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Calibration Coefficient Installation for ICM TRL-CALIBRATION KITS Series TRL-200x on HP8720

PREFACE:

This procedure is valid for series TRL-200x calibration kits (3 Line Standards).

(This example uses the TRL-2004A calibration kit)

INSTRUCTION CRITERIA:

- Comments and suggestions are contained in parenthesis

- Screen menu keys are in *ITALICS*

- Data or hard keys are in **BOLDFACE**

EQUIPMENT:

HP 8720 with disk drive

ICM TRL-2004A P/N A0132140A

Standard Definitions for TRL-2004A for HP8720

5/16" Torque Wrench

ICM Application Note 111 "Mainframe/TRL Calibration Trouble Shooting Guide"

For background information on the HP8720 Network Analyzer, please refer to the HP operating manual.

START INSTALLATION:

Select **CAL** (located in RESPONSE area of front panel)

Select *CAL KIT* [...]

Depress *MODIFY* [...]

DEFINING THRU STANDARD:

- Depress *DEFINE STANDARD* (screen will display CALIBRATION STANDARD # x)

Enter **4** then **x1** (located in ENTRY area of front panel)

- Depress *DELAY/THRU*

- Depress *MODIFY STD. DEFINITION*

- Depress *SPECIFY OFFSET*

- Depress *OFFSET DELAY*

Enter **0** then **x1**

- Depress *OFFSET LOSS*

Enter **0** then **x1**

- Depress *OFFSET Z0* (should read 50 Ohms), otherwise enter 50 then x1

- Depress *MINIMUM FREQUENCY*

Enter **0** then **x1**

- Depress *MAXIMUM FREQUENCY*

    Enter **2 6 . 6 G/n**

- Depress *COAX*

- Depress *STD OFFSET DONE*

- Depress *LABEL STD*

- Depress *ERASE TITLE*

The label is created by the operator using the rotary knob and screen menu keys
(For this example, use **T H R U**)

- Depress *DONE*

- Depress *STD DONE* (defined)

DEFINING SHORT STANDARD:

- Depress *DEFINE STANDARD*

Enter **1** then **x1**

- Depress *SHORT*

- Depress *MODIFY STD. DEFINITION*

- Depress *SPECIFY OFFSET*

- Depress *OFFSET DELAY*

Enter **- 0. 0 7 7 G/n** (Active area should read -77pS)

- Depress *OFFSET LOSS* (should read 0), otherwise enter 0 then x1

- Depress *OFFSET Z0* (should read 50 Ohms), otherwise enter 50 then x1

- Depress *MINIMUM FREQUENCY* (should read 0), otherwise enter 0 then x1

- Depress *MAXIMUM FREQUENCY*

Enter **9 9 9 G/n** (should read 999 GHz)

- Depress *COAX*

- Depress *STD OFFSET DONE*

- Depress *LABEL STANDARD*

- Depress *ERASE TITLE*

- The label is created by the operator using the rotary knob and screen menu keys (For this example, use **S H O R T**)

- Depress *DONE*

- Depress *STD DONE (DEFINED)*

DEFINING MATCH or LOAD STANDARD

- Depress *DEFINE STANDARD*

Enter **5** then **x1**

- Depress *LOAD*

- Depress *MODIFY STD. DEFINITION*

- Depress *FIXED*

- Depress *SPECIFY OFFSET*

- Depress *OFFSET DELAY*

Enter **0. 0 0 1 G/n** (Active area should read 1 pS)

- Depress *OFFSET LOSS* (should read 0), otherwise enter 0 then x1

- Depress *OFFSET Z0* (should read 50 Ohms), otherwise enter 50 then x1

- Depress *MINIMUM FREQUENCY* (should read 0), otherwise enter 0 then x1

- Depress *MAXIMUM FREQUENCY*

Enter **0 .5 0 1** then **G/n** (Active area should read 501 MHz)

- Depress *COAX*

- Depress *STD OFFSET DONE*

- Depress *LABEL STD*

- Depress *ERASE TITLE*

The label is created by the operator using the rotary knob and screen menu keys (For this example, use **M A T C H**)

- Depress *DONE*

- Depress *STD DONE* (defined)

DEFINING LINE 1 STANDARD

- Depress *DEFINE STANDARD*

Enter **6** then **x1**

- Depress *DELAY/THRU*

- Depress *MODIFY STD. DEFINITION*

- Depress *SPECIFY OFFSET*

- Depress *OFFSET DELAY*

Enter **0 . 1 1 3 5 G/n** (Should read 113.5 pS)

- Depress *OFFSET LOSS* (should read 0), otherwise enter 0 then x1

- Depress *OFFSET Z0* (should read 50 Ohms), otherwise enter 50 then x1

- Depress *MINIMUM FREQUENCY*

Enter **0. 4 9 9** then **G/n** (Active area should read 499 MHz)

- Depress *MAXIMUM FREQUENCY*

Enter **3 . 5** then **G/n** (Active area should read 3.5 GHz)

