

Appendix: Average number of detected markers

This appendix contains average number of detected markers for given visibility level for each marker detector and each combination of parameters of image enhancing algorithms.

Original video without processing, ARUco detector

Visibility level	Visibility range	<i>No parameter</i>
0	0.0 – 0.2	0.000
1	0.2 – 0.4	0.059
2	0.4 – 0.6	0.142
3	0.6 – 0.8	0.179
4	0.8 – 1.0	0.517
5	1.0 – 1.2	0.747
6	1.2 – 1.4	1.040
7	1.4 – 1.6	1.127
8	1.6 – 1.8	1.138
9	1.8 – 2.0	1.576
10	2.0 – 2.2	1.643
11	2.2 – 2.4	1.733
12	2.4 – 2.6	2.022
13	2.6 – 2.8	2.314
14	2.8 – 3.0	2.674
15	3.0 – 3.2	2.749
16	3.2 – 3.4	3.270
17	3.4 – 3.6	3.360
18	3.6 – 3.8	2.884
19	3.8 – 4.0	3.247
20	4.0 – 4.2	3.736
21	4.2 – 4.4	3.518
22	4.4 – 4.6	3.364
23	4.6 – 4.8	1.798
24	4.8 – 5.0	2.163
25	5.0 – 5.2	4.737
26	5.2 – 5.4	5.632
27	5.4 – 5.6	5.581
28	5.6 – 5.8	4.871
29	5.8 – 6.0	5.981

Video processed with CLAHE, ARUco detector

Visibility level	Visibility range	Clip limit					
		1	2	3	4	5	6
0	0.0 – 0.2	0.001	0.001	0.000	0.001	0.002	0.002
1	0.2 – 0.4	0.017	0.042	0.034	0.051	0.068	0.110
2	0.4 – 0.6	0.189	0.179	0.132	0.151	0.170	0.151
3	0.6 – 0.8	0.333	0.359	0.321	0.256	0.359	0.269
4	0.8 – 1.0	0.578	0.543	0.526	0.500	0.534	0.466
5	1.0 – 1.2	0.822	0.740	0.692	0.644	0.575	0.568
6	1.2 – 1.4	1.026	0.887	0.722	0.649	0.576	0.530
7	1.4 – 1.6	1.315	1.117	0.909	0.670	0.497	0.416
8	1.6 – 1.8	1.385	1.167	1.017	0.833	0.644	0.529
9	1.8 – 2.0	1.559	1.412	1.394	1.241	1.106	1.029
10	2.0 – 2.2	1.565	1.470	1.399	1.357	1.286	1.232
11	2.2 – 2.4	1.851	1.782	1.644	1.545	1.564	1.426
12	2.4 – 2.6	2.118	2.074	1.904	1.853	1.566	1.471
13	2.6 – 2.8	2.321	2.296	2.069	1.975	1.818	1.673
14	2.8 – 3.0	2.651	2.569	2.495	2.408	2.170	1.982
15	3.0 – 3.2	2.920	2.938	3.065	3.051	2.996	2.884
16	3.2 – 3.4	3.224	3.232	3.477	3.527	3.316	3.017
17	3.4 – 3.6	3.408	3.550	3.746	3.855	3.781	3.592
18	3.6 – 3.8	2.870	3.087	3.589	3.797	3.778	3.715
19	3.8 – 4.0	3.178	3.470	3.769	3.911	3.838	3.692
20	4.0 – 4.2	3.639	3.627	3.748	3.739	3.739	3.732
21	4.2 – 4.4	3.142	2.539	2.383	2.206	2.106	2.156
22	4.4 – 4.6	3.451	3.251	3.036	2.841	2.738	2.718
23	4.6 – 4.8	3.295	4.389	4.316	4.244	4.244	4.212
24	4.8 – 5.0	4.140	5.041	4.942	4.785	4.669	4.680
25	5.0 – 5.2	5.101	5.107	4.956	4.855	4.786	4.699
26	5.2 – 5.4	5.789	5.634	5.375	5.196	5.044	4.952
27	5.4 – 5.6	5.975	5.971	5.867	5.708	5.584	5.435
28	5.6 – 5.8	5.882	5.892	5.828	5.667	5.538	5.280
29	5.8 – 6.0	5.994	5.997	5.992	5.971	5.947	5.918

**Video processed with Deblurring with $\sigma = 1.0$, ARUco
detector**

Visibility level	Visibility range	Weight w			
		1.0	2.0	3.0	4.0
0	0.0 – 0.2	0.001	0.001	0.002	0.003
1	0.2 – 0.4	0.110	0.110	0.127	0.136
2	0.4 – 0.6	0.245	0.255	0.292	0.340
3	0.6 – 0.8	0.526	0.487	0.551	0.474
4	0.8 – 1.0	0.681	0.802	0.819	0.845
5	1.0 – 1.2	0.973	1.110	1.123	1.034
6	1.2 – 1.4	1.185	1.172	1.258	1.099
7	1.4 – 1.6	1.198	1.208	1.203	1.162
8	1.6 – 1.8	1.293	1.460	1.575	1.592
9	1.8 – 2.0	1.676	1.759	1.806	1.753
10	2.0 – 2.2	1.780	1.821	1.851	1.857
11	2.2 – 2.4	1.861	1.970	2.010	1.911
12	2.4 – 2.6	2.206	2.228	2.206	2.235
13	2.6 – 2.8	2.465	2.478	2.459	2.453
14	2.8 – 3.0	2.752	2.743	2.688	2.638
15	3.0 – 3.2	2.655	2.687	2.680	2.629
16	3.2 – 3.4	3.131	2.996	2.886	2.848
17	3.4 – 3.6	3.350	3.309	3.225	3.145
18	3.6 – 3.8	2.947	2.981	2.923	2.908
19	3.8 – 4.0	3.292	3.287	3.275	3.259
20	4.0 – 4.2	3.777	3.786	3.791	3.786
21	4.2 – 4.4	3.525	3.511	3.468	3.468
22	4.4 – 4.6	3.303	3.221	3.149	3.154
23	4.6 – 4.8	1.834	1.819	1.834	1.819
24	4.8 – 5.0	2.297	2.297	2.285	2.308
25	5.0 – 5.2	4.742	4.737	4.726	4.715
26	5.2 – 5.4	5.472	5.368	5.278	5.249
27	5.4 – 5.6	5.584	5.495	5.429	5.337
28	5.6 – 5.8	5.011	5.097	5.065	5.000
29	5.8 – 6.0	5.978	5.978	5.970	5.954

