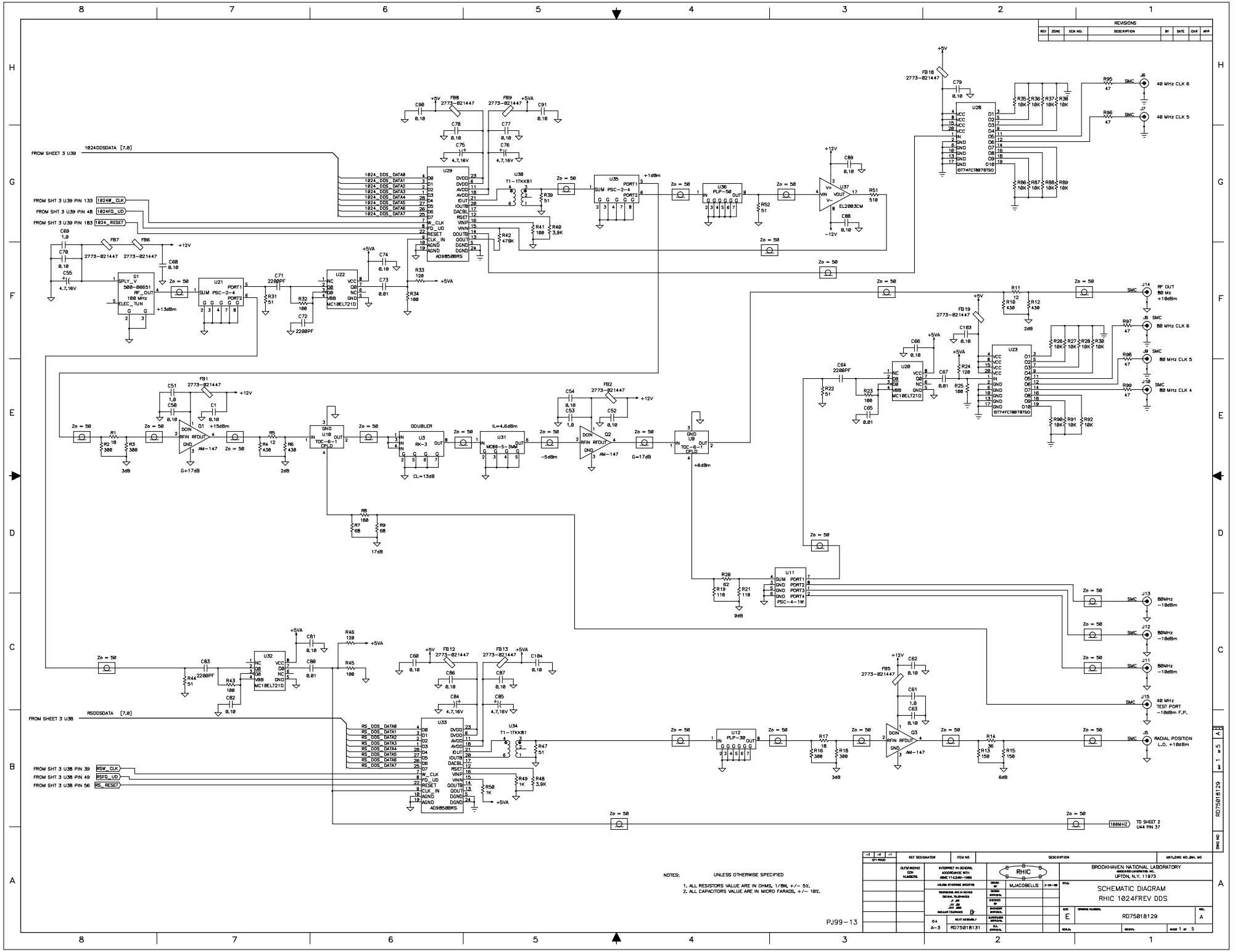
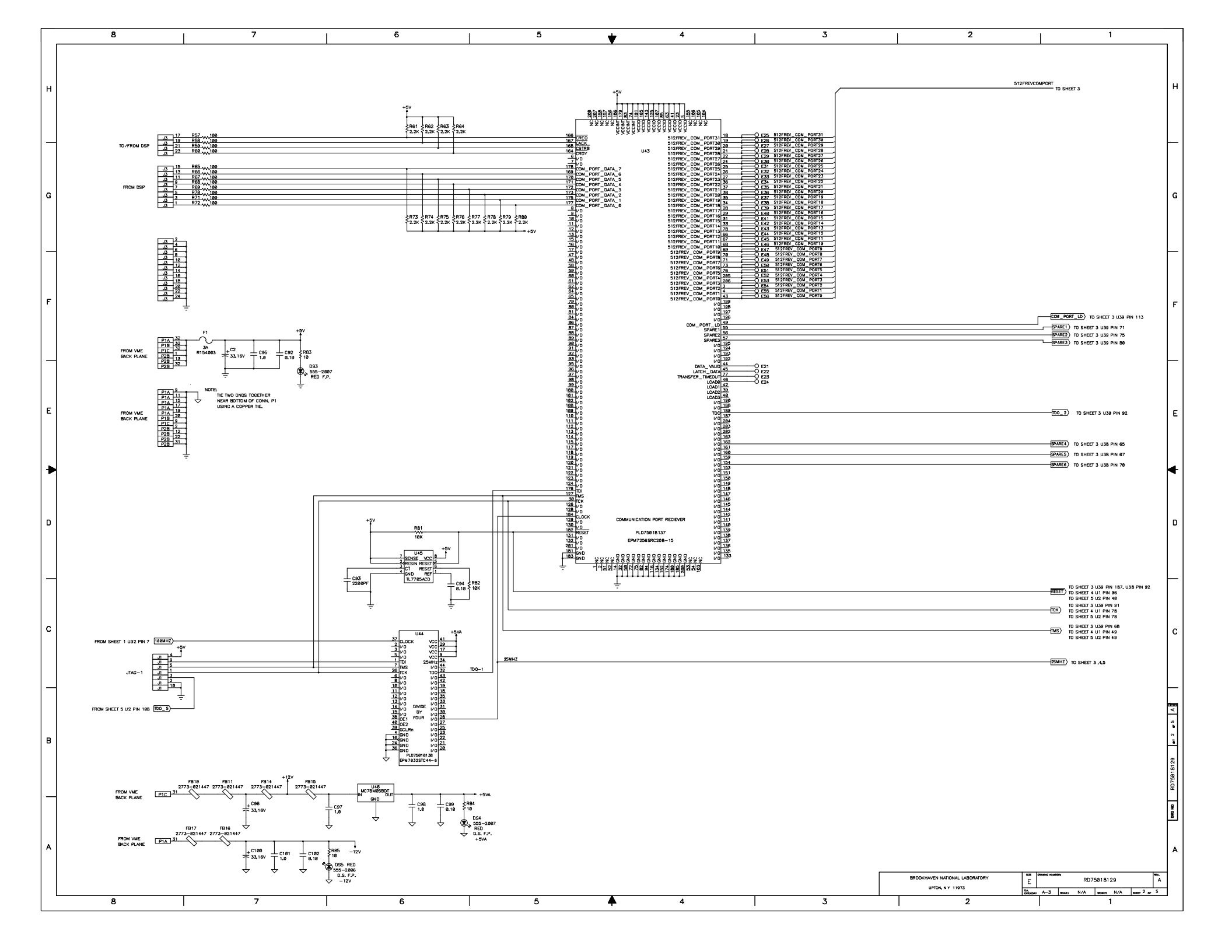
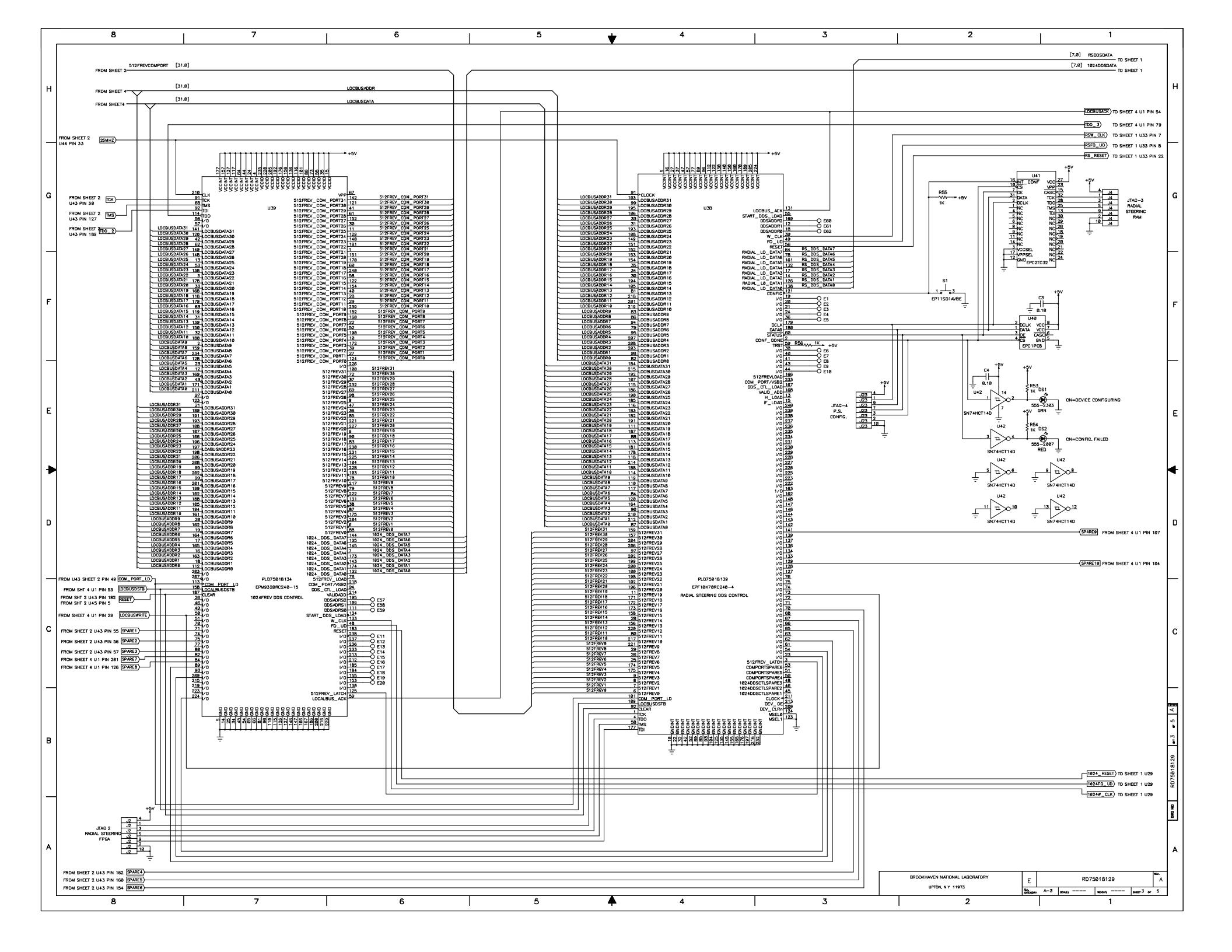
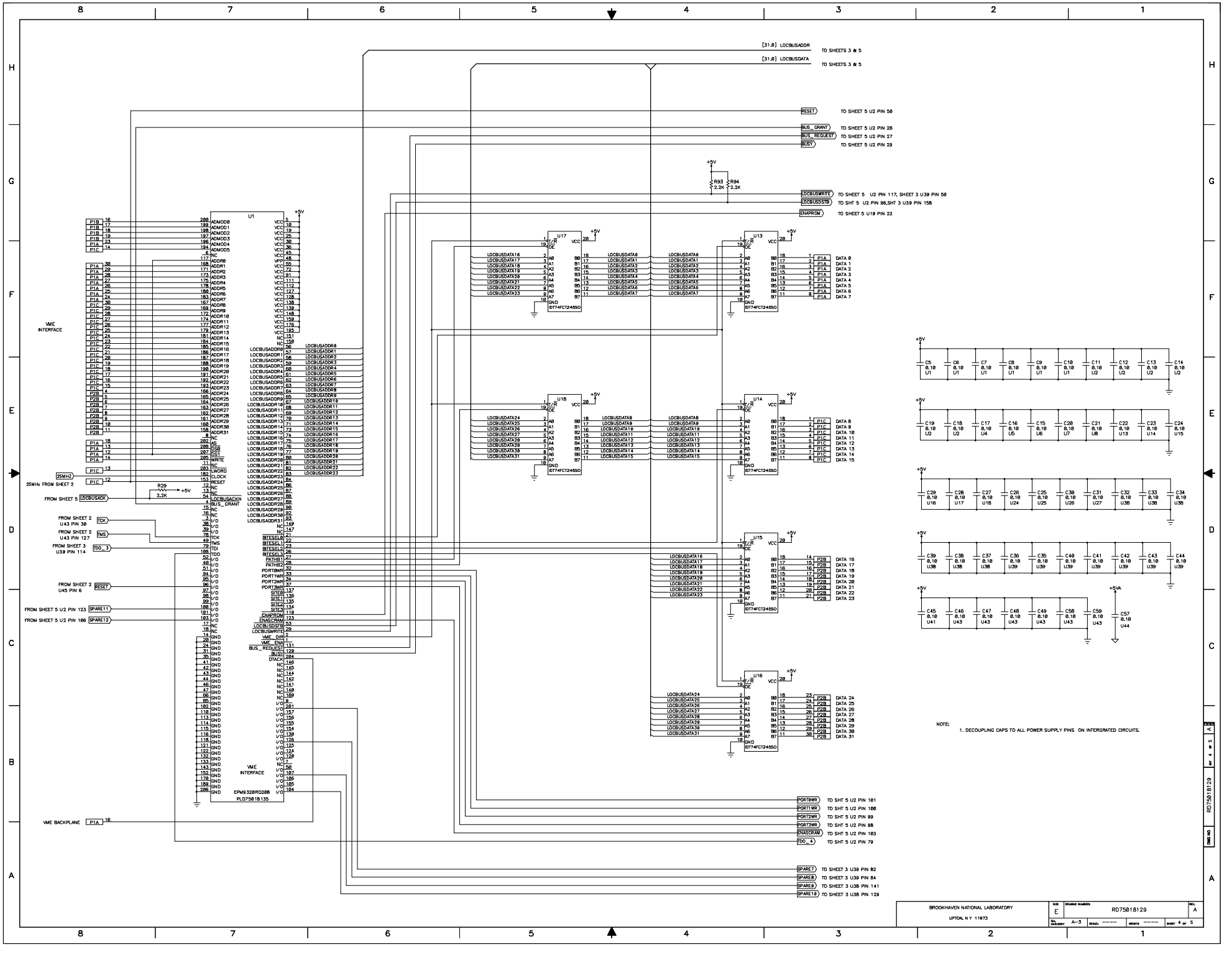
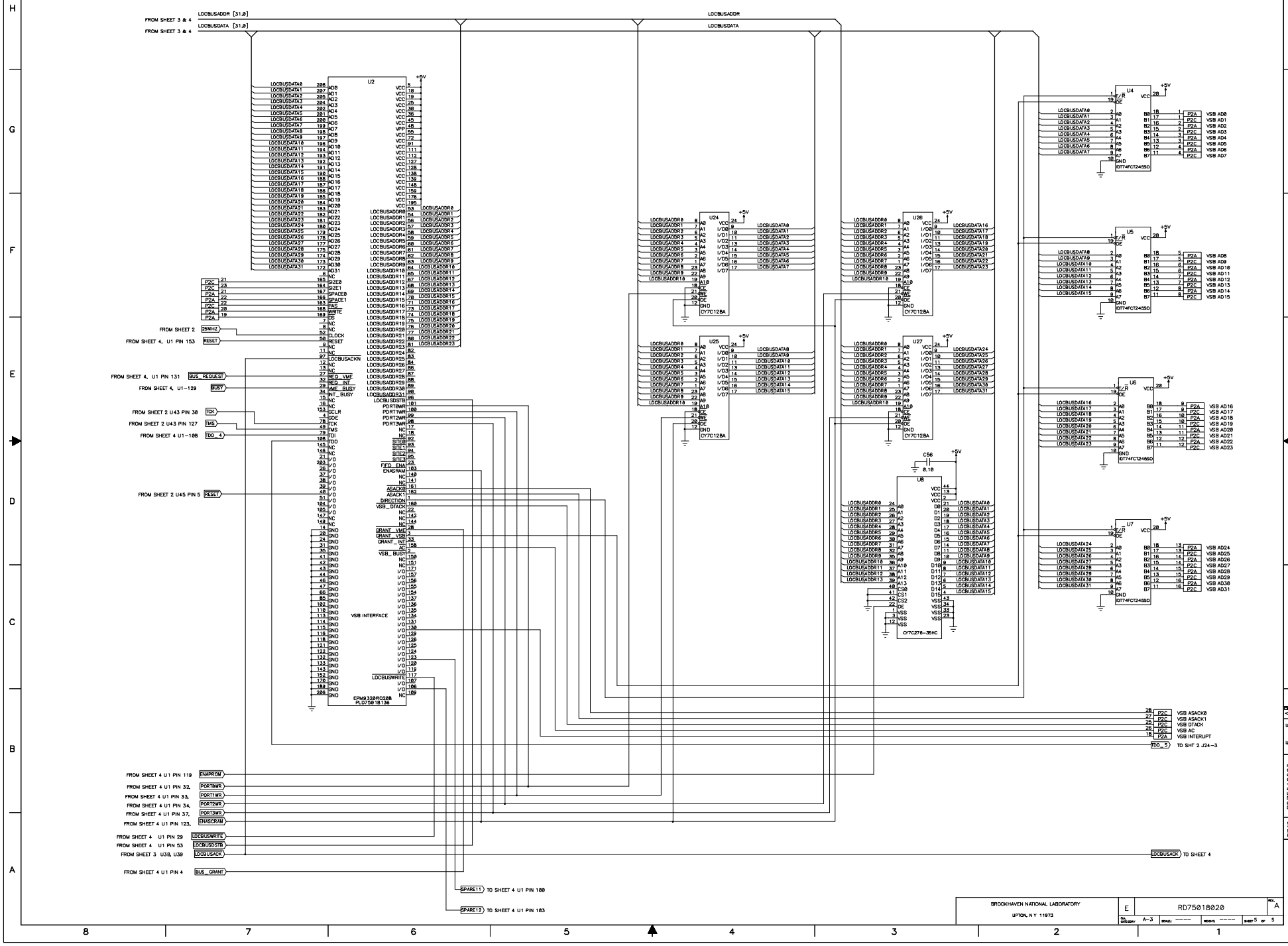

REVISIONS
REV ZONE ECN NO. DESCRIPTION BY DATE CKR APP
FROM SHEET 3 U39
1024DDSDATA [7.0]
FROM SHT 3 U39 PIN 133 1024W_CLK
FROM SHT 3 U39 PIN 48 1024FQ_UD
FROM SHT 3 U39 PIN 183 1024_RESET
FROM SHEET 3 U38
RSDDSDATA [7.0]
FROM SHT 3 U38 PIN 39 RSW_CLK
FROM SHT 3 U38 PIN 49 RSFQ_UD
FROM SHT 3 U38 PIN 56 RS_RESET
40 MHz CLK 6
40 MHz CLK 5
RF OUT 80 Mz +10dBm
80 MHz CLK 6
80 MHz CLK 5
80 MHz CLK 4
80MHz -10dBm
80MHz -10dBm
80MHz -10dBm
40 MHz TEST PORT -10dBm F.P.
RADIAL POSITION L.O. +10dBm
TO SHEET 2 U44 PIN 37
100MHZ
NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS VALUE ARE IN OHMS, 1/8W, +/- 5%.
2. ALL CAPACITORS VALUE ARE IN MICRO FARADS, +/- 10%.
PJ99-13
REF DESIGNATOR
ITEM NO
DESCRIPTION
MATLSWG NO.,SHL NO
QTY REQD
CUSTOMIZING ECN NUMBERS
INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.5-M-1989
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES
.X .XX
.XX .XXX
.XXX .XXXX
ANGULAR TOLERANCE
NEXT ASSEMBLY
A-3
RD75018131
RHIC
DRAWN BY MJACOBELLIS
DESIGN APPROVAL
CHECKED BY
ENGINEER APPROVAL
SUPERVISOR APPROVAL
Q.A. APPROVAL
BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.
UPTON, N.Y. 11973
TITLE:
SCHEMATIC DIAGRAM
RHIC 1024FREV DDS
SIZE E
DRAWING NUMBER: RD75018129
REV. A
SCALE:
WEIGHT:
SHEET 1 OF 5
DWG NO RD75018129
SHT 1 OF 5


