TEST REPORT
CEC Guideline
Performance Test Protocol for Evaluating Inverters Used in Grid-Connected Photovoltaic Systems

Report reference No. ..... :	102862126CRT-018
Tested by (printed name and signature) ..... :	Dipesh Patel 
Approved by (printed name and signature) ..... :	Steven Pasternack 
Date of issue ..... :	Nov 2nd, 2018
Testing Laboratory Name ..... :	Intertek Testing Services Inc.
Address ..... :	3933 US-11, Cortland, NY 13045 USA
Testing location ..... :	CCATL ☐ SMT ☐ NRTL ☒
Applicant's Name ..... :	Chilicon Power, LLC
Address ..... :	1563 Calle Patricia, Pacific Palisades, CA
Test specification	
Standard ..... :	CEC Guideline
Test procedure ..... :	Performance Test Protocol for Evaluating Inverters Used in Grid-Connected Photovoltaic Systems: March 1, 2005
Non-standard test method ..... :	None
Test item description ..... :	2 Line Inverter
Trademark ..... :	Chilicon
Model and/or type reference ..... :	CP-720-60-72-96-208/240-MC4
Rating(s) ..... :	Input voltage range: 47Vdc-82Vdc Output 1: 240V, 720W Output 2: 208V, 720W
Manufacturer ..... :	Chilicon Power, LLC
Address ..... :	1563 Calle Patricia, Pacific Palisades, CA
Testing	
Date of receipt of test item	10/05/2018
Date(s) of performance of test	10/08/2018 to 10/19/2018

(1) CP-720-60-72-96-208/240-MC4 @ output 240Vac, 60Hz

Manufacturer: Chilicon Power LLC

Model #: CP-720-60-72-96-208/240-MC4 (240V)

Serial #: 41200019 Insulation Value High

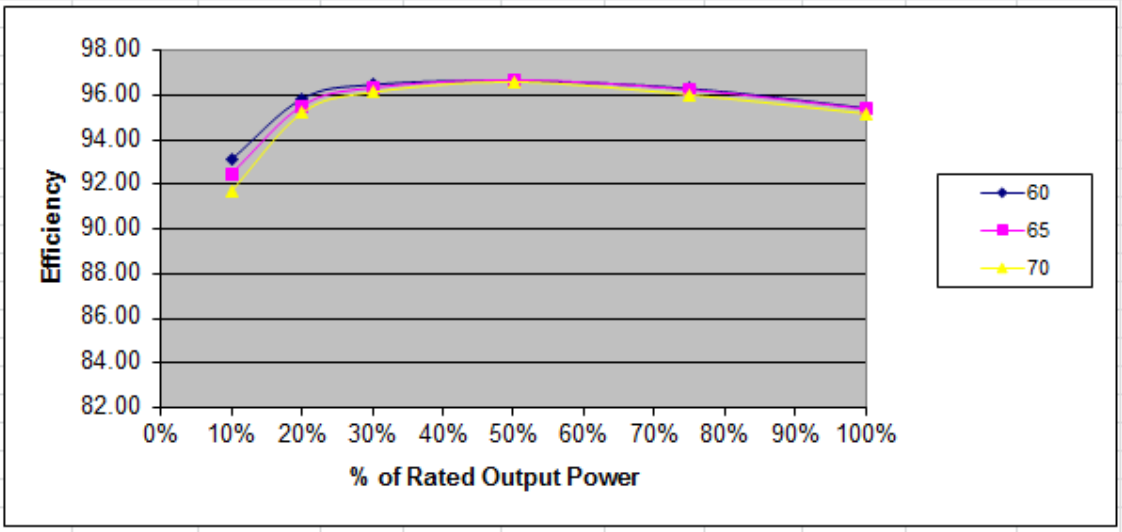
Maximum Continuous Output Power: 0.721 kW Tare Loss: 0.10 W

