

Passive inductive systems are used for identification of persons and items.

I-Code is designed especially for the following applications : baggage identification (for example at the airport), parcel services, retail (barcode replacement), access control....

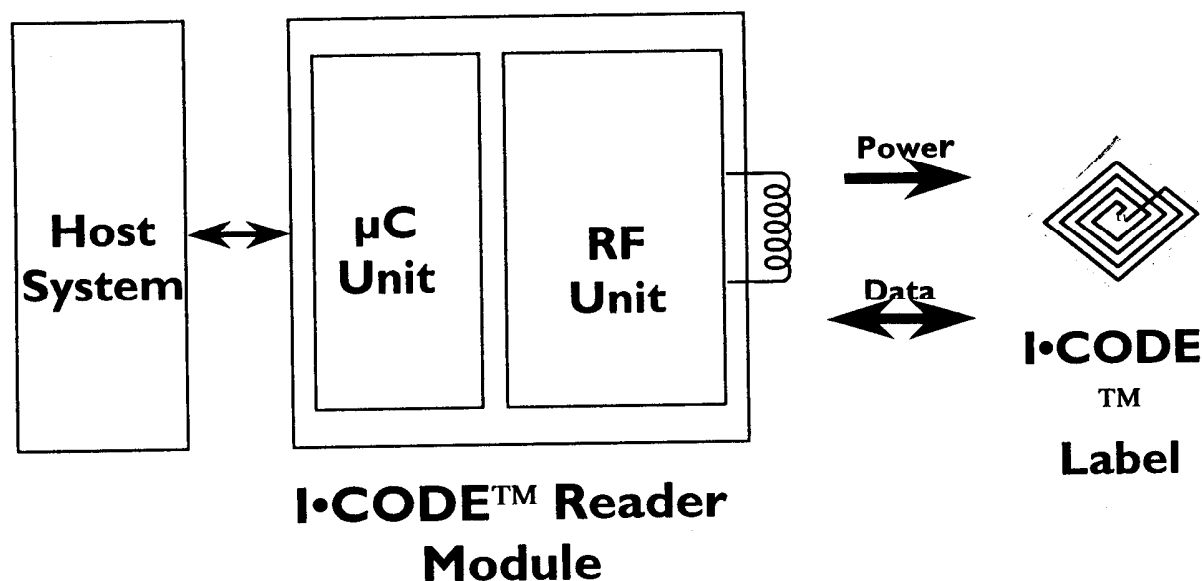


Fig.1.) Basic Principle of the I-Code system

Figure 1 shows the basic Principle of the I-Code System, which is the same as for all passive transponder systems.

The reader module is inductively coupled with one or more passive transponder. The reader module generates a 13.56 MHz magnetic field which induces a voltage in the tag resonant circuit for powering of the tag..

Nearly all the power is concentrated in the nearfield, the radiated power is much less ($<<10\text{mW}$).

Data is transmitted to the tag by a 10% ASK modulation of this carrier. This data contains the command (read, write....) and optional data which is stored in a EEPROM in the tag.

The passive tag responds by changing the load of the field. This change is very low, so the re-radiated signal from the tag is very low (much below spurious emission limits).

The reader is controlled over a RS232 from an external host computer.

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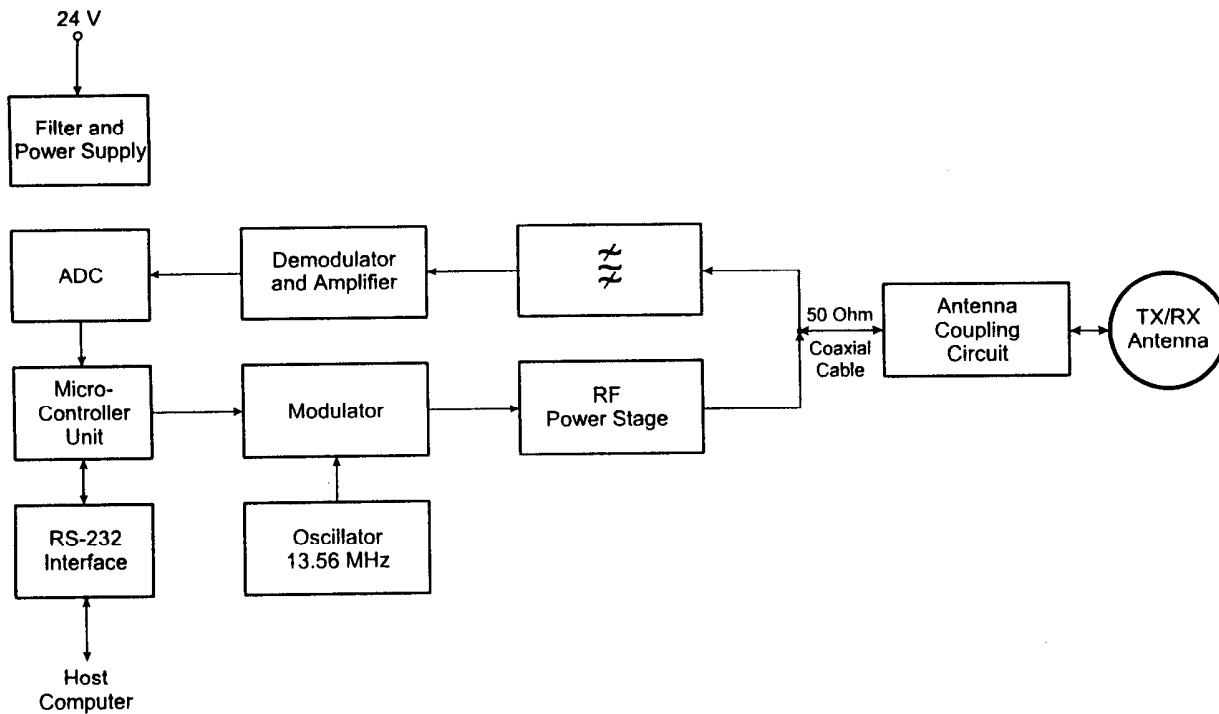


Fig.2.) block diagram of the reader

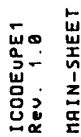
Fig.2.) gives a short overview of the internal blocks of the reader. In a 13.56 MHz crystal oscillator a 13.56 MHz signal is generated and modulated in the modulator block, which is controlled from the microcontroller unit.

