MODIFICATION RECOMMENDED

N4962A-01

S E R V I C E   N O T E

N4962A Serial BERT 12.5 Gb/s

Serial Numbers: 5092, 5100, 5101, 5206, 5237, 5248, US52320102, MY53236501, MY53236502, MY53236504-MY53236514, MY53236516-MY53236518

Several N4962A bit error rate testers were shipped/repaired with an incorrect firmware version.

Parts Required:

P/N	Description	Qty.
NONE		

ADMINISTRATIVE INFORMATION

<table>
<tr><td colspan="4">SERVICE NOTE CLASSIFICATION:</td></tr>
<tr><td colspan="4" align="center">MODIFICATION RECOMMENDED</td></tr>
<tr><td colspan="2">ACTION   X ON SPECIFIED FAILURE
CATEGORY: [[]] AGREEABLE TIME</td><td colspan="2">STANDARDS
          LABOR: 3.0 Hours</td></tr>
<tr><td colspan="2">LOCATION [[]] CUSTOMER INSTALLABLE
CATEGORY: [[]] ON-SITE (active On-site contract required)
          X SERVICE CENTER
        [[]] CHANNEL PARTNER</td><td>SERVICE   [[]] RETURN
INVENTORY: [[]] SCRAP
          X SEE TEXT</td><td>USED   [[]] RETURN
PARTS: [[]] SCRAP
        X SEE TEXT</td></tr>
<tr><td colspan="2">AVAILABILITY: PRODUCT'S SUPPORT LIFE</td><td colspan="2">NO CHARGE AVAILABLE UNTIL: 01-December-2021</td></tr>
<tr><td colspan="2"> X Calibration Required
  [[]] Calibration NOT Required</td><td colspan="2">PRODUCT LINE: PL24
AUTHOR: MM</td></tr>
<tr><td colspan="4">ADDITIONAL INFORMATION: This product is set up for return to factory repair/calibration only. Work must be performed at Factory, not Service Center.</td></tr>
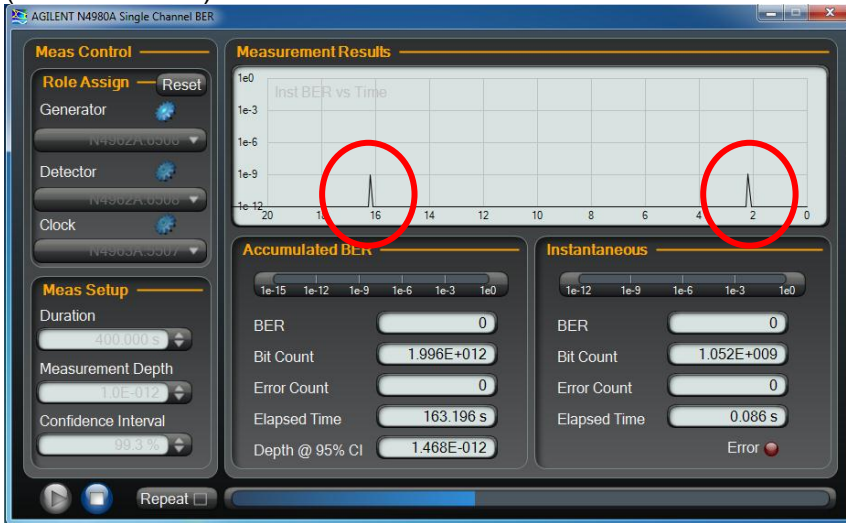</table>

March 24, 2014

Agilent Technologies

Situation:

Some N4962A 10G BERT's have been reported to periodically (several times a minute) return an incorrect value when queried for BER results. The incorrect value can be the time stamp, bit count, or error count, and subsequent queries will return the correct values. When using the N4980A software single channel BER measurement, the output may look like this (see red circles):

Or like this:

If polling for results remotely, the data may look like this:

```
:TRIG:SAMP:;SENS:DATA? ALL¥n
2.98802e10, 0.00000e0, 2.981, 0.00000e0¥n
:SYST:STAT? BITERROR¥n
0¥n
:STAT:OPER:MEAS:COND?¥n
1¥n
:TRIG:SAMP:;SENS:DATA? ALL¥n
3.01340e10, 0.00000e0, 3.006, 0.00000e0¥n
:SYST:STAT? BITERROR¥n
0¥n
:STAT:OPER:MEAS:COND?¥n
1¥n
:TRIG:SAMP:SENS:DATA? ALL¥n
3.05094e10, 1.00000e0, 3.043, 3.27768e-   ◄──── 1 bit error is incorrectly reported.
:SYST:STAT? BITERROR¥n
0¥n
:STAT:OPER:MEAS:COND?¥n
1¥n
:TRIG:SAMP:SENS:DATA? ALL¥n
3.08397e10, 0.00000e0, 3.076, 0.00000e0¥  ◄──── Total bit errors is back to 0. If the previously
                                                 reported bit error was correct, then it would still
                                                 be reported here and the reported number of
                                                 errors would be $>= 1$.
```

The values reported from the

   :TRIGger:SAMPle:SENSe:DATA? ALL

   or

   :FETCh:BER? ALL

queries are BIT COUNT, ERROR COUNT, ELAPSED TIME, BER.

