

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: without duct

Measurement Results 1:

Output [%]	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff [G/W]
	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		
20	29.98	0.114	49.10	0.129	8138	68.5	16.668	0.0052	0.409	0.0087	6.824	4.393
25	47.16	0.138	73.91	0.174	9829	46.7	16.648	0.0054	0.665	0.0104	11.066	4.262
30	66.94	0.118	103.22	0.142	11464	55.3	16.626	0.0046	0.989	0.0079	16.443	4.071
35	85.89	0.150	131.32	0.121	12811	126.2	16.599	0.0041	1.344	0.0116	22.315	3.849
40	106.30	0.238	163.32	0.256	14111	176.0	16.567	0.0050	1.769	0.0161	29.300	3.628
45	125.51	0.292	196.02	0.290	15542	204.4	16.527	0.0064	1.929	0.0160	31.881	3.937
50	146.34	1.190	235.41	0.623	16862	246.0	16.480	0.0055	1.963	0.0220	32.354	4.523
55	181.71	0.386	275.86	0.514	18263	132.1	16.426	0.0078	2.092	0.0278	34.370	5.287
60	212.27	0.551	325.15	0.607	19676	399.1	16.360	0.0075	2.334	0.0196	38.182	5.559
65	243.61	0.423	369.14	0.794	20896	298.1	16.284	0.0065	2.925	0.0291	47.625	5.115
70	278.22	0.555	411.50	0.791	22336	227.6	16.196	0.0070	3.816	0.0442	61.800	4.502
75	309.80	1.229	463.70	2.410	23219	278.3	16.098	0.0081	5.083	0.0463	81.822	3.786
80	338.98	2.031	513.16	2.769	24429	351.0	15.990	0.0049	6.888	0.0494	110.134	3.078
90	410.00	1.128	601.87	3.591	26480	286.0	15.802	0.0114	11.035	0.0691	174.372	2.351
100	461.22	2.231	689.97	7.138	27919	169.7	15.595	0.0092	15.245	0.0579	237.737	1.940

Measurement Results 2:

Output [%]	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff [G/W]
	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		
20	29.78	0.803	45.03	1.422	7970	33.1	16.417	0.0033	0.389	0.0076	6.389	4.661
25	46.21	0.807	69.47	1.420	9721	71.7	16.399	0.0062	0.635	0.0115	10.416	4.436
30	65.41	0.808	97.92	1.429	11274	120.8	16.378	0.0042	0.953	0.0120	15.610	4.190
35	83.16	0.830	124.17	1.438	12609	121.8	16.354	0.0063	1.298	0.0131	21.232	3.917
40	103.07	0.811	154.10	1.562	13893	116.1	16.325	0.0060	1.701	0.0162	27.772	3.711
45	124.37	0.884	189.05	1.464	15249	231.9	16.284	0.0052	1.940	0.0165	31.589	3.937
50	142.35	1.024	223.49	1.513	16560	200.6	16.238	0.0063	2.027	0.0192	32.907	4.326
55	174.70	0.944	268.58	1.612	17904	359.1	16.184	0.0061	2.121	0.0231	34.322	5.090
60	206.57	0.917	312.74	1.510	19317	224.2	16.116	0.0051	2.412	0.0284	38.874	5.314
65	238.78	1.103	354.61	1.662	20605	315.0	16.045	0.0063	2.976	0.0272	47.751	5.001
70	273.72	1.147	398.51	1.798	21795	316.8	15.964	0.0097	3.916	0.0385	62.518	4.378
75	303.13	1.022	449.01	1.692	22819	209.9	15.868	0.0067	5.132	0.0432	81.431	3.723
80	332.65	1.218	498.62	1.728	24050	400.1	15.773	0.0091	6.830	0.0510	107.734	3.088
90	407.86	1.502	582.77	3.292	26195	166.8	15.604	0.0091	10.955	0.0778	170.949	2.386
100	458.99	3.486	677.92	5.063	27579	173.7	15.404	0.0103	15.086	0.0755	232.395	1.975

Measurement Results 3:

Output [%]	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff [G/W]
	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		
20	28.91	0.833	44.30	1.419	7873	36.4	16.229	0.0052	0.385	0.0102	6.252	4.623
25	44.92	0.835	68.26	1.420	9594	52.7	16.212	0.0046	0.626	0.0101	10.141	4.429
30	62.48	0.846	95.53	1.422	11171	111.3	16.192	0.0045	0.936	0.0131	15.160	4.121
35	79.89	0.833	121.40	1.425	12522	102.1	16.170	0.0043	1.277	0.0133	20.654	3.868
40	99.72	0.857	149.42	1.423	13808	99.2	16.139	0.0068	1.673	0.0159	27.007	3.692
45	120.02	1.043	183.54	1.568	15071	179.8	16.100	0.0046	1.919	0.0140	30.902	3.884
50	138.48	0.892	216.93	1.467	16415	294.2	16.054	0.0049	2.004	0.0180	32.171	4.305
55	169.28	0.849	261.88	1.472	17924	415.9	16.001	0.0072	2.119	0.0173	33.910	4.992
60	200.88	0.985	303.77	1.530	19163	169.4	15.932	0.0065	2.373	0.0327	37.809	5.313
65	231.67	0.890	346.48	1.482	20301	288.6	15.856	0.0087	2.956	0.0338	46.878	4.942
70	263.78	0.883	387.67	1.482	21556	373.2	15.763	0.0085	3.890	0.0325	61.316	4.302
75	295.33	0.894	440.01	1.595	22858	357.9	15.665	0.0079	5.108	0.0475	80.019	3.691
80	321.71	1.242	487.82	1.841	23958	238.2	15.551	0.0109	6.710	0.0313	104.345	3.083
90	400.15	2.032	574.74	3.247	25993	236.1	15.361	0.0103	10.875	0.0619	167.053	2.395
100	446.02	2.157	666.34	3.898	27417	170.6	15.166	0.0107	14.850	0.0622	225.213	1.980

Measurement Results 4:

Output [%]	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff [G/W]
	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		
20	27.75	0.880	42.23	0.832	7720	41.7	15.928	0.0046	0.374	0.0101	5.963	4.654
25	42.39	0.879	64.93	0.831	9374	55.6	15.911	0.0051	0.611	0.0100	9.717	4.363
30	59.60	0.880	91.98	0.831	10985	116.9	15.887	0.0064	0.903	0.0100	14.345	4.155
35	77.64	0.878	118.31	0.833	12474	136.4	15.866	0.0062	1.254	0.0111	19.889	3.904
40	97.94	0.883	144.96	0.841	13622	145.4	15.836	0.0045	1.653	0.0173	26.178	3.741
45	117.09	0.956	177.69	0.912	14876	171.9	15.794	0.0058	1.929	0.0149	30.464	3.843
50	136.26	0.904	210.81	0.885	16090	169.4	15.748	0.0064	2.014	0.0153	31.711	4.297
55	168.19	0.955	256.14	0.990	17435	226.4	15.689	0.0069	2.146	0.0189	33.673	4.995
60	196.01	0.972	298.43	1.236	18816	274.1	15.628	0.0052	2.425	0.0295	37.899	5.172
65	228.48	0.980	341.66	0.930	20108	117.2	15.559	0.0087	2.994	0.0335	46.583	4.905
70	260.94	1.302	383.08	1.546	21251	110.1	15.483	0.0067	3.970	0.0319	61.470	4.245
75	294.00	1.300	430.00	1.841	22410	254.0	15.400	0.0052	5.159	0.0489	79.440	3.701
80	314.24	1.966	477.32	2.027	23714	179.6	15.312	0.0063	6.716	0.0550	102.833	3.056
90	393.51	2.118	571.34	1.652	25636	151.8	15.150	0.0071	10.796	0.0512	163.557	2.406
100	443.68	3.182	660.41	4.341	27217	208.0	14.971	0.0086	14.759	0.0773	220.960	2.008

Measurement Results 5:

Output [%]	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff [G/W]
	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		
20	27.05	0.964	41.16	0.374	7699	40.5	15.779	0.0029	0.364	0.0083	5.739	4.713
25	41.90	0.983	63.87	0.423	9352	49.6	15.766	0.0046	0.598	0.0110	9.430	4.443
30	57.81	0.964	89.25	0.366	10911	78.2	15.742	0.0045	0.894	0.0099	14.070	4.108
35	75.76	0.966	114.93	0.396	12202	109.6	15.720	0.0048	1.226	0.0098	19.265	3.932
40	95.03	0.967	140.58	0.383	13425	75.7	15.691	0.0046	1.612	0.0158	25.298	3.756
45	114.60	0.986	173.81	0.454	14843	117.8	15.650	0.0049	1.920	0.0138	30.049	3.814
50	133.78	1.071	206.30	0.475	16048	118.8	15.606	0.0042	2.020	0.0201	31.525	4.244
55	162.43	0.969	248.74	0.484	17263	270.5	15.550	0.0079	2.159	0.0173	33.568	4.839
60	192.93	0.982	293.02	0.473	18559	313.2	15.484	0.0060	2.452	0.0297	37.960	5.082
65	224.99	1.026	336.87	0.735	19841	251.7	15.418	0.0054	2.982	0.0341	45.970	4.894
70	256.47	1.206	377.48	0.985	21155	99.6	15.343	0.0044	3.946	0.0269	60.548	4.236
75	287.68	0.999	419.92	0.632	22334	160.5	15.265	0.0078	5.218	0.0588	79.661	3.611
80	314.16	1.353	473.69	1.083	23276	324.3	15.179	0.0076	6.715	0.0591	101.930	3.082
90	388.52	1.636	566.10	1.102	25392	210.6	15.023	0.0102	10.755	0.0542	161.564	2.405
100	436.95	1.706	650.77	2.734	27198	179.2	14.845	0.0074	14.597	0.0401	216.696	2.016

Plots for Measurement Results:

