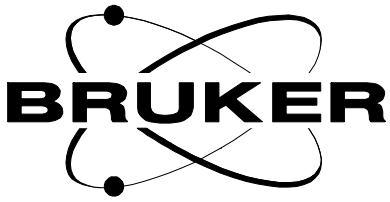

AQR

Amplitude Setting Unit Single
Technical Manual

Version 001

BRUKER

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This manual was written by

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Wissembourg, France

Manual P/N: Z31485
DWG-Nr: 1187001

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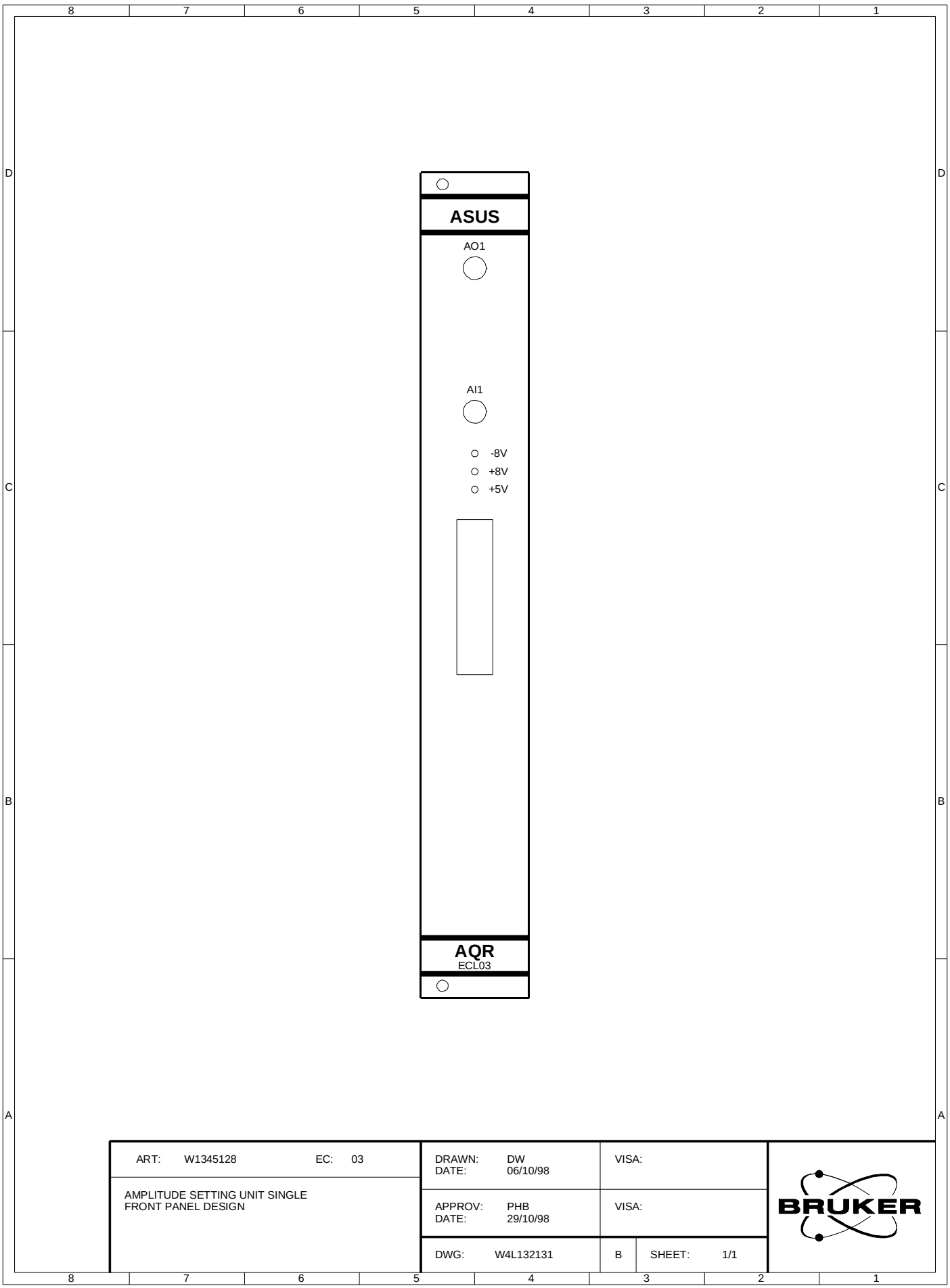
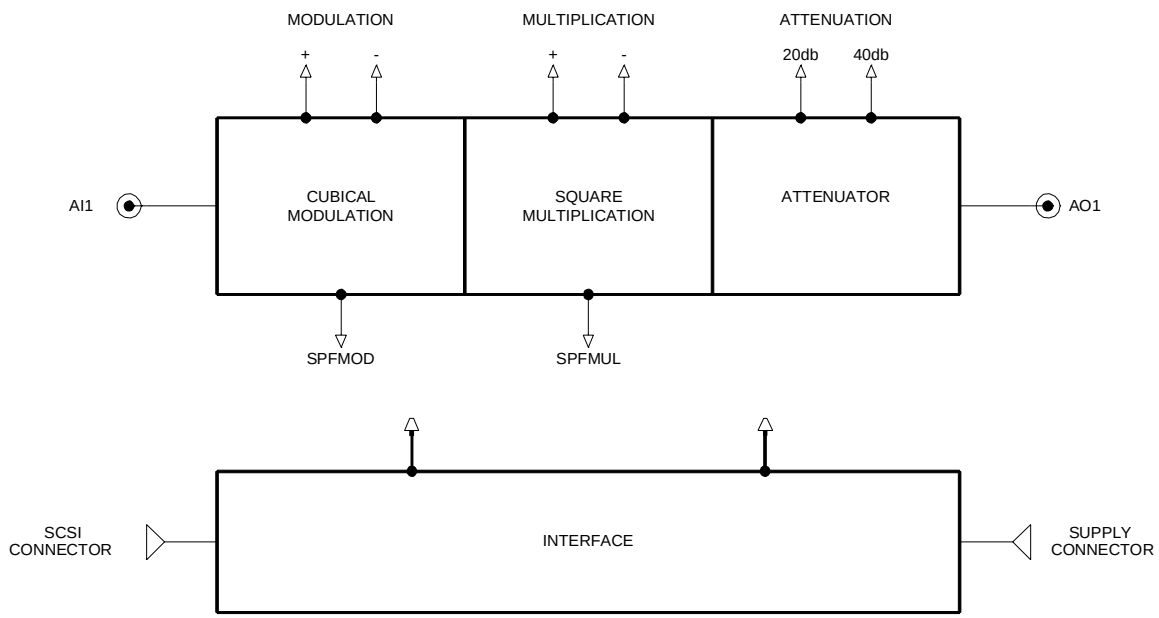
ASU Single Channel 1

Figure 1.1. Amplitude Setting Unit Single Channel Location



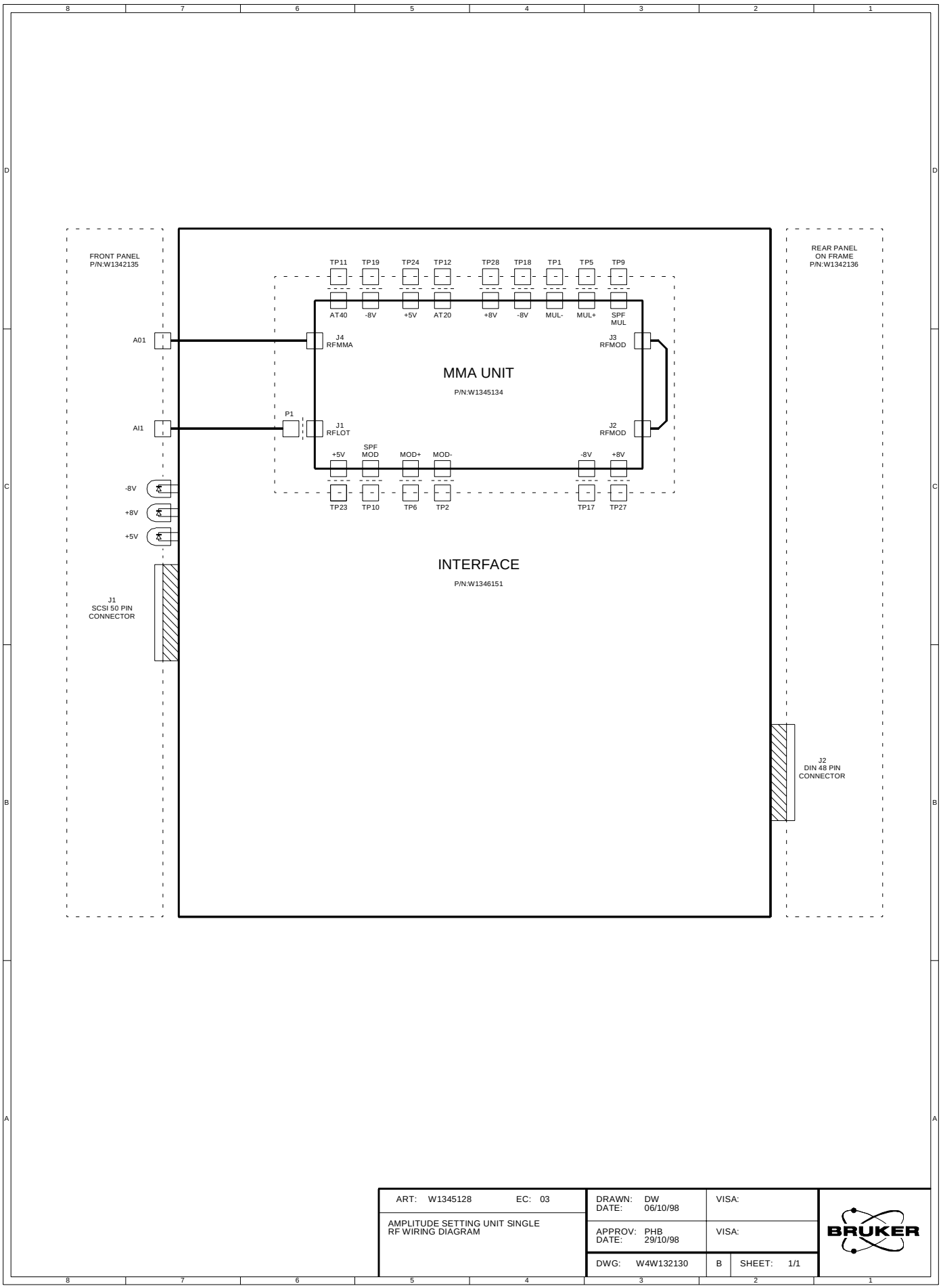
ART: W1345128 EC: 03	DRAWN: DW DATE: 06/10/98	VISA:	BRUKER
AMPLITUDE SETTING UNIT SINGLE FRONT PANEL DESIGN	APPROV: PHB DATE: 29/10/98	VISA:	
	DWG: W4L132131	B SHEET: 1/1	

