

MEASUREMENT/TECHNICAL REPORT

Infrared Adapter AD- 35

FCC ID: NYF35AD337XX.....

July 28, 1998

Equipment Under Test

Type: Infrared Adapter AD- 35

Equipment Category: Infrared Data Logger

Relevant Standard: 47 CFR Part 15

This report concerns: Original grant Class II change

Request issue of grant:

Immediately upon completion of review.
 Defer grant per 47 CFR 0.457(d)(ii) until Company Name agrees to notify the Commission by of the intended date of announcement of the product so that the grant can be issued on that date.

Measurement Procedure used:

 ANSI C63.4-1992 FCC/OET MP-4 (1987) Other

If other describe

Application for Certification
prepared by:

Uwe Keller
EMCC DR. RASEK
Moggast
D-91320 Ebermannstadt
Germany
Phone: +49 9194 9016
Fax: +49 9194 8125
e-mail: 106111.2702@compuserve.com

Applicant for this device:

Lars Kückendahl
Infimum Supercomputers
Memeler Str. 5c
Bad Oldeslohe, Germany D- 23843
Phone: + 49 4531 1815 10
Fax: + 49 4531 1815 20


Dr. Werner G. Rašek
- President -

TABLE OF CONTENTS

1 GENERAL INFORMATION	4
1.1 Product Description	4
1.2 Related Submittal(s)/Grant(s)	4
1.3 Tested System Details	5
1.4 Interface Cables.....	6
1.5 Test Methodology.....	6
1.6 Test Facility	6
2 PRODUCT LABELING.....	7
2.1 FCC ID Label.....	7
2.2 Location of Label on EUT	8
3 CONFIGURATION OF TESTED SYSTEM.....	9
3.1 Test Set-up.....	9
3.2 Justification	9
3.3 Equipment Modifications	10
3.4 Operation Mode of the EUT	10
4 BLOCKDIAGRAM OF EQUIPMENT.....	11
4.1 Blockdiagram of AD-35	11
5 CONDUCTED AND RADIATED MEASUREMENT PHOTOS.....	12
5.1 Conducted Measurement Photos.....	12
5.2 Radiated Measurement Photos	14
6 CONDUCTED EMISSION DATA.....	16
6.1 Test Procedure	16
6.2 Measured Data.....	16
6.3 Test Instrumentation Used, Conducted Measurement.....	16
7 RADIATED EMISSION DATA.....	17
7.1 Test Procedure	17
7.2 Measured Data.....	17
7.3 Field Strength Calculation.....	18

7.4 Test Instrumentation Used, Radiated Measurement	18
8 PHOTOS OF TESTED EUT	19
8.1 PC: Highscreen, Allround BB 300V, with removed enclosure.....	19
8.2 EUT.....	20
8.3 PCB component side of AD- 35	21
8.4 PCB soldering side of AD- 35.....	22
9 LIST OF ATTACHMENTS.....	23

de

1 GENERAL INFORMATION

1.1 Product Description

Equipment Under Test (EUT)

The following describes the function of the EUT and the general operation:

Product name: AD- 35

The HRF-35, manufactured by Infimum Supercomputers ISC communicates with the host computer via a serial infrared interface. If the computer does not provide a infrared interface use can be made of the **Infrared- Adapter AD35**. Another use of the **AD35** is to connect the HRF-35 to a modem.

The **AD35** is supplied with power through the data- and handshake lines of the PC. Due to this fact it will only work if the interface provides +/-12V logical levels.

The general operation is to send and receive data via infrared (IrDa).

1.2 Related Submittal(s)/Grant(s)

None.

1.3 Tested System Details

DEVICE	FCC ID
Infimum Supercomputers AD- 35 S/N none EUT submitted for grant	NYF35AD337XX
Highscreen PC Modell : Allround BB 300V S/N 50006010123 with Sony CD- ROM Drive Unit Model CDU611 S/N 53211012	Note 1 AK8CDU61110
FIC Motherboard Model: VL-601 S/N KN8108449	FCC Declaration of Conformity
SPI Sprakle power int'l LTD Switching power supply Model No.:FSP235-60GI S/N W14823170	FCC Declaration of Conformity
ATI Technologies INC. VGA Card Model No.: 109-46200-00 S/N OM81407349	FCC Declaration of Conformity
S/N OM814 07349Maxtor Hard Disc Model No.: 84320D4 S/N L41QJ13A	Note 1
Panasonic 3 1/2'' Floppy Drive Model No.: JU-257A606PC S/N 02440162	Note 1
President Monitor Model No.: GD-5164-PMG Product Number GV- 1564E S/N D443131998	HZ4GD-5164
Highscreen Keyboard Model No.: MY3000 Product Number G81-3081LBD / 00 S/N G 016988 G02	GDD5YOG-81-3000
HP Desk Jet 500C Printer Model No.: C2114A S/N 3220S57677	B94C2114X
Microsoft Mouse Part No.: 58269 S/N 03752589	C3KSMP1

