DODOTRONIC High Performance Dual Sensor Ultrasonic USB Microphone User Guide

DODOTRONIC

USER GUIDE
2.0
ULTRAMIC384KEVO
ULTRAMIC192KEVO
High-performance dual-sensor Ultrasonic USB microphone

Contents

Overview

Ultramics are USB audio and ultrasonic microphones.
Two versions are available:
– UM384K USB MICROPHONE with 384 kHz sampling rate and 190kHz bandwidth
– UM384K USB MICROPHONE with 192 kHz sampling rate and 95kHz bandwidth
This means that you can record sounds up to about 190 kHz or up to 95 kHz.
The USB 2.0 full speed port allows an easy connection to your PC, iOS, Android smartphone or tablet and to embedded Linux systems.

The microphone is provided (optional) with a magnetic cone that makes the microphone more directional.
The cone can be easily removed by pulling it from the tip making the microphone omnidirectional, moreover, the cone provides protection to the sensor.
The magnets keep the cone close to the sensor.

Features

- A high-performance dual-sensor- omnidirectional audio and ultrasonic microphone

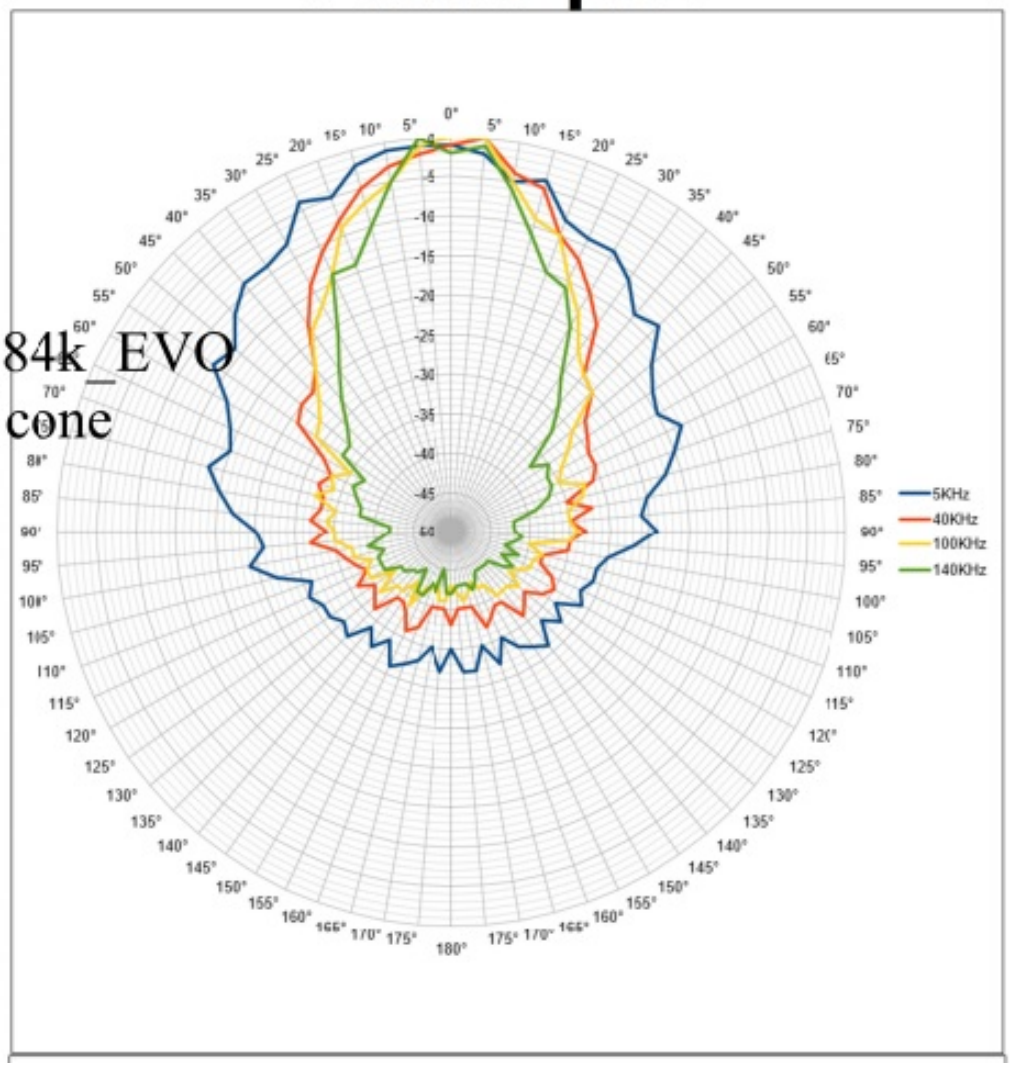
- **USB 2.0** full speed connection using a driverless – standard audio class UAC 1.1 interface for an easier communication with host devices
- Hardware amplification gain is settled via four switches

