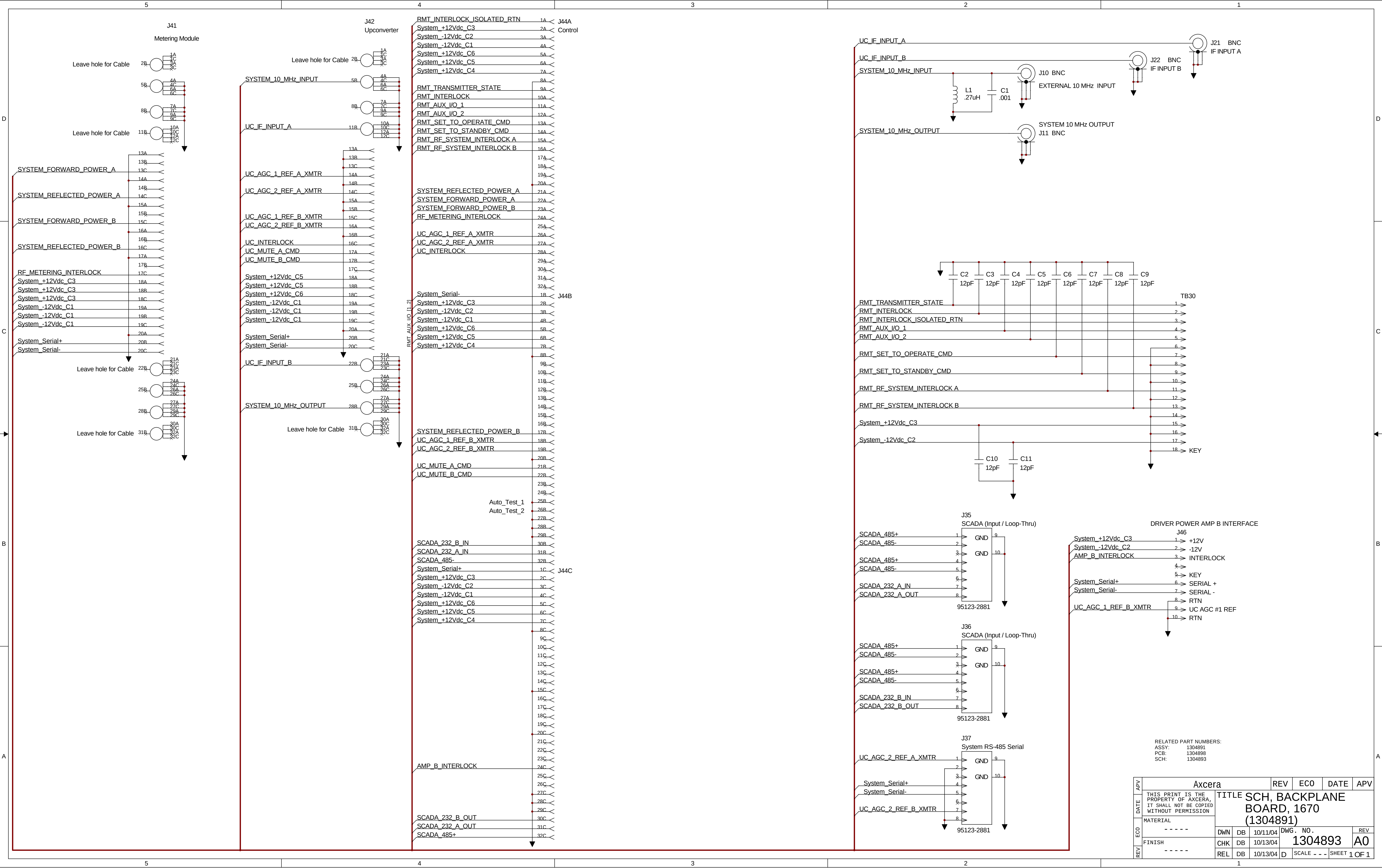
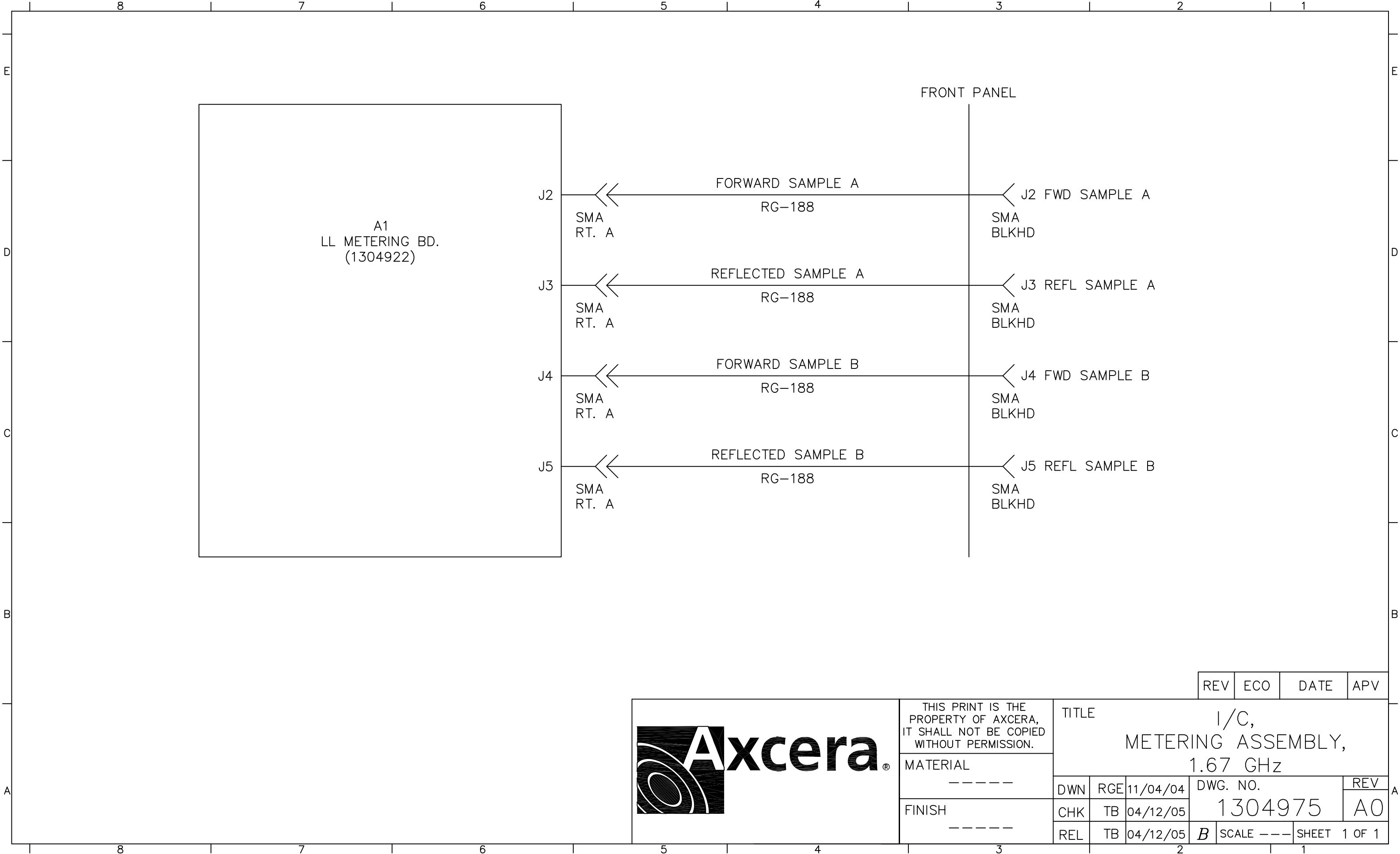






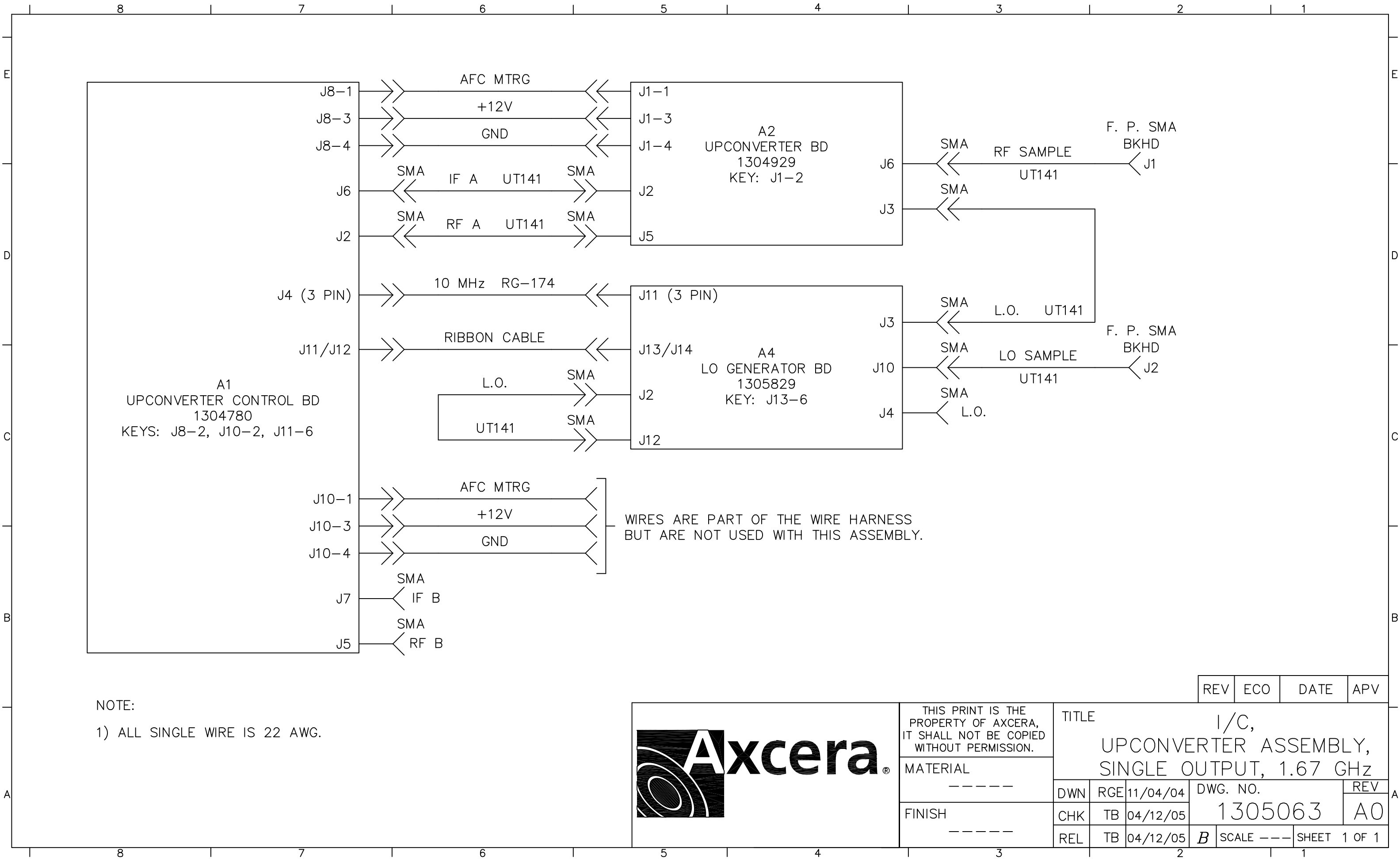
THIS PRINT IS THE
PROPERTY OF AXCERA,
IT SHALL NOT BE COPIED
WITHOUT PERMISSION.

MATERIAL

FINISH

TITLE
I/C,
METERING ASSEMBLY,
1.67 GHz

DWN	RGE	11/04/04	DWG. NO.	REV
CHK	TB	04/12/05	1304975	A0
REL	TB	04/12/05	B SCALE ---	SHEET 1 OF 1



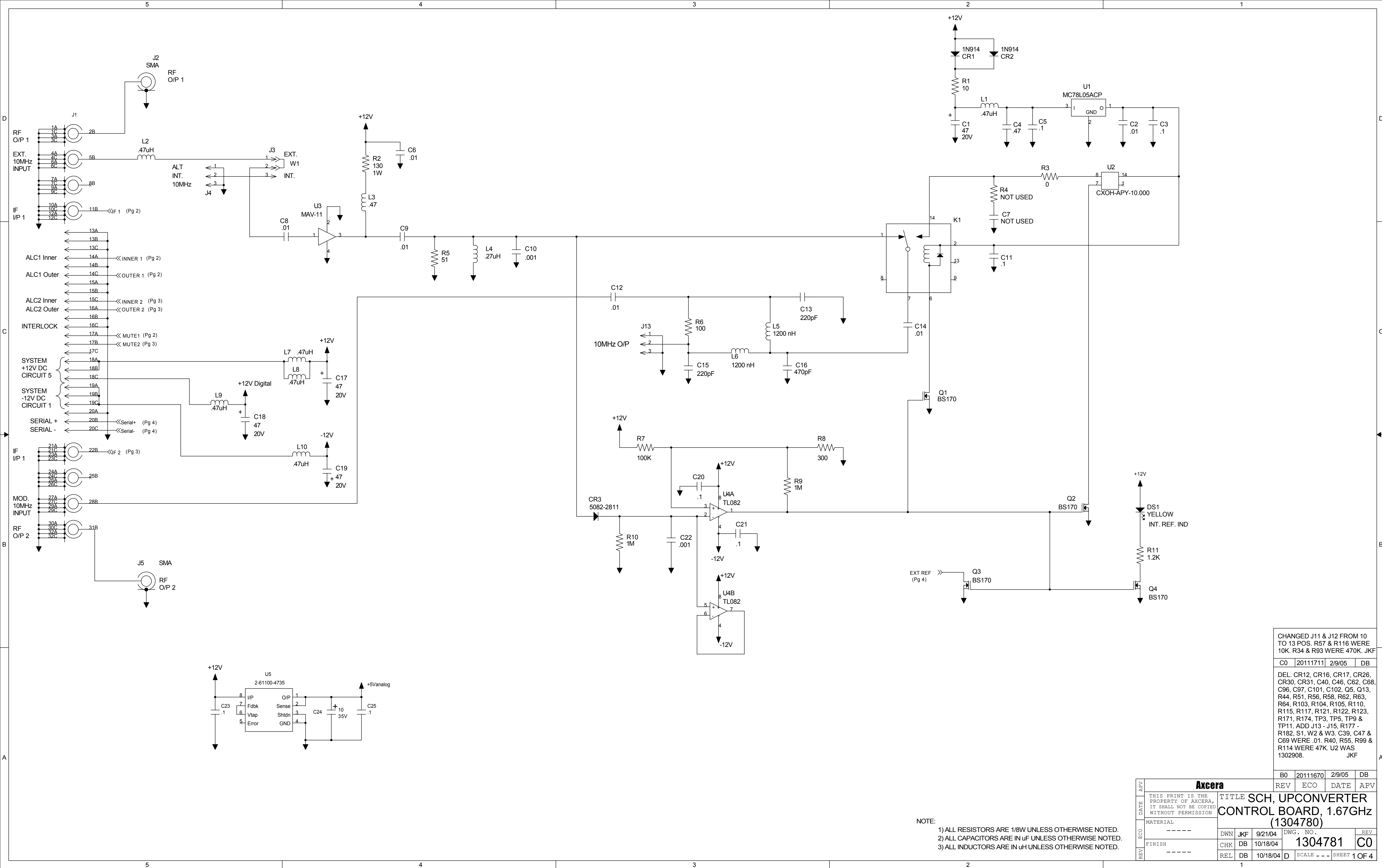
THIS PRINT IS THE
PROPERTY OF AXCERA,
IT SHALL NOT BE COPIED
WITHOUT PERMISSION.

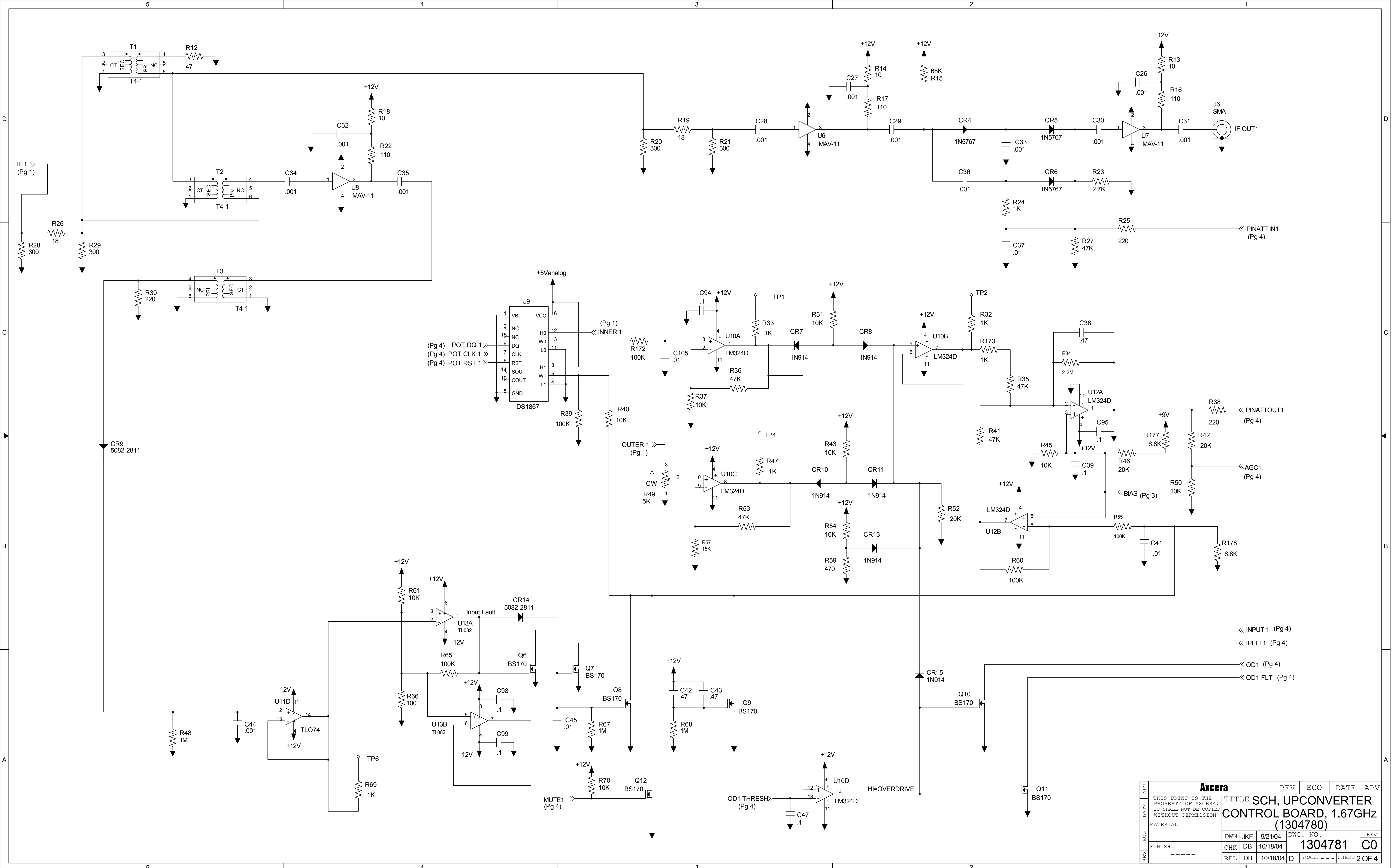
MATERIAL

FINISH

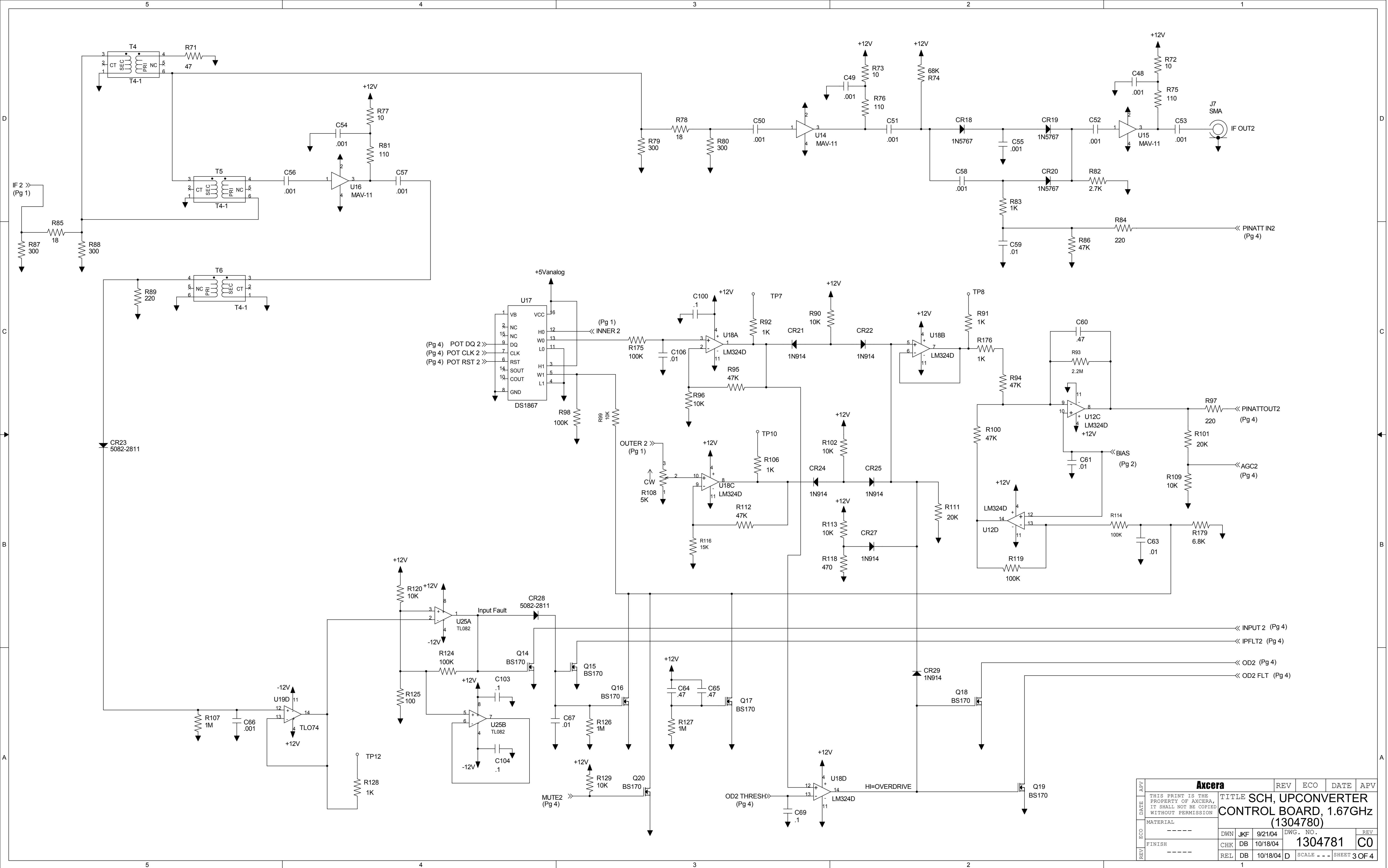
TITLE
I/C,
UPCONVERTER ASSEMBLY,
SINGLE OUTPUT, 1.67 GHz

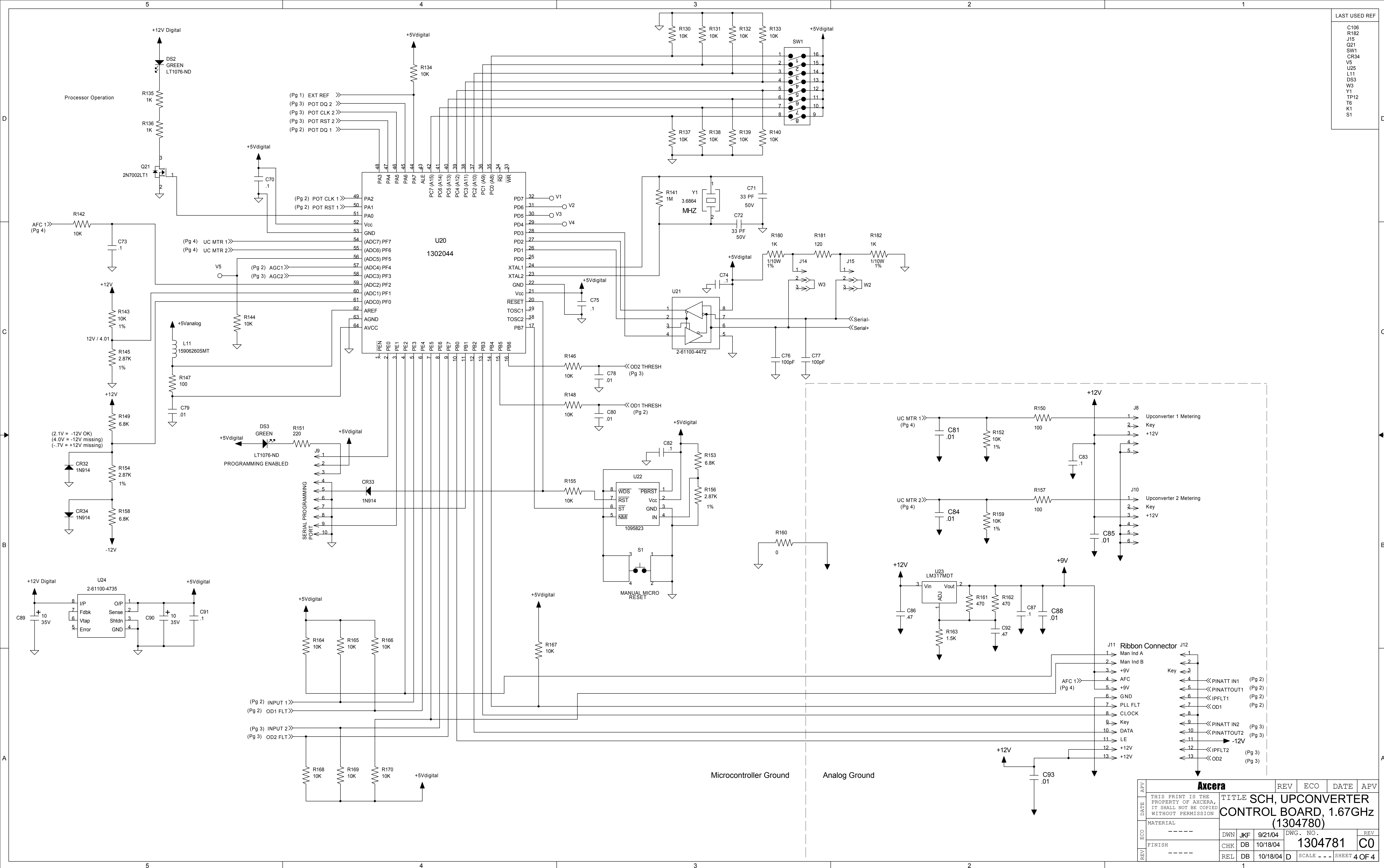
DWN	RGE	11/04/04	DWG. NO.	REV
CHK	TB	04/12/05	1305063	A0
REL	TB	04/12/05	B SCALE ---	SHEET 1 OF 1

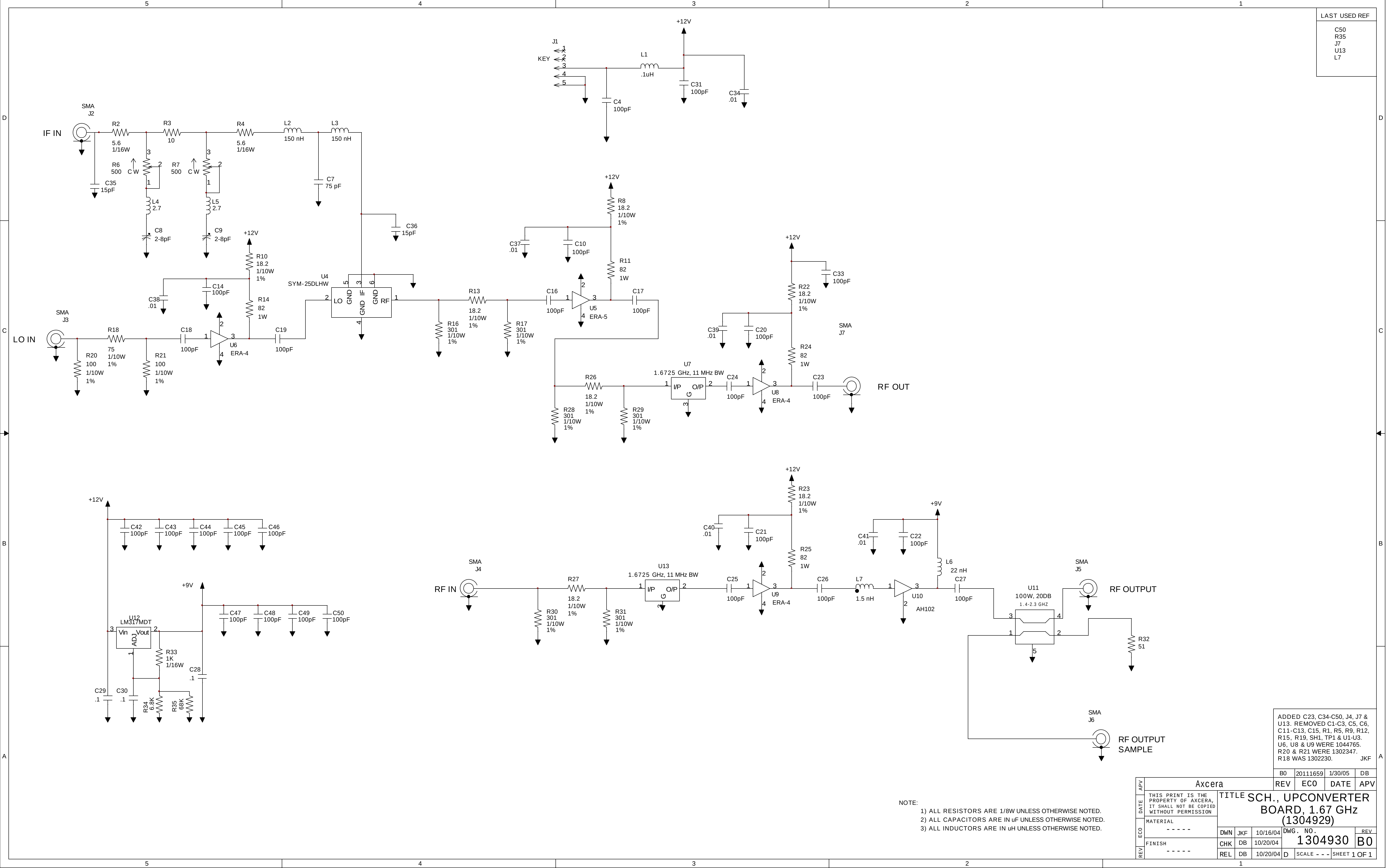




APV		Axcera		REV	ECO	DATE	APV
DATE		THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION		TITLE SCH, UPCONVERTER CONTROL BOARD, 1.67GHz (1304780)			
MATERIAL		-----		DWN	JKF	9/21/04	DWG. NO.
FINISH		-----		CHK	DB	10/18/04	REV
REL		-----		REL	DB	10/18/04	D
				SCALE - - -		SHEET 2 OF 4	





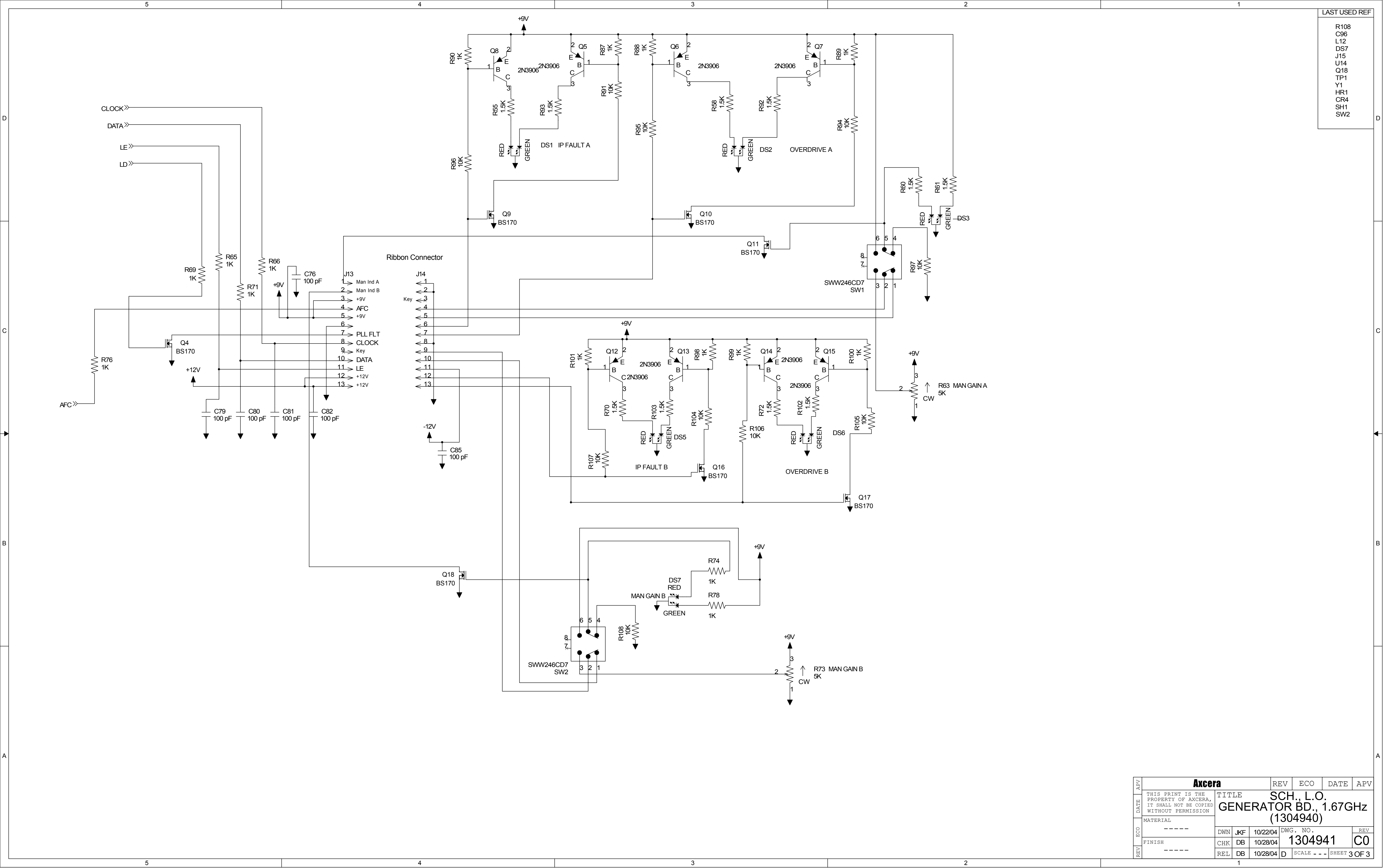


LAST USED REF
C50
R35
J7
U13
L7

ADDED C23, C34-C50, J4, J7 & U13. REMOVED C1-C3, C5, C6, C11-C13, C15, R1, R5, R9, R12, R15, R19, SH1, TP1 & U1-U3. U6, U8 & U9 WERE 1044765. R20 & R21 WERE 1302347. R18 WAS 1302230. JKF

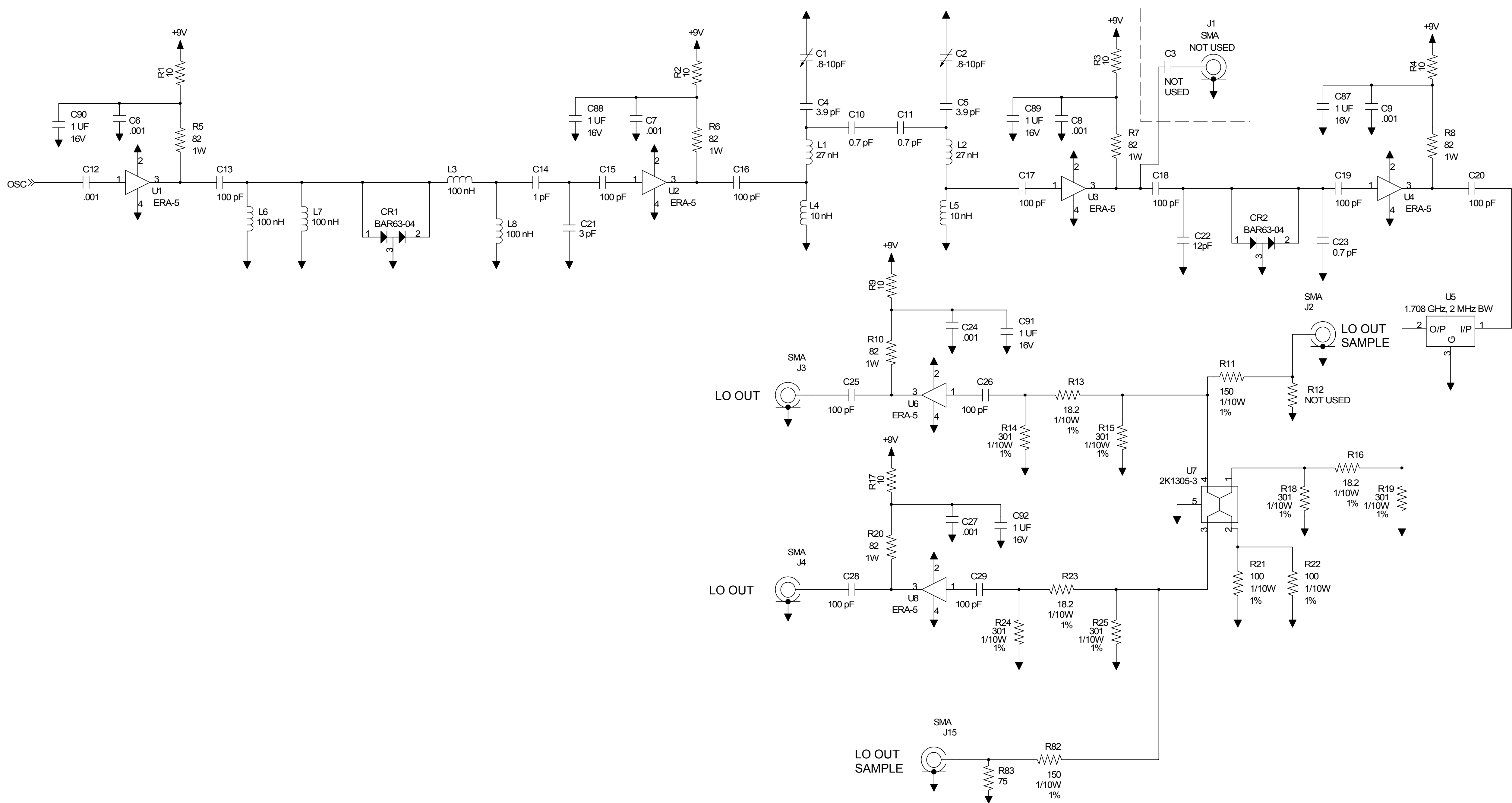
Axcera				REV	ECO	DATE	APV
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION			TITLE SCH., UPCONVERTER BOARD, 1.67 GHz (1304929)			
ECO	MATERIAL			DWN JK F 10/16/04 DWG. NO. 1304930			
REV	FINISH			CHK	DB	10/20/04	B0
	-----			REL	DB	10/20/04	D SCALE -- - SHEET 1 OF 1

NOTE:
1) ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
2) ALL CAPACITORS ARE IN uF UNLESS OTHERWISE NOTED.
3) ALL INDUCTORS ARE IN uH UNLESS OTHERWISE NOTED.



LAST USED REF	
R108	
C96	
L12	
DS7	
J15	
U14	
Q18	
TP1	
Y1	
HR1	
CR4	
SH1	
SW2	

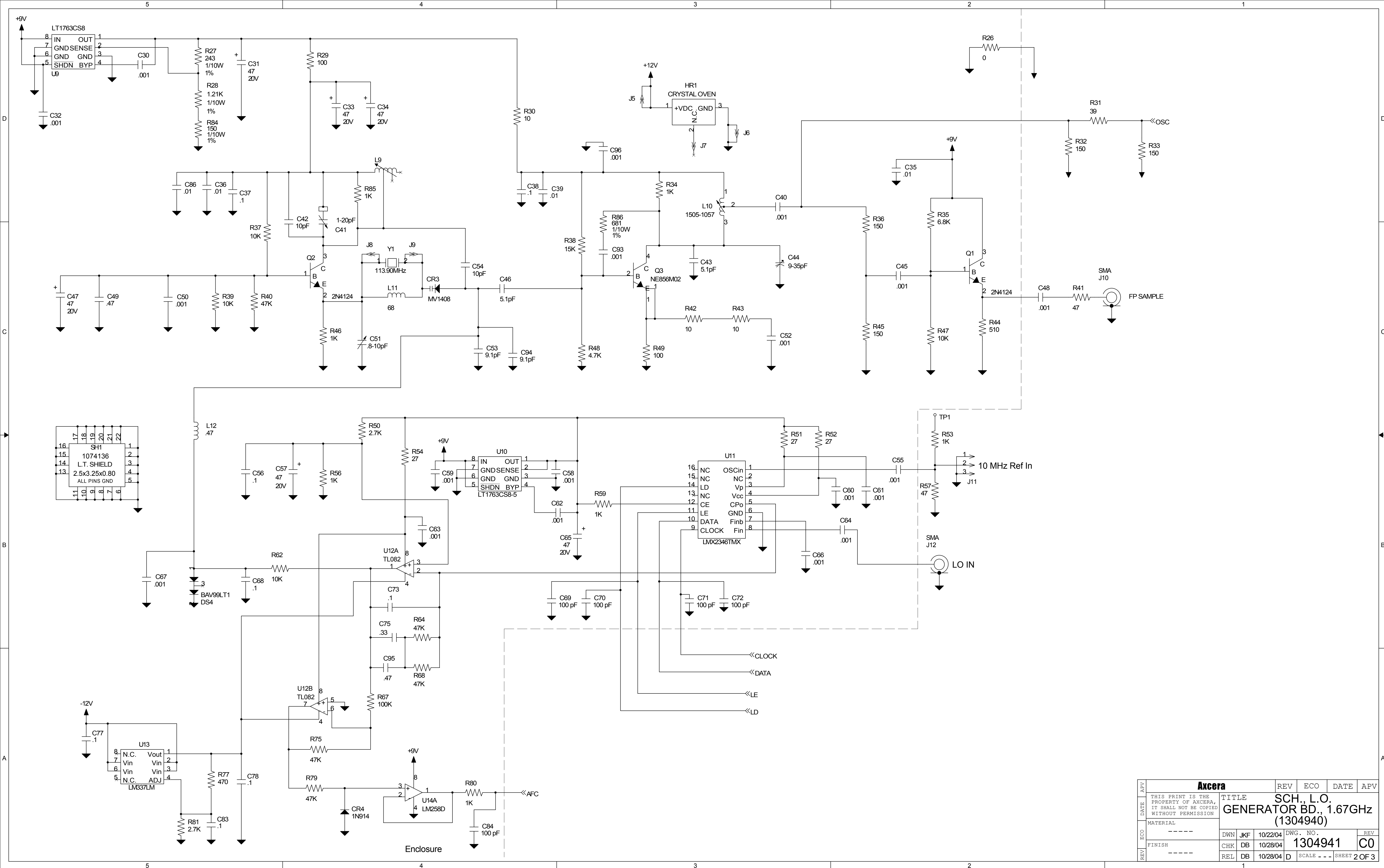
Axcera					REV	ECO	DATE	APV
REV	DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION	TITLE SCH., L.O. GENERATOR BD., 1.67GHz (1304940)					
MATERIAL			DWN JKF 10/22/04 DWG. NO. 1304941 REV C0					
ECO	-----							
FINISH			CHK	DB	10/28/04	1304941 C0		
REV	-----		REL	DB	10/28/04	D	SCALE - - -	SHEET 3 OF 3

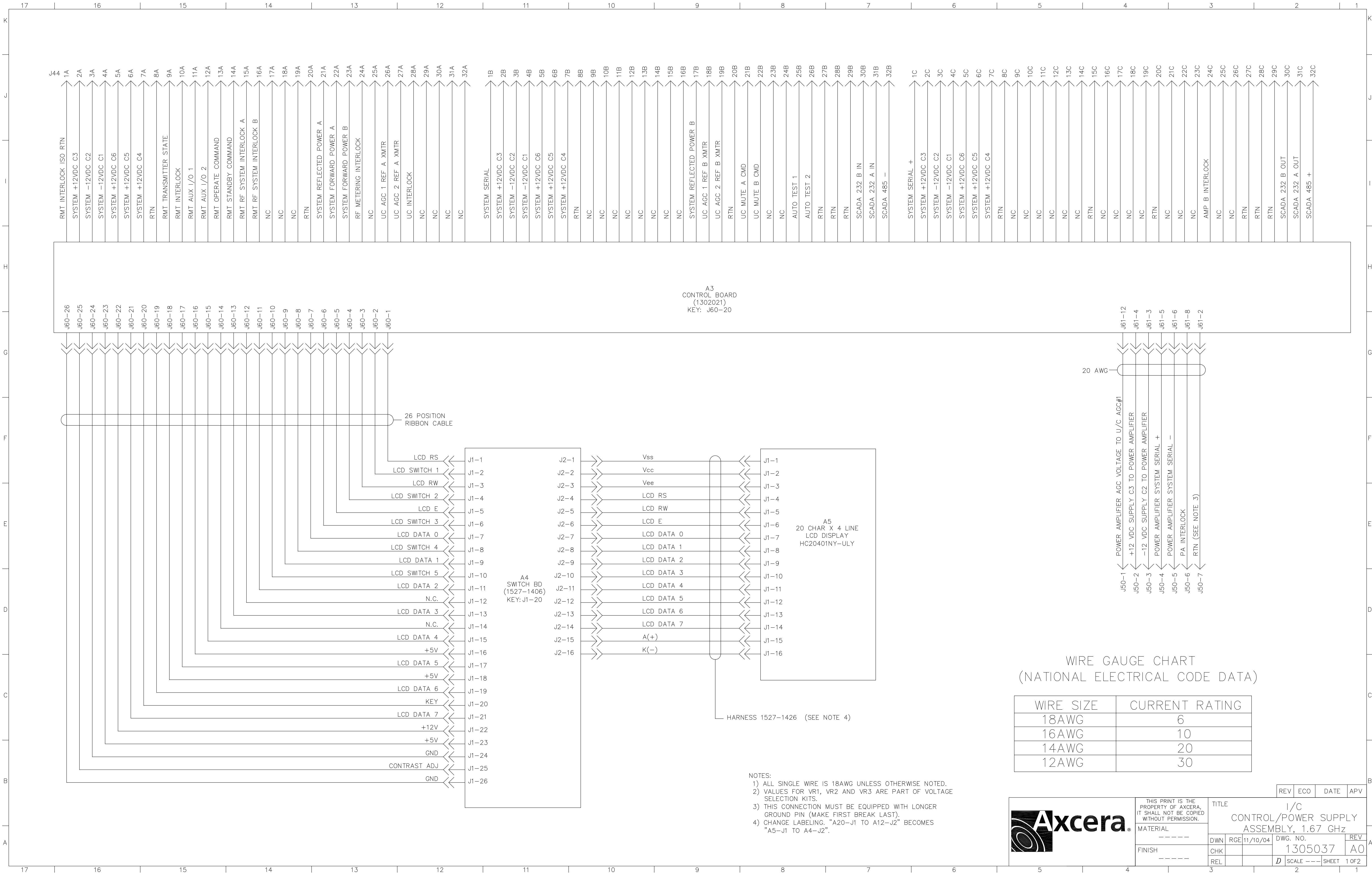


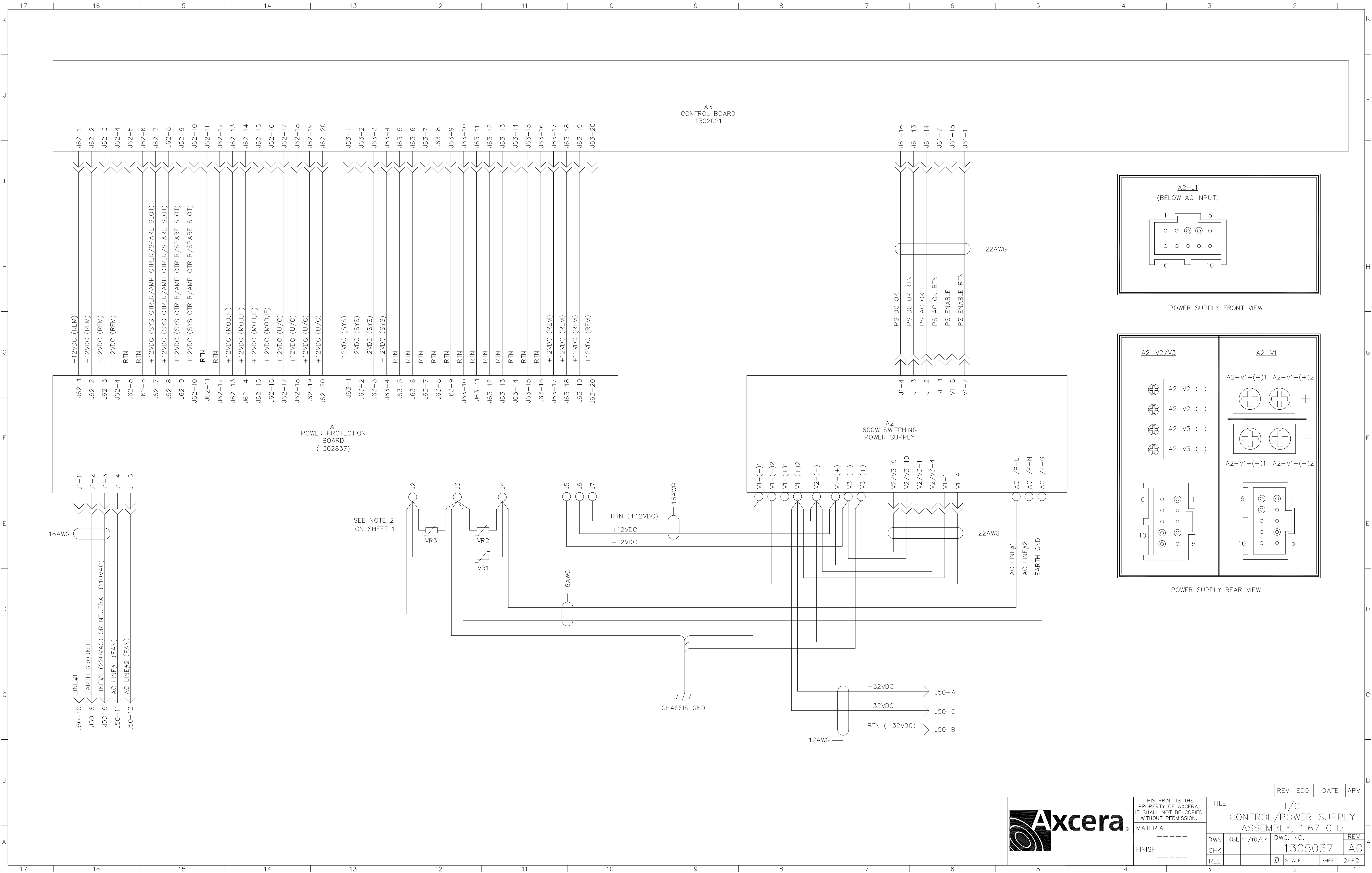
NOTE:
1) ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
2) ALL CAPACITORS ARE IN uF UNLESS OTHERWISE NOTED.
3) ALL INDUCTORS ARE IN uH UNLESS OTHERWISE NOTED.

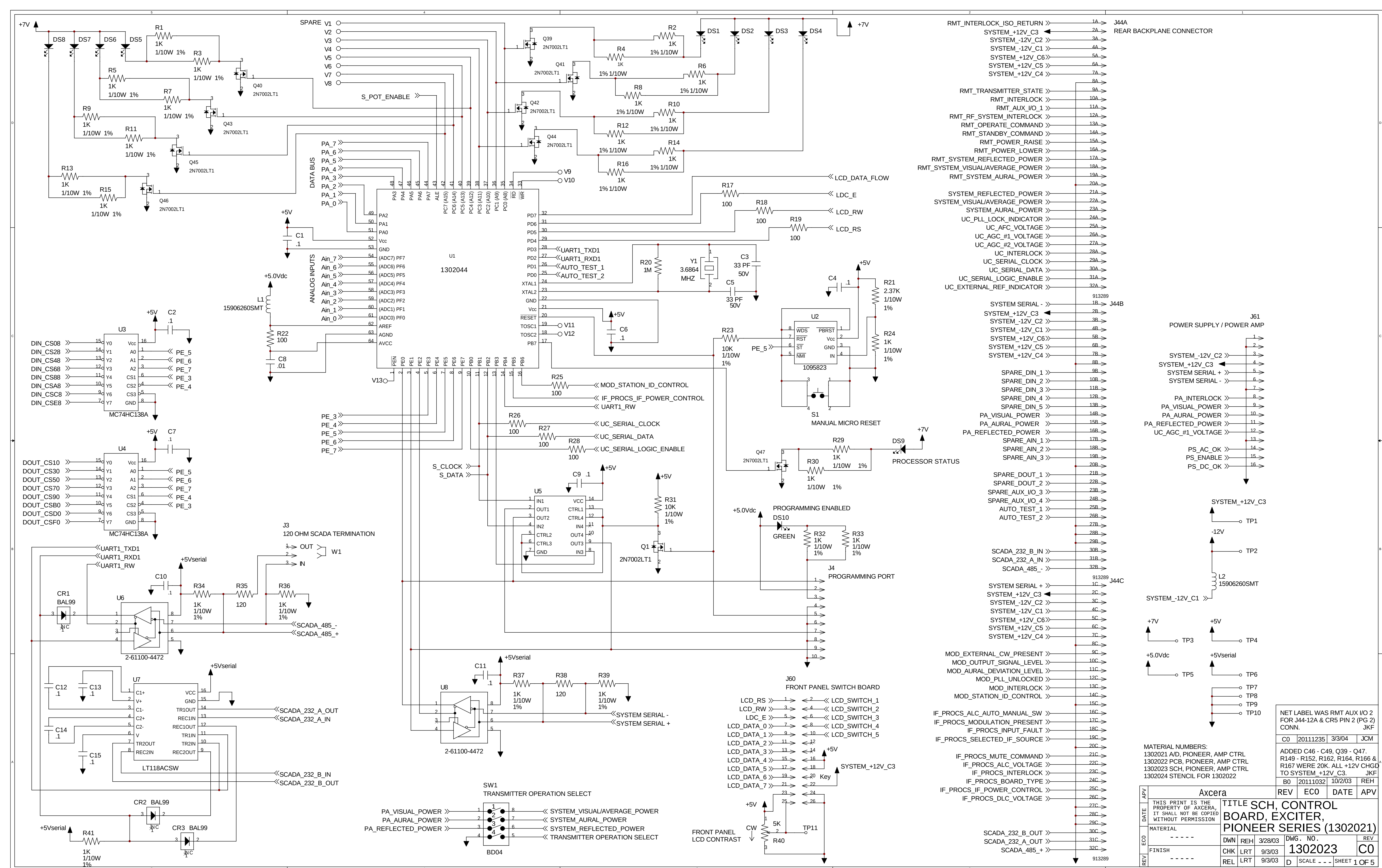
REV	DATE	Axcera			TITLE		
	ECO	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION			SCH., L.O. GENERATOR BD., 1.67GHz (1304940)		
	MATERIAL	-----			DWN	JKF	10/22/04
	FINISH	-----			CHK	DB	10/28/04
REV	ECO	-----			DWG. NO.	1304941	
	REL	-----			SCALE	D	
					SHEET	1 OF 3	

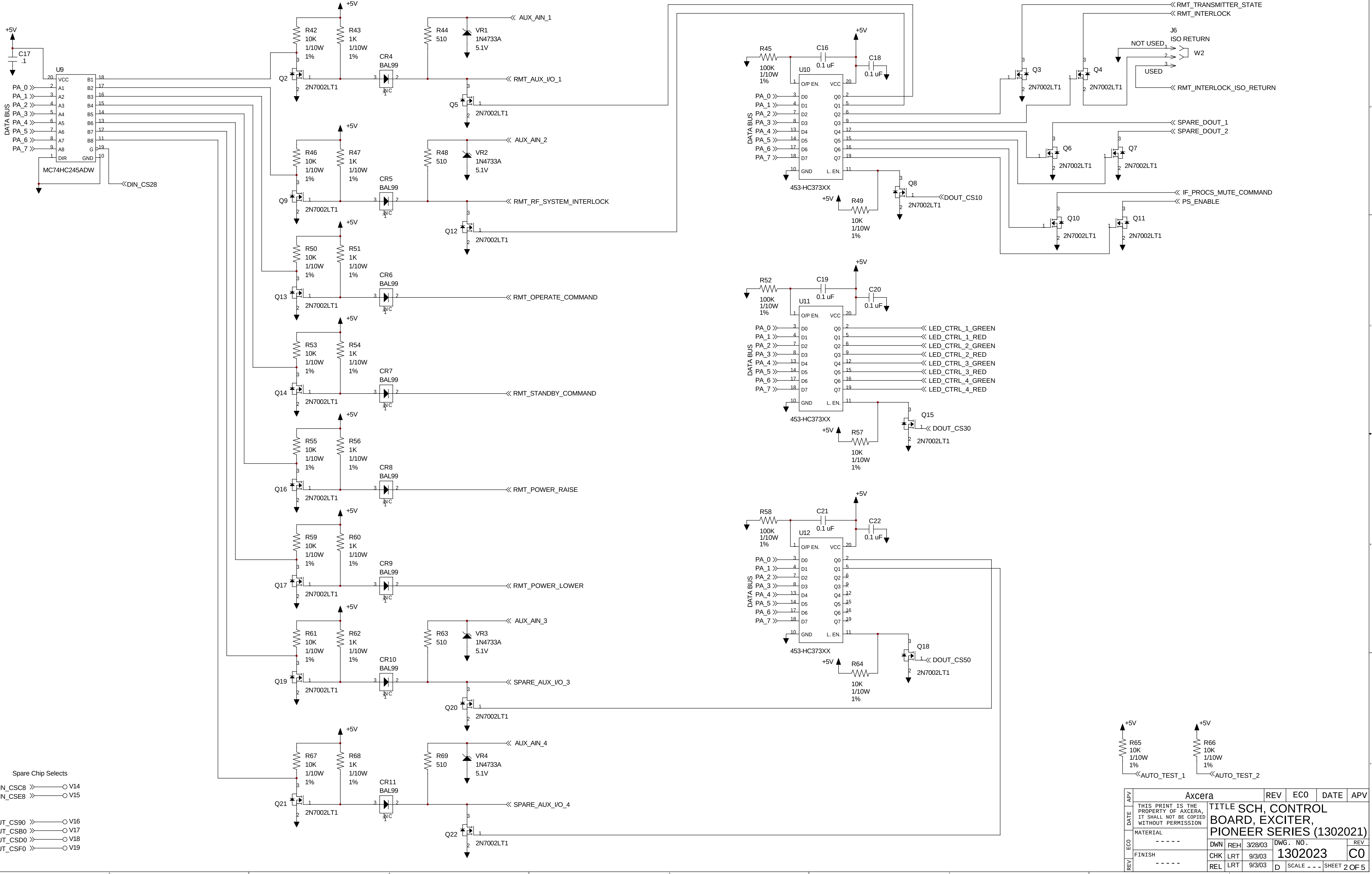
ADDED PAGE 3, C96, Q5 - Q18 & R87 - R108.			
B0	20111664	3/18/05	DB
ADD C87 - C95, J15, R82 - R86. DEL C74 & R12. C53 WAS 5.1 PF. R62 WAS 3.3K. R11 WAS 301.			
B0	20111664	2/2/05	DB



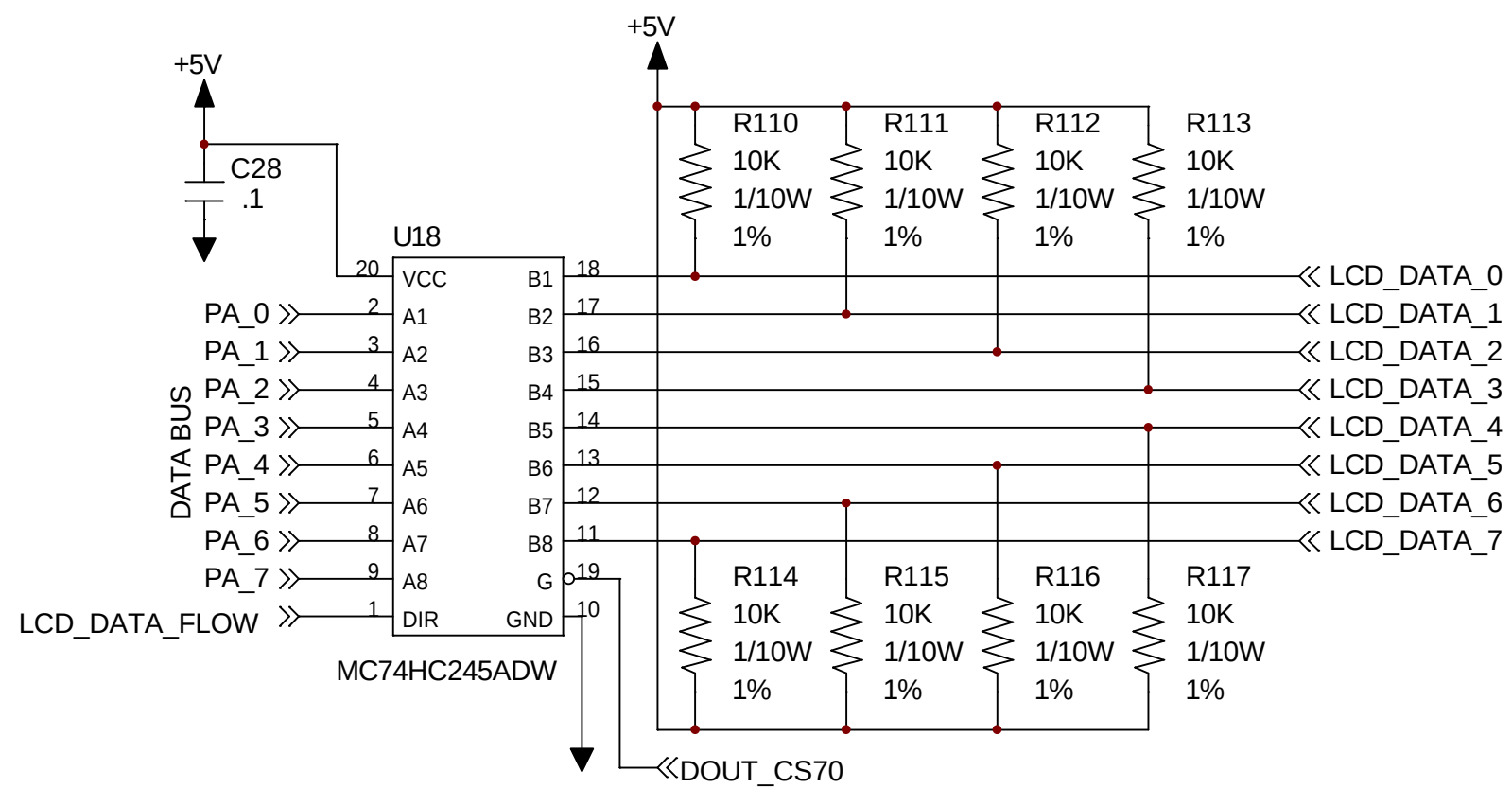
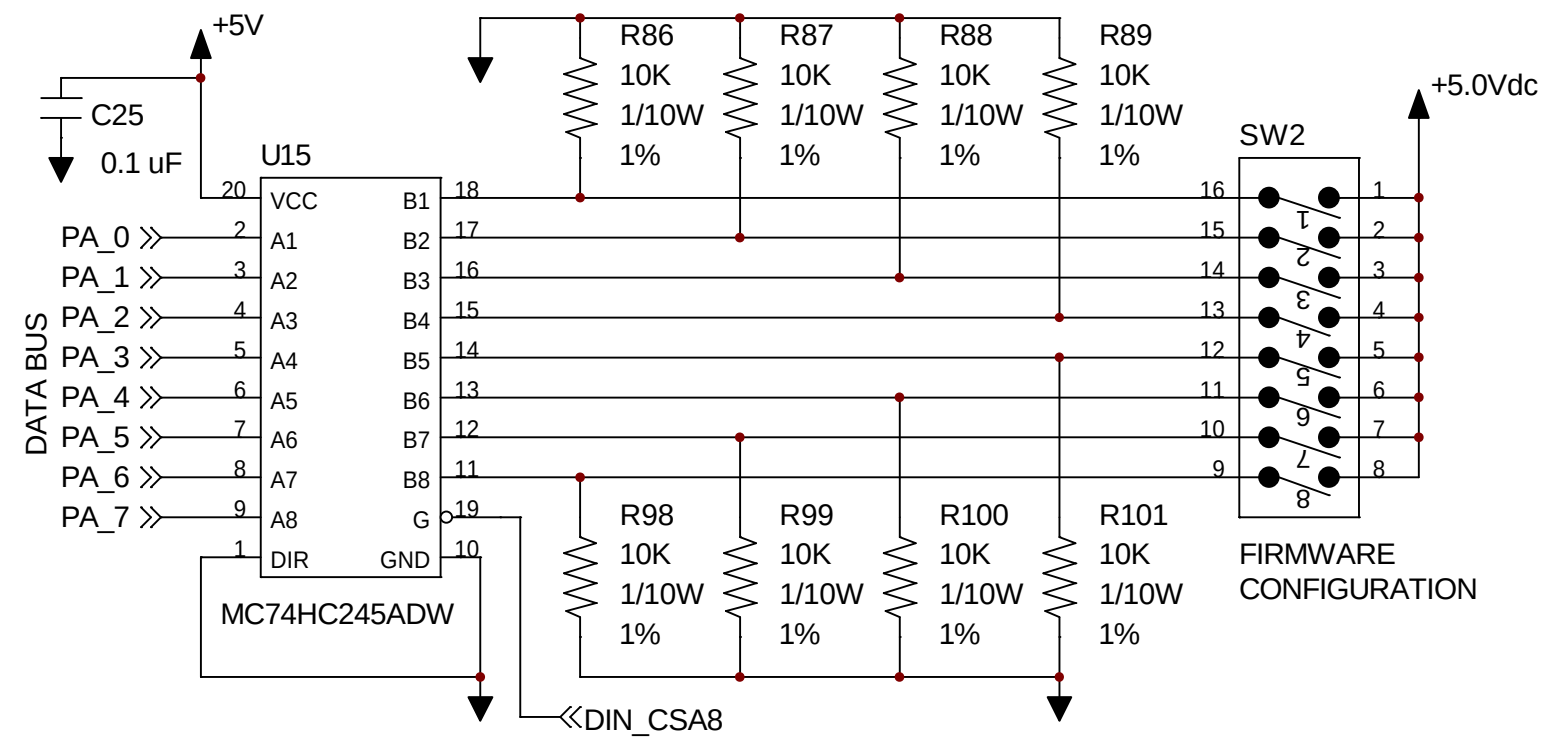
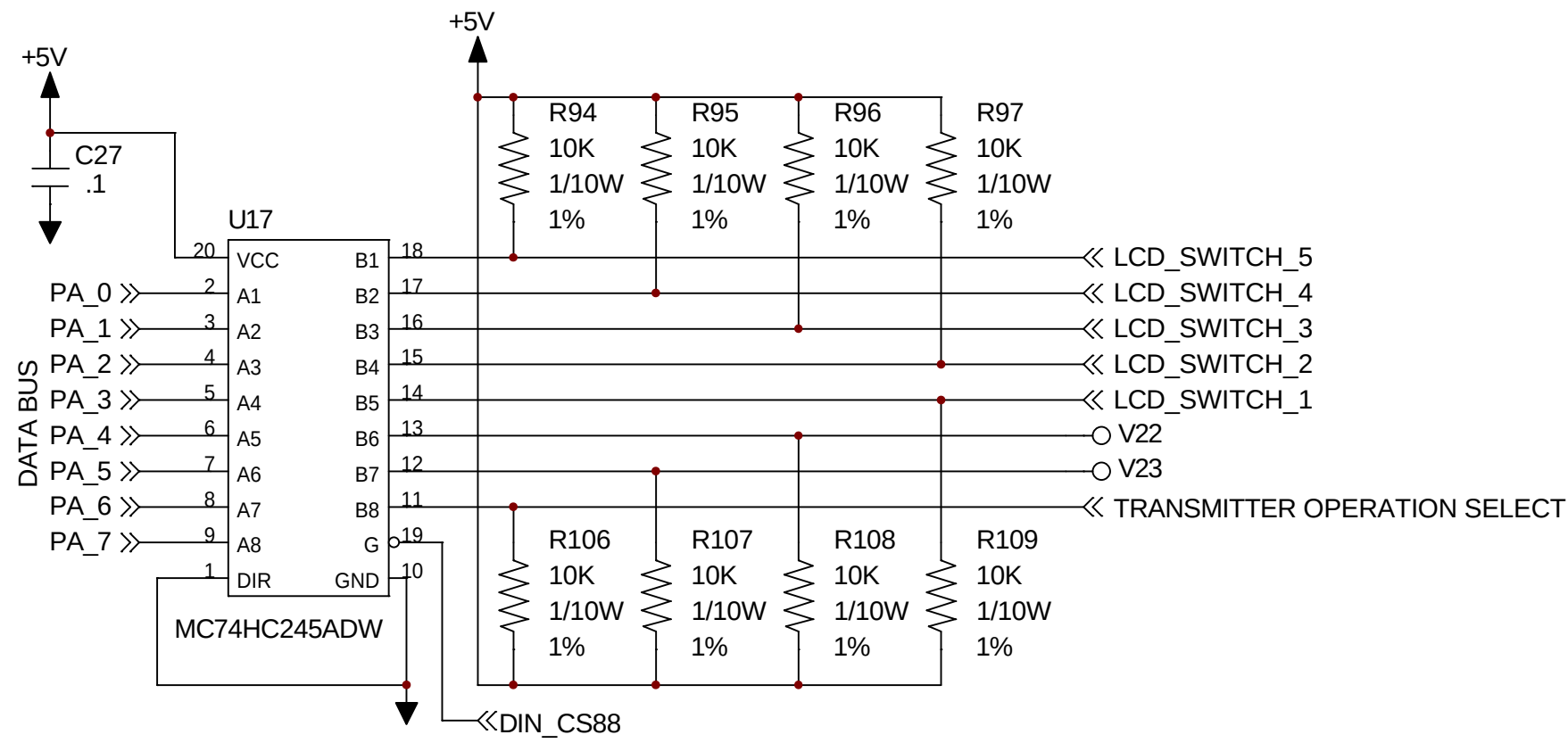
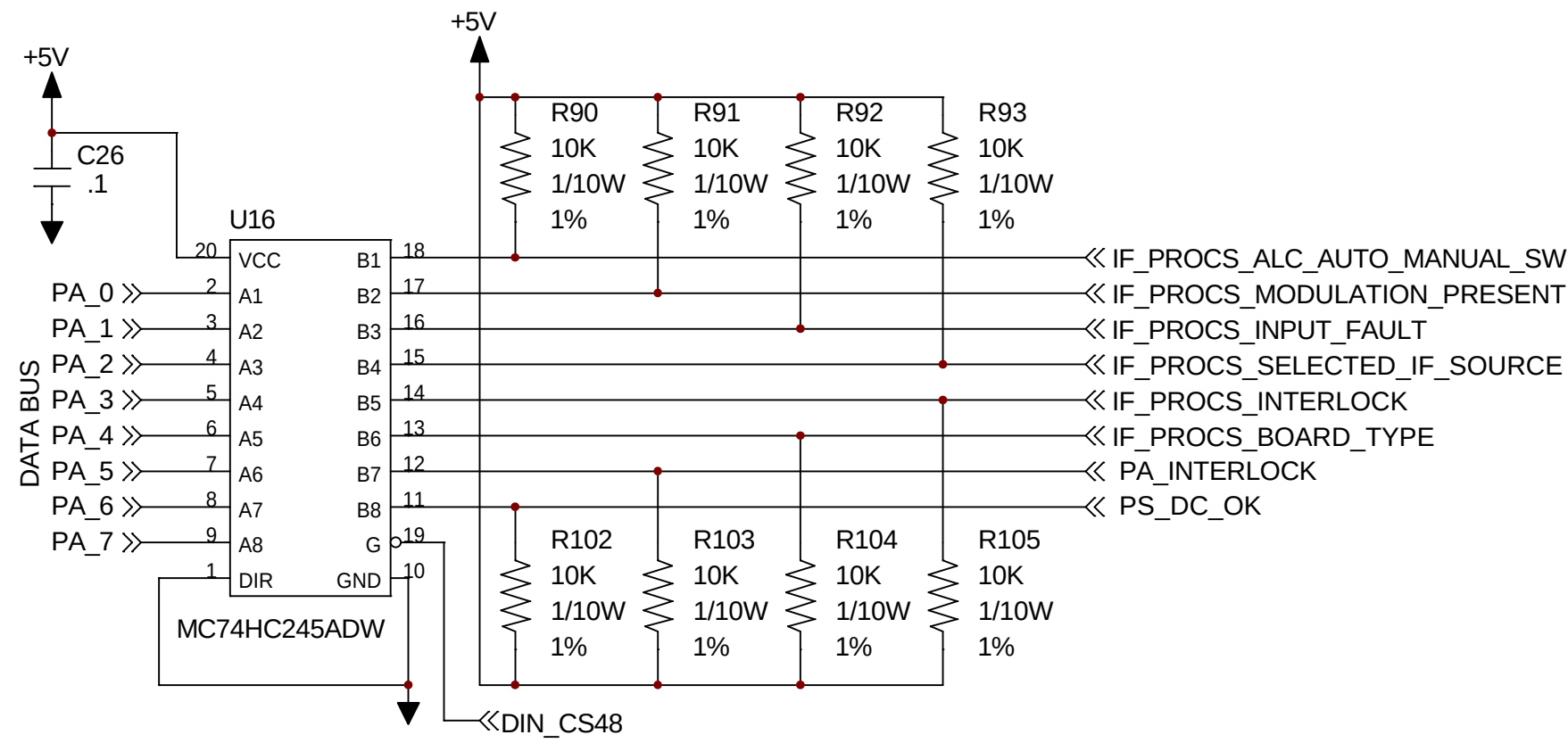
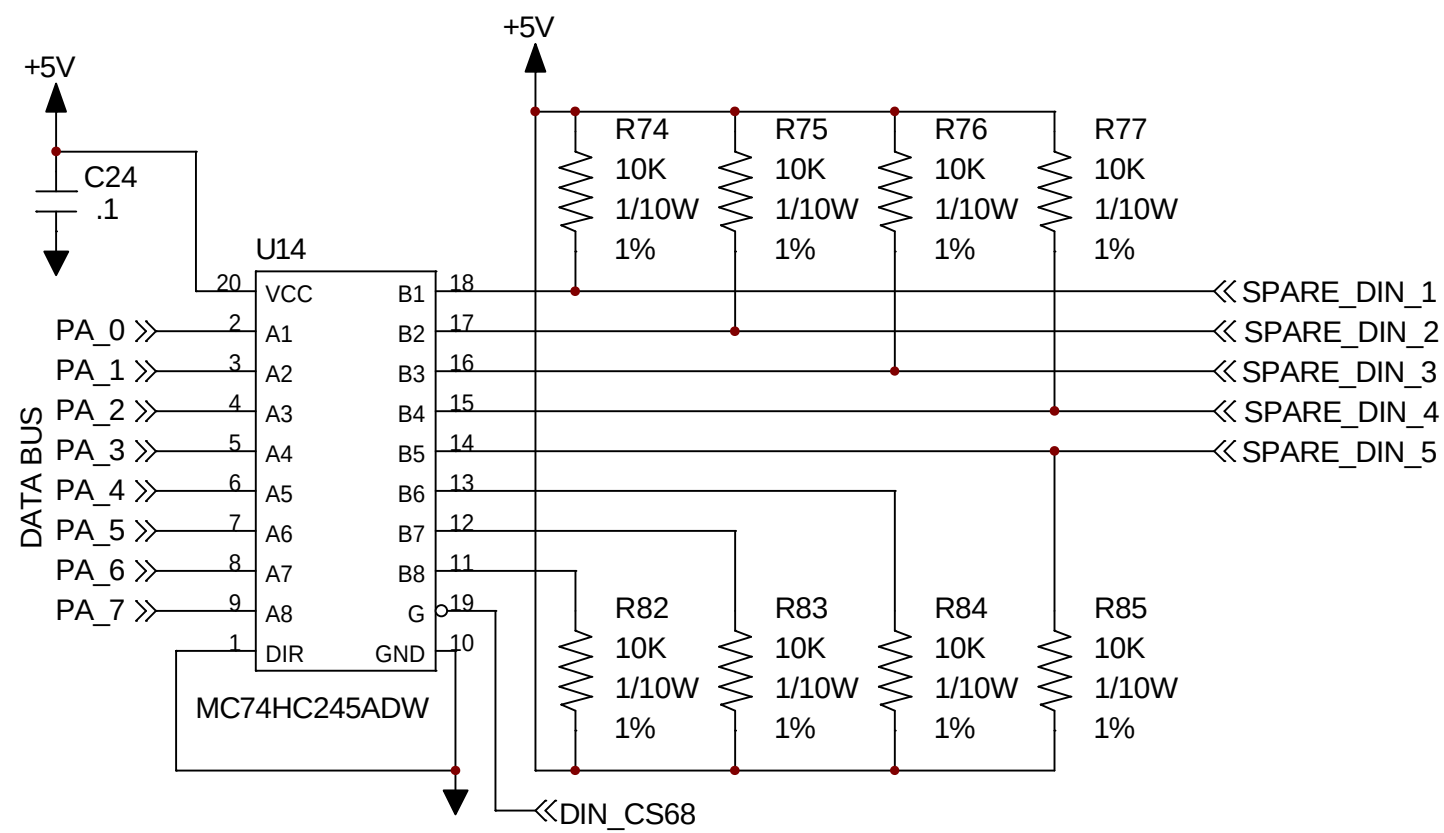
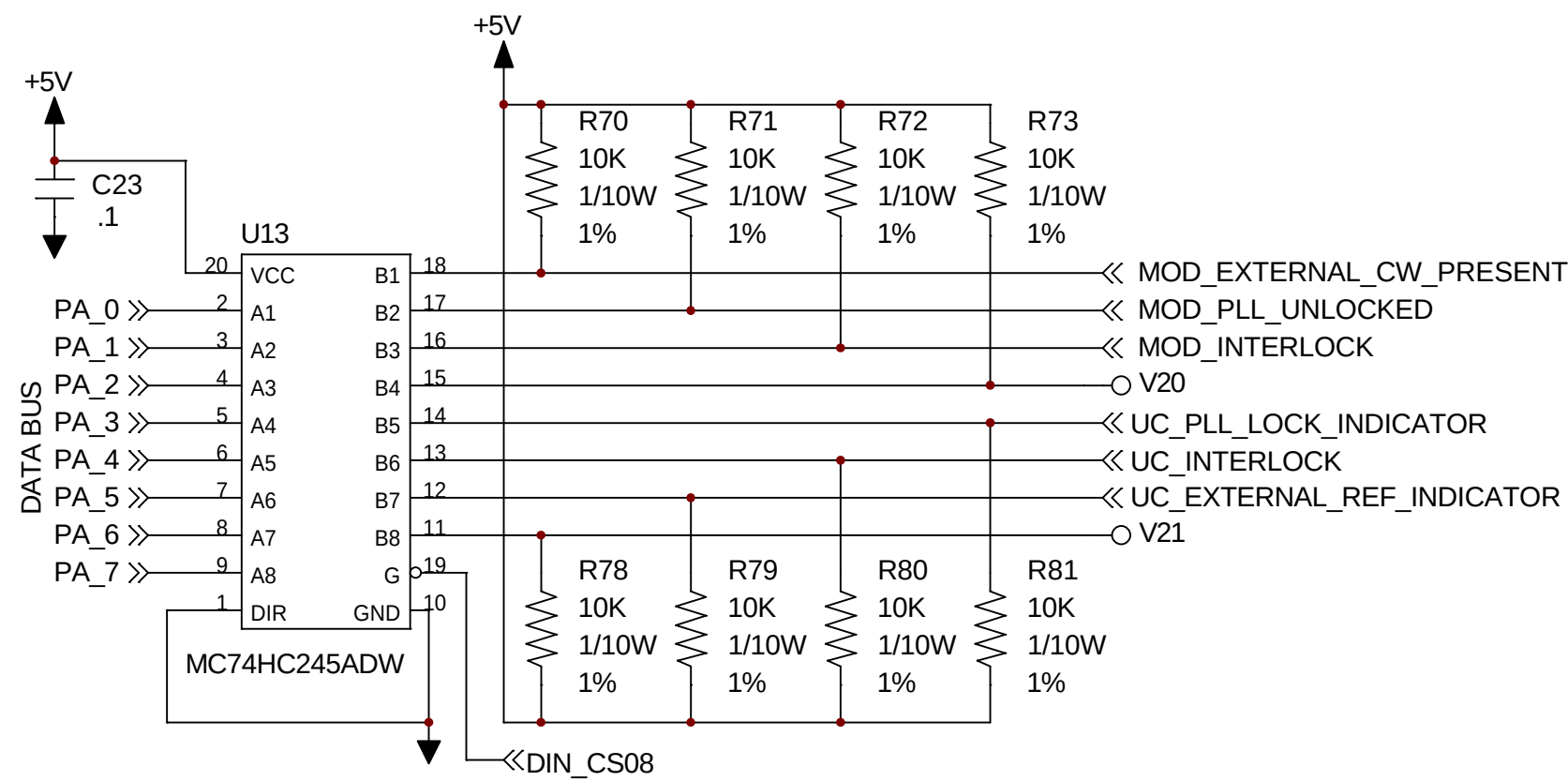




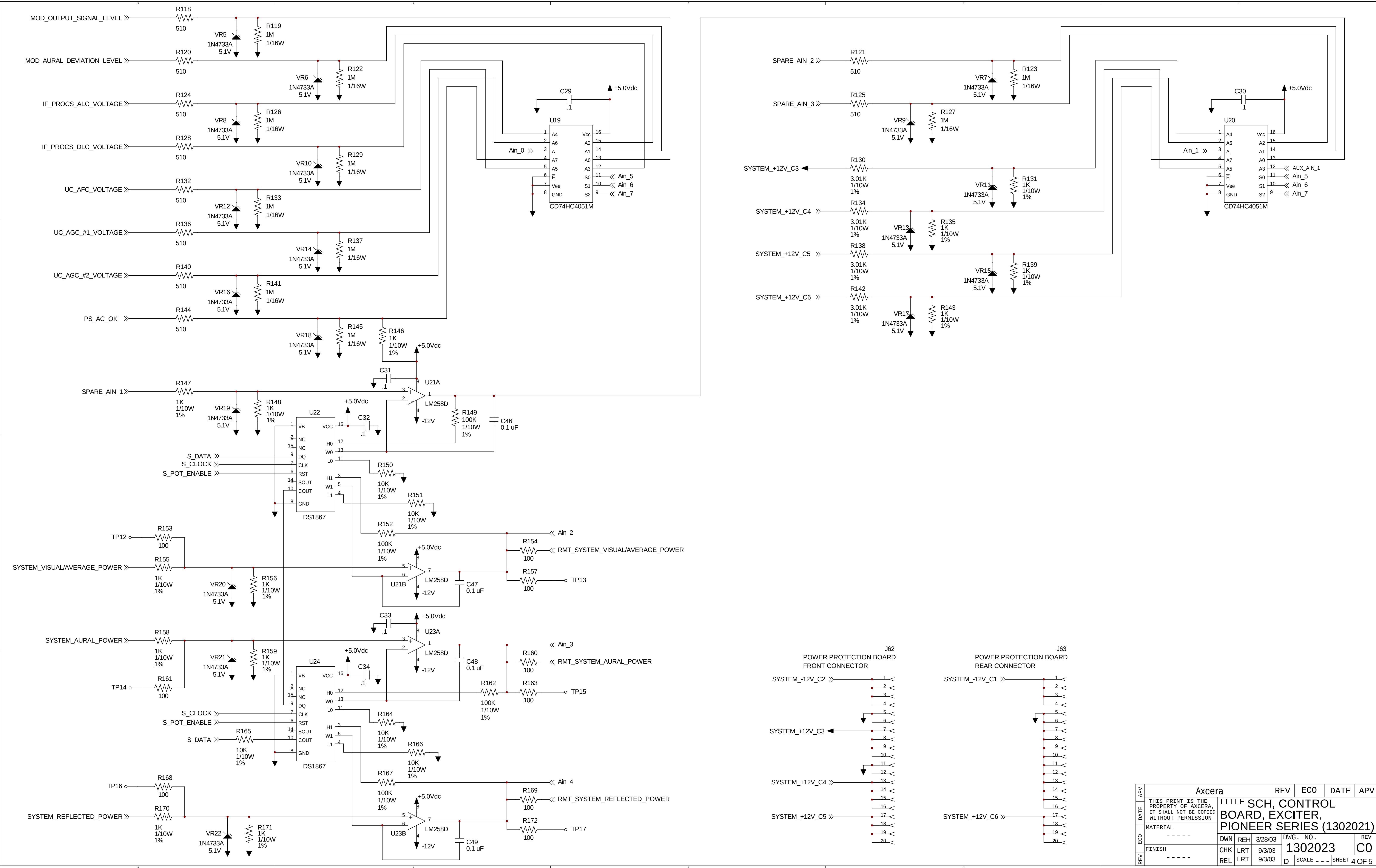


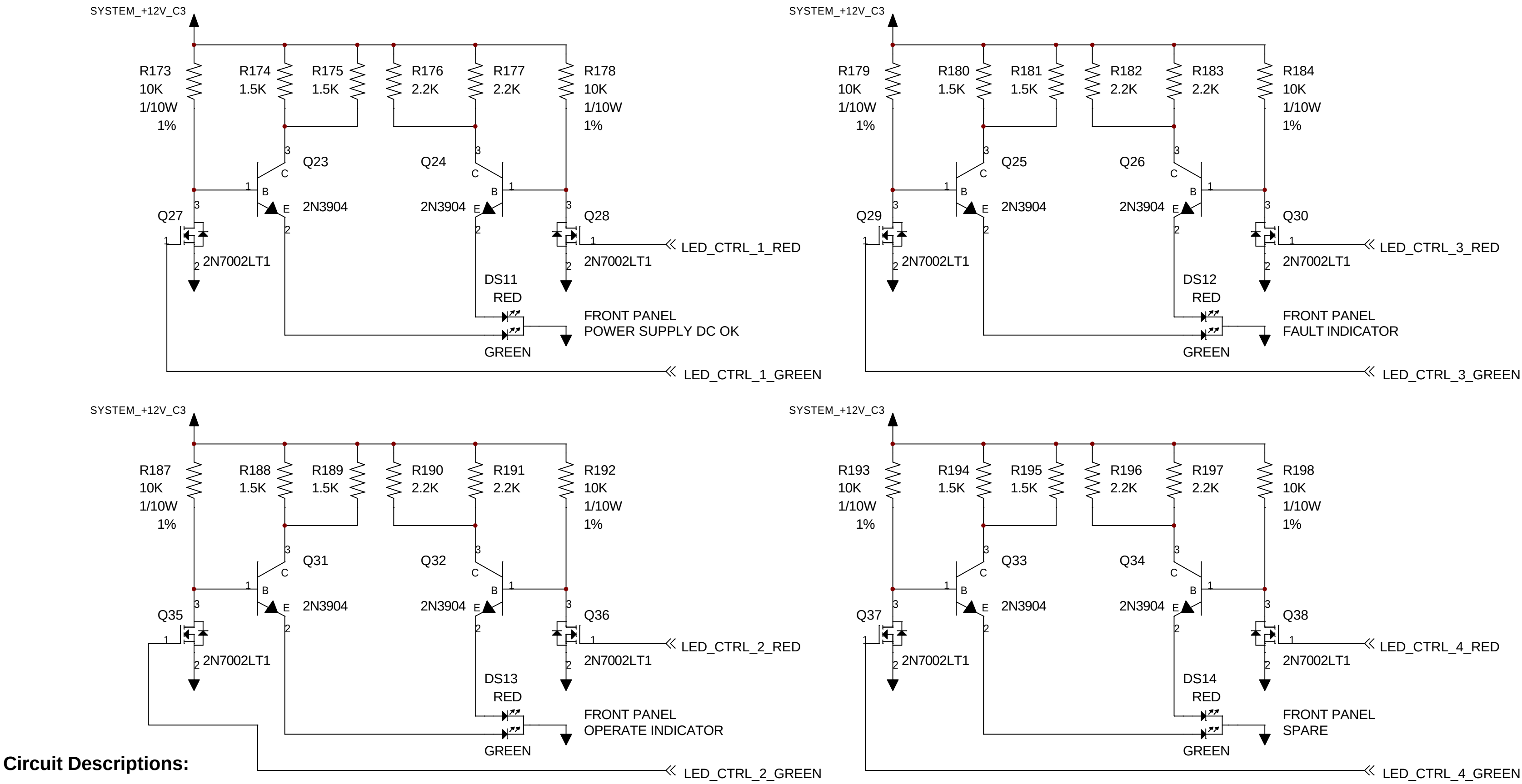


APV	Axcera				REV	ECO	DATE	APV
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION				TITLE SCH, CONTROL BOARD, EXCITER, PIONEER SERIES (1302021)			
ECO	MATERIAL				DWN	REH	3/28/03	DWG. NO.
REV	FINISH				CHK	LRT	9/3/03	1302023
					REL	LRT	9/3/03	C0



APV	Axcera				REV	ECO	DATE	APV
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION		TITLE SCH, CONTROL BOARD, EXCITER, PIONEER SERIES (1302021)					
ECO			MATERIAL					
REV	FINISH		DWN	REH	3/28/03		DWG. NO.	REV
	-----		CHK	LRT	9/3/03		1302023	C0
			REL	LRT	9/3/03		D	SCALE --- SHEET 3 OF 5





Circuit Descriptions:

PAGE 1:

U1 is an Atmel Atmega128 microcontroller. This part is in-circuit programmed using the serial programming port. When the microcontroller is held in reset by either the programming port or the external watchdog IC, a transistor inverts the reset signal while serial programming lines are connected to U1 through analog switch U5.

U2 is a watchdog IC used to hold the microcontroller in reset if the supply voltage is less than 4.21 Vdc; (1.25 Vdc < Pin 4 (IN) < Pin 2 (Vcc)). The watchdog momentarily resets the microcontroller if Pin 6 (IST) is not clocked every second. A manual reset switch is provided but should not be needed.

Diodes DS1 through DS8 are used for display of auto test results. A test board is used to execute self test routines. When the test board is installed, Auto_Test_1 is held low and Auto_Test_2 is allowed to float at 5 Vdc. This is the signal to start the auto test routines.

U3 and U4 are used to selectively enable various input and output ICs found on page 2 and 3 of the schematic.

U1 has two serial ports available. In this application, one port is used to communicate with transmitter system components where U1 is the master of a RS-485 serial bus. The other serial port is used to provide serial data I/O where U1 is not the master of the data port. A dual RS-232 port driver IC and a RS-485 port driver is also in the second serial data I/O system. The serial ports are wired such that serial data input can come through one of the three serial port channels. Data output is sent out through each of the three serial port channels.

Switch SW1 is used to select either transmitter operation or exciter driver operation. When the switches of SW1 are on, transmitter operation is selected and the power monitoring lines of the transmitter's power amplifier are routed to the system power monitoring lines.

PAGE 2:

Digital output latches are used to control system devices. Remote output circuits are implemented using open drain FETs with greater than 60 Volt drain to source voltage ratings.

Remote digital inputs are diode protected with a 1 Kohm pull-up resistor to 5Vdc. If the remote input voltage is greater than about 2 volts or floating, a FET is turned on and a logic low is applied to the digital input buffer. If the remote input voltage is less than the turn on threshold of the FET (about 2 Vdc), a logic high is applied to the digital input buffer.

Four of the circuits on page two are auxiliary I/O connections wired for future use. They are wired similar to the remote digital inputs but include a FET for digital output operation. To operate these signals as an input, the associated output FET must be turned off. These circuits are also connected to an analog input multiplexer IC.

PAGE 3:

Several ICs are used as input buffers to allow the microcontroller to monitor various digital input values. Most digital inputs use a 10 Kohm pull-up resistor. The buffer IC used for data transfer to the display is wired for read and write control.

PAGE 4:

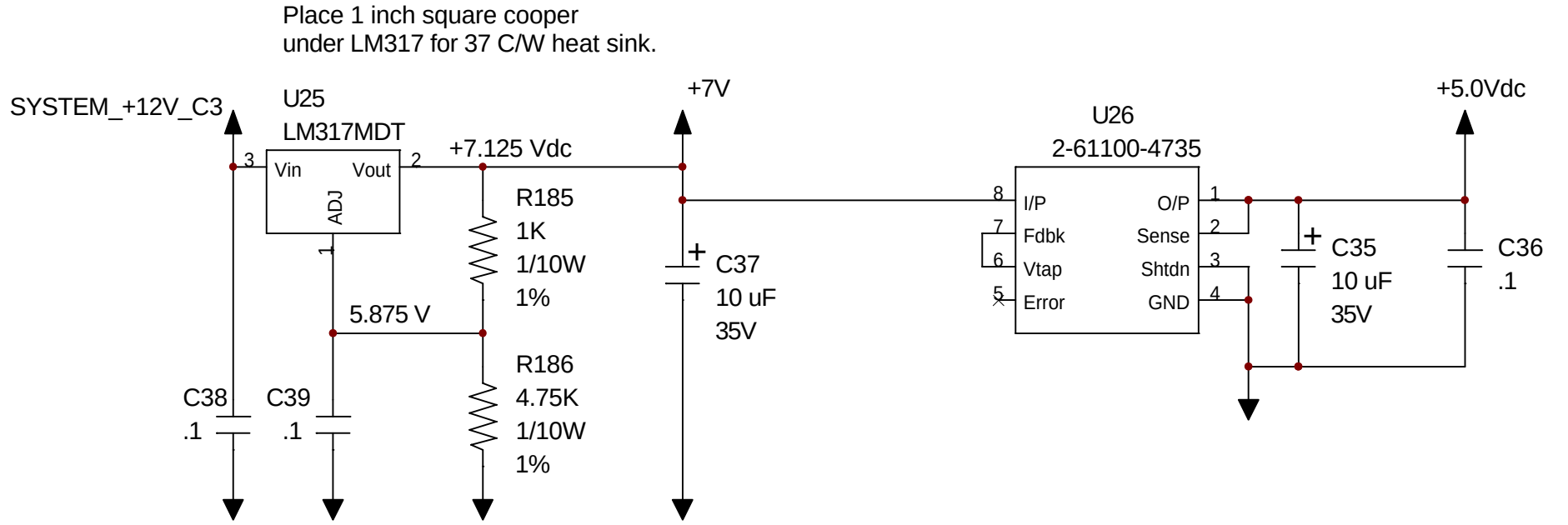
Each analog input is expected to be between 0 and 5 Vdc. If a signal exceeds 5.1 Vdc, a 0.225 Watt zenor diode clamps the signals voltage. Most signals are calibrated at their source however two dual serial potentiometer ICs are used to calibrate four signals. For these four circuits, the input value is divided in half before it is applied to an op-amp. The serial potentiometer is used to adjust the input signal between 80 and 120% of the input signal. Serial data to the second serial potentiometer is transferred through the first IC. The wiper position of the digital potentiometer circuit is used to set the gain of the op-amp. Lower digital values for the wiper setting increases the gain of the op-amp. If N= 0, gain = 6.0. If N = 255, gain = 3.00. If Vin = 1.0 at spare_Ain_1 and N = 128, U21A out = 4.0V with gain = 4.

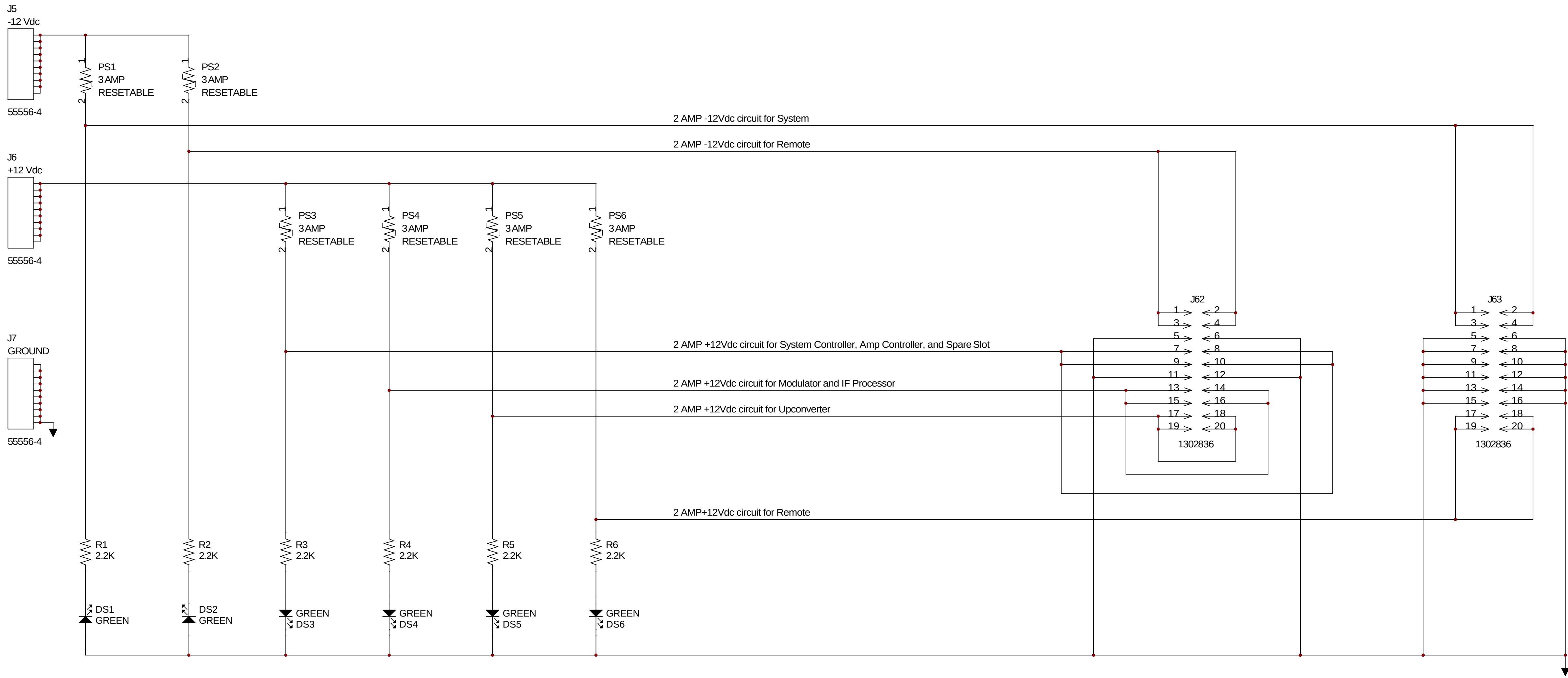
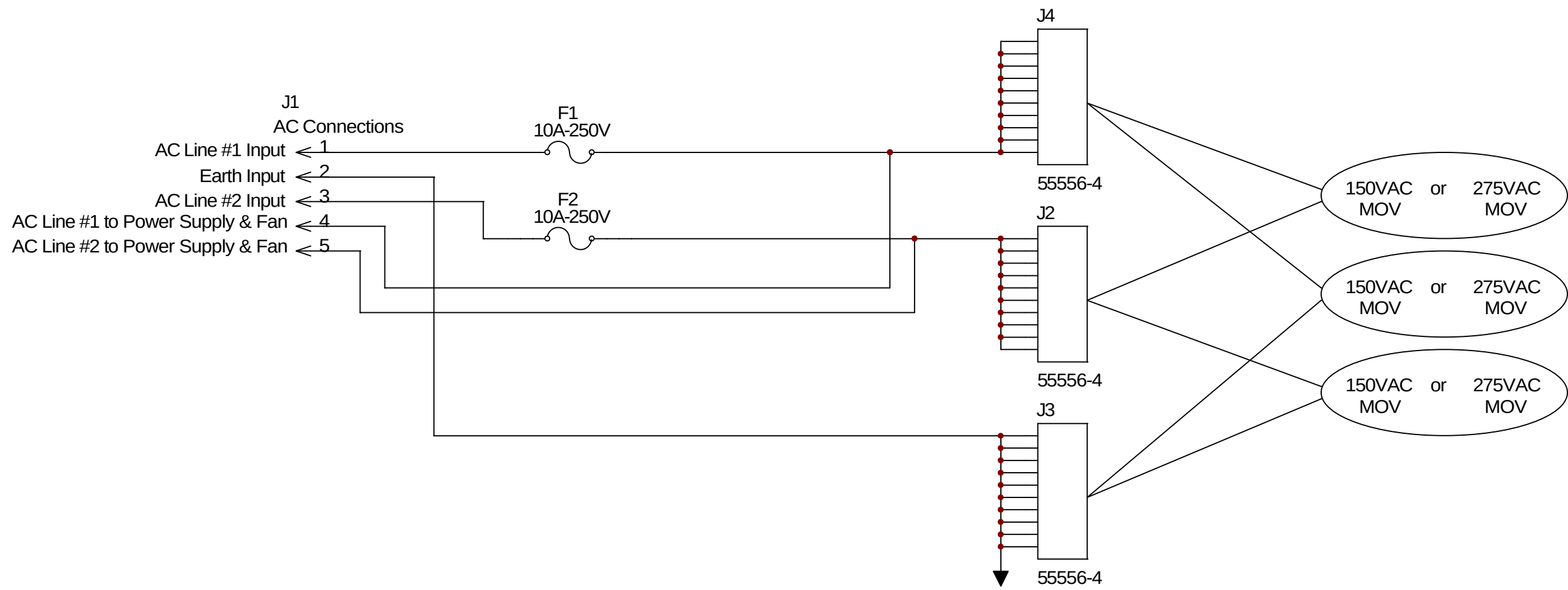
Two 20 position connectors are used to provide power to the backplane. J62 and J63 get power from the power supply after a nominal 3 amp resettable fuse. The Raychem polyswitch resettable fuses may open on a current as low as 2.43 amps at 50C, 3 amps at 25 C or 3.3 amps at 0C. They definately will open when the current is 4.86 amps at 50C, 6 amps at 20C, or 6.6 amps at 0C. Trace widths of these circuits are 0.140" (designed for maximum current).

PAGE 5:

Each of the four LED circuits drive a dual element common cathode LED. To make a good amber color, the current applied to the green element is slightly greater than the red element.

Several voltage regulators are used to power the board. Seven volts is typically applied to board LEDs and to the input of a precision 5.0 volt regulator. The 5.0 volt regulator is used for analog circuits and the microcontroller analog reference voltage. Another two 5 volt regulator circuits are used for most other board circuits.





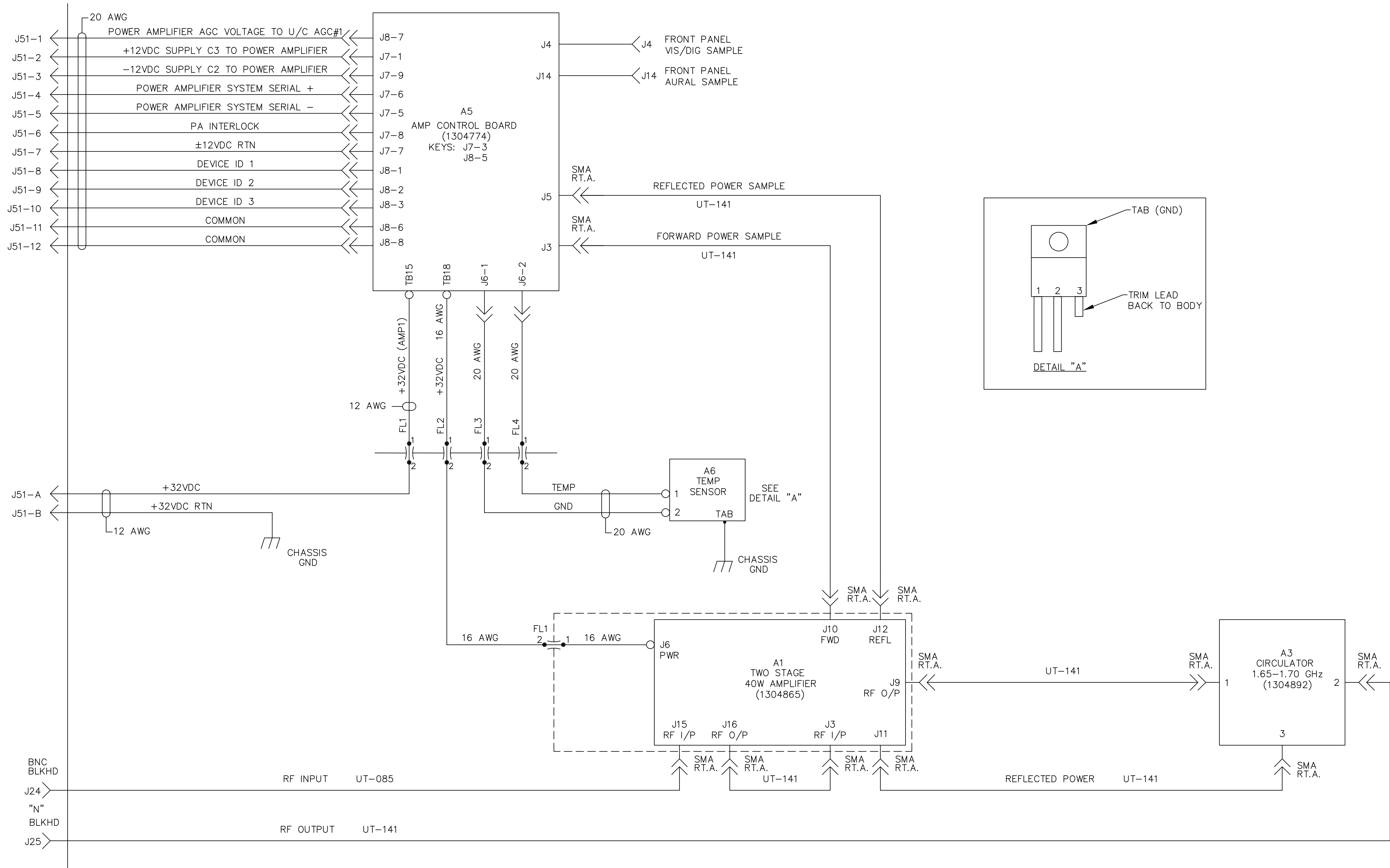
Circuit Design Notes:

- Track widths of 0.140 inch minimum top and bottom of board shall be used to connections to J1, J2, J3, J4.
- Track widths of 0.140 inch minimum top of board shall be used to connections to J5 and J6.
- Track widths of 0.065 inch minimum shall be used to connections to J62 and J63.
- Track widths of 0.020 inch minimum shall be used to connections between LEDs and resistors.
- Board BOM needs the following items added to those exported from Orcad:

Part Number	Qty	Description
102071	4	Fuse Clip, PC BD Mnt., 15 Amp

MATERIAL NUMBERS:
1302837 PIONEER, POWER PROTECTION
1302838 PCB, PIONEER, PWR PROTECT
1302839 SCH, PIONEER, PWR PROTECT
1302840 STENCIL FOR 1302838

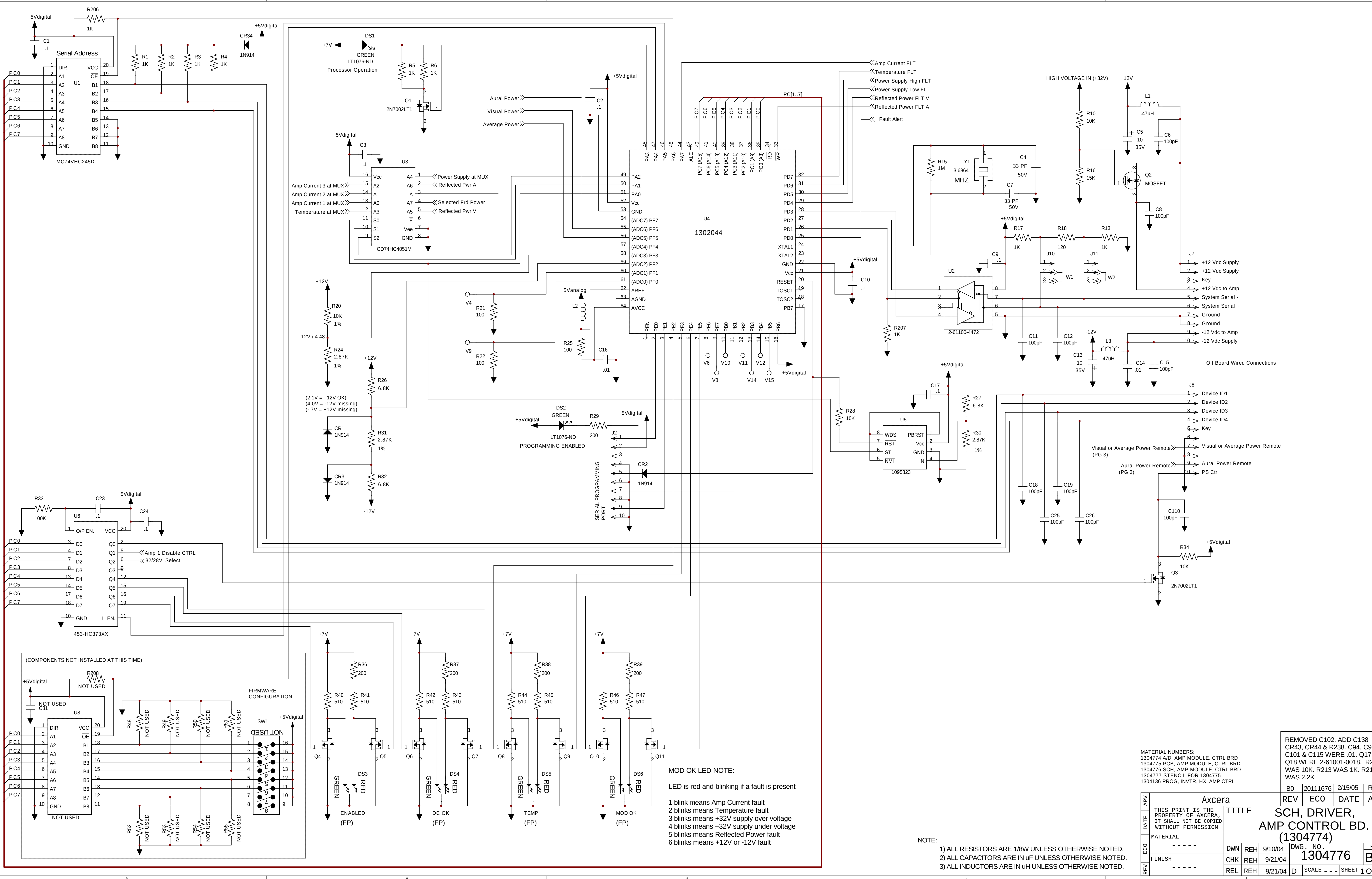
REV	DATE	APV	Axcera				REV	ECO	DATE	APV
THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION			TITLE SCH, PIONEER, PWR PROTECT (1302837)							
			MATERIAL		DWN		REH	5/29/03	DWG. NO.	
FINISH			CHK		REL	5/29/03	1302839		REV	
			REL		REL	5/29/03	D	SCALE	SHEET 1 OF 1	



NOTE:
1. ALL WIRE IS 20AWG UNLESS OTHERWISE NOTED.

 Axcera ®	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION.	TITLE									
		I/C, PA ASSEMBLY, 5W 1.67 GHz									
		MATERIAL									
		FINISH									

		DWN	RGE	11/11/04	DWG. NO.					REV	
		CHK	TB	04/12/05	1305055					A0	
		REL	TB	04/12/05	D	SCALE	----	SHEET		1 OF 1	



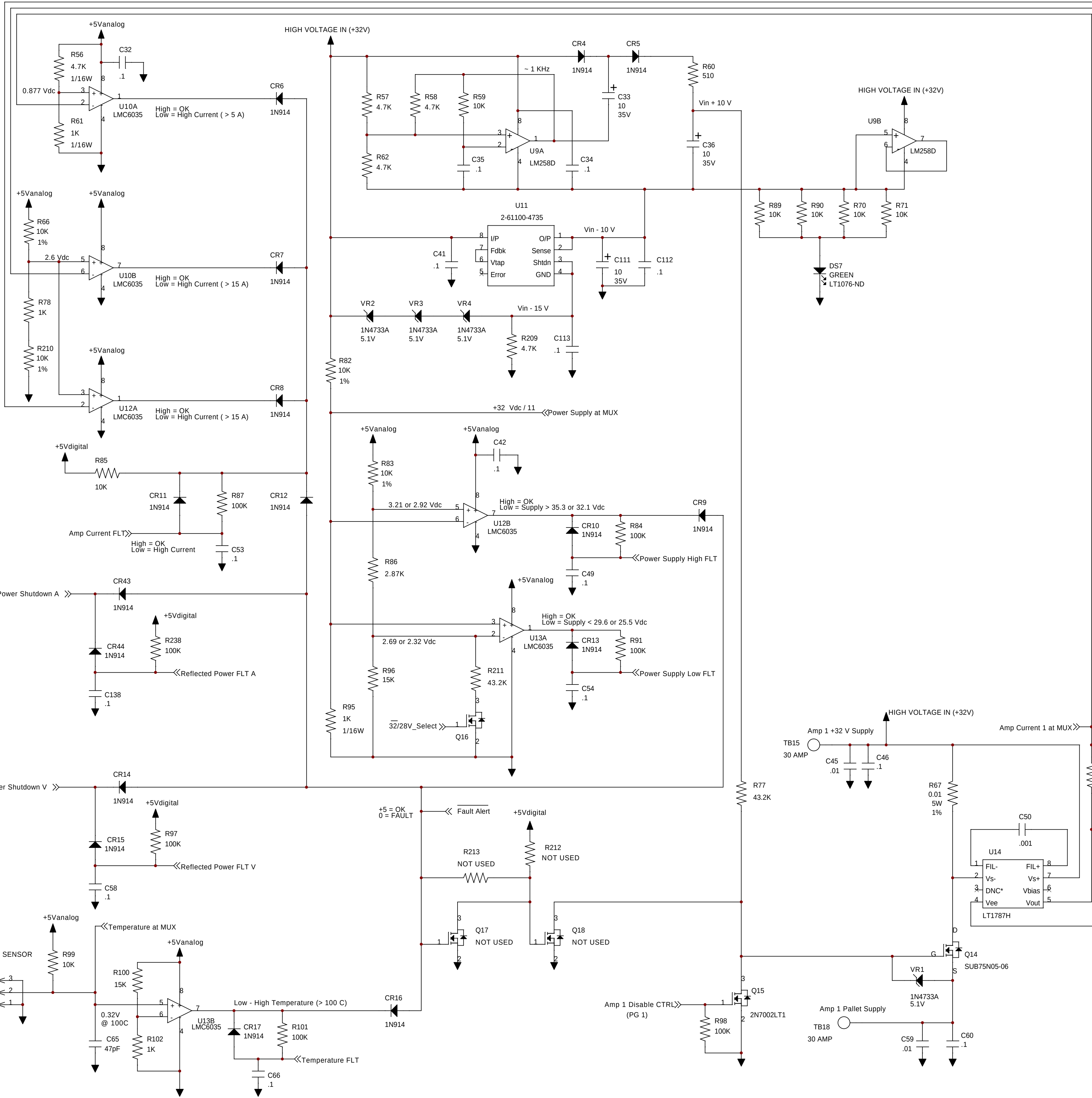
MATERIAL NUMBERS:
1304774 A/D, AMP MODULE, CTRL BRD
1304775 PCB, AMP MODULE, CTRL BRD
1304776 SCH, AMP MODULE, CTRL BRD
1304777 STENCIL FOR 1304775
1304136 PROG, INVTR, HX, AMP CTRL

REMOVED C102. ADD C138
CR43, CR44 & R238. C94, C98,
C101 & C115 WERE .01. Q17 &
Q18 WERE 2-61001-0018. R212
WAS 10K. R213 WAS 1K. R215
WAS 2.2K JKF

APV	Axcera		REV	ECO	DATE	APV
DATE	THIS PRINT IS THE PROPERTY OF AXGERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION		TITLE		SCH, DRIVER, AMP CONTROL BD. (1304774)	
ECO			DWN	REH	9/10/04	REV
REV	FINISH		CHK	REH	9/21/04	B0
			REL	REH	9/21/04	D
			SCALE	- - -		SHEET 1 OF 3

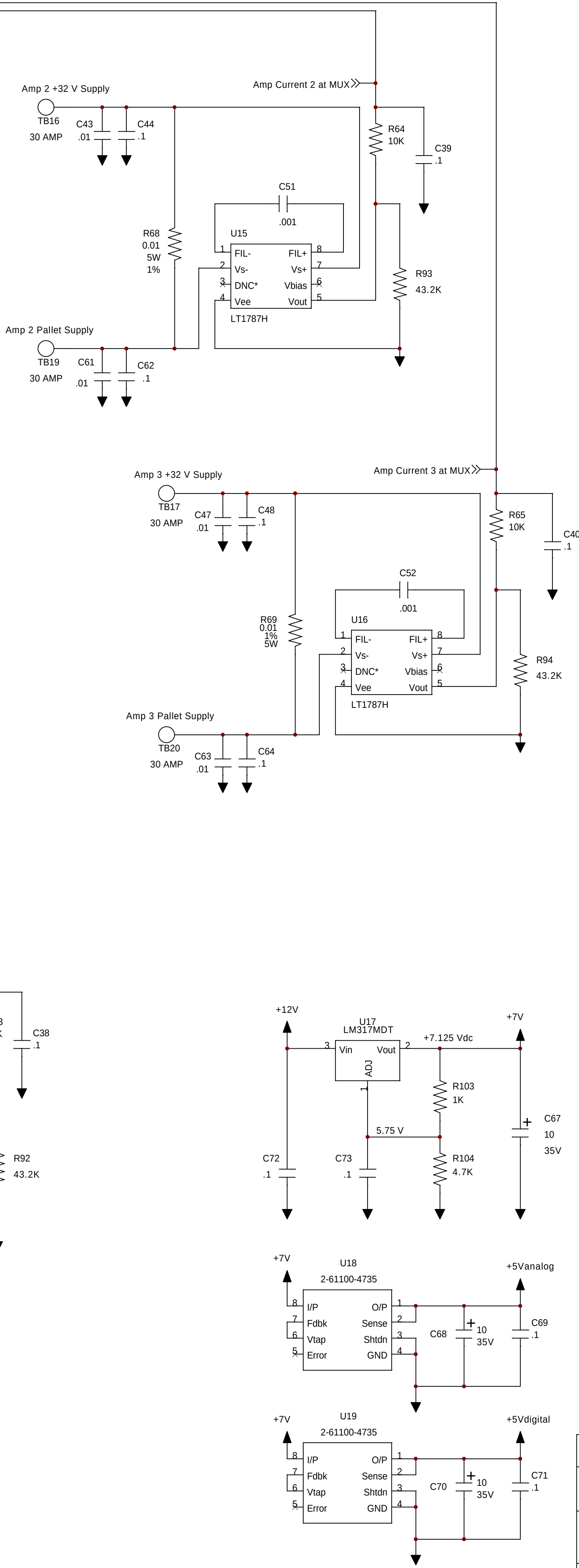
NOTE:
1) ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
2) ALL CAPACITORS ARE IN uF UNLESS OTHERWISE NOTED.
3) ALL INDUCTORS ARE IN uH UNLESS OTHERWISE NOTED.

MOD OK LED NOTE:
LED is red and blinking if a fault is present
1 blink means Amp Current fault
2 blinks means Temperature fault
3 blinks means +32V supply over voltage
4 blinks means +32V supply under voltage
5 blinks means Reflected Power fault
6 blinks means +12V or -12V fault



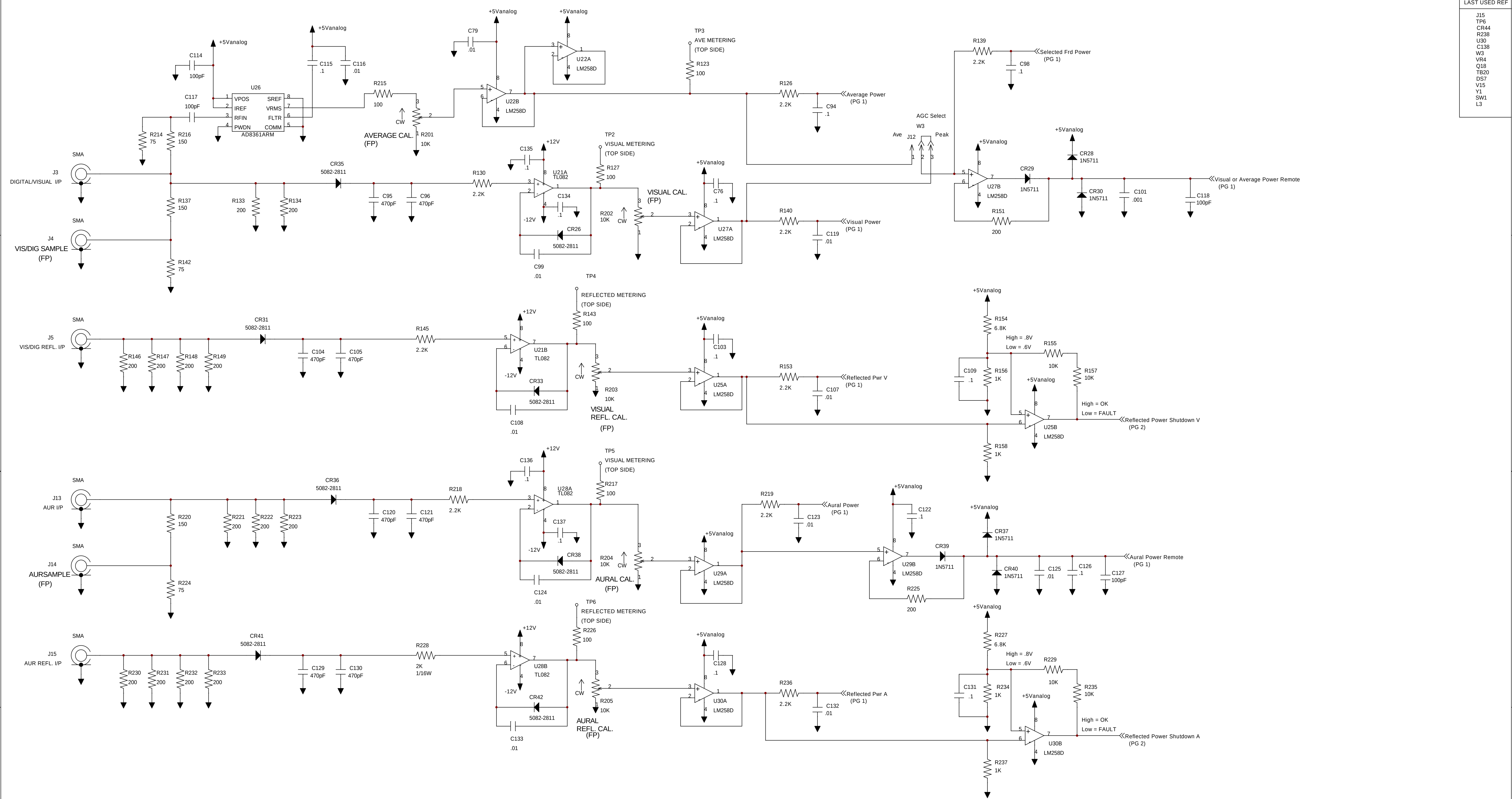
NOTE:

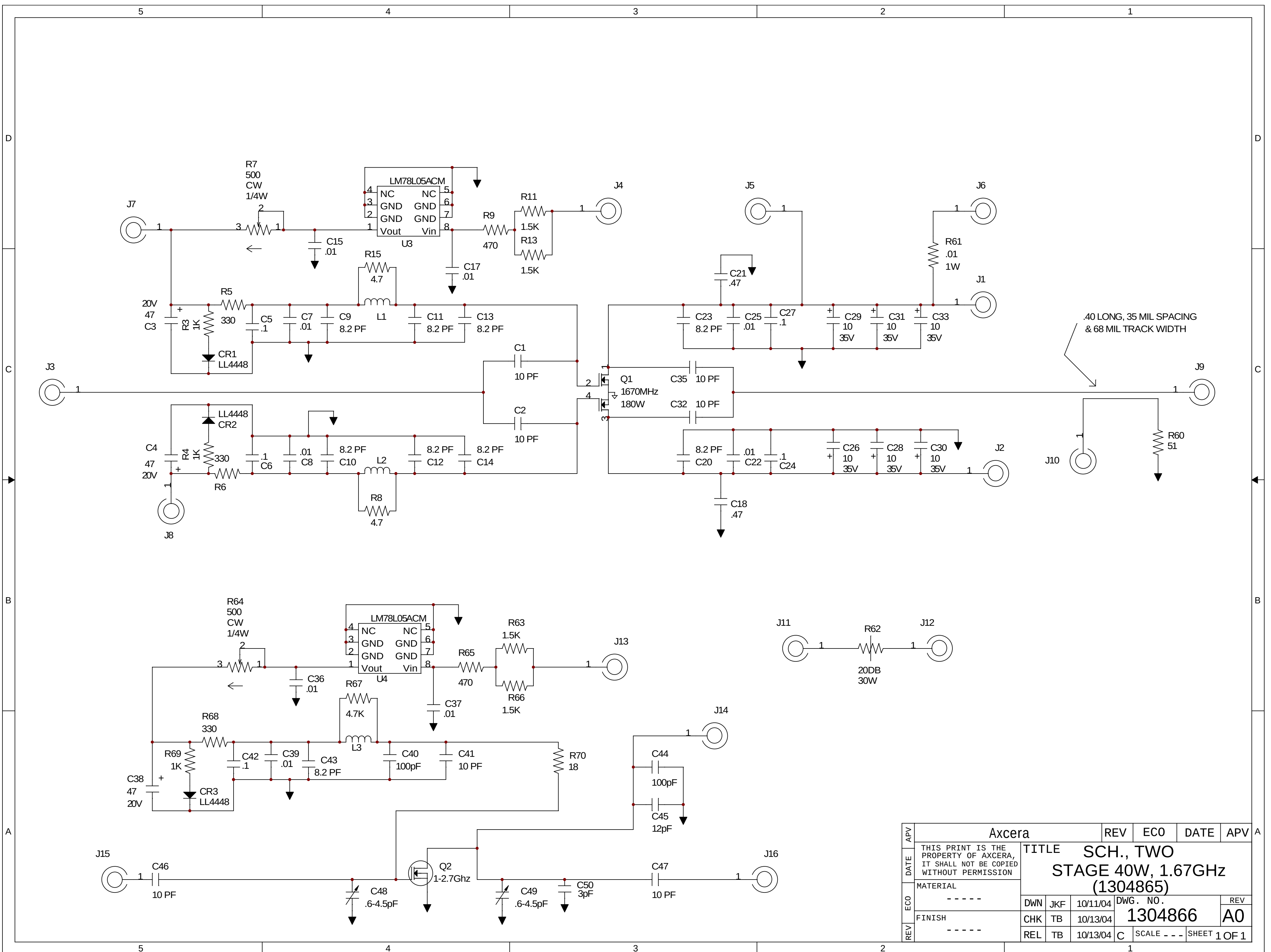
A track width of 0.3 inch is needed between power input vias and sense resistors R55,R56,R57. 0.3 inch track width is also needed between the output of the sense resistors and the output vias that provide power to the amplifier pallets.



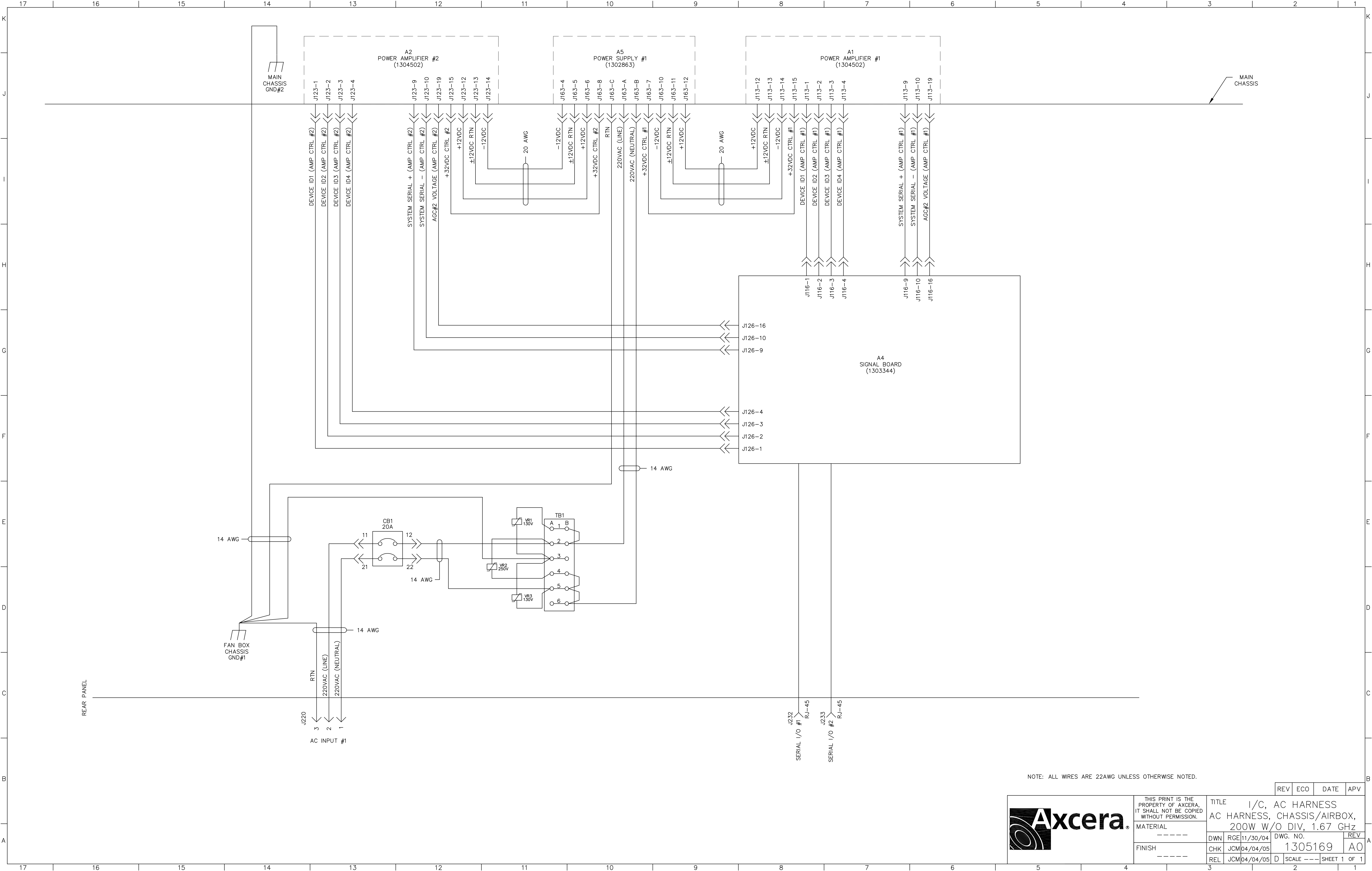
APV	Axcera				REV	ECO	DATE	APV
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION				TITLE			
ECO					SCH, DRIVER, AMP CONTROL BD. (1304774)			
REV	FINISH				DWN	REH	9/10/04	REV
					CHK	REH	9/21/04	1304776
					REL	REH	9/21/04	B0
					SCALE - - - SHEET 2 OF 3			

LAST USED REF			
J15	TP6		
CR44			
R238			
C138			
W3			
VR4			
Q18			
T820			
DS7			
V15			
Y1			
SW1			
L3			



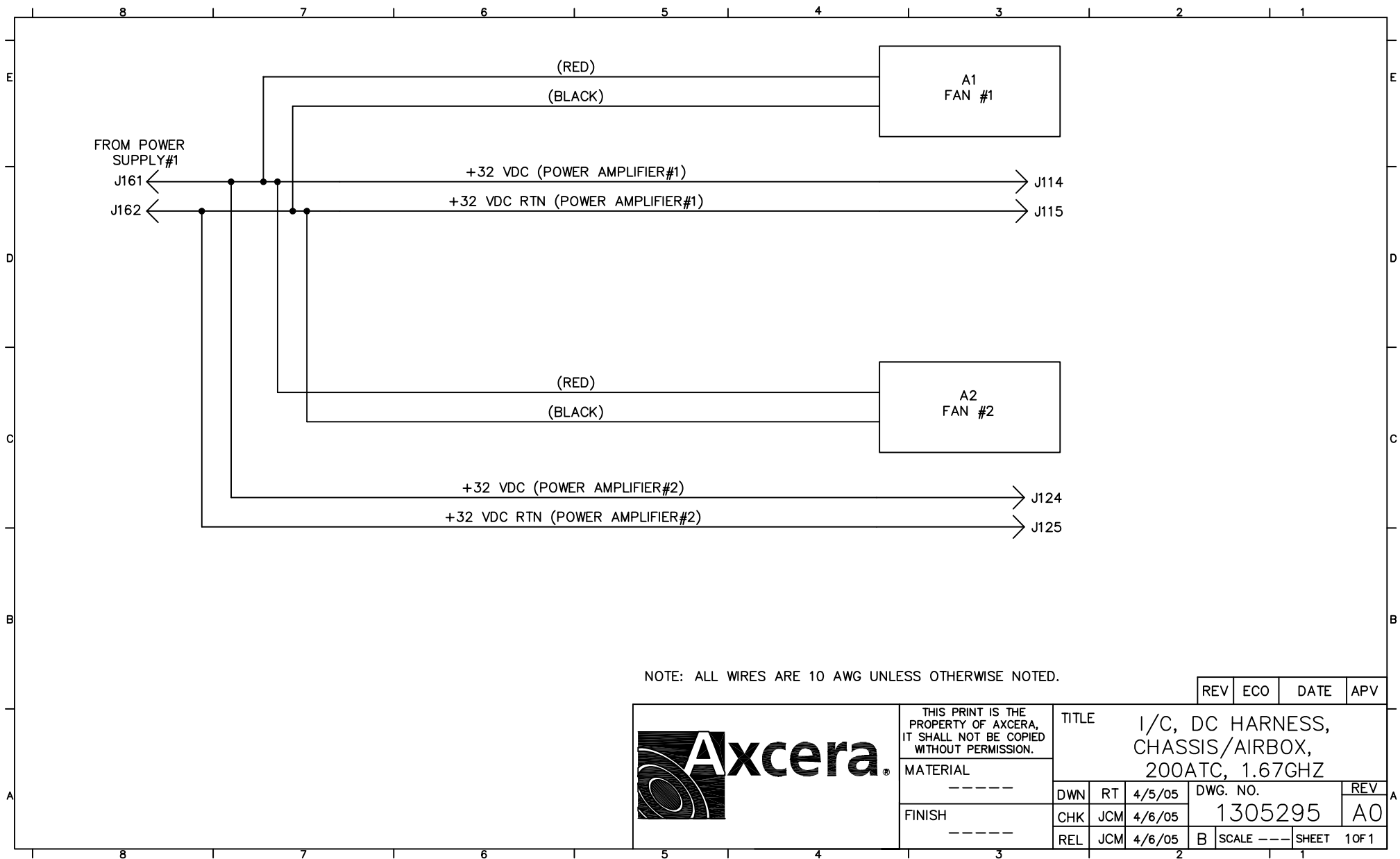


APV	Axcera				REV	ECO	DATE	APV	A
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION				TITLE SCH., TWO STAGE 40W, 1.67GHz (1304865)				
ECO	MATERIAL -----				DWN	JKF	10/11/04	DWG. NO. 1304866	
REV	FINISH -----				CHK	TB	10/13/04	A0	
					REL	TB	10/13/04	C	SCALE --- SHEET 1 OF 1



NOTE: ALL WIRES ARE 22AWG UNLESS OTHERWISE NOTED.

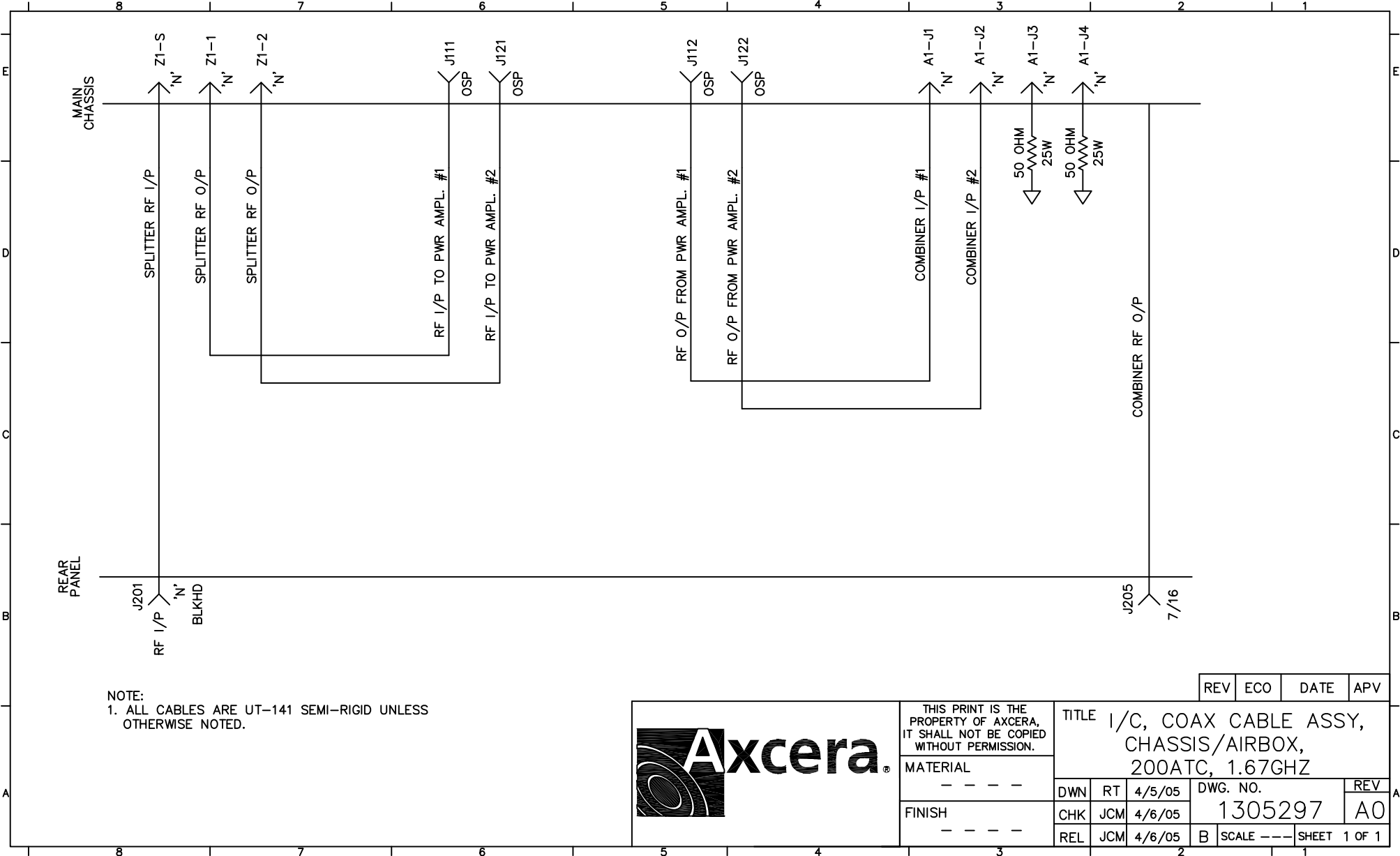
REV		ECO	DATE	APV
THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION.		TITLE		
MATERIAL		I/C, AC HARNESS		
FINISH		AC HARNESS, CHASSIS/AIRBOX, 200W W/O DIV, 1.67 GHz		
DWN	RGE	11/30/04	DWG. NO.	REV
CHK	JCM	04/04/05	1305169	A0
REL	JCM	04/04/05	D	SCALE --- SHEET 1 OF 1



NOTE: ALL WIRES ARE 10 AWG UNLESS OTHERWISE NOTED.

REV	ECO	DATE	APV
-----	-----	------	-----

 Axcera®	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION.				TITLE I/C, DC HARNESS, CHASSIS/AIRBOX, 200ATC, 1.67GHZ						
	MATERIAL -----				DWN	RT	4/5/05	DWG. NO.		REV	
	FINISH -----				CHK	JCM	4/6/05	1305295		A0	
					REL	JCM	4/6/05	B	SCALE ---	SHEET	10F1



NOTE:
1. ALL CABLES ARE UT-141 SEMI-RIGID UNLESS OTHERWISE NOTED.



THIS PRINT IS THE
PROPERTY OF AXCERA,
IT SHALL NOT BE COPIED
WITHOUT PERMISSION.

MATERIAL

- - - -

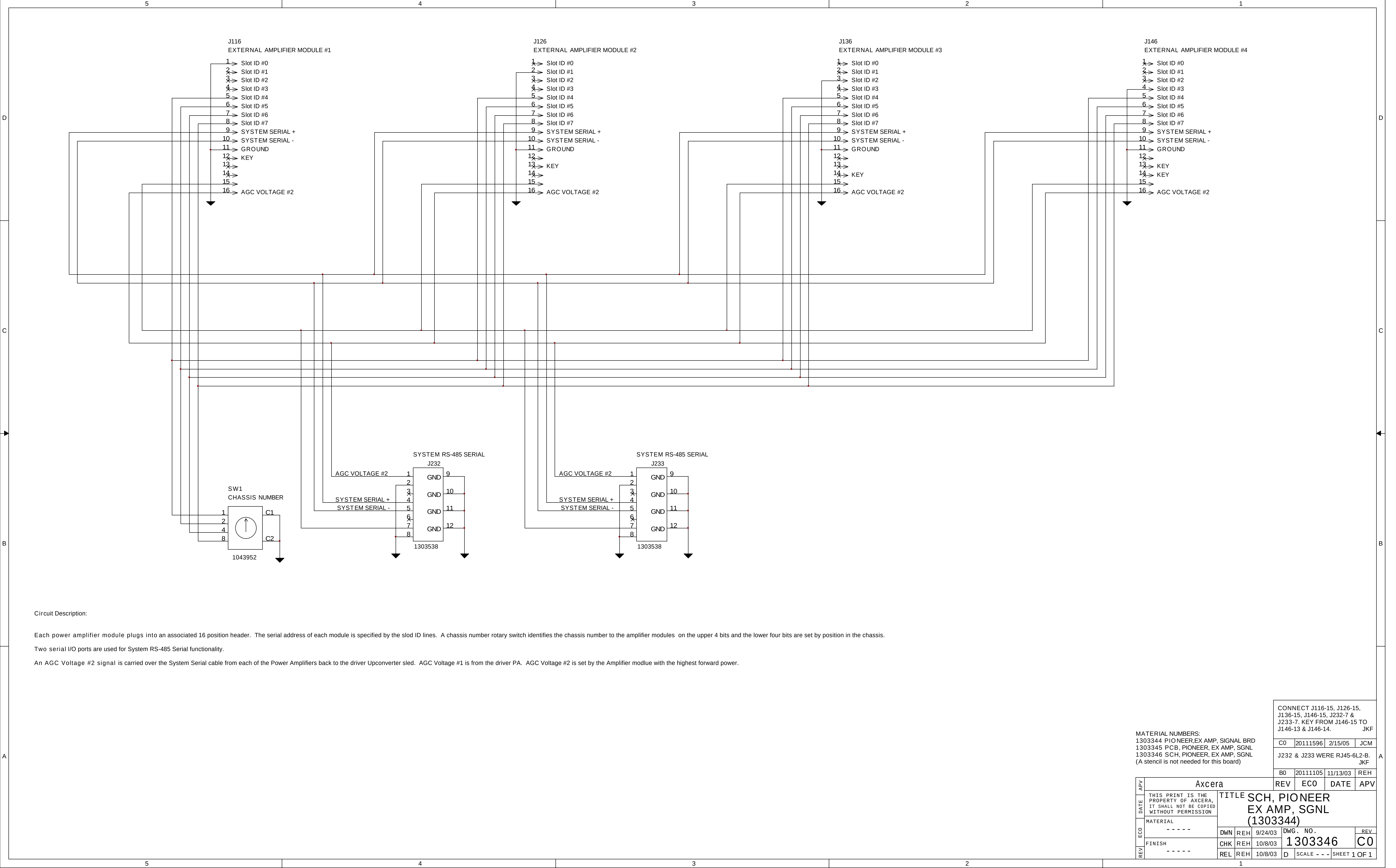
FINISH

- - - -

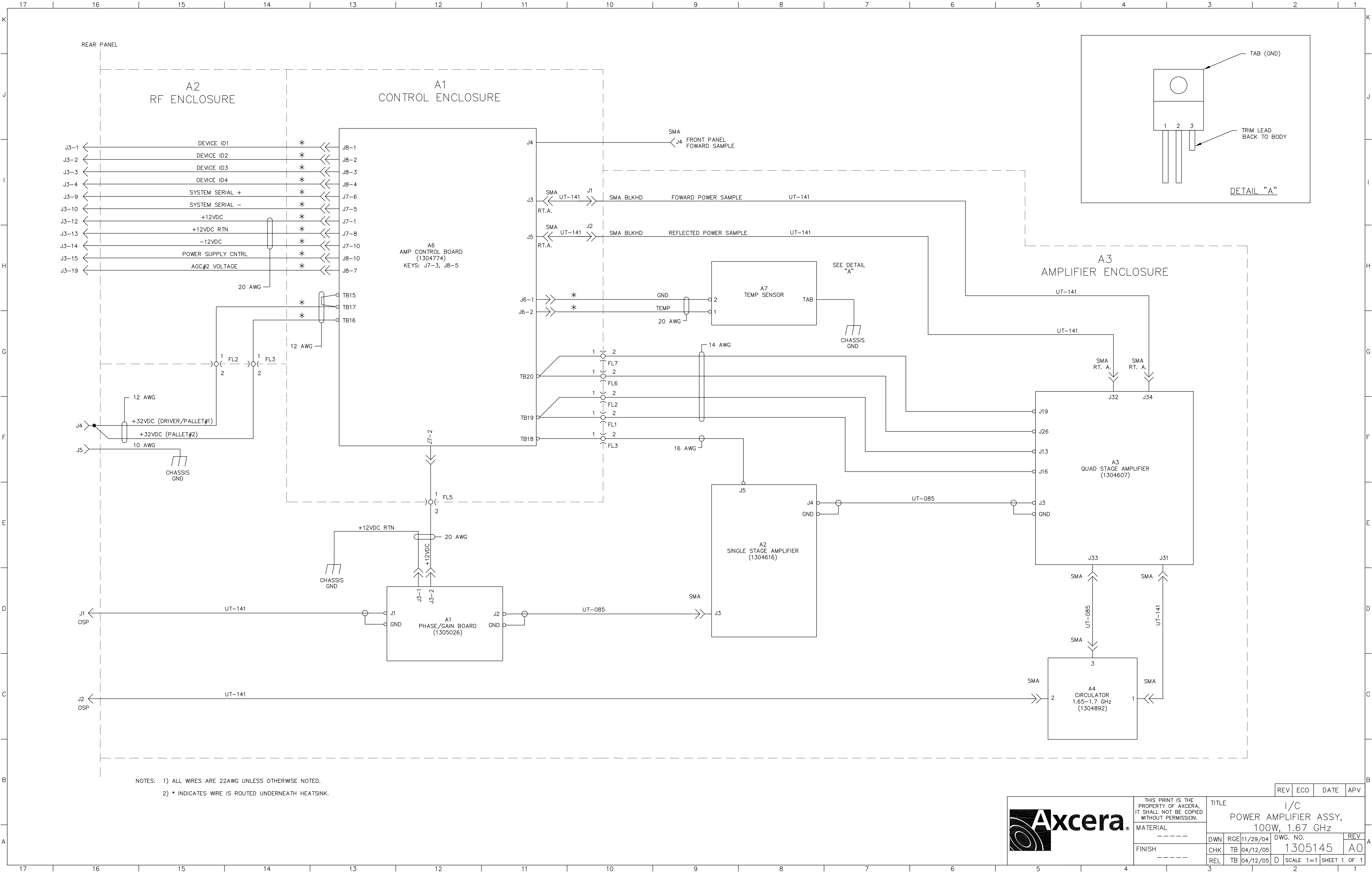
TITLE I/C, COAX CABLE ASSY,
CHASSIS/AIRBOX,
200ATC, 1.67GHZ

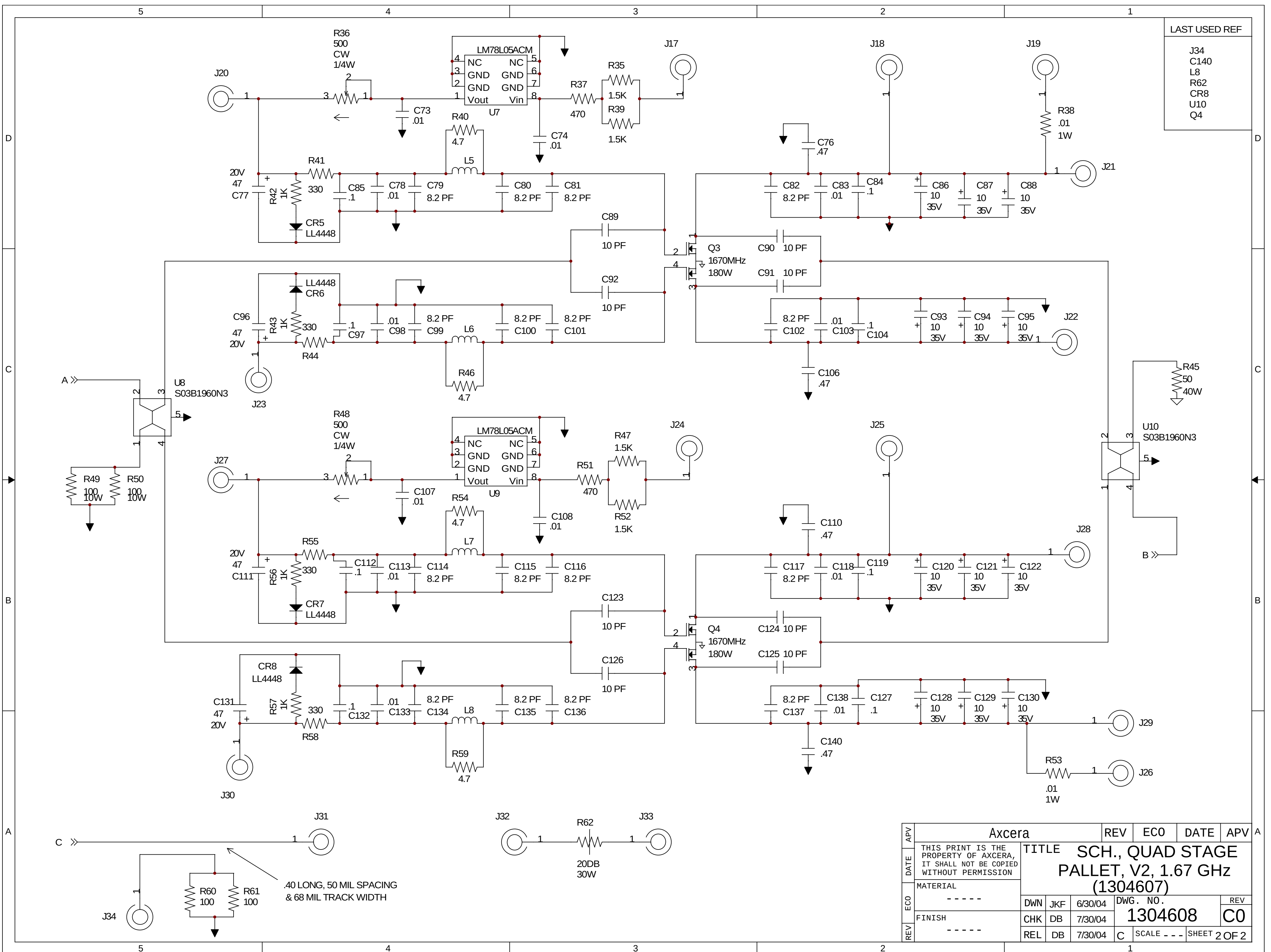
DWN	RT	4/5/05	DWG. NO.	REV
CHK	JCM	4/6/05	1305297	A0
REL	JCM	4/6/05	B SCALE ---	SHEET 1 OF 1

REV	ECO	DATE	APV
-----	-----	------	-----



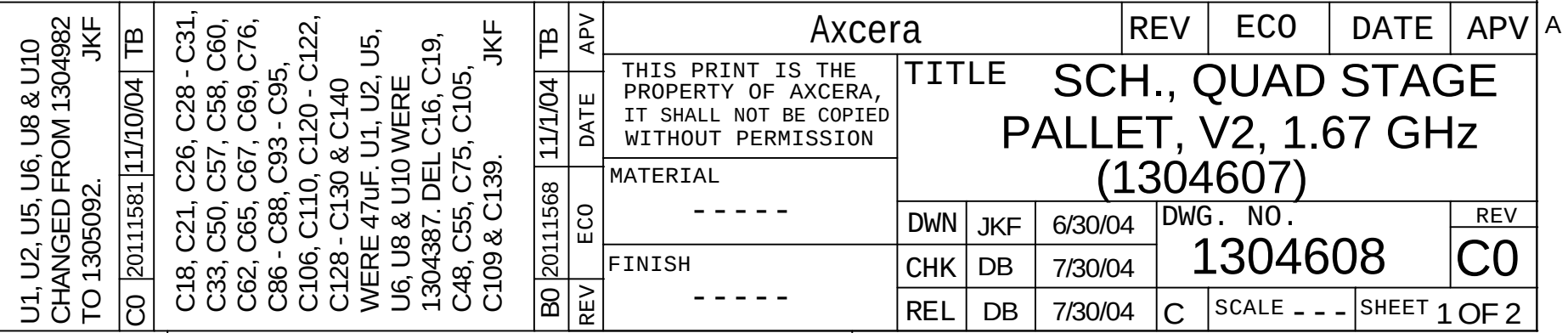
MATERIAL NUMBERS: 1303344 PIONEER,EX AMP, SIGNAL BRD 1303345 PCB, PIONEER, EX AMP, SGNL 1303346 SCH, PIONEER, EX AMP, SGNL (A stencil is not needed for this board)				J146-13 & J146-14. JKF			
				C0	20111596	2/15/05	JCM
				J232 & J233 WERE RJ45-6L2-B- JKF			
				B0	20111105	11/13/03	REH
				REV	ECO	DATE	APV
APV	Axcera						
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION			TITLE SCH, PIONEER EX AMP, SGNL (1303344)			
ECO	MATERIAL			DWN	REH	9/24/03	DWG. NO.
REV	FINISH			CHK	REH	10/8/03	1303346
REV	----			REL	REH	10/8/03	D SCALE - - - SHEET 1 OF 1
				C0			

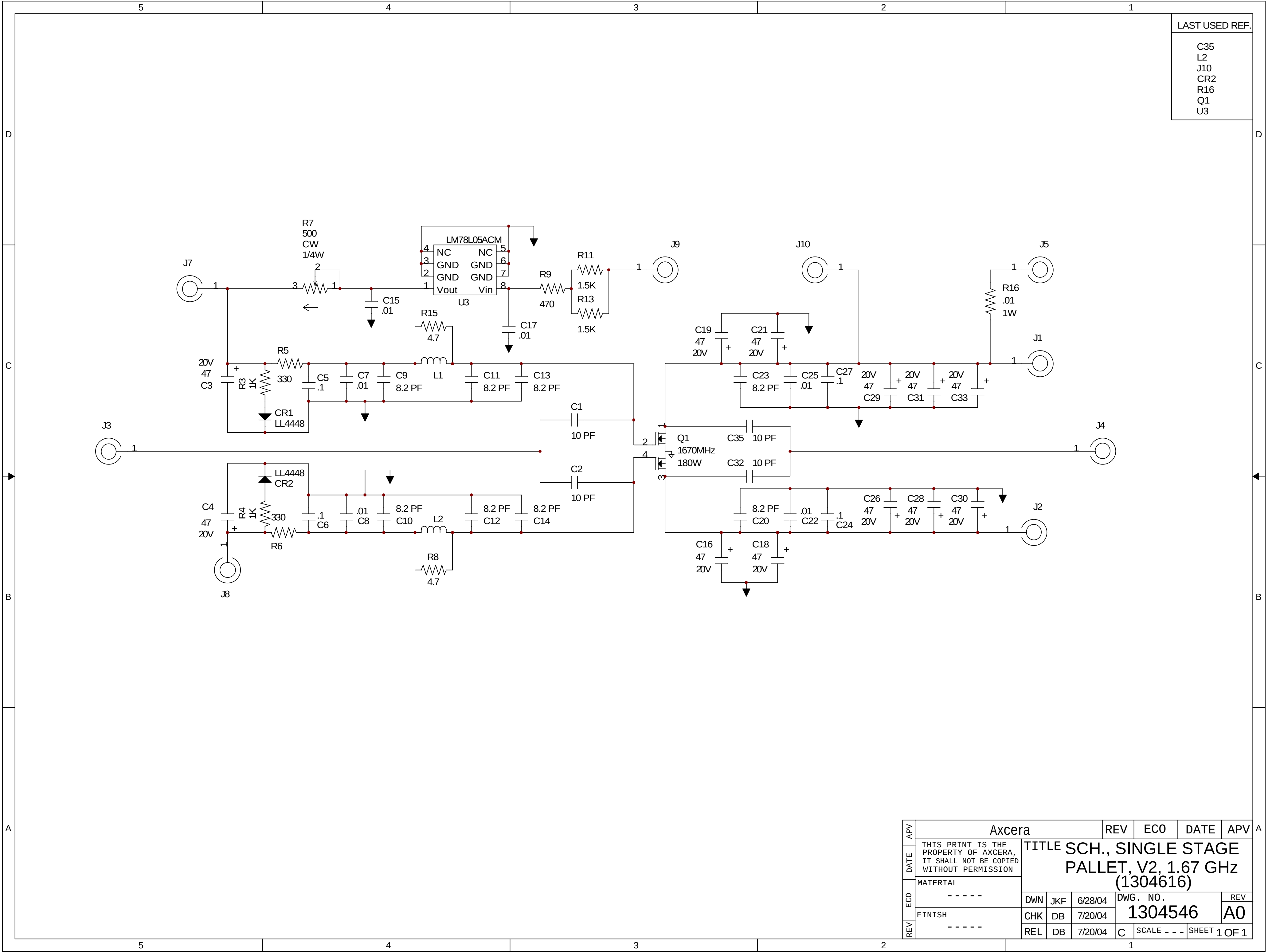




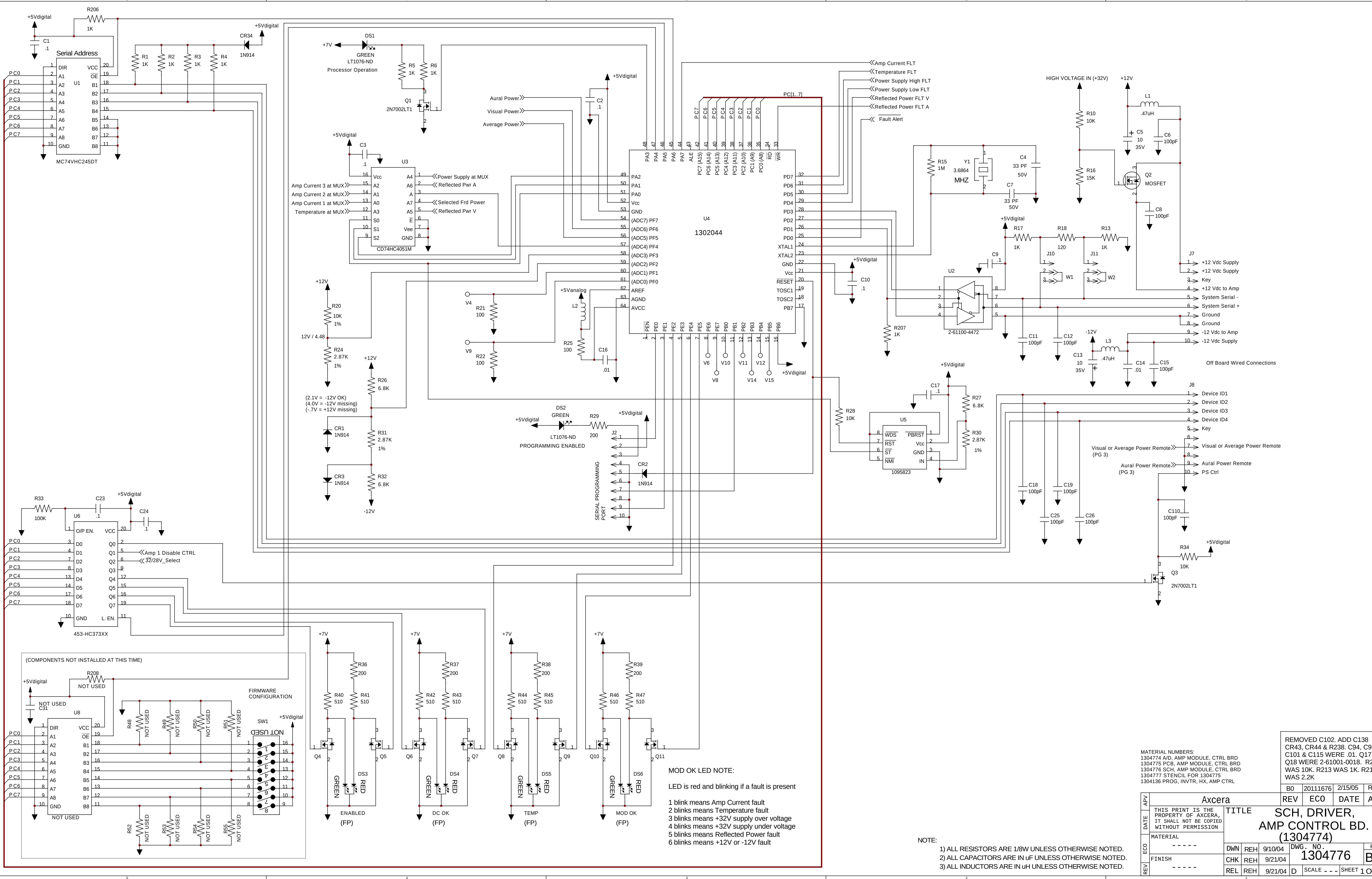
LAST USED REF
J34
C140
L8
R62
CR8
U10
Q4

APV	Axcera					REV	ECO	DATE	APV
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION					TITLE SCH., QUAD STAGE PALLET, V2, 1.67 GHz (1304607)			
ECO	MATERIAL -----					DWN	JKF	6/30/04	DWG. NO.
REV	FINISH -----					CHK	DB	7/30/04	1304608
						REL	DB	7/30/04	C
								SCALE - - -	SHEET 2 OF 2





APV	Axcera				REV	ECO	DATE	APV	A
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION				TITLE SCH., SINGLE STAGE PALLET, V2, 1.67 GHz (1304616)				
ECO	MATERIAL				DWN	JKF	6/28/04	DWG. NO.	
REV	FINISH				CHK	DB	7/20/04	1304546	
					REL	DB	7/20/04	C	SCALE - - - SHEET 1 OF 1

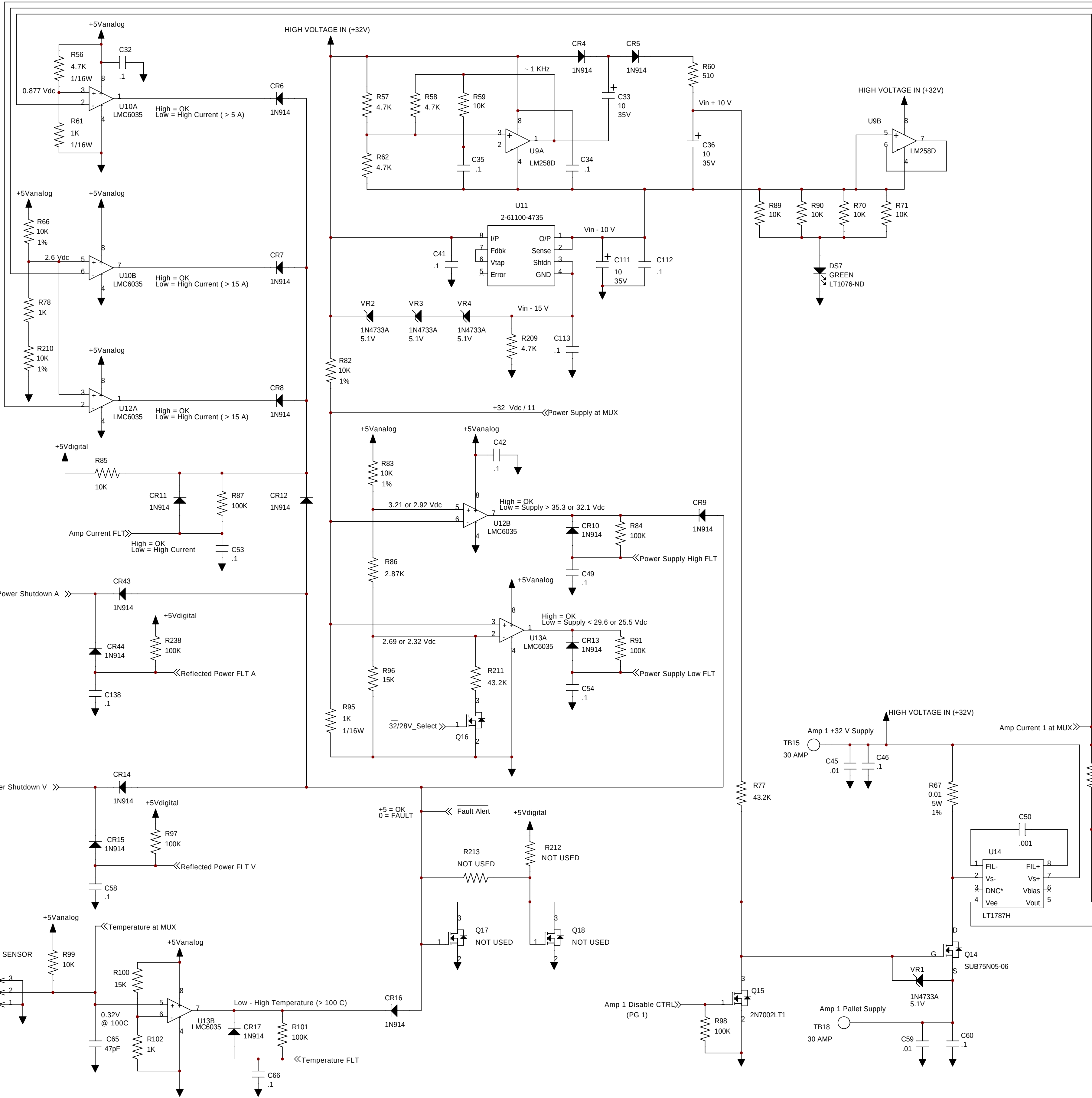


MOD OK LED NOTE:
LED is red and blinking if a fault is present

1 blink means Amp Current fault
2 blinks means Temperature fault
3 blinks means +32V supply over voltage
4 blinks means +32V supply under voltage
5 blinks means Reflected Power fault
6 blinks means +12V or -12V fault

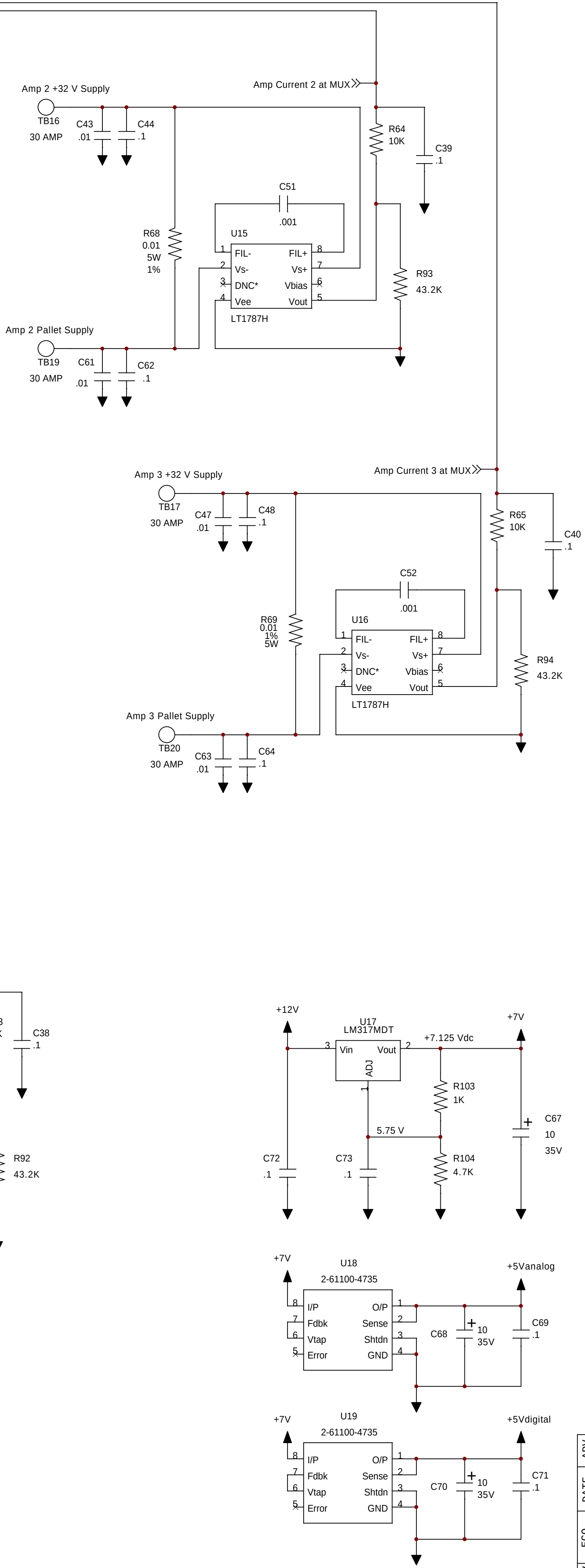
NOTE:
1) ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
2) ALL CAPACITORS ARE IN uF UNLESS OTHERWISE NOTED.
3) ALL INDUCTORS ARE IN uH UNLESS OTHERWISE NOTED.

MATERIAL NUMBERS: 1304774 A/D, AMP MODULE, CTRL BRD 1304775 PCB, AMP MODULE, CTRL BRD 1304776 SCH, AMP MODULE, CTRL BRD 1304777 STENCIL FOR 1304775 1304136 PROG, INVTR, HX, AMP CTRL				REV B0 20111676 2/15/05 REH			
APV				REV ECO DATE APV			
DATE				TITLE			
ECO				SCH, DRIVER, AMP CONTROL BD. (1304774)			
REV				DWN REH 9/10/04 DWG. NO. 1304776 REV B0			
FINISH				CHK REH 9/21/04			
REL				REL REH 9/21/04 D SCALE - - - SHEET 1 OF 3			

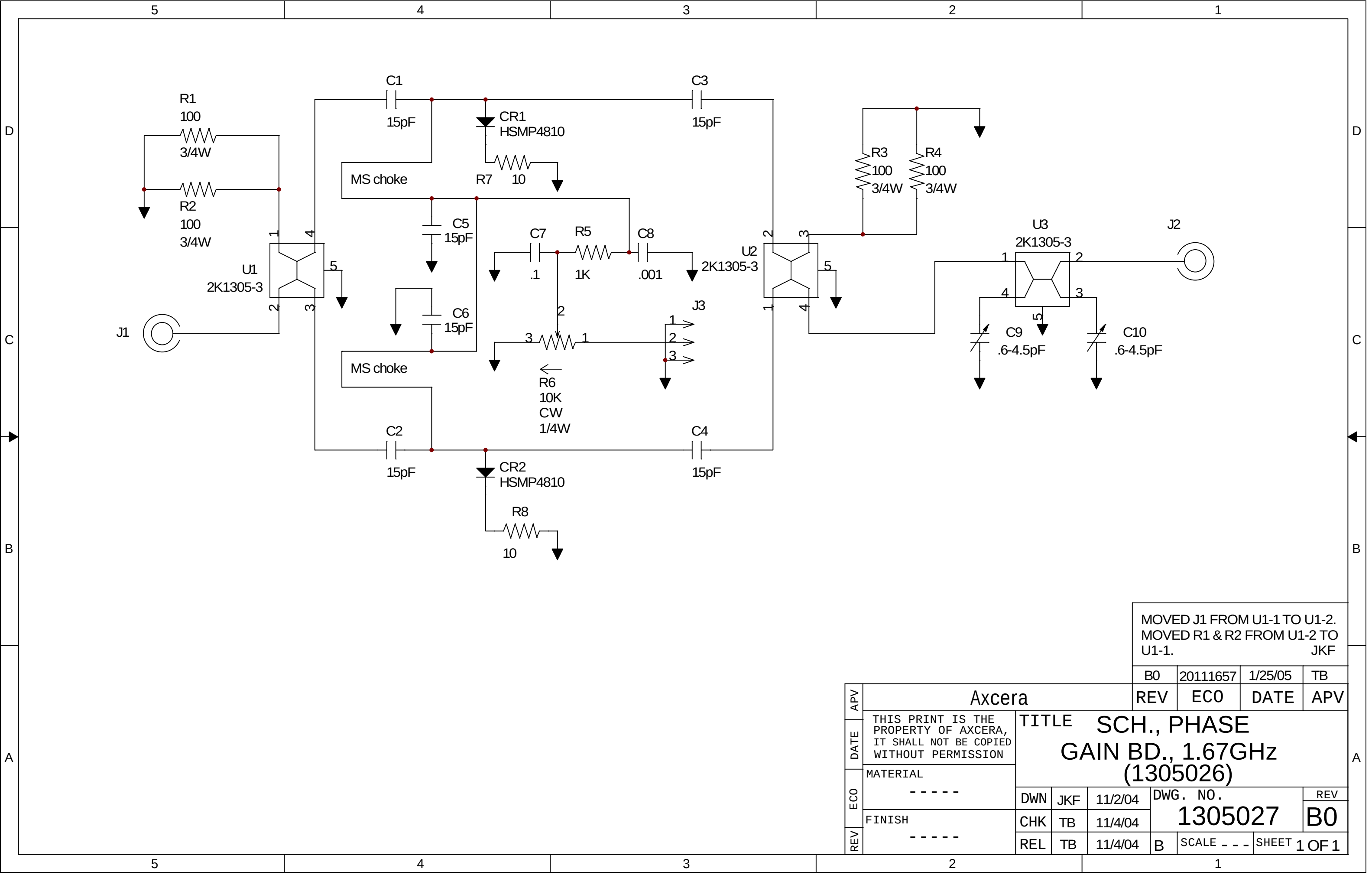


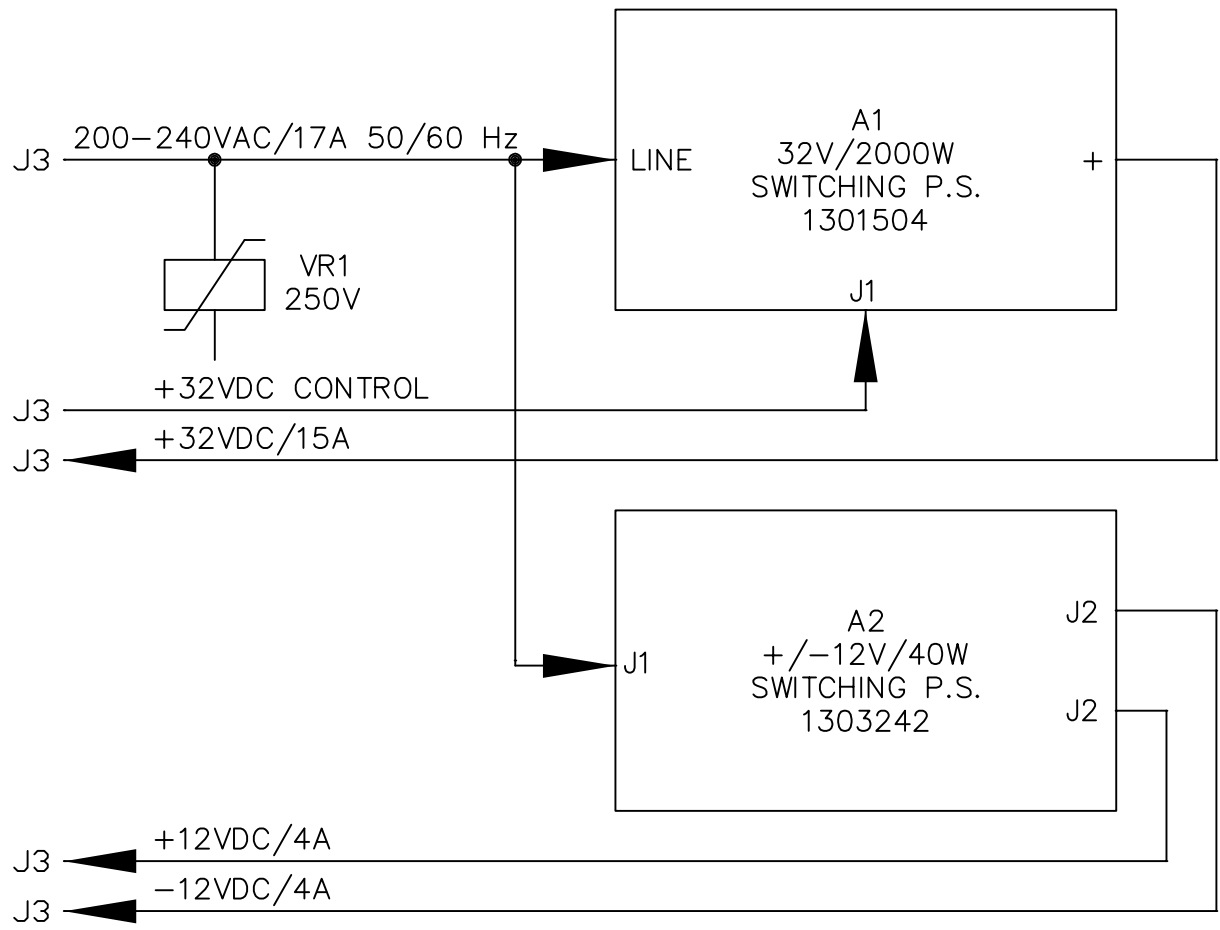
NOTE:

A track width of 0.3 inch is needed between power input vias and sense resistors R55,R56,R57. 0.3 inch track width is also needed between the output of the sense resistors and the output vias that provide power to the amplifier pallets.



APV	Axcera				REV	ECO	DATE	APV
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION				TITLE			
ECO					SCH, DRIVER, AMP CONTROL BD. (1304774)			
REV	FINISH				DWN	REH	9/10/04	REV
					CHK	REH	9/21/04	1304774
					REL	REH	9/21/04	B0
					SCALE - - - SHEET 2 OF 3			





THIS PRINT IS THE
PROPERTY OF AXCERA,
IT SHALL NOT BE COPIED
WITHOUT PERMISSION.

MATERIAL

FINISH

TITLE				
B/D, POWER SUPPLY ASSY, 1KW, INNOVATOR LX				
DWN	RGE	1/27/04	DWG. NO.	
CHK	JCM	1/27/04	1303886	
REL	JCM	1/27/04	A	SCALE ---
			SHEET 1 OF 1	

REV	ECO	DATE	APV
-----	-----	------	-----

