

## **Summary**

**Tektronix**

**Vclips VC301B  
Video Clips for Testing and Optimization of  
Video Compression**

**Decoder Series – VC301B, D-Traffic AVC BP**

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- Worldwide, visit [www.tektronix.com](http://www.tektronix.com) to find contacts in your area.

## **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-301-B D-Traffic-AVC-BP

|                          |   |
|--------------------------|---|
| <b>Decoder Test Set</b>  | VC-301-B D-Traffic-AVC-BP   |
| <b>Purpose</b>           | Test H.264/AVC decoders with typical and extreme values of each bitstream parameter.  |
| <b>Content</b>           | Single scene – traffic moving into, out of and across picture.<br>Most CIF clips are 500 frames, clips with larger frame sizes are shorter.   |
| <b>Standard</b>          | ISO/IEC 14496-10:2003(E)<br>ISO title: Information technology – Coding of audio-visual objects: Part 10: Advanced Video Coding 2003-12-01   |
| <b>Number of clips</b>   | 68 sequences, numbered V30101 to V30168, with the following sizes: <ul style="list-style-type: none"> <li>• 16x16 (1 stream)</li> <li>• 112x896 (1 stream)</li> <li>• 896x112 (1 stream)</li> <li>• 176x144 (3 streams)</li> <li>• 352x288 (57 streams)</li> <li>• 720x576 (2 streams)</li> <li>• 1280x720 (1 stream)</li> <li>• 1920x1088 (1 stream)</li> <li>• 4096x2304 (1 stream)</li> </ul> <p>plus nine YUV source files (one per input size)</p> |
| <b>Total disk size</b>   | 161 MBytes (.264 files)<br>636 MBytes (.yuv files)  |
| <b>Video format</b>      | Compressed ".264" video files as per AVC Visual standard  |
| <b>How supplied</b>      | 1 computer DVD  |
| <b>Software supplied</b> | YUV sequence viewer<br>".264" to YUV decoder<br>in folder:        \Software   |
| <b>Documentation</b>     | PDF of this manual<br>in folder:        \Documentation  |

## 1. Introduction

This set of video sequences is designed to test an H.264/AVC Baseline Profile decoder with a wide variety of bitstream parameters. This includes the syntax elements in the Sequence Parameter and Picture Parameter Sets, as well as higher-level encoder controls such as the frequency of Intra frames.

Syntax element tests are done by individually enabling all the different permissible bit-field options within the header in the clips specified. Some clips are also provided with multiple combinations and with all permissible bit-fields enabled.

A single video scene is provided: all the variations are done on this single video scene.

## 2. Information supplied

The following pages list:

- the basic details of the video sequence (source data, contents of the scene);
- the settings used for each sequence.

In addition, on the DVD there are provided:

- 'Trace' information for the headers and first few frames of each clip (see below);
- a spreadsheet which lists all the clips and shows which Header fields are enabled and the values used (Microsoft Excel<sup>®</sup> format);
- the original YUV source video used to encode the video sequences.

## 2.1. 'Trace' information provided

The 'Trace' files provide a plain-text parsing/decoding of the headers and first few frames of each clip.

Two Trace files are provided for each clip:

- ❑ Parse bitstream
- ❑ Interpret

Both of these file types have the file extension '.vpt', although they only contain standard ASCII text data and can be viewed with any text viewer.

(These Trace files were generated using the [MTS4EA](#) video compression analysis tool, available from [Tektronix](#).)

