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 Hewlett Packard Brio D6769A Personal Computer. Each In/Out audio ports of the Professional Audio Card were connected on a "Digigram load box" simulating a typical user environment. During pre-scan evaluation, PCX822np, PCX442np and VX822 have been tested.
The PCX822np has been identified as the worst case.
Consequently, all test results contained in this report are from the PCX822np.

1.1.2 EUT Exercise software

The EUT exercise program used during radiated and conducted testing, was designed to exercise the PCX822np in a manner similar to a typical use (data are transmitted on audio inputs and outputs). Software is running on PC under DOS 6.22, is called X22TEST.EXE, and Audio test is selected.

1.1.3 Special accessories

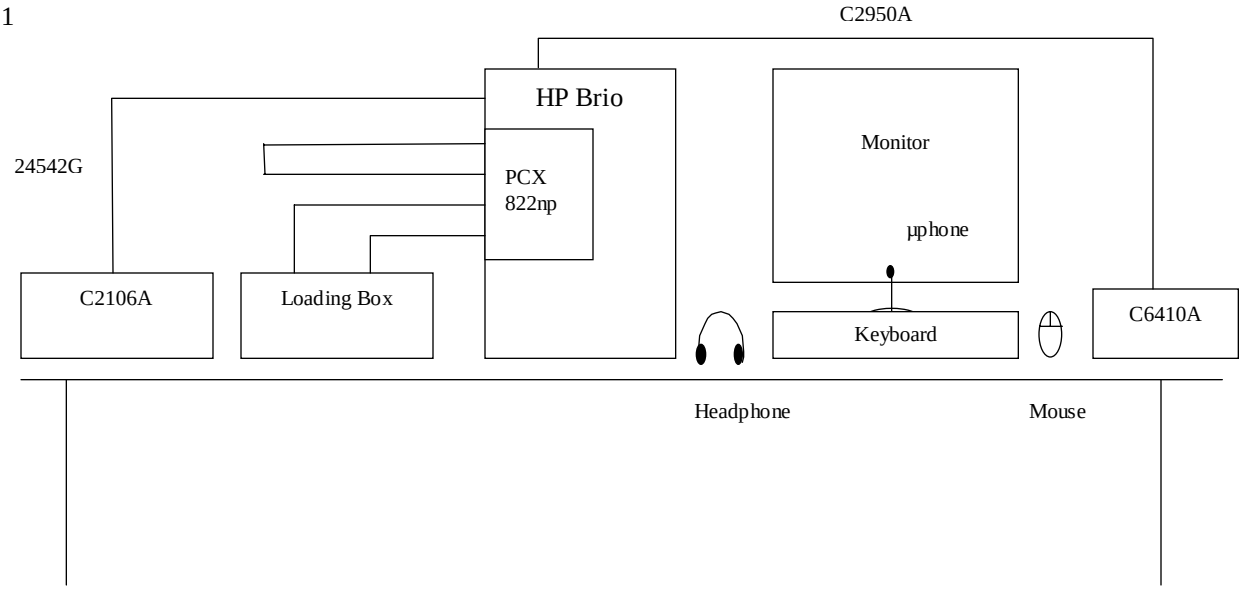
As shown in Figure 1, all interfaces cables used for compliance testing are shielded as normally supplied. All these cables are normally recommended to be used with the product.

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



Analog Inputs are connected to 47Ω load.
Analog Outputs are connected to 15 KΩ load.
Digital Inputs/outputs are 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.

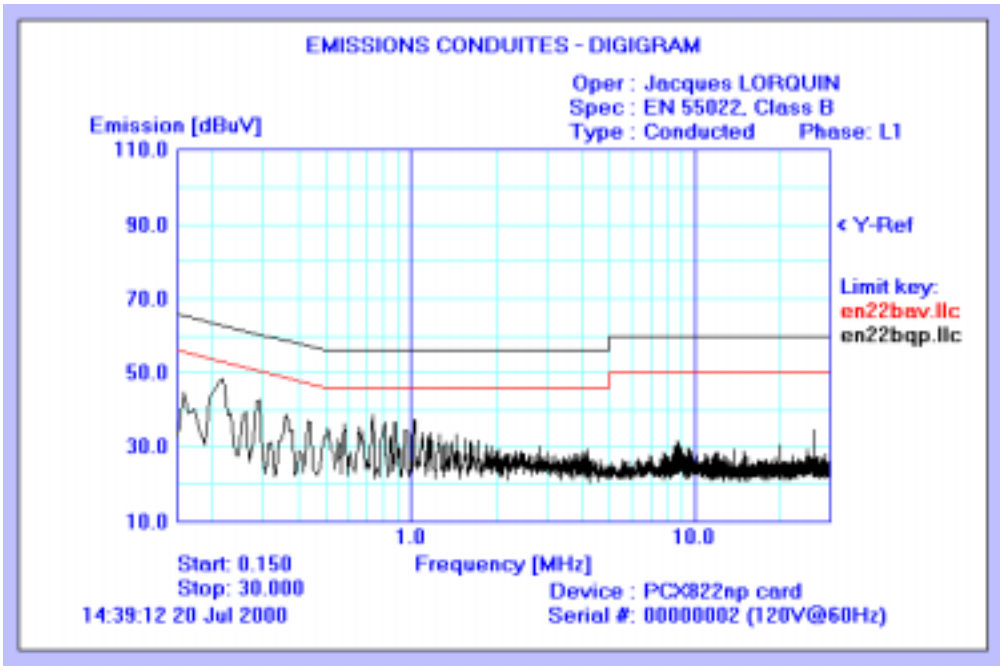
Measurement was initially made with an HP-8591EM Spectrum Analyzer in peak mode. This was followed by a Quasi-Peak, i.e. CISPR measurement with the Rohde & Schwarz ESH3 receiver for any strong signal. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits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

