

FCC CLASS B COMPLIANCE REPORT

for

Electromagnetic Emissions

of

Pocket PC

Trade Name : Intermec, HTC
Model Number : PB10
FCC ID : NM8BLUEBIRD
Serial Number : N/A
Report Number : 000749-F
Date : October 6, 2000

Prepared for ; G

High Tech Computer Corporation
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VERIFICATION OF COMPLIANCE

Equipment Under Test: Pocket PC
Trade Name: Intermec, HTC
FCC ID: NM8BLUEBIRD
Model Number: PB10
Serial Number: N/A
Applicant: **High Tech Computer Corporation**
9F, No. 6-3, Bau-Chian Rd., Hsin Tien,
Taipei, Taiwan, R.O.C.

Manufacturer: **High Tech Computer Corporation**
9F, No. 6-3, Bau-Chian Rd., Hsin Tien,
Taipei, Taiwan, R.O.C.

Type of Test: FCC Class B
Measurement Procedure: ANSI C63.4: 1992
File Number: 000749-F
Date of test: October 3, 2000
Deviation: None
Condition of Test Sample: Normal

The above equipment was tested by C&C Laboratory, Co., Ltd. for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, Subpart B and the measurement procedure according to ANSI C63.4, 1992. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

A handwritten signature in black ink that reads 'Nicki Cheng'.

Nicki Cheng / Manager



SYSTEM DESCRIPTION

EUT Test Program:

1. EMI test program was loaded and executed in Windows CE.
2. Data was sent to LCD Panel on EUT, and filling the screens with upper case of "H" patterns.
3. The PC set at communication environment and received "H" pattern from EUT through USB Cable and shown on the monitor.
4. Test program sequentially exercised all related I/O's of PC and sent "H" patterns to the applicable output port of PC.
5. Repeat 2 to 4. Test program is self-repeating throughout the test.



PRODUCT INFORMATION

Housing Type:	Plastic		
EUT Power Rating:	5VDC, 2A		
AC power during Test:	120VAC/60Hz from Power Adapter		
Power Adapter Manufacturer:	PHIHONG		
Power Adapter Model Number:	PSC10A-050		
Power Adapter Power Rating	I/P: 100-240VAC, 50-60Hz, 0.3A O/P: 5VDC, 2A		
DC Power Cable Type:	Unshielded, 1.5m (Non-detachable)		
OSC/Clock Frequencies:	206/133/3.6864/18.432/32.768MHz		
SDRAM Capacity:	32/16MB	Install:	32MB
CPU Manufacture:	Intel	Type:	SA-1110
LCD Panel Manufacturer:	CITIZEN	Model:	H3246H-FE
Mother Board Manufacturer:		Part No.:	50H00060-00
Memory Card Manufacturer:		Part No.:	50H00073-00
Memory Card Capacity:	32/24/16	Install:	32MB
Li-Ion Battery Pack Manufacturer:	LEO	Model:	PB16
USB/Serial Cradle Manufacturer:	LEO	Model:	PB15A
		Cable Type: Shielded, 1.0m (Non-detach.	
USB/Serial Cable Type:	Shielded, 1.2m (Detachable)		

I/O PORT OF EUT:

I/O PORT TYPES	Q'TY	TESTED WITH
1).DC-IN Port	1	1
2).PC Connect Port	1	1
3).Earphone Port	1	1
4).Memory Card Connect Port	1	1



SUPPORT EQUIPMENT

No.	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1.	PC	Brio BA600	SG95204933	N/A	HP	N/A	Unshielded, 1.7m
2.	Monitor	D2827A	KR92316215	C5F7NFCMC1518X	HP	Shielded, 1.5m (with two core)	Unshielded, 1.7m
3.	Modem	231AA	A27631083844	BFJ9D9308US	Hayes	Shielded, 1.7m	Unshielded, 1.5m
4.	Printer	2225C	3233S10451	DSI6XU2225	HP	Shielded, 1.7m	Unshielded, 1.7m
5.	PS/2 Keyboard	SK-2502C	M990543849	FCC DoC	HP	Shielded, 1.8m	N/A
6.	PS/2 Mouse	M-S34	LZC81065474	DZL211029	HP	Shielded, 1.8m	N/A
7.	Earphone	N/A	N/A	N/A	Panasonic	Unshielded, 1.7m	N/A

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.



