



Acquiring Authorization to Operate an sUAS: Unlocking a DJI Drone in Authorized Airspace

Congratulations! You have studied hard, passed the Remote Pilot test (aka Part 107) and have your Remote Pilot Certificate in hand. You have practiced, gained some experience in a controlled environment, and are now ready to collect data. You have walked through your checklist, gone to SkyVector.com (and B4UFLY, or other legitimate sources) to make sure that you are operating in Class G airspace. You are ready to fly!

Well not so fast. If you are operating a drone that is [manufactured by DJI](#), then it is always a good idea to make sure that DJI has not further imposed airspace restrictions BEFORE you get out into the field.¹ In some cases, DJI will lock your drone down over geographic areas where the FAA maintains that you are 'clear to fly' (below 400' and in Class G airspace). And, on the 'flipside', DJI may NOT lock your drone over areas that (under federal regulations) it is illegal to operate a drone altogether (which includes national parks, wildlife refuges, and other protected areas). Given this information, the best rule of thumb is to add the DJI GeoZone Map (more on this below) to your flight planning check sheet (in addition to legitimate FAA airspace resources, which, as a licensed pilot you are required to thoroughly examine prior to each flight).

DJI has locked down access to certain areas based on DJI's own zone classification definitions. Some of DJI's locked zones can be easily unlocked (within a few minutes), while other zones require more extensive documentation and weeks of planning ahead. In any event, this

FAA Airspace and DJI Airspace

All airspace is regulated by the FAA. Obtaining an unlocking authorization from DJI is not the same as receiving an FAA waiver to operate a sUAS in controlled airspace. DJI can only 'unlock' unmanned operations in uncontrolled airspace (Class G airspace below 400' AGL). As a certified remote pilot, you already have permission (from the FAA) to operate in this airspace anyway. However, DJI has identified (for one reason or another) some zones within this 'operational airspace' that may require increased knowledge and vigilance by RPIC's. DJI has therefore added an additional layer of verification for these areas.

With that being said, if you have received a waiver from the FAA to operate an sUAS outside of Class G Airspace (or above 400' AGL), then you will likely be required to submit the FAA documentation to DJI. This documentation is likely required to unlock your DJI drone in your area of operation, and under the confines of your waiver.

¹ If you are not operating a DJI drone, then this entire document probably does not apply to you, but you should check with your manufacturer to see if they have similar areas that are locked down...



unlocking process is best initiated before you head out into the field (the process requires an internet connection and some information).

Introduction to DJI's GeoZone

DJI's GeoZone map is an interactive map that shows which airspace areas require further authorization (according to DJI). Some of the delineated areas on the GeoZone Map mirror the restricted areas that are associated with SkyVector and B4UFly (for example, controlled airspace). Note that, in some areas, DJI's GeoZone map has delineated areas with additional flight restrictions (in addition to the areas identified by the FAA). You can compare the DJI's GeoZoneMap to B4UFly and / or SkyVector.com (which show FAA restricted areas). See Figure 1 and Figure 2.

1. Navigate to <https://www.dji.com/flysafe>
2. Scroll down the webpage and select the *GeoZone Map* option (or you can access it directly from <https://www.dji.com/flysafe/geo-map>).

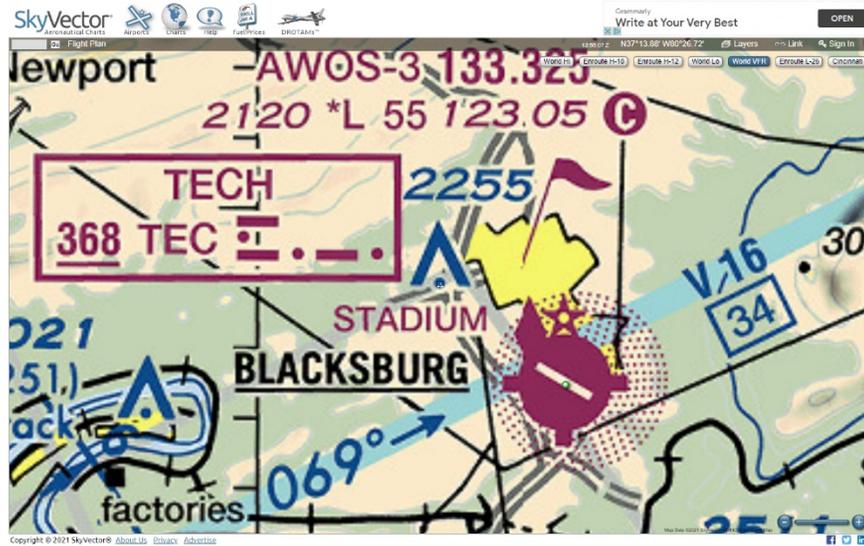
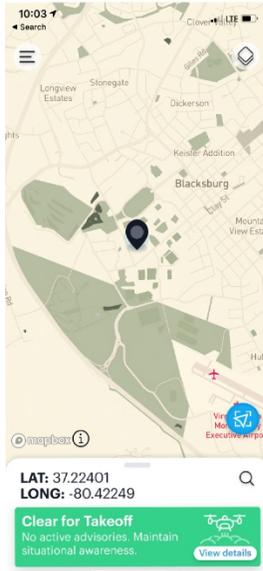