The reported BER (3.27768e-11, in the example above) is a calculated value and will follow the reported error count and bit count:

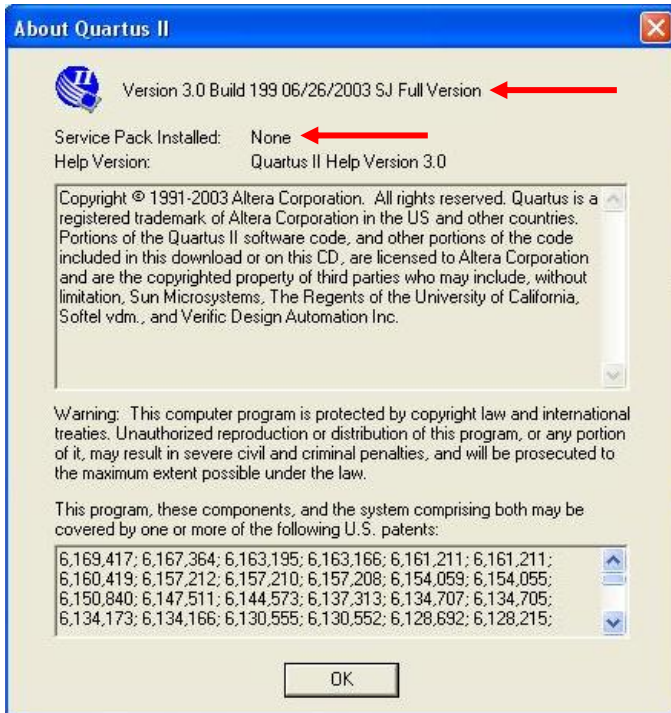$$\mathbf{BER} = \frac{\mathbf{error\ count}}{\mathbf{bit\ count}}$$

It is possible for incorrect values to be reported for any of the other three parameters (bits, errors, or time) and it is possible for the incorrect value to be either higher or lower than the correct value.

Some hardware dependency has been observed and it is possible that some unit-to-unit variation in the frequency of occurrence may exist; however, the issue is believed to be contained to the specific serial numbers listed above.
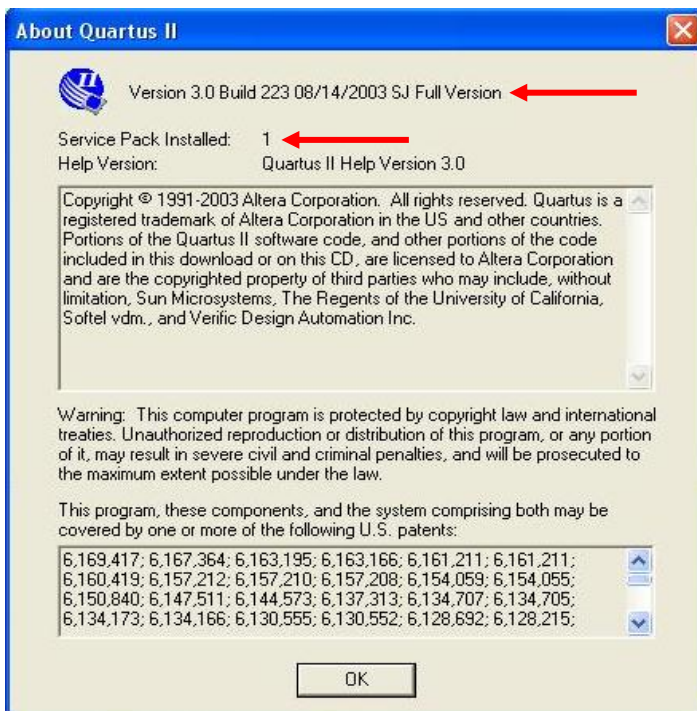
Solution/Action:
The cause of this behavior has been identified and fixed. The wrong build of firmware compiler was used for a time at the factory and was introducing this error.

Incorrect version:

Correct version:

The solution is to recompile and reinstall the N4962A firmware using the correct compiler version.

This is to be performed at the expense of the factory. Compiling and installing (loading) the firmware is a complex process requiring a specific hardware set and can only be performed at the factory.

Steps to be performed upon return to factory:
1. Perform full verification test, including test for incorrect BER results.
    a. Note the rate of incorrect query results.
    b. The customer may be charged for failures found on incoming test which are unrelated to this service note.
2. Recompile and reinstall firmware.
    a. Move or delete the old firmware file so that it will not be possible to accidentally re-use the wrong file at a later date.
    b. Make a note in SFC that the firmware has been corrected according to this service note.
3. Re-run full verification test, including test for incorrect BER results.
    a. Note the rate of incorrect query results (there should be none) and confirm that the issue has been resolved.
    b. The customer should not be charged for any new failure found at re-test.

Revision History:

Revision Number	Date	Author	Reason For Change
1.0	3/20/2014	MM	As published