



VALUEHEARING

Information Booklet

All About

Bluetooth

Hearing Aids

*Everything you need to know about using, wearing
and caring for your Bluetooth Hearing Aids*

An Introduction

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Bluetooth hearing aids is one of the great new innovations to have come onto the market over the past few years.

Our clients love the convenience of streaming phone calls, television, music and podcasts directly to their hearing aids, but like all technology, it comes with some challenges. The purpose of this book is to give you an overview of Bluetooth and the role it plays in hearing aids.

Hopefully it will inspire you to give the new generation of hearing aids a try if you already haven't trialled them. And, if you already have Bluetooth hearing aids, this guide might answer a few questions.

If there is anything further you'd like to know about Bluetooth hearing aids, not covered in this guide, do let us know and we'll do an updated edition.

If you'd like to try Bluetooth hearing aids, do give us a call at Value Hearing on 1800 531 468 or via our website: www.valuehearing.com.au.



Introducing Bluetooth

What is Bluetooth?

[Bluetooth](#) is a standard for the short-range wireless interconnection of mobile phones, computers, and other electronic devices.

It operates on a radio frequency (yes, just like radio or television).

All wireless and cordless communication products operate on a specific frequency - 2.4GHz.

Other devices you'd be familiar with operating [in that frequency include](#): baby monitors, wireless headphones, Bluetooth, Wi-Fi devices, wireless LANs, car remote entry devices and garage door remote controls.

It is also [increasingly used in modern hearing aids](#) to provide the convenience of pairing your hearing aids to mobile phones, televisions and other streaming devices. It also allows you to use your mobile phone as a 'remote control' for your hearing aids and, increasingly you will be able to work with your audiologist to [remotely troubleshoot and reprogram your hearing aids](#).

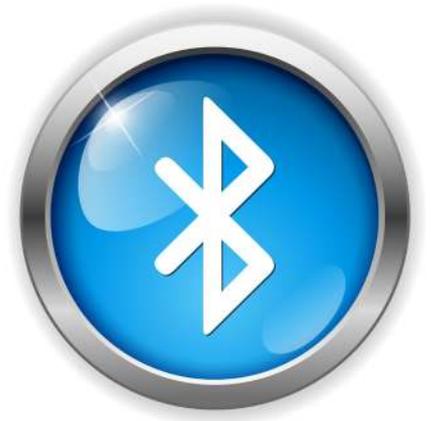
How does Bluetooth pairing work?

Bluetooth enabled devices must be 'paired' with each other before they can talk to one another.

First, each device has to be switched on to make them "discoverable" to one another. To secure the connection, you will need to enter a PIN.

Once devices are paired, they will automatically recognise each other as soon as they are switched on and Bluetooth is enabled.

If the connection is lost, you will need to go through the process of pairing again.



Aren't WiFi and Bluetooth the same thing?

No, they're not, although it's easy to get them confused because they broadly do the same thing - transmit data wirelessly.

Lots of devices have both WiFi and Bluetooth (like your smartphone) and both types of technology can operate independently of one another.

The important difference to remember is that Bluetooth is a direct 'device-to-device technology' that requires that you actively "pair" the two devices being linked. Bluetooth has also been described as acting like a cord between the two devices by creating [a secure, wireless personal area network](#) in which these devices can communicate.

[WiFi is more like radio station broadcaster](#), where anyone can connect (if they have the correct password)

So Why Is It Called Bluetooth?

That's a great question.

Back 1990s, a group of scientists in different parts of the world were working on new short range radio link technology. They quickly realised that instead of inventing competing protocols, they should meet and thrash out an agreement over one single unified standard.

In 1996, they met in Sweden and finally came to a consensus on the nature of the technology. Then came the hard decision of what to name this technology.

In the end it was one of the scientists who suggested the name Bluetooth - after Harald "Bluetooth" Gormsson, a 10th century Danish king who united pagan Danish tribes under the one banner of Christianity.

As to why King Harald had the nickname Bluetooth. Some believed he was fond of eating blueberries; others say it was liquorice which stained his teeth blue, but the truth has been lost in the mists of history.



How does Bluetooth apply to hearing aids?

Bluetooth provides the opportunity to stream sound directly into your hearing aids to promote greater clarity from devices such as your smartphone, television, personal music player.

The advantage to hearing aid users was obvious.

While the technology has been used in hearing aids since the 2000s, the early hearing aids needed a intermediary device often worn around the neck.

Now the convergence is complete with many devices able to directly 'pair' with your hearing aids.

