

## **SECTION 2 - CALIBRATION/VERIFICATION**

### **2-1 GENERAL**

This section provides the maintenance technician with Calibration and Verification Procedures.

The Calibration/Verification Procedures should only be performed by Technicians familiar with the setup and operation of the recommended test equipment.

#### **2-1-1 CALIBRATION/VERIFICATION SCHEDULE**

The Calibration/Verification Procedures should be performed as a result of one or more of the following conditions:

- The 2975 fails to meet the performance specifications
- One or more assemblies are replaced
- The recommended 12 month calibration interval is due

#### **2-1-2 CONTROLS AND CONNECTORS**

Refer to Appendix C for the location of the controls and connectors specified in the Calibration/Verification Procedures.

#### **2-1-3 TEST EQUIPMENT REQUIREMENTS**

Appendix E contains a list of Test Equipment suitable for performing the Calibration/ Verifications Procedures. Other equipment meeting the Test Equipment specifications listed in Appendix E may be substituted in place of the recommended models.

#### **2-1-4 TEST RECORD**

Make copies of the Calibration and Verification Data Sheets to record results obtained while performing the Calibration and Verification Procedures.

**NOTE:** Calibration Results for the Generator and Analyzer Calibration process are stored in an electronic file on the PC.

#### **2-1-5 VERIFICATION SETUP FILES**

There are 28 Verification Setup Files stored in the 2975. When performing the Verification Procedures, the Recall feature of the 2975 is used to recall the Verification Setup File needed.

**NOTE:** The Verification Setup Files are also included on the Calibration Software CD-ROM.

#### **2-1-6 CALIBRATION SOFTWARE**

The Calibration Software CD-ROM includes the Calibration Software, Verification Setup Files and System Software.

**NOTE:** The 2975 should be running System Software Version 1.9 or higher before the Calibration is performed.

## 2-2 PRECAUTIONS

### 2-2-1 SAFETY

As with any piece of electronic equipment, take extreme caution when working with “live” circuits. Observe the following precautions when performing the Calibration/Verification Procedures:

**WARNING: REMOVE ALL JEWELRY OR OTHER COSMETIC APPAREL BEFORE PERFORMING ANY PROCEDURES INVOLVING “LIVE” CIRCUITS.**

**WHEN WORKING WITH LIVE CIRCUITS OF HIGH POTENTIAL, KEEP ONE HAND IN POCKET OR BEHIND BACK TO AVOID SERIOUS SHOCK HAZARD.**

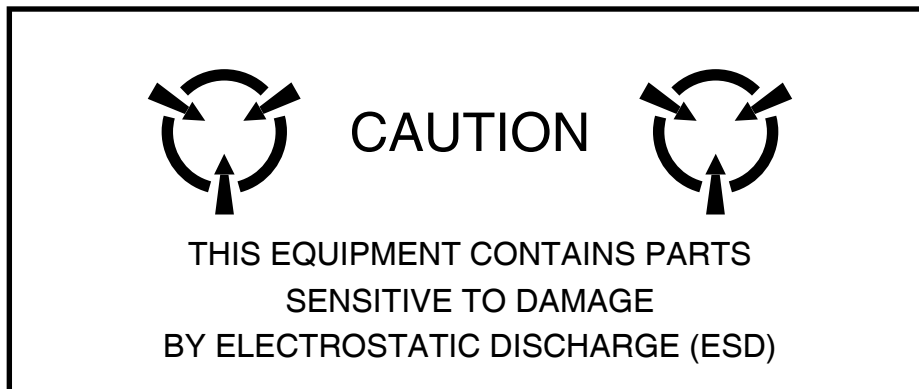
**USE ONLY INSULATED TROUBLESHOOTING TOOLS WHEN WORKING WITH LIVE CIRCUITS.**

**FOR ADDED INSULATION, PLACE RUBBER BENCH MATS UNDER ALL POWERED BENCH EQUIPMENT AND TECHNICIAN CHAIRS.**

**HEED ALL WARNINGS AND CAUTIONS CONCERNING MAXIMUM VOLTAGES AND POWER INPUTS.**

### 2-2-2 ESD

**CAUTION: ONLY PERFORM CALIBRATION/VERIFICATION PROCEDURES IN AN ESD ENVIRONMENT. ALL PERSONNEL PERFORMING THE CALIBRATION/ VERIFICATION PROCEDURES SHOULD HAVE KNOWLEDGE OF ACCEPTED ESD PRACTICES AND/OR BE ESD CERTIFIED.**



## 2-3 DISASSEMBLY REQUIREMENTS

Remove the Case Assy from the 2975 to perform the Power Supply Voltages Calibration Procedures. Refer to the individual Calibration Procedures for additional disassembly requirements.

The Case Assy should be reassembled prior to performing the TXCO and Generator / Analyzer Calibration Procedures.

## 2-4 VERIFICATION PROCEDURES

To perform a Calibration Verification, perform para 2-4-2 through 2-4-9.

To perform a System Verification, perform para 2-4-2 through 2-4-29.

### 2-4-1 INITIAL SETUP

PREREQUISITES: None

EQUIPMENT REQUIRED: 10 MHz Frequency Standard

STEP	PROCEDURE
1.	Connect the 2975 to an appropriate external power source.
2.	Set the MAIN POWER Switch (Rear Panel) to the ON position.
3.	Connect the 10 MHz Frequency Standard to the EXTERNAL RF I/O Connector.
4.	When the Opening Screen is displayed, press <b>MODE</b> Key, "7" Key and "1" Key to display the Configuration Screen.
5.	Press <b>MODE</b> Key, "7" Key and "7" Key to display the Recall Menu.

The 2975 system parameters are now ready to be verified.

## 2-4-2 GENERATOR OUTPUT FREQUENCY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Universal Counter

STEP	PROCEDURE
1.	Recall Verification Setup File #1.
2.	Disconnect the 10 MHz Frequency Standard from the EXTERNAL RF I/O Connector.
3.	Connect the Universal Counter to the GEN Connector.
4.	Verify 1 GHz ( $\pm 10$ Hz) on the Universal Counter. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 5.</li><li>• If reading is out of tolerance, perform the 2975 Calibration Procedures (para 2-6).</li></ul>
5.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT</b> (F2) to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, reconnect the 10 MHz Frequency Standard to the EXTERNAL RF I/O Connector and proceed with the next Verification Procedure.</li></ul>

### 2-4-3 GENERATOR OUTPUT POWER

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Power Meter

STEP	PROCEDURE
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1. Recall Verification Setup File #2.
2. Connect the Power Meter to the GEN Connector.
3. Set the Power Meter to 501 MHz at +10.0 dBm.
4. Verify the following levels on the Power Meter:

2975 GENERATOR LEVEL	POWER METER LEVEL
+10 dBm	+10 dBm ( $\pm 1.5$ dB)
0 dBm	0 dBm ( $\pm 1.5$ dB)
-10 dBm	-10 dBm ( $\pm 1.5$ dB)
-20 dBm	-20 dBm ( $\pm 1.5$ dB)
-30 dBm	-30 dBm ( $\pm 1.5$ dB)
-40 dBm	-40 dBm ( $\pm 1.5$ dB)
-50 dBm	-50 dBm ( $\pm 1.5$ dB)
-60 dBm	-60 dBm ( $\pm 1.5$ dB)

- If all readings are correct, go to Step 5.
  - If any reading is out of tolerance, perform the 2975 Calibration Procedures (para 2-6).
5. Perform one of the following:
    - If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.
      - Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.
      - Press **10 MHz REFERENCE** to select Internal reference.
      - Press **FACTORY DEFAULT (F2)** to restore the Unit to Factory Defaults.
    - If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.

## 2-4-4 GENERATOR LEVEL FLATNESS

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Power Meter

STEP	PROCEDURE
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1. Recall Verification Setup File #3.
2. Connect the Power Meter to the GEN Connector.
3. Set the 2975 to the following frequencies and verify 0 dBm ( $\pm 1.5$  dB) on the Power Meter:

170 MHz	1470 MHz
220 MHz	1520 MHz
270 MHz	1570 MHz
320 MHz	1620 MHz
370 MHz	1670 MHz
420 MHz	1720 MHz
470 MHz	1770 MHz
520 MHz	1820 MHz
570 MHz	1870 MHz
620 MHz	1920 MHz
670 MHz	1970 MHz
720 MHz	2020 MHz
770 MHz	2070 MHz
820 MHz	2120 MHz
870 MHz	2170 MHz
920 MHz	2220 MHz
970 MHz	2270 MHz
1020 MHz	2320 MHz
1070 MHz	2370 MHz
1120 MHz	2420 MHz
1170 MHz	2470 MHz
1220 MHz	2520 MHz
1270 MHz	2570 MHz
1320 MHz	2620 MHz
1370 MHz	2670 MHz
1420 MHz	2700 MHz

- If all readings are correct, go to Step 4.
  - If any reading is out of tolerance, perform the 2975 Calibration Procedures (para 2-6).
4. Perform one of the following:
    - If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.
      - Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.
      - Press **10 MHz REFERENCE** to select Internal reference.
      - Press **FACTORY DEFAULT (F2)** to restore the Unit to Factory Defaults.
    - If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.

## 2-4-5 GENERATOR T/R POWER LEVEL ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Power Meter

STEP PROCEDURE

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1. Recall Verification Setup File #4.
2. Connect the Power Meter to the T/R Connector.
3. Verify the following levels on the Power Meter:

2975 POWER LEVEL	POWER METER LEVEL
-30.0 dBm	-30 dBm ( $\pm 1$ dB)
-40.0 dBm	-40 dBm ( $\pm 1$ dB)
-50.0 dBm	-50 dBm ( $\pm 1$ dB)
-60.0 dBm	-60 dBm ( $\pm 1$ dB)

- If all readings are correct, go to Step 4.
  - If any reading is out of tolerance, perform the 2975 Calibration Procedures (para 2-6).
4. Perform one of the following:
    - If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.
      - Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.
      - Press **10 MHz REFERENCE** to select Internal reference.
      - Press **FACTORY DEFAULT (F2)** to restore the Unit to Factory Defaults.
    - If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.

## 2-4-6 GENERATOR T/R POWER LEVEL FLATNESS

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Power Meter

STEP	PROCEDURE
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1. Recall Verification Setup File #5.
2. Connect the Power Meter to the T/R Connector.
3. Set the 2975 to the following frequencies and verify -30 dBm ( $\pm 1$  dB) on the Power Meter:

50 MHz	1400 MHz
100 MHz	1450 MHz
150 MHz	1500 MHz
200 MHz	1550 MHz
250 MHz	1600 MHz
300 MHz	1650 MHz
350 MHz	1700 MHz
400 MHz	1750 MHz
450 MHz	1800 MHz
500 MHz	1850 MHz
550 MHz	1900 MHz
600 MHz	1950 MHz
650 MHz	2000 MHz
700 MHz	2050 MHz
750 MHz	2100 MHz
800 MHz	2150 MHz
850 MHz	2200 MHz
900 MHz	2250 MHz
950 MHz	2300 MHz
1000 MHz	2350 MHz
1050 MHz	2400 MHz
1100 MHz	2450 MHz
1150 MHz	2500 MHz
1200 MHz	2550 MHz
1250 MHz	2600 MHz
1300 MHz	2650 MHz
1350 MHz	2700 MHz

- If all readings are correct, go to Step 4.
  - If any reading is out of tolerance, perform the 2975 Calibration Procedures (para 2-6).
4. Perform one of the following:
    - If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.

Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.

Press **10 MHz REFERENCE** to select Internal reference.

Press **FACTORY DEFAULT (F2)** to restore the Unit to Factory Defaults.
    - If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.



## 2-4-7 RF POWER METER ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: RF Generator

STEP	PROCEDURE
1.	Recall Verification Setup File #6.
2.	Press <b>ZERO</b> on the 2975 Power Meter.
3.	Connect the RF Generator to the T/R Connector.
4.	Set the RF Generator to 500 MHz at 10.5 dBm.
5.	Verify 10.5 dBm ( $\pm 1.05$ dB) on the 2975 Power Meter. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 5.</li><li>• If reading is out of tolerance, perform the 2975 Calibration Procedures (para 2-6).</li></ul>
6.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-8 RSSI METER ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: RF Generator

STEP PROCEDURE

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1. Recall Verification Setup File #7.
2. Calibrate the 2975 RSSI Meter (press the RSSI Meter CAL Button and follow the on-screen prompts).
3. Connect the RF Generator to the ANT Connector.
4. Verify the following levels on the 2975 RSSI Meter:

RF GENERATOR SETTINGS	2975 RSSI METER
10 MHz at -70 dBm	-70.0 dBm ( $\pm 2.5$ dB)
10 MHz at -60 dBm	-60.0 dBm ( $\pm 2.5$ dB)
10 MHz at -50 dBm	-50.0 dBm ( $\pm 2.5$ dB)
10 MHz at -40 dBm	-40.0 dBm ( $\pm 2.5$ dB)
10 MHz at -30 dBm	-30.0 dBm ( $\pm 2.5$ dB)
10 MHz at -20 dBm	-20.0 dBm ( $\pm 2.5$ dB)

- If all readings are correct, go to Step 5.
  - If any reading is out of tolerance, perform the 2975 Calibration Procedures (para 2-6).
5. Perform one of the following:
- If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.
    - Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.
    - Press **10 MHz REFERENCE** to select Internal reference.
    - Press **FACTORY DEFAULT (F2)** to restore the Unit to Factory Defaults.
  - If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.

## 2-4-9 ANALYZER LEVEL ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: RF Generator

STEP	PROCEDURE
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1. Recall Verification Setup File #8.
2. Press **NORMAL** (F5) on the 2975 Spectrum Analyzer to normalize the 2975 Spectrum Analyzer. (This may take a few minutes.)
3. Connect the RF Generator to the ANT Connector.
4. Set the RF Generator to 1 MHz at -30.0 dBm.
5. Set the RF Generator and the 2975 to the following frequencies and verify -30 dBm ( $\pm 2$  dB) Analyzer peak level on the 2975 Spectrum Analyzer:

1 MHz	1400 MHz
50 MHz	1450 MHz
100 MHz	1500 MHz
150 MHz	1550 MHz
200 MHz	1600 MHz
250 MHz	1650 MHz
300 MHz	1700 MHz
350 MHz	1750 MHz
400 MHz	1800 MHz
450 MHz	1850 MHz
500 MHz	1900 MHz
550 MHz	1950 MHz
600 MHz	2000 MHz
650 MHz	2050 MHz
700 MHz	2100 MHz
750 MHz	2150 MHz
800 MHz	2200 MHz
850 MHz	2250 MHz
900 MHz	2300 MHz
950 MHz	2350 MHz
1000 MHz	2400 MHz
1050 MHz	2450 MHz
1100 MHz	2500 MHz
1150 MHz	2550 MHz
1200 MHz	2600 MHz
1250 MHz	2650 MHz
1300 MHz	2700 MHz
1350 MHz	

- If all readings are correct, go to Step 5.
- If any reading is out of tolerance, perform the 2975 Calibration Procedures (para 2-6).

6. Perform one of the following:

- If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.

Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.

Press **10 MHz REFERENCE** to select Internal reference.

Press **FACTORY DEFAULT (F2)** to restore the Unit to Factory Defaults.

- If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.

## 2-4-10 GENERATOR FM RESIDUAL

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Modulation Analyzer

STEP	PROCEDURE
1.	Recall Verification Setup File #9.
2.	Connect the Modulation Analyzer to the GEN Connector.
3.	Set the Modulation Analyzer for 300 Hz to 3 kHz post-detection filtering. Measure FM level.
4.	Verify <15 Hz RMS on the Modulation Analyzer. Record level. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 5.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Generator Assy. Return the 2975 to Aeroflex for repair.</li></ul>
5.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-11 GENERATOR AM RESIDUAL

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Modulation Analyzer

STEP	PROCEDURE
1.	Recall Verification Setup File #10.
2.	Connect the Modulation Analyzer to the GEN Connector.
3.	Set the Modulation Analyzer for 300 Hz to 3 kHz post-detection filtering. Measure AM level.
4.	Verify <0.1% on the Modulation Analyzer. Record level. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 5.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Generator Assy. Return the 2975 to Aeroflex for repair.</li></ul>
5.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-12 GENERATOR FM DEVIATION ACCURACY

PREREQUISITES:            2-4-1    Initial Setup  
                                 2-4-5    Generator FM Residual

EQUIPMENT REQUIRED:    Modulation Analyzer

STEP	PROCEDURE
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1. Recall Verification Setup File #11.
2. Connect the Modulation Analyzer to the GEN Connector.
3. Set the Modulation Analyzer to measure FM with the 15 kHz LP Filter selected.
4. Record the FM deviation shown on the Modulation Analyzer.
5. Subtract the reading recorded in para 2-4-10 from the reading recorded in Step 4. Verify FM deviation is 10 kHz ( $\pm 0.30$  kHz).
  - If reading is correct, go to Step 5.
  - If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Multifunction I/O PCB Assy or Generator Assy. Return the 2975 to Aeroflex for repair.
6. Perform one of the following:
  - If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.
    - Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.
    - Press **10 MHz REFERENCE** to select Internal reference.
    - Press **FACTORY DEFAULT (F2)** to restore the Unit to Factory Defaults.
  - If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.

### 2-4-13 GENERATOR FM MODULATION RATE

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Modulation Analyzer

STEP PROCEDURE

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1. Recall Verification Setup File #12.
2. Connect the Modulation Analyzer to the GEN Connector.
3. Set the Modulation Analyzer to measure FM with the 15 kHz LP Filter selected.
4. Record the FM deviation level for the following AF Field settings. Subtract the FM Residual reading recorded in para 2-4-10 and verify the FM deviation for the following AF Field settings on the Modulation Analyzer:

2975 (M1) AF FIELD	FM DEVIATION
50.0 Hz	6 kHz ( $\pm 0.18$ kHz)
300.0 Hz	6 kHz ( $\pm 0.18$ kHz)
10000.0 Hz	6 kHz ( $\pm 0.18$ kHz)

- If all readings are correct, go to Step 5.
  - If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Multifunction I/O PCB Assy or Generator Assy. Return the 2975 to Aeroflex for repair.
5. Perform one of the following:
    - If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.

Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.

Press **10 MHz REFERENCE** to select Internal reference.

Press **FACTORY DEFAULT (F2)** to restore the Unit to Factory Defaults.
    - If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.



## 2-4-14 GENERATOR FM MODULATION DISTORTION

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Modulation Analyzer  
Audio Analyzer

STEP	PROCEDURE
1.	Recall Verification Setup File #13.
2.	Connect the Modulation Analyzer to the GEN Connector.
3.	Set the Modulation Analyzer to measure FM with the 3 kHz LP Filter selected.
4.	Connect the Audio Analyzer to the Modulation Analyzer Modulation Output Connector.
5.	Verify the modulation distortion is <1% on the Audio Analyzer. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 6.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Multifunction I/O PCB Assy or Generator Assy. Return the 2975 to Aeroflex for repair.</li></ul>
6.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-15 GENERATOR AM MODULATION ACCURACY

PREREQUISITES:            2-4-1    Initial Setup  
                                 2-4-6    Generator AM Residual

EQUIPMENT REQUIRED:    Modulation Analyzer

STEP	PROCEDURE
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1. Recall Verification Setup File #14.
2. Connect the Modulation Analyzer to the GEN Connector.
3. Set the Modulation Analyzer to measure AM.
4. Record the AM Modulation shown on the Modulation Analyzer.
5. Subtract the reading recorded in para 2-4-11 from the reading recorded in Step 4. Verify the AM Modulation is 30% ( $\pm 5\%$ ).
  - If reading is correct, go to Step 6.
  - If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Multifunction I/O PCB Assy or Generator Assy. Return the 2975 to Aeroflex for repair.
6. Perform one of the following:
  - If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.
    - Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.
    - Press **10 MHz REFERENCE** to select Internal reference.
    - Press **FACTORY DEFAULT (F2)** to restore the Unit to Factory Defaults.
  - If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.

