



F² Engineering Testing Laboratory

FCC Certification Test Report

Prepared on behalf of:

**Dunn/IDP Computer Corporation
20 Firstfield Road
Gaithersburg, MD 20878**

Equipment Received:	9/16/98
Test Completed:	9/23/98
Report Date:	9/29/98

FCC ID: ITR-IDP760SPMN

I hereby state that: The measurements shown in this application were made in accordance with the procedures indicated and the energy emitted by this equipment was found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements.

I further state that: On the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of Part 15 of the FCC Rules under normal use and maintenance.

I confirm that all the information in this application that has been transferred is correct.

Certified by: *Francis Chau*
Francis Chau, Senior EMC Engineer

This report shall not be duplicated except in full without the written approval of F² Engineering

	Report Body	Appendix
Pages	26	Operator's Manual

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EXHIBIT E

Equipment Under Test Information and Data

DESCRIPTION OF EUT: The Dunn/IDP Computer Corporation's Mini Tower Computer was configured with a power supply, motherboard and Pentium II-450 CPU, clock speed is 100MHz.

TEST ITEM CONDITION: The equipment to be tested was received in good condition.

TEST CONFIGURATION: The system was configured externally with components that are also Class B compliant. The test was performed with the monitor powered by the AC wall outlet. The motherboard was configured with an Intel Pentium II-450 (100 MHz).

TESTING ALGORITHM: A basic program was written to continuously send a stream of H's to the parallel port, comports and monitor. The system was tested in all modes of operation and clock speeds. Worst case emissions are recorded in the data tables.

CONDUCTED EMISSION TESTING: The EUT was placed on a .8 meter high, 1 X 1.5 meter non-conductive table. Power was provided to the EUT through a LISN bonded to a 3 X 2 meter ground plane. The LISN and peripherals were supplied power through a filtered AC power source. The output of the LISN was connected to the input of the receiver and emissions in the range 450kHz to 30 MHz were measured. The measurements were recorded using the quasi-peak values, and the resolution bandwidth during testing was 9kHz. All data for conducted emissions are found in Exhibit H.

RADIATED EMISSION TESTING: The EUT was tested at a distance of 3 meters. The emissions were maximized by rotating the table and raising/lowering the antenna mounted on a 4-meter mast. Cable and peripheral positions were also varied to produce maximum emissions. Both horizontal and vertical field components were measured. The output of the antenna was connected, through a pre-amplifier, to the input of the receiver and emissions were measured in the range 30MHz to 2GHz. The values under 1GHz with a resolution bandwidth of 120KHz are quasi-peak reading made at 3 meters. The measurements above 1GHz with a resolution bandwidth of 1MHz are peak reading at a distance of 3 meters. All data for radiated emissions are found in Exhibit I.

EXHIBIT E

Equipment Under Test Information and Data

DESCRIPTION OF EUT: The Dunn/IDP Computer Corporation's Mini Tower Computer was configured with a power supply, motherboard and Pentium II-450 CPU, clock speed is 100MHz.

TEST ITEM CONDITION: The equipment to be tested was received in good condition.

TEST CONFIGURATION: The system was configured externally with components that are also Class B compliant. The test was performed with the monitor powered by the AC wall outlet. The motherboard was configured with an Intel Pentium II-450 (100 MHz).

TESTING ALGORITHM: A basic program was written to continuously send a stream of H's to the parallel port, comports and monitor. The system was tested in all modes of operation and clock speeds. Worst case emissions are recorded in the data tables.

CONDUCTED EMISSION TESTING: The EUT was placed on a .8 meter high, 1 X 1.5 meter non-conductive table. Power was provided to the EUT through a LISN bonded to a 3 X 2 meter ground plane. The LISN and peripherals were supplied power through a filtered AC power source. The output of the LISN was connected to the input of the receiver and emissions in the range 450kHz to 30 MHz were measured. The measurements were recorded using the quasi-peak values, and the resolution bandwidth during testing was 9kHz. All data for conducted emissions are found in Exhibit H.

RADIATED EMISSION TESTING: The EUT was tested at a distance of 3 meters. The emissions were maximized by rotating the table and raising/lowering the antenna mounted on a 4-meter mast. Cable and peripheral positions were also varied to produce maximum emissions. Both horizontal and vertical field components were measured. The output of the antenna was connected, through a pre-amplifier, to the input of the receiver and emissions were measured in the range 30MHz to 1 GHz.. Measurements were recorded in quasi-peak with the measurement bandwidth set to 120kHz. All data for radiated emissions are found in Exhibit I.