Figure 1 BAUFly (left) and SkyVector (right) both show that the Blacksburg airport does not have a control tower, and is Class G airspace. Under FAA regulations, drone operators can fly under 400’.

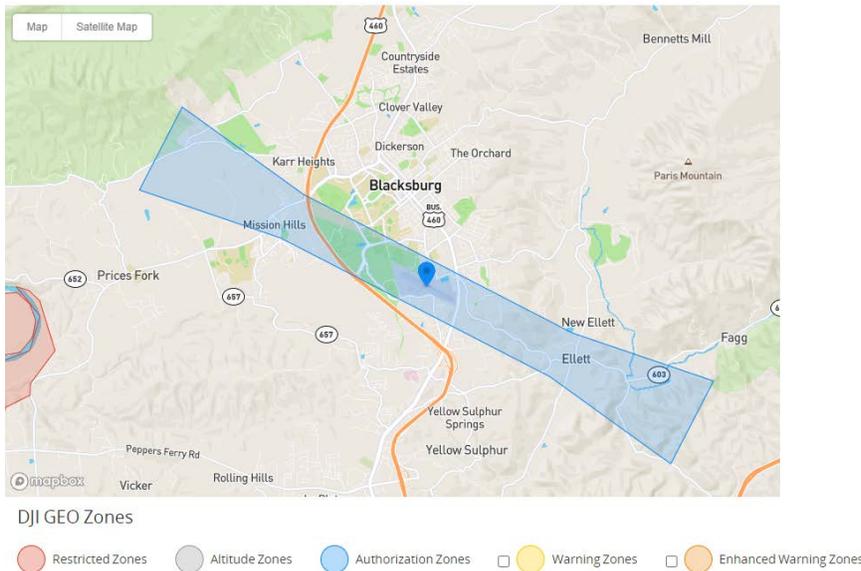


Figure 2 - DJI's GeoZone map classifies some of the Blacksburg airspace as an 'Authorization Zone' (blue). Operating a DJI sUAS in this zone requires an unlocking code (from DJI).

The GeoZone Map includes the following restrictive zones (also, referenced the legend in Figure 2 and in the map in Figure 3).

Restricted Zones – these zones are typically associated with tightly controlled airspace (airports with control towers, military bases, federal facilities, etc.). RPIC’s will probably not be able to unlock these areas through the online process without additional documentation (which likely includes an FAA waiver, and other letters of authorization).

Altitude Zones – represent areas where flight altitude is limited by DJI’s software (outside of busy airports, etc.). To my knowledge, DJI will not unlock the altitude limitations through the online form.

Authorization Zones – represent areas where RPIC’s must maintain increased vigilance and situational awareness. These areas can be unlocked by operators with a verified DJI account.

Warning Zones – Operators will be prompted with a warning message. No unlocking is necessary.

Enhanced Warning Zone – Operators will be required to unlock the zone. This is similar to unlocking an Authorization zone, but users do not require a verified DJI account in order to go through the unlocking process.

Regulated Restricted Zones – Flights are prohibited in these areas (Prisons, Wildlife refuges, National Parks, etc.)

Recommended Zones – These areas are recommended for flight (AMA / model aviation parks, etc.)