## 2-4-16 RF ERROR METER ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: RF Generator

STEP PROCEDURE

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1. Recall Verification Setup File #15.
2. Connect the RF Generator to the T/R Connector.
3. Set the RF Generator to the following settings and verify the following readings on the 2975 RF Error Meter:

RF GENERATOR SETTINGS	2975 RF ERROR METER
1000.01 MHz at -20 dBm	+10000 Hz ( $\pm 1$ Hz)
999.99 MHz at -20 dBm	-10000 Hz ( $\pm 1$ Hz)

- If all readings are correct, go to Step 4.
  - If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Multifunction I/O PCB Assy or Receiver Assy. Return the 2975 to Aeroflex for repair.
4. Perform one of the following:
    - If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.
      - Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.
      - Press **10 MHz REFERENCE** to select Internal reference.
      - Press **FACTORY DEFAULT (F2)** to restore the Unit to Factory Defaults.
    - If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.

## 2-4-17 AF METER ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: RF Generator

STEP	PROCEDURE
1.	Recall Verification Setup File #16.
2.	Connect the RF Generator to the ANT Connector.
3.	Set the RF Generator to 100 MHz at -10.0 dBm.
4.	Set the RF Generator to output a 6 kHz FM signal at a 1 kHz rate.
5.	Verify 1000 Hz ( $\pm 1$ Hz) on the 2975 AF Counter. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 6.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Multifunction I/O PCB Assy or Receiver Assy. Return the 2975 to Aeroflex for repair.</li></ul>
6.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-18 FM DEVIATION METER ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: RF Generator

STEP	PROCEDURE
1.	Recall Verification Setup File #17.
2.	Connect the RF Generator to the ANT Connector.
3.	Set the RF Generator to 100 MHz at -10.0 dBm.
4.	Record the level on the 2975 Deviation Meter.
5.	Set the RF Generator to output a 10 kHz FM signal at a 1 kHz rate.
6.	Record the level on the 2975 Deviation Meter.
7.	Subtract the deviation level in Step 4 from the deviation level in Step 6 and verify the deviation level is 10 kHz ( $\pm 0.52$ kHz).
	<ul style="list-style-type: none"><li>• If reading is correct, go to Step 8.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Multifunction I/O PCB Assy or Receiver Assy. Return the 2975 to Aeroflex for repair.</li></ul>
8.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-19 AM MODULATION METER ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: RF Generator

STEP	PROCEDURE
1.	Recall Verification Setup File #18.
2.	Connect the RF Generator to the ANT Connector.
3.	Set the RF Generator to 100 MHz at -20.0 dBm.
4.	Record the level on the 2975 Modulation Meter.
5.	Set the RF Generator to output an AM signal at 50% depth.
6.	Record the level on the 2975 Modulation Meter.
7.	Subtract the modulation level in Step 4 from the modulation level in Step 6 and verify the modulation level is 50% ( $\pm 5\%$ ).
	<ul style="list-style-type: none"><li>• If reading is correct, go to Step 8.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Multifunction I/O PCB Assy or Receiver Assy. Return the 2975 to Aeroflex for repair.</li></ul>
8.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-20 ANALYZER FREQUENCY AND SPAN ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: RF Generator

STEP	PROCEDURE
1.	Recall Verification Setup File #19.
2.	Connect the RF Generator to the ANT Connector.
3.	Set the RF Generator to 1.5 GHz at -20.0 dBm.
4.	Measure the 20 dB bandwidth of the displayed signal; calculate the center frequency and record the peak frequency of the displayed signal.
5.	Subtract 1.5 GHz from the peak frequency in Step 4 and verify the peak frequency is 0 kHz ( $\pm 2.5$ kHz). <ul style="list-style-type: none"><li>• If reading is correct, go to Step 6.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: IF/Video PCB Assy or Receiver Assy. Return the 2975 to Aeroflex for repair.</li></ul>
6.	Adjust the RF Generator frequency until the -30 dBm point on the left side of the signal response rests on the 1st major division from the left of the display.
7.	Increase the RF Generator frequency 80 kHz and verify the -30 dBm point is within 1/2 minor division of the 9th major division from the left of the display. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 8.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: IF/Video PCB Assy or Receiver Assy. Return the 2975 to Aeroflex for repair.</li></ul>
8.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-21 ANALYZER BANDWIDTH SWITCHING ERROR

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: RF Generator

STEP	PROCEDURE
------	-----------

1. Recall Verification Setup File #20.
2. Press **NORMAL** (F5) on the 2975 Spectrum Analyzer to normalize the 2975 Spectrum Analyzer. (This may take a few minutes.)
3. Connect the RF Generator to the ANT Connector.
4. Set the RF Generator to 500 MHz at -30.0 dBm.
5. Set the AUTO/MAN Field to MAN (to switch the 2975 Spectrum Analyzer to Manual Mode).
6. Using the following settings, record the peak level of the trace data for each RBW Filter and verify the absolute difference between the maximum and minimum levels is  $\leq 2$  dB:

SPAN	RBW	VBW
5 kHz	300 Hz	100 Hz
50 kHz	3 kHz	100 Hz
500 kHz	30 kHz	3 kHz
1 MHz	60 kHz	3 kHz
5 MHz	300 kHz	3 kHz
20 MHz	6 MHz	3 kHz

- If all readings are correct, go to Step 7.
  - If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: IF/Video PCB Assy or Receiver Assy. Return the 2975 to Aeroflex for repair.
7. Perform one of the following:
    - If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.
 

Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.

Press **10 MHz REFERENCE** to select Internal reference.

Press **FACTORY DEFAULT** (F2) to restore the Unit to Factory Defaults.
    - If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.



## 2-4-22 OSCILLOSCOPE AMPLITUDE ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Arbitrary Waveform Generator

STEP PROCEDURE

---

1. Recall Verification Setup File #21.
2. Connect the Arbitrary Waveform Generator to the SCOPE CH1 Connector.
3. Set the Arbitrary Waveform Generator frequency to 1 kHz Sinewave.
4. Using the following settings, verify the peak to peak level on the 2975 Oscilloscope is between 7 to 9 major divisions. Select VPOS (Vertical Position) and use the Spinner to position the no-signal trace on the center graticule.

ARBITRARY WAVEFORM GENERATOR LEVEL	2975 OSCILLOSCOPE VOLTS/DIV
160 mVp-p	0.02 V/Div
400 mVp-p	0.05 V/Div
800 mVp-p	0.1 V/Div
1.6 Vp-p	0.2 V/Div
4 Vp-p	0.5 V/Div
8 Vp-p	1.0 V/Div
16 Vp-p	2.0 V/Div

- If all readings are correct, go to Step 5.
  - If reading is out of tolerance, this indicates a hardware failure in the 2975.  
Probable source of failure: Multifunction I/O PCB Assy. Return the 2975 to Aeroflex for repair.
5. Disconnect the Arbitrary Waveform Generator from the SCOPE CH1 Connector.  
Connect the Arbitrary Waveform Generator to the SCOPE CH2 Connector.
  6. Set the SOURCE Field on the 2975 Oscilloscope to CH2.

## STEP

## PROCEDURE

7. Using the following settings, verify the peak to peak level on the 2975 Oscilloscope is between 7 to 9 major divisions. Select VPOS (Vertical Position) and use the Spinner to position the no-signal trace on the center graticule.

FUNCTION GENERATOR LEVEL	2975 OSCILLOSCOPE VOLTS/DIV
160 mVp-p	0.02 V/Div
400 mVp-p	0.05 V/Div
800 mVp-p	0.1 V/Div
1.6 Vp-p	0.2 V/Div
4 Vp-p	0.5 V/Div
8 Vp-p	1.0 V/Div
16 Vp-p	2.0 V/Div

- If all readings are correct, go to Step 8.
  - If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Multifunction I/O PCB Assy. Return the 2975 to Aeroflex for repair.
8. Perform one of the following:
- If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.
    - Press **MODE** Key, **7** Key, **1** Key to display the Configuration Screen.
    - Press **10 MHz REFERENCE** to select Internal reference.
    - Press **FACTORY DEFAULT (F2)** to restore the Unit to Factory Defaults.
  - If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.