512FREVCOMPORT
TO SHEET 3
TO/FROM DSP
FROM DSP
FROM VME BACK PLANE
NOTE:
TIE TWO GNDS TOGETHER NEAR BOTTOM OF CONN. P1 USING A COPPER TIE.
U43
512FREV_COM_PORT31
512FREV_COM_PORT30
512FREV_COM_PORT29
512FREV_COM_PORT28
512FREV_COM_PORT27
512FREV_COM_PORT26
512FREV_COM_PORT25
512FREV_COM_PORT24
512FREV_COM_PORT23
512FREV_COM_PORT22
512FREV_COM_PORT21
512FREV_COM_PORT20
512FREV_COM_PORT19
512FREV_COM_PORT18
512FREV_COM_PORT17
512FREV_COM_PORT16
512FREV_COM_PORT15
512FREV_COM_PORT14
512FREV_COM_PORT13
512FREV_COM_PORT12
512FREV_COM_PORT11
512FREV_COM_PORT10
512FREV_COM_PORT9
512FREV_COM_PORT8
512FREV_COM_PORT7
512FREV_COM_PORT6
512FREV_COM_PORT5
512FREV_COM_PORT4
512FREV_COM_PORT3
512FREV_COM_PORT2
512FREV_COM_PORT1
512FREV_COM_PORT0
COM_PORT_DATA_7
COM_PORT_DATA_6
COM_PORT_DATA_5
COM_PORT_DATA_4
COM_PORT_DATA_3
COM_PORT_DATA_2
COM_PORT_DATA_1
COM_PORT_DATA_0
COM_PORT_LD
SPARE1
SPARE2
SPARE3
DATA_VALID
LATCH_DATA
TRANSFER_TIMEOUT
TDO_2
SPARE4
SPARE5
SPARE6
COMMUNICATION PORT RECIEVER
PLD75018137
EPM7256SRC208-15
U45
TL7705ACD
U44
EPM7032STC44-6
PLD75018136
JTAG-1
FROM SHEET 1 U32 PIN 7
FROM SHEET 5 U2 PIN 188
TDO_5
TDO-1
RESET
TCK
TMS
25MHZ
TO SHEET 3,4,5
U46
MC78M05BDT
DS3 555-2807 RED F.P.
DS4 555-2807 RED D.S. F.P. +5VA
DS5 RED 555-2806 D.S. F.P. -12V
BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973
RD75018129
A-3
N/A
N/A
2 of 5