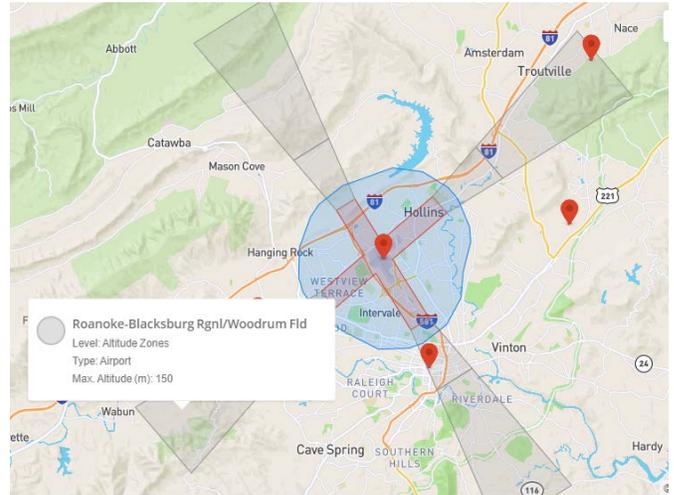


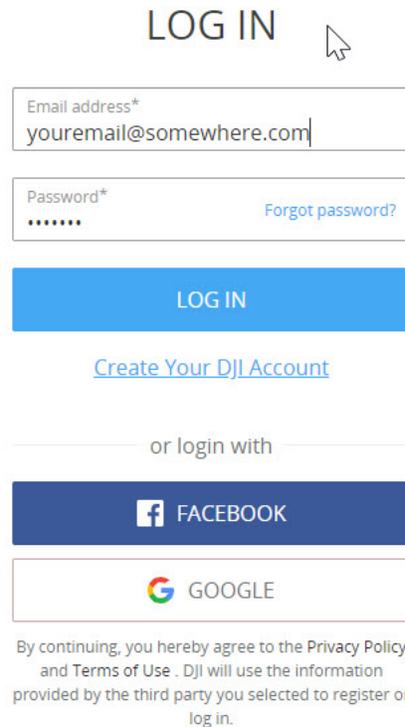
Figure 3 DJI’s GeoZone Map includes three types of restricted airspace zones surrounding Roanoke’s airport (Restricted, Altitude, and Authorization)

Unlocking a Drone: Identifying a Zone

Typically, RPICs need to unlock *Authorization Zones*, as these zones are typically associated with Class G airspace, but they are in locations where additional vigilance by the RPIC may be required. Follow these steps to: submit an unlocking request to DJI, acquire authorization from DJI, unlock your drone, and a prepare for a successful flight!

Before you head out the door:

1. Check the GeoZone map (<https://www.dji.com/flysafe/geo-map>) to see if you need to unlock your drone.
2. If the answer to #1 above is 'yes', then you will need to initiate an application to unlock your drone in a particular area. Go to <https://fly-safe.dji.com/unlock> to get this process started.
 - a. Be prepared to login into your DJI Account (or create an account if you do not have one already) <https://account.dji.com/login>



The image shows a screenshot of the DJI login page. At the top, the text "LOG IN" is displayed with a mouse cursor pointing to it. Below this, there are two input fields: "Email address*" containing the text "youremail@somewhere.com" and "Password*" with masked characters "*****". To the right of the password field is a link that says "Forgot password?". Below the input fields is a blue button labeled "LOG IN". Underneath the button is a link that says "Create Your DJI Account". Below this is a horizontal line with the text "or login with" in the center. Underneath this line are two buttons for social login: a blue button with the Facebook logo and the text "FACEBOOK", and a white button with the Google logo and the text "GOOGLE". At the bottom of the form, there is a small line of text: "By continuing, you hereby agree to the Privacy Policy and Terms of Use . DJI will use the information provided by the third party you selected to register or log in."

Figure 4 DJI Login

Once you have successfully logged in, you will need to submit a *New Unlock Request* (Figure 5).

