



The Portsdown Project

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Scope

BATC

- Recap of the project history
- Basic Capabilities
- Raspberry Pi 4
- Portsdown 2020 vs Portsdown 4
- New Features and Functions
- Way ahead
- What to Build?



Portsdown – What is it?

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- Entry level, simple DATV exciter
 - With a MiniTiouner, a DATV RX
 - Intended for /P or home use
 - Useful addition to the shack
 - An “appliance”
-
- Not a broadcast-quality H265 TX
 - Not like a Windows PC

Project History



- 2017 – initial development from Evariste F50EO's concept

TX			RX	
CAM MPEG2	CAM H264	Pattern	TS File	Carrier
FEC 1/2	FEC 2/3	FEC 3/4	FEC 5/6	FEC 7/8
SR 250	SR 333	SR 500	SR1000	SR2000
71 MHz	146.5 MHz	437 MHz	1249 MHz	1255 MHz

- 2018 – Mature capability on “Jessie”. F-M board & Express

BATC Portsdown Transmitter Main Menu				
TX		RX	M2	
Modulation	Encoder	Output to	Format	Source
DVB-S	MPEG-2	UGLY	4:3	PI Cam
Freq	Sym Rate	FEC	Band/Tvtr	Att Level
1255 MHz	4000	7/8	23_cm	-10.00
EasyCap	Caption	Audio	Atten	
Comp Vid	On	Auto	NONE	
Preset 1	Preset 2	Preset 3	Preset 4	Store
146.5_333	437_1MS	1255_HD	437-Ugly	Preset

- 2019 – Initial LimeSDR capability on “Stretch”

- 2020 – Mature LimeSDR capability on “Buster”

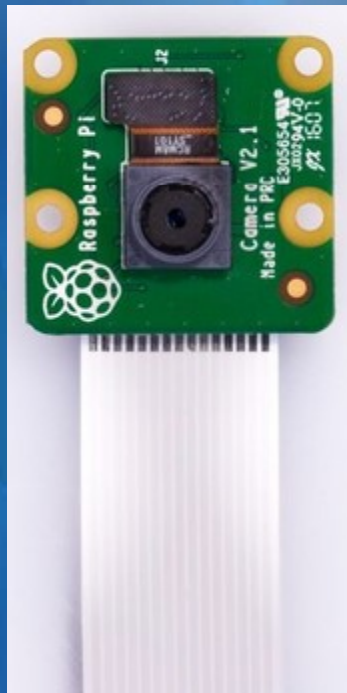
BATC Portsdown 4 DATV System Main Menu				
TX		RX	M2	M3
Modulation	Encoder	Output to	Format	Source
52QPSK	H264	Pluto	720p	HDMI
Freq	Sym Rate	FEC	Band/Tvtr	Pluto Pwr
437 MHz	1000	2/3	70_cm	0
EasyCap	Caption	Audio	Atten	Att Level
Comp Vid	On	Auto	NONE	-10.00
Preset 1	Preset 2	Preset 3	Preset 4	Store
146.5_333	437_1MS	1255_HD	437-Ugly	Preset

- Portsdown 4 on Raspberry Pi 4

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Portsdown Core Capabilities

- DVB-S and DVB-S2 transmission
- MPEG-2 and H264 encoding
- Video from Pi Cam or EasyCap



Raspberry Pi 4

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- Faster processor than the RPi3
- H265 hardware decoder
- USB-3 and Gigabit ethernet
- More heat
- No power protection
- No OpenVG graphics
- No MPEG-2 hardware decoder
- H265 decoder has limitations
- Video output difficult

