



## **BATC report to the RSGB spectrum Forum – November 2019**

The ATV community continues to innovate with very low bandwidth transmissions using H265 video encoding and DVB-S2 modulation.

BATC recently submitted a report to Ofcom detailing the tests done on the 71MHz band using just 80 KHz of occupied bandwidth to transmit high resolution full frame video and audio over a 29 km obstructed path.

A copy of the video file can be viewed here:

<https://www.dropbox.com/s/w864ywsmlgpw1uw/G0MJW%20-%2071MHz%2066Ks%208PSK.mp4?dl=0>

*G0MJW on 71MHz DATV in just 80 KHz bandwidth*

### **Activity levels**

Terrestrial ATV activity on all bands has plateaued, perhaps due to increased DATV activity using the wideband transponder on the geo-stationary QO-100 satellite.

This was reflected in a slight fail in UK entries to the recent IARU Region 1 ATV Contest where UK stations submitted entries on all bands from 71MHz to 24GHz. G4FRE and G8GTZ won the 24GHz section with a 136 km contact (a new DATV world record).

[https://wiki.batc.org.uk/images/e/e1/IARU\\_Region\\_1\\_ATV\\_Contest\\_2019\\_Results.pdf](https://wiki.batc.org.uk/images/e/e1/IARU_Region_1_ATV_Contest_2019_Results.pdf)

## **The Bands**

### **50 MHz**

Tests have continued on 51 MHz to support the IARU region 1 team initiative at WRC 2019. The current distance record using low power stations stands at 140 km. Note, DVB-S2 is currently used which will limit the use of any enhanced propagation modes due to its vulnerability to multi-path and other phase distortion effects.

### **71 MHz**

ATVers have had to learn new skills to operate on the band including coping with higher noise floors and huge antennas!

Even with the 100 watt ERP restriction, the current DX record is 160 km and again phase distortion will prevent the use of any enhanced propagation modes 71MHz offers.

### **146-147 MHz**

Many ATVers have applied for a special NoV to operate in this band and even though the maximum transmit power is limited to 50 watts ERP, ATV QSOs using 500KHz or less bandwidth over 200Km are now happening regularly with the current record standing at 407Km.

### **430-440 MHz**

This band is much more active due to the narrower bandwidth of digital TV transmissions that can now fit into this crowded allocation. Regularly there are long distance transmission of over 200 Km made around the UK and into Europe.

### **1.3 GHz**

In light of the potential changes to 23cms, BATC is investigating the potential of migrating TV repeater outputs to DVB-S2 1 Ms (1.2MHz occupied bandwidth) operation. Tests indicate a gain of 13 dB over a 16MHz FM signal with no loss in video quality.

Work is ongoing to develop a suitable DATV transmission system and BATC is proposing to provide funds to help repeater groups migrate to the new standard.

### **2.3 – 2.4 GHz**

There are still 2 repeaters licensed for this band and even though we lost 40MHz of the band in the PSSR process there continues to be a small amount of simplex operation.

A large number of operators have built 2.4GHz DATV and NB equipment to operate on Oscar100 – we need a plan to encourage these stations to use the equipment for terrestrial contacts!

### **3.4 GHz**

7 repeaters are now licensed for this band and due to a lower noise floor and easy receive systems using C band LNBS, the performance is equal to or better than 13cms. With the band having been reduced to 10MHz, there is only sufficient bandwidth to allow the digital repeater output to be on this band with inputs on other bands.

Due to bandwidth limitations there is little simplex operation on this band although stations are active during BATC and IARU contests using Reduced Bandwidth DATV.

### **5.6GHz**

With the availability of the low cost (<£20) FPV FM ATV transmit and receive equipment we are seeing a significant increase in the number of ATV and WBFM stations using the 5.6 GHz band. There are 2 repeaters with inputs on 5665MHz and we believe this will become an important band to attract newcomers to ATV and microwaves.

## **10 GHz**

6 repeaters are licensed for this band and it is also quite active with simplex operation.

A number of stations are active with DATV on the band using standard narrow band transverters from 144 / 432 MHz to generate DATV signals on the band. The current best DX stands at 407Kms between M0DTS and G4UVZ worked during a tropo opening in October 2018.

## **24GHz**

A number of stations are active on 24GHz ATV undertaking mainly portable work with the current best DX standing at 136Kms.

## **Higher bands**

2 stations are active on 76GHz and have achieved a 35.6 km QSO (a new world record) and M0DTS has successfully transmitted video on 134 GHz. A number of ATVers are purchasing 122 GHz equipment and we expect to see some FM ATV activity on that band in 2020.

## **Oscar 100**

The launch of the geostationary Oscar100 satellite has seen a large increase in activity and interest in ATV – over 150 stations are known to be operational on DATV

[https://wiki.batc.org.uk/QO100\\_DATV\\_Users](https://wiki.batc.org.uk/QO100_DATV_Users)

The BATC WB spectrum monitor and NB web SDR have enabled everyone to get a glimpse of the activity and innovation on the satellite which provides coverage of 60% of the world's population.

<https://eshail.batc.org.uk/wb/>

<https://eshail.batc.org.uk/nb/>

## **TV Repeaters**

Overall we currently have 42 TV repeaters licensed on the 1.3 GHz, 2.4GHz, 3.4GHz and 10GHz bands with a mixture of analogue and digital transmission outputs.

## **The BATC**

BATC membership continue to grow with Oscar100 encouraging more stations to be active on DATV - the Portsdown DATV system proving to be a popular route back in to the hobby for many.

BATC believes that building a community of ATV builders and operators through online communities on the member's forum, providing a reliable source of relevant information on wikis and in the CQ-TV magazine and reporting activity on social media is fundamental to the growth we have seen both in ATV activity and BATC membership.

The BATC continues to support and drive initiatives with a program of awards and grants to recognize achievements in the community and the use of the BATC shop stocks otherwise difficult to source components for BATC sponsored projects.

In order to further increase operator numbers, BATC has awarded a number of prizes for contest winners and organizes a monthly activity weekend timed to coincide with activity weekends in neighbouring IARU countries.

BATC regularly attends a number of rallies around the country encouraging people to take an interest in ATV and helping to promote the use of all our bands from 50 MHz up.