

Tool info

Serial API: 1:1.0
Board: Custom STM32F401RE thrustBoard v2
Firmware: thrust++ : ChibiOS RT 7.1.0 : HAL 8.1.0
Commit: [143fcfd] : Apr 24 2022 - 17:29:27

Measurement info

Motor: T-Motor F1507
KV: 2700
Magnet poles: 14
Propeler: T3140
Blade count: 3
Note: no 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	26.60	0.475	34.70	5.293	8348	78.0	16.699	0.0070	0.338	0.0135	5.649	4.709
25	40.52	0.105	51.96	5.286	10196	147.2	16.687	0.0075	0.517	0.0182	8.625	4.698
30	57.21	0.473	70.49	5.284	12110	122.1	16.672	0.0096	0.758	0.0206	12.636	4.527
35	74.50	0.233	90.23	5.291	13879	178.5	16.649	0.0077	1.034	0.0202	17.221	4.326
40	91.58	0.147	111.17	5.289	15553	300.4	16.629	0.0099	1.366	0.0304	22.723	4.030
45	112.23	0.287	134.47	5.298	17310	422.0	16.598	0.0097	1.759	0.0255	29.191	3.845
50	132.27	0.188	158.07	5.286	18562	398.1	16.567	0.0091	2.123	0.0268	35.176	3.760
55	155.57	0.406	184.50	5.296	20094	170.6	16.525	0.0071	2.489	0.0250	41.122	3.783
60	182.69	0.352	214.92	5.363	21687	436.1	16.483	0.0099	2.887	0.0288	47.583	3.840
65	210.56	0.421	243.89	5.316	23344	466.7	16.426	0.0118	3.393	0.0304	55.727	3.778
70	240.98	0.385	278.98	5.412	24997	335.9	16.366	0.0122	4.162	0.0432	68.123	3.537
75	272.14	1.146	313.96	5.491	26426	402.6	16.295	0.0124	5.185	0.0442	84.491	3.221
80	300.34	1.085	353.43	5.376	28121	549.9	16.215	0.0127	6.311	0.0529	102.336	2.935
90	362.74	1.484	425.74	5.620	30874	210.8	16.073	0.0173	9.109	0.0482	146.417	2.477
100	433.01	2.580	499.87	5.987	33416	209.0	15.900	0.0192	11.737	0.0742	186.628	2.320

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	26.24	0.369	36.63	3.676	8227	75.7	16.493	0.0085	0.325	0.0105	5.368	4.888
25	39.10	0.492	52.73	3.679	10087	140.7	16.482	0.0105	0.508	0.0200	8.373	4.670
30	55.17	0.353	69.97	3.678	11858	137.0	16.464	0.0061	0.736	0.0190	12.111	4.555
35	72.53	0.352	90.20	3.677	13682	247.8	16.445	0.0061	1.019	0.0247	16.761	4.328
40	89.83	0.365	111.74	3.679	15385	278.8	16.422	0.0064	1.361	0.0237	22.357	4.018
45	110.34	0.359	132.89	3.678	17023	303.7	16.396	0.0091	1.723	0.0252	28.256	3.905
50	127.26	0.480	153.97	3.708	18446	333.6	16.366	0.0083	2.087	0.0240	34.148	3.727
55	151.37	0.573	179.25	3.704	19940	465.3	16.331	0.0065	2.445	0.0265	39.929	3.791
60	176.60	0.417	208.34	3.678	21535	459.7	16.288	0.0075	2.867	0.0223	46.692	3.782
65	204.86	0.432	242.37	3.694	23303	540.6	16.235	0.0076	3.357	0.0283	54.508	3.758
70	235.04	0.836	275.26	3.875	24800	431.6	16.174	0.0109	4.094	0.0315	66.215	3.550
75	265.60	0.610	312.27	3.704	26220	565.7	16.104	0.0109	5.106	0.0381	82.231	3.230
80	293.47	0.933	351.79	3.808	27882	805.6	16.029	0.0114	6.221	0.0478	99.712	2.943
90	354.46	0.935	421.58	4.611	30591	274.3	15.896	0.0149	8.891	0.0424	141.325	2.508
100	423.87	1.939	496.48	4.502	33077	194.0	15.734	0.0153	11.540	0.0519	181.564	2.335

