

## AC & DC POWER GROUPS Rev C

### Important Benefits:

- Comprehensive ABD0100.1.8.1 Compliance test sequence suite saves months of test development time
- Includes both AC and DC power groups (Rev C) for maximum test coverage
- Available for all AFX Series models at power levels from 6kVA to 150kVA for AC and DC testing
- Supports both Single and Three phase AC power groups (Tables A, B & C)
- Supports DC power group
- Comprehensive Test Reports to document compliance
- Current Revision C
- Test Sequences can be customized as needed to meet changing requirements
- VISA Calls and VB Script support allows other test equipment integration into tests
- LAN, USB, RS232 and GPIB Support
- PPSC Test Manager Software Required to execute test sequences



### ABD0100.1.8.1, Airbus A350 Electrical Tests

The Airbus ABD0100.1.8.1 is largely based on the RTCA DO160, Section 16 test standard but with notable changes and extensions. RTCA performance standards form the basis for FAA regulatory requirements for all commercial aircraft. The power tests covered by the ABD0100.1.8.1 Airbus version simulate conditions of aircraft power from before engine start to after landing including emergencies. Currently at revision E, the ABD0100.1.8.1 test option was developed to ensure compliance of all electrical systems on the A350 commercial airliner.

### Comprehensive Coverage & Convenience

Using Pacific's extensive library of test sequences and the PPSC Test Manager Windows software, the AFX Power source turns into a powerful and easy to use compliance test system. No need to spend weeks developing your own test procedures, just connect your EUT and select what test to run. User observation of EUT behavior and additional measurement equipment to monitor EUT output is required in addition to the AFX power source.

### Extensive Coverage

The ability of the AFX Series to provide both AC, DC, AC+DC and DC+AC output reduces the amount of additional test equipment and coupling devices needed to perform most tests. It also provides great test coverage for EMC Test labs to meet client's test requirements.



THE POWER OF EXPERTISE



## Supported Power Groups

The following power groups are included in the ABD0100.1.8.1 A350 test option.

Power Group	Description	Nominal Voltage	Nominal Frequency	Phase Mode
SVF	Single-Phase, Variable Frequency, 115 V	115Vrms L-N	360 – 800Hz	Single Phase
TVF	Three-Phase, Variable Frequency, 115 V	115Vrms L-N	360 – 800Hz	Three Phase
SVFH	Single-Phase, Variable Frequency, 230 V	230Vrms L-N	360 – 800Hz	Single Phase
TVFH	Three-Phase, Variable Frequency, 230 V	230Vrms L-N	360 – 800Hz	Three Phase
SCF	Single-Phase, 400 Hz Constant Frequency, 115 V	115Vrms L-N	400Hz	Single Phase
TCF	Three-Phase, 400 Hz Constant Frequency, 115 V	115Vrms L-N	400Hz	Three Phase
SCFH	Single-Phase, 400 Hz Constant Frequency, 230 V	230Vrms L-N	400Hz	Single Phase
TCFH	Three-Phase, 400 Hz Constant Frequency, 230 V	230Vrms L-N	400Hz	Three Phase
LDC	28V DC utilization equipment	28Vdc	n/a	n/a

### AC Power Test Execution Samples – ABD0100.1.8.1

The following screens provide some typical captured output voltage waveforms from the AC Power Source during

ing ABD0100.1.8.1 AC Test Sequence execution. Samples shown reflect two different test conditions on a three phase 115V<sub>L-N</sub>/200V<sub>L-L</sub> AC power bus.

