

SONY

X-OCN

WORKFLOW

Benefits

X-OCN – 16 BIT HIGH PERFORMANCE WORKFLOW.

Outstanding image quality with economical file sizes all the way up to 8.6K

Exceptional tonal rendition and dynamic range thanks to 16-bit Scene Linear Capture

Fast, easy and powerful workflows supported by the majority of third-party post tools

16-bit eXtended Tonal Range – Original Camera Negative and VENICE/VENICE 2

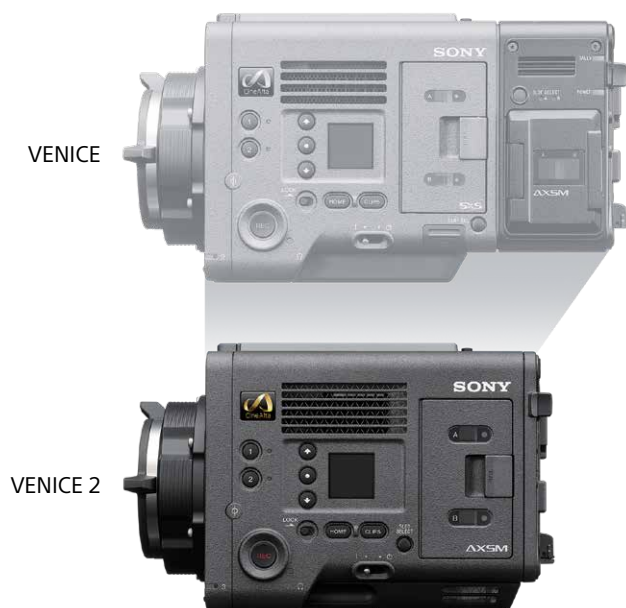
VENICE 2 takes X-OCN recording to the next level with internal 16 bit recording at up to 8.6K. The original VENICE camera with its AXS-R7 can record X-OCN at up to 6K resolution. X-OCN delivers the flexibility of a 16-bit raw format within compact files thanks to modern processing algorithm giving filmmakers greater grading freedom than ever before.



Full Frame Recording, Exceptional Performance

X-OCN preserves the full dynamic and tonal range of the camera. In its full frame mode VENICE 2 can record at up to 8.6K with 16-bit colour. X-OCN is the ideal choice for no compromise SDR and HDR workflows including ACES.

Even though X-OCN is a 16-bit per colour format, preserving the most subtle of textures and providing exquisite latitude and colour rendition, the files remain compact and manageable. Editors, colourists and post-production will find the files extremely flexible and surprisingly easy to work with, even with relatively modest computers including laptops.



X-OCN files are significantly smaller than uncompressed raw files of similar resolution and frame rate. Typically, 16-bit X-OCN files are not significantly larger and, in many cases, smaller than most of the more commonly used conventional high quality 10-bit and 12-bit codecs. This ensures that the files are easy to handle and manage throughout the entire production workflow.

When shooting at 8K X-OCN LT files are typically smaller than 4K ProRes 4444 XQ files. For example, at 24fps 8.6K 17:9 X-OCN LT is 1,706Mbps while 4K ProRes 4444 XQ is 1,911Mbps. In most cases the 16 bit 8.6K X-OCN-LT recording will offer greater image quality and grading flexibility than the 4K ProRes 444 XQ recordings.

Rapid transfers for faster, more economic workflows

The reduced file size helps to speed up file transfers and reduce storage and archive requirements. Whether on set or in post-production, the ability to move and copy footage more quickly is particularly beneficial for fast turnaround productions. However, if required Sony's Raw Viewer application can be used to convert X-OCN files from 16-bit linear to a variety of other formats suitable for delivery or post-production including OpenEXR and even ProRes.



