Getting Started Guide

Agilent Technologies
PSA Series Performance Verification and Adjustment Software

Agilent Technologies

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1 Introduction

About the Software Test Environment

Test Management Environment is the new high performance, 32 bit, component-based calibration platform from Agilent. Agilent Test Management Environment can be expanded by purchasing test packages to test additional HP/Agilent instruments. Agilent Test Management Environment reduces the cost of instrument maintenance by providing quick and accurate automated tests—reducing instrument downtime—and providing a “common look and feel”—reducing operator training.

Agilent Test Management Environment feature highlights:

- Runs on Microsoft ® Windows NT 4.0 with service pack 6A, and Microsoft ® Windows 2000, service pack 3
- Provides the ability to perform full calibration and repair
- Simple operator’s user interface
- Provides easy customizing of test sequences
- Supports 17025 calibration solutions
- Allows guard banding using measurement uncertainties
- Provides ANSI Z540 compliant test reports
- Custom report generation
- Results stored in database
- Provides test standard tracking
- Provides administration security to control the test standards used
- Provides comprehensive on-line help

Required Test Equipment

The following table identifies the equipment required to run the performance verification tests and adjustments. Some tests can use various models of a particular equipment type. The “Recommended Agilent Model” is the preferred equipment. However, the “Alternative Agilent Model” is an acceptable substitute. Not all of the listed test equipment needs to be connected to perform an individual test. To run a test, only the equipment specified for that test needs to be connected.

NOTE The validity of the performance verification and adjustment software measurements depends in part on required test equipment measurement accuracy. Verify proper calibration of test equipment before running tests with this software.

Table 1-1 Required Test Equipment Summary

Instrument	Critical Specifications	Recommended Agilent Model Number	Alternative Agilent Model Number	Use[a]
Signal Sources				
Synthesized Signal Generator	Frequency: 1 MHz to 2.5 GHz Spectral purity: 7 MHz to 1321 MHz Spurious (non-harmonic): at 50 MHz: ≤ -90 dBc ≤ 2.56 GHz: < -78 dBc Harmonics: < -30 dBc ≤ +13 dBm SSB Phase Noise: ≤ -106 dBc/Hz at 1 kHz offset (or residual FM ≤ 0.5 Hz, 300 Hz to 3 kHz integration BW). VSWR: < 1.5:1	8663A		A, P, T
Synthesized Signal Generator	Frequency: 100 kHz to 6.0 GHz Spectral Purity: SSB Phase Noise @ 1 GHz, 20 kHz offset = -134 dBc/Hz Harmonics: -30 dBc @ ≤ +10 dBm output	8665B (Option 004)		P
Sweep Signal Generator *(2 required, only 1 needs to be Option 008)*	Frequency: 10 MHz to 26.5 GHz Frequency Resolution: 1 Hz Harmonic level: < -40 dBc Amplitude range: -20 dBm to +13 Amplitude resolution: 0.02 Harmonic level: < 2 GHz, < -30 dBc ≥ 2 GHz & < 26.5 GHz, < -50 dBc VSWR: < 20 GHz: 1.6:1 ≤ 31 GHz: 1.8:1	83630B (Option 008)	83630A (Option 008), 83640A/B (Option 008), 83650A/B (Option 008)	A, P, T

Table 1-1 Required Test Equipment Summary (Continued)

