



**ELECTRO MAGNETIC COMPATIBILITY
LABORATORY**

TEST REPORT

**Report number :
961-215-11/e**

SUBJECT : EMI measurement about standard CFR 47 part 15 class B

CONTRACT :

ARCHOS SA

DATE of report :

May, 12 of 1998

CUSTOMER :

B.GONNET

EQUIPMENT :

PCMCIA connection interface

Mini Hard Disc peripheral device.

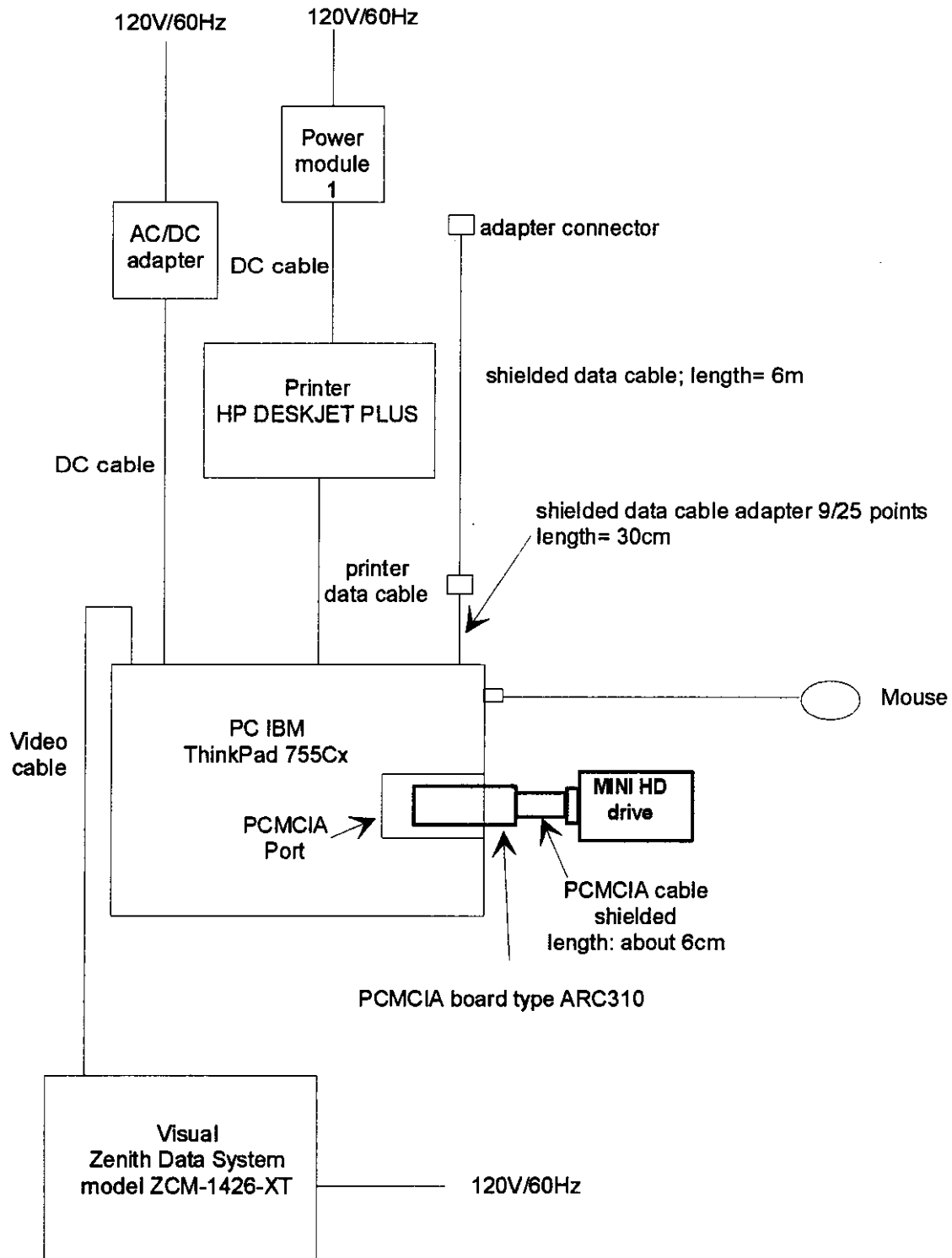
Written by : D. RAUD

Approval : JL.CANDELON

*This document must be only reproduced by a whole photographic operation.
It contents 6 pages and 11 annexes.*

This test report is attached to the equipment under test only.