The RF Power stage amplifies and filters this signal. This filtered signal is supplied with a 50 Ohm cable to the tuned antenna.

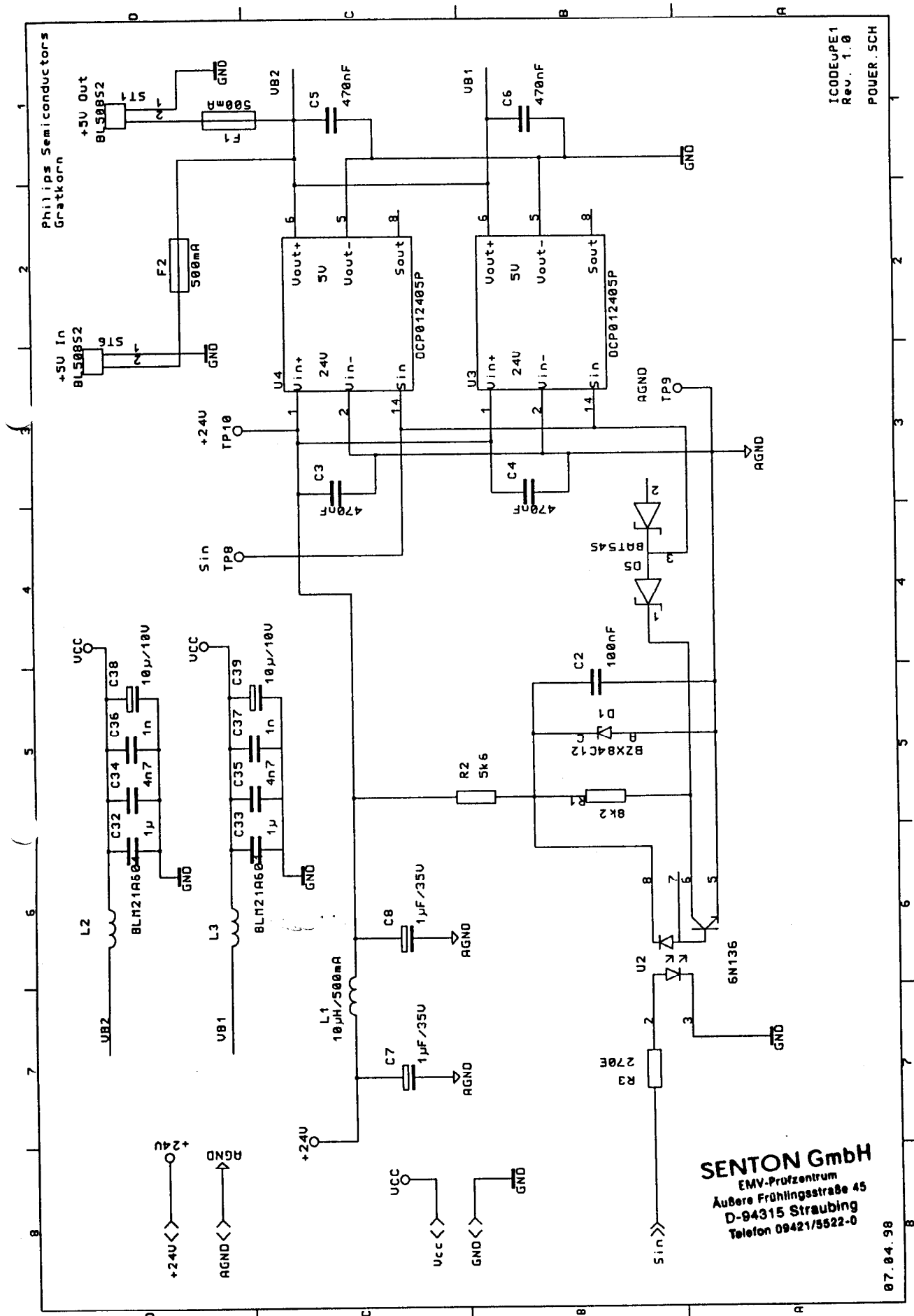
The passive tag receives this signal, rectifies the carrier for generating the supply voltage, demodulates the signal and if a valid command is detected responds to the reader by using a load modulation technique, which is a small change of the reader field.

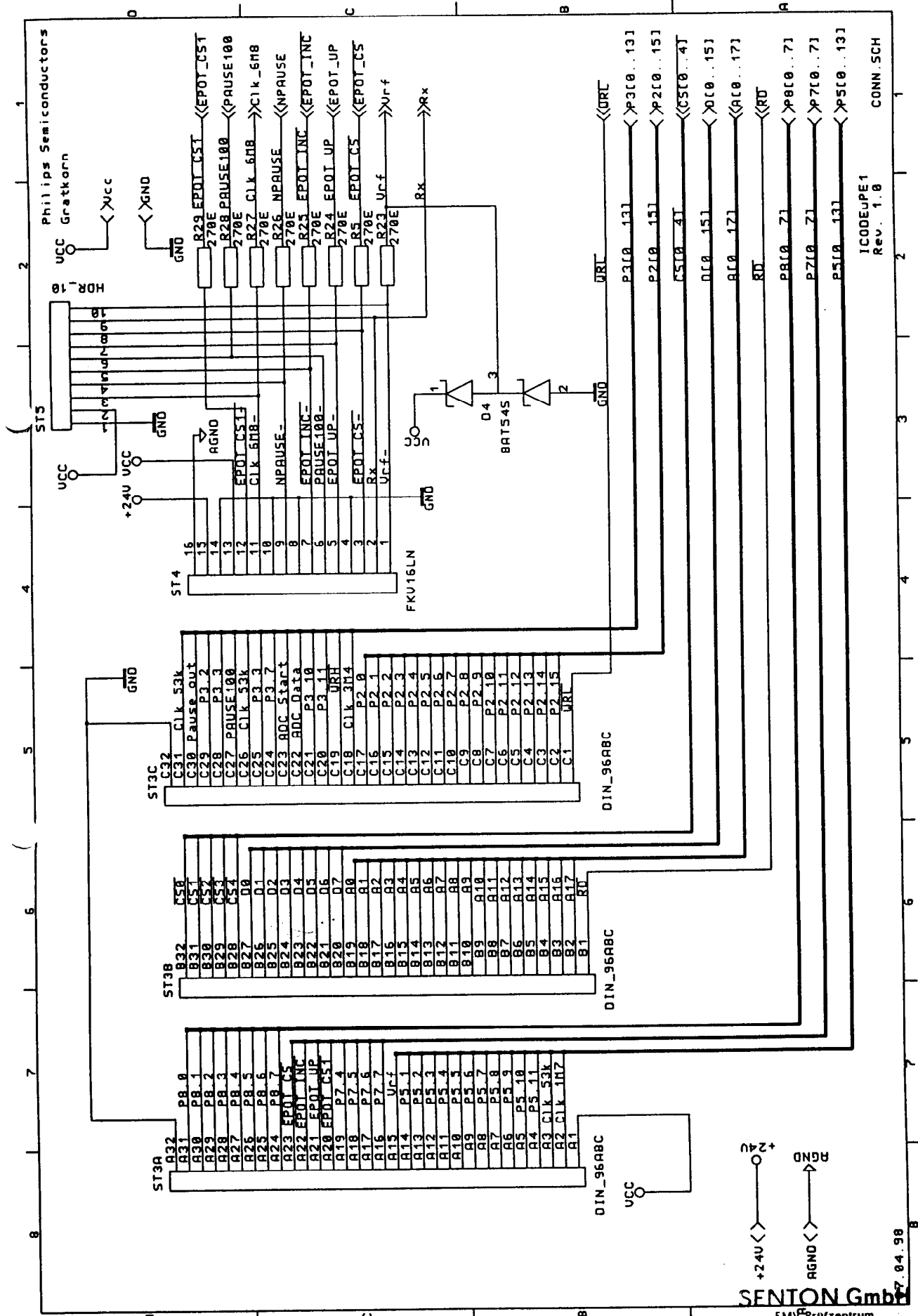
This re-radiated signal is received from the reader antenna, fitted via the 50 Ohm cable to the reader, filtered, demodulated and amplified. After an Analogue to Digital conversion this signal is processed in the microcontroller unit.