Instrument	Critical Specifications	Recommended Agilent Model Number	Alternative Agilent Model Number	Use[a]
Sweep Signal Generator *(Needed for E4446A, E4448A)*	Frequency: 10 MHz to 50 GHz Frequency Resolution: 1 Hz Harmonic level: < -40 dBc Amplitude range: -20 dBm to +13 Amplitude resolution: 0.02 Harmonic level: < 2 GHz, < -30 dBc ≥ 2 GHz & < 26.5 GHz, < -50 dBc ≥ 26 GHz, < -40 dBc VSWR: < 20 GHz: 1.6:1 ≤ 40 GHz: 1.8:1 ≤ 50 GHz: 2.0:1	83650B (Option 008)	83650A	A, P, T
Digital Signal Generator	Ability to create 64 tones across a 5 MHz span synchronously, 5 MHz to 10 MHz Resolution: 0.02	E4433B (Option UND)	E4437B (Option UND FW datecode ≥ B.02.24)	A, P
Function Generator	Frequency: 1 Hz to 15 MHz Amplitude Resolution: 0.1 mv Harmonic Distortion: -35 dBc	33120A (Option 001)	33120A	A, P
Counters				
Universal Counter	Frequency: 10 MHz Gate time: 10 to 100 seconds Must be capable of measuring signal at +7 dBm (0.5 Vrms)	53132A		P, T
Meters				
Digital Voltmeter	AC Accuracy (SETACV SYNC mode): ± 4% of reading	3458A		A, T
Power Meter	Dual Channel Absolute Accuracy: ± 0.5% Resolution: 0.01 dB Reference Accuracy: 1.2% Power Reference Accuracy: ± 0.9% Compatible with Agilent 8480 series power sensors dB relative mode	E4419B	E4419A	A, P
Power Sensor *(2 required)*	Frequency Range: 100 kHz to 4.2 GHz. VSWR at 50 MHz: ≤ 1.05 1 MHz to 4 GHz: ≤ 1.30:1 Type-N (m) Option H84 Cal Factor: Characterized by standards lab to: ± 0.6%[b]	8482A (Option H84)	8482A STD (Will increase measurement uncertainty)	A, P
Power Sensor	Frequency Range: 50 MHz to 8 GHz. VSWR: at 50 MHz: ≤ 1.05:1 700 MHz to 3GHz: ≤ 1.22:1 Option H84 Cal Factor: Characterized by standards lab to: ± 0.6%	8481A (Option H84)	8481A, STD 8485A STD (Will increase measurement uncertainty)	P

Table 1-1 Required Test Equipment Summary (Continued)

Instrument	Critical Specifications	Recommended Agilent Model Number	Alternative Agilent Model Number	Use[a]
Power Sensor *(Needed for E4440A, E4443A, E4445A)*	Frequency Range: 50 MHz to 26.5 GHz Amplitude Range: -20 to +10 dB VSWR: 50 MHz to 100 MHz: 1.15:1 100 MHz to 2 GHz: 1.10:1 2 GHz to 12.4 GHz: 1.15:1 12.4 GHz to 18 GHz: 1.20:1 18 GHz to 26.5 GHz: 1.25:1 RF Connector: 2.4 mm (M)	8485A	8487A	A, P
Power Sensor *(Needed for E4446A, E4448A)*	Frequency Range: 50 MHz to 50 GHz Amplitude Range: -20 to +20 dB VSWR: 50 MHz to 100 MHz: 1.15:1 100 MHz to 2 GHz: 1.10:1 2 GHz to 12.4 GHz: 1.15:1 12.4 GHz to 18 GHz: 1.20:1 18 GHz to 26.5 GHz: 1.25:1 26.5 GHz to 40 GHz: 1.30:1 40 GHz to 50 GHz: 1.50:1 RF Connector: 2.4 mm coaxial (M)	8487A		A, P
Standards				
Frequency Standard	Frequency: 10 MHz Accuracy: < ±1 $e10^{-10}$	5071A	5061B	A, P
50 MHz, -25 dBm Calibrator	Frequency Drift: < 2.5 kHz Typical VSWR: 1.06:1 Output Power Variation: ±.004 dB Total Harmonic Content: -45 dBc	Z5602A Opt H51 Opt H35 for BAB Opt H24 for E4446A, E4448A		A
Attenuators				
10 dB Step Attenuator	Range: 0 to 110 dB Accuracy: Characterized by standards lab to: ±0.005 + 0.0052/10 dB step[c] Calibrated at 50 MHz VSWR: at 50 MHz: ≤ 1.05:1	8496G	8496H	P
1 dB Step Attenuator	Range: 0 to 11 dB Accuracy: Characterized by standards lab to: ± 0.01 dB[c] Calibrated at 50 MHz VSWR: at 50 MHz: ≤ 1.05:1	8494G	8494H	P
Attenuator Interconnect Kit	Type N connector kit to connect the 8496G to the 8494G	11716A		P
Attenuator Driver	Compatible with the 8496G and 8494G step attenuators.	11713A		P
6 dB Fixed Attenuator	6 dB Type N (m, f) VSWR: at 50 MHz: ≤ 1.1	8491A (Options 006 & H47)		P
20 dB Fixed Attenuator	20 dB Type N (m, f) Accuracy: ± 0.5 dB VSWR: DC to 8 GHz: ≤ 1.20:1	8491A (Option 020)		A