TESTED CONFIGURATION



SUMMARY

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1. INFORMATIONS FOR THE TEST

NAME OF EQUIPMENT UNDER TEST :

PCMCIA connection interface

Mini Hard Disc peripheral device.

ADDRESS OF THE CUSTOMER :

**ARCHOS SA
ZA les Godets, 37 rue des petits ruisseaux
VERRIERES
91370 (Essonne)
FRANCE**

NAME OF THE CUSTOMER :

B.GONNET

DATE OF THE TEST :

May, 5 of 1998

TEST FACILITY :

**EMC Test Site in ANGERS
331 avenue Patton
49004 (Angers cedex 01)
FRANCE
FCC recognition number I6U**

ASSISTANT DURING THE TEST :

B.GONNET

TEST DRIVEN BY :

D.RAUD

TEST MANAGER :

Jean Louis CANDELON

2. INTRODUCTION

The test is done to verify the compliance of system configuration described §4 versus the limits class B of USA standard regulation CFR 47 part 15 subpart B for conducted emissions limits (§15.107 class B device) and radiated emission limits (§15.109 class B device).

3. DOCUMENTS OF REFERENCE

CFR 47 part 0 to 19, date of 1997
ANSI C63.4, date of 1992

4. CONFIGURATION OF THE EQUIPMENT UNDER TEST

HARDWARE :

Equipment under test:

* Mini HD drive without serial number with PCMCIA board ref. ARC330;
with flat cable length = 6cm
The flat cable is shielded with copper foil on lower side only;
this foil is connected to ground at each extremity

Associated equipment for the test, measured with EUT :

- * Portable PC IBM (with PCMCIA port) ; Model ThinkPad 755Cx; type 9545; S/N: 00-00023;
FCC ID: ANO9545E with AC/DC Adapter IBM P/N 49G2192 without serial number
- * Additionnal visual Zenith Data Systems model ZCM-1426-Xt; S/N MYZE5018002086;
FCC ID: CKLHCM-427
- * Microsoft mouse PS/2 compatible mouse; S/N 597891; FCC ID: C3K76FPS26C
- * Printer Hewlett Packard Deskjet Plus 2277A FCC-ID: B948JA2277X S/N: 2906A16132
with Power Module 1, model: ETT76J2A Input: 120V/60Hz A.C 0.5A Output: 20V A.C 40VA

Interconnections :

- * AC power cable for visual, unshielded, length = 2.50m
- * Printer parallel data cable; shielded; length 2m, ref. N085675000.01C with shielded connectors
- * On serial port: shielded data cable adapter 9/25 points; length 30cm; ref.: Logistel 9306 + shielded data cable; length 6m; ref.: Logistel 9017 + connector adaptor ref.: Logistel 9242

SOFTWARE : Activity during the test

Reads and writes data between MINI HD and PC in loop mode

5. LIST OF MEASUREMENT APPARATUS

APPARATUS	MANUFACTURER	REFERENCE	SERIAL NUMBER	Date of vérification
*RECEIVERS				
Receptive chain :	Hewlett Packard	HP 8574 A	-	-
Q-P Adaptator	Hewlett Packard	HP 85650A	2811A01134	juin-97
Spectrum analyser	Hewlett Packard	HP 8568 B	2816A116603	juin-97
Preselector	Hewlett Packard	HP 685685A	287A00784	juin-97
EMI Software	Hewlett Packard	HP 85869A	-	
REMS Software for fieldstrength	Hewlett Packard	HP 85879A rev A.02.01	-	
*NETWORKS Adatpters				
LISN	Rohde & Schwarz	ESH2-Z5	861741/019	juin-97
LISN	Rohde & Schwarz	ESH2-Z5	872094/037	juin-97
LISN	Rohde & Schwarz	ESH2-Z5	871777/031	juil-97
*ANTENNAS				
Bicónic	Schwarzbeck	BBA 9106	42456060001	juin-97
Log.périod.	Schwarzbeck	UHALP 9107	42456080001	juin-97

6. RESULTS

Test type	compliance	no compliance	Appendix
Power line interferences: PC (AC/DC adapter) visual printer	 x x x		 1-1 and 1-2 1-3 and 1-4 1-5 and 1-6
Electric fieldstrength	 x		 2-1 and 2-2

7. CONCLUSION

The tested equipment complies with the standard in reference.