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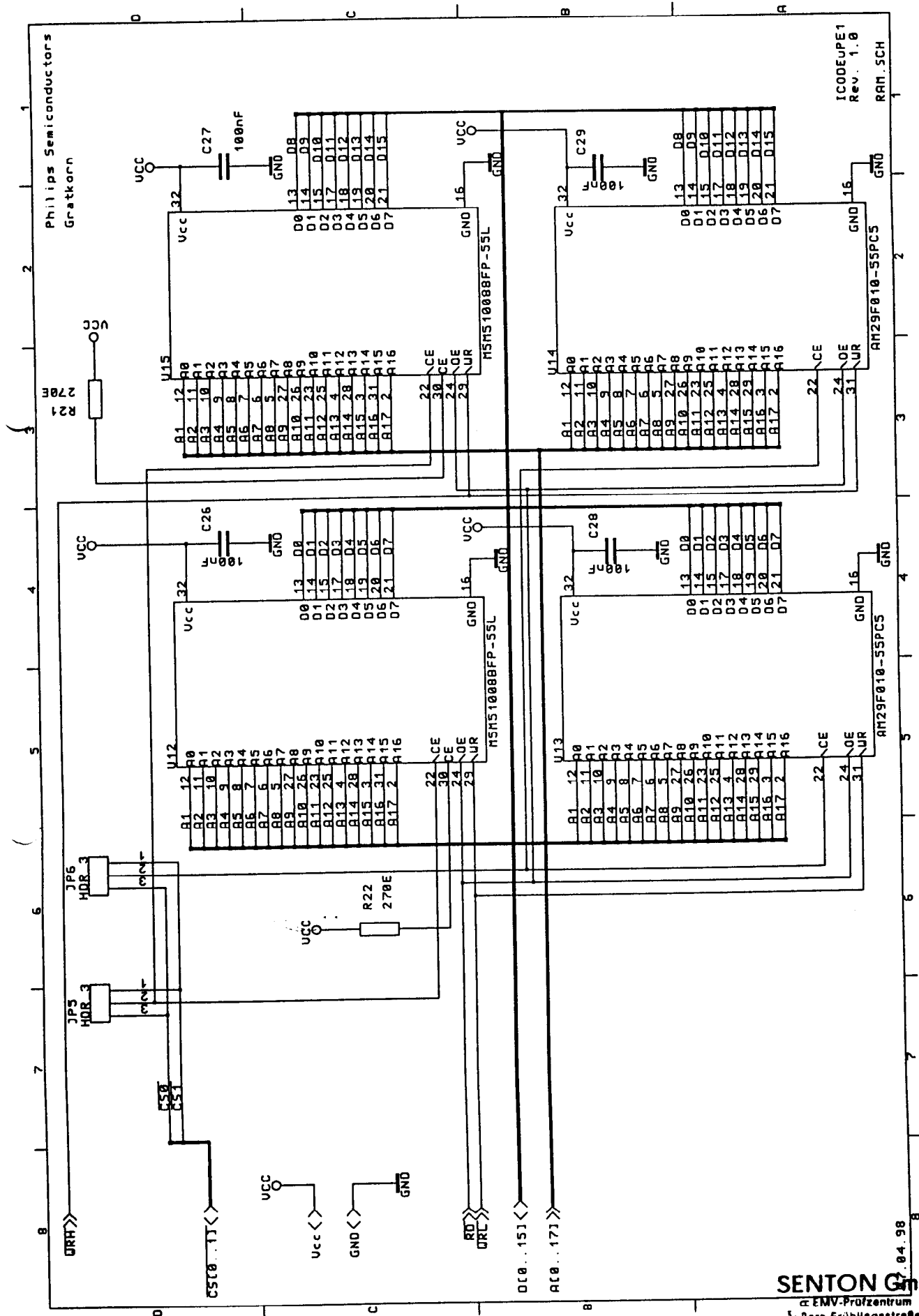
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7.04.98