### 2.1.1 Parse bitstream Trace file

The Parse bitstream Trace file lists all the bits of the bitstream, divided into the individual bitstream fields:

```
0000 0000 ---- ---- ---- ---- ---- ---- (0x00000000,7) : ZERO_BYTE
0000 0000 0000 0000 0000 0001 ---- ---- (0x00000001,7) : START_CODE_PREFIX_ONE_3BYTES
0--- ---- ---- ---- ---- ---- ---- ---- (0x00000004,7) : FORBIDDEN_ZERO_BIT
11-- ---- ---- ---- ---- ---- ---- ---- (0x00000004,6) : NAL_REF_IDC
0011 1--- ---- ---- ---- ---- ---- ---- (0x00000004,4) : NAL_UNIT_TYPE
0100 0010 ---- ---- ---- ---- ---- ---- (0x00000005,7) : PROFILE_IDC
0--- ---- ---- ---- ---- ---- ---- ---- (0x00000006,7) : CONSTRAINT_SET0_FLAG
0--- ---- ---- ---- ---- ---- ---- ---- (0x00000006,6) : CONSTRAINT_SET1_FLAG
0--- ---- ---- ---- ---- ---- ---- ---- (0x00000006,5) : CONSTRAINT_SET2_FLAG
0000 0--- ---- ---- ---- ---- ---- ---- (0x00000006,4) : RESERVED_ZERO_5BITS
0001 0100 ---- ---- ---- ---- ---- ---- (0x00000007,7) : LEVEL_IDC
1--- ---- ---- ---- ---- ---- ---- ---- (0x00000008,7) : SEQ_PARAMETER_SET_ID
0011 0--- ---- ---- ---- ---- ---- ---- (0x00000008,6) : LOG2_MAX_FRAME_NUM_MINUS4
1--- ---- ---- ---- ---- ---- ---- ---- (0x00000008,1) : PIC_ORDER_CNT_TYPE
0010 1--- ---- ---- ---- ---- ---- ---- (0x00000008,0) : LOG2_MAX_PIC_ORDER_CNT_LSB_MINUS4
```

The above information is split into three sections:

- ❑ the section of '0's and '1's on the left gives the bits in the bitstream, in the order they occur;
- ❑ the data in brackets (0x00000004,7) is the hex address byte address in the bitstream and the starting bit position in the bitstream, where 7 is the most-significant bit (occurring first in the byte) and 0 is the least-significant bit (occurring last in the byte);
- ❑ the name given is the standard name for the bitstream field.

Each of the Parse bitstream Trace files has a name of the form:

V301nn\_B\_D-Traffic\_AVC\_BP\_xxx\_parse\_bitstream.vpt

(where 'nn' is the last 2 digits of the clip number and 'xxx' is a short clip name)

### 2.1.2 Interpret Trace file

The Interpret Trace file reads the values in the bitstream fields and interprets them i.e. explains what the value given means:

```
(0x00000000,7) [BSN]      zero_byte = 0x00
(0x00000001,7) [BSN]      start_code_prefix_one_3bytes = 0x000001
(0x00000004,7) [NAL]      forbidden_zero_bit = 0
(0x00000004,6) [NAL]      nal_ref_idc = 3 : Reference slice or SPS or PPS
(0x00000004,4) [NAL]      nal_unit_type = 7 : Sequence Parameter Set (SPS)
(0x00000005,7) [SPS]      profile_idc = 66 : Baseline profile
(0x00000006,7) [SPS]      constraint_set0_flag = 0 : May or may not obey A.2.1 constraints
(0x00000006,6) [SPS]      constraint_set1_flag = 0 : May or may not obey A.2.2 constraints
(0x00000006,5) [SPS]      constraint_set2_flag = 0 : May or may not obey A.2.3 constraints
(0x00000006,4) [SPS]      reserved_zero_5bits = '00000'
(0x00000007,7) [SPS]      level_idc = 20 : Level 2
(0x00000008,7) [SPS]      seq_parameter_set_id = 0 (bitstream values: length=1 bits,
seq_parameter_set_id=0x1)
(0x00000008,6) [SPS]      log2_max_frame_num_minus4 = 5 : MaxFrameNum = 512 (bitstream values:
length=5 bits, log2_max_frame_num_minus4=0x6)
(0x00000008,1) [SPS]      pic_order_cnt_type = 0
(0x00000008,0) [SPS]      log2_max_pic_order_cnt_lsb_minus4 = 4 : MaxPicOrderCntLsb = 256
(bitstream values: length=5 bits, log2_max_pic_order_cnt_lsb_minus4=0x5)
```

The above information is split into three sections:

- ❑ section on the left in brackets (0x00000004,7) is the hex address byte address in the bitstream and the starting bit position in the bitstream, where 7 is the most-significant bit (occurring first in the byte) and 0 is the least-significant bit (occurring last in the byte);
- ❑ the title (such as [SPS]) is the general syntax level of the bitstream element (e.g. SPS = Sequence Parameter Set);
- ❑ the section on the right gives the interpreted value of the bitstream data, i.e. what the bitstream data means.

Each of the Interpret Trace files has a name:

V301nn\_B\_D-Traffic\_AVC\_BP\_xxx\_interpret.vpt

(where 'nn' is the last 2 digits of the clip number and 'xxx' is a short clip name)

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### 3. Software supplied

The following software is supplied:

- ".264" to YUV decoder;
- YUV sequence viewer.

#### 3.1. YUV sequence viewer

This program is called: `YUVSequenceViewer.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.

YUVSequenceViewer tries to work out the size of the video frames from the filename (if it is given in the filename): if there are no clues from the filename then the user must enter the size of the frames.

On the 'Tool' menu there is an option to subtract two YUV sequences, to look for differences between two files. A zero difference results in a constant grey image. To make these differences more visible, select the menu 'View' then 'Options' then enter a number into the 'Subtraction scale' box: the larger the number, the more the differences are multiplied.

## 3.2. ".264" to YUV decoder

This program is called: `decode264.exe`  
and is located in the folder: `\Software`

It is a command-line only tool (to be called from within a DOS/Command Prompt box).

The syntax for use is:


```
decode264 <input file> <output file>
```

Where the file names include spaces, the filenames must be included within quotes, e.g.

```
decode264 "input 1" "C:\Temp\output 1"
```

## 4. Clip Set Details

### 4.1. General clip set details

| CLIP SET DETAILS |                                | Begin   End   | Title          |
|------------------|--------------------------------|---|----------------|
|                  |                                |    | <b>Traffic</b> |
| 1.               | Number(s)                      | V30101 to V30168  |                |
|                  | Filename(s)                    | V30101_?_D_Traffic_AVC_BP_*.264 to<br>V30168_?_D_Traffic_AVC_BP_*.264   |                |
| 1.               | Title                          | Traffic   |                |
| 2.               | Description                    | Vehicles into picture, out of picture, across picture   |                |
| 3.               | Main purposes/tests            | Check different options in Header are correctly decoded   |                |
| 4.               | Size(s), horizontal x vertical | <ul style="list-style-type: none"> <li>• 16x16 (1 stream)</li> <li>• 112x896 (1 stream)</li> <li>• 896x112 (1 stream)</li> <li>• 176x144 (3 streams)</li> <li>• 352x288 (57 streams)</li> <li>• 720x576 (2 streams)</li> <li>• 1280x720 (1 stream)</li> <li>• 1920x1088 (1 stream)</li> <li>• 4096x2304 (1 stream)</li> </ul> |                |
| 5.               | Video format                   | H264 ISO/IEC 14496-10 (source: YUV 4:2:0 Planar, 8 bits/sample)   |                |
| 6.               | Number of frames               | 500 (some encoded clips are shorter)  |                |
| 7.               | Source frame rate              | 25 fps  |                |
| 8.               | Clip duration (secs:frames)    | 20 : 00   |                |
| 9.               | File size on disc (MB)         | 161 MBytes (.264 files)<br>636 MBytes (.yuv files)  |                |
| 10.              | Original video format          | 720x576 DV, interlaced  |                |
| 11.              | Keywords                       | KW-vehicles, KW-movement_in, KW-movement_out, KW-cross_movement, KW-high_contrast, KW-bright_colours, KW-leaves, KW-monochromatic_area  |                |

|    | FEATURES             | Qty/amount | Notes |
|----|----------------------|------------|-------|
| 1. | <b>GLOBAL MOTION</b> |            |       |
| 2. | Fast pan             | -          |       |
| 3. | Pan                  | -          |       |
| 4. | Tracking pan         | -          |       |
| 5. | Zoom in              | -          |       |
| 6. | Zoom out             | -          |       |
| 7. | Scroll               | -          |       |
| 8. | Rotate               | -          |       |
| 9. | Hand-held camera     | -          |       |

