HD Voice for Field Reports and Interviews
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Wireless carriers and VoIP providers can now offer improved voice quality using what is commonly referred to as HD Voice, or Wide-Band Speech technology. HD Voice is already available on many third party headsets and mobile phones, offering wireless freedom with a significant improvement in audio quality.

While standard phone calls (G.711, AMR-NB, PSTN, or POTS) are limited to 300 Hz – 3.4 kHz bandwidth, this new technology supports (G.722, AMR-WB) 50 Hz – 7 kHz bandwidth. The extra 1.5 octaves of low frequency energy provides a richer, more natural sound, while the extra octave of high frequency information dramatically improves clarity and intelligibility. Extra bandwidth is just half the picture, as voice quality takes a big step forward. Voices sound more natural and less raspy or mechanical, while background noise is reduced or eliminated.

Wireless carriers determine which codec best suits their network based on the available data bandwidth. In some cases, voice quality may vary depending on network traffic. Typically, the phone/network side of the call uses a speech-based codec to conserve transmission resources. While this is the most efficient way of transmitting wideband speech, speech-based compression algorithms traditionally do not do as well with ambient sounds, music, or non-speech test signals.

It is important to note that HD Voice phone calls use the same circuit-switched connection as a normal voice call, as opposed to the packet switched data network. The circuit-switched voice call path is more reliable, and typically less expensive than metered, packet-switched data traffic.

To date, there are no universal bridges between wireless carriers, or between VoIP calls and wireless calls. While there may be some carrier specific exceptions, for the most part VoIP HD Voice stays within VoIP land, and wireless HD Voice calls stay within each wireless carrier's network. For now at least, calls between carriers default to standard voice bandwidth.

Wireless Phone HD Voice Calls
To take advantage of this extended voice bandwidth, both phones on the call must support HD Voice, and both phones must be on the same carrier, in coverage areas that support HD Voice.

Wireless Phones that support HD Voice phone calls:*
Apple iPhone 5   (T-Mobile - USA) (3, Orange – UK)
HTC One S   (T-Mobile - USA) (3, Orange – UK)
HTC One   (T-Mobile - USA) (3, Orange – UK)
Samsung Galaxy SIII (T-Mobile - USA) (3, Orange – UK)
Samsung Galaxy S4 (T-Mobile - USA) (3, Orange – UK)

*New phones and carriers are added often. This is not a complete list of phones or carriers. We welcome your assistance in expanding this list (Last updated January 2014).

This creates a significant opportunity for the broadcast industry. If a station buys any two of these phones from the same carrier as listed above, and they are both located in supported service areas, the call will automatically connect with HD Voice service. Leave one phone back

at the station, hand the second phone to a field reporter. You can now offer a substantial voice quality improvement in a low cost field reporting solution. Its as easy as placing a phone call.

While HD Voice brings an increase in bandwidth and quality, the limiting factor is still the mic and earpiece within the phone. A significant increase in quality occurs when using an external professional mic and headphones. JK Audio makes several products that take advantage of HD Voice by routing audio through the headset jack of the above wireless phones.

JK Audio Products that support HD Voice through the headset interface jack:
http://www.jkaudio.com/daptor2.htm
http://www.jkaudio.com/compack.htm
http://www.jkaudio.com/remotemix-one.htm
http://www.jkaudio.com/remotemix-2.htm
http://www.jkaudio.com/remotemix-3-5.htm
http://www.jkaudio.com/remotemix-4.htm
http://www.jkaudio.com/interchange.htm

Bluetooth HD Voice
Many wireless headset manufacturers quickly adopted the HD Voice standard long before phones and carriers were ready for HD Voice headsets. Unfortunately, not all phones capable of HD Voice network calls will support a Bluetooth HD Voice capable headset.

HD Voice (mSBC Wideband Speech) on the Bluetooth side uses a waveform codec instead of a speech-based codec, offering significantly better sounding point-to-point full-duplex wireless transmission. A waveform codec allows transmission of ambient sounds, test tones, and non-speech waveforms.

A minimum of Bluetooth Standard 3.0 and Bluetooth Hands Free Profile HFP 1.6 are required on both the phone and headset in order to provide wireless HD Voice through the phone and headset. This detailed information is not easy to find.

Wireless phones that support Bluetooth HD Voice:*
Apple iPhone 4s, 5 **
Samsung Galaxy S4
Motorola Droid RAZR HD

*New phones are added often. This is not a complete list of phones that offer this feature. We welcome your assistance in expanding this list. (Last updated January 2014)

**Apple iPhone
It appears that any iPhone that features SIRI may already include Bluetooth HD Voice, regardless of the phone carrier or network. SIRI appears to use wide band audio input to improve speech recognition. While this does nothing to improve a phone call on a network that does not support HD Voice, it may allow you to use Bluetooth HD Voice with third party codec apps. Simply fire up SIRI before using your codec app, and your JK Audio product will switch to HD Voice.

JK Audio products that support HD Voice through Bluetooth Wireless Technology:
http://www.jkaudio.com/bluepack.htm   (HD Voice feature added July 2013)
http://www.jkaudio.com/interloop.htm   (HD Voice feature added July 2013)
http://www.jkaudio.com/outerloop.htm   (all units support HD Voice)
http://www.jkaudio.com/remotemix-3-5.htm (HD Voice feature added January 2014)
http://www.jkaudio.com/remotemix-4.htm   (HD Voice feature added January 2014)
http://www.jkaudio.com/bluedriver.htm   (HD Voice feature added April 2014)
http://www.jkaudio.com/blueset.htm   (HD Voice feature added April 2014)

Connection of the above JK Audio products together, or to a third party Bluetooth HD Voice headset will result in an HD Voice connection using the Bluetooth mSBC waveform codec for excellent full-duplex audio quality.

BluePack, Interloop, RemoteMix 3.5 and RemoteMix 4 models manufactured before the HD Voice feature was added, may be upgraded to include HD Voice compatibility for a nominal fee (plus shipping). This upgrade must be performed at JK Audio's Sandwich, Illinois facility. Unfortunately BlueSet and BlueDriver models cannot be upgraded. Contact support@jkaudio.com for more information.

Using Audio CODEC Apps with Bluetooth HD Voice
There are a number of third party smart phone codec apps that transmit high quality audio over the data network using various forms of compression. These apps transmit 15 kHz and higher audio bandwidth back to a software or hardware receiver. Some of these apps use the Bluetooth HD voice path when available.

For example, on an iPhone 5, the Tieline Report-It app uses Bluetooth HD Voice when Bluetooth is the selected audio input. Simply fire up SIRI before using your codec app, and your JK Audio product will switch to HD Voice. As mentioned earlier, the Bluetooth HD Voice waveform codec passes 7 kHz audio directly to the application. This combination is a vast improvement in quality over an HD Voice network phone call which uses a speech-based HD Voice codec.

This statement does not cover all codec apps or HD Voice capable devices. We welcome your assistance in expanding this list.

When full 15 kHz or better audio is required, a wired headset interface is your best choice.

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