



## CUSTOMER APPROVAL SHEET

|                              |                       |
|------------------------------|-----------------------|
| <b>Company Name</b>          |                       |
| <b>MODEL</b>                 | <b>A070VTN06.1</b>    |
| <b>CUSTOMER<br/>APPROVED</b> | Title :<br><br>Name : |

- ☐ APPROVAL FOR SPECIFICATIONS ONLY (Spec. Ver. 0.8)
- ☐ APPROVAL FOR SPECIFICATIONS AND ES SAMPLE (Spec. Ver. 0.8)
- ☐ APPROVAL FOR SPECIFICATIONS AND CS SAMPLE (Spec. Ver. 0.8)
- ☐ CUSTOMER REMARK :

1 Li-Hsin Rd. 2. Science-Based Industrial Park  
Hsinchu 300, Taiwan, R.O.C.  
Tel: +886-3-500-8899  
Fax: +886-3-577-2730



|              |          |
|--------------|----------|
| Doc. Version | 0.8      |
| Total Page   | 24       |
| Date         | 2018/6/8 |

# Product Specification

## 7.0" COLOR TFT-LCD MODULE

**Model Name: A070VTN06.1**

---

< > Preliminary Specification

< ♦ > Final Specification

### Note:

The content of this specification is subject to change.

All changes to delivery specification shall be notified in advance

© 2014 AU Optronics  
All Rights Reserved,  
Do Not Copy.



## Record of Revision

| Version | Revise Date | Page   | Content                                                                                    |
|---------|-------------|--------|--------------------------------------------------------------------------------------------|
| 0.0     | 2016/3/25   | All    | First Draft                                                                                |
| 0.1     | 2016/5/4    | 5      | To modify the viewing direction in General Description<br>To modify Note 2                 |
|         |             | 6      | To modify the outline drawing                                                              |
|         |             | 8      | To modify Note 2                                                                           |
|         |             | 11     | To modify Note 2                                                                           |
|         |             | 15     | To modify AC Electrical Characteristics in Timing Condition                                |
| 0.2     | 2016/5/6    | 10     | To insert VH <sub>G</sub> -V <sub>GL</sub> of Min. data in Absolute Maximum Ratings        |
|         |             | 12 -17 | To modify depiction and diagram in power on/off sequence and Electrical AC Characteristics |
|         |             | 20     | To modify the Electrostatic discharge and Note 3 in Reliability Test Item                  |
| 0.3     | 2016/06/30  | 5      | To modify General Description                                                              |
|         |             | 11     | To add the LED life time in Backlight Driving Conditions                                   |
|         |             | 17     | To add Chromaticity in Optical specifications                                              |
|         |             | 21     | To add Packing Form                                                                        |
| 0.4     | 2016/8/31   | 6      | To update the outline drawing                                                              |
|         |             | 10     | To insert IV <sub>DD</sub> and IAV <sub>DD</sub> in Electrical DE Characteristics          |
| 0.5     | 2016/9/19   | 6      | To update the outline drawing                                                              |
| 0.6     | 2016/11/01  | 6      | To update the outline drawing                                                              |
| 0.7     | 2016/12/16  | 6      | To update the outline drawing                                                              |
| 0.8     | 2018/6/8    | 6      | Update the outline drawing                                                                 |
|         |             | 20     | Add the absorption angle of polarizer on note9                                             |



# Contents

|                                           |           |
|-------------------------------------------|-----------|
| <b>A. General Description .....</b>       | <b>5</b>  |
| 1. Display characteristics .....          | 5         |
| <b>B. Outline Dimension.....</b>          | <b>6</b>  |
| <b>C. Electrical Specifications .....</b> | <b>7</b>  |
| 1. Pin assignment.....                    | 7         |
| 2. Absolute Maximum Ratings .....         | 10        |
| 3. Electrical DC Characteristics .....    | 10        |
| a. TFT- LCD Panel .....                   | 10        |
| b. Backlight Driving Conditions .....     | 11        |
| 4. Power on/off sequence .....            | 12        |
| 5. Electrical AC Characteristics .....    | 14        |
| a. Input Timing .....                     | 14        |
| b. Signal AC Characteristics .....        | 17        |
| <b>D. Optical specifications .....</b>    | <b>18</b> |
| <b>E. Reliability Test Items .....</b>    | <b>21</b> |
| <b>F. Packing and Marketing .....</b>     | <b>22</b> |
| 1. Packing Form.....                      | 22        |
| 2. Module/Panel Label Information.....    | 23        |



## A. General Description

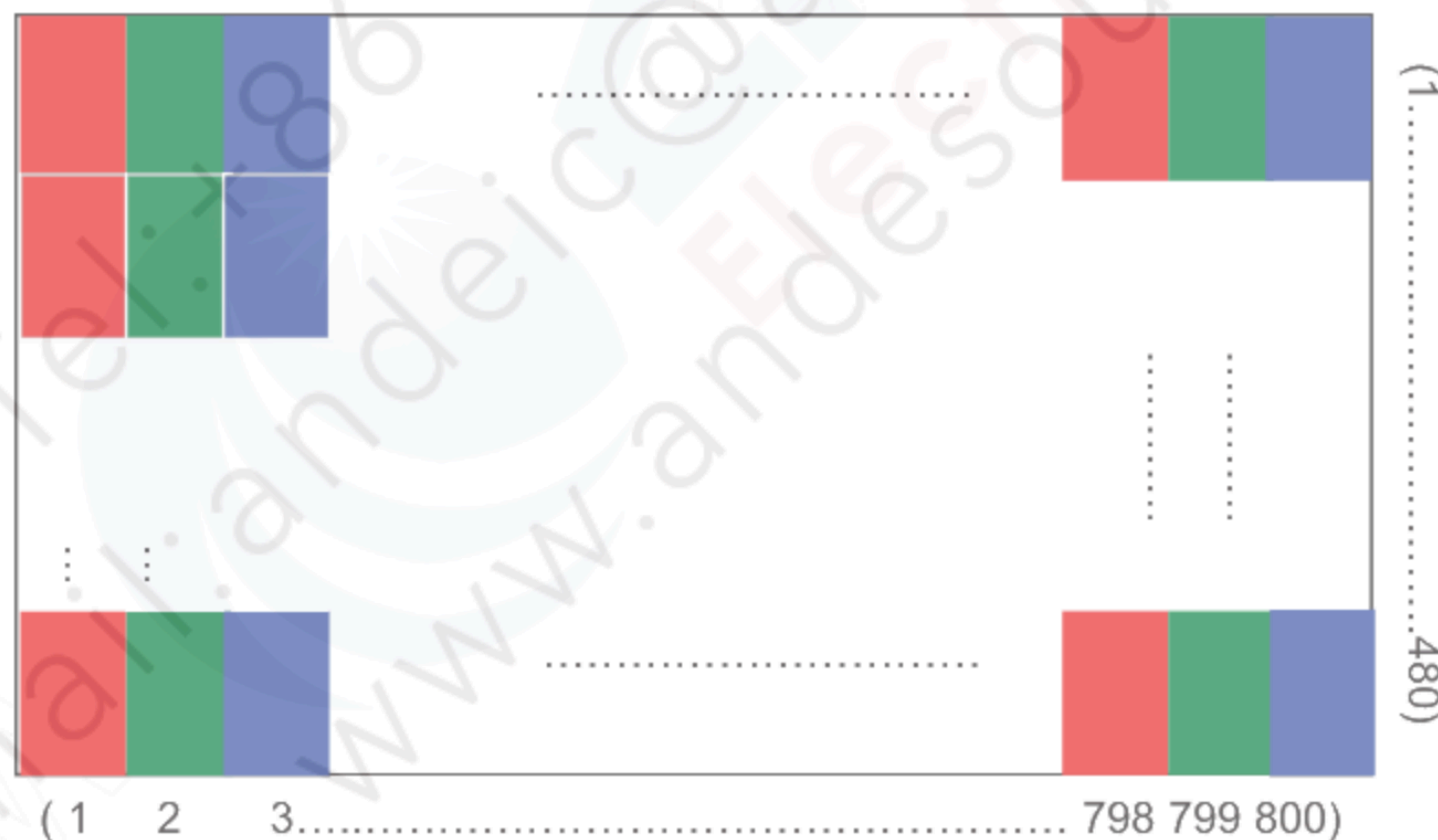
### 1. Display characteristics

| NO | Item                | Unit | Specification                   | Remark |
|----|---------------------|------|---------------------------------|--------|
| 1  | Display Resolution  | dot  | 800 RGB (H) × 480(V)            |        |
| 2  | Active Area         | mm   | 154.08(H) × 85.92(V)            |        |
| 3  | Screen Size         | inch | 7 (Diagonal)                    |        |
| 4  | Dot Pitch           | mm   | 0.0642 × 0.179                  |        |
| 5  | Color Configuration | --   | R. G. B. Stripe                 | Note 1 |
| 6  | Color Depth         | --   | 65K Colors                      | Note 2 |
| 7  | Overall Dimension   | mm   | 166.43 (H) × 102.2 (V) × 6.3(T) | Note 3 |
| 8  | Weight              | g    | TBD                             |        |
| 9  | Display Mode        | --   | Normally White                  |        |
| 10 | Viewing direction   |      | 6 o'clock (gray inversion)      |        |

Note 1: Dot stripe arrangement is shown as figure below.

Note 2: Parallel RGB 16-bits interface

Note 3: Not including FPC. The further detail dimension drawing information is on next page.









## C. Electrical Specifications

### 1. Pin assignment

Connector : FH26W-51S-0.3SHW(05)

| No. | Pin Name | I/O | Description                                            | Remarks  |
|-----|----------|-----|--------------------------------------------------------|----------|
| 1   | GND      | P   | Power Ground                                           |          |
| 2   | VGL      | P   | Gate OFF Voltage                                       |          |
| 3   | NC       | -   | Not Connected                                          |          |
| 4   | VDD      | P   | Power for Digital Circuit                              |          |
| 5   | NC       | -   | Not Connected                                          |          |
| 6   | VGH      | P   | Gate ON Voltage                                        |          |
| 7   | NC       | -   | Reserved for AUO internal test. Please treat it as NC. |          |
| 8   | AVDD     | P   | Power for Analog Circuit                               |          |
| 9   | AVDD     | P   | Power for Analog Circuit                               |          |
| 10  | GND      | P   | Power Ground                                           |          |
| 11  | VSD      | I   | Vertical Sync Input                                    |          |
| 12  | HSD      | I   | Horizontal Sync Input                                  |          |
| 13  | DEN      | I   | Data Input Enable                                      |          |
| 14  | GND      | P   | Power Ground                                           |          |
| 15  | DCLK     | I   | Pixel Clock                                            | Note 1   |
| 16  | GND      | P   | Power Ground                                           |          |
| 17  | B4       | I   | Blue Data(MSB)                                         |          |
| 18  | B3       | I   | Blue Data                                              |          |
| 19  | B2       | I   | Blue Data                                              |          |
| 20  | B1       | I   | Blue Data                                              |          |
| 21  | B0       | I   | Blue Data(LSB)                                         |          |
| 22  | GND      | P   | Power Ground                                           |          |
| 23  | G5       | I   | Green Data(MSB)                                        |          |
| 24  | G4       | I   | Green Data                                             |          |
| 25  | G3       | I   | Green Data                                             |          |
| 26  | G2       | I   | Green Data                                             |          |
| 27  | G1       | I   | Green Data                                             |          |
| 28  | G0       | I   | Green Data(LSB)                                        |          |
| 29  | GND      | P   | Power Ground                                           |          |
| 30  | R4       | I   | Red Data(MSB)                                          |          |
| 31  | R3       | I   | Red Data                                               |          |
| 32  | R2       | I   | Red Data                                               |          |
| 33  | R1       | I   | Red Data                                               |          |
| 34  | R0       | I   | Red Data (LSB)                                         |          |
| 35  | GND      | P   | Power Ground                                           |          |
| 36  | MODE     | I   | DE/SYNC mode select                                    | Note 2   |
| 37  | SHLR     | I   | Left / Right Selection                                 | Note 3,4 |
| 38  | UPDN     | I   | Up / Down Selection                                    | Note 3,4 |
| 39  | RESET    | I   | Global Reset Pin.                                      | Note 5   |



|    |        |   |                                  |  |
|----|--------|---|----------------------------------|--|
| 40 | VDD    | P | Power for Digital Circuit        |  |
| 41 | VDD    | P | Power for Digital Circuit        |  |
| 42 | GND    | P | Power Ground                     |  |
| 43 | GND    | P | Power Ground                     |  |
| 44 | AVDD   | P | Power for Analog Circuit         |  |
| 45 | GND    | P | Power Ground                     |  |
| 46 | NC     | - | Not Connected                    |  |
| 47 | VLED1- | P | Power for LED Backlight(Cathode) |  |
| 48 | VLED2- | P | Power for LED Backlight(Cathode) |  |
| 49 | VLED3- | P | Power for LED Backlight(Cathode) |  |
| 50 | VLED+  | P | Power for LED Backlight(Anode)   |  |
| 51 | VLED+  | P | Power for LED Backlight(Anode)   |  |

\*\*\* I: Input signal; P: Power source

Note 1: Data shall be latched at the falling edge of DCLK.

Note 2: DE/SYNC mode select. Normally pull high.  
When select DE mode, MODE="1", VSD and HSD must pull Low.  
When select SYNC mode, MODE="0", DEN must be grounded.

Note 3: Selection of scanning mode

| Scan direction input control |      | Descriptions                        |
|------------------------------|------|-------------------------------------|
| UPDN                         | SHLR |                                     |
| GND                          | VDD  | From up to down, and left to right. |
| VDD                          | GND  | From down to up, and right to left. |
| GND                          | GND  | From up to down, and right to left. |
| VDD                          | VDD  | From down to up, and left to right. |

Note 4: Definition of scanning direction. Refer to the figure as below:



UPDN = LOW ; SHLR = HIGH



UPDN = LOW ; SHLR = LOW



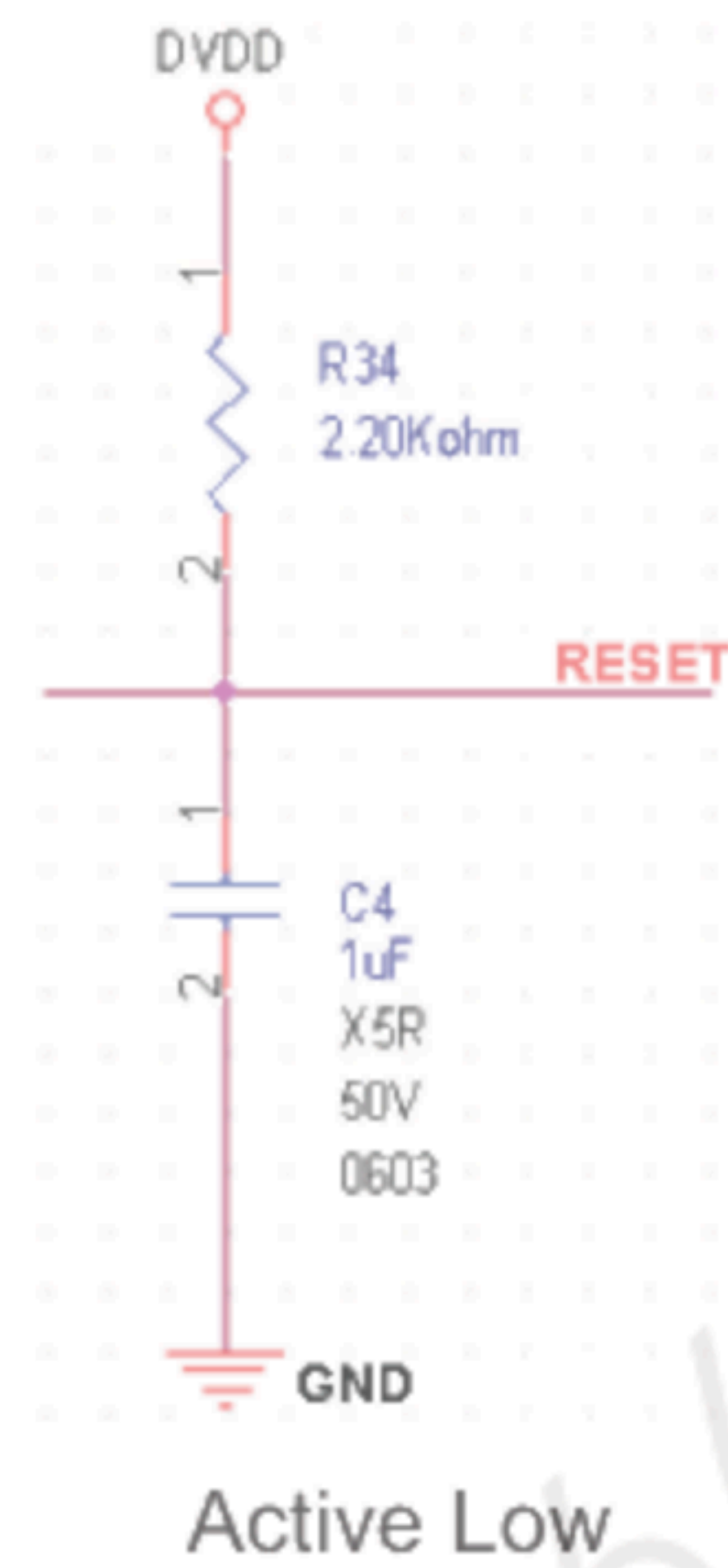
UPDN = HIGH ; SHLR = HIGH



UPDN = HIGH ; SHLR = LOW



Note 5: Global reset pin. Active low to enter reset state. Suggest to connect with an RC (R=2.2K ohm, C=1uF) reset circuit for stability. Normally pull high.





## 2. Absolute Maximum Ratings

| Items         | Symbol  | Values |      | Unit | Condition |
|---------------|---------|--------|------|------|-----------|
|               |         | Min.   | Max. |      |           |
| Power Voltage | VDD     | -0.3   | 3.9  | V    | Note 1,2  |
|               | AVDD    | -0.3   | 13   | V    | Note 1,2  |
|               | VGH     | -0.3   | 20   | V    | Note 1,2  |
|               | VGL     | -10    | 0.3  | V    | Note 1,2  |
|               | VGH VGL | 15     | 30   | V    | Note 1,2  |

Note 1: Functional operation should be restricted under ambient temperature. (25°C).

Note 2: Maximum ratings are those values beyond which damages to the device may occur. Functional operation should be restricted to the limits in the electrical characteristics chapter.

## 3. Electrical DC Characteristics

The following items are measured under stable condition.

### a. TFT- LCD Panel

| Parameter            |         | Symbol | Min.    | Typ. | Max.    | Unit | Notes  |
|----------------------|---------|--------|---------|------|---------|------|--------|
| Power Supply         |         | VDD    | 3.0     | 3.3  | 3.6     | V    | Note 1 |
|                      |         | IVDD   | -       | 10.5 | 12.6    | mA   |        |
|                      |         | AVDD   | 10.7    | 11   | 11.3    | V    | Note 1 |
|                      |         | IAVDD  | -       | 16   | 19.2    | mA   |        |
|                      |         | VGH    | 15.3    | 16.0 | 16.7    | V    | Note 1 |
|                      |         | IVGH   | -       | 0.2  | 1.0     | mA   |        |
|                      |         | VGL    | -7.7    | -7.0 | -6.3    | V    | Note 1 |
|                      |         | IVGL   | -       | -0.2 | -1.0    | mA   |        |
| Input Signal Voltage | H Level | VIH    | 0.7xVDD | -    | VDD     | V    |        |
|                      | L Level | VIL    | 0       | -    | 0.3xVDD | V    |        |

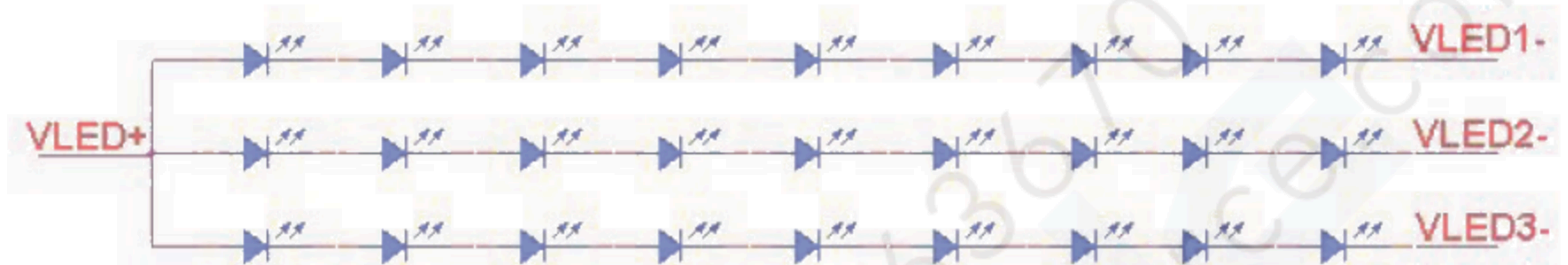
Note 1: Typical current test pattern





## b. Backlight Driving Conditions

| Parameter          | Symbol | Min.  | Typ.  | Max. | Unit | Remark    |
|--------------------|--------|-------|-------|------|------|-----------|
| LED Supply Current | $I_L$  | -     | 195   |      | mA   |           |
| LED Supply Voltage | $V_L$  | -     | 26.55 | 29.7 | V    | Note 1, 2 |
| LED Life Time      | $L_L$  | 10000 | ---   | ---  | Hr   | Note 3    |



\*\*\* LED backlight is composed by total 27 LEDs (3 strings, 9pcs per string).

Note 1: The LED backlight supply power is for 3 strings of LEDs.

Note 2: The voltage capacity of LED driver IC must be over the max of LED Supply Voltage condition.

Note 3: The LED lifetime 10,000hrs means: after 10,000hrs normally use at 195mA, under +25°C, the brightness decreases to 50% of original level.



#### 4. Power on/off sequence

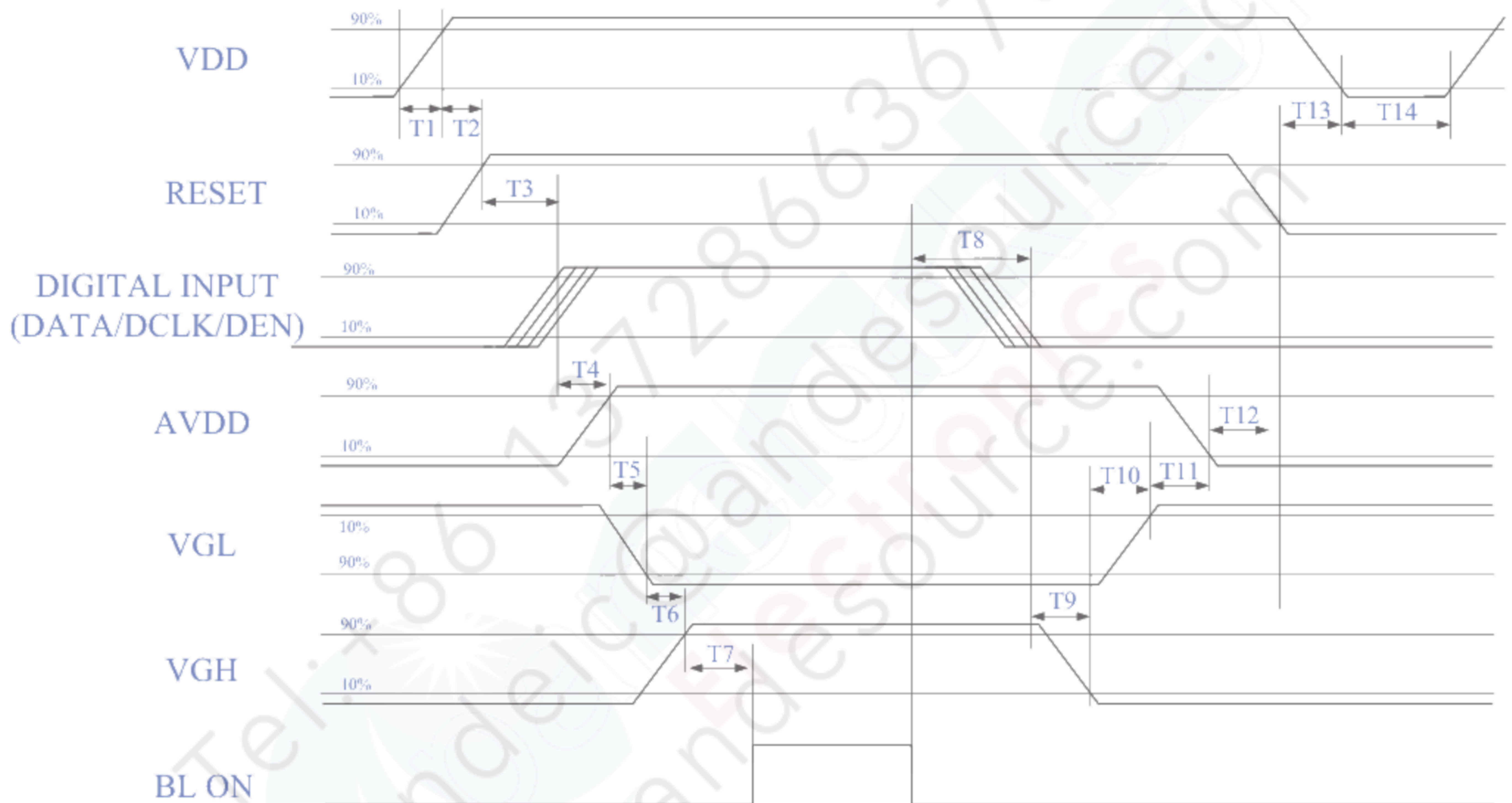
The LCD adopts high voltage driver IC, so it could be permanently damaged under using wrong power on/off sequence procedure. The suggested LCD power on/off sequence is shown as below:

##### Power on sequence:

VDD → RESET → Digital Input (Data/DCLK/DEN) → AVDD → VGL → VGH → BL ON

##### Power off sequence:

BL ON → Digital Input (Data/DCLK/DEN) → VGH → VGL → AVDD → RESET → VDD





| Parameter | Value |      |      | Units |
|-----------|-------|------|------|-------|
|           | Min.  | Typ. | Max. |       |
| T1        | 0.5   | -    | 20   | ms    |
| T2        | 1     | -    | 10   | ms    |
| T3        | 10    | -    | 30   | ms    |
| T4        | 0     | -    | 20   | ms    |
| T5        | 10    | -    | 40   | ms    |
| T6        | 10    | -    | 30   | ms    |
| T7        | 100   | -    | -    | ms    |
| T8        | 100   | -    | -    | ms    |
| T9        | 10    | -    | 40   | ms    |
| T10       | 0     | -    | 30   | ms    |
| T11       | 0     | -    | 40   | ms    |
| T12       | 10    | -    | 30   | ms    |
| T13       | 1     | -    | 10   | ms    |
| T14       | 1000  | -    | -    | ms    |



## 5. Electrical AC Characteristics

### a. Input Timing

#### DE MODE

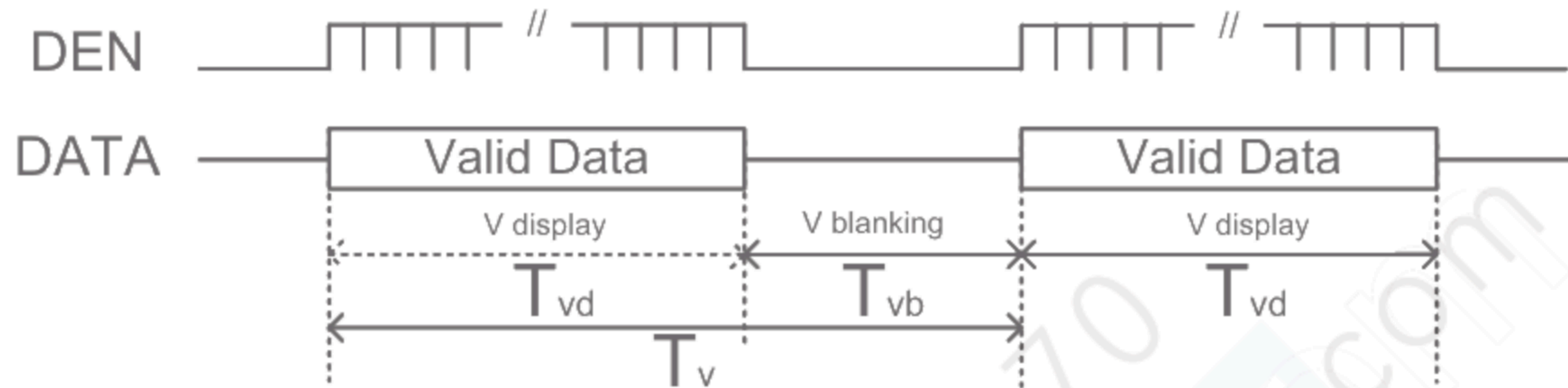
| Parameter                | Symbol | Min  | Typ  | Max  | Unit |
|--------------------------|--------|------|------|------|------|
| Clock frequency          | DCLK   | 26.4 | 33.3 | 46.8 | MHz  |
| Frame rate               | -      | 55   | 60   | 70   | Hz   |
| Horizontal Signal        |        |      |      |      |      |
| Horizontal display area  | Thd    | 800  |      |      | DCLK |
| Horizontal period area   | Th     | 862  | 1056 | 1200 | DCLK |
| Horizontal blanking area | Thb    | 62   | 256  | 400  | DCLK |
| Vertical Signal          |        |      |      |      |      |
| Vertical display area    | Tvd    | 480  |      |      | TH   |
| Vertical period area     | Tv     | 510  | 525  | 650  | TH   |
| Vertical blanking area   | Tvb    | 30   | 45   | 170  | TH   |

#### SYNC MODE

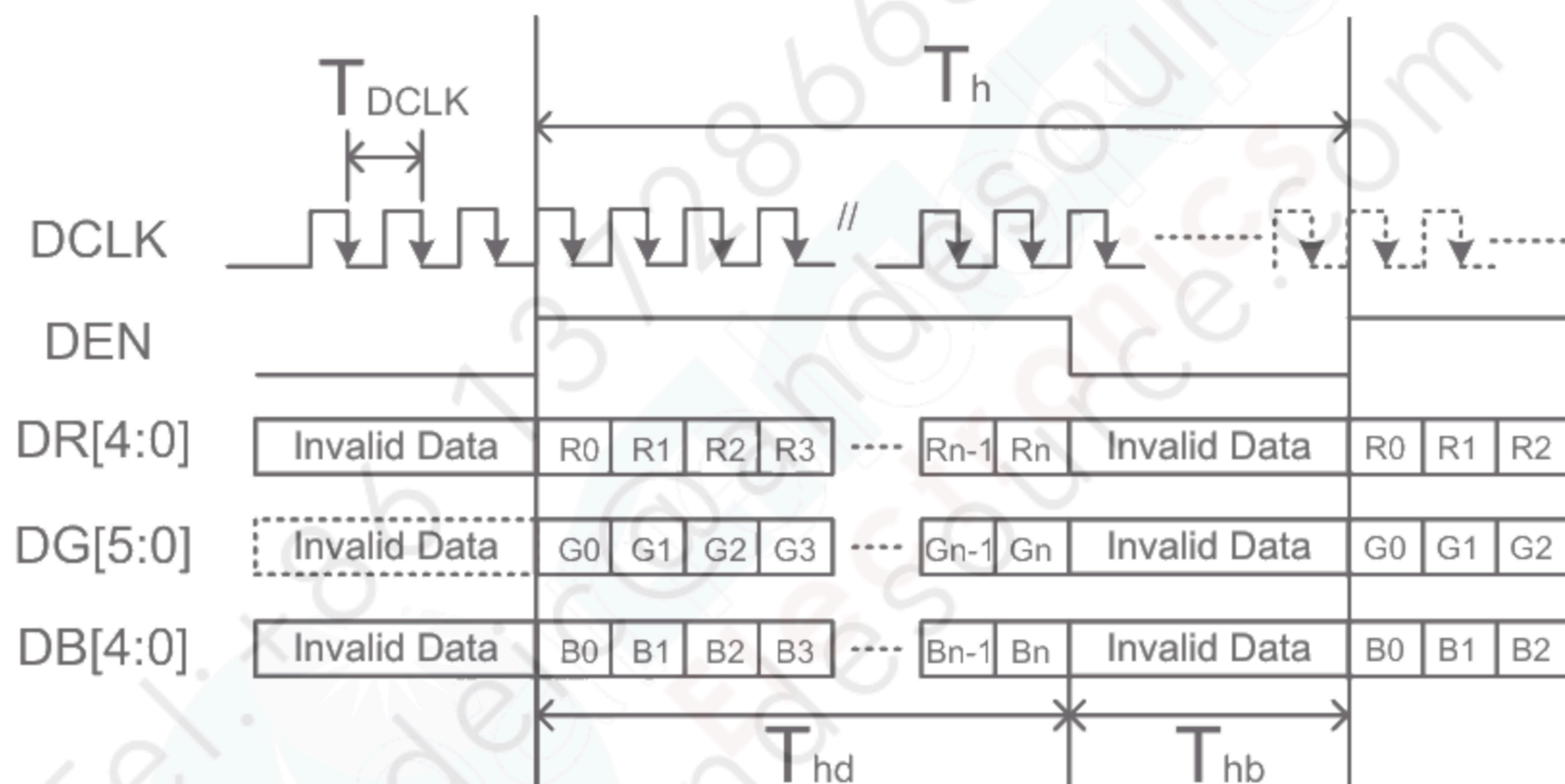
| Parameter                | Symbol | Min | Typ  | Max  | Unit |
|--------------------------|--------|-----|------|------|------|
| Clock frequency          | DCLK   | -   | 29.2 | 46.5 | MHz  |
| Frame rate               | -      | -   | 60   | -    | Hz   |
| Horizontal Signal        |        |     |      |      |      |
| Horizontal display area  | Thd    | 800 |      |      | DCLK |
| Horizontal period area   | Th     | 908 | 928  | 1088 | DCLK |
| Horizontal blanking area | Thb    | 108 | 128  | 288  | DCLK |
| Horizontal pulse width   | Thw    | 1   | 48   | 87   | DCLK |
| Horizontal back porch    | The    | 88  | 88   | 88   | DCLK |
| Horizontal front porch   | Thf    | 20  | 40   | 200  | DCLK |
| Vertical Signal          |        |     |      |      |      |
| Vertical display area    | Tvd    | 480 |      |      | TH   |
| Vertical period area     | Tv     | 517 | 525  | 712  | TH   |
| Vertical blanking area   | Tvb    | 42  | 45   | 232  | TH   |
| Vertical pulse width     | Tvw    | 3   | 3    | 3    | TH   |
| Vertical back porch      | Tve    | 32  | 32   | 32   | TH   |
| Vertical front porch     | Tvf    | 5   | 13   | 200  | TH   |



### Vertical Timing Input (DE Mode)

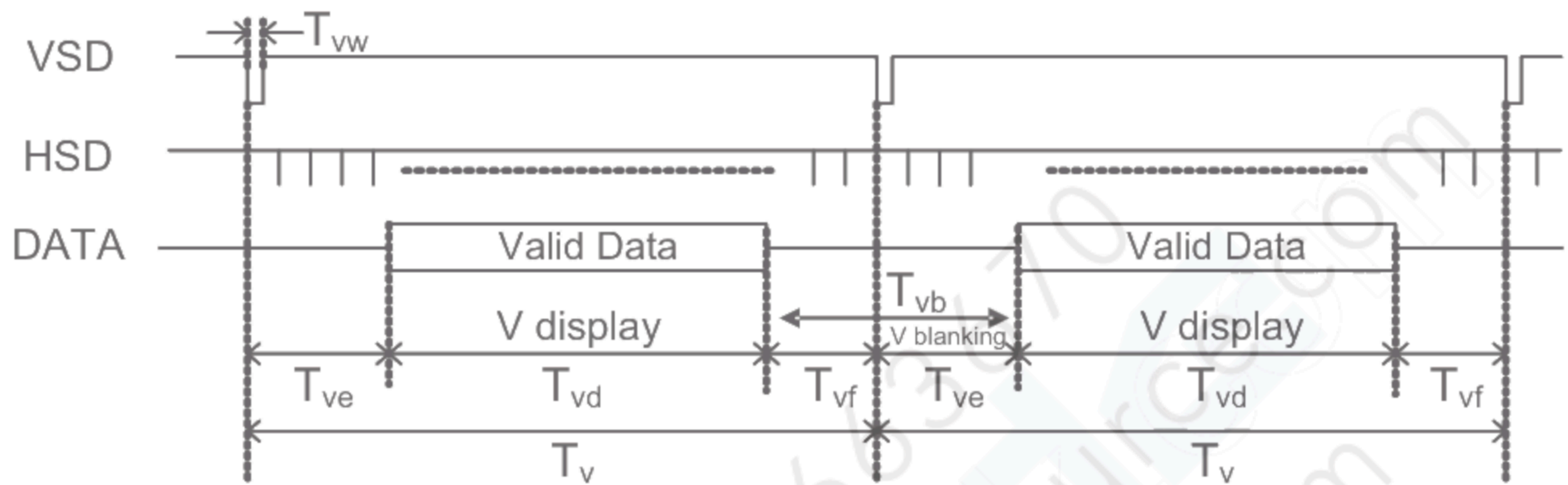


### Horizontal Timing Input (DE Mode)

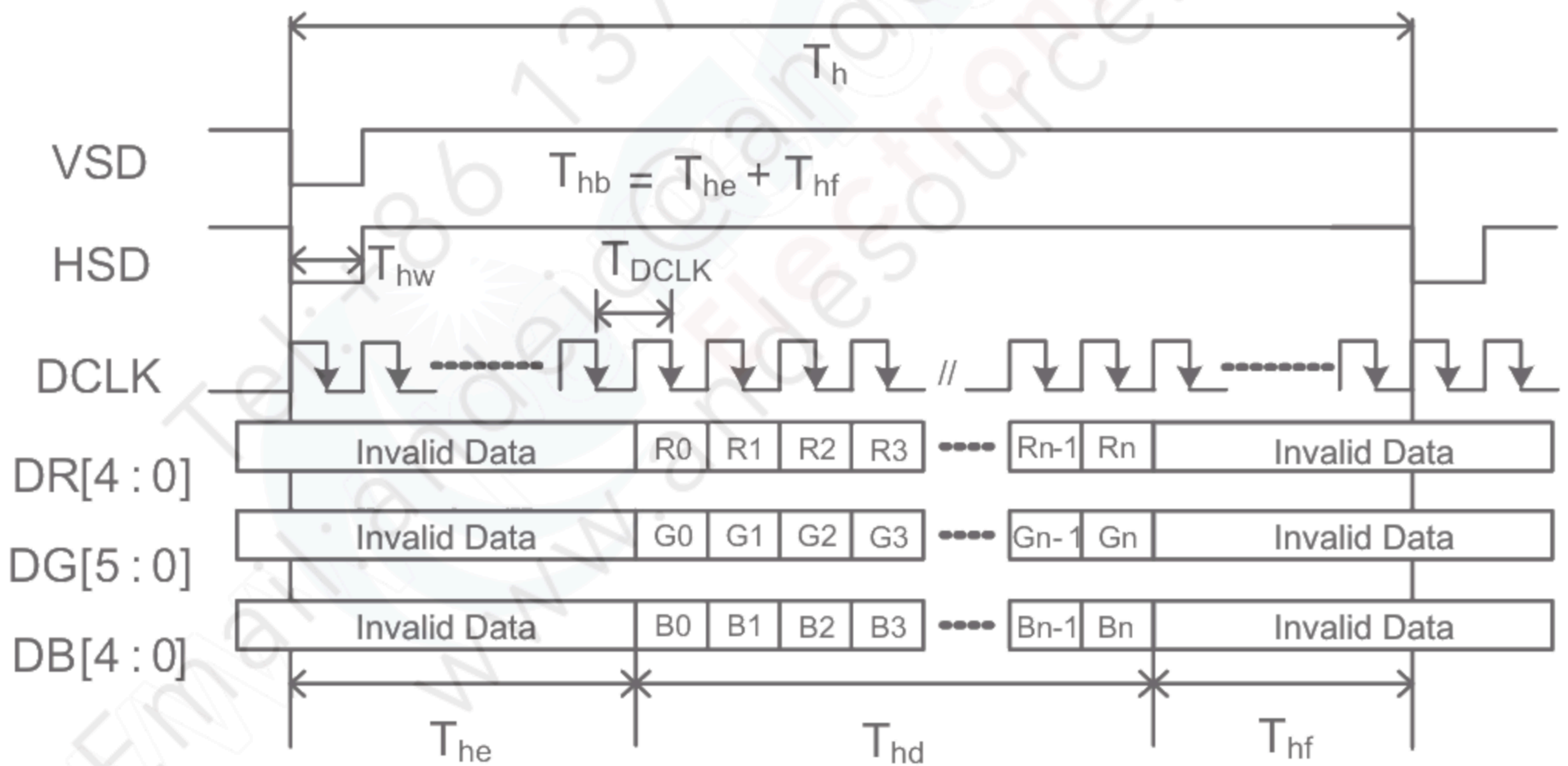




### Vertical Timing Input (SYNC Mode)



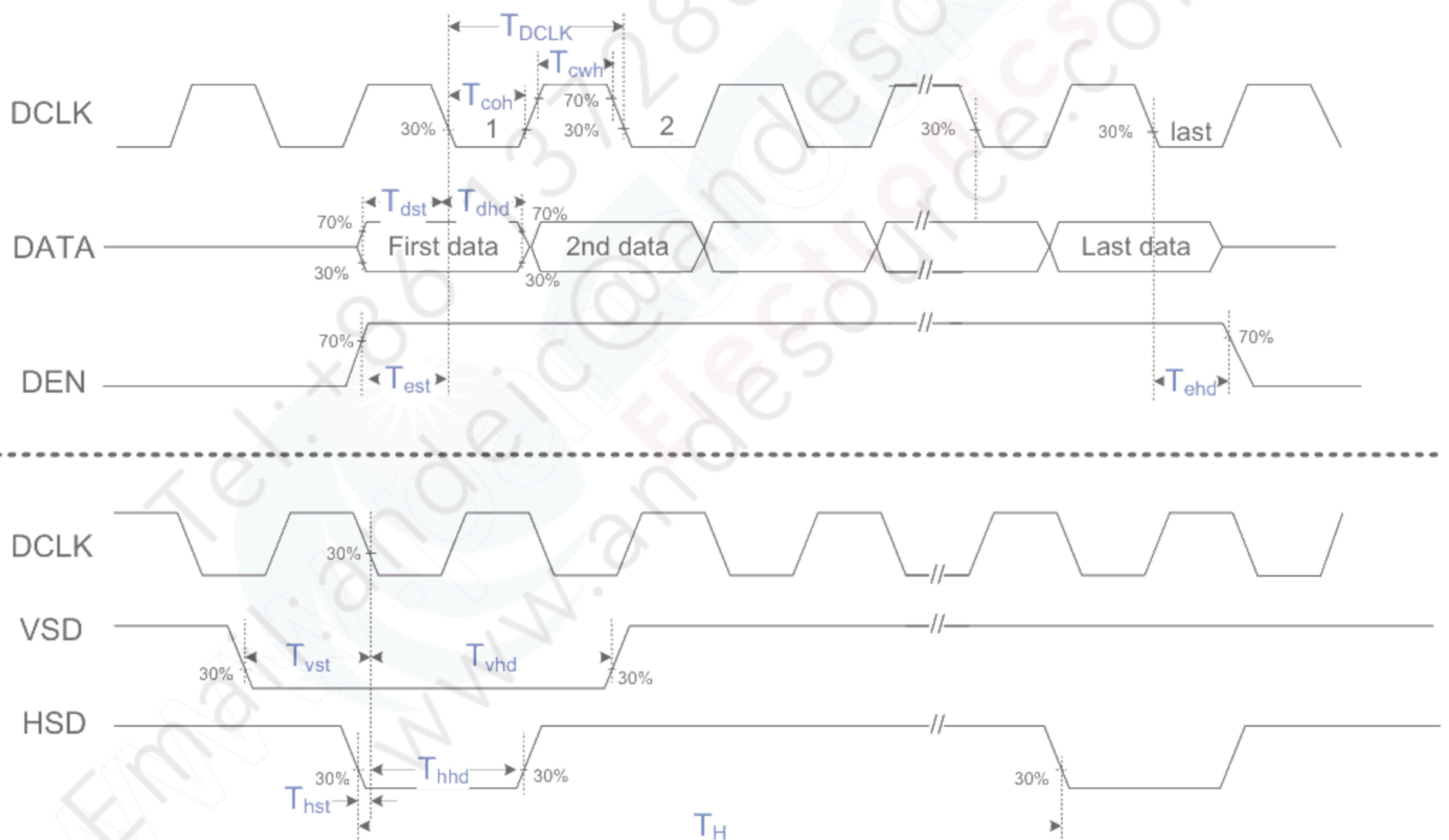
### Horizontal Timing Input (SYNC Mode)





### b. Signal AC Characteristics

| Parameter       | Symbol     | Min | Typ | Max | Unit |
|-----------------|------------|-----|-----|-----|------|
| HSD setup time  | $T_{hst}$  | 8   | -   | -   | ns   |
| HSD hold time   | $T_{hhd}$  | 8   | -   | -   | ns   |
| VSD setup time  | $T_{vst}$  | 8   | -   | -   | ns   |
| VSD hold time   | $T_{vhd}$  | 8   | -   | -   | ns   |
| Data setup time | $T_{dst}$  | 8   | -   | -   | ns   |
| Data hold time  | $T_{dhd}$  | 8   | -   | -   | ns   |
| DEN setup time  | $T_{est}$  | 8   | -   | -   | ns   |
| DEN hold time   | $T_{ehd}$  | 8   | -   | -   | ns   |
| DCLK cycle time | $T_{coh}$  | 20  | -   | -   | ns   |
| DCLK pulse duty | $D_{dclk}$ | 40  | 50  | 60  | %    |





## D. Optical specifications

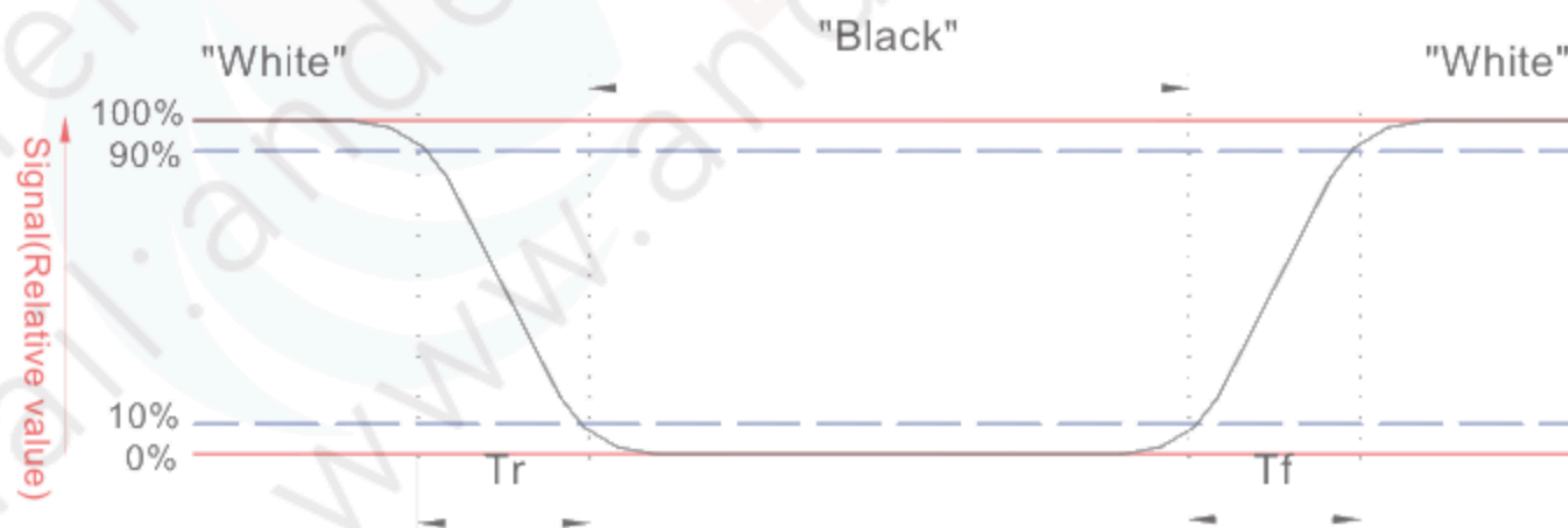
| Item           | Symbol  | Condition                  | Min.  | Typ.  | Max.  | Unit              | Remark   |
|----------------|---------|----------------------------|-------|-------|-------|-------------------|----------|
| Response Time  | Tr + Tf | $\theta=0^\circ$           | -     | 25    | 50    | ms                | Note 1,2 |
| Contrast ratio | CR      | At optimized viewing angle | 400   | 500   | -     |                   | Note 3   |
| Viewing Angle  | Top     | $CR \geq 10$               | 35    | 40    | -     | deg.              | Note 4,5 |
|                | Bottom  |                            | 55    | 60    | -     |                   |          |
|                | Left    |                            | 55    | 60    | -     |                   |          |
|                | Right   |                            | 55    | 60    | -     |                   |          |
| Brightness     | $Y_L$   | Perpendicular              | 1250  |       | -     | cd/m <sup>2</sup> | Note 6   |
| Chromaticity   | Wx      | $\theta=0^\circ$           | 0.263 | 0.313 | 0.363 |                   | Note 7   |
|                | Wv      |                            | 0.274 | 0.324 | 0.374 |                   |          |
| Uniformity     |         | -                          | 70    | 75    | -     | %                 | Note 8   |

\*\*\* Optical measurement should be performed in the dark room, ambient temperature =25°C, and backlight current  $I_L=195$  mA

\*\*\* To be measured on the center area of panel with a field angle of 1° by Topcon luminance meter SR-3, after 15 minutes operation.

Note 1: Definition of response time:

The output signals of photo detector are measured when the input signals are changed from "black" to "white"(falling time) and from "white" to "black"(rising time), respectively.



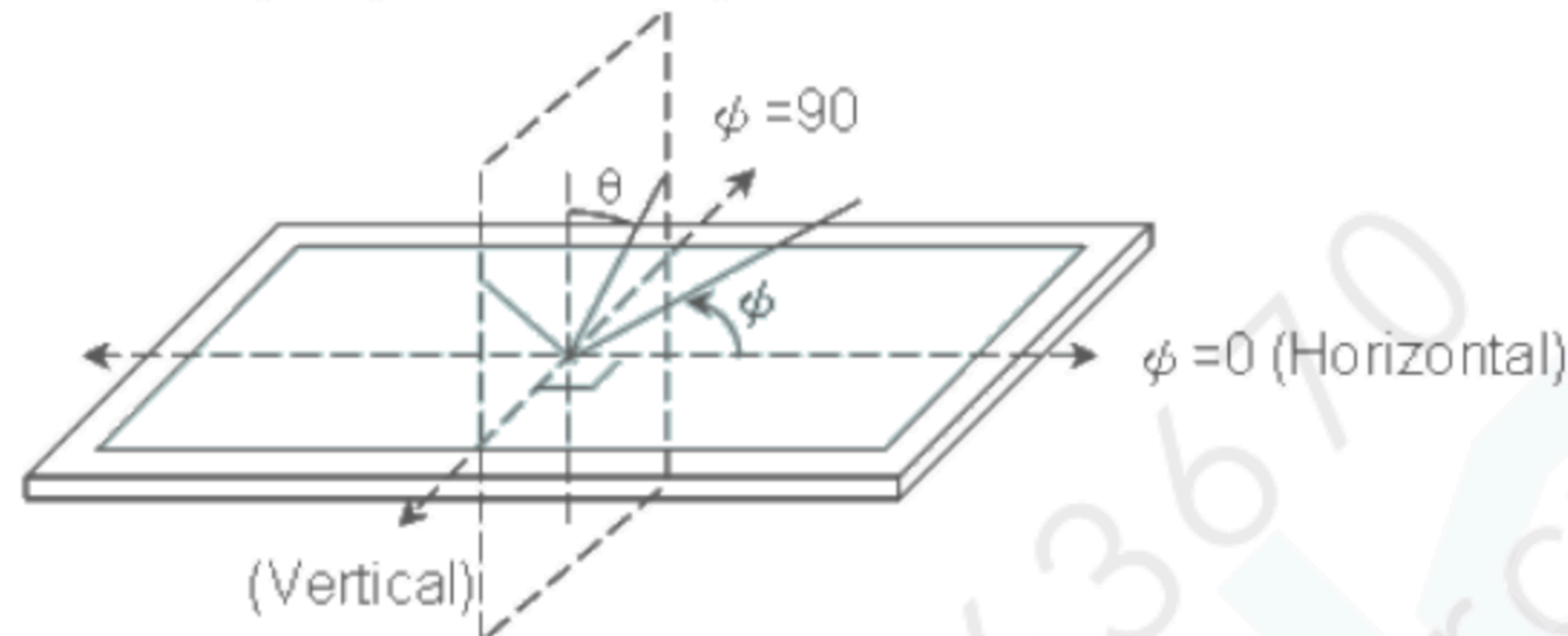


Note 2: From liquid crystal characteristics, response time will become slower and the color of panel will become darker when ambient temperature is below 25°C.

Note 3: Contrast ratio is calculated with the following formula.

$$\text{Contrast ratio} = \frac{\text{Photo detector output when LCD is at "White" state}}{\text{Photo detector output when LCD is at "Black" state}}$$

Note 4: Definition of viewing angle: refer to figure as below.



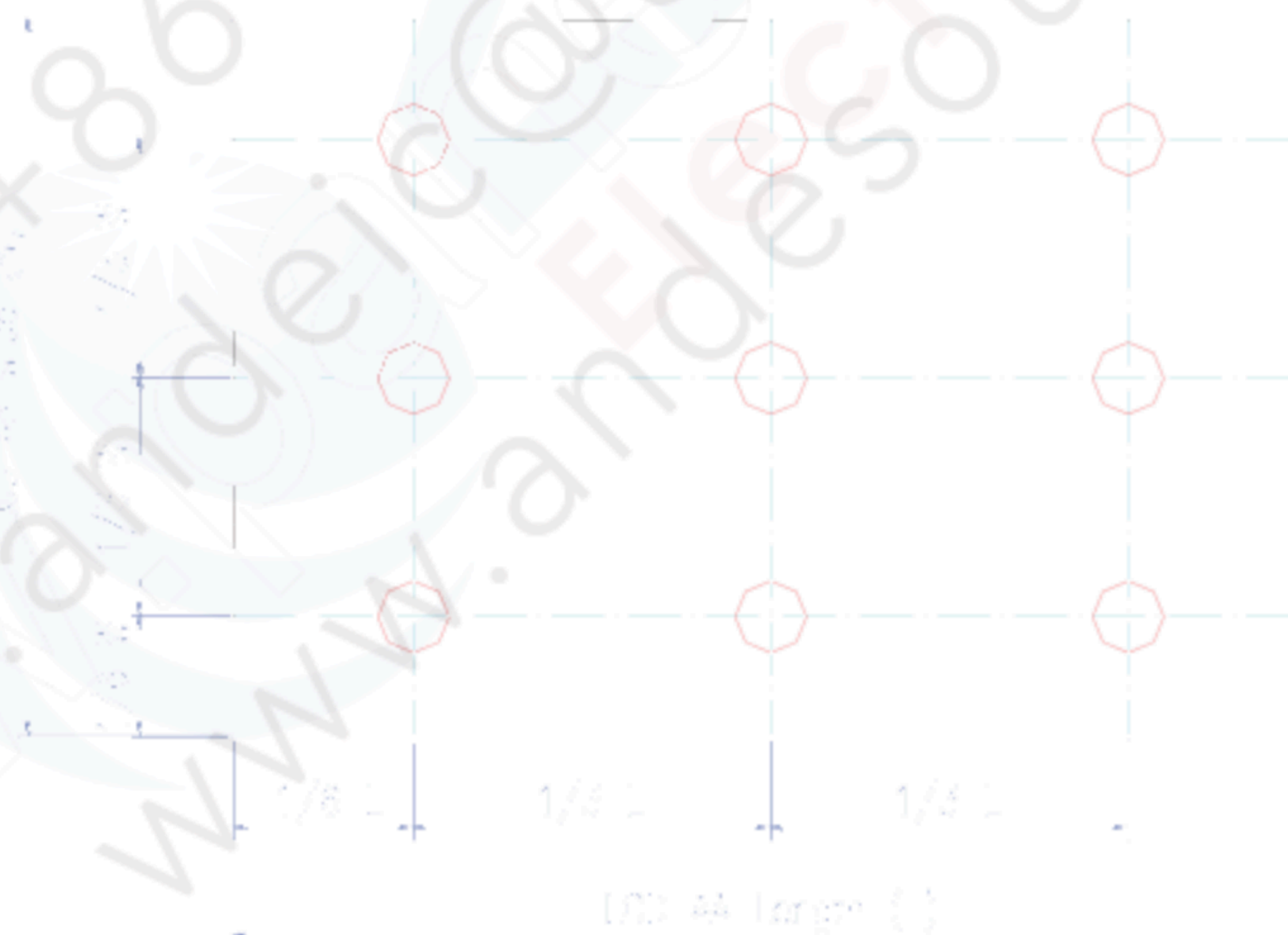
Note 5: The viewing angles are measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

Note 6: Brightness is measured at the center of the display perpendicular to the panel surface.

Note 7: The chromaticity of R, G, and B is for reference only. The accurate data will base on the reality test.

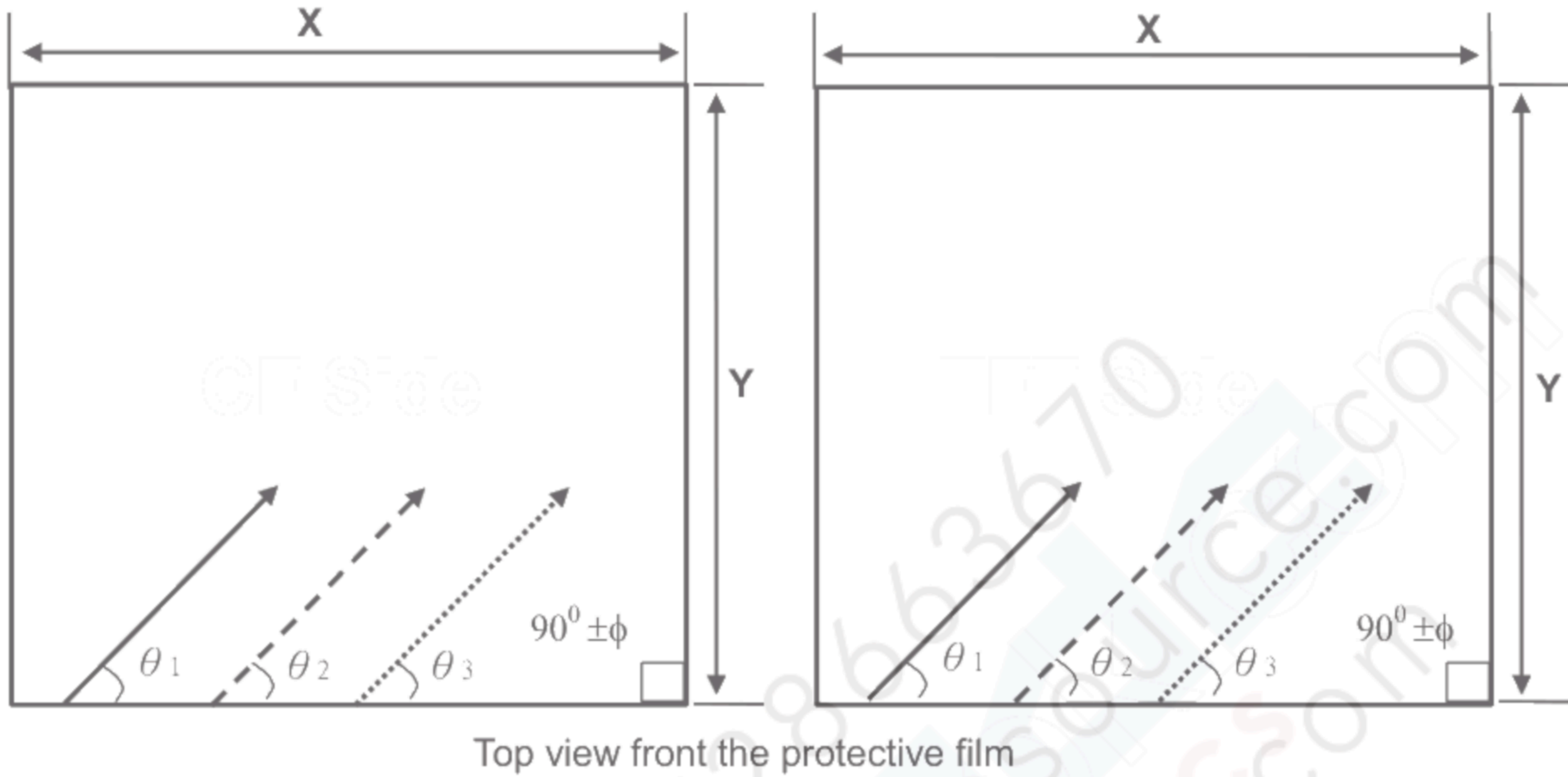
Note 8: Luminance Uniformity is defined as following within the 9 measurements (L1~L9),

$$\text{Luminance Uniformity(\%)} = \frac{\text{Minimum brightness}}{\text{Maximum brightness}}$$





Note 9 : Absorption angle of polarizer



|           | Absorption Angle     |
|-----------|----------------------|
|           | $\theta_1(^{\circ})$ |
| CF side   | 45                   |
| TFT side  | 45                   |
| Tolerance | $\pm 1$              |



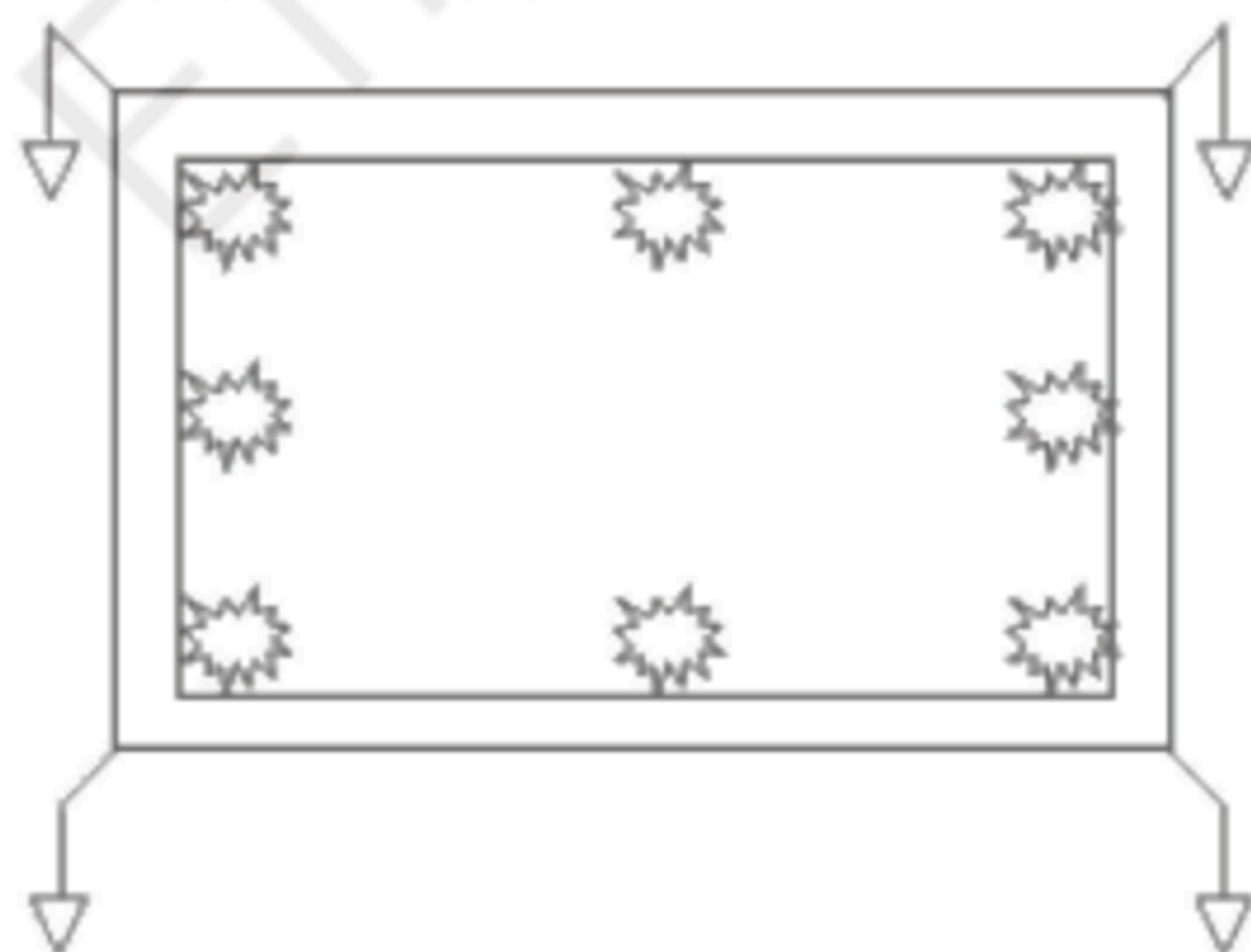
## E. Reliability Test Items

| No. | Test items                         | Conditions                                                                                                                                   |                    | Remark                       |
|-----|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------|
| 1   | High temperature storage           | Ta= 80 °C                                                                                                                                    | 240Hrs             | Note1                        |
| 2   | Low temperature storage            | Ta= -30 °C                                                                                                                                   | 240Hrs             |                              |
| 3   | High temperature operation         | Ts= 70 °C                                                                                                                                    | 240Hrs             |                              |
| 4   | Low temperature operation          | Ta= -20 °C                                                                                                                                   | 240Hrs             | Note1                        |
| 5   | High temperature and high humidity | Ts= 60 °C, 90% RH                                                                                                                            | 240Hrs             | Operation                    |
| 6   | Heat shock                         | -30 °C ~ 80 °C /50 cycles 1Hrs/cycle                                                                                                         |                    | Non-operation                |
| 7   | Electrostatic discharge            | Contact Discharge: ± 4KV, 150pF(330Ω ) 1sec, 8 points, 25 times/ point<br>Air Discharge: ± 8KV, 150pF(330Ω ) 1sec, 8 points, 25 times/ point |                    | Operation<br>(Note 3)        |
| 8   | Vibration                          | Frequency range                                                                                                                              | 10 ~ 55Hz          | JIS C7021,A10<br>Condition A |
|     |                                    | Stoke                                                                                                                                        | 1.5mm              |                              |
|     |                                    | Sweep                                                                                                                                        | 10Hz ~ 55Hz ~ 10Hz |                              |
|     |                                    | 2 hours for each direction of X, Y, Z<br>(6 hours for total)                                                                                 |                    |                              |
| 9   | Mechanical shock                   | 100G, 6ms, ±X,±Y,±Z<br>3 times for each direction                                                                                            |                    |                              |
| 10  | Vibration (with carton)            | Random vibration:<br>0.015G <sup>2</sup> /Hz from 5 ~ 200Hz<br>-6dB/Octave from 200 ~ 500Hz                                                  |                    | IEC 68-34                    |
| 11  | Drop (with carton)                 | Height: 60cm<br>1 corner, 3 edges, 6 surfaces                                                                                                |                    |                              |

Note 1: Ta: Ambient temperature, Ts: Panel surface temperature

Note 2: In the standard condition, there is not display function NG issue occurred. All the cosmetic specification is judged before the reliability stress.

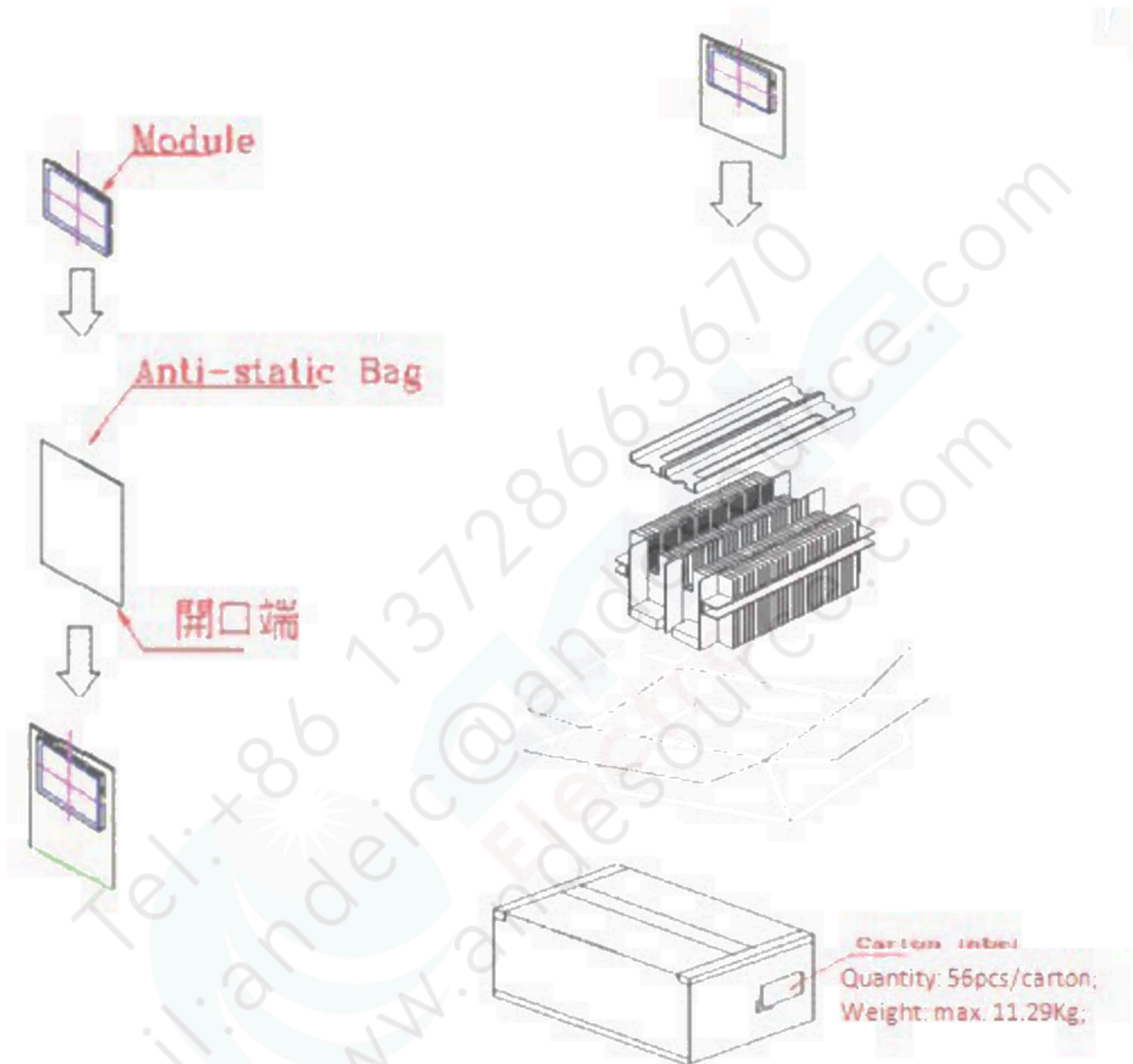
Note 3: According to EN61000-4-2, ESD class B: Some performance degradation allowed. No data lost  
Self-recoverable. No hardware failures. Test points and pattern as below.





## F. Packing and Marketing

### 1. Packing Form





## 2. Module/Panel Label Information

The module/panel (collectively called as the "Product") will be attached with a label of shipping number that represents the identification of the Product at a specific location. Refer to the Product outline drawing for detailed location and size of the label. The label is composed of a 22-digit serial number and printed with 2D data matrix code (ECC200) with the following definition:

ABCDEFGHIJKLMNOPQRSTUV

A070VTN06

- For internal system usage and production serial numbers.
- AUO Module or Panel factory code, represents the final production factory to complete the Product
- Product version code, ranging from 0~9 or A~Z (for Version after 9)
- Week Code, the production week when the product is finished at its production process

Example:

**270S06ZS3A06V102P80200:**

**Product Manufacturing Week Code:** WK27

**Product Version:** Version 0

**Product Manufacturing Factory:** S06

**Internal Production Control Number:** ZS3A06V102P80200

**Product Level:** Z

**Module Lot Number :** S3A06V102P8,

**S:** Factory side

**3A:** Production Location

**0:** Year code (2010)

**6V102P8:** Lot-Number

**Serial Number:** 0200

**Product Name:** A070VTN06



## Precautions

1. Do not twist or bend the module and prevent the unsuitable external force for display module during assembly.
2. Adopt measures for good heat radiation. Be sure to use the module within the specified temperature.
3. Avoid dust or oil mist during assembly.
4. Follow the correct power sequence while operating. Do not apply the invalid signal, otherwise, it will cause improper shut down and damage the module.
5. Less EMI: it will be more safety and less noise.
6. Please operate module in suitable temperature. The response time & brightness will drift by different temperature.
7. Avoid to display the fixed pattern (exclude the white pattern) in a long period, otherwise, it will cause image sticking.
8. Be sure to turn off the power when connecting or disconnecting the circuit.
9. Polarizer scratches easily, please handle it carefully.
10. Display surface never likes dirt or stains.
11. A dewdrop may lead to destruction. Please wipe off any moisture before using module.
12. Sudden temperature changes cause condensation, and it will cause polarizer damaged.
13. High temperature and humidity may degrade performance. Please do not expose the module to the direct sunlight and so on.
14. Acetic acid or chlorine compounds are not friends with TFT display module.
15. Static electricity will damage the module, please do not touch the module without any grounded device.
16. Do not disassemble and reassemble the module by self.
17. Be careful do not touch the rear side directly.
18. No strong vibration or shock. It will cause module broken.
19. Storage the modules in suitable environment with regular packing.
20. Be careful of injury from a broken display module.
21. Please avoid the pressure adding to the surface (front or rear side) of modules, because it will cause the display non-uniformity or other function issue.