Table 1-1 Required Test Equipment Summary (Continued)

Instrument	Critical Specifications	Recommended Agilent Model Number	Alternative Agilent Model Number	Use[a]
20 dB Fixed Attenuator	20 dB 3.5 mm (m, f) Accuracy: ± 0.5 dB VSWR: DC to 8 GHz: ≤ 1.20:1	8493C (Option 020)		A
Terminations				
Type N (m)	50 W Frequency: 1 MHz to 4 GHz VSWR: 4 GHz: ≤ 1.05:1	909A (Option 012)		P, T
3.5 mm (m)	50 ohm VSWR: ≤ 26.5: ≤ 1.12:1	909D		P
2.4 mm (f) *(Needed for E4446A, E4448A)*	50 ohm Frequency: DC to 50 GHz	85138B		P
BNC	50 ohm	1250-0207		P
Miscellaneous Devices				
Power Splitter	Frequency: 9 kHz to 3 GHz Type N (f) VSWR: ≤ 1.10:1	11667A		P
Power Splitter	Frequency: DC to 26.5 GHz 3.5 mm (f) VSWR: DC to 3 GHz: < 1.06:1 3 GHz to 26.5 GHz: < 1.22:1 Insertion Loss: DC to 8 GHz: 6.5 dB *(Typical)* 8 - 18 GHz: 7.0 dB 18 - 26.5 GHz: 7.3 dB	11667B (Option H30)	11667B (std.)	P
Power Splitter *(Needed for E4446A, E4448A)*	Frequency: DC to 50 GHz 2.4 mm (f) VSWR: ≤ 18 GHz: < 1.29:1 18 GHz to 26.5 GHz: < 1.20:1 ≤ 40 GHz: < 1.50:1 ≤ 50 GHz: < 1.65:1 Insertion Loss: DC to 18 GHz: 6.0 dB *(Typical)* 18 to 26 GHz: 7.0 dB 26.5 to 40 GHz: 8.0 dB 40 to 50 GHz: 8.5 dB	11667C		P
Directional Bridge	Frequency Range: 5 MHz to 3 GHz Directivity: ≤ 5 MHz: 30 dB 5 MHz to 2 GHz:40 dB 2 GHz to 3 GHz: 30 dB VSWR: ≤ 2 GHz: ≤ 1.15:1 ≤ 3 GHz: ≤ 1.22:1 Insertion Loss: ≤ 1.5, +0.1 dB/GHz Coupling (nominal): 16 dB Type N (f)	86205A		P

Table 1-1 Required Test Equipment Summary (Continued)

Instrument	Critical Specifications	Recommended Agilent Model Number	Alternative Agilent Model Number	Use[a]
Directional Coupler *2 required*	2 GHz to 20 GHz SMA (f) Directivity > 16 dB Transmission arm loss: < 1.5 dB (nominal) Coupled Arm Loss: ~10 dB (nominal) VSWR: ≤ 1.35:1	87300B		P
DC Probe		11002A	11003A	A
High Frequency Probe	300 kHz to 3 GHz Input Resistance: 1 M ohm (nominal)	85024A		T
Negative Detector	0.01 to 26.5 GHz ± 0.6 dB to 18 GHz	33330C		A
Bias Adjustment Board		E4440-60041		A
Cables				
APC 3.5 (m) (m) *2 required*	Frequency: DC to 26.5 GHz Length: ≤ 92 cm (36 in) Insertion Loss: ~2 dB VSWR: DC to 18 GHz: ≤ 1.25:1 18 GHz to 26.5 GHz: ≤ 1.35:1	8120-4921		A, P
2.4 mm (f) (m) *(Needed for E4446A, E4448A*	Frequency: DC to 50 GHz Length: ≤ 249 mm (9.8 in) Insertion Loss: ≤ 26 GHz, ~4 dB Insertion Loss: ≤ 40 GHz, ~5 dB Insertion Loss: ≤ 50 GHz, ~6 dB VSWR: ≤ 26.5 GHz: ≤ 1.30:1 ≤ 40 GHz: ≤ 1.40:1 ≤ 50 GHz: ≤ 1.55:1	8120-6164		A, P
Type-N *(2 required)*	Frequency: 10 MHz to 8 GHz Precision Type-N (m) 62 cm (24 in.) VSWR: ≤ 18 GHz: 1.4:1 Insertion Loss: 1.5 dB	11500C		A, P, T
BNC *(3 required)*	50 W Coax BNC (m) 120 cm (48 in.)	10503A		A, P, T
BNC (m) to SMC (f)		10020-61605	10503A BNC cable with 1250-0832 BNC to SMC adapter	A
Filters				
50 MHz Low Pass	Cutoff Frequency: 50 MHz Rejection at 65 MHz: > 40 dB Rejection at 75 MHz: > 60 dB Insertion Loss: ~1 dB VSWR: ≤ 1.5:1 BNC (m) to BNC (f)	0955-0306		P, T

