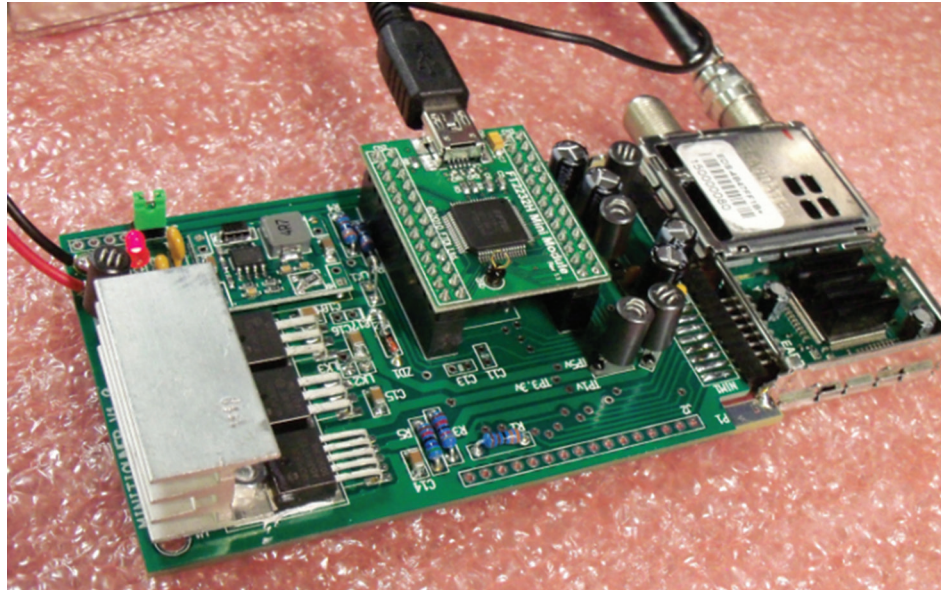


# 146MHz TV Update



G7NSY/P & G8VPG/P at Win Green (left). The USB MiniTiouner Receiver (right).

**Two years ago Ofcom gave UK amateurs temporary access to an additional 1MHz between 146 and 147MHz with a power limit of 25 watts ERP and strict conditions of non-interference to other users.**

This allocation was intended to be used for experimental modes and as a result the UK band plan was updated to include an allocation for Reduced Bandwidth Digital Amateur Television (RB-TV) [1].

## Equipment and information

To enable operation within the 500kHz allocated in the band plan, the ATV community had to develop new equipment based around modified versions of the satellite broadcast DVB-S and MPEG-4 specifications. The initial transmit

solution was based on the Raspberry Pi and its camera sending data at 333KSymbols/s; the receiver uses an amateur-designed USB satellite tuner card [2] with the MiniTioune DVB-S reception and analysis software developed by F6DZP [3].

The British Amateur Television Club supported these initiatives including a free download RB-TV special edition [4].

As well as developing equipment to run in 500kHz, early tests showed that even for amplifiers generating only 5W output it would be tough to achieve the required linearity to limit spectral re-growth (which is broadly akin to splatter on HF from an overdriven amplifier). Most stations are now running 80 watt PAs with DC inputs of 60W to produce just 5W of clean RB-TV!

## QSOs Using 146MHz RB-TV

Initial on-air tests resulted in the first 2-way QSO between G4CPE and GOWFT in December 2014; G1LPS and MODTS were the first to achieve a 100km+ QSO, in early 2015.

Since then a number of portable stations have been active on BATC activity days and, on 4 September, G8GTZ/P gained access to Brown Clee (I082QL). Further south, three other stations went out: G8VPG/P (I080WX), G7NSY/P (I080WX) and G8GKQ/P (I080UU). Despite heavy rain a new record for 146MHz RB-TV was set, first between G8GTZ/P and G8VPG/P at 168km, only to be

beaten just 15 minutes later by G8GTZ/P and G8GKQ/P at 182km.

Distances such as 182km might seem trivial for 146MHz. However, RB-TV has a typical bandwidth of over 300kHz and the NoV imposes a limit of 25W ERP. Compare this to a typical 2m SSB station using 3kHz bandwidth and 1kW ERP: RB-TV transmissions are 36dB (4000 times) weaker.

## Next steps

The BATC has offered an award for the first 2-way 250km+ RB-TV contact on 146MHz. This remains an elusive target. However the use of even lower bandwidths will help and, as video encoding techniques improve, transmissions using 125KSymbols/s can give acceptable amateur TV pictures and allow for 4dB more path loss.

Noel Matthews, G8GTZ will be presenting a talk on these and other advances in amateur television at the 2016 RSGB Convention on 7-9 October [5].

## Websearch

- [1] [www.thersgb.org/services/bandplans/#20](http://www.thersgb.org/services/bandplans/#20)
- [2] [www.batc.org.uk/forum/viewtopic.php?f=15&t=4225](http://www.batc.org.uk/forum/viewtopic.php?f=15&t=4225)
- [3] [www.vivadatv.org/viewtopic.php?f=81&t=367](http://www.vivadatv.org/viewtopic.php?f=81&t=367)
- [4] <https://wiki.batc.tv/images/0/0a/Cqtvrbtv.pdf>
- [5] [www.rsgb.org/convention](http://www.rsgb.org/convention)



G8GTZ/P received at 168km by G8VPG/P.

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