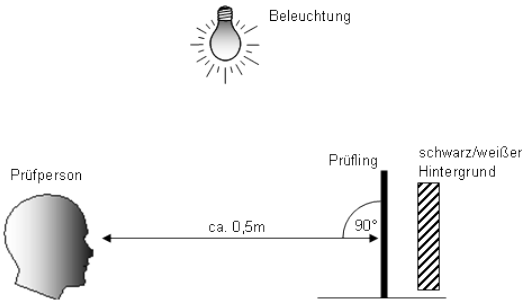
VISUAL ACCEPTANCE CRITERIA

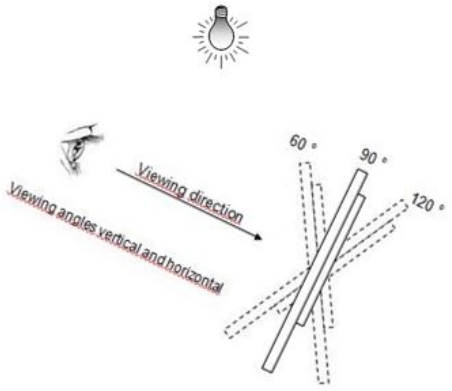
Inspection criteria

Inspection personnel	trained, experienced, normally-sighted persons.
Viewing distance	500 mm.
Viewing angle	
Membrane switch panels, Resistive Touchscreen, piezo	90 °, mirroring not permitted. (towards viewing direction)
Projected Capacitive Touchscreen, Capkey	Mirroring allowed, 60 ° - 120 ° (vertical and horizontal).
Illumination	800-1000 lx normal light D50 or D65.
Display window	Inspection against black/white background.
Test conditions	Ambient conditions.
Observation time	Max. 5 sec per inspection surface (indicative).

Example: viewing angle 90º



Viewing angle 60º - 120º



Printing criteria

Inscriptions / characters	Inscriptions and characters must be easily legible.
Symbols / logo	Interruptions are not permissible.
Lines	Interruptions ≤ 0.16mm2
Contour sharpness / edge feathering	± 0.15 mm

Product group:

1. Membrane switch, Piezo & front foil
2. LCD
3. Housing
4. Glass
5. Resistive touchscreen
6. PCAP touchscreen

VISUAL ACCEPTANCE CRITERIA

Membrane switch, piezo, foil, back panels

		Per 100 cm^2
Scratch, stain, spot, inclusion	≤ 0.06 mm^2	✓
	Low (colour) contrast > 0.06 mm^2 and ≤ 0.25 mm^2. High (colour) contrast > 0.06 mm^2 and ≤ 0.16 mm^2.	1
	Area > 0.25 mm^2 (at low contrast) *or* > 0.16mm^2 (at high contrast)	✗

Table 1.

Distance between 2 visual anomalies minimal 50 mm.

Colour ΔE < 1.5 due to first sample or agreed colour sample.
Measured with comparable colour measurement system.

LCD

LCD visual acceptance criteria are similar to the specification of the specified LCD.

Housing.

		Per 100 cm^2
Scratch, stain, spot, inclusion	≤ 0.06 mm^2	✓
	Low (colour) contrast > 0.06 mm^2 and ≤ 0.25 mm^2. High (colour) contrast > 0.06 mm^2 and ≤ 0.16 mm^2.	1
	Area > 0.25 mm^2 or >0.16mm^2	✗

Table 1.

Distance between 2 visual anomalies minimal 50 mm.

VISUAL ACCEPTANCE CRITERIA

Touchscreen, Resistive

Visual anomalies

			<11”	≥11”
Viewing area	Dot, line	≤ 0.06 mm^2	✓	✓
		> 0.06 mm^2 and ≤ 0.16 mm^2	2	3
		> 0.16 mm^2	✗	✗
Printed area	Scratch, stain, spot	≤ 0.06 mm^2	✓	✓
		Low (colour) contrast > 0.06 mm^2 and ≤ 0.25 mm^2 High (colour) contrast > 0.06 mm^2 and ≤ 0.16 mm^2	1	2
		Area >0.25 mm^2 or >0.16 mm^2	✗	✗
Maximum anomalies total product			3	4

Table 2.

Distance between 2 visual anomalies minimal 50 mm.

