

Beeping Tones Associated with “Out-of-Range” Shock Lead Impedance

SUMMARY

This article describes beeping associated with “out-of-range” Shock Lead Impedance:

- Boston Scientific defibrillators display a programmer message window and (in some cases) emit beeping tones when an “out-of-range” shock lead impedance is detected.
- Detection of shock impedances outside the normal range warrants additional investigation to identify root cause. After resolving the issue, the Clinical Event should be reset through the programmer.
- Beeping tones may occur prior to implant if the device is taken out of Storage mode *before* a lead is attached.

ICD: Implantable Cardioverter Defibrillator

CRT-D: Cardiac Resynchronization Therapy Defibrillator

CRM PRODUCTS REFERENCED*

VITALITY® HE,
 CONTAK RENEWAL® 3 / 4 / HE,
 CONTAK RENEWAL 3RF / 4RF,
 CONTAK RENEWAL 3RF HE / 4RF HE,
 CONTAK RENEWAL 3 AVT / 4 AVT,
 CONFIENT®, and LIVIAN®

*Products referenced herein may not be approved in all geographies. For comprehensive information on device operation, reference the appropriate product labeling.

CRM CONTACT INFORMATION

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In addition to visual indicators displayed on the programmer (Clinical Events and/or yellow warning messages), some Boston Scientific defibrillators also emit an **audible indicator** to alert patients/clinicians when the device has detected an “out-of-range” shock lead impedance measurement. These two indicators are triggered by impedance measurements of less than 20 ohms (Ω) or greater than 125 Ω .

Audible Indicator (Beeping Tones) for CONFIENT®, LIVIAN®, VITALITY® HE, CONTAK RENEWAL® 3/4, 3/4 HE, 3/4 RF, and 3/4 AVT Devices

Upon the first detection of a shock lead impedance value outside the normal range, 16 R-wave synchronous beeping tones will sound. Once beeping tones begin, they will repeat every six hours until the Clinical Event is manually reset with a programmer (Figure 2).

Visual Indicator

Upon the first programmer interrogation following detection of an out-of-range shock lead impedance value, a message will display in the Clinical Events window of the System Summary screen (Figure 1). Additionally, for those devices enrolled in LATITUDE Patient Management System, an out-of-range value also triggers a red alert.¹

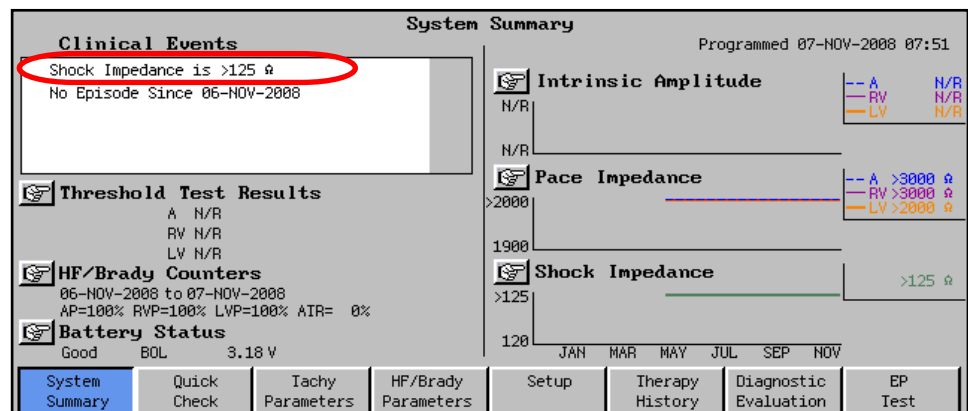


Figure 1. System Summary screen displaying shock lead impedance outside the normal range.

Out-of-Range Impedance Measurements

Any time an out-of-range shock lead impedance condition is reported, clinicians should conduct standard lead testing and troubleshooting procedures to identify root cause and resolve the issue. For assistance with any out-of-range messages, please contact a local Boston Scientific CRM representative or CRM Technical Services.

¹In order for red alerts to be detected by the LATITUDE System, an upload of device information must be received.

- Shock impedance >125 Ω (e.g., open condition):
 - **Prior to implant**—Will occur if a daily measurement is conducted before a lead is attached to the device. Since daily measurements are activated upon removal from Storage mode, a device should not be removed from Storage mode until the lead is attached. Note that programmable parameters may be adjusted without taking the device out of Storage mode.
 - **During and Post-implant**—May indicate a lead connection issue (e.g., loose setscrew or incomplete lead insertion) or a breach in the electrical pathway (e.g., lead conductor fracture).
- Shock Impedance <20 Ω (e.g., shorted condition):
 - May indicate a possible internal insulation breach (e.g., clavicle/first rib damage), inappropriate electrode contact, or a damaged defibrillator.

Resetting the Clinical Event and Beeping Associated with Out-of-Range Shock Lead Impedance

Once the underlying reason for the out-of-range measurement is understood and resolved, the Clinical Event should be reset as outlined in Figure 2. **Resetting the Clinical Event will terminate the beeping tones.** Until the Clinical Event message window is reset, additional Clinical Events/LATITUDE alerts for out-of-range shock lead impedance will not be generated, and the device will continue to emit beeping tones every six hours.

1 Tap anywhere on the message text within the white Clinical Events message window on the programmer screen; a yellow message window appears.

2 To print the message window, select the Print Notice button.
NOTE: Once the Reset Event button is selected, the option to print is no longer available.

3 After resolving the issue, select the Reset Event button. The message will automatically disappear and the beeping tones are now reset.

Figure 2. Reset the Clinical Event and beep by selecting the Reset Event button in the yellow message window.

For additional information, refer to the **A Closer Look** article entitled *Investigate, Report, Print, and Reset Clinical Event Messages in the System Summary Screen* available through CRM Technical Services or at www.bostonscientific.com.