

The specimen details

Diameter of bolt	d (mm)	20
Diameter of bolt hole	d <sub>0</sub> (mm)	22
End distance	e <sub>1</sub> (mm)	60
Edge distance	e <sub>2</sub> (mm)	50
Spacing between centres of bolts in the direction of load transfer	p <sub>1</sub> (mm)	60
Spacing between rows of bolts	p <sub>2</sub> (mm)	103
Thickness of end plate	t <sub>p</sub> (mm)	10
Horizontal distance of lever arm	B <sub>L</sub> (mm)	490
Vertical distance of lever arm	D <sub>L</sub> (mm)	51.7

Steel Grade		S275	S355
Dimension of Members		UB305x16 5x40	UC254x25 4x89
Depth of Section	D (mm)	303.4	260.3
Width of Section	B (mm)	165	256.3
Thickness of Web	t (mm)	6	10.3
Thickness of Flange	T (mm)	10.2	17.3
Root Radius	r (mm)	8.9	12.7
Depth between Fillets	d (mm)	265.2	200.3

Nominal Temperature

650°C

Time (minute)	Thermocouple Average(°C)	Jack Displacement (mm)	Load Angle α(°)	Beam Rotation (°)	Column Rotation (°)	Connection Rotation (°)	Force Rotation (°)	F3 from F1 (kN)	F3 from F2 (kN)	F3 Average (kN)	Tension (kN)	Shear (kN)	Moment (kN*m)
0	651.314	1.057											
1	651.312	1.072											
2	651.464	1.067											
3	651.498	1.065	56.48	0.000	0.000	0.000	57.724	-0.57	-0.62	-0.59	-0.33	-0.49	-272.59
4	651.553	2.335	56.49	0.040	0.055	-0.015	57.674	1.13	0.61	0.87	0.48	0.73	401.45
5	651.573	3.933	56.35	0.153	-0.012	0.165	57.701	1.19	0.89	1.04	0.58	0.87	477.91
6	651.536	5.532	56.16	0.319	0.018	0.301	57.728	1.00	0.86	0.93	0.52	0.77	425.74
7	651.669	6.983	56.00	0.474	0.027	0.447	57.730	1.13	1.06	1.10	0.61	0.91	501.78
8	651.709	8.603	55.81	0.644	0.018	0.626	57.750	1.38	1.03	1.20	0.68	1.00	549.92
9	651.813	10.186	55.60	0.824	0.055	0.770	57.782	1.06	1.03	1.04	0.59	0.86	476.34
10	651.839	11.673	55.75	0.915	0.016	0.899	57.537	1.45	1.05	1.25	0.70	1.03	571.16
11	651.844	13.285	55.67	1.035	0.015	1.020	57.502	1.64	1.33	1.48	0.84	1.23	677.28
12	652.043	14.756	55.54	1.164	0.016	1.148	57.495	1.70	1.43	1.57	0.89	1.29	713.76
13	652.142	16.150	55.45	1.273	0.038	1.235	57.484	2.08	1.84	1.96	1.11	1.61	890.38
14	652.174	17.745	55.29	1.419	0.042	1.377	57.489	2.45	2.14	2.30	1.31	1.89	1044.13
15	652.247	19.299	55.09	1.598	0.055	1.543	57.518	2.26	2.14	2.20	1.26	1.80	997.07
16	652.258	20.851	54.87	1.785	0.024	1.761	57.544	2.38	2.27	2.33	1.34	1.90	1052.46
17	652.347	22.233	54.68	1.944	0.027	1.917	57.578	2.63	2.47	2.55	1.47	2.08	1151.33
18	652.396	23.899	54.47	2.141	0.037	2.104	57.596	3.25	2.53	2.89	1.68	2.35	1301.34
19	652.360	25.544	54.28	2.314	0.009	2.305	57.608	3.43	2.62	3.02	1.76	2.45	1358.36
20	652.422	27.161	54.10	2.481	0.071	2.410	57.626	3.54	2.94	3.24	1.90	2.62	1453.40
21	652.434	28.686	53.92	2.644	0.046	2.598	57.640	3.80	3.06	3.43	2.02	2.77	1535.14
22	652.530	30.343	53.76	2.816	0.056	2.760	57.630	3.23	3.16	3.19	1.89	2.58	1427.16