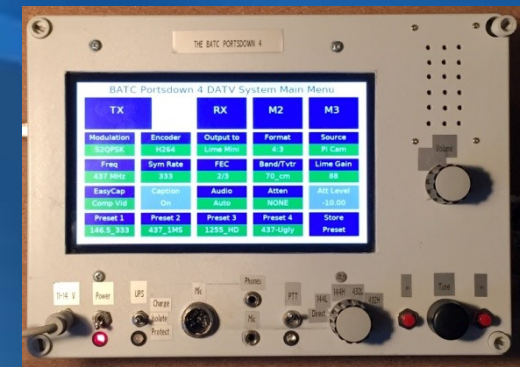
Portsdown 2020 vs Portsdown 4



- F-M Board and Digilite
- 3.5 or 7 inch screen
- Comp Video out
- Poor video monitor



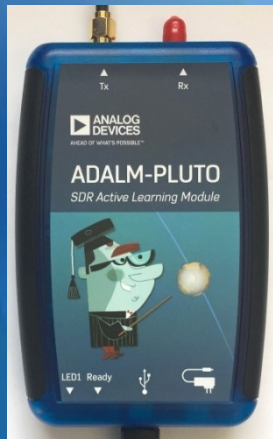
- Pluto
- 7 inch Screen only
- No Comp video
- Excellent monitors
- Langstone Compatible



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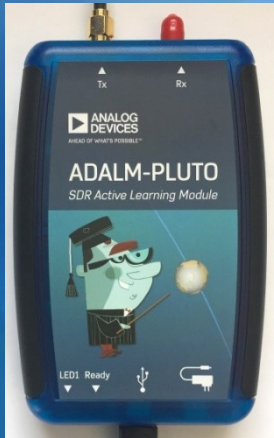
Portsdown 4 New Features

- Pluto H264 Transmissions
- LKV373A HDMI Input
 - Streaming
 - Pluto
- HDMI and Comp Vid monitors
- Pluto Signal Generator
- No need for USB Hub



Pluto

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- Expand the frequency Range
- Enable 2nd Processor?
- Load F50EO DATV Firmware
 - (FIRM2101RC of 5 February 2020)
- Change IP Address?
- Use with
 - Portsdown (H264 only)
 - Langstone (TCXO mod?)
 - Portsdown Signal Generator (x5?)

HDMI Input

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- Fast-moving field
- Current approach is to use the LKV 373A
- Network-connected
- Can be monitored by VLC on a PC
- TX Quality limited by H264 encoder



Non-Standard Hardware

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- Don't
- If you have to, make it work by modifying the software yourself
- Your modifications will be overwritten by the next update
- Unless you pass the modification to me for inclusion in the core
- Testing remains difficult

The BATC logo features the letters "BATC" in a bold, white, sans-serif font. The letters are contained within a dark, rectangular block that is slightly tilted. This block is set against a background of concentric, glowing blue circles, giving it a three-dimensional, futuristic appearance.

The Portsdown Receiver

- Uses the same LongMynd core as Ryde
- Works on Portsdown 2020 and Portsdown 4
- Three players:
 - VLC with ffmpeg (software)
 - VLC with hardware decoder
 - OMXPlayer
- UDP Stream to PC (MER Display)

Portsdown Receiver Menu (8)

QO-100 (a)		EXIT	Config		
SR	SR	SR	SR	SR	SR
1500	1000	500	333	250	125
10491.5	10495.25	10495.75	10496.25	10496.75	
MHz	MHz	MHz	MHz	MHz	
10497.25	10497.75	10498.25	10498.75	10499.25	
MHz	MHz	MHz	MHz	Keyboard	
Play with	Play with	Play with	Play to	Beacon	
ffmpeg VLC	OMX Player	VLC	UDP Stream	MER	



DVB-S2 Lock

10494.993 MHz

999 ks

QPSK

FEC 1/2

999 ks

DG00PK

2908Mike@QO-100

H265 AAC

MER 2.4 (1.0 needed)

DG00PK JO50GQ

SV8RV

TEST H265 ENCODER
via Software (no GPU needed)
ffmpeg libx265

SV8RV qth: Zakynthos (Zante) Isl. GREECE loc:km07ks dish:1.8m feeder:POTV pwr:5-60watts
libx265 H265 with SV8RV script(H265 H265).

