



WINSTAR Display Co.,Ltd.
Industrial Display Manufacturer



品質保證系統 Quality Assurance System

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[illegible]



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1. Quality Assurance System

WINSTAR ISO9001-2008 Quality Policy :

1. Quality Priority
2. Service Excellence
3. Timely Delivery
4. Technology Innovation
5. R & D orientation

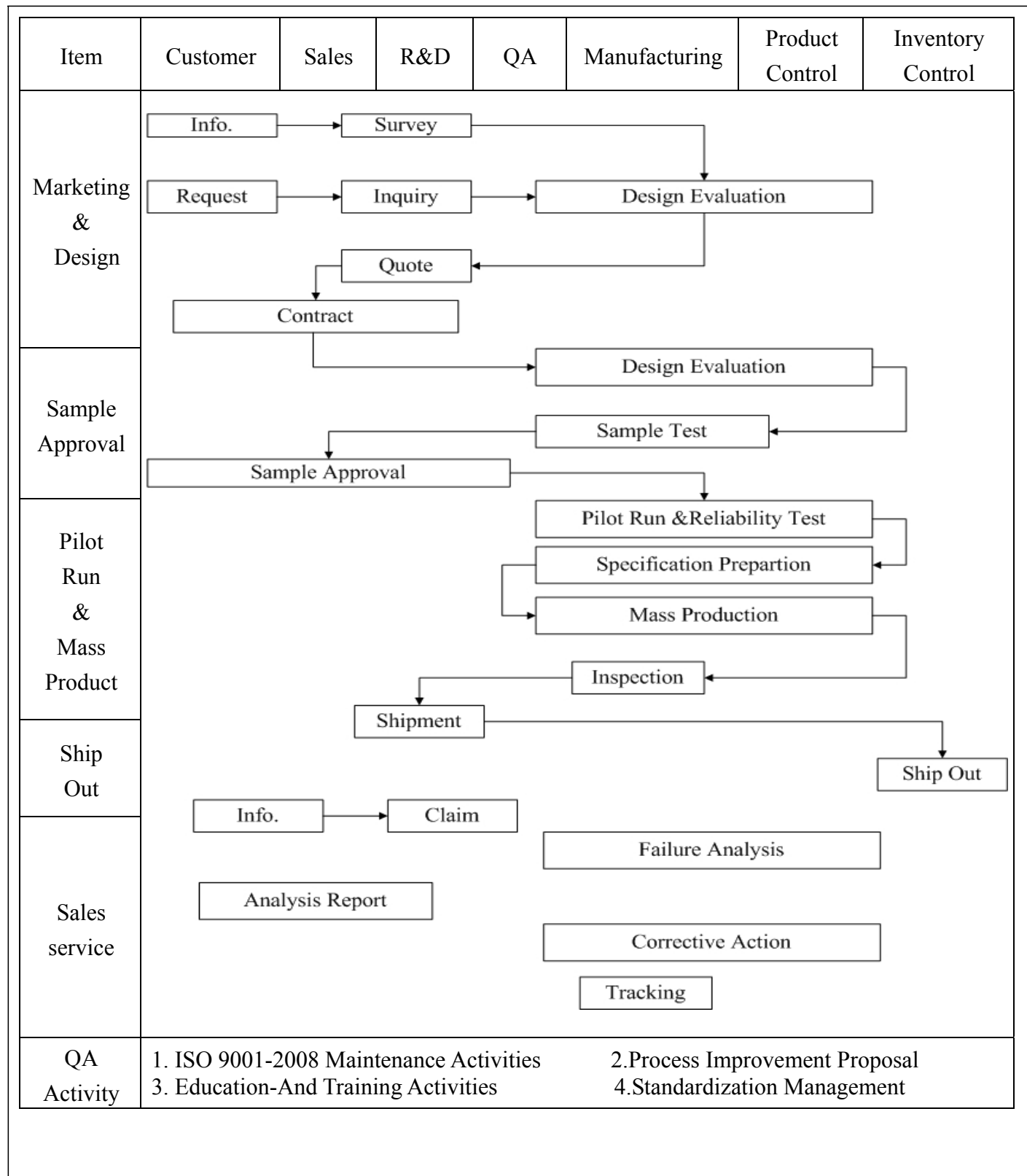
WINSTAR ISO9001-2008 Quality Promise :

1. Quality Priority
We strive for the high-quality products and aim for the perfection.
2. Service Excellence
One of our missions is to provide our customers the satisfactory service.
3. Timely Delivery
Our on-time delivery wins glowing reputations.

WINSTAR ISO9001-2008 Quality Object :

1. 成品不良率的降低 Decrease the finish good defective rate.
2. 客訴案件之減少 Decrease the customer complaint.
3. 製程不良率的降低 Decrease the in process defective rate.
 - 3.1 鐸錫加工不良率降低 Decrease the solder defective rate.
 - 3.2 流焊不良率降低 Decrease the S.M.T defective rate.
 - 3.3 打線不良率降低 Decrease the wire bonding defective rate.
 - 3.4 組裝不良率降低 Decrease the assembly defective rate.

2. Quality Assurance Flow Chart



3. Inspection Specification

3-1. Inspection Standard : MIL-STD-105E Table Normal Inspection Single Sampling Level II °

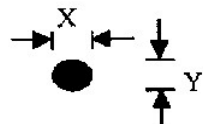
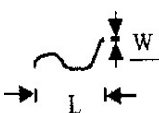
3-2. Equipment : Gauge 、 MIL-STD 、 WINSTAR Tester 、 Sample °

3-3. IQC Defect Level : Major Defect AQL 0.65; Minor Defect AQL 2.5 °

3-4. FQC Defect Level : 100% Inspection °

3-5. OUT Going Defect Level : Sampling °

3-6. Specification :

NO	Item	Criterion	LEVEL													
01	Electrical Testing	1.1Missing vertical, horizontal segment, segment contrast defect.	Minor													
		1.2 Missing character, dot or icon	Minor													
		1.3 Display malfunction.	Minor													
		1.4 No function or no display.	Minor													
		1.5 Current consumption exceeds product specifications.	Minor													
		1.6 LCD viewing angle defect.	Minor													
		1.7 Mixed product types.	Minor													
		1.8 Contrast defect.	Minor													
02	LCD black spots, white spots, contamination (non-display)	2.1 Round type : As following drawing $\Phi=(x+y)/2$ <div></div> <table><thead><tr><th>SIZE</th><th>Acceptable Q'TY</th></tr></thead><tbody><tr><td>$\Phi\leq0.10$</td><td>Accept no dense</td></tr><tr><td>$0.10<\Phi\leq0.20$</td><td>2</td></tr><tr><td>$0.20<\Phi\leq0.25$</td><td>1</td></tr><tr><td>$0.25<\Phi$</td><td>0</td></tr></tbody></table>	SIZE	Acceptable Q'TY	$\Phi\leq0.10$	Accept no dense	$0.10<\Phi\leq0.20$	2	$0.20<\Phi\leq0.25$	1	$0.25<\Phi$	0	Minor			
		SIZE	Acceptable Q'TY													
$\Phi\leq0.10$	Accept no dense															
$0.10<\Phi\leq0.20$	2															
$0.20<\Phi\leq0.25$	1															
$0.25<\Phi$	0															
	2.2 Line type : (As following drawing) <div></div> <table><thead><tr><th>Length</th><th>Width</th><th>Acceptable Q 'TY</th></tr></thead><tbody><tr><td>---</td><td>$W\leq0.02$</td><td>Accept no dense</td></tr><tr><td>$L\leq3.0$</td><td>$0.02<W\leq0.03$</td><td rowspan="2">2</td></tr><tr><td>$L\leq2.5$</td><td>$0.03<W\leq0.05$</td></tr><tr><td>---</td><td>$0.05<W$</td><td>As round type</td></tr></tbody></table>	Length	Width	Acceptable Q 'TY	---	$W\leq0.02$	Accept no dense	$L\leq3.0$	$0.02<W\leq0.03$	2	$L\leq2.5$	$0.03<W\leq0.05$	---	$0.05<W$	As round type	Minor
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$L\leq2.5$	$0.03<W\leq0.05$															
---	$0.05<W$	As round type														



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NO	Item	Criterion	LEVEL												
03	Polarizer bubbles	<div>If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction.</div> <table><tr><th>Size Φ</th><th>Acceptable Q'TY</th></tr><tr><td>$\Phi \leq 0.20$</td><td>Accept no dense</td></tr><tr><td>$0.20 < \Phi \leq 0.50$</td><td>3</td></tr><tr><td>$0.50 < \Phi \leq 1.00$</td><td>2</td></tr><tr><td>$1.00 < \Phi$</td><td>0</td></tr><tr><td>Total Q'TY</td><td>3</td></tr></table>	Size Φ	Acceptable Q'TY	$\Phi \leq 0.20$	Accept no dense	$0.20 < \Phi \leq 0.50$	3	$0.50 < \Phi \leq 1.00$	2	$1.00 < \Phi$	0	Total Q'TY	3	Minor
Size Φ	Acceptable Q'TY														
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$0.20 < \Phi \leq 0.50$	3														
$0.50 < \Phi \leq 1.00$	2														
$1.00 < \Phi$	0														
Total Q'TY	3														
04	rainbow	<div>4.1</div> <div>(a) if the deviation color (or Newton ring) spread in VA than rejected or according to limited sample.</div> <div>(b) if the deviation color (or Newton ring) not spread in VA than accept.</div>	Minor												
05	Soldering	5.1 No un-melted solder paste may be present on the PCB.	Minor												
		5.2 No cold solder joints, missing solder connections, oxidation or icicle.	Minor												
		5.3 No residue or solder balls on PCB.	Minor												
		5.4 No short circuits in components on PCB.	Minor												

