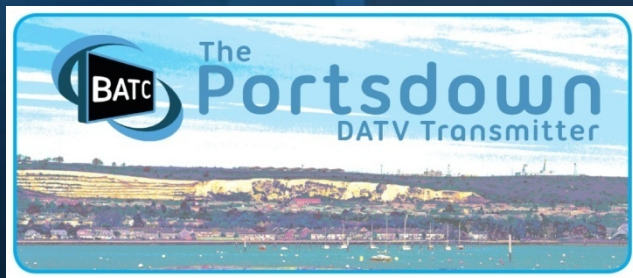




Portsmouth New Capabilities

Dave G8GKQ



CAT21
16 October 2021



Topics

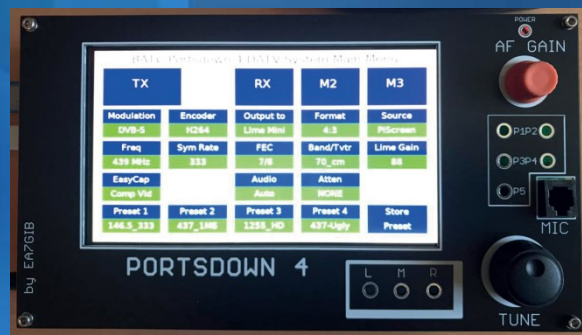
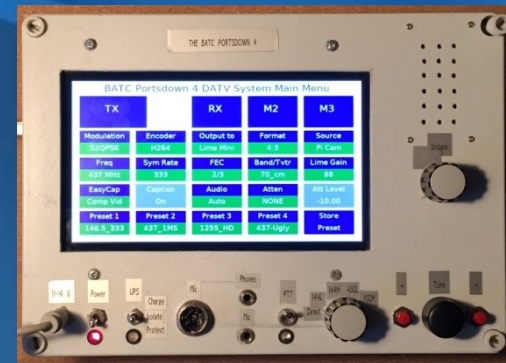
- Legacy Capabilities
- DVB-T
- Signal Generator Improvements
- Band Viewer
- Power Meter
- Noise Figure Indication
- Future Developments



Legacy Capabilities

- RPi 3 or 4 and Touchscreen with SDR
- DVB-S and DVB-S2 Transmitter
- DVB-S and DVB-S2 Receiver (with tuner)
- Stream Transmitter and Receiver
- Basic Signal Generator

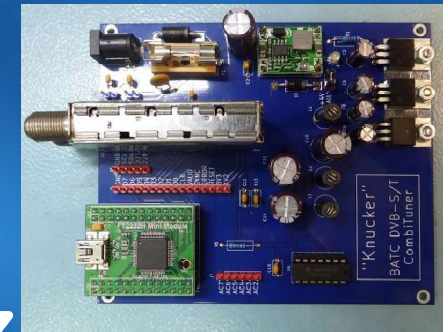
Example Builds





DVB-T/T2 Receive Support

- Receive needs Knucker Tuner
- Freq range 50 MHz – 1000 MHz
- BW range 150 kHz – 2 MHz
- No Service Information Display
- More sensitive than the MiniTioner

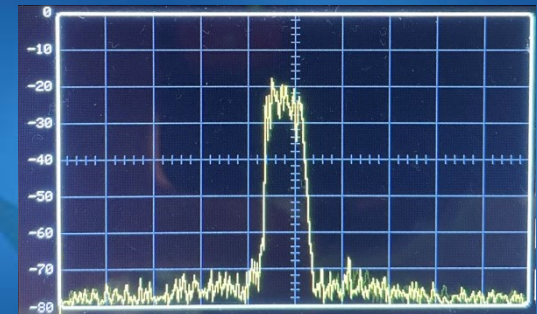


146.500 MHz	250 kHz
MOD : DVB-T	FFT : 2K
Const: QPSK	FEC : 7/8
Guard: 1/32	
SSI is 100	
SQI is 100	
SNR is 25.84	
PER is 0.00	