VENICE 2
with 8K image sensor



VENICE 2
with 6K image sensor



VENICE

VENICE Recording Formats

VENICE 2 23.98/24.0p Recording format in V2.0

VENICE 2 with 8K image sensor (Mbps)

Format	Profile	8.6K 3:2	8.6K 17:9	8.2K 2.39:1	8.2K 17:9	8.1K 16:9	7.6K 16:9	5.8K 6.5	5.8K 4:3	5.8K 17:9	5.5K 2.39:1	5.4K 16:9
X-OCN	X-OCN XT	5,345	4,233	3,079	3,861	4,233	3,861	3,040	2,676	1,919	1,446	1,919
	X-OCN ST	3,658	2,897	2,107	2,642	2,897	2,642	2,080	1,832	1,313	990	1,313
	X-OCN LT	2,155	1,706	1,241	1,556	1,706	1,556	1,225	1,079	773	583	773
4K ProRes	ProRes 4444 XQ	1,911*	1,911	1,911	1,911	-	-	1,911	1,911	1,911	1,911	-
	ProRes 4444	1,274*	1,274	1,274	1,274	-	-	1,274	1,274	1,274	1,274	-
	ProRes 422 HQ	849*	849	849	849	-	-	849	849	849	849	-
QFHD ProRes	ProRes 4444 XQ	1,792*	-	-	-	1,792	1,792	1,792*	1,792*	-	-	1,792
	ProRes 4444	1,194*	-	-	-	1,194	1,194	1,194*	1,194*	-	-	1,194
	ProRes 422 HQ	797*	-	-	-	797	797	797*	797*	-	-	797

ProRes bitrate is "Target Data Rate".
Please check Apple ProRes White Paper for meaning of "Target Data Rate".
SV is a abbreviation of Surround View.

* Supported when Zoom to Fit is on.

VENICE 2 with 6K image sensor (Mbps)

Format	Profile	6K 3:2	6K 1.85:1	6K 17:9	6K 2.39:1	5.7K 16:9	4K 6.5	4K 4:3	4K 4:3 SV	4K 17:9	4K 17:9 SV	4K 2.39:1	3.8K 16:9	3.8K 16:9 SV
X-OCN	X-OCN XT	2,631	2,143	2,091	1,665	2,091	1,525	1,342	1,342	965	965	770	965	965
	X-OCN ST	1,800	1,467	1,431	1,140	1,431	1,044	919	919	661	661	527	661	661
	X-OCN LT	1,061	864	843	671	843	615	541	541	389	389	310	389	389
4K ProRes	ProRes 4444 XQ	1,911*	-	1,911	1,911	-	1,911	1,911*	-	1,911	1,911	1,911	-	-
	ProRes 4444	1,274*	-	1,274	1,274	-	1,274	1,274*	-	1,274	1,274	1,274	-	-
	ProRes 422 HQ	849*	-	849	849	-	849	849*	-	849	849	849	-	-
QFHD ProRes	ProRes 4444 XQ	1,792*	-	-	-	1,792	1,792*	1,792*	-	-	-	-	1,792	1,792
	ProRes 4444	1,194*	-	-	-	1,792	1,792*	1,792*	-	-	-	-	1,792	1,792
	ProRes 422 HQ	797*	-	-	-	797	797*	797*	-	-	-	-	797	797

VENICE Recording Formats

VENICE 2 60p Recording format in V2.0

VENICE 2 with 8K image sensor

(Mbps)

Format	Profile	8.6K 3:2	8.6K 17:9	8.2K 2.39:1	8.2K 17:9	8.1K 16:9	7.6K 16:9	5.8K 6:5	5.8K 4:3	5.8K 17:9	5.5K 2.39:1	5.4K 16:9
X-OCN	X-OCN XT	-	-	-	-	-	-	-	6,691	4,796	3,616	4,796
	X-OCN ST	-	-	5,268	6,606	-	6,606	-	4,579	3,282	2,474	3,282
	X-OCN LT	-	-	3,102	3,891	-	3,891	-	2,697	1,934	1,458	1,934
4K ProRes	ProRes 4444 XQ	-	-	4,778	4,778	-	-	-	4,778	4,778	4,778	-
	ProRes 4444	-	-	3,185	3,185	-	-	-	3,185	3,185	3,185	-
	ProRes 422 HQ	-	-	2,124	2,124	-	-	-	2,124	2,124	2,124	-
QFHD ProRes	ProRes 4444 XQ	-	-	-	-	-	4,479	-	4,479*	-	-	4,479
	ProRes 4444	-	-	-	-	-	2,986	-	2,986*	-	-	2,986
	ProRes 422 HQ	-	-	-	-	-	1,991	-	1,991*	-	-	1,991

ProRes bitrate is "Target Data Rate".

Please check Apple ProRes White Paper for meaning of "Target Data Rate".

* Supported when Zoom to Fit is on.

