

## Maritime Rule Part 34: Medical Standards

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### INFORMATION FOR OPTOMETRISTS

Optometrists conducting eyesight examinations for seafarers who need to meet the requirements of Maritime Rule Part 34: Medical Standards should use this guidance.

#### **What is Maritime Rule Part 34: Medical Standards?**

Maritime rules contain detailed technical standards and procedures and form part of New Zealand's maritime law. The rules are statutory instruments (or secondary legislation) made by the Minister of Transport under the Maritime Transport Act 1994.

Part 34 of the maritime rules relates to medical standards for seafarers and their fitness for duty. Rules are available on the Maritime New Zealand website: [maritimenz.govt.nz/rules](http://maritimenz.govt.nz/rules).

#### **Who can conduct eye examinations for seafarers?**

Seafarers wishing to gain a new deck certificate of competency or proficiency are required to have their eyesight and colour vision tested by a **registered optometrist**.

In the case of non-deck certificates of competency or proficiency (for example engineering and electrotechnical certificates), or for seafarers holding a current deck certificate and seeking renewal of that certificate, eye examinations are normally conducted by a **medical practitioner** as part of a medical examination for a certificate of medical fitness. However, if there is any doubt whether the seafarer has met the required standards, he or she may be referred to a **registered optometrist** for further testing.

**Note:** refer to appendix 2 for a list of certificates.

#### **Note: optometrists are required to be registered**

Any person conducting eye examinations requiring an optometrist must be a registered optometrist.

This is defined as: "A person registered under the Health Practitioners Competence Assurance Act 2003 with the Optometrists and Dispensing Opticians Board who has, or is deemed to have, a current Annual Practising Certificate and who is practising optometry in accordance with his or her scope of practice".

## What eyesight and colour vision standards are required?

The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) prescribes minimum standards for ships' officers and ratings. STCW was adopted in 1978 by conference at the International Maritime Organization (IMO) (an agency of the United Nations) in London, entered into force in 1984 and was significantly amended in 1995 and 2010. The 1978 STCW convention was the first to establish basic requirements on training certification and watchkeeping on an international level.

Maritime New Zealand's eyesight and colour vision standards for seafarers are set in accordance with the STCW Code, Section A-I/9. These standards apply to all Maritime New Zealand certificates of competency or proficiency, with conditions as shown in the following table.

See appendix 1 for Table A-I/9, "Minimum in-service eyesight standards for seafarers".

**The table below shows how eyesight standards are applied to maritime certificates (see appendix 2 for certificate definitions).**

<b>Certificate type</b>	<b>General eyesight standards</b>	<b>Colour vision standards</b>
STCW and STCW-F deck	As prescribed in A-I/9 of STCW Code (see appendix 1)  Must pass general eyesight test in accordance with this standard	As prescribed in A-I/9 of STCW Code (see appendix 1)  Must pass colour vision test in accordance with this standard
STCW and STCW-F engineering	As prescribed in A-I/9 of STCW Code (see appendix 1)  Must pass a general eyesight test subject to allowance in standard for combined vision	As prescribed in A-I/9 of STCW Code (see appendix 1)  Restricted certificate permitted if standards failed, as considered appropriate by the Director of Maritime New Zealand
National deck	As prescribed in A-I/9 of STCW Code (see appendix 1)  Must pass general eyesight test in accordance with this standard	As prescribed in A-I/9 of STCW Code (see appendix 1)  Must pass colour vision test in accordance with this standard  Restricted certificate limiting exercise of privileges to daylight hours only to be issued if standards failed
National engineering	As prescribed in A-I/9 of STCW Code (see appendix 1)  Must pass a general eyesight test subject to allowance in standard for combined vision	No standard to meet
Others	Sufficient for duties	Sufficient for duties

## Eyesight considerations in relation to seafaring duties

Seafarers are required to pass eyesight and colour vision tests that relate to their duties on board ships. Seafarers who are required to keep bridge lookout duties need to meet more stringent requirements than those who don't. However for shipboard duties such as engineering or electrotechnical functions, it is still important that specific standards are met.