DVB-T Transmit Support



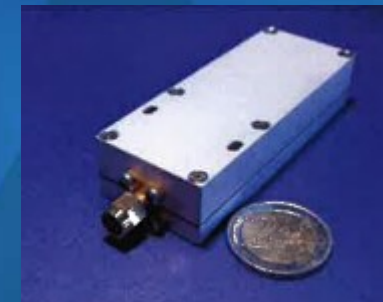
- LimeSDR or Pluto (P4)
- Bandwidth Limitations
 - LimeSDR Mini 150 kHz – 2 MHz
 - Pluto 150 kHz – 1 MHz
- Portsdown 2020 LimeSDR only





Signal Generator

- Sources
 - Pluto SDR - 6 GHz
 - Pluto SDR x5 - 30 GHz
 - LimeSDR Mini - 3.5 GHz
 - ADF4351 - 4.4 GHz
 - ADF5355 - 13.6 GHz
- Elcom Source
- Nort SLO



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Sig Gen Control

Portsdwn Signal Generator Control Panel

Lime Mini

ON

OFF

Cal Lime

Exit

+ + + + + + + + +
1,255.000,000
- - - - - - - - -

+ +
1.5 dBm
- -

Save

Recall

Lime Gain = 77

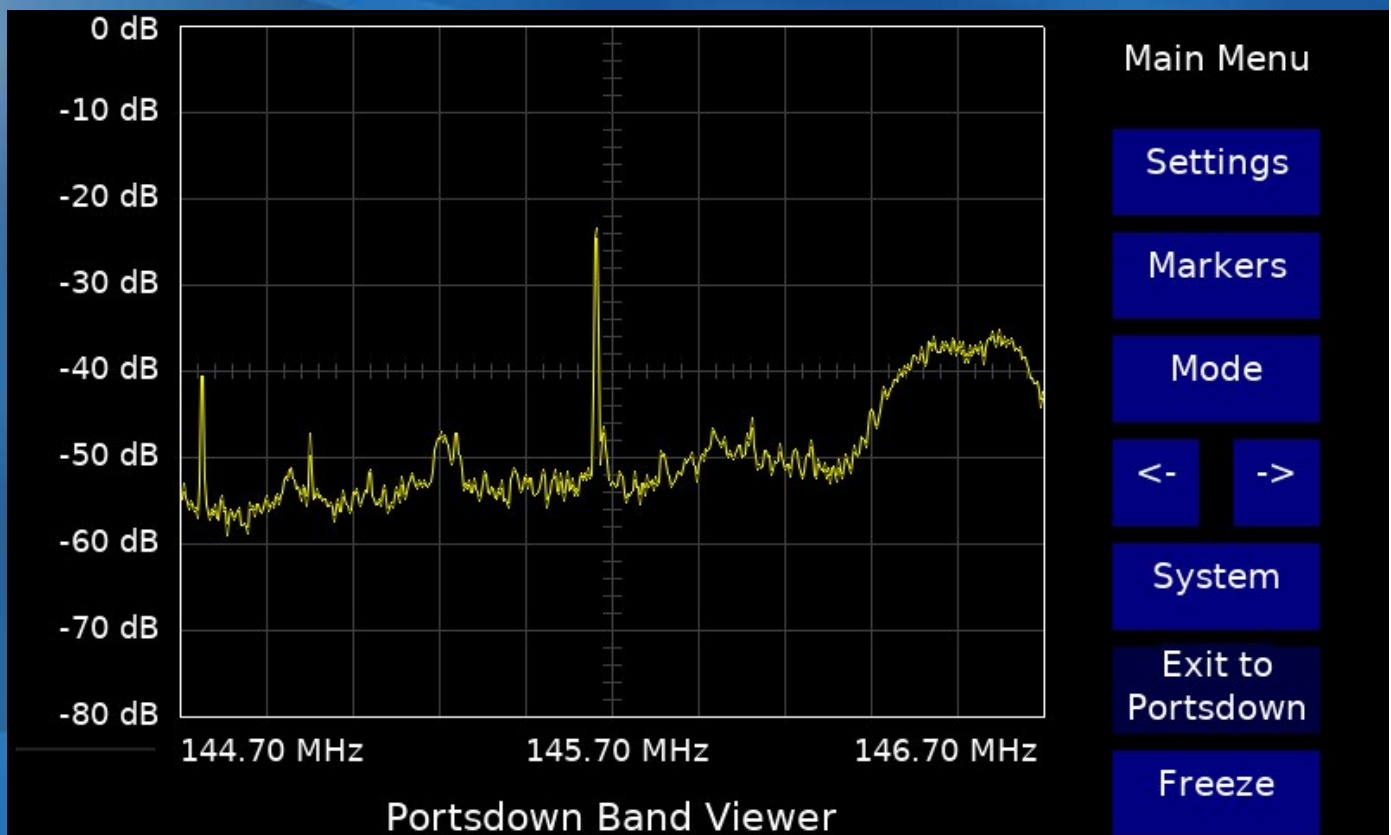


Band Viewer

- Portsdown 2020 and Portsdown 4
- LimeSDR Mini only
- Intended as a “Panadapter”
- Accurate relative levels
- Limited Dynamic Range