VENICE 2 with 6K image sensor

(Mbps)

Format	Profile	6K 3:2	6K 1.85:1	6K 17:9	6K 2.39:1	5.7K 16:9	4K 6:5	4K 4:3	4K 4:3 SV	4K 17:9	4K 17:9 SV	4K 2.39:1	3.8K 16:9	3.8K 16:9 SV
X-OCN	X-OCN XT	6,577	5,357	5,227	4,163	5,227	3,813	3,355	-	2,413	-	1,924	2,413	-
	X-OCN ST	4,500	3,667	3,577	2,850	3,577	2,610	2,296	-	1,652	-	1,317	1,652	-
	X-OCN LT	2,651	2,160	2,108	1,678	2,108	1,537	1,353	-	973	-	776	973	-
4K ProRes	ProRes 4444 XQ	4,778*	-	4,778	4,778	-	4,778	4,778*	-	4,778	-	4,778	-	-
	ProRes 4444	3,185*	-	3,185	3,185	-	3,185	3,185*	-	3,185	-	3,185	-	-
	ProRes 422 HQ	2,124*	-	2,124	2,124	-	2,124	2,124*	-	2,124	-	2,124	-	-
QFHD ProRes	ProRes 4444 XQ	4,479*	-	-	-	4,479	4,479*	4,479*	-	-	-	-	4,479	-
	ProRes 4444	2,986*	-	-	-	2,986	2,986*	2,986*	-	-	-	-	2,986	-
	ProRes 422 HQ	1,991*	-	-	-	1,991	1,991*	1,991*	-	-	-	-	1,991	-

X-OCN recording: Three versions to suit your needs

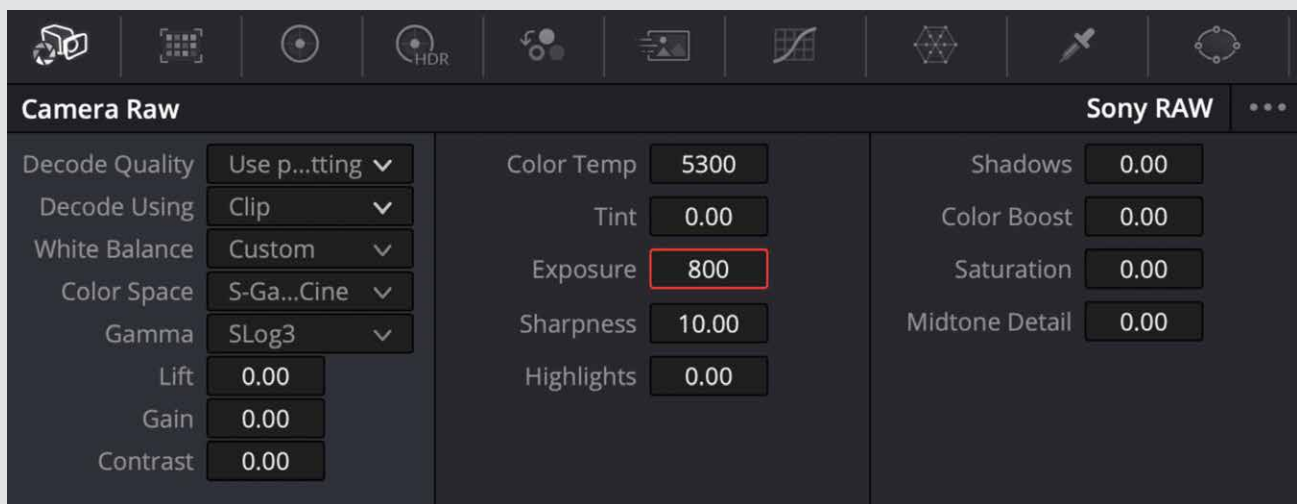
There are three versions of X-OCN, all three versions preserve the tremendous range, subtlety and robustness that that is expected from high quality 16-bit scene linear recordings. X-OCN ST is the standard version which provides a carefully optimised balance between extremely high image quality and manageable file sizes. X-OCN ST is commonly used for feature films, drama, and other high-end, high-quality productions.

Workflow tools compatible with the X-OCN format

X-OCN is supported by in most leading non-linear editing software tools. It is supported in Adobe Premiere CC, Blackmagic DaVinci Resolve, Apple Final Cut Pro X via Calibrated{Q} Sony RAW Decode plug-in, Avid Media Composer via the nablet Sony RAW AMA plug-in, Colorfront OSD, FilmLight Baselight and, Assimilate Scratch, to name a few.

