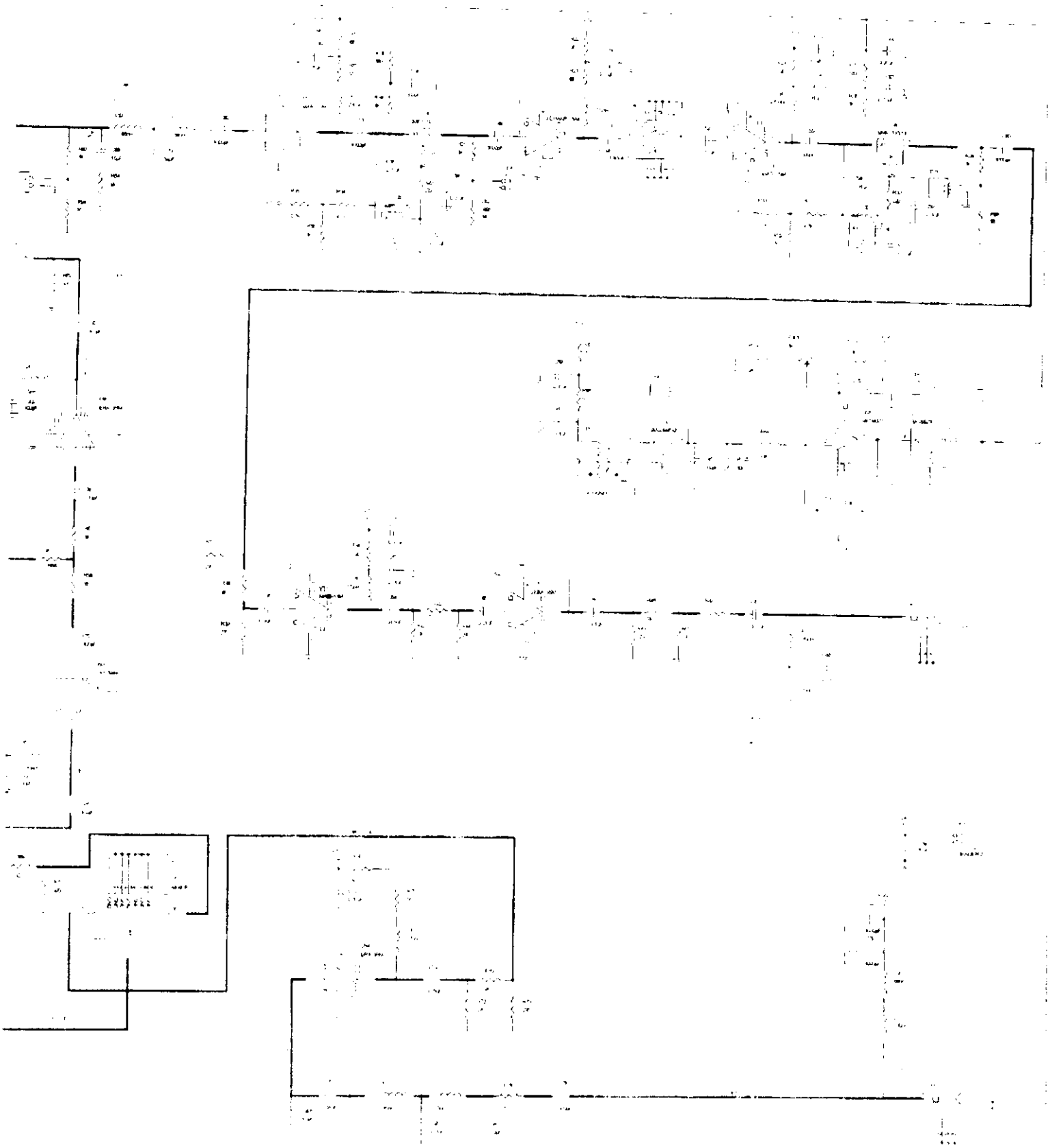
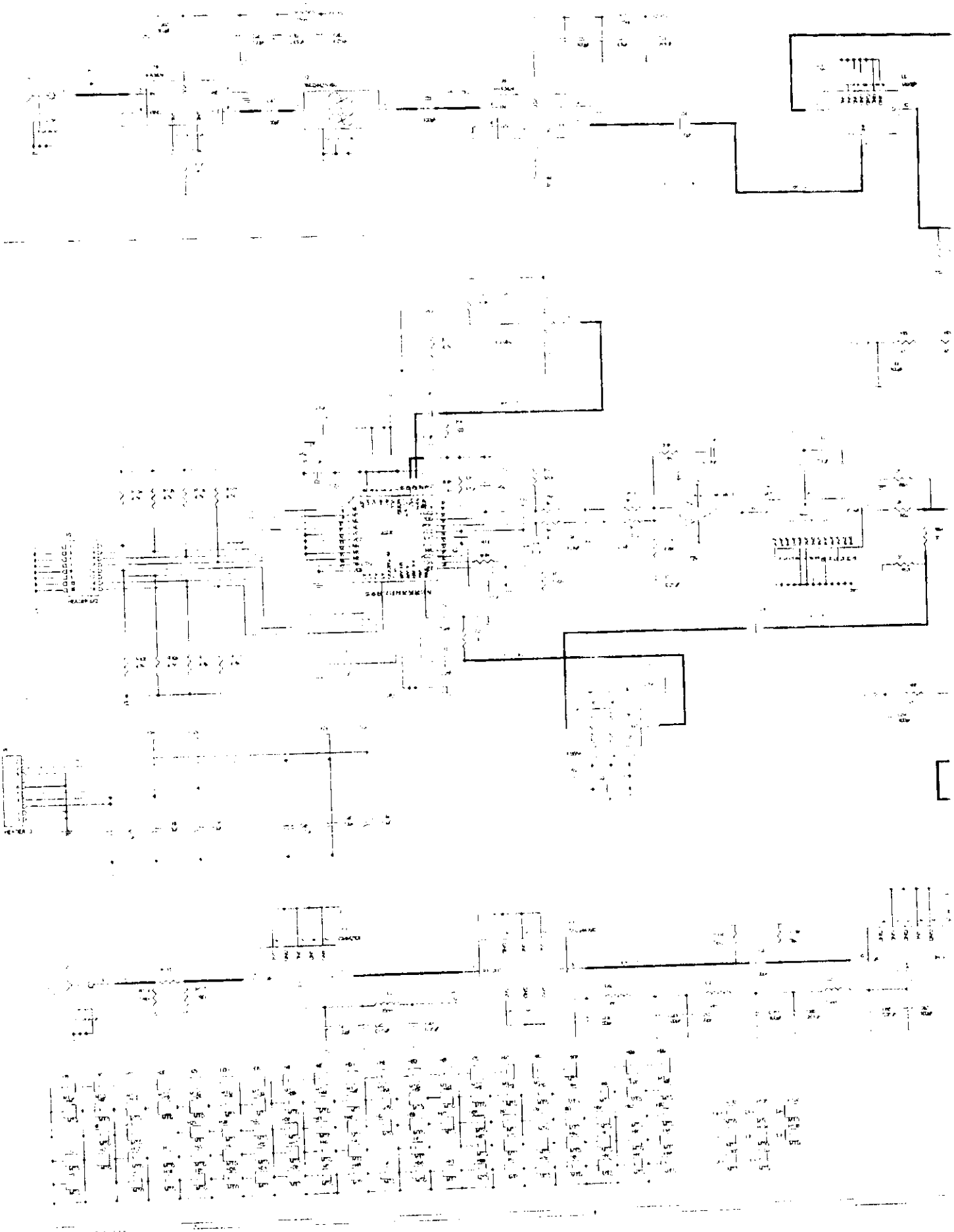
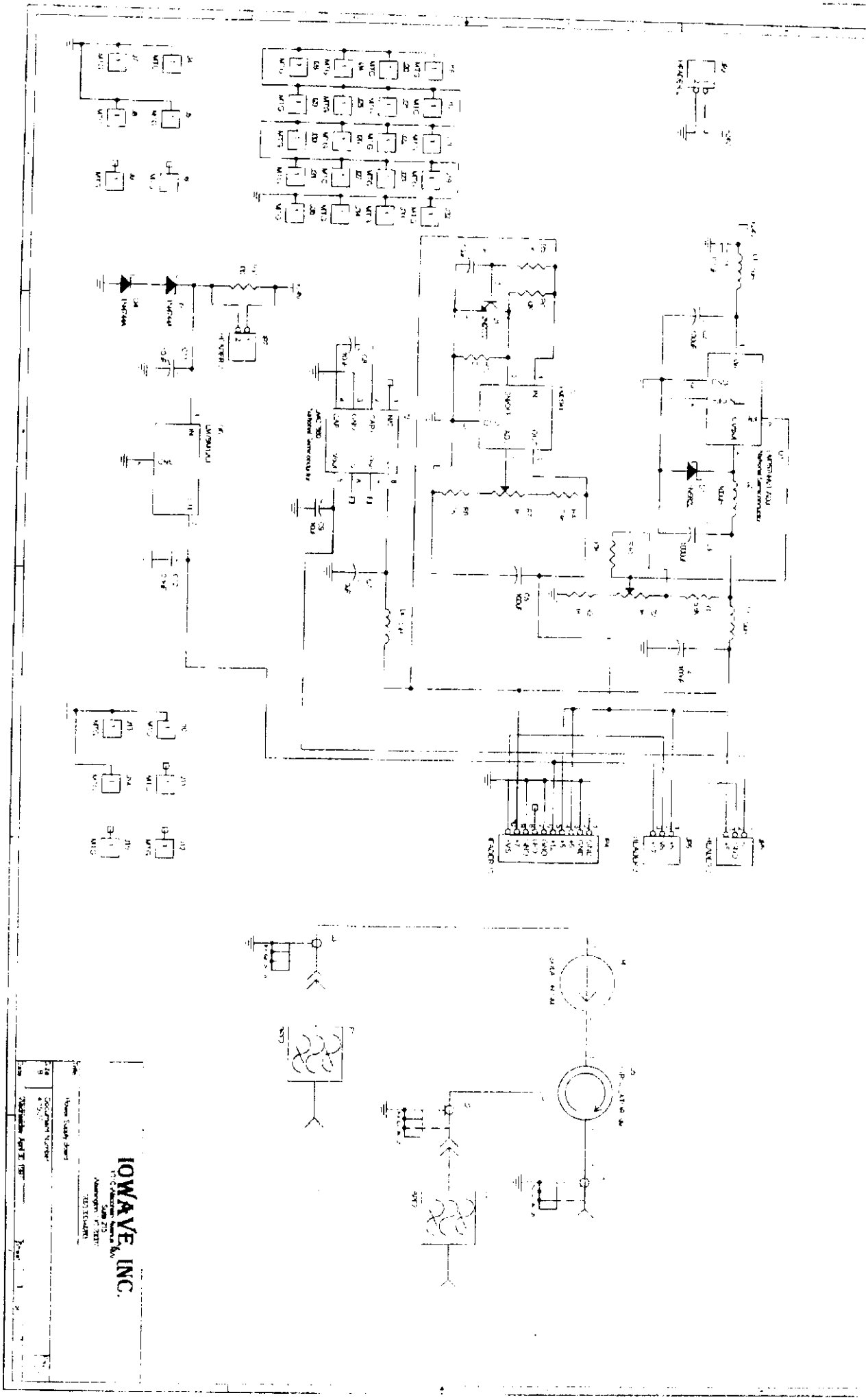
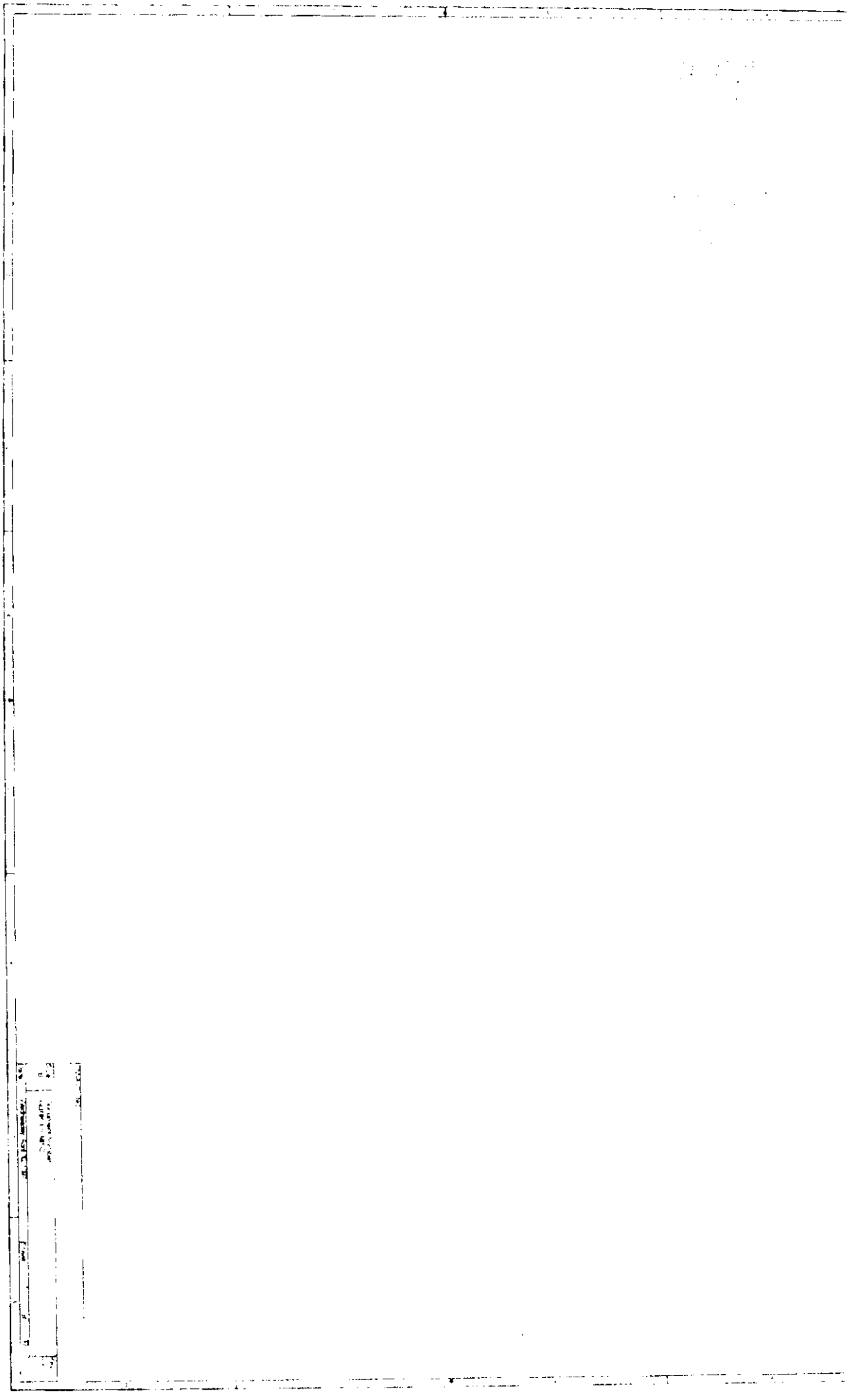


