1 TEST REPORT

1.1 System test configuration

1.1.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it). It has been tested in a Toshiba 440CDX Laptop Computer. Each In/Out audio ports of the Professional Audio Card were connected on a "Digigram load box" simulating a typical user environment.

1.1.2 EUT Exercise software

The EUT exercise program used during radiated and conducted testing, was designed to exercise the PCXPocket 440 in a manner similar to a typical use. Playtest software, running on laptop under DOS: play sound file (.WAV) on 4 outputs.

1.1.3 Special accessories

As shown in Figure 1, all interfaces cables used for compliance testing are shielded as normally supplied. All these cables are normally recommended to be used with the product.

1.1.4 Equipment modifications

No equipment modification has been necessary during testing to achieve compliance to Class B levels. The unit tested was representative to a production unit.

1.1.5 Configuration of tested system

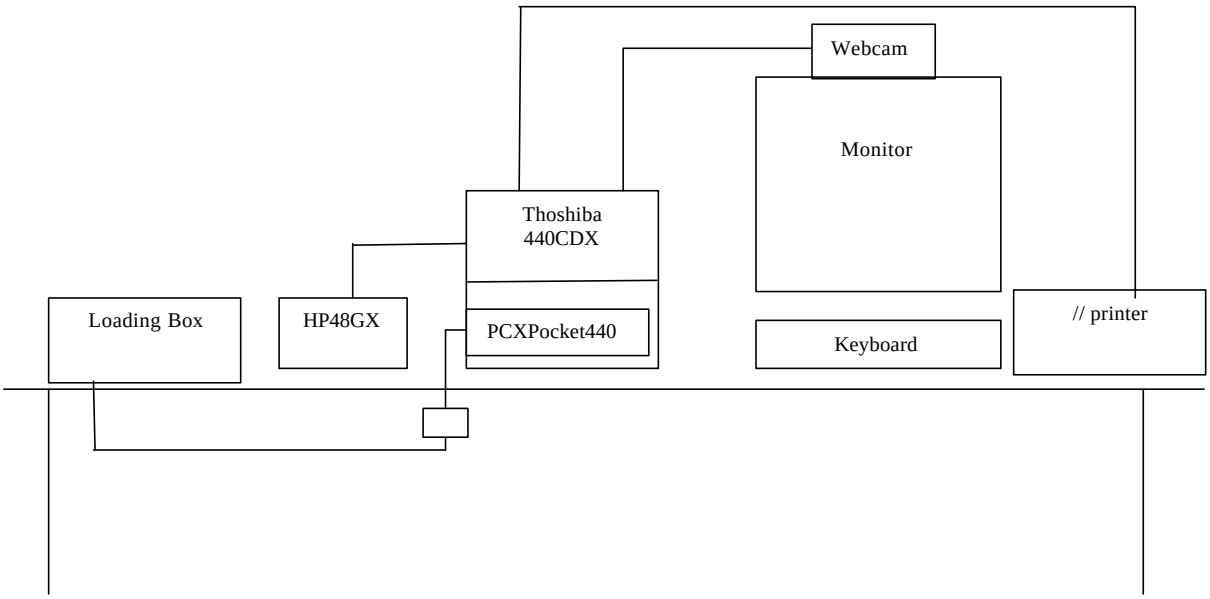


Figure 1 - Configuration of tested system

4x Analog Inputs: connected to 120Ω load.
4x Analog Outputs: connected to 15 kΩ load.
1x numeric output AES: connected to 75Ω load.
1x numeric input AES: connected to 75Ω load.
1x Time code input: connected to 75Ω load
1x Synchro Input/Output: connected to 75Ω load.

1.2 Conducted emission data

1.2.1 Test procedure

The product has been tested according to ANSI C63.4-1992, CISPR22-1993/A1:1995/A2:1996 and EN55022:1994/A1:1995/A2:1997.
The product has been tested with 120V / 60Hz power line voltage and compared to the CISPR22 Class B limits. Measurement bandwidth was 9kHz from 150kHz to 30MHz.

