

RAL-24192UT1 Setup Guide

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1. Introduction

Thank you for purchasing RAL-24192UT1. We are confident that you will enjoy listening HD music with your PC Audio system includes it. RAL-24192UT1 gets Music stream from PC or Mac through USB 2.0 High-Speed (480Mbps) port and converts it to S/PDIF Digital Audio stream. RAL-24192UT1 has three Audio output, the first one is Digital Audio Output, the second one is Analog Stereo Line Output and the last one is a Stereo Headphone Output.

You can enjoy RAL-24192UT1 with minimum Audio System personally consists of PC/Mac and high class headphone. If you have an excellent DAC, RAL-24192UT1 provides S/PDIF Digital Audio Stream up to 24bit/192kHz to DAC through Digital Audio Output port. If you have an excellent legacy Audio amplifier, on board 24bits/192kHz DAC provides Stereo Analog Lineout to it.

1-1. Features:

- Fully compatible with USB 2.0 (HS 480Mbps) Specification.
- Fully compatible with USB Audio Class 2.0 Driver.
- Works with USB Bus Power or External Power (DC+5V/150mA or higher).
- Accepts 16bits/24bits, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz and 192kHz.
- Includes wide range frequency response headphone amplifier.
- OCL (GND reference) headphone amplifier provides clear and pure sound.
- Includes powerful headphone amplifier, it provides 120mW/16-Ohm each Ch..
- Use 32bit parallel processor and multi thread operation. Low overhead software provides noise-free, clear and rich music.

2. System requirements

2-1. PC running on Windows 7, Vista, XP(SP2 or newer). 32bits or 64bits.

- One USB 2.0 HS(480Mbps) enabled Host port.
- One CD-ROM Drive to install USB Audio 2.0 Driver.
- RAL-24192 USB Audio Class 2.0 Driver installation required.

** The bundled CD-ROM includes the driver, installer and Instruction Guide.

Note) The knowledge and experience regarding 'Control Panel' for 'Sound Audio Device', 'Device Manager', Audio Music Player application such as foobar, MediaPlayer, iTunes and CD Ripping applications are required to use RAL-24192UT1. Refer User Guide, Instruction Guide or Online Help of these Applications.

2-2. MacOS X 10.6.4(Snow Leopard) or newer.

- One USB 2.0 HS(480Mbps) enabled Host port.
- MacOS X 10.6.4 or newer already includes USB Audio Class 2 Driver.

** You don't need to install the driver. The bundled CD-ROM does not include any drivers and software for MacOSX.

2-3. VoyageMPD

Some Linux distribution includes USB Audio Class 2.0 Driver. RAL-24192UT1 may work with these drivers.

2-4.DAC with S/PDIF input or Analog Stereo Line input.

- S/PDIF compliant RCA(75Ohm) or TOSLINK. Must support up to 24bits/192kHz.
- Audio amp which has Analog Stereo Line input.

2-5. Stereo Headphone

- Equipped with Standard 6.35mm(1/4") Phone Plug.
- Impedance 8-Ohm to 400-Ohm un-balanced.

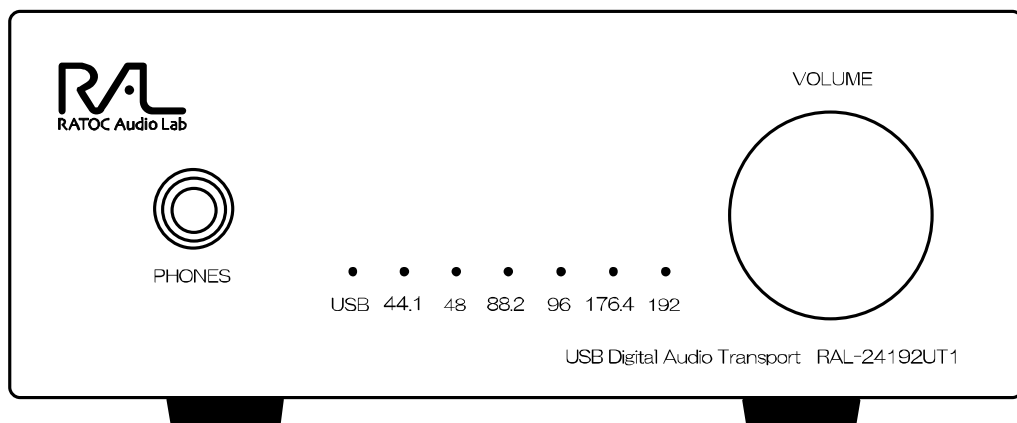
3. Package contents.

RAL-24192UT1 package includes:

- RAL-24192UT1
- USB Cable (1m) with USB HS Compliant Logo.
- CD-ROM includes USB Audio Class 2.0 Driver for Windows and 'RAL-24192UT1 Setup Guide' (PDF file. This document.)

4.1 Front Panel, Rear Panel Layout.

4-1. Front Panel



[PHONES] ---- Headphone Output Jack for 6.35mm(1/4") phone plug.

[VOLUME] ---- Output level control for Headphone..

LED indicators

[USB] ---- lights on at RAL-24192 being configured as a USB Audio Device.

[44.1] ---- lights on to indicate 44.1kHz sampling rate is detected.

[48] ---- lights on to indicate 48kHz sampling rate is detected.

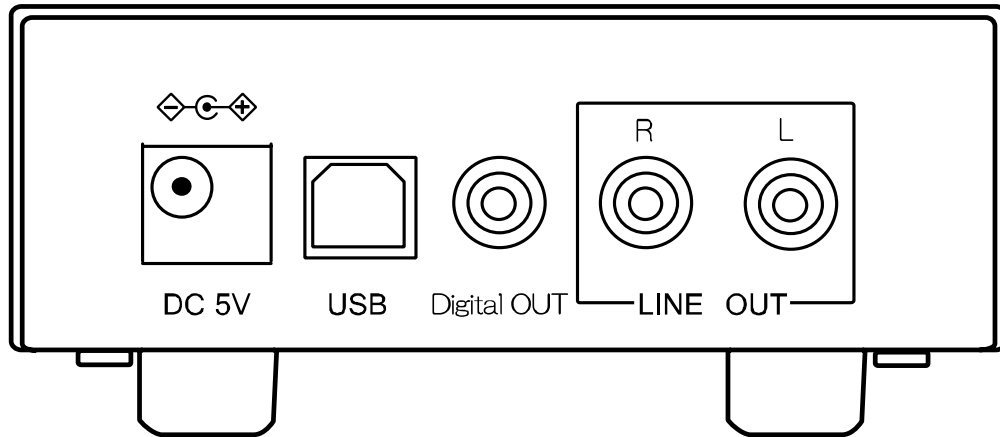
[88.2] ---- lights on to indicate 88.2kHz sampling rate is detected.

[96] ---- lights on to indicate 96kHz sampling rate is detected.

[176.4] ---- lights on to indicate 176.4kHz sampling rate is detected.

[192] ---- lights on to indicate 192kHz sampling rate is detected.

4-2. Rear Panel



[DC IN]

External Power input jack. Must be provided with regulated DC +5V.

Required 0.5A or over.

