

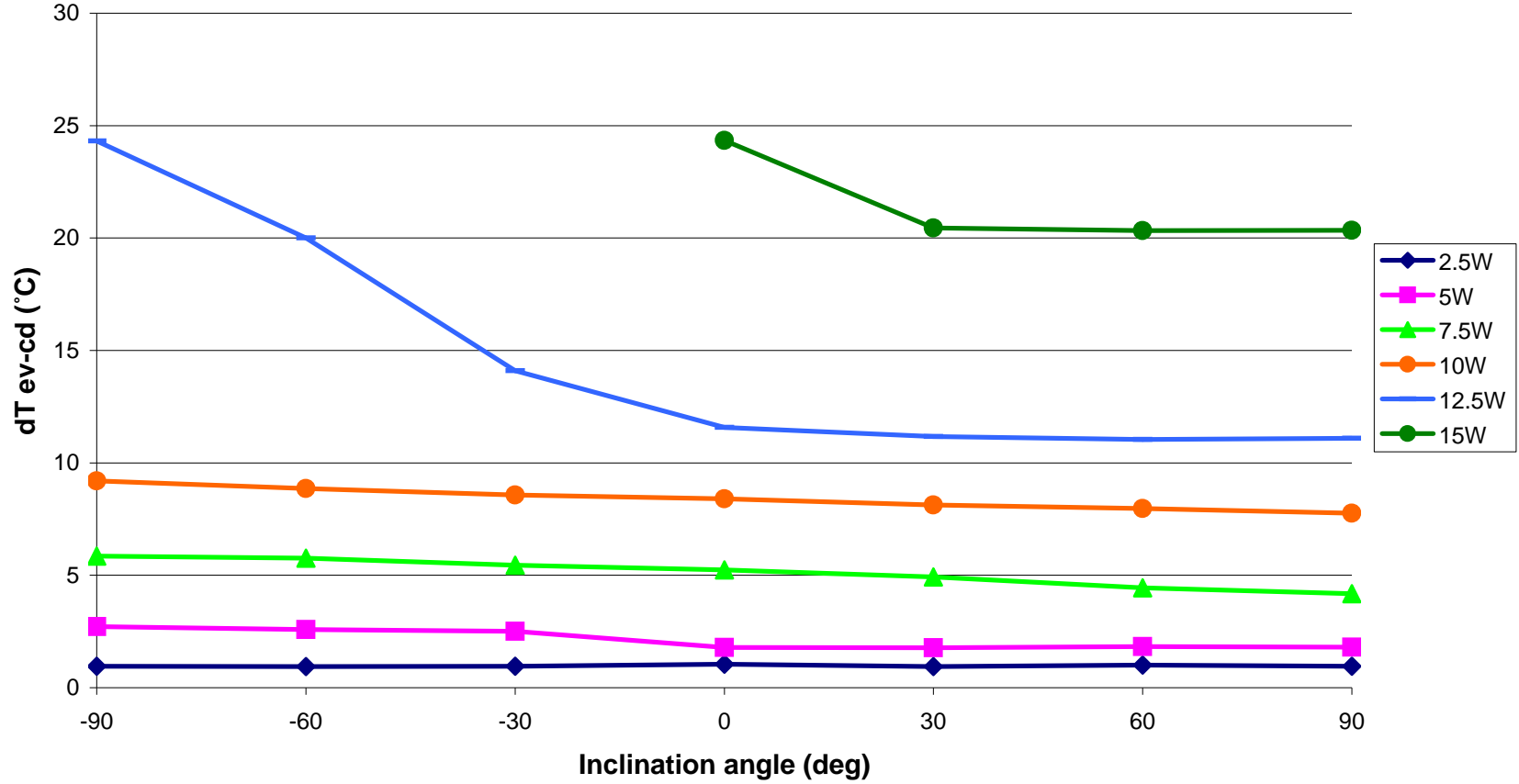
Heat Pipe Test Report

Manufacturer		Enertron				Test conditions			Test date	10/4/2011				
Wick structure/ Working fluid		Sintered Powder Metal/ Water				Effective area (m2)		7.07E-06	Note: ev- Evaporator of heat pipe cd- Condenser of heat pipe eb- Evaporator Block cb- Condenser Block					
Pipe specification		C110 Copper 0.3mm wall thickness				Coolant temp (°C)		35						
Diameter	±0.05 mm	3				Contact length of ev/cd (mm)		50						
Length	±0.10 mm	150				At 90° the evaporator is directly below the condenser; 0° is horizontal.								
Flatten thickness	±0.05 mm	n/a												
Bend angle	±1 deg	n/a												
Inclination Angle (°)	Heat Load (W)	dT ev-cd (°C)	Thermal resistance ev-cd (°C/W)	Thermal conductivity ev-cd (W/mK)	dT eb-cb (°C)	Thermal resistance eb-cb (°C/W)	Thermal Conductivity eb-cb (W/mK)	Measured Temperature T (°C)						
								ev	cd	eb1	eb2	cb1	cb2	
90	2.5	0.96	0.38	36880	1.70	0.68	20841	36.35	35.39	36.93	36.80	35.10	35.24	
	5	1.80	0.36	39232	2.78	0.56	25417	37.59	35.78	38.34	38.22	35.38	35.61	
	7.5	4.18	0.56	25390	5.75	0.77	18459	40.43	36.26	41.48	41.58	35.68	35.88	
	10	7.76	0.78	18236	10.64	1.06	13302	44.51	36.76	46.69	46.84	35.97	36.29	
	12.5	11.09	0.89	15950	14.90	1.19	11865	48.23	37.14	51.23	51.40	36.23	36.59	
	15	20.34	1.36	10432	23.79	1.59	8921	57.91	37.57	60.48	60.57	36.59	36.90	
60	2.5	1.00	0.40	35332	1.56	0.62	22672	36.33	35.33	36.85	36.71	35.20	35.24	
	5	1.83	0.37	38696	2.77	0.55	25546	37.55	35.73	38.29	38.20	35.43	35.53	
	7.5	4.44	0.59	23919	6.04	0.81	17567	40.67	36.24	41.75	41.91	35.69	35.88	
	10	7.97	0.80	17742	10.76	1.08	13154	44.65	36.68	46.79	46.95	35.94	36.28	
	12.5	11.04	0.88	16014	14.86	1.19	11900	48.18	37.14	51.22	51.44	36.29	36.65	
	15	20.33	1.36	10441	23.69	1.58	8958	57.82	37.50	60.30	60.49	36.51	36.90	
30	2.5	0.94	0.37	37786	1.58	0.63	22456	36.32	35.38	36.77	36.71	35.07	35.26	
	5	1.78	0.36	39672	2.78	0.56	25435	37.56	35.78	38.37	38.23	35.42	35.61	
	7.5	4.92	0.66	21557	6.73	0.90	15773	41.20	36.28	42.46	42.66	35.71	35.96	
	10	8.13	0.81	17401	10.97	1.10	12902	44.78	36.65	46.97	47.13	35.92	36.25	
	12.5	11.17	0.89	15834	15.04	1.20	11762	48.34	37.17	51.39	51.56	36.27	36.61	
	15	20.45	1.36	10376	23.85	1.59	8897	57.94	37.49	60.48	60.64	36.51	36.91	
0	2.5	1.04	0.42	33877	1.50	0.60	23610	36.36	35.32	36.79	36.61	35.17	35.23	
	5	1.79	0.36	39517	2.81	0.56	25137	37.59	35.80	38.43	38.26	35.49	35.58	
	7.5	5.24	0.70	20241	7.15	0.95	14842	41.47	36.23	42.91	43.01	35.67	35.94	
	10	8.40	0.84	16850	11.39	1.14	12422	45.13	36.74	47.46	47.63	35.99	36.32	
	12.5	11.58	0.93	15267	15.51	1.24	11401	48.79	37.20	51.85	52.04	36.27	36.61	
	15	24.34	1.62	8718	27.24	1.82	7789	61.80	37.46	63.79	63.99	36.45	36.84	
-30	2.5	0.96	0.38	36957	1.46	0.59	24175	36.27	35.32	36.78	36.56	35.16	35.26	
	5	2.51	0.50	28137	3.42	0.68	20677	38.30	35.79	38.91	38.95	35.44	35.58	
	7.5	5.44	0.73	19490	7.41	0.99	14329	41.70	36.26	43.16	43.29	35.68	35.95	
	10	8.58	0.86	16494	11.62	1.16	12171	45.31	36.74	47.68	47.86	36.03	36.27	
	12.5	14.09	1.13	12549	17.48	1.40	10120	51.24	37.15	53.86	53.96	36.25	36.63	

