N2716A-01

S E R V I C E   N O T E

Supersedes:
NONE

Agilent N2716A Performance Verification & Adjustment Software for the Agilent NFA Series Noise Figure Analyzers

Serial Numbers: N/A

A serious defect has been found in the N2716A Performance Verification & Adjustment Software. The defect affects the Input VSWR test and means this test should not be used. All other tests contained in the software are unaffected.

To Be Performed By: Agilent-Qualified Personnel or Customer

Parts Required:

P/N	Description	Qty.
NONE		

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:		
MODIFICATION RECOMMENDED		
ACTION CATEGORY:	X IMMEDIATELY [[]] ON SPECIFIED FAILURE [[]] AGREEABLE TIME	STANDARDS: LABOR: 0.0 Hours
LOCATION CATEGORY:	[[]] CUSTOMER INSTALLABLE [[]] ON-SITE X SERVICE CENTER	SERVICE [[]] RETURN USED [[]] RETURN INVENTORY: [[]] SCRAP PARTS: [[]] SCRAP X SEE TEXT X SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	AGILENT RESPONSIBLE UNTIL: December 2003
AUTHOR: DM PRODUCT LINE: PN		
ADDITIONAL INFORMATION: Updated product available early 2003		

Agilent Technologies

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Situation:
An updated version of the Performance Verification & Adjustment software will be available early next year. Until this is available the following manual procedure is recommended.

Solution/Action:
The Input VSWR test uses Agilent 8753/8722 Network Analyzers to measure the maximum VSWR of the Noise Figure Analyzer (NFA) over each of the specified frequency bands given below**.**

Frequency Range	N8972A	N8973A	N8974A	N8975A
10MHz to 500MHz	< 1.6:1	< 1.6:1	< 1.6:1	< 1.6:1
500MHz to 1000MHz	< 1.8:1	< 1.8:1	< 1.8:1	< 1.8:1
1000MHz to 1500MHz	< 1.9:1	< 1.9:1	< 1.9:1	< 1.9:1
1500 MHz to 3000 MHz	---------	< 1.8:1	< 1.8:1	< 1.8:1
3000 MHz to 6700 MHz	---------	---------	< 1.3:1	< 1.3:1
6700 MHz to 20000 MHz	---------	---------	---------	< 2.1:1
20000 MHz to 26500 MHz	---------	---------	---------	< 2.4:1

Table 1 – NFA VSWR Specification

The NFA utilizes several frequency dependent signal paths to cover its operating frequency range. The frequency setting of the NFA has to be changed for each measurement frequency range as shown below.

| Frequency Range	NFA Frequency
10MHz to 500MHz	250MHz
500MHz to 1000MHz	750MHz
1000MHz to 1500MHz	1250MHz
1500 MHz to 3000 MHz	1750MHz
3000 MHz to 6700 MHz	5000MHz
6700 MHz to 20000 MHz	15000MHz
20000 MHz to 26500 MHz	23000MHz

Table 2 – NFA Frequency Setting

The test procedure contained in this document is applicable to Agilent 8753/8722 D, E, ES, and ET models. However, the hard/soft keys referred to are specific to the ET model. Refer to the appropriate user's guide if there are differences between what is shown and the network analyzer being used.

Calibrating the Network Analyzer

For best results the network analyzer should be calibrated over the frequency range being measured. Set the Network Analyzer as follows:

1. Factory Preset the analyzer, press [Preset]
2. Set the Active Channel to 1, press [Chan 1]
3. Set the measurement mode to S11, press [Meas], {Reflection}
4. The start and stop frequencies are dependant on the frequency range being measured e.g. for 10MHz to 500MHz press [Start], [1], [0], [M/µ] then [Stop], [5], [0], [0], [M/µ]
5. Set the measurement format to SWR, press [Format],{SWR}
6. Set the number of measurement points to 401 points, press [Sweep Setup], {NUMBER of POINTS}, [4], [0], [1],[x1]
7. Set the power level to –30dBm, press [Sweep Setup] {Power}, [-], [3],[0],[x1]
8. Connect the equipment as shown below. Include the test cable and include adapter 1 and 2 if they are required.
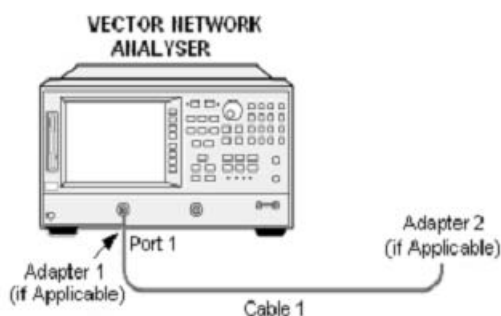

9. Select the calibration kit in use from the [Cal] menu and press {Return}. The calibration kit selection is dependent on the Noise Figure Analyzer under test.

Note: The connector type applies to the test port or adapter if fitted, not the unit under test.

10. Select a S11 port calibration, press [Cal], {Calibrate Menu}, {Reflection 1-port}
11. Connect the Open to the test port or adapter if fitted and perform the open calibration. Press {Opens} and select the relevant soft key.
12. Connect the Short to the test port or adapter if fitted and perform the open calibration. Press {Shorts} and select the relevant soft key.
13. Connect the Load to the test port or adapter if fitted and perform the open calibration. Press {Loads} and select the relevant soft key and press, {done 1-port CAL}.
14. Finally, save the calibration. Press [Save/Recall], then press {Save State}.

Performing the NFA VSWR measurement

When the Network Analyzer is calibrated connect the NFA as shown below.
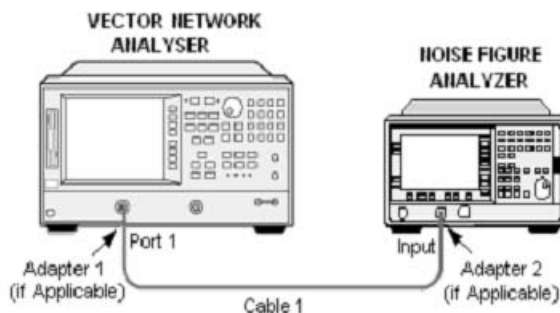
Set the Noise Figure Analyzer as follows:

1. Ensure the preset is set to factory settings, press [System], {More}, {Power On/Preset}, {Power On Preset} & {Preset Factory}.
2. Press [Preset] and wait for the routine to finish
3. Set sweep to single, press [Sweep], {Sweep Mode: single}
4. Set the frequency mode to fixed, press [Frequency/Points], {Freq Mode}, {Fixed},
5. The NFA frequency setting depends on the frequency range being measured e.g. for 250MHz, press [Frequency/Points], {Fixed Freq}, [2],[5],[0],{MHz}
6. Restart the NFA sweep using [Restart] and wait until the sweep has completed
7. Auto range the Network Analyzer using [Scale Ref], {Auto Scale}
8. Using the marker peak function on the network analyzer, determine the maximum displayed VSWR over the measured frequency range. Press [Marker Fctn], {Mkr Search [ON]}, {Search: Max}
9. Record the maximum displayed VSWR and the frequency this occurs at. Ensure the measured value is within the published specification.

Remaining Frequency Ranges

Repeat the calibration and measurement process for the remaining frequency ranges that are applicable to the NFA being tested.