

## linHPSDR and the Hermes-Lite 2

User guide

by m5evt





## Installation and getting started

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# Installation and getting started

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- 2.2 Discovery
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linHPSDR is a Linux based SDR application developed by John Melton GOORX see https: //github.com/gOorx/linhpsdr.

This document describes the M5EVT fork of linHPSDR (https://github.com/m5evt/linhpsdr) which has features and tweaks especially for the Hermes-Lite 2 SDR.

This guide is based upon the original guide by GOORX, see:

https://github.com/g0orx/linhpsdr/blob/master/documentation/linhpsdr-user.pdf

R The code must be built from source. The deb package is very out of date and will not work as expected.

#### **1.2** Prerequisites

To build from source start with the prerequisites:

sudo	apt	install	libfftw3-dev
sudo	apt	install	libpulse –dev
sudo	apt	install	libsoundio-dev
sudo	apt	install	libasound2-dev
sudo	apt	install	libgtk –3–dev
sudo	apt	install	libsoapysdr-dev

#### 1.3 WDSP

Next install WDSP:

```
git clone https://github.com/g0orx/wdsp.git
cd wdsp
make
sudo make install
```

#### 1.4 CW options

To take advantage of CW features described in this manual the following additional options are required:

```
sudo apt install libtool
git clone https://github.com/m5evt/unixcw-3.5.1.git
cd unixcw-3.5.1
autoreconf -i
./configure
make
sudo make install
sudo ldconfig
```

#### 1.5 Compile and install

First, get the source code:

```
git clone https://github.com/m5evt/linhpsdr.git
cd linhpsdr
```

If CW support is not needed the following lines in the Makefile can be commented out (as shown below):

#CWDAEMON\_INCLUDE=CWDAEMON

```
#ifeq ($(CWDAEMON_INCLUDE),CWDAEMON)
#CWDAEMON_OPTIONS=-D CWDAEMON
#CWDAEMON_LIBS=-1cw
#CWDAEMON_SOURCES= \
#cwdaemon.c
#CWDAEMON_HEADERS= \
#cwdaemon.h
#CWDAEMON_OBJS= \
#cwdaemon.o
#endif
```

Finally, compile and install linHPSDR:

make sudo make install



#### 2.1 Wisdom file

The first time linHPSDR is run an FFT wisdom file must be created. Depending on CPU this may take some time.

 $(\mathbf{R})$ 

Once the Wisdom file has been created, it will not need to perform this calculation again.

Planning	COMPLEX	FORWARD	FFT	size	64									
Planning	COMPLEX	BACKWARD	FFT	size	64									
Planning	COMPLEX	BACKWARD	FFT	size	65									
Planning	COMPLEX	FORWARD	FFT	size	128									
Planning	COMPLEX	BACKWARD	FFT	size	128									
Planning	COMPLEX	BACKWARD	FFT	size	129									
Planning	COMPLEX	FORWARD	FFT	size	256									
Planning	COMPLEX	BACKWARD	FFT	size	256									
Planning	COMPLEX	BACKWARD	FFT	size	257									
Planning	COMPLEX	FORWARD	FFT	size	512									
Planning	COMPLEX	BACKWARD	FFT	size	512	-		11 11000						
Planning	COMPLEX	BACKWARD	FFT	size	513	<u>×</u>		LINHPSL	DR: Cre	ating FF	-1W3 W	/IS\-		8
Planning	COMPLEX	FORWARD	FFT	size	1024			Optimizi	ing FFT	sizes th	rough	26214	45:	
Planning	COMPLEX	BACKWARD	FFT	size	1024									
Planning	COMPLEX	BACKWARD	FFT	size	1025									
Planning	COMPLEX	FORWARD	FFT	size	2048	(0)			in a T					
Planning	COMPLEX	BACKWARD	FFT	size	2048	(PI	leas	se be pat	tient. I	nis will t	ake se	verain	ninute	:S.)
Planning	COMPLEX	BACKWARD	FFT	size	2049									

#### 2.2 Discovery

The first window displayed by linHPSDR is the radio discovery window. Note in the window below, a direct connection to the HL2 is used and no DHCP server is in use (this is denoted by the APIPA ip address). However, the HL2 will likely work better on a network with a DHCP server.

