A Touch Technologies Co., Ltd.

Specification of
Surface Acoustic Wave Touch Panel
A. Application

This specification applies to the Surface Acoustic Wave Touch Panel.
Three types of offerings available:

- **Standard SAW**
  3mm glass with beveled edge.

- **Tempered SAW**
  Break Resistance, meets UL-1950, by 6mm heat tempered glass.

- **Protected SAW**
  Break Resistance, Dustproof, Waterproof

B. Environmental Conditions

1. **Operating Temperature Range**
   0°C ~ 50°C

2. **Operating Humidity Range**
   90% RH at 40°C (no dew falls)

3. **Storage Temperature Range**
   -40°C ~ 70°C

4. **Altitude**
   - Operating: 10,000 feet (3048m)
   - Storage / Transport: 50,000 feet (15,240m)

5. **Chemical Resistance**
   The active area of the touch panel is resistant to the damage of chemicals which do not influence glass, such as acetone, toluene, methyl ethyl ketone, isopropyl alcohol, methyl alcohol, ethyl acetate, ammonia-based glass cleaners, gasoline, kerosene, vinegar.
**C. Electrical Characteristics**

1. **Supply Voltage**
   +5VDC

2. **Electrostatic Protection**
   Per EN 61000-4-2, 1995 : Meets Level 4
   (15 kV air / 8 kV contact discharges).

3. **Resolution**
   Based on controller resolution of 4096 x 4096.

**D. Mechanical Characteristics**

1. **Construction**
   There are four transducers attached to the beveled edge of the glass.
   1×TY on left side upper corner
   1×RY on right side upper corner
   1×TX on right side upper corner
   1×RX on right side down corner
   (Based on the cable exiting from the right side)

2. **Cable and Connector**
   Cable typically exits from the right side, with a 2 x 6, 0.635 mm square post receptacle.

3. **Touch Activation Force**
   Less than 85 grams.

4. **Positional Accuracy**
   Standard deviation of error is less than ±1%.

5. **Life Performance**
   More than 50 million touches in one location.
   (Tested by a stylus similar as finger).

6. **Input Medium**
   Finger or gloved hand (rubber, cloth or leather).

7. **Surface Durability**
   Optical glass surface, Mohs' hardness rating : 7.
For Tempered SAW only

1. Construction
   Pure 6mm-thickness heat strengthened glass with transducers attached to the beveled edge of the glass.

2. Break Resistance
   Meets UL-1950 Steel Ball Drop Test
   A 1-pound steel ball drops from height of 130 cm onto the center of the glass without breaking.

For Protected SAW only

1. Construction
   Pure 6mm-thickness heat strengthened glass with transducers attached on the edge of the glass surface.
   The reflectors and transducers are sealed inside the ABS plastic frame.

2. Break Resistance
   Meets UL-1950 Steel Ball Drop Test

3. Dustproof
   The ABS plastic frame around the panel prevents dust and dirt from accumulating on the reflectors and transducers.

4. Waterproof
   Special glue is applied to the gap between the ABS plastic frame and glass substrate to prevent water infiltration.
   Test Method: Set the touchscreen horizontally, and pour water on the panel surface without overflow over the ABS plastic frame. The panel surface is soaked in water for 1 hour. The panel is in normal condition after water poured out and dried.

E. Optical Performance

   Light Transmission 90% (per ASTM D1003)
F. Glass Substrate Quality

1. Circular Defects

<table>
<thead>
<tr>
<th>Description</th>
<th>Length {mm}</th>
<th>Comments {mm}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass defects spots, stains, etch defects, surface chips</td>
<td>&gt;0.51</td>
<td>None allowed</td>
</tr>
<tr>
<td></td>
<td>≥0.38, ≤0.51</td>
<td>2 per 50.8 diameter circle</td>
</tr>
<tr>
<td></td>
<td>&lt;0.38</td>
<td>Accumulated length must be less than 1.27 in a 50.8 diameter circle</td>
</tr>
<tr>
<td>When evaluating defects with distortion include the entire distorted area when measuring.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Linear Defects

<table>
<thead>
<tr>
<th>Description</th>
<th>Width {mm}</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Glass scratch</td>
<td>&gt;0.102</td>
<td>None allowed</td>
</tr>
<tr>
<td></td>
<td>0.102</td>
<td>12.7 max length w/ minimum separation of 6.35</td>
</tr>
<tr>
<td></td>
<td>0.076</td>
<td>25.4 max length w/ minimum separation of 3.81</td>
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<tr>
<td></td>
<td>0.051</td>
<td>38.1 max length w/ minimum separation of 1.27</td>
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<tr>
<td></td>
<td>&lt; 0.051</td>
<td>Disregard</td>
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</tbody>
</table>

3. Edge Chips

<table>
<thead>
<tr>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four edges excluding four corners</td>
<td>1.27 W × 1.27 L × 1/3 glass thickness</td>
</tr>
<tr>
<td>Four corners</td>
<td>2.54 W × 5.08 L × 1/2 glass thickness</td>
</tr>
</tbody>
</table>