

# Wavelet Digital Video Recorder Test



During this objective video testing series there have been a lot of requests for us to test a DVR. At first we were reluctant because of the vast number of DVRs out there which are poor technical performers and, after seeing their test results, you may have thought it better to stay with your old and clunky VHS VCRs.

To illustrate some of our concerns we will show video waveforms from a well known and much used OEM DVR line. When you see the OEM DVR (let's call it Brand X) video waveforms compared with our test DVR waveforms you will be hoping you didn't purchase Brand X or similar DVRs.

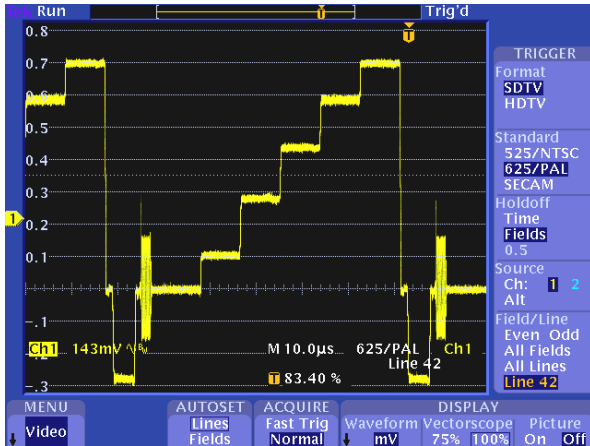
So that we could show you reasonable quality DVR test results during our test we approached C R Kennedy Pty Ltd and asked them if they could make available Dallmeier's latest Wavelet DVR offering the DMS 180 III DVR which they very kindly did. There has been a lot written about this DVR and it was the Overall Winner of the IFSEC 2003 Security Industry Award. We have not seen any objective test results so we were unable to technically compare the Dallmeier DMS III DVR with any of the other DVRs we have tested.

The Dallmeier 180 III DVR is majority manufactured by Dallmeier, the only parts of the DMS 180 III DVR not designed and manufactured by Dallmeier are the hard drives and the cooling fans. Most other DVR manufacturers use standard PC motherboards and PC power supplies of varying quality for their DVRs. I once saw a lot of Brand X DVRs stop operating during December one year, a nice Christmas present for the client! It's worth noting that this defect came after the year 2000 and in this case the motherboards were the cause of the problem.

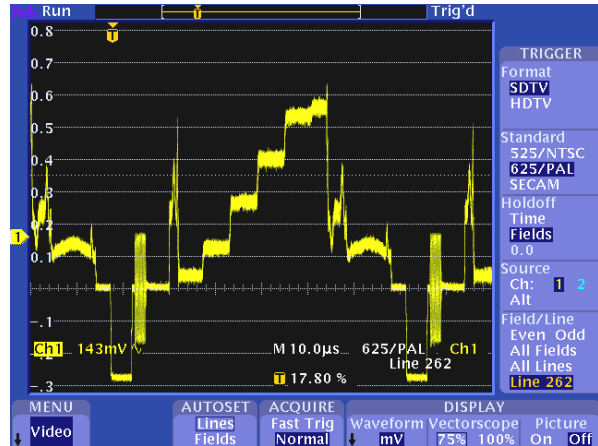
The Dallmeier DMS 180 III is a high resolution (H 720 x V 576 or V 288) digital security recording system with up to 24 camera inputs. The DMS 180 III can be operated across a network with a central DVR remote control PView-Station. PRemote is a fast picture transmission remote control which operates across a LAN or WAN or ISDN or PSTN with the DMS 180 III internal MPEG-4 or H261/H263 video compression systems. SmartFinder is an intelligent search system for objects in the picture and enables fast efficient analysis of the recorded data in predefined picture areas.

The Dallmeier DMS 180 III complies with German UVV-Kassen certification. The device has multi-track functionality so that it can meet individual requirements for functionality and recording speed, it also includes the SEDOR system which ensures additional protection through automatic camera sabotage recognition (defocusing, redirecting, masking and spraying the lens with paint). Extensive monitoring features such as dynamic fan control, external and internal temperature monitoring, component diagnostics, voltage monitoring, etc ensure potentially high operational stability and durability.

Dallmeier have designed their own power supply (another problem area for many PC based units) without a fan for the DMS 180 III. This power supply includes a 200 ms power outage backup which apparently covers about 80% of power outages and we understand the power supply is guaranteed for 8 years. Also, for easy installation and maintenance the DMS 180 III has a removable BNC terminal board and LCD servicing and status indicators.



