



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

# **Unmanned Aircraft System (UAS) Characteristics Report**

*User Guide*

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## Revision History

Date Revised	Revision	Revised By
4/20/21	Added DAA range of sensor fields	Kim Merchant

## **Introduction to the Unmanned Aircraft System (UAS) Characteristics Report**

The UAS Characteristics Report is the means for the UAS Integration Office and other Federal Aviation Administration (FAA) offices with the responsibility of safely integrating UAS into the National Airspace System (NAS) to gather UAS specification data. The data is correlated to operational flight data and accident/incident/occurrence/anomaly data to identify trends related to UAS capabilities, durability, and reliability. The data will assist with setting performance standards and informing future rulemaking.

### **UAS Data Management Workflows**

The UAS Characteristics Report form will be used when a new UAS is added to a participant's fleet, when the participant modifies the UAS such that the specifications change, and when the UAS is removed from service. To minimize the reporting burden on participants, the UAS Integration Office will populate the form with as much data as is available in other sources such as the aircraft registration, participants' Concept of Operations (CONOPS) documents, and UAS manufacturers' websites. The following workflows are used to maintain a complete, accurate inventory of participants' UAS fleets.

#### **Adding a New UAS to the Fleet**

1. A participant submits a monthly operational flight report.
2. The UAS Integration Office notes a new aircraft registration number or nickname on the monthly operational flight report.
3. The UAS Integration Office uses the new aircraft registration number or nickname to query the FAA UAS registration systems and gather the UAS manufacturer and model information.
4. The UAS Integration Office populates as many fields as possible on the UAS Characteristics Report form using the CONOPS document and the UAS manufacturer's website.
5. The UAS Integration Office routes the partially-completed form to the participant.
6. The participant verifies the pre-populated data and populates the blank fields.
7. The participant routes the completed form to the UAS Integration Office.

#### **Updating Specifications of Existing UAS**

1. A participant notifies the UAS Integration Office that a modification to a UAS requires an update of the specifications tracked in the UAS Characteristics Report.
2. The UAS Integration Office routes the UAS Characteristics Report form populated with the current UAS specifications data to the participant.
3. The participant updates the form.
4. The participant routes the updated form to the UAS Integration Office.

#### **Removing a UAS from the Fleet**

1. A participant notifies the UAS Integration Office that a UAS has been removed from the fleet and provides the aircraft registration number or nickname.
2. The UAS Integration Office flags the associated record as inactive. (The record will be kept for data analysis.)

### **Populate the UAS Characteristics Report Form**

The UAS Characteristics report form is divided into six sections:

1. **Basic Information.** As its name implies, this section contains the name of the participant and the basic specifications of the UAS.

2. Control and Non-Payload Communication (CNPC) Primary Link.
3. Control and Non-Payload Communication (CNPC) Secondary Link.
4. Global Navigation Satellite System (GNSS).
5. Detect and Avoid (DAA) Technology Used. This section contains information about the DAA technology, not the DAA procedures, used. Therefore, do not include information about manual procedures.
6. Record History. The purpose of the data in this section is to capture when the form is first populated, when it is updated, and when it was deactivated.

The first five sections include fields to identify the data sources (e.g., DroneZone, CONOPS document, manufacturer's website, etc.).

### **Basic Information**

1. Participant Name. Provide the name of the Participant (PSP) or Lead Participant (BEYOND).
2. Aircraft Nickname or Aircraft Registration Number. Provide the unique identifier of the aircraft that was flown. Depending on the weight of the aircraft and when the aircraft was registered, the unique identifier may be the nickname assigned to the aircraft when registering it in DroneZone or it may be the registration number assigned to the aircraft when registering it using AC Form 8050-1.
3. Aircraft Manufacturer. Identify the company or individual responsible for manufacturing the unmanned aircraft (UA). In the box to the right, specify the data source.
4. Aircraft Model. Identify the make and/or model of the UA. In the box to the right, specify the data source.
5. Unmanned Aircraft Type. From the drop-down box, select the design type of the UA. In the box to the right, specify the data source.
6. Year of Manufacture, Purchase, or Acquisition. If known, enter the year that the UA was manufactured. If the year of manufacture is unknown, enter the year that the participant purchased or acquired the UA. In the box to the right, specify the data source.
7. Aircraft Maximum Takeoff Weight. State the maximum weight that the UA can support upon takeoff. In the second box, identify the unit of measure used to record the weight. In the box to the right, specify the data source.
8. Maximum Airspeed. If known, state the maximum speed that can be maintained by the UA. In the second box, identify the unit of measure used to record the speed. In the box to the right, specify the data source.
9. Maximum Altitude Capability. If known, state the maximum altitude (above ground level) that the UA is capable of reaching. In the second box, identify the unit of measure used to record the altitude. In the box to the right, specify the data source.
10. Maximum Flight Time. State the maximum time that the UA can fly on one fuel load. Use the format of H:MM. In the box to the right, specify the data source.