ICCODEUPE1
 Rev. 1.0

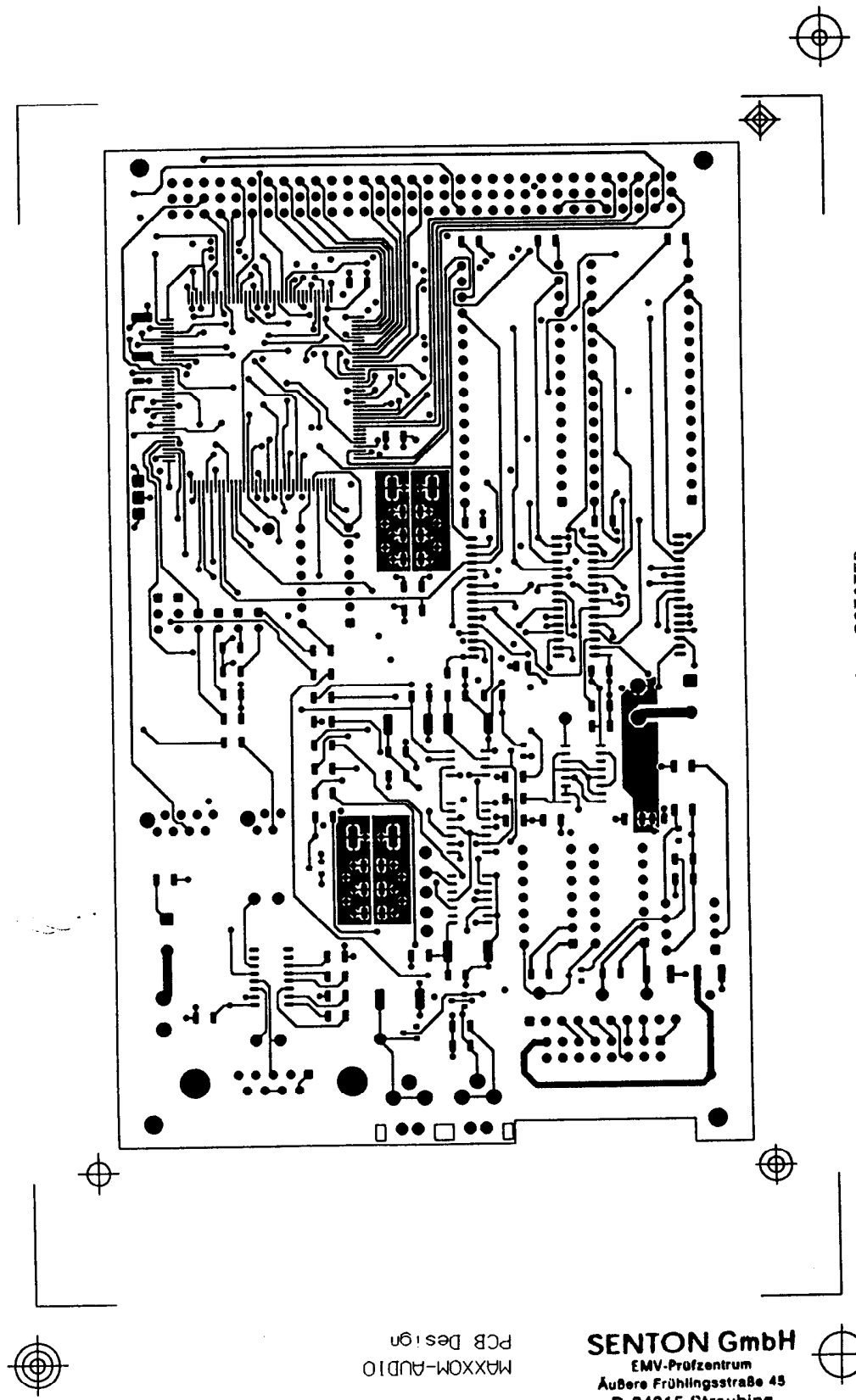
CONN. SCH





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Gratkorn

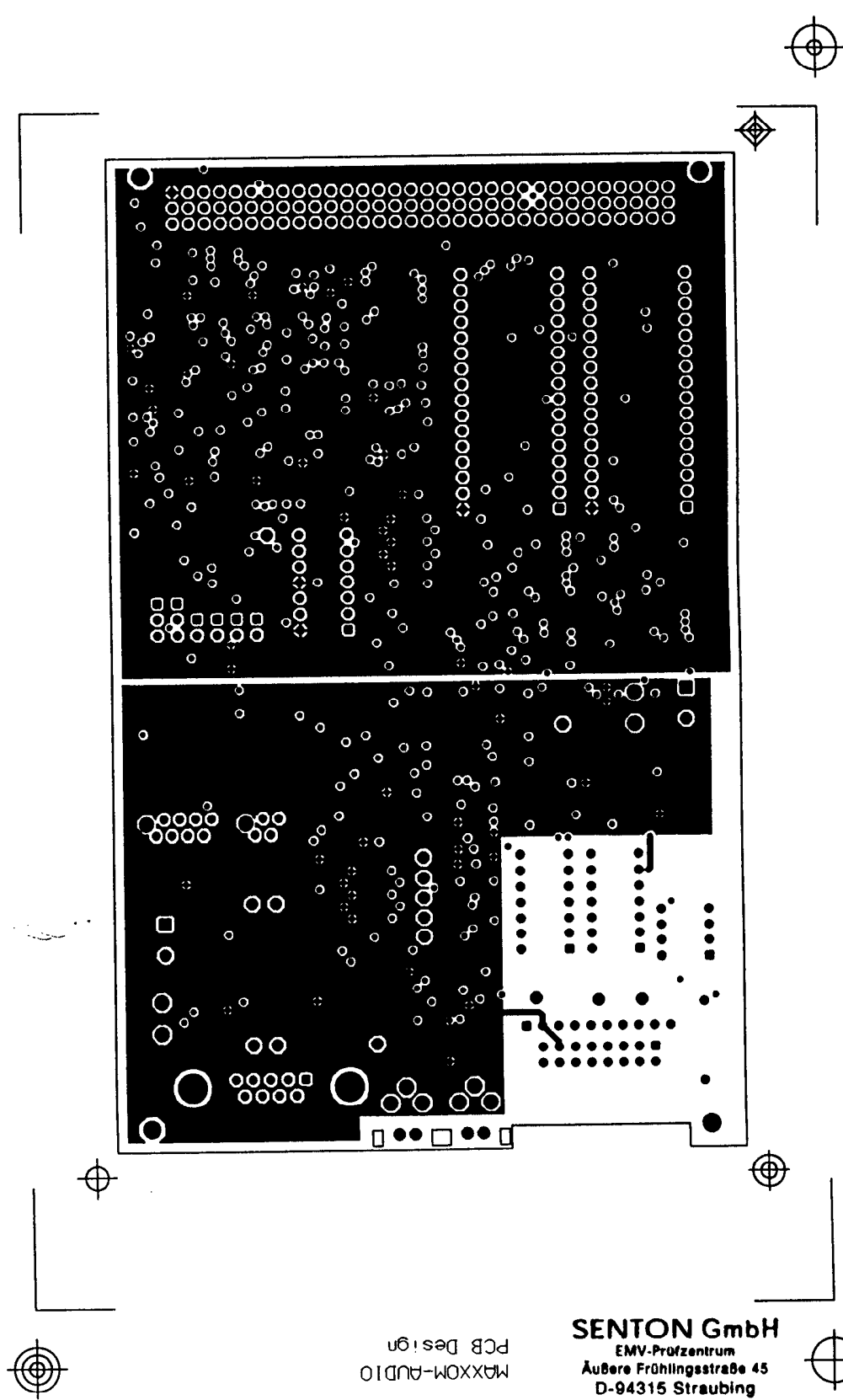
IC00EUP1
Rev. 1.0
RAM.SCH



MAXXOM-AUDIO
PCB Design

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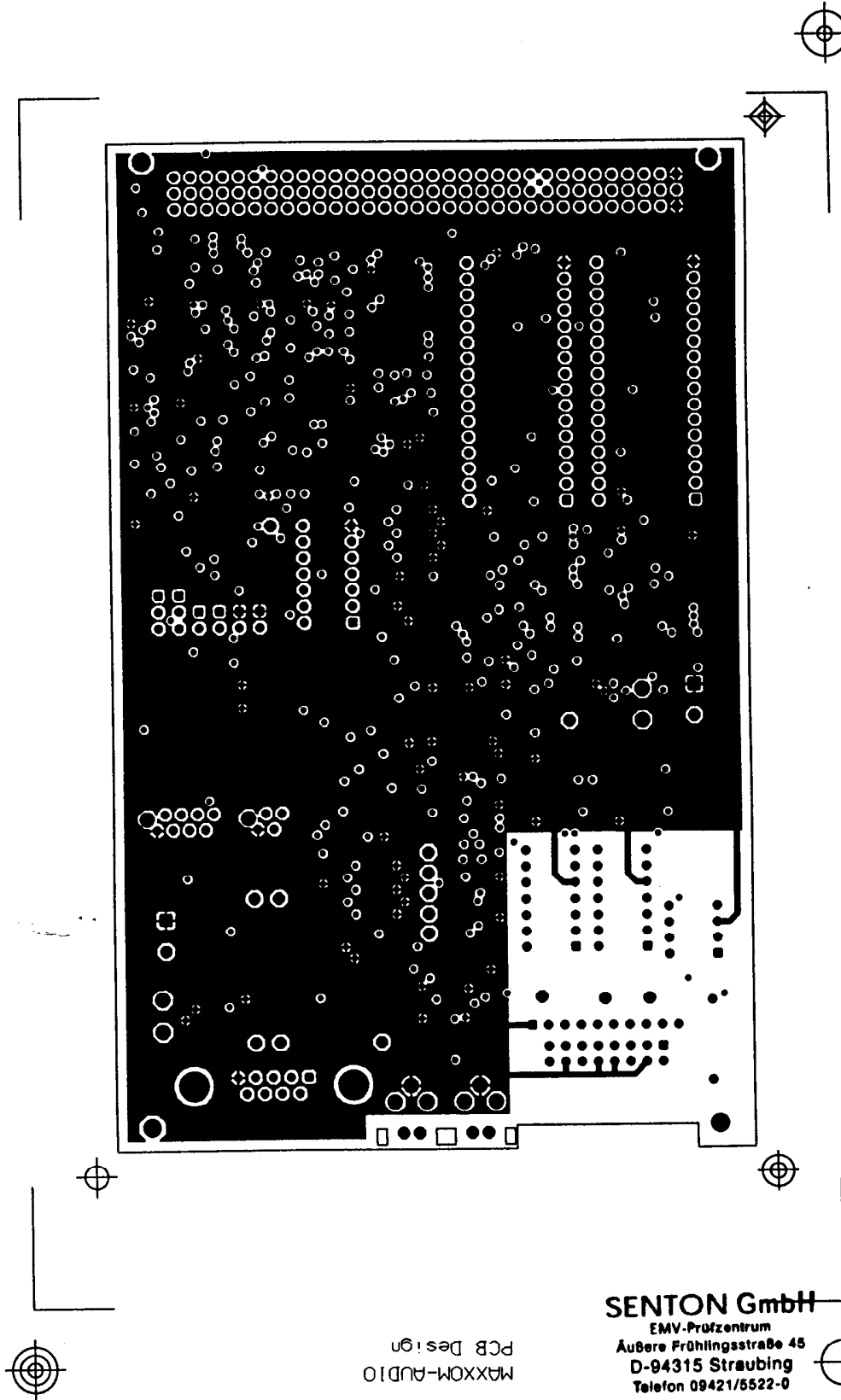
Upe1-2, Top (Apr. 7, 1998) (17:25) (MIKRON) SCALE: 100% ROTATED
Drill Ref Pnt: 0.966, 0.516 (inch)



MAXXOM-AUD10
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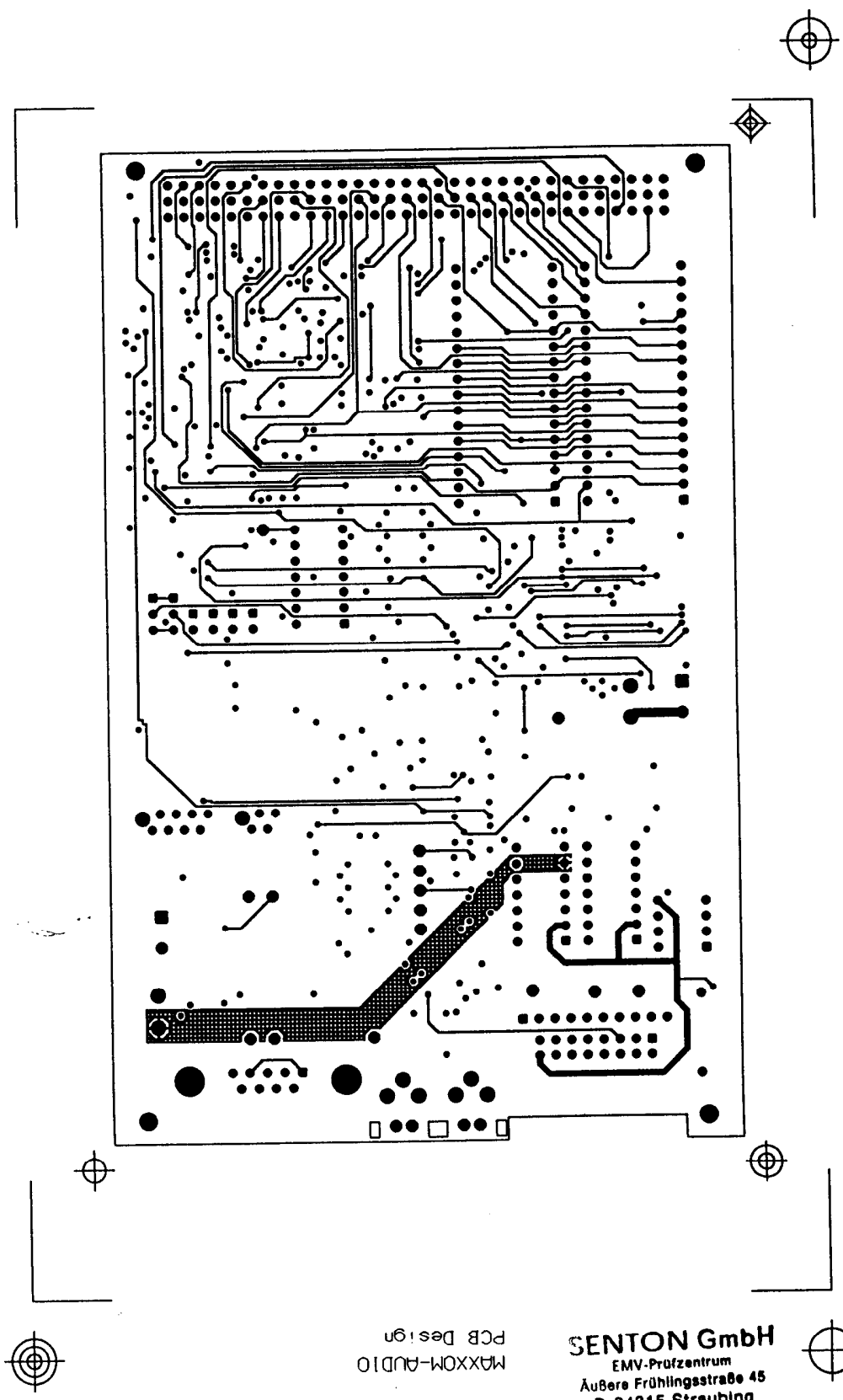
Upe1-2, Inner1 (Apr 7, 1998) (17:25) (MIKRON) SCALE: 100% ROTATED
Drill Ref Pnt: 0.966, 0.516 (inch)



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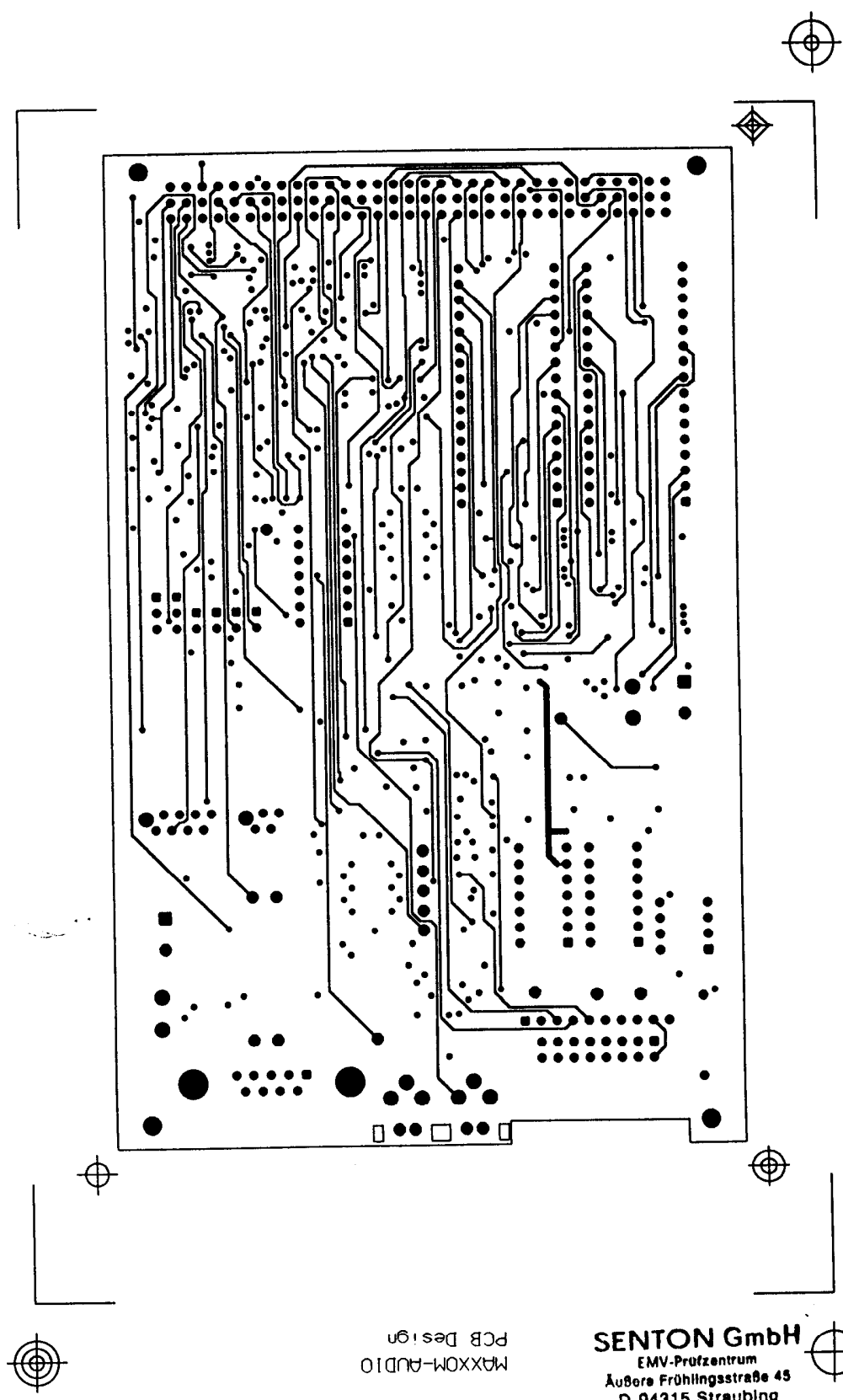
Upe1-2, Inner2 (Apr. 7. 1998) (17:26) (MIKRON) SCALE: 100% ROTATED
Drill Ref Pnt: Ø 966, Ø 516 (inch)