MEASUREMENT PROCEDURE

(PRELIMINARY LINE CONDUCTED EMISSION TEST)

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4: 1992 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per ANSI C63.4: 1992.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4: 1992.
- 4) The EUT received AC power through a Line Impedance Stabilization Network (LISN) which supplied power source of 120VAC/60Hz and was grounded to the ground plane.
- 5) All support equipment received power from a second LISN supplying power of 110VAC/60Hz, if any.
- 6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7) Analyzer / Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- 8) During the above scans, the emissions were maximized by cable manipulation.
- 9) The following test mode(s) were scanned during the preliminary test:

Mode(s):

- 1. Pocket PC + USB Cradle (connect with PC)**
- 2. Pocket PC + Serial Cradle (connect with PC)**
- 3. Pocket PC + USB Cable (connect with PC)**
- 4. Pocket PC + Serial Cable (connect with PC)**

- 10) After the preliminary scan, we found the following test mode(s) producing the highest emission level.

Mode: 1.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

MEASUREMENT PROCEDURE (FINAL LINE CONDUCTED EMISSION TEST)

- 1) EUT and support equipment was set up on the test bench as per step 10 of the preliminary test.
- 2) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Q.P. mode, then the emission signal was re-checked using an A.V. detector.
- 3) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. MHz	Q.P. Raw dBuV	Average Raw dBuV	Q.P. Limit dBuV	Average Limit dBuV	Q.P. Margin dB	Average Margin dB	Note
x.xx	43.95	---	56	46	-12.05	---	L1

Freq.	= Emission frequency in MHz
Raw dBuV	= Uncorrected Analyzer/Receiver reading
Limit dBuV	= Limit stated in standard
Margin dB	= Reading in reference to limit
Note	= Current carrying line of reading
“---“	= The emission level complied with the Average limit,

LINE CONDUCTED EMISSION LIMIT

Frequency	Maximum RF Line Voltage	
	Q.P.	AVERAGE
150kHz-500kHz	66-56dBuV	56-46dBuV
500kHz-5MHz	56dBuV	46dBuV
5MHz-30MHz	60dBuV	50dBuV

Note: The lower limit shall apply at the transition frequency.



MEASUREMENT PROCEDURE (PRELIMINARY RADIATED EMISSION TEST)

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per ANSI C63.4: 1992 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per ANSI C63.4: 1992.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4: 1992.
- 4) The EUT received 120VAC/60Hz power source from the outlet socket under the turntable. All support equipment received 110VAC/60Hz power from another socket under the turntable, if any.
- 5) The antenna was placed at 10 meter away from the EUT as stated in ANSI C63.4: 1992. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
- 6) The Analyzer / Receiver quickly scanned from 30MHz to 5000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- 7) The following test mode(s) were scanned during the preliminary test:

Mode(s):

- 1. Pocket PC + USB Cradle (connect with PC)**
- 2. Pocket PC + Serial Cradle (connect with PC)**
- 3. Pocket PC + USB Cable (connect with PC)**
- 4. Pocket PC + Serial Cable (connect with PC)**

- 8) After the preliminary scan, we found the following test mode(s) producing the highest emission level.

Mode: 1.

Then, the EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for reference of final testing.



MEASUREMENT PROCEDURE (FINAL RADIATED EMISSION TEST)

- 1) EUT and support equipment were set up on the turntable as per step 8 of the preliminary test.
- 2) The Analyzer / Receiver scanned from 30MHz to 5000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- 3) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit, and only Q.P. reading will record in this report.
- 4) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
xx.xx	14.0	11.2	26.2	30	-3.8

Freq.	= Emission frequency in MHz
Raw Data (dBuV/m)	= Uncorrected Analyzer / Receiver reading
Corr. Factor (dB)	= Correction factors of antenna factor and cable loss
Emiss. Level	= Raw reading converted to dBuV and CF added
Limit dBuV/m	= Limit stated in standard
Margin dB	= Reading in reference to limit



RADIATED EMISSION LIMIT

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBu V/m)		
		Q.P.	AVERAGE	PEAK
30-230	10	30	/	/
230-1000	10	37	/	/
Above 1000	3	/	53.9	73.9