A bit of background

The first Bluetooth enabled hearing aids were for Made for iPhone (MFI) and while it worked, there were limitations.

1. *They don't sound particularly good when streaming audio* - They tend to sound more tinny than dedicated earphones and have frequent hisses, pops and crackles.
2. *They suffer frequent drop outs* - If you put your phone in your pocket then one ear is likely to drop out during streaming.
3. *Connectivity is at the whim of Apple* - there are frequent connectivity issues when Apple updates its software. You then have to wait patiently until they, hopefully, fix it with the next update.
4. *You need another intermediary device to use it with anything except Apple devices* - so no direct to phone streaming for all the Android and older flip phone users of the world. You are unable to hook these up to your laptop for Skype calls or watching Netflix. Neither can you use the built-in Bluetooth of your brand new Television set. You basically need adaptors for any Bluetooth sound source, except iPhone.
5. *No hands-free calling* - You need to hold the phone like you're speaking on speaker phone as the call uses your phone's microphone. This is not particularly legal when operating a vehicle.



Over the past few years other manufacturers have incorporated the technology so it works with both Apple and Android products.

Bluetooth hearing aids are hearing aids *first*

Unlike some hearables coming onto the market, hearing aids are designed to improve your hearing first and foremost. Bluetooth sometimes seems like an afterthought in some of these devices.

What this means is that even if the Bluetooth connection drops out, which happens frequently in some models, the hearing part of the device will continue to work as designed.

Just because the Bluetooth does not appear as stable as you'd hope, that does not mean it is a terrible hearing aid. It just means that Bluetooth is quite finicky at the best of times and some corners needed to be cut to make it work in a hearing aid.

Bluetooth is quite power hungry and it is an amazing feat to actually have this in a hearing aid in the first place. Hearing aids also need to be small, so the Antennae for the Bluetooth radio is smaller than in large Bluetooth earphones. In order to operate within the confines of a small hearing aid, some compromises needed to be made. You can read more about it in [our article on Bluetooth in hearing aids here](#).

These compromises means that Bluetooth in a hearing aid is not designed to replace high quality headphones, although a device like Phonak's Marvel range of hearing aids gets very close. It is designed to add functionality over and above amplification of hearing loss.

What you should expect from the Bluetooth part of your hearing aid

The Good

A Bluetooth hearing aid can make it possible to conveniently listen to your favourite music in private, while going along with your day to day business. No one needs to know that you are silently rocking out to your favourite tunes or absorbing your favourite podcast.

This is especially helpful if you suffer tinnitus, as silence and tinnitus do not mix well.

Bluetooth hearing aids can allow you to take mobile phone calls through your hearing aids. This can be a tremendous help if hearing people on the phone, where lip reading is out of the question, is even a slight problem for you. Some models even allow Hands Free calling!

Bluetooth hearing aids also allow you to connect to hearing aid apps. Some of these apps are quite advanced and allow remote control of the hearing aids. Some even allow Artificial Intelligence features to help improve your hearing.

Some Bluetooth hearing aids even allow remote fine tuning, thus reducing the need for in clinic visits just to have a quick tweak applied.

Most Bluetooth hearing aids have an optional accessory, allowing you to stream the TV signal in beautiful stereo directly into your hearing aids. They still keep the hearing aid microphones active, so you can hear those people close to you, but you have your own control over the TV volume at a level of clarity that has to be experienced.

The Bad

Bluetooth hearing aids can disconnect from your phone intermittently while you're streaming.

You might be happily enjoying a nice song while out walking the dog and suddenly one ear drops out or you gets pops and crackles happening.

This is because Bluetooth is inherently sensitive to interference and the wavelength used for the radio signal cannot pass through your body. So it is often the ear furthest away from your phone that loses connection.

This can be worse when approaching intersections where there are a lot of cars and traffic lights, all contaminating the radio signal. The small hearing aid battery and Bluetooth Antenna certainly does not help.

Certain models, like Resound's Quattro and Phonak Marvel have techniques to greatly reduce the frequency of interference. But even they aren't perfect.

The sound quality, especially on 'made for iPhone' hearing aids can leave a lot to be desired.

This is because the amount of data that is transmitted via Bluetooth is reduced to improve battery life. The Quattro and Marvel does much better in this regard, but if your ear is

unplugged due to the requirements of your hearing loss, you won't hear the lovely bass that a good set of earphones can produce.

A simple phone update can break the Bluetooth connection to your hearing aids. You'll have to then wait for the phone manufacturer or the hearing aid manufacturer to release a fix, before things work again. It does not happen frequently, but when it does it is very annoying.

