Tool info

Serial API:	1:1.0
Board:	Custom STM32F401RE thrustBoard v2
Firmware:	thrust++ : ChibiOS RT 7.1.0 : HAL 8.1.0
Commit:	[28e06d2] : Mar 20 2022 - 17:31:34

Measurement info

Motor:	T-Motor F1507
KV:	2700
Magnet poles:	14
Propeler:	HQProp Duct 76mmx8
Blade count:	8
Note:	with duct 5.2

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	36.23	0.540	43.08	0.172	8244	98.1	16.673	0.0053	0.392	0.0087	6.528	5.550
25	54.51	0.519	68.53	0.185	10028	159.9	16.656	0.0043	0.618	0.0106	10.299	5.293
30	78.00	0.525	91.28	0.205	11771	181.0	16.632	0.0058	0.930	0.0148	15.468	5.043
35	101.89	0.548	121.71	0.354	13226	201.3	16.608	0.0039	1.299	0.0117	21.578	4.722
40	121.70	0.552	145.69	0.490	14489	217.3	16.577	0.0046	1.654	0.0208	27.418	4.439
45	148.05	0.546	174.90	0.561	15979	523.5	16.540	0.0051	1.937	0.0139	32.045	4.620
50	177.21	0.581	214.62	0.494	17380	441.7	16.498	0.0066	2.055	0.0155	33.901	5.227
55	209.50	0.573	255.04	0.805	18697	456.3	16.436	0.0059	2.180	0.0222	35.832	5.847
60	248.11	0.724	287.74	0.753	20116	556.9	16.371	0.0058	2.482	0.0239	40.627	6.107
65	286.72	1.069	339.10	1.402	21542	518.3	16.296	0.0072	3.079	0.0254	50.171	5.715
70	322.93	0.796	381.04	1.379	22946	618.7	16.215	0.0052	3.866	0.0374	62.680	5.152
75	360.33	0.932	431.72	1.096	24258	720.2	16.121	0.0068	5.194	0.0404	83.731	4.303
80	398.39	0.944	471.04	1.402	25411	532.2	16.011	0.0082	6.859	0.0476	109.818	3.628
90	484.19	2.118	572.23	3.839	27731	437.4	15.827	0.0083	10.580	0.0684	167.453	2.891
100	550.38	3.167	651.30	10.545	29323	297.0	15.614	0.0094	14.699	0.0597	229.510	2.398

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	33.52	0.489	40.22	0.216	8058	86.2	16.432	0.0044	0.362	0.0081	5.957	5.627
25	50.01	0.532	63.69	0.267	9807	101.8	16.415	0.0048	0.593	0.0100	9.736	5.137
30	73.53	0.486	88.25	0.198	11510	150.2	16.397	0.0049	0.886	0.0094	14.535	5.059
35	96.66	0.491	114.18	0.229	13063	186.4	16.371	0.0068	1.229	0.0116	20.126	4.803
40	116.31	0.513	138.10	0.419	14324	235.5	16.345	0.0037	1.589	0.0117	25.972	4.478
45	141.55	0.524	168.31	0.483	15642	375.2	16.310	0.0040	1.899	0.0162	30.975	4.570
50	169.93	0.520	209.64	0.833	17163	550.4	16.263	0.0060	2.013	0.0174	32.734	5.191
55	200.62	0.563	244.44	0.539	18521	569.5	16.212	0.0066	2.169	0.0199	35.169	5.704
60	240.59	0.597	282.95	0.754	19938	591.7	16.147	0.0068	2.432	0.0270	39.264	6.127
65	277.37	0.651	328.66	1.110	21117	270.2	16.075	0.0070	3.021	0.0284	48.557	5.712
70	315.73	0.929	375.28	2.061	22509	562.2	15.996	0.0071	3.790	0.0430	60.627	5.208
75	348.95	0.641	418.38	1.165	23853	731.5	15.907	0.0076	5.017	0.0261	79.804	4.373
80	388.02	1.413	462.33	3.735	25067	412.1	15.811	0.0095	6.693	0.0543	105.833	3.666
90	470.83	2.101	554.81	3.634	27496	570.1	15.638	0.0074	10.408	0.0803	162.758	2.893
100	537.85	2.392	625.23	3.594	29215	275.9	15.452	0.0095	14.398	0.0628	222.469	2.418