**Dallmeier DMS 180 III DVR recorded and replayed 5 Step Greyscale waveform image at the composite video output.**



**Brand X recorded and replayed 5 Step Greyscale waveform image at VGA monitor out.**

For this series of tests we recorded 5 minutes of each video waveform required for the test and then played them back, made the relevant measurements and copied the video waveforms. All waveforms shown in this article followed this process. Our tests showed that the DMS 180 III PAL composite video output fully complied with the PAL standard which was a pleasant surprise when compared with many other DVRs we have tested. When we test a DVR with a VGA output only we use a high quality video scan converter which fully complies with the PAL standard to make all other video signal measurements. The video signal output is usually very good though the scan converter and some DVRs that have a GUI only screen image have to be measured without considering the GUI on the video waveform.

The DMS 180 III showed one minor glitch on the colour burst which we found had no effect on

the colour at all, but we have sent the relevant video waveforms to the manufacturer via the Australian distributors' video engineer.

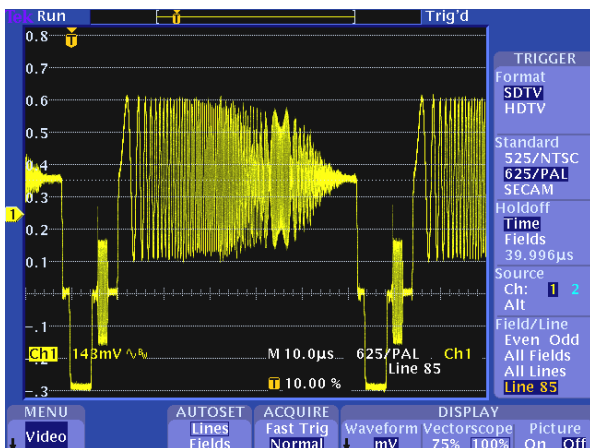
The recorded and replayed 5 Step Greyscale test showed up very well on the DMS 180 III for a CCTV DVR. It showed a slight amount of gamma correction in the mid grey area which would normally enhance the detail in these areas on a standard video monitor. Brand X DVR left us wondering where greyscale step 5 had disappeared too. Please note the image each side of the 5 step greyscale from Brand X is the DVR GUI and should not be considered.

When it came time to record and replay the 0.5 MHz to 6 MHz Sweep the DMS 180 III showed a good signal through to about 4 MHz and, probably more, if the standard composite video problems with this type of waveform were not showing up just after 4

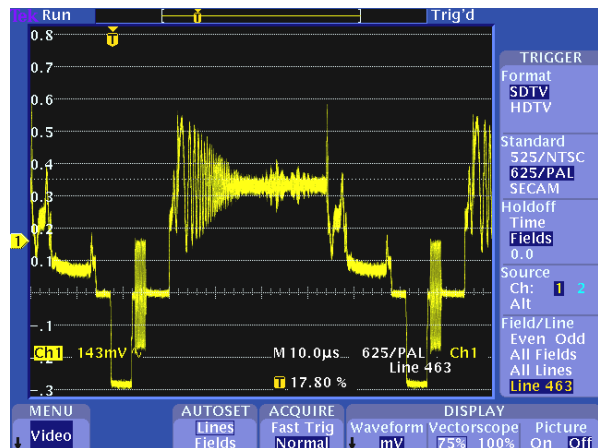
MHz. Whereas poor old Brand X was lucky to hold on up to 1.5 MHz. Please note the image each side of the 0.5 MHz to 6 MHz Sweep from Brand X is the DVR GUI and should not be considered.

We have also included an expanded Multiburst signal from the DMS 180 III DVR which shows very clean and even levels for 0.5 MHz, 1 MHz and 2 MHz signals through the recording and replay process.

Probably the toughest test for a video recorder or a transmission system is the Modulated 20T Pulse. The DMS 180 III DVR recorded and replayed Modulated 20T Pulse showed chrominance slightly advanced and chrominance slightly low. We did not test the Modulated 20T Pulse with Brand X.



