

## RESOUND ALERA™ AND THE UNITE WIRELESS ACCESSORIES – CONNECTING THE HEARING INSTRUMENT USER TO THE WORLD

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### ABSTRACT

ReSound recognizes that the hearing needs of the hearing instrument user extend far beyond the everyday one-on-one conversation or group discussion. Wireless technology has connected hearing instruments to various accessories for the past few years, but never in a package that offers outstanding sound quality combined with a robust, strong signal. The ReSound Unite™ wireless accessory package was designed to deliver the best in wireless technology to the hearing professional and the hearing aid user: a robust connection to the world. The robust connection, easy to use accessories and discreet, far-reaching connectivity with the fitting software and accessories are made possible through the ReSound Range™ hearing aid chip and use of 2.4GHz wireless technology. The ReSound Unite™ package includes the Unite TV Streamer for connectivity to televisions and other audio sources, the Unite Phone Clip for mobile phone use, the Remote Control for easy operation of the ReSound Alera™ hearing instruments, and the AirLink™ for truly wireless fitting.

In today's fast-paced lifestyles, we are surrounded by technology—technology that connects us to others, to information and to entertainment. ReSound recognizes that the hearing needs of the hearing instrument user extend far beyond the everyday one-on-one conversation or group discussion. People need to hear and interact well with mobile telephones and understand the rapidly changing news stories of the day, while reserving time to relax and enjoy personal music devices. Wireless technology has connected hearing instruments to various accessories for the past few years, but never in a package that offers outstanding sound quality combined with a robust, strong signal. However, a wireless technology package that offers both of these advantages is now available—the ReSound Alera wireless instruments and ReSound Unite wireless accessories.

### WHY WIRELESS MATTERS – MARKET RESEARCH

In developing this wireless technology package, a great deal of attention was directed towards common perceptions and expectations of wireless technology among end users and hearing professionals. Market

research studies revealed interesting viewpoints among the two groups, and highlighted ways in which wireless technology can significantly improve the hearing instrument user's listening experience and connection with the world.

The first set of research was conducted via in-depth phone interviews and focus groups with end users from France, Germany and the United States in July, 2009.<sup>1</sup> Participants reported difficulties hearing the TV at a level that was comfortable for others in the room. They indicated that a TV solution should also allow them to carry on a conversation with others in the room at the same time. Respondents reported that phone use continues to be problematic, as it is not loud enough to hear clearly without feedback. Certain individuals asserted that a remote control would be convenient for monitoring the status and current settings (e.g., volume level and program selection), as it is sometimes difficult to determine the default mode when the device is behind or on the ear. Ultimately, many respondents indicated that they would prefer having control over what they hear, and thereby over the hearing aids. They agreed that they would want the most natural listening experience as

possible—one that would not isolate them from other people or from technology such as phones, TVs and other audio sources.

ReSound also sought the hearing professional's perspective when planning for wireless technology development. Dispensers of hearing instruments noted problems with current wireless technology, such as discrepancies between the image and the sound of wirelessly streamed television programming. They were frustrated with connection problems and limited coverage. They also indicated they would prefer to eliminate conspicuous external devices to link the hearing aids to the computer, such as fitting cables. They wanted wireless technology that would be stable, reliable and fast for their patients, with accessories that are versatile and simple to use.

Further research with over 450 hearing care professionals in the United States, France and Germany was conducted via telephone in January, 2010.<sup>2</sup> Participants all indicated that they had sold at least one wireless hearing instrument in the past six months. Most of the hearing professionals had been in practice at least ten years. On average, 60% of the fittings included wireless features, with the highest percentage in France (85%). Ninety percent of all hearing professionals were pleased with wireless hearing instruments. Wireless hearing instruments accessories were favorably regarded by 75% overall, with the greatest favor from the European hearing professionals.

Seventy percent of hearing professionals indicated the patients they have fitted with wireless hearing instruments are more satisfied than those fitted with non-wireless (Figure 1). In the US, hearing professionals reported most of patients fit with wireless hearing instruments are in younger (<65) age groups, while those in France and Germany are significantly more likely to be over age 70. The study found that US and German hearing professionals perceive higher cell phone use among patients to be correlated with wireless hearing instrument fittings. Further, these hearing professionals perceived patients fitted

with wireless technology to be more active users of new technology than patients fitted with non-wireless technology. Finally, about 60% of US and German hearing professionals felt their wireless hearing instrument patients are much more socially active than those with non-wireless devices. Return rates among hearing professionals were judged to be similar between patients fitted with wireless and non-wireless hearing instruments.