**Video processed with Deblurring with $\sigma = 2.0$, ARUco
detector**

Visibility level	Visibility range	Weight w			
		1.0	2.0	3.0	4.0
0	0.0 – 0.2	0.001	0.001	0.001	0.002
1	0.2 – 0.4	0.127	0.169	0.220	0.212
2	0.4 – 0.6	0.217	0.340	0.387	0.425
3	0.6 – 0.8	0.500	0.538	0.628	0.667
4	0.8 – 1.0	0.750	1.009	1.043	1.060
5	1.0 – 1.2	1.096	1.205	1.226	1.226
6	1.2 – 1.4	1.252	1.291	1.391	1.437
7	1.4 – 1.6	1.396	1.569	1.726	1.873
8	1.6 – 1.8	1.575	1.943	2.006	2.011
9	1.8 – 2.0	1.788	2.029	2.065	2.059
10	2.0 – 2.2	1.857	2.012	2.089	2.101
11	2.2 – 2.4	2.079	2.317	2.307	2.317
12	2.4 – 2.6	2.287	2.485	2.434	2.493
13	2.6 – 2.8	2.572	2.547	2.597	2.591
14	2.8 – 3.0	2.780	2.812	2.826	2.826
15	3.0 – 3.2	2.760	2.840	2.818	2.825
16	3.2 – 3.4	3.135	2.979	2.899	2.890
17	3.4 – 3.6	3.360	3.357	3.341	3.318
18	3.6 – 3.8	3.058	3.063	3.111	3.116
19	3.8 – 4.0	3.300	3.348	3.356	3.377
20	4.0 – 4.2	3.800	3.805	3.819	3.853
21	4.2 – 4.4	3.617	3.752	3.858	3.915
22	4.4 – 4.6	3.369	3.405	3.538	3.887
23	4.6 – 4.8	1.995	2.337	2.813	3.378
24	4.8 – 5.0	2.535	3.035	3.622	4.163
25	5.0 – 5.2	4.893	5.101	5.241	5.345
26	5.2 – 5.4	5.598	5.603	5.634	5.683
27	5.4 – 5.6	5.683	5.752	5.759	5.708
28	5.6 – 5.8	5.516	5.774	5.914	5.849
29	5.8 – 6.0	5.990	5.993	5.972	5.697

**Video processed with Deblurring with $\sigma = 3.0$, ARUco
detector**

Visibility level	Visibility range	Weight w			
		1.0	2.0	3.0	4.0
0	0.0 – 0.2	0.002	0.003	0.003	0.004
1	0.2 – 0.4	0.153	0.237	0.254	0.339
2	0.4 – 0.6	0.236	0.311	0.434	0.538
3	0.6 – 0.8	0.487	0.577	0.654	0.667
4	0.8 – 1.0	0.759	0.940	0.983	1.069
5	1.0 – 1.2	1.048	1.171	1.281	1.329
6	1.2 – 1.4	1.219	1.331	1.503	1.563
7	1.4 – 1.6	1.492	1.711	1.909	1.929
8	1.6 – 1.8	1.580	1.954	2.034	2.029
9	1.8 – 2.0	1.765	2.029	2.100	2.088
10	2.0 – 2.2	1.923	2.024	2.060	2.167
11	2.2 – 2.4	2.079	2.347	2.416	2.366
12	2.4 – 2.6	2.287	2.529	2.493	2.515
13	2.6 – 2.8	2.516	2.560	2.648	2.686
14	2.8 – 3.0	2.775	2.849	2.872	2.963
15	3.0 – 3.2	2.775	2.833	2.851	2.909
16	3.2 – 3.4	3.105	2.987	2.987	3.068
17	3.4 – 3.6	3.373	3.418	3.418	3.486
18	3.6 – 3.8	3.014	3.072	3.101	3.237
19	3.8 – 4.0	3.320	3.352	3.409	3.567
20	4.0 – 4.2	3.796	3.815	3.843	3.933
21	4.2 – 4.4	3.759	3.823	4.014	4.312
22	4.4 – 4.6	3.441	3.703	4.026	4.421
23	4.6 – 4.8	2.269	3.145	3.684	4.363
24	4.8 – 5.0	2.959	3.884	4.442	4.907
25	5.0 – 5.2	5.038	5.260	5.441	5.559
26	5.2 – 5.4	5.692	5.770	5.772	5.821
27	5.4 – 5.6	5.797	5.860	5.879	5.876
28	5.6 – 5.8	5.763	5.914	5.882	5.903
29	5.8 – 6.0	5.993	5.994	5.992	5.968

**Video processed with Deblurring with $\sigma = 4.0$, ARUco
detector**

Visibility level	Visibility range	Weight w			
		1.0	2.0	3.0	4.0
0	0.0 – 0.2	0.002	0.002	0.005	0.006
1	0.2 – 0.4	0.144	0.203	0.280	0.356
2	0.4 – 0.6	0.236	0.377	0.528	0.642
3	0.6 – 0.8	0.449	0.628	0.718	0.756
4	0.8 – 1.0	0.759	0.914	1.052	1.095
5	1.0 – 1.2	1.034	1.123	1.185	1.253
6	1.2 – 1.4	1.205	1.450	1.477	1.517
7	1.4 – 1.6	1.614	1.797	1.878	1.888
8	1.6 – 1.8	1.621	1.862	1.966	2.063
9	1.8 – 2.0	1.724	2.035	2.065	2.088
10	2.0 – 2.2	1.911	2.071	2.185	2.185
11	2.2 – 2.4	2.079	2.416	2.465	2.436
12	2.4 – 2.6	2.331	2.456	2.566	2.610
13	2.6 – 2.8	2.535	2.610	2.774	2.843
14	2.8 – 3.0	2.807	2.885	2.959	3.050
15	3.0 – 3.2	2.858	2.909	2.978	3.055
16	3.2 – 3.4	3.110	3.051	3.105	3.215
17	3.4 – 3.6	3.399	3.450	3.550	3.691
18	3.6 – 3.8	3.039	3.126	3.285	3.527
19	3.8 – 4.0	3.340	3.409	3.611	3.883
20	4.0 – 4.2	3.808	3.855	3.948	4.090
21	4.2 – 4.4	3.801	4.000	4.418	4.858
22	4.4 – 4.6	3.564	4.133	4.600	4.974
23	4.6 – 4.8	2.653	3.731	4.679	5.373
24	4.8 – 5.0	3.331	4.541	5.134	5.558
25	5.0 – 5.2	5.082	5.334	5.512	5.540
26	5.2 – 5.4	5.751	5.806	5.755	5.746
27	5.4 – 5.6	5.873	5.914	5.927	5.883
28	5.6 – 5.8	5.839	5.892	5.860	5.817
29	5.8 – 6.0	5.993	5.997	5.992	5.970

**Video processed with White balancing with $black = 0$,
ARUco detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.002	0.001	0.002	0.001
1	0.2 – 0.4	0.246	0.271	0.305	0.195
2	0.4 – 0.6	0.500	0.481	0.500	0.406
3	0.6 – 0.8	0.615	0.628	0.667	0.641
4	0.8 – 1.0	0.810	0.853	0.879	0.750
5	1.0 – 1.2	1.130	1.137	1.110	1.068
6	1.2 – 1.4	1.384	1.371	1.371	1.384
7	1.4 – 1.6	1.690	1.746	1.751	1.680
8	1.6 – 1.8	1.822	1.845	1.920	1.649
9	1.8 – 2.0	1.812	1.888	1.888	1.712
10	2.0 – 2.2	2.143	2.149	2.196	1.940
11	2.2 – 2.4	2.317	2.267	2.257	2.218
12	2.4 – 2.6	2.551	2.529	2.493	2.331
13	2.6 – 2.8	2.667	2.679	2.686	2.547
14	2.8 – 3.0	2.885	2.890	2.908	2.844
15	3.0 – 3.2	2.891	2.862	2.891	2.905
16	3.2 – 3.4	2.958	2.932	2.937	3.232
17	3.4 – 3.6	3.540	3.572	3.556	3.563
18	3.6 – 3.8	3.415	3.401	3.377	3.213
19	3.8 – 4.0	3.692	3.713	3.672	3.583
20	4.0 – 4.2	3.983	3.988	3.974	3.929
21	4.2 – 4.4	4.184	4.177	4.241	4.461
22	4.4 – 4.6	4.564	4.538	4.508	4.564
23	4.6 – 4.8	4.839	4.788	4.756	4.487
24	4.8 – 5.0	5.297	5.262	5.227	5.017
25	5.0 – 5.2	5.077	5.077	5.096	5.195
26	5.2 – 5.4	5.245	5.247	5.305	5.881
27	5.4 – 5.6	5.784	5.790	5.810	5.978
28	5.6 – 5.8	5.839	5.849	5.892	5.892
29	5.8 – 6.0	5.997	5.997	5.996	5.996