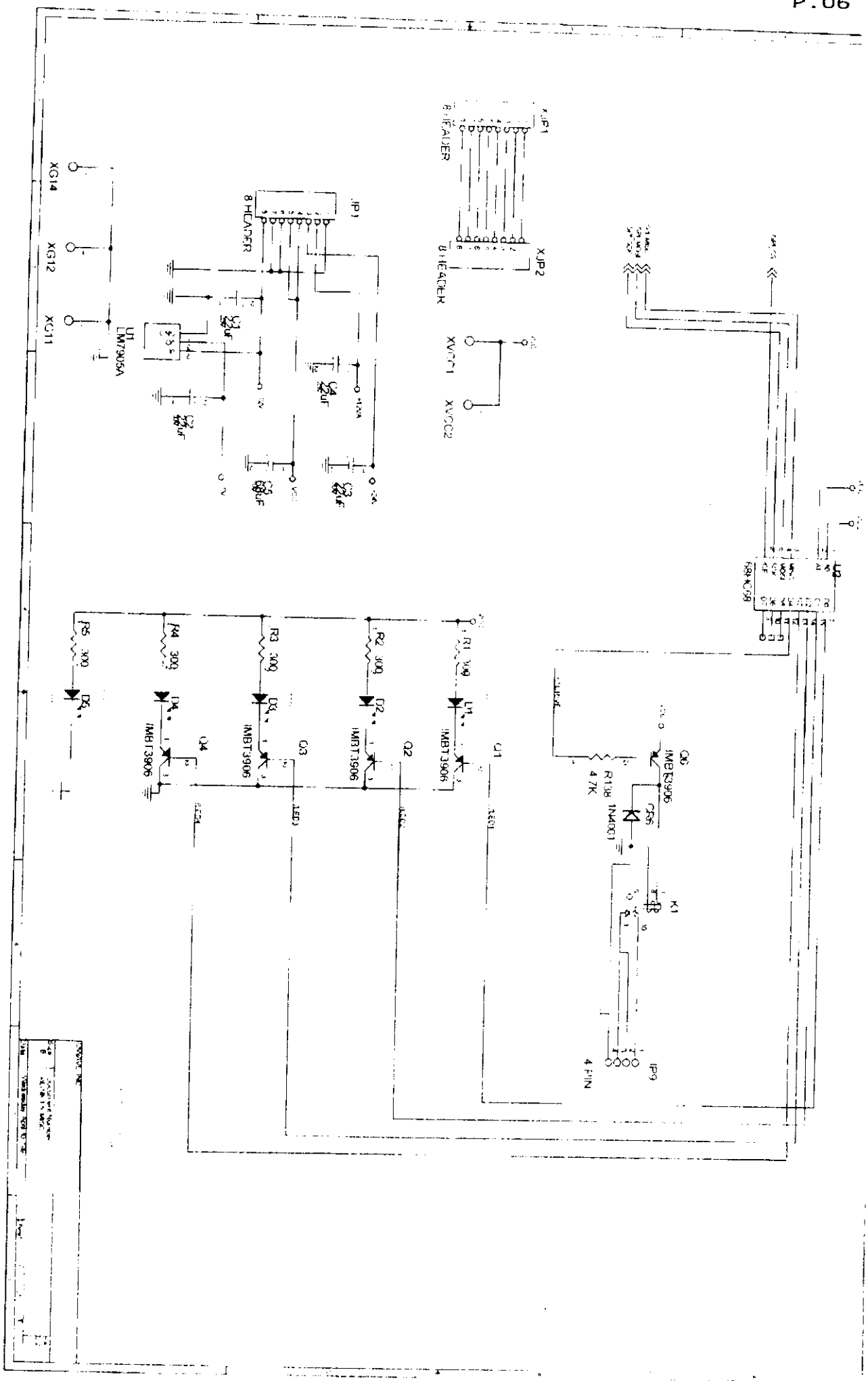
IOWAVE, INC.