## 20 June 2007 Web-cleat Test Result

23	652.622	31.864	53.58	2.970	0.065	2.905	57.649	3.54	3.49	3.51	2.08	2.83	1566.44
24	652.522	33.475	53.38	3.159	0.070	3.089	57.664	3.84	3.85	3.85	2.29	3.09	1711.63
25	652.642	35.046	53.25	3.276	0.087	3.189	57.681	3.96	4.28	4.12	2.47	3.30	1830.60
26	652.579	36.536	53.00	3.480	0.096	3.383	57.718	4.19	4.61	4.40	2.65	3.51	1949.28
27	652.651	38.107	52.79	3.664	0.110	3.554	57.752	4.31	5.17	4.74	2.87	3.77	2094.79
28	652.793	39.654	52.64	3.784	0.102	3.682	57.780	4.59	5.87	5.23	3.17	4.16	2306.27
29	652.804	41.177	52.48	3.934	0.117	3.817	57.793	5.26	6.99	6.12	3.73	4.85	2695.44
30	652.771	42.740	52.38	4.019	0.179	3.839	57.808	6.90	8.21	7.55	4.61	5.98	3322.46
31	652.823	44.263	52.27	4.122	0.182	3.940	57.810	7.92	9.15	8.54	5.22	6.75	3750.01
32	652.802	45.937	52.19	4.187	0.203	3.984	57.824	8.88	10.09	9.49	5.82	7.50	4163.64
33	652.946	47.435	52.03	4.357	0.216	4.141	57.812	9.84	11.06	10.45	6.43	8.24	4577.78
34	652.870	49.023	51.94	4.465	0.248	4.217	57.794	10.80	11.70	11.25	6.93	8.86	4921.54
35	652.961	50.562	51.84	4.568	0.230	4.338	57.795	11.27	12.13	11.70	7.23	9.20	5112.31
36	653.017	52.021	51.72	4.705	0.238	4.467	57.776	11.68	12.73	12.20	7.56	9.58	5324.31
37	653.046	53.672	51.60	4.850	0.260	4.590	57.756	11.84	13.12	12.48	7.75	9.78	5438.41
38	653.190	55.147	51.49	4.972	0.265	4.707	57.736	12.31	13.26	12.79	7.96	10.01	5563.67
39	653.177	56.653	51.39	5.091	0.286	4.805	57.721	12.59	13.52	13.06	8.15	10.20	5674.45
40	653.216	58.168	51.28	5.211	0.304	4.907	57.708	13.44	14.17	13.80	8.63	10.77	5990.81
41	653.226	59.731	51.16	5.347	0.287	5.060	57.693	12.97	14.08	13.52	8.48	10.53	5861.28
42	653.236	61.374	51.03	5.481	0.280	5.201	57.695	13.25	14.34	13.79	8.68	10.72	5967.66
43	653.289	62.912	50.95	5.581	0.291	5.290	57.670	13.34	14.67	14.01	8.82	10.88	6054.11
44	653.340	64.355	50.84	5.709	0.287	5.422	57.652	13.19	14.29	13.74	8.68	10.65	5931.07
45	653.288	65.854	50.73	5.825	0.280	5.545	57.651	13.22	14.71	13.96	8.84	10.81	6018.76
46	653.314	67.401	50.58	5.957	0.279	5.678	57.669	13.77	14.95	14.36	9.12	11.09	6176.98
47	653.333	68.860	50.49	6.060	0.284	5.776	57.655	13.86	14.89	14.37	9.14	11.09	6176.24
48	653.415	70.302	50.37	6.175	0.280	5.895	57.658	13.69	15.12	14.41	9.19	11.10	6182.06
49	653.398	71.776	50.26	6.272	0.283	5.989	57.674	14.42	15.54	14.98	9.58	11.52	6418.74
50	653.542	73.404	50.10	6.431	0.287	6.144	57.675	14.62	15.89	15.26	9.79	11.70	6524.08
51	653.574	74.887	49.97	6.563	0.307	6.256	57.670	15.00	16.27	15.64	10.06	11.97	6675.06
52	653.519	76.369	49.83	6.689	0.301	6.388	57.682	15.26	16.49	15.88	10.24	12.13	6765.39