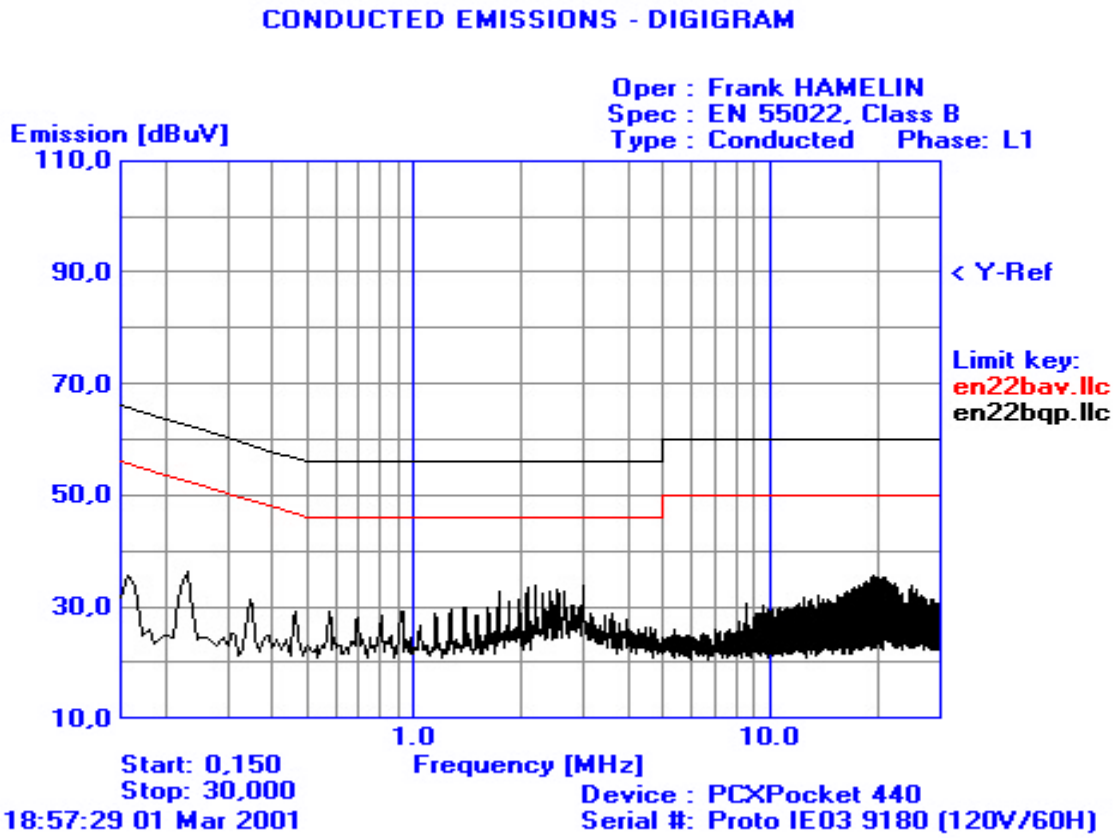
Measurement was initially made with an HP-8591EM Spectrum Analyzer in peak mode. This was followed by a Quasi-Peak, i.e. CISPR measurement with the Rohde&Schwarz ESH3 receiver for any strong signal. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.

The Peak data are shown on the following plots. Quasi-Peak and Average measurements are detailed in a table with frequencies and levels measured.

Interconnecting cables and equipment's were moved to position that maximized emission. A summary of the worst case emissions found in all test configurations and modes is shown on the following page.

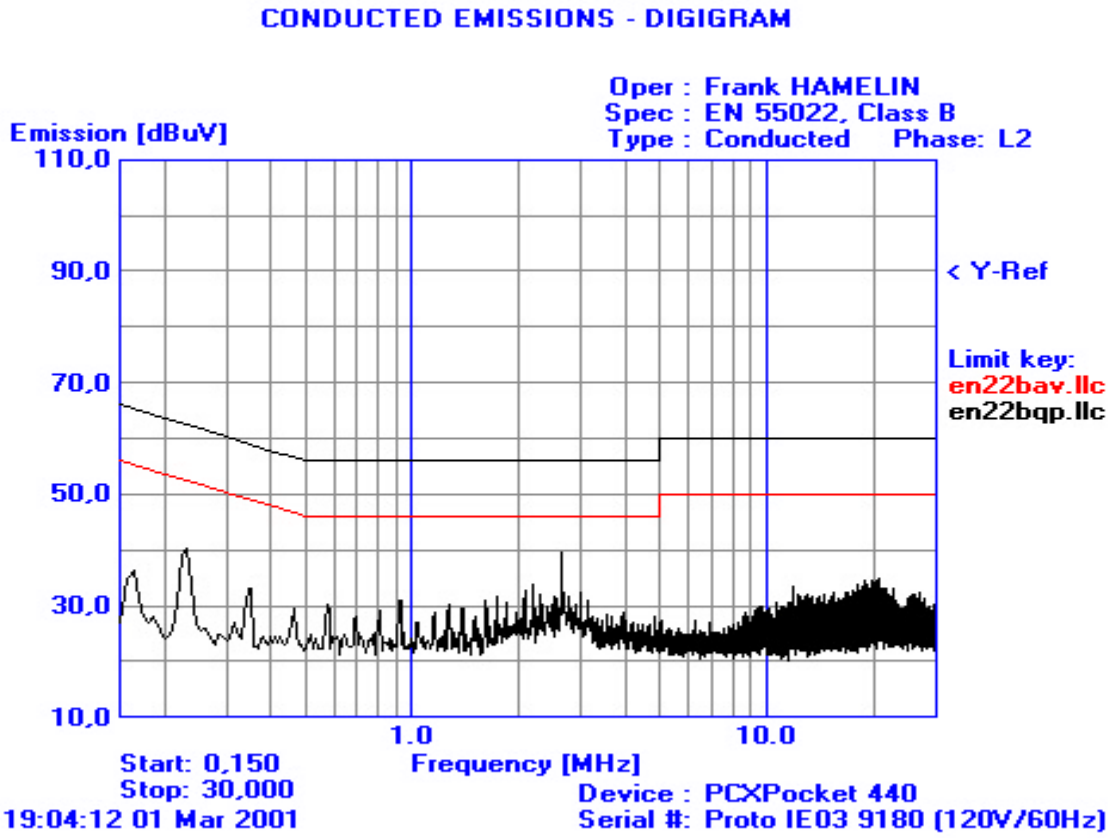
Test equipment :
HP 8591EMSpectrum Analyzer
Rhode&Schwarz ESH3 Receiver
EMCO 3810/2SH LISN N°1 (50Ω/50microhenry LISN measure)
Telemeter NNB-2/16 LISN N°2 (auxiliary)

1.2.2 Line conducted emission data on Toshiba 440CDX with PCXpocket 440



Num.	Freq. [MHz]	Q-Peak [dBµV]	QP limit [dBµV]	*QP delta [dBµV]*	Average [dBµV]	AVG Limit [dBµV]	*AVG Delta [dBµV]*
1	0.160	32.1	65.5	**-33.4**	17.8	55.5	**-37.7**
2	0.230	35.1	62.5	**-27.4**	30.6	52.5	**-21.9**
3	0.350	30.5	58.9	**-28.4**	28.6	48.9	**-20.3**
4	2.190	32.9	56.0	**-23.1**	29.7	46.0	**-16.3**
5	2.530	31.8	56.0	**-24.2**	29.3	46.0	**-16.7**
6	2.960	27.9	56.0	**-28.1**	23.7	46.0	**-22.3**
7	19.37	31.6	60.0	**-28.4**	25.0	50.0	**-25.0**

1.2.3 Neutral conducted emission data on Toshiba 440CDX with PCXpocket V3



Num.	Freq. [MHz]	Q-Peak [dBµV]	QP limit [dBµV]	***QP delta [dBµV]***	Average [dBµV]	AVG Limit [dBµV]	***AVG Delta [dBµV]***
1	0.160	32.6	65.5	**-32.9**	27.2	55.5	**-28.3**
2	0.230	39.8	62.5	**-22.7**	35.5	52.5	**-17.0**
3	0.350	32.2	58.9	**-26.7**	30.2	48.9	**-18.7**
4	2.640	34.5	56.0	**-21.5**	22.4	46.0	**-23.6**
5	19.62	31.8	60.0	**-28.2**	26.8	50.0	**-23.2**

