ASMS
Aviation Safety Management Systems

Assessment Guide:
Part 101 Flight Test
and
Part 102 Operational Competency Assessment

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Introduction

The Part 101 Flight Test and Part 102 Occupation Competency Assessment (OCA) is designed to assess your ability to operate an RPAS in a safe and competent manner.

All parts of the flight test are designed to test specific tasks in operating the aircraft.

The Assessor is looking for competence in operating the aircraft, particularly in flight modes that do not use positioning assistance. You may have First Person View or a Camera enabled for the flight test, but do not use it for positioning.

The majority of the flight test is carried out in a non-position hold flight mode is due to the requirement of the Pilot being able to operate the aircraft in the event of a GNSS or optical positioning failed state.

On average expect 25 hours of flight experience in a non-positioning flight mode (i.e. ATTI) to be at the required standard.

Treat the flight test or OCA as if it were a work site where you were planning to operate.

Part 101 Flight Test vs Part 102 Operational Competency Assessment

101 operators are not expected to carry any operational procedures, such as preflight checklists or job hazard assessments. However, doing so is a sign of good airmanship and being a professional operator.

The Part 102 Operational Competency Assessment assesses the candidate's knowledge of the rules, application of the procedures in their exposition, and their flying competence.

The knowledge test will be administered either orally or in written form. Answers will be assessed by the examiner. If any answers demonstrate incorrect understanding of the relevant rule(s), the examiner will discuss the answers with the candidate. This process helps ensure that the candidate continues to maintain an accurate knowledge of the rules.

102 operators will be expected to carry out the assessment in accordance with their 102 exposition, and whatever variances to CAR 101 that entails. A copy of the operator's exposition will be requested in advance of the flight test so that the examiner has time to familiarise themselves with the privileges granted by CAA and other relevant procedures. The pilot is expected to prepare the same planning documents for the OCA as they would for any commercial flight conducted under the Part 102 certificate.

The flight test for a Part 102 OCA will generally consist of the same manoeuvres as the Part 101 flight test, but may include additional manoeuvres if required to test specific procedures in the operator's exposition.

Aviation Safety Management Systems Ltd

Aviation Safety Management Systems Ltd (ASMS) is a Part 141 certificated Aviation Training Organisation, certificate TR86491. ASMS has approval from CAA to conduct flight crew training and conducted operational competency assessments for unmanned aircraft operations.

Part 141 Certificated

ASMS' Part 141 certification and associated approvals confers the status of an approved organisation under Civil Aviation Rule 101.202 for:

- issuing a pilot certificate qualification for operating remotely piloted aircraft;
- appointing persons to give instruction to operators of remotely piloted aircraft; and
- authorising the operation of a remotely the operation of a remotely piloted aircraft greater than 15kg.

The Flight Test

Briefing

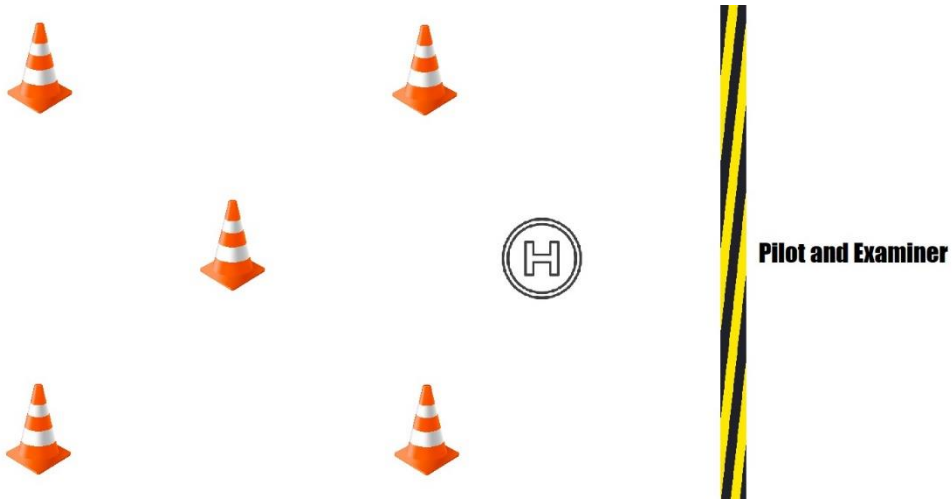
The Assessor will start by briefing you about the flight test –