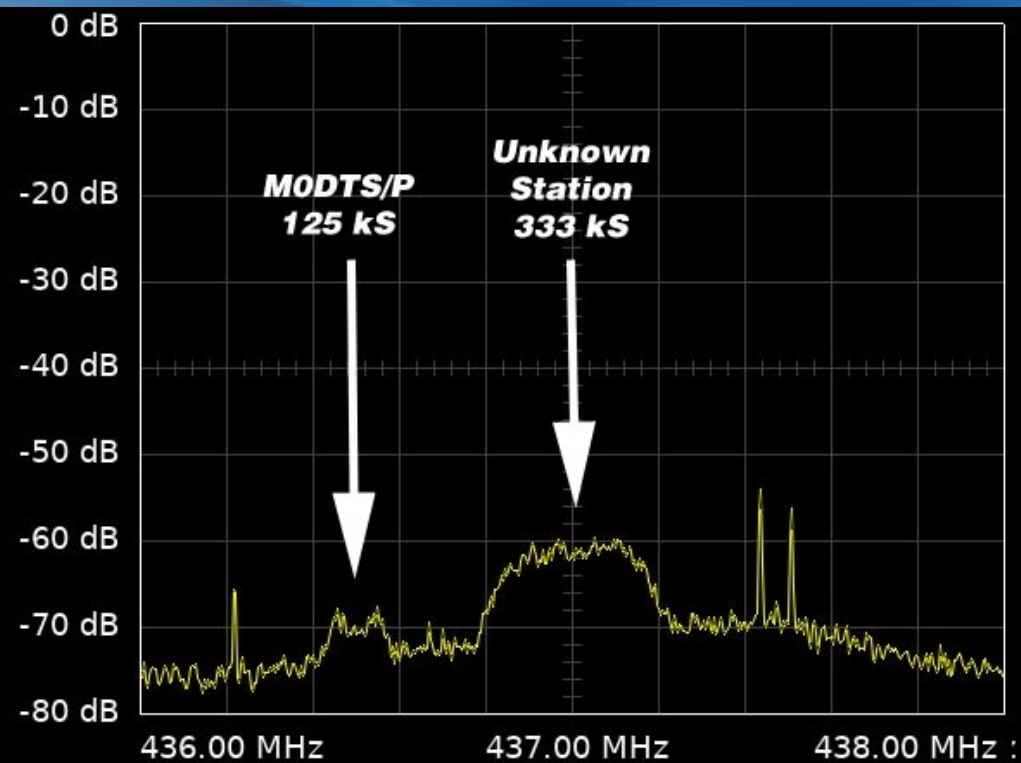
BATC

Typical Usage



Weak Signal Work

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Portsdwn Band Viewer

Gain
Menu

100%

90%

70%

50%

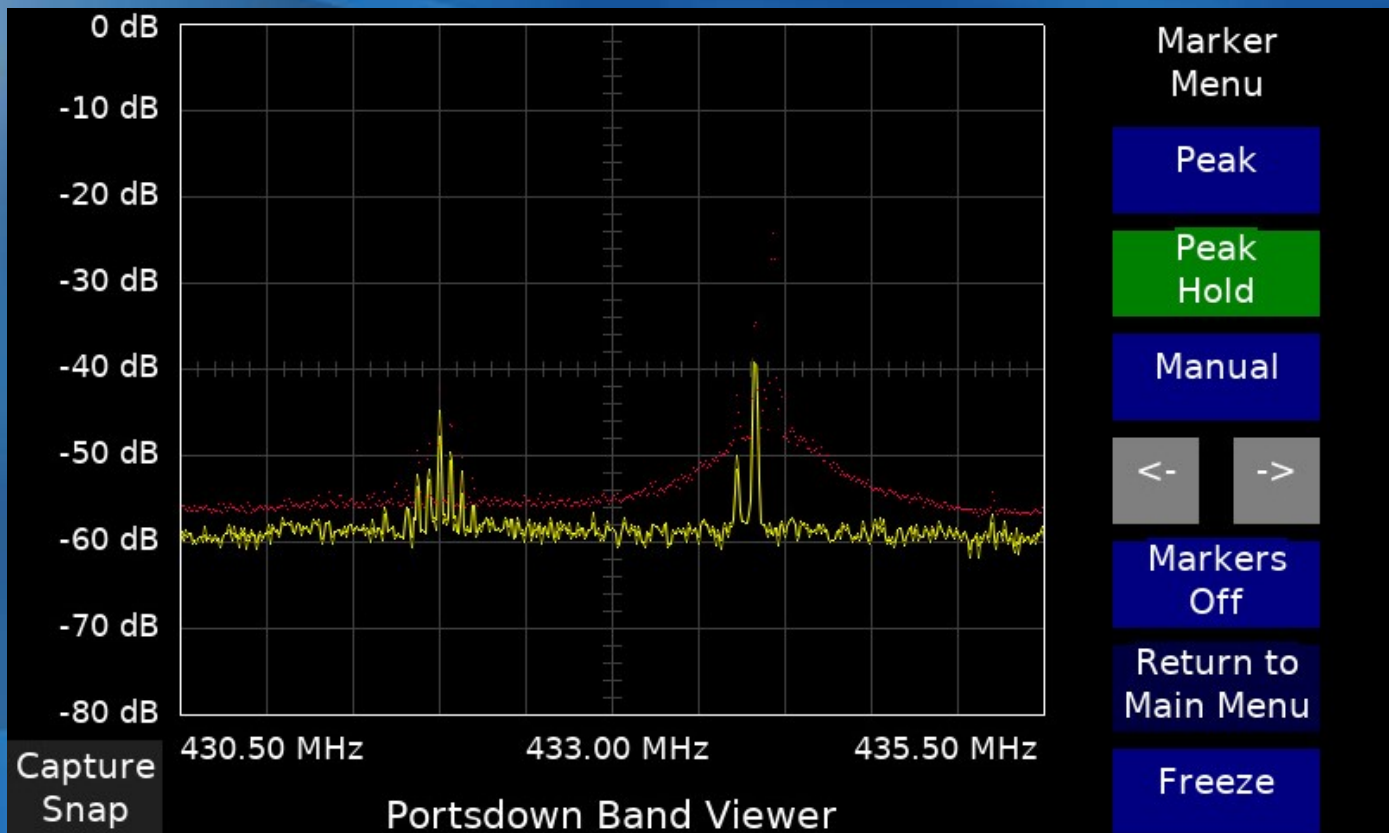