**Video processed with White balancing with $black = 1$,
ARUco detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.003	0.004	0.004	0.002
1	0.2 – 0.4	0.364	0.381	0.381	0.254
2	0.4 – 0.6	0.566	0.575	0.585	0.500
3	0.6 – 0.8	0.859	0.795	0.859	0.718
4	0.8 – 1.0	0.966	1.000	0.957	0.871
5	1.0 – 1.2	1.205	1.205	1.219	1.164
6	1.2 – 1.4	1.490	1.417	1.470	1.404
7	1.4 – 1.6	1.721	1.711	1.766	1.736
8	1.6 – 1.8	1.908	1.885	1.943	1.718
9	1.8 – 2.0	1.871	2.006	2.018	1.771
10	2.0 – 2.2	2.167	2.226	2.250	2.048
11	2.2 – 2.4	2.436	2.426	2.406	2.257
12	2.4 – 2.6	2.691	2.632	2.596	2.390
13	2.6 – 2.8	2.780	2.780	2.792	2.610
14	2.8 – 3.0	3.023	3.014	3.014	2.899
15	3.0 – 3.2	2.978	2.971	2.931	2.967
16	3.2 – 3.4	3.148	3.114	3.080	3.287
17	3.4 – 3.6	3.656	3.646	3.678	3.637
18	3.6 – 3.8	3.657	3.609	3.594	3.333
19	3.8 – 4.0	3.858	3.822	3.818	3.704
20	4.0 – 4.2	4.090	4.078	4.074	3.995
21	4.2 – 4.4	4.333	4.340	4.397	4.624
22	4.4 – 4.6	4.744	4.764	4.713	4.846
23	4.6 – 4.8	5.067	5.083	5.104	4.762
24	4.8 – 5.0	5.436	5.430	5.430	5.186
25	5.0 – 5.2	5.129	5.110	5.123	5.197
26	5.2 – 5.4	5.218	5.228	5.276	5.780
27	5.4 – 5.6	5.743	5.765	5.784	5.981
28	5.6 – 5.8	5.903	5.882	5.882	5.914
29	5.8 – 6.0	5.997	5.999	5.996	5.994

**Video processed with White balancing with $black = 2$,
ARUco detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.004	0.003	0.005	0.004
1	0.2 – 0.4	0.364	0.398	0.381	0.297
2	0.4 – 0.6	0.566	0.538	0.604	0.557
3	0.6 – 0.8	0.923	0.910	0.936	0.782
4	0.8 – 1.0	0.991	0.983	0.983	0.914
5	1.0 – 1.2	1.151	1.151	1.199	1.219
6	1.2 – 1.4	1.483	1.450	1.470	1.424
7	1.4 – 1.6	1.726	1.777	1.787	1.772
8	1.6 – 1.8	1.937	1.920	1.994	1.741
9	1.8 – 2.0	1.947	2.006	2.047	1.806
10	2.0 – 2.2	2.262	2.310	2.315	2.077
11	2.2 – 2.4	2.495	2.465	2.525	2.238
12	2.4 – 2.6	2.757	2.640	2.691	2.463
13	2.6 – 2.8	2.805	2.767	2.799	2.610
14	2.8 – 3.0	3.078	3.060	3.046	2.931
15	3.0 – 3.2	3.015	2.985	3.018	2.971
16	3.2 – 3.4	3.156	3.114	3.097	3.312
17	3.4 – 3.6	3.669	3.672	3.646	3.646
18	3.6 – 3.8	3.715	3.715	3.643	3.406
19	3.8 – 4.0	3.935	3.899	3.899	3.753
20	4.0 – 4.2	4.114	4.105	4.078	4.024
21	4.2 – 4.4	4.376	4.440	4.447	4.773
22	4.4 – 4.6	4.810	4.800	4.723	4.918
23	4.6 – 4.8	5.145	5.130	5.145	4.855
24	4.8 – 5.0	5.459	5.465	5.483	5.331
25	5.0 – 5.2	5.167	5.118	5.137	5.200
26	5.2 – 5.4	5.232	5.206	5.252	5.690
27	5.4 – 5.6	5.695	5.717	5.756	5.965
28	5.6 – 5.8	5.871	5.860	5.882	5.914
29	5.8 – 6.0	5.997	5.996	5.997	5.993

**Video processed with White balancing with $black = 3$,
ARUco detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.004	0.004	0.005	0.004
1	0.2 – 0.4	0.390	0.441	0.424	0.339
2	0.4 – 0.6	0.632	0.623	0.613	0.566
3	0.6 – 0.8	0.923	0.897	0.962	0.808
4	0.8 – 1.0	0.966	0.991	0.983	0.931
5	1.0 – 1.2	1.171	1.137	1.192	1.185
6	1.2 – 1.4	1.411	1.411	1.417	1.470
7	1.4 – 1.6	1.716	1.777	1.782	1.772
8	1.6 – 1.8	1.931	1.908	1.943	1.747
9	1.8 – 2.0	1.847	1.929	2.035	1.765
10	2.0 – 2.2	2.238	2.280	2.274	2.036
11	2.2 – 2.4	2.356	2.406	2.337	2.297
12	2.4 – 2.6	2.603	2.559	2.603	2.404
13	2.6 – 2.8	2.799	2.786	2.786	2.623
14	2.8 – 3.0	3.032	3.009	2.995	2.894
15	3.0 – 3.2	2.967	2.945	2.935	2.938
16	3.2 – 3.4	3.152	3.148	3.072	3.325
17	3.4 – 3.6	3.682	3.714	3.701	3.672
18	3.6 – 3.8	3.657	3.667	3.589	3.377
19	3.8 – 4.0	3.895	3.895	3.899	3.725
20	4.0 – 4.2	4.114	4.121	4.102	4.033
21	4.2 – 4.4	4.426	4.433	4.475	4.716
22	4.4 – 4.6	4.779	4.754	4.769	4.944
23	4.6 – 4.8	5.171	5.181	5.161	4.891
24	4.8 – 5.0	5.407	5.453	5.442	5.326
25	5.0 – 5.2	5.153	5.099	5.118	5.186
26	5.2 – 5.4	5.242	5.199	5.215	5.603
27	5.4 – 5.6	5.644	5.657	5.692	5.943
28	5.6 – 5.8	5.871	5.860	5.882	5.882
29	5.8 – 6.0	5.992	5.996	5.997	5.992