REPORT NUMBER : 961-215-11/e
 PRODUCT NAME : PC IBM MODEL THINKPAD 755 Cx + HARD DISK DRIVE on PCMCIA port
 SERIAL NUMBER : PC: 00-00023
 STANDARD : FCC PART 15 / 1997 CLASS B
 MEASUREMENT : AC POWER LINE CONDUCTED PHASE
 (Limit line#1= Quasi-Peak limit)
 CONDITIONS : 120V/60Hz

APPENDIX:1-1

MEASUREMENTS DONE BY : D.RAUD

5 May 1998 10:38:26

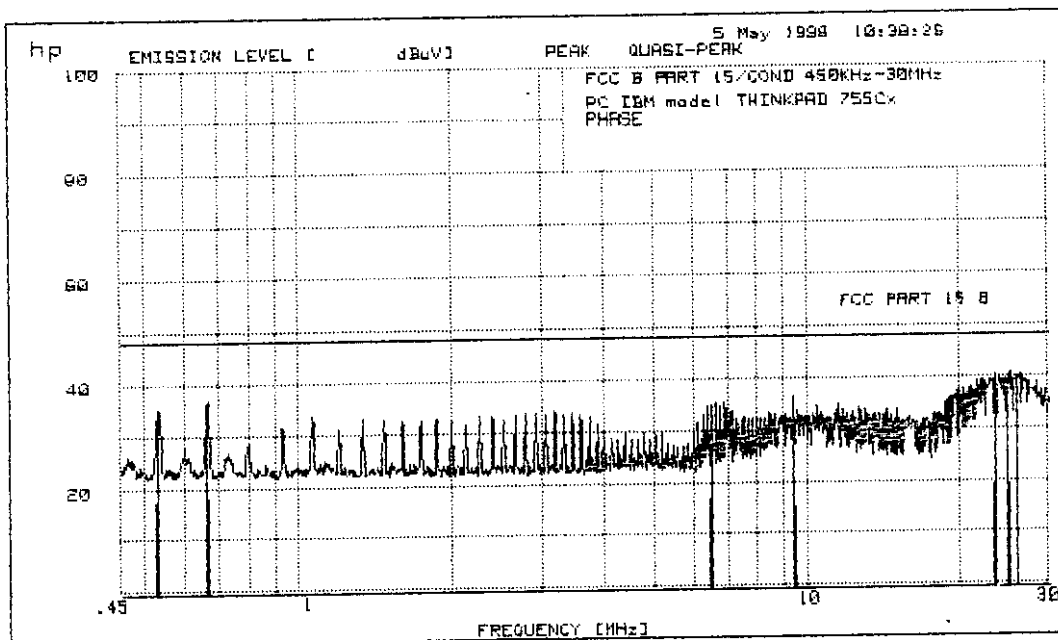
1. CONDUCTION SECTEUR

1.1 FCC B PART 15/COND 450KHz-30MHz

PC IBM model THINKPAD 755Cx
 PHASE

Quasi-Peaks above -20 dB of Limit Line #1
 peak criteria = 6 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.5322	35.1	-12.9
2	.6648	36.2	-11.8
3	6.515	34.3	-13.7
4	9.424	31	-17.0
5	23.52	39.2	-8.8
6	24.94	39.2	-8.8
7	26.01	39.5	-8.5



REPORT NUMBER : 961-215-11/e
 PRODUCT NAME : PC IBM MODEL THINKPAD 755 Cx + HARD DISK DRIVE on PCMCIA port
 SERIAL NUMBER : PC: 00-00023
 STANDARD : FCC PART 15 / 1997 CLASS B
 MEASUREMENT : AC POWER LINE CONDUCTED NEUTRAL
 (Limit line#1= Quasi-Peak limit)
 CONDITIONS : 120V/60Hz

