

BATC report to the RSGB Spectrum Forum - October 2014

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The ATV community is continuing to make the migration to digital operation as the squeeze on spectrum above 400 MHz continues. A self imposed policy of digital only for any newly licensed repeater outputs has been adopted and the use of 2 and 4 Msymbol DVB-S is now accepted as the UK standard for all bands from 437 MHz – 10 GHz. However, a large amount of analogue FM is still in use and it is too early to adopt a digital only policy for repeater inputs as it would disenfranchise too many ATV operators at this stage.

That said, the BATC is continuing to support and promote projects which make DVB-S DATV more accessible and brings the spectrum benefits of DATV to as many stations as possible. Over 100 Digilite systems are estimated to have been sold and BATC has sold more than 50 of the UK sourced DTX1 combined encoder / modulator units at cost price to our members.

The BATC is also actively supporting experimentation with, and the development of, lower bit-rate (sub 500 Kbit/s) digital video transmission for use on the lower bands, including the new 146 – 147 MHz allocation. Currently BATC members are experimenting with MPEG-4 codecs and evaluating suitable modulation schemes and one member is developing an I/Q modulator plug in board for the Raspberry PI. Low bit rate receivers will present a significant design challenge, however the development of wide band SDR modules such as SDRplay may have potential as the basis for a flexible receiver covering a number of bandwidths and modulation schemes.

BATC is also aware of the continuing need to improve the spectral purity of DATV signals, particularly in the area of spectral regrowth. We have published a number of filter designs for both 70cms and 23cms in recent issues of CQ-TV and are in the process of initiating a scheme of regional experts or mentors with the skill and equipment to help other ATV operators ensure their transmissions are within the recommended IARU standards.

TV Repeaters

Currently 33 TV units are licensed with 2 non-operational. Operation listed by primary transmit band is 1.3 GHz = 22, 2.3 GHz = 4, 3.4 GHz = 1 and 10 GHz = 5.

All TV repeater keepers were contacted during the NoV renewal process and several NoVs were not renewed for units not on air. GB3BA, one of the new 3.4 GHz NoVs, has been returned as the site was lost during the 2 years that it took to get the NoV.

6 new applications are currently in vetting (1.3 GHz = 4 units and 3.4 GHz = 2 units) with the longest delay at 20 months.

Only 1 NoV has been received in the last 12 months. This was for the GB3IV site move.

In theory, the move to digital makes spectrum planning for repeater outputs an easier task, however the need to retain FM inputs in the short term, combined with the impact of the PSSR release makes finding input channels hard. Realistically 23cms is now the only band where it is practical to find room for and gain primary user approval for a 16 MHz wide FM channel.

The Bands

2.3 GHz

As a result of a lot of hard work by RSGB and others, the PSSR announcement resulted in significantly less impact than has been the case in some other countries. It does have an impact on ATV operation, particularly analogue, and 7 TV repeaters will be affected by the programme. The BATC & ETCC is working to co-ordinate changes with Ofcom and with the groups affected.

The 13cm digital video transmitter "HAMtv" onboard the ISS, provided by ESA and coordinated by AMSAT-Italy, has now been commissioned. Ground terminals around the world and monitoring streams have been created using the BATC streamer/server site.

The link budget appears to be slightly better than predicted and good signals have been received using <1 metre dishes.

Its use for actual schools contacts is dependent upon agreements being made between the ISS partners.

1.3 GHz

John McCullagh (ETCC), Murray Niman (RSGB) and Noel Matthews (BATC & ETCC TV rep) met with the CAA and Ofcom in July to update the CAA on Amateur activities in the 23cms and in particular the adoption of digital modulation schemes for both voice and TV repeaters. We have since written a document outlining activities on the band giving technical details of the systems requiring NoV approval and a draft version has been sent to the CAA.

As a result of the meeting, the CAA agreed to direct contact with the ETCC to discuss NoV applications as and when the need arises and we have recently sent CAA details of the 4 outstanding NoVs. All applications must still follow the agreed ETCC / Ofcom NoV application process but this direct contact will hopefully result in fewer delays for 23cms applications.

70cms

The development of 2 MHz wide DVB-S has prompted a revival of 70cms ATV and DX exceeding 600 kms has been worked by UK stations. Prior to the IARU Region 1 conference, BATC liaised with fellow ATV organisations throughout Europe to agree a common approach that was also supported by the RSGB and other national societies. As a result it has been agreed that DATV simplex and repeater inputs can continue on the band but in order to minimise interference to other services, TV repeater outputs should not be licensed on 70cms.

146 – 147 MHz

BATC is very pleased with the support received from the RSGB in proposing a 500 Kbit/s allocation for experimental very narrow band DATV in the new 146 – 147 MHz band. As mentioned above, there are already a number of developments being undertaken by members of the ATV community.

Below 100 MHz

The BATC is aware of the comments attracted by some recent experiments undertaken to evaluate the potential of DATV at 50 MHz. These initial proof of concept experiments were conducted utilising equipment that readily available and used the narrowest standard DVB-S modes that commercially available receivers will support.

The BATC would not support the regular use of transmission modes that go against existing RSGB / IARU band plans. We do however believe that the bands below 100 MHz offer very interesting potential for experimentation and that the ATV community should adopt the very narrow band technologies being developed for use in the 146 MHz band.