100	•		Linl	HPSDR (Be	eta)		_	· · · 😣
٢	μ	Device	Protocol	Version	IP	MAC	IFACE	Status
		Hermes Lite V2	1	72p8	169.254.19.221	00:1C:C0:A2:13:DD	enp7s0	Idle
	nonUDS							
Ľ					>			
		Retry Di	scovery			Sta	art Radio	

The HL2 gateware version is noted as 72 patch 8.

To start the radio, click on the Start Radio button on the bottom right corner.

#### 2.3 Setting up sound

linHPSDR will always have at least one receiver window active. With a fresh install, linHPSDR will default to one receiver. Two windows will be displayed; RX window and the main window.

LinHPSDR (Beta): Hermes Lite V2 P1 72p	8 169.254.19.221 (00:1C:C0:	A2:13	:DD) on en	p – 🔹 😣
0 dBm	7.051.920	мох	Tune	Add Receiver
<u>-20 dBm</u>		vox	Configure	Add Wideband
<u>-40 dBm</u> -50 dBm	\ <u></u> `			
<u>-80 dBm</u>			Micropho	ne Level
openHPSDR -100 dBm			Microphe	one Gain (35dB)
- 120 dBm	22 degC		. I Dri	ve (100%)

Main window

To get started the audio must be setup. Click configure on the main window. The radio dialogue tab will be displayed.

#### 2.3 Setting up sound

•		Linux HPSDR: H	lermes Lit	e V2 169.	254.19.221
Radio OC XVTR I	RX-0 TX Pu	re Signal PA EER M	IDI Abo	out	
Radio Model					
HERMES LITE 2 🔻	🔲 Enable P	A N2ADR FILT	Ters 🔻	48000	-
ADC-0					
LNA g	ain (dB):	22			+
FPGA PSU clock					
Configuration	1				
SWR alarm at 2.0	- + lemp	alarmat 50 — ·	<u> </u>		
	ackend <sup>,</sup>				
Calibration [dBm]					
S-Meter	11.8				
	11.8				
Panadapter:					
CW					
CW generation:	Radio	-			
CWdaemon enabled:		Port:	51000	- +	
CW Speed (WPM)	24 —	+ Sidetone Level:	118		
Sidetone Freq:	650 — ·	+ Weight:	50		
CWdaemon sidetone:		Break In Delay (Ms):	275		
Region					
UK <b>-</b>					

Select audio about half way down the tab window. There are three options; SoundIO, Pulseaudio and Alsa. SoundIO must be used for OS X. Alsa may need to be used for the Raspberry Pi. However, it is recommended to use Pulseaudio to make best use of some of the features described in this document.

Next, select the RX-0 tab.

•	Linux HPSDR: Hermes Lite V2 169.254.19.2	221	- o 🙁
Radio OC XVTR RX-0 TX Pure Sign	al PA EER MIDI About		
Filter Var1 150 - + 2850 - + Var2 150 - + 2850 - + Audio Local Audio Stereo Built-in Audio Analogue Stereo Equalizer Preamp Low Mid High 0.0 0.0 0.0 0.0 -12dB -12dB -12dB -12dB	TX Frequency Use This Receivers Frequency Panadapter FPS: 10.0 FPS: 370.3 Average: -25.0 High: -25.0 Low: -135.0 Low: 20.0 Step:	CAT CAT Debug TCP/IP enable 19090 Serial Port Enable Serial Port: Baudrate:	<ul> <li>– +</li> <li>/dev/ttyACM0</li> <li>9600 ▼</li> </ul>
OdB OdB OdB OdB	Waterfall High: -25.0 High: -105.0 Low: Waterfall Automatic Waterfall FT8 Marker		₽

The audio settings for each RX can be different, so each RX must be configured separately for the chosen audio options.

Ensure local audio is checked.

The second of the two audio drop down boxes will be blank, select this and search for a device (likely *Built-in Audio Analogue Stereo*). Receiver audio should then be heard. If not, close the configure dialogue box. Select the RX0 window and click on the AGC button and select a desired AGC mode (slow, medium or fast). Then increase the AGC gain on the slider. The AGC gain level is noted by an orange line across the RX panadapter.