Applications

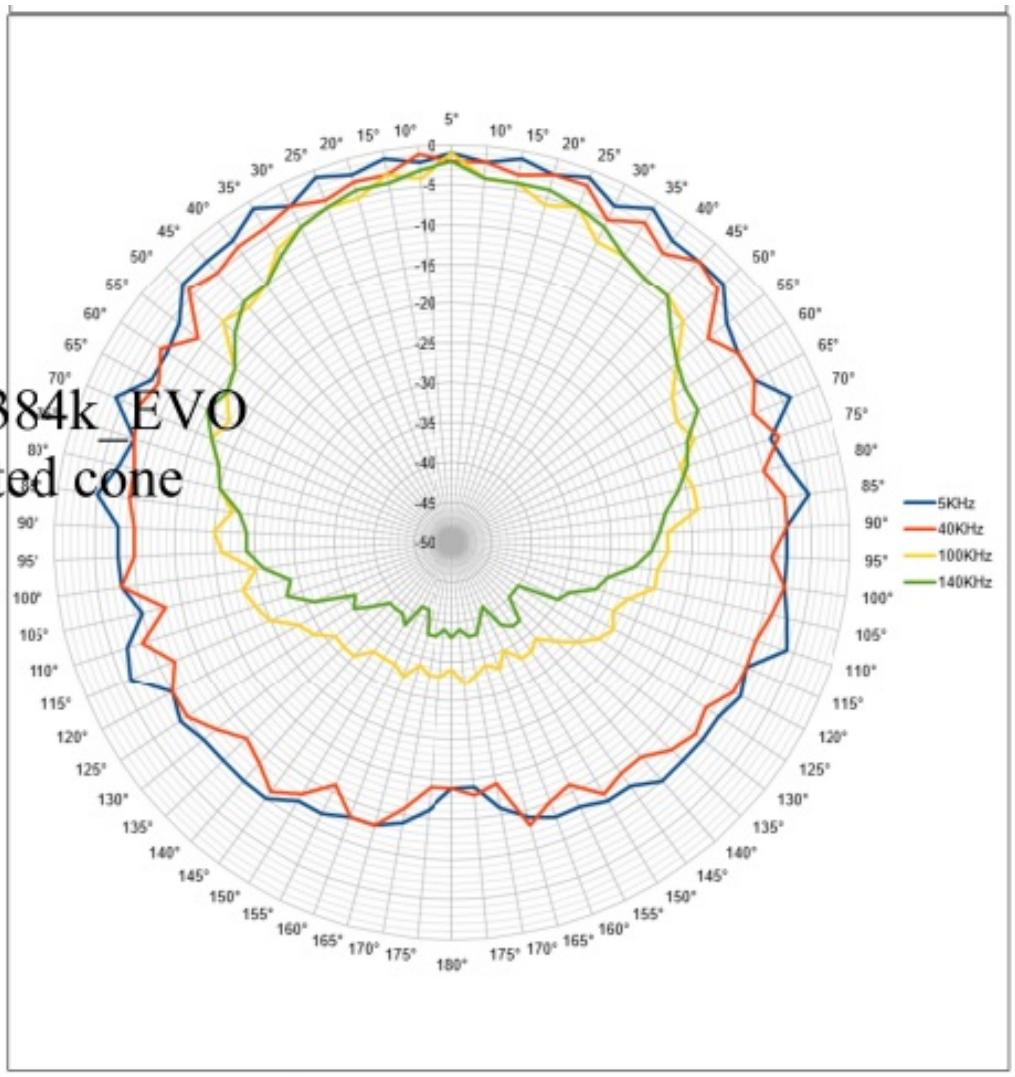
- BIOACOUSTICS:
  o Detecting and recording of biological ultrasounds for **bioacoustics studies** on insects, cetaceans, rodents, and bats.
  o Environmental studies to assess the impact of **wind farms** on bats.
  o Recording and analyzing mice ultrasonic vocalizations for **pharmacological studies**.
  o Soundtracks and special effects (such as slowing down the recorded ultrasounds).
- INDUSTRIAL:
  o **LEAK detection**
  o **Predictive motor fault monitoring**
  o Detection of **high-frequency noises** emitted by switching power supplies, LCD screens, or the turbines of car and truck engines, energy-saving lamps.
  The use of a standard USB audio class allows the microphone to be used as a standard Plug & Play device with no driver installation required.
  … WITH YOUR PC
  Insert the USB connector of the microphone to the USB connector of your PC.
  Less than a minute is required for the operating system of your PC to install the required software.
  Install your preferred audio software. The list of compatible software can be found on: **www.dodotronic.com**
  … **WITH YOUR SMARTPHONE OR TABLET**
  Use a USB OTG adapter and connect the Ultramic to your Android smartphone.
  Download the BAT RECORDER app and open it.
  Connect your headphones to listen to the ultrasound translated in the audio range. The online user guide will lead you to understand the many available features.

