

DATV

(D-ATV Digital Amateur Televisie)

Rob Hardenberg (PE1ITR)

Sjef Verhoeven (PE5PVB)

Joris Vreken (PE1GLX)

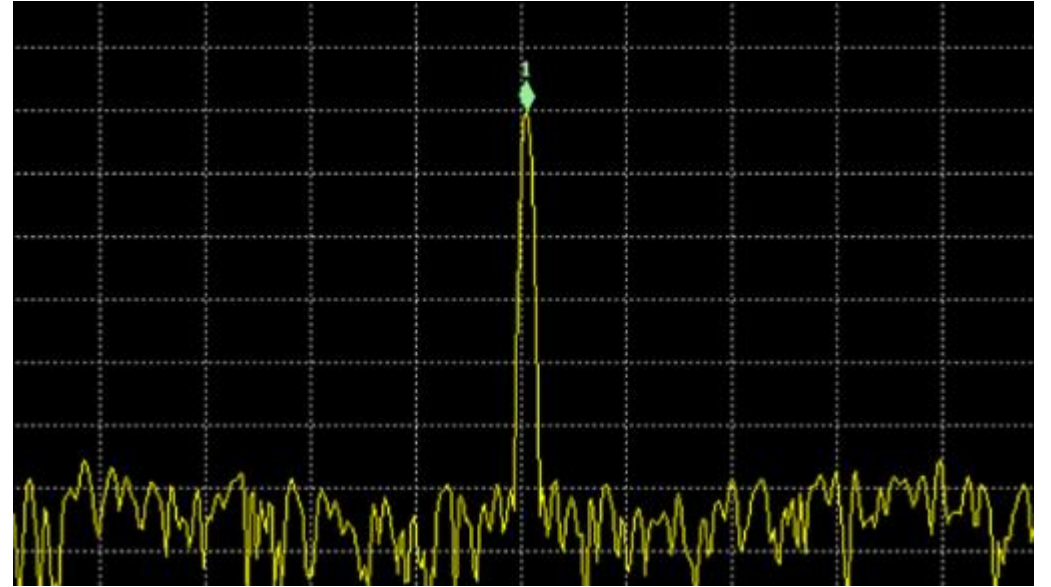
Henk Hamoen (PA3GUO)

VERON Eindhoven (A13)

CW

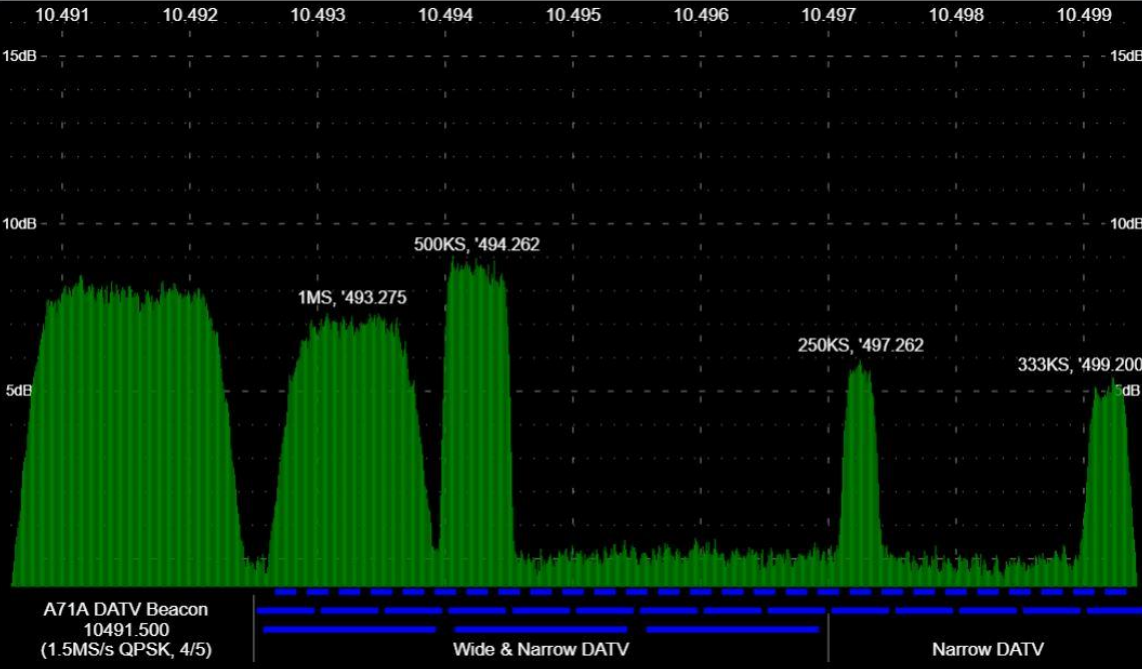
- Simple modulation type ('easy')

'0' / '1'



DATV

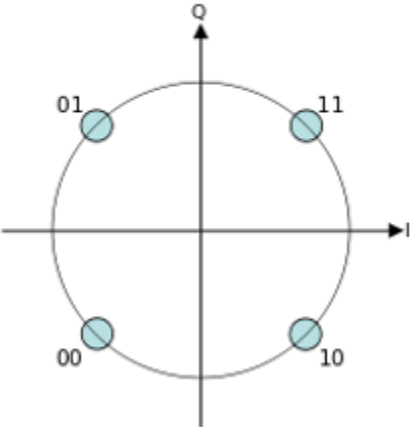
- Complex modulation type ('difficult')
 - E.g. 2 MB data / sec



QPSK

Symbols

00	-1-1j
01	-1+1j
10	1-1j
11	1+1j



Digital

- Photo

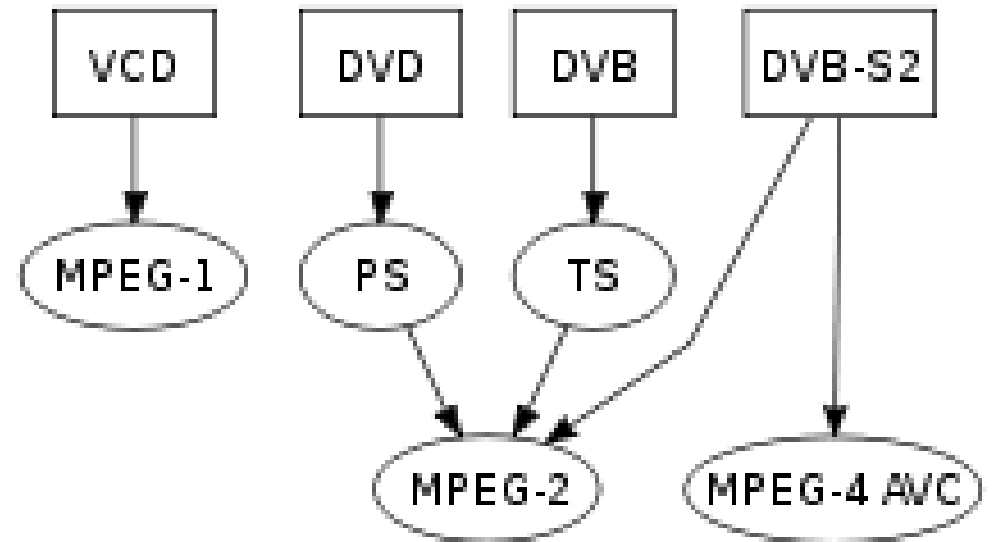
- Small, low resolution → large, high resolution images
- Information / Data
- Compression of data: JPEG, ..



Digital

- Video

- Small, low resolution → large, high resolution
- Information / Data
- Compression of data: MPEG, H264



Digital TV

- Video & Audio signals

- RF signals



- Bandwidth (SR)
- Error correction (FEC)
- ..

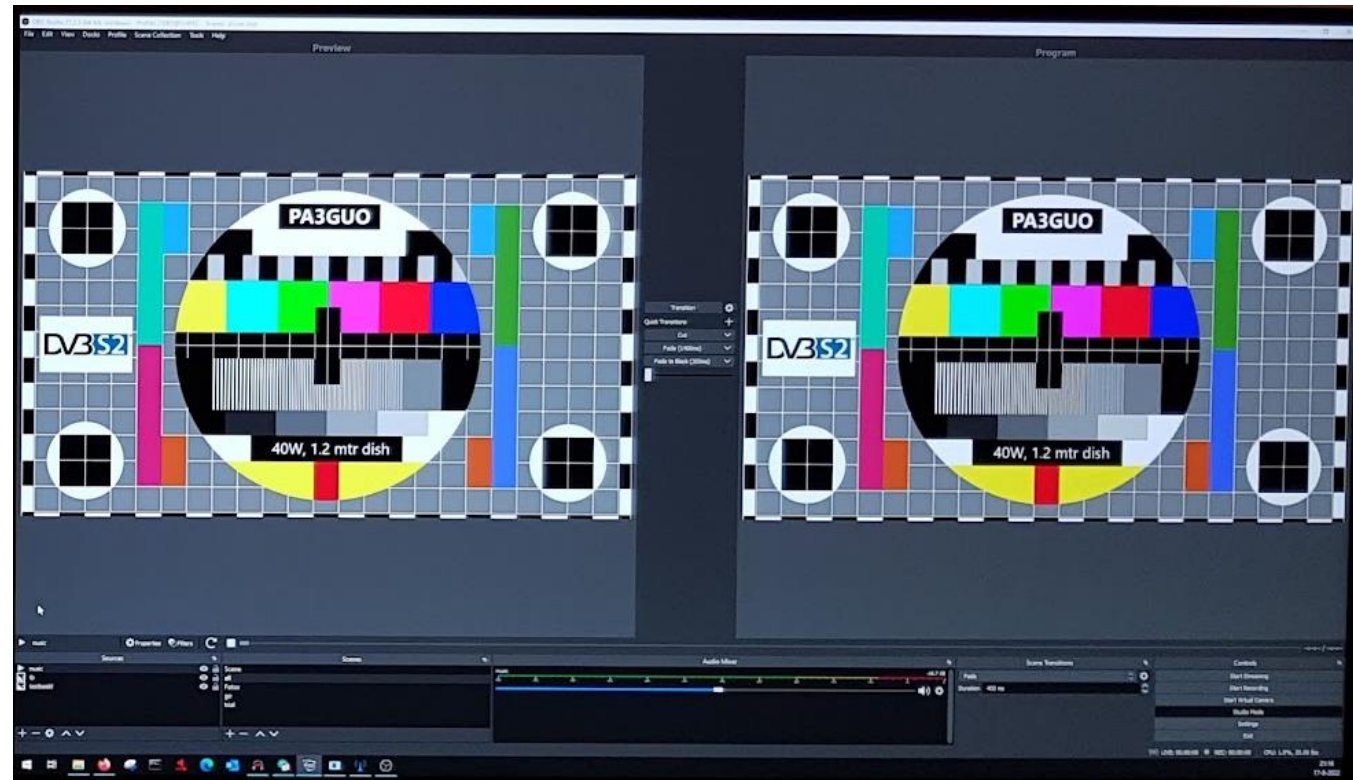
Digital TV – Building your station

- Video/Audio MPEG Transport stream PC ('SW')
- RF DVB signal DSP/FPGA/.. ('Emb SW')
- RF PA's, Pre-amps, Antennas, ..

Digital TV – Building your station

Video/Audio MPEG Transport stream:

Camera →
Foto →



→ FFmpeg

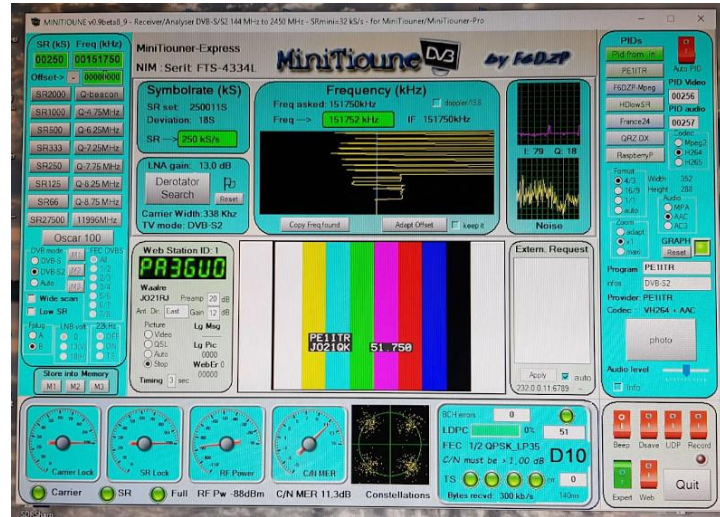
OBS

Digital TV – Building your station

RF: DVB



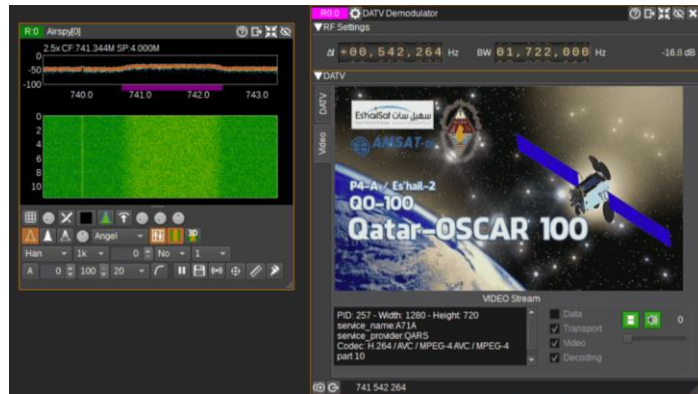
Minituner (HW)



MiniTuner (SW)



Pluto

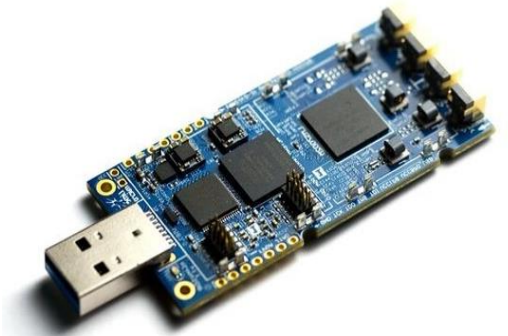


SDR Angel

BATC Portsdown 4 DATV System Main Menu

TX		RX		M2	M3
Modulation	Encoder	Output to	Format	Source	
S2QPSK	H264	Lime Mini	4:3	PiScreen	
Freq	Sym Rate	FEC	Band/Tvtr	Lime Gain	
437 MHz	333	9/10	70_cm	88	
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_Lime	1255_HD	437-Pluto	Preset	

Microcontroller + Lime SDR ('BATC Portsdown')



Digital TV – Building your station

RF PA's:

- 100W → 20W for DATV (wide, linear)

RF: Pre-amps, Antennas:

- Same as regular stations (nothing special)

RF: Propagation:

- DVB-T vs DVB-S
- SR, FEC
- Tropo, Scatter, Satellite

Digital TV

- QSO's
 - Direct
 - ATV Repeaters
 - Satellite (QO-100)
- Frequency
 - 2m, 70cm, 23cm, 13cm, ... 6m, 10m !

- PI6ATV ATV Repeater Eindhoven
- Contests VERON, BATC, Rob PE1ITR
- DxPeditions

- Locals:

Jack PA0BOJ
Joris PE1GLX

Rob PE1ITR
Henk PA3GUO

Sjef PE5PVB
Eric PE1MIX

Rick PE2AAB
..



ATV Relais PI6EHV

Ingangsfrequenties analog:	2335, 2368, 10400 Mhz, 6.0MHz geluid
Ingangsfrequentie DVB-S:	2350 MHz, SR 2000. Service id 1
Ingangsfrequenties RB-DATV	436, 437, 2323 en 2325 MHz. Symbol Rate 250k. De ontvanger detecteert automatisch DVB-S of DVB-S2 en de FEC.
Uitgangsfrequentie 23cm analog:	1280 MHz, 6.0 MHz geluid
Uitgangsfrequentie 23cm DVB-S2:	1291 MHz, DVB-S2, 8PSK, SR 5000kHz, FEC 3/4. De stream bevat meerdere programma's.

Digital TV – Fun !

- Experimental
 - Compression/DVB settings, distance records, propagation research
- Starting = easy (today)
 - Raspberry Pi, Pluto, Lime, Minituner, Ali-Express, ebay
 - Other stations want to help and make time for you (also during QSO's)

Digital TV – Google search

- BATC
- Portsdown
- VERON ATV
- RB DATV (Reduced Bandwidth)

Digital TV – Demo's !!