

Summary



Vclips VC032A Video Clips for Testing and Optimization of Video Compression

Encoder Series – VC032A, E-Asia HD

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General Safety Summary

Use this product only as specified.

While using this product, you may need to access other parts of a larger system. Read the safety sections of the other product manuals for warnings and cautions related to their operation.

Summary: VC-032-A E-Asia HD

Encoder Test Series	VC-032-A E-Asia HD
Purpose	Test High Definition (HD) encoders with all variants of movement and lighting
Content	Scenes from Beijing, Tokyo and Seoul with fast/slow movement, tracking, pan, zoom, rotation, high contrast, low contrast, bright colours, dull colours, monochromatic areas, day, night, people, vehicles, talking heads, buildings
Number of clips	48 scenes all provided at sizes: <ul style="list-style-type: none"> • 720p 1280x720, progressive scan (nos. V0320nn) • 1080i 1920x1088, interlaced scan (nos. V0321nn) i.e. total 96 clips
Total disk size	132 GBytes
Video format	YUV 4:2:0 planar, 8 bits per pixel
How supplied	On hard disk drive unit (with USB 2.0 and Firewire/1394 interfaces)
Software supplied	YUV viewer YUV field splitter in folder: \Software
Documentation	PDF of this manual in folder: \Documentation

1. Introduction

This set of video sequences is designed to test and stress a High Definition (HD) video encoder by providing a diverse set of video clips, which have all types of movement and lighting conditions:

- ❑ 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 such as bright daylight, dull daytime, night, dusk;
- ❑ details such as fine lines, moiré patterns;
- ❑ other challenging features such as fast zooms, scene changes, rapid brightness changes, focus changes.

In many cases the lighting conditions and movement are non-ideal: for example, the picture overall is too light or too dark, or a hand-held camera is used, or the subjects are blurred or sometimes out of focus, or there are rapid brightness changes due to the use of automatic gain control on the camera.

These features are deliberately inserted/used as they can often cause the greatest difficulty to video encoders, and these represent the boundary conditions (worst case) that the encoder should encounter with 'real' video clips.

In general the scenes are quite high-brightness, as it is easier to see encoder artefacts in a bright scene.

2. Installation, Backup

2.1 Backup

These video files are provided on a hard disk unit. Although the unit has been extensively tested prior to delivery, like all hard disks it *could* fail.

Therefore we strongly advise you to back up all the data on this hard disk unit.

(If the drive does fail, we can provide a replacement unit at low cost, but it could still be highly inconvenient for you.)

2.2 Installation

The hard disk unit has both USB 2.0 and 1394/Firewire interfaces (cables for both are provided). Both these interfaces provide a data transfer speed of over 400 Mbits/sec. Providing you have the correct hardware interface on your computer, the hard disk unit should be recognised automatically, simply by plugging in the cable from the unit to your computer. (The driver disk supplied should not be required.)

3. Description of Clip Set

48 video scenes are provided: each of these is provided at 720p (1280x720, progressive scan) and 1080i (1920x1088, interlaced scan) resolutions (that is 96 clips in all).

All clips are provided in YUV 4:2:0 format with no header:

- ❑ planar YUV 4:2:0 sub-sampled, i.e. 4 bytes of Y data for each byte of U data and each byte of V data;
- ❑ no headers of any kind (no file or frame headers);
- ❑ one byte per sample;
- ❑ progressive scan (not interlaced);
- ❑ row raster order (top picture row first);
- ❑ Y plane values are 0-255 unsigned;
- ❑ U and V plane values are unsigned with a DC offset of 128.

Up-sampling of 1080i

These video scenes were all originally filmed in progressive format at a resolution of 1280 pixels horizontally x 720 pixels vertically.

In order to generate the 1080i sized sequences (i.e. 1920 x 1088, interlaced, at 60 fields per second), the original sequences were:

- up-sampled by 50%
- intermediate frames generated to provide 60 frames per second (based upon interpolation of frame-to-frame movement)
- the frames then processed to take the appropriate fields, to generate the interlace.