Inclination Angle (°)	Heat Load (W)	dT ev-cd (°C)	Thermal resistance ev-cd (°C/W)	Thermal conductivity ev-cd (W/mK)	dT eb-cb (°C)	Thermal resistance eb-cb (°C/W)	Thermal Conductivity eb-cb (W/mK)	Measured Temperature T (°C)					
								ev	cd	eb1	eb2	cb1	cb2
-60	2.5	0.94	0.38	37665	1.52	0.61	23253	36.27	35.34	36.79	36.65	35.14	35.26
	5	2.59	0.52	27300	3.55	0.71	19909	38.40	35.81	39.02	39.06	35.43	35.54
	7.5	5.76	0.77	18430	7.77	1.04	13664	42.00	36.24	43.56	43.62	35.69	35.97
	10	8.86	0.89	15971	11.87	1.19	11920	45.55	36.69	47.94	48.09	36.00	36.30
	12.5	20.00	1.60	8841	22.36	1.79	7909	57.13	37.13	58.70	58.85	36.22	36.61
-90	2.5	0.96	0.38	36880	1.53	0.61	23177	36.35	35.40	36.77	36.70	35.16	35.26
	5	2.72	0.54	26044	3.67	0.73	19284	38.50	35.79	39.19	39.20	35.44	35.61
	7.5	5.85	0.78	18137	7.99	1.07	13278	42.13	36.28	43.74	43.86	35.73	35.89
	10	9.20	0.92	15384	12.24	1.22	11557	45.93	36.73	48.28	48.50	35.98	36.31
	12.5	24.31	1.94	7274	26.39	2.11	6701	61.34	37.03	62.69	62.80	36.18	36.53

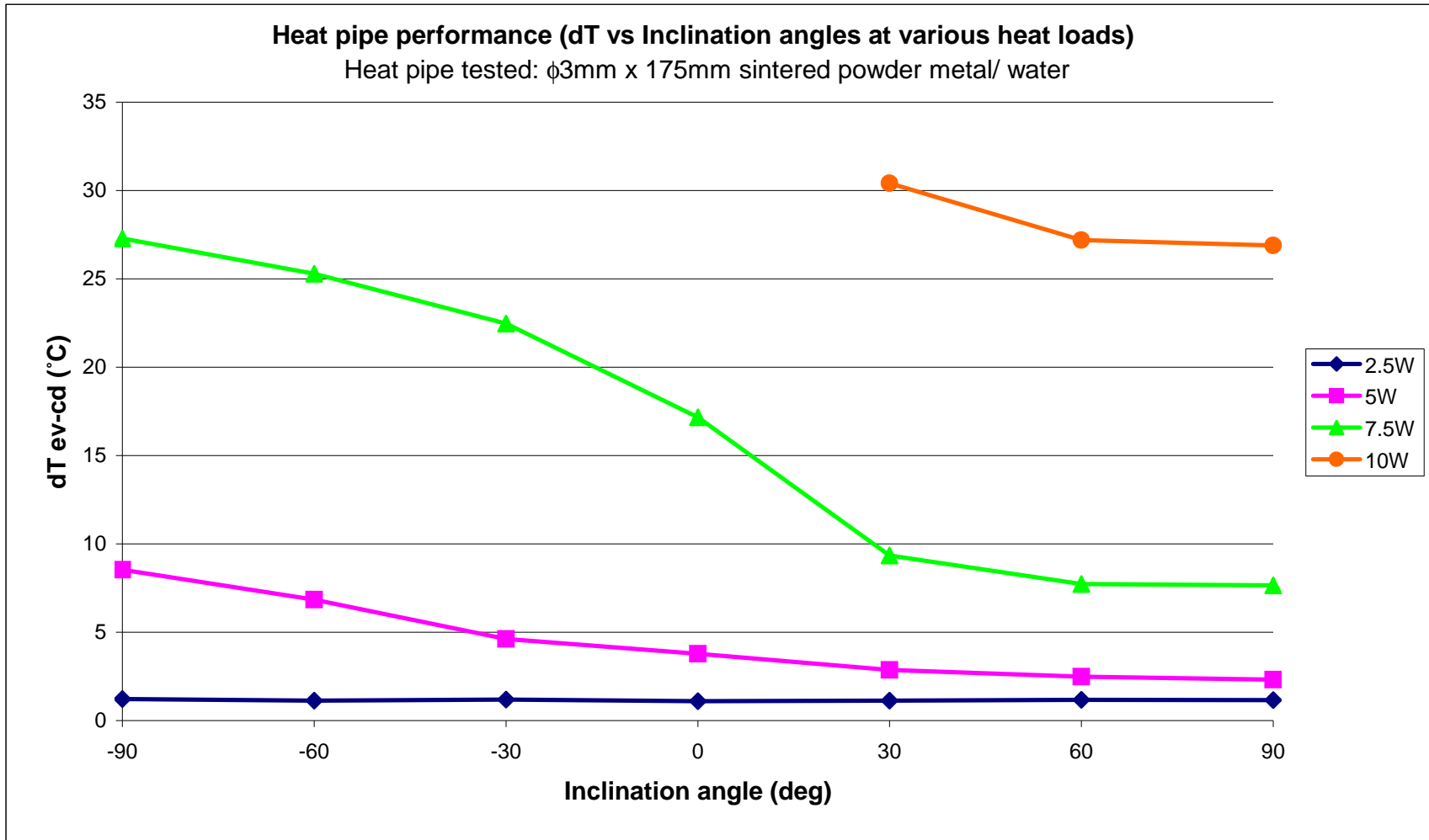
Heat pipe performance (dT vs Inclination angles at various heat loads)

