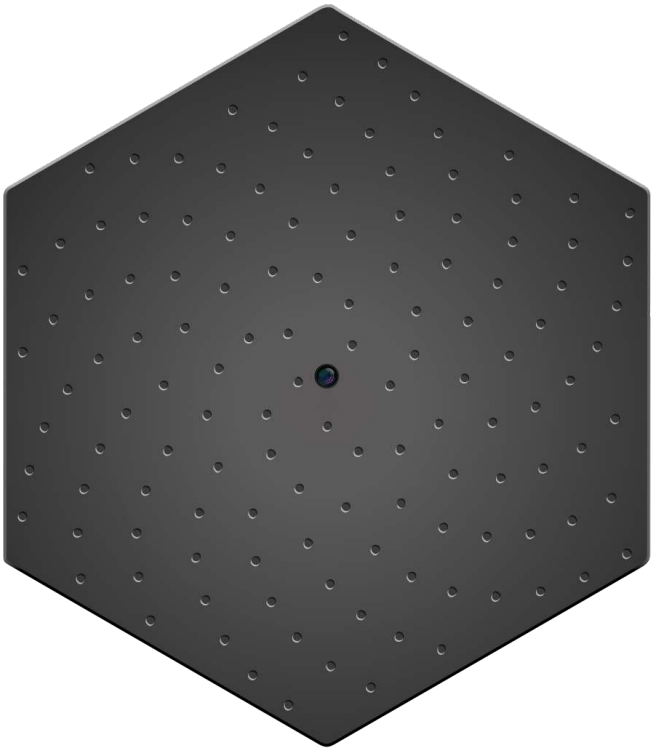
Acoustic Camera
Hextile

- **128 MEMS microphones, 46 cm diameter**
- **Data transfer and power over single USB cable**
- **Real time virtual microphone, both live-mode and post-processing**
- **Modular based design for different sizes**
- **Plug and play**



Features

- Robust camera front-end based on a hexagonal shaped aluminium disc
- No interface box between array and laptop, direct connection and power with USB cable
- Listen to and analyse real time audio from virtual microphone position
- Virtual microphone enables you to listen to the sound contribution from any source real time, filtered with your selected frequency range
- Microphones on a disc prevent sound and echo from behind
- Low self-noise and large measurement range
- RPM option for analysing rotating machines.
- High-performance optical video camera is included in the camera front-end unit
- The distribution of the high number of microphones ensures high resolving power and reduces the problems due to side lobe effect
- Digital microphones ensure large dynamic range and high stability
- All parts are integrated in the camera frontend – no need for a signal processing interface box
- Records the signal from every microphone

