
Evergreen Solar	0.877
Suntech Power	0.877
Instalaciones Pevafersa	0.878
Jiangyin Jetion Science and Technology	0.879

Manufacturer	Average
BP Solar	0.879
CA Solar	0.880
Wuxi Shangpin Solar Energy Science & Technology	0.880
Ningbo Maxsolar	0.880
CEEG (Shanghai) Solar Science and Technology	0.880
Centrosolar America	0.880
Aavid Thermalloy	0.881
Andalay Solar	0.881
Ecosolargy	0.882
SET-Solar	0.882
Zhejiang Sunflower Light Energy Science & Technology	0.882
MAGE Solar	0.883
Apollo Solar Energy	0.883
Changzhou Trina Solar Energy	0.884
Worldwide Energy & Mfg USA	0.884
Solon Fuer Solartechnik	0.884
Green Power	0.884
Sintek Photronic	0.884
ET Solar Industry	0.884
Canadian Solar	0.885
Solar Power Industries	0.885
Ningbo Solar Electric Power	0.886
Chinalight Haoyu Photovoltaic Technology	0.887
Schott Solar	0.887
Moser Baer Photovoltaic	0.887
Silray	0.887
Schuco International	0.887
aleo solar	0.887
Shanghai Solar Energy S&T	0.887
Titan Energy Systems	0.889
Solarfun Power	0.890
Ritek	0.892
SolarWorld	0.893
Mitsubishi Electric	0.893

Changzhou Nesl Solartech	0.893
Jiangsu Sainty Machinery	0.893
Lifeline Energy International	0.893
SUNGEN International	0.893
Upsolar	0.893
Shanghai Topsolar Green Energy	0.895
Lumos	0.895
Brightwatts	0.896
Siliken	0.896
Siliken California	0.896
Day4 Energy	0.897
United Solar Ovonix	0.903
Solar Integrated Technologies	0.903
Hyundai Heavy Industries	0.903
Solar Power (SPI)	0.904
Yes! Solar	0.907
Phono Solar Technology	0.907
SunPower	0.909
Symphony Energy	0.910
Zhejiang ERA Solar Technology	0.911
Sanyo Electric	0.925
Chi Mei Energy	0.937
Solyndra	0.941
Nexpower Technology	0.948
Kaneka	0.950
EPV SOLAR	0.955
First Solar	0.960

## Appendix 2

Manufacturer	Product	Description	Advertised	Actual	Efficiency
Aavid Thermalloy	ASMP-175M	175W Monocrystalline Module	175.0	154.1	0.881
Aavid Thermalloy	ASMP-180M	180W Monocrystalline Module	180.0	158.6	0.881
<b>Average</b>					<b>0.881</b>
Advanced Renewable Energy	AREi-210W-M6-G	210W Polycrystalline Module	210.0	179.5	0.855
Advanced Renewable Energy	AREi-215W-M6-G	215W Polycrystalline Module	215.0	184	0.856
Advanced Renewable Energy	AREi-220W-M6-G	220W Polycrystalline Module	220.0	188.4	0.856
Advanced Renewable Energy	AREi-225W-M6-G	225W Polycrystalline Module	225.0	192.8	0.857
Advanced Renewable Energy	AREi-230W-M6-G	230W Polycrystalline Module	230.0	197.3	0.858
<b>Average</b>					<b>0.856</b>
aleo solar	S16.165	165W Polycrystalline Module	165.0	146.1	0.885
aleo solar	S16.170	170W Polycrystalline Module	170.0	150.6	0.886
aleo solar	S16.175	175W Polycrystalline Module	175.0	155.2	0.887
aleo solar	S16.180	180W Polycrystalline Module	180.0	159.7	0.887
aleo solar	S16.185	185W Polycrystalline Module	185.0	164.3	0.888
aleo solar	S18.210	210W Polycrystalline Module	210.0	186.2	0.887
aleo solar	S18.215	215W Polycrystalline Module	215.0	190.8	0.887
aleo solar	S18.220	220W Polycrystalline Module	220.0	195.3	0.888
aleo solar	S18.225	225W Polycrystalline Module	225.0	199.9	0.888
aleo solar	S18.230	230W Polycrystalline Module	230.0	204.5	0.889
<b>Average</b>					<b>0.887</b>
Alps Technology	ATI-2000(210)	210W Polycrystalline Module	210.0	180.1	0.858
Alps Technology	ATI-2000(220)	220W Polycrystalline Module	220.0	189	0.859
Alps Technology	ATI-2000(230)	230W Polycrystalline Module	230.0	197.9	0.860
Alps Technology	ATI-RF50	50W Polycrystalline Module	50.0	39.5	0.790
Alps Technology	ATI-RF52	52W Polycrystalline Module	52.0	41.2	0.792
Alps Technology	ATI-RF54	54W Polycrystalline Module	54.0	42.9	0.794
<b>Average</b>					<b>0.826</b>
Andalay Solar	ST165-1	165W Monocrystalline Module	165.0	142.8	0.865
Andalay Solar	ST170-1	170W Monocrystalline Module	170.0	152.9	0.899
Andalay Solar	ST175-1	175W Monocrystalline Module	175.0	157.5	0.900
Andalay Solar	KC180-1	180W Polycrystalline Module	180.0	156	0.867
Andalay Solar	KC205-1	205W Polycrystalline Module	205.0	180	0.878
Andalay Solar	KC210-1	210W Polycrystalline Module	210.0	184.6	0.879
<b>Average</b>					<b>0.881</b>

Apollo Solar Energy	ASEC-175G6M	175W Polycrystalline Module	175.0	155.9	0.891
Apollo Solar Energy	ASEC-175G6S	175W Monocrystalline Module	175.0	155.2	0.887
Apollo Solar Energy	ASEC-180G6M	180W Polycrystalline Module	180.0	160.5	0.892
Apollo Solar Energy	ASEC-180G6S	180W Monocrystalline Module	180.0	159.7	0.887
Apollo Solar Energy	ASEC-185G6M	185W Polycrystalline Module	185.0	165.1	0.892
Apollo Solar Energy	ASEC-185G6S	185W Monocrystalline Module	185.0	164.3	0.888
Apollo Solar Energy	ASEC-190G6M	190W Polycrystalline Module	190.0	165	0.868
Apollo Solar Energy	ASEC-190G6S	190W Monocrystalline Module	190.0	168.8	0.888
Apollo Solar Energy	ASEC-195G6M	195W Polycrystalline Module	195.0	169.5	0.869
Apollo Solar Energy	ASEC-195G6S	195W Monocrystalline Module	195.0	173.4	0.889
Apollo Solar Energy	ASEC-200G6M	200W Polycrystalline Module	200.0	173.9	0.870
Apollo Solar Energy	ASEC-200G6S	200W Monocrystalline Module	200.0	178	0.890
Apollo Solar Energy	ASEC-205G6M	205W Polycrystalline Module	205.0	178.4	0.870
Apollo Solar Energy	ASEC-205G6S	205W Monocrystalline Module	205.0	182.5	0.890
Apollo Solar Energy	ASEC-210G6M	210W Polycrystalline Module	210.0	182.9	0.871
Apollo Solar Energy	ASEC-210G6S	210W Monocrystalline Module	210.0	187.1	0.891
<b>Average</b>					<b>0.883</b>
Applied Solar	OE-34	34W Polycrystalline Waterproof Built-in PV Roof Tile	34.0	28.2	0.829
Applied Solar	OE-48	48W Polycrystalline Waterproof Built-in PV Roof Tile	48.0	38.6	0.804
Applied Solar	OE-50	50W Polycrystalline Waterproof Built-in PV Roof Tile	50.0	40.4	0.808
<b>Average</b>					<b>0.814</b>
ASUN Energy	ASM190PCA0G101	190W Polycrystalline Module, Framed	190.0	159.1	0.837
ASUN Energy	ASM195PCA0G101	195W Polycrystalline Module, Framed	195.0	163.5	0.838
ASUN Energy	ASM200PCA0G101	200W Polycrystalline Module, Framed	200.0	167.8	0.839
ASUN Energy	ASM205PCA0G101	205W Polycrystalline Module, Framed	205.0	172.1	0.840
ASUN Energy	ASM210PCA0G101	210W Polycrystalline Module, Framed	210.0	176.5	0.840
<b>Average</b>					<b>0.839</b>
Atlantis Energy	AES-SS-100-C	14W Monocrystalline SunSlate	14.0	11.5	0.821
<b>Average</b>					<b>0.821</b>
BP Solar	BP365TS	65W Polycrystalline Module, MC Connectors, 6V, Roof Tile Frame	65.0	51.7	0.795
BP Solar	BP170B	170W Polycrystalline Module, MC3, Bronze Frame	170.0	152.6	0.898
BP Solar	BP3170N	170W Polycrystalline Module, MC3, U Frame	170.0	152.6	0.898
BP Solar	BP3170N_Q	170W Polycrystalline Module, MC3, U Frame	170.0	152.6	0.898
BP Solar	BP175B	175W Polycrystalline Module, MC4, Bronze Frame	175.0	157.3	0.899
BP Solar	BP175I	175W Polycrystalline Module, Multicontact MC3, Integra Frame	175.0	157.3	0.899
BP Solar	BP3175N	175W Polycrystalline Module, MC3, U Frame	175.0	157.2	0.898
BP Solar	BP3175N_Q	175W Polycrystalline Module, MC3, U Frame	175.0	157.2	0.898

BP Solar	BP3180N	180W Polycrystalline Module, MC3, U Frame	180.0	161.8	0.899
BP Solar	BP3180N_Q	180W Polycrystalline Module, MC3, U Frame	180.0	161.8	0.899
BP Solar	SX3190B	190W Polycrystalline Module, MC3, U Frame, Black/Black	190.0	166	0.874
BP Solar	SX3190N	190W Polycrystalline Module, MC3, U Frame	190.0	166	0.874
BP Solar	SX3190W	190W Polycrystalline Module, MC3, U Frame, White/Black	190.0	166	0.874
BP Solar	SX3195B	195W Polycrystalline Module, MC3, U Frame, Black/Black	195.0	170.5	0.874
BP Solar	SX3195N	195W Polycrystalline Module, MC3, U Frame	195.0	170.5	0.874
BP Solar	SX3195W	195W Polycrystalline Module, MC3, U Frame, White/Black	195.0	170.5	0.874
BP Solar	SX3200B	200W Polycrystalline Module, MC3, U Frame, Black/Black	200.0	175	0.875
BP Solar	SX3200N	200W Polycrystalline Module, MC3, U Frame	200.0	175	0.875
BP Solar	SX3200W	200W Polycrystalline Module, MC3, U Frame, White/Black	200.0	175	0.875
BP Solar	BP3210N	210W Polycrystalline Module, MC3, P Frame	210.0	176.2	0.839
BP Solar	BP3210T	210W Polycrystalline Module, MC4, U Frame	210.0	184.1	0.877
BP Solar	BP3220N	220W Polycrystalline Module, MC3, P Frame	220.0	193.1	0.878
BP Solar	BP3220T	220W Polycrystalline Module, MC4, U Frame	220.0	193.1	0.878
BP Solar	BP3230N	230W Polycrystalline Module, MC3, P Frame	230.0	202.2	0.879
BP Solar	BP3230T	230W Polycrystalline Module, MC4, U Frame	230.0	202.2	0.879
BP Solar	BP3237T	237W Polycrystalline Module, MC4,U Frame	237.0	208.5	0.880
<b>Average</b>					<b>0.879</b>
Brightwatts	BWI-72-P175	175W Monocrystalline Module	175.0	159.4	0.911
Brightwatts	BWI-60-M190	190W Polycrystalline Module	190.0	168.1	0.885
Brightwatts	BI-156-200W	200W Polycrystalline Module	200.0	180.2	0.901
Brightwatts	BWI-60-M200	200W Polycrystalline Module	200.0	177.1	0.886
<b>Average</b>					<b>0.896</b>
CA Solar	MS-150M	150W Monocrystalline Module	150.0	131.7	0.878
CA Solar	MS-150M	150W Monocrystalline Module	150.0	131.7	0.878
CA Solar	MS-155M	155W Monocrystalline Module	155.0	136.2	0.879
CA Solar	MS-160M	160W Monocrystalline Module	160.0	140.7	0.879
CA Solar	MS-165M	165W Monocrystalline Module	165.0	145.2	0.880
CA Solar	MS-170M	170W Monocrystalline Module	170.0	149.7	0.881
CA Solar	MS-175M	175W Monocrystalline Module	175.0	154.2	0.881
CA Solar	MS-180M	180W Monocrystalline Module	180.0	158.8	0.882
<b>Average</b>					<b>0.880</b>
Canadian Solar	CS5C-80M	80W Monocrystalline Module	80.0	72.7	0.909
Canadian Solar	CS5C-90M	90W Monocrystalline Module	90.0	82	0.911
Canadian Solar	CS5A-150M	150W Monocrystalline Module	150.0	136.2	0.908
Canadian Solar	CS6A-150P	150W Polycrystalline Module	150.0	130.7	0.871

