U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

April 27, 2015

Exemption No. 11434
Regulatory Docket No. FAA–2015–0201

Mr. David Voyles
1300 Hoge Building
705 Second Avenue
Seattle, WA 98104

Dear Mr. Voyles:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

The Basis for Our Decision

By letter dated January 24, 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct real estate aerial imaging services.

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

Airworthiness Certification

The UAS proposed by the petitioner is a DJI Phantom 2.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria

provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Mr. Daniel W. Achatz is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Mr. Daniel W. Achatz is hereafter referred to as the operator.

Failure to comply with any of the conditions and limitations of this grant of exemption will be grounds for the immediate suspension or rescission of this exemption.

1. Operations authorized by this grant of exemption are limited to the DJI Phantom 2 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The

operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g. inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs

(training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

25. The UAS may not be operated by the PIC from any moving device or vehicle.

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

    The PIC, VO, operator trainees or essential persons are not considered nonparticipating persons under this exemption.

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

If this exemption permits operations for the purpose of closed-set motion picture and television filming and production, the following additional conditions and limitations apply.

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
    a. Dates and times for all flights;
    b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N−Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

Unless otherwise specified in this grant of exemption, the UAS, the UAS PIC, and the UAS operations must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on April, 30, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/
John S. Duncan
Director, Flight Standards Service

January 24, 2015

U.S. Department of Transportation, Docket Operations
West Building Ground Floor, Room w12-140
1200 New Jersey Avenue, SE Washington, DC 20590

Subj: *Petition for Exemption to Operate the DJI Phantom 2 Quad-Copter Unmanned Aerial System for Commercial Aerial Photography Purposes*

Dear Sir or Madam:

The purpose of this letter is to petition the Federal Aviation Administration for an exemption from certain Federal Aviation Regulations in order for the petitioner, Daniel W. Achatz, to operate an Unmanned Aerial System (UAS) within the Seattle metropolitan area of the National Airspace System, in furtherance of his business as a real estate photographer. Mr. Achatz is well acquainted with the risks that come with the privilege of operating an aircraft in the United States, but also with the opportunities available via new unmanned flight technology. He holds a Private Pilot Certificate and has logged over 500 hours of flight time in single-engine, land-rated aircraft. He also has more than twenty hours of logged flight time of that particular unmanned aircraft that is the subject of this Petition. As a real estate photographer, the petitioner would like to combine the benefits of an unmanned aviation platform with his profession as a photographer to further the opportunities for safe, cost-effective aerial imaging services for the public at large.

Accordingly, and pursuant to 14 CFR §§ 11.61–.103 and Section 333 of the FAA Modernization and Reform Act of 2012, PL 112–95 (Feb. 14, 2012), the petitioner is submitting the following information with this request:

Identity of Petitioner and Counsel to the Petitioner.

Petitioner: Daniel W. Achatz
6552 Earl Avenue NW
Seattle, WA 98117
(206) 612-2830
dan@danachatz.com

Petitioner's Counsel: David Voyles
1300 Hoge Building, 705 Second Avenue
Seattle, WA 98104
(206) 455-3568
david@voylespllc.com

Description of Operations.

A. The UAS that is the Subject of this Petition.

Mr. Achatz is the owner of a DJI Phantom 2 Aerial Kit unmanned aircraft with a serial number of PH646002943 and its associated portable ground station controller (together the "Subject UAS"). The Subject UAS is a quad-copter with a camera mounted beneath it, piloted via a portable ground station.[1] It has an empty weight of approximately 1,000 grams, and a maximum weight of 1,390 grams, with the GoPro Hero IV mounted as payload. He purchased the Subject UAS as part of a Toronto Cinema Edition P2 Aerial Kit on January 14, 2015. The Phantom 2 is a widely known unmanned aircraft, and is the same type of aircraft that was recently the subject of the grant of an exemption by the FAA. *See In re Douglas Trudeau*, FAA Exemption No. 11138 (Jan. 5, 2015).

The portable ground station used by Mr. Achatz to pilot the unmanned aircraft is a two-channel, wireless communication device using an FCC-compliant 5.8GHz frequency band for the video link, and a 2.4 GHz transmitted. The Subject UAS is equipped with lost-link capability, which enables the Phantom 2 to enter a fail-safe Return-to-Home Mode in the event that the link between the aircraft and the ground station is lost.[2]

The Subject UAS can operate for a total of approximately 20 minutes on one battery charge. It has a maximum range from the ground station of 2,300 feet. However, it also has programmable height and radius limits to establish an operations area. Without programming the Subject UAS, it has a default height limit of 393 feet AGL.

B. The UAS Pilot in Command.

Mr. Achatz began flying as a student pilot in 1979. He conducted his flight training predominantly at Galvin Aviation at Boeing Field in Seattle, Washington. He was issued his private pilot certificate in August of 1984. As of the date of this letter, he has 526 hours of accumulated flight time, with over 100 hours in a high-performance single engine aircraft with retractable landing gear.

Mr. Achatz has never been subject to an FAA enforcement action. Nor has he ever been involved with an aircraft accident or incident that required notification to the NTSB.

With regard to the Subject UAS, Mr. Achatz has made numerous flights as a hobbyist, and has accumulated more than fifteen hours of flight time with the Subject UAS.

[1] *See* Toronto Edition Packaging List, Nomenclature, and Operating Instructions, attached hereto as Exhibit A.
[2] *See* Phantom 2 Flight Procedures, attached hereto as Exhibit B.

C. UAS Operating Parameters and Intended Mission Profile.

Mr. Achatz is a professional photographer. He has worked for multiple sellers of real property and real estate brokerages in the Seattle area on a contract basis to photograph homes listed for sale. He intends to use the Subject UAS to conduct aerial photography for listing brokers.[3]

The vast majority of the petitioner's operations will be conducted in the Seattle metropolitan area. However, his business takes him throughout the western Washington area. On the Seattle Sectional Chart, those flights would occur generally within western Washington.[4] Because the operations may be conducted at various locations in the area during the period that the exemption would be in effect, there are not specific locations at which Mr. Achatz intends to operate.

Mr. Achatz would adopt with the following UAS Operating Parameters:

1. All missions will be conducted below 300' AGL, and within a radius distance of 800' from the portable ground station.

2. Each mission will consist of one flight.

3. Mr. Achatz will establish a fixed location where he will be positioned with the portable ground station, and where he will post a sign near the ground station stating, "Aerial Photography in Progress – Remain Back 150 feet."

4. Mr. Achatz will act as the pilot in command and will have direct line of sight visual observation of the aircraft at all times, and operate only within visual line of sight. He will conduct all operations under his own personal and flight safety protocols, and post a sign near his control station.

5. In terms of proximity to the residence or structure being photographed, Mr. Achatz may operate in a close proximity to the structure, and in some cases as close as 25' away from the structure. When that happens, he will operate at less than two miles per hour, making the risk of collision almost negligible.

6. Prior to the start of a flight, Mr. Achatz will activate and use the UAS's global positioning system flight safety procedure and lost-link procedure to ensure return of the aircraft in the event of a lost link or compromised communication.