Analysing software, live and post-processing

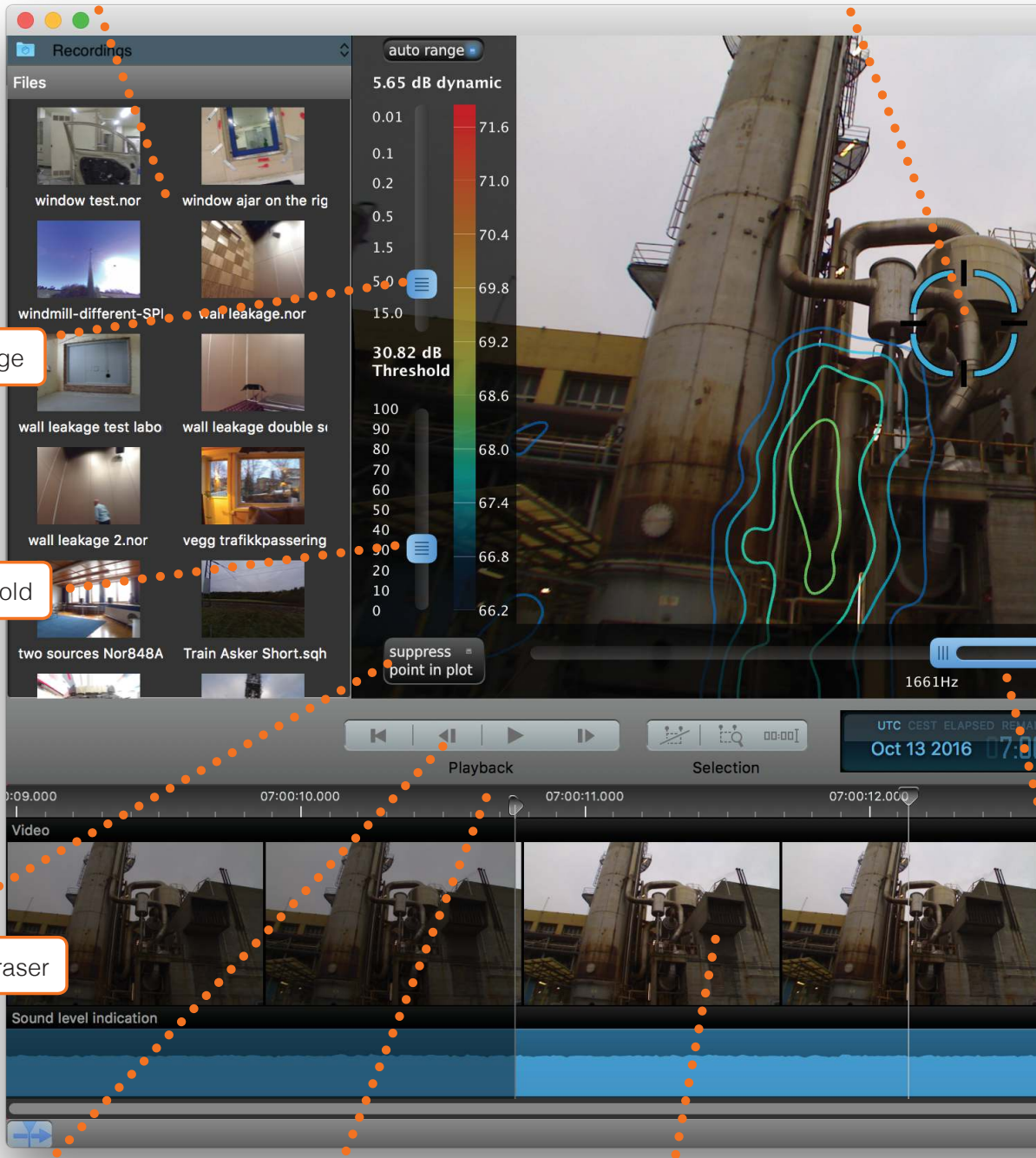
Thumbnail of recordings

Virtual microphone position selected by the
Used for analysis and listening

Select the colour range

Select plotting threshold

Enable the acoustic eraser



Playback control

Time axis

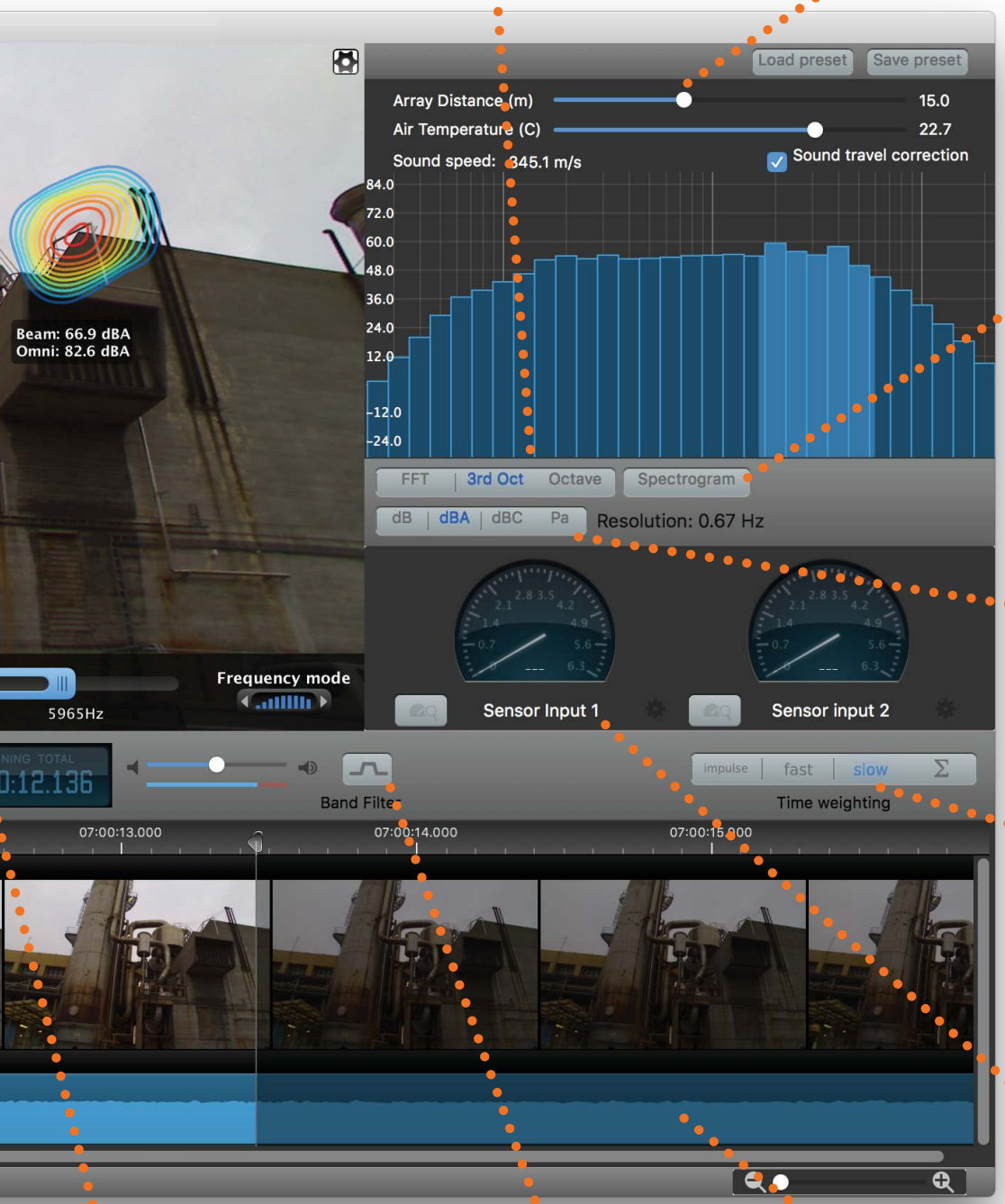
Video frames for quick navigation within recording

