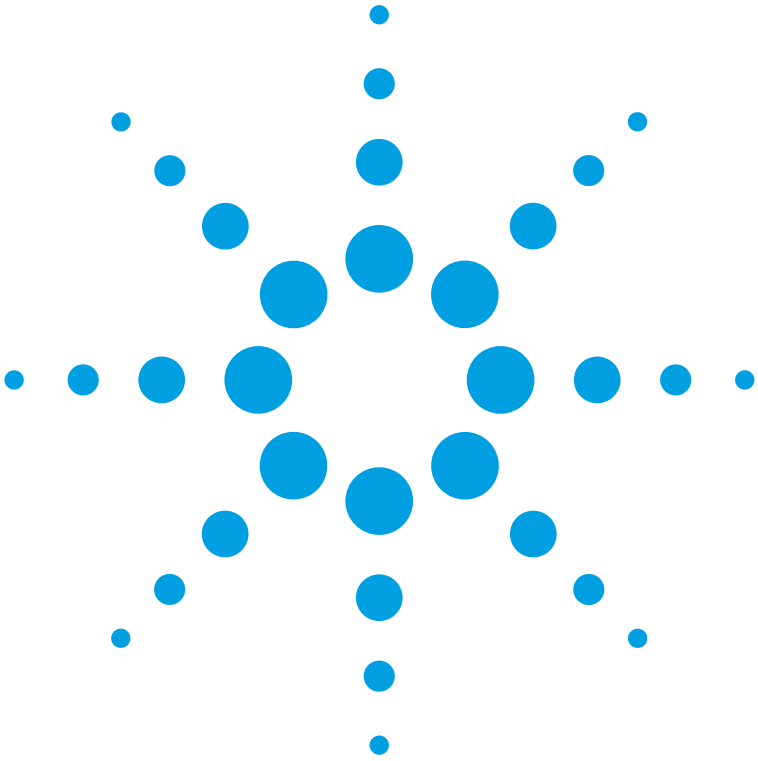
Agilent N1011A Lightwave Verification Kit



Agilent Technologies

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CAUTION

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

WARNING

The *warning* sign 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 sign until the indicated conditions are fully understood and met.


The instruction manual symbol. The product is marked with this warning symbol when it is necessary for the user to refer to the instructions in the manual.


The laser radiation symbol. This warning symbol is marked on products which have a laser output.


The AC symbol is used to indicate the required nature of the line module input power.


The ON symbols are used to mark the positions of the instrument power line switch.


The OFF symbols are used to mark the positions of the instrument power line switch.


The CE mark is a registered trademark of the European Community.


The CSA mark is a registered trademark of the Canadian Standards Association.


The C-Tick mark is a registered trademark of the Australian Spectrum Management Agency.

ISM1-A This text denotes the instrument is an Industrial Scientific and Medical Group 1 Class A product.

Typographical Conventions.
The following conventions are used in this book:

Key type for keys or text located on the keyboard or instrument.

Softkey type for key names that are displayed on the instrument's screen.

`Display type` for words or characters displayed on the computer's screen or instrument's display.

User type for words or characters that you type or enter.

Emphasis type for words or characters that emphasize some point or that are used as place holders for text that you type.

General Safety Considerations

This product 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 product in a safe condition.

Install the instrument according to the enclosure protection provided. This instrument does not protect against the ingress of water. This instrument protects against finger access to hazardous parts within the enclosure.

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

Lightwave Verification

You can monitor the stability and repeatability of the analyzer system hardware by periodically performing the lightwave verification process. The verification test compares measurements of the current system status against factory-measured data unique to the verification kit device.

If the analyzer measures the verification device within the uncertainty limits provided on the disk, the analyzer passes the verification. If the measurement results do not fall within the uncertainty limits, perform the steps in “If the Analyzer Does Not Pass the Verification Test” on page 6 and repeat the verification procedure. If the analyzer continues to fail the test, contact your nearest Agilent Technologies office or sales representative. A list of Agilent Technologies sales and service offices is provided in “Agilent Technologies Service Offices” on page 7.