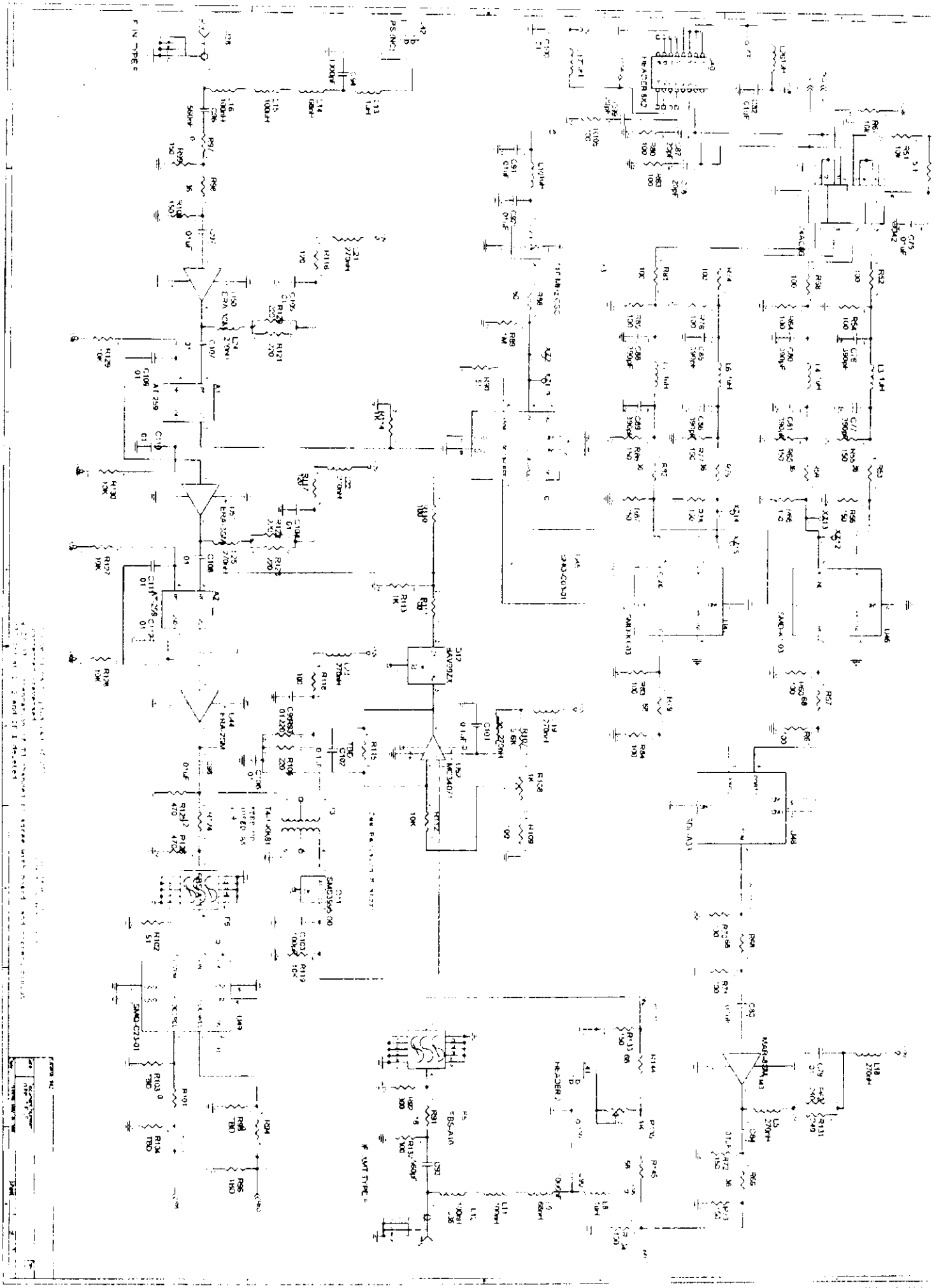


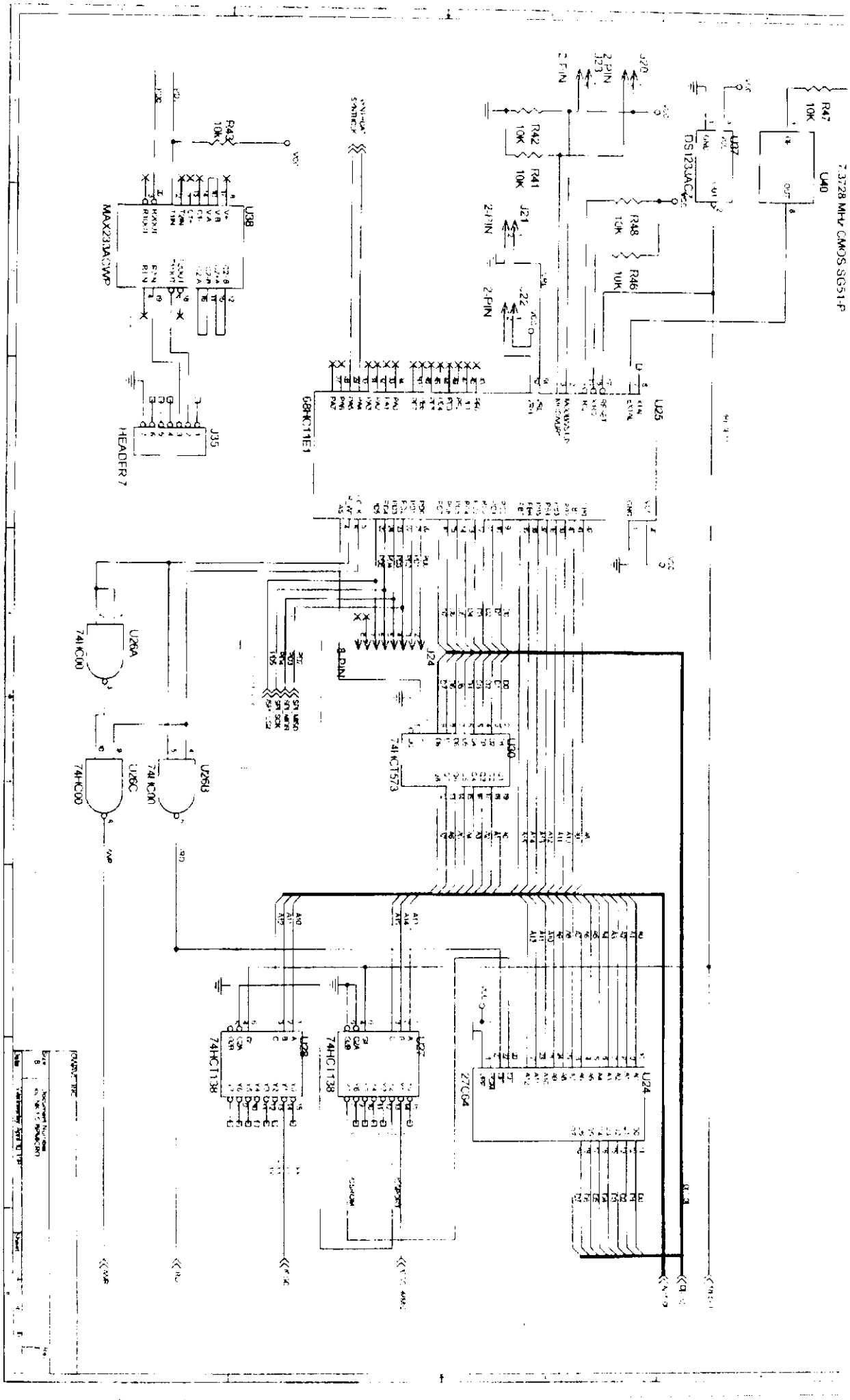


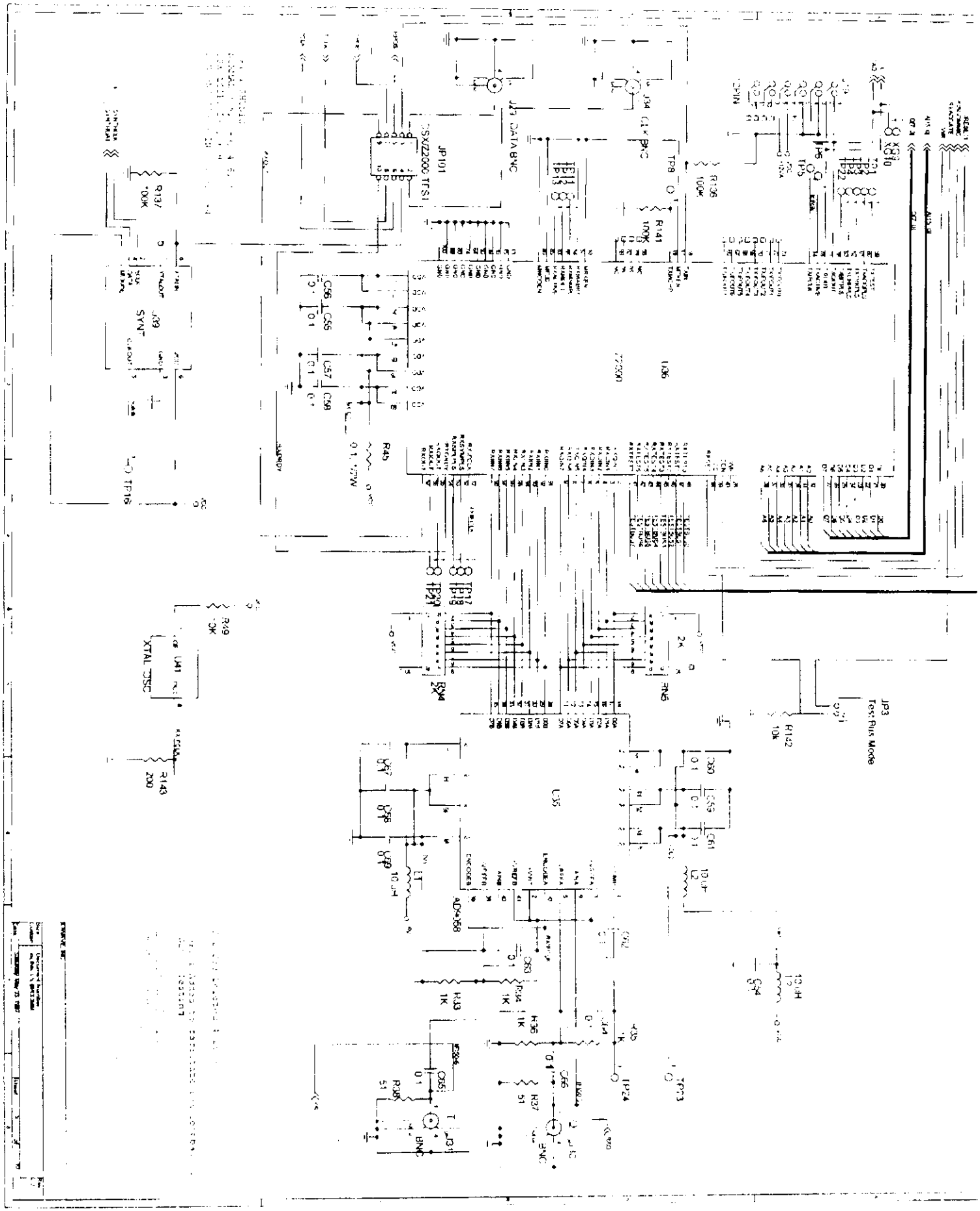
IOWAVE INC.

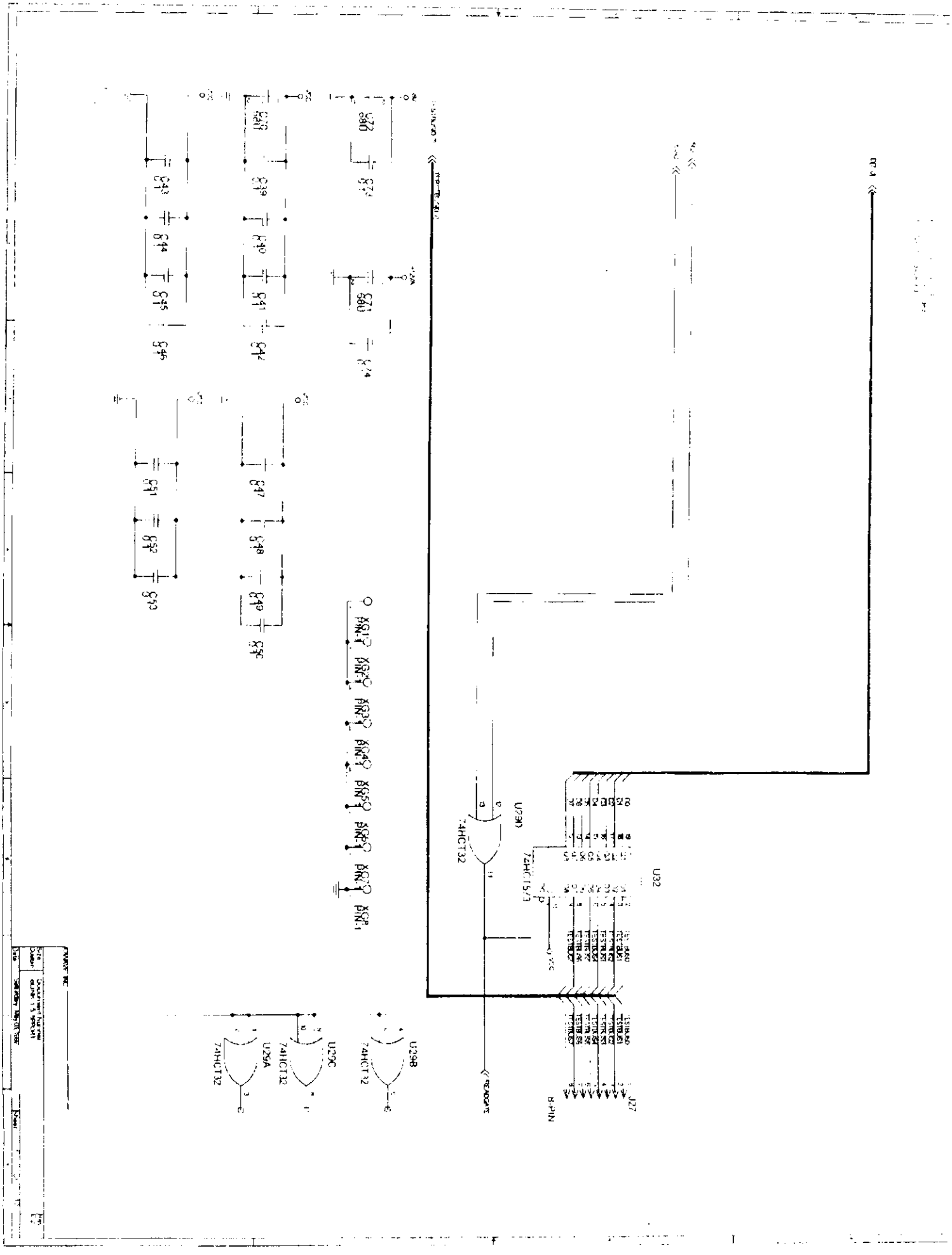


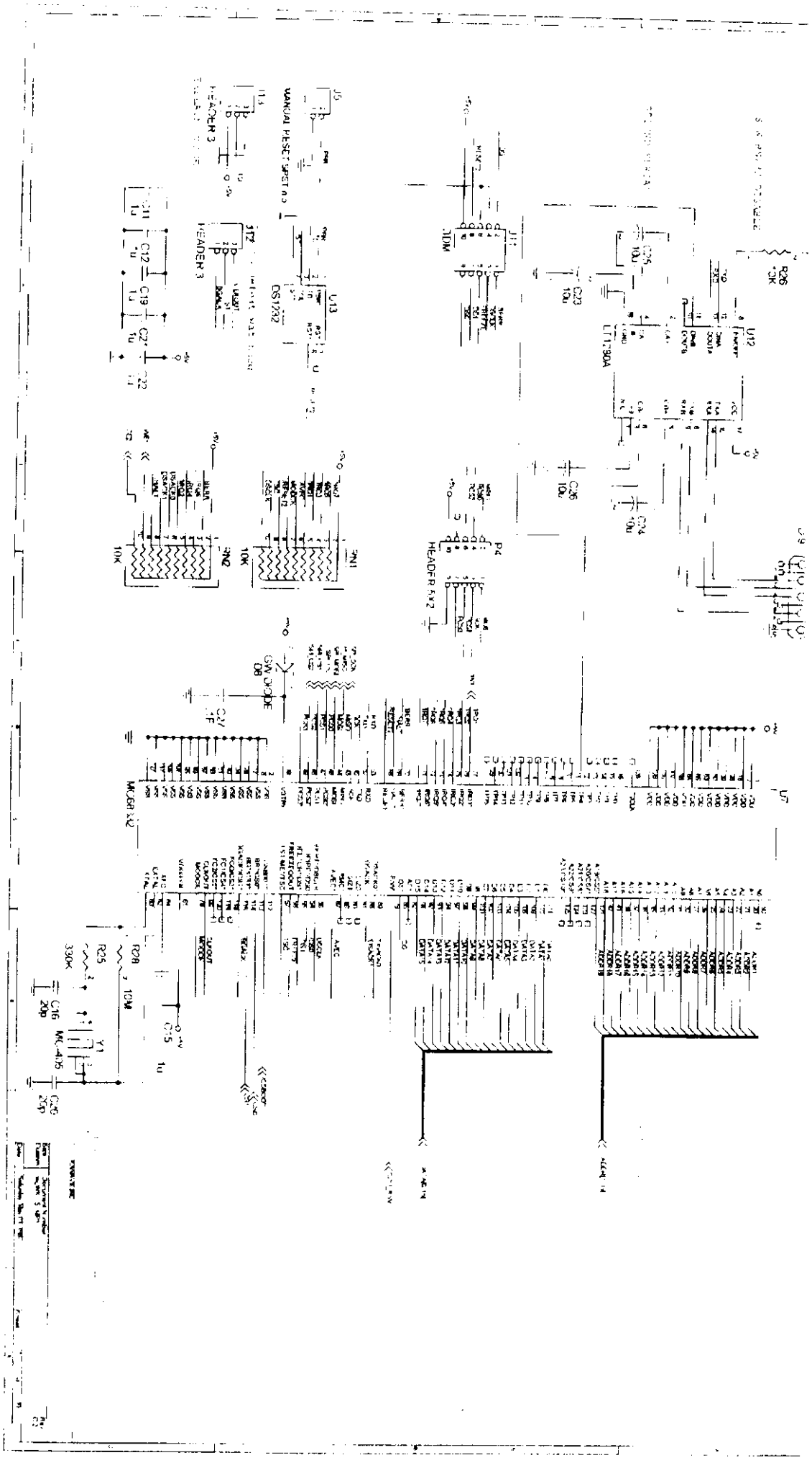

XJP1
8 HEADER
XJP2
8 HEADER
JP1
8 HEADER
XG14
XG12
XG11
U1
LM7905A
XVCC1
XVCC2
R1 300
R2 300
R3 300
R4 300
R5 300
D1
D2
D3
D4
D5
IMBT3906
Q1
Q2
Q3
Q4
Q5
IMBT3906
R13 4.7K
1N4001
K1
JP9
4 PIN

