Keysight Technologies 85120A-E13 High Power SCMM System

Notice: Hewlett-Packard's former Test and Measurement business became part of Agilent Technologies in 1999, and then Keysight Technologies in August 2014. This document is provided as a courtesy but is no longer kept current and thus will contain historical references to Agilent, HP or Hewlett-Packard. For more information, go to www.keysight.com.

KEYSIGHT TECHNOLOGIES

Operating & Service Manual

Notices

Manual Part Number

85120-90021

Edition

October 2014

Published by:

Keysight Technologies, Inc.
1400 Fountaingrove Pkwy.
Santa Rosa, CA 95403 USA

Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

HIGH POWER SCMM
SYSTEM
85120A-E13

MANUAL PART NO.
85120-90021
JULY 1992
REV 1 FEBRUARY 1994
REV 2 MAY 1994

DESCRIPTION:

The HP 85120A Option E13 is an HP 8510C based Single Connection Multiple Measurement (SCMM) system. This system is integrated at the Hewlett-Packard Santa Rose facility and installed at the customer site by a Hewlett-Packard engineer.

The HP 85120A-E13 system (when connected to a customer supplied spectrum analyzer) is capable of performing the following measurements:

1. S-Parameter measurements.
2. Noise Figure measurements.
3. Spectrum analysis, spurious signal analysis.
4. Spectrum analysis, harmonics, intermodulation products.
5. Power in and power out measurements and power added efficiency.
6. Power supply voltage and current measurements.
7. Conversion loss.
8. DC parameters of DUT.

Refer to Table 1 for a listing of system components. Refer to Figure 1 for a system configuration diagram. Figure 2 is a simplified system block diagram.

Description	Part Number	Qty
NETWORK ANALYZER	8510C	1
SYNTHESIZED SWEEPER	83621A	1
POWER METER	437B #002	1
POWER METER	437B #003	1
SYSTEM CABINET 1.6 M	E3661-60001	1
POWER SENSOR	8481A	1
SYSTEM POWER SUPPLY	6624A	1
SYSTEM POWER SUPPLY	6653A	1
POWER SENSOR	8485A	1
HIGH POWER TEST SET	8514B #H83	1
MULTIPLEXER CARD (FOR 3457A)	44491A	1
ATTENUATOR/SWITCH DRIVER	11713A	2
INTERFACE UNIT	8514B #K44	1
RF CABLE W1	85120-20001	1
RF CABLE W2	85120-20002	1
RF CABLE W3	85120-20003	1
RF CABLE W4	85120-20004	1
RF CABLE W5,W7	85120-20005	2
RF CABLE W6	85120-20006	1
RF CABLE W8	85120-20007	1
RF CABLE W9	85120-20008	1

Table 1

Refer to Figure 9 for the wiring diagram of the feed-through panel and 37 pin connector that are depicted in Figure 1.

DESCRIPTION (continued):

System Configuration
Figure 1

OPERATION:

System Block Diagram
Figure 2

OPERATION:

Figures 3 through 8 illustrate the HP 11713A Attenuator/Switch Driver settings and signal paths for S-Parameter, Noise Figure, and Spectrum Analyzer measurements using the HP 85120A-E13 system.

Figure 3 shows the settings and path for normal S-Parameter operation of the HP 8514B-H83 Test Set with an amplifier or jumper installed between J1 and J2 of the HP 8514B-K44 Test Set Interface.

Figure 4 shows the settings and path for normal S-Parameter operation of the HP 8514B-H83 Test Set with the amplifier bypassed.

Figure 5 shows the settings and path for normal S-Parameter operation of the HP 8514B-H83 Test Set with the a1 reference coupled from the amplifier output.

Figure 6 shows the settings and path for Noise Figure measurements.
NOTE: The high power amplifier should be turned OFF for this mode.

Figure 7 shows the settings and path for monitoring the Port 1 power level or monitoring the Port 2 signal with a spectrum analyzer (for all S-Parameter modes) .

Figure 8 shows the settings and path for monitoring the Port 2 power level or monitoring the Port 1 signal with a spectrum analyzer (for all S-Parameter modes).

OPERATION (continued) :

Figure 3

OPERATION (continued):

Figure 4

OPERATION (continued):

Figure 5

OPERATION (continued):

Figure 6

OPERATION (continued):

Figure 7

OPERATION (continued):

