



High impedances produce artifact which in turn gives an unreadable test. Here is some information and solutions.

**SYMPTOMS** - Artifact noted in all channels, squealing of the machine, Impedance reading of 40+

**MOST COMMON CAUSES:**

- \* 60 cycle electrical interference.
- \* Faulty electrode/s due to high impedance or broken wire/s.
  - \* Faulty ground electrode.
  - \* Bad cap.
- \* Application Technique.

**REMEDY:**

- Unplug anything electrical in the room, i.e. lamp, TV, bed, IV, surge protectors, clocks.
- Check electrode impedance, they should be low, 7-10 Kilo Ohms. If high impedance, clean electrode/s and mildly abrade skin using skin prep (Lemon Prep). Recheck electrode impedance.
- If the problem of high impedances persists after the above has been accomplished, the next step is to totally eliminate the cap and the board adapter for broken wires. Look over the board adapter, make sure wires are not cracked also unplug and reinsert the cap to the board adapter. If they are still out then a saline test needs to be performed. This can be accomplished by connecting the cap to your transmitter as if you were preparing for a patient. Submerge the **cap only** in normal saline. (Do not immerse where the board adapter meets the cap.) This creates an electrolyte situation so all the electrodes are electrically equal as if you have perfect application. Next, you perform another impedance check. All impedances should be low, 7-10 Kilo Ohms resistance. Bad electrodes are indicated by high electrical resistance. If all electrodes show high resistance you may have a bad ground electrode. Plug in a quick insert into the ground position on your jack box and drop the other end into the saline. If your ground is the problem then the high impedance problem should go away and all the electrodes should show low resistance. If they remain high, then your problem is most likely in your jack box because you have bypassed your cap and board adapter with the quick insert. If after checking impedances the same individual electrodes do show up high you must determine if the problem is the cap or the board adapter by plugging in a second cap, submerging it in the saline and checking the impedances. If the same electrodes are high then you have identified the problem at your board adapter and not the cap.

**APPLICATION:**

- Hair has to be clean, dry and chemical free, i.e. hair spray, mousse, etc.
- The proper amount of gel is important, **4 – 6 cc. only**. When applying gel Always use blunted needle, gently rocking to abrade the scalp. Bald heads take special care – gel tends to bleed from electrode to electrode thus giving a flat line – this is known as “gel bridge.”
- When applying skin prep, place on the end of a wooden applicator stick and rub onto the skin area, rocking back and forth between index finger and thumb.
- Apply ground electrode – this electrode must have low impedance as it is the common reference to all other electrodes.

**GENERAL SUGGESTIONS:**

- Check condition of patient; tense, restless, sweating, confused?
- Check the environment around the patient. Electrical things around the patient must be unplugged, is electrical bed unplugged?
- Check battery voltage before prepping patient, low voltage can cause artifact.