

Operational colour vision assessment – guide for assessors



For more information, visit www.caa.govt.nz/colour-vision

The operational colour vision assessment (OCVA) is not a test of colour naming or piloting ability. Rather it is an opportunity for class 1, 2 and, where needed, DL9 medical applicants to demonstrate the ability to read, correctly interpret and describe information that is presented visually.

Satisfactory performance indicates that the applicant can, regardless of colour perception, interpret and make use of information presented visually in a dependable and timely manner, appropriate to the operational situation under consideration.

Conduct of the OCVA

The operational colour vision assessment (OCVA) must be carried out by a Category A Instructor (who is not CVD) who has completed approved CAA training in the conduct of the OCVA and is operating under a Part 141 organisation. It is recommended, but not mandatory, that applicants have some experience in piloting aircraft before taking the assessment, probably at or around the point at which they would normally undertake the PPL flight test (day assessment) or have completed some dual night flying (night assessment). However, the OCVA may be conducted with the assessor flying the aircraft throughout. Applicants are advised to seek the guidance of an A or B Cat instructor as to when to take the assessment. Assessors carrying out the OCVA should confirm that the applicant has done this; however, it is the applicant's decision on when to take the OCVA. There is no restriction on how many times the applicant may undertake the OCVA. Assessors should ascertain if an applicant has undergone previous assessments and may question the applicant as to what areas of the assessment had been found previously to be unsatisfactory and what remedial training if any had been completed by the applicant. Note that applicants may not wear colour-corrective lenses (such as X-Chrom, ChromaGen and Colourview) for both the ground and air elements of the OCVA.

The OCVA must be conducted independently and cannot be combined with other flight testing/assessment activity such as the issue or renewal of a flight crew licence, the issue or renewal of a flight crew rating, initial or periodic flight crew competency checks, operational checks and biennial flight reviews. The airborne element of the assessment by day and night must be flown in an aircraft; the use of a simulator, regardless of its certification or approval, is not permitted. The day OCVA is conducted in daylight and under artificial lighting conditions where a chart/map/plate would normally be read. The day OCVA must be completed before the night OCVA. The night OCVA must be completed at night (between ECT and MCT); ground assessment may be done under any light conditions where a chart/map/plate would be read, and under normal cockpit lighting. The OCVA may be flown as a day-into-night exercise provided the night section is completed in full darkness. Both the day and night OCVA must be carried out from an airfield certified under CAR Part 139. The night OCVA must be conducted at an airport where a fully representative range of permanent runway, taxiway and aerodrome lighting is available.

Identity of the applicant should be confirmed by appropriate photo-ID and the signature of the applicant is to be recorded on the assessment form (attached to this guide).

OCVA Assessment Technique

The assessment must cover all of the areas defined in the OCVA form regardless of the experience of the applicant. The objective of the assessment is not to determine if the applicant can name colours and is not an assessment of flying ability. The instructor carrying out the assessment should confirm that an applicant can correctly, and consistently, interpret the meaning of information conveyed by maps, charts, plates, instruments or lights, or to assess terrain conditions and

obstructions on the ground and in the air. The assessment is not a check of aviation knowledge. For example, the use of keys, notes and glossaries on maps, charts and plates is permitted; the interpretation of warning lights should recognise the nature of the warning, not the actions or drills associated with it. Where lighting is observed, the applicant should be able to recognise it in a way that allows its function to be clearly stated and appropriate action taken. In the air, assessing instructors must analyse whether an applicant's action, say an unstable or unsafe approach, is due to lack of ability or as a result of misinterpreting visual cues – surface features, PAPIs, runway lighting etc; this should be achieved through questioning what the applicant is seeing and how they are reacting to this information. Manoeuvres can be repeated as necessary to confirm assessments. Correct interpretation should be achieved by the candidate in 'a timely manner'. This is defined as the amount of time appropriate to the given operational assessment scenario to identify correctly, trap and/or action a visual cue such that safety is not compromised. 'Timely manner' on the ground in a planning scenario will differ from that say of identifying lights on an aircraft approach.

