

# Phonak

## Q&A

### S3-2018: Roger for young children

This Question and Answer (Q&A) document is meant to provide guidance on important aspects of Roger, such as general questions, transmission, compatibility and costs.

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#### Introduction

Roger remains the digital standard in wireless communication and is fully compatible with practically every hearing aid, BAHA and cochlear implant that young children use today. All Roger microphones utilize wireless transmission, a proprietary 2.4 GHz protocol to help improve a young child's speech understanding in noise and over distance. Roger is the only wireless microphone technology that is adaptive and adjusts automatically based on ambient noise level. Additionally, multiple microphones can be used together when there's more than one person speaking to a child (e.g., parents and therapist during a BabyBeats™ early intervention session). Simply put, Roger is a young child's best friend, improving access to caregiver speech and helping ensure a language-rich environment for a growing brain.

## General questions

### **Q: When was Roger introduced to the market?**

A: Roger was first launched in 2013 and remains the digital standard in wireless communication.

### **Q: Are digital hearing aids not enough?**

A: Some feel that because digital hearing aids have improved sound quality and reduced background noise, a personal wireless microphone system might not be needed. However, a Roger system still offers many advantages over digital hearing aids alone. These include reducing the effects of reverberation (echo) and helping to overcome the effects of distance between the speaker and the hearing impaired listener. There are many situations where young children are at a distance from parents (e.g., in the back seat of a car during drives to preschool, at a park when running around with other little ones) and can fully benefit from the addition of Roger.

### **Q: If a child wears two hearing aids, should he/she wear two Roger receivers?**

A: Yes, we recommend two receivers for the best understanding. We know that listening with both ears brings the greatest benefit. Previous studies have shown up to a 3dB improvement in SNR when listening with hearing aids/CIs and binaural receivers compared to listening with hearing aids/CIs and only a monaural receiver..

For more information:

[https://www.phonakpro.com/content/dam/phonakpro/gc\\_hq/en/resources/evidence/journal\\_articles/documents/ACCESS\\_Chapter\\_2\\_Michael\\_Valente.pdf](https://www.phonakpro.com/content/dam/phonakpro/gc_hq/en/resources/evidence/journal_articles/documents/ACCESS_Chapter_2_Michael_Valente.pdf)

[https://www.phonakpro.com/content/dam/phonakpro/gc\\_hq/en/events/2010/latin\\_american\\_pediatric\\_conference\\_santiago/Dr\\_Erin\\_Schafer.pdf](https://www.phonakpro.com/content/dam/phonakpro/gc_hq/en/events/2010/latin_american_pediatric_conference_santiago/Dr_Erin_Schafer.pdf)

### **Q: At what age should a child start using Roger technology?**

A: Wireless microphone technology can play a valuable role in improving a child's access to speech from an early age, which is crucial for their speech and language development. Many experts recommend introducing such systems once a child becomes mobile, and some professionals recommend Roger immediately regardless of the age of a child.

## Transmission

### **Q: Some Wi-Fi routers switch to 5 GHz bands as they encounter interference in the 2.4 GHz band (since nowadays more and more devices operate in this frequency band). Are Roger networks at risk of encountering the same interference?**

A: The proprietary 2.4 GHz protocol ("frequency hopping") of Roger does not encounter such issues, therefore a Roger network cannot be affected by Wi-Fi. This means surfing on the internet while using a Roger system does not impact the audio signal at all. However, regular 2.4 GHz networks are not that robust. A Wi-Fi network, for example, can temporarily be reduced if a Roger microphone is closer than 1m / 3feet to an 802.11g Wi-Fi access point.

### **Q: Why is the proprietary 2.4 GHz protocol of Roger?**

A: Roger is an adaptive digital wireless transmission technology running on the 2.4 GHz band. Audio signals are digitized and packaged in very short (160  $\mu$ s) digital bursts of codes (packets) and broadcast several times, each at different channels between 2.4000 and 2.4835 GHz. Frequency hopping between channels, in combination with repeated broadcast, avoids interference issues. End-to-end (transmitter to hearing aid receiver) audio delay is about 22 ms, and Roger systems are tap-proof.

Roger employs adaptive frequency hopping, which means only free channels are used. Roger receivers regularly talk back to the transmitting wireless microphones, informing the system about which channels are steadily occupied (by any other nearby system operating at 2.4 GHz, like a WiFi network) and which channels are free. The Roger wireless microphone then automatically 'hops' around these occupied channels. The Roger wireless microphones can also sense the presence of a WiFi network and respond to this accordingly.

For more information:

[https://www.phonakpro.com/content/dam/phonakpro/gc\\_hq/en/resources/evidence/white\\_paper/documents/Insight\\_Roger\\_new\\_wireless\\_Technology\\_028-0955.pdf](https://www.phonakpro.com/content/dam/phonakpro/gc_hq/en/resources/evidence/white_paper/documents/Insight_Roger_new_wireless_Technology_028-0955.pdf)

**Q: Since Roger is constantly changing to free channels to eliminate any risk of interference. How does that affect the power consumption?**

A: Power consumption is well within reasonable limits, both for Roger wireless microphones and for Roger receivers. A fully charged Roger wireless microphone battery will last up to 10 hours when operating in dual transmission mode; easily long enough to cover a young child's day (and later when the same child starts school, will easily cover a full school day). Roger miniaturized ear-level receivers in active mode consume around 3 mA. This can normally be supplied by a hearing aid battery without problems.