Canadian Solar	CS6A-150PE	150W Polycrystalline Module	150.0	132.6	0.884
Canadian Solar	CS6A-155P	155W Polycrystalline Module	155.0	135.1	0.872
Canadian Solar	CS6A-155PE	155W Polycrystalline Module	155.0	137.1	0.885
Canadian Solar	CS5A-160M	160W Monocrystalline Module	160.0	145.4	0.909
Canadian Solar	CS6A-160P	160W Polycrystalline Module	160.0	139.6	0.873
Canadian Solar	CS6A-160PE	160W Polycrystalline Module	160.0	141.7	0.886
Canadian Solar	CS6P-160PE	160W Polycrystalline Module	160.0	141	0.881
Canadian Solar	CS5A-165M	165W Monocrystalline Module	165.0	150.1	0.910
Canadian Solar	CS6A-165P	165W Polycrystalline Module	165.0	144.1	0.873
Canadian Solar	CS6P-165PE	165W Polycrystalline Module	165.0	145.5	0.882
Canadian Solar	CS5A-170M	170W Monocrystalline Module	170.0	154.7	0.910
Canadian Solar	CS6A-170P	170W Polycrystalline Module	170.0	148.6	0.874
Canadian Solar	CS6P-170PE	170W Polycrystalline Module	170.0	150	0.882
Canadian Solar	CS5A-175M	175W Monocrystalline Module	175.0	159.4	0.911
Canadian Solar	CS6A-175P	175W Polycrystalline Module	175.0	153.1	0.875
Canadian Solar	CS6P-175PE	175W Polycrystalline Module	175.0	154.5	0.883
Canadian Solar	CS5A-180M	180W Monocrystalline Module	180.0	164	0.911
Canadian Solar	CS6A-180P	180W Polycrystalline Module	180.0	157.6	0.876
Canadian Solar	CS6P-180P	180W Polycrystalline Module	180.0	156.7	0.871
Canadian Solar	CS6P-180PE	180W Polycrystalline Module	180.0	159	0.883
Canadian Solar	CS6A-185P	185W Polycrystalline Module	185.0	162.1	0.876
Canadian Solar	CS6P-185P	185W Polycrystalline Module	185.0	159.5	0.862
Canadian Solar	CS6P-185PE	185W Polycrystalline Module	185.0	163.5	0.884
Canadian Solar	CS6A-190P	190W Polycrystalline Module	190.0	166.6	0.877
Canadian Solar	CS6P-190P	190W Polycrystalline Module	190.0	163.9	0.863
Canadian Solar	CS6P-190PE	190W Polycrystalline Module	190.0	168.1	0.885
Canadian Solar	CS6P-195P	195W Polycrystalline Module	195.0	168.4	0.864
Canadian Solar	CS6P-195PE	195W Polycrystalline Module	195.0	172.6	0.885
Canadian Solar	CS6P-200P	200W Polycrystalline Module	200.0	172.8	0.864
Canadian Solar	CS6P-200PE	200W Polycrystalline Module	200.0	177.1	0.886
Canadian Solar	CS6P-205P	205W Polycrystalline Module	205.0	177.3	0.865
Canadian Solar	CS6P-210P	210W Polycrystalline Module	210.0	181.7	0.865
Canadian Solar	CS6P-215P	215W Polycrystalline Module	215.0	186.2	0.866
Canadian Solar	CS5P-220M	220W Monocrystalline Module	220.0	200.1	0.910
Canadian Solar	CS6P-220P	220W Polycrystalline Module	220.0	190.7	0.867
Canadian Solar	CS5P-225M	225W Monocrystalline Module	225.0	204.8	0.910
Canadian Solar	CS6P-225P	225W Polycrystalline Module	225.0	195.2	0.868



Canadian Solar	CS5P-230M	230W Monocrystalline Module	230.0	209.4	0.910
Canadian Solar	CS6P-230P	230W Polycrystalline Module	230.0	199.6	0.868
Canadian Solar	CS5P-235M	235W Monocrystalline Module	235.0	214.1	0.911
Canadian Solar	CS5P-240M	240W Monocrystalline Module	240.0	218.7	0.911
<b>Average</b>					<b>0.885</b>
CEEG (Shanghai) Solar Science and Technology	SST 160-72M	160W Monocrystalline Module	160.0	136.4	0.853
CEEG (Shanghai) Solar Science and Technology	SST 165-72M	165W Monocrystalline Module	165.0	140.8	0.853
CEEG (Shanghai) Solar Science and Technology	SST 170-72M	170W Monocrystalline Module	170.0	145.3	0.855
CEEG (Shanghai) Solar Science and Technology	SST 175-72M	175W Monocrystalline Module	175.0	156.5	0.894
CEEG (Shanghai) Solar Science and Technology	SST 180-72M	180W Monocrystalline Module	180.0	161	0.894
CEEG (Shanghai) Solar Science and Technology	SST 185-72M	185W Monocrystalline Module	185.0	165.6	0.895
<b>Average</b>					<b>0.874</b>
Centrosolar America	E165	165W Monocrystalline Module	165.0	146.5	0.888
Centrosolar America	E170	170W Monocrystalline Module	170.0	151.1	0.889
Centrosolar America	E175	175W Monocrystalline Module	175.0	155.7	0.890
Centrosolar America	E180	180W Monocrystalline Module	180.0	157.7	0.876
Centrosolar America	E185	185W Monocrystalline Module	185.0	162.2	0.877
Centrosolar America	E195	195W Polycrystalline Module	195.0	172.4	0.884
Centrosolar America	D200	200W Polycrystalline Module	200.0	172.8	0.864
Centrosolar America	E200	200W Polycrystalline Module	200.0	176.9	0.885
Centrosolar America	E205	205W Polycrystalline Module	205.0	181.5	0.885
Centrosolar America	D210	210W Polycrystalline Module	210.0	181.7	0.865
Centrosolar America	E210	210W Polycrystalline Module	210.0	186.1	0.886
Centrosolar America	D220	220W Polycrystalline Module	220.0	190.7	0.867
Centrosolar America	D230	230W Polycrystalline Module	230.0	199.6	0.868
Centrosolar America	E260	260W Polycrystalline Module	260.0	231.2	0.889
Centrosolar America	E265	265W Polycrystalline Module	265.0	235.8	0.890
Centrosolar America	E270	270W Polycrystalline Module	270.0	237.2	0.879
<b>Average</b>					<b>0.880</b>
Changzhou Nesl Solartech	DJ-165D	165W Monocrystalline Module	165.0	147.3	0.893
Changzhou Nesl Solartech	DJ-170D	170W Monocrystalline Module	170.0	151.8	0.893
Changzhou Nesl Solartech	DJ-175D	175W Monocrystalline Module	175.0	156.4	0.894
Changzhou Nesl Solartech	DJ-180D	180W Monocrystalline Module	180.0	161	0.894

<b>Average</b>					<b>0.893</b>
Changzhou Trina Solar Energy	TSM-165DA01	165W Monocrystalline Module	165.0	146	0.885
Changzhou Trina Solar Energy	TSM-170D	170W Monocrystalline Module	170.0	152.1	0.895
Changzhou Trina Solar Energy	TSM-170DA01	170W Monocrystalline Module	170.0	150.6	0.886
Changzhou Trina Solar Energy	TSM-170DA03	170W Monocrystalline Module	170.0	150.5	0.885
Changzhou Trina Solar Energy	TSM-170PA03	170W Polycrystalline Module	170.0	148.7	0.875
Changzhou Trina Solar Energy	TSM-175D	175W Monocrystalline Module	175.0	156.7	0.895
Changzhou Trina Solar Energy	TSM-175DA01	175W Monocrystalline Module	175.0	155.1	0.886
Changzhou Trina Solar Energy	TSM-175DA03	175W Monocrystalline Module	175.0	155	0.886
Changzhou Trina Solar Energy	TSM-175PA03	175W Polycrystalline Module	175.0	153.2	0.875
Changzhou Trina Solar Energy	TSM-180D	180W Monocrystalline Module	180.0	161.3	0.896
Changzhou Trina Solar Energy	TSM-180DA01	180W Monocrystalline Module	180.0	159.7	0.887
Changzhou Trina Solar Energy	TSM-180DA03	180W Monocrystalline Module	180.0	159.6	0.887
Changzhou Trina Solar Energy	TSM-180PA03	180W Polycrystalline Module	180.0	157.7	0.876
Changzhou Trina Solar Energy	TSM-185DA01	185W Monocrystalline Module	185.0	164.3	0.888
Changzhou Trina Solar Energy	TSM-185DA03	185W Monocrystalline Module	185.0	164.2	0.888
Changzhou Trina Solar Energy	TSM-185PA03	185W Polycrystalline Module	185.0	162.3	0.877
Changzhou Trina Solar Energy	TSM-190DA03	190W Monocrystalline Module	190.0	168.7	0.888
Changzhou Trina Solar Energy	TSM-190PA03	190W Polycrystalline Module	190.0	166.8	0.878
Changzhou Trina Solar Energy	TSM-220DA05	220W Monocrystalline Module	220.0	193.6	0.880
Changzhou Trina Solar Energy	TSM-220PA05	220W Polycrystalline Module	220.0	192.9	0.877
Changzhou Trina Solar Energy	TSM-230DA05	230W Monocrystalline Module	230.0	202.7	0.881
Changzhou Trina Solar Energy	TSM-230PA05	230W Polycrystalline Module	230.0	202	0.878
Changzhou Trina Solar Energy	TSM-240DA05	240W Monocrystalline Module	240.0	211.8	0.883
Changzhou Trina Solar Energy	TSM-240PA05	240W Polycrystalline Module	240.0	211	0.879
<b>Average</b>					<b>0.884</b>
Chi Mei Energy	CSSU-100A	100W Thin Film a-Si Module	100.0	93.7	0.937
Chi Mei Energy	CSSU-100B	100W Thin Film a-Si Module	100.0	93.7	0.937
<b>Average</b>					<b>0.937</b>
China Sunergy	CSUN160D-24/D	160W Monocrystalline Module	160.0	136.4	0.853
China Sunergy	CSUN165D-24/D	165W Monocrystalline Module	165.0	140.8	0.853
China Sunergy	CSUN170D-24/D	170W Monocrystalline Module	170.0	145.3	0.855
China Sunergy	CSUN175D-24/D	175W Monocrystalline Module	175.0	156.5	0.894
China Sunergy	CSUN180D-24/D	180W Monocrystalline Module	180.0	161	0.894
China Sunergy	CSUN185D-24/D	185W Monocrystalline Module	185.0	165.6	0.895
<b>Average</b>					<b>0.874</b>

Chinalight Haoyu Photovoltaic Technology (Beijing)	CLS165P	165W Polycrystalline Module	165.0	146	0.885
Chinalight Haoyu Photovoltaic Technology (Beijing)	CLS170P	170W Polycrystalline Module	170.0	150.5	0.885
Chinalight Haoyu Photovoltaic Technology (Beijing)	CLS175P	175W Polycrystalline Module	175.0	155.1	0.886
Chinalight Haoyu Photovoltaic Technology (Beijing)	CLS180P	180W Polycrystalline Module	180.0	159.6	0.887
Chinalight Haoyu Photovoltaic Technology (Beijing)	CLS185P	185W Polycrystalline Module	185.0	164.2	0.888
Chinalight Haoyu Photovoltaic Technology (Beijing)	CLS190P	190W Polycrystalline Module	190.0	168.8	0.888
Chinalight Haoyu Photovoltaic Technology (Beijing)	CLS215P	215W Polycrystalline Module	215.0	190.5	0.886
Chinalight Haoyu Photovoltaic Technology (Beijing)	CLS220P	220W Polycrystalline Module	220.0	195	0.886
Chinalight Haoyu Photovoltaic Technology (Beijing)	CLS225P	225W Polycrystalline Module	225.0	199.6	0.887
Chinalight Haoyu Photovoltaic Technology (Beijing)	CLS230P	230W Polycrystalline Module	230.0	204.2	0.888
Chinalight Haoyu Photovoltaic Technology (Beijing)	CLS235P	235W Polycrystalline Module	235.0	208.7	0.888
<b>Average</b>					<b>0.887</b>
Chint Solar (Zhejiang)	CHSM5612M	175W Monocrystalline Module	175.0	152.4	0.871
Chint Solar (Zhejiang)	CHSM6610M	230W Monocrystalline Module	230.0	199.5	0.867
<b>Average</b>					<b>0.869</b>
Day4 Energy	Day448MC 155	155W Polycrystalline Module, Day4™ Electrode Technology, Framed	155.0	138.7	0.895
Day4 Energy	Day448MC 160	160W Polycrystalline Module, Day4™ Electrode Technology, Framed	160.0	143.3	0.896
Day4 Energy	Day448MC 165	165W Polycrystalline Module, Day4™ Electrode Technology, Framed	165.0	147.9	0.896
Day4 Energy	Day448MC 170	170W Polycrystalline Module, Day4™ Electrode Technology, Framed	170.0	152.5	0.897
Day4 Energy	Day448MC 175	175W Polycrystalline Module, Day4™ Electrode Technology, Framed	175.0	157.1	0.898
Day4 Energy	Day448MC 180	180W Polycrystalline Module, Day4™ Electrode Technology, Framed	180.0	161.7	0.898
Day4 Energy	Day448MC 185	185W Polycrystalline Module, Day4™ Electrode Technology, Framed	185.0	166.3	0.899
Day4 Energy	Day448MC 190	190W Polycrystalline Module, Day4™ Electrode Technology, Framed	190.0	170.9	0.899
<b>Average</b>					<b>0.897</b>
DelSolar	D6P210A3E	210W Polycrystalline Module	210.0	180.1	0.858
DelSolar	D6P220A3E	220W Polycrystalline Module	220.0	189	0.859
DelSolar	D6P230A3E	230W Polycrystalline Module	230.0	197.9	0.860
<b>Average</b>					<b>0.859</b>
Ecosolargy	SDM-170/(165)-72M	165W Monocrystalline Module	165.0	145.3	0.881
Ecosolargy	SDM-170/(170)-72M	170W Monocrystalline Module	170.0	149.8	0.881
Ecosolargy	SDM-170/(175)-72M	175W Monocrystalline Module	175.0	154.3	0.882