Heat pipe tested: $\phi 3\text{mm} \times 150\text{mm}$ sintered powder metal/ water



Heat Pipe Test Report

Manufacturer		Enertron				Test conditions			Test date	10/4/2011				
Wick structure/ Working fluid		Sintered Powder Metal/ Water				Effective area (m2)		7.07E-06	Note: ev- Evaporator of heat pipe cd- Condenser of heat pipe eb- Evaporator Block cb- Condenser Block					
Pipe specification		C110 Copper 0.3mm wall thickness				Coolant temp (°C)		35						
Diameter	±0.05 mm	3				Contact length of ev/cd (mm)		50						
Length	±0.10 mm	175				At 90° the evaporator is directly below the condenser; 0° is horizontal.								
Flatten thickness	±0.05 mm	n/a												
Bend angle	±1 deg	n/a												
Inclination Angle (°)	Heat Load (W)	dT ev-cd (°C)	Thermal resistance	Thermal conductivity	dT eb-cb (°C)	Thermal resistance	Thermal Conductivity	Measured Temperature T (°C)						
								ev	cd	eb1	eb2	cb1	cb2	
90	2.5	1.16	0.47	38014	1.66	0.66	26632	36.59	35.43	37.18	36.94	35.26	35.35	
	5	2.32	0.46	38194	2.02	0.40	43750	38.14	35.82	39.13	38.87	35.57	35.70	
	7.5	7.65	1.02	17348	6.16	0.82	21541	43.85	36.21	44.86	44.89	35.77	35.96	
	10	26.88	2.69	6578	20.99	2.10	8427	63.06	36.17	64.61	64.56	35.81	35.95	
60	2.5	1.17	0.47	37818	1.64	0.65	27007	36.57	35.40	37.12	36.96	35.25	35.38	
	5	2.49	0.50	35567	2.02	0.40	43772	38.38	35.89	39.22	38.92	35.59	35.72	
	7.5	7.73	1.03	17164	6.23	0.83	21285	43.97	36.25	44.95	45.00	35.71	35.99	
	10	27.19	2.72	6504	21.54	2.15	8210	63.38	36.19	64.89	64.90	35.71	35.95	
30	2.5	1.13	0.45	39298	1.63	0.65	27189	36.56	35.44	37.04	36.95	35.27	35.31	
	5	2.87	0.57	30819	2.13	0.43	41550	38.77	35.90	39.37	39.17	35.56	35.70	
	7.5	9.35	1.25	14191	7.54	1.01	17595	45.50	36.16	46.72	46.67	35.70	35.94	
	10	30.41	3.04	5815	23.36	2.34	7570	66.46	36.05	67.93	67.91	35.65	35.90	
0	2.5	1.11	0.44	40009	1.69	0.67	26237	36.55	35.44	37.12	36.95	35.18	35.31	
	5	3.79	0.76	23348	2.74	0.55	32270	39.61	35.82	40.21	40.10	35.55	35.68	
	7.5	17.17	2.29	7726	13.44	1.79	9870	53.09	35.92	54.40	54.34	35.54	35.76	
-30	2.5	1.19	0.47	37245	1.58	0.63	27981	36.55	35.36	37.08	36.93	35.23	35.36	
	5	4.62	0.92	19151	3.38	0.68	26136	40.31	35.69	40.93	40.89	35.38	35.65	
	7.5	22.47	3.00	5901	17.29	2.31	7671	58.32	35.85	59.51	59.48	35.45	35.75	
-60	2.5	1.13	0.45	39020	1.57	0.63	28177	36.57	35.44	37.09	36.94	35.24	35.32	
	5	6.84	1.37	12927	5.32	1.06	16623	42.60	35.76	43.52	43.42	35.45	35.65	
	7.5	25.29	3.37	5245	19.37	2.58	6849	61.06	35.77	62.19	62.03	35.40	35.61	
-90	2.5	1.23	0.49	36031	1.57	0.63	28213	36.61	35.38	37.08	36.98	35.23	35.37	
	5	8.54	1.71	10356	6.62	1.32	13354	44.24	35.70	45.21	45.07	35.37	35.60	
	7.5	27.28	3.64	4862	20.87	2.78	6354	63.04	35.76	64.13	64.05	35.33	35.65	