APPENDIX:1-2

MEASUREMENTS DONE BY : D.RAUD

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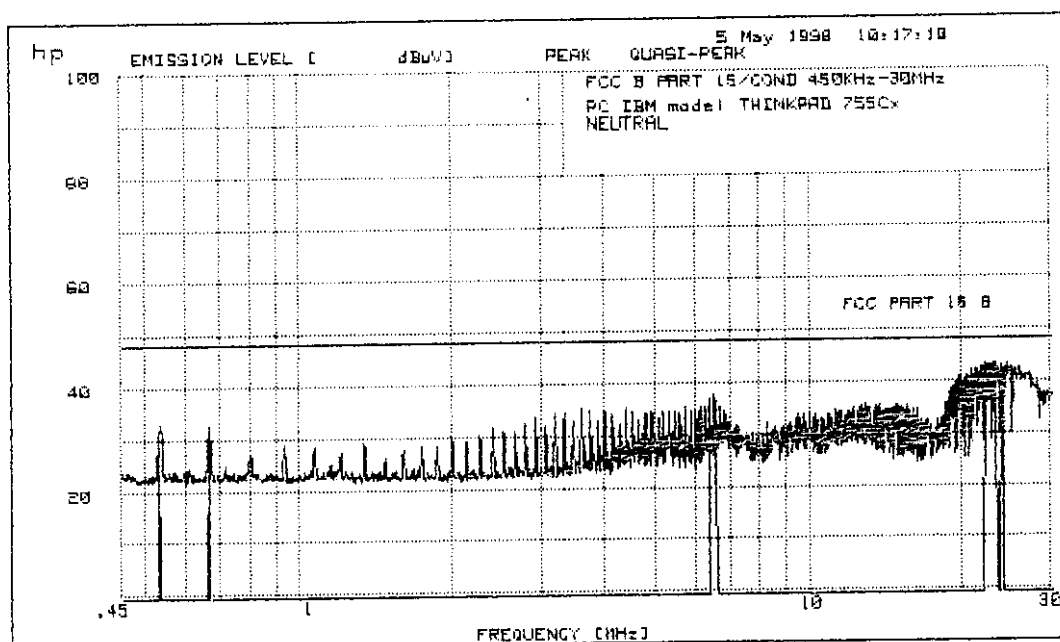
1. CONDUCTION SECTEUR

1.1 FCC B PART 15/COND 450KHz-30MHz

PC IBM model THINKPAD 755Cx
 NEUTRAL

Quasi-Peaks above -15 dB of Limit Line #1
 peak criteria = 6 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	6.433	36.6	-11.4
2	6.569	36.3	-11.7
3	22.37	43.2	-4.8
4	22.94	42.7	-5.3
5	23.92	41.3	-6.7



REPORT NUMBER : 961-215-11/e
 PRODUCT NAME : VISUAL ZENITH DATA SYSTEM model ZCM-1426-XT
 SERIAL NUMBER : MYZE5018002086
 STANDARD : FCC PART 15 / 1997 CLASS B
 MEASUREMENT : AC POWER LINE CONDUCTED PHASE
 (Limit line#1= Quasi-Peak limit)
 CONDITIONS : 120V/60Hz

APPENDIX:1-3

MEASUREMENTS DONE BY : D.RAUD

5 May 1998 10:49:42

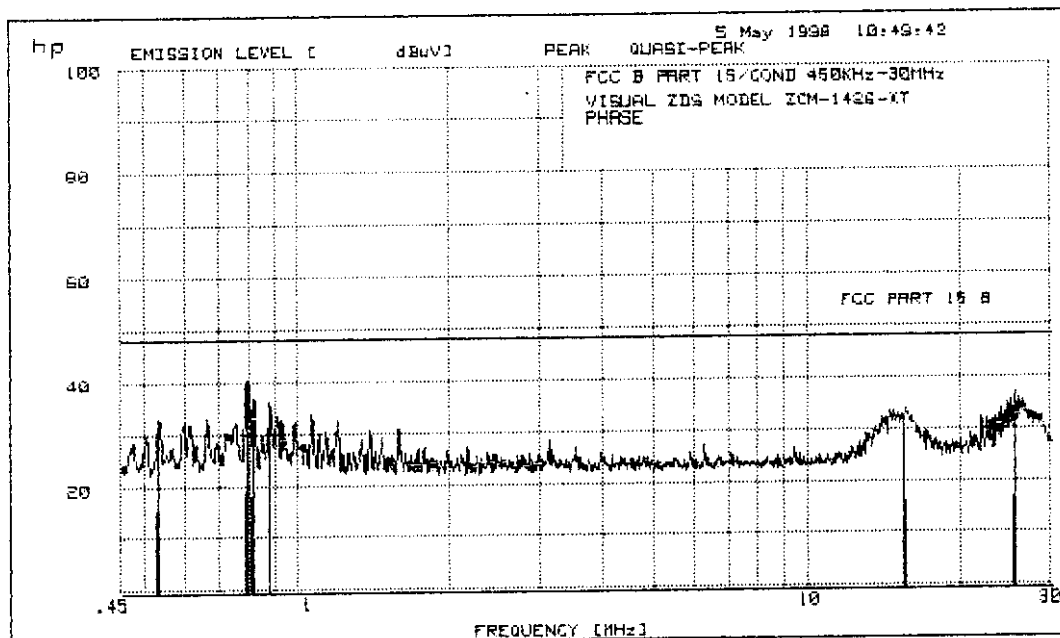
1. CONDUCTION SECTEUR

1.1 FCC B PART 15/COND 450KHz-30MHz

VISUAL ZDS MODEL ZCM-1426-XT
PHASE

Quasi-Peaks above -20 dB of Limit Line #1
peak criteria = 6 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.5322	31.2	-16.8
2	.7962	39.1	-8.9
3	.8165	36.3	-11.7
4	.8805	35.2	-12.8
5	15.53	32.4	-15.6
6	25.47	34.6	-13.4



REPORT NUMBER : 961-215-11/e
 PRODUCT NAME : VISUAL ZENITH DATA SYSTEM model ZCM-1426-XT
 SERIAL NUMBER : MYZES018002086
 STANDARD : FCC PART 15 / 1997 CLASS B
 MEASUREMENT : AC POWER LINE CONDUCTED NEUTRAL
 (Limit line#1= Quasi-Peak limit)
 CONDITIONS : 120V/60Hz

APPENDIX:1-4

MEASUREMENTS DONE BY : D.RAUD

5 May 1998 11:00:46

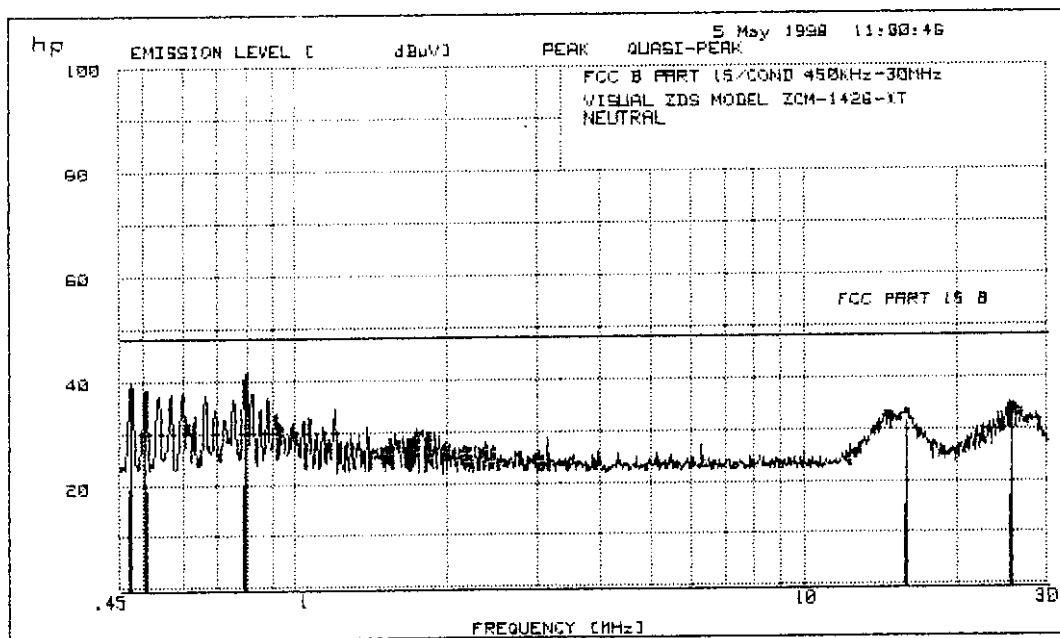
1. CONDUCTION SECTEUR

1.1 FCC B PART 15/COND 450KHz-30MHz

VISUAL ZDS MODEL ZCM-1426-XT
 NEUTRAL

Quasi-Peaks above -20 dB of Limit Line #1
 peak criteria = 6 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.4732	38.9	-9.1
2	.5061	38.5	-9.5
3	.7962	40.6	-7.4
4	15.85	31.4	-16.6
5	25.47	34.2	-13.8