## Main features

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- 3.2 Radio info
- 3.3 Misc
- 3.4 Transmitter info

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- 4.2 OC 4.3 RX-n
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- 4.5 PA

#### 

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- 6.1 Setting up tlf
- 6.2 logcfg.dat

× •											Lint	HPSDR	: Hern	nes L	_ite V	2 Rx-(	0 ADC	-0 48	3000													10
VFO A LOCK	A>B 7 CWL	A <i . 0 500</i 	з а< 51. NB	>b sp 92 Nr	LIT V O SNB	/FO B	zoo 14. Ago	M x2 008 FAST	STEP .77 RIT	10 Hz 0 SI +00	JUBRX 00	ASSIGN AF C AGC XIT +	IED TX GAIN GAIN ⊦0000	СТ	'UN (	DUP	RXA	NT	ВМК	DIV						S	)	1,34.	5, 7 -12	9 dBm /	0 +40 + Av	60
-80																																
-100		-G																														
-120									-  -																							
-140	محمد بالمان	1.11 per 4. 104	ر المالية.	ما داردار	ursén a senta bie	411.84	dia dia		histor	للمد الا		ماند ما	المعطيلة		ي. الديانية		hudha a		inali au		d.i. solu	5.6.L	n saka	na.it.l	ومعالمه			si at seli	اما مقدما	الأبر ولايد		446
-160		чр - Ч- чр	, edder , offe	1.4104	7.045		1	. ריאי	49-0-84	l.w	ሳት ጥ 7.0	)50			ιγ»rγ e	700-0	(~11 <b>4</b> )	- pv	7.05	5	(~4 <b>)</b>		. 14 14	bia de Al	W - W	7.06	мину ч <b>у</b>	- Pool of	•• • <b>1</b> /41	1999 B		r 40,
				3	6. F	<b>?e</b>	C	ei	ve	r۱	wi	nc	do	M	/																	

R linHPSDR will always have at least one receiver window open. With only one receiver, this receiver window cannot be closed. To exit linHPSDR, click the cross on the top right corner of the main window.

#### 3.1 VFO controls

#### **3.1.1** Bottom row buttons



The buttons across the bottom of the VFO screen will now be discussed. When a button is enabled, the background is purple. If the button is disabled, the background is grey. The buttons are described left to right.

The LOCK button will lock the VFO and not allow the frequency to be changed.

The current MODE is displayed and can be changed by clicking on it and selecting another mode.

The current RX FILTER is displayed and can be changed by clicking on it and selecting another filter.

NB (noise blanker) can be enabled/disabled by clicking on it and selection either OFF, NB or NB2.

NR (noise reduction) can be enabled/disabled by clicking on it and selection either OFF, NR or NR2.

SNB (spectral noise blanker) can be enabled/disabled by clicking on it.

ANF (automatic notch filter) can be enabled/disabled by clicking on it.

AGC (automatic gain control) can be enabled/disabled by clicking on it and selection either OFF, LONG, SLOW, MEDIUM or FAST.

RIT and XIT can be enabled/disabled by clicking on it. Right clicking on the RIT/XIT button allows the RIT/XIT step to be changed. Using the scroll wheel of a mouse hovered over the RIT/XIT value changes the offset.

CTUN (click tune) can be enabled/disabled by clicking on it. Click tuning means that the HL2 RX frequency does not change and linHPSDR changes frequency by apply a frequency translation within the RX passband (as set by the sample rate).

DUP can be enabled/disabled by clicking on it. With DUP enabled the transmitted audio is monitored at the RX panadapter and waterfall are update with this signal.

**RXANT** can be enabled/disabled by clicking on it. This toggles the GP7 bit on the HL2 N2ADR filter board. This is used by the HL2-MRF101 100 W Power Amplifier to toggle between a dedicated RX antenna and the TX antenna.

**R** With just the N2ADR filter board extra hardware is needed to make use of **RXANT**.

The **BMK** button allows the user to add or select a bookmark.

DIV can be enabled/disabled by clicking on it. This enables diversity reception with 2 hardware synchronised Hermes-Lite 2 receivers.

The AF GAIN can be adjusted by putting the mouse cursor over the slider and using the scroll wheel to move up or down. Alternatively, by clicking on the slider.

The AGC GAIN can be adjusted by putting the mouse cursor over the slider and using the scroll wheel to move up or down. Alternatively, by clicking on the slider.

#### 3.1.2 VFOs

Each receiver has a VFO A and VFO B. VFO A is on the left hand side of the VFO. VFO B is on the right hand side. To change frequency, hovering the mouse over the desired digit and using the scroll wheel allows the frequency to be changed. Frequency can also be changed by clicking or scrolling within the RX panadapter.



