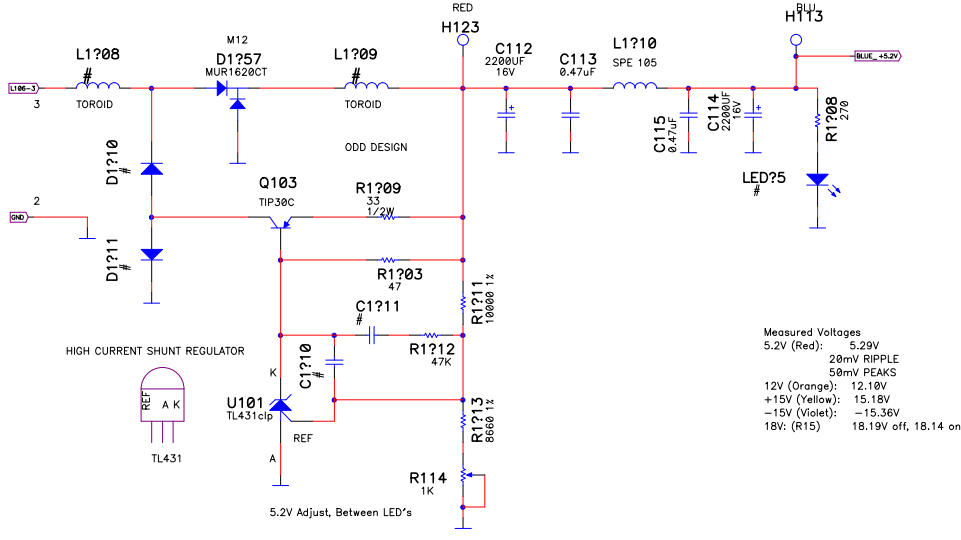
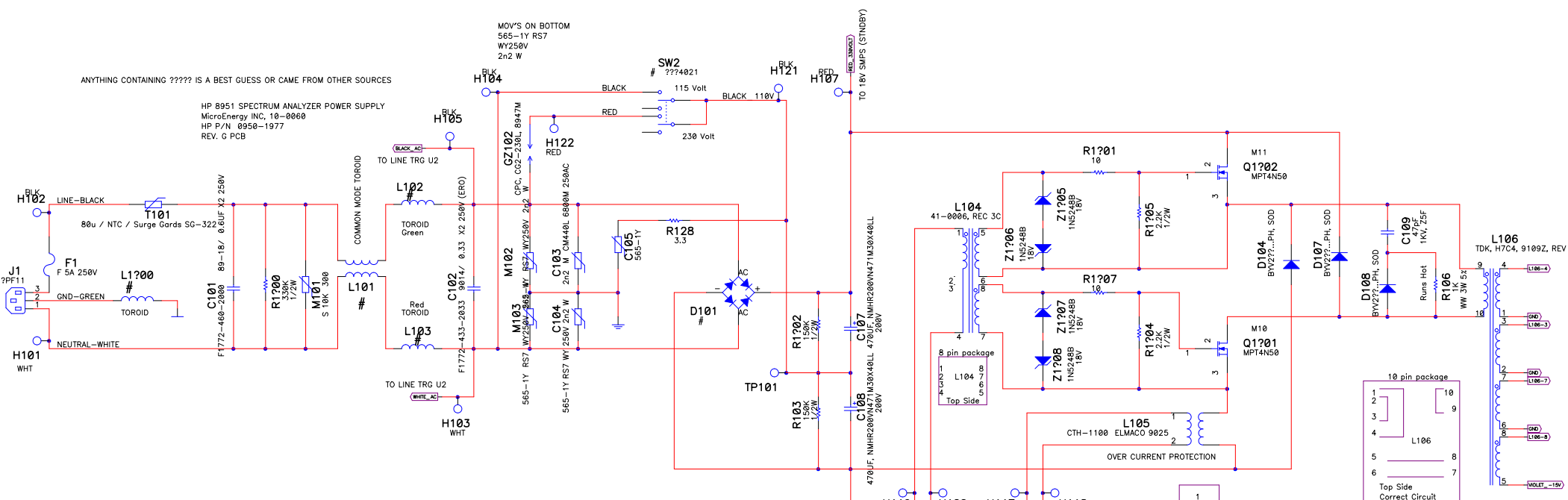