Planar plot

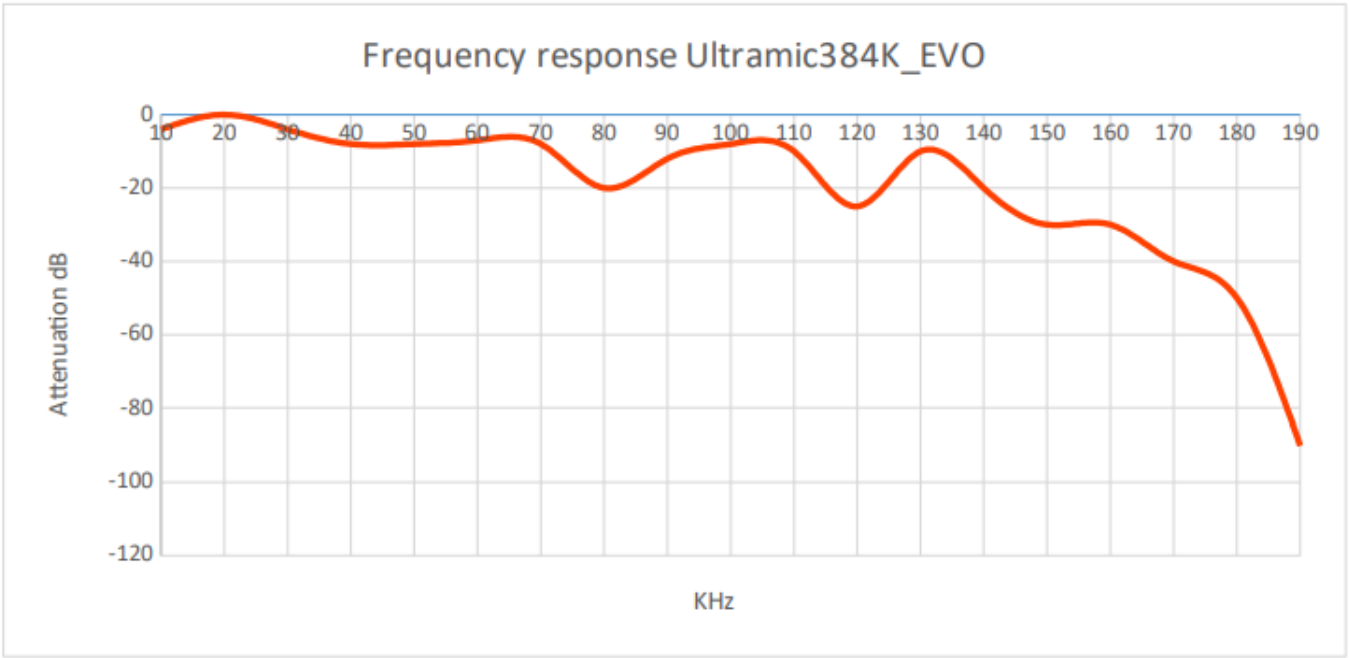
ULTRAMIC384k_EVO
with mounted cone



ULTRAMIC384k_EVO
with unmounted cone

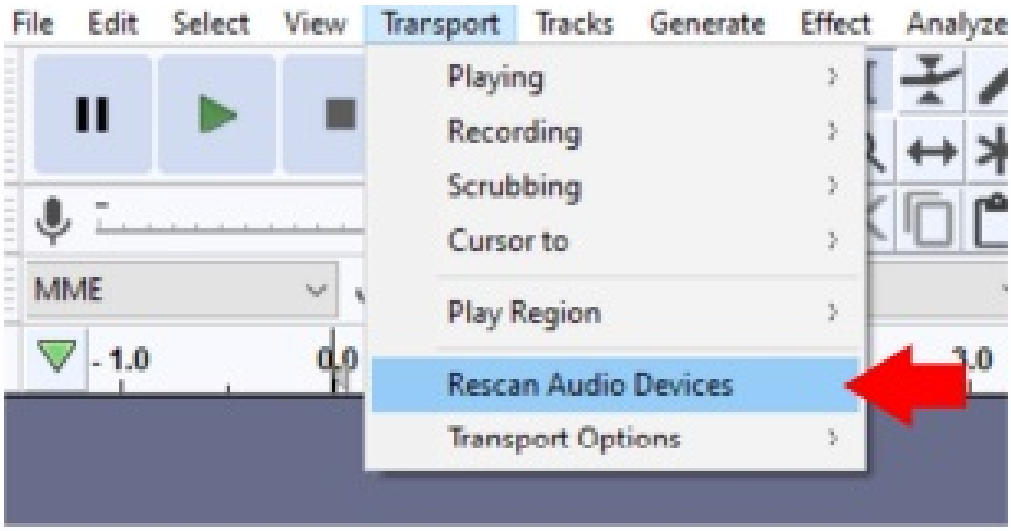