Ecosolargy	SDM-170/(180)-72M	180W Monocrystalline Module	180.0	158.9	0.883
Ecosolargy	SDM-170/(185)-72M	185W Monocrystalline Module	185.0	163.4	0.883
<b>Average</b>					<b>0.882</b>
EPV SOLAR	EPV-40	40W Thin-Film Dual Junction a-Si Module, Frameless	40.0	38.2	0.955
EPV SOLAR	EPV-42	42W Thin-Film Dual Junction a-Si Module, Frameless	42.0	40.1	0.955
<b>Average</b>					<b>0.955</b>
ET Solar Industry	ET-M572165	165W Monocrystalline Module	165.0	146.5	0.888
ET Solar Industry	ET-M572170	170W Monocrystalline Module	170.0	151.1	0.889
ET Solar Industry	ET-M572175	175W Monocrystalline Module	175.0	155.7	0.890
ET Solar Industry	ET-M572180	180W Monocrystalline Module	180.0	157.7	0.876
ET Solar Industry	ET-M572185	185W Monocrystalline Module	185.0	162.2	0.877
ET Solar Industry	ET-P654190	190W Polycrystalline Module	190.0	167.9	0.884
ET Solar Industry	ET-P654195	195W Polycrystalline Module	195.0	172.4	0.884
ET Solar Industry	ET-P654200	200W Polycrystalline Module	200.0	176.9	0.885
ET Solar Industry	ET-P654205	205W Polycrystalline Module	205.0	181.5	0.885
ET Solar Industry	ET-P654210	210W Polycrystalline Module	210.0	186.1	0.886
ET Solar Industry	ET-P672250	250W Polycrystalline Module	250.0	222	0.888
ET Solar Industry	ET-P672255	255W Polycrystalline Module	255.0	226.6	0.889
ET Solar Industry	ET-P672260	260W Polycrystalline Module	260.0	231.2	0.889
ET Solar Industry	ET-P672265	265W Polycrystalline Module	265.0	235.8	0.890
ET Solar Industry	ET-P672270	270W Polycrystalline Module	270.0	237.2	0.879
ET Solar Industry	ET-P672275	275W Polycrystalline Module	275.0	241.7	0.879
ET Solar Industry	ET-P672280	280W Polycrystalline Module	280.0	246.3	0.880
<b>Average</b>					<b>0.884</b>
Evergreen Solar	ES-170-RL	170W Spruce Line Module, MC Connectors	170.0	147.1	0.865
Evergreen Solar	ES-170-SL	170W Spruce Line Module, MC Connectors	170.0	147.1	0.865
Evergreen Solar	ES-B-170-fa1	170W Glass-EVA-Tedlar Construction, MC Connectors	170.0	145.8	0.858
Evergreen Solar	ES-B-170-fb1	170W Glass-EVA-Tedlar Construction, MC Connectors	170.0	145.8	0.858
Evergreen Solar	ES-180-RL	180W Spruce Line Module, MC Connectors	180.0	158.7	0.882
Evergreen Solar	ES-180-SL	180W Spruce Line Module, MC Connectors	180.0	158.7	0.882
Evergreen Solar	ES-B-180-fa1	180W Glass-EVA-Tedlar Construction, MC Connectors	180.0	154.6	0.859
Evergreen Solar	ES-B-180-fb1	180W Glass-EVA-Tedlar Construction, MC Connectors	180.0	154.6	0.859
Evergreen Solar	ES-190-RL	190W Spruce Line Module, MC Connectors	190.0	163.9	0.863
Evergreen Solar	ES-190-SL	190W Spruce Line Module, MC Connectors	190.0	163.9	0.863
Evergreen Solar	ES-A-190-fa2	190W String Ribbon™ Module	190.0	171.7	0.904
Evergreen Solar	ES-A-190-fa3	190W String Ribbon™ Module, Black Frame	190.0	171.7	0.904
Evergreen Solar	ES-B-190-fa1	190W Glass-EVA-Tedlar Construction, MC Connectors	190.0	163.4	0.860

Evergreen Solar	ES-B-190-fb1	190W Glass-EVA-Tedlar Construction, MC Connectors	190.0	163.4	0.860
Evergreen Solar	ES-195-RL	195W Spruce Line Module, MC Connectors	195.0	168.4	0.864
Evergreen Solar	ES-195-SL	195W Spruce Line Module, MC Connectors	195.0	168.4	0.864
Evergreen Solar	ES-A-195-fa2	195W String Ribbon™ Module	195.0	176.1	0.903
Evergreen Solar	ES-A-195-fa3	195W String Ribbon™ Module, Black Frame	195.0	176.1	0.903
Evergreen Solar	ES-B-195-fa1	195W Glass-EVA-Tedlar Construction, MC Connectors	195.0	167.9	0.861
Evergreen Solar	ES-B-195-fb1	195W Glass-EVA-Tedlar Construction, MC Connectors	195.0	167.9	0.861
Evergreen Solar	ES-200-RL	200W Spruce Line Module, MC Connectors	200.0	171.7	0.859
Evergreen Solar	ES-200-SL	200W Spruce Line Module, MC Connectors	200.0	171.7	0.859
Evergreen Solar	ES-A-200-fa2	200W String Ribbon™ Module	200.0	180.7	0.904
Evergreen Solar	ES-A-200-fa3	200W String Ribbon™ Module, Black Frame	200.0	180.7	0.904
Evergreen Solar	ES-B-200-fa1	200W Glass-EVA-Tedlar Construction, MC Connectors	200.0	172.3	0.862
Evergreen Solar	ES-B-200-fb1	200W Glass-EVA-Tedlar Construction, MC Connectors	200.0	172.3	0.862
Evergreen Solar	ES-A-205-fa2	205W String Ribbon™ Module	205.0	185.4	0.904
Evergreen Solar	ES-A-205-fa3	205W String Ribbon™ Module, Black Frame	205.0	185.4	0.904
Evergreen Solar	ES-A-210-fa2	210W String Ribbon™ Module	210.0	190	0.905
Evergreen Solar	ES-A-210-fa3	210W String Ribbon™ Module, Black Frame	210.0	190	0.905
<b>Average</b>					<b>0.877</b>
First Solar	FS-267	67.5W Thin Film CdTe Module	67.5	64.8	0.960
First Solar	FS-270	70W Thin Film CdTe Module	70.0	67.2	0.960
First Solar	FS-272	72.5W Thin Film CdTe Module	72.5	69.6	0.960
First Solar	FS-275	75W Thin Film CdTe Module	75.0	72	0.960
First Solar	FS-277	77.5W Thin Film CdTe Module	77.5	74.5	0.961
<b>Average</b>					<b>0.960</b>
GE Energy	GEPVp-066-G	66W Polycrystalline Module	66.0	52.1	0.789
GE Energy	GEPVp-200-M	200W Polycrystalline Module	200.0	173.1	0.866
GE Energy	GEPVp-205-M	205W Polycrystalline Module	205.0	177.6	0.866
<b>Average</b>					<b>0.840</b>
Gloria Solar	GSS5-160A-E1	160W Monocrystalline Module	160.0	139.7	0.873
Gloria Solar	GSS5-165A-E1	165W Monocrystalline Module	165.0	144.2	0.874
Gloria Solar	GSS5-170A-E1	170W Monocrystalline Module	170.0	148.7	0.875
Gloria Solar	GSM6-200D-E1	200W Polycrystalline Module	200.0	170	0.850
Gloria Solar	GSM6-205D-E1	205W Polycrystalline Module	205.0	174.4	0.851
Gloria Solar	GSM6-210D-E1	210W Polycrystalline Module	210.0	178.8	0.851
Gloria Solar	GSM6-215D-E1	215W Polycrystalline Module	215.0	183.2	0.852
Gloria Solar	GSM6-220D-E1	220W Polycrystalline Module	220.0	187.6	0.853
<b>Average</b>					<b>0.860</b>

Green Power	ET-M572165	165W Monocrystalline Module	165.0	146.5	0.888
Green Power	ET-M572170	170W Monocrystalline Module	170.0	151.1	0.889
Green Power	ET-M572175	175W Monocrystalline Module	175.0	155.7	0.890
Green Power	ET-M572180	180W Monocrystalline Module	180.0	157.7	0.876
Green Power	ET-M572185	185W Monocrystalline Module	185.0	162.2	0.877
Green Power	ET-P654195	195W Polycrystalline Module	195.0	172.4	0.884
Green Power	ET-P654200	200W Polycrystalline Module	200.0	176.9	0.885
Green Power	ET-P654205	205W Polycrystalline Module	205.0	181.5	0.885
Green Power	ET-P654210	210W Polycrystalline Module	210.0	186.1	0.886
Green Power	ET-P672260	260W Polycrystalline Module	260.0	231.2	0.889
Green Power	ET-P672265	265W Polycrystalline Module	265.0	235.8	0.890
Green Power	ET-P672270	270W Polycrystalline Module	270.0	237.2	0.879
Green Power	ET-P672275	275W Polycrystalline Module	275.0	241.7	0.879
Green Power	ET-P672280	280W Polycrystalline Module	280.0	246.3	0.880
<b>Average</b>					<b>0.884</b>
Hyundai Heavy Industries	HiS-M191SF	191W Polycrystalline Module	191.0	172.6	0.904
Hyundai Heavy Industries	HiS-M194SF	194W Polycrystalline Module	194.0	175.4	0.904
Hyundai Heavy Industries	HiS-M197SF	197W Polycrystalline Module	197.0	178.2	0.905
Hyundai Heavy Industries	HiS-M200SF	200W Polycrystalline Module	200.0	180.9	0.905
Hyundai Heavy Industries	HiS-M203SF	203W Polycrystalline Module	203.0	183.7	0.905
Hyundai Heavy Industries	HiS-M206SF	206W Polycrystalline Module	206.0	186.5	0.905
Hyundai Heavy Industries	HiS-M209SF	209W Polycrystalline Module	209.0	189.3	0.906
Hyundai Heavy Industries	HiS-M212SG	212W Polycrystalline Module	212.0	191	0.901
Hyundai Heavy Industries	HiS-M215SG	215W Polycrystalline Module	215.0	193.7	0.901
Hyundai Heavy Industries	HiS-M218SG	218W Polycrystalline Module	218.0	196.5	0.901
Hyundai Heavy Industries	HiS-M221SG	221W Polycrystalline Module	221.0	199.3	0.902
Hyundai Heavy Industries	HiS-M224SG	224W Polycrystalline Module	224.0	202	0.902
Hyundai Heavy Industries	HiS-M227SG	227W Polycrystalline Module	227.0	204.8	0.902
Hyundai Heavy Industries	HiS-M230SG	230W Polycrystalline Module	230.0	207.6	0.903
<b>Average</b>					<b>0.903</b>
Instalaciones Pevafersa	IP-VA180	180W Monocrystalline Module	180.0	159.2	0.884
Instalaciones Pevafersa	IP-VAP210	210W Polycrystalline Module	210.0	183.7	0.875
Instalaciones Pevafersa	IP-VAP230	230W Polycrystalline Module	230.0	201	0.874
<b>Average</b>					<b>0.878</b>
Isofoton	IS-210/32	210W Monocrystalline Module	210.0	182.8	0.870
Isofoton	IS-215/32	215W Monocrystalline Module	215.0	187.3	0.871
Isofoton	IS-220/32	220W Monocrystalline Module	220.0	191.8	0.872

<b>Average</b>					<b>0.871</b>
Jiangsu Sainy Machinery	GES-M165	165W Monocrystalline Module	165.0	147.3	0.893
Jiangsu Sainy Machinery	GES-M170	170W Monocrystalline Module	170.0	151.8	0.893
Jiangsu Sainy Machinery	GES-M175	175W Monocrystalline Module	175.0	156.4	0.894
Jiangsu Sainy Machinery	GES-M180	180W Monocrystalline Module	180.0	161	0.894
<b>Average</b>					<b>0.893</b>
Jiangyin Jetion Science and Technology	JT175(35)S1580x808	175W Monocrystalline Module	175.0	153.9	0.879
Jiangyin Jetion Science and Technology	JT180(36)S1580x808	180W Monocrystalline Module	180.0	158.5	0.881
Jiangyin Jetion Science and Technology	JT185(36)S1580x808	185W Monocrystalline Module	185.0	163	0.881
Jiangyin Jetion Science and Technology	JT210(29)P1655x992	210W Polycrystalline Module	210.0	184.1	0.877
Jiangyin Jetion Science and Technology	JT215(30)P1655x992	215W Polycrystalline Module	215.0	188.6	0.877
Jiangyin Jetion Science and Technology	JT220(30)P1655x992	220W Polycrystalline Module	220.0	193.2	0.878
Jiangyin Jetion Science and Technology	JT225(30)P1655x992	225W Polycrystalline Module	225.0	197.7	0.879
Jiangyin Jetion Science and Technology	JT230(30)P1655x992	230W Polycrystalline Module	230.0	202.2	0.879
<b>Average</b>					<b>0.879</b>
Jumao Photonics (Xiamen)	JMP-85W-S5-G	85W Monocrystalline Module	85.0	72.6	0.854
Jumao Photonics (Xiamen)	JMP-160W-S5-G	160W Monocrystalline Module	160.0	134.8	0.843
Jumao Photonics (Xiamen)	JMP-170W-S5-G	170W Monocrystalline Module	170.0	143.5	0.844
Jumao Photonics (Xiamen)	JMP-210W-M6-G	210W Polycrystalline Module	210.0	179.5	0.855
Jumao Photonics (Xiamen)	JMP-215W-M6-G	215W Polycrystalline Module	215.0	184	0.856
Jumao Photonics (Xiamen)	JMP-220W-M6-G	220W Polycrystalline Module	220.0	188.4	0.856
Jumao Photonics (Xiamen)	JMP-225W-M6-G	225W Polycrystalline Module	225.0	192.8	0.857
Jumao Photonics (Xiamen)	JMP-230W-M6-G	230W Polycrystalline Module	230.0	197.3	0.858
<b>Average</b>					<b>0.853</b>
Kaneka	G-SA060	60W a-Si Module	60.0	57	0.950
<b>Average</b>					<b>0.950</b>
Kyocera Solar	SU53BU	53W Polycrystalline Module, Deep Blue	53.0	41.6	0.785
Kyocera Solar	KC130GT	130W Polycrystalline Module, High Efficiency, Deep Blue	130.0	114.2	0.878
Kyocera Solar	KC130TM	130W Polycrystalline Module, High Efficiency, Deep Blue	130.0	114.2	0.878
Kyocera Solar	KD130GX-L	130W Polycrystalline Module, High Efficiency, Deep Blue	130.0	114.8	0.883
Kyocera Solar	KD130GX-LP	130W Polycrystalline Module, High Efficiency, Deep Blue	130.0	114.8	0.883
Kyocera Solar	KD135GX-L	135W Polycrystalline Module, High Efficiency, Deep Blue	135.0	119.4	0.884