Surface flatness
Pillowing, rippling

≤150 µm (view area up to 6”)
≤250 µm (view area 6” and larger)

Bonding optical clear

A continuous edge/line of 1 mm maximum around the border of the view area is acceptable. No interruption of the optical clear border is allowed.

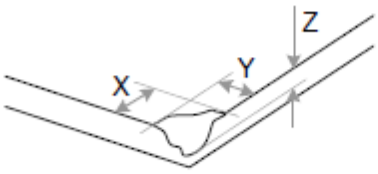
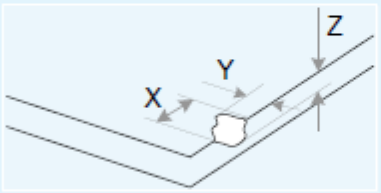
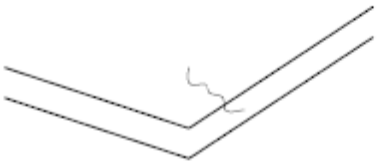
Colour

ΔE < 1.5 due to first sample or agreed colour sample.
Measured with comparable colour measurement system.

Glass

- Glass deviations should be evaluated by the glass supplier specification.
- Finishing of the glass edge should be according to glass specification ISO10110.

Allowed Glass defects

Line #	Defect type	Maximum size	Max. total per surface
A 	Corner Fragments	X≤2mm, Y≤2mm, Z≤glass thickness	1
B 	Side Fragments	X≤5mm, Y≤1mm, Z≤glass thickness	2
C 	Progressive crack	Progressive crack	0

Touchscreen, Projected Capacitive (PCAP) sensor & CapKey on glass

Visual anomalies

			<10.1”	<15.6”	≥15.6” <19.1”	≥19.1”
Viewing area	Dot, line	≤ 0.06 mm^2	✓	✓	✓	✓
		> 0.06 mm^2 and ≤ 0.16 mm^2	1	1	2	2
		> 0.16 mm^2	✗	✗	✗	✗
Printed area	Scratch, stain, spot	≤ 0.06 mm^2,	✓	✓	✓	✓
		> 0.06 mm^2 and ≤ 0.16 mm^2	1	1	2	3
		> 0.16 mm^2	✗	✗	✗	✗
Maximum anomalies total product			2	2	4	4

Table 3.

Distance between 2 visual anomalies minimal 50 mm.

Bonding optical clear

A continuous edge/line of 0.3 mm maximum around the border of the view area is acceptable. No interruption of the optical clear border is allowed.

Colour

ΔE < 2 due to first sample or agreed colour sample (not measured on glass, but reference material).
Measured with comparable colour measurement system.
Ceramic ink is supplier-dependent and can’t meet the ΔE < 2

Touchscreen, Projected Capacitive (PCAP) sensor & CapKey on plastic
(like polycarbonate or PMMA)

Deviations om polycarbonate or PMMA should be evaluated by the plastic supplier specification.

Visual anomalies

			<10.1”	≥10.1” <15.6”	≥15.6” <19.1”	≥19.1”
Viewing area	Dot, line	≤ 0.06 mm^2	✓	✓	✓	✓
		> 0.06 mm^2 and ≤ 0.32 mm^2	2	3	4	4
		> 0.32 mm^2	✗	✗	✗	✗
Printed area	Scratch, stain, spot	≤ 0.06 mm^2	✓	✓	✓	✓
		> 0.06 mm^2 and ≤ 0.32 mm^2.	2	3	4	4
		> 0.32 mm^2	✗	✗	✗	✗
Maximum anomalies total product			3	4	5	6

Table 4.

Distance between 2 visual anomalies minimal 50 mm.