In all modes except CWL or CWU, clicking on the RX panadapter sets the zero IF frequency. In CWL or CWU, clicking at the centre of a CW signal sets the correct CW TX/RX frequency.

vfo a a>b a 7.051	A<>B SPLT ロフハ		ие в zoom x2 step 10 Hz 7.052.920
LOCK CWL 500	2200		ANF AGC FAST RIT +0
	630	•	
	<b>1</b> 50	►	1.840.000
-80	80	►	1.835.000
	60	►	1.845.000
-100	40	►	
	30	►	
-120	20	►	
	17	►	
-140	15	►	
LALLIN LUMBER	12	►	a disa ati mangan di Kasari
and a second and a second second	10	►	almonaturchedrataliere Maria estiliaera
-160	6	►	
	GEN	►	
	wwv	►	

To change band, right click on VFO A and select the band.

The chosen TX frequency and mode are displayed by the received that is ASSIGNED TX.

Along the top row there are three buttons A>B, A<B and A<>B. These move A to B, B to A and swap A and B respectively.

ZOOM changes zoom on the RX panadapter and waterfall display. Note, when changing radio sample rate, the zoom may need to be changed.

STEP changes the step size of the VFO increment. If a mouse hovers over the RX panadapter and the scroll wheel is used, this step is set by this button. For voice modes 100 Hz is preferable, for CW 10 Hz is preferable.

#### 3.1.3 Split and Subrx

SUBRX allows a virtual receiver within the receiver passband. This subrx is controlled by VFO B. When using subrx VFO B should remain within the VFO A passband (the VFO A passband can be visualised by setting the zoom to x1). VFO A is panned to left audio channel, VFO B is panned to right audio channel. The subrx frequency is best changed by hovering the mouse over the VFO B frequency and using the scroll wheel.

There are a couple of different modes for SPLIT. These can be selected by right clicking on the SPLIT button.

• 🛛			Li	inHPSDR: Hermes Lite \	V2 Rx-0 ADC-0 48000	
VFO A	A>B A <b a<="">B SPLT</b>	VFOB ZOOM X	STEP 10 Hz	ASSIGNED TX AF GAIN	_	QOS ADC SWR TEMP
LOCK	CWL 500 NB NR 5	SPLIT C FAS	Z.920 SOB	AGC GAIN XIT +0000 CTUN	DUP RXANT BMK DI	CAT CWD MIDI
		SAT				
-80		RSAT				
	- 6					
-100	<b>-</b> G					

SAT and RSAT are for satellite modes and will not be discussed in this document. By default (and no need to right click on the SPLIT button) SPLIT mode will:

- · Enable SUBRX;
- · Set VFO B to up 1 kHz of VFO A for CW, up 5 kHz of VFO A for USB/LSB;
- · Pan VFO A left audio channel, panel VFO B right audio channel;
- · Transmit on VFO B frequency.

To change VFO A frequency, either use the scroll wheel on the RX panadapter or scroll wheel hovering over the VFO A frequency.

To change VFO B frequency, click on the RX panadapter for the desired transmit frequency or scroll wheel hovering over the VFO B frequency.

R The transmitter panadapter tx frequency colour follows the VFO being used for TX. If VFO A is used, the colour is blue. If VFO B is used, the colour is orange.

#### 3.2 Radio info

To the right of the VFO screen is the radio info. This has information, alerts and warnings.

CWD	MIDI	

QOS this warning is set if the HL2 is experiencing a poor quality-of-service over the network and within the buffers of linHPSDR. Occasional warnings are generally acceptable, however, if there are sustained warnings it is best to check CPU load and network latency.

ADC this warning is set if the HL2 ADC is reporting clipping of the input signal. If this occurs, it is best to reduce the LNA gain (in the radio dialog tab within Configure).

SWR this warning is set if the HL2 reported VSWR is above the valued configured in the radio dialog tab (VSWR 2:1 by default).

**TEMP** this warning is set if the HL2 reported temperature is above the valued configured in the radio dialog tab (50 deg C by default).

CAT this shows the the CAT server is enabled *and* a client has connected (see RX-n tab in Configure to enable CAT).

CWD this shows the cwdaemon is enabled.

MIDI this shows the MIDI server is enabled.

#### 3.3 Misc

A shortcut to get to the RX dialog tab can be found by right clicking on the RX panadapter window.

The RX panadapter scale can be adjusted by hovering the mouse over the left hand side of the RX panadapter and using the scroll wheel on a mouse.



