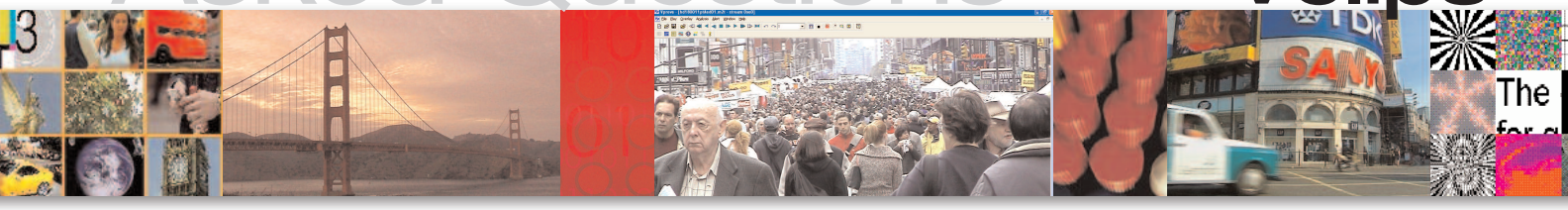
Frequently Asked Questions

Vclips



1. What are Vclips?

Vclips comprise several sets of uncompressed ("raw") and compressed video, designed to be used by video compression developers/testers.

They have carefully-chosen and well-defined features, which test fully video compression encoders and decoders.

2. Why would I buy Vclips - why not make my own? (Or just use the MPEG-4 ISO set?)

Of course, you can make your own clips, if you can find a suitable source.

But each set of clips has taken 3-10 man-weeks to film, select, edit, format, change bitfields (if appropriate) document and make available. While you can spend this time yourself, it is much quicker, cheaper and easier to buy Vclips, where all the work has already been done.

In addition, it is always better to have an "independent" test as provided by Vclips than if you produce the test sequences yourselves. For example, if you use your own encoder, and your decoder has any issues/errors, then it can be the case that the encoder mirrors the issues in the decoder. The result is that your own test clips would play OK on your decoder, but your decoder would perhaps not work well with video encoded with a different encoder.

Read through the detailed reasons below, but the 3rd main reason for using Vclips is that they provide much better test coverage than otherwise available: using them should lead to a better, more robust encoder / decoder.

Encoder Series

In order to generate suitable YUV source files for encoder testing, there are many time-consuming issues to resolve:

– almost all freely-available video sources are already highly compressed and therefore have artefacts

  If these are de-compressed to YUV then these artefacts will still be present (even if not visible) and they will adversely affect an encoder, distorting the results obtained

– The point about testing an encoder is to make sure it works well with ALL types of video sequences that you are likely to encounter. This means it needs to cover many many items:

  - movement types such as pan, zoom, rotation, object movement in foreground and background, objects moving in/out/across, tracking movement ....
  - subject types such as people, vehicles, buildings, trees, sky, water ....
  - colours - bright to dark, high/low contrast, monochromatic areas
  - lighting conditions - bright daylight, dull day time, night, dusk
  - details such as fine lines, moire patterns
  - other challenging features, such as fast zooms, scene changes, rapid brightness changes, focus changes

The E-City series (i.e. the subject of the show-reel) has carefully been designed to cover ALL these aspects, individually and conjunction with other test items.

– all these different parameters are properly documented within Vclips: for example if you wish to see your encoder response to "fast zooms" or "scene changes" you only need to search for the relevant clips using the keywords, and these are immediately available

Tektronix
Enabling Innovation

– the ISO conformance streams only comprise streams that are already encoded streams, so you cannot test your encoder with them. Although you can download a small number (~6 - 8) YUV examples (such as "Foreman") this is only a very limited set of clips

– we have found that for many encoders, all these things are not tested and can sometimes actually cause encoders to be very inefficient or stall/crash (for example with very rapid zooms or scene changes)

– the motion estimation of the encoder is a critical part: the E-Synthetic set of clips has pre-defined frame-by-frame motion, so you can see if your motion estimation is working correctly

In summary, the Encoder series provides a good thorough test of your encoder, which is not available elsewhere.