Table 1-1 Required Test Equipment Summary (Continued)

Instrument	Critical Specifications	Recommended Agilent Model Number	Alternative Agilent Model Number	Use[a]
300 MHz Low Pass *(2 Required)*	Cutoff Frequency: 300 MHz Rejection at > 435 MHz: > 45 dB VSWR: ≤ 1.5:1 BNC (m, f)	0955-0455		P
1.8 GHz Low Pass *(2 Required)*	Cutoff frequency: 1.8 GHz Rejection at > 3 GHz: > 45 dB Insertion Loss: ~0.25 dB VSWR: ≤ 1.35:1 SMA (f)	0955-0491		P
4.4 GHz Low Pass *(2 Required)*	Cutoff frequency: 4.4 GHz Rejection at > 5.5 GHz: > 42 dB	9135-0005	360D	P
Adapters				
Type-N (f) to Type-N (f)	Frequency: DC to 18 GHz VSWR: 1.13:1	1250-1472		P
Type-N (m) to Type-N (m)	Frequency: DC to 18 GHz VSWR: ≤ 1.13:1	1250-1475		P
Type-N (f) to BNC (m)	Frequency: DC to 1.3 GHz VSWR: 1.13:1	1250-1477		P, T
Type-N (m) to BNC (m)	Frequency: DC to 1.3 GHz VSWR: 1.13:1	1250-1473		P, T
Type-N (m) to APC 3.5 mm (m)	Frequency: DC to 18 GHz VSWR: ≤ 1.08:1	1250-1743		P
Type-N (m) to BNC (f)	Frequency: DC to 1.3 GHz VSWR: ≤ 1.13:1	1250-1476		P
APC 3.5 mm (f) to APC 3.5 mm (f) *(2 Required)*	Frequency: DC to 26.5 GHz VSWR: ≤ 1.05:1	83059B	1250-1749	P
APC 3.5 mm (m) to APC 3.5 mm (m) *(2 Required)*	Frequency: DC to 26.5 GHz VSWR: ≤ 1.12:1	1250-1748		P
APC 3.5 mm (f) to APC 3.5 mm (f)	Frequency: DC to 34 GHz VSWR: 1.15:1	1250-1749		P
2.4 mm (f) to APC 3.5 mm (m) *(Needed for E4446A, E4448A)*	Frequency: DC to 26.5 GHz VSWR: ≤ 1.05:1	11901D		A, P
APC 3.5 mm (f) to Type-N (f)	For 83630B Frequency: DC to 18 GHz VSWR: 1.08:1	1250-1745		A, P
APC 3.5 mm (f) to 2.4 mm (f) *(Needed for E4446A, E4448A)*	Frequency: DC to 26.5 GHz VSWR: 1.05:1	11901B		P

Table 1-1 Required Test Equipment Summary (Continued)