## 2-4-23 DIGITAL VOLTMETER DC ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Voltage Calibrator

STEP	PROCEDURE
1.	Recall Verification Setup File #22.
2.	Connect the Voltage Calibrator to the DVM Connector.
3.	Set the Voltage Calibrator to 200 mV.
4.	Verify 200 mV ( $\pm 10$ mV) on the 2975 Digital Voltmeter. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 5.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Multifunction I/O PCB Assy. Return the 2975 to Aeroflex for repair.</li></ul>
5.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-24 DIGITAL VOLTMETER AC ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Voltage Calibrator

STEP	PROCEDURE
1.	Recall Verification Setup File #23.
2.	Connect the Voltage Calibrator to the DVM Connector.
3.	Set the Voltage Calibrator to 200 mV.
4.	Set the Voltage Calibrator to the following levels and verify 200 mV ( $\pm 30$ mV) on the 2975 Digital Voltmeter.  50 Hz 100 Hz 1 kHz 10 kHz 20 kHz
	<ul style="list-style-type: none"><li>• If all readings are correct, go to Step 5.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Multifunction I/O PCB Assy. Return the 2975 to Aeroflex for repair.</li></ul>
5.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.  Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.  Press <b>10 MHz REFERENCE</b> to select Internal reference.  Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-25 FUNCTION GENERATOR LEVEL ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Microphone Adapter  
Digital Multimeter  
10 k $\Omega$  Load

STEP	PROCEDURE
1.	Recall Verification Setup File #24.
2.	Connect the Microphone Adapter to the MIC Connector and AUDIO I/O Connector.
3.	Connect the Digital Multimeter, through a 10 k $\Omega$ Load, to the Microphone Adapter AUDIO OUT 1 Connector.
4.	Set the Digital Multimeter to measure AC Volts.
5.	Verify the level is 7.070 Vrms ( $\pm 350$ mVrms) on the Digital Multimeter. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 6.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Front Panel Audio PCB Assy. Return the 2975 to Aeroflex for repair.</li></ul>
6.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-26 FUNCTION GENERATOR FREQUENCY ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Microphone Adapter  
Universal Counter  
10 k $\Omega$  Load

STEP	PROCEDURE
1.	Recall Verification Setup File #25.
2.	Connect the Microphone Adapter to the MIC Connector and AUDIO I/O Connector.
3.	Connect the Universal Counter, through a 10 k $\Omega$ Load, to the Microphone Adapter AUDIO OUT 1 Connector.
4.	Verify the frequency is 5000 Hz ( $\pm 1$ Hz) on the Universal Counter. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 5.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Front Panel Audio PCB Assy. Return the 2975 to Aeroflex for repair.</li></ul>
5.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-27 FUNCTION GENERATOR TOTAL HARMONIC DISTORTION

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Microphone Adapter  
Audio Analyzer  
10 k $\Omega$  Load

STEP	PROCEDURE
1.	Recall Verification Setup File #26.
2.	Connect the Microphone Adapter to the MIC Connector and AUDIO I/O Connector.
3.	Connect the Audio Analyzer Audio Input, through a 10 k $\Omega$ Load, to the Microphone Adapter AUDIO OUT 1 Connector.
4.	Verify the total harmonic output is <0.5%. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 5.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Front Panel Audio PCB Assy. Return the 2975 to Aeroflex for repair.</li></ul>
5.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<p>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</p><p>Press <b>10 MHz REFERENCE</b> to select Internal reference.</p><p>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</p></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>

## 2-4-28 AF COUNTER ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Microphone Adapter  
Arbitrary Waveform Generator

STEP	PROCEDURE
1.	Recall Verification Setup File #27.
2.	Connect the Microphone Adapter to the MIC Connector and AUDIO I/O Connector.
3.	Connect the Arbitrary Waveform Generator to the Microphone Adapter AUDIO IN Connector.
4.	Set the Arbitrary Waveform Generator to 5 Vp-p at 5000 Hz.
5.	Verify the frequency is 5000 Hz ( $\pm 1$ Hz) on the 2975 AF Counter. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 6.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Front Panel Audio PCB Assy. Return the 2975 to Aeroflex for repair.</li></ul>
6.	Perform one of the following: <ul style="list-style-type: none"><li>• If this procedure is performed as a stand-alone procedure, perform the following key sequences to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment.<ul style="list-style-type: none"><li>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</li><li>Press <b>10 MHz REFERENCE</b> to select Internal reference.</li><li>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</li></ul></li><li>• If this procedure is performed as part of a complete Verification, proceed with the next Verification Procedure.</li></ul>



## 2-4-29 SINAD/DISTORTION METER ACCURACY

PREREQUISITES: 2-4-1 Initial Setup

EQUIPMENT REQUIRED: Microphone Adapter  
Arbitrary Waveform Generator

**NOTE:** If an Arbitrary Waveform Generator is used other than the model specified In Appendix B, an residual measurement needs to be accomplished prior to verifying the Distortion level in Step 7.

STEP	PROCEDURE
1.	Recall Verification Setup File #28.
2.	Connect the Microphone Adapter to the MIC Connector and AUDIO I/O Connector.
3.	Connect the Arbitrary Waveform Generator to the Microphone Adapter AUDIO IN Connector.
4.	Set the Arbitrary Waveform Generator for a 1 kHz sinewave carrier at 10.0 Vp-p. Set the AM Modulation on the Arbitrary Waveform Generator to 37% at a 1500.0 Hz rate.
5.	Verify the level is 12 dB ( $\pm 1.1$ dB) on the 2975 SINAD Meter. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 6.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Front Panel Audio PCB Assy. Return the 2975 to Aeroflex for repair.</li></ul>
6.	Switch OFF the AM Modulation on the Arbitrary Waveform Generator and record the Residual Distortion on the 2975 Distortion Meter.
7.	Set the AM Modulation on the Arbitrary Waveform Generator to 7% at a 1500.0 Hz rate.
8.	Subtract the Residual Distortion reading in Step 6 from the level on the Arbitrary Waveform Generator and verify the level is 5% ( $\pm 0.09\%$ ) on the 2975 Distortion Meter. <ul style="list-style-type: none"><li>• If reading is correct, go to Step 9.</li><li>• If reading is out of tolerance, this indicates a hardware failure in the 2975. Probable source of failure: Front Panel Audio PCB Assy. Return the 2975 to Aeroflex for repair.</li></ul>
9.	If this procedure is performed as a stand-alone procedure or as part of a complete Verification, perform the following key sequence to reset Factory Default Settings, then remove power from the Unit and disconnect the test equipment. <p>Press <b>MODE</b> Key, <b>7</b> Key, <b>1</b> Key to display the Configuration Screen.</p> <p>Press <b>10 MHz REFERENCE</b> to select Internal reference.</p> <p>Press <b>FACTORY DEFAULT (F2)</b> to restore the Unit to Factory Defaults.</p>

## 2-5 VERIFICATION DATA SHEET

TECHNICIAN: \_\_\_\_\_ DATE: \_\_\_\_\_

2975 S/N: \_\_\_\_\_

STEP	DATA	RESULT
<b>GENERATOR OUTPUT FREQUENCY (2-4-2)</b>		
4.	1 GHz ( $\pm 10$ Hz)	-----
<b>GENERATOR OUTPUT POWER (2-4-3)</b>		
4.	+10 dBm      +10 dBm ( $\pm 1.5$ dB)	-----
	0 dBm        0 dBm ( $\pm 1.5$ dB)	-----
	-10 dBm      -10 dBm ( $\pm 1.5$ dB)	-----
	-20 dBm      -20 dBm ( $\pm 1.5$ dB)	-----
	-30 dBm      -30 dBm ( $\pm 1.5$ dB)	-----
	-40 dBm      -40 dBm ( $\pm 1.5$ dB)	-----
	-50 dBm      -50 dBm ( $\pm 1.5$ dB)	-----
	-60 dBm      -60 dBm ( $\pm 1.5$ dB)	-----
<b>GENERATOR LEVEL FLATNESS (2-4-4)</b>		
3.	170 MHz      0 dBm ( $\pm 1$ dB)	-----
	220 MHz      0 dBm ( $\pm 1$ dB)	-----
	270 MHz      0 dBm ( $\pm 1$ dB)	-----
	320 MHz      0 dBm ( $\pm 1$ dB)	-----
	370 MHz      0 dBm ( $\pm 1$ dB)	-----
	420 MHz      0 dBm ( $\pm 1$ dB)	-----
	470 MHz      0 dBm ( $\pm 1$ dB)	-----
	520 MHz      0 dBm ( $\pm 1$ dB)	-----
	570 MHz      0 dBm ( $\pm 1$ dB)	-----
	620 MHz      0 dBm ( $\pm 1$ dB)	-----
	670 MHz      0 dBm ( $\pm 1$ dB)	-----
	720 MHz      0 dBm ( $\pm 1$ dB)	-----
	770 MHz      0 dBm ( $\pm 1$ dB)	-----
	820 MHz      0 dBm ( $\pm 1$ dB)	-----
	870 MHz      0 dBm ( $\pm 1$ dB)	-----
	920 MHz      0 dBm ( $\pm 1$ dB)	-----
	970 MHz      0 dBm ( $\pm 1$ dB)	-----
	1020 MHz     0 dBm ( $\pm 1$ dB)	-----
	1070 MHz     0 dBm ( $\pm 1$ dB)	-----
	1120 MHz     0 dBm ( $\pm 1$ dB)	-----
	1170 MHz     0 dBm ( $\pm 1$ dB)	-----
	1220 MHz     0 dBm ( $\pm 1$ dB)	-----
	1270 MHz     0 dBm ( $\pm 1$ dB)	-----
	1320 MHz     0 dBm ( $\pm 1$ dB)	-----
	1370 MHz     0 dBm ( $\pm 1$ dB)	-----
	1420 MHz     0 dBm ( $\pm 1$ dB)	-----

**GENERATOR LEVEL FLATNESS (2-4-4) (cont)**

3. 1470 MHz	0 dBm ( $\pm 1$ dB)	-----
1520 MHz	0 dBm ( $\pm 1$ dB)	-----
1570 MHz	0 dBm ( $\pm 1$ dB)	-----
1620 MHz	0 dBm ( $\pm 1$ dB)	-----
1670 MHz	0 dBm ( $\pm 1$ dB)	-----
1720 MHz	0 dBm ( $\pm 1$ dB)	-----
1770 MHz	0 dBm ( $\pm 1$ dB)	-----
1820 MHz	0 dBm ( $\pm 1$ dB)	-----
1870 MHz	0 dBm ( $\pm 1$ dB)	-----
1920 MHz	0 dBm ( $\pm 1$ dB)	-----
1970 MHz	0 dBm ( $\pm 1$ dB)	-----
2020 MHz	0 dBm ( $\pm 1$ dB)	-----
2070 MHz	0 dBm ( $\pm 1$ dB)	-----
2120 MHz	0 dBm ( $\pm 1$ dB)	-----
2170 MHz	0 dBm ( $\pm 1$ dB)	-----
2220 MHz	0 dBm ( $\pm 1$ dB)	-----
2270 MHz	0 dBm ( $\pm 1$ dB)	-----
2320 MHz	0 dBm ( $\pm 1$ dB)	-----
2370 MHz	0 dBm ( $\pm 1$ dB)	-----
2420 MHz	0 dBm ( $\pm 1$ dB)	-----
2470 MHz	0 dBm ( $\pm 1$ dB)	-----
2520 MHz	0 dBm ( $\pm 1$ dB)	-----
2570 MHz	0 dBm ( $\pm 1$ dB)	-----
2620 MHz	0 dBm ( $\pm 1$ dB)	-----
2670 MHz	0 dBm ( $\pm 1$ dB)	-----
2700 MHz	0 dBm ( $\pm 1$ dB)	-----

