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. It has been decided that it will be the PCXPocket V3 which will be tested, as it is the most complete configuration. Consequently, all test results contained in this report are from the PCXPocket V3.
At the time, tests were performed, the name of the product wasn't definitive; that's why in data results, the name of the tested product is VX Pocket. Each time VX Pocket name is used, it should be replaced by PCXpocket V3.

1.1.2 EUT Exercise software

The EUT exercise program used during radiated and conducted testing, was designed to exercise the PCXPocket V3 in a manner similar to a typical use (data are transmitted on audio inputs and outputs). Software is running on laptop under DOS, is called VXTEST.EXE, and Audio test is selected.

1.1.3 Special accessories

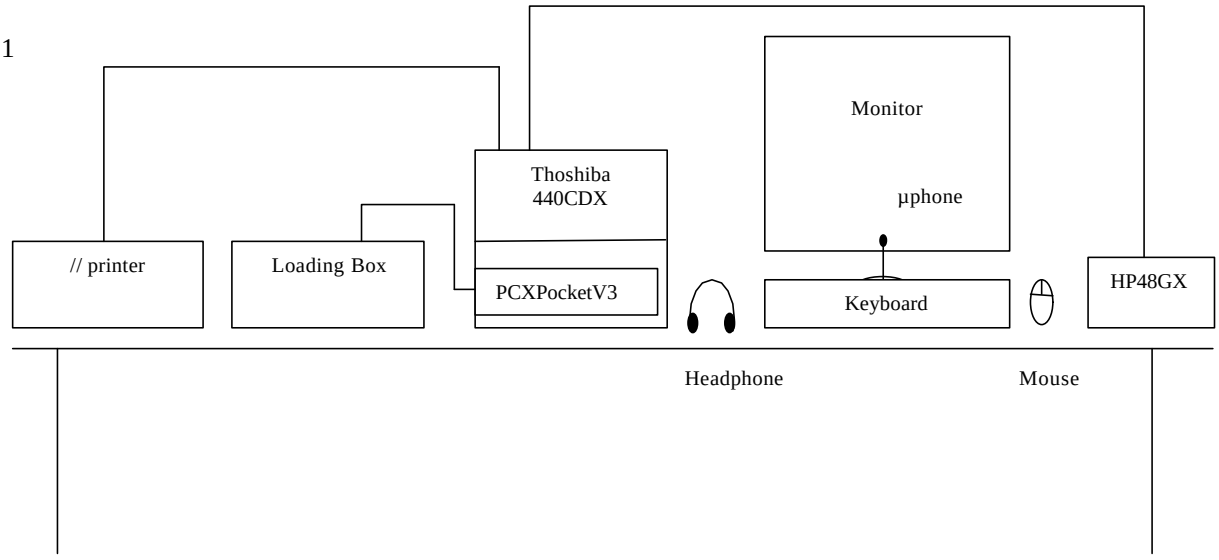
As shown in Figure 1, all interfaces cables used for compliance testing are shielded as normally supplied. All these cables are normally recommended to be used with the product.

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

Fig 1



2x Balanced Analog Inputs: connected to 47 Ω load.
2x Balanced Analog Outputs: connected to 15 KΩ load.
1x Time code input: connected to 47 Ω load
1x SPDIF Input: connected to 75 Ω load
1x SPDIF Output: connected to 75 Ω 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 150 KHz to 30 MHz.

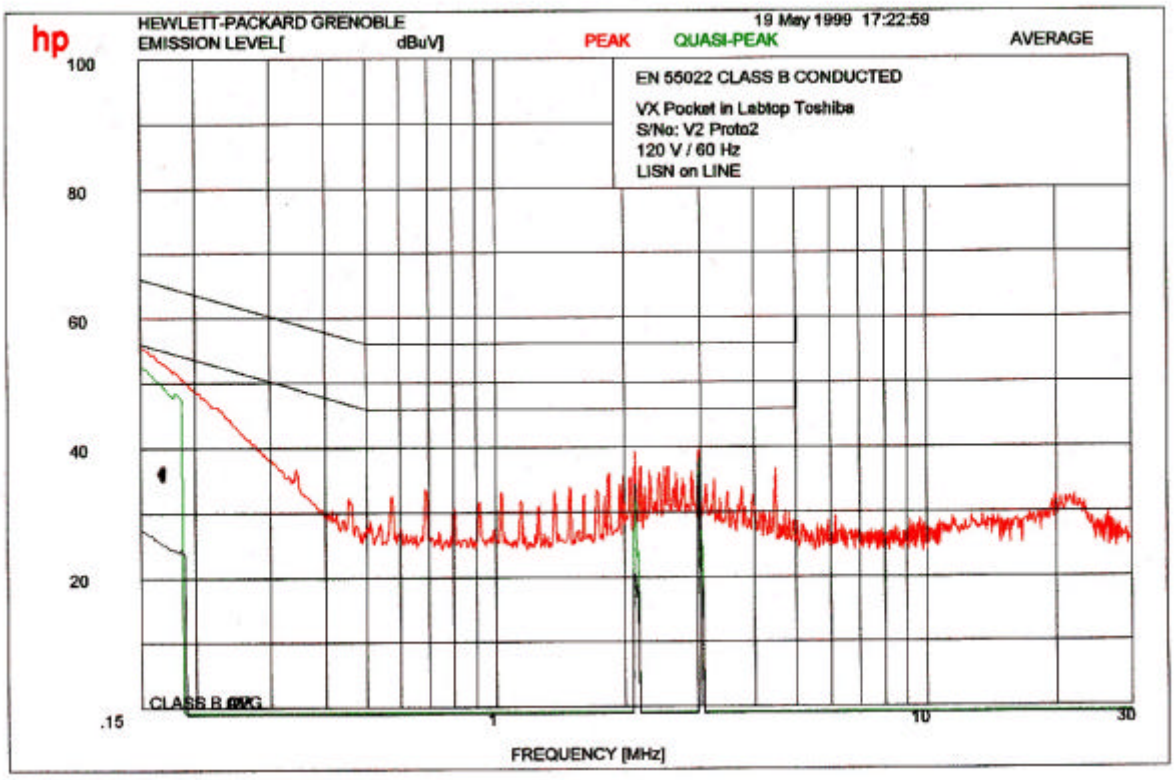
Measurement was initially made with an HP-8591EM Spectrum Analyzer in peak mode. This was followed by a Quasi-Peak, i.e. CISPR measurement with the Rohde & Schwarz ESH3 receiver for any strong signal. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits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