Kyocera Solar	KD135GX-LP	135W Polycrystalline Module, High Efficiency, Deep Blue	135.0	119.4	0.884
Kyocera Solar	KC175GT	175W Polycrystalline Module, High Efficiency, Deep Blue	175.0	153.6	0.878
Kyocera Solar	KD180GX-L	180W Polycrystalline Module, High Efficiency, Deep Blue	180.0	156	0.867
Kyocera Solar	KD180GX-LP	180W Polycrystalline Module, High Efficiency, Deep Blue	180.0	156	0.867
Kyocera Solar	KD185GX-LPU	185W Polycrystalline Module, High Efficiency, Deep Blue	185.0	162.5	0.878
Kyocera Solar	KC200GT	200W Polycrystalline Module, High Efficiency, Deep Blue	200.0	175.7	0.879
Kyocera Solar	KD200GX-LPU	200W Polycrystalline Module, High Efficiency, Deep Blue	200.0	175.5	0.878
Kyocera Solar	KD205GX-L	205W Polycrystalline Module, High Efficiency, Deep Blue	205.0	180	0.878
Kyocera Solar	KD205GX-LP	205W Polycrystalline Module, High Efficiency, Deep Blue	205.0	180	0.878
Kyocera Solar	KD205GX-LPU	205W Polycrystalline Module, High Efficiency, Deep Blue	205.0	180	0.878
Kyocera Solar	KD210GX-L	210W Polycrystalline Module, High Efficiency, Deep Blue	210.0	184.6	0.879
Kyocera Solar	KD210GX-LP	210W Polycrystalline Module, High Efficiency, Deep Blue	210.0	184.6	0.879
Kyocera Solar	KD210GX-LPU	210W Polycrystalline Module, High Efficiency, Deep Blue	210.0	184.6	0.879
Kyocera Solar	KD215GX-LPU	215W Polycrystalline Module, High Efficiency, Deep Blue	215.0	189.1	0.880
<b>Average</b>					<b>0.874</b>
Lifeline Energy International	LF-165WP	165W Monocrystalline Module	165.0	147.3	0.893
Lifeline Energy International	LF-170WP	170W Monocrystalline Module	170.0	151.8	0.893
Lifeline Energy International	LF-175WP	175W Monocrystalline Module	175.0	156.4	0.894
Lifeline Energy International	LF-180WP	180W Monocrystalline Module	180.0	161	0.894
<b>Average</b>					<b>0.893</b>
Ligitek Photovoltaic	LG052BB00	52W Polycrystalline Module	52.0	41.2	0.792
Ligitek Photovoltaic	LM210BB00	210W Polycrystalline Module	210.0	180.1	0.858
Ligitek Photovoltaic	LM215BB00	215W Polycrystalline Module	215.0	184.5	0.858
Ligitek Photovoltaic	LM220BB00	220W Polycrystalline Module	220.0	189	0.859
Ligitek Photovoltaic	LM225BB00	225W Polycrystalline Module	225.0	193.4	0.860
Ligitek Photovoltaic	LM230BB00	230W Polycrystalline Module	230.0	197.9	0.860
<b>Average</b>					<b>0.848</b>
Lumos	LS185-72M	185W Monocrystalline Module	185.0	165.6	0.895
<b>Average</b>					<b>0.895</b>
MAGE Solar	Powertec 170/5ME	170W Monocrystalline Module	170.0	151	0.888
MAGE Solar	Powertec 175/5ME	175W Monocrystalline Module	175.0	155.6	0.889
MAGE Solar	Powertec 175/5MJ	175W Monocrystalline Module	175.0	153.9	0.879
MAGE Solar	Powertec 180/5ME	180W Monocrystalline Module	180.0	160.1	0.889
MAGE Solar	Powertec 180/5MJ	180W Monocrystalline Module	180.0	158.5	0.881
MAGE Solar	Powertec 185/5MJ	185W Monocrystalline Module	185.0	163	0.881
MAGE Solar	Powertec 220/6PJ	220W Polycrystalline Module	220.0	193.2	0.878
MAGE Solar	Powertec 225/6PJ	225W Polycrystalline Module	225.0	197.7	0.879



MAGE Solar	Powertec 230/6PJ	230W Polycrystalline Module	230.0	202.2	0.879
<b>Average</b>					<b>0.883</b>
Mitsubishi Electric	PV-EE120MF5F	120W Polycrystalline Module, Lead-Free Solder	120.0	108.7	0.906
Mitsubishi Electric	PV-EE125MF5F	125W Polycrystalline Module, Lead-Free Solder	125.0	112.4	0.899
Mitsubishi Electric	PV-EE130MF5F	130W Polycrystalline Module, Lead-Free Solder	130.0	117	0.900
Mitsubishi Electric	PV-MF160EB4	160W Polycrystalline Module, Lead-Free Solder, MC Connectors	160.0	141.6	0.885
Mitsubishi Electric	PV-MF165EB4	165W Polycrystalline Module, Lead-Free Solder, MC Connectors	165.0	146.1	0.885
Mitsubishi Electric	PV-MF170EB3	170W Polycrystalline Module, Lead-Free Solder, MC Connectors	170.0	150.7	0.886
Mitsubishi Electric	PV-MF170EB4	170W Polycrystalline Module, Lead-Free Solder, MC Connectors	170.0	150.7	0.886
Mitsubishi Electric	PV-MF170UD4	170W Polycrystalline Module, Lead-Free Solder, MC Connectors	170.0	151.6	0.892
Mitsubishi Electric	PV-UD170MF5	170W Polycrystalline Module, Lead-Free Solder, MC Connectors	170.0	150.9	0.888
Mitsubishi Electric	PV-MF175UD4	175W Polycrystalline Module, Lead-Free Solder, MC Connectors	175.0	156.1	0.892
Mitsubishi Electric	PV-UD175MF5	175W Polycrystalline Module, Lead-Free Solder, MC Connectors	175.0	157	0.897
Mitsubishi Electric	PV-MF180UD4	180W Polycrystalline Module, Lead-Free Solder, MC Connectors	180.0	160.7	0.893
Mitsubishi Electric	PV-UD180MF5	180W Polycrystalline Module, Lead-Free Solder, MC Connectors	180.0	161.6	0.898
Mitsubishi Electric	PV-UD185MF5	185W Polycrystalline Module, Lead-Free Solder, MC Connectors	185.0	166.2	0.898
Mitsubishi Electric	PV-UD190MF5	190W Polycrystalline Module, Lead-Free Solder, MC Connectors	190.0	169.8	0.894
<b>Average</b>					<b>0.893</b>
Moser Baer Photovoltaic	MBPV CAAP 210	210W Polycrystalline Module	210.0	186.5	0.888
Moser Baer Photovoltaic	MBPV CAAP 220	220W Polycrystalline Module	220.0	195	0.886
<b>Average</b>					<b>0.887</b>
Nexpower Technology	NH-100UT_3A	95W Thin Film a-Si Module	95.0	90	0.947
NexPower Technology	NH-100UX 3A	95W Thin-Film a-Si Module	95.0	90.7	0.955
Nexpower Technology	NH-100UT_4A	100W Thin Film a-Si Module	100.0	94.8	0.948
NexPower Technology	NH-100UX 4A	100W Thin-Film a-Si Module	100.0	95.5	0.955
Nexpower Technology	NH-100UT_5A	105W Thin Film a-Si Module	105.0	99.5	0.948
NexPower Technology	NH-100UX 5A	105W Thin-Film a-Si Module	105.0	100.3	0.955
Nexpower Technology	NH-100UT_6A	110W Thin Film a-Si Module	110.0	104.3	0.948
Nexpower Technology	NT-125UX	125W Thin Film a-Si/uc-Si Module	125.0	117.5	0.940
Nexpower Technology	NT-130UX	130W Thin Film a-Si/uc-Si Module	130.0	122.3	0.941
Nexpower Technology	NT-135UX	135W Thin Film a-Si/uc-Si Module	135.0	127	0.941
<b>Average</b>					<b>0.948</b>
Ningbo Maxsolar	MP-150WP	150W Monocrystalline Module	150.0	131.7	0.878
Ningbo Maxsolar	MP-155WP	155W Monocrystalline Module	155.0	136.2	0.879
Ningbo Maxsolar	MP-160WP	160W Monocrystalline Module	160.0	140.7	0.879
Ningbo Maxsolar	MP-165WP	165W Monocrystalline Module	165.0	145.2	0.880
Ningbo Maxsolar	MP-170WP	170W Monocrystalline Module	170.0	149.7	0.881

Ningbo Maxsolar	MP-175WP	175W Monocrystalline Module	175.0	154.2	0.881
Ningbo Maxsolar	MP-180WP	180W Monocrystalline Module	180.0	158.8	0.882
<b>Average</b>					<b>0.880</b>
Ningbo Solar Electric Power	TDB125x125-72-P 150W	150W Monocrystalline Module	150.0	133.2	0.888
Ningbo Solar Electric Power	TDB125x125-72-P 155W	155W Monocrystalline Module	155.0	137.7	0.888
Ningbo Solar Electric Power	TDB125x125-72-P 160W	160W Monocrystalline Module	160.0	142.3	0.889
Ningbo Solar Electric Power	TDB125x125-72-P 165W	165W Monocrystalline Module	165.0	146.8	0.890
Ningbo Solar Electric Power	TDB125x125-72-P 170W	170W Monocrystalline Module	170.0	151.4	0.891
Ningbo Solar Electric Power	TDB125x125-72-P 175W	175W Monocrystalline Module	175.0	155.9	0.891
Ningbo Solar Electric Power	TDB125x125-72-P 180W	180W Monocrystalline Module	180.0	160.5	0.892
Ningbo Solar Electric Power	TPB125x125-96-P 200W	200W Polycrystalline Module	200.0	175.7	0.879
Ningbo Solar Electric Power	TPB125x125-96-P 210W	210W Polycrystalline Module	210.0	184.7	0.880
Ningbo Solar Electric Power	TPB125x125-96-P 220W	220W Polycrystalline Module	220.0	193.7	0.880
Ningbo Solar Electric Power	TPB125x125-96-P 230W	230W Polycrystalline Module	230.0	202.8	0.882
Ningbo Solar Electric Power	TPB125x125-96-P 240W	240W Polycrystalline Module	240.0	211.9	0.883
<b>Average</b>					<b>0.886</b>
Ningbo Ulica Solar Science & Technology	165(35) D UL811x1581	165W Monocrystalline Module	165.0	142.7	0.865
Ningbo Ulica Solar Science & Technology	230(35) D UL997x1953	230W Monocrystalline Module	230.0	201.8	0.877
<b>Average</b>					<b>0.871</b>
Phono Solar Technology	PS160M-24/F	160W Monocrystalline Module	160.0	145.1	0.907
Phono Solar Technology	PS165M-24/F	165W Monocrystalline Module	165.0	149.7	0.907
Phono Solar Technology	PS170M-24/F	170W Monocrystalline Module	170.0	154.4	0.908
Phono Solar Technology	PS180M-24/F	180W Monocrystalline Module	180.0	163.7	0.909
Phono Solar Technology	PS185M-24/F	185W Monocrystalline Module	185.0	168.3	0.910
Phono Solar Technology	PS190M-24/F	190W Monocrystalline Module	190.0	173	0.911
Phono Solar Technology	PS210M-20/U	210W Monocrystalline Module	210.0	189.7	0.903
Phono Solar Technology	PS210P-20/U	210W Polycrystalline Module	210.0	190.1	0.905
Phono Solar Technology	PS215M-20/U	215W Monocrystalline Module	215.0	194.3	0.904
Phono Solar Technology	PS215P-20/U	215W Polycrystalline Module	215.0	194.7	0.906
Phono Solar Technology	PS220M-20/U	220W Monocrystalline Module	220.0	199	0.905
Phono Solar Technology	PS220P-20/U	220W Polycrystalline Module	220.0	199.4	0.906
Phono Solar Technology	PS225M-20/U	225W Monocrystalline Module	225.0	203.6	0.905
Phono Solar Technology	PS225P-20/U	225W Polycrystalline Module	225.0	204	0.907
Phono Solar Technology	PS230M-20/U	230W Monocrystalline Module	230.0	208.2	0.905
Phono Solar Technology	PS230P-20/U	230W Polycrystalline Module	230.0	208.6	0.907
Phono Solar Technology	PS235M-20/U	235W Monocrystalline Module	235.0	212.8	0.906

Phono Solar Technology	PS235P-20/U	235W Polycrystalline Module	235.0	213.3	0.908
Phono Solar Technology	PS240M-20/U	240W Monocrystalline Module	240.0	217.5	0.906
Phono Solar Technology	PS240P-20/U	240W Polycrystalline Module	240.0	217.9	0.908
<b>Average</b>					<b>0.907</b>
Powercom	PPV-130M6L	126W Polycrystalline PV Module	126.0	110.1	0.874
Powercom	PPV-180M6L	178W Polycrystalline PV Module	178.0	155.9	0.876
Powercom	PPV-210M6L	210W Polycrystalline PV Module	210.0	182.9	0.871
Powercom	PPV-230M6L	223W Polycrystalline PV Module	223.0	194.2	0.871
<b>Average</b>					<b>0.873</b>
Quantum Technologies	QS 215W/60-156 AP 2BB	215W Polycrystalline Module	215.0	187.6	0.873
Quantum Technologies	QS 220W/60-156 AP 2B	220W Polycrystalline Module	220.0	192.1	0.873
Quantum Technologies	QS 20W/60-156 SP 2B	220W Polycrystalline Module	220.0	189.1	0.860
Quantum Technologies	Q 225W/60-156 AP BB	225W Polycrystalline Module	225.0	196.6	0.874
Quantum Technologies	QS 225W/60-156 SP 2BB	225W Polycrystalline Module	225.0	193.5	0.860
Quantum Technologies	QS 225W/60-256 EM 3BB	225W Monocrystalline Module	225.0	192.4	0.855
Quantum Technologies	QS 230W/60-156 SP 2BB	230W Polycrystalline Module	230.0	198	0.861
<b>Average</b>					<b>0.865</b>
REC ScanModule	REC205AE-US	205W Polycrystalline Module, High Performance	205.0	178.2	0.869
REC ScanModule	REC205AE-US (BLK)	205W Polycrystalline Module, High Performance	205.0	178.2	0.869
REC ScanModule	SCM205	205W Polycrystalline Module	205.0	178.6	0.871
REC ScanModule	REC210AE-US	210W Polycrystalline Module, High Performance	210.0	182.7	0.870
REC ScanModule	REC210AE-US (BLK)	210W Polycrystalline Module, High Performance	210.0	182.7	0.870
REC ScanModule	SCM210	210W Polycrystalline Module	210.0	183	0.871
REC ScanModule	REC215AE-US	215W Polycrystalline Module, High Performance	215.0	187.2	0.871
REC ScanModule	REC215AE-US (BLK)	215W Polycrystalline Module, High Performance	215.0	187.2	0.871
REC ScanModule	SCM215	215W Polycrystalline Module	215.0	187.5	0.872
REC ScanModule	REC220AE-US	220W Polycrystalline Module, High Performance	220.0	191.7	0.871
REC ScanModule	REC220AE-US (BLK)	220W Polycrystalline Module, High Performance	220.0	191.7	0.871
REC ScanModule	SCM220	220W Polycrystalline Module	220.0	192	0.873
REC ScanModule	REC225AE-US	225W Polycrystalline Module, High Performance	225.0	196.2	0.872
REC ScanModule	REC225AE-US (BLK)	225W Polycrystalline Module, High Performance	225.0	196.2	0.872
REC ScanModule	SCM225	225W Polycrystalline Module	225.0	196.5	0.873
REC ScanModule	REC230AE-US	230W Polycrystalline Module, High Performance	230.0	200.7	0.873
REC ScanModule	REC230AE-US (BLK)	230W Polycrystalline Module, High Performance	230.0	200.7	0.873
<b>Average</b>					<b>0.871</b>
Ritek	PM130	130W Polycrystalline Module	130.0	115.4	0.888
Ritek	MM135	135W Monocrystalline Module	135.0	120.9	0.896