#### 3.4 Transmitter info

When the MOX/VOX is enabled, the main window will display the HL2 reported VSWR and forward power. Note, the red microphone level shows that audio is routed to linHPSDR (regardless of whether the HL2 is transmitting or not).

🛄 🔹 LinHPSDR (Be	eta): Hermes Lite V2	P1 72p8 169.254	.19.221 (00:1C:C	0:A2:13	:DD) on enp	) <b>-</b> 🔹 🚫
	0 dBm	14.2	235.560	мох	Tune	Add Receiver
	<u>-20 dBm</u>	M.	1.2 W	vox	Configure	Add Wideband
	<u>-40 dBm</u>	Mali	SWR: 1.1:1		conngare	
	<u>-80 dBm</u>	7	ALC: -0.0 dB		Micropho	ne Level
openHPSD	P =100 dBm				Micropho	one Gain (35dB)
Cpenin epi	-120 dBm		28 degC			
0 2116 AUSK, 2011 WASS	-140 dBm		28 degC		Dri	ve (100%)

For all modes except CW, the transmitted waveform leaving linHPSDR (after signal processing) is displayed in red.

Note the colour of the TX frequency changes to red when transmitting. Also, the VFO being used for TX will change to red in the VFO window.

<b>X</b> •						
VFO A	A>B A	B A⇔B	SPLIT	VFO B	ZOOM x5	STEP
	14.2	35.5	60		7.100	.94
LOCK	USB 2.7k	NB N	IR SNE	3 ANF	AGC MED	RI

R The drive level is the main power output control for the HL2. However, note that for first time users, the PA tab within Configure will need attention. The default values within this tab will result in low power output from the HL2.

## 4. Configuration dialogue

#### 4.1 Radio

•	L		-	ø	8					
Radio OC XVTR	RX-0 TX Pure Signal	PA EER M	IDI Abo	out						
Radio Model										
HERMES LITE 2 🔫	🔲 Enable PA	N2ADR FILT	TERS 🔻	48	000	-				
ADC-0										
LNA g	jain (dB):	22				- +				
FPGA PSU clock										
Configuration										
SWR alarm at 2.0	— + Temp alarm at	50 — -								
Audio										
PULSEAUDIO 🔻 B	ackend:									
Calibration [dBm]										
S-Meter:	11.8									
Panadapter:	11.8									
CW										
CW generation:	Radio 🗸 🔻									
CWdaemon enabled:		Port:	51000		+					
CW Speed (WPM)	24 – + Side	tone Level:	118							
Sidetone Freq:	650 – +	Weight:	50							
CWdaemon sidetone:	Break	In Delay (Ms):	275							
Region										
∪к <del>▼</del>										

Some users have tried linHPSDR over the years and maybe infrequently come back to it. For these users, there may be saved settings that aren't perfectly compatible with the current version. For example, the radio model may show as HERMES LITE rather than HERMES LITE 2. In this instance, it is recommended to close linHPSDR and make a backup of the .props file and then remove it with:

rm ~/.local/share/linhpsdr/\*.props

Then re-open linHPSDR.

Features of note in this window are as follows:

Enable PA with this selected the main 5 W PA is enabled on the HL2. If the low power output is desired (for transverter use for example), un-check this.

FILTERS most users likely are using the N2ADR FILTERS. Selecting this in the drop down box will automatically change the OC tab settings. The HL2-MRF101 PA filter settings are also supported.

Sample rate can be changed between 48000 and 384000.

R

With 4 receivers enabled and high sample rates, Pulseaudio will likely struggle. It is recommended to use 48000 if 4 receivers are used.

FPGA PSU clock with the N2ADR filter board on 160m, some noise has been observed. With this box enabled, the noise should disappear.

Alarm thresholds VSWR alarm limit and temperature alert threshold (in deg C).

Calibration the values given are considered reasonably accurate.

**R** From time to time different gateware revisions can change these calibration values.

#### 4.1.1 CW

linHPSDR can support CW handled in the radio hardware and also generate CW within linHPSDR. This is configured in the radio tab at the bottom.

linHPSDR has a cwdaemon server built-in. This allows Linux logging software (that supports cwdaemon) to key linHPSDR (via keyboard/macro based CW). For example, tlf can talk directly to linHPSDR and no winkeyer is needed. To select this option, select linHPSDR in the CW generation drop down.