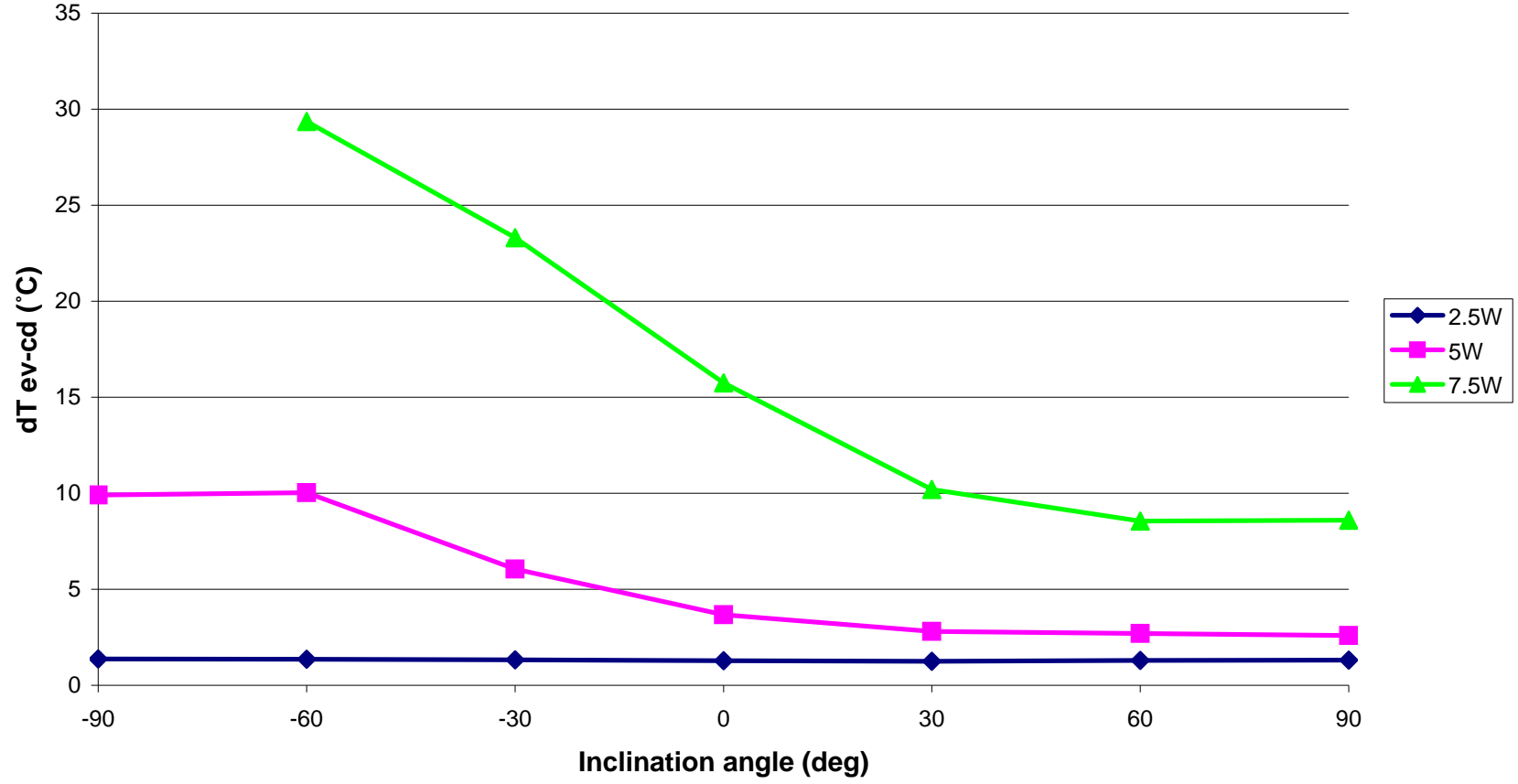


Heat Pipe Test Report

Manufacturer		Enertron				Test conditions			Test date	10/4/2011				
Wick structure/ Working fluid		Sintered Powder Metal/ Water				Effective area (m ²)		7.07E-06	Note: ev- Evaporator of heat pipe cd- Condenser of heat pipe eb- Evaporator Block cb- Condenser Block					
Pipe specification		C110 Copper 0.3mm wall thickness				Coolant temp (°C)		35						
Diameter	±0.05 mm	3				Contact length of ev/cd (mm)		50						
Length	±0.10 mm	200				At 90° the evaporator is directly below the condenser; 0° is horizontal.								
Flatten thickness	±0.05 mm	n/a												
Bend angle	±1 deg	n/a												
Inclination Angle (°)	Heat Load (W)	dT ev-cd (°C)	Thermal resistance ev-cd (°C/W)	Thermal conductivity ev-cd (W/mK)	dT eb-cb (°C)	Thermal resistance eb-cb (°C/W)	Thermal Conductivity eb-cb (W/mK)	Measured Temperature T (°C)						
								ev	cd	eb1	eb2	cb1	cb2	
90	2.5	1.32	0.53	40252	1.87	0.75	28355	36.92	35.60	37.34	37.25	35.34	35.51	
	5	2.59	0.52	41030	3.59	0.72	29555	38.66	36.08	39.41	39.28	35.65	35.86	
	7.5	8.60	1.15	18511	11.46	1.53	13889	45.27	36.68	47.14	47.40	35.56	36.05	
60	2.5	1.30	0.52	40809	1.77	0.71	30041	36.88	35.58	37.31	37.14	35.41	35.51	
	5	2.70	0.54	39370	3.66	0.73	28974	38.80	36.10	39.46	39.39	35.65	35.87	
	7.5	8.55	1.14	18621	11.41	1.52	13949	45.30	36.75	47.10	47.39	35.56	36.10	
30	2.5	1.25	0.50	42441	1.83	0.73	28990	36.87	35.62	37.33	37.16	35.28	35.55	
	5	2.81	0.56	37786	3.84	0.77	27609	38.89	36.08	39.61	39.47	35.57	35.83	
	7.5	10.19	1.36	15613	13.37	1.78	11906	46.88	36.68	49.04	49.20	35.51	36.00	
0	2.5	1.28	0.51	41511	1.80	0.72	29522	36.86	35.58	37.34	37.17	35.34	35.57	
	5	3.68	0.74	28825	5.01	1.00	21166	39.87	36.18	40.70	40.78	35.61	35.84	
	7.5	15.75	2.10	10104	19.64	2.62	8104	52.45	36.70	55.28	55.49	35.55	35.94	
-30	2.5	1.32	0.53	40221	1.84	0.74	28848	36.90	35.59	37.32	37.14	35.31	35.47	
	5	6.05	1.21	17535	8.11	1.62	13078	42.23	36.18	43.73	43.83	35.51	35.83	
	7.5	23.30	3.11	6830	27.21	3.63	5849	59.89	36.59	62.76	62.95	35.41	35.87	
-60	2.5	1.35	0.54	39210	1.89	0.76	28040	36.92	35.57	37.36	37.24	35.33	35.48	
	5	10.02	2.00	10586	12.79	2.56	8299	46.25	36.23	48.11	48.26	35.25	35.56	
	7.5	29.37	3.92	5420	33.13	4.42	4804	65.86	36.49	68.66	68.88	35.42	35.86	
-90	2.5	1.38	0.55	38583	1.96	0.78	27136	36.96	35.58	37.40	37.26	35.30	35.45	
	5	9.90	1.98	10716	12.66	2.53	8380	46.12	36.22	48.01	48.12	35.25	35.55	