**GENERATOR T/R POWER LEVEL ACCURACY (2-4-5)**

3. -30 dBm	-30 dBm ( $\pm 1$ dB)	-----
-40 dBm	-40 dBm ( $\pm 1$ dB)	-----
-50 dBm	-50 dBm ( $\pm 1$ dB)	-----
-60 dBm	-60 dBm ( $\pm 1$ dB)	-----

**GENERATOR T/R POWER LEVEL FLATNESS (2-4-6)**

3. 50 MHz	-30 dBm ( $\pm 1$ dB)	-----
100 MHz	-30 dBm ( $\pm 1$ dB)	-----
150 MHz	-30 dBm ( $\pm 1$ dB)	-----
200 MHz	-30 dBm ( $\pm 1$ dB)	-----
250 MHz	-30 dBm ( $\pm 1$ dB)	-----
300 MHz	-30 dBm ( $\pm 1$ dB)	-----
350 MHz	-30 dBm ( $\pm 1$ dB)	-----
400 MHz	-30 dBm ( $\pm 1$ dB)	-----
450 MHz	-30 dBm ( $\pm 1$ dB)	-----
500 MHz	-30 dBm ( $\pm 1$ dB)	-----
550 MHz	-30 dBm ( $\pm 1$ dB)	-----
600 MHz	-30 dBm ( $\pm 1$ dB)	-----
650 MHz	-30 dBm ( $\pm 1$ dB)	-----
700 MHz	-30 dBm ( $\pm 1$ dB)	-----
750 MHz	-30 dBm ( $\pm 1$ dB)	-----
800 MHz	-30 dBm ( $\pm 1$ dB)	-----

**GENERATOR T/R POWER LEVEL FLATNESS (2-4-6) (cont)**

3.	850 MHz	-30 dBm (±1 dB)	-----
	900 MHz	-30 dBm (±1 dB)	-----
	950 MHz	-30 dBm (±1 dB)	-----
	1000 MHz	-30 dBm (±1 dB)	-----
	1050 MHz	-30 dBm (±1 dB)	-----
	1100 MHz	-30 dBm (±1 dB)	-----
	1150 MHz	-30 dBm (±1 dB)	-----
	1200 MHz	-30 dBm (±1 dB)	-----
	1250 MHz	-30 dBm (±1 dB)	-----
	1300 MHz	-30 dBm (±1 dB)	-----
	1350 MHz	-30 dBm (±1 dB)	-----
	1400 MHz	-30 dBm (±1 dB)	-----
	1450 MHz	-30 dBm (±1 dB)	-----
	1500 MHz	-30 dBm (±1 dB)	-----
	1550 MHz	-30 dBm (±1 dB)	-----
	1600 MHz	-30 dBm (±1 dB)	-----
	1650 MHz	-30 dBm (±1 dB)	-----
	1700 MHz	-30 dBm (±1 dB)	-----
	1750 MHz	-30 dBm (±1 dB)	-----
	1800 MHz	-30 dBm (±1 dB)	-----
	1850 MHz	-30 dBm (±1 dB)	-----
	1900 MHz	-30 dBm (±1 dB)	-----
	1950 MHz	-30 dBm (±1 dB)	-----
	2000 MHz	-30 dBm (±1 dB)	-----
	2050 MHz	-30 dBm (±1 dB)	-----
	2100 MHz	-30 dBm (±1 dB)	-----
	2150 MHz	-30 dBm (±1 dB)	-----
	2200 MHz	-30 dBm (±1 dB)	-----
	2250 MHz	-30 dBm (±1 dB)	-----
	2300 MHz	-30 dBm (±1 dB)	-----
	2350 MHz	-30 dBm (±1 dB)	-----
	2400 MHz	-30 dBm (±1 dB)	-----
	2450 MHz	-30 dBm (±1 dB)	-----
	2500 MHz	-30 dBm (±1 dB)	-----
	2550 MHz	-30 dBm (±1 dB)	-----
	2600 MHz	-30 dBm (±1 dB)	-----
	2650 MHz	-30 dBm (±1 dB)	-----
	2700 MHz	-30 dBm (±1 dB)	-----

**RF POWER METER ACCURACY (2-4-7)**

5.	10.5 dBm (±1.05 dB)	-----
----	---------------------	-------

**RSSI METER ACCURACY (2-4-8)**

4.	-70 dBm	-70.0 dBm (±2.5 dB)	-----
	-60 dBm	-60.0 dBm (±2.5 dB)	-----
	-50 dBm	-50.0 dBm (±2.5 dB)	-----
	-40 dBm	-40.0 dBm (±2.5 dB)	-----
	-30 dBm	-30.0 dBm (±2.5 dB)	-----
	-20 dBm	-20.0 dBm (±2.5 dB)	-----

STEP

DATA

RESULT

**ANALYZER LEVEL ACCURACY (2-4-9)**

5.	1 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	50 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	100 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	150 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	200 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	250 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	300 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	350 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	400 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	450 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	500 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	550 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	600 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	650 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	700 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	750 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	800 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	850 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	900 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	950 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1000 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1050 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1100 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1150 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1200 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1250 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1300 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1350 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1400 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1450 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1500 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1550 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1600 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1650 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1700 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1750 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1800 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1850 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1900 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	1950 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	2000 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	2050 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	2100 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	2150 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	2200 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	2250 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	2300 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	2350 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	2400 MHz	-30.0 dBm ( $\pm 2$ dB)	-----
	2450 MHz	-30.0 dBm ( $\pm 2$ dB)	-----

STEP	DATA	RESULT
<b>ANALYZER LEVEL ACCURACY (2-4-9) (cont)</b>		
5.	2500 MHz      -30.0 dBm ( $\pm 2$ dB)	-----
	2550 MHz      -30.0 dBm ( $\pm 2$ dB)	-----
	2600 MHz      -30.0 dBm ( $\pm 2$ dB)	-----
	2650 MHz      -30.0 dBm ( $\pm 2$ dB)	-----
	2700 MHz      -30.0 dBm ( $\pm 2$ dB)	-----
<b>GENERATOR FM RESIDUAL (2-4-10)</b>		
4.	<15 Hz rms	-----
<b>GENERATOR AM RESIDUAL (2-4-11)</b>		
4.	<0.1%	-----
<b>GENERATOR FM DEVIATION ACCURACY (2-4-12)</b>		
4.	Record FM deviation	-----
5.	Subtract reading in para 2-4-10 from reading in Step 4	-----
	FM deviation is 10 kHz ( $\pm 0.31$ kHz)	-----
<b>GENERATOR FM MODULATION RATE (2-4-13)</b>		
4.	50.0 Hz          6 kHz ( $\pm 0.18$ kHz)	-----
	300.0 Hz        6 kHz ( $\pm 0.18$ kHz)	-----
	10000.0 Hz      6 kHz ( $\pm 0.18$ kHz)	-----
<b>GENERATOR FM MODULATION DISTORTION (2-4-14)</b>		
5.	Modulation Distortion is <1%	-----
<b>GENERATOR AM MODULATION ACCURACY (2-4-15)</b>		
4.	Record AM Modulation	-----
5.	Subtract reading in para 2-4-11 from reading in Step 4	-----
	AM Modulation is 30% ( $\pm 5\%$ )	-----
<b>RF ERROR METER ACCURACY (2-4-16)</b>		
3.	1000.01 MHz    +10000 Hz ( $\pm 1$ Hz)	-----
	999.99 MHz     -10000 Hz ( $\pm 1$ Hz)	-----
<b>AF METER ACCURACY (2-4-17)</b>		
5.	1000 Hz ( $\pm 1$ Hz)	-----
<b>FM DEVIATION METER ACCURACY (2-4-18)</b>		
4.	Record deviation level	-----
6.	Record deviation level	-----
7.	Subtract Step 4 from Step 6	-----
	Deviation level is 10 kHz ( $\pm 0.52$ kHz)	-----

**AM MODULATION METER ACCURACY (2-4-19)**

- |                                       |  |       |
|---------------------------------------|--|-------|
| 4. Record modulation level            |  | ----- |
| 6. Record modulation level            |  | ----- |
| 7. Subtract Step 4 from Step 6        |  | ----- |
| Modulation level is 50% ( $\pm 5\%$ ) |  | ----- |

**ANALYZER FREQUENCY AND SPAN ACCURACY (2-4-20)**

- |   |  |       |
|---|--|-------|
| 4. Measure 20 dB bandwidth of displayed signal                                |  | ----- |
| Calculate center frequency  |  | ----- |
| Record peak frequency of displayed signal                                     |  | ----- |
| 5. Subtract 1.5 GHz from peak frequency in Step 4                             |  | ----- |
| Peak frequency is 0 kHz ( $\pm 2.5$ kHz)                                      |  | ----- |
| 7. -30 dBm point is within 1/2 minor division of 9th major division from left |  | ----- |

