

CLARITY HEARING CARE

BATTLE OF THE DNNs

Who did AI hearing better?

Two contenders. Six neural networks.
One very noisy dinner.

The technical papers. The measured results. The verdicts.

SIGNIA MaX 7

4

specialist DNNs

OTICON REVEAL

2

cooperating
DNNs

Clarity Hearing Care research review | September 29, 2026

Signia MaX 7, Oticon Reveal, and the science behind the sales pitch

Two contenders. Six neural networks. One very noisy dinner.

Oticon arrives with two cooperating AI systems. Signia arrives with four specialized neural networks and a banner announcing 54 times more processing power. Both promise to help you follow the conversation while staying connected to the world around you. Somewhere between the appetizer and the product brochure, a perfectly reasonable question appears: **Who actually did DNN better?** [1, 54]

We went through the technical papers, manufacturer studies, independent lab methods, fitting documentation, and research behind those claims. The result is a contest with real round winners: Signia has a distinctive own-voice workflow and an expanded conversation architecture; Oticon has the shorter published analysis interval and leads several available independent lab metrics in the tested configurations. The grand prize for **the scientifically superior neural network**, however, is still unclaimed. No public matched current-network benchmark or named, controlled MaX 7-versus-Reveal 1 human trial was located in this review.

That is a more interesting answer than counting four against two. It tells us where the engineering differs, where listening results support a claim, and where the marketing department has wandered beyond the measurements.

This is a technical research review with a playful match commentary. The jokes are ours. The numbers come from the linked sources. Research cutoff: September 29, 2026.

Before the bell: what a DNN actually does

A deep neural network is a learned mathematical model. During development, engineers give it sound examples and targets. Training adjusts numerical weights so the model becomes useful at a particular task: detecting speech, identifying the wearer's own voice, characterizing noise, or estimating how sound should be processed.

Inside the hearing aid, the trained model runs **inference**: it applies what it learned to incoming sound. It does not need to understand the sentence, know the speaker personally, or recognize why you are annoyed with the waiter. Acoustic pattern recognition and human understanding are different things.

And the DNN is one part of a larger machine. Microphones collect mixtures of voices and noise. Spatial processing emphasizes some directions and reduces others. Noise processing changes the balance across time and frequency. Amplification, compression, feedback control, and the physical ear fitting determine what reaches the eardrum. Earlier peer-reviewed hearing-aid research demonstrates how learned processing and conventional signal processing can work together; it does not rank the current MaX and Reveal networks. [35]

A useful distinction is the **control path** versus the **audio path**. A neural network may estimate speech probability and steer another processing block. The audio then passes through that block. Counting the networks says little about how powerful the beamformer is, how much distortion the system introduces, or how accurately the fitting restores audibility.

The referee's first ruling: a DNN is a trained tool with a job. It is not a standardized unit of intelligence. Four networks do not automatically equal twice the hearing benefit of two.

Round 1: four specialists versus two collaborators

Signia calls its system **Acoustic Intelligence**. Its four networks separately analyze external speech, the wearer's own voice, noise, and the surrounding scene. Those estimates work together to steer the rest of the hearing aid. [1, 2]

Oticon calls its system **Dual AI**. **Speech AI** supplies learned speech information. **Context AI** uses that information and other acoustic inputs to shape the balance between speech and surrounding sound. Oticon describes both as embedded, individually trained networks. [11, 28]

Four specialists. Two collaborators.

Disclosed tasks, not a neural-network quality ranking

SIGNIA MaX

Speech Detection

Detect external speech

Own Voice Detection

Identify when the wearer speaks

Noise Analysis

Characterize background noise

Scene Analysis

Interpret the listening situation

OTICON REVEAL

Speech AI

Learned speech estimates that inform subsequent processing

Context AI

Uses speech information and acoustic inputs to balance speech and surroundings

Both use additional spatial processing, amplification, fitting, feedback, and comfort controls.

Task summary from manufacturer documentation [1, 11]. Model count does not determine hearing benefit.

Disclosed neural-network roles: four Signia analysis tasks and two cooperating Oticon systems. The boxes do not imply matched model size or accuracy. [1, 11]

The important difference is **how the work is divided**. Signia explicitly dedicates a learned specialist to own voice. Oticon explicitly links a speech detector with an evolved context-processing network. Neither published diagram exposes enough internal model detail to calculate which system has more learned capability.

There are two naming traps. Signia's four AI-branded processing features are not four extra DNNs, and the network-to-feature relationship is not simply one-to-one. Oticon's **4D Sensor technology** refers to four information dimensions, not four more neural networks. [3, 12, 56]

Could one large network outperform four smaller ones? Yes, in principle. Could four specialists be more efficient and reliable for their assigned tasks? Also yes. Those are engineering possibilities, not findings about these proprietary products.

ROUND VERDICT: Signia wins the advertised specialist headcount and the separately identified own-voice task. Neural-network quality remains unranked. The headcount trophy is real. It is just not the trophy your ears were asking for.

