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

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

August 31, 2015

Exemption No. 12670
Regulatory Docket No. FAA−2015−1067

Dr. Roger D. Duffell, Ph.D.
1416 Arblay Place
Loganville, GA 30052-4140

Dear Dr. Duffell:

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.

By letters dated April 10 and July 17, 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. You requested to operate an unmanned aircraft system (UAS) to conduct aerial photography, videography, and cinematography.

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 Vision+.

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[1]. 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, Dr. Roger D. Duffell 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, Dr. Roger D. Duffell is hereafter referred to as the operator.

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

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 Vision+ 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 September 30, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

Roger D. Duffell, PhD
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Docket Management Facility
U.S. Department of Transportation
1200 New Jersey Ave, SE
West Building Ground Floor, Room W12-140
Washington, DC 20590

Friday, April 10, 2015

RE: *Exemption Request Section 333 of the FAA Reform Act of the Federal Aviation Regulations*

Dear Sir or Madam,

I, Roger Duffell, am writing pursuant to the FAA Modernization and Reform Act of 2012, to request that I, Roger Duffell, an owner and operator of a UAS, **FAA Registration # N539YQ**, be issued a Certificates of Waiver or Authorization (COA) from the Federal Aviation Administration so that I, Roger Duffell, may operate my unmanned aircraft system ("UAS") commercially in airspace regulated by the Federal Aviation Administration ("FAA").

As described herein I, Roger Duffell, am currently an FAA Licensed Private Pilot with current Class III Medical Certificate; also experienced (30 years) in flying hobby radio controlled airplanes, helicopters, and FAR Part 103 ultralights, and para motor aircraft for recreational purposes, all without incursions or incidences. I currently have a hobby grade quad-copter[1] UAS, equipped with an integrated camera, FAA Registration # N539YQ with intent to use it for aerial photography and videography/cinematography to enhance my engineering consulting business as it relates to and for those individuals and companies unfamiliar with the geographical/topographical layout of the area; augment real estate appraisal agents for commercial and residential properties, also for inspections and documentation of the same. I also maintain a second quad-copter[1] of the same that serves as a backup unit.

As a private pilot, I am committed to safety with each flight, My, Roger Duffell's, exemption request would permit operation of my ultra-light weight (2.8 lbs), unmanned (piloted by remote control) in tightly controlled and limited airspace, in accordance with all limits of model/recreational use. Not to exceed an altitude of greater than 400' AGL, to maintain a 100' buffer to general aviation ("GA") space. Maintaining Line of Sight with the UAS, and with support from a spotter and within VFR conditions. Areas of operation to be well clear of Class A&B airspace as indicated on current Sectional Charts, airports, and helipads, and away from congested areas for community videos, and within property boundaries for residence and/or commercial real estate videos/photos.

I, Roger Duffell, have personally instilled and maintain safety protocols and controls[2] to avoid and prevent a public hazard, as well as to manned aircraft in GA space. I intend to educate others to further safety protocols exclusive to lightweight UAS's specific to engineering survey and documenting, and real estate video/photography usage. I will record flight data and other information gained through permitted commercial flight operations to share with the FAA upon request to assist with future protocol and safety regulation.

[1] Appendix A – DJI Phantom 2 Vision+ User Manual
[2] Appendix B – Safety Protocols and Controls

Respectfully Submitted,

Roger Duffell

Appendix A

DJI Phantom 2 Vision + V3.0

User Manual V1.8
2015.01

(52 Pages)

PHANTOM 2 VISION+

User Manual V1.8

2015.01

Phantom 2 Vision + User Manual

V1.2 2015.01

Please read this manual carefully before using the product.

Important Safety Notice

Use your Phantom carefully. It contains sensitive electronic components and may be damaged when dropped, crashed or exposed to water. Never fly a damaged Phantom.

Maintenance
Do not open or attempt to repair Phantom by yourself as doing so may cause damage to the Phantom or cause injury. If the Phantom is not operating normally or has come into contact with liquid, contact a DJI authorized dealer or DJI customer service. Learn more at www.dji.com/support

Battery
Never disassemble, pinch, crush, burn, drop or tread on the DJI smart flight battery. Never short or allow the metal contacts on the battery terminal to touch. Do not expose batteries to extreme temperatures. Always use the DJI approved charger to charge the battery. Keep the DJI battery away from children and store it in a cool, dry place.

Please read the Disclaimer before using your Phantom 2 Vision+.

Using This Manual

Key

Warning | Important | Hints and Tips | References or Definitions

Important

Except when specifically stated, all descriptions in this manual are for Phantom mode, not Naza-M mode.

Before Flight

The following tutorials and manuals have been produced to ensure you to make full use of your Phantom 2 Vision+.
(1) Disclaimer
(2) Phantom 2 Vision+ Quick Start Guide
(3) Phantom 2 Vision+ User Manual
(4) Phantom Pilot Training Guide
Watching all the tutorial videos and reading the Disclaimer before flight is recommended. Afterwards, prepare your first flight using the Phantom 2 Vision+ Quick Start Guide. Improve your flying skills in subsequent flights using the Phantom Pilot Training Guide. Refer to this manual for more comprehensive information. Experienced users, particularly those with DJI Phantom 2 Vision experience should skip to the Phantom 2 Vision+ Quick Start Guide to begin preparing for flight.

Watch the Tutorial Videos

Please watch the tutorial videos below to learn how to use Phantom 2 Vision+ correctly and safely.
http://www.dji.com/phantom2visionplus/training/
Phantom 2 Vision+ official tutorial videos

Download DJI VISION App

Download and install the DJI VISION App. Choose one of the download methods below.

Search "DJI VISION" on the App Store then follow instructions for iOS version.
Search "DJI VISION" on Google Play then follow instructions for Android version.

Available on the iPhone App Store
iOS6.1 or above

Got it on Google play
Android 4.0 or above

Contents

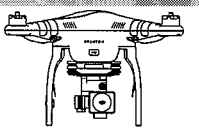
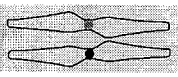
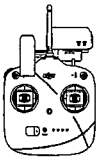
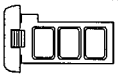
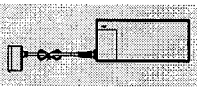
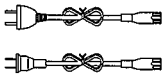
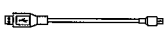
Overview

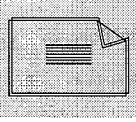
The Phantom 2 Vision+ is the next evolution of the Phantom 2 Vision. It features the same App enabled First Person View (FPV), high performance camera, remote camera control and in-flight content sharing, but adds to it a high performance 3- axial camera stabilization system. It is ideal for aerial creativity whether photo or video. In addition, it provides ground station function which allows users to plan the flight mission and enables aircraft to flight automatically.

FPV: First Person View, see the world from the perspective of the craft and feel a true flying experience.

1 In the Box

Check that all of the following items have been included in your package before use. If anything is missing, please contact your local dealer.

NO.	Name	Picture	Qty.	Remarks
1	Aircraft		1	Integrated gimbal and camera
2	Propeller Pairs		4	4 with black nut, 4 with grey
3	Micro-SD Card		1	Inserted in aircraft Micro-SD slot
4	Lens Cap		1	Fixed to camera lens
5	Gimbal Clamp		1	Attached to the gimbal
6	Prop Wrench		1	In maintenance packet
7	Remote Controller		1	Includes attached Phone Holder and Range Extender
8	AA Batteries		4	For Remote Controller
9	DJI Smart Flight Battery		1	Inside aircraft
10	Charger		1	110-240V Adaptive
11	Power Cables		2	GB & CE
12	Plug Adaptors		2	SAA & BS
13	Micro-USB Cable		1	For range extender charging and firmware upgrade

14	Manuals		4	Including: Disclaimer, Phantom Pilot Training Guide, Phantom 2 Vision+ Quick Start Guide, User Manual
15	Stickers		2	Colors: Pink, Blue
16	Vibration Absorber		4	In maintenance packet
17	Anti-drop Kit		2	In maintenance packet
18	Spare Screws		11	In maintenance packet M3X5(6pcs); M3X8(5pcs)
19	Landing Pad		4	In maintenance packet

2 Introduction

The Phantom 2 Vision+ package includes: Phantom, Camera, Gimbal, Propulsion System, Flight Control System, Remote Controller and Wi-Fi Communication System. 5.8 GHz Remote Controller Receiver, Flight Control System and 2.4 GHz Wi-Fi Module are inside the Phantom.

Remote Controller	Outside	Working Modes	Inside
5.8GHz 2 sticks, 7 channels	3-axial Stabilized Gimbal Camera Motors and Props	Phantom-Ready to Fly and Ready to Fly(non-GPS) NAZA-M-GPS, ATTI, Manual and Failsafe	Flight Control System 2.4GHz Wi-Fi Module 5.8GHz Receiver Electronic Speed Controls(ESCs)

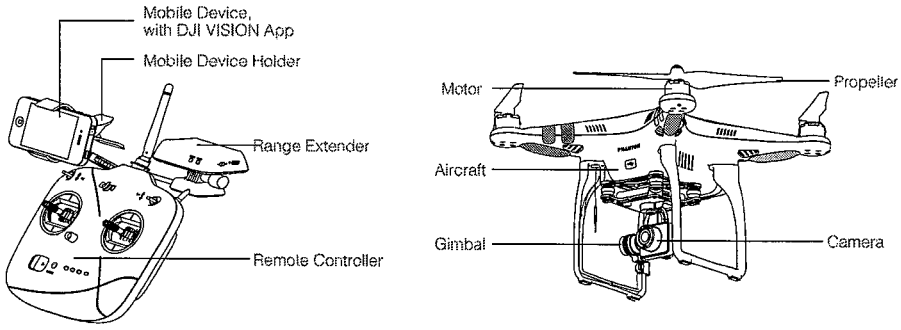


Figure 1

Choose between Phantom and Naza-M working modes using Phantom 2 Vision+ Assistant. If using Naza-M mode, please refer to the NAZA-M V2 Quick Start Manual for related instructions.

- Phantom: Flight settings will be selected automatically depending on whether 6 or more satellites have been found. This mode allows users to configure the Remote Controller and gain values, and use Failsafe and battery level warnings.
- Naza-M: Flight settings will be identical to the Naza-M V2. Users can choose between GPS, Attitude, or Manual mode. They can also access advanced settings including Intelligent Orientation Control (IOC). Rear LED Flight Indicators will display the flight status according to the Naza-M indicator.
- Ready to Fly: When 6 or more GPS satellites have been found, the Flight Control System will lock its home point and Rear LED Flight Indicators will blink a slow green (G ·····). This mode is ideal for beginners.
- Ready to Fly (non-GPS): When less than 6 GPS satellites have been found, the Flight Control System will stabilize itself less than in full Ready to Fly mode and will require more skilled flying. Rear LED Flight Indicators will blink a slow yellow (Y ·····).

Assembly and Use

Follow the below instructions to prepare for flight.

1 Removing Gimbal Clamp

Pull gimbal clamp in the direction indicated to remove.

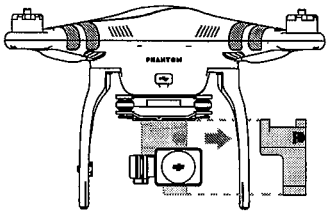


Figure 2

To avoid damage to the gimbal, remove Gimbal Clamp before powering up the Phantom.

Attach the Gimbal Clamp during transportation or long term storage to avoid damage.

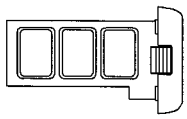
2 Preparing the Battery

Ensure all related devices are fully charged before flying the Phantom 2 Vision+.

Device	Power supply
Remote Controller	2000mAh rechargeable LiPo battery
Range Extender	Charge fully through Micro-USB slot. See Charging the Range Extender (Page 20) for details.
Aircraft (including gimbal and camera)	DJI Smart Flight Battery.
Mobile Device	Fully charge before using the DJI VISION App.

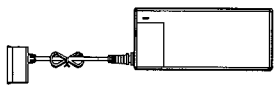
2.1 DJI Smart Flight Battery

This battery has been specially designed for the Phantom 2 series. It has a battery capacity of 5200mAh, voltage of 11.1V and charge-discharge management functionality. It can only be charged with a DJI charger or Phantom 2 Car Charger.



Smart Flight Battery

Figure 3



DJI Charger

Figure 4

DJI Smart Flight Battery Functions

(1) Balance Charging	Automatically balances the voltage of each battery cell during charging.
(2) Capacity Display	Displays current battery levels.
(3) Communication	Communicates with Flight Controller about battery voltage, capacity, current and other relevant information.
(4) Overcharge Protection	Charging stops automatically when battery voltage reaches 12.8V to prevent overcharge damage.
(5) Over Discharge Protection	Discharging stops automatically when battery voltage reaches 8.4V to prevent over discharge damage.
(6) Short Circuit Protection	Automatically cuts power supply when a short circuit is detected.
(7) Sleep Protection	Sleep mode is entered after 10 minutes of inactivity to save power.
(8) Charging Temperature Detection	The battery will charge only when the temperature is between 0°C (32°F) and 40°C (104°F).

Battery Specifications

Type	LiPo
Capacity	11.1V, 5200mAh
Charging Environment Temperature	0°C~40°C
Discharging Environment Temperature	-20°C~50°C
Charging/Discharging Environment Relative Humidity	<80%

⚠ Please read the user manual, disclaimer, and battery warnings before use. Users take full responsibility for all operations and usage.

2.2 Usages

Powering on/off

Powering on: Press Circular Power Button once, then press again and hold for 2 seconds to power on. Power Light will go red and Battery Level Indicators will show the current battery level.

Powering off: Press Circular Power Button once, then press again and hold for 2 seconds to turn off. Battery Level Indicators will all go out.

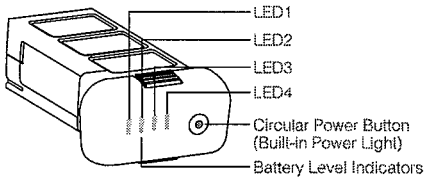


Figure 5

Checking the battery level

When the battery is powered off, press the Circular Power Button once. Battery Level Indicators will light up to show battery level. See below for details.

Battery Level Indicators will show the current battery level during charging and discharging. The indicators are defined below.

LED is on LED blinks
LED is off

Discharging process				
LED1	LED2	LED3	LED4	Current battery level
■	■	■	■	87.5%~100%
■	■	■	▯	75%~87.5%
■	■	■	□	62.5%~75%
■	■	▯	□	50%~62.5%
■	■	□	□	37.5%~50%
■	▯	□	□	25%~37.5%
■	□	□	□	12.5%~25%
▯	□	□	□	0%~12.5%
□	□	□	□	<0%

Battery life

When the battery is powered off, press and hold the Circular Power Button for 5 seconds to check battery life. Battery Level Indicators will show light up and the Battery Power Indicators will blink for 10 seconds. All lights will then turn off. For details, please see below.

Battery life				
LED1	LED2	LED3	LED4	Current battery life
■	■	■	■	90%~100%
■	■	■	▯	80%~90%
■	■	■	□	70%~80%
■	■	▯	□	60%~70%
■	■	□	□	50%~60%
■	▯	□	□	40%~50%
■	□	□	□	30%~40%
▯	□	□	□	20%~30%
□	□	□	□	Less than 20%

⚠ When batter life reaches 0, it is no longer operational.

More battery information is available in the battery tab of the Phantom 2 Vision+ Assistant.

2.3 Charging the Flight Battery

(1) Connect charger to wall socket (100-240V, 50/60Hz, using the Plug Adaptors if necessary).
(2) Connect battery to charger. If the current capacity of the battery is over 75%, you should turn it on before beginning to charge.
(3) Battery Level Indicators will display current capacity level as the battery charges.
(4) Battery is fully charged when Battery Level indicator lights are off. Disconnect the charger and battery when charging is complete.

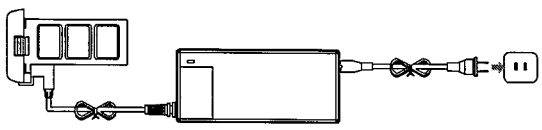


Figure 6

Charging process				
LED1	LED2	LED3	LED4	Current battery level
▮	▯	▯	▯	0%~25%
▮	▮	▯	▯	25%~50%
▮	▮	▮	▯	50%~75%
▮	▮	▮	▮	75%~100%
▯	▯	▯	▯	Fully charged

The Smart Flight Battery can be charged using an optional Phantom 2 Car Charger. This can charge the battery in-car or through 3S-6S Li-Po batteries. Contact your authorized dealer or DJI customer service for details.

⚠ • Battery should only be charged with the charger provided by DJI. DJI does not take any responsibility for damage caused by third party chargers.
• If current battery level is over 75%, the battery should be turned on before charging.

2.4 Battery Installation

Push battery into battery compartment according to the below diagram. When you hear a click, the battery has been properly installed.

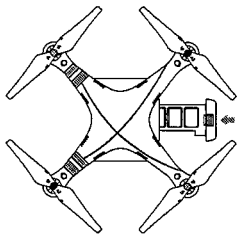


Figure 7

⚠ An incorrectly installed battery may cause
• Bad contact,
• Unavailable battery information,
• Unsafe flight,
• Inability to take off.

2.5 Correct Battery Usage Notes

(1) When the battery is turned on, do not connect it to or disconnect it from the Phantom.
(2) Charge and discharge the battery completely once every 20 charge/discharge cycles. Discharge the battery until there is less than 8% power or until it can no longer be turned on, then recharge it to maximum capacity. This power cycling procedure will optimize the battery.
(3) For long term storage, place the battery with only a 40~50% charge in a strong battery box. Discharge and charge the battery once every 3 months to keep it in good condition. Charge amount should be varied in these maintenance charges - (40%~50%)—0%—100%—(40%~50%).
(4) Purchase a new battery after your current battery has been discharged over 300 times. Completely discharge a battery prior to disposal. Please dispose of batteries properly.
(5) Purchase a new battery if your current battery swells up or is damaged in any way.
(6) Never recharge or fly with a battery that is swollen or damaged in any way.
(7) Never charge batteries unattended. Always charge batteries on a non-flammable surface such as concrete and never near any flammable materials.
(8) Safety is extremely important. For more information, please see the Disclaimer.

