SUMMARY
Boston Scientific CRM has performed testing to identify potential interactions that may occur between portable multimedia players and implantable pacemakers and defibrillators. Testing suggests that multimedia players are not likely to interfere with the operation of the implanted device; however, precautions should be taken with respect to other components of the player. To prevent wanded telemetry interference in a clinic, hospital, or at home using a LATITUDE® Wanded Communicator, multimedia players should be turned Off or placed at least 12 inches (30.48 cm) away from the wand.

Products Referenced

Contact Information
Americas
(www.bostonscientific.com)
www.bostonscientific.com
Technical Services
LATITUDE® Customer Support
1.800.CARDIOAC (227.3422)
+1.617.582.4000
Patient Services
1.866.484.3268
Europe, Middle East, Africa
Technical Services
+32 2 416 7222
eurtechservice@bsci.com
LATITUDE Clinician Support
latITUDE.europe@bsci.com
Asia Pacific
Technical Services
+61 2 9063 8299
aptechservice@bsci.com
Japan
iapentechservice@bsci.com
LATITUDE Customer Support
latITUDE.asiapacific@bsci.com
Japan
latITUDE@bsci.com (Japan)

© 2013 by Boston Scientific Corporation or its affiliates. All Rights Reserved.

Portable Multimedia Players and Implantable Pacemakers and Defibrillators

Portable multimedia players are small electronic devices that can store and play back audio and video. These devices typically include a base unit (player), headphones (including earbuds), and sometimes a cellular phone. All electronic equipment generates electromagnetic fields which may potentially cause electromagnetic interference (EMI). Some of these players and their accessories also contain magnets. Most electromagnetic and magnetic fields in consumer products are not strong enough to affect the function of a pacemaker or defibrillator. However, as a general precaution, electronic devices and any item containing magnets should be kept at least 6 inches (15.24 cm) away from an implanted medical device (heart pacemaker or defibrillator).

Potential EMI from Portable Multimedia Players

EMI occurs when the electromagnetic field of one electronic device interferes with the intended operation of another electronic device. Some electronic devices generate electromagnetic signals that are strong enough to interfere with an implanted pacemaker or defibrillator. Interference and its effects are typically temporary and can be eliminated if the patient increases the distance between themselves and the source of EMI.

Portable multimedia players are commonly in close proximity to an implanted device because they are often used or carried in a breast/shirt pocket or on an armband. Boston Scientific tested various players and accessory components to determine if they could be a source of EMI to an implanted pacemaker or defibrillator. Testing concluded that there were no unexpected observations with respect to EMI from the portable multimedia units tested with Boston Scientific devices when used according to instructions. While our testing suggests that the portable multimedia players tested should not interfere with the function of an implanted Boston Scientific pacemaker or defibrillator, many multimedia players contain components and accessories (e.g., cellular phone and headphones) that may be sources of EMI.

As a precaution, multimedia players and their accessories should be kept at least 6 inches (15.24 cm) away from an implanted pacemaker or defibrillator. Devices containing cell phones that transmit more than 3 Watts should be kept at least 12 inches (30.48 cm) from the implanted device. If wearing the device in an armband, consider wearing it on the arm opposite the side of device implant to increase distance from the implant. For patients using the LATITUDE® or LATITUDE® NXT Patient Management systems, it may be necessary to keep mobile phones at least 11 feet (3.35 m) away from the Communicator to help prevent EMI.

Magnets in Portable Multimedia Players and Accessories

As described in the pacemaker and defibrillator instructions for use, exposure to strong magnetic fields greater than 10 Gauss (1 mTesla) may alter implanted device function. Exposure to fields of this strength can suspend therapy or cause asynchronous pacing, depending on device programming. The Apple® iPad® 2 (and onward) contains embedded magnets along the left edge of the device and on the right side of the front glass; some iPad covers and cases (including the iPad Smart Cover and Smart Case) use magnets to attach the cover to the device. Additionally, certain models of headphones and earbuds used with multimedia players contain strong magnets in the earpiece. Because the strength of magnets contained in these products is not always apparent, patients should keep these products at least 6 inches (15.24 cm) away from the implanted device.
device. Accordingly, do not place the iPad (or magnetic accessories) on your chest during use or rest it there while not using it (e.g., while sleeping). If a magnet does interfere with device function, moving the magnet away should restore the device to its original programming and function.

Evaluation of the ZOOM® LATITUDE® Programming System

The ZOOM LATITUDE Programming System uses either wanded or ZIP™ Wandless Telemetry (RF telemetry) to communicate with compatible Boston Scientific defibrillators and pacemakers. Evaluation suggests that during an interrogation session between the programmer and the implanted device:

- ZIP Wandless Telemetry (RF) used to interrogate defibrillators and pacemakers is not susceptible to telemetry interference from a portable multimedia player.
- Wanded telemetry used to interrogate defibrillators and pacemakers may be susceptible to telemetry interference when an operating portable multimedia player is within 2 inches (5.08 cm) of the wand during interrogation. However, during testing this interference did not affect pacemaker or defibrillator function (pacing, sensing, and defibrillation), it only slowed or prevented communication with the programmer. At no time during testing was partial programming observed; programming was either completely successful or no changes were made.

Additional Information

For additional information on how pacemakers and defibrillators respond to magnets, cellular phones or other potential sources of EMI, please contact CRM Technical Services or refer to the following resources on Boston Scientific’s web site:

- Physician Instructions for Use web page—includes product “System Guides”
- A Closer Look web page—includes educational articles such as Cellular Phones and Implantable Devices
- Living with Your Implanted Device web page—includes general information on EMI, common items that may cause EMI, and general precautions for patients

1Portable multimedia players tested: Apple iPod (third generation #A1040 and fifth generation # A1136), Apple iPod Nano #A1236, Apple iPod Mini #1051, Apple iPhone #A1203; Creative Zen V; and Motorola MOTO Q.
2Boston Scientific data on file.
3RF telemetry in Boston Scientific defibrillators, pacemakers, LATITUDE/LATITUDE NXT Patient Management Systems and programmers operate in a higher frequency band, outside of the frequency range of spurious noise generated by the multimedia player function of the products evaluated. The multi-media/music player peak emissions were centered near 250 kHz (wanded telemetry range) and extended up to 30 MHz. These peak emissions are well below the range of RF telemetry operation (869-928 MHz).
4Instructions for Use manuals website path: bostonscientific.com > Healthcare Professionals > Electrophysiology > Instructions for Use
5A Closer Look article website path: bostonscientific.com > Healthcare Professionals > Electrophysiology > Product Performance Resource Center > A Closer Look Articles > EMI and Implantable Device Systems
6Living with Your Implanted Device website path: bostonscientific.com > Patients > Heart and Blood Vessel Conditions > Living with a Pacemaker or Living with a Defibrillator > Electromagnetic Interference Look-up