

MODIFICATION RECOMMENDED –  
CORRECTS MANUFACTURING OR DESIGN DEFECTS

**E8241A-08**

# S E R V I C E N O T E

Supersedes:  
None

## E8241A PSG Analog Signal Generator

Serial Numbers: [0000A00000 / 9999Z99999]

**Power offset in the Agilent N7800A Test Management Environment Software for power measurements > 0 dBm**

**To Be Performed By: Agilent-Qualified Personnel or Customer**

**Parts Required:**

| P/N  | Description | Qty. |
|------|-------------|------|
| None |             |      |

## ADMINISTRATIVE INFORMATION

|                                 |   |  |  |
|---------------------------------|---|--|--|
| SERVICE NOTE CLASSIFICATION:    |   |  |  |
| <b>MODIFICATION RECOMMENDED</b> |   |  |  |
| ACTION CATEGORY:                | X IMMEDIATELY<br><input type="checkbox"/> ON SPECIFIED FAILURE<br><input type="checkbox"/> AGREEABLE TIME | STANDARDS:                             | LABOR: 1.0 Hours   |
| LOCATION CATEGORY:              | X CUSTOMER INSTALLABLE<br><input type="checkbox"/> ON-SITE<br><input type="checkbox"/> SERVICE CENTER     | SERVICE INVENTORY:                     | <input type="checkbox"/> RETURN<br><input type="checkbox"/> SCRAP<br><input type="checkbox"/> SEE TEXT |
| AVAILABILITY:                   | PRODUCT'S SUPPORT LIFE  | USED PARTS:                            | <input type="checkbox"/> RETURN<br><input type="checkbox"/> SCRAP<br><input type="checkbox"/> SEE TEXT |
| AUTHOR: RDS                     | PRODUCT LINE: 15  | AGILENT RESPONSIBLE UNTIL: August 2006 |  |
| ADDITIONAL INFORMATION:         |   |  |  |

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**Situation:**

The 20 GHz PSGs use an E4413A Power Sensor to measure Maximum Leveled Power and Power Level Accuracy. This power sensor contains two sets of Calibration Factors, one for powers  $\leq 0$  dBm and the other for powers  $> 0$  dBm. Due to a software defect the Calibration Factors for powers  $> 0$  dBm are not being used for higher powers. This will result in the measured power being offset.

**Solution/Action:**

Until the software is fixed a manual measurement is required for Maximum Leveled Power and Power Level Accuracy. The measured data will be recorded in this service note and attached to the Agilent N7800A Test Management Environment Software report.

**Manual Maximum Power Measurement**

1. Zero and calibrate the E4413A power sensor.
2. Connect the sensor directly to the PSG RF Output (no cables).
3. Set the E8241A frequency to 100 MHz.
4. Enter the test frequency via the E4419A/B front panel (Frequency/A Freq).
5. Set the E8241A amplitude to the maximum power in **Table 1**. The maximum power is dependent upon what options the E8241A contains.

**Table 1**

| Frequency           | STD     | 1E1     | 1EA     | 1E6     | 1E6 & 1E1 | 1E1& 1EA | 1E1 & 1E6 & 1EA |
|---------------------|---------|---------|---------|---------|-----------|----------|-----------------|
| 250 kHz to 3.2 GHz  | +13 dBm | +11 dBm | +16 dBm | +13 dBm | +11 dBm   | +15 dBm  | +12 dBm         |
| > 3.2 GHz to 20 GHz | +13 dBm | +11 dBm | +20 dBm | +13 dBm | +11 dBm   | +18 dBm  | +20 dBm         |

6. Increment the E8241A amplitude by 0.3 dB, this is to accommodate the measurement uncertainty of the measurement.
7. Check for the E8241A leveling. If the unit is leveled then the test passed. If the unit is unlevelled, then the test failed.
8. Repeat steps 4 through 7 for E8241A frequencies of 10 GHz and 20 GHz.
9. Record your results below by initialing the appropriate cell in **Table 2**.

**Table 2**

| Frequency | Pass | Fail |
|-----------|------|------|
| 100 MHz   |      |      |
| 10 GHz    |      |      |
| 20 GHz    |      |      |

**Manual Power Level Accuracy**

1. Zero and calibrate the E4413A power sensor.
2. Connect the sensor directly to the PSG RF Output (no cables).
3. Set the E8241A frequency to 95.1 MHz and the amplitude to 0 dBm.
4. Enter the test frequency via the E4419A/B front panel (Frequency/A Freq).
5. Measure the E8241A amplitude.
6. Subtract the measured value from the E8241A front panel setting.
7. Enter the difference in **Table 3**.

**Table 3**

| Frequency   | 0 dBm | 10 dBm | Max power<br>(See Table 1) |
|-------------|-------|--------|----------------------------|
| 95.1 MHz    |       |        |                            |
| 10.0501 GHz |       |        |                            |
| 19.9501 GHz |       |        |                            |

8. Increment the amplitude of the E8241A to the next power in **Table 3** and repeat steps 5 through 7. Repeat this step until all powers have been tested for this frequency.
9. Increment the E8241A frequency to the next frequency in **Table 3** and repeat steps 4 through 8.
10. Compare the result to the specifications in **Table 4**

**Table 4**

| Frequency        | > +10 dBm | +10 dBm to -10 dBm |
|------------------|-----------|--------------------|
| 250 kHz to 2 GHz | $\pm 0.6$ | $\pm 0.6$          |
| >2 GHz to 20 GHz | $\pm 0.8$ | $\pm 0.8$          |

11. Record your results below by initialing the appropriate cell in **Table 5**.

**Table 5**

| Frequency   | Pass | Fail |
|-------------|------|------|
| 95.1 MHz    |      |      |
| 10.0501 GHz |      |      |
| 19.9501 GHz |      |      |

12. Attach the completed service note to the Agilent N7800A Test Management Environment Software report.