|     |                                    |                 |            |
|-----|------------------------------------|-----------------|------------|
| 10. | <b>OBJECT MOTION</b>               |                 |            |
| 11. | Movement out of picture            | Lots, some fast |            |
| 12. | Movement into picture              | Lots, some fast |            |
| 13. | Movement across picture            | Lots, some fast |            |
| 14. | Diagonal movement                  | -               |            |
| 15. | Subjects behind foreground objects | Some            |            |
| 16. | Low movement                       | -               |            |
| 17. | <b>COLOURS &amp; CONTRAST</b>      |                 |            |
| 18. | Light picture                      | Areas           |            |
| 19. | Dark picture                       | Areas           |            |
| 20. | Bright colours                     | Areas           |            |
| 21. | Dull colours                       | Areas           |            |
| 22. | Fine detail pattern                | Some            |            |
| 23. | High contrast areas                | Several         |            |
| 24. | Large monochromatic area           | Some            |            |
| 25. | <b>SCENE CONTENT</b>               |                 |            |
| 26. | Out-of-focus                       | -               |            |
| 27. | Fine lines/moiré patterns          | Some            |            |
| 28. | Reflections                        | Some            |            |
| 29. | Scene change                       | -               |            |
| 30. | <b>SCENE SUBJECTS</b>              |                 |            |
| 31. | People                             | -               |            |
| 32. | Faces                              | -               |            |
| 33. | Vehicles                           | Lots            |            |
| 34. | Buildings                          | -               |            |
| 35. | Trees                              | Some            | Background |
| 36. | Text                               | -               |            |
| 37. | Talking head                       | -               |            |
| 38. | Water                              | -               |            |
| 39. | Leaves                             | Some            | Background |
| 40. | Sky                                | -               |            |
| 41. | Clouds                             | -               |            |
| 42. | Round objects                      | -               |            |
| 43. | <b>LIGHT CONDITIONS</b>            |                 |            |
| 44. | Bright sunlight                    | Some            |            |
| 45. | Shaded areas                       | Some            |            |
| 46. | Bright daylight                    | Some            |            |
| 47. | Dull daylight                      | -               |            |
| 48. | Twilight                           | -               |            |
| 49. | Night                              | -               |            |
| 50. | Backlighting                       | -               |            |

## 4.2. Summary of clips

|        |   |
|--------|---|
| V30101 | Baseline Profile stream   |
| V30102 | Extended profile stream, but specifying conformance to Baseline Profile in constraint flags   |
| V30103 | Bitstream with <code>sequence_parameter_set_id</code> equal to 31   |
| V30104 | Bitstream with <code>log2_max_frame_num_minus4</code> set to 0.   |
| V30105 | Bitstream with <code>log2_max_frame_num_minus4</code> set to 12.  |
| V30106 | Bitstream with <code>pic_order_cnt_type</code> set to 1   |
| V30107 | Bitstream with <code>pic_order_cnt_type</code> set to 2   |
| V30108 | Bitstream with <code>log2_max_pic_order_cnt_lsb_minus4</code> set to 0  |
| V30109 | Bitstream with <code>log2_max_pic_order_cnt_lsb_minus4</code> set to 12   |
| V30110 | Bitstream with <code>num_ref_frames_in_pic_order_cnt_cycle</code> equal to 255  |
| V30111 | Bitstream with <code>num_ref_frames_in_pic_order_cnt_cycle</code> equal to 0  |
| V30112 | Bitstream with <code>delta_pic_order_always_zero</code> equal to 1  |
| V30113 | Bitstream with <code>num_ref_frames</code> equal to 1   |
| V30114 | Bitstream with <code>num_ref_frames</code> equal to 6   |
| V30115 | Bitstream with <code>gaps_in_frame_num_value_allowed_flag</code> equal to 1   |
| V30116 | Bitstream with <code>pic_width_in_mbs_minus1</code> and <code>pic_height_in_map_units_minus1</code> both equal to 0 (i.e. 1 macroblock per picture) |
| V30117 | Bitstream with <code>pic_width_in_mbs_minus1</code> equal to 55 and <code>pic_height_in_map_units_minus1</code> equal to 6                          |
| V30118 | Bitstream with <code>pic_width_in_mbs_minus1</code> equal to 6 and <code>pic_height_in_map_units_minus1</code> equal to 55                          |
| V30119 | Bitstream with <code>direct_8x8_inference</code> set to 1   |
| V30120 | Bitstream using nominal frame cropping  |
| V30121 | Bitstream using extreme frame cropping  |
| V30122 | bitstream with <code>pic_parameter_set_id</code> equal to 255   |
| V30123 | Bitstream with <code>pic_order_present_flag</code> equal to 1   |
| V30124 | Bitstream with <code>num_ref_idx_l0</code> equal to 31  |
| V30125 | Bitstream with <code>num_ref_idx_l1</code> equal to 31  |
| V30126 | Stream with initial luma quantisation parameter equal to 0  |
| V30127 | Stream with initial luma quantisation parameter equal to 51   |
| V30128 | Stream with initial SP luma quantisation parameter equal to 0   |
| V30129 | Stream with initial SP luma quantisation parameter equal to 51  |
| V30130 | Bitstream with <code>chroma_qp_index_offset</code> equal to -12   |
| V30131 | Bitstream with <code>chroma_qp_index_offset</code> equal to 12  |
| V30132 | Bitstream with <code>deblocking_filter_control_present_flag</code> equal to 1   |
| V30133 | Bitstream using constrained Intra prediction  |
| V30134 | Bitstream using the <code>redundant_pic_cnt</code> syntax element.  |
| V30135 | Bitstream with no VUI parameters  |

|        |   |
|--------|---|
| V30136 | Extreme values in Extended Sample Aspect Ratio                  |
| V30137 | Useless values in Extended Sample Aspect Ratio                  |
| V30138 | Square aspect ratio   |
| V30139 | "Overscan appropriate" specified                                |
| V30140 | Video signal type information, low values                       |
| V30141 | Video signal type information, high values                      |
| V30142 | Video signal type information, with colour description          |
| V30143 | Video signal type information, with colour description          |
| V30144 | Chroma sampling location information present, location type = 0 |
| V30145 | Chroma sampling location information present, location type = 5 |
| V30146 | Extremely low frame rate  |
| V30147 | Extremely high frame rate                                       |
| V30148 | Frame rate not fixed  |
| V30149 | Bitstream restrictions, default values                          |
| V30150 | Bitstream restrictions, most permissive values                  |
| V30151 | Intra frames  |
| V30152 | Bitsream using only 16x16 Inter-prediction                      |
| V30153 | Bitsream using only 16x8 Inter-prediction                       |
| V30154 | Bitsream using only 8x16 Inter-prediction                       |
| V30155 | Bitsream using only 8x8 Inter-prediction                        |
| V30156 | Bitsream using only 8x4 Inter-prediction                        |
| V30157 | Bitsream using only 4x8 Inter-prediction                        |
| V30158 | Bitsream using only 4x4 Inter-prediction                        |
| V30159 | Multiple parameters test  |
| V30160 | Simple stream, compliant with all three profiles                |
| V30161 | Low complexity QCIF-sized stream                                |
| V30162 | QCIF-sized stream   |
| V30163 | QCIF-sized stream, many parameters altered                      |
| V30164 | 625SD-sized stream  |
| V30165 | 625SD-sized stream, many parameters altered                     |
| V30166 | 720p-sized stream   |
| V30167 | 1080HD-sized stream   |
| V30168 | Large stream, 4096x2304   |

# Summary



## **Vclips VC301B Video Clips for Testing and Optimization of Video Compression**

**Encoder Series – VC301B, D-Traffic AVC BP**

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### **Contacting Tektronix**

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0--- ---- ---- ---- ---- ---- ---- ---- (0x00000004,7) : FORBIDDEN_ZERO_BIT
11-- ---- ---- ---- ---- ---- ---- ---- (0x00000004,6) : NAL_REF_IDC
0011 1--- ---- ---- ---- ---- ---- ---- (0x00000004,4) : NAL_UNIT_TYPE
0100 0010 ---- ---- ---- ---- ---- ---- (0x00000005,7) : PROFILE_IDC
0--- ---- ---- ---- ---- ---- ---- ---- (0x00000006,7) : CONSTRAINT_SET0_FLAG
0--- ---- ---- ---- ---- ---- ---- ---- (0x00000006,6) : CONSTRAINT_SET1_FLAG
0--- ---- ---- ---- ---- ---- ---- ---- (0x00000006,5) : CONSTRAINT_SET2_FLAG
0000 0--- ---- ---- ---- ---- ---- ---- (0x00000006,4) : RESERVED_ZERO_5BITS
0001 0100 ---- ---- ---- ---- ---- ---- (0x00000007,7) : LEVEL_IDC
1--- ---- ---- ---- ---- ---- ---- ---- (0x00000008,7) : SEQ_PARAMETER_SET_ID
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1--- ---- ---- ---- ---- ---- ---- ---- (0x00000008,1) : PIC_ORDER_CNT_TYPE
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Each of the Parse bitstream Trace files has a name of the form:

V301nn\_B\_D-Traffic\_AVC\_BP\_xxx\_parse\_bitstream.vpt

(where 'nn' is the last 2 digits of the clip number and 'xxx' is a short clip name)

### 2.1.2 Interpret Trace file

The Interpret Trace file reads the values in the bitstream fields and interprets them i.e. explains what the value given means:

```
(0x00000000,7) [BSN] zero_byte = 0x00
(0x00000001,7) [BSN] start_code_prefix_one_3bytes = 0x000001
(0x00000004,7) [NAL] forbidden_zero_bit = 0
(0x00000004,6) [NAL] nal_ref_idc = 3 : Reference slice or SPS or PPS
(0x00000004,4) [NAL] nal_unit_type = 7 : Sequence Parameter Set (SPS)
(0x00000005,7) [SPS] profile_idc = 66 : Baseline profile
(0x00000006,7) [SPS] constraint_set0_flag = 0 : May or may not obey A.2.1 constraints
(0x00000006,6) [SPS] constraint_set1_flag = 0 : May or may not obey A.2.2 constraints
(0x00000006,5) [SPS] constraint_set2_flag = 0 : May or may not obey A.2.3 constraints
(0x00000006,4) [SPS] reserved_zero_5bits = '00000'
(0x00000007,7) [SPS] level_idc = 20 : Level 2
(0x00000008,7) [SPS] seq_parameter_set_id = 0 (bitstream values: length=1 bits,
seq_parameter_set_id=0x1)
(0x00000008,6) [SPS] log2_max_frame_num_minus4 = 5 : MaxFrameNum = 512 (bitstream values:
length=5 bits, log2_max_frame_num_minus4=0x6)
(0x00000008,1) [SPS] pic_order_cnt_type = 0
(0x00000008,0) [SPS] log2_max_pic_order_cnt_lsb_minus4 = 4 : MaxPicOrderCntLsb = 256
(bitstream values: length=5 bits, log2_max_pic_order_cnt_lsb_minus4=0x5)
```

The above information is split into three sections:

- ❑ section on the left in brackets (0x00000004,7) is the hex address byte address in the bitstream and the starting bit position in the bitstream, where 7 is the most-significant bit (occurring first in the byte) and 0 is the least-significant bit (occurring last in the byte);
- ❑ the title (such as [SPS]) is the general syntax level of the bitstream element (e.g. SPS = Sequence Parameter Set);
- ❑ the section on the right gives the interpreted value of the bitstream data, i.e. what the bitstream data means.

Each of the Interpret Trace files has a name:

V301nn\_B\_D-Traffic\_AVC\_BP\_xxx\_interpret.vpt

(where 'nn' is the last 2 digits of the clip number and 'xxx' is a short clip name)

---

### 3. Software supplied

The following software is supplied:

- ".264" to YUV decoder;
- YUV sequence viewer.

#### 3.1. YUV sequence viewer

This program is called: `YUVSequenceViewer.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.

YUVSequenceViewer tries to work out the size of the video frames from the filename (if it is given in the filename): if there are no clues from the filename then the user must enter the size of the frames.

On the 'Tool' menu there is an option to subtract two YUV sequences, to look for differences between two files. A zero difference results in a constant grey image. To make these differences more visible, select the menu 'View' then 'Options' then enter a number into the 'Subtraction scale' box: the larger the number, the more the differences are multiplied.

## 3.2. ".264" to YUV decoder

This program is called: `decode264.exe`  
and is located in the folder: `\Software`

It is a command-line only tool (to be called from within a DOS/Command Prompt box).

The syntax for use is:


```
decode264 <input file> <output file>
```

Where the file names include spaces, the filenames must be included within quotes, e.g.

```
decode264 "input 1" "C:\Temp\output 1"
```

## 4. Clip Set Details

### 4.1. General clip set details

| CLIP SET DETAILS |                                | Begin   End   | Title          |
|------------------|--------------------------------|---|----------------|
|                  |                                |    | <b>Traffic</b> |
| 1.               | Number(s)                      | V30101 to V30168  |                |
|                  | Filename(s)                    | V30101_?_D_Traffic_AVC_BP_*.264 to<br>V30168_?_D_Traffic_AVC_BP_*.264   |                |
| 1.               | Title                          | Traffic   |                |
| 2.               | Description                    | Vehicles into picture, out of picture, across picture   |                |
| 3.               | Main purposes/tests            | Check different options in Header are correctly decoded   |                |
| 4.               | Size(s), horizontal x vertical | <ul style="list-style-type: none"> <li>• 16x16 (1 stream)</li> <li>• 112x896 (1 stream)</li> <li>• 896x112 (1 stream)</li> <li>• 176x144 (3 streams)</li> <li>• 352x288 (57 streams)</li> <li>• 720x576 (2 streams)</li> <li>• 1280x720 (1 stream)</li> <li>• 1920x1088 (1 stream)</li> <li>• 4096x2304 (1 stream)</li> </ul> |                |
| 5.               | Video format                   | H264 ISO/IEC 14496-10 (source: YUV 4:2:0 Planar, 8 bits/sample)   |                |
| 6.               | Number of frames               | 500 (some encoded clips are shorter)  |                |
| 7.               | Source frame rate              | 25 fps  |                |
| 8.               | Clip duration (secs:frames)    | 20 : 00   |                |
| 9.               | File size on disc (MB)         | 161 MBytes (.264 files)<br>636 MBytes (.yuv files)  |                |
| 10.              | Original video format          | 720x576 DV, interlaced  |                |
| 11.              | Keywords                       | KW-vehicles, KW-movement_in, KW-movement_out, KW-cross_movement, KW-high_contrast, KW-bright_colours, KW-leaves, KW-monochromatic_area  |                |

|    | FEATURES             | Qty/amount | Notes |
|----|----------------------|------------|-------|
| 1. | <b>GLOBAL MOTION</b> |            |       |
| 2. | Fast pan             | -          |       |
| 3. | Pan                  | -          |       |
| 4. | Tracking pan         | -          |       |
| 5. | Zoom in              | -          |       |
| 6. | Zoom out             | -          |       |
| 7. | Scroll               | -          |       |
| 8. | Rotate               | -          |       |
| 9. | Hand-held camera     | -          |       |

|     |                                    |                 |            |
|-----|------------------------------------|-----------------|------------|
| 10. | <b>OBJECT MOTION</b>               |                 |            |
| 11. | Movement out of picture            | Lots, some fast |            |
| 12. | Movement into picture              | Lots, some fast |            |
| 13. | Movement across picture            | Lots, some fast |            |
| 14. | Diagonal movement                  | -               |            |
| 15. | Subjects behind foreground objects | Some            |            |
| 16. | Low movement                       | -               |            |
| 17. | <b>COLOURS &amp; CONTRAST</b>      |                 |            |
| 18. | Light picture                      | Areas           |            |
| 19. | Dark picture                       | Areas           |            |
| 20. | Bright colours                     | Areas           |            |
| 21. | Dull colours                       | Areas           |            |
| 22. | Fine detail pattern                | Some            |            |
| 23. | High contrast areas                | Several         |            |
| 24. | Large monochromatic area           | Some            |            |
| 25. | <b>SCENE CONTENT</b>               |                 |            |
| 26. | Out-of-focus                       | -               |            |
| 27. | Fine lines/moiré patterns          | Some            |            |
| 28. | Reflections                        | Some            |            |
| 29. | Scene change                       | -               |            |
| 30. | <b>SCENE SUBJECTS</b>              |                 |            |
| 31. | People                             | -               |            |
| 32. | Faces                              | -               |            |
| 33. | Vehicles                           | Lots            |            |
| 34. | Buildings                          | -               |            |
| 35. | Trees                              | Some            | Background |
| 36. | Text                               | -               |            |
| 37. | Talking head                       | -               |            |
| 38. | Water                              | -               |            |
| 39. | Leaves                             | Some            | Background |
| 40. | Sky                                | -               |            |
| 41. | Clouds                             | -               |            |
| 42. | Round objects                      | -               |            |
| 43. | <b>LIGHT CONDITIONS</b>            |                 |            |
| 44. | Bright sunlight                    | Some            |            |
| 45. | Shaded areas                       | Some            |            |
| 46. | Bright daylight                    | Some            |            |
| 47. | Dull daylight                      | -               |            |
| 48. | Twilight                           | -               |            |
| 49. | Night                              | -               |            |
| 50. | Backlighting                       | -               |            |

## 4.2. Summary of clips

|        |   |
|--------|---|
| V30101 | Baseline Profile stream   |
| V30102 | Extended profile stream, but specifying conformance to Baseline Profile in constraint flags   |
| V30103 | Bitstream with <code>sequence_parameter_set_id</code> equal to 31   |
| V30104 | Bitstream with <code>log2_max_frame_num_minus4</code> set to 0.   |
| V30105 | Bitstream with <code>log2_max_frame_num_minus4</code> set to 12.  |
| V30106 | Bitstream with <code>pic_order_cnt_type</code> set to 1   |
| V30107 | Bitstream with <code>pic_order_cnt_type</code> set to 2   |
| V30108 | Bitstream with <code>log2_max_pic_order_cnt_lsb_minus4</code> set to 0  |
| V30109 | Bitstream with <code>log2_max_pic_order_cnt_lsb_minus4</code> set to 12   |
| V30110 | Bitstream with <code>num_ref_frames_in_pic_order_cnt_cycle</code> equal to 255  |
| V30111 | Bitstream with <code>num_ref_frames_in_pic_order_cnt_cycle</code> equal to 0  |
| V30112 | Bitstream with <code>delta_pic_order_always_zero</code> equal to 1  |
| V30113 | Bitstream with <code>num_ref_frames</code> equal to 1   |
| V30114 | Bitstream with <code>num_ref_frames</code> equal to 6   |
| V30115 | Bitstream with <code>gaps_in_frame_num_value_allowed_flag</code> equal to 1   |
| V30116 | Bitstream with <code>pic_width_in_mbs_minus1</code> and <code>pic_height_in_map_units_minus1</code> both equal to 0 (i.e. 1 macroblock per picture) |
| V30117 | Bitstream with <code>pic_width_in_mbs_minus1</code> equal to 55 and <code>pic_height_in_map_units_minus1</code> equal to 6                          |
| V30118 | Bitstream with <code>pic_width_in_mbs_minus1</code> equal to 6 and <code>pic_height_in_map_units_minus1</code> equal to 55                          |
| V30119 | Bitstream with <code>direct_8x8_inference</code> set to 1   |
| V30120 | Bitstream using nominal frame cropping  |
| V30121 | Bitstream using extreme frame cropping  |
| V30122 | bitstream with <code>pic_parameter_set_id</code> equal to 255   |
| V30123 | Bitstream with <code>pic_order_present_flag</code> equal to 1   |
| V30124 | Bitstream with <code>num_ref_idx_l0</code> equal to 31  |
| V30125 | Bitstream with <code>num_ref_idx_l1</code> equal to 31  |
| V30126 | Stream with initial luma quantisation parameter equal to 0  |
| V30127 | Stream with initial luma quantisation parameter equal to 51   |
| V30128 | Stream with initial SP luma quantisation parameter equal to 0   |
| V30129 | Stream with initial SP luma quantisation parameter equal to 51  |
| V30130 | Bitstream with <code>chroma_qp_index_offset</code> equal to -12   |
| V30131 | Bitstream with <code>chroma_qp_index_offset</code> equal to 12  |
| V30132 | Bitstream with <code>deblocking_filter_control_present_flag</code> equal to 1   |
| V30133 | Bitstream using constrained Intra prediction  |
| V30134 | Bitstream using the <code>redundant_pic_cnt</code> syntax element.  |
| V30135 | Bitstream with no VUI parameters  |

|        |   |
|--------|---|
| V30136 | Extreme values in Extended Sample Aspect Ratio                  |
| V30137 | Useless values in Extended Sample Aspect Ratio                  |
| V30138 | Square aspect ratio   |
| V30139 | "Overscan appropriate" specified                                |
| V30140 | Video signal type information, low values                       |
| V30141 | Video signal type information, high values                      |
| V30142 | Video signal type information, with colour description          |
| V30143 | Video signal type information, with colour description          |
| V30144 | Chroma sampling location information present, location type = 0 |
| V30145 | Chroma sampling location information present, location type = 5 |
| V30146 | Extremely low frame rate  |
| V30147 | Extremely high frame rate                                       |
| V30148 | Frame rate not fixed  |
| V30149 | Bitstream restrictions, default values                          |
| V30150 | Bitstream restrictions, most permissive values                  |
| V30151 | Intra frames  |
| V30152 | Bitsream using only 16x16 Inter-prediction                      |
| V30153 | Bitsream using only 16x8 Inter-prediction                       |
| V30154 | Bitsream using only 8x16 Inter-prediction                       |
| V30155 | Bitsream using only 8x8 Inter-prediction                        |
| V30156 | Bitsream using only 8x4 Inter-prediction                        |
| V30157 | Bitsream using only 4x8 Inter-prediction                        |
| V30158 | Bitsream using only 4x4 Inter-prediction                        |
| V30159 | Multiple parameters test  |
| V30160 | Simple stream, compliant with all three profiles                |
| V30161 | Low complexity QCIF-sized stream                                |
| V30162 | QCIF-sized stream   |
| V30163 | QCIF-sized stream, many parameters altered                      |
| V30164 | 625SD-sized stream  |
| V30165 | 625SD-sized stream, many parameters altered                     |
| V30166 | 720p-sized stream   |
| V30167 | 1080HD-sized stream   |
| V30168 | Large stream, 4096x2304   |