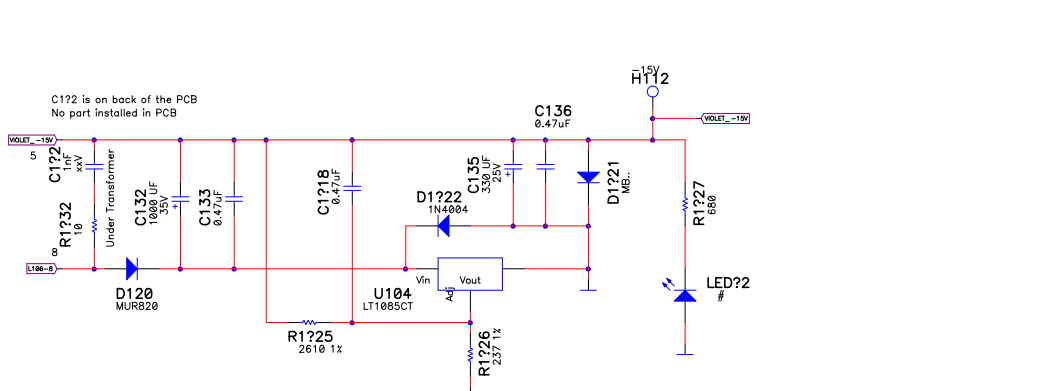
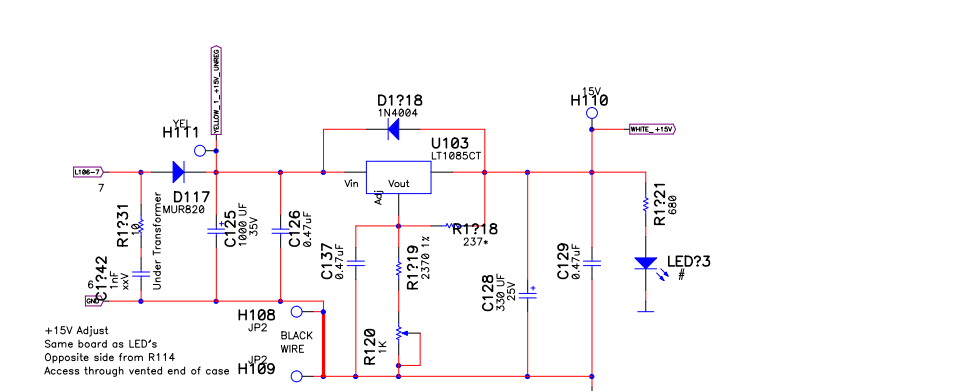
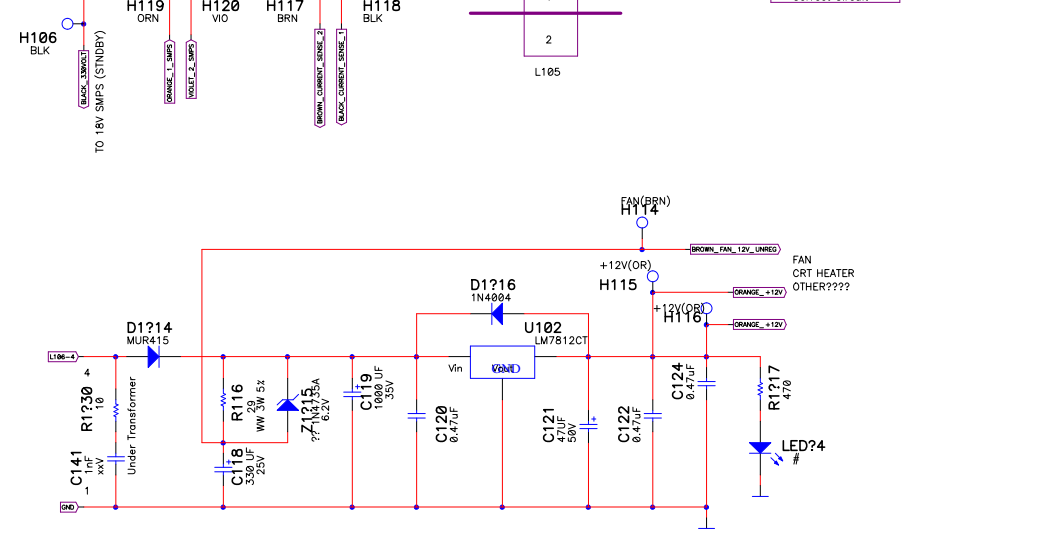
ANYTHING CONTAINING ????? IS A BEST GUESS OR CAME FROM OTHER SOURCES