Heat pipe performance (dT vs Inclination angles at various heat loads)

Heat pipe tested: ϕ 3mm x 200mm sintered powder metal/ water

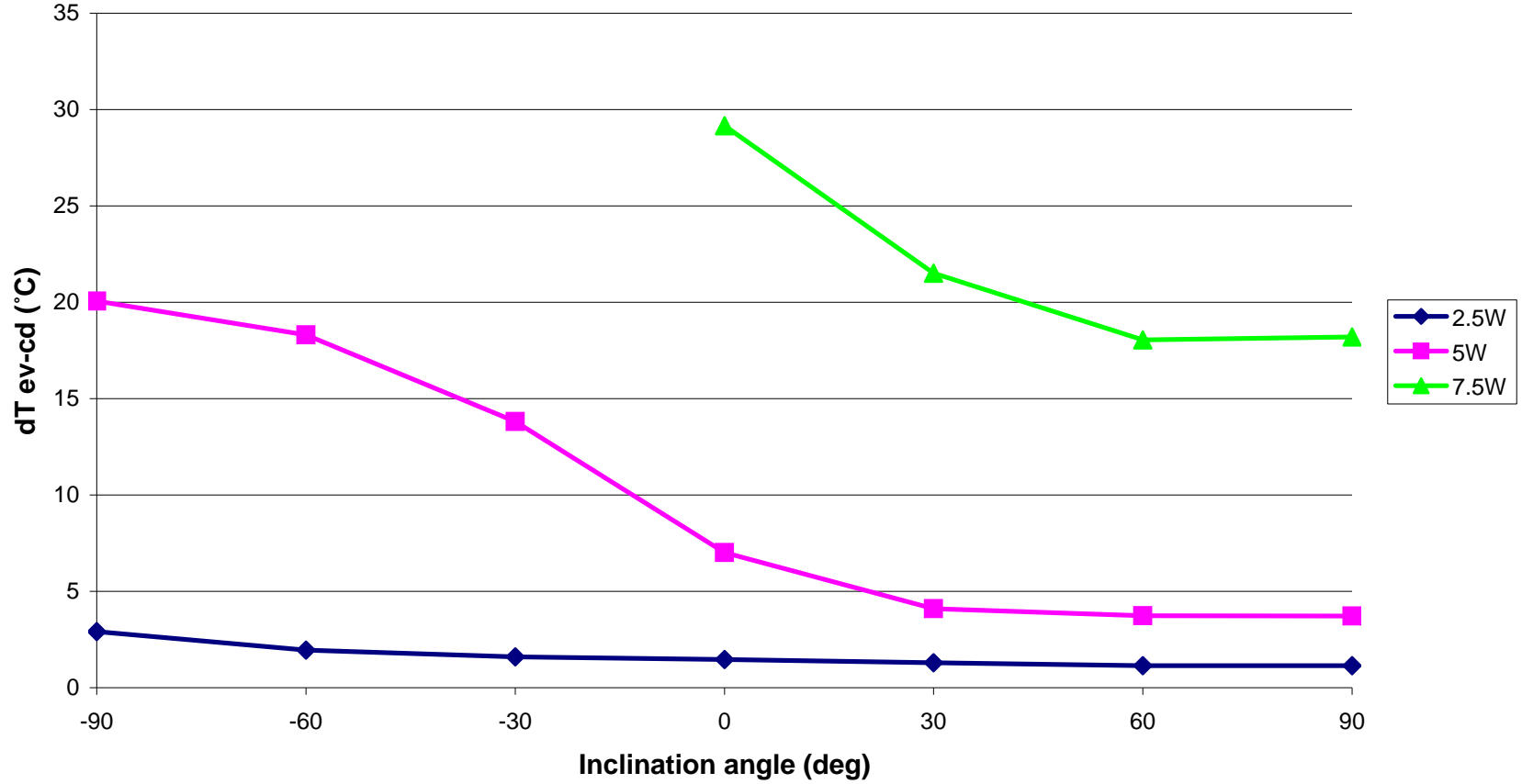


Heat Pipe Test Report

Manufacturer		Enertron				Test conditions			Test date	10/4/2011				
Wick structure/ Working fluid		Sintered Powder Metal/ Water				Effective area (m ²)		7.07E-06	Note: ev- Evaporator of heat pipe cd- Condenser of heat pipe eb- Evaporator Block cb- Condenser Block					
Pipe specification		C110 Copper 0.3mm wall thickness				Coolant temp (°C)		35						
Diameter	±0.05 mm	3				Contact length of ev/cd (mm)		50						
Length	±0.10 mm	225				At 90° the evaporator is directly below the condenser; 0° is horizontal.								
Flatten thickness	±0.05 mm	n/a												
Bend angle	±1 deg	n/a												
Inclination Angle (°)	Heat Load (W)	dT ev-cd (°C)	Thermal resistance ev-cd (°C/W)	Thermal conductivity ev-cd (W/mK)	dT eb-cb (°C)	Thermal resistance eb-cb (°C/W)	Thermal Conductivity eb-cb (W/mK)	Measured Temperature T (°C)						
								ev	cd	eb1	eb2	cb1	cb2	
90	2.5	1.14	0.45	54484	1.51	0.60	41071	36.39	35.25	36.69	36.59	35.12	35.15	
	5	3.72	0.74	33294	3.94	0.79	31394	39.40	35.69	39.54	39.56	35.59	35.62	
	7.5	18.20	2.43	10204	18.65	2.49	9954	54.21	36.01	54.43	54.45	35.72	35.85	
60	2.5	1.14	0.45	54436	1.47	0.59	42104	36.40	35.26	36.67	36.55	35.12	35.16	
	5	3.74	0.75	33080	4.08	0.82	30340	39.54	35.80	39.70	39.72	35.60	35.66	
	7.5	18.05	2.41	10289	18.51	2.47	10029	54.01	35.97	54.22	54.36	35.69	35.86	
30	2.5	1.29	0.52	48017	1.43	0.57	43434	36.54	35.25	36.72	36.57	35.16	35.28	
	5	4.10	0.82	30229	4.31	0.86	28721	39.84	35.75	39.91	40.00	35.62	35.67	
	7.5	21.51	2.87	8634	21.90	2.92	8478	57.38	35.88	57.62	57.71	35.68	35.84	
0	2.5	1.46	0.59	42306	1.59	0.64	38853	36.76	35.29	36.79	36.82	35.20	35.22	
	5	7.02	1.40	17644	7.36	1.47	16826	42.60	35.58	42.81	42.87	35.41	35.56	
	7.5	29.17	3.89	6366	29.58	3.94	6277	65.00	35.83	65.22	65.29	35.63	35.71	
-30	2.5	1.59	0.64	38829	1.64	0.66	37694	36.87	35.28	36.93	36.86	35.25	35.26	
	5	13.81	2.76	8966	14.07	2.81	8797	49.30	35.50	49.51	49.53	35.46	35.43	
-60	2.5	1.96	0.78	31611	2.13	0.85	29044	37.29	35.33	37.37	37.39	35.21	35.28	
	5	18.31	3.66	6760	18.63	3.73	6643	53.77	35.45	53.94	53.98	35.30	35.36	
-90	2.5	2.91	1.16	21269	2.98	1.19	20777	38.16	35.25	38.24	38.25	35.26	35.27	
	5	20.06	4.01	6171	20.19	4.04	6130	55.45	35.39	55.54	55.58	35.35	35.38	