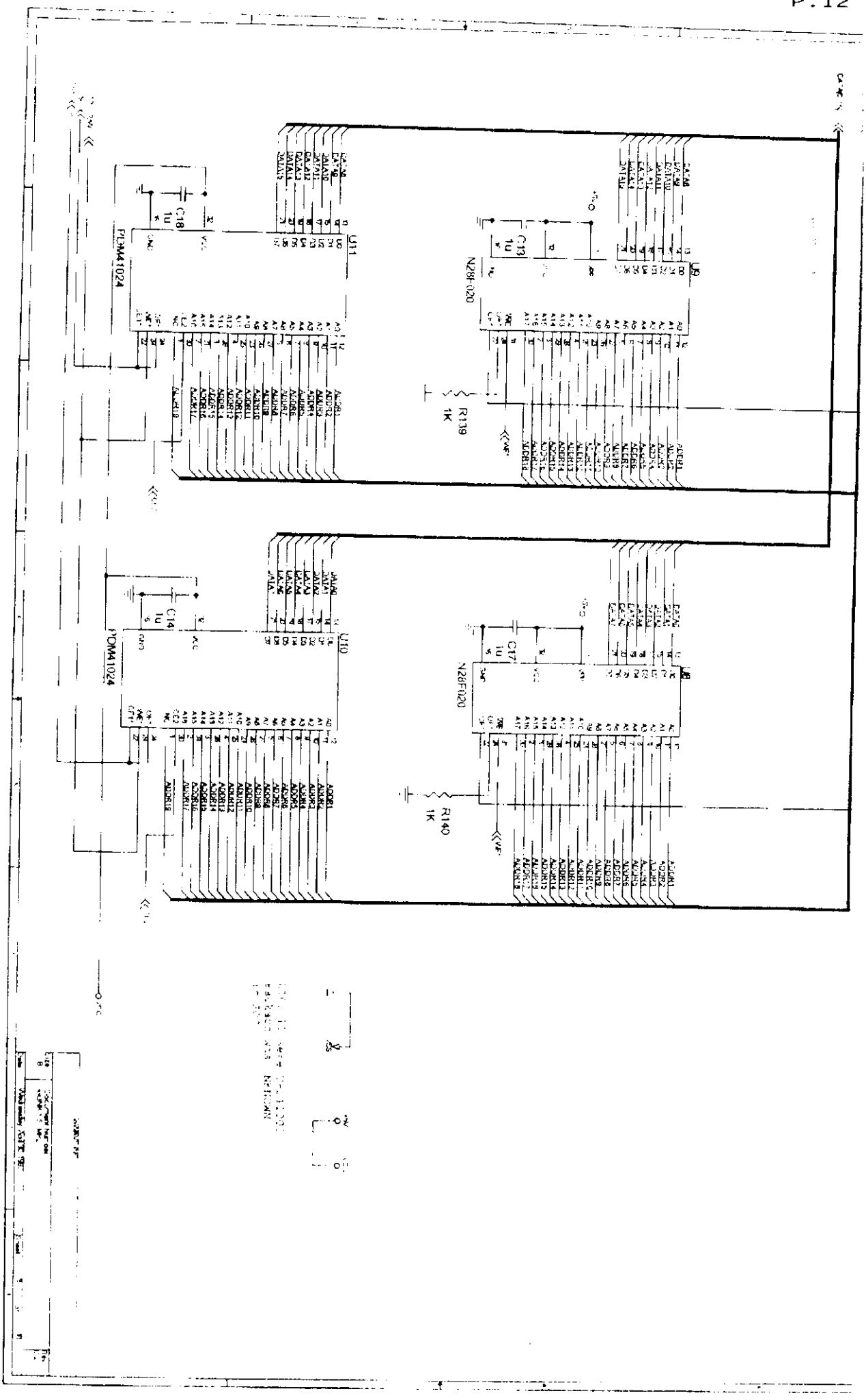


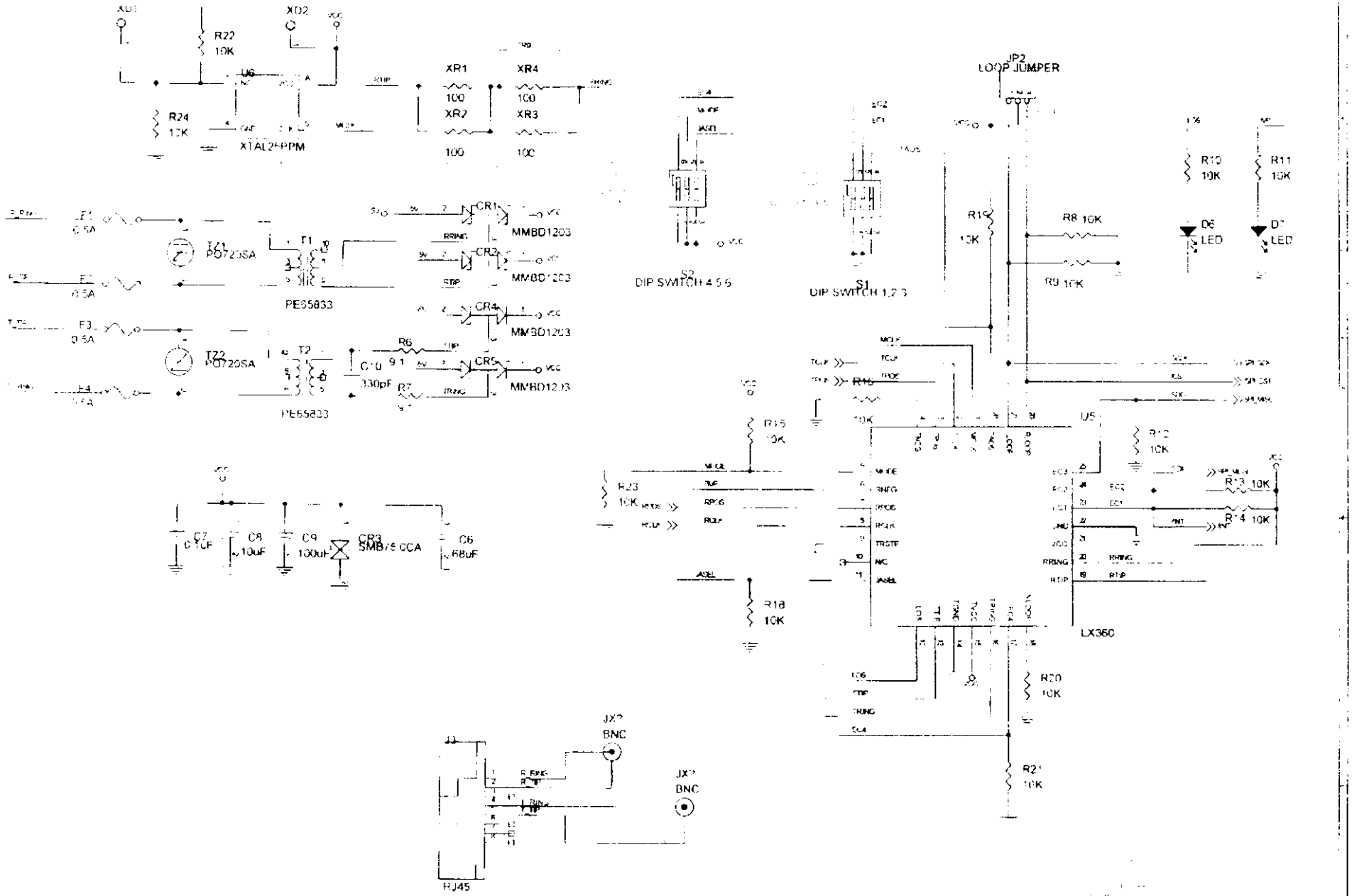

7.3728 MHz CMOS SG51-P
MAX233ACWP
68HC11E1
74HC573
74HC1138
74HC1138
27C64
74HC00
74HC00
74HC00
DS1233AC
HEADER 7
8-PIN
2-PIN
2-PIN
2-PIN
R47 10K
R42 10K
R42 10K
R41 10K
R48 10K
R46 10K

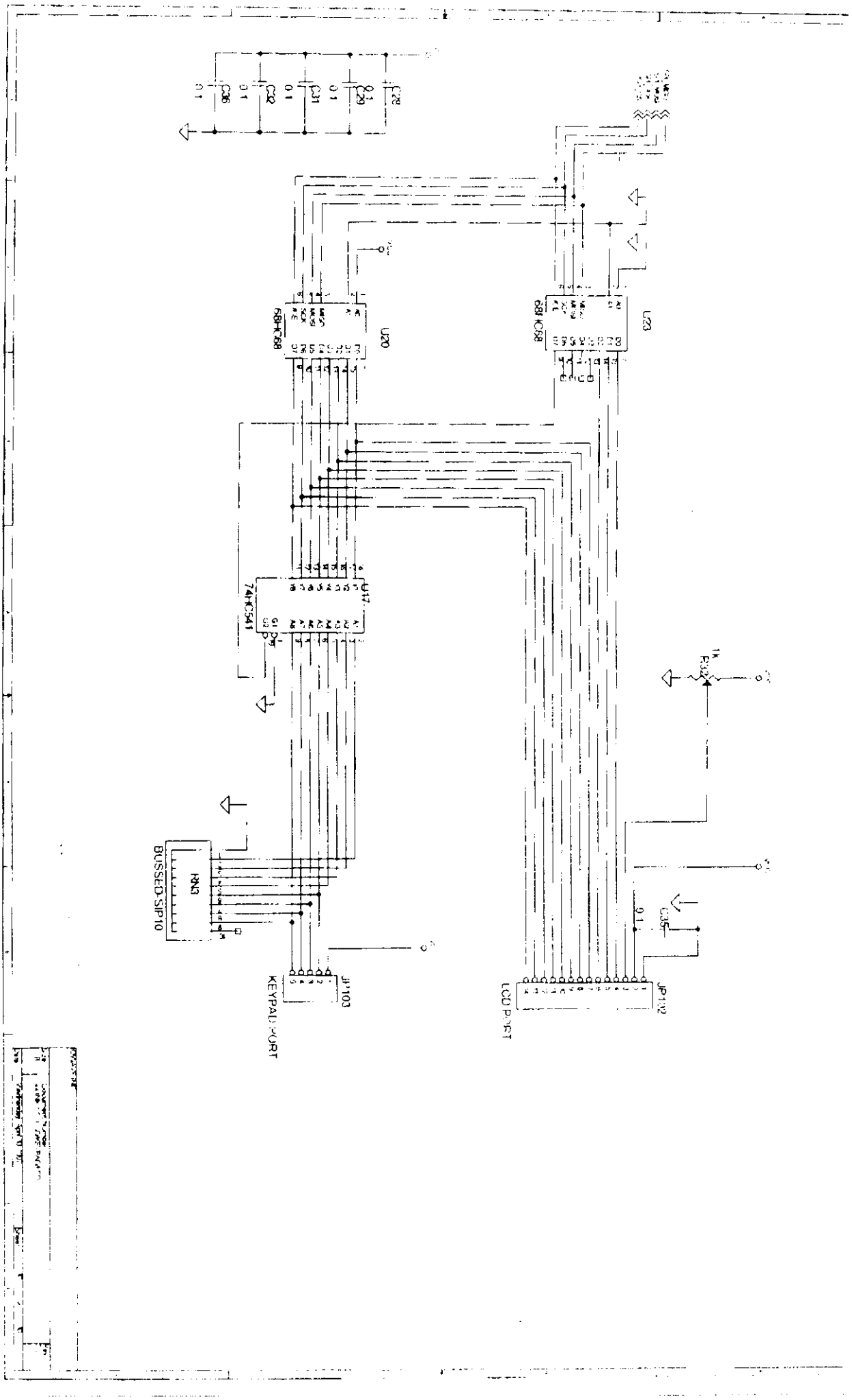



U32
74HCT32
U29A
U29B
U29C
74HCT32
74HCT32
74HCT32
U27


R26 3K
C25 10u
C23 10u
U12
LT1790A
C24 10u
C26 10u
10M
HEADER 2
HEADER 3
MANUAL RESET SPST n.o.
DS1232
U13
10K
RN2
RN1
P4
HEADER 4X2
C27 .1F
DIODE
MR168 X2
R25 330K
R28 10M
C16 20p
C15 1u
Y1
MC-405
C26 20p


U11
PDM41024
C18
1u
U9
N28F020
C13
1u
R139
1K
U10
PDM41024
C14
1u
U8
N28F020
C17
1u
R140
1K

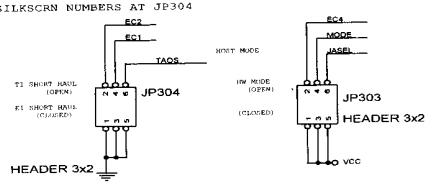

XD1
XD2
R22
10K
U6
R24
10K
XTAL24PPM
XR1
100
XR2
100
XR4
100
XR3
100
JP2
LOOP JUMPER
R10
10K
R11
10K
D6
LED
D7
LED
R15
10K
R8 10K
R9 10K
S2
DIP SWITCH 4,5,6
S1
DIP SWITCH 1,2,3
F1
0.5A
F2
0.5A
F3
0.5A
F4
0.5A
TZ1
P0720SA
TZ2
P0720SA
T1
T2
PE65833
PE65833
CR1
CR2
CR4
CR5
MMBD1203
MMBD1203
MMBD1203
MMBD1203
R6
9.1
R7
9.1
C10
330pF
R16
10K
U5
R15
10K
R23
10K
R18
10K
R12
10K
R13 10K
R14 10K
LX360
R20
10K
R21
10K
C7
0.1UF
C8
10uF
C9
100uF
CR3
SMBJ5.0CA
C6
68uF
J3
RJ45
JX2
BNC
JX3
BNC


C36
0.1
C32
0.1
C31
0.1
C30
0.1
C28
U20
74HC688
U23
74HC688
U17
74HC541
R32
1k
C35
0.1
RN3
BUSSED SIP10
JP103
KEYPAD PORT
JP102
LCD PORT

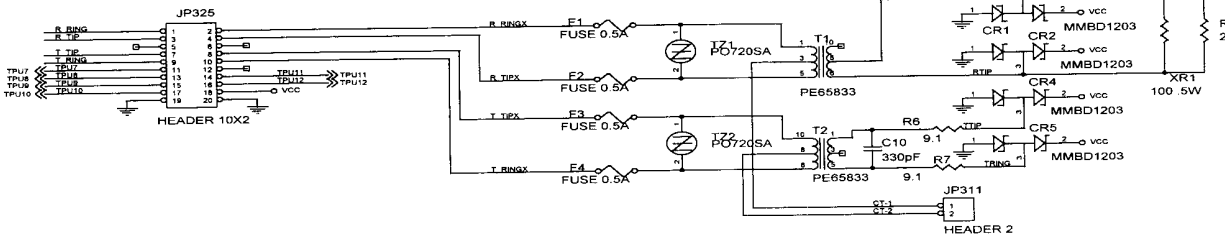
| | JP303 | JP304 |
|---|---|---|
| HARDWARE MODE | PINS 1-2<br>PINS 5-6 | PINS 5-6 |
| SOFTWARE MODE | PINS 1-2<br>PINS 3-4<br>PINS 5-6 | OPEN |

XJP303A SHUNT
XJP303B SHUNT
XJP304A SHUNT

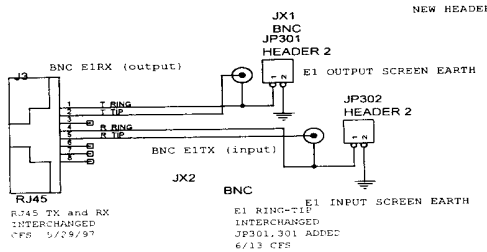
ADD SILKSCRN NUMBERS AT JP304




XJP324 SHUNT
XJP325 SHUNT
XJP326 SHUNT
XJP327 SHUNT



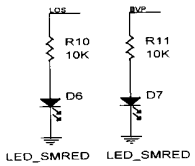

NOTE : NEW CONNECTION
DIODES PIN 1 TO GND

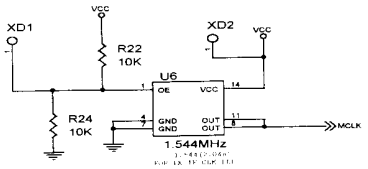


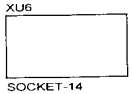

NEW HEADER

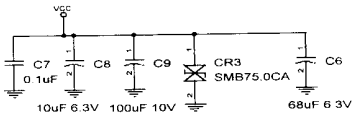
RJ45 TX and RX
INTERCHANGED
CFS 5/29/97

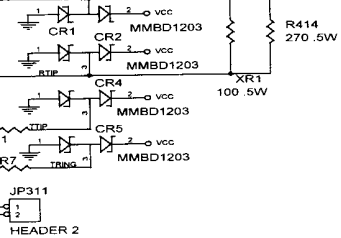
E1 RING-TIP
INTERCHANGED
JP301,301 ADDED
6/13 CFS

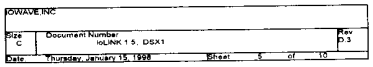


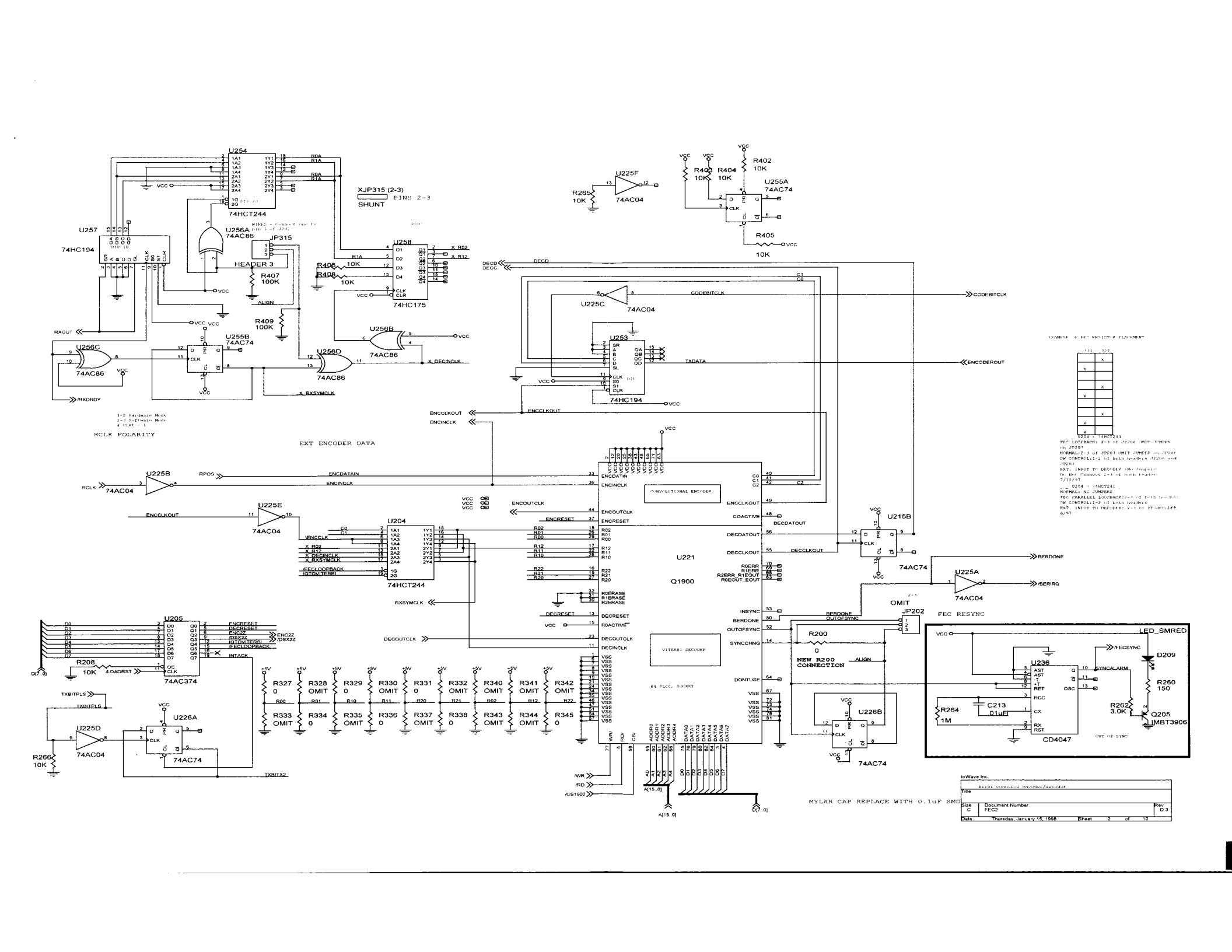



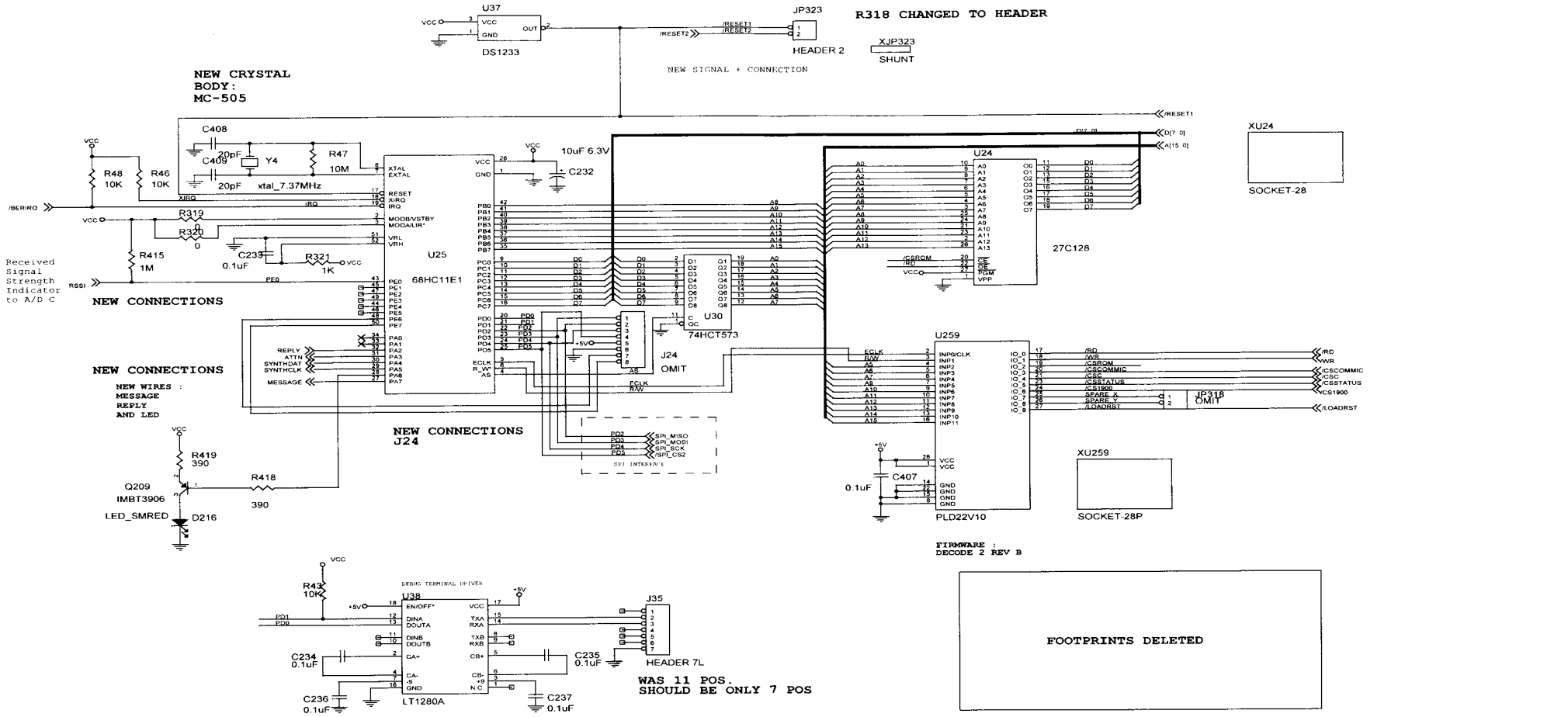






Indoor Unit


U254
74HCT244
U257
74HC194
U256A
74AC86
JP315
HEADER 3
R407
100K
R409
100K
ALIGN
RXOUT
U256C
74AC86
U255B
74AC74
U256D
74AC86
/RXDRDY
X_RXSYMCLK
U258
74HC175
R406
10K
R408
10K
R1A
X_R02
X_R12
U256B
74AC86
X_DECINCLK
RCLK POLARITY
XJP315 (2-3)
SHUNT
PINS 2-3
U225F
74AC04
R265
10K
R403
10K
R404
10K
R402
10K
U255A
74AC74
R405
10K
DECD
DECC
U225C
74AC04
CODEBITCLK
U253
74HC194
TXDATA
ENCODEROUT
ENCCLKOUT
ENCINCLK
EXT ENCODER DATA
U225B
74AC04
RPOS
ENCDATAIN
ENCINCLK
U225E
74AC04
ENCCLKOUT
U204
74HCT244
/ENCCLK
X_R02
X_R12
X_DECINCLK
X_RXSYMCLK
/FECLOOPBACK
IQTOVITERBI
RXSYMCLK
U221
Q1900
CONVOLUTIONAL ENCODER
VITERBI DECODER
ENCOUTCLK
ENCRESET
COACTIVE
DECDATOUT
DECCLKOUT
R0ERR
R1ERR
R2ERR_R1EOUT
R0EOUT_EOUT
INSYNC
BERDONE
OUTOFSYNC
SYNCCHNG
DONTUSE
DECRESET
R0ACTIVE
DECOUTCLK
DECINCLK
R0ERASE
R1ERASE
R2ERASE
84 PLCC, 300MIL
U215B
74AC74
U225A
74AC04
/BERIRQ
BERDONE
OUTOFSYNC
JP202
OMIT
FEC RESYNC
R200
0
NEW R200
CONNECTION
ALIGN
U205
74AC374
ENCRESET
DECRESET
ENC2Z
/DSX2Z
/FECLOOPBACK
INTACK
R208
10K
/LOADRST
TXBITPLS
U225D
74AC04
U226A
74AC74
R266
10K
TXBITX2
R327
0
R328
OMIT
R329
0
R330
OMIT
R331
0
R332
OMIT
R340
OMIT
R341
OMIT
R342
0
R333
OMIT
R334
0
R335
OMIT
R336
0
R337
OMIT
R338
0
R343
OMIT
R344
OMIT
R345
0
+5V
/WR
/RD
/CS1900
A[15..0]
D[7..0]
U226B
74AC74
LED_SMRED
/FECSYNC
U236
CD4047
SYNCALARM
OSC
R264
1M
C213
.01uF
R260
150
R262
3.0K
D209
Q205
IMBT3906
OUT OF SYNC
MYLAR CAP REPLACE WITH 0.1uF SMD
ioWave Inc.
Title
Size C
Document Number FEC2
Rev D.3
Date: Thursday, January 15, 1998
Sheet 2 of 10

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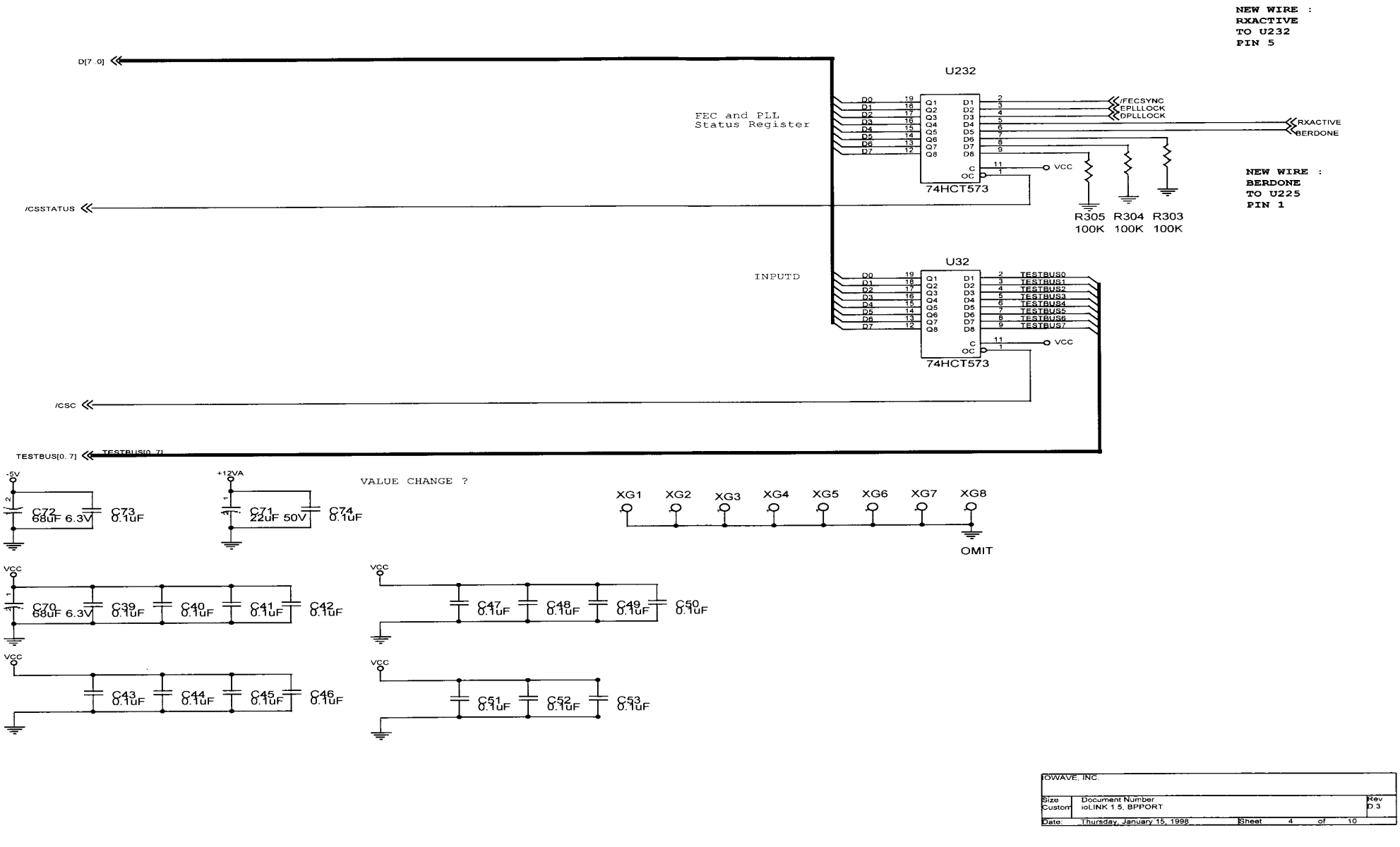
| Date: Thursday, January 15, 1998 | Sheet 3 of 10 | |