HP 8951 SPECTRUM ANALYZER POWER SUPPLY
 MicroEnergy INC, 10-0069
 HP P/N 0950-1977
 REV. G PCB

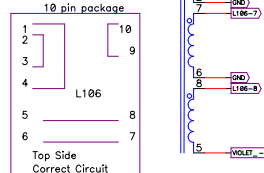
MOV'S ON BOTTOM
 565-1Y RS7
 WY250V
 2x2 W



Measured Voltages
 5.2V (Red): 5.29V
 20mV RIPPLE
 50mV PEAKS
 12V (Orange): 12.10V
 +15V (Yellow): 15.18V
 -15V (Violet): -15.36V
 18V: (R15) 18.19V off, 18.14 on



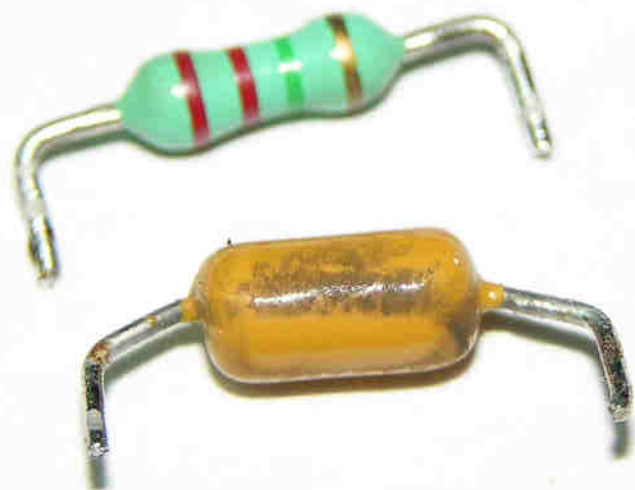
+15V Adjust
 Same board as LED's
 Opposite side from R114
 Access through vented end of case



P-CAD Bill of Materials C:\...HP 8951 Power Supply_20.SCH					
Count	RefDes	PatternName	Value	Voltage	Power
4	Q2, Q3, Q4, Q6	TO-92	2N4401		
1	D101	BRIDGE	#		
1	C22	CAP100RP	10UF	50V	
3	C3, C10, C121	CAP100RP	47UF	50V	
11	C13, C27, C113, C115, C120, C122, C124, C126, C129, C133, C136	CAP200	0.47uF		
3	C1?2, C1?42, C141	CAP200	1nF	xxV	
1	C109	CAP200	47pF	1KV, Z5F	
1	C1	CAP200	470pF	1KV, YBF	
3	C24, C30, C31	CAP200	No-Pop		
3	C118, C128, C135	CAP200RP	330 UF	25V	
4	C11, C119, C125, C132	CAP200RP	1000 UF	35V	
2	C112, C114	CAP200RP	2200UF	16V	
3	C17, C23, C29	CAP300RP	No-Pop		
8	C1?10, C1?11, C5, C?18, C16, C?26, C18, C20	CAP400AX	#		
2	C?21, C?31	CAP400AX	0.22 uF		
1	C?35	CAP400AX	0.22uF	100V	
4	C26, C?24, C?25, C?36	CAP400AX	0.22uF		
2	C1?18, C137	CAP400AX	0.47uF		
1	C15	CAP400AX	2.2nF		
1	C8	CAP400AX	33nF		
1	C?32	CAP400AX	100pF		
1	C?28	CAP400AX	???100pF		
1	C?2	CAP600AX	0.1/400 MKT1822 DIN44122		
2	C107, C108	CAPRAD1200	470UF, NMHR200VN471M30X40LL	200V	
1	C102	XCAP_A	F1772-433-20339014/ 0.33 X2 250V (ERO)		
1	C101	XCAP_B	F1772-460-200089-18/ 0.6UF X2 250V		
1	P2P3	HDR2X12KEYED	#		
1	DB1				
2	D1?10, D1?11	DIODE400	#		
1	D?23	DIODE400	# ???...214???		
1	D?21	DIODE400	1N4001		
5	D1?16, D1?18, D1?22, D?20, D?26,	DIODE400	1N4004		
1	D?17	DIODE400	1N4005		
10	D24, D11, D13, D12, D14, D15, D21, D22, D20, D?36	DIODE400	1N4448		
1	D?35	DIODE400	1N4448 HP??		
1	D?27	DIODE400	???1N4937		
3	D104, D107, D108	DIODE400	BYV2??...PH, SOD		
1	D8	DIODE400	No-pop		
1	D1?21	DIODE600	MB..		
1	D1?14	DIODE600	MUR415		
1	F1		F 5A 250V		
1	GZ102	GDT	CPC, CG2-230L,8947M		
1	P1	HDR2X1	#		
1	P2				
1	L101	TOROID_CHOKE	#		
1	L1?00		#		
3	L?8, L?9, L?10	TOROID_A	#		
3	L1?09, L102, L103	TOROID_BFLIPPED	#		
1	L1?08	TOROID_C	#		

