

## **Summary**



### **Vclips VC013A Video Clips for Testing and Optimization of Video Compression**

**Encoder Series – VC013A, E-City**

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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-013-A E-City

<b>Encoder Test Series</b>	VC-013-A E-City
<b>Purpose</b>	Test High Definition (HD) encoders with all variants of movement and lighting
<b>Content</b>	City scenes with fast/slow movement, tracking, pan, zoom, rotation, high contrast, low contrast, bright colours, dull colours, monochromatic areas, scene change, day, night, people, vehicles, talking heads, buildings
<b>Number of clips</b>	55 scenes all provided at sizes: <ul style="list-style-type: none"> <li>• 720p 1280x720, progressive scan (nos. V130nn)</li> <li>• 1080i 1920x1088, interlaced scan (nos. V131nn)</li> </ul> i.e. total 110 clips
<b>Total disk size</b>	110 GBytes
<b>Video format</b>	YUV 4:2:0 planar, 8 bits per pixel
<b>How supplied</b>	On hard disk drive unit (with USB 2.0 and Firewire/1394 interfaces)
<b>Software supplied</b>	YUV viewer YUV field splitter in folder: \Software
<b>Documentation</b>	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 - 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

55 video scenes are provided: each of these is provided at 720p (1280x720, progressive scan) and 1080i (1920x1088, interlaced scan) resolutions (that is 110 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**

These video scenes were all originally filmed in Interlaced format at a resolution of 720 pixels horizontally x 576 pixels vertically.

In order to generate the 720p and 1080i sized sequences, the original sequences were up-sampled.

Vqual had done considerable experimentation and processing 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; maintenance of interlace in the 1080i sequences.

Inevitably, there have been significant compromises, which are most noticeable in the 1080i sequences. In particular, various parts of these sequences can exhibit some colour artefacts, which cannot be removed without substantially adversely affecting the resolution.

#### **Interlace**

These video scenes were all originally filmed in Interlaced format (as is standard).

The 720p sequences have been processed to remove the Interlace; the 1080i sequences have been up-sampled with the Interlace remaining.

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 3.2 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 that after this 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:

```
V13102_Canary_wharf_1920x1088i.yuv
```

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

```
yuvfieldsplit -i V13102_Canary_wharf_1920x1088i.yuv -t  
V13102_top.yuv -b V13102_bot.yuv
```

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

-f <first frame>




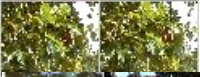



















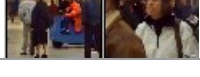
-l <last frame>








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

## **5. Clip summary**

The following pages show a summary of the video clips provided.

Clip Number(s)	Title	Main purposes	Duration (secs: frames)	1080i file size (MB)	Begin-End
V130/V131 01	Colour bars countdown	High contrast, rotating lines, scene change	11:22	931	
V130/V131 02	Canary wharf	Fine lines, zoom out	22:05	1,739	
V130/V131 03	Traffic	Movement in, out	1:07:15	5,296	
V130/V131 04	Cross traffic	Fast crossing movement, scene changes	45:06	3,544	
V130/V131 05	Piccadilly circus	Bright colours, crossing movement	14:20	1,159	
V130/V131 06	Bus junction	Bright colours, movement out, diagonal line	12:01	943	
V130/V131 07	Station bus	Zoom out	36:21	2,886	
V130/V131 08	Gold monument	Monochromatic area, high contrast	10:00	783	
V130/V131 09	Grenadier guards	Synchronised areas of movement	11:20	924	
V130/V131 10	Bridge scenes	Scene changes, water	27:05	2,131	
V130/V131 11	Train in station	Crossing diagonal movement	21:06	1,661	
V130/V131 12	Taxi view	Global motion within window	10:21	849	
V130/V131 13	Crowd	Multiple random movement, people	10:20	846	
V130/V131 14	Crowd close-up	Multiple random movement, people	18:18	1,466	
V130/V131 15	Stars stripes	Few persons, bright colours, detail	17:17	1,385	
V130/V131 16	Packet woman	Person, white areas	7:11	583	
V130/V131 17	Mobile man	Hand-held camera, face	9:21	771	
V130/V131 18	Man eating	Face, crossing in front	19:15	1,535	
V130/V131 19	Hands	Hands, limited movement	18:00	1,410	
V130/V131 20	Legs	Legs, random movement	30:00	2,350	
V130/V131 21	Fast zooms	Fast zooms in and out	23:20	1,864	
V130/V131 22	Neon night 1	High contrast, bright lights, mainly dark	15:07	1,197	
V130/V131 23	Neon night 2	High contrast, mainly bright, diagonal picture	12:10	971	

V130/V131 24	Neon night 3	High contrast, bright lights, bright to dark	14:21	1,163	
V130/V131 25	Bright night	Dark areas, water, detail	12:15	987	
V130/V131 26	Boat night	Dark areas, highlights, movement	22:08	1,748	
V130/V131 27	Leaves	Leaves, random movement	10:00	783	
V130/V131 28	Window car	Leaves reflection, high contrast	17:11	837	
V130/V131 29	Low bridge	Slow movement	11:09	890	
V130/V131 30	Airplane view	Global diagonal pan, low contrast	27:05	2,131	
V130/V131 31	Station	Vehicles in and out, crossing movement	28:00	2,193	
V130/V131 32	One man	Single person crossing diagonal	4:24	392	
V130/V131 33	Wheely car	Car out	3:09	263	
V130/V131 34	Cafe woman	Talking heads, crossing behind	30:01	2,353	
V130/V131 35	Cafe men	Talking heads	15:03	1,184	
V130/V131 36	Woman drinking	Talking heads	15:10	1,206	
V130/V131 37	Blue water	Water, bright colours, zoom out	30:01	2,353	
V130/V131 38	Muddy waters	Low contrast, monochromatic	20:00	1,567	
V130/V131 39	River boat	Water, highlights, crossing movement	11:20	924	
V130/V131 40	Harbour tug	Water, high contrast	13:18	1,075	
V130/V131 41	Sight-seeing boat	Global slow pan, water	41:02	3,218	
V130/V131 42	Bird flight	Fast pan, hand-held camera	7:20	611	
V130/V131 43	Bridge person	Slow pan, subject behind foreground	20:00	1,567	
V130/V131 44	Person track	Fast tracking pan	7:16	595	
V130/V131 45	Walking track	Slow tracking pan	15:04	1,188	
V130/V131 46	Wild moped	Fast pan, small subject, high detail, hand-held	9:19	765	
V130/V131 47	Luggage cart	Slow pan, movement in front/behind, low contrast	13:19	1,078	

V130/V131 48	Cathedral 1	Slow pan down, monochromatic to high detail, contrast	14:19	1,156	
V130/V131 49	Cathedral 2	Slow pan up, high detail	21:15	1,692	
V130/V131 50	Diagonal lines	Low contrast lines, movement out	4:24	385	
V130/V131 51	Angled 1	Low contrast sky, small objects moving	9:23	777	
V130/V131 52	Angled 2	Scene tilt	12:00	940	
V130/V131 53	Angled entrance	Angled cross movement	23:06	1,821	
V130/V131 54	Rotate 1	Rotation left, high detail, monochromatic area	15:20	1,238	
V130/V131 55	Rotate 2	Rotation right, high detail, monochromatic area	6:17	523	