Touch Left to Hide Overlay

Touch Right to Exit

+43.5dBm 21,59W

0.25ppm) 120cm Offset Dish/ MiniTouner Express

Don't Forget

The BATC logo consists of the letters "BATC" in a bold, white, sans-serif font, centered on a dark blue rectangular background. This rectangle is slightly tilted and is surrounded by a glowing blue circular ring that appears to be part of a larger, stylized architectural structure in the background.

BATC

- BATC Stream Receiver and sender
- Portsdown Signal Generator



Portsdwn Signal Generator Control Panel

ON

OFF

Cal Pluto

Exit

+ + + + + + + + +
5,760.100,000
- - - - - - - - -

+ +
- 0.1 dBm - -

Save

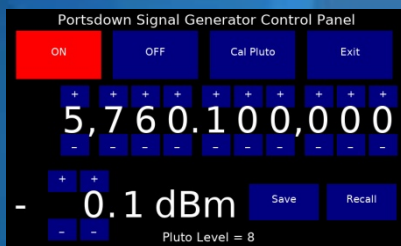
Recall

Pluto Level = 8

Don't Forget

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- BATC Stream Receiver and sender
- Portsdown Signal Generator
- Range and Bearing Calculations
- Video monitors
- Ability to screenshot - "snap"
- Control a Jetson
- RTL-FM



From G8GKQ	IO91CC55GE	Bearing	Range
GB3SCx_Bell_Hill	IO80UU59AA	234 deg	43 km
Butser	IO90MX24EK	103 deg	58 km
Cleeve_Common	IO81XW81	351 deg	92 km
Win_Green	IO80WX66RB	240 deg	26 km
Hannington	IO91JH	060 deg	46 km
Lane_End	IO91JA47AR	101 deg	40 km
Mendips	IO81PH	291 deg	68 km
Lulworth	IO80WP01UD	207 deg	58 km
Walbury	IO91GI45IA	039 deg	35 km
Brn_Clee	IO82QL	340 deg	163 km

Touch Screen to Continue

Future Enhancements

The BATC logo is a dark blue square with the letters 'BATC' in white, bold, sans-serif font. It is positioned on the left side of the slide, partially overlapping a large, stylized blue graphic that resembles a computer monitor or a window frame. The background of the slide is a solid blue color with subtle gradients and a large, faint, stylized blue shape that frames the central content.

BATC

- Return of “FreqShow” using W7QT’s “Panadaptor”

Set

Dn

PANADAPTER

Up

Quit

10 dB

nutall

scale = 5.0 dB

-40 dB

fft pks = 3

- 0.5000 Mhz

<

437.000000

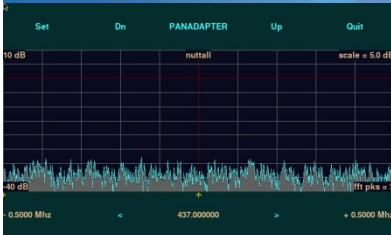
>

+ 0.5000 Mhz

Future Enhancements

The BATC logo consists of the letters "BATC" in a bold, white, sans-serif font. The letters are contained within a dark, 3D rectangular block that appears to be floating or attached to a blue, curved, metallic-looking structure. The background of the slide is a deep blue with abstract, lighter blue curved shapes that create a sense of depth and movement.

- Return of “FreqShow” using W7QT’s “Panadaptor”
- ADF5355 drive from SigGen
- TX Video quality improvements
- Web Interface?
- QuickTune RX Control?
- Not CM4



What to Build?

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- Build a Portsdown 4
 - Compatible with all BATC RF switches
- If you want Comp Video
 - Use a separate Pi Zero
- Both Portsdown 2020 and Portsdown 4 will continue to be supported
- New development will be concentrated on Portsdown 4



The BATC logo is located in the top left corner. It consists of the letters "BATC" in white, bold, sans-serif font, set against a dark blue rectangular background. This rectangle is slightly tilted and is surrounded by a glowing blue circular ring.

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Questions