

Test Report

File Nr. TA853_02.DOC

Matrix-Needleprinter T2040 + cut device

EUT: Matrix Needleprinter
Typ: T2040S
S/N: 1820048
Configuration: Serial interface RS232 and parallel I/F Centronics on board.
Options: Cut device

Manufacturer: Tally GmbH
Glockeraustr. 4
89275 Elchingen
Germany

Regulations: FCC rules part 15, limit class B

Applicant: Tally GmbH
Glockeraustr. 4
89275 Elchingen
Germany

Contact person: Mr. Böhm -Tally GmbH

Test site: Test facilities of the EMCE GmbH
Laupheimer-Str. 29
88483 Burgrieden
Germany

Test date: 12/23/1998

Responsible Engineer: Mr. Chr. Vogelmann
EMCE GmbH
Ingenieurbüro für EMV-Prüfungen
und Schaltungsentwicklung

2 Report

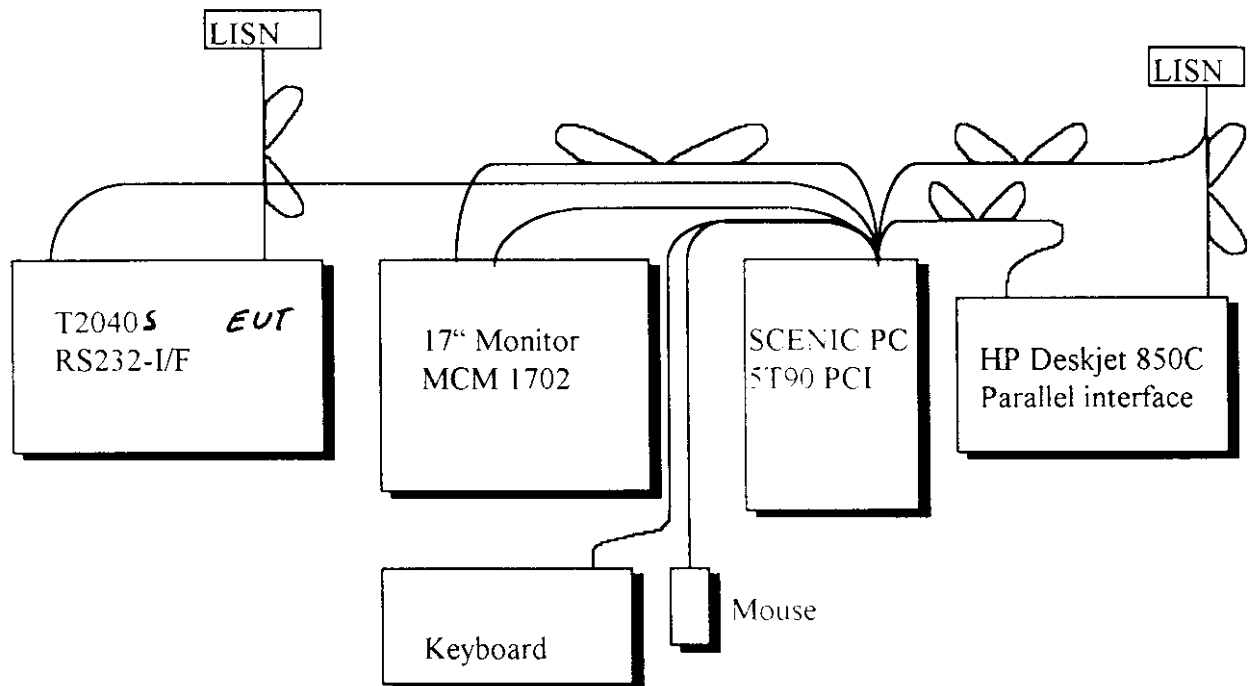
2.1 EMI Report FCC part 15 limit class B

2.1.1 Conducted Emissions

2.1.1.1 Test Configuration

ANSI C63.4-1992

T2040 serial RS232 I/F



2.1.1.2 Test Procedure

Regulations:

FCC part 15 limit class B
0.45 - 30MHz

Test Operation:

During the tests, the system was exercised using a Microsoft Word for Windows document which provided for complete system operation. Data were displayed on the monitor and then transferred to the printers on the parallel port (HP Deskjet 850C) and the serial port (T2040~~9~~), where it was printed. The fanfoldpaper was cutted always after the seventh line, triggerd by a formfeed command. These tests represented a contious display-transfer-print programm operation which is a worst case mode and provided for a worst case emanated profile. The printed characters were shown in the appendix.

PC:	SCENIC 5T90/PCI
Monitor	MCM 1702
T2040	Ser.Nr. 1820048
Additional printer	HP Deskjet 850C
Parallel I/F cable:	Shielded cable
Serial I/F cable:	Shielded cable
Fanfoldpaper for the	T2040
Single sheet for the	HP Deskjet 850C
Supply voltage:	120VAC/60Hz

Test results:

Measurements are made with a CISPR receiver with the detector in peak mode. If the emanation is closer than 6dB to the limit or more, the receiver will stop and measure the exact value with quasipeak. The frequency, the maximum quasipeak value and the limit will be printed out.

Summary:

The limits were kept.

Conducted Emission

Protocolscope:

First test run

Conducted emission of the T2040 serial I/F on L1- and N-Phase

Conducted emission of the PC + Monitor on L1- and N-Phase (the monitor was supplied via the PC)

Conducted emission of the HP Deskjet 850C parallel I/F on L1- and N-Phase

EMCE GmbH Ing büro für EMV_Prüfungen Conducted emission

EUT: Matrix needle printer T20405 S/N 1820048
Manuf: Tally GmbH / Germany
Op Cond: LQ, 10cpi, "HH...", 120V/60Hz, RS232
Operator: Vogelmann
Test Spec: FCC Part 15 Class B
Comment: Test ID: PR851_06
TA853_01, Phase L1 - T2040+cut device
Date: 04. Jan 99 13:03

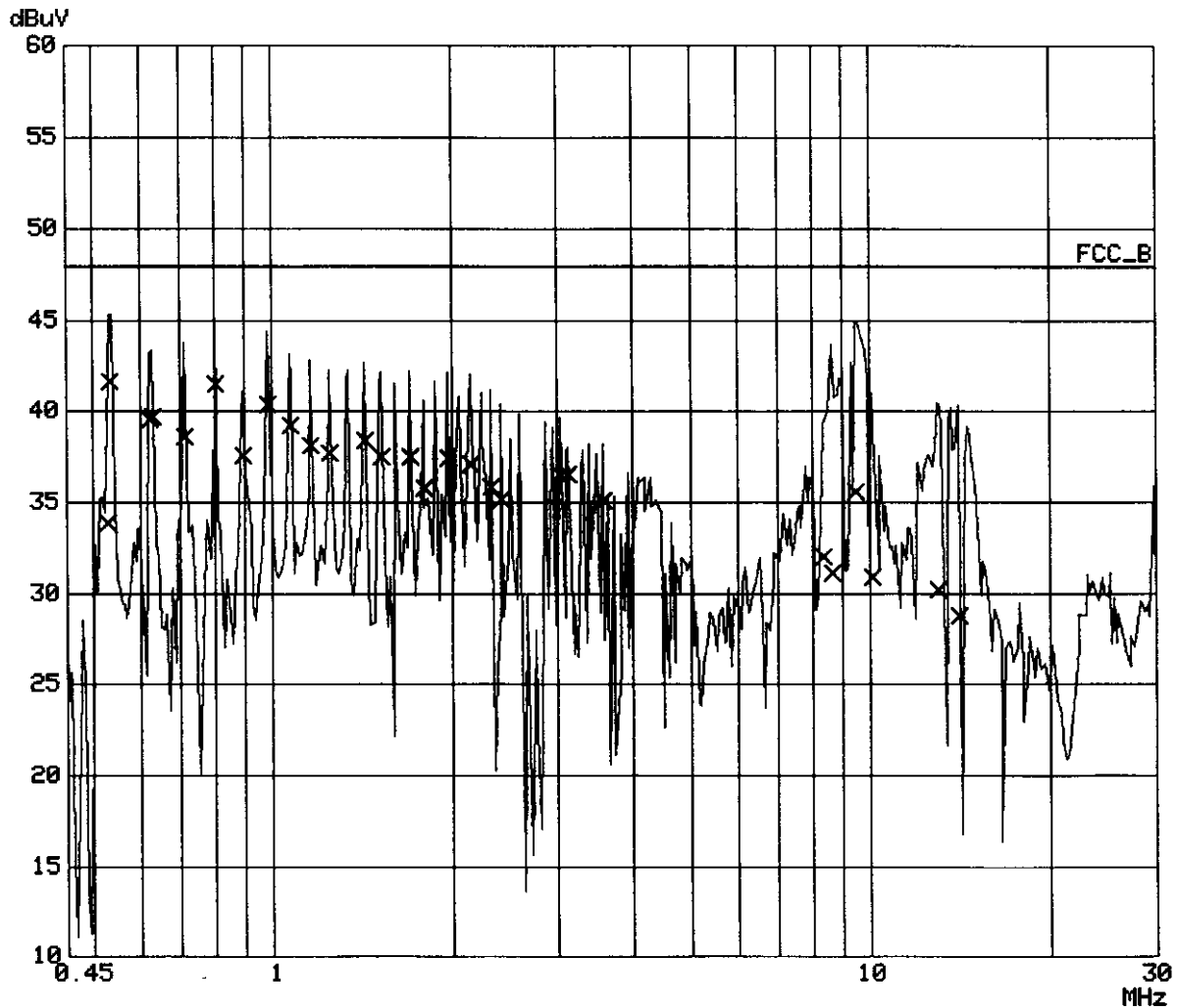
Scan Settings (1 Range)

----- Frequencies -----			----- Receiver Settings -----					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	30M	5k	10k	PK	20ms	AUTO	LD OFF	60dB

Transducer No.	Start	Stop	Name
2	1Hz	1000M	Kabel_6m

Final Measurement: x QP

Meas Time: 1 s
Subranges: 50
Acc Margin: 10dB



EMCE GmbH Ing büro für EMV_Prüfungen

Conducted emission

EUT: Matrix needle printer T2040\$ S/N 1820048
Manuf: Tally GmbH / Germany
Op Cond: LQ, 10cpi, "HH...",120V/60Hz, RS232
Operator: Vogelmann
Test Spec: FCC Part 15 Class B
Comment: Test ID: PR851_06
 TA853_01, Phase L1 - T2040+cut device
Date: 04. Jan 99 13:03

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.53000	33.8	48.0
0.53500	41.6	48.0
0.62500	39.6	48.0
0.63000	39.7	48.0
0.71500	38.6	48.0
0.80500	41.5	48.0
0.89500	37.5	48.0
0.98500	40.4	48.0
1.07500	39.2	48.0
1.16500	38.1	48.0
1.25000	37.7	48.0
1.43500	38.4	48.0
1.52500	37.5	48.0
1.70000	37.5	48.0
1.79500	35.8	48.0
1.97000	37.4	48.0
2.15000	37.1	48.0
2.32500	35.8	48.0
2.41500	35.1	48.0
3.05000	36.5	48.0
3.14000	36.5	48.0
3.58500	35.1	48.0
8.34000	32.0	48.0
8.64000	31.1	48.0
9.49500	35.6	48.0
10.11000	30.9	48.0
13.01000	30.2	48.0
14.17000	28.7	48.0

* limit exceeded

EMCE GmbH Ing büro für EMV_Prüfungen

Conducted emission

EUT: Matrix needle printer T2040\$ S/N 1820048
 Manuf: Tally GmbH / Germany
 Op Cond: LQ, 10cpi, "HH...", 120V/60Hz, RS232
 Operator: Vogelmann
 Test Spec: FCC Part 15 Class B
 Comment: Test ID: PR851_06
 TA853_02, Phase N - T2040+cut device
 Date: 23. Dec 98 13:13

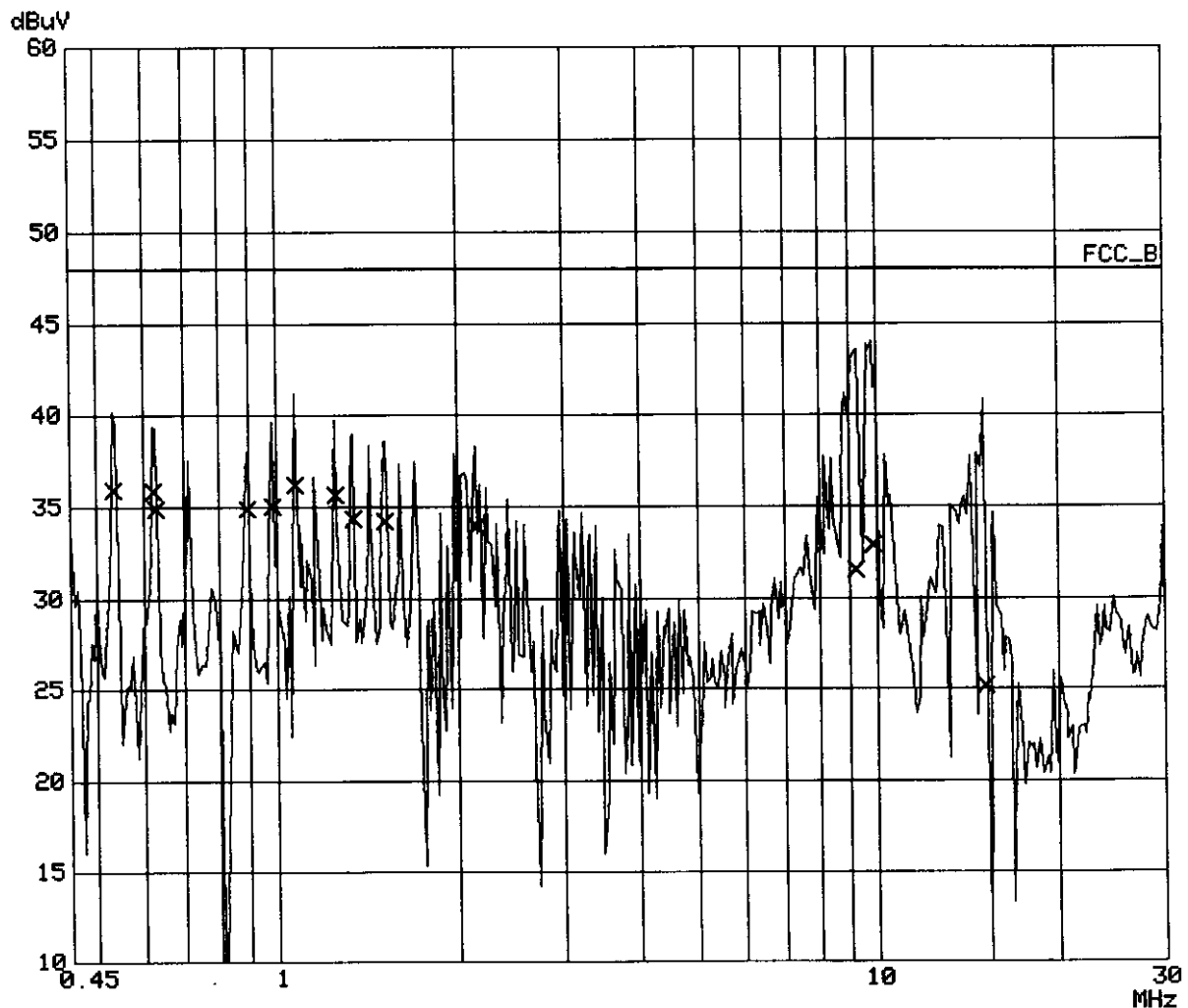
Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	30M	5k	10k	PK	20ms	AUTO	LD OFF	60dB