**Video processed with MBUWWB with $black = 0$, ARUco
detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.007	0.006	0.006	0.004
1	0.2 – 0.4	0.568	0.619	0.576	0.534
2	0.4 – 0.6	0.877	0.877	0.849	0.792
3	0.6 – 0.8	1.167	1.167	1.218	1.154
4	0.8 – 1.0	1.112	1.112	1.138	1.112
5	1.0 – 1.2	1.370	1.432	1.432	1.404
6	1.2 – 1.4	1.616	1.623	1.603	1.603
7	1.4 – 1.6	1.914	1.959	1.959	1.944
8	1.6 – 1.8	1.937	1.966	1.920	1.897
9	1.8 – 2.0	2.135	2.141	2.147	1.988
10	2.0 – 2.2	2.560	2.524	2.560	2.381
11	2.2 – 2.4	2.584	2.545	2.604	2.634
12	2.4 – 2.6	2.919	2.860	2.963	2.750
13	2.6 – 2.8	3.088	3.075	3.113	2.906
14	2.8 – 3.0	3.170	3.156	3.179	3.078
15	3.0 – 3.2	3.236	3.284	3.240	3.189
16	3.2 – 3.4	3.494	3.519	3.515	3.599
17	3.4 – 3.6	4.045	4.080	3.981	3.961
18	3.6 – 3.8	4.198	4.164	4.184	4.155
19	3.8 – 4.0	4.247	4.267	4.247	4.243
20	4.0 – 4.2	4.252	4.259	4.252	4.249
21	4.2 – 4.4	5.319	5.348	5.383	5.440
22	4.4 – 4.6	5.508	5.503	5.585	5.677
23	4.6 – 4.8	5.756	5.829	5.829	5.819
24	4.8 – 5.0	5.663	5.674	5.698	5.703
25	5.0 – 5.2	5.225	5.247	5.252	5.307
26	5.2 – 5.4	5.552	5.644	5.714	5.847
27	5.4 – 5.6	5.959	5.968	5.978	5.984
28	5.6 – 5.8	5.925	5.882	5.914	5.935
29	5.8 – 6.0	5.989	5.992	5.990	5.997

**Video processed with MBUWWB with $black = 1$, ARUco
detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.009	0.010	0.009	0.008
1	0.2 – 0.4	0.712	0.703	0.644	0.619
2	0.4 – 0.6	0.915	0.887	0.906	0.868
3	0.6 – 0.8	1.192	1.205	1.244	1.192
4	0.8 – 1.0	1.198	1.172	1.138	1.095
5	1.0 – 1.2	1.418	1.411	1.384	1.390
6	1.2 – 1.4	1.662	1.662	1.649	1.609
7	1.4 – 1.6	1.949	1.975	1.934	1.944
8	1.6 – 1.8	1.960	1.977	1.897	1.862
9	1.8 – 2.0	2.194	2.224	2.200	2.076
10	2.0 – 2.2	2.613	2.571	2.613	2.417
11	2.2 – 2.4	2.634	2.663	2.683	2.663
12	2.4 – 2.6	2.963	2.985	2.963	2.882
13	2.6 – 2.8	3.113	3.138	3.094	2.994
14	2.8 – 3.0	3.183	3.202	3.197	3.151
15	3.0 – 3.2	3.240	3.222	3.258	3.182
16	3.2 – 3.4	3.464	3.443	3.515	3.582
17	3.4 – 3.6	4.013	4.019	4.023	3.984
18	3.6 – 3.8	4.198	4.179	4.188	4.140
19	3.8 – 4.0	4.275	4.296	4.283	4.227
20	4.0 – 4.2	4.264	4.264	4.273	4.242
21	4.2 – 4.4	5.326	5.404	5.461	5.489
22	4.4 – 4.6	5.538	5.533	5.636	5.677
23	4.6 – 4.8	5.839	5.855	5.865	5.855
24	4.8 – 5.0	5.686	5.686	5.692	5.733
25	5.0 – 5.2	5.222	5.233	5.244	5.279
26	5.2 – 5.4	5.501	5.571	5.651	5.792
27	5.4 – 5.6	5.959	5.975	5.975	5.978
28	5.6 – 5.8	5.892	5.914	5.903	5.935
29	5.8 – 6.0	5.989	5.989	5.988	5.994

**Video processed with MBUWWB with $black = 2$, ARUco
detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.010	0.009	0.010	0.009
1	0.2 – 0.4	0.703	0.712	0.686	0.593
2	0.4 – 0.6	0.953	0.934	0.981	0.887
3	0.6 – 0.8	1.244	1.192	1.256	1.218
4	0.8 – 1.0	1.164	1.181	1.164	1.103
5	1.0 – 1.2	1.425	1.466	1.425	1.329
6	1.2 – 1.4	1.642	1.669	1.623	1.603
7	1.4 – 1.6	1.995	1.964	1.944	1.964
8	1.6 – 1.8	1.977	1.977	1.966	1.885
9	1.8 – 2.0	2.206	2.200	2.229	2.024
10	2.0 – 2.2	2.536	2.577	2.607	2.387
11	2.2 – 2.4	2.614	2.673	2.693	2.574
12	2.4 – 2.6	2.971	2.956	2.971	2.765
13	2.6 – 2.8	3.107	3.101	3.145	3.006
14	2.8 – 3.0	3.170	3.193	3.193	3.156
15	3.0 – 3.2	3.229	3.215	3.233	3.182
16	3.2 – 3.4	3.439	3.473	3.527	3.540
17	3.4 – 3.6	4.026	4.029	4.019	4.016
18	3.6 – 3.8	4.208	4.208	4.246	4.184
19	3.8 – 4.0	4.275	4.287	4.312	4.255
20	4.0 – 4.2	4.273	4.266	4.273	4.259
21	4.2 – 4.4	5.383	5.369	5.447	5.454
22	4.4 – 4.6	5.544	5.554	5.605	5.703
23	4.6 – 4.8	5.819	5.850	5.870	5.865
24	4.8 – 5.0	5.703	5.692	5.680	5.733
25	5.0 – 5.2	5.222	5.230	5.236	5.271
26	5.2 – 5.4	5.499	5.557	5.634	5.768
27	5.4 – 5.6	5.949	5.968	5.968	5.975
28	5.6 – 5.8	5.892	5.882	5.925	5.946
29	5.8 – 6.0	5.989	5.986	5.988	5.992

**Video processed with MBUWWB with $black = 3$, ARUco
detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.009	0.010	0.010	0.009
1	0.2 – 0.4	0.669	0.746	0.686	0.619
2	0.4 – 0.6	0.943	0.953	0.925	0.925
3	0.6 – 0.8	1.256	1.218	1.269	1.192
4	0.8 – 1.0	1.172	1.198	1.181	1.129
5	1.0 – 1.2	1.452	1.466	1.411	1.349
6	1.2 – 1.4	1.636	1.623	1.603	1.556
7	1.4 – 1.6	1.954	1.954	1.944	1.934
8	1.6 – 1.8	2.034	1.983	1.948	1.897
9	1.8 – 2.0	2.176	2.206	2.212	2.000
10	2.0 – 2.2	2.583	2.560	2.548	2.393
11	2.2 – 2.4	2.733	2.762	2.743	2.663
12	2.4 – 2.6	2.934	2.978	2.919	2.816
13	2.6 – 2.8	3.057	3.088	3.107	3.031
14	2.8 – 3.0	3.197	3.206	3.188	3.124
15	3.0 – 3.2	3.240	3.229	3.204	3.156
16	3.2 – 3.4	3.447	3.494	3.451	3.553
17	3.4 – 3.6	3.994	4.023	4.039	4.023
18	3.6 – 3.8	4.242	4.242	4.266	4.193
19	3.8 – 4.0	4.275	4.300	4.312	4.239
20	4.0 – 4.2	4.276	4.271	4.287	4.245
21	4.2 – 4.4	5.355	5.376	5.461	5.496
22	4.4 – 4.6	5.544	5.538	5.600	5.656
23	4.6 – 4.8	5.855	5.855	5.860	5.870
24	4.8 – 5.0	5.669	5.674	5.680	5.703
25	5.0 – 5.2	5.233	5.233	5.241	5.282
26	5.2 – 5.4	5.492	5.542	5.622	5.780
27	5.4 – 5.6	5.946	5.975	5.971	5.971
28	5.6 – 5.8	5.914	5.903	5.914	5.925
29	5.8 – 6.0	5.989	5.988	5.986	5.989

