



Module Solarland USA SLP165S-24H

Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Imp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Isc	1	40.5	8.55	916.3	32.9	14:21:04	28/11/2016	60.7	38.7	4.28
Retest - failed Isc	2	40.6	8.60	924.0	32.4	14:21:45	28/11/2016	60.5	38.7	4.32
Retest - failed Isc	3	40.6	8.72	930.9	32.8	14:22:30	28/11/2016	60.5	38.7	4.35
Retest - failed Isc	4	40.2	8.80	950.4	34.8	14:36:28	28/11/2016	62.9	38.6	4.44
Retest - failed Isc	5	40.3	8.78	944.7	34.6	14:37:08	28/11/2016	63.6	38.5	4.42
Retest - failed Isc	6	40.3	8.81	949.8	34.2	14:37:43	28/11/2016	62.8	38.6	4.44
Retest - failed Isc	7	40.4	9.01	951.6	34.5	14:42:34	28/11/2016	62.7	38.6	4.45
Retest - failed Isc	8	40.4	9.00	960.5	34.8	14:43:15	28/11/2016	62.6	38.6	4.49
Retest - failed Isc	9	40.4	9.03	961.2	34.9	14:43:52	28/11/2016	63.2	38.6	4.49
Retest - failed Voc + Isc	10	40.6	9.02	967.2	33.3	14:47:41	28/11/2016	61.4	38.7	4.52
Retest - failed Voc + Isc	11	40.7	9.02	966.0	33.1	14:49:13	28/11/2016	61.8	38.6	4.52
Retest - failed Voc + Isc	12	40.8	9.08	974.1	33.2	14:49:56	28/11/2016	61.5	38.7	4.55
Retest - failed Isc	13	40.3	9.09	959.0	36.1	15:01:52	28/11/2016	56.3	39.0	4.48
Retest - failed Isc	14	40.3	9.09	961.5	35.8	15:02:39	28/11/2016	57.3	38.9	4.50
Retest - failed Isc	15	40.4	9.10	958.4	35.4	15:03:20	28/11/2016	56.3	38.9	4.48
Retest - failed Isc	16	40.3	9.10	974.8	34.4	15:06:26	28/11/2016	56.5	38.9	4.56
Retest - failed Isc	17	40.3	9.10	971.6	34.5	15:07:03	28/11/2016	56.3	39.0	4.54
Retest - failed Isc	18	40.3	9.10	972.2	34.6	15:07:37	28/11/2016	56.4	38.9	4.55
Retest - failed Isc	19	40.3	9.02	965.9	34.7	15:08:14	28/11/2016	56.6	38.9	4.52
Retest - failed Isc	20	40.4	9.09	988.3	34.4	15:15:05	28/11/2016	56.7	38.9	4.62
Retest - failed Isc	21	40.5	9.14	991.6	33.8	15:16:22	28/11/2016	55.9	39.0	4.64
Retest - failed Isc	22	40.5	9.16	988.8	34.2	15:16:57	28/11/2016	56.2	39.0	4.62
Retest - failed Isc	23	40.5	9.09	984.8	34.9	15:19:48	28/11/2016	56.8	38.9	4.60
Retest - failed Isc	24	40.5	9.12	986.6	35.2	15:20:22	28/11/2016	56.8	38.9	4.61
Retest - failed Isc	25	40.5	9.14	985.8	35.1	15:20:59	28/11/2016	56.9	38.9	4.61
Retest - failed Isc	26	40.1	9.19	975.9	35.2	15:26:08	28/11/2016	55.7	39.0	4.56
Retest - failed Isc	27	40.1	9.16	976.5	35.0	15:27:42	28/11/2016	57.2	38.9	4.57
Retest - failed Isc	28	40.1	9.20	980.3	34.7	15:28:57	28/11/2016	57.8	38.9	4.58



Module Solarland USA SLP165S-24H

Maximum Power (Watts)	165.3
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Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Impp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Isc	29	40.1	9.21	987.8	35.6	15:31:53	28/11/2016	56.5	38.9	4.62
Retest - failed Isc	30	40.1	9.23	993.1	35.3	15:32:29	28/11/2016	56.0	39.0	4.64
Retest - failed Isc	31	40.2	9.25	991.2	35.0	15:33:14	28/11/2016	56.2	39.0	4.63
Retest - failed Isc	32	40.6	9.22	990.8	34.2	15:35:49	28/11/2016	53.6	39.1	4.63
Retest - failed Isc	33	40.5	9.25	995.0	34.9	15:36:40	28/11/2016	54.3	39.1	4.65
Retest - failed Isc	34	40.5	9.25	994.5	34.6	15:37:29	28/11/2016	53.9	39.1	4.65
Retest - failed Isc	35	40.7	9.22	994.8	33.6	15:38:34	28/11/2016	52.9	39.1	4.65
Retest - failed Isc	36	41.2	9.20	995.3	34.1	15:41:44	28/11/2016	50.9	39.3	4.65
Retest - failed Isc	37	41.2	9.19	994.7	33.6	15:42:23	28/11/2016	50.8	39.3	4.65
Retest - failed Isc	38	41.1	9.17	987.2	34.3	15:43:55	28/11/2016	51.5	39.2	4.62
Retest - failed Isc	39	39.9	9.15	973.7	35.4	15:48:25	28/11/2016	59.8	38.8	4.55
Retest - failed Isc	40	39.9	9.15	968.2	34.7	15:49:04	28/11/2016	60.8	38.7	4.53
Retest - failed Isc	41	39.9	9.14	961.9	34.7	15:49:36	28/11/2016	61.7	38.6	4.50
Retest - failed Isc	42	40.2	9.17	988.8	35.8	15:51:56	28/11/2016	63.4	38.5	4.62
Retest - failed Isc	43	40.2	9.17	992.0	35.8	15:52:38	28/11/2016	64.0	38.5	4.64
Retest - failed Isc	44	40.2	9.18	987.4	36.2	15:53:25	28/11/2016	64.8	38.5	4.62
Retest - failed Isc	45	40.2	9.22	995.7	36.3	15:55:34	28/11/2016	63.5	38.5	4.66
Retest - failed Isc	46	40.1	9.17	988.3	36.2	15:56:11	28/11/2016	64.2	38.5	4.62
Retest - failed Isc	47	40.1	9.19	987.5	36.8	15:56:45	28/11/2016	64.3	38.5	4.62
Retest - failed Isc	48	40.6	9.16	984.4	36.3	15:59:13	28/11/2016	60.7	38.7	4.60
Retest - failed Voc + Isc	49	40.6	9.15	983.5	36.8	15:59:56	28/11/2016	61.7	38.6	4.60
Retest - failed Voc + Isc	50	40.6	9.16	985.2	36.8	16:00:34	28/11/2016	61.9	38.6	4.61
Retest - failed Voc + Isc	51	41.4	8.54	906.7	35.1	17:27:10	28/11/2016	51.8	39.2	4.24
Retest - failed Voc + Isc	52	41.3	8.53	902.7	35.5	17:27:40	28/11/2016	51.3	39.2	4.22
Retest - failed Voc + Isc	53	41.3	8.53	904.6	35.7	17:28:11	28/11/2016	52.2	39.2	4.23
Retest - failed Isc	54	41	8.48	923.5	34.8	17:33:13	28/11/2016	51.6	39.2	4.32
Retest - failed Isc	55	41	8.40	922.0	35.5	17:33:45	28/11/2016	51.8	39.2	4.31
Retest - failed Isc	56	40.9	8.40	915.0	35.8	17:34:21	28/11/2016	52.5	39.2	4.28



Technician	L. Cutburth
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Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Impp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Isc	57	40.9	8.20	910.4	36.6	17:41:45	28/11/2016	53.5	39.1	4.26
Retest - failed Isc	58	40.9	8.20	906.9	37.7	17:42:19	28/11/2016	53.3	39.1	4.24
Retest - failed Isc	59	40.9	8.21	901.2	36.8	17:42:52	28/11/2016	53.6	39.1	4.21
Retest - failed Voc + Isc	60	41.4	8.09	888.9	34.7	17:46:43	28/11/2016	52.0	39.2	4.16
Retest - failed Voc + Isc	61	41.4	8.08	891.1	34.6	17:47:22	28/11/2016	51.5	39.2	4.17
Retest - failed Voc + Isc	62	41.4	8.00	883.1	34.2	17:48:00	28/11/2016	51.4	39.2	4.13
Retest - failed Isc	63	40.7	7.58	803.6	35.4	17:55:13	28/11/2016	54.3	39.1	3.76
Retest - failed Isc	64	40.8	7.56	792.1	35.8	17:55:48	28/11/2016	53.8	39.1	3.70
Retest - failed Isc	65	40.9	7.61	800.7	35.2	17:56:31	28/11/2016	54.3	39.1	3.74
Retest - failed Isc	66	41.1	7.91	864.4	35.5	18:00:56	28/11/2016	52.7	39.2	4.04
Retest - failed Voc + Isc	67	41.2	7.92	859.2	35.8	18:01:31	28/11/2016	52.6	39.2	4.02
Retest - failed Isc	68	41.2	7.88	864.4	35.3	18:02:39	28/11/2016	51.0	39.3	4.04
Retest - failed Voc + Isc	69	41.3	7.68	839.8	35.8	18:10:09	28/11/2016	50.7	39.3	3.93
Retest - failed Voc + Isc	70	41.3	7.69	840.5	36.4	18:10:42	28/11/2016	51.5	39.2	3.93
Retest - failed Voc + Isc	71	41.3	7.68	835.9	36.1	18:11:18	28/11/2016	51.4	39.2	3.91
Retest - failed Voc + Isc	72	41.3	7.57	817.1	35.5	18:15:57	28/11/2016	50.0	39.3	3.82
Retest - failed Isc	73	41.3	7.56	817.6	35.7	18:16:29	28/11/2016	49.6	39.3	3.82
Retest - failed Voc + Isc	74	41.3	7.51	809.2	35.6	18:17:05	28/11/2016	49.8	39.3	3.78
Retest - failed Isc	75	40.8	7.18	767.4	33.0	18:25:40	28/11/2016	50.6	39.3	3.59
Retest - failed Isc	76	40.8	7.14	763.6	33.0	18:26:10	28/11/2016	51.3	39.2	3.57
Retest - failed Isc	77	40.8	7.06	757.8	32.4	18:26:48	28/11/2016	51.1	39.2	3.54
Retest - failed Isc	78	40.9	7.01	781.3	34.2	18:29:42	28/11/2016	48.7	39.4	3.65
Retest - failed Isc	79	41	6.98	776.8	34.0	18:30:16	28/11/2016	48.4	39.4	3.63
Retest - failed Isc	80	41	6.93	770.6	33.7	18:30:53	28/11/2016	48.0	39.4	3.60
Retest - failed Isc	81	41.3	6.87	744.4	32.5	18:34:51	28/11/2016	46.1	39.5	3.48
Retest - failed Isc	82	41.4	6.84	748.9	32.4	18:35:36	28/11/2016	46.2	39.5	3.50
Retest - failed Isc	83	41.4	6.83	749.6	32.0	18:36:23	28/11/2016	46.1	39.5	3.50
Retest - failed Voc + Isc	84	41.7	6.72	740.2	31.6	18:40:45	28/11/2016	45.2	39.6	3.46