cursor.

Display the spectrum as FFT, 1/3 or 1/1 octave

Set the focal distance

Display spectrogram



A, C or flat frequency weighting selection

Time weighting

RPM and order tracking

Set the frequency range

Listen to broadband or selected frequency band

Sound level history

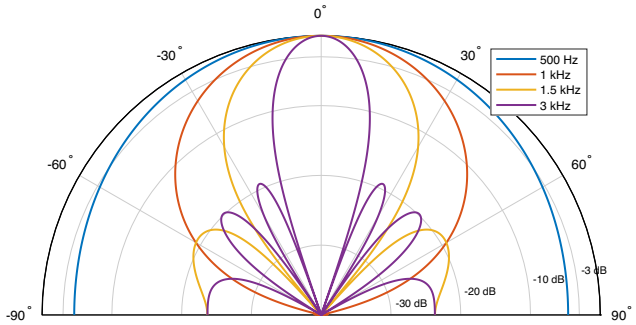
Modular design for increased resolution

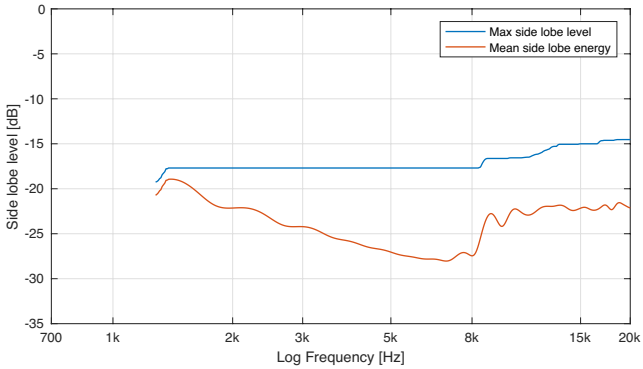
Acoustic beamforming performance is a function of the size of the equipment being used. Bigger physical size and more microphones means better performance. The size versus resolution criteria is the crux of the acoustic camera market. Users want something that is small, lightweight, and portable, while at the same time having excellent resolution. These criterias are often at odds with one another.