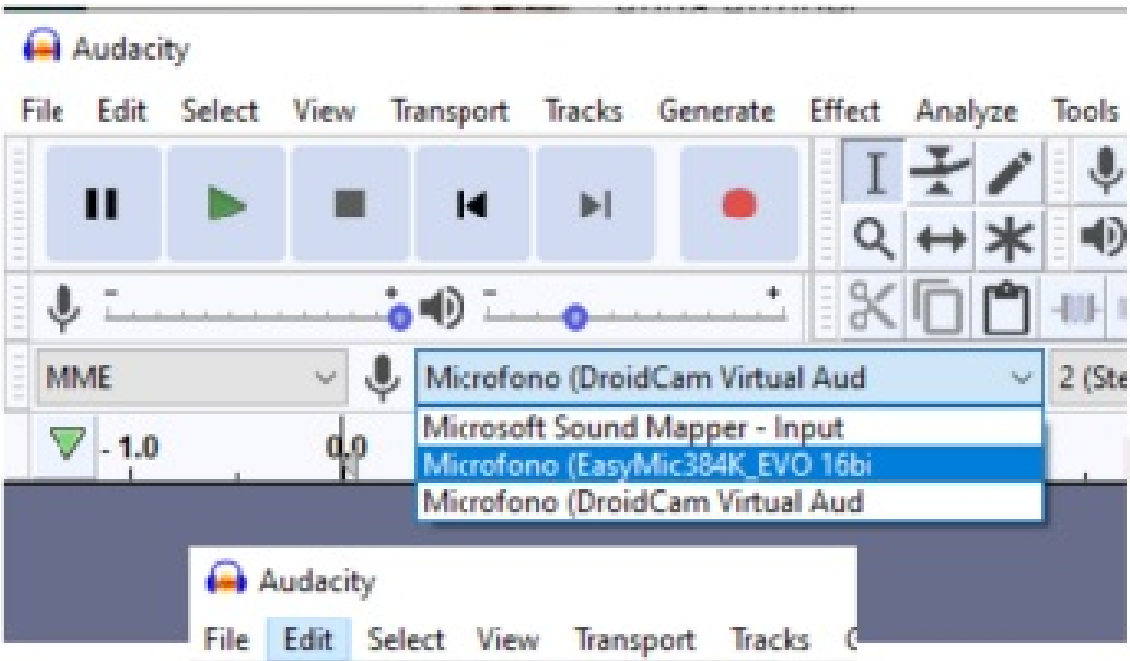
Frequency response

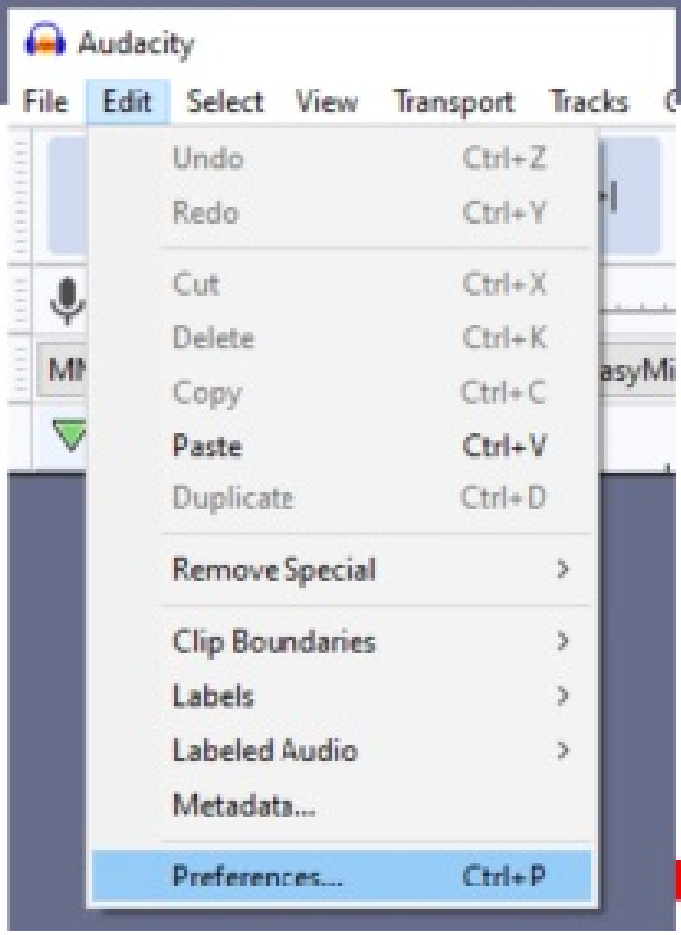


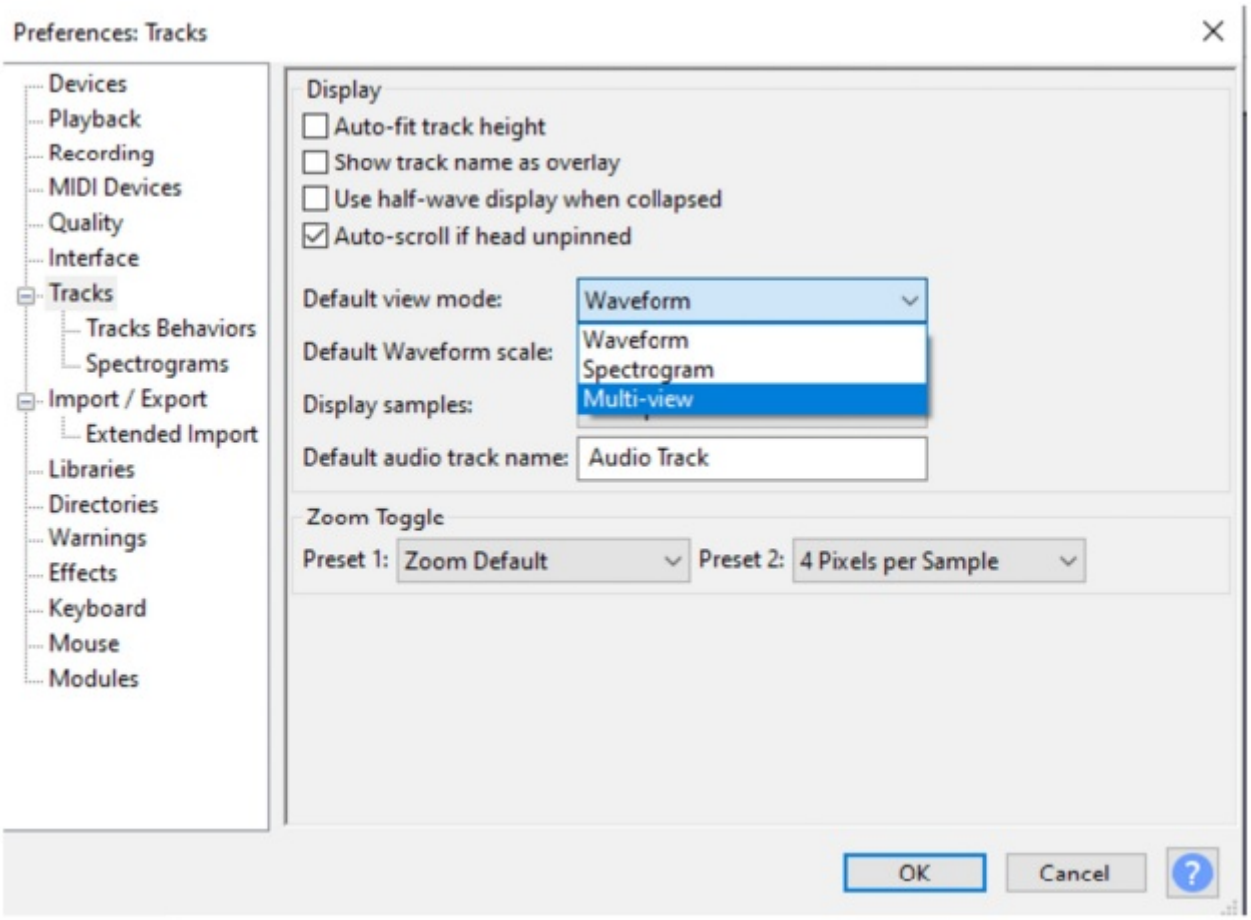
How to setup Audacity with Ultramic384K_EVO

