Unit 69: Performing Machine Function Tests

Level:	**4**
Unit type:	**Optional (Neurophysiology)**
Credit value:	**7**
Guided learning hours:	**58**

Unit summary

In this unit, you will develop the knowledge, understanding and skills needed to perform machine function tests on neurophysiological recording equipment. You will be expected to build your patient-centred professional practice and practise safely in the workplace.

Unit assessment requirements

There are no specific assessment requirements for this unit. Please refer to the assessment strategy in *Annexe B*.

Additional information

All procedures must be undertaken in accordance with the Standard Operating Procedures (SOPs) in own work practice.

AC1.1 machine functions include:

- importance of regular checks
- switching on procedure
- checking the condition of all cables and connectors
- ensuring there is an adequate storage medium for the test to be carried out
- confirming the correct date and time is displayed.

AC2.2 includes:

- safety of the machine, including all cables and connectors
- importance of the safety rating and ensuring regular safety checks.

AC2.3 includes:

- relate to local and national standards.

AC2.4 includes:

- identify the sampling rate
- default settings (filters, sensitivity, time base)
- the function of the high- and low-frequency filter and default sensitivity setting, and use of a square wave signal

- the time base, time marker, range of different time bases, cursors
- the function of the stimulator and correct use of the stimulus parameters (stimulation rate and where appropriate stimulus duration)

AC2.5 includes:

- permanent records, which could be a printout or information could be stored on the hard drive.

AC3.3 includes:

- selection and connection of external devices to measure frequency response
- selection of the correct input signal voltage, frequency/frequencies and type of wave (square/sine) on a signal generator for the measurement of frequency response curves
- selection of the correct display parameters for the measurement of frequency response curves
- the range of test frequencies and number of different bandwidths (both low- and high-frequency filters), including 50 Hz notch filter.

AC3.4 includes:

- an appropriate set of graphs showing the response from a number of filter bandwidths, including the 50 Hz notch filter
- calculation of the machine's turnover frequency -3db for appropriate filter settings and show on the graph.

AC4.1 includes:

- selection and connection of external devices to measure CMRR.

AC4.2 includes:

- selection of the correct input signal voltage on a signal generator for the measurement CMRR
- selection of correct display parameters

AC4.3 includes:

- use data measurements to calculate CMRR in dB
- range of expected values and impact of incorrect values

AC5.1 includes:

- selection and connection of external devices to measure noise

AC5.2 includes:

- correct use of attenuator box to measure noise

AC5.4 includes:

- range of expected values and impact of incorrect values.

Learning outcomes and assessment criteria

To pass this unit, learners need to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet **in own area of work and in accordance with Standard Operating Procedures (SOPs)** to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the principles and application of machine function tests on neurophysiological recording equipment	1.1	Explain the principles and application of machine function tests			
		1.2	Explain the process to be followed if errors in machine function are detected			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Be able to perform internal calibration procedures on neurophysiological recording equipment in accordance with Standard Operating Procedures	2.1	Evaluate the Standard Operating Procedure for performing internal calibration procedures			
		2.2	Explain the importance of electrical safety for neurophysiology investigations			
		2.3	Explain the principles of internal calibration procedures for neurophysiological recording equipment			
		2.4	Perform internal calibration procedures on the recording equipment used following standard operating procedures			
		2.5	Record the machine function tests in a permanent format			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to perform external calibration procedures on neurophysiological recording equipment in accordance with the Standard Operating Procedures	3.1	Evaluate the Standard Operating Procedure for performing external calibration procedures			
		3.2	Perform external calibration procedures on the recording equipment used following standard operating procedures			
		3.3	Test the machine over a range of frequencies using a number of different bandwidths			
		3.4	Assess the external calibration procedures, identifying and explaining any issues with the procedure			
4	Be able to measure common mode rejection ratio using a signal generator for a number of recorder channels	4.1	Explain how correct external devices are selected			
		4.2	Record common mode rejection ratio using a signal generator for a number of recorder channels			
		4.3	Calculate the common mode rejection ratio in decibels, identifying and explaining any issues with the procedure			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5	Be able to measure internal noise of a number of the recorder's channels	5.1	Explain how correct external devices/transducers are selected			
		5.2	Explain how to select the correct input signal voltage, frequency/frequencies and type of wave (square/sine)			
		5.3	Measure internal noise of a number of the recorder's channels			
		5.4	Assess the measurements, identifying and explaining any issues with the procedure			
6	Understand how machine function tests contribute to the provision of quality-assured investigations	6.1	Evaluate the requirements for quality-assured investigations			
		6.2	Explain how machine function tests contribute to the provision of quality-assured investigations			
		6.3	Explain the procedure in the event of identifying an issue of quality assurance (fault log)			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)