Decoder Series

– in order to generate suitable encoded (compressed) files for decoder testing, the encoded clips with which you test your decoder need to be from a different source than your own encoder (in order to confirm interoperability)

– they also must cover the whole range of possible modes and errors which can occur in sequences which your decoder might encounter. The Vclips in each set have been carefully encoded, structured and altered to ensure that the ranges of these different test items for a decoder have been included and fully tests them - individually and conjunction with other test items

– all these different modes and tests are carefully documented - so if your decoder "crashes" or has some problem with one of the Vclips sequences but not with others, it is easy and quick to see what has changed - and this therefore points you to the exact problem area in your decoder

– bitstreams with errors - it is really useful to have bit streams with errors deliberately introduced, so you can check how you decoder reacts when there are errors in the bitstream - which there will certainly be. The Vclips sets numbered 111 and 112 have errors introduced, so you can see if your encoder crashes or continues or what it does with these errors. The errors introduced are clearly documented, with their description, expected response and exact bit location, the configuration of the rest of the header. These give a good coverage of many possible error conditions which your decoder may encounter - many of these are errors which Tektronix has seen in "real-world" sequences. (And the MPEG-4 ISO/Donated streams do not provide any of this.)

– there are great reasons to get a proper commercial product from us for testing your H.264/AVC decoder:

- in the Vclips test sequences every syntax element is explicitly exercised and (where relevant) each range of values, from top to bottom and in between (there are a number of sequences in the JM set, but what syntax elements/values are really being used in each?)
- Vclips are fully documented - every part of each syntax element is shown, so if your decoder cannot decode a particular stream then you know exactly where the problem is - and this documentation is provided not only in paper but also in searchable electronic form
- far more tests - more than 100 tests for each of Baseline, Extended and Main Profiles
- the completely unique Error tests - the JVT sequences do not included any errors sequences (or at least, not deliberately so!) and without doubt your decoder will have to deal with bitstreams with errors in them
- because each syntax element is tested and full documentation is provided, it makes it easy to test specific parts of your decoder (suppose you have just changed a part of the code: you can do a quick search of the paper/electronic documentation provided for a test bitstream to check this new part of your decoder)
- we provide the high quality YUV source files that were used to generate the encoded video and we also provide a YUV sequence viewer/subtracter (allowing the visual difference between two YUV bitstreams to be clearly seen), plus an H.264/AVC decoder as well - all of which make is easy to do a comparison with the YUV output your decoder produces

Plus, for a period of 12 months from date of purchase we are providing free updates to the sequences if there are any changes necessary to track the H.264/AVC standard (and JM reference software, where appropriate)

They are already used by lots of companies who are leading proponents of H.264/AVC, including many companies involved in the relevant MPEG committees and JVT.

– there are many problems with using the MPEG-4 ISO Conformance and Donated bitstreams:

- there are many errors in the MPEG-4 ISO conformance streams: out of the 21 ISO "conformance" streams provided as tests for Simple Profile, only 6 truly comply with the standard for Simple Profile - these errors in these bitstreams are well-known and documented.
- Also, the Microsoft "reference" decoder will not decode 3 of the 6 streams which do comply with Simple Profile (also well-known errors).
- So, if you make your decoder able to decode all these streams (or emulate the behaviour of the Microsoft reference decoder) it will not be compliant with the MPEG-4 standard for Simple Profile
- there are similarly errors in the Donated streams (again, well-known by the MPEG committee)
- some of the streams have been incorrectly encoded - they look incorrect on-screen. That is, there is no syntax error, but the MBs or motion vectors or other fields have incorrect values in them.
- It would be easy to spend time trying to correct the on-screen look of these streams - but doing so would mean your decoder was then non-compliant.
- some of them are incorrectly documented
- all of them have very limited documentation - there is little/no information on the setting of many of the bits in the stream header, VOP and MBs
- although there are a reasonable number of streams, they do not cover a very wide range of different possible bit-patterns in the stream header, VOP and MBs
- The Vclips Decoder test sets numbered 101 to 108 get over all these problems.

And importantly for both the Encoder and Decoder Series, Vclips are provided to you royalty-free, for you to use as you wish. They can be displayed on your web-site or used for demonstration/marketing purposes, and there is no danger that in doing so you will be infringing someone's intellectual property rights - for example, someone who might take issue with your use of the clips and take some action against your company.

(You must of course use the Vclips in accordance with the license agreement.)