7. On each mission, the aircraft will return to the control pad with no less than five minutes of battery power remaining.[5]

8. Each mission will last for no more than twenty minutes of flight time.

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[3] Attached hereto as Exhibit C are examples of Mr. Achatz's aerial photography done on a recreational basis.
[4] Exhibit D contains a chart with the coordinates of the proposed operating boundaries.
[5] Attached hereto as Exhibit E is a sample battery log for the Subject UAS, showing the percentage of battery power remaining on landing.

9. In the event that any mission would ever occur within the airspace of a specific airport (e.g., if the operation will involve photographing a residence located in a neighborhood in West Seattle, which falls within the KBFI Class D airspace) or controlled airspace, Mr. Achatz shall obtain the permission of that control tower to operate in that airspace or from the appropriate control authority.

10. In the event that any mission will occur within five miles of an airport, Mr. Achatz shall ensure the airport is notified of the estimated flight time, flight duration, elevation of flight, and pertinent information.

11. Mr. Achatz will conduct all flights in permissible weather, and during hours from BMNT to EENT.

Specific Sections of 14 CFR From Which Petitioner Seeks an Exemption.

Mr. Achatz seeks an exemption from the following FARs:

14 CFR Part 21, Subpart H	Certification procedures for products and parts, Airworthiness Certificates
14 CFR Part 36	Noise standards: Type and airworthiness
14 CFR § 45.23	Display of marks; general
14 CFR Part 61	Certification: Pilots, flight instructors, and ground instructors
14 CFR § 91.7	Civil aircraft airworthiness
14 CFR § 91.9	Civil aircraft flight manual, marking, and placard requirements
14 CFR § 91.103	Preflight action
14 CFR § 91.105	Flight crewmembers at stations
14 CFR § 91.109	Flight instruction
14 CFR § 91.119	Minimum safe altitudes
14 CFR § 91.121	Altimeter settings
14 CFR § 91.151	Fuel requirements for flights in VFR conditions
14 CFR § 91.173	ATC clearance and flight plan in IFR conditions
14 CFR § 91.203	Civil aircraft: Certifications required
14 CFR § 91.207	Emergency locator transmitters
14 CFR Part 91, Subpart E	Maintenance

The Extent of Relief Sought, and Reasons for Seeking the Exemption.

14 CFR Part 21, Subpart H. Part 21 establishes the procedures for issuance of certificates of airworthiness, as mandated by 49 U.S.C. § 44704. Under Section 333 and 49 U.S.C. § 44701(b), the FAA may exempt aircraft from airworthiness certification. The petitioner requests an exemption from the requirements of this Part because the size, weight, speed, operational capability and proximity to airports in which the Subject UAS pose significantly less of a risk that the risks posed by conventional aircraft. Manned aircraft pose

risks to the life and safety of the crew; that is not a consideration with the Subject UAS. Risks to third parties are also minimized given the lightweight and slow speed at which the Subject UAS would operate. Nor are there risks of fuel spillage or fire in the event of an accident. Thus Mr. Achatz requests that the FAA waive the requirement that the Subject UAS, particularly the aircraft portion, require an airworthiness certificate.

14 CFR Part 36. FAR Part 36, Subparts A, F and O, establish certain noise standards for certification of various aircraft types. Because the Subject UAS would not have an airworthiness certificate, and given its small size and negligible noise impact, the petitioner requests an exemption from FAR Part 36.

14 CFR § 45.23. FAR Part 45.23 establishes marking requirements for aircraft; paragraph (b) mandates that the registration number be displayed in letters not less than two inches in height. The Subject UAS is small enough that it cannot accommodate the type-size requirement. Accordingly, Mr. Achatz requests an exemption from this part.

14 CFR Part 61. FAR Part 61 sets forth the certification requirements for pilots. Subpart E establishes the privileges and limitations for holders of a private pilot certificate. The petitioner requests an exemption that would allow him to operate the Subject UAS for compensation or hire as part of his aerial photography business for the reasons articulated in *In re Trudeau*, FAA Exemption No. 11138, and *In re Astraeus*, FAA Exemption No. 11062. Mr. Achatz will operate the Subject UAS over property where the owner or owner's representative has requested that the operation occur. Furthermore, as a holder of a private pilot certificate, Mr. Achatz is an Airman who meets the knowledge base and skill level for operating an UAS. He thus requests and exemption from the requirement that he hold a commercial pilot certificate and anything other than a Third Class Medical certificate.

14 CFR § 91.7. Under FAR 91.7, no person may operate an aircraft unless it is in an airworthy condition. To the extent that "airworthy" is defined as requiring an airworthiness certificate, the petitioner would request an exemption from this FAR for the same reasons identified in his request for an exemption of 14 CFR Part 21, Subpart H. He will not, however, operate the Subject UAS if it is not in a condition for safe flight, as required under FAR 91.7(b).

14 CFR § 91.9. Petitioner requests exemption from the requirement of FAR 91.9, which requires that all aircraft have certain markings, placards and on-board flight manuals for the same reasons as stated in his request fro exemption under 14 CFR Part 21, Subpart H, and for a deviation from the marking requirements of 14 CFR Part 36, Subparts A, F, and O.

14 CFR § 91.103. FAR 91.103 mandates certain pre-flight action. Petitioner will take all necessary pre-flight action, but requests an exemption from this requirement insofar as it is interpreted as requiring pre-flight actions appropriate to manned aircraft only (e.g., that flights be from an airport, etc.).

14 CFR § 91.105. FAR 91.105 mandates that crewmembers be at designated stations, have safety belts fastened, etc. Petitioner would be at a designated ground station for each mission, but requests an exemption to accommodate the fact that the Subject UAS is unmanned.

14 CFR § 91.109. This FAR requires that all flight instruction be conducted in aircraft that have dual controls, or throw-over controls, with an instructor. From time to time the petitioner will conduct his own refresher training, but requests an exemption insofar as this FAR would be interpreted to require that the ground control station have a second controller or dual-control capability.

14 CFR § 91.119. FAR 91.119 sets forth the minimum safe altitudes over various areas. Petitioner requests an exemption from this this FAR in order to accomplish the intended function of the mission for which he seeks an exemption.

14 CFR § 91.121. FAR 91.121 mandates various altimeter settings in order to maintain level flight. Petitioner requests and exemption from this FAR as the Subject UAV will not have an altimeter that matches the requirements of this FAR. Operations with the Subject UAV will, however, maintain altitude below the 300' AGL ceiling by the petitioner monitoring the altitude of the UAS and through the Subject UAS's ability to establish a flight zone that cannot exceed the ceiling.

14 CFR § 91.151. Petitioner requests an exemption from the VFR-flight fuel carrying requirements because the Subject UAS will operate on battery power. Operations with the Subject UAS will, however, maintain a five-minute reserve battery time.

19 CFR § 91.173. Petitioner requests an exemption from the IFR-clearance requirement for flights into controlled airspace. It is possible Mr. Achatz may operate the Subject UAS in conditions that are IFR within controlled airspace (e.g., a flight on a day with less than three miles visibility in a neighborhood that falls within the Class D airspace of KBFI). He would request that, after contacting ATC for the controlled airspace, he would be allowed to operate in what might be IFR conditions, but where he still has complete and unfettered line of sight visibility with the Subject UAS.