Both launches use "world's first" language for differently defined features. Novelty can be real while quality remains unranked. A chronology claim does not award the winner's belt. [1, 54]

Round 2: the training-data weigh-in

Signia reports **40 million sound samples**, speech in **11 languages**, **six music genres**, and a wide range of voices and environments for Acoustic Intelligence. That is a substantive description of training breadth. It is a total across the system, not a disclosure that every one of the four networks independently received 40 million unique examples. [2, 5]

Oticon describes separately training Reveal's two networks with real-life sound scenes captured using a **32-microphone spherical recording array**. Its earlier More documentation disclosed **12 million sound scenes**. The current Reveal papers do not provide a directly comparable total for the two deployed networks. [11, 18]

So 40 million versus 12 million is an invalid scorecard for this match: different generations, different units, and undisclosed durations and counting rules. A short augmented sound window and a long spatial scene are not interchangeable pieces of training data.

The useful questions are less photogenic:

- Were unfamiliar speakers and recordings held out for testing?
- How well does the model generalize to new noises, accents, languages, and reverberation?
- How often does it miss soft speech or mistake music for speech?
- How much speech detail survives the chosen amount of suppression?
- What happens after the model is compressed and deployed within the hearing aid's power budget?

These are proposed evaluation questions. Public headline totals do not answer them.

Oticon's historical technical trail is unusually informative. The original More paper identifies **gated recurrent units**, or GRUs, and 24 input/output neurons. A GRU maintains information about recent input; its short-term state can change while the learned weights stay fixed. Reveal's current technical paper also describes 24 input/output units for Speech AI, but does not disclose a full reproducible layer-by-layer model, total parameter count, or trained weights. The old More architecture should not be silently assigned to every current Reveal block. [18, 10]

Intent's DNN 2.0 documentation describes richer training objectives: preserve speech and speech-like energy, reduce noise, limit distortion, and stabilize the output. That history makes clear why a network's training target can matter more than how many networks appear on a brochure. [19]

ROUND VERDICT: no dataset-quality winner. Signia publishes a useful current scale claim. Oticon provides useful historical and current training detail. Neither supplies the common held-out test that would establish which present-day network generalizes better.

Also, 11 languages does not mean MaX translates your dinner conversation. That would be a different product, and possibly a different dinner.

Round 3: the 54-times-powerful microphone drop

Signia's actual claim is **54 times more processing power than IX**, alongside twice the memory and roughly 50% greater energy efficiency. The cited baseline is IX, not Oticon Reveal. The launch material does not supply a reproducible benchmark workload, arithmetic precision, absolute operations-per-second figure, or independent chip-throughput measurement. [1]

The same launch release says RTCE AI processes 75% more data points per second than IX. That is another particular workload counter. It should not be treated as the measurement basis for the 54x chip-capacity figure. [1]

That matters because capacity, analysis cadence, reaction time, and audio delay are four different quantities.

Quantity	What is disclosed	What the number cannot establish
Relative processing capacity	MaX: 54x the IX baseline	A 54x advantage over Reveal, or 54x better speech understanding
Acoustic analysis interval	MaX Acoustic Intelligence: 100 scans/s, or 10 ms; Reveal Speech AI: every 2 ms, or 500 analyses/s	A matched detector-speed comparison or total audio latency
End-to-end acoustic delay	No matched MaX-Reveal measurement located	Which aid sends sound from microphone to receiver sooner
Energy efficiency	MaX advertises an approximately 50% improvement over IX	Exactly 50% longer battery life under everyday use

The intervals come from the respective manufacturers' descriptions. Reveal also describes Context AI evaluating inputs and adapting every 2 ms. The clocks are informative, but their tasks and processing schedules are not equivalent. [2, 10]

The arithmetic says 500 updates per second is five times 100 updates per second. It does **not** say Reveal's entire hearing aid is five times faster. Nor does it refute MaX's 54x capacity claim. Two systems can have different computing resources, different workloads, and different update schedules.

IX literature itself describes other processing quantities at 1,000 updates per second and 192,000 analyzed data points per second. Comparing those directly with MaX's DNN scan rate would create a fake performance regression from unrelated counters. [6]

Our engineering inference is that more computing capacity can support more simultaneous analysis, richer features, and more elaborate spatial processing within a small power budget. A wearer might experience the payoff as a better speaker transition or less accidental attenuation of speech. Its size must be established through measurements and listening tests.

ROUND VERDICT: Oticon wins the shorter published analysis interval. Signia advertises a large compute increase over its own predecessor. Neither number wins an audio-latency or hearing-benefit contest.

Fifty-four times more horsepower is exciting. We still need to know the track, the load, and whether the driver took the correct exit.

Round 4: how much is new, and how much came from the family?

Signia: AX to IX to MaX

AX established the split-processing foundation: treat focused sound and surroundings through separate streams, with different processing choices. Later AX developments included Own Voice Processing 2.0 and echo handling. [7, 9]

IX expanded conversation support: RealTime Conversation Enhancement used dynamic focus streams and conversation analysis to help follow turn-taking. Group-conversation processing existed before MaX's four-DNN announcement. [6]

MaX adds learned coordination and expands the architecture. It introduces the four analysis specialists and AI-informed refinements to conversation, own-voice, scene, and noise processing. The documented conversation changes include three additional narrower focus streams, a Multi-Stream Denoiser, and a Contrast Enhancer. [3, 57]

For the reader who wants the actual mechanism: the new streams improve spatial selectivity; the denoiser applies additional binaural noise reduction informed by the streams and speech estimates; the contrast component allows more linear gain during speech to increase separation from the background. These are several interacting processing changes. A benefit cannot be attributed to DNN count alone. [3]

Earlier AX and IX studies support that lineage. IX's feature-on/off group-conversation test reported a mean 1.1 dB advantage in 20 listeners. An IX field study followed 78 experienced wearers, comparing IX with their own older aids. Those findings concern IX and its comparators, not current MaX-Reveal superiority. [6, 8]

Our assessment: MaX is a substantive development of IX. Calling it completely unrelated to IX would hide the engineering foundation; calling it an AI sticker would ignore the new learned analysis and processing.

