

MODEL LIST

ADP-350BB BA			
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1. ELECTRICAL

1.1 Input Characteristics:

1.1.1 Nominal Voltage

Parameter Description	Min	Typ	Max	Units
<i>Vin (Voltage Range)</i>		100-240		Vrms

1.1.2 Input Voltage Range

Parameter Description	Min	Typ	Max	Units
<i>Vin (Voltage Range)</i>	90		264	Vrms

1.1.3 Rated Frequency

Parameter Description	Min	Typ	Max	Units
<i>Vin (frequency)</i>		50-60		Hz

1.1.4 Frequency Range

Parameter Description	Min	Typ	Max	Units
<i>Vin (frequency)</i>	47		63	Hz

1.1.5 Current

Parameter Description	Min	Typ	Max	Units
<i>Iin (90VAC)</i>			4.8	Arms
<i>Iin (180VAC)</i>			2.4	Arms
<i>Rated Input current on label</i>		TBD		Arms

1.1.6 Brown out

Parameter Description	Min	Typ	Max	Units
<i>Vin (turn-off)</i>	65	85		Vrms



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MODEL NO. :

ADP-350BB SERIES

Date

Drawn

Design (EE)

Design (ME)

DOCUMENT NAME. :

REV.

05/24/2024

呂翠娥

陳彥儒

蔡柏崢

ES-350BB SERIES

S03

1.1.7 Inrush Current Limit (cold start)

Parameter Description	Min	Typ	Max	Units
<i>Initial In-rush Current</i>			<22% I ² t of Fuse spec	Amps (peak)

At 115V/230V. Spec shown is for First power up (Cold). Repeat (Warmup) power ups may be higher.

Use a 100m-ohm input line impedance to represent a typical home/office line impedance on test set up.

The design may NOT need to have an Inrush limiting NTC or any bypass mechanism. Worst case measurement (90/270 deg) is expected to be taken and I²T analysis conducted on Fuse and Bridge diode.

1.1.8 No Load and small load Power Consumption

V_{in}=115V/230Vac

Parameter Description	Min	Typ	Max	Units
<i>Minimum Efficiency @ Vin=minimum, max load @100Vac</i>	88			%
<i>Minimum Efficiency @ .1W, +48VDC</i>	TBD			%
<i>Minimum Efficiency @ .2W, +48VDC</i>	TBD			%
<i>Minimum Efficiency @ .25W, +48VDC</i>	33			%
<i>Minimum Efficiency @ .3W, +48VDC</i>	TBD			%
<i>Minimum Efficiency @ .4W, +48VDC</i>	TBD			%
<i>Minimum Efficiency @ .5W, +48VDC</i>	48			%
<i>Minimum Efficiency @ 1W, +48VDC</i>	64			%
<i>Minimum Efficiency @ 2W, +48VDC</i>	74			%
<i>Minimum Efficiency @ 5W, +48VDC</i>	83			%
<i>Minimum Efficiency @ 10W, +48VDC</i>	83			%
<i>Minimum Efficiency @ 15W, +48VDC</i>	83			%
<i>Minimum Efficiency @ 20W, +48VDC</i>	83			%
<i>Minimum Efficiency @ .1W, +36VDC</i>	TBD			%
<i>Minimum Efficiency @ .2W, +36VDC</i>	TBD			%
<i>Minimum Efficiency @ .25W, +36VDC</i>	33			%
<i>Minimum Efficiency @ .3W, +36VDC</i>	TBD			%
<i>Minimum Efficiency @ .4W, +36VDC</i>	TBD			%
<i>Minimum Efficiency @ .5W, +36VDC</i>	48			%
<i>Minimum Efficiency @ 1W, +36VDC</i>	64			%
<i>Minimum Efficiency @ 2W, +36VDC</i>	74			%
<i>Minimum Efficiency @ 5W, +36VDC</i>	83			%