Figure 8

Figure 9

HP 85120A OPTION E13

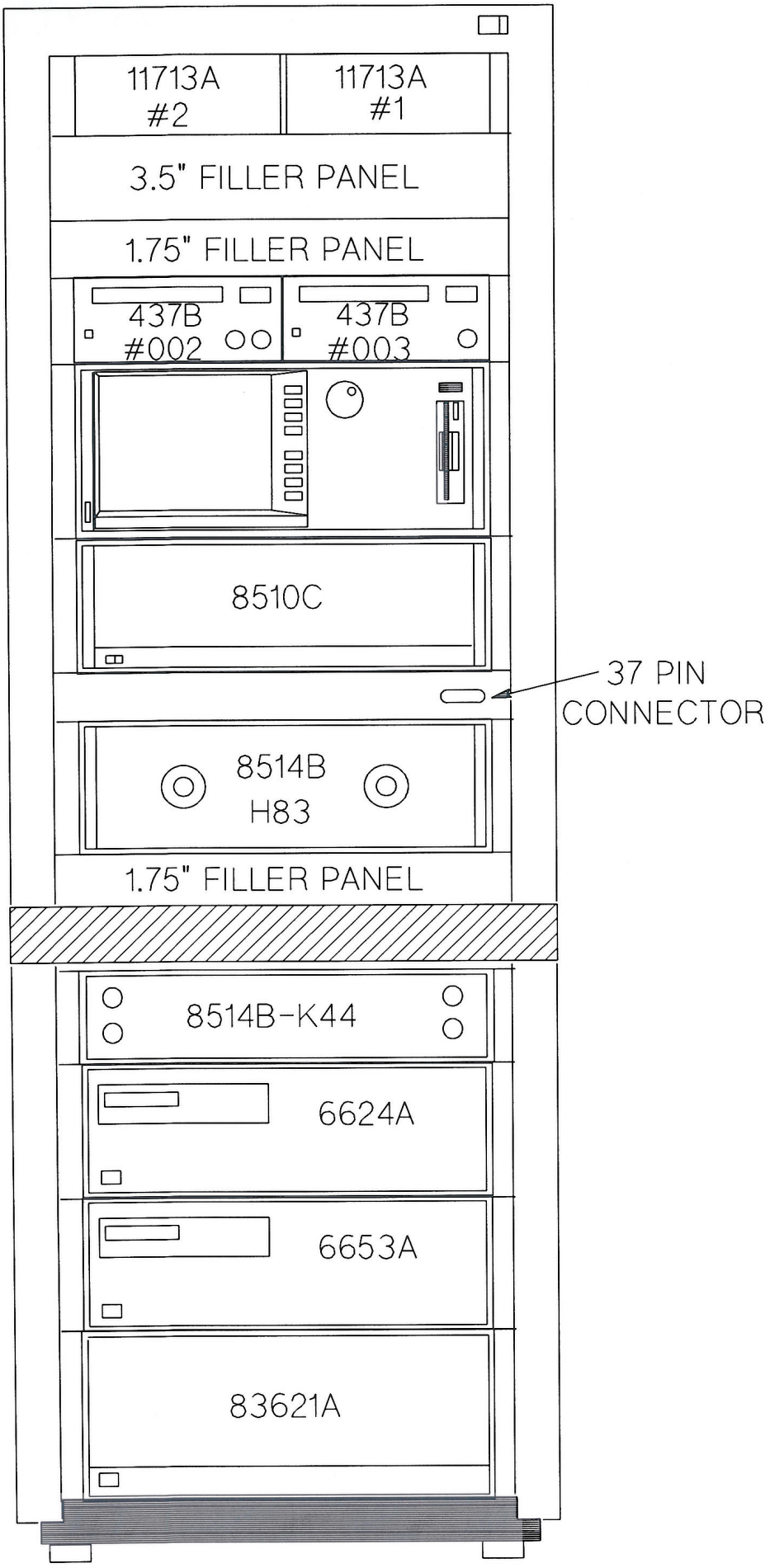


Fig-1

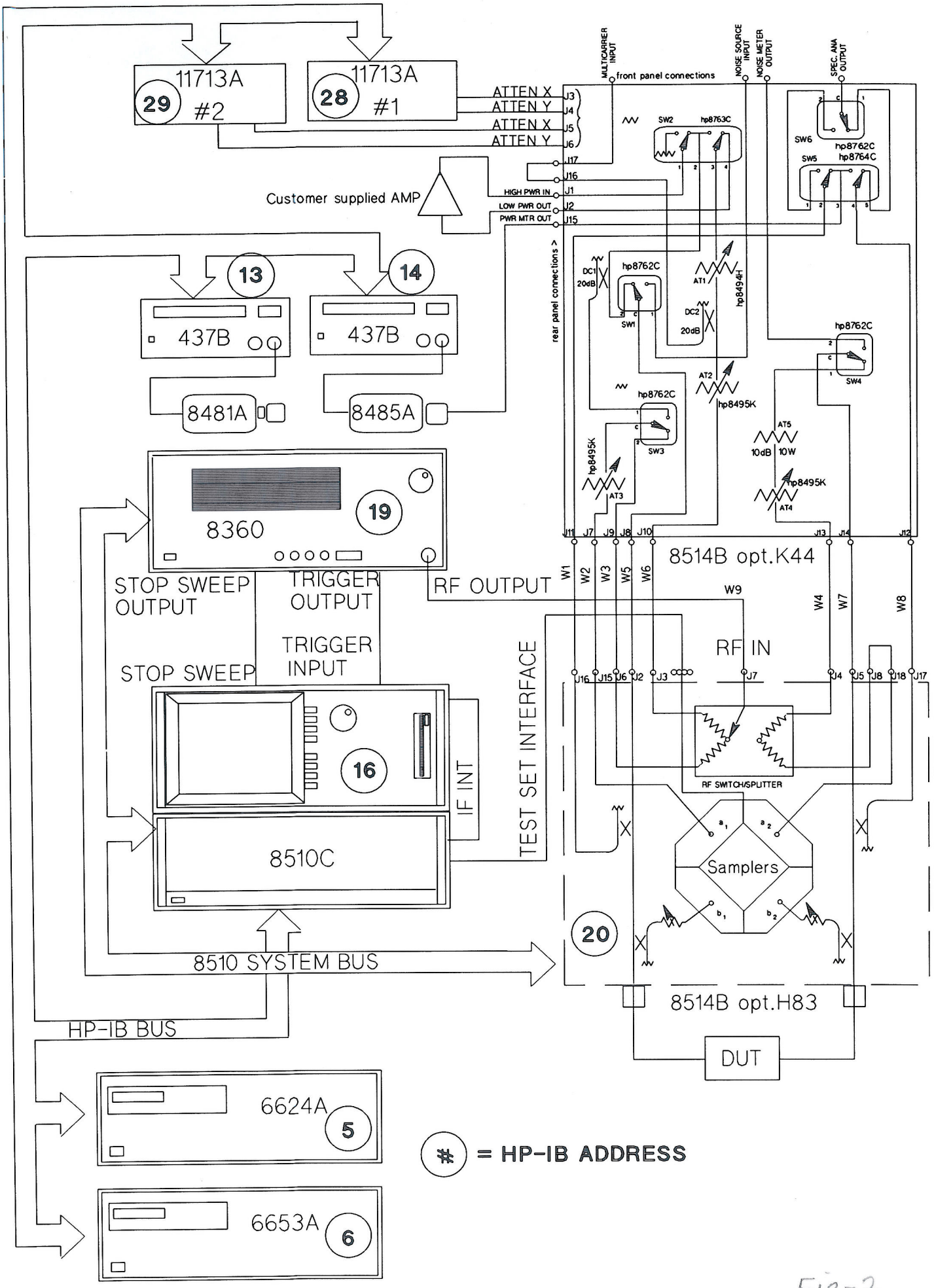
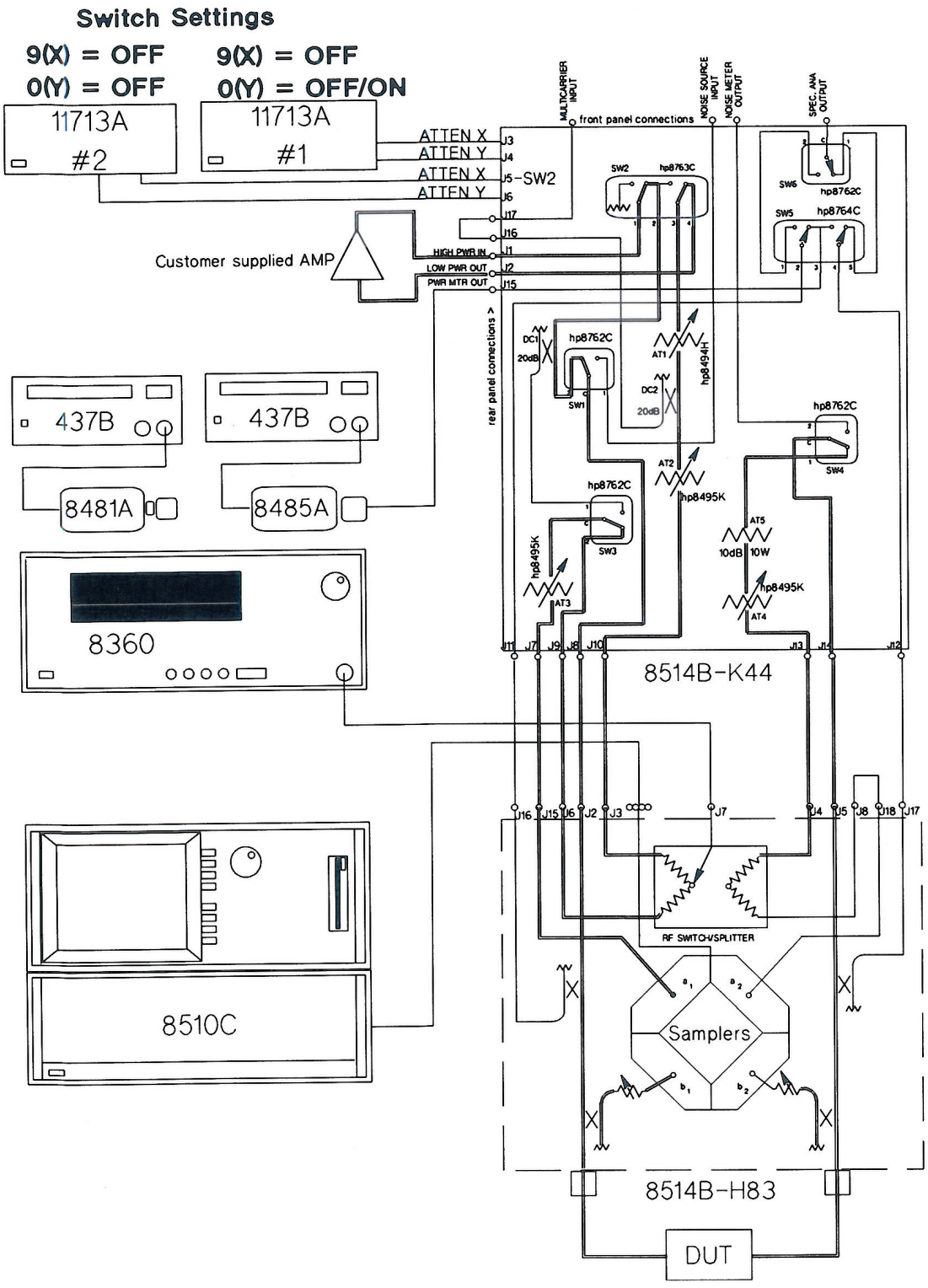
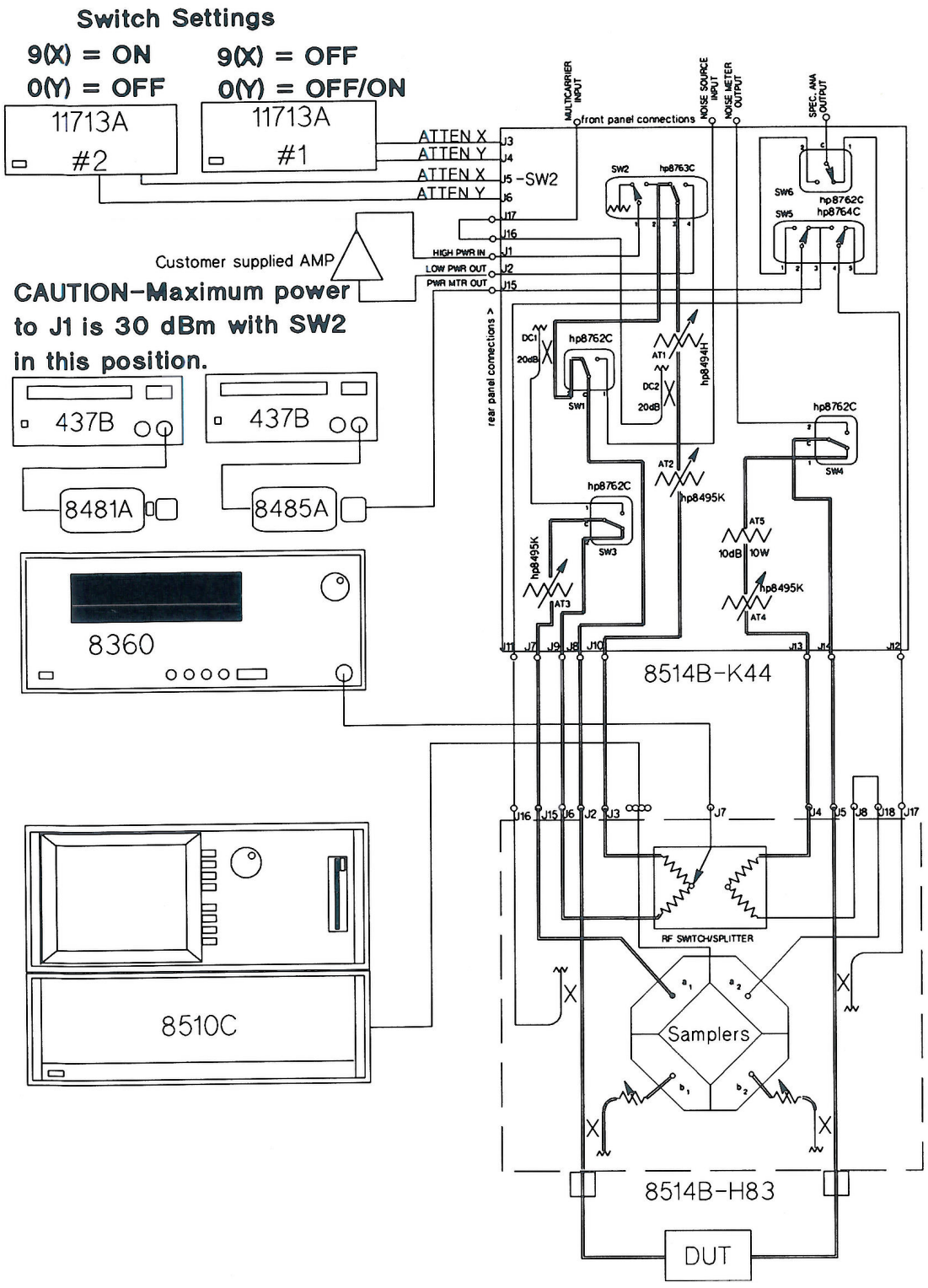