REPORT NUMBER : 961-215-11/e
 PRODUCT NAME : PRINTER HP DESKJET PLUS
 SERIAL NUMBER : 2906A16132
 STANDARD : FCC PART 15 / 1997 CLASS B
 MEASUREMENT : AC POWER LINE CONDUCTED PHASE
 (Limit line#1= Quasi-Peak limit)
 CONDITIONS : 120V/60Hz

APPENDIX:1-5

MEASUREMENTS DONE BY : D.RAUD

5 May 1998 11:09:30

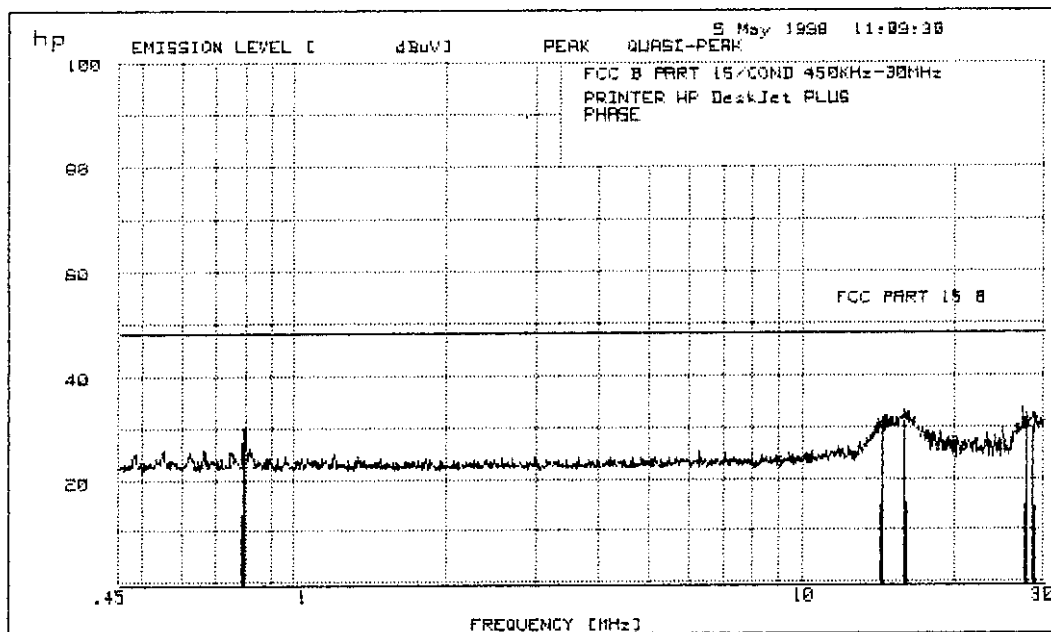
1. CONDUCTION SECTEUR

1.1 FCC B PART 15/COND 450KHz-30MHz

PRINTER HP DeskJet PLUS
 PHASE

Quasi-Peaks above -30 dB of Limit Line #1
 peak criteria = 6 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.7962	27.5	-20.5
2	14.34	30.4	-17.6
3	15.92	30.9	-17.1
4	27.7	30.6	-17.4
5	28.53	29.3	-18.7



REPORT NUMBER : 961-215-11/e
PRODUCT NAME : PRINTER HP DESKJET PLUS
SERIAL NUMBER : 2906A16132
STANDARD : FCC PART 15 / 1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED NEUTRAL
(Limit line#1= Quasi-Peak limit)
CONDITIONS : 120V/60Hz