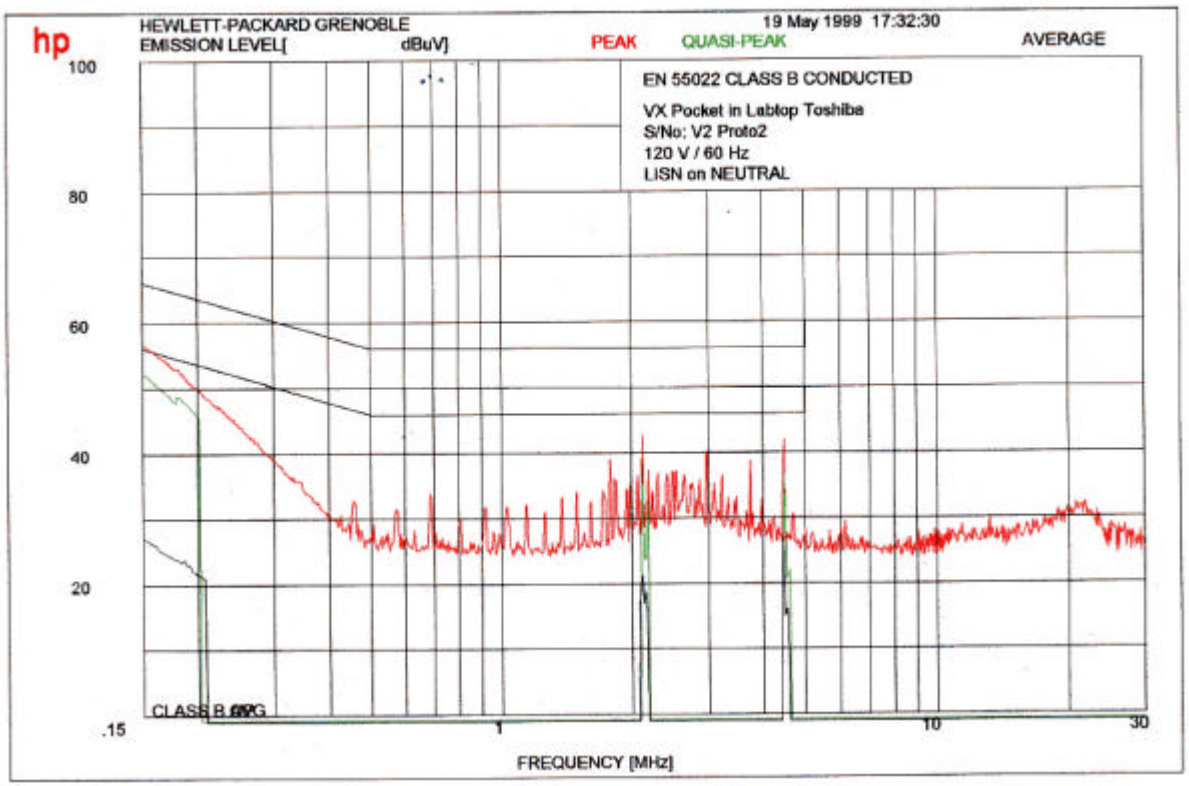
Test equipment :
HP 8568B Analyzer
HP 85650A Quasi Peak adapter
Rhode & Schwarz ESH2-Z5, LISN#1
Rhode & Schwarz ESH2-Z5, LISN#2

1.2.2 Line 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	2.116	34.3	56.0	**-21.7**	20.5	46.0	**-25.5**
2	2.969	38.2	56.0	**-17.8**	35.8	46.0	**-10.2**