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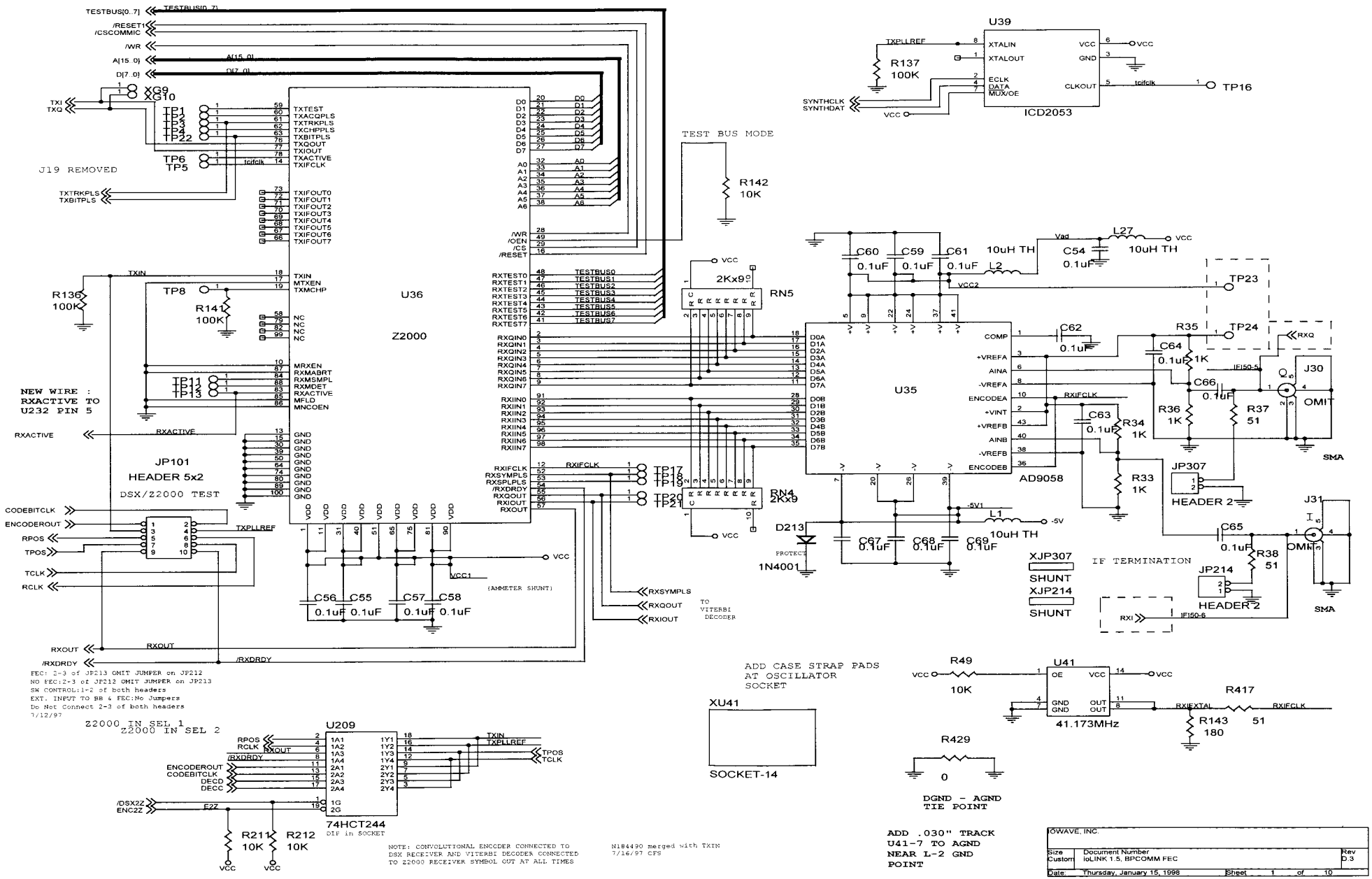
| IOWAVE, INC. | | |
| Size: Custom | Document Number: ioLINK 1.5, BPPORT | Rev: D.3 |
| Date: Thursday, January 15, 1998 | Sheet 4 of 10 | |


TESTBUS[0..7]
/RESET
/CSCOMMIC
/WR
A[15..0]
D[7..0]
XG9
XG10
TXI
TXQ
TP1
TP2
TP3
TP4
TP22
TP6
TP5
J19 REMOVED
TXTEST
TXACQPLS
TXTRKPLS
TXCHPPLS
TXBITPLS
TXQOUT
TXIOUT
TXACTIVE
TXIFCLK
tcifclk
TXTRKPLS
TXBITPLS
TXIFOUT0
TXIFOUT1
TXIFOUT2
TXIFOUT3
TXIFOUT4
TXIFOUT5
TXIFOUT6
TXIFOUT7
TXIN
MTXEN
TXMCHP
R136
100K
TP8
R141
100K
NC
MRXEN
RXMABRT
RXMSMPL
RXMDET
RXACTIVE
MFLD
MNCOEN
NEW WIRE :
RXACTIVE TO
U232 PIN 5
RXACTIVE
JP101
HEADER 5x2
DSX/Z2000 TEST
GND
U36
Z2000
TEST BUS MODE
R142
10K
/WR
/OEN
/CS
/RESET
TESTBUS0
TESTBUS1
TESTBUS2
TESTBUS3
TESTBUS4
TESTBUS5
TESTBUS6
TESTBUS7
RXQIN0
RXQIN1
RXQIN2
RXQIN3
RXQIN4
RXQIN5
RXQIN6
RXQIN7
RXIIN0
RXIIN1
RXIIN2
RXIIN3
RXIIN4
RXIIN5
RXIIN6
RXIIN7
RXIFCLK
RXSYMPLS
RXSPLPLS
/RXDRDY
RXQOUT
RXIOUT
TP17
TP18
TP19
TP20
TP21
RN5
2Kx9
RN4
2Kx9
VCC
VCC1
(AMMETER SHUNT)
C56
C55
C57
C58
0.1uF
CODEBITCLK
ENCODEROUT
RPOS
TPOS
TCLK
RCLK
TXPLLREF
RXOUT
/RXDRDY
RXSYMPLS
RXQOUT
RXIOUT
TO
VITERBI
DECODER
FEC: 2-3 of JP213 OMIT JUMPER on JP212
NO FEC:2-3 of JP212 OMIT JUMPER on JP213
SW CONTROL:1-2 of both headers
EXT. INPUT TO BB & FEC:No Jumpers
Do Not Connect 2-3 of both headers
7/12/97
Z2000 IN SEL 1
Z2000 IN SEL 2
U209
74HCT244
DIP in SOCKET
R211
10K
R212
10K
NOTE: CONVOLUTIONAL ENCODER CONNECTED TO
DSX RECEIVER AND VITERBI DECODER CONNECTED
TO Z2000 RECEIVER SYMBOL OUT AT ALL TIMES
N184490 merged with TXIN
7/16/97 CFS
U39
ICD2053
TXPLLREF
R137
100K
SYNTHCLK
SYNTHDAT
XTALIN
XTALOUT
ECLK
DATA
MUX/OE
CLKOUT
TP16
U35
AD9058
COMP
+VREFA
AINA
-VREFA
ENCODEA
+VINT
+VREFB
AINB
-VREFB
ENCODEB
C60
C59
C61
10uH TH
L2
C54
0.1uF
L27
10uH TH
Vad
VCC2
TP23
C62
C64
C66
C63
R34
1K
R35
TP24
R36
1K
R37
51
J30
OMIT
SMA
RXQ
IFI50-5
RXIFCLK
JP307
HEADER 2
R33
1K
C67
C68
C69
L1
10uH TH
-5V1
-5V
D213
PROTECT
1N4001
XJP307
SHUNT
XJP214
SHUNT
IF TERMINATION
JP214
HEADER 2
C65
R38
51
J31
SMA
RXI
IFI50-6
ADD CASE STRAP PADS
AT OSCILLATOR
SOCKET
XU41
SOCKET-14
R49
10K
U41
OE
GND
OUT
41.173MHz
R417
RXIEXTAL
RXIFCLK
R143
180
R429
0
DGND - AGND
TIE POINT
ADD .030" TRACK
U41-7 TO AGND
NEAR L-2 GND
POINT
IOWAVE, INC.
Size
Custom
Document Number
ioLINK 1.5, BPCOMM FEC
Rev
D.3
Date:
Thursday, January 15, 1998
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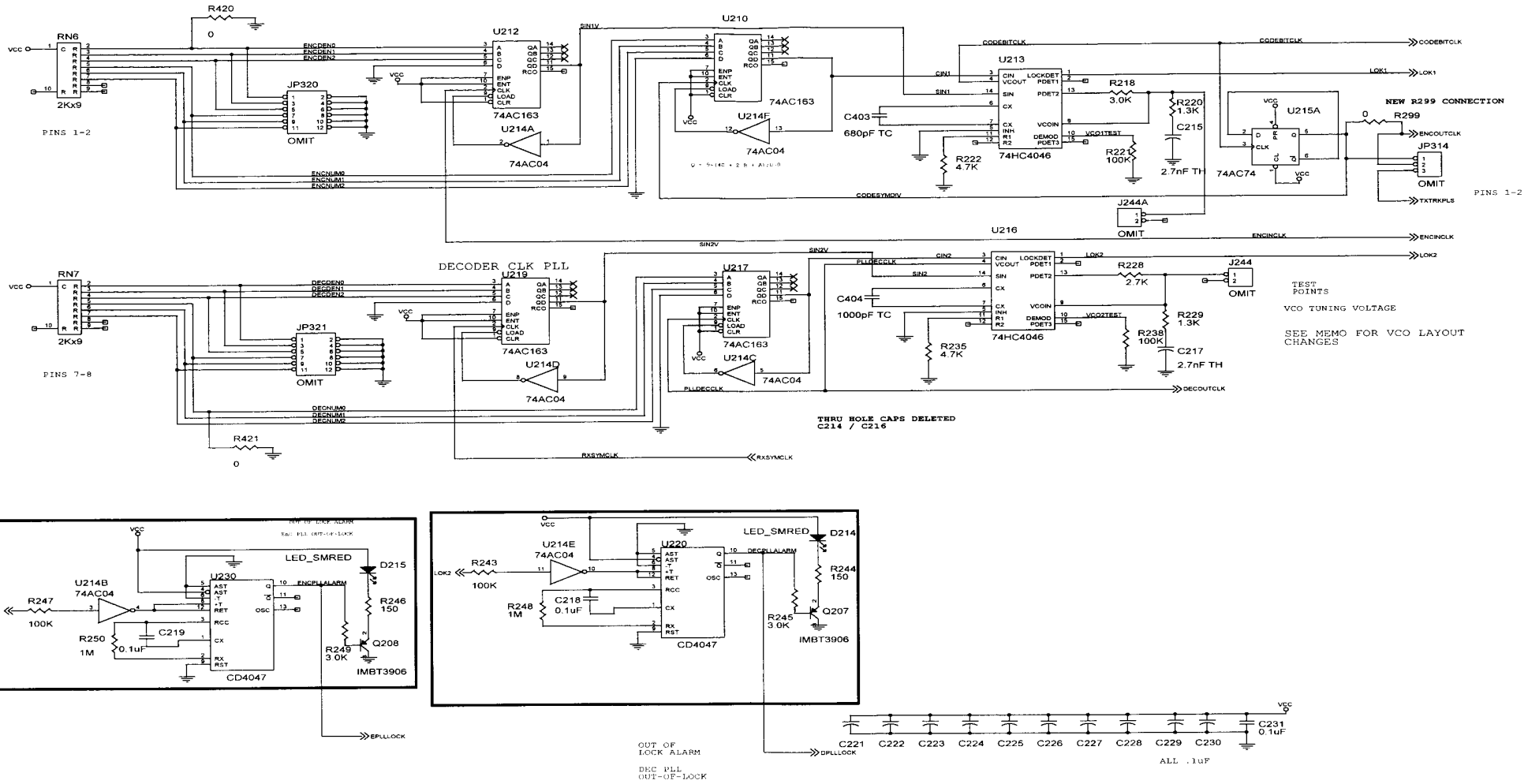
1
of
10