Note 1: We state that we cannot find a computer with a FCC ID number or FCC logo for testing the EUT because we are located in Europe. We used a Class B computer that is available on the marketplace in Europe. We state that the computer is one typical of actual usage with the EUT.

1.4 Interface Cables

Function / Type	Shielded or Non Shielded	Length
AC Power PC	unshielded	2,0 m
AC Power Monitor	unshielded	2,0 m
AC Power Printer	unshielded	3,0 m
Keyboard	shielded	1,5 m
Mouse	unshielded	2,0 m
Monitor	shielded	1,5 m
Printer	shielded	1,5 m
EUT (AD- 35)	shielded	3,0 m

1.5 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C 63.4 - 1992.

Conducted emissions were measured to demonstrate compliance with the alternative standards contained in CISPR 22:1985 (with Draft CISPR/G 2, 5, 9, 11, 12, 13 and 14) as described in CFR 47 § 15.107 (e).

Radiated emissions (30 MHz - 1000 MHz) were measured to demonstrate compliance with the alternative standards contained in CISPR 22: 1985 (with Draft CISPR/G 2, 5, 9, 11, 12, 13 and 14) as described in CFR 47 § 15.109 (g). Radiated testing was performed at an antenna to EUT distance of 10 meters.

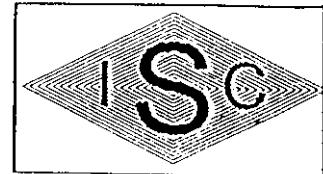
Radiated emissions (1000 MHz - 2000 MHz) were measured to demonstrate compliance with the standard CFR 47 § 15.109 . Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.6 Test Facility

The open area test site and conducted measurement facility used to collect the conducted and radiated emission data are located in Moggast, D-91320 Ebermannstadt, Germany. This site has been fully described in a report submitted to the FCC, and accepted in the letter dated Jan. 15, 1997 (31040/SIT - 1300 F2).

2 PRODUCT LABELING

2.1 FCC ID Label



ISC Infimum SuperComputers Memeler Str.5c 23843 Bad Oldesloe

To the
Federal Communication Commission

ISC
Infimum SuperComputers
Memeler Strasse 5c
23843 Bad Oldesloe
Germany

Tel.: ++49 4531 181510
Fax: ++49 4531 181520

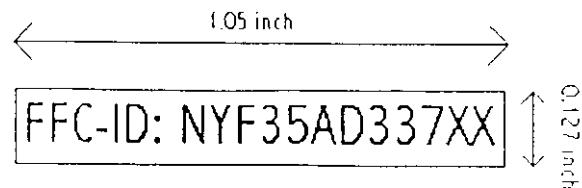
Bad Oldesloe, 09/08/98

Subject: FCC-ID for Infrared Adapter AD-35.

Dear Ladies and Gentlemen,

for our Infrared Adapter AD-35 we chose the FCC-ID: **NYF35AD337XX**.
We are going to print the FCC-ID directly onto the incasement of equipment. We will use a tampon printing method which is used for printing on keypad etc. This prints are resistant against mechanical and chemical stress and will survive the operating life of the equipment.

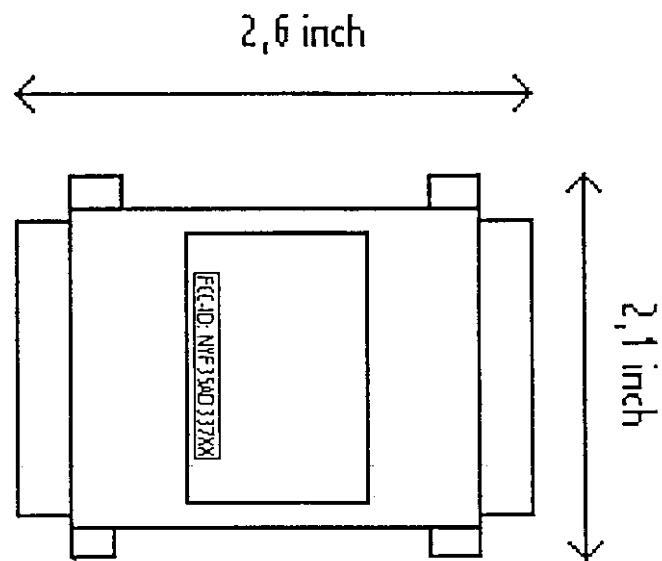
Picture 1. shows you a draft of the FCC-ID for the AD -35