3. What is the difference between the Encoder Series and the Decoder Series of Vclips?

The Encoder Series comprise sets of uncompressed "raw" YUV video sequences, specifically designed for testing encoders.

The Decoder Series comprise sets of compressed video sequences, encoded to a particular video standard. These are specifically designed for testing decoders.

4. Can I see some Vclips before I buy?

You can download a Vclips "show reel" which demonstrates the range of clips provided.

Also included in the download is the PDF version of the user manual, and examples of the extensive information provided for each individual clip.

5. Can I use the Encoder series with other video standards, such as MPEG-1 / MPEG-2?

Yes, no problem. The Encoder Series are YUV files, which can be used with any encoder.

6. What about H.264/AVC clips?

The H.264/AVC Vclips are available right now!

There are 6 clip sets:

– Functional tests for Baseline, Extended and Main Profiles (respectively VC-301, VC-302 and VC-303)

– Error tests for Baseline, Extended and Main Profiles (respectively VC-311, VC-312 and VC-313)

7 . How do I view the Encoder Series of YUV clips?

We provide (free of charge) on the Vclips DVD(s), a small program called "YuvViewer", which allows to you view, run and single step through all the YUV sequences provided.

8. How do I view the Decoder Series of YUV clips?

First, you should be able to use your own decoder!

We provide (free of charge) on the Vclips CD(s), two small programs:

One which decodes the compressed video to a YUV file (it may not decode all the streams with deliberately-introduced errors)

“YuvViewer”, which allows to you view, run and single step through the YUV sequences produced by the decoder provided.

9. What does the “site” license allow?

Vclips is licensed for use on a maximum number of computers: the 'site' license allows you to copy/store/work on the Vclips on a maximum of 20 (twenty) computers on a single site.

10. Can you supply other clips, e.g. HD?

We already do offer HD clips, as part of the Encoder series, and in some of the Encoder series, where HD sizes are supported by the video standard & Profile.

The Encoder series are un-encoded YUV, that can be used with any video encoder (H.264/AVC, MPEG-4, MPEG-2, H.263+, WM9, Real, Divx...).

Within the Decoder series, the H.264/AVC sets VC-301, VC-302 and VC-303 all have a small number of clips which are HD and larger.

11. Can I get Vclips without a watermark?

Not currently. Due to the nature of video compression development, the watermarking is the only (limited) means of protection that we can use for Vclips.

In any event, the watermarking has been carefully done not to interfere with video compression development, and is not unlike many 'real world' video sequences which have a watermark to indicate the source of the video (such as the TV station).

Contact Tektronix:

ASEAN / Australasia (65) 6356 3900
Austria +41 52 675 3777
Balkan, Israel, South Africa and other ISE Countries +41 52 675 3777
Belgium 07 81 60166
Brazil & South America 55 (11) 3741-8360
Canada 1 (800) 661-5625
Central East Europe, Ukraine and Baltics +41 52 675 3777
Central Europe & Greece +41 52 675 3777
Denmark +45 80 88 1401
Finland +41 52 675 3777
France & North Africa +33 (0) 1 69 86 81 81
Germany +49 (221) 94 77 400
Hong Kong (852) 2585-6688
India (91) 80-22275577
Italy +39 (02) 25086 1
Japan 81 (3) 6714-3010
Luxembourg +44 (0) 1344 392400
Mexico, Central America & Caribbean 52 (55) 56666-333
Middle East, Asia and North Africa +41 52 675 3777
The Netherlands 090 02 021797
Norway 800 16098
People’s Republic of China 86 (10) 6235 1230
Poland +41 52 675 3777
Portugal 80 08 12370
Republic of Korea 82 (2) 528-5299
Russia & CIS +7 (495) 7484900
South Africa +27 11 254 8360
Spain (+34) 901 988 054
Sweden 020 08 80371
Switzerland +41 52 675 3777
Taiwan 886 (2) 2722-9622
United Kingdom & Eire +44 (0) 1344 392400
USA 1 (800) 426-2200

For other areas contact Tektronix, Inc. at: 1 (503) 627-7111

Last Updated February 23 2006

Our most up-to-date product information is available at: **www.tektronix.com**

4/06 FLG/WOW 2AW-19645-0

Tektronix
Enabling Innovation