Agilent Technologies
E4402BU Option H3B

Installation Guide

Use this manual with the following documents:
The ESA-E Service Document Kit includes:
ESA Service Guide
Calibration Guide

Agilent Technologies

Manufacturing Part Number: E4402-90109
Printed in USA
May 2006

Warranty Statement

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Safety Notes

The following safety notes are used throughout this document. Familiarize yourself with each of these notes and its meaning before performing any of the procedures in this document.

WARNING	**Warning denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.**

CAUTION	Caution denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in damage to or destruction of the instrument. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.

Definitions

- Specifications describe the performance of parameters covered by the product warranty (temperature – 0 to 55 °C, unless otherwise noted.)
- *Typical* describes additional product performance information that is not covered by the product warranty. It is performance beyond specification that 80% of the units exhibit with a 95% confidence level over the temperature range 20 to 30 °C. Typical performance does not include measurement uncertainty.
- *Nominal* values indicate expected performance, or describe product performance that is useful in the application of the product, but is not covered by the product warranty.

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E4402BU Option H3B

Introduction

This installation procedure provides instructions for installing the E4402BU Option H3B into a standard E4402B ESA Spectrum Analyzer. The Option H3B can occupy Slot 5 or 6. Refer to the E4402B Option H3B User's and Service Guide (E4401-90511) for performance verification.

The Agilent Technologies E4402B Option H3B provides a local oscillator output on the rear panel of the ESA using an SMA (f) connector, for use with the Aerodynex Sideband Adapter (ATSA–N/P–06R2–AG) for TV modulator and transmitter measurements. This option is not compatible with option 1DN, Tracking Generator.

Description

The Agilent Technologies E4402B Option H3B provides a local oscillator output on the rear panel of the ESA using an SMA (f) connector, for use with the Aerodynex Sideband Adapter (ATSA–N/P–06R2–AG) for TV modulator and transmitter measurements. This option is not compatible with option 1DN, Tracking Generator.

The center frequency of the first LO output is 3.9214 GHz when the E4402B is tuned to a center frequency of 0 Hz, and is 4.9214 GHz when the E4402B is tuned to a center frequency of 1 GHz.

The nominal output power of the LO Output is ≥ –5 dBm from 3.9214 GHz to 4.9214 GHz and is ≥ –10 dBm for center frequencies greater than 1 GHz.

Any device connected to this output must have a 50 Ω impedance. Included with special Option H3B is a 50 Ω load that is to be installed on the 1st LO Output connector when not in use. Failure to terminate the output connector with a 50 Ω load may degrade the frequency response of the E4402B.

The Agilent Technologies E4402B Option H3B is not compatible with the Tek 1405 sideband adapter or the Aerodynex ATSA–N/P–06R1–TX.

In all other respects, the Agilent Technologies E4402B Option H3B is the same as a standard E4402B.

Verifying the Shipment

Inspect the shipping container. If the container or packing material is damaged, it should be kept until the contents of the shipment have been checked mechanically and electrically. If there is physical damage please notify the nearest Agilent Technologies office. Refer to "Contacting Agilent Sales and Service Offices" on page 17. Keep the damaged shipping materials (if any) for inspection by the carrier and an Agilent Technologies representative.

Table 1 Content List

Description	Agilent Part Number	Qty
Spiral Wrap	0890-0025	0.356 meter
Adapter	1250-1666	1
50 Ohm Load	1810-0118	1
Hex Nut	2950-0223	1
Washer	3050-0420	1
Cable Assembly	5062-6665	1
Rear Panel (H3B)	E4401-00085	1
User's and Service Guide	E4401-90511	1
Installation Guide (H3B)	E4402-90109	1

Installation Information

Products Affected:	E4402B ESA-E
To Be Performed By:	(X) Agilent Service Center (X) Personnel Qualified by Agilent
Estimated Installation Time: Estimated Adjustment and Verification Time:	1 Hour 1 Hour
Performance Test and Adjustments	Page 12

Installation Procedure

This installation procedure provides instructions for installing the Option H3B into a E4402B ESA Spectrum Analyzer. The Option H3B can occupy Slot 5 or 6. Refer to the E4402B Option H3B User's and Service Guide (E4401-90511) for performance verification.