512FREVCOMPORT [31,0]
FROM SHEET 2
FROM SHEET 4
FROM SHEET4
LOCBUSADDR
LOCBUSDATA
25MHZ
FROM SHEET 2 U44 PIN 33
FROM SHEET 2 U43 PIN 38
FROM SHEET 2 U43 PIN 127
FROM SHEET 2 U43 PIN 189
TCK
TMS
TDO_2
U39
U38
PLD75018134
EPM9328RC240-15
1024FREV DDS CONTROL
PLD75018139
EPF10K70RC240-4
RADIAL STEERING DDS CONTROL
COM_PORT_LD
LOCALBUSDSTB
RESET
LOCBUSWRITE
SPARE1
SPARE2
SPARE3
SPARE7
SPAREB
SPARE4
SPARE5
SPARE6
JTAG 2 RADIAL STEERING FPGA
JTAG-3 RADIAL STEERING RAM
JTAG-4 P.S. CONFIG.
EP11SD1AVBE
EPC2TC32
EPC1PC8
SN74HCT14D
555-2303 GRN
555-2807 RED
ON=DEVICE CONFIGURING
ON=CONFIG. FAILED
[7,0] RSDDSDATA
[7,0] 1024DDSDATA
TO SHEET 1
LOCBUSACK
TDO_3
RSW_CLK
RSFQ_UD
RS_RESET
TO SHEET 4 U1 PIN 54
TO SHEET 4 U1 PIN 79
TO SHEET 1 U33 PIN 7
TO SHEET 1 U33 PIN 8
TO SHEET 1 U33 PIN 22
SPARE9
SPARE10
FROM SHEET 4 U1 PIN 187
FROM SHEET 4 U1 PIN 184
1024_RESET
1024FQ_UD
1024W_CLK
TO SHEET 1 U29
BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973
RD75018129
REV. A
SHEET 3 OF 5