Vmin: 60 Vdc Vnom: 65 Vdc Vmax: 70 Vdc

		Power Level (%; kW)						
		10%	20%	30%	50%	75%	100%	
Input Voltage (Vdc)		0.070	0.144	0.216	0.362	0.541	0.725	Wtd
Vmin	60	93.13	95.85	96.48	96.66	96.31	95.43	96.21
Vnom	65	92.51	95.54	96.35	96.70	96.26	95.40	96.13
Vmax	70	91.72	95.22	96.15	96.61	96.03	95.19	95.91

Peak Efficiency: 96.7 % Nominal Average Efficiency: 96.1 %

CEC Efficiency = 96.0%



All Efficiency data is within 3 standard deviations from the average? Pass

All input power levels are within tolerances during Efficiency Test? Pass

Equipment Used:

Asset #	Description	Mfg	Model	Serial	Cal Date	Cal Due
I039	Temperature data	Yokogawa	MW100	91H339436	7-May-18	7-May-19
U101845	Power Analyzer	Yokogawa	WT3004E	91T336060	27-Oct-17	27-Oct-18

Test Engineer: Anthony Steiner DATE: 15-Jun-18

Specified		Sample #1			Sample #2			Sample #3			Sample #4			Sample #5		
Output Power	Input Voltage	Output Power	Input Voltage	Efficiency	Output Power	Input Voltage	Efficiency	Output Power	Input Voltage	Efficiency	Output Power	Input Voltage	Efficiency	Output Power	Input Voltage	Efficiency
(% of rated)	(Vdc)	(kW)	(Vdc)	(%)	(kW)	(Vdc)	(%)	(kW)	(Vdc)	(%)	(kW)	(Vdc)	(%)	(W)	(Vdc)	(%)
5%																
10%		0.07031	60.04	93.134	0.07027	60.04	93.1348	0.07022	60.04	93.1352	0.0702	60.04	93.1329	0.07016	60.03	93.1258
20%		0.14498	59.98	95.8208	0.14501	59.98	95.8557	0.14501	59.98	95.8569	0.14506	59.98	95.8612	0.14502	59.98	95.8593
30%	Vmin 60Vdc	0.21669	59.94	96.4758	0.21662	59.94	96.4879	0.21669	59.94	96.4868	0.2167	59.94	96.486	0.21673	59.94	96.4885
50%		0.36073	59.98	96.6525	0.36084	59.98	96.6678	0.36086	59.98	96.6672	0.36078	59.98	96.6652	0.36083	59.98	96.6652
75%		0.53945	60.01	96.3112	0.53953	60.01	96.3118	0.5396	60.01	96.3125	0.53967	60.01	96.3141	0.53983	60.01	96.3139
100%		0.72454	60.15	95.4333	0.72453	60.15	95.436	0.72455	60.15	95.434	0.7245	60.15	95.4347	0.72447	60.15	95.433
5%																
10%		0.07005	65.01	92.4993	0.07004	65.01	92.501	0.07007	65.01	92.5036	0.0701	65.01	92.5088	0.07009	65.01	92.5182
20%	Vnom 65Vdc	0.14436	64.99	95.4756	0.14449	64.99	95.5516	0.14455	64.99	95.5537	0.14443	64.99	95.5477	0.14438	64.99	95.5486
30%		0.21576	64.99	96.3495	0.21572	65	96.35	0.21569	65	96.3488	0.21568	65	96.3463	0.21569	65	96.3449
50%		0.36203	65.01	96.6953	0.362	65.01	96.6953	0.36191	65.01	96.6954	0.36189	65.01	96.6942	0.36193	65.01	96.6952
75%		0.54073	64.92	96.2428	0.54089	64.92	96.2599	0.54084	64.92	96.2629	0.54099	64.92	96.2636	0.54106	64.92	96.2677
100%		0.72033	65	95.401	0.72039	65	95.398	0.72052	65	95.3977	0.72062	65	95.3953	0.72056	65	95.397
5%																
10%		0.06903	70.07	91.7272	0.06899	70.07	91.71	0.06901	70.07	91.7127	0.06901	70.07	91.7166	0.06904	70.07	91.7203
20%	Vmax 70Vdc	0.14459	69.99	95.2105	0.14458	69.99	95.2288	0.14446	69.99	95.2195	0.14451	69.99	95.2197	0.14446	69.99	95.2169
30%		0.21622	70.03	96.0981	0.21633	70.02	96.1588	0.21634	70.02	96.1567	0.21633	70.03	96.1581	0.21645	70.02	96.1566
50%		0.36129	70.02	96.5735	0.36125	70.02	96.6189	0.36141	70.02	96.6192	0.36142	70.02	96.6215	0.36124	70.02	96.6238
75%		0.54302	69.99	96.0035	0.54316	70	96.0188	0.54365	70	96.0287	0.54384	70	96.0388	0.544	70	96.0486
100%		0.72079	70.08	95.2006	0.72086	70.08	95.2108	0.72045	70.08	95.176	0.72047	70.08	95.1683	0.7205	70.08	95.1713

