

APEX TV ENCLOSURES

Quality Control Checklist & Test Report

Document: APEX-QC-001 | Rev 1.0 | Outdoor TV Enclosure 55"

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	<input type="checkbox"/>	<input type="checkbox"/>	<div></div>	
Sheet thickness	2.0mm ± 0.1mm	<input type="checkbox"/>	<input type="checkbox"/>	<div></div>	
Surface finish quality	No scratches/dents	<input type="checkbox"/>	<input type="checkbox"/>	<div></div>	
Powder coat thickness	60-80 microns	<input type="checkbox"/>	<input type="checkbox"/>	<div></div>	
Glass Assembly					
Laminated glass thickness	4+4mm (8mm total)	<input type="checkbox"/>	<input type="checkbox"/>	<div></div>	
AR coating applied	<1% reflection	<input type="checkbox"/>	<input type="checkbox"/>	<div></div>	
IR rejection coating	>70% IR blocked	<input type="checkbox"/>	<input type="checkbox"/>	<div></div>	
UV blocking verified	>99% UV blocked	<input type="checkbox"/>	<input type="checkbox"/>	<div></div>	
Glass edge quality	Polished, no chips	<input type="checkbox"/>	<input type="checkbox"/>	<div></div>	

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

Assembly Quality Inspection

Section 2

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

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

Electrical Testing					Section 3
ITEM	SPECIFICATION	PASS	FAIL	NOTES	
Wiring Inspection					
All connections secure	No loose wires	<input type="checkbox"/>	<input type="checkbox"/>	_____	
Wire colors correct per diagram	Match schematic	<input type="checkbox"/>	<input type="checkbox"/>	_____	
Cable routing neat	Tied, no pinch	<input type="checkbox"/>	<input type="checkbox"/>	_____	
Cable glands sealed	Hand tight + 1/4 turn	<input type="checkbox"/>	<input type="checkbox"/>	_____	
Power Supply					
Input voltage verified	100-240VAC	<input type="checkbox"/>	<input type="checkbox"/>	_____	
DC output voltage	12.0V ± 0.5V	<input type="checkbox"/>	<input type="checkbox"/>	_____	
Earth continuity	<0.1 ohm	<input type="checkbox"/>	<input type="checkbox"/>	_____	
Insulation resistance	>2M ohm @ 500V	<input type="checkbox"/>	<input type="checkbox"/>	_____	
Control System					
MCU boots correctly	LED sequence OK	<input type="checkbox"/>	<input type="checkbox"/>	_____	
	Ambient ±2°C	<input type="checkbox"/>	<input type="checkbox"/>	_____	

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Temperature sensors reading				
PWM signal verified	25kHz, 0-100%	<input type="checkbox"/>	<input type="checkbox"/>	_____
Fan tach signal received	RPM reading	<input type="checkbox"/>	<input type="checkbox"/>	_____

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	<input type="checkbox"/>	<input type="checkbox"/>		
Fans start at 30°C	20% PWM	<input type="checkbox"/>	<input type="checkbox"/>		
50% PWM at 40°C	Mid-point	<input type="checkbox"/>	<input type="checkbox"/>		
PWM scales with temperature	Linear 30-50°C	<input type="checkbox"/>	<input type="checkbox"/>		
100% PWM at 50°C	Full speed	<input type="checkbox"/>	<input type="checkbox"/>		
Alarm triggers at 55°C	LED warning	<input type="checkbox"/>	<input type="checkbox"/>		
Failsafe Testing					
Sensor disconnect → 100% PWM	Failsafe active	<input type="checkbox"/>	<input type="checkbox"/>		
Fan stall detection	Alert triggered	<input type="checkbox"/>	<input type="checkbox"/>		
MCU watchdog recovery	Auto-restart	<input type="checkbox"/>	<input type="checkbox"/>		
Noise Testing					

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Noise at 25% PWM	<25 dBA @ 1m	<input type="checkbox"/>	<input type="checkbox"/>	
Noise at 100% PWM	<35 dBA @ 1m	<input type="checkbox"/>	<input type="checkbox"/>	_____
No rattles or vibration	Silent operation	<input type="checkbox"/>	<input type="checkbox"/>	_____

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	<input type="checkbox"/>	<input type="checkbox"/>	_____
Cable entry seals	IP68 verified	<input type="checkbox"/>	<input type="checkbox"/>	_____
IP66 labyrinth intake grilles installed	Downward louvers correct	<input type="checkbox"/>	<input type="checkbox"/>	_____
IP66 rain cowl/hood installed	40mm overhang min	<input type="checkbox"/>	<input type="checkbox"/>	_____
Compression latches tight	All 4 latches engaged	<input type="checkbox"/>	<input type="checkbox"/>	_____
Water jet test (IPX6)	IEC 60529, 100L/min, 3m	<input type="checkbox"/>	<input type="checkbox"/>	_____
Positive Pressure Test				
Fans running, door closed	Positive pressure	<input type="checkbox"/>	<input type="checkbox"/>	_____
Smoke test airflow direction	Outward only	<input type="checkbox"/>	<input type="checkbox"/>	_____
Thermal Performance (if tested)				
	4hr @ 55°C amb	<input type="checkbox"/>	<input type="checkbox"/>	_____

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Heat soak test completed				
Internal temp maintained	<65°C internal	<input type="checkbox"/>	<input type="checkbox"/>	<hr/>

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	<input type="checkbox"/>	<input type="checkbox"/>	_____
No visible scratches	All surfaces	<input type="checkbox"/>	<input type="checkbox"/>	_____
Glass clean, no smudges	Both sides	<input type="checkbox"/>	<input type="checkbox"/>	_____
Labels applied correctly	Serial, ratings	<input type="checkbox"/>	<input type="checkbox"/>	_____
Documentation & Packing				
User manual included	Latest revision	<input type="checkbox"/>	<input type="checkbox"/>	_____
Warranty card included	Completed	<input type="checkbox"/>	<input type="checkbox"/>	_____
Mounting hardware kit complete	Per packing list	<input type="checkbox"/>	<input type="checkbox"/>	_____
Spare filters included	2x filter set	<input type="checkbox"/>	<input type="checkbox"/>	_____
Keys/lock mechanism	2x keys	<input type="checkbox"/>	<input type="checkbox"/>	_____

ITEM	SPECIFICATION	PASS	FAIL	NOTES
Packaging				
Corner protectors installed	All 8 corners	<input type="checkbox"/>	<input type="checkbox"/>	_____
Glass protection applied	Foam + cardboard	<input type="checkbox"/>	<input type="checkbox"/>	_____
Shipping labels correct	Fragile, orientation	<input type="checkbox"/>	<input type="checkbox"/>	_____

Final Test Result

✓
PASS
Unit meets all specifications

!
CONDITIONAL
Minor issues, rework required

✗
FAIL
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: _____

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This document must be retained for a minimum of 5 years from production date.