1	L1?10	TOROID D	SPE 105		
4	LED?2, LED?3, LED?4, LED?5	LED100R	#		
1	U4	DIP14	LM339AN		
1	U102	TO-220-3VERT	LM7812CT		
2	U103, U104	TO-220-3VERT	LT1085CT		
1	U2	DIP-6	MOC8101 V012		
1	T101	CAP300	80u / NTC / Surge Gards SG-322		
1	C105	CAP300	565-1Y		
2	M102, M103	CAP300	565-1Y RS7 WY250V 2n2 W		
1	M101	CAP300	S 10K 300		
1	C103	CAP400	2n2 M CM440L6800M 250AC		
1	C104	CAP400	565-1Y RS7 WY 250V 2n2 W		
1	Q1	TO-220-3VERT	MTP2N85		
2	Q1?01, Q1?02	TO-220-3VERT	MPT4N50		
2	D117, D120	TO-220-2VERT	MUR820		
1	D10	TO-220-2VERT	MUR1520		
1	D1?57	TO-220-3VERT	MUR1620CT		
6	NET_TIE1, NET_TIE2, NET_TIE3, NET_TIE4, NET_TIE5, NET_TIE6	NET_TIE			
1	J1		?PF11		
1	R13	AXIAL2WVERT300	100K		WW 1W 5%
1	R10	AXIAL2WVERT300	0.47		WW 3W 5%
1	R106	AXIAL2WVERT300	1K		WW 3W 5%
1	R116	AXIAL2WVERT300	29		WW 3W 5%
1	R12	AXIAL2WVERT300	47		WW 3W 5%
1	R15	AXIAL2WVERT300	220		WW 3W 5%
1	R1	AXIAL2WVERT450	100K		WW 3W 5%
3	R?28, R?35, R?39	RES400	1K		
1	R?71	RES400	2.2		
1	R?40	RES400	2.2K		
1	R39	RES400	2.2M		
1	R128	RES400	3.3		
1	R?53	RES400	3.3K		
6	R1?01, R1?07, R1?30, R1?31, R1?32, R?38	RES400	10		
13	R9, R?44, R?49, R?51, R24, R?54, R?55, R?59, R?60, R?61, R?62, R?65, R?66	RES400	10K		
1	R?33	RES400	10K 1%		
1	R?63	RES400	12K 1%		
1	R?47	RES400	15K		
1	R?29	RES400	22		
1	R?41	RES400	23.9 1%		
1	R1?03	RES400	47		
3	R1?12, R?37, R?45	RES400	47K		
1	R27	RES400	100		
3	R5, R?57, R?64	RES400	100K		
1	R?69	RES400	220K 1%		
1	R1?26	RES400	237 1%		
1	R1?18	RES400	237*		
1	R1?08	RES400	270		
1	R?50	RES400	330 Ohm		
1	R1?17	RES400	470		
2	R1?21, R1?27	RES400	680		
1	R?26	RES400	681* 1%		
1	R?68	RES400	1000 1%		
1	R?32	RES400	1620 1%		