11713A
29
#2
11713A
28
#1
ATTEN X
ATTEN Y
ATTEN X
ATTEN Y
J3
J4
J5
J6
MULTICARRIER INPUT
front panel connections
NOISE SOURCE INPUT
NOISE METER OUTPUT
SPEC. ANA OUTPUT
SW2
hp8763C
SW6
hp8762C
SW5
hp8764C
J17
J16
J1
J2
J15
HIGH PWR IN
LOW PWR OUT
PWR MTR OUT
Customer supplied AMP
rear panel connections >
DC1
20dB
hp8762C
AT1
hp8494H
SW1
DC2
20dB
hp8762C
SW4
AT2
hp8762C
hp8495K
SW3
AT5
10dB 10W
hp8495K
AT3
hp8495K
AT4
13
14
437B
437B
8481A
8485A
19
8360
J11
J7
J9
J8
J10
J13
J14
J12
8514B opt.K44
STOP SWEEP OUTPUT
TRIGGER OUTPUT
RF OUTPUT
W1
W2
W3
W5
W6
W9
W4
W7
W8
TRIGGER INPUT
STOP SWEEP
RF IN
J16
J15
J6
J2
J3
J7
J4
J5
J8
J18
J17
16
IF INT
TEST SET INTERFACE
RF SWITCH/SPLITTER
Samplers
8510C
20
8510 SYSTEM BUS
8514B opt.H83
DUT
HP-IB BUS
6624A
5
6653A
6
= HP-IB ADDRESS