Transducer No.	Start	Stop	Name
2	1Hz	1000M	Kabel_6m

Final Measurement: x QP

Meas Time: 1 s
 Subranges: 50
 Acc Margin: 10dB



EMCE GmbH Ingenieurbüro für EMV-Prüfungen Conducted emission

EUT: Matrix needle printer T2040\$ S/N 1820048
Manuf: Tally GmbH / Germany
Op Cond: LQ, 10cpi, "HH...", 120V/60Hz, RS232
Operator: Vogelmann
Test Spec: FCC Part 15 Class B
Comment: Test ID: PR851_06
TA853_02, Phase N - T2040+cut device
Date: 23. Dec 98 13:13

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.53500	35.9	48.0
0.62500	35.9	48.0
0.63000	34.9	48.0
0.89500	34.9	48.0
0.98500	35.0	48.0
1.07500	36.2	48.0
1.25500	35.7	48.0
1.34500	34.3	48.0
1.52000	34.2	48.0
2.15000	34.0	48.0
9.20500	31.5	48.0
9.85000	32.9	48.0
15.12500	25.2	48.0

* limit exceeded

EMCE GmbH Ing büro für EMV-Prüfungen Conducted emission

EUT: Matrix needle printer T20405 S/N 1820048
 Manuf: Tally GmbH / Germany
 Op Cond: LQ, 10cpi, "HH...", 120V/60Hz, RS232
 Operator: Vogelmann
 Test Spec: FCC Part 15 Class B
 Comment: Test ID: PR851_06
 TA853_03, Phase L1 - SCENIC PC + Monitor
 Date: 23. Dec 98 13:25

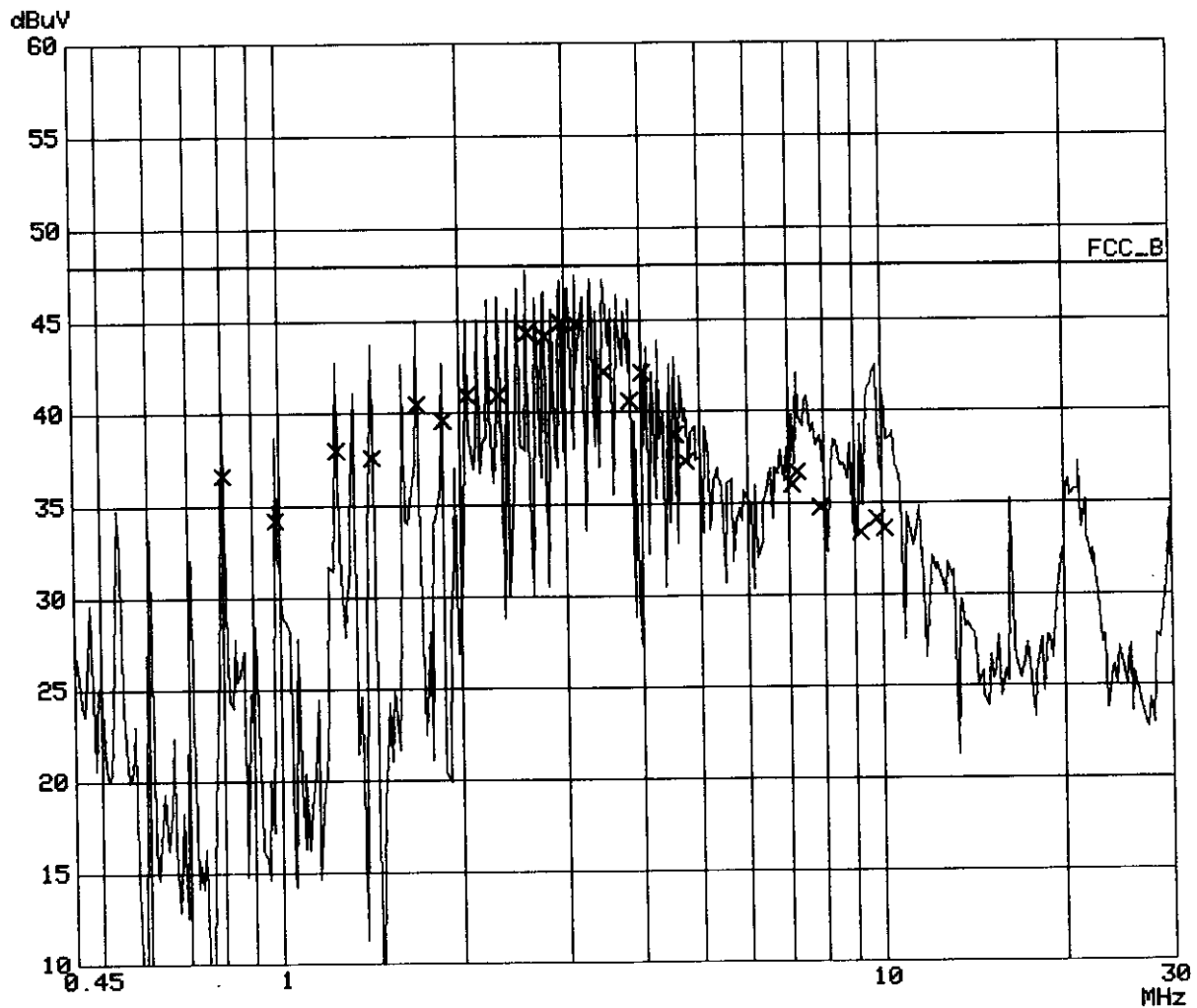
Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	30M	5k	10k	PK	20ms	AUTO	LD OFF	60dB

Transducer No.	Start	Stop	Name
2	1Hz	1000M	Kabel_6m

Final Measurement: x QP

Meas Time: 1 s
 Subranges: 50
 Acc Margin: 10dB



EMCE GmbH Ing büro für EMV-Prüfungen Conducted emission

EUT: Matrix needle printer T2040\$ S/N 1820048
Manuf: Tally GmbH / Germany
Op Cond: LQ, 10cpi, "HH...", 120V/60Hz, RS232
Operator: Vogelmann
Test Spec: FCC Part 15 Class B
Comment: Test ID: PR851_06
TA853_03, Phase L1 - SCENIC PC + Monitor
Date: 23. Dec 98 13:25

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.80500	36.6	48.0
0.98500	34.2	48.0
1.25000	38.0	48.0
1.43000	37.6	48.0
1.70000	40.5	48.0
1.87500	39.6	48.0
2.05500	40.9	48.0
2.32000	41.0	48.0
2.59500	44.3	48.0
2.77500	44.1	48.0
2.95500	44.8	48.0
3.13500	44.8	48.0
3.48500	42.1	48.0
3.83500	40.6	48.0
4.02500	42.1	48.0
4.56500	38.7	48.0
4.74500	37.3	48.0
7.07500	36.0	48.0
7.22500	36.7	48.0
7.87500	34.7	48.0
9.21000	33.4	48.0
9.80000	34.1	48.0
10.10000	33.6	48.0

* limit exceeded

EMCE GmbH Ing büro für EMV_Prüfungen Conducted emission

EUT: Matrix needle printer T2040\$ S/N 1820048
 Manuf: Tally GmbH / Germany
 Op Cond: LQ, 10cpi, "HH...", 120V/60Hz, RS232
 Operator: Vogelmann
 Test Spec: FCC Part 15 Class B
 Comment: Test ID: PR851_06
 TA853_04, Phase N - SCENIC PC + Monitor
 Date: 23. Dec 98 13:32

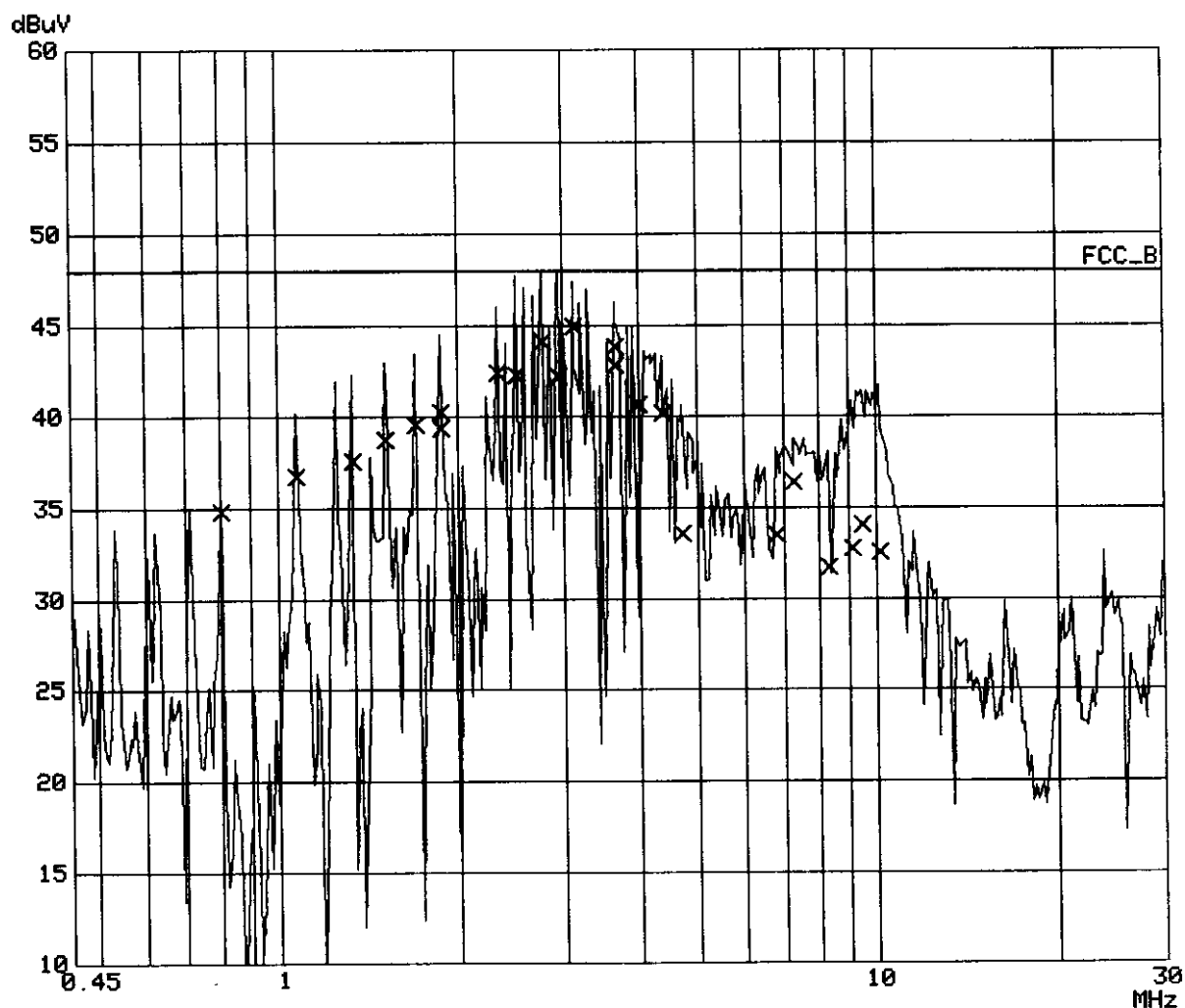
Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	30M	5k	10k	PK	20ms	AUTO	LD OFF	60dB

Transducer No.	Start	Stop	Name
2	1Hz	1000M	Kabel_6m

Final Measurement: x QP

Meas Time: 1 s
 Subranges: 50
 Acc Margin: 10dB



EMCE GmbH Ing büro für EMV_Prüfungen Conducted emission

EUT: Matrix needle printer T2040\$ S/N 1820048
Manuf: Tally GmbH / Germany
Op Cond: LQ, 10cpi, "HH...", 120V/60Hz, RS232
Operator: Vogelmann
Test Spec: FCC Part 15 Class B
Comment: Test ID: PR851_06
 TA853_04, Phase N - SCENIC PC + Monitor
Date: 23. Dec 98 13:32