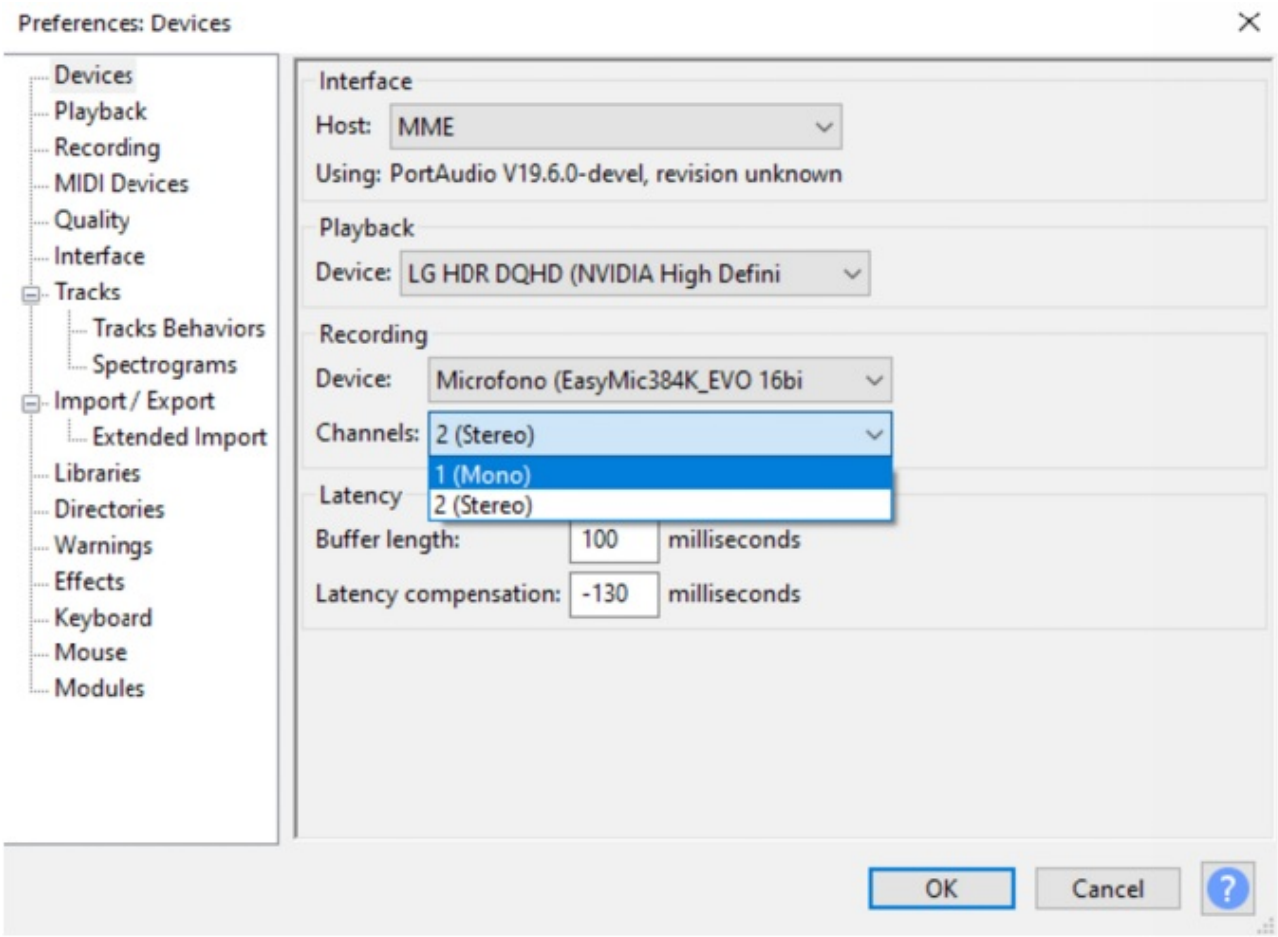
Audacity

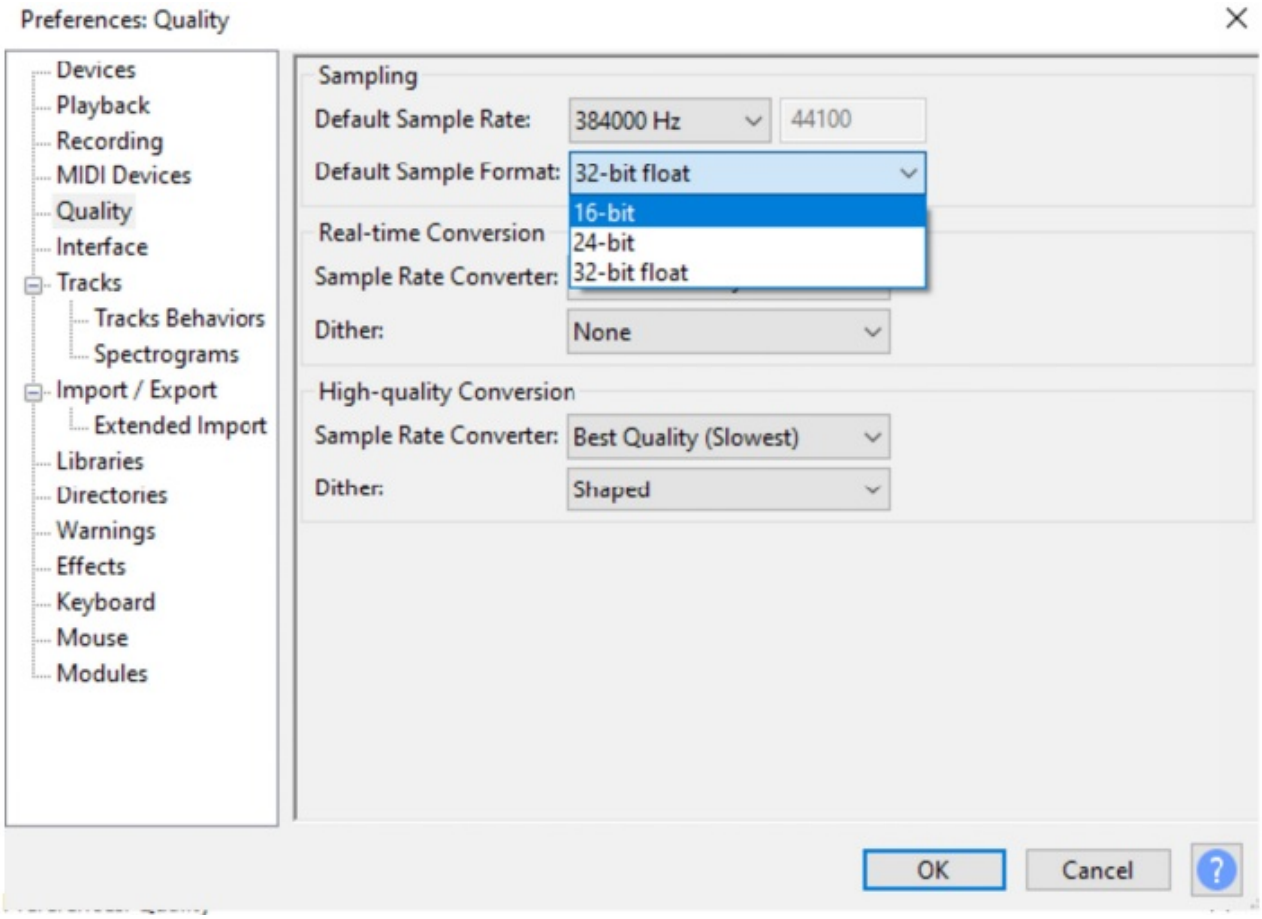

File Edit Select View Trarsport Tracks Generate Effect Analyze
Playing
Recording
Scrubbing
Cursor to
Play Region
Rescan Audio Devices
Transport Options
MME
- 1.0
0.0