APPENDIX:1-6

MEASUREMENTS DONE BY : D.RAUD

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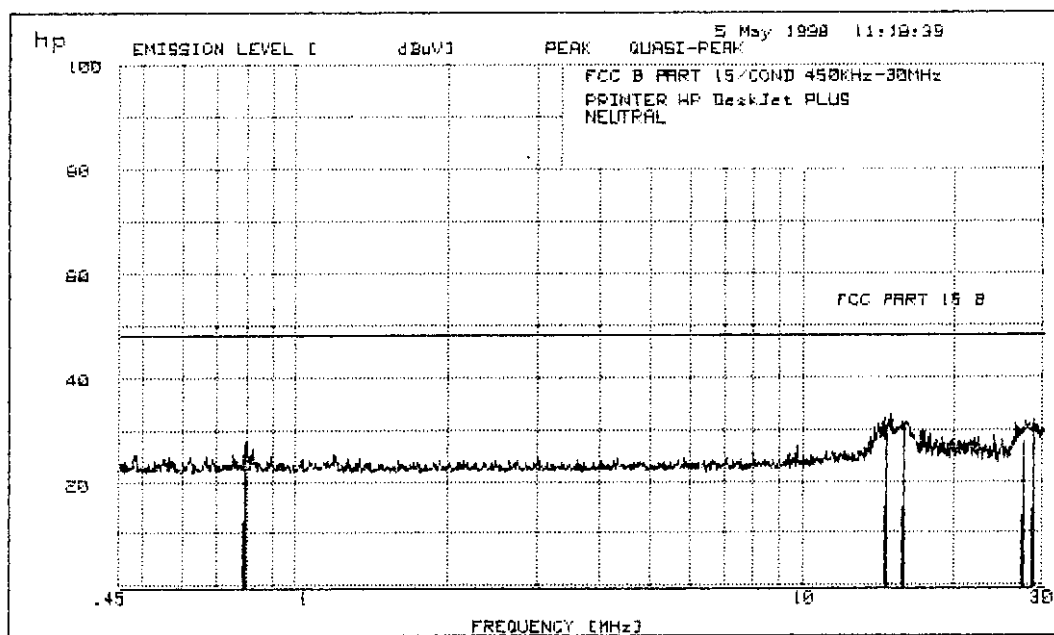
1. CONDUCTION SECTEUR

1.1 FCC B PART 15/COND 450KHz-30MHz

PRINTER HP DeskJet PLUS
NEUTRAL

Quasi-Peaks above -30 dB of Limit Line #1
peak criteria = 6 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.7962	25.3	-22.7
2	14.64	30.2	-17.8
3	15.85	30.1	-17.9
4	27.35	27.4	-20.6
5	28.65	29.4	-18.6



REPORT : 961-215-11/e APPENDIX 2-1
 PRODUCT NAME : PC IBM MODEL THINKPAD 755Cx with MINI HD on PCMCIA port
 SERIAL NUMBER : PC: 00-00023 CONFIGURATION ON APPENDIX A
 STANDARD : FCC PART15 DATE OF 1997 CLASS B D=3m
 MEASUREMENT : ELECTRIC FIELD 30-1000MHz
 CONDITIONS : 120V/60Hz
 DATE : 05/05/1998
 MEASUREMENT DONE BY : D.RAUD

PRODUCT EMISSIONS

HP 85879A Rev. A.02.01

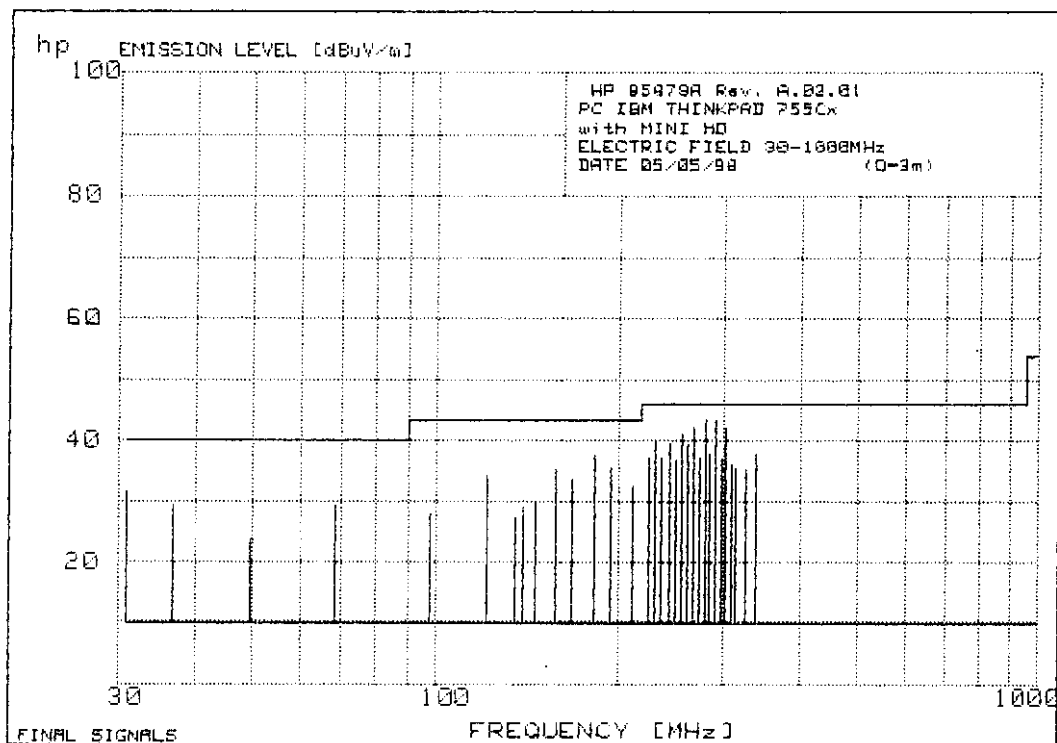
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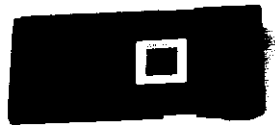
5 May 1998 15:43