Instrument	Critical Specifications	Recommended Agilent Model Number	Alternative Agilent Model Number	Use[a]
BNC (m) to SMA(f)	Frequency: DC to 1.3 GHz VSWR: ≤ 1.13:1	1250-1700		P
Type N (m) to APC 3.5 mm (f) *(2 Required, Opt. BAB 3 Required)*	Frequency: DC to 18 GHz VSWR: ≤ 1.08:1	1250-1744		P
Type N (f) to 2.4 mm (f)	Frequency: DC to 18 GHz VSWR: ≤ 1.08:1	11903B		A, P
Type N (m) to 2.4 mm (f) *(Needed for E4446A, E4448A)*	Frequency: DC to 18 GHz VSWR: 1.08:1	11903D		P
Type N (f) to APC 3.5 mm (m)	Frequency: DC to 18 GHz VSWR: ≤ 1.14:1	1250-1750		A, P
BNC Tee		1250-0781		A, P
SMB (f) to BNC (f)	Frequency: DC to 1.3 GHz	1250-1236		A, P
BNC (f) to SMA (m)	Frequency: DC to 1.3 GHz	1250-1200		A, P
BNC (f) to Dual Banana		1251-2277		A, P
Controller				
Computer	IBM compatible PC Intel Pentium 90 MHz or greater Microsoft® Windows 2000 or NT 4.0 at least 32 MB RAM At least 200 MB of available hard disk space CD-ROM Drive 800x600 Minimum monitor resolution Web browser[d]			A, P
Accessories				
IEEE 488 Interface Card	High-performance GPIB with: Agilent-VISA 1.2[e] or greater or NI-VISA 1.2[f] or greater	82341D	National p/n AT-GPIB/TNT or PCI-GPIB	A, P

a. A = Adjustments, P = Performance Testing, T = Troubleshooting)
b. The 8482A power sensor uses cal factors to compensate the power sensor for frequency response errors. Cal factors are stated in percentages. The 8482A factory cal factor uncertainty ranges from 2.2% to 3.1%. The cal factor uncertainty can be reduced to < 2.0% by using metrology grade calibration techniques. The power sensor cal factor uncertainty becomes one component of the Verification Test uncertainty analysis. Lower cal factor uncertainties will translate to wider test margins.

c. The 8494G and 8496G step attenuators should be permanently joined via the 11716A Interconnect Kit. The step attenuator combination should have each step attenuation characterized by a metrology lab at 50 MHz.

   For the best test results the step attenuation should be characterized to the following uncertainty levels;

   0 dB to 40 db Attenuation: ± 0.005 dB

   41 dB to 80 dB Attenuation: ± 0.01 dB

   81 dB to 120 dB Attenuation: ± 0.21 dB

d. Microsoft ® Internet Explorer ® 4.0 or greater or Netscape ® 4.0 or greater.
e. Agilent Technologies Agilent-VISA is available at http://www.agilent.com.
f. National Instruments NI-VISA is available at http://www.natinst.com/gpib/gpib_dl.htm

List of Performance Verification Tests

The performance verification tests are designed to provide the highest level of confidence that the instrument being tested conforms to published, factory-set specifications. The tests are supplied in an automated test software application. The automatic execution of the full set of performance tests will take between two and three hours to complete. The tests are designed to test an instrument operating within the temperature range defined by the instrument specifications. Some repairs require a performance test to be run after the repair. If the instrument is unable to pass any of the performance tests, adjustment tests or further repairs are needed.

1. Residual Responses
2. Displayed Average Noise Level
3. Frequency Reference Accuracy
4. Frequency Readout Accuracy
5. Count Accuracy
6. Spurious Responses
7. Third-Order Intermodulation Distortion
8. Gain Compression
9. Second Harmonic Distortion
10. Power Bandwidth Accuracy
11. Resolution Bandwidth Switching Uncertainty
12. IF Amplitude Ripple (Option B7J)
13. IF Phase Ripple (Option B7J)
14. Display Scale Fidelity
15. Input Attenuation Switching Uncertainty
16. Absolute Amplitude Accuracy
17. Noise Sidebands, < 50 kHz Offsets
18. Noise Sidebands, > 50 kHz Offsets
19. Frequency Response (Option B7J)
20. Frequency Response 300 kHz to 3 GHz
21. Frequency Response Above 3 GHz
22. Frequency Response Below 300 kHz