Satisfactory/safe performance in day light

To achieve satisfactory performance by day, the applicant will be required to:

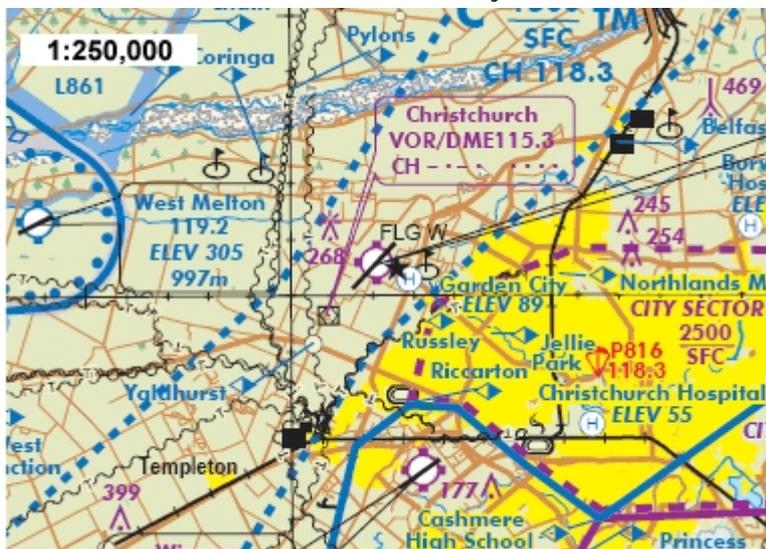
"a. Read and correctly interpret in timely manner aeronautical charts, including print in various sizes, colours and fonts, symbols, lines and terrain markings. Aeronautical chart reading may be performed under any light condition where the chart would normally be read."

- **Visual navigation charts (VNC).** Open out a new and current 1:250,000 VNC. Ask the applicant to describe the text, symbology, terrain markings and airspace markings visible on the map starting from the top left corner and working across the page. The map key may be used to assist the reader. The applicant should be able to consistently interpret the map under all lighting conditions where the map would normally be read. This may include the briefing room environment, outdoors and inside an aircraft.

Should the applicant appear to have difficulty in observing any markings on the map, the assessor should use open ended questions to ascertain if there is a genuine inability to see markings or if a simple omission was made. For example, the assessor should ask the applicant what text or symbols can be identified while indicating the area of interest on the map.

There is no requirement to name colours on the chart, however an applicant should be able to differentiate between objects of similar appearance, such as the boundary of a control zone versus a control area.

More experienced applicants may use appropriate aviation language in describing what is presented on the chart while those with less experience may need to describe their observations in layman's terms and with reference to the chart key.



"b. Read and correctly interpret in timely manner aircraft instrumentation and displays, particularly those with coloured markings, warning lights and coloured displays."

- **Airspeed indicator (ASI).** Seated in an aircraft, direct the applicant's attention to the ASI. Ask the applicant to describe what they observe on the face of the instrument, including any digits, circumferential bands or radial marks. Naming of colours is not required. However, an applicant should be able to read the numbers on the instrument as well as state the start and end points of any bands. They should also be able to differentiate between adjacent or overlapping bands and radial marks. The terminology used to describe markings may vary depending upon the applicant's aviation knowledge and experience.



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- **Attitude indicator (AI).** Seated in an aircraft, direct the applicant's attention to the AI. Ask the applicant to describe what they observe on the face of the instrument, including descriptions of any markings and coloured hemispheres. Naming of colours is not required. However, an applicant should be able to accurately describe the layout of markings on the instrument along with any digits and differentiate between the coloured hemispheres.