**ANALYZER BANDWIDTH SWITCHING ERROR (2-4-21)**

6. SPAN	RBW	VBW	TOLERANCE	
5 kHz	300 Hz	100 Hz	$\leq 2$ dB	-----
50 kHz	3 kHz	100 Hz	$\leq 2$ dB	-----
500 kHz	30 kHz	3 kHz	$\leq 2$ dB	-----
1 MHz	60 kHz	3 kHz	$\leq 2$ dB	-----
5 MHz	300 kHz	3 kHz	$\leq 2$ dB	-----
20 MHz	6 MHz	3 kHz	$\leq 2$ dB	-----

**OSCILLOSCOPE AMPLITUDE ACCURACY (2-4-22)**

4. GEN LEVEL	2975 OSC	TOLERANCE	
160 mVp-p	0.02 V/Div	7 to 9 major divisions	-----
400 mVp-p	0.05 V/Div	7 to 9 major divisions	-----
800 mVp-p	0.1 V/Div	7 to 9 major divisions	-----
1.6 Vp-p	0.2 V/Div	7 to 9 major divisions	-----
4 Vp-p	0.5 V/Div	7 to 9 major divisions	-----
8 Vp-p	1.0 V/Div	7 to 9 major divisions	-----
16 Vp-p	2.0 V/Div	7 to 9 major divisions	-----
7. GEN LEVEL	2975 OSC	TOLERANCE	
160 mVp-p	0.02 V/Div	7 to 9 major divisions	-----
400 mVp-p	0.05 V/Div	7 to 9 major divisions	-----
800 mVp-p	0.1 V/Div	7 to 9 major divisions	-----
1.6 Vp-p	0.2 V/Div	7 to 9 major divisions	-----
4 Vp-p	0.5 V/Div	7 to 9 major divisions	-----
8 Vp-p	1.0 V/Div	7 to 9 major divisions	-----
16 Vp-p	2.0 V/Div	7 to 9 major divisions	-----

**DIGITAL VOLTMETER DC ACCURACY (2-4-23)**

- |                          |  |       |
|--------------------------|--|-------|
| 4. 200 mV ( $\pm 10$ mV) |  | ----- |
|--------------------------|--|-------|

STEP	DATA	RESULT
<b>DIGITAL VOLTMETER AC ACCURACY (2-4-24)</b>		
4.	50 Hz            200 mV ( $\pm 30$ mV)	-----
	100 Hz           200 mV ( $\pm 30$ mV)	-----
	1 kHz            200 mV ( $\pm 30$ mV)	-----
	10 kHz           200 mV ( $\pm 30$ mV)	-----
	20 kHz           200 mV ( $\pm 30$ mV)	-----
<b>FUNCTION GENERATOR LEVEL ACCURACY (2-4-25)</b>		
5.	7.070 Vrms ( $\pm 350$ mVrms)	-----
<b>FUNCTION GENERATOR FREQUENCY ACCURACY (2-4-26)</b>		
4.	5000 Hz ( $\pm 1$ Hz)	-----
<b>FUNCTION GENERATOR TOTAL HARMONIC DISTORTION (2-4-27)</b>		
4.	Total harmonic output is $< 0.5\%$	-----
<b>AF COUNTER ACCURACY (2-4-28)</b>		
5.	5000 Hz ( $\pm 1$ Hz)	-----
<b>SINAD/DISTORTION METER ACCURACY (2-4-29)</b>		
5.	12 dB ( $\pm 1.1$ dB)	-----
6.	Record Residual Distortion	-----
8.	5% ( $\pm 0.09\%$ )	-----



## 2-6 CALIBRATION PROCEDURES

### 2-6-1 POWER SUPPLY VOLTAGES

PREREQUISITES: None

EQUIPMENT REQUIRED: Digital Multimeter

STEP	PROCEDURE
------	-----------

1. Remove Case Assy (para 3-3-1).

#### VERIFY RESISTANCE

2. Using the Digital Multimeter, verify resistance between the locations shown and chassis ground.

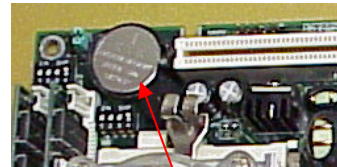
RESISTANCE	LOCATION
>100 Ω	42A1A1A1J19, Pin B2
>12 Ω	42A1A1A1J19, Pin B25
>12 Ω	42A1A1A1J19, Pin B28
>400 Ω	42A1A1A1J19, Pin B31
>2 kΩ	42A1A1A1J19, Pin C14

- If readings are correct, go to Step 3.
  - If any of the resistance measurements are out of tolerance, return the 2975 to the factory for fault diagnosis and repair.
3. Remove CPU Adapter Assy (para 3-3-9).
  4. Using the Digital Multimeter, verify the battery voltage on the back side of the CPU Adapter Assy is  $\geq 2.8$  Vdc.
    - If reading is correct, reinstall CPU Adapter Assy (para 3-3-9) and go to Step 5.
    - If reading is out of tolerance, replace the CPU Battery and go to Step 5.

(BACK SIDE)  
(7005-4243-500)



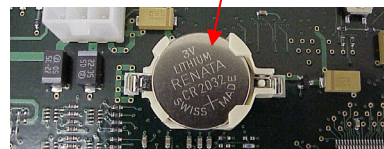
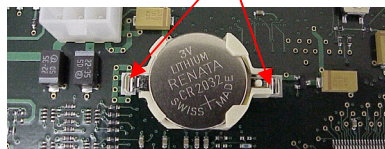
Measure Battery Voltage Here



(TOP SIDE)  
(7005-4243-500)

CPU Battery

(TOP SIDE)  
(7010-4238-800)

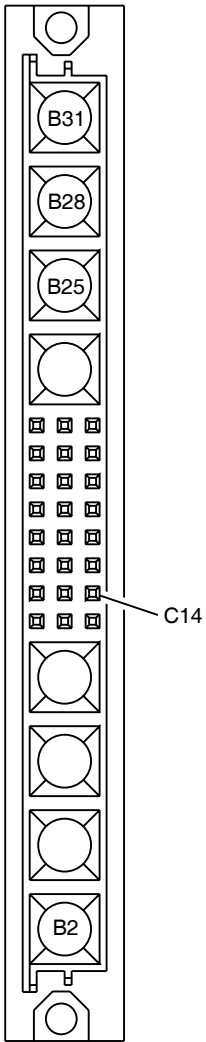


**VERIFY VOLTAGES**

5. Apply power to the 2975 from an appropriate power source.
6. Using the Digital Multimeter, verify the following voltages between the locations shown and chassis ground.

<b>VOLTAGE</b>	<b>LOCATION</b>
14.8 to 15.2 Vdc	42A1A1A1J19, Pin B2
4.9 to 5.3 Vdc	42A1A1A1J19, Pin B25
4.9 to 5.3 Vdc	42A1A1A1J19, Pin B28
14.8 to 15.2 Vdc	42A1A1A1J19, Pin B31
4.9 to 5.3 Vdc	42A1A1A1J19, Pin C14

- If readings are correct, go to Step 7.
  - If any of the supply voltages are out of tolerance, return the 2975 to the factory for fault diagnosis and repair.
7. Allow a 15-minute warm-up period before proceeding with the Calibration Procedures.



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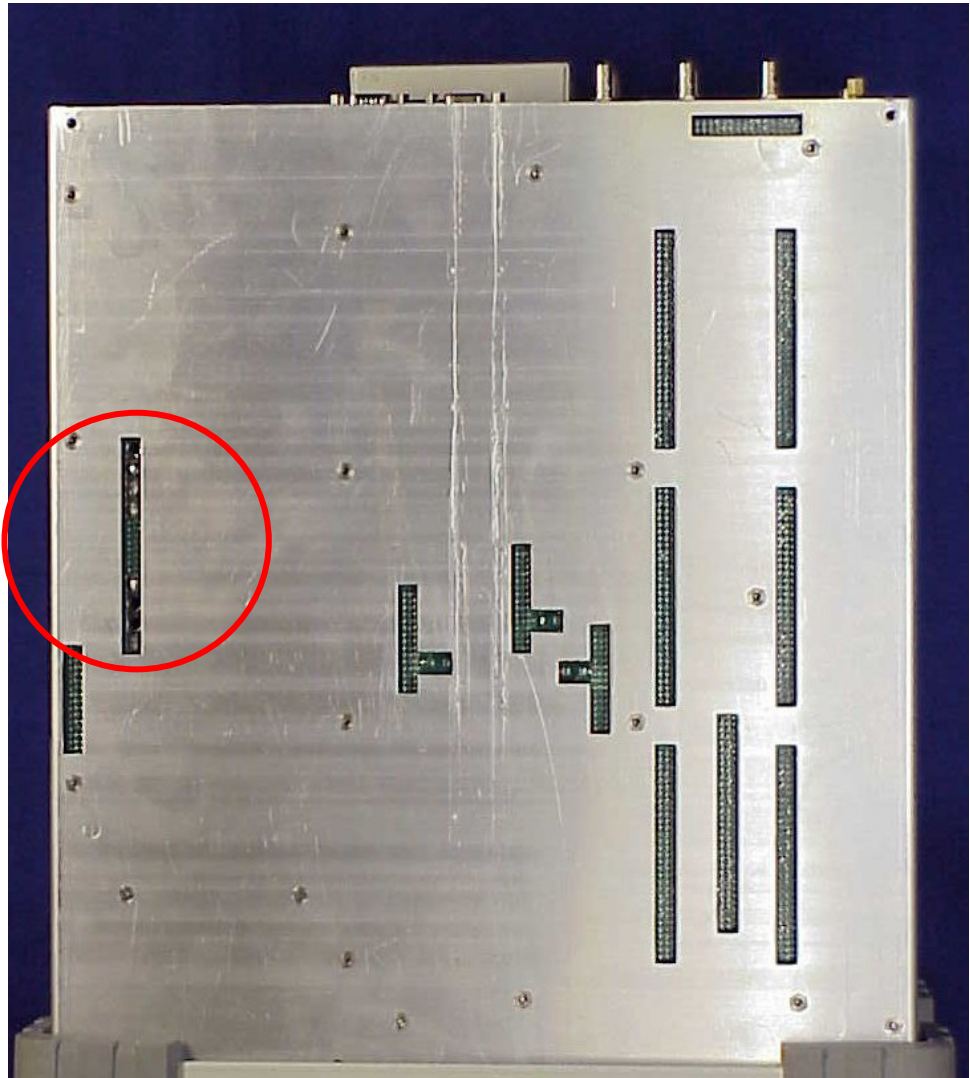


Figure 2-1 Power Supply Voltages

## 2-6-2 GENERATOR / ANALYZER / TCXO

PREREQUISITES:	2-6-1 Power Supply Voltages
EQUIPMENT REQUIRED:	PC w/ Ethernet Card and GPIB Card Power Meter Power Meter Sensor Head "A" Power Meter Sensor Head "B" Signal Generator Universal Counter Ethernet Crossover Cable GPIB Cables

**NOTE:** The Case Assy should be reassembled prior to performing the Generator / Analyzer Calibration Procedure.

**NOTE:** Refer to Figures 2 through 5 for the Calibration Test Equipment Configuration Setups, including cable hookups and GPIB addresses.