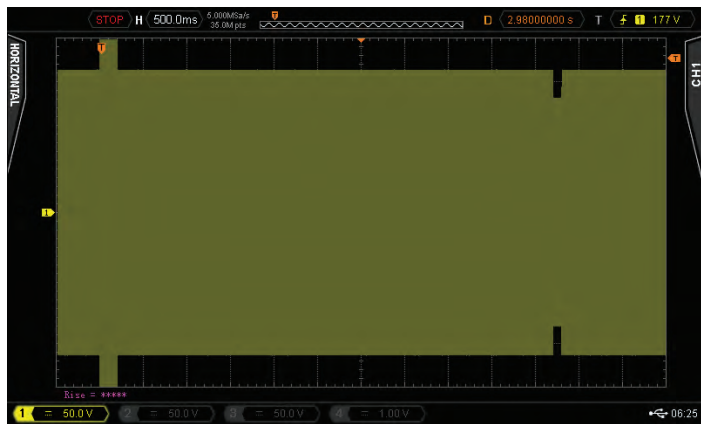


Figure 1: ABD0100.1.8.1 - A350 - AC Test TCF102 Voltage Transient

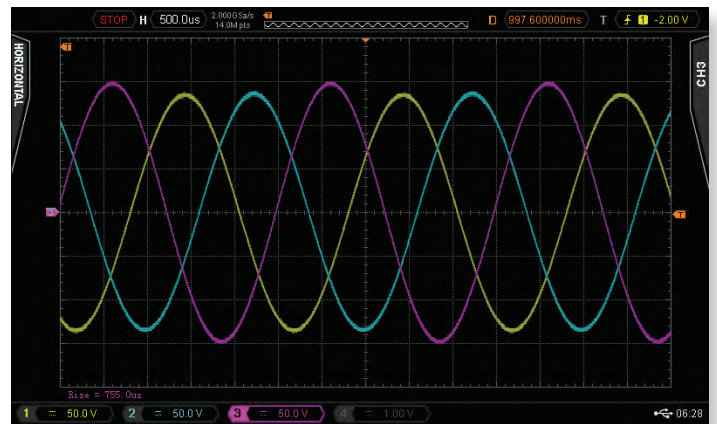


Figure 2: ABD0100.1.8.1 - A350 - AC Test TCF201

### DC Power Test Execution Samples – ABD0100.1.8.1

The following screens provide some typical captured output voltage waveforms from the DC Power Source during

ing ABD0100.1.8.1 DC Test Sequence execution. Samples shown reflect two different test conditions, DC + AC ripple (Figure 3) and a DC transient (Figure 4).

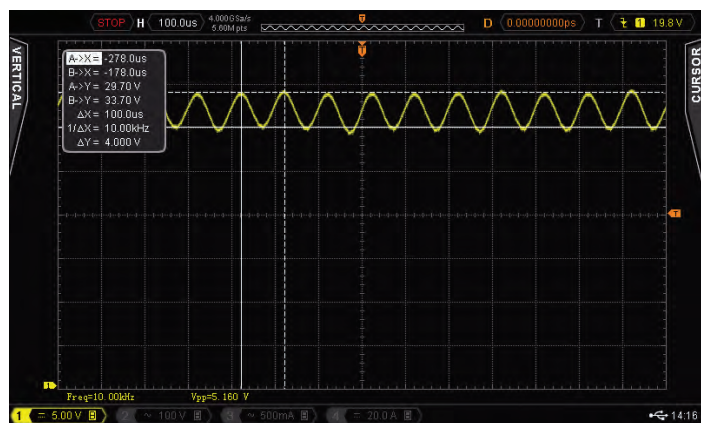


Figure 3: ABD0100.1.8.1 - A350 - DC, Test LDC103 - AC Ripple 10kHz

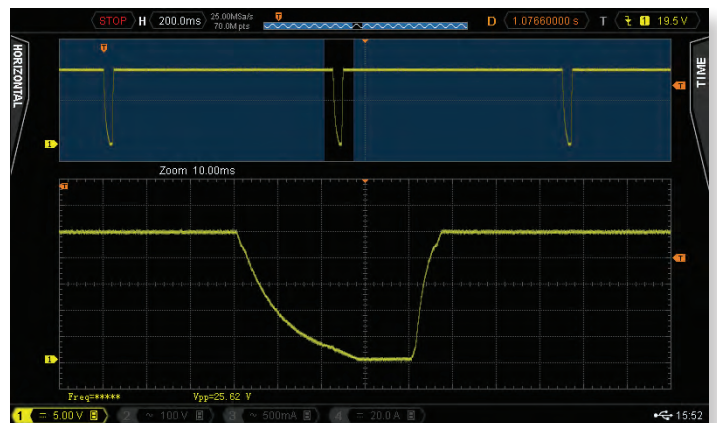
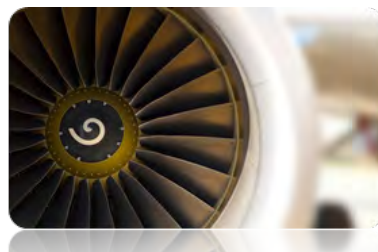