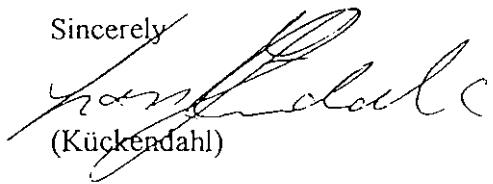
2.2

Location of Label on EUT

Picture 2. shows your the AD-35 with the FCC-ID printed on the top side.



Sincerely



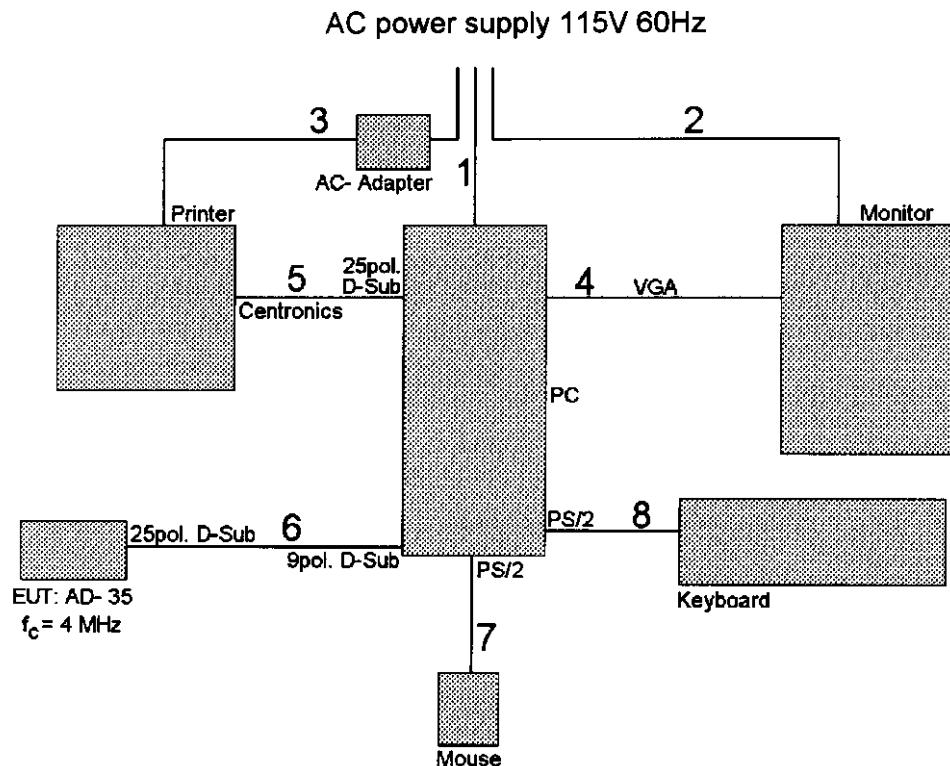
A handwritten signature in black ink, appearing to read "Kückendahl".

(Kückendahl)

3 CONFIGURATION OF TESTED SYSTEM

3.1 Test Set-up

This Block Diagram displays the Test Set-up. EUT: AD- 35, PC, monitor, keyboard, Printer and mouse.



Cable	Function	Length
1	AC power supply PC (line, neutral, protective earth)	2,0 m
2	AC power supply Monitor (line, neutral, protective earth)	2,0 m
3	AC power supply Printer (line, neutral, protective earth)	3,0 m
4	Video signal	1,0 m
5	Printer signal	1,5 m
6	Serial cable EUT: AD- 35 ↔ COM2	1,5 m
7	Mouse	2,0 m
8	Keyboard	1,5 m

3.2 Justification

The system was configured for testing in a typical fashion. The EUT was connected with the PC on the serial port COM2, via a standard serial cable. The serial port COM1 was tested in addition to the second port during preliminary emissions tests. The simultaneous testing of this identical port did not increase emissions significantly. Therefore, the final qualification testing was completed with only the COM2 port connected.

