

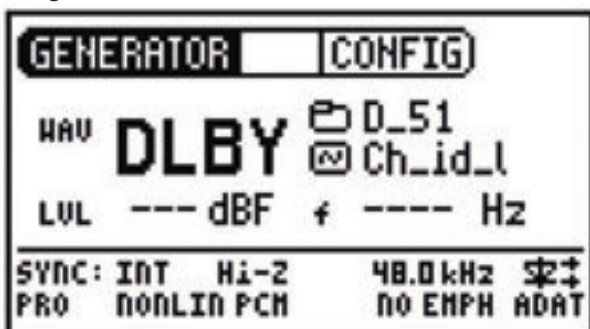
# NTI Digirator DR2

Terry Nelson MIBS reviews a new digital test signal generator.

After reviewing the NTI Minirator MR-PRO analogue signal test generator in the previous edition of *Line Up* I had the pleasure of getting to know its digital brother, the Digirator DR2 digital test generator. In terms of layout and presentation the two units are identical, incorporating a large LCD screen, central rotary wheel, with enter key, four function keys (escape - wave - level - frequency), sensitivity and mute keys, plus a combined on-off and backlight button. As with the MR-PRO, these keys provide direct access to the various test signals, their signal level and frequency (where appropriate). The rotary wheel is used for navigation around the LCD screen and the adjustment of settings, with the enter button selecting the required function.

The Digirator provides outputs for both professional and consumer digital formats. Connectors include an XLR-3M for AES3, a coaxial (RCA) connector for 75 ohm S/PDIF, and an optical connector for Toslink stereo and ADAT eight-channel signals. Additional connectors include a USB port, an external power supply jack, and an XLR-3F connector which accepts a synchronising input for AES3, word clock and video. The XLR and coaxial outputs are transformer-isolated in order to be earth-free and will tolerate phantom power without damage. For further flexibility, an RCA to BNC adapter is provided to cater for AES-3id format test signals, and an XLR-3M to BNC adapter does the same for a sync reference signals.

**Dolby and DTS surround test signals can be generated**



## Overview

The menu structure and the way functions are accessed is exactly the same as for the analogue Minirator, but obviously with the appropriately specialised digital parameters. Taking a closer look at the menu bar at the top of the screen, the drop-down menu starts with the test signal Generator settings, followed by the 'Transparency' and I/O Delay measurement functions. The last menu option is labelled System which provides access to the unit's serial number and firmware issue, plus various parameters for power saving and the screen backlight. Selecting the Generator menu provides access to ten test signals: a sine wave (adjustable level and frequency), a frequency sweep, a 'Chirp' (for impulse tests), a delay test (used in conjunction with the NTI Acoustilyzer to measure acoustic delay times), pink noise, white noise, a saw-tooth test signal for measuring signal polarity, a user-loaded wave file, and finally, various Dolby Digital, Dolby E and DTS encoded test signals. There are also facilities via the 'Config' menu for storing and recalling test signals and files,



and for muting either stereo channel or inverting the polarity of the right channel relative to the left one. The bottom of the LCD screen displays the various digital parameters affecting the test signal, such as selected impedance (Hi-Z, 75 or 110 Ohms), sample rate (32 to 192kHz), and 'Sync' status (the latter being the internal or an external clock, with automatic detection of AES3 or AES11, Word Clock, Video B&B - PAL or NTSC). A numeric value shows the sampling rate of the test signal.

Also included in these parameter lists at the bottom of the screen are icons which indicate the Channel Status (Pro or Consumer), whether linear or non-linear (data reduced) PCM signals are being used, and the presence of 15/50 pre-emphasis. The selected optical output status is also shown here (two-channel stereo, ADAT eight-channel and Off). In ADAT mode, the number of channels is linked to the sampling rate (ie: four channels at double rates and two channels at quad rates).

## Measurements

Besides being a test signal generator, the Digirator also incorporates a range of measurement functions, including an assessment of 'transparency' - or digital integrity - of a system, and the I/O latency or delay (either in milliseconds or TV frames). In the case of unequal delay times for the A and B channels, these are displayed alternately.

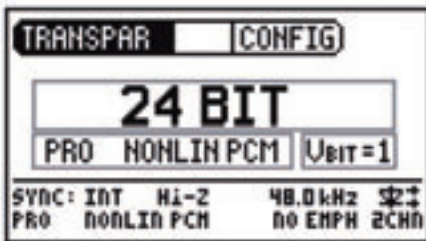
## Surround Tests

The unexpected test signal formats are those for Dolby Pro Logic II, Dolby Digital, Dolby E and DTS, all with a fixed 48kHz sample rate. The full set of Dolby/DTS signals for the Digirator consist of vocal

channel identification for L-C-R-Rs-Ls plus a 400Hz tone, vocal channel identification for the LFE plus an 80Hz tone, full bandwidth pink noise at -20dBFS for the five main channels plus band-limited pink noise of 20-120Hz for the LFE channel. There are also polarity test signals for all channels, sine wave tones at 80Hz, 400Hz, 1kHz and 10kHz, and a reference voice announcement on all channels at -20dBFS.

These same test signals are also provided in a range of compression levels including Dolby Digital 5.1 at 448kbit/s, Dolby E 5.1 with 16 and 20 bit wordlengths, and Dolby E 5.1+2 at 20 bits. In the DTS 5.1 format, the test signals can be produced at 754.5 or 1509 kbit/s.

**A complete digital signal path bit-transparency test can be performed**



However, due to the limited capacity of the unit's flash memory, not all of these Dolby and DTS test signals can be stored simultaneously - they are all provided on a supplied CD, and can be loaded and stored as appropriate via the USB interface and supplied software. In addition, Dolby Digital Plus and DTS High Resolution Audio test signals are in preparation, and will be available for download in the near future.

**Conclusion**

The NTI DR2 Digirator is a little jewel of a test instrument. It is easy and intuitive to use, and also provides a useful education for some of those hazy points of digital audio! The flexibility of a wide range of test signals, particularly those in Dolby Digital, Dolby E, Pro Logic II and DTS, makes it an ideal source for testing signal chains as well as general troubleshooting and verifications. Highly recommended!

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**Contacts and Prices**

NTI Digirator DR2

Price: £812.65

(Excluding VAT)

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