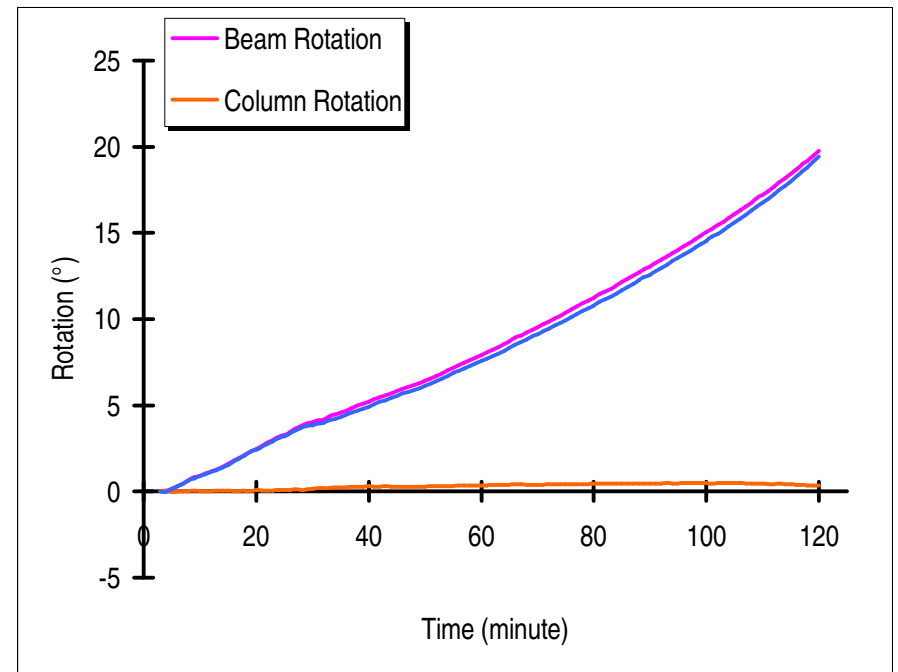
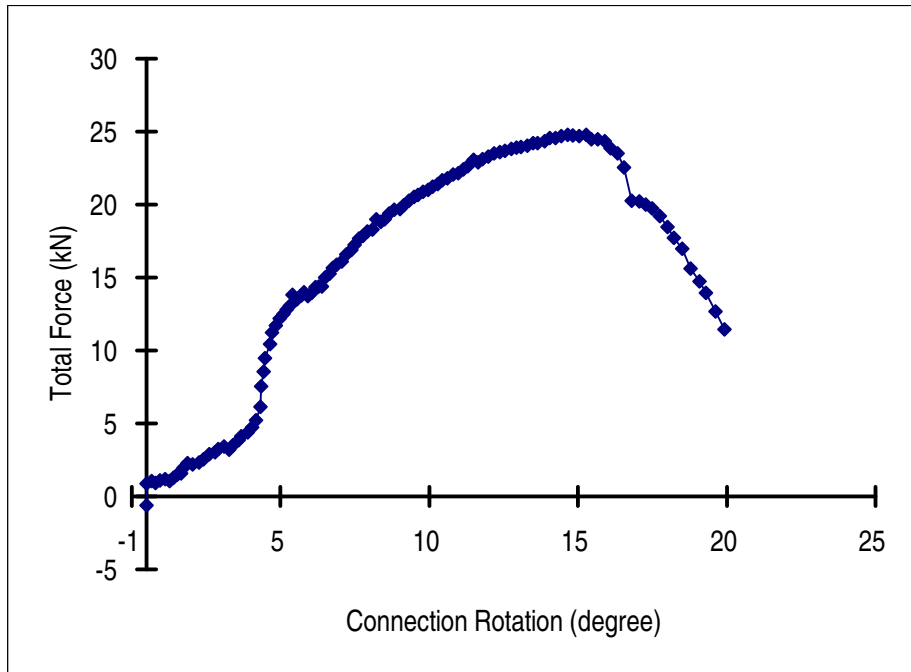
## 20 June 2007 Web-cleat Test Result