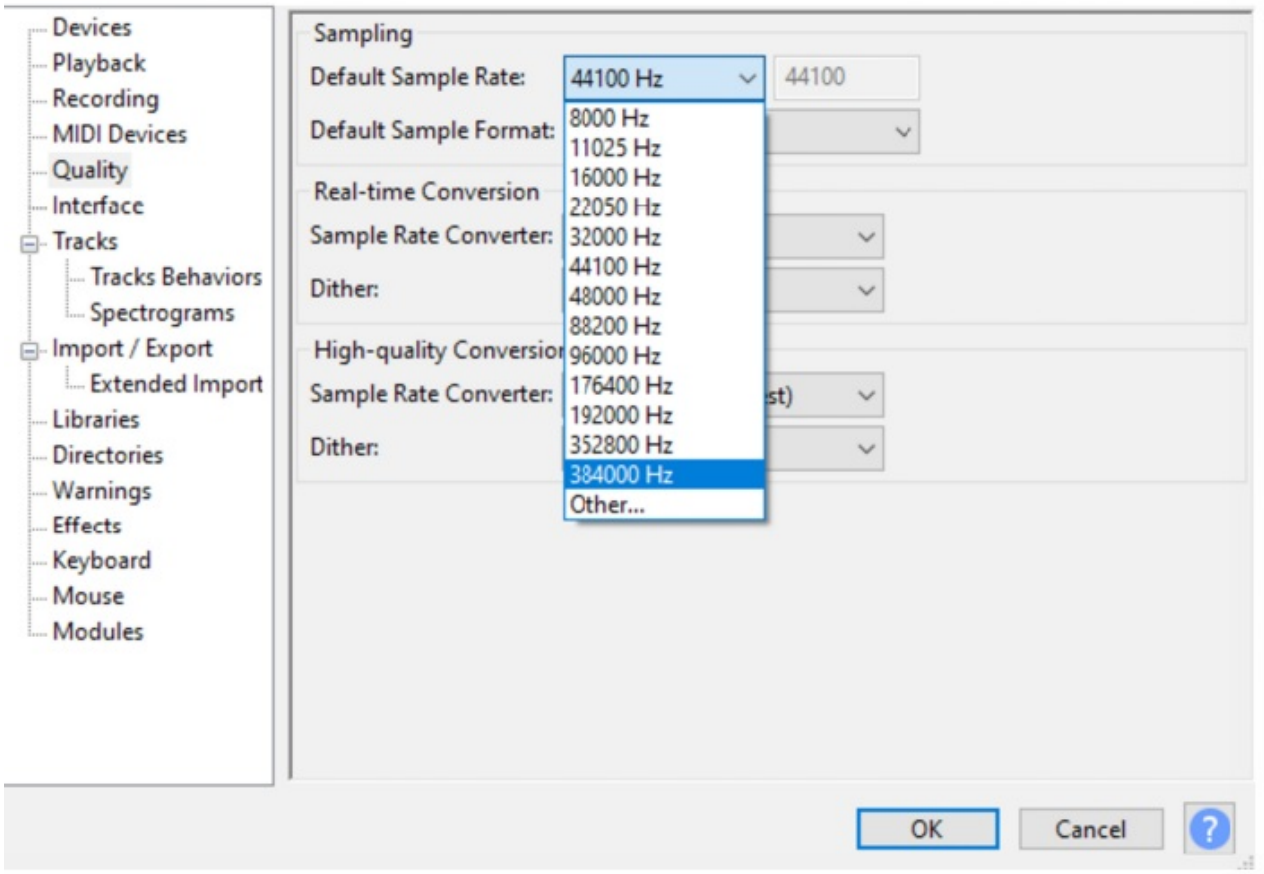

Audacity
File Edit Select View Transport Tracks Generate Effect Analyze Tools
MME
Microfono (DroidCam Virtual Aud
Microsoft Sound Mapper - Input
Microfono (EasyMic384K_EVO 16bi
Microfono (DroidCam Virtual Aud
- 1.0
0.0