Hearing aid manufacturers still have quite a bit to learn about smartphone apps. Their apps work most of the time, but sometimes there are annoying bugs or obvious oversights or missing features. They do update these apps regularly, but it is best not to purchase a hearing aid just because of a specific phone app.

Using a lot of streaming can drain your hearing aid battery faster. So don't expect a Bluetooth hearing aid battery to last as long as a non-Bluetooth hearing aid battery.

The Ugly

Sometimes things just stop working altogether. The phone won't connect to the aid and the Bluetooth connection just won't respond. This is especially frustrating for the technically reserved individual.

Fortunately there are some simple steps to get things up and running again.

1. Restart the hearing aids, by turning them off and back on and try again.
2. Make sure you are using a new battery (if applicable) or that the aid is charged
3. Unpair the hearing aids from your phone - for 'made for iPhone' devices you'll find this under accessibility/MFI Hearing aids. On the true Bluetooth hearing aids like the Phonak Marvel, you'll need to go to settings/Bluetooth and pair from there.
4. Try repairing the aids - if this fails reset your phone, by powering it down and back up and try again.

In most cases this should do the trick.

- Phonak has a support site for the Marvel, where you can search for your issue and find direct answers. <https://marvel-support.phonak.com/en/>
- Oticon also has a support section here: <https://www.oticon.com/support/how-to/open-wireless-connections/faq>
- Resound: <https://www.resound.com/en-au/help/connected>

What Models Are On The Market?

Oticon

The [Oticon OPN range](#) has been around for the past couple of years and are "Made For iPhone" (MFi) hearing aids, which directly streams your phone calls and other audio sources (podcasts, music, Netflix, Skype, etc.) from your iPhone or iPad through your hearing aids.

OPN hearing aids are compatible with the Oticon ON iPhone app, which allows the user to make volume and program changes. You can also link this to 'IFTTT' (if this, then that) technology, which gets your different apps and technologies working together;

Oticon recently released their custom range of In-The-Ear devices that now also have MFi technology.

The OPN range is also available in a [rechargeable](#) version for its MiniRite style.

Android users require the Oticon ConnectClip to link their Android mobile phone to the OPN hearing devices.

The new Essential level SIYA 1 and 2 ranges brings this technology into much more cost effective devices. So with Oticon, you can get Bluetooth in all ranges, except the free-to-client government ranges.

Oticon is soon to release their own remote assist feature, allowing users of these devices to request and receive adjustments without having to attend a clinic visit.

GN Resound

The [GN Resound LiNX 3D range](#) features MFi technology which allows for direct streaming of phone calls and other audio sources from your iPhone or iPad through your hearing aids.

LiNX 3D hearing aids are compatible with the Resound Smart 3D iPhone app. This app is one of the most sophisticated hearing aid apps on the current market and allows volume and program changes, as well as a basic graphic equaliser and the ability to create 'favourite' programs. There is also a 'find my hearing aid feature' through GPS tracking and the ability to geotag different programs for different locations e.g. your favourite café or your weekly yoga class.

The Resound Smart 3D app also offers 'Resound Assist' which is a feature that can be set up to allow your [Audiologist](#) to perform remote adjustments to fine tune your hearing aid settings without you needing to physically come into the clinic!



The GN Resound LiNX 3D range encompasses all styles of devices i.e. Behind-The-Ear/ Receiver-in-the-Canal and In-The-Ear/custom styles.

The LiNX range does offer a rechargeable model only in its brand new [LiNX Quattro hearing aid](#) and the rest uses standard batteries only.

Android users require the GN Resound Phone Clip+ to link their Android mobile phone to the LiNX hearing devices.

ASHA should be coming in 2019 to allow connectivity between the Quattro range of hearing aids and compatible Android Phones

Phonak

[Phonak](#) tried to even the playing field for Android and other phone users with the release of their Phonak Audeo B-Direct devices. These devices can directly connect to basically any smart phone that has Bluetooth. However, audio streaming is only to one hearing aid (selected in the software by the client/ audiologist) and only allows the streaming of phone calls, not other audio sources.

One of the big drawcards for this model is that it is truly 'handsfree' i.e. you can answer a phone call via the hearing aid itself (by pressing a button on the back of the hearing aid) and a microphone in the hearing aid picks up your voice, which means you don't have to physically touch your phone at all.



Audeo B-Direct hearing aids are only available in the Receiver-in-the-Canal style and with a standard battery option.

Now there is a Marvellous new kid on the Block

The Phonak Audeo Marvel, based on the SWORD 3.0 chip was released in December 2018.