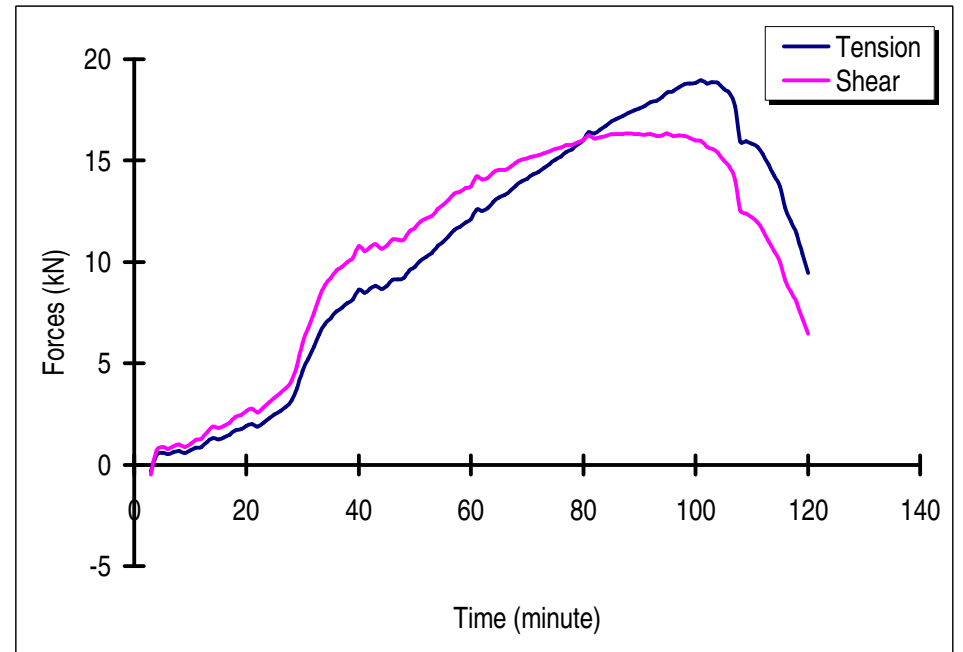
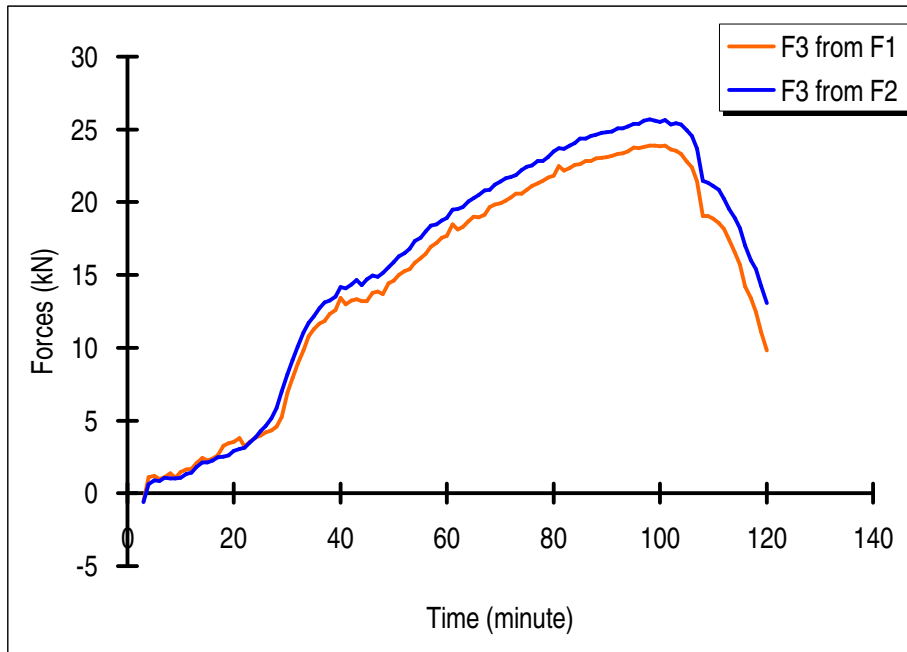
53	653.570	78.004	49.67	6.859	0.308	6.551	57.675	15.41	16.80	16.11	10.42	12.28	6848.62
54	653.544	79.518	49.51	7.017	0.309	6.708	57.672	15.84	17.33	16.59	10.77	12.61	7038.75
55	653.602	81.065	49.36	7.185	0.313	6.872	57.662	16.16	17.57	16.87	10.99	12.80	7143.16
56	653.632	82.651	49.22	7.333	0.338	6.995	57.651	16.48	18.00	17.24	11.26	13.05	7287.61
57	653.607	84.343	49.08	7.470	0.342	7.128	57.657	16.95	18.40	17.68	11.58	13.36	7458.35
58	653.833	85.882	48.92	7.634	0.362	7.272	57.652	17.21	18.48	17.85	11.73	13.45	7515.06
59	653.759	87.509	48.78	7.779	0.354	7.425	57.647	17.58	18.72	18.15	11.96	13.65	7627.70
60	653.783	89.063	48.63	7.924	0.342	7.582	57.649	17.70	18.90	18.30	12.10	13.73	7675.81
61	653.912	90.778	48.48	8.072	0.362	7.710	57.654	18.49	19.48	18.98	12.58	14.21	7944.45
62	653.825	92.366	48.31	8.235	0.372	7.863	57.661	18.13	19.53	18.83	12.52	14.06	7863.22
63	653.967	93.905	48.15	8.376	0.381	7.995	57.673	18.31	19.67	18.99	12.67	14.15	7913.19
64	653.959	95.627	47.99	8.537	0.391	8.146	57.676	18.72	20.06	19.39	12.97	14.40	8060.37
65	653.948	97.133	47.80	8.711	0.384	8.327	57.689	19.00	20.29	19.64	13.19	14.55	8146.67
66	653.985	98.833	47.58	8.921	0.411	8.510	57.700	18.94	20.49	19.71	13.30	14.55	8150.48
67	653.971	100.243	47.43	9.052	0.403	8.649	57.725	19.15	20.80	19.98	13.52	14.71	8240.96
