2.4 GHz Accessories: Enhancing the patient experience

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Starkey Hearing Technologies recently introduced a new line of sleek and simple accessories that provide patients increased control and customization of their listening experiences. The Starkey Hearing Technologies TV, Remote Microphone +, Remote, and Thrive™ Hearing Control app are compatible with the Livio™ AI and Livio hearing aids. With intuitive and user-friendly interfaces, these accessories provide a seamless wireless experience in environments where hearing-impaired individuals struggle most. Additionally, connecting accessories with Livio AI and Livio hearing aids is quick and easy, allowing pairing both within and outside of Inspire®.

STARKEY HEARING TECHNOLOGIES TV

Starkey Hearing Technologies TV (Figure 1) streams audio directly from a television to Livio AI or Livio hearing aids all while providing exceptional sound quality and a streaming range up to 50 feet. Connecting to a television using the available Optical TOSLINK jack or Analog jack located on the rear of the device, the TV device can stream to multiple people at one time, eliminating the need for multiple TV devices. Volume adjustments can be conveniently made using the Thrive Hearing Control app, Starkey Hearing Technologies Remote, hearing aid user controls, or by using the volume control buttons on the TV device itself.

STARKEY HEARING TECHNOLOGIES REMOTE MICROPHONE +

Starkey Hearing Technologies Remote Microphone + (Figure 2) is a multi-functional accessory, providing patients with a simple hearing solution for a variety of difficult listening environments. Designed to operate for up to 10 hours and reaching a fully charged state within three hours, the Remote Microphone + also benefits hearing professionals, as one product provides various solutions for their diverse and unique patient populations. The Input Mode button allows patients to easily receive audio input from the remote microphone feature, a Bluetooth®-enabled device, a Teleloop system, an FM system, or a non-Bluetooth-enabled device using the line-in mode. Integrated volume controls allow a patient to quickly adjust the audio stream volume.
Based on its orientation, the remote microphone feature automatically optimizes environmental sounds so the patient can hear what they are most interested in within an optimal streaming range of about 60 feet. When worn by a speaker in the vertical position, the Remote Microphone + focuses on the speaker’s voice and reduces background noise. When placed horizontally (e.g. on a tabletop), the Remote Microphone + gathers sound from every direction.

Compatible with Apple®, Android™, and most Bluetooth-enabled mobile phones, the Remote Microphone + can stream phone calls and other audio (e.g. music) directly to Livio AI or Livio hearing aids. When connected via Bluetooth to a mobile phone, the patient can easily accept, reject or end a phone call using the multi-function button. When on a phone call, the caller on the other end is heard directly through the hearing aids and the Remote Microphone + transmits the patient’s voice back to the caller, resulting in a hands-free experience. For patients with multiple Bluetooth-enabled devices, the Remote Microphone + allows pairing with up to eight devices, supporting two connections at a time.

The Teleloop feature receives audio from environments that have an active teleloop system. The FM system functionality is available when an FM receiver is attached. For audio sources without Bluetooth, a line-in cable can directly attach the Remote Microphone + to an electronic audio source and stream audio directly to the hearing aids.

**STARKEY HEARING TECHNOLOGIES REMOTE**

The Starkey Hearing Technologies Remote (Figure 3) includes the same intuitive and familiar design patients are accustomed to; providing a discreet and simple way to make hearing aid adjustments. New functionality includes the ability to start or stop audio streaming and adjust the audio streaming volume from a Starkey Hearing Technologies TV or Remote Microphone +.

**THRIVE HEARING CONTROL APP**

Building upon the foundation of Starkey’s TruLink app, the Thrive Hearing Control app enhances the patient experience by allowing them to adjust the streaming volume as well as start or stop a stream from a Starkey Hearing Technologies TV or Remote Microphone +. With up to five streaming accessories able to be paired to Livio AI or Livio hearing aids, multiple streaming devices can easily be managed by a patient, allowing the ability to re-name accessories for ease of selection. If being paired to an accessory is no longer desired, a patient can easily un-pair their hearing aids within the app.
**CLINICAL VALIDATION**

During the development process, Starkey Hearing Technologies conducted a validation study to ensure our accessories met patient needs. Sixty-eight participants (42 males and 26 females) with an age range of 26 to 82 years (mean age of 63.5 years old) were fit with Livio AI hearing aids and at least one Starkey Hearing Technologies accessory for a period of six to eight weeks. All participants had, on average, a symmetrical bilateral mild-to-severe sensorineural hearing loss. They were fit with various styles of Livio AI hearing aids, programmed to Starkey’s proprietary fitting formula e-STAT [Scheller & Rosenthal, 2012], with venting appropriate for their hearing losses. The functionality of each accessory was discussed with participants during the initial hearing aid fitting, and they selected the accessory(s) which best fit their lifestyles. Over three, two-week field trials, participants were asked to use the products in their day-to-day lives. They completed subjective questionnaires focusing on streaming sound quality, speech understanding while streaming, user controls, and cosmetic appeal of the Remote Microphone + and TV device.

Ratings of sound quality and speech understanding while streaming with their iPhone®, Remote Microphone +, or TV device were evaluated using a five-point Likert scale ranging from “very poor” to “very good” with the majority of participants providing ratings of “good” to “very good” (Figures 4 & 5). Ratings of ease of use of the user controls on the TV device and Remote Microphone + were evaluated using a five-point Likert scale ranging from “very difficult” to “very easy,” with most of the participants rating the user controls as “easy” or “very easy” to use. Cosmetic appeal was evaluated using an 11-point scale ranging from 0 (“poor”) to 10 (“excellent”), with the majority of participants providing a rating of eight or higher (Figure 6). Below are comments from participants when they were asked what they liked most about the Remote Microphone + and TV device.
CONCLUSION
The comprehensive 2.4 GHz accessory product line further enhances a patient’s hearing aid experience, including easy-to-use functionality and excellent audio streaming sound quality. Clinical validation results confirm the patient-driven design and benefits. The Starkey Hearing Technologies TV allows patients to watch their favorite television programs without disturbing others. The Remote Microphone + improves communication in the most difficult environments by streaming live voice, phone calls, and Bluetooth audio directly to a patient’s hearing aids. The Remote and Thrive Hearing Control app assist in making discreet hearing aid adjustments. Creating innovative technology is at the forefront of what Starkey Hearing Technologies continues to do, and with the welcome introduction of 2.4 GHz accessories, patients can remain connected and engaged with their worlds like never before.

REFERENCES