Discharging methods:
Slow: Place battery in Phantom and turn on. Leave on until there is less than 8% of power left or until the battery can no longer be turned on. See DJI VISION App for battery levels. Motors do not need to be turned on, reducing wear.
Fast: Fly the Phantom outdoors until there is less than 8% of power left or until the battery can no longer be turned on.

3 Preparing the Phantom 2 Vision+

The Phantom 2 Vision+ is a quadrotor with a built-in Flight Control System with integrated gimbal and camera. It features an FC Assistant Port, Camera Data Port and a specialized battery compartment for its flight battery. All these features make the Phantom 2 Vision+ easy to assemble and configure.

3.1 Introduction

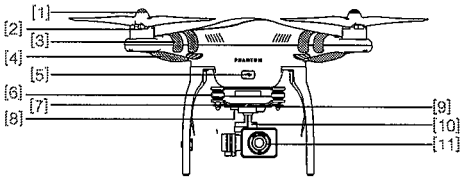


Figure 8

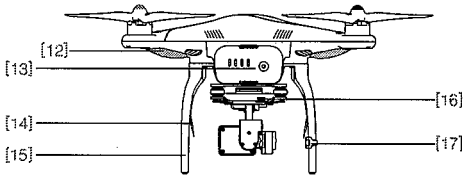


Figure 9

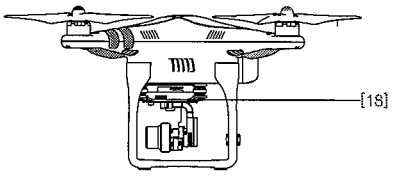


Figure 10

[1] Propeller (P15)
[2] Motor
[3] Front Sticker
[4] Front LED (P12)
[5] FC Assistant Port (Micro-USB slot) (P46)
[6] Vibration Absorber
[7] Camera LED Indicator (P15)
[8] Camera Function Button (P14)
[9] Anti-drop Kit (P13)
[10] 3-axial Stabilized Gimbal (P12)
[11] Camera Lens (P14)
[12] Rear LED Flight Indicator (P12)
[13] DJI Smart Flight Battery (P7)
[14] Receiver Antenna (P17)
[15] Landing Gear
[16] Camera Data Port (Micro-USB slot) (P14)
[17] Compass (P25)
[18] Micro-SD Slot (P13)

3.2 Built-in Flight Control System

The Phantom 2 Vision+ is equipped with a DJI Naza-M V2 Flight Control System. This provides incredible ease of use and stability. Pilots can control the Phantom's movements in many directions, including pitch (forwards and backwards), roll (left and right), elevator (up and down) and yaw (turn left or right). The flight control system also can provide IOC, Failsafe and battery level warnings.

Modules	Functions
Flight Controller	Acts as the brains of the complete flight control system, responsible for connecting and controlling all the modules together.
IMU	Has a built-in inertial sensor and a barometric altimeter that measures both attitude and altitude.
GPS & Compass	The compass reads geomagnetic information and assists the GPS (Global Position System) to accurately calculate the position and height of the aircraft.
LED Flight Indicators	Indicates the status of flight control system.

FC Assistant Port

The flight control system communicates with the PC Assistant through a Micro-USB cable between the Phantom FC Assistant Port and the PC. Users can use Assistant to configure the aircraft and upgrade the Phantom firmware. Please refer to Using the Phantom 2 Vision+ Assistant (Page 46) for details.

3.3 LED Flight Indicator Descriptions

LED flight indicators are found at the front and the rear of the Phantom. Front LEDs are for indicating where the nose of the aircraft is. They light up solid red after motors have started spinning. Rear LED Flight Indicators light up to show the aircraft's current flight status once the flight battery is powered on. For details, please see the below table.

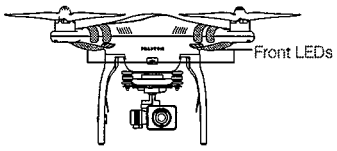


Figure 11

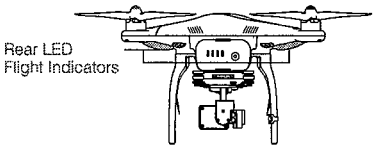


Figure 12

Rear LED Flight Indicators	Normal	Notes
R G Y ····· Red, Green, Yellow flashing in turn	Power On Self-Test	
Y G ····· Yellow,Green flashing in turn	Warming Up	Aircraft cannot take off.
G ····· Slow Green flashing	Ready to Fly	More than 6 GPS satellites are found.
Y ····· Slow Yellow flashing	Ready to Fly (non-GPS)	Less than 6 GPS satellites are found.

Rear LED Flight Indicators	Abnormal	Notes
Y ····· Quick Yellow flashing	Remote Controller Signal Lost	Refer to Failsafe Function (Page27) for details.
R ····· Slow Red flashing	Low Battery Level Warning	DJI VISION App will also show warning message.
R ····· Quick Red flashing	Critical Low Battery Level Warning	DJI VISION App will show warning message.
R ····· Three Red flashing off and on	Not Stationary or Sensor Bias is too big	Keep aircraft stationary or perform IMU calibration.
R —— Solid red	Error	Cannot fly.
R Y ····· Red, Yellow flashing in turn	Compass Needs Calibration	Refer to Calibrating the Compass (Page25) to get details.

⚠ If a solid red R LED indicator appears, connect to the Phantom 2 Vision+ Assistant for details and resolution. This may be caused by:

- IMU calibration required: Recalibrate IMU using Assistant.
- IMU is abnormal: Repair required.
- Compass is abnormal: Repair required.
- Remote Controller mid-point is set abnormally: Refer to How to solve large margin(s) mid-point error? (Page 49)

3.4 3-axial Stabilized Gimbal

The 3-axial stabilized gimbal of the Phantom 2 Vision+ will power on and self-check each time the flight battery is installed and powered on. Its pitch can be controlled using the DJI VISION App. This gimbal has two working modes, Non-FPV mode and FPV mode, with the Non-FPV mode set as default. This can be configured in Phantom 2 Vision+ Assistant or the DJI VISION App.

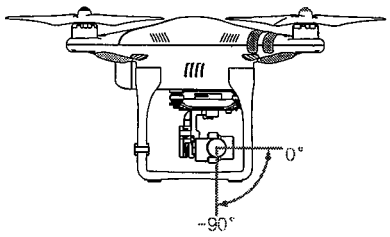


Figure 13

Gimbal specifications	
Control accuracy	±0.03°
Controllable range	Pitch : -90°~0°
Maximum angular velocity	Pitch : 90°/s

• **Non-FPV Mode:** the gimbal will stabilize across 3-axial for smooth aerial creativity.
• **FPV Mode (First Person View Mode):** Gimbal will lock to the movements of the Phantom for a FPV experience.

Anti-drop Kit

The Anti-drop Kit helps keep the gimbal and camera connected to the aircraft. Two have been mounted on delivery. If new ones are required, take the gimbal and press part [1] through the center hole of the Vibration Absorber the center hole of part [2]. Lock them together as shown in [3]. Mounting the Anti-drop Kit diagonally is recommended.

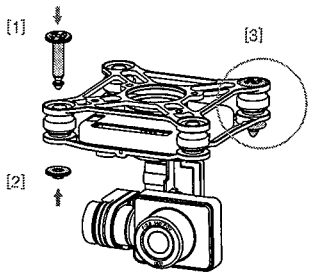


Figure 14

⚠ Once part [1] and part [2] are connected, the Anti-drop Kit cannot be disconnected and reused.

Micro-SD Slot

With flight battery powered off, make sure the Micro-SD card is inserted correctly into the Micro-SD Slot before taking any photos or recording any video.

The Phantom 2 Vision+ comes with a 4GB Micro-SD card and can support cards up to 32GB. The DJI VISION App may not be able to read some Micro-SD cards. Using the DJI VISION App to reformat new Micro-SD cards is recommended.
Refer to Format Micro-SD Card (Page 37) for details.

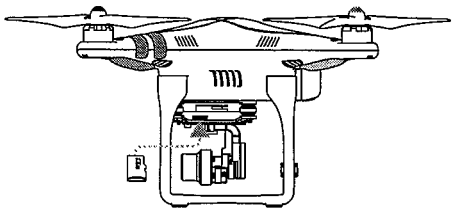


Figure 15

⊘ Do not insert or remove Micro-SD card when flight battery is powered on.

Gimbal Error Warnings

Before the aircraft takes off, if a gimbal motor error is detected or the gimbal clamp is not removed, there will be a warning prompt on the camera page of the DJI VISION App. This will disappear after the problem is resolved.

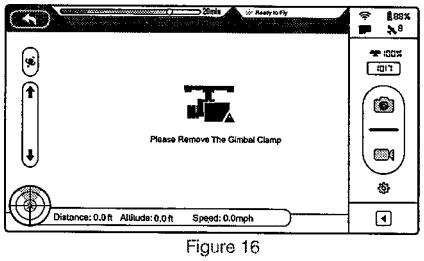


Figure 16

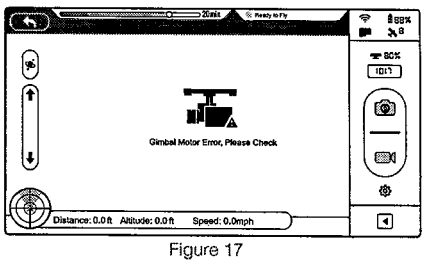


Figure 17

⚠
- Remove gimbal clamp before powering on flight battery.
- Gimbal motor error may occur in these situations: (1) Gimbal is placed on uneven ground. (2) Gimbal has received an excessive external force, e.g. a collision. Please take off from flat, open ground and protect the gimbal after powering up.
- Flying in heavy fog or cloud may make the gimbal wet, leading to a temporary failure. The gimbal will recover when it dries out.

3.5 Camera

The Phantom 2 Vision+ camera powers up when the flight battery has been installed and switched on. Photos and videos can be shot by pressing either the onboard button or the DJI VISION App. For aerial photography it supports burst shots, continuous capture and timed capture, and exports to both Adobe DNG Raw and JPEG. For aerial video, it shoots in full HD at (1080p30/1080i60) and can even shoot 720p60 for internet ready slow motion.

Camera specifications	
Sensor Size	1/2.3"
Pixels	14 Megapixels
Resolution	4384×3288
HD Recording	1080p30 /1080i60/720p60
Recording FOV	110° / 85°

Lens cap removal

Remove lens cap before use and replace it when shooting is complete to protect the camera lens.

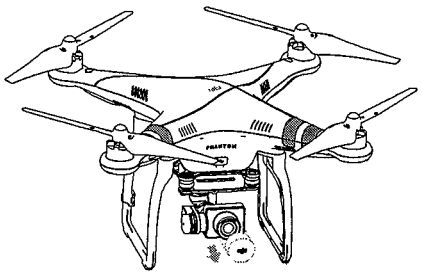


Figure 18

Camera Function Buttons

Capture: Press (hold less than 2 seconds) to take a single capture.

Record: Press (hold more than 2 seconds) to begin recording. Press again to stop.

Camera Data Port

Connect the Camera Data Port to a PC using a Micro-USB cable to copy files to a PC.

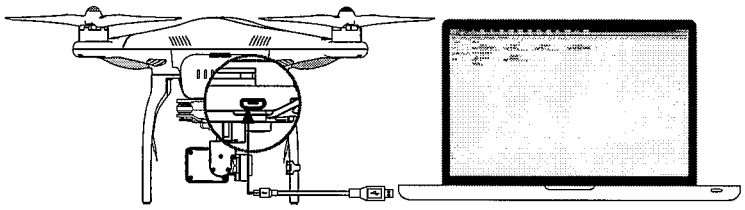


Figure 19

⚠ Photos and videos can only be copied when the flight battery is powered on.

Camera LED Indicator

Camera LED Indicator lights up after the flight battery is powered on. It provides information on the working status of the camera.

Camera LED Indicator	Wi-Fi status	Camera status
Green Solid	OFF	Power On; Idle
Slow Green Blink (0.2s on, 1.8s off)	ON	Idle
Green Blink(0.1s on, 0.3s off, 0.1s on, 1.8s off)	ON	Micro-SD card connected to PC
Fast Green Blink (0.1s on, 0.3s off)	ON	Synchronizing
Orange Solid	OFF	Recording
Orange Blink Once (0.2s on, 0.3s off)	ON / OFF	Taking a single picture.
Orange Blink 3 Times(0.1s on, 0.1s off)	ON / OFF	Taking 3 or 5 photos per shot
Orange Fast Blink (0.1s on, 0.3s off)	ON / OFF	Firmware Upgrading
Green, Orange (0.2s green, 1.8s orange)	ON	Recording
Red Solid	ON / OFF	Critical error
Slow Red Blink (0.2s on, 1.8s off)	ON / OFF	CMOS sensor error
Red Blink Once (0.2s on, 0.3s off)	ON / OFF	Operation failed
Red Blink 3 Times(0.1s on, 0.1s off)	ON / OFF	Micro-SD card error
Fast Red Blinks (0.1s on, 0.3s off)	ON / OFF	Upgrade error
Fast Green, Orange and Red Blink (0.1s on, 0.3s off)	ON / OFF	Overheated Camera

4 Attaching the Propellers

Always use original 9-inch propellers, classified by the color of each central nut.

4.1 Introduction

Propellers	Grey Nut (9450)	Black Nut (9450 R)
Diagram		
Assembly Location	Attach to motor without black dot.	Attach to motor with black dot.
Fastening/ Un-fastening Instructions	Lock: Tighten propeller in this direction. Unlock: Loosen propeller in this direction.	

4.2 Assembly

(1) (Figure 20) Remove warning cards from motors after you have read them.

(2) (Figure 21) Spin grey marked propellers clockwise onto unmarked motors and black marked propellers anti-clockwise for black marked motors.

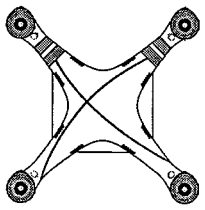


Figure 20

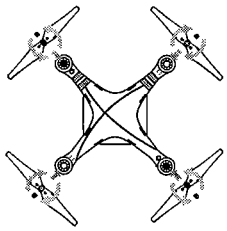


Figure 21

Propellers self tighten during flight. DO NOT use thread locker.

- Always match marked props with the corresponding motor.
- Protective gloves are recommended during propeller assembly and removal.

4.3 Removing the Propellers

(Figure 22) Prevent motor rotation using the included wrench or a hand, then remove propeller according to the un-fastening instructions.

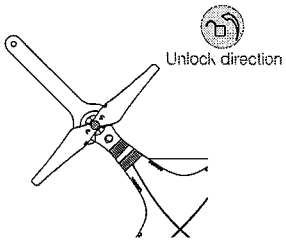


Figure 22

4.4 Notes

(1) Check that propellers and motors are installed correctly and firmly before every flight.
(2) Ensure that all propellers are in good condition before each flight. DO NOT use any ageing, chipped, or broken propellers.
(3) To avoid injury, STAND CLEAR of and DO NOT touch propellers or motors when they are spinning.
(4) ONLY use original DJI propellers for a better and safer flight experience.

For beginner flyers, Phantom 2 Prop Guards are recommended. Contact your authorized dealer or DJI customer service to purchase if necessary.

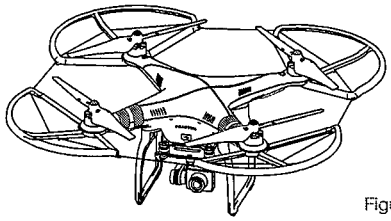


Figure 23

5 Preparing the Remote Controller

The Phantom 2 Vision+ Remote Controller is a wireless communication device using the 5.8GHz frequency band. Remote Controller and Phantom are paired before delivery.
For upgraded remote controller (models: NPVT581, NDJ6 or NRC900), select "Upgrade Version" in Phantom Assistant. For basic remote controller (models: PVT581, DJ6 or RC900), select "Basic Version" in Phantom Assistant.
The Remote Controller is set to Mode 2 by default. This can be adjusted in the PHANTOM RC Assistant. See Using the PHANTOM RC Assistant (Page 47) for details. You can also adjust the power of your Remote Controller according to national regulations. Please refer to Compliance Version Configuration (Page 19).

- **Compliance Version:** The Phantom 2 Vision+ Remote Controller is compliant with CE and FCC (see the FCC ID) regulations.
- **Operating Mode:** Mode 1 and Mode 2 refer to different channel mappings.
- **Mode 1:** The right stick controls throttle.
- **Mode 2:** The left stick controls throttle.

The Range Extender and Phone Holder are already mounted on the Remote Controller. Twist the Mobile Device Holder to face outwards and fix it in position for mobile device installation.

Large smartphones and tablets are not recommended for the Phone Holder as they do not fit.

5.1 The Remote Controller

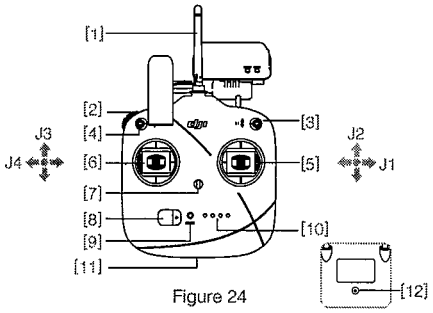
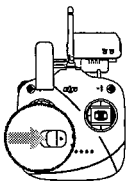


Figure 24

[1] Antenna
[2] Left Dial
[3] Switch S1
[4] Switch S2 (Reserved)
[5] Right Stick: J1, Roll [left & right], J2, Pitch [front & back]
[6] Left Stick: J3, Throttle [up & down], J4, Yaw [rotation]
[7] Neck Strap Attachment
[8] Power Switch
[9] Power Indicator
[10] Battery Charge & RC Assistant Port (micro-USB port)
[11] Battery Level Indicator
[12] Training Port (on back)

5.2 Power on the Remote Controller

(1) Set S1 and S2 switches to the upper most position and place all sticks in the mid-point.
(2) Toggle power switch to the right to switch on.
(3) There will be a power on indicator beep. If the remote controller is set to be CE compliant, then there will be one beep, while the FCC compliant version will emit two beeps. The battery level indicator displays the current battery level. The indicator will blink green quickly, indicating the remote controller and receiver are linking. Once fully linked, the power indicator will change to a solid green.