Grading Flexibility

Once in post-production editors and colourists will appreciate the ability to adjust the exposure, colour temperature, highlights, shadows and sharpness with simple to use controls. These controls alter the way the 16-bit X-OCN data is processed prior to being converted to a conventional RGB or YCbCr component image, thus ensuring the highest possible image quality (the exact range and type of controls available will depend on the software used).



X-OCN LT. Surprisingly compact files without sacrifice

X-OCN LT delivers incredibly compact files that are in most cases visibly indistinguishable from X-OCN ST files. For many productions X-OCN LT is more than enough to deliver outstanding image quality while at the same time realising a substantial reduction in storage requirements.

Like every version of X-OCN, LT retains all the flexibility and robustness of a 16-bit recording. X-OCN LT is a great option when shooting at 8K for projects that will be delivered in 4K. You retain the benefits of a 16-bit 8K recording but have files that are of a similar size to 4K ProRes 4444 XQ. X-OCN LT makes it easy for those used to acquiring at 4K to migrate to 6K or 8K acquisition without fearing a large increase in data overheads.

X-OCN XT when quality is everything

X-OCN XT excels when the very highest quality imagery is required, it is ideal for demanding visual effects work and productions requiring the utmost image quality from VENICE. X-OCN XT is visually indistinguishable from uncompressed raw yet considerably smaller.



Ready for VFX heavy workflows and Virtual Production

The VENICE cameras support several different gamuts and colourspace. As well as Sony's ultra-wide SGamut3 and SGamut3.cine gamuts, the VENICE cameras also support the use of the ACES colourspace and ACES LUT's. X-OCN 16-bit scene linear recordings are ideal for ACES workflows and other colour managed workflows. The use of the ACES colourspace in camera, as well as for all your production's assets such as background plates and graphics, avoids having to convert between different standards. This is particularly useful for virtual production, green screen, and effects heavy projects.



Extensive Metadata

X-OCN files are packed with useful metadata. Information about almost every aspect of the camera's setup is recorded in the file's metadata as well as lens metadata and gyro metadata. Lens and gyro metadata is particularly useful for virtual production and other VFX heavy projects. The VENICE cameras include support for both Cooke /i data and ZEISS eXtended Metadata.

IMAGE: Just some of the metadata recorded in a typical X-OCN file.

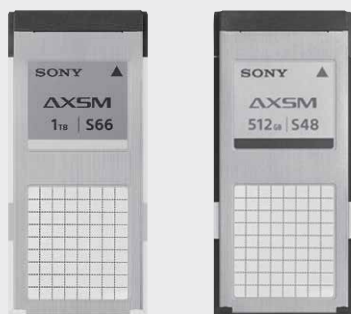
Camera	VENICE 2/Cine...	VENICE 2/CineAltaV 2
Video Codec	X-OCN ST	X-OCN ST
Resolution	8192x4320	8192x4320
Aspect Ratio	256:135	256:135
Format FPS	24p	24p
Capture FPS	24p	24p
Pixel Aspect		1:1
Flip		
Number of ...	4	4
Audio Codec	LPCM	LPCM
Audio Bit Depth	24	24
Audio Sampli...	48000	48000
Auto Exposur...	ManualExposur...	ManualExposureMode
Exposure Index	800	800
Auto Focus ...	ManualFocusM...	ManualFocusMode
ND Filter Wheel	1/8	1/8
Image Sensor...	34079um	34079um
Image Sensor...	17971um	17971um
Image Sensor...	ProgressiveFra...	ProgressiveFrame
Shutter Spee...	173.00deg	173.00deg
Shutter Spee...	1/50sec	20mssec
Camera Mast...	0.00dB	0.00dB
ISO Sensitivity	800	800

Computer Friendly format for modern workflows

X-OCN is a very computer friendly format. It uses clever algorithms and processes to reduce the size of the file without sacrificing image quality. These processes are designed to work with modern computer CPUs and GPUs to deliver fast, high-quality decoding at high resolutions. X-OCN can even be edited and graded on laptops such as the M1 and M2 MacBook Pro's.

ART Looks workflow

Sony's Raw Viewer software can be used to convert conventional LUTs into ART files. ART files help eliminate the image artefacts that can sometimes be found when using conventional LUTs such as solarisation and banding. ART files are particularly useful for the demanding high quality HDR workflows.



AXSM Card A-Series

AXSM



Frame size and frame rate agnostic

Unlike conventional codecs, X-OCN is not tied to specific frame sizes, frame rates or aspect ratios. X-OCN directly records the sensor's output at the chosen scan size and frame rate. This ensures that everything captured on set is transferred to post-production without scaling or any other compromises. The VENICE cameras support multiple scan sizes and aspect ratios giving film makers the ability to choose the most appropriate format for their production.

For Anamorphic productions you can shoot at 4:3 or 6:5 with multiple de-squeeze options. 6:5 is the perfect aspect ratio for modern 1.8x full frame anamorphic lenses and in addition provides a wider aspect ratio when used with conventional 2x anamorphic lenses. For spherical productions you can shoot at 17:9, 16:9 or 2.39:1.



Superlative Super 35mm

Whether you use the Full Frame 8K sensor or the Full Frame 6K sensor there is no loss of image quality when you use the 5.8K or 4K Super 35mm scan modes. This makes VENICE an excellent choice for productions where a Super 35mm scan size is preferred. When shooting at 5.8K or 4K Super 35, the X-OCN ST recordings will be of similar size to 4K ProRes 4444 recordings yet offer all the full benefits of a 16-bit recording direct from the sensor.

Fast Ethernet/WiFi control – The VENICE cameras include a fast and responsive internal webserver for remote control over ethernet or Wi-Fi. This can be used to setup and control the camera remotely from a computer, tablet or mobile phone. The ability to change the position of the ND filter remotely, or to switch between either of the camera's two base ISOs, greatly increases the range of light levels that can be accommodated when you are able to directly access the camera.

VENICE 2 with 8K image sensor recording time by AXS-A1TS66, 1 TB memory

Imager mode	Project FPS	X-OCN XT	X-OCN ST	X-OCN LT	4K ProRes 4444 XQ	4K ProRes 4444	4K ProRes 422 HQ	QFHD ProRes 4444 XQ	QFHD ProRes 4444	QFHD ProRes 422 HQ
5.4K 16:9	23/24	65 min	95 min	160 min	-	-	-	69 min	104 min	156 min
	25	62	91	154	-	-	-	67	100	150
	29	52	76	128	-	-	-	55	83	125
	50	31	45	77	-	-	-	33	50	75
	59	26	38	64	-	-	-	27	41	62
5.8K 17:9	23/24	65	95	160	65	98	146	-	-	-
	25	62	91	154	62	94	140	-	-	-
	29	52	76	128	52	78	117	-	-	-
	47	32	47	80	-	-	-	-	-	-
	50	31	45	77	31	47	70	-	-	-
5.5K 2.39:1	23/24	86	126	212	65	98	146	-	-	-
	25	82	121	204	62	94	140	-	-	-
	29	69	100	170	52	78	117	-	-	-
	47	43	63	106	-	-	-	-	-	-
	50	41	60	102	31	47	70	-	-	-
5.8K 6:5	23/24	41	60	102	65	98	146	69	104	156
	25	39	57	98	62	94	140	67	100	150
	29	33	48	81	52	78	117	55	83	125
	47	20	30	51	-	-	-	-	-	-
	50	22	32	55	31	47	70	33	50	75
5.8K 4:3	23/24	46	68	115	65	98	146	69	104	156
	25	44	65	111	62	94	140	67	100	150
	29	37	54	92	52	78	117	55	83	125
	47	23	34	57	-	-	-	-	-	-
	50	22	32	55	31	47	70	33	50	75
7.6K 16:9	23/24	32	47	80	-	-	-	69	104	156
	25	31	45	77	-	-	-	67	100	150
	29	25	37	64	-	-	-	55	83	125
	50	-	22	38	-	-	-	33	50	75
	59	-	18	32	-	-	-	27	41	62
8.1K 16:9	23/24	29	43	73	-	-	-	69	104	156
	25	28	41	70	-	-	-	67	100	150
	29	23	34	58	-	-	-	55	83	125
8.2K 17:9	23/24	32	47	80	65	98	146	-	-	-
	25	31	45	77	62	94	140	-	-	-
	29	25	37	64	52	78	117	-	-	-
	47	-	23	40	-	-	-	-	-	-
	50	-	22	38	31	47	70	-	-	-
8.2K 2.39:1	23/24	40	59	100	65	98	146	-	-	-
	25	39	57	96	62	94	140	-	-	-
	29	32	47	80	52	78	117	-	-	-
	47	20	29	50	-	-	-	-	-	-
	50	19	28	48	31	47	70	-	-	-
8.6K 17:9	23/24	29	43	73	65	98	146	-	-	-
	25	28	41	70	62	94	140	-	-	-
	29	23	34	58	52	78	117	-	-	-
	47	-	21	36	-	-	-	-	-	-
8.6K 3:2	23/24	23	34	58	65	-	-	69	-	-
	25	22	32	55	62	-	-	67	-	-
	29	18	27	46	52	-	-	55	-	-