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Minimum Efficiency @ 10W, +36VDC	83			%
Minimum Efficiency @ 15W, +36VDC	83			%
Minimum Efficiency @ 20W, +36VDC	83			%
Minimum Efficiency @ .1W, +28VDC	TBD			%
Minimum Efficiency @ .2W, +28VDC	TBD			%
Minimum Efficiency @ .25W, +28VDC	33			%
Minimum Efficiency @ .3W, +28VDC	TBD			%
Minimum Efficiency @ .4W, +28VDC	TBD			%
Minimum Efficiency @ .5W, 28VDC	48			%
Minimum Efficiency @ 1W, +28VDC	64			%
Minimum Efficiency @ 2W, +28VDC	74			%
Minimum Efficiency @ 5W, +28VDC	83			%
Minimum Efficiency @ 10W, +28VDC	83			%
Minimum Efficiency @ 15W, +28VDC	83			%
Minimum Efficiency @ 20W, +28VDC	83			%
Minimum Efficiency @ .1W, +20VDC/19.5VDC	TBD			%
Minimum Efficiency @ .15W, +20VDC/19.5VDC	55			%
Minimum Efficiency @ .2W, +20VDC/19.5VDC	TBD			%
Minimum Efficiency @ .25W, +20VDC/19.5VDC	52			%
Minimum Efficiency @ .3W, +20VDC/19.5VDC	TBD			%
Minimum Efficiency @ .4W, +20VDC/19.5VDC	TBD			%
Minimum Efficiency @ .5W, 20VDC/19.5VDC	62			%
Minimum Efficiency @ 1W, +20VDC/19.5VDC	66			%
Minimum Efficiency @ 2W, +20VDC/19.5VDC	75			%
Minimum Efficiency @ 5W, +20VDC/19.5VDC	83			%
Minimum Efficiency @ 10W, +20VDC/19.5VDC	83			%
Minimum Efficiency @ 15W, +20VDC/19.5VDC	83			%
Minimum Efficiency @ 20W, +20VDC/19.5VDC	83			%
Max input power @ no load, +19.5VDC			150	mW

1.1.9 Average efficiency

Parameter Description	Min	Typ	Max	Units
Minimum average efficiency (25%, 50%, 75%, and 100%), +48VDC	89			%
Minimum average efficiency (25%, 50%, 75%, and 100%), +36VDC	89			%
Minimum average efficiency (25%, 50%, 75%, and 100%), +28VDC	89			%



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Minimum average efficiency (25%, 50%, 75%, and 100%), +20VDC/19.5VDC	89			%
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1.1.10 Power factor Correction :

Parameter Description	Min	Typ	Max	Units
PFC @ 100% loading and 115/230VAC	0.95			

1.2 Output Characteristics:

Parameter Description	Min	Typ	Max	Units
Output Voltage Regulation				
+19.5VDC	18.53	19.50	20.48	Volts
+20VDC	19.69	20.30	20.91	Volts
+28VDC	27.65	28.50	29.36	Volts
+36VDC	35.04	36.50	37.96	Volts
+48VDC	46.75	48.70	50.65	Volts
Output Current				
+19.5VDC	0		9.50	Amps
+20VDC	0		9.30	Amps
+28VDC	0		7.80	Amps
+36VDC	0		6.44	Amps
+48VDC	0		6.78	Amps

1.2.1 Peak Current

Parameter Description	Min	Typ	Max	Units
Peak Load Current(+48VDC)			8.39	Amps
Duty cycle			10	%
Maximum duration			4	s
Transient Load Current			9.20	Amps
Maximum duration	1			ms
Peak Load Current(+36VDC)			7.40	Amps
Duty cycle			10	%
Maximum duration			4	s
Transient Load Current			8.24	Amps
Maximum duration	1			ms
Peak Load Current(+28VDC)			8.88	Amps



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Duty cycle			10	%
Maximum duration			4	s
Transient Load Current			9.88	Amps
Maximum duration	1			ms
Peak Load Current(+20VDC)			10.48	Amps
Duty cycle			10	%
Maximum duration			4	s
Transient Load Current			11.67	Amps
Maximum duration	1			ms
Peak Load Current(+19.5VDC)			10.48	Amps
Duty cycle			10	%
Maximum duration			4	s
Transient Load Current			11.67	Amps
Maximum duration	1			ms

1.2.2 Output Ripple and Noise

Parameter Description	Min	Typ	Max	Units
Output ripple / noise				
+48VDC			450	mVpp
+36VDC			450	mVpp
+28VDC			450	mVpp
+20VDC/19.5VDC			300	mVpp

Measured methods:

T1. Performed by 20MHz bandwidth in oscilloscope.


T2. Applied 0.1uF ceramic capacitor and 10uF tantalum capacitor across output connector terminals.

T3. Measured at the end of DC cable.

