## Backing Up Analyzer Correction Constants

This section describes how to retrieve the correction-constant data from the instrument memory and record the data as a backup copy. As long as the data remains valid it can be used to recalibrate the instrument quickly after a memory loss. It is recommended that a copy of this data be maintained in the user's records. Procedures for restoring the correction constants to battery-backed RAM memory are also provided in this section.

**Note**

If the current correction constants are not valid, new correction constants must be generated. Refer to the following adjustment procedures in Chapter 2:

- "10 MHz Reference (Standard)."
- "Frequency Response."
- "Cal Attenuator Error Correction."
- "External ALC Error Correction (Option 010 and 011)."

The HP 8591A stores the following correction constants in RAM:

- The flatness correction constants, used to correct frequency-response amplitude errors.
- The step-attenuation correction constants, used to correct A12 Amplitude Control step-attenuator errors and provide a relative amplitude reference for the CAL AMPTD self-calibration routine.
- The timebase correction constant, used by the DAC that tunes the RTXO (10 MHz timebase) on the A25 Counter Lock assembly. Instruments with Option 004, Precision Frequency Reference, do not use this correction constant.
- The CALTGX slope and offset correction constants, used to improve the performance of the external automatic level control (ALC). Only analyzers equipped with a tracking generator (Option 010 and 011) use these corrections.

### Retrieving the Timebase and Flatness-Correction Constants

1. Make a copy of the Correction Constant Backup-Data Record at the end of this section.
2. Record the date and instrument serial number.
3. Press the following keys:

   (PRESET)

   (FREQUENCY)

   −37 (Hz)

   (CAL)

   MORE 1 of 3

   MORE 2 of 3

**Note** For Option 004 instruments, bypass the next two steps.

4. Press VERIFY TIMEBASE.
5. Record the number that is displayed in the active-function block in Table 9-1.
6. Press the following keys:

   SERVICE CAL

   FLATNESS DATA

   EDIT FLATNESS

7. The signal trace represents the frequency-response (flatness) correction-constant data. The active-function block displays the frequency response error, in dB, for 4 MHz.
8. Record the frequency-response error for 4 MHz in Table 9-2.
9. Press ⇧.
10. Record the next frequency-response error in Table 9-2.
11. Repeat the previous two steps until all frequency-response errors are recorded. Use ⇩ to view previous data points.
12. Press EXIT when all frequency-response errors have been recorded.

## Retrieving the A12 Step-Gain and CALTGX Correction Constants

1. Press the following keys to view the current A12 step-attenuator correction constants.

   CAL

   MORE 1 of 3

   MORE 2 of 3

   SERVICE DIAG

   DISPLAY CAL DATA

2. Look at the first five entries in the ERR column; they are the amplitude errors for the 1 dB, 2 dB, 4 dB, 8 dB, and 16 dB step-attenuators.
3. Record the amplitude errors (correction constants) for the five step-attenuators in Table 9-3.

**Note** The next step is for analyzers equipped with a tracking generator (Option 010 or 011) only.

4. Record the CALTGX slope and offset correction constants in Table 9-4. The correction constants are printed on a label that is located on the A7A1 Tracking Generator Control Board assembly.

File the completed copy of the Correction-Constant Data Record for future reference.

## Correction Constant Backup-Data Record

Hewlett-Packard Company
Model HP 8591A

Serial No. _____ Date _____

**Table 9-1.**
**RTXO Timebase Correction Constant (Instruments without Option 004)**

| | |
|---|---|
| Timebase | _____ |

**Table 9-2. Frequency Response Correction Constants**

| Frequency (MHz) | Error (dB)* | Frequency (MHz) | Error (dB)* | Frequency (MHz) | Error (dB)* | Frequency (MHz) | Error (dB)* |
|---|---|---|---|---|---|---|---|
| 4 | _____ | 485 | _____ | 966 | _____ | 1447 | _____ |
| 41 | _____ | 522 | _____ | 1003 | _____ | 1484 | _____ |
| 78 | _____ | 559 | _____ | 1040 | _____ | 1521 | _____ |
| 115 | _____ | 596 | _____ | 1077 | _____ | 1558 | _____ |
| 152 | _____ | 633 | _____ | 1114 | _____ | 1595 | _____ |
| 189 | _____ | 670 | _____ | 1151 | _____ | 1632 | _____ |
| 226 | _____ | 707 | _____ | 1188 | _____ | 1669 | _____ |
| 263 | _____ | 744 | _____ | 1225 | _____ | 1706 | _____ |
| 300 | _____ | 781 | _____ | 1262 | _____ | 1743 | _____ |
| 337 | _____ | 818 | _____ | 1299 | _____ | 1780 | _____ |
| 374 | _____ | 855 | _____ | 1336 | _____ | 1817 | _____ |
| 411 | _____ | 892 | _____ | 1373 | _____ | | |
| 448 | _____ | 929 | _____ | 1410 | _____ | | |

* Instruments equipped with Option 001, 75Ω Input Impedance, display dBmV.

**Table 9-3. A12 Step-Attenuator Correction Constants**

| Attenuator Step | ERR (dB) | Attenuator Step | ERR (dB) |
|---|---|---|---|
| 1 dB | _____ | 4 dB | _____ |
| 2 dB | _____ | 8 dB | _____ |
| | | 16 dB | _____ |

**Table 9-4. CALTGX Correction Constants (Option 010 and 011)**

| | |
|---|---|
| Slope | _____ |
| Offset | _____ |