VIDEO MULTI SDI MONITOR

Compact, Slim & Lightweight Multi-SDI Test Monitor

RoHS

CINELITE II

HD-SDI

SD-SDI

6.5 Inches

1.4 kg

The design is subject to change.

LV 5330 MULTI SDI MONITOR

GENERAL

The LV 5330 is a compact and lightweight multi-SDI test monitor specifically designed for oncamera and portable applications. Picture, waveform, vector, audio and status screens can be displayed individually or in multi-screen representations. The instrument is also equipped with on-picture measurement functions, Cinelite and Cinezone, and helps facilitate measurements that are easily understood by both technical and operations personnel. High-accuracy measurement and monitoring facilities also include settable error level monitoring and alarms as well as extensive data analysis. A screen capture function facilitates communication between production and post production personnel and aids in project documentation.

FEATURES

- **Two Serial Digital Inputs**
  Two SDI input connectors (channels A and B) support HD-SDI and SD-SDI signals. The selected SDI input is passed through an SDI output connector to facilitate switched monitor output operation.
- **Display**
  A built-in 6.5-inch XGA TFT LCD (1,024x768) provides brilliant and clear representations of waveforms, vectors, pictures, audio level meters, status, etc. The multi-screen feature allows these displays to be shown simultaneously in tiled windows.
- **Picture display**
  Brightness, contrast, and saturation is adjustable and aspect ratio, safe action and safe title markers can be displayed. The edge enhancement feature provides visual assistance with focus.
- **Cinelite II (Cinelite and Cinezone)**
  The Cinelite on-picture measurement feature displays the luminance of any three user definable points and provides luminance measurements in %, RGB levels (or %) as well as in f-stops. The Cinezone feature uses false-colors to represent luminance values on the display enabling quick confirmation of the luminance distribution levels on the display.
- **Waveform Monitoring**
  Parade, overlay, Y C_B C_R, RGB, and pseudo-composite displays are available.
- **Vectorscope**
  Vectorscope display is available and accommodates both 75 % and 100 % saturation levels; pseudo-composite vectorscope display is also available.
- **5 Bar Display**
  The 5 Bar display enables simultaneous monitoring of component and composite gamut.
- **Line Selector**
  Selects any line of the video signal to be displayed and provides waveform, vector and 5-bar representations of the selected line. A line marker on the picture facilitates visual selection of the appropriate line.
- **Audio Level Meter**
  Up to 8 channels of embedded audio signals can be displayed using audio bar level meters.
  *The SD-SDI audio quantization precision is up to 20 bits.
- **Viewfinder**
  The camera's composite video output (in NTSC or PAL) can be shown on the picture display. The edge enhancement feature assists you in focusing the camera.
- **Screen Capture**
  The displayed screen can be captured and saved to internal memory or USB memory.
- **Extensive Analysis Features**
  - Various types of error detection
  - SDI signal event log
  - Digital data dump
- **Flexible Control**
  - Instrument can be remote controlled from a PC over an Ethernet network.
  - Internal memory holds up to 30 presets allowing quick access to your favorite instrument setups. Personalize your LV 5330 by loading your own custom presets via USB thumb-drive.
- **External Synchronization**
  Accepts tri-level sync or NTSC/PAL black burst signals.
- **Stereo Headphone Output**
  Extracts embedded audio signals and sends 2 user selectable audio channels to the headphone jack.
- **Panel LED Illumination**
  You can illuminate all of the panel keys; a useful feature when working in a dark environment.
- **Power Supply**
  XLR DC input connector is provided; accepts 12Vdc- 18Vdc.
  A V-mount battery adapter is also available as a factory option.
- **Tripod Mounting**
  A screw(1/4 in.) hole for attaching a camera tripod is provided on the bottom panel of the LV 5330
- **Battery Mount (Factory Option)**
  A battery adapter can be installed on the rear panel as a factory option.
  · **BATTERY MOUNT IDX (V-Mount)**
  · **BATTERY MOUNT ANTON (AntonBauer)**

SPECIFICATIONS LV 5330

Video Formats and Corresponding Standards

	Format	Corresponding Standard
1	1080i/60	SMPTE 274M, 292M
2	1080i/59.94	
3	1080i/50	
4	1080p/30	
5	1080p/29.97	
6	1080p/25	
7	1080p/24	
8	1080p/23.98	
9	1080PsF/30	SMPTE RP211, 292M
10	1080PsF/29.97	
11	1080PsF/25	
12	1080PsF/24	
13	1080PsF/23.98	
14	720p/60	SMPTE 296M, 292M
15	720p/59.94	
16	720p/50	
17	720p/30	
18	720p/29.97	
19	720p/25	
20	720p/24	
21	720p/23.98	
22	525i/59.94	SMPTE 259M
23	625i/50	

Other Standards
- **Ancillary Data Standard:** SMPTE 291M
- **Embedded Audio Standard:** SMPTE 299M (HD-SDI), SMPTE 272M (SD-SDI)

Format Setting
- **Format Setting:** Auto or manual setting from the supported formats
- **Sampling Frequency:** 74.25 MHz (HDTV), 74.25/1.001 MHz (HDTV), 13.5 MHz (SDTV)
- **External Synchronization:** Auto setting from supported formats

Input/Output Connectors

SDI Input
- **Input Connector:** Two BNC connectors (switching between A and B)

External Reference Input
- **Input Signal:** Tri-level sync or NTSC/PAL black burst
- **Input Connector:** One pair of BNC connectors (15 kΩ passive loop-through)
  *Phase difference accurary between external reference and internal signal is ±1 clock cycle.

SDI Output
- **Output Connector:** One BNC connector (reclocks and transmits the selected SDI input signal)
- **Output Voltage:** 800 mVp-p±10 % (75 Ω)

Headphone Output
- **Output Signal:** Extracts and outputs the embedded audio signal.
- **Sampling Frequency:** Only supports 48 kHz (must be synchronized to the video signal)
- **Output Connector:** One stereo miniature jack, 32 Ω (16 to 600 Ω)

USB Memory
- **Function:** Stores screen captures, error logs, preset data, and data dumps, Also used for Firmware update.

Remote Control
- **Function:** Recalls presets, transmits errors, controls the tally indicator
- **Connector:** D-sub 15-pin female

Ethernet
- **Function:** Enables remote control from an external computer and data transmission
- **Type:** 10BASE-T/100BASE-TX auto switching, one RJ-45 jack

Viewfinder Input
- **Function:** Monitors composite video signals, picture only.
- **Input Signal:** NTSC/PAL VBS signal
- **Input Connector:** One BNC connector

Picture Display

- **HDTV Display:** Displays by sampling pixels
- **SDTV Display:** Displays by interpolating pixels
- **Display:** Color or black and white selectable
- **Frame Rate:** Displays by converting the frame rate using the internal sync signal
- **Marker Display:** Center marker, aspect marker, safe title marker, safe action marker
- **Adjustment:** Brightness, contrast, chroma, aperture

Cinelite Display

- **f-STOP:** Measure relative brightness in f-stops
  - **Measurement areas:** Three points specified using the cursor
  - **Reference:** Uses an object with an 18 % reflectance as reference
- **%DISPLAY:** Displays luminance percentage (LEVEL%), RGB percentage (RGB%), and RGB numeric values
  - **Measurement points:** Three points specified using the cursor
- **Measurement areas:** 1×1, 3×3, 9×9
- **GAMMA**
  - **0.45:** Reference gamma
  - **USER 1-3:** User-defined gamma
  - **USER A-E:** Gamma downloaded from USB memory
- **On Picture Level Indicator:** Switches the screen to black and white and displays the set luminance level in green

Cinezone Display

- **Screen:** Maps colors based on luminance levels. Linear or step selectable.
- **UPPER:** Can be set from -6.3 % to 109.4 %. Displays white when the level is above the set level.
- **LOWER:** Can be set from -7.3 % to 108.4 %. Displays Black when the level is below the set level.

Display Form

- **Display Size:** 6.5-inch color XGA. Effective area 1024 × 768 dots
- **1 Screen Display:** Picture display, Cinelite display, Cinezone display, waveform display, vectorscope display, status display, viewfinder display
- **2 Screen Display:** Picture and waveform displays, waveform and vectorscope displays, waveform and picture displays, waveform and audio level displays, audio numeric and bar displays
- **4 Screen Display:** Audio level display or status display selectable in addition to waveform display, vectorscope display, and picture display

Waveform Display

Waveform Operation
- **Display Modes:** Overlay and parade
- **Timing Display:** Displays by calculating Y-C_B and Y-C_R
  Uses bowtie signals
- **EAV-SAV period:** Show or hide selectable
- **G, B, R Conversion:** Converts Y, C_B, C_R signals into G, B, R and displays the result
- **Pseudo-Composite Display:** Digitally converts component signals into composite signals and displays the result
- **Channel Assignments:** The G, B, R order or R, G, B order selectable for G, B, R conversion display

Vertical Axis
- **Gain:** ×1, ×5, or variable selectable
- **Variable Gain:** ×0.2 to ×2.0 at the ×1 setting, ×1.0 to ×10.0 at the ×5 setting
- **Amplitude Accuracy:** ≤ ±0.5 %
- **Frequency Characteristics HDTV**
  - **Y Signal:** ≤ ±0.5 % 1 to 30 MHz
  - **C_B, C_R signals:** ≤ ±0.5 % 0.5 to 15 MHz
- **Frequency Characteristics SDTV**
  - **Y Signal:** ≤ ±0.5 % 1 to 5.75 MHz
  - **C_B, C_R signals:** ≤ ±0.5 % 0.5 to 2.75 MHz

Horizontal Axis
- **Line Magnification:** ×1 or ×10 selectable
- **Field Magnification:** ×1, ×20, or ×40 selectable

Cursor Measurement
- **Horizontal Cursors:** 2 (REF and DELTA)
- **Vertical Cursors:** 2 (REF and DELTA)
- **Amplitude Measurement:** Measures in % or V
- **Time Measurement:** Measures in usec or msec
- **Frequency Display:** Displays the frequency by assuming the interval between the cursors to be one period

Marker Display:
- **75 % Marker:** Indicates the value corresponding to the peak chrominance signal of the 75 % color bar.

Vectorscope Display

- **Scale:** 75 % or 100 % selectable
- **Gain:** ×1, ×5, IQ-MAG, or variable selectable
- **Variable Gain:** ×0.2 to ×2.0 at the ×1 setting, ×1.0 to ×10.0 at the ×5 setting
- **Amplitude Accuracy:** ≤ ±0.5 %
- **IQ Axis:** Show or hide selectable
- **Pseudo-Composite Display:** Artificially converts component signals into composite signals and displays the result

5 Bar Display

- **Bar Display:** Displays the peak levels of Y, R, G, B, and composite

Embedded Audio Display

- **Display Channels:** 8-channel simultaneous display
- **Meter:** 60 dB peak level or 90 dB peak level
- **Group Selection:** Select any two groups from groups 1, 2, 3, and 4
- **Channel Mapping:** Mapping to L, R, SL(S), SR, C, LFE, RL, RR

Viewfinder

- **Display Size:** Full-screen display
- **Adjustment:** Brightness, contrast, chroma, aperture

Status

- **Data Dump Display:** Dumps data by serial data sequence or by channel
- **Event log:** Stores up to 1,000 events
- **Data output:** To USB memory or over an Ethernet network

Screen Capture

Captures the displayed screen
- **Waveform Comparison:** Superimposes the input signal over an image from memory.

Presets

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Other Display Features

- **LCD:** 6.5-inch color LCD
  - **Backlight brightness:** High or low selectable
- **Screen Display:** Format, color system, date, time
- **Panel LED Illumination:** Illuminates all keys

Environmental Conditions

- **Operating Temperature:** 0 to 40 °C
- **Operating Humidity:** ≤ 85 %RH (no condensation)
- **Operating Environment:** Indoors, or outdoors with no rain
- **Overvoltage Category:** I
- **Pollution Degree:** 2

Power Requirements

12 VDC (10 to 18 V), 18 Wmax.

Dimensions and Weight

215 (W) × 128 (H) × 63 (D) mm (excluding projections), 1.4 kg

Accessories

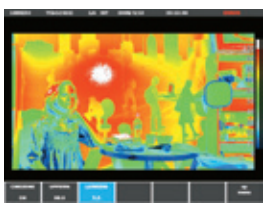
Instruction manual 1
Camera adapter..... 1

Option Sold Separately

AC adapter LP 1960, LR 2752, LC 2127

Cinelite II

Cinelite



Cinezone

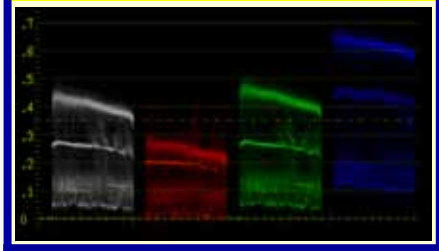
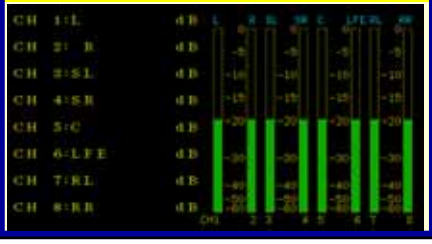
LV5330 Ultra-Compact SDI Monitor

- **Compact Portable SDI Picture, Waveform, Vector Monitor**
- High-brightness screen 6,5”
- Ideal for use on any SDI camera
- Patented measurement tools Gamut 5BAR,CineLite ,CineZone and CineSearch included
- Formats are HD,SD and Dual link-A
- Size 215(W)x128(H)x63(D)mm
- Weight only 1,3kg, power consumption only 18W

NEW!

HD / SD
Dual-A

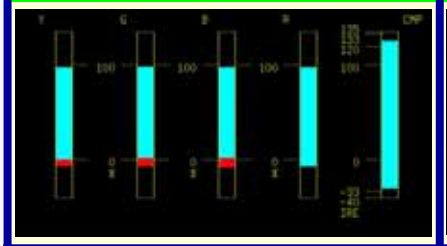
LV5330 Normal Display

Waveform	Vector Scope
	
Picture Monitor	**Sound Monitor**
	

LV5330 Leader Exclusive Display

LEADER

5Bar Gamut Error



CineZone

CineSearch

F-Stop Measurement

LV5330 Leader Exclusive Display

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Y% Point Measurement

RGB Point Measurement

RGB255 Point Measurement

LV5330 Interesting Display

LEADER

Capture compare

Phase

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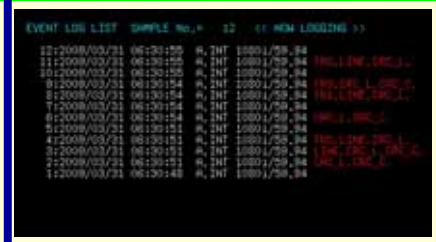
LV5330 Display data analyze

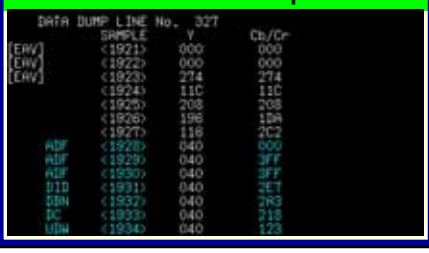
LEADER

Error Status

Error log



Data Dump

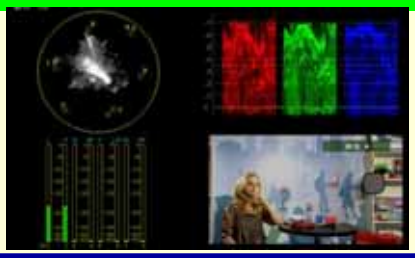


ANC data

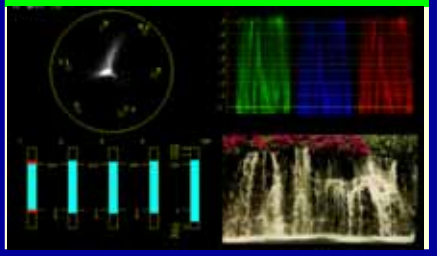
LV5330 Multi Display

LEADER

4 Screen with Sound



4 Screen with 5BAR



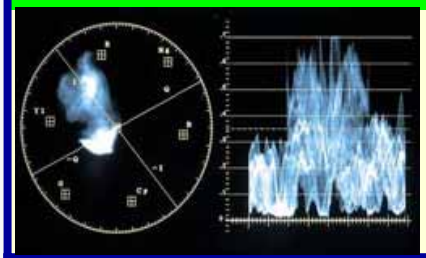
Picture Main with RGB WFM

Picture Main with Y WFM

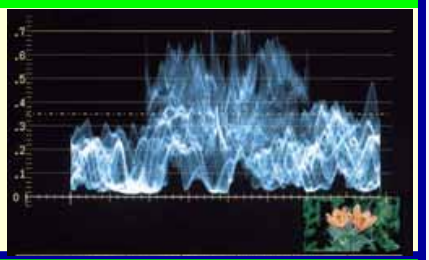
LV5330 Multi Display

LEADER

Vector and WFM



WFM with Picture



Picture with WFM

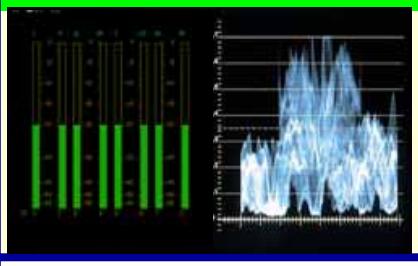
Pic with WFM Line Select

LV5330 Multi Display

LEADER

Picture with Vector

Sound and WFM



Sound Value and Bar

Picture Display Markers

LEADER

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Picture Display Markers
Safe Action/Safe Title/Center

LEADER

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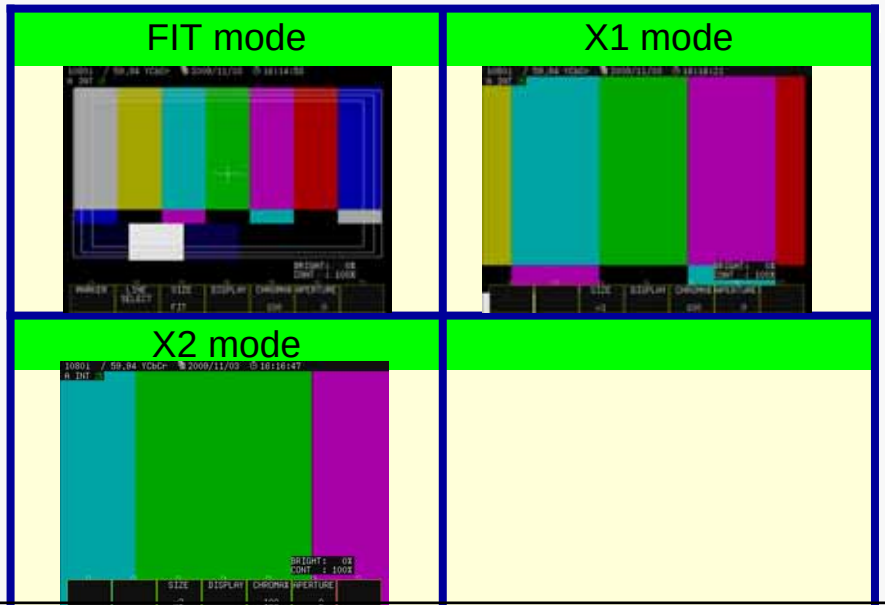
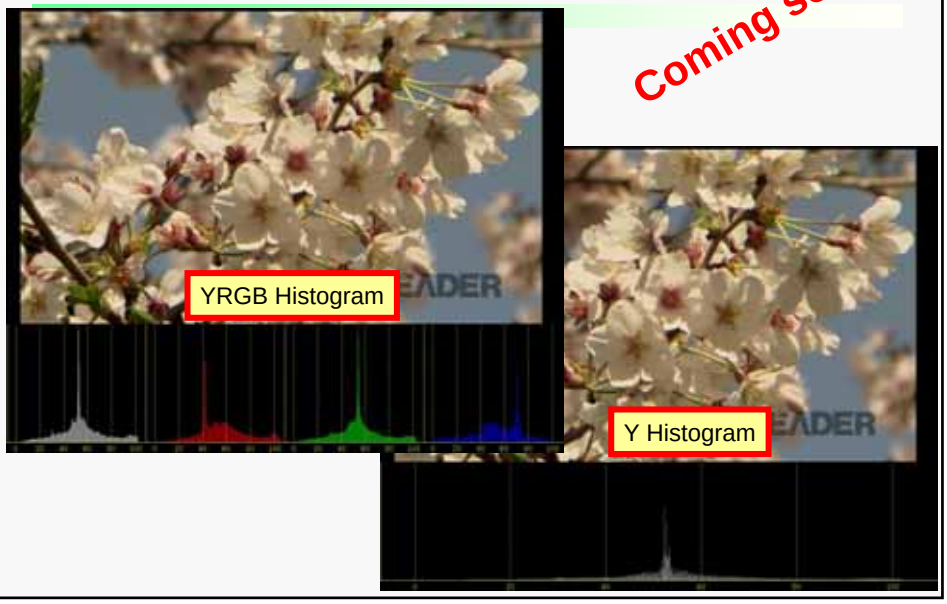
LV5330 Magnify Mode Display

LEADER



SD 16:9 Correct Display

Histogram Option



Coming soon

LV5330 USB port

1. Screen capture save to BMP file
2. Capture file load to unit (Compare)
3. Preset save to file
4. Log save to TXT file
5. Data Dump save to TXT file
6. Software Upgrade

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LV5330 used on Camera

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LV5330 in Rack Mount

OB Van or Studio

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LV5330 carrying case option

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LV5330 Battery mount

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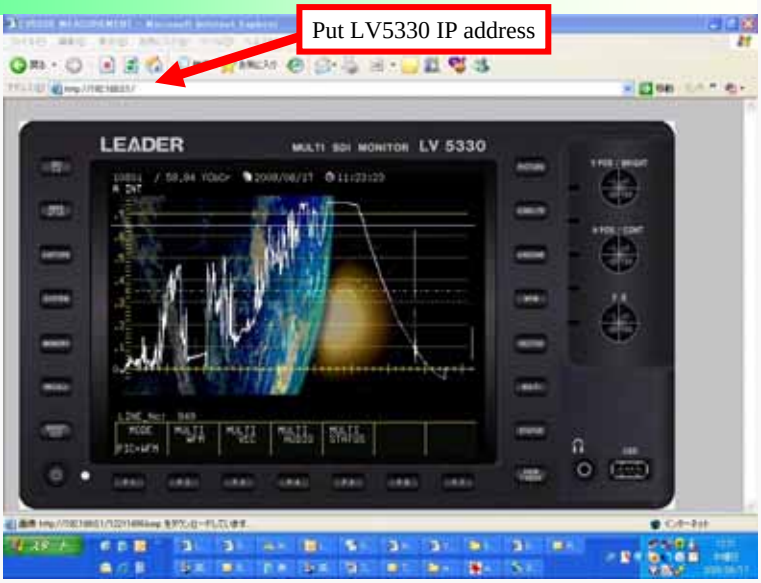
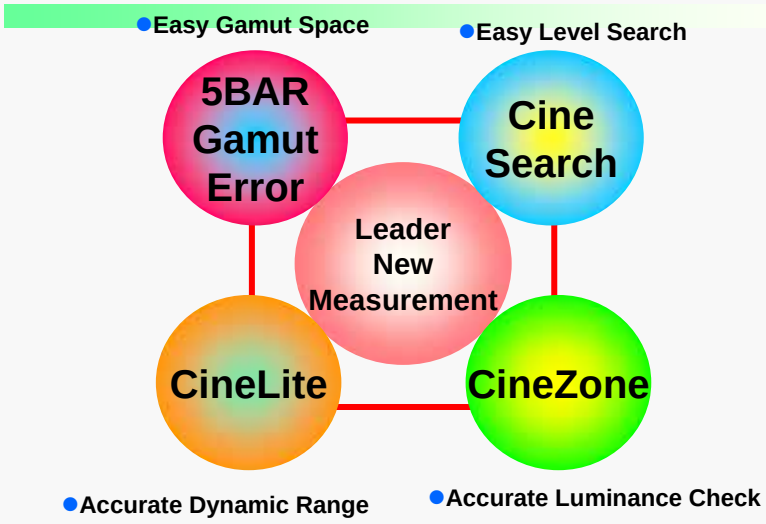
Web Server (Use for Internet explorer)

You can control mouse



Advanced Measurement Methods

LEADER



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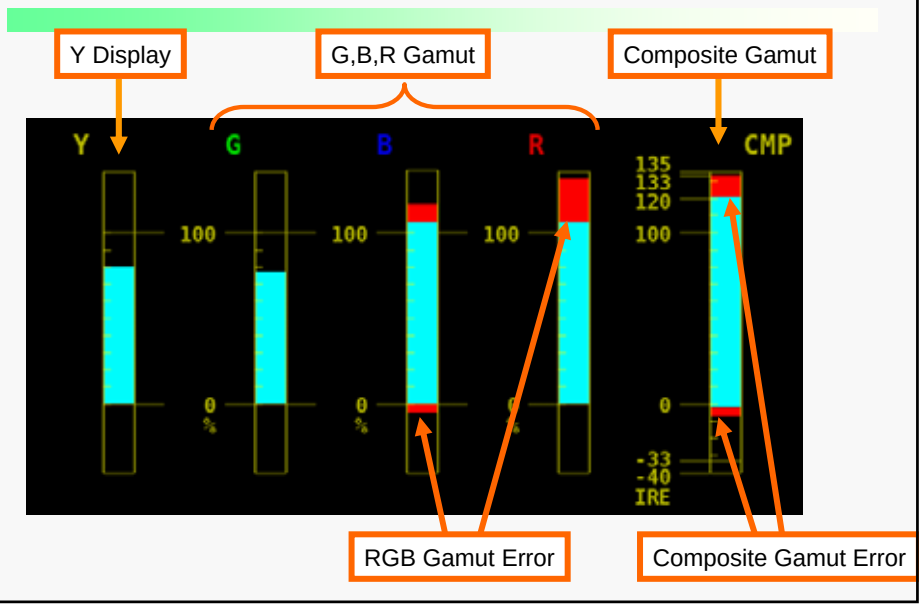
Leader exclusive

5Bar Graph Display-1

LEADER



5Bar Graph Display-4

LEADER

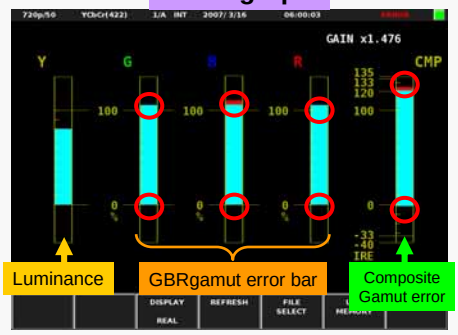
Check this line

Monitor range is wide
Very difficult check all time

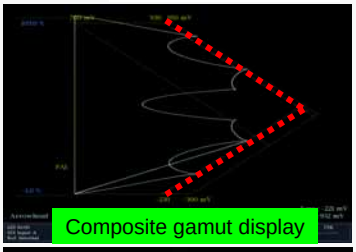
LEADER

5 Bar graph

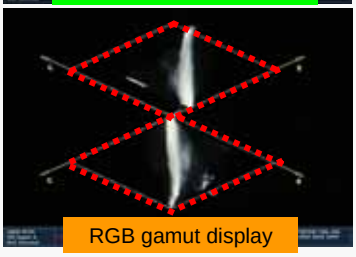
check point



One Screen



Composite gamut display



RGB gamut display

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LEADER 5-BAR Gamut Error

Other Company Gamut Error

5Bar Graph Display-5

LEADER

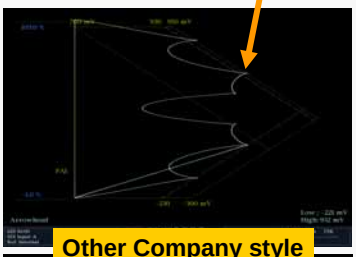
Over Arrowhead is error

Red is error

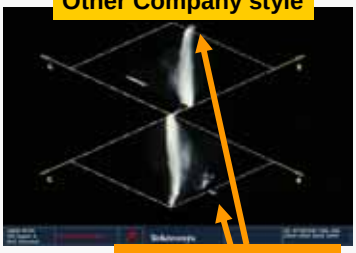
Blue is OK

You can check
Very small error

LEADER style



Other Company style



Over diamond is error

5Bar Graph Display-5

LEADER

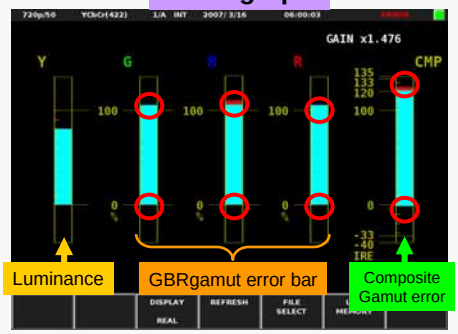
Check this line

Monitor range is wide
Very difficult check all time
Can't RBG and composite same time

LEADER

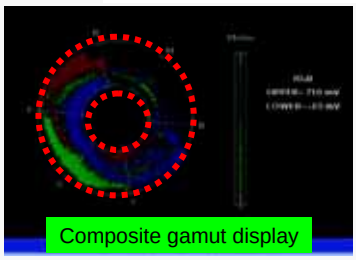
check point

5 Bar graph

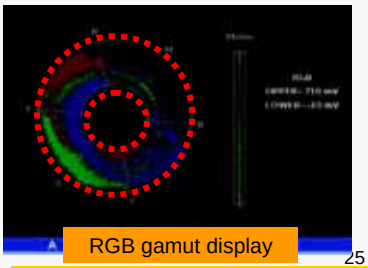


Luminance | GBRgamut error bar | Composite Gamut error

One Screen



Composite gamut display



RGB gamut display

LEADER 5-BAR Gamut Error

Other Company Gamut Error

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CINELITE

LEADER

- **F-Stop and percentage accurate measurement**
- **Use the full dynamic range of your camera!**

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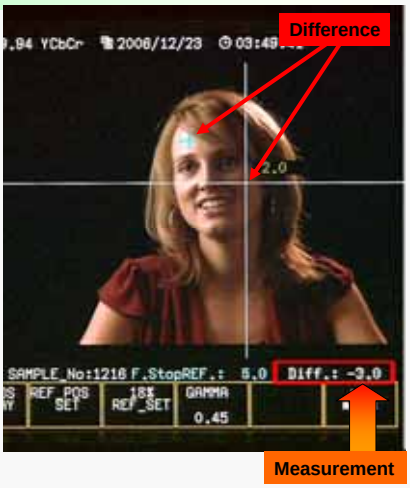

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Luminance Percentage

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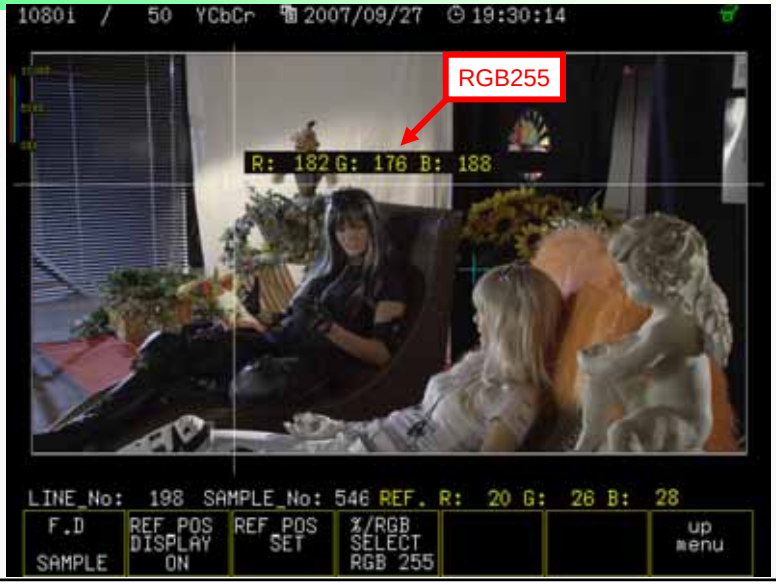
R / G / B Percentage

R / G / B Percentage



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CineZone

LEADER

NEW!

Luminance zoning
New option CineZone

Picture Display

CineZone

CineZone

LEADER

Luminance Upper %

You can setup upper and lower percentage

Luminance Lower %

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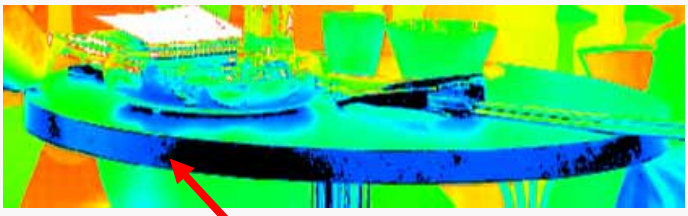
CineZone

Picture Display

CineZone



Picture display table side is black.
But CineZone can see luminance detail

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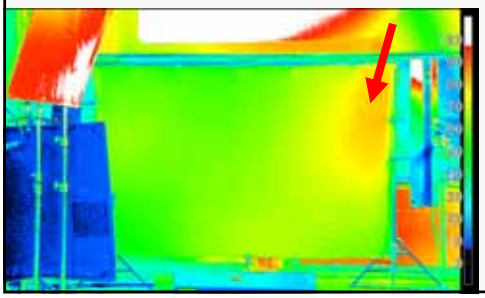
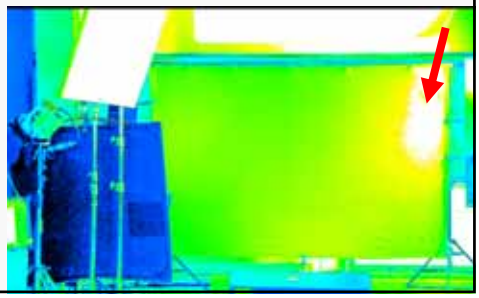
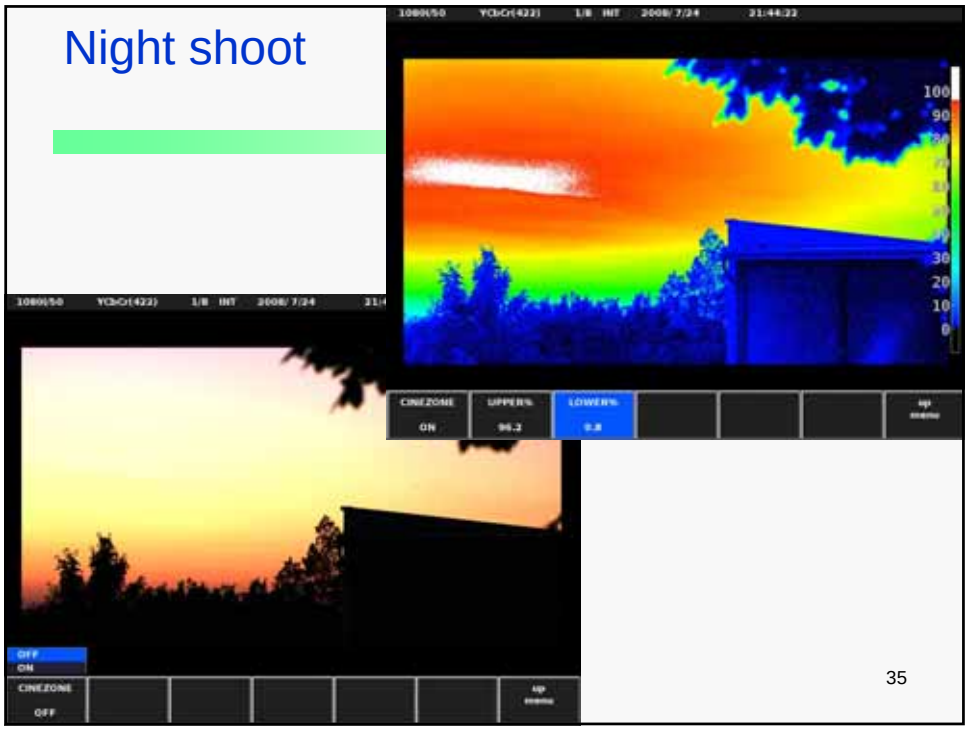
Chroma key





Night shoot



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Night shoot

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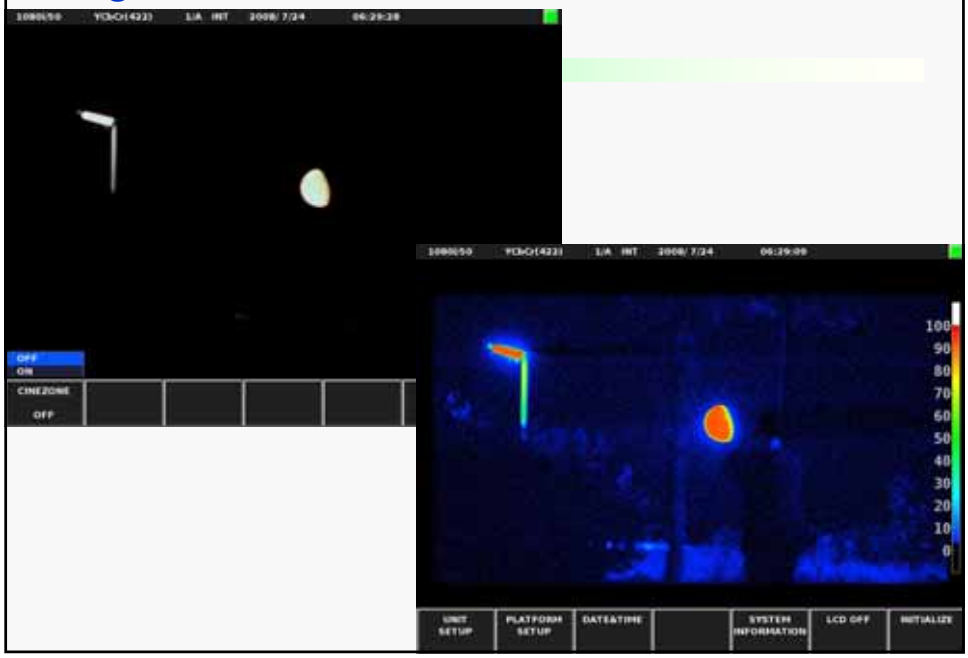

CineZone change luminance limitation

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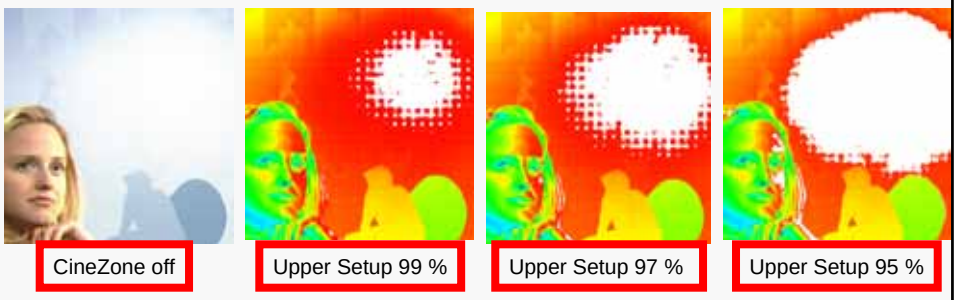

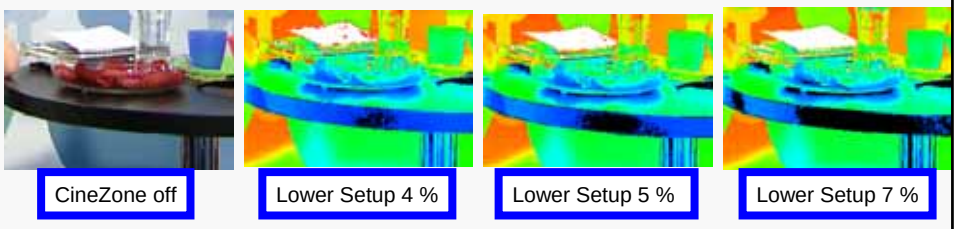

CineZone Indicatory hi and low luminance

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Effectively examine Picture condition using CineZone display

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- In the case of image over 100% luminance level

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Video gamut should not over 100% luminance level

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Checking video gamut using waveform is possible, however, unable to identify specific location

42

Vectorscope is used for color monitoring and does not measure luminance signal

43

Over/under exposure area can be identified easily using CineZone. White area indicates over 100%.

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% luminance level measurement is possible using CineLite

45

◆In the case of image under 100% luminance level

46

Whether image is over or under 100% can not be easily identified using picture display

47

Video gamut under 100% can be checked with waveform

48

Vectorscope does not measure whether it is over 100% luminance level

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Image within 100% gamut is easily identified using CineZone

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Threshold is set to100%. All image is under 100% since white area does not exist

Examine with Cinelite is possible whether it is within 100% gamut

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Measurement capability

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	Measure the exposure	
CineZone	Identify the location in the image	++
CineLite	Measure with cross hair	+
Picture	Can not measure	-
Wave Form	Measure the entire frame or 1 line	+
Vector	Can not measure	-

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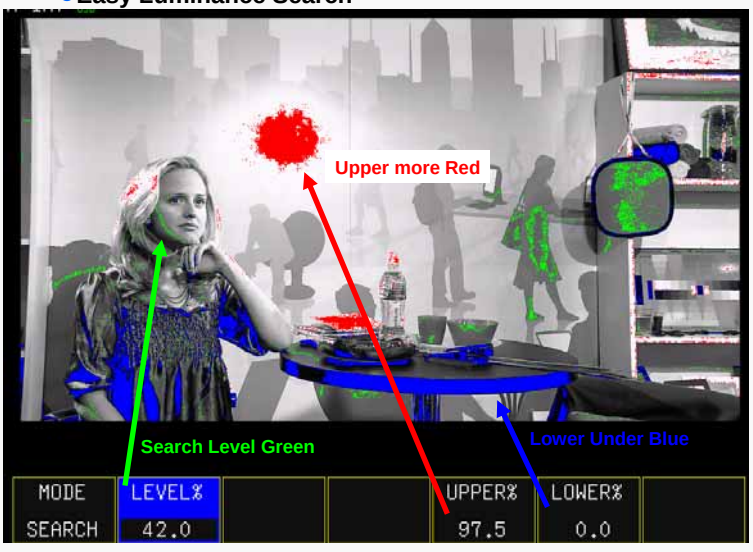
Comparison

	Leader	T-Company	V-Company
CineZone	YES	No	No
CineLite	YES	No	No
Picture	YES	Yes	Yes
Wave Form	YES	Yes	Yes
Vector	YES	Yes	Yes

CineSearch Easy Luminance Search

- Easy Luminance Search



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CineSearch Easy 3 levels Search 1

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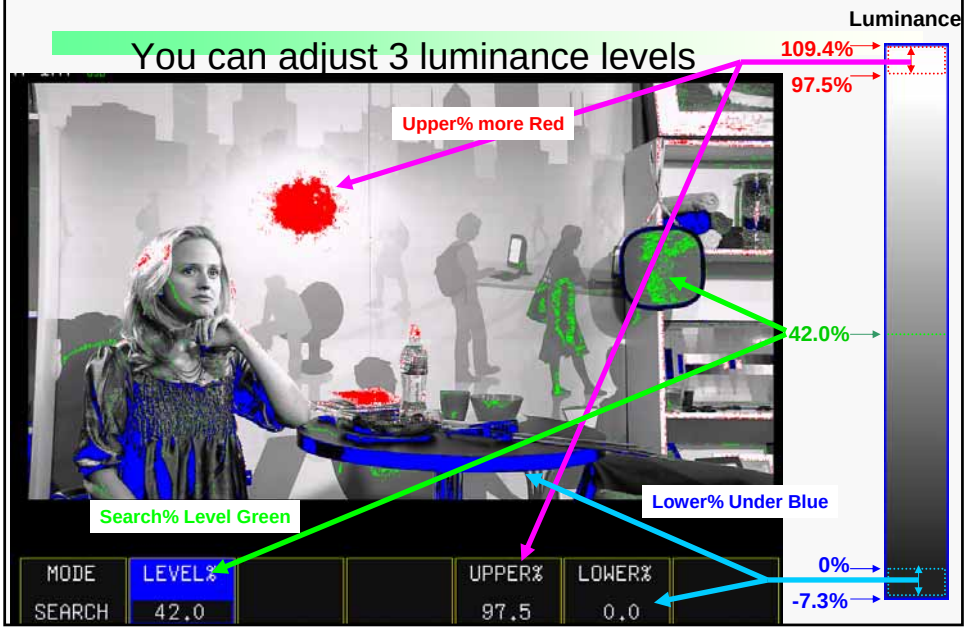
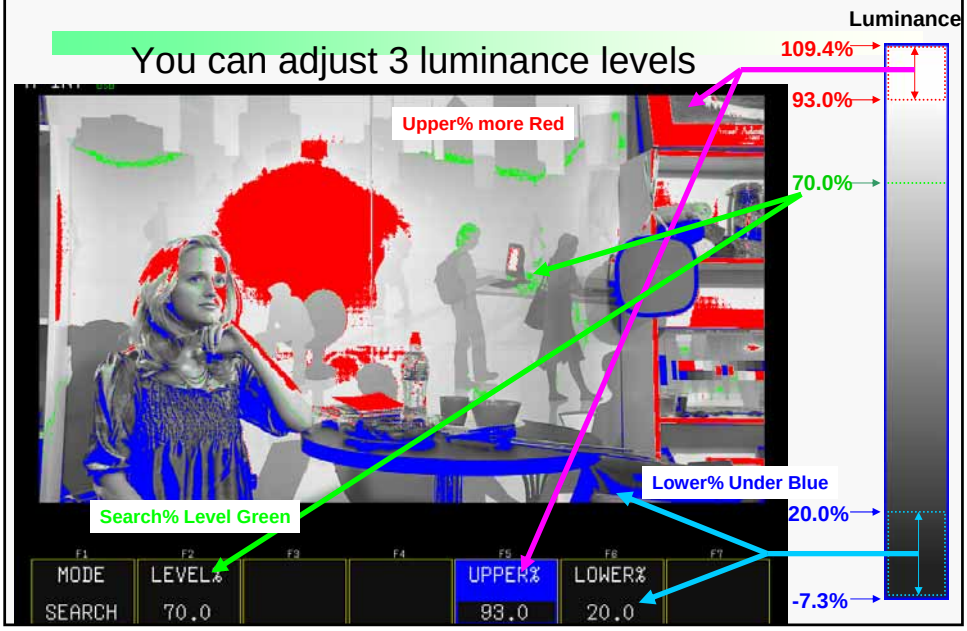
You can adjust 3 luminance levels



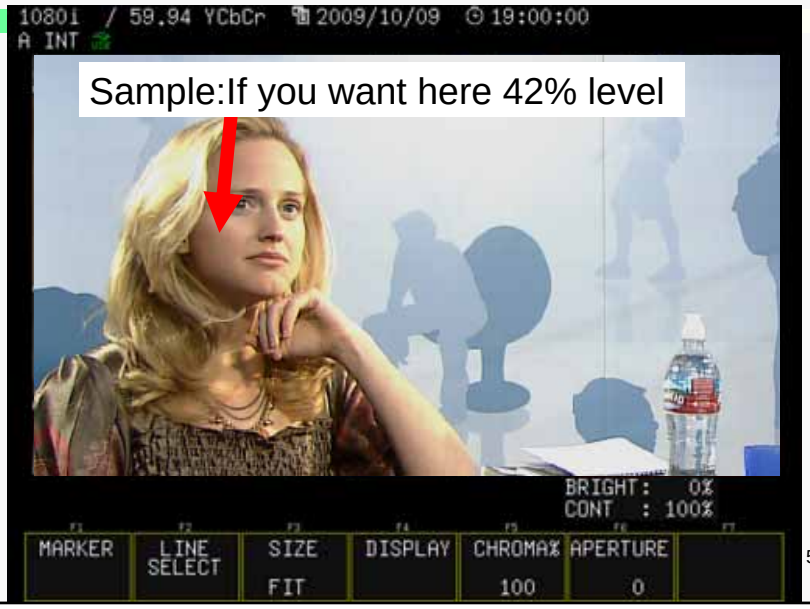
CineSearch Easy 3 levels Search 2

LEADER

You can adjust 3 luminance levels



CineSearch Exemplum Adjustment 1



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CineSearch Exemplum Adjustment 1

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CineSearch Exemplum Adjustment 1

59

CineSearch Exemplum Adjustment 1

STEP3:Adjust iris or light

OR

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CineSearch Exemplum Adjustment 1

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CineSearch Exemplum Adjustment 2

Change Search level

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Comparison chart

Function	Leader	T-Company	V-Company
WFM	Yes	Yes	Yes
Vector	Yes	Yes	Yes
Picture	Yes	Yes	Yes
Sound	Yes	Yes	Yes
Gamut	5Bar (Easy)	Diamond Arrowhead	RGB Ring Composite Ring
F-Stop %Measure	Cinelite	Can't	Can't
Luminance zoning	CineZone	Can't	Can't
Easy Level Adjust	CineSearch	WFM	WFM
Multi camera measure	Yes	None	None

LEADER

Technology Innovator

Leader Electronics Corporation

End

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