For deck certificate holders, bridge lookout duties require good visual acuity and colour vision. Distant ships, markers and navigational hazards need to be seen and recognised, and charts and electronic displays need to be read precisely. Many navigational markers and lights are colour coded, including the navigation lights fitted to vessels, and it is vital that the bridge watchkeeper can differentiate between the colours used. Colour coding is also used for displays on navigational equipment, such as radars and electronic charting.

Non-deck personnel wishing to gain STCW certificates must also meet colour vision requirements. Seafarers with engineering or electrotechnical duties work with colour coded items, including electrical wiring, monitors displaying information, warning lights, pipe systems and other equipment. With regard to general eyesight, particularly near vision, gauges and instruments and other displays have to be read and monitored.

## Eyesight and colour vision standards

**Note:** When completing an eyesight test report, please refer to the eyesight categories listed in appendix 3.

See also appendix 1 notes on testing and STCW Table A-I/9.

### Deck certificates

**Note:** for GMDSS radio certificates refer to the engineering tests and standards given below.

**General eyesight** (distance vision values given in Snellen decimal notation with metre notation in brackets):

**Distance vision (unaided)** – 0.1 in one eye and 0.1 in the other eye (6/60)

**Distance vision (aided)** – 0.5 in one eye and 0.5 in the other eye (6/12).

**Near/immediate vision** – vision required for ship's navigation (eg chart and nautical publication reference, use of bridge instrumentation and equipment, and identification of aids to navigation).

**Visual fields** – normal visual fields.

**Night blindness** – vision required to perform all necessary functions in darkness without compromise.

**Diplopia (double vision)** – no significant condition evident.

**Colour vision** – 38 plate Ishihara test with two errors allowed (see colour vision notes).

A fail result in the Ishihara test would normally mean that the required standard has not been met. However, if there is any cause for doubt about a pass result of the Ishihara test or the validity of the test result, the candidate should be further tested by one of the following:

- a second pseudo-isochromatic (PIC) test (see colour vision notes)
- a Holmes Wright Type B lantern test with two errors in two runs of nine pairs allowed
- a spectral anomaloscopy conducted by a colour vision specialist (see colour vision notes).

**In the case where an alternative test is required, Maritime New Zealand should be consulted before the test is conducted and may nominate the optometrist or colour vision specialist. Email: seafarers@maritimenz.govt.nz**

For **National** deck certificates where colour vision requirements are not met, Maritime New Zealand may issue a restricted certificate that limits the exercise of privileges to daylight hours only.

**Note:** An examinee must not use colour vision aids when taking any colour vision test, including red-tinted, chromas lenses, and chromagen lenses. The use of colour-correcting lenses will invalidate test results.

**Disease** – there should be no evidence of serious or progressive eye disease.

## **Engineering, electrotechnical, and GMDSS radio certificates**

**General eyesight** (distance vision values given in Snellen decimal notation with metre notation in brackets):

**Distance vision (unaided)** – 0.1 in one eye and 0.1 in the other eye (6/60)

**Distance vision (aided)** – 0.4 in one eye and 0.4 in the other eye (6/15).

For engineering and electrotechnical (not GMDSS radio), combined (two eyes together) eyesight vision of at least 0.4 is acceptable.

**Near/immediate vision** – vision required to read instruments in close proximity, to operate equipment, and to identify systems/components as necessary.

**Visual fields** – sufficient visual fields.

**Night blindness** – vision required to perform all necessary functions in darkness without compromise.

**Diplopia (double vision)** – no significant condition evident.

**Colour vision (not required for national engineering certificates)** – 38 plate Ishihara test with two errors allowed (see colour vision notes).

In the case where the Ishihara test is failed, the candidate may be further tested by one of the following:

- a Farnsworth D15 (dichotomous test, panel D15) test with one diametrical crossing being allowed

- a spectral anomaloscopy conducted by a colour vision specialist (see colour vision notes).

**In the case where an alternative test is required, Maritime New Zealand should be consulted before the test is conducted and may nominate the optometrist or colour vision specialist. Email: [seafarers@maritimenz.govt.nz](mailto:seafarers@maritimenz.govt.nz)**

**Note:** an examinee must not use colour vision aids when taking any colour vision test, including red-tinted, chromas lenses, and chromagen lenses. The use of colour-correcting lenses will invalidate test results.

