Quickstart Instructions

Note: *This feature is completely optional. It need not be implemented, and your radio will operate perfectly normally without it.*

Navigate to registry key HKLM\Software\OpenHPSDR\Thetis-x64.

Add a new 'String Value' with the name ASIOdrivername.

Populate the new string value with the name of your ASIO device driver.

Some popular driver names are listed below:

UMC ASIO Driver

Studio 192 ASIO

Focusrite USB ASIO

AudioBox ASIO Driver

MOTU M Series

ASIO Lynx

ULTRAVOICE ASIO Driver

M-Audio M-Track Solo and Duo...

If your driver name is not listed above, run hostsample.exe for additional clues:

https://github.com/W4WMT/Thetis/releases/tag/v0.0

If ChannelMaster is unable to load the ASIO driver specified in the registry key, then all TX & RX audio streams will be routed (by default) to the hardware audio codec chip in the radio, just as before.
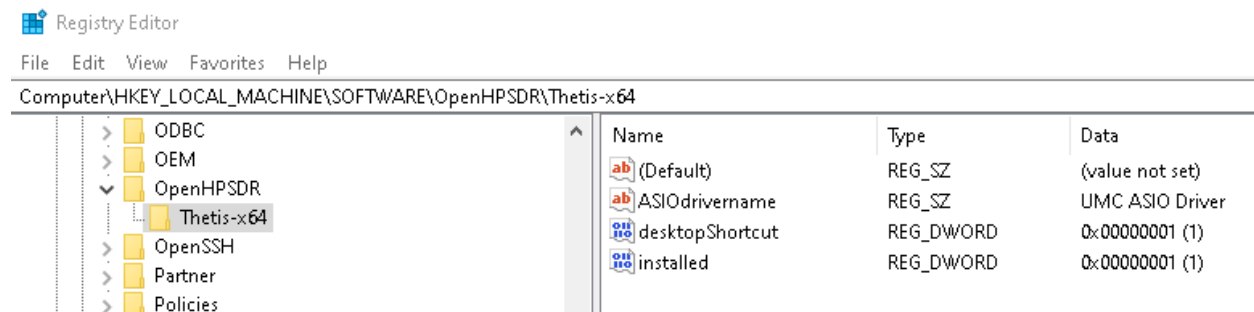
General Instructions

The ASIO-enabled ChannelMaster (cmASIO) is a high-performance feature targeted for 'power users' wishing to permanently sink/source their speaker/microphone audio streams via an ASIO sound device attached to the host SDR computer, when operating phone or CW. When implemented by the user, all audio streams normally processed by the audio codec chip in the radio are thereafter processed by the ASIO device *instead*. Under these conditions, VAC1 & VAC2 may then be dedicated to digital-mode operations without the worry of having to frequently switch back and forth to phone or CW.

Implementation simply requires the user to add a new registry key string value as described above in the quick-start instructions. This specifies which ASIO device the ChannelMaster (and therefore Thetis) will use. If the user wishes to cease processing via cmASIO, just delete the name in the ASIOdrivername key value or delete the key value altogether. This requires a re-start of Thetis before taking effect.

Once implemented, the ChannelMaster expects to enjoy exclusive use of the selected ASIO sound device. This conforms to Steinberg Audio SDK specifications and helps guarantee the highest

performance available. Therefore VAC1 & VAC2 will not be able to select the particular ASIO driver in use by the ChannelMaster.

The user may also specify the number of 64-sample blocks that can be held by the FIFO buffer (ring-buffer) that is used to synchronize the ChannelMaster and ASIO threads. The default is five blocks, which should provide excellent performance for most users. To alter this, the user can add a new DWORD value to the same registry key (see above) named ASIOblocknum, which is filled out with the desired number of blocks. (Only the low-order 16 bits are significant, the high-order bits are masked off.)

For low-latency performance of the transmit (mic) audio stream the user may also elect to not use a ring-buffer at all. This is called lockMode and is entered by setting any of the high-order bits in the ASIOblocknum value described in the previous paragraph. In this scenario, the ChannelMaster (TX) is connected directly to the double-buffer ASIO callback, without any intervening layers of buffering whatsoever. This mode is extremely compute intensive during short bursts, which will not show up in conventional averaging CPU percentage measurement displays. In lockMode users will not fare well on machines not having idle cores immediately ready to do the processing in a timely fashion.

Satisfactory operation of the cmASIO feature is predicated upon all the following:
ASIO driver is a *hardware* device driver, not a virtual driver (e.g. Voicemeeter, ASIO4ALL, etc.).
Sound device and SDR hardware (Anan, Hermes, etc.) are referenced to a common clock source.
Processor has enough hardware cores to run 9 simultaneous quasi real-time streaming threads.
Cores are not busy trying to service competing threads in other applications running at the same time.
OpenHPSDR Protocol-2 firmware is currently installed on the SDR hardware (P1 is not supported).
ASIO driver must be able to operate under the following conditions:
- 48,000 sa/s sampling rate
- 64 sample buffer size
- Int32LSB sample format (24 bit samples, left aligned in 32 bit little-endian integers)