4. Reliability Test Condition

Environmental Test				
No.	Test Item	Content of Test	Test Condition	Applicable Standard
1	High Temperature storage	Endurance test applying the high storage temperature for a long time.	80℃ 200hrs	MIL-202E
2	Low Temperature storage	Endurance test applying the high storage temperature for a long time.	-30℃ 200hrs	MIL-202E
3	High Temperature/Humidity Storage	Endurance test applying the high temperature and high humidity storage for a long time.	60℃,90%RH 96hrs	MIL-202E
4	Temperature Cycle	Endurance test applying the low and high temperature cycle. <div style="text-align: center;"> -20°C 25°C 70°C $\xrightarrow{\hspace{1.5cm}}$ $\xleftarrow{\hspace{1.5cm}}$ 30min 5min 30min 1 cycle </div>	-20℃/70℃ 10 cycles	MIL-202E
Mechanical Test				
5	Vibration test	Endurance test applying the vibration during transportation and using.	Total fixed amplitude :15mm Vibration Frequency :10~55Hz One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes	MIL-202E
Others				
6	Static electricity test	Endurance test applying the electric stress to the terminal.	VS=800V,RS=1.5kΩ CS=100pF 1 time	—

*** Supply voltage for logic system=5V. Supply voltage for LCD system =Operating voltage at 25℃

*** All High /Low Temperature storage or High Temperature/Humidity Storage the LCM after tested then must storage at normal condition 4hrs.

*** Conducted in accordance with the conditions of the product specification book



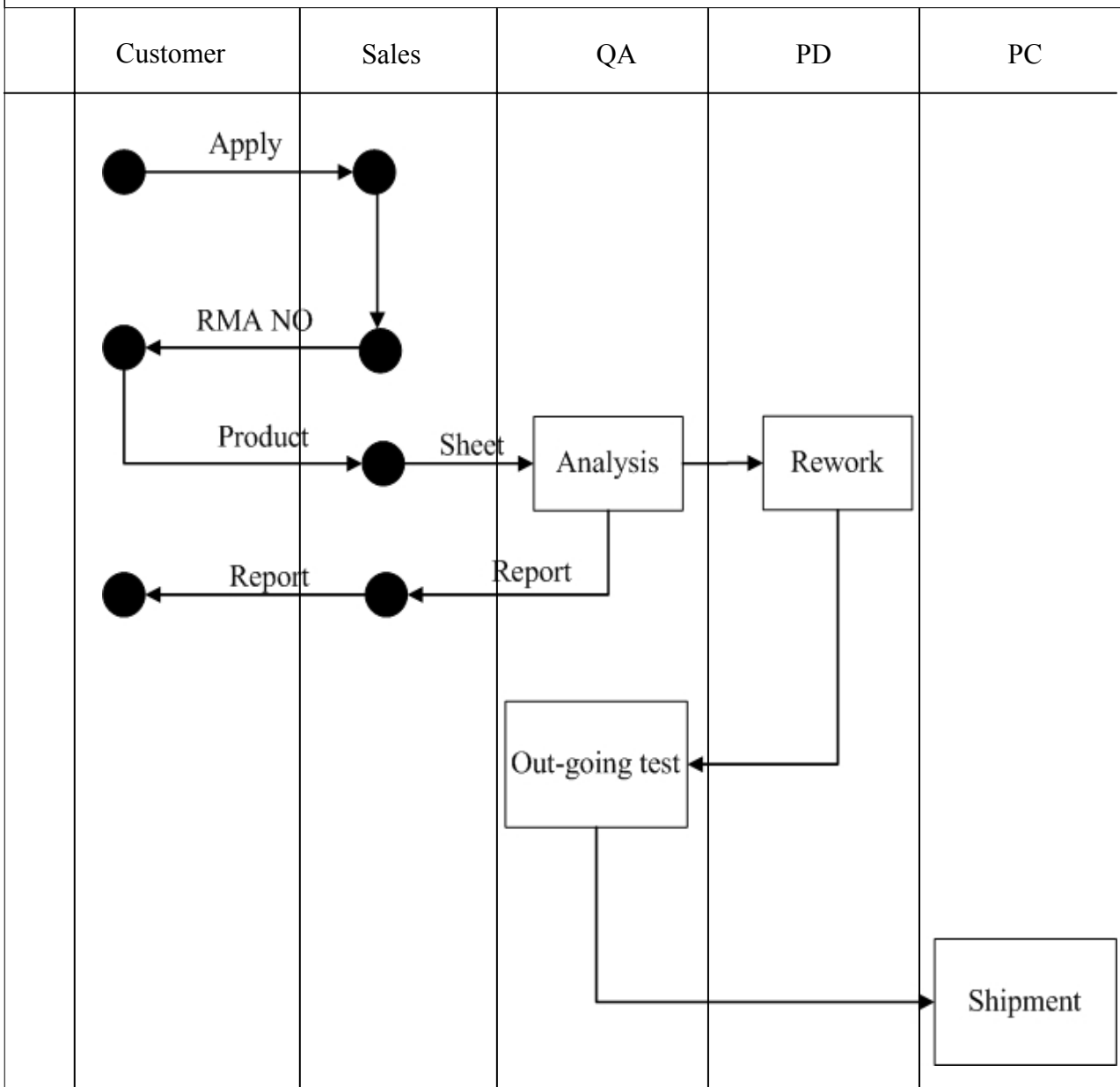
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5. RMA System