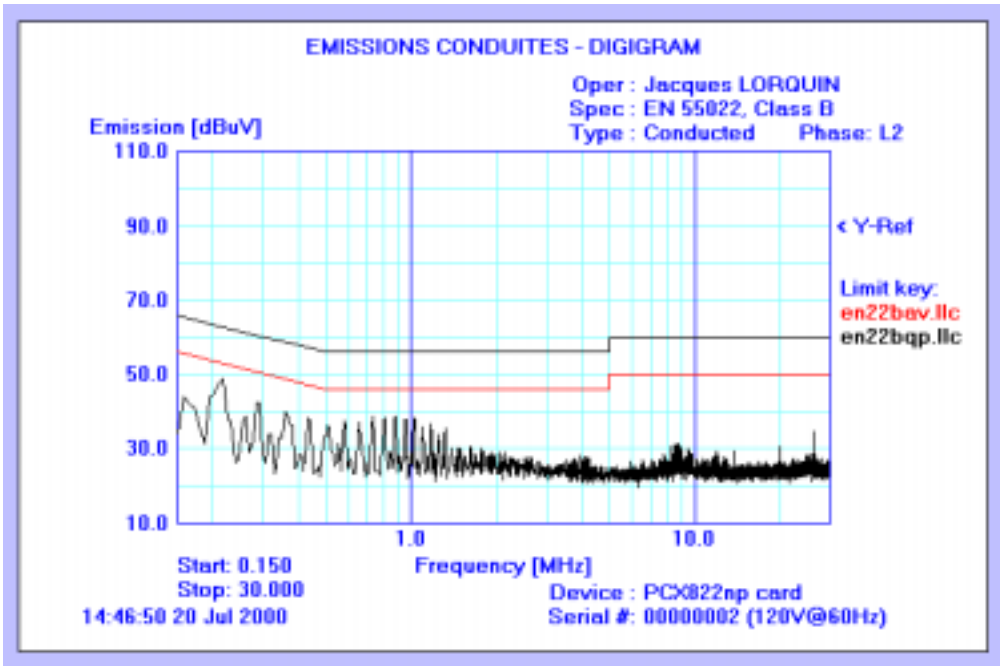
Test equipment :
HP 8591EM Spectrum Analyzer
Rhode & Schwarz ESH3 Receiver
EMCO 3810/2SH LISN N°1
TELEMETER NNB-2/16L LISN N°2

1.2.2 Neutral conducted emission data on HP Brio with PCX822np



Num.	Freq. [MHz]	Peak [dBµV]	Q-Peak [dBµV]	QP limit [dBµV]	***QP delta [dBµV]***	Average [dBµV]	AVG Limit [dBµV]	***AVG Delta [dBµV]***
1	0.160	55.39 *	51.11	64.00	**-12.89**	47.96	54.00	**-6.04**
2	0.220	48.93	47.45	62.00	**-14.55**	47.10	52.00	**-4.9**
3	0.290	43.14	41.89	60.00	**-18.11**	41.09	50.00	**-8.91**
4	0.360	39.40	37.95	58.00	**-20.05**	37.47	48.00	**-10.53**
5	0.730	39.58	37.66	56.00	**-18.34**	35.30	46.00	**-10.7**
6	0.880	38.20	36.60	56.00	**-19.4**	34.68	46.00	**-11.32**
7	1.020	38.24	36.30	56.00	**-19.7**	33.05	46.00	**-12.95**
8	26.13	35.98	34.12	60.00	**-25.88**	33.04	50.00	**-16.96**

