

# Bluetooth Optimization



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# Bluetooth Optimization Guide

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The following document includes setup advice, best practices and tips and tricks to get the best possible Bluetooth connection between your Thump Boosted, Freeplay, Reach, ProDX, or CRBT monitors and your iOS/Android device.

## Common Causes Of Bluetooth Dropouts

**Distance:** The distance between your Bluetooth connected devices is a very relevant factor in signal strength. Depending on the Bluetooth implementation of both connected devices, the maximum distance is 10 meters (32.8 feet).



**Hard Surfaces:** In addition to distance, hard surfaces can block or reduce the range of your wireless network. Surfaces such as wood, concrete, metal can block your signal. Having objects such as walls, speakers, audio/amp racks, furniture and windows in front of your device will affect the range.



**Crowds:** If there are large crowds of people in between your device and Thump Boosted, Freeplay, CRBT, Reach or ProDX that can cause reduction of signal strength. Water acts as a blockade for high frequency radio signals and since the human body consists of 60% of water, crowds will have an effect on your signal strength.



**Radio Interference:** Radio signals from various consumer electronic products can interfere with wireless network signals. For example, cordless phones, wireless routers, garage door openers and microwave ovens can each take down a Bluetooth connection when powered on.



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## Bluetooth Radio Interference

### What is it and why do I need to know about it for my set up?

- **Bluetooth devices transmit their signals in a narrow radio frequency range around 2.4 GHz. Various other electronic devices in a home, such as most Wi-Fi wireless home networks, cordless phones, garage door openers, baby monitors, and microwave ovens, may also use this same frequency range. Any such device can interfere with a Bluetooth connection, slowing down the performance and potentially breaking network connections.**
- **Likewise, the wireless networks of neighbors generally all use the same form of radio signaling. Especially in residences that share walls with each other, interference between different home networks is not uncommon.**
- **The 2.4-GHz band used by Bluetooth gives a device the ability to choose between 79 different 1-MHz channels within that band. When Bluetooth detects interference on one channel, it can move over to another channel to avoid the interference. This may cause some signal degradation or temporarily block the signal. Depending on what kind of connection the Bluetooth device relies on, the disruption could cut out your sound.**
- **If a given Bluetooth device falls out of range of its paired device, obviously that connection will fail or “drop.” Devices situated near the edge of the network range will likely experience intermittent dropped connections. But even when Bluetooth devices stay within range consistently, performance can still be adversely affected by distance, obstructions, or interference.**

Type of Barrier	Interference Potential
Wood	Low
Synthetic material	Low
Glass	Low
Water	Medium
Bricks	Medium
Marble	Medium
Plaster	High
Concrete	High
Bulletproof glass	High
Metal	Very high



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## Thump Boosted/Freeplay/CRBT/Reach/ProDX Positioning

**Test Different Locations:** Don't settle prematurely on a location for your Thump Boosted, Freeplay, Reach, ProDX or CR monitor. Experiment; try placing the device in several different promising locations. While trial-and-error may not be the most scientific way to find a good spot for your equipment, it is often the only practical way to assure the best possible performance.



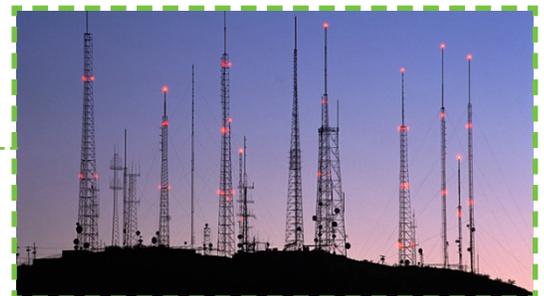
**Central Location to mix position:** For the CRBT, place the monitors in a central location. Placing the audio streaming device near the speaker is best. The Thump Boosted, Freeplay, Reach and ProDX should also be central to the Bluetooth device to which it is connected.



**Avoid physical obstructions:** Any barriers along the "line of sight" between devices will degrade a radio signal. Plaster or brick walls tend to have the most negative impact, but really any obstruction including cabinets or furniture will weaken the signal to some degree. Obstructions tend to reside closer to floor level so placing your Thump Boosted/Freeplay/CRBT/ProDX/Reach on an elevated surface decreases this risk. Also avoid reflective surfaces whenever possible. Some signals literally bounce off of windows, mirrors, metal file cabinets and stainless steel countertops, lessening both range and performance.



**Avoid radio interference:** Place the Thump Boosted/Freeplay/CRBT/ProDX/Reach and your Bluetooth at least 1 m (3 feet) away from other home appliances that send wireless signals in the same frequency range. Such appliances include Wi-Fi routers, some microwave ovens, cordless telephones, baby monitors, and home automation equipment like X-10 devices. Any appliance that transmits in the same general range as 802.11b or 802.11g (2.4 GHz) can generate interference. Likewise, install the unit away from electrical equipment that also generates interference. Avoid electric fans, other motors, and fluorescent lighting. Many Wi-Fi routers can switch to the 5 GHz frequency that can reduce interference with Bluetooth.