STEP	PROCEDURE
------	-----------

---

### ETHERNET CARD SETUP

1. With the PC operating in Windows 95, 98, 2000 or NT, right click on the Network icon and select **Properties**.
2. Select **TCP/IP** and **Specify An IP Address**.
3. Enter PC IP Address: **10, 200, 126, 77**
4. Enter PC Subnet Mask: **255, 255, 0, 0**
5. After the PC reboots, connect the Ethernet Crossover Cable to the 2975 and the PC Ethernet Card.
6. Power up the 2975.
7. Enter 2975 IP Address: **10, 200, 126, 76**
8. Enter 2975 Subnet Mask: **255, 255, 0, 0**

### CALIBRATION SOFTWARE SETUP

9. Insert Calibration Software CD-ROM into PC.
10. Run "Setup" to install the Calibration Software onto the PC.  
**NOTE:** The drive designation can be changed to the desired drive letter by the user. DO NOT use "X" as the drive letter.
11. Follow the on-screen prompts through the installation process.

### RUNNING THE CALIBRATION SOFTWARE

12. Select the **2975 Auto Calibration** icon.
13. Enter the following when prompted: Badge - **1112** Password - **1112**
14. With the Calibration Main Screen displayed, select **Test Menu, IFR-2975 (FITS)** and **Complete Calibration**.
15. Select **Run All Tests**.

16. Follow the on-screen prompts through the Calibration process.

**NOTE:** When the “Connect To UUT” pop-up window is displayed, the IP Address entered must match the IP Address of the 2975.

**NOTE:** The Calibration process can be halted at anytime by selecting **Pause/Abort** on the Calibration Main Screen.

17. When the Calibration is completed, the Calibration Results for the Generator and Analyzer Calibration process are stored in an electronic file on the PC, accessed by selecting **Report**.

## 2-7 CALIBRATION DATA SHEET

TECHNICIAN: \_\_\_\_\_ DATE: \_\_\_\_\_

2975 S/N: \_\_\_\_\_

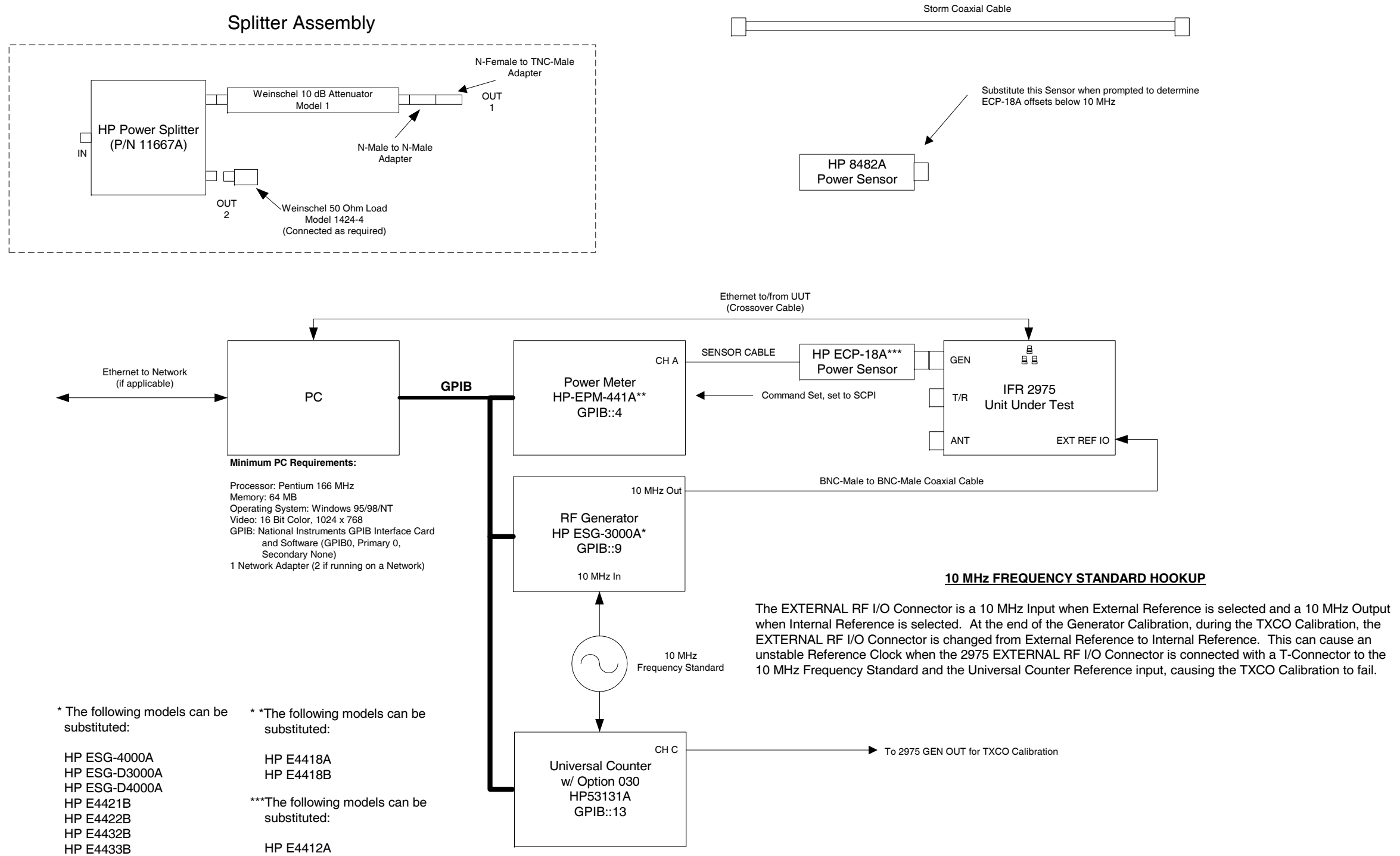
STEP	DATA	RESULT
<b>POWER SUPPLY VOLTAGES (2-6-1)</b>		
2.	>100 $\Omega$ at 42A1A1A1J19, Pin B2	_____ (√)
	>12 $\Omega$ at 42A1A1A1J19, Pin B25	_____ (√)
	>12 $\Omega$ at 42A1A1A1J19, Pin B28	_____ (√)
	>400 $\Omega$ at 42A1A1A1J19, Pin B31	_____ (√)
	>2 k $\Omega$ at 42A1A1A1J19, Pin C14	_____ (√)
4.	Battery Voltage is $\geq 2.8$ Vdc	_____
6.	14.8 to 15.2 Vdc at 42A1A1A1J19, Pin B2	_____ (√)
	4.9 to 5.3 Vdc at 42A1A1A1J19, Pin B25	_____ (√)
	4.9 to 5.3 Vdc at 42A1A1A1J19, Pin B28	_____ (√)
	14.8 to 15.2 Vdc at 42A1A1A1J19, Pin B31	_____ (√)
	4.9 to 5.3 Vdc at 42A1A1A1J19, Pin C14	_____ (√)

### GENERATOR / ANALYZER / TCXO (2-6-2)

Calibration Results for the Generator / Analyzer / TCXO Calibration process are stored in an electronic file on the PC when the Calibration is completed.