Figure 1.2. Amplitude Setting Unit Single Channel Block Diagram



ART: W1345128 EC: 03	DRAWN: DW DATE: 06/10/98	VISA:	
AMPLITUDE SETTING UNIT SINGLE RF BLOCK DIAGRAM	APPROV: PHB DATE: 29/10/98	VISA:	
	DWG: W4B132115	B	SHEET: 1/1

Figure 1.3. Amplitude Setting Unit Single Channel Wiring Diagram



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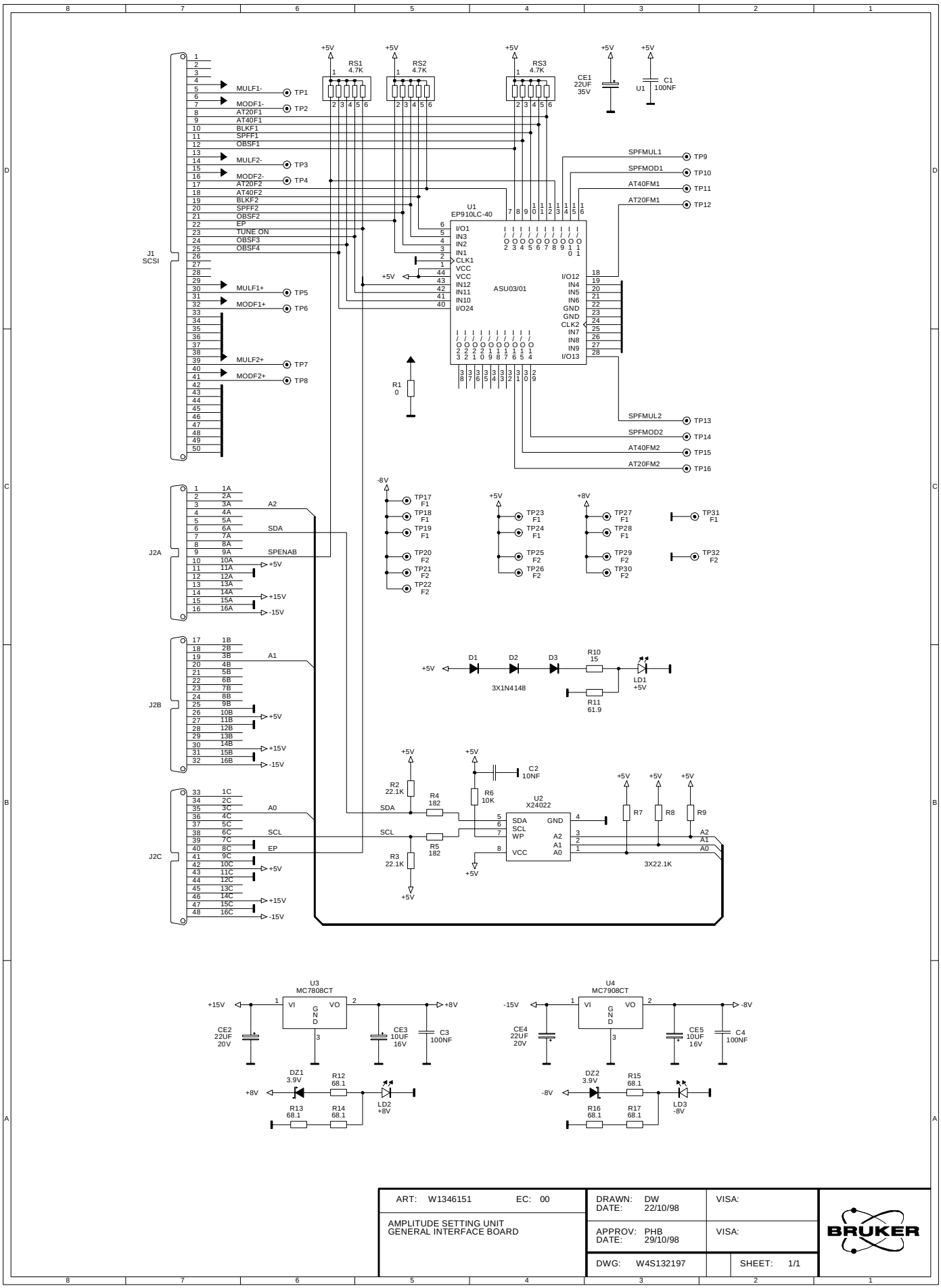
AMPLITUDE SETTING UNIT SINGLE RF WIRING DIAGRAM	APPROV: PHB DATE: 29/10/98	VISA:	
	DWG: W4W132130	B SHEET: 1/1	

Interface 2

Figure 2.1. Interface Schematic



ART: W1346151 EC: 00	DRAWN: DW DATE: 22/10/98	VISA:	BRUKER
AMPLITUDE SETTING UNIT GENERAL INTERFACE BOARD	APPROV: PHB DATE: 29/10/98	VISA:	
	DWG: W4S132197	SHEET: 1/1	

Figure 2.2. Interface Location

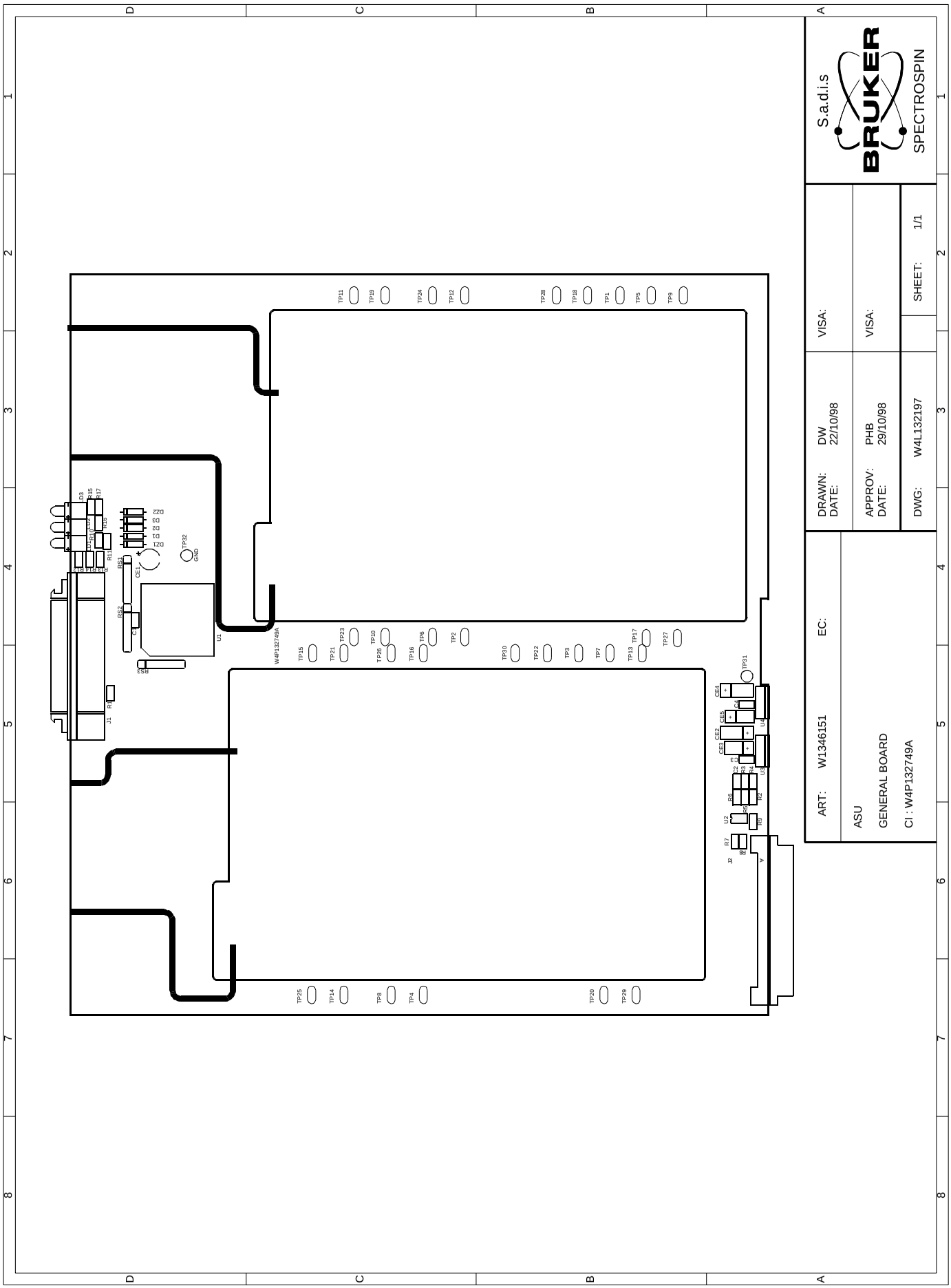
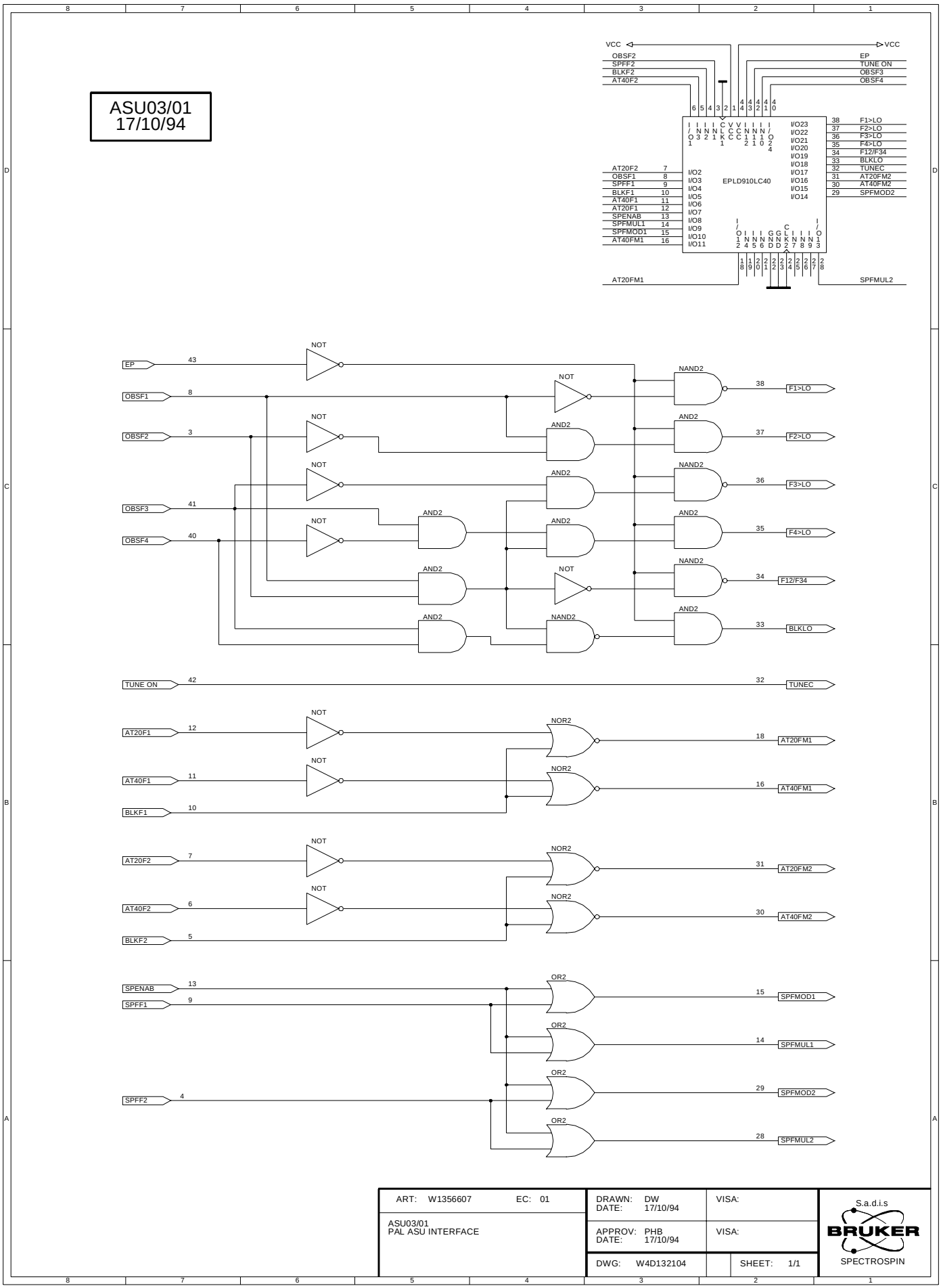


Figure 2.3. PAL ASU03/01 Logical Program



ART: W1356607 EC: 01	DRAWN: DW DATE: 17/10/94	VISA:	S.a.d.i.s BRUKER SPECTROSPIN
ASU03/01 PAL ASU INTERFACE	APPROV: PHB DATE: 17/10/94	VISA:	
	DWG: W4D132104	SHEET: 1/1	

Value Table

Part:W1346151 Drawing:W4S132197 Copy In Part: Draw:
Desc:AQR ASU CIRCUIT INTERFACE ECL:0 Modified:22/10/98 By:DW

Pos.	Component	Local Description
C1	8493	COND CMS 1206 100N 50V 20% X7R
C2	21014	COND CMS 1206 10N 50V 20% X7R
C3	8493	COND CMS 1206 100N 50V 20% X7R
C4	8493	COND CMS 1206 100N 50V 20% X7R
CE1	10017	COND CHIMI RAD 22U 35V 6.3X7
CE2	51557	COND CMS TANTAL 22U 20V 20%
CE3	51559	COND CMS TANTAL 10U 16V 20%
CE4	51557	COND CMS TANTAL 22U 20V 20%
CE5	51559	COND CMS TANTAL 10U 16V 20%
CI1	W1348018	CI ASU2/LOT CIRCUIT INTERFACE
D1	2967	DIODE 1N4148
D2	2967	DIODE 1N4148
D3	2967	DIODE 1N4148
DZ1	34639	DIODE Z BZX55C 3.9V 500MW
DZ2	34639	DIODE Z BZX55C 3.9V 500MW
ICSU1	15771	IC SUPPORT PLCC44
J1	59837	CN F 50 C PRT SCSI/1.27
J2	22744	CN M 48 C PRT DIN41612-C/2
LD1	21866	OPTO LED 3MM C PRT BOI VR R2.5
LD2	21866	OPTO LED 3MM C PRT BOI VR R2.5
LD3	21866	OPTO LED 3MM C PRT BOI VR R2.5
R1	21352	RES CMS 0 1% 0.25W 1206
R2	21327	RES CMS 22.1K 1% 0.25W 1206
R3	21327	RES CMS 22.1K 1% 0.25W 1206
R4	20727	RES CMS 182 1% 0.25W 1206
R5	20727	RES CMS 182 1% 0.25W 1206
R6	20750	RES CMS 10K 1% 0.25W 1206
R7	21327	RES CMS 22.1K 1% 0.25W 1206
R8	21327	RES CMS 22.1K 1% 0.25W 1206
R9	21327	RES CMS 22.1K 1% 0.25W 1206
R10	20713	RES CMS 15 1% 0.25W 1206
R11	8853	RES CMS 61.9 1% 0.25W 1206
R12	20721	RES CMS 68.1 1% 0.25W 1206
R13	20721	RES CMS 68.1 1% 0.25W 1206
R14	20721	RES CMS 68.1 1% 0.25W 1206
R15	20721	RES CMS 68.1 1% 0.25W 1206
R16	20721	RES CMS 68.1 1% 0.25W 1206
R17	20721	RES CMS 68.1 1% 0.25W 1206
RS1	9818	RES RES 4.7KX5 2% SIL6
RS2	9818	RES RES 4.7KX5 2% SIL6
RS3	9818	RES RES 4.7KX5 2% SIL6
TP1	35779	ACCBL LANGUETTE PL 2.8 PRT
TP2	35779	ACCBL LANGUETTE PL 2.8 PRT
TP3	35779	ACCBL LANGUETTE PL 2.8 PRT
TP4	35779	ACCBL LANGUETTE PL 2.8 PRT
TP5	35779	ACCBL LANGUETTE PL 2.8 PRT
TP6	35779	ACCBL LANGUETTE PL 2.8 PRT
TP7	35779	ACCBL LANGUETTE PL 2.8 PRT
TP8	35779	ACCBL LANGUETTE PL 2.8 PRT
TP9	35779	ACCBL LANGUETTE PL 2.8 PRT
TP10	35779	ACCBL LANGUETTE PL 2.8 PRT
TP11	35779	ACCBL LANGUETTE PL 2.8 PRT
TP12	35779	ACCBL LANGUETTE PL 2.8 PRT
TP13	35779	ACCBL LANGUETTE PL 2.8 PRT

Part:W1346151 Drawing:W4S132197 Copy In Part: Draw:
Desc:AQR ASU CIRCUIT INTERFACE ECL:0 Modified:22/10/98 By:DW

Pos.	Component	Local Description
TP14	35779	ACCBL LANGUETTE PL 2.8 PRT
TP15	35779	ACCBL LANGUETTE PL 2.8 PRT
TP16	35779	ACCBL LANGUETTE PL 2.8 PRT
TP17	35779	ACCBL LANGUETTE PL 2.8 PRT
TP18	35779	ACCBL LANGUETTE PL 2.8 PRT
TP19	35779	ACCBL LANGUETTE PL 2.8 PRT
TP20	35779	ACCBL LANGUETTE PL 2.8 PRT
TP21	35779	ACCBL LANGUETTE PL 2.8 PRT
TP22	35779	ACCBL LANGUETTE PL 2.8 PRT
TP23	35779	ACCBL LANGUETTE PL 2.8 PRT
TP24	35779	ACCBL LANGUETTE PL 2.8 PRT
TP25	35779	ACCBL LANGUETTE PL 2.8 PRT
TP26	35779	ACCBL LANGUETTE PL 2.8 PRT
TP27	35779	ACCBL LANGUETTE PL 2.8 PRT
TP28	35779	ACCBL LANGUETTE PL 2.8 PRT
TP29	35779	ACCBL LANGUETTE PL 2.8 PRT
TP30	35779	ACCBL LANGUETTE PL 2.8 PRT
TP31	59995	ACCBL PICOT FOURCHE D1.1MM
TP32	59995	ACCBL PICOT FOURCHE D1.1MM
TP3	35779	ACCBL LANGUETTE PL 2.8 PRT
TP4	35779	ACCBL LANGUETTE PL 2.8 PRT
TP5	35779	ACCBL LANGUETTE PL 2.8 PRT
TP6	35779	ACCBL LANGUETTE PL 2.8 PRT
TP7	35779	ACCBL LANGUETTE PL 2.8 PRT
TP8	35779	ACCBL LANGUETTE PL 2.8 PRT
TP9	35779	ACCBL LANGUETTE PL 2.8 PRT
U1	W1356607	IC 910/ASU CIRCUIT INTERFACE
U2	22952	IC 24022/E2PR X24022S8 SO8
U3	4978	IC 7808/VREG MC7808CT TO220
U4	12156	IC 7908/VREG MC7908CT TO220