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## Troubleshooting

If you are experiencing trouble connecting your device to the Thump Boosted, Freeplay, Reach, ProDX or CRBT monitor then try one or more of these troubleshooting steps to get the problem resolved.

- **Power cycle your Thump Boosted/Freeplay/CRBT/Reach/ProDX Monitor.**
- **Make sure that your Thump Boosted/Freeplay/CRBT/Reach/ProDX and connecting device are close to each other.**
  - **Make sure Bluetooth is turned on on your device.**
- **Offentimes a soft reset can resolve connectivity issues. On a phone, you can switch airplane mode on and off again.**
- **Delete the Thump Boosted/Freeplay/CRBT/Reach/ProDX from your device and rediscover it.**
- **Make sure your Thump Boosted/Freeplay/CRBT/Reach/ProDX is ready to pair by holding down the BT button until it blinks.**
  - **Make sure the device you are trying to pair with the Thump Boosted/Freeplay/CRBT/Reach/ProDX is designed to connect with it. Its a pretty safe bet that Bluetooth mice, keyboards, cameras, or other speakers are probably not going to do you any good if you attempt to connect to them.**



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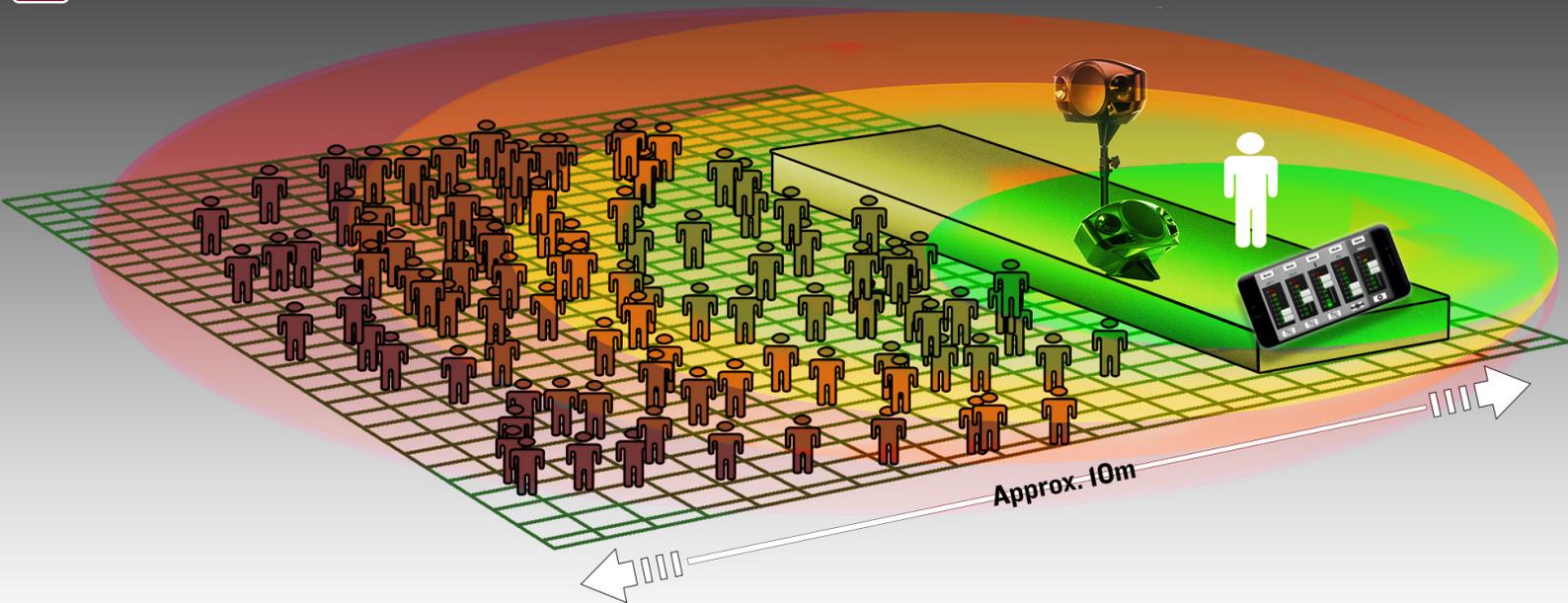


## CR SERIES / FREEPLAY Bluetooth Setup

-  Best possible connection. Optimal data transfer.
-  Still good connection. Very low drop-out risk.
-  May experience drop outs especially in environments with many sources of interference.
-  Likely to experience drop outs.

### Common causes of Bluetooth interference:

- Objects - Walls, people, columns, furniture, amplifiers, metal, and glass.
- RF - Wi-Fi routers, wireless in-ear systems, wireless mics, cordless phones, other Bluetooth devices, and garage door openers, and baby monitors.



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## Bluetooth Links and Documents

- <http://classroom.synonym.com/block-bluetooth-signal-17777.html>
- <http://support.apple.com/en-us/HT1365>
- [http://www.cisco.com/c/en/us/products/collateral/wireless/spectrum-expert-wi-fi/prod\\_white\\_paper0900ae-cd807395a9.html](http://www.cisco.com/c/en/us/products/collateral/wireless/spectrum-expert-wi-fi/prod_white_paper0900ae-cd807395a9.html)



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