Equipment Under Test Information, continued

CALCULATION OF DATA: RADIATED EMISSIONS - The antenna factors(including cable losses) of the biconical antennas used, and the pre-amplifier gain, are input into the memory of the receiver. The receiver then corrects the reading for amplitude automatically. The field strength reading can then be taken directly from the receiver and compared to the FCC limits in dBuV/m. The following equation is used to convert to uV/m:

$$E_{uV/m} = \text{antilog}(E_{dBuV/m} / 20)$$

SAMPLE OF FIELD STRENGTH CALCULATION:

$$E_a = V_a + A_F + A_e + (-A_G)$$

Where E_a = Field Strength(uV/m)
 V_a = 20 x log10 (Measure RF voltage, uV)
 A_e = Cable Loss Factor, dB
 A_G = Amplifier Gain, dB
 A_F = Antenna Factor dB(m-1)

i.e. If the reading is 57.0 dBuV, the antenna factor 8.0 dB, cable loss factor 1.0 dB and Amplifier gain is 25.0 dB, so the field strength will be:

$$\begin{aligned} E_a(\text{dBuV/m}) &= 57 + 8 + 1 + (-25) \\ &= 41 \text{ dBuV/m} \end{aligned}$$

or

$$\begin{aligned} E_a(\text{uV/m}) &= 10^{(41/20)} \\ &= 112.20 \text{ uV/m} \end{aligned}$$

EXHIBIT G

EUT CONFIGURATION AND CABLES

EUT: Mini Tower Computer, FCC ID: ITR-IDP760SPMN

MONITOR: Magnavox, Model CM2099-D201; FCC ID: A3KM043

SERIAL DEVICE: Hayes, Model 5201AM; FCC ID: BFJ5201AM

RECORDER: AIWA Co. Ltd., Model MS-J101

KEYBOARD: Sejin, Model SKR-2233; FCC ID: GJJSKR-2233

VGA CARD: Diamond, Model DM-GX2; FCC DoC

JOYSTICK: Logitech, Model: 3001

MOUSE: Sejin, Model SMB-2000; FCC ID: GJJB50PA0

POWER SUPPLY: Power Man, Model: FSP250-61GI

MICROPHONE: Quick Shot

USB DEVICE: Intel Digital Camera, Model YC76; FCC ID: EDUYC76
Logitech Scanner, Model S-UA1; FCC ID: DZL211089

SPEAKERS: Labrec, Model: CS-180

CABLES: Shielded cables and power cords were used throughout system under test.

FCC ID: ITR-IDP760SPMN

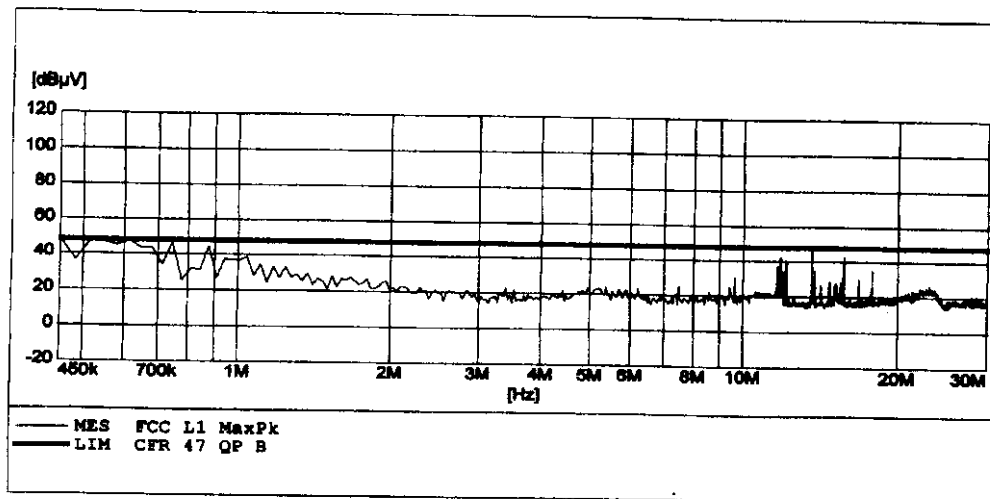
EXHIBIT H

CONDUCTED DATA

FCC ID: ITR-IDP760SPMN

Model: Mini Tower Computer

PHASE SIDE



Note: The points are Q/P value list below.