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.80500	34.8	48.0
1.07500	36.8	48.0
1.34000	37.6	48.0
1.52000	38.8	48.0
1.70000	39.5	48.0
1.87500	39.4	48.0
1.88000	40.3	48.0
2.33000	42.4	48.0
2.51000	42.3	48.0
2.77500	44.1	48.0
2.96000	42.2	48.0
3.13500	44.9	48.0
3.67000	43.8	48.0
3.67500	42.8	48.0
4.01500	40.6	48.0
4.38500	40.2	48.0
4.73500	33.6	48.0
6.80000	33.5	48.0
7.27500	36.4	48.0
8.33000	31.7	48.0
9.12000	32.8	48.0
9.47500	34.1	48.0
10.15500	32.5	48.0

* limit exceeded

EMCE GmbH Ing büro für EMV_Prüfungen

Conducted emission

EUT: Matrix needle printer T2040\$ S/N 1820048
 Manuf: Tally GmbH / Germany
 Op Cond: LQ, 10cpi, "HH...", 120V/60Hz, RS232
 Operator: Vogelmann
 Test Spec: FCC Part 15 Class B
 Comment: Test ID: PR851_06
 TA853_05, Phase L1 - HP-Deskjet 850C
 Date: 23. Dec 98 13:42

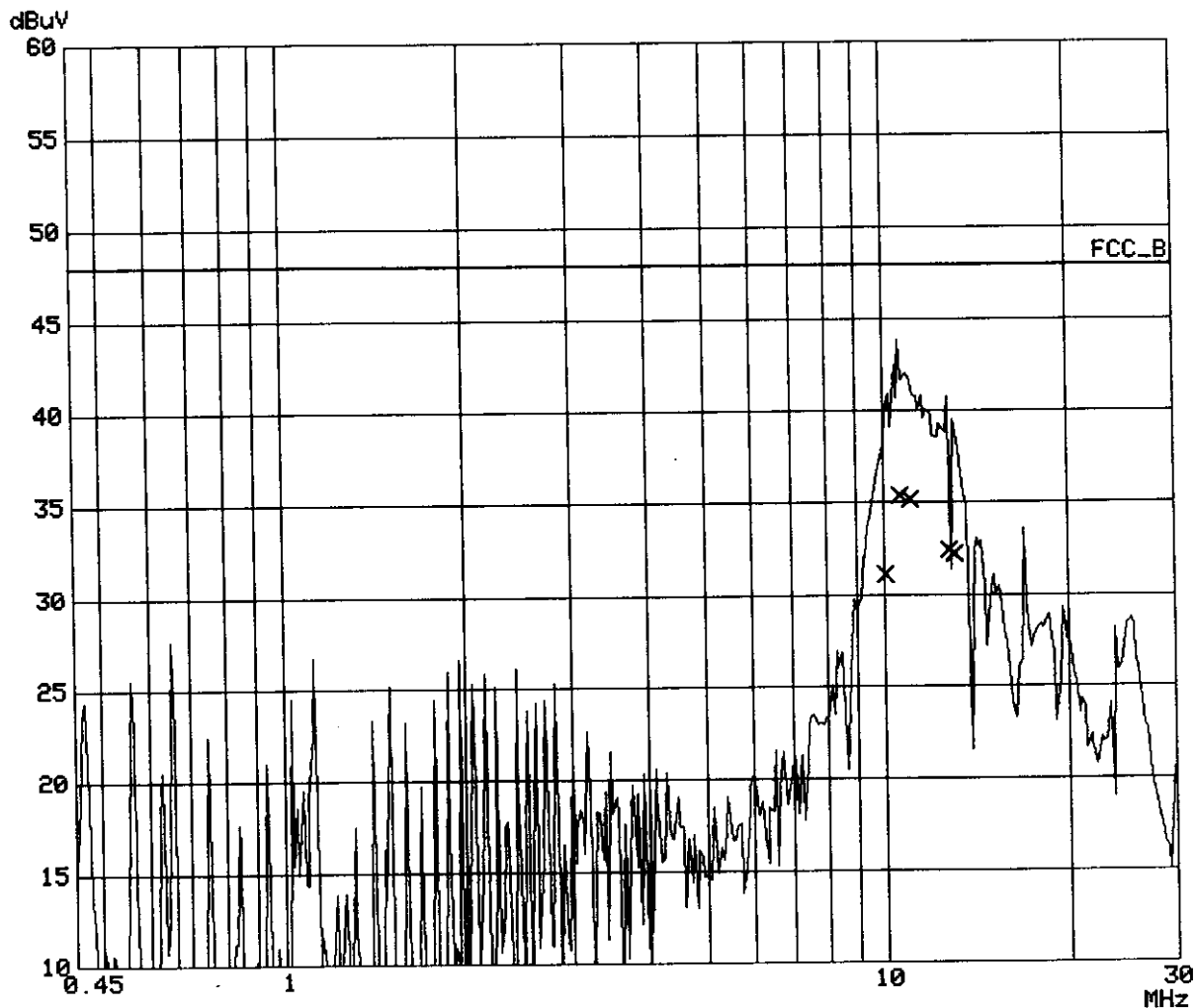
Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	30M	5k	10k	PK	20ms	AUTO	LD OFF	60dB

Transducer No.	Start	Stop	Name
2	1Hz	1000M	Kabel_6m

Final Measurement: x QP

Meas Time: 1 s
 Subranges: 50
 Acc Margin: 10dB



EMCE GmbH Ingenieurbüro für EMV-Prüfungen

Conducted emission

EUT: Matrix needle printer T2040 S/N 1820048
Manuf: Tally GmbH / Germany
Op Cond: LQ, 10cpi, "HH...", 120V/60Hz, RS232
Operator: Vogelmann
Test Spec: FCC Part 15 Class B
Comment: Test ID: PR851_06
TA853_05, Phase L1 - HP-Deskjet 850C
Date: 23. Dec 98 13:42

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
10.02000	31.1	48.0
10.64500	35.3	48.0
11.07500	35.2	48.0
12.79000	32.4	48.0
13.02500	32.2	48.0

* limit exceeded

EMCE GmbH Ing büro für EMV-Prüfungen Conducted emission

EUT: Matrix needle printer T2040 S/N 1820048
 Manuf: Tally GmbH / Germany
 Op Cond: LQ, 10cpi, "HH...", 120V/60Hz, RS232
 Operator: Vogelmann
 Test Spec: FCC Part 15 Class B
 Comment: Test ID: PR851_06
 TA853_06, Phase N - HP-Deskjet 850C
 Date: 23. Dec 98 13:49

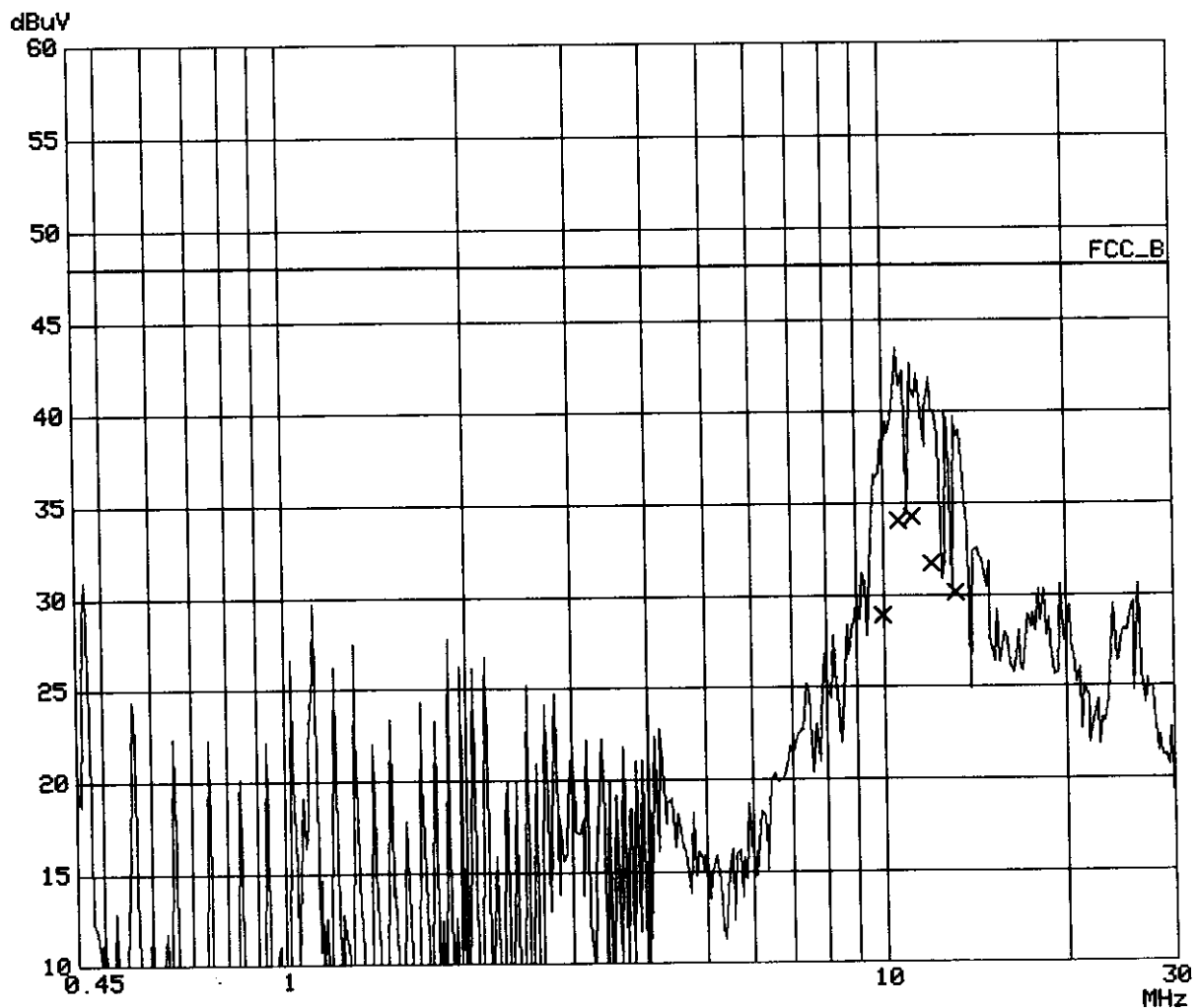
Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	30M	5k	10k	PK	20ms	AUTO	LD OFF	60dB

Transducer No.	Start	Stop	Name
2	1Hz	1000M	Kabel_6m

Final Measurement: x QP

Meas Time: 1 s
 Subranges: 50
 Acc Margin: 10dB



EMCE GmbH Ing büro für EMV_Prüfungen

Conducted emission

EUT: Matrix needle printer T2040\$ S/N 1820048
Manuf: Tally GmbH / Germany
Op Cond: LQ, 10cpi, "HH...",120V/60Hz, RS232
Operator: Vogelmann
Test Spec: FCC Part 15 Class B
Comment: Test ID: PR851_06
 TA853_06, Phase N - HP-Deskjet 850C
Date: 23. Dec 98 13:49

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
9.93000	28.9	48.0
10.57000	34.1	48.0
11.17500	34.2	48.0
11.98500	31.7	48.0
13.14000	30.1	48.0

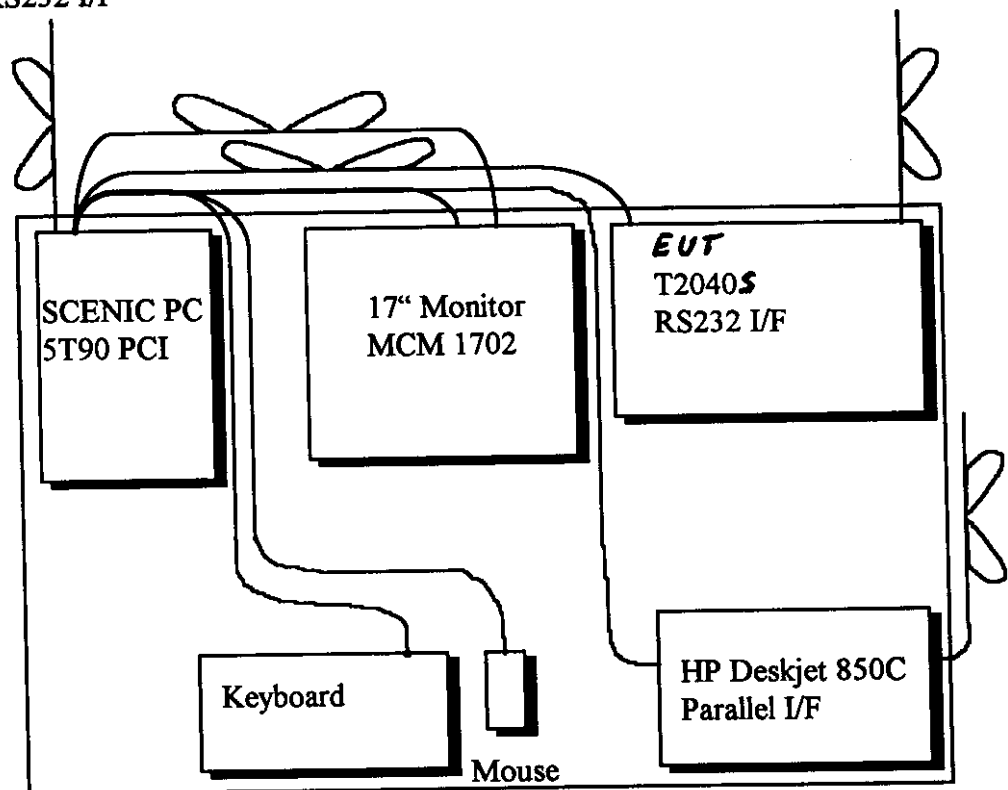
* limit exceeded

2.1.2 Radiated Emissions

2.1.2.1 Test Configuration

ANSI C63.4-1992

T2040 serial RS232 I/F



Contents:

1 EMC Instrumentation.....	3
2 Report.....	4
2.1 EMI Report FCC part 15 limit class B.....	4
2.1.1 Conducted Emissions.....	4
2.1.1.1 Test Configuration	4
2.1.1.2 Test Procedure.....	5
2.1.2 Radiated Emissions.....	7
2.1.2.1 Test Configuration	7
2.1.2.2 Test Procedure.....	9
3 Results.....	14
4 Appendix	15

1 EMC Instrumentation

EMI:

x	Receiver	ESS 5Hz - 1000 MHz	Rohde & Schwarz
	Probe	ESH2-Z3	Rohde & Schwarz
x	LISN 1	ESH3-Z5	Rohde & Schwarz
x	LISN 2	ESH3-Z5	Rohde & Schwarz
	LISN 4	NNBM 8125	Schwarzbeck
	Absorbing Clamp	MDS 21	Schwarzbeck
	Antenna 9kHz - 30MHz	HFH2-Z2	Rohde & Schwarz
x	Antenna 30 - 300MHz	VHBA9123 / BBA9106	Schwarzbeck
x	Antenna 250 - 1200MHz	UHALP 9108A	Schwarzbeck
	Antenna 9kHz - 30 MHz	Loop-Antenna 1,5m Ø	EMCE
x	Shielded Cabine	6,4m x 4m x 2,25m	Frankonia
x	Open Field Test Site	3m / 10m	EMCE GmbH / Burgrieden
x	AC Source 5kVA	5001i	California Instruments
	Netanalyser	PM3000A	Voltech
	LISN 3	NNB 4/32T	Rolf Heine HF-Technik

Miscellaneous:

x	PC SCENIC 5T/90 PCI	S26361-K345-V711	-	Siemens Nixdorf Informationssysteme AG
x	Monitor MCM 1702	S26361-K373-V318 S/N BU 908484	FCC-ID ARFKDM178 8	Siemens Nixdorf Informationssysteme AG
x	Keyboard MF2 LC	S26381-K252-V120		Siemens Nixdorf Informationssysteme AG
x	Mouse Serial Mouse 2.0A	0222829	FCC-ID C3KSMP1	Microsoft Corp.
x	Additional Printer HP Deskjet 850C	S/N US545110NX	FCC-ID B94C2145X	Hewlett Packard

2.1.2.2 Test Procedure

Regulations:

FCC part 15 limit class B
30 - 1000MHz

Test Operation:

During the tests, the system was exercised using a Microsoft Word for Windows document which provided for complete system operation. Data were displayed on the monitor and then transferred to the printers on the parallel port (HP Deskjet 850C) and the serial port (T2040), where it was printed. The fanfoldpaper was cutted always after the seventh line, triggered by a formfeed command. These tests represented a continous display-transfer-print programm operation which is a worst case mode and provided for a worst case emanated profile. The printed characters were shown in the appendix.

PC:	SCENIC 5T90/PCI
Monitor	MCM 1702
T2040	Ser.Nr. 1820048
Additional printer	HP Deskjet 850C
Parallel I/F cable:	Shielded cable
Serial I/F cable:	Shielded cable
Fanfoldpaper for the	T2040
Single sheet for the	HP Deskjet 850C
Supply voltage:	120VAC/60Hz

Test results:

Radiated Emission

Polarisation of the antenna:

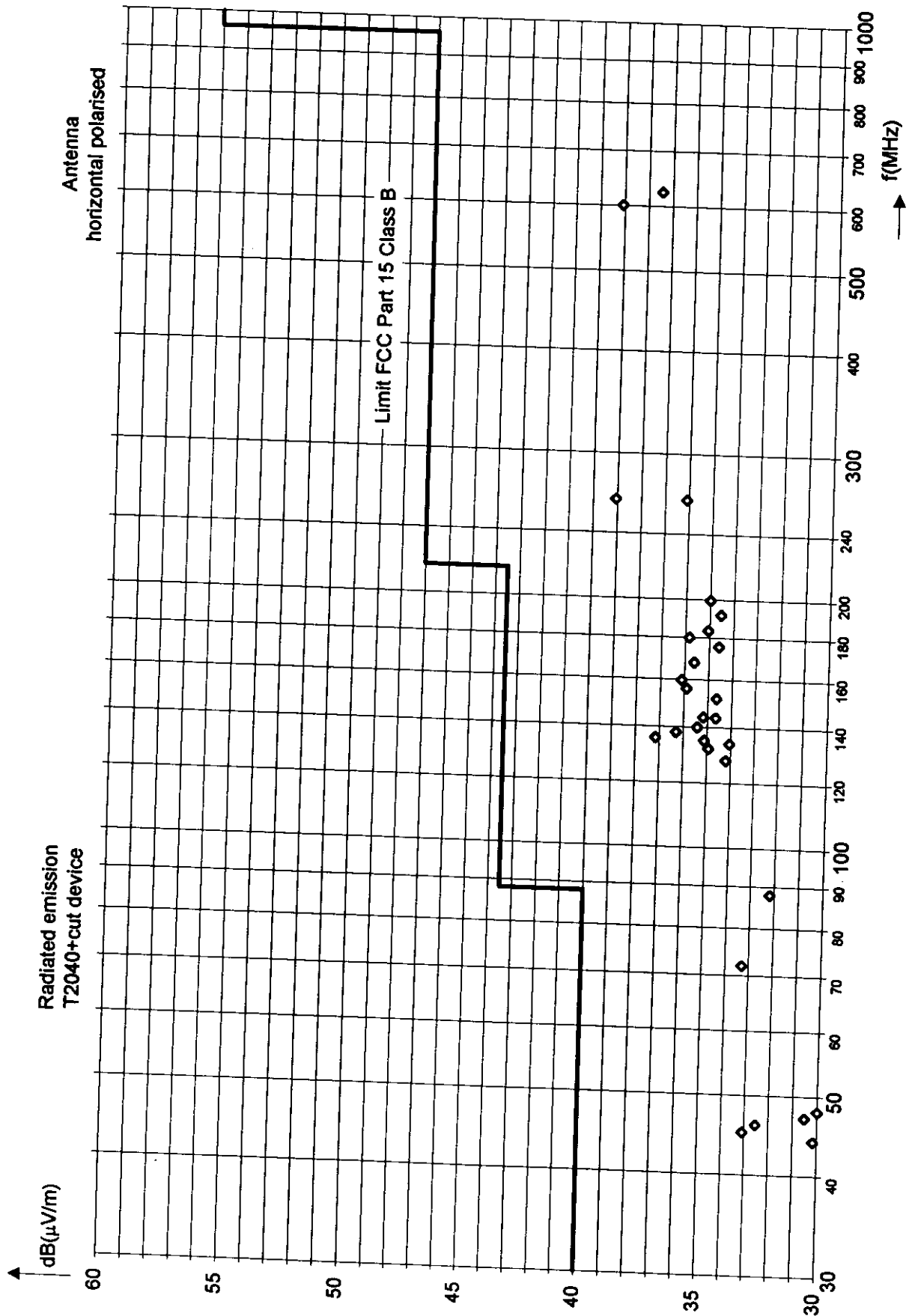
Horizontal

Frequency	Measured	+ AF	+ KF	Emission	Limit	Difference	Ant. -	Ant. -
MHz	value	dB/m	dB		dBµV/m	dBµV	Height	Polar.
	dBµV	Antenna	Cable	dBµV/m			meter	H/V
44.000	20.5	8.4	1.2	30.2	40.0	9.8	4.0	H
45.000	23.5	8.3	1.3	33.1	40.0	6.9	4.0	H
46.000	23.0	8.3	1.3	32.5	40.0	7.5	4.0	H
47.930	20.5	8.2	1.3	30.0	40.0	10.0	4.0	H
72.019	23.0	8.6	1.7	33.3	40.0	6.7	4.0	H
87.872	21.0	9.3	1.9	32.2	40.0	7.8	4.0	H
127.814	20.5	11.3	2.3	34.2	43.5	9.3	2.5	H
132.034	21.0	11.5	2.4	34.9	43.5	8.6	2.5	H
134.000	20.0	11.6	2.4	34.1	43.5	9.4	2.5	H
135.000	21.0	11.7	2.4	35.1	43.5	8.4	2.5	H
135.802	23.0	11.7	2.4	37.2	43.5	6.3	2.5	H
138.000	22.0	11.8	2.5	36.3	43.5	7.2	2.0	H
140.000	21.0	12.0	2.5	35.4	43.5	8.1	2.0	H
143.790	20.0	12.1	2.5	34.7	43.5	8.8	2.0	H
144.037	20.5	12.2	2.5	35.2	43.5	8.3	2.0	H
151.778	19.5	12.6	2.6	34.6	43.5	8.9	2.0	H
156.040	20.5	12.8	2.6	35.9	43.5	7.6	2.0	H
159.767	20.5	13.0	2.7	36.1	43.5	7.4	2.0	H
168.043	19.5	13.4	2.7	35.6	43.5	7.9	2.0	H
175.743	18.0	13.8	2.8	34.6	43.5	8.9	1.5	H
180.046	19.0	14.0	2.8	35.8	43.5	7.7	1.5	H
183.732	18.0	14.2	2.9	35.1	43.5	8.4	1.5	H
191.720	17.0	14.6	2.9	34.5	43.5	9.0	1.5	H
199.708	17.0	15.0	3.0	35.0	43.5	8.5	1.5	H
263.615	18.0	17.6	3.5	39.1	46.0	6.9	1.5	H
264.067	15.0	17.6	3.5	36.1	46.0	9.9	1.5	H
600.151	15.0	19.0	5.1	39.1	46.0	6.9	1.0	H
624.157	13.0	19.3	5.2	37.4	46.0	8.6	1.0	H

All other measured emanations were 10 dB or more below the limits.

Summary:

The limits were kept.



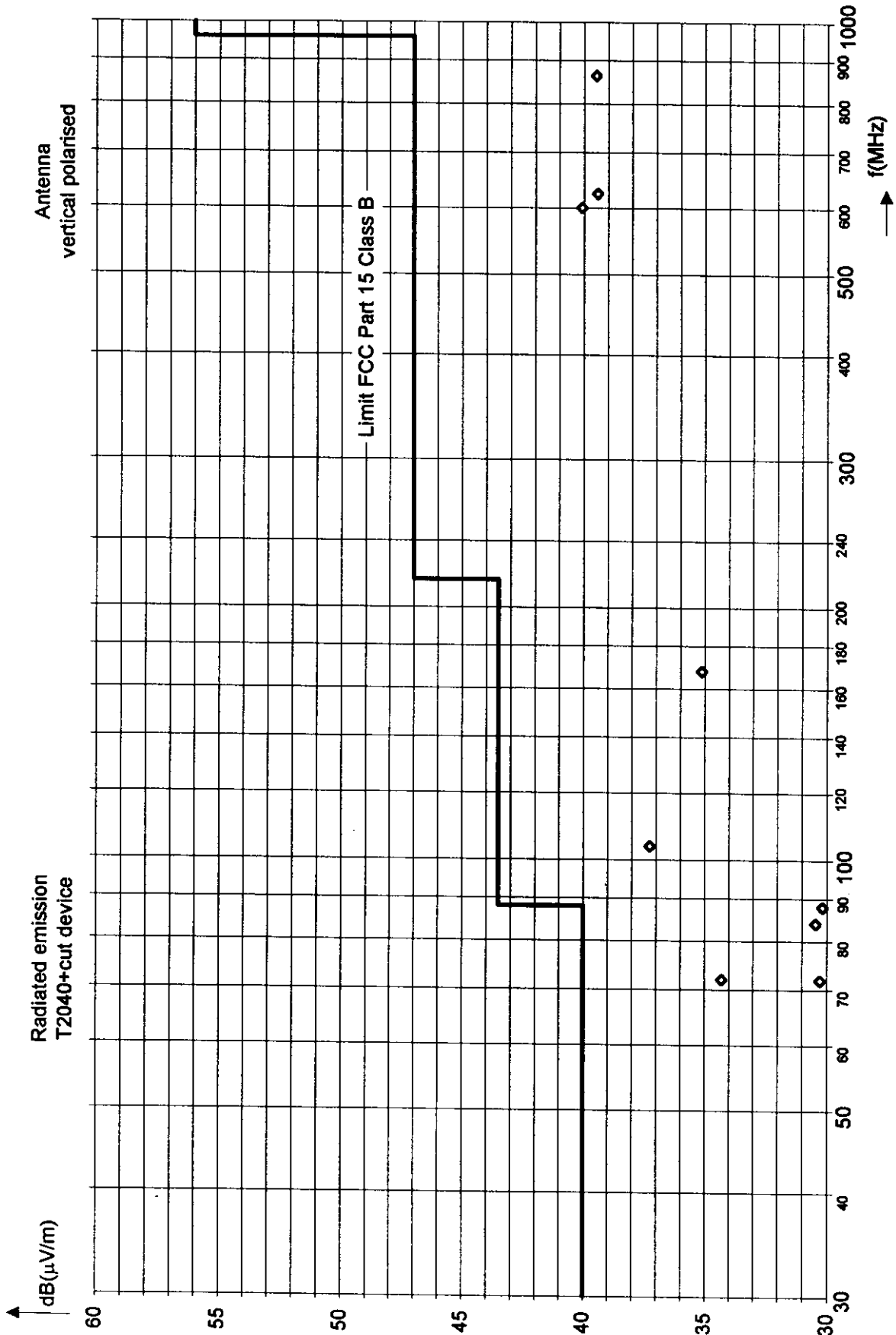
Polarisation of the antenna:
 Vertical

Frequency	Measured	+ AF	+ KF	Emission	Limit	Difference	Ant.-	Ant.-
MHz	value	dB/m	dB		dBµV/m	dBµV	Height	Polar.
	dBµV	Antenna	Cable	dBµV/m			meter	H/V
71.896	20.0	8.6	1.7	30.3	40.0	9.7	1.0	V
72.020	24.0	8.6	1.7	34.3	40.0	5.7	1.0	V
84.022	19.5	9.1	1.8	30.5	40.0	9.5	1.0	V
87.872	19.0	9.3	1.9	30.2	40.0	9.8	1.0	V
103.849	25.0	10.2	2.1	37.3	43.5	6.2	1.0	V
168.040	19.0	13.4	2.7	35.1	43.5	8.4	1.0	V
600.151	16.0	19.0	5.1	40.1	46.0	5.9	1.0	V
624.157	15.0	19.3	5.2	39.4	46.0	6.6	1.0	V
864.217	12.0	21.6	5.9	39.5	46.0	6.5	1.0	V

All other measured emanations were 10 dB or more below the limits.

Summary:

The limits were kept.

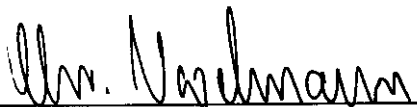


3 Results

EMI:

Regulation	Class	Result	Remarks
FCC part 15 limit class B			
Conducted Emission 0,45 - 30MHz	B	kept	
Radiated Emission 30 -1000MHz	B	kept	

Burgrieden, 12/23/1998


Dipl.Ing.(FH) Christian Vogelmann


Dipl.Ing.(FH) Erik Felser

- HP Deskjet 850C

Significant design elements for EMC

Matrix Printer Models T2X40.

1. Generated Frequencies:

1.1 Power-Supply BG 47832

Kind	Part Nb.	Frequency	Remarks
Clock	IC3	80kHz	Clock for PWM

1.2 Control-Board BG 48012

Kind	Part Nb.	Frequency	Remarks
Clock	G1	15,9744MHz	Clock Processor IC6
Clock	IC16	approx 150kHz	5V DC-DC-Converter
Clock	IC2, IC3	approx. 250kHz	supply for RS232 Interface
Clock	IC12	approx 8kHz	Horizontal Motor Driver
Clock	IC13, IC14	approx 16kHz	Vertical Motor Driver
Clock	IC15	approx 22kHz	Vertical Motor Driver
Clock	VA1-VA6	approx 1,8kHz	Needle Driver

1.3 Panel: BG 47809

Kind	Frequency	Remarks
Clock	approx. 280kHz	Clock IC4

1.4 Cut Logik-Board BG 047623 (in Model T2040S only)

Kind	Frequency	Remarks
Clock	approx. 20kHz	PWM for Current Controller IC2

Date: 15.03.99
Name: Rolf Winterhalder/TEE
File: 40S_FCC_6.doc

Tally
Computerdrucker GmbH

2. List of Components used for EMI suppression

2.1 Power-Supply BG 47832

Part	Value	Name	ID-No.	Manufacturer
X-Capacitor	220nF	C18, C15	708512	see attached data sheets
Y-Capacitor	2,2nF	C33, C34	709710	see attached data sheets
Choke	2X10mF	L2	710225	see attached data sheets
Y1-Capacitor	4,7nF	C16 or C35	711411 or 710393	see attached data sheets

2.2 Control-Board BG 48012

Part	Value	Name	ID-No.	Manufacturer
Resistor	100Ohm	RA1, RA3, RA5-9, RA16-19	710213	see attached data sheets
Capacitor	330pF	C10, C43, C50-52, C56, C61	710331	see attached data sheets
Capacitor	330pF	C32-33, C57,	710877	see attached data sheets
Capacitor	68pF	C8-9, C16, C18, C35, C78, C111, C120-121	710209	see attached data sheets
Resistor	Ohm	R14, R24, R34, R40, R47, R58, R86	709995	see attached data sheets
Inductor	22uF, 3A	L2	711476	see attached data sheets
PCB	Layers Multilayer		047804	

2.3 Cut Logik-Board BG 047623 (T2040S only)

Part	Value	Name	ID-No.	Manufacturer
Capacitor	100nF	C17, C18	708660	see attached data sheets

2.4 Cut Motor BG 054717 (T2040S only)

Part	Value	Name	ID-No.	Manufacturer
2 X Y-Capacitor	4,7nF			integrated in the motor by Dunker
1 X X-Capacitor	47nF			integrated in the motor by Dunker

Date: 15.03.99 Name: Rolf Winterhalder/TEE File: 40S_FCC_6.doc	<i>Tally</i> Computerdrucker GmbH
---	--

3. Constructive measures for EMI-suppression

The metal screen of the Controller board is connected to earth by a copper ribbon (Id. Nr:060415 for printer T2040 and T2040S or Id. Nr. 060284 for printer T2140)

A ferrite core (710242) is placed at the mains input (Id. Nr: 047892)

A ferrite core (710242) is placed at the connection from power supply to control-board near the connector of power supply (Id. Nr: 047705)

When installing the cutting device its metal chassis must be connected to the metal screen of the printer controller. Therefore a mass wire with a faston receptacle is fixed to the chassis of the cutting device (see back view photo of T2040S).

HF-Drosseln RF Chokes

L2 711476

UKW-Drosseln VHF chokes

I_N I_R A	$L_N^{1)}$ $L_R^{1)}$ μH	R_{typ} Ω	f_{res} MHz	Maße Dimensions $\varnothing \times l$ (mm)	Min. Rastermaß Min. lead spacing mm	Kern Core	Bestellnummer Ordering code
Nennspannung 500 V-~ Rated voltage 500 Vdc/Vac							
2	17	0,063	100	7,0 × 24	–	Ferrit	B82111-B-C14
	40	0,180	90	7,0 × 26	30	Ferrite	B82111-E-C23
3	2	0,038	147	5,0 × 14	17,5	Karbonyleisen Carbonyl iron	B82131-A5302-M
	3	0,035	151	5,5 × 19	22,5		B82132-A5302-M
	10	0,077	69	7,5 × 24	27,5		B82133-A5302-M
	12	0,090	75	7,5 × 29	32,5		B82134-A5302-M
	8	0,025	145	7,0 × 24	–	Ferrit Ferrite	B82111-B-C13
	13	0,024	170	6,5 × 29	–		B82111-B-C19
	20	0,054	125	6,0 × 29	–		B82111-B-C20
	22	0,070	110	7,0 × 26	30		B82111-E-C22
	25	0,046	85	8,5 × 34	–		B82111-B-C24
4	1	0,014	199	5,0 × 14	17,5	Karbonyleisen Carbonyl iron	B82131-A5402-M
	2	0,020	186	5,5 × 19	22,5		B82132-A5402-M
	5	0,034	87	7,5 × 24	27,5		B82133-A5402-M
	7	0,033	94	7,5 × 29	32,5		B82134-A5402-M
	6	0,017	170	7,5 × 24	–	Ferrit Ferrite	B82111-B-C12
	11	0,020	150	6,5 × 29	–		B82111-B-C18
	12	0,040	140	7,5 × 26	30		B82111-E-C21
	15	0,024	120	8,5 × 34	–		B82111-B-C23
6	1	0,010	243	5,5 × 19	22,5	Karbonyleisen Carbonyl iron	B82132-A5602-M
	3	0,019	108	7,5 × 24	27,5		B82133-A5602-M
	4	0,014	205	7,5 × 24	–	Ferrit Ferrite	B82111-B-C11
	6	0,010	200	7,0 × 29	–		B82111-B-C17
	7	0,020	180	7,5 × 26	30		B82111-E-C20
	9	0,012	150	9,0 × 34	–		B82111-B-C22
9	3	0,006	220	7,5 × 29	–	Ferrit/Ferrite	B82111-B-C16
10	5	0,005	175	9,5 × 34	–	Ferrit/Ferrite	B82111-B-C21

1) Meßfrequenz/Measuring frequency:
 $L \leq 10 \mu H$ = 1 MHz
 $10 \mu H < L \leq 1000 \mu H$ = 100 kHz
 $L > 1000 \mu H$ = 10 kHz



Breitbandige Entstörung
Runder Sechslloch-Ferritkern

Broadband RFI suppression
Round 6-aperture ferrite core

Nennstrom 1 A
Nennspannung 500 V-~

Rated current 1 A
Rated voltage 500 Vdc/Vac

VDE 565-2

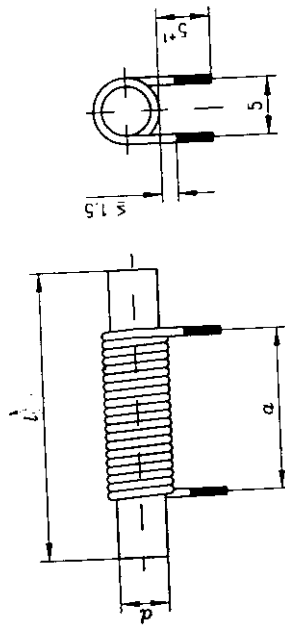
f_{res}	Z bei/at f_{res} Ω	Kennfarbe Color code	Windungszahl Number of turns	Maße Dimensions $\varnothing \times l$ (mm)	IEC-Klimakat. IEC climatic category	Isolation Insulation	Bestellnummer Ordering code
60	900	braun/brown	2,5	6,2 × 15	55/120/21	nein / no	B82114-R-A4
60	900	braun/brown	2,5	6,2 × 15	55/125/56	ja / yes	B82114-R-C4
100	800	grün/green	2,5	6,7 × 15	55/120/21	nein / no	B82114-R-A1
100	800	grün/green	2,5	6,7 × 15	55/125/56	ja / yes	B82114-R-C1

Application
There are two essential fields of application for choke coils of the DS type:

1. HF chokes in electronic circuitry.
2. Noise suppressors in low power circuits, e.g. small motors, electrical equipment of motor cars.

Description
These choke coils consist of a cylindrical **FERROCARIT** (ferrite) core equipped with a one-layer winding of enamelled copper wire. Core and winding are cemented together by means of a heat-proof adhesive. The terminals, extending tangentially from the core, are tinmed.

2. Choke coils bestehen aus einem KUPFER-IT-Stabkern (Ferrit), der mit einer Wicklung aus lackisoliertem Kupferdraht versehen ist. Die beiden Teile sind wärmebeständig miteinander verklebt; die tangential abgehenden Wickelenden sind verzinnt.



Dimensions in mm

Electrical data, dimensions, and ordering references of our standardized choke coils Type DS can be taken from the opposite table.

Special types
Sufficient demand presupposed it is possible to deliver special versions with other dimensions of "a" or with deviating core or conductor diameters. If necessary an additional insulating coating can be provided.

Technische Daten, Maße und Bestellbezeichnungen der Standardausführungen können der Standardausführung entnommen werden.

Ausführungen
Reichendem Bedarf sind Ausführungen mit speziellen Maßen "a" und mit von der Reihe abweichenden Kern- und Drahtabmessungen lieferbar. Auf Wunsch kann eine zusätzliche Isolation aufgebracht werden.

Technical data and ordering references for choke coils type DS (standard types)

Technische Daten und Bestellbezeichnungen für Drosselspulen DS (Standardausführungen)

33 - 02

Induktivität	Inductance	D.C. resistance	Operating current	Resonant frequency	Dimensions in mm	Winding	Conductor diameter	Item number
L in µH	R in mΩ	I in A	f _{res} in MHz	d	l	a	W	Teilenummer
1 ± 20%	≤ 8	≤ 9,5	≥ 190	4	10	6	7,5	DS 4/10 - 571 04 011 00
1,2 ± 20%	≤ 9	≤ 9,5	≥ 180	4	10	7	9,5	DS 4/10 - 571 04 012 00
1,5 ± 20%	≤ 11	≤ 9	≥ 150	4	10	9	11,5	DS 4/10 - 571 04 013 00
1,8 ± 20%	≤ 9	≤ 9	≥ 140	4	15	7	9,5	DS 4/15 - 571 04 014 00
2,2 ± 20%	≤ 10	≤ 8,5	≥ 130	4	15	8	10,5	DS 4/15 - 571 04 015 00
2,7 ± 20%	≤ 12	≤ 8	≥ 110	4	15	9	12,5	DS 4/15 - 571 04 016 00
3,3 ± 20%	≤ 14	≤ 7,5	≥ 110	4	15	11	14,5	DS 4/15 - 571 04 017 00
3,9 ± 20%	≤ 15	≤ 7,5	≥ 100	4	15	13	17,5	DS 4/15 - 571 04 018 00
4,7 ± 20%	≤ 15	≤ 7,5	≥ 90	4	20	11	15,5	DS 4/20 - 571 04 019 00
5,6 ± 20%	≤ 16	≤ 7,5	≥ 80	4	20	13	17,5	DS 4/20 - 571 04 020 00
6,8 ± 20%	≤ 19	≤ 7,5	≥ 70	4	20	16	21,5	DS 4/20 - 571 04 021 00
8,2 ± 20%	≤ 20	≤ 7,5	≥ 70	4	20	18	24,5	DS 4/20 - 571 04 022 00
10 ± 10%	≤ 21	≤ 7,5	≥ 60	4	25	18	23,5	DS 4/25 - 571 04 023 00
12 ± 10%	≤ 24	≤ 7,5	≥ 50	4	25	21	27,5	DS 4/25 - 571 04 024 00
15 ± 10%	≤ 25	≤ 7,5	≥ 50	4	30	21	28,5	DS 4/30 - 571 04 025 00
18 ± 10%	≤ 27	≤ 7	≥ 40	4	30	25	32,5	DS 4/30 - 571 04 026 00
22 ± 10%	≤ 40	≤ 6	≥ 40	4	30	26	36,5	DS 4/30 - 571 04 027 00
27 ± 10%	≤ 44	≤ 5,5	≥ 40	4	30	27	42,5	DS 4/30 - 571 04 028 00