3.3 Equipment Modifications

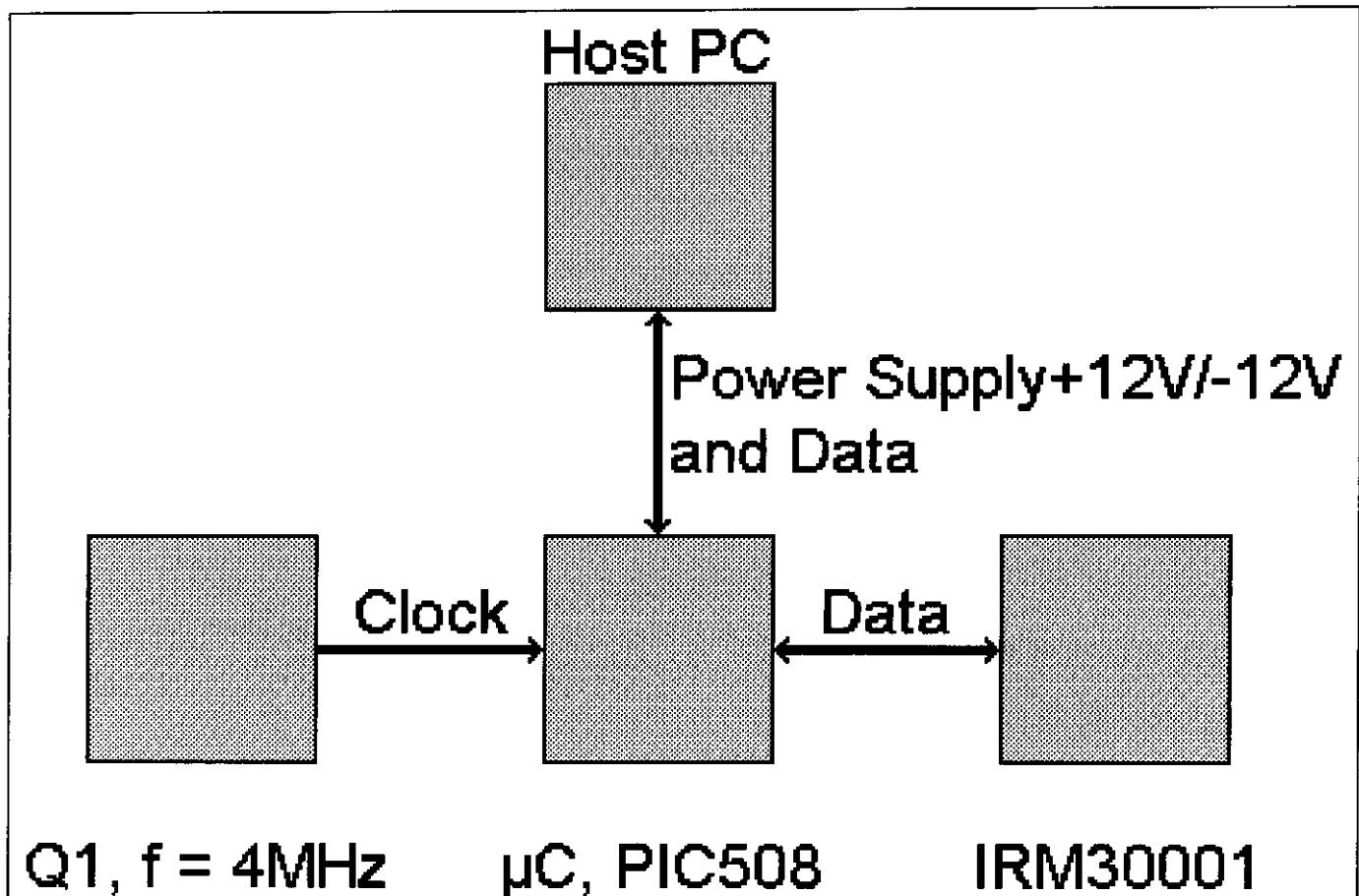
To achieve compliance to Class B levels no changes were made during compliance testing.

3.4 Operation Mode of the EUT

During conducted and radiated emission testing the EUT was operated with permanent data communication with the host- PC.

4 BLOCKDIAGRAM OF EQUIPMENT

4.1 Blockdiagram of AD-35



CONDUCTED EMISSION DATA**6.1 Test Procedure**

The initial step in collecting conducted data is a peak scan of the measurement range with an EMI test receiver. The significant peaks are then measured with quasi-peak detector.