Inputs / Ouputs Connectors *2.1*

Table 2.1. Front Panel Connector J1

Pins	Descriptions	Pins	Descriptions
01	NC	26	NC
02	NC	27	NC
03	NC	28	NC
04	AGND	29	AGND
05	MULF1-	30	MULF1+
06	AGND	31	AGND
07	MODF1-	32	MODF1+
08	AT20F1	33	DGND
09	AT40F1	34	DGND
10	BLKF1	35	DGND
11	SPFF1	36	DGND
12	OBSF1	37	DGND
13	AGND	38	AGND
14	MULF2-	39	MULF2+
15	AGND	40	AGND
16	MODF2-	41	MODF2+
17	AT20F2	42	DGND
18	AT40F2	43	DGND
19	BLKF2	44	DGND
20	SPFF2	45	DGND
21	OBSF2	46	DGND
22	NC	47	DGND
23	TUNE ON	48	DGND
24	NC	49	DGND
25	NC	50	DGND

Table 2.2. Rear Panel Connector J2

Pins	Descriptions	Pins	Descriptions	Pins	Descriptions
1A	NC	1B	NC	1C	NC
2A	NC	2B	NC	2C	NC
3A	Adresse 1	3B	Adresse 2	3C	Adresse 3
4A	NC	4B	NC	4C	NC
5A	NC	5B	NC	5C	NC
6A	SDA	6B	NC	6C	SCL
7A	NC	7B	NC	7C	I2CGND
8A	NC	8B	NC	8C	EP
9A	SPENAB	9B	SPENABGND	9C	EPGND
10A	+5V	10B	+5V	10C	+5V
11A	GND	11B	GND	11C	GND
12A	NC	12B	NC	12C	NC
13A	NC	13B	NC	13C	NC
14A	+15V	14B	+15V	14C	+15V
15A	GND	15B	GND	15C	GND
16A	-15V	16B	-15V	16C	-15V

MMA Unit 3

Figure 3.1. Modulation, Multiplication & Attenuator Block Diagram

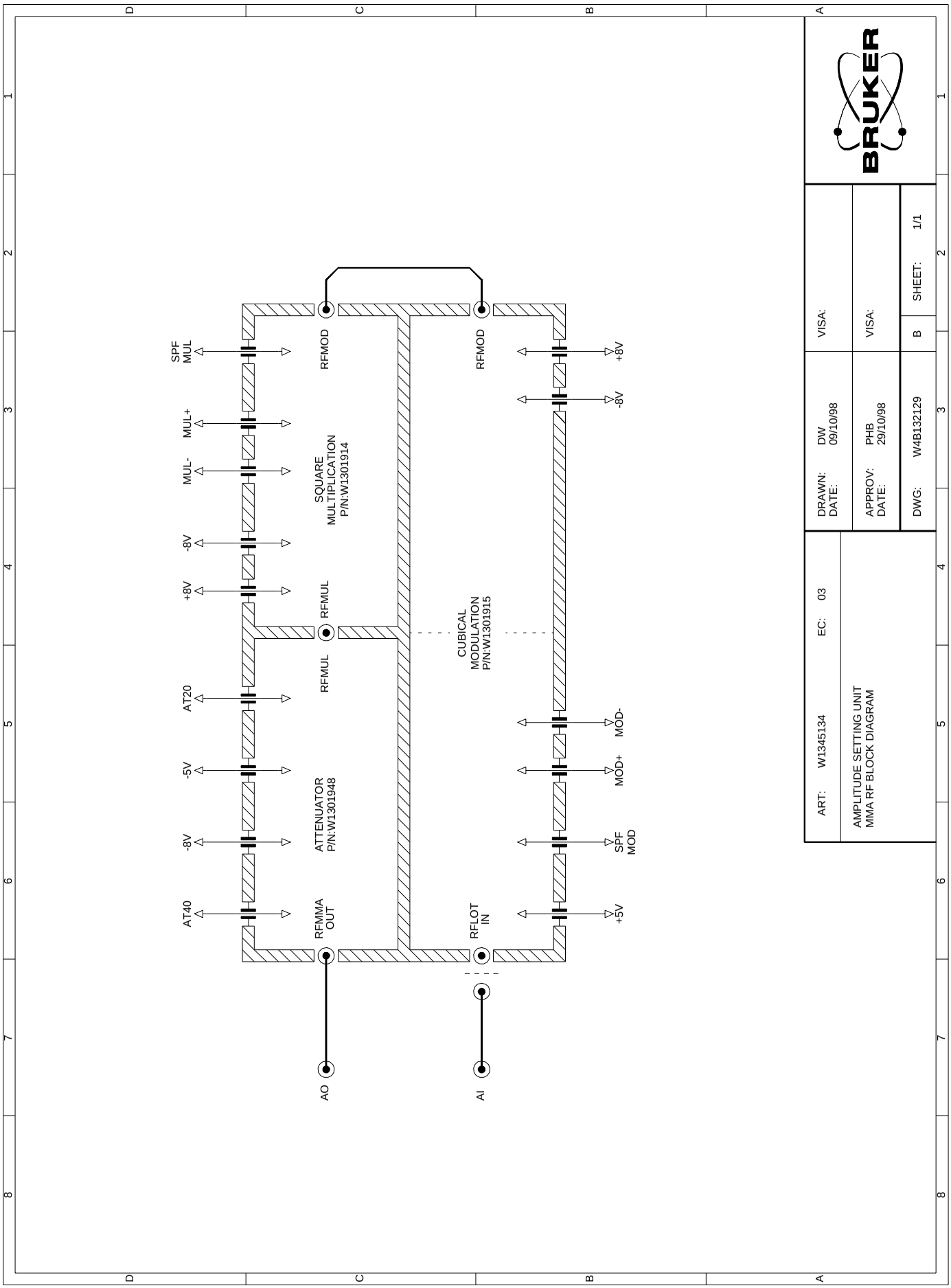


Figure 3.2. Modulation Schematic

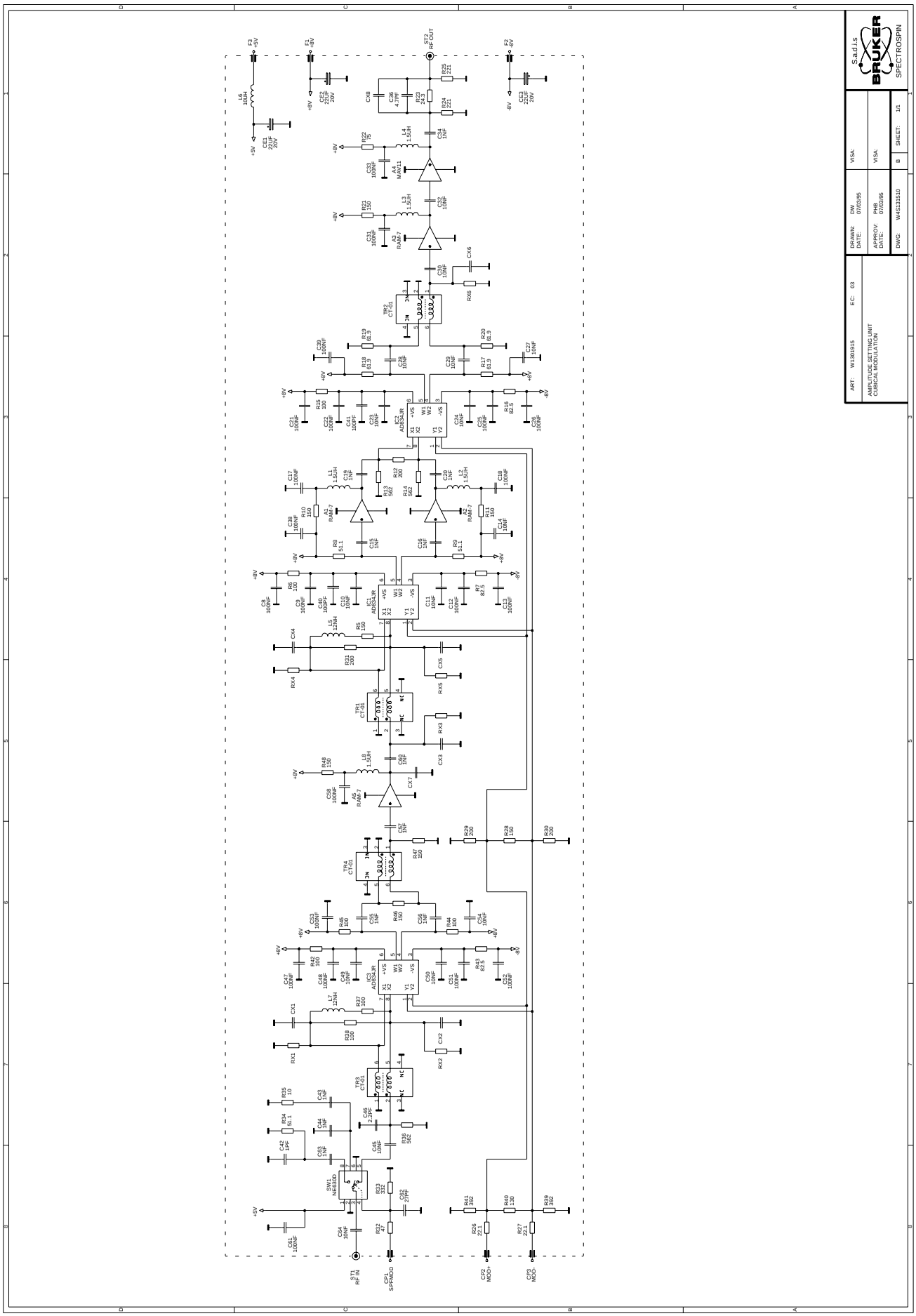
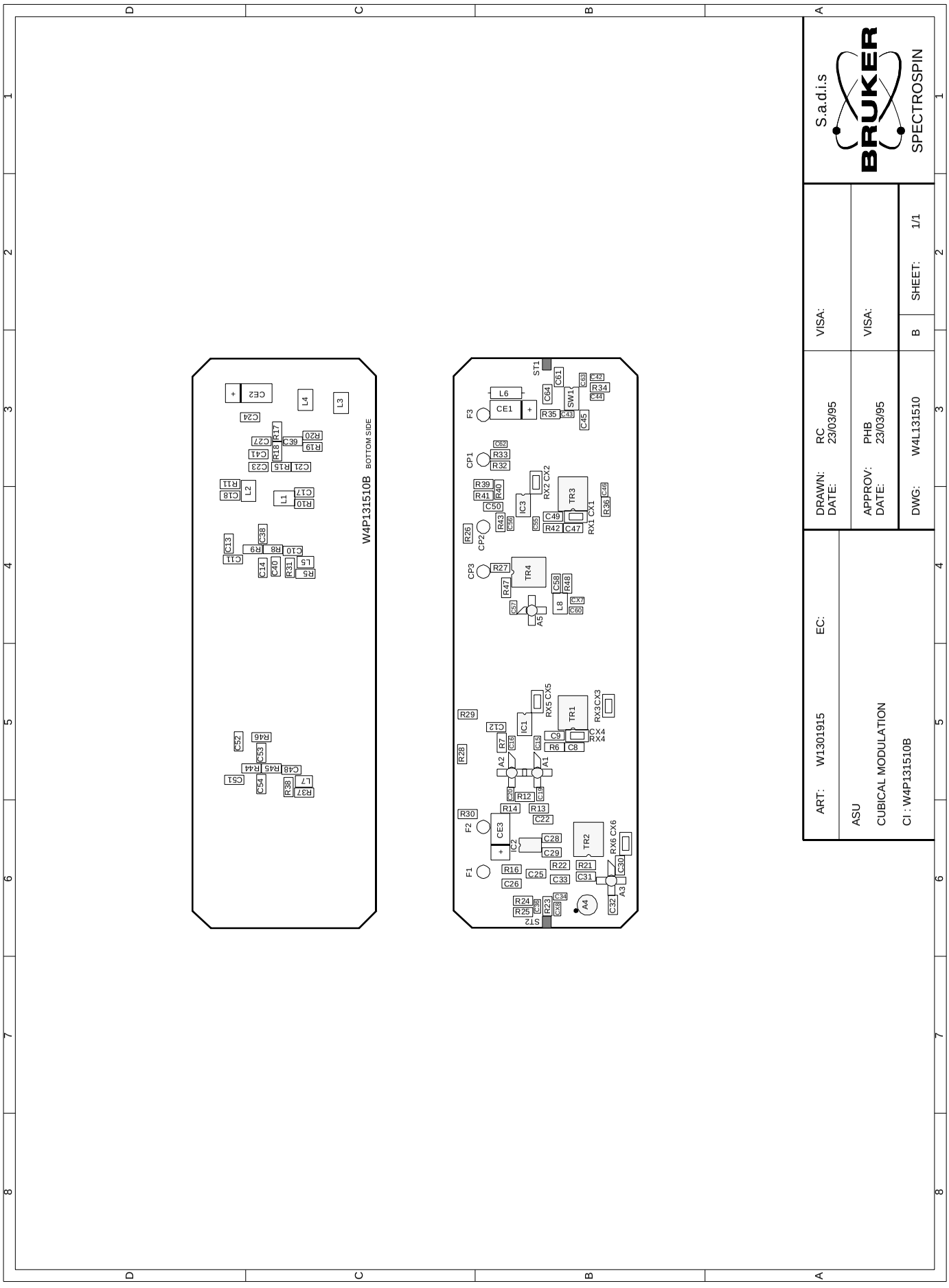


Figure 3.3. Modulation Location



Value Table

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Desc:ASU MODULATION AU CUBE ECL:0 Modified:06/03/95 By:DEHF

+-- Value Tab ----------

Pos.	Component	Local Description
A1	56535	IC 7/HF RAM-7 13DB EQU.MSA0735
A2	56535	IC 7/HF RAM-7 13DB EQU.MSA0735
A3	56535	IC 7/HF RAM-7 13DB EQU.MSA0735
A4	31201	IC 11/HF MAV-11
A5	56535	IC 7/HF RAM-7 13DB EQU.MSA0735
C8	8493	COND CMS 1206 100N 50V 20% X7R
C9	8493	COND CMS 1206 100N 50V 20% X7R
C10	21014	COND CMS 1206 10N 50V 20% X7R
C11	21014	COND CMS 1206 10N 50V 20% X7R
C12	8493	COND CMS 1206 100N 50V 20% X7R
C13	8493	COND CMS 1206 100N 50V 20% X7R
C14	21014	COND CMS 1206 10N 50V 20% X7R
C15	73183	COND CMS CDR12 1N 150V 20%
C16	73183	COND CMS CDR12 1N 150V 20%
C17	8493	COND CMS 1206 100N 50V 20% X7R
C18	8493	COND CMS 1206 100N 50V 20% X7R
C19	73183	COND CMS CDR12 1N 150V 20%
C20	73183	COND CMS CDR12 1N 150V 20%
C21	8493	COND CMS 1206 100N 50V 20% X7R
C22	8493	COND CMS 1206 100N 50V 20% X7R
C23	21014	COND CMS 1206 10N 50V 20% X7R
C24	21014	COND CMS 1206 10N 50V 20% X7R
C25	8493	COND CMS 1206 100N 50V 20% X7R
C26	8493	COND CMS 1206 100N 50V 20% X7R
C27	21014	COND CMS 1206 10N 50V 20% X7R
C28	21014	COND CMS 1206 10N 50V 20% X7R
C29	21014	COND CMS 1206 10N 50V 20% X7R
C30	21014	COND CMS 1206 10N 50V 20% X7R
C31	8493	COND CMS 1206 100N 50V 20% X7R
C32	21014	COND CMS 1206 10N 50V 20% X7R
C33	8493	COND CMS 1206 100N 50V 20% X7R
C34	73183	COND CMS CDR12 1N 150V 20%
C36	73180	COND CMS CDR12 4.7P 150V 0.25P
C38	8493	COND CMS 1206 100N 50V 20% X7R
C39	8493	COND CMS 1206 100N 50V 20% X7R
C40	20990	COND CMS 1206 100P 50V 5% NPO
C41	20990	COND CMS 1206 100P 50V 5% NPO
C42	73410	COND CMS CDR12 1P 150V 0.25P
C43	73183	COND CMS CDR12 1N 150V 20%
C44	73183	COND CMS CDR12 1N 150V 20%
C45	21014	COND CMS 1206 10N 50V 20% X7R
C46	73179	COND CMS CDR12 2.2P 150V 0.25P
C47	8493	COND CMS 1206 100N 50V 20% X7R
C48	8493	COND CMS 1206 100N 50V 20% X7R
C49	21014	COND CMS 1206 10N 50V 20% X7R
C50	21014	COND CMS 1206 10N 50V 20% X7R
C51	8493	COND CMS 1206 100N 50V 20% X7R
C52	8493	COND CMS 1206 100N 50V 20% X7R
C53	8493	COND CMS 1206 100N 50V 20% X7R
C54	21014	COND CMS 1206 10N 50V 20% X7R
C55	73183	COND CMS CDR12 1N 150V 20%
C56	73183	COND CMS CDR12 1N 150V 20%
C57	73183	COND CMS CDR12 1N 150V 20%
C58	8493	COND CMS 1206 100N 50V 20% X7R

+-- Value Tab Head ----------+
| Part:W1301915 Drawing:W4S131510B Copy In Part: Draw: |
| Desc:ASU MODULATION AU CUBE ECL:0 Modified:06/03/95 By:DEHF |
+-- Value Tab ----------+

Pos.	Component	Local Description
C60	73183	COND CMS CDR12 1N 150V 20%
C61	8493	COND CMS 1206 100N 50V 20% X7R
C62	73182	COND CMS CDR12 27P 150V 20%
C63	73183	COND CMS CDR12 1N 150V 20%
C64	21014	COND CMS 1206 10N 50V 20% X7R
CE1	51557	COND CMS TANTAL 22U 20V 20%
CE2	51557	COND CMS TANTAL 22U 20V 20%
CE3	51557	COND CMS TANTAL 22U 20V 20%
CI1	W1356520	CI MODULATION AU CUBE
CP1	59995	ACCBL PICOT FOURCHE D1.1MM
CP2	59995	ACCBL PICOT FOURCHE D1.1MM
CP3	59995	ACCBL PICOT FOURCHE D1.1MM
F1	59995	ACCBL PICOT FOURCHE D1.1MM
F2	59995	ACCBL PICOT FOURCHE D1.1MM
F3	59995	ACCBL PICOT FOURCHE D1.1MM
IC1	56510	IC 834/PAD AD834MULT 0.5GHZSO8
IC2	56510	IC 834/PAD AD834MULT 0.5GHZSO8
IC3	56510	IC 834/PAD AD834MULT 0.5GHZSO8
L1	22874	SELF CMS 1008 1.5UH 10%
L2	22874	SELF CMS 1008 1.5UH 10%
L3	22874	SELF CMS 1008 1.5UH 10%
L4	22874	SELF CMS 1008 1.5UH 10%
L5	42179	SELF CMS 1008 12NH 20%
L6	30155	SELF 10UH 0.14A
L7	42179	SELF CMS 1008 12NH 20%
L8	22874	SELF CMS 1008 1.5UH 10%
R10	20726	RES CMS 150 1% 0.25W 1206
R11	20726	RES CMS 150 1% 0.25W 1206
R12	8854	RES CMS 200 1% 0.25W 1206
R13	20733	RES CMS 562 1% 0.25W 1206
R14	20733	RES CMS 562 1% 0.25W 1206
R15	20724	RES CMS 100 1% 0.25W 1206
R16	20722	RES CMS 82.5 1% 0.25W 1206
R17	8853	RES CMS 61.9 1% 0.25W 1206
R18	8853	RES CMS 61.9 1% 0.25W 1206
R19	8853	RES CMS 61.9 1% 0.25W 1206
R20	8853	RES CMS 61.9 1% 0.25W 1206
R21	20726	RES CMS 150 1% 0.25W 1206
R22	51836	RES CMS 75 1% 0.25W 1206
R23	56359	RES CMS 24.3 1% 0.25W 1206
R24	20728	RES CMS 221 1% 0.25W 1206
R25	20728	RES CMS 221 1% 0.25W 1206
R26	20715	RES CMS 22.1 1% 0.25W 1206
R27	20715	RES CMS 22.1 1% 0.25W 1206
R28	20726	RES CMS 150 1% 0.25W 1206
R29	8854	RES CMS 200 1% 0.25W 1206
R30	8854	RES CMS 200 1% 0.25W 1206
R31	8854	RES CMS 200 1% 0.25W 1206
R32	73283	RES CMS 47.5 1% 0.25W 1206
R33	20730	RES CMS 332 1% 0.25W 1206
R34	20765	RES CMS 51.1 1% 0.25W 1206
R35	20711	RES CMS 10 1% 0.25W 1206
R36	20733	RES CMS 562 1% 0.25W 1206
R37	20724	RES CMS 100 1% 0.25W 1206
R38	20724	RES CMS 100 1% 0.25W 1206
R39	20731	RES CMS 392 1% 0.25W 1206

Value Tab Head

Part:W1301915 Drawing:W4S131510B Copy In Part: Draw:
Desc:ASU MODULATION AU CUBE ECL:0 Modified:06/03/95 By:DEHF

Value Tab

Pos.	Component	Local Description
R40	51682	RES CMS 130 1% 0.25W 1206
R41	20731	RES CMS 392 1% 0.25W 1206
R42	20724	RES CMS 100 1% 0.25W 1206
R43	20722	RES CMS 82.5 1% 0.25W 1206
R44	20724	RES CMS 100 1% 0.25W 1206
R45	20724	RES CMS 100 1% 0.25W 1206
R46	20726	RES CMS 150 1% 0.25W 1206
R47	20726	RES CMS 150 1% 0.25W 1206
R48	20726	RES CMS 150 1% 0.25W 1206
R5	20726	RES CMS 150 1% 0.25W 1206
R6	20724	RES CMS 100 1% 0.25W 1206
R7	20722	RES CMS 82.5 1% 0.25W 1206
R8	20765	RES CMS 51.1 1% 0.25W 1206
R9	20765	RES CMS 51.1 1% 0.25W 1206
SW1	56425	IC 630/SA630 S08
TR1	56414	TRSFO 1/1 5-1000MHZ CMS DIP6
TR2	56414	TRSFO 1/1 5-1000MHZ CMS DIP6
TR3	56414	TRSFO 1/1 5-1000MHZ CMS DIP6
TR4	56414	TRSFO 1/1 5-1000MHZ CMS DIP6

Figure 3.4. Multiplication Schematic

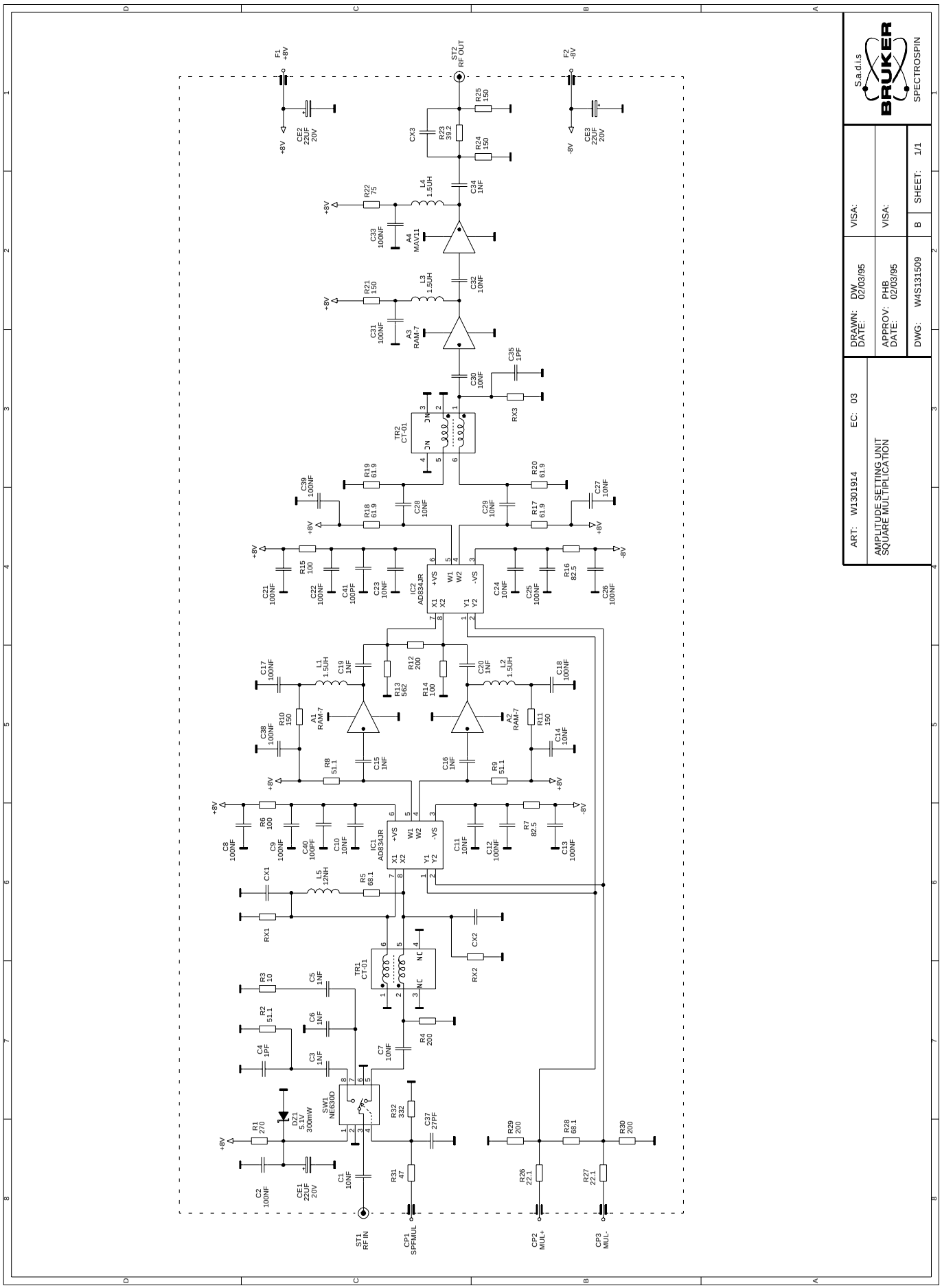
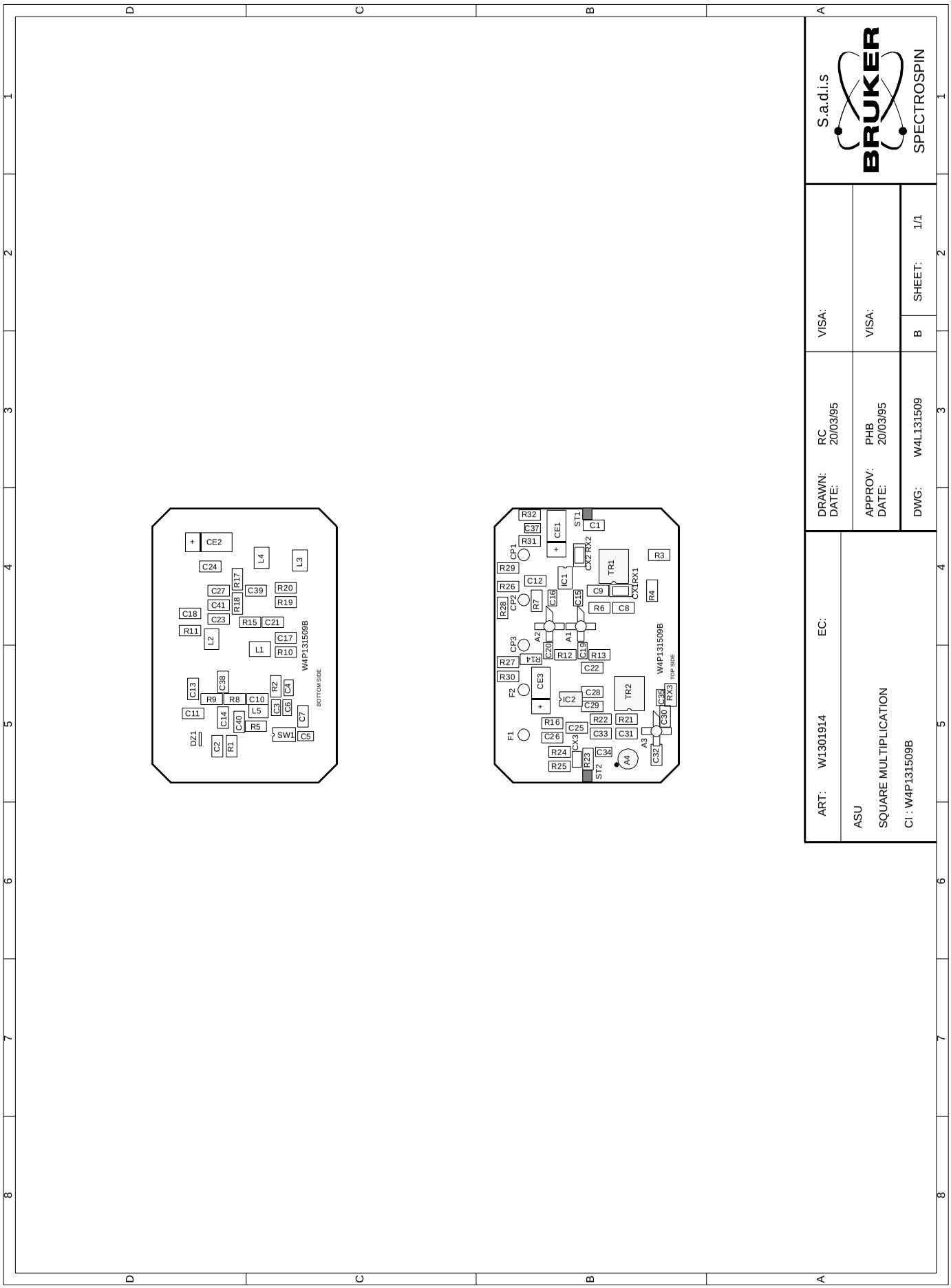