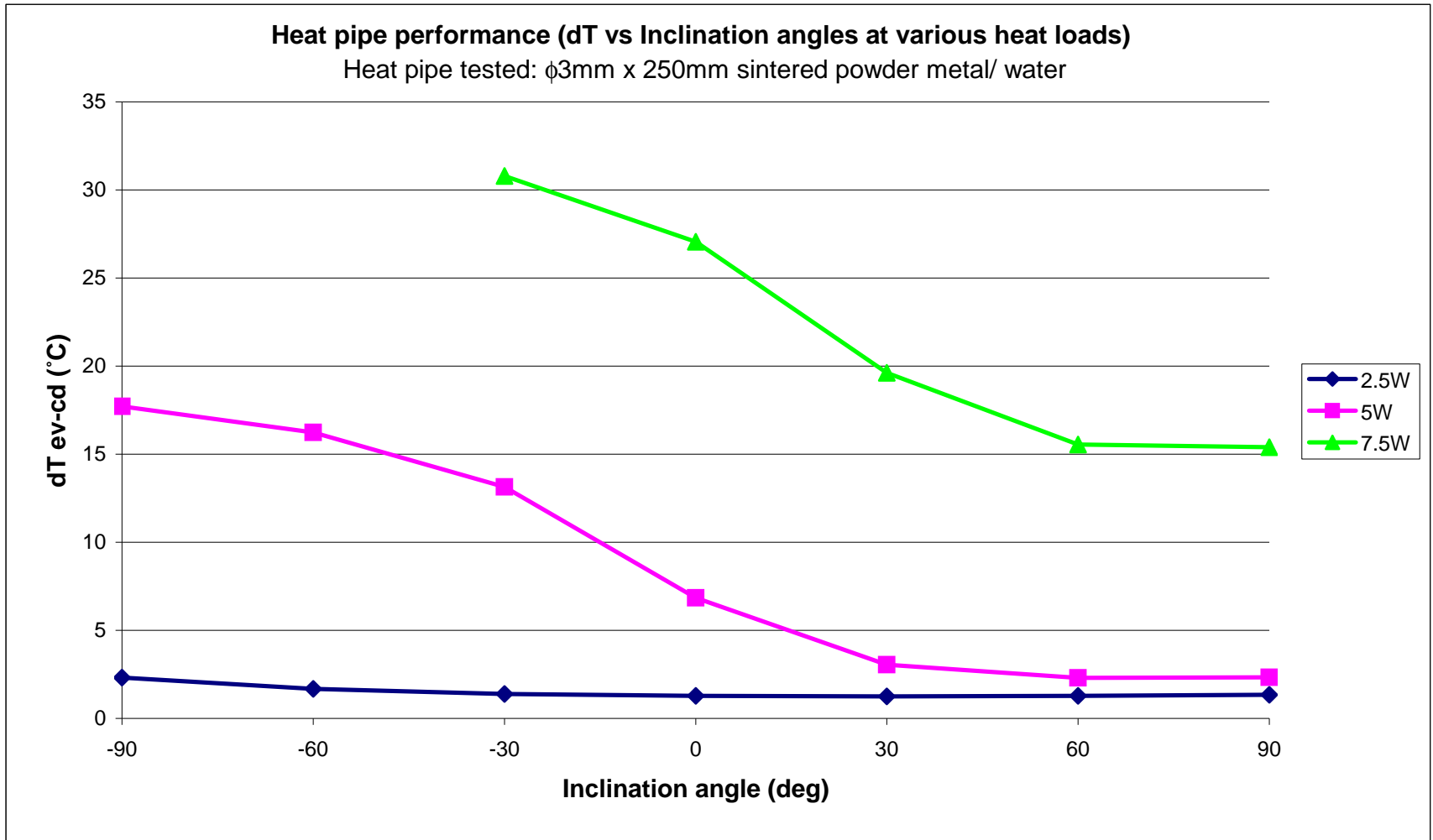
Heat pipe performance (dT vs Inclination angles at various heat loads)