Fig-2



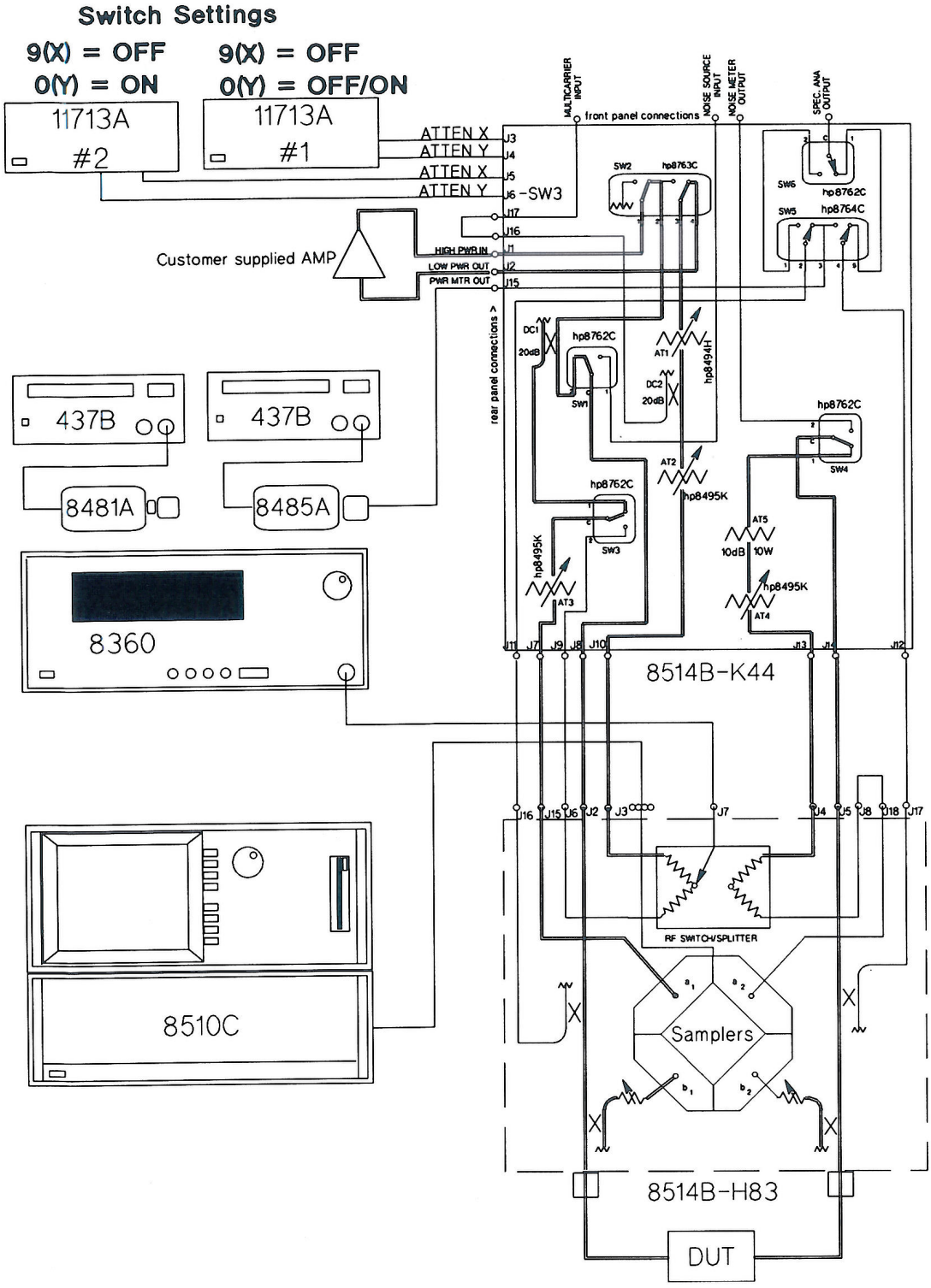
Signal Path for normal S-Parameter operation of 8514B-H83 Test Set. (Amplifier or jumper installed between J1 and J2 of 8514B-K44).

