Tool info

Serial API:	1:1.0
Board:	Custom STM32F401RE thrustBoard v2
Firmware:	thrust++ : ChibiOS RT 7.1.0 : HAL 8.1.0
Commit:	[7ea798b] : Apr 25 2022 - 18:19:20

Measurement info

Motor:	T-Motor MN2206-13
KV:	2000
Magnet poles:	14
Propeler:	HQProp 6x3.5
Blade count:	2
Note:	

Measurement Results 1:

Output	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff
[%]	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		[G/W]
20	29.51	3.561	49.23	2.658	4479	11.4	12.554	0.0035	0.267	0.0060	3.358	8.788
25	47.36	3.561	70.72	2.657	5448	17.3	12.548	0.0053	0.424	0.0106	5.320	8.902
30	69.00	3.562	95.18	2.661	6395	24.9	12.540	0.0050	0.618	0.0101	7.755	8.897
35	92.24	3.561	125.52	2.658	7354	30.2	12.529	0.0033	0.907	0.0156	11.361	8.119
40	119.64	3.574	154.06	2.674	8221	52.4	12.518	0.0037	1.222	0.0165	15.298	7.821
45	150.73	3.566	187.89	2.664	9124	43.9	12.501	0.0046	1.646	0.0182	20.580	7.324
50	181.03	3.565	225.65	2.672	10023	39.0	12.483	0.0067	2.071	0.0230	25.849	7.003
55	214.21	3.569	267.26	2.669	10879	60.1	12.460	0.0055	2.458	0.0217	30.626	6.994
60	254.20	3.566	314.84	2.669	11814	87.9	12.429	0.0054	2.841	0.0232	35.308	7.200
65	289.89	3.569	362.26	2.678	12531	102.4	12.399	0.0057	3.357	0.0261	41.618	6.965
70	329.40	3.568	415.45	2.678	13366	58.0	12.363	0.0044	3.978	0.0482	49.182	6.698
75	371.95	3.594	472.64	2.702	14152	129.3	12.325	0.0047	4.946	0.0310	60.959	6.102
80	411.32	3.570	529.93	2.684	15074	182.7	12.276	0.0073	6.096	0.0484	74.831	5.497
90	469.33	3.569	619.79	2.903	16617	79.5	12.192	0.0047	8.776	0.0587	106.991	4.387
100	526.89	3.575	736.29	2.824	18024	82.8	12.086	0.0051	11.537	0.0221	139.438	3.779

Measurement Results 2:

Output	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff
[%]	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		[G/W]
20	29.07	3.636	48.01	2.998	4445	10.5	12.461	0.0047	0.256	0.0078	3.185	9.126
25	46.52	3.636	68.17	2.996	5407	14.3	12.455	0.0038	0.403	0.0106	5.013	9.279
30	65.55	3.636	91.35	2.997	6303	29.7	12.446	0.0035	0.602	0.0147	7.498	8.742
35	91.08	3.636	122.12	2.994	7290	32.4	12.436	0.0042	0.879	0.0209	10.928	8.335
40	120.06	3.680	150.15	3.054	8173	36.1	12.424	0.0047	1.207	0.0191	14.990	8.009
45	149.67	3.653	186.16	3.003	9048	46.8	12.407	0.0041	1.594	0.0183	19.780	7.567
50	179.31	3.649	221.47	3.007	9956	61.2	12.390	0.0049	2.012	0.0192	24.930	7.193
55	211.63	3.648	263.14	3.013	10791	93.5	12.368	0.0023	2.398	0.0182	29.654	7.137
60	250.83	3.666	311.83	3.024	11639	62.0	12.339	0.0058	2.784	0.0230	34.356	7.301
65	285.57	3.641	358.33	3.013	12441	94.9	12.307	0.0046	3.297	0.0285	40.579	7.037
70	323.79	3.640	410.62	3.004	13308	98.7	12.273	0.0059	3.961	0.0300	48.610	6.661
75	364.16	3.643	465.44	3.006	14077	133.1	12.233	0.0069	4.873	0.0473	59.612	6.109
80	402.19	3.652	522.37	3.004	14999	136.3	12.189	0.0066	6.034	0.0571	73.546	5.469
90	452.95	3.649	611.35	3.166	16486	85.2	12.108	0.0052	8.657	0.0422	104.817	4.321
100	511.73	3.651	722.45	4.742	17855	79.8	12.003	0.0057	11.371	0.0341	136.481	3.749

Measurement Results 3:

Output	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff
[%]	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		[G/W]
20	31.28	2.655	47.88	2.530	4413	10.1	12.371	0.0051	0.258	0.0062	3.197	9.784
25	47.80	2.652	69.08	2.531	5388	19.3	12.366	0.0025	0.401	0.0101	4.956	9.645
30	67.27	2.655	91.88	2.537	6268	19.9	12.361	0.0045	0.594	0.0154	7.346	9.158
35	91.81	2.654	122.48	2.533	7248	48.3	12.348	0.0038	0.869	0.0157	10.730	8.557
40	119.55	2.654	150.48	2.542	8165	48.3	12.334	0.0053	1.197	0.0198	14.760	8.100
45	147.10	2.658	182.17	2.533	8988	56.2	12.320	0.0040	1.586	0.0198	19.535	7.530
50	175.98	2.655	221.72	2.535	9884	86.4	12.301	0.0038	2.016	0.0263	24.803	7.095
55	209.42	2.681	260.55	2.547	10670	86.3	12.280	0.0048	2.381	0.0210	29.243	7.161
60	250.19	2.715	304.71	2.546	11604	80.7	12.252	0.0058	2.785	0.0203	34.117	7.333
65	283.93	2.670	350.99	2.550	12362	126.7	12.225	0.0056	3.277	0.0294	40.061	7.088
70	321.96	2.668	403.13	2.533	13220	94.9	12.186	0.0032	3.944	0.0290	48.062	6.699
75	362.82	2.658	458.71	2.552	14048	127.3	12.147	0.0057	4.851	0.0509	58.929	6.157
80	399.80	2.672	516.02	2.592	14857	104.2	12.101	0.0044	5.982	0.0636	72.386	5.523
90	449.74	2.687	606.08	2.819	16393	96.1	12.020	0.0058	8.573	0.0378	103.043	4.365
100	504.52	2.721	714.87	2.727	17869	80.1	11.920	0.0082	11.243	0.0393	134.023	3.764

Measurement Results 4:

Output	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff
[%]	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		[G/W]
20	27.00	3.359	46.44	1.120	4394	9.1	12.288	0.0052	0.255	0.0072	3.136	8.610
25	45.13	3.359	67.43	1.124	5341	16.0	12.282	0.0049	0.404	0.0073	4.961	9.098
30	64.68	3.359	90.28	1.124	6242	26.3	12.278	0.0040	0.593	0.0086	7.282	8.883
35	88.66	3.363	120.45	1.454	7194	25.0	12.265	0.0053	0.859	0.0201	10.536	8.415
40	114.60	3.360	149.53	1.183	8058	43.4	12.250	0.0059	1.180	0.0156	14.457	7.927
45	146.31	3.362	183.03	1.147	8906	49.7	12.236	0.0046	1.571	0.0198	19.224	7.611
50	173.86	3.376	218.84	1.174	9808	53.0	12.220	0.0042	1.989	0.0191	24.300	7.155
55	205.98	3.362	258.87	1.175	10621	60.8	12.197	0.0053	2.374	0.0253	28.956	7.113
60	244.31	3.363	303.82	1.135	11559	61.8	12.170	0.0057	2.768	0.0186	33.691	7.252
65	278.99	3.376	351.42	1.161	12365	153.7	12.137	0.0050	3.270	0.0253	39.684	7.030
70	316.23	3.382	402.22	1.186	13123	95.0	12.110	0.0044	3.930	0.0407	47.591	6.645
75	356.31	3.369	455.14	1.174	13949	77.8	12.067	0.0039	4.796	0.0308	57.871	6.157
80	396.00	3.381	513.77	1.252	14788	127.6	12.020	0.0059	5.971	0.0352	71.774	5.517
90	444.69	3.366	595.36	1.196	16285	90.0	11.936	0.0064	8.481	0.0243	101.223	4.393
100	496.42	3.387	710.24	1.724	17718	99.8	11.842	0.0070	11.166	0.0283	132.228	3.754

Measurement Results 5:

Output	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff
[%]	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		[G/W]
20	23.52	1.718	46.27	2.013	4365	7.1	12.212	0.0038	0.249	0.0063	3.045	7.725
25	41.37	1.718	67.37	2.011	5321	15.2	12.204	0.0018	0.392	0.0070	4.787	8.643
30	61.72	1.719	89.76	2.018	6214	25.8	12.199	0.0040	0.578	0.0100	7.046	8.759
35	84.71	1.718	118.79	2.012	7156	16.5	12.190	0.0037	0.849	0.0174	10.355	8.180
40	109.78	1.719	147.48	2.022	8026	47.5	12.173	0.0040	1.163	0.0215	14.163	7.751
45	141.10	1.722	179.39	2.024	8884	49.0	12.162	0.0049	1.562	0.0208	18.993	7.429
50	168.41	1.739	217.82	2.019	9769	60.9	12.143	0.0053	1.978	0.0235	24.017	7.012
55	199.60	1.729	255.46	2.042	10613	52.7	12.119	0.0043	2.356	0.0175	28.554	6.990
60	239.98	1.741	301.96	2.047	11506	87.7	12.093	0.0051	2.787	0.0177	33.699	7.121
65	274.26	1.774	348.44	2.022	12251	113.8	12.066	0.0052	3.283	0.0195	39.607	6.925
70	311.08	1.745	396.76	2.044	13076	64.6	12.030	0.0057	3.926	0.0382	47.226	6.587
75	351.50	1.745	451.02	2.033	13902	88.2	11.991	0.0043	4.796	0.0339	57.509	6.112
80	390.10	1.743	507.20	2.102	14704	175.2	11.948	0.0050	5.920	0.0360	70.734	5.515
90	440.96	1.727	590.51	2.034	16235	48.1	11.870	0.0056	8.419	0.0363	99.937	4.412
100	492.83	1.818	700.86	2.612	17601	112.4	11.770	0.0094	11.042	0.0296	129.964	3.792

Plots for Measurement Results: