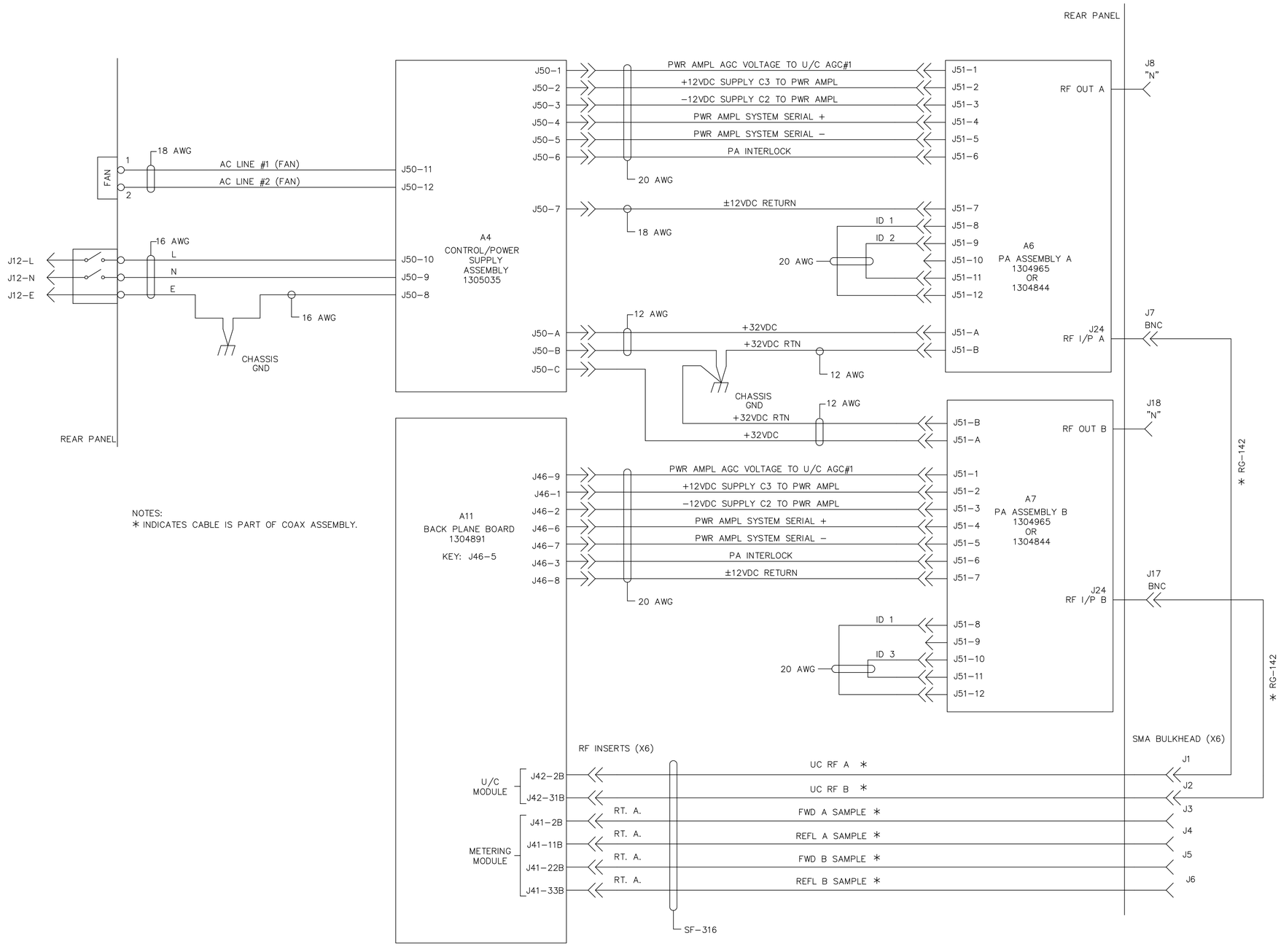


NOTES:
* INDICATES CABLE IS PART OF COAX ASSEMBLY.

REV	ECO	DATE	APV

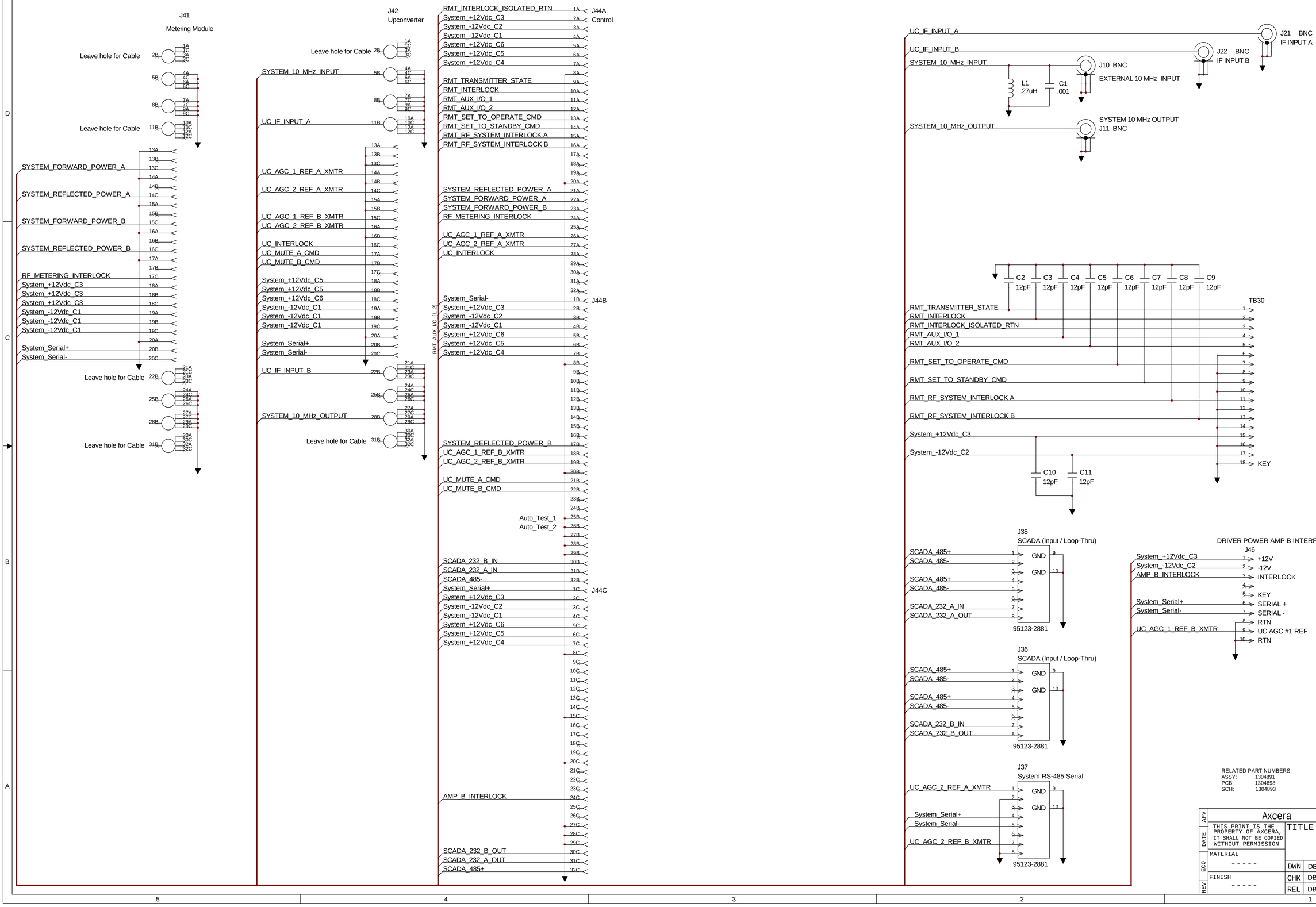
Axcera

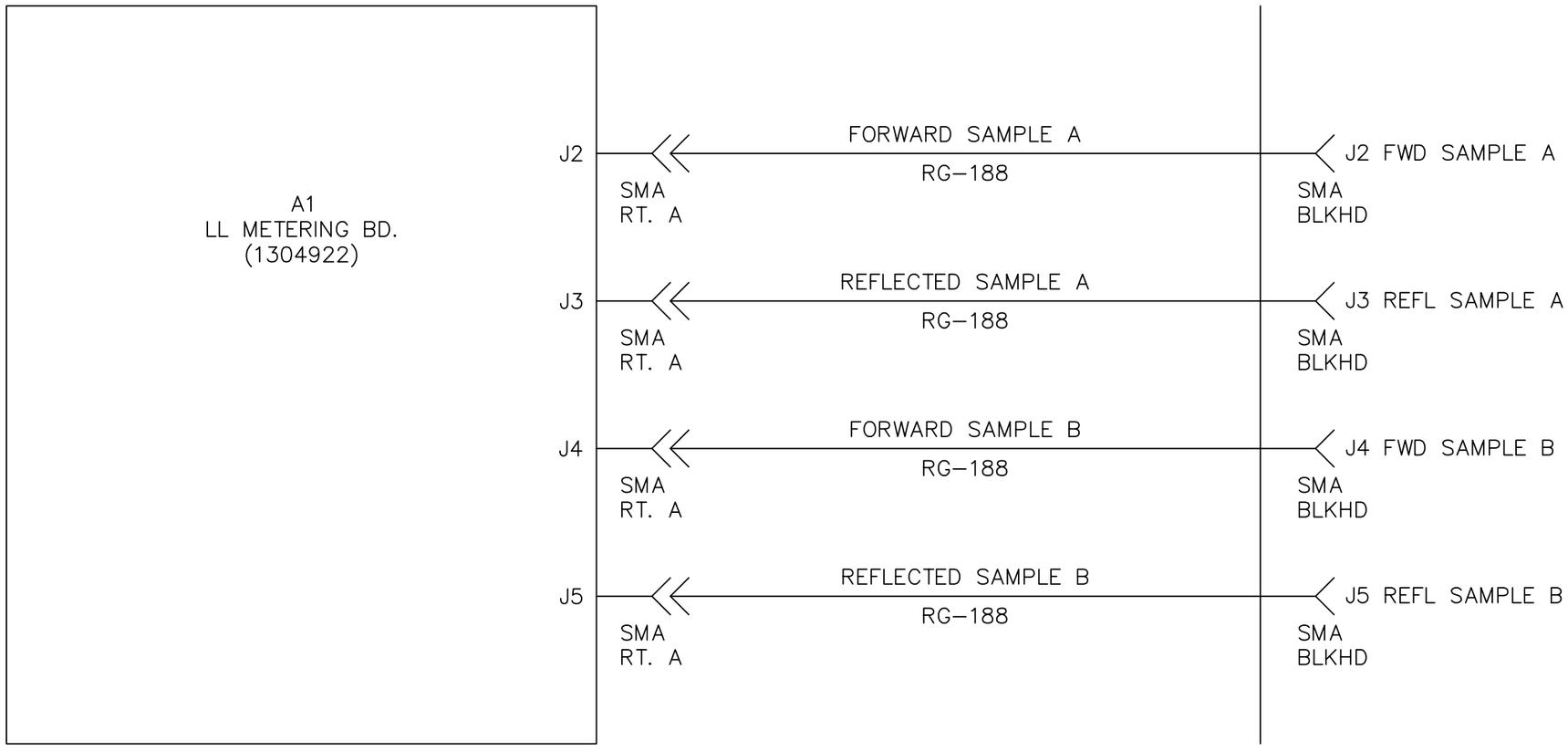
MATERIAL
–––––

FINISH
–––––

TITLE
I/C,
CHASSIS ASSEMBLY,
DRIVER, 1.67 GHz

			DWG. NO.	REV
DWN	RGE	11/04/04	1305023	A0
CHK	TB	04/12/05		
REL	TB	04/12/05	D	SCALE ––– SHEET 1 OF 1


J41
Metering Module
Leave hole for Cable
Leave hole for Cable
Leave hole for Cable
Leave hole for Cable
SYSTEM_FORWARD_POWER_A
SYSTEM_REFLECTED_POWER_A
SYSTEM_FORWARD_POWER_B
SYSTEM_REFLECTED_POWER_B
RF_METERING_INTERLOCK
System_+12Vdc_C3
System_+12Vdc_C3
System_+12Vdc_C3
System_-12Vdc_C1
System_-12Vdc_C1
System_-12Vdc_C1
System_Serial+
System_Serial-
J42
Upconverter
Leave hole for Cable
SYSTEM_10_MHz_INPUT
UC_IF_INPUT_A
UC_AGC_1_REF_A_XMTR
UC_AGC_2_REF_A_XMTR
UC_AGC_1_REF_B_XMTR
UC_AGC_2_REF_B_XMTR
UC_INTERLOCK
UC_MUTE_A_CMD
UC_MUTE_B_CMD
System_+12Vdc_C5
System_+12Vdc_C5
System_+12Vdc_C6
System_-12Vdc_C1
System_-12Vdc_C1
System_-12Vdc_C1
System_Serial+
System_Serial-
UC_IF_INPUT_B
SYSTEM_10_MHz_OUTPUT
Leave hole for Cable
RMT_INTERLOCK_ISOLATED_RTN
System_+12Vdc_C3
System_-12Vdc_C2
System_-12Vdc_C1
System_+12Vdc_C6
System_+12Vdc_C5
System_+12Vdc_C4
J44A
Control
RMT_TRANSMITTER_STATE
RMT_INTERLOCK
RMT_AUX_I/O_1
RMT_AUX_I/O_2
RMT_SET_TO_OPERATE_CMD
RMT_SET_TO_STANDBY_CMD
RMT_RF_SYSTEM_INTERLOCK_A
RMT_RF_SYSTEM_INTERLOCK_B
SYSTEM_REFLECTED_POWER_A
SYSTEM_FORWARD_POWER_A
SYSTEM_FORWARD_POWER_B
RF_METERING_INTERLOCK
UC_AGC_1_REF_A_XMTR
UC_AGC_2_REF_A_XMTR
UC_INTERLOCK
RMT_AUX_I/O_1,2
System_Serial-
System_+12Vdc_C3
System_-12Vdc_C2
System_-12Vdc_C1
System_+12Vdc_C6
System_+12Vdc_C5
System_+12Vdc_C4
J44B
SYSTEM_REFLECTED_POWER_B
UC_AGC_1_REF_B_XMTR
UC_AGC_2_REF_B_XMTR
UC_MUTE_A_CMD
UC_MUTE_B_CMD
Auto_Test_1
Auto_Test_2
SCADA_232_B_IN
SCADA_232_A_IN
SCADA_485-
System_Serial+
System_+12Vdc_C3
System_-12Vdc_C2
System_-12Vdc_C1
System_+12Vdc_C6
System_+12Vdc_C5
System_+12Vdc_C4
J44C
AMP_B_INTERLOCK
SCADA_232_B_OUT
SCADA_232_A_OUT
SCADA_485+
UC_IF_INPUT_A
UC_IF_INPUT_B
SYSTEM_10_MHz_INPUT
L1
.27uH
C1
.001
J10 BNC
EXTERNAL 10 MHz INPUT
J22 BNC
IF INPUT B
J21 BNC
IF INPUT A
SYSTEM_10_MHz_OUTPUT
SYSTEM 10 MHz OUTPUT
J11 BNC
C2 12pF
C3 12pF
C4 12pF
C5 12pF
C6 12pF
C7 12pF
C8 12pF
C9 12pF
TB30
RMT_TRANSMITTER_STATE
RMT_INTERLOCK
RMT_INTERLOCK_ISOLATED_RTN
RMT_AUX_I/O_1
RMT_AUX_I/O_2
RMT_SET_TO_OPERATE_CMD
RMT_SET_TO_STANDBY_CMD
RMT_RF_SYSTEM_INTERLOCK_A
RMT_RF_SYSTEM_INTERLOCK_B
System_+12Vdc_C3
System_-12Vdc_C2
KEY
C10 12pF
C11 12pF
J35
SCADA (Input / Loop-Thru)
SCADA_485+
SCADA_485-
SCADA_485+
SCADA_485-
SCADA_232_A_IN
SCADA_232_A_OUT
GND
GND
95123-2881
J36
SCADA (Input / Loop-Thru)
SCADA_485+
SCADA_485-
SCADA_485+
SCADA_485-
SCADA_232_B_IN
SCADA_232_B_OUT
GND
GND
95123-2881
J37
System RS-485 Serial
UC_AGC_2_REF_A_XMTR
System_Serial+
System_Serial-
UC_AGC_2_REF_B_XMTR
GND
GND
95123-2881
DRIVER POWER AMP B INTERFACE
J46
System_+12Vdc_C3
System_-12Vdc_C2
AMP_B_INTERLOCK
System_Serial+
System_Serial-
UC_AGC_1_REF_B_XMTR
+12V
-12V
INTERLOCK
KEY
SERIAL +
SERIAL -
RTN
UC AGC #1 REF
RTN
RELATED PART NUMBERS:
ASSY: 1304891
PCB: 1304898
SCH: 1304893
Axcera
REV
ECO
DATE
APV
THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION
TITLE SCH, BACKPLANE BOARD, 1670 (1304891)
MATERIAL
FINISH
DWN DB 10/11/04
CHK DB 10/13/04
REL DB 10/13/04
DWG. NO. 1304893
REV A0
SCALE - - -
SHEET 1 OF 1



REV	ECO	DATE	APV

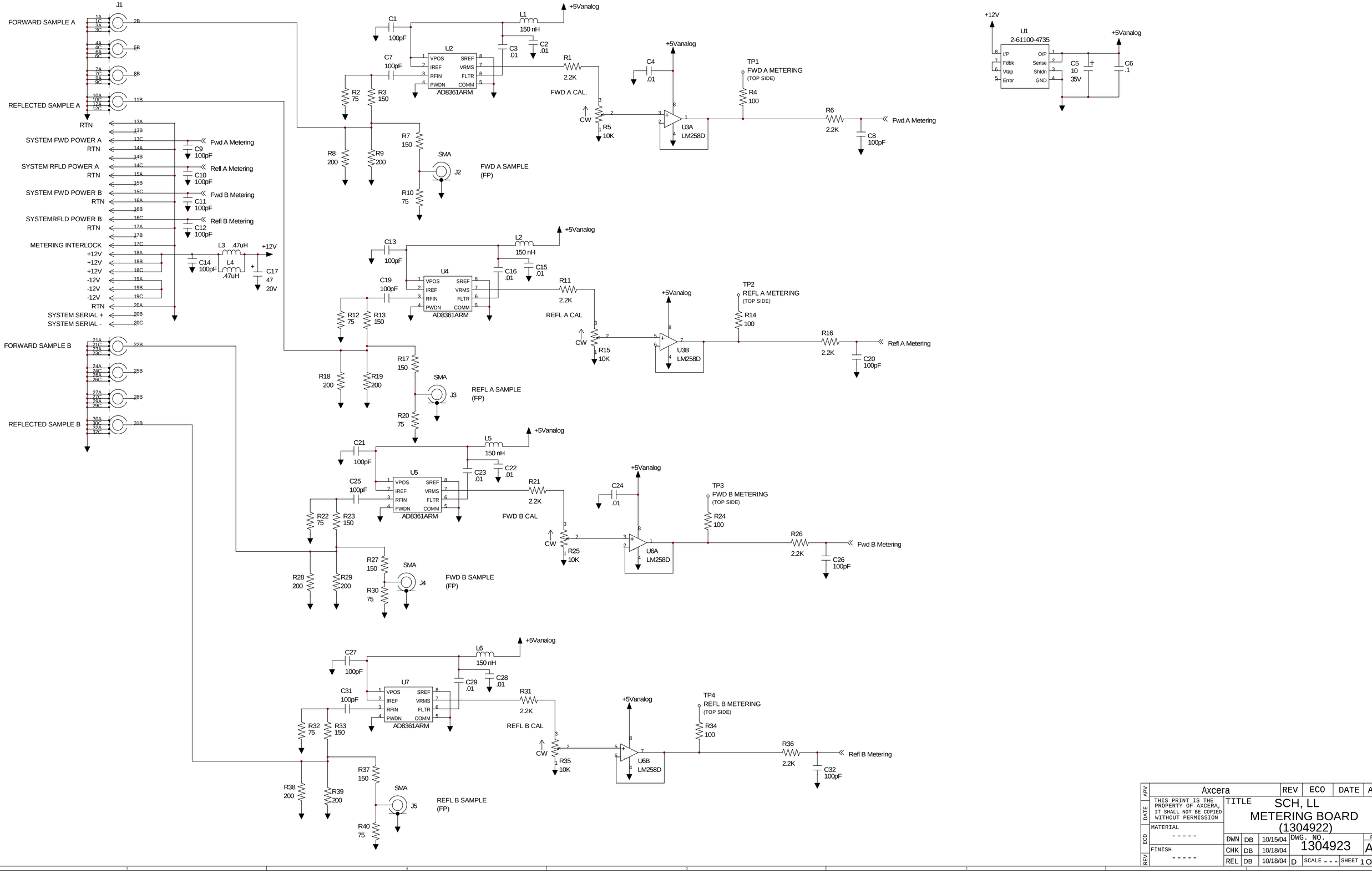
Axcera®

MATERIAL
———

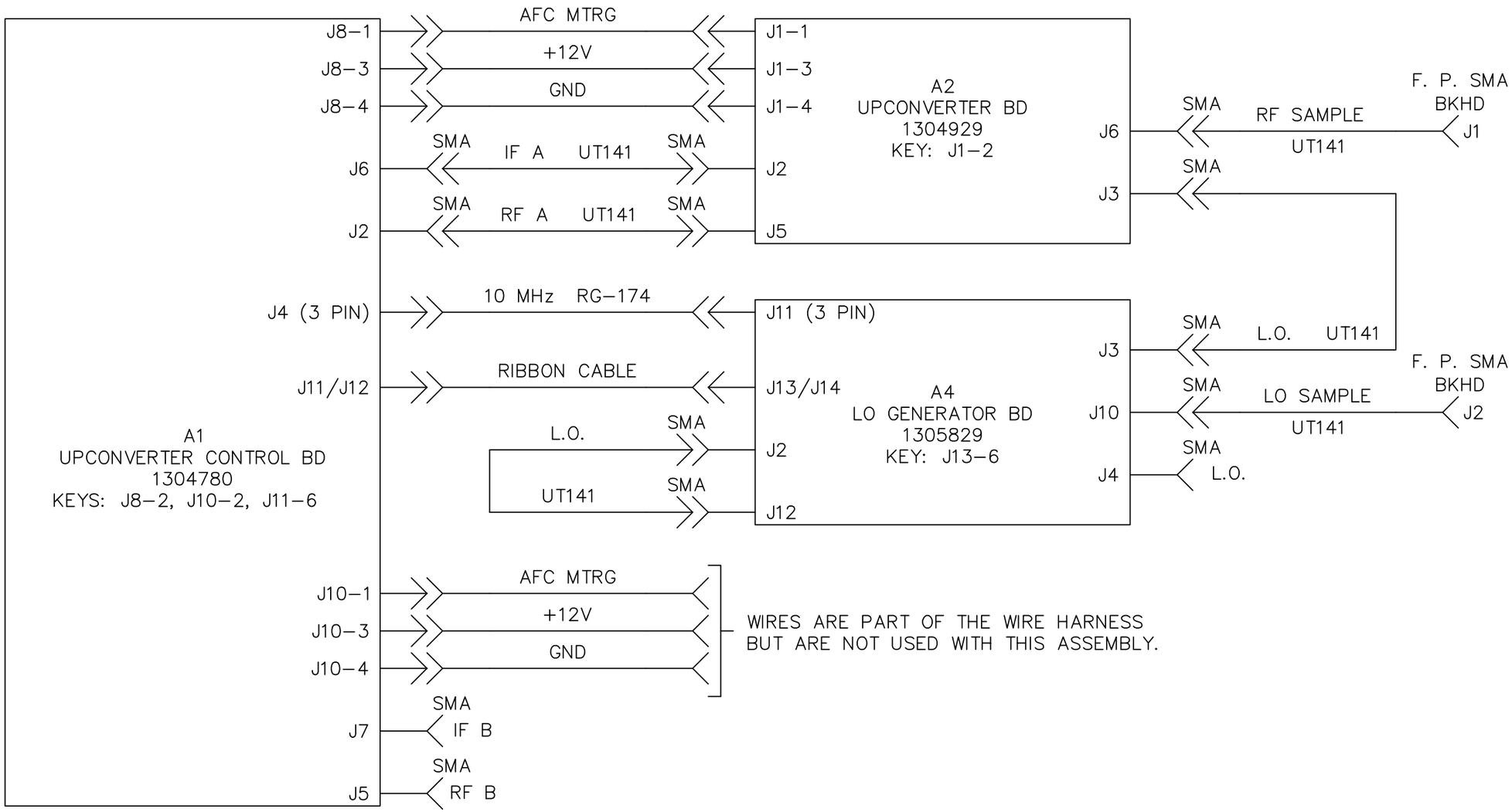
FINISH
———

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



APV	Axcera	REV	ECO	DATE	APV
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION	TITLE	SCH, LL METERING BOARD (1304922)		
ECO	MATERIAL -----	DWN	DB	10/15/04	DWG. NO. 1304923 REV A0
REV	FINISH -----	CHK	DB	10/18/04	
		REL	DB	10/18/04	D SCALE - - - SHEET 1 OF 1



NOTE:

1) ALL SINGLE WIRE IS 22 AWG.

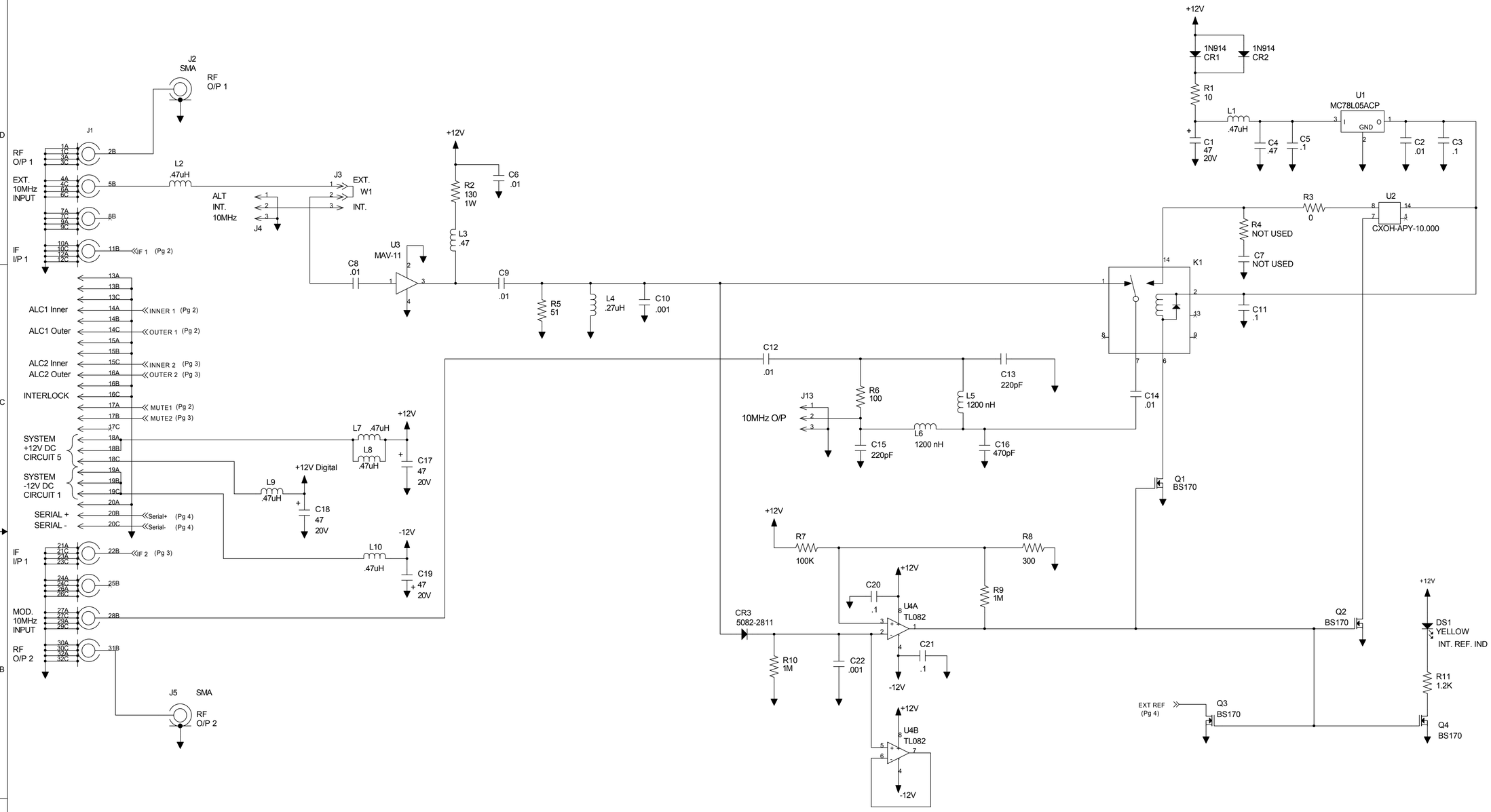
REV	ECO	DATE	APV

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



CHANGED J11 & J12 FROM 10 TO 13 POS. R57 & R116 WERE 10K. R34 & R93 WERE 470K. JKF

C0	20111711	2/9/05	DB

DEL. CR12, CR16, CR17, CR26, CR30, CR31, C40, C46, C62, C68, C96, C97, C101, C102, Q5, Q13, R44, R51, R56, R58, R62, R63, R64, R103, R104, R105, R110, R115, R117, R121, R122, R123, R171, R174, TP3, TP5, TP9 & TP11. ADD J13 - J15, R177 - R182, S1, W2 & W3. C39, C47 & C69 WERE .01. R40, R55, R99 & R114 WERE 47K. U2 WAS 1302908. JKF

B0	20111670	2/9/05	DB

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.

Axcera

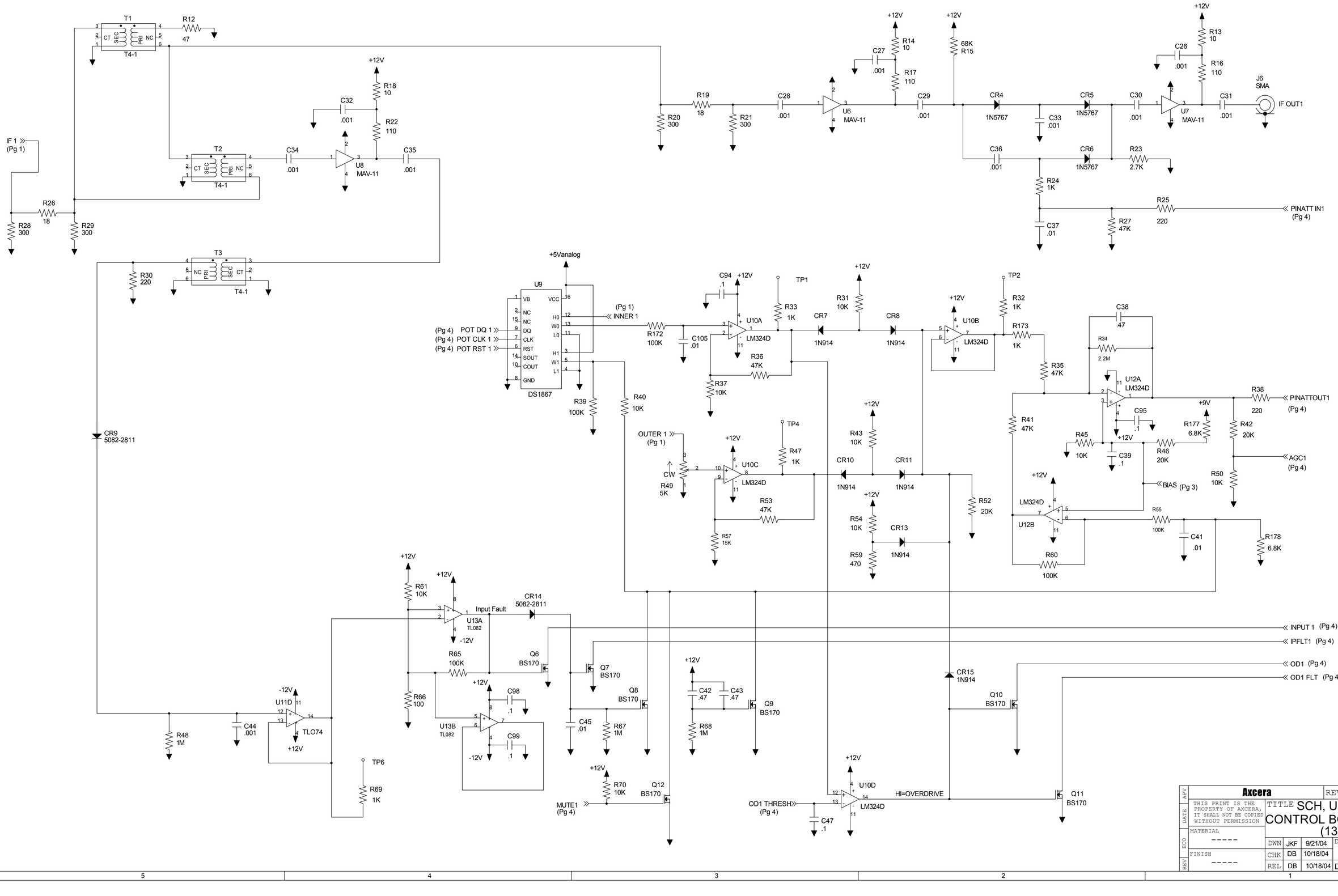
REV	ECO	DATE	APV

TITLE SCH, UPCONVERTER CONTROL BOARD, 1.67GHz (1304780)

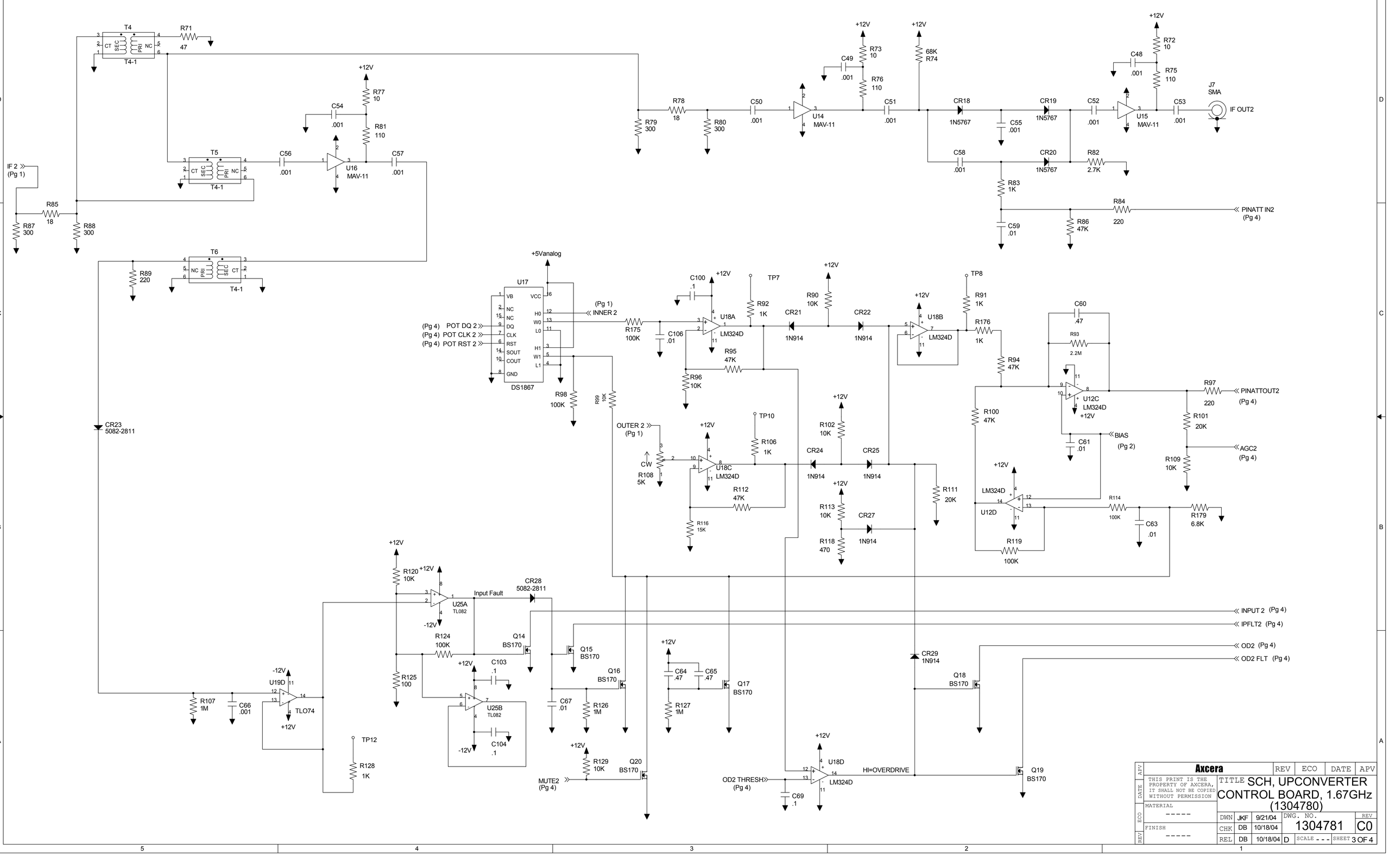
MATERIAL -----

FINISH -----

DWN	JKF	9/21/04	DWG. NO. 1304781	REV C0
CHK	DB	10/18/04		
REL	DB	10/18/04	D	SCALE - - - SHEET 1 OF 4



	Axcera		REV	ECO	DATE	APV
	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. 1304781			REV C0
	FINISH -----	CHK DB 10/18/04				
		REL DB 10/18/04	D	SCALE - - -	SHEET 2 OF 4	



Axcera		REV	ECO	DATE	APV
THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION					
MATERIAL -----					
FINISH -----					

TITLE	SCH, UPCONVERTER CONTROL BOARD, 1.67GHz (1304780)				
DWN	JKF	9/21/04	DWG. NO.		REV
CHK	DB	10/18/04	1304781		C0
REL	DB	10/18/04	D	SCALE - - -	SHEET 3 OF 4

LAST USED REF

C106
R182
J15
Q21
SW1
CR34
V5
U25
L11
DS3
W3
Y1
TP12
T6
K1
S1

Processor Operation

+12V Digital
DS2 GREEN LT1076-ND
R135 1K
R136 1K
Q21 2N7002LT1

+5Vdigital
R134 10K
C70 .1

(Pg 1) EXT REF
(Pg 3) POT DQ 2
(Pg 3) POT CLK 2
(Pg 3) POT RST 2
(Pg 2) POT DQ 1

R130 10K
R131 10K
R132 10K
R133 10K
SW1
R137 10K
R138 10K
R139 10K
R140 10K

U20
1302044
PA3 PA4 PA5 PA6 PA7 ALE PC7 (A15) PC6 (A14) PC5 (A13) PC4 (A12) PC3 (A11) PC2 (A10) PC1 (A9) PC0 (A8) RD WR
(Pg 2) POT CLK 1
(Pg 2) POT RST 1
PA2 PA1 PA0 Vcc GND
(Pg 4) UC MTR 1
(Pg 4) UC MTR 2
(ADC7) PF7 (ADC6) PF6 (ADC5) PF5 (ADC4) PF4 (ADC3) PF3 (ADC2) PF2 (ADC1) PF1 (ADC0) PF0 AREF AGND AVCC
V5
(Pg 2) AGC1
(Pg 3) AGC2
PD7 PD6 PD5 PD4 PD3 PD2 PD1 PD0 XTAL1 XTAL2 GND Vcc RESET TOSC1 TOSC2 PB7
V1 V2 V3 V4
PEN PE0 PE1 PE2 PE3 PE4 PE5 PE6 PE7 PB0 PB1 PB2 PB3 PB4 PB5 PB6

R141 1M
Y1 3.6864 MHZ
C71 33 PF 50V
C72 33 PF 50V

AFC 1 (Pg 4)
R142 10K
C73 .1

+12V
R143 10K 1%
12V / 4.01
R145 2.87K 1%
+12V
R149 6.8K
(2.1V = -12V OK)
(4.0V = -12V missing)
(-.7V = +12V missing)
CR32 1N914
R154 2.87K 1%
CR34 1N914
R158 6.8K
-12V

+5Vanalog
L11 15906260SMT
R144 10K
R147 100
C79 .01

+5Vdigital
C75 .1

R146 10K
C78 .01
OD2 THRESH (Pg 3)
R148 10K
C80 .01
OD1 THRESH (Pg 2)

+5Vdigital
C74 .1
U21
2-61100-4472
R180 1K 1/10W 1%
R181 120
R182 1K 1/10W 1%
J14
J15
W3
W2
Serial-
Serial+
C76 100pF
C77 100pF

DS3 GREEN LT1076-ND
PROGRAMMING ENABLED
R151 220
+5Vdigital
J9
SERIAL PROGRAMMING PORT
CR33 1N914

+5Vdigital
C82 .1
R153 6.8K
U22
WDS PBRST RST Vcc ST GND NMI IN
1095823
R155 10K
R156 2.87K 1%
S1
MANUAL MICRO RESET

R160 0

+12V Digital
U24
2-61100-4735
I/P O/P Fdbk Sense Vtap Shtdn Error GND
C89 10 35V
C90 10 35V
C91 .1
+5Vdigital

+5Vdigital
R164 10K
R165 10K
R166 10K
R167 10K
(Pg 2) INPUT 1
(Pg 2) OD1 FLT
(Pg 3) INPUT 2
(Pg 3) OD2 FLT
R168 10K
R169 10K
R170 10K
+5Vdigital

Microcontroller Ground

Analog Ground

UC MTR 1 (Pg 4)
C81 .01
R150 100
R152 10K 1%
+12V
J8
1 Upconverter 1 Metering
2 Key
3 +12V
C83 .1

UC MTR 2 (Pg 4)
C84 .01
R157 100
R159 10K 1%
J10
1 Upconverter 2 Metering
2 Key
3 +12V
C85 .01

+12V
U23
LM317MDT
Vin Vout ADJ
R161 470
R162 470
R163 1.5K
C86 .47
C87 .1
C88 .01
C92 .47
+9V

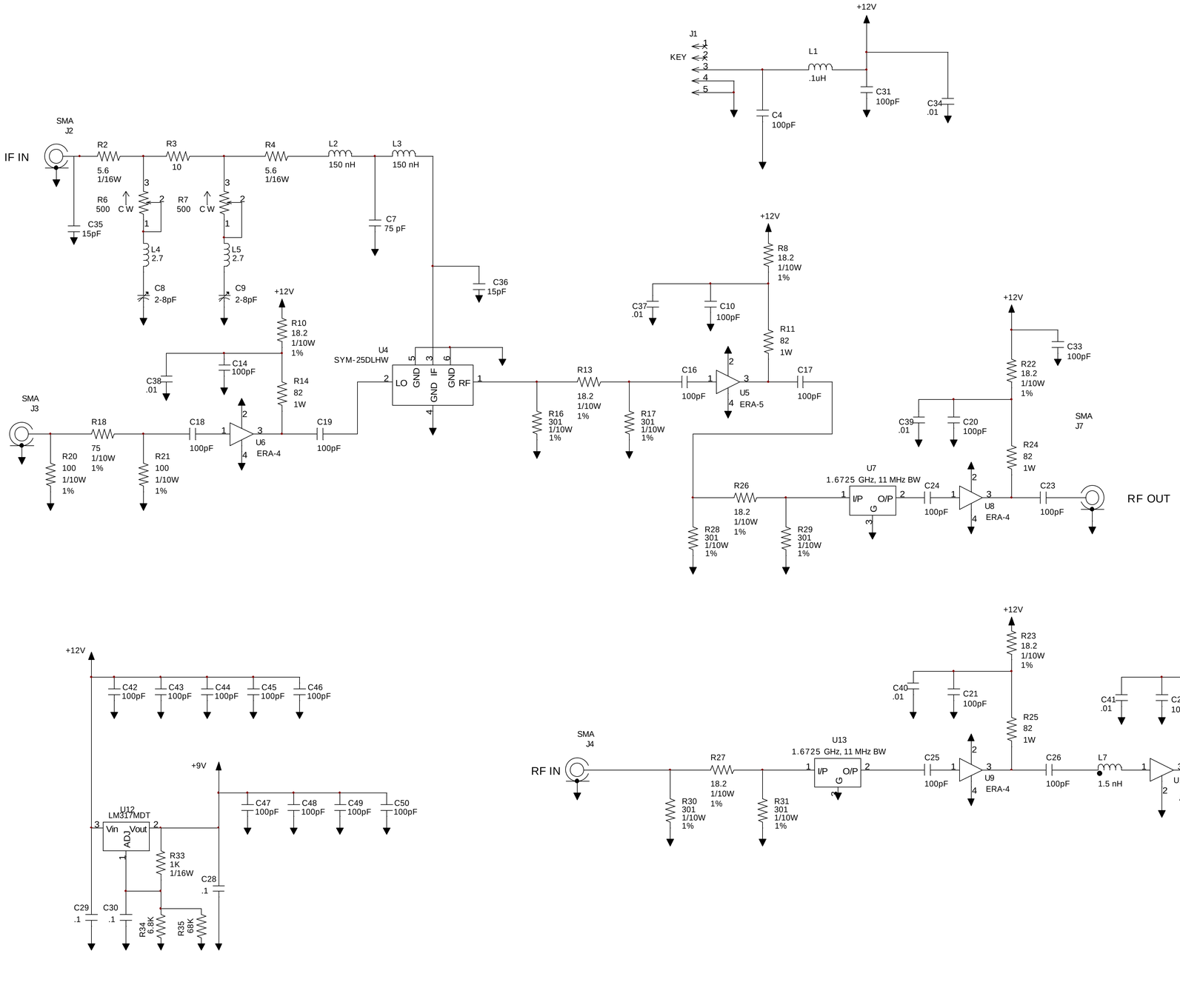
J11 Ribbon Connector J12
1 Man Ind A
2 Man Ind B
3 +9V
4 AFC
5 +9V
6 GND
7 PLL FLT
8 CLOCK
9 Key
10 DATA
11 LE
12 +12V
13 +12V
AFC 1 (Pg 4)
Key
4 PINATT IN1 (Pg 2)
5 PINATTOUT1 (Pg 2)
6 IPFLT1 (Pg 2)
7 OD1 (Pg 2)
9 PINATT IN2 (Pg 3)
10 PINATTOUT2 (Pg 3)
11 -12V
12 IPFLT2 (Pg 3)
13 OD2 (Pg 3)

+12V
C93 .01

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)			
ECO	MATERIAL -----	DWN JKF 9/21/04	DWG. NO. 1304781	REV C0	
REV	FINISH -----	CHK DB 10/18/04			
		REL DB 10/18/04	D	SCALE - - -	SHEET 4 OF 4

LAST USED REF

C50
R35
J7
U13
L7



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.

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

REV	ECO	DATE	APV
B0	20111659	1/30/05	DB

Axcera

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

MATERIAL -----

FINISH -----

TITLE SCH., UPCONVERTER BOARD, 1.67 GHz (1304929)

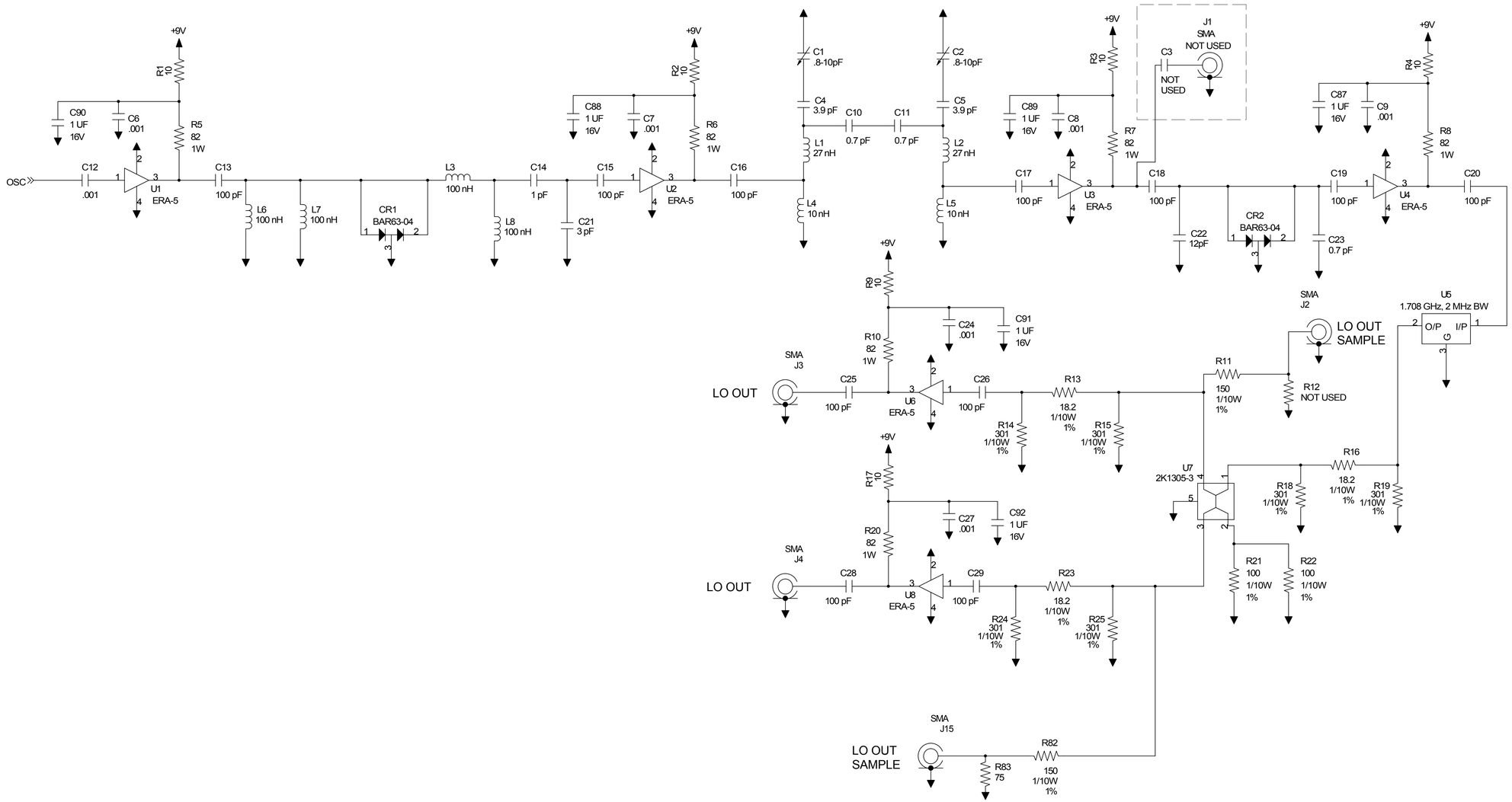
			DWG. NO.	REV
DWN	JKF	10/16/04	1304930	B0
CHK	DB	10/20/04		
REL	DB	10/20/04	D SCALE - - -	SHEET 1 OF 1

LAST USED REF

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

+9V
Q8 2N3906
Q5 2N3906
Q6 2N3906
Q7 2N3906
R90 1K
R87 1K
R88 1K
R89 1K
R55 1.5K
R93 1.5K
R91 10K
R58 1.5K
R92 1.5K
R95 10K
R94 10K
R96 10K
RED GREEN DS1 IP FAULT A
RED GREEN DS2 OVERDRIVE A
Q9 BS170
Q10 BS170
Q11 BS170
R60 1.5K
R61 1.5K
RED GREEN DS3
SWW246CD7 SW1
R97 10K
CLOCK
DATA
LE
LD
R69 1K
R65 1K
R66 1K
R71 1K
C76 100 pF
Ribbon Connector
J13
J14
Man Ind A
Man Ind B
+9V
AFC
+9V
PLL FLT
CLOCK
Key
DATA
LE
+12V
+12V
Q4 BS170
R76 1K
AFC
+12V
C79 100 pF
C80 100 pF
C81 100 pF
C82 100 pF
-12V
C85 100 pF
+9V
Q12 2N3906
Q13 2N3906
Q14 2N3906
Q15 2N3906
R101 1K
R98 1K
R99 1K
R100 1K
R70 1.5K
R103 1.5K
R72 1.5K
R102 1.5K
R104 10K
R106 10K
R105 10K
RED GREEN DS5
RED GREEN DS6
R107 10K
IP FAULT B
OVERDRIVE B
Q16 BS170
Q17 BS170
+9V
R63 MAN GAIN A 5K
CW
Q18 BS170
DS7 RED
MAN GAIN B
GREEN
R74 1K
R78 1K
+9V
R108 10K
SWW246CD7 SW2
+9V
R73 MAN GAIN B 5K
CW

APV	Axcera		REV	ECO	DATE	APV
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION	TITLE SCH., L.O. GENERATOR BD., 1.67GHz (1304940)				
ECO	MATERIAL -----		DWN	JKF	10/22/04	DWG. NO. 1304941 REV C0
			CHK	DB	10/28/04	
REV	FINISH -----		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	ECO	DATE	APV
B0	20111664	2/2/05	DB

ADD C87 - C95, J15, R82 - R86. DEL C74 & R12. C53 WAS 5.1 PF. R62 WAS 3.3K. R11 WAS 301. JKF

REV	ECO	DATE	APV
B0	20111664	3/18/05	DB

ADDED PAGE 3, C96, Q5 - Q18 & R87 - R108. JKF

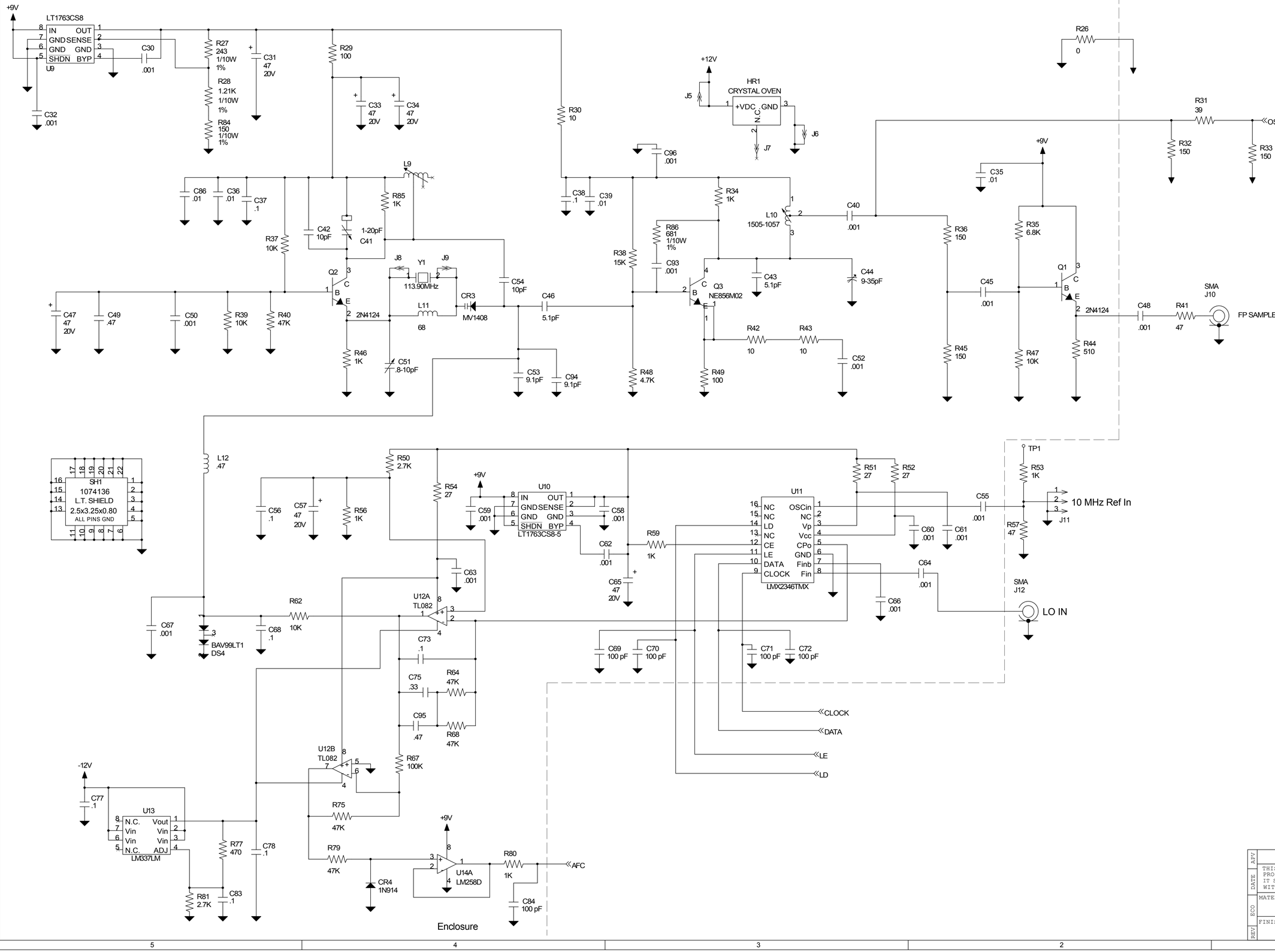
Axcera

MATERIAL: ------

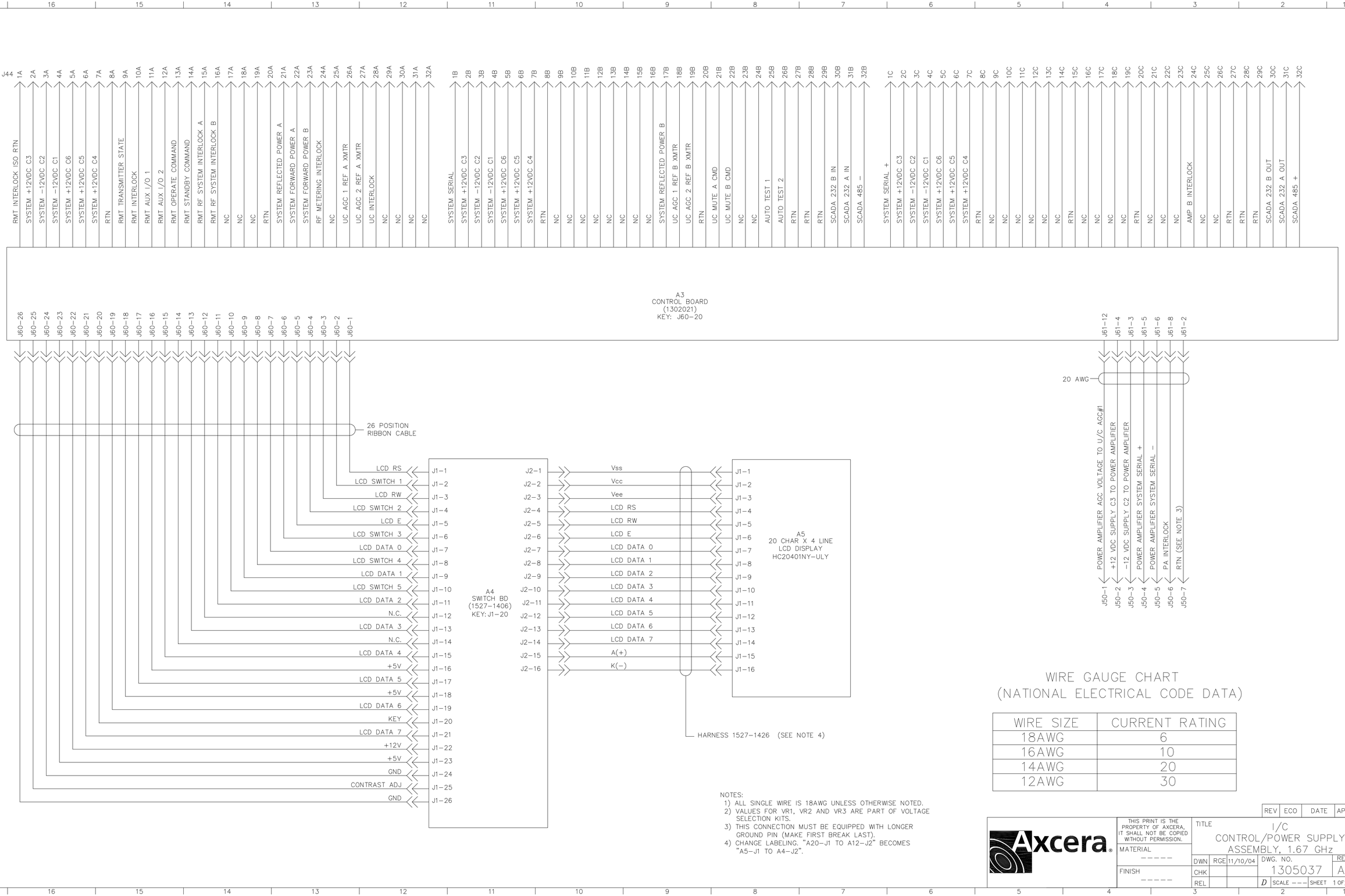
FINISH: ------

TITLE: SCH., L.O. GENERATOR BD., 1.67GHz (1304940)

DWN	JKF	10/22/04	DWG. NO. 1304941	REV C0
CHK	DB	10/28/04		
REL	DB	10/28/04	D SCALE - - -	SHEET 1 OF 3



APV	Axcera	REV	ECO	DATE	APV	
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION	TITLE	SCH., L.O. GENERATOR BD., 1.67GHz (1304940)			
ECO	MATERIAL -----	DWN	JKF	10/22/04	DWG. NO. 1304941	REV C0
REV	FINISH -----	CHK	DB	10/28/04		
		REL	DB	10/28/04	D SCALE ---	SHEET 2 OF 3



WIRE GAUGE CHART
(NATIONAL ELECTRICAL CODE DATA)

WIRE SIZE	CURRENT RATING
18AWG	6
16AWG	10
14AWG	20
12AWG	30

NOTES:
1) ALL SINGLE WIRE IS 18AWG UNLESS OTHERWISE NOTED.
2) VALUES FOR VR1, VR2 AND VR3 ARE PART OF VOLTAGE SELECTION KITS.
3) THIS CONNECTION MUST BE EQUIPPED WITH LONGER GROUND PIN (MAKE FIRST BREAK LAST).
4) CHANGE LABELING. "A20–J1 TO A12–J2" BECOMES "A5–J1 TO A4–J2".

REV	ECO	DATE	APV

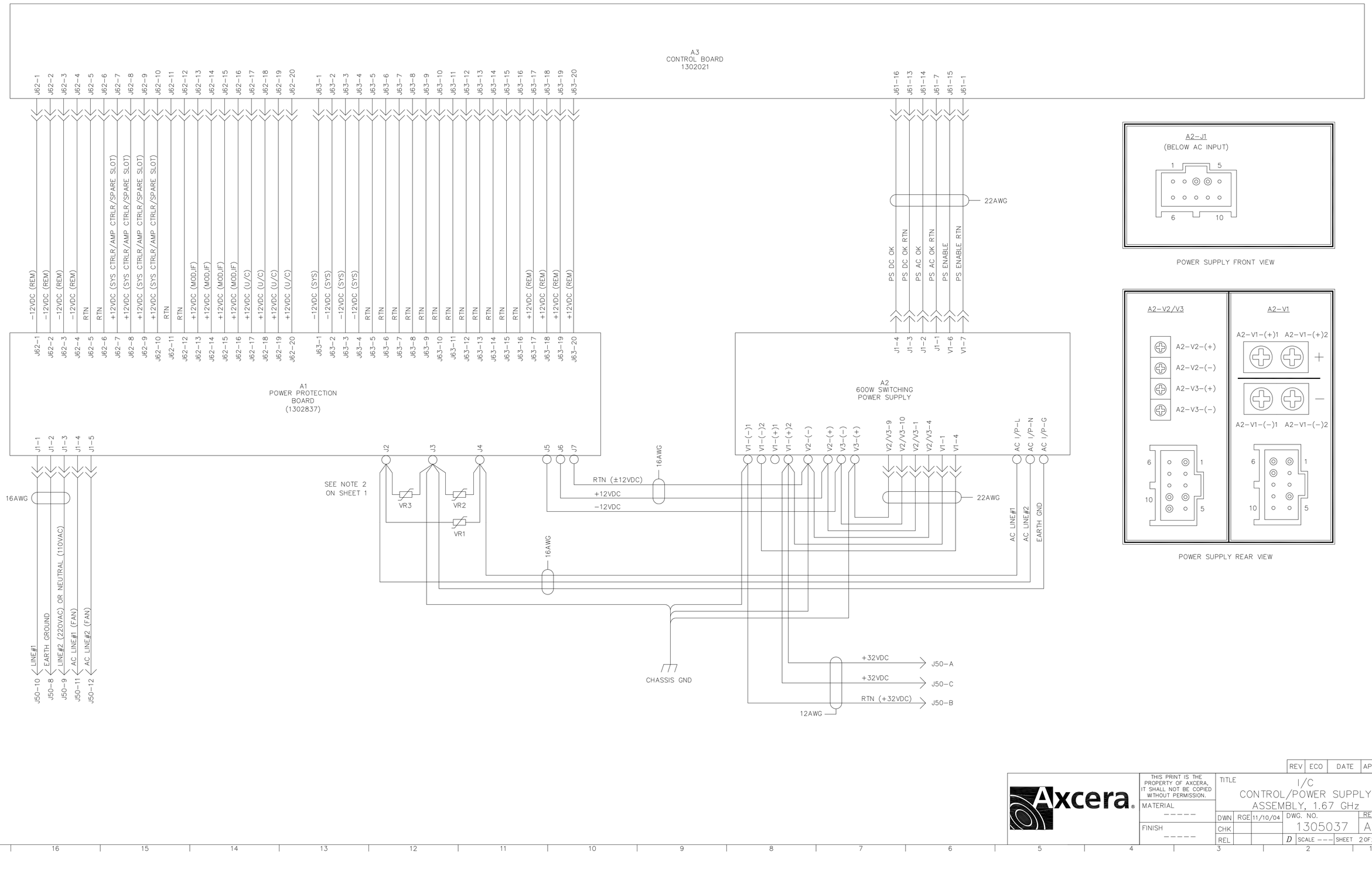
Axcera

MATERIAL ––––––

FINISH ––––––

TITLE
I/C
CONTROL/POWER SUPPLY
ASSEMBLY, 1.67 GHz

DWN	RGE	11/10/04	DWG. NO.	REV
CHK			1305037	A0
REL			D SCALE –––	SHEET 1 OF 2



REV	ECO	DATE	APV

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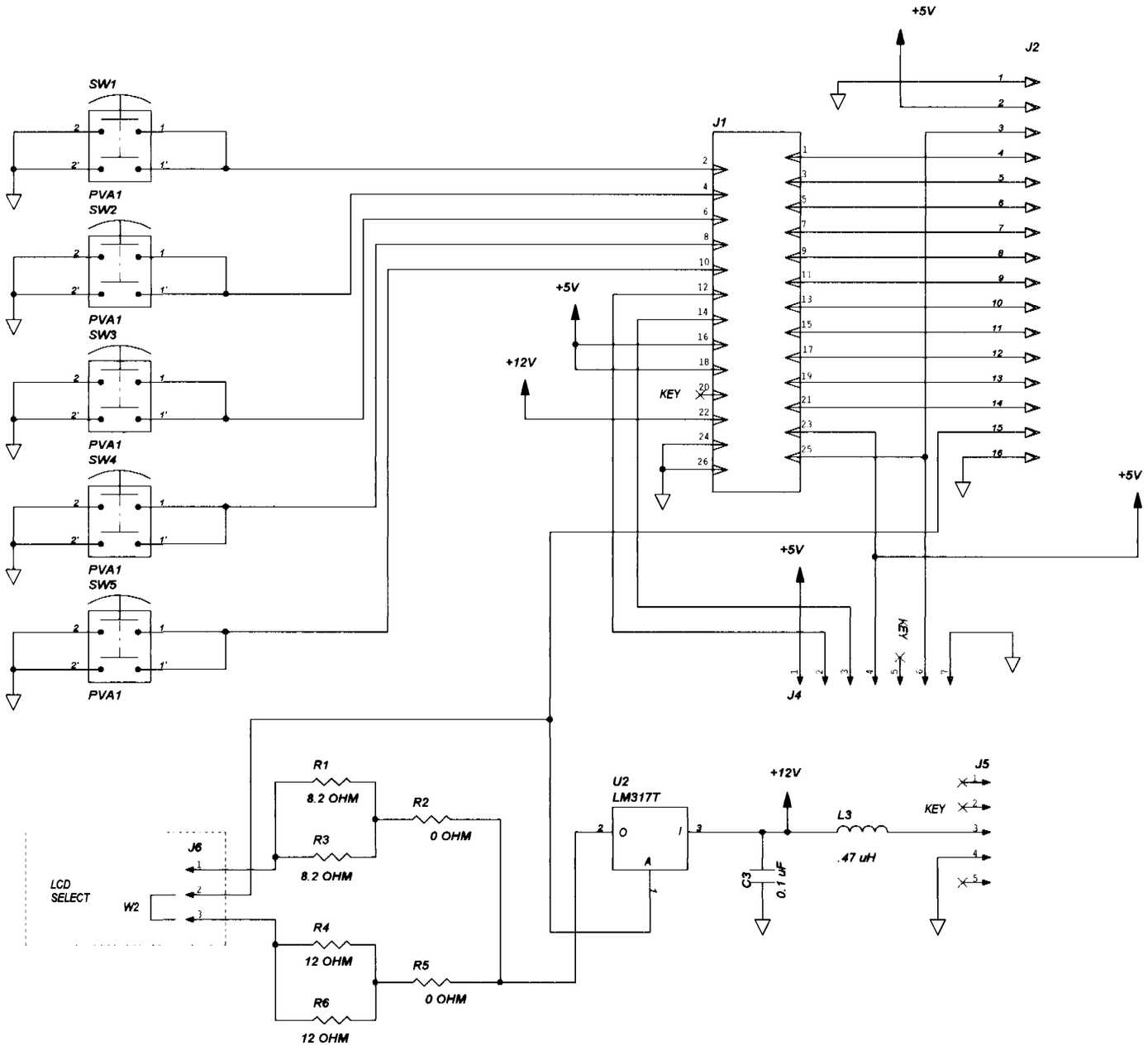
MATERIAL

FINISH

TITLE
I/C
CONTROL/POWER SUPPLY
ASSEMBLY, 1.67 GHz

DWN	RGE	11/10/04	DWG. NO.		REV
CHK			1305037		A0
REL			D	SCALE ---	SHEET 2 OF 2



DELETED C1, C2, L1, L2, U1, J3, & W1. MOVED W2 FROM J6-1,-2 TO J6 -2,-3. JKF

REV	ECN	DATE	APV
3	8603	11/7/96	RAS
AT J2 W2 WAS W1. (TMY)			
2	8424	9/29/96	JCM
SWITCHED PINS 1 & 2 OF U2. (TMY)			
1	8368	8/27/96	RAS

ITS CORPORATION

MATERIAL ---

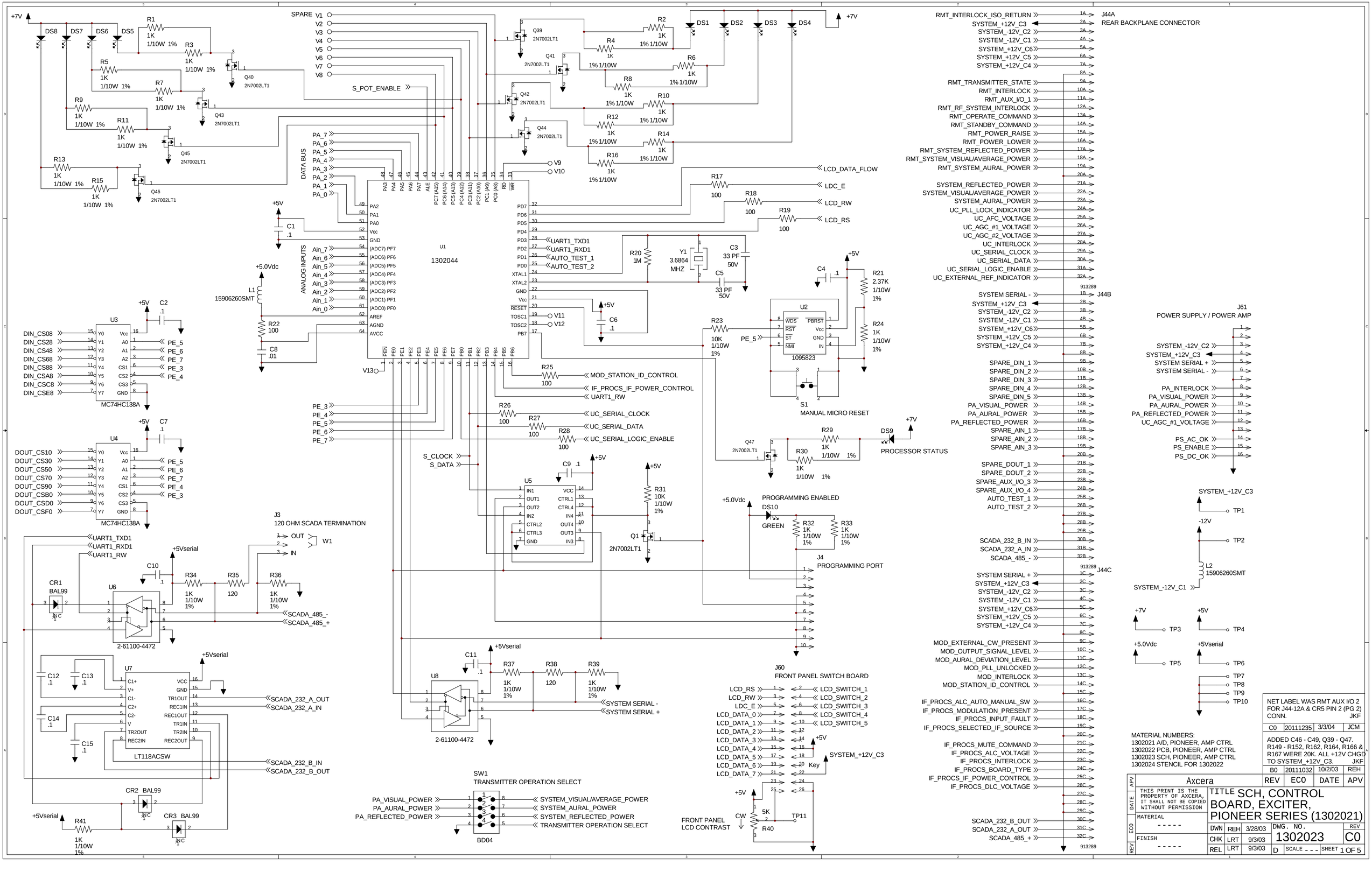
FINISH ---

TITLE SCHEMATIC SWITCH BOARD (1527-1406)

DWN	DLM	6/3/96	
CHK	RAS	6/14/96	
REL	RAS	6/14/96	

DWG. NO. 1527-3406 REV 3

B SCALE --- SHEET 1 OF 1


+7V
DS8
DS7
DS6
DS5
R1 1K 1/10W 1%
R3 1K 1/10W 1%
R5 1K 1/10W 1%
R7 1K 1/10W 1%
R9 1K 1/10W 1%
R11 1K 1/10W 1%
R13 1K 1/10W 1%
R15 1K 1/10W 1%
Q40 2N7002LT1
Q43 2N7002LT1
Q45 2N7002LT1
Q46 2N7002LT1
SPARE V1
V2
V3
V4
V5
V6
V7
V8
S_POT_ENABLE
Q39 2N7002LT1
Q41 2N7002LT1
Q42 2N7002LT1
Q44 2N7002LT1
R2 1K 1% 1/10W
R4 1K 1% 1/10W
R6 1K 1% 1/10W
R8 1K 1% 1/10W
R10 1K 1% 1/10W
R12 1K 1% 1/10W
R14 1K 1% 1/10W
R16 1K 1% 1/10W
DS1
DS2
DS3
DS4
+7V
DATA BUS
PA_7
PA_6
PA_5
PA_4
PA_3
PA_2
PA_1
PA_0
V9
V10
LCD_DATA_FLOW
LDC_E
LCD_RW
LCD_RS
R17 100
R18 100
R19 100
+5V
C1 .1
ANALOG INPUTS
Ain_7
Ain_6
Ain_5
Ain_4
Ain_3
Ain_2
Ain_1
Ain_0
U1
1302044
PA2
PA1
PA0
Vcc
GND
(ADC7) PF7
(ADC6) PF6
(ADC5) PF5
(ADC4) PF4
(ADC3) PF3
(ADC2) PF2
(ADC1) PF1
(ADC0) PF0
AREF
AGND
AVCC
PD7
PD6
PD5
PD4
PD3
PD2
PD1
PD0
XTAL1
XTAL2
GND
Vcc
RESET
TOSC1
TOSC2
PB7
UART1_TXD1
UART1_RXD1
AUTO_TEST_1
AUTO_TEST_2
R20 1M
Y1 3.6864 MHZ
C3 33 PF 50V
C5 33 PF 50V
+5V
C6 .1
+5.0Vdc
L1 15906260SMT
R22 100
C8 .01
V13
V11
V12
R23 10K 1/10W 1%
R25 100
R26 100
R27 100
R28 100
MOD_STATION_ID_CONTROL
IF_PROCS_IF_POWER_CONTROL
UART1_RW
UC_SERIAL_CLOCK
UC_SERIAL_DATA
UC_SERIAL_LOGIC_ENABLE
PE_3
PE_4
PE_5
PE_6
PE_7
S_CLOCK
S_DATA
U5
IN1
OUT1
OUT2
IN2
CTRL2
CTRL3
GND
VCC
CTRL1
CTRL4
IN4
OUT4
OUT3
IN3
C9 .1
R31 10K 1/10W 1%
Q1 2N7002LT1
+5V
C4 .1
U2
WDS
RST
ST
NMI
PBRST
Vcc
GND
IN
1095823
R21 2.37K 1/10W 1%
R24 1K 1/10W 1%
PE_5
S1
MANUAL MICRO RESET
Q47 2N7002LT1
R29 1K 1/10W 1%
R30 1K 1/10W 1%
DS9
PROCESSOR STATUS
+7V
+5.0Vdc
PROGRAMMING ENABLED
DS10
GREEN
R32 1K 1/10W 1%
R33 1K 1/10W 1%
J4
PROGRAMMING PORT
J60
FRONT PANEL SWITCH BOARD
LCD_RS
LCD_RW
LDC_E
LCD_DATA_0
LCD_DATA_1
LCD_DATA_2
LCD_DATA_3
LCD_DATA_4
LCD_DATA_5
LCD_DATA_6
LCD_DATA_7
LCD_SWITCH_1
LCD_SWITCH_2
LCD_SWITCH_3
LCD_SWITCH_4
LCD_SWITCH_5
Key
SYSTEM_+12V_C3
FRONT PANEL LCD CONTRAST
CW
5K
R40
TP11
U3
DIN_CS08
DIN_CS28
DIN_CS48
DIN_CS68
DIN_CS88
DIN_CSA8
DIN_CSC8
DIN_CSE8
MC74HC138A
PE_5
PE_6
PE_7
PE_3
PE_4
U4
DOUT_CS10
DOUT_CS30
DOUT_CS50
DOUT_CS70
DOUT_CS90
DOUT_CSB0
DOUT_CSD0
DOUT_CSF0
C2 .1
C7 .1
J3
120 OHM SCADA TERMINATION
OUT
IN
W1
UART1_TXD1
UART1_RXD1
UART1_RW
+5Vserial
C10 .1
R34 1K 1/10W 1%
R35 120
R36 1K 1/10W 1%
CR1 BAL99
U6
2-61100-4472
SCADA_485_-
SCADA_485_+
U7
LT118ACSW
C12 .1
C13 .1
C14 .1
C15 .1
SCADA_232_A_OUT
SCADA_232_A_IN
SCADA_232_B_IN
SCADA_232_B_OUT
CR2 BAL99
CR3 BAL99
R41 1K 1/10W 1%
C11 .1
R37 1K 1/10W 1%
R38 120
R39 1K 1/10W 1%
U8
2-61100-4472
SYSTEM SERIAL -
SYSTEM SERIAL +
SW1
TRANSMITTER OPERATION SELECT
PA_VISUAL_POWER
PA_AURAL_POWER
PA_REFLECTED_POWER
SYSTEM_VISUAL/AVERAGE_POWER
SYSTEM_AURAL_POWER
SYSTEM_REFLECTED_POWER
TRANSMITTER OPERATION SELECT
BD04
RMT_INTERLOCK_ISO_RETURN
SYSTEM_+12V_C3
SYSTEM_-12V_C2
SYSTEM_-12V_C1
SYSTEM_+12V_C6
SYSTEM_+12V_C5
SYSTEM_+12V_C4
RMT_TRANSMITTER_STATE
RMT_INTERLOCK
RMT_AUX_I/O_1
RMT_RF_SYSTEM_INTERLOCK
RMT_OPERATE_COMMAND
RMT_STANDBY_COMMAND
RMT_POWER_RAISE
RMT_POWER_LOWER
RMT_SYSTEM_REFLECTED_POWER
RMT_SYSTEM_VISUAL/AVERAGE_POWER
RMT_SYSTEM_AURAL_POWER
SYSTEM_REFLECTED_POWER
SYSTEM_VISUAL/AVERAGE_POWER
SYSTEM_AURAL_POWER
UC_PLL_LOCK_INDICATOR
UC_AFC_VOLTAGE
UC_AGC_#1_VOLTAGE
UC_AGC_#2_VOLTAGE
UC_INTERLOCK
UC_SERIAL_CLOCK
UC_SERIAL_DATA
UC_SERIAL_LOGIC_ENABLE
UC_EXTERNAL_REF_INDICATOR
J44A
REAR BACKPLANE CONNECTOR
913289
J44B
SYSTEM SERIAL -
SYSTEM_+12V_C3
SYSTEM_-12V_C2
SYSTEM_-12V_C1
SYSTEM_+12V_C6
SYSTEM_+12V_C5
SYSTEM_+12V_C4
SPARE_DIN_1
SPARE_DIN_2
SPARE_DIN_3
SPARE_DIN_4
SPARE_DIN_5
PA_VISUAL_POWER
PA_AURAL_POWER
PA_REFLECTED_POWER
SPARE_AIN_1
SPARE_AIN_2
SPARE_AIN_3
SPARE_DOUT_1
SPARE_DOUT_2
SPARE_AUX_I/O_3
SPARE_AUX_I/O_4
AUTO_TEST_1
AUTO_TEST_2
SCADA_232_B_IN
SCADA_232_A_IN
SCADA_485_-
J44C
MOD_EXTERNAL_CW_PRESENT
MOD_OUTPUT_SIGNAL_LEVEL
MOD_AURAL_DEVIATION_LEVEL
MOD_PLL_UNLOCKED
MOD_INTERLOCK
MOD_STATION_ID_CONTROL
IF_PROCS_ALC_AUTO_MANUAL_SW
IF_PROCS_MODULATION_PRESENT
IF_PROCS_INPUT_FAULT
IF_PROCS_SELECTED_IF_SOURCE
IF_PROCS_MUTE_COMMAND
IF_PROCS_ALC_VOLTAGE
IF_PROCS_INTERLOCK
IF_PROCS_BOARD_TYPE
IF_PROCS_IF_POWER_CONTROL
IF_PROCS_DLC_VOLTAGE
SCADA_232_B_OUT
SCADA_232_A_OUT
SCADA_485_+
J61
POWER SUPPLY / POWER AMP
SYSTEM_-12V_C2
SYSTEM_+12V_C3
SYSTEM SERIAL +
SYSTEM SERIAL -
PA_INTERLOCK
PA_VISUAL_POWER
PA_AURAL_POWER
PA_REFLECTED_POWER
UC_AGC_#1_VOLTAGE
PS_AC_OK
PS_ENABLE
PS_DC_OK
SYSTEM_+12V_C3
TP1
-12V
TP2
L2
15906260SMT
SYSTEM_-12V_C1
+7V
TP3
+5V
TP4
+5.0Vdc
TP5
+5Vserial
TP6
TP7
TP8
TP9
TP10
NET LABEL WAS RMT AUX I/O 2 FOR J44-12A & CR5 PIN 2 (PG 2) CONN. JKF
C0 | 20111235 | 3/3/04 | JCM
ADDED C46 - C49, Q39 - Q47. R149 - R152, R162, R164, R166 & R167 WERE 20K. ALL +12V CHGD TO SYSTEM_+12V_C3. JKF
B0 | 20111032 | 10/2/03 | REH
MATERIAL NUMBERS:
1302021 A/D, PIONEER, AMP CTRL
1302022 PCB, PIONEER, AMP CTRL
1302023 SCH, PIONEER, AMP CTRL
1302024 STENCIL FOR 1302022
Axcera
REV | ECO | DATE | APV
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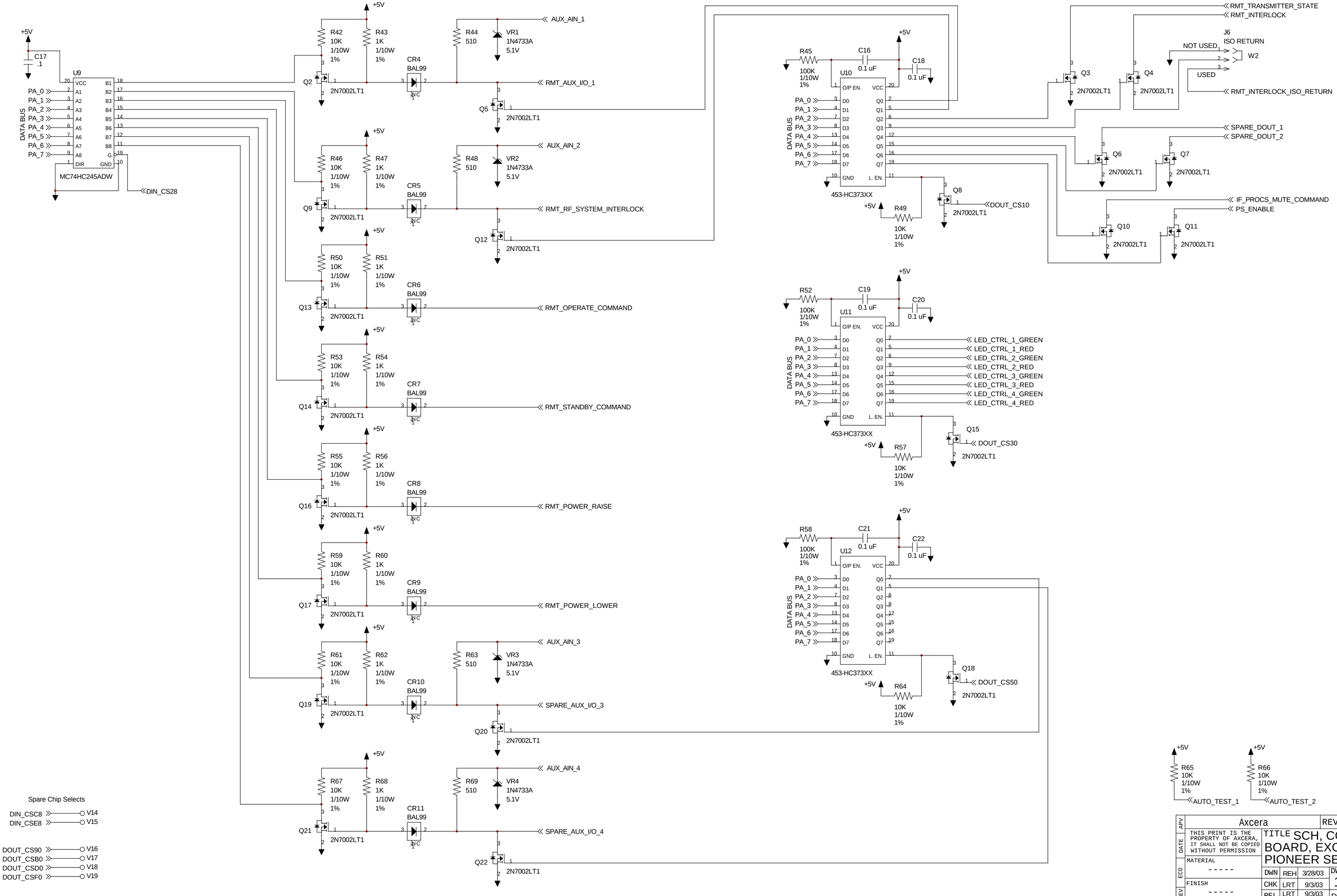
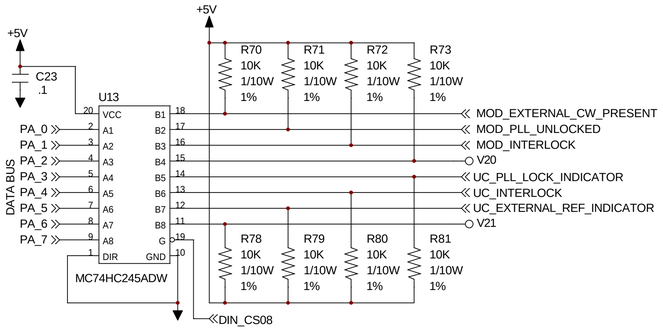
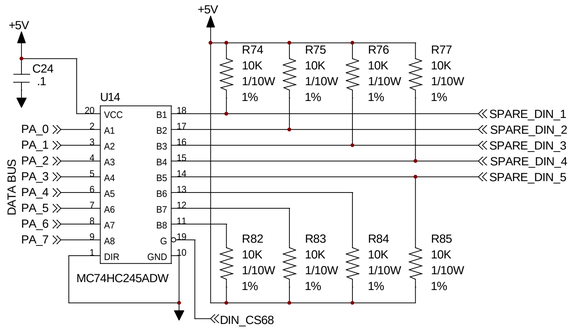
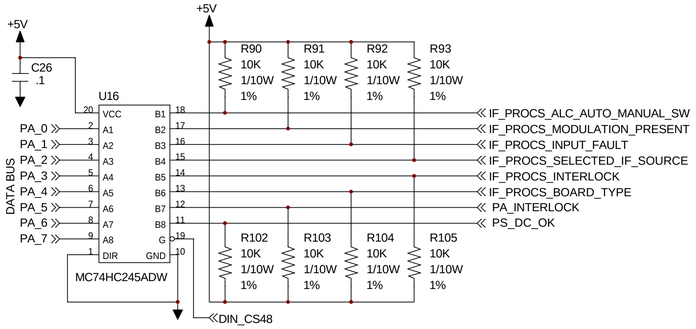
MATERIAL
FINISH
TITLE SCH, CONTROL BOARD, EXCITER, PIONEER SERIES (1302021)
DWN REH 3/28/03
CHK LRT 9/3/03
REL LRT 9/3/03
DWG. NO. 1302023
REV C0
D
SCALE - - -
SHEET 1 OF 5

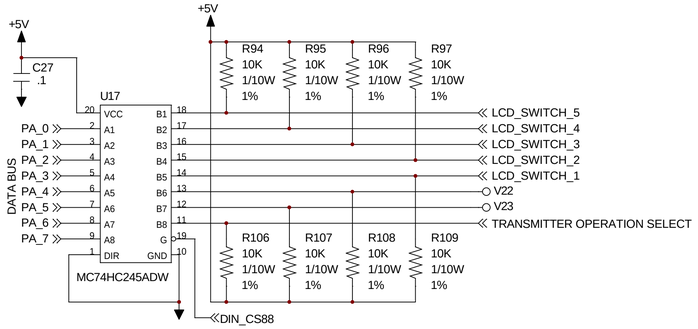


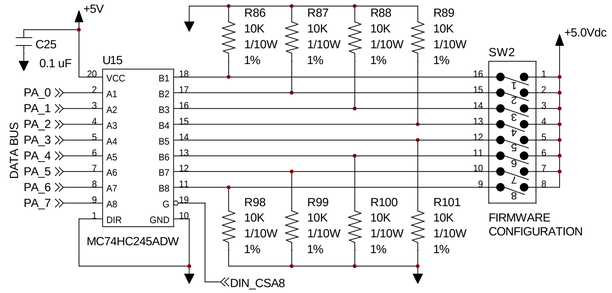
APV	Axcera	REV	ECO	DATE	APV
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION	TITLE SCH, CONTROL BOARD, EXCITER, PIONEER SERIES (1302021)			
ECO	MATERIAL -----	DWN	REH	3/28/03	DWG. NO. 1302023 REV C0
REV	FINISH -----	CHK	LRT	9/3/03	
		REL	LRT	9/3/03	D SCALE - - - SHEET 2 OF 5



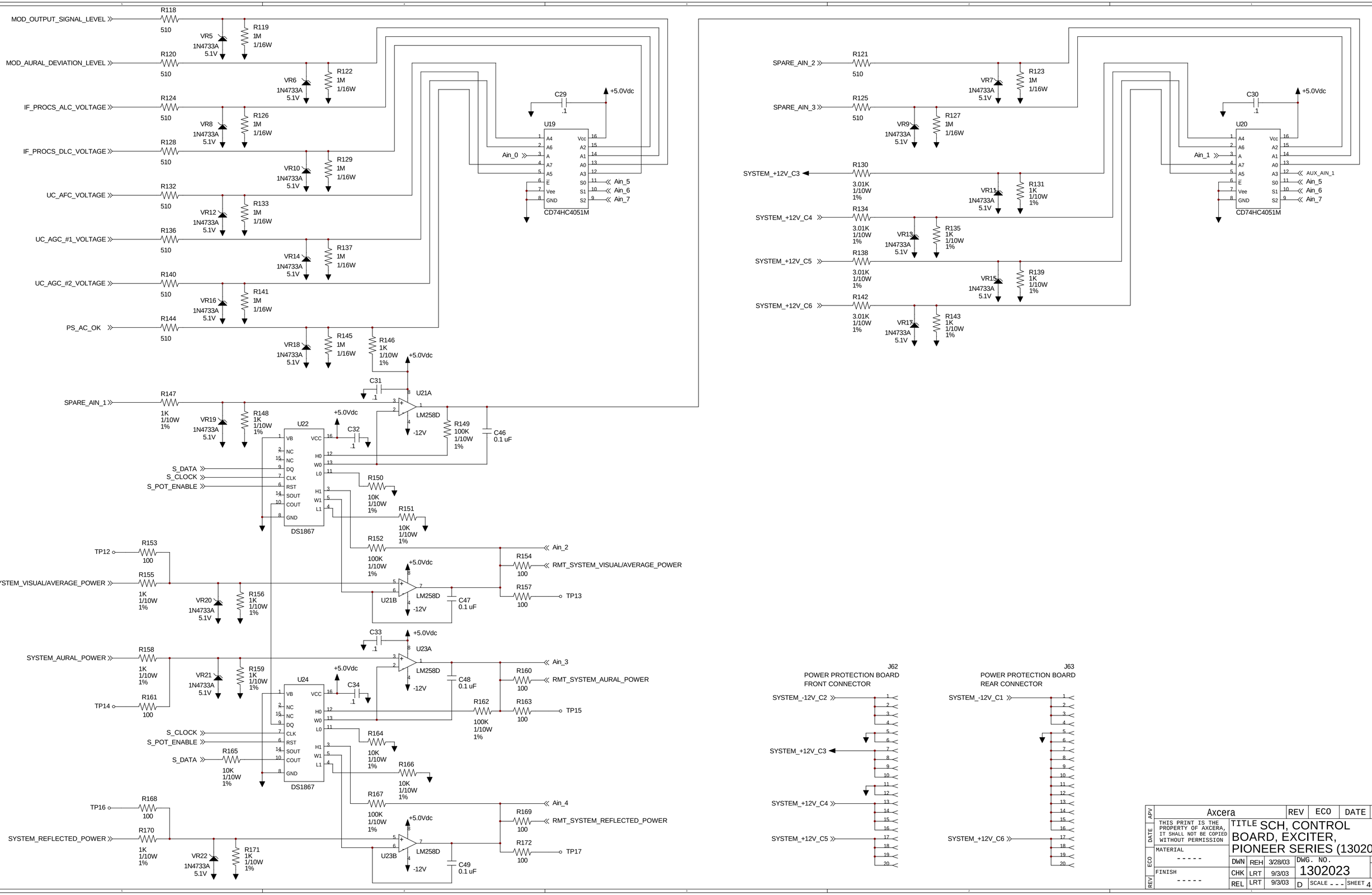






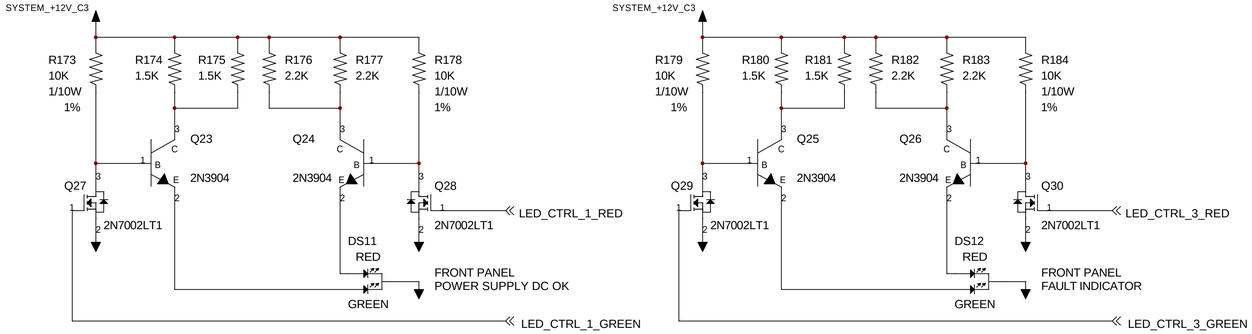


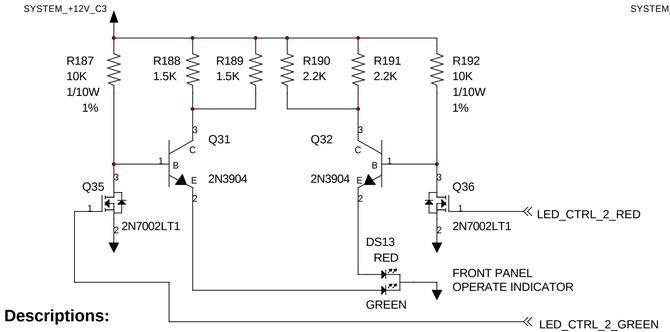
APV	Axcera	REV	ECO	DATE	APV
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION	TITLE SCH, CONTROL BOARD, EXCITER, PIONEER SERIES (1302021)			
ECO	MATERIAL -----	DWN REH 3/28/03	DWG. NO. 1302023	REV C0	
REV	FINISH -----	CHK LRT 9/3/03			
		REL LRT 9/3/03	D	SCALE - - -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

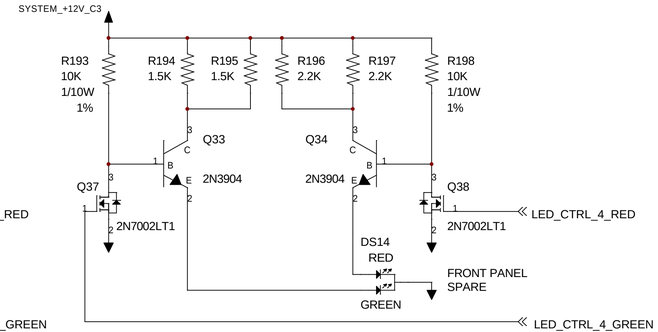

MOD_OUTPUT_SIGNAL_LEVEL
MOD_AURAL_DEVIATION_LEVEL
IF_PROCS_ALC_VOLTAGE
IF_PROCS_DLC_VOLTAGE
UC_AFC_VOLTAGE
UC_AGC_#1_VOLTAGE
UC_AGC_#2_VOLTAGE
PS_AC_OK
SPARE_AIN_1
R118 510
R119 1M 1/16W
R120 510
R122 1M 1/16W
R124 510
R126 1M 1/16W
R128 510
R129 1M 1/16W
R132 510
R133 1M 1/16W
R136 510
R137 1M 1/16W
R140 510
R141 1M 1/16W
R144 510
R145 1M 1/16W
R146 1K 1/10W 1%
R147 1K 1/10W 1%
R148 1K 1/10W 1%
VR5 1N4733A 5.1V
VR6 1N4733A 5.1V
VR8 1N4733A 5.1V
VR10 1N4733A 5.1V
VR12 1N4733A 5.1V
VR14 1N4733A 5.1V
VR16 1N4733A 5.1V
VR18 1N4733A 5.1V
VR19 1N4733A 5.1V
C29 .1
+5.0Vdc
U19
CD74HC4051M
Ain_0
Ain_5
Ain_6
Ain_7
C31 .1
U21A
LM258D
-12V
R149 100K 1/10W 1%
C46 0.1 uF
U22
DS1867
S_DATA
S_CLOCK
S_POT_ENABLE
C32 .1
R150 10K 1/10W 1%
R151 10K 1/10W 1%
R152 100K 1/10W 1%
TP12
TP13
TP14
TP15
TP16
TP17
R153 100
R154 100
R155 1K 1/10W 1%
R156 1K 1/10W 1%
R157 100
SYSTEM_VISUAL/AVERAGE_POWER
RMT_SYSTEM_VISUAL/AVERAGE_POWER
VR20 1N4733A 5.1V
U21B
C47 0.1 uF
Ain_2
C33 .1
U23A
C48 0.1 uF
SYSTEM_AURAL_POWER
R158 1K 1/10W 1%
R159 1K 1/10W 1%
R160 100
R161 100
R162 100K 1/10W 1%
R163 100
RMT_SYSTEM_AURAL_POWER
VR21 1N4733A 5.1V
U24
C34 .1
Ain_3
R164 10K 1/10W 1%
R165 10K 1/10W 1%
R166 10K 1/10W 1%
R167 100K 1/10W 1%
R168 100
R169 100
R170 1K 1/10W 1%
R171 1K 1/10W 1%
R172 100
SYSTEM_REFLECTED_POWER
RMT_SYSTEM_REFLECTED_POWER
VR22 1N4733A 5.1V
U23B
C49 0.1 uF
Ain_4
SPARE_AIN_2
SPARE_AIN_3
R121 510
R123 1M 1/16W
R125 510
R127 1M 1/16W
VR7 1N4733A 5.1V
VR9 1N4733A 5.1V
C30 .1
U20
AUX_AIN_1
Ain_1
SYSTEM_+12V_C3
SYSTEM_+12V_C4
SYSTEM_+12V_C5
SYSTEM_+12V_C6
R130 3.01K 1/10W 1%
R131 1K 1/10W 1%
R134 3.01K 1/10W 1%
R135 1K 1/10W 1%
R138 3.01K 1/10W 1%
R139 1K 1/10W 1%
R142 3.01K 1/10W 1%
R143 1K 1/10W 1%
VR11 1N4733A 5.1V
VR13 1N4733A 5.1V
VR15 1N4733A 5.1V
VR17 1N4733A 5.1V
J62
POWER PROTECTION BOARD
FRONT CONNECTOR
J63
POWER PROTECTION BOARD
REAR CONNECTOR
SYSTEM_-12V_C2
SYSTEM_-12V_C1
Axcera
REV
ECO
DATE
APV
THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION
TITLE SCH, CONTROL BOARD, EXCITER, PIONEER SERIES (1302021)
MATERIAL
FINISH
DWN REH 3/28/03
CHK LRT 9/3/03
REL LRT 9/3/03
DWG. NO. 1302023
REV C0
D
SCALE - - -
SHEET 4 OF 5

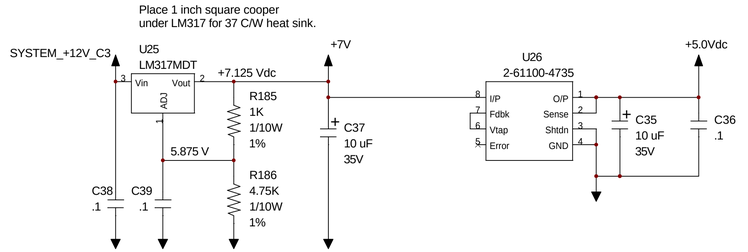
LAST USED REF.

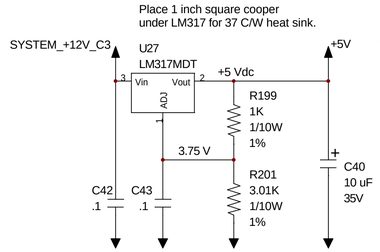
R202
C49
Q47
DS14
U28
VR22
J63
TP17
V23
SW2
CR11
W2
Y1
L2
S1

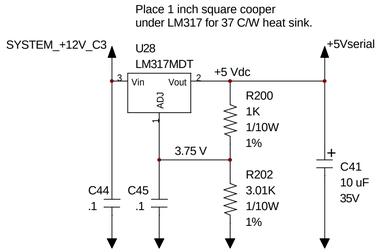












Circuit Descriptions:

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 (!ST) 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.

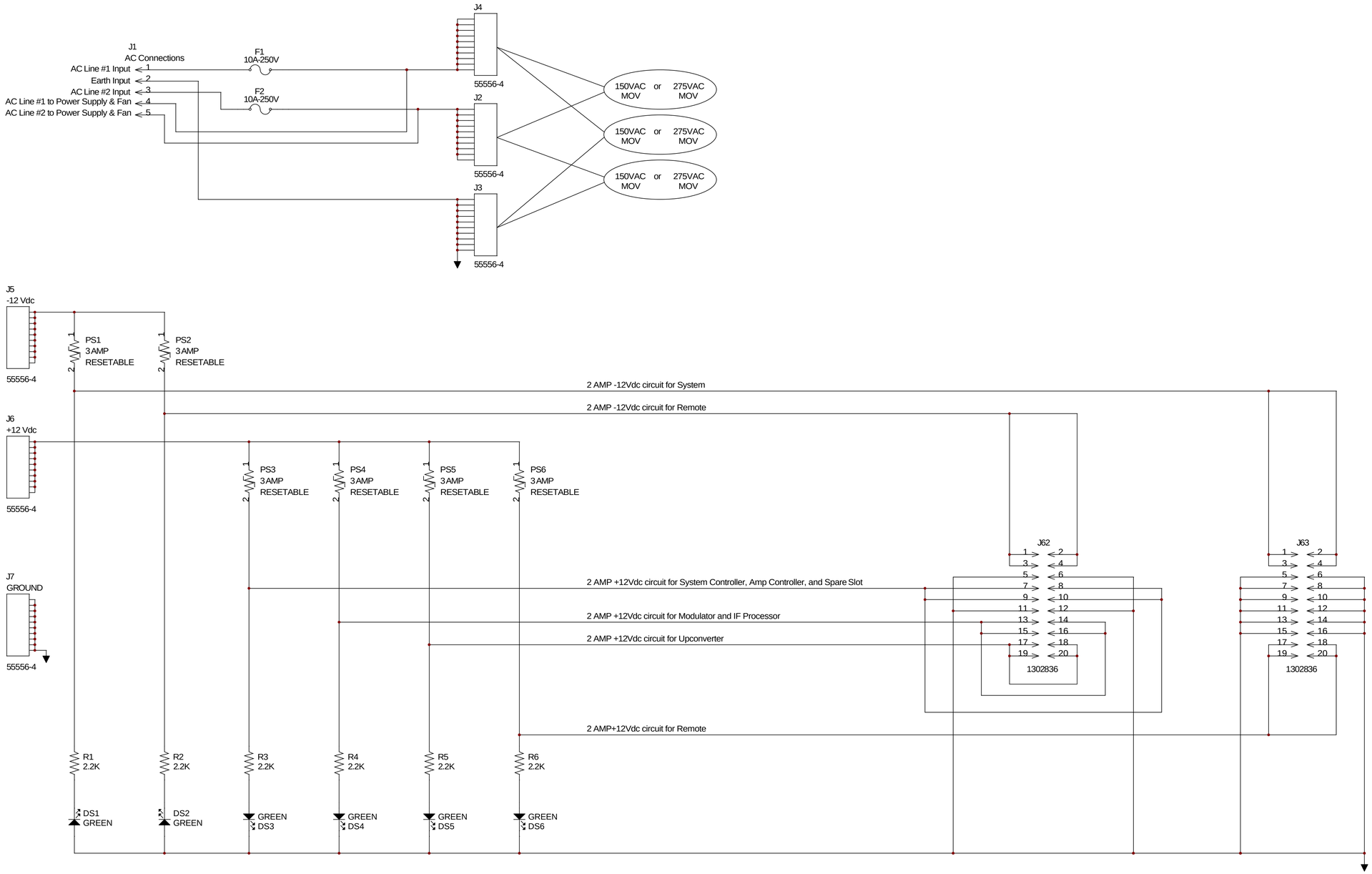
Two 20 position connectors are used to provide power to the backplane. J62 and J63 get power from the power supply after a nominal 3 amp resettable fuse. The Raychem polyswitch resettable fuses may open on a current as low as 2.43 amps at 50C, 3 amps at 25 C or 3.3 amps at 0C.
They definately will open 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.

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. 1302023	REV C0	
REV	FINISH -----	CHK LRT 9/3/03			
		REL LRT 9/3/03	D	SCALE ---	SHEET 5 OF 5



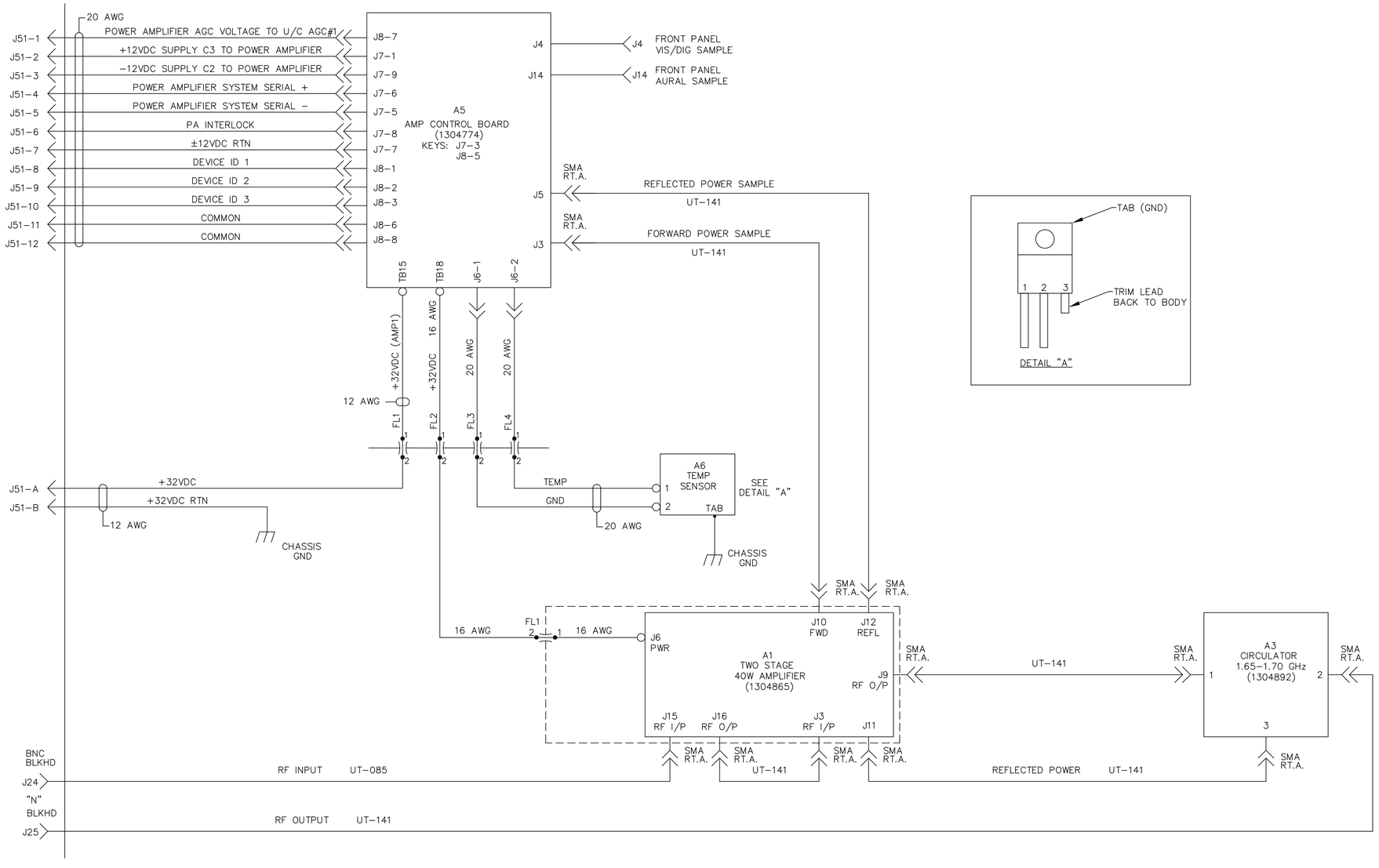
Circuit Design Notes:

1. Track widths of 0.140 inch minimum top and bottom of board shall be used to connections to J1, J2, J3, J4.
2. Track widths of 0.140 inch minimum top of board shall be used to connections to J5 and J6.
3. Track widths of 0.065 inch minimum shall be used to connections to J62 and J63.
4. Track widths of 0.020 inch minimum shall be used to connections between LEDs and resistors.
5. 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

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



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

REV	ECO	DATE	APV

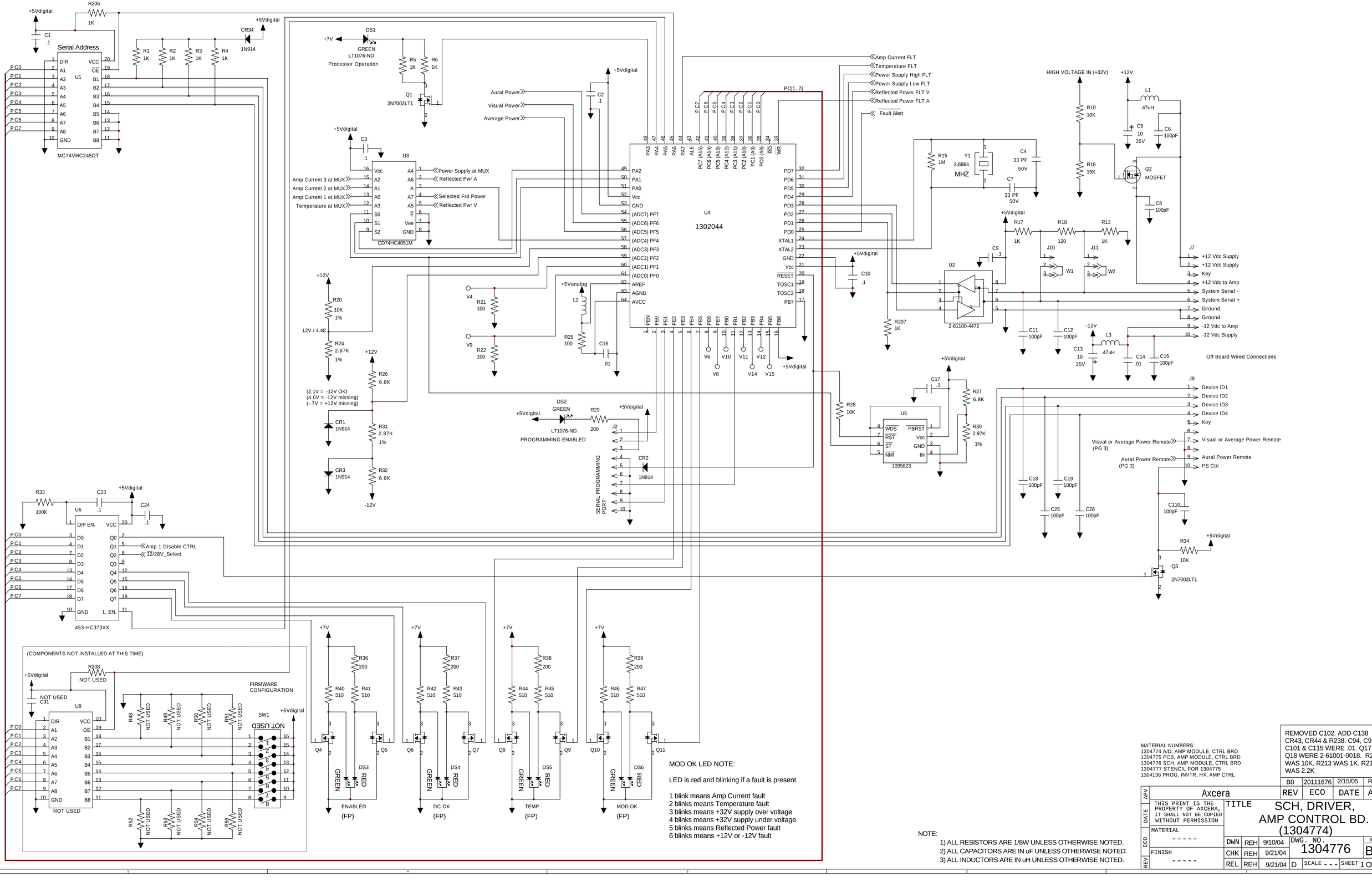
Axcera

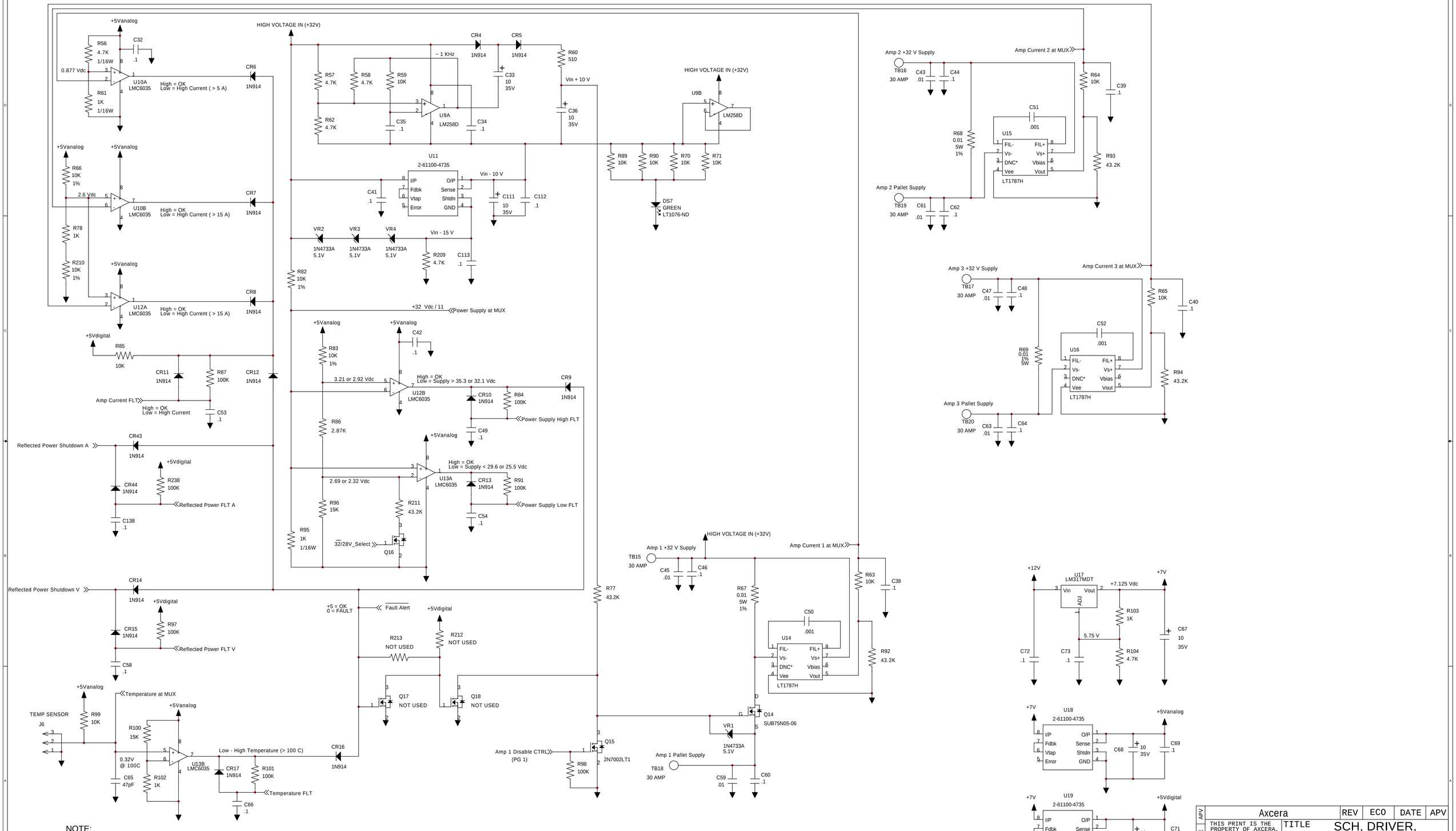
MATERIAL
−−−−−

FINISH
−−−−−

TITLE
I/C,
PA ASSEMBLY, 5W
1.67 GHz

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


Serial Address
MC74VHC245DT
U1
U2
U3
U4
U5
U6
U8
1302044
CD74HC4051M
2-61100-4472
1095823
453-HC373XX
Processor Operation
PROGRAMMING ENABLED
SERIAL PROGRAMMING PORT
Off Board Wired Connections
(COMPONENTS NOT INSTALLED AT THIS TIME)
FIRMWARE CONFIGURATION
NOT USED
ENABLED (FP)
DC OK (FP)
TEMP (FP)
MOD OK (FP)
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
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
B0 20111676 2/15/05 REH
Axcera REV ECO DATE APV
THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION
MATERIAL - - - - -
FINISH - - - - -
TITLE SCH, DRIVER, AMP CONTROL BD. (1304774)
DWN REH 9/10/04
CHK REH 9/21/04
REL REH 9/21/04
DWG. NO. 1304776
REV B0
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	SCH, DRIVER, AMP CONTROL BD. (1304774)			
ECO	MATERIAL - - - - -	DWN	REH	9/10/04	DWG. NO. 1304776	REV B0
REV	FINISH - - - - -	CHK	REH	9/21/04		
		REL	REH	9/21/04	D	SCALE - - - SHEET 2 OF 3

LAST USED REF

J15
TP6
CR44
R238
U30
C138
W3
VR4
Q18
TB20
DS7
V15
Y1
SW1
L3

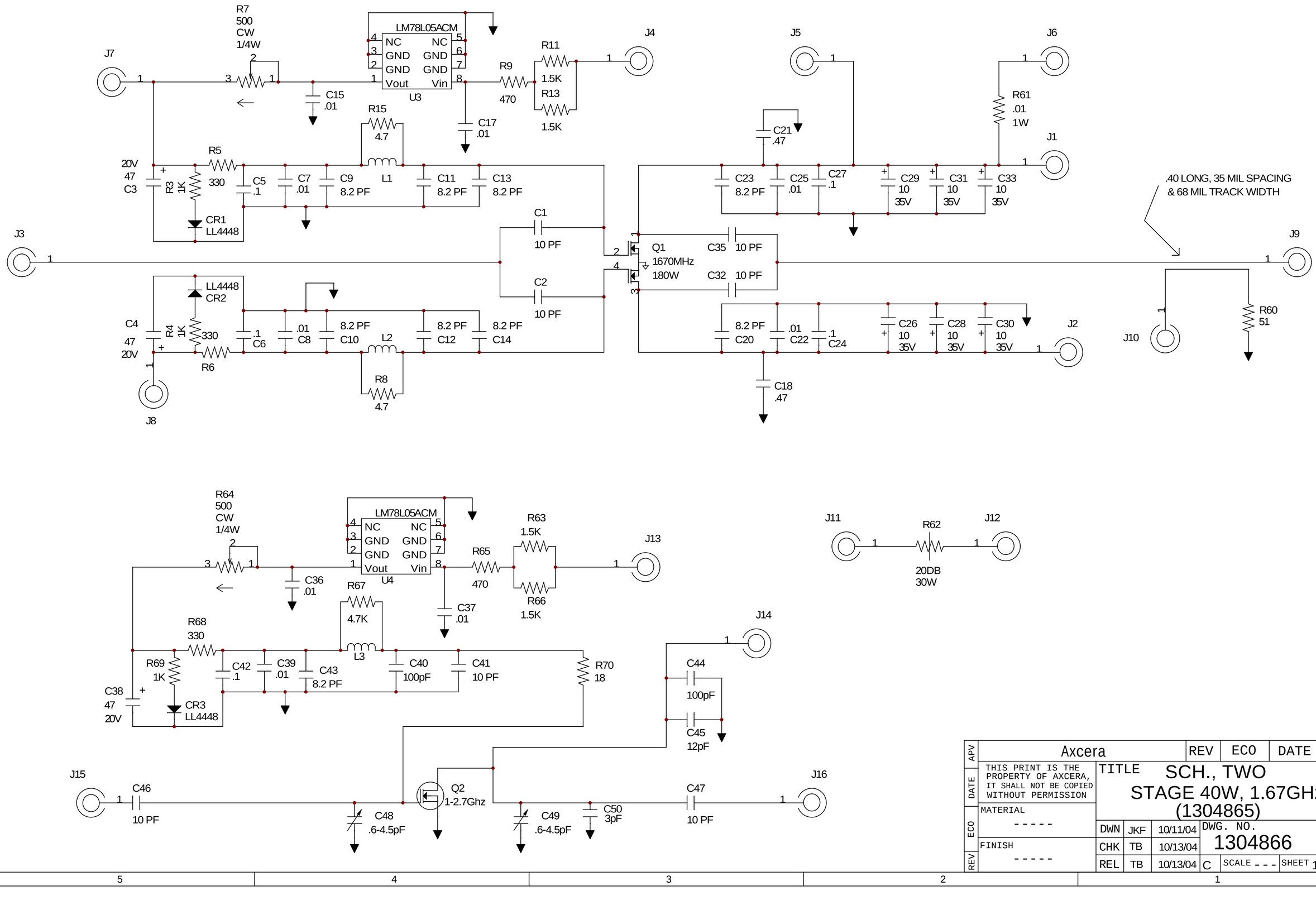
+5Vanalog
C114 100pF
C117 100pF
C115 .1
C116 .01
U26 AD8361ARM (VPOS, IREF, RFIN, PWDN, SREF, VRMS, FLTR, COMM)
R214 75
R216 150
R215 100
R201 10K
AVERAGE CAL. (FP)
C79 .01
U22A LM258D
U22B LM258D
TP3 AVE METERING (TOP SIDE)
R123 100
R126 2.2K
C94 .1
Average Power (PG 1)
R139 2.2K
C98 .1
Selected Frd Power (PG 1)
AGC Select
Ave W3 Peak
J12
SMA J3 DIGITAL/VISUAL I/P
SMA J4 VIS/DIG SAMPLE (FP)
R137 150
R142 75
R133 200
R134 200
CR35 5082-2811
C95 470pF
C96 470pF
+12V
C135 .1
U21A TL082
C134 .1
-12V
CR26 5082-2811
C99 .01
TP2 VISUAL METERING (TOP SIDE)
R127 100
R130 2.2K
R202 10K
CW
VISUAL CAL. (FP)
C76 .1
U27A LM258D
R140 2.2K
C119 .01
Visual Power (PG 1)
U27B LM258D
R151 200
CR29 1N5711
CR28 1N5711
CR30 1N5711
C101 .001
C118 100pF
Visual or Average Power Remote (PG 1)

SMA J5 VIS/DIG REFL. I/P
R146 200
R147 200
R148 200
R149 200
CR31 5082-2811
C104 470pF
C105 470pF
R145 2.2K
TP4 REFLECTED METERING (TOP SIDE)
R143 100
U21B TL082
CR33 5082-2811
C108 .01
R203 10K
VISUAL REFL. CAL. (FP)
C103 .1
U25A LM258D
R153 2.2K
C107 .01
Reflected Pwr V (PG 1)
R154 6.8K
High = .8V
Low = .6V
R155 10K
C109 .1
R156 1K
R157 10K
U25B LM258D
High = OK
Low = FAULT
Reflected Power Shutdown V (PG 2)
R158 1K

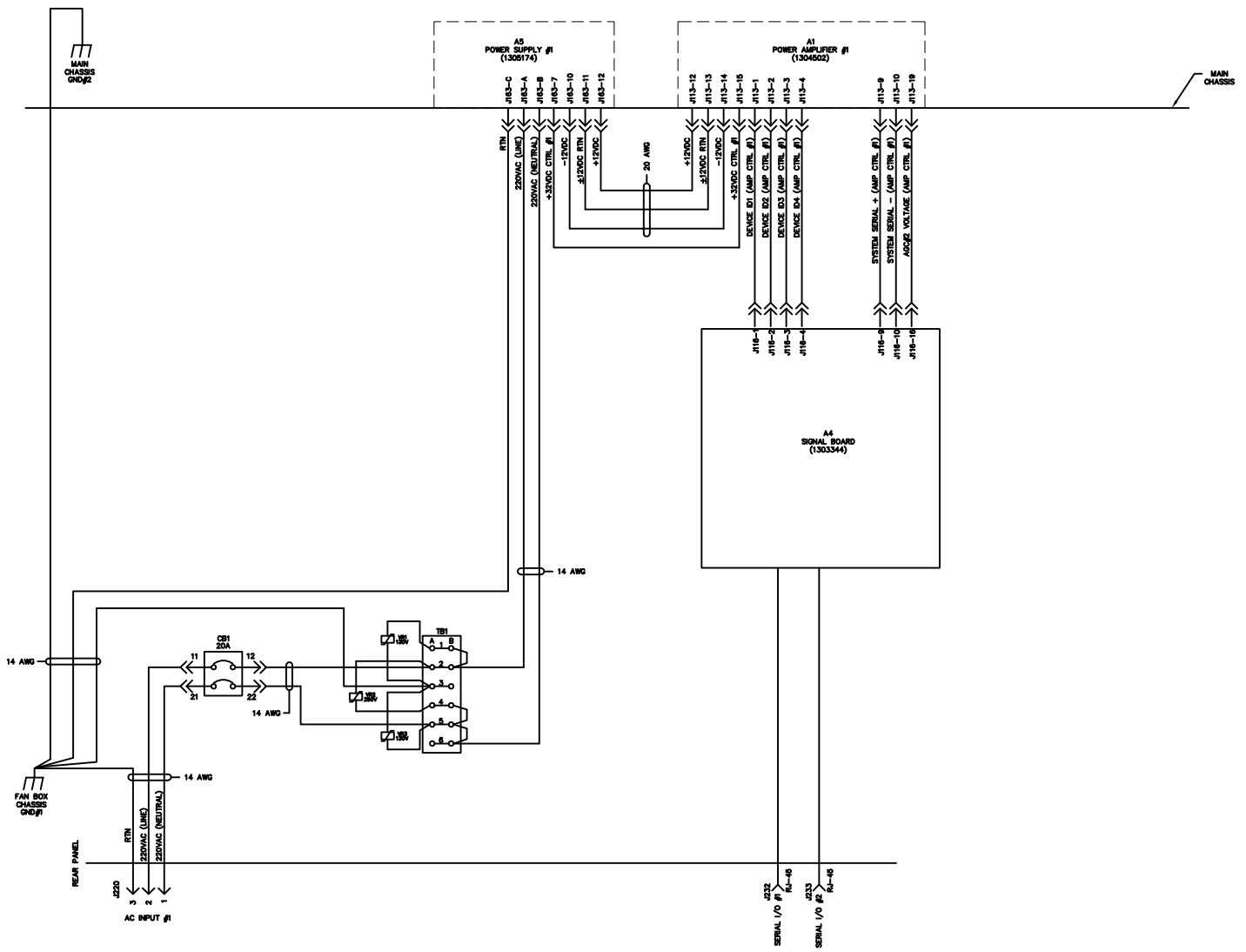
SMA J13 AUR I/P
SMA J14 AURSAMPLE (FP)
R220 150
R224 75
R221 200
R222 200
R223 200
CR36 5082-2811
C120 470pF
C121 470pF
R218 2.2K
TP5 VISUAL METERING (TOP SIDE)
R217 100
U28A TL082
C137 .1
CR38 5082-2811
C124 .01
R204 10K
AURAL CAL. (FP)
C136 .1
U29A LM258D
R219 2.2K
C123 .01
Aural Power (PG 1)
C122 .1
U29B LM258D
CR39 1N5711
CR37 1N5711
CR40 1N5711
C125 .01
C126 .1
C127 100pF
Aural Power Remote (PG 1)
R225 200

SMA J15 AUR REFL. I/P
R230 200
R231 200
R232 200
R233 200
CR41 5082-2811
C129 470pF
C130 470pF
R228 2K 1/16W
TP6 REFLECTED METERING (TOP SIDE)
R226 100
U28B TL082
CR42 5082-2811
C133 .01
R205 10K
AURAL REFL. CAL. (FP)
C128 .1
U30A LM258D
R236 2.2K
C132 .01
Reflected Pwr A (PG 1)
R227 6.8K
High = .8V
Low = .6V
R229 10K
C131 .1
R234 1K
R235 10K
U30B LM258D
High = OK
Low = FAULT
Reflected Power Shutdown A (PG 2)
R237 1K

APV	Axcera	REV	ECO	DATE	APV	
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION	TITLE	SCH, AMP. MODULE, CTRL BD (1304774)			
ECO	MATERIAL -----	DWN	REH	9/10/04	DWG. NO. 1304776	REV B0
REV	FINISH -----	CHK	REH	9/21/04		
		REL	REH	9/21/04	D	SCALE - - - SHEET 3 OF 3



APV	Axcera	REV	ECO	DATE	APV	
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 A0
		CHK	TB	10/13/04		
REV	FINISH -----	REL	TB	10/13/04	C SCALE ---	SHEET 1 OF 1



NOTE: ALL WIRES ARE 22AWG UNLESS OTHERWISE NOTED.

REV	ECO	DATE	APV

Axcera.

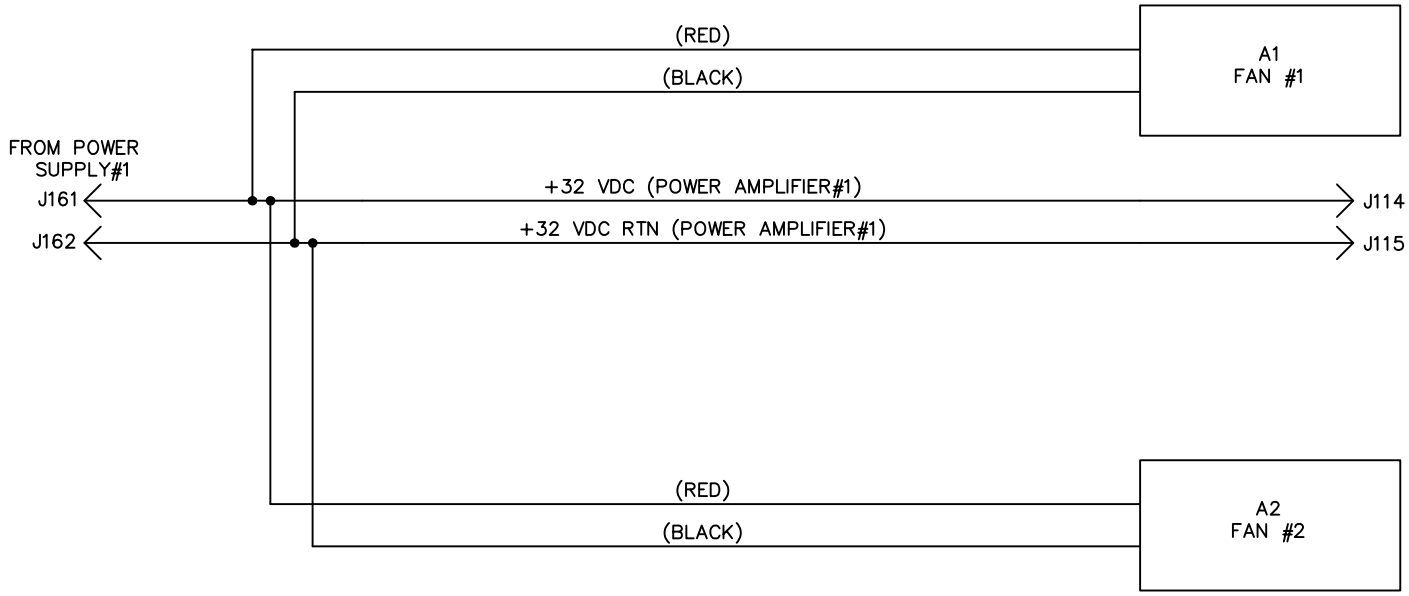
THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION.

MATERIAL: -----

FINISH: -----

TITLE: I/C, AC HARNESS, CHASSIS/AIRBOX, 100ATC, 1.67GHZ

DWN	RT	4/5/05	DWG. NO. 1305882 REV A0
CHK	JCM	4/6/05	
REL	JCM	4/6/05	D SCALE 1=1 SHEET 1 OF 1



NOTE: ALL WIRES ARE 10 AWG UNLESS OTHERWISE NOTED.

REV	ECO	DATE	APV

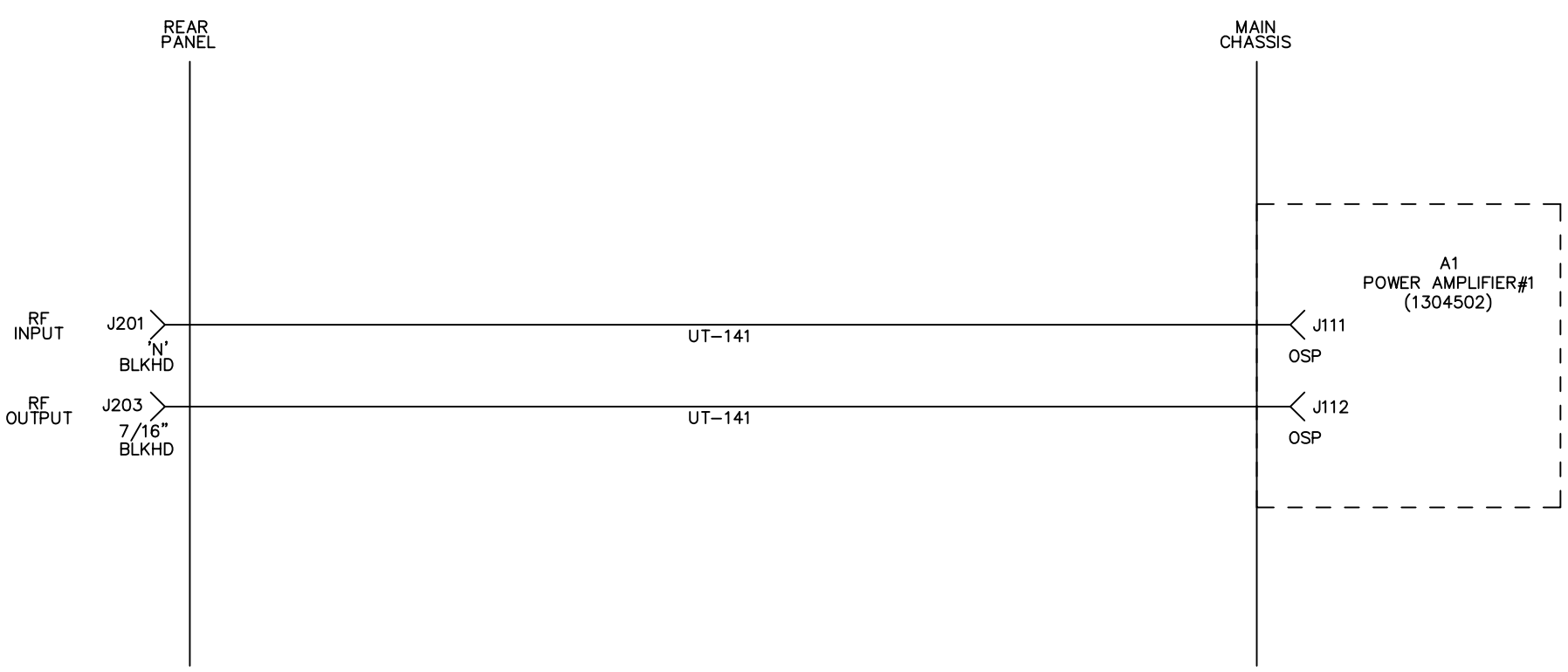
Axcera®

MATERIAL: -----

FINISH: -----

TITLE: I/C, DC HARNESS, CHASSIS/AIRBOX, 100ATC, 1.67GHZ

DWN	RT	4/5/05	DWG. NO. 1305885	REV	A0
CHK	JCM	4/6/05			
REL	JCM	4/6/05	B	SCALE ---	SHEET 1 OF 1



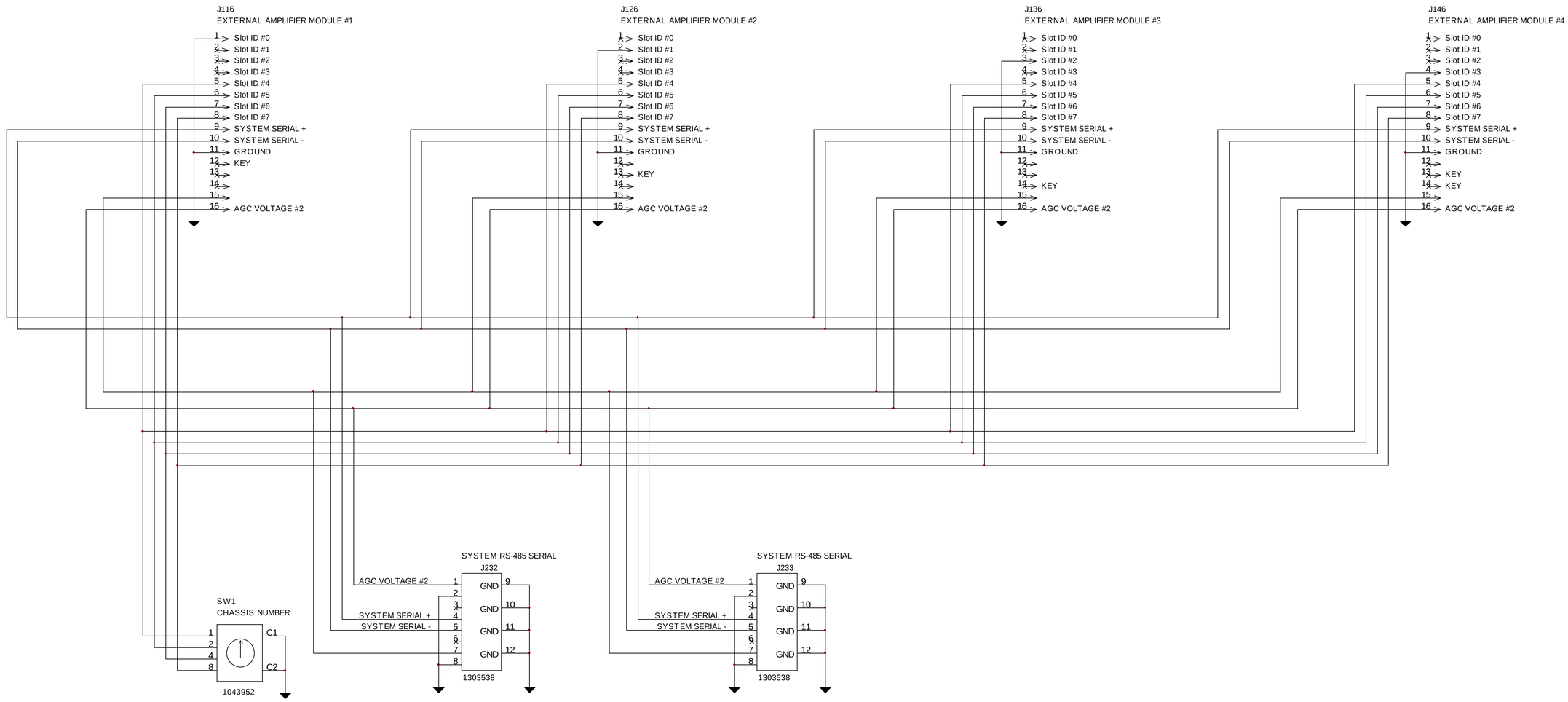
REV	ECO	DATE	APV

MATERIAL — — — —

FINISH — — — —

TITLE I/C, COAX CABLE ASSY, CHASSIS/ AIRBOX, 100ATC, 1.67GHZ

DWN	RT	4/5/05	DWG. NO. 1305883	REV A0
CHK	JCM	4/6/05		
REL	JCM	4/6/05	B SCALE — — —	SHEET 1 OF 1



Circuit Description:

Each power amplifier module plugs into an associated 16 position header. The serial address of each module is specified by the slod ID lines. A chassis number rotary switch identifies the chassis number to the amplifier modules on the upper 4 bits and the lower four bits are set by position in the chassis.

Two serial I/O ports are used for System RS-485 Serial functionality.

An AGC Voltage #2 signal is carried over the System Serial cable from each of the Power Amplifiers back to the driver Upconverter sled. AGC Voltage #1 is from the driver PA. AGC Voltage #2 is set by the Amplifier modlue with the highest forward power.

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)

REV	ECO	DATE	APV
C0	20111596	2/15/05	JCM
CONNECT J116-15, J126-15, J136-15, J146-15, J232-7 & J233-7. KEY FROM J146-15 TO J146-13 & J146-14. JKF			
C0	20111596	2/15/05	JCM
J232 & J233 WERE RJ45-6L2-B. JKF			
B0	20111105	11/13/03	REH

Axcera

MATERIAL
- - - - -

FINISH
- - - - -

TITLE SCH, PIONEER EX AMP, SGNL (1303344)

DWN	REH	9/24/03	DWG. NO. 1303346	REV C0
CHK	REH	10/8/03		
REL	REH	10/8/03	D SCALE - - -	SHEET 1 OF 1

REAR PANEL

A2
RF ENCLOSURE

A1
CONTROL ENCLOSURE

J3-1 DEVICE ID1 * J8-1
J3-2 DEVICE ID2 * J8-2
J3-3 DEVICE ID3 * J8-3
J3-4 DEVICE ID4 * J8-4
J3-9 SYSTEM SERIAL + * J7-6
J3-10 SYSTEM SERIAL − * J7-5
J3-12 +12VDC * J7-1
J3-13 +12VDC RTN * J7-8
J3-14 −12VDC * J7-10
J3-15 POWER SUPPLY CNTRL * J8-10
J3-19 AGC#2 VOLTAGE * J8-7

20 AWG

A6
AMP CONTROL BOARD
(1304774)
KEYS: J7-3, J8-5

TB15
TB17 *
TB16 *
12 AWG

1 FL2 2
1 FL3 2

12 AWG
J4 +32VDC (DRIVER/PALLET#1)
+32VDC (PALLET#2)
J5 10 AWG
CHASSIS GND

J7-2

1 FL5 2

+12VDC RTN
20 AWG
+12VDC
CHASSIS GND

J3-1
J3-2

J1 OSP UT-141 J1 GND
A1
PHASE/GAIN BOARD
(1305026)
J2 GND UT-085 SMA J3

J2 OSP UT-141

J4 SMA FRONT PANEL FOWARD SAMPLE

J3 SMA UT-141 J1 RT.A. SMA BLKHD FOWARD POWER SAMPLE UT-141

J5 SMA UT-141 J2 RT.A. SMA BLKHD REFLECTED POWER SAMPLE UT-141

J6-1 * GND
J6-2 * TEMP
20 AWG
A7
TEMP SENSOR
TAB
SEE DETAIL "A"
CHASSIS GND

TB20
TB19
TB18
1 2 FL7
1 2 FL6
1 2 FL2
1 2 FL1
1 2 FL3
14 AWG
16 AWG

J5
J4 GND
A2
SINGLE STAGE AMPLIFIER
(1304616)
UT-085

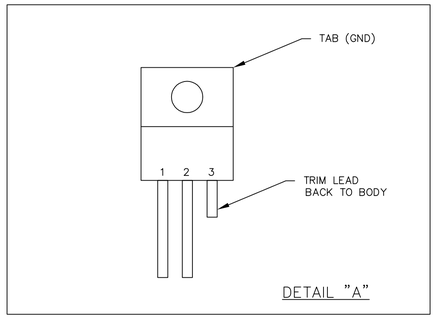
A3
AMPLIFIER ENCLOSURE

UT-141
UT-141
SMA RT. A. J32
SMA RT. A. J34

J19
J26
J13
J16
A3
QUAD STAGE AMPLIFIER
(1304607)
J3 GND

J33 SMA
J31 SMA
UT-085
UT-141
SMA 3

SMA 2
A4
CIRCULATOR
1.65-1.7 GHz
(304892)
1 SMA



NOTES: 1) ALL WIRES ARE 22AWG UNLESS OTHERWISE NOTED.
2) * INDICATES WIRE IS ROUTED UNDERNEATH HEATSINK.

REV	ECO	DATE	APV

Axcera

MATERIAL

FINISH

TITLE
I/C
POWER AMPLIFIER ASSY,
100W, 1.67 GHz

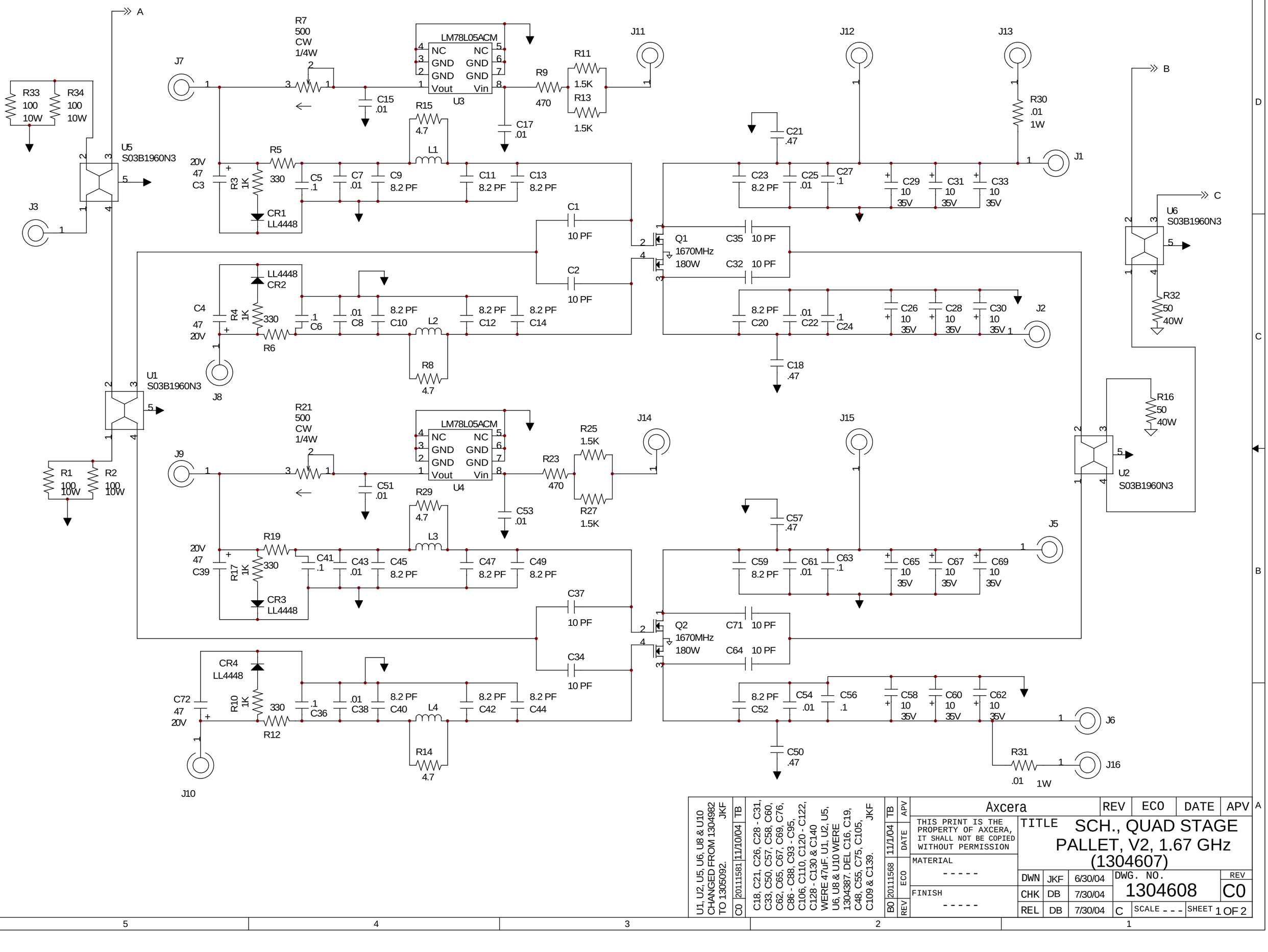
DWN	RGE	11/29/04	DWG. NO.		REV
CHK	TB	04/12/05	1305145		A0
REL	TB	04/12/05	D	SCALE 1=1	SHEET 1 OF 1

LAST USED REF

J34
C140
L8
R62
CR8
U10
Q4

R36 500 CW 1/4W
LM78L05ACM
NC NC GND GND GND GND Vout Vin
U7
J17
J18
J19
J20
R35 1.5K
R37 470
R39 1.5K
C73 .01
C74 .01
R40 4.7
L5
R38 .01 1W
J21
R41
20V 47 C77
R42 1K
330
CR5 LL4448
C85 .1
C78 .01
C79 8.2 PF
C80 8.2 PF
C81 8.2 PF
C76 .47
C82 8.2 PF
C83 .01
C84 .1
C86 10 35V
C87 10 35V
C88 10 35V
C89 10 PF
C92 10 PF
Q3 1670MHz 180W
C90 10 PF
C91 10 PF
LL4448 CR6
C96 47 20V
R43 1K
330
R44
C97 .1
C98 .01
C99 8.2 PF
L6
C100 8.2 PF
C101 8.2 PF
R46 4.7
J23
J22
C102 8.2 PF
C103 .01
C104 .1
C93 10 35V
C94 10 35V
C95 10 35V
C106 .47
A
U8 S03B1960N3
R49 100 10W
R50 100 10W
R48 500 CW 1/4W
LM78L05ACM
U9
J24
J25
J27
R47 1.5K
R51 470
R52 1.5K
C107 .01
C108 .01
R54 4.7
L7
R45 50 40W
U10 S03B1960N3
B
C110 .47
J28
R55
20V 47 C111
R56 1K
330
CR7 LL4448
C112 .1
C113 .01
C114 8.2 PF
C115 8.2 PF
C116 8.2 PF
C123 10 PF
C126 10 PF
Q4 1670MHz 180W
C124 10 PF
C125 10 PF
C117 8.2 PF
C118 .01
C119 .1
C120 10 35V
C121 10 35V
C122 10 35V
CR8 LL4448
C131 47 20V
R57 1K
330
R58
C132 .1
C133 .01
C134 8.2 PF
L8
C135 8.2 PF
C136 8.2 PF
R59 4.7
J30
C137 8.2 PF
C138 .01
C127 .1
C128 10 35V
C129 10 35V
C130 10 35V
J29
C140 .47
R53 .01 1W
J26
C
J31
J32
R62
J33
20DB 30W
.40 LONG, 50 MIL SPACING & 68 MIL TRACK WIDTH
R60 100
R61 100
J34

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. 1304608 REV C0
REV	FINISH -----	CHK	DB	7/30/04	
		REL	DB	7/30/04	C SCALE --- SHEET 2 OF 2



U1, U2, U5, U6, U8 & U10 CHANGED FROM 1304982 TO 1305092. JKF	TB	11/1/04	C18, C21, C26, C28 - C31, C33, C50, C57, C58, C60, C62, C65, C67, C69, C76, C86 - C88, C93 - C95, C106, C110, C120 - C122, C128 - C130 & C140 WERE 47uF. U1, U2, U5, U6, U8 & U10 WERE 1304387. DEL C16, C19, C48, C55, C75, C105, C109 & C139. JKF	TB	APV
	C0	20111581		B0	20111568
				REV	ECO

Axcera	REV	ECO	DATE	APV

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MATERIAL: - - - - -

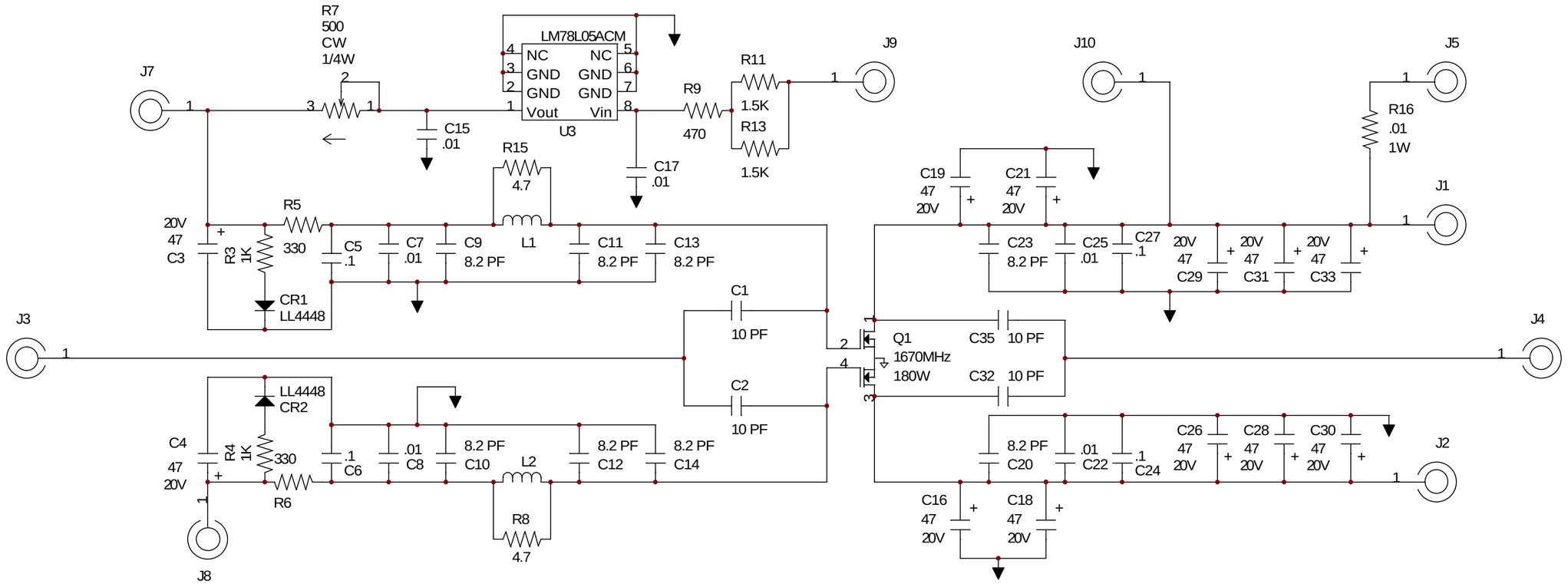
FINISH: - - - - -

TITLE: SCH., QUAD STAGE PALLET, V2, 1.67 GHz (1304607)

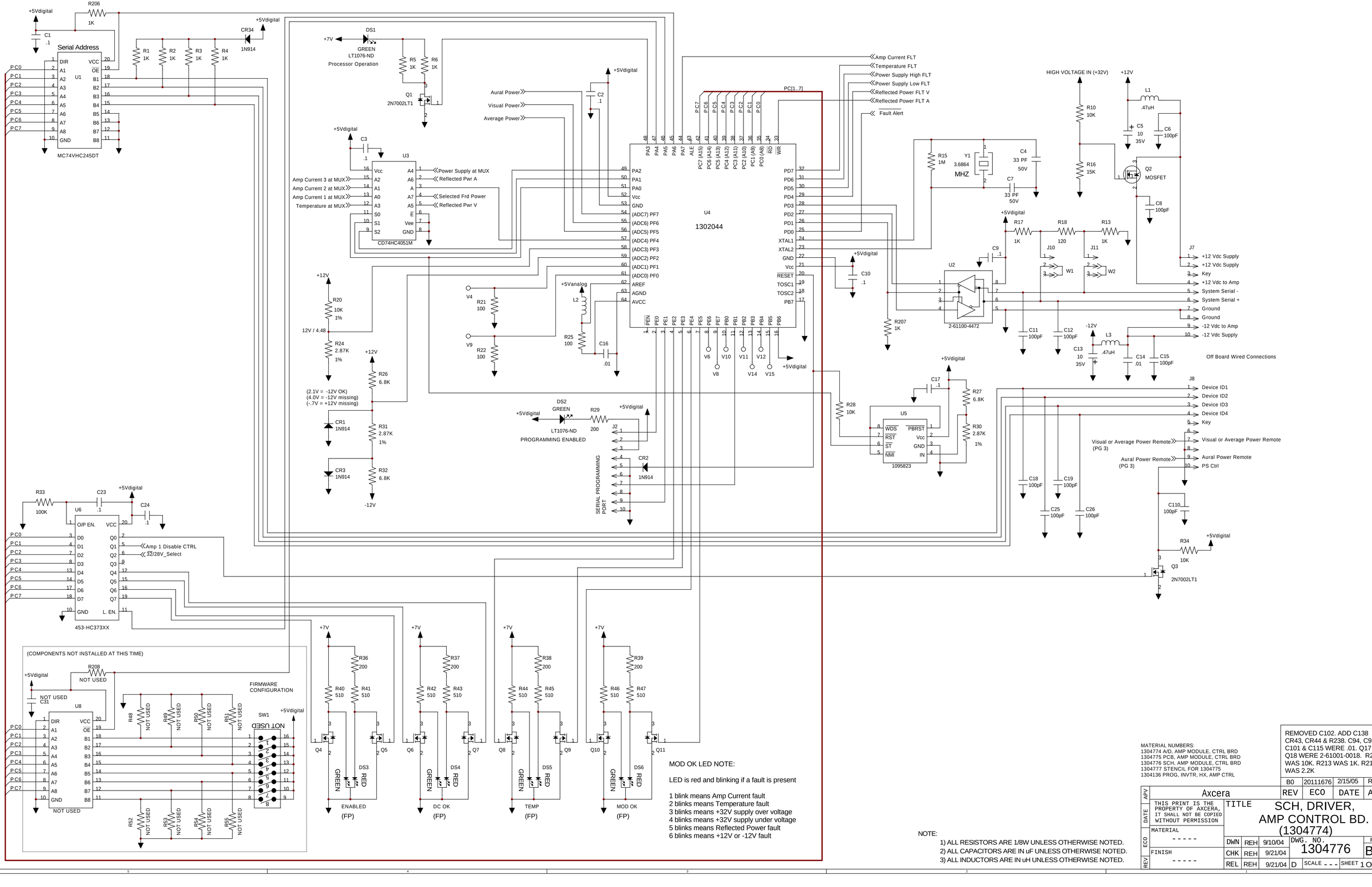
			DWG. NO.	REV
DWN	JKF	6/30/04	1304608	C0
CHK	DB	7/30/04		
REL	DB	7/30/04	C	SCALE - - - SHEET 1 OF 2

LAST USED REF.

C35
L2
J10
CR2
R16
Q1
U3



APV	Axcera	REV	ECO	DATE	APV
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. 1304546		REV A0
REV	FINISH -----	CHK DB 7/20/04			
		REL DB 7/20/04	C	SCALE ---	SHEET 1 OF 1


Serial Address
MC74VHC245DT
U1
U2
U3
U4
U5
U6
U8
1302044
CD74HC4051M
2-61100-4472
1095823
453-HC373XX
Processor Operation
PROGRAMMING ENABLED
SERIAL PROGRAMMING PORT
Off Board Wired Connections
(COMPONENTS NOT INSTALLED AT THIS TIME)
FIRMWARE CONFIGURATION
NOT USED
ENABLED (FP)
DC OK (FP)
TEMP (FP)
MOD OK (FP)
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
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
B0 20111676 2/15/05 REH
Axcera REV ECO DATE APV
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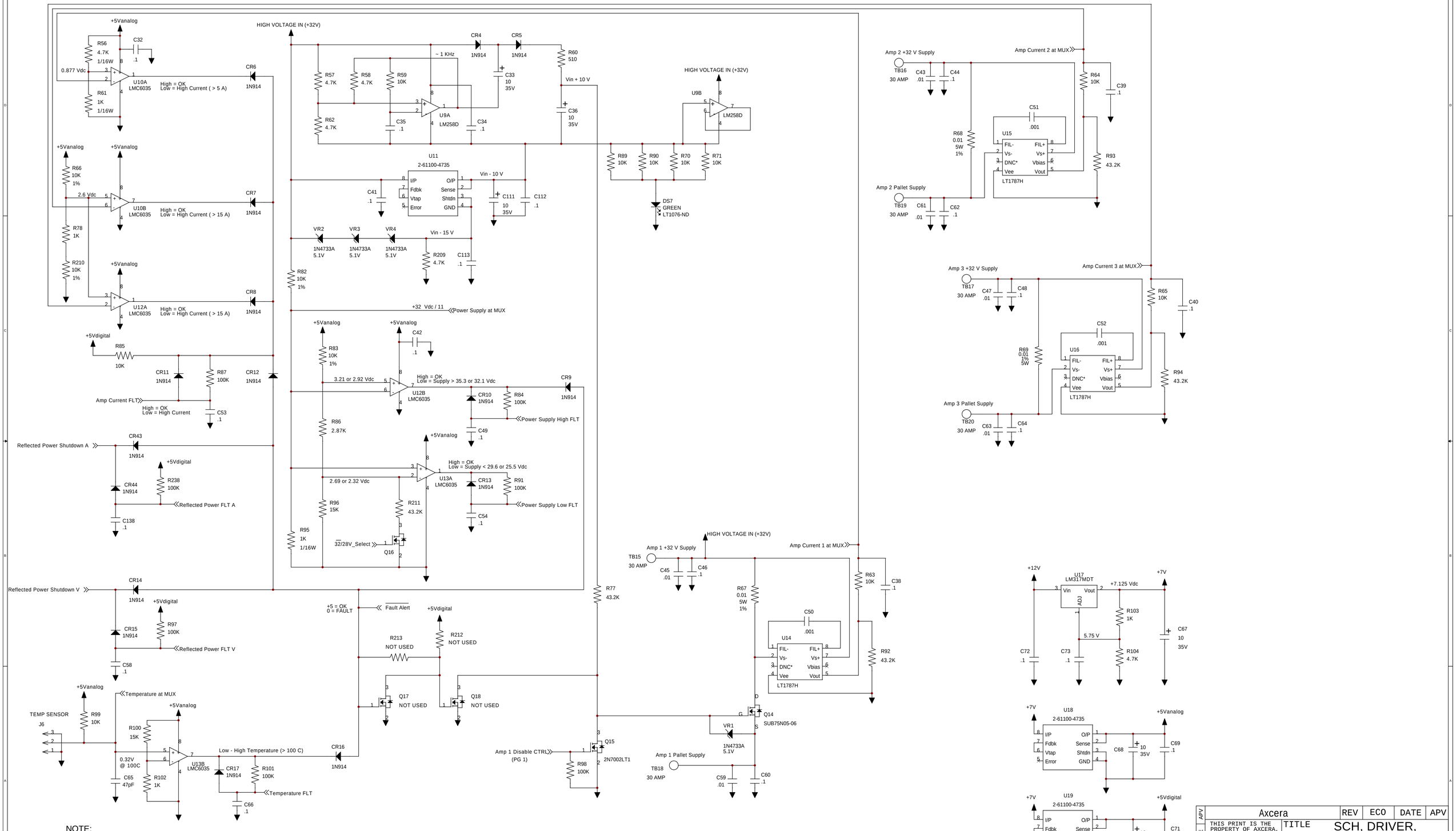
MATERIAL - - - - -
FINISH - - - - -
TITLE SCH, DRIVER, AMP CONTROL BD. (1304774)
DWN REH 9/10/04
CHK REH 9/21/04
REL REH 9/21/04
DWG. NO. 1304776
REV B0
D SCALE - - - SHEET 1 OF 3



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	SCH, DRIVER, AMP CONTROL BD. (1304774)			
ECO	MATERIAL - - - - -	DWN	REH	9/10/04	DWG. NO. 1304776	REV B0
REV	FINISH - - - - -	CHK	REH	9/21/04		
		REL	REH	9/21/04	D	SCALE - - - SHEET 2 OF 3

LAST USED REF

J15
TP6
CR44
R238
U30
C138
W3
VR4
Q18
TB20
DS7
V15
Y1
SW1
L3

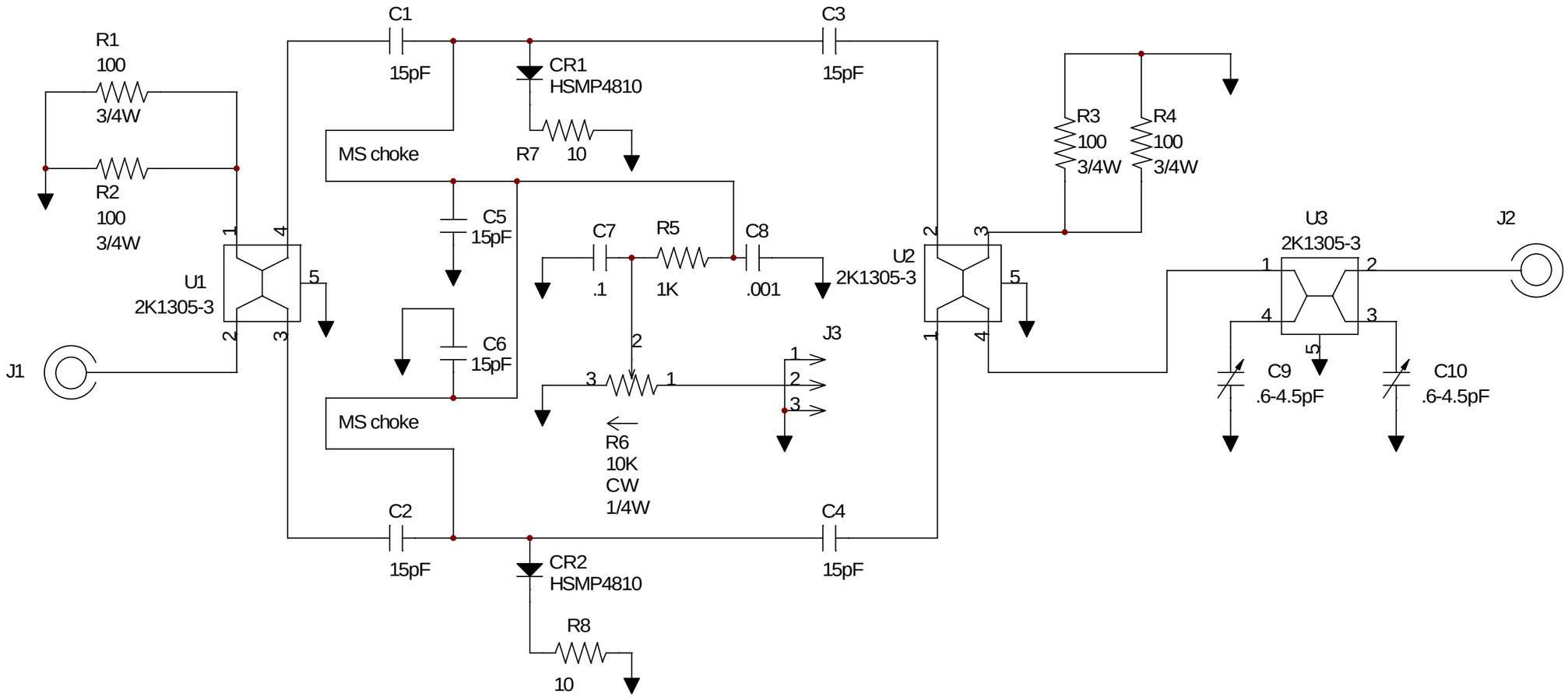
+5Vanalog
C114 100pF
C117 100pF
C115 .1
C116 .01
U26 AD8361ARM (VPOS, IREF, RFIN, PWDN, SREF, VRMS, FLTR, COMM)
R214 75
R216 150
R215 100
R201 10K
AVERAGE CAL. (FP)
C79 .01
U22A LM258D
U22B LM258D
TP3 AVE METERING (TOP SIDE)
R123 100
R126 2.2K
C94 .1
Average Power (PG 1)
R139 2.2K
C98 .1
Selected Frd Power (PG 1)
AGC Select
Ave W3 Peak
J12
SMA J3 DIGITAL/VISUAL I/P
SMA J4 VIS/DIG SAMPLE (FP)
R137 150
R142 75
R133 200
R134 200
CR35 5082-2811
C95 470pF
C96 470pF
+12V
C135 .1
U21A TL082
C134 .1
-12V
CR26 5082-2811
C99 .01
TP2 VISUAL METERING (TOP SIDE)
R127 100
R130 2.2K
R202 10K
CW
VISUAL CAL. (FP)
C76 .1
U27A LM258D
R140 2.2K
C119 .01
Visual Power (PG 1)
U27B LM258D
R151 200
CR29 1N5711
CR28 1N5711
CR30 1N5711
C101 .001
C118 100pF
Visual or Average Power Remote (PG 1)

SMA J5 VIS/DIG REFL. I/P
R146 200
R147 200
R148 200
R149 200
CR31 5082-2811
C104 470pF
C105 470pF
R145 2.2K
TP4 REFLECTED METERING (TOP SIDE)
R143 100
U21B TL082
CR33 5082-2811
C108 .01
R203 10K
VISUAL REFL. CAL. (FP)
C103 .1
U25A LM258D
R153 2.2K
C107 .01
Reflected Pwr V (PG 1)
R154 6.8K
High = .8V
Low = .6V
R155 10K
C109 .1
R156 1K
R157 10K
U25B LM258D
High = OK
Low = FAULT
Reflected Power Shutdown V (PG 2)
R158 1K

SMA J13 AUR I/P
SMA J14 AURSAMPLE (FP)
R220 150
R224 75
R221 200
R222 200
R223 200
CR36 5082-2811
C120 470pF
C121 470pF
R218 2.2K
TP5 VISUAL METERING (TOP SIDE)
R217 100
U28A TL082
C137 .1
CR38 5082-2811
C124 .01
R204 10K
AURAL CAL. (FP)
C136 .1
U29A LM258D
R219 2.2K
C123 .01
Aural Power (PG 1)
C122 .1
U29B LM258D
CR39 1N5711
CR37 1N5711
CR40 1N5711
C125 .01
C126 .1
C127 100pF
Aural Power Remote (PG 1)
R225 200

SMA J15 AUR REFL. I/P
R230 200
R231 200
R232 200
R233 200
CR41 5082-2811
C129 470pF
C130 470pF
R228 2K 1/16W
TP6 REFLECTED METERING (TOP SIDE)
R226 100
U28B TL082
CR42 5082-2811
C133 .01
R205 10K
AURAL REFL. CAL. (FP)
C128 .1
U30A LM258D
R236 2.2K
C132 .01
Reflected Pwr A (PG 1)
R227 6.8K
High = .8V
Low = .6V
R229 10K
C131 .1
R234 1K
R235 10K
U30B LM258D
High = OK
Low = FAULT
Reflected Power Shutdown A (PG 2)
R237 1K

APV	Axcera	REV	ECO	DATE	APV	
DATE	THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION	TITLE	SCH, AMP. MODULE, CTRL BD (1304774)			
ECO	MATERIAL -----	DWN	REH	9/10/04	DWG. NO. 1304776	REV B0
REV	FINISH -----	CHK	REH	9/21/04		
		REL	REH	9/21/04	D	SCALE - - - SHEET 3 OF 3



MOVED J1 FROM U1-1 TO U1-2.
MOVED R1 & R2 FROM U1-2 TO U1-1. JKF

REV	ECO	DATE	APV
B0	20111657	1/25/05	TB

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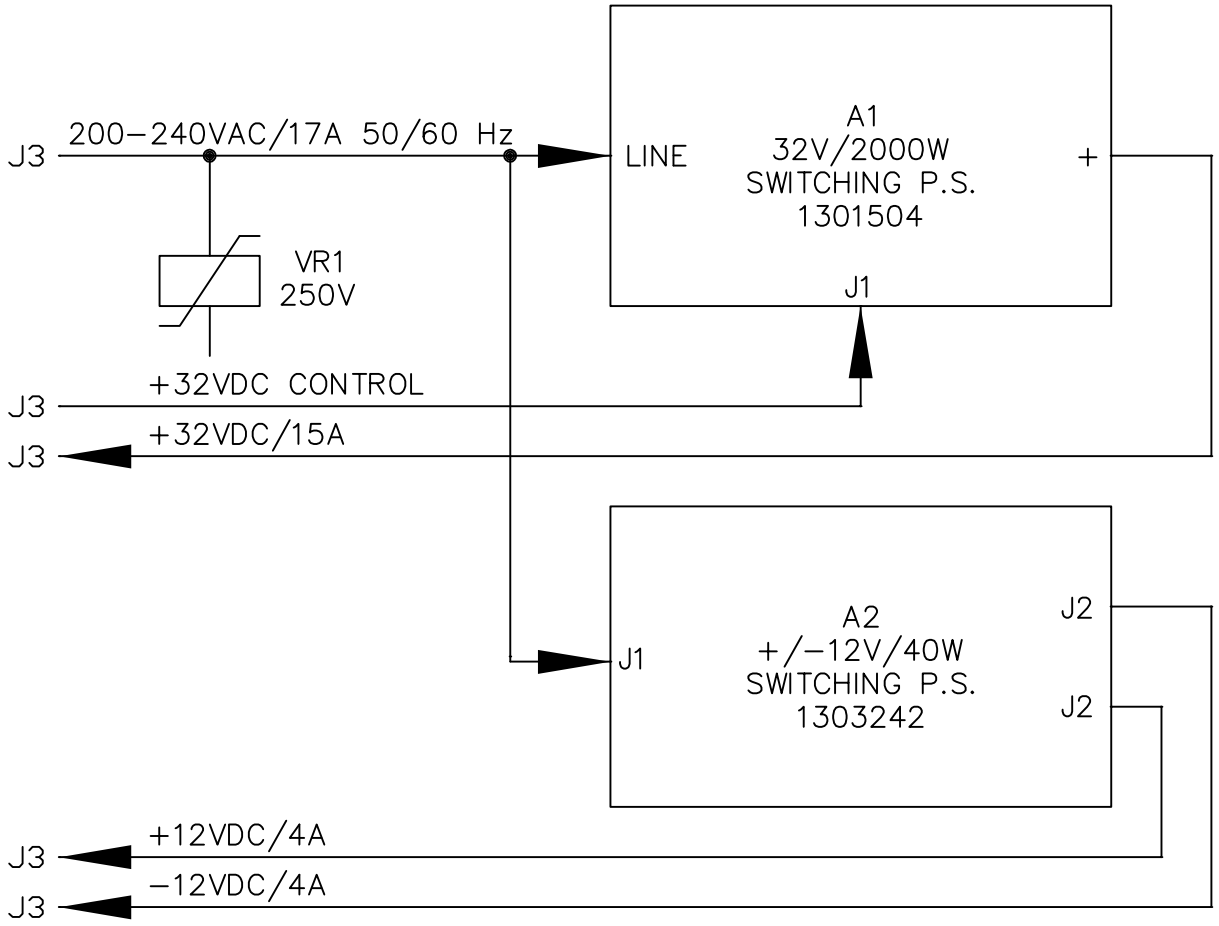
MATERIAL
- - - - -

FINISH
- - - - -

TITLE SCH., PHASE GAIN BD., 1.67GHz (1305026)

			DWG. NO.	REV
DWN	JKF	11/2/04	1305027	B0
CHK	TB	11/4/04		
REL	TB	11/4/04	B	SCALE - - - SHEET 1 OF 1



REV	ECO	DATE	APV

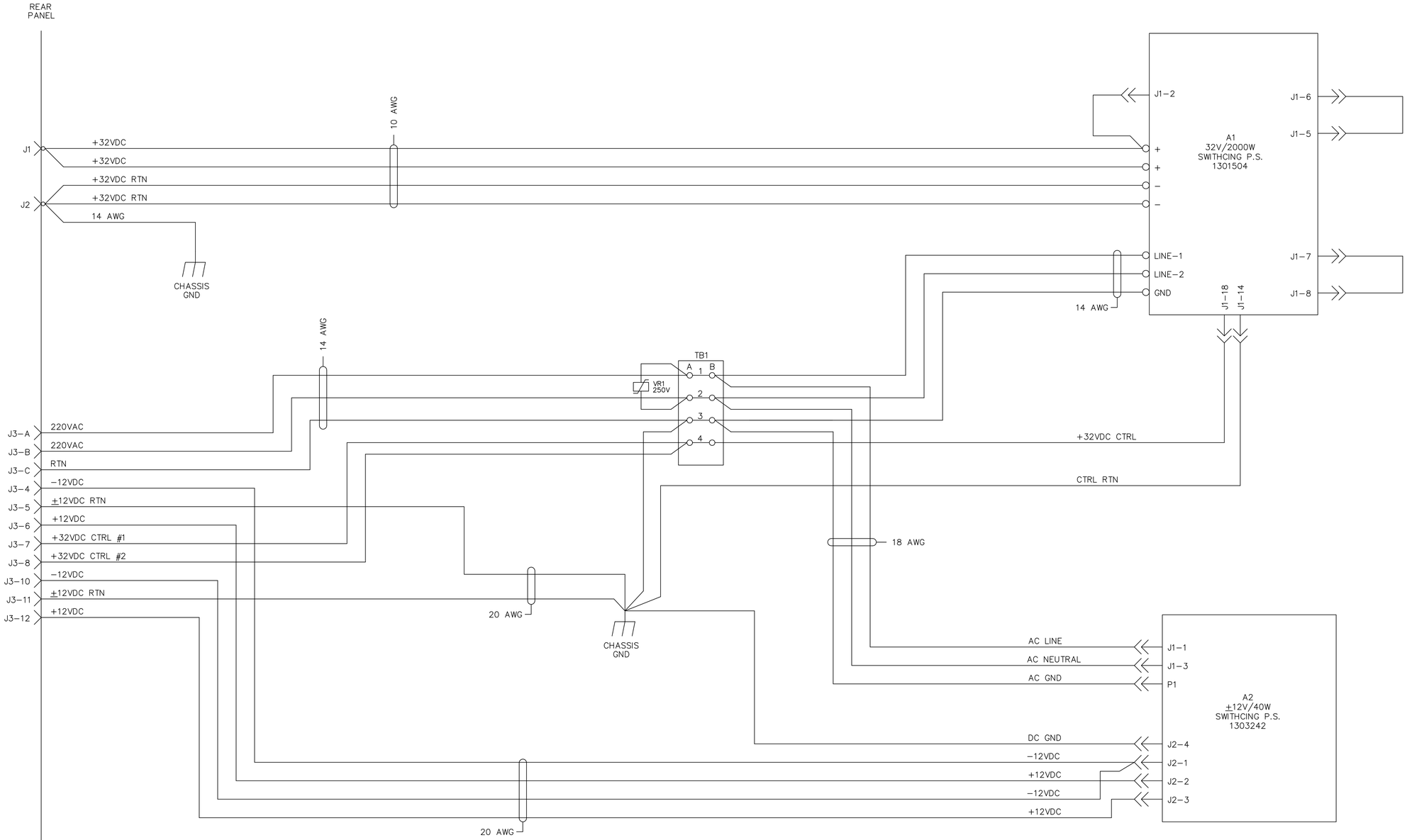
Axcera®

MATERIAL
– – – – –

FINISH
– – – – –

TITLE
B/D,
POWER SUPPLY ASSY,
1KW, INNOVATOR LX

			DWG. NO.	REV
DWN	RGE	1/27/04	1303886	A0
CHK	JCM	1/27/04		
REL	JCM	1/27/04	A SCALE – – –	SHEET 1 OF 1



NOTE: ALL WIRES ARE 22AWG UNLESS OTERHWISE NOTED.

REV	ECO	DATE	APV
BO	20111155	12/8/03	LRT

ADDED GND WIRE AT J2. (RGE)

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MATERIAL

FINISH

TITLE
I/C
POWER SUPPLY ASSY
1KW, INNOVATOR LX

DWN	MH	10/24/03	
CHK	JCM	11/5/03	
REL	JCM	11/5/03	

DWG. NO. 1303479 REV BO

D | SCALE 1=1 | SHEET 1 OF 1