Omnitek

Ultra 4K Tool Box

UHD-TV Analyzer, Generator & Converter

12G/6G/3G/HD/SD-SDI, DisplayPort & HDMI

UHD Tools for new TV standards

The **Omnitek *Ultra*** 4K Tool Box provides conversion, generation and analysis of Ultra HDTV and Digital Cinema signals in all current and anticipated 4K video formats up to 4096x2160/60, allowing manufacturers, designers, researchers, broadcast stations, networks, outside broadcast units and systems integrators to build, test and commission 4K products and systems with complete confidence.

Containing a complete solution, the 4K Tool Box offers of a variety of connection formats – multi-rate SDI, HDMI and DisplayPort - for both video source and display. Conversion between connection and image formats allows operation in multi-format video environments, while comprehensive and advanced SDI eye and jitter analysis features enable system designers to rapidly locate sources of signal error in all signal paths up to 12G-SDI single link up to 4K/60.

Analyzer

Results are shown in a configurable display on HDMI, DisplayPort or over IP e.g. on a wireless tablet for remote browser control. Particular screen configurations can be saved and restored as presets.

Picture Viewer

High quality, full-size, full-frame-rate display of the selected video input. Max/Min window size control

SDI - Physical Layer Analysis

Eye pattern display provides accurate, automatic measurement of SDI amplitude, bitstream rise and fall times, overshoot/undershoot level, calibrated input cable length. Multiple filters show the jitter amplitude at the main frequencies, helping to identify the source of the jitter. Advanced option provides 12G analysis plus jitter spectrum, histogram, SMPTE templates and jitter insertion

Status monitoring

Video format and picture size. Physical error checks and a timecode display for all links. Gamut range, signal amplitude and jitter amplitude. The Status display also reports issues such as black screens and stuck bits.

Gamut meters

Intuitive 6-bar YCbCr & RGB gamut check.

Real-time reading of the percentage of pixels that are outside the permitted tolerances on any of the monitored colour spaces (as specified for example in EBU Recommendation 103).

Ancillary Data

ANC data is displayed and decoded at the chosen position in the data stream. A watch facility allows particular codes to be found and displayed

CRC

Active picture and full frame Cyclic Redundancy Check codes are created for comparison of signal path data integrity.

Functions

Analyzer	Picture Viewer
	Eye diagram (SD, HD, 3G, 6G, & 12Gb/s)
	Jitter meters, spectrum, histogram
	Comprehensive video status information
	Detailed SDI multi-cable link display
	SDI data monitor – ANC packets, zoom, link timing, data waveform
	Colour gamut displays
Generator	Stills, moving test patterns & zoneplates
	Uncompressed video capture & play-out
	SDI Jitter & inter-link delay insertion
	Safe Title & Action cage insertion
	Import/Export
Converter	Up, down and cross conversion between all supported formats – SD to UHD
	Dynamic size, position and crop – user-controlled, HD from a 4K input
	6-Axis, Colour Correction – primary conversion and LUTs
	Colour space conversion

Video Data Analysis

Four different views of active raw pixel data are provided. Depending on the video format, this data may be drawn from a number of different data streams. Cable Viewer displays SMPTE samples in the order they appear on these multiplexed streams.

Data Viewer displays YUV/RGB values for pixels on a particular line of all the streams that comprise the image.

Data Waveform allows you to monitor the YUV/RGB values graphically at the current cursor position.

Zoom View gives magnified views of the image pixels around the current cursor position.

Relative Timing measurement

Timing can be measured relative to individual SDI links or to an analog sync. This is particularly useful for checking quad 3G-SDI link synchronisation.

Generator

Generate stills and sequences in all video standards from SD up to 4K from imported images, line patterns, zone plates, and combinations. Clips of uncompressed video can be captured and replayed for analysis, with full raster (RVF) support. Capture on error is supported.

Image files can be loaded from internal SSD, USB and LAN and are scaled to fit the current output resolution. Line patterns are generated at full bit-precision in the colour space of the currently-selected format and can include a range of colour bars and other features such as frequency sweeps, multiburst, Luma and Chroma steps & ramp and pulse & bar. The zone plate generator allows the definition of spatial and temporal frequencies over the full range of X, Y and T values. The basic waveform is selectable as sine, square, or triangular, and may be applied to Luma and Chroma channels independently.

Test patterns can have moving elements added to create continuous a moving source. This includes the widely recognised Omnitek 'TSA' moving test pattern which can be used to check continuity, resolution and colour gamut. Additionally, the 4K version of the TSA includes quadrant and cable identifiers to more easily help determine cable ordering for multi-link 4K standards. Pathological patterns to test multi-stream formats up to 12G are provided.

Audi tone generation and channel selection is included.

SDI jitter insertion enables stress testing of devices under test, at frequencies between 0 to 3MHz (resolution 0.735Hz) and amplitudes of 0 to 4UI pk-pk (resolution 0.0078UI). Timing delay can also be added to links to exercise reception of multi-cable SDI standards such as quad-link 4K.

The generator output can be locked to a video input, an external reference, or left to free run.

SNMP

SNMP commands are supported and SNMP traps generated, allowing automation of all aspects of the 4K Tool Box's functionality, and enabling remote control scripting as part of a test infrastructure.

Format Converter

An interactive Connections screen is used to set the paths and formats for inputs, outputs and user interface to the displays.

Up/Down/Cross Conversion between the full range of input and output standards is automatic and includes multi-stream raster reconstruction for the various 4x3G, (SQ & 2SI), 6G and 12G UHD video standards.

Inputs are selected and routed either to the internal analyzer or the dedicated Eye scan module. The analyzer and generator are independently routed to the user's choice of output: DisplayPort, HDMI or SDI. The video format, bit depth and colour space can be chosen here too. Standards are auto-detected but with a manual override in case of badly formatted TRS codes.

Video filters are provided for experimentation with softening and sharpening images during conversion, including the SMPTE flat algorithm.

Colour LUTs can be used to convert between standards and 6-axis (YUV & RGB) colour correction is provided to make further adjustments after format conversion.

Further capabilities include Crop and Resize of the image to a region of interest selected on the screen, to allow for example HD extraction from a UHD source.

Display

Inputs and the User Interface can be routed to either HDMI (1080p) or DisplayPort outputs. When viewing the User Interface on a DisplayPort 4K monitor, the Picture View can be maximised to full resolution.

Applications

Manufacture	Design, Compatibility testing, Stress testing, Production line testing
R&D	UHD-TV system analysis, Standards monitoring
Broadcast	System development, Integration, Format conversion, Signal path testing
Post & Pro-AV	6-Axis, Colour Correction – primary conversion and LUTs

Video

Bidirectional I/O

3x SDI	3G/HD/SD - supports up to Quad Link 4K/60
Connection	BNC, 75ohm input impedance

Inputs

1x SDI (EYE)	12G/6G/3G/HD/SD – supports Eye & Jitter monitoring
Connection	BNC, 75ohm input impedance
2x SDI (AUX)	12G/6G/3G/HD/SD – supports up to 4K/60
Connection	BNC, 75ohm input impedance
HDMI	HDMI – supports up to 1080p60

Outputs

2x SDI (AUX)	12G/6G/3G/HD/SD – supports up to 4K/60
Connection	BNC, 75ohm input impedance
DisplayPort	DisplayPort 1.2 MST & SST – supports up to 4K/60
HDMI	HDMI – supports up to 1080/60

Reference

Sync Input	Analogue Black (0.3V p-p) or Tri-level (0.6V p-p)
Connection	BNC, 75ohm input impedance

Audio I/O Embedded SDI, HDMI & DisplayPort

Communications, Control & file I/O

Ethernet	1Gb/s
Connection	RJ45
2x USB	USB 2.0

User Interface

Display	HDMI, DisplayPort or HTML over IP
Control	USB keyboard and mouse/trackerball or via browser

SFP+ Cage	* Reserved for future use
CVBS	* Future implementation
DisplayPort	* Input – future implementation

Video Formats

SDI	4096x2160p - 23.98/24/25/29.97/30/47.952/48/50/59.94/60Hz
	3840x2160p - 23.98/24/25/29.97/30/50/59.94/60Hz
	2048x1080p - 23.98/24/25/29.97/30/47.952/48/50/59.94/60Hz
	1920x1080p - 23.98/24/25/29.97/30/50/59.94/60Hz
	2048, 1920x1080sF - 23.98/24/25/29.97/30Hz
	2048, 1920x1080i - 50/59.94/60Hz
	1280x720p - 23.98/24/25/29.97/30/50/59.94/60Hz
	720x486i - 59.94, 576i - 50Hz
Sampling	4:2:2, 4:4:4 - Y, Cr, Cb, R, G, B - 8, 10, 12 bits
HDMI	1280x720p - 50/60Hz
	1920x1080p - 50/60Hz
DisplayPort	1280x720p - 50/60Hz
	1920x1080p - 50/60Hz
	3840x2160p - 30/50/60Hz

Standards	SMPTE
UHDTV1 50/60	12G-SDI ST 2082-10 (2SI)
	Dual-link 6G-SDI ST 2081-11 (2SI)
	Quad-link 3GA-SDI/3GB-SDI ST 425-5 (2SI and SQ)
UHDTV1 25/30	6G-SDI ST 2081-10 (2SI)
	Dual-link 3GB-SDI ST 425-3 (2SI and SQ)
	Quad-link HD-SDI (SQ)
HD 1080p	3GA-SDI/3GB-SDI/3GB-DS-SDI/Dual-link HD-SDI ST 425-1, 372
HD/SD	HD-SDI/SD-SDI ST 2048-2, 274, 296, 259
	2SI = 2 Sample Interleaved, SQ = Square Division
Colour spaces	ITU-R BT.601, ITU-R BT.709, ITU-R BT.2020

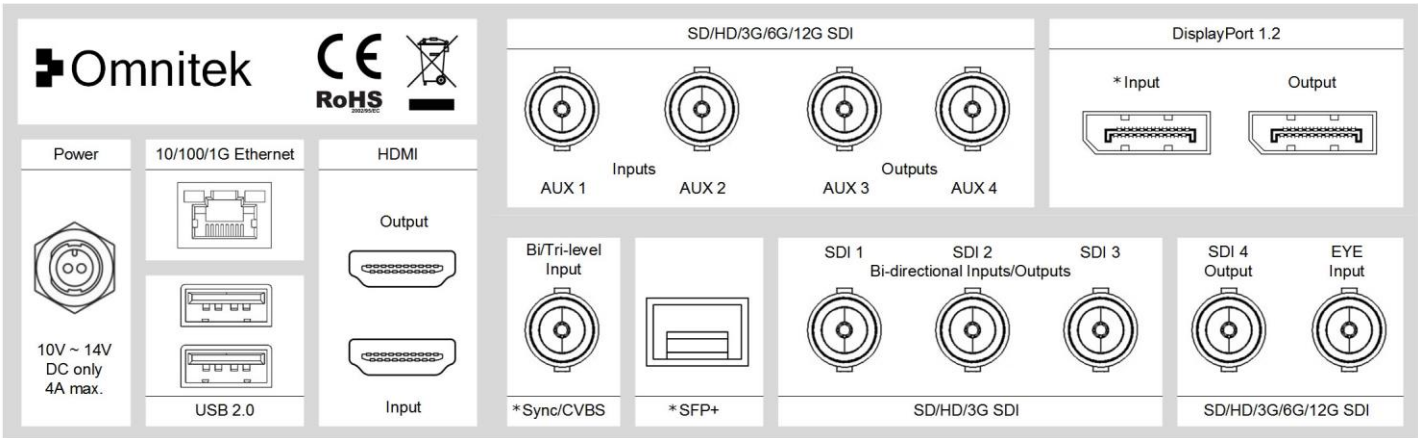
Environmental

Power	12V DC 60W. PSU 100-240V AC 50-60Hz
Size/Weight	215mm x 233mm x 42mm, 1.7Kg
Temperature	Operational: +5...+35C
	Storage: -20...+50C
Humidity	<95% non-condensing

Systems 4K Tool Box with Analyzer, Generator, Converter, PHY to 6G
Also as separate Analyzer, Generator or Converter to 6G

Options

VIDEO_12G	I/O support for 12G-SDI
ANALYZE	Data analysis
GENERATE	Multi-format generator
CONVERT	Multi-format converter
PHY	Physical layer analysis up to 6Gb/s
PHY_ADV	Advanced physical layer analysis (requires PHY) and 12Gb/s physical layer support (requires VIDEO_12G)



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ABOUT OmniTek

Omnitek is the product division of Image Processing Techniques Ltd., a leading independent consultancy company specializing in the design of products for the broadcast, post-production, and digital film industries. Since 1998, IPT has completed many successful design projects for major equipment manufacturers in Europe, Asia, and the United States. For more information, please see **www.omnitek.tv**

Ultra 4K Tool Box
New features - release schedule

The Omnitek *Ultra* 4K Tool Box contains many tools and the inclusion of these is set out in the schedule below. Versions and release dates for further features will be provided as an update to this list.

All features are standard unless otherwise stated, and accessible by download of the versions from omnitek.tv from the release dates shown.

A table of the SDI video standards supported in each release is given overleaf, and is available to view online for periodic updates.

1.0

- ANC Decode
- Interlaced output
- Software update

1.1

- Inter-link timing measurement
- Safe title/action cage insertion

1.2

- HDMI & USB Local Control
- Full frame-rate HDMI video proxy
- Genlock – analogue reference or input-lock
- Reference to SDI Video H&V timing measurement
- Dual & Quad SDI Inter-link timing measurement
- Cable View display
- More 4:2:2 video standards (see over)
- Presets, User settings
- Active & Full Frame CRC display
- Crosshair on video proxy

Scheduled release - December 2014

2.0

- Advanced Physical Layer measurements (option)
- Real Time Moving Test Signal Generator
- 12G-SDI: Note 12G beta in 1.3 (option)
- 6G & 12G pathological test patterns
- SDI output voltage control
- Cable length estimate
- Auto Frame CRC check, single & multi-link
- 6-axis colour correction
- Dynamic Crop & Zoom (Cut HD from 4K)
- 12-bit video standards
- Anamorphic & AFD support
- Full SNMP control
- IP Address Display

1.3

- Sequence capture & playback
- Interlink SDI delay insertion
- HDMI 1.4 video input
- Timecode ATC read and display
- 4K User Interface with full res video input view
- Selected 4:4:4 video standards
- Selected 4096 x 2160 DCI video standards

Scheduled release – February 2015

Scheduled release – April 2015

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SMPTE Standard	Interface	Image Format	Signal Format	Sampling Structure	Pixel Depth	Field/Frame Rate	Avalability
259	SD	720x486	4:2:2	YCbCr	10-bit	59.94i	Now
		720x576				50i	Now
296	HD	1280x720				60p, 59.94p, 50p, 30p, 29.97p, 25p, 24p, 23.98p	Now
274		1920x1080				30p, 29.97p, 25p, 24p, 23.98p	Now
						30psF, 29.97psF, 25psF, 24psF, 23.98psF	Now
						60i, 59.94i, 50i	Now
2048-2		2048x1080				30p, 29.97p, 25p, 24p, 23.98p	Now
						30psF, 29.97psF, 25psF, 24psF, 23.98psF	Now
						60i, 59.94i, 50i	Now
372	Dual-link HD	1920x1080	4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
			4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	10-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Feb 2015
			4:2:2	YCbCr	12-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Apr 2015
			4:4:4	RGB & YCbCr	10-bit	60i, 59.94i, 50i	Feb 2015
			4:2:2	YCbCr	12-bit	60i, 59.94i, 50i	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	60i, 59.94i, 50i	Apr 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p	Now
		2048x1080	4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
			4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	10-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Feb 2015
			4:2:2	YCbCr	12-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Apr 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p, 48, 47.952	Now
425-1	3GA & 3GB	1280x720	4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
			4:4:4	RGB & YCbCr	10-bit	60p, 59.94p, 50p	Feb 2015
		1920x1080	4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
			4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	10-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Feb 2015
			4:2:2	YCbCr	12-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Apr 2015
			4:4:4	RGB & YCbCr	10-bit	60i, 59.94i, 50i	Feb 2015
			4:4:4	RGB & YCbCr	12-bit	60i, 59.94i, 50i	Apr 2015
			4:2:2	YCbCr	12-bit	60i, 59.94i, 50i	Apr 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p	Now
		2048x1080	4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
			4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	10-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Feb 2015
			4:2:2	YCbCr	12-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Apr 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p, 48p, 47.952p	Now
	3GB-DS	1280x720	4:2:2	YCbCr	10-bit	60p, 59.94p, 50p, 30p, 29.97p, 25p, 24p, 23.98p	Dec 2014
		1920x1080	4:2:2	YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Now
			4:2:2	YCbCr	10-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Now
			4:2:2	YCbCr	10-bit	60i, 59.94i, 50i	Now
		2048x1080	4:2:2	YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Now
			4:2:2	YCbCr	10-bit	30psF, 29.97psF, 25psF, 24psF, 23.98psF	Now
			4:2:2	YCbCr	10-bit	60i, 59.94i, 50i	Now
425-3	Dual-link 3GA	1920x1080	4:4:4	RGB & YCbCr	10-bit	60p, 59.94p, 50p	Feb 2015
			4:2:2	YCbCr	12-bit	60p, 59.94p, 50p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	60p, 59.94p, 50p	Apr 2015
		2048x1080	4:4:4	RGB & YCbCr	10-bit	60p, 59.94p, 50p, 48p, 47.952p	Feb 2015
			4:2:2	YCbCr	12-bit	60p, 59.94p, 50p, 48p, 47.952p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	60p, 59.94p, 50p, 48p, 47.952p	Apr 2015
	Dual-link 3GB	1920x1080	4:4:4	RGB & YCbCr	10-bit	60p, 59.94p, 50p	Feb 2015
			4:2:2	YCbCr	12-bit	60p, 59.94p, 50p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	60p, 59.94p, 50p	Apr 2015
		2048x1080	4:4:4	RGB & YCbCr	10-bit	60p, 59.94p, 50p, 48p, 47.952p	Feb 2015
			4:2:2	YCbCr	12-bit	60p, 59.94p, 50p, 48p, 47.952p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	60p, 59.94p, 50p, 48p, 47.952p	Apr 2015
425-3 (2SI & SQ)	Dual-link 3GC	3840x2160	4:2:2	YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Dec 2014
		4096x2160	4:2:2	YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015

2SI = Two Sample Interleave SQ = Square Division

SMPTE Standard	Interface	Image Format	Signal Format	Sampling Structure	Pixel Depth	Field/Frame Rate	Avalability
425-5 (2SI & SQ)	Quad-link 3GA	3840x2160	4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p	Now
		4096x2160	4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
			4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p, 48p, 47.952p	Feb 2015
	Quad-link 3GB	3840x2160	4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p	Dec 2014
		4096x2160	4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
			4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p, 48p, 47.952p	Feb 2015
2081-10 (2SI)	6G	1920x1080	4:4:4	RGB & YCbCr	10-bit	60p, 59.94p, 50p	Feb 2015
			4:4:4	RGB & YCbCr	12-bit	60p, 59.94p, 50p	Apr 2015
			4:2:2	YCbCr	12-bit	60p, 59.94p, 50p	Apr 2015
		2048x1080	4:4:4	RGB & YCbCr	10-bit	60p, 59.94p, 50p, 48p, 47.952p	Feb 2015
			4:4:4	RGB & YCbCr	12-bit	60p, 59.94p, 50p, 48p, 47.952p	Apr 2015
			4:2:2	YCbCr	12-bit	60p, 59.94p, 50p, 48p, 47.952p	Apr 2015
		3840x2160	4:2:2	YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Dec 2014
		4096x2160	4:2:2	YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
2081-11 (2SI)	Dual-link 6G	3840x2160	4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
			4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p	Dec 2014
		4096x2160	4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Feb 2015
			4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p, 48p, 47.952p	Feb 2015
2082-10 (2SI)	12G	3840x2160	4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p	Apr 2015
		4096x2160	4:2:2	YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	10-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:4:4	RGB & YCbCr	12-bit	30p, 29.97p, 25p, 24p, 23.98p	Apr 2015
			4:2:2	YCbCr	10-bit	60p, 59.94p, 50p, 48p, 47.952p	Apr 2015

2SI = Two Sample Interleave SQ = Square Division