[USB]

Connect to USB-A port of PC or Mac with USB 2.0 HS compliant cable.

[Digital Out]

S/PDIF Coax digital audio output port. Must be connected to DAC digital input with 75-Ohm Coaxial cable. This signal is isolated by Isolation Transformer.

[Line Out]

Stereo(L, R ch.) Audio analog line out.

5. Setting up Mac/MacOS X.

5-1. Connecting RAL-24192UT1 to Mac USB port.

Getting start setting up your Mac / MacOS X 10.6.4 or newer.

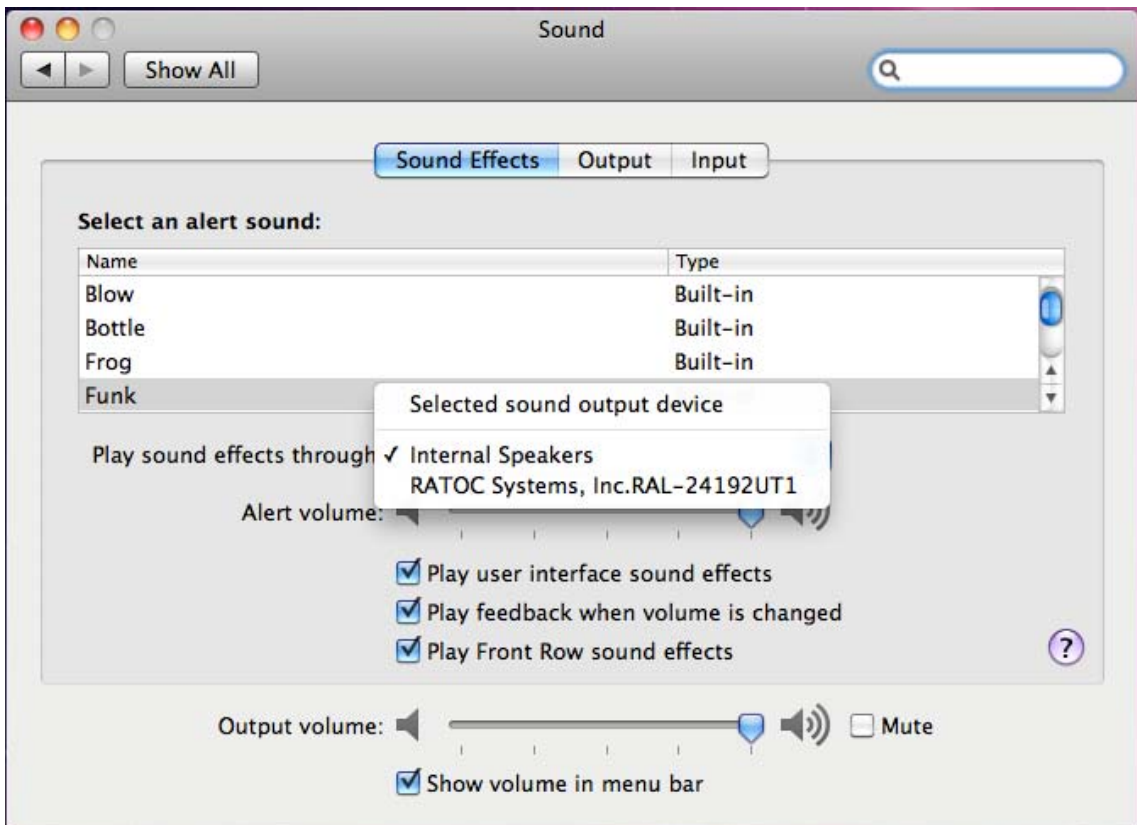
- (1) Connect RAL-24192UT1 to Mac USB port with USB cable. The cable should be compliant with USB High-Speed(480Mbps) certification.
MacOS X will detect and recognize RAL-24192UT1. And then install USB Audio Class 2 driver automatically for RAL-24192UT1.
- (2) Click on the “System Preference” app on Dock.
- (3) Click on the “Sound” icon at the second row, “Hardware”



5-2. Setting 'Sound Effects' output to Internal Speakers.

Click on the “Sound Effects” tab to prevent alerts and effect sounds such as “e-mail received notification sound” are routed to Audio System.

Set “Play alerts and sound effects through ‘Internal Speakers’”



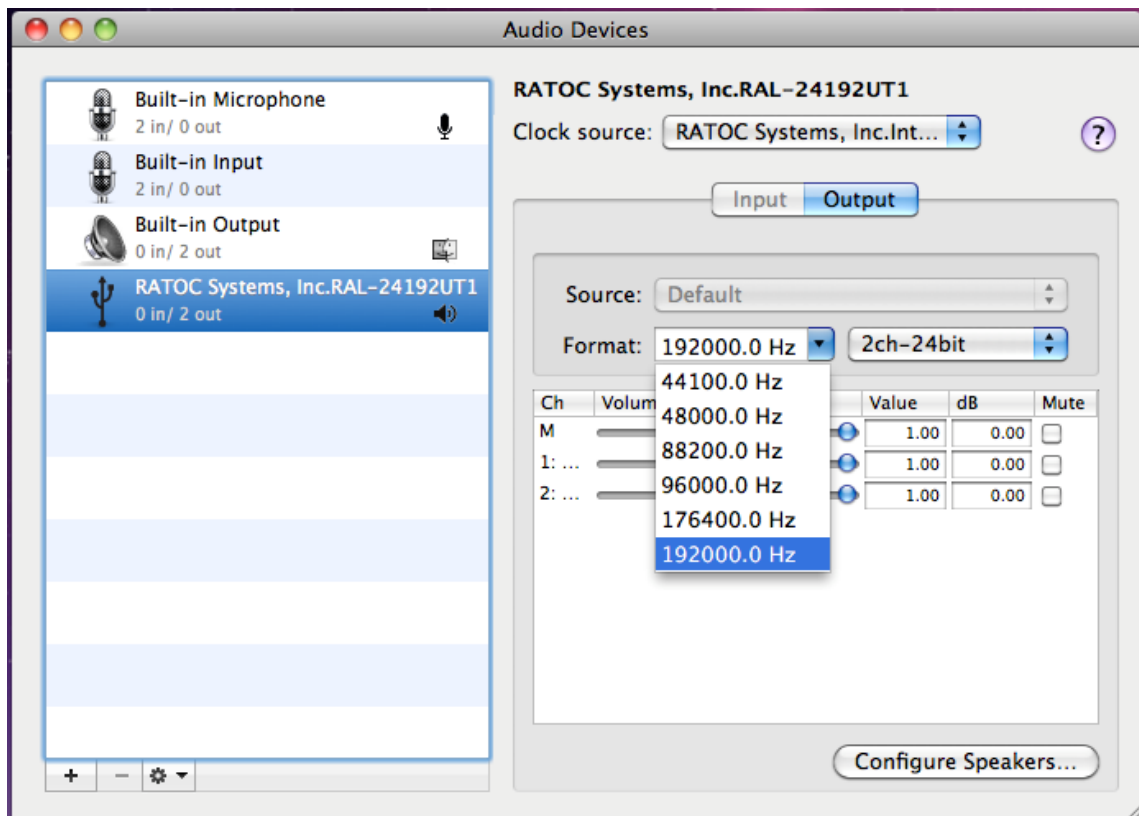
5-3. Setting RAL-24192UT1 as an Audio Output.

