T3Vid

T3D007 Asia

User Manual

Video Clips for

Testing and Optimisation of

Video Compression

TestVid

www.testvid.com

Intentionally blank

This User Manual contains full information on the video files that you/your organisation has licensed for use.

Please ensure to read the next two pages for details of how these video clips may be used, within the terms of the License Agreement

To find particular video clips that contain specific features/subjects that you wish to test for, it is recommended that you use the PDF version of this manual as this allows fast electronic searching for specific clip features using the "CF-words" (see section 5.2 for more information).

T3D007_Asia User manual v1.0

TestVid Ltd., 4 Cheyne Road, Bristol BS9 2DH, United Kingdom
www.testvid.com sales@testvid.com Tel.: +44 (0)117 949 6411

TestVid Content License Agreement

This Content License Agreement (this "Agreement") governs the terms by which you ("You" or "Your") obtain the right to use video files, music files, sound effects files, creative art, 3-D animations, computer animations, motion backgrounds, camera acquired video footage, photos, flash files, project files, music files, data files and other material (collectively referred to as " Content") supplied by TestVid Ltd ('TestVid'). This Agreement is in addition to the TestVid Terms and Conditions of Sale ("Terms and Conditions") which are incorporated herein by reference and to which You will be contractually bound upon Your first use of the Content. In the event of any inconsistency between this Agreement and the Terms and Conditions, this Agreement shall govern. Any capitalized term that is not defined in this Agreement shall have the same meaning as set out in the Terms and Conditions.

GENERAL INFORMATION REGARDING THIS AGREEMENT

USE OF ANY OF THE TESTVID CONTENT INDICATES FULL AGREEMENT TO THE TERMS OF THIS AGREEMENT, EITHER FOR YOURSELF OR ON BEHALF OF YOUR COMPANY OR EMPLOYER (WHETHER ACTING AS AN EMPLOYEE, CONTRACTOR, SUB-CONTRACTOR, CONSULTANT OR IN ANY OTHER CAPACITY), AND AGREE TO BE BOUND BY ITS TERMS. IF YOU ARE ACCEPTING ON BEHALF OF YOUR COMPANY OR EMPLOYER, YOU REPRESENT AND WARRANT THAT YOU HAVE FULL LEGAL AUTHORITY TO BIND YOUR COMPANY OR EMPLOYER. IF YOU DO NOT HAVE SUCH AUTHORITY OR YOU DO NOT ACCEPT OR AGREE WITH THESE TERMS, DO NOT USE THE CONTENT.

LICENSE TERMS

Upon Your acceptance of this Agreement and receipt of payment from You by TestVid, TestVid grants to You a perpetual, non-exclusive, non-transferable license to use the Content for the Permitted Uses (as outlined below). The use contemplated by You must be a Permitted Use. If it is not, it is prohibited by this Agreement. All other rights in and to the Content, including, without limitation, all copyright and other intellectual property rights relating to the Content, are retained by TestVid.

Content is Licensed (not sold)

Your use of the Content is under license only. No title or intellectual property rights are granted to You. Ownership of the Content and all copyright and all other rights not expressly granted by this Agreement remains with TestVid.

Permitted Uses for the Content

Subject to the restrictions described under **Content License Restrictions & Prohibited Uses** below the following are "Permitted Uses" of the Content:

1. testing, development, engineering and related activities including product demonstrations and tests;
2. on-line or electronic presentations, catalogues, brochures, advertising and promotions including web pages, podcasts and vidcasts providing that when used for this purpose the version of the Content displayed (a) must be compressed such that any version that appears to be as good quality as the original cannot be obtained, and (b) the TestVid logo remains visible, and (c) there is a clear label denoting the TestVid copyright;
3. any other uses approved in writing, in advance by TestVid.

For clarity, You may not use the Content in products for resale, license or other distribution, unless approved in writing in advance by TestVid.

Content License Restrictions & Prohibited Uses

You may not do anything with the Content that is not expressly permitted in the preceding section or permitted by a separate modified content license which has been explicitly agreed in writing by TestVid. By way of example and not limitation, the following are "Prohibited Uses":

4. sale, resale or distribution of the Content either as a single piece of video, music file, sound effect file, composition, software project file or product or as a part of any background of these;
5. sale, resale or distribution of the Content as a part of another production where the Content, in our sole discretion, comprises 5% or more of the finished product;
6. incorporation of the Content in any product that results in a re-distribution or re-use of the Content or is otherwise made available in such a way one could extract or access or reproduce the Content as a separate file as if it were substantially unmodified;
7. sub-licensing, re-selling, renting, lending, assigning, gifting or otherwise transferring or distributing the Content or the rights granted under this Agreement;
8. removal of any notice of copyright, logo, watermark, trade-mark or other proprietary right from any place where it is on or embedded in the Content;
9. installation and use of the Content at a location/site other than for which the Content was originally licensed or placing a copy of the Content on a network server or web server for use by others at a different location/site;
10. use of the Content in a way which could be considered obscene, pornographic, immoral, infringing, dishonest, fraudulent, defamatory or libellous in nature, or that could be reasonably likely to bring any person or property reflected in the Content into disrepute;
11. use of or display of the Content in an electronic format that enables it to be downloaded or distributed as the original media file or with minor differences (as determined by TestVid) via any computer device (including mobile devices) or shared in any peer-to-peer or similar arrangement;
12. breaking the Content into smaller pieces and selling these pieces as stock or test media

Restriction on Quantity of Copies

Only You or bona-fide colleagues are permitted to use the Content, although You may transfer the Content or files containing the Content or Permitted Derivative Works to Your company's servers, for the purpose of reproduction for Permitted Uses, provided that such parties shall have no further or additional rights to use the Content and cannot access or extract it from any file You supply.

As long as it is a Permitted Use, You may reproduce the Content or any parts thereof in original or derivative forms (e.g. compressed) a maximum of 25 times on one particular 'site' (i.e. one geographical location, as determined at the discretion of TestVid).

If You require the Content to be copied or stored more than 25 times in original or derivative form, or require the Content or any parts thereof on a different site then You must purchase additional licenses for the Content. The count of number of copies covers all versions whether stored or used on personal computers, workstations, servers, web-servers, mainframes, laptops, PDAs, mobile phones and other mobile devices, games consoles and any other type of computer. For the avoidance of doubt, if the Content is stored at a remote site this Content may only be downloaded and used at the single site for which the license was purchased.

In addition to these 25 copies You may make one (1) copy of the Content solely for back-up purposes, and You must reproduce all

proprietary notices on this single back-up copy.

Term of Agreement

This Agreement is effective until it is terminated. If You terminate this Agreement You must destroy or delete the Content and any Permitted Derivative Works, along with any copies or archives of it or accompanying materials (if applicable), and cease using the Content for any purpose. This Agreement and all of Your rights under it terminate automatically without notice if at any time You breach any of its terms. You must, if requested, confirm to TestVid in writing that You have complied with these requirements and provide any proof thereof requested by TestVid.

Amendment

This Agreement can be amended by TestVid at any time by posting an amended Agreement on TestVid's website. Your only recourse, if You are not agreeable to the amended Agreement is to terminate this Agreement and cease use of the Content. Otherwise, You will be bound by the terms of the amended Agreement.

Replacement of the Content

TestVid may revoke the license granted by this Agreement and replace the Content with a substantially similar alternative for any reason. TestVid may inform You of replacement of the Content by sending notice of same, along with the replacement Content to the address or contact information provided to TestVid by You or such other address as You may advise TestVid in writing to use. In the event of a replacement, the license for the replaced Content immediately terminates and this Agreement (or the then-current version of this Agreement) automatically applies to the replacement Content. You agree not to use the replaced Content, or any Permitted Derivative Works, for future products and to take all reasonable steps to discontinue use of the replaced Content, or any Permitted Derivative Works, in products that already exist.

Limitation of Warranties and Liability

While TestVid carefully all of the Content to ensure the highest quality, THE CONTENT IS PROVIDED "AS IS" WITHOUT REPRESENTATION, WARRANTY OR CONDITION OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED REPRESENTATIONS, WARRANTIES OR CONDITIONS OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. WE DO NOT REPRESENT OR WARRANT THAT THE CONTENT WILL MEET YOUR REQUIREMENTS OR THAT IT WILL BE ERROR FREE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE CONTENT IS WITH YOU. SHOULD THE CONTENT PROVE DEFECTIVE, YOU ASSUME THE ENTIRE RISK AND COST OF ALL NECESSARY CORRECTIONS.

Our entire liability and Your exclusive remedy, with respect to any claims arising out of Your use of the Content, or out of Your actions in downloading the Content, shall be as follows: TESTVID'S MAXIMUM AGGREGATE LIABILITY UNDER THIS AGREEMENT OR IN RESPECT OF THE USE OR EXPLOITATION OF ANY OR ALL OF THE CONTENT IN ANY MANNER SHALL BE LIMITED TO THE FEES COLLECTED BY TESTVID FOR YOUR USE OF THE CONTENT THAT IS THE SUBJECT MATTER OF THE CLAIM OR $1,000 UNITED STATES DOLLARS, WHICHEVER IS GREATER. IN NO EVENT SHALL TESTVID OR ANY OF ITS DIRECTORS, OFFICERS, EMPLOYEES, SHAREHOLDERS, PARTNERS, AGENTS OR LICENSEES BE LIABLE FOR ANY INCIDENTAL, INDIRECT, PUNITIVE, EXEMPLARY, OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING DAMAGES FOR LOSS OF PROFITS, INTERRUPTION, LOSS OF BUSINESS INFORMATION, OR ANY OTHER PECUNIARY LOSS) IN CONNECTION WITH ANY CLAIM, LOSS, DAMAGE, ACTION, SUIT OR OTHER PROCEEDING ARISING UNDER OR OUT OF THIS AGREEMENT, INCLUDING WITHOUT LIMITATION THE USE OF, RELIANCE UPON, ACCESS TO, OR EXPLOITATION OF THE CONTENT OR ANY PART THEREOF, OR ANY RIGHTS GRANTED TO YOU HEREUNDER, EVEN IF TESTVID HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER THE ACTION IS BASED ON AGREEMENT, TORT (INCLUDING NEGLIGENCE), INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OR OTHERWISE. IF YOUR JURISDICTION DOES NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR FOR THE LIMITATION OR EXCLUSION OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, THE LIABILITY OF TESTVID OR ANY OF ITS DIRECTORS, OFFICERS, EMPLOYEES, SHAREHOLDERS, PARTNERS OR AGENTS SHALL BE LIMITED TO THE GREATEST EXTENT PERMITTED BY LAW.

Indemnity

You agree to indemnify, defend and hold TestVid and its affiliates, and their respective directors, officers, employees, shareholders and agents (collectively, the "TestVid Parties") harmless from and against any and all claims, liability, losses, costs and expenses (including reasonable legal fees) incurred by any TestVid Party as a result of (i) any breach by You of this Agreement; (ii) any claim threatened or asserted against any TestVid Party that alleges that You have breached this Agreement or infringed any copyrights, trade secrets, trademarks, right of privacy, right of publicity or other intellectual or other property rights of any third party. TestVid reserves the right, at Your expense, to assume the exclusive defence and control of any matter otherwise subject to indemnification by You, and You agree to cooperate with TestVid's defence of such claim.

General Provisions

You acknowledge and agree that this Agreement will be governed under the laws of the United Kingdom (without reference to conflicts of laws principles). You hereby irrevocably submit to the jurisdiction of the Courts of the United Kingdom. If TestVid is obligated to go to court or arbitration to enforce any of its rights, or to collect any fees, You agree to reimburse TestVid for its legal fees, costs and disbursements if TestVid is successful. You consent to service of any required notice or process upon You by registered mail or overnight courier with proof of delivery notice, addressed to the address or contact information provided by You at the time You first purchase usage rights to the Content. You agree to waive any right You may have to trial by jury. TestVid's failure to insist upon or enforce strict performance of any provision of this Agreement shall not constitute a waiver. This Agreement is not assignable by You without TestVid's prior written consent (such consent not to be unreasonably withheld). TestVid may assign this Agreement without Your consent to any other party so long as such party agrees to be bound by its terms. This Agreement may be amended by TestVid at any time by posting an amended Agreement on the TestVid website. Continued use of the Content or failure to terminate this Agreement after posting of such amendment will be deemed to be acceptance of the amendment.

YOU ACKNOWLEDGE THAT YOU HAVE READ THIS AGREEMENT AND HAVE HAD OPPORTUNITY TO SEEK INDEPENDENT LEGAL ADVICE PRIOR TO AGREEING TO IT. IN CONSIDERATION OF TESTVID AGREEING TO PROVIDE THE CONTENT, YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THIS AGREEMENT. YOU FURTHER AGREE THAT IT (AND ANY SUBSEQUENT MODIFICATION OF IT) AND THE TERMS AND CONDITIONS POSTED ON THE WEBSITE ARE THE COMPLETE AGREEMENT BETWEEN YOU AND TESTVID, AND THAT SAME SUPERSEDES ANY PRIOR AGREEMENT.

Contents

1. Overview of T3D007 Asia

2-D / 3-D	3D Stereoscopic
Compressed/ Uncompressed	Uncompressed Left & Right (separate streams)
Description of video	Scenes from Japan, China and South Korea
Purpose	Test an encoder to deal with 3D video, with all aspects of global and local motion, slow/medium/fast motion, with panning, scrolling, zooming, smooth and erratic, high/low contrast, with limited colours/vivid colours and many common subject types, plus different aspects of 3D (different negative & positive disparity, colour & luma differences)
Number of clips	70 Left & Right pairs of video clips (35 Left & Right pairs each at 1080p and 1080i)
Length of video	Total of over 38 minutes (over 19 minutes each at 1080p and 1080i)
Total size on disk	535 GBytes
Video format(s)	**1080p:** - 1920x1080 progressive, 50.0fps - YUV 4:2:0 planar 8 bits per sample **1080i:** - 1920x1080 interlaced Top Field First, 25.0fps - YUV 4:2:0 planar 8 bits per sample
Audio format(s)	MPEG-1 Layer II stereo 384kbps CBR 16-bit 48kHz and WAV linear PCM uncompressed stereo 1536kbps 48kHz

2. Introduction

T2Vid and ***T3Vid*** are high definition (HD) video clips designed for testing video encoders and decoders.

The ***T3Vid*** clips are stereoscopic 3-dimensional (matched left and right images); the ***T2Vid*** clips are 2-D.

Both the ***T2Vid*** and ***T3Vid*** clips come in two variants: those designed to test and stress video encoders (usually in uncompressed YUV format, some of which have associated sound); and compressed video designed to test the range of options available in a standards-compliant video decoder (in compressed format such as MPEG-4/AVC/H.264 or MPEG-2, both as elementary streams and in 'wrappers' such as MPEG-2 Transport Stream).

2.1 T2Vids and T3Vids for testing encoders

Each set of clips for testing encoders contains a diverse selection of clips designed to stress a video encoder in different ways. Typically this includes different movement types, different subjects, different lighting conditions, different camera movement - designed to encompass the majority of different types of difficult-to-encode items. In some cases the quality of filming is marginal - deliberately so, as this is often the hardest to encode. The majority of the filming was done hand-held, as is quite often the case with documentary and even film currently. However, in all cases there has been no video editing as such (unless otherwise stated for a specific clip) - all the separate video clips are direct decodes from the HD camera files, with no re-compression/re-encoding done. Where video editing has been done the re-encode is only at the transitions - the vast majority of these clips are also as per the original camera files.

These clips are provided as sets of video clips, typically 30 - 50 in a set, lasting from 15 - 20 minutes total. These include:

- ‘standard’ HD of real-world subjects (1920x1080, 1280x720; e.g. in New York, San Francisco, London, Munich)
- as above but D-cinema resolutions (2K and 4K)
- as above but 'low' resolutions such as NTSC, D1 PAL, CIF, mobile, web, etc.
- synthetically generated, which has features such as precisely defined motion - ideal for checking such items as encoder motion estimation

The formats/resolutions provided vary from by clip set; as an example all the HD sets are provided at 1920x1080 progressive, 1920x1080 interlaced and 1280x720 progressive formats, in uncompressed YUV format, 16:9 aspect ratio.

All filming was done native HD (or higher resolution, e.g. 2K).

Most clip sets are provided in 8 bits per sample; some are available at 10-bit or 14-bits per sample.

The ***T2Vid*** clips are straightforward 2-D clips; the ***T3Vid*** clips comprise matched left and right video images. The ***T3Vid*** clips have the 'extra dimension' of varying 3-D depth: from shallow to deep 3-D effect, into or out of the picture, with additional artefacts and difficulties that can be encountered in 3-D.

2.1.1 Audio

Sound is provided for almost all clips: in some cases this is sound recorded which is directly associated with the clips, in other cases the sound comprises appropriate background or music.

In a few cases the associated audio is one of the main reasons for recording the clip so both should be viewed together (where this is the case the notes state this for the specific clip in the manual). However, note that in most cases the associated audio provided is just that which could easily be recorded at the same time as the video, typically comprising background sounds, and is often of low quality as the sound was not the primary consideration at the time of filming.

2.1.2 Software

In addition to the video and audio, utility software to process the YUV video is provided as listed in section 4 and information on YUV viewers.

2.2 T2Vids and T3Vids for testing decoders

These are designed to test standards-compliant video decoders, by providing a series of video clips where the same video source material is encoded at different bit-rates with different encoder options.

Normally each clip is provided more than one format: typically MPEG-2 and MPEG-4/AVC/H.264 elementary video formats, at both 1920x1080 and 1280x720, as well as the source video in YUV format. In addition, each clip is typically encoded into one or more 'wrapper' formats such as MPEG-2 Transport Stream, with the associated audio in an appropriate format.

The associated audio is also provided as separate elementary files.

Full information on the currently available sets of ***T2Vid*** and ***T3Vid*** clips series is at www.testvid.com.

2.3 *TestVid* logo

The ***TestVid*** logo (or a variant of it) is usually placed in the lower left corner of the video. It is a condition of the license agreement for ***TVids*** that this logo is not removed or obscured.

The logo has been carefully sized and placed to coincide with the borders of a 16x16 macroblock (where this is possible) and is static throughout each sequence, in order to have minimal effect on encoders and decoders.

2.4 Safety

The ***TVids*** are almost invariably supplied on a USB hard drive unit. This unit may be mains powered or powered directly from the USB port.

In all cases it is imperative that you carefully read and understand the safety information provided with the unit.

2.5 Backup

As the ***TVids*** are almost invariably supplied on a USB hard drive unit it is highly recommended that you make an immediate backup of the whole unit, as hard drives can of course fail. (This backup copy is in addition to the 25 copies allowed by the license agreement.)

The warranty on the hard drive is 180 days, but if it does fail it would of course take some days at least to provide a replacement unit.

3. T3D007 Asia Clip set description

3.1 Set content types

This set of video clips comprise a range of subjects, motion, colours, light levels designed to test and stress 3D video encoders by providing a varied set of conditions:

- subject types such as people, traffic, buildings, sky, water, trees, text..
- movement types such as panning, tracking, hand-held camera, zooming in/out
- subject motion such as into, out of or across the picture, in front of and partially behind objects, fast and slow
- lighting conditions, from bright sunlight, dull daylight, shaded areas, night-time..
- hard to encode items such as reflections, fine lines, patterns, round objects..
- varying camera properties such as depth of field, in/out-of-focus..
- and with sound associated with the clips

plus the 3D aspects of:

- different amounts of continual negative disparity (i.e. out of the screen towards the viewer, in front of the screen plane) and positive disparity (i.e. into the screen away from the viewer, behind the screen plane); sometimes varying within a scene
- different amounts of temporary (short-term) negative and positive disparity
- matched and unmatched colour between Left & Right streams
- matched and unmatched geometric properties between Left & Right streams (e.g. unmatched on zoom)

In many cases the video is harder to encode than might normally be expected, as the lighting conditions are not ideal or there is significant camera movement, or the focus varies, or the disparity is larger than is normally comfortable. These features are deliberately used as they often cause the most difficulty to 3D video encoders and represent the worst case that the encoder should encounter in 'normal / real' use.

The total time of the pairs of Left & Right clips is over 38 minutes (over 19 minutes in each of the formats).

3.1.1 Scene cuts / composite sequences

Although some sequences have fades/transitions within them, fast scene changes (i.e. scene cuts) are not provided within the set of clips as they are easy to do simply by adding two of the YUV files together.

One way to do this is using the DOS command window:

```
copy /b file1.yuv+file2.yuv file12.yuv
```

(where `file1.yuv` and `file2.yuv` are the two files to be added together, and `file12.yuv` is the result)

This makes a combined file '`file12.yuv`' with a scene cut at the join between the two. (This works as there are no headers on the YUV files.)

The YUV files being added together must be the same resolution, although they can be different frame rates.

The advantages with adding files together in this manner are that:

- it allows composite sequences which either contain fairly similar scenes, so that the resulting scene cut is more 'gentle', or completely different scenes, depending upon how radical a scene cut you wish to have;
- several scenes can be added together to make composite sequences with multiple different levels of scene cuts (from gentle to radical);
- and looping or very long composite sequences can be generated if required, e.g. to play continuously for an hour or more.

3.2 3D aspects of the clips provided

3.2.1 General

The 3D effect is of these sequences covers a whole range, from mild to excessive. For the purposes of testing, many of the sequences the 3D effect has deliberately made quite clear and strong

This has been done as this is a set of test sequences that is anticipated to be used for various applications:

- technical testing of 3D encoders - e.g. efficiency and speed with encoding Left and Right separately or differentially; effects on the encoder of differences Left to Right (differences not only of viewpoint caused by different amounts of 3D effect but also of colour, geometry, artefacts)
- investigation of 3D - e.g. understanding what will cause problems in different encoding, transmission and usage scenarios, user perceptions, limits on acceptability of both the source material and encoded material

Also, although mainly generated for use in a 'testing environment' with the screen sizes and viewer distances as given in section 3.2.10, it is intended that at least some of these sequences are usable with larger or smaller screen sizes / viewer distances (which in the nominal 'test environment' may give either an excessive or a very minor 3D effect).

3.2.2 Filming

3D clearly adds considerably to the aspects of filming, not least as matching of every parameter is required between Left & Right cameras/views.

All filming was done with pairs of cameras and configurations that were nominally identical (camera sensors, processors and acquisition systems where serial numbers were very close in sequence), although different camera pairs were used for filming various scenes.

3.2.3 Subject choices

The subject choices are different to those normally made compared with 2D ***Tvids*** sets, where the choice is based upon varied content which tests encoders.

For 3D, the primary motive has been to select subjects where

- the 3D effects are clear (although ranging from subtle to very pronounced)
- it is considered that the sequences would be a good test of a 3D encoder, either due to the detail/nature of the subjects (e.g. fine lines, water) or due to the differences between Left and Right
- particular aspects or problems of 3D are illustrated, e.g. objects which appear in one side but not the other at the screen edge; specular highlights in one side but not the other; grain which will be different Left to Right

- in some cases where the difficulties of 3D filming and viewing are illustrated by examples, such as with zoom or hand-held camera action (encompassing angled views)

Consequently several of the sequences may be filmed in the same general locations, where clear 3D depth effects could be demonstrated.

3.2.4 Mechanical alignment of cameras

The cameras were mechanically aligned (X, Y, Z and rotationally) at the centres and as far as possible at the edges. Some 3D is produced where the cameras are not well aligned, but this test set does not include any examples of basic alignment errors, firstly, as this problem is rapidly becoming much less common, and secondly if the cameras were not well aligned during filming, this is very easily corrected in post production

3.2.5 Convergence and geometric matching

All filming was done with the cameras parallel: no convergence was used in any of the filming. This was done to avoid differential trapezoidal views Left to Right, in order to avoid the subsequent post-production corrections that would otherwise be required.

Correct alignment and use of 'identical' cameras and lenses in general resulted in good geometric matching between Left and Right. However, each of the lenses exhibited minor inconsistencies between Left and Right at each zoom level (as is normally the case and likely to continue for some time); on some of the video sequences this may be observable and where this is the case this is indicated in section 3EV.07 for the sequence concerned.

3.2.6 Interocular spacing

For each sequence the interocular spacing of the cameras is stated. In some cases this was relatively small compared to the subjects/field of view, leading to a slight 3D effect; in many cases this was larger, leading to a very distinct 3D effect. In most cases the interocular was maintained at a distance so that the 'average' negative and positive disparity was within the limits considered reasonable by Sky [see below] as this produces acceptable 3D given the anticipated screen size and viewer distance.

The actual interocular used for filming a specific sequence is given in section 3DN.07 for each sequence.

3.2.7 Negative and positive disparity

Negative disparity is the Left/Right difference that makes objects appear closer to the viewer than the screen plane, i.e. out of the screen. It is given as a negative number below.

Positive disparity is the Left/Right difference that makes objects appear to the viewer to be farther away than the screen plane, i.e. into the screen. It is given as a positive number below.

3.2.8 Average/typical and peak positive and negative disparity

For each clip a figure is given for the

- average/typical negative and positive disparity, (respectively sections 3DN.01 and 3DN.02 for each sequence) and
- peak (transitory) negative and positive disparity (respectively sections 3DN.04 and 3DN.05 for each sequence)

as a percentage of the screen width.

For some clips with significant movement it is necessary to make a judgement about average/typical values: this will usually be the most obvious elements of the foreground and background.

Many clips have very short-term large disparities (particularly negative): in many cases although the disparity is 'excessive' it is likely to be tolerated by a viewer, due to its short-term nature and context.

In any event as this is intended to be a test set for 3D, the 'rules' of acceptability are sometimes deliberately broken to allow the user to explore these limits and applicability of these rules in a user's context.

3.2.9 Location of screen plane

In the many cases the screen plane has been set in post-production at the main subject; however sometimes this is not the case in order to give the desired effect

In most cases the screen plane does not move; however some sequences have the screen plane changing during the sequence. When this is done, the change is generally gradual and either for aesthetic reasons or in order to reduce excessive negative disparity, and is indicated by a change in the disparity percentages.

As the Left and Right sequences are provided separately, most stereo viewers allow the user to adjust the screen plane (by moving the sequences left/right), so these can be adjusted to experiment with different locations of the screen plane.

3.2.10 Screen size and viewer distance

As this is a test set of video sequences it has been assumed that they will be more often viewed in a test environment, i.e. where

- a typical large screen TV is used for viewing (approximately in the range 36"/1.0m to 60"/1.5m) at a distance of approximately 3m
- and/or a computer monitor, 22" (0.6m) or above in size is used for viewing at a distance of approximately 1m

Consequently most sequences have been filmed with the appropriate subject choice, interocular spacing and lens choice to suit this. However, there are a number of sequences where the disparities are relatively low or relatively high, making these sequences more suitable for viewing respectively on larger screens (e.g. cinema-size) at greater distance or smaller screens (e.g. mobile devices) at closer distances.

3.2.11 Floating windows

No floating windows have been applied to these sequences (as noted in 3DN.10 for each sequence), so some sequences have obvious/discomfiting window violations (i.e. where an object is visible in one eye but is completely or partially off-screen for the other eye, making 3D resolution impossible for the viewer). Where this is particularly the case this is stated in the 3D notes (section GN.08) for that particular sequence.

The user is of course free to apply floating windows if desired.

3.2.12 Colour correction

Most sequences have been colour corrected; for the majority of sequences the correction required has been limited; generally only due to a slight colour cast caused by the optics of the filming rig.

However, despite identical camera and storage settings between Left & Right, in some cases there is a colour cast difference between the Left & Right cameras. The reasons for the colour cast differences were:

- specular and diffuse reflection differences within the scene between Left & Right. As the angle is slightly different between Left & Right, some objects can produce substantially different reflections (the most obvious example is a partially shiny

surface, which from one angle gives a much stronger reflection of sunlight, but from a slightly different angle simply shows its surface colour);

- light differences between Left & Right causing different camera responses. The same lenses and cameras were used Left & Right (with serial numbers very close together); however, despite this the different light entering each side would sometimes cause significantly different responses, giving a large colour cast between the Left & Right (sometimes varying within the time of a sequence)
- stray light/highlights/lens flare. Despite use of matte boxes, there were occasions when stray light impinged on the lens for one side and not the other, causing internal lens reflections or colour shifts, or significantly different responses

For these circumstances it has been partially colour corrected or not been colour corrected at all: the purpose with these sequences is to allow the user to explore the effects (encoding and visual) under these circumstances. However, for the sequences where colour correction has been partially done/not done, it has been checked that the colour differences do not detract from the 3D aspects of the clips concerned.

Whether a sequence has been colour corrected or not is stated in section 3DN.08 for each sequence.

3.2.13 Camera synchronisation ('genlock')

One of the challenges of 3D filming is to ensure that the camera shutters are synchronised, i.e. the cameras are 'genlocked' together.

The term 'shutter' refers to film cameras and does not really apply to digital cameras where there is no mechanical shutter (such timing is done electronically), but the term is still used and can be applied as the effect is very similar.

If the cameras are not synchronised (genlocked), an object which is moving is recorded at one place in one camera can appear at a different place in the other camera. For example, if the cameras are not genlocked, an object falling vertically may appear near the top of the frame in the Left Camera - as this is the time when the Left camera shutter was 'open' - but appear more towards the middle of the frame in the Right camera. Clearly this will give some difference between Left and Right, which will therefore appear as a 3D effect - but it is not. In many cases this 'false' 3D effect is not noticeable; in some cases it is.

Very little 3D is now being made where the cameras are not genlocked so in this set only one of the sequences have the cameras not genlocked left-to-right.

Other ***TVids*** 3D sets do have a small number of sequences where the cameras are not genlocked - see sets **T3D002 USA West** and **T3D003 Europe**. (In each of these sets where the sequences are not genlocked, care has been taken to ensure that the synchronisation difference in these cases is relatively small and there is no overall effect from the lack of genlock, so that the sequences concerned are still entirely usable. In most cases the timing difference is small and it is hard to tell that the sequences are not genlocked, even with examination of the sequences frame-by-frame. Essentially, the lack of genlock is a very minor factor and only perceivable on very small movement differences on some of the small scene elements of the sequences concerned.)

Where a sequence has the cameras not genlocked this is indicated in section 3EV.07 for the sequence concerned, as 'Not genlocked'.

3.2.14 Post-production

Post-production has been limited to only that required: generally only that needed to set the 3D disparity. All post-production was done either floating point or minimum at 16-bits per component, 4:4:4, and each operation done on the video was checked to ensure that the original could be

reproduced with zero change of data at 12-bits resolution (by applying the operation forwards then in reverse and checking that there was no difference with the original camera data input).

3.2.15 Notes on 3D aspects

For each sequence notes relevant to the 3D aspects of the sequence are given in section GN.08 of each sequence.

3.2.16 Sky Television recommendations for 3D content

BSkyB Television in the UK has recently launched a 3D TV channel. For content providers wishing to submit content, BSkyB has produced a specification of requirements.

Note: the information which is provided below has been paraphrased from the BSkyB document and inclusion of comments in the document below is for reference and convenience only; the original document from BSkyB should be referred to.

Recommendations:

- negative disparity should not exceed 1% for majority of the time
- positive disparity should not exceed 2% for majority of the time
- peak (transitory) negative disparity should not exceed 2.5%
- peak (transitory) positive disparity should not exceed 4%

These values are given for a screen size of 46" to 70" diagonal (1.2m to 1.8m); recommended viewer distance is not stated.

Where the description of each sequence states if the sequence is 'Within the Sky spec' in sections 3DN.03 and 3DN.06 for each sequence it is the above limits which are referenced.

3.2.17 Displays for viewing the 3D sequences

This section provides some information on 3D displays; see section 4.1 for details of the technical requirements for playing the stereoscopic video (computer and software requirements)

There are two aspects to this:

- the choice of viewing technology, e.g. interlaced, over-under, colour coded, alternate frames, checker-board..
- the choice of display itself, e.g. 3D polarised monitor with passive glasses, pair of projectors, 'standard' (non-3D) TV, head-mounted display, shutter display and glasses, auto-stereoscopic display..

Each viewing technology and display has its own merits and drawbacks; it is up to the user to decide which is optimal for their own requirements.

In testing this set of sequences, two viewing technologies were mainly used:

- interlaced with polarised monitor and passive glasses
- colour-coded with standard monitor and colour-coded glasses

These were chosen as they were considered the most widely available and/or easily accessible, although each has advantages and disadvantages:

Viewing method	Advantages	Disadvantages
Polarised passive glasses with interlaced display	Used for 3D theatrical presentations No change of colour	Reduces vertical resolution of Left and Right by half Gives 'interlaced' effect

	Good separation of Left and Right Relatively little light loss	3D is affected when image is rotated/rotational movement Viewing angle limited vertically (to +/- 4 degrees of a specific height on, on some displays)
Colour-coded (passive) glasses with standard display	No loss of vertical resolution (no interlaced effect) Viewing angle limited only by standard display	Display of some colours is poor

3.2.18 Notes specific to this *Tvids* set (Right view differences; lower visual quality)

Lower bit rate on Right view (some sequences)

A number of 3D video codecs are using a full resolution image for the Left view then a difference image only for the Right view, with a much lower bit rate used for the Right view. (An example is the 3D typically used for BluRay disks.)

Therefore for some of the sequences in this set, the Right view was recorded with an artificially low bit rate. As would be expected, this generates some artefacts in the Right view (e.g. 19 Beijing_traffic, 20 Night_neon).

More challenging video quality (some sequences)

A number of 3D cameras provide relatively low bit-rates for the Left & Right views (sometimes a lower bit-rate for the Right).

The experience of **TestVid** is that the quality of the video is often rather lower than from professional 2D cameras. To reflect this, some of the sequences in this set have noticeably lower visual quality and additional camera noise (e.g. 23 Shibuya_spin).

3.2.19 T3vid logo

The ***T3vid*** logo has deliberately not been made 3D, in order to have as little impact as possible on encoders which do differential encoding (i.e. encode the difference in the Right from the Left).

It is also aligned on a 16-bit macroblock boundary, is static throughout the sequence and is of a dark colour, designed to be unobtrusive: when viewing the video, in practice it can easily be ignored (although it is generally not at the apparent depth of the nearby video or at screen plane depth).

3.3 Individual clips provided

70 YUV clips are provided, comprising 35 pairs of Left & Right clips each at the following resolutions:

1080p:

- 1920x1080 progressive
- YUV 4:2:0 (i.e. each frame of Y is 1920x1080; each frame of U and V is 960x540)
- 8-bits (one byte) per sample
- 50.0 frames per second
- Y planes are unsigned nominally 16-235 but may go into the range 0-255

- U and V planes are centred at 128 and are nominally 16-240 but may go into the range 0-255

1080i:

- 1920x1080 interlaced Top Field First
- YUV 4:2:0 (i.e. each frame of Y is 1920x1080; each frame of U and V is 960x540)
- 8-bits (one byte) per sample
- 25.0 frames per second
- Y planes are unsigned nominally 16-235 but may go into the range 0-255
- U and V planes are centred at 128 and are nominally 16-240 but may go into the range 0-255

At both resolutions the clips are:

- planar YUV (i.e. a frame of Y followed by a frame of U followed by a frame of V)
- no headers of any kind
- top picture row first
- 16:9 picture aspect ratio
- square pixels

All of the clips were filmed at the respective frame rates (i.e. 50.0 / 25.0 fps), although the YUV may be re-played / encoded at any speed (such as 50.0, 25.0 or 23.976 fps).

3.4 Format of video on disk

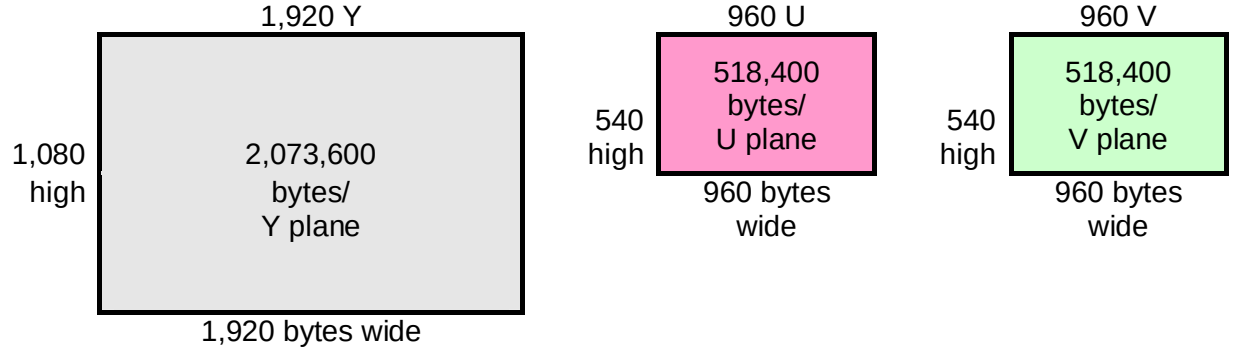
All the YUV video is stored in planar form, i.e. a plane of Y followed by a plane of U followed by a plane of V.

3.4.1 1080p (1920x1080 progressive 4:2:0 8-bit)

Byte 0 in the file is the Y data of the pixel at top left of the first frame.

One frame of Y, U and V:

Plane of Y followed by plane of U followed by plane of V



Valid video data ranges:

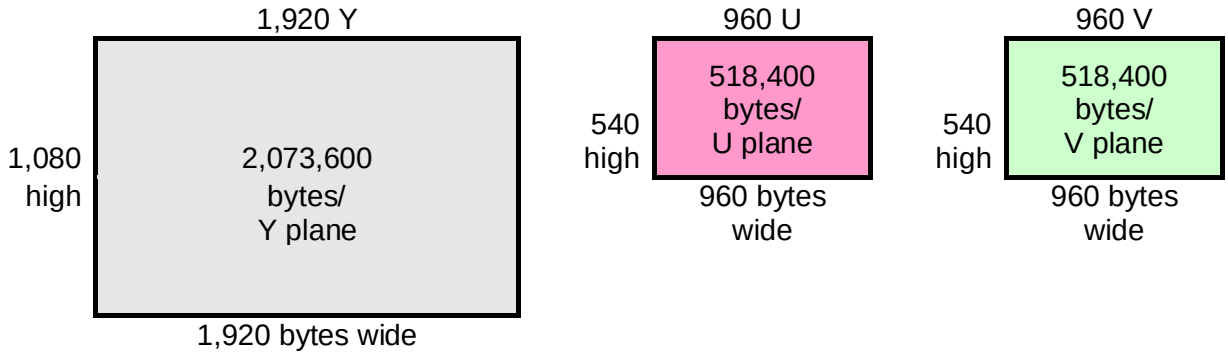
- Y: 16 - 235
- U and V: 16 - 240

3.4.2 1080i (1920x1080 interlaced, Top Field First, 4:2:0 8-bit)

Byte 0 in the file is the Y data of the pixel at top left of the first frame.
Alternate lines of each frame contain alternate fields. The video is Top Field First.

One frame of Y, U and V:

Plane of Y followed by plane of U followed by plane of V



Valid video data ranges:

- Y: 16 - 235
- U and V: 16 - 240

3.5 Audio

Audio clips are provided for every video clip, matching the video length. In the vast majority of cases this was the actual audio recorded with the video.

Where the audio provided was not recorded with the video, similar/appropriate audio is provided, matched in time-length. This is denoted by '`_sim_`' in the audio filename (instead of '`_act_`', denoting actual audio recorded at the time).

Clearly the main point of the ***Tvids*** is video testing, so the audio supplied is intended to be used to check timing/correlation during the encode process rather than to be particularly useful as standalone audio. Consequently, this audio has not been cleaned up or normalised and nor was much time spent in ensuring good audio recording during filming.

All the audio clips are provided in two formats:

- MPEG-1 Layer II stereo 384kbps CBR 16-bit 48kHz and
- WAV linear PCM uncompressed stereo 1536kbps 16-bit 48kHz

4. Software to view & process YUV video

4.1 Viewing/playing the stereoscopic video

This section explains some of the technical requirements for playing the stereoscopic video (computer and software requirements); see section 3.2.17 for some information on 3D displays.

4.1.1 Computer requirements of viewing the stereoscopic video

The ***Tvids*** YUV files within this set require a high performance computer in order to play the video in real-time at full frame rates. The sustained continuous data rates required are:

- **1080p50.0:** 312MBytes/sec (156Mbytes/sec for each of Left & Right)
- **1080i25.0** 156MBytes/sec (78Mbytes/sec for each of Left & Right)

This means that the above rates must be achieved using disk arrays, solid state disks or with the video loaded into RAM disk.

Useful references as starting points for system recommendations are given on the websites for Aja (www.aja.com) and BlackMagic Design (www.blackmagic-design.com) although various companies provide information about how this can be achieved / the configuration of system required to achieve this. A list is given on the **TestVid** website under Support at:

http://www.testvid.com/highperfpc.html

TestVid accepts no responsibility or liability for use of any of the information on the pages listed.

4.1.2 Stereoscopic viewers/players

There are a number of stereoscopic viewers/players available: a list is given on the **TestVid** website under Support at:

http://www.testvid.com/stereoviewers.html

Links are provided to the respective web pages for each program. Note that some of these are more than just viewers.

TestVid accepts no responsibility or liability for download or use of any of the programs listed; the user should carefully examine the license agreement that applies to the software concerned.

However, note that the stereoscopic viewers listed may not import YUV uncompressed files directly: the YUV files may need to be wrapped e.g. in an AVI. Whether or not a particular viewer does import directly YUV files is given on the above **TestVid** web page, although even if listed as not supported it is advisable to check the status of this aspect directly with the software provider as updates do of course occur.

There are a number of choices available in order to view the stereoscopic video:

- wrap the YUV within an AVI file and use a stereoscopic viewer (support for viewing YUV files when wrapped in an AVI is much more common in stereoscopic viewers)
- convert the YUV into a different format acceptable to the chosen stereoscopic viewer
- play the YUV video out in real-time on SDI and use an adaptor to display the two SDI inputs

Each of the above options is discussed below.

The individual Left & Right YUV files can be viewed using the viewers listed in 4.2.

4.1.3 Wrap the YUV within an AVI file

There are a number of programs to do this; probably the easiest is to use a program called FFMPEG. This is used as a command line program: it can easily be found using a search engine.

Usage:

```
ffmpeg -s 1920x1080 -i <infile.yuv> -vcodec copy <outfile.avi>
```

where

- <infile.yuv> is the input YUV filename
- <outfile.avi> is the output AVI filename

4.1.4 Convert YUV to another format

As the purpose of this set of ***Tvids*** sequences is to test encoders (and presumably purchased for this purpose), the user will have a means to encode the YUV sequences into a compressed format such as MPEG-2, H.264/MPEG-4/AVC, MVC or other, so can then view the compressed sequences.

4.1.5 Stereo YUV output on SDI

The same method can be used for stereoscopic video as for 2D video: see section 4.3.

4.2 Viewing the YUV video (individual Left or Right)

There are a number of software programs for viewing YUV files: a list is given on the **TestVid** website under Support at:

http://www.testvid.com/yuvviewers.html

Links are provided to the pages where the YUV viewers can be downloaded.

Note that these programs only show one YUV stream at a time.

4.3 Real-time play-out of the YUV video

The YUV files provided are suitable for direct use with video encoders, but in some circumstances it may desirable to play-out the YUV in real-time on an SDI / ASI / DVI / HDMI link.

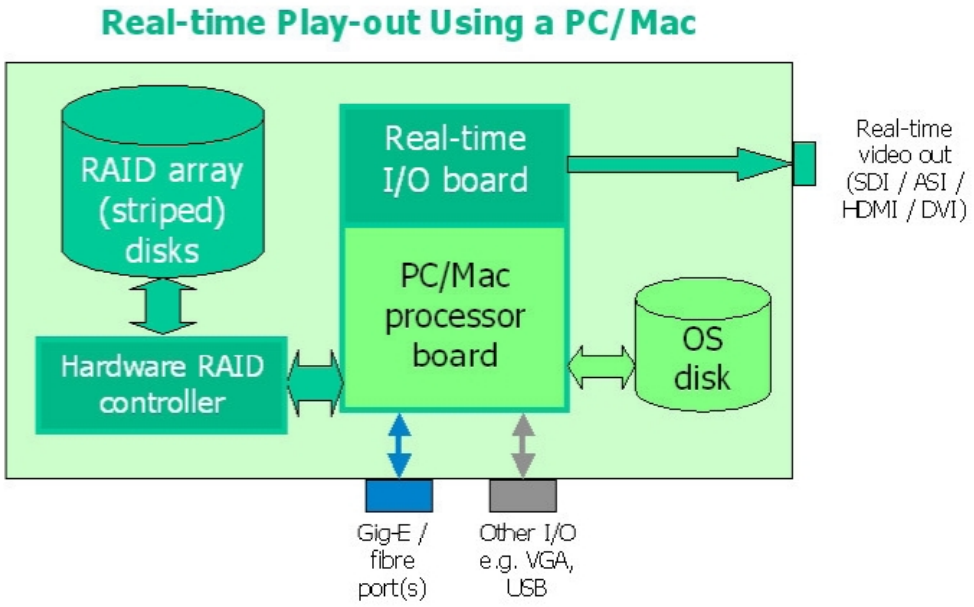
Essentially, the issue is to get the uncompressed ***Tvids*** YUV files from disk onto an SDI / ASI / DVI / HDMI interface via a specialised I/O board.

All video servers, many hardware encoders and a large proportion of other professional broadcast equipment have internal hard disks and Gig-E Ethernet interfaces. This allows the ***Tvids*** to be directly copied over the Ethernet network onto the hard disk, and play-out from there.

Where it is required to produce an SDI / ASI / DVI / HDMI stream as input to other equipment, this can be done relatively straightforwardly, using:

- a high performance PC / Mac
- with high speed RAID hard disks
- with an appropriate SDI etc. I/O board, e.g. from Aja, BlackMagic Design or Bluefish444
- and software to control moving the video from disk onto the I/O interface

A schematic of the required set-up is:



See the **TestVid** website:

http://www.testvid.com/support.html

More detailed information is provided, including a page on "broadcast applications" and the steps required are covered in some detail in the white paper, "Real-Time Play-out of YUV Video in a Broadcast Environment"

4.4 Software tools provided

The following software is provided:

Software tool	Purpose
`yuvcropsize`	Removes rows/columns from a 1920x1080 YUV file to make a YUV file where the size of the frames is reduced
`yuvmake1088`	Add extra lines at the top/bottom of a 1920x1080 YUV file to make it 1920x1088
`yuvletterbox`	Alter provided video by making it appear 'letterboxed' (i.e. with black bands top and bottom of each frame) or 'pillarboxed' (with black bands left and right)

Note

1. The software tools are provided solely for the use of the purchaser of the license to use this set of video clips and may not be used with other video or provided to other persons/organisations.

2. The use of these software tools is only on the basis of complete acceptance of the license agreement as given in section below. The fact of using these software tools gives your explicit consent to abide by the terms of the license agreement.

4.4.1 License agreement relating to the software tools provided

This license agreement below applies to all software listed in this section 4.4.

The software program(s) is/are provided to the user without any license fee or royalty on an "as is" basis, solely as an incidental part of the clip set and do not form part of the contract.
TestVid disclaims any and all warranties, whether express, implied, or statutory, including any implied warranties or merchantability or of fitness for a particular purpose.
The user makes use of this/these program(s) at their own risk. In no event shall **TestVid** be liable for any incidental, punitive, or consequential damages of any kind whatsoever arising from the use of this/these program(s).

This disclaimer of warranty extends to the user of this/these program(s) and user's customers, employees, agents, transferees, successors and assigns.

The software program(s) is/are provided solely to the purchaser of the relevant set of ***TVids*** and may not be sent to or copied to any other person or organisation or used with any other video

4.4.2 yuvcropsize

This is a command line program for reducing the size of any of the provided video by removing lines from the top and/or columns from the right of each video frame.

Usage:

`yuvcropsize <inputfile.yuv> <p> <xsize> <ysize> <xcrop> <ycrop> <fff>`

where

- `<inputfile.yuv>` is the input filename (must have extension `.yuv`)
- `<p>` = progressive or interlaced input file, set to ‘p’ or ‘i’
- `<xsize>` = horizontal resolution of the input file
- `<ysize>` = vertical resolution of frame of the input file (for interlaced, this is the frame vertical resolution, not the field vertical resolution e.g. this value would be 576 for D1PAL input video)
- `<xcrop>` = number of columns to crop from the right-hand side of each frame. Limitations: this must a multiple of 2 (`yuvcropsize` will round up if this is not the case); the remaining number of columns in a frame cannot be less than 16 (`yuvcropsize` will reduce `xcrop` if this is not the case).
- `<ycrop>` = number of lines to crop from the top of each frame. Limitations: this must a multiple of 2 for progressive input files and multiple of 4 for interlace input files (`yuvcrop` will round up if this is not the case); the remaining number of lines in a frame cannot be less than 16 (`yuvcropsize` will reduce `ycrop` if this is not the case).
- `<fff>` = number of video frames to process. Set to 0 to process all frames. If `<fff>` is greater than the number of frames then all frames will be processed

The filename for the output file, with the lines/columns removed, will be

`inputfile_CROP_<newx>x<newy>.yuv`

where <newx> and <newy> are the new horizontal and vertical dimensions of the cropped file (the '_CROP_<newx>x<newy>' is added by yuvcropsize).

The output file is put in the same folder as the input file.

4.4.3 yuvmake1088

This is a command line program for adding 8 additional lines to 1080 vertical resolution video, to make it 1088 vertically i.e. an integer multiple of 16.

This assumes the video is 1920x1080, 4:2:0, 8-bits per sample.

All the lines added are greyscale, set to one grey colour.

Usage:

```
yuvmake1088 <inputfile.yuv> <p> <n> <c>
```

where

- <inputfile.yuv> is the input filename which is 1080 lines vertically (must have extension .yuv)
- <p> = progressive or interlaced input file, set to 'p' or 'i'
- <n> = the number of the 8 lines to add at the top of each frame (0, 2, 3, 6 or 8). '0' means add zero lines at the top i.e. at 8 lines at the bottom; '8' means add 8 lines at the top and zero at the bottom; '4' means add 4 at top and bottom, etc.
- <c> = greyscale colour to add, number 16-235. 16=black; 235=white. Numbers less than 16 will be set to 16; greater than 235 will be set to 235.

The filename for the output file, with the extra 8 lines added, will be

```
inputfile_1088.yuv
```
(the '_1088' is added by yuvmake1088)

The output file is put in the same folder as the input file.

4.4.4 yuvletterbox

This is a command line program for creating a black band at the top & bottom of each frame (or left & right), by over-writing the video data in these bands. The luminance of the 'black' band may be set; the size of the bands top and bottom (left/right) may be set. The ***Tvids*** logo is moved to remain visible in the bottom left corner of the video data.

Note: this program does not work on the 2K video supplied with this set ***Tvids*** of as it was not considered relevant to 2K video.

1080p (1920x1080) videos are 16:9 picture aspect ratio (1.777:1).