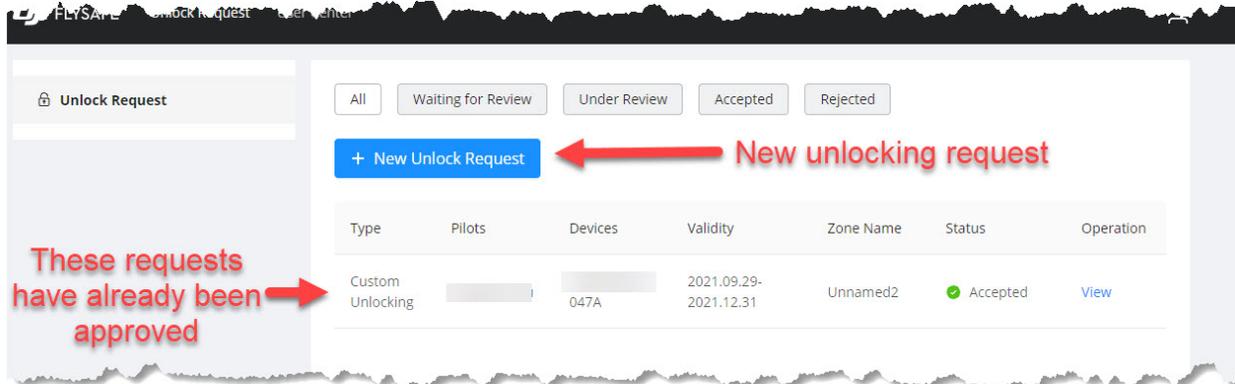


Figure 5 Submitting a New Unlocking Request

After accepting the *New Unlock Request*, you will be prompted to select the Unlocking Type. The *custom* option will enable you to draw a circle (or polygon) on a map to identify the (authorization areas where you would like to operate your sUAS. The other option is to identify then entire GeoZone and apply for flight authorization across the entire zone. The steps associated with both options are essentially the same. This example will walk you through the ‘Draw a Circle’ option’.

After selecting ‘*New Unlocking Request* (Figure 5), read the *Unlocking Request Notice* carefully (and confirm that you have read it).

Keep in mind that, by submitting an authorization application to DJI, you are **NOT applying for flight authorization from the FAA**. This authorization application is only associated with the hardware company that manufactured your drone (DJI) to unlock your drone, so that you can operate it in an area that this company has determined that additional verification is necessary. If given permission, you should not consider this authorization to be a ‘get out of jail free card’ to do ‘whatever you want to do’ (because as you know, the FAA, not DJI, is the regulatory authority for the National Airspace System [NAS]).

Select the *Custom Unlocking* option (or the *Zone Unlocking* option, they both work the same).

New Unlock Request X

Unlocking Type



Custom Unlocking
Draw a circle or a polygon anywhere on the map and apply to unlock



Zone Unlocking
Select a GEO Zone and apply to unlock. Including Authorization Zone self unlocking

Figure 6 New Unlocking Request Type

Some basic information has been completed (based on your login credentials). Complete the form by 'Adding a Device'. The Custom Unlocking Form will appear (Figure 7). You will be prompted for 2 pieces of information, including: 1.) Information about your sUAS (DJI refers to this as 'your devices'), and 2.) information about the Pilot.

Devices:

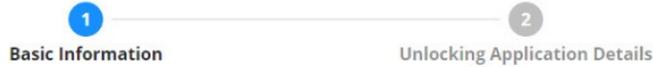
- If you have applied to unlock your drone previously (for the same or a different area), then select the drone from the pulldown list (1)
- If you have not applied to unlock your drone (if this is your first time, or if this is a new drone) then you will need to select the Add Device option (2), and respond to the prompts.
 - Flight controller serial number
 - Aircraft model
 - Device name (this might be a nickname that you have for it...).

Pilots:

Again, if your pilot has already been added to the list then a list of pilot options will appear when you click on the box. Otherwise, you will need to Add a Pilot (3).

- This will prompt you to enter the pilot's name and email address (and it needs to be a legitimate email address, or else you may not receive the unlocking authorization code).