**EXAMPLE:** C:\2975CALIBRATIONV1.8\TESTREPORT\442215.RPT

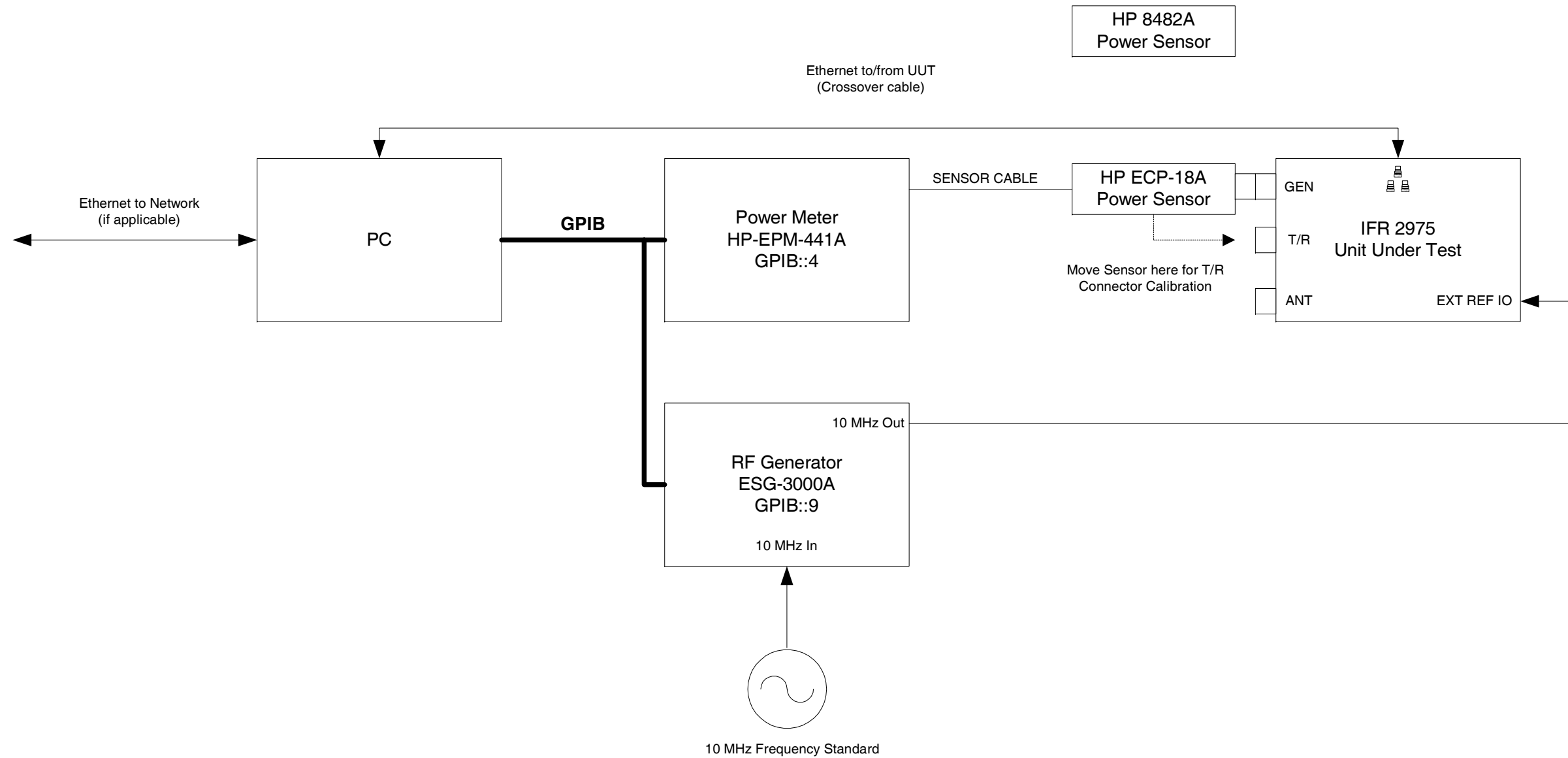
# 2975 Calibration Test Equipment Configuration



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Figure 2-2 2975 Calibration Test Equipment Configuration

## Generator Calibration Setup

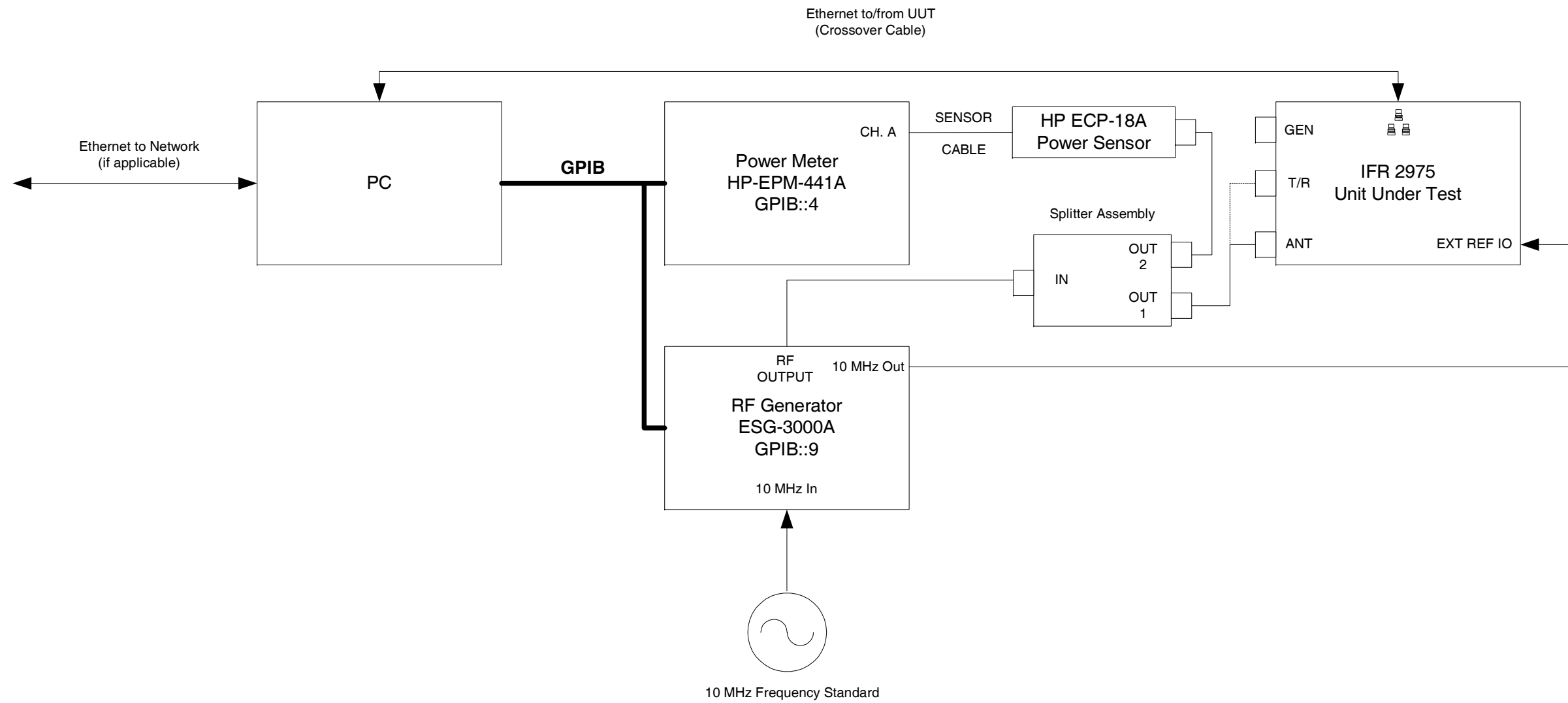


042M-048

Figure 2-3 Generator Calibration Setup



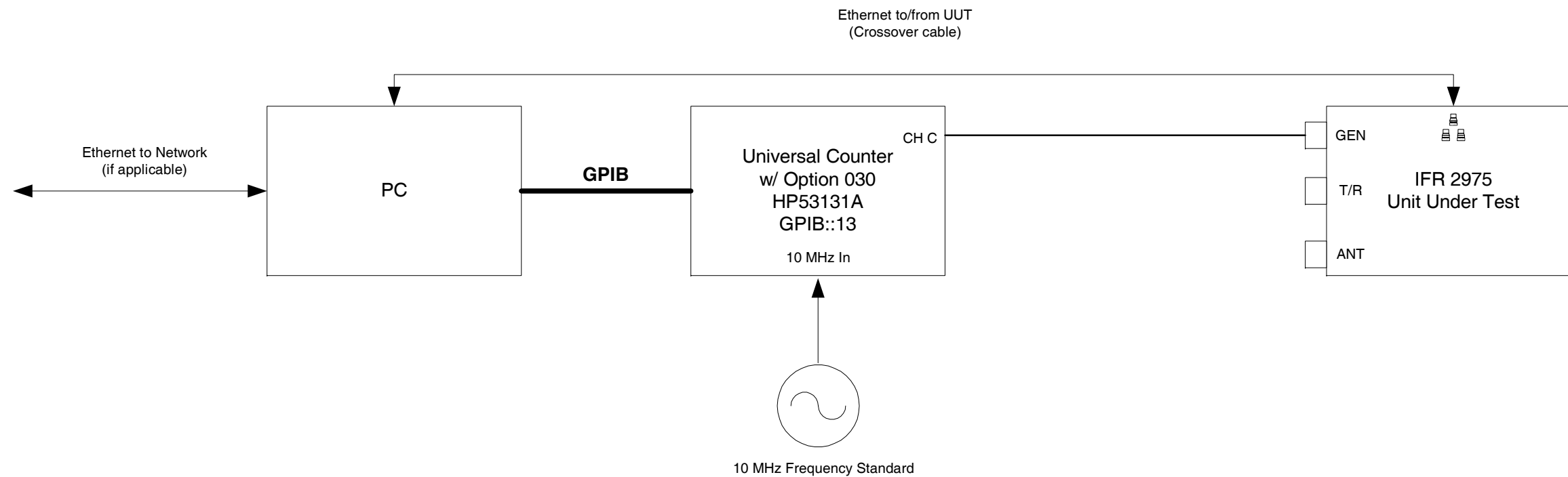
# Analyzer Calibration Setup



042M-049

Figure 2-4 Analyzer Calibration Setup

## TCXO Calibration Setup



### 10 MHz FREQUENCY STANDARD HOOKUP

The EXTERNAL RF I/O Connector is a 10 MHz Input when External Reference is selected and a 10 MHz Output when Internal Reference is selected. At the end of the Generator Calibration, during the TXCO Calibration, the EXTERNAL RF I/O Connector is changed from External Reference to Internal Reference. This can cause an unstable Reference Clock when the 2975 EXTERNAL RF I/O Connector is connected with a T-Connector to the 10 MHz Frequency Standard and the Universal Counter Reference input, causing the TXCO Calibration to fail.

042M-050

Figure 2-5 TCXO Calibration Setup