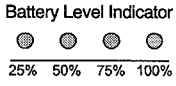
⚠ • If the low voltage warning alert sounds (refer to Remote Controller Power LED Status Information (Page 17) for details), please recharge the battery as soon as possible.
• Using the incorrect type of charging cable may cause damage.
• Following long term storage, recharge the battery before use.

5.3 Remote Controller Power LED Status Information

Power LED Indicator	Sound	Remote Controller Status
G — Solid Green	None	Functioning normally.
R — Solid Red	None	Charging(remote controller is powered off)
Y — Solid Yellow	None	Remote controller joysticks calibration error, need to be re-calibrate.
R — Solid Red	BB—BB—BB	Low voltage (from 3.5V-3.53V), recharge the remote controller.
R ····· Quick Red flashing	B-B-B.....	Critical low voltage (from 3.45V-3.5V). Recharge the remote controller immediately.
G ····· Slow Green flashing	B–B–B.....	Alert will sound after 15 minutes of inactivity. It will stop once you start using the remote controller.

5.4 Battery Level Indicator

Built-in LiPo Battery: The remote controller includes a rechargeable LiPo battery with a capacity of 2000mAh. You can monitor the current battery level using the LED indicators on the front panel of the remote controller as the figure shown:



⚠ The remote controller will show a blinking LED and sound an alert when the voltage drops below 3.45V, then automatically power off after 3 seconds. This process will repeat even if you power cycle the remote controller. If this low voltage warning occurs during flight, the remote controller will automatically power off, causing the aircraft to enter Failsafe mode, which cannot be interrupted (refer to Failsafe Function (Page27) for details). It is strongly recommended that you recharge the battery immediately when the 3.45V-3.5V low voltage warning occurs.

5.5 Antenna Orientation

Keep the antennas pointing skyward, perpendicular to the ground for maximum remote controller range during flight.

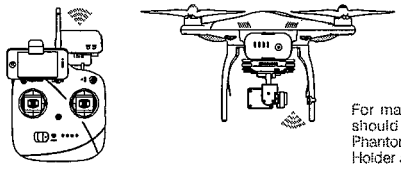


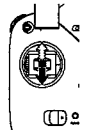
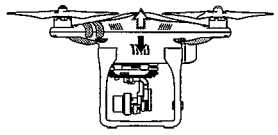
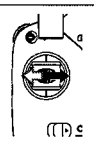
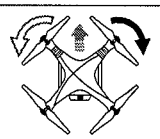
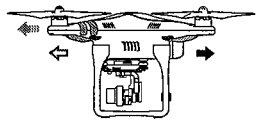
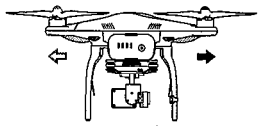
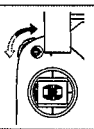
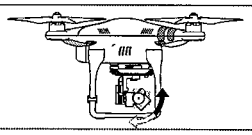
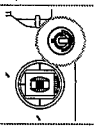
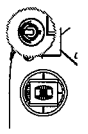
Figure 25

For maximum range and reliability, Remote Controller antenna should point skywards with no obstructions between it and the Phantom. Obstacles may cause Return to Home to trigger. Phone Holder and Range Extender should not block the antenna.

5.6 Remote Controller Operation

The Remote Controller is set to Mode 2 by default.

- Stick Neutral/ mid point: Control sticks of the Remote Controller are placed at the central position.
- Move the Stick: The control stick is pushed away from the central position.

Remote Controller (Mode 2)	Aircraft (indicates nose direction)	Operation details
		Vertical movements on the left stick control elevation. Push the stick up to ascend and down to descend. When both sticks are centered the Phantom will hover in place. Push the throttle stick upward beyond the centered (neutral) position to take off. Push the throttle gently to prevent sudden and unexpected elevation.
		Horizontal movements on the left stick control the rudder. Push left to rotate counter clock-wise and right for clockwise. If the stick is centered, the Phantom will fly straight. The more the stick is moved, the faster the Phantom will rotate.
		Vertical movements on the right stick control forward and backward pitch. Push up to fly forward and down to fly backward. The Phantom will hover in place if the stick is centered. Push the stick further for a larger pitch angle (maximum 35°) and faster flight.
		Horizontal movements on the right stick control left and right pitch. Push left to fly left and right to fly right. The Phantom will hover in place if the stick is centered. Push the stick further for a larger pitch angle (maximum 35°) and faster flight.
		Left Dial: Turn the dial to the right, and the camera will shift to point upwards.Turn the dial to the left, and the camera will shift to point downwards. The camera will keep its current position if the dial is static.
	 Position 1 Position 2 Position 3	The S1 switch is used for compass calibration. Toggle the S1 from position 1 to position 3 and back approximately 5 times to enter into compass calibration mode. In Naza-M mode, the S1 switch is used to switch between control modes and enter compass calibration.
	 Position 1 Position 2 Position 3	S2 is used to record a Home point manually. After a Home point has been recorded automatically, flipping S2 from position 1 to position 3 and back 5 times (or more) rapidly will move the Home point to the Phantom's current location. In addition, you can enable Dynamic Home Point feature in DJI VISION App. In Naza-M working mode, S2 is be used for IOC.

⚠ • In 'Ready to Fly' mode, the Phantom will hover when all sticks are released.
• In 'Ready to Fly (non-GPS)' the Phantom will lock its altitude but will not have horizontal positioning.

5.7 Linking the Remote Controller and Receiver

A 5.8G receiver is built in to the Phantom 2 Vision+. Its link button and indicator are located on the underside of the phantom, as shown in Figure 26.
The Remote Controller and the receiver are paired before delivery. Only use this button if you have replaced your Remote Controller or receiver.

Linking Procedures

(1) Power off the Remote Controller, power on the aircraft. You will see the link indicator blinking red.
(2) Press the link button with a thin object and hold until the link indicator blinks yellow. Release the link button.
(3) Power on the Remote Controller. Link indicator will switch off, showing that a link has been successfully established.

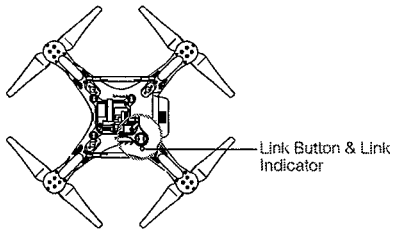


Figure 26

Link Indicator

Link Indicator	Description	Next Operation
R ····· Red flashing	No signal received.	Switch on the Remote Controller or perform a link procedure.
Y ····· Yellow flashing	Ready to link.	Switch on the Remote Controller.

5.8 Compliance Version Configuration

As power levels vary between regulators, the Phantom Remote Controller's power output can be adjusted by twisting the CE/FCC Control Knob (Figure 27) on the back of the Remote Controller using a flathead screwdriver. For CE compliance, set the Remote Controller to CE with a full counterclockwise turn. For FCC compliance, set the Remote Controller to FCC with a full clockwise turn. Be sure to follow relevant local regulations.
Compliance can be configured using the PHANTOM RC Assistant. Select CE compliance version in Assistant to set it, or do the same with FCC compliance version.

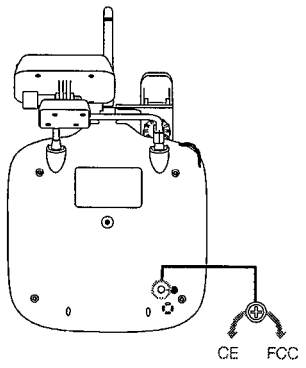


Figure 27

⚠ • Turn the CE/FCC Control Knob gently to avoid damage.
• CE compliant devices have an effective remote controller range of 400 meters in open spaces due to power limitations.
• FCC compliant devices have an effective range of 800 meters in open spaces.
• Watch your flight distance as the Phantom 2 Vision+ will enter Failsafe mode (auto-landing or go home and land) if it flies beyond the relevant range limits.
• Always follow local laws and regulations.

• It is recommended to use a Φ2.4mm flathead screwdriver for adjustments.
• There is another potentiometer for reserved use.

6 Preparing the Range Extender

The Phantom 2 Vision+ Range Extender is a wireless communication device that operates within the 2.4 GHz frequency band. It is used to extending the effective range of communication between a Smartphone and the Phantom 2 Vision+. In an open, unobstructed area, the transmission distance can reach up to 700 meters. This can be reduced by trees, buildings and other sources of the same frequency. Before every flight, it is suggested that you ensure the Range Extender is functioning properly; otherwise communication issues between the mobile device and the Phantom 2 Vision+ may occur.

Each Range Extender has a unique MAC address and network name (SSID), details of which are printed on the label as 'Phantom_XXXXXX'. The 'XXXXXX' represents the last 6 letters or numbers of the MAC address for the Range Extender. This can be renamed in the DJI VISION App.

6.1 Introduction

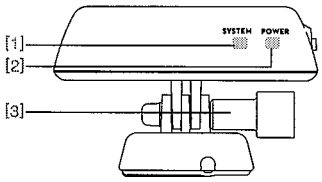


Figure 28

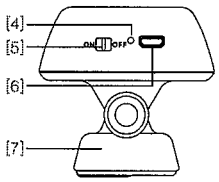


Figure 29

[1] SYSTEM Indicator
[2] POWER Indicator
[3] Locking Screw
[4] Binding Reset Button
[5] Power Switch
[6] Charging Port(Micro-USB slot)
[7] Mounting Bracket

SYSTEM Indicator

Shows Wi-Fi status of the Range Extender.

SYSTEM Indicator	Description
Green flashing	The Wi-Fi network is functioning normally.
Off	The Wi-Fi network is functioning abnormally.

POWER Indicator

Shows power levels of the Range Extender.

POWER Indicator	Description
Solid green	Fully charged.
Solid red	Low voltage alert, re-charge required.
Solid Yellow	Charging.

⚠ If the power indicator is a solid red light, the Ranger Extender may stop working at any moment. Land and recharge as soon as possible.

Binding Reset Button

When the Binding Reset Button is pressed, it will reset and restart the Range Extender. You will need to bind it with the Phantom 2 Vision+ again to recreate its Wi-Fi network. Failure to do so will cause the DJI VISION App to fail to connect with the camera.

6.2 Using Range Extender

Charging the Range Extender

Charge the Range Extender by connecting the charging port to a power supply device such as a PC or a USB charger using a Micro-USB cable. Make sure to charge the Range Extender completely before using it for the first time. This takes 3~4 hours depending on USB power output.

⚠ Make sure the Range Extender has enough power before each use.

Powering on the Range Extender

(1) Flick the power switch to the ON position.
(2) Wait for approximately 30 seconds. The Wi-Fi signal indicator will blink green indicating the Range Extender is communicating properly.
(3) Keep the Range Extender facing the aircraft during flight for the best communication link.

⚠ Power off the Range Extender after every flight to avoid discharging the battery.

Checking the Battery Level

The battery level of the Range Extender can be checked in the camera page of the DJI VISION App as shown below. When the battery level drops to 20% or lower, the battery level icon will go red as a charging reminder.

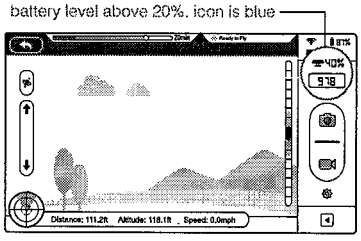


Figure 30

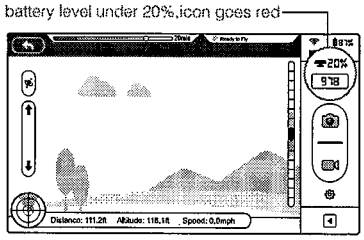


Figure 31

6.3 Rename Range Extender SSID

Make your Range Extender SSID easier to remember by changing its name.

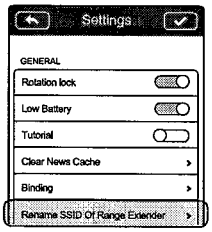


Figure 32

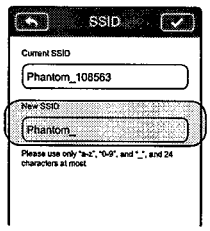


Figure 33

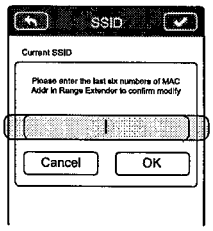


Figure 34

(1) Tap "Rename SSID of Range Extender" in the Settings page. Enter a new SSID name (e.g. Phantom_Tom) in the textbox.
(2) Tap ✔ and you will be asked to enter the last six characters of your MAC address on the Range Extender to confirm the change. The MAC address can be found on the sticker on your Range Extender. If your MAC address is 60:60:1F:60:41:E7, then enter 6041E7.
(3) Tap "OK" to confirm the change. The Range Extender will automatically restart and the App will return to the settings page. Approximately 30 seconds later, the new network name can be found in the Wi-Fi list of your mobile device. Select and connect the renamed network to use the DJI VISION App.

6.4 Binding the Phantom 2 Vision+ and Range Extender

If the connection between the Phantom 2 Vision+ and the Range Extender fails, or one of them needs to be repaired or replaced, a camera and Range Extender binding will need to be performed through the DJI VISION App.

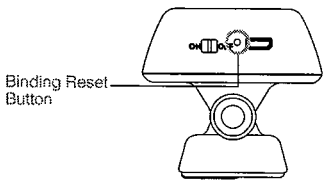


Figure 35

(1) Power on the camera and Range Extender.
(2) Approximately 30 seconds later, press the Binding Reset Button on the Range Extender with a pin until the SYSTEM Indicator turns off. The Range Extender will then restart automatically.
(3) Approximately 30 seconds later, the SYSTEM Indicator will start to blink green, indicating that the Range Extender is ready for binding.
(4) Enable Wi-Fi on your mobile device then select "Phantom_XXXXXX" the (SSIDof your Range Extender) from theWi-Fi network list.
(5) Run the DJI VISION App then tap -> Settings -> General -> Binding (Figure 36). Select 'Scan QR Code' to scan the camera QR code on the bottom of aircraft (Figure 37). Get the camera SSID (E.g. FC200_xxxxxx) and the MAC address (Figure 38). You can also skip the scan and enter the camera MAC address directly (Figure 39). The MAC address can be found on the camera label.
(6) Tap the tick ✔ in the top right corner. The Range Extender should automatically restart. Binding is now complete.

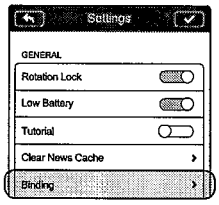


Figure 36

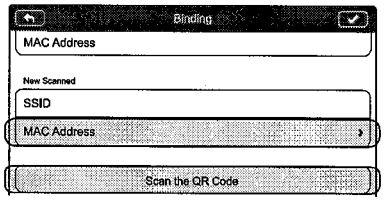
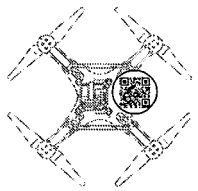


Figure 37



Scan the camera QR code on the bottom of aircraft

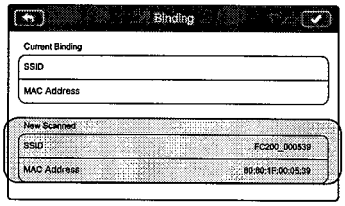


Figure 38

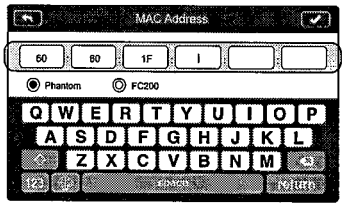


Figure 39

⊘ DO NOT push the Binding Reset Button of the Range Extender unless you are ready to rebind the Range Extender and the camera. This will unbind your camera so you must follow the steps above for rebinding.

⚠ If both the Phantom 2 Vision+ and the Range Extender are powered on and working normally, you will be able to find the SSID on the Wi-Fi list of your mobile device.

- The QR code is located on the bottom cover of the Phantom 2 Vision+. If you cannot find the QR code, please contact DJI customer service and provide your camera serial number (printed on the label of the camera) so they can generate a new QR code for you.
- Photographing and saving the QR code is recommended to prevent loss.

7 Downloading and Installing the DJI VISION App

7.1 Download and Install

Download DJI VISION App
Download and install the DJI VISION App. Choose one of the download methods below.

Search "DJI VISION" on the App Store then follow instructions for iOS version.
Search "DJI VISION" on Google Play then follow instructions for Android version.

Available on the iPhone App Store — iOS6.1 or above

Get it on Google play — Android 4.0 or above

Supported mobile devices

iOS (iOS6.1 or above) Recommended: iPhone4S, iPhone5, iPhone5S, iPhone5C,iPhone6, iPhone6 Plus, iPod Touch4, iPod Touch5; Available but not recommended: iPad3, iPad4, iPad mini, iPad Air.

Android (4.0 or above): Samsung Galaxy S3, S4, Note2, Note3 or mobile devices of similar configuration.

DJI continues to support many mobile devices and any information from users are welcome. Please send any questions or queries to the following mailbox: phantom2vision@dji.com.

The DJI website is regularly updated. Check back often for latest App updates.

7.2 Register and Login

Access the Internet to register and login.

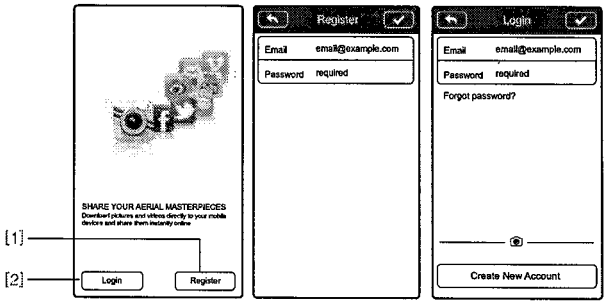


Figure 40 Figure 41 Figure 42

[1] Register

Tap 'Register' to enter the registration page. Fill in your Email and Password information and then tap ✔ to create a new account.

The DJI account works with all DJI Assistant and Apps.

[2] Login

Tap 'Login' to enter the login page. Fill in your registered Email and Password and then tap ✔ to login.

Log in to your account the first time you use the DJI VISION App.

Tap "Forgot Password" if you have forgotten your login details.

[3] Usage tips

Useful tips will display when you enter the welcome page. Tap the screen to display the next tip.