Oticon: More to Real to Intent to Reveal

More introduced Oticon's learned sound-processing foundation. Real added wind, handling, and sudden-sound improvements. **Intent** introduced DNN 2.0 and the 4D sensing approach. **Reveal** adds Speech AI alongside a revised Context AI and changes voice clarification, feedback management, and connectivity. [18, 20, 21, 19, 22]

Context AI is described as a retrained successor to Intent's DNN 2.0, adapted to the improved input available from Speech AI and other processing. That is a concrete change to the information flowing through the system. [28, 29]

Our assessment: Reveal is a substantive development of Intent, with considerable continuity. “Everything is new” and “nothing is new” both make poor technical descriptions.

ROUND VERDICT: both show meaningful platform development. Signia's clearest architectural expansion is coordinated task specialization and conversation processing. Oticon's clearest DNN change is adding learned speech detection to a revised learned context system.

Round 5: the dinner-table test

Imagine three people taking turns around a restaurant table, with another conversation nearby. The difficult question is not simply “Is there speech?” It is **which speech should stand out, from which direction, and for how long?**

MaX's conversation analyzers use learned estimates to steer the expanded focus streams and their processing. Its own-voice information also helps determine what to do while the wearer participates. The additional denoising and contrast components build on IX's conversation strategy. [5, 27]

Reveal combines its speech estimates with an **AI-driven Voice Clarifier** that steers directional reductions toward unwanted sources while protecting target speech. The clinician sets an operating area: Front, Wide, or Full. In difficult conditions, multiple simultaneous talkers inside that area are prioritized by level; the technical description says the loudest receives priority. When reliable speech detection fails for a period, the system can fall back to frontal optimization. [10]

That is a useful limitation to understand. A speech detector can be accurate and still emphasize somebody other than the person you intended to hear. “Speech” is an acoustic category. “The person I came to dinner with” involves intention.

Both systems use acoustic evidence and processing choices to manage this problem. Oticon's 4D information includes head movement, body movement, conversation activity, and the acoustic environment. Signia also incorporates motion and acoustic-scene information. Neither public architecture establishes perfect target selection. [56, 26]

Our engineering inference: MaX's extra spatial streams may be valuable for particular speaker layouts and turn-taking patterns. Reveal's quick speech estimates and null steering may be valuable when separating an identified voice from interfering sources. **The geometry and the fitting decide how those ideas translate into benefit.**

ROUND VERDICT: MaX has a clearly expanded multi-stream conversation design; Reveal has a clearly documented detector-and-null-steering strategy. No current matched listening test settles which wins across moving, overlapping, real-world conversations.

The loudest person at dinner is already winning enough arguments. We would like the hearing aid to require evidence before joining in.

Round 6: your own voice enters the chat

A wearer saying “I sound strange” can be describing different problems. One is physical **occlusion**: sealing the ear changes how internally conducted low-frequency sound is heard. Another is the way the hearing aid amplifies and processes the wearer's voice.

Signia's dedicated own-voice DNN is a genuinely useful distinction. MaX uses spatial near-field information to identify the wearer's voice, so OVP AI can adjust processing while the wearer speaks. It removes the personal in-clinic own-voice calibration required by earlier OVP generations. [3, 27]

This is a concrete workflow advantage. The clinician no longer needs that calibration step to make own-voice detection available. It also creates a plausible route to better first-fit own-voice handling.

It does not prove superior own-voice comfort against Reveal. That requires listeners, comparable couplings, and processing-on/off measurements. A better voice detector cannot simply undo every physical effect of a sealed ear.

ROUND VERDICT: Signia wins the clearly disclosed own-voice specialization and the removal of the earlier calibration step. A cross-brand comfort championship has not been demonstrated.

A fifth imaginary DNN called “Please Stop Sounding Like a Bucket” would still have to deal with the ear tip.

Round 7: context is allowed to stay at dinner

Oticon's strongest conceptual case is that good hearing includes **speech plus useful surroundings**. Context can help a listener understand a scene, anticipate events, and maintain a sense of place. Independent studies on noise schemas and speech/background balance support investigating those goals. They do not validate Reveal's superiority over MaX. [49, 50]

Reveal gives that idea a named learned-processing partner: Context AI. Its task involves balancing sound based on speech information and other inputs. The published training aims also include speech preservation, appropriate noise attenuation, stable output, and limited distortion. [19, 28]

Signia's Ambient Scene Adaptation AI and Dynamic Noise Control AI also manage surrounding sound. Its technical description explicitly distinguishes situations where stronger noise relief is appropriate from situations where more environmental access is useful. It retains a surrounding stream and adjusts its relationship to the conversation stream. [57, 26]

So an article claiming “Oticon preserves the world, while Signia deletes it” would be scientifically lazy. Both aim to balance conversation and surroundings. Their analysis, spatial processing, control boundaries, and tuning differ.