Ritek	PM135	135W Polycrystalline Module	135.0	119.9	0.888
Ritek	MM140	140W Monocrystalline Module	140.0	125.4	0.896
Ritek	PM140	140W Polycrystalline Module	140.0	124.5	0.889
Ritek	MM145	145W Monocrystalline Module	145.0	130	0.897
Ritek	PM175	175W Polycrystalline Module	175.0	155.4	0.888
Ritek	MM180	180W Monocrystalline Module	180.0	161.2	0.896
Ritek	PM180	180W Polycrystalline Module	180.0	160	0.889
Ritek	MM185	185W Monocrystalline Module	185.0	165.8	0.896
Ritek	PM185	185W Polycrystalline Module	185.0	164.5	0.889
Ritek	MM190	190W Monocrystalline Module	190.0	170.4	0.897
Ritek	PM190	190W Polycrystalline Module	190.0	168.6	0.887
Ritek	MM195	195W Monocrystalline Module	195.0	174.5	0.895
Ritek	PM195	195W Polycrystalline Module	195.0	173.1	0.888
Ritek	MM200	200W Monocrystalline Module	200.0	179.1	0.896
Ritek	PM200	200W Polycrystalline Module	200.0	177.7	0.889
Ritek	MM205	205W Monocrystalline Module	205.0	183.7	0.896
Ritek	PM205	205W Polycrystalline Module	205.0	182.3	0.889
Ritek	MM210	210W Monocrystalline Module	210.0	188.3	0.897
Ritek	PM210	210W Polycrystalline Module	210.0	186.3	0.887
Ritek	MM215	215W Monocrystalline Module	215.0	192.9	0.897
Ritek	PM215	215W Polycrystalline Module	215.0	190.9	0.888
Ritek	MM220	220W Monocrystalline Module	220.0	197	0.895
Ritek	PM220	220W Polycrystalline Module	220.0	195.4	0.888
Ritek	MM225	225W Monocrystalline Module	225.0	201.6	0.896
Ritek	PM225	225W Polycrystalline Module	225.0	200	0.889
Ritek	MM230	230W Monocrystalline Module	230.0	206.1	0.896
Ritek	PM230	230W Polycrystalline Module	230.0	204.6	0.890
Ritek	MM235	235W Monocrystalline Module	235.0	210.7	0.897
Ritek	MM240	240W Monocrystalline Module	240.0	215.4	0.898
<b>Average</b>					<b>0.892</b>
Sanyo Electric	HIP-180BA19	HIT Power 180W - Hybrid Amorphous/Monocrystalline Module	180.0	166.9	0.927
Sanyo Electric	HIP-180DA3	180W HIT Hybrid Amorphous/Monocrystalline Module	180.0	167.3	0.929
Sanyo Electric	HIP-186BA19	HIT Power 186W - Hybrid Amorphous/Monocrystalline Module	186.0	172.6	0.928
Sanyo Electric	HIP-186BA3	186W HIT Hybrid Amorphous/Monocrystalline Module	186.0	167.5	0.901
Sanyo Electric	HIP-186DA3	186W HIT Hybrid Amorphous/Monocrystalline Module	186.0	173	0.930
Sanyo Electric	HIP-190BA19	HIT Power 190W - Hybrid Amorphous/Monocrystalline Module	190.0	176.4	0.928
Sanyo Electric	HIP-190BA3	190W HIT Hybrid Amorphous/Monocrystalline Module	190.0	171.2	0.901

Sanyo Electric	HIP-190DA3	190W HIT Hybrid Amorphous/Monocrystalline Module	190.0	176.8	0.931
Sanyo Electric	HIP-195BA19	HIT Power 195W - Hybrid Amorphous/Monocrystalline Module	195.0	181.1	0.929
Sanyo Electric	HIP-195BA3	195W HIT Hybrid Amorphous/Monocrystalline Module	195.0	179.8	0.922
Sanyo Electric	HIP-195DA3	195W HIT Hybrid Amorphous/Monocrystalline Module	195.0	181.5	0.931
Sanyo Electric	HIP-195NKHA1	195W HIT Power N Hybrid Amorphous/Monocrystalline Module	195.0	180.7	0.927
Sanyo Electric	HIP-195NKHA5	195W HIT Power N Hybrid Amorphous/Monocrystalline Module	195.0	180.7	0.927
Sanyo Electric	HIP-200BA19	HIT Power 200W - Hybrid Amorphous/Monocrystalline Module	200.0	185.9	0.930
Sanyo Electric	HIP-200BA3	200W HIT Hybrid Amorphous/Monocrystalline Module	200.0	184.5	0.923
Sanyo Electric	HIP-200DA3	200W HIT Hybrid Amorphous/Monocrystalline Module	200.0	186.2	0.931
Sanyo Electric	HIP-200NKHA1	200W HIT Power N Hybrid Amorphous/Monocrystalline Module	200.0	185.4	0.927
Sanyo Electric	HIP-200NKHA5	200W HIT Power N Hybrid Amorphous/Monocrystalline Module	200.0	185.4	0.927
Sanyo Electric	HIP-205BA19	HIT Power 205W - Hybrid Amorphous/Monocrystalline Module	205.0	190.7	0.930
Sanyo Electric	HIP-205BA3	205W HIT Hybrid Amorphous/Monocrystalline Module	205.0	185.1	0.903
Sanyo Electric	HIP-205NKHA1	205W HIT Power N Hybrid Amorphous/Monocrystalline Module	205.0	190.2	0.928
Sanyo Electric	HIP-205NKHA5	205W HIT Power N Hybrid Amorphous/Monocrystalline Module	205.0	190.2	0.928
Sanyo Electric	HIP-210NKHA1	210W HIT Power N Hybrid Amorphous/Monocrystalline Module	210.0	194.9	0.928
Sanyo Electric	HIP-210NKHA5	210W HIT Power N Hybrid Amorphous/Monocrystalline Module	210.0	194.9	0.928
Sanyo Electric	HIP-215NKHA1	215W HIT Power N Hybrid Amorphous/Monocrystalline Module	215.0	199.6	0.928
Sanyo Electric	HIP-215NKHA5	215W HIT Power N Hybrid Amorphous/Monocrystalline Module	215.0	199.6	0.928
<b>Average</b>					<b>0.925</b>
Schott Solar	ASE-300-DGF/25-145	145W Polycrystalline Module, 25V, Double Glass, Framed	145.0	131.8	0.909
Schott Solar	SAPC-170	170W Polycrystalline Module	170.0	149.1	0.877
Schott Solar	SAPC-175	175W Monocrystalline Module	175.0	151.8	0.867
Schott Solar	ASE-300-DGF/34-195	195W Polycrystalline Module, 34V, Double Glass, Framed	195.0	178.7	0.916
Schott Solar	Poly 202	202W Polycrystalline Module	202.0	177.6	0.879
Schott Solar	Poly 210	210W Polycrystalline Module	210.0	184.8	0.880
Schott Solar	Poly 217	217W Polycrystalline Module	217.0	191.2	0.881
Schott Solar	Poly 220	220W Polycrystalline Module	220.0	193.9	0.881
Schott Solar	Poly 225	225W Polycrystalline Module	225.0	198.4	0.882
Schott Solar	ASE-300-DGF/42-240	240W Polycrystalline Module	240.0	212.5	0.885
Schott Solar	ASE-300-DGF/50-250	250W Polycrystalline Module, 50V, Double Glass, Framed	250.0	221.6	0.886
Schott Solar	ASE-300-DGF/50-260	260W Polycrystalline Module	260.0	230.6	0.887
Schott Solar	ASE-300-DGF/50-270	270W Polycrystalline Module	270.0	239.7	0.888
Schott Solar	ASE-300-DGF/50-280	280W Polycrystalline Module, 50V, Double Glass, Framed	280.0	248.8	0.889
Schott Solar	ASE-300-DGF/50-290	290W Polycrystalline Module	290.0	257.9	0.889
Schott Solar	ASE-300-DGF/50-300	300W Polycrystalline Module	300.0	267	0.890
Schott Solar	ASE-300-DGF/50-310	310W Polycrystalline Module, 50V, Double Glass, Framed	310.0	276.2	0.891

<b>Average</b>					<b>0.887</b>
Schuco International	MPE 310 MP 02	310W Monocrystalline Module, Premium, Dark Frame	310.0	274.9	0.887
Schuco International	MPE 320 MP 02	320W Monocrystalline Module, Premium, Dark Frame	320.0	284	0.888
<b>Average</b>					<b>0.887</b>
Schuco USA	S 165-SPU	165W Polycrystalline Module, Lead-Free Solder, MC Connectors	165.0	146.1	0.885
Schuco USA	S 165-SPU-4	165W Polycrystalline Module, Lead-Free Solder, MC Connectors	165.0	146.4	0.887
Schuco USA	S 170-SPU	170W Polycrystalline Module, Lead-Free Solder, MC Connectors	170.0	150.7	0.886
Schuco USA	S 170-SPU-4	170W Polycrystalline Module, Lead-Free Solder, MC Connectors	170.0	150.9	0.888
Schuco USA	S 175-SPU-4	175W Polycrystalline Module, Lead-Free Solder, MC Connectors	175.0	157	0.897
Schuco USA	S 180-SPU-4	180W Polycrystalline Module, Lead-Free Solder, MC Connectors	180.0	161.6	0.898
Schuco USA	MPE 200 PS 04	200W Polycrystalline Module	200.0	172.8	0.864
Schuco USA	SPV 200 SMAU-1	200W Monocrystalline Module, Black Frame	200.0	178.1	0.891
Schuco USA	MPE 205 PS 04	205W Polycrystalline Module	205.0	177.3	0.865
Schuco USA	MPE 210 PS 04	210W Polycrystalline Module	210.0	181.7	0.865
Schuco USA	SPV 210 SMAU-1	210W Monocrystalline Module, Black Frame	210.0	187.3	0.892
Schuco USA	MPE 215 PS 04	215W Polycrystalline Module	215.0	186.2	0.866
Schuco USA	MPE 220 PS 04	220W Polycrystalline Module	220.0	190.7	0.867
Schuco USA	MPE 225 PS 04	225W Polycrystalline Module	225.0	195.2	0.868
Schuco USA	MPE 230 PS 04	230W Polycrystalline Module	230.0	199.6	0.868
<b>Average</b>					<b>0.879</b>
SET-Solar	SDM-170/(165)-72M	165W Monocrystalline Module	165.0	145.3	0.881
SET-Solar	SDM-170/(170)-72M	170W Monocrystalline Module	170.0	149.8	0.881
SET-Solar	SDM-170/(175)-72M	175W Monocrystalline Module	175.0	154.3	0.882
SET-Solar	SDM-170/(180)-72M	180W Monocrystalline Module	180.0	158.9	0.883
SET-Solar	SDM-170/(185)-72M	185W Monocrystalline Module	185.0	163.4	0.883
<b>Average</b>					<b>0.882</b>
Shanghai Solar Energy S&T	S-175C	175W Monocrystalline Module	175.0	155.2	0.887
Shanghai Solar Energy S&T	S-180C	180W Monocrystalline Module	180.0	159.7	0.887
Shanghai Solar Energy S&T	S-185C	185W Monocrystalline Module	185.0	164.3	0.888
Shanghai Topsolar Green Energy	TSM72-125M 160W	160W Monocrystalline Module	160.0	143.9	0.899
Shanghai Topsolar Green Energy	TSM72-125M 165W	165W Monocrystalline Module	165.0	148.5	0.900
Shanghai Topsolar Green Energy	TSM72-125M 170W	170W Monocrystalline Module	170.0	153.1	0.901
Shanghai Topsolar Green Energy	TSM72-125M 175W	175W Monocrystalline Module	175.0	157.8	0.902
Shanghai Topsolar Green Energy	TSM72-125M 180W	180W Monocrystalline Module	180.0	162.4	0.902
<b>Average</b>					<b>0.896</b>
Sharp	ND-62RU1	62W Polycrystalline Roof Module	62.0	51.2	0.826
Sharp	ND-62RU1F	62W Polycrystalline Roof Module	62.0	51.2	0.826