- Depress *COAX*

- Depress *STD OFFSET DONE*

- Depress *LABEL STANDARD*

- Depress *ERASE TITLE*

- The label is created by the operator using the rotary knob and screen menu keys (For this example, use **L I N E 1**)

- Depress *DONE*

- Depress *STD DONE (defined)*

DEFINING LINE 2 STANDARD

- Depress *DEFINE STANDARD*

Enter **7** then **x1**

- Depress *DELAY/THRU*

- Depress *MODIFY STD. DEFINITION*

- Depress *SPECIFY OFFSET*

- Depress *OFFSET DELAY*

Enter **0. 0 2 6 G/n** (Should read 26 pS)

- Depress *OFFSET LOSS* (should read 0), otherwise enter 0 then x1

- Depress *OFFSET Z0* (should read 50 Ohms), otherwise enter 50 then x1

- Depress *MINIMUM FREQUENCY*

Enter **1 . 9 9** then **G/n** (Active area should read 1.99 GHz)

- Depress *MAXIMUM FREQUENCY*

Enter **1 8 . 1** then **G/n** (Active area should read 18.1 GHz)

- Depress *COAX*

- Depress *STD OFFSET DONE*

- Depress *LABEL STANDARD*

- Depress *ERASE TITLE*

- The label is created by the operator using the rotary knob and screen menu keys (For this example, use **L I N E 2**)

- Depress *DONE*

- Depress *STD DONE (defined)*

DEFINING LINE 3 STANDARD

- Depress *DEFINE STANDARD*

Enter **8** then **x1**

- Depress *DELAY/THRU*

- Depress *MODIFY STD. DEFINITION*

- Depress *SPECIFY OFFSET*

- Depress *OFFSET DELAY*

Enter **0. 0 1 8 G/n** (Should read 18 pS)

- Depress *OFFSET LOSS* (should read 0), otherwise enter 0 then x1

- Depress *OFFSET Z0* (should read 50 Ohms), otherwise enter 50 then x1

- Depress *MINIMUM FREQUENCY*

Enter **5 . 9 9** then **G/n** (Active area should read 5.99 GHz)

- Depress *MAXIMUM FREQUENCY*

Enter **2 6 . 5 1** then **G/n** (Active area should read 26.51 GHz)

- Depress *COAX*

- Depress *STD OFFSET DONE*

- Depress *LABEL STANDARD*

- Depress *ERASE TITLE*

- The label is created by the operator using the rotary knob and screen menu keys (For this example, use **L I N E 3**)

- Depress *DONE*

- Depress *STD DONE (defined)*

CLASS ASSIGNMENTS:

- Depress *SPECIFY CLASS*

- Depress *MORE*

- Depress *MORE*

- Depress *TRL THRU*

Enter **4** then **x1**

- Depress *TRL REFLECT*

Enter **1** then **x1**

- Depress *TRL LINE OR MATCH*

Enter **5** then **x1** **6** then **x1** **7** then **x1** **8** then **x1**

- Depress *SPECIFY CLASS DONE*

- Depress *LABEL CLASS*

- Depress *MORE*

- Depress *MORE*

- Depress *TRL THRU*

- Depress *ERASE TITLE*

- The label is created by the operator using the rotary knob and screen menu keys (For this example, use **T H R U**)

- Depress *DONE*

- Depress *TRL REFLECT*

- Depress *ERASE TITLE*

- The label is created by the operator using the rotary knob and screen menu keys (For this example, use **SHORT**)

- Depress *DONE*

- Depress *TRL LINE OR MATCH*

- Depress *ERASE TITLE*

- The label is created by the operator using the rotary knob and screen menu keys (For this example, use **L123+MATCH)**

- Depress *DONE*

- Depress *LABEL CLASS DONE*

- Depress *TRL/LRM OPTION* (Verify that LINE Z0 and SET REF. THRU are underlined, otherwise Depress LINE Z0 and THRU)

- Depress *RETURN*

- Depress *LABEL KIT*

- Depress *ERASE TITLE*

- The label is created by the operator using the rotary knob and screen menu keys (For this example, use **TRL-2004A**)

- Depress *DONE*

- Depress *KIT DONE (MODIFIED)*

- Depress *SAVE USER KIT,* (instrument will beep but no other menu will appear)

- Depress *RETURN*

- Depress *CAL KIT [TRL-2004A]*

- Depress *SELECT CAL KIT*

- Depress *USER KIT*

- Depress *RETURN*

- Depress *RETURN*

- **IT IS SUGGESTED THAT THE OPERATOR SAVES THIS CAL KIT TO DISK**.

- Push **SAVE/RECALL** (located in INSTRUMENT STATE area of front panel)

- Depress *SELECT DISK*

- Insert a Floppy disk (must be double sided and formatted)

- Depress *INTERNAL DISK*

- Depress *RETURN*

- Depress *SAVE STATE* (display will show SAVING: INSTRUMENT STATE, then SAVING: CAL KIT.

- END OF PROCEDURE

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