There is a further nuance in context research. A study using an **ideal mask**, with access to the separate clean speech and noise signals, can show what a useful processing target looks like. A real hearing aid receives mixtures and has to estimate that target. The ideal-mask result is a research goal, not evidence that a deployed DNN reproduces it perfectly. [51]

ROUND VERDICT: both have legitimate context-preservation strategies. Oticon makes speech/context cooperation central to its two-network design. Signia makes ambient awareness one part of coordinated specialist analysis. Current cross-brand context superiority remains unproven.

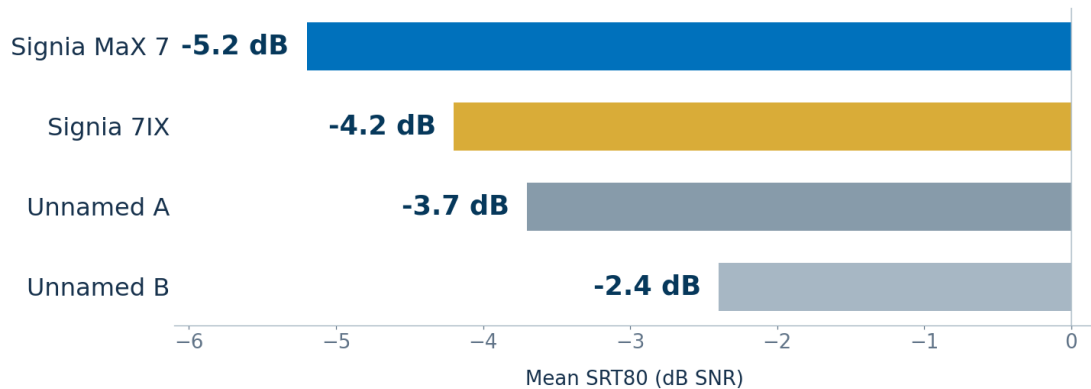
Round 8: actual humans, actual scores

This is where Signia earns something more meaningful than a headcount trophy.

An Oldenburg study tested **30 experienced hearing-aid users** with MaX 7, 7IX, and two unnamed premium competitors. The outcome was **SRT80**: the signal-to-noise ratio needed to repeat 80% of the test words correctly. Lower is better. [4]

MaX improves on IX in the reported human test

Lower SNR required for 80% correct words. More negative is better.



30 listeners | MaX advantage over IX: 1.0 dB | 29/30 performed best with MaX

Manufacturer-associated study [4]. Proprietary fits, closed couplings, manual speech-in-noise programs.

The competitors were unnamed. This does not establish a MaX-Reveal result. Means only; see paper for variability.

Mean SRT80 in the reported 30-person study: MaX -5.2 dB, IX -4.2 dB, unnamed A -3.7 dB, and unnamed B -2.4 dB. Lower is better. This is not a named MaX-Reveal trial. [4]

MaX's mean advantage over IX was **1.0 dB**, and 29 of 30 participants performed best with MaX among those four aids. Brands used their proprietary first fits, closed couplings, and manual speech-in-noise programs; participants kept their heads forward. The study does not identify either competitor as Reveal or isolate DNN effects. [4]

The paper's conversion of 1 dB into 16 percentage points of word benefit relies on an assumed psychometric slope. It is not a direct measurement of a universal 16-point everyday improvement. [4]

Here is our interpretation: a modest threshold shift can matter when listening is near the point where speech becomes usable. It can make a difficult conversation easier without making an impossible scene effortless.

A second Signia-associated study at **ORCA**, involving 26 adults, reported advantages of **6-21 percentage points** in word scores, up to **1.8 points** on a 10-point effort scale, and up to **12.6 minutes** in stated willingness to keep listening. That last number was a rating of tolerable listening time, not a timed endurance test. The test SNR was individually selected using MaX's 75% speech threshold, and devices used proprietary targets and speech-in-noise programs. [5]

Oticon's acoustic speech/context brief compares Reveal with Intent. It reports up to **6.5 dB output-SNR enhancement** relative to unaided listening, up to **2.3 dB** beyond Intent, and up to **17% higher modeled speech-cue access** in selected conditions. It used manikin

recordings, a 16-speaker scene, closed molds, and a linearized NAL-NL2 prescription; those are acoustic/model outcomes, not observed human word scores. [14]

Signia's separate manikin experiment reports **10.5 dB and 9.3 dB SNR improvement** relative to unaided listening at 0 and +5 dB input SNR, respectively. Its advantages were 0.8-1.3 dB over IX and 2.0-3.1 dB over the best unnamed competitor in those conditions. It used proprietary fits, closed couplings, alternating front/side talkers, and phase-inversion measurements; phase-sensitive features were disabled. These are complete-system acoustic results from a particular geometry. [3]

Your calculator can subtract 6.5 from 10.5. The experimental designs do not justify turning that subtraction into a MaX-Reveal advantage.

These results support development within both brands. They cannot be subtracted from one another to manufacture a brand margin. An SRT change, an output-SNR improvement, and a modeled cue-access percentage are different measures obtained under different conditions.