68	654.037	101.974	47.28	9.204	0.386	8.818	57.721	19.65	20.87	20.26	13.75	14.88	8341.03
69	654.119	103.570	47.08	9.375	0.392	8.983	57.745	19.85	21.23	20.54	13.99	15.04	8432.27
70	654.129	105.124	46.94	9.519	0.394	9.125	57.745	19.92	21.42	20.67	14.11	15.10	8466.72
71	654.196	106.736	46.75	9.692	0.398	9.294	57.762	20.12	21.64	20.88	14.31	15.21	8531.00
72	654.150	108.146	46.56	9.870	0.415	9.455	57.774	20.32	21.73	21.03	14.46	15.27	8568.66
73	654.105	109.726	46.37	10.034	0.414	9.620	57.802	20.58	21.87	21.22	14.64	15.36	8623.03
74	654.138	111.247	46.18	10.192	0.412	9.780	57.828	20.61	22.24	21.42	14.83	15.46	8681.34
75	654.115	112.793	45.99	10.361	0.426	9.935	57.854	20.86	22.45	21.66	15.05	15.58	8751.59
76	654.246	114.414	45.78	10.547	0.437	10.110	57.880	21.10	22.52	21.81	15.21	15.63	8786.19
77	654.172	116.063	45.58	10.737	0.427	10.310	57.881	21.30	22.81	22.06	15.44	15.76	8860.95
78	654.210	117.609	45.38	10.912	0.436	10.476	57.909	21.48	22.82	22.15	15.56	15.76	8869.55
79	654.378	119.181	45.21	11.066	0.426	10.640	57.928	21.71	23.12	22.41	15.79	15.91	8953.18
80	654.177	120.559	44.98	11.244	0.459	10.785	57.978	21.82	23.48	22.65	16.02	16.01	9016.91
81	654.257	122.139	44.76	11.434	0.445	10.989	58.005	22.46	23.71	23.09	16.39	16.26	9159.37
82	654.314	123.725	44.57	11.594	0.458	11.136	58.039	22.17	23.66	22.91	16.32	16.08	9063.67