[31:0] LOCBUSADDR
TO SHEETS 3 & 5
[31:0] LOCBUSDATA
TO SHEETS 3 & 5
RESET
TO SHEET 5 U2 PIN 50
BUS_GRANT
TO SHEET 5 U2 PIN 28
BUS_REQUEST
TO SHEET 5 U2 PIN 27
BUSY
TO SHEET 5 U2 PIN 29
+5V
R93 2.2K
R94 2.2K
LOCBUSWRITE
TO SHEET 5 U2 PIN 117, SHEET 3 U39 PIN 58
LOCBUSDSTB
TO SHT 5 U2 PIN 96,SHT 3 U39 PIN 158
ENAPROM
TO SHEET 5 U19 PIN 22
U1
EPM9320RQ208
PLD75818135
VME INTERFACE
VME BACKPLANE
25MHz
25MHz FROM SHEET 2
R29 2.2K
FROM SHEET 5 LOCBUSACK
FROM SHEET 2 U43 PIN 38 TCK
FROM SHEET 2 U43 PIN 127 TMS
FROM SHEET 3 U39 PIN 114 TDO_3
FROM SHEET 2 U45 PIN 6 RESET
FROM SHEET 5 U2 PIN 123 SPARE11
FROM SHEET 5 U2 PIN 186 SPARE12
U17
U13
U18
U14
U15
U16
74FCT245SO
TO SHT 5 U2 PIN 181 PORT0WR
TO SHT 5 U2 PIN 180 PORT1WR
TO SHT 5 U2 PIN 99 PORT2WR
TO SHT 5 U2 PIN 98 PORT3WR
TO SHT 5 U2 PIN 103 ENASCRAM
TO SHT 5 U2 PIN 79 TDO_4
TO SHEET 3 U39 PIN 82 SPARE7
TO SHEET 3 U39 PIN 84 SPARE8
TO SHEET 3 U38 PIN 141 SPARE9
TO SHEET 3 U38 PIN 129 SPARE10
+5VA
NOTE:
1. DECOUPLING CAPS TO ALL POWER SUPPLY PINS ON INTEGRATED CIRCUITS.
BROOKHAVEN NATIONAL LABORATORY
UPTON, N Y 11973
RD75818129
REV A
SHEET 4 OF 5