**Dallmeier DMS 180 III DVR recorded and replayed 0.5 MHz to 6 MHz Sweep waveform image at the composite video output.**



**Brand X recorded and replayed 0.5 MHz to 6 MHz Sweep waveform image at VGA monitor out.**

The DMS 180 III DVR recorded and replayed 75% Colour Bars vectorscope image showed chrominance levels and phase to be very good for this type of device.

This issue has been devoted to a high quality Dallmeier Wavelet DVR. Next month we will test a high quality MPEG-2 DVR and report on its performance.

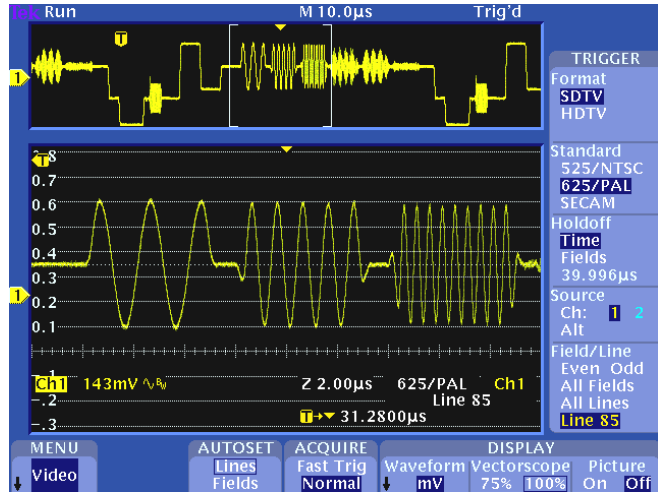
*Acknowledgements:  
C R Kennedy Pty Ltd.*

**Les Simmonds is a truly independent CCTV consultant and CCTV testing authority.**

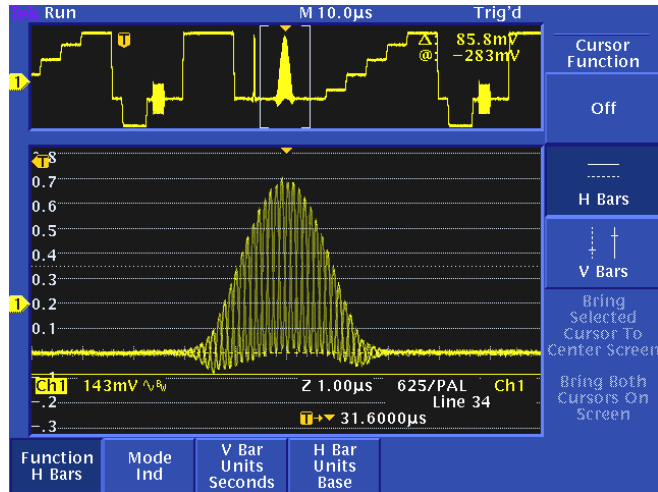
**Email:  
les@cctvconsultants.com.au**

**Web:  
www.cctvconsultants.com.au**

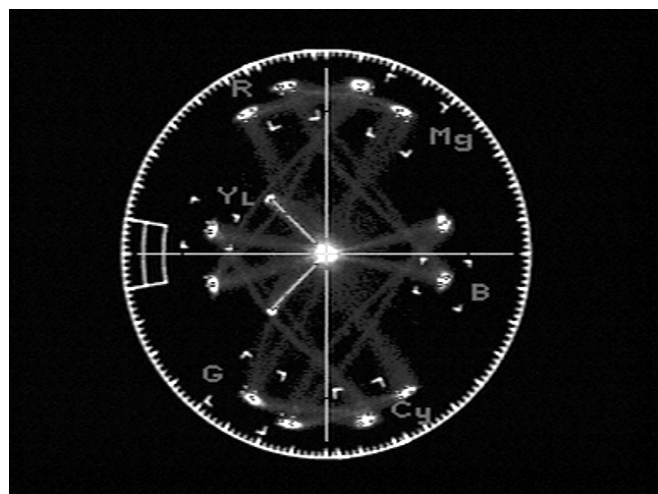
*This article was originally published in Security Electronics Magazine Australia.*



**Dallmeier DMS 180 III DVR recorded and replayed expanded 0.5 MHz, 1 MHz and 2 MHz Multiburst waveform image at the composite video output.**



**Dallmeier DMS 180 III DVR recorded and replayed Modulated 20T Pulse waveform image at the composite video output.**



**Dallmeier DMS 180 III DVR recorded and replayed 75% Colour Bars vectorscope image at the composite video output.**