Before starting the cwdaemon server, a decision must be made regarding sidetone. To have no sidetone created by linHPSDR, ensure the CWdaemon sidetone box in unchecked. For contesting using keyboard macros in logging software, it is often beneficial to select duplex (DUP button) for the given receiver. This allows monitoring of the transmitted signal (with a slight delay).

This fork of linHPSDR does not support CWX anymore and all cw generation is achieved by IQ packet manipulation within the transmitter code in linHPSDR. A raised cosine profile with a rise/fall time of 8 ms is used.

The final option is to use linHPSDR to generate the CW sidetone and CW IQ waveforms. This option is used to MIDI based keying. To use this configuration, ensure that CWdaemon sidetone is selected before enabling CWdaemon. The MIDI server must also be enabled and configured. This is discussed in a seperate section of this document.

Calibration [dBm]	11 0				
S-Meter:					
Panadapter:	11.8				
CW					
CW generation:	linHPSDR	-			
CWdaemon enabled:		Port:			
CW Speed (WPM)		+ Sidetone Level:			
Sidetone Freq:		+ Weight:			
CWdaemon sidetone:		Break In Delay (Ms	s): 275	- +	
Region					
ик 🔻					

#### 4.2 OC

The OC tab should not need any tweaking if the correct filter board has been set in the Radio tab.



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#### 4.3 RX-n

<u>100</u> •	21	- 🕫 😣	
Radio OC XVTR RX-0 TX Pure Sign	al PA EER MIDI About		
Filter	TX Frequency	CAT	
Var1 150 - + 2850 - +	Use This Receivers Frequency	CAT Debug	
Var2 150 - + 2850 - +		TCP/IP enable	
Audio	Panadapter	19090	
Local Audio	10.0	Serial Port Enable	
Stereo 🗸	FPS:	Serial Port:	/dev/ttyACM0
Built-in Audio Analogue Stereo 🗙	Average:	Baudrate:	9600 🗸
	-25.0		
	-135.0		
Equalizer	20.0		
Enable Equalizer	Step:		
0.0 0.0 0.0 0.0	🔲 Panadapter Filled		
-12dB -12dB -12dB -12dB	🔲 Panadapter Gradient		
	AGC Lines		
	Waterfall		
	-25.0		
	-105.0		
	🔲 Waterfall Automatic		
	Waterfall FT8 Marker		
15dB 15dB 15dB 15dB			

Local Audio must always be checked.

CAT control is per receiver. To enable CAT on a given receiver, ensure that TCP/IP enable is selected

R The panadapter FPS (frames per second) and Average will likely need changing depending on mode and radio sample rate.

Waterfall automatic will set blue for the lowest signal levels and red for the highest signal levels.

R If strong signals appear on the band the contrast will automatically change, so this feature can sometimes falsely make the user thing noise levels have changed.



Take care when undertaking comparisons between antennas etc. to uncheck Waterfall automatic.

Linux HPSDR: Hermes Lite V	/2 169.254.19.221	- • 8
Radio OC XVTR RX-0 TX Pure Signal PA EER MIDI About		
Microphone		
Local Microphone Monitor of TX Audio		
Tune	Equalizer	
100 Tune Percent:	Enable Equalizer	
	Preamp Low Mid High	
Tune Use Drive:	-12dB -12dB -12dB -12dB	
	J <b>I I I I</b>	
TX Filter		
Use Rx Filter:		
Low: 150 - + High: 2850 - +	вьо вьо вьо вьо	
FM		
FM TX Pre-emphasize before limiting		
АМ		
AM Carrier Level: 0.5 - +		
	15dB • 15dB • 15dB • 15dB •	
стсѕѕ		
Enable CTCSS 67.0 🔻		
Panadapter		
13 EPS:	N	
	¥	
20 High:		
-140		
Low:		

Ensure that (Local Microphone is selected.

#### 4.5 PA

The HL2 power output is not the same for every band. The PA tab allows tweaking of the power output per band. The values all default to 53.0. This will likely result in low power out from the HL2. The optimum values are likely somewhere between 39.0 and 43.0 (lower number is higher power output, with a minimum value of 38.0)

•						9.254.19.221 – e						
Radio	oc	XVTR	RX-0	хт (	Pure Signa	al P	A E	EER M	IDI	About		
PA Calil	oration	۱										
2200	53.0		+	630	53.0		+	160	38	.8 -		
80	38.8		+	60	53.0		+ ]	40	38	.8 -	- +	
30	38.8		+	20	41.3		+	17	38	.8 -		
15	42.4		+	12	53.0		+	10	40	.3 -	- +	
	53.0		+	GEN	53.0		+	wwv	53	.0 -	- +	
220	53.0		+	430	53.0		+	902	53	.0 -		
1240	53.0		+	2300	53.0		+	3400	53	.0 -	- +	
AIR	53.0		+									
												₽



#### 5.1 CAT

🌂 e			Pre	ferences						- • 😣				
Program < T	RX control ROT con	rol Modes	QTH Profiles	Export	DXCluster	Fonts	WAZ, ITU zones	IOTA Membership	>					
Station	rigctld													
New QSO Pat	th to rigctld binary:									ОК				
Visible columns	er (bin (riget)d									Cancel				
Bands														
TRX control	Radio one Radio two													
ROT control	tadio one itadio two									Help				
Modes	Radio one, desc.:	Radio 1	Host: loca	lhost										
QTH profiles	RIG model:	r	)evice (e. a. /dev	//ttv/50)·	Poll ra	ter Pr	ort number:							
Export	2 Hamlib NET right		verice (eigh/dei		500		1522							
DXCluster	2 Harnino IVET Higed	-			500		-552							
Fonts	Extra command line	arguments:	Use	CWR inste	ead of CW									
WAZ, ITU zones			Run	rigctld wl	nen program	starts								
IOTA	Dedie energeniel en													
Membership	Radio one serial pa	ameters												
Bandmap	Serial speed:	Data bits	Stop bits	Pa	arity									
xplanet support	default 🗸 🗸	default	✓ default	~ 0	default	$\sim$								
Zip code tracking	Handshake	DTR	RTS											
LoTW/eQSL support	dofault	dofault	default	$\sim$										
CW interface	uerauic 🔹	uerault	* derault	•										
fldigi/wsjt interface														
Exit & Auto backup														
External viewers	Switch only betweer	mode related r	memories		C	hange def	ault frequencies							
Callbook support	Show communicatio	with TRX in co	nsole			Add/Mo	dify memory							
RBN support	You have to run corl	og in console to	see the debug	messages										
Online log upload			and activity											
Propagation														

Ensure linHPSDR is running. From a command prompt, type the following:

rigctld -m 240 -r localhost:19090

Configure CQRLOG as shown in the image above.

Finally, from the within CQRLOG select File -> Refresh TRX/Rot control

#### 5.2 CW

The setup from macro/keyboard CW from CQRLOG is shown below.

•					Preferences						- 🔹 😣	l
Program	<	Membership	Bandmap	xplanet support	Zip code track	ing LoTW/eQ	SL support	CW interface	fldigi/wsjt interface	>		
Station								-				l
New QSO		Interfaces type:	cwdaemo	n	~						OK	l
Visible columns		WinKeyer USB									Cancel	l
Bands		Port		Default CW sn	eed							l
TRX control		6789		30 Û WP	M							l
ROT control											Help	l
Modes												l
QTH profiles												l
Export		cwdaemon —										l
DXCluster		Address:		Port:	Default CW spe	ed						l
Fonts		localhost		51000	25 🗘 WPN	1						l
WAZ, ITU zones												l
IOTA		K3NG Kev										l
Membership		Port		Default CW sp	eed							l
Bandmap					и							l
xplanet support				30 0								l
Zip code tracking		Serial port spe	ed:									l
LoTW/eQSL support		115200										l
CW interface												l
fldigi/wsjt interface		HamLib										l
Exit & Auto backup		Default CW sp	eed	bost and port	number are take	n from						l
External viewers		20 ^ WPI	vi.	parameters of	the first rig	in toni						l
Callbook support		30 0										l
RBN support						Kov macros	i i					l
Online log upload						Ney macros						
Propagation												



#### 6.1 Setting up tlf

tlf is a great keyboard driven Linux contest logger. It can be downloaded from:

https://github.com/Tlf/tlf/tags

#### 6.2 logcfg.dat

The following settings should be added to a logcfg.dat file to use cwdaemon:

NETKEYER NETKEYERPORT=51000 NETKEYERHOST=127.0.0.1

and for CAT:

RADIO\_CONTROL RIGMODEL=240 RIGPORT=localhost:19090 RIGPTT

Different options may have been set by the user in linHPSDR resulting in different port numbers to those shown above.