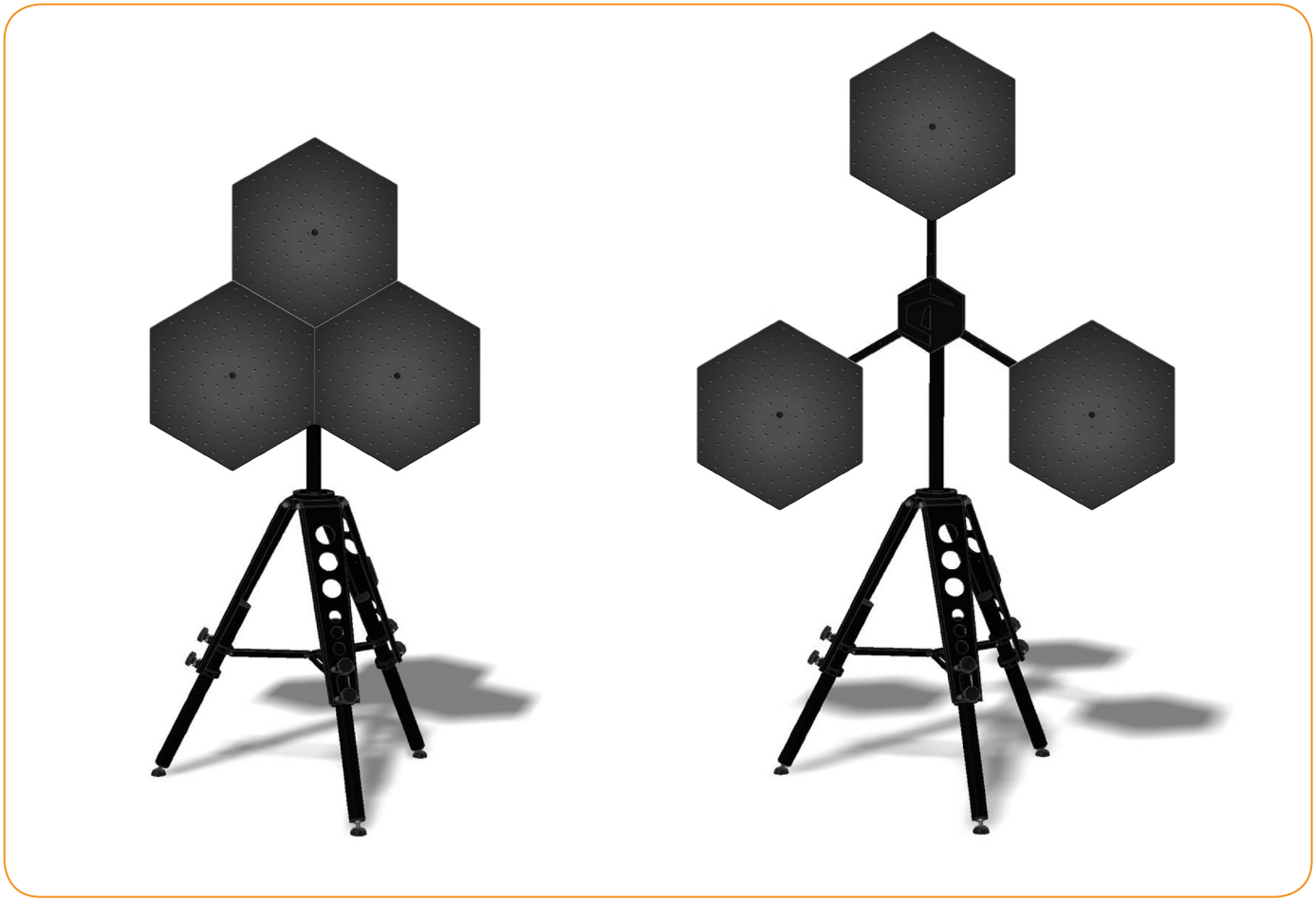
A single Hextile can due to its hexagon shape be combined with two other single units into a larger Multitile for increased resolution. The Multitile is a 384 element array with a diameter of 93 cm.

In addition, a Multitile can also be used for low frequency measurements by sliding the individual Hextile units on the arms of the array holder to create a low frequency configuration.