**Q: How is Bluetooth® different to 2.4 GHz?**

A: Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz) from fixed and mobile devices, and building personal area networks (PANs). <https://en.wikipedia.org/wiki/Bluetooth#Implementation> Therefore Bluetooth, '2.4 GHz' and Roger operate in the same bandwidth, however, with different protocols that allow different features and create different limitations (e.g., interference, power consumption, range).

**Q: How is Roger technology different than Bluetooth technology?**

A: While Bluetooth operates on the same frequency band as Roger, it uses a different protocol and is therefore not compatible. It also differs in the following ways:

- Roger can provide a range of 20 m while Bluetooth is typically limited to about 10m with low power devices.
- Roger can broadcast to an unlimited number of receivers while Bluetooth supports up to 3 receivers only.
- Roger uses broadcast while Bluetooth uses bi-directional links.
- Roger is designed for reaching a minimal current consumption at the miniaturized receivers, at the expense of a higher current consumption at the transmitter side (where the battery can be larger).
- Roger is designed for reaching a minimal audio delay, reaching a delay of only 25ms. A typical audio streaming delay is around 200ms with Bluetooth A2DP, while an customized A2DP streaming solution can reach down to about 60ms.

**Q: Is it possible to mix audio from a Multimedia Hub with voice transmitted from the Roger Touchscreen Mic??**

A: Yes, Roger is the only system that provides this feature.

## Compatibility

**Q: Are all cochlear implants compatible with Roger?**

A: Yes. Design-integrated and universal Roger receivers are available. There is a solution for virtually every listener, regardless of the hearing technology your young client uses.

- Design-integrated receivers are available for Phonak hearing aids and CI sound processors from Advanced Bionics, Cochlear and MED-EL.
- The miniature universal Roger X receiver can be attached to an audio shoe or streamer regardless of the manufacturer.
- The universal neckloop receiver Roger MyLink is compatible with any hearing aid or CI sound processor that has a T-Coil.

**Q: Can Roger be used with the ReSound MultiMic?**

A: Yes. The Roger X can be plugged into the 3-pin Euro plug on the MultiMic. There is no need to program a specific profile as Roger X (02) is delivered from the factory with the "automatic" CI profile (factory settings). . \*\*The adaptive behavior of Roger X is limited by the gain model of the ReSound MultiMic when a Roger X is plugged into the ReSound MultiMic.

## Competition

**Q: Competition reps use Jace Wolfe's results to show a limited benefit from Roger compared to ReSound MultiMic.**

**How to reply?**

A: It's important to remember, the results from Jace Wolfe study with Cochlear show limited benefit due to the signal processing of the Cochlear Nucleus implant. His results show that Roger outperforms the MultiMic for hearing aid users. For more information: [View Jace Wolfe's talk at the Sound Foundations conference in Atlanta in 2016.](#) (Scroll down to Session III: Topic 3 "Hear well or hear say")

**Q: ReSound published a white paper that says it provides the same benefits in noise as Roger. Is this true?**

A: No. ReSound Multi Mic has no voice activity detection and no voice-off function so in noisy situations, when the talker is not speaking, the system keeps transmitting noise to the user. You can find the White paper on [Digimind](#).

**Q: Up to 3 devices can be paired to Resound hearing aids with one set of pediatric hearing aids. Does this mean the MultiMic offers a MultiTalker network?**

A: No. It's true that ReSound hearing aids can be paired to a total of three streaming devices but only one MultiMic can be used at a time.(e.g., 1 ReSound MultiMic and 2 TV streamers). It does not allow for multiple microphones to be used at the same time.

**Q: Isn't the table mode for the MultiMic equivalent to the Small Group mode?**

A: No. The Resound MultiMic features a table mode with an omni microphone mode.

Phonak MultiBeam technology features advanced automatic functionality to focus and pick up the speakers in a group exclusively.

**Q: Isn't Oticon's ConnectClip a nice solution for young children?**

A: As per Oticon's booklet on instructions for use; the Connect clip is intended to be used by children (> 36 months old) and adults together with their hearing solution.

<https://www.oticon.com/-/media/oticon-us/main/download-center/connectclip/ifu/178672usifu24gconnectclip.pdf>

## Costs

**Q: Don't all remote microphones ultimately provide the same benefit? Why is Roger so much more expensive, while the MultiMic is free?**

A: Roger is very different to other wireless microphones on the market. It's proprietary, robust transmission and adaptive behavior provides unparalleled speech discrimination performance over distance and in dynamic, noisy environments.

Dr. Jace Wolfe has done intensive research in the field of remote microphone technology. His findings confirm that Roger performance is unmatched. Unlike the competition, Roger can be used with multiple microphones in a Roger network, allowing multiple caregivers (e.g. parents, grandparents, siblings, friends) and multimedia devices to broadcast to young listeners. This unique MultiTalker Network, the automatic microphones modes, the audio input, the Bluetooth connectivity and many other features ensure the real-life listening needs of even our youngest customers are met.

Roger is the right solution for young children and will continue to benefit them as they grow because Roger devices can be customized to meet their changing needs. Roger is fully compatible to other hearing instruments and extendable when their needs do change.

It is easy to use, reliable and safe, however, it is the outstanding performance, the universal compatibility and the flexibility that has kept Roger the gold standard in our industry since 2013. If you want your youngest clients to have increased access to caregiver speech in every listening environment, you must consider Roger.