Oticon also reports a small two-week home comparison: 16 of 17 experienced Intent users preferred Reveal, with six receiving fine-tuning. That is a preference result from an unblinded predecessor comparison. Its 94% headline and Signia's 97% performance headline concern different participants, outcomes, and comparators. They are not rival percentages from the same contest. [10, 55]

ROUND VERDICT: MaX beats IX and the unnamed competitors in the reported human speech tests. Reveal improves on Intent in its reported acoustic tests. Neither finding establishes a MaX 7-Reveal 1 human winner.

The evidence can award the bouts that happened. It cannot award a bout by secretly assigning a face to "Brand A."

Round 9: the brain-response headline needs a referee

Oticon's **"60% stronger brain response"** is based on a specific physiological measurement. The cortical brief enrolled 27 experienced users; 17 completed both Reveal and Intent conditions. During passive listening, synthetic speech-like stimuli in noise elicited cortical auditory evoked potentials. Participants watched a silent captioned film. [13]

The headline concerns an approximately 60% increase in the **mid-frequency F-ratio**, a statistic used to detect the evoked response relative to EEG variability. Low- and high-frequency results did not show the same advantage. It does not mean 60% more words understood, 60% less listening effort, better long-term cognition, or an advantage over Signia. [13]

That result is interesting on its actual terms: it suggests a stronger detectable neural response to the tested stimuli in the tested comparison.

A separate Reveal context experiment tested 17 users listening to an audiobook while attending to selected contextual events. Average pupil dilation was **0.0494 mm for prioritized cues versus 0.0180 mm for non-prioritized cues**, and the two-choice audiobook comprehension score averaged 80%. There was no MaX, Intent, unaided, or processing-off comparison in that experiment. [15]

The experiment supports the observation that users could prioritize content while wearing Reveal. It cannot establish that Reveal caused better prioritization than another aid. Larger pupil responses in an attention task also should not automatically be presented as reduced effort.

ROUND VERDICT: Oticon has relevant neural and contextual evidence, with specific outcomes and comparators. It earns an evidence category, not proof of a smarter DNN or a smarter wearer.

A bigger EEG statistic is not a firmware update for the person wearing the hearing aid.

Round 10: the independent lab changes the storyline

HearAdvisor publishes results for **Signia Pure Charge&Go MaX** and **Oticon Reveal 1 miniRITE**. Its current tuned-fitting data offer a useful comparison of complete devices in the tested laboratory configurations. Higher scores are better. [30, 31]

What the independent lab measured

Tuned fitting | Higher scores are better | Complete devices, not isolated DNNs

METRIC	MaX	Reveal 1
Speech in quiet	3.64	4.78
Speech in noise	2.76	3.34
Feedback handling	4.60	5.00
Own voice / occlusion	3.70	1.90
Music streaming	2.90	3.50

MaX tier not clearly identified. MaX: vented Sleeve. Reveal 1: Bass Dome. [30, 31]

The own-voice score estimates passive occlusion. It does not test Signia OVP AI. [34]

Values checked September 29, 2026. Lab scores cannot predict an individual fitting outcome.

HearAdvisor tuned-fitting values for the tested configurations. MaX tier is unclear; physical couplings differ. The own-voice metric is passive occlusion, not OVP AI. [30, 31, 34]

Reveal leads speech, feedback, and streaming music in those results. MaX leads the reported own-voice/occlusion metric. The MaX page does not clearly identify its technology tier, so this must not be promoted into a verified premium MaX 7-versus-Reveal 1 trial. MaX used a vented Sleeve; Reveal used a Bass Dome. Both tuned conditions targeted NAL-NL2 for the standardized N3 loss. [30, 31]

Two method details are essential. The speech scores combine HASPI v2 with predicted ease-of-understanding ratings derived from a model trained on more than 100,000 blinded consumer ratings. These are standardized acoustic/model scores, not a clinical trial of these two products in listeners' ears. [32, 33]

And the **own-voice metric estimates passive occlusion** from acoustic insertion measurements with the device powered off for products without active occlusion cancellation. It does not test Signia's active OVP AI detector or prove that its DNN beat Oticon's. The physical coupling can strongly influence the score. [34]

ROUND VERDICT: Reveal wins the currently available independent speech and feedback metrics in these tested configurations. MaX wins the passive occlusion metric in its tested coupling. Neither result ranks isolated DNN sophistication.

This is why we opened the methods section. The score called “own voice” was keeping a different score from the one most readers would assume.

The wild card: some of the best engineering is outside the DNN

An accurate speech estimate is useful only if the rest of the hearing aid can deliver it. Several meaningful changes sit outside the advertised network count.

Signia's MaX documentation includes upgraded ear-to-ear communication, eWindScreen 2.0, SoundSmoothing 2.0, and an updated MaX-Fit rationale. Oticon includes revised wind/handling processing, amplification, and feedback control. Those changes can alter comfort, audibility, and stability even when the neural-network question is held separate. [26, 22]

Reveal Optimizer uses phase inversion, frequency shift, spectro-temporal modulation, and gain reduction. The feedback brief reports up to **25 dB more maximum usable gain in selected frequencies** than three unnamed competitors under its test conditions. That is a feedback-headroom result, not a 25 dB speech-in-noise advantage. [16]

Wind and transient claims are equally easy to mix up. Signia reports a **74% improvement in the speech-to-wind intensity ratio** over IX and reductions in transient-to-speech intensity ratio of up to **66%** against tested competitors. Oticon advertises up to **40 dB wind/handling attenuation**. Ratio changes, attenuation, and speech preservation are different quantities; they cannot be ranked by choosing the biggest numeral. [2, 55]

A fitting that preserves usable speech gain without whistling may help a wearer more than a larger advertised model count. That is our practical engineering assessment, not a claim that the DNN is unimportant.