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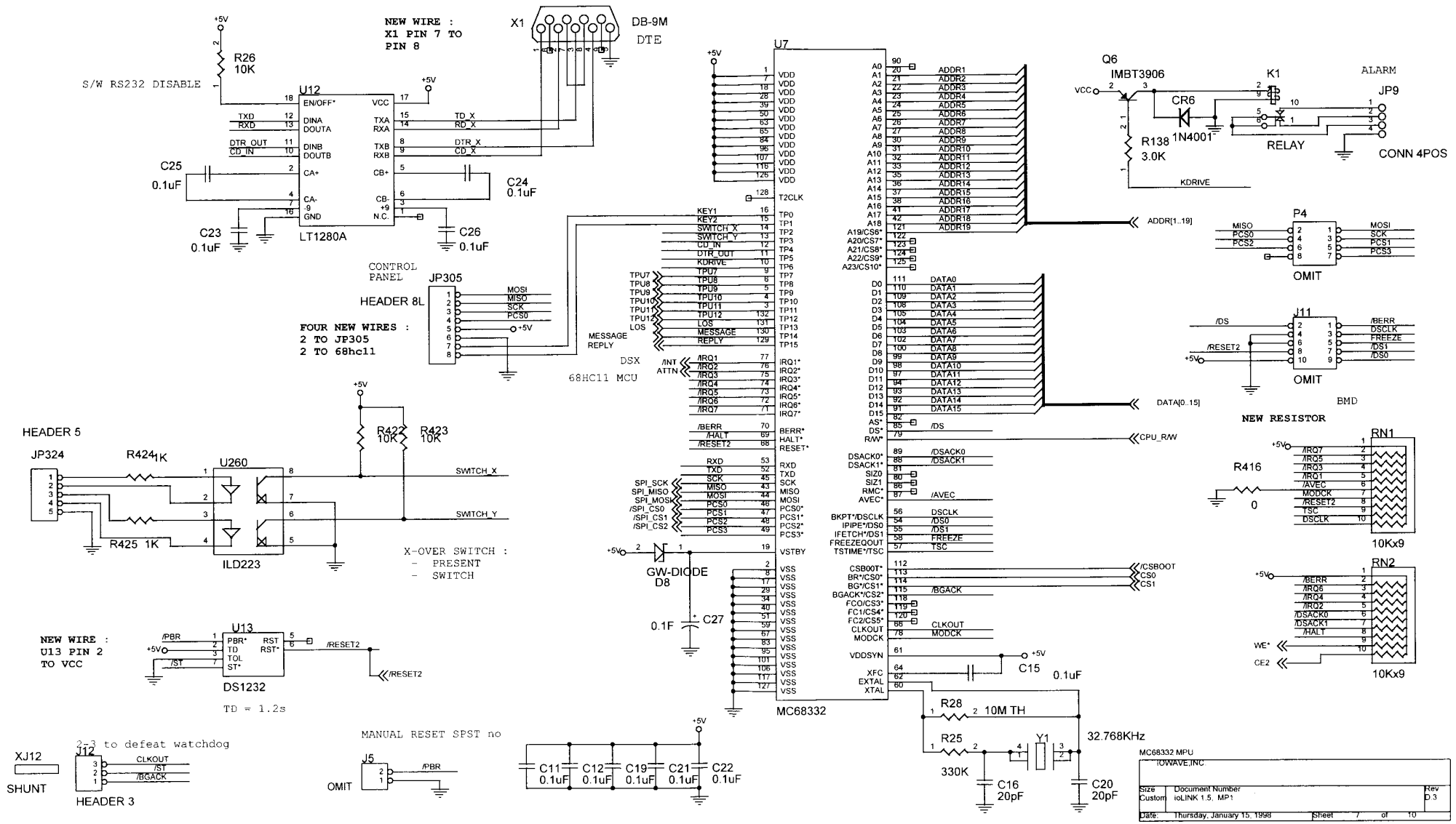
NEW WIRE :
X1 PIN 7 TO
PIN 8
X1
DB-9M
DTE
S/W RS232 DISABLE
R26
10K
U12
LT1280A
C25
0.1uF
C24
0.1uF
C23
0.1uF
C26
0.1uF
U7
MC68332
CONTROL
PANEL
JP305
HEADER 8L
FOUR NEW WIRES :
2 TO JP305
2 TO 68hc11
DSX
68HC11 MCU
MESSAGE
REPLY
Q6
IMBT3906
K1
RELAY
ALARM
JP9
CONN 4POS
CR6
1N4001
R138
3.0K
KDRIVE
ADDR[1..19]
P4
OMIT
J11
OMIT
BMD
DATA[0..15]
CPU_R/W
NEW RESISTOR
RN1
10Kx9
R416
0
RN2
10Kx9
HEADER 5
JP324
R424 1K
U260
ILD223
R425 1K
R422
10K
R423
10K
SWITCH_X
SWITCH_Y
X-OVER SWITCH :
- PRESENT
- SWITCH
GW-DIODE
D8
0.1F
C27
NEW WIRE :
U13 PIN 2
TO VCC
U13
DS1232
TD = 1.2s
R28
10M TH
R25
330K
Y1
32.768KHz
C16
20pF
C20
20pF
C15
0.1uF
MANUAL RESET SPST no
J5
OMIT
C11
0.1uF
C12
0.1uF
C19
0.1uF
C21
0.1uF
C22
0.1uF
XJ12
SHUNT
J12
2-3 to defeat watchdog
HEADER 3
MC68332 MPU
IOWAVE,INC
Size
Custom
Document Number
ioLINK 1.5, MP1
Rev
D.3
Date:
Thursday, January 15, 1998
Sheet
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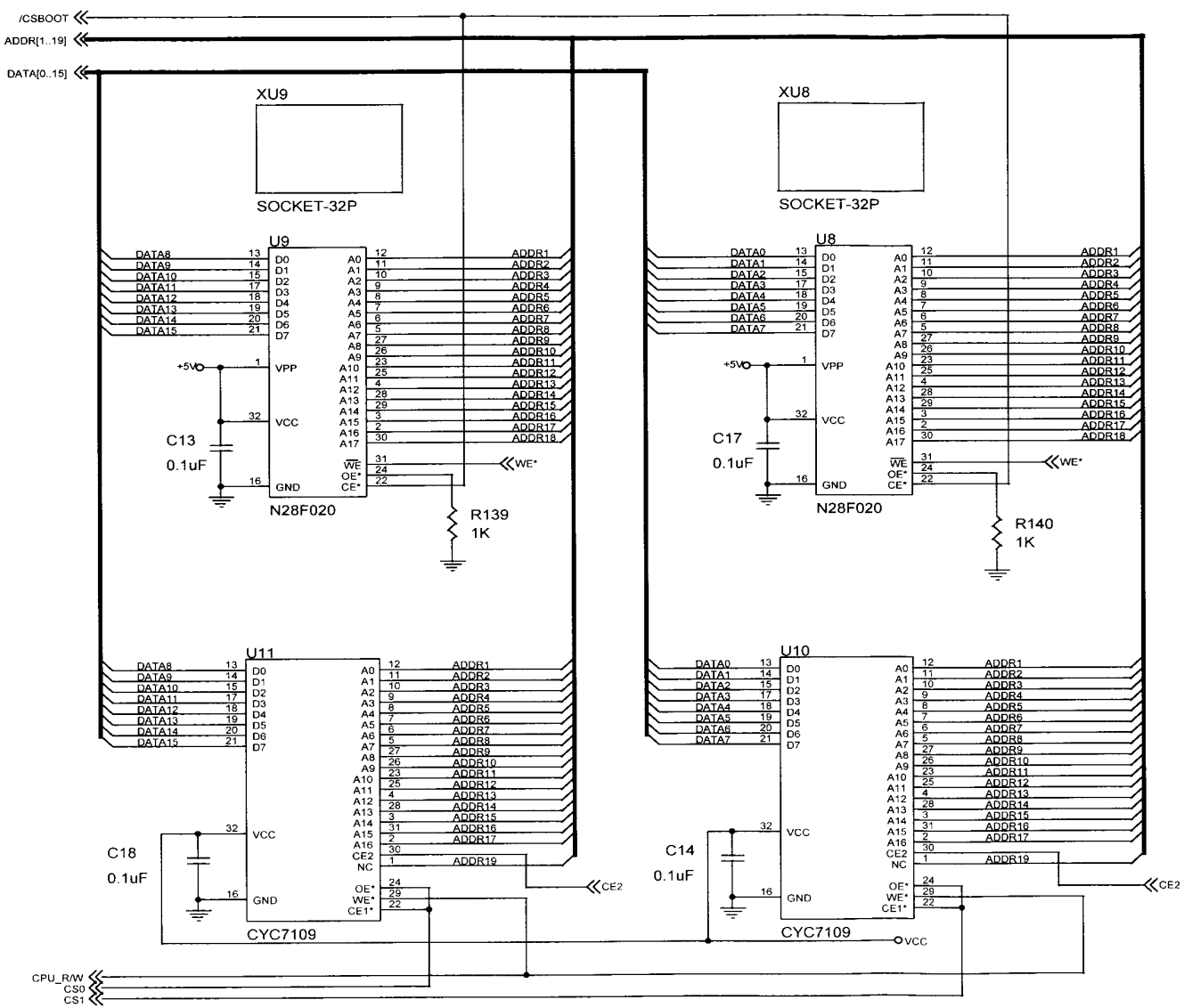
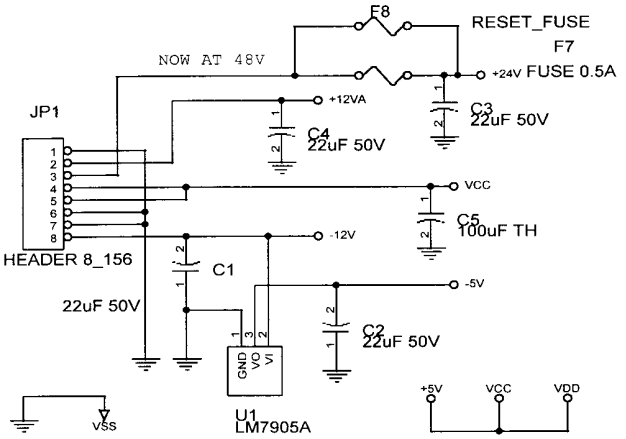
of
10




MEMORY and POWER IN

icWAVE,INC.

| Size | Document Number | Rev |
|---|---|---|
| B | ioLINK 1.5, MP2 | D.3 |

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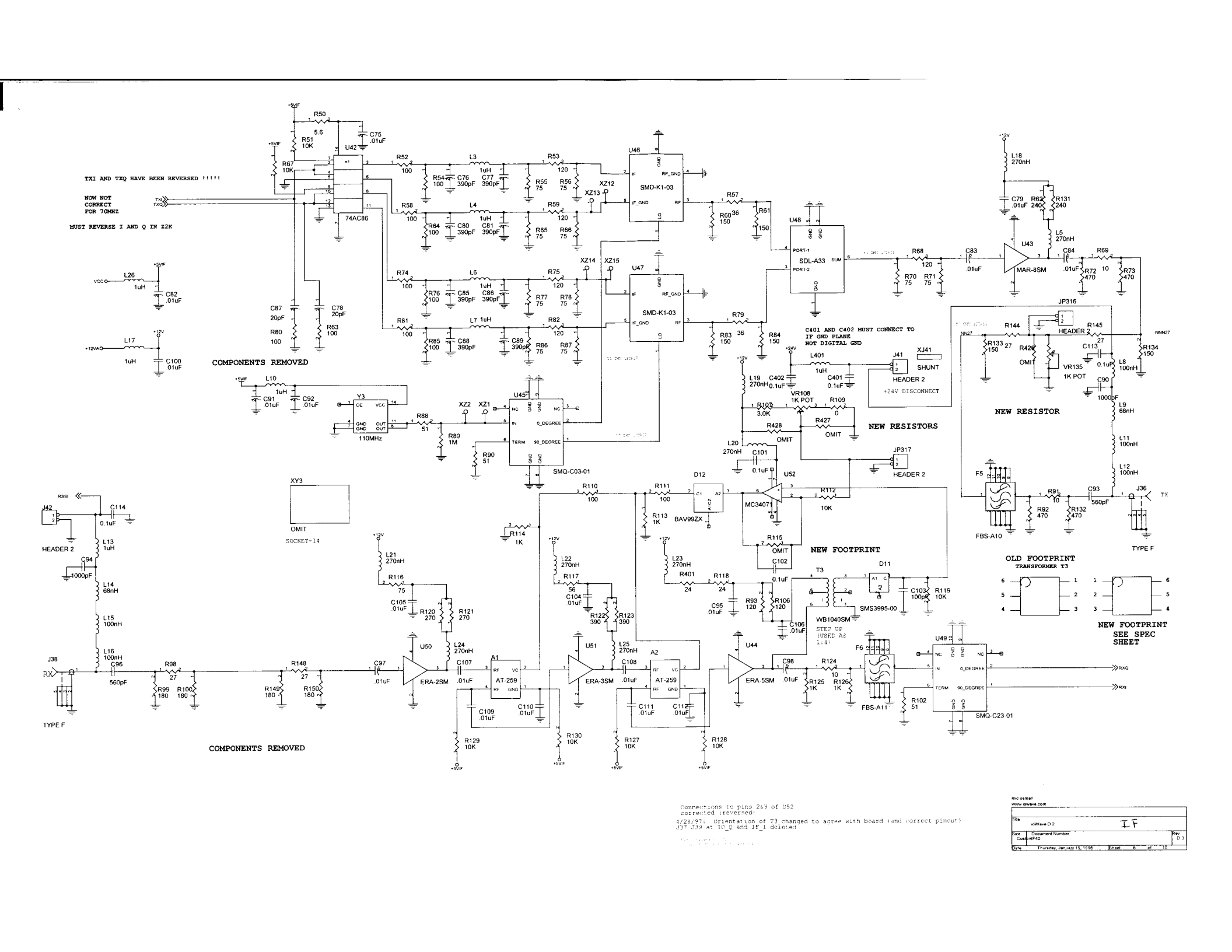
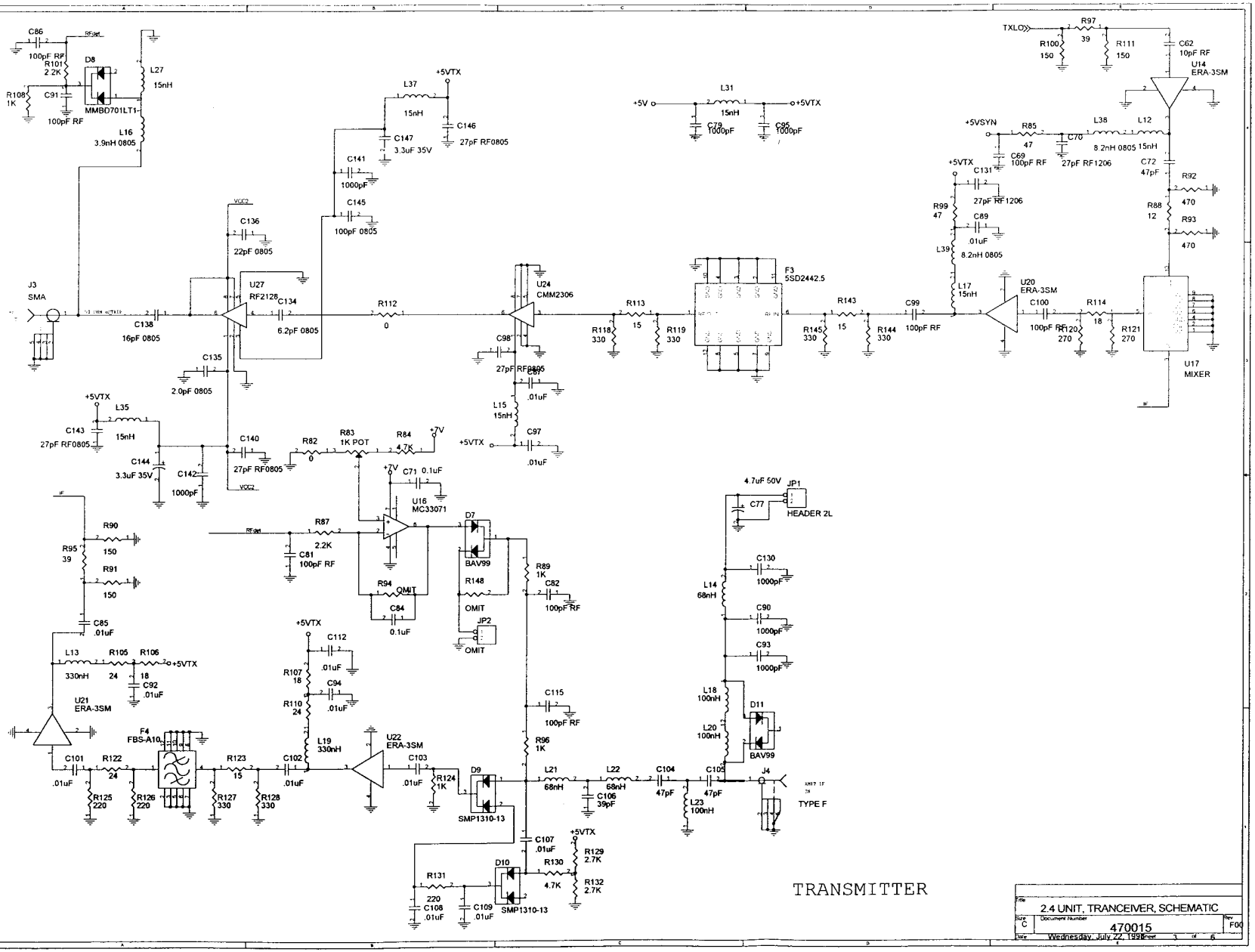