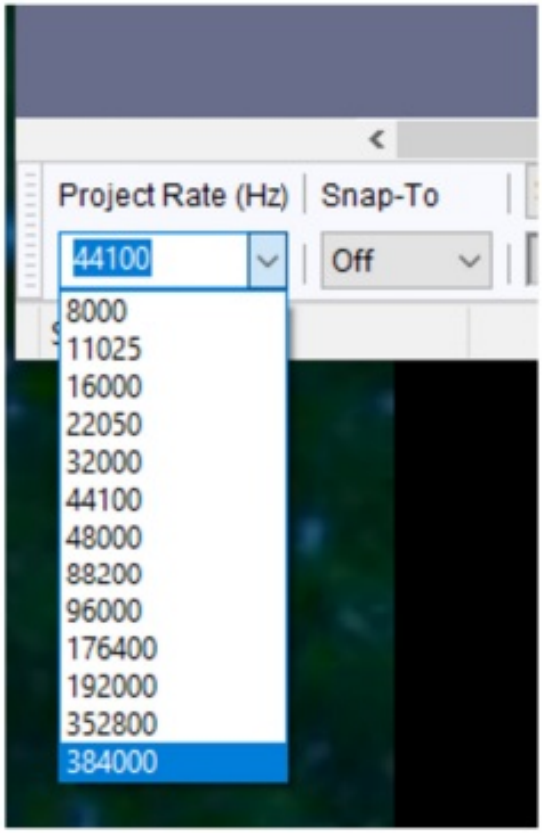

Audacity
File Edit Select View Transport Tracks
Undo Ctrl+Z
Redo Ctrl+Y
Cut Ctrl+X
Delete Ctrl+K
Copy Ctrl+C
Paste Ctrl+V
Duplicate Ctrl+D
Remove Special
Clip Boundaries
Labels
Labeled Audio
Metadata...
Preferences... Ctrl+P

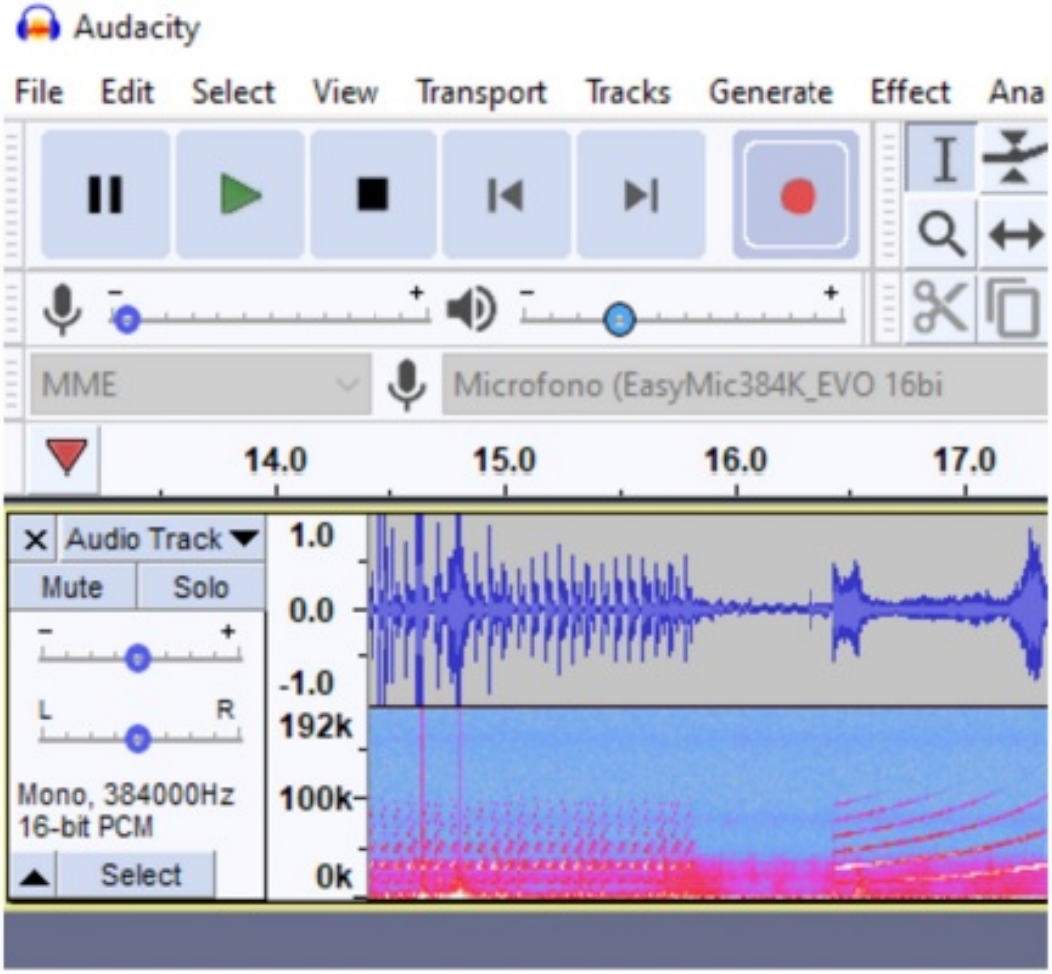

Preferences: Tracks
Devices
Playback
Recording
MIDI Devices
Quality
Interface
Tracks
Tracks Behaviors
Spectrograms
Import / Export
Extended Import
Libraries
Directories
Warnings
Effects
Keyboard
Mouse
Modules
Display
Auto-fit track height
Show track name as overlay
Use half-wave display when collapsed
Auto-scroll if head unpinned
Default view mode:
Waveform
Waveform
Spectrogram
Multi-view
Default Waveform scale:
Display samples:
Default audio track name:
Audio Track
Zoom Toggle
Preset 1:
Zoom Default
Preset 2:
4 Pixels per Sample
OK
Cancel