1.2.3 Acoustic noise

The sound quality of the Adapter shall meet all of the following criteria (metrics) for both left and right ear binaural measurements when tested in accordance with the Dell AC Adapter Sound Quality Test Procedure Document. For more complete specification refer to latest revision of Dell document AC0101 (Sound quality specification for AC Adapters)

Sound Quality Specifications for all Operational Modes

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Date	Drawn	Design (EE)	Design (ME)	DOCUMENT NAME. :	REV.
05/24/2024	呂翠娥	陳彥儒	蔡柏崢	ES-350BB SERIES	S03

AC Adapter			
Operational Mode	Critical Band Loudness	Prominent Tones	Modulation
All Modes	<0.025	No	<25%

The Adapter must meet the specification at all test voltage/current combinations.

- Critical Band Loudness shall **be less than 25 millisones**. This is not the sum total of the area under the curve rather this metric applies to each critical band along the Bark scale.
- No Prominent Tones (**Prominence Ratio**) allowed (< 7.0 dB) at any critical band.
- Degree of Amplitude Modulation in percentage shall **be less than 25%** in any critical band.

When testing Adapters for noise compliance, **all combinations of voltage and current will be used**. Worst case for both input voltage ranges using all possible load currents **should** be documented. The Adapter must meet the specification at all test voltage/current combinations. The minimum number of finished product to be tested shall be 32 units. Out of the 32, two units **should** be tested for all the necessary Load/Line combinations to identify at least the two **worst conditions** for each input voltage range. These shall be tested at each individual stage of development. Additionally, in order to be in compliance with this specification the supplier shall pass 100% of all samples tested.

All testing for compliance to this specification shall be performed in an acoustic lab certified by Dell.

All other results for compliance to this specification shall not be accepted.

Pendec Acoustic Laboratory


4F, No. 388, Section 1, Nei Hu Rd.

Taipei, Taiwan R. O. C. 114

Contact: Mr. Robin Cheng

886-2-2657-1779

0928269919 (Cellular)

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05/24/2024	呂翠娥	陳彥儒	蔡柏崢	ES-350BB SERIES	S03

1.2.4 Timing

Parameter Description	Min	Typ	Max	Units
<i>T1(Output Turn On Delay) 19.5V only</i>			4000	ms
<i>T2 (Output Rise Time) 19.5V to 48V</i>			150	ms

1.2.5 Fall time

DC output fall time from 90% to 10% of output voltage shall be between **0~275ms** at 90VAC and maximum load.

Discharge time 48V→19.5V <275ms for no load and full load.

1.2.6 Protection

1.2.6.1 Over Voltage Protection (Non pre-short test item due to system limit and 100V_{ac} test)

Parameter Description	Min	Typ	Max	Units
<i>Output Over Voltage</i>				Volts
+48VDC	50.0		56.0	Volts
+36VDC	40.0		46.0	Volts
+28VDC	30.0		36.0	Volts
+20VDC/+19.5VDC	22.0		26.0	Volts

1.2.6.2 Short Circuit protection(Non pre-short test item due to system limit)

- When any pin shorting on the cc pin, The AC adapter cannot be damaged. It is still able to keep functionality after removing pin shorting.
- When Vo shorting on the GND, the AC adapter cannot be damaged. It can be auto-recovery (less 15 times). If the Vo to GND keep shorting after auto-recovery, the AC adapter must be latch.

1.2.6.3 Over Current Protection

When AC adapter output over current, it must be latch after delay time.

Parameter Description	Min	Typ	Max	Units
<i>Over Current Inception Level</i>				
+48VDC	9		11	Amps
+36VDC	8		11	Amps
+28VDC	10		13	Amps
+20VDC/+19.5VDC	11		14	Amps
<i>Over Current Time Delay</i>				
td	30	300		ms



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ADP-350BB SERIES

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Drawn

Design (EE)

Design (ME)

DOCUMENT NAME. :

REV.

05/24/2024

呂翠娥

陳彥儒

蔡柏崢

ES-350BB SERIES


S03

1.2.6.4 Over Thermal Protection

The adapter shall use electronic circuitry to limit the unit case temperature **95°C** maximum.

It return to normal operation only after AC power line recycles.