The judges' scorecard

Question being judged	Defensible result	Evidence boundary
More separately advertised DNN tasks?	Signia MaX	Architecture count, not hearing benefit
Dedicated own-voice DNN and simpler calibration workflow?	Signia MaX	No controlled Reveal comfort comparison
Shorter published analysis interval?	Oticon Reveal	Different tasks; no matched total audio-delay test
Human conversation benefit over Signia IX?	MaX wins the reported tests	Complete systems, particular scenes and fittings
Available independent speech and feedback scores?	Reveal leads in tested configurations	MaX tier unclear; coupling and laboratory methods matter
Available passive occlusion score?	MaX's tested fitting leads	Not a measurement of OVP AI
Better context preservation across brands?	Unresolved	Both have relevant designs; no matched current trial
Better trained, more sophisticated DNN?	Unresolved	No shared corpus, full model disclosure, or isolated-network benchmark
Overall MaX 7-Reveal 1 human champion?	Not established	No named, controlled current-premium comparison located

Our verdict: Signia's four-DNN design is a serious engineering development, with distinctive own-voice specialization and expanded conversation processing. Its reported gains over IX support a real advance.

Oticon's two-network design is also serious engineering. It brings learned speech detection into cooperation with context processing, and its available independent laboratory speech results are stronger in the tested configurations.

If “who did it better?” means **who organizes more named specialist tasks**, Signia has the answer. If it means **who leads the available independent lab speech and feedback metrics**, Reveal currently has the answer, with the stated limitations. If it means **whose current neural networks are intrinsically superior**, the public evidence cannot answer it.

That is a worthwhile result. We can name winners without pretending the evidence says more than it does.

For a wearer, the deciding test is the fitted system in the conversations that matter: target audibility, speaker changes, comfort, useful surrounding sound, and the amount of effort required. For a researcher, the next step is a matched benchmark and a transparent human crossover study.

The DNNs can keep arguing about their résumés. The wearer gets to judge the conversation.

The nerd bench: details the headline leaves out

Frozen weights, changing behavior

A useful conceptual expression is:

Current estimate = model(trained weights, current acoustic features, recent state).

This is an explanatory model, not either manufacturer's code. Incoming sound and short-term state can change continually while the trained weights remain fixed. A hearing aid adapting to a restaurant is therefore not necessarily retraining its neural network.

Reveal explicitly documents completed training and fixed deployed parameters. MaX describes manufacturer-trained task networks and automatic adaptation; no public evidence reviewed here shows the wearer or clinician retraining those four network weights through the app or fitting software. Personalization and runtime control should be kept separate from learning new weights. [11, 5]

Detector accuracy is a task-specific number

Signia reports an own-voice false-detection rate below 1% when other talkers in front speak. That is an interesting detector result in its stated test context. It is not “99% perfect own voice” across every wearer, scene, and coupling. A full comparison would need missed detections, false alarms, test-set composition, decision thresholds, and performance across conditions. [3]

Likewise, Oticon's scientist interview describes the new speech detector as three times faster than its previous detector. This is another predecessor-relative claim, not a current MaX comparison or a substitute for a shared precision/recall curve. [28]

Channels are not neurons, and training resolution is not fitting resolution

Published specification	MaX 7	Reveal 1
Product-sheet processing channels	48	64
Clinician fitting bands	20	24
Advertised network count	4	2
Relevant learned-processing detail	Current full topology and parameter totals undisclosed	Speech/context processing described at 24-channel resolution
Training evaluation detail	Full losses and evaluation partitions undisclosed	Context AI target comparison described at 256-channel resolution

The product-sheet figures come from Signia's German tier documentation and Oticon's differentiation tool; market and tier availability should be checked against the fitting software. [25, 12]

The 256-channel detail describes the resolution used to evaluate training errors. It does not create 256 clinician-adjustable bands. Similarly, 24 input/output units do not disclose a network's total neuron count or hidden-layer size. Different blocks inside one aid may use different frequency partitions. These numbers do not supply a simple model-size ranking. [19, 11]

What the specialist can program

Connexx and Genie expose the fitted hearing-aid system: gain, compression, output limits, acoustic coupling, directional support, and feature preferences. They do not provide the clinician with a neural-network layer editor.

MaX documentation includes conversation, own-voice, ambient, and noise-related controls. Reveal provides operating-area and other personalization settings; AI Noise Suppression defaults are described as 2 dB for easy scenes and 10 dB for difficult scenes, with available ranges depending on tier. Voice Clarifier strength also varies by tier. Four DNNs or two DNNs across a family therefore does not imply identical processing support at every price level. [23, 24, 22, 12]

The clinical implication is straightforward: compare actual models, enabled features, prescriptions, and delivered gain. A product-family name is not a complete test configuration.