Fig-3



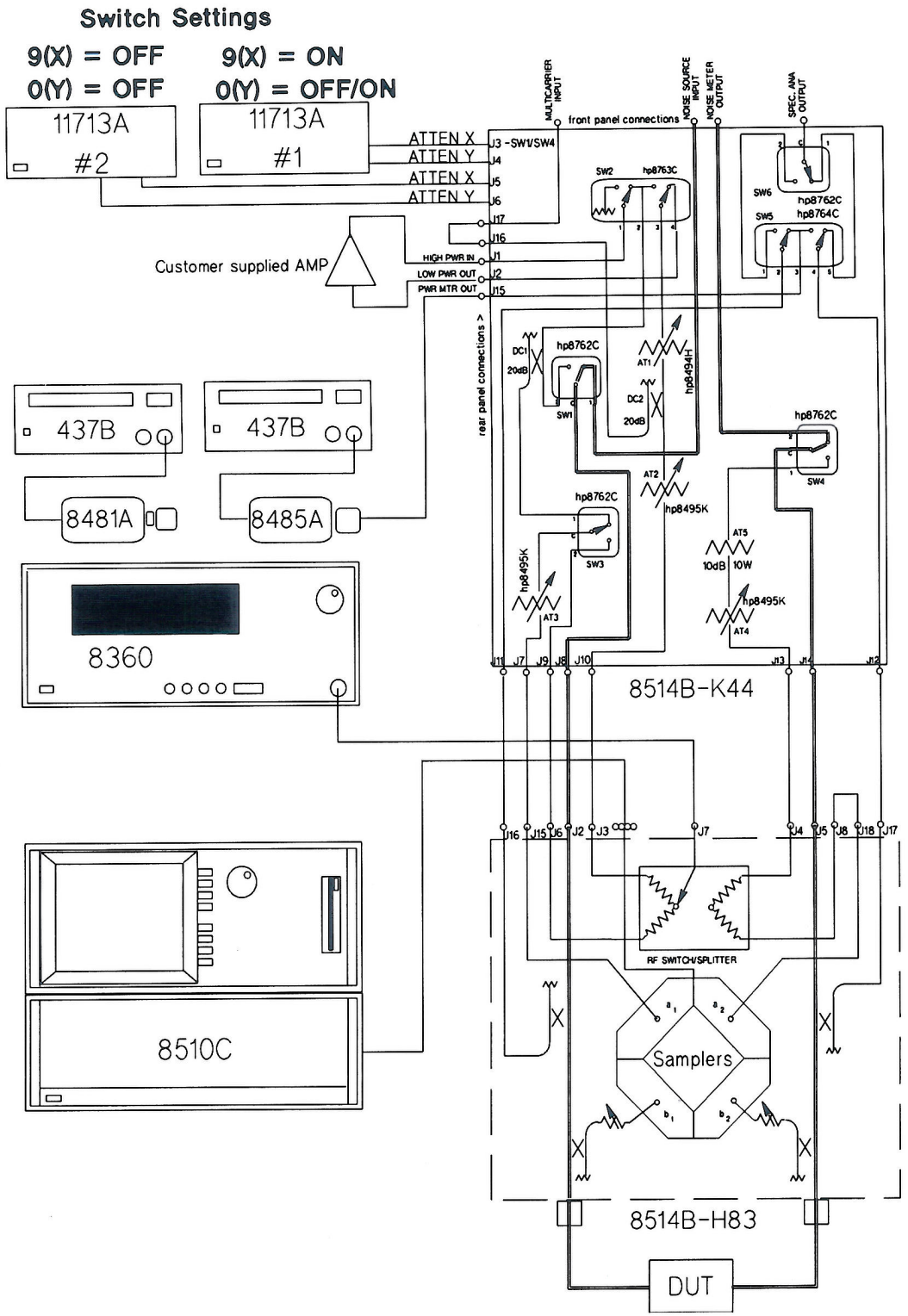
Signal Path for normal S-Parameter operation of 8514B-H83 Test Set. (Amplifier is bypassed).

Fig-4



Signal Path for normal S-Parameter operation of 8514B-H83 Test Set. (a1 reference coupled from amplifier output).