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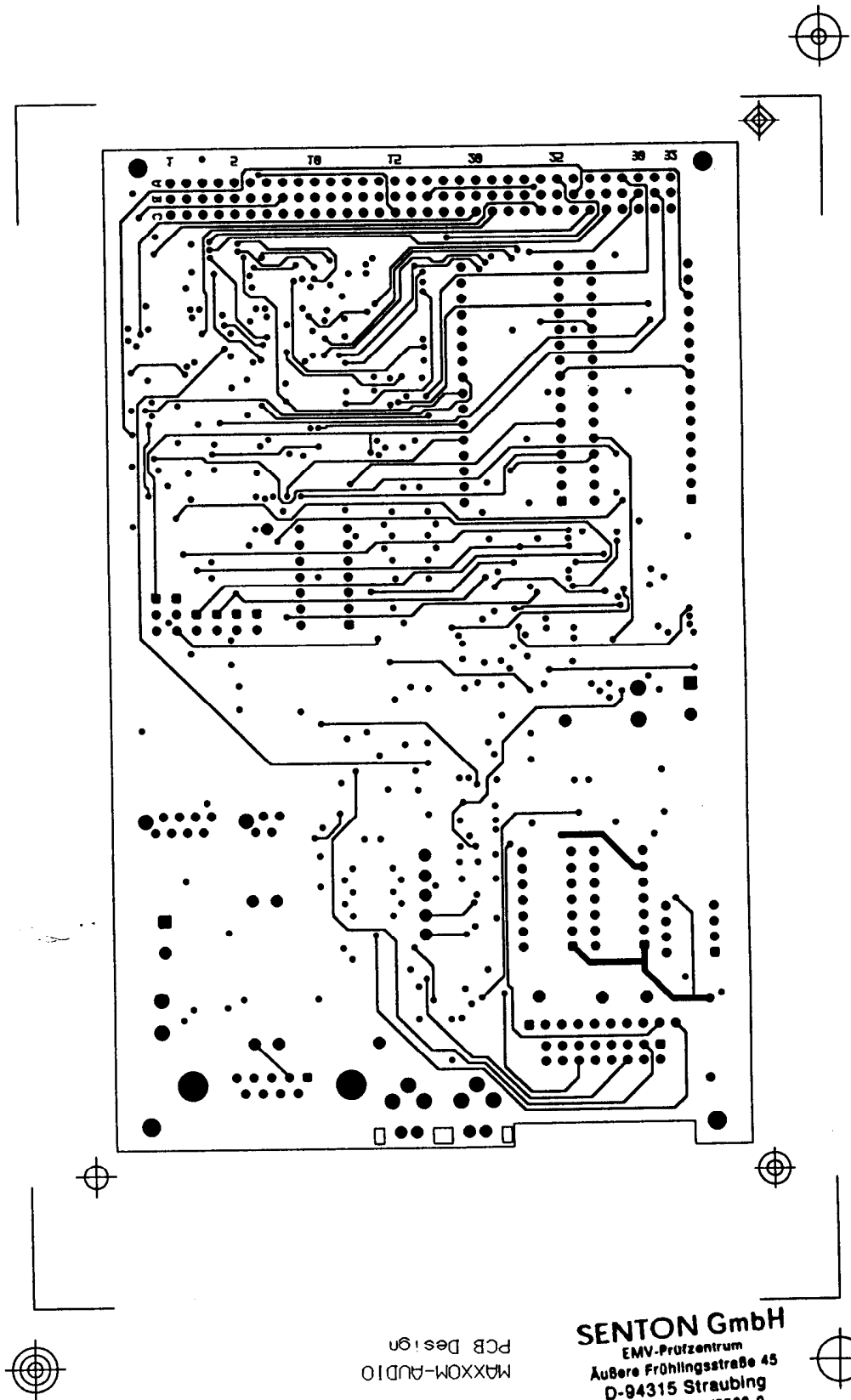
Joel-2, Inner3 (Apr. 7, 1998) (17:26) (MIKRON) SCALE: 100% ROTATED
Drill Ref Pnt: 0.966, 0.516 (inch)



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Upe1-2, Inner4 (Apr. 7. 1998) (17:26) (MIKRON) SCALE: 100% ROTATED
Drill Ref Pnt: Ø 966, Ø 516 (inch)



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Upe1-2, Bottom (Apr. 7, 1998) (17:26) (MIKRON) SCALE: 100% ROTATED
Drill Ref Pnt: 0.966, 0.516 (inch)

Stückliste

Projekt:	ICODEuPE1		
Datum:	09.03.1999	Version Nr.:	2.1

Bez.	Wert	Ker.	Tol.	Baugröße	Hersteller	Bestellnummer	Ersatztyp	Anmerkung
PCB	ICODEuPE1			160x100				
R1	8k2		5%	1206				
R2	5k6		5%	1206				
R3	270E		5%	1206				
R4	2k7		5%	1206				
R5	270E		5%	1206				
R6	10k		5%	1206				
R7	10k		5%	1206				
R8	2k7		5%	1206				
R9	10E		5%	1206				
R10	3R3		5%	1206				
R11	15k		5%	1206				
R12	15k		5%	1206				
R13	15k		5%	1206				
R14	15k		5%	1206				
R15	15k		5%	1206				
R16	15k		5%	1206				
R17	15k		5%	1206				
R18	10k		5%	1206				
R19	10k		5%	1206				
R20	10k		5%	1206				
R21	270E		5%	1206				
R22	270E		5%	1206				
R23	270E		5%	1206				
R24	270E		5%	1206				
R25	270E		5%	1206				
R26	270E		5%	1206				