1	R1?19	RES400	2370 1%		
1	R1?25	RES400	2610 1%		
1	R37	RES400	4020 1%		0.4W
1	R?34	RES400	5900 1%		
1	R1?13	RES400	8660 1%		
1	R1?11	RES400	10000 1%		
1	R?58	RES400	51100 1%		
2	R1?04, R1?05	RES600	2.2K		1/2W
1	R1?09	RES600	33		1/2W
2	R1?02, R103	RES600	150K		1/2W
1	R1?00	RES600	330K		1/2W
3	R23, R114, R120	POT3T	1K		
1	SW2		# ???4021		
1	SW1				
1	Q103	TO-220-3VERT	TIP30C		
1	U101	TO-92	TL431clp		
1	U1	DIP-8	UC3842BN		
1	U3	DIP-8	UC3844BN		
1	TP2	WIRE_HOLE	+18VOLT		
1	H104	WIRE_HOLE	BLACK		
2	H121, TP101	WIRE_HOLE	BLACK_110V		
3	H3, H4, H106	WIRE_HOLE	BLACK_330VOLT		
2	H5, H105	WIRE_HOLE	BLACK_AC		
2	H14, H118	WIRE_HOLE	BLACK_CURRENT_SENSE_1		
2	H108, H109	WIRE_HOLE	BLACK_JUMPER_WIRE		
2	H15, H113	WIRE_HOLE	BLUE_+5.2V		
2	H11, H117	WIRE_HOLE	BROWN_CURRENT_SENSE_2		
1	H114	WIRE_HOLE	BROWN_FAN_12V_UNREG		
1	H12	WIRE_HOLE	GREEN_L_PWR_ON__TTL		
1	H102	WIRE_HOLE	LINE-BLACK		
1	H101	WIRE_HOLE	NEUTRAL-WHITE		
2	H10, H119	WIRE_HOLE	ORANGE_1_SMPS		
2	H115, H116	WIRE_HOLE	ORANGE_+12V		
1	H122	WIRE_HOLE	RED		
1	H123	WIRE_HOLE	RED(+5.2VOLT_UNFILTERED)		
3	H1, H2, H107	WIRE_HOLE	RED_330VOLT		
1	H7	WIRE_HOLE	RED_LINE_TRIGGER		
2	H8, H120	WIRE_HOLE	VIOLET_2_SMPS		
2	H16, H112	WIRE_HOLE	VIOLET_-15V		
2	H17, H110	WIRE_HOLE	WHITE_+15V		
2	H6, H103	WIRE_HOLE	WHITE_AC		
2	H9, H111	WIRE_HOLE	YELLOW_1_+15V_UNREG		
1	H13	WIRE_HOLE	YELLOW_H_PWR_UP__TTL		
1	L105	CURRENT	CTH-1100 ELMACO 9025		
1	L1	SMPS18V	41-2013, REV2A		
1	L104	SMPSAC	41-0006, REC 3C		
1	L106	SMPSDC	TDK, H7C4, 9109Z, REV B		
1	Z?4	DIODE400	# 1N...		
4	Z1?05, Z1?06, Z1?07, Z1?08	DIODE400	1N5248B		18V
2	Z?2, Z?3	DIODE400	1N6003		13V
1	Z1?15	DIODE400	?? 1N4735A		6.2V
2	Z?24, Z?25	DIODE500	1N5386B		180V