Click on the “Output” tab and select “RATOC Systems, Inc. RAL-24192UT1”. This selection will route the sound from iTunes or other Audio Applications to your Audio system.



5-4. Setting up 'Audio MIDI Setup' Application.

- (1) If “Audio MIDI Setup” application is not found on Dock, select the “Finder” application. Select “Places – Applications” , scroll down the list and click on the “Utilities” folder. Find “Audio MIDI Setup.app” and drag it down to Dock.
- (2) Open the “Audio MIDI Setup” application and select “Audio Devices”.
- (3) Click on “Output” tab. Select “RAL-24192UT1” for the “Default Output” to send the sounds from iTunes or other applications to Audio system.
- (4) Select “Built-in Output” for the “System Output” to route system alert sound such as “new mail received” sound to built-in speaker.
- (5) Select “RAL-24192UT1” at “Properties For:” drop-down list. And then select your desired sample rate such as 192000 Hz. “2ch.-24bit” is required for RAL-24192UT1. If sample rate which is not identical to the sample rate of original music file itself is selected, MacOS X Audio driver will execute sample rate conversion. As this conversion will affect audio quality, we recommend to select adequate sample rate which is identical to one of music file at this field.



5-5. Launch and play iTunes or other Music Player application.

Launch iTunes or other Music Player application. Start it and select Music file. You will listen and enjoy fine and clear sound from your Audio system. To learn more about Music Player application, refer User Guide or Online Help of the application.

6. Setting up Windows PC (Windows 7)

This chapter describes the driver installation and setting on Windows 7 as an example, these process is almost same as one on Windows XP(SP2) and Windows Vista(SP1).

Getting start setting up Windows 7 (32bit or 64bit) PC.

6-1. Installation of USB Audio 2.0 Class Driver.

RAL-24192UT1 requires USB Audio Class 2.0 Driver. You need to install it before using RAL-24192UT1. If you forgot it or failed to install it, RAL-24192UT1 would not be configured as a USB Audio Device.

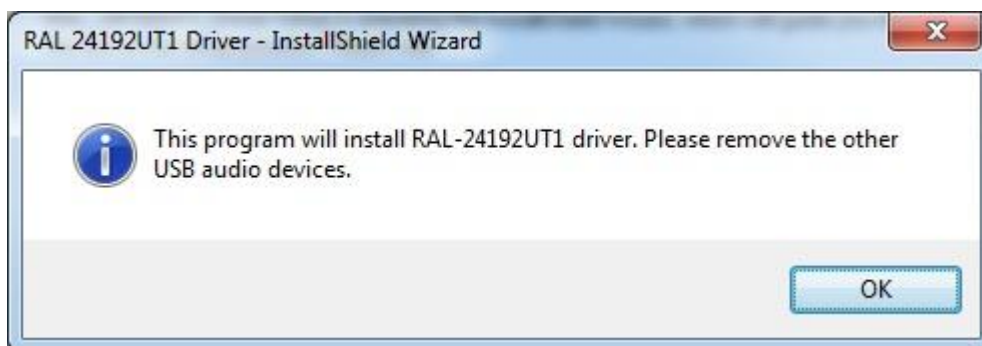
- (1) Connect RAL-24192UT1 to USB 2.0 HS(480Mbps) enabled port on PC.
- (2) Log in as an Administrator. You must log in as an Administrator to install USB Audio Class 2.0 Driver.
- (3) Insert bundled CD-ROM to CD-ROM drive.
- (4) If “RAL-24192UT1 installer” does not start automatically, click auto-run icon of the CD-ROM folder.



- (5) The installer will be launched and start automatically. Follow shown instructions and select “Install Driver”. If “User account control” dialog box is shown up, click “Yes”.
- (6) Click 'Install driver' button and get start the installation.

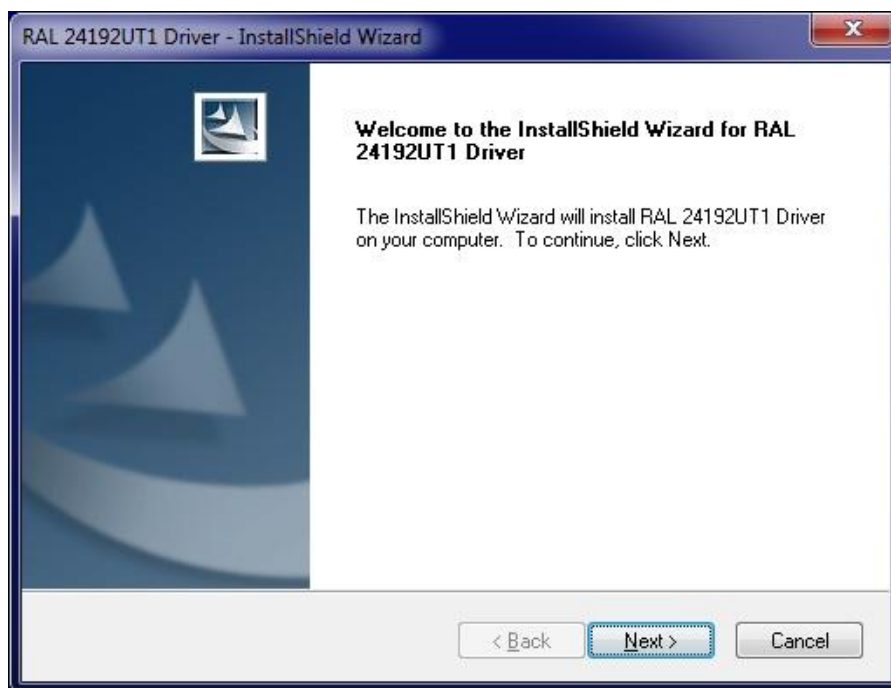


- (7) Click “Install”, "OK", “Next” or “continue”. And then click “Finish”.



Follow this message and remove USB Audio Device except RAL-24192UT1.
Only one RAL-24192UT1 should be connected at this time.