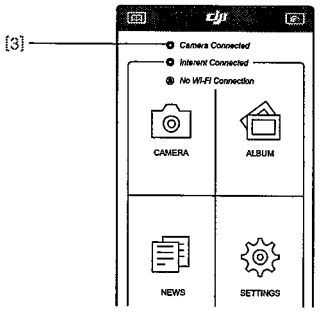


Figure 43

Enable the "Tutorial" switch in the Settings page to get hints and tips the first time you use the DJI VISION App.

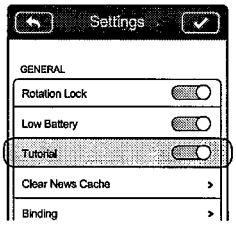


Figure 44

8 Connecting the Camera

Before flight, always connect your smartphone to the Phantom's Wi-Fi network. This is required for the camera control and FPV.

8.1 Connecting Procedures

Follow these instructions to connect a mobile device to the Phantom 2 Vision+ camera.

(1) Power on the Remote Controller and the Range Extender.
(2) Power on the Phantom 2 Vision+.
(3) Enable the Wi-Fi on your mobile device; wait for about 30 seconds, and then select "Phantom_XXXXXX" from theWi-Fi network list (Figure45).
(4) Run the DJI VISION App on your mobile device. When the Wi-Fi Computer Connection status on the App main menu goes green, the connection is good (Figure46).
(5) Tap the "CAMERA" icon and the DJI VISION App will begin a live camera preview (Figure47). This means everything is functioning normally.

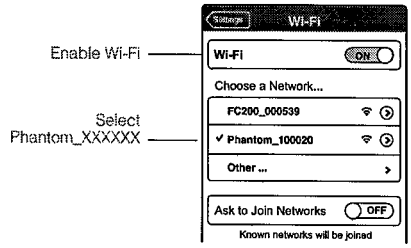


Figure 45

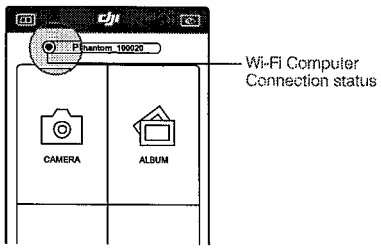


Figure 46

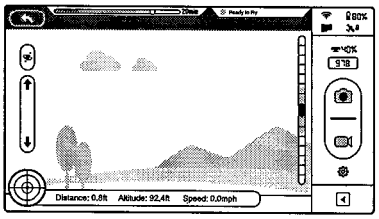


Figure 47

Wi-Fi Computer Connection Status Description

Icon		Description
G	Solid green	Wi-Fi is connected to the Phantom 2 Vision+.
B	Solid blue	Wi-Fi is connected to another Wi-Fi network, not to the Phantom 2 Vision+.
	Off	No Wi-Fi connection.

- The SSID is unique for each Phantom 2 Vision+ It will appear as Phantom_XXXXXX in your Wi-Fi list.
- Android users can tap the SSID button on the main page to mobile device Wi-Fi settings directly.

Flight

Once pre-flight preparation is complete, it is recommended to carry out the tasks in the Phantom Pilot Training Guide to prepare for more complex flight maneuvers and learn to fly safely. Ensure that all flights are carried out in a suitable location.

Flight Environment Requirements

(1) Do not use the aircraft in severe weather conditions. These include wind speed exceeding category 4, snow, rain and smog.
(2) Fly in open fields as high buildings or steel structures may affect the accuracy of the onboard compass.
(3) Keep the Phantom away from obstacles, crowds, high voltage power lines, trees or bodies of water when in flight.
(4) Reduce the chance of electromagnetic interference by not flying in areas with high levels of electromagnetism, including base stations or radio transmission towers.
(5) The Phantom cannot operate within the polar areas.
(6) Do not fly the aircraft within no-fly zones specified by local laws and regulations.

Preflight Checklist

(1) Remote Controller, smart battery, Range Extender and smartphone are fully charged.
(2) Propellers are mounted correctly.
(3) Gimbal clamp has been removed.
(4) Damping absorbers are in good condition, not broken or worn.
(5) Anti-drop kits have been mounted correctly.
(6) Camera lens cap has been removed.
(7) Micro-SD card has been inserted if necessary.
(8) Gimbal is functioning as normal.
(9) Motors can start and are functioning as normal.
(10) DJI VISION App can connect to the camera.

1 Calibrating the Compass

IMPORTANT: Make sure to calibrate the compass in every new flight location. The compass is very sensitive to electromagnetic interference, which can cause abnormal compass data leading to poor flight performance or even flight failure. Regular calibration is required for optimum performance.

- DO NOT calibrate your compass where there is a chance of strong magnetic interference, such as magnetite, parking structures, and steel reinforcements underground.
- DO NOT carry ferromagnetic materials with you during calibration such as keys or cellular phones.
- DO NOT calibrate beside massive metal objects.

1.1Calibration Procedures

Choose an open space to carry out the following procedures. Watch the Phantom 2 Vision+ quick start video for more details.

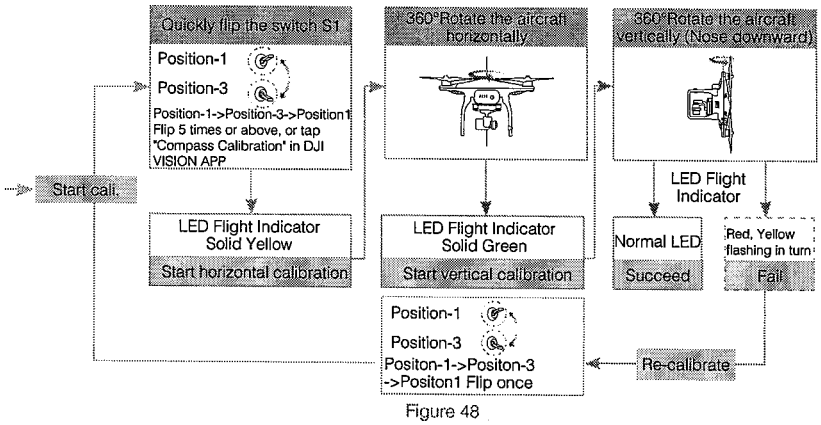


Figure 48

If compass calibration is needed before flight, a prompt will appear on the DJI VISON App's camera page. It will disappear after successful calibration.

1.2 When to Recalibrate

(1) When compass data is abnormal, the rear LED flight indicator will blink red and yellow.
(2) Flying in different location to last flight.
(3) Mechanical structure of the Phantom has changed, i.e. changed mounting position of the compass.
(4) Severe drifting occurs in flight, i.e. Phantom does not fly in straight lines.

2 Starting/Stopping the Motors

2.1 Starting Motors

A Combination Stick Command (CSC) is used to start the motors instead of simply pushing the stick up. Push both sticks to their bottom corners to start the motors. Once the motors have spun up, release both sticks simultaneously.

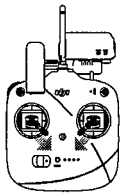


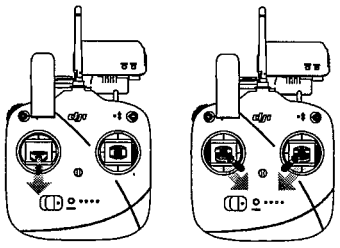
Figure 49

2.2 Stopping Motors

There are two methods to stop the motors.

Method 1: When the Phantom has landed, push the throttle down, then conduct CSC. Motors will stop immediately. Release both sticks once motors stop.

Method 2: When the aircraft has landed, push the throttle down and hold. Motors will stop after 3 seconds.



[1] [2]

Figure 50

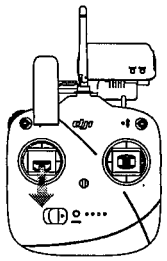


Figure 51

Do not execute CSC during normal flight. This will stop the motors and cause the aircraft to drop without control.

- Conduct the CSC as neatly as you can. Release the sticks once motors start/stop.
- Pull down the throttle stick to descend. The stick will lock into place and the aircraft will descend steadily. Push the throttle stick upward to release throttle lock.

3 Flight Test

3.1Take off/Landing Procedures

(1) Place the Phantom 2 Vision+ on open flat ground with battery indicators facing towards you.
(2) Power on the Remote Controller and Range Extender, then the Smart Flight Battery.
(3) Launch the DJI VISION App and start bind it with your smartphone then enter the camera preview page.
(4) Wait until the Rear LED Flight Indicator blinks green. This means it has initialized and is Ready to Fly. If it flashes yellow, it is in Ready to Fly (non-GPS) mode and will require more careful flight. Execute the CSC command to start motors.
(5) Push the throttle up slowly to take off. Refer to Remote Controller Operation (Page 18) for more details.
(6) Shoot photos and videos using the DJI VISION App. Refer to DJI VISION App Usage (Page 32) for more details.
(7) To land, hover over a level surface and gently pull down on the throttle gently to descend.
(8) After landing, execute the CSC command or hold the throttle at its lowest position for 3 seconds or more until the motors stop.
(9) Turn off the smart battery, Range Extender and Remote Controller.

⚠ • When the Rear LED Flight Indicator blinks yellow rapidly during flight, the aircraft has entered Failsafe mode. Refer to Failsafe Function(Page 27) for details.
• A low battery level warning is indicated by the Rear LED Flight Indicator blinking red slowly or rapidly during flight. Refer to the Low Battery Level Warning Function(Page 28) for details.
• View tutorials about flight for more flight information:www.dji.com/phantom2visionplus/training.
• Aircraft and battery performance is subject to environmental factors such as air density and temperature. Be very careful when flying 3000 meters (9800 feet) or more above sea level, as battery and aircraft performance may be reduced.

3.2 Video Suggestions and Tips

(1) Work through the check list before each flight.
(2) Set the gimbal working mode to Stabilized.
(3) Aim to shoot when flying in Ready to Fly only.
(4) Always fly in good weather, such as sunny or windless days.
(5) Change camera settings to suit you. These include FOV, photo format and exposure compensation.
(6) Take flight tests to establish flight routes and scenes.
(7) Push the sticks gently to make aircraft movements stable and smooth.

4 Failsafe Function

The Phantom will enter Failsafe mode when its connection to the Remote Controller is lost. The Flight Control System will automatically control the aircraft to return to home and land to prevent injury or damage.

Home Point: When the Phantom enters 'Ready to Fly' from the 'Ready to Fly status (non-GPS)', the GPS coordinates will be recorded and set as the home point.
• When Remote Controller signal is lost, the aircraft will return to the recorded home point coordinates and land.
• Home point coordinates are used to calculate the horizontal distance of the aircraft (shown as "Distance" on the GUI of the DJI VISION App).
• After successfully record the home point, rear LED flight indicators blink fast green.
Dynamic Home Point: The Home point will be reset to position of the mobile device at specific time intervals.
• Enable dynamic home point in DJI Vision app or Phantom 2 Assistant.
• Dynamic home point is only available to the GPS-enabled mobile device. Turn on GPS and data service to obtain higher accuracy of the mobile device position.
• Dynamic home point is useful in situations when you are in motion and require a Home point that is different from the takeoff point.

4.1 When Will Failsafe Activate?

(1) The Remote Controller is powered off.
(2) The Phantom has flown out of effective remote controller range.
(3) The signal between the Remote Controller and the Phantom has been blocked.
(4) There is interference causing a signal problem with the Remote Controller.

4.2 Failsafe Procedure

Initiating the Failsafe mode from different flying statuses will results in different landing processes.
Ready to Fly(non-GPS)— Automatic landing
The Flight Control System will keep the aircraft level during descent and landing. It may be drift during the descent and landing process.
Ready to Fly— Automatic go home and land
The Flight Control System will automatically control the aircraft to fly back to the home point and land.

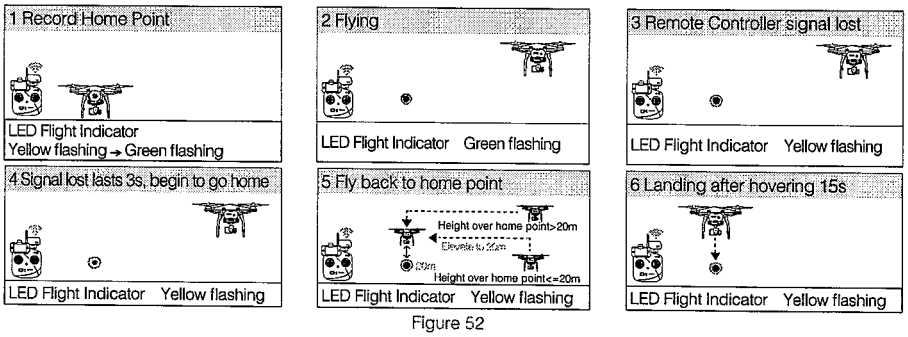


Figure 52

- To ensure the aircraft successful return to home after Failsafe activation, aim to only fly in Ready to Fly mode.
- The Phantom will automatically descend during the Failsafe process if there are less than 6 GPS satellites detected for more than 20 seconds.
- When the aircraft is landing automatically, users can control the aircraft's position and altitude if the remote controller signal is recovered.
- Aircraft cannot navigate around vertical obstacles on its return home course during Failsafe. However, you can set return home altitude value in Phantom Assistant to avoid hitting vertical obstacles through DJI Phantom Assistant.

Quickly flipping the S2 switch of the Remote Controller from top to bottom 5 times or more will reset the current aircraft position as a new home point. Rear LED flight indicators will blink green rapidly when successful.

Failsafe on the DJI VISION App

The DJI VISION App will provide information during Failsafe.

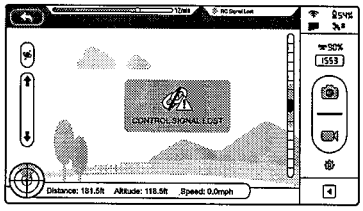


Figure 53

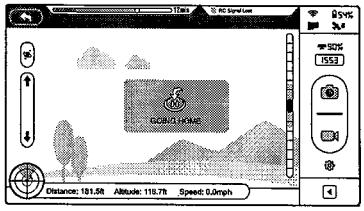


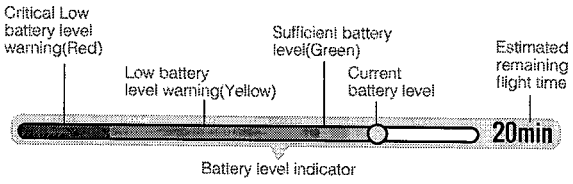
Figure 54

4.3 Regaining Control During Failsafe Procedures

Position of Switch S1	Position-1	Position-2	Position-3
How to regain control	When the S1 switch is switched to Position-1, toggle the S1 switch to any other position once to regain control. If the Remote Controller signal is recovered, control is returned to the pilot.	Regain control as soon as signal is recovered.	

5 Low Battery Level Warning Function

If the DJI smart battery is depleted to a point that may affect the safe return of the aircraft, the low battery level warning notifies users to take action. Users are advised to land the aircraft immediately when they observe these warnings. The thresholds for these warnings are automatically determined based on the current aircraft altitude and its distance from the Home point. Details of the battery level warning are listed below:



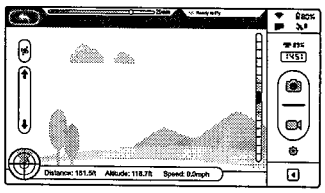
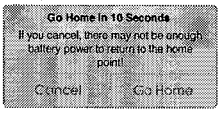


Figure 55

Battery Level Warning	Remark	Rear LED Flight Indicator	DJI VISION App	Flight Instructions
Sufficient battery level	Sufficient battery level	Green LED blinks slowly	No message prompts	Operating normally, no specific action needed
Low battery level warning	The battery power is low. Please land the aircraft.	Red LED blinks slowly.	When "Go-Home" is selected in the Phantom Assistant, this message will appear:  Tap "Go-home" to have the aircraft return to the Home point and land automatically, or "Cancel" to resume normal flight. If no action is taken, the aircraft will automatically go home and land after 10 seconds.	Fly the Phantom 2 Vision+ back and land it as soon as possible, then stop the motors and replace the battery.
Critical Low battery level warning	The aircraft must land immediately.	Red LED blinks quickly.	The DJI Vision App screen will flash red and aircraft starts to descend.	The Phantom 2 Vision+ will begin to descend and land automatically.
Estimated remaining flight time	Estimated remaining flight based on current battery level.	N/A	N/A	N/A

Color zones on the battery level indicator 20min reflect estimated remaining flight time and are adjusted automatically, according to the aircraft's current status.
When the critical battery level warning activates and the aircraft is descending to land automatically, you may push the throttle upward to hover the aircraft and navigate it to a more appropriate location for landing.

⚠ When these warnings are triggered, please bring the aircraft back to the Home point or land to avoid losing power during flight.

Low Battery Level Warning on the DJI VISION App

Battery level warnings will show on the camera page of the DJI VISION App when the battery level is low.
(1) A red light will flash along the edges of the app screen.
(2) Audible alarm. Make sure sound is turned on and volume is turned up on your mobile device.
(3) The aircraft battery icon will turn red.

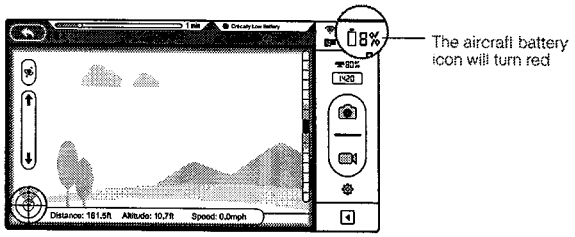


Figure 56

6 Flight Limits

All unmanned aerial vehicle (UAV) operators should abide by all regulations from such organizations as the ICAO (International Civil Aviation Organization) and their own national airspace regulations. For safety reasons, the flight limits function is enabled by default to help users use this product safely and legally. The flight limits function includes height, distance limits and No Fly Zones.

In Ready to Fly mode, height, distance limits and No Fly Zones work together to manage flight. In Ready to Fly (non-GPS) status, only height limits work and flights cannot go higher than 120m.

Default parameters in Assistant are compliant within the definitions of class G ruled by ICAO. (Refer to Airspace Definition to get more details). As each country has its own rules, make sure to configure these parameters to comply with these rules before flying.

6.1 Max Height & Radius Limits

Max Height & Radius limits flying height and distance. Configuration can be done in the Phantom 2 Vision+ Assistant (Figure 57). Once complete, your Phantom will fly in a restricted cylinder (Figure 58).