Original video without processing, AprilTag2 detector

Visibility level	Visibility range	<i>No parameter</i>
0	0.0 – 0.2	0.003
1	0.2 – 0.4	0.364
2	0.4 – 0.6	0.726
3	0.6 – 0.8	0.962
4	0.8 – 1.0	1.147
5	1.0 – 1.2	1.301
6	1.2 – 1.4	1.517
7	1.4 – 1.6	1.670
8	1.6 – 1.8	2.161
9	1.8 – 2.0	2.341
10	2.0 – 2.2	2.470
11	2.2 – 2.4	2.653
12	2.4 – 2.6	2.919
13	2.6 – 2.8	3.050
14	2.8 – 3.0	3.151
15	3.0 – 3.2	3.371
16	3.2 – 3.4	3.443
17	3.4 – 3.6	3.402
18	3.6 – 3.8	4.029
19	3.8 – 4.0	4.372
20	4.0 – 4.2	4.240
21	4.2 – 4.4	5.184
22	4.4 – 4.6	5.272
23	4.6 – 4.8	5.632
24	4.8 – 5.0	5.622
25	5.0 – 5.2	5.142
26	5.2 – 5.4	5.094
27	5.4 – 5.6	5.156
28	5.6 – 5.8	5.946
29	5.8 – 6.0	6.000

Video processed with CLAHE, AprilTag2 detector

Visibility level	Visibility range	Clip limit					
		1	2	3	4	5	6
0	0.0 – 0.2	0.005	0.005	0.005	0.006	0.006	0.006
1	0.2 – 0.4	0.280	0.322	0.305	0.305	0.331	0.339
2	0.4 – 0.6	0.519	0.425	0.311	0.236	0.208	0.198
3	0.6 – 0.8	0.731	0.756	0.718	0.692	0.551	0.603
4	0.8 – 1.0	1.034	0.905	0.845	0.741	0.681	0.655
5	1.0 – 1.2	1.096	0.911	0.801	0.815	0.760	0.664
6	1.2 – 1.4	1.490	1.232	1.060	0.921	0.801	0.808
7	1.4 – 1.6	1.716	1.467	1.208	0.964	0.782	0.635
8	1.6 – 1.8	1.948	1.724	1.391	1.190	0.897	0.701
9	1.8 – 2.0	2.265	2.000	1.765	1.506	1.300	1.200
10	2.0 – 2.2	2.435	2.155	1.940	1.756	1.554	1.429
11	2.2 – 2.4	2.703	2.495	2.158	2.000	1.802	1.733
12	2.4 – 2.6	2.919	2.750	2.544	2.184	1.941	1.853
13	2.6 – 2.8	3.258	3.050	2.673	2.384	2.088	1.868
14	2.8 – 3.0	3.197	3.018	2.867	2.739	2.486	2.151
15	3.0 – 3.2	3.378	3.316	3.280	3.167	2.989	2.778
16	3.2 – 3.4	3.494	3.413	3.519	3.506	3.359	3.034
17	3.4 – 3.6	3.441	3.598	3.775	3.871	3.813	3.624
18	3.6 – 3.8	4.329	4.227	4.106	4.039	3.913	3.792
19	3.8 – 4.0	4.368	4.198	4.069	3.984	3.870	3.664
20	4.0 – 4.2	4.252	4.059	3.867	3.796	3.810	3.803
21	4.2 – 4.4	5.121	4.340	3.269	2.610	2.440	2.333
22	4.4 – 4.6	5.277	4.867	3.913	3.097	2.913	2.851
23	4.6 – 4.8	5.653	5.591	5.161	4.627	4.446	4.394
24	4.8 – 5.0	5.651	5.663	5.547	5.314	5.116	4.942
25	5.0 – 5.2	5.145	5.252	5.266	5.214	5.066	4.967
26	5.2 – 5.4	5.111	5.177	5.136	5.114	5.044	4.937
27	5.4 – 5.6	5.216	5.330	5.368	5.317	5.267	5.181
28	5.6 – 5.8	5.968	5.978	5.968	5.946	5.806	5.527
29	5.8 – 6.0	5.999	5.997	5.996	5.983	5.971	5.935

Video processed with Deblurring with $\sigma = 1.0$, AprilTag2 detector

Visibility level	Visibility range	Weight w			
		1.0	2.0	3.0	4.0
0	0.0 – 0.2	0.003	0.002	0.003	0.002
1	0.2 – 0.4	0.254	0.195	0.203	0.178
2	0.4 – 0.6	0.425	0.415	0.425	0.368
3	0.6 – 0.8	0.705	0.538	0.462	0.513
4	0.8 – 1.0	1.017	0.897	0.905	0.845
5	1.0 – 1.2	1.130	1.068	1.000	0.932
6	1.2 – 1.4	1.424	1.298	1.139	1.040
7	1.4 – 1.6	1.650	1.558	1.477	1.497
8	1.6 – 1.8	2.046	1.862	1.747	1.661
9	1.8 – 2.0	2.029	1.818	1.653	1.576
10	2.0 – 2.2	2.238	1.964	1.935	1.786
11	2.2 – 2.4	2.337	2.020	1.901	1.762
12	2.4 – 2.6	2.676	2.368	2.213	1.971
13	2.6 – 2.8	2.843	2.572	2.352	2.182
14	2.8 – 3.0	3.032	2.936	2.830	2.693
15	3.0 – 3.2	3.200	2.985	2.785	2.691
16	3.2 – 3.4	3.316	3.114	2.941	2.814
17	3.4 – 3.6	3.331	3.187	3.039	2.887
18	3.6 – 3.8	3.715	3.430	2.976	2.749
19	3.8 – 4.0	4.227	4.024	3.729	3.445
20	4.0 – 4.2	4.181	4.107	3.995	3.874
21	4.2 – 4.4	5.050	4.837	4.596	4.333
22	4.4 – 4.6	5.195	5.128	4.851	4.528
23	4.6 – 4.8	5.596	5.446	5.269	4.886
24	4.8 – 5.0	5.541	5.436	5.227	4.983
25	5.0 – 5.2	5.101	5.058	5.011	4.970
26	5.2 – 5.4	5.075	5.027	4.995	4.971
27	5.4 – 5.6	5.130	5.063	4.971	4.905
28	5.6 – 5.8	5.796	5.419	4.742	4.161
29	5.8 – 6.0	5.964	5.642	4.811	4.008

Video processed with Deblurring with $\sigma = 2.0$, AprilTag2 detector

Visibility level	Visibility range	Weight w			
		1.0	2.0	3.0	4.0
0	0.0 – 0.2	0.004	0.004	0.004	0.003
1	0.2 – 0.4	0.280	0.186	0.195	0.195
2	0.4 – 0.6	0.519	0.472	0.415	0.387
3	0.6 – 0.8	0.859	0.679	0.654	0.615
4	0.8 – 1.0	1.129	1.103	1.043	0.974
5	1.0 – 1.2	1.192	1.151	1.110	1.082
6	1.2 – 1.4	1.523	1.417	1.338	1.219
7	1.4 – 1.6	1.787	1.650	1.609	1.589
8	1.6 – 1.8	2.040	2.011	1.908	1.799
9	1.8 – 2.0	2.100	1.971	1.841	1.682
10	2.0 – 2.2	2.357	2.137	2.030	1.911
11	2.2 – 2.4	2.525	2.347	2.109	1.901
12	2.4 – 2.6	2.801	2.640	2.434	2.213
13	2.6 – 2.8	2.987	2.774	2.679	2.528
14	2.8 – 3.0	3.106	3.046	2.913	2.835
15	3.0 – 3.2	3.182	3.018	2.884	2.807
16	3.2 – 3.4	3.333	3.165	2.987	2.869
17	3.4 – 3.6	3.354	3.212	3.103	3.000
18	3.6 – 3.8	3.884	3.647	3.464	3.179
19	3.8 – 4.0	4.231	4.081	3.927	3.700
20	4.0 – 4.2	4.207	4.143	4.043	3.979
21	4.2 – 4.4	5.106	4.794	4.574	4.326
22	4.4 – 4.6	5.241	5.103	4.913	4.590
23	4.6 – 4.8	5.591	5.404	5.259	4.902
24	4.8 – 5.0	5.552	5.459	5.308	5.017
25	5.0 – 5.2	5.118	5.101	5.047	5.008
26	5.2 – 5.4	5.080	5.073	5.022	4.995
27	5.4 – 5.6	5.137	5.063	4.981	4.930
28	5.6 – 5.8	5.806	5.398	4.828	4.366
29	5.8 – 6.0	5.967	5.751	5.212	4.427