* Recording one clip. When several clips are recorded, time should be shorten than the chart.

VENICE 2 with 6K image sensor recording time by AXS-A1TS66, 1 TB memory

Imager mode	Project FPS	X-OCN XT	X-OCN ST	X-OCN LT	4K ProRes 4444 XQ	4K ProRes 4444	4K ProRes 422 HQ	QFHD ProRes 4444 XQ	QFHD ProRes 4444	QFHD ProRes 422 HQ
3.8K 16:9	23/24	129 min	188 min	316 min	-	-	-	69 min	104 min	156 min
	25	124	180	304	-	-	-	67	100	150
	29	103	150	254	-	-	-	55	83	125
	50	62	90	153	-	-	-	33	50	75
	59	51	75	127	-	-	-	27	41	62
4K 2.39:1	23/24	161	235	395	65	98	146	-	-	-
	25	155	225	380	62	94	140	-	-	-
	29	129	188	317	52	78	117	-	-	-
	47	81	118	199	-	-	-	-	-	-
	50	77	113	191	31	47	70	-	-	-
4K 17:9	23/24	129	188	316	65	98	146	-	-	-
	25	124	180	304	62	94	140	-	-	-
	29	103	150	254	52	78	117	-	-	-
	47	64	94	159	-	-	-	-	-	-
	50	62	90	153	31	47	70	-	-	-
4K 4.3	23/24	93	135	229	65	98	146	69	104	156
	25	89	130	220	62	94	140	67	100	150
	29	74	108	183	52	78	117	55	83	125
	47	46	68	115	-	-	-	-	-	-
	50	44	65	110	31	47	70	33	50	75
4K 6.5	23/24	81	119	201	65	98	146	69	104	156
	25	78	114	193	62	94	140	67	100	150
	29	65	95	161	52	78	117	55	83	125
	47	41	59	101	-	-	-	-	-	-
	50	39	57	97	31	47	70	33	50	75
5.7K 16:9	23/24	59	87	147	-	-	-	69	104	156
	25	57	83	141	-	-	-	67	100	150
	29	47	69	118	-	-	-	55	83	125
	50	28	42	71	-	-	-	33	50	75
	59	23	35	59	-	-	-	27	41	62
6K 2.39:1	23/24	75	109	185	65	98	146	-	-	-
	25	72	105	177	62	94	140	-	-	-
	29	60	87	148	52	78	117	-	-	-
	47	37	54	92	-	-	-	-	-	-
	50	36	52	89	31	47	70	-	-	-
6K 17:9	23/24	59	87	147	65	98	146	-	-	-
	25	57	83	141	62	94	140	-	-	-
	29	47	69	118	52	78	117	-	-	-
	47	29	43	74	-	-	-	-	-	-
	50	28	42	71	31	47	70	-	-	-
6K 1.85:1	23/24	58	85	144	-	-	-	-	-	-
	25	56	81	138	-	-	-	-	-	-
	29	46	68	115	-	-	-	-	-	-
	47	29	42	72	-	-	-	-	-	-
	50	28	40	69	-	-	-	-	-	-
6K 3:2	23/24	47	69	117	65	98	146	69	104	156
	25	45	66	112	62	94	140	67	100	150
	29	38	55	94	52	78	117	55	83	125
	47	23	34	58	-	-	-	-	-	-
	50	22	33	56	31	47	70	33	50	75
	59	19	27	47	26	39	58	27	41	62

*Recording one clip. When several clips are recorded, time should be shorten than the chart.