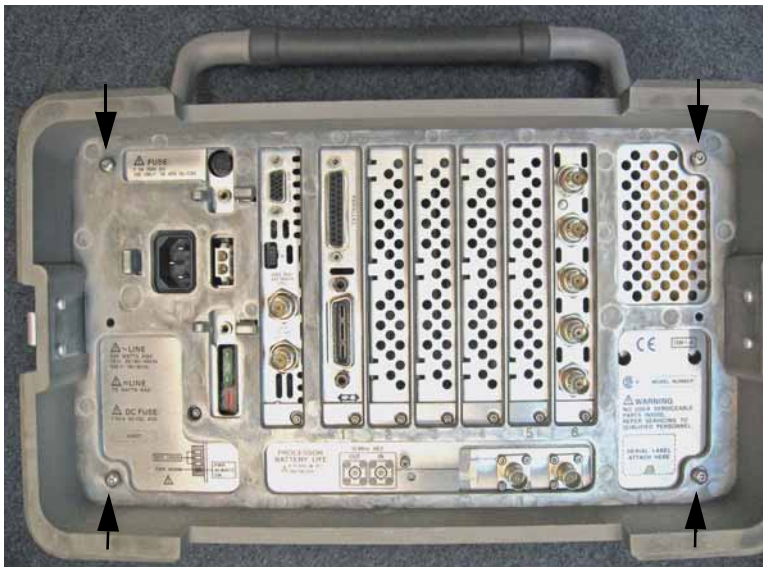
Follow the steps outlined below to install the Option IF Output retrofit kit.

Removing the Rear Panel and Covers

NOTE Keep all of the hardware (screws, nuts, etc.) for re-use when installing the assemblies.

1. Remove the rear frame on the ESA using a #20 Torx driver (4 screws). Refer to Figure 1.

Figure 1 Rear Panel



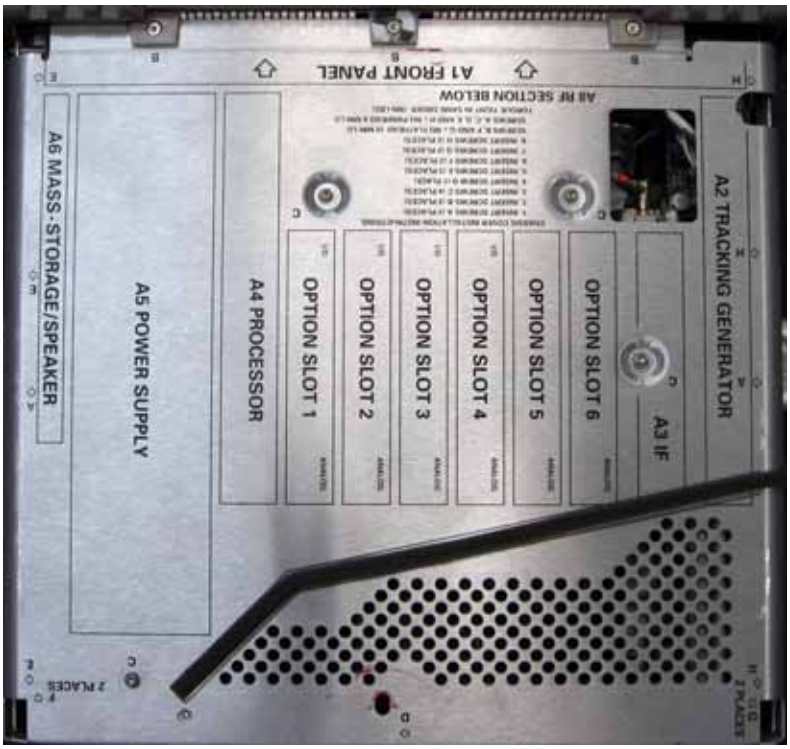
2. Remove the outer dress cover.