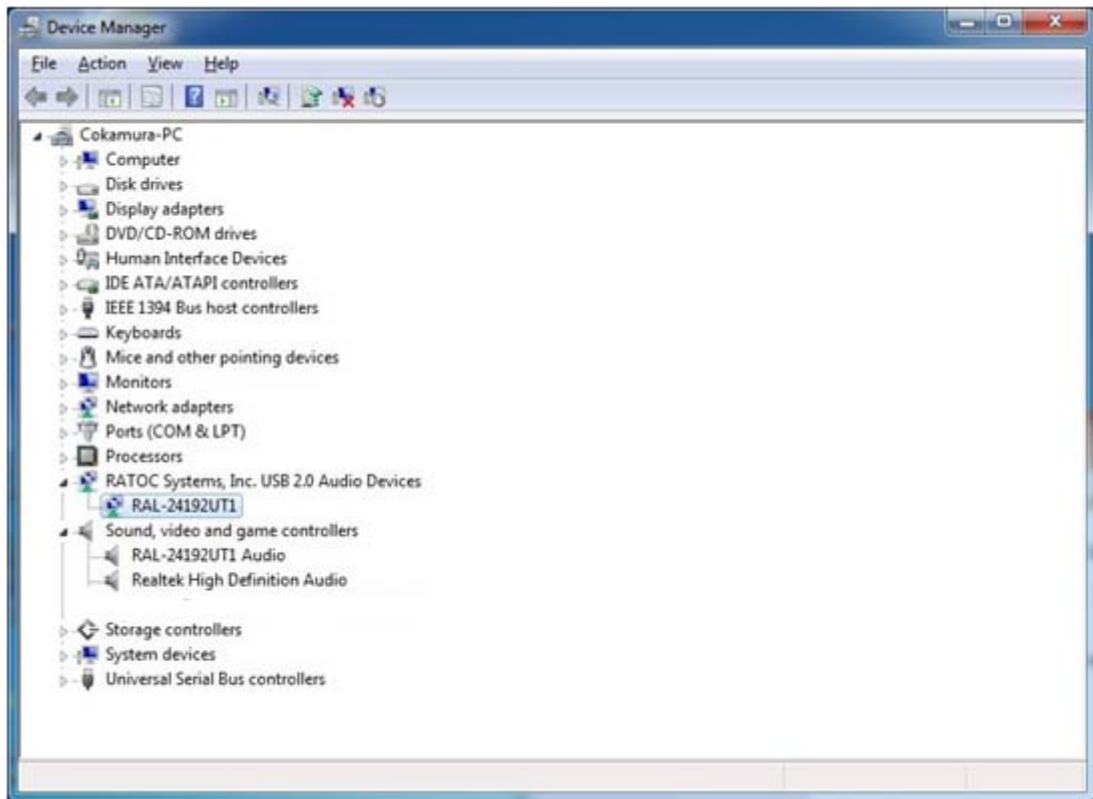
- (8) The InstallShield Wizard will start and show prompt message box. Click 'Next' to continue Drivers for RAL-24192UT1 installation.



- (9) When all necessary drivers are installed successfully, the installer shows up 'Exit' prompt message. Click 'Exit' and quit installation.



- (10) Open Device Manager Window and check “RATOC Systems, Inc. USB 2.0 Audio Devices” and ‘RAL-24192UT1 Audio’ are showing up.



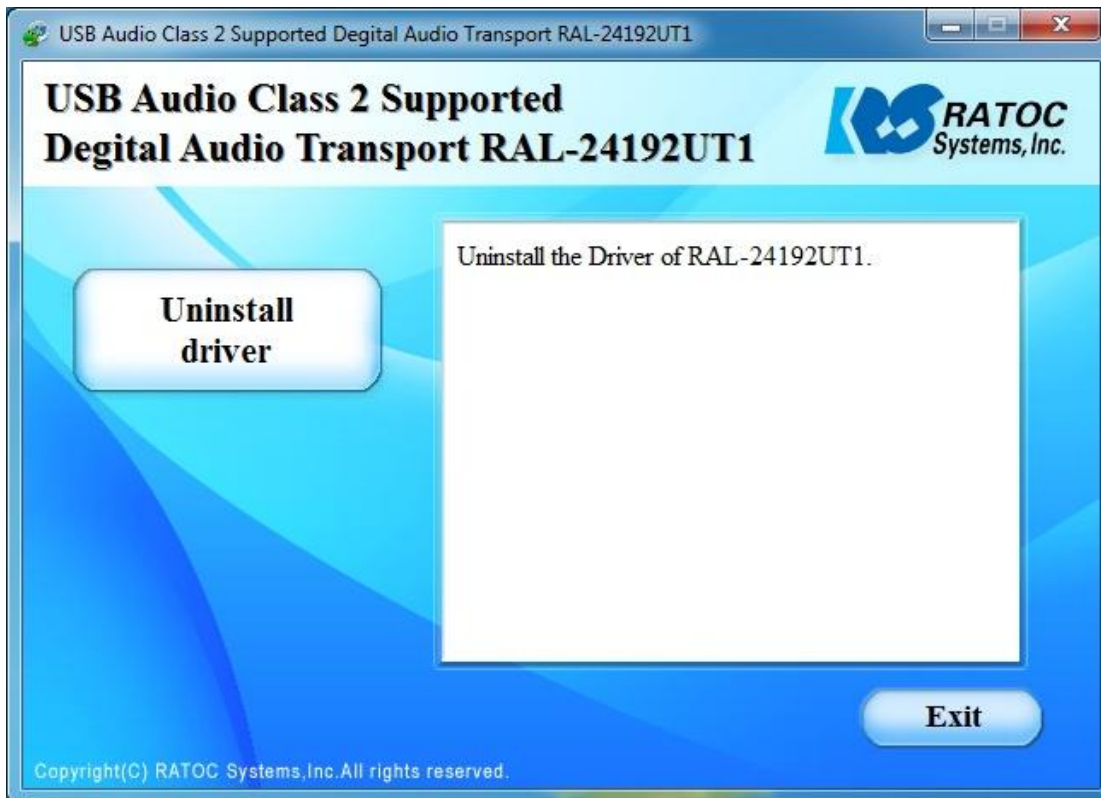
- (11) Remove RAL-24192UT1 Set up CD-ROM from the drive.

6-2. Uninstall RAL-24192UT1 Device Driver.

If you failed in RAL-24192UT1 Driver installation or desire to remove it from your Windows PC, uninstall it and re-install again.

Follow instructions below.

- (1) Insert bundled CD-ROM into the CD-ROM drive.
- (2) If RAL-24192UT1 installer doesn't start automatically, click 'autorun.exe' at CD-ROM folder.
- (3) Click 'Uninstall driver'.
- (4) Just in case, make sure you will start to uninstall. And then click 'Yes.'
- (5) Click 'Finish', remove CD-ROM from the drive and restart Windows System.