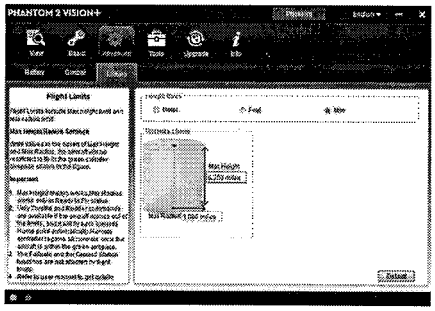


Figure 57

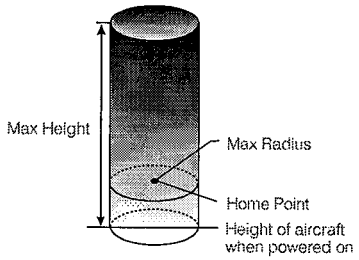


Figure 58

Ready to Fly	G: ····· Green flashing		
	Limits	**DJI VISION App**	**Rear LED flight indicator**
Max Height	Flight height must be under the set height.	Warning: Height limit reached.	None.
Max Radius	Flight distance must be within the max radius.	Warning: Distance limit reached.	Rapid red flashing (R): ····· when close to the max radius limit.

Ready to Fly(non-GPS)	Y: ····· Yellow flashing		
	Flight Limits	**DJI VISION App**	**Rear LED flight indicator**
Max Height	Flight height restricted to 120m and under.	Warning: Height limit reached.	None.
Max Radius	No limits		

- If you fly out of the limit, you can still control the Phantom, but cannot fly it further.
- If the Phantom flies out of the max radius in Ready to Fly (non-GPS) mode, it will fly back within range automatically.

6.2 Flight Restriction of Restricted Areas

Restricted areas include airports worldwide. All restricted areas are listed on the DJI official website at http://www.dji.com/fly-safe/category-mc. Restricted areas are divided into category A and category B. Category A areas cover major international airport such as LAX and Heathrow, while category B areas includes smaller airports.

Category A Safety Zone

(1) The category A "safety zone" is comprised of a small "no-fly zone" and a range of "restricted-altitude zones". Flight is prevented in the "no-fly zone" but can continue with height restrictions in the restricted-altitude zone.
(2) 1.5 miles (2.4 km) around a designated safety zone is a no-fly zone, inside which takeoff is prevented.
(3) 1.5 miles (2.4 km) to 5 miles (8 km) around restricted areas are altitude restricted, with maximum altitude going from 35 feet (10.5 m) at 1.5 miles (2.4 km) to 400 feet (120 m) at 5 miles (8 km).
(4) A "warning zone" has been set around the safety zone. When you fly within 320 feet (100m) of the safety zone, a warning message will appear on the DJI Vision app.

Category B Safety Zone

(1) Category B "safety zone" is comprised of a "no-fly zone" and a "warning zone".
(2) 0.6 miles (1 km) around the safety zone is a designated "no-fly zone".
(3) A "warning zone" has been set around the safety zone. When you fly within 0.6 miles (1Km) of this zone, a warning will appear on the DJI Vision app.

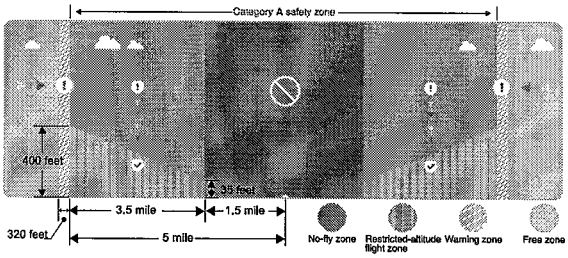


Figure 59:Category A

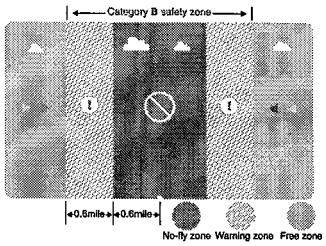


Figure 60: Category B

Ready to Fly Ⓖ ……Green flashing			
Zone	Restriction	DJI VISION App Notification	Rear LED Flight Indicator
No-fly Zone	Motors will not start.	Warning: You are in a No-fly zone. Take off prohibited.	Ⓡ …… Red flashing
	If the Phantom enters the restricted area in Ready to Fly (non-GPS) mode but Ready to Fly mode activates, the Phantom will automatically descend to land then stop its motors after landing.	Warning: You are in a No-fly zone, automatic landing has begun. (If you are within 1.5 mile radius)	
Restricted-altitude flight zone	If the Phantom enters a restricted area in Ready to Fly (non-GPS) mode and Ready to Fly mode activates, it will descend to a safe altitude and hover 15 feet below the safe altitude.	Warning: You are in a restricted zone. Descending to safe altitude. (If you are between the range of 1.5 mile and 5 mile radius) Warning: You are in a restricted zone. Max flight height restricted to between 10.5m and 120m. Fly Cautiously.	
Warning zone	No flight restriction applies, but there will be warning message.	Warning: You are approaching a restricted zone, Fly Cautiously.	
Free zone	No restrictions.	None.	None.

Semi-automatic descent: All stick commands are available except the throttle stick command during the descent and landing process. Motors will stop automatically after landing. Users will regain control once the motors have stopped. There is no need to toggle the S1 switch.

- When flying in the safety zone, LED flight indicators will blink red Ⓡ ……quickly and continue for 3 seconds, then switch to indicate current flying status and continue for 5 seconds at which point it will switch back to red blinking.
- For safety reasons, please do not fly close to airports, highways, railway stations, railway lines, city centers and other special areas. Try to ensure the aircraft is visible.

6.3 Conditions of Flight Limits

In different working modes and flight modes, flight limits will differ according to number of GPS satellites found. The following table demonstrates all the cases(√: available; ×:unavailable).

All flights are restricted by height, distance and special areas simultaneously.

Phantom mode			
Flight Status	Limits of Special Area	Max Height	Max Radius
Ready to Fly	√	√	√
Ready to Fly (non-GPS)	×	√	×

Neza-M mode				
Control Mode	number of GPS found	Limits of Special Area	Max Height	Max Radius
GPS	≥6	√	√	√
	<6	×	√	×
ATTI.	≥6	√	√	×
	<6	×	√	×
Manual	≥6	×	×	×
	<6	×	×	×

6.4 Disclaimer

Please ensure that you are up to date with international and domestic airspace rules and regulations before using this product. By using this product, you hereby agree to this disclaimer and signify that you have read this fully. You agree that you are responsible for your own conduct and content while using this product, and for any direct or indirect consequences caused by not following this manual, violating or disregarding other applicable local laws, administrative rules and social habits thereof.

DJI VISION App Usage

The DJI VISION App controls the Phantom 2 Vision+ camera including capture, recording, settings and pitch angle. It also displays essential flight information including flight parameters and battery level.

1 DJI VISION App Main Menu

After logging in you will see the VISION App home screen. This shows current Wi-Fi connection status and the four main features of the App.

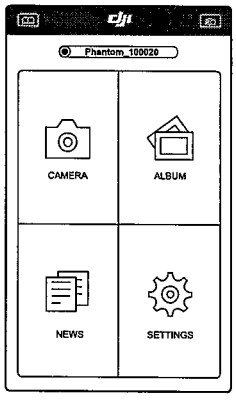


Figure 61

Icons		Description
	Camera	Tap to enter the Camera view screen
	Album	Tap to enter your Album of photos and videos
	News	Tap to read the latest DJI News
	Settings	Tap to change and view app Settings
	Manuals	Tap to view and download manuals
	Checklist	Tap to enter the preflight checklist

⚠
- When using the camera and the SD card album (Page 37), connect your mobile device to the Phantom 2 Vision+ Wi-Fi network.
- Internet access is required for sharing photos, videos and reading DJI news.
- If you receive a phone call during a flight, the live camera preview screen may be interrupted. It's recommended to ignore the call and pay attention to your flight.

2 Camera Page

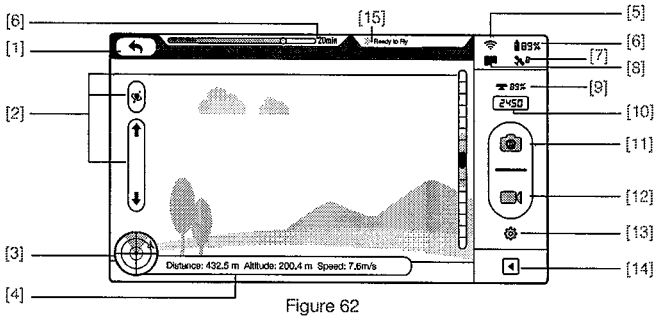


Figure 62

[1] Return [2] Camera Pitch Control [3] Flight Attitude and Radar Function [4] Flight Parameters [5] Wi-Fi Signal Strength [6] Flight Battery Level [7] Aircraft GPS Status [8] Micro-SD Card Status [9] Range Extender Battery Level [10] Remaining Shots [11] Shutter Button [12] Video Recording Button [13] Camera Settings [14] Hide or Show Flight Parameters [15] Rear LED Flight Indicator Status

[1] Return

-Return to the preview page

[2] Camera Pitch Control

-Pitch Control switch is white tap once to highlight it and enter Accelerometer Sensor Mode. Tap again to return to normal.

Normal Mode

Tap up arrow to pitch camera upwards and down arrow to pitch downwards. Green slider indicates current camera pitch.

Gimbal pitch control (Normal Mode)

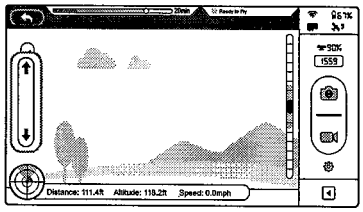


Figure 63

Gimbal pitch movement

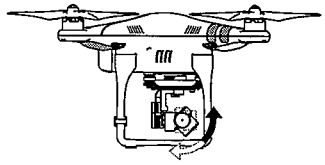


Figure 64

Accelerometer Sensor Mode

The gimbal pitch movement is controlled by moving your mobile device. Pitch forward to pitch camera down and backward to pitch camera up.

Gimbal pitch control (Accelerometer Sensor Mode)

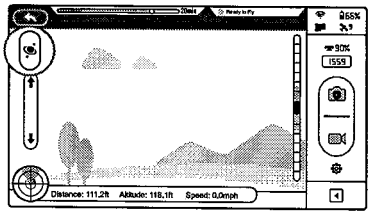


Figure 65

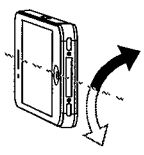


Figure 66

Gimbal pitch movement

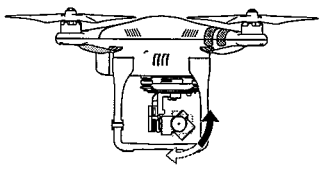


Figure 67

⚠ In Accelerometer Sensor Mode, the pitch angle indicator will show a grey area. When the green pitch indicator is inside the grey area, the camera will move according to pitch gestures. When the indicator reaches the boundary of the grey area, pitch gestures will control the camera's pitch speed at a constant rate.

[3] Flight Attitude and Radar Function

Figure 68

Flight attitude is indicated by the flight attitude icon.

(1) The red arrow shows which direction the Phantom 2 Vision+ is facing.
(2) Light blue and dark blue areas indicate pitch.
(3) Pitching of the boundary between light blue and dark blue area shows roll angle.
(4) An orange circle around the radar indicates that the dynamic home point is not available. A green circle around the radar indicates that the dynamic home point is available and a new home point has been set.

Tap flight attitude icon to turn on the radar function. Home in the center of the radar and the red icon indicates the Phantom 2 Vision+'s current heading, direction, and approximate distance from home. Tap flight attitude icon again to disable the radar.The current longitude and latitude of the aircraft is displayed on the bottom of the radar.

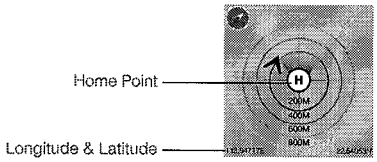


Figure 69

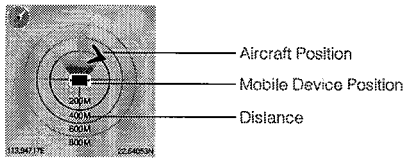
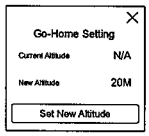


Figure 70

⚠ • By default, the center of the radar indicates the home point recorded by the Phantom 2 Vision+. Tap the center of the radar to switch the center to your mobile device's current location.
• If your mobile device contains a compass, the top portion of the Radar is the direction you are pointing. If not, the radar will be oriented due north.
• Distance units are metric in Figure 69 and Figure 70. Users can switch the unit to imperial in the settings page.

[4] Flight Parameters



Tap to set return home (RTH) altitude.
Distance: Horizontal distance from home point.
Altitude: Vertical distance from home point.
Speed: Horizontal flying speed.

Distance value will show as N/A if the Phantom 2 Vision+ is not in "Ready to Fly" mode.

[5] Wi-Fi Signal Strength

Indicates camera is connected to your mobile device and Wi-Fi is working normally.
The connection between the camera and mobile device may fail if Wi-Fi signal strength is low. Refer to Phantom 2 Vision+ CONNECTION BROKEN for more information.

[6] Flight Battery Level

Show current flight battery level. When battery level is low and the battery icon turns red it is recommended to fly the aircraft back and land it as soon as possible. Please refer to Low Battery Level Warning Function (Page 28) to get more details.

[7] Aircraft GPS Status

GPS status icon display the number of satellites found by the aircraft. The icon is highlighted when more than 6 satellites are found, allow the Phantom to fly in "Ready to Fly" mode.

[8] Micro-SD Card Status

Displays Micro-SD Card Status. Icon is highlighted when a valid Micro-SD card is inserted. If there is no Micro-SD card present, it is grayed out.

[9] Range Extender Battery Level

Shows current battery level of the Range Extender. Refer to Checking the Battery Level (Page 21) for more details.

[10] Remaining Shots

Displays estimated shots remaining, based on the current photo size setting and storage capacity of the Micro-SD card. This shows '0' if:

(1) Micro-SD card is not inserted.
(2) Micro-SD card is full.

(3) Micro-SD card is damaged.
(4) Connection between the DJI VISION App and camera is broken.

[11] Shutter Button

Tap to take photos.
Single capture: press once for a single capture.
Continuous capture: press once for 3 or 5 captures.
Timed capture: press once to begin a timed capture, press again to stop.

- Shutter button is disabled during video recording.
- Capture modes can be reconfigured in camera settings; refer to the Camera Settings (Page35).

[12] Video Recording Button

Start and stop video recording. Tap once to start recording. A red dot will blink to indicate recording is in progress and a time code will appear in the top right corner of the preview screen. Press again to stop recording.

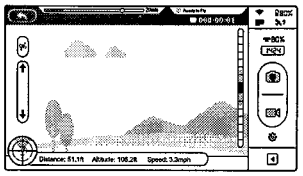


Figure 71

[13] Camera Settings

Tap to open the camera settings menu, refer to Camera Settings (Page 35).

[14] Hide or Show Flight Parameters

Tap to hide flight parameters. Tap again to show.

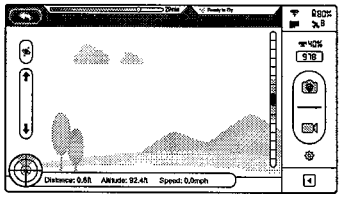


Figure 72

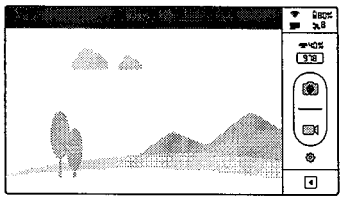


Figure 73

[15] Rear LED Flight Indicator Status

Displays the aircraft's current flight status. Tap for details.

3 Camera Settings

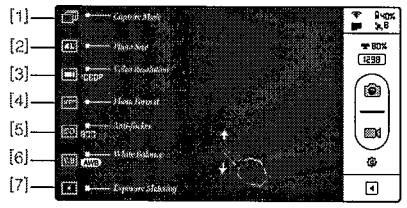


Figure 74

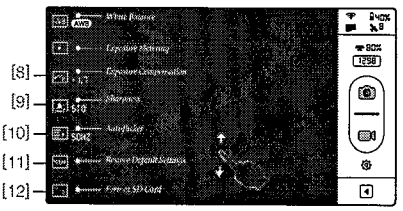


Figure 75

[1] Capture Mode [2] Photo Size [3] Video Resolution [4] Photo Format [5]ISO [6] White Balance [7] Exposure Metering [8] Exposure Compensation [9] Sharpness [10] Anti-flicker [11] Restore Defaults [12] Format Micro-SD Card

[1] Capture Mode

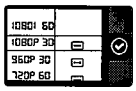
	Single capture.
	3 captures.
	5 captures.
	Configurable timed capture: a) Interval between shots (3~60 s) b) Number of shots (2~254, or number of picture is subject to the capacity of the memory card.)

Capture Button will change according to the mode selected , , , .

[2] Photo Size

	Large: 4384 x 3288, 4:3, 14.4MP
	Medium: 4384 x 2922, 3:2, 12.8MP
	Small: 4384 x 2466, 16:9, 10.8MP

[3] Video Resolution



1920x1080 60i,	16 : 9
1920x1080 30p,	16 : 9
1920x1080 25p,	16 : 9
1280x960 30p,	4 : 3
1280x960 25p,	4 : 3
1280x720 60p,	16 : 9
1280x720 30p,	16 : 9
640x480 30p,	4 : 3(VGA)

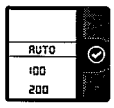
Three Field of View (FOV) options are supported when shooting in 1920x1080 60i, 1920x1080 30p and 1920x1080 25p: Medium (110°) and Narrow (85°).

[4] Photo Format

	JPEG
	RAW The Phantom 2 Vision+ camera shoots in JPEG and RAW file formats simultaneously when this option is selected. See the following table for detailed specifications. JPEG photo size: 4384×3288, 4384×2922, 4384×2466 RAWphoto size: 4384×3288, 4384×2920, 4384×2464

RAW can be edited using the most recent versions of Adobe Camera Raw for Photoshop and Adobe Lightroom.