- Basic rules of carrying out the assessment;
- The weather and how your aircraft will perform in it;
- Identification of hazards, and any mitigation that will be carried out;
- Basic discussion about CAR 101 Rules (Breaching 101 rules will result in failure of the flight test) ;
- Discussion around battery management, respective of the aircraft being operated;
- Discussion of the aircraft and its systems, such as magnetometers;
- Discussion of the current failsafe settings, and their suitability for the flying site;
- Pre-flight check of the aircraft.

Assessment Course

The assessment is carried out over a small course laid out with cones in an "X" shape, approximately 10m x 10m, with a take-off/landing area indicated, and a hard-line separating the course from the Pilot and Examiner (and any other third parties).

The aircraft should never cross over the hard line during the flight test, for the safety of all involved, breaching this rule will result in failure of the OCA.

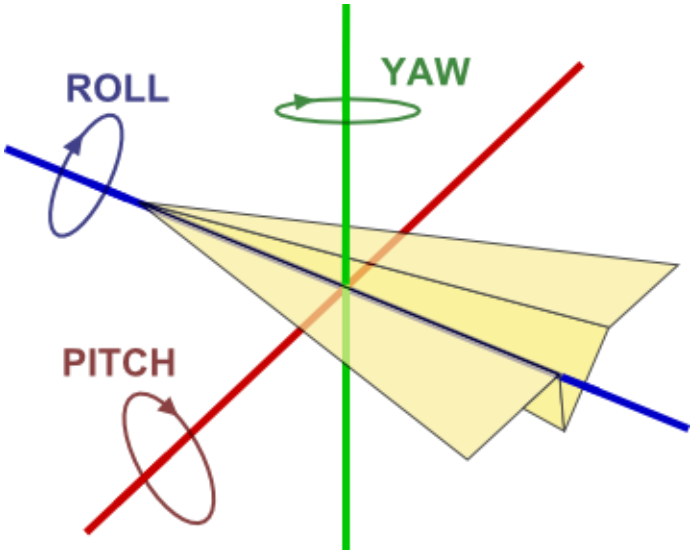


Through each part of the assessment the Assessor will verbally instruct the candidate to move to a particular location in the course:

- Centre cone – the middle of the X
- Top right cone – the furthest cone on the right hand side of the pilot
- Top left cone – the furthest left cone
- Bottom right cone – the closest right cone
- Bottom left cone – the closest left cone

Aircraft Manoeuvres

The Assessor will instruct the candidate to position and manoeuvre the aircraft in pitch, roll, and yaw. These instructions will be referenced to the aircraft (i.e. Left is the left-hand side of the aircraft, irrespective of its orientation)



Aircraft Orientation

The Assessor will request the aircraft to be positioned in various orientations throughout the assessment.

- Tail in – the aircraft tail, or rear, is facing the Pilot
- Nose in – the aircraft's nose, or front, is facing the Pilot
- Left in – the aircraft's left hand side is facing the Pilot
- Right in – the aircraft's right hand side is facing the Pilot

Assessment Tasks

The following tasks may be carried out in any order, and possibly in repetition to ensure the candidate has met the required standard.

Take Off & Landing

- Take off straight up in a smooth controlled fashion, establish a stable hover at approximately 4 foot altitude and verify aircraft is operating correctly.
- Landing should be smooth, vertical, and deliberate. Accuracy during landing is a sign of familiarity with the aircraft.

The aircraft should not drag undercarriage on the ground, or move about wildly during the ascent.

360 Yaw on the spot

This task is one of the more difficult of the assessment; however it is very useful for displaying any aircraft orientation control issues.

- Establish a stable hover over the centre cone
- Yaw the aircraft 360 degrees, in either direction, taking approximately 6 seconds to complete one rotation.
- While yawing, maintain the aircraft's position above the cone.
- Repeat in the opposite direction.

The rate of rotation in yaw should be constant, speeding up the rate of rotation in a specific orientation displays a lack of competence in flying in that orientation. The Assessor will note which orientations the candidate appears struggle in and may request the same orientations for future tasks.