## 20 June 2007 Web-cleat Test Result

83	654.311	125.345	44.38	11.746	0.459	11.287	58.072	22.34	23.87	23.10	16.51	16.16	9113.42
84	654.361	126.876	44.15	11.953	0.467	11.486	58.103	22.56	24.04	23.30	16.72	16.23	9156.06
85	654.426	128.548	43.94	12.136	0.465	11.671	58.130	22.63	24.39	23.51	16.93	16.31	9207.80
86	654.560	130.039	43.70	12.322	0.460	11.862	58.180	22.82	24.39	23.60	17.06	16.31	9210.55
87	654.491	131.715	43.47	12.519	0.471	12.048	58.211	22.82	24.56	23.69	17.19	16.30	9210.60
88	654.437	133.341	43.24	12.719	0.458	12.261	58.241	23.02	24.64	23.83	17.36	16.32	9231.07
89	654.495	134.953	43.02	12.892	0.459	12.433	58.287	23.06	24.78	23.92	17.48	16.32	9231.95
90	654.486	136.620	42.84	13.043	0.467	12.576	58.323	23.10	24.82	23.96	17.57	16.29	9222.46
91	654.528	138.239	42.58	13.252	0.454	12.798	58.368	23.19	24.87	24.03	17.69	16.26	9209.70
92	654.547	139.906	42.35	13.448	0.465	12.983	58.404	23.33	25.09	24.21	17.89	16.31	9244.52
93	654.423	141.363	42.10	13.639	0.489	13.150	58.468	23.36	25.06	24.21	17.96	16.23	9203.02
94	654.513	143.111	41.85	13.837	0.466	13.371	58.514	23.49	25.19	24.34	18.13	16.24	9216.65
95	654.493	144.796	41.62	14.026	0.476	13.550	58.556	23.78	25.38	24.58	18.37	16.32	9269.51
96	654.588	146.253	41.36	14.242	0.495	13.747	58.603	23.71	25.40	24.55	18.43	16.22	9218.66
97	654.643	147.767	41.11	14.431	0.492	13.939	58.666	23.82	25.61	24.71	18.62	16.25	9239.38
98	654.514	149.386	40.85	14.640	0.489	14.151	58.716	23.88	25.70	24.79	18.75	16.21	9226.96
99	654.640	150.892	40.61	14.811	0.477	14.334	58.779	23.89	25.60	24.75	18.79	16.11	9172.15
100	654.680	152.511	40.33	15.036	0.493	14.543	58.832	23.85	25.53	24.69	18.82	15.98	9106.32
101	654.689	154.194	40.07	15.247	0.472	14.775	58.884	23.91	25.65	24.78	18.96	15.95	9096.38
102	654.705	155.790	39.82	15.444	0.490	14.954	58.943	23.62	25.32	24.47	18.80	15.67	8943.52
103	654.625	157.409	39.55	15.648	0.492	15.156	59.000	23.54	25.42	24.48	18.87	15.59	8902.80
104	654.664	159.060	39.28	15.876	0.485	15.391	59.051	23.31	25.34	24.32	18.83	15.40	8801.29
105	654.784	160.735	39.00	16.081	0.484	15.597	59.126	22.78	24.93	23.85	18.54	15.01	8588.13
106	654.694	162.320	38.73	16.308	0.477	15.831	59.169	22.41	24.57	23.49	18.32	14.69	8413.89
107	654.711	163.915	38.46	16.517	0.470	16.047	59.226	21.43	23.66	22.55	17.65	14.02	8036.52
108	654.707	165.550	38.16	16.770	0.464	16.306	59.269	19.03	21.47	20.25	15.92	12.51	7178.50
109	654.916	167.081	37.87	17.009	0.456	16.553	59.326	19.07	21.34	20.20	15.95	12.40	7121.08
110	654.838	168.820	37.61	17.221	0.451	16.770	59.376	18.88	21.11	19.99	15.84	12.20	7012.09
111	654.828	170.303	37.33	17.435	0.437	16.998	59.434	18.57	20.87	19.72	15.68	11.96	6880.81
112	654.844	171.913	37.02	17.687	0.430	17.257	59.495	18.18	20.25	19.22	15.34	11.57	6662.40

113	654.913	173.421	36.70	17.944	0.440	17.504	59.555	17.43	19.53	18.48	14.82	11.04	6367.13
114	654.865	174.974	36.42	18.169	0.435	17.734	59.610	16.55	18.90	17.73	14.26	10.52	6073.25
115	654.848	176.739	36.08	18.420	0.423	17.997	59.698	15.72	18.21	16.96	13.71	9.99	5772.90
116	654.755	178.428	35.75	18.681	0.390	18.291	59.770	14.21	17.03	15.62	12.67	9.12	5278.26
117	654.876	180.080	35.39	18.969	0.388	18.581	59.840	13.41	16.04	14.72	12.00	8.53	4940.08
118	654.879	181.738	35.13	19.157	0.362	18.795	59.911	12.46	15.42	13.94	11.40	8.02	4650.46
119	655.003	183.477	34.76	19.470	0.347	19.123	59.973	11.08	14.25	12.66	10.40	7.22	4192.35
120	654.990	185.192	34.43	19.760	0.328	19.432	60.011	9.81	13.09	11.45	9.44	6.47	3763.56







Photographs after Test

