



## UK DMR Repeater Number One Goes Live...

### DMR features:

- \* Two "timeslots" within one 12.5 kHz frequency allocation
- \* Permanent network links with selectable talkgroups to allow local, area, national or international QSOs
- \* Affordable commercial quality gear
- \* Simple, straightforward digital technology

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On Monday 24th June 2013 at precisely 11.19am, GB7TD, UK amateur radio's first DMR repeater, was switched on by proud repeater keeper Michael Lockwood, G1XCC.

GB7TD is sited near to the village of Flockton in the shadow of the iconic Emley Moor transmitter.

Linked to DMR-MARC's worldwide network of Motorola repeaters, currently numbering almost two hundred, GB7TD provides unsurpassed audio quality, increased usable range versus FM and a very simple user interface.

DMR uses Motorola's "MotoTRBO" technology that allows two virtual channels within a single repeater frequency—effectively two QSOs are possible simultaneously.

In addition, pre-designated "talkgroups" allow users to select a local, area, regional or international call.

Finance for the project was provided by Michael, G1XCC and Mick, M0LEV —no funding was provided by the Five Towns Repeater Group, which has co-sited boxes on 23cm, 2 metres and 6 metres and of which GB7TD is a member. Michael felt that as this was something new to amateur radio in the UK, the finan-

cial risk should be down to individuals, but he's working hard to ensure success with new members enrolling weekly. The network is growing very nicely!

For current news and information on GB7TD and DMR in the UK and round the world, visit:

<http://www.gb3yw.co.uk/GB7TD>

<http://www.dmr-marc.net>



Michael, G1XCC and Mick, M0LEV with the new repeater

## ...and the news gets even better!

Following extensive testing, including network stability and antenna optimisation, the UK's second DMR repeater, GB7HX, has now been fully commissioned by keeper John Goodwin, G0PRF.

Located on the Pennines to the west of Huddersfield, GB7HX not only

provides excellent coverage in its own right, but using DMR's roaming capability, in conjunction with GB7TD, seamless QSOs are now possible over a very wide area.

GB7HX currently uses frequencies previously utilised by GB3HD, with a move to more common wide spacing

subject to imminent confirmation of the NoV by the RSGB's Emerging Technologies Co-ordination Committee.

Other DMR repeaters already in the pipeline include Keighley, West Yorkshire and Caterham in Surrey.

## What are “timeslots and talkgroups”?

### Firstly— timeslots

Simple. It's the way that that MotoTRBO/DMR squeezes two speech channels into one repeater frequency. It's done by a very accurate timing algorithm. Your QSD is software routed to timeslot 1 or timeslot 2 determined by your radio's programming...

### Next — talkgroups

...and talkgroups add further data to the stream to route your call to others listening on the same, errm, talkgroup. It's all done in software and that's why setting up your radio is best done by someone who's used to doing it. Your repeater keeper will have full information.

The DMR-MARC system uses the internet and a network of servers to stream data between repeaters.

GB7TD uses a 3G internet connection.

### Getting started — equipment

What do you need to get started in DMR?

Well, first off, a radio of course. The most common DMR brand is, unsurprisingly, Motorola, but there are others on the market from Vertex Standard, Hytera etc. Wherever you source your radio though, you need the following in order to use it on the new repeaters: -

- MotoTRBO compatible
- A UHF model—ensure it covers the UK amateur 70cm band

The most popular handheld—and the

### Getting started — programming

This is really important so if you're new to DMR, read this bit VERY carefully.

All current DMR radios require programming through the manufacturer's dedicated software. Without this, you will not be able to use your radio.

I'll repeat that. If your radio is not correctly programmed, you will not be able to transmit or receive DMR.

easiest and cheapest way to try DMR out—is the Motorola DP3400. This basic but very rugged handie has 32 preset channels, full functionality and superb performance in both digital and FM modes. Slightly higher up the range are the

DP3600 handie and its mobile sister, the DM3600, both of which feature a display and extended memories. Prices on the used market start at around £120 for the DP3400, but that probably won't include a charger—easily available online for about £30.



The good news is that once programmed, the system is incredibly stable and easy to use—just select a preset, key transmit and every repeater worldwide on the same time-slot/talkgroup combination will fire up and you can make your call – no linking or reprogramming is required. Very user friendly. Very safe. Just remember to leave a couple of seconds between overs to reset the system.

### Current talkgroup configuration

TG1—World wide

TG2—Europe wide

TG3—North America/South Pacific

TG9—Local West Yorkshire

TG235—UK Wide

The above talkgroups are available on both timeslots

TG8—Roaming West Yorks (TS1 only)

## A final word from the experts at Motorola

Mike Swiatkowski, AA9VI, is an RF engineer based at Motorola HQ in Schaumburg, Illinois. He works on the design of MotoTRBO equipment and as a major contributor to the development of the DMR-MARC network, Mike provided invaluable input to GB7TD.

“The best thing about our network is that it was designed by specialists from within the industry who have a personal stake in its professionalism and decorum. There is literally a treasure-chest of expertise on the network daily whose success is self-evident to all network users. Many of the early DMR-MARC trustees had no idea that it would grow to what it is today.

“When compared to other technologies that require a minimum 10kHz guard band between voice channels, DMR is far more spectrum efficient. Its main benefits over earlier amateur radio modes are immunity to inter-modulation products and multipath loss of sync between the mobile and repeater, with excellent adjacent channel selectivity.

“We're excited that after growing the network for a few years, the UK have at last joined the USA, Canada, Australia, New Zealand, and South Africa on our English language talk group. There used to be a saying in the Victorian era – ‘the sun never sets on the British Empire’. We're glad we're now able to take a page out of that book and say ‘the sun never sets on our DMR-MARC network.’ “