Entstördrosseln

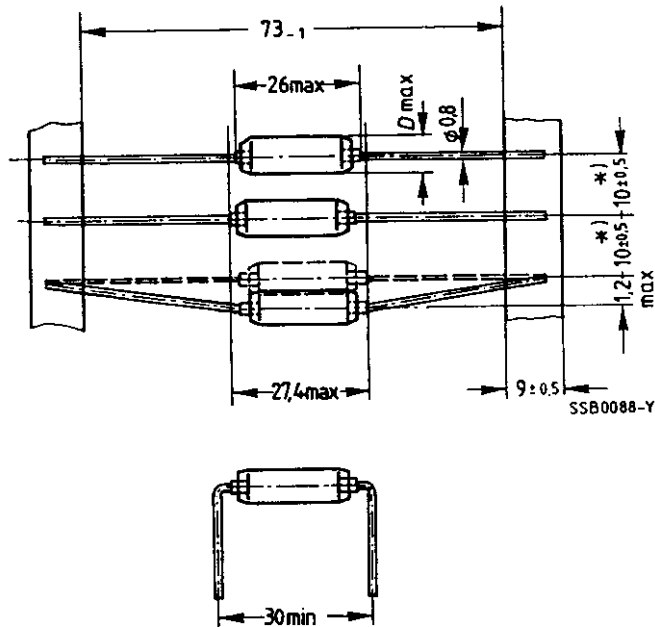
L2 711476

UKW-Drosseln für Netzanwendungen

Mit einlagiger Wicklung auf
Ferrit-Kern mit Isolierumhüllung

Nenninduktivität 7 ... 470 μH
Induktivitätstoleranz $\pm 20\%$
Nennspannung 500 V~/V~
Nennstrom 0,3 ... 6 A
IEC-Klimakategorie 55/125/56

Prüfzeichen



*) Toleranz über 10 Schritte $\pm 2\text{ mm}$

I_N	L_N	R_{typ} bei + 20 °C	Maß D_{max}	Bestell- bezeichnung	Min. Stück	Bis Stück	Preise in DM je Stück ab			
							Min. Stück	250	500	1000
A	μH	Ω	mm							
Induktivitätstoleranz $\pm 20 \%$										
0,3	470	6,5	6	B82111-E-C27	100	4000	1,24	-,83	-,76	-,69
0,5	220	2,6	6,5	B82111-E-C26	100	4000	1,24	-,83	-,76	-,69
1	100	0,65	6,5	B82111-E-C25	100	4000	1,24	-,83	-,76	-,69
1,5	56	0,3	6,5	B82111-E-C24	100	4000	1,24	-,83	-,76	-,69
2	40	0,18	7	B82111-E-C23	100	4000	1,24	-,83	-,76	-,69
3	22	0,07	7	B82111-E-C22	100	4000	1,24	-,83	-,76	-,69
4	12	0,04	7,5	B82111-E-C21	100	4000	1,24	-,83	-,76	-,69
6	7	0,02	7,5	B82111-E-C20	100	4000	1,24	-,83	-,76	-,69

711476

Entstörd

UKW-Dros:

Mit einlagig
Ferrit-Kern

Nennindukt
Induktivitäts
Nennspann
Nennstrom
IEC-Klimak
Prüfzeichner

I_N A	L_N μH	R_{typ} bei $+20^\circ\text{C}$ m Ω
2	17	63
3	8	25
3	13	24
3	20	54
3	25	46
4	11	20
4	15	24
6	4	14
6	6	10
6	9	12
9	3	6
10	5	5

POS ID-NR BAUTEIL	TYPANZSTATUS	BEZEICHNUNG
710197 L4972	PAC=SOP	SMD 1 ? IC16
710209 C	C=68p ID=62130 U=63V TOL=M TYP=UNDEFINED	SMD 9 ? C8 C9 C16 C18 C35 C78 C92* C111 C120 C121
710212 VH_3	SEX=MALE DIRECT=P	1 ? X4
710213 MNR14_B	R=100R ID=62080 P=0.06W TOL=J	SMD 11 ? RA1 RA3 RA5 RA6 RA7 RA8 RA9 RA17 RA18 RA19
710216 R	R=1K0 ID=62048 P=0.12W TOL=J	SMD 9 ? R4 R18 R30 R43 R49* R55 R56 R61 R67 R80
710220 R	R=68K ID=62048 P=0.12W TOL=J	SMD 1 ? R10
710253 R	R=180R ID=62048 P=0.12W TOL=J	SMD 1 ? R11 R12* R70*
710254 R	R=1K5 ID=62058 P=1.0W TOL=J	SMD 0 ? RP*
710272 R	R=47R ID=62048 P=0.12W TOL=F	SMD 0 ? R54*
710273 R	R=1K54 ID=62048 P=0.12W TOL=F	SMD 0 ? R81*
710274 R	R=1K9 ID=62048 P=0.12W TOL=J	SMD 2 ? R59 R71
710278 R	R=4K7 ID=62048 P=0.12W TOL=J	SMD 12 ? R1 R5 R6 R7 R9 R12 R17 R19 R20 R36 R69* R75 R76
710284 R	R=39K ID=62048 P=0.12W TOL=J	SMD 4 ? R21 R22 R27 R78
710285 R	R=56K ID=62048 P=0.12W TOL=J	SMD 3 ? R33* R39 R48 R61
710286 C	C=22p ID=62130 U=63V TOL=M TYP=UNDEFINED	SMD 2 ? C1 C2
710288 C	C=330p ID=62130 U=63V TOL=J TYP=UNDEFINED	SMD 0 ? C20*
710307 R	R=1R ID=62050 P=0.25W TOL=F	SMD 4 ? R37 R50 R51 R62
710319 3718	PAC=DIP	2 ? IC13 IC14
710320 ZIF_CON22	SEX=FEMALE DIRECT=S THICK=0.3	2 ? X5 X6
710321 C	C=330p ID=62129 U=100V TOL=J TYP=X7R	SMD 7 ? C10 C31* C38* C43 C45* C48* C50 C51 C52 C53* C55* C56 C58* C61 C68* C77*
710332 L_710332	TYP=710332	1 ? L1
710333 C	C=220n ID=62132 U=63V TOL=M TYP=X7R	SMD 8 ? C41 C42 C100 C101 C107 C108 C10 C110
710335 R	R=0R ID=62048 P=0.25W TOL=J	SMD 1 ? R16* R42 R64*
710338 D_SUB9_1	SEX=FEMALE DIRECT=P MOUNT=SNAPIN	1 ? X1
710368 R	R=3K3 ID=62048 P=0.12W TOL=J	SMD 2 ? R65 R73
710389 MNR35_R	R=1k ID=62083 P=0.06W TOL=J	SMD 2 ? RA14 RA15
710399 Z_DIODE	TYP=ZMM5.6	SMD 2 ? V3 V19
710403 NPN	TYP=BDW93CPI	1 ? V22
710410 R	R=120R ID=62048 P=0.12W TOL=J	SMD 1 ? R35
710418 CHAMP36	SEX=FEMALE DIRECT=P MOUNT=SNAPIN SCREW=NO	1 ? X3
710421 PNP_2C	TYP=BCP51_16	SMD 1 ? V6
710615 C	C=470p ID=62130 U=63V TOL=K TYP=UNDEFINED	SMD 2 ? C15* C40 C49
710618 C	C=10n ID=62130 U=63V TOL=M TYP=UNDEFINED	SMD 9 ? C3 C4 C12 C29* C79 C85 C113 C11 C115 C119
710877 C	C=330p ID=62130 U=63V TOL=M TYP=UNDEFINED	SMD 2 ? C32 C33
711390 MAX202	PAC=SOP	SMD 2 ? IC2 IC3
711402 R	R=1R5 ID=62050 P=0.25W TOL=F	SMD 2 ? R66 R68
711419 VN02ANSP	PAC=PWR50	SMD 0 ? IC19*
711427 Z_DIODE	TYP=VC080505C150	SMD 0 ? V4* V5*
711441 E28F800	PAC=TSOP48	SMD 1 ? IC4* IC5
711456 93C56	PAC=SOP	SMD 1 ? IC11
711476 L_711476	TYP=711476	1 ? L2
711477 L_711477	TYP=711477	0 ? L3* att.
711478 R	R=0R47 ID=62050 P=0.25W TOL=J	SMD 2 ? R26 R57
BR_CLOS BR_SMALL	TYP=CLOSED	4 X B3 B19 B21 B24
BR_CLOS BR_MICRO	TYP=CLOSED	1 X B1
BR_OPEN BR_SMALL	TYP=OPEN	7 X B5 B11 B12 B13 B17 B20 B22
PA_MARK PASSERMARK	TYP=PAWK	4 X PAWK1 PAWK2 PAWK3 PAWK4
SMDK_TP TEST	TYP=SMDK	1 X P177

0
0POS0 ID-NR 0 BAUTEIL
0

0TYP0ANZ0STATUS 0 BEZEICHNUNG

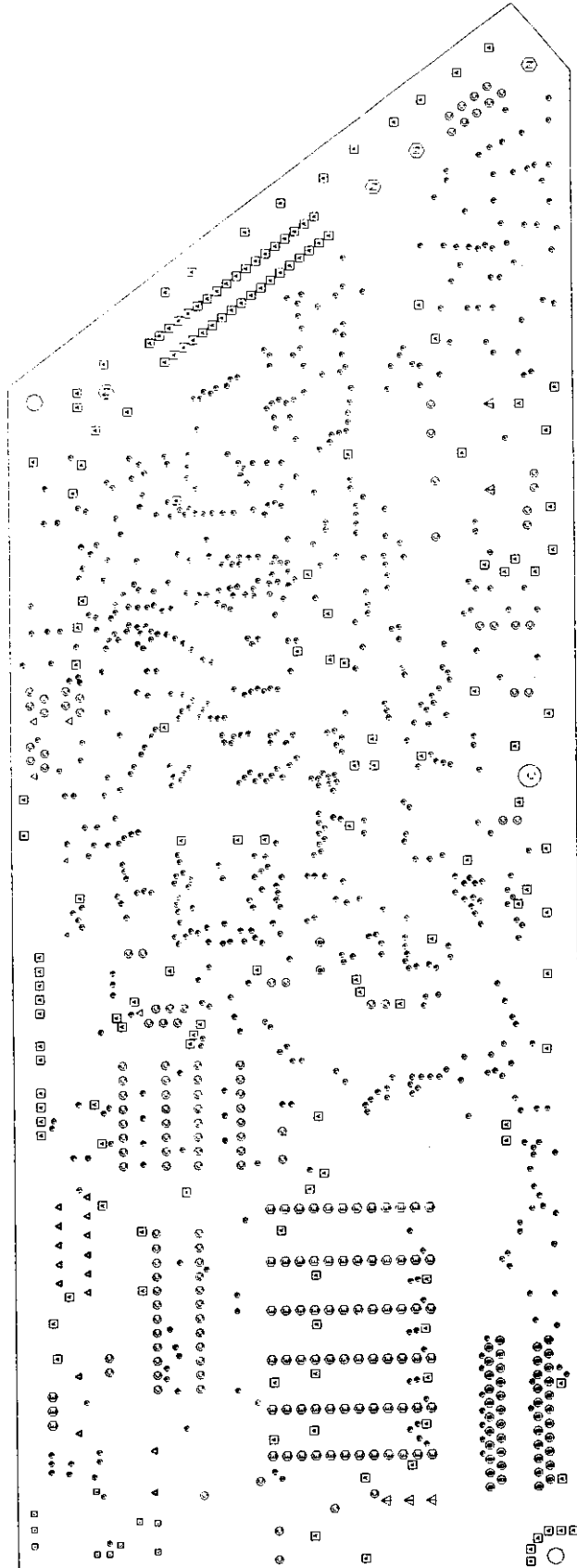
0
0 SMD_TP TEST TYP=SMD 176 X P1 P2 P3 P4 P5 P6 P7 P8 P9 P10
0 P11 P12 P13 P14 P15 P16 P17 P18
0 P19 P20 P21 P22 P23 P24 P25 P26
0 P27 P28 P29 P30 P31 P32 P33 P34
0 P35 P36 P37 P38 P39 P40 P41 P42
0 P43 P44 P45 P46 P47 P48 P49 P50
0 P51 P52 P53 P54 P55 P56 P57 P58
0 P59 P60 P61 P62 P63 P64 P65 P66
0 P67 P68 P69 P70 P71 P72 P73 P74
0 P75 P76 P77 P78 P79 P80 P81 P82
0 P83 P84 P85 P86 P87 P88 P89 P90
0 P91 P92 P93 P94 P95 P96 P97 P98
0 P99 P100 P101 P102 P103 P104
0 P105 P106 P107 P108 P109 P110
0 P111 P112 P113 P114 P115 P116
0 P117 P118 P119 P120 P121 P122
0 P123 P124 P125 P126 P127 P128
0 P129 P130 P131 P132 P133 P134
0 P135 P136 P137 P138 P139 P140
0 P141 P142 P143 P144 P145 P146
0 P147 P148 P149 P150 P151 P152
0 P153 P154 P155 P156 P157 P158
0 P159 P160 P161 P162 P163 P164
0 P165 P166 P167 P168 P169 P170
0 P171 P172 P173 P174 P175 P176
0

* = nicht bestueckt

		d			28.02.1999
		c			23.01.1999
		b	7	7	17.12.1998
7	AG.Rev	PCB.Rev	Ch.Rep.No	Draw.Rev	Date
ayer: SOLDERMASK BOT		TALLY GmbH		ID-No	
				48	010

		d		28.02.1999
		c		23.01.1999
?	?	b	?	17.12.1998
Note	AG.Rev	PCB.Rev	Ch.Rep.No	Draw.Rev
Layer:	OUTLINE		TALLY GmbH	ID-No 48 010

Bohrungen in mm:		
/	FIGURE /	HOLESIZE / QTY /
*	0.5000-P	710
□	0.8000-P	160
⊗	0.9000-P	46
△	1.0000-P	10
⊙	1.0000-P	115
▲	1.2000-P	15
⊛	1.3000-P	75
△	1.7000-P	5
⊙	3.2000-P	4
△	1.0000-N	2
△	1.5000-N	4
○	3.2000-N	2
⊙	4.0000-N	1