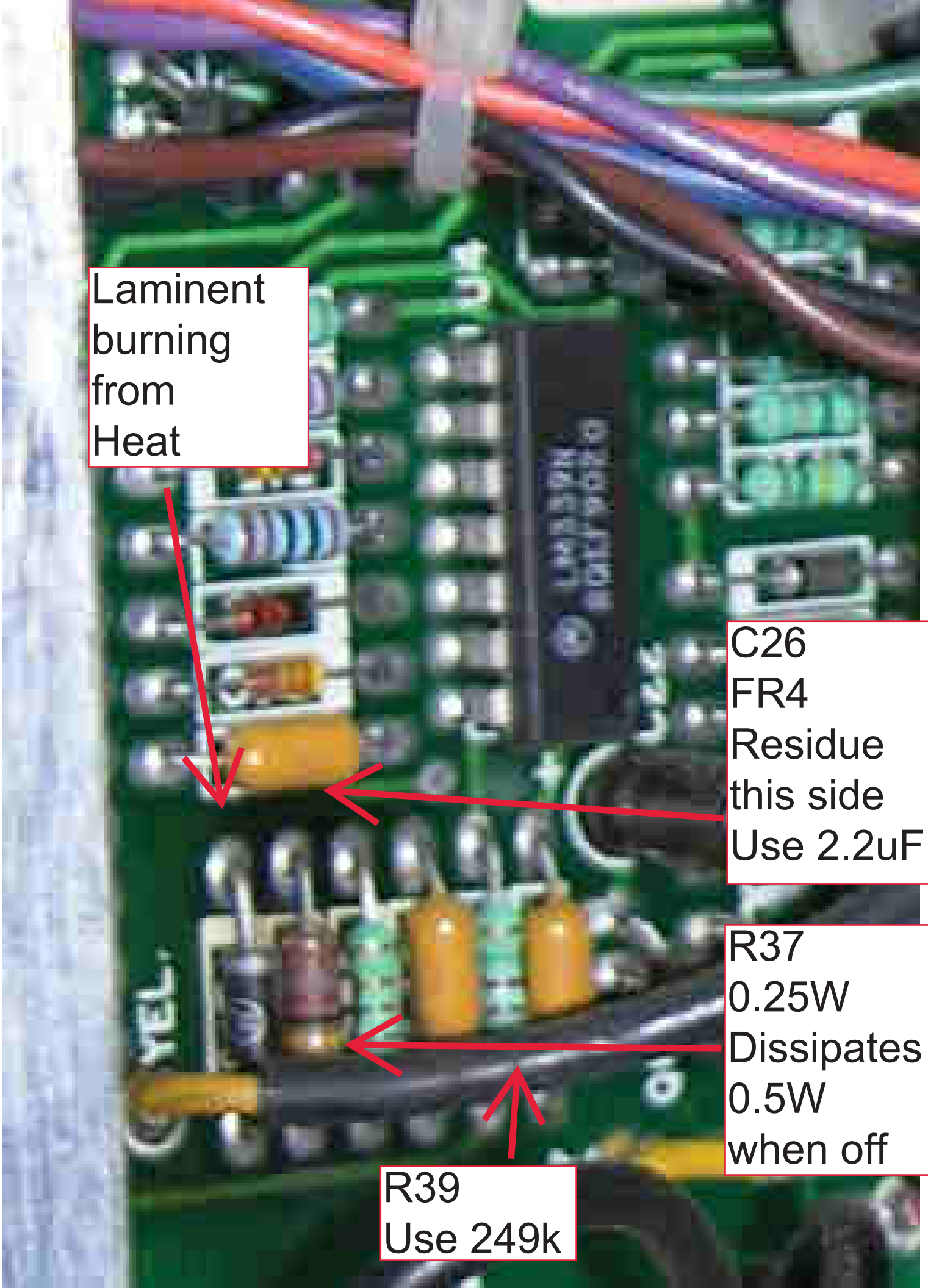


Laminent
burning
from
Heat

C26
FR4
Residue
this side
Use 2.2uF

R37
0.25W
Dissipates
0.5W
when off

R39
Use 249k



HP Spectrum Analyzer, w/Sweep, 9kHz-1.8GHz, OPT 004,010,021,101,102 HP Mod# 8591A

Firmware Version 3.1.90

Battery <https://www.digikey.com/en/products/detail/tadiran-batteries/TL-4903-P/2297351>

Battery Replacement 3-39 Page 155

A16 Processor / Video Board 3-27 Page 143

9 Memory Reset

1)

Load Default Table to Non-Volatile RAM

FREQ > -37 > Hz Passcode

CAL > More > More > SERVICE DIAG > DEFAULT CAL DATA

If working Run Cal Routines

2)

CONFIG > More > DISPOSE USER MEMORY

Deletes all programs in user memory

Must be Re-Loaded again

RECALL > CATALOG INTERNAL > CATALOG ALL

3)

SHORT IC PINS # 2 & 8, U104 on A16

Use Jumper to short for 10 sec.

Shorts C106 in Parallel with BT101

Deletes ALL Correction Constants

>>>> DEAD BATTERY "0.00 V"

9 Instrument Response after Memory Reset

If Random Screen Flashing

FREQ > -37 > Hz Passcode

CAL > More > More > DEFAULT CAL DATA

CAL > Lowest Soft Key > Lowest Soft Key > 3rd Soft Key from Top

9 Analyzer Recovery after A16 Memory Loss

Resetting the Analyzer Power-On Units

FREQ > -2001 > Hz Passcode

AMPLITUDE > More > INPUT Z (50)
 AMPLITUDE > SCALE LOG LIN (LOG) > More > AMPTD UNITS (dBm)
 AMPLITUDE > SCALE LOG LIN (LIN) > More > AMPTD UNITS (Volts)
 AMPLITUDE > SCALE LOG LIN (LOG)
 CAL > More > More > SERVICE CAL > STORE POWR ON UNITS