LOCBUSADDR [31,0]
LOCBUSDATA [31,0]
FROM SHEET 3 & 4
LOCBUSADDR
LOCBUSDATA
U2
U4
U5
U6
U7
U8
U24
U25
U26
U27
CY7C128A
CY7C276-35HC
IDT74FCT245SO
C56
0.10
+5V
VSB INTERFACE
EPM9320RQ208
PLD75018136
FROM SHEET 2
25MHZ
FROM SHEET 4, U1 PIN 153
RESET
FROM SHEET 4, U1 PIN 131
BUS_REQUEST
FROM SHEET 4, U1-129
BUSY
FROM SHEET 2 U43 PIN 30
TCK
FROM SHEET 2 U43 PIN 127
TMS
FROM SHEET 4 U1-108
TDO_4
FROM SHEET 2 U45 PIN 5
RESET
FROM SHEET 4 U1 PIN 119
ENAPROM
FROM SHEET 4 U1 PIN 32,
PORT0WR
FROM SHEET 4 U1 PIN 33,
PORT1WR
FROM SHEET 4 U1 PIN 34,
PORT2WR
FROM SHEET 4 U1 PIN 37,
PORT3WR
FROM SHEET 4 U1 PIN 123,
ENASCRAM
FROM SHEET 4 U1 PIN 29
LOCBUSWRITE
FROM SHEET 4 U1 PIN 53
LOCBUSDSTB
FROM SHEET 3 U38, U39
LOCBUSACK
FROM SHEET 4 U1 PIN 4
BUS_GRANT
SPARE11 TO SHEET 4 U1 PIN 100
SPARE12 TO SHEET 4 U1 PIN 103
VSB ASACK0
VSB ASACK1
VSB DTACK
VSB AC
VSB INTERUPT
TDO_5 TO SHT 2 J24-3
LOCBUSACK TO SHEET 4
BROOKHAVEN NATIONAL LABORATORY
UPTON, N Y 11973
E
RD75018020
REV. A
A-3
SHEET 5 OF 5