Sharp	ND-62RU2	62W Polycrystalline Roof Module	62.0	51.2	0.826
Sharp	ND-62RUC1	62W Polycrystalline Roof Module, Locking Connector	62.0	51.2	0.826
Sharp	ND-65RU1F	65W Polycrystalline Roof Module	65.0	53	0.815
Sharp	ND-65RUC1	65W Polycrystalline Roof Module, Locking Connector	65.0	53	0.815
Sharp	ND-72ELU	72W Polycrystalline Triangle Module, Left Side	72.0	63.2	0.878
Sharp	ND-72ELUC	72W Polycrystalline Triangle Module, Left Side, Locking Connector	72.0	63.2	0.878
Sharp	ND-72ELUF	72W Polycrystalline Triangle Module, Left Side	72.0	63.2	0.878
Sharp	ND-72ERU	72W Polycrystalline Triangle Module, Right Side	72.0	63.2	0.878
Sharp	ND-72ERUC	72W Polycrystalline Triangle Module, Right Side, Locking Connector	72.0	63.2	0.878
Sharp	ND-72ERUF	72W Polycrystalline Triangle Module, Right Side	72.0	63.2	0.878
Sharp	ND-V075CL	75W Polycrystalline Triangle Module, Left Side, Locking Connector	75.0	65.9	0.879
Sharp	ND-V075CR	75W Polycrystalline Triangle Module, Right Side, Locking Connector	75.0	65.9	0.879
Sharp	ND-123UJF	123W Polycrystalline Module	123.0	108.2	0.880
Sharp	ND-130UJF	130W Polycrystalline Module	130.0	113.8	0.875
Sharp	ND-N2ECU	142W Polycrystalline Module	142.0	124.1	0.874
Sharp	ND-N2ECUC	142W Polycrystalline Module, Locking Connector	142.0	124.1	0.874
Sharp	ND-N2ECUF	142W Polycrystalline Module	142.0	124.1	0.874
Sharp	NE-160U1	160W Polycrystalline Module, Flat Screw	160.0	140.1	0.876
Sharp	ND-162U1F	162W Polycrystalline Module	162.0	142.8	0.881
Sharp	ND-162U1Y	162W Polycrystalline Module	162.0	142.8	0.881
Sharp	ND-162U2	162W Polycrystalline Module	162.0	142.8	0.881
Sharp	NE-165U1	165W Polycrystalline Module, Flat Screw	165.0	144.6	0.876
Sharp	NE-165U5	165W Polycrystalline Module	165.0	144.6	0.876
Sharp	NE-165UC1	165W Polycrystalline Module, Locking Connector	165.0	144.6	0.876
Sharp	ND-167U1	167W Polycrystalline Module	167.0	147.3	0.882
Sharp	ND-167U1F	167W Polycrystalline Module	167.0	147.3	0.882
Sharp	ND-167U1Y	167W Polycrystalline Module	167.0	147.3	0.882
Sharp	ND-167U2	167W Polycrystalline Module	167.0	147.3	0.882
Sharp	ND-167U3A	167W Polycrystalline Module	167.0	147.3	0.882
Sharp	ND-167UC1	167W Polycrystalline Module, Locking Connector	167.0	147.3	0.882
Sharp	NE-170U1	170W Polycrystalline Module	170.0	149.1	0.877
Sharp	NE-170UC1	170W Polycrystalline Module, Locking Connector	170.0	149.1	0.877
Sharp	NT-170U1	170W Monocrystalline Module	170.0	147.3	0.866
Sharp	NT-170UC1	170W Monocrystalline Module, Locking Connector	170.0	147.3	0.866
Sharp	NT-175U1	175W Monocrystalline Module	175.0	151.8	0.867
Sharp	NT-175UC1	175W Monocrystalline Module, Locking Connector	175.0	151.8	0.867
Sharp	ND-176U1Y	176W Polycrystalline Module	176.0	152.4	0.866

Sharp	ND-176UC1	176W Polycrystalline Module, Locking Connector	176.0	152.4	0.866
Sharp	NT-180U1	180W Monocrystalline Module	180.0	156.3	0.868
Sharp	ND-181U1	181W Polycrystalline Module	181.0	159.3	0.880
Sharp	ND-181U1F	181W Polycrystalline Module	181.0	159.3	0.880
Sharp	ND-181U2	181W Polycrystalline Module	181.0	159.3	0.880
Sharp	ND-187U1	187W Polycrystalline Module	187.0	164.7	0.881
Sharp	ND-187U1F	187W Polycrystalline Module	187.0	164.7	0.881
Sharp	ND-187U2	187W Polycrystalline Module	187.0	164.7	0.881
Sharp	ND-187UC1	187W Polycrystalline Module, Locking Connector	187.0	164.7	0.881
Sharp	ND-198U1F	198W Polycrystalline Module	198.0	170.5	0.861
Sharp	ND-198UC1	198W Polycrystalline Module, Locking Connector	198.0	170.5	0.861
Sharp	ND-200U1	200W Polycrystalline Module	200.0	173	0.865
Sharp	ND-200U1F	200W Polycrystalline Module	200.0	173	0.865
Sharp	ND-200U2	200W Polycrystalline Module	200.0	173	0.865
Sharp	ND-200UC1	200W Polycrystalline Module, Locking Connector	200.0	173	0.865
Sharp	ND-208U1	208W Polycrystalline Module	208.0	180.1	0.866
Sharp	ND-208U1F	208W Polycrystalline Module	208.0	180.1	0.866
Sharp	ND-208U2	208W Polycrystalline Module	208.0	180.1	0.866
Sharp	ND-208UC1	208W Polycrystalline Module, Locking Connector	208.0	180.1	0.866
Sharp	ND-216U1F	216W Polycrystalline Module	216.0	185	0.856
Sharp	ND-216U2	216W Polycrystalline Module	216.0	187.3	0.867
Sharp	ND-216UC1	216W Polycrystalline Module, Locking Connector	216.0	185	0.856
Sharp	ND-U216C1	216W Polycrystalline Module, Locking Connector	216.0	185	0.856
Sharp	ND-220U1F	220W Polycrystalline Module	220.0	188.5	0.857
Sharp	ND-220UC1	220W Polycrystalline Module, Locking Connector	220.0	188.5	0.857
Sharp	ND-224U1F	224W Polycrystalline Module	224.0	192.6	0.860
Sharp	ND-224UC1	224W Polycrystalline Module, Locking Connector	224.0	192.6	0.860
Sharp	ND-U224C1	224W Polycrystalline Module, Locking Connector	224.0	192.6	0.860
Sharp	ND-U230C1	230W Polycrystalline Module, Locking Connector	230.0	198	0.861
Sharp	ND-V230A1	230W Polycrystalline Module	230.0	198	0.861
Sharp	NU-U230F3	230W Monocrystalline Module, Locking Conenctor	230.0	207.1	0.900
Sharp	NU-U235F1	235W Monocrystalline Module, Locking Conenctor	235.0	211.7	0.901
<b>Average</b>					<b>0.868</b>
Siliken	SLK60P6L 215 Wp	215W Polycrystalline Module	215.0	192.4	0.895
Siliken	SLK60P6L 220 Wp	220W Polycrystalline Module	220.0	197	0.895
Siliken	SLK60P6L 225 Wp	225W Polycrystalline Module	225.0	201.5	0.896
Siliken	SLK60P6L 230 Wp	230W Polycrystalline Module	230.0	206.1	0.896



Siliken	SLK60P6L 235 Wp	235W Polycrystalline Module	235.0	210.7	0.897
<b>Average</b>					<b>0.896</b>
Siliken California	SLK60P6L 215 Wp	215W Polycrystalline Module	215.0	192.4	0.895
Siliken California	SLK60P6L 220 Wp	220W Polycrystalline Module	220.0	197	0.895
Siliken California	SLK60P6L 225 Wp	225W Polycrystalline Module	225.0	201.5	0.896
Siliken California	SLK60P6L 230 Wp	230W Polycrystalline Module	230.0	206.1	0.896
Siliken California	SLK60P6L 235 Wp	235W Polycrystalline Module	235.0	210.7	0.897
<b>Average</b>					<b>0.896</b>
Silray	SR-180	180W Monocrystalline Module	180.0	159.7	0.887
<b>Average</b>					<b>0.887</b>
Sintek Photronic	STK-S6C2PE-A	175W Polycrystalline Module	175.0	155.9	0.891
Sintek Photronic	STK-S6C1ME-A	180W Monocrystalline Module	180.0	159.7	0.887
Sintek Photronic	STK-S6B1PE-A	200W Polycrystalline Module	200.0	173.9	0.870
Sintek Photronic	STK-S6B1ME-A	205W Monocrystalline Module	205.0	182.5	0.890
<b>Average</b>					<b>0.884</b>
Solar Integrated Technologies	SI-G1 288	288W Thin Film Roofing Membrane	288.0	260	0.903
Solar Integrated Technologies	SI-T1 288	288W Thin Film Roofing Membrane	288.0	260	0.903
Solar Integrated Technologies	SI-G1 576	576W Thin Film Roofing Membrane	576.0	519.9	0.903
Solar Integrated Technologies	SI-T1 576	576W Thin Film Roofing Membrane	576.0	519.9	0.903
Solar Integrated Technologies	SI-G1 720	720W Thin Film Roofing Membrane	720.0	649.9	0.903
Solar Integrated Technologies	SI-G1 864	864W Thin Film Roofing Membrane	864.0	779.8	0.903
<b>Average</b>					<b>0.903</b>
Solar Power (SPI)	SP165FM52	165W Monocrystalline Module	165.0	149.8	0.908
Solar Power (SPI)	SP170FM22	170W Monocrystalline Module	170.0	146.6	0.862
Solar Power (SPI)	SP170FM52	170W Monocrystalline Module	170.0	154.5	0.909
Solar Power (SPI)	SP175FM52	175W Monocrystalline Module	175.0	159.1	0.909
Solar Power (SPI)	SP190FM52	190W Monocrystalline Module	190.0	171.8	0.904
Solar Power (SPI)	SP190FP12	190W Polycrystalline Module	190.0	173.8	0.915
Solar Power (SPI)	SP190FP52	190W Polycrystalline Module	190.0	170.4	0.897
Solar Power (SPI)	SP195FM52	195W Monocrystalline Module	195.0	176.4	0.905
Solar Power (SPI)	SP195FP12	195W Polycrystalline Module	195.0	178.5	0.915
Solar Power (SPI)	SP195FP52	195W Polycrystalline Module	195.0	175	0.897
Solar Power (SPI)	SP200FM52	200W Monocrystalline Module	200.0	181	0.905
Solar Power (SPI)	SP200FP12	200W Polycrystalline Module	200.0	183.1	0.916
Solar Power (SPI)	SP200FP52	200W Polycrystalline Module	200.0	179.6	0.898
Solar Power (SPI)	SP205FM52	205W Monocrystalline Module	205.0	185.7	0.906
Solar Power (SPI)	SP205FP12	205W Polycrystalline Module	205.0	187.8	0.916

Solar Power (SPI)	SP205FP52	205W Polycrystalline Module	205.0	184.2	0.899
<b>Average</b>					<b>0.904</b>
Solar Power Industries	SPI-M190-60	190W Polycrystalline Module	190.0	168.1	0.885
Solar Power Industries	SPI-M200-60	200W Polycrystalline Module	200.0	177.1	0.886
<b>Average</b>					<b>0.885</b>
Solarfun Power	SF160-24-M150	150W Monocrystalline Module	150.0	133.6	0.891
Solarfun Power	SF160-24-M155	155W Monocrystalline Module	155.0	138.1	0.891
Solarfun Power	SF160-24-M160	160W Monocrystalline Module	160.0	142.7	0.892
Solarfun Power	SF160-24-M165	165W Monocrystalline Module	165.0	147.2	0.892
Solarfun Power	SF160-24-M170	170W Monocrystalline Module	170.0	151.8	0.893
Solarfun Power	SF190-27-P170	170W Polycrystalline Module	170.0	150.4	0.885
Solarfun Power	SF160-24-M175	175W Monocrystalline Module	175.0	156.4	0.894
Solarfun Power	SF190-27-P175	175W Polycrystalline Module	175.0	155	0.886
Solarfun Power	SF160-24-M180	180W Monocrystalline Module	180.0	161	0.894
Solarfun Power	SF190-27-P180	180W Polycrystalline Module	180.0	159.5	0.886
Solarfun Power	SF160-24-M185	185W Monocrystalline Module	185.0	165.6	0.895
Solarfun Power	SF190-27-P185	185W Polycrystalline Module	185.0	164	0.886
Solarfun Power	SF190-27-P190	190W Polycrystalline Module	190.0	168.6	0.887
Solarfun Power	SF190-27-P195	195W Polycrystalline Module	195.0	173.1	0.888
Solarfun Power	SF190-27-P200	200W Polycrystalline Module	200.0	177.7	0.889
Solarfun Power	SF190-27-P205	205W Polycrystalline Module	205.0	182.3	0.889
Solarfun Power	SF190-27-P210	210W Polycrystalline Module	210.0	186.8	0.890
<b>Average</b>					<b>0.890</b>
Solartech Power	SPM190P	190W Polycrystalline Module, Framed	190.0	159.1	0.837
Solartech Power	SPM195P	195W Polycrystalline Module, Framed	195.0	163.5	0.838
Solartech Power	SPM200P	200W Polycrystalline Module, Framed	200.0	167.8	0.839
Solartech Power	SPM205P	205W Polycrystalline Module, Framed	205.0	172.1	0.840
Solartech Power	SPM210P	210W Polycrystalline Module, Framed	210.0	176.5	0.840
<b>Average</b>					<b>0.839</b>
SolarWorld	SW165 mono	165W Monocrystalline Module	165.0	147.4	0.893
SolarWorld	SW175 mono	175W Monocrystalline Module	175.0	156.6	0.895
SolarWorld	SW220 mono	220W Monocrystalline Module	220.0	196.5	0.893
SolarWorld	SW230 mono	230W Monocrystalline Module	230.0	204.4	0.889
<b>Average</b>					<b>0.893</b>
Solon Fuer Solartechnik	P220/6+/01 215Wp	215W Polycrystalline Module	215.0	189.8	0.883
Solon Fuer Solartechnik	P220/6+/01 220Wp	220W Polycrystalline Module	220.0	194.3	0.883
Solon Fuer Solartechnik	P220/6+/01 225Wp	225W Polycrystalline Module	225.0	198.9	0.884