Reloading the Timebase and Flatness Correction Constants

2.4
FREQ > -37 > Hz Passcode
 CAL > More > More > SERVICE DIAG > DEFAULT CAL DATA
FREQ > -2001 > Hz Passcode
 CAL > More > More > SERVICE CAL
 CAL TIMEBASE **Skip for Option 004**
 Enter Value **Time Base = 85**
 Press ENTER
 CAL > More > CAL FETCH > More > More > CAL STORE **Do NOT use CAL FETCH**

2.13
FREQ > -2001 > Hz Passcode
 CAL > More > More > SERVICE CAL
 FLATNESS DATA
 INIT FLT **Erases and Re-Formats New**
FREQ > -2001 > Hz Passcode
 CAL > More > More > SERVICE CAL > FLATNESS DATA > EDIT FLATNESS
 Enter 4 MHz Data >>> +/-dBm
 Use ^ key to scroll for next data point
 Press STORE FLATNESS

Frequency Response (Flatness)

Freq	dB		Freq	dB
4	-1.15		929	0.90
41	-0.80		966	1.07
78	-0.33		1003	1.03
115	-0.47		1040	0.74
152	-0.65		1077	0.47
189	-0.68		1114	0.55
226	-0.39		1151	0.64
263	-0.17		1188	0.60
300	0.00		1225	0.68
337	-0.04		1262	1.27

374	0.32		1299	1.86
411	0.81		1336	1.67
448	0.74		1373	1.52
485	0.50		1410	1.49
522	0.55		1447	1.72
559	0.66		1484	1.86
596	0.56		1521	2.06
633	0.77		1558	2.50
670	1.12		1595	2.90
707	1.34		1632	2.93
744	0.89		1669	2.87
781	0.91		1706	3.10
818	0.87		1743	3.84
855	0.91		1780	4.72
892	0.91		1817	5.10

Reloading the A12 Step Gain and CALTXG Correction Constants

2.7 **FREQ > -2001 > Hz** Passcode

CAL > More > More > SERVICE CAL > SET ATTN ERROR

Enter 5 Data points >>>+/-dBm
Analyzer will Reset After 16 dB Entry

A12 Step Attenuator	
Step	dB
1	-0.08
2	-0.06
4	0.08
8	0.09
16	0.00

2.68 **DISPLAY > CHANGE TITLE > More > RPG TITLE**

ENTER "CALTXG 0.3079,3095;"

HOLD > CAL > More > More > SERVICE CAL > EXECUTE TITLE

CALTXG (Value inside on PCB)		Factory Defaults
Slope	x	0.3079
Offset	x	3095

FREQ > -37 > Hz Passcode

Connect RF Out to RF In

CAL > More > More > CAL TRK Gen
CAL > Store

2.2 **Instrument recalibration after Reloading the Correction Constants**

Connect Cal Out to RF In

FREQ > -37 > Hz Passcode
AMPLITUDE > More > EXT PREAMP Cal Amptd gives error to set Ext Preamp to "0"
Enter "0" >>> dBm
CAL > FREQ & AMPTD

2.2 CAL > More > CRT HORZ POSITION

Center Display with Knob

CAL > More > CRT VERT POSITION

Center Display with Knob

CAL > CAL STORE to move from RAM to Non-Volatile Memory

CONFIG > More > DEFAULT CONFIG

CONFIG > More > More > POWER ON (IP)

3.1.90 Firmware added "POWERON"

Default Sets to POWERON LAST

DISPLAY > CHANGE TITLE

Press the "YZ_# SPC CLEAR and CLEAR

Clears current Title

DISPLAY > CHANGE TITLE > More > RPG TITLE

Enter "POWERON IP;"

HOLD > CAL > More > More > SERVICE CAL > EXECUTE TITLE

Update Battery Label Date

10/23/1990
7/10/2023

2.14 **Set Time & Date**

CONFIG > TIMEDATE > TIMEDATE (ON)

CONFIG > TIMEDATE > DATEMODE (DMY)

CONFIG > TIMEDATE > SET DATE

YYMMDD >> Enter

CONFIG > TIMEDATE > SET TIME

HHMMSS >> Enter