Preferences: Devices
Devices
Playback
Recording
MIDI Devices
Quality
Interface
Tracks
Tracks Behaviors
Spectrograms
Import / Export
Extended Import
Libraries
Directories
Warnings
Effects
Keyboard
Mouse
Modules
Interface
Host:
MME
Using: PortAudio V19.6.0-devel, revision unknown
Playback
Device:
LG HDR DQHD (NVIDIA High Defini
Recording
Device:
Microfono (EasyMic384K_EVO 16bi
Channels:
2 (Stereo)
1 (Mono)
2 (Stereo)
Latency
Buffer length:
100
milliseconds
Latency compensation:
-130
milliseconds
OK
Cancel


Preferences: Quality
Devices
Playback
Recording
MIDI Devices
Quality
Interface
Tracks
Tracks Behaviors
Spectrograms
Import / Export
Extended Import
Libraries
Directories
Warnings
Effects
Keyboard
Mouse
Modules
Sampling
Default Sample Rate:
384000 Hz
44100
Default Sample Format:
32-bit float
16-bit
24-bit
32-bit float
Real-time Conversion
Sample Rate Converter:
Dither:
None
High-quality Conversion
Sample Rate Converter:
Best Quality (Slowest)
Dither:
Shaped
OK
Cancel


Devices
Playback
Recording
MIDI Devices
Quality
Interface
Tracks
Tracks Behaviors
Spectrograms
Import / Export
Extended Import
Libraries
Directories
Warnings
Effects
Keyboard
Mouse
Modules
Sampling
Default Sample Rate:
44100 Hz
44100
Default Sample Format:
Real-time Conversion
Sample Rate Converter:
Dither:
High-quality Conversion
Sample Rate Converter:
Dither:
8000 Hz
11025 Hz
16000 Hz
22050 Hz
32000 Hz
44100 Hz
48000 Hz
88200 Hz
96000 Hz
176400 Hz
192000 Hz
352800 Hz
384000 Hz
Other...
OK
Cancel





Technical Specifications

Recording format	Linear PCM (Pulse Code Modulation) format	
USB B connector	USB 2.0 Full Speed USB audio class 1.1	
External dimensions	Ultramic = 80 W x 30 L x 16 H mm Cone = 37 W x 25 L x 18 H mm	
Weight	24 g	
Switch gain settings referred t o 1 Khz 94 dB SPL = 0 dB	1 2 3 4	-33 dB -10dB OdB 10dB
Sampling frequency	384 kHz/second or 192kHz/second	
Resolution	16 bit	
Amplification	High quality, and low noise, amplification with low pass filter with cutting freque ncy of 190 kHz or 95kHz	
CPU	32 bit integrated ARM Cortex M4 microcontroller	
Power	15 mA power requirement when connected to a USB host	
Microphone sensor	Dual SPU0410LR5H from Knowles	

Q&A

Q: How can I connect Ultraimc384K to my own analog recorder?
A: Ultramic384K doesn't need a separate recorder and cannot be connected to an analog recorder since the only output is digital (USB). Use the integrated recorder instead.

_____

Q: Can I record audio and Ultrasound at the same time?
A: Yes, Ultramic384K_EVO has no high pass filter so you can record audio and ultrasound at the same time.

_____

Q: I want to listen and view the spectrograms of acoustical signals.
A: Connect your Ultramic384K to your smartphone, tablet or PC and use your preferred app. The list of compatible apps is available on **www.dodotronic.com.**

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Q: My software can't get the audio stream from UM384K.
A: Not all the software allows a so high sampling rate, check if the sampling rate can be set to 384 Khz. Select the right sound source.

_____

Q: I'm recording in real-time but from the spectrogram, I see only a valid bandwidth up to 20 Khz.
A: probably you have chosen the wrong sound source, try to change the sound source from the PC microphone to UM384K.

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Technical assistance and support
Send a request to:
info@dodotronic.com

Safety Precautions

Before using this device, read this manual carefully to ensure that you know how to operate the Ultramic384K safely and correctly. Be sure to keep this manual on hand so teat you can refer to it at any time.

Instructions for us.

- Do not leave the product where it will be subject to high temperatures and/or In drect sunlight.
- Do not use organic solvents such as alcohol or thinner for cleaning.
- Do not apply strong Notation or shock to the product.
- Do not expose to water and dust.
- Use appropriate cables

Caution

- Stop using the product if you notice an abnormality such as an unusual odor, abnormal sound, or smoke.
- Do not leave the product where It will be subject to high temperatures.

Conformity declaration

model: ULTRAMIC384K EVO
Ultramix is in conformity with the protection and compliance requirements of the following EC Directives:

- 2004/108/CE
- 2006/95/CE

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Documents / Resources

	DODOTRONIC High Performance Dual Sensor Ultrasonic USB Microphone [pdf] User Guide High Performance Dual Sensor Ultrasonic USB Microphone, ULTRAMIC384KEVO, ULTRAMIC 192KEVO

References