14 CFR § 91.203. FAR 91.203 requires that a civil aircraft have an airworthiness certificate and a registration certificate. Mr. Achatz requests that he be exempt from complying with this FAR insofar as it mandates issuance of an airworthiness certificate, for the reasons stated in his request for an exemption under 14 CFR Part 21, Subpart H.

14 CFR § 91.207. FAR 91.207 prohibits operation of a US-registered aircraft unless it is equipped with an emergency locator transmitter. Given the limited distance of flights of the Subject UAS, Mr. Achatz requests and exemption from this FAR.

14 CFR Part 91, Subpart E. FAR 91, Subpart E requires that owners or operators of aircraft have the aircraft inspected at certain intervals, and by certain mechanics. Petitioner requests an exemption from this Subpart because the Subject UAS has a trouble-shooting and maintenance program that is best executed by the owner/operator, and is simply different from the maintenance of manned aircraft. Petitioner will, however, maintain a maintenance log and any maintenance records of repair of the Subject UAS.

Public Interest and Benefit Considerations.

Aerial imaging services generally require use of a manned platform. Close-proximity aerial photography is difficult to do, and usually requires the use of a helicopter or slow-moving aircraft at an appropriate distance over a populated area. The operation must be conducted in VFR conditions, and adds aircraft in congested airspace.

By using the Subject UAS, Mr. Achatz aims to provide the public with quality aerial photography services at a fraction of the cost involved with manned flight. Furthermore, the risks inherent with manned flight are significantly reduced where the aircraft conducting the operation is less than five pounds, remains below 300' AGL, and can operate within a very confined cylinder on or directly over the location being photographed. Finally, as a certificated airman, he has the knowledge and experience to conduct a safe, efficient flight operation in furtherance of his primary occupation. Thus the public will be better served by having more affordable aerial imaging options available, and through an operation that is being conducted by an FAA-certificated airman.

Why the Exemptions Would Not Adversely Affect Safety.

The proposed operations will not adversely affect safety for four primary reasons.

First, the operations will be conducted in airspace where there is typically no activity among other users of the NAS. Flights are limited to property over which the owner has requested that the Subject UAS operate, so the owners will be aware of the flight operation. As a pilot himself, Mr. Achatz fully recognizes the dangers that a small UAV could pose to all types of manned aircraft. The operations he is proposing to undertake pending approval of this Exemption Request are operations where manned aircraft will not fly. There would be a rigid separation between where a manned aircraft can fly (particularly due to FAR 91.119 which establishes minimum safe altitudes, to include an absolute prohibition of operating an aircraft within 500' of any structure) and where Mr. Achatz would operate the UAV.

Second, the Subject UAS is simply not a large aircraft. Weighing in at a maximum of five pounds fully loaded, the likelihood that it would damage property or injure a person is not low, even in the event of a mishap. Furthermore, aerial imaging is still something done via manned aircraft, and the risk there is at least equal to the risk posed by the proposed operation.

Third, the Subject UAS has inherent lost-link capabilities to bring it back to its operating base for each mission. It is a redundant system for a more foreseeable problem that could arise.

Fourth, the Subject UAS will be operated only by the petitioner. Mr. Achatz is a certificated pilot with sufficient flight time and experience with the aircraft to conduct a reasonably safe operation.

Language for Inclusion in the Federal Register.

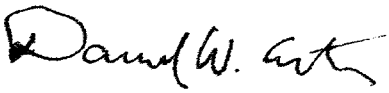
Mr. Achatz proposes that the following language be included in the Federal Register:

> *Petition for Exemption.*
>
> *Federal Aviation Regulations from which Petitioner seeks exemption: 14 CFR 14 CFR Part 21, Subpart H; Part 36; § 45.23; Part 61; §§ 91.7; 91.9; 91.103; 91.105; 91.109; 91.119; 91.121; 91.151; 91.173; 91.203; 91.207; and 14 CFR Part 91, Subpart E.*
>
> *Description of Relief Sought: The petitioner is seeking an exemption from the above-referenced Federal Aviation Regulations to conduct aerial photography using a light, unmanned aerial vehicle for homeowners and real estate brokers seeking to provide aerial images of homes being listed for sale in the Seattle metropolitan area.*

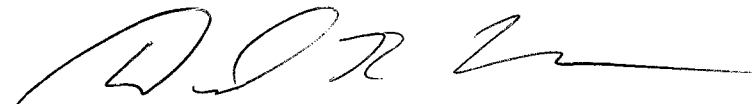
Conclusion.

Mr. Achatz and the undersigned counsel thank the FAA for considering this request. Please do not hesitate to contact us should there be a need for additional information. We look forward to working with the FAA in its determination, and to being part of the discussion as the FAA considers how to expand, train, test, register, track and control commercial UAV use in the United States.

Respectfully Submitted,



Daniel W. Achatz
Petitioner



David R. Voyles
Counsel to the Petitioner

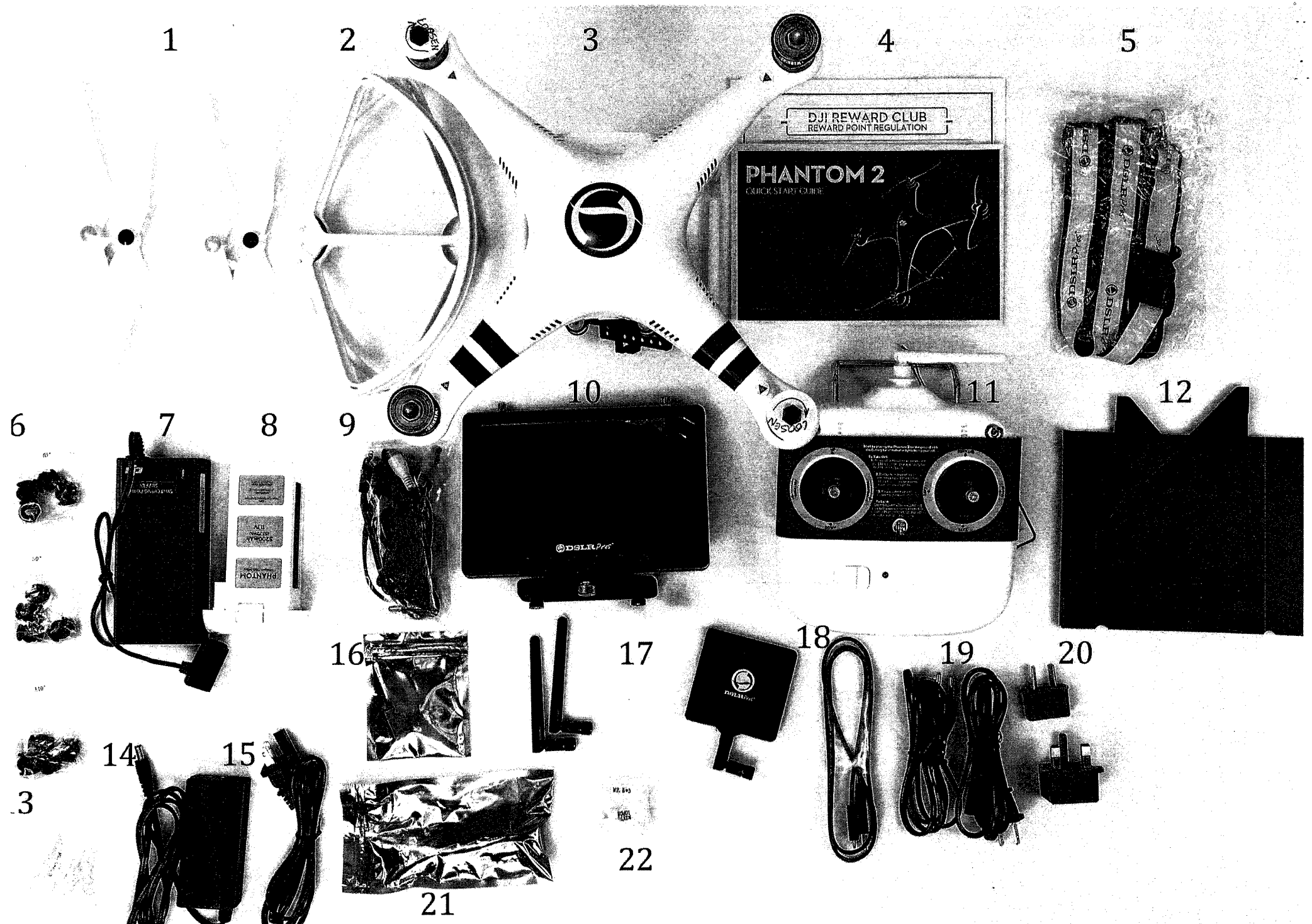
Exhibit A — Toronto Edition Packaging List, Nomenclature, and Operating Instructions

