

New chips, faster networks to improve phone audio

March 2 2012, By Steve Johnson

Smartphone owners can surf the Web, pay bills, watch videos, enjoy music and send email. But while their gadgets have been designed to handle increasing amounts of data, experts say, less attention has been paid to their ability to clearly convey the sound of someone's voice, especially in noisy restaurants and other places.

A recent J.D. Power and Associates study of wireless-device performance concluded that problems such as voice distortion and echoes have contributed to "a halt in overall call quality improvement." One reason for that, according to some industry observers, is that phone service providers in the United States have yet to offer [mobile-phone technology](#) comparable to "High-Definition Voice," which is extensively used in other nations.

As a result, "you can get better quality mobile phone calls on networks in India and Uganda than in the U.S.," said Doug Mohny, editor-in-chief of HD Voice News, which closely tracks the audio capabilities of consumer devices.

But that could change soon. One reason is an expanding wireless network called 4G Long Term Evolution, or LTE, which by 2013 is expected to provide high-definition voice calls in this country. Another could be a [microchip](#) developed by Mountain View, Calif.-based Audience.

Designed to enhance the quality of a person's voice, while removing [background noise](#), the [chip](#) already is available in many phones,

including some operating in countries with HD Voice. And once high-definition mobile audio services are launched in this country, the chip could gain much broader use and could eventually help human-to-machine [voice recognition](#) in everything from automobiles to TVs, said Andy Keane, the company's vice president of marketing.

Instead of having to punch in keyboard commands to a machine, he said, "you should be able to just tell it what to do and it will do it."

HD Voice, which was launched in 2009, is available in 31 countries. And in a recent publication, the industry group Global Mobile Suppliers Association said calls using the technology are like "speaking to the other party in the same room."

That's because HD Voice operates in a frequency range close to what the human voice uses, according to Swedish telecommunications company Ericsson, which is among the businesses promoting the technology.

People speak in a range of 50 to 12,000 Hz - meaning hertz, or cycles per second - Ericsson noted in a report last year, while many phones today only operate between 300 and 3,400 Hz. But HD Voice phones range from 50 to 7,000 Hz, the report added, providing clearer conversations, easier-to-decipher voice messages, better conference calls and more accurate voice-to-text translations.

Verizon Wireless has been testing high-definition voice technology and is widely expected to be the first to offer it for mobile phones in the United States. Its recently installed 4G LTE network currently serves 194 cities nationwide.

Verizon Wireless spokeswoman Heidi Flato said she didn't know when such a service might be offered in this country, but industry experts have speculated it could be this year or next.

When that happens, executives at Audience hope it will increase demand for their voice-enhancing chip, called earSmart.

They say the chip and a software algorithm they developed in collaboration with auditory neuroscientists helps phones isolate and focus on individual sources of sound within noisy environments - just like the human ear.

Say someone makes a call from a bustling restaurant or airport. The Audience chip in the phone of the person receiving the call would analyze the pitch, harmonics and other acoustic properties of the incoming call and categorize the data into separate audio streams, the company explained in a recent regulatory filing announcing its plan to go public. Then the chip would isolate and highlight the stream associated with the caller's voice, while minimizing the rest.

Founded in 2000, Audience shipped its first-generation chip in 2008 and has since sold more than 135 million of them to such mobile-device makers as Apple, Samsung, Sharp and Sony.

Keane says the chip improves the sound of phone calls even when it's not operating on a high-definition audio network.

But as high-definition services become more prevalent, he expects the chip to be incorporated into a growing number of consumer devices.

After all, Keane said, "once people get used to voice quality, they don't want to go back."

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