(2) CP-720-60-72-96-208/240-MC4, @ output 208Vac, 60Hz

Manufacturer: Chilicon Power LLC

Model #: CP-720-60-72-96-208/240-MC4 (208V)

Serial #: 41200019 Insulation Value High

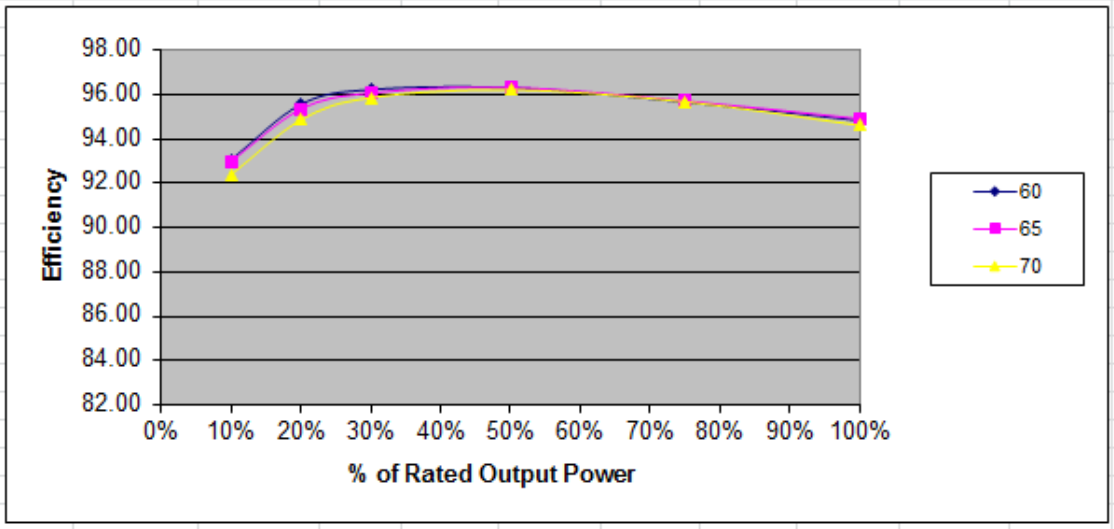
Maximum Continuous Output Power: 0.725 kW Tare Loss: 0.10 W

Vmin: 60 Vdc Vnom: 65 Vdc Vmax: 70 Vdc

		Power Level (%; kW)						
		10%	20%	30%	50%	75%	100%	
Input Voltage (Vdc)		0.070	0.148	0.216	0.365	0.544	0.727	Wtd
Vmin	60	93.07	95.58	96.24	96.32	95.68	94.84	95.73
Vnom	65	93.00	95.36	96.09	96.34	95.73	94.91	95.73
Vmax	70	92.40	94.87	95.87	96.23	95.69	94.62	95.60

Peak Efficiency: 96.3 % Nominal Average Efficiency: 95.6 %

CEC Efficiency = 95.5%



All Efficiency data is within 3 standard deviations from the average? Pass

All input power levels are within tolerances during Efficiency Test? Pass

Equipment Used:

Asset #	Description	Mfg	Model	Serial	Cal Date	Cal Due
I039	Temperature data	Yokogawa	MW100	91H339436	7-May-18	7-May-19
I037	Temperature data	Yokogawa	MW100	91H339436	8-Jan-18	8-Jan-19
U101845	Power Analyzer	Yokogawa	WT3004E	91T336060	27-Oct-17	27-Oct-18