Figure 4: ABD0100.1.8.1 - A350 - DC, Test LDC402, Test Condition 19



## Compliance Matrix ABD0100.1.8.1 - AC Power Groups

Test	Description	SVF	TVF	SVFH	TVFH	SCF	TCF	SCFH	TCFH	Notes
VF	CF									
Normal Operation (1xx)										
101	Steady State Voltage and Frequency	Y	Y	Y	Y	Y	Y	Y	Y	
102	Voltage Transients	Y	Y	Y	Y	Y	Y	Y	Y	High voltage transients for AC H power groups up to 324V requires T Option (400V)
103	Voltage Modulation	Y	Y	Y	Y	Y	Y	Y	Y	
104	Voltage Spikes	R	R	R	R	R	R	R	R	Requires external Spike Generator with 1000V pos/neg capability
105	Current Distortion	R	R	R	R	R	R	R	R	Requires Spectrum Analyzer and CT's to monitor UUT current
106	Voltage Distortion 1	Y	Y	Y	Y	Y	Y	Y	Y	Requires adjustable full- bridge rectifier load
107	Voltage Distortion 2	R	R	R	R	R	R	R	R	Requires External Signal Generator and Coupling Transformer
108	Voltage Distortion Transients	Y	Y	Y	Y	Y	Y	Y	Y	Requires adjustable full- bridge rectifier load
109	Inrush Current	R, Z	R, Z	R, Z	R, Z	R, Z	R, Z	R, Z	R, Z	Requires measurement equipment to measure inrush current. May require special input cabling to meet impedance requirements
110	Frequency Variations	Y	Y	Y	Y					
111	Frequency Modulation	Y	Y	Y	Y	Y	Y	Y	Y	
112	111 Voltage DC Content - AFX Series	Y	Y	Y	Y	Y	Y	Y	Y	AC + DC Offset. AFX Series in AC+DC Mode
113	112 Voltage Modulation due to Equipment	R	R	R	R	R	R	R	R	May require special input cabling to meet impedance requirements
114	113 Voltage Spike due to Equip. Load Switching	R	R	R	R	R	R	R	R	Requires contactor/relay switching between AC Source and UUT
115	114 Voltage Unbalance Transient	N/A	Y	N/A	Y	N/A	Y	N/A	Y	
Adnormal Operation (2xx)										
201	Steady State Voltage and Frequency	Y	Y	Y	Y	Y	Y	Y	Y	
202	Voltage Transients	Y	Y	Y	Y	Y	Y	Y	Y	High voltage spikes up to 180V or 360V requires Split Phase mode (FORM2) or Transformer (XFMR) for Single Phase, and Transformer(XFMR) for Three Phase UUT's
203	Voltage Modulation	Y	Y	Y	Y	Y	Y	Y	Y	
204	Frequency Transients	Y	Y	Y	Y	Y	Y	Y	Y	
Emergency Operation (3xx)										
301	Steady State Voltage and Frequency	Y	Y	Y	Y	Y	Y	Y	Y	
302	Voltage Distortion	Y	Y	Y	Y	Y	Y	Y	Y	Requires adjustable full- bridge rectifier load
303	Voltage Distortion	R	R	R	R	R	R	R	R	Requires External Signal Generator and Coupling Transformer
304	Voltage Distortion Transients	Y	Y	Y	Y	Y	Y	Y	Y	Requires adjustable full- bridge rectifier load
305	Inrush Current	Y	Y	Y	Y	Y	Y	Y	Y	Requires measurement equipment to measure inrush current. May require special input cabling to meet impedance requirements
306	Frequency Variations	Y	Y	Y	Y	Y	Y	Y	Y	
307	Voltage Modulation due to Equipment	Y	Y	Y	Y	Y	Y	Y	Y	May require special input cabling to meet impedance requirements
Switching Transients (4xx)										
401	Transparency Time	Y	Y	Y	Y	Y	Y	Y	Y	
402	Voltage Switching Transients 1	Y	Y	Y	Y	Y	Y	Y	Y	
403	Voltage Switching Transients 2, Part 1A	Y	Y	Y	Y	Y	Y	Y	Y	
404	Voltage Switching Transients w/Freq. Change	Y	Y	Y	Y	N/A	N/A	N/A	N/A	
Power Supply Removal (5xx)										
501	Power Line Disconnection	Y	Y	Y	Y	Y	Y	Y	Y	

## Compliance Matrix ABD0100.1.8.1 - DC Power Group

LDC Test <sup>1</sup>	Description	LDC	Notes
Normal Operation (1xx)			
101	Steady State Voltage	Y	
102	Voltage Transients	Y	
103	Voltage Ripple	Y/R	Supported up to 25kHz ripple. Requires function generator and coupling transformer > 25kHz
104	Voltage Spikes	R	Requires Spike Generator and coupling network
105	Inrush Current	Y	
106	Voltage Variations due to APU start	Y	
107	DC Ripple Voltage due to Equipment	R	Requires specific impedance cable between power source and EUT and test equipment to measure ripple current.
108	Voltage Spike due to Equip. Load	R	Requires switches between power source and EUT.
109	Compatibility with EPDC voltage clamping devices	Y	Requires switches and 50V Zener diode circuit between power source and EUT.
Abnormal Operation (2xx)			
201	Voltage Transients	R	AC&DC not supported

LDC Test <sup>1</sup>	Description	LDC	Notes
Emergency Operation (3xx)			
301	Steady State Voltage	Y	
302	Voltage Ripple	Y	
303	Inrush Current	Y	
304	Equipment current ripple	R	Requires specific impedance cable between power source and EUT and test equipment to measure ripple current.
Switching Operation (4xx)			
401	Transparency Times	Y	
402	Voltage Switching Transients 1	Y	
403	Voltage Switching Transients 2	Y	
Power Line Disconnection (5xx)			
501	Power Line Disconnection	Y	Requires disconnection of various power source inputs to EUT.

