

## Addendum A – Service Manual

### Agilent Model E4356A Telecommunications DC Power Supply

p/n 5964-8170

Applies to units with serial numbers US39290101 and up.

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## Foreword

This addendum contains information for troubleshooting and repairing the Agilent E4356A Telecommunications DC Power Supply. The standard service manual for the Agilent Series 667xA DC Power Supplies (p/n 5959-2583) used together with this service addendum is shipped with the Agilent E4356A when ordered with Option 0BN.

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**NOTE:** This addendum is to be used along with the standard service manual for the Agilent Series 667xA DC Power Supplies. When troubleshooting, follow the procedures outlined for Agilent Model 6674A. This addendum documents only the differences between the standard troubleshooting procedures for Agilent Model 6674A and the Agilent E4356A Telecommunications DC Power Supply.

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## Areas of Difference

- ◆ Voltage and Current Values (Table 2-2).
- ◆ Performance Test Record (Table 2-19).
- ◆ Initialization Program listing (Figure 3-18).
- ◆ Parts list (Tables 5-3, 5-4, 5-6, 5-7, 5-9, 5-10 and 5-11).

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## Chapter 2 Differences

### Voltage and Current Values – page 2-4

**Table 2-2. Programming Voltage and Current Values**

Agilent Model	Full-Scale Voltage	Max. Prog. Voltage	Full-Scale Current	Max. Prog. Current	Max. Prog. OverVoltage
Agilent E4356A	80	81.9	30	30.71	96

Verification Test Record – page 2-19

Table 2-12. Verification Test Record for Agilent Model E4356A

Model: Agilent E4356A		Report No.		Date	
Test Description	Minimum Specification	Recorded Results*	Maximum Specification	Measurement Uncertainty	
<b>Constant Voltage Tests</b>					
<b>Voltage Programming and Readback</b>					
Low Voltage (0 V) $V_{out}$	-80 mV	_____ mV	+80 mV	2.2 $\mu$ V	
Front Panel Display Readback	$V_{out}$ -120 mV	_____ mV	$V_{out}$ +120 mV	2.2 $\mu$ V	
High Voltage (80 V) $V_{out}$	79.888 V	_____ V	80.112 V	0.8 mV	
Front Panel Display Readback	$V_{out}$ -160 mV	_____ mV	$V_{out}$ +160 mV	0.8 mV	
<b>Load Effect</b>	$V_{out}$ -4.6 mV	_____ mV	$V_{out}$ +4.6 mV	40 $\mu$ V	
<b>Source Effect</b>	$V_{out}$ -4.6 mV	_____ mV	$V_{out}$ +4.6 mV	40 $\mu$ V	
<b>PARD (Ripple and Noise)</b>					
peak-to-peak	0	_____ mV	16 mV	904 $\mu$ V	
rms	0	_____ mV	1.9 mV	150 $\mu$ V	
<b>Transient Response Time (@900 <math>\mu</math>s)</b>	0	_____ mV	100 mV	12 mV	
<b>Constant Current Tests</b>					
<b>Current Programming and Readback</b>					
Low Current (0 A) $I_{out}$	-25 mA	_____ mA	+25 mA	153 $\mu$ A	
Front Panel Display Readback	$I_{out}$ -30 mA	_____ mA	$I_{out}$ +30 mA	153 $\mu$ A	
High Current (30 A) $I_{out}$	29.945 A	_____ A	30.055 A	5.7 mA	
Front Panel Display Readback	$I_{out}$ -65 mA	_____ mA	$I_{out}$ +65 mA	5.7 mA	
<b>Load Effect</b>	$I_{out}$ -3.75 mA	_____ mA	$I_{out}$ +3.75 mA	21 $\mu$ A	
<b>Source Effect</b>	$I_{out}$ -3.75 mA	_____ mA	$I_{out}$ +3.75 mA	21 $\mu$ A	
<b>PARD (Ripple and Noise)</b>					
rms	0	_____ mA	25 mA	5 mA	
<b>Current Sink (4A) Display Readback</b>	$I_{out}$ -34 mA	_____ mA	$I_{out}$ +34 mA	0.6 mA	

\* Enter your test results in this column.

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## Chapter 3 Differences

### Initialization Program Listing - page 3-38

In Figure 3-18, change line 160 to read:

```
160 DATA 169,170,171,172,174,176,180
```

Change line 230 to read:

```
230 DATA 1,1,1,2,1,4,4
```

Add the following lines to Figure 3-18 after line 590:

```
591 Eprom_data_4356: ! ! EEPROM data for E4356A
592 DATA 458.923,70,81.9,0,82,0,80,70,26.6175,0
593 DATA 99,1,50,0,96,0,82,255,20,10
594 DATA 4356,55,500,90,500,1765,5,255,0,0
595 DATA 1296,4356,0,20,180,20,174,175,33,98
596 DATA 115,30,20,1,58,71.6625,30.7125
597 !
```

Add the following lines after line 980:

```
981 CASE "E4356A"
982 RESTORE Eprom_data_4356
```

Change line 1030 to read:

```
1030 PRINT "6671A, 6672A, 6673A, 6674A, 6675A and E4356A"
```

Change line 1070 to read:

```
1070 FOR I=1 TO 47
```

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## Chapter 5 Differences

**Table 5-3. Main Chassis**

Ref. Des.	Agilent Part No.	Description
ELECTRICAL PARTS		
A1	E4356-61023	Front panel pc assembly, tested
A2	5064-0104	GPIB pc assembly, tested
A3	E4356-61021	FET pc assembly, tested
A5	E4356-61020	Control pc assembly, tested
A6	E4356-61022	Output pc assembly, tested
A7	E4356-61026	Snubber pc assembly, tested (mounted on heatsink)
D900	1906-0451	Diode, rectifier UTF12780 (mounted on heatsink)
L900	06674-80005	1 <sup>st</sup> stage output choke
T900	9100-4976	Transformer, power output
C999	E4356-60026	Capacitor assembly 220 pF, 1.6kV (mounted on D900)
MECHANICAL PARTS		
E4356A	E4356-80001	Nameplate

**Table 5-4. A1 Front Panel Board**

Ref. Des.	Agilent Part No.	Description
U4	5080-2278	Programmed ROM (installed in socket)

**Table 5-6. A2 GPIB Board**

Ref. Des.	Agilent Part No.	Description
U106	5080-2243	Programmed ROM (installed in socket)

**Table 5-7. A3 FET Board**

Ref. Des.	Agilent Part No.	Description
		ELECTRICAL PARTS
C228	0150-8856	Capacitor 6800 pF 1%
R247	0757-0460	Resistor 61.9k
R250	0757-0458	Resistor 51.1k
R253	0757-0446	Resistor 15.0k
R256	0698-3432	Resistor 26.1 ohms
R257	0698-3433	Resistor 28.7 ohms

**Table 5-9. A5 Control Board**

Ref. Des.	Agilent Part No.	Description
		ELECTRICAL PARTS
C683	0160-5468	Capacitor 0.47 $\mu$ F, 50 V
C716	0160-4835	Capacitor 0.1 $\mu$ F
R504	0698-6392	Resistor 22k, 0.1 %
R651, 652	0757-0476	Resistor 301k
R665, 6664	0757-0199	Resistor 21.5k
R690	0698-8827	Resistor 1M
R691	0757-0465	Resistor 100k
R718	0698-8695	Resistor 36k, 0.1 %
R730, 731	0699-0934	Resistor 36.65k, 0.1 %
R768	8159-0005	Resistor 0 ohms
R809	0699-0769	Resistor 17.5k, 0.1 %

**Table 5-10. A6 Output Board**

Ref. Des.	Agilent Part No.	Description
		ELECTRICAL PARTS
C901, 903, 905	0180-4705	Capacitor 6000 $\mu$ F, 100V
Q903	1855-1003	Transistor IRFIP-240
R909, 910	0698-3644	Resistor 5.1k, 2W
R934	0698-0082	Resistor 464 ohms

**Table 5-11. A7 Snubber Board**

Ref. Des.	Agilent Part No.	Description
		ELECTRICAL PARTS
C990, 991	0160-5466	Capacitor 1000 pF, 100V
R990- 995	0698-3634	Resistor 470 ohms