Solon Fuer Solartechnik	P220/6+/01 230Wp	230W Polycrystalline Module	230.0	203.4	0.884
Solon Fuer Solartechnik	P220/6+/01 235Wp	235W Polycrystalline Module	235.0	208	0.885
<b>Average</b>					<b>0.884</b>
Solyndra	SL-001-135	135W Thin Film Module	135.0	126.7	0.939
Solyndra	SL-001-135N	135W Thin Film Module	135.0	126.7	0.939
Solyndra	SL-001-135U	135W Thin Film Module	135.0	126.7	0.939
Solyndra	SL-001-150	150W Thin Film Module	150.0	141	0.940
Solyndra	SL-001-150N	150W Thin Film Module	150.0	141	0.940
Solyndra	SL-001-150U	150W Thin Film Module	150.0	141	0.940
Solyndra	SL-001-157	157W Thin Film Module	157.0	147.6	0.940
Solyndra	SL-001-157N	157W Thin Film Module	157.0	147.6	0.940
Solyndra	SL-001-157U	157W Thin Film Module	157.0	147.6	0.940
Solyndra	SL-001-165	165W Thin Film Module	165.0	155.2	0.941
Solyndra	SL-001-165N	165W Thin Film Module	165.0	155.2	0.941
Solyndra	SL-001-165U	165W Thin Film Module	165.0	155.2	0.941
Solyndra	SL-001-173	173W Thin Film Module	173.0	162.8	0.941
Solyndra	SL-001-173N	173W Thin Film Module	173.0	162.8	0.941
Solyndra	SL-001-173U	173W Thin Film Module	173.0	162.8	0.941
Solyndra	SL-001-182	182W Thin Film Module	182.0	171.4	0.942
Solyndra	SL-001-182N	182W Thin Film Module	182.0	171.4	0.942
Solyndra	SL-001-182U	182W Thin Film Module	182.0	171.4	0.942
Solyndra	SL-001-191	191W Thin Film Module	191.0	179.9	0.942
Solyndra	SL-001-191N	191W Thin Film Module	191.0	179.9	0.942
Solyndra	SL-001-191U	191W Thin Film Module	191.0	179.9	0.942
Solyndra	SL-001-200	200W Thin Film Module	200.0	188.5	0.943
Solyndra	SL-001-200N	200W Thin Film Module	200.0	188.5	0.943
Solyndra	SL-001-200U	200W Thin Film Module	200.0	188.5	0.943
<b>Average</b>					<b>0.941</b>
Sun Energy Engineering	SE14-52	52W Polycrystalline Waterproof Integrated PV Roof Tile	52.0	41.2	0.792
<b>Average</b>					<b>0.792</b>
SUNGEN International	SGM-165D	165W Monocrystalline Module	165.0	147.3	0.893
SUNGEN International	SGM-170D	170W Monocrystalline Module	170.0	151.8	0.893
SUNGEN International	SGM-175D	175W Monocrystalline Module	175.0	156.4	0.894
SUNGEN International	SGM-180D	180W Monocrystalline Module	180.0	161	0.894
<b>Average</b>					<b>0.893</b>
SunPower	PL-PLT-63L-BLK-U	63W Monocrystalline Module, SunTile	63.0	55.1	0.875
SunPower	SPR-76R-BLK-U	76W Monocrystalline Module, SunTile	76.0	64.9	0.854

SunPower	SPR-200-BLK-U	200W Monocrystalline Module, Framed, Grid Connect, Black Backsheet	200.0	179.7	0.899
SunPower	SPR-200-WHT-U	200W Monocrystalline Module, Framed, Grid Connect, White Backsheet	200.0	181.5	0.908
SunPower	SPR-205-BLK-U	205W Monocrystalline Module, Framed, Grid Connect, Black Backsheet	205.0	184.3	0.899
SunPower	SPR-210-BLK-U	210W Monocrystalline Module, Framed, Grid Connect, Black Backsheet	210.0	188.9	0.900
SunPower	SPR-210-WHT-U	210W Monocrystalline Module, Framed, Grid Connect, White Backsheet	210.0	190.8	0.909
SunPower	SPR-215-WHT-U	215W Monocrystalline Module, Framed, Grid Connect, White Backsheet	215.0	195.5	0.909
SunPower	SPR-217-WHT-U	217W Monocrystalline Module, Framed, Grid Connect, White Backsheet	217.0	197.4	0.910
SunPower	SPR-220-BLK-U	220W Monocrystalline Module, Framed, Grid Connect, Black Backsheet	220.0	198.2	0.901
SunPower	SPR-220-WHT-U	220W Monocrystalline Module, Framed, Grid Connect, White Backsheet	220.0	200.2	0.910
SunPower	SPR-225-BLK-U	225W Monocrystalline Module, Framed, Grid Connect, Black Backsheet	225.0	202.9	0.902
SunPower	SPR-230-WHT-U	230W Monocrystalline Module, Framed, Grid Connect, White Backsheet	230.0	209.5	0.911
SunPower	PL-SUNP-SPR-290	290W Monocrystalline Module, Laminate, Grid Connect, White Backsheet	290.0	266.4	0.919
SunPower	SPR-290-WHT-U	290W Monocrystalline Module, Framed, Grid Connect, White Backsheet	290.0	266.4	0.919
SunPower	T5-SPR-290	290W Monocrystalline Module, Integrated Laminate/Frame/Mounting System, Grid Connect, White Backsheet	290.0	266.4	0.919
SunPower	PL-SUNP-SPR-305	305W Monocrystalline Module, Laminate, Grid Connect, White Backsheet	305.0	280.6	0.920
SunPower	SPR-305-WHT-U	305W Monocrystalline Module, Framed, Grid Connect, White Backsheet	305.0	280.6	0.920
SunPower	T5-SPR-305	305W Monocrystalline Module, Integrated Laminate/Frame/Mounting System, Grid Connect, White Backsheet	305.0	280.6	0.920
SunPower	PL-SUNP-SPR-310	310W Monocrystalline Module, Laminate, Grid Connect, White Backsheet	310.0	285.3	0.920
SunPower	SPR-310-WHT-U	310W Monocrystalline Module, Framed, Grid Connect, White Backsheet	310.0	285.3	0.920
SunPower	T5-SPR-310	310W Monocrystalline Module, Integrated Laminate/Frame/Mounting System, Grid Connect, White Backsheet	310.0	285.3	0.920
SunPower	PL-SUNP-SPR-315E	315W Monocrystalline Module, Laminate, Grid Connect, White Backsheet	315.0	290	0.921
SunPower	SPR-315E-WHT-D	315W Monocrystalline Module, Framed, Grid Connect, White Backsheet	315.0	290	0.921
SunPower	SPR-315E-WHT-U	315W Monocrystalline Module, Framed, Grid Connect, White Backsheet	315.0	290	0.921
SunPower	T5-SPR-315	315W Monocrystalline Module, Integrated Laminate/Frame/Mounting System, Grid Connect, White Backsheet	315.0	290	0.921
<b>Average</b>					<b>0.909</b>
Suntech Power	STP115D-12/VEC	115W Polycrystalline Module, MC Connectors, Transparent Backsheet	115.0	102.4	0.890
Suntech Power	STP115D-12/VED	115W Polycrystalline Module, MC Connectors, Transparent Backsheet	115.0	102.4	0.890
Suntech Power	STP120D-12/VEC	120W Polycrystalline Module, MC Connectors, Transparent Backsheet	120.0	106.9	0.891
Suntech Power	STP120D-12/VED	120W Polycrystalline Module, MC Connectors, Transparent Backsheet	120.0	106.9	0.891
Suntech Power	STP125D-12/VEC	125W Polycrystalline Module, MC Connectors, Transparent Backsheet	125.0	111.4	0.891
Suntech Power	STP125D-12/VED	125W Polycrystalline Module, MC Connectors, Transparent Backsheet	125.0	111.4	0.891
Suntech Power	STP130D-12/VEC	130W Polycrystalline Module, MC Connectors, Transparent Backsheet	130.0	113.7	0.875
Suntech Power	STP130D-12/VED	130W Polycrystalline Module, MC Connectors, Transparent Backsheet	130.0	113.7	0.875
Suntech Power	STP135D-12/VEC	135W Polycrystalline Module, MC Connectors, Transparent Backsheet	135.0	118.2	0.876
Suntech Power	STP135D-12/VED	135W Polycrystalline Module, MC Connectors, Transparent Backsheet	135.0	118.2	0.876

Suntech Power	STP160S-24/Ab-1	160W Monocrystalline Module, MC Connectors	160.0	138.6	0.866
Suntech Power	STP160S-24/Ab-1 Black	160W Monocrystalline Module, MC Connectors, Black Backsheet	160.0	138.4	0.865
Suntech Power	STP165S-24/Ab-1	165W Monocrystalline Module, MC Connectors	165.0	143	0.867
Suntech Power	STP165S-24/Ab-1 Black	165W Monocrystalline Module, MC Connectors, Black Backsheet	165.0	142.8	0.865
Suntech Power	STP170S-24/Ab-1	170 Watt Monocrystalline Module, MC Connectors	170.0	151.4	0.891
Suntech Power	STP170S-24/Ab-1 Black	170 Watt Monocrystalline Module, MC Connectors, Black Backsheet	170.0	152.9	0.899
Suntech Power	STP175S-24/Ab-1	175 Watt Monocrystalline Module, MC Connectors	175.0	156	0.891
Suntech Power	STP175S-24/Ab-1 Black	175 Watt Monocrystalline Module, MC Connectors, Black Backsheet	175.0	157.5	0.900
Suntech Power	STP180-18/Ub-1	180W Polycrystalline Module, MC Connectors	180.0	158.4	0.880
Suntech Power	STP180S-24/Ab-1	180 Watt Monocrystalline Module, MC Connectors	180.0	160.5	0.892
Suntech Power	STP180S-24/Ab-1 Black	180 Watt Monocrystalline Module, MC Connectors, Black Backsheet	180.0	162.1	0.901
Suntech Power	STP185S-24/Ab-1	185W Monocrystalline Module, MC Connectors	185.0	161.9	0.875
Suntech Power	STP190-18/UB-1	190 Watt Polycrystalline Module, MC Connectors	190.0	166.3	0.875
Suntech Power	STP200-18/UB-1	200 Watt Polycrystalline Module, MC Connectors	200.0	175.3	0.877
Suntech Power	STP210-18/UB-1	210 Watt Polycrystalline Module with MC Connectors	210.0	184.4	0.878
Suntech Power	STP230D-12/VEC	230W Polycrystalline Module, MC Connectors, Transparent Backsheet	230.0	201.6	0.877
Suntech Power	STP230D-12/VED	230W Polycrystalline Module, MC Connectors, Transparent Backsheet	230.0	201.6	0.877
Suntech Power	STP240D-12/VEC	240W Polycrystalline Module, MC Connectors, Transparent Backsheet	240.0	210.6	0.878
Suntech Power	STP240D-12/VED	240W Polycrystalline Module, MC Connectors, Transparent Backsheet	240.0	210.6	0.878
Suntech Power	STP250-24/Vb-1	250W Polycrystalline Module, MC Connectors	250.0	222.2	0.889
Suntech Power	STP250D-12/VEC	250W Polycrystalline Module, MC Connectors, Transparent Backsheet	250.0	219.6	0.878
Suntech Power	STP250D-12/VED	250W Polycrystalline Module, MC Connectors, Transparent Backsheet	250.0	219.6	0.878
Suntech Power	STP260-24/Vb-1	260W Polycrystalline Module with MC Connectors	260.0	235.4	0.905
Suntech Power	STP260D-12/VEC	260W Polycrystalline Module, MC Connectors, Transparent Backsheet	260.0	226.1	0.870
Suntech Power	STP260D-12/VED	260W Polycrystalline Module, MC Connectors, Transparent Backsheet	260.0	226.1	0.870
Suntech Power	STP270-24/Vb-1	270W Polycrystalline Module with MC Connectors	270.0	244.7	0.906
Suntech Power	STP270D-12/VEC	270W Polycrystalline Module, MC Connectors, Transparent Backsheet	270.0	235.1	0.871
Suntech Power	STP270D-12/VED	270W Polycrystalline Module, MC Connectors, Transparent Backsheet	270.0	235.1	0.871
Suntech Power	STP280-24/Vb-1	280W Polycrystalline Module with MC Connectors	280.0	254	0.907
Suntech Power	STP050D-5/ZCB	50W Polycrystalline Waterproof Built-in PV Roof Tile	50.0	40.4	0.808
Suntech Power	STP050D-5/ZCF	50W Polycrystalline Waterproof Built-in PV Roof Tile	50.0	40.4	0.808
Suntech Power	STP050D-5/ZCG	50W Polycrystalline Waterproof Built-in PV Roof Tile	50.0	40.4	0.808
<b>Average</b>					<b>0.877</b>
Symphony Energy	SE-M215Gy	215W Polycrystalline Module	215.0	195.4	0.909
Symphony Energy	SE-M216Gy	216W Polycrystalline Module	216.0	196.4	0.909
Symphony Energy	SE-M217Gy	217W Polycrystalline Module	217.0	197.3	0.909
Symphony Energy	SE-M218Gy	218W Polycrystalline Module	218.0	198.2	0.909

Symphony Energy	SE-M219Gy	219W Polycrystalline Module	219.0	199.2	0.910
Symphony Energy	SE-M220Gy	220W Polycrystalline Module	220.0	200.1	0.910
Symphony Energy	SE-M221Gy	221W Polycrystalline Module	221.0	201	0.910
Symphony Energy	SE-M222Gy	222W Polycrystalline Module	222.0	202	0.910
Symphony Energy	SE-M223Gy	223W Polycrystalline Module	223.0	202.9	0.910
Symphony Energy	SE-M224Gy	224W Polycrystalline Module	224.0	203.8	0.910
Symphony Energy	SE-M225Gy	225W Polycrystalline Module	225.0	204.7	0.910
Symphony Energy	SE-M226Gy	226W Polycrystalline Module	226.0	205.7	0.910
Symphony Energy	SE-M227Gy	227W Polycrystalline Module	227.0	206.6	0.910
Symphony Energy	SE-M228Gy	228W Polycrystalline Module	228.0	207.5	0.910
Symphony Energy	SE-M229Gy	229W Polycrystalline Module	229.0	208.5	0.910
Symphony Energy	SE-M230Gy	230W Polycrystalline Module	230.0	209.4	0.910
Symphony Energy	SE-M231Gy	231W Polycrystalline Module	231.0	210.3	0.910
Symphony Energy	SE-M232Gy	232W Polycrystalline Module	232.0	211.3	0.911
Symphony Energy	SE-M233Gy	233W Polycrystalline Module	233.0	212.2	0.911
Symphony Energy	SE-M234Gy	234W Polycrystalline Module	234.0	213.1	0.911
Symphony Energy	SE-M235Gy	235W Polycrystalline Module	235.0	214.1	0.911
<b>Average</b>					<b>0.910</b>
Tianwei New Energy (Chengdu) PV Module	TW155(35)D	155W Monocrystalline Module	155.0	135.1	0.872
Tianwei New Energy (Chengdu) PV Module	TW160(35)D	160W Monocrystalline Module	160.0	139.5	0.872
Tianwei New Energy (Chengdu) PV Module	TW165(35)D	165W Monocrystalline Module	165.0	144	0.873
Tianwei New Energy (Chengdu) PV Module	TW170(35)D	170W Monocrystalline Module	170.0	148.5	0.874
Tianwei New Energy (Chengdu) PV Module	TW175(35)D	175W Monocrystalline Module	175.0	153	0.874
Tianwei New Energy (Chengdu) PV Module	TW180(28)P	180W Polycrystalline Module	180.0	155.6	0.864
Tianwei New Energy (Chengdu) PV Module	TW180(35)D	180W Monocrystalline Module	180.0	157.5	0.875
Tianwei New Energy (Chengdu) PV Module	TW185(28)P	185W Polycrystalline Module	185.0	160.1	0.865
Tianwei New Energy (Chengdu) PV Module	TW185(35)D	185W Monocrystalline Module	185.0	162.1	0.876
Tianwei New Energy (Chengdu) PV Module	TW190(28)P	190W Polycrystalline Module	190.0	164.5	0.866
Tianwei New Energy (Chengdu) PV Module	TW195(28)P	195W Polycrystalline Module	195.0	169	0.867
Tianwei New Energy (Chengdu) PV Module	TW200(28)P	200W Polycrystalline Module	200.0	173.4	0.867