No	EMISSION	SPEC	MEASUREMENTS			SITE			CORR	COMMENTS
	FREQUENCY MHz	LIMIT dBuV/m	ABS	dLIM dB	MODE	POL	HGT cm	AZM deg	FACTOR dB	
1	30.060	40.0	31.4	-8.6	QP	V	120	310	14.2	BROADBAND
2	35.921	40.0	29.5	-10.5	QP	V	110	360	12.9	BROADBAND
3	48.000	40.0	23.7	-16.3	PK	V	110	105	9.3	
4	66.580	40.0	29.3	-10.7	PK	V	120	260	5.6	
5	96.010	43.5	28.2	-15.3	PK	V	110	360	8.9	
6	120.024	43.5	34.3	-9.2	PK	V	100	270	12.	
7	132.917	43.5	27.4	-16.1	PK	H	100	325	13.2	
8	137.991	43.5	29.0	-14.5	QP	H	120	155	13.7	
9	144.004	43.5	30.0	-13.5	PK	H	250	0	14.2	
10	155.161	43.5	32.3	-11.2	PK	H	130	340	14.9	
11	156.007	43.5	35.1	-8.4	PK	H	130	280	15.	
12	166.297	43.5	33.6	-9.9	QP	H	130	15	15.4	
13	179.999	43.5	37.5	-6.0	QP	H	140	295	16.	
14	192.014	43.5	35.6	-7.9	QP	H	130	0	16.5	
15	210.119	43.5	32.6	-10.9	PK	H	120	360	17.2	
16	222.050	46.0	37.2	-8.8	PK	H	150	325	17.8	
17	228.018	46.0	40.1	-5.9	QP	H	150	320	18.	
18	234.031	46.0	37.1	-8.9	PK	H	150	360	18.3	
19	240.023	46.0	39.6	-6.4	QP	H	130	0	18.6	
20	246.043	46.0	36.9	-9.1	PK	H	130	340	18.8	
21	252.038	46.0	41.2	-4.8	QP	H	170	325	19.1	
22	258.036	46.0	39.5	-6.5	QP	H	170	325	19.3	
23	264.068	46.0	42.1	-3.9	QP	H	170	335	19.5	
24	270.019	46.0	37.1	-8.9	QP	H	160	335	19.7	
25	276.061	46.0	43.5	-2.5	QP	H	160	200	19.9	
26	282.065	46.0	37.9	-8.1	QP	H	160	330	20.1	
27	288.030	46.0	43.4	-2.6	QP	H	150	215	20.3	
28	294.123	46.0	37.2	-8.8	QP	H	160	330	20.5	
29	300.035	46.0	42.1	-3.9	QP	H	170	220	17.7	
30	306.09	46.0	36.1	-9.9	PK	H	150	225	17.8	
31	312.044	46.0	35.5	-10.5	QP	H	150	330	18.	
32	324.027	46.0	35.2	-10.8	PK	H	150	220	18.2	
33	336.107	46.0	37.9	-8.1	QP	H	110	320	18.5	

REPORT : 961-215-11/e APPENDIX 2-2
PRODUCT NAME : PC IBM MODEL THINKPAD 755Cx with MINI HD on PCMCIA port
SERIAL NUMBER : PC: 00-00023 CONFIGURATION ON APPENDIX A
STANDARD : FCC PART15 DATE OF 1997 CLASS B D=3m
MEASUREMENT : ELECTRIC FIELD 30-1000MHz
CONDITIONS : 120V/60Hz
DATE : 05/05/1998

MEASUREMENT DONE BY : D.RAUD





MINI HD