### **Primary Control and Non-Payload Communication (CNPC) Link**

1. Primary CNPC Link Type(s). Select up to four type(s) of primary CNPC links used when operating the UAS. If you select "Other Licensed" or "Other Unlicensed", describe the type in the line below the CNPC Radio Link Frequency Unit of Measure.
2. Primary CNPC Radio Link Frequency Value. For each primary CNPC link type selected, identify the frequency used for the link.
3. Primary CNPC Radio Link Frequency Unit of Measure. Specify whether the unit of measure used to record the frequency is GHz or MHz.
4. CNPC Lost Link Latency Threshold. Specify the length of time with no CNPC signal between the control station and the UAS before the UAS is programmed to execute its lost link procedure. Use the format of MM:SS.
5. Data Source. Specify the source of the CNPC link data.

### **Secondary Control and Non-Payload Communication (CNPC) Link**

1. Secondary CNPC Link Type(s). Select up to four type(s) of secondary CNPC links used when operating the UAS. If you select "Other Licensed" or "Other Unlicensed", describe the type in the line below the CNPC Radio Link Frequency Unit of Measure.
2. Secondary CNPC Radio Link Frequency Value. For each secondary CNPC link type selected, identify the frequency used for the link.
3. Secondary CNPC Radio Link Frequency Unit of Measure. Specify whether the unit of measure used to record the frequency is GHz or MHz.

### **Global Navigation Satellite System (GNSS)**

1. GNSS Type(s). Select one or two GNSS types used when operating the UAS. If you select "Other", describe the type in the line below.
2. GNSS Frequency Used. For each GNSS type selected, identify the frequency used. Specify whether the unit of measure used to record the frequency is GHz or MHz.
3. Data Source. Specify the source of the GNSS data.

### **Detect and Avoid (DAA) Technology Used**

This section contains information about the DAA technology, not the DAA procedures, used. Therefore, do not include information about manual procedures. Populate each of the following fields for both the primary and secondary technological systems. In the box to the right, specify the data source.

1. Level of Autonomy. Specify whether the DAA system is automatic/pre-programmed or autonomous.
  - a. Automatic/Pre-Programmed: The UA reacts when a pre-programmed threshold requirement is met. Just like the threshold, the reaction is also pre-programmed. The system cannot deviate from pre-programmed instructions unless manually directed to do so by the operator.
  - b. Autonomous: An autonomous UA is goal-oriented and executes the appropriate actions, based on sensor input, to achieve an end state. In highly autonomous systems, the human is outside the loop. What distinguishes autonomous from automatic is the UA's ability to make decisions.
2. Location. Identify where the DAA system is located: on the aircraft, on the ground, or both.
3. Cooperative or Non-Cooperative. Specify whether the DAA sensor detects cooperative or non-cooperative aircraft.
  - a. Cooperative: The sensor detects other aircraft that have an electronic means of identification aboard in operation.
  - b. Non-Cooperative: The sensor detects other aircraft that do not have an electronic means of identification aboard or that have inoperative equipment because of malfunction or deliberate action.
4. Range of Sensor Value. Enter the detection range of the sensor.
5. Range of Sensor Unit of Measure. Enter the unit of measure used to record the range of the sensor.
6. Range of Sensor Note. Enter any notes about the sensor range (e.g., probability of detection within 1 mile is 95%, within 5 miles is 90%).
7. DAA Sensor Type(s). In the list box, select one or more DAA sensor types used when operating the UAS. Click to select; selected types are highlighted in blue. Click the highlighted type again to de-select it. If you select "Other", describe the type in the line below.

### **Record History**

1. Record Creation Date. Enter the date that the participant completed the form to add a UAS to the fleet.

2. Record Created By. Enter the name of the person on the participant's team that completed the form to add a UAS to the fleet.
3. Record Change Date. Enter the date that the participant updated the data on the form.
4. Record Changed By. Enter the name of the person on the participant's team that updated the data on the form.
5. Record Inactive Indicator. Change the value in this field from "No" to "Yes" when the participant notifies the UAS Integration Office that the UAS has been removed from the fleet.

## Appendix A: Acronyms

Acronym	Term
CNPC	Control and Non-Payload Communication
CONOPS	Concept of Operations
DAA	Detect and Avoid
FAA	Federal Aviation Administration
GNSS	Global Navigation Satellite System
NAS	National Airspace System
PSP	Partnership for Safety Program
UA	Unmanned Aircraft
UAS	Unmanned Aircraft System