N1011A Verification Kit Parts

Table 1. Kit Parts

Part Description	Part Number
20 GHz Lightwave Detector	08703-60225
Power Supply and Cable Assembly	5063-5540
RF Coax Termination	00909-60016
Optical Cable Assembly (SPC)	1005-0173
Optical Connector (FC/PC)	08154-61702
Verification Kit Manual	08703-90205

Lightwave Verification Procedure

To get the best indication of instrument changes over time, print the results from the first test and archive them to compare with all subsequent tests. The verification routine sets the analyzer to the following conditions:

- Full band sweep (50 MHz to 20.05 GHz)
- 401 points
- 30 Hz IF bandwidth
- 0.5 % Smoothing
- 8 Sweep Averages

WARNING **The verification routine saves data to Memory 2, overwriting any data previously stored in Memory 2.**

Required Equipment

- 8703B Lightwave Component Analyzer
- Verification Kit (N1011A)
- Floppy Disk (included in verification kit)

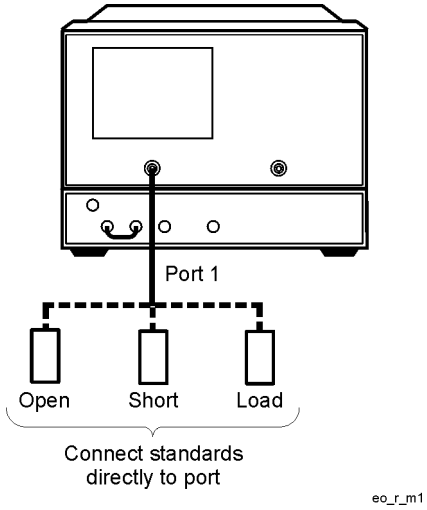
1. Press **System**, **Service Menu**, **Lightwave Service Menu**, **Verify Instrument.**

   The conditions set for the verification are as follows:

NOTE Do not change the conditions during the verification procedure.

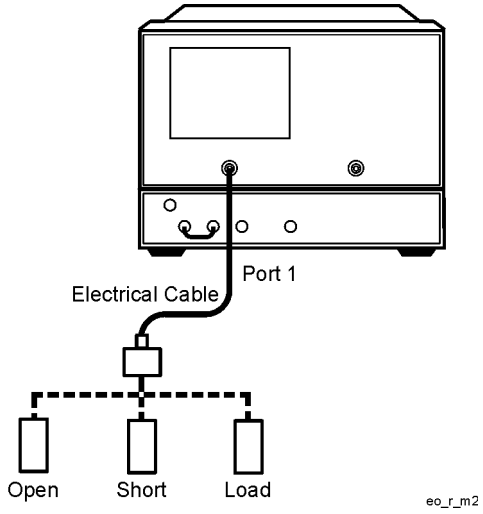
2. Press **Verify ON**, **O/E Cal** and perform an O/E Response and Match Calibration.
3. Press **Meas**, **Trans: O/E, Trans: O/E (Port 1)**.
4. Press **Cal**, **CALIBRATE MENU**, **RESPONSE & MATCH**, **REFLECTION**.
5. Connect the open calibration standard directly to the electrical port as shown in Figure 1.

Figure 1. Forward Reflection Measurement for O/E Response and Match Calibration



6. Measure the calibration standard by pressing **FORWARD: OPEN**.
7. The analyzer displays “WAIT - MEASURING CAL STANDARD” during the standard measurement. The softkey label is then underlined.
8. Repeat steps 5 through 7 to measure the short and the load calibration standards in the forward direction.
9. Connect the open calibration standard to the end of a cable that is connected to the electrical port as shown in Figure 2.

Figure 2. Reverse Reflection Measurement for O/E Response and Match Calibration



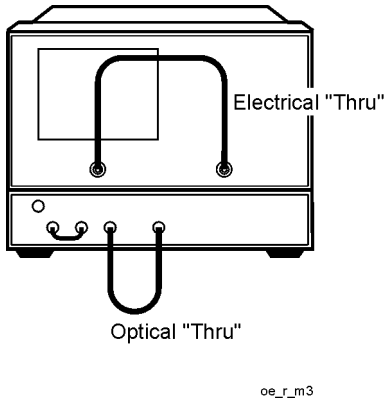
10. Measure the calibration standard by pressing **REVERSE: OPEN**.
11. The analyzer displays “WAIT - MEASURING CAL STANDARD” during the standard measurement. The softkey label is then underlined.
12. Repeat steps 9 through 11 to measure the short and the load calibration standards in the

reverse direction.

13. Press **STANDARDS DONE**.

14. Connect the cables, as shown in Figure 3.

Figure 3. Transmission Measurement for O/E Response and Match Calibration



15. Press **TRANSMISSION**, **FWD. TRANS. THRUS**. The analyzer displays “WAIT - MEASURING CAL STANDARD” during the standard measurement. The softkey label is then underlined.