30%

Back to
Settings

Freeze

Peak Hold

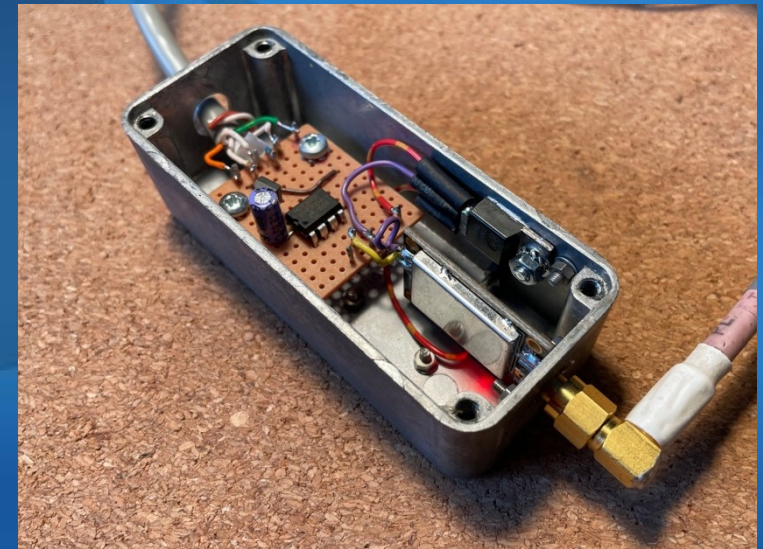
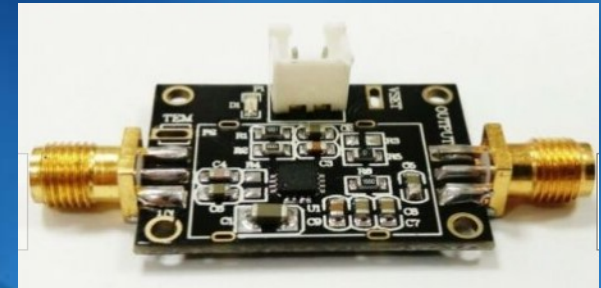
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Power Meter

- Needs external sensor
- AD8318
- MCP3002 A-D
- More sensors in future



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Sensor: ad8318-3

Portdown Power Meter

Main Menu

Settings

dBm

Mode

<-

->

System

Exit to
Portdown

Freeze

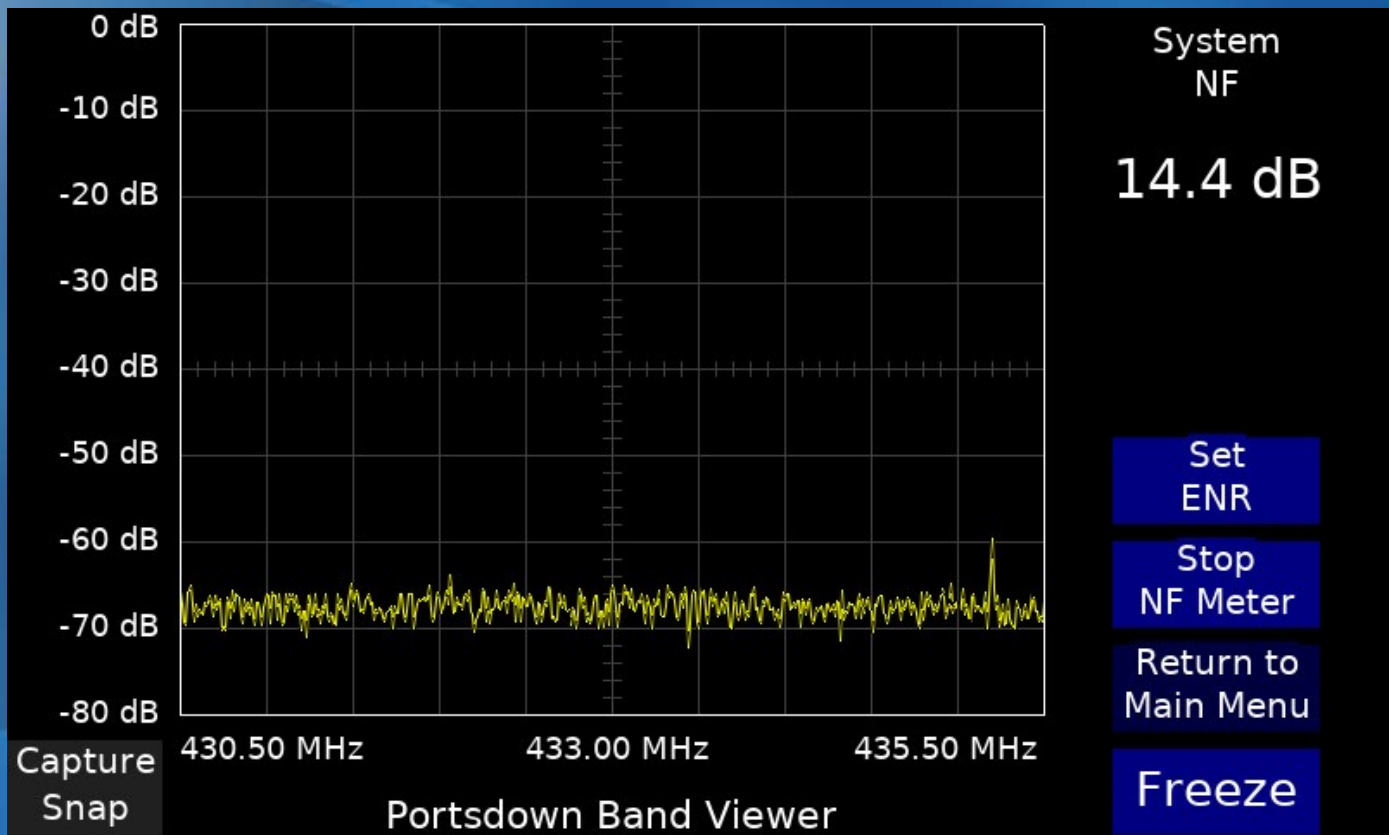


Noise Figure Indication

- Basic Capability in Band Viewer
- Needs an external switched noise source
- Some errors in calculation at present
- But within a dB or 2

Noise Figure

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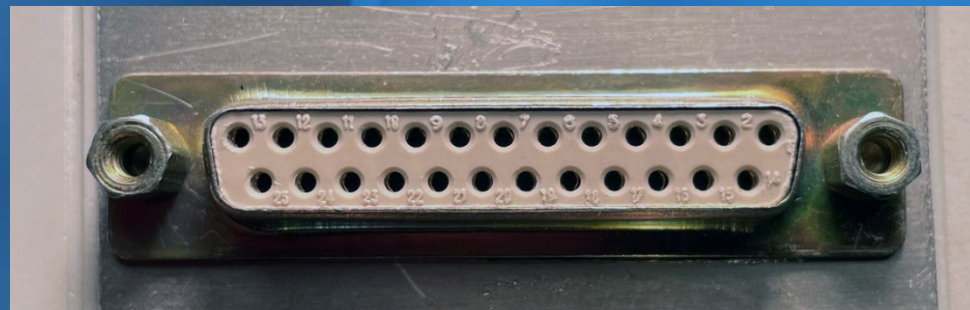


Noise Figure Notes

- LimeSDR must be operating in linear region
- No significant signals in bandwidth
- Bandwidth?
- Minimise digital noise locally

Portsdown Interface

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Way Ahead

- Migrate from Buster to Bullseye OS
- Portsdown 2020 will become Portsdown 3
 - Continued support
- Most new features will be Portsdown 4 only
 - 5 inch Touchscreen?
 - Ramp/sweep generator?
 - LF Sig Gen?
- What can you contribute?

Where are they All?



- 750 Portsdown SD Cards
- 250 Portsdown GPIO PCBs
- 150 LimeSDR Minis
- 500+ known purchasers

The BATC logo is a dark blue square with the letters 'BATC' in white, positioned on a light blue circular graphic that resembles a stylized 'C' or a partial ring.

BATC

Questions

CAT21
16 October 2021