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Date	Drawn	Design (EE)	Design (ME)	DOCUMENT NAME. :	REV.
05/24/2024	呂翠娥	陳彥儒	蔡柏崢	ES-350BB SERIES	S03

1.2.7 Dynamic LoadChang (50Hz,100Hz,1KHz)

Parameter Description	Min	Typ	Max	Units
Transient Loading Conditions				
+48VDC capacitive loading	100			uF
Output Transient Starting Load				
+48VDC	0			Amps
Output Transient Load Step				
+48VDC			100	% of max loading
Voltage Overshoot				
+48VDC			4.8	V
Voltage Undershoot				
+48VDC			4.8	V
Transient Response Load Slew Rate			2.5	A/usec
Transient Loading Conditions				
+36VDC capacitive loading	100			uF
Output Transient Starting Load				
+36VDC	0			Amps
Output Transient Load Step				
+36VDC			100	% of max loading
Voltage Overshoot				
+36VDC			3.6	V
Voltage Undershoot				
+36VDC			3.6	V
Transient Response Load Slew Rate			2.5	A/usec
Transient Loading Conditions				
+28VDC capacitive loading	100			uF
Output Transient Starting Load				
+28VDC	0			Amps
Output Transient Load Step				
+28VDC			100	% of max loading
Voltage Overshoot				
+28VDC			2.8	V
Voltage Undershoot				
+28VDC			2.8	V
Transient Response Load Slew Rate			2.5	A/usec
Transient Loading Conditions				
+19.5VDC/+20VDC capacitive loading	100			uF
Output Transient Starting Load				
+19.5VDC/+20VDC	0			Amps
Output Transient Load Step				
+19.5VDC/+20VDC			100	% of max loading
Voltage Overshoot				



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Design (ME)

DOCUMENT NAME. :

REV.

05/24/2024

呂翠娥

陳彥儒

蔡柏崢

ES-350BB SERIES

S03

+19.5VDC/+20VDC			2	V
<i>Voltage Undershoot</i>				
+19.5VDC/+20VDC			2	V
<i>Transient Response Load Slew Rate</i>			2.5	A/usec

1.2.8 Overshoot and undershoot

Parameter Description	Min	Typ	Max	Units
<i>Voltage Overshoot</i>				
+48VDC			50.65	Volts
+36VDC			37.96	Volts
+28VDC			29.36	Volts
+20VDC			20.91	Volts
+19.5VDC			20.48	Volts

1.2.9 System Capacitive Load

Parameter Description	Min	Typ	Max	Units
<i>Capacitive Load</i>				
+19.5VDC,+20VDC,+28VDC,+36VDC,+48VDC,			100	uF
<i>ESR Load</i>				
+19.5VDC,+20VDC,+28VDC,+36VDC,+48VDC,	30		100	m-ohms



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05/24/2024	呂翠娥	陳彥儒	蔡柏崢	ES-350BB SERIES	S03

2. Environmental

2.1 Temperature(safety demand)

Parameter Description	Min	Typ	Max	Units
<i>Operating Temperature (in operation)</i>	0		35	degrees Celsius
<i>Non-Operating Ambient</i>	-40		70	degrees Celsius
<i>Max Case Temperature Rise</i>			Side: $\Delta T \leq 48$ Top: $\Delta T \leq 55$ Bottom: $\Delta T \leq 60$	degrees Celsius

2.2 Humidity

Parameter Description	Min	Typ	Max	Units
<i>Humidity (Operating and NonOperating)</i>			95	% non-condensing

2.3 Altitude

Parameter Description	Min	Typ	Max	Units
<i>Altitude Operating</i>			5,000	meter
<i>Altitude Non-operating</i>			35,000	feet



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ES-350BB SERIES

S03


ITEM		CONDITION	SPECIFICATION
Environmental Characteristics:			
2.3.1	Electric Fast Transients:	Refer to IEC1000- 4-4 level 3	No function error
2.3.2	Lightning Surge:	Refer to IEC1000-4-5 level 3	No function error
2.3.3	Electron Static Discharge: (Refer to IEC1000-4-2 Energy Storage Capacitor 150pF; Discharge Resistor 330Ω)	Air Discharge: ± 12kV min. Air Discharge: ± 15kV min Contact Discharge: ±6kV min. Contact Discharge: ±8kV min	No function error No damage No function error No damage
2.3.4	Cooling	Natural air cooling	
2.3.5	EMI:	CISPR 32: CLASS B	Under 2db with resistive load
2.3.6	Leakage Current	264Vac/50Hz Add DELL NFPA99	≤50 uA Meet safety(follow DELL demand test form)
2.3.7	Insulation Resistance:	Between AC input and secondary applied 500Vdc for 1 minute Add DELL HJ741 Primary to Earth (Ground)	≥ 30MΩ
2.3.8	Dielectric Strength: (Hi-Pot)	Between AC input and secondary AC 3kV, test time 1 minute, and cut off current shall be less than 10mA Hi-pot1 AC 3kV, test time 1s. Hi-pot2 DC 4242V, test time 1s. In production line Hi-pot arcing sense level=5	
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DOCUMENT NAME. :			REV.
ES-350BB SERIES			S03