Hextile performance

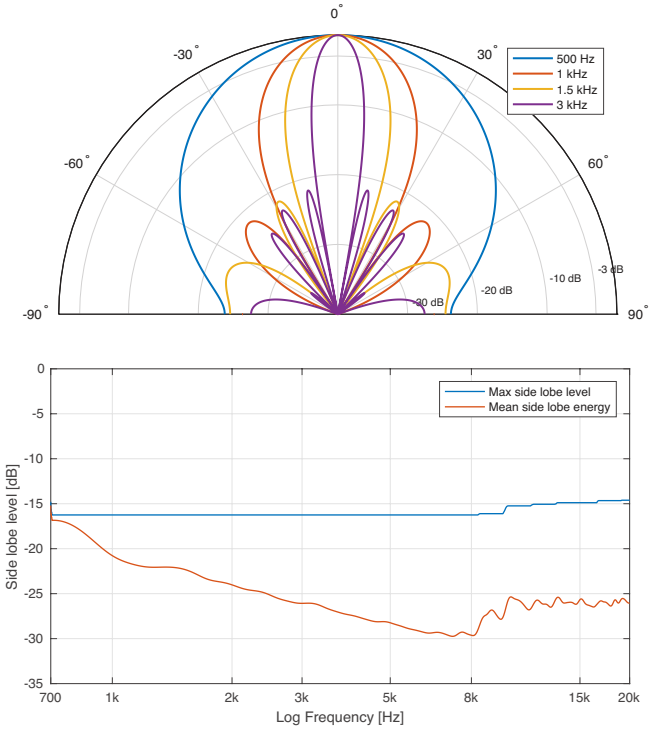




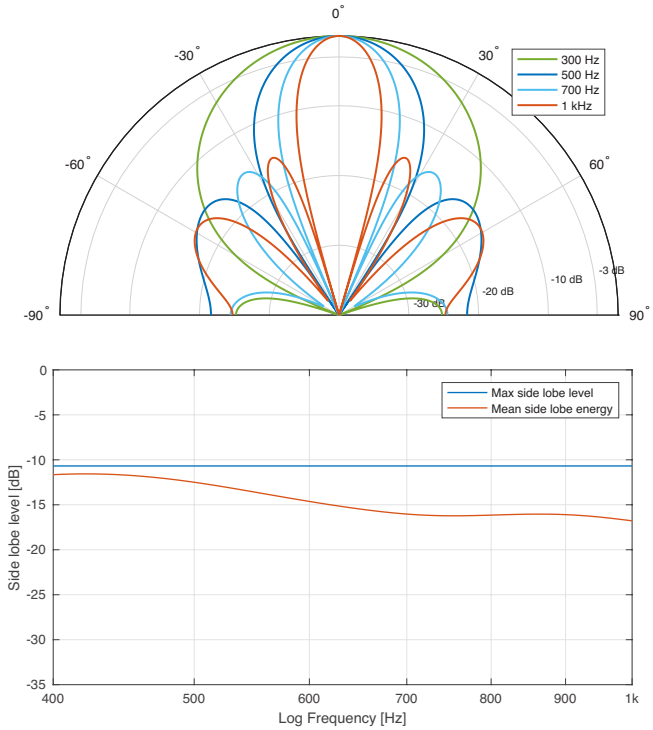


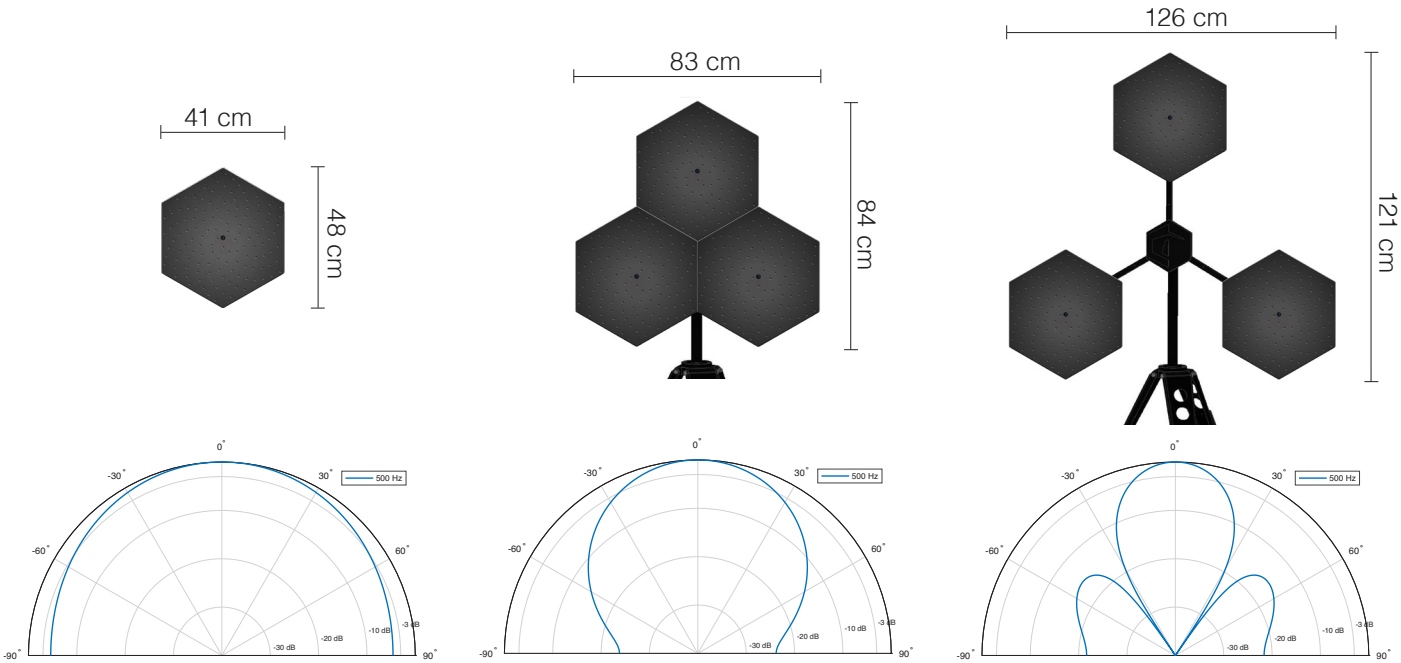
Multitile shown in both standard configuration and for low frequency measurements