1.3 RADIATED EMISSION DATA

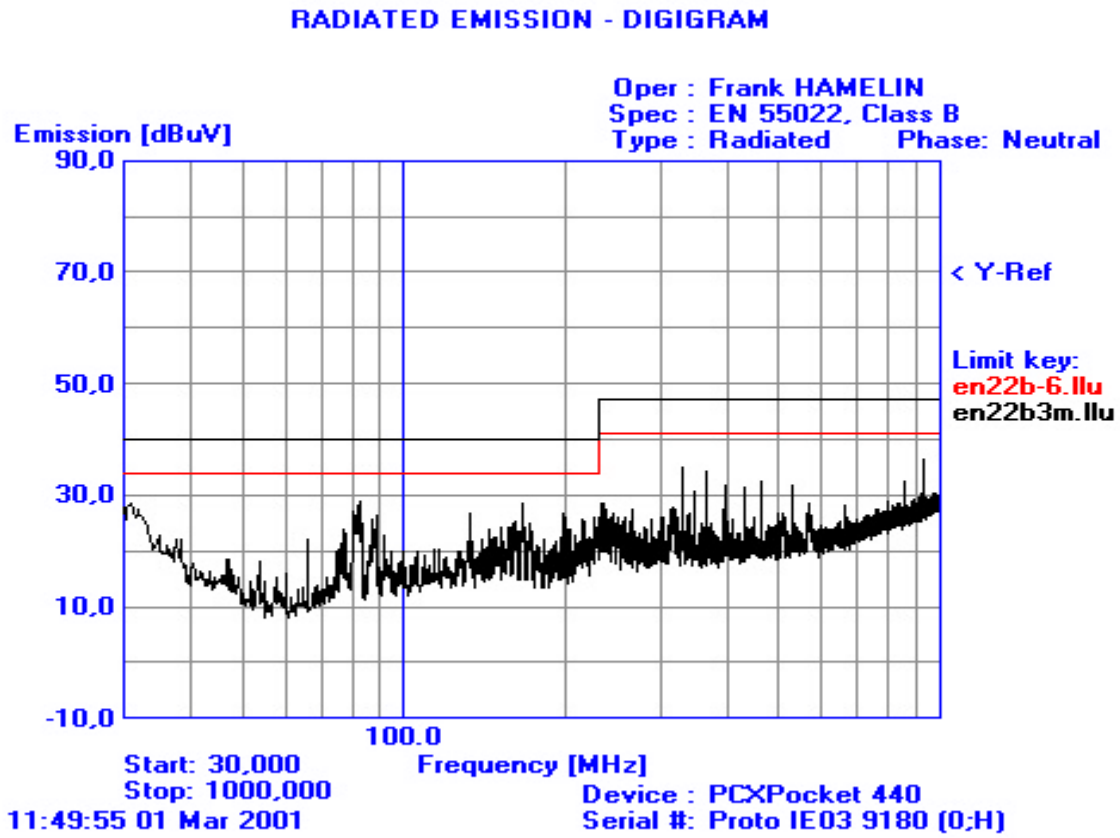
1.3.1 Test Procedure

The product has been tested according to ANSI C63.4-1992, CISPR22-1993/A1:1995/A2:1996 and EN55022:1994/A1:1995/A2:1997.
The product has been tested with 230V / 50Hz power line voltage, at a distance of 10 meters from the antenna and compared to the CISPR 22 Class B limits. Measurement bandwidth was 120kHz from 30 MHz to 1GHz. Antenna height search was performed from 1m to 4m for both horizontal and vertical polarization. Continuous linear turntable azimuth search was performed with 360 degrees range.
Interconnecting cables and equipment's were moved to position that maximized emission. A summary of the worst case emissions found in all test configurations and modes is shown on the following page.

Test Equipment: HP-8574A E.M.I Receiver
(HP-8568B Analyzer + HP-85650 Quasi-Peak adapter + HP-85685A RF Preselector).
EMCO 3104C Biconical Antenna & EMCO 3146 Log Periodic Antenna.
EMCO-1050, 6 meters height antenna mast & EMCO-1060, 3 meters diameter Turntable.

1.3.2 Radiated emission data

Final result 30MHz – 1GHz:



Frequency (MHz)	QPeak Lmt (dBuV/m)	QPeak (dBuV/m)	QPeak-Lmt (dB)	Angle (deg)	Pol	Hgt (cm)	Tot Corr (dB)
66.301	30.0	29.4	-0.6	247	V	108	10.3
83.275	30.0	24.0	-6.0	271	V	268	9.7
132.613	30.0	28.1	-2.0	26	V	188	15.0
165.790	30.0	27.5	-2.6	106	H	396	17.9
196.144	30.0	22.5	-7.5	77	H	381	19.7
203.204	30.0	28.9	-1.1	252	V	105	14.0
208.848	30.0	26.0	-4.0	237	H	376	14.1
220.170	30.0	23.5	-6.5	191	V	125	14.2
231.437	37.0	25.6	-11.4	54	V	103	14.4
237.065	37.0	24.3	-12.7	163	V	103	14.4
240.186	37.0	22.8	-14.2	127	V	107	14.5
242.755	37.0	24.3	-12.7	26	V	103	14.5
331.569	37.0	22.6	-14.4	1	H	285	17.5
338.674	37.0	29.0	-8.0	56	H	280	17.6
364.690	37.0	34.1	-2.9	32	H	245	18.3
397.869	37.0	26.5	-10.5	126	H	213	19.0
431.020	37.0	33.9	-3.1	30	H	199	20.0
464.199	37.0	30.6	-6.4	331	H	177	21.0
530.501	37.0	30.6	-6.4	10	V	332	22.4
596.821	37.0	34.2	-2.8	202	V	280	23.2
729.40	37.0	32.2	-4.8	191	V	242	26.6
795.733	37.0	32.4	-4.6	3	V	221	27.2
928.318	37.0	36.8	-0.2	36	V	222	28.3

1.3.3 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follow :

FS = RA + AF + CF – AG

Where FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Factor
AG = Amplifier Gain

Assume a receiver reading of 52.5dBµV is obtained. The antenna factor of 7.4 and a cable factor of 1.1 is added. The amplifier gain of 29dB is subtracted, giving a field strength of 32 dBµV/m.

FS = 52.5 + 7.4 + 1.1 – 29 = 32 dBµV/m

The 32 dBµV/m value can be mathematically converted to its corresponding level in µV/m.
Level in µV/m = Common Antilogarithm [(32dBµV/m)/20] = 39.8 µV/m.