2.3.9 Common mode noise

1. The peak-to-peak voltage measured in the frequency range of 10 KHz to 40 KHz shall not exceed 500 mVp-p.
2. The peak-to-peak voltage measured in the frequency range of 40 KHz to 80 KHz shall not exceed 150 mVp-p.
3. The peak-to-peak voltage measured in the frequency range of 80 KHz to 400 KHz shall not exceed 250 mVp-p.

3. Safety

- 1.1 The Power supply shall be designed to comply with EN/IEC 62368-1 and IEC 60950-1 safety requirements.

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Mechanical characteristics

Item		Conditions						Specification
1.	Bending test		Load	Angle (°)	Arbitrary direction	Cycles in every minute	Sample size	
		Case - DC cord	227 g	0~180°	6250 Cycles	15 Cycles	24 Pcs	
		DC Cord-Plug	227 g	0~180°	6250 Cycles	15 Cycles	24 Pcs	
		Test Procedure: 1. Adjust the tester to count for 6250 cycles with a rate of 15 cycles per minute. Timing is listed below: a. 0 – 180 degrees: 1.5 second, Dwell at 180 degrees: 1 second b. 180 – 0 degrees: 1.5 second, Dwell at 0 degrees: 0 second 2. Rotate each direction 180 degrees. One cycle is 180 degrees. 3. Connect the monitoring systems (monitoring event <=5sec) to record the voltage during test. 4. Connect the 19.5V voltage source through the Adapter for Power, PSID, and GRD. 5. PSU rated current to be applied to Power and GRD, with minimum of 1A applied to PSID. Deviation to be approved by Dell. 6. Voltage across all three lines (PSID, GRD, Power) must be continuously monitored continuously and test equipment must be programmed to stop when the voltage drops below 18.5V. 目前因吳江BENCH 無對應測試DELL DC CABLE 設備， 故短期內入料需要求供應商提供IST 測試報告，即 BENCH 暫不測試線材；長期BENCH TEAM 會架構與 IST 相仿的儀器做複測的動作						Failure Criteria: 1. Any voltage that falls below 18.5V. Must be repeatable. 2. Any structural cracks, breaks, or tearing in the cable. No Exposed Metal. 3. Minor cosmetic damage is acceptable.



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MODEL NO. :

ADP-350BB SERIES

Date

Drawn

Design (EE)

Design (ME)

DOCUMENT NAME. :

REV.