Test Engineer: Dipesh Patel DATE: 19-Oct-18

Specified		Sample #1			Sample #2			Sample #3			Sample #4			Sample #5		
Output Power	Input Voltage	Output Power	Input Voltage	Efficiency	Output Power	Input Voltage	Efficiency	Output Power	Input Voltage	Efficiency	Output Power	Input Voltage	Efficiency	Output Power	Input Voltage	Efficiency
(% of rated)	(Vdc)	(kW)	(Vdc)	(%)	(kW)	(Vdc)	(%)	(kW)	(Vdc)	(%)	(kW)	(Vdc)	(%)	(W)	(Vdc)	(%)
5%																
10%		0.07167	60.26	93.0733	0.07163	60.26	93.0803	0.07157	60.26	93.075	0.0716	60.26	93.0707	0.07153	60.26	93.0613
20%		0.14373	59.92	95.5777	0.1437	59.92	95.579	0.14367	59.92	95.573	0.14363	59.92	95.5773	0.14363	59.92	95.573
30%	Vmin 60Vdc	0.2148	60.33	96.2393	0.21473	60.33	96.2367	0.21463	60.32	96.2333	0.2146	60.32	96.2383	0.2145	60.32	96.2377
50%		0.36047	60.07	96.3227	0.36057	60.07	96.3237	0.3607	60.07	96.3263	0.36063	60.07	96.3253	0.36073	60.07	96.324
75%		0.545	60.09	95.6663	0.54507	60.09	95.673	0.54513	60.09	95.6773	0.54523	60.09	95.6783	0.5454	60.09	95.6817
100%		0.72733	59.87	94.8447	0.7273	59.87	94.843	0.7273	59.87	94.8437	0.72737	59.87	94.8443	0.72737	59.87	94.843
5%																
10%		0.07013	65.05	92.9963	0.0701	65.05	93.001	0.07003	65.05	93	0.07017	65.05	93.0103	0.07007	65.05	93.0037
20%		0.14833	65	95.3607	0.14823	65.01	95.352	0.1483	65.01	95.364	0.14823	65.01	95.3627	0.1482	65.01	95.3593
30%	Vnom 65Vdc	0.216	65.46	96.085	0.2161	65.46	96.0837	0.21597	65.46	96.0883	0.21587	65.46	96.0873	0.21593	65.46	96.0857
50%		0.3651	65.29	96.335	0.36523	65.29	96.336	0.3653	65.29	96.336	0.36533	65.29	96.337	0.36543	65.29	96.3357
75%		0.54393	65.52	95.7297	0.5441	65.52	95.7297	0.54403	65.52	95.7307	0.54403	65.52	95.7293	0.54407	65.52	95.7327
100%		0.72753	65.53	94.927	0.7274	65.53	94.9167	0.7274	65.53	94.9127	0.7273	65.53	94.909	0.7273	65.53	94.903
5%																
10%		0.06973	70.12	92.391	0.06987	70.12	92.41	0.0699	70.12	92.406	0.0699	70.12	92.406	0.0698	70.12	92.386
20%		0.1415	70.2	94.888	0.14067	70.2	94.867	0.14087	70.2	94.8723	0.13997	70.21	94.8577	0.14067	70.2	94.8667
30%	Vmax 70Vdc	0.21437	70.31	95.872	0.21437	70.31	95.8797	0.21437	70.31	95.8723	0.2143	70.31	95.874	0.21433	70.31	95.874
50%		0.35697	70.6	96.2337	0.35713	70.6	96.2347	0.35717	70.6	96.2347	0.3571	70.6	96.2337	0.3572	70.6	96.2343
75%		0.5434	70.33	95.6883	0.5438	70.32	95.6887	0.54347	70.33	95.689	0.5436	70.32	95.6863	0.54307	70.33	95.69
100%		0.7287	70.23	94.6193	0.72877	70.23	94.6207	0.72877	70.23	94.6223	0.7288	70.23	94.6213	0.72873	70.23	94.6217

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