DSLR Pros™

Toronto Edition Packaging List

Congratulations on your purchase of a DSLRPros Toronto Edition Aerial Kit. Inside your Special Edition tough case you will find the following items with numbers that correspond to the kit image on the following page.

1. Set Of 4 Self-Tightening Propeller Blades (Carbon Fiber Blades Not Pictured)
2. Propeller Guards
3. DJI Phantom 2 With 3-Axis Gimbal Pre-Installed
4. DJI Phantom 2 Quick Start Guide
5. DSLRPros Lanyard For DJI Remote
6. Set Of Spare Gimbal Vibration Absorbers
7. DJI Smart Flight Battery Charger
8. Set of 2 DJI Smart Flight Batteries (1 Shown)
9. Field Monitor Cables
10. DSLRPros 7" FPV Field Monitor
11. DJI Remote Transmitter
12. Sun Shade For FPV Field Monitor
13. Anti-Drop Pins For Gimbal
14. FPV Field Monitor Charger
15. A/C Power Cables For Field Monitor Charger
16. Set Of Spare Screws and Propeller Wrench
17. Set Of Antennas For FPV Field Monitor
18. Micro-USB Cable
19. A/C Power Cable For DJI Smart Flight Battery Charger
20. International Plug Set
21. Philip's Head Screwdriver
22. String For Propeller Guards


1
2
3
4
5
DJI REWARD CLUB
REWARD POINT REGULATION
PHANTOM 2
QUICK START GUIDE
6
7
8
9
10
11
12
16
17
18
19
20
14
15
13
21
22

DSLR Pros™

PLEASE READ ALL TOPICS BEFORE POWERING ON FOR FIRST TIME

New pilots should **NOT** fly the Phantom with the Gimbal attached until they have had at least 10 hours of flight practice. Refer to the Zenmuse H3-3D operator's manual for installation and removal instructions (found on www.dji.com).

DJI Phantom 2 Wiki: http://wiki.dji.com/en/index.php/Phantom_2
DJI Phantom 2 Videos: http://www.dji.com/product/phantom-2/video

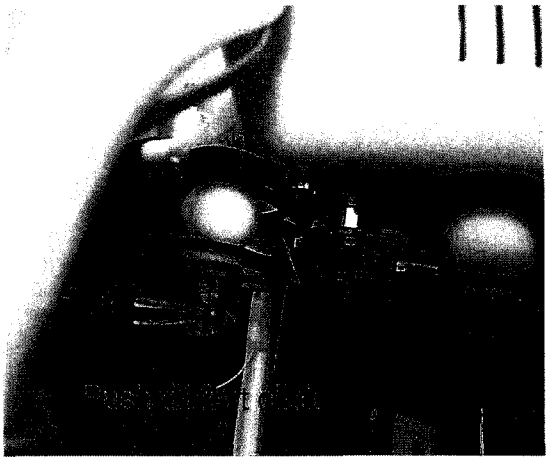
For DSLRPros videos please visit our YouTube Channel
Link: http://www.youtube.com/channel/UCJUVqDvAzr1jbdrmhxsH7jw

1. Turning On Your Transmitter and Phantom 2
2. Advanced Calibration
3. Compass Calibration
4. LED Break Down
5. GoPro Shooting Preferences
6. Flight Modes
7. OEM Phantom Controller/Transmitter (If Applicable)
8. Futaba Controller/Transmitter (If Applicable)
9. Propeller Installation
10. Gimbal Installation & Removal
11. Updating Your Software
12. Battery Safety

WARNING:

DO NOT fly with zip ties attached to Phantom. Zip ties are installed for shipping purposes only.

DO NOT use WiFi with the GoPro on the Phantom. This will cause the pilot to lose control over the craft and result in a flyaway.



DO NOT power on the Phantom without a GoPro attached to the gimbal. This will damage the gimbal and render it unusable.

Be sure to add the anti-drop caps to the gimbal before flying with the gimbal attached.

It is the owner's responsibility to be certain that the propeller blades are attached properly and securely fastened before every flight. It is recommended that novice pilots learn to fly with the white plastic propellers

1. **Turning On Your Transmitter and Phantom 2**

- Always turn on your transmitter before turning on your craft. To turn on our transmitter press the power switch to the "on" position. Make sure your throttle is all the way down and the toggle switches are in the uppermost position before turning on your transmitter.
- To turn on your Phantom 2 insert the DJI Smart Flight Battery into the craft, press the circular power button once, then press again and hold until the Power Light on the battery turns red.

2. **Advanced Calibration**

Make sure the settings have been properly adjusted so that the Phantom can run with the best performance possible.

- Plug the Phantom into your PC or Mac using the USB cable provided.
- Power on the transmitter with the throttle all the way down.
- Power on the Phantom.
- Open the DJI Phantom Application.
- Go to the "Tools" tab.
- Click "Advance."
- Make sure there is no metal anywhere around the compass.
- Do not touch the table that the craft is on and make sure it is very still.
- Click "advanced cali."
- When a box pops up that says "power down MC" ignore it, click OK, and do not touch anything.
- When the advanced calibration has completed successfully, a green check mark will appear to the right of the status bar.

3. **Compass Calibration**

It is important to calibrate your compass outdoors every time you fly your craft. This allows the Phantom to track its own position from multiple satellites and ensures optimal performance.

- Set the Phantom on a flat surface.
- With the throttle down and all switches in the uppermost position power up the transmitter and then power up the Phantom.
- Wait until the Phantom has full GPS lock. You will know the Phantom has full GPS lock when the LEDs under the Phantom's arms are green and blinking.
- Flip the flight mode switch from "GPS" to "Atti" five times in a steady motion until the lights on the underside of the craft turn a solid, unblinking yellow.
- Pick up the Phantom (do not hold by compass).
- Hold the Phantom straight out and turn your body in a complete circle until the lights turn from yellow to solid green.
- Stop turning.
- Rotate the Phantom vertically so that the USB port is facing straight down and repeat your 360-degree rotation until the lights blink green again.
- Place the Phantom back on the ground and look to see that there are only green blinking lights. If not, repeat the process.

