4G Enhanced Transmission

Product Training



4G ENHANCED TRANSMISSION

Compatible Firmware Version

Release Date		July-18-2024
Aircraft	M350RTK	V10.01.00.09
	M300RTK	V60.01.00.03
	M30T	V10.01.00.14
	Matrice3D/3TD	V10.01.16.04
	Mavic 3E/3T/3M*	/
Remote Controller	DJI RC PLUS	V05.02.11.06
	DJI RC PRO Enterprise*	/
DJI DOCK2	DJI DOCK2	V10.01.16.04
APP	Pilot 2 App	V10.1.0.30

*Note: The firmware of Mavic 3E/3T/3M and DJI RC PRO will be released on July 30.

4G ENHANCED TRANSMISSION

Enhanced Flight Safety

Function Introduction

By connecting the aircraft to the DJI 4G dongle, and connecting the RC to the 4G dongle/Wi-Fi, the image transmission link can utilize 4G connectivity to enhance transmission range/quality.



What's Required

- 4G Dongle / Wi-Fi for the RC
- 4G Dongle for the aircraft
- SIM cards for the 4G dongle (purchased separately)

Application Value

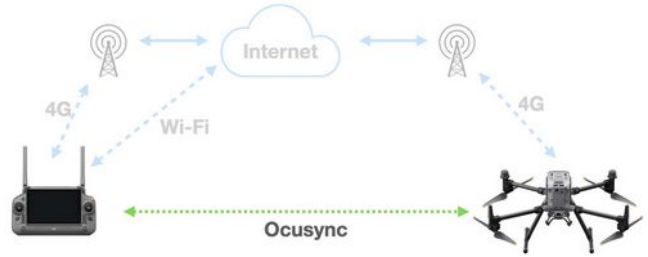
- Enhanced transmission range and quality, especially in urban areas where the OcuSync link can be blocked or interfered with.
- Dongle on the RC can also provide internet connectivity for Network RTK / map service.

4G ENHANCED TRANSMISSION

How it Works with OcuSync

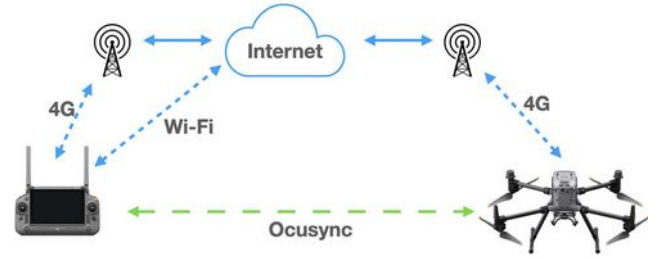
Under Normal Conditions

•When the OcuSync transmission is strong, the 4G link maintains a connection, but 4G is not used for data transmission, providing a high-quality, low-latency experience while minimizing data consumption.



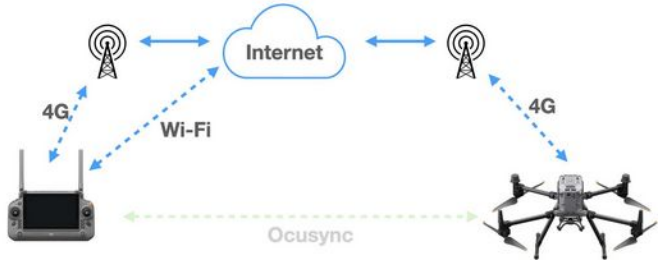
Under Interference or Long-Distance Transmission Conditions

•When the OcuSync transmission encounters interference, obstruction, or long-distance transmission scenarios, the system will automatically activate 4G for image transmission, using the 4G network and OcuSync transmission simultaneously.



Under Complete Disconnection Conditions

•If OcuSync is completely disconnected, the system will fully rely on 4G for image transmission, meaning that both the image data from the aircraft to the ground and the control data from the ground to the aircraft will be transmitted via the 4G network.



Note: Each time the aircraft is powered on, it needs to be connected to the RC via OcuSync first, then 4G enhanced transmission can be enabled.