Technician	L. Cutburth
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Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Imp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Voc + Isc	85	41.7	6.68	741.0	31.4	18:41:34	28/11/2016	44.8	39.6	3.46
Retest - failed Voc + Isc	86	41.7	6.71	745.5	31.4	18:42:12	28/11/2016	44.2	39.7	3.49
Retest - failed Voc + Isc	87	42.6	8.49	846.5	31.4	8:59:11	29/11/2016	39.8	39.9	3.96
Retest - failed Voc + Isc	88	42.3	8.14	808.7	31.5	9:00:28	29/11/2016	41.4	39.8	3.78
Retest - failed Voc + Isc	89	42.1	8.30	825.7	31.5	9:01:33	29/11/2016	43.0	39.7	3.86
Retest - failed Voc + Isc	90	42	8.88	967.3	32.2	9:03:52	29/11/2016	44.7	39.6	4.52
Retest - failed Voc + Isc	91	41.9	9.02	985.4	32.6	9:04:24	29/11/2016	44.9	39.6	4.61
Retest - failed Voc + Isc	92	42.8	9.16	1085.0	31.8	9:19:33	29/11/2016	41.0	39.8	5.07
Retest - failed Voc + Isc	93	42.6	9.85	1147.0	32.2	9:20:37	29/11/2016	42.8	39.7	5.36
Retest - failed Voc + Isc	94	43	10.37	1132.0	30.8	9:26:33	29/11/2016	41.1	39.8	5.29
Retest - failed Voc + Isc	95	42.2	10.44	1144.0	32.7	9:29:48	29/11/2016	45.0	39.6	5.35
Retest - failed Voc + Isc	96	42	10.14	1100.0	32.9	9:30:18	29/11/2016	45.5	39.6	5.14
Retest - failed Voc + Isc	97	41.8	10.13	1110.0	33.4	9:31:36	29/11/2016	47.2	39.5	5.19
Retest - failed Voc + Isc	98	41.9	9.59	1056.0	32.8	9:34:14	29/11/2016	47.0	39.5	4.94
Retest - failed Voc + Isc	99	41.9	9.49	1037.0	32.2	9:34:46	29/11/2016	47.6	39.5	4.85
Retest - failed Voc + Isc	100	42	9.69	976.7	32.9	9:37:08	29/11/2016	46.9	39.5	4.57
Retest - failed Voc + Isc	101	41.9	9.65	1062.0	32.9	9:38:01	29/11/2016	47.0	39.5	4.97
Retest - failed Voc + Isc	102	41.1	9.65	978.9	32.6	9:40:38	29/11/2016	54.2	39.1	4.58
Retest - failed Voc + Isc	103	41.2	9.75	992.1	32.0	9:41:40	29/11/2016	54.5	39.1	4.64
Retest - failed Voc + Isc	104	41	9.66	962.2	32.2	9:42:14	29/11/2016	55.6	39.0	4.50
Retest - failed Voc + Isc	105	41	9.65	959.7	32.3	9:42:47	29/11/2016	55.8	39.0	4.49
Retest - failed Voc + Isc	106	41	9.53	1034.0	33.3	9:44:27	29/11/2016	56.2	39.0	4.83
Retest - failed Voc + Isc	107	41.5	9.72	1073.0	33.4	9:47:06	29/11/2016	55.3	39.0	5.02
Retest - failed Voc + Isc	108	41.3	9.68	1058.0	33.3	9:47:40	29/11/2016	56.4	38.9	4.95
Retest - failed Voc + Isc	109	41.2	9.74	1082.0	33.9	9:48:29	29/11/2016	57.2	38.9	5.06
Retest - failed Voc + Isc	110	41.5	10.06	1082.0	33.3	9:51:30	29/11/2016	58.0	38.9	5.06
Retest - failed Voc + Isc	111	41.4	10.21	1100.0	33.1	9:52:00	29/11/2016	59.0	38.8	5.14
Retest - failed Voc + Isc	112	42.2	10.28	1113.0	32.9	10:00:40	29/11/2016	54.5	39.1	5.20



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Current at Maximum Power (Imp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Voc + Isc	113	42.8	10.99	1196.0	32.1	10:06:36	29/11/2016	50.2	39.3	5.59
Retest - failed Voc + Isc	114	42.2	10.50	1142.0	33.4	10:10:47	29/11/2016	51.4	39.2	5.34
Retest - failed Voc + Isc	115	41.8	10.52	1043.0	33.9	10:11:15	29/11/2016	51.9	39.2	4.88
Retest - failed Voc + Isc	116	41.8	10.61	1156.0	34.2	10:13:07	29/11/2016	53.5	39.1	5.41
Retest - failed Voc + Isc	117	41.8	10.33	1130.0	32.5	10:18:00	29/11/2016	54.2	39.1	5.28
Retest - failed Voc + Isc	118	42.1	10.00	1046.0	32.2	10:27:31	29/11/2016	46.1	39.5	4.89
Retest - failed Voc + Isc	119	42.4	11.02	1120.0	32.5	10:30:31	29/11/2016	46.7	39.5	5.24
Retest - failed Voc + Isc	120	42	10.31	1044.0	32.4	10:31:07	29/11/2016	47.3	39.5	4.88
Retest - failed Voc + Isc	121	41.7	9.91	1003.0	33.5	10:31:41	29/11/2016	48.0	39.4	4.69
Retest - failed Voc + Isc	122	41.6	10.03	1074.0	33.1	10:36:39	29/11/2016	49.4	39.4	5.02
Retest - failed Voc + Isc	123	41.4	9.73	1042.0	33.4	10:37:12	29/11/2016	50.1	39.3	4.87
Retest - failed Voc + Isc	124	41.6	10.11	1071.0	33.2	10:38:07	29/11/2016	49.9	39.3	5.01
Retest - failed Voc + Isc	125	41.4	9.66	1031.0	33.0	10:38:39	29/11/2016	50.4	39.3	4.82
Retest - failed Voc + Isc	126	41.6	10.19	1109.0	33.2	10:40:37	29/11/2016	49.4	39.4	5.19
Retest - failed Isc	127	41.2	9.47	1032.0	34.1	10:41:37	29/11/2016	50.9	39.3	4.83
Retest - failed Isc	128	41.1	9.35	1011.0	34.5	10:42:12	29/11/2016	51.2	39.2	4.73
Retest - failed Isc	129	41	9.41	1015.0	34.8	10:42:46	29/11/2016	52.0	39.2	4.75
Retest - failed Voc + Isc	130	41.6	9.62	1044.0	33.7	10:46:48	29/11/2016	50.0	39.3	4.88
Retest - failed Voc + Isc	131	41.4	9.35	1012.0	34.0	10:47:16	29/11/2016	50.4	39.3	4.73
Retest - failed Voc + Isc	132	41.4	9.44	1020.0	34.5	10:47:51	29/11/2016	51.3	39.2	4.77
Retest - failed Isc	133	41.1	9.87	1023.0	34.4	10:50:05	29/11/2016	50.6	39.3	4.78
Retest - failed Isc	134	40.9	9.80	1009.0	34.4	10:51:06	29/11/2016	52.0	39.2	4.72
Retest - failed Isc	135	41.1	9.39	980.1	33.2	10:54:03	29/11/2016	50.9	39.3	4.58
Retest - failed Isc	136	41.2	9.28	1005.0	33.2	10:56:14	29/11/2016	49.6	39.3	4.70
Retest - failed Isc	137	41.2	9.31	1001.0	33.5	10:58:08	29/11/2016	50.1	39.3	4.68
Retest - failed Isc	138	41.1	9.37	1008.0	33.8	10:58:42	29/11/2016	49.8	39.3	4.71
Retest - failed Voc + Isc	139	41.4	9.43	1008.0	33.7	11:03:08	29/11/2016	49.4	39.4	4.71
Retest - failed Isc	140	41.3	9.42	1008.0	33.6	11:03:44	29/11/2016	49.0	39.4	4.71



Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Impp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Voc + Isc	141	41.3	9.53	1017.0	34.4	11:04:17	29/11/2016	49.8	39.3	4.76
Retest - failed Voc + Isc	142	41.8	9.61	1037.0	33.1	11:06:51	29/11/2016	47.5	39.5	4.85
Retest - failed Voc + Isc	143	41.7	9.59	1035.0	32.7	11:07:23	29/11/2016	47.1	39.5	4.84
Retest - failed Voc + Isc	144	41.8	9.61	1041.0	32.3	11:07:57	29/11/2016	46.6	39.5	4.87
Retest - failed Isc	145	40.7	10.12	1032.0	33.2	11:10:19	29/11/2016	53.4	39.1	4.83
Retest - failed Isc	146	40.7	10.43	1056.0	33.8	11:10:55	29/11/2016	54.4	39.1	4.94
Retest - failed Isc	147	40.7	10.67	1108.0	33.5	11:11:38	29/11/2016	55.9	39.0	5.18
Retest - failed Isc	148	40.6	9.96	1047.0	33.4	11:12:17	29/11/2016	57.0	38.9	4.90
Retest - failed Isc	149	40.7	9.80	1068.0	33.7	11:14:10	29/11/2016	55.4	39.0	4.99
Retest - failed Voc + Isc	150	41.1	10.26	1110.0	33.6	11:40:45	29/11/2016	54.2	39.1	5.19
Retest - failed Voc + Isc	151	41	10.19	1109.0	34.1	11:41:21	29/11/2016	54.7	39.0	5.19
Retest - failed Isc	152	40.8	10.19	1103.0	34.3	11:42:08	29/11/2016	55.5	39.0	5.16
Retest - failed Voc + Isc	153	41.7	10.41	1163.0	32.9	11:45:41	29/11/2016	52.5	39.2	5.44
Retest - failed Voc + Isc	154	41.5	10.62	1108.0	34.2	11:46:15	29/11/2016	53.3	39.1	5.18
Retest - failed Voc + Isc	155	41.1	10.24	1112.0	35.4	11:46:54	29/11/2016	55.0	39.0	5.20
Retest - failed Voc + Isc	156	41	10.12	1096.0	35.5	11:47:32	29/11/2016	55.6	39.0	5.12
Retest - failed Voc + Isc	157	41.5	9.80	1052.0	34.5	11:53:37	29/11/2016	53.8	39.1	4.92
Retest - failed Voc + Isc	158	41.1	9.75	903.8	34.7	11:54:22	29/11/2016	54.5	39.1	4.23
Retest - failed Voc + Isc	159	41.1	9.27	990.9	35.8	11:55:19	29/11/2016	54.6	39.1	4.63
Retest - failed Voc + Isc	160	41	9.32	995.3	35.4	11:55:56	29/11/2016	54.9	39.0	4.65
Retest - failed Voc + Isc	161	41.5	9.41	989.7	34.6	12:02:18	29/11/2016	49.3	39.4	4.63
Retest - failed Isc	162	40.9	9.29	975.4	34.5	12:05:54	29/11/2016	51.5	39.2	4.56
Retest - failed Isc	163	40.9	9.30	979.6	34.4	12:06:28	29/11/2016	51.6	39.2	4.58
Retest - failed Isc	164	40.9	9.36	977.7	34.6	12:07:00	29/11/2016	52.5	39.2	4.57
Retest - failed Isc	165	40.8	9.45	1022.0	34.4	12:09:00	29/11/2016	50.9	39.3	4.78
Retest - failed Isc	166	40.8	9.44	1015.0	35.1	12:09:37	29/11/2016	50.9	39.3	4.75
Retest - failed Isc	167	40.7	9.47	1016.0	35.2	12:10:16	29/11/2016	51.8	39.2	4.75
Retest - failed Isc	168	40.8	9.75	1040.0	35.0	12:12:09	29/11/2016	52.2	39.2	4.86





Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Impp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Isc	169	40.7	9.69	1031.0	36.1	12:13:07	29/11/2016	51.6	39.2	4.82
Retest - failed Isc	170	40.7	9.61	1025.0	36.3	12:13:52	29/11/2016	55.2	39.0	4.79
Retest - failed Voc + Isc	171	41.1	9.71	1046.0	34.9	12:16:48	29/11/2016	54.0	39.1	4.89
Retest - failed Voc + Isc	172	41.1	9.82	1053.0	35.8	12:17:22	29/11/2016	54.5	39.1	4.92
Retest - failed Voc + Isc	173	41.1	9.76	1063.0	35.5	12:17:54	29/11/2016	54.2	39.1	4.97
Retest - failed Isc	174	41	8.88	938.5	33.6	12:21:48	29/11/2016	50.4	39.3	4.39
Retest - failed Isc	175	41	8.91	936.0	33.4	12:22:46	29/11/2016	50.7	39.3	4.38
Retest - failed Isc	176	40.9	8.89	936.6	34.2	12:23:42	29/11/2016	51.6	39.2	4.38
Retest - failed Isc	177	40.9	9.22	989.6	34.2	12:25:37	29/11/2016	50.6	39.3	4.63
Retest - failed Isc	178	41	8.97	968.3	33.5	12:28:37	29/11/2016	50.8	39.3	4.53
Retest - failed Isc	179	41	8.93	958.3	33.8	12:29:08	29/11/2016	50.4	39.3	4.48
Retest - failed Voc + Isc	180	41.4	9.15	989.4	33.6	12:33:36	29/11/2016	48.4	39.4	4.63
Retest - failed Voc + Isc	181	41.4	8.99	983.1	33.7	12:34:18	29/11/2016	48.5	39.4	4.60
Retest - failed Voc + Isc	182	41.4	9.20	981.4	33.7	12:34:46	29/11/2016	48.3	39.4	4.59
Retest - failed Voc + Isc	183	41.4	9.30	997.4	33.5	12:35:20	29/11/2016	48.2	39.4	4.66
Retest - failed Voc + Isc	184	41.7	9.61	1023.0	33.7	12:37:03	29/11/2016	48.0	39.4	4.78
Retest - failed Voc + Isc	185	41.6	9.32	1009.0	33.7	12:37:40	29/11/2016	48.2	39.4	4.72
Retest - failed Voc + Isc	186	41.6	9.10	992.9	33.6	12:38:12	29/11/2016	48.1	39.4	4.64
Retest - failed Isc	187	40.5	8.97	939.2	34.9	12:42:31	29/11/2016	57.5	38.9	4.39
Retest - failed Isc	188	40.3	9.07	928.7	35.5	12:43:38	29/11/2016	58.9	38.8	4.34
Retest - failed Isc	189	40.3	9.40	941.6	36.0	12:44:33	29/11/2016	60.2	38.7	4.40
Retest - failed Isc	190	40.5	8.00	963.8	35.6	12:50:51	29/11/2016	58.5	38.8	4.51
Retest - failed Isc	191	40.5	8.99	959.9	35.7	12:51:23	29/11/2016	59.0	38.8	4.49
Retest - failed Isc	192	40.6	9.26	992.0	34.9	12:51:57	29/11/2016	59.2	38.8	4.64
Retest - failed Isc	193	40.7	9.43	988.6	35.2	12:52:30	29/11/2016	58.9	38.8	4.62
Retest - failed Isc	194	40.8	8.66	929.9	34.8	12:54:30	29/11/2016	57.3	38.9	4.35
Retest - failed Isc	195	40.8	8.72	931.5	34.9	12:55:06	29/11/2016	57.4	38.9	4.36
Retest - failed Voc + Isc	196	40.9	8.90	951.5	34.3	12:55:44	29/11/2016	57.4	38.9	4.45



Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Imp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Voc + Isc	197	41.4	8.95	964.2	34.4	13:04:13	29/11/2016	52.9	39.1	4.51
Retest - failed Voc + Isc	198	41.3	8.63	1001.0	35.4	13:05:55	29/11/2016	54.1	39.1	4.68
Retest - failed Voc + Isc	199	41.8	10.33	1117.0	34.7	13:09:21	29/11/2016	53.2	39.1	5.22
Retest - failed Voc + Isc	200	41.4	9.23	1000.0	35.0	13:11:26	29/11/2016	53.9	39.1	4.68
Retest - failed Voc + Isc	201	41.3	8.69	914.0	33.5	13:13:45	29/11/2016	50.9	39.3	4.27
Retest - failed Voc + Isc	202	41.3	8.82	917.2	33.9	13:14:19	29/11/2016	51.8	39.2	4.29
Retest - failed Voc + Isc	203	41.3	8.95	927.2	33.5	13:14:58	29/11/2016	51.3	39.2	4.34
Retest - failed Isc	204	41	9.00	967.7	34.9	13:16:56	29/11/2016	52.1	39.2	4.52
Retest - failed Isc	205	41	8.99	964.2	34.3	13:17:30	29/11/2016	52.7	39.2	4.51
Retest - failed Voc + Isc	206	41.1	8.82	972.0	34.3	13:18:00	29/11/2016	53.2	39.1	4.54
Retest - failed Voc + Isc	207	41.3	9.74	1043.0	35.3	13:19:56	29/11/2016	51.1	39.2	4.88
Retest - failed Voc + Isc	208	41.2	8.98	967.9	35.4	13:21:17	29/11/2016	52.6	39.2	4.53
Retest - failed Isc	209	41.1	8.58	926.0	35.7	13:21:50	29/11/2016	52.5	39.2	4.33
Retest - failed Isc	210	41	8.58	921.5	36.2	13:22:22	29/11/2016	53.3	39.1	4.31
Retest - failed Isc	211	41.1	8.24	925.4	35.7	13:24:30	29/11/2016	52.4	39.2	4.33
Retest - failed Isc	212	41	8.34	882.1	35.7	13:24:58	29/11/2016	53.1	39.1	4.12
Retest - failed Isc	213	41.1	8.44	905.3	35.5	13:25:32	29/11/2016	52.7	39.2	4.23
Retest - failed Voc + Isc	214	41.6	8.45	891.5	32.0	13:32:54	29/11/2016	46.1	39.5	4.17
Retest - failed Voc + Isc	215	41.5	8.47	888.3	32.9	13:33:24	29/11/2016	47.0	39.5	4.15
Retest - failed Isc	216	41.3	8.30	866.3	32.8	13:34:20	29/11/2016	47.8	39.4	4.05
Retest - failed Isc	217	41.4	8.16	883.7	33.4	13:36:39	29/11/2016	47.3	39.5	4.13
Retest - failed Isc	218	41.3	7.95	855.3	32.9	13:37:11	29/11/2016	47.5	39.5	4.00
Retest - failed Isc	219	41.3	7.82	847.9	32.9	13:37:39	29/11/2016	47.1	39.5	3.96
Retest - failed Voc + Isc	220	41.7	8.14	881.1	32.1	13:40:35	29/11/2016	46.7	39.5	4.12
Retest - failed Voc + Isc	221	41.6	7.91	873.1	32.6	13:41:09	29/11/2016	46.6	39.5	4.08
Retest - failed Voc + Isc	222	41.6	7.98	871.8	32.8	13:41:41	29/11/2016	46.8	39.5	4.08
Retest - failed Voc + Isc	223	41.8	8.23	899.3	32.9	13:47:40	29/11/2016	46.2	39.5	4.20
Retest - failed Voc + Isc	224	42	8.28	935.3	32.6	13:48:48	29/11/2016	45.7	39.6	4.37





Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Imp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Voc + Isc	225	41.9	8.24	897.5	32.7	13:50:09	29/11/2016	45.3	39.6	4.20
Retest - failed Voc + Isc	226	41.7	8.07	873.5	33.3	13:50:44	29/11/2016	45.9	39.6	4.08
Retest - failed Isc	227	40.7	7.72	814.3	34.2	13:53:29	29/11/2016	52.4	39.2	3.81
Retest - failed Isc	228	40.8	7.62	808.1	35.2	13:53:59	29/11/2016	52.5	39.2	3.78
Retest - failed Isc	229	40.8	7.61	803.4	35.6	13:54:33	29/11/2016	53.0	39.1	3.76
Retest - failed Voc + Isc	230	41.2	8.14	891.3	33.8	13:56:59	29/11/2016	52.2	39.2	4.17
Retest - failed Voc + Isc	231	41.2	7.47	874.3	33.7	13:57:31	29/11/2016	52.7	39.2	4.09
Retest - failed Voc + Isc	232	41.3	8.04	877.0	34.2	13:57:57	29/11/2016	52.0	39.2	4.10
Retest - failed Voc + Isc	233	41.4	7.84	847.2	34.3	14:00:25	29/11/2016	50.2	39.3	3.96
Retest - failed Voc + Isc	234	41.5	7.86	858.3	34.5	14:00:57	29/11/2016	49.8	39.3	4.01
Retest - failed Voc + Isc	235	41.5	7.83	854.6	34.0	14:01:33	29/11/2016	48.8	39.4	4.00
Retest - failed Voc + Isc	236	41.6	7.59	837.3	33.8	14:10:29	29/11/2016	47.1	39.5	3.92
Retest - failed Voc + Isc	237	41.6	7.56	834.5	33.8	14:11:04	29/11/2016	47.4	39.5	3.90
Retest - failed Voc + Isc	238	41.6	7.54	834.6	33.9	14:12:06	29/11/2016	47.8	39.4	3.90
Retest - failed Isc	239	41.3	7.68	829.2	35.0	14:17:32	29/11/2016	49.0	39.4	3.88
Retest - failed Isc	240	41.2	7.71			14:18:08	29/11/2016		42.2	0.00
Retest - failed Isc	241	41.3	7.79	833.3	35.8	14:18:40	29/11/2016	49.6	39.3	3.90
Retest - failed Isc	242	41.2	7.79	824.2	35.9	14:19:19	29/11/2016	50.1	39.3	3.85
Retest - failed Isc	243	41.2	7.83	847.5	35.8	14:21:34	29/11/2016	49.5	39.3	3.96
Retest - failed Isc	244	41.2	7.72	855.9	36.0	14:22:06	29/11/2016	49.5	39.3	4.00
Retest - failed Isc	245	41.2	7.68	850.2	35.8	14:22:45	29/11/2016	49.6	39.3	3.98
Retest - failed Isc	246	41.4	7.41	822.1	35.0	14:25:56	29/11/2016	48.1	39.4	3.84
Retest - failed Voc + Isc	247	41.4	7.47	821.3	35.3	14:26:30	29/11/2016	48.7	39.4	3.84
Retest - failed Voc + Isc	248	41.4	7.49	829.1	35.0	14:27:23	29/11/2016	48.4	39.4	3.88
Retest - failed Voc + Isc	249	41.4	7.38	812.5	35.5	14:28:41	29/11/2016	48.2	39.4	3.80
Retest - failed Isc	250	41.3	7.23	776.4	38.9	14:33:41	29/11/2016	47.0	39.5	3.63
Retest - failed Isc	251	41.3	7.23	785.1	38.1	14:34:17	29/11/2016	48.2	39.4	3.67
Retest - failed Isc	252	41.2	7.18	780.6	38.2	14:34:54	29/11/2016	48.6	39.4	3.65



Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Impp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Isc	253	41.3	7.18	778.7	37.7	14:35:28	29/11/2016	48.7	39.4	3.64
Retest - failed Voc + Isc	254	41.5	7.08	768.9	35.9	14:38:19	29/11/2016	47.9	39.4	3.60
Retest - failed Voc + Isc	255	41.5	7.10	773.3	35.8	14:38:50	29/11/2016	48.2	39.4	3.62
Retest - failed Voc + Isc	256	41.5	6.97	763.5	36.0	14:39:24	29/11/2016	48.4	39.4	3.57
Retest - failed Voc + Isc	257	41.5	6.99	761.9	36.1	14:40:00	29/11/2016	48.2	39.4	3.56
Retest - failed Voc + Isc	258	41.6	7.17	787.0	35.3	14:42:17	29/11/2016	47.6	39.5	3.68
Retest - failed Voc + Isc	259	41.6	7.21	794.1	35.4	14:42:52	29/11/2016	47.8	39.4	3.71
Retest - failed Voc + Isc	260	41.6	7.19	786.2	35.8	14:43:24	29/11/2016	48.1	39.4	3.68
Retest - failed Isc	261	41.5	7.10	781.4	35.4	14:46:11	29/11/2016	46.2	39.5	3.65
Retest - failed Voc + Isc	262	41.6	7.17	785.1	35.8	14:46:47	29/11/2016	46.7	39.5	3.67
Retest - failed Voc + Isc	263	41.5	7.12	779.5	36.4	14:47:20	29/11/2016	47.1	39.5	3.64
Retest - failed Voc + Isc	264	41.5	7.17	778.7	36.5	14:47:58	29/11/2016	46.7	39.5	3.64
Retest - failed Isc	265	41.2	9.42	987.1	33.0	9:42:46	30/11/2016	51.1	39.3	4.62
Retest - failed Voc + Isc	266	41.2	9.52	986.9	33.5	9:43:59	30/11/2016	51.9	39.2	4.61
Retest - failed Isc	267	41.1	9.49	977.7	33.6	9:44:33	30/11/2016	52.2	39.2	4.57
Retest - failed Isc	268	41	9.38	963.3	33.7	9:45:10	30/11/2016	52.1	39.2	4.50
Retest - failed Isc	269	40.9	9.21	1002.0	33.9	9:47:27	30/11/2016	52.0	39.2	4.69
Retest - failed Voc + Isc	270	41.6	9.69	1047.0	32.8	9:50:14	30/11/2016	50.1	39.3	4.90
Retest - failed Isc	271	40.9	9.06	981.6	34.4	9:54:02	30/11/2016	53.4	39.1	4.59
Retest - failed Isc	272	40.8	9.20	988.7	34.3	9:54:51	30/11/2016	54.0	39.1	4.62
Retest - failed Voc + Isc	273	41.2	9.10	990.2	33.2	9:59:40	30/11/2016	52.8	39.2	4.63
Retest - failed Voc + Isc	274	41.1	9.02	976.6	33.3	10:00:17	30/11/2016	53.4	39.1	4.57
Retest - failed Voc + Isc	275	41.1	9.00	974.1	33.5	10:00:53	30/11/2016	53.5	39.1	4.55
Retest - failed Isc	276	40.9	8.99	971.5	33.8	10:03:06	30/11/2016	52.7	39.2	4.54
Retest - failed Isc	277	40.8	9.03	984.6	33.9	10:03:38	30/11/2016	53.0	39.1	4.60
Retest - failed Isc	278	40.9	9.26	1008.0	33.6	10:04:15	30/11/2016	53.4	39.1	4.71
Retest - failed Isc	279	40.4	9.37	986.5	33.7	10:08:00	30/11/2016	56.3	38.9	4.61
Retest - failed Isc	280	40.4	9.57	1004.0	33.9	10:08:42	30/11/2016	58.7	38.8	4.69



Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Impp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Isc	281	40.5	9.59	1021.0	33.8	10:12:00	30/11/2016	59.7	38.8	4.77
Retest - failed Isc	282	40.4	9.35	987.5	34.1	10:12:45	30/11/2016	60.5	38.7	4.62
Retest - failed Voc + Isc	283	40.9	10.26	1058.0	33.3	10:19:00	30/11/2016	58.2	38.8	4.95
Retest - failed Voc + Isc	284	41.3	10.57	1128.0	33.4	10:22:56	30/11/2016	56.9	38.9	5.27
Retest - failed Voc + Isc	285	41.7	10.83	1172.0	33.3	10:26:30	30/11/2016	54.5	39.1	5.48
Retest - failed Voc + Isc	286	41.5	10.84	1175.0	33.9	10:27:02	30/11/2016	55.8	39.0	5.49
Retest - failed Voc + Isc	287	41.4	11.49	1246.0	33.7	10:34:17	30/11/2016	59.4	38.8	5.83
Retest - failed Voc + Isc	288	41.1	11.01	1196.0	33.9	10:34:50	30/11/2016	60.5	38.7	5.59
Retest - failed Voc + Isc	289	41	10.87	1179.0	34.5	10:35:24	30/11/2016	60.8	38.7	5.51
Retest - failed Voc + Isc	290	40.8	10.83	1163.0	35.0	10:36:07	30/11/2016	62.3	38.6	5.44
Retest - failed Voc + Isc	291	41.4	11.10	1213.0	33.1	10:40:26	30/11/2016	56.4	38.9	5.67
Retest - failed Voc + Isc	292	41.2	10.87	1195.0	34.0	10:40:56	30/11/2016	57.6	38.9	5.59
Retest - failed Voc + Isc	293	41	12.12	1224.0	34.1	10:43:41	30/11/2016	56.8	38.9	5.72
Retest - failed Voc + Isc	294	42.1	11.44	1242.0	32.8	10:53:59	30/11/2016	52.0	39.2	5.81
Retest - failed Voc + Isc	295	41.9	11.67	1155.0	33.0	11:00:20	30/11/2016	50.4	39.3	5.40
Retest - failed Voc + Isc	296	41.6	11.54	1137.0	33.7	11:00:53	30/11/2016	51.1	39.2	5.32
Retest - failed Voc + Isc	297	41.3	11.32	1111.0	34.6	11:02:10	30/11/2016	52.4	39.2	5.19
Retest - failed Voc + Isc	298	41.1	11.31	1117.0	34.2	11:02:57	30/11/2016	53.3	39.1	5.22
Retest - failed Voc + Isc	299	41.4	11.32	1221.0	33.3	11:05:31	30/11/2016	52.8	39.2	5.71
Retest - failed Voc + Isc	300	42	11.21	1210.0	33.0	11:12:08	30/11/2016	48.5	39.4	5.66
Retest - failed Voc + Isc	301	42.5	11.30	1211.0	31.8	11:16:47	30/11/2016	45.3	39.6	5.66
Retest - failed Voc + Isc	302	42.3	11.22	1199.0	32.3	11:17:17	30/11/2016	46.7	39.5	5.61
Retest - failed Voc + Isc	303	41.7	11.03	1177.0	33.8	11:19:08	30/11/2016	49.4	39.4	5.50
Retest - failed Voc + Isc	304	41.5	10.01	1064.0	33.8	11:23:19	30/11/2016	49.4	39.4	4.98
Retest - failed Voc + Isc	305	41.5	10.05	1071.0	33.7	11:23:55	30/11/2016	49.9	39.3	5.01
Retest - failed Voc + Isc	306	41.7	10.92	1172.0	33.6	11:25:28	30/11/2016	49.9	39.3	5.48
Retest - failed Voc + Isc	307	41.6	10.73	1153.0	33.5	11:27:55	30/11/2016	49.8	39.3	5.39
Retest - failed Voc + Isc	308	41.5	10.89	1157.0	33.3	11:28:26	30/11/2016	50.7	39.3	5.41



Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Imp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

Technician	L. Cutburth		<b>Offset from STC</b>		
Report Date	March 13, 2018		LID	1.00%	of Voc & Isc
Data taken on	Nov. 11/12 2015		Sorting/Quality	1.50%	of Isc
			Soiling	2.50%	of Voc & Isc
			Degradation	1.00%	of Voc & Isc
<b>String Data - STC</b>					
Power =	165.3	Watts	<b>Acceptable Limits</b>		
String	1	in series	Delta (-) Isc =	7.50%	(low)
Isc =	5.07	Amps	Delta (+) Isc =	7.50%	(high)
Voc =	43.0	VDC	Delta (-) Voc =	2.50%	(low)
Voc (0 °C) =	44.5	VDC	Delta (+) Voc =	5.00%	(high)

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m²)	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Voc + Isc	309	41.4	10.53	1153.0	33.8	11:29:41	30/11/2016	51.0	39.3	5.39
Retest - failed Voc + Isc	310	41.4	10.45	1121.0	32.9	11:30:17	30/11/2016	50.6	39.3	5.24
Retest - failed Isc	311	40.7	10.25	1072.0	34.6	11:34:04	30/11/2016	54.4	39.1	5.01
Retest - failed Voc + Isc	312	41.3	10.33	1089.0	33.7	11:36:51	30/11/2016	53.5	39.1	5.09
Retest - failed Voc + Isc	313	41.1	10.12	1054.0	34.3	11:37:23	30/11/2016	54.2	39.1	4.93
Retest - failed Voc + Isc	314	41	9.96	1030.0	34.3	11:37:58	30/11/2016	54.8	39.0	4.82
Retest - failed Isc	315	40.7	10.32	1093.0	34.5	11:40:06	30/11/2016	55.9	39.0	5.11
Retest - failed Isc	316	40.7	10.53	1124.0	34.4	11:40:39	30/11/2016	56.2	39.0	5.26
Retest - failed Isc	317	40.6	10.66	1136.0	35.6	11:41:11	30/11/2016	57.4	38.9	5.31
Retest - failed Isc	318	40.5	10.83	1158.0	35.4	11:41:56	30/11/2016	57.5	38.9	5.41
Retest - failed Isc	319	40.2	9.98	1072.0	36.0	11:44:47	30/11/2016	60.5	38.7	5.01
Retest - failed Isc	320	40.2	10.11	1079.0	36.8	11:45:20	30/11/2016	60.2	38.7	5.05
Retest - failed Isc	321	40.4	10.41	1115.0	36.4	11:46:52	30/11/2016	59.6	38.8	5.21
Retest - failed Isc	322	40.3	10.32	1101.0	36.8	11:47:32	30/11/2016	60.5	38.7	5.15
Retest - failed Isc	323	40.2	9.84	1054.0	36.4	11:49:30	30/11/2016	59.8	38.8	4.93
Retest - failed Isc	324	40.4	9.85	1054.0	35.6	11:58:40	30/11/2016	59.5	38.8	4.93
Retest - failed Isc	325	40.4	10.02	1071.0	35.6	11:59:10	30/11/2016	59.7	38.8	5.01
Retest - failed Isc	326	40.4	10.20	1095.0	35.8	11:59:47	30/11/2016	59.9	38.7	5.12
Retest - failed Isc	327	39.9	9.77	1038.0	35.2	12:03:58	30/11/2016	64.5	38.5	4.85
Retest - failed Isc	328	39.9	9.71	1023.0	35.0	12:04:36	30/11/2016	65.4	38.4	4.78
Retest - failed Isc	329	39.9	9.64	1022.0	35.0	12:05:13	30/11/2016	65.6	38.4	4.78
Retest - failed Isc	330	39.8	9.57	1016.0	34.6	12:05:49	30/11/2016	66.1	38.4	4.75
Retest - failed Isc	331	39.9	9.51	1025.0	35.8	12:07:30	30/11/2016	66.6	38.4	4.79
Retest - failed Isc	332	39.9	9.65	1041.0	35.8	12:08:04	30/11/2016	66.7	38.4	4.87
Retest - failed Isc	333	39.9	9.71	1043.0	35.4	12:08:47	30/11/2016	66.7	38.3	4.88
Retest - failed Isc	334	39.9	9.83	1057.0	35.3	12:09:22	30/11/2016	67.0	38.3	4.94
Retest - failed Isc	335	40	9.96	1068.0	35.8	12:11:49	30/11/2016	64.4	38.5	4.99
Retest - failed Isc	336	40.1	10.07	1081.0	35.8	12:12:22	30/11/2016	65.2	38.4	5.05



Module Solarland USA SLP165S-24H

Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Imp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Voc + Isc	337	41	10.52	1134.0	34.6	12:15:17	30/11/2016	59.9	38.7	5.30
Retest - failed Voc + Isc	338	40.8	10.31	1132.0	35.6	12:16:07	30/11/2016	60.8	38.7	5.29
Retest - failed Voc + Isc	339	40.7	10.32	1110.0	36.0	12:18:03	30/11/2016	61.3	38.7	5.19
Retest - failed Isc	340	40.6	10.19	1097.0	36.3	12:18:37	30/11/2016	61.0	38.7	5.13
Retest - failed Voc + Isc	341	41.1	9.99	1081.0	34.3	12:27:00	30/11/2016	58.3	38.8	5.05
Retest - failed Voc + Isc	342	41	9.96	1076.0	34.7	12:27:50	30/11/2016	58.5	38.8	5.03
Retest - failed Isc	343	40.7	9.68	993.4	35.6	12:30:28	30/11/2016	54.4	39.1	4.64
Retest - failed Isc	344	40.7	9.64	998.5	34.7	12:31:05	30/11/2016	54.7	39.0	4.67
Retest - failed Isc	345	40.6	9.62	996.6	34.5	12:31:39	30/11/2016	54.3	39.1	4.66
Retest - failed Isc	346	40.6	9.66	1004.0	34.6	12:32:18	30/11/2016	54.4	39.1	4.69
Retest - failed Isc	347	40.7	9.74	1034.0	34.2	12:34:29	30/11/2016	53.6	39.1	4.83
Retest - failed Isc	348	40.6	9.73	1029.0	34.8	12:34:59	30/11/2016	52.9	39.1	4.81
Retest - failed Isc	349	40.6	9.74	1036.0	34.4	12:35:33	30/11/2016	53.9	39.1	4.84
Retest - failed Isc	350	40.7	9.72	1041.0	34.4	12:36:31	30/11/2016	52.6	39.2	4.87
Retest - failed Isc	351	40.7	9.42	1023.0	35.5	12:38:48	30/11/2016	53.8	39.1	4.78
Retest - failed Isc	352	40.6	9.44	1015.0	35.5	12:39:22	30/11/2016	54.4	39.1	4.75
Retest - failed Isc	353	40.7	9.47	1017.0	34.8	12:39:55	30/11/2016	54.7	39.0	4.76
Retest - failed Isc	354	41	9.30	1005.0	33.8	12:42:55	30/11/2016	53.4	39.1	4.70
Retest - failed Voc + Isc	355	41.7	9.20	1007.0	33.3	12:50:25	30/11/2016	48.2	39.4	4.71
Retest - failed Voc + Isc	356	41.5	9.14	982.8	33.5	12:51:20	30/11/2016	49.0	39.4	4.60
Retest - failed Voc + Isc	357	41.4	9.06	983.3	34.0	12:51:53	30/11/2016	49.4	39.4	4.60
Retest - failed Isc	358	40.9	8.99	950.0	34.8	12:56:12	30/11/2016	50.4	39.3	4.44
Retest - failed Isc	359	40.8	8.99	950.0	34.2	12:56:51	30/11/2016	52.0	39.2	4.44
Retest - failed Isc	360	40.7	9.04	951.5	35.0	12:57:29	30/11/2016	53.2	39.1	4.45
Retest - failed Isc	361	40.7	9.15	963.1	34.4	12:58:06	30/11/2016	53.8	39.1	4.50
Retest - failed Isc	362	40.7	9.06	973.4	35.5	13:00:53	30/11/2016	55.6	39.0	4.55
Retest - failed Isc	363	40.6	8.94	952.2	36.5	13:01:25	30/11/2016	55.9	39.0	4.45
Retest - failed Isc	364	40.5	8.99	956.8	36.8	13:02:27	30/11/2016	57.5	38.9	4.47



Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Imp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Isc	365	40.5	9.42	1003.0	37.4	13:03:38	30/11/2016	57.8	38.9	4.69
Retest - failed Isc	366	40.3	9.09	845.0	37.0	13:06:10	30/11/2016	57.3	38.9	3.95
Retest - failed Isc	367	40.4	9.00	978.3	37.3	13:06:59	30/11/2016	57.4	38.9	4.57
Retest - failed Isc	368	40.4	8.98	976.6	37.2	13:07:32	30/11/2016	58.2	38.8	4.57
Retest - failed Isc	369	40.3	8.99	970.8	37.7	13:08:12	30/11/2016	58.9	38.8	4.54
Retest - failed Isc	370	40.6	9.39	1023.0	36.8	13:10:36	30/11/2016	56.8	38.9	4.78
Retest - failed Voc + Isc	371	41.3	8.65	934.3	35.4	13:17:34	30/11/2016	50.9	39.3	4.37
Retest - failed Voc + Isc	372	41.2	8.59	927.5	35.5	13:18:10	30/11/2016	51.6	39.2	4.34
Retest - failed Isc	373	41.1	8.60	930.1	36.0	13:19:10	30/11/2016	51.3	39.2	4.35
Retest - failed Isc	374	40.7	8.34	885.0	35.6	13:21:23	30/11/2016	52.9	39.1	4.14
Retest - failed Isc	375	40.8	8.18	882.4	35.4	13:23:36	30/11/2016	54.2	39.1	4.13
Retest - failed Isc	376	40.8	8.06	864.2	35.5	13:24:11	30/11/2016	54.4	39.1	4.04
Retest - failed Isc	377	40.7	8.02	864.0	35.8	13:24:45	30/11/2016	54.4	39.1	4.04
Retest - failed Isc	378	40.6	8.14	890.5	36.4	13:27:06	30/11/2016	56.7	38.9	4.16
Retest - failed Isc	379	40.6	8.18	894.3	36.0	13:27:39	30/11/2016	56.7	38.9	4.18
Retest - failed Isc	380	40.7	8.33	909.3	35.8	13:28:15	30/11/2016	57.0	38.9	4.25
Retest - failed Isc	381	40.6	8.27	904.3	37.1	13:30:11	30/11/2016	56.8	38.9	4.23
Retest - failed Isc	382	40.6	8.38	910.3	36.9	13:30:43	30/11/2016	57.3	38.9	4.26
Retest - failed Isc	383	40.8	8.48	924.4	36.0	13:32:32	30/11/2016	55.5	39.0	4.32
Retest - failed Isc	384	40.8	8.69	936.0	36.2	13:33:13	30/11/2016	55.7	39.0	4.38
Retest - failed Isc	385	40.8	8.02	872.6		13:35:54	30/11/2016	54.4	39.1	4.08
Retest - failed Isc	386	40.8	8.17	883.2		13:36:26	30/11/2016	55.0	39.0	4.13
Retest - failed Isc	387	40.9	8.49	923.4		13:39:52	30/11/2016	54.4	39.1	4.32
Retest - failed Voc + Isc	388	41.1	8.15	891.2		13:41:18	30/11/2016	53.2	39.1	4.17
Retest - failed Voc + Isc	389	40.9	8.01	833.1		13:44:16	30/11/2016		42.2	3.90
Retest - failed Voc + Isc	390	40.8	7.99	827.3		13:44:50	30/11/2016		42.2	3.87
Retest - failed Isc	391	40.5	7.84	826.9	34.2	13:46:18	30/11/2016	52.7	39.2	3.87
Retest - failed Isc	392	40.5	7.70	817.6	34.1	13:47:07	30/11/2016	52.7	39.2	3.82





Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Impp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

Technician	L. Cutburth		<b>Offset from STC</b>		
Report Date	March 13, 2018		LID	1.00%	of Voc & Isc
Data taken on	Nov. 11/12 2015		Sorting/Quality	1.50%	of Isc
			Soiling	2.50%	of Voc & Isc
			Degradation	1.00%	of Voc & Isc
<b>String Data - STC</b>			<b>Acceptable Limits</b>		
Power =	165.3	Watts	Delta (-) Isc =	7.50%	(low)
String	1	in series	Delta (+) Isc =	7.50%	(high)
Isc =	5.07	Amps	Delta (-) Voc =	2.50%	(low)
Voc =	43.0	VDC	Delta (+) Voc =	5.00%	(high)
Voc (0 °C) =	44.5	VDC			

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Isc	393	40.5	7.74	824.3	34.5	13:47:40	30/11/2016	53.1	39.1	3.85
Retest - failed Isc	394	40.4	7.54	822.6	34.1	13:48:12	30/11/2016	53.3	39.1	3.85
Retest - failed Isc	395	40.7	7.60	824.4	33.3	13:51:44	30/11/2016	51.3	39.2	3.85
Retest - failed Isc	396	40.7	7.58	826.4	33.7	13:52:22	30/11/2016	51.7	39.2	3.86
Retest - failed Isc	397	40.7	7.68	830.9	33.3	13:52:55	30/11/2016	51.9	39.2	3.89
Retest - failed Isc	398	41.3	7.55	821.5	32.8	13:56:10	30/11/2016	48.2	39.4	3.84
Retest - failed Isc	399	41.3	7.65	827.1	33.1	13:56:40	30/11/2016	48.2	39.4	3.87
Retest - failed Isc	400	41.5	7.43	806.7	32.1	14:02:59	30/11/2016	45.8	39.6	3.77
Retest - failed Isc	401	41.3	7.33	793.5	33.3	14:06:02	30/11/2016	46.4	39.5	3.71
Retest - failed Voc + Isc	402	41.6	7.58	831.2	33.5	14:11:15	30/11/2016	46.5	39.5	3.89
Retest - failed Voc + Isc	403	41.6	7.47	819.1	33.2	14:11:51	30/11/2016	46.8	39.5	3.83
Retest - failed Voc + Isc	404	41.5	7.42	811.0	33.4	14:13:14	30/11/2016	47.4	39.5	3.79
Retest - failed Voc + Isc	405	41.5	7.37	804.8	33.7	14:13:47	30/11/2016	47.1	39.5	3.76
Retest - failed Isc	406	41.2	7.60	821.4	35.5	14:20:42	30/11/2016	50.6	39.3	3.84
Retest - failed Isc	407	41.1	7.52	813.9	35.3	14:21:15	30/11/2016	50.9	39.3	3.81
Retest - failed Isc	408	41.1	7.53	814.0	35.6	14:21:51	30/11/2016	51.5	39.2	3.81
Retest - failed Isc	409	41.1	7.46	805.9	35.8	14:22:23	30/11/2016	52.2	39.2	3.77
Retest - failed Isc	410	41	7.51	807.0	36.1	14:22:55	30/11/2016	52.3	39.2	3.77
Retest - failed Isc	411	41.1	7.54	828.2	36.2	14:25:19	30/11/2016	50.9	39.3	3.87
Retest - failed Isc	412	41.1	7.49	824.0	35.9	14:25:51	30/11/2016	51.0	39.3	3.85
Retest - failed Isc	413	41.1	7.42	814.2	36.2	14:26:26	30/11/2016	50.6	39.3	3.81
Retest - failed Isc	414	41.2	7.49	819.8	36.3	14:27:00	30/11/2016	50.9	39.3	3.83
Retest - failed Voc + Isc	415	41.3	7.27	793.2	35.5	14:29:08	30/11/2016	49.9	39.3	3.71
Retest - failed Voc + Isc	416	41.3	7.21	785.8	35.2	14:29:41	30/11/2016	49.9	39.3	3.67
Retest - failed Isc	417	41.3	7.14	786.5	35.4	14:30:09	30/11/2016	49.1	39.4	3.68
Retest - failed Voc + Isc	418	41.4	7.15	783.2	35.2	14:31:45	30/11/2016	49.1	39.4	3.66
Retest - failed Isc	419	41.5	6.90	753.1	32.7	14:37:19	30/11/2016	46.1	39.5	3.52
Retest - failed Isc	420	41.5	6.88	748.4	32.7	14:37:50	30/11/2016	46.2	39.5	3.50



Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Impp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Voc + Isc	421	41.5	6.88	748.2	32.5	14:38:26	30/11/2016	46.8	39.5	3.50
Retest - failed Isc	422	41.4	6.89	748.6	32.8	14:39:20	30/11/2016	46.8	39.5	3.50
Retest - failed Voc + Isc	423	41.7	7.17	799.0	32.5	14:41:39	30/11/2016	44.6	39.6	3.74
Retest - failed Voc + Isc	424	41.6	7.15	793.5	32.7	14:42:13	30/11/2016	44.8	39.6	3.71
Retest - failed Voc + Isc	425	41.6	7.16	792.8	32.4	14:42:48	30/11/2016	45.4	39.6	3.71
Retest - failed Isc	426	41.5	7.13	792.6	32.5	14:43:24	30/11/2016	46.1	39.5	3.71
Retest - failed Isc	427	41.4	7.08	788.2	33.4	14:46:02	30/11/2016	46.0	39.5	3.69
Retest - failed Isc	428	41.4	6.97	780.5	33.1	14:46:35	30/11/2016	46.2	39.5	3.65
Retest - failed Isc	429	41.4	6.88	772.9	32.8	14:47:05	30/11/2016	45.9	39.6	3.61
Retest - failed Isc	430	41.4	6.71	752.4	32.6	14:47:37	30/11/2016	46.3	39.5	3.52
Retest - failed Isc	431	40.9	6.75	731.3	34.2	14:50:39	30/11/2016	49.6	39.3	3.42
Retest - failed Isc	432	40.9	6.68	723.2	35.2	14:51:15	30/11/2016	49.4	39.4	3.38
Retest - failed Isc	433	40.9	6.66	723.7	35.8	14:51:54	30/11/2016	49.8	39.3	3.38
Retest - failed Isc	434	40.9	6.61	720.2	35.9	14:52:28	30/11/2016	50.2	39.3	3.37
Retest - failed Isc	435	41.2	6.79	740.8	35.2	14:55:01	30/11/2016	50.3	39.3	3.46
Retest - failed Isc	436	41.2	6.79	743.5	35.5	14:55:37	30/11/2016	50.5	39.3	3.48
Retest - failed Voc + Isc	437	41.3	6.75	743.6	35.4	14:56:11	30/11/2016	49.8	39.3	3.48
Retest - failed Isc	438	41.2	6.72	734.5	35.4	14:56:42	30/11/2016	50.0	39.3	3.43
Retest - failed Voc + Isc	439	41.6	7.36	819.9	35.4	15:00:57	30/11/2016	49.2	39.4	3.83
Retest - failed Voc + Isc	440	41.6	7.33	815.9	35.9	15:01:29	30/11/2016	48.7	39.4	3.81
Retest - failed Voc + Isc	441	41.6	7.34	811.6	36.2	15:02:20	30/11/2016	48.4	39.4	3.79
Retest - failed Voc + Isc	442	41.7	7.22	805.0	35.8	15:03:09	30/11/2016	47.8	39.4	3.76
Retest - failed Isc	443	41.7	7.33	815.7	35.8	15:03:44	30/11/2016	40.7	39.9	3.81
Retest - failed Voc + Isc	444	41.7	7.20	802.1	35.2	15:05:22	30/11/2016	44.4	39.6	3.75
Retest - failed Voc + Isc	445	41.7	7.18	800.8	34.9	15:05:54	30/11/2016	45.2	39.6	3.74
Retest - failed Voc + Isc	446	41.7	7.15	798.4	35.8	15:06:31	30/11/2016	46.0	39.5	3.73
Retest - failed Isc	447	40.4	8.65	901.0	33.5	10:04:51	1/12/2016	53.8	39.1	4.21
Retest - failed Isc	448	40.5	8.84	926.9	33.6	10:05:25	1/12/2016	54.2	39.1	4.33



Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Imp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

Technician	L. Cutburth		<b>Offset from STC</b>		
Report Date	March 13, 2018		LID	1.00%	of Voc & Isc
Data taken on	Nov. 11/12 2015		Sorting/Quality	1.50%	of Isc
			Soiling	2.50%	of Voc & Isc
			Degradation	1.00%	of Voc & Isc
<b>String Data - STC</b>			<b>Acceptable Limits</b>		
Power =	165.3	Watts	Delta (-) Isc =	7.50%	(low)
String	1	in series	Delta (+) Isc =	7.50%	(high)
Isc =	5.07	Amps	Delta (-) Voc =	2.50%	(low)
Voc =	43.0	VDC	Delta (+) Voc =	5.00%	(high)
Voc (0 °C) =	44.5	VDC			

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Isc	449	40.6	8.66	924.6	33.4	10:05:57	1/12/2016	54.0	39.1	4.32
Retest - failed Isc	450	40.6	8.86	930.7	34.1	10:06:28	1/12/2016	53.6	39.1	4.35
Retest - failed Isc	451	41	10.03	1064.0	34.0	10:08:06	1/12/2016	53.6	39.1	4.98
Retest - failed Isc	452	40.8	9.39	1016.0	34.1	10:08:34	1/12/2016	53.9	39.1	4.75
Retest - failed Isc	453	40.8	9.37	1008.0	33.7	10:09:04	1/12/2016	53.7	39.1	4.71
Retest - failed Isc	454	40.8	9.33	1011.0	33.9	10:09:51	1/12/2016	54.0	39.1	4.73
Retest - failed Isc	455	40.8	9.28	1004.0	33.7	10:10:26	1/12/2016	53.7	39.1	4.69
Retest - failed Isc	456	40.8	9.29	1010.0	33.7	10:11:55	1/12/2016	53.6	39.1	4.72
Retest - failed Isc	457	40.7	9.42	1028.0	34.4	10:12:26	1/12/2016	54.2	39.1	4.81
Retest - failed Isc	458	40.7	9.51	1038.0	34.6	10:13:04	1/12/2016	54.4	39.1	4.85
Retest - failed Isc	459	40.6	9.54	1040.0	34.3	10:13:56	1/12/2016	54.9	39.0	4.86
Retest - failed Isc	460	40.8	9.36	1032.0	33.8	10:15:53	1/12/2016	53.6	39.1	4.83
Retest - failed Voc + Isc	461	41.4	9.79	1078.0	34.0	10:20:00	1/12/2016	51.4	39.2	5.04
Retest - failed Isc	462	40.9	9.31	1010.0	34.6	10:24:20	1/12/2016	53.8	39.1	4.72
Retest - failed Isc	463	40.9	9.54	1027.0	35.2	10:24:56	1/12/2016	54.0	39.1	4.80
Retest - failed Isc	464	40.4	9.87	1052.0	34.7	10:27:07	1/12/2016	57.9	38.9	4.92
Retest - failed Voc + Isc	465	41.7	10.74	1116.0	32.8	10:36:00	1/12/2016	52.0	39.2	5.22
Retest - failed Voc + Isc	466	41.6	10.75	1041.0	32.9	10:42:05	1/12/2016	52.4	39.2	4.87
Retest - failed Isc	467	41	9.99	1038.0	33.0	10:47:52	1/12/2016	54.6	39.1	4.85
Retest - failed Isc	468	40.7	9.70	1054.0	33.6	11:02:36	1/12/2016	57.5	38.9	4.93
Retest - failed Isc	469	40.7	9.83	1063.0	33.0	11:03:08	1/12/2016	57.6	38.9	4.97
Retest - failed Isc	470	40.7	10.02	1077.0	33.4	11:03:51	1/12/2016	58.5	38.8	5.04
Retest - failed Isc	471	40.7	10.16	1096.0	33.3	11:04:25	1/12/2016	58.2	38.8	5.12
Retest - failed Voc + Isc	472	41	10.38	1003.0	32.2	11:07:08	1/12/2016	57.4	38.9	4.69
Retest - failed Voc + Isc	473	40.9	10.12	1087.0	33.0	11:07:44	1/12/2016	58.1	38.8	5.08
Retest - failed Isc	474	40.7	9.94	1066.0	34.2	11:08:21	1/12/2016	58.8	38.8	4.98
Retest - failed Isc	475	40.6	9.96	1064.0	34.2	11:08:57	1/12/2016	58.7	38.8	4.98
Retest - failed Voc + Isc	476	40.8	9.82	1046.0	34.2	11:16:42	1/12/2016	59.0	38.8	4.89



Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Impp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

Technician	L. Cutburth		<b>Offset from STC</b>		
Report Date	March 13, 2018		LID	1.00%	of Voc & Isc
Data taken on	Nov. 11/12 2015		Sorting/Quality	1.50%	of Isc
			Soiling	2.50%	of Voc & Isc
			Degradation	1.00%	of Voc & Isc
<b>String Data - STC</b>			<b>Acceptable Limits</b>		
Power =	165.3	Watts	Delta (-) Isc =	7.50%	(low)
String	1	in series	Delta (+) Isc =	7.50%	(high)
Isc =	5.07	Amps	Delta (-) Voc =	2.50%	(low)
Voc =	43.0	VDC	Delta (+) Voc =	5.00%	(high)
Voc (0 °C) =	44.5	VDC			