RMA SYSTEM





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6. Warning for the returned products

退貨品所需提供的資料，以利分析不良原因

(For a speedy analysis to the returned products, please provide us the information as follows)

一、產品應用方式。

(What was the application for the products ?)

二、產品使用環境溫度範圍。

(What was the ambience while the products were used ?)

三、不良品註明不良原因。

(Please give details or notes for each defective product.)

四、電源使用狀況，含 B/L(Ex：DC 5V 或 AC 110V 400Hz)

(Please describe the input conditions to the products [including Backlight] such as Vdd=DC 5.0V or EL backlight=AC=110V/ 400Hz...etc.)

五、調整 Vop 之方式(Ex：線路接法)

(How was the Vop controlled or adjusted ? [Ex：drawing of the connected circuit.])



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7. Precaution with use for LCM module

LCM 使用注意事項 (Precautions with use for LCM module)

- 一、 取用、安裝、焊接需作好防靜電措施，如：
(Warning For Static Electricity: The followed actions must be done before opening or fixing or soldering the LCM :)
 - ☐ 戴靜電環。
(To wear an anti-static wrist-strap.)
 - ☐ 不穿易產生靜電材質的服裝。
(To wear the anti-static clothes.)
 - ☐ 安裝環境地板具防靜電功用，特別在低溫乾燥的環境。
(The anti-static floor can be applied, especially in a dry and low temperature [low humidity] nvironment.)
 - ☐ 承載物為抗靜電材質。
(To use a container with anti-static material.)
- 二、 安裝、拆卸、加工時電源需關閉。
(Turn off the power switch before installing, detaching or soldering the LCM.)
- 三、 產品與LCM間作好EMI防護措施。
(To avoid the EMI problem, please properly connect the LCM to the equipment with EMC protection.)
- 四、 使用環境溫差過大時，需有VR調整Vop讓明暗對比適當。
(The contrast has to be adjusted to a proper situation with VR if the LCM is run at a higher range of temperature.)
- 五、 在極低溫使用最好具heater裝置，以增進顯示轉態速度。
(It is better to have a heater built-in on the LCM to improve the display speed at a lower temperature.)
- 六、 在裝機前才把保護膜撕開，防止 LCD 刮傷。
(To avoid scratching the LCD, please do not remove the protective film before installing the LCM.)
- 七、 安裝環境清潔度保持，以防止污物。
(Please keep a cleanly working area to protect LCM from dirty particles.)
- 八、 若有不良請勿自行拆組，以免增加分析與修護難度。
(Please do not open the LCM if it has failed, that may affect the processing of analysis.)
- 九、 防紫外光損壞，避免在陽光下使用或暴露，除非 LCD 防紫外光。
(Sensitive to ultraviolet, avoid used or exposed under sunlight unless it's applicable to ultraviolet.)
- 十、 模組使用時若需要增加連接 PIN 或排線應注意焊接效果如短路或空焊的不良。
(If you need to increase PIN or flexible flat cable when operation, please take care the welding effect, such as short-circuit or bad welding)