TIP: The simplest way to complete this task, and to practice for it, is to think of the transmitter as two halves. With reference to a Mode 2 transmitter, set the yaw rate with the left stick and do not change it, and use the right stick (cyclic) to give corrections to the aircraft to reposition it over the cone. Treating it in this manner reduces the work load of the pilot and ensure the yaw rate remains constant.

Four Quarters of Orientation

This task will display the candidate's ability to control the aircraft accurately in all orientations.

- The Assessor will request the Pilot to position the aircraft over one of the 4 outside cones of the "X" and to fly to that cone and in the next in various orientations.
- Once reaching the cone, establish a stable hover over it, without changing orientation from the previous instruction.
- Repeat in various locations and orientations as instructed.

Ascending and Descending Circuits

This task requires the Pilot to use both control sticks in a smooth manner, whilst maintaining a steady altitude change throughout.

- The Assessor will request the aircraft to be positioned at a cone, in an orientation, and at an altitude
- Initially the aircraft will be flown in a LH or RH circuit around the outside cones, nose in the direction of flight, and turning at each part of the box. This does not require stopping at each cone. Whilst flying in this circuit around the outside of the box the aircraft should ascend smoothly and constantly to the requested altitude.
- Once at the 4th cone, directly above the start point, maintain a steady hover and rotate 180 degrees in yaw.
- Fly the opposite direction circuit whilst descending in the same manner back to the start point

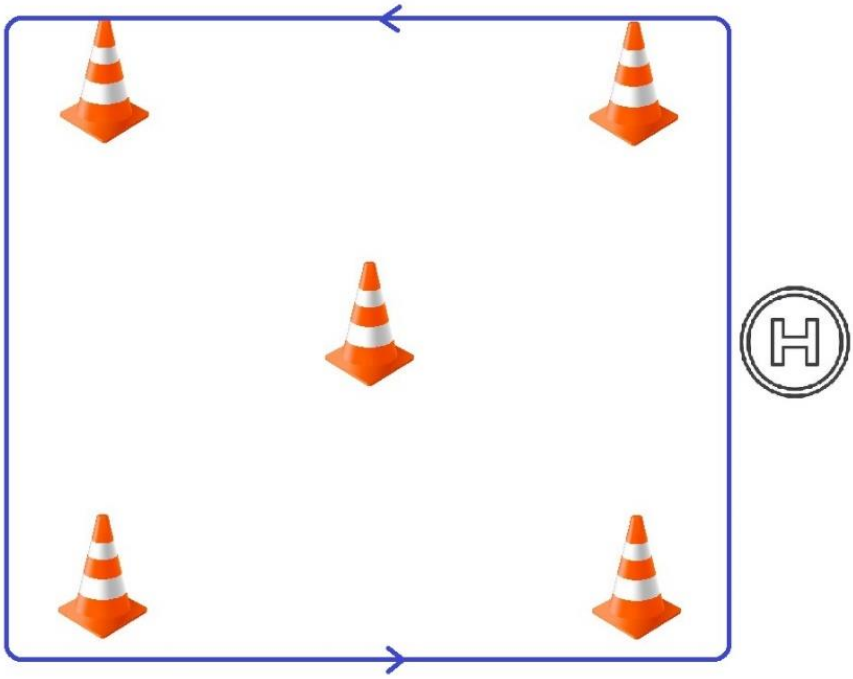
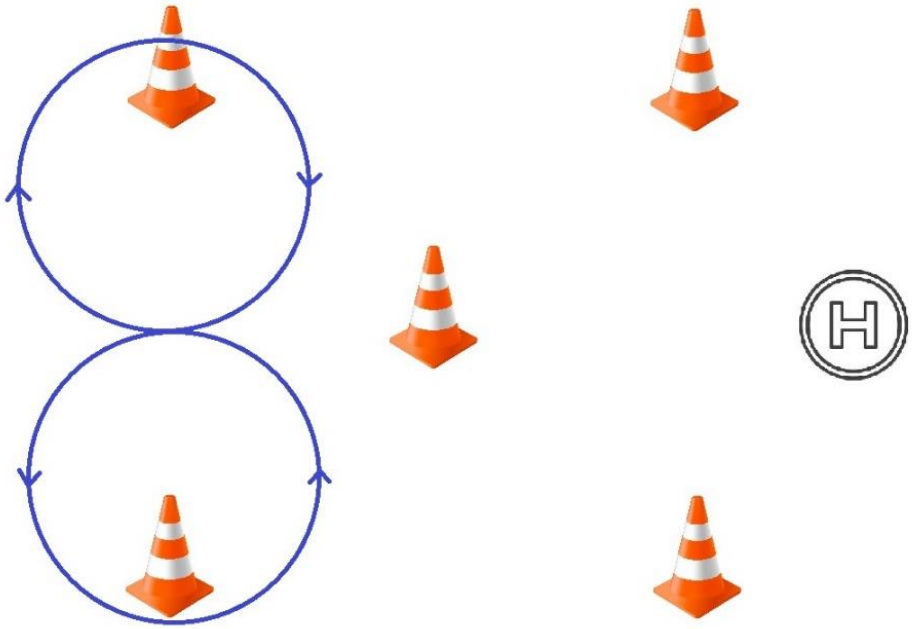