		2	R40,48	57	RES, 3.9K OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ392U	
		15	R29,61,62,63,64,73 74,75,76,77,78,79, 80,93,94	56	RES, 2.2K OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ222U	
		17	R26,27,28,30,35,36, 37,38,81,82,86,87, 88,89,90,91,92	55	RES, 10K OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ103U	
		3	R24,33,46	54	RES, 120 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ121U	
		19	R23,25,32,34,41, 43,45,57,58,59,60, 65,66,67,68,69,70, 71,72	53	RES, 100 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ101U	
		6	R22,31,39,44,47,52	52	RES, 51 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ510U	
		1	R20	51	RES, 62 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ620U	
		2	R19,21	50	RES, 110 OHMS, 1/8W, 5% SMT RC1206 (PANASONIC)	ERJ-8GEYJ111U	
		1	R14	49	RES, 36 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ360U	
		1	R13,15	48	RES, 150 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ151U	
		1	R8	47	RES, 180 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ181U	
		2	R7,9	46	RES, 68 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ680U	
		2	R5,11	45	RES, 12 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ120U	
		4	R4,6,10,12	44	RES, 430 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ431U	
		4	R2,3,16,18	43	RES, 300 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEY301U	
		2	R1,17	42	RES, 18 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ180U	
				41			
				40			
				39			
		4	C65,67,73,80	38	CAP, 0.01UF, 50V, 10%, SMT1206, CERAMIC (PANASONIC)	ECU-V1H103KBM	
		5	C64,71,72,83,93	37	CAP, 2200PF, 50V, 10%, SMT1206, CERAMIC (PANASONIC)	ECU-V1H222KBM	
		5	C55,75,76,84,85	36	CAP, 4.7UF, 16V, 20, SMT 1206, TANTALUM (PANASONIC)	ECS-T1CY475R	
		8	C51,53,61,69,95, 97,98,101	35	CAP,1.0UF,16V, +80-20%, SMT 1206, CERAMIC (TDK CORP)	CC1206CY5V105Z	
		3	C2,96,100	34	CAP,33UF,16V,20%, SMT 7343, TANTALUM (PANASONIC)	ECS-T1CD336R	
		79	C1,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17, 18,19,20,21,22,23,24, 25,26,27,28,29,30,31, 32,33,34,35,36,37,38, 39,40,41,42,43,44,45, 46,47,48,49,50,52,54, 56,57,58,59,60,62,63, 66,68,70,74,77,78,79, 81,82,86,87,88,89,90, 91,92,94,99,102,103, 104	33	CAP, 0.01UF, 50V, 10%, SMT 1206, CERAMIC (PANASONIC)	ECU-V1H104KBW	
				32			
				31			
		3	Q1,2,3	30	I.C. AMPLIFIER 5-55 MHZ (M/ACOM)	AM-147	
		1	U46	29	REGULATOR VOLTAGE, 5V POSTIVE, SMT (MOTOROLA)	MC78M05BDT	
		1	U45	28	I.C. SUPPLY VOLTAGE SUPERVISOR (TEXAS INSTRUMENTS)	TL7705ACD	
		1	U44	27	I.C. CPLD 44 PIN TQFP (PLD75018138) (ALTERA)	EPM7032STC44-6	
		1	U43	26	I.C. CPLD 208 PIN QFP (PLD75018137) (ALTERA)	EPM7256SRC208-15	
		1	U42	25	I.C. HEX SCHMITT-TRIGGER INVERTER (TEXAS INSTRUMENTS)	SN74HCT14D	
		1	U41	24	I.C. TQFP32 (ALTERA)	EPC2TC32	
		1	U40	23	I.C. (ALTERA)	EPC1PC8	
		1	U39	22	I.C. CPLD 240 PIN RQFP (PLD75018134) (ALTERA)	EPM9320RC240-15	
		1	U38	21	I.C. CPLD 240 PIN RQFP (PLD75018139) (ALTERA)	EPF10K70RC240-2	
		1	U37	20	I.C. 100 MHz VIDEO LINE DRIVER (ELANTEC)	EL2003C	
		1	U36	19	I.C. FILTER LOW PASS (MINI-CIRCUITS)	PLP-50	
		1	U31	18	FILTER, BANDPASS (LARK ENGINEERING)	MC80-5-3MM	
		2	U30,34	17	TRANSFORMER, RF WIDEBAND SMT (MINI-CIRCUITS)	T1-1T-KK81	
		2	U29,33	16	I.C. 125 MHz DDS SYNTHESIZER (ANALOG DEVICES)	AD9850BRS	
		4	U24,25,26,27	15	I.C. 8 BIT CMOS PROM (CYPRESS)	CY7C128A	
		2	U23,28	14	I.C. FAST CMOS, 1 TO 10 CLOCK DRIVER (INTERGRATED DEVICE TECHNOLOGY)	IDT74FCT807BTSO	
		2	U21,35	13	I.C. POWER SPLITTER/COMBINER (MINI-CIRCUITS)	PSC-2-4	
		3	U20,22,32	12	I.C. DIFFERENTIAL PECL TO TTL TRANSLATOR (MOTOROLA)	MC10ELT21D	
		1	U12	11	I.C. FILTER LOW PASS (MINI-CIRCUITS)	PLP-30	
		1	U11	10	I.C. POWER SPLITTER/COMBINER (MINI-CIRCUITS)	PSC-4-1W	
		2	U9,10	9	I.C. DIRECTIONAL COUPLER (MINI-CIRCUITS)	TDC-6-1	
		1	U8	8	I.C. 16 X 16 REPROGRAMMABLE PROM (CYPRESS)	CY7C276-35HC	
		10	U4,5,6,7,13,14, 15,16,17,18	7	I.C. FAST CMOS OCTAL BIDIRECTIONAL TRASCEVIVERS (INTERGRATED DEVICES TECHNOLOGY)	IDT74FCT245SO	
		1	U3	6	I.C. FREQUENCY DOUBLER 50 OHMS (MINI-CIRCUITS)	RK-3	
		1	U2	5	I.C. CPLD 208 PIN PQFD (PLD75018136) (ALTERA)	EPM9320RQ208	
		1	U1	4	I.C. CPLD 208 PIN PQFD (PLD75018135) (ALTERA)	EPM9320RQ208	
				3			
				2			
		1		1	PRINTED WIRING BOARD		RD75018130
-3	-2	-1	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MFG. / PART NO.	MATL DWG NO., BNL NO.
QTY REQD							

PJ99-13

NEXT ASSEMBLY

OUTSTANDING ECN

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES
.X +/- .030
.XX +/- .015
.XXX +/- .005
ANGULAR TOLERANCE +/-1°

NA FINISH

BREAK SHARP EDGES
MAX. .03 MIN. .01

RHIC

DRAWN BY	M. JACOBELLIS	2-26-99
DESIGN APPROVAL		
CHECKED APPROVAL		
ENGINEER APPROVAL		
SUPERVISOR APPROVAL		
Q.A. APPROVAL		
C.E.E. APPROVAL		

