

2022-07-12
Certificate of Security - Flight Stand 50

The object of this *Certificate of Security* is to certify that the products listed below have been designed, developed, tested, and validated by Tyto Robotics to its internal standards of safety. The products respect the provided datasheet, and, when used within their specifications, operating conditions and with the specified protective equipment, are safe. Large propellers rotate at high speed and are inherently dangerous to humans. Tyto Robotics has performed a variety of safety analysis on its products and conducts physical tests to determine their reliability and their safety.

Manufacturer information

Manufacturer Name	Tyto Robotics Inc.
Design, final manufacturing, and testing	Canada
Manufacturer Address	B1-80 Adrien-Robert, Gatineau, QC J8Y 3S2, Canada
Product name	Flight Stand 50

Listed safety analysis and tests

Overall structural safety factor (FEA)	2.0 minimum
Structural natural frequency	Mode 1: 17.76 Hz; Mode 2: 18.10 Hz; Mode 3: 56.85 Hz Supposing a total mass of motor and propeller of 3 kg
Stand structural static test	Passed test with pulling force of 757.3 N for 73 hours Passed test with lateral force of 268.8 N for 42 hours
Force Measurement Unit fatigue test	Passed test with push/pulling force of 600 N for 100,000 cycles Passed test with CW/CCW torque of 30 Nm for 100,000 cycles Total duration of fatigue testing: 228 hours 13 mins
System dynamic test	Run tests with 4 powertrain combinations, powered by DC power supply
System endurance test	Run 70 sets, a total duration of 50 hours of testing with spinning motor and propeller

Confirmed by:



Baiyun Tang, mechanical engineer, Tyto Robotics Inc.