**Disease** – there should be no evidence of serious or progressive eye disease.

**Notes on testing:** the following is taken from Appendix A: Vision standards in “*Guidelines on the medical examinations for seafarers*” (International Labour Office / International Maritime Organization (ILO/IMO)), which is available on the ILO website: [www.ilo.org](http://www.ilo.org).

## Testing

All tests needed to determine the visual fitness of a seafarer are to be reliably performed by a competent person and use procedures recognised by the relevant national authority.

Quality assurance of vision-testing procedures at a person’s first seafarer examination is particularly important to avoid inappropriate career decisions. Please note:

- distance vision should be tested using Snellen test type or equivalent
- near vision should be tested with reading test type
- colour vision should be tested by colour confusion plates (Ishihara or equivalent). Supplementary investigations such as lantern tests may be used when appropriate (see the International Commission on Illumination “*International Recommendations for Colour Vision Requirements for Transport*” (CIE-143-2001, including any subsequent versions)). The use of colour-correcting lenses will invalidate test results and should not be permitted
- visual fields may initially be assessed using confrontation tests (Donders, etc) and any indication of limitation or the presence of a medical condition where visual field loss can occur should lead to more detailed investigation
- limitations to night vision may be secondary to specific eye diseases or may follow ophthalmological procedures. They may also be noted during other tests or found as a result of limitations to low-contrast vision testing. Specialist assessment should be undertaken if reduced night vision is suspected.

**Maritime New Zealand note:** limitations to night vision may be secondary to specific eye disease or refractive surgery that results in reduced contrast sensitivity. Where eye disease known to affect night vision is present or where the applicant has had refractive surgery, specific testing should be undertaken by an appropriate examiner.

## Colour vision notes

Where an Ishihara test is not available, or if there is doubt about an Ishihara pass result for a deck certificate, an alternative pseudo-isochromatic (PIC) test may be used, the alternatives being the American Optical Company PIC Plates, the Bostrom Kugelberg Plates for Testing Colour Vision, the Dvorine PIC Plates, the Standard PIC Plates (SPP) or the American Optical Hardy Rand Rittler (AOHRR).

Fail criteria for a spectral anomaloscopy for a **deck** certificate is the mid-matching point (MMP) being more than + or – 2 standard deviations from the mean of the colour normal population, or the matching range is more than 3 standard deviations from the normal mean.

Fail criteria for a spectral anomaloscopy for **non-deck** certificates is a protan diagnosis as indicated by an excess of red in a red plus green mixture of colours to match yellow and a significantly lower than normal yellow luminance setting.

## References for eyesight and colour vision standards and procedures

Maritime Rule Part 34 uses the following references for eyesight and colour vision standards and testing procedures:

### General eyesight

- **Section A-I/9 (Medical Standards) of the STCW Code**, with particular reference to **Table A-I/9**, Minimum in-service eyesight standards for seafarers
- additional guidance is available in the **ILO/IMO “Guidelines on the medical examinations of seafarers”** (ILO/IMO/JMS/2011/12).

### Colour vision

- references are as for general eyesight (above), but colour vision in Table A-I/9 is as defined in the *“International Recommendations for Colour Vision Requirements for Transport”* by the Commission Internationale de l’Eclairage (CIE-143-2001)
- for all **deck** certificates, **CIE Colour Vision Standard 1** is used
- for **STCW engineering and GMDSS Radio** certificates, **CIE Colour Vision Standard 3** is used
- for **national engineering** certificates there is no colour vision requirement
- hard and electronic copies of the *“International Recommendations for Colour Vision Requirements for Transport”*, CIE Technical Report (CIE 143-2001), are available for a fee from the International Commission on Illumination website: **Error! Hyperlink reference not valid.**[www.cie.co.at](http://www.cie.co.at).