Figure 3.5. Multiplcation Location



Value Table

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Desc:ASU MULTIPLICATION AU CARRE ECL:0 Modified:02/03/95 By:DEHF

Pos.	Component	Local Description
A1	56535	IC 7/HF RAM-7 13DB EQU.MSA0735
A2	56535	IC 7/HF RAM-7 13DB EQU.MSA0735
A3	56535	IC 7/HF RAM-7 13DB EQU.MSA0735
A4	31201	IC 11/HF MAV-11
C1	21014	COND CMS 1206 10N 50V 20% X7R
C2	8493	COND CMS 1206 100N 50V 20% X7R
C3	73183	COND CMS CDR12 1N 150V 20%
C4	73410	COND CMS CDR12 1P 150V 0.25P
C5	73183	COND CMS CDR12 1N 150V 20%
C6	73183	COND CMS CDR12 1N 150V 20%
C7	21014	COND CMS 1206 10N 50V 20% X7R
C8	8493	COND CMS 1206 100N 50V 20% X7R
C9	8493	COND CMS 1206 100N 50V 20% X7R
C10	21014	COND CMS 1206 10N 50V 20% X7R
C11	21014	COND CMS 1206 10N 50V 20% X7R
C12	8493	COND CMS 1206 100N 50V 20% X7R
C13	8493	COND CMS 1206 100N 50V 20% X7R
C14	21014	COND CMS 1206 10N 50V 20% X7R
C15	73183	COND CMS CDR12 1N 150V 20%
C16	73183	COND CMS CDR12 1N 150V 20%
C17	8493	COND CMS 1206 100N 50V 20% X7R
C18	8493	COND CMS 1206 100N 50V 20% X7R
C19	73183	COND CMS CDR12 1N 150V 20%
C20	73183	COND CMS CDR12 1N 150V 20%
C21	8493	COND CMS 1206 100N 50V 20% X7R
C22	8493	COND CMS 1206 100N 50V 20% X7R
C23	21014	COND CMS 1206 10N 50V 20% X7R
C24	21014	COND CMS 1206 10N 50V 20% X7R
C25	8493	COND CMS 1206 100N 50V 20% X7R
C26	8493	COND CMS 1206 100N 50V 20% X7R
C27	21014	COND CMS 1206 10N 50V 20% X7R
C28	21014	COND CMS 1206 10N 50V 20% X7R
C29	21014	COND CMS 1206 10N 50V 20% X7R
C30	21014	COND CMS 1206 10N 50V 20% X7R
C31	8493	COND CMS 1206 100N 50V 20% X7R
C32	21014	COND CMS 1206 10N 50V 20% X7R
C33	8493	COND CMS 1206 100N 50V 20% X7R
C34	73183	COND CMS CDR12 1N 150V 20%
C35	73410	COND CMS CDR12 1P 150V 0.25P
C37	73182	COND CMS CDR12 27P 150V 20%
C38	8493	COND CMS 1206 100N 50V 20% X7R
C39	8493	COND CMS 1206 100N 50V 20% X7R
C40	20990	COND CMS 1206 100P 50V 5% NPO
C41	20990	COND CMS 1206 100P 50V 5% NPO
CE1	51557	COND CMS TANTAL 22U 20V 20%
CE2	51557	COND CMS TANTAL 22U 20V 20%
CE3	51557	COND CMS TANTAL 22U 20V 20%
CI1	W1356519	CI MULTIPLICATION AU CARRE
CP1	59995	ACCBL PICOT FOURCHE D1.1MM
CP2	59995	ACCBL PICOT FOURCHE D1.1MM
CP3	59995	ACCBL PICOT FOURCHE D1.1MM
DZ1	22577	DIODE Z BZX84C 5V1 300MW SOT23
F1	59995	ACCBL PICOT FOURCHE D1.1MM
F2	59995	ACCBL PICOT FOURCHE D1.1MM

+-- Value Tab Head --+
| Part:W1301914 Drawing:W4S131509B   Copy In Part: Draw: |
| Desc:ASU MULTIPLICATION AU CARRE   ECL:0   Modified:02/03/95   By:DEHF |
+-- Value Tab ---+

Pos.	Component	Local Description
IC1	56510	IC 834/PAD AD834MULT 0.5GHZSO8
IC2	56510	IC 834/PAD AD834MULT 0.5GHZSO8
L1	22874	SELF CMS 1008 1.5UH 10%
L2	22874	SELF CMS 1008 1.5UH 10%
L3	22874	SELF CMS 1008 1.5UH 10%
L4	22874	SELF CMS 1008 1.5UH 10%
L5	42179	SELF CMS 1008 12NH 20%
R1	53689	RES CMS 274 1% 0.25W 1206
R2	20765	RES CMS 51.1 1% 0.25W 1206
R3	20711	RES CMS 10 1% 0.25W 1206
R4	8854	RES CMS 200 1% 0.25W 1206
R5	20721	RES CMS 68.1 1% 0.25W 1206
R6	20724	RES CMS 100 1% 0.25W 1206
R7	20722	RES CMS 82.5 1% 0.25W 1206
R8	20765	RES CMS 51.1 1% 0.25W 1206
R9	20765	RES CMS 51.1 1% 0.25W 1206
R10	20726	RES CMS 150 1% 0.25W 1206
R11	20726	RES CMS 150 1% 0.25W 1206
R12	8854	RES CMS 200 1% 0.25W 1206
R13	20733	RES CMS 562 1% 0.25W 1206
R14	20724	RES CMS 100 1% 0.25W 1206
R15	20724	RES CMS 100 1% 0.25W 1206
R16	20722	RES CMS 82.5 1% 0.25W 1206
R17	8853	RES CMS 61.9 1% 0.25W 1206
R18	8853	RES CMS 61.9 1% 0.25W 1206
R19	8853	RES CMS 61.9 1% 0.25W 1206
R20	8853	RES CMS 61.9 1% 0.25W 1206
R21	20726	RES CMS 150 1% 0.25W 1206
R22	51836	RES CMS 75 1% 0.25W 1206
R23	20718	RES CMS 39.2 1% 0.25W 1206
R24	20726	RES CMS 150 1% 0.25W 1206
R25	20726	RES CMS 150 1% 0.25W 1206
R26	20715	RES CMS 22.1 1% 0.25W 1206
R27	20715	RES CMS 22.1 1% 0.25W 1206
R28	20721	RES CMS 68.1 1% 0.25W 1206
R29	8854	RES CMS 200 1% 0.25W 1206
R30	8854	RES CMS 200 1% 0.25W 1206
R31	73283	RES CMS 47.5 1% 0.25W 1206
R32	20730	RES CMS 332 1% 0.25W 1206
SW1	56425	IC 630/SA630 S08
TR1	56414	TRSFO 1/1 5-1000MHZ CMS DIP6
TR2	56414	TRSFO 1/1 5-1000MHZ CMS DIP6