Figure 2 Outer Dress Cover

3. Remove the inner cover. Refer to the letters that are silk screened onto the inner cover near the screw holes. The screws are located on the top, side and rear. Refer to Figure 3.

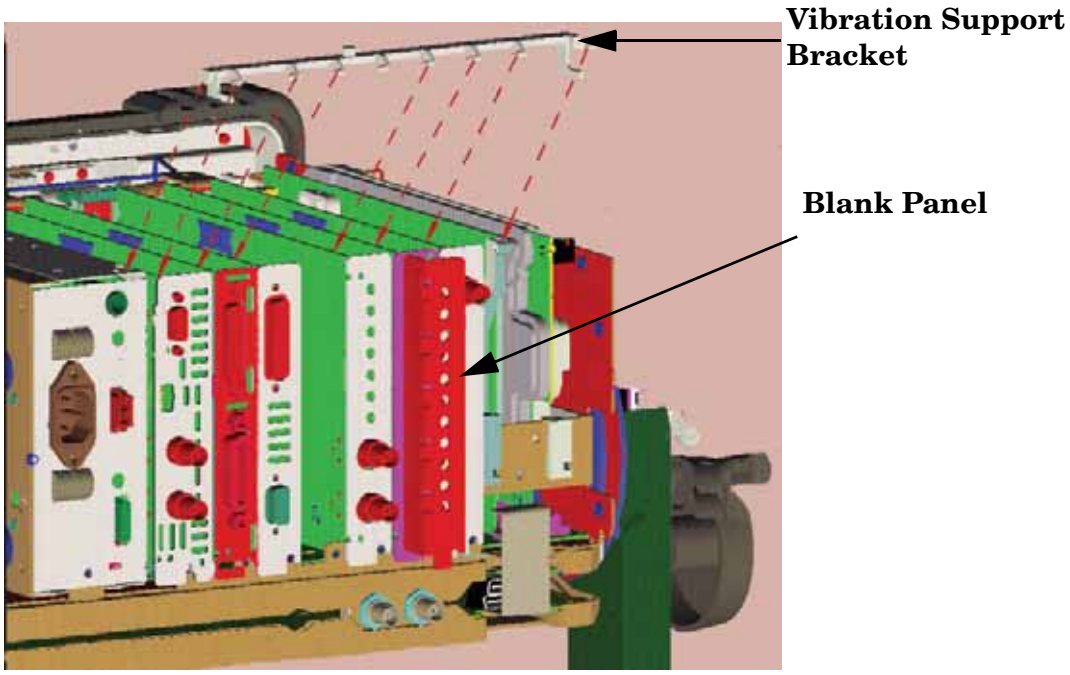
Letter	Agilent Part Number	Qty
A	0515-0372	2
B	0515-2600	3
C	0515-0372	4
D	0515-0372	1
E	0515-0372	3
F	0515-2600	2
G	0515-2600	2
H	0515-0372	3

Figure 3 Inner Cover



4. Remove the vibration support and the blank panel of slot 5, screw (0515-0372). Keep the screw and vibration bracket, discard the blank panel.

Figure 4 Blank Panel Installation



Connecting the Cable to the 1st LO AUX OUT

1. Remove the 50 Ohm load (1810-0118) connector on the 1st LO AUX OUT.
2. Insert the plastic spiral wrap (0890-0025) around the braided cable (5062-6665) before making the cable connection. Refer to Figure 5.
3. Attach one end of the spiral wrapped cable (5062-6665) to the 1st LO AUX OUT and torque to 10 in-lb.
4. Route the SMA end of the spiral wrapped cable (5062-6665) through the 2nd converter assembly and feed it through the chassis of slot 5. Refer to Figure 7.