Notes: Y = Full support. No additional equipment is needed to perform the required AC stimulus  
R = Requires additional equipment. See notes for details

N/A = Not Applicable - No Test required  
All DC Tests (LDC) files are provided for both single or three phase mode

## Test Executive

Rather than being fixed with no ability for customization or enhancements, Pacific Power Source's Test Sequences are developed within its PPSC Test Manager test executive environment. The PPSC Test Manager is a plug-in to the standard Pacific Power Source PPSC Manager windows software and provides complete access to the underlying Test Sequence implementation.

Pacific Power's Test Manager software provides powerful tools for controlling test execution, collecting measurement data from the Power Source and or the unit under test as required.

Other instruments can be controlled through the PPSC Test Manager executive using VISA drivers and VB Scripting, thus providing powerful tools to test engineers. Alternatively, the Test Sequences can be

run as provided, controlling just the Pacific Power Source AC Source with no further customization required. Test Sequence libraries can be password protected by the user to prevent unauthorized modifications. Revision control of test procedures is built into the PPSC Test Manager executive.

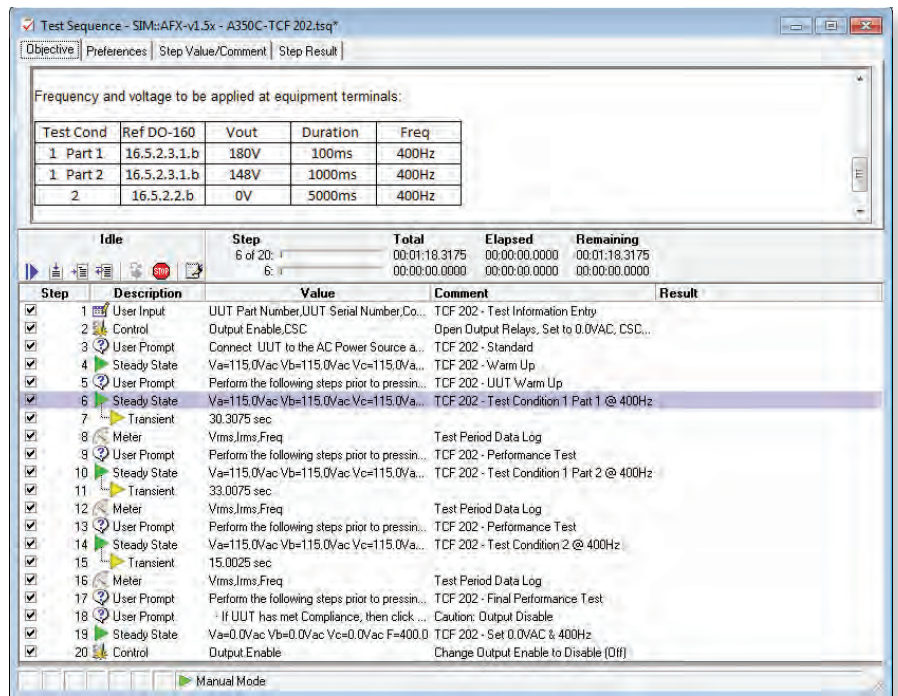


Figure 5: ABD0100.1.8.1, TCF 202, Abnormal Voltage Transient Test Screen

## Ordering Information

Option	Description	Part Number
ABD0100.1.8.1C	Provides Test Sequences for ABD0100.1.8.1(A350), Issue C, Dated July 2008, Electrical Characteristics of A350 AC and DC Systems. Note: Additional equipment may be required for some tests and the Test Sequences will need to be adjusted by the user to accommodate the additional equipment. Includes all AC and DC power groups. AC+DC component (DC offset) tests and DC tests require use of AFX Series power source. Distribution revision 1.2 or higher required for AFX Series.	149125
PPSC Manager	Basic PPSC Manager functions (PPSC Control, Output Sequence Browser, Waveform Editor) . Does not include PPSC Test Manager license for access to Test Sequences and Test Plans. No cost license.	Free license with registration
PPSC Test Manager	Registration and access to PPSC Test Manager Software. Create, Open, and Edit Output Test Sequences using PPSC Manager Features	Separate License required for each power source

## Deliverables

- Test Sequence Installer Download Link
- User Documentation PDF Download Link



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