BROOKHAVEN NATIONAL LABORATORY

UPTON, NEW YORK, 11973

TITLE: PRINTED WIRING BOARD ASSEMBLY

RHIC 1024FREV DDS

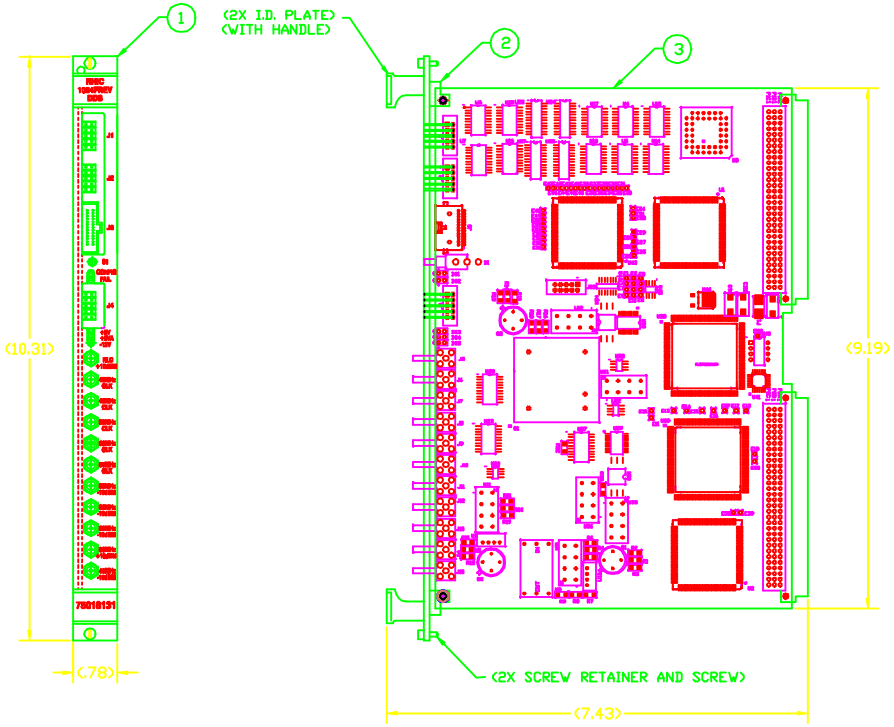
SIZE	DRAWING NUMBER:	REV
E	RD75018131	A

QA CATEGORY: A-3 | SCALE: 2:1 | WEIGHT: ——— | SHEET 1 OF 1

			1	DS5	70	LED, SUBMINIATURE, RED, 14V (DIALIGHT)	555-2006	
			3	DS2,3,4	69	LED, SUBMINIATURE, RED, 5V, (DIALIGHT)	555-2007	A-42334
			1	DS1	68	LED, SUBMINIATURE, GRN, 5V, (DIALIGHT)	555-2303	A-42337
					67			
					66			
			1	XF1	65	FUSE, 3.0A, FAST ACTING (LITTTELFUSE)	R1541003	
			1	F1	64	FUSE BLOCK, SMT (LITTELFUSE)	R154003	
					63			
			5	R95,96,97,98,99	62	RES, 47 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ470U	
			3	R83,84,85	61	RES, 10 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ100U	
			1	R51	60	RES, 510 OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ511U	
			6	R49,50,53,54,55,56	59	RES, 1K OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ102U	
			1	R42	58	RES, 470K OHMS, 1/8W, 5%, SMT RC1206 (PANASONIC)	ERJ-8GEYJ474U	
	-3	-2	-1	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MFG. / PART NO.	MATL DWG NO., BNL NO.
	QTY REQD							

QTY REQD			REF DESIGNATOR	ITEM NO.	DESCRIPTION	MFG. / PART NO.	MATL DWG NO., BNL NO.
–3	–2	–1					
			REFERENCE	81	SCHEMATIC DIAGRAM	RD75018129	X
				80			X
		1	XU8	79	SOCKET, 44 PIN PLCC (BERG)	PLCC44P–T	X
		2	P1,2	78	CONN, 96 PIN, MALE, RGT ANG (T&B MC096–042–2)	A–66224	X
		1	J23	77	HEADER, 10 PIN MALE, STRAIGHT (SULLINS ELECTRONICS INC)	PTC05DAAN	X
		11	J5,6,7,8,9,10,11, 12,13,14,15	76	CONN, BLKHD MOUNTED RGT ANG, MALE JACK, GLD PLD(AEP)	1110–1511–002	X X
		1	J3	75	CONN, 26 POSITION, MALE, RGT ANG (AMP)	1–104069–3	X
		3	J1,2,4	74	HEADER, 10 PIN MALE, RGT ANG (SULLINS ELECTRONIC INC.)	PTC05DGBN	X
				73			X
		17	FB1,2,5,6,7,8, 9,10,11,12,13,14, 15,16,17,18,19	72	FERRITE BEAD, SMT (FAIR–RITE PRODUCTS CORP.)	2773–021447	X
		1	S1	71	SWITCH, PUSHBUTTON, SPST EP SERIES (C&K)	EP11SD1AVBE	

REVISIONS							
REV	ZONE	ECN NO.	DESCRIPTION	BY	DATE	CKR	APP



NOTES:

1. FRONT PANEL INCLUDES FRONT PANEL, TWO HANDLES WITH TWO I.D. PLATES, UPPER AND LOWER SCREW RETAINERS AND SCREWS
2. LABEL FRONT SURFACE OF I.D. PLATE WITH PERMANENT BLACK SEMIGLOSS INK, REF MIL-STD-130. ARTWORK TO BE SUPPLIED BY BNL.
3. ITEM NO. 2 CARD MTG BRACKET KIT (INCLUDES FOLLOWING FOR REFERENCE)
   1. CARD MTG BRACKET NON CONDUCTIVE VERO NO. 172-12710M
   2. M2 .5X10 CH HD SCREW VERO NO. 41-24642J
   3. M2 .5 HEX NUT VERO NO. 27-24633J

QTY REQD -3	QTY REQD -2	QTY REQD -1	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MFG. / PART NO.	MAT'L DWG NO., BNL NO.
		1		3	P.C. BOARD ASSEMBLY		RD75018131
		2		2	CARD MTG BKT KIT 10/PK	VERO 173-232669L	
		1		1	FRONT PANEL MODIFIED		RD75018132

PJ99-13

NEXT ASSEMBLY

CUTTING ECN

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES
.X ± .030
.XX ± .015
.XXX ± .005
ANGULAR TOLERANCE ±1°

NA / FINISH

BREAK SHARP EDGES MAX. .031 MIN. .015

RHIC

DRAWN BY	M.JACOBELLIS	3-24-99
ENGR APPROVAL		
CHECKED BY		
ENGINEER APPROVAL		
SUPERVISOR APPROVAL		
QA APPROVAL		
CAE APPROVAL		

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973

TITLE:
MODULE ASSEMBLY
RHIC 1024FREV DDS

SIZE: D | DRAWING NUMBER: RD75018133 | REV: A

QA CATEGORY: A-3 | SCALE: 1/1 | WEIGHT: —— | SHEET 1 OF 1