

Repeaters

There is no news about the recent restrictions placed on new repeater applications for the 70cm band. This has led to an increase in applications for 2m repeaters, and could lead to more problems with adjacent channel interference as discussed in the April 2003 edition of this column. As only limited traditional 2m channels are available, the RMC has to allocate the 'new' 12.5kHz channels to applications. There is an increasing chance that this will result in users who have not had the transceivers adjusted for the narrower channel spacing causing interference to repeaters above or below the channel they are working. The RMC urges users of 2m repeaters to get the necessary adjustments made to their rigs as soon as possible.

DSP EXPERIMENT ON GB3ES

GB3ES, the 2m repeater in Hastings, has had a user-controlled DSP (Digital Signal Processing) facility installed.

DTMF (Dual-Tone Multi Frequency) signals, applied by the user, alter the through-audio characteristics of the repeater to facilitate communications. The engine that drives this is the NEIM 1031 in-line DSP module from bhi Ltd. Reactions from the users have been very favourable, since weak signals benefit greatly in intelligibility, combined with a reduction in listener fatigue. The module can simply be switched into the through audio path by sending a DTMF '5' and switched out by sending DTMF '9'. In addition to these, pressing the star key introduces a 3dB top lift to brighten the sound, pressing '#' gives an overall 3dB lift to make things just that little bit louder to compensate for those whisperers. All these functions can be added progressively.

William Blankley, G8CMK, installed the NEIM 1031 unit into GB3ES. He has provided some further technical details of the process.

"As a matter of technical policy, GB3ES has no de-emphasis on the received audio nor pre-emphasis on the transmitted audio, ie GB3ES is flat, input to output. Questions we wanted to answer were how the bhi DSP box would cope with the flat audio and, secondly, how would CTCSS tones affect it? The 1031 takes raw audio from the receiver in its stride, bearing in mind that this will have a 6dB per octave rising top characteristic. As far as CTCSS is concerned the 1031 has been tried in two positions, both before

and after the received CTCSS tone removal filter. There has been no problem in either position.

"Interfacing the 1031 to the existing logic of GB3ES was done as follows. The GB3ES receiver has two audio outputs. One is an unsquelched signal path and the other drives the logic and squelch system. The DSP unit is positioned immediately after the receiver the main signal path, before squelch. There is no connection between the 1031 and the logic that drives the repeater. Control of the 1031 is by means of DTMF tones. The DSP installation has a control 'side chain' that consists of a DTMF decoder, giving four lines out that carry the binary values 0 to 16, depending on the received tone and hold the value of the last tone pair received. These four lines are then decoded to 16 discrete lines. Hash and star tones are used to set R-S latches that control relays in the signal path that affect, respectively, gain; +3dB, and a top lift R-C step circuit of +6dB that is +3dB at 1kHz. A '5' present on the decoded output controls the DSP relay; this switches the audio chain to the output of the DSP box. Note that, as this is controlled from the output of the decoder, it has to be the last DTMF tone entered. Keying any other tone as the last in command sequence therefore turns off the DSP. Users have been told to key '9' to do this, then it should be easy to remember to key 5 and 9 to turn the DSP on and off. Keying '0' resets the tone and level latches and will cause the DSP relay to drop out (as it is not '5' being retained on the decoder output). The duration of the control tone was set at about 160ms. This was so that it would only respond to a slow deliberate input and not to the various tones that are played on DTMF keypads.

"On the 1031, the main switch that controls the effect of the DSP has been left at three. This is quite conservative, considering that settings of up to five in a range of one to eight available were used in trials. We would like to allow the user to control the amount of processing but, without further details from the manufacturer, we have been reluctant to attempt to interface the command decoder with the bhi 1031 unit. This project will have to wait until such time that we have the necessary information to allow it to progress. When this happens, we feel that we will be able to demonstrate the full potential of digital signal processing.

"In conclusion, the experiment has

been well worth it. The only (minor) drawback we have encountered is that has been a slight 'robotic' quality to the speech on certain signals (bhi had warned us about this). We believe that the bhi 1031 unit is something that no repeater should be without. It has enhanced the quality of life for many of our users".

For more details about the NEIM 1031 visit the bhi website.



The bhi NEIM 1031 DSP module.

RMC VoIP COMMITTEE MEMBER

Andrew Barrett, G8DOR, has taken on the role of RMC VoIP specialist. Andrew will continue his work as the RMC regional manager of the South and South West of England.

REPEATER PROPOSAL STATUS AS OF 28 OCTOBER 2003.

The latest clearance status can be obtained from the RMC website. Please note that, even though an application may have cleared, it is beyond the control of the RMC as to when the keeper will bring the repeater into service. ♦

WEBSEARCH

- [1] www.radio.bhinstrumentation.co.uk
- [2] www.cotral.org.uk/rmc

LATEST CLEARED REPEATERS

The latest clearance status can be obtained from the RMC website [1]. Please note that even though an application may have cleared it is beyond the control of the RMC as to when the keeper will bring the repeater into service.

Callsign	Type	Channel/Frequency	Keeper
GB3KY	2m Spec Change King's Lynn	RV57 Input 145.1125MHz Output 145.7125MHz	G1SCQ

OUTSTANDING VOICE REPEATER PROPOSALS SUBMITTED FOR LICENSING ARE:

Callsign	Type	Process Stage	Proposed Keeper
GB3AA	New 23cm, Alveston North of Bristol	RU	G4CJL
GB3AN	New 2m	RMC	G0FED
GB3BM	New 70cm wide, Southport	On hold	G4WPS
GB3BO	New 2m, Bolton	RMC	G4YYB
GB3BW	New 23cm, Western-super-Mare	RMC	G4SZM
GB3BF	New 2m, Lochgelly, Fife	RMC	MMDFFY
GB3FJ	Site Change 70, Lincolnshire	On hold	G8LXI
GB3BT	New 70cm wide, Tamworth	On hold	G8PHG
GB3F	New 2m, Lincolnshire	PU	G8LXI
GB3LG	New 2m, Lochgillhead, Argyll	RMC	MM1FEQ
GB3LP	New 8m	RMC	M1SWB
GB3MI	New 70cm, Ballycastle, NI	On hold	M0CRQ
GB3PK	New 2m, Ballycastle, NI	NRP	M0CRR
GB3PB	New 70cm, Belsover	On hold	G1SLE
GB3WB	Site change 70cm, Backwell, North Somerset	On hold	G4SZM
GB3WE	New 2m, Backwell, North Somerset	RA	G4SZM
GB3WJ	70cm freq change, Scunthorpe	On hold	G3TMD
GB3WM	New 70cm wide, Wafferton	On hold	G4ALJ
GB3XC	New 70cm wide, Exeter	On hold	G8UWE