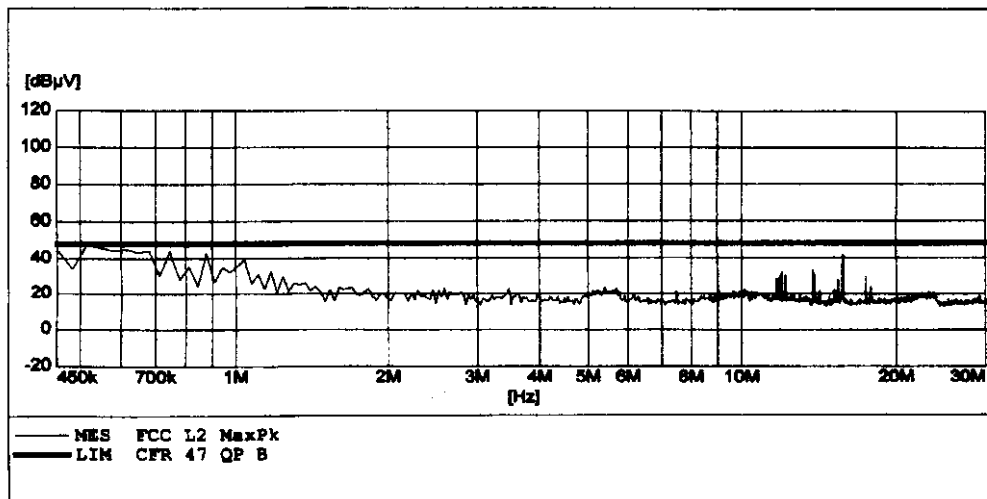
462.11KHz	46.09dBuV
534.33KHz	44.98dBuV
602.38KHz	45.67dBuV
744.89KHz	43.12dBuV

CONDUCTED DATA

FCC ID: ITR-IDP760SPMN

Model: Mini Tower Computer

NEUTRAL SIDE



Note: The points are QP value list below.

460.65KHz	46.23dBuV
531.49KHz	46.84dBuV
601.68KHz	45.23dBuV
743.22KHz	43.10dBuV

EXHIBIT I
RADIATED DATA

Dunn/IDP Computer Corporation
Mini Tower Computer
FCC ID #: ITR-IDP760SPMN

FREQ. (MHz)	ANTENNA POLARIZ.	FIELD STRENGTH (dBuV/ m)	FIELD STRENGTH (uV/m)	FCC LIMIT (dBuV/m)	FCC LIMIT (uV/m)	MARGIN (dB)
232.67	H	33.54	47.53	46.00	200	12.46
334.23	H	39.00	89.13	46.00	200	7.00
431.66	H	39.05	89.64	46.00	200	6.95
766.80	H	38.64	85.51	46.00	200	7.36
924.24	H	34.98	56.10	46.00	200	11.02
1345.50	H	41.39	117.35	53.90	500	12.51

The system was tested with the following CPU/Bus speed combinations:

CPU type: Pentium II- 450 CPU/Clock speed: 100MHz

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EXHIBIT I

RADIATED DATA

Dunn/IDP Computer Corporation
Mini Tower Computer
FCC ID #: ITR-IDP760SPMN

FREQ (MHz)	ANTENNA POLARIZ	FIELD STRENGTH (dBuV) (m)	FIELD STRENGTH (uV/m)	FCC LIMIT (dBuV/m)	FCC LIMIT (uV/m)	MARGIN (dB)
232.67	H	33.54	47.53	46.00	200	12.46
334.23	H	39.00	89.13	46.00	200	7.00
431.66	H	39.05	89.64	46.00	200	6.95
766.80	H	38.64	85.51	46.00	200	7.36
924.24	H	34.98	56.10	46.00	200	11.02
1345.50	H	41.39	117.35	53.90	500	12.51

The system was tested with the following CPU/Bus speed combinations:

CPU type: Pentium II- 450 CPU/Clock speed: 100MHz

EXHIBIT K

EUT COMPLIES
WITHOUT
MODIFICATIONS



F² Engineering Testing Laboratory

APPENDIX

to

Report No. 8253-02-98

for

Dunn/IDP Computer Corporation

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Gaithersburg, MD 20878

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