7. Grade up setting for Windows.

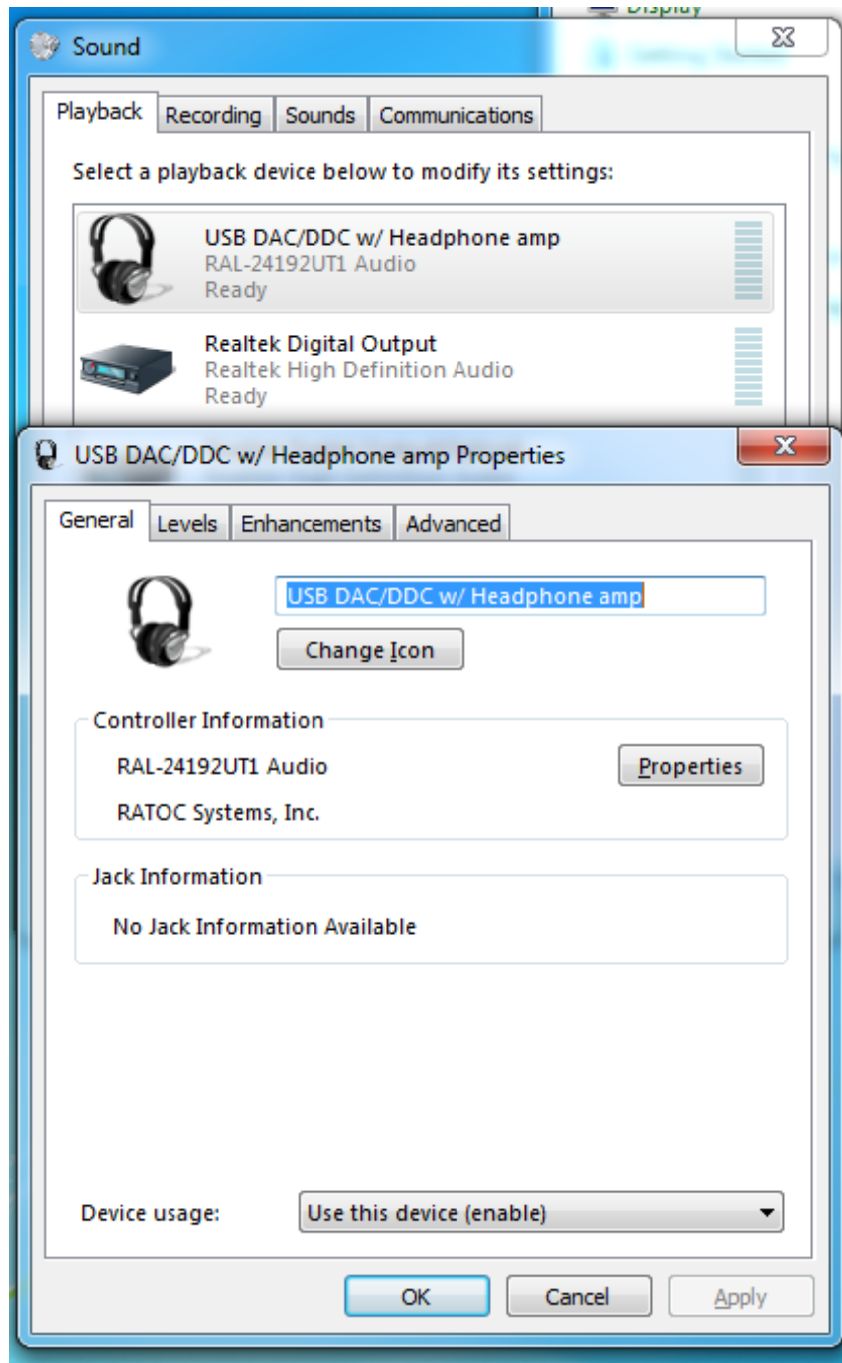
This chapter describes how to improve sound quality and tune up your PC to listen high fidelity and pure sound.

Before installation of Music Player application or additional drivers:

- Check Compatibility and Combination of Sound Drivers and Applications. And select most suitable one for your PC/Mac Audio system. You also need some setting at Device Manager Window to use the application or add-on drivers.
- Set disable to route 'System Sound' to your Audio system. Follow steps below:
 - (1) Launch "Control Panel" and click on "Sound".
 - (2) Select "Built-in Sound card" at the "Playback" tab. Click "Set Default" button to route system sound such as "new mail received" to built-in speaker.
 - (3) Select "RAL-24192UT1" at the "Playback" tab and click "Properties" button.
 - (4) Click "Advanced" tab. And set check mark at both 'Allow applications to take exclusive control of this device' and 'Give exclusive mode applications priority'. These two setting must be set to use ASIO4ALL driver, Kernel Streaming or WASAPI mode with Music Player applications. If you would like to use Media Player or iTunes, these applications use Direct Sound or QuickTime Player.

7-1 Listen HD Music with Direct Sound and Kernel Mixer

(1) Double click 'RAL-24192UT1 Audio' at 'Playback' tab. Click 'Properties' button and open 'Speaker Property'.

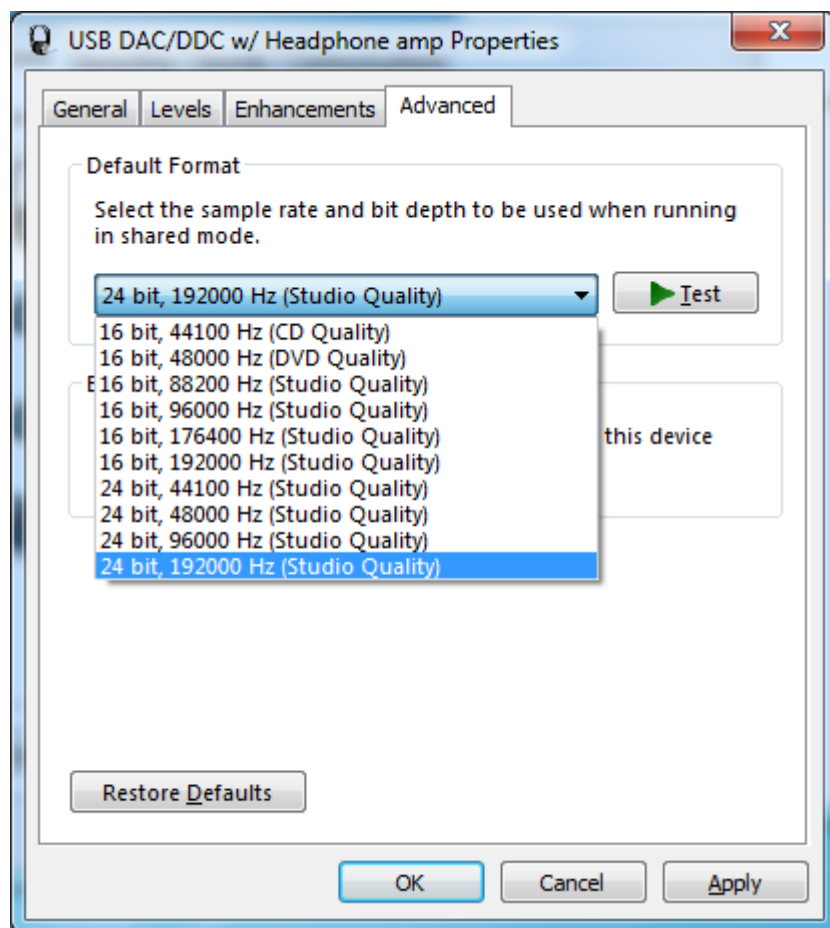


You can change icon and device name as you like.

(4) Click 'Advanced' tab and select Sampling Rate/bit rate correspond to property of music files you like at 'Default Format' box.

Note) 24bit/88.2kHz and 24bit/176.4kHz are not shown up at the list.

This is the known issue of Windows 7/Vista Direct Sound Driver.

