

WAVECOM® W-VAC

Virtual Audio Cable

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Application Note



Wavecom Virtual Audio Cable (W-VAC) is a digital audio device for signal playback and recording. It works with all Wavecom decoders and 3rd-party sound applications.



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Introduction

Wavecom Virtual Audio Cable (W-VAC) is a digital audio program introduced together with W-CODE release V8.3.0.

W-VAC is a virtual audio driver which provides a set of interconnected wave-out and wave-in devices. This interconnection between devices allows the transfer of audio signals between applications in a

digital way, i.e., the sampled signal in AF or IQ baseband is streamed from one end to another. The process is lossless, there is no conversion or compression.

W-VAC can be installed on Windows XP and Windows 7, 32- or 64-bit by running the installer wvac.exe. To use W-VAC, a USB dongle license is required.

Use W-VAC together with W-CODE

After W-VAC is installed on a computer, the device appears in the sound control panel (Fig. 1). User can check the setting by opening the “Properties” button. W-VAC is fix configured at “2 channel, 16 bit, 192 kHz (Studio Quality)” (the highest sampling rate) to ensure proper functionality. This setting is displayed in the “Advanced” tag.

Fig. 2 shows a typical setup using W-VAC. Applications writing into and reading out from W-VAC are not necessarily Wavecom application. W-VAC is made for general access.

W-CODE uses W-VAC as a digital bridge to stream AF or IQ signal from a Wavecom input device (W-PCI, W-PCIe, W74PC or W-CLOUD). Users can use W-CODE built-in Media Player/Recorder (or any 3rd party application) to record/play the signals.

The parameters of the sample stream provided through W-VAC are usually:

- Audio channels: 2. When the signal is AF only the left channel will have non-zero samples, the right channel is always zero.
- Bit per sample: 16.

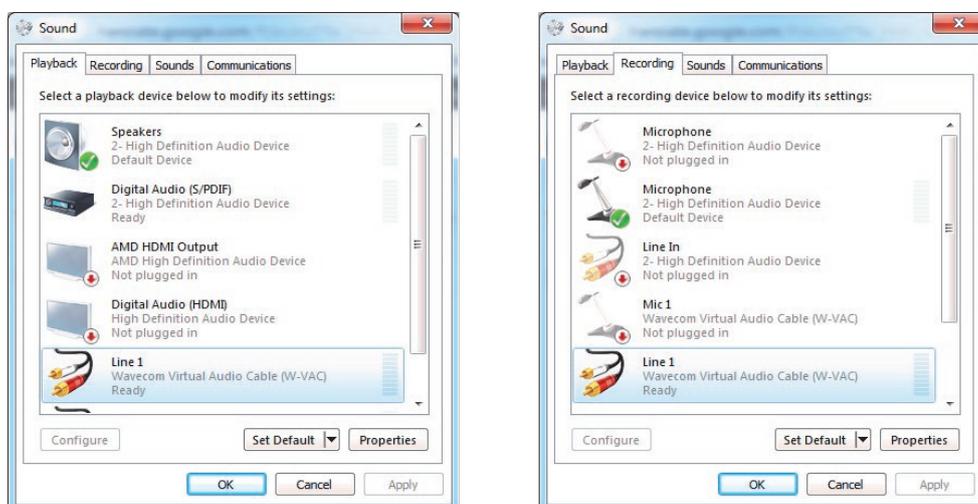


Fig. 1 W-VAC wave devices in Windows 7 sound control panel.