Tianwei New Energy (Chengdu) PV Module	TW205(28)P	205W Polycrystalline Module	205.0	177.9	0.868
Tianwei New Energy (Chengdu) PV Module	TW210(28)P	210W Polycrystalline Module	210.0	182.4	0.869
Tianwei New Energy (Chengdu) PV Module	TW215(28)P	215W Polycrystalline Module	215.0	186.8	0.869
Tianwei New Energy (Chengdu) PV Module	TW220(28)P	220W Polycrystalline Module	220.0	191.3	0.870
Tianwei New Energy (Chengdu) PV Module	TW225(28)P	225W Polycrystalline Module	225.0	195.8	0.870
Tianwei New Energy (Chengdu) PV Module	TW230(28)P	230W Polycrystalline Module	230.0	200.3	0.871
Tianwei New Energy (Chengdu) PV Module	TW235(28)P	235W Polycrystalline Module	235.0	204.8	0.871
<b>Average</b>					<b>0.870</b>
Titan Energy Systems	Titan S6-60	210W Monocrystalline Module	210.0	186.6	0.889
<b>Average</b>					<b>0.889</b>
TynSolar	TYN-168P6	165W Polycrystalline Modle	165.0	142.1	0.861
TynSolar	TYN-170S5	170W Monocrystalline Module	170.0	149.2	0.878
TynSolar	TYN-180P6	175W Polycrystalline Module	175.0	151	0.863
TynSolar	TYN-180S5	175W Monocrystalline Module	175.0	153.7	0.878
<b>Average</b>					<b>0.870</b>
United Solar Ovonc	PVL-29	29W Field Applied 3J a-Si Laminate	29.0	26.1	0.900
United Solar Ovonc	PVL-31	31W Field Applied 3J a-Si Laminate	31.0	28	0.903
United Solar Ovonc	PVL-33	33W Field Applied 3J a-Si Laminate	33.0	29.8	0.903
United Solar Ovonc	PVL-58	58W Field Applied 3J a-Si Laminate	58.0	52.3	0.902
United Solar Ovonc	PVL-62	62W Field Applied 3J a-Si Laminate	62.0	56	0.903
United Solar Ovonc	PVL-64	64W Field Applied 3J a-Si Laminate	64.0	57.7	0.902
United Solar Ovonc	PVL-66	66W Field Applied 3J a-Si Laminate	66.0	59.6	0.903
United Solar Ovonc	PVL-68	68W Field Applied 3J a-Si Laminate	68.0	61.4	0.903
United Solar Ovonc	PVL-72	72W Field Applied 3J a-Si Laminate	72.0	65	0.903
United Solar Ovonc	PVL-116	116W Field Applied 3J a-Si Laminate	116.0	104.7	0.903
United Solar Ovonc	PVL-124	124W Field Applied 3J a-Si Laminate	124.0	112	0.903
United Solar Ovonc	PVL-128	128W Field Applied 3J a-Si Laminate	128.0	115.5	0.902
United Solar Ovonc	PVL-131	131W Field Applied 3J a-Si Laminate	131.0	118.2	0.902
United Solar Ovonc	PVL-136	136W Field Applied 3J a-Si Laminate	136.0	122.8	0.903
United Solar Ovonc	PVL-144	144W Field Applied 3J a-Si Laminate	144.0	130.1	0.903
<b>Average</b>					<b>0.903</b>
Upsolar	UP-M165M	165W Monocrystalline Module	165.0	147.3	0.893
Upsolar	UP-M170M	170W Monocrystalline Module	170.0	151.8	0.893

Upsolar	UP-M175M	175W Monocrystalline Module	175.0	156.4	0.894
Upsolar	UP-M180M	180W Monocrystalline Module	180.0	161	0.894
<b>Average</b>					<b>0.893</b>
Worldwide Energy & Mfg USA	AS-5M36-165W	165W Monocrystalline Module	165.0	146	0.885
Worldwide Energy & Mfg USA	AS-5M-170W	170W Monocrystalline Module	170.0	152.1	0.895
Worldwide Energy & Mfg USA	AS-5M36-170W	170W Monocrystalline Module	170.0	150.6	0.886
Worldwide Energy & Mfg USA	AS-6M24-170W	170W Monocrystalline Module	170.0	150.5	0.885
Worldwide Energy & Mfg USA	AS-6P24-170W	170W Polycrystalline Module	170.0	148.7	0.875
Worldwide Energy & Mfg USA	AS-5M-175W	175W Monocrystalline Module	175.0	156.7	0.895
Worldwide Energy & Mfg USA	AS-5M36-175W	175W Monocrystalline Module	175.0	155.1	0.886
Worldwide Energy & Mfg USA	AS-6M24-175W	175W Monocrystalline Module	175.0	155	0.886
Worldwide Energy & Mfg USA	AS-6P24-175W	175W Polycrystalline Module	175.0	153.2	0.875
Worldwide Energy & Mfg USA	AS-5M-180W	180W Monocrystalline Module	180.0	161.3	0.896
Worldwide Energy & Mfg USA	AS-5M36-180W	180W Monocrystalline Module	180.0	159.7	0.887
Worldwide Energy & Mfg USA	AS-6M24-180W	180W Monocrystalline Module	180.0	159.6	0.887
Worldwide Energy & Mfg USA	AS-6P24-180W	180W Polycrystalline Module	180.0	157.7	0.876
Worldwide Energy & Mfg USA	AS-5M36-185W	185W Monocrystalline Module	185.0	164.3	0.888
Worldwide Energy & Mfg USA	AS-6M24-185W	185W Monocrystalline Module	185.0	164.2	0.888
Worldwide Energy & Mfg USA	AS-6P24-185W	185W Polycrystalline Module	185.0	162.3	0.877
Worldwide Energy & Mfg USA	AS-6M24-190W	190W Monocrystalline Module	190.0	168.7	0.888
Worldwide Energy & Mfg USA	AS-6P24-190W	190W Polycrystalline Module	190.0	166.8	0.878
Worldwide Energy & Mfg USA	AS-6M30-220W	220W Monocrystalline Module	220.0	193.6	0.880
Worldwide Energy & Mfg USA	AS-6P30-220W	220W Polycrystalline Module	220.0	192.9	0.877
Worldwide Energy & Mfg USA	AS-6M30-230W	230W Monocrystalline Module	230.0	202.7	0.881
Worldwide Energy & Mfg USA	AS-6P30-230W	230W Polycrystalline Module	230.0	202	0.878
Worldwide Energy & Mfg USA	AS-6M30-240W	240W Monocrystalline Module	240.0	211.8	0.883
Worldwide Energy & Mfg USA	AS-6P30-240W	240W Polycrystalline Module	240.0	211	0.879
<b>Average</b>					<b>0.884</b>
Wuxi Shangpin Solar Energy Science & Technology	SPSM-165D	165W Monocrystalline Module	165.0	145	0.879
Wuxi Shangpin Solar Energy Science & Technology	SPSM-170D	170W Monocrystalline Module	170.0	149.5	0.879
Wuxi Shangpin Solar Energy Science & Technology	SPSM-175D	175W Monocrystalline Module	175.0	154.1	0.881
Wuxi Shangpin Solar Energy Science & Technology	SPSM-180D	180W Monocrystalline Module	180.0	158.6	0.881
<b>Average</b>					<b>0.880</b>
Yes! Solar	ES190W-NW	190W Polycrystalline Module	190.0	173.8	0.915
Yes! Solar	ES190W-RW	190W Polycrystalline Module	190.0	170.4	0.897



Yes! Solar	ES195W-NW	195W Polycrystalline Module	195.0	178.5	0.915
Yes! Solar	ES195W-RW	195W Polycrystalline Module	195.0	175	0.897
Yes! Solar	ES200W-NW	200W Polycrystalline Module	200.0	183.1	0.916
Yes! Solar	ES200W-RW	200W Polycrystalline Module	200.0	179.6	0.898
Yes! Solar	ES205W-NW	205W Polycrystalline Module	205.0	187.8	0.916
Yes! Solar	ES205W-RW	205W Polycrystalline Module	205.0	184.2	0.899
<b>Average</b>					<b>0.907</b>
Yingli Green Energy	YL170P-23b	170W Polycrystalline Module	170.0	146.8	0.864
Yingli Green Energy	YL175(156)	175W Polycrystalline Module, High Transmission and Textured Glass	175.0	148.9	0.851
Yingli Green Energy	YL175P-23b	175W Polycrystalline Module	175.0	151.3	0.865
Yingli Green Energy	YL180P-23b	180W Polycrystalline Module	180.0	155.7	0.865
Yingli Green Energy	YL185P-23b	185W Polycrystalline Module	185.0	160.2	0.866
Yingli Green Energy	YL195P-26b	195W Polycrystalline Module	195.0	168.1	0.862
Yingli Green Energy	YL200P-26b	200W Polycrystalline Module	200.0	172.6	0.863
Yingli Green Energy	YL205P-26b	205W Polycrystalline Module	205.0	177	0.863
Yingli Green Energy	YL210P-26b	210W Polycrystalline Module	210.0	181.5	0.864
Yingli Green Energy	YL220P-29b	220W Polycrystalline Module, High Transmission and Textured Glass	220.0	194.6	0.885
Yingli Green Energy	YL225P-29b	225W Polycrystalline Module, High Transmission and Textured Glass	225.0	199.1	0.885
Yingli Green Energy	YL230P-29b	230W Polycrystalline Module, High Transmission and Textured Glass	230.0	203.7	0.886
Yingli Green Energy	YL235P-29b	235W Polycrystalline Module, High Transmission and Textured Glass	235.0	208.3	0.886
Yingli Green Energy	YL240P-32b	240W Polycrystalline Module	240.0	207	0.863
Yingli Green Energy	YL245P-32b	245W Polycrystalline Module	245.0	211.5	0.863
Yingli Green Energy	YL250P-32b	250W Polycrystalline Module	250.0	216	0.864
Yingli Green Energy	YL255P-32b	255W Polycrystalline Module	255.0	220.4	0.864
Yingli Green Energy	YL260P-35b	260W Polycrystalline Module	260.0	225.4	0.867
Yingli Green Energy	YL265P-35b	265W Polycrystalline Module	265.0	229.9	0.868
Yingli Green Energy	YL270P-35b	270W Polycrystalline Module	270.0	234.4	0.868
Yingli Green Energy	YL275P-35b	275W Polycrystalline Module	275.0	238.9	0.869
Yingli Green Energy	YL280P-35b	280W Polycrystalline Module	280.0	243.4	0.869
<b>Average</b>					<b>0.868</b>
Yunnan Tianda Photovoltaic	TD160M5	160W Monocrystalline Module	160.0	139	0.869
Yunnan Tianda Photovoltaic	TD165M5	165W Monocrystalline Module	165.0	143.5	0.870
Yunnan Tianda Photovoltaic	TD170M5	170W Monocrystalline Module	170.0	148	0.871
Yunnan Tianda Photovoltaic	TD175M5	175W Monocrystalline Module	175.0	152.5	0.871
Yunnan Tianda Photovoltaic	TD180M5	180W Monocrystalline Module	180.0	157	0.872
<b>Average</b>					<b>0.871</b>
Zerquest Solar	Zp170	170W Monocrystalline Module	170.0	143.5	0.844

<b>Average</b>					<b>0.844</b>
Zhejiang ERA Solar Technology	ESPSA-170	170W Monocrystalline Module	170.0	154.7	0.910
Zhejiang ERA Solar Technology	ESPSA-175	175W Monocrystalline Module	175.0	159.4	0.911
Zhejiang ERA Solar Technology	ESPSA-180	180W Monocrystalline Module	180.0	164.1	0.912
<b>Average</b>					<b>0.911</b>
Zhejiang Global Photovoltaic Technology	GSM-155	155W Monocrystalline Module	155.0	135.4	0.874
Zhejiang Global Photovoltaic Technology	GSM-160	160W Monocrystalline Module	160.0	139.9	0.874
Zhejiang Global Photovoltaic Technology	GSM-165	165W Monocrystalline Module	165.0	144.4	0.875
Zhejiang Global Photovoltaic Technology	GSM-170	170W Monocrystalline Module	170.0	148.9	0.876
Zhejiang Global Photovoltaic Technology	GSM-175	175W Monocrystalline Module	175.0	153.4	0.877
Zhejiang Global Photovoltaic Technology	GSM-180	180W Monocrystalline Module	180.0	157.9	0.877
<b>Average</b>					<b>0.875</b>
Zhejiang Sunflower Light Energy Science & Technology	SF125x125-72-M-150W	150W Monocrystalline Module	150.0	132	0.880
Zhejiang Sunflower Light Energy Science & Technology	SF125x125-72-M-155W	155W Monocrystalline Module	155.0	136.5	0.881
Zhejiang Sunflower Light Energy Science & Technology	SF125x125-72-M-160W	160W Monocrystalline Module	160.0	141	0.881
Zhejiang Sunflower Light Energy Science & Technology	SF125x125-72-M-165W	165W Monocrystalline Module	165.0	145.5	0.882
Zhejiang Sunflower Light Energy Science & Technology	SF125x125-72-M-170W	170W Monocrystalline Module	170.0	150.1	0.883
Zhejiang Sunflower Light Energy Science & Technology	SF125x125-72-M-175W	175W Monocrystalline Module	175.0	154.6	0.883
Zhejiang Sunflower Light Energy Science & Technology	SF125x125-72-M-180W	180W Monocrystalline Module	180.0	159.2	0.884
Zhejiang Sunflower Light Energy Science & Technology	SF125x125-72-M-185W	185W Monocrystalline Module	185.0	163.7	0.885
<b>Average</b>					<b>0.882</b>