Common picture aspect ratios with areas of letterbox / pillarbox are:

Picture aspect ratio	**1080p (1920x1080)**
Default	**Number of black lines top & bottom**
1.777:1 (16:9)	0, 0
Letterbox	**Number of black lines top & bottom**
1.85:1	21, 21
2.35:1	131, 132
	Number of black lines left & right

Pillarbox	
1.33:1 (4:3)	240, 240
14:9 (1.56:1)	117, 118

Usage:

```
yuvletterbox <inputfile.yuv> <xsize> <ysize> <nnn>     (cont'd)
                        <f> <blk> <l> <tl> <br>
```

where

- <inputfile.yuv> is the input filename (must have extension .yuv)
- <xsize> = horizontal resolution of the input file (must be multiple of 2)
- <ysize> = vertical resolution of frame of the input file, e.g. set to 1080 for 1920x1080p (must be multiple of 4)
- <nnn> = number of video frames to process. Set to 0 to process all frames. If <nnn> is greater than the number of frames then all frames will be processed
- <f> = format, i.e. progressive or interlaced input file, set to 'p'
- <blk> = 'black' colour to add, number 16-235. 16=black; 235=white. Numbers less than 16 will be set to 16; greater than 235 will be set to 235.
- <l> = letterbox or pillarbox, set to 'l' or 'p'. If set to 'l' (for letterbox) then the values for <tl> and
 are used respectively for the top and bottom of the video; if set to 'p' (for pillarbox) then the values for <tl> and
 are used respectively for the left and right of the video
- <tl> = the number of the lines (columns) to over-write at the top (left) of each frame with the <blk> value. Valid values are 0 to 400
-
 = the number of the lines (columns) to over-write at the bottom (right) of each frame with the <blk> value. Valid values are 0 to 400

As an example:

```
yuvletterbox inputfile.yuv 1920 1080 0 p 16 l 21 21
```

will produce a letterboxed version of the inputfile.yuv file, 1920x1080, all frames, progressive, black colour 16, with 21 black lines top and bottom (making a visible picture aspect ratio of 1:85:1)

The filename for the output file, with the letterboxed/pillarboxed content will be

inputfile_LBOX.yuv if <l> = 'l', or (the '_LBOX' is added by yuvletterbox)

inputfile_PBOX.yuv if <l> = 'p', or (the '_PBOX' is added by yuvletterbox)

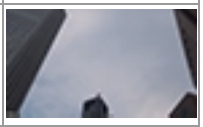
The output file is put in the same folder as the input file.

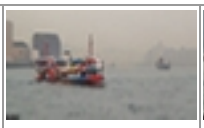
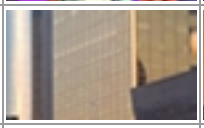
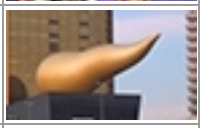
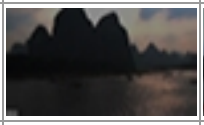
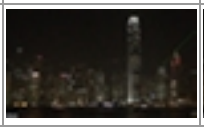
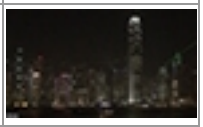
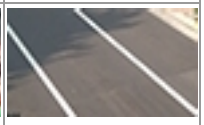
5. List of clips

5.1 Clips summary

- Total time of clips: **19 mins 6 secs 37 frames (50p)**
  19 mins 6 secs 15 frames (25i)

Clip number(s)	Title	Main purposes (2D) - see also '3D notes, GN.08	Duration (mins:secs: frames)	Begin	End
T3D007001: T3D007101	Asakusa_man	Continuous random movement of background, with foreground obscuration, and no global movement	00:23:41, 00:23:20		
T3D007002: T3D007102	Seoul_shower	Codec stress and efficiency test with multiple small changes (due to raindrops)	00:43:36, 00:43:18		
T3D007003: T3D007103	Nippon_Express	Smooth panning motion left-wards, tracking a main subject with continually varying obscuration and heat-haze causing continual minor movements of parts of the picture	00:57:19, 00:57:09		
T3D007004: T3D007104	Masked_dance	Codec efficiency with highly coloured subject moving randomly against a patterned background, with out-of focus transition and camera flashes	00:30:40, 00:30:20		
T3D007005: T3D007105	Train_ride	Tough combined codec stress test with random rotational global motion with zoom, many line objects, patterns, graininess, high & low contrast areas, obscuration, foreground reflections & spots, brightness changes and a complex scene with a jump cut	00:30:36, 00:30:18		
T3D007006: T3D007106	Changing_the_guard	Codec efficiency test with scenes with limited movement, plus global translation, plus dip-to-black fades	00:47:22, 00:47:11		
T3D007007: T3D007107	Balustrades	Codec stress test with relatively large subjects being frequently obscured by highly patterned objects (no global motion)	00:25:24, 00:25:12		
T3D007008: T3D007108	Green_scene	Efficiency test with scene comprising detailed natural objects and water, with continuous (generally) smooth translation	00:32:00, 00:32:00		
T3D007009: T3D007109	Souvenir_shops	Motion vector tracking of many subjects moving in different directions, with continual random lateral and rotational motion	00:49:44, 00:49:22		
T3D007010: T3D007110	Rooves	Codec test of motion vector tracking with slow pan left and right of many similarly highly-patterned objects	00:35:22, 00:35:11		

T3D007011: T3D007111	Dancing_girls	Codec efficiency test in scene where camera gain high due to relatively low light indoors (and consequently some camera artefacts)	00:31:26, 00:31:13		
T3D007012: T3D007112	Takeshita_street	Slow non-uniform vertical translation and zoom, with many subjects and obscuration	00:23:02, 00:23:01		
T3D007013: T3D007113	Shipyard_cranes	Codec stress test with very rapid movement of foreground blurred objects obscuring detailed subjects in the background, also moving relatively	00:38:09, 00:38:04		
T3D007014: T3D007114	Fast_walk	Codec stress and efficiency test of grainy night scene with video effects applied	00:20:10, 00:20:05		
T3D007015: T3D007115	Skyscrapers	Continuous rotational movement test of relatively simple scene but with highly patterned low-contrast buildings	00:32:41, 00:32:20		
T3D007016: T3D007116	Pavement_patterns	Global motion tracking with highly patterned background providing a codec stress test	00:32:42, 00:32:21		
T3D007017: T3D007117	Bullet_train	Stress test with white fade-in and fade-out, white fade in the middle, and rapid direction changes	00:21:42, 00:21:21		
T3D007018: T3D007118	Great_Wall	Efficiency test with patterns and random global rotational movement, slow cross fade and global non-smooth pan/scroll	01:19:20, 01:19:10		
T3D007019: T3D007119	Beijing_traffic	Codec efficiency test where scene changes from one where there is no global motion & limited subject motion, to one where there is a global pan and zoom, plus continual subject movement	00:42:32, 00:42:16		
T3D007020: T3D007120	Night_neon	Night-time test with high contrast and slow global scroll upwards	00:20:34, 00:20:17		
T3D007021: T3D007121	Dragon_river	Efficiency test with global movement into the scene, with reflections, multiple moving subjects, irregular global motion & continuous haze (on distant hills)	00:28:30, 00:28:15		
T3D007022: T3D007122	Disappear	Motion vector stress test where almost all of image is similar and low contrast, plus check id codec produces banding on output	00:25:01, 00:25:00		
T3D007023: T3D007123	Shibuya_spin	Rapid left pan with some rotational movement, with many subjects crossing the picture	00:23:26, 00:23:13		
T3D007024: T3D007124	Shopping_mall	Frequent v. small up/down global movement and background colored light changes with continuous random movement of large and obscured subjects	00:41:14, 00:41:07		

T3D007025: T3D007125	Star_ferry	Codec tracking efficiency of main subject largely stationary in field of view, with continual relative movement of a complex background	00:30:00, 00:30:00		
T3D007026: T3D007126	Duck_man	Motion vector/efficiency test at jump cuts and because we liked the audio !	00:28:44, 00:28:22		
T3D007027: T3D007127	Golden_statue	Smooth panning motion right-wards with a few irregular global movements	00:26:11, 00:26:05		
T3D007028: T3D007128	Hazy_HK	Codec efficiency and stress test with low-contrast detailed scene (and very strong moire fringes on one building)	00:16:35, 00:16:17		
T3D007029: T3D007129	Escalator	Test with dark scene, areas of grain and high contrast, with slow global right-wards translation	00:20:28, 00:20:14		
T3D007030: T3D007130	Yangshuo_dusk	Stress test with high contrast scene and non-smooth global pan	00:09:40, 00:09:20		
T3D007031: T3D007131	Harbour_night	Codec stress test with worst grain ever likely to encounter (e.g. from a nightcam), fine subjects and high contrast	00:21:14, 00:21:07		
T3D007032: T3D007132	PedXing_below	Motion vector tracking of many objects (people) primarily moving horizontally or vertically, then global motion track	00:34:08, 00:34:04		
T3D007033: T3D007133	Terracotta_warriors	Efficiency test where there is no subject movement but continual zoom, translation, high camera noise (due to low light) and shimmering due to non-synchronized lighting in a low contrast mono-colour scene	00:58:02, 00:58:01		
T3D007034: T3D007134	Forbidden_City	Codec efficiency tracking many subjects moving principally left/right but other directions, many of which small in field of view	00:21:40, 00:21:20		
T3D007035: T3D007135	Sideways	Efficiency and stress tests with non-standard view (rotated 90 degrees) where translation is not in usual direction	00:41:02, 00:41:01		

5.2 Clip features

5.2.1 PDF file searching for specific clip features

The PDF of the user manual may be searched to find clips that match the given CF-words ('CF'= Clip Feature).
The majority of the CF-words relate to aspects of the clip such as lighting and subject matter; those that pertain to 3D are denoted as 'CF3D-…'.

5.2.2 Excel file sorting for specific clip features

In addition to the PDF of this manual, an Excel file is provided which lists all the clips and the clip features in columns. This spreadsheet is in Excel .xls format (compatible with Excel versions from 97-2000 and later).

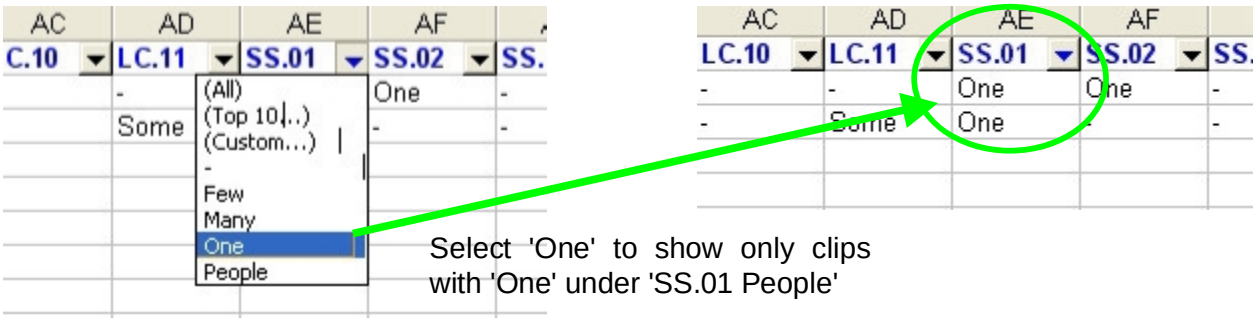
There are two tabs in the spreadsheet:

- the first tab has the clip set title: this has all the items listed in the manual for the clip
- the second tab "Clip features" just lists the individual clips, with the list of their clip features and individual columns for each individual clip feature.