4G ENHANCED TRANSMISSION

Product Introduction



DJI Cellular Dongle
(First generation)
PN:CP.TR.00000046.03



DJI Cellular Dongle Mounting kit
Does Not Include DJI Cellular Dongle
PN:CP.MA.00000431.01



Matrice 30 Series 4G Dongle Kit
Includes DJI Cellular Dongle
PN:CP.EN.00000550.01



Matrice 350 RTK 4G Dongle Kit
Includes DJI Cellular Dongle
PN:CP.EN.00000549.01



DJI Cellular Dongle2
PN:CP.MA.000000712.03

1. The DJI Cellular Dongle and DJI Cellular Dongle2 do not include a SIM card.
2. Please purchase a **Nano-SIM Card** from your local provider.
3. The DJI Cellular Dongle and DJI Cellular Dongle 2 do not support eSIM cards, they only support physical Nano-SIM cards.

4G ENHANCED TRANSMISSION

Compatible Products List

Module	Compatible Models
 DJI Cellular Dongle (First generation)	※ DJI MAVIC 3E, DJI MAVIC 3T, DJI Mavic 3M ※ Matrice 30 Series ※ Matrice 300 RTK, Matrice 350 RTK ※ DJI RC Pro Enterprise, DJI RC Plus
 DJI Cellular Dongle 2	• DJI Dock 2 • DJI Matrice 3D/3TD

※ The DJI Cellular Dongle 2 Module features new dual-antenna adaptive switching, which allows it to handle complex scenarios more effectively compared to the DJI Cellular Module.

DJI MAVIC 3 ENTERPRISE SERIES

Compatible Products

Aircraft: DJI Cellular Dongle + DJI Cellular Dongle Mounting Kit

Remote Controller: DJI Cellular Dongle*



* The remote controller can also connect to the internet via Wi-Fi to use the 4G Enhanced Transmission feature.

MATRICE 30 SERIES

Compatible Products

Aircraft: Matrice 30 Series 4G Dongle Kit

Remote Controller: DJI Cellular Dongle*



* The remote controller can also connect to the internet via Wi-Fi to use the 4G Enhanced Transmission feature.

MATRICE 350 RTK/MATRICE M300 RTK

Compatible Products

Aircraft: Matrice 350 RTK 4G Dongle Kit

Remote Controller: DJI Cellular Dongle*



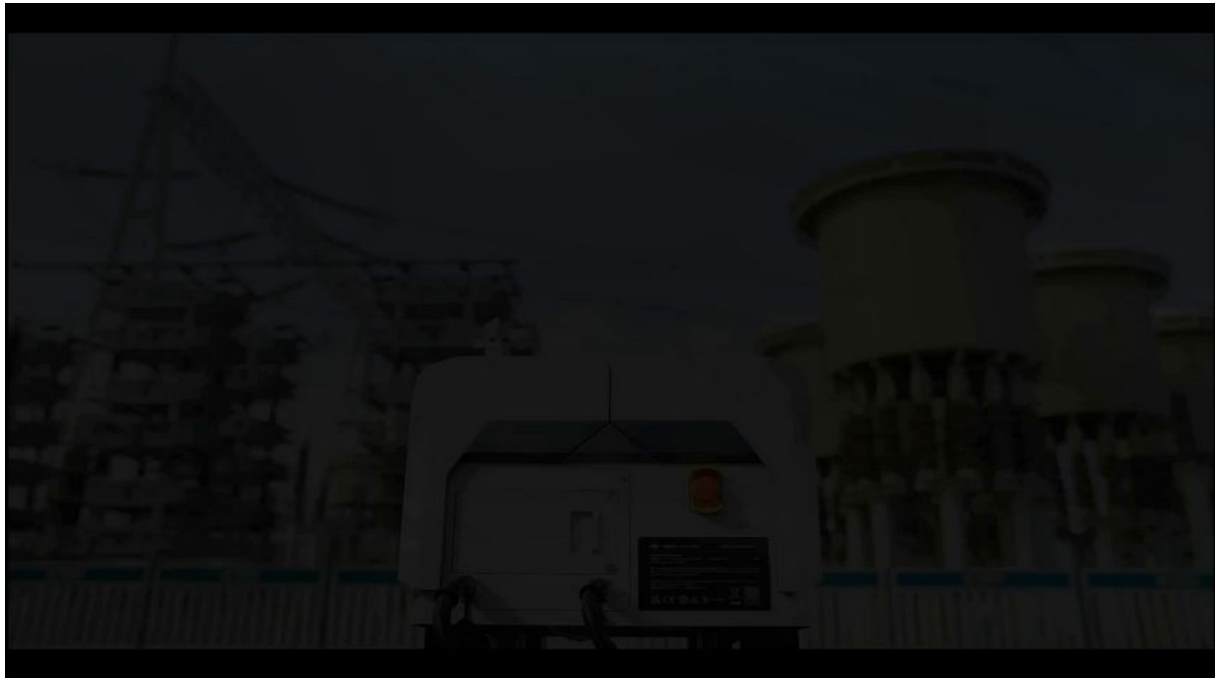
*The Matrice 300 RTK uses the Matrice 350 RTK 4G Dongle Kit and DJI Cellular Dongle, and it needs to be paired with the DJI RC Plus remote controller.