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Isc	477	40.4	9.87	1052.0	35.4	11:20:42	1/12/2016	55.8	39.0	4.92
Retest - failed Isc	478	40.4	9.95	1059.0	35.6	11:21:23	1/12/2016	56.2	39.0	4.95
Retest - failed Isc	479	40.7	9.89	1064.0	34.4	11:23:10	1/12/2016	52.5	39.2	4.98
Retest - failed Isc	480	40.4	9.79	1041.0	34.6	11:26:25	1/12/2016	54.9	39.0	4.87
Retest - failed Isc	481	40.4	9.88	1040.0	33.8	11:27:10	1/12/2016	55.3	39.0	4.86
Retest - failed Isc	482	40.3	9.53	1021.0	34.4	11:29:38	1/12/2016	55.6	39.0	4.77
Retest - failed Isc	483	40.2	9.37	993.0	33.8	11:30:13	1/12/2016	55.5	39.0	4.64
Retest - failed Isc	484	40.3	9.69	1033.0	34.3	11:33:09	1/12/2016	55.2	39.0	4.83
Retest - failed Isc	485	40.3	9.69	1037.0	34.4	11:33:39	1/12/2016	54.8	39.0	4.85
Retest - failed Isc	486	40.5	9.79	1045.0	34.2	11:35:34	1/12/2016	53.7	39.1	4.89
Retest - failed Isc	487	40.4	9.67	1027.0	34.6	11:36:26	1/12/2016	54.1	39.1	4.80
Retest - failed Isc	488	41	9.72	1048.0	33.5	11:39:28	1/12/2016	52.1	39.2	4.90
Retest - failed Isc	489	40.9	9.86	1058.0	33.7	11:40:05	1/12/2016	51.6	39.2	4.95
Retest - failed Isc	490	41	10.34	1113.0	34.8	11:44:56	1/12/2016	52.8	39.2	5.20
Retest - failed Isc	491	40.9	10.25	1094.0	34.7	11:45:35	1/12/2016	53.0	39.1	5.12
Retest - failed Voc + Isc	492	41.5	9.87	1069.0	33.2	11:51:58	1/12/2016	50.0	39.3	5.00
Retest - failed Voc + Isc	493	41.3	10.04	1085.0	34.3	11:53:37	1/12/2016	50.6	39.3	5.07
Retest - failed Voc + Isc	494	41.2	9.97	1081.0	33.8	11:55:18	1/12/2016	51.5	39.2	5.05
Retest - failed Isc	495	41.1	9.93	1076.0	33.9	11:55:52	1/12/2016	51.7	39.2	5.03
Retest - failed Isc	496	40.4	9.48	989.9	34.5	11:58:59	1/12/2016	56.1	39.0	4.63
Retest - failed Isc	497	40.4	9.52	994.3	35.0	11:59:37	1/12/2016	55.7	39.0	4.65
Retest - failed Isc	498	40.3	9.60	993.6	35.2	12:00:20	1/12/2016	57.1	38.9	4.65
Retest - failed Isc	499	40.3	9.57	986.5	35.2	12:00:54	1/12/2016	56.9	38.9	4.61
Retest - failed Isc	500	40.1	9.77	1031.0	36.1	12:02:56	1/12/2016	57.9	38.9	4.82
Retest - failed Isc	501	40.3	9.51	1007.0	35.6	12:04:09	1/12/2016	57.1	38.9	4.71
Retest - failed Isc	502	40.2	9.41	1004.0	36.0	12:04:44	1/12/2016	57.6	38.9	4.69
Retest - failed Isc	503	40.2	9.50	1005.0	36.3	12:06:01	1/12/2016	57.9	38.9	4.70
Retest - failed Isc	504	40.4	9.31	998.9	36.3	12:08:14	1/12/2016	58.6	38.8	4.67



Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Impp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Isc	505	40.5	9.12	978.0	36.8	12:13:59	1/12/2016	59.2	38.8	4.57
Retest - failed Isc	506	40.5	9.09	968.0	36.3	12:14:33	1/12/2016	59.7	38.8	4.53
Retest - failed Isc	507	40.5	9.05	973.7	35.9	12:15:12	1/12/2016	59.7	38.8	4.55
Retest - failed Isc	508	40.7	9.12	984.0	37.3	12:19:51	1/12/2016	57.1	38.9	4.60
Retest - failed Isc	509	40.7	9.12	980.9	37.2	12:20:27	1/12/2016	57.8	38.9	4.59
Retest - failed Isc	510	40.7	9.13	983.1	36.8	12:21:10	1/12/2016	57.3	38.9	4.60
Retest - failed Voc + Isc	511	41.2	9.10	973.5	35.8	12:25:25	1/12/2016	54.1	39.1	4.55
Retest - failed Voc + Isc	512	41.1	8.95	969.5	35.6	12:26:08	1/12/2016	53.8	39.1	4.53
Retest - failed Isc	513	40.6	9.31	996.9	37.2	12:31:38	1/12/2016	58.0	38.9	4.66
Retest - failed Isc	514	40.7	9.63	1027.0	37.0	12:32:40	1/12/2016	58.8	38.8	4.80
Retest - failed Isc	515	40.6	9.44	1009.0	36.5	12:33:31	1/12/2016	58.8	38.8	4.72
Retest - failed Isc	516	40.7	9.11	978.5	35.0	12:35:06	1/12/2016	59.0	38.8	4.58
Retest - failed Isc	517	40.6	9.09	975.7	35.8	12:36:29	1/12/2016	59.2	38.8	4.56
Retest - failed Voc + Isc	518	80.3	8.84	911.5	33.9	12:43:36	1/12/2016	61.0	38.7	4.26
Retest - failed Voc + Isc	519	80.5	9.16	940.0	34.1	12:44:12	1/12/2016	61.0	38.7	4.40
Retest - failed Voc + Isc	520	80.4	9.17	935.3	34.9	12:44:47	1/12/2016	60.8	38.7	4.37
Retest - failed Voc + Isc	521	80.3	9.01	929.2	34.8	12:45:25	1/12/2016	61.5	38.7	4.34
Retest - failed Voc + Isc	522	121	8.79	917.7	35.2	12:46:36	1/12/2016	61.4	38.7	4.29
Retest - failed Voc + Isc	523	121	8.78	922.8	35.5	12:47:11	1/12/2016	61.7	38.6	4.31
Retest - failed Voc + Isc	524	121	8.74	917.4	34.8	12:47:53	1/12/2016	62.1	38.6	4.29
Retest - failed Voc + Isc	525	122	8.72	921.3	35.4	12:48:30	1/12/2016	61.7	38.6	4.31
Retest - failed Voc + Isc	526	245	8.65	920.3	35.1	12:51:23	1/12/2016	61.9	38.6	4.30
Retest - failed Voc + Isc	527	244	8.62	915.0	34.9	12:51:58	1/12/2016	61.9	38.6	4.28
Retest - failed Voc + Isc	528	243	8.64	921.6	36.2	12:52:53	1/12/2016	62.3	38.6	4.31
Retest - failed Voc + Isc	529	243	8.84	938.7	36.6	12:53:34	1/12/2016	62.9	38.6	4.39
Retest - failed Voc + Isc	530	323	8.78	914.0	36.8	12:55:24	1/12/2016	64.5	38.5	4.27
Retest - failed Voc + Isc	531	322	8.55	903.6	37.1	12:56:13	1/12/2016	65.1	38.4	4.23
Retest - failed Voc + Isc	532	322	8.39	879.1	36.8	12:57:06	1/12/2016	64.9	38.5	4.11



Module	Solarland USA SLP165S-24H
Maximum Power (Watts)	165.3
Open Circuit Voltage (VDC)	43.0
Short Circuit Current (Amps)	5.07
Voltage at Maximum Power (Vmpp)	34.8
Current at Maximum Power (Imp)	4.75
Beta (%/°C)	-0.1419
Alpha (%/°C)	0.00218

Technician	L. Cutburth
Report Date	March 13, 2018
Data taken on	Nov. 11/12 2015

Offset from STC		
LID	1.00%	of Voc & Isc
Sorting/Quality	1.50%	of Isc
Soiling	2.50%	of Voc & Isc
Degradation	1.00%	of Voc & Isc

String Data - STC		
Power =	165.3	Watts
String	1	in series
Isc =	5.07	Amps
Voc =	43.0	VDC
Voc (0 °C) =	44.5	VDC

Acceptable Limits		
Delta (-) Isc =	7.50%	(low)
Delta (+) Isc =	7.50%	(high)
Delta (-) Voc =	2.50%	(low)
Delta (+) Voc =	5.00%	(high)

	String Index	Voc (VDC)	Isc (Amps)	Irradiance (w/m <sup>2</sup> )	Ambient T (deg. C)	Time (local - Euro format)	Date	BOM-Temp (deg. C)	Expected Voc	Expected Isc
Retest - failed Voc + Isc	533	321	8.36	880.2	36.8	12:57:56	1/12/2016	65.5	38.4	4.12
Retest - failed Voc + Isc	534	702	8.01	844.0	43.7	13:29:54	1/12/2016	48.2	39.4	3.95
Retest - failed Voc + Isc	535	700	7.89	827.1	43.9	13:30:54	1/12/2016	48.2	39.4	3.87
Retest - failed Voc + Isc	536	700	7.84	826.0	43.9	13:31:33	1/12/2016	48.2	39.4	3.86
Retest - failed Voc + Isc	537	699	7.94	828.3	44.3	13:32:26	1/12/2016	48.2	39.4	3.87
Retest - failed Voc + Isc	538	667	7.79	821.6	43.7	13:33:35	1/12/2016	48.2	39.4	3.84
Retest - failed Voc + Isc	539	666	7.73	812.6	43.6	13:34:18	1/12/2016	48.0	39.4	3.80
Retest - failed Voc + Isc	540	666	7.74	812.5	43.8	13:34:54	1/12/2016	48.5	39.4	3.80
Retest - failed Voc + Isc	541	665	7.68	805.8	43.3	13:35:29	1/12/2016	48.9	39.4	3.77
Retest - failed Voc + Isc	542	647	7.67	803.3	43.2	13:37:25	1/12/2016	48.2	39.4	3.76
Retest - failed Voc + Isc	543	648	7.58	793.7	42.9	13:37:57	1/12/2016	47.6	39.5	3.71
Retest - failed Voc + Isc	544	650	7.72	805.6	42.8	13:39:22	1/12/2016	48.2	39.4	3.77
Retest - failed Voc + Isc	545	651	7.79	816.2	43.3	13:40:05	1/12/2016	48.2	39.4	3.82
Retest - failed Voc + Isc	546	659	7.66	805.4	43.9	13:41:07	1/12/2016	48.4	39.4	3.77
Retest - failed Isc	547	41.2	7.83	830.1	35.4	13:56:02	1/12/2016	48.9	39.4	3.88