Figure 8s

This task is designed to show the candidates competence in flying in multiple orientations in forward flight, while executing coordinated turns.

- Pick any 2 of the 5 cones, informing the instructor of which ones you have chosen
- Fly a figure 8 around the cones, nose of the aircraft in the direction of flight, and at a constant altitude
- Execute coordinated turns at each cone – The aircraft should bank and yaw smoothly around the turn.
- The cross over point of the figure 8 should be at the same point, in the middle of the 2 cones
- Repeat in the opposite direction

TIP: It may be advantageous to carry out this task at around 4m/s speed, the speed allows the aircraft to more smoothly bank into turn. A coordinated turn is achieved by yawing and pitching/rolling at the same time, for instance a left hand turn requires both sticks to be moved to the left.



Vertical 180 degree corkscrews

This task displays the Pilots familiarity with the aircraft's rate of rotation and ascent/descent, as well as displaying any interaction with the LH stick moved on diagonals.

- Position the aircraft Tail In at one of the far cones
- In a smooth motion, rotate the aircraft 180 degrees in yaw, whilst doubling the aircrafts altitude. Halfway through the manoeuvre the aircraft should be at 90degrees to its start position.
- Establish a stable hover at the top of manoeuvre, nose in, above the cone
- Translate the aircraft sideways to the opposite cone
- Establish a stable hover above the cone
- Descend, whilst rotating 180 degrees, in the opposite manner to the first part. The aircraft should now be tail in

TIP: This requires precise stick movements and a familiarity with the rate the aircraft moves at. Practice with positioning turned on, which allows the pilot to not concentrate on the cyclic or the aircraft's position, and to focus on learning the rate of the ascent and yaw with the LH stick

Emergency Situations

During the flight test, the examiner could request the simulation of an emergency. These could involve:

- The aircraft catching on fire
- Loss of sight or signal
- Manned aviation intrusion
- People / Property intrusion

Tips for the Test

- Competence is shown by carrying out the assessment in a confident, calm, controlled manner. Shaking thumbs and blaming the wind are the opposite of this…
- ***Relax!***
- Before arming the aircraft, announce your intention to arm, by calling out “Arming!” or similar
- Do not worry about the wind, the assessor isn’t judging exactly how accurately you can fly in the wind, but how you respond to it.
- ***Relax!***
- Giving the stick wrong input isn’t a reason for failure, provided it’s not a constant wrong input in a certain orientation. What the Assessor is looking for is that you give the appropriate correction for the wrong input and not wrong input-wrong input-wrong input-tree.
- Engaging a position hold flight mode during the test as a means of gathering control is not a reason for failure or the test, but is also not displaying competence in flying.
- ***Relax!***
- If you need a few minutes to “loosen your thumbs” before the flight test talk to the Assessor.
- You are the Pilot In Command. The same as in the “real world”, the buck stops with you. If you are not happy carrying out a task asked by the Assessor, as you believe it be unsafe or in breach of CAR 101, or your 102 exposition, it is your job to decide how to proceed.