16. Press **FWD. MATCH THRU**. The analyzer displays “WAIT - MEASURING CAL STANDARD” during the standard measurement. The softkey label is then underlined.

17. Press **STANDARDS DONE**.

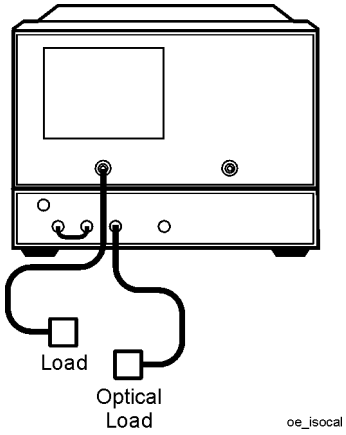
18. If you do not want the isolation calibration, press **ISOLATION**, **OMIT ISOLATION** and go to step 24.

19. If you want the isolation calibration, press **Avg**, **AVERAGING ON**. (For greater dynamic range use an averaging factor of 32.)

20. Press **Cal**, **RESUME CAL SEQUENCE, ISOLATION**.

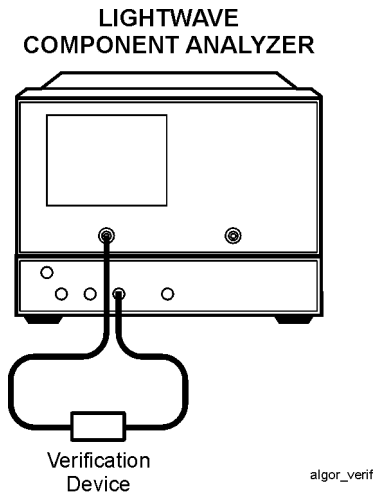
21. Connect the isolation standards as shown in Figure 4.

Figure 4. Isolation Measurement for O/E Response and Match Calibration



22. Press **FWD ISOL'N**, **ISOL'N STD**. The O/E isolation data is measured and averaged over 16 sweeps (or the number selected). The softkey label is then underlined.
23. Press **ISOLATION DONE, Avg**, **AVERAGING OFF**, **Cal**, **RESUME CAL SEQUENCE.**
24. Press **DONE: RESP & MATCH**.
25. Insert the floppy disk that has the verification device data into the analyzer disk drive.
26. Press **Load Disk**.
27. Connect the verification device between the analyzer lightwave source and PORT 1.

Figure 5. Setup for Verification Device Measurement



28. Press **Start Verify**. This test compares the measured data with the data from the floppy disk. The message "PASS" or "FAIL" will appear on the analyzer.
29. Press **View Deviation** to toggle between seeing the data as a comparison or as the deviation with the limits:

    - Comparison compares the trace with the verification device data at a point-by-point basis. If one point fails in the comparison, the analyzer will fail the verification test.

The DC responsivity is not verified. The DC offset is calculated as the difference between the average value of the measured data (20 points) and the average value of the verification device data (20 points).

If the Analyzer Does Not Pass the Verification Test

Clean all of the connectors and cable ends and repeat the verification procedure. If the analyzer continues to fail the test, contact your nearest Agilent Technologies office or sales representative. A list of Agilent Technologies sales and service offices is provided in "Agilent Technologies Service Offices" on page 7.

Agilent Technologies Service Offices

Before returning an instrument for service, call the Agilent Technologies Instrument Support Center at (800) 403-0801, visit the Test and Measurement Web Sites by Country page at http://www.tm.agilent.com/tmo/country/English/index.html, or call one of the numbers listed below.

Table 2. Agilent Technologies Service Numbers

Austria	01/25125-7171
Belgium	32-2-778.37.71
Brazil	(11) 7297-8600
China	86 10 6261 3819
Denmark	45 99 12 88
Finland	358-10-855-2360
France	01.69.82.66.66
Germany	0180/524-6330
India	080-34 35788
Italy	+39 02 9212 2701
Ireland	01 615 8222
Japan	(81)-426-56-7832
Korea	82/2-3770-0419
Mexico	(5) 258-4826
Netherlands	020-547 6463
Norway	22 73 57 59
Russia	+7-095-797-3930
Spain	(34/91) 631 1213
Sweden	08-5064 8700
Switzerland	(01) 735 7200
United Kingdom	01 344 366666
United States and Canada	(800) 403-0801