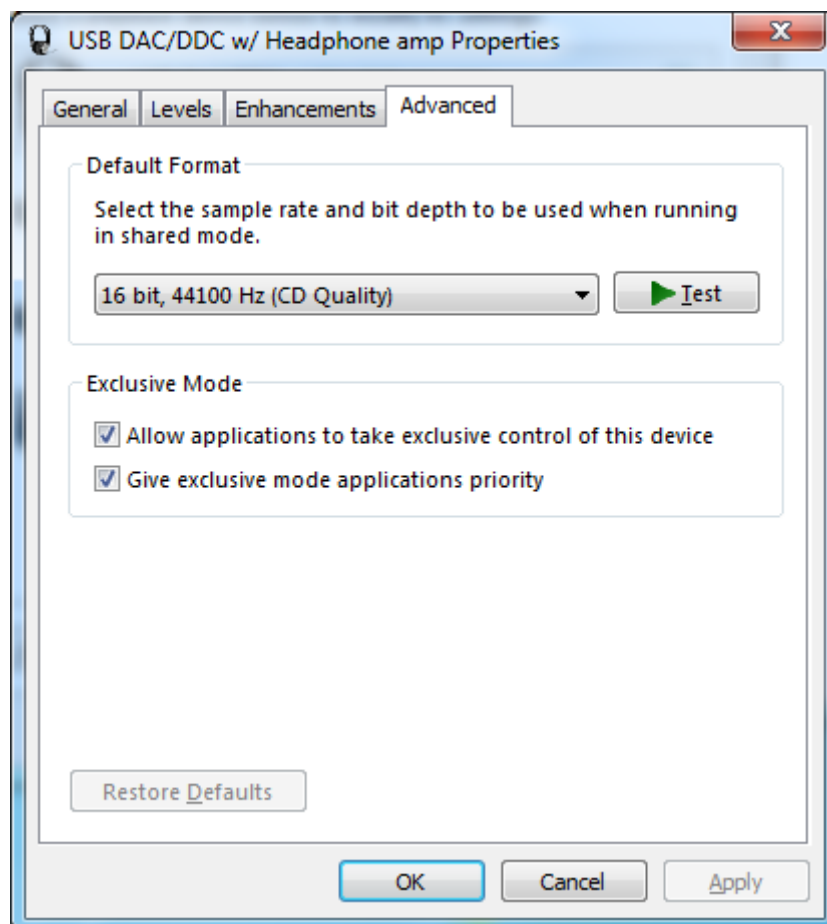


7-2 Using WASAPI mode, skip Kernel Mixer.

Windows7 and Vista (SP1 or newer) includes this function. Once enabled, Windows Kernel Mixer is bypassed and Audio application can pass music data to Audio drivers directly. Refer 'Setting to bypass Kernel Mixer'.

** iTunes does not work with WASAPI setting on 64bit Windows7 or Windows Vista.

- (1) Click 'Start' and launch 'Control Panel'.
- (2) Double click 'Sound'.
- (3) Double click 'RAL-24192UT1 Audio' at 'Playback' tab. And click 'Properties' button.
- (4) Click 'Advanced' tab and mark Checkbox of both 'Allow applications to take exclusive control of this device' and 'Give exclusive mode applications priority' at 'Exclusive Mode' box.



7-3 Using WASAPI mode and ASIO Drivers.

ASIO Driver is one of very famous free software for PC Music freaks. It provides low latency and bypassing Kernel Mixer. RAL-24192UT1 and bundled USB 2.0 Audio Class Driver are fully compatible with ASIO Driver.

(1) Setting up WASAPI enabled mode.

You need to enable WASAPI mode before using ASIO driver.

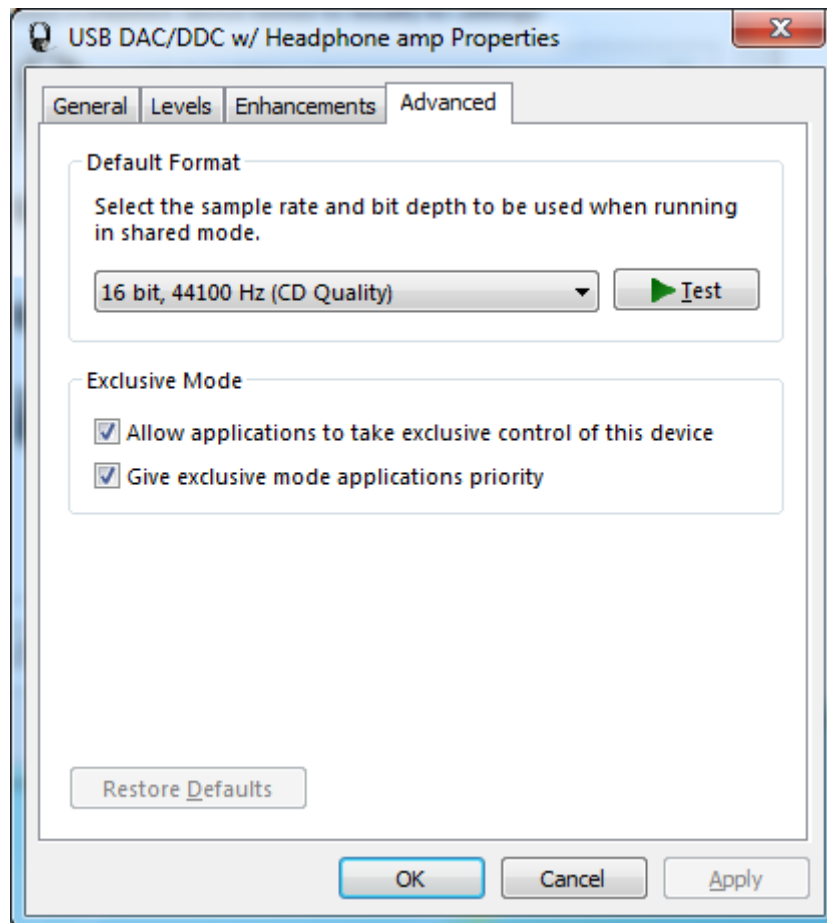
(2) Click 'Start' and launch 'Control Panel'.

(3) Double click 'Sound'.

(4) Double click 'RAL-24192UT1 Audio' at 'Playback' tab. And click 'Properties' button.

(5) Click 'Advanced' tab and mark Checkbox of both 'Allow applications to take exclusive control of this device' and 'Give exclusive mode applications priority' at 'Exclusive Mode' box.