[5] Selectable ISO



AUTO
100
200
400

[6] White Balance

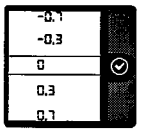
AWB	AWB (auto white balance)
	Sunny
	Cloudy
	Incandescent lamp

[7] Exposure Metering

	Center
	Average
	Spot

- Center: The meter concentrates most on the center of the scene.
- Average: Averages out the light levels for the entire image. This mode is used when the scene has no significant light difference.
- Spot: Measures a small area in the center of the scene. This mode is used in a high contrast scene where the subject must be accurately exposed.

[8] Exposure Compensation



-2.0(EV)	2.0(EV)
-1.7(EV)	1.7(EV)
-1.3(EV)	1.3(EV)
-1.0(EV)	1.0(EV)
-0.7(EV)	0.7(EV)
-0.3(EV)	0.3(EV)
0(EV)	

[9] Sharpness

STD	Standard
HARD	Hard
SOFT	Soft

[10] Anti-flicker

AUTO	Anti-flicker
50HZ	50Hz
60HZ	60Hz

[11] Restore Defaults

Restores all default camera settings. Flight battery restart is needed to allow restoration to take effect.

[12] Format Micro-SD Card

Format the Micro-SD card. All data stored in the Micro-SD card will be lost after formatting. Remember to backup before formatting.

4 Album Page

The DJI VISION App has an SD Card album and a Mobile Device Photo Album. Images and videos on the SD Card album can be synchronized to the Mobile Device Photo Album.

In the DJI VISION App, tap to enter into the SD Card album and tap to enter into Mobile Device Photo Album.

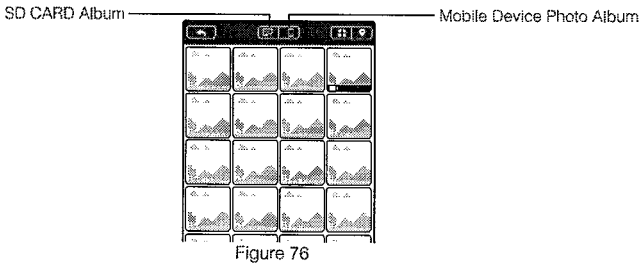


Figure 76

⚠ SD Card album is accessible when the mobile device is connected to Phantom 2 Vision+ Wi-Fi.

4.1 SD Card Album

Pictures stored in the camera are presented using Thumbnails. Tap the corresponding thumbnail to view the picture.

[1] Photos and videos are listed and grouped by date.

[2] All photos and videos that have been synced to your mobile device are marked with .

[3] Tap any thumbnail for single view mode. Tap a Photo thumbnail that hasn't been synchronized to the mobile device to view the photo. Swipe left or right to view the previous or next photo. Tap on a video thumbnail to play it and view the video length. A progress bar will appear at the bottom of the screen. Tap to enter single synchronization mode to synchronize a single photo or video, or to synchronize and play a video at the same time.

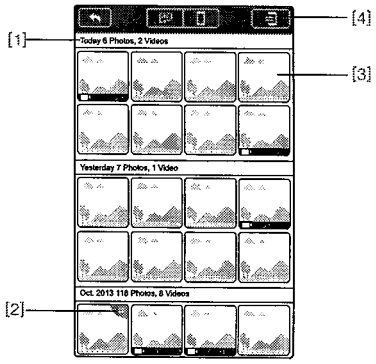


Figure 77

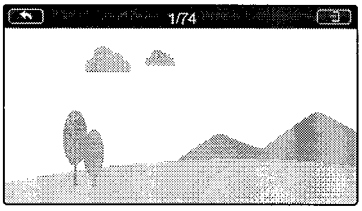


Figure 78

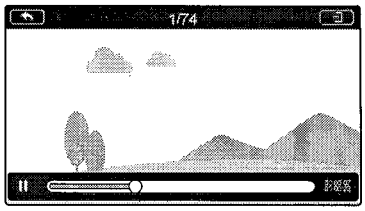


Figure 79

[4] Tap the button to enter multiple synchronization mode (as shown in the following diagram). Tap thumbnails to select photos or videos to synchronize to your mobile device (selected thumbnails are marked with a tick). Select one or more groups to be synchronized by checking the box before the group, then tap to start synchronizing. During the synchronization process, users can tap to cancel synchronization. Photos and videos that have been synchronized to the mobile device will remain.

⚠ Some mobile devices cannot support the synchronization of 1080i60 video files.

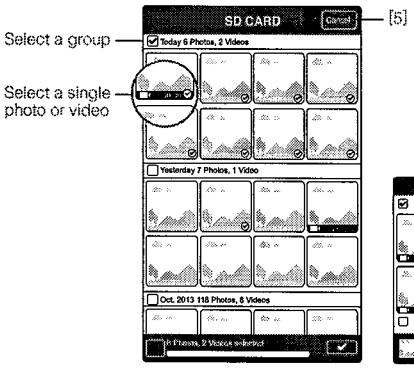


Figure 80

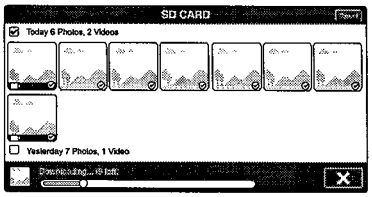


Figure 81

[5] Tap "Cancel" or "Finished" to exit multiple synchronization mode and return to the SD Card page.

Connect camera data port to a PC via a Micro-USB cable to copy photos or videos on the SD card album from the Micro-SD card to the PC conveniently.

4.2 Mobile Device Photo Album

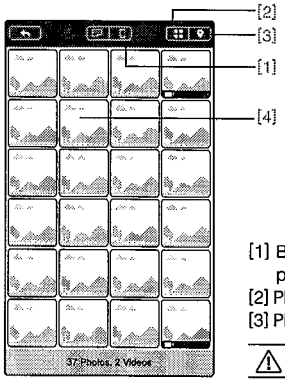


Figure 82

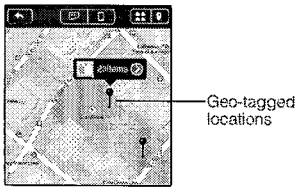


Figure 83

[1] Browse all synchronized photos and videos in the album. Tap to view selected photos or videos.
[2] Photos and videos are displayed using thumbnails and sorted by capture time.
[3] Pictures and videos are sorted by captured/recorded geo-tagged locations.

⚠ Internet access is required for map downloads.

[4] Tap any thumbnail for single view; you can slide left or right to view the previous or next photo. Tap a video thumbnail to play a single video.

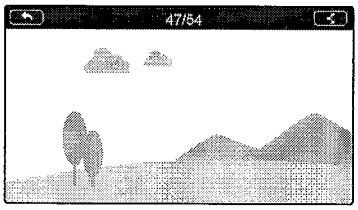


Figure 84

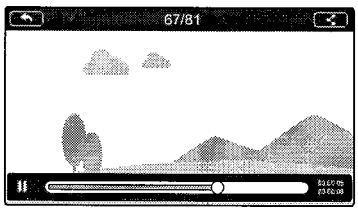


Figure 85

[5] Tap to share your photos and videos to social networks.

⚠ Access to the Internet is required for photo and video sharing.

5 News Page

View the latest DJI news. (Internet access is required.)

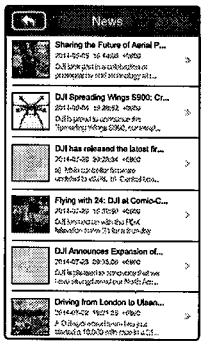


Figure 86

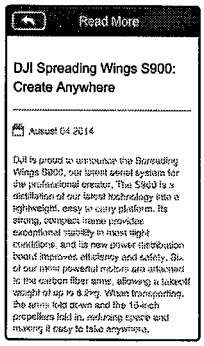


Figure 87

6 Settings Page

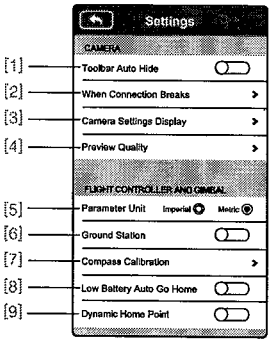


Figure 88

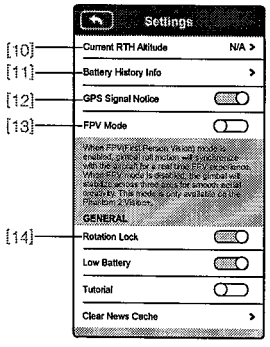


Figure 89

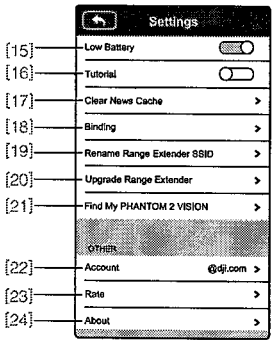


Figure 90

[1] Toolbar Auto Hide

Slide the switch from left to right to enable this function. Toolbar will auto hide on the camera page.

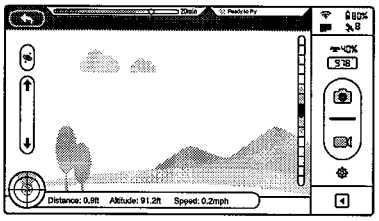


Figure 91: Toolbar Auto Hide Disabled

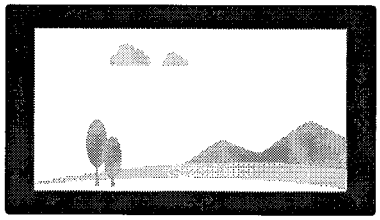


Figure 92: Toolbar Auto Hide Enabled

[2] When Connection Breaks

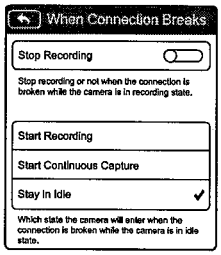


Figure 93

Stop Recording:
Enabled: Stop recording if the Wi-Fi connection between the mobile device and the camera breaks while the camera is recording.
Disabled: Keeps recording if the Wi-Fi connection between the mobile device and the camera breaks while the camera is recording.

Select the state the camera will enter in the event of a Wi-Fi Connection break between the mobile device and the camera. Use this function to ensure your recording is uninterrupted during the flight.

[3] Camera Settings Display

iOS users will see an enabled item display in the camera settings toolbar and disabled items will be hidden. This feature is not available on Android.

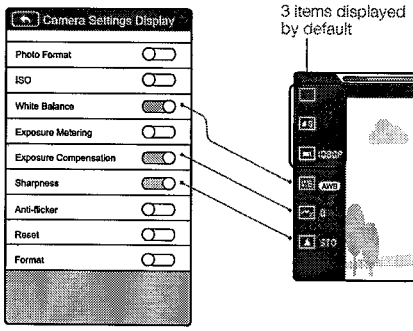


Figure 94

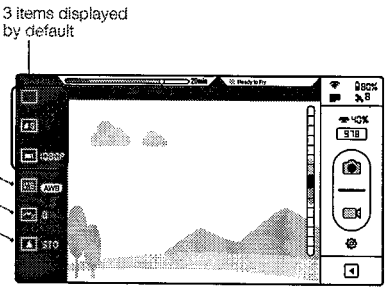


Figure 95

[4] Preview Quality

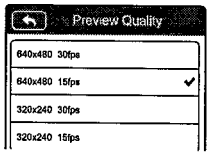


Figure 96

High: 640 x 480@30fps
Medium: 640 x 480@15fps
Medium: 320 x 240@30fps
Low: 320 x 240@15fps (Recommended when there is a lot of interference.)

[5] Parameter Unit

Select imperial or metric units of measurement.

[6] Ground Station

Slide to the right to enable ground station feature.

[7] Compass Calibration

Tap to calibrate the compass. Do not calibrate the compass during flight.

[8] Low Battery Auto Go Home

Enable or disable auto go home feature when battery is low.

[9] Dynamic Home Point

When activated, the Home point will be reset to your current position at specific time intervals. The aircraft will return to the latest Home point as required.

[10] Current RTH Altitude

Default RTH altitude set to 20m. Raising the RTH altitude above 120m is not recommended.

[11] Battery History Info

Show the battery history warning records.

[12] GPS Signal Notice

If enabled, the DJI VISION App will display a pop-up tip when attempting to takeoff without a sufficient GPS signal.

[13] FPV Mode

Switched on, the gimbal will work in FPV mode. Switched off, the gimbal will work in Stabilize mode.

[14] Rotation Lock

The user interface of the DJI VISION App will rotate if rotation lock is enabled (for iOS device only).

[15] Low Battery Warning

If enabled, an alarm will sound when the battery level is too low.

> ⚠ We recommended adjusting the mobile device volume to the highest level.

[16] Tutorial

Hints and Tips

[17] Clear News Cache

Tap to flush news cache.

[18] Binding

In the event that camera and Range Extender binding is lost or an item has been repaired or replaced, binding must be performed using the DJI VISION App. Refer to Binding the Phantom 2 Vision+ and Range Extender (Page 21) for details.

[19] Rename Range Extender SSID

Tap to rename the SSID of the Range Extender. Refer to Rename Range Extender SSID (Page 21) for details.

[20] Upgrade Range Extender

When upgraded, it is possible to use a mobile device's data network to access internet functions while connected to the Phantom.
This feature is not available on Android.

[21] Find My PHANTOM 2 VISION

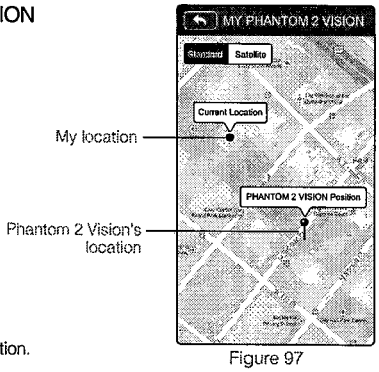


Figure 97

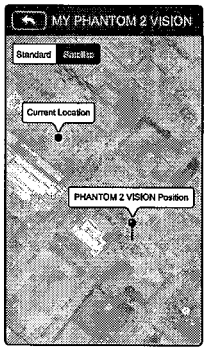


Figure 98

[22] Account

Tap to see user account information.

[23] Rate

Tap to rate the DJI VISION App. Internet access required.

> Android App does not include rating.

[24] About

Tap to see the current version of the DJI VISION App and contact information.

7 Ground Station

The DJI Vision app features an integrated ground station function. Using it you can create flight missions by placing waypoints and setting waypoint altitude and overall speed. When flight plan has been created, simply tap "GO" and your aircraft will execute the flight mission automatically. You may also abort the flight mission and bring aircraft home by activating "GoHome" feature.

⚠ Upgrade Phantom firmware to the latest version to enable ground station feature. Refer to "Firmware Upgrade of the Phantom 2 Vision+" (P46) for more information about how to upgrade the firmware.

7.1 Ground Station GUI

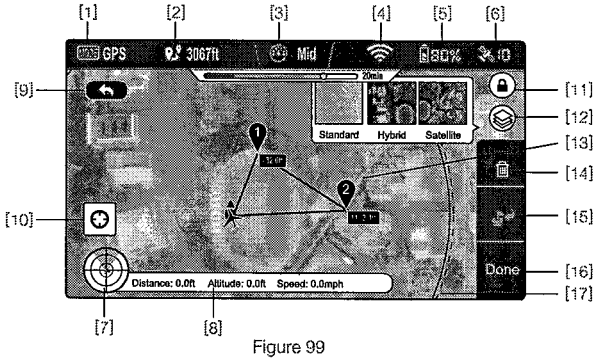


Figure 99

[1] MODE

Modes include
Hover: Hovering
Waypoint: Mission in progress
GoHome: Returning to home point
Take off: Taking off
Landing: Landing
GPS: GPS flight
Atti.: Atti. flight
Manual: Manual flight

[2] Approximated Flight Mission Distance

Planned mission distance. To achieve optimum battery performance, max mission distance is 5km(3miles).

[3] Speed

For flight safety concern, only three gears of flight speed are available. Choose from Fast (8m/s), Mid(4m/s) and Slow (2m/s) for flight speeds. Estimated 10 minutes flight is achievable when the aircraft travels in "Fast" gear.

[4] Wi-Fi Signal Strength

Wi-Fi signal strength display. Refer to [5] in "Using the DJI Vision App" for details.

[5] Battery Level

Battery level display. Refer to [6] in "Using the DJI Vision app" for details.

[6] GPS

Number of satellites connected. Refer to [7] in "Using the DJI Vision app" for details.

[7] Flight Attitude and Radar

Attitude and Radar display. Refer to [3] in "Using the DJI Vision app" for details.

[8] Flight Parameters

Flight information display. Refer to [4] in "Using the DJI Vision app" for details.

[9] Back

Return to camera GUI.

[10] Home Point Locator

Locate your Home point.

[11] Orientation Lock

Unlock to sync map orientation with aircraft movement.

[12] Map View

Select map view from standard, hybrid or satellite.

[13] Waypoint

Tap each waypoint to set altitude.

[14] Delete

Delete current waypoint.

[15] Go Home

Abort mission, return home and land.

[16] Done

Hit "Done" then tap "GO" to begin mission.

[17] Flight Area

The aircraft can fly in this area and return to the home point with the current battery level. This area is dependent on the current state of the aircraft and will be refreshed at specific time intervals.

7.2 Using Ground Station

Step 1 Launching Ground Station:

Enable ground station in the Settings section of the DJI Vision app. A disclaimer for Ground Station will appear. Read this thoroughly before using Ground Station.

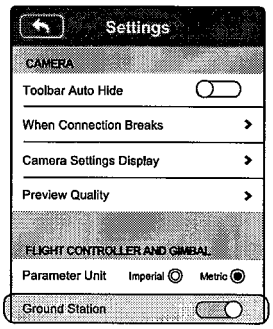


Figure 100

Ensure your mobile device has access to the Internet. Due to the map data required, Wi-Fi connection is recommended. Internet access is required to cache the ground station map, if Wi-Fi is unavailable, mobile data service is required. Open the DJI Vision app camera GUI and swipe left to launch ground station(see Figure 101). DJI Vision app cannot connect to your aircraft while it is accessing the Internet. Hence, you may prompt with the warning message such as "Connection to Phantom Failed". This message will not appear when your aircraft is re-connected to DJI Vision app. Map data of your current location will load. You can then drag the map to cache nearby areas for future use(see Figure 102).

