



# High-fidelity recovery of Audio Watermarks under extreme conditions

Our patented system is a robust tool for protecting, synchronizing and monitoring broadcasted content, improving security, customer engagement and analytics

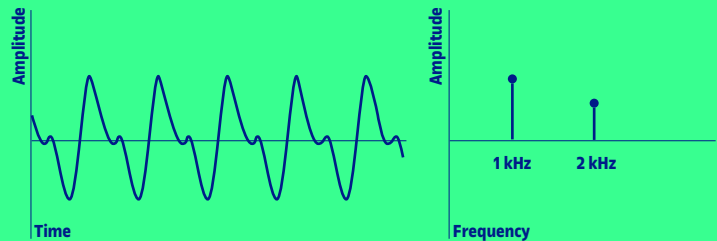
## Advantages

- **Real-time recovery at longer distances: over 6 metres from the audio transmitter**
- **High fidelity and robust decoding, overcoming broadcasting distortions and background noise**
- **Better time synchronization between emitter and receiver**
- **High capacity (over 1000 bits per second)**
- **No internet access needed for users to run the system**

## Innovative Aspects

- **The use of the Fourier domain, 6 metres from the audio transmitter**
- **The use of the time and frequency domains during the embedding**

### Fourier domain



# Watermarks are a new way for advertisers to engage with consumers on second screens, increasing brand recall, awareness and effectiveness

## Applications



### Media analytics

- Audience measurements and broadcasting monitoring
- Measure campaign effectiveness
- Consumer analytics on broadcasting, video on demand or even internet distribution



### TV advertising

- Connection of TV broadcasts with mobile apps to increase viewer engagement
- Synchronize ads in real time on second screens when a programme or ad is on air



### Digital security

- Digital rights management (DRM) for video or music on demand
- Another layer of security to detect counterfeiting and piracy
- Authentication and confirmation of genuine content.



### Inventors

David Megías, researcher with the UOC's KISON (K-riptography and Information Security for Open Networks) research group



### Patents

PCT/EP2013/074971 Method and apparatus for embedding and extracting watermark data in an audio signal



### Video

[tinyurl.com/watermarkingaudio](http://tinyurl.com/watermarkingaudio)



Universitat Oberta de Catalunya (UOC)

Contact us:  
Knowledge Transfer and Entrepreneurship  
[transfer\\_osrt@uoc.edu](mailto:transfer_osrt@uoc.edu)