Video processed with Deblurring with $\sigma = 3.0$, AprilTag2 detector

Visibility level	Visibility range	Weight w			
		1.0	2.0	3.0	4.0
0	0.0 – 0.2	0.007	0.005	0.004	0.004
1	0.2 – 0.4	0.364	0.305	0.229	0.220
2	0.4 – 0.6	0.594	0.575	0.547	0.623
3	0.6 – 0.8	0.923	0.859	0.769	0.744
4	0.8 – 1.0	1.259	1.181	1.147	1.103
5	1.0 – 1.2	1.308	1.274	1.253	1.240
6	1.2 – 1.4	1.583	1.536	1.483	1.497
7	1.4 – 1.6	1.787	1.797	1.756	1.802
8	1.6 – 1.8	2.201	2.075	2.075	2.000
9	1.8 – 2.0	2.235	2.071	1.976	1.935
10	2.0 – 2.2	2.429	2.339	2.179	2.101
11	2.2 – 2.4	2.644	2.554	2.436	2.337
12	2.4 – 2.6	2.971	2.787	2.779	2.691
13	2.6 – 2.8	3.025	3.000	2.956	2.899
14	2.8 – 3.0	3.165	3.138	3.096	3.050
15	3.0 – 3.2	3.302	3.204	3.087	3.022
16	3.2 – 3.4	3.397	3.329	3.203	3.156
17	3.4 – 3.6	3.347	3.299	3.238	3.219
18	3.6 – 3.8	3.961	3.937	3.826	3.691
19	3.8 – 4.0	4.320	4.198	4.113	4.040
20	4.0 – 4.2	4.223	4.195	4.154	4.114
21	4.2 – 4.4	5.099	5.085	4.872	4.546
22	4.4 – 4.6	5.241	5.221	5.082	4.892
23	4.6 – 4.8	5.642	5.585	5.482	5.275
24	4.8 – 5.0	5.605	5.570	5.453	5.250
25	5.0 – 5.2	5.142	5.112	5.107	5.090
26	5.2 – 5.4	5.107	5.104	5.099	5.082
27	5.4 – 5.6	5.162	5.156	5.127	5.117
28	5.6 – 5.8	5.903	5.710	5.538	5.430
29	5.8 – 6.0	5.985	5.954	5.876	5.747

**Video processed with Deblurring with $\sigma = 4.0$, AprilTag2
detector**

Visibility level	Visibility range	Weight w			
		1.0	2.0	3.0	4.0
0	0.0 – 0.2	0.008	0.009	0.005	0.005
1	0.2 – 0.4	0.466	0.441	0.339	0.271
2	0.4 – 0.6	0.651	0.585	0.566	0.613
3	0.6 – 0.8	0.949	1.000	0.974	0.910
4	0.8 – 1.0	1.284	1.276	1.241	1.181
5	1.0 – 1.2	1.336	1.301	1.240	1.301
6	1.2 – 1.4	1.682	1.709	1.583	1.623
7	1.4 – 1.6	1.802	1.812	1.766	1.787
8	1.6 – 1.8	2.218	2.259	2.190	2.155
9	1.8 – 2.0	2.241	2.147	2.135	2.029
10	2.0 – 2.2	2.435	2.375	2.345	2.244
11	2.2 – 2.4	2.743	2.693	2.584	2.515
12	2.4 – 2.6	3.000	2.956	2.868	2.787
13	2.6 – 2.8	3.113	3.094	3.019	2.987
14	2.8 – 3.0	3.174	3.170	3.161	3.092
15	3.0 – 3.2	3.364	3.273	3.189	3.124
16	3.2 – 3.4	3.430	3.371	3.325	3.287
17	3.4 – 3.6	3.376	3.341	3.293	3.257
18	3.6 – 3.8	4.058	4.155	4.087	3.995
19	3.8 – 4.0	4.304	4.283	4.215	4.174
20	4.0 – 4.2	4.257	4.211	4.190	4.154
21	4.2 – 4.4	5.128	5.085	5.050	4.887
22	4.4 – 4.6	5.256	5.246	5.190	5.123
23	4.6 – 4.8	5.637	5.632	5.554	5.482
24	4.8 – 5.0	5.628	5.576	5.558	5.430
25	5.0 – 5.2	5.137	5.148	5.126	5.118
26	5.2 – 5.4	5.097	5.114	5.107	5.099
27	5.4 – 5.6	5.162	5.175	5.156	5.114
28	5.6 – 5.8	5.925	5.892	5.763	5.559
29	5.8 – 6.0	5.988	5.961	5.936	5.802

**Video processed with White balancing with $black = 0$,
AprilTag2 detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.003	0.004	0.003	0.006
1	0.2 – 0.4	0.390	0.364	0.364	0.381
2	0.4 – 0.6	0.651	0.623	0.632	0.708
3	0.6 – 0.8	0.744	0.795	0.808	0.962
4	0.8 – 1.0	0.991	1.052	1.069	1.190
5	1.0 – 1.2	1.171	1.178	1.130	1.199
6	1.2 – 1.4	1.444	1.430	1.444	1.543
7	1.4 – 1.6	1.619	1.629	1.650	1.721
8	1.6 – 1.8	1.943	2.006	1.989	2.126
9	1.8 – 2.0	2.065	2.176	2.171	2.276
10	2.0 – 2.2	2.268	2.304	2.262	2.411
11	2.2 – 2.4	2.614	2.663	2.614	2.634
12	2.4 – 2.6	2.809	2.779	2.743	2.743
13	2.6 – 2.8	3.000	2.943	2.950	2.887
14	2.8 – 3.0	3.073	3.092	3.101	3.064
15	3.0 – 3.2	3.291	3.284	3.302	3.298
16	3.2 – 3.4	3.346	3.388	3.376	3.397
17	3.4 – 3.6	3.379	3.389	3.367	3.402
18	3.6 – 3.8	4.174	4.111	4.082	3.966
19	3.8 – 4.0	4.239	4.255	4.267	4.283
20	4.0 – 4.2	4.192	4.183	4.183	4.240
21	4.2 – 4.4	4.872	4.887	4.887	5.128
22	4.4 – 4.6	5.179	5.159	5.144	5.231
23	4.6 – 4.8	5.606	5.627	5.591	5.622
24	4.8 – 5.0	5.616	5.517	5.459	5.605
25	5.0 – 5.2	5.153	5.156	5.129	5.140
26	5.2 – 5.4	5.104	5.109	5.111	5.092
27	5.4 – 5.6	5.206	5.190	5.178	5.152
28	5.6 – 5.8	5.935	5.935	5.925	5.978
29	5.8 – 6.0	5.999	5.999	5.999	6.000