In the lab data, MaX's speech-in-noise score changed from 2.12 at initial fit to 2.76 after tuning; Reveal's changed from 3.21 to 3.34. The published network count stayed the same. These results reinforce why fitting belongs in the comparison, while the remaining device and coupling differences still limit a cross-brand conclusion. [30, 31]

The ear is part of the system

Opening a fitting can improve physical occlusion and change direct sound access, while also allowing processed sound to leak away and affecting usable gain. Closing it can strengthen delivered low-frequency processing while changing own-voice perception. These are acoustic tradeoffs, not a DNN popularity contest.

The direct and amplified paths can also mix in an open fitting. That makes actual acoustic delay and sound quality worth measuring; the advertised analysis interval does not supply that measurement.

This is our engineering interpretation of why couplings, targets, and end-to-end behavior belong in a fair comparison. A system can have an excellent detector and still be a poor match for a particular physical fitting.

Hardware and wireless promises need their own scorecard

MaX combines Bluetooth Classic, LE Audio, and telecoil support. At the research cutoff, its launch footnote schedules full Auracast functionality through a firmware update by March 2027. Reveal advertises MFi, ASHA, LE Audio, and Auracast support; phone and software compatibility still matter. Ear-to-ear processing communication is distinct from the phone's streaming link. [1, 26, 58]

A capability that helps with calls or broadcasts can be valuable without telling us anything about which DNN is more sophisticated. Hardware readiness, enabled firmware, and actual compatibility are separate facts.

For additional engineering context, MaX's technical paper reports a redesigned NFMI ear-to-ear link with a 35% stronger signal. Reveal's guide describes feedback phase-inversion convergence as 30% faster, with 64-channel spectral processing and up to 4 dB additional fitting headroom over its earlier implementation. These are supporting radio and feedback changes, not additional neural networks. [3, 11]

Who built it, and how much did it cost?

The research trail identifies real specialists. Signia's current papers include Niels Søgaaard Jensen, Barinder Samra, Homayoun Kamkar-Parsi, and Cecil Wilson. The ORCA study is associated with Petri Korhonen and colleagues. Oticon's technical paper is by Mette Brændgaard and Christina Wassard, with Thomas Behrens explaining the architecture in firsthand interviews. Earlier peer-reviewed work includes Andersen and colleagues. Paper authorship is not a complete chip or software engineering roster. [3, 5, 10, 28, 35, 39]

Both parent groups fund substantial research. WS Audiology reported **EUR 177 million** in R&D expense for FY 2024/25. Demant reported **DKK 1,401 million** for calendar 2025. Those totals cover multiple products and activities. Neither is a disclosed MaX or Reveal development budget. Training duration, GPU hours, iteration counts, current model size, and product-specific spending remain undisclosed in the reviewed public evidence. [36, 37]

These are not products created without internal research expertise. They also exist in an industry that uses outside components, licensed technology, shared research resources, and academic methods. Oticon's documented CEVA Bluetooth licensing is a radio-IP example; the shared FORCE sound-scene project is a research-resource example. Neither proves that the current DNNs were bought from the same supplier or trained on identical data. [42, 43, 45]

The public milestones show years of accumulated platform development. They do not reveal when a particular current network's training began, how many failed versions preceded it, or the cost of its final training run. A product history is not a GPU stopwatch.

Early wearer reports add questions to investigate, rather than a controlled ranking. The research trail includes Reveal and MaX forum discussions and a firsthand MaX launch report that disclosed WSA-paid travel. Different fittings, previous aids, expectations, and short wear periods make those reports unsuitable for scoring DNN quality. [27, 52, 53]

The experiment that would settle the rivalry

There are two championships to test.

For the complete hearing aid: verify MaX 7 and Reveal 1 hardware and firmware, match comparable coupling and delivered real-ear targets, and use a randomized crossover with adequate wear time and fine-tuning. Test automatic operation separately from maximum manual speech-in-noise settings. Include moving and overlapping talkers, different loss profiles, reverberation, wind, quiet, music, own voice, and meaningful surrounding events. Report individual results and uncertainty alongside averages.

For the DNN itself: give comparable tasks a common held-out corpus, with new speakers and acoustic conditions. Publish task accuracy, speech preservation, distortion, latency, memory, arithmetic precision, operations, and energy per inference. Then use controlled feature ablations to distinguish network contributions from beamforming, feedback, and fitting changes.

That is our proposed benchmark, not a study already performed. A smaller specialized network might be the better solution within a fixed power budget. A model that looks excellent offline might lose that advantage after hardware integration. And the better whole hearing aid could win without having the better isolated classifier.

Until those experiments are public, **the correct result is specific winners plus an unanswered overall network question.** That is where the science ends and the next good research project begins.

The research trail: 58 linked sources

Numbered citations identify sources for particular claims. This register also retains background reading from the underlying research. Manufacturer studies, independent lab tests, corporate records, and firsthand reports have different evidential weight. Forum discussion is background. Three HIMPP background pages could not be re-accessed during this check; no verdict relies on them.