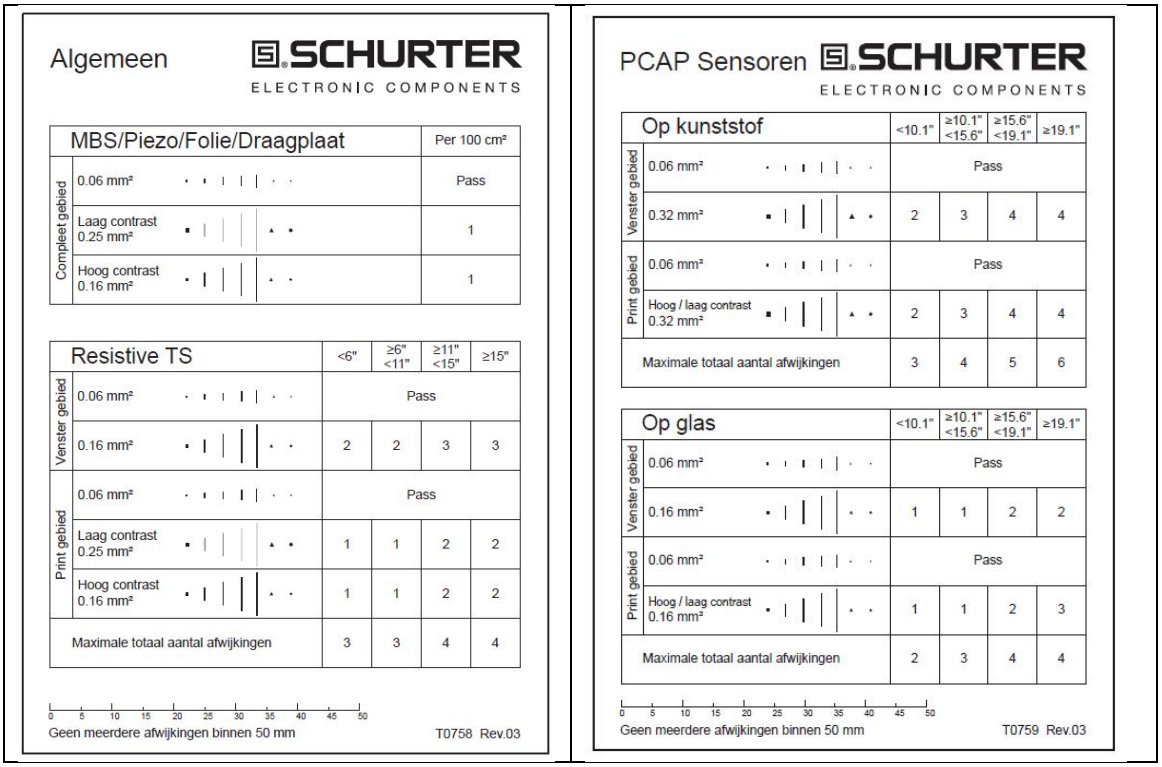
Bonding optical clear

A continuous edge/line of 0.3 mm maximum around the border of the view area is acceptable. No interruption of the optical clear border is allowed.

Colour

ΔE < 2 due to first sample or agreed colour sample (not measured on glass, but reference material).
Measured with comparable colour measurement system.

Appendix A, inspection chart
On request available via sales representative.



Algemeen

SCHURTER ELECTRONIC COMPONENTS

MBS/Piezo/Folie/Draagplaat		Per 100 cm²
Compleet gebied	0.06 mm²	Pass
	Laag contrast 0.25 mm²	1
	Hoog contrast 0.16 mm²	1

Resistive TS		<6"	≥6" <11"	≥11" <15"	≥15"
Venster gebied	0.06 mm²	Pass			
	0.16 mm²	2	2	3	3
Print gebied	0.06 mm²	Pass			
	Laag contrast 0.25 mm²	1	1	2	2
	Hoog contrast 0.16 mm²	1	1	2	2
Maximale totaal aantal afwijkingen		3	3	4	4

0 5 10 15 20 25 30 35 40 45 50

Geen meerdere afwijkingen binnen 50 mm

T0758 Rev.03

PCAP Sensoren

SCHURTER ELECTRONIC COMPONENTS

Op kunststof		<10.1"	≥10.1" <15.6"	≥15.6" <19.1"	≥19.1"
Venster gebied	0.06 mm²	Pass			
	0.32 mm²	2	3	4	4
Print gebied	0.06 mm²	Pass			
	Hoog / laag contrast 0.32 mm²	2	3	4	4
Maximale totaal aantal afwijkingen		3	4	5	6

Op glas		<10.1"	≥10.1" <15.6"	≥15.6" <19.1"	≥19.1"
Venster gebied	0.06 mm²	Pass			
	0.16 mm²	1	1	2	2
Print gebied	0.06 mm²	Pass			
	Hoog / laag contrast 0.16 mm²	1	1	2	3
Maximale totaal aantal afwijkingen		2	3	4	4

0 5 10 15 20 25 30 35 40 45 50

Geen meerdere afwijkingen binnen 50 mm

T0759 Rev.03