05/24/2024

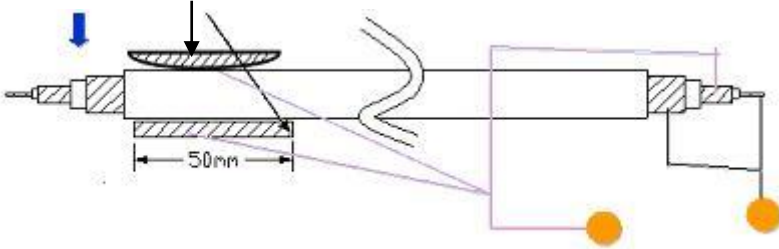
呂翠娥

陳彥儒

蔡柏崢

ES-350BB SERIES

S03

2.	Compression Test	<p>For coaxial design, the positive of multimeter is connected to center conductor and the outer spiral conductor, and the negative is connected to inner spiral conductor and fixtures. For flat cable, each wire V+, GND, and PSID must be checked independently for shorting with each other under pressure. The material of the fixtures is stainless and it is a curved fixture, its thickness is 5 mm; length is 50 mm (See the figure). Compress speed is 1 ± 1 Kg/min. Sample size:12 Pcs</p> 	<p>Failure Criteria</p> <p>The cable should not short with pressure less than 100 Kg.</p>
3.	Vibration	<p>Only endurance conditioning by sweeping shall be made.</p> <p>The entire frequency range from 10 Hz to 55 Hz and return to 10 Hz. shall be transversed in 1 min.</p> <p>Amplitude (total excursion) : 1.5 mm</p> <p>This motion shall be applied for a period of 2 hrs in each of 3 mutually perpendicular axis (a total of 6 hrs) .</p>	<p>Output voltage refer to Item 1.2</p> <p>Dielectric strength : Without ignition smoke, damage, arcing or breakdown.</p> <p>Insulation resistance : 100MΩ or more</p> <p>Appearance : There shall be no blistering of the specification label or other damage to the construction.</p>
4.	Shock	<p>Peak acceleration: 981/m/s²</p> <p>Duration of pulse: 6 ms</p> <p>Three successive shocks shall be applied in both directions of mutually perpendicular axis (a total of 18 shocks).</p>	<p>Output voltage $\pm 0.5V$</p> <p>Dielectric strength : Without ignition smoke, damage, arcing or breakdown.</p> <p>Insulation resistance : 100MΩ or more.</p>



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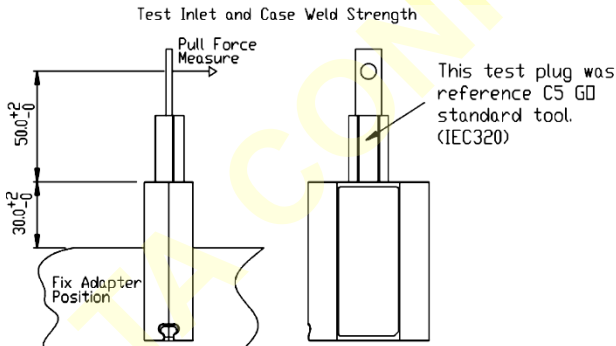
ADP-350BB SERIES

Date	Drawn	Design (EE)	Design (ME)	DOCUMENT NAME. :	REV.
05/24/2024	呂翠娥	陳彥儒	蔡柏崢	ES-350BB SERIES	S03

			Appearance : There shall be no blistering of the specification label or other damage to the construction.																														
4-1	Random Vibration (Non-Operational)	The random spectrum will be 3.08Grms. Perform random vibration testing on three (3) mutually orthogonal axes. Each vibration test will run for 30 minutes. Random Vibration Breakpoints:	The voltage delta between pretest and posttest voltages shall not exceed 5%.																														
		<table><tr><th colspan="2">PSD Break Points for 3.08Grms</th></tr><tr><th>Frequency (Hz)</th><th>Acceleration (G²/Hz)</th></tr><tr><td>7</td><td>0.004</td></tr><tr><td>20</td><td>0.013</td></tr><tr><td>33</td><td>0.003</td></tr><tr><td>156</td><td>0.1</td></tr><tr><td>200</td><td>0.026</td></tr><tr><td>233</td><td>0.04</td></tr><tr><td>282</td><td>0.0037</td></tr><tr><td>312</td><td>0.01</td></tr><tr><td>400</td><td>0.0002</td></tr><tr><td>500</td><td>0.0002</td></tr><tr><td>600</td><td>0.00009</td></tr><tr><td>700</td><td>0.000023</td></tr><tr><td>800</td><td>0.00003</td></tr></table>	PSD Break Points for 3.08Grms		Frequency (Hz)	Acceleration (G ² /Hz)	7	0.004	20	0.013	33	0.003	156	0.1	200	0.026	233	0.04	282	0.0037	312	0.01	400	0.0002	500	0.0002	600	0.00009	700	0.000023	800	0.00003	The function must be ok and no any solder crack be found.
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		All parts and glue must be no damage and movement.																															
4-2	Random Vibration (Operational)	The random spectrum will be 2.17Grms. Perform random vibration testing on three (3) mutually orthogonal axes. Each vibration test will run for 30 minutes. A meter will be reading the voltage throughout testing. The voltage will remain within the 5% allowance during testing. Random Vibration Breakpoints:	The voltage delta between pretest and posttest voltages shall not exceed 5%.																														
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		REV. S03																															

