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63 Second 1/2A Fubar 600 - Performance Runs

1 message

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Report No. 63

Second 1/2A Fubar 600

April 13, 2020

I called Jay Burkart yesterday and requested a computer performance run on the 4C battery pack and a 10 X 7e APC prop. The ElectriCalc Program predicted output is sh

Tandy Fubar 600 Turnigy 3536/5 10x7 850mm

all data without guarantee - Accuracy: +/-10%

propCalc - Propeller Calculator


General Model Weight: 1134 g incl. Drive 40 oz # of Motors: 1 (on same Battery) Wing Area: 38.71 dm² 600 in² Drag: simplified 0.05 Cd

Battery Cell Type (Cont. / max. C) - charge state: custom - normal Configuration: 2 S 1 P Cell Capacity: 1000 mAh max. discharge: 85% 1000 mAh total


Controller Type: CC Phoenix Edge 50 Current: 50 A cont. 50 A max Resistance: 0.015 Ohm Weight: 71 g 2.5 oz

Motor Manufacturer - Type (Kv) - Cooling: Turnigy - D3536-5 (1450) KV (w/o torque): 1450 rpm/V no-load Current: 3.5 A @ 8 V Limit (up to 15s): 520 W medium search... Prop-Kv-Wizard


Propeller Type - yoke twist: APC Electric E - 0° Diameter: 10 inch 254 mm Pitch: 7 inch 177.8 mm # Blades: 2




Load: 30.2 C



Mixed Flight Time: 2.8 min



electric Power: 193 W



est. Temperature: 46 °C

Remarks:

- The airflow at the propeller blade will stall. Therefore the static thrust and max. current may not be reached. On ground you will measure "Stall Thrust" as maximum.
- 26.0km/h / 16.1mph - above this airspeed stall at the propeller blade will have disappeared completely.
- The estimated vertical climb speed is less than mentioned above. As a result the vertical climb speed may not be maintained.

Battery	Motor @ Optimum Efficiency	Motor @ Maximum	Propeller
Load: 30.20 C	Current: 26.70 A	Current: 30.20 A	Static Thrust: 1201 g
Voltage: 6.84 V	Voltage: 6.51 V	Voltage: 6.39 V	42.4 oz
Rated Voltage: 7.40 V	Revolutions*: 8160 rpm	Revolutions*: 7865 rpm	Revolutions*: 7865 rpm
Energy: 7.4 Wh	electric Power: 173.8 W	electric Power: 193.0 W	Stall Thrust: 997 g
Total Capacity: 1000 mAh	mech. Power: 137.4 W	mech. Power: 152.2 W	35.2 oz
Used Capacity: 850 mAh	Efficiency: 79.1 %	Efficiency: 78.9 %	avail. Thrust @ 0 km/h: 997 g
min. Flight Time: 1.7 min		est. Temperature: 46 °C	avail. Thrust @ 0 mph: 35.2 oz
Mixed Flight Time: 2.8 min		115 °F	Pitch Speed: 84 km/h
Weight: 68 g			52 mph
2.4 oz		Wattmeter readings	Tip Speed: 377 km/h
		Current: 30.2 A	234 mph
		Voltage: 6.84 V	specific Thrust: 5.17 g/W
		Power: 206.6 W	0.18 oz/W

The key performance parameters are summarized below:

Motor: Turnigy D3 Outrunner

Battery: Graphene LiPo 1000 mAh 2S 65C

Prop: 10 X 7e APC

Throttle: 100%

Thrust: 42.4 oz

Weight: 40.0 oz

Thrust/Weight: 1.06

Amps: 30.2

Run Time: 1.7 min

Rate of Climb: 1299 ft./min

Max Altitude: $1.7 \times 1299 = 2208$ ft.

Cutoff Altitude: $1.5 \times 1299 = 1949$ ft. ~ (*The SAM LMR run time limit is 1.5 min*)

Jay also made a second run with a 11 X 7e APC prop which is shown below.

Tandy Fubar 600 Turnigy 3536/5 11x7 1000r

all data without guarantee - Accuracy: +/-10%

General

Model Weight: g oz

Battery Cell Type (Cont. / max. C) - charge state: -

Controller Type:

Motor Manufacturer - Type (Kv) - Cooling: -

Propeller Type - yoke twist: -

of Motors: (on same Battery)

Wing Area: dm² in²

Configuration: S P

Cell Capacity: mAh mAh total

max. discharge:

Resistance: Ohm

Weight: g oz

KV (w/o torque): rpm/V

no-load Current: A @ V

Limit (up to 15s): W

Diameter: inch mm

Pitch: inch mm

Blades:

Load:

Mixed Flight Time:

electric Power:

est. Temperature:

Remarks:

Battery

Load:	37.13 C
Voltage:	6.72 V
Rated Voltage:	7.40 V
Energy:	7.4 Wh
Total Capacity:	1000 mAh
Used Capacity:	850 mAh
min. Flight Time:	1.4 min
Mixed Flight Time:	2.5 min
Weight:	68 g
	2.4 oz

Motor @ Optimum Efficiency

Current:	26.70 A
Voltage:	6.51 V
Revolutions*:	8160 rpm
electric Power:	173.8 W
mech. Power:	137.4 W
Efficiency:	79.1 %

Motor @ Maximum

Current:	37.13 A
Voltage:	6.16 V
Revolutions*:	7282 rpm
electric Power:	228.7 W
mech. Power:	177.2 W
Efficiency:	77.5 %
est. Temperature:	52 °C
	126 °F

Wattmeter readings

Current:	37.13 A
Voltage:	6.72 V
Power:	249.5 W

Propeller

Static Thrust:	1371 g
	48.4 oz
Revolutions*:	7282 rpm
Stall Thrust:	1252 g
	44.2 oz
avail. Thrust @ 0 km/h:	1371 g
avail. Thrust @ 0 mph:	48.4 oz
Pitch Speed:	78 km/h
	48 mph
Tip Speed:	383 km/h
	238 mph
specific Thrust:	5.99 g/W
	0.21 oz/W

Motor Partial Load

Propeller	Throttle	Current (DC)	Voltage (DC)	el. Power	Efficiency	Thrust	Spec. Thrust
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The key performance parameters are summarized below:

- Motor: Turnigy D3 Outrunner
- Battery: Graphene LiPo 1000 mAh 2S 65C
- Prop: 11 X 7e APC
- Throttle: 100%
- Thrust: 48.4 oz

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14/4/20, 8:36 am

Weight: 40.0 oz

Thrust/Weight: 1.21

Amps: 37.13

Run Time: 1.4 min

Rate of Climb: 1412 ft/min

Max Altitude: $1.4 \times 1412 = 1977$ ft.

Cutoff Altitude: $1.5 \times 1412 = 2118$ ft. ~ *(Jay feels the run time will reach 1.5 min due*

The 1.5 min run time will make the cutoff altitude $(2118 - 1949) = 169$ feet more.....