Projekt:	ICCODEuPE1		
Datum:	09.03.1999	Version Nr.:	2.1

Bez.	Wert	Ker.	Tol.	Baugröße	Hersteller	Bestellnummer	Ersatztyp	Anmerkung
R27	270E		5%	1206				
R28	270E		5%	1206				
R29	270E		5%	1206				
C1	100nF	X7R	10%	1206				
C2	100nF	X7R	10%	1206				
C3	470nF	X7R	10%	1206				
C4	470nF	X7R	10%	1206				
C5	470nF	X7R	10%	1206				
C6	470nF	X7R	10%	1206				
C7	1µF/35V	Tantal	20%	B				
C8	1µF/35V	Tantal	20%	B				
C9	100nF	X7R	10%	1206				
C10	10µF/10V	Tantal	20%	C				
C11	100nF	X7R	10%	1206				
C12	10µF/10V	Tantal	20%	C				
C13	100nF	X7R	10%	1206				
C14	10µF/10V	Tantal	20%	C				
C15	100nF	X7R	10%	1206				
C16	100nF	X7R	10%	1206				
C17	100nF	X7R	10%	1206				
C18	100nF	X7R	10%	1206				
C19	100nF	X7R	10%	1206				
C20	100nF	X7R	10%	1206				
C21	100nF	X7R	10%	1206				
C22	10µF/10V	Tantal	20%	C				
C23	100nF	X7R	10%	1206				
C24	100nF	X7R	10%	1206				
C25	100nF	X7R	10%	1206				
C26	100nF	X7R	10%	1206				
C27	100nF	X7R	10%	1206				

Projekt:	IC0DEuPE1		
Datum:	09.03.1999	Version Nr.:	2.1

Bez.	Wert	Ker.	Tol.	Baugröße	Hersteller	Bestellnummer	Ersatztyp	Anmerkung
C28	100nF	X7R	10%	1206				
C29	100nF	X7R	10%	1206				
C30	100nF	X7R	10%	1206				
C31	10µF/10V	Tantal	20%	C				
C32	1µF	X7R	10%	1206				
C33	1µF	X7R	10%	1206				
C34	4n7	X7R	10%	1206				
C35	4n7	X7R	10%	1206				
C36	1nF	X7R	10%	1206				
C37	1nF	X7R	10%	1206				
C38	10µF/10V	Tantal	20%	C				
C39	10µF/10V	Tantal	20%	C				
L1	10µH/500mA			bedrahtet	Siemens	B781*8-T1103-K		bedrahtete Drossel
L2	BLM21A601			0805	MURATA			SMD-Drossel
L3	BLM21A601			0805	MURATA			SMD-Drossel
D1	BZX84C12			SOT23				Z-Diode 12V
D2	BAT54S			SOT23				
D3	BAT54S			SOT23				
D4	BAT54S			SOT23				
D5	BAT54S			SOT23				
U1	74HC112			S016				
U2	6N136			DIP8A				
U3	DCP012405P			DIP14A	BURR-BROWN			
U4	DCP012405P			DIP14A	BURR-BROWN			
U5	74HC4024			S014				
U6	74HC74			S014				
U7	LTC1400CS8			S08	Linear Technologies			
U8	SAB-C167CR-LM			P-MQFP-144-1	Siemens			

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Bez.	Wert	Ker.	Tol.	Baugröße	Hersteller	Bestellnummer	Ersatztyp	Anmerkung
U9	MAX202EESE			S016	Maxim			
U10	MAX809LEUR-T			SOT23	Maxim			
U11	VX-8231 3,6864MHz			DIP14A	Jauch			Quarzoszillator
U12	M5M51008BFP-55L			S032 525	Mitsubishi			SRAM 128k x 8, 55ns
U13	AM29F010-55PC5			DIP32A	AMD			gesockelt
U14	AM29F010-55PC5			DIP32A	AMD			gesockelt
U15	M5M51008BFP-55L			S032 525	Mitsubishi			SRAM 128k x 8, 55ns
F1	500mA Polyfuse			FLST2R5				nicht bestücken
F2	500mA Polyfuse			FLST2R5				nicht bestücken
JP1	Stiftleiste 1x2			RM 2,54				
JP2	Stiftleiste 1x2			RM 2,54				
JP3	Stiftleiste 1x2			RM 2,54				
JP4	Stiftleiste 1x2			RM 2,54				
JP5	Stiftleiste 1x3			RM 2,54				
JP6	Stiftleiste 1x3			RM 2,54				
JP7	0 Ohm			1206				Lötjumper
JP8	0 Ohm			1206				Lötjumper
ST1	BL508S2			MKDSN_2RMI	Weidmüller RM5.08			Schraubklemmen 2polig, nicht bestücken
ST2	DELTA 9HF			DB9SL				SubD 9pol. Female
ST3	DIN 96ABC			DIN41612ABC				VG-Leiste 96pol. Male
ST4	Stiftwanne 16pol.			FKV16LN				Stiftwanne gewinkelt
ST5	Stiftleiste 1x10			RM 2,54				
ST6	BL508S2			MKDSN_2RMI	Weidmüller RM5.08			Schraubklemmen 2polig, nicht bestücken
ST9	Stecker				Micro-Match			

Projekt:	ICCODEuPE1		
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Bez.	Wert	Ker.	Tol.	Baugröße	Hersteller	Bestellnummer	Ersatztyp	Anmerkung
ST10	Stecker				Micro-Match			nicht bestücken
SW1	Taster 1xEin			HDR1X2	Mantor			Baufrom 2210
SW2	Taster 1xEin			HDR1X2	Mantor			Baufrom 2210
TP1	TESTPIN			PIN				
TP2	TESTPIN			PIN				
TP3	TESTPIN			PIN				
TP4	TESTPIN			PIN				
TP5	TESTPIN			PIN				
TP6	TESTPIN			PIN				
TP7	TESTPIN			PIN				
TP8	TESTPIN			PIN				
TP9	TESTPIN			PIN				
TP10	TESTPIN			PIN				
TP11	TESTPIN			PIN				
TP12	TESTPIN			PIN				
TP13	TESTPIN			PIN				
TP14	TESTPIN			PIN				
TP15	TESTPIN			PIN				