- [1] [WS Audiology \(24 Aug 2026\). Signia MaX launch release.](#)
- [2] [Signia. Acoustic Intelligence: training scale and analysis claims.](#)
- [3] [Jensen et al. \(Aug 2026\). Holistic AI-driven enhancement of conversations in noise. Technical white paper.](#)
- [4] [Jensen et al. \(Aug 2026\). MaX outperforms key competitors in group conversation in noise. Human-study white paper.](#)
- [5] [Korhonen et al. \(Aug 2026\). Enhancing group conversations in noise with RTCE AI. ORCA white paper.](#)
- [6] [Jensen et al. \(Sep 2023\). Signia IX with RealTime Conversation Enhancement.](#)
- [7] [Taylor & Jensen \(Jun 2022\). Evidence supports advantages of Signia AX split processing.](#)
- [8] [Jensen et al. \(Mar 2024\). Real-world assessment of Signia IX.](#)
- [9] [Signia \(May 2022\). AX Own Voice Processing 2.0 / Auto EchoShield.](#)
- [10] [Brændgaard & Wassard \(2026\). Oticon Reveal AI - Technical features.](#)
- [11] [Oticon \(2026\). Reveal product guide.](#)
- [12] [Oticon \(2026\). Reveal product differentiation tool.](#)
- [13] [Zapata-Rodríguez, Undurraga & Faulkner \(2026\). Cortical responses to speech with Reveal.](#)
- [14] [Oticon \(2026\). Reveal speech and context research brief.](#)
- [15] [Oticon \(2026\). Prioritization and context research brief.](#)
- [16] [Denker \(2026\). Reveal Optimizer - Technical evidence.](#)
- [17] [Ng et al. \(2026\). Putting hearing in the right context. Oticon white paper.](#)
- [18] [Brændgaard \(2020\). An introduction to MoreSound Intelligence.](#)
- [19] [Oticon \(2024\). 4D Sensor technology and DNN 2.0 technical white paper.](#)
- [20] [Oticon \(2023\). Wind & Handling Stabilizer white paper.](#)
- [21] [Oticon \(2023\). SuddenSound Stabilizer white paper.](#)
- [22] [Oticon \(2026\). What's new in Genie 2 2026.2.](#)
- [23] [Signia. Connexx 10 fitting documentation \(Germany\).](#)
- [24] [Signia \(Aug 2026\). MaX Connexx fitting guide \(Germany\).](#)
- [25] [Signia \(Aug 2026\). MaX technology levels \(Germany\).](#)
- [26] [Signia \(Aug 2026\). MaX platform brochure \(Germany\).](#)
- [27] [HHTM \(24 Aug 2026\). Firsthand interview with Barinder Samra; MaX/IX wearer impressions; travel disclosure.](#)
- [28] [HearingTracker \(8 Sep 2026\). Firsthand Q&A with Thomas Behrens on Reveal.](#)

- [29] HHTM (Sep 2026). Reveal scientist interview and full transcript.
- [30] HearAdvisor. Signia Pure Charge&Go MaX public test results and settings.
- [31] HearAdvisor. Oticon Reveal 1 miniRITE public test results and settings.
- [32] HearAdvisor. How We Measure: laboratory setup, recordings, device settings.
- [33] HearAdvisor. Speech Perception metric: HASPI/listening-ease model.
- [34] HearAdvisor. Occlusion metric: REOIG and subjective mapping.
- [35] Andersen et al. (2021). Creating Clarity in Noisy Environments by Using Deep Learning in Hearing Aids. Peer-reviewed article.
- [36] WS Audiology. Annual Report 2024/25. R&D, organization, ownership and accounting policies.
- [37] Demant. Annual Report 2025. R&D, ownership, development-cost policies and operations.
- [38] WS Audiology. Innovation: platform strategy and research organization.
- [39] Signia. Expert directory and research biographies.
- [40] Eriksholm (29 Feb 2024). New research focus: AI.
- [41] Eriksholm. Jesper Jensen researcher profile.
- [42] CEVA / Oticon (23 Aug 2016). Bluetooth LE IP licensing announcement.
- [43] CEVA. 2025 Form 10-K: licensee disclosures.
- [44] Knowles. 2025 Form 10-K: major customer disclosure.
- [45] FORCE Technology. HOA-SSR shared audiovisual sound-scene dataset.
- [46] HIMPP. Structure and scope of third-party patent licensing.
- [47] HIMPP. Partner list.
- [48] HIMPP. Patent acquisition news: Pindrop and Bitwave.
- [49] Hicks & McDermott (2024). Noise schemas aid hearing in noise. PNAS.
- [50] Johnson & Healy (2024). Speech/background balance and contextual recognition. Ear and Hearing.
- [51] Johnson & Healy (2024). Ideal compressed mask: environmental recognition and speech intelligibility. JASA.
- [52] HearingTracker forum. Oticon Reveal discussion, page 9: firsthand September wearer/provider observations.
- [53] HearingTracker forum. Signia MaX flagship launch discussion.
- [54] Oticon (12 Aug 2026). Reveal launch release.
- [55] Oticon. Reveal professional product page and claim footnotes.
- [56] Bianchi et al. (2024). Oticon Intent clinical evidence: 4D Sensor technology.
- [57] Signia. MaX feature descriptions: RTCE AI, OVP AI, scene adaptation, noise control.
- [58] Oticon (2026). Reveal miniRITE R technical data sheet.