

Summary



Vclips VC108B Video Clips for Testing and Optimization of Video Compression

Decoder Series – VC108B, D-Traffic MP4 ASP V

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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-108-A D-Traffic-MP4-ASP-V

Decoder Test Set	VC-108-A D-Traffic-MP4-ASP-V
Purpose	Test MPEG-4 Advanced Simple Profile decoders with all variants of bit fields within the MPEG-4 visual stream VOP
Content	Single scene – traffic moving into, out of and across picture 500 frames
Standard	ISO/IEC 14496-2:2001(E) ISO title: Information technology – Coding of audio-visual objects: Part 2: Visual 2 nd Edition 2001-12-01
Number of clips	55 sequences, numbered V10801 to V10855: <ul style="list-style-type: none"> • 352x288 (40 streams) • 352x576 (4 streams) • 720x576 (11 streams) <p>i.e. total 55 clips plus five YUV source videos</p>
Total disk size	179 Mbytes (compressed video files only)
Video format	Compressed ".m4v" video files as per MPEG-4 Part 2 Visual standard
How supplied	1 computer DVD
Software supplied	YUV sequence viewer ".m4v" to YUV decoder in folder: \Software on disk 1
Documentation	PDF of this manual in folder: \Documentation on disk 1

1. Introduction

This set of video sequences is designed to test the parts of an MPEG-4 Advanced Simple Profile decoder which decode the VOP part of the video bitstream, i.e. the VideoObjectPlane.

For the purposes of these tests the VOP is defined as comprising those sections of the standard which are referred to by the VideoObjectPlane() pseudo-function in section 6.2.5 of the MPEG-4 standard.

This is done by individually enabling all the different permissible bit-field options within the VOP 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 CD there is provided:

- 'Trace' information for some of the VOPs of each clip (the 'Trace' information is ~1Mbyte per VOP, so not all VOPs are detailed, but a relevant number are chosen - see below);
- where relevant, the 'Trace' information for the 'Header' of the sequence (the Header comprises all syntactic elements higher than the VOP);
- a spreadsheet which lists all the clips and shows which VOP fields (and Header fields) are enabled and the values used (Microsoft Excel[®] format);
- the original YUV source video used to encode the video sequences.

2.1. 'Trace' information provided

The 'Trace' files provide a parsing/decoding of the header and the first few VOPs of each clip, into the bitstream fields as listed in the standard.

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 0000 0000 0000 0001 1011 0000 (0x00000000,7) : VISUAL_OBJECT_SEQUENCE_START_CODE
0000 0011 ---- ---- ---- ---- ---- (0x00000004,7) : PROFILE_AND_LEVEL_INDICATION
0000 0000 0000 0000 0000 0001 1011 0101 (0x00000005,7) : VISUAL_OBJECT_START_CODE
0--- ---- ---- ---- ---- ---- ---- (0x00000009,7) : IS_VISUAL_OBJECT_IDENTIFIER
0001 ---- ---- ---- ---- ---- ---- (0x00000009,6) : VISUAL_OBJECT_TYPE
0--- ---- ---- ---- ---- ---- ---- (0x00000009,2) : VIDEO_SIGNAL_TYPE
01-- ---- ---- ---- ---- ---- ---- (0x00000009,1) : STUFFING_BITS
0000 0000 0000 0000 0000 0001 0000 0000 (0x0000000A,7) : VIDEO_OBJECT_START_CODE
0000 0000 0000 0000 0000 0001 0010 0000 (0x0000000E,7) : VIDEO_OBJECT_LAYER_START_CODE
0--- ---- ---- ---- ---- ---- ---- (0x00000012,7) : RANDOM_ACCESSIBLE_VOL
0000 0001 ---- ---- ---- ---- ---- (0x00000012,6) : VIDEO_OBJECT_TYPE_INDICATION
0--- ---- ---- ---- ---- ---- ---- (0x00000013,6) : IS_OBJECT_LAYER_IDENTIFIER
0001 ---- ---- ---- ---- ---- ---- (0x00000013,5) : ASPECT_RATIO_INFO
0--- ---- ---- ---- ---- ---- ---- (0x00000013,1) : VOL_CONTROL_PARAMETERS
00-- ---- ---- ---- ---- ---- ---- (0x00000013,0) : VIDEO_OBJECT_LAYER_SHAPE
1--- ---- ---- ---- ---- ---- ---- (0x00000014,6) : MARKER_BIT

```

The above information is split into 3 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:

V108nn_D-Traffic_MP4_ASP_VOP_xxx_parse_bitstream.vpt

(where 'nn' is the last 2 digits of the clip number)

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) [VOS] {MP4} visual_object_sequence_start_code = 0xb0 (0xB0)
MPEG-4 Simple/Level 3
(0x00000005,7) [VO ] {MP4} visual_object_start_code = 0x1b5 (0x1B5)
(0x00000009,7) [VO ] {MP4} is_visual_object_identifier = 0
(0x00000009,6) [VO ] {MP4} visual_object_type = 0x1
(0x00000009,2) [VO ] {MP4} video_signal_type = 0
(0x00000009,1) [VOP] {MP4} Stuffing bits = 0x1 (number of bits is 2)
(0x0000000A,7) [VOS] {MP4} video_object_start_code = 0x100 (range: 0x100 - 0x11F)
(0x0000000E,7) [VOL] {MP4} video_object_layer_start_code = 0x120 (range: 0x120 - 0x12F)
(0x00000012,7) [VOL] {MP4} random_accessible_vol = 0
(0x00000012,6) [VOL] {MP4} video_object_type_indication = Simple Object Type
(0x00000013,6) [VO ] {MP4} is_object_layer_identifier = 0: video_object_layer_verid='0001'
(Version 1) assumed
(0x00000013,5) [VOL] {MP4} aspect_ratio_info = '0001' = 1:1 (Square)
[VOL] {MP4} vol_control_parameters are off
(0x00000013,0) [VOL] {MP4} video_object_layer_shape = 0 (Rectangular)
(0x00000014,5) [VOL] {MP4} vop_time_increment_resolution = 0x19 (dec. 25)
[inf] {MP4} number of bits for vop_time_increment = 5
(0x00000016,4) [VOL] {MP4} fixed_vop_rate = 0 : VOP rate can be variable
[VOL] {MP4} video_object_layer_width = 352; video_object_layer_height = 288
```

The above information is split into 3 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 [VOL] is the general syntax level of the bitstream element (e.g. VOL = VideoObjectLayer) and {MP4} denotes this applies to MPEG-4 only (as opposed to other standards such as H.263);
- ❑ 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 of the form:

V108nn_D-Traffic_MP4_ASP_VOP_xxx_interpret.vpt

(where 'nn' is the last 2 digits of the clip number)

3. Software supplied

The following software is supplied:

- ❑ ".m4v" to YUV decoder;
- ❑ YUV sequence viewer.

3.1. YUV sequence viewer

This program is called: YUVSequenceViewer.exe

and is located on disk 1 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. ".m4v" to YUV decoder

This program is called: `decoder.exe`
and is located on disk 1 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:


```
decoder <input file> <output file> <width> <height>
```

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

```
decoder "input 1" "C:\Temp\output 1" 176 144
```

4. Basic Clip Set Details

4.1. General clip set details

BASIC CLIP DETAILS		Begin End	Title
			Traffic
1.	Number(s)	V10801 to V10855	
2.	Filename(s)	V10801_D-Traffic_MP4_ASP_VOP_<name>.m4v to V10855_D-Traffic_MP4_ASP_VOP_<name>.m4v	
3.	Title	Traffic	
4.	Description	Vehicles into picture, out of picture, across picture	
5.	Main purposes / tests	Check different options in Header are correctly decoded	
6.	Size(s), horizontal x vertical	40 CIF sequences (352x288); 4 2CIF sequences (352x576); 11 D1 sequences (720x576)	
7.	Video format	.m4v MPEG-4 Part 2 Visual (source material YUV 4:2:0 Planar, 8 bits per pixel)	
8.	Number of frames	501 (typically: sometimes varies, with bit-rate limitations)	
9.	Source frame rate	25 fps	
10.	Clip duration (seconds : frames)	20 : 00	
11.	File size on disc (MB)	Total for all files: 67MB	
12.	Original video format	720x576 DV, interlaced	

13.	Keywords	KW-vehicles, KW-movement_in, KW-movement_out, KW-cross_movement, KW-high_contrast, KW-bright_colours, KW-leaves, KW-monochromatic_area
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	FEATURES	Qty / amount	Notes
14.	GLOBAL MOTION		
15.	Fast pan	-	
16.	Pan	-	
17.	Tracking pan	-	
18.	Zoom in	-	
19.	Zoom out	-	
20.	Scroll	-	
21.	Rotate	-	
22.	Hand-held camera	-	

23.	OBJECT MOTION		
24.	Movement out of picture	Lots, some fast	
25.	Movement into picture	Lots, some fast	
26.	Movement across picture	Lots, some fast	

27.	Diagonal movement	-	
28.	Subjects behind foreground objects	Some	
29.	Low movement	-	
30.	COLOURS & CONTRAST		
31.	Light picture	Areas	
32.	Dark picture	Areas	
33.	Bright colours	Areas	
34.	Dull colours	Areas	
35.	Fine detail pattern	Some	
36.	High contrast areas	Several	
37.	Large monochromatic area	Some	
38.	SCENE CONTENT		
39.	Out-of-focus	-	
40.	Fine lines / moiré patterns	Some	
41.	Reflections	Some	
42.	Scene change	-	
43.	SCENE SUBJECTS		
44.	People	-	
45.	Faces	-	
46.	Vehicles	Lots	
47.	Buildings	-	
48.	Trees	Some	Background
49.	Text	-	
50.	Talking head	-	
51.	Water	-	
52.	Leaves	Some	Background
53.	Sky	-	
54.	Clouds	-	
55.	Round objects	-	
56.	LIGHT CONDITIONS		
57.	Bright sunlight	Some	
58.	Shaded areas	Some	
59.	Bright daylight	Some	
60.	Dull daylight	-	
61.	Twilight	-	
62.	Night	-	
63.	Backlighting	-	
64.	Substantial brightness change	-	

4.2. Summary of clips

Clip Name	Description
V10801	Advanced Simple Profile/Level 3 stream
V10802	Bitstream with f-codes in the range 2-4
V10803	Bitstream with f-codes in the range 4-6
V10804	Bitstream with f-codes in the range 4-7
V10805	Bitstream with f-codes in the range 2-4 and resync_markers
V10806	Bitstream with f-codes in the range 4-7 and resync_markers
V10807	Bitstream with vop_rounding_type set to 1
V10808	Bitstream with intra_dc_vlc_thr set to 1
V10809	Bitstream with intra_dc_vlc_thr set to 4
V10810	Bitstream with intra_dc_vlc_thr set to 7
V10811	Bitstream with explicit vop_quant settings: 4, 8, 24 for I-, P- and B-VOPs respectively
V10812	Bitstream with explicit vop_quant settings: 1, 31, 31 for I-, P- and B-VOPs respectively
V10813	Bitstream with explicit vop_quant settings: 31, 1, 1 for I-, P- and B-VOPs respectively
V10814	Bitstream with quant_type set to 1 (first quantisation method) in VideoObjectLayer
V10815	Bitstream with quant_type set to 1 (first quantisation method) and explicit settings for vop_quant: 4, 8, 24 for I-, P- and B-VOPs respectively
V10816	Bitstream using the resynchronisation error resilience tool
V10817	Bitstream using the resynchronisation error resilience tool, but with resync_marker_disable = 1
V10818	Bitstream using the data partitioning error resilience tool
V10819	Bitstream using a combination of the data partitioning and RVLC error resilience tools
V10820	Bitstream using the resynchronisation error resilience tool with video packet length of 1024 bits
V10821	Bitstream using the resynchronisation error resilience tool with video packet length of 2048 bits
V10822	Bitstream with quarter_sample set to 1 in VideoObjectLayer
V10823	Bitstream with no 4MV mode macroblocks
V10824	Bitstream encoded with I-VOPs only
V10825	Bitstream encoded with group-of-pictures (GOP) pattern containing an I-VOP followed by 14 P-VOPs with 2 B-VOPs between each
V10826	Bitstream encoded with group-of-pictures (GOP) pattern containing an I-VOP followed by 4 P-VOPs with 5 B-VOPs between each
V10827	Bitstream with no skipped macroblocks
V10828	Bitstream using the global motion compensation (GMC) tool with stationary model at half-pel precision
V10829	Bitstream using the global motion compensation (GMC) tool with translation model at half-pel precision
V10830	Bitstream using the global motion compensation (GMC) tool with first affine model at half-pel precision
V10831	Bitstream using the global motion compensation (GMC) tool with second affine model at half-pel precision

Clip Name	Description
V10832	Bitstream using the global motion compensation (GMC) tool with second affine model at quarter-pel precision
V10833	Bitstream using the global motion compensation (GMC) tool with second affine model at 1/8-pel precision
V10834	Bitstream using the global motion compensation (GMC) tool with second affine model at 1/16-pel precision
V10835	Bitstream with many parameter variations (see table in section 5 for full details)
V10836	Bitstream with many parameter variations (see table in section 5 for full details)
V10837	Advanced Simple Profile Level 5 bitstream
V10838	ASP @ L5 bitstream with interlaced I-VOPs only
V10839	ASP @ L5 bitstream with interlaced P-VOPs only
V10840	ASP @ L5 bitstream with top_field_first = 1 in VideoObjectPlane
V10841	ASP @ L5 bitstream with alternate_vertical_scan_flag = 1 in VideoObjectPlane
V10842	ASP @ L5 bitstream using the global motion compensation (GMC) tool with translation model at 1/16th-pel precision
V10843	ASP @ L5 bitstream using the global motion compensation (GMC) tool with first affine model at 1/8th-pel precision
V10844	ASP @ L5 bitstream using the global motion compensation (GMC) tool with second affine model at quart-pel precision
V10845	ASP @ L5 bitstream with quarter_sample = 1 in VideoObjectLayer
V10846	ASP @ L5 bitstream with many parameter variations (see table in section 6 for full details)
V10847	ASP @ L5 bitstream with many parameter variations (see table in section 6 for full details)
V10848	ASP @ L3b bitstream with many parameter variations (see table in section 6 for full details)
V10849	ASP @ L3b bitstream with many parameter variations (see table in section 6 for full details)
V10850	ASP @ L3b bitstream with many parameter variations (see table in section 6 for full details)
V10851	ASP @ L3b bitstream with many parameter variations (see table in section 6 for full details)
V10852	ASP @ L4 bitstream with many parameter variations (see table in section 6 for full details)
V10853	ASP @ L4 bitstream with many parameter variations (see table in section 6 for full details)
V10854	ASP @ L4 bitstream with many parameter variations (see table in section 6 for full details)
V10855	ASP @ L4 bitstream with many parameter variations (see table in section 6 for full details)