

S E R V I C E N O T E

SUPERSEDES: NONE

3048A Phase Noise Interface

Serial Numbers: 3138A00888 / 9999A99999

Clarification of functional and diagnostic test failures due to an 11848A PC board modification (A3 board).**Duplicate Service Notes:**11848A-03
3048MS-02**Situation:**

In some applications using an unmodified 11848A, where the peak tuning range is typically greater than 50 MHz, the phase lock loop (PLL) may not lock up. If it does lock up, there may be an otherwise unexplained noise peak displayed in the plot of phase noise for the device under test (DUT). This noise peak may have the appearance of a wide spurious signal several dB above the average noise floor, and typically shows up at an offset from the carrier of about 500 KHz to 2 MHz.

Starting in November 1992, the A3 board (p/n 11848-60203) in new 11848As was modified by cutting a trace. This eliminated a feedback path that was either generating noise or preventing lockup of the phase lock loop. While this modification did not affect the application measurement software for the 3048A, it did impact some test programs.

The 3048A Functional test #4 (Lag-Lead Transfer Functions Test) may fail depending upon what software revision is being used (see below).

Continued

DATE: August 1994

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

INFORMATION ONLY

AUTHOR: KD	ENTITY: 5340	ADDITIONAL INFORMATION:
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11848A Diagnostic Software Tests will always fail since they attempt to test a circuit that uses the cut trace, and this diagnostic software (now obsolete) was never revised.

On the A3 board (p/n 11848-60203), the trace was cut between U25 (15) and U30 (2) on the component side of the board. All boards shipped in 11848As, serial numbers 3138A00888 and up, were modified. In addition, all exchange assemblies (p/n 11848-69103) are being modified as they go through the repair process at the factory. Therefore, a user could send in a failed (unmodified) board for a different reason and receive a working modified one (cut trace) in return. Tests that did not fail previously may now fail.

Solution/Action:

This service note provides information on acceptable performance for the 11848A under certain known situations where some specific tests may fail but the 11848A is functioning normally. The user may either disregard test failures where the cause is known and the 3048A system is otherwise performing normally, or if that is unacceptable, the user may upgrade his 3048A software to the latest version.

Performance specifications and functionality of the 11848A are not affected by the cut trace since it was part of an unused circuit designed in for future enhancements of the 11848A that were never implemented. However, testing of that circuit was designed into the test software so some tests can fail.

For the 11848A Diagnostic program (now obsolete), some tests will always fail when the trace is cut since there was only one version of the program and it expects the trace to be a valid circuit path. The diagnostic program was only intended to be used as an aid for isolating failures uncovered by other means and not as a verification of system or instrument operational status. If the system checks in the 3048A software (as described in the 3048A System Calibration manual) all pass, and the system makes valid phase noise measurements, the results of the diagnostic tests can be ignored.

For Functional Test #4 (Lag-lead test), the test results are determined by the 3048A software revision as follows:

3048A RMB Software Rev A.02.0x and a cut trace on A3:

Functional Test #4 fails. However, if the 10 MHz A vs B test (Quick Check) passes, there is a very high confidence level (>90%) that the lag-lead circuits are OK so the test is not really needed.

3048A RMB Software Rev A.03.00:

Functional Test #4 (under investigation) was removed from the software so as not to hold up release of this revision. Therefore a cut trace on A3 will not cause a functional test failure with this revision.

3048A RMB Software Rev A.03.0x and a cut trace:

Functional Test #4 (modified) was put back in the software at Rev A.03.01 & up, but now it does not test the path where the trace was cut so it should pass as long as nothing else is wrong with the instrument.

3048A DOS Software (Option 301) Rev A.00.02:

Same as for RMB software Rev A.02.0x.

3048A DOS Software (Option 301) Rev A.01.0x:

Same as for RMB software Rev A.03.0x.

CAUTION:

Customers and service center personnel should not automatically assume that an uncut trace on an unmodified 11848A is causing a problem they may be seeing. Only the specific symptoms noted above have a high confidence level of being corrected by cutting the subject trace.

Cutting the trace, if it does not fix the problem, may disrupt test continuity and, in some cases, service traceability. The new test failures may also then mask valid failures later on. It is recommended that the factory be contacted first and the problem discussed before cutting the trace. It may be that an invalid application is contributing to the problem or that a software upgrade may be a wiser solution. The 3048A software system checks described in the 3048A Calibration manual should run to verify system operation. Customers can receive needed technical support through their closest Agilent Sales or Service office.