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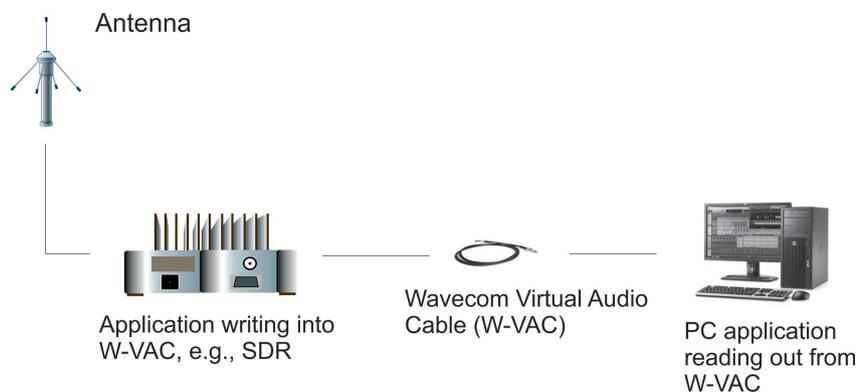


Fig. 2 A typical setup using W-VAC.

- Sample rate: depends on the sample rate at which the input device is working, minimum is 48000 Hz.

Fig. 3 shows how to use W-CODE Media Player/Recorder to record signal from W-VAC. Be aware of the following settings:

Input device: Wavecom Virtual Audio Cable (W-VAC) is selected.

Sample rate: given that the FFT is running at a bandwidth of 24000 Hz, a sample rate of 48000 Hz is required at least.

Channel: W-VAC always streams 2 channels, so “Stereo” or “IQ” should be selected. However, in this FFT the signal just contains real samples, so the right channel contains zero-valued samples, as shown in the screenshot.

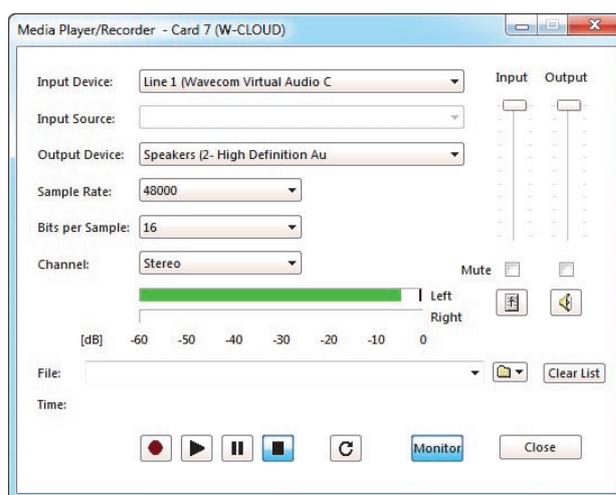
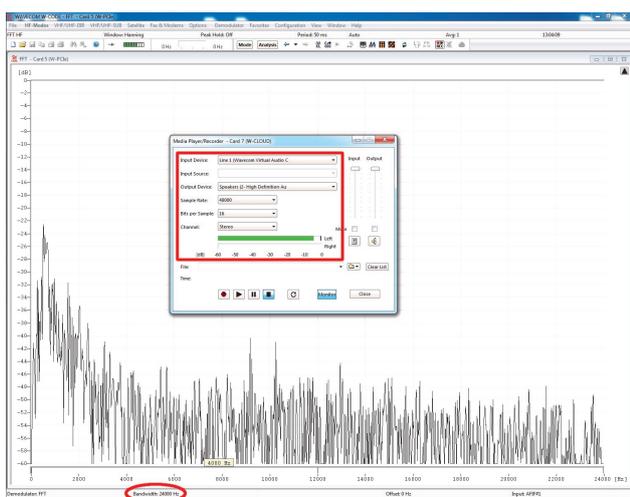


Fig. 3 Record samples from W-VAC using W-CODE Media Player/Recorder.

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Use W-VAC to Record Signal on Wavecom Hardware Decoder

Signal recording without loss or compression is essential in SIGINT / COMINT applications. With W-VAC the user can record signals on a Wavecom hardware decoder (W-PCIe, W-PCI and W74PC) while decoding. The recording works in a “native” way, i.e., the signal on an analog input is digitized and forwarded to the W-VAC. This has an indisputable advantage over signal recording on a built-in sound card regarding signal quality.