		<table><tr><th colspan="2">PSD Break Points for 2.17Grms</th></tr><tr><th>Frequency (Hz)</th><th>Acceleration (G²/Hz)</th></tr><tr><td>7</td><td>0.001</td></tr><tr><td>21</td><td>0.007</td></tr><tr><td>32</td><td>0.0027</td></tr><tr><td>53</td><td>0.03</td></tr><tr><td>80</td><td>0.005</td></tr><tr><td>155</td><td>0.04</td></tr><tr><td>190</td><td>0.01</td></tr><tr><td>204</td><td>0.017</td></tr><tr><td>234</td><td>0.006</td></tr><tr><td>260</td><td>0.013</td></tr><tr><td>600</td><td>0.0005</td></tr><tr><td>700</td><td>0.0005</td></tr><tr><td>800</td><td>0.00015</td></tr></table>	PSD Break Points for 2.17Grms		Frequency (Hz)	Acceleration (G ² /Hz)	7	0.001	21	0.007	32	0.0027	53	0.03	80	0.005	155	0.04	190	0.01	204	0.017	234	0.006	260	0.013	600	0.0005	700	0.0005	800	0.00015	All parts and glue must be no damage and movement.
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5.	Drop test 1	Delta Drop Test Standard for Portable Power Supply Test height : 1 meter for every surface (six sides) <u>1 times</u> Test surface material : hardwood surface or concrete	1. Electrical characteristic shall be satisfied. 2. PWB 銅箔無掀起或傷害 3. 無鉚錫破損 4. 無零件破損 5. 若測試造成外殼 (Enclosure)裂縫,必須 Repeat test 5 times. 並進行 root cause analysis and provide corrective action. 6. 測試 Hi-pot 為”PASS”時,產品若有破洞, 裂縫時需檢查 User accessible area 與 Hazardous voltage parts,必須 keep Double or Reinforced insulation.																														
	Drop test 2	Drop times: 30 times for every surface (six side),total 180 times”, Due to adapter weight >=400g Test surface material : The concrete Drop height: 10cm																															

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05/24/2024	呂翠娥	陳彥儒	蔡柏崢
DOCUMENT NAME. : ES-350BB SERIES			REV. S03

6.	AC inlet insertion and withdrawal	DENAN-LAW : Rated load 5000 times, and rated load 1.5 folds/100 times (20 times/min.) UL/CSA : Rated load 1.5 folds/250 times (10 times/min) IEC : Rated load 1000 times, and without rated load 3000 times (15 times/min.)	Without distinct damage in appearance. Electrical characteristic shall be satisfied.
7.	AC inlet insertion and withdrawal Push Test	The AC Power Cord receptacle shall remain securely mounted/fixd in place when a 20lb force is applied during insertion/ withdrawal of power cord. Test shall be repeated on each sample 50 times.(Sample size: 5 Pcs)	Without distinct damage in appearance.
8.	AC inlet weight test	The plug shall be connected to AC inlet then direction of plug X and Y shall be applied to there condition. Weight: <u>100</u> N. Time: <u>5</u> sec. Test times: <u>3</u> times.	Without distinct damage in appearance. Electrical characteristic shall be satisfied without solder crack of mounted board on AC inlet
8-1	AC inlet Bending Force test	<ol style="list-style-type: none"> 1. Adapter is fixed by fixture and body of adapter extends 30mm from fixture. 2. The test inlet was reference C5 GO standard tool. 3. The distance between load point and inlet surface is 50mm. 4. We issue this test for both logo and label side. 5. Minimum bending force is 15 Kgf 	We stop pull force immediately when we hear break voice. We test each side once time for 5 pcs sample to take data.



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ES-350BB SERIES

S03

9.	Ball impact	<p>Delta Impact Test Standard for Portable Power Supply</p> <p>1 The sample is placed on the laminated wood surface with the surface to be impacted positioned horizontally. If the sample needs to be stabilized or held in place, the stabilizing device must be solid to allow for the intended force to be delivered to the sample. For example, if blocks are used to support the samples, the blocks shall be secured together so that the sample sits securely and doesn't move due to the impact delivered by the steel ball. The sample must be in contact with the laminated wood surface at all times.</p> <p>2 The steel ball is allowed to fall freely from rest through the guide tube for a vertical distance of 1.5M to the point of impact.</p> <p>3 Only one impact per sample shall be made. Use new samples for additional impacts.</p>	<p>1. 若測試造成外殼 (Enclosure) 裂縫,必須 Repeat test 5 times. 並進行 root cause analysis and provide corrective action.</p> <p>2. 測試 Hi-pot 為"PASS"時, 產品若有破洞,裂縫時需檢查 User accessible area 與 Hazardous voltage parts,必須 keep Double or Reinforced insulation.</p>
10	Acoustic Noise	<p>Measurements to determine the AC adapter sound pressure are made using a 1/2" low noise free-field microphone in a inner size with 45(W)×45(D)×65(H) cm³ Anechoic chamber.</p>	<p>Delta Spec.: The AC Adapter shall produce no human perceivable audible noise (less than 30dB) No load : < 30dB 0~Full Load: : 30dB</p>
		<p>Measurements to determine the AC Adapter sound quality are made using a binaural (artificial) head in a qualified chamber that meets the requirements of ISO 3744, Clause 4.3.</p>	<p>Dell Spec.: Please kindly refer to DELL AC Adapter Sound Quality Test Procedure (Number: AC0103)</p>  <p>"AC Adapters Sound Quality Test Procedure"</p>
11	Adhesion of specification labels	<p>1. Tape peeling test</p> <p>2. High temperature storage The AC adaptor shall be stored at a temperature of $65 \pm 2^{\circ}\text{C}$ with relative humidity of 90% to 95% for 6 to 7 h</p> <p>3. Low temperature storage The d. c. power supply shall be stored at a temperature of $-20 \pm 3^{\circ}\text{C}$ for 6 to 7 h.</p>	<p>There shall be no blistering or peeling of the specification label.</p>

