

Specification of AgNW Capacitive Touch Panel

Product Name	Nuovo 27" CTP
Product Model	NF-M-C270-FF-05A
Issue Date	2018.05.02

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1. Introduction

1.1 Purpose

The purpose of this specification is to define the quality standard, test criteria, and engineering drawing of capacitive touch panel.

1.2 Scope

This specification applies to the 27" Touch Panel model NF-M-C270-FF-05A provided by Nuovo Film.

1.3 Precaution

1.3.1 Storage

The touch panel should be stored under the environment condition as suggested, and avoid storing in direct sunlight.

1.3.2 Handling

- i. Hold the touch panel body instead of the FPC all the time.
- ii. Ensure that static precautions are observed at all times during handling of the TP modules

1.3.3 Cleaning

- i. Prevent using any kind of the chemical solvent, acidic or alkali solution when cleaning.
- ii. Neutral detergent or isopropyl alcohol is suggested if the panel need cleaning.

1.3.4 Assembly

- i. Do not apply rough force such as bending or twisting to the touch panel during assembly.
- ii. Excessive force or strain to the panel or FPC is prohibited.

1.3.5 Operation

- i. The panel must be operated in a steady environment, the abrupt change of the environment conditions may cause malfunction.
- ii. Do not pull the interface connector in or out while the touch panel is operating.
- iii. Any sharp edged or hard objects are inhibited to contact the touch panel when under operation.

1.4 Warranty

Nuovo Film provides one year product guarantee under normal storage condition and operational guideline as defined in this document.

2. General Description

2.1 General Information

Item	Description
Panel Size	27"
Aspect Ratio	16:9
Interface	USB(2.0 Full Speed)
Power	5V(USB:4.7V~6.0V, Typical: 5V)
Touch Controller IC	ILI2312
Active Points	Multi-touch 10 points
Channel number	RX78*TX44
OS	Window/ Android/ Linux

2.2 Dimension Overview

Item	Spec
Cover Lens OD	641.86mm(L)* 380.40mm(W)
View Area	597.60mm(L)* 336.15mm(W)
Sensor OD	614.93mm (L)* 366.78mm (W)

2.3 Stack-up

Layer	Thickness	Materials
Cover Lens	3	Physical strengthened glass
OCA	0.125mm	Adhesive
Sense side SNW	0.125mm	AgNW Film
OCA	0.05mm	Adhesive
Drive side SNW	0.125mm	AgNW Film
Total Thickness	3.45±0.3mm	

2.4 Optical Inspection

Item	Specification	Measurement Method
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Transparency	$\geq 87.5\%$	Hunterlab
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2.5 Environment Conditions

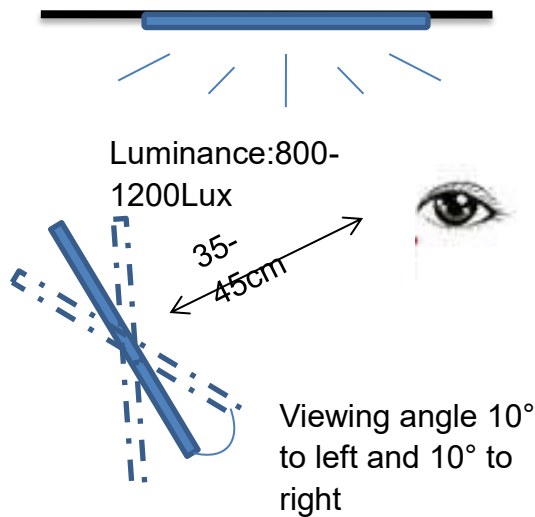
Operating: $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$; 45%~85%RH

Storage: $-30^{\circ}\text{C} \sim +80^{\circ}\text{C}$; 45%~85%RH

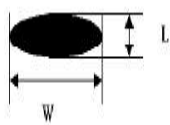
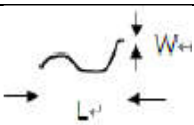
3 Inspection


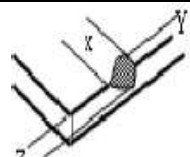
3.1 Inspection Condition

- i. The touch panel should be inspected at a clean room of at least class 10,000
- ii. Brightness at test site: 800-1200LUX
- iii. Inspection distance: 35-45cm
- iv. Viewing angle: $90 \pm 10^{\circ}$
- v. Light source: 40W fluorescent light
- vi. Inspection time: $25 \pm 5\text{s}$