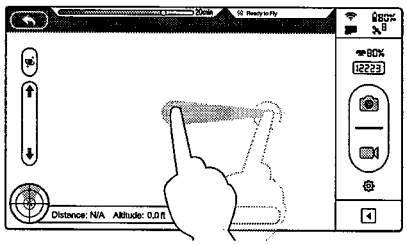


Figure 101

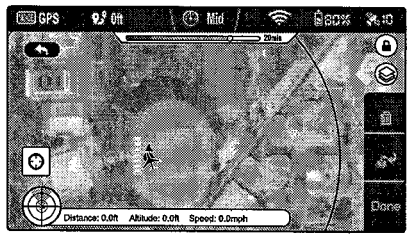


Figure 102

Step 2 Setting a Waypoint:

Disconnect from the Internet and connect the DJI Vision app to your aircraft. Check that remote controller S1 switch is in position (position-1) and the upper left corner in ground station display GPS and wait for the aircraft to enter "Ready-to-Fly" mode (LED indicator blinking green) before swiping left into ground station. Tap on the map to place a waypoint. You can place up to 16 waypoints including the Home point. Waypoints cannot be placed beyond 500m from the Home point or inside No Waypoint Areas.

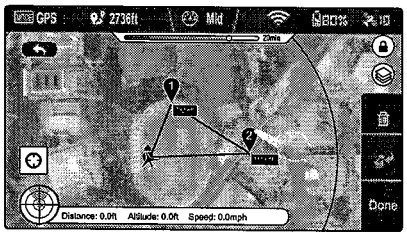


Figure 103

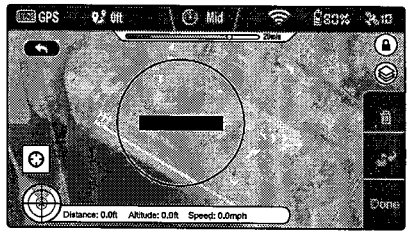


Figure 104

⚠
- A circle on the map, as shown in Figure 104, indicates a restricted, No Waypoint area. Waypoints cannot be placed in this area. For more information, refer to "6.2 Flight Restriction of Restricted Areas (P30)".
- To achieve the optimal video transmission quality, the aircraft is set to operate within a 500m-radius area from Home point.

Tap on a waypoint to open a waypoint properties window. Slide the white dot right to adjust waypoint altitude. The default altitude is set to 98 feet (30 m) and can be adjusted from 0 to 650 feet (200 m). Tap "OK" to save waypoint settings. To delete current waypoint, tap 🗑. Modify longitude and latitude value using the input box.

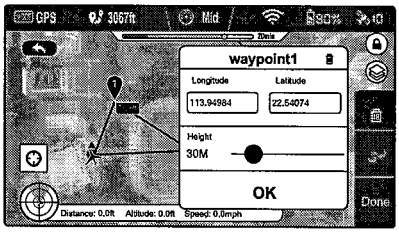


Figure 105

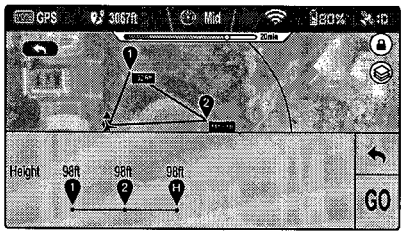


Figure 106

Step 3 Preview a Mission:
Tap "Done" to preview the mission when all waypoints are set. A prompt similar to the one below will appear.
This prompt lists all waypoints and their altitudes. The aircraft will fly to each waypoint listed. If there is a difference in altitude between waypoints, the aircraft will adjust its altitude as it flies between points. When ready, tap "GO" to begin mission.

⚠ **Aircraft reacts differently to the "GO" command:**
- If aircraft is on the ground, the aircraft takes off automatically and ascend 16 feet (5m) then fly to the first waypoint.
- If aircraft is in the air, the aircraft flies to the first waypoint.

Step 4 Executing Flight Mission
The aircraft flies to each waypoint in numerical order. As it flies, swipe back into the DJI Vision app camera GUI to control camera tilt and capture photos or video. Tap ⏸ to pause the mission during the flight, and aircraft will then start hovering. Tap ▶ to resume mission. If you wish to regain control of the aircraft, toggle the S1 switch on remote controller from (Position-1) to either (Position-2) or (Position-3) to discontinue the current mission.

Step 5 Landing
When all waypoints have been visited, the aircraft will return to its Home point and hover. Regain control of the aircraft and land it manually. You may also tap button to initiate "Go Home" procedure. Aircraft will abort current mission, return to Home point and auto land. When the aircraft is landing automatically, users can control the aircraft's position and altitude. Users can start the motors to take off immediately after the motors have stopped following auto landing.

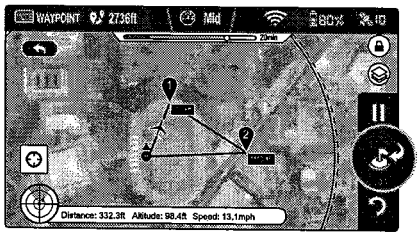


Figure 107

PC / MAC Assistant

For better use of the Phantom 2 Vision+, Phantom 2 Vision+ Assistant and Phantom RC Assistant are required. Both run on Windows or Mac OS X operating systems.

1 Installing Driver and Phantom 2 Vision+ Assistant

1.1 Installing and Running on Windows

(1) Download the driver installer and Assistant installer (.EXE) from the Phantom 2 Vision+ download page.
(2) Connect the Phantom 2 Vision+ to a PC using a Micro-USB cable.
(3) Run the driver installer and follow the prompts to finish installation.
(4) Run the Assistant installer and follow the prompts to finish installation.
(5) Double click the Phantom 2 Vision+ icon on your desktop to launch Assistant.

⚠ Supports Windows XP, Windows 7 and Windows 8 (32 or 64 bit).

1.2 Installing and Running on Mac OS X

(1) Download the Assistant installer (.DMG) format from the Phantom 2 Vision+ download page.
(2) Run the installer and follow the prompts to finish installation.

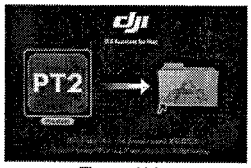


Figure 108

(3) When launching for the first time, if using Launchpad to run the Phantom 2 Vision+ Assistant, Launchpad will not allow access because Assistant has not been reviewed by the Mac App Store.

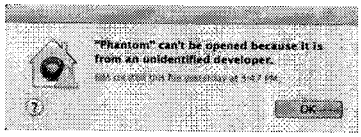


Figure 109

(4) Locate the Phantom 2 Vision+ icon in Finder, press Control then click the icon (or right-click the icon using a mouse). Choose Open from the shortcut menu, then click Open in the prompt dialog box to launch.
(5) After the first successful launch, double click the Phantom 2 Vision+ icon as normal to launch using Finder or Launchpad.

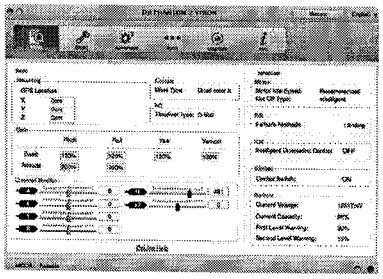


Figure 110

⚠ DMG installer supports Mac OS X 10.9 or above.

Phantom 2 Vision+ Assistant on Mac OS X and Windows are the same. Assistant pages shown in this manual are from the Windows version.

2 Using Assistant

The Phantom 2 Vision+ Assistant is used to configure the flight control system and upgrade firmware. The Phantom RC Assistant is used to configure the Remote Controller and upgrade its firmware.

2.1 Using the Phantom 2 Vision+ Assistant

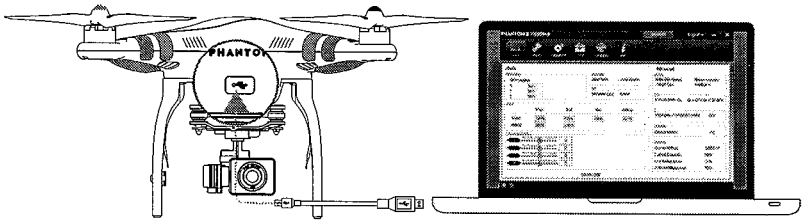


Figure 111

(1) Power on the PC and the Phantom 2 Vision+. Connect the Phantom 2 Vision+ to the PC with a Micro-USB cable. DO NOT disconnect until configuration is finished.
(2) Run Phantom 2 Vision+ Assistant and wait for the Phantom 2 Vision+ to connect. Watch the indicators Ⓡ Ⓑ on the bottom of the screen. When connected successfully, the Computer Connection status is Ⓖ and Data Exchange Indicator blinks Ⓑ .
(3) Choose [Basic] or [Advanced] configuration pages.
(4) View and check the current configuration in the [View] page.

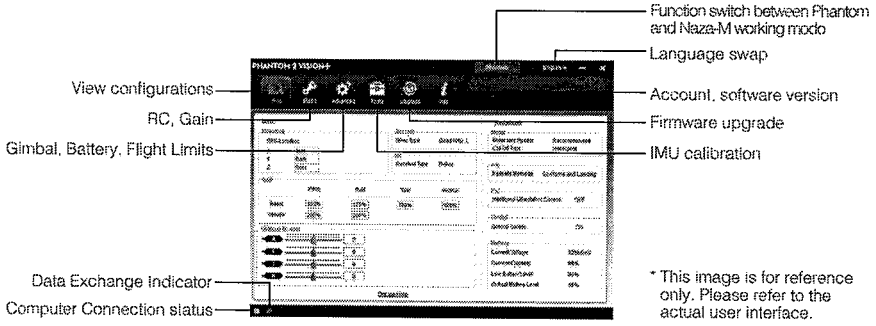


Figure 112

⚠ • Do not enable Naza-M mode before finishing "Advanced Flight Maneuvers" in the "Phantom Pilot Training Guide".

• Enable Phantom mode by tapping the same button if Naza-M mode is enabled. Once changed to Phantom working mode, all parameters will return to factory settings.

2.2 Firmware Upgrade of the Phantom 2 Vision+

(1) Click [Upgrade] icon to check the current firmware version and whether the installed firmware is the latest version. If not, click links to upgrade.
(2) Wait until the Assistant shows "finished". Click OK and power cycle the Phantom 2 Vision+ after 5 seconds. Once complete, firmware is up to date.

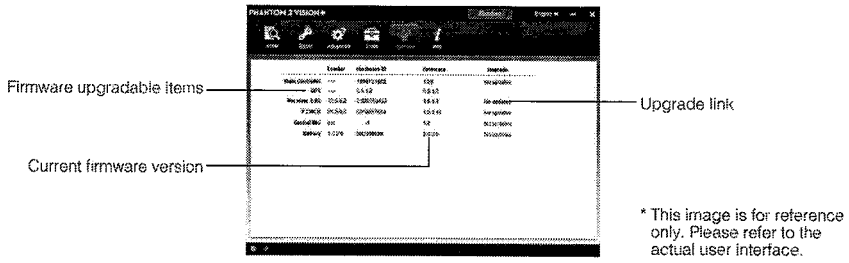


Figure 113

- An internet connection is required to upgrade the Phantom 2 Vision+ firmware.
- DO NOT power off until the upgrade is finished.
- If the firmware upgrade fails, the Flight Controller will enter a waiting for firmware upgrade status automatically. If this happens, repeat the above procedures.

Firmware upgradable items: (1)Flight Controller (2)GPS (3)5.8G Receiver (4) Main Board (P330CB) (5)Battery (6) Gimbal IMU

2.3 Using the Phantom RC Assistant

Use the Phantom 2 Vision+ Assistant to install PHANTOM RC Assistant on your Windows PC or Mac, and then follow the below steps to configure the Remote Controller.

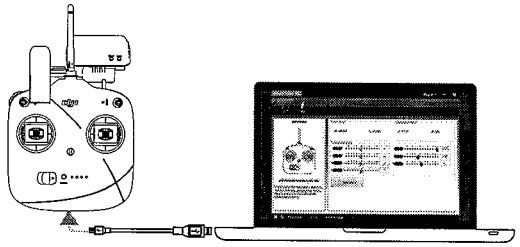


Figure 114

(1) Turn off the Remote Controller and find its Micro-USB slot.
(2) Power on PC and Remote Controller then connect Remote Controller to the PC with a Micro-USB cable. DO NOT disconnect until configuration is finished.
(3) Run the PHANTOM RC Assistant and wait for the Remote Controller to connect to Assistant. Watch the indicators Ⓡ Ⓑ on the bottom left of the screen. When connected successfully, the Computer Connection status is Ⓖ and Data Exchange Indicator blinks Ⓑ.
(4) Finish configuration in the [Main] page.
(5) Finish upgrade in the [Info] page if necessary.

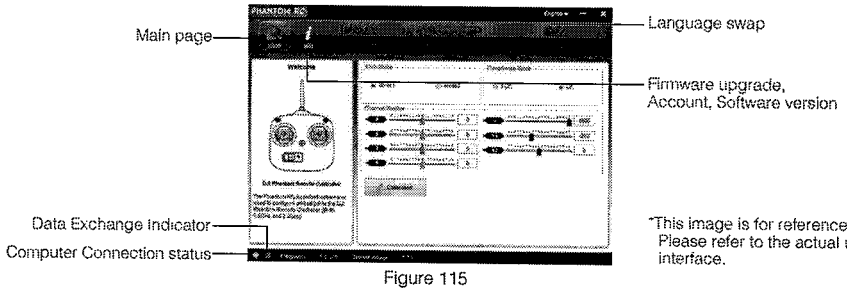


Figure 115

Appendix

1 Rear LED Flight Indicator Status

Rear LED Flight Indicators	Normal status
R G Y ····· (Red, Green, Yellow flashes in turn)	Power On Self-Test
Y G ····· (Green, Yellow flashes in turn)	Warming Up
G ····· (Slow Green flashes)	Ready to Fly
Y ····· (Slow Yellow flashes)	Ready to Fly (non-GPS)
Rear LED Flight Indicators	**Abnormal status**
Y ····· (Quick Yellow flashes)	Remote Controller Signal Lost
R ····· (Slow Red flashes)	Low Battery Level Warning
R ····· (Quick Red flashes)	Critical Low Battery Level Warning
R · · · · · · (Three Red flashes off and on)	Not Stationary or Sensor Bias is too big
R —— (Solid red)	Error*
R Y ····· (Red, Yellow flashes in turn)	Compass Needs Calibration

*You can learn more about error by connecting the Phantom 2 Vision+ to the Assistant.

2 Specifications

Aircraft	
Supported Battery	DJI 5200mAh Li-Po Battery
Weight (Battery & Propellers included)	1242g
Recommend payload	≤1300g
Maximum payload	1350g
Hovering Accuracy (Ready to Fly)	Vertical: 0.8m; Horizontal: 2.5m
Max Yaw Angular Velocity	200°/s
Max Tiltable Angle	35°
Max Ascent / Descent Speed	Ascent: 6m/s; Descent: 2m/s
Max Flight Speed	15m/s (Not Recommended)
Motor Diagonal Length	350mm
3-axial stabilized Gimbal	
Working Current	Static : 750mA; Dynamic : 900mA
Control Accuracy	±0.03°
Controllable Range	Pitch : –90° - 0°
Maximum Angular Speed	Pitch : 90°/s
Camera	
Operating Environment Temperature	0°C - 40°C
Sensor Size	1/2.3"
Effective Pixels	14 Megapixels
Resolution	4384×3288
HD Recording	1080p30 /1080i60
Recording FOV	110° / 85°

Remote Controller	
Operating Frequency	5.728 GHz - 5.85 GHz
Communication Distance (open area)	CE Compliance: 400m; FCC Compliance: 800m
Receiver Sensitivity (1%PER)	-93dBm
Transmitting Power (EIRP)	CE Compliance: 25mW; FCC Compliance: 100mW
Working Current/Voltage	120mA@3.7V
Battery	2000mAh rechargeable LiPo battery
Range Extender	
Operating Frequency	2412MHz - 2462MHz
Communication Distance (open area)	500m - 700m
Transmitting Power	20dBm
Power Consumption	2W

3 Troubleshooting (FAQ)

3.1 How to solve large margin(s) mid-point error?

If the Remote Controller stick(s) mid-point margin of error is too big, the motors will fail to start when you execute the CSC and the Phantom will not take off. The below are some possible fixes for this.

(1) One of the Remote Controller's stick positions (except the throttle stick) is not centered when powering on the Phantom 2 Vision+.
Solution: Place all Remote Controller sticks at their mid-point positions and then power cycle the Phantom 2 Vision+ to re-record the mid-point.

(2) The Remote Controller sticks have been trimmed, leading to a deviation in the mid-point position.
Solution: Use Assistant to perform a Remote Controller calibration.
a) Connect to Assistant, tap Basic -> RC -> Command Sticks Calibration and push all Remote Controller sticks through their complete travel range to see if any stick cannot reach its outermost position.
b) Power cycle the Phantom 2 Vision+. Power cycling is required.
c) Re-attempt Remote Controller calibration in Assistant.

If the above solutions do not solve your issue, please send your Remote Controller to DJI Customer service for repair.

3.2 How to restore a video file if power is turned off during a recording session?

Solution: Keep or place the Micro-SD card back into the camera. Power cycle the camera and wait about 30 seconds for the video file to be restored.

3.3 Failure to acquire the SSID.

Solution: Double check whether both the camera and Range Extender are powered on and the power switch of the camera is switched to "Wi-Fi ON."

3.4 What to do if Phantom 2 Vision+ is out of sight and the Wi-Fi connections is lost?

Solution: Turn off the Remote Controller to trigger the Failsafe mode and the aircraft will start to fly back, descend, and land at the Home point. Please make sure there are no obstacles between the Phantom and the home point and that you are familiar with the procedure for regaining control.

3.5 Wi-Fi connection fails all the time.

Solution: Double check the current Wi-Fi connection status of the mobile device. The mobile device may be connecting to other Wi-Fi networks after a connection breaks with the Phantom 2 Vision+.

3.6 Files fail to synchronize.

Solution: Video files that are too large (file sizes close to 4GB) cannot be synchronized to the mobile device. Some mobile devices do not support the synchronization of the 1080i60 video files.

3.7 iOS Albums fail to synchronize.

Solution: Reset the settings of your mobile device as illustrated below. Enable the Settings -> Private -> Photos -> DJI VISION. Otherwise Albums will fail to synchronize with your mobile device.

