

Tool info

Serial API: 1:1.0
Board: Custom STM32F401RE thrustBoard v2
Firmware: thrust++ : ChibiOS RT 7.1.0 : HAL 8.1.0
Commit: [] : Sep 15 2022 - 20:11:16

Measurement info

Motor: RaceStar BR2507S
KV: 1800
Magnet poles: 14
Propeler: HQProp 6x4x3
Blade count: 3
Note: battery 3S 2700mAh

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	58.01	12.561	82.75	1.786	4736	33.3	12.323	0.0038	0.620	0.0304	7.642	7.592
30	105.99	12.557	142.53	1.777	6241	52.9	12.307	0.0052	1.201	0.0308	14.777	7.173
40	150.50	12.556	200.53	1.789	7407	77.7	12.284	0.0056	1.850	0.0382	22.723	6.623
50	215.02	12.556	280.91	1.793	8812	32.5	12.247	0.0062	2.899	0.0437	35.503	6.056
60	311.23	12.558	397.29	1.793	10477	56.0	12.190	0.0066	4.666	0.0770	56.875	5.472
70	426.79	12.590	539.50	1.943	12231	67.0	12.102	0.0074	7.091	0.0893	85.817	4.973
80	549.47	12.606	691.20	2.515	13870	90.3	12.003	0.0072	10.035	0.0792	120.447	4.562
90	671.51	12.652	841.44	2.145	15301	98.0	11.877	0.0095	13.361	0.0691	158.679	4.232
100	793.88	12.597	989.22	2.023	16601	96.3	11.728	0.0087	17.069	0.1105	200.193	3.966

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	65.47	7.623	81.85	2.094	4715	38.6	12.222	0.0032	0.612	0.0277	7.483	8.748
30	112.04	7.613	140.37	2.097	6189	50.7	12.202	0.0051	1.189	0.0283	14.510	7.722
40	155.87	7.612	197.12	2.088	7355	71.6	12.180	0.0055	1.823	0.0307	22.200	7.021
50	220.26	7.612	277.49	2.106	8751	36.9	12.147	0.0056	2.905	0.0442	35.294	6.241
60	315.84	7.619	393.51	2.100	10435	59.0	12.085	0.0062	4.705	0.0525	56.866	5.554
70	428.20	7.631	532.88	2.274	12175	78.3	12.010	0.0059	7.055	0.0647	84.733	5.054
80	549.17	7.637	681.97	2.179	13775	81.0	11.906	0.0066	9.887	0.0593	117.718	4.665
90	670.39	7.679	832.68	2.374	15175	98.7	11.778	0.0072	13.199	0.0562	155.459	4.312
100	789.11	7.636	976.32	2.337	16463	106.0	11.638	0.0092	16.887	0.0853	196.526	4.015

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	54.24	6.409	73.17	3.834	4700	38.8	12.126	0.0038	0.583	0.0300	7.071	7.671
30	100.41	6.395	131.44	3.836	6160	52.3	12.108	0.0056	1.165	0.0388	14.108	7.117
40	144.28	6.394	187.83	3.837	7326	67.8	12.084	0.0040	1.818	0.0296	21.974	6.566
50	205.83	6.395	266.25	3.835	8682	34.1	12.050	0.0057	2.815	0.0381	33.922	6.068
60	301.64	6.399	380.37	3.838	10348	43.9	11.993	0.0069	4.600	0.0551	55.168	5.468
70	413.57	6.438	520.01	3.920	12088	71.4	11.913	0.0073	6.972	0.0490	83.060	4.979
80	533.37	6.521	666.65	4.007	13680	84.3	11.812	0.0072	9.850	0.0647	116.346	4.584
90	654.14	6.416	814.10	3.901	15098	104.0	11.689	0.0087	13.083	0.0455	152.929	4.277
100	770.70	6.463	958.11	3.917	16336	103.4	11.551	0.0117	16.701	0.0916	192.909	3.995

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	54.97	3.729	71.06	4.122	4695	27.8	12.031	0.0038	0.606	0.0396	7.293	7.537
30	99.32	3.695	128.96	4.103	6141	51.5	12.018	0.0063	1.156	0.0309	13.888	7.152
40	142.75	3.697	184.36	4.104	7277	65.6	11.995	0.0044	1.796	0.0319	21.540	6.627
50	202.95	3.696	261.70	4.111	8643	34.3	11.961	0.0055	2.824	0.0378	33.774	6.009
60	298.05	3.721	375.08	4.128	10297	49.0	11.905	0.0062	4.541	0.0473	54.063	5.513
70	407.91	3.835	512.01	4.266	12040	74.4	11.825	0.0063	6.879	0.0831	81.344	5.015
80	528.25	4.030	657.56	4.332	13608	76.3	11.729	0.0085	9.655	0.0689	113.244	4.665
90	648.52	3.782	804.19	4.213	15023	117.7	11.609	0.0077	12.966	0.0635	150.533	4.308
100	763.31	4.034	944.86	4.527	16285	118.7	11.476	0.0092	16.520	0.1066	189.582	4.026

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	51.21	4.880	71.96	3.392	4639	38.8	11.959	0.0045	0.584	0.0340	6.989	7.326
30	95.54	4.881	128.55	3.390	6104	62.3	11.939	0.0062	1.159	0.0338	13.839	6.903
40	139.54	4.880	183.72	3.392	7236	77.0	11.918	0.0046	1.783	0.0345	21.250	6.566
50	198.87	4.880	258.50	3.398	8579	33.3	11.884	0.0068	2.758	0.0425	32.775	6.068
60	292.95	4.882	372.09	3.398	10247	39.3	11.828	0.0062	4.491	0.0552	53.118	5.515
70	403.87	4.898	508.77	3.419	11955	60.2	11.744	0.0064	6.854	0.0667	80.498	5.017
80	520.71	4.946	652.41	3.504	13542	71.5	11.649	0.0079	9.619	0.0814	112.047	4.647
90	640.93	5.007	796.86	3.539	14952	103.2	11.524	0.0078	12.856	0.0577	148.150	4.326
100	753.38	5.003	935.62	3.638	16154	109.5	11.385	0.0103	16.321	0.0827	185.822	4.054

Plots for Measurement Results:

