

## Flicker Measuring Probe for LCM ATS

### MODEL A712306

#### Key Features :

- Able to integrate with LCM ATS for LCM auto flicker adjustment
- Capable of integrating Chroma 29XX Series LCM Auto Test System
- Support FMA and FLVL flicker measurement mode
- Have a patented adjustment algorithm, making adjustment speed faster
- Capable of editing adjustment script when using with LCM Master
- Include a protective sleeve which is anti-collision, anti-static and anti-electromagnetic, making the sensor be applicable to a variety of harsh environments



## FLICKER MEASURING PROBE FOR LCM ATS MODEL A712306

The Chroma A712306 Flicker Measuring Probe for LCM ATS is specifically designed for adjusting the flicker on LCM automatically following the FMA(Flicker Modulation Amplitude) standards defined by VESA (Video Electronics Standards Association) and JEITA(Japan Electronics Information Technology Industries Association) for flicker measurement. It can work with the Chroma 291X Series LCM automatic test system to complete auto flicker adjustment.

The main function of Chroma 291X Series LCM ATS is to provide the power and signal for the LCM to be adjusted. Different model no. and accessories can be purchased based on the interface and size used. The A712306 that is controlled by 291x LCM ATS follows the VESA defined FMA measurement to retrieve the flicker value for judgment. When the flicker value is larger than the specification, the flicker adjustment interface will be used to adjust the Vcom voltage on the UUT (Unit Under Test.) The flicker adjustment with patented algorithm can adjust quickly and complete the entire program in seconds.

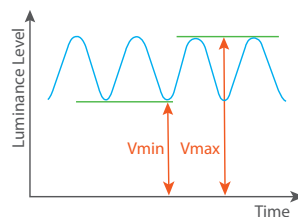
The auto flicker adjustment program equipped by Chroma 291X Series LCM ATS can edit different scripts for different models of UUTs without burning in the firmware. Such flexibility is suitable for most of the LCMs with digital Vcom functions on the market that can improve the test efficiency, lower down the test equipment and labor cost for the LCM manufacturers.

#### FMA Measurement Theory

Assuming the luminance change of LCD is as the figure shown below, the luminance of AC is  $V_{max}-V_{min}$  and the luminance of DC is  $(V_{max}+V_{min})/2$ . Based on the calculation formula of VESA ,FMA :

$$FMA = AC \text{ lux.} / DC \text{ lux.}$$

$$= (V_{max}-V_{min}) / \{ (V_{max}+V_{min})/2 \} \times 100\%$$



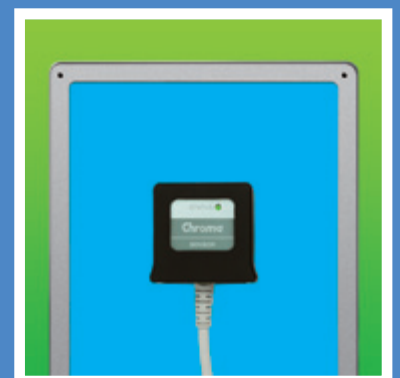
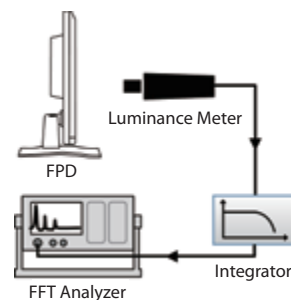
#### FLVL Measurement Theory

The way of FLVL is sending the data A712306 measured to the filter whose sensor is fit to human eyes. Then output it into the FFT Analyzer. Get the energy distribution in different frequencies. Here's the JEITA standard flicker calculation formula.

P0 : Power spectrum when frequency is zero

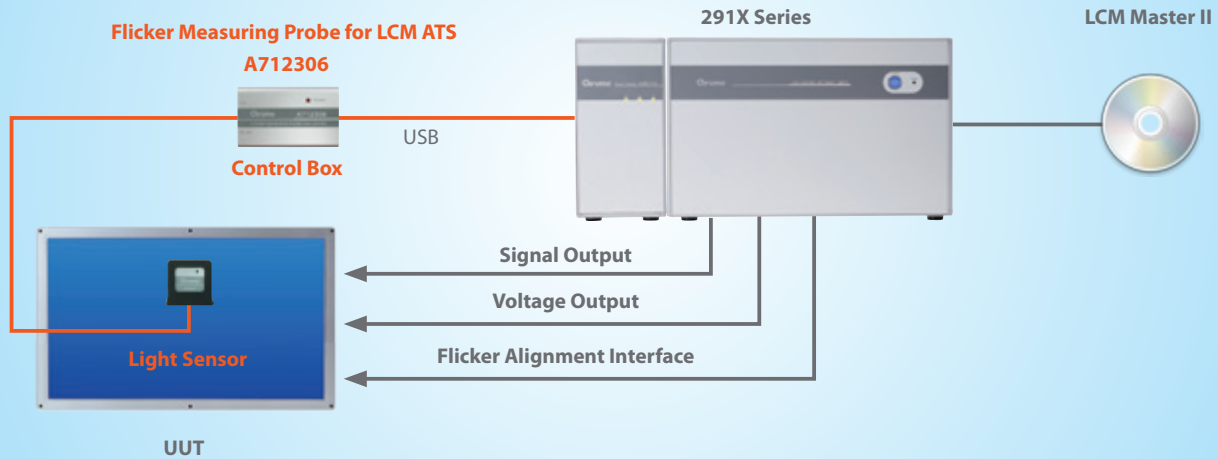
Px : Power spectrum when frequency is X

$$\text{Flicker amount} = 10 \times \log (P_x/P_0) \text{ [dB]}$$



**Chroma**

## SYSTEM ARCHITECTURE



## SPECIFICATIONS

Model		A712306
Measurement Area		Ø10mm
Measurement Distance		0 mm (contact measurement)
Measurement Range		10 lux ~1000 lux
Measurement Mode		FMA , FLVL
Flicker -Contrast Measurement Method (FMA)	Display Range	0.0 to 100%
	Accuracy *1	± 2% (Flicker frequency : 30 Hz AC/DC 10 % sine wave) ± 3% (Flicker frequency : 60 Hz AC/DC 10 % sine wave)
	Repeatability *1	1% (2σ) (Flicker frequency : 20 to 65 Hz AC/DC 10 % sine wave)
	Measurement Time	0.5 sec./time
Flicker -JEITA Measurement Method (FLVL)	Accuracy *1	± 1dB (Flicker frequency : 30 Hz AC/DC 10 % sine wave)
	Repeatability *1	0.5dB (Flicker frequency : 30 Hz AC/DC 10 % sine wave)
	Measurement Time	2 sec. / time
Communication Interface		USB
Supported Software		LCM Master II
Input Voltage		DC 5V, 500 mA
Operating Temp./Humidity		0°C to 40°C (32° F to 104° F) ; less than 90% relative humidity (non-condensing)
Storage Temp./Humidity		0°C to 40°C (32° F to 104° F) ; less than 90% relative humidity (non-condensing)

Note \*1 : It depends on Chroma's test terms.

\* All specifications are subject to change without notice. Please visit Chroma's website for the latest information.

## ORDERING INFORMATION

**A712306** : Flicker Measuring Probe for LCM ATS

**Chroma 291X Series LCM ATS**

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