The Audeo M removes all the limitations of the Direct range of hearing aids and now allows phone call streaming to both ears as well as audio streaming from any BT 4.2 or higher source.

The Audeo M is also available even at the essential 30 level and has rechargeable options at all levels as well.

In September 2019, the Audeo M will receive a firmware (software) upgrade that will allow it to connect directly to ROGER remote microphones, for improved hearing in noise and over distance.

Starkey

[Starkey](#) was one of the first manufacturers to offer MFi technology. The MFi technology allows for direct streaming of all audio sources from your iPhone or iPad through your hearing aids.

Starkey Halo 2 and Halo IQ hearing aids are compatible with the Starkey TruLink iPhone app, which allows the user to make volume and program changes, as well as geotag locations for specific programs and places.

The Starkey TruLink app is now also available for select Android mobile phones.

The Halo range is only available in the receiver-in-the-canal style, and does not currently offer a rechargeable option.

Starkey are about to release their new 'Livio IQ' hearing device which takes direct connectivity to the next level by incorporating health and fitness tracking. Not only will these hearing aids directly stream audio sources from your iPhone to your hearing aids but they will also track your physical and cognitive health, and measure your communication and engagement throughout the day.



Widex



The [Widex](#) Evoke range was released a couple of months ago and followed on from the Widex Beyond devices. The MFi technology allows for direct streaming of phone calls, music and other audio sources from your iOS device through your hearing aids.

Evoke hearing aids are compatible with the Evoke iPhone app, which allows the user to make volume and program changes, use a basic graphic equaliser, geotag, create personal programs and use Widex's latest development – 'SoundSense Learn'.

SoundSense Learn is a real-time based learning system, which allows users to fine tune their hearing device settings by listening to 'A vs. B' sound comparisons to create a more individualised listening experience.

The Evoke range is only available in the Receiver-in-the-Canal style, which is also available in a rechargeable version for convenience.

Android users can use the Widex app but direct streaming of audio sources is not possible and would require use of Widex's 'DEX' devices.

Unitron

The [Unitron](#) Moxi All devices can directly connect to basically any smart phone that has Bluetooth. Like the Phonak Audeo B-Direct, audio streaming is only to one hearing aid (selected in the software by the client/audiologist) and only allows the streaming of phone calls, not other audio sources.

Again, one of the big drawcards for this model is that it is truly 'handsfree' i.e. you can answer the phone call via the hearing aid itself by pressing a button on the back of the hearing aid and a microphone in the hearing aid picks up your voice, which means you don't have to physically touch your phone at all.

The Moxi All is available in both a standard battery version and a rechargeable version.

We expect Unitron to release a Moxi model based on the SWORD 3.0 chip towards the middle of 2019.



Signia



The [Signia](#) Nx range offers MFi technology for direct streaming of phone calls and other audio sources from your iOS device to many styles of hearing devices. Unfortunately, the size 10 battery styles such as the Silk Nx, Pure 10 NX and the Styletto, does not have Bluetooth connectivity.

Signia Nx hearing aids are compatible with the 'Signia myControl' iPhone app, which allows the user to make volume and program changes, has 'motion sensor data' to ensure the best hearing quality while a user is moving, and tracks noise and voice activity;.

Android users can use the Signia app but direct streaming of audio sources is not possible and a Signia 'Streamline Mic' is required.

Other questions we've been asked about Bluetooth hearing aids

Why Don't These Devices Sound As Nice As Wireless Earphones?

It basically comes down to battery power. Wireless earphones such as Apple's AirPods use rechargeable batteries that can offer 5 hours of streaming before requiring a recharge. They are quite a bit bigger than hearing aids and have two main tasks, to play music properly and act as a headset for phone calls.



Hearing aid batteries are generally much smaller than those found in these rechargeable earphones. Not only that, but lasting only 5 hours before they die, will not meet the usage requirements of most hearing aid users, which can be up to 17 hours use a day in some cases. Bigger wireless headphones, such as those from Bose and others, can deliver 20 hours of streaming, but cut you off from the outside world and aren't exactly discreet.

Hearing aids also need to take everyday sounds, process and clean up the sound and then amplify the sound before putting it back in the user's ear, while keeping loud sounds down to avoid further hearing damage. So there is a lot more going on in a hearing aid compared to a relatively simple earphone.

Can My Bluetooth Hearing Aids be Hacked?



Hacking is a term with a frightening connotations but it has two very different meanings.

There's hacking, where technologically-minded people tinker with hardware and software they own, either for their own amusement, simple curiosity, or with a desire to make 'improvements'.