Figure 3.6. Attenuator Schematic

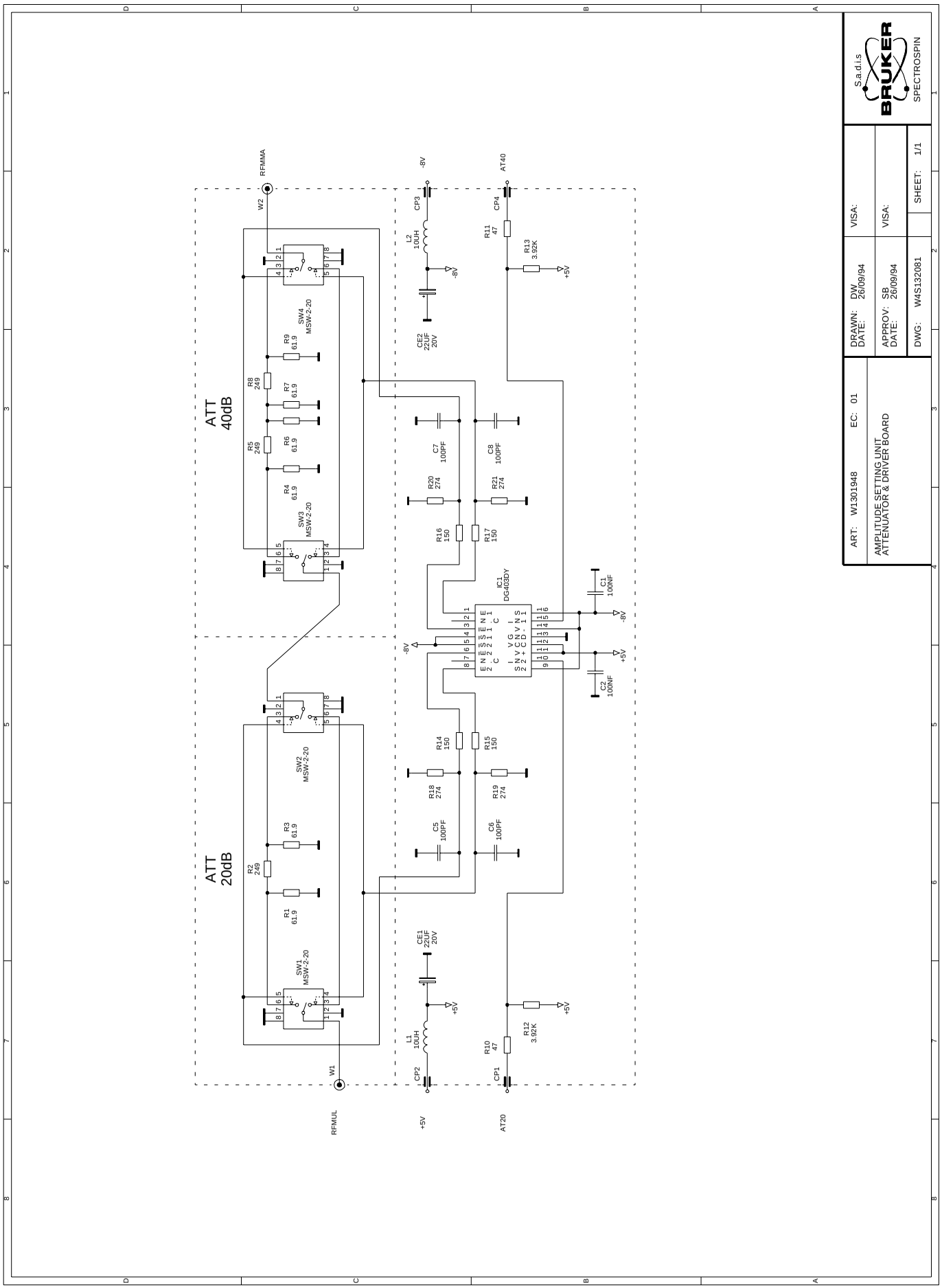
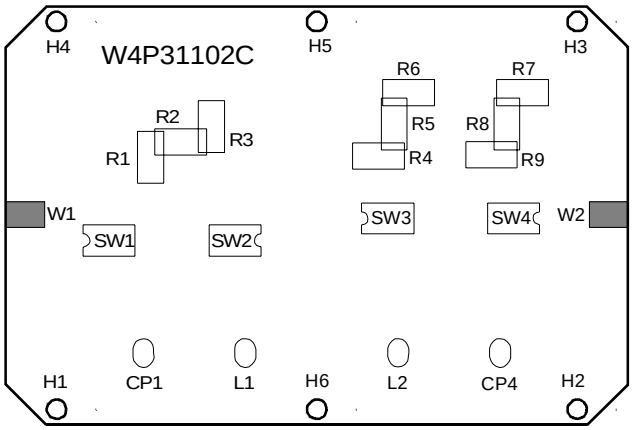
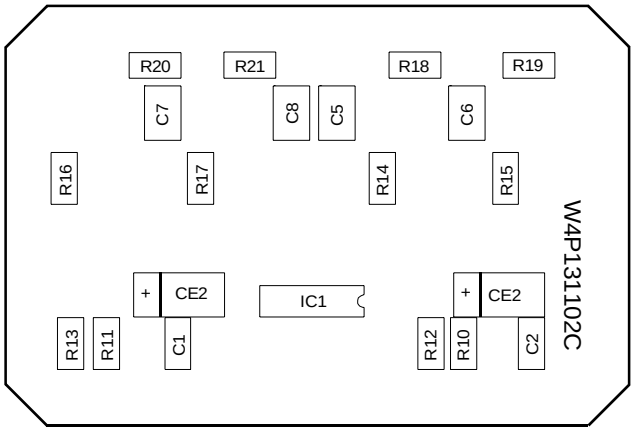


Figure 3.7. Attenuator Location





ART: W1301822 EC: 01	DRAWN: DW DATE: 28/10/94	VISA:	S.a.d.i.s BRUKER SPECTROSPIN
A.S.U. ATTENUATOR & DRIVER BOARD CI : W4P131102C	APPROV: SB DATE: 28/10/94	VISA:	
	DWG: W4L131102	B SHEET: 1/1	

Value Table

Value Tab Head

Part:W1301948 Drawing:W4S132081 Copy In Part: Draw:
Desc:ASU ATTENUATEUR & PILOTE ECL:0 Modified:27/10/97 By:MN

Value Tab

Pos.	Component	Local Description
C1	8493	COND CMS 1206 100N 50V 20% X7R
C2	8493	COND CMS 1206 100N 50V 20% X7R
C5	30412	COND CMS CDR14 100P 500V 20%
C6	30412	COND CMS CDR14 100P 500V 20%
C7	30412	COND CMS CDR14 100P 500V 20%
C8	30412	COND CMS CDR14 100P 500V 20%
CE1	51557	COND CMS TANTAL 22U 20V 20%
CE2	51557	COND CMS TANTAL 22U 20V 20%
CI1	W1356233	CI ASU ATTENUATOR & DRIVER
CP1	59995	ACCBL PICOT FOURCHE D1.1MM
CP4	59995	ACCBL PICOT FOURCHE D1.1MM
IC1	22554	IC 403/SWI DG403DY SO16
L1	30155	SELF 10UH 0.14A
L2	30155	SELF 10UH 0.14A
R1	8853	RES CMS 61.9 1% 0.25W 1206
R2	56314	RES CMS 249 1% 0.25W 1206
R3	8853	RES CMS 61.9 1% 0.25W 1206
R4	8853	RES CMS 61.9 1% 0.25W 1206
R5	56314	RES CMS 249 1% 0.25W 1206
R6	8853	RES CMS 61.9 1% 0.25W 1206
R7	8853	RES CMS 61.9 1% 0.25W 1206
R8	56314	RES CMS 249 1% 0.25W 1206
R9	8853	RES CMS 61.9 1% 0.25W 1206
R10	73283	RES CMS 47.5 1% 0.25W 1206
R11	73283	RES CMS 47.5 1% 0.25W 1206
R12	20744	RES CMS 3.92K 1% 0.25W 1206
R13	20744	RES CMS 3.92K 1% 0.25W 1206
R14	20726	RES CMS 150 1% 0.25W 1206
R15	20726	RES CMS 150 1% 0.25W 1206
R16	20726	RES CMS 150 1% 0.25W 1206
R17	20726	RES CMS 150 1% 0.25W 1206
R18	53689	RES CMS 274 1% 0.25W 1206
R19	53689	RES CMS 274 1% 0.25W 1206
R20	53689	RES CMS 274 1% 0.25W 1206
R21	53689	RES CMS 274 1% 0.25W 1206
SW1	56407	SW ASGA CMS DC-1GHZ
SW2	56407	SW ASGA CMS DC-1GHZ
SW3	56407	SW ASGA CMS DC-1GHZ
SW4	56407	SW ASGA CMS DC-1GHZ

Specifications 4

Characteristics of Amplitude Setting Unit Single Channel 4.1

The specifications below fit with the last upgrading of the unit. (Febuary 1997)

RF specifications 4.1.1

Frequency range	5 to 850 MHz
Gain	1 dB ± 1 dB
Input power	4 dBm ± 0,5 dB
Output power	5 dBm ± 1 dB for 4 dBm IN
Input VSWR	1.4
Output VSWR	1.5
Power out 1 dB Compression	5 dBm
Output harmonics H2	- 30 dBm
Output harmonics H3	- 30 dBm

Amplitude control 4.1.2

	from 0 to +1V/-1V 100Ω balanced load (MOD & MULT)
	Cubical law for Modulation
	Square law for Multiplication
	Digital input for 20dB & 40dB Attenuation
	(1 : through - 0 : active)
SPF & BLK	(0 : through - 1 : blanked)

Safety switch 4.1.3

SPENAB digital input (1 : RF Off)
(0 : RF On)

Dynamics *4.1.4*

Dynamic range	120 dB
Modulation dynamic	50 dB (50dB @ 600 MHz)
	-40 dB (50dB* @ 800 MHz)
Multiplication dynamic	40 dB (50dB @ 600 MHz)
	-30 dB (40dB* @ 800 MHz)
	(* = ± 2dB linearity)
Attenuators	20 dB (± 1dB) + 40 dB (± 1dB) @ 800 MHz

Phase shift *4.1.5*

Modulation @ 50 dB Range (25°C)	<15° for 600 MHz
	<25° for 800 MHz
Multiplication @ 30 dB	<10° for 600 MHz
	<15° for 800 MHz
Typical thermal stability (25°C to 50°C)	$\frac{\Delta\varphi}{\Delta T}$ = -F x 3.10^{-3} degree.K^{-1}
(example : F = 800 MHz, T from 300 to 315k $\Rightarrow \Delta\varphi = -36°$)	

Isolation (SPENAB CMD), (MOD & MULT at max. level) *4.1.6*

Isolation input / output	70 dB
Isolation input / output + ATT : 60 dB	110 dB

Output noise level *4.1.7*

Unblanked (MOD, MULT = 0V)	< -135 dBm (1 Hz)
Unblanked (MOD, MULT = 2.5V)	< -124 dBm (1 Hz)
Blanked (ATT = 60 dB, SPF = 0V)	Thermal noise

Switching time *4.1.8*

Rise Time	200 ns
DC Ringing	150 mV
Fall Time	100 ns
DC Ringing	10 mV
Propagation Time	40 ns

DC requirements *4.1.9*

Supply +15V	420 mA
Supply -15V	200 mA
Supply +5V	100 mA

Operating temperature *4.1.10*

Ambiance temperature range	+20°C @ +40°C

Figures

Figures

Tables

Tables