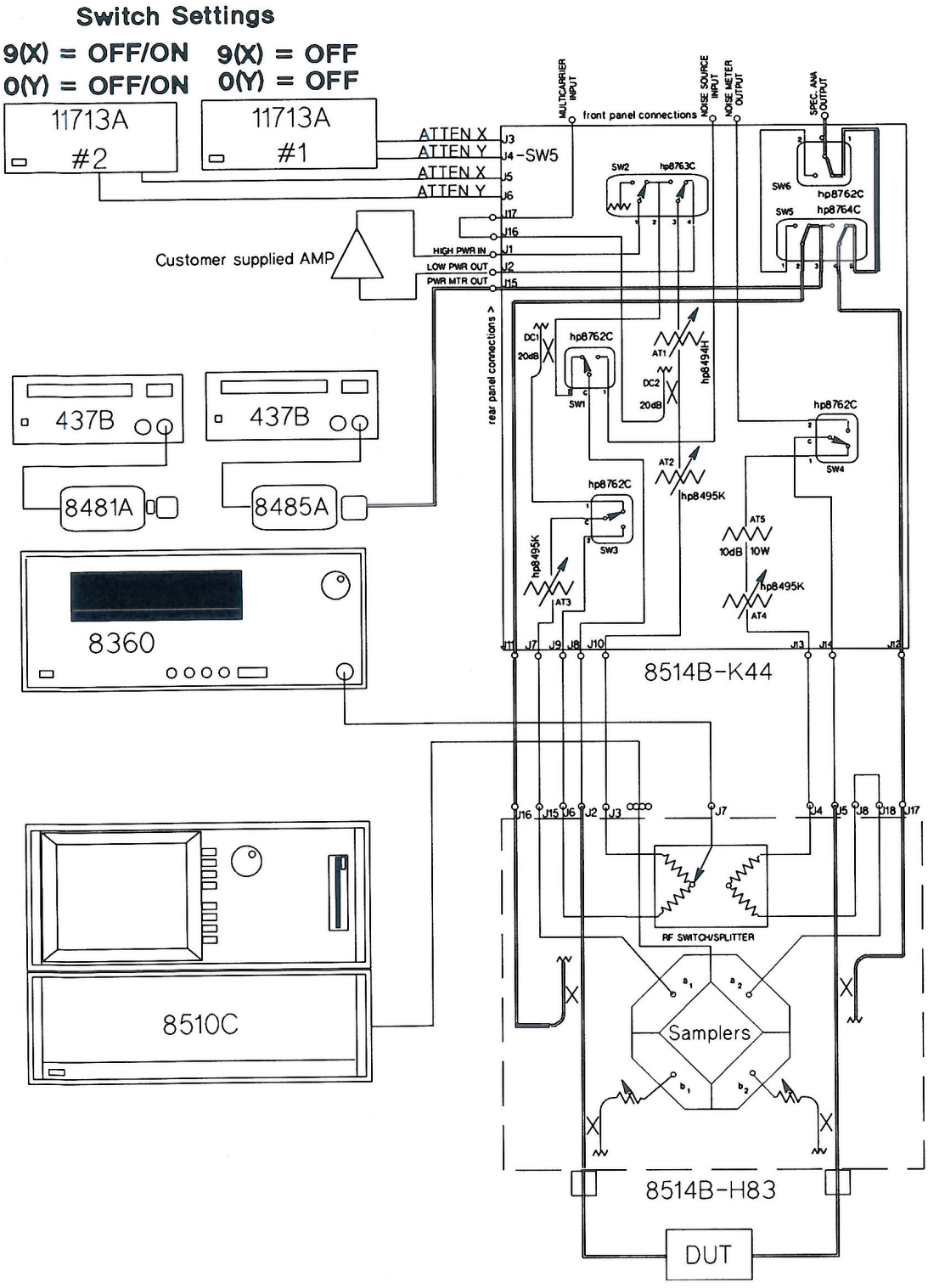
Fig-5



Signal Path for Noise Figure Measurements.

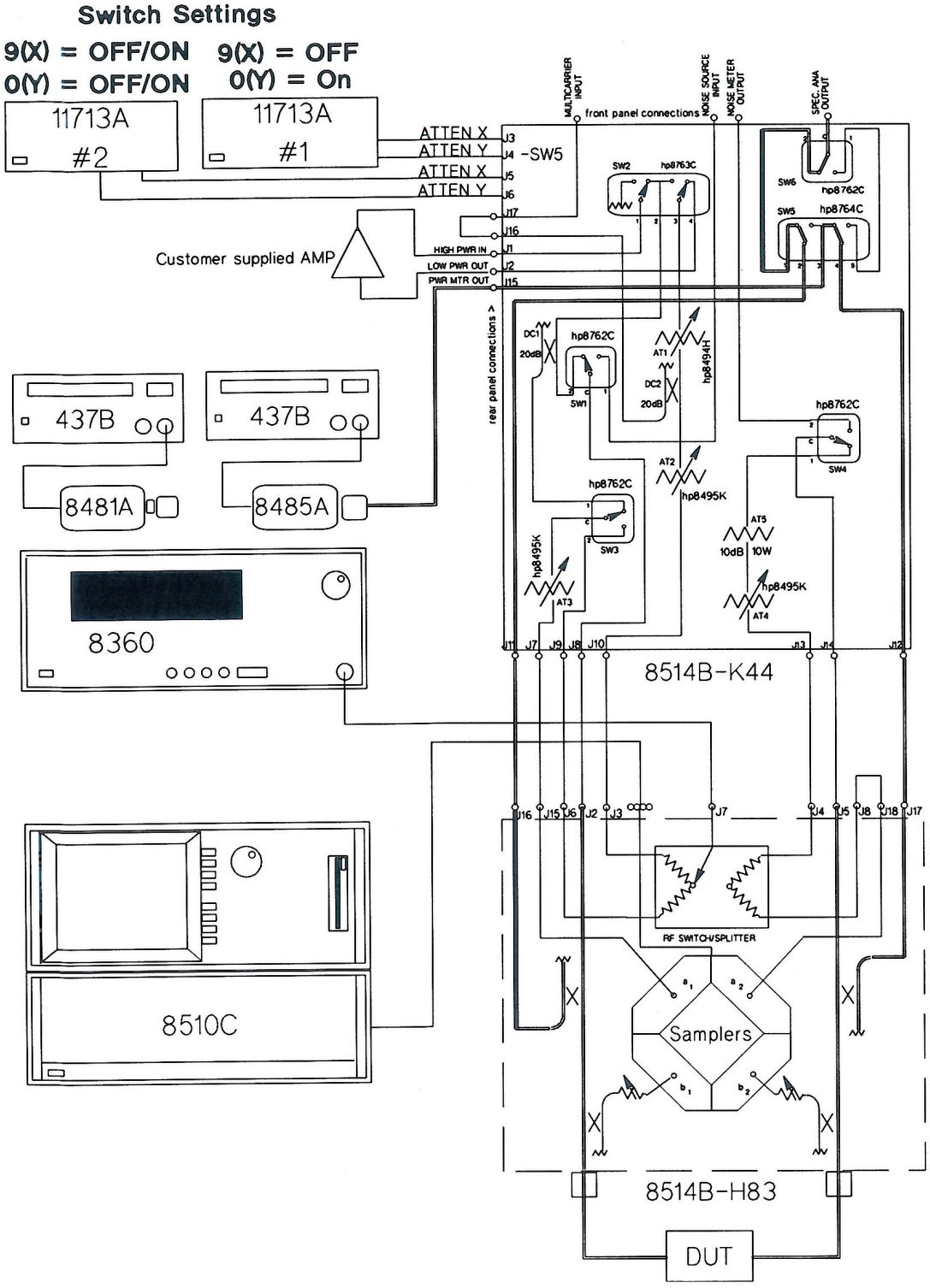
(Note–High Power Amp should be turned OFF for this mode).

Fig-6



Monitor Port 1 power level. Monitor Port 2 signal with spectrum analyzer (for all S-Pararmeter modes).

Fig-7



Monitor Port 2 power level. Monitor Port 1 signal with spectrum analyzer (for all S-Pararmeter modes).