DJI DOCK 2

Compatible Products

Aircraft: DJI Cellular Dongle 2

Dock: DJI Cellular Dongle 2*



Dock 2 can also connect to Internet via ethernet to use the 4G Enhanced Transmission Feature. 4G dongle is not mandatory.

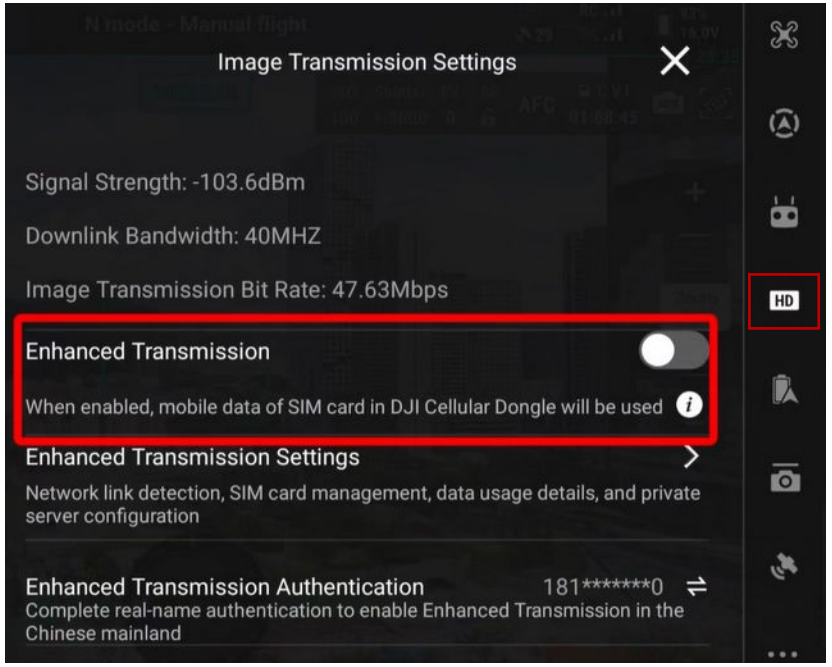
* When both 4G and ethernet are connected, the ethernet network will be prioritized. When the ethernet network is disconnected, it will switch to 4G.

Note: DJI Dock 1 does not support 4G enhanced transmission.

4G ENHANCED TRANSMISSION

How to Use DJI Pilot 2 App to Enable Enhanced Transmission

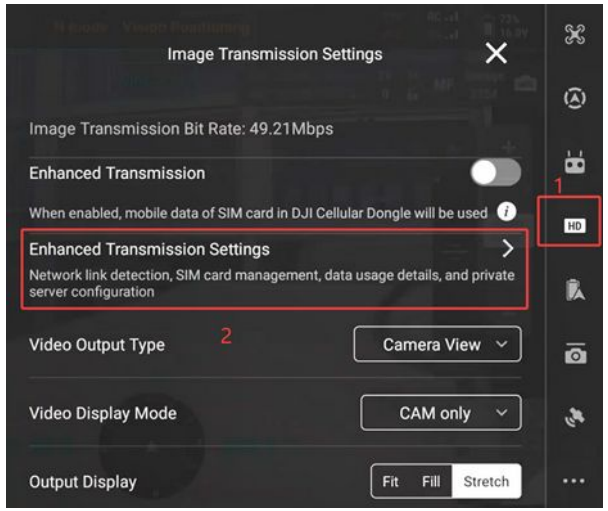


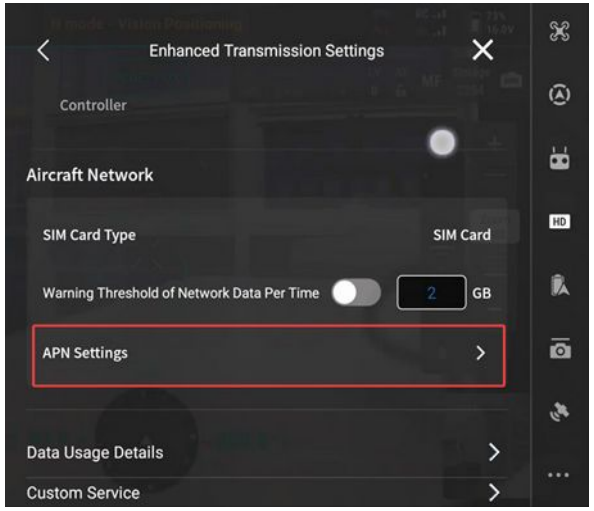


By clicking the 4G icon or entering the HD page, you can view the signal strength, enable the enhanced transmission feature, and display data usage information.

4G ENHANCED TRANSMISSION

How to Set up Dongle APN on the Aircraft





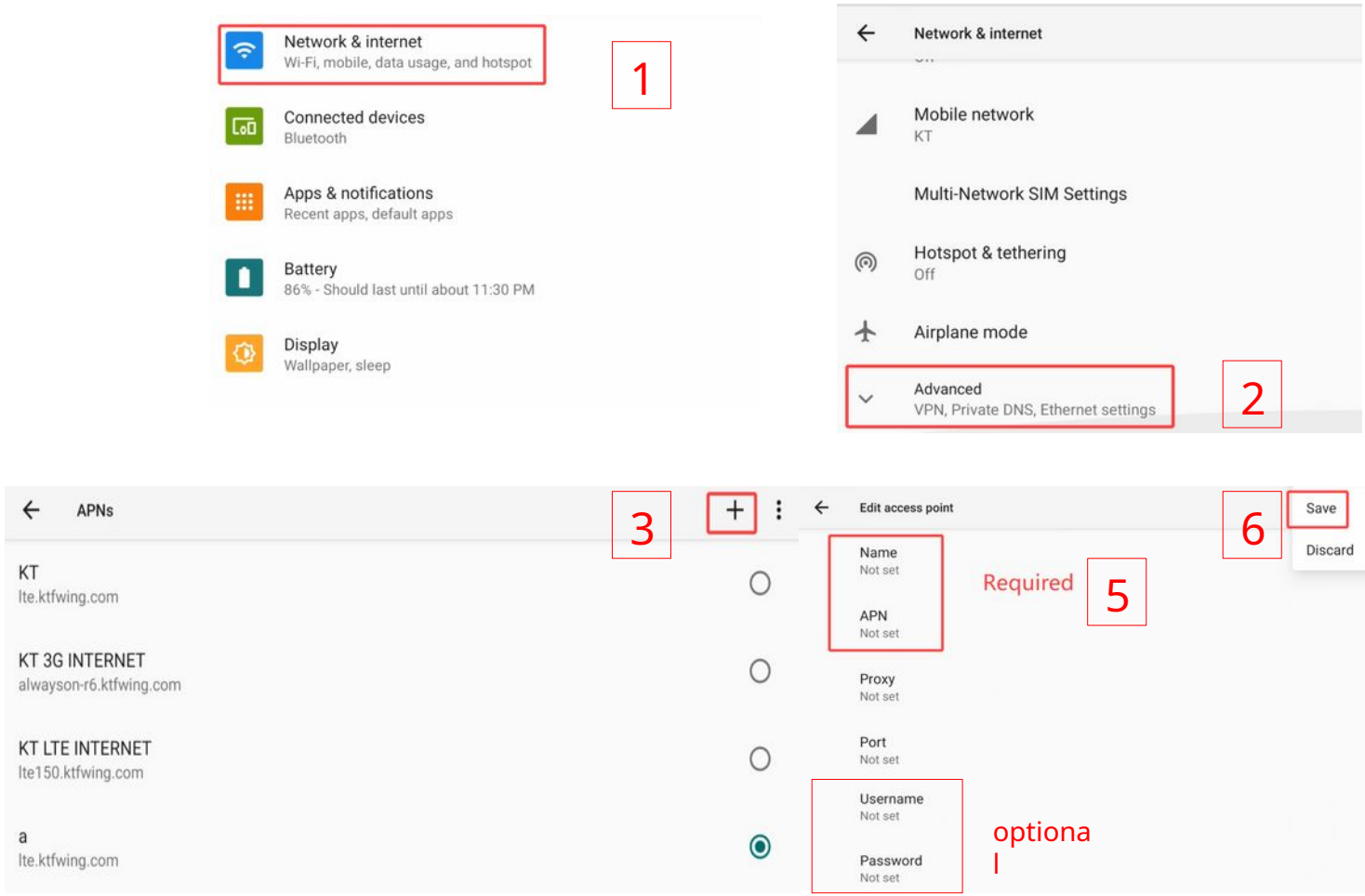


- 4G Enhanced Transmission supports APN auto-adaptation, it can automatically adapt the APN without manual settings.
- Manually setting APN has higher priority than auto-adaptation.
- Please contact your local mobile operator for obtaining accurate APN information.

4G ENHANCED TRANSMISSION

How to Set up Dongle APN on the Remote Controller

- 4G Enhanced Transmission supports APN auto-adaptation, it can automatically adapt the APN without manual settings.
- Manually setting APN has higher priority than auto-adaptation.
- Please contact your local mobile operator for obtaining accurate APN information.
- **Name** and **APN** information are required, Username and Password are optional.

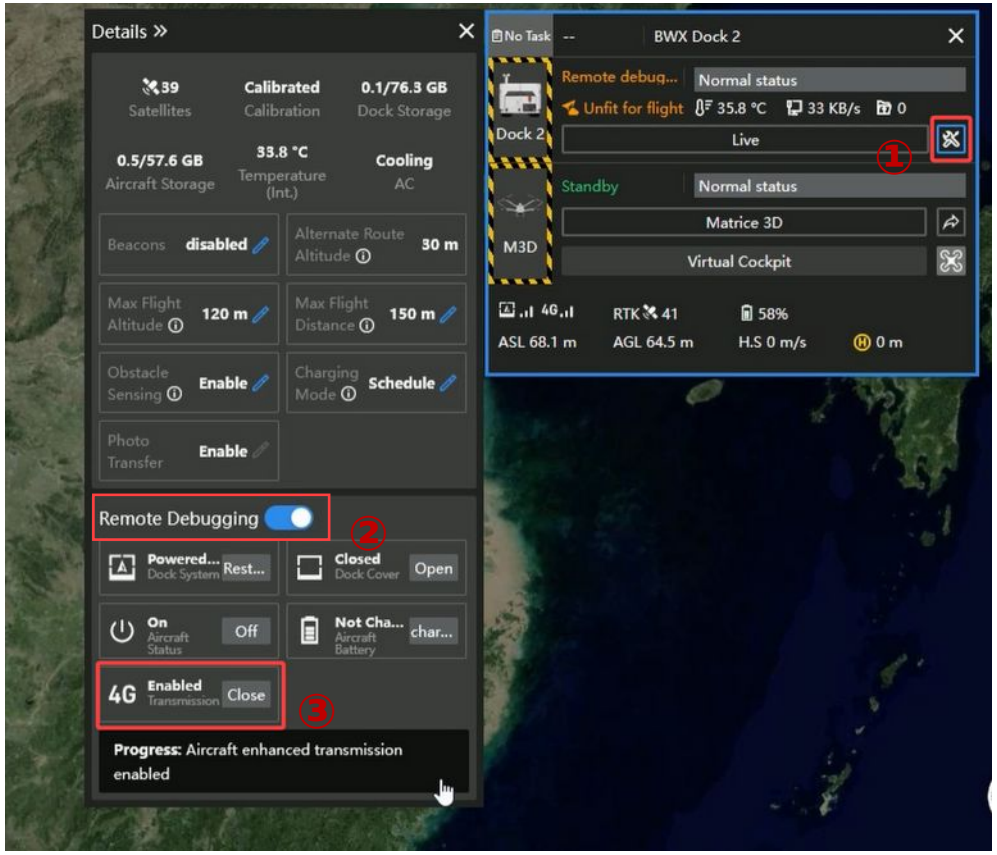


4G ENHANCED TRANSMISSION

How to Use DJI FlightHub2 to Enable Enhanced Transmission

Make sure aircraft is equipped with dongle and powered on.

1. Enter your project, and click the "Actions" icon.
2. Enable ‘Remote Debugging’ mode.
3. Enable Enhanced Transmission.

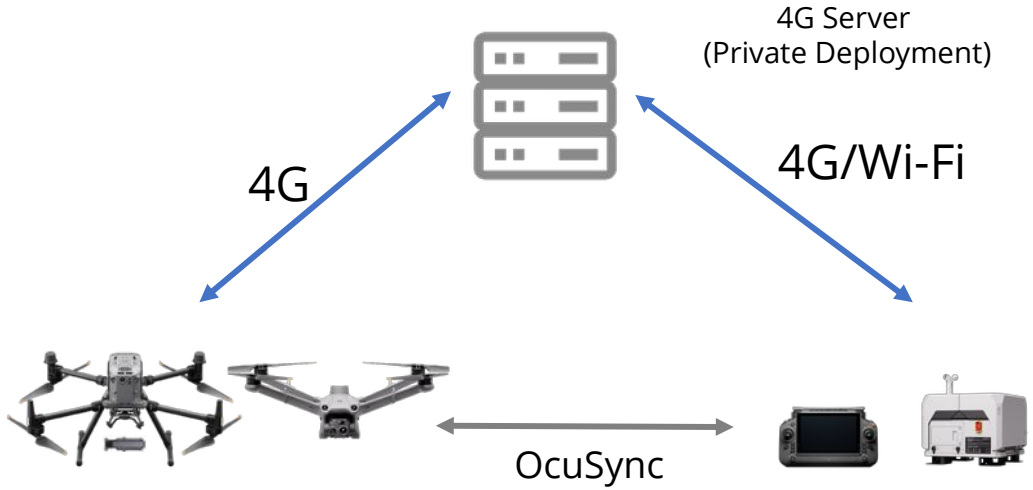


4G ENHANCED IMAGE TRANSMISSION SDK

Deploy the 4G Transmission Service on Private/Cloud Server

Function Introduction

To meet the needs of private deployment of 4G enhanced image transmission, DJI provides the SDK for private deployment of 4G enhanced image transmission service.



Supported Products

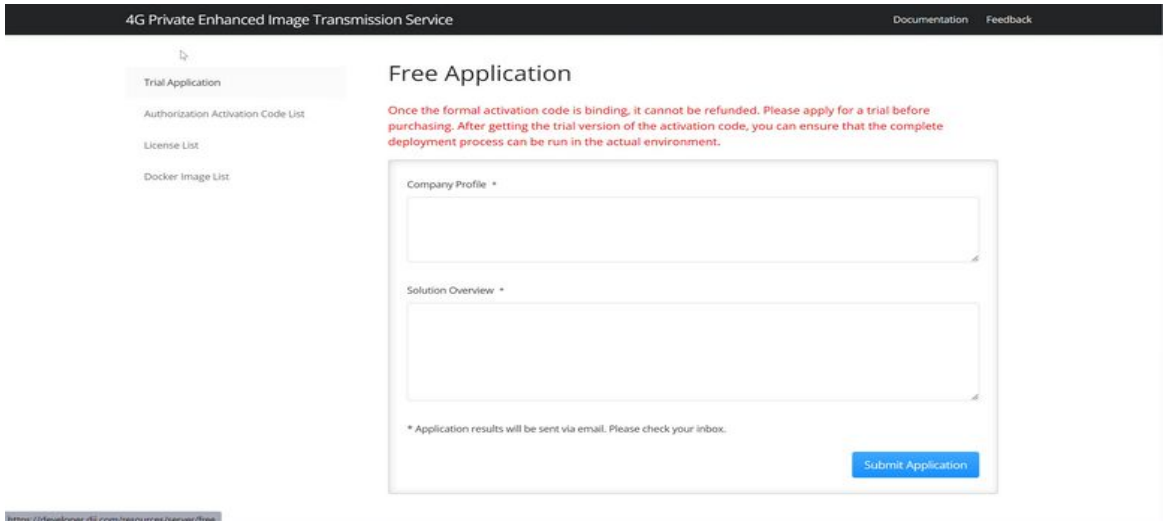
Models
Mavic 3E/3T/3M （DJI RC Pro Enterprise）
Matrice 30/30T （DJI RC Plus）
Matrice 350 RTK （DJI RC Plus）
Matrice 300 RTK （DJI RC Plus）
M3TD/M3D (DJI Dock 2)

Note:
1.The 4G enhanced image transmission can transmit not only image data but also control data.
2.The network RTK data can also be transmitted via 4G enhanced image transmission.