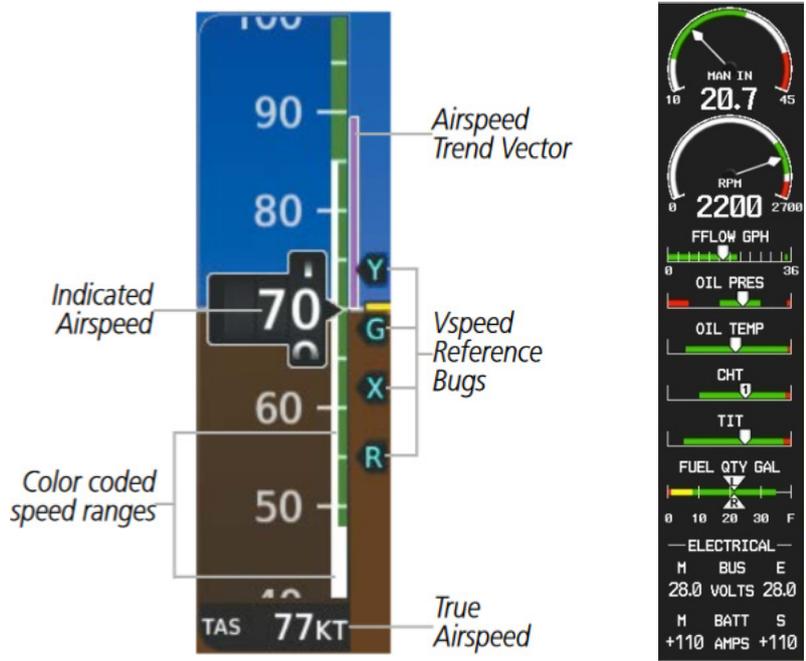


- **RPM gauge.** Seated in an aircraft, direct the applicant's attention to the RPM gauge. Ask the applicant to describe what they observe on the face of the instrument, including descriptions of any numbers, coloured bands and radial markings. Naming of colours is not required. However, an applicant should be able to accurately describe the layout of markings on the instrument.



- EFIS 'Glass' cockpits.** Seated in an aircraft, direct the applicant's attention to any EFIS style displays. This may include full EFIS type displays or simple moving map displays, engine instrumentation displays and/or radio displays. Ask the applicant to describe what they observe on the display(s), including any numbers, airspeed and altitude tapes, attitude indicators, names, map representations and the like. Naming of colours is not required. However, an applicant must be able to accurately identify and read digits and text and to differentiate between coloured areas in a way that enables them to interpret the meaning of information displayed. The terminology used to describe markings may vary depending upon the applicant's aviation knowledge and experience.





"c. Recognise terrain and obstructions in a timely manner including forced landing or emergency landing areas and the surface conditions. The applicant should be able to describe surface features and obstructions."

- Emergency landing fields.** While seated in an aircraft flying at an altitude of around 2,000 ft above ground level ask the applicant to describe a chosen field. To guide the applicant, ask them to comment on the aspects of surface, slope, size, surrounds, stock, shape, sun, wind and elevation. The chosen field should be clearly visible to both the assessor and the applicant. It may be expected that an applicant with greater knowledge and experience in aviation and/or the land may be able to discuss their observations with greater fluency and to a greater depth. For inexperienced applicants it may therefore be necessary to undertake more detailed and probing questioning such as "point out fence lines, drains, powerlines, cattle, etc?" The process should be repeated for several fields until such time as the assessor has confirmed whether an applicant can reliably describe the surface. The assessor could also choose to fly a FLWOP or a precautionary landing to an unsuitable field and confirm the applicant can identify the relevant hazards.



- **Airfield markings and signage.** While seated in a taxiing aircraft, ask the applicant to describe markings and signage in the airport environment. This may include holding points, taxiways signs, taxiway centre lines and runway markings.

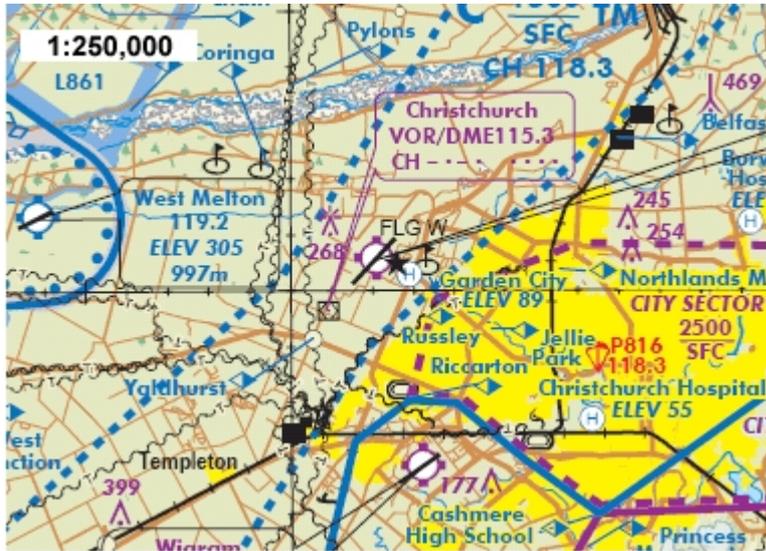


Satisfactory/safe performance at night

To achieve satisfactory performance by night, the applicant will be required to:

“a. Read and correctly interpret in timely manner aeronautical charts, including print in various sizes, colours and fonts, symbols, lines and terrain markings. Aeronautical chart reading may be performed under any light condition where the chart would normally be read.”

- **Visual navigation charts (VNC).** Open out a new and current VNC. Ask the applicant to describe the text, symbology, terrain markings and airspace markings visible on the map starting from the top left corner and working across the page. The map key may be used to assist the reader. The applicant should be able to consistently interpret the map under all lighting conditions where the map would normally be read. Given that the applicant must have achieved satisfactory performance in the day OCVA prior to this an assessment under indoor artificial light should not be necessary but should include performance in an aircraft under artificial lighting. Should the applicant appear to have difficulty in observing any markings on the map, the assessor should use open questions to ascertain if there is a genuine inability to see markings or if a simple omission was made. For example, the assessor should ask the applicant if they can see any text or symbols while pointing towards the general area of interest on the map. There is no requirement to name colours on the chart, however an applicant should be able to differentiate between objects of similar appearance, such as the boundary of a control zone versus a control area. More experienced applicants may use appropriate aviation language in describing what is presented on the chart while those with less experience may need to describe their observations in layman's terms and with reference to the chart key.



"b. Read and correctly interpret in timely manner aircraft instrumentation and displays, particularly those with coloured markings, warning lights and coloured displays."

- Airspeed indicator (ASI).** Seated in an aircraft, direct the applicant's attention to the ASI. Ask the applicant to describe what they observe on the face of the instrument, including descriptions of any digits, circumferential bands or radial marks.

Naming of colours is not required. However, an applicant should be able to read the numbers on the instrument as well as the start and end points of any bands. They should also be able to differentiate between adjacent or overlapping bands and radial marks.

The terminology used to describe markings may vary depending upon the applicant's aviation knowledge and experience.
- Attitude indicator (AI).** Seated in an aircraft, direct the applicant's attention to the AI. Ask the applicant to describe what they observe on the face of the instrument, including descriptions of any markings and coloured hemispheres. Naming of colours is not required. However, an applicant should be able to accurately describe the layout of markings on the instrument along with any digits and differentiate between the coloured hemispheres.
- RPM gauge.** Seated in an aircraft, direct the applicant's attention to the RPM gauge. Ask the applicant to describe what they observe on the face of the instrument, including descriptions of any numbers, coloured bands and radial markings. Naming of colours is not required. However, an applicant should be able to accurately describe the layout of markings on the instrument.
- EFIS 'Glass' cockpits.** Seated in an aircraft, direct the applicant's attention to any EFIS style displays. This may include full EFIS type displays or simple moving map displays, engine instrumentation displays and/or radio displays. Ask the applicant to describe what they observe on the display(s), including any numbers, airspeed and altitude tapes, attitude indicators, names, map representations and the like. Naming of colours is not required. However, an applicant must be able to accurately identify and read digits and text and to differentiate between coloured areas in a way that enables them to interpret the meaning of information displayed.

The terminology used to describe markings may vary depending upon the applicant's aviation knowledge and experience.