Fig-8

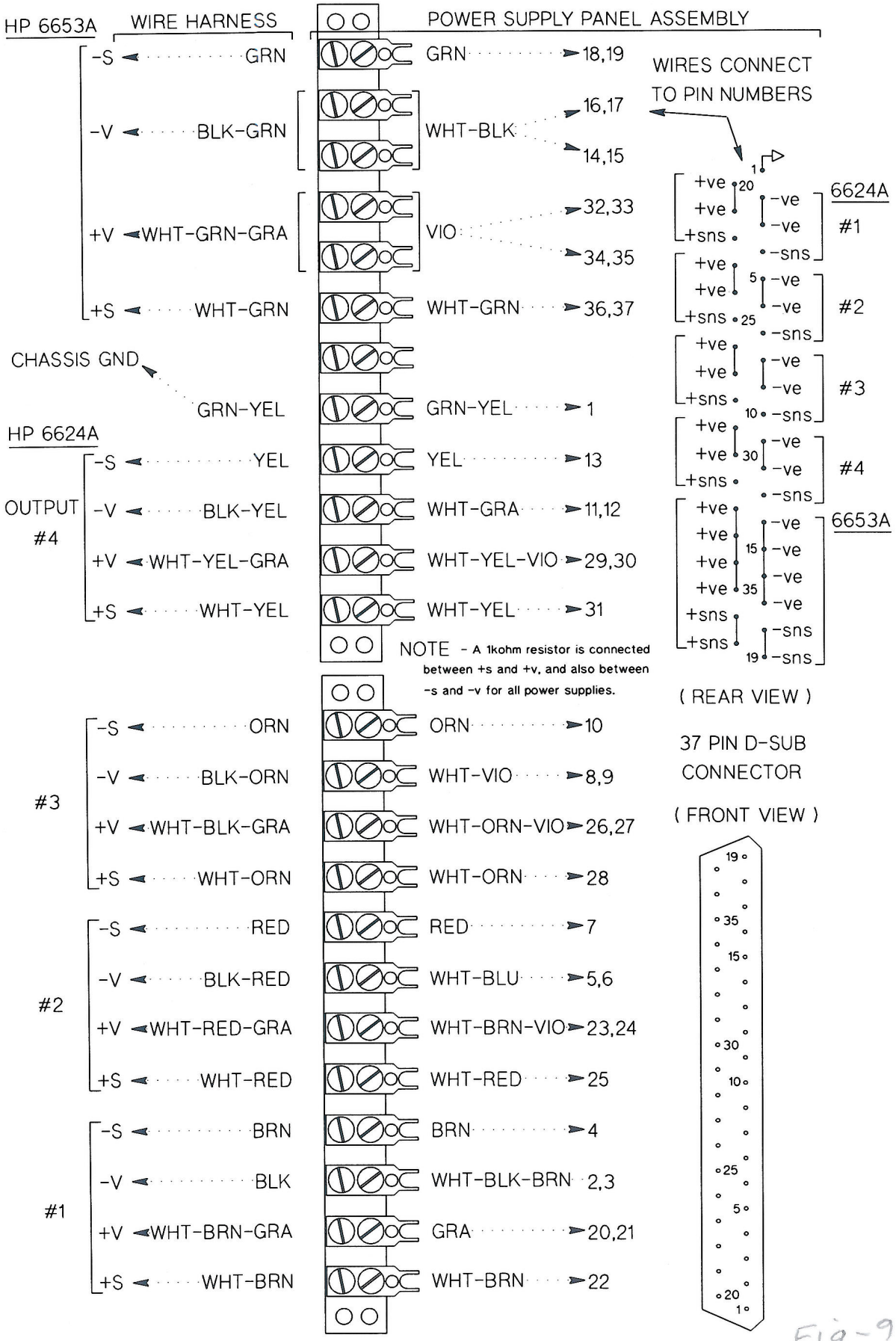

HP 6653A
WIRE HARNESS
POWER SUPPLY PANEL ASSEMBLY
-S GRN
GRN 18,19
-V BLK-GRN
WHT-BLK 16,17
14,15
+V WHT-GRN-GRA
VIO 32,33
34,35
+S WHT-GRN
WHT-GRN 36,37
CHASSIS GND
GRN-YEL
GRN-YEL 1
HP 6624A
-S YEL
YEL 13
OUTPUT #4
-V BLK-YEL
WHT-GRA 11,12
+V WHT-YEL-GRA
WHT-YEL-VIO 29,30
+S WHT-YEL
WHT-YEL 31
NOTE - A 1kohm resistor is connected between +s and +v, and also between -s and -v for all power supplies.
-S ORN
ORN 10
-V BLK-ORN
WHT-VIO 8,9
#3
+V WHT-BLK-GRA
WHT-ORN-VIO 26,27
+S WHT-ORN
WHT-ORN 28
-S RED
RED 7
-V BLK-RED
WHT-BLU 5,6
#2
+V WHT-RED-GRA
WHT-BRN-VIO 23,24
+S WHT-RED
WHT-RED 25
-S BRN
BRN 4
-V BLK
WHT-BLK-BRN 2,3
#1
+V WHT-BRN-GRA
GRA 20,21
+S WHT-BRN
WHT-BRN 22
WIRES CONNECT TO PIN NUMBERS
1
+ve 20
+ve
+sns
-ve
-ve
-sns
6624A
#1
+ve
+ve
+sns 25
5
-ve
-ve
-sns
#2
+ve
+ve
+sns 10
-ve
-ve
-sns
#3
+ve
+ve 30
+sns
-ve
-ve
-sns
#4
+ve
+ve
+ve
+ve 35
+sns
+sns 19
15
-ve
-ve
-ve
-ve
-sns
-sns
6653A
(REAR VIEW)
37 PIN D-SUB CONNECTOR
(FRONT VIEW)
19
35
15
30
10
25
5
20
1

Fig-9