6.2 Measured Data

Judgement: Passed by 12,3 dB

	Frequency [MHz]	Measured QP [dB μ V]	Limit QP [dB μ V]
line	0,225	36,0	52,7
line	0,280	35,9	50,8
line	0,340	36,9	49,2
line	0,395	33,1	47,9
line	3,680	27,5	46,0
line	7,980	35,0	50,0
line	9,080	36,9	50,0

	Frequency [MHz]	Measured QP [dB μ V]	Limit QP [dB μ V]
neutral	0,225	36,2	52,7
neutral	0,280	34,3	50,8
neutral	0,340	36,8	49,2
neutral	0,395	33,1	47,9
neutral	8,150	34,4	50,0
neutral	9,650	36,4	50,0
neutral	28,92	34,2	50,0

If the average limit is met when using a quasi- peak detector receiver, the test unit shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

Test Personnel:

Tester Signature



Date: July 06, 1998

Typed/Printed Name: Uwe Keller

6.3 Test Instrumentation Used, Conducted Measurement

Type	Manufacturer/ Model No.	Serial No.	Last Calibration	Cal. Interval
Receiver	Rohde & Schwarz ESS	825132/015	March 27, 1998	12 months
LISN	Rohde & Schwarz ESH2-Z5	872094/0046	May 06, 1998	12 months
LISN	Schwarzbeck NSLK 8126	8126228	January 15, 1998	12 months

7

RADIATED EMISSION DATA

7.1 Test Procedure

The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, plus the limit. Explanation of the Correction Factor is given in paragraph 7.3.

The frequency range investigated was 30 MHz to 2000 MHz.

7.2 Measured Data

Radiated Emission Data (30MHz- 1000MHz)

Judgement: Passed by 2.2 dB

Frequency (MHz)	Receiver Reading ^{NOTE 1} (dB μ V)	Correction Factor (dB / m)	Corrected Reading (dB μ V / m)	10 Meter Limit (dB μ V / m)	Antenna Polarity (v/h)
38,24	16,0	11,8	27,8	30	v
39,93	14,0	11,8	25,8	30	v
52,03	14,5	7,2	21,7	30	v
225,4	15,0	12,5	27,5	30	v
300,6	16,5	16,1	32,6	37	h
565,5	7,0	22,9	29,9	37	v

Radiated Emission Data (1GHz- 2GHz)

Judgement: Passed by 20.9 dB

Frequency (GHz)	Receiver Reading ^{NOTE 2} (dB μ V/m)	Correction Factor (dB / m)	Corrected Reading (dB μ V / m)	3 Meter Limit (dB μ V / m)	Antenna Polarity (v/h)
1,0017	9,0	24,0	33,0	53,9	h
1,0083	8,5	24,0	32,5	53,9	h
1,0350	7,5	24,0	31,5	53,9	h
1,0687	7,0	24,0	31,0	53,9	h
1,0800	6,5	24,0	30,5	53,9	h

Test Personnel:

Tester Signature:

Typed/Printed Name:



Uwe Keller

Date: July 10, 1998

NOTE 1 All readings are quasi-peak values using a bandwidth of 120 kHz

NOTE 2 All Readings are average values using a bandwidth of 1 MHz.

7.3 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

where

FS = Field Strength (dB μ V/m)

RA = Receiver Amplitude (dB μ V)

AF = Antenna Factor (dB/m)

CF = Cable Attenuation Factor (dB)

Assume a receiver reading of 23.5 dB μ V is obtained. The Antenna Factor of 7.4 dB/m and a Cable Factor of 1.1 dB is added, giving a field strength of 32 dB μ V/m. The 32 dB μ V/m value can be mathematically converted to its corresponding level in μ V/m.

$$FS = 23.5 \text{ dB}\mu\text{V} + 7.4 \text{ dB/m} + 1.1 \text{ dB} = 32 \text{ dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

7.4 Test Instrumentation Used, Radiated Measurement

Radiated Measurement (30 MHz- 1000 MHz)

Type	Manufacturer/ Model No.	Serial No.	Last Calibration	Cal. Interval
Receiver	Rohde & Schwarz ESS	825132/015	March 27, 1998	12 months
Antenna	EMCO 3143	9604-1269	Feb. 20, 1998	12 months

Radiated Measurement (1 GHz- 2 GHz)

Type	Manufacturer/ Model No.	Serial No.	Last Calibration	Cal. Interval
Receiver	Rohde & Schwarz ESMI-RF	833827/002	July 28, 1998	12 months
Antenna	EMCO 3115	2111	Nov. 21, 1997	12 months