

Introduction

Good subject preparation and application techniques are essential for high quality, low noise recordings of EEG, ECG, and EMG signals. Poor signal quality is mostly caused by poor contact or electrode movement. Excessively high skin impedances due to inadequate preparation could cause signal artifacts that can interfere with recordings.

The **MLE2002 Model 1089 MK III Checktrode®** by UFI allows quick and easy evaluation of electrode contact impedance. The unit uses an AC excitation method to remove the effects of polarization errors from impedance reading. By evaluating total electrode contact impedance, electrodes can then be removed and re-attached to minimize noise and interference.

Typical applications of the **MLE2002 Model 1089 MK III Checktrode** include testing of:

- electrode/skin contact integrity in physiological and/or bio-electrical systems
- quality of electrodes
- integrity of electrode wires
- external batteries such as those used in telemetry and other physiological monitoring systems



The **MLE2002 Model 1089 MK III Checktrode** is suitable for use with ADInstruments electrodes including

- MLA0310 Lead Wires (1.8 m, 10 snap on)
- MLA0313 Lead Wires (3 snap on)
- MLA1505 Lead Wires (5 alligator clip)
- MLAIME EEG Clip Electrodes
- MLAWBT9 EEG Flat Electrodes

Electrode Contact Integrity and Quality Testing

Step 1: Prepare the electrode sites using

- Abrasive Gel
- Alcohol Swabs
- Electrode Cream
- Electrode Paste
- Abrasive Pad

Step 2: Attach one end of the electrode to the subject and the other end to the Checktrode inputs.

Step 3: Turn the unit **ON**

Step 4: Set the Function Switch to **50 k Ω Test**. The reading should be between 49.5 and 50.5 k Ω .

Step 5: Once completed, set the Function Switch to **Contact k Ω** . If the display shows a reading of

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|--------------------|---|
| < 5 k Ω | indicates a good preparation with no noise. |
| 5 – 10 k Ω | indicates an ok preparation with some noise. |
| 10 – 30 k Ω | indicates an average preparation that might improve with time. For better results, electrode should be removed and reattached again. |
| > 30 k Ω | indicates a bad preparation which will cause noise with the slightest motion. Electrode should be removed and reattached again. |

Step 6: To test the quality of the electrodes used, select the **Offset (mV)** function. A reading of >10 k Ω indicates severe electrode problems.

Electrode Wires Integrity Testing

Step 1: Connect one end of the electrode wire to one of the red electrode inputs.

Step 2: Turn the unit **ON** and set the Function Switch to **Contact k Ω** .

Step 3: Connect the other end of the electrode wire to the **snap connector** on the Checktrode. The display should provide a stable reading of “00.0”. A change in reading with wire motion indicates an intermittent open in the wire.

External Battery Testing

Step 1: Select the **External Battery (V)** function and turn the unit **ON**.

Step 2: Connect the battery to the **Battery Test Connector** located at the side of the Checktrode. Checktrode display will indicate the battery voltage.