**Video processed with White balancing with $black = 1$,
AprilTag2 detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.003	0.004	0.005	0.006
1	0.2 – 0.4	0.407	0.331	0.347	0.373
2	0.4 – 0.6	0.632	0.613	0.604	0.651
3	0.6 – 0.8	0.718	0.782	0.795	0.846
4	0.8 – 1.0	1.000	1.000	1.052	1.147
5	1.0 – 1.2	1.068	1.089	1.096	1.233
6	1.2 – 1.4	1.358	1.311	1.358	1.543
7	1.4 – 1.6	1.589	1.594	1.640	1.746
8	1.6 – 1.8	1.885	1.839	1.862	2.063
9	1.8 – 2.0	2.088	2.206	2.200	2.194
10	2.0 – 2.2	2.310	2.262	2.262	2.387
11	2.2 – 2.4	2.545	2.594	2.554	2.564
12	2.4 – 2.6	2.728	2.743	2.735	2.691
13	2.6 – 2.8	2.925	2.912	2.956	2.893
14	2.8 – 3.0	3.069	3.078	3.064	3.050
15	3.0 – 3.2	3.302	3.276	3.280	3.276
16	3.2 – 3.4	3.325	3.321	3.346	3.359
17	3.4 – 3.6	3.344	3.354	3.347	3.379
18	3.6 – 3.8	4.097	4.063	4.034	3.932
19	3.8 – 4.0	4.211	4.235	4.247	4.287
20	4.0 – 4.2	4.183	4.185	4.197	4.238
21	4.2 – 4.4	4.879	4.858	4.887	5.149
22	4.4 – 4.6	5.169	5.159	5.149	5.241
23	4.6 – 4.8	5.637	5.632	5.585	5.642
24	4.8 – 5.0	5.616	5.576	5.488	5.605
25	5.0 – 5.2	5.162	5.159	5.148	5.142
26	5.2 – 5.4	5.111	5.111	5.111	5.090
27	5.4 – 5.6	5.203	5.194	5.178	5.162
28	5.6 – 5.8	5.946	5.968	5.946	5.989
29	5.8 – 6.0	5.999	5.999	5.999	6.000

**Video processed with White balancing with $black = 2$,
AprilTag2 detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.002	0.002	0.004	0.006
1	0.2 – 0.4	0.322	0.305	0.288	0.314
2	0.4 – 0.6	0.557	0.557	0.604	0.660
3	0.6 – 0.8	0.667	0.654	0.731	0.782
4	0.8 – 1.0	0.914	1.026	1.052	1.190
5	1.0 – 1.2	1.082	1.000	1.075	1.212
6	1.2 – 1.4	1.358	1.338	1.331	1.503
7	1.4 – 1.6	1.533	1.589	1.594	1.711
8	1.6 – 1.8	1.822	1.810	1.810	1.908
9	1.8 – 2.0	1.947	2.018	2.041	2.153
10	2.0 – 2.2	2.167	2.262	2.232	2.387
11	2.2 – 2.4	2.455	2.386	2.356	2.416
12	2.4 – 2.6	2.632	2.618	2.647	2.566
13	2.6 – 2.8	2.925	2.918	2.887	2.862
14	2.8 – 3.0	3.037	3.041	3.041	3.037
15	3.0 – 3.2	3.193	3.215	3.204	3.225
16	3.2 – 3.4	3.312	3.346	3.329	3.338
17	3.4 – 3.6	3.325	3.318	3.325	3.367
18	3.6 – 3.8	4.043	3.995	3.976	3.884
19	3.8 – 4.0	4.202	4.223	4.223	4.292
20	4.0 – 4.2	4.159	4.169	4.176	4.223
21	4.2 – 4.4	4.879	4.865	4.872	5.142
22	4.4 – 4.6	5.169	5.159	5.128	5.246
23	4.6 – 4.8	5.627	5.627	5.611	5.632
24	4.8 – 5.0	5.622	5.587	5.506	5.599
25	5.0 – 5.2	5.153	5.153	5.142	5.137
26	5.2 – 5.4	5.109	5.111	5.114	5.085
27	5.4 – 5.6	5.206	5.194	5.181	5.159
28	5.6 – 5.8	5.935	5.946	5.946	5.978
29	5.8 – 6.0	6.000	5.999	5.999	6.000

**Video processed with White balancing with $black = 3$,
AprilTag2 detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.002	0.003	0.003	0.004
1	0.2 – 0.4	0.254	0.212	0.271	0.322
2	0.4 – 0.6	0.547	0.594	0.557	0.623
3	0.6 – 0.8	0.641	0.654	0.679	0.744
4	0.8 – 1.0	0.828	0.966	0.991	1.112
5	1.0 – 1.2	1.000	0.952	1.000	1.199
6	1.2 – 1.4	1.212	1.238	1.272	1.457
7	1.4 – 1.6	1.426	1.477	1.497	1.629
8	1.6 – 1.8	1.655	1.621	1.655	1.799
9	1.8 – 2.0	1.776	1.847	1.876	1.935
10	2.0 – 2.2	2.131	2.113	2.089	2.292
11	2.2 – 2.4	2.228	2.287	2.267	2.337
12	2.4 – 2.6	2.471	2.529	2.507	2.485
13	2.6 – 2.8	2.774	2.786	2.767	2.748
14	2.8 – 3.0	2.977	2.972	2.972	2.986
15	3.0 – 3.2	3.145	3.142	3.116	3.167
16	3.2 – 3.4	3.253	3.291	3.287	3.350
17	3.4 – 3.6	3.302	3.312	3.331	3.350
18	3.6 – 3.8	3.845	3.826	3.797	3.720
19	3.8 – 4.0	4.182	4.194	4.182	4.247
20	4.0 – 4.2	4.128	4.138	4.154	4.202
21	4.2 – 4.4	4.745	4.752	4.759	5.021
22	4.4 – 4.6	5.154	5.123	5.108	5.226
23	4.6 – 4.8	5.611	5.596	5.575	5.606
24	4.8 – 5.0	5.448	5.395	5.326	5.442
25	5.0 – 5.2	5.134	5.129	5.115	5.121
26	5.2 – 5.4	5.107	5.109	5.111	5.080
27	5.4 – 5.6	5.178	5.165	5.156	5.130
28	5.6 – 5.8	5.935	5.946	5.935	5.968
29	5.8 – 6.0	6.000	5.999	5.999	6.000

**Video processed with MBUWWB with $black = 0$,
AprilTag2 detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.005	0.006	0.004	0.005
1	0.2 – 0.4	0.390	0.432	0.407	0.364
2	0.4 – 0.6	0.736	0.679	0.670	0.642
3	0.6 – 0.8	0.859	0.833	0.897	0.949
4	0.8 – 1.0	1.147	1.181	1.164	1.207
5	1.0 – 1.2	1.226	1.205	1.199	1.205
6	1.2 – 1.4	1.450	1.517	1.483	1.490
7	1.4 – 1.6	1.635	1.660	1.665	1.726
8	1.6 – 1.8	1.931	1.914	1.954	2.034
9	1.8 – 2.0	2.182	2.212	2.188	2.271
10	2.0 – 2.2	2.387	2.393	2.387	2.387
11	2.2 – 2.4	2.881	2.871	2.812	2.782
12	2.4 – 2.6	2.838	2.875	2.882	2.809
13	2.6 – 2.8	2.950	2.925	2.956	3.019
14	2.8 – 3.0	3.055	3.096	3.101	3.142
15	3.0 – 3.2	3.291	3.364	3.335	3.356
16	3.2 – 3.4	3.409	3.422	3.447	3.460
17	3.4 – 3.6	3.399	3.444	3.441	3.424
18	3.6 – 3.8	3.918	3.952	4.000	4.039
19	3.8 – 4.0	4.267	4.300	4.324	4.324
20	4.0 – 4.2	4.178	4.202	4.204	4.245
21	4.2 – 4.4	5.078	5.092	5.092	5.149
22	4.4 – 4.6	5.251	5.241	5.241	5.277
23	4.6 – 4.8	5.622	5.622	5.627	5.632
24	4.8 – 5.0	5.529	5.541	5.541	5.599
25	5.0 – 5.2	5.121	5.126	5.134	5.137
26	5.2 – 5.4	5.094	5.085	5.087	5.094
27	5.4 – 5.6	5.146	5.149	5.149	5.156
28	5.6 – 5.8	5.871	5.903	5.925	5.957
29	5.8 – 6.0	5.999	5.999	6.000	6.000

