CopSonic
UltraSonic Connectivity

General Introduction to Ultrasounds

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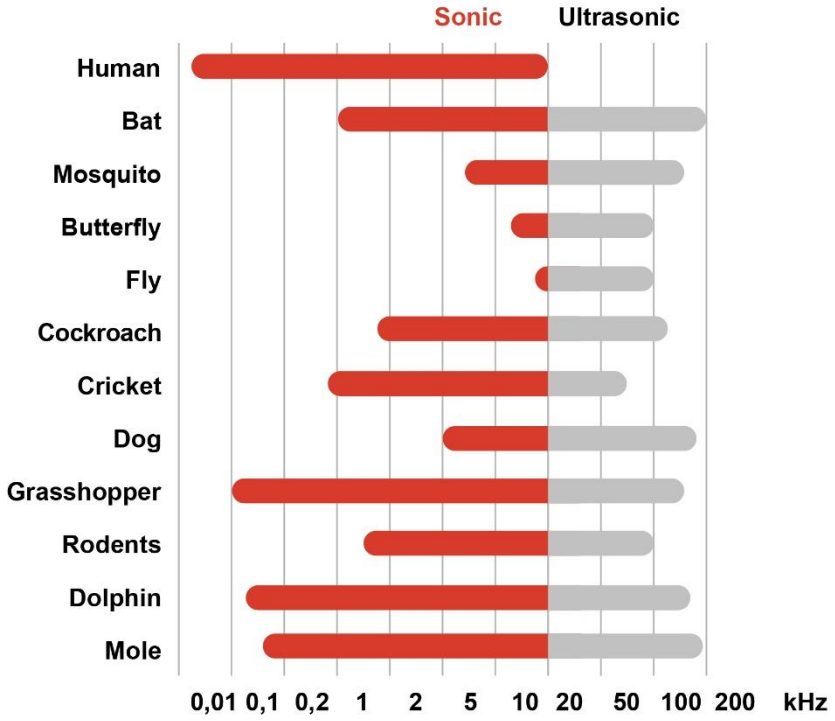
Overview

This document will explain the CopSonic ultrasound technology (hereinafter “US”) in a summarized way as a general introduction.

The innovative CopSonic technology enables data transmission or interaction between devices using sound waves as a communication channel between electronic devices for as long as they have speakers and/or microphones.

For all projects aiming standard public devices, the CopSonic technology is using audio frequencies between 8 Hz and 21 kHz. Within this range, the US frequencies will start around 17 kHz.

Human and animals have different capacities with regard to hearing these audio frequencies:



In the case of human, we have a margin for inserting sounds in:

- very low ranges: watermarking (hereinafter “WM”) with audio frequencies up to 15 kHz
- higher ranges: US with audio frequencies between 17 kHz and 20.5 kHz which are considered inaudible since the human ear will not perceive them.

Some animals might be able to hear the US ranges. Yet, for these animals, it would be just like a person hearing a radio but in no case will this be harmful or dangerous for them.

US reach further than WM technologies, so the distance between the mobile device and the speakers is greater as to enable detecting messages.

Since the technology depends on sounds, the distance will always depend on:
- the quality of the speaker on the device which is broadcasting the signal,
- the volume on the device which is broadcasting the signal,
- the quality of the microphone on the device(s) which receives the signal;

Our US technology is designed to enable the transmission of packages of data between devices (included in full-duplex and offline mode) with a payload up to 10,000 bits / second as of today. This capacity allows us to cover almost any use case. In the case of transmissions that exceed this current payload capacity, the content download location can always be shared by US for the application to download instead of the data itself.

The main advantages of the CopSonic technology (WM and/or US) over other well-known wireless technologies such as Bluetooth, NFC and RFID are:

1) Control of the propagation distance.
2) Compatible with keeping up health safety distances.
3) No infrastructure deployment.
4) It can work WITHOUT an application by using browsers.
5) Easy integration (1 person / 1 day).
6) Full-duplex communication between devices.
7) A current bitrate of 10,000 bits / second (a bitrate capacity in continuous evolution).
8) Compatible with 100% of smartphones.
9) Compatible with iOS, Android, .NET, Java and JS.
10) Use of a unique alphabetic protocol per client giving greater security.
11) Possibility of encrypting the information.
12) Possibility of integrating One-Time-Password algorithms and timestamps.
13) Applicable as an authentication factor in 3D Secure / PSD2.
14) Possibility to communicate in 1-to-1 mode but also in 1-to-many mode
15) A clean technology which works without electromagnetic impact

The CopSonic technology is capable of working in full OFFLINE mode, requiring no cloud interaction at all. This will greatly contribute to empowering numerous use cases in different environments and industries.

To go further:
The CopSonic technology is distributed as a Sofware Development Kit and different ready-to-use applications. Available for all major platforms (Android, iOS, .Net, Java, Javascript). CopSonic offers to collaborate during the process of integration and development of solutions that include the CopSonic technology.

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