
Sample Report

Typical LCD Panel Analysis Menu

- 1. Optical Characteristics** non-destructive
- 2. Driving Characteristics** non-destructive
- 3. Mechanism analysis**
- 4. Panel analysis**
- 5. Circuit analysis**
- 6. Cross sections**

1. Optical Characteristics (AUO LCD module)



Photo.1-1-1 Monitor

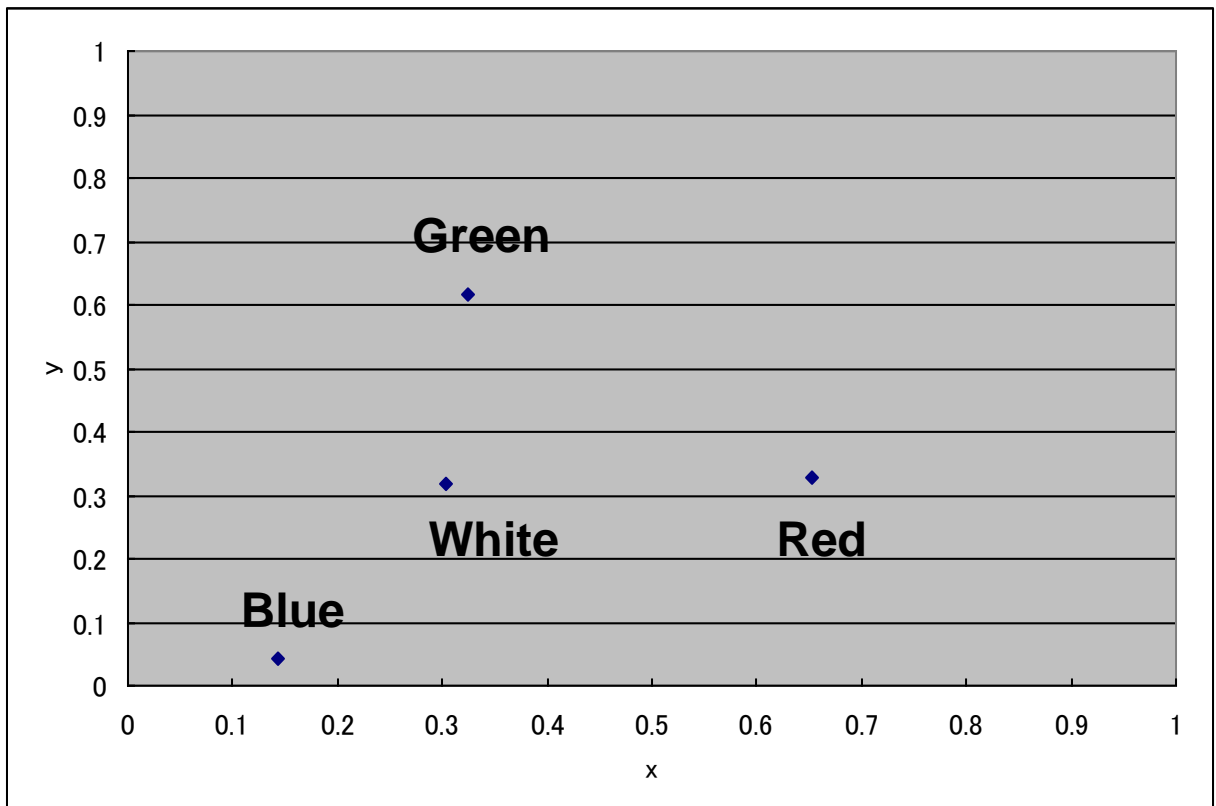


Fig.2-1 Chromaticity Coordinates

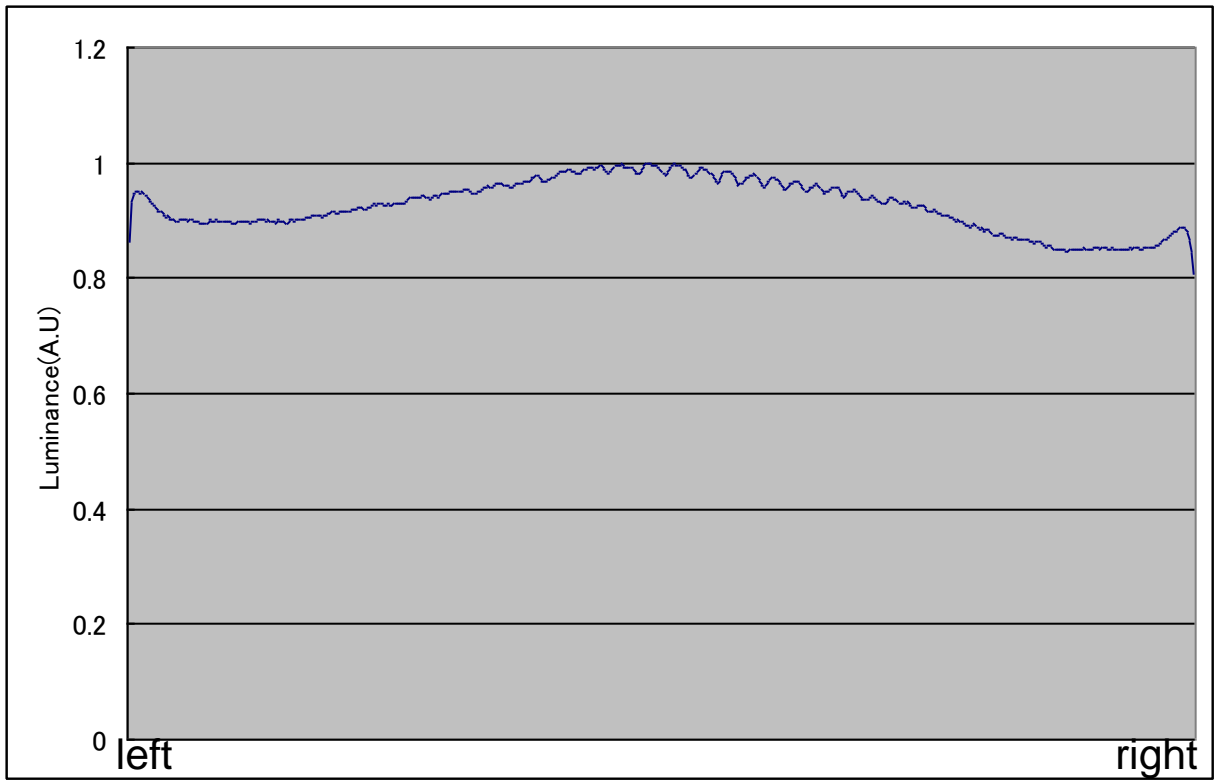
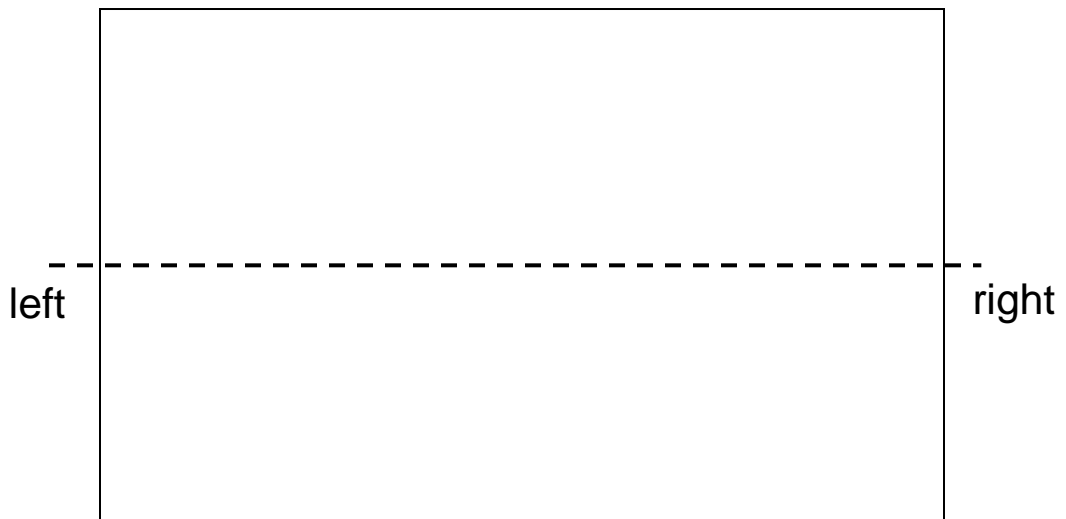


Fig.2-3 Luminance Variation(X-direction)



White Display

2. Driving Characteristics

2-1. Measuring terminal

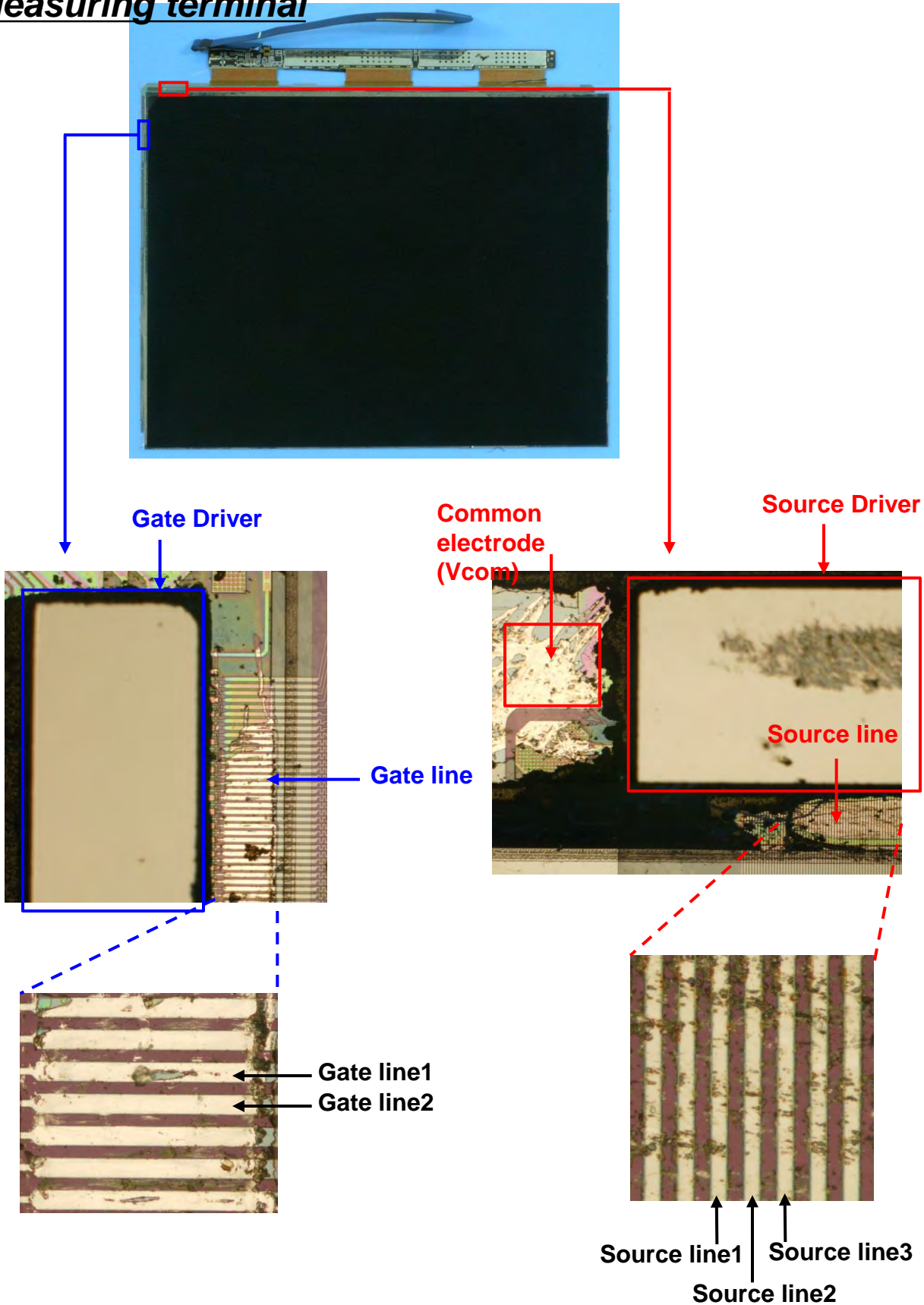


Photo.1-2-1 Measurement part

2-2. Pixel layout

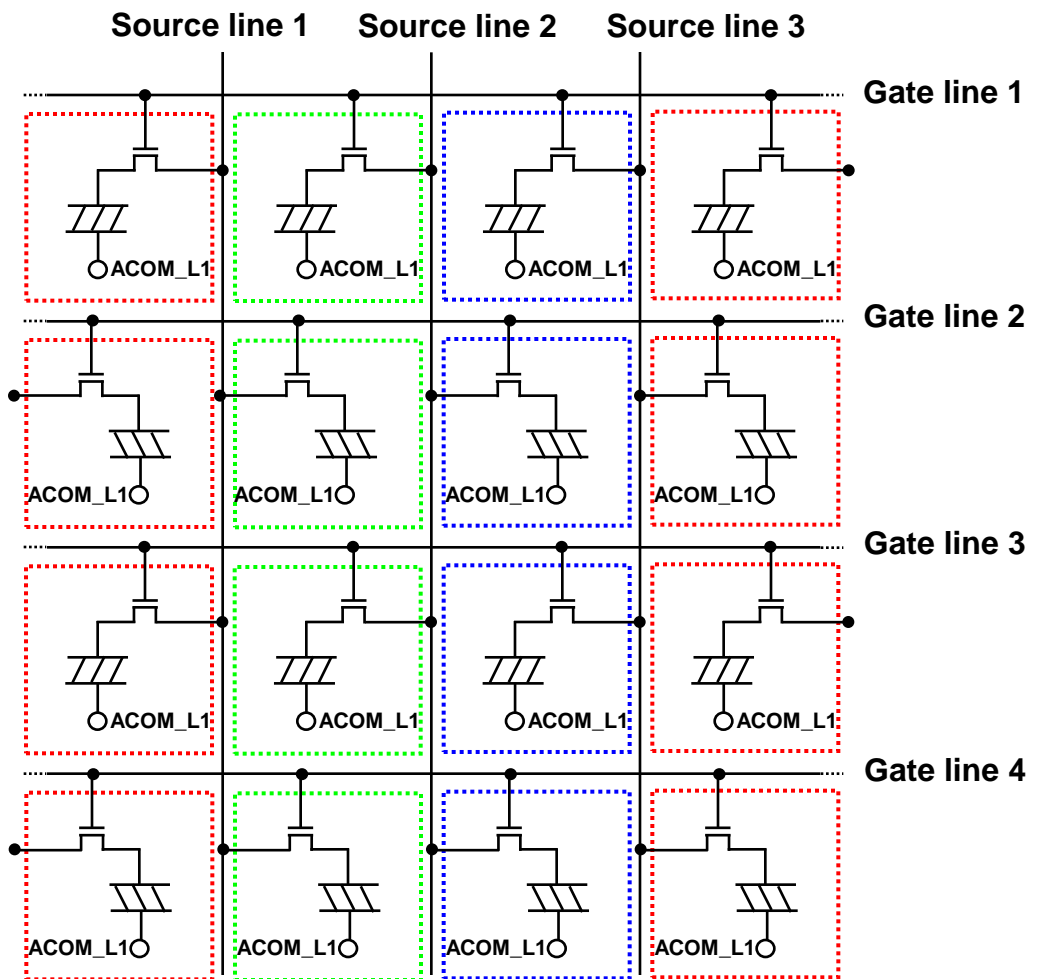
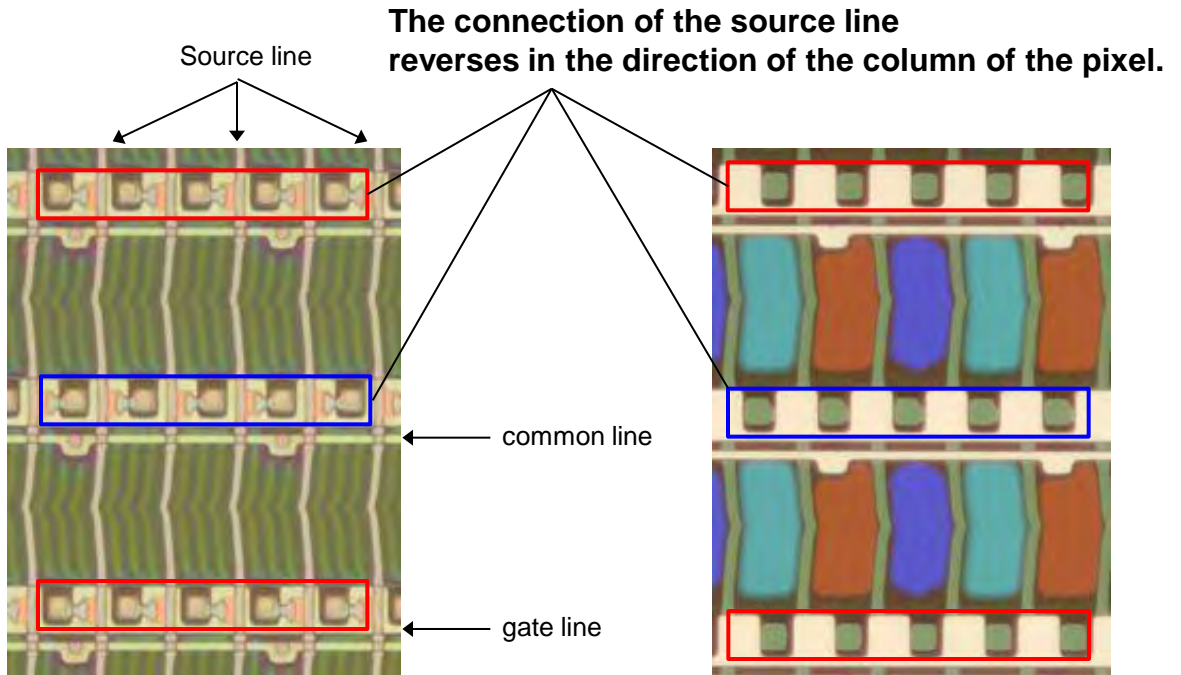


Fig.1-3-1 Estimated pixel circuit

2-3 Signal waveform acquisition

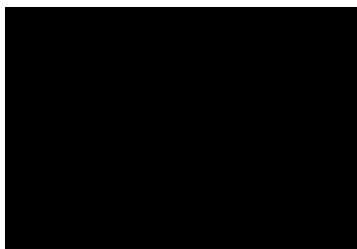
The image data of the following table created with PC is displayed on the analysis products, and the signal waveform at that time is acquired.

The graphics format is set to JPEG.

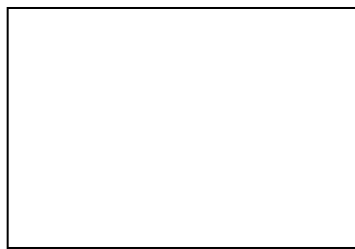
Resolution of image data is set to the 2048x1536 pixel, same as the display resolution of the analyzed product.

Table.1-4-1 Display image composition list

Image data	Image size (pixel)	Data composition(8bit)		
		R	G	B
Black	2048 × 1536	0	0	0
White	2048 × 1536	255	255	255
Red	2048 × 1536	255	0	0
Green	2048 × 1536	0	255	0
Blue	2048 × 1536	0	0	255



Black



White



Red

Fig.1-4-2 Example of display image

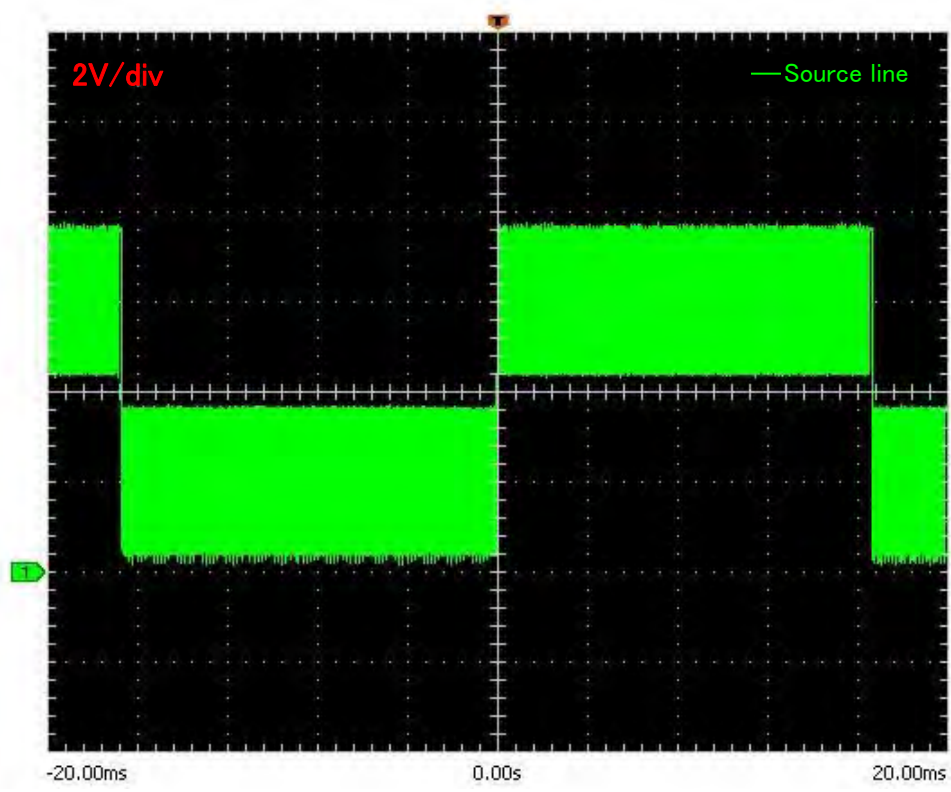


Fig.1-5-6 Frame waveform of source line_1 (Red image display)

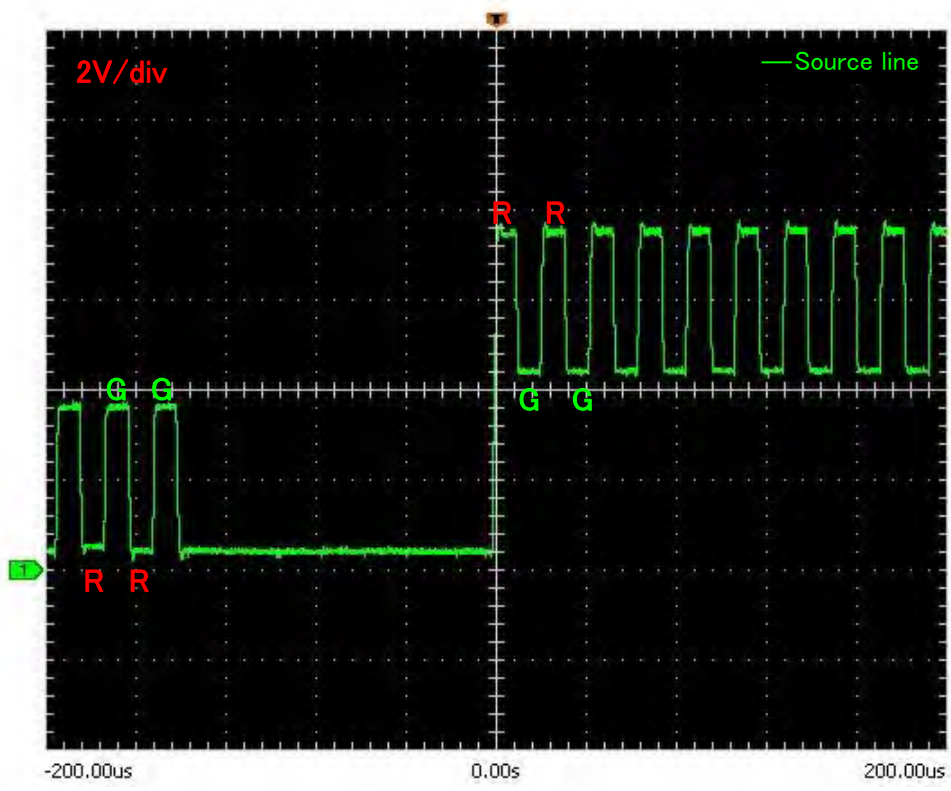


Fig.1-5-7 Waveform of source line_1 (Red image display)

Gate line

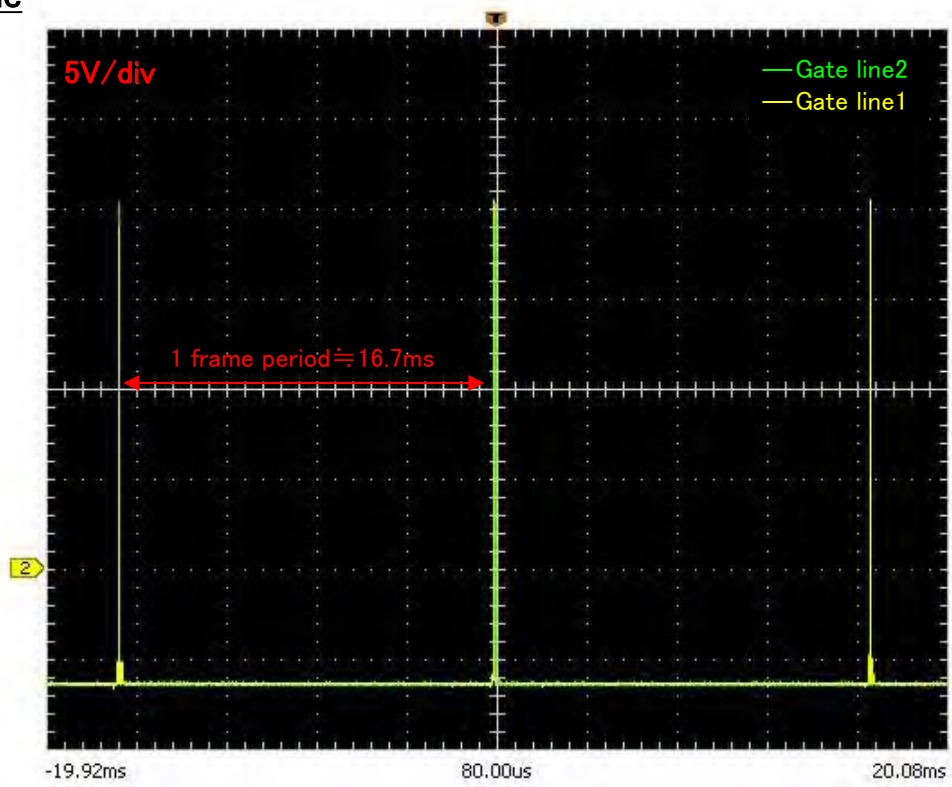


Fig.1-5-32 Frame waveform of gate line

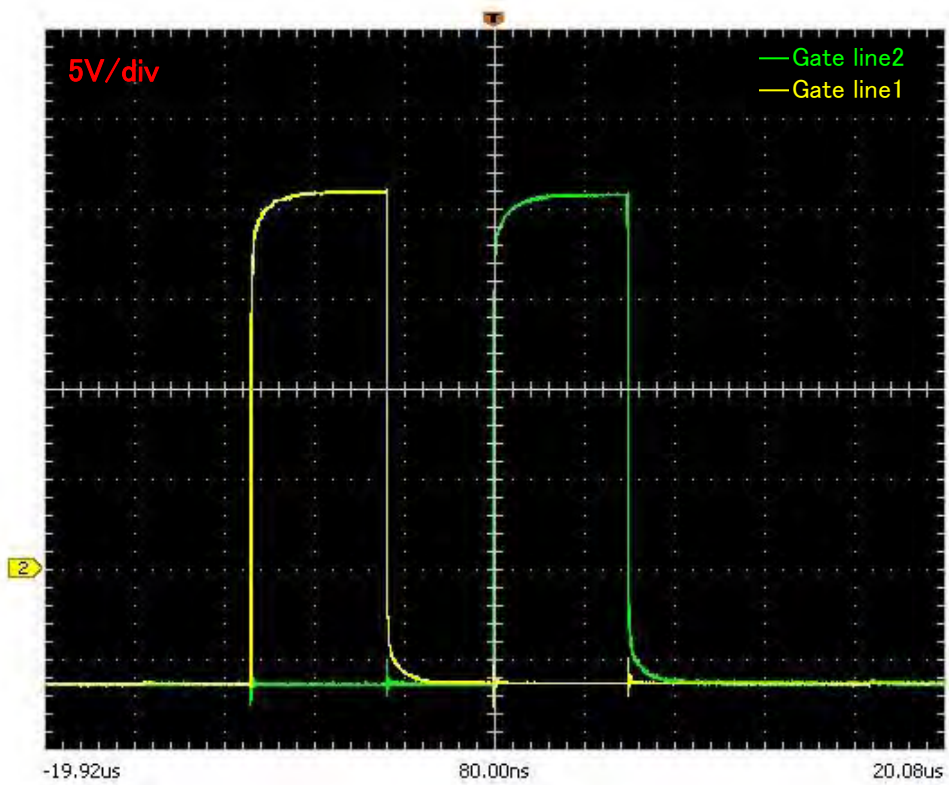


Fig.1-5-33 Waveform of gate line

3. Mechanism analysis

AUO LCD module

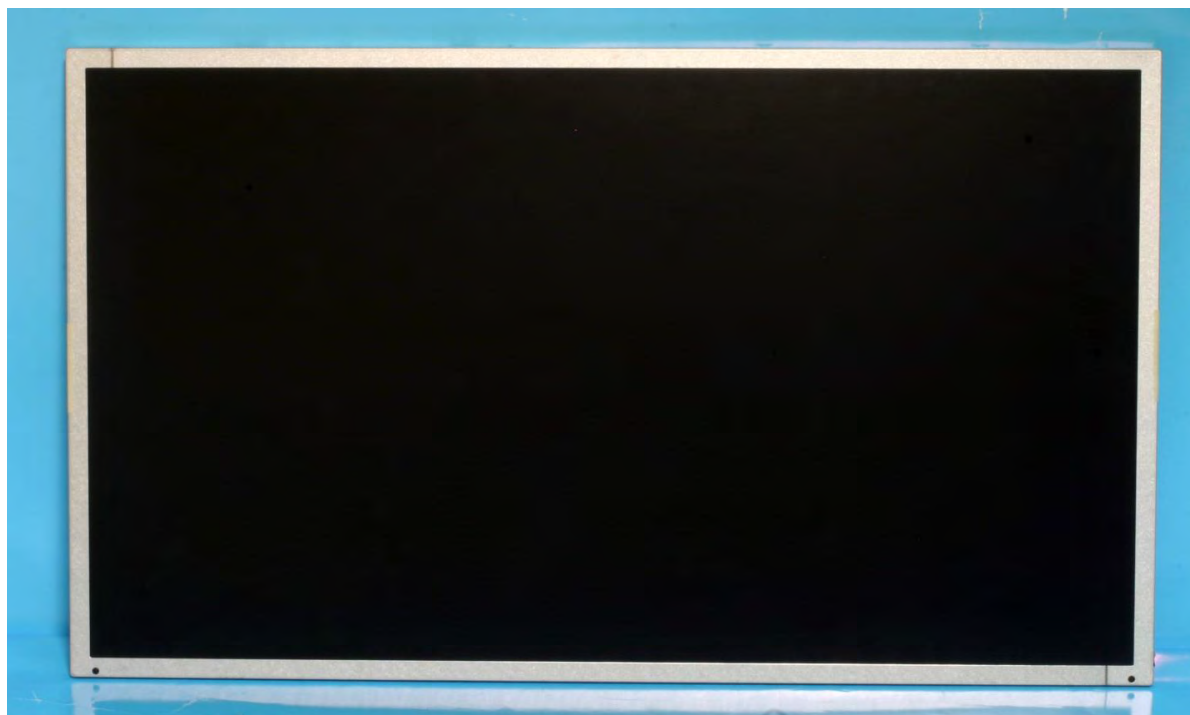


Photo.3-1 LCD Module (Top View)

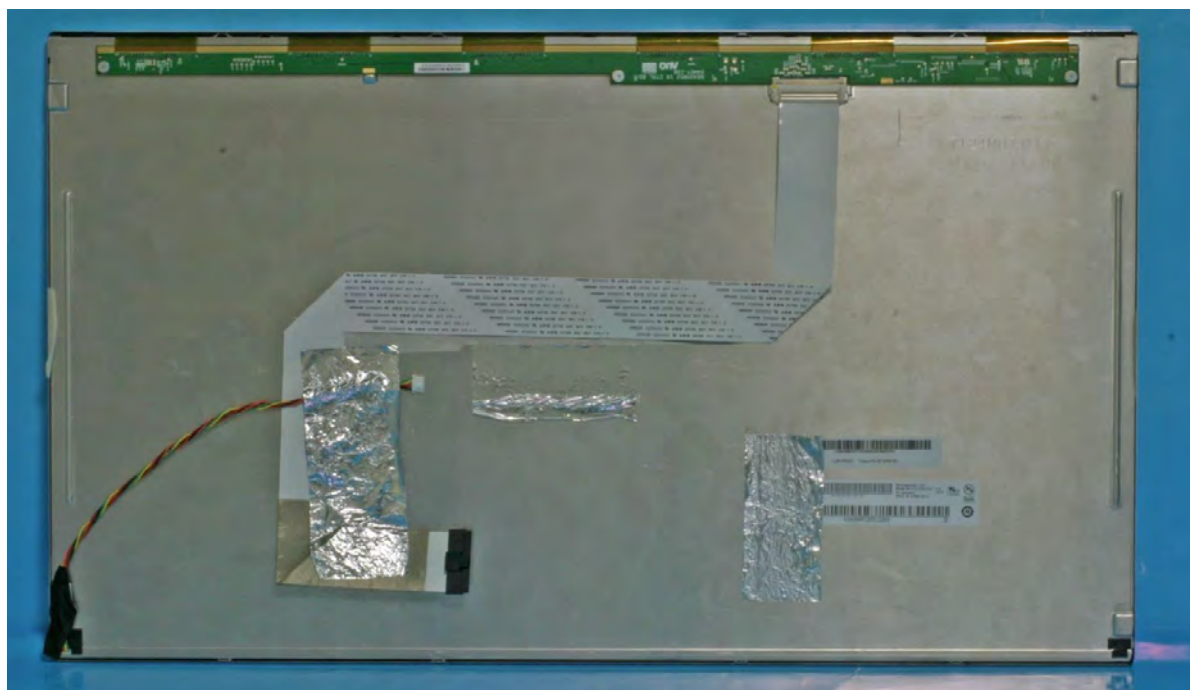


Photo.3-2 LCD Module (Bottom View)

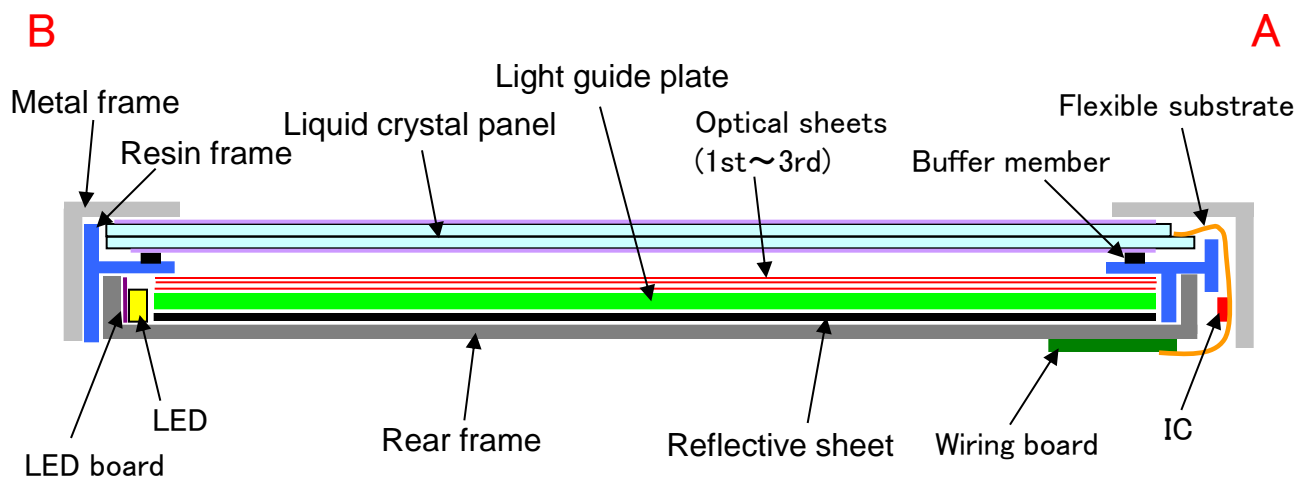
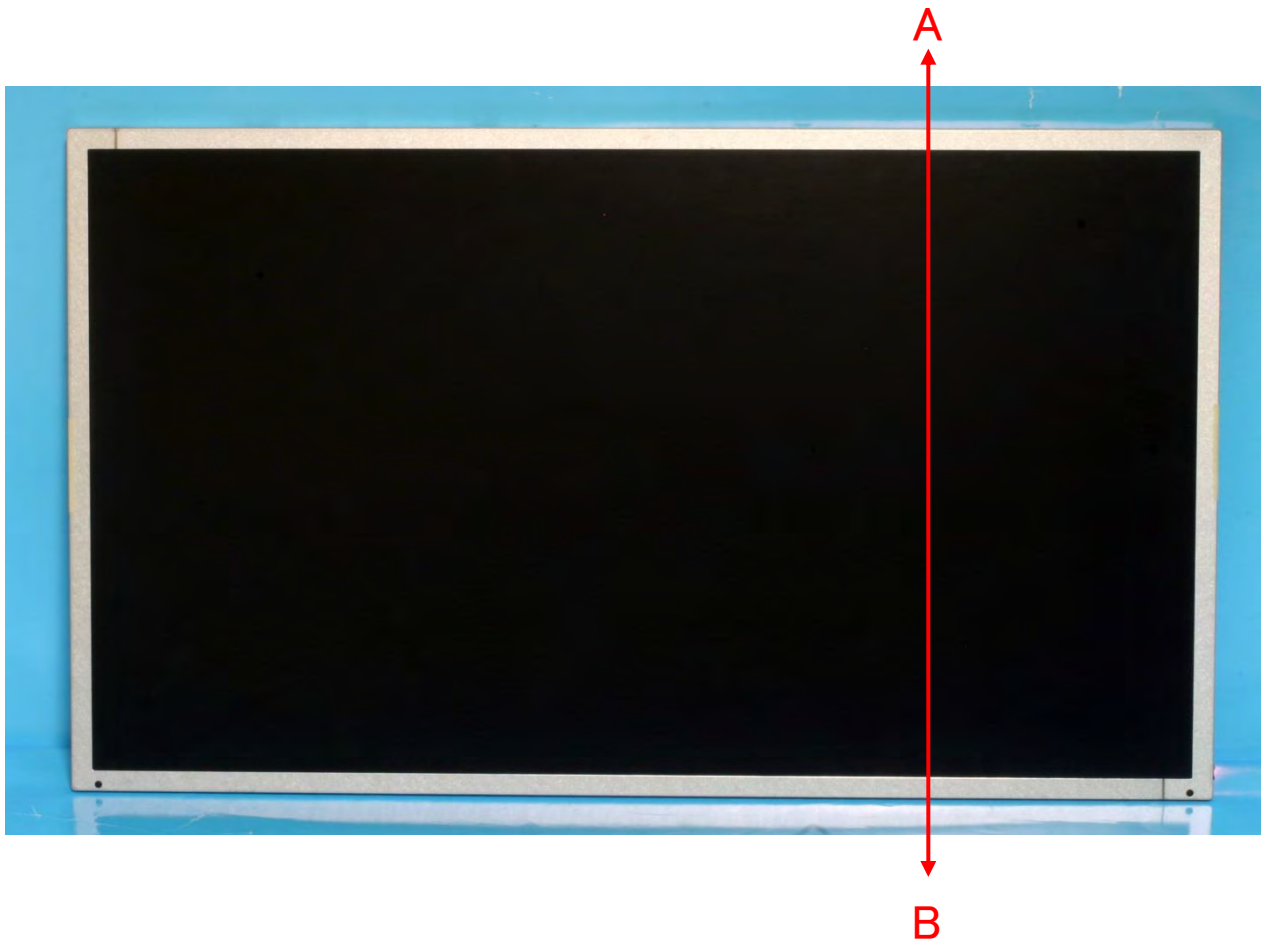
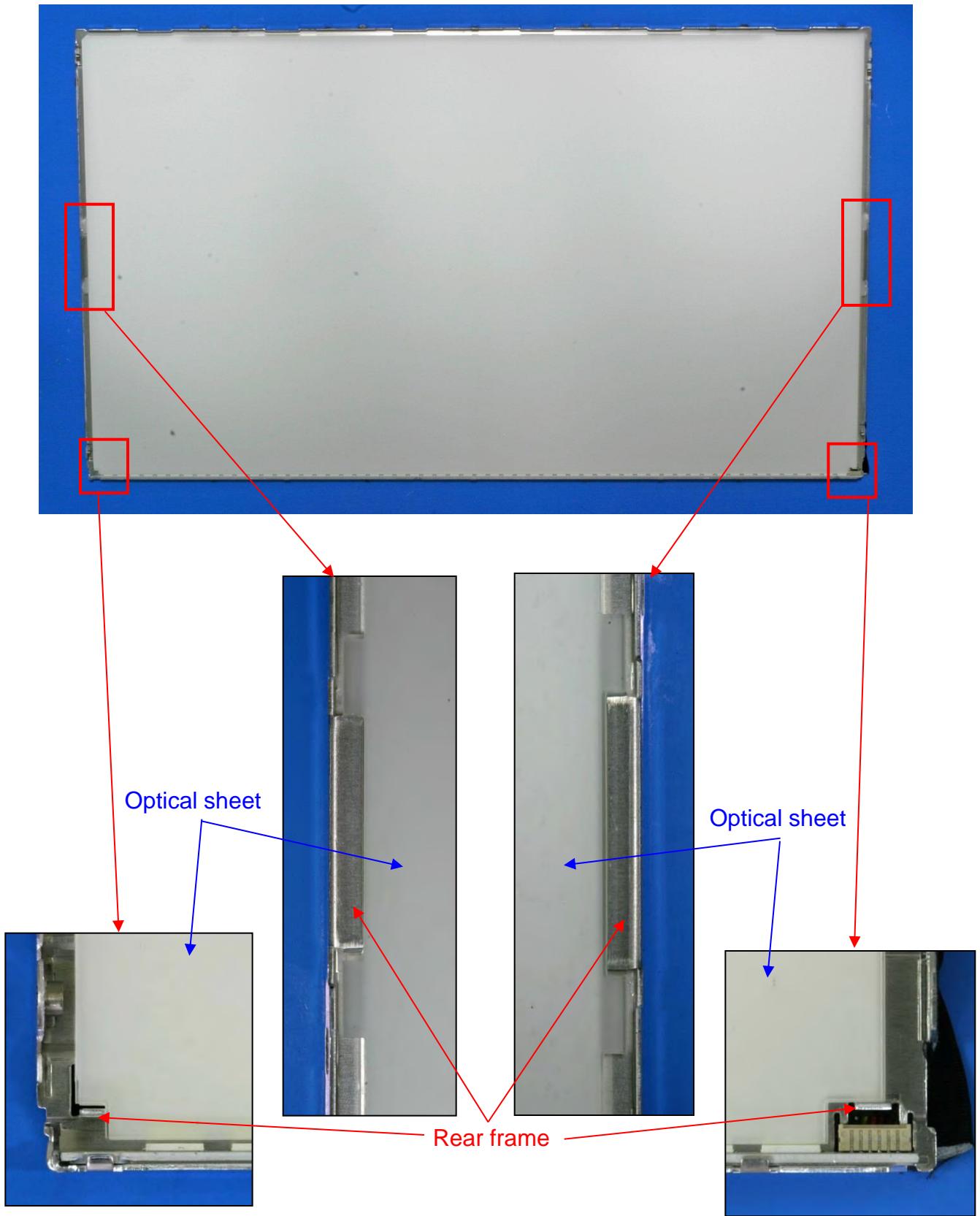


Fig.1-1 Cross-sectional view module



• The position of an optical sheet is fixed by the rear frame.

※ After removing the metal frame, Panel, Resin frame

Photo.3-21 Module (Top View)

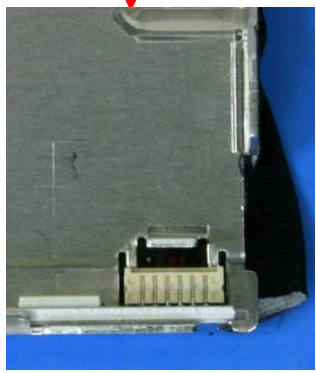
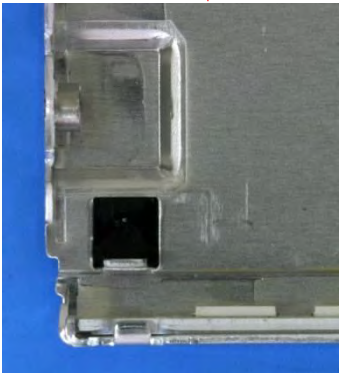
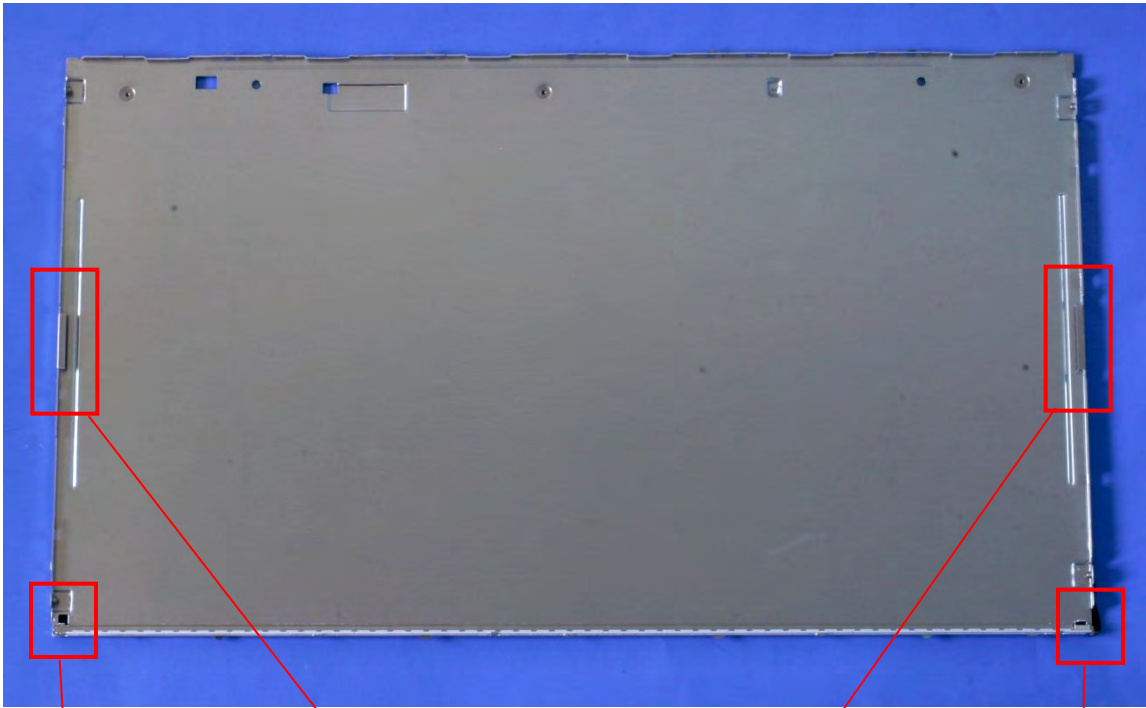
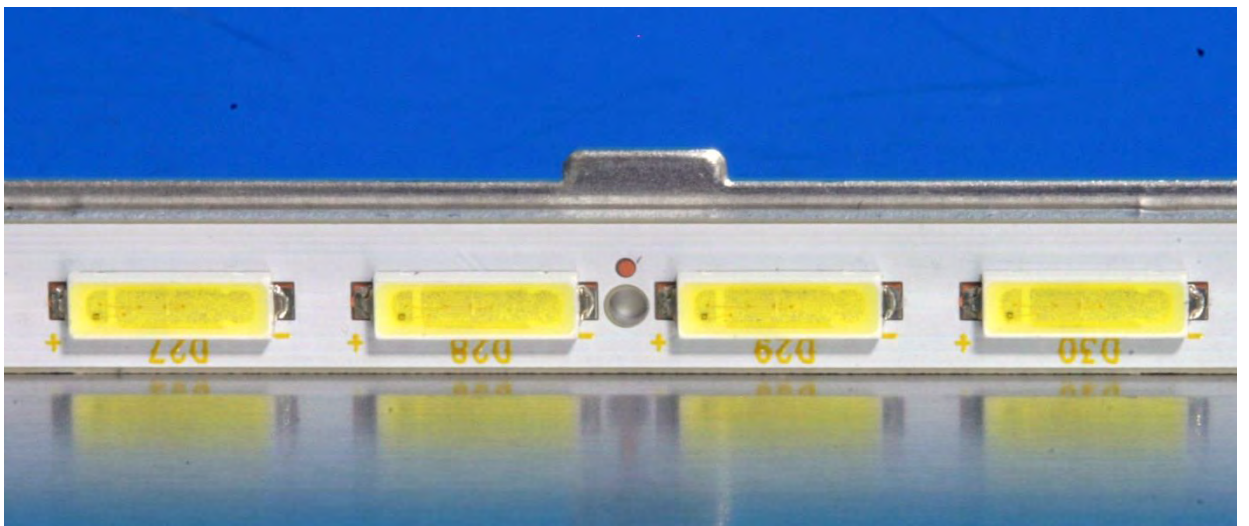
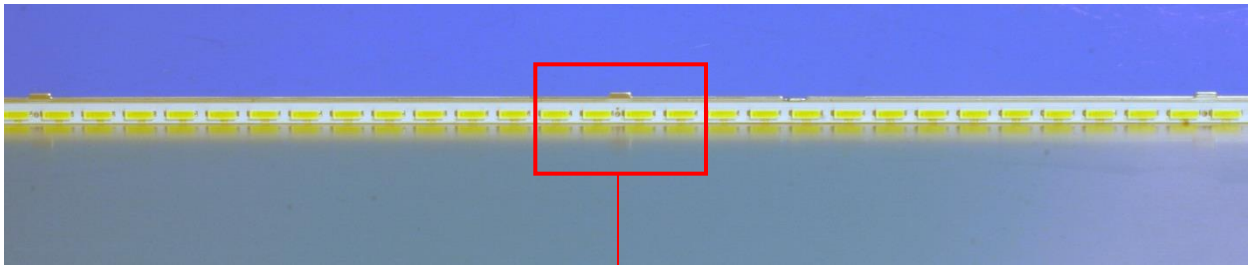
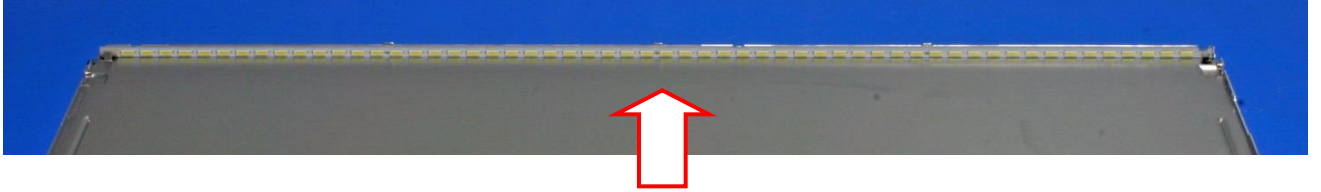
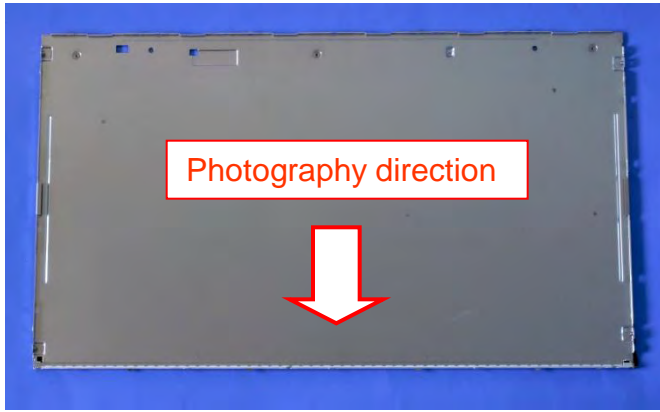


Photo.3-33 Rear frame



4. Panel analysis

4-1 Liquid crystal panel peripheral area OM image

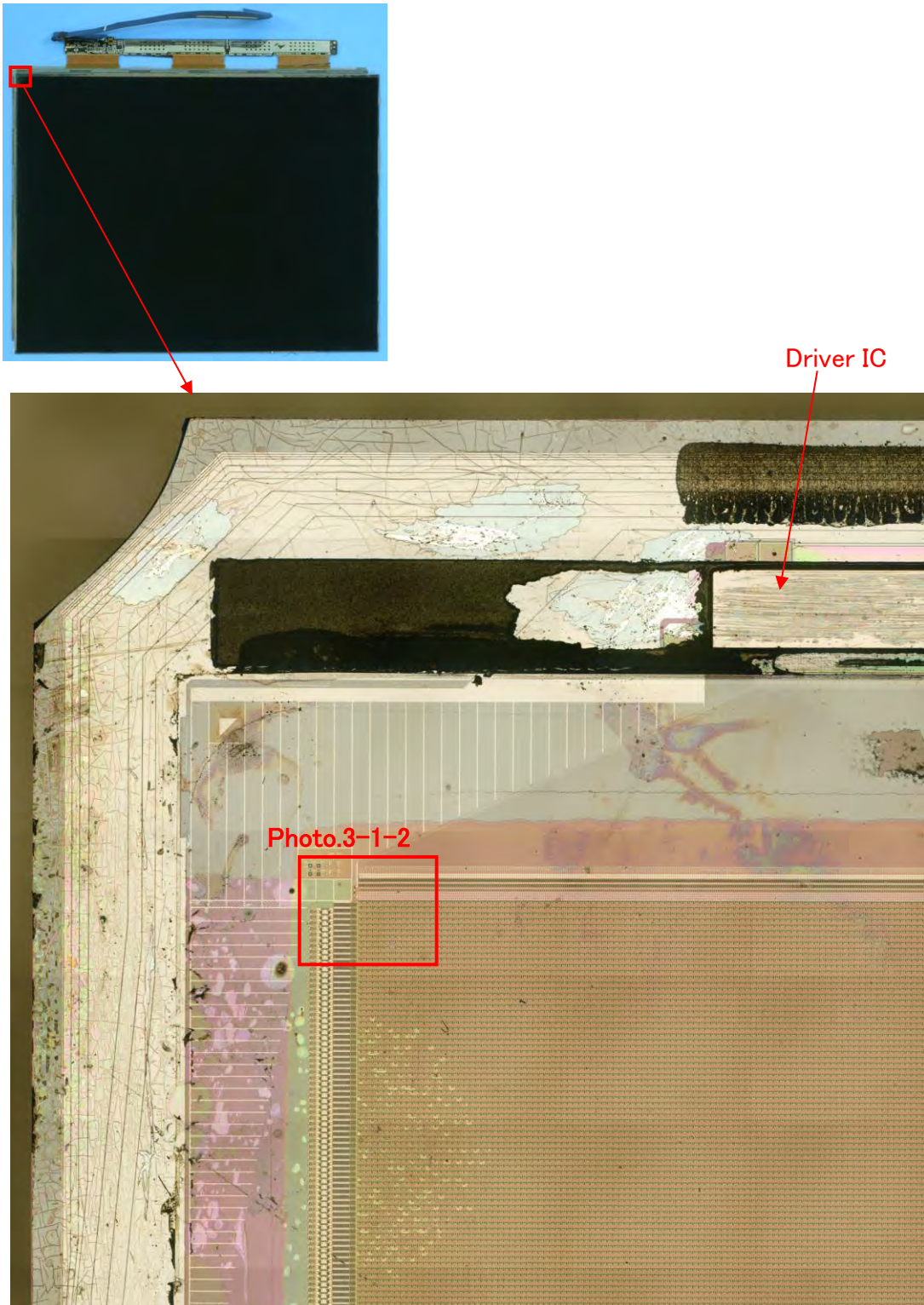


Photo.3-1-1 Panel peripheral area OM image (display side)

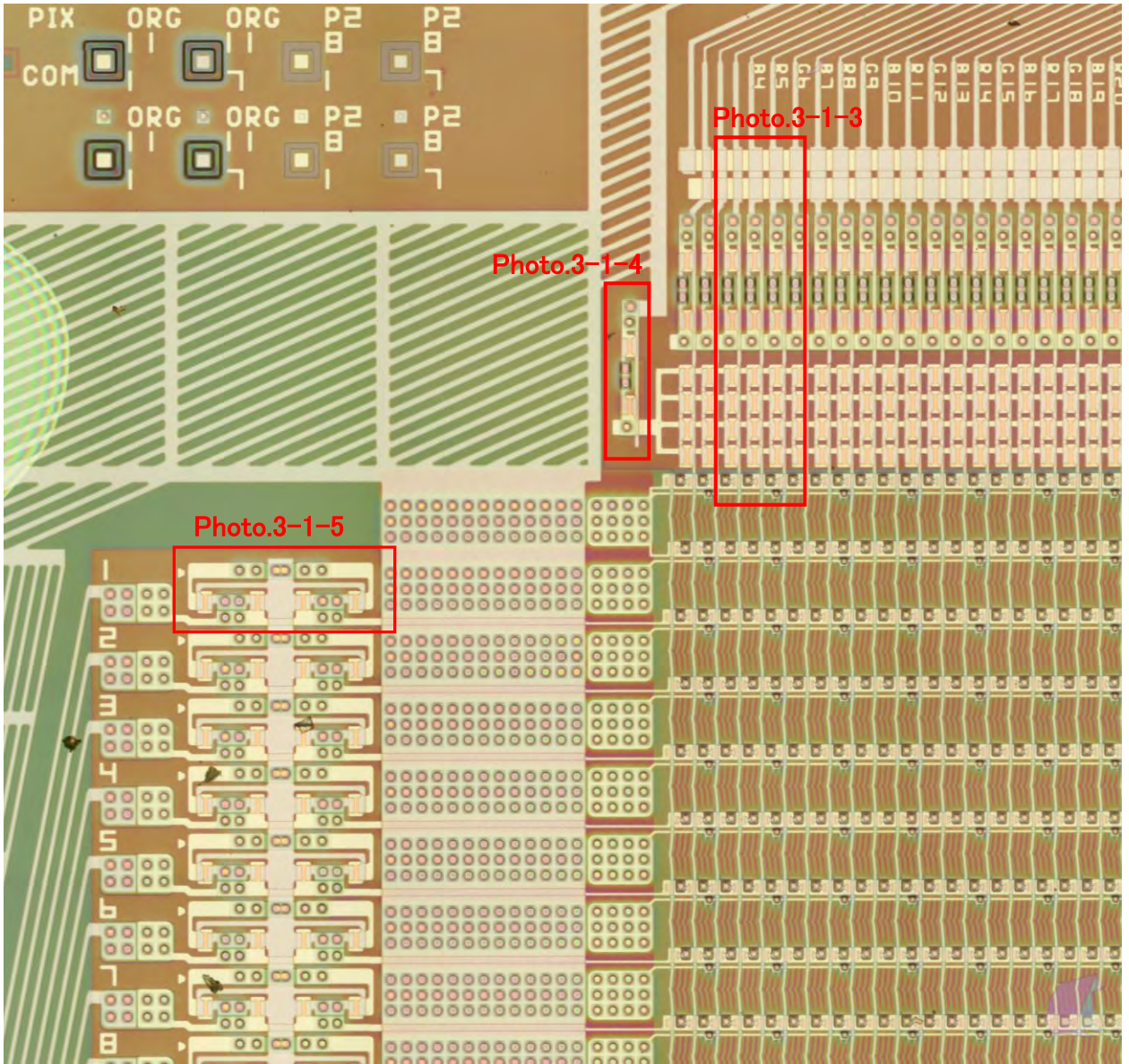


Photo.3-1-2 Display region peripheral area OM image (display side)

5 Circuit analysis

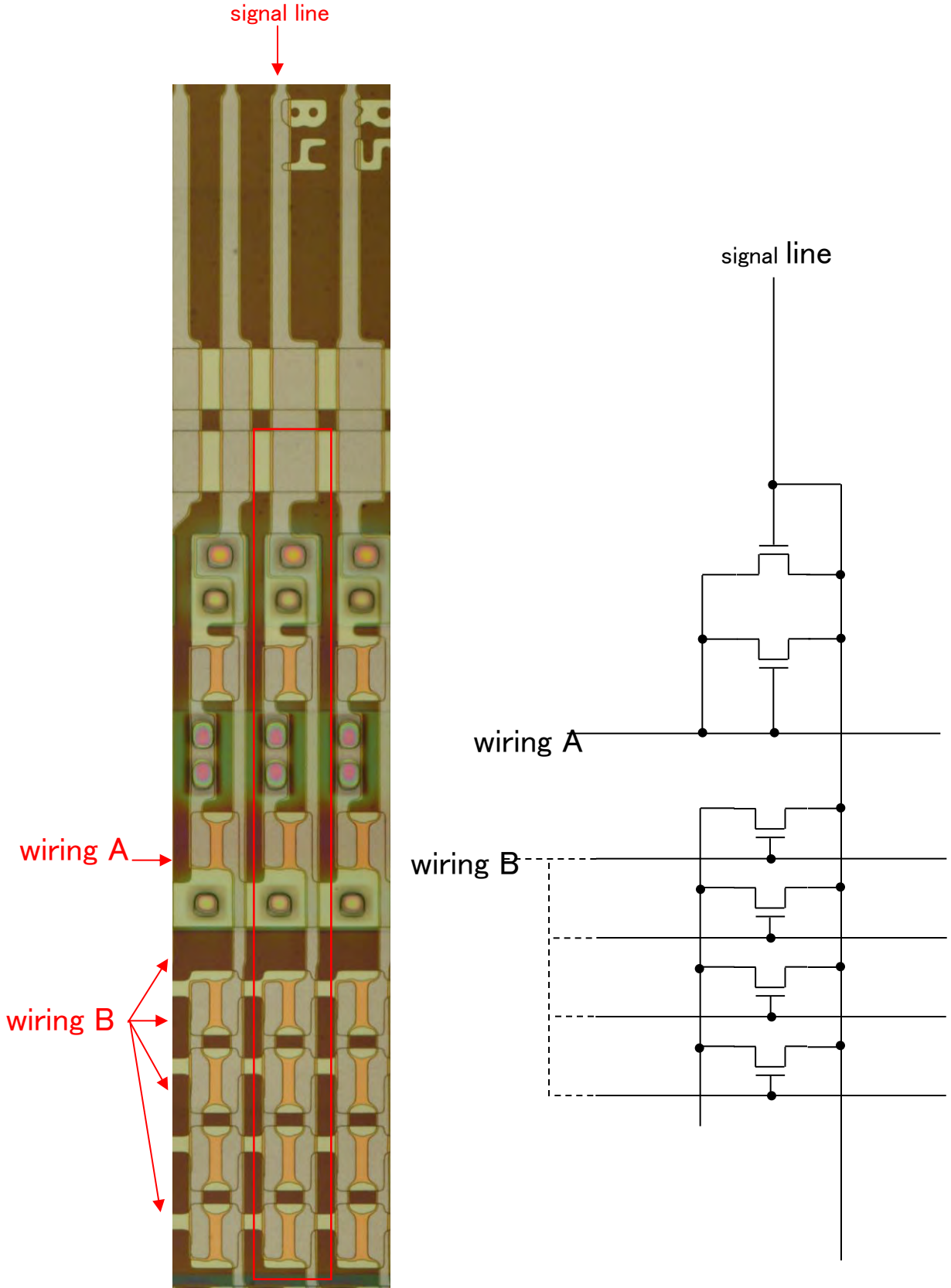
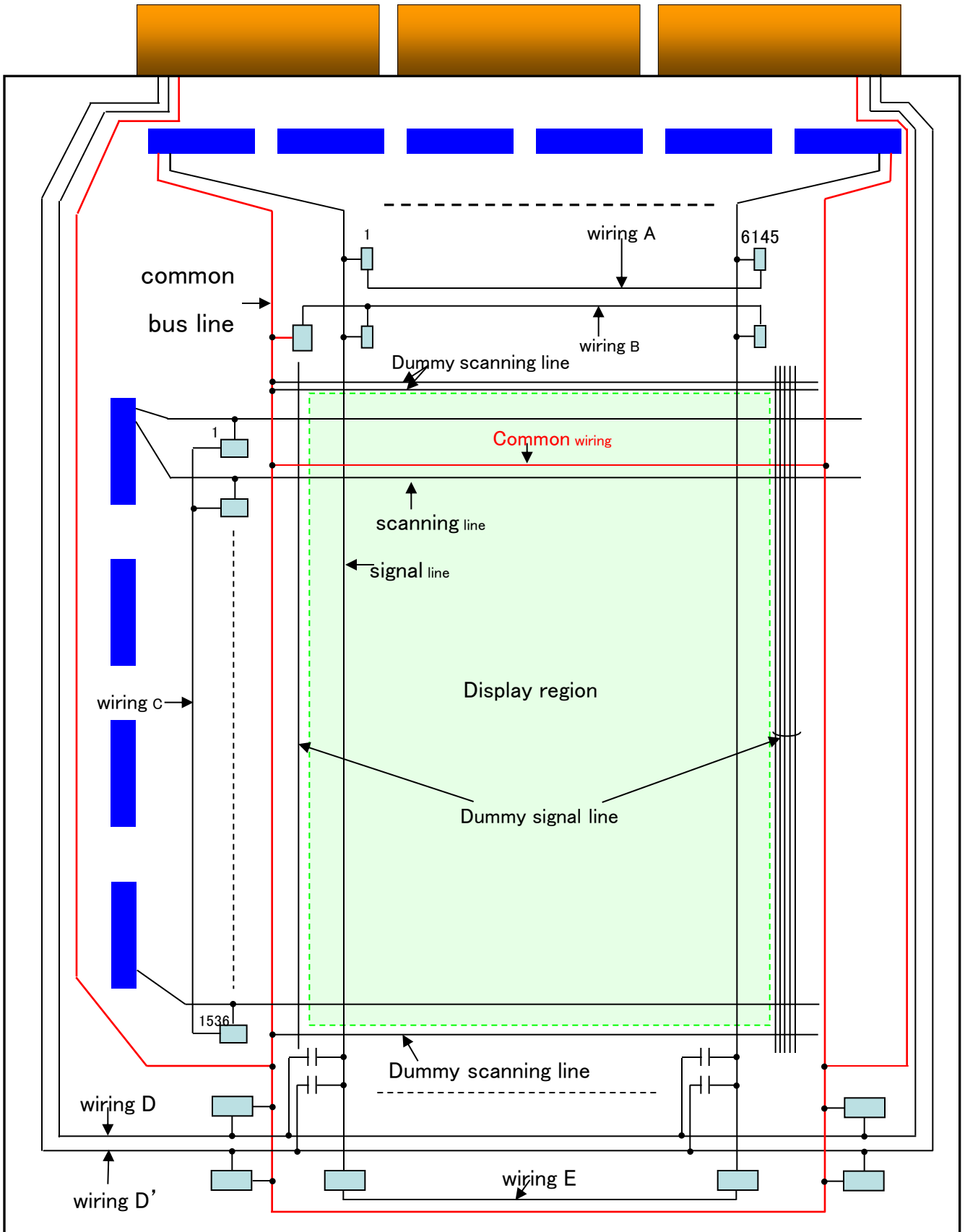


Photo.3-1-3 Static protection element OM image (display side)



Static protection element
 Driver IC
 Flexible substrate

Fig.4-1 Array substrate peripheral layout

5 Circuit analysis

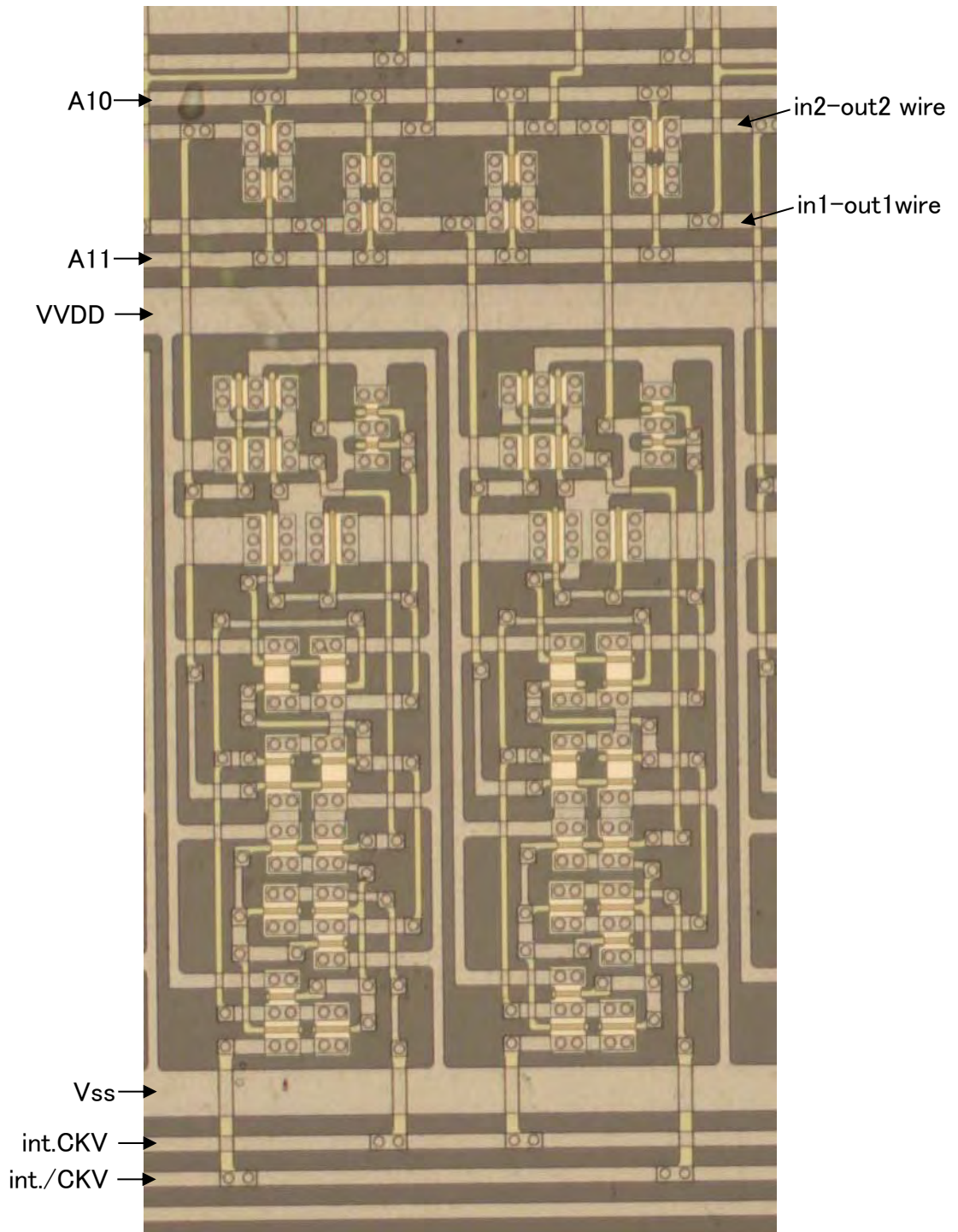


Photo.31 Shift Register Cell(Scanning Line)

VVDD
VSS

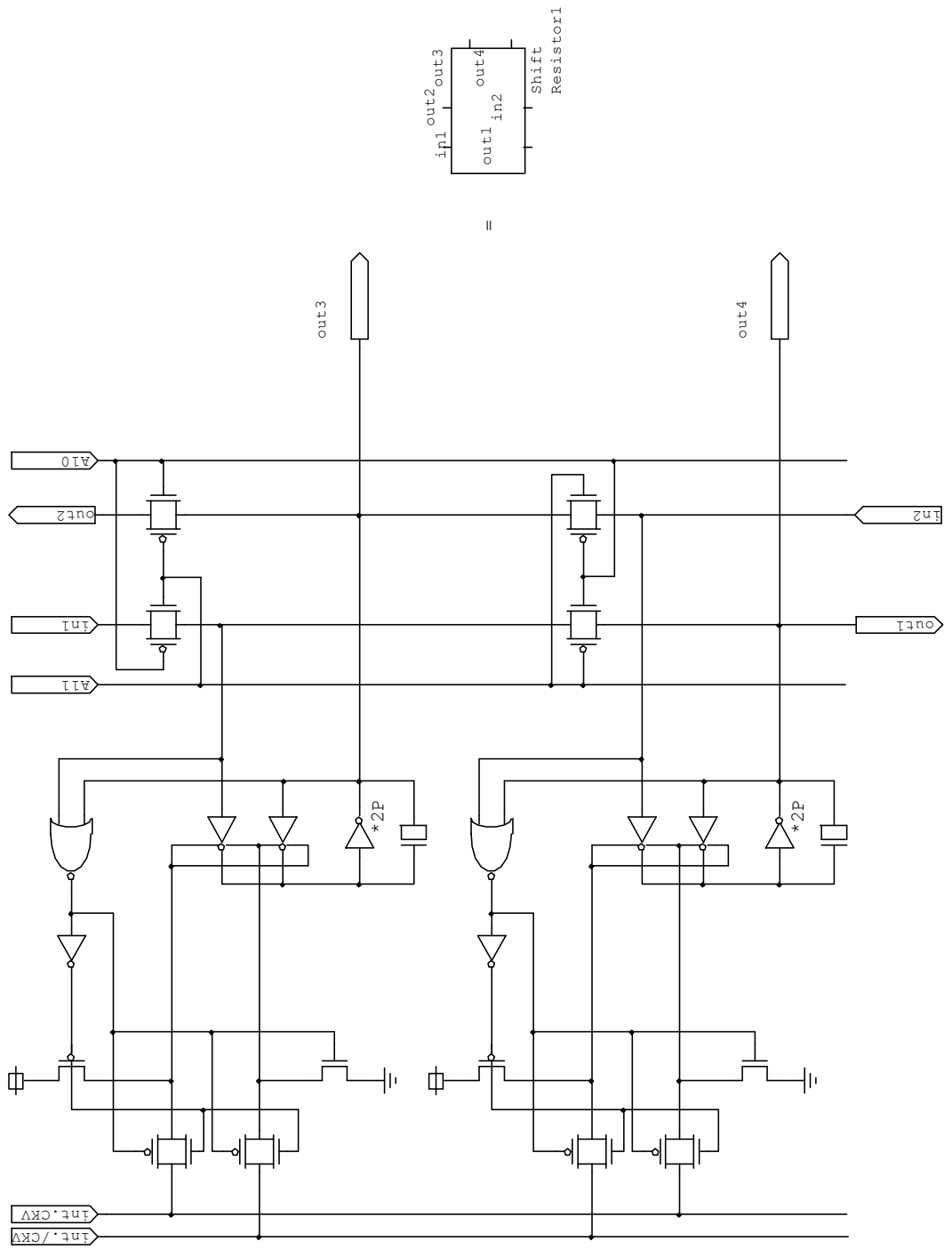


Fig.11.3 Shift Register Cell(Scanning Line)

6. Cross-section analysis

TPO panel module

6-1 TFT cross-sectional STEM

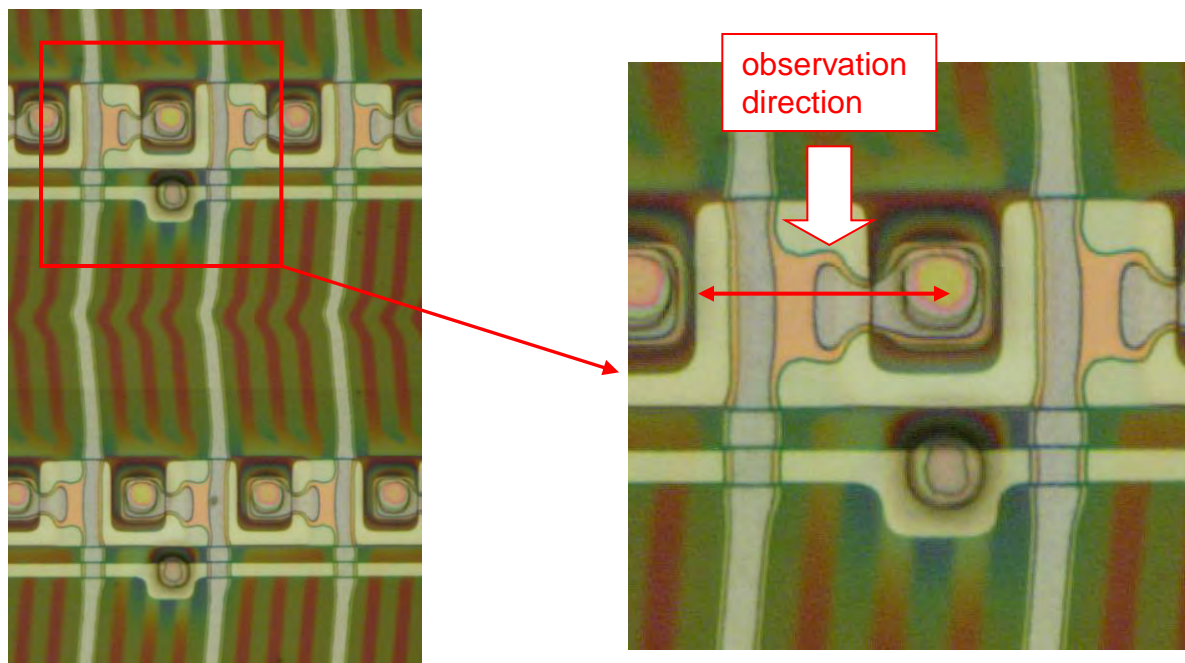


Photo.4-1-1 TFT cross-sectional observation point

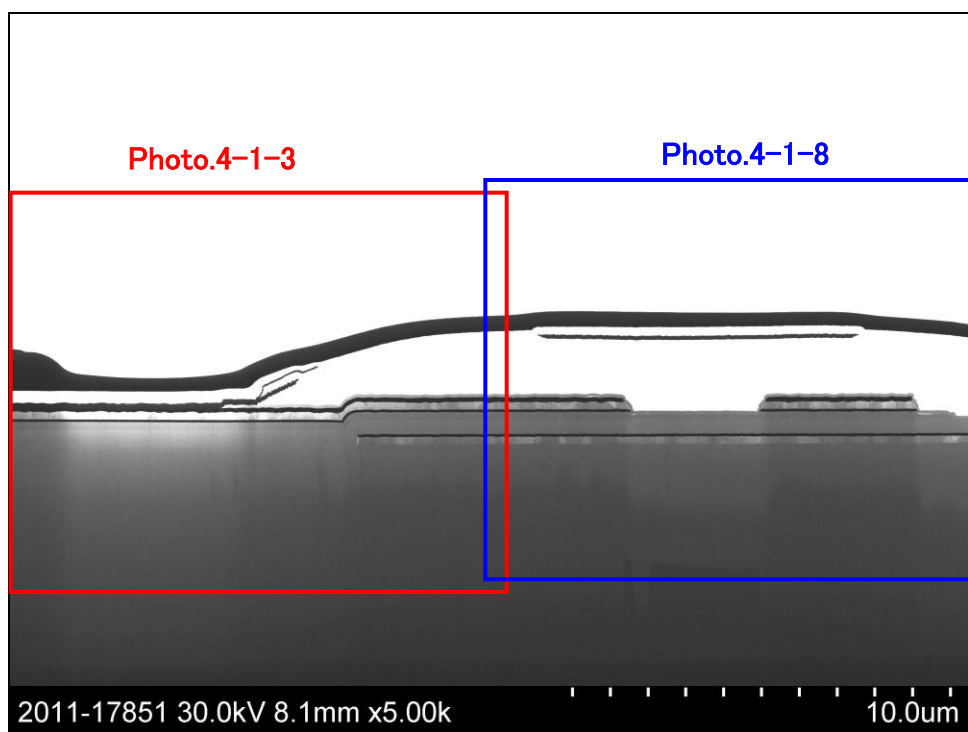


Photo.4-1-2 TFT cross-sectional STEM image

TFT cross-sectional STEM-EDX

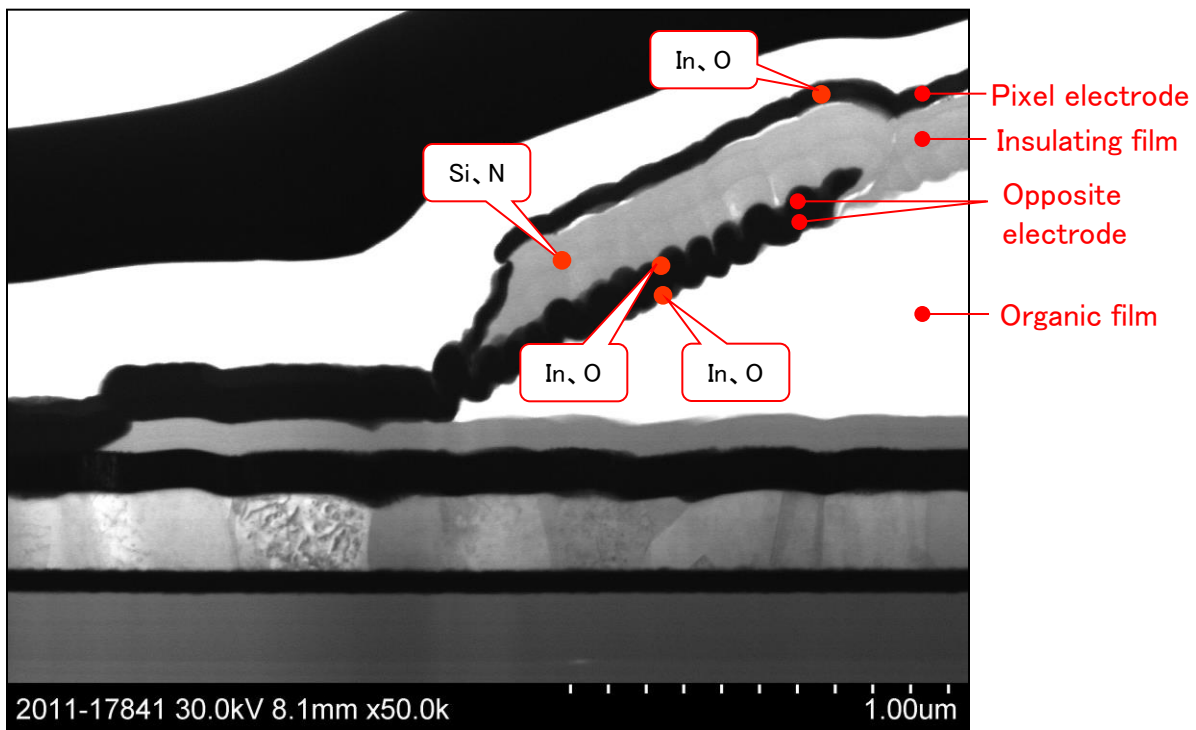
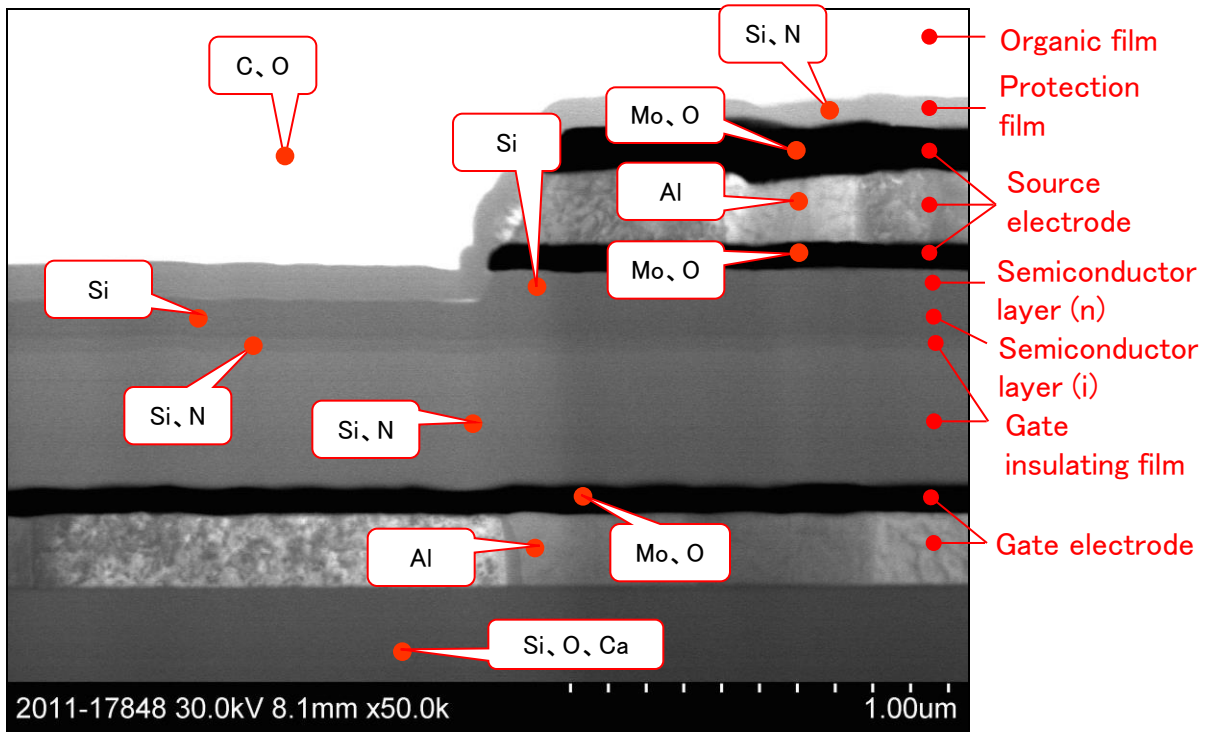


Photo.4-1' -1 TFT EDX analysis summary

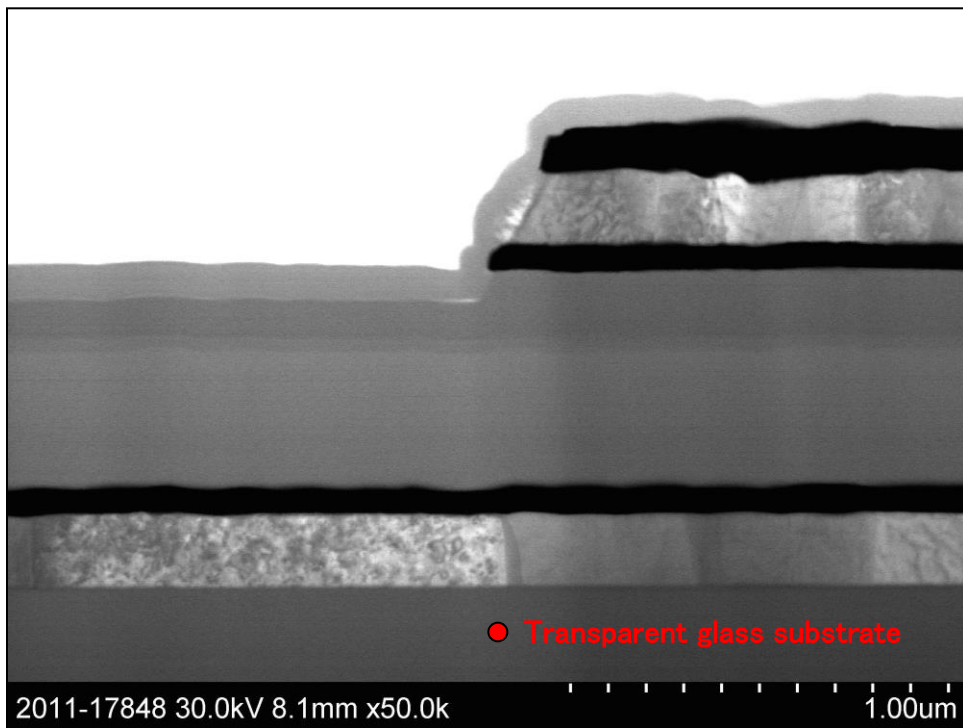


Photo.4-1' -2 EDX analysis point (Transparent glass substrate)

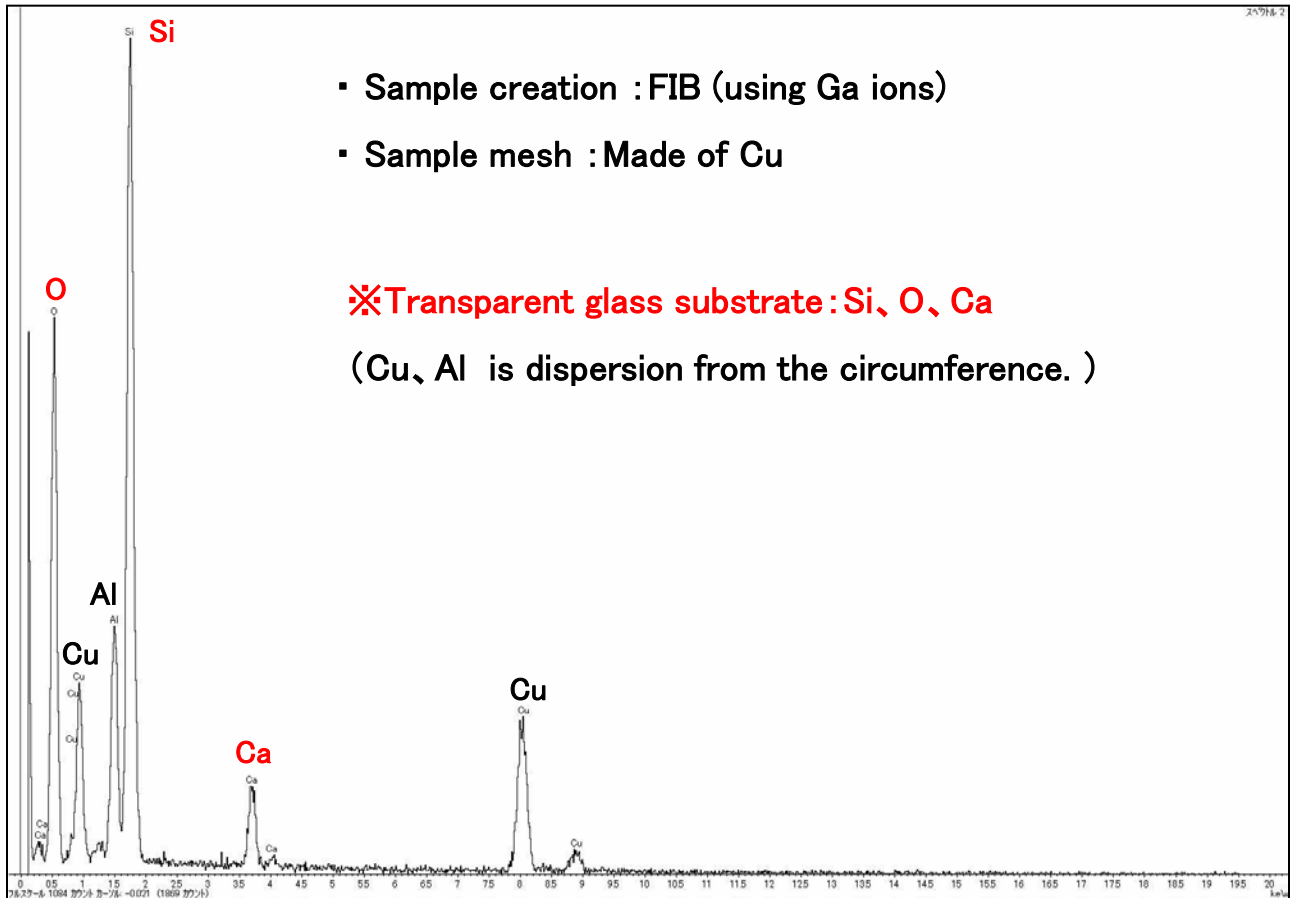


Fig.4-1' -1 EDX analysis results (Transparent glass substrate)