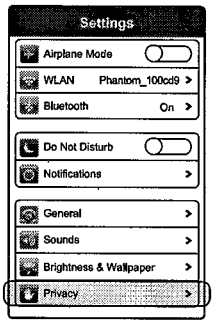


Figure 116

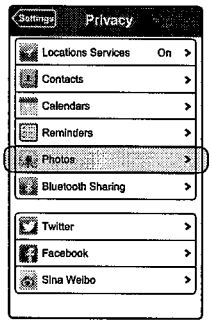


Figure 117

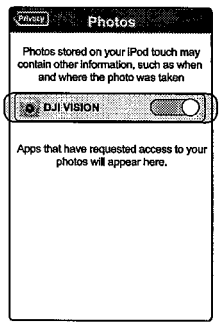


Figure 118

3.8 Failure to share.

Solution: Make sure your mobile device has access to the Internet.

3.9 Some Android devices have a problem connecting to the Phantom 2 Vision+ Wi-Fi Extender.

Solution: Some Android devices do not allow for both a Wi-Fi connection and a mobile data connection at the same time. When trying to connect to the Phantom 2 Vision+ Wi-Fi network, most devices will check whether an Internet connection has a certain Wi-Fi setting enabled, e.g. Auto network switch or Test for Internet connection. If no Internet connection is found because the Phantom 2 Vision+ creates a non-routable connection it will drop the Phantom 2 Vision+ Wi-Fi network connection and scan for the next available connection. Example: For the Samsung Note 3, carry out the following procedures to solve this issue. Tap Settings -> Wi-Fi, and then tap the "Menu" button. Select "Advanced" then uncheck the "Auto network switch". You might see a warning that indicates the Internet connection is unstable this message can be ignored.

3.10 App tips for mobile devices.

Solution: If using the App on multiple mobile devices turn off the App on the first mobile device then turn it on the second one to ensure normal functions on the second mobile device.

3.11 How to land the aircraft more smoothly?

Solution: First pull the throttle stick position down to lower than 5%, then execute the CSC command to stop the motors.

3.12 Why is the discharge time of a battery not zero when unused?

Solution: A battery aging test is performed prior to delivery which affects the discharge time of the new battery. This is why the discharge time of a new battery is not zero. The battery is okay to use.

3.13 Do I need extra hardware to utilize ground station?

Solution: No extra hardware is required.

3.14 Does ground station support caching map data offline?

Solution: Yes, user can cache map data in ground station for future use.

3.15 What if I accidently exit DJI Vision App in ground station mode?

If DJI Vision App is closed when aircraft is executing flight mission, aircraft continues with the remaining flight mission.
If DJI Vision App is closed and failed to re-connect with aircraft within 1 minute, aircraft returns home point automatically.

The content is subject to change.

Download the latest version from

http://www.dji.com/product/phantom-2-vision-plus

Appendix B

Protocals and Controls

Safety Guidelines Manual

Protocols and Controls & Safety Guidelines

Safety for public on the ground as well as manned aircraft above is an essential and utmost consideration for aerial videos and photography. As such, safety protocols and controls must be implemented through pre-flight preparation and during flight.

Pre-Flight Protocol:

- Check batteries to insure fully charged and ready for use, as well as inspect batteries for damage or leakage that may affect proper operation.
- Inspect propellers for cracks, chips or damage that may cause sudden loss of propulsion or unmanageable/uncontrolled flight.
- Monitor AWOS reports and forecasts for wind advisory or other conditions that my impact flight.
- Consult current sectional charts for operational area hazards and limitations.
- Verify signal on my aviation frequency transceiver and monitor the local CTAF for any active air traffic.
- Check for any NOTAMs related to area of activity.
- Post warning sign(s)/stand(s) "Attention Aerial Photography In Progress - Remain Back 50 Feet ", and "Do not talk to or engage pilot or spotter".

Flight Protocol:

- Takeoff and land from same location.
- Spotter to remain alert to birds, sound or aircraft, curious public, and approaching vehicles.
- Spotter to not allow anyone to engage in conversation or distract the remote control pilot restrict flight to minimal elevation sufficient to acquire desired results.
- Remained focused on UAS and prepared for emergency failsafe landing at all times.
- Monitor battery life to insure ample time for safe controlled landing.
- Land UAS and shut down propulsion immediately following landing.

Post Flight Protocol:

- Remove Battery to prevent accidental activation of propulsion system.
- Secure UAS in its case.
- Remove all signs from public access area.

Emergency Landing Protocol in event of the following:

- Manned aircraft is heard or seen in vicinity of flight.
- There is a public gathering within established safety boundary wanting to observe flight .
- Pilot is being distracted from focusing on flight and safety.
- Sudden change in weather (wind bursts).
- Birds enter into proximity of flight.
- Spotter detects any unsafe environment issue.

Roger D. Duffell, PhD
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Phone: 770.560.1826 ● Fax: 770.454.0038

Friday, July 17, 2015

RE: Docket ID: FAA-2015-1067

Brenda Robeson, Program Analyst, Airmen and Airspace Rules Division,

I, Roger Duffell, am submitting this in response your letter dated July 6th, 2015, Request for Additional Information.

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the Reform Act), and 14 C.F.R. Part 11, I, Roger Duffell, operating a Unmanned Aircraft System (UAS) equipped to conduct aerial photography and survey for various industries, hereby applies for an exemption from the Federal Aviation Regulations (FARs) listed below to allow operation of my registered UAS commercially in airspace regulated by the Federal Aviation Administration (FAA) so long as such operations are conducted with and under the conditions outlined herein or as may be established by the FAA as required by Section 333.

The requested exemption would permit I, Roger Duffell, to pursue commercial interests in providing services to consumers interested in aerial data capture using a small advanced UAS in the following areas:

- Agricultural Surveying
- Analyze Topography Realities
- UAS Operator Training
- Real Estate Photography
- Product Demonstrations
- Research and Development

UASs are proving to be a viable and feasible method to obtain information of agricultural cropland in determining optimum inputs that result in cost savings to farmers, yield security, and reduce environmental impact of excess fertilizers and chemicals in the soil. The real-time topographical understanding of erosion can also provide land owners with valuable information on a more frequent basis due to the reduced cost, thus reducing or preventing a need for damage control.

UASs can provide higher quality imagery in a timelier manner, and at lower costs than current means, thus allowing consumers relief more quickly from disasters. Roof and tower inspections of commercial structures can be done without the risk to humans associated with the associated climbing and subsequent liability. Industries across a broad spectrum welcome the ability to now be proactive with preventative inspections more cost effectively.

I, Roger Duffell, stipulate that all commercial interests UAS flights that will occur over private or controlled access property will do so with the property owner's prior consent and knowledge and that only people who have consented or otherwise have agreed to be in the area where photography and videography will take place will be captured. Additionally, I, Roger Duffell, hold a FAA Private Pilot License with Class III Medical Certificate and that any spotters that are not licensed airmen will be trained to understand the proper roles of a spotter, communication procedures, proper visual scan techniques, operations at non-towered airports, and appropriate sections of the Aeronautical Information Manual.

I am petitioning for exemption to enable myself to operate a DJI Phantom 2 Vision Plus multi-rotor equipped with a three-axis gimbaled camera. This UAS weighs less than 3 lbs., has a built- in capability to limit the height it flies above the ground, to limit the radius of the distance it flies from the operator and to exclude it from Class A, B, C and D airspace including a no fly zone feature. System also has the failsafe function of the autopilot system, which means when the communication between the Main Controller and the transmitter is lost; the system will automatically trigger Return to Home and will land safely.

The above specifications meet standards listed below, some derived in accordance with the Model Aircraft Operating Standards:

- The petitioner will only operate its UAS in line of sight of a pilot and/or spotter and will operate at sites that are a 'sufficient distance' from populated areas within the sterile area described in the operator's manual. Such operations will insure that the UAS will "not create a hazard to users of the national airspace system or the public."
- When flying UAS within 3 miles of an airport, airport operators will be notified and the operator will give the right of way to avoid flying in the proximity of full-scale aircraft.
- Maximum flight time for each operational flight will be 25 minutes.
- Flights will be terminated at 25% battery power reserve should that occur prior to the 25 minute limit.
- The UAV will be programmed so that it will not be operated at an altitude of no more than 400 feet AGL.
- Minimum crew for each commercial interests operation will consist of the UAS FAA Licensed Pilot and the Spotter.
- The UAS PIC's (Pilot in Command) will be an FAA licensed airman holding a FAA Private Pilot and Third Class FAA Medical Certificate.
- The UAS operated by the petitioner weighs less than 55 pounds, including the payload (i.e. camera, lens, and gimbal).
- The UAS will operate at speeds of no more than 55 knots.

Given the small size of the UAS and the restricted sterile environment within which it will operate, I feel my UAS operations would adhere to the Reform Act's safety requirements.

Additionally, the fact that I, Roger Duffell, holds FAA Pilot certificate, demonstrates that I have a high regard to safe operations with an understanding of FARs, pre-flight inspections, maintenance and repair, operations within airspace, as well as being trained to high safety standards.

Under the requested exemption Roger Duffell ensures that all spotters will have completed a small unmanned aircraft systems (UAS) education and training program including all applicable regulations and guidance documents; including aeronautical background information such as charts, NOTAMs and Radio Communications Procedures; Human Factors and Crew Resource Management; Basic Small UAS Aerodynamics; Weather factors; Airmanship and Decision-making and Safe Operating Procedures.

I, Roger Duffell, request an exemption from the following regulations as well as any additional regulations that may technically apply to the operation of the UAS N539YQ and any subsequent backup registered UAS of same model. Regulations from which the exemption is requested:

14 C.F.R. Part 21
14 C.F.R. 45.23 (b)
14 C.F.R. 61.113(a) and (b)
14 C.F.R. 91.7 (a)
14 C.F.R. 91.9 (b) (2)
14 C.F.R. 91.109
14 C.F.R . 91.119
14 C.F.R. 91.121
14 C.F.R. 91.151(a)
14 C.F.R. 91.203 (a) & (b)
14 C.F.R. 91.205 (b)
14 C.F.R. 91.215
14 C.F.R. (91.401 - 91.417)

14 CFR Part 21, Airworthiness Certificates
This part establishes the procedures for the issuance of an airworthiness certificate. While the FAA continues to work to develop airworthiness standards for Unmanned Aerial Systems, we request an experimental certificate be issued for the DJI Phantom 2 Vision Plus V3, N539YQ, under either or both of the following provisions:

21.191 Experimental certificates.

Experimental certificates are issued for the following purposes:

(a) Research and development. Testing new aircraft design concepts, new aircraft equipment, new aircraft installations, new aircraft operating techniques, or new uses for aircraft.
(b) Showing compliance with regulations. Conducting flight tests and other operations to show compliance with the airworthiness regulations including flights to show compliance for issuance of type and supplemental type certificates, flights to substantiate major design changes, and flights to show compliance with the function and reliability requirements of the regulations. Since the experimental certificate can be used for commercial purposes such as market surveys, sales demonstrations, and customer crew training, we would expect that an experimental certificate would permit my commercial purpose as well. The aircraft will not carry persons or property, will not carry fuel, and will only fly under strict operational requirements. Combined with the UAS light weight, being constructed primarily of carbon fiber and/or plastic, I propose that the UAS will be at least as safe, if not safer, than a conventionally certificated aircraft performing the same mission. If an experimental airworthiness certificate is not appropriate for this application, then we request an exemption of 14 CFR Part 21, Subpart H, and the requirement for airworthiness certificate in general, citing the equivalent level of safety outlined in the previous paragraph.

14 CFR 45.23 Display of marks; general and 14 CFR 45.29 Size of marks.
These regulations provide that each aircraft must display "N" and the aircraft's registration number in letters at least 3 inches high. Additionally, the aircraft must display the word "EXPERIMENTAL" in letters at least 2 inches high near the entrance to the cabin, cockpit, or pilot station. The UAS does not have an entrance in which the word "EXPERIMENTAL" can be placed. We can propose to achieve an equivalent level of safety by including the word "EXPERIMENTAL" in the placard on the top of the aircraft, as shown above, where the PIC, VO and others in the vicinity of the aircraft while it is preparing for launch will be able to see the designation. Additionally, we feel that the permanent placard discussed in the previous paragraph will provide the aircraft's registration information at the ground station. Finally, we can display at the ground station a high contrast flag or banner that contains the words "Unmanned Aircraft System Ground Station" in letters 3 inches high or greater. Since the aircraft will operate

within 3/4 NM of the ground station, the banner should be visible to anyone that observes the aircraft and chooses to investigate its point of origin.

14 CFR 61.113 Private pilot privileges and limitations: Pilot in Command and 61.133 Commercial pilot privileges and limitations.
The regulation provides that no person that holds a Private Pilot certificate may act as pilot in Command of an aircraft for compensation or hire. Subparagraph (b) allows a private pilot to act as pilot in command of an aircraft in connection with any business or employment if: (1) The flight is only incidental to that business or employment; and (2) The aircraft does not carry passengers or property for compensation or hire. My proposed operations require that the PIC must hold at least a Private Pilot Certificate issued by the FAA and since the aircraft cannot carry passengers or property, I feel this will meet the intent of 61.113 Subparagraph (b) even though the intent of this application is to conduct a business.

14 CFR 91.7 Prohibits the Operation of an aircraft without an airworthiness certificate.
As no such certificate will be applicable in the form contemplated by the FARs, this Regulation is inapplicable.

14 CFR 91.9 Civil aircraft flight manual, marking, and placard requirements.
This regulation provides that no person may operate an aircraft unless a current, approved flight manual is in the aircraft. I assume that the intent of this requirement is to ensure that flight manual information is available to the aircrew while operating the aircraft. I request an exemption to this requirement since the aircraft is not only too small to carry documentation; the documentation would not be available to the crew during flight operations. To obtain an equivalent level of safety and meet the intent of 91.9, I propose that a current, approved UAS Flight Manual must be available to the crew at the ground station anytime the aircraft is in, or preparing for, flight.

14 CFR 91.109 Flight Instruction.
Simulated instrument flight and certain flight tests the regulation states that "No person may operate a civil aircraft that is being used for flight instruction unless that aircraft has fully functioning dual controls." The UAS ground-based control station consists of a small hand-held radio transmitter and while it does not offer a second set of "controls", both the student and instructor could operate the single set of controls simultaneously. With both student and instructor having "hands-on" the controls during flight, I feel that this technique meets the intent 91.109 and provides an equivalent level of safety.

14 CFR 91.119 Minimum safe altitudes: General.
The regulation states that over sparsely populated areas the aircraft cannot be operated closer than 500 feet to any vessel, vehicle, or structure. Since the typical mission of the UAS would be photography or survey of persons, vessels, vehicles or structures it would be necessary to operate closer than 500 feet to the items listed. Operations will only be flown over property or persons where permission has been obtained and careful pre-planning practice has been performed. The aircraft will be operated at a low altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface. Therefore we maintain that due to the small size of the UAS, the hazard to persons, vehicles and structures is minimal compared to manned aircraft, which should be considered in granting the exemption.

14 CFR 91.121 Altimeter settings.
The regulation requires that aircraft shall maintain cruising altitudes by reference to an altimeter setting available within 100 NM of the aircraft. The UAS will always fly below 400 feet AGL and will not need to maintain cruising altitudes in order to prevent conflict with other aircraft. An Above Ground Level altimeter measurement above the takeoff point is transmitted via radio from the UAS on-board computer to the display screen held by the PIC, providing a constantly updated AGL readout.

14 CFR 91.151 Fuel requirements for flight in VFR conditions.
The regulation provides that no person may begin a flight in an airplane under day-VFR conditions unless there is enough fuel to fly to the first point of intended landing and to fly after that for at least 30 minutes. I feel the

intention of this paragraph is to provide an energy reserve as a safety buffer for delays to landing. The UAS is battery operated and the maximum duration of flight from a single battery charge is 1-30 minutes with a 20% reserve. Since the aircraft will never fly more than 1/2 NM from the point of intended landing, a full battery charge at launch will ensure that we meet the reserve energy requirement of this paragraph. I request an exemption to the word "fuel" and ask for an equivalent interpretation with the word "energy". I also request exemption from the 30 min reserve and ask that my reserve will be to fly the mission to the point of intended landing and have at least a 20% battery reserve after that.

14 CFR 91.203(a) & (b) Civil aircraft: Certifications required.
The regulation provides that an airworthiness certificate, with the registration number assigned to the aircraft and a registration certificate must be aboard the aircraft. Additionally, subparagraph (b) provides that the airworthiness certificate be "displayed at the cabin or cockpit entrance so that it is legible to passengers or crew." The UAS is too small to carry documentation, does not have an entrance, and is not capable of carrying passengers or crew. To obtain an equivalent level of safety and meet the intent of 91.203, I propose that documents deemed appropriate for this aircraft by the FAA will be co- located with the crew at the ground control station and available for inspection upon request. In order to identify the aircraft, I propose that the information found on airworthiness and registration certificates be permanently affixed to the aircraft via placard containing the following information N539YQ plus the word "EXPERIMENTAL" to satisfy the requirement of 14 CFR 45.23.

14 CFR Subpart E (91.401- 91.417) - Maintenance, Preventive Maintenance, Alterations
The regulation provides that the operator is primarily responsible for maintaining the aircraft in an airworthy condition, including compliance with part 39 and 43. Paragraphs 91.407 and 91.409 require that the aircraft be "approved for return to service by a person authorized under 43.7" after maintenance and inspection. It is my intention that the PIC perform maintenance and inspection of the aircraft and "be authorized to approve the aircraft for return to service."
The PIC will ensure that the aircraft is in an airworthy condition prior to every flight and in addition, conduct detailed inspections after every two hours of flight. Maintenance performed by the PIC is limited to repairing small cracks, replacing a propeller, checking electrical connections and updating software and firmware for the on-board computer. All other maintenance will be performed by the manufacturer or their designated repair facility. The PIC will document work performed in accordance with 91.417. I feel that due to the size, construction, and simplicity of the aircraft, the PIC can ensure an equivalent level of safety.

I respectfully request a Certificate of Authorization under Section 333 to enable me, Roger Duffell, to operate safe, low-risk commercial UAV operations for the activities stated. I at all times will continue to respect the space and privacy of citizens and property whilst keeping our skies safe.

Respectfully Submitted,

Roger Duffell