Table 1-2 Test Equipment/Performance Test Matrix

Instrument	Performance Test #																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Signal Sources																						
8663A														X	X	X	X					
8665B																		X	X	X		
83630B[a]				X	X	1	X	X	X												1	
83650B						2															2	
E4433B												X	X									
33120A																						X
Counters																						
53132A			X																			
Meters and Sensors																						
3458A																						X
E4419B						X	X	X	X			X				X			X	X	X	
8482A																X			X	X		
8481A								X	X			X										
8485A						1	X														1	
8487A						2															2	
Standards																						
5071A			X																			
Attenuators																						
8496G														X	X	X						
8494G														X	X	X						
11716A														X	X	X						
11713A														X	X	X						
8491A Opt. 006																X						
8491A Opt. 020															X					X		
Miscellaneous Devices																						
11667A									X			X							X	X		

Table 1-2 Test Equipment/Performance Test Matrix

Instrument	Performance Test #																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
11667B																					1	
11667C																					2	
86205A							X	X														
87300B							X	X														
Filters																						
0955-0306 50 MHz LPF							X		X													
0955-0455 300 MHz LPF									X													
0955-0491 1.8 GHz LPF							X		X													
9135-0005 4.4 GHz LPF									X													

a. Model 83650B can be used as a substitute for the 83630B.

X = all models
1 = E4440A, E4443A, E4445A
2 = E4446A, E4448A

List of Adjustments

Adjustments should not be used for calibration. These procedures are designed to reset various circuit parameters. In addition, some of the tests reset or calculate correction values associated with some measurements. The adjustments are supplied in an automated test software application. The software is designed to adjust an instrument operating within the temperature range defined by the instrument specifications.

Never perform adjustments as routine maintenance. Adjustments should be performed only after a repair or after a performance test failure.

Supported Adjustments include:

1. Lowband Mixer Bias
2. SLODA (E4440A, E4443A, E4445A)
3. FELOMA (E4446A, E4448A)
4. Second LO Power
5. Analog IF Input Detector
6. Attenuator Slope
7. 50 MHz Calibrator Amplitude
8. Overload Detector DAC
9. 10 MHz Internal Frequency Reference
10. YTF Alignment
11. Frequency Response
12. Frequency Response (Option B7J)

Table 1-3 Test Equipment/Adjustments Matrix

Instrument	Adjustment #											
	1	2	3	4	5	6	7	8	9	10	11	12
Signal Sources												
8665B												X
83630B[a]						1				1	1	
83650B										2	2	
E4433B								X				
33120A											X	
Meters and Sensors												
3458A	X	X	X								X	
E4419B				X	X	X				X	X	X
8482A											X	X
8481A				X	X							
8485A						1				1	1	
8487A						2				2	2	
Standards												
5071A									X			
Z5602A							X					
Attenuators												
8491A Opt. 020									X		X	
8493C											X	
Miscellaneous Devices												
11667A											X	X
11667B						1				1	1	
11667C						2				2	2	
11002A DC Probe	X	X										
33330C Neg. Detector											X	
Bias Adjustment Board	X	X	X									

a. Model 83650B can be used as a substitute for the 83630B.

X = all models
1 = E4440A, E4443A, E4445A
2 = E4446A, E4448A

Memory Initialization Utility

The PSA Memory Initialization Utilities encompass two functions. One utility resets the statistics (attenuator actuations, 50 MHz calibrator actuations, temperature ranges, hours of operation, etc.). The other writes the latest default calibration constants into the memory of a particular board assembly. This is needed since one part number board assembly is used in several model numbers, and certain model numbers require different default calibration constants.

Getting Started

NOTE Refer to the software built-in help documentation for complete information on using the performance verification and adjustment software.

NOTE Contact Agilent Technologies for assistance with the Performance Verification and Adjustment Software. For software technical support, contact the Agilent Technologies Test and Measurement Call Center at **1–800–452–4844**.

Before You Start

Check the following before starting the performance test software.

1. Ensure you have a compatible controller (IBM compatible computer), refer to Table 1-1 on page 7.
2. Ensure computer has a GPIB Interface Card installed in it before running the software installation. The recommended card is Agilent model part number 82350A. You may also use a National Instruments model part number AT-GPIB/TNT or PCI-GPIB.
3. Install Performance Verification/Adjustment software on the computer.
4. Ensure you have the proper test equipment. Let all the test equipment and PSA warm up in accordance to instrument specifications.
5. Ensure you have the proper test equipment. Refer to Table 1-1 on page 7 for a list of test equipment.

Software Installation and Configuration

After installation, refer to the online help instructions for configuring the software for performing tests and adjustments.