4. LED Break Down

This list will help users understand what all the different LED light combinations on the Phantom mean.

- Initialization: Slow, steady flashing yellow lights.
- Satellite Lock: 2 green blinks.
- Transmitter Off: Rapid steady flashing yellow lights.
- IOC Enabled: Users will see green flashing lights but intermittently have a yellow flash indicating that it is working. Be sure to fly **more than** 30 feet away from the craft's home location.
- DO NOT fly with any red lights at all.

4. Starting Up the FPV (If Applicable)

Follow these steps to properly turn on the FPV connection. Not following these steps may result in damage to the system.

- Make sure the GoPro is connected and powered on.
- Make sure the antennas are screwed in to both the TX and Monitor/Rx of the FPV system before powering on.
- Make sure the BAND and CHANNELS on both the FPV TX and Monitor/Rx are the same. Our FPV system is multichannel and multi-band capable.
- When the digital counter turns on the FPV TX is on and transmitting.
- Turn on the FPV Monitor/Rx by pressing and holding the power button for 3 seconds. A red light next to the power button will turn on when the Monitor is on.

5. GoPro Shooting Preferences

The GoPro has an array of different shooting modes and settings. This can be overwhelming for users who are not accustomed to using a GoPro, so here is a quick reference guide on our recommendations for different shooting conditions. More information can be found in the GoPRo manual.

- Overall best shooting: 2.7k, 30 FPS,
- Low light shooting: 1080P 30 FPS, Wide, No Pro tune
- Slow motion: 1080p at 60 fps (any setting at a higher fps than 60)
- Put all GoPro footage through "CineForm" (free editing/conversion software offered by GoPro) before putting it into any other editing program.

6. Flight Modes

The Phantom 2 comes with multiple flight modes that allow users to control the Phantom in many different ways.

- Attitude Mode: Maintains altitude but the craft will keep moving in one direction when influenced by wind or momentum.
- GPS Attitude Mode: Maintains altitude and position. Even if acted upon by an outside force it will return to its last location (where the user let go of the sticks).
- IOC Mode: No matter the position of the Phantom, the directional controls will always remain the same.

7. OEM Phantom Controller/Transmitter (If Applicable)

The Phantom OEM Controller/Transmitter is the default transmitter for the Phantom 2.

- Refer to the DJI tutorials and User Manual for flight controls and information.
- The DSLRPros Lanyard attaches to the OEM Phantom Transmitter by the silver loop above the power switch.

8. Futaba Controller/Transmitter (If Applicable)

The Futaba controller is the ideal controller for DSLRPros aerial kits. This is an upgraded controller that provides more options when piloting the Phantom.

The LiPo charger is meant to charge the LiPo battery only. **NEVER** charge a LiPo battery with any charger that is not a LiPo battery charger. Incorrect charging can cause damage the battery that may result in severe damage to persons and surroundings.

- Left Stick: Located on the left hand side of the transmitter, pressing up and down on the throttle controls vertical movements. Pressing left and right on the throttle stick causes the aerial to rotate clockwise or counter-clockwise.
- Right Stick: Located on the right hand side of the transmitter, the right stick controls forward and backward movement and left and right horizontal movement.
- To turn on the motors for your craft, move both the left and right control stick all the way down and towards the center of the transmitter. Release the sticks when the motors begin to spin.
- SA Toggle Switch: This is the Intelligent Orientation Control (IOC) mode, which is NOT enabled by default. This switch is located on the left side of the transmitter just above the throttle control.
- SE Toggle Switch: This controls the flight mode. This switch is located on the top, left hand side of the transmitter. See the "Advanced NAZA Assistant Manual" for further details.
- SH Toggle Switch: This is the timer reset. This timer is set to warn the user when to start landing the Phantom. This switch is located on the top, right hand side of the transmitter.
- RD Knob: This sets the gimbal stopping point for the tilt. The trim slider on the rear, right side of the Futaba controls the tilt. The RD knob is located on the front of the transmitter, above the power switch.
- SD Toggle Switch: The Dual Rate option on the Futaba allows users to limit the overall speed at which the Phantom can operate through the "Fluid Slow Pan" mode.

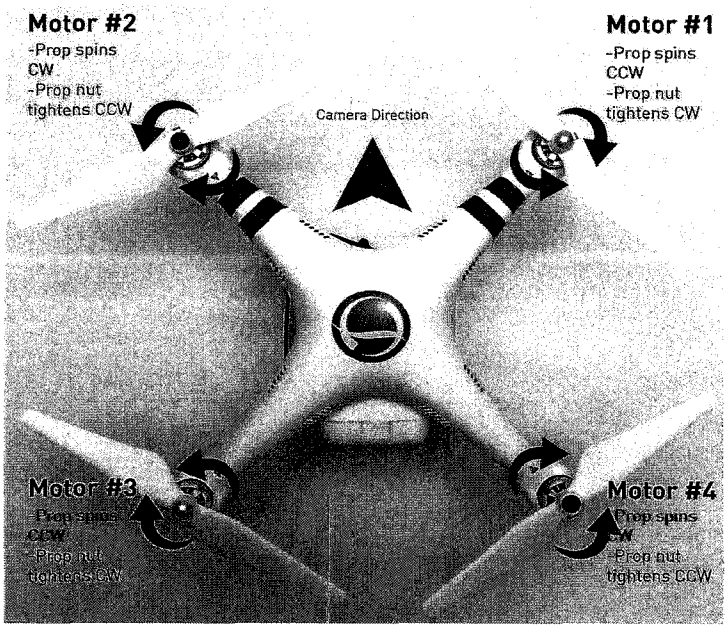
9. Propeller Installation

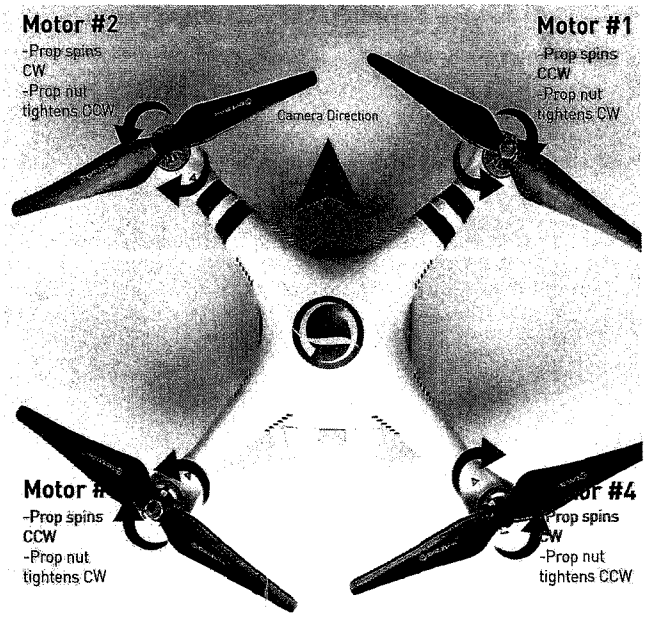
It is the owner's responsibility to be certain that the propeller blades are attached properly and securely fastened before every flight. All propeller blades are directional and can only be attached to one set of motors. Installing a propeller blade on the wrong motor can result in damage to the craft. If you are unsure about how to install your propeller blades, contact DSLRPros before attempting to fly your craft.

It is recommended that novice pilots learn to fly with the white plastic propellers. The carbon fiber propellers are for experienced pilots. They are of a different construction and can be much more dangerous for inexperienced pilots.

Proper direction for rotation is necessary when attaching propeller blades. When the front of the craft is facing the user, the motors are numbered 1 to 4 (counter clockwise), starting with the left hand motor. Prop nuts on motors 1 & 3 tighten by spinning clockwise while prop nuts on motors 2 & 4 tighten in a counter clockwise direction.

DSLRPros Carbon Fiber Props are NOT self-tightening.





To attach the propellers, remove the warning discs from the motors and spin the propeller blades onto the corresponding motor in the direction indicated by the above image. Correct propeller installation is necessary for proper flight. Additional information can be found in the DJI User Manual.

Propeller guards are to be used for indoor situations only. Please follow the instructions below to install prop guards.

- To install your propeller guards, carefully place your craft upside down on a stable, flat surface.
- Under each motor, you will see 4 2mm Hex screws. Remove the two outermost screws from the base of each motor. Do not discard the removed screws.
- Use the propeller guard screws (note that these screws are longer than those that you just removed from the P2) to secure the propeller guards to the base of the motors.
- For added security, thread the white string included with your purchase through the eyes of the propeller guards.

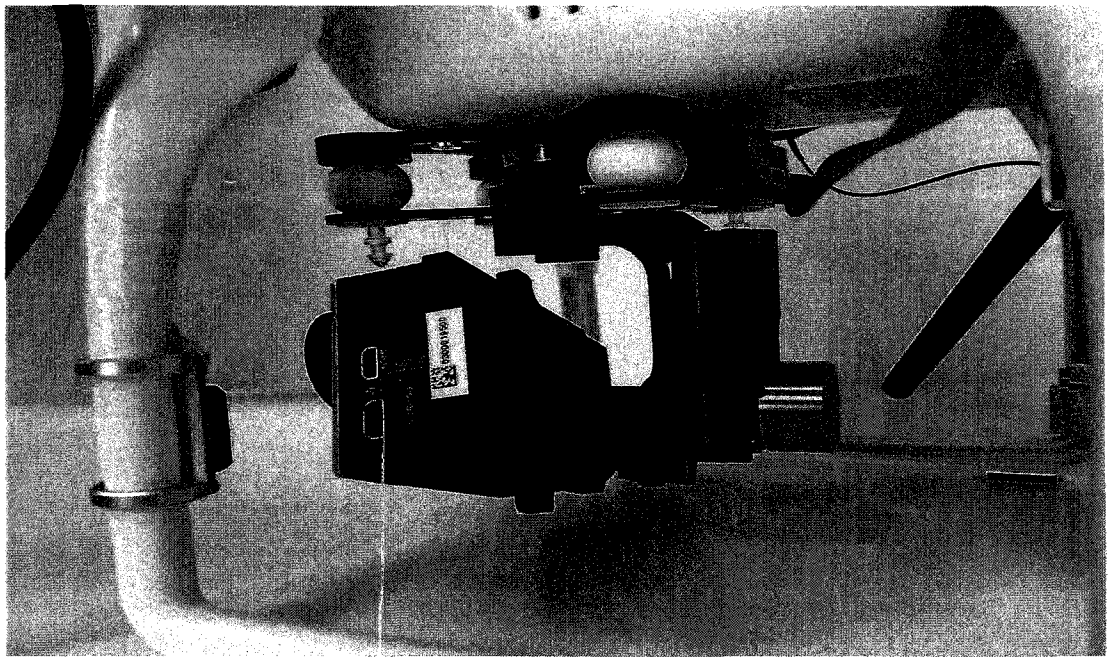
10. Gimbal Installation & Removal

It is highly recommended that new pilots remove the lower half of the gimbal before flight practice so that in the event of a crash while learning to fly the Phantom the Zenmuse H3-3D will not be damaged. Please refer to the Zenmuse H3-3D operator manual for detailed installation and removal procedures. The images and directions below are only supplemental to the manuals found on the DJI website.

Only the lower half of the gimbal is attached and secured in place via the rubber tension grommets, which have a lip that fits into the bracket rings. While these provide enough tension to retain the gimbal during flight they can come loose if the craft is involved in a significant crash. The grey/black ribbon cable will be the only connection to the craft for power and video. This cable can be disconnected and reconnected at will after the lower half is removed from the brackets.

- To disconnect your gimbal, pinch the rubber tension grommets and pull out of the top plate.
- Disconnect the ribbon cable from the gimbal by firmly pulling it out of the back of the gimbal. It is recommended that you disconnect the gimbal cable before performing any firmware updates. Failure to do so can result in damage to your gimbal.

- To reconnect your gimbal, pinch the rubber tension grommets back into place and reattach the ribbon cable.
- Be sure to attach the anti-drop pins before flying with your gimbal installed.



11. Updating Your Software

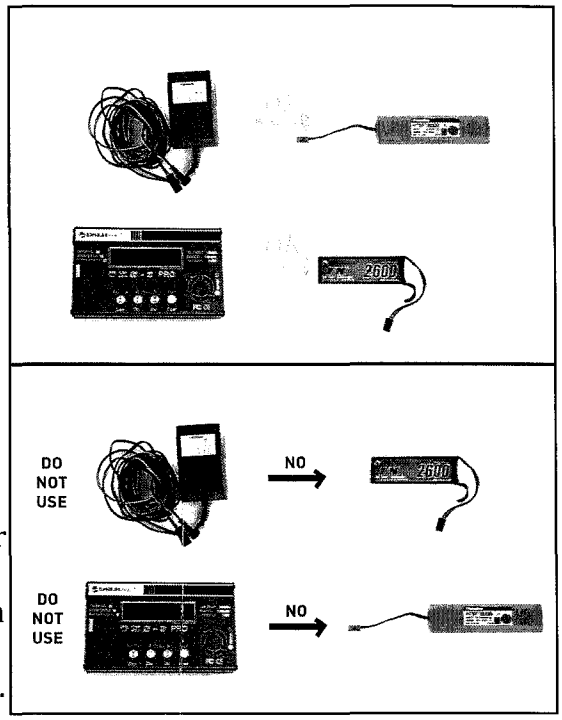
It is recommended that you periodically check for software updates using the DJI assistant software application. When upgrading the firmware on either the transmitter or the craft, be sure to disconnect the gimbal from the craft. Upgrading your software with the gimbal's ribbon cable still attached can permanently damage the gimbal.

- Plug the Phantom into your PC or Mac using the USB cable provided.
- Power on the transmitter with the throttle all the way down.
- Power on the Phantom.
- Open the DJI Phantom software.
- Go to the "Upgrade" tab.
- If upgrades are available, check with DSLRPros to ensure that the upgrade is necessary before installing.
- After the upgrade is complete, power down your craft and transmitter before reattaching the gimbal.