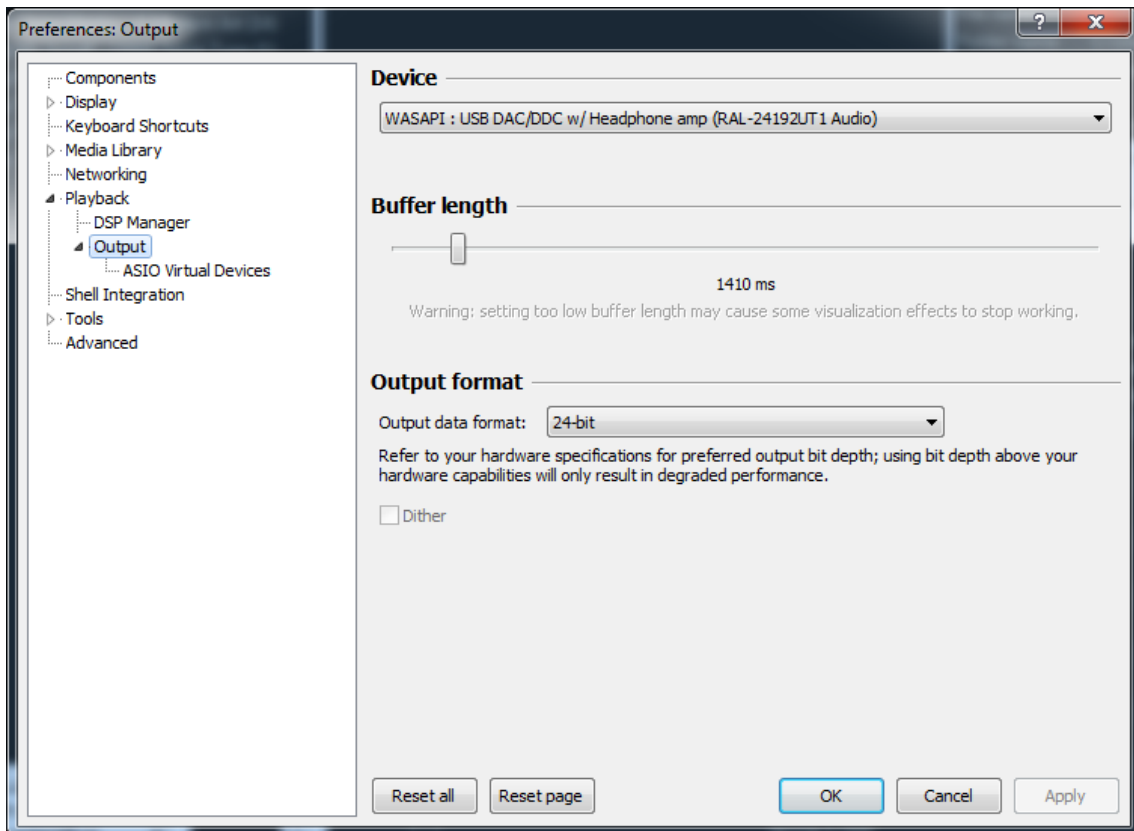
(6) Download ASIO Plug in Drivers suitable for your application such as foobar2000 from the application web site. Install it and follow instructions described at the web page.



7-4 Installation and setting up application example foobar2000.

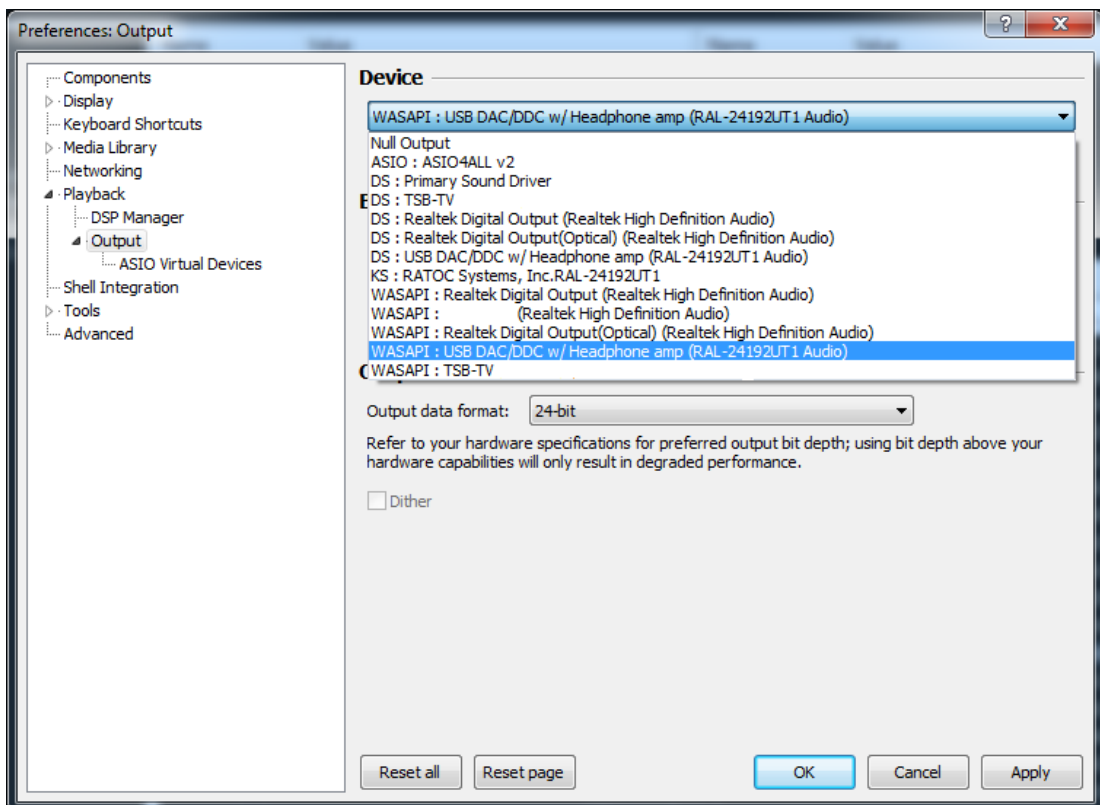
The foobar2000 is a famous and very popular application running on Windows PC. This chapter describes how to setup the application running on your system.

- (1)Download from the latest stable version of foobar2000 from www.foobar2000.org and install it into your Windows system.
- (2)If you would like to skip Kernel Mixer and use WASAPI mode, you need to download optional component 'WASAPI output support' from Optional Component page and install it. Check WASAPI mode enabled or not at 'Control Panel-Sound-Properties'. Refer chapter *'7.2 Using WASAPI mode, skip Kernel Mixer'*.
- (3)If you would like to use ASIO driver, you need to download optional 'ASIO Support' component from Optional Component page and install it. Check WASAPI mode enabled or not at 'Control Panel-Sound-Properties'. Refer chapter *'7.3 Using WASAPI mode and ASIO drivers'*.
- (4)Launch 'foobar2000' and click 'File'. Select 'Preferences' and open 'Preferences' dialog box..