3.3 Cosmetic Inspection ① ②

Defect Type	Criteria	Notes
Dot defects (Bubble/Fiber/Particle /Spot/Dent)	1. $D \leq 0.35\text{mm}$, Ignored 2. $0.35\text{mm} < D \leq 0.8\text{mm}$, $N \leq 10$, $DS \geq 10\text{mm}$ 3. $D > 0.8\text{mm}$, not allowed	 $D = (W+L)/2$
Linear defects (Scratch/Fiber)	1. $L \leq 15\text{mm}$, $W \leq 0.2\text{mm}$, Ignored 2. $0.2\text{mm} < W \leq 0.35\text{mm}$, $L \leq 15\text{mm}$, $N \leq 5$, $DS \geq 10\text{mm}$ 3. $W > 0.35\text{mm}$, not allowed	

Corner chipping	<ol style="list-style-type: none"> $X \leq 5\text{mm}$ & $Y \leq 3\text{mm}$, $Z \leq T$, $N \leq 3$ Otherwise not allowed 	 X: Length; Y: Width; Z: Thickness
Side chipping	<ol style="list-style-type: none"> $X \leq 6\text{mm}$ & $Y \leq 1\text{mm}$, $Z \leq T/2$, $N \leq 5$ Otherwise not allowed 	 X: Length; Y: Width; Z: Thickness
Smudge	Can be wipe clean within 15 seconds that judged to be OK	/
Color of cover lens/logo typeface/shade of background	Color shows no difference from that of the samples	/
	Clear typeface and clear pattern	
	Good shade of back color	

Note 1:

"D" means Diameter;

"L" means Length;

"W" for Width;

"N" for Quantity;

"T" for Glass Thickness;

"DS" for the distance between two defects.

Note 2:

Total number of defects for each piece: $N \leq 10$, $DS \geq 10\text{mm}$

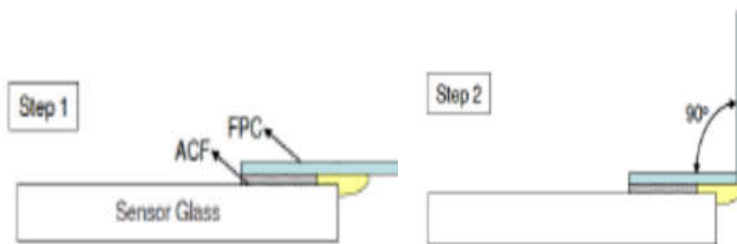
4 Reliability Test

Test Item	Test Condition	Criteria
Damp Heat	Temperature: 60°C Humidity: 90%RH Time: 240hrs	1.No cosmetic defect 2.Function OK
Thermal Shock	High temperature: 80°C Low temperature: -30°C Time: 30 cycles	1.No cosmetic defect 2.Function OK
High Temperature	Temperature: 80°C Time: 240hrs	1.No cosmetic defect 2.Function OK
Low Temperature	Temperature: -30°C Time: 240hrs	1.No cosmetic defect 2.Function OK
Salt Spray	Concentration: 5% NaCl solution	1.No cosmetic defect

Test	Temperature: 35°C Time: 48hrs	2.Function OK
Sweat Test	PH=4.7 sweat Time: 48hrs	1.No cosmetic defect 2.Function OK
Static Electricity	1.Air discharge: 8KV/10KV/12KV 2. Contact discharge: 4KV/6KV/8KV 3.10 times for each point	1.No cosmetic defect 2.Function OK

5 FPC Peeling Test

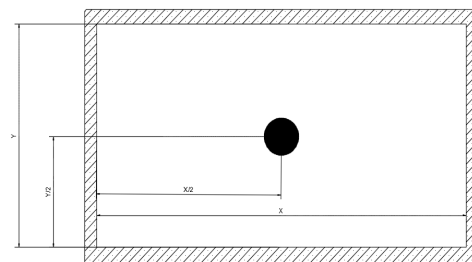
Item	Test Condition	Result
FPC Peeling Test	1. Pulling weight: 500g 2. Pulling speed: 25 mm/min 3. Pulling angle: 90°	1.FPC has no damage 2.Function OK



6. Cover Lens Test

Item	Spec
Pressure Value	400 ~500 mPA above 6u
Ball Drop Test ①	227g±2g, 35cm, No damage after one time impact at the central area.
Hardness ②	6H (Pencil: 6H, Pressure: 1N/45)

Note 1: The ball drop test illustration is shown as follows.



Note 2: The hardness test follows the JIS K-5400 serials industry standard and the test illustration is shown as below.