Figure 5 Spiral Wrapped Cable to 1st LO AUX OUT

Assembling the Option H3B Rear Panel

1. Install the coax adapter (1250-1666) into the 1st LO OUT on the H3B rear dress panel (E4401-00085)and secure using washer (3050-0420) and nut (2950-0223). Torque to 21 in-lb using a 3/8 inch nut driver. Refer to Figure 6 and Figure 8.

Figure 6 Adapter

2. Install the assembled Option H3B dress panel (E4401-00085) into slot 5 and secure with screw (0515-0372). Figure 4 on page 8.
3. Attach the SMA end of the spiral wrapped cable (5062-6665) as shown Figure 7. Torque to 10 in-lb.

Figure 7 Spiral Wrapped Cable to Option H3B Rear Panel

4. Install the 50 Ohm load (1810-0118) on the adapter, hand tighten. Refer to Figure 8.

Figure 8 50 Ohm Load

5. Connect the vibration bracket (E4401-40026) to the instrument as shown in Figure 4 on page 8. Tighten all option card screws (0515-0372) to 9 in-lb.

Performance Tests and Adjustments

The tests outlined in this section are to verify the operation of the Option H3B and should be used in conjunction with the standard ESA manuals.

Refer to the E4402B User's and Service Guide for operation, specifications and performance verification.

NOTE Failure to terminate the output connector with a 50 Ω load may degrade the frequency response of the E4402B.

Safety and Regulatory Information

Introduction

Review this product and related documentation to familiarize yourself with safety markings and instructions before you operate the instrument. The documentation contains information and warnings that must be followed by the user to ensure safe operation and to maintain the product in a safe condition.

Before Applying Power

Verify that the product is configured to match the available main power source. If this product is to be powered by autotransformer, make sure the common terminal is connected to the neutral (grounded) side of the ac power supply.

Connector Care and Cleaning

If alcohol is used to clean the connectors, the power cord to the instrument must be removed. All cleaning should take place in a well ventilated area. Allow adequate time for the fumes to disperse and moist alcohol to evaporate prior to energizing the instrument.

WARNING **To prevent electrical shock, disconnect the Agilent Technologies model product from mains before cleaning. Use a dry cloth or one slightly dampened with water to clean the external case parts. Do not attempt to clean internally.**

Declaration of Conformity

For a copy of the manufacturer's Declaration of Conformity for this apparatus, contact your local Agilent Technologies office or sales representative. Refer to "Contacting Agilent Sales and Service Offices" on page 17.

Statement of Compliance

This instrument has been designed and tested in accordance with IEC Publication 1010, Safety Requirements for Electronic Measuring Apparatus, and has been supplied in a safe condition. The instruction documentation contains information and warnings which must be followed by the user to ensure safe operation and to maintain the instrument in a safe condition.

Shipping Instructions

You must always call the Agilent Technologies Instrument Support Center to initiate service before retuning your instrument to a service office. See "Contacting Agilent Sales and Service Offices" on page 17. Always transport or ship the instrument using the original packaging if possible. If not, comparable packaging must be used. Attach a complete description of the failure symptoms.

Compliance with Canadian EMC Requirements

This ISM device complies with Canadian ICES-001.
Cet appareil ISM est conforme a la norme NMB du Canada.

Compliance with German Noise Requirements

This is to declare that this instrument is in conformance with the German Regulation on Noise Declaration for Machines (Laermangabe nach der Maschinenlaermrerordnung-3. GSGV Deutschland).