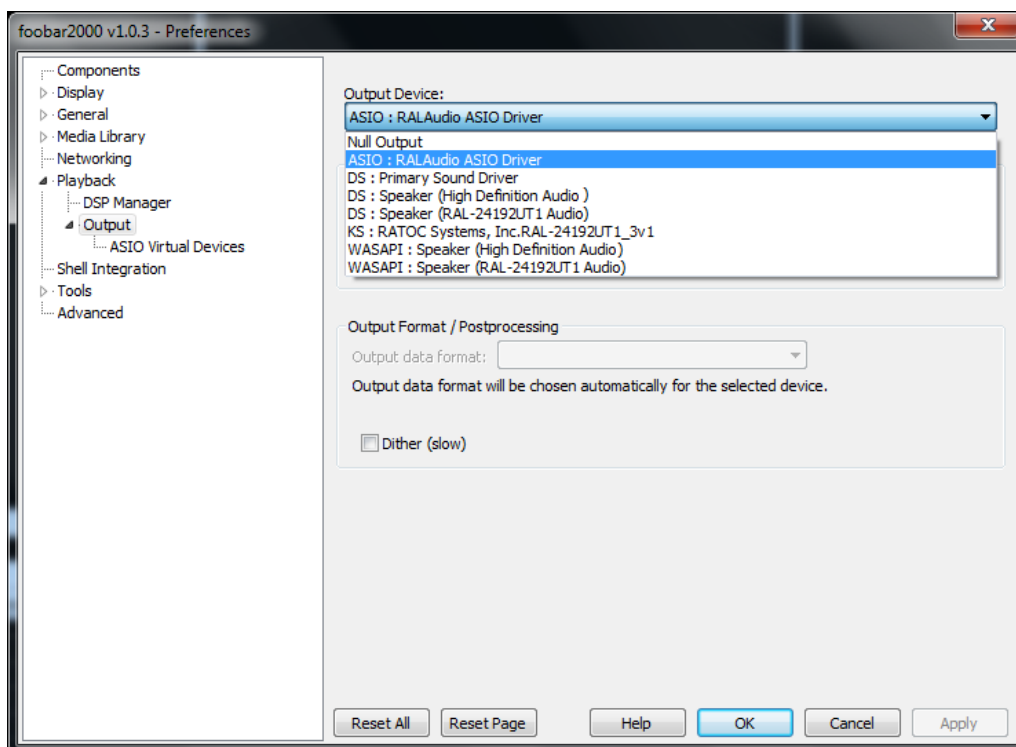


(5) Select 'Playback → Output'. Select RAL-2496UT1 at Devices list as follows.

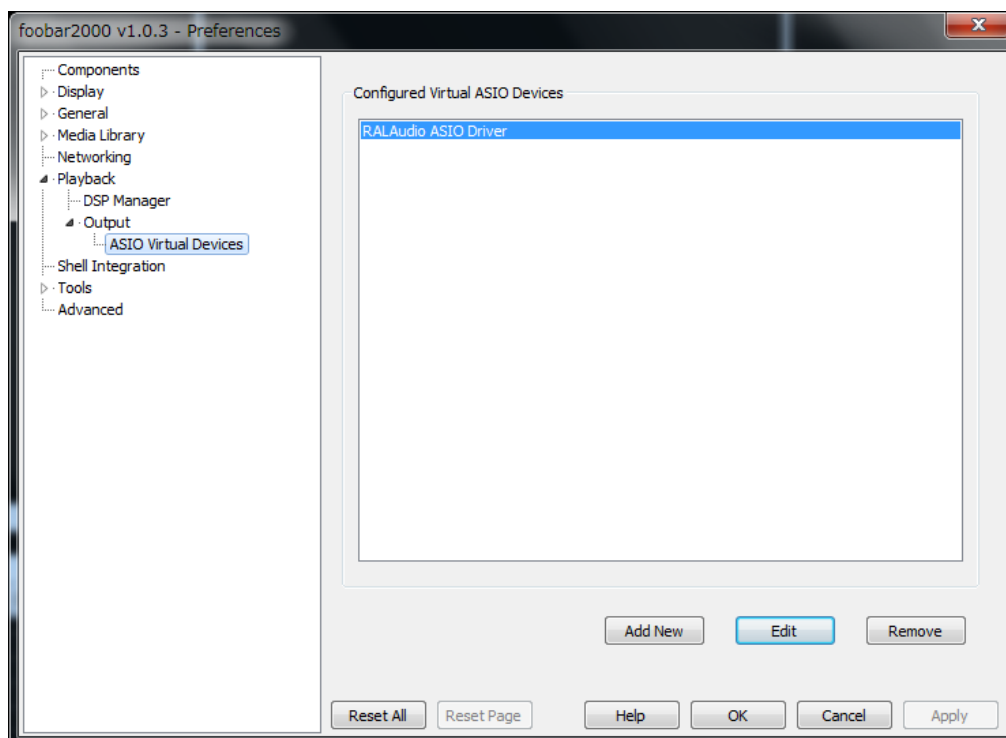
- If you will use Direct Sound,
 - select 'DS:USB DAC/DDC w/ Headphone amp(RAL-24192UT1 Audio)'.
- If you will use Kernel Streaming mode,
 - select 'KS:RATOC Systems, Inc. RAL-24192UT1'.
- If you will use WASPI mode,
 - select 'WASAPI: USB DAC/DDC w/ Headphone amp(RAL-24192UT1 Audio)'.



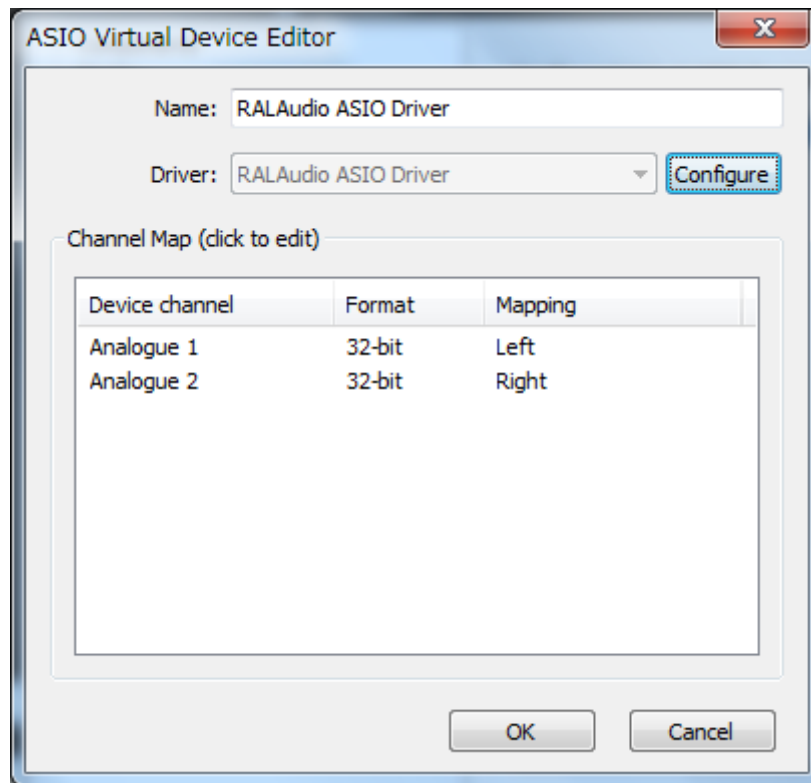
(6) If you would like to use ASIO, select 'Playback→Output' and select 'ASIO:RAL Audio ASIO Driver' at Device pull-down list.



(7) Select 'ASIO Virtual Devices' and click 'Edit' button.



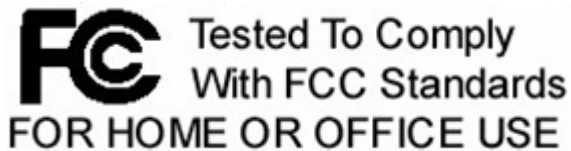
- (8) 'RAL-24192UT1' is configured and shown up at ASIO Virtual Device Editor window.
Edit 'Analogue 1' for Left channel and 'Analogue 2' for Right channel.



- (9) Click 'OK' and close dialog box. Select Music Library and start it.
Refer www.foobar2000.org to learn more about foobar2000.

8. FCC Declaration

RATOC Systems, Inc. RAL-24192UT1



-FCC Statement-

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection

against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- (1) Reorient or relocate the receiving antenna.
- (2) Increase the separation between the equipment and receiver.
- (3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- (4) Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance may result in this unit not complying with FCC Rules Part 15.