

Product Comparison Chart

FEATURE	COCHLEAR™ NUCLEUS® FREEDOM™ SOUND PROCESSOR	COCHLEAR™ NUCLEUS® 5 SOUND PROCESSOR	COCHLEAR™ NUCLEUS® 6 SOUND PROCESSOR	COCHLEAR™ NUCLEUS® KANSO™ SOUND PROCESSOR	WHY IT MATTERS
Year Introduced	2005	2009	2013	2016	
Size	Small SP12 with 3 zinc air standard controller	Smaller 24% Smaller than the Freedom with standard disposable batteries	Smallest 41% smaller than the Nucleus Freedom 22% smaller than the Nucleus 5 with Standard Disposable Battery	Smallest off-the-ear sound processor available ^{3,4}	The Nucleus 6 Sound Processor is smaller than its predecessors and its modular design stays comfortably in place and can fit children as well as adults. In fact, the Nucleus 6 Sound Processor is almost 41% smaller than the Nucleus Freedom Sound Processor ¹ and 22% smaller than the Nucleus 5 Sound Processor. ² The Kanso Sound Processor is the smallest off-the-ear sound processor available. ^{3,4} It is designed to fit against the curvature of your head for added comfort, security, and peace of mind. The Kanso Sound Processor combines the essential modular components of a behind-the-ear sound processor into a singular, all-encompassing design so you have less parts to care for like coils and cables.
Weight	Average	Lighter	Lightest Behind-the-Ear Sound Processor 24% Lighter than the Nucleus Freedom with 3 Zinc Air Batteries	Lightest Off-The-Ear Sound Processor	The Nucleus 6 Sound Processor is light and has a low profile designed for a more comfortable fit behind the ear. In fact, the Nucleus 6 Sound Processor is 24% lighter than the Nucleus Freedom Sound Processor. ¹ The Kanso Sound Processor is the lightest off-the-ear sound processor available. ^{3,4} It also removes the weight completely from your ear for added comfort. It is especially an advantageous wearing option when wearing glasses.
Next-Generation Microchip	No	No	Yes	Yes	At the heart of the Nucleus 6 and Kanso Sound Processors is a microchip with five times the processing power as the industry-leading Nucleus 5 Sound Processor. The extra power supports the latest breakthroughs such as data logging and True Wireless™ technology. Our Nucleus Implants are designed to last a lifetime with a flexible architecture and power to allow for future sound processor upgradeability. ⁵
Choice of Different Size Sound Processor Units	No	No	Yes	No	Upgrading to Nucleus 6 opens up two options to accommodate the way you live: namely, the CP910 Sound Processing Unit with direct audio input and the smaller CP920 Sound Processing Unit. The CP910, CP920, and Kanso (CP950) Sound Processors come with enhanced tactile controls, improved coil profile, LED indicators, built-in 2.4GHz wireless technology, and other design features Implant recipients value.
Total Cost of Ownership	Standard	Standard	Lower 25% less than Nucleus 5	Lower	After your initial investment in the upgraded system, you will start seeing the long-term advantages of reduced costs for accessories, maintenance and replacement supplies, such as microphone protectors and rechargeable batteries. ⁶ The Kanso Sound Processor does not have a modular design like the Nucleus 6 Sound Processor, which may save on coil and cable replacement costs in the future.
Data Logging	No	No	Yes	Yes	Life moves so fast, it's hard enough to recall everything that happened yesterday, let alone last month. Data logging does it automatically by recording exactly how your sound processor is being used every day. Your audiologist gets a more complete picture of your hearing experiences without gaps or guesswork. From now on, adjustments can be truly evidence-based.
Water Resistance Rating	IP44	IP44 (with disposable batteries) and IP57 (with rechargeable batteries)	IP44 (with disposable batteries) and IP57 (with rechargeable batteries)	IP54	With its new water repellent nano coating, you can relax around water and be confident your system is protected. The Nucleus 6 with disposable batteries has an IP44 water resistance rating. ⁷ When using rechargeable batteries, the Nucleus 6 Sound Processor has an IP57 rating to withstand sweat, rain, or splashes of water. ⁸ The Kanso Sound Processor has an IP54 water resistance rating. Both ratings give you full confidence in rain, splashes of water and sweat. ⁹
Water Resistance Rating with Cochlear™ Nucleus® Aqua+	Aqua+ Not Compatible	Yes	Yes	Yes	You can expand your water fun even further when you add the Cochlear™ Nucleus® Aqua+ to your Nucleus 6 ¹⁰ or Kanso Sound Processor. ¹¹ With this transparent enclosure, the level of moisture protection increases to IP68. The Aqua+ opens up a whole world of water activities such as swimming underwater, surfing the waves, taking a shower, and many more.
Auto-FM	No	No	Yes	No	Children in a classroom and adults who prefer the extra comfort of assistive technology will appreciate the sensitivity of the Nucleus 6 Sound Processor to switch automatically to FM when it detects an FM system in the classroom or conference room. When the teacher or lecturer finishes talking through the FM system, the sound processor will automatically revert to the default program as set by the clinician. The Kanso Sound Processor can connect to an FM System through the Mini Microphone 2+, which will stream audio directly from the FM transmitter.