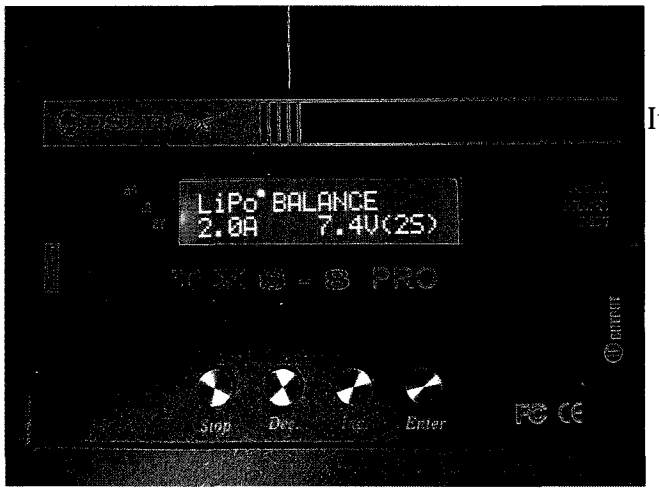
12. Battery Safety

It is vital to the safety of your aerial craft, yourself, and others that you practice proper battery safety when using, charging, and storing all batteries used with your Phantom. Improper use, charging, and/or storage of batteries can result in damage to the battery or personal property. Please adhere to all battery safety guidelines in the included manuals. The estimated flight time for a Phantom 2 with H3-3D gimbal under ideal conditions is 11 minutes.

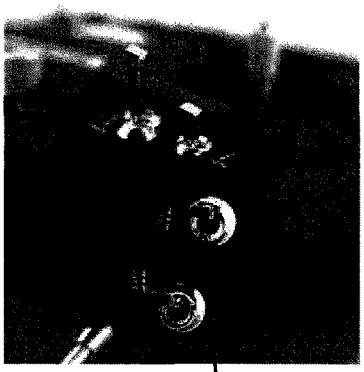
- Only charge your batteries using the included charging units. Failure to do so may result in fire.
- Never charge batteries unattended.
- If you notice that a battery is swelling or ballooning, immediately discontinue the charge, remove the battery from the charger, and observe the battery outside and away from any combustible materials for at least 15 minutes.
- In the event of a crash, remove the battery from the craft and observe it in a safe location looking for swelling or damage for at least 15 minutes before using the battery again.
- When storing your batteries for more than two weeks, you must reduce their charge to storage mode. Refer to your manual for proper battery storage procedures.



If your kit includes a Futaba transmitter with a Lithium Polymer Battery, please adhere to the guidelines outlined in the charger manual and only use the included Futaba charging station when charging a Futaba battery. It is always recommended to charge and store your LiPo batteries in a LiPo Safe Flame Resistant bag. Failure to do so can result in fire.



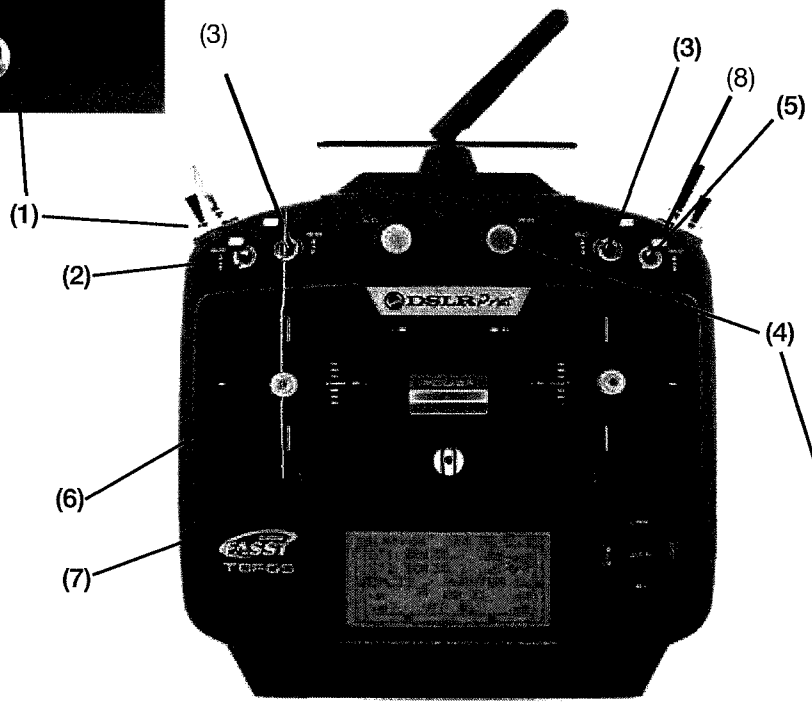
It is recommended that you use the Balance(BAL) setting when charging LiPo batteries.
DSLRPros 2600mAH LiPo battery is 2 Cell(2S) and charges at NO more than 2Amps.



DSLRPros™

DSLRPros Futaba 8FG Black Edition Super 14-Channel Ultimate Kit Replacement Transmitter

Pre-programmed Control Guide



(1) SE Toggle Switch (GPS, ATTI, ATTI): This is your flight mode control. The lowest ATTI position can be set to trigger "FAILSAFE" as an advanced feature. See you DJI Phantom "Advanced NAZA Assistant Manual" for further details.

(2) SA Toggle Switch (OFF, COURSE LOCK, HOME LOCK): This is your Intelligent Orientation Control or IOC. This mode is not enabled by default.

(3) SB and SC Toggle Switches (OFF, SMALL RADIUS, LARGE RADIUS): These switches control the advanced Point of Interest flight profiles. This function allows the operator to bank left or right using only the right joystick. Using the SB Toggle will allow the pilot to fly an inside pivot around a central object. Using the SC Toggle will enable you to fly an outside pivot. These functions are reserved for advanced users and NOT enabled at default.

(4) RD Knob: This knob sets the gimbal's stopping point for the camera tilt. The tilt is controlled by the trim lever on the rear right side of the Futaba.

(5) SD Toggle Switch (OFF, 30%, 50%): This enables the "Fluid Slow Pan" mode.

(6) Throttle and Pan Control Stick.

(7) Forward, Backward, Left and Right Control Stick.

(8) SH Toggle Switch: This is your timer reset. The Futaba comes with dual timers set to give you an audible alarm at 4 minutes and again at 8 minutes. Once you switch out a new battery, use the SH switch to zero out the timer. NOTE: The automatic timer should only be used as a reference point and should not be relied upon for accurate battery life. Under ideal conditions, a Phantom 2 with H3-3D axis installed will have 11 minutes of flight time.