TXI AND TXQ HAVE BEEN REVERSED !!!!!
NOW NOT CORRECT FOR 70MHZ
MUST REVERSE I AND Q IN Z2K
COMPONENTS REMOVED
C401 AND C402 MUST CONNECT TO IF GND PLANE NOT DIGITAL GND
NEW RESISTORS
NEW RESISTOR
NEW FOOTPRINT
OLD FOOTPRINT
TRANSFORMER T3
NEW FOOTPRINT SEE SPEC SHEET
+24V DISCONNECT
HEADER 2
SHUNT
OMIT
SOCKET-14
TYPE F
FBS-A10
FBS-A11
SMQ-C03-01
SMQ-C23-01
SMD-K1-03
SDL-A33
MAR-8SM
74AC86
MC34071
BAV99ZX
SMS3995-00
WB1040SM
STEP UP (USED AS 1:4)
ERA-2SM
ERA-3SM
ERA-5SM
AT-259
110MHz
Connections to pins 263 of U52 corrected (reversed)
4/28/97: Orientation of T3 changed to agree with board (and correct pinout) J37,J39 at TO_Q and IF_I deleted
mic osman
www.sawave.com
Title
sWave D 2
IF
Size: Custom/F40
Document Number
Rev: D 3
Date: Thursday, January 15, 1998
Sheet 6 of 10


C86
100pF RF
R101
2.2K
D8
MMBD701LT1
L27
15nH
R108
1K
C91
100pF RF
L16
3.9nH 0805
L37
15nH
+5VTX
C147
3.3uF 35V
C146
27pF RF0805
C141
1000pF
C145
100pF 0805
C136
22pF 0805
J3
SMA
U27
RF2128
C134
6.2pF 0805
C138
16pF 0805
C135
2.0pF 0805
R112
0
U24
CMM2306
C98
27pF RF0805
C87
.01uF
L15
15nH
C97
.01uF
L31
15nH
C79
1000pF
C95
1000pF
F3
5SD2442.5
R113
15
R118
330
R119
330
R143
15
R145
330
R144
330
C99
100pF RF
TXLO
R97
39
R100
150
R111
150
C62
10pF RF
U14
ERA-3SM
+5VSYN
R85
47
C70
8.2nH 0805
L38
15nH
L12
C69
100pF RF
C72
47pF
C131
27pF RF1206
R99
47
C89
.01uF
L39
8.2nH 0805
L17
15nH
U20
ERA-3SM
C100
100pF RF
R114
18
R120
270
R121
270
R92
470
R88
12
R93
470
U17
MIXER
L35
15nH
C143
27pF RF0805
C144
3.3uF 35V
C142
1000pF
C140
27pF RF0805
R82
0
R83
1K POT
R84
4.7K
+7V
C71
0.1uF
U16
MC33071
R87
2.2K
C81
100pF RF
R94
OMIT
C84
0.1uF
D7
BAV99
R148
OMIT
JP2
OMIT
R89
1K
C82
100pF RF
4.7uF 50V
JP1
C77
HEADER 2L
C130
1000pF
L14
68nH
C90
1000pF
C93
1000pF
L18
100nH
L20
100nH
D11
BAV99
R90
150
R95
39
R91
150
C85
.01uF
L13
330nH
R105
24
R106
18
C92
.01uF
U21
ERA-3SM
F4
FBS-A10
C101
.01uF
R122
24
R123
15
C102
.01uF
R125
220
R126
220
R127
330
R128
330
C112
.01uF
R107
18
C94
.01uF
R110
24
L19
330nH
U22
ERA-3SM
C103
.01uF
R124
1K
D9
SMP1310-13
C115
100pF RF
R96
1K
L21
68nH
L22
68nH
C106
39pF
C104
47pF
C105
47pF
L23
100nH
J4
TYPE F
C107
.01uF
R129
2.7K
R130
4.7K
R132
2.7K
D10
SMP1310-13
R131
220
C108
.01uF
C109
.01uF
TRANSMITTER
Title
2.4 UNIT, TRANCEIVER, SCHEMATIC
Size
C
Document Number
470015
Rev
F00
Date
Wednesday, July 22, 1998
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3
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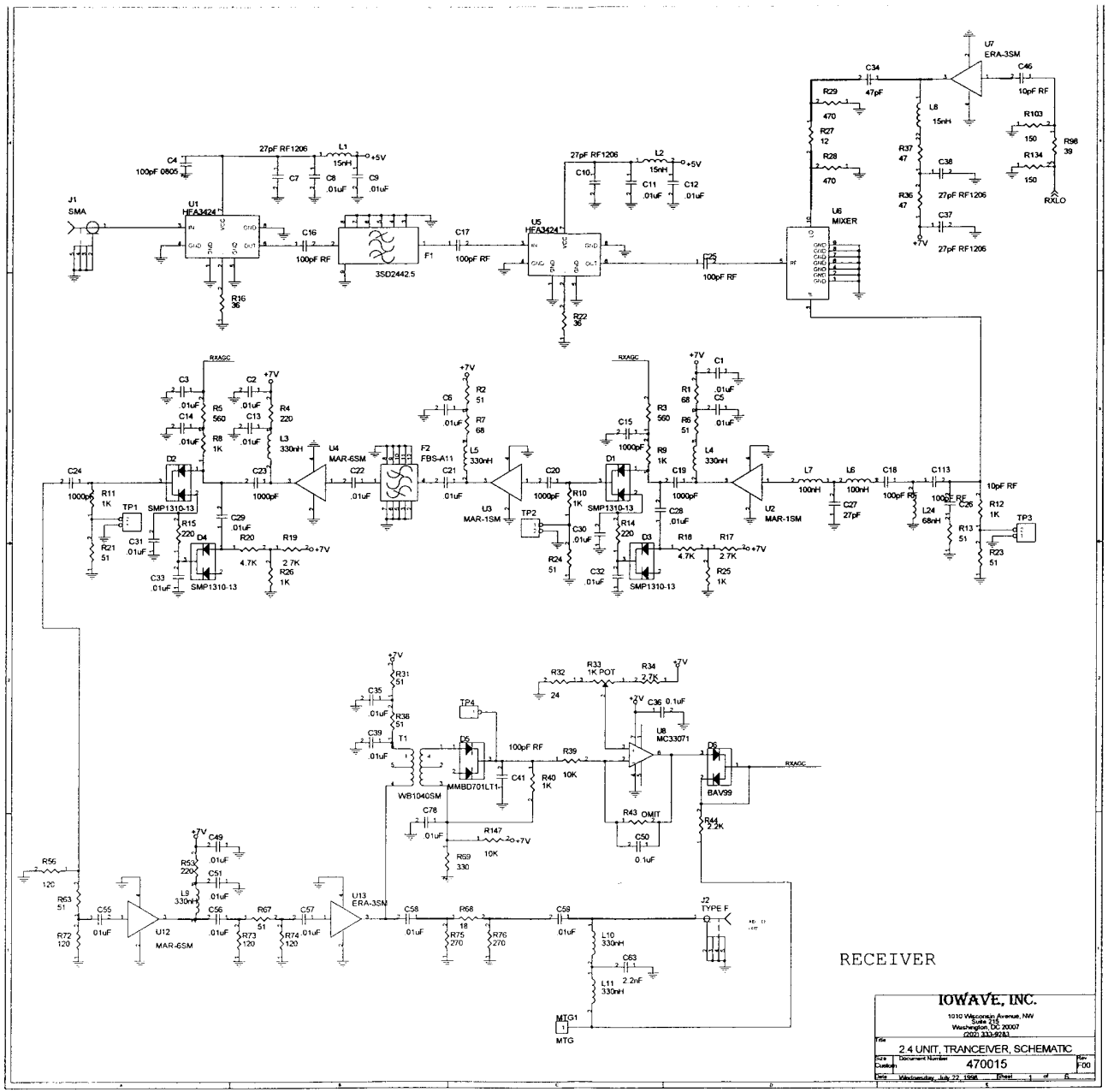
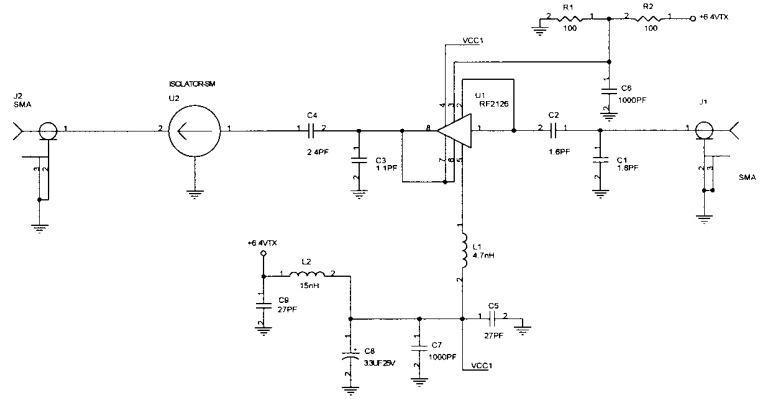
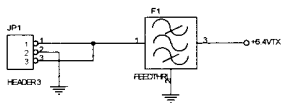
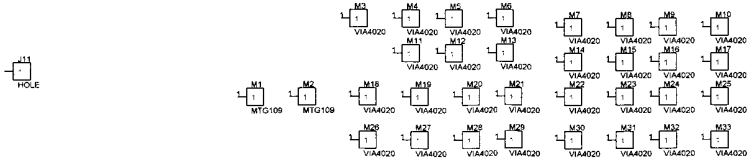
6


RECEIVER
IOWAVE, INC.
1010 Wisconsin Avenue, NW
Suite 215
Washington, DC 20007
(202) 333-9763
2.4 UNIT, TRANCEIVER, SCHEMATIC
470015
F00
Wednesday, July 22, 1998







IOWave, Inc.
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Washington, DC 20007
(202) 333-9283

Title: Power Amp, 2.4 Ghz RF Unit

Size: C | Document Number: 470037-010 | Rev: FC2

Date: Tuesday, September 15, 1998 | Sheet 4 of 4

| | JP303 | JP304 |
|---|---|---|
| HARDWARE MODE | PINS 1-2<br>PINS 5-6 | PINS 5-6 |
| SOFTWARE MODE | PINS 1-2<br>PINS 3-4<br>PINS 5-6 | OPEN |

XJP303A SHUNT
XJP303B SHUNT
XJP304A SHUNT

ADD SILKSCRN NUMBERS AT JP304

JP304 HEADER 3x2
JP303 HEADER 3x2

XJP324 SHUNT
XJP325 SHUNT
XJP326 SHUNT
XJP327 SHUNT

JP325 HEADER 10X2

NOTE : NEW CONNECTION DIODES PIN 1 TO GND

JP319 HEADER 2

JP2 LOOP JUMPER HEADER 3

JP311 HEADER 2

JP302 HEADER 2

JP301 HEADER 2

NEW HEADER

JX1 BNC E1RX (output)

JX2 BNC E1TX (input)

RJ45 RJ45 TX and RX INTERCHANGED CFS 5/29/97

E1 OUTPUT SCREEN EARTH

E1 INPUT SCREEN EARTH

E1 RING-TIP INTERCHANGED JP301,301 ADDED 6/13 CFS

"FOR T1 Receive is the output from iolink 1.5 to the Telco Switch"

T1 65893# 1:2
T2 65811 1:2
E1 68146* 1,1,2?:1
6866C 1,1,5#:2
*Dual secondary used
*T1 and E1 interchanged

XU6 SOCKET-14

1.544MHz

LED_SMRED D6 D7

LXT360

U5 U6

XD1 XD2

REVISION HISTORY
CR1,2,4,5 PART SYMBOL CHANGED 5/31/97 CFS
ANODE WAS PIN 2 CATHODE WAS PIN 1

T1, T2, P1 T2?s T1?s X21?s on 4/30

5/31/97: T1, T2 Were 65893 (No Such part Number in Pulse Engineering catalog)

JX1 and JX2 added back 5/31/97 CFS

OWAVE,INC.

| Size | Document Number | Rev |
|---|---|---|
| C | ioLINK 1.5 DSX1 | D 3 |
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Indoor Unit