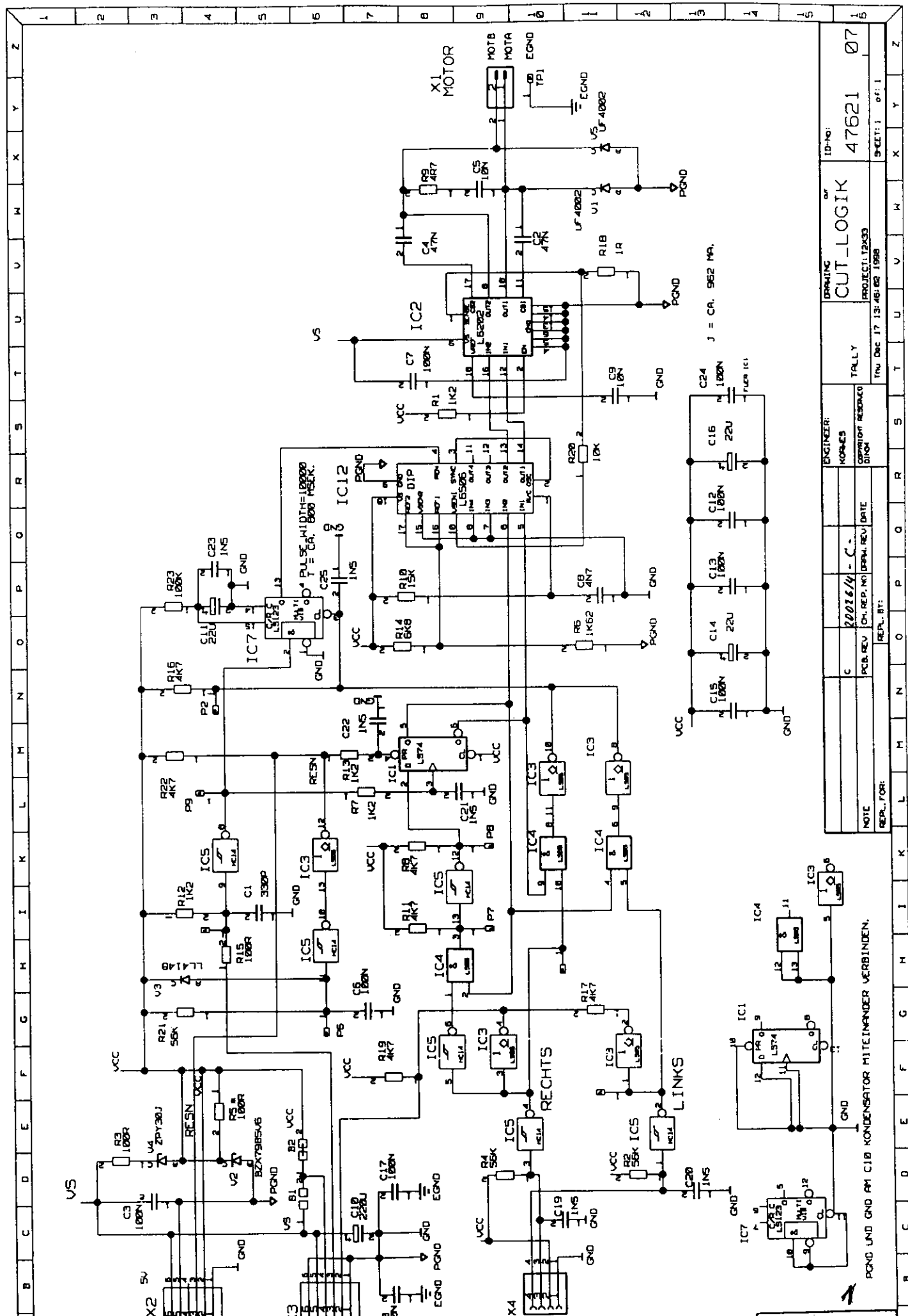
6 DESIGN : CONTROL97 T2040
 6 BAUGRUPPE : 46012
 6 SMD-BAUGR. : 46011
 6 LEITERPLATTE: 46010 2

6 DATUM : 1.03.1999

6 (Mechanische Bauteile und Bauteile ohne elektrische Funktion sind separat aufgefuehrt)

6 POS 6 ID-NR 6 BAUTEIL 6 TYP 6 ANZ 6 STATUS 6 BEZEICHNUNG

6	47743	W5M23160FF	PAC=SOP	SMD	0 ?	IC10*
6	47802	PPC	PAC=QFP	SMD	1 ?	IC7
6	704595	Z_DIODE	TYP=ZPY30J		1 ?	V21
6	705414	MICROMATCH6	SEX=FEMALE DIRECT=S COL=RED		1 ?	X9
6	708081	MICROMATCH4	SEX=FEMALE DIRECT=S COL=RED		1 ?	X12
6	708547	2_5ULTREX4	SEX=MALE DIRECT=S COL=BLACK		1 ?	X7
6	708548	2_5ULTREX5	SEX=MALE DIRECT=S COL=BLACK		1 ?	X8
6	708568	ELKO-220U,148			1 ?	C21* C112
6	708683	S_DIODE	TYP=D1F84	SMD	1 ?	V2
6	708689	FT5763	PAC=RM65		6 ?	VA1 VA2 VA3 VA4 VA5 VA6
6	708818	ELKO-1U,148			1 ?	C105
6	708891	ELKO-10U,148			8 ?	C94 C95 C96 C97 C98 C99 C102
6						C106
6	709121	ELKO-1M,148			1 ?	C104
6	709133	ELKO-2U2,148			1 ?	C103
6	709143	DIODE	TYP=MUR410		1 ?	V11
6	709582	MICROMATCH4	SEX=FEMALE DIRECT=S COL=GREEN		1 ?	X10
6	709595	NPN	TYP=BC847B	SMD	1 ?	V7
6	709616	2_5ULTREX2	SEX=MALE DIRECT=S COL=BLACK		1 ?	X2
6	709656	74LS07	PAC=SOP	SMD	1 ?	IC8
6	709742	74LS14	PAC=SOP	SMD	2 ?	IC9 IC18
6	709794	C	C=1n ID=62130 U=63V TOL=M TYP=UNDEFINED	SMD	2 ?	C25 C37
6	709800	V25	PAC=QFP	SMD	1 ?	IC6
6	709822	L6203	PAC=MWATT11		1 ?	IC12
6	709857	C	C=470n ID=62132 U=50V TOL=M TYP=25U	SMD	3 ?	C62 C63 C69
6	709923	74LS373	PAC=SOP	SMD	1 ?	IC17
6	709984	MNR34_B	R=100R ID=62082 P=0.06W TOL=J	SMD	5 ?	RA2 RA4 RA10 RA11 RA12 RA13
6	709986	QUARZ	F=15.9744MHZ PAC=HC49U		1 ?	G1
6	709995	R	R=100R ID=62048 P=0.12W TOL=J	SMD	9 ?	R14 R24 R34 R38 R40 R45* R46*
6						R47 R52 R53* R58 R82* R86
6	709997	R	R=10K ID=62048 P=0.12W TOL=J	SMD	6 ?	R2 R15* R23 R31 R32* R44 R74 R8
6	709999	C	C=100n ID=62130 U=63V TOL=M TYP=UNDEFINED	SMD	19 ?	C5 C6 C11 C14 C19 C23 C28 C34
6						C36 C39 C44 C54 C67 C80 C84 C86
6						C90 C116 C118
6	710021	PD431000	PAC=SOP	SMD	1 ?	IC1
6	710059	FFC10	SEX=FEMALE INV=NO	SMD	1 ?	X13
6	710096	MICROMATCH4	SEX=FEMALE DIRECT=S COL=BROWN		0 ?	X11*
6	710099	S_DIODE_NNCA	TYP=BAT54	SMD	1 ?	V1
6	710102	R	R=470R ID=62048 P=0.12W TOL=J	SMD	4 ?	R25 R28 R29* R41 R72
6	710122	L6219	PAC=DIP		1 ?	IC15
6	710144	R	R=3K01 ID=62048 P=0.12W TOL=F	SMD	2 ?	R3 R60
6	710153	C	C=1n5 ID=62130 U=63V TOL=M TYP=UNDEFINED	SMD	13 ?	C7* C13 C17* C22* C24 C26* C27
6						C30 C46 C47 C59 C64 C66 C74 C87
6						C89 C91 C117*

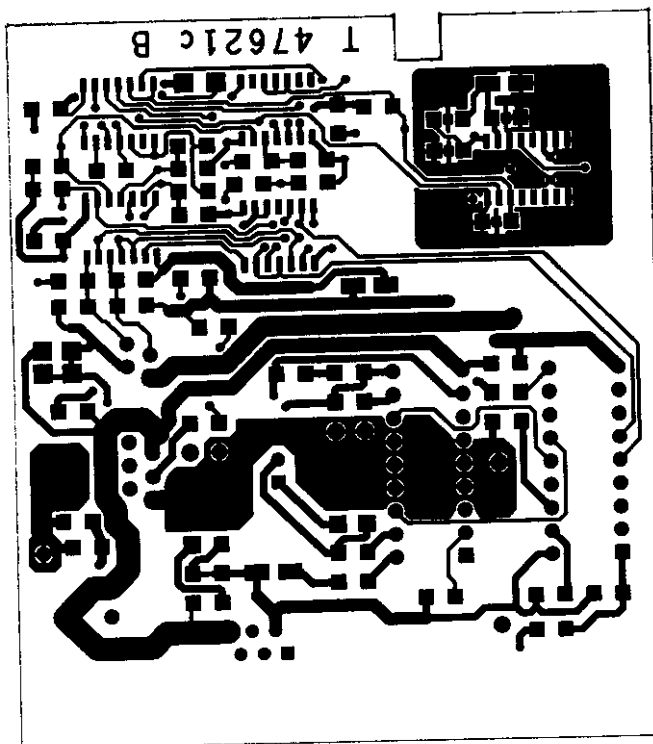


ID-No:		47621	07
DRAWING		CUT_LOGIK	
PROJECT: 12433			
TNU Dec 17 13:46:02 1998			
ENGINEER:			
MOBILES			
OPTIONAL RESONANT			
DATE			
PCB REV			
CH. REP. NO			
DEPT. REV			
REPL. BY:			

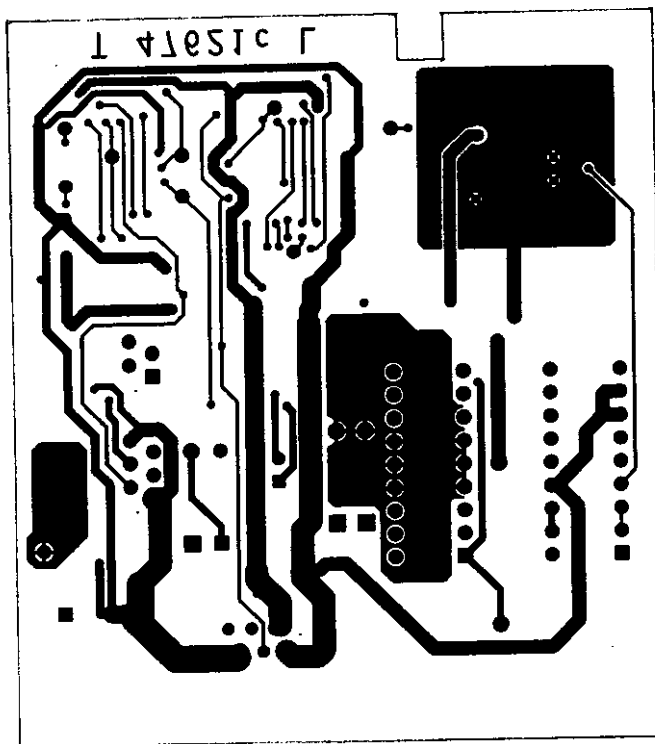
PGND UND GND AM C19 KONDENSATOR MITTEINANDER VERBINDEIN.