## APPENDIX 1: STCW Table A-I/9

### Minimum in-service eyesight standards for seafarers

STCW Convention regulation	Category of seafarer	Distance vision aided <sup>1</sup>		Near/immediate vision  Both eyes together, aided or unaided	Colour vision <sup>3</sup>	Visual fields <sup>4</sup>	Night blindness <sup>4</sup>	Diplopia (double vision) <sup>4</sup>
		One eye	Other eye					
I/11 II/1 II/2 II/3 II/4 II/5 VII/2	Masters, deck officers and ratings required to undertake look-out duties	0.5 <sup>2</sup>	0.5	Vision required for ship's navigation (eg chart and nautical publication reference, use of bridge instrumentation and equipment, and identification of aids to navigation)	See note 6	Normal visual fields	Vision required to perform all necessary functions in darkness without compromise	No significant condition evident
I/11 III/1 III/2 III/3 III/4 III/5 III/6 III/7 VII/2	All engineers, officers, electro-technical officers, electro-technical ratings and ratings or others forming part of an engine-room watch	0.4 <sup>5</sup>	0.4 <sup>5</sup>	Vision required to read instruments in close proximity, to operate equipment, and to identify systems/ components as necessary	See note 7	Sufficient visual fields	Vision required to perform all necessary functions in darkness without compromise	No significant condition evident
I/11 IV/2	GMDSS radio operators	0.4	0.4	Vision required to read instruments in close proximity, to operate equipment, and to identify systems/ components as necessary	See note 7	Sufficient visual fields	Vision required to perform all necessary functions in darkness without compromise	No significant condition evident

1. Values are given in Snellen decimal notation.
2. A value of at least 0.7 in one eye is recommended to reduce the risk of undetected underlying eye disease.
3. As defined in "International Recommendations for Colour Vision Requirements for Transport" by the Commission Internationale de l'Eclairage (CIE-143-2001 including any subsequent versions).
4. Subject to assessment by a clinical vision specialist where indicated by initial examination findings.
5. Engine department personnel shall have a combined eyesight vision of at least 0.4.
6. CIE colour vision standard 1 or 2.
7. CIE colour vision standard 1, 2 or 3.

Decimal	Metre
0.1	6/60
0.4	6/15
0.5	6/12

## APPENDIX 2: Maritime certificates

### Definitions of certificates

See Maritime Rule Part 32: Seafarer Certification for full certificate titles, available on the Maritime New Zealand website.

#### For the purposes of this guidance:

**STCW (Standards of Training, Certification and Watchkeeping) certificates** will refer to:  
**STCW** certificates issued under subpart C of part 32 of the maritime rules **and**  
**STCW-F** (fishing) aligned certificates issued under subpart D of 32 of the maritime rules.

#### STCW deck certificates

Deck watch rating (DWR)

Able seafarer deck (AB Deck)

Integrated rating (IR)

Watchkeeper deck on ships less than 500GT in the near-coastal area

Master on ships less than 500GT in the near-coastal area

Master on ships less than 500GT

Watchkeeper deck

Chief mate on ships less than 3000GT

Master on ships less than 3000GT

Chief mate

Master

Chief mate yacht

Master yacht on ships less than 500GT

Master yacht

Advanced deck-hand – fishing (ADH-F)

Mate fishing vessel – limited (MFV)

Skipper fishing vessel – limited (SFV)

Mate fishing vessel – unlimited (MFV-U)

Skipper fishing vessel – unlimited (SFV-U)

Global Maritime Distress and Safety System (GMDSS) radio operator

#### STCW engineering certificates

Engine room watch rating (EWR)

Electro-technical rating (ETR)

Able seafarer engine (AB engine)

Electro-technical officer (ETO)

Marine engineer class 3 (MEC 3)

Marine engineer class 2 on ships less than 3000kW (MEC 2 <3000kW)

Marine engineer class 2 endorsed chief engineer (MEC 2 ECE)

Marine engineer class 2 (MEC 2)

Marine engineer class 1 (MEC 1)



**National certificates** will refer to national certificates issued under subpart C of Maritime Rule Part 32.

**National deck certificates**

Qualified deck crew (QDC)

Skipper restricted limits (SRL)

Skipper coastal/offshore (SCO)

Master yacht less than 24 metres (Master yacht < 24m)

**National engineering certificates**

Marine engineer class 6 (MEC 6)

Marine engineer class 5 (MEC 5)

Marine engineer class 4 (MEC 4)

## APPENDIX 3: Eyesight test categories

Maritime Rule part 34: Medical Standards requires candidates for the following certificates (both deck and engineering) to undergo eyesight and colour vision tests to the categories outlined below:

Certificate type	Applicable categories	
	Visual acuity	Colour vision
<b>Deck certificates: STCW</b>		
Master	A, B or D	A, B or D
Chief Mate		
Master <3000 GT		
Chief Mate <3000 GT		
Watchkeeper Deck		
Master <500 GT		
Master <500 GT NC		
Watchkeeper Deck <500 GT NC		
Integrated Rating		
AB Deck		
Deck Watch Rating		
Chief Mate Yacht		
Master Yacht <500 GT		
Master Yacht		
GMDSS Radio Operator* <small>* STCW engineering standards apply to GMDSS Radio certificates except for the combined vision standard (0.4 in each eye is required)</small>	A, B or D	A, B or D
<b>Deck certificates: STCW-F aligned</b>		
Advanced Deck-Hand – Fishing	A, B or D	A, B or D
Mate Fishing Vessel		
Skipper Fishing Vessel		
Mate Fishing Vessel Unlimited		
Skipper Fishing Vessel Unlimited		

<b>Deck certificates – National</b>	<b>Visual acuity</b>	<b>Colour vision</b>
Master Yacht <24 m Skipper Coastal/Offshore Skipper Restricted Limits Qualified Deck Crew	A, B or D	A, B or D
<b>Engineering certificates – STCW</b>	<b>Visual acuity</b>	<b>Colour vision</b>
MEC 1 MEC 2 MEC 2 ECE MEC 2 <3000 kW MEC 3 Electro-technical Officer AB Engine Electro-technical Rating Engine Room Watch Rating	A, B or D	A, B or D
<b>Engineering certificates – National</b>	<b>Visual acuity</b>	<b>Colour vision</b>
MEC 4 MEC 5 MEC 6	A, B or D	No test required

## Designation of eyesight categories

<b>Visual acuity conversion table</b>	
Decimal	Metre
0.1	6/60
0.4	6/15
0.5	6/12

## Deck certificates

Visual acuity			
Category	Correction	Standard (Snellen decimal notation with metre notation in brackets)	
A	Without correction	One eye	0.5 (6/12)
		Other eye	0.5 (6/12)
B	With correction	One eye	0.5 (6/12)
		Other eye	0.5(6/12)
	Without correction	One eye	0.1 (6/60)
		Other eye	0.1 (6/60)
D	Fails required standards		

Colour vision	
Category	Standard
A	Passes 38 plate Ishihara test with no more than two errors
D	Fails Ishihara test
B*	Passes alternative PIC test or passes Holmes Wright Type B lantern test with two errors in two runs of nine pairs being allowed
D/2	Fails alternative PIC test or fails Holmes Wright Type B lantern test
<p>* This test should only be conducted if there is any doubt about a pass result in the Ishihara test. Refer to Maritime New Zealand “guidance for optometrists” for more details on alternative tests. In the case where an alternative test is required, Maritime New Zealand should be consulted before the test is conducted and may nominate the optometrist or colour vision specialist.</p>	

## Engineering certificates

Visual acuity			
Category	Correction	Standard (Snellen decimal notation with metre notation in brackets)	
A	Without correction	Combined vision (not for GMDSS) <sup>*</sup>	0.4 (6/15)
	Without correction	One eye	0.1 (6/60)
B	With correction	Other eye	0.1 (6/60)
	Without correction	Combined vision* (not for GMDSS)	0.4 (6/15)
D	Without correction	One eye	0.1 (6/60)
	Without correction	Other eye	0.1 (6/60)
D	Fails required standards		
* For GMDSS radio operator certificates a standard of 0.4 needs to be met in each eye.			

Colour vision	
Category	Standard
A	Passes 38 plate Ishihara test with no more than two errors
D	Fails Ishihara test
B*	Passes Farnsworth saturated D15 test with no more than one diametrical crossing
D/F	Fails Farnsworth saturated D15 test
* A candidate who fails the Ishihara test may take the Farnsworth D15 test. Refer to Maritime New Zealand "Information for optometrists" for more details on alternative tests. In the case where an alternative test is required, Maritime New Zealand should be consulted before the test is conducted and may nominate the optometrist or colour vision specialist.	