Custom Unlocking



Basic Information

User Information

Identity: Organization Account

Organization Name: Virginia Tech

First Name: John

Last Name: McGee

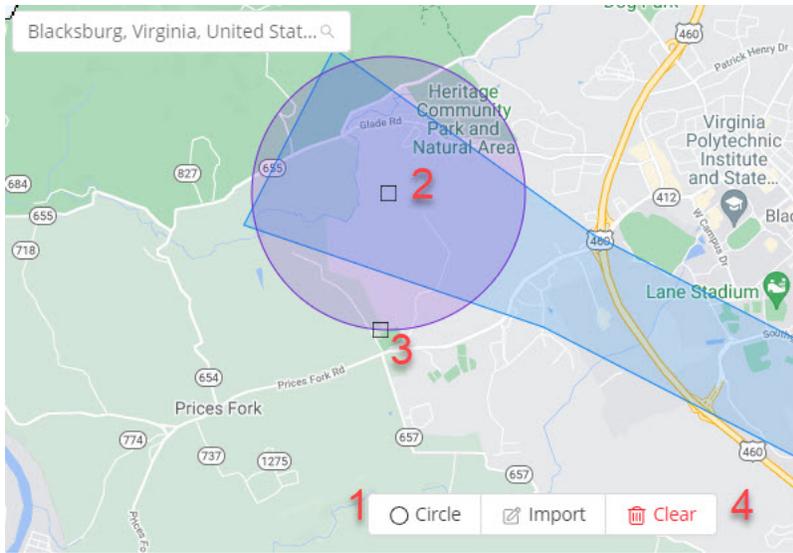
Phone Number: +1 5403150154

Devices List unable to display devices that do not support this unlocking type

| | | |
|----------------------|---|---|
| <input type="text"/> | <input type="text"/> | Add Device 2 |
| Mavic Pro Pilots |  |  1 |
| <input type="text"/> | | Add Pilot 3 |

Figure 7 The Custom Unlocking Form

Once this form has been completed, you will be directed to an online map. Use the search bar to navigate to the area that you need to 'unlock'. Select the Circle option (1) at the bottom of the map, and click in the middle of area that you are requesting to get unlocked (2). This first point will represent the center of the circle. Move your mouse away from this initial point, and click again at the outside of the circle (3). You can now use your mouse to drag the circle around (by selecting the center of the circle) or to make the circle larger or smaller (by selecting the circumference of the circle and moving it in or out). You can always clear the map and start over (4)!



Once you are comfortable with delineating an appropriate area on the map, you will need to provide:

- a time range (start and stop date) for the area to be unlocked (give yourself a few weeks. Be sure to take into account potential scheduling / weather delays).
- Altitude – note that, by default this is in meters, so change this to feet if needed. You can operate up to 400 feet AGL, so I would recommend entering 399 feet!
- Unlocking Application Reason - This can be short and sweet. Research, training, teaching, demonstrations. Just a word or two will likely be enough.

You may be prompted to upload a letter (on your company / organizational letterhead) and a copy of your sUAS license. I have provided a sample below.



Forest Resources and Environmental Conservation

Professor and Geospatial Extension Specialist

Blacksburg, Virginia 24061

P: (540) [redacted]

September 29, 2021

To Whom It May Concern,

These sUAS's (DJI Mavic Pro, DJI Phantom 4, DJI Phantom 3, DJI Phantom 4 multispectral) are owned by Virginia Tech. They are being used for commercial and research purposes.

Sincerely,

If you are using an sUAS for training/demonstrations (and you 'on the clock'), then this would be considered a commercial purpose.

After uploading and submitting the forms, you should receive an email verification back from DJI stating that the application to unlock your drone has been received.

The last time I did this, I received authorization from DJI to unlock my drone in about 5 minutes. I am not going to bank on this quick of a turn around all the time...

Unlocking your Drone!

Once you receive your authorization email from DJI, you can reference this document (<https://tinyurl.com/UnlockDJI>) or follow the updated instructions below.

Before you get started...

- To unlock the restricted areas with DJI GO 4, the mobile device must be connected to the Internet during steps 1 to 4. DJI recommends using an iPhone (for Sparks) since Android devices sometimes are unable to access cellular networks while connected to Wi-Fi.
- Steps 1 to 4 can be completed outside of the unlocking area. I would consider doing this from home / office if there is not an internet connection in the unlocking area (aka the field).
- The unlocking license will still be stored in the aircraft after the license has been imported unless it's replaced by another license. This suggests that you can manage the license (turn the license ON or OFF) even when logged on with a different DJI account (full disclosure: I have never attempted to login with a different account and unlock the authorization license..).

Step 1: Power on the aircraft and remote controller and ensure that the remote controller has successfully connected to the aircraft.

Step 2: Physically connect the mobile device (smartphone, tablet, etc.) to the remote controller with a USB cable (connect to the Wi-Fi if using a Spark). Launch DJI GO 4 (V4.2.8 or later) and log into the same DJI account that was used when initially requesting the unlock code if prompted.

Step 3: Go to the *camera view* on the DJIGO 4 App, and select *General Settings* (A). Then select *Unlocking List* (B). (Figure 9).