Then there is the other type: hackers who are criminals looking to extort money from individuals or companies. Or hackers may be malicious vandals who destroy and disrupt things simply

because they can.

Hearing aid manufacturers, along with manufacturers of all types of Bluetooth devices, are well aware of this - and they are extremely mindful of security. Did you know that General James Clapper, the Director of National Intelligence of the United States received security clearance to wear his Bluetooth hearing aids back in 2016?

Is There Cause For Concern?

Two of the world's leading hearing aid manufacturers have provided clear advice that malicious hacking of Bluetooth hearing aids is highly unlikely.

Signia addressed this issue last year:

...medical device manufacturers like Signia are committed to removing the risk of hacking. Through secure wireless technology and encryptions, you can be confident your Signia hearing aids work as intended, have a high level of cybersecurity, and remain out of hackers' reach.

The advice we've received from Phonak is:

The hearing aids do not use WiFi, so hacking using this connection is not possible. The hearing aids are discoverable via Bluetooth for 3 minutes after switch on so it is possible for others to connect to them during this period if within physical range and if they aren't actively connected to the device.

What you can do about security

Phonak has sensible advice to keep your hearing aids secure - and the same general advice applies to any of your WIFI and Bluetooth devices, regardless of type or manufacturer:

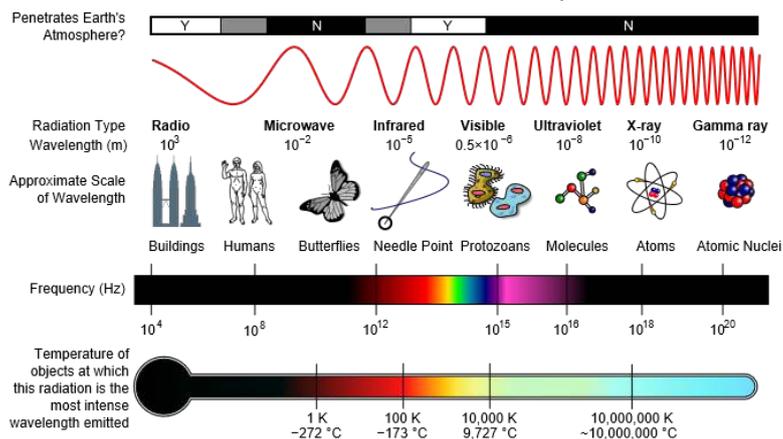
- Avoid rebooting Marvel devices in public areas (as hearing aids are discoverable via Bluetooth for 3 minutes after switch on)
- Maintain an active connection with a personal Bluetooth enabled device when in public. As the Marvel devices only have one connection slot, this will mitigate other people detecting and connecting to the device.
- Activate flight mode on the device if Bluetooth is not being used. To activate flight mode, press lower program button and switch device on, hold button for 7 seconds and release)

Bluetooth and Radiation

Some people are concerned about mobile phone radiation and have similar concerns about Bluetooth.

Radiation is transmission of energy from a source which travels in the form of waves or particles.

We are exposed to radiation in one form or another each and every day - the biggest, most obvious source of radiation exposure is the sun.



Bluetooth signals are low frequency and travel over a limited distance (about 10 metres), any radiation emitted is actually far less than your mobile phone which has to send stronger signals much further away.

According to the US Federal Communications Commission, there is currently [no scientific evidence that establishes a causal link](#) between wireless device use and cancer or other illnesses.

Despite confirming that there is no evidence to suggest that mobile phones can cause cancer, The [Centers for Disease Control](#) in the United States recommends people concerned about radiation exposure from their phones to use a wireless device (like Bluetooth) to keep the phone away from your head.

If you're interested in discovering more about Bluetooth and radiation, we've found a well-written and accessible article [here](#).

Discover everything you need to know about hearing aids - absolutely FREE!

New edition out March 29, 2019

- How Can You Tell If You Have Hearing Loss?
- How Do You Know If You Need Hearing Aids?
- Preparing to Buy Hearing Aids
- Choosing A Hearing Care Professional
- Where To Find A Good Audiologist
- What To Ask When Making Your Appointment
- What Makes A Good Audiologist for YOU
- What To Expect From A Hearing Assessment
- What Information Should You Expect
- Types of Hearing Aids & How They Work
- Overview of Hearing Aid Brands in Australia
- What you Should Expect From The Hearing Specialist Recommendations
- Hearing Aid Fitting Appointments
- Getting Used To Wearing Hearing Aids
- Care of your Hearing Aids

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Christo Fourie, Clinical Audiologist

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