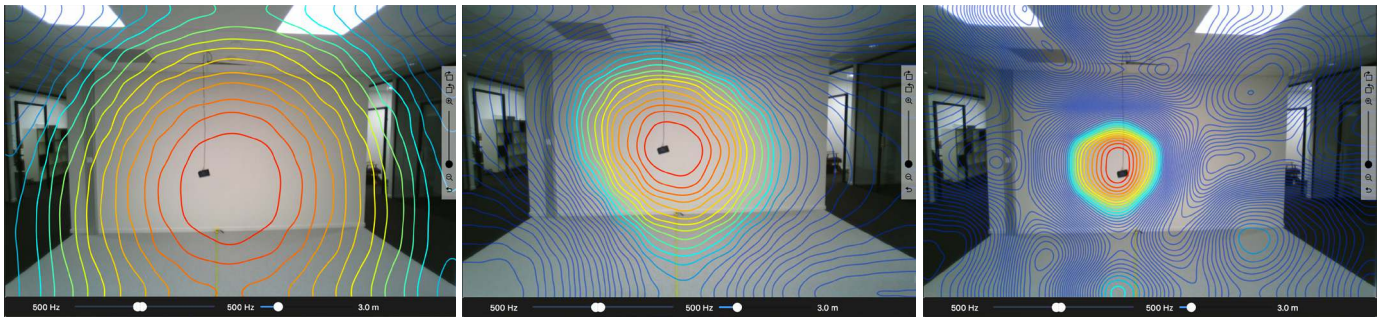
Multitile performance



Multitile (LF mode) performance







Array geometry, beampattern at 500 Hz, and plotting results of pink noise source filtered at 500 Hz for Hextile, Multitile and Multitile (LF mode)

Audio and video

Connection	USB
Microphones	Digital MEMS
# of mics Hextile	128
# of mics Multitile	384
# of mics Multitile (LF mode)	384
Max sound level	120 dB
Min sound level (system)	9 dBA
SNR per microphone	65 dBA
SNR array (system)	82 dBA
Audio sampling rate	44.1 kHz
A/D bit resolution	16 bit/sample
Camera resolution	Max 2592 x 1944
Frame rate @ 2592 x 1944	15 FPS
Frame rate @ 1280 x 960	45 FPS
Opening angle	105° horizontal, 75° vertical
Self-noise (A-weighted)	
Hextile	12 dBA
Multitile	7 dBA
Multitile (LF mode)	7 dBA

Frequency response

Per microphone (flat)	100 Hz - 20 kHz
Per microphone	-26 +/-3dBFS/Pa @1 kHz 94 dB
Spatial sensitivity (-3 dB)	
Hextile	410 Hz - 20 kHz
Multitile	220 Hz - 20 kHz
Multitile (LF mode)	120 Hz - 1 kHz
Spatial sensitivity (-1 dB)	
Hextile	240 Hz - 20 kHz
Multitile	130 Hz - 20 kHz
Multitile (LF mode)	70 Hz - 1 kHz

Physical

Dimension Hextile	41 cm x 48 cm, Ø 48 cm
Dimension Multitile	83 cm x 84 cm, Ø 96 cm
Dimension Multitile (LF mode)	126 cm x 121 cm, Ø 146 cm
Weight Hextile	3 kg
Weight Multitile	< 10 kg
Material	Aluminium
DC supply	USB 5V
Power consumption	< 3 W
Operating temperature range	-40 to +85
Ingress Protection code	IP40

Sensors

Gyroscope
Accelerometer (G-sensor)
Magnetometer
Temperature
Humidity

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