"c. Visually identify in a timely manner the location and significance of lights on other aircraft or airfields. This may include:

- **Identifying the location and direction of travel of other aircraft in the vicinity.** Seated in a flying or taxiing aircraft, the applicant's attention should be drawn to other aircraft in the vicinity. The applicant should be asked to state the location and direction of travel of other aircraft, in the air and/or on the ground. There is no requirement to name the colours of lights on those aircraft but the applicant should be able to detect the presence of the aircraft and identify its orientation and direction of travel.
- **Runway approach aids relevant to the type of aircraft.** Seated in a flying aircraft, the applicant's attention should be drawn to relevant approach aids. The applicant should be asked to describe what they can see on the approach aid and to comprehend the meaning of the aid indications. For example a PAPI indication should be interpreted accurately as very high (four white), high (three white), on slope (two white), low (one white), very low (no white). This may be backed up with a description of the relevant runway perspective. This exercise may best be flown by the assessor.
- **Runway edge.** Seated in a flying and/or taxiing aircraft, the applicant's attention should be drawn to relevant runway edge lighting. The applicant should be asked to describe what they can see on the runway edge lighting and how it differs along the length of the runway. There is no requirement to name light colours, however the applicant's description should match the assessor's observation of the lighting.
- **Runway ends.** Seated in a flying and/or taxiing aircraft, the applicant's attention should be drawn to relevant runway end lighting. The applicant should be asked to describe what they can see on the runway end lighting and how it differs from edge lighting. There is no requirement to name colours, however the applicant's description should identify the differences between end lighting and edge lighting.
- **In runway lights (centreline, touchdown zone, taxiway lead off lights).** Seated in a flying and/or taxiing aircraft, the applicant's attention should be drawn to relevant runway lighting. The applicant should be asked to describe what they can see on the runway lighting. There is no requirement to name colours however the applicant's description should accurately describe the layout of lighting.
- **Taxiways.** Seated in a taxiing aircraft, the applicant's attention should be drawn to relevant taxiway lighting. The applicant should be asked to describe what they can see on the taxiway lighting. There is

no requirement to name colours however the applicant's description should accurately describe the layout of lighting.

- **Holding points.** Seated in a taxiing aircraft, the applicant's attention should be drawn to relevant holding point lighting and markings. The applicant should be asked to describe what they can see on the taxiway. There is no requirement to name colours however the applicant's description should accurately describe the layout of the holding point markings and lighting.
- **Obstacles.** Seated in a taxiing and/or flying aircraft, the applicant's attention should be drawn to relevant obstacle markings and/or lighting. The applicant should be asked to describe what they can see. There is no requirement to name colours however the applicant's description should accurately describe the layout of the obstacle markings and lighting.
- **Airport beacons.** Seated in a taxiing and/or flying aircraft, the applicant's attention should be drawn to an airport beacon. The applicant should be asked to describe what they can see. There is no requirement to name colours however the applicant's description should identify the presence of the beacon and accurately describe its location and behaviour.

Completing the OCVA

Once the day or night OCVA is completed, the instructor should fill out the relevant sections of the OCVA assessment form. An applicant must achieve a 'satisfactory' assessment in all the relevant categories to be deemed to have an overall satisfactory performance. Where the assessment has been unsatisfactory, detail should be included in the report for both the applicant's and the medical examiner's information. The assessor should debrief the applicant on the specific areas of unsatisfactory performance.

At the conclusion of the test, complete and sign an entry in the applicant's logbook as follows:

'Name: Nos: completed an operational colour vision assessment on [date]. Satisfactory performance in day operations demonstrated/not demonstrated to allow air operations with passengers when appropriately licenced. Satisfactory performance in night flying demonstrated/not demonstrated/not undertaken* to allow night flying, when appropriately rated. Any change to restrictions are not valid until confirmed on a medical certificate by an AME.*

*Signed: Name: Inst Cat: CAA Nos: *Delete as required*

Provide a copy of the completed form to the applicant who is responsible for forwarding it to their AME who will review the applicant's medical certificate and determine what, if any, restrictions, are to be applied. Also, forward a copy of the form to the CAA Aviation Medicine Team, CAA, PO Box 3555, Wellington 6140.

Fees for the OCVA will be determined by the Part 141 organisation under which the OCVA is completed.

If the applicant is licenced, type rated and current on the aircraft used, the applicant and the assessor may log the flight time as PIC for the duration each was at the controls. If the applicant is not licenced or rated on the aircraft the assessor may log PIC and the applicant dual time where appropriate.

References:

1. Civil Aviation (Impaired Colour Vision) General Directions Notice 2018
2. Civil Aviation (Examination Procedures) General Directions Notice 2018