Heat pipe tested: ϕ 3mm x 225mm sintered powder metal/ water



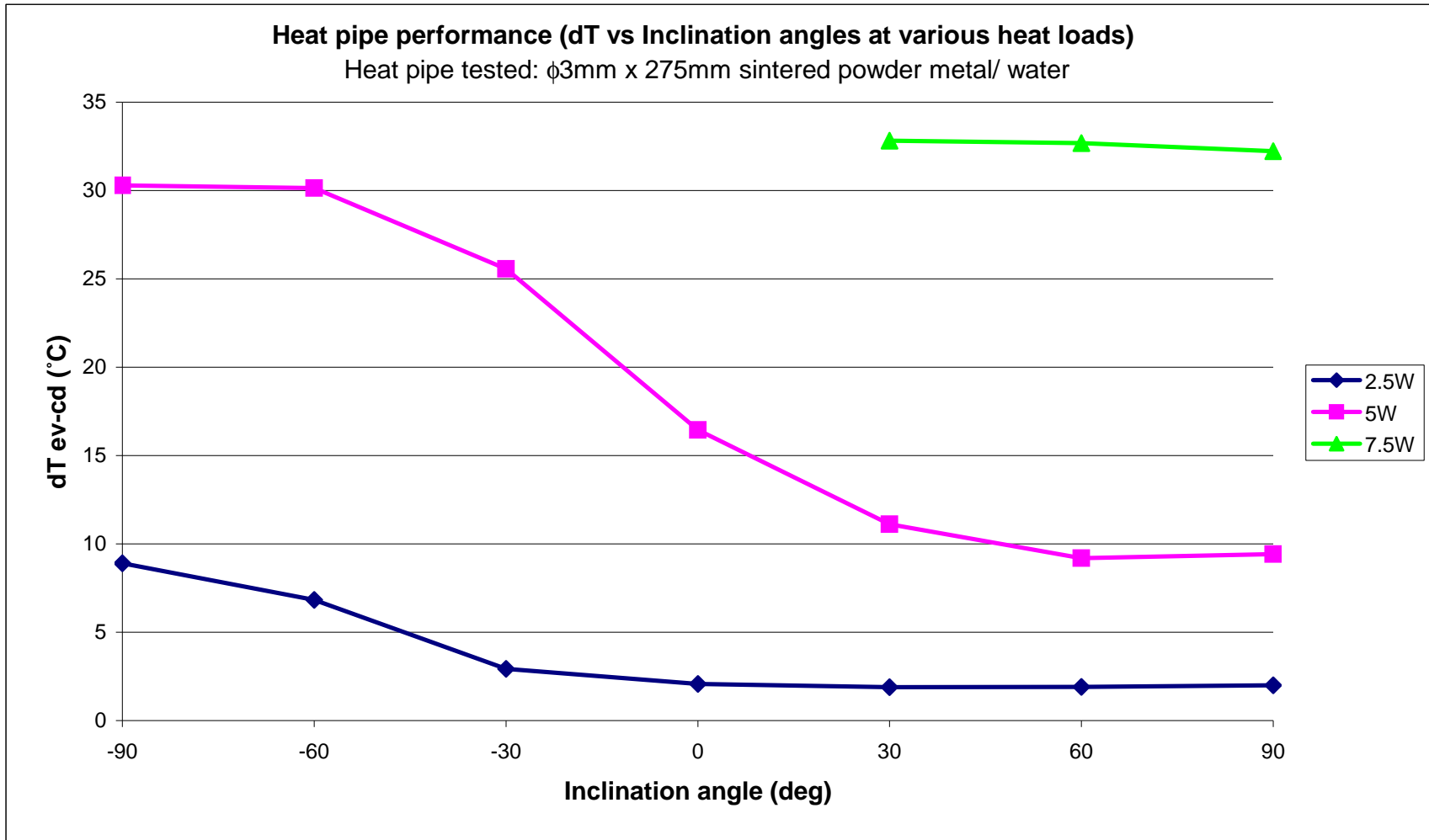
Heat Pipe Test Report

Manufacturer		Enertron				Test conditions			Test date	9/30/2011				
Wick structure/ Working fluid		Sintered Powder Metal/ Water				Effective area (m2)		7.07E-06	Note: ev- Evaporator of heat pipe cd- Condenser of heat pipe eb- Evaporator Block cb- Condenser Block					
Pipe specification		C110 Copper 0.3mm wall thickness				Coolant temp (°C)		35						
Diameter	±0.05 mm	3				Contact length of ev/cd (mm)		50						
Length	±0.10 mm	250				At 90° the evaporator is directly below the condenser; 0° is horizontal.								
Flatten thickness	±0.05 mm	n/a												
Bend angle	±1 deg	n/a												
Inclination Angle (°)	Heat Load (W)	dT ev-cd (°C)	Thermal resistance ev-cd (°C/W)	Thermal conductivity ev-cd (W/mK)	dT eb-cb (°C)	Thermal resistance eb-cb (°C/W)	Thermal Conductivity eb-cb (W/mK)	Measured Temperature T (°C)						
								ev	cd	eb1	eb2	cb1	cb2	
90	2.5	1.35	0.54	52513	1.70	0.68	41707	36.87	35.52	37.30	37.24	35.51	35.64	
	5	2.33	0.47	60613	3.13	0.63	45184	38.27	35.94	38.96	38.89	35.71	35.87	
	7.5	15.39	2.05	13787	17.93	2.39	11836	51.48	36.09	53.76	53.93	35.71	36.12	
60	2.5	1.28	0.51	55435	1.72	0.69	41245	36.87	35.59	37.24	37.21	35.48	35.54	
	5	2.31	0.46	61376	3.11	0.62	45548	38.27	35.96	38.94	38.90	35.73	35.90	
	7.5	15.54	2.07	13653	18.03	2.40	11773	51.62	36.07	53.88	54.01	35.74	36.11	
30	2.5	1.25	0.50	56408	1.64	0.66	43131	36.82	35.57	37.21	37.11	35.46	35.59	
	5	3.05	0.61	46384	3.76	0.75	37655	38.97	35.92	39.49	39.53	35.65	35.87	
	7.5	19.61	2.62	10819	22.01	2.93	9641	55.61	36.00	57.77	57.91	35.64	36.02	
0	2.5	1.28	0.51	55435	1.73	0.69	40864	36.80	35.52	37.24	37.18	35.45	35.51	
	5	6.84	1.37	20677	8.19	1.64	17272	42.68	35.84	43.89	43.98	35.59	35.89	
	7.5	27.06	3.61	7841	29.34	3.91	7233	62.91	35.85	65.00	65.08	35.53	35.87	
-30	2.5	1.39	0.56	50889	1.67	0.67	42484	36.89	35.50	37.17	37.15	35.44	35.56	
	5	13.14	2.63	10770	14.79	2.96	9568	48.85	35.71	50.32	50.41	35.47	35.70	
	7.5	30.79	4.11	6893	32.86	4.38	6459	66.50	35.71	68.42	68.50	35.46	35.75	
-60	2.5	1.68	0.67	42230	1.96	0.79	36016	37.17	35.50	37.44	37.51	35.46	35.56	
	5	16.23	3.25	8715	17.79	3.56	7954	51.85	35.62	53.33	53.35	35.43	35.68	
-90	2.5	2.32	0.93	30529	2.72	1.09	25996	37.78	35.47	38.18	38.26	35.42	35.57	
	5	17.72	3.54	7986	19.27	3.85	7340	53.32	35.61	54.76	54.76	35.37	35.61	