Fig. 4 and 5 show how to record a signal on an input, e.g., AFIF#1 using W-VAC.

- Wire the signal from the receiver to the Wavecom hardware decoder input.

- Put the signal to the spectrum middle. Choose a proper bandwidth, e.g., 48 kHz, so that the signal is not cut.
- Run “ALS (Automatic Level Setting)” so that the signal level looks “nice”.
- Open the Media Player/Recorder, choose “Wavecom Virtual Audio Cable W-VAC” as the Input Device. Set the Sample Rate to 96 kHz, Bits per Sample to 16 bits and Channel to “AF LEFT”.
- Set a file name and press the “Record” button to start recording.

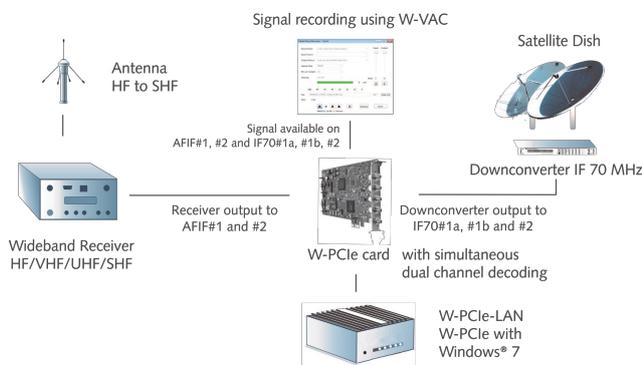


Fig. 4 Configuration for recording on W-VAC.

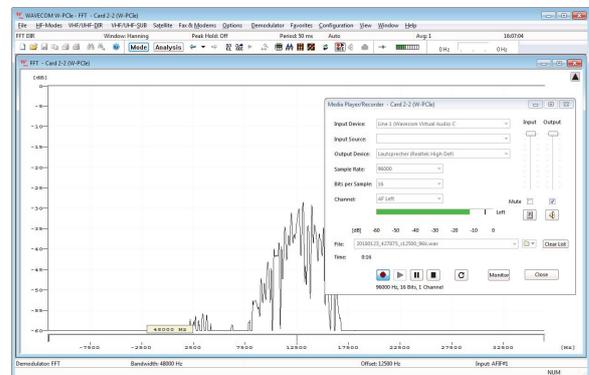


Fig. 5 Record the signal on AFIF#1 using W-VAC.

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Use a 3rd-party Application with W-VAC

Unlike other similar commercial products, W-VAC does not contain any synthetic noise mechanism to disable 3rd-party applications from using it. Any software capable of accessing a wave device can write-in and read-out samples from W-VAC. This feature makes W-VAC a versatile bridge working with other devices and applications.

The following sequence of screenshots (Fig. 6 – 9) shows how to capture (record) signal on W-VAC using the popular media player VLC. Note that in this example the bandwidth of the spectrum display (FFT) in W-CODE is 48 kHz, the sample rate is set to 96 kHz in the recording parameter.

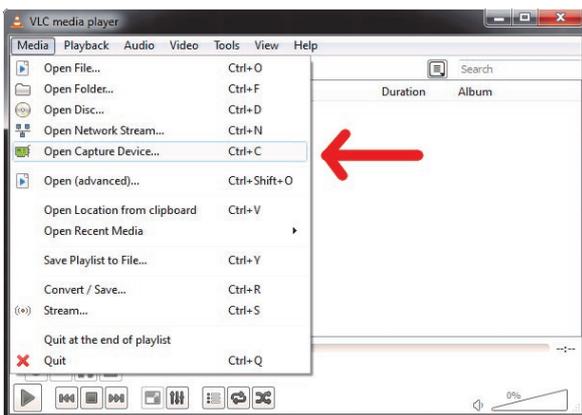


Fig. 6 Open a capture device.

