APEX TV ENCLOSURES

Quality Control Checklist & Test Report

Document: APEX-QC-001 | Rev 1.0 | Outdoor TV Enclosure 75"

SERIAL NUMBER

MODEL

APEX-55-STD

PRODUCTION DATE

INSPECTOR NAME

INSPECTION DATE

WORK ORDER

Incoming Materials Inspection

Section 1

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Frame & Panels				
Aluminum alloy grade verified	5052-H32	☐	☐	
Sheet thickness	2.0mm ± 0.1mm	☐	☐	
Surface finish quality	No scratches/ dents	☐	☐	
Powder coat thickness	60-80 microns	☐	☐	
Glass Assembly				
Laminated glass thickness	4+4mm (8mm total)	☐	☐	
AR coating applied	<1% reflection	☐	☐	
IR rejection coating	>70% IR blocked	☐	☐	
UV blocking verified	>99% UV blocked	☐	☐	
Glass edge quality	Polished, no chips	☐	☐	

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Fans & Filters				
Fan model verified	Noctua/Sunon 140mm	☐	☐	
PWM capability confirmed	4-pin PWM	☐	☐	
Filter mesh grade	IP5X rated	☐	☐	
Hardware				
Stainless steel grade	316 Marine Grade	☐	☐	
EPDM gasket durometer	60-70 Shore A	☐	☐	
Cable glands IP rating	IP68	☐	☐	

Assembly Quality Inspection

Section 2

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Frame Assembly				
Corner joints tight, no gaps	<0.5mm gap	☐	☐	
All welds ground smooth	Ra <3.2µm	☐	☐	
Frame squareness	Diagonal ±2mm	☐	☐	
Overall dimensions	±3mm tolerance	☐	☐	
Glass Installation				
Glass seated in gasket evenly	Full perimeter contact	☐	☐	
Gasket compression uniform	20-30% compression	☐	☐	
No visible gaps or daylight	0mm visible gap	☐	☐	
Hinge operation smooth	Opens 90°+	☐	☐	
Lock mechanism secure	Positive latch	☐	☐	

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Fan & Ventilation				
Fans mounted securely	No vibration	☐	☐	
Anti-vibration mounts installed	All 4 corners	☐	☐	
Intake vents clear	No obstruction	☐	☐	
Exhaust vents clear	No obstruction	☐	☐	
Filters installed correctly	Proper orientation	☐	☐	
Mounting System				
VESA mount centered	±5mm center	☐	☐	
Mount bolts torqued	As specified	☐	☐	
Wall bracket included	Complete kit	☐	☐	

Electrical Testing

Section 3

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Wiring Inspection				
All connections secure	No loose wires	☐	☐	
Wire colors correct per diagram	Match schematic	☐	☐	
Cable routing neat	Tied, no pinch	☐	☐	
Cable glands sealed	Hand tight + 1/4 turn	☐	☐	
Power Supply				
Input voltage verified	100-240VAC	☐	☐	
DC output voltage	12.0V ± 0.5V	☐	☐	
Earth continuity	<0.1 ohm	☐	☐	
Insulation resistance	>2M ohm @ 500V	☐	☐	
Control System				
MCU boots correctly	LED sequence OK	☐	☐	
	Ambient ±2°C	☐	☐	

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Temperature sensors reading				
PWM signal verified	25kHz, 0-100%	☐	☐	_____
Fan tach signal received	RPM reading	☐	☐	_____

Measured Values (Record Actual)

DC Output Voltage: _____ V

Earth Continuity: _____ Ω

Insulation Resistance: _____ MΩ

Sensor 1 Reading: _____ °C

Sensor 2 Reading: _____ °C

Room Temperature: _____ °C

Functional Testing

Section 4

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Fan Control Logic				
Fans off at cold start (<30°C)	0% PWM	☐	☐	
Fans start at 30°C	20% PWM	☐	☐	
50% PWM at 40°C	Mid-point	☐	☐	
PWM scales with temperature	Linear 30-50°C	☐	☐	
100% PWM at 50°C	Full speed	☐	☐	
Alarm triggers at 55°C	LED warning	☐	☐	
Failsafe Testing				
Sensor disconnect → 100% PWM	Failsafe active	☐	☐	
Fan stall detection	Alert triggered	☐	☐	
MCU watchdog recovery	Auto-restart	☐	☐	
Noise Testing				

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Noise at 25% PWM	<25 dBA @ 1m	☐	☐	
Noise at 100% PWM	<35 dBA @ 1m	☐	☐	
No rattles or vibration	Silent operation	☐	☐	

Fan Speed & Noise Measurements

Fan RPM @ 25%: _____ RPM

Fan RPM @ 100%: _____ RPM

Noise @ 25%: _____ dBA

Noise @ 100%: _____ dBA

Environmental & Seal Testing

Section 5

ITEM	SPECIFICATION	PASS	FAIL	NOTES
IP66 Rating Verification				
Door seal continuity (EPDM channel)	No gaps, 20-30% compression	☐	☐	
Cable entry seals	IP68 verified	☐	☐	
IP66 labyrinth intake grilles installed	Downward louvers correct	☐	☐	
IP66 rain cowl/hood installed	40mm overhang min	☐	☐	
Compression latches tight	All 4 latches engaged	☐	☐	
Water jet test (IPX6)	IEC 60529, 100L/min, 3m	☐	☐	
Positive Pressure Test				
Fans running, door closed	Positive pressure	☐	☐	
Smoke test airflow direction	Outward only	☐	☐	
Thermal Performance (if tested)				
	4hr @ 55°C amb	☐	☐	

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Heat soak test completed				
Internal temp maintained	<65°C internal	☐	☐	_____

Note: Full thermal chamber testing (4hr @ 55°C) and IP66 water jet testing per IEC 60529 is required for first article inspection. Production units require functional test of cooling system and spot-check of IP66 sealing (visual inspection + short water spray).

Final Inspection & Cosmetics

Section 6

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Cosmetic Inspection				
Powder coat finish uniform	No runs/sags	☐	☐	
No visible scratches	All surfaces	☐	☐	
Glass clean, no smudges	Both sides	☐	☐	
Labels applied correctly	Serial, ratings	☐	☐	
Documentation & Packing				
User manual included	Latest revision	☐	☐	
Warranty card included	Completed	☐	☐	
Mounting hardware kit complete	Per packing list	☐	☐	
Spare filters included	2x filter set	☐	☐	
Keys/lock mechanism	2x keys	☐	☐	

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Packaging				
Corner protectors installed	All 8 corners	☐	☐	
Glass protection applied	Foam + cardboard	☐	☐	
Shipping labels correct	Fragile, orientation	☐	☐	

Final Test Result

✓	!	✗
PASS	**CONDITIONAL**	**FAIL**
Unit meets all specifications	Minor issues, rework required	Major defects, reject unit

Defect Summary (if any)

#	DEFECT DESCRIPTION	SEVERITY	CORRECTIVE ACTION
1			
2			
3			
4			

QC Inspector Signature

Name: _____

Date: _____

QC Supervisor Approval

Name: _____

Date: _____