Heat Pipe Test Report

Manufacturer		Enertron				Test conditions			Test date	9/30/2011				
Wick structure/ Working fluid		Sintered Powder Metal/ Water				Effective area (m2)		7.07E-06	Note: ev- Evaporator of heat pipe cd- Condenser of heat pipe eb- Evaporator Block cb- Condenser Block					
Pipe specification		C110 Copper 0.3mm wall thickness				Coolant temp (°C)		35						
Diameter	±0.05 mm	3				Contact length of ev/cd (mm)		50						
Length	±0.10 mm	275				At 90° the evaporator is directly below the condenser; 0° is horizontal.								
Flatten thickness	±0.05 mm	n/a												
Bend angle	±1 deg	n/a												
Inclination Angle (°)	Heat Load (W)	dT ev-cd (°C)	Thermal resistance ev-cd (°C/W)	Thermal conductivity ev-cd (W/mK)	dT eb-cb (°C)	Thermal resistance eb-cb (°C/W)	Thermal Conductivity eb-cb (W/mK)	Measured Temperature T (°C)						
								ev	cd	eb1	eb2	cb1	cb2	
90	2.5	2.00	0.80	39888	2.31	0.93	34404	37.42	35.42	37.63	37.65	35.23	35.41	
	5	9.42	1.88	16903	9.89	1.98	16096	45.15	35.73	45.44	45.54	35.53	35.68	
	7.5	32.23	4.30	7408	33.05	4.41	7224	68.18	35.96	68.72	68.85	35.67	35.80	
60	2.5	1.90	0.76	41795	2.26	0.90	35289	37.29	35.39	37.51	37.55	35.21	35.33	
	5	9.20	1.84	17301	9.86	1.97	16135	45.04	35.84	45.45	45.54	35.55	35.70	
	7.5	32.69	4.36	7304	33.54	4.47	7117	68.70	36.01	69.24	69.36	35.66	35.85	
30	2.5	1.88	0.75	42261	2.16	0.86	36910	37.25	35.37	37.49	37.50	35.27	35.41	
	5	11.11	2.22	14324	11.69	2.34	13620	46.90	35.79	47.22	47.32	35.54	35.63	
	7.5	32.82	4.38	7275	33.66	4.49	7093	68.80	35.99	69.37	69.43	35.64	35.84	
0	2.5	2.08	0.83	38314	2.36	0.94	33691	37.44	35.36	37.69	37.70	35.29	35.37	
	5	16.45	3.29	9677	17.03	3.41	9344	52.17	35.73	52.53	52.64	35.53	35.56	
-30	2.5	2.93	1.17	27169	3.18	1.27	25048	38.20	35.27	38.43	38.52	35.27	35.32	
	5	25.56	5.11	6226	26.02	5.20	6116	61.10	35.54	61.51	61.53	35.41	35.58	
-60	2.5	6.84	2.73	11641	7.16	2.86	11120	42.16	35.32	42.36	42.44	35.22	35.27	
	5	30.14	6.03	5281	30.70	6.14	5185	65.60	35.47	66.12	66.11	35.37	35.47	
-90	2.5	8.90	3.56	8942	9.22	3.69	8629	44.18	35.28	44.48	44.47	35.20	35.31	
	5	30.29	6.06	5255	30.75	6.15	5175	65.70	35.41	66.17	66.15	35.39	35.42	



Heat Pipe Test Report

Manufacturer		Enertron				Test conditions			Test date	9/29/2011				
Wick structure/ Working fluid		Sintered Powder Metal/ Water				Effective area (m2)		7.07E-06	Note: ev- Evaporator of heat pipe cd- Condenser of heat pipe eb- Evaporator Block cb- Condenser Block					
Pipe specification		C110 Copper 0.3mm wall thickness				Coolant temp (°C)		35						
Diameter	±0.05 mm	3				Contact length of ev/cd (mm)		50						
Length	±0.10 mm	300				At 90° the evaporator is directly below the condenser; 0° is horizontal.								
Flatten thickness	±0.05 mm	n/a												
Bend angle	±1 deg	n/a												
Inclination Angle (°)	Heat Load (W)	dT ev-cd (°C)	Thermal resistance ev-cd (°C/W)	Thermal conductivity ev-cd (W/mK)	dT eb-cb (°C)	Thermal resistance eb-cb (°C/W)	Thermal Conductivity eb-cb (W/mK)	Measured Temperature T (°C)						
								ev	cd	eb1	eb2	cb1	cb2	
90	2.5	1.54	0.62	57415	1.83	0.73	48238	36.92	35.38	37.14	37.02	35.19	35.31	
	5	4.81	0.96	36803	5.53	1.11	31984	40.72	35.92	41.10	41.26	35.58	35.73	
	7.5	22.30	2.97	11896	23.09	3.08	11490	58.41	36.11	58.83	59.11	35.76	36.01	
60	2.5	1.43	0.57	61918	1.80	0.72	49067	36.83	35.40	37.10	37.02	35.18	35.33	
	5	4.61	0.92	38335	5.28	1.06	33518	40.53	35.92	40.90	41.10	35.61	35.84	
	7.5	21.64	2.88	12260	22.46	2.99	11811	57.75	36.11	58.17	58.45	35.74	35.96	
30	2.5	1.48	0.59	59945	1.76	0.70	50181	36.92	35.44	37.19	37.08	35.33	35.41	
	5	4.61	0.92	38376	5.33	1.07	33166	40.54	35.94	40.95	41.06	35.55	35.80	
	7.5	24.53	3.27	10815	25.33	3.38	10472	60.51	35.98	61.02	61.11	35.60	35.86	
0	2.5	1.54	0.61	57565	1.84	0.73	48159	36.92	35.38	37.16	37.10	35.27	35.32	
	5	13.31	2.66	13287	13.91	2.78	12718	49.04	35.73	49.40	49.48	35.42	35.64	
-30	2.5	2.27	0.91	38951	2.63	1.05	33620	37.69	35.42	37.95	37.95	35.24	35.40	
	5	22.32	4.46	7922	22.75	4.55	7775	57.92	35.59	58.21	58.24	35.41	35.55	
-60	2.5	6.43	2.57	13757	6.76	2.70	13089	41.80	35.37	42.02	42.03	35.23	35.31	
	5	25.28	5.06	6994	25.61	5.12	6904	60.78	35.50	61.06	60.99	35.36	35.46	
-90	2.5	7.57	3.03	11680	7.85	3.14	11261	42.94	35.37	43.15	43.10	35.23	35.32	
	5	25.11	5.02	7043	25.43	5.09	6954	60.60	35.49	60.79	60.75	35.30	35.38	