Auto On	No	No	Yes	Yes	The Nucleus 6 and Kanso Sound Processors turn On automatically when you insert a battery and Off when separated from your implant for more than 2 minutes. This feature is designed to conserve your battery charge and offer you convenience.
Auto-Telecoil	No	Yes	Yes	No	The Nucleus 6 Sound Processor automatically switch the built-in telecoil On when you place the phone over your sound processor to give you safe, hands-free mobility through a Bluetooth™ headset. The telecoil also automatically links with FM Neckloops and room loop systems.
Wireless Phone Use Options	Manual Telecoil	Dual Microphones Auto-Telecoil	Cochlear Wireless Phone Clip	Cochlear Wireless Phone Clip	Easy access to the phone is critical in this mobile age, and you will want a variety of options to meet your individual needs. The Wireless Phone Clip allows you to stream phone calls directly to your sound processor. You can answer and adjust the volume just by pushing a button. The same goes for all Bluetooth™ enabled devices and MP3 music players.
Dual Microphone Technology	Yes, Rear Microphone is Omnidirectional only in certain settings Front Microphone is Directional	Yes, Both rear and front microphones are calibrated and omnidirectional	Yes, Both rear and front microphones are calibrated and omnidirectional all the time	Yes, both left and right microphones are calibrated and omnidirectional all the time	Calibrated, omnidirectional microphones serve as an enhanced suite of directionality for improved listening in noise. Dual microphones allow the sound processor to determine where sounds are coming from. Using this information, the sound processor can block competing sounds from the back and sides, allowing you to focus on the sounds from the front.
Input Processing	SmartSound Technology	SmartSound Technology	SmartSound IQ Technology	SmartSound IQ Technology	Input processing is designed to deliver the best signal to the implant.
Input Processing Generation	I	II	III	III	Input processing algorithms are refined and improved in each new generation with the Nucleus 6 and Kanso Sound Processors poised to be the most advanced ever.
Hearing Performance	SmartSound® Technology One Omnidirectional and One Directional Microphone	SmartSound® 2 Technology Dual Omnidirectional Microphones	SmartSound® IQ Technology Dual Omnidirectional Microphones	SmartSound® IQ Technology Dual Omnidirectional Microphones	The Nucleus 6 and Kanso Sound Processors feature breakthrough performance with the latest in microchip technology. With 5X the processing power of the industry leading Nucleus 5, the new chip provides the platform for a vast array of technologies designed to improve your hearing experience. The Nucleus 6 and Kanso Sound Processors automatically adapt to ensure that you hear your personal best in any environment. SmartSound IQ ¹³ filters out background noise and optimizes your hearing experience by focusing on sounds that are most important to you. Recent research studies show that people who have upgraded to the Nucleus 6 demonstrated a remarkable improvement in their understanding of sentences, with individual increases up to 77%. ^{14,15}
Remote Control Options	None	One Bi-Directional CR110 Remote Assistant	Two Bi-Directional CR210 Remote Control CR230 Remote Assistant	Two Bi-Directional CR210 Remote Control CR230 Remote Assistant	Simple control: The discreet, pocket size CR210 Remote Control has a handy display that allows you to make simple adjustments to settings, such as volume, sensitivity and telecoil without touching your sound processor. Advanced monitoring: The full-featured CR230 Remote Assistant with intuitive design and a full-color display maximizes your monitoring and management of your hearing.
Simultaneous Remote Control for Bilateral Implant Recipients	No	Yes CR110	Yes CR210 and CR230	Yes CR210 and CR230	Controlling both the left and right sound processor simultaneously is more convenient than making changes to each side independently.
Color Options	6 Colors	5 Colors	5 Colors	8 Colors	The Nucleus 6 Sound Processor not only comes in five different colors, but also offers sound processor and coil covers in 12 bright colors and patterns. The Kanso Sound Processor comes with eight different colors to match your hairstyle and skin color.
True Wireless	Telecoil or MicroLink only	Euro Pin or Telecoil only	3rd Generation – Telecoil or Euro Pin Direct to Processor: Mini Microphone 2/2+, Phone Clip, TV Streamer	3rd Generation – Telecoil ¹² or Euro Pin Direct to Processor: Mini Microphone 2/2+, Phone Clip, TV Streamer	The Nucleus 6 and Kanso Sound Processors are equipped with the same 2.4 GHz wireless technology you'll find in Bluetooth™ and other truly wireless devices. You'll hear conversations, phone calls and even the TV straight from the source. Make ample use of Bluetooth-enabled music players or hearing aids without wires, headphones or other gadgets dangling from your neck. Audio signals from your TV, stereo and GPS will be channeled right into your sound processor, much like an extra speaker. The Wireless Mini Microphone 2/2+ may improve sentence recognition by as much as 50-60%. ¹⁶