Acoustic Noise Emission/Geraeuschemission	
LpA<70 dB	Lpa<70 dB
Operator Position	am Arbeitsplatz
Normal Operation	normaler Betrieb
per ISO 7779	nach DIN 45635 t. 19

Warnings

WARNING	**The WARNING notice denotes a hazard. It calls attention to a procedure which if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.**

Warnings applicable to this instrument are:

WARNING	**To prevent electrical shock, disconnect the Agilent Technologies E4402BU Option H3B from the mains before cleaning. Use a dry cloth or one slightly dampened with water to clean the external case parts. Do not attempt to clean internally.**

WARNING	**If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.**

WARNING	**For continued protection against fire hazard replace line fuse only with same type and rating:** **• United States—F 5A/250V, Part Number 2110-0709** **• Europe—F 3.15A/250V, Part Number 2110-0655** **The use of other fuses or material is prohibited.**

WARNING	**This is a Safety Class I product (provided with a protective earthing ground incorporated in the power cord). The mains plug shall be inserted only into a socket outlet provided with a protective earth contact. Any interruption of the protective conductor, inside or outside the product is likely to make the product dangerous. Intentional interruption is prohibited.**

WARNING	**These servicing instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing unless you are qualified to do so.**

WARNING	**The opening of covers or removal of parts is likely to expose dangerous voltages. Disconnect the instrument from all voltage sources while it is being opened.**

WARNING	**This product is designed for use in Installation Category II and Pollution Degree 2 per IEC 61010-1: 2001.**

WARNING	**No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock do not remove covers.**

WARNING **If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.**

Cautions

CAUTION The CAUTION notice denotes a hazard. It calls attention to an procedure that, if not correctly performed or adhered to, could result in damage to or destruction of the product. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met

Cautions applicable to this instrument are:

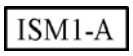
CAUTION Always use the three-prong ac power cord supplied with this instrument. Failure to ensure adequate earth grounding (by not using this cord) can cause instrument damage.

CAUTION This product is designed for use in Installation Category II and Pollution Degree 2 per IEC 61010-1:2001.

CAUTION This instrument has autoranging line voltage input; be sure the supply voltage is within the specified range.

CAUTION Ventilation Requirements: When installing the instrument in a cabinet, the convection into and out of the instrument must not be restricted. The ambient temperature (outside the cabinet) must be less than the maximum operating temperature of the instrument by 4 °C for every 100 watts dissipated in the cabinet. If the total power dissipated in the cabinet is greater than 800 watts, forced convection must be used.

Instrument Markings

	When you see this symbol on your instrument, you should refer to the instrument's instruction manual for important information.
	This symbol indicates hazardous voltages.
	The laser radiation symbol is marked on products that have a laser output.
	This symbol indicates that the instrument requires alternating current (ac) input.
	The CE mark is a registered trademark of the European Community. If it is accompanied by a year, it indicates the year the design was proven.
	The CSA mark is a registered trademark of the Canadian Standards Association.
	This symbol indicates the product meets the Australian Standards.
	This symbol indicates separate collection for electrical and electronic equipment, mandated under EU law as of August 13, 2005. All electric and electronic equipment are required to be separated from normal waste for disposal (Reference WEEE Directive, 2002/96/EC).
	This text indicates that the instrument is an Industrial Scientific and Medical Group 1 Class A product (CISPR 11, Clause 4).
	This symbol indicates that the power line switch is ON.
	This symbol indicates that the power line switch is in the STANDBY position.
	Safety Earth Ground. This is a Safety Class I product (provided with a protective earthing terminal). An uninterruptible safety earth ground must be provided from the main power source to the product input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and secured against any unintended operation.

Contacting Agilent Sales and Service Offices

Assistance with test and measurement needs, and information on finding a local Agilent office are available on the Internet at:
http://www.agilent.com/find/assist

You can also purchase accessories or documentation items on the Internet at:
http://www.agilent.com/find

If you do not have access to the Internet, contact your field engineer.

NOTE In any correspondence or telephone conversation, refer to the product by its model number and full serial number. With this information, the Agilent representative can determine whether your unit is still within its warranty period.