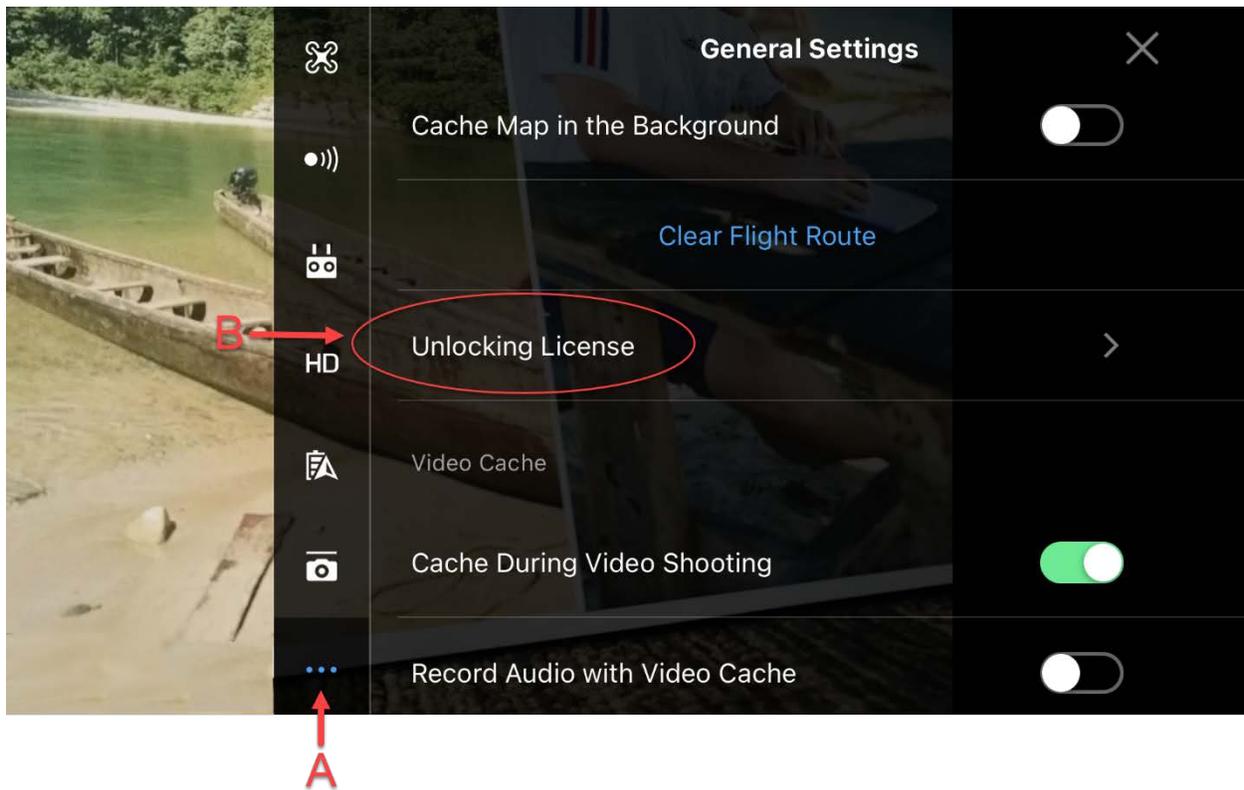


Figure 8-Select the Unlocking License option

Step 4: Select the *Sync* option (A). After the controller syncs with the mobile device, the unlocking code will appear on the screen (B). Select *Import to Aircraft* (C), to transfer the unlocking code to the aircraft (Figure 9).

