Setting up a sound card using commands.
NOTE: you should run the entire process the first time, each adjustment, if you don't the default values will be
used for the adjustments you didn't run when you do the save, default is not always good. When done with
adjustments, do the "radio tune save" command or you will lose all adjustments at the next reboot.
Note: in the usbradio.conf file there is a rxboost= and a txboost=
rxboost=1 ; Rx Audio Boost
; 0 = 20db attenuator inserted for hot disc rx audio,
; 1= 20db attenuator removed for weak disc rx audio
; Set to 1 for additonal gain if using a low level receiver output.
;same applies to the transmit if needed.
how to find my usb sound cards in linux:
log into the site computer, log in as root. I use putty SSH from another computer on the system.
Menu item 9 enter and then type:
cd \ [there is a space after cd , then hit enter and then enter again, then cd / and hit enter to make sure you're at the root command
prompt.
my login looks like this: [root@WA2KJC-PI /]#
Then type:
cat /proc/asound/cards
and here is what I get:
[root@WA2KJC-PI ~]# cat /proc/asound/cards
0 [Device]: USB-Audio - USB PnP Sound Device
C-Media Electronics Inc. USB PnP Sound Device at usb-3f980000.usb-1.2, full spe
1 [Device_1]: USB-Audio - USB PnP Sound Device
C-Media Electronics Inc. USB PnP Sound Device at usb-3f980000.usb-1.1.3, full s
Note: don't pay attention to the 0[Device] or the 1[Device] that's only the order in which they were inserted
Not where they actually are in the 4 port usb connector:
Usb is bottom left with the Ethernet on the left. Usb1 is bottom right. Usb2 is top left. Usb3 is top right.
So insert only one usb audio card at a time and run the command and make a note of the "usb-1.2" or "usb-
1.1.3" etc etc
bottom left usb usb-1.1.3
bottom right usb usb-1.2
top right usb usb-1.3
top left usb usb-1.1.2
The actual soundcard doesn't have any influence on the result, it's only the port it's plugged into is being
identified with the usb something.

To set the sound card levels using asterisk commands. This effort will save in the usbradio_tune_usb.conf
Type asterisk –rvvvvvvv and hit enter and here is what I get:
[root@WA2KJC-PI ~]# asterisk -rvvvvvvv

Then type:

radio active and hit enter.

The information that returns indicates the currently selected radio interface, usb port, if you want to change to a

different radio interface/usb sound card, issue command with the appropriate usb number.

radio active usb2 [or usb1 or usb or usb3 and hit enter]

that is how you will repeat this process for each usb port you are setting up.

To set the usb sound card receiver input level adjustment the radio must be running with no signal applied on

the receive frequency. Discriminator flat audio.

Because the sound card is connected to the radio's unfiltered and unsquelched receive signal point, discriminator

audio, it is now subject to a maximum amplitude white noise signal from the radio. That is why I used resistors

In the rxa connection to hold this audio steady by loading it.

Enter on the CLI command

radio tune rxnoise

The software will now automatically adjust the input sensitivity to match the radio output signal.

If it fails then you don't have enough audio level. Make sure there isn't anything in the discriminator circuit

path and use shielded audio cable grounded at both ends.

You can edit the usbradio.conf file, under the correct usb port selection, rxboost=1 for more audio.

To set the receiver carrier detect squelch level,

enter the CLI command

radio tune rxsquelch

The display will show the current no-signal strength and the current squelch setting. You should be 100-150

above the noise level with your squelch setting.

Enter the CLI command

radio tune rxsquelch xxx

where xxx is the Current Signal Strength reading plus 100, so example: you saw 500 so add 100, so your xxx is

600.

To set the receiver voice level adjustment, apply an on-channel, strong, full-quieting RF signal modulated by a

1 KHz tone at 3 KHz deviation, or use an HT and send # then

While holding the ptt and sending #

Enter the CLI command

radio tune rxvoice

The software will now automatically adjust level for discriminator voice modulation. Unkey the HT when it says successful.

To set the receiver sub-audible tone level adjustment, apply a strong, on-channel, full-quieting RF signal with

the correct pl tone at 300-500 Hz deviation.

Or just key the HT with no room audio, be quiet let it send its pl tone, while holding the ptt.

Enter the CLI command
radio tune rxtone
The software will now automatically adjust the level to decode the sub-audible tone
modulation.
To measure the transmitter pl tone:
Set Service monitor to measure the radio transmitter modulation, or listen for you
HT pl squelch to open and no
hum, hum means to much ctcss deviation and no squelch opening means not enough ctcss
transmit.
Issue the CLI command
radio tune txtone 300 the range is 0-999 I like 300
The transmitter will activate for a few seconds to enable you to observe the pl
ctcss transmit modulation.
note the sub-audible tone modulation level.
Repeatedly issue the 'radio tune txtone xxx' command with xxx as a new relative
level adjustment as necessary
to properly set the sub-audible tone modulation to 300-500 hz.
You can turn up the volume on an HT and listen for a hum, that means you have to
much pl tone, back it down.
Now for the voice transmit level:
radio tune txvoice 999
The software applies both the sub-audible tone modulation signal and a 1KHz tone. I
set it to max so as to
measure the transmitter max dev setting. Watch your ears it going to be loud.
At this point adjust the transmitter deviation to slightly less than 4 kc, by
issuing the command
radio tune txvoice 700 or 300 or whatever it takes to sound nice.
Repeatedly issue the 'radio tune txvoice xxx' command with xxx as a new relative
level adjustment as necessary
to properly set the combined voice and tone modulation to +/- 3.5-4 KHz of
deviation.
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Save the settings for this usb device using the CLI command, this is important.
enter the CLI command
radio tune save
this effort will be saved as usbradio_tune_usb.conf or what ever usb port you
selected with radio active
command, or usb1 or usb2 etc, the software automatically names it depending on what
you selected at the
beginning of this adjustment process with the radio active usb? Cli command.
Repeat this again to install each additional usb card.
When your are done with the tuning process.
Type exit to get you back to the Menu and select 16, Reboot this System.
WA2KJC Dave Petrie