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	29.16	3.271	39.62	0.369	7988	71.7	16.248	0.0046	0.366	0.0061	5.954	4.898
25	44.30	3.274	61.94	0.143	9694	167.5	16.232	0.0045	0.581	0.0099	9.423	4.701
30	67.71	3.271	86.01	0.257	11434	176.4	16.210	0.0049	0.877	0.0147	14.214	4.764
35	91.66	3.273	112.15	0.198	12893	135.1	16.184	0.0009	1.222	0.0120	19.779	4.634
40	110.15	3.274	134.81	0.257	14178	228.6	16.159	0.0058	1.573	0.0142	25.424	4.333
45	135.29	3.270	163.54	0.281	15594	404.1	16.123	0.0074	1.900	0.0124	30.638	4.416
50	162.95	3.308	207.23	1.021	16875	452.0	16.078	0.0056	2.026	0.0233	32.581	5.002
55	194.20	3.277	238.73	0.476	18348	422.7	16.031	0.0069	2.184	0.0212	35.009	5.547
60	231.39	3.309	275.77	1.332	19870	645.2	15.970	0.0066	2.449	0.0265	39.110	5.916
65	267.49	3.291	315.39	1.558	21086	218.7	15.894	0.0077	3.038	0.0283	48.279	5.540
70	305.60	3.290	365.09	1.000	22270	534.8	15.813	0.0069	3.826	0.0585	60.499	5.051
75	341.92	3.570	415.95	3.942	23746	525.2	15.715	0.0067	5.019	0.0374	78.879	4.335
80	378.65	3.355	457.99	2.068	24764	520.2	15.607	0.0094	6.666	0.0654	104.028	3.640
90	459.72	3.833	550.33	3.393	27129	487.2	15.411	0.0131	10.384	0.0785	160.026	2.873
100	526.24	3.789	621.99	2.645	28901	242.0	15.203	0.0127	14.169	0.0378	215.406	2.443

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	28.04	3.246	38.44	0.168	7849	63.3	15.973	0.0040	0.352	0.0085	5.617	4.993
25	41.43	3.248	59.22	0.192	9615	115.0	15.958	0.0042	0.568	0.0079	9.058	4.574
30	63.88	3.246	83.28	0.246	11214	159.3	15.940	0.0052	0.840	0.0096	13.382	4.774
35	87.91	3.246	107.19	0.269	12748	216.8	15.911	0.0046	1.187	0.0134	18.886	4.655
40	106.49	3.247	129.32	0.296	13928	264.4	15.882	0.0047	1.530	0.0165	24.307	4.381
45	130.57	3.245	156.56	0.204	15354	356.3	15.847	0.0044	1.865	0.0138	29.550	4.419
50	153.35	3.250	195.72	0.712	16589	409.6	15.797	0.0067	2.018	0.0168	31.879	4.810
55	189.05	3.260	234.53	1.309	17977	428.7	15.745	0.0075	2.175	0.0229	34.251	5.520
60	222.33	3.276	263.83	1.751	19396	519.2	15.681	0.0077	2.435	0.0199	38.176	5.824
65	260.00	3.272	305.43	0.905	20660	474.3	15.608	0.0059	3.027	0.0269	47.243	5.503
70	296.54	3.251	354.84	0.851	21945	514.7	15.530	0.0096	3.819	0.0385	59.308	5.000
75	330.55	3.317	400.65	0.792	23306	590.6	15.447	0.0061	4.991	0.0410	77.086	4.288
80	366.69	3.341	443.84	1.881	24540	491.3	15.365	0.0073	6.599	0.0346	101.402	3.616
90	451.13	3.870	546.00	3.595	26883	492.1	15.197	0.0096	10.284	0.0722	156.283	2.887
100	515.47	3.756	609.73	2.321	28686	265.1	15.028	0.0082	13.953	0.0569	209.685	2.458

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	30.83	0.131	38.79	0.161	7802	75.8	15.817	0.0044	0.351	0.0074	5.557	5.547
25	43.70	0.290	59.59	0.169	9501	109.1	15.801	0.0039	0.558	0.0090	8.817	4.957
30	65.69	0.128	84.52	0.216	11074	155.9	15.783	0.0042	0.838	0.0132	13.223	4.968
35	89.89	0.196	106.35	0.346	12620	219.8	15.755	0.0060	1.174	0.0136	18.501	4.859
40	108.21	0.157	129.35	0.507	13957	261.8	15.730	0.0050	1.519	0.0158	23.896	4.528
45	132.49	0.212	154.44	0.351	15159	379.7	15.692	0.0055	1.868	0.0148	29.305	4.521
50	153.69	0.346	190.63	0.567	16575	513.0	15.651	0.0063	2.011	0.0145	31.481	4.882
55	189.23	0.252	230.22	0.480	17834	495.9	15.601	0.0062	2.200	0.0207	34.321	5.513
60	222.27	0.604	260.20	1.824	19389	522.3	15.537	0.0074	2.470	0.0245	38.385	5.791
65	258.49	0.231	299.55	1.216	20541	504.2	15.472	0.0067	3.023	0.0256	46.770	5.527
70	294.66	0.658	348.07	1.610	21945	558.5	15.397	0.0065	3.866	0.0295	59.526	4.950
75	329.47	0.623	396.33	1.630	23239	482.0	15.317	0.0053	5.019	0.0337	76.874	4.286
80	364.86	0.594	439.42	0.750	24551	482.6	15.233	0.0103	6.590	0.0352	100.383	3.635
90	448.38	1.480	535.15	2.663	26820	377.4	15.073	0.0093	10.303	0.0737	155.300	2.887
100	515.85	1.873	610.72	2.043	28536	267.9	14.897	0.0091	13.837	0.0389	206.133	2.502

Plots for Measurement Results: