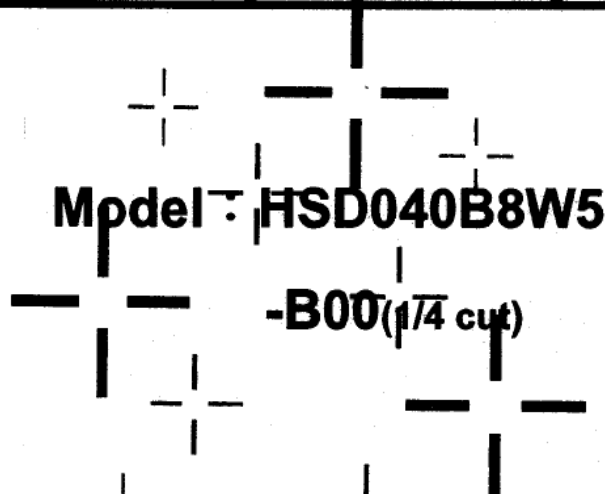


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TO : DTC

Date : May, 12, 2014

## Customer Acceptance Specification



|                                         |                    |
|-----------------------------------------|--------------------|
| Accepted by:                            |                    |
| Signature                               | Date               |
| Proposed by: Technical Service Division |                    |
| Signature<br>周瑞美                        | Date<br>2014.05.15 |

**Note:**

1. Please contact HannStar Display Corp. before designing your product based on this module specification.
2. The information contained herein is presented merely to indicate the characteristics and performance of our products. No responsibility is assumed by HannStar for any intellectual property claims or other problems that may result from application based on the module described herein.

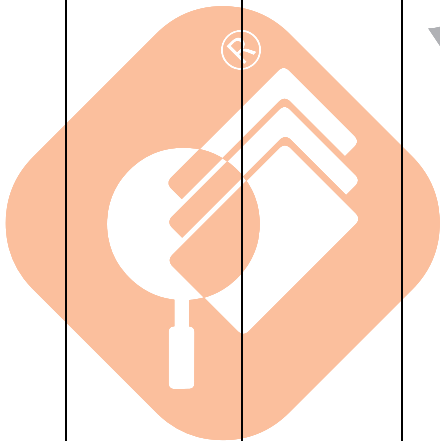


|                |                                  |          |        |
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## Record of Revisions

| Rev. | Date          | Sub-Model | Description of change                    |
|------|---------------|-----------|------------------------------------------|
| 1.0  | May, 12, 2014 | -B00      | Formal Specification was first released. |

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## 1.0 GENERAL DESCRIPTION

### 1.1 Introduction

HannStar Display model HSD040B8W5-B00 is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This TFT LCD has a 3.97 (9:15) inch diagonally measured active display area with WVGA (480 horizontal by 800 vertical pixel) resolution.

### 1.2 Features

- 3.97 (15:9 diagonal) inch configuration
- 16.7M color by 8 bit R.G.B signal input
- RoHS Compliance & Halogen Free

### 1.3 Applications

- Mobile Smart Phone
- Personal Navigation Device
- Multimedia applications and AV system

### 1.4 General information

| Item              | Specification                      | Unit   |
|-------------------|------------------------------------|--------|
| Outline Dimension | 55.14(H) X 93.60(V) X 0.6 t (Typ.) | mm     |
| Display area      | 51.84(H) X 86.40(V)                | mm     |
| Number of Pixel   | 480 RGB (H) x 800(V)               | pixels |
| Pixel pitch       | 0.108(H) x 0.108(V)                | mm     |
| Pixel arrangement | RGB Vertical stripe                |        |
| Display mode      | Normally White                     |        |

|                |                                  |          |        |
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## 2.0 ABSOLUTE MAXIMUM RATINGS

(The following are maximum values which, if exceeded, may cause operation or damage to the unit.)

| Item                       | Symbol          | Min. | Max. | Unit | Note  |
|----------------------------|-----------------|------|------|------|-------|
| LC Operating Voltage       | VOP             | --   | 5    | V    | *1,*2 |
| Operating Temperature      | T <sub>OP</sub> | -20  | 65   | °C   |       |
| Storage Temperature        | T <sub>ST</sub> | -40  | 85   | °C   |       |
| Operating Ambient Humidity | H <sub>OP</sub> | 10   | *4   | RH   | *3    |
| Storage Humidity           | H <sub>ST</sub> | 10   | *4   | RH   | *3    |

Note:

- \*1. At 25±5°C
- \*2. Due to the characteristics of LC Material, the Liquid Crystal driving voltage varies with environmental temperature.
- \*3. Non-condensation.
- \*4. Temp. ≤ 60°C, 90%RH Max.  
Temp. > 60°C, Absolute humidity shall be less than 90%RH.



|                |                                  |          |        |
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### 3.0 Electrical Specifications

| Item                      | Symbol | Min. | Typ. | Max. | Unit | Note  |
|---------------------------|--------|------|------|------|------|-------|
| TFT Gate ON Voltage       | VGH    | --   | 15   | --   | V    | *1,*2 |
| TFT Gate OFF Voltage      | VGL    | --   | -10  | --   | V    |       |
| TFT Common Voltage        | Vcom   | -2   | --   | 0    | V    |       |
| Data (RGB signal) Voltage | Vsig   | -5.0 | --   | 5.0  | V    |       |

Note:

**1. VGH is TFT Gate operating Voltage.**

\*2. VGL is TFT Gate operating Voltage.

The storage structure of this model is  $C_{ST}$  (Storage on Common)

\*3. Vcom must be adjusted to optimize display quality \_Cross talk, Contrast Ratio and etc.



|                |                                  |          |        |
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### 3.1 FPC PIN ASSIGNMENT

| No. | Pin           | No. | Pin     | No. | Pin         | No. | Pin           | No. | Pin   |
|-----|---------------|-----|---------|-----|-------------|-----|---------------|-----|-------|
| 1   | MARK          | 43  | VCSW2   | 85  | DSI_D0N     | 127 | BS3           | 169 | C21N  |
| 2   | NULL          | 44  | VCSW1   | 86  | DSI_D0N     | 128 | BS2           | 170 | C21P  |
| 3   | VCOM          | 45  | VCSW1   | 87  | DSI_VSS     | 129 | BS1           | 171 | C21P  |
| 4   | VCOM          | 46  | VSP     | 88  | PCCS1       | 130 | BS0           | 172 | DUMMY |
| 5   | VGL           | 47  | VSP     | 89  | PCCS0       | 131 | TEST2         | 173 | VGH   |
| 6   | DUMMY         | 48  | VSP     | 90  | OSC         | 132 | TEST1         | 174 | VGH   |
| 7   | DUMMY         | 49  | VSP     | 91  | DSI_LDO_ENB | 133 | HSYNC_OUT1    | 175 | VGH   |
| 8   | DUMMY         | 50  | VSPC    | 92  | PCLK        | 134 | CABC_PWM_OUT1 | 176 | DUMMY |
| 9   | DUMMY         | 51  | VSPR    | 93  | DE          | 135 | IOVCC         | 177 | C41N  |
| 10  | DUMMY         | 52  | VSPR    | 94  | HSYNC       | 136 | IOVCC         | 178 | C41N  |
| 11  | DUMMY         | 53  | VDDD    | 95  | VSYN        | 137 | IOVCC         | 179 | C41P  |
| 12  | DUMMY         | 54  | VDDD    | 96  | SDO         | 138 | VDDD          | 180 | C41P  |
| 13  | DUMMY         | 55  | VDDD    | 97  | SDI_SDA     | 139 | VDDD          | 181 | VCOM  |
| 14  | DUMMY         | 56  | VDDD    | 98  | CSX         | 140 | VDDD          | 182 | VCOM  |
| 15  | DUMMY         | 57  | VDDD    | 99  | SCL         | 141 | VSSD          | 183 | VCOM  |
| 16  | DUMMY         | 58  | VDDD    | 100 | DCX         | 142 | VSSD          | 184 | VCOM  |
| 17  | DUMMY         | 59  | VDDD    | 101 | TEST3       | 143 | VSSD          | 185 | DUMMY |
| 18  | DUMMY         | 60  | VSSD    | 102 | DB0         | 144 | VSSD          | 186 | VGL   |
| 19  | DUMMY         | 61  | VSSD    | 103 | DB1         | 145 | VSSA          | 187 | VGL   |
| 20  | VCOM          | 62  | VSSD    | 104 | DB2         | 146 | VSSA          | 188 | DUMMY |
| 21  | VCOM          | 63  | VSSD    | 105 | DB3         | 147 | VSSA          | 189 | VCOM  |
| 22  | CABC_PWM_OUT2 | 64  | VSSAC   | 106 | DB4         | 148 | VR            | 190 | VCOM  |
| 23  | DUMMY         | 65  | DSI_VSS | 107 | DB5         | 149 | VCI           | 191 | DUMMY |
| 24  | LVGL          | 66  | DSI_VSS | 108 | DB6         | 150 | VCI           | 192 | DUMMY |
| 25  | LVGL          | 67  | DSI_VSS | 109 | DB7         | 151 | VCI           | 193 | DUMMY |
| 26  | DUMMY         | 68  | DSI_VCC | 110 | DB8         | 152 | VCL           | 194 | DUMMY |
| 27  | VCOM          | 69  | DSI_VCC | 111 | DB9         | 153 | VCL           | 195 | DUMMY |
| 28  | VCOM          | 70  | DSI_VCC | 112 | DB10        | 154 | VCL           | 196 | DUMMY |
| 29  | DUMMY         | 71  | DSI_LDO | 113 | DB11        | 155 | DUMMY         | 197 | DUMMY |
| 30  | VGH           | 72  | DSI_VSS | 114 | DB12        | 156 | C24N          | 198 | DUMMY |
| 31  | VGH           | 73  | DSI_D1P | 115 | DB13        | 157 | C24N          | 199 | DUMMY |
| 32  | DUMMY         | 74  | DSI_D1P | 116 | DB14        | 158 | C24P          | 200 | DUMMY |
| 33  | VCI           | 75  | DSI_D1N | 117 | DB15        | 159 | C24P          | 201 | DUMMY |
| 34  | VCI           | 76  | DSI_D1N | 118 | DB16        | 160 | C22N          | 202 | DUMMY |
| 35  | VCI           | 77  | DSI_VSS | 119 | DB17        | 161 | C22N          | 203 | DUMMY |
| 36  | VSN           | 78  | DSI_CP  | 120 | DB18        | 162 | C22P          | 204 | DUMMY |
| 37  | VSN           | 79  | DSI_CP  | 121 | DB19        | 163 | C22P          | 205 | DUMMY |
| 38  | VSN           | 80  | DSI_CN  | 122 | DB20        | 164 | C23N          | 206 | VCOM  |
| 39  | VSN           | 81  | DSI_CN  | 123 | DB21        | 165 | C23N          | 207 | VCOM  |
| 40  | VSNR          | 82  | DSI_VSS | 124 | DB22        | 166 | C23P          | 208 | NULL  |
| 41  | VSNR          | 83  | DSI_D0P | 125 | DB23        | 167 | C23P          | 209 | MARK  |
| 42  | VCSW2         | 84  | DSI_D0P | 126 | NRESET      | 168 | C21N          |     |       |

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### 3.2 TFT Design Rules

| Item                     |                | Specification                      | unit    |
|--------------------------|----------------|------------------------------------|---------|
| COG<br>Himax HX8369-B    | Chip size      | 24360 x 932                        | $\mu$ m |
|                          | Pad number     | 1907                               | —       |
|                          | Pin assignment | <u>Based on the HX8369-B Spec.</u> |         |
| COG<br>Forcelead SC7798A | Chip size      | 24360 x 930                        | $\mu$ m |
|                          | Pad number     | 1913                               | —       |
|                          | Pin assignment | <u>Based on the SC7798A Spec.</u>  |         |

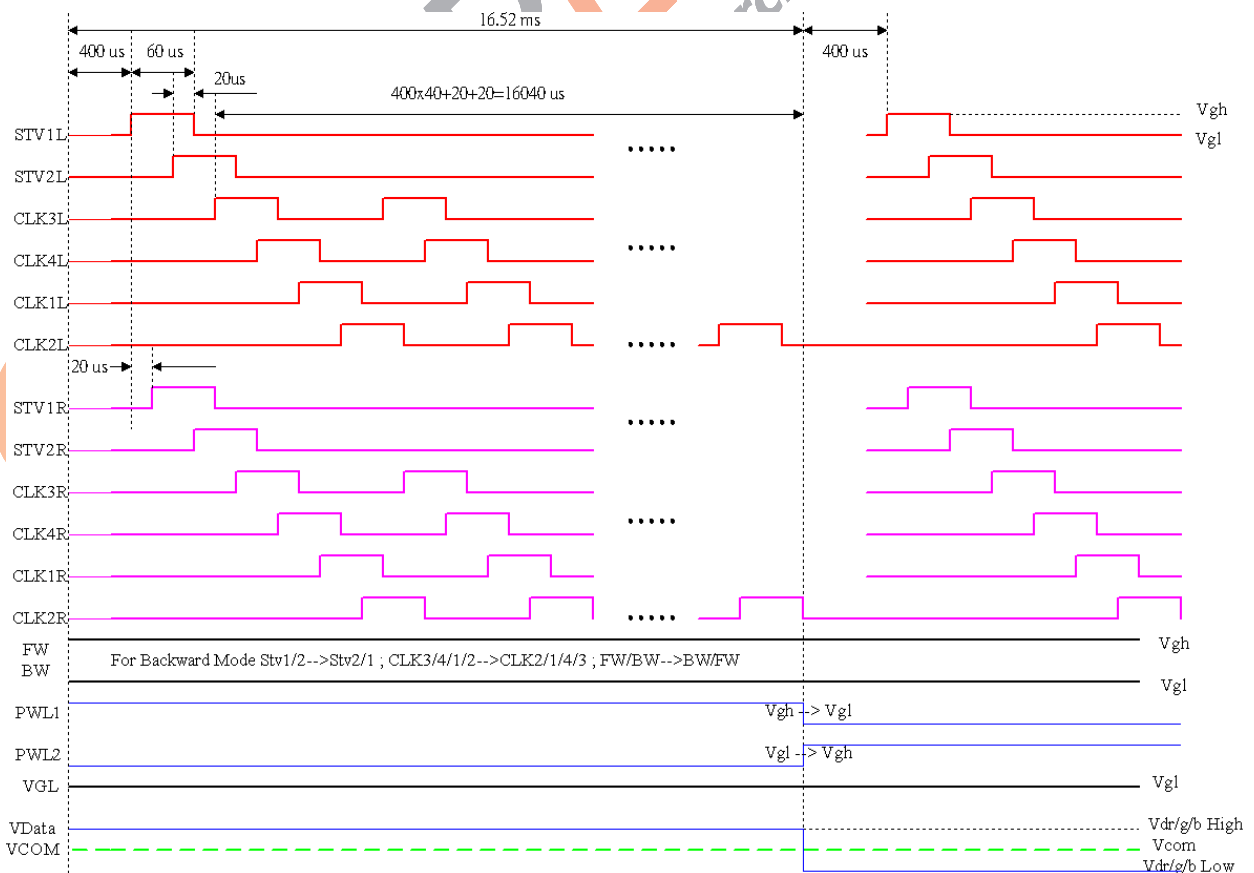




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### 3.3 Cell test light on waveform

| Voltage              | Gray   | White  | Black  | Red    | Green  | Blue   |
|----------------------|--------|--------|--------|--------|--------|--------|
| V <sub>gg</sub>      | +30V   | +30V   | +30V   | +30V   | +30V   | +30V   |
| V <sub>com</sub>     | -1.55V | -1.55V | -1.55V | -1.55V | -1.55V | -1.55V |
| V <sub>gh</sub>      | +15V   | +15V   | +15V   | +15V   | +15V   | +15V   |
| V <sub>gl</sub>      | -10V   | -10V   | -10V   | -10V   | -10V   | -10V   |
| V <sub>dr</sub> High | +2.5V  | 0.1V   | +5V    | 0.1V   | +5V    | +5V    |
| V <sub>dr</sub> Low  | -2.5V  | -0.1V  | -5V    | -0.1V  | -5V    | -5V    |
| V <sub>dg</sub> High | +2.5V  | 0.1V   | +5V    | +5V    | 0.1V   | +5V    |
| V <sub>dg</sub> Low  | -2.5V  | -0.1V  | -5V    | -5V    | -0.1V  | -5V    |
| V <sub>db</sub> High | +2.5V  | 0.1V   | +5V    | +5V    | +5V    | 0.1V   |
| V <sub>db</sub> Low  | -2.5V  | -0.1V  | -5V    | -5V    | -5V    | -0.1V  |



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## 4.0 OPTICAL CHARACTERISTICS

### 4.1 Optical specification

| Item                              |         | Symbol         | Condition                   | Min.  | Typ.  | Max.  | Unit | Note                                                                 |
|-----------------------------------|---------|----------------|-----------------------------|-------|-------|-------|------|----------------------------------------------------------------------|
| Transmittance (with Polarizer)    |         | T (%)          | Θ=0<br>Normal viewing angle | 4     | 4.45  | —     | —    | Transmittance base on using EWV Polarizer , Reference Only           |
| Transmittance (without Polarizer) |         | T (%)          |                             | 11.3  | 12.6  | —     | —    |                                                                      |
| Contrast                          |         | CR             |                             | 500   | 900   | —     |      | (1)(2)                                                               |
| Response time                     | Rising  | T <sub>R</sub> |                             | —     | 4     | 8     | msec | (1)(3)                                                               |
|                                   | Falling | T <sub>F</sub> |                             | —     | 12    | 24    |      |                                                                      |
| Color gamut                       | S(%)    |                |                             | 45    | 50.8  | —     | %    |                                                                      |
| Color chromaticity (CIE1931)      | White   | W <sub>x</sub> |                             | 0.288 | 0.308 | 0.328 |      | (1)(4)<br>CF glass                                                   |
|                                   |         | W <sub>y</sub> | 0.312                       | 0.332 | 0.352 |       |      |                                                                      |
|                                   | Red     | R <sub>x</sub> | 0.610                       | 0.630 | 0.650 |       |      |                                                                      |
|                                   |         | R <sub>y</sub> | 0.307                       | 0.327 | 0.347 |       |      |                                                                      |
|                                   | Green   | G <sub>x</sub> | 0.263                       | 0.283 | 0.303 |       |      |                                                                      |
|                                   |         | G <sub>y</sub> | 0.531                       | 0.551 | 0.571 |       |      |                                                                      |
|                                   | Blue    | B <sub>x</sub> | 0.142                       | 0.162 | 0.182 |       |      |                                                                      |
|                                   |         | B <sub>y</sub> | 0.134                       | 0.154 | 0.174 |       |      |                                                                      |
| Viewing angle                     | Hor.    | Θ <sub>L</sub> | CR>10                       | 65    | 80    | —     |      | (1)(4)<br>Viewing Angle base on using EWV Polarizer , Reference Only |
|                                   |         | Θ <sub>R</sub> |                             | 60    | 70    | —     |      |                                                                      |
|                                   | Ver.    | Θ <sub>U</sub> |                             | 60    | 80    | —     |      |                                                                      |
|                                   |         | Θ <sub>D</sub> |                             | 60    | 80    | —     |      |                                                                      |
| Gray inversion direction          |         | 9 o'clock      |                             |       |       |       |      | (5)                                                                  |

### 4.2 Measuring Condition

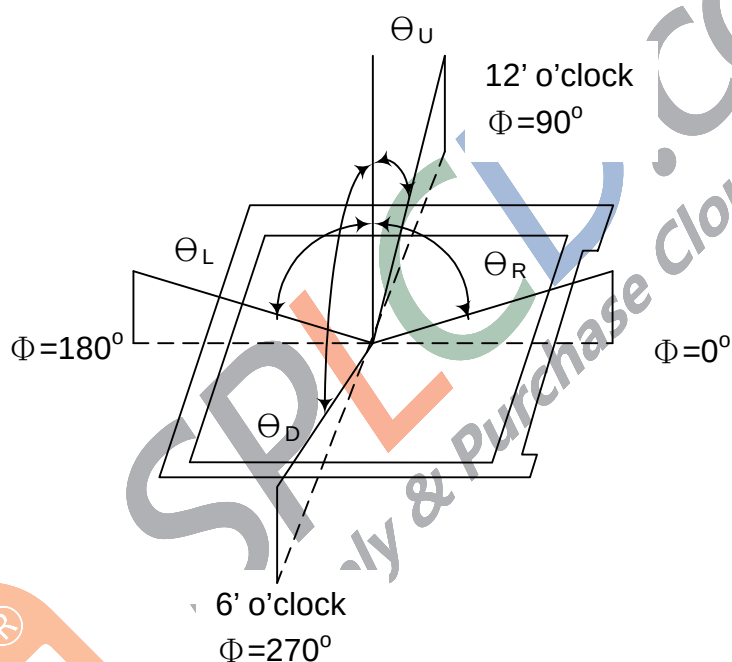
- Measuring surrounding : dark room
- Ambient temperature :  $25 \pm 2^\circ\text{C}$
- 15min. warm-up time.

|                |                                  |          |         |
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### 4.3 Measuring Equipment

- FPM520 of Westar Display technologies, INC., which utilized SR-3 for Chromaticity and BM-5A for other optical characteristics.

Note (1) Definition of Viewing Angle:

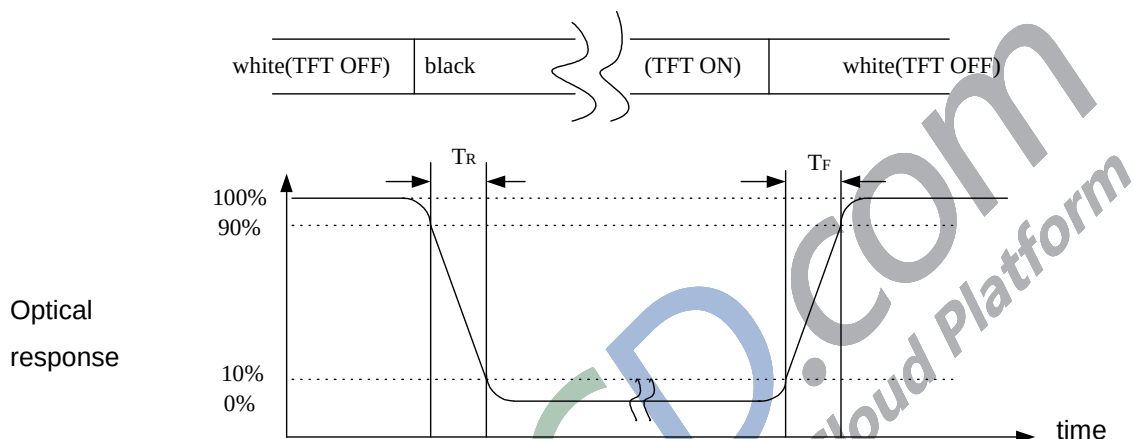


Note (2) Definition of Contrast Ratio (CR) :  
measured at the center point of panel

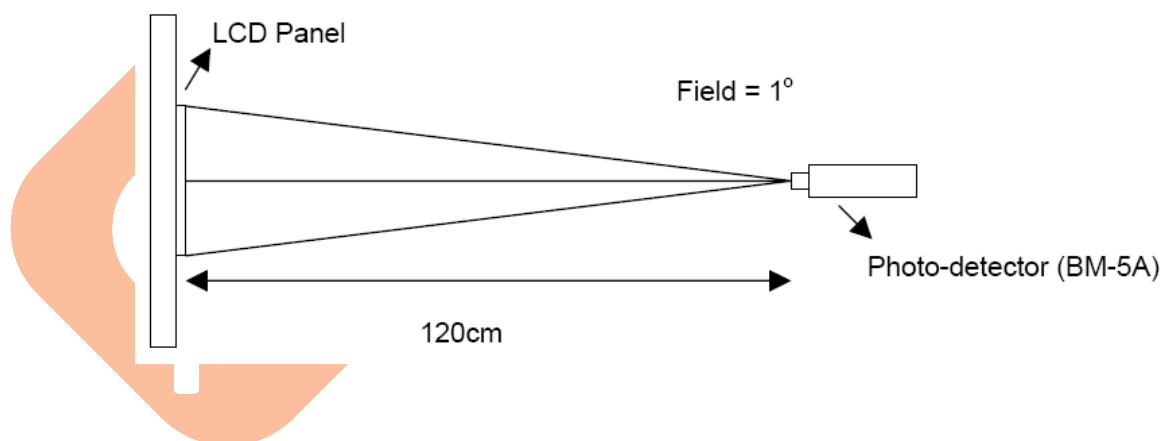
$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

|                |                                  |          |         |
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Note (3) Definition of Response Time : Sum of  $T_R$  and  $T_F$

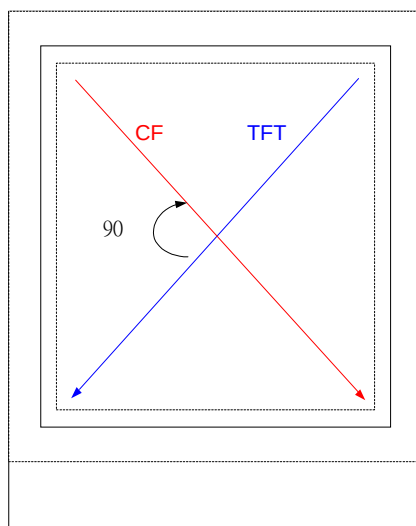


Note (4) Definition of optical measurement setup



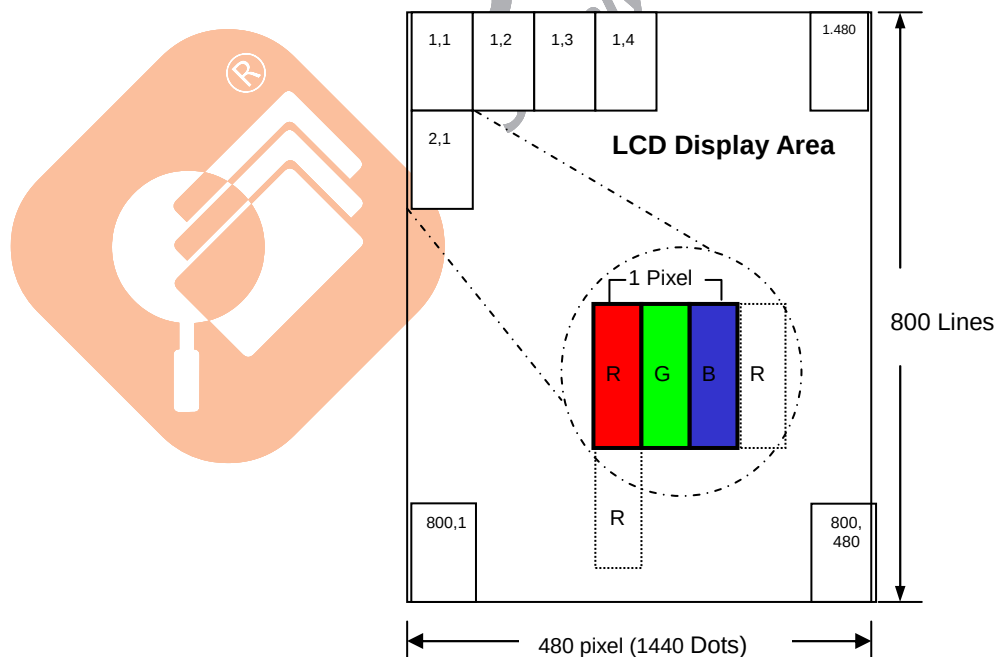
|                |                                  |          |         |
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Note (5) Rubbing Direction (The different Rubbing Direction will cause the different optima view direction.



TFT Face up

## 5.0 PIXEL FORMAT

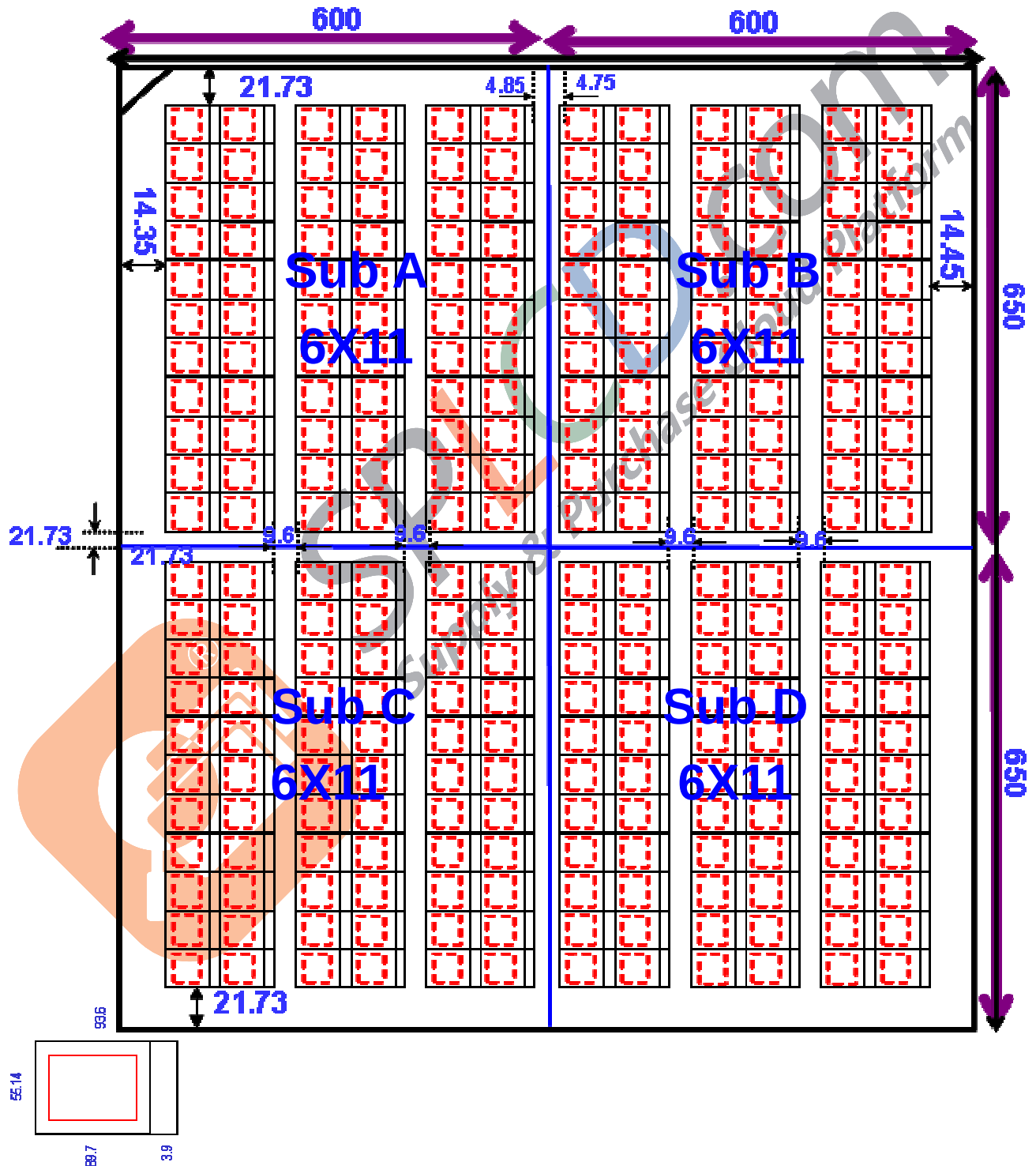


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## 6.0 OUTLINE DIMENSION

### 6.1 Outline Dimension of Mother Glass (Unit : mm)

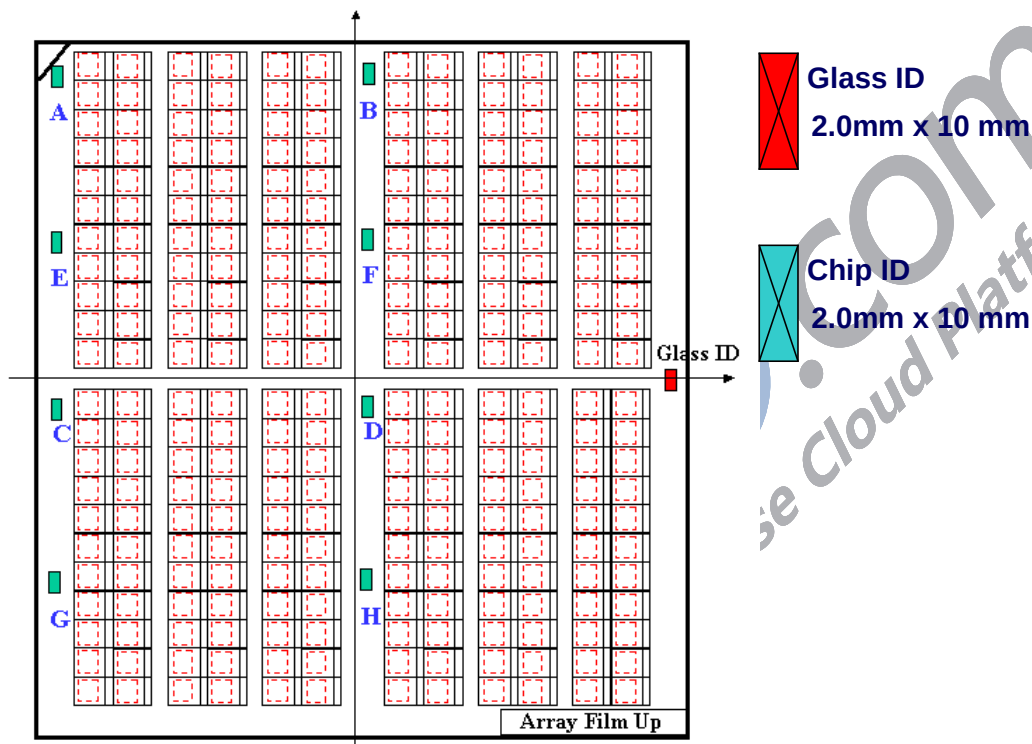
For TFT film up



|                |                                  |          |         |
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## 6.2 Glass ID & Chip ID Position

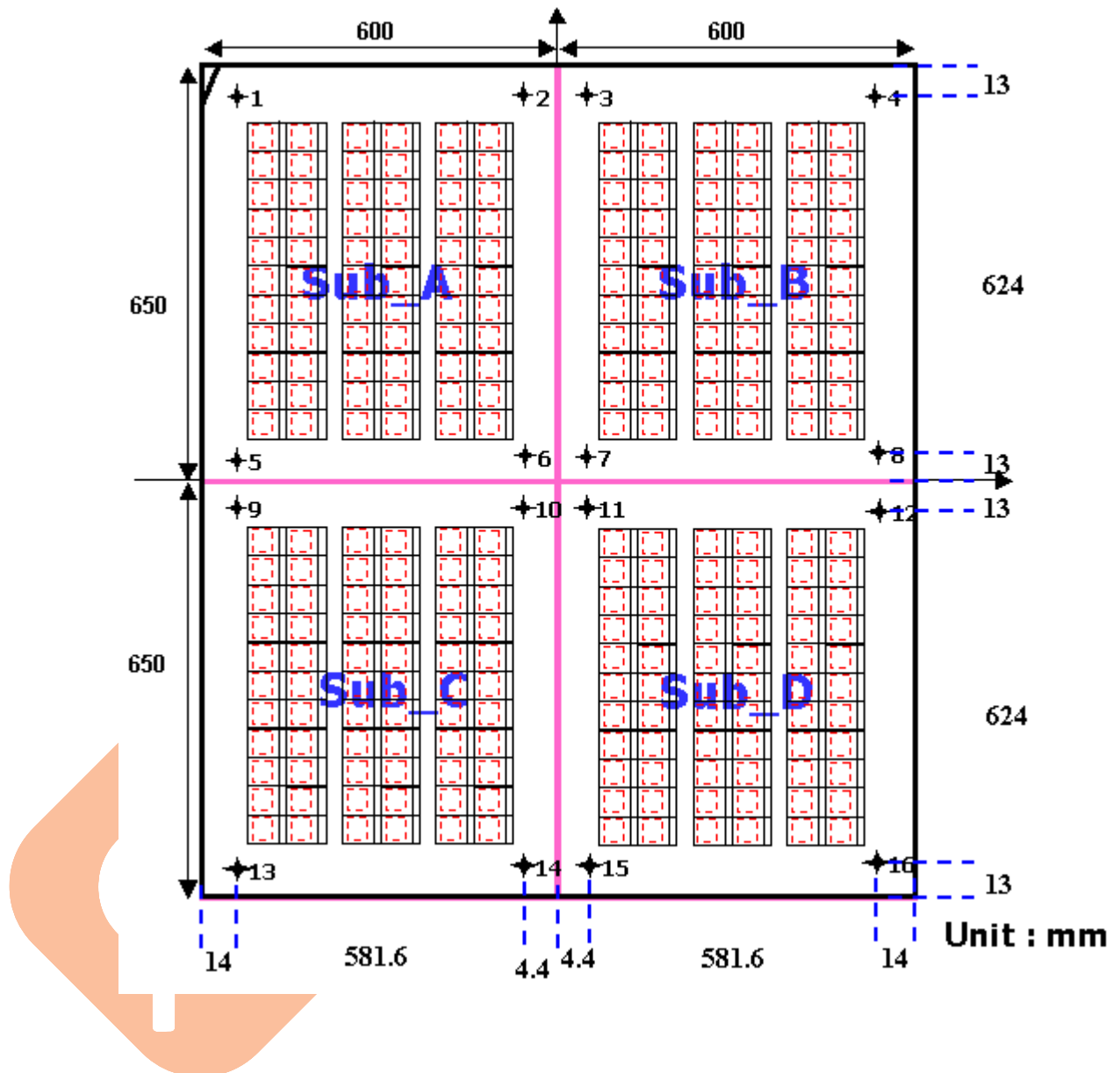
### Sub A/B/C/D TFT Film Up (Unit : mm)



| Array Film up | X    | Y       |
|---------------|------|---------|
| Glass ID      | 587  | 0       |
| ChipID        | X    | Y       |
| A             | -587 | 602     |
| B             | 3.4  | 602     |
| C             | -587 | -48     |
| D             | 3.4  | -48     |
| E             | -587 | 269.36  |
| F             | 3.4  | 269.36  |
| G             | -587 | -380.64 |
| H             | 3.4  | -380.64 |

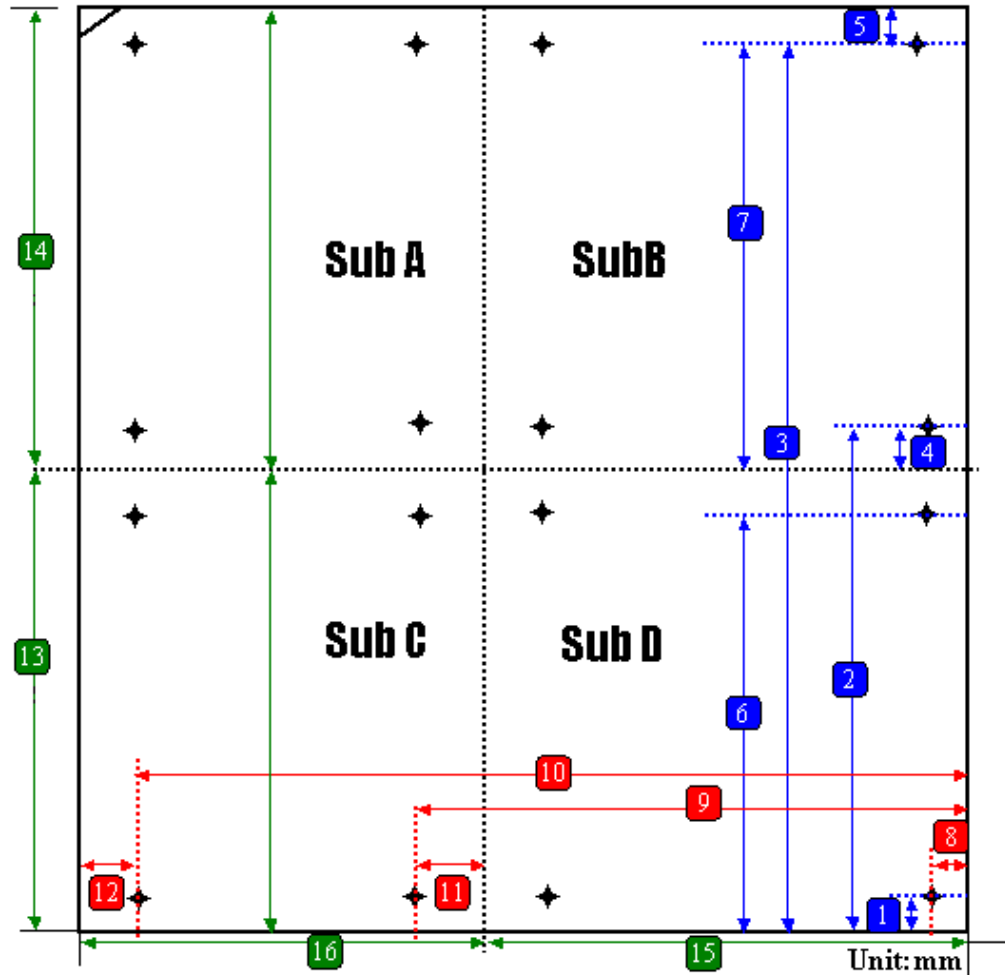
|                |                                  |          |         |
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### 6.3 4nd cut alignment marks distance (Array Film Up) Unit : mm





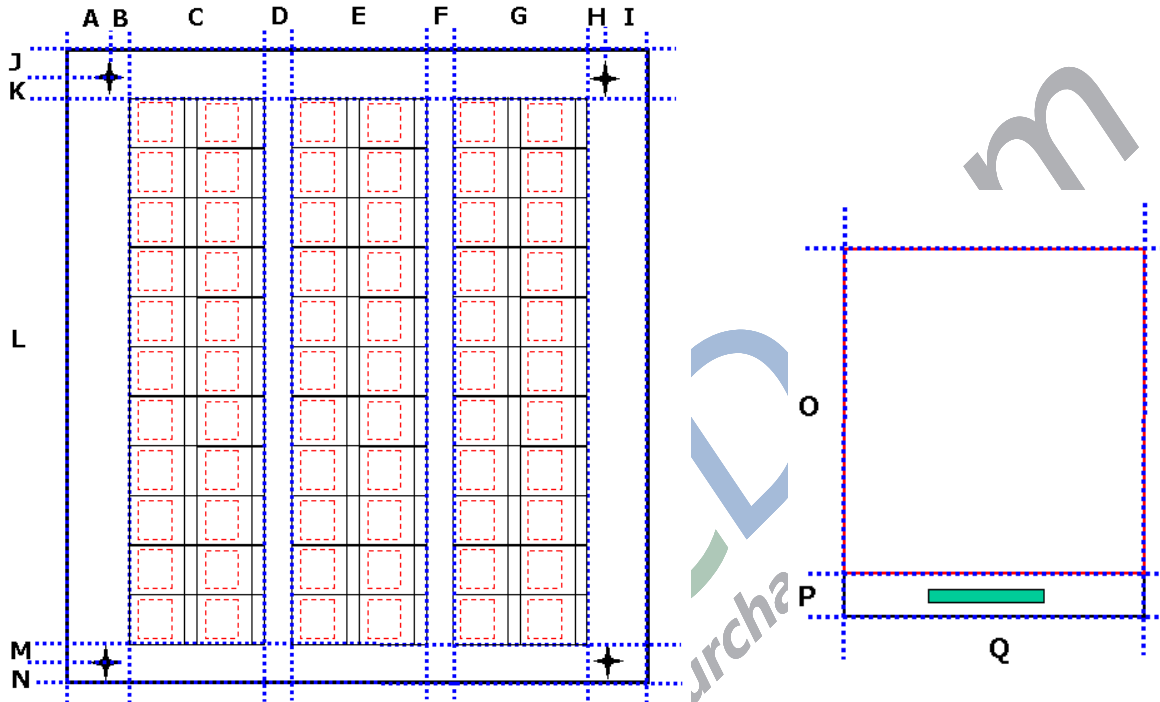
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|    | Distance |     | Distance |
|----|----------|-----|----------|
| 1. | 13       | 9.  | 604.4    |
| 2. | 663      | 10. | 1186     |
| 3. | 1287     | 11. | 4.4      |
| 4. | 13       | 12. | 14       |
| 5. | 13       | 13. | 650      |
| 6. | 637      | 14. | 650      |
| 7. | 637      | 15. | 600      |
| 8. | 14       | 16. | 600      |

|                |                                  |          |         |
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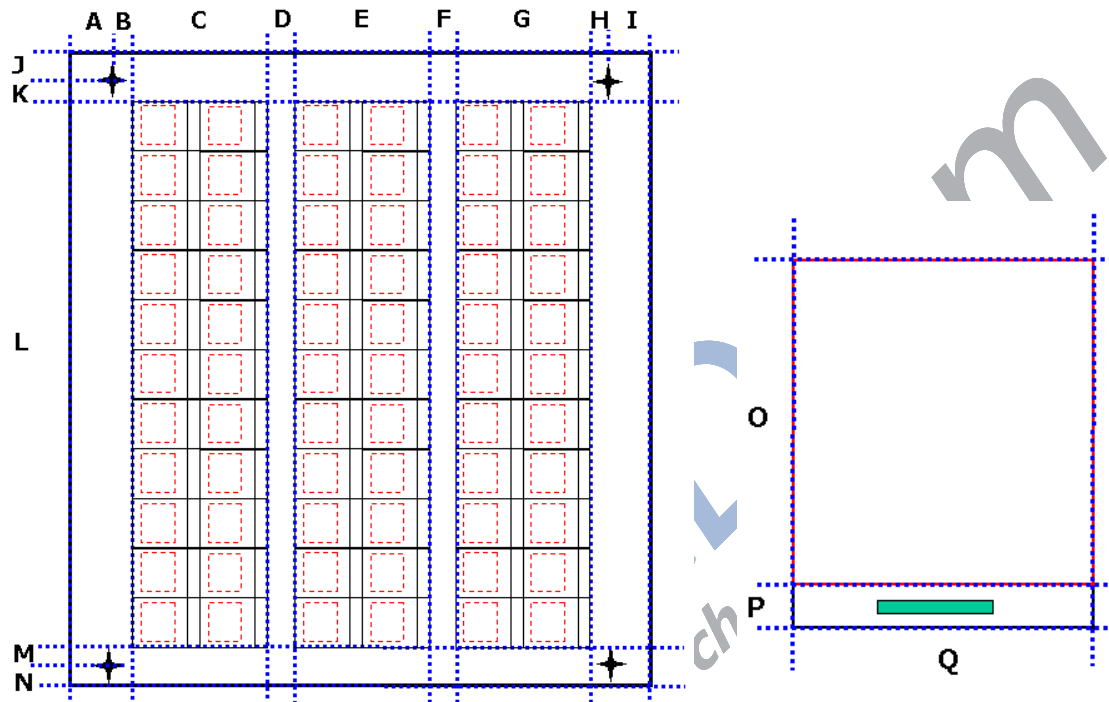
## Sub A/C , Array Film Up



|   | Sub A  | Sub C  | total                         |
|---|--------|--------|-------------------------------|
| A | 14     | 14     | A+B+C<br>+D+E+F+G+H+I<br>=600 |
| B | 0.35   | 0.35   |                               |
| C | 187.2  | 187.2  |                               |
| D | 9.6    | 9.6    |                               |
| E | 187.2  | 187.2  |                               |
| F | 9.6    | 9.6    |                               |
| G | 187.2  | 187.2  |                               |
| H | 0.45   | 0.45   |                               |
| I | 4.4    | 4.4    |                               |
| J | 13     | 13     | J+K+L+M+N<br>=650             |
| K | 8.73   | 8.73   |                               |
| L | 606.54 | 606.54 |                               |
| M | 8.73   | 8.73   |                               |
| N | 13     | 13     | O+P=93.6                      |
| O | 89.7   | 89.7   |                               |
| P | 3.9    | 3.9    |                               |
| Q | 55.14  | 55.14  |                               |
|   |        |        | unit:mm                       |

|                |                                  |          |         |
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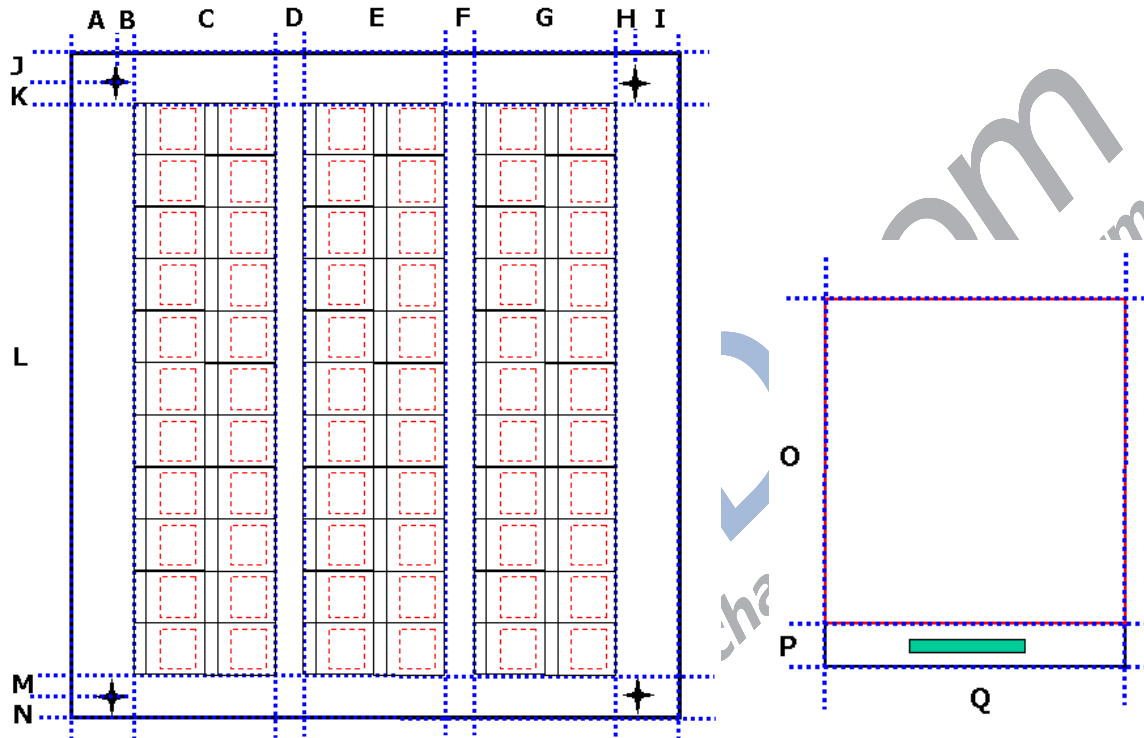
## Sub B/D · Array Film Up



|   | Sub B  | Sub D  | total                         |
|---|--------|--------|-------------------------------|
| A | 4.4    | 4.4    | A+B+C<br>+D+E+F+G+H+I<br>=600 |
| B | 0.35   | 0.35   |                               |
| C | 187.2  | 187.2  |                               |
| D | 9.6    | 9.6    |                               |
| E | 187.2  | 187.2  |                               |
| F | 9.6    | 9.6    |                               |
| G | 187.2  | 187.2  |                               |
| H | 0.45   | 0.45   |                               |
| I | 14     | 14     |                               |
| J | 13     | 13     | J+K+L+M+N<br>=650             |
| K | 8.73   | 8.73   |                               |
| L | 606.54 | 606.54 |                               |
| M | 8.73   | 8.73   |                               |
| N | 13     | 13     | O+P=93.6                      |
| O | 89.7   | 89.7   |                               |
| P | 3.9    | 3.9    |                               |
| Q | 55.14  | 55.14  |                               |
|   |        |        | unit:mm                       |

|                |                                  |          |         |
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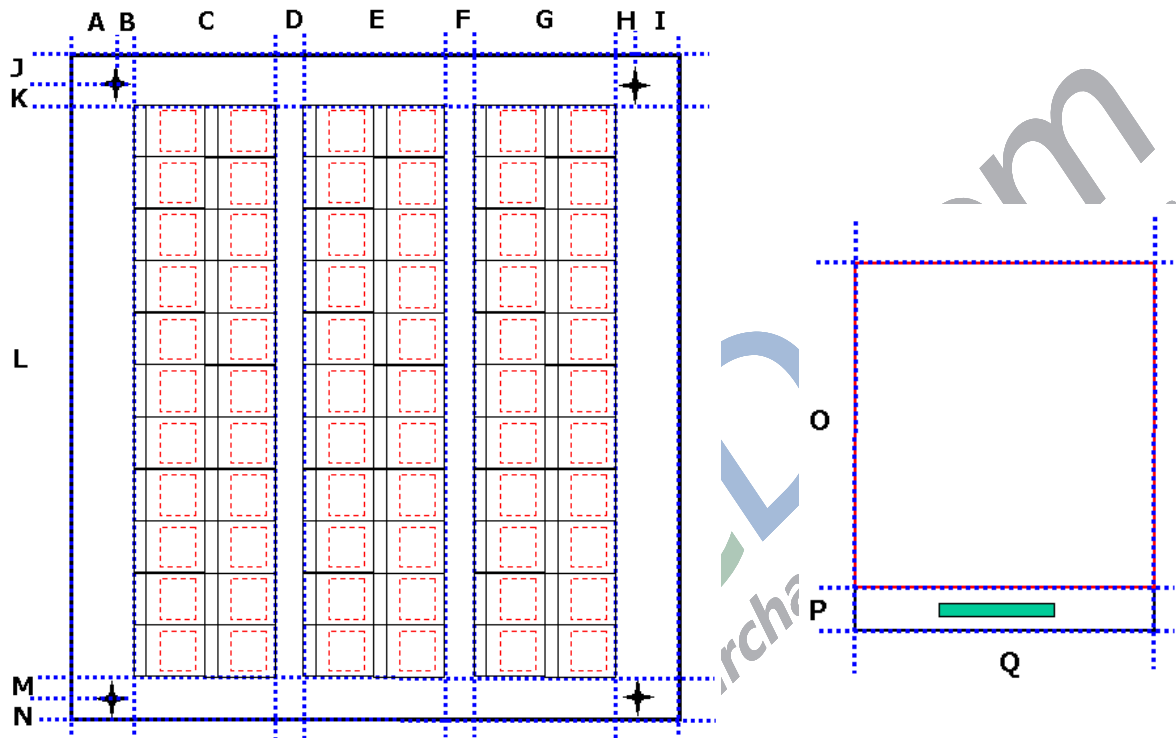
## Sub A/C , CF Film Up (R180) (no pre-cut)



|   | Sub A  | Sub C  | total                         |
|---|--------|--------|-------------------------------|
| A | 4.4    | 4.4    | A+B+C<br>+D+E+F+G+H+I<br>=600 |
| B | 0.45   | 0.45   |                               |
| C | 187.2  | 187.2  |                               |
| D | 9.6    | 9.6    |                               |
| E | 187.2  | 187.2  |                               |
| F | 9.6    | 9.6    |                               |
| G | 187.2  | 187.2  |                               |
| H | 0.35   | 0.35   |                               |
| I | 14     | 14     |                               |
| J | 13     | 13     | J+K+L+M+N<br>=650             |
| K | 8.73   | 8.73   |                               |
| L | 606.54 | 606.54 |                               |
| M | 8.73   | 8.73   |                               |
| N | 13     | 13     | O+P=93.6                      |
| O | 89.7   | 89.7   |                               |
| P | 3.9    | 3.9    |                               |
| Q | 55.14  | 55.14  |                               |
|   |        |        | unit:mm                       |

|                |                                  |          |         |
|----------------|----------------------------------|----------|---------|
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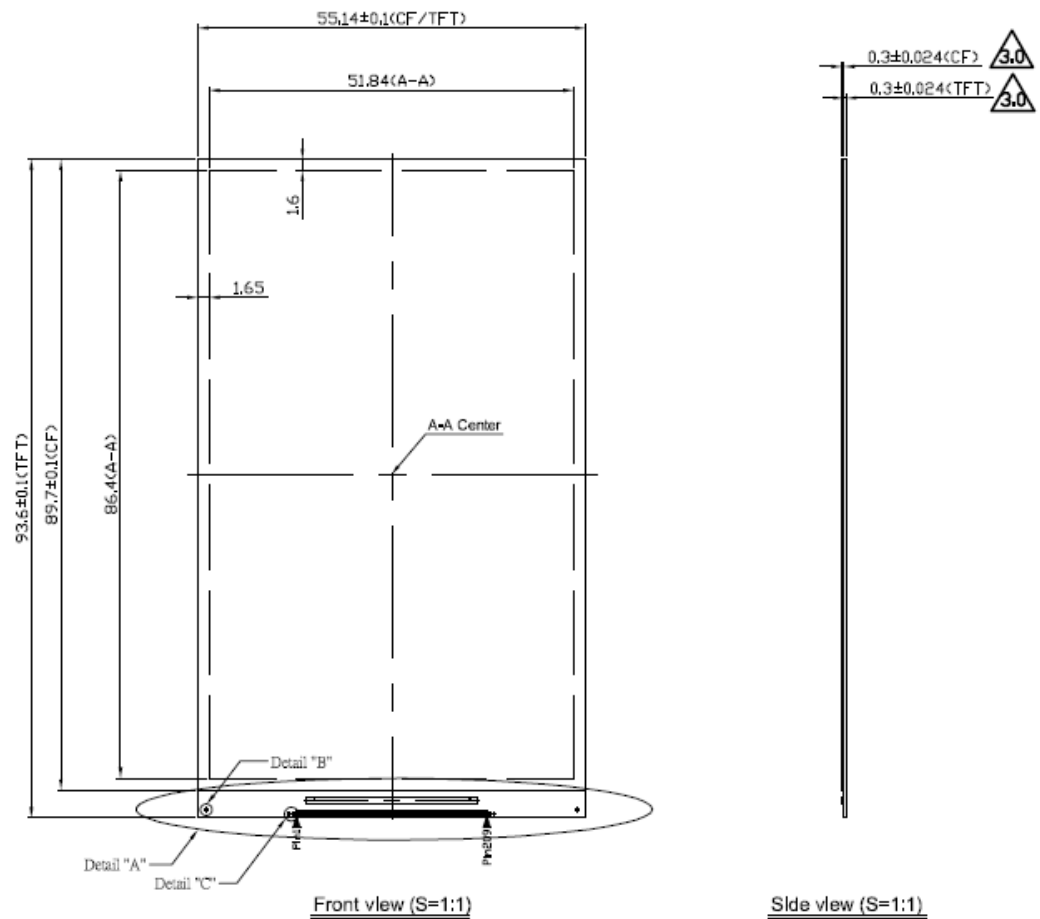
## Sub B/D , CF Film Up (R180) (no pre-cut)



|   | Sub B  | Sub D  | total                         |
|---|--------|--------|-------------------------------|
| A | 14     | 14     | A+B+C<br>+D+E+F+G+H+I<br>=600 |
| B | 0.45   | 0.45   |                               |
| C | 187.2  | 187.2  |                               |
| D | 9.6    | 9.6    |                               |
| E | 187.2  | 187.2  |                               |
| F | 9.6    | 9.6    |                               |
| G | 187.2  | 187.2  |                               |
| H | 0.35   | 0.35   |                               |
| I | 4.4    | 4.4    |                               |
| J | 13     | 13     | J+K+L+M+N<br>=650             |
| K | 8.73   | 8.73   |                               |
| L | 606.54 | 606.54 |                               |
| M | 8.73   | 8.73   |                               |
| N | 13     | 13     | O+P=93.6                      |
| O | 89.7   | 89.7   |                               |
| P | 3.9    | 3.9    |                               |
| Q | 55.14  | 55.14  |                               |
|   |        |        | unit:mm                       |

|                |                                  |          |         |
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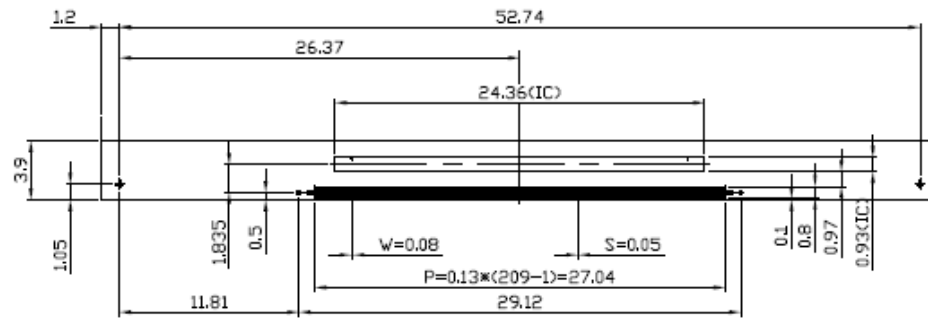
## 6.4 Chip Size



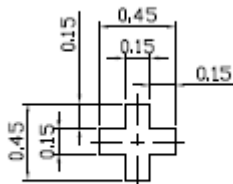
|                |                                  |          |         |
|----------------|----------------------------------|----------|---------|
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**Notes :**

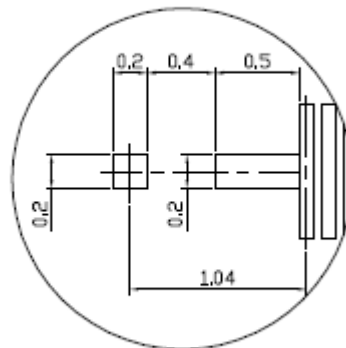
1. General Tolerance:  $\pm 0.2$
2. FPC Pad Tolerance:  $\pm 0.02$



Detail "A" (S=2:1)



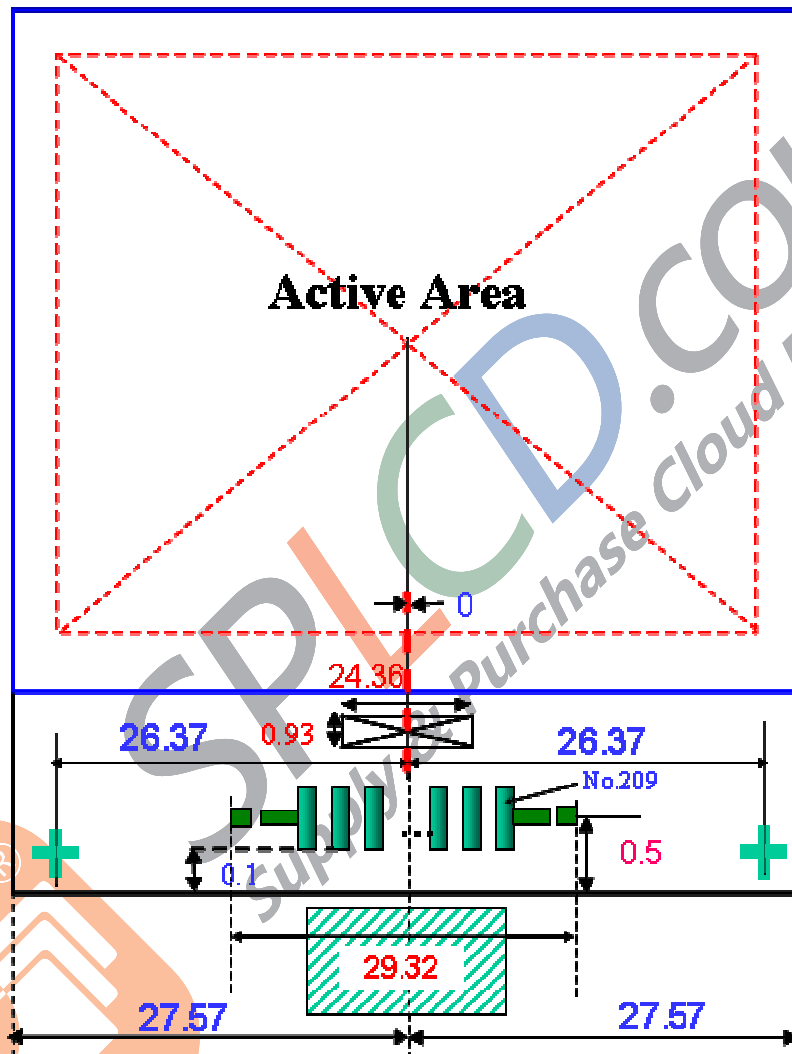
Detail "B" (S=20:1)



Detail "C" (S=20:1)

|                |                                  |          |         |
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## 6.5 IC & FPC position

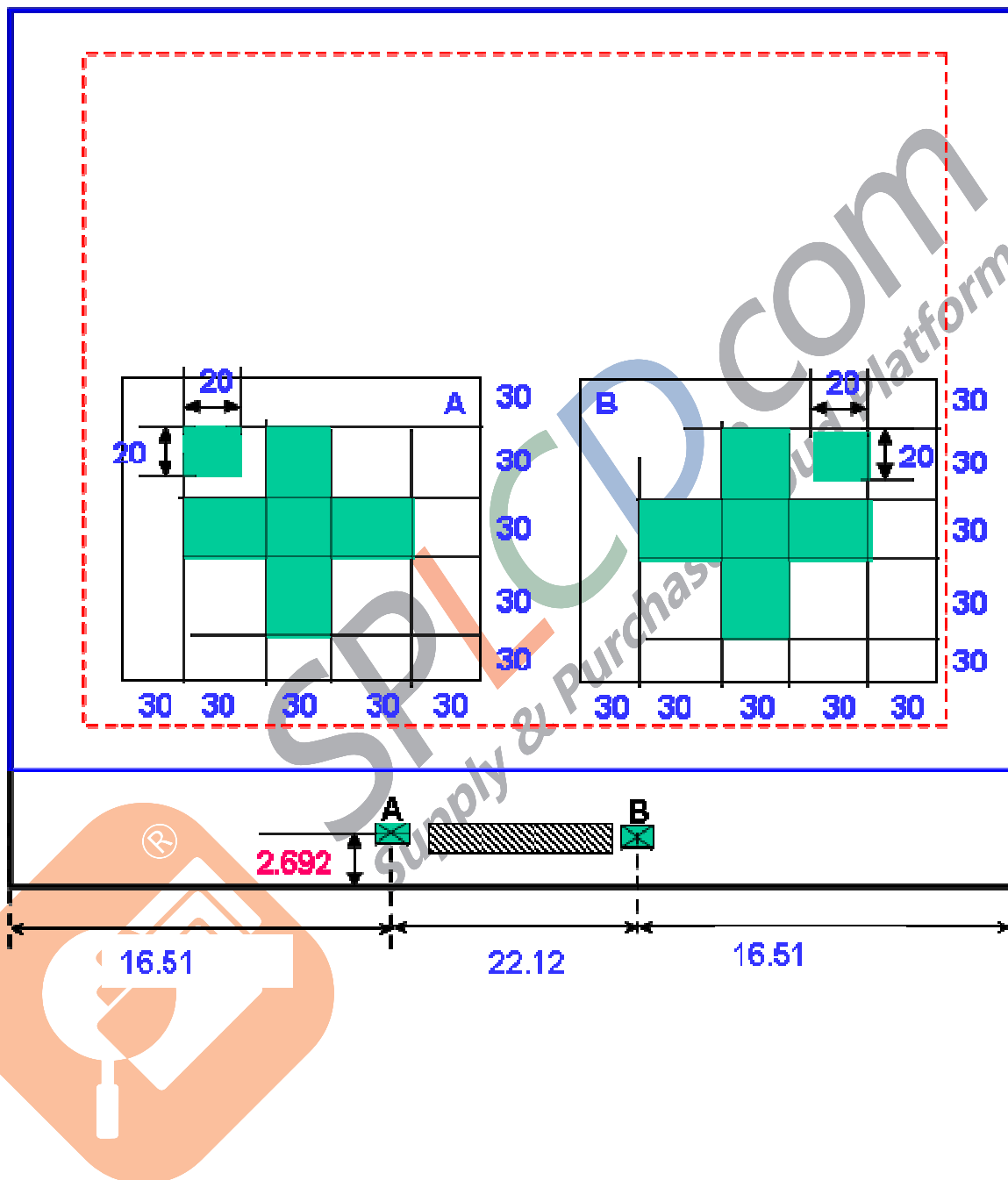


**CP center**  
pad width = 0.08 mm, space 0.05 mm, pitch 0.13 mm

Unit : mm

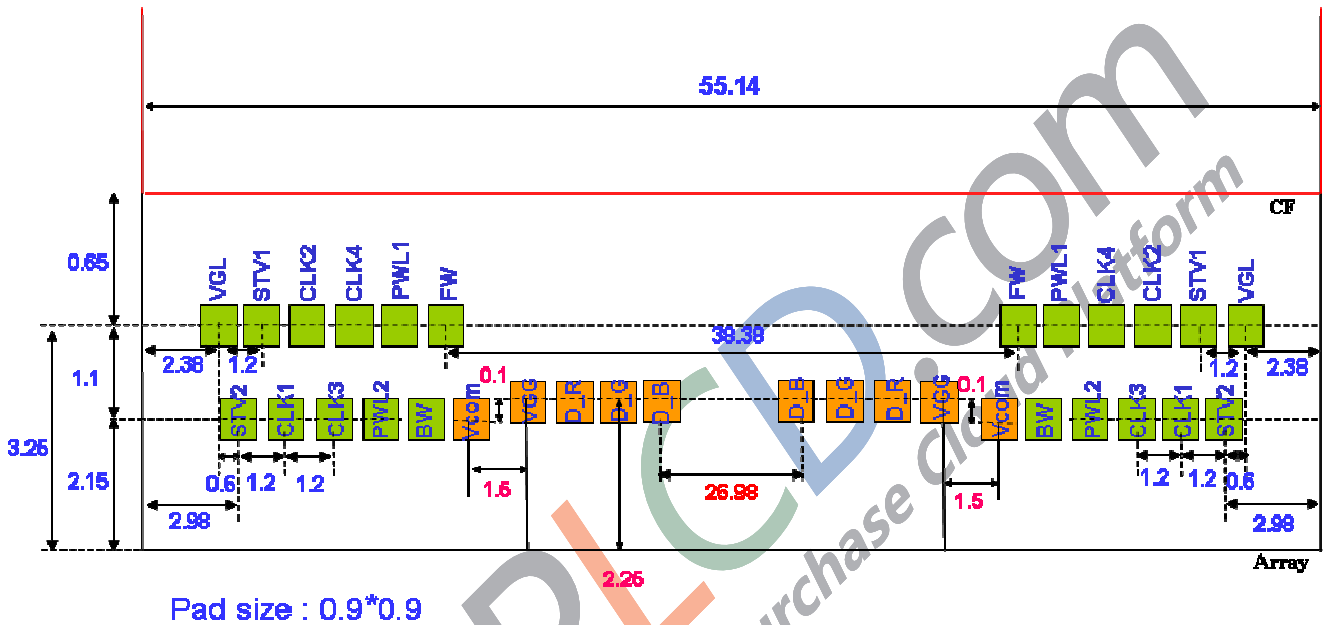


|                |                                  |          |         |
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## 6.6 Cell test



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## 7.0 Reliability test items

| No. | Item                                           | Conditions              | Remark |
|-----|------------------------------------------------|-------------------------|--------|
| 1   | High Temperature Storage                       | Ta=+80°C, 240hrs        |        |
| 2   | Low Temperature Storage                        | Ta=-30°C, 240hrs        |        |
| 3   | High Temperature Operation                     | Ta=+70°C, 240hrs        |        |
| 4   | Low Temperature Operation                      | Ta=-20°C, 240hrs        |        |
| 5   | High Temperature and High Humidity (Operating) | Ta=+60°C, 90%RH, 240hrs |        |

Note: (1) All tests above are practiced at module type.

(2) There is no display function NG issue occurred, all the cosmetic specification is judged before the reliability stress.



|                |                                  |          |         |
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## 8.0. LOT MARK



### 8.1 Lot Mark

(1) Cell Type: Production name

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| H | S | D | 0 | 4 | 0 | C | 8 | W | 5  | -  | B  | *  | *  |

code 1~3: Hannstar Display Co.

code 4~6: Display Area Diagonal size(inch)

011=1.1"

015=1.5"

018=1.8",.....

code 7 : Shipment type

A= Full Size before 2<sup>nd</sup> cut

B= 1/4 Cut

D= 1/16 Cut

F= Full cell without Polarizer

code 8 : Resolution

1=QQVGA ; 2=QCIF+ ; 3=QVGA ; 4=QQVGA- ; 5=960x234 ;

6=480x234/480x240 ; 9=480x272 ; A=240x400/240x432 ;

C=640x234; D=800x480 ; E=SXGA ; F=1024x576/1024x600 ;

G=WXGA+; H=HDTV ;J=720x480; K=WSXGA+ ;S=SVGA ;

X=XGA ; U=WUXGA/FHD ; V=VGA ; W=WXGA ;

code 9 : Aspect ratio

N=Standard , W=Wide

code10 :Serial No.

code12 :Version No.

code 13,14:Reversion No.

|                |                                  |          |         |
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(2) Production date

(3) Label ID: serial number for barcode.

|     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|

Code (1),(2) : Out source code

Code (3) : Grade (D)

Code (4) : Year

|      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|
| Year | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
| Mark | 6    | 7    | 8    | 9    | 0    | 1    | 2    | 3    | 4    | 5    |

Code (5) : Month

|       |      |      |      |      |      |      |      |      |      |     |      |      |
|-------|------|------|------|------|------|------|------|------|------|-----|------|------|
| Month | Jan. | Feb. | Mar. | Apr. | May. | Jun. | Jul. | Aug. | Sep. | Oct | Nov. | Dec. |
| Mark  | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | A   | B    | C    |

Code (6) : Date (1~9, A~X exp.I/O:10~31)

Code (7),(8),(9),(10) : Serial No.

(4) P/N:Hannstar internal part number

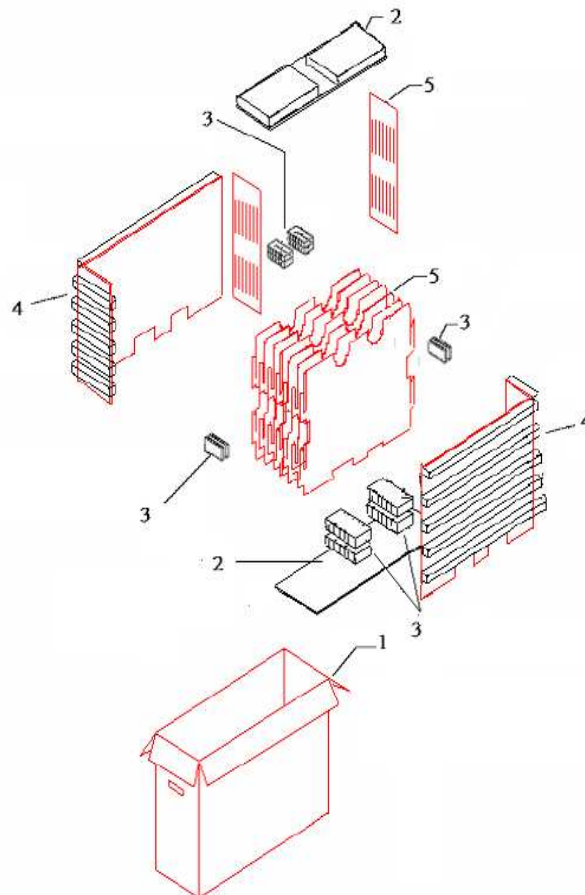
(5) QTY: Quantity of chip



|                |                                  |          |         |
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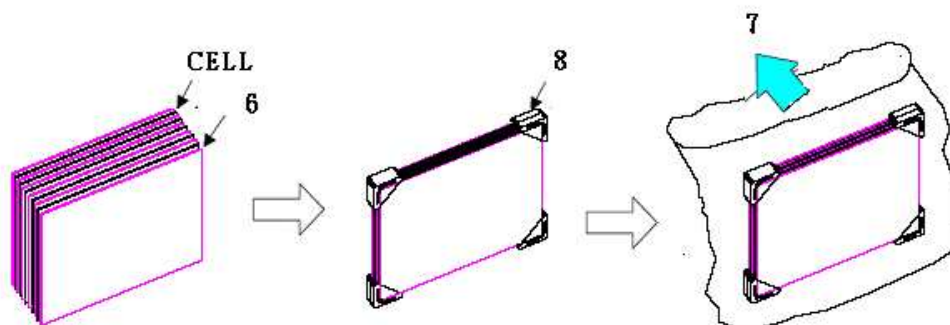
## 9.0 PACKAGE SPECIFICATION

### 9.1 Packing form

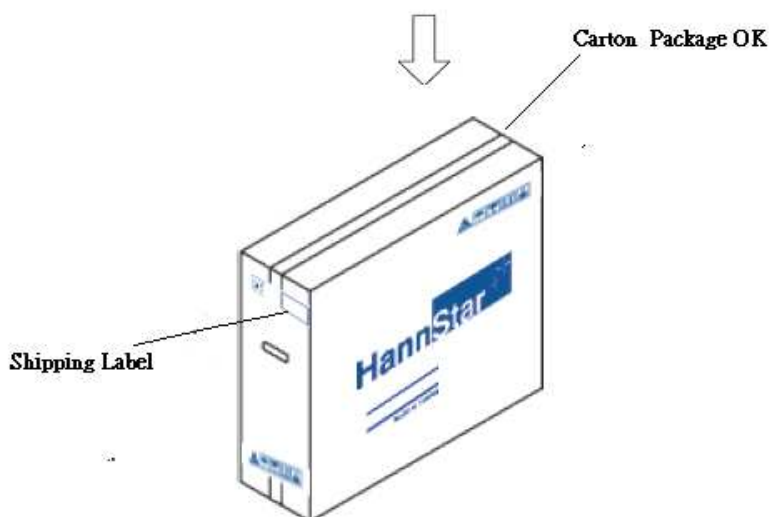


| 瀚宇編號 | 品名                                      | Unit | Q'TY  | 附註                                                  |
|------|-----------------------------------------|------|-------|-----------------------------------------------------|
| 1    | Carton                                  | PC   | 1     |                                                     |
| 2    | EPE Cushion(T/B)                        | PCS  | 2     | 1.EPE Cushion (T) B標平板+EPE 片狀<br>2.EPE Cushion (B): |
| 3    | EPE buffer Cushion( T/B and both sides) | PCS  | 8~10  | 1Carton 有3pcs~10pcs                                 |
| 4    | Around board=cardboard+EPE Cushion      | PCS  | 2     | B標平板+EPE 條狀                                         |
| 5    | Cardboard of partition                  | EA   | 1     |                                                     |
| 6    | EPE Foam                                | PCS  | 56~72 | 0.3t -72 pcs , 0.5t -56pcs                          |
| 7    | Vacuum Bag                              | PCS  | 8     |                                                     |
| 8    | PET sheath                              | EA   | 32    |                                                     |

|                |                                  |          |         |
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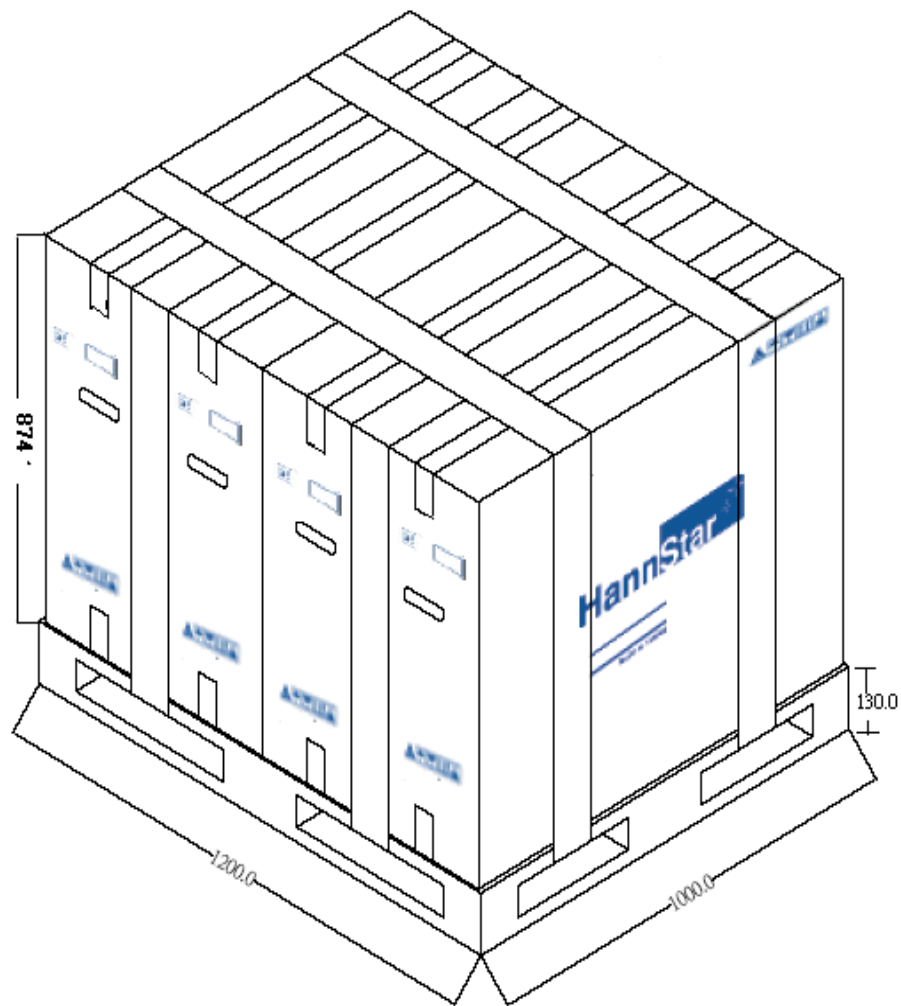


5 sheets x 8 packs=40 sheets



|                |                                  |          |         |
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## 9.2 Packing assembly drawings



**Notes:**  
 1 Pallet: 4 set Cartons  
 1 Pallet: 160 sheet Cells



|                |                                  |          |         |
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## 10.0 GENERAL PRECAUTION

### 10.1 Use Restriction

This product is not authorized for use in life supporting systems, aircraft navigation control systems, military systems and any other application where performance failure could be life-threatening or otherwise catastrophic.

### 10.2 Disassembling or Modification

Do not disassemble or modify the module. It may damage sensitive parts inside LCD module, and may cause scratches or dust on the display. HannStar does not warrant the module, if customers disassemble or modify the module.

### 10.3 Breakage of LCD Panel

10.3.1. If LCD panel is broken and liquid crystal spills out, do not ingest or inhale liquid crystal, and do not contact liquid crystal with skin.

10.3.2. If liquid crystal contacts mouth or eyes, rinse out with water immediately.

10.3.3. If liquid crystal contacts skin or cloths, wash it off immediately with alcohol and rinse thoroughly with water.

10.3.4. Handle carefully with chips of glass that may cause injury, when the glass is broken.

### 10.4 Electric Shock

10.4.1. Disconnect power supply before handling LCD module.

10.4.2. Do not pull or fold the LED cable.

10.4.3. Do not touch the parts inside LCD modules and the fluorescent LED's connector or cables in order to prevent electric shock.

### 10.5 Absolute Maximum Ratings and Power Protection Circuit

10.5.1. Do not exceed the absolute maximum rating values, such as the supply voltage variation, input voltage variation, variation in parts' parameters, environmental temperature, etc., otherwise LCD module may be damaged.

10.5.2. Please do not leave LCD module in the environment of high humidity and high temperature for a long time.

10.5.3. It's recommended to employ protection circuit for power supply.

### 10.6 Operation

10.6.1 Do not touch, push or rub the polarizer with anything harder than HB pencil lead.

10.6.2 Use fingerstalls of soft gloves in order to keep clean display quality, when persons handle the LCD module for incoming inspection or assembly.

10.6.3 When the surface is dusty, please wipe gently with absorbent cotton or other soft material.

10.6.4 Wipe off saliva or water drops as soon as possible. If saliva or water drops contact with polarizer for a long time, they may causes deformation or color fading.

|                |                                  |          |         |
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10.6.5 When cleaning the adhesives, please use absorbent cotton wetted with a little petroleum benzene or other adequate solvent.

#### 10.7 Mechanism

Please mount LCD module by using mounting holes arranged in four corners tightly.

#### 10.8 Static Electricity

10.8.1 Protection film must remove very slowly from the surface of LCD module to prevent from electrostatic occurrence.

10.8.2 Because LCD module use CMOS-IC on circuit board and TFT-LCD panel, it is very weak to electrostatic discharge. Please be careful with electrostatic discharge. Persons who handle the module should be grounded through adequate methods.

#### 10.9 Strong Light Exposure

The module shall not be exposed under strong light such as direct sunlight. Otherwise, display characteristics may be changed.

#### 10.10 Disposal

When disposing LCD module, obey the local environmental regulations.