4G PRIVATE ENHANCED IMAGE TRANSMISSION SERVICE

Authorization License Application and Purchase

- Trial Application is free for ecosystem partners: https://developer.dji.com/resources/server/free
- 4G Private Enhanced Image Transmission authorization license and upgrade license are available through the PRM and online store.
- The authorization license comes with one additional year of free upgrade service.
- Each 4G private license supports maximum 50 online drones. If more online drones are needed, you need to purchase extra license. (50 online drones per license). We can support maximum 200 online drones (need 4 licenses).



Contact to technical support

DJI CELLULAR DONGLE

Specifications

Telecommunication Standards	TDD-LTE/FDD-LTE/WCDMA/GSM
Operating Frequency Bands	TDD-LTE: B34/38/39/40/41 FDD-LTE: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20 B25/B26/B28/B66/B71 WCDMA: B1/B2/B4/B5/B6/B8/B19 GSM: 850/900/1800/1900 MHz
Interface	USB-C port, nano-SIM card slot, TS-5 antenna ports
Antennas	Dual antennas
Dimensions	52.4×23×8 mm
Weight	Approx. 15 g
Operating Voltage/Current	5 V, 1 A
Operating Temperature	-20° to 55° C (-4° to 131° F)
Storage Temperature	-40° to 70° C (-40° to 158° F)

DJI Cellular Dongle

（First generation）

Telecommunication Standards	TDD-LTE/FDD-LTE/WCDMA
Operating Frequency Bands	TDD-LTE: B34/38/39/40/41(194M) FDD-LTE: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66/B71 WCDMA: B1/B2/B4/B5/B6/B8/B19
Interface	USB-C port, nano-SIM card slot, TS-5 antenna ports
Antennas	Dual antennas
Dimensions	43.5×23.0×7.0 mm
Weight	Approx. 11.5 g
Operating Voltage/Current	5 V, 1 A
Operating Temperature	-30° to 65° C (-22° to 149° F)
Storage Temperature	-40° to 85° C (-40° to 185° F)

DJI Cellular Dongle 2

DJI CELLULAR DONGLE

Status Indicator Descriptions

Indicator Status	Description
Solid green	Strong 4G signal
Blinks green	Weak 4G signal
Solid blue	Strong 2G/3G signal
Blinks blue	Weak 2G/3G signal
Solid red	No SIM card detected. Check if SIM card is in good condition and inserted correctly
Blinks red	SIM card inserted, but no network signal. Check the network signal coverage and the network service of the SIM card

DJI Cellular Dongle

（First generation）

Blinking Pattern	Description
Solid red	During startup or no nano-SIM card detected after startup.
Solid green	Strong 4G signal in use.
Blinks green slowly	Weak 4G signal in use.
Blinks green quickly	4G connection not established. Wait for establishment/restart the device/move the device to a location with strong signal.
Solid blue	Strong 3G signal in use.
Blinks blue slowly	Weak 3G signal in use.

DJI Cellular Dongle 2

4G ENHANCED TRANSMISSION

Supports Network RTK

Scenario

When using the M350 RTK equipped with the L2 for LiDAR point cloud collection, the RTK signal needs to remain connected in real-time and in a FIX (fixed) state.

Challenge

If the drone loses connection with the remote controller, the RTK accuracy will continuously degrade, affecting the final model quality.

Value

During long-distance operations with the M350 RTK, even if the radio image transmission is disconnected, RTK data can still be obtained through the 4G enhanced transmission, ensuring the RTK remains in a FIX state during the operation.



4G ENHANCED TRANSMISSION

Stable and Continuous Connection

Scenario

For urban area first respond and security patrol scenario, when an abnormal alert is received, the drone needs to immediately proceed to the scene and transmit live footage back.

Challenge

Due to the complex urban environment, image transmission is blocked by interference or obstruction, leading to signal disconnection.

Value

After implementing 4G enhanced transmission, the video captured by the drone can be smoothly transmitted back to the FlightHub 2 in real-time. The command center can remotely control the drone's flight direction and switch the gimbal camera, conducting video inspections. This supports better communication for command center and ground enforcement teams, achieving coordinated teams.