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



Num.	Freq.	Q-Peak	QP limit	***QP delta***	Average	AVG Limit	***AVG Delta***
	[MHz]	[dBµV]	[dBµV]	***[dBµV]***	[dBµV]	[dBµV]	***[dBµV]***
1	2.172	32.6	56.0	**-13.55**	21.3	46.0	**-24.7**
2	4.462	36.7	56.0	**-17.57**	27.0	46.0	**-19.0**

1.3 RADIATED EMISSION DATA

1.3.1 Test Procedure

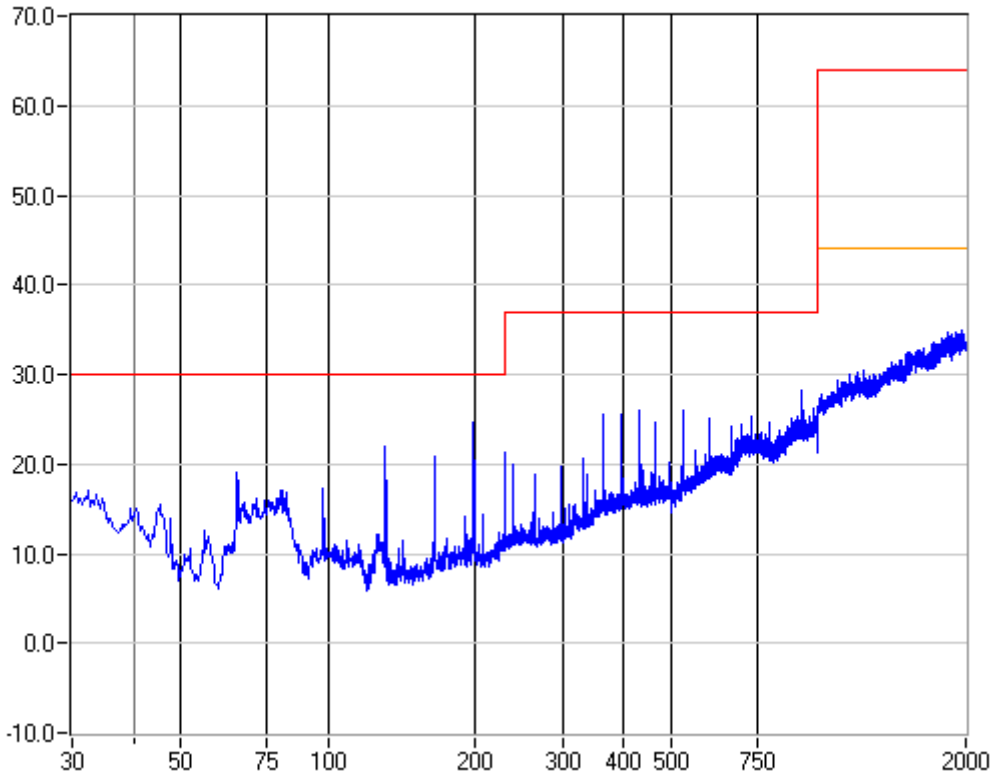
The product has been tested according to ANSI C63.4-1992, CISPR22-1993/A1:1995/A2:1996 and EN55022:1994/A1:1995/A2:1997.
The product has been tested with 230V / 50Hz power line voltage, at a distance of 10 meters from the antenna and compared to the CISPR 22 Class B limits. Measurement bandwidth was 120 KHz from 30 MHz to 1 GHz and 1 MHz above. 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).
HP 8563^{E} 30Hz –26.5 GHz Spectrum Analyser
EMCO 3110 Biconical Antenna (sn:1245) & EMCO 3146 Log Periodic Antenna (sn:1151)
EMCO-1050, 6 meters height antenna mast & EMCO-1060, 3 meters diameter Turntable.
EMCO 3147, 200 MHz – 5 GHz Log Periodic Antenna (sn: 1109)
EMCO 3147, 200 MHz – 5 GHz Log Periodic Antenna (sn: 1110)

1.3.2 Radiated emission data

RADIATED EMISSIONS REPORT : 30 MHz ---> 2000MHz.
Date : 5/19/99 4:58 PM
Product : VX Pocket
Config : in Labtop Toshiba 440
S/N : V2 Proto2
Operator : F. HAMELIN
Limit used : EN_FCC_B
S0 Anecoic chamber. 10 meters measurement.

Prescan:



Final result:

Frequency (MHz)	QPeak Lmt (dBuV/m)	QPeak (dBuV/m)	Peak (dBuV/m)	QPeak-Lmt (dB)	Angle (deg)	Pol	Hgt (cm)	Tot Corr (dB)
66.29	30.00	22.33	23.58	-7.67	217	V	268	8.28
132.61	30.00	25.14	25.88	-4.86	259	H	398	8.69
165.76	30.00	21.18	23.07	-8.82	347	H	307	11.06
198.92	30.00	25.03	25.53	-4.97	339	V	106	11.79
232.07	37.00	22.36	23.48	-14.64	230	H	383	13.72
928.32	37.00	29.61	32.70	-7.39	347	H	103	26.60

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.