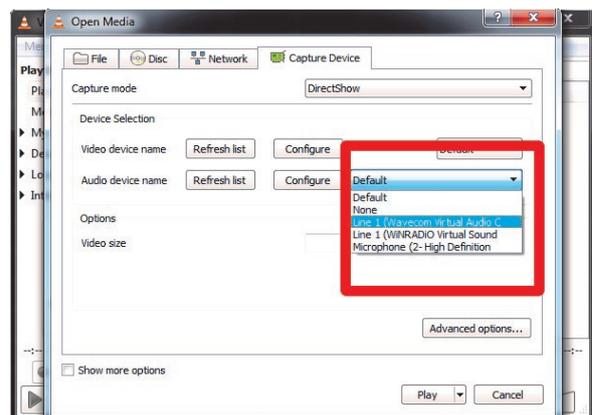


Fig. 7 Select the capture device W-VAC.

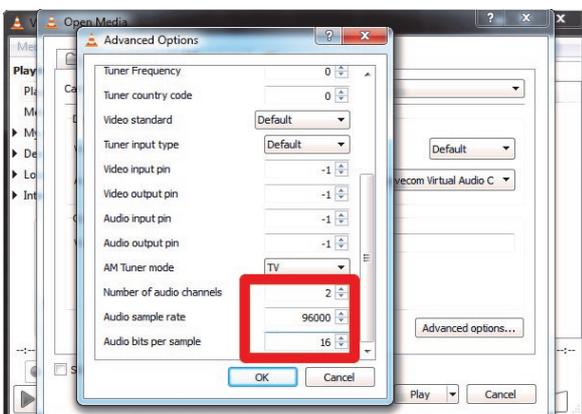


Fig. 8 Configure recording parameters.

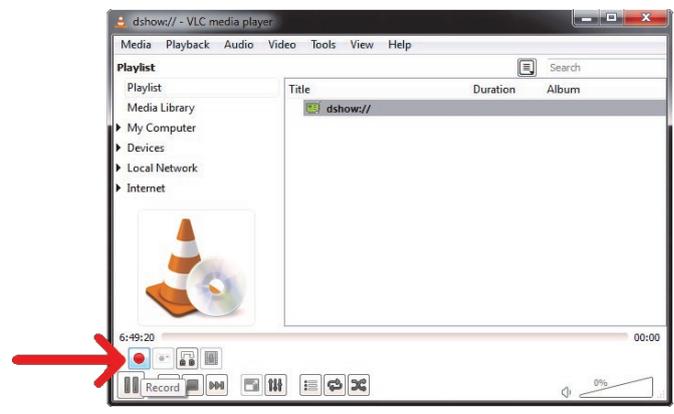


Fig. 9 Record the signal.

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Since more than thirty years Wavecom Elektronik AG has developed, manufactured and distributed high quality devices and software for the decoding and retrieval of information from wireless data communication in all frequency bands. The nature

of the data communication may be arbitrary, but commonly contains text, images and voice. The company is internationally established within this industry and maintains a longstanding, world-wide network of distributors and business partners.

Product Information

Products	http://www.wavecom.ch/product-summary.php
Datasheets	http://www.wavecom.ch/brochures.php
Specifications	http://www.wavecom.ch/product-specifications.php
Documentation	http://www.wavecom.ch/manuals.php
Online help	http://www.wavecom.ch/content/ext/DecoderOnlineHelp/default.htm
Software warranty	One year free releases and bug fixes, update by DVD
Hardware warranty	Two years hardware warranty
Prices	http://www.wavecom.ch/contact-us.php

System Requirements

	<i>Minimum</i>	<i>Recommended</i>
CPU	Core i5 or Core i7 2.8 GHz	Core i7-6700 3.4 GHz
Memory	4 - 8 GB RAM	16 - 32 GB RAM
OS	Windows 7	Windows 10 32-bit or 64-bit

Product Code	Description
WVAC	Wavecom virtual audio cable. For Windows XP, 7 and 10 systems

Distributors and Regional Contacts

You will find a list of distributors and regional contacts at <http://www.wavecom.ch/distributors.php>