1. When comparing the CP920 with Compact Battery configuration with the Nucleus Freedom Sound Processor with the 3-zinc air Standard Controller.

2. When comparing the CP920 with Compact Battery configuration with the Nucleus 5 Sound Processor with Standard Disposable Battery configuration.

3. See Kanso Sound Processor User Guide for technical specifications.

4. MED-EL Medical Electronics. RONDO User Manual. Last accessed July 2016. Available at: <http://www.medel.com/int/rondo>.

5. The Nucleus 6 Sound Processor is compatible with the Nucleus 22 (N22), Nucleus 24 System (N24), Nucleus Freedom (CI24RE) and Nucleus 5 System (CI422 and CI500 Series) Implants. The Kanso Sound Processor is compatible with the Nucleus 24 System (N24), Nucleus Freedom (CI24RE) and Nucleus 5 System (CI422 and CI500 Series) Implants. The Kanso will not be compatible with the Nucleus 22 (N22) Implant due to Kanso's size and coil type.

6. As compared to Nucleus® 5 and Nucleus® Freedom® Sound Processors. Based on coil cable, rechargeable battery, microphone protector, earhooks, and remote assistant.

7. The Nucleus 6 Sound Processor is water resistant to level IP44 of the International Standard IEC60529. This water protection means that the sound processor is splash resistant and the Nucleus 6 Sound Processor must not be immersed in water.

8. The Nucleus 6 Sound Processor is water resistant to level IP57 of the International Standard IEC60529. This water protection rating means that the sound processor is not only splash resistant, but it can be submerged into three feet of still water for up to 30 minutes. This water protection only applies when you use rechargeable batteries. Not intended for swimming.

9. The Kanso Sound Processor is water resistant to level IP54 of the International Standard IEC60529.

10. The Nucleus 6 Sound Processor with the Aqua+ is water resistant to level IP68 of the International Standard IEC60529. This water protection only applies when you use the Aqua+ and rechargeable batteries. Not compatible with the acoustic component.

11. The Kanso Sound Processor with the Aqua+ is water resistant to level IP68 of the International Standard IEC60529. This water protection rating means that the sound processor with the Aqua+ can be continuously submerged under water to a depth of 3 meters (9 feet and 9 inches) for up to 2 hours. This water protection only applies when you use the Aqua+ and LR44 alkaline or nickel metal hydride disposable batteries.

12. Recipients with simulation rates below 7200 Hz will have telecoil disabled to minimize sound interference.

13. It is recommended that SNR-NR, WNR, and SCAN be made available to any recipient ages 6 years and older, who is able to 1) complete objective speech perception testing in quiet and noise in order to determine and document performance 2) report a preference for different program settings.

14. Wolfe, J., et al (2015). The Benefits of Adaptive Signal Processing in a Commercially Available Cochlear Implant Sound Processor. *Otology & Neurology*. (In press). Average Improvement: 27 Percentage Points.

15. Investigation of Nucleus 6 Sound Processing Input Processing in Cochlear Implant Recipients. IDE C130246 Clinical Investigation Report. September 30, 2014. 37.5 Percentage Point Improvement.

16. Wolfe, J., Morais Duke, M., & Schaefer, E. (2015). Improving Hearing Performance in Cochlear™ Nucleus® 6 Users with True Wireless Accessories.