**Video processed with MBUWWB with $black = 1$,
AprilTag2 detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.004	0.006	0.006	0.006
1	0.2 – 0.4	0.398	0.398	0.331	0.390
2	0.4 – 0.6	0.708	0.670	0.613	0.623
3	0.6 – 0.8	0.731	0.821	0.859	0.910
4	0.8 – 1.0	1.147	1.207	1.190	1.147
5	1.0 – 1.2	1.199	1.267	1.192	1.233
6	1.2 – 1.4	1.470	1.503	1.391	1.424
7	1.4 – 1.6	1.660	1.685	1.670	1.726
8	1.6 – 1.8	1.891	1.920	1.948	2.023
9	1.8 – 2.0	2.165	2.194	2.153	2.229
10	2.0 – 2.2	2.387	2.435	2.375	2.387
11	2.2 – 2.4	2.792	2.842	2.851	2.782
12	2.4 – 2.6	2.838	2.853	2.882	2.765
13	2.6 – 2.8	2.893	2.931	2.931	2.937
14	2.8 – 3.0	3.050	3.101	3.124	3.138
15	3.0 – 3.2	3.327	3.353	3.349	3.320
16	3.2 – 3.4	3.409	3.426	3.439	3.435
17	3.4 – 3.6	3.396	3.418	3.424	3.412
18	3.6 – 3.8	3.903	3.918	3.957	4.029
19	3.8 – 4.0	4.235	4.251	4.275	4.296
20	4.0 – 4.2	4.176	4.200	4.204	4.228
21	4.2 – 4.4	5.085	5.078	5.071	5.135
22	4.4 – 4.6	5.241	5.241	5.241	5.277
23	4.6 – 4.8	5.617	5.617	5.611	5.632
24	4.8 – 5.0	5.552	5.547	5.547	5.605
25	5.0 – 5.2	5.129	5.132	5.140	5.137
26	5.2 – 5.4	5.092	5.090	5.090	5.092
27	5.4 – 5.6	5.149	5.152	5.152	5.159
28	5.6 – 5.8	5.882	5.914	5.914	5.957
29	5.8 – 6.0	5.999	5.999	5.999	6.000

**Video processed with MBUWWB with $black = 2$,
AprilTag2 detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.005	0.006	0.006	0.006
1	0.2 – 0.4	0.356	0.398	0.254	0.297
2	0.4 – 0.6	0.604	0.623	0.632	0.623
3	0.6 – 0.8	0.795	0.756	0.872	0.846
4	0.8 – 1.0	1.147	1.181	1.129	1.172
5	1.0 – 1.2	1.253	1.205	1.240	1.219
6	1.2 – 1.4	1.430	1.457	1.483	1.437
7	1.4 – 1.6	1.690	1.680	1.660	1.706
8	1.6 – 1.8	1.833	1.868	1.948	1.879
9	1.8 – 2.0	2.176	2.106	2.159	2.141
10	2.0 – 2.2	2.298	2.333	2.310	2.381
11	2.2 – 2.4	2.832	2.891	2.762	2.644
12	2.4 – 2.6	2.801	2.824	2.750	2.713
13	2.6 – 2.8	2.887	2.862	2.855	2.868
14	2.8 – 3.0	3.083	3.083	3.064	3.124
15	3.0 – 3.2	3.320	3.338	3.302	3.295
16	3.2 – 3.4	3.363	3.405	3.409	3.418
17	3.4 – 3.6	3.379	3.418	3.424	3.418
18	3.6 – 3.8	3.903	3.928	3.957	4.010
19	3.8 – 4.0	4.202	4.247	4.263	4.267
20	4.0 – 4.2	4.176	4.195	4.204	4.230
21	4.2 – 4.4	5.085	5.057	5.078	5.128
22	4.4 – 4.6	5.236	5.221	5.246	5.262
23	4.6 – 4.8	5.606	5.606	5.617	5.642
24	4.8 – 5.0	5.547	5.552	5.552	5.605
25	5.0 – 5.2	5.132	5.132	5.134	5.140
26	5.2 – 5.4	5.092	5.087	5.090	5.092
27	5.4 – 5.6	5.156	5.152	5.152	5.156
28	5.6 – 5.8	5.882	5.914	5.925	5.968
29	5.8 – 6.0	5.999	5.999	6.000	6.000

**Video processed with MBUWWB with $black = 3$,
AprilTag2 detector**

Visibility level	Visibility range	<i>white</i>			
		97	98	99	100
0	0.0 – 0.2	0.005	0.005	0.004	0.004
1	0.2 – 0.4	0.271	0.314	0.280	0.280
2	0.4 – 0.6	0.642	0.604	0.623	0.642
3	0.6 – 0.8	0.756	0.692	0.718	0.782
4	0.8 – 1.0	1.095	1.138	1.103	1.078
5	1.0 – 1.2	1.226	1.178	1.137	1.253
6	1.2 – 1.4	1.437	1.430	1.358	1.358
7	1.4 – 1.6	1.701	1.645	1.650	1.680
8	1.6 – 1.8	1.810	1.839	1.868	1.839
9	1.8 – 2.0	2.100	2.124	2.118	2.106
10	2.0 – 2.2	2.327	2.250	2.226	2.298
11	2.2 – 2.4	2.802	2.752	2.713	2.564
12	2.4 – 2.6	2.735	2.706	2.699	2.699
13	2.6 – 2.8	2.849	2.799	2.792	2.893
14	2.8 – 3.0	3.064	3.037	3.014	3.078
15	3.0 – 3.2	3.287	3.269	3.295	3.251
16	3.2 – 3.4	3.338	3.401	3.401	3.384
17	3.4 – 3.6	3.402	3.392	3.428	3.405
18	3.6 – 3.8	3.899	3.923	3.942	3.952
19	3.8 – 4.0	4.186	4.235	4.247	4.251
20	4.0 – 4.2	4.173	4.200	4.195	4.209
21	4.2 – 4.4	5.064	5.078	5.057	5.113
22	4.4 – 4.6	5.241	5.221	5.246	5.256
23	4.6 – 4.8	5.596	5.617	5.617	5.637
24	4.8 – 5.0	5.547	5.558	5.547	5.610
25	5.0 – 5.2	5.132	5.134	5.134	5.137
26	5.2 – 5.4	5.090	5.092	5.094	5.090
27	5.4 – 5.6	5.152	5.149	5.152	5.159
28	5.6 – 5.8	5.892	5.914	5.946	5.946
29	5.8 – 6.0	5.999	5.999	5.999	5.999