4G ENHANCED TRANSMISSION

Q&A

- **What type of SIM card is supported, and what are the requirements?**
  Supports Nano-SIM, but does not support eSIM.
- **Are the SIM cards and data costs the responsibility of the user?**
  Yes, DJI Dongle does not include the SIM card or data costs.
- **Does the 4G Enhanced Transmission consume data quickly when in use?**
  When using 4G Enhanced transmission, a 30-minute flight can consume approximately 1GB of data on the aircraft side, if RC also uses 4G dongle, the data consumption will be similar. However, the actual data consumption will depend on the flight mission and conditions.
- **Can the drone remotely take-off only based on 4G enhanced transmission without OcuSync?**
  No. For safety considerations, it has to connect RC and aircraft via OcuSync first, then can use 4G enhanced transmission.
  But after 4G enhanced transmission is enabled, and the drone lands based on 4G enhanced transmission, a 3-minute takeoff countdown will start, pilot can remotely take off the drone within 3 minutes via 4G enhanced transmission, even without OcuSync.
- **Can 4G enhanced transmission services be used globally ?**
  This function is currently unavailable in certain countries and regions due to varying policy restrictions, local compliance requirements, and diverse business development situations.

4G ENHANCED TRANSMISSION

Q&A

- **What are the 4G signal strength requirements when using 4G Enhanced Transmission ?**

  To ensure a clear and smooth transmission experience, a network speed of at least 5Mbps (uplink) is generally required (the actual transmission experience is related to the local 4G network signal conditions).

  The 4G network signal conditions include the network status at both the aircraft and the ground. Weak or no signal, or network congestion at either end, can lead to a degraded 4G transmission experience, resulting in issues such as image transmission lag, significant control delay, or even loss of image transmission and control.

  Therefore, when using enhanced transmission, please pay attention to the following:

  1. Always choose a location where the 4G signal on the remote controller or mobile device is nearly full to operate the drone for a better enhanced transmission experience.
  2. Enhanced transmission uses 4G network transmission. After the OcuSync is disconnected, flying entirely on 4G may have some delay and lag. Fly with caution.
  3. When the OcuSync image transmission signal is weak or disconnected, maintain an appropriate flight altitude. In open areas, try to fly below 120 meters to get a better 4G signal.
  4. In environments with tall buildings, set an appropriate return-to-home altitude (higher than the buildings).
  5. If you are in a restricted flight area with many tall buildings, ensure the obstacle avoidance and bypass function is enabled, and fly with caution.
  6. Beyond visual line of sight (BVLOS) flights are not recommended, especially at night.
  7. If the DJI Pilot 2 app indicates a weak image transmission signal, fly with caution.

4G ENHANCED TRANSMISSION

Q&A

- **When using the 4G Enhanced Transmission, is it normal for the 4G signal bars to fluctuate continuously on the ground or in the sky?**

  4G signal transmission relies on public cellular telecommunication networks, which is mainly reflected in the following two aspects:

  Network Speed:

  This is primarily determined by the 4G signal strength at the pilot and the aircraft location, as well as the level of network congestion at the corresponding base station.

  Network Load:

  In dense population areas, base station resources are relatively limited, and many users share the base station resources. As a result, each user may experience less bandwidth resources and larger real-time latency.

  In summary, since 4G transmission uses the mobile network provided by operators for data transmission, the actual transmission experience is related to the local 4G network quality. The 4G network quantity includes the network status at both the aircraft end and the ground end. Weak or no signal, or network congestion at either end, can lead to poor 4G signal quality, such as fluctuating 4G signal bars, image transmission lag, significant control delay, or even loss of image transmission and control.

KNOWN ISSUES

- The DJI Cellular Module SIM card slot does not have foolproof protection. It is recommended that users insert the SIM card correctly according to the position of the chip.
- Any after-sales coverage for crashes or other incidents will not include compensation for the SIM card. Users will need to purchase a replacement on their own.
- When Dock 2 aircraft is controlled by Dock station as controller A and the remote controller as controller B, the 4G button will not be displayed on the remote controller.
- The DIV interface is the secondary interface for 4G, while the interface next to the 4G is the primary interface. On the RC Pro Enterprise, the secondary interface is not needed, so it is recommended that users connect to the 4G interface as shown below (DIV stands for diversity, which means a diversity antenna can be used to enhance signal strength).




Thank You