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05/24/2024	呂翠娥	陳彥儒	蔡柏崢		S03

12	Wiggle test	<ol style="list-style-type: none"> 1. Fasten adapter and cord firmly to their plates. 2. Adjust motor cam shaft so that AC adapter is in max forward position. 3. Connect cord to AC power and adapter output cable to DC load with LED to indicate that power is on. 4. Adjust plate distance so that adapter and cord just make connection and LED is lit. 5. Adjust DC load to maximum load for adapter (65W adapter = 3.75A). 6. Let adapter thermally soak for 15-20 minutes. 7. Adjust Variac to ~30VAC (~750RPM) and run for ~10 minutes. 8. Adjust Variac to ~0VAC and adjust motor cam shaft so that AC adapter is in max forward position. 9. Adjust plate distance so that adapter and cord just make connection and LED is lit. 10. Repeat steps 7 through 9 until adapter receptacle contacts begin to produce audible arcing noises. 11. Repeat steps 6 through 9 except lower Variac operational voltage to ~20VAC (~300RPM) until adapter begins to produce consistently Long or loud popping and arcing noises. 12. Remove adapter and plug from plates and attempt to manually twist cord slightly while varying the insertion distance, attempting to produce prolonged arcing, If manual manipulation should begin to prove unproductive, return to fixture and repeat step 11. 13. There is a "test to failure" pass criteria. This means continue to execute this test procedure until the adapter no longer conducts or the test ends in smoke or melting. 	<ol style="list-style-type: none"> 1. 如過程中有發煙,熔毀,停止後將樣品外殼拆開,觀察 SOCKET 後方如果 Pin 铆接處沒有晃動,可判定為 "PASS", 如 SOCKET 後方零件有被燒毀的現象,則判定為 "FAIL" 2. 請注意卯接處發黑不是指塑膠熔毀後,覆蓋於卯接處的現象
13	Tumble test	Test condition should refer to Delta standard 10000-0258	判定標準 <ol style="list-style-type: none"> 1. 弱測試造成外殼 (Enclosure) 裂縫, 以不允許金手指插入作為判定標準 2. 測試 Hi-pot 為 PASS 時, 產品若有破洞或裂縫時需檢查 User accessible area and Hazardous voltage parts, 必須 keep double or reinforced insulation.
13	Outline dimension Case Color	205*90*34 ; BLACK	L x W x H Color

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05/24/2024	呂翠娥	陳彥儒	蔡柏崢	ES-350BB SERIES	S03


14	Weight	1100 g +/-50g	XX g
15	AC Inlet	C14	C6 or C8 or C14 or CX Type
16	DC Connector	Barrel type 7.4 x 5.1 x 12.5mm	X Type O.D. x I.D. x L
17	DC Cable Length	1800	XXXX mm

18. Product Application: Notebook

19. DC Cable Connector pin define and related test request, please refer to SN item 2.4

USB C TYPE		TERMINAL
NA	V+ID RED	RED
PIN A4 A9	V BUS	WHITE (+)
PIN B4 B9		
PIN A5	CC1	ID BLUE
PIN A1 A12	GND	BLACK (-)
PIN B1 B12		
SHELL		
PIN A6 A7 SHORT	NC	

20. Product Ingress protection(IP) rating: No requirement(IP00)

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