Probably the "Clip features" tab is easiest to use to find specific clips with specific features, although every column may be sorted for specific features, by clicking on the drop-down arrow adjacent to each column heading (the examples below are from the T2V001 USA East clip set)

	A	B	C	D	E	F	G	
1			GN.01	GN.02	GN.03	GN.04	GN.05	GN.06
2	Number(s)	Title	Filename(s)	Horizontal x vertical si	Progressive / Interlaced	Video format	Bits per sam	Video c
3	T2V001001, T2V001101, T2V00	Bars_countdown	T2V001001_Bars_countdown_1920x1080p.yuv :	1920x1080; 1280x720	'p' file suffix = progressive; 'i'	YUV planar 4:	8 (for each of	HD colo
4	T2V001002, T2V001102, T2V00	Stars_n_Stripes	T2V001002_Stars_n_Stripes_1920x1080p.yuv :	1920x1080; 1280x720	'p' file suffix = progressive; 'i'	YUV planar 4:	8 (for each of	US flag
5	T2V001003, T2V001103, T2V001203	Times_Square	T2V001003_Times_Square_1920x1080p.yuv : T2	1920x1080; 1280x720	'p' file suffix = progressive; 'i'	YUV planar 4:	8 (for each of	Somewh
6	T2V001004, T2V001104, T2V001204	Chrysler_building	T2V001004_Chrysler_building_1920x1080p.yuv :	1920x1080; 1280x720	'p' file suffix = progressive; 'i'	YUV planar 4:	8 (for each of	Slow zo
7	T2V001005, T2V001105, T2V001205	Display	T2V001005_Display_1920x1080p.yuv : T2V0011(	1920x1080; 1280x720	'p' file suffix = progressive; 'i'	YUV planar 4:	8 (for each of	Large ou

Click arrow to get drop-down list of items in this column (example below for 'SS.01 People')



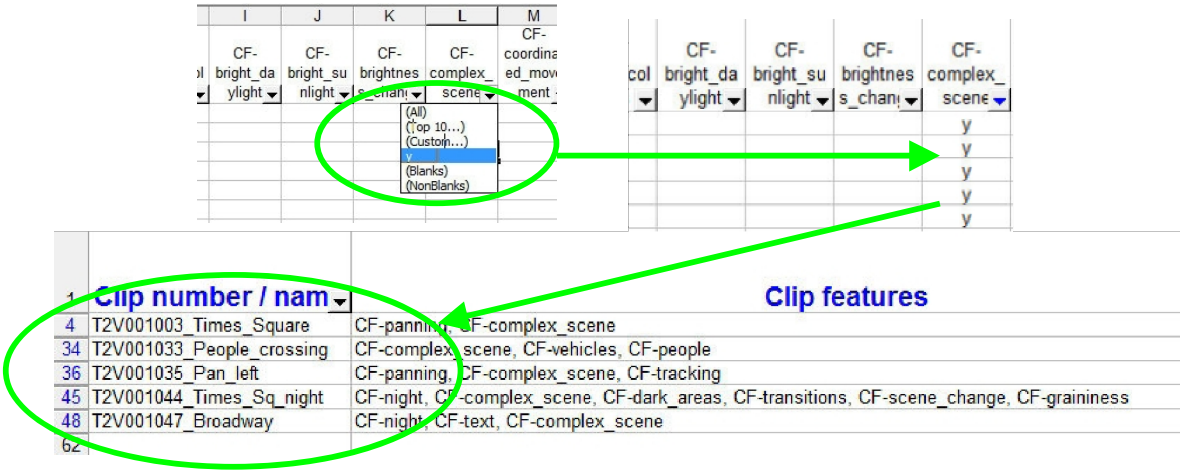
Select 'One' to show only clips with 'One' under 'SS.01 People'

Note that this first tab on the spreadsheet is roughly 100 columns wide (from column A to column CZ), so it may be helpful to use the 'Freeze Panes' feature (on the 'Window' menu in Excel 2000 and 2003) or split windows to keep the clip number visible.

The "Clip features" tab appears and can be sorted as indicated below:

	A	B	C	D	E	F	G
1	Clip number / nam	Clip features	CF-animal	CF-angl	CF-bandin	CF-black_background	CF-bright_daylight
2	T2V001001_Bars_countdown	CF-text, CF-dark_areas, CF-patterns, CF-black_background, CF-round_objects, CF-transitions, CF-large_monochromatic				y	
3	T2V001002_Stars_n_Stripes	CF-bright colours, CF-large_monochromatic, CF-movement_across					
4	T2V001003_Times_Square	CF-panning, CF-complex_scene					
5	T2V001004_Chrysler_building	CF-zoom_in, CF-fine_details, CF-low_contrast, CF-dull_daylight					
6	T2V001005_Display	CF-high_contrast, CF-rapid_changes					
7	T2V001006_Smiling	CF-faces, CF-people					
8	T2V001007_Traffic_duty	CF-faces, CF-text, CF-people					
9	T2V001008_Empire_State	CF-patterns, CF-scroll, CF-faces, CF-hand_held					
10	T2V001009_FDNY	CF-out_of_focus, CF-vehicles					
11	T2V001010_Checked_caps	CF-people, CF-movement_out, CF-patterns					
12	T2V001011_Gold_statue	CF-water, CF-patterns, CF-large_monochromatic					
13	T2V001012_Eyewitness_news	CF-moving_text					

Selecting a drop-down menu and clicking on 'y' reduces the list to those that have that CF value:



5.2.3 List of 'CF' ('clip features') words used

The PDF of the user manual may be searched to find clips that match the given CF-words ('CF'= Clip Feature).

3D specific:

CF3D-effect_mild	CF3D-effect_medium	CF3D-effect_strong
CF3D-effect_excessive	CF3D-peak_negative	CF3D-peak_positive
CF3D-effect_change		
CF3D-perception_hard	CF3D-viewer_discomfort	CF3D-window_violation
CF3D-diff_colour	CF3D-diff_elements	CF3D-diff_geometry
CF3D-diff_not_genlocked		
CF3D-Sky_spec_yes	CF3D-Sky_spec_no	
CF3D-zoom	CF3D-rotation	CF3D-fast_movement
CF3D-contrast	CF3D-grain	

Meanings of the 3D-specific CF-words above:

CF3D-effect_mild CF3D-effect_medium CF3D-effect_strong CF3D-effect_excessive	How strong the 3D effect in general is perceived to be for the clip, when viewed with the screen size and distance as described in section 3.2.10 At least one of these is stated for every clip
CF3D-effect_change	The depth of the 3D effect changes during the clip
CF3D-peak_negative CF3D-peak_positive	Transitory peak negative or positive disparity which exceeds the Sky specification (see section 3.2.16)
CF3D-perception_hard	3D is hard to perceive either due to scene contents (differences left to right) or lighting differences (e.g. flare from sunlight in one side only) or random nature of scene contents

CF3D-viewer_discomfort	Clips where it is considered that viewer discomfort might be caused, e.g. due to differences left to right, or excessive disparity that continues too long, or window violation(s)
CF3D-window_violation	Where a significant object appears in one side and not the other for a sufficiently long time as to be noticeable
CF3D-diff_colour	Where there is a colour difference between left and right
CF3D-diff_elements	Where there are some elements within the scene which are different between left and right, e.g. due to reflections
CF3D-diff_geometry	Where the geometry is different left to right e.g. due to differential zoom; optical effects
CF3D-diff_not_ genlocked	The cameras have not been 'genlocked' and there may be some very minor artefacts as a result (see section 3.2.13)
CF3D-Sky_spec_yes CF3D-Sky_spec_no	Whether or not the clip meets the Sky specification (see section 3.2.16) either for average or transitory negative and positive disparity One of these is stated for every clip
CF3D-zoom	Zooming in or out
CF3D-rotation	Effect on 3D of rotation
CF3D-fast_movement	Effect on 3D of fast movement
CF3D-contrast	High or low contrast in both views or contrast differences between left and right could affect 3D
CF3D-grain	Graininess of sequence could affect 3D

General:

CF-bright_sunlight	CF-bright_daylight	CF-sunrise_sunset
CF-dull_daylight	CF-brightness_change	CF-shaded
CF-indoors_bright	CF-indoors_dark	CF-night
CF-twilight	CF-light_picture	CF-dark_picture
CF-high_contrast		
CF-people	CF-vehicles	CF-water
CF-buildings	CF-faces	CF-text
CF-trees	CF-leaves_grass	CF-clouds
CF-sky		
CF-patterns	CF-reflections	CF-round_objects
CF-graininess	CF-out_of_focus	
CF-bright_colours	CF-dull_colours	
CF-movement_in	CF-movement_out	CF-movement_up/down
CF-movement_across	CF-random_movement	CF-diagonal_movement
CF-fast_track_pan	CF-panning	CF-scroll

CF-tracking	CF-tracking_following	CF-jerky
CF-transition	CF-fade	
CF-zoom_in	CF-zoom_out	
CF-angled	CF-subjects_behind_foreground	
CF-sound_vehicles	CF-sound_talking	CF-sound_water
CF-sound_other	CF-wind	CF-music

6. Detailed information on individual clips

The following pages provide detailed information on the clips in this set.

6.1 Detailed description of each clip

This section contains detailed descriptions of each video clip, and the associated audio.

70 features are listed for each clip: the purpose of providing these descriptions is to make it easier to select specific clips for specific features.

Therefore even if a characteristic does occur in a particular clip, this is not necessarily listed where it is not a prominent feature and/or where it is believed that the clip would not be selected for this particular feature.

Clearly to some extent these descriptions and selections are subjective, and the user is likely to come to their own conclusions as to which are most relevant to their particular codec / situation: the descriptions provided are intended to be an appropriate starting point.