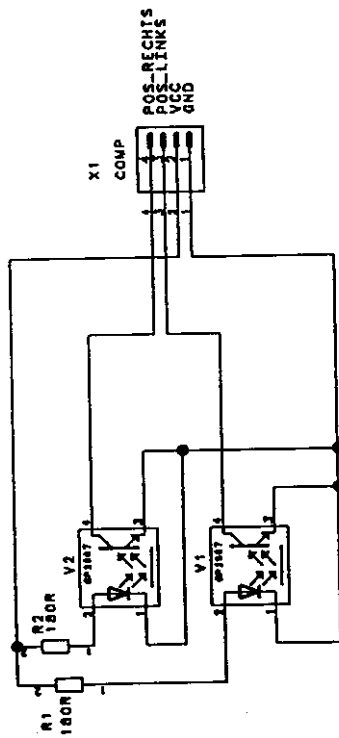
A Mechanik - Teile			HS Kühlkörper			R Widerstände			X Steckverbinder		
Baugruppen			IC Integr. Schaltkreise			TR Trafo / Übertrager					
C Kondensatoren			L Induktivitäten			V Dioden / Transistoren					

		u			22.04.1990
?	?	a	?	?	16.02.1996
Note	AG.Rev	PCB.Rev	Ch.Rep.No	Draw.Rev	Date
Layer: TOP		MANNESMANN TALLY		ID-No 47 621	

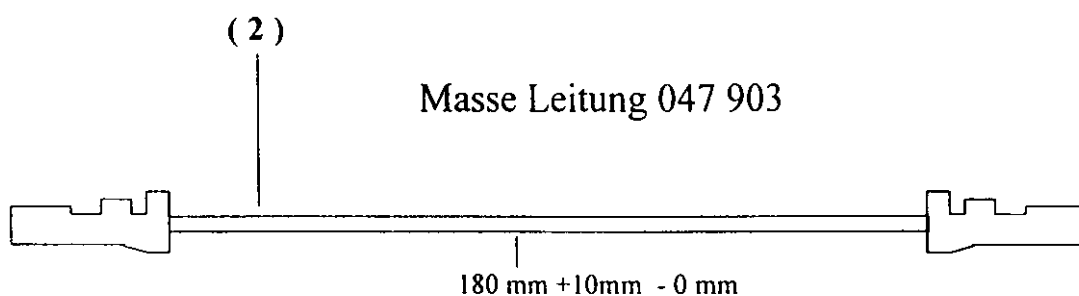
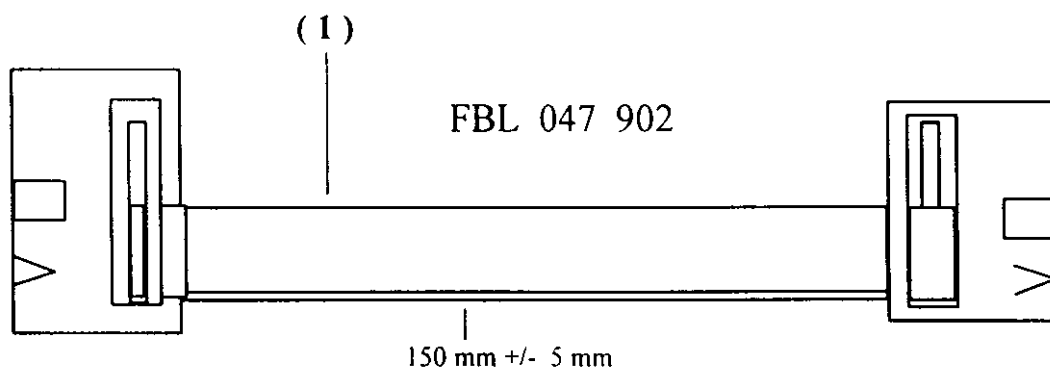
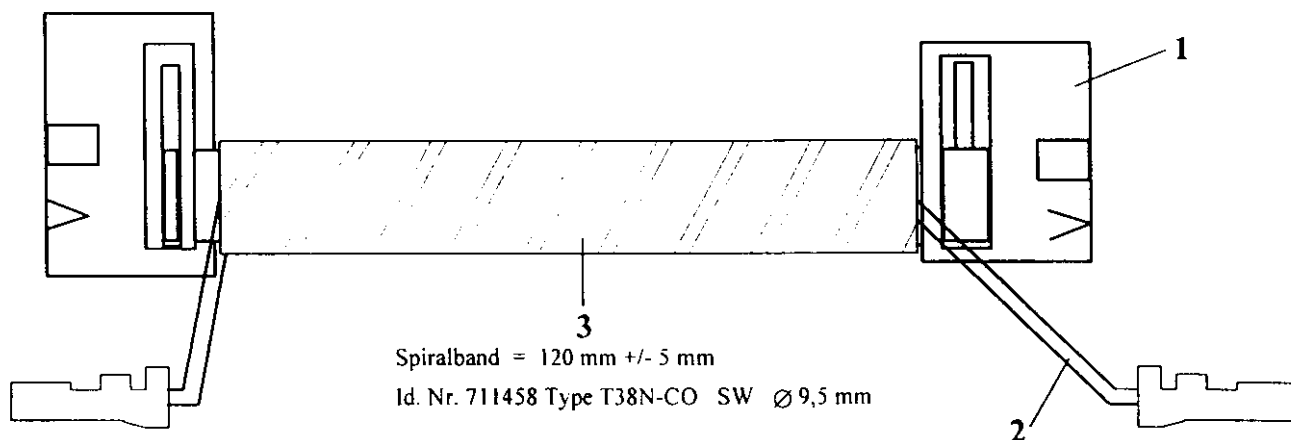


		b				22.04.1996
?	?	a	?	?	?	16.02.1996
Note	AG.Rev	PCB.Rev	Ch.Rep.No	Draw.Rev	Date	
Layer: BOTTOM				MANNESMANN TALLY	ID-No 47 621	





10-Ref		47684		07	
SHEET: 1		of 1			
ENGINEER:		MANHESMANN		DRAWING	
MOFFATT		TALLY		LS-CUT	
24.01.1986		Thu Jan 25 10:28:43 1986		PROJECT: 12147.CUT	
PCB, REV		CH, REF, NO		DATE	
REPL. FOR: X		REPL. BY: X			
NOTE					



CUT-Anschluß Kpl. T2040

Tally

048147/10

Bt.-Nr.: 1

Folgebl.: --

Zeichnungs-Nr.:

20175/1

26.01.1999

Pe

Ersatz für:

Aktengesellschaft Stuttgart

Technical drawing of a circular mechanical part, likely a flange or end plate. The drawing shows a circular face with a central hole and eight smaller holes arranged in a circle. Dimensions are given in millimeters (mm) with tolerances. The outer diameter is 22 ±0.1. The inner diameter of the central hole is 16 ±0.1. The diameter of the eight small holes is 2.7 ±0.1. The angle between the center lines of the small holes is 45°.

[illegible]

ALLE RECHTE VORBEHALTEN
Alcatel SEL
Aktiengesellschaft Stuttgart

Typ G 30.1

Schutzart DIN 40 050 BL2	:	Klemmen IP 00 Gehäuse IP 20
Betriebsart	:	S1
Isolierstoffklasse	:	E VDE 0530 (120°C)
Funkstörgrad	:	- VDE 0875
Messungsart	:	VDE 0530 : DIN 42 025
Nennspannung	U_N	24 V
Nennstrom 2)	I_N	$\leq 0,45$ A
Nennleistungsaufnahme 2)	P_{1N}	$\geq 10,8$ W
Leerlaufstrom 1)	I_0	$\leq 0,09$ A
Nenn Drehmoment 2)	M_N	1,7 10^{-2} Nm
Nenn Drehzahl 2)	n_N	3400 $\pm 10\%$ min $^{-1}$
Nennleistung 2)	P_{2N}	6,1 W
Reibungsmoment 1)	M_R	0,35 10^{-2} Nm
Nennwirkungsgrad 2)	η_N	56 %
max. Moment 1)	M_{max}	- $\pm 10\%$ 10^{-2} Nm
Anhaltmoment 1)	M_A	6,1 $\pm 10\%$ 10^{-2} Nm
Leerlauf Drehzahl 1)	n_0	4850 $\pm 10\%$ min $^{-1}$
Steigung der Drehzahl- Drehmoment Kennlinie 1)	K_D	1,21 10^{-4} Nmsrad $^{-1}$ 1,26 10^{-2} Nm/1000min $^{-1}$
Läufermassenträgheitsmoment	J_R	19,5 10^{-7} kgm 2
Mechanische Anlaufzeitkonstante 1)	τ_m	16,2 10^{-3} s
Anlaufstrom 1)	I_A	1,4 $\pm 10\%$ A
Entmagnetisierungsstrom 1)	I_{Fm}	$\geq$ - A
Läuferwiderstand 1)	R_R	16,6 $\pm 10\%$ Ω
Anschlußwiderstand 1)	R_A	17,1 $\pm 10\%$ Ω
Drehmomentkonstante 1)	K_M	4,52 10^{-2} NmA $^{-1}$
Anschlußinduktivität 1)	L	15,35 10^{-3} H
Elektrische Zeitkonstante 1)	τ_e	0,9 10^{-3} s
Anlaufspannung 1)	U_A	3 V
Maximale Abgabeleistung 1)	P_{2max}	7,7 W
Maximale Drehzahl 2)	n_{max}	6000 min $^{-1}$
Maximale Gehäusetemperatur 2)	ϑ_G	80 °C
Thermischer Widerstand 2)		
Wicklung zum Gehäuse	R_{th1}	5,96 KW $^{-1}$
Gehäuse zur umgebenden Luft	R_{th2}	13,2 KW $^{-1}$
Gewicht	—	0,11 kg

A4

- 1) $\vartheta_W - \vartheta_R = 20$ °C
2) $\Delta \vartheta_W - \Delta \vartheta_{Wzul} = 100$ K

												PATMAN			
												ABMANE			
				DATUM				NAME							
				BEARB. 07.10.88				Nägels				8.117.016			
				GEPR. 21.10.94				Pfender							
												MA/STAB			
				ERSTVERW.								G 30.1			
20.03.96				Wirt				Wicklungsänd. 7970				3			
DATUM				NAME				MITTEILUNG				AUSG.			
				ALCATEL SEL				dunkermotoren				61501024			
												48			
												BLATT			
												BL.			
												ERS. F.			
												ERS. D.			

Tally GMBH ELCHINGEN		20026/1 117780		-B- 14.10.96 -A- 21.5.96		SC		Zeichnungs-Nr.: 54717		10		Bl.-Nr.: 4 Folgebl.: 5	
-------------------------	--	-------------------	--	-----------------------------	--	----	--	--------------------------	--	----	--	---------------------------	--

UCL-N°	0	1	2	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

CAUTION: For continued protection against risk of fire, replace only with same type and rating of fuse.

ATTENTION: Pour ne pas compromettre la protection contre les risques d'incendie, remplacer par un fusible de même type et de mêmes caractéristiques nominales.

FCC ID: EUIT2X40

Tally GmbH

Made in Germany

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference that may be received, including interference that may cause undesired operation.

Tally GmbH D-89275 Elchingen

AC	V	Model
	Hz	Ser.No.
	A	Id. No.
	W	F1

US LISTED
I.T.E. 90SE

[illegible]

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C. 20554

GRANT OF EQUIPMENT AUTHORIZATION

Certification

┌	┐	Date of Grant	April 2, 1998
Tally GmbH		File No	31010/EQU 4-3-5
P.O. Box 2969		Application dated:	February 27, 1998
D-89019 Ulm Germany	└		

Attention: Walter Bohm, Dept. TQV

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below

FCC IDENTIFIER **EUIT2X40**

Name of Grantee **Tally GmbH**

FCC Rule Part(s): 15

Equipment Class : Class B Computing Device Peripheral

If the subject device requires shielded interface cables to ensure compliance, the user's manual must advise the user of this requirement.

This device has shown compliance with new rules adopted under Docket 87-389 and is not affected by Section 15.37, transition rule.

- | | | |
|----|--|----------------|
| 1) | Overall Front View, Printer Model T2040S with Cutter on top | 40S Front. JPG |
| 2) | Overall Back View, Printer Model T2040S (Placement of FCC ID marked) | 40S Back. " |
| 3) | Cutting Device, Bottom Back View | 40S CutBk. " |
| 4) | Cutting Device, Top Front View | 40S Cut Fr. " |
| 5) | Cutting Device without Enclosure, CUT-Logic with Motor | 40S Cut Op. " |

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT2X40

March 16, 1999
W. Boehm, Dept. TQV

Application for FCC Class II Permissive Change

Matrix Printer Model T2040S

Photographs of Printer and Interiors

No.	Description
1.	Overall Front View, Printer Model T2040S with Cutter on top
2.	Overall Back View, Printer Model T2040S (Placement of FCC ID marked)
3.	Cutting Device, Bottom Back View
4.	Cutting Device, Top Front View
5.	Cutting Device without Enclosure, CUT-Logic with Motor

- 1) Overall Front View, Printer Model T2040S with Cutter on top



Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT2X40

March 16, 1999
W. Boehm, Dept. TQV

Application for FCC Class II Permissive Change

Matrix Printer Model T2040S

LIST OF EXHIBITS

Appendix A:	Test Report TA853_02.DOC of Printer T2040S with serial and parallel Interface and CUT-Device Issued by EMCE GmbH, 88483 Burgrieden (Germany), by Dez. 23, 1998
-------------	--

Appendix B: Documentation of Electrical Assemblies

- Generated Frequencies, EMI Suppression Measures
- Data Sheets of EMI Suppression Components
- Circuit Diagram, Component Placement and Parts-List of all PCBs.

Appendix C: Photographs of Printer and Interiors

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT2X40

March 16, 1999
W. Boehm, Dept. TQV

Application for FCC Class II Permissive Change

Matrix Printer Model T2040S

LIST OF EXHIBITS

Appendix A: Test Report **TA853_02.DOC** of Printer **T2040S**
with serial and parallel Interface and CUT-Device
Issued by EMCE GmbH, 88483 Burgrieden (Germany), by Dez. 23, 1998

Appendix B: Documentation of Electrical Assemblies
- Generated Frequencies, EMI Suppression Measures
- Data Sheets of EMI Suppression Components
- Circuit Diagram, Component Placement and Parts-List of all PCBs.

Appendix C: Photographs of Printer and Interiors

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT2X40

March 16, 1999
W. Boehm, Dept. TQV

Application for FCC Class II Permissive Change

Matrix Printer Model T2040S

LIST OF EXHIBITS

Appendix A: Test Report **TA853_02.DOC** of Printer **T2040S**
with serial and parallel Interface and CUT-Device
Issued by EMCE GmbH, 88483 Burgrieden (Germany), by Dez. 23, 1998

Appendix B: Documentation of Electrical Assemblies

- Generated Frequencies, EMI Suppression Measures
- Data Sheets of EMI Suppression Components
- Circuit Diagram, Component Placement and Parts-List of all PCBs.

Appendix C: Photos of Printer and Interiors

FEDERAL COMMUNICATIONS COMMISSION
MELLON BANK APPLICATION RETURN FORM

Date:

4/7/99

Data Preparation Center
Mellon Bank
Room 153-2718
Pittsburgh, PA 1559-001

Re: Tally Computerdrucker Gmbh

The enclosed application(s) can be processed as filed. Please refer to the following instructions:

- ☐ Use original date stamped, and stamp all receipt copies with the same date.
- ☒ Restamp application(s) and all other documents.
- ☐ Application was sent to the wrong location, and is being forwarded for processing.
- ☒ Process application(s) in Lockbox 358315.
- ☒ Process filing using Payment Type Code EAC.
- ☐ Process as overpayment.

Please contact the Billings & Collections Branch at (202) 418-1995, if you have any questions.

Sincerely,

Claudette E. Prile

Billings & Collections Branch

Enclosure

159
OK # 0986225 - #45
731