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	25.59	0.545	35.27	2.296	8153	60.4	16.319	0.0068	0.317	0.0124	5.165	4.955
25	37.98	0.317	51.51	2.294	10003	126.3	16.308	0.0055	0.496	0.0175	8.089	4.695
30	53.73	0.335	69.43	2.296	11858	145.8	16.293	0.0064	0.727	0.0218	11.852	4.534
35	70.50	0.337	89.13	2.298	13523	238.1	16.275	0.0072	1.009	0.0234	16.415	4.295
40	87.41	0.318	110.29	2.297	15155	305.2	16.249	0.0076	1.333	0.0230	21.659	4.036
45	107.18	0.332	131.30	2.293	16962	386.5	16.228	0.0107	1.704	0.0255	27.652	3.876
50	125.43	0.408	152.37	2.318	18136	323.5	16.197	0.0095	2.059	0.0267	33.346	3.761
55	148.17	0.333	177.20	2.297	20016	393.3	16.160	0.0098	2.417	0.0225	39.065	3.793
60	172.62	0.348	206.13	2.298	21267	259.2	16.118	0.0091	2.824	0.0258	45.522	3.792
65	201.02	0.380	239.63	2.308	22829	472.5	16.070	0.0085	3.346	0.0306	53.778	3.738
70	230.44	0.585	274.61	2.412	24640	413.0	16.013	0.0103	4.062	0.0290	65.044	3.543
75	259.85	0.619	307.72	2.341	25979	514.7	15.952	0.0106	5.044	0.0358	80.467	3.229
80	287.58	1.189	348.10	2.556	27433	585.9	15.883	0.0073	6.170	0.0425	98.001	2.934
90	347.99	0.972	417.60	2.770	30438	366.5	15.758	0.0094	8.788	0.0413	138.479	2.513
100	418.24	1.427	491.20	2.999	32952	288.2	15.592	0.0198	11.384	0.0516	177.487	2.356

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	24.92	0.250	36.10	2.094	8084	67.0	16.195	0.0070	0.320	0.0135	5.177	4.813
25	37.59	0.264	51.97	2.096	9938	91.3	16.178	0.0064	0.494	0.0165	7.993	4.703
30	52.99	0.296	69.85	2.101	11728	153.8	16.164	0.0055	0.716	0.0234	11.580	4.576
35	69.92	0.290	89.52	2.103	13424	152.2	16.139	0.0069	0.996	0.0242	16.079	4.348
40	87.33	0.267	110.62	2.095	15111	328.3	16.114	0.0101	1.330	0.0277	21.425	4.076
45	106.40	0.305	130.35	2.104	16769	465.8	16.086	0.0094	1.683	0.0275	27.067	3.931
50	123.98	0.319	151.05	2.201	18081	370.3	16.055	0.0089	2.042	0.0250	32.784	3.782
55	145.84	0.440	174.91	2.152	19591	509.6	16.008	0.0095	2.385	0.0274	38.174	3.820
60	169.89	0.454	202.87	2.132	21101	225.6	15.968	0.0121	2.814	0.0248	44.929	3.781
65	197.42	0.428	235.55	2.129	22624	423.3	15.905	0.0099	3.318	0.0283	52.780	3.740
70	225.30	0.356	268.57	2.157	24189	462.7	15.841	0.0113	4.020	0.0338	63.682	3.538
75	254.81	0.517	302.09	2.206	25761	659.7	15.757	0.0126	4.994	0.0408	78.692	3.238
80	282.32	0.853	340.95	2.488	27304	635.5	15.675	0.0145	6.134	0.0487	96.154	2.936
90	340.97	0.654	410.29	2.311	30100	317.3	15.538	0.0146	8.644	0.0419	134.301	2.539
100	408.78	1.350	481.43	2.742	32477	263.6	15.374	0.0189	11.160	0.0661	171.570	2.383

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	23.78	0.341	35.06	2.476	7975	73.4	15.941	0.0081	0.311	0.0152	4.964	4.791
25	36.01	0.330	50.34	2.479	9782	94.3	15.930	0.0088	0.482	0.0196	7.683	4.687
30	50.98	0.337	67.24	2.475	11581	129.6	15.916	0.0106	0.706	0.0174	11.235	4.538
35	67.73	0.324	87.19	2.476	13267	196.8	15.898	0.0069	0.977	0.0198	15.535	4.359
40	84.81	0.323	107.62	2.477	14960	325.8	15.874	0.0081	1.303	0.0257	20.684	4.100
45	103.08	0.357	127.69	2.510	16436	402.8	15.848	0.0072	1.654	0.0236	26.212	3.933
50	121.13	0.379	147.59	2.491	17719	338.5	15.817	0.0088	2.003	0.0165	31.688	3.823
55	141.73	0.472	170.80	2.487	19430	382.7	15.779	0.0087	2.364	0.0275	37.307	3.799
60	165.94	0.475	199.12	2.488	20797	422.3	15.738	0.0097	2.795	0.0250	43.986	3.773
65	193.09	0.507	230.87	2.516	22519	424.2	15.686	0.0096	3.315	0.0296	52.002	3.713
70	220.60	0.537	263.03	2.514	24145	483.8	15.628	0.0102	4.000	0.0336	62.506	3.529
75	251.38	0.429	298.32	2.501	25637	486.1	15.562	0.0105	4.980	0.0309	77.506	3.243
80	278.54	0.799	334.84	2.582	26971	407.9	15.491	0.0102	6.082	0.0364	94.223	2.956
90	335.15	0.762	404.58	2.658	29712	405.7	15.370	0.0114	8.499	0.0399	130.622	2.566
100	405.13	1.325	479.29	3.063	32312	218.3	15.224	0.0165	10.997	0.0524	167.421	2.420

Plots for Measurement Results:

