






Reduced bandwidth DATV - RB-TV or Low SR DATV

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G8GTZ



What is RB-TV

-  RB-TV is fast scan DATV below 1 Msymbol / sec = <1 MHz wide
-  Can be any modulation scheme but commonly use DVB-S standard
-  Typically 333kSym/s 7/8 FEC = ~500Khz bandwidth



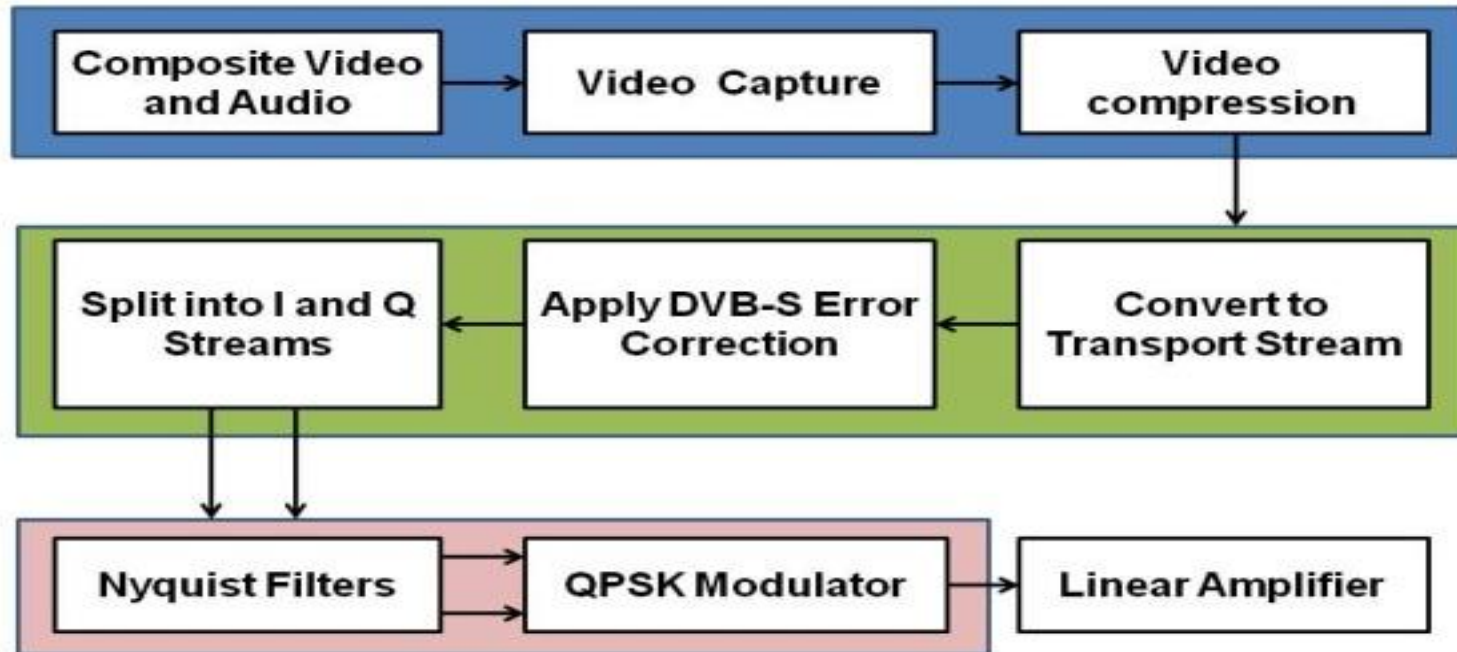
Why RB-TV?

- Bandwidth of ~ 500 KHz
- Proven 6 dB improvement over 2Msymbol DVB-S
 - 70cms Dx mode
- Enables DATV operation in bands where not room for normal DATV
 - UK 146 & 70 MHz MHz allocation
 - 50 MHz and 28 MHz?

RB-TV tx








DATV Transmission elements





Video encoding









-  MPEG-2 is not useable below 500 Kbit/s
-  MPEG-4 is codec of choice
-  Brian G4EWJ and F6DZP have evaluating the performance of H264 at very low bit rates.
-  <https://www.dropbox.com/sh/beyc5k1d2qyju7n/AACaa02tsHP6y2cVYu9pwhRka?dl=0>
-  250 kS/s and received by Tutioune software
<http://www.vivadatv.org/images/test%20250kS%20extract.html>

460 kbit/s = 330kSymbols

The logo for BATC, featuring the letters 'BATC' in white on a dark blue trapezoidal background, which is surrounded by two light blue curved lines.

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RB-TV - MPEG-4 encoding

-  Raspberry Pi (30 euro SBC) has native MPEG4 encoder and camera
 -  No external video capture
 -  Produces I&Q data
 -  More from F50E0
-  Linux based SBC (eg Odroid) with capture cards
 -  Geeky!
-  PC based using ffmpeg
 -  Not portable



RB-TV modulator

 DATVexpress – FPGA based flexible
DATV exciter/transmitter

 wide range of symbol rates

 70 MHz to 2.45 GHz

 0 dBm output

 Raspberry Pi Digithin plug in card

 Low SR modulator (330 kS)






 Si570 LO = 50MHz to 2 GHz

 0 dBm output

 Kits available from BATC shop









RB-TV receive

-  The hard part! Consumer STB / chips do not go below 1 Msymbol ☹️
-  Only current solution is Tutoune software with Pci card or USB tuner
 -  More from F6DZP & kits from BATC shop
-  Potential to really optimise performance
-  Maybe dedicated hardware solutions in future....



RB-TV “on air”

-  F9ZG tests over 200+ Km everyday with high success rate
-  G1LPS and MODTS worked 117 Km on 146.5 MHz with 25 watts erp!
 -  DATV express tx & Tutioune rx
-  G8GTZ and G4CPE worked 95 Km on 146.5 MHz with 25 watts erp!
 -  RpiDATV/Digithin tx & Tutioune rx
-  Imagine a Raspberry Pi on a Funcube!!



RB-TV - summary

- Great potential for experimentation
- More efficient spectrum gives access to new bands & operation on existing bands
 - Bands below 146 MHz?
 - Solution on 23cms?
- 6dB improvement over 2Ms gives great potential for DX
- Shows ATVers are at the leading edge of the hobby!