Minimum Computer Requirements

— 200 MHz Pentium Processor or higher

— 64 MB RAM or more

— 200 MB available hard drive

— Operating system: Microsoft ® Windows 2000, service pack 3, or Microsoft ® Windows NT, service pack 6A (Microsoft ® Windows XP is not supported at this time)

— GPIB card installed

— Agilent Visa or NI Visa installed

— IE 4.0 or higher

Ensure computer has a GPIB Interface Card and VISA drivers installed in it before running the software installation. The recommended card is Agilent model part number 82350A. You may also use a National Instruments model part number AT-GPIB/TNT or PCI-GPIB.

Ensure you have the proper test equipment. Let all the test equipment and the UUT warm up in accordance to instrument specifications.

NOTE

Agilent Visa & GPIB drivers can be downloaded from the Agilent website at: http://www.agilent.com

National Instruments Visa can be downloaded from the website: http://www.ni.com

Software Installation Instructions

1. Close all applications
2. Insert CD into your CD-ROM Drive
3. From the **Start** menu, choose **Run**.
4. Type D:\Setup (where "D" is your CD-ROM drive) and click OK
5. Follow the instructions on the screen to install
6. Restart windows when prompted so your computer is properly configured to run the software

When the installation is complete, a shortcut is created on your desktop and a program group is added to your Start menu labeled *Agilent Test Management Environment (TME)*.

NOTE At this time, the PSA Series Performance Test and Adjustment software does not support a Network installation as described in the Test Management Environment (TME) help.

Installation Issues: If you install the N2721A "Performance SW for PNA Network Analyzers" version A.01.01 or older over this installation, the PSA calibration software might not operate correctly. If you notice that your Asset Database is reset (e.g. Cal due dates reset, etc.) after installation of the software, then install N2721A patch A.01.02 and reinstall the PSA calibration software.

To Run the Software

Launch the Agilent Test Management Environment from the Start menu -> Programs -> Agilent Test Management Environment.

or

Launch the Agilent Test Management Environment from the Agilent Test Management Environment shortcut on the Desktop.

Follow the instructions from the "Getting Started" section of the Online Help to run the software.

For more information about installation and administration, refer to the readme.txt file on the CDROM.

Warmup Time

Test Equipment Warmup

Allow sufficient warmup time for the test equipment. Refer to individual operating and service manuals for warmup specifications.

UUT Warmup

The UUT must be stored at a constant temperature, within the specified operating temperature range, for a minimum of two hours prior to running the performance verification tests or adjustments. Switch on the instrument and let it warm up in accordance with warmup requirements in the instrument specifications.

NOTE The Internal 10 MHz Frequency Reference test and the Internal 10 MHz Frequency Reference adjustment require a minimum of 24 hours warmup time. The instrument must be turned on —**not in standby**— for the entire warmup period.

Equipment Connections

GPIB Cables

All test equipment controlled by GPIB should be connected to the internal GPIB connector of the controller (select code 7). If the controller has only one GPIB connector, connect the UUT to it as well. If the controller has dual GPIB connectors, connect the UUT to the second GPIB (typically, select code 8).

Test Setups

Complete detailed illustrations are located in the online help supplied with the test software. The program prompts the operator to make appropriate equipment connections.

Failure to Meet Specifications

If the instrument does not meet one or more of the specifications during testing, check the test setup for proper configuration, check the condition of all connectors, and ensure all connections are tight. After these things have been checked and confirmed correct, run the failed tests again. If the results are still unsatisfactory, complete any remaining tests and refer to the troubleshooting information in the service guide to correct the problem.

Abnormal Indications during Adjustment

If the indications received during an adjustment do not agree with the normal conditions given in the adjustment procedures, a fault exists in your instrument. The fault should be repaired *before* proceeding with any further adjustments. Refer to the troubleshooting and repair information in the service guide.

Calibration Cycle

The performance verification tests should be used to check the instrument against the instrument specifications every twelve months.

The instrument requires periodic verification of performance. Under most conditions of use, you should check the instrument against the instrument specifications every twelve months using the complete set of automated performance verification tests located on the *Performance Verification and Adjustment Software* CD.

When test results show proper operation and calibration, no adjustments are necessary.