Future expectations for wireless fittings were high for US hearing professionals, with 60% predicting an increase in this type of fittings over the next six months. Those in France and Germany expected the demand to remain about the same over that time period. Overall, a 29% increase in demand was expected within the next six months. The most desired improvements to wireless

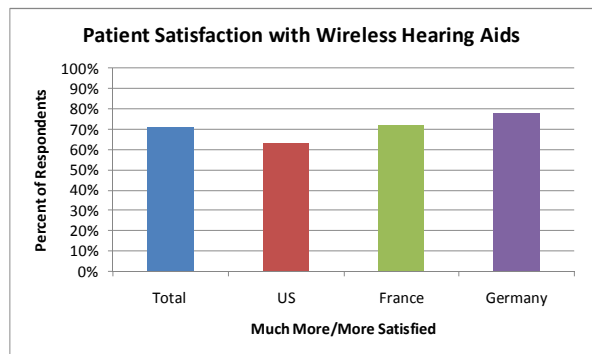


Figure 1. Satisfaction with wireless hearing instruments compared to non-wireless.

hearing instrument technology to improve sales were TV and mobile phone accessories. Remote control improvements were especially desired by the American hearing professionals. Effective wireless fitting in the clinic without the need for a third device around the patient's neck was desired by about 60% of hearing professionals, mostly in the US.

Overall, the general consensus among both end users and hearing professionals was that hearing well on the phone and enjoying television viewing with others would be much-desired improvements in hearing instrument technology. The technology should be as inconspicuous as possible, to

allow the hearing aid user to enjoy listening experiences in the most natural way. Better hearing through the marriage of hearing instrument and wireless technology should connect people to their world, not isolate them further by imposing unrealistic distance restrictions and requiring the use of large linking accessories. Fittings should be made more effortless through direct connection between the fitting software and the hearing instruments, without the need for cables or a third device. Thus, ReSound's Unite wireless accessory package was designed to deliver the best in wireless technology to the hearing professional and the hearing instrument user: a robust connection to the world.

## 2.4 GHZ WIRELESS TECHNOLOGY

The benefits of the ReSound Unite wireless technology include a robust connection, easy to use accessories and discreet connectivity with the fitting software and accessories. These benefits are made possible through the ReSound Range™ hearing aid chip and use of 2.4GHz wireless technology. As the only hearing instrument manufacturer to incorporate this type of wireless technology in our products, we are able to transmit the signal over longer distances, up to 7 meters. Use of this technology limits interference from other devices and allows for a smaller antenna. Finally, there is no need for a bulky device to connect the hearing aids to the fitting software. All that is required to connect the devices to the fitting software is a fitting accessory, called the AirLink, which is inserted into a USB port of the computer (Figure 2). This technology, though new to hearing aids, has been proven in the gaming industry and in the use of wireless keyboards. The benefits that translate to the hearing aid user include improved clarity of wirelessly-transmitted sound, reliable wireless connections, smaller devices and elimination of echo and lip sync issues when watching television or listening to other audio sources.



Figure 2. The Airlink fitting accessory

## RESOUND UNITE ACCESSORY LINE

The ReSound Unite is a package of wireless accessories with one goal in mind: to connect the hearing aid user to the technology around them. Audio can be directly streamed from the television, computer or stereo to the hearing aids via the Unite TV Streamer. The Unite Phone Clip attaches to the mobile phone. The remote control allows users to access the technology they choose in a simple manner, while monitoring the status of their hearing instruments.



Figure 3. The ReSound Unite TV Streamer

The Unite TV Streamer, shown in Figure 3, is a small device that plugs into the back of the TV, computer, stereo, or other audio source. This unique device allows for the fastest audio streaming available on the market to date. Research has shown that audio streaming delays exceeding 30 ms will result in noticeable differences between the streamed and the direct signal. Delays of 80ms or more will further distort the user's experience, as mismatches between audio and visual

# ReSound Alera™

information will result. The Unite TV Streamer's speed of 18ms ensures no echo or lip sync issues will disrupt or distort the viewing experience for the user. Since the Unite TV Streamer plugs directly into the television or other audio source such as a DVD player or stereo receiver, there is no need to wear anything around the neck or on the person. Hearing aid users can walk freely around the room up to 7 meters from the television and enjoy amplified sound directly through the hearing aids. They can participate in conversations as well as listening to the TV, all just by wearing their ReSound Alera hearing instruments.



Figure 4. The ReSound Unite Phone Clip

The Unite Phone Clip (Figure 4) is a small device that links the mobile phone to the hearing aids through Bluetooth technology. Introduced in 1994, Bluetooth technology involves low-noise radio transmission that is digitally controlled.<sup>3,4</sup> Operating around the 2.45 GHz radio frequency, it is usually used to connect digital devices in relatively close proximity<sup>5,6</sup>, and has become the standard for wireless mobile phone headsets. Around the size of a matchbook or brooch, the Unite phone clip can be affixed to the clothing or worn in a pocket, eliminating the need for a bulky accessory to wear close to the head. Alternately, it can be clipped to the sunshade in the car for hands-free mobile phone use. Users can enjoy clear speech on the phone through wireless connectivity to the hearing instruments.



Figure 5. The ReSound Unite Remote Control

The Unite Remote Control (Figure 5) affords elegant operation and manipulation of the hearing instruments. Its easy-to-use key pad allows the hearing aid user to change programs or the volume on the hearing aid, which grants greater access to small hearing instrument technology to individuals with manual dexterity difficulties. The display window allows the user to monitor the status of the hearing instruments. The Unite Remote Control also serves as a device to link the hearing aids to the phone or the TV for streaming.

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