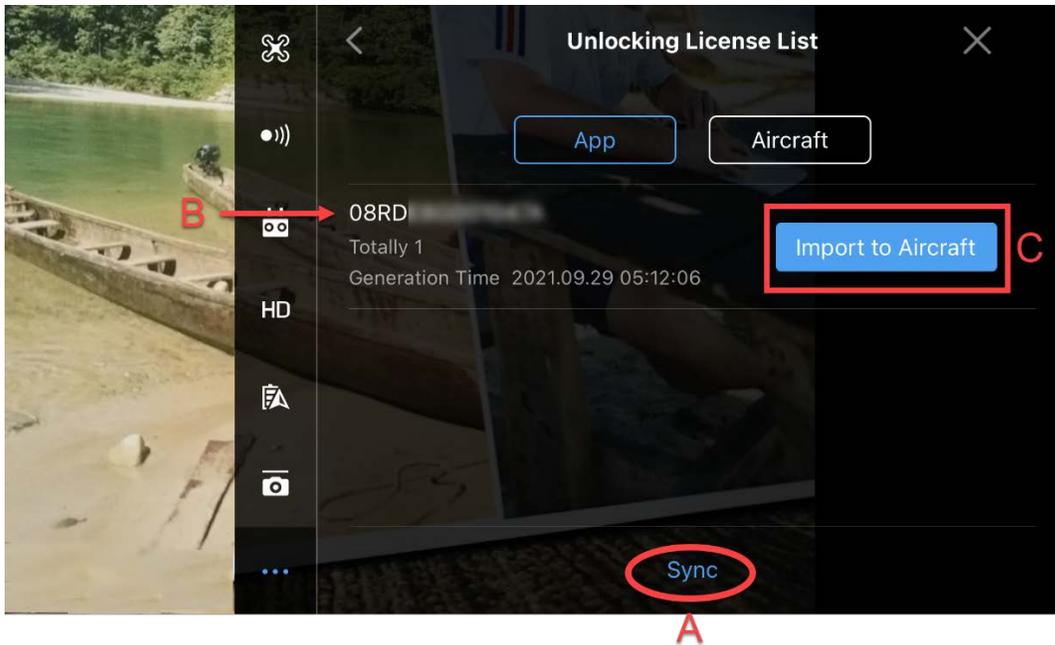


Figure 9-Unlocking License List

Your unlocking license has now been downloaded from your mobile device (the App) to your aircraft. The DJI Go App will remind you that you can turn on or off the authorization license by accessing the *Aircraft* page and unlocking using the *Aircraft* option as needed (figure 10).

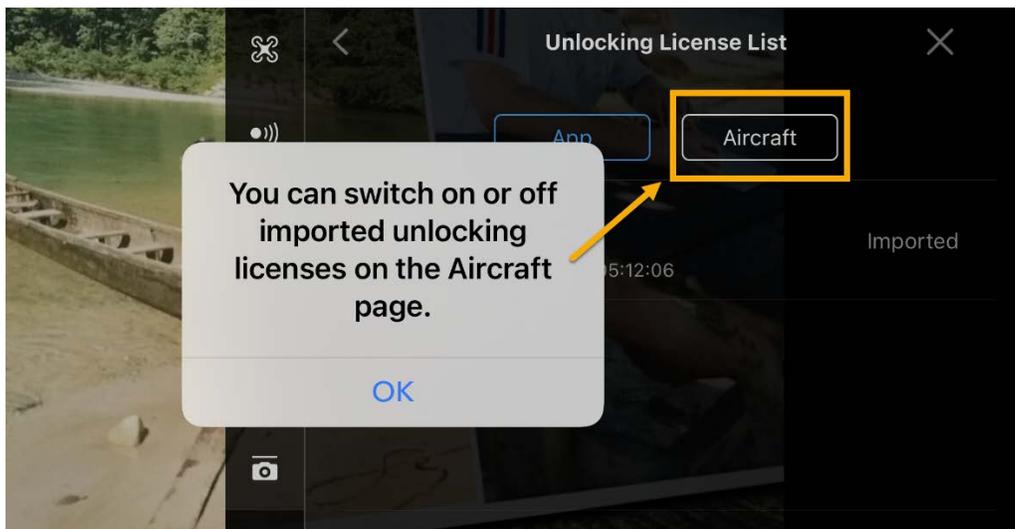


Figure 10-Accessing the Aircraft Page

The Unlocking License (Figure 11) list shows all of the licenses that can be turned on or off (the example below only lists 1 license). There is some important information associated with this list (particularly, the validity period that shows when the unlocking license will expire).