01 Asakusa_man

GN.01	Filename(s)	T3D007001_Asakusa_man_1080p50_8b_P420_l/r.yuv: T3D007101_Asakusa_man_1080i25_8b_P420_l/r.yuv
GN.02	Horizontal x vertical size	1920x1080
GN.03	Progressive / Interlaced	1080p - Progressive; 1080i - Interlaced TFF
GN.04	Video format	YUV planar 4:2:0
GN.05	Bits per sample	8 (for each of Y, U, V)
GN.06	Video description	Japanese man looking directly at the camera (with heat-haze in background on rooves)
GN.07	Principal purposes (see also 3D notes)	Continuous random movement of background, with foreground obscuration, and no global movement
GN.08	3D notes	Over-strong 3D effect is acceptable most of the time, except for when there are very near objects
GN.09	Duration (mins:secs:frames)	00:23:41, 00:23:20
GN.10	Number of frames	1,191 : 595
GN.11	File size on disk (MB), combined L+R	7,409 : 3,701
GN.12	3D CF-words	CF3D-effect_strong, CF3D-effect_excessive, CF3D-peak_negative, CF3D-viewer_discomfort, CF3D-Sky_spec_no
GN.13	CF-words	CF-bright_daylight, CF-brightness_change, CF-crowd, CF-depth_of_field, CF-faces, CF-movement_across, CF-people, CF-sound_talking, CF-talking_head
GN.14	Associated audio types	MPEG1 Layer II 48kHz 16bit stereo 384kbps Constant Bit Rate : 16bit uncompressed 48kHz stereo WAV
GN.15	Associated audio filenames	T3a007x01_Asakusa_man_act_MP1LII.mpa : T3a007y01_Asakusa_man_act_unc.wav
GN.16	Associated audio description	Actual audio recorded with video
GN.17	Audio duration	Same as video (video played at 50.0fps)

Clip features		Details
3D DATA		
3DN.01	Ave. Negative disparity	-1.6%
3DN.02	Ave. Positive disparity	1.2%
3DN.03	Ave. within Sky spec (-1% / +2%)	No
3DN.04	Peak Negative disparity	-4.4%
3DN.05	Peak Positive disparity	1.6%
3DN.06	Peak within Sky spec (-2.5% / +4%)	No
3DN.07	Interocular (mm)	75
3DN.08	Colour corrected	Yes
3DN.09	Geometric correction	None
3DN.10	Floating window used	No
3D EVALUATION		
3EV.01	3D effect	Strong, Excessive
3EV.02	Change in 3D effect	-
3EV.03	Peak negative or positive disparity	Peak negative
3EV.04	3D perception hard	-
3EV.05	3D viewer discomfort	Yes
3EV.06	3D window violation	-

3EV.07	3D diff. Left to Right	-
3EV.08	Comply with Sky spec	No
3EV.09	3D possibly affected by	-

LIGHT CONDITIONS

LC.01	Bright sunlight	-
LC.02	Bright daylight	All
LC.03	Dull daylight	-
LC.04	Shaded areas	-
LC.05	Indoors bright	-
LC.06	Indoors dark	-
LC.07	Twilight	-
LC.08	Sunrise/sunset	-
LC.09	Night	-
LC.10	Backlighting	-
LC.11	Large brightness change	Few

SCENE SUBJECTS

SS.01	People	Many
SS.02	Faces	Many
SS.03	Vehicles	-
SS.04	Buildings	-
SS.05	Trees	-
SS.06	Text	-
SS.07	Talking head	One
SS.08	Water	-
SS.09	Leaves/grass	-
SS.10	Sky	-
SS.11	Clouds	-
SS.12	Patterns	-
SS.13	Round/curved objects	One

SCENE PROPERTIES

SP.01	Depth of field	Shallow
SP.02	Out-of-focus	Background
SP.03	Fine lines/moiré patterns	-
SP.04	Reflections	-
SP.05	Scene change	-
SP.06	Fades	-
SP.07	Transitions	-
SP.08	Slow/fast motion	-

COLOURS & CONTRAST

CC.01	Light picture	-
CC.02	Dark picture	-
CC.03	Bright colours	-
CC.04	Dull colours	-
CC.05	Fine detail/moiré patterns	-
CC.06	High contrast areas	-
CC.07	Large monochromatic areas	-
CC.08	Graininess	-
CC.09	Black background	-
CC.10	White background	-

GLOBAL MOTION

GM.01	Fast track/pan	-
GM.02	Tracking in/out	-
GM.03	Tracking	-
GM.04	Panning	-
GM.05	Tracking (following)	-
GM.06	Fast scroll	-
GM.07	Scroll	-
GM.08	Angled	-
GM.09	Zoom in	-
GM.10	Zoom out	-
GM.11	Hand-held camera	-

SUBJECT MOTION

SM.01	Movement out of picture	-
SM.02	Movement into picture	-
SM.03	Movement across picture	Some
SM.04	Movement up/down	-
SM.05	Diagonal movement	-
SM.06	Subjects behind foreground objects	Few
SM.07	Low movement	-

SOUND CONTENT

SC.01	Talking	Some
SC.02	Movement	Footsteps
SC.03	Vehicles	-

SC.04	Wind	-
SC.05	Music	Background
SC.06	Background	People
SC.07	Other	-

SOUND CHARACTERISTICS

SH.01	Mono/ stereo	Stereo
SH.02	Average volume	Mid
SH.03	Level changes	-
SH.04	Clear/ distorted	Clear

02 Seoul_shower

GN.01	Filename(s)	T3D007002_Seoul_shower_1080p50_8b_P420_l/r.yuv: T3D007102_Seoul_shower_1080i25_8b_P420_l/r.yuv
GN.02	Horizontal x vertical size(s)	1920x1080
GN.03	Progressive / Interlaced	1080p - Progressive; 1080i - Interlaced TFF
GN.04	Video format	YUV planar 4:2:0
GN.05	Bits per sample	8 (for each of Y, U, V)
GN.06	Video description	People walking on the street in the rain, mainly away from the camera, with umbrellas
GN.07	Principal purposes (see also 3D notes)	Codec stress and efficiency test with multiple small changes (due to raindrops)
GN.08	3D notes	Strong 3D effect with random focus obscuration on one eye (rain on lens)
GN.09	Duration (mins:secs:frames)	00:43:36, 00:43:18
GN.10	Number of frames	2,186 : 1,093
GN.11	File size on disk (MB), combined L+R	13,599 : 6,799
GN.12	3D CF-words	CF3D-effect_strong, CF3D-perception_hard, CF3D-diff_elements, CF3D-Sky_spec_yes
GN.13	CF words	CF-dark_areas, CF-dark_picture, CF-graininess, CF-movement_in, CF-people, CF-shaded, CF-twilight
GN.14	Associated audio types	MPEG1 Layer II 48kHz 16bit stereo 384kbps Constant Bit Rate : 16bit uncompressed 48kHz stereo WAV
GN.15	Associated audio filenames	T3a007x02_Seoul_shower_act_MP1LII.mpa : T3a007y02_Seoul_shower_act_unc.wav
GN.16	Associated audio description	Actual audio recorded with video
GN.17	Audio duration	Same as video (video played at 50.0fps)

Clip features		Details
3D DATA		
3DN.01	Ave. Negative disparity	0.0%
3DN.02	Ave. Positive disparity	1.2%
3DN.03	Ave. within Sky spec (-1% / +2%)	Yes
3DN.04	Peak Negative disparity	-1.8%
3DN.05	Peak Positive disparity	1.6%
3DN.06	Peak within Sky spec (-2.5% / +4%)	Yes
3DN.07	Interocular (mm)	75
3DN.08	Colour corrected	Yes
3DN.09	Geometric correction	None
3DN.10	Floating window used	No
3D EVALUATION		
3EV.01	3D effect	Strong
3EV.02	Change in 3D effect	-
3EV.03	Peak negative or positive disparity	-
3EV.04	3D perception hard	Yes
3EV.05	3D viewer discomfort	-

3EV.06	3D window violation	-
3EV.07	3D diff. Left to Right	Elements
3EV.08	Comply with Sky spec	Yes
3EV.09	3D possibly affected by	-

LIGHT CONDITIONS

LC.01	Bright sunlight	-
LC.02	Bright daylight	-
LC.03	Dull daylight	-
LC.04	Shaded areas	Some
LC.05	Indoors bright	-
LC.06	Indoors dark	-
LC.07	Twilight	All
LC.08	Sunrise/sunset	-
LC.09	Night	-
LC.10	Backlighting	-
LC.11	Large brightness change	-

SCENE SUBJECTS

SS.01	People	Many
SS.02	Faces	Few
SS.03	Vehicles	Cars
SS.04	Buildings	-
SS.05	Trees	Few
SS.06	Text	-
SS.07	Talking head	-
SS.08	Water	Rain
SS.09	Leaves/grass	Some
SS.10	Sky	-
SS.11	Clouds	-
SS.12	Patterns	-
SS.13	Round/curved objects	Many

SCENE PROPERTIES

SP.01	Depth of field	Deep
SP.02	Out-of-focus	-
SP.03	Fine lines / moiré patterns	-
SP.04	Reflections	-
SP.05	Scene change	-
SP.06	Fades	-
SP.07	Transitions	-
SP.08	Slow/fast motion	-

COLOURS & CONTRAST

CC.01	Light picture	-
CC.02	Dark picture	All
CC.03	Bright colours	-
CC.04	Dull colours	Most
CC.05	Fine detail/moiré patterns	-
CC.06	High contrast areas	Several
CC.07	Large monochromatic areas	-
CC.08	Graininess	Some - light
CC.09	Black background	-
CC.10	White background	-

GLOBAL MOTION

GM.01	Fast track/pan	-
GM.02	Tracking in/out	-
GM.03	Tracking	-
GM.04	Panning	-
GM.05	Tracking (following)	-
GM.06	Fast scroll	-
GM.07	Scroll	-
GM.08	Angled	-
GM.09	Zoom in	-
GM.10	Zoom out	-
GM.11	Hand-held camera	-

SUBJECT MOTION

SM.01	Movement out of picture	Lots
SM.02	Movement into picture	Lots
SM.03	Movement across picture	Some
SM.04	Movement up/down	-
SM.05	Diagonal movement	-
SM.06	Subjects behind foreground objects	Many
SM.07	Low movement	-

SOUND CONTENT

SC.01	Talking	Some
SC.02	Movement	Other

SC.03	Vehicles	Traffic
SC.04	Wind	Some
SC.05	Music	Background
SC.06	Background	Rain
SC.07	Other	-

SOUND CHARACTERISTICS

SH.01	Mono/ stereo	Stereo
SH.02	Average volume	Mid
SH.03	Level changes	-
SH.04	Clear/ distorted	Clear