1.2.3 Line conducted emission data on HP Brio with PCX822np



Num.	Freq. [MHz]	Peak [dBµV]	Q-Peak [dBµV]	QP limit [dBµV]	***QP delta [dBµV]***	Average [dBµV]	AVG Limit [dBµV]	***AVG Delta [dBµV]***
1	0.160	50.35	41.93	64.00	**-22.07**	35.97	54.00	**-18.03**
2	0.220	49.68	48.45	62.00	**-13.55**	48.27	52.00	**-3.73**
3	0.290	43.43	42.43	60.00	**-17.57**	41.88	50.00	**-8.12**
4	0.360	40.24	39.24	58.00	**-18.76**	38.88	48.00	**-9.12**
5	0.440	39.50	38.01	56.00	**-17.99**	36.81	46.00	**-9.19**
6	0.880	39.51	38.18	56.00	**-17.82**	37.31	46.00	**-8.69**
7	0.950	38.58	37.48	56.00	**-18.52**	36.87	46.00	**-9.13**
8	26.13	32.35	28.70	60.00	**-31.3**	26.18	50.00	**-23.82**

1.3 RADIATED EMISSION DATA

1.3.1 Test Procedure

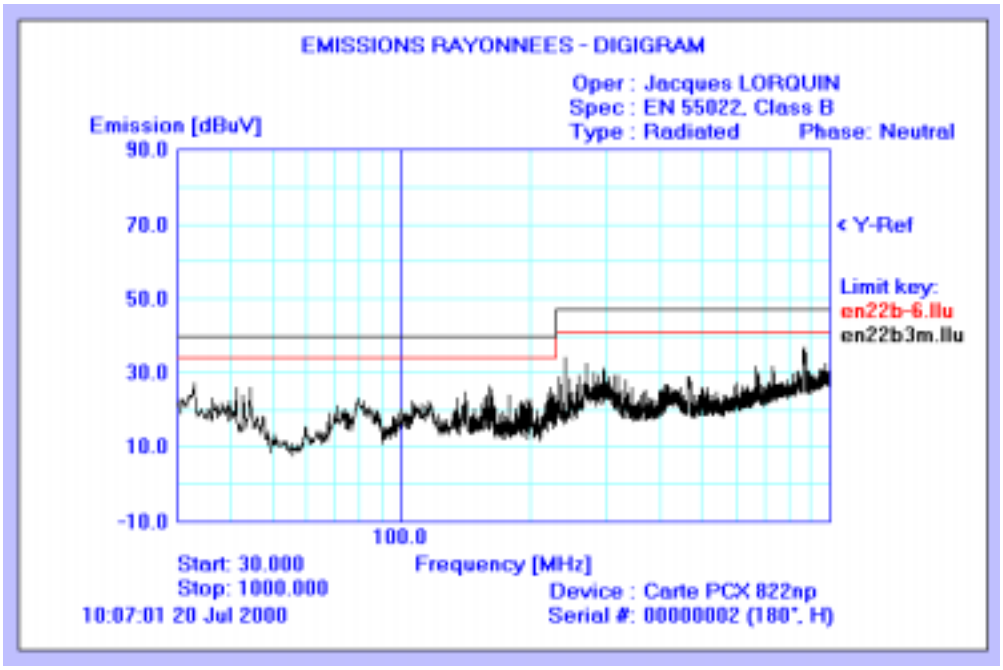
The product has been tested according to ANSI C63.4-1992, CISPR22-1993/A1:1995/A2:1996 and EN55022:1994/A1:1995/A2:1997.
The product has been tested with 230V / 50Hz power line voltage, at a distance of 10 meters from the antenna and compared to the CISPR 22 Class B limits. Measurement bandwidth was 120 KHz from 30 MHz to 1 GHz. 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. In first, the frequencies are identified in the full anechoic chamber at 3 meters and then are measured on the Open Area Test Site.
The plot on the following page shows only the frequency identification.
The table just after shown the measured levels.

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

Graph example in full anechoic chamber- 30-1000MHz



Frequency (MHz)	QPeak Lmt (dBµV/m)	QPeak (dBµV/m)	**QPeak-Lmt (dB)**	Angle (deg)	Pol	Hgt (cm)	Tot Corr (dB)
41.45	30.0	25.2	**-4.8**	261	V	110	11.8
43.00	30.0	24.7	**-5.3**	115	V	105	11.9
44.57	30.0	25.8	**-4.2**	183	V	108	11.9
129.04	30.0	20.6	**-9.4**	194	V	104	15.1
130.60	30.0	21.5	**-8.5**	190	V	103	15.0
132.11	30.0	22.9	**-7.1**	255	V	104	15.0
133.55	30.0	22.0	**-8.1**	312	V	131	14.9
135.19	30.0	25.7	**-4.3**	237	V	103	14.9
159.77	30.0	23.5	**-6.5**	90	V	104	17.4
161.30	30.0	20.6	**-9.5**	259	V	107	17.6
186.15	30.0	20.1	**-10.0**	73	H	238	19.1
200.47	30.0	19.1	**-10.9**	81	H	305	14.0
222.33	30.0	20.5	**-9.5**	6	H	263	14.3
240.02	37.0	26.5	**-10.5**	18	V	103	14.5
270.36	37.0	31.0	**-6.0**	202	H	379	15.5
865.33	37.0	29.6	**-7.4**	213	H	252	27.6

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.