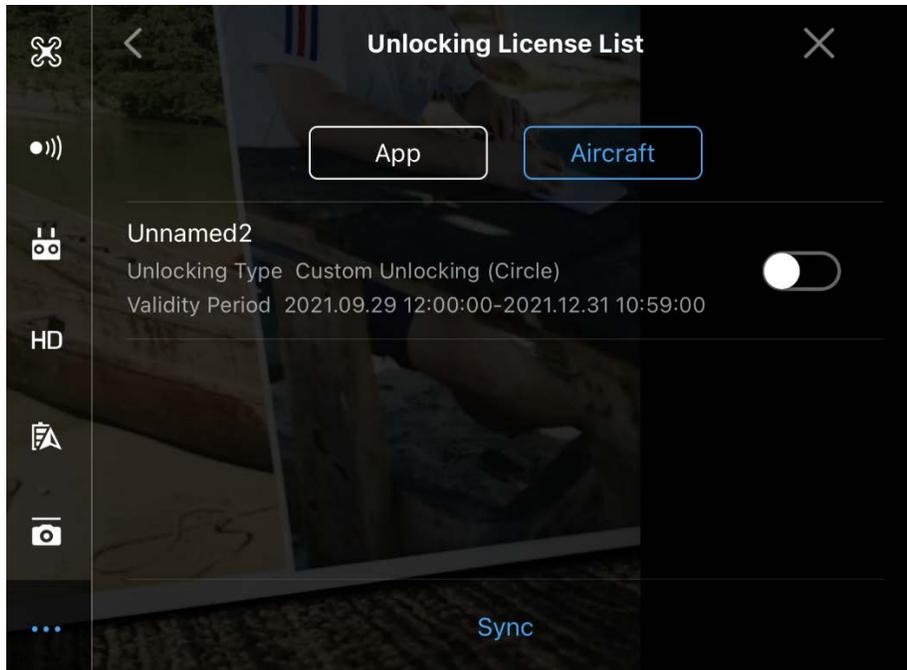


Figure 11-Unlocking License List

While Figure 11 shows the licenses that are available for this particular sUAS to unlock, the license needs to be activated. The actual activation of the license can only be done in the field (i.e. in the area where you have requested to have the license unlocked).

Step 5: To unlock your license, toggle on the license button (A). You will need to confirm that

- You are qualified to fly in the zone (B), and
- You agree to bear full responsibility for your flight in the zone (C)

It is difficult to do this on a SmartPhone (especially on a bright sunny day), because some of your 'action items' are small and difficult to see (see Figure 12). You will need to make sure that you check off both of the options above (by tapping each of the circles (C) with your finger) to turn them into check marks (B) and then Selecting Yes (D). If YES is not activated, then you have not 'checked off' both items B and C.

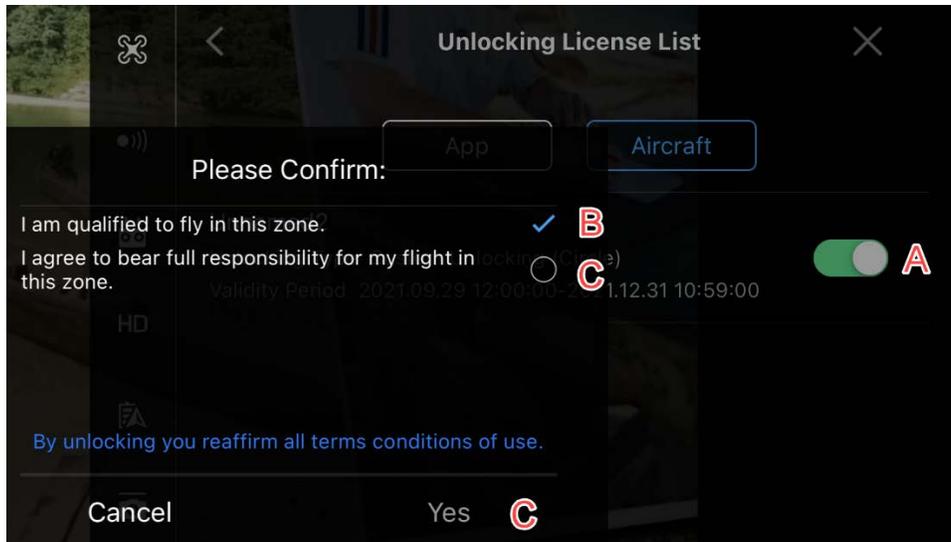


Figure 12 Unlocking the License: Acknowledgment of responsibility.

Your sUAS has now been unlocked, and you should be ready to fly!

Keep in mind the following:

- DJI’s unlocking license is NOT tied to a pilot (really), but it is tied (or locked down) to a sUAS. For example, just because you have unlocked a P4, it does not mean that you can operate your friend’s P4 in this location as well. Every single drone that is going to be operated in a restrictive zone (or Authorization area) needs to go through the process and receive an authorization code.
- Also, keep in mind that the unlocking license is only associated with a given time period (that you provide during the application process). Once this time period has expired, your drone will not be able to fly in this restrictive zone (so you will need to reapply for another unlocking license again).