Considerable experimentation and processing has been done to determine the optimum way to do this, balancing many factors, including: apparent resolution; colour fidelity; maintenance of actual data; minimising the introduction of additional artefacts that could significantly affect an encoder; production of interlace.

Inevitably, there have been some compromises: in particular, a number of the 1080i sequences exhibit minor or significant movement artefacts in the bottom field (i.e. the one which is generated), particularly when there is rapid movement. This can be highly noticeable in some sequences, but at this cannot be improved upon currently (the alternative of simply averaging frames to generate the bottom field produces uniformly poor results).

Interlace on 1080i sequences

The 1080i sequences are supplied as complete frames with the field lines intermixed. In order to separate the two fields, a utility 'yuvFieldSplit' is supplied which allows you to do this (see section 4.2 below).

Note that for 1080i the bottom field is the first field temporally (as is standard in broadcast systems).

4. Software Supplied

The following software is supplied:

- ❑ YUV viewer
- ❑ YUV field splitter

4.1 YUV viewer

This program is called: YUVviewer.exe
and is located in the folder: \Software

To run it, double-click on it – it does not need to be installed.

Once it has been run once, it associates files with an extension of .yuv so subsequently double-clicking on a file with this extension will automatically open the YUV file in the sequence viewer.

Note that in order for the sequence to be displayed properly, the size must firstly be set in YUVviewer, using the 'Custom' selection.

4.2 YUV field splitter

This program is called: yuvFieldSplit.exe
and is located in the folder: \Software

The purpose is to separate the two fields of the 1080i sequences.

This is a command-line (batch mode) program only: it can only be run from a command prompt/MS-DOS window.

To run it the format for commands is:

```
yuvfieldsplit -i <input file> -t <top field out> -b <bottom field out>
```

NOTE: there is a <space> between each – option and the file name.

To see a list of options enter yuvFieldSplit.exe at the command line (with no arguments).

As an example, to split the file:

```
V032102_Red_portico_1920x1088i.yuv
```

into two fields, the following command line would be used (this would be entered as one line):

```
yuvfieldsplit -i V032102_Red_portico_1920x1088i.yuv -t  
V032102_top.yuv -b V032102_bot.yuv
```

To separate some of the frames, not all, two additional command line flags may be used:





```
-f <first frame>
```

```
-l <last frame>
```






Again, there must be a space between the option and the frame number.

5. Information supplied

The following pages describe in considerable detail each video sequence (source data, contents of the scene).

Clip Number(s)	Title	Main purposes	Duration (secs : frames)	1080i file size (MB)	Begin ; End
V0320/V0321 01	Forbidden City	Low contrast patterns, large monochromatic area	13:18	1,278.4	
V0320/V0321 02	Red portico	Bright colours, high contrast patterns, fine detail, white-out	13:09	1,250.2	
V0320/V0321 03	Roof girl	Zoom out, foreground movement and pan	08:24	827.2	
V0320/V0321 04	Red flag	Tracking pan behind foreground objects, text, moiré pattern	10:26	1,021.5	
V0320/V0321 05	Striped shirts	People moving towards camera & different directions, lines	17:14	1,641.9	
V0320/V0321 06	Emperor statue	Texture, reflections, slow zoom out, round objects	17:12	1,635.7	
V0320/V0321 07	Woman mauve	Tracking pan with foreground and background objects	08:02	758.3	
V0320/V0321 08	Gold leaf roof	Camera shake, texture, round objects, patterns, zoom out	30:21	2,885.9	
V0320/V0321 09	Boy kite	Small object movement, large monochromatic areas	25:09	2,378.3	
V0320/V0321 10	Craggy rock	Random shapes (mainly grey), pan right/up/ left	21:15	2,021.1	
V0320/V0321 11	Pan zoomed in	Fast pan down/left, out of focus	11:03	1,043.4	
V0320/V0321 12	Gargoyles	Texture, patterns, lines, monochrome image	24:15	2,303.1	
V0320/V0321 13	Lawnmower	Tracking single person, grass, buildings	27:22	2,607.0	
V0320/V0321 14	Ming scroll	Pan up, low contrast, texture	12:10	1,159.4	
V0320/V0321 15	Making jade	Low movement, high contrast	12:04	1,140.6	
V0320/V0321 16	Passing balustrade	Fast movement right, low contrast background	09:16	896.2	
V0320/V0321 17	Great Wall steps	Lines, large monochromatic area, people towards camera	06:28	651.8	
V0320/V0321 18	Great Wall walk	Lines, large monochromatic area, people away from camera	11:09	1,062.2	
V0320/V0321 19	Dancing bear	Animal, high contrast, white-out	13:10	1,253.4	

Clip Number(s)	Title	Main purposes	Duration (secs : frames)	1080i file size (MB)	Begin ; End
V0320/V0321 20	Roller coaster	Random fast global motion, high contrast, bright colours	20:10	1,911.4	
V0320/V0321 21	Loaded bicycles	Vehicles towards camera, lines, bright areas	15:09	1,438.2	
V0320/V0321 22	Gold inlay	Global movement, in & out of focus	13:08	1,247.1	
V0320/V0321 23	Neon zooms	Round objects, fast zoom in/out, buildings, text	21:16	2,024.2	
V0320/V0321 24	Lanes below	Regular lines, text, horizontal left-to-right movement	11:08	1,059.1	
V0320/V0321 25	Men on bench	Talking people with passing foreground & background	51:10	4,825.5	
V0320/V0321 26	Crossroads up	Curved movement of vehicles up, lines, low contrast	06:04	576.6	
V0320/V0321 27	Crossroads left	Vehicles moving left diagonally, low contrast	23:20	2,224.7	
V0320/V0321 28	Crossroads down	Vehicles moving down diagonally, low contrast	31:23	2,986.2	
V0320/V0321 29	Mother daughter	People towards camera, text, tracking pan	13:10	1,253.4	
V0320/V0321 30	Traffic towards	Vehicles towards camera, text, high contrast	47:06	4,437.0	
V0320/V0321 31	Letter R	Large text object, very limited movement, reflections, 3 colours	29:07	2,748.0	
V0320/V0321 32	Traffic right	Large object movement, vehicles close to camera	33:23	3,174.2	
V0320/V0321 33	Seoul planes	Slow movement, large low contrast & monochromatic areas	21:04	1,986.6	
V0320/V0321 34	Shopping	Diagonal tracking pan of people	06:11	598.5	
V0320/V0321 35	Freeway	Continual movement towards camera, lines, large mono area	07:25	736.4	
V0320/V0321 36	Car side view	Very fast left to right movement, text, trees, buildings, vehicles	22:14	2,111.9	
V0320/V0321 37	Night crossing away	Night time, lines, people away from camera, out of focus	22:02	2,074.3	
V0320/V0321 38	Night crossing twd	Night time, lines, people towards camera, text, vehicles	10:21	1,005.8	
V0320/V0321 39	Skyscraper up	Lines, reflections, strong patterns, pan up, building	17:25	1,676.4	
V0320/V0321 40	Skyscraper down	Lines, reflections, strong patterns, pan down, building	17:15	1,645.1	
V0320/V0321 41	Narita planes	Low contrast monochromatic background, slow movement, text	48:05	4,527.8	
V0320/V0321 42	Cleaning crew	Diagonal movement of people, text, lines	22:04	2,080.6	

Clip Number(s)	Title	Main purposes	Duration (secs : frames)	1080i file size (MB)	Begin ; End
V0320/V0321 43	Out-of-focus neon	In & out of focus neon lights, night time, high contrast	27:29	2,629.0	
V0320/V0321 44	Shinagawa night	Pan across night time, high contrast, dark areas, text	10:19	999.6	
V0320/V0321 45	Girl with pen	(Non) talking head, low movement	26:07	2,466.0	
V0320/V0321 46	White beard	(Non) talking heads, low movement	12:07	1,150.0	
V0320/V0321 47	Tokyo	Overall tint (blue), camera shake, fast movement right, buildings	36:18	3,440.5	
V0320/V0321 48	Shinagawa station	People, patterns, reflections, lines	52:02	4,894.4	