Exhibit B — Phantom 2 Flight Procedures

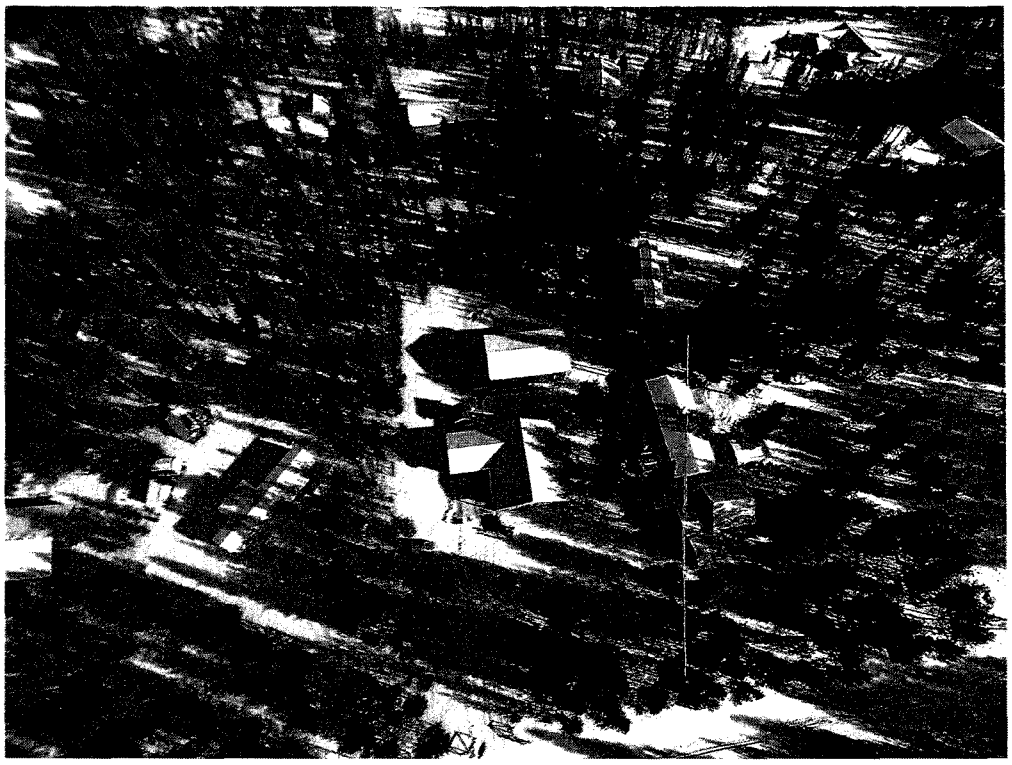
DSLR Pros™

Phantom 2 Flight Procedures

It is recommended that you follow this procedure when flying your craft.

- Be certain that the WiFi function on your GoPro is off. If you see a flashing blue light on your GoPro, this means the WiFi function is on and must be turned off before starting your craft.
- Check that batteries for transmitter and craft are fully charged and properly installed.
- Check that a camera is connected to gimbal.
- Check that antennas are connected to FPV monitor.
- Check that propellers are securely fastened to motors.
- Place all switches on transmitter in their uppermost position with the throttle all the way down.
- Power on your transmitter.
- Power on your craft and wait for LED lights to stop flashing red, indicating that your craft has achieved its GPS signal.
- Perform a compass calibration.
- With the craft on an even surface at least ten feet away from you, start the motors by moving the control sticks down and towards the center of the transmitter.
- Press up on the throttle to take off.

Exhibit C — Examples of Mr. Achatz's Aerial Photography Done on a Recreational Basis



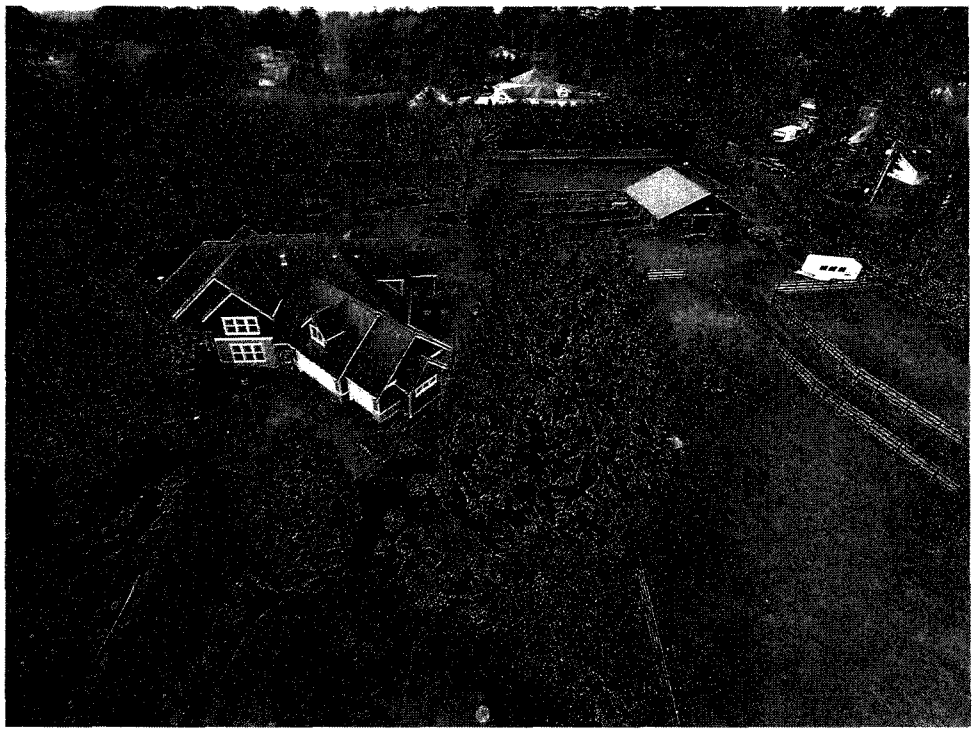


Exhibit D — Boundary of Intended Area of Operation

Boundary Points:

N48°56.77'	W120°43.20'147°
N47°17.97'	W119°59.47'166°
N46°11.40'	W120°2.42'245°
N45°59.46'	W121°38.66'265°
N46°8.91'	W122°52.98'249°
N46°4.30'	W124°3.22'337
N46°49.66'	W124°10.87'326°
N47°34.60'	W124°32.07'332°
N48°26.45'	W124°48.58'087
N48°11.77'	W123°21.34'022°
N48°25.75'	W123°4.66'321°
N48°39.42'	W123°13.24'040°
N48°45.54'	W122°59.42'326°
N48°59.22'	W123°5.86'072°
N48°59.45'	W120°43.83'

Exhibit E — **Log for Phantom Battery**

Battery Log for Phantom Batt 1

Date	Type	Flight time	% left on Landing
11/13/14	Phantom 2	0.4	24%
11/13/14	Phantom 2	0.4	27%
11/15/14	Phantom 2	0.4	26%
11/15/14	Phanton 2	0.4	25%
11/16/14	Phantom 2	0.4	27%
11/24/14	Phantom 2	0.4	25%
11/25/14	Phantom 2	0.4	26%
12/08/13	Phantom 2	0.4	26%
12/12/14	Phantom 2	0.4	25%
12/12/14	Phantom 2	0.4	27%
12/15/14	Phantom 2	0.4	26%
12/23/14	Phantom 2	0.4	24%
12/23/14	Phanton 2	0.4	25%
12/24/14	Phantom 2	0.4	28%
12/29/14	Phantom 2	0.4	26%
12/29/14	Phantom 2	0.4	27%
01/01/15	Phantom 2	0.4	29%
1/1/15	Phantom 2	0.4	28%
1/1/15	Phantom 2	0.4	29%
1/6/15	Phantom 2	0.4	28%
1/8/15	Phantom 2	0.4	27%
9-Jan	Phantom 2	0.4	27%
11/12/15	Phantom 2	0.4	26%
11/13/15	Pahtom 2	0.4	23%
14-Nov	Phantom 2	0.4	27%
16-Jan	Phantom 2	0.4	27%