****Note:** “/” means the limit line isn’t applicable.



SUMMARY DATA (LINE CONDUCTED TEST)

Model Number: PB10

Location: Site # 4

Tested by: Jacky Wang

Test Mode: Mode 1

Test Results: Passed

Temperature: 29 °C

Humidity: 68%RH

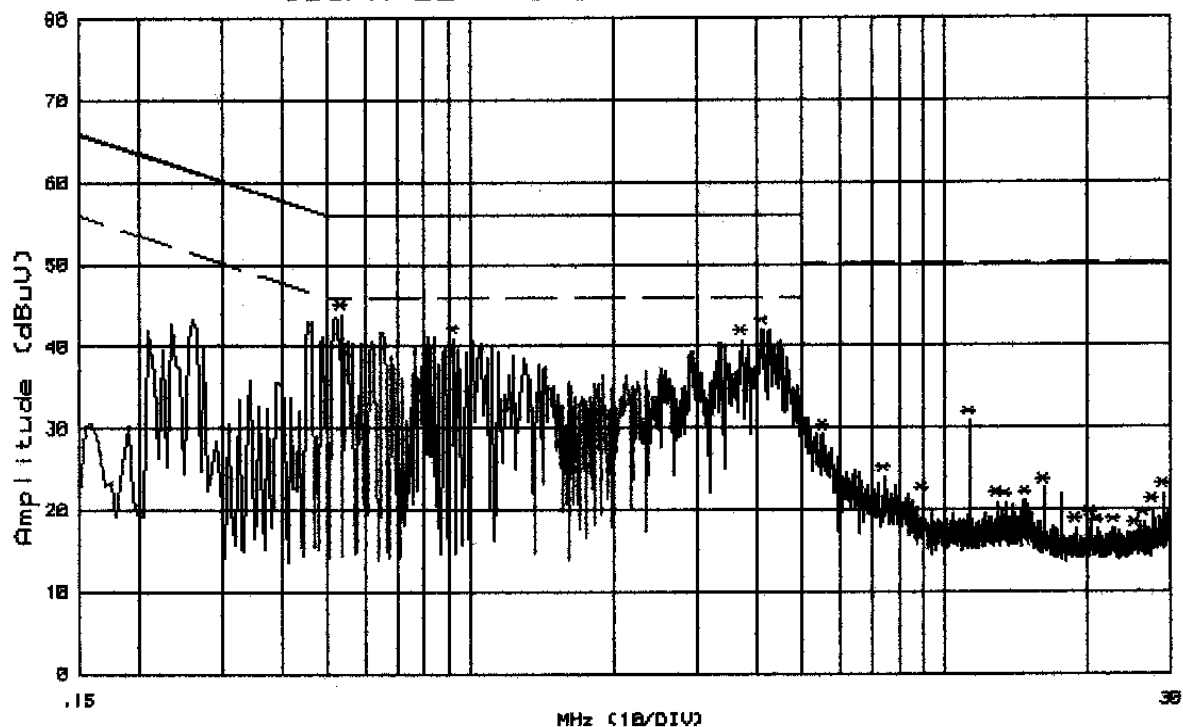
(The chart below shows the highest readings taken from the final data)

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.535	34.7	---	56.0	46.0	-21.3	---	L1
0.925	31.6	---	56.0	46.0	-24.4	---	L1
3.740	29.8	---	56.0	46.0	-26.2	---	L1
4.120	32.1	---	56.0	46.0	-23.9	---	L1
5.560	21.4	---	60.0	50.0	-38.6	---	L1
7.460	20.1	---	60.0	50.0	-39.9	---	L1
0.525	36.1	---	56.0	46.0	-19.9	---	L2
1.030	35.4	---	56.0	46.0	-20.6	---	L2
3.740	30.8	---	56.0	46.0	-25.2	---	L2
4.250	31.5	---	56.0	46.0	-24.5	---	L2
5.500	21.8	---	60.0	50.0	-38.2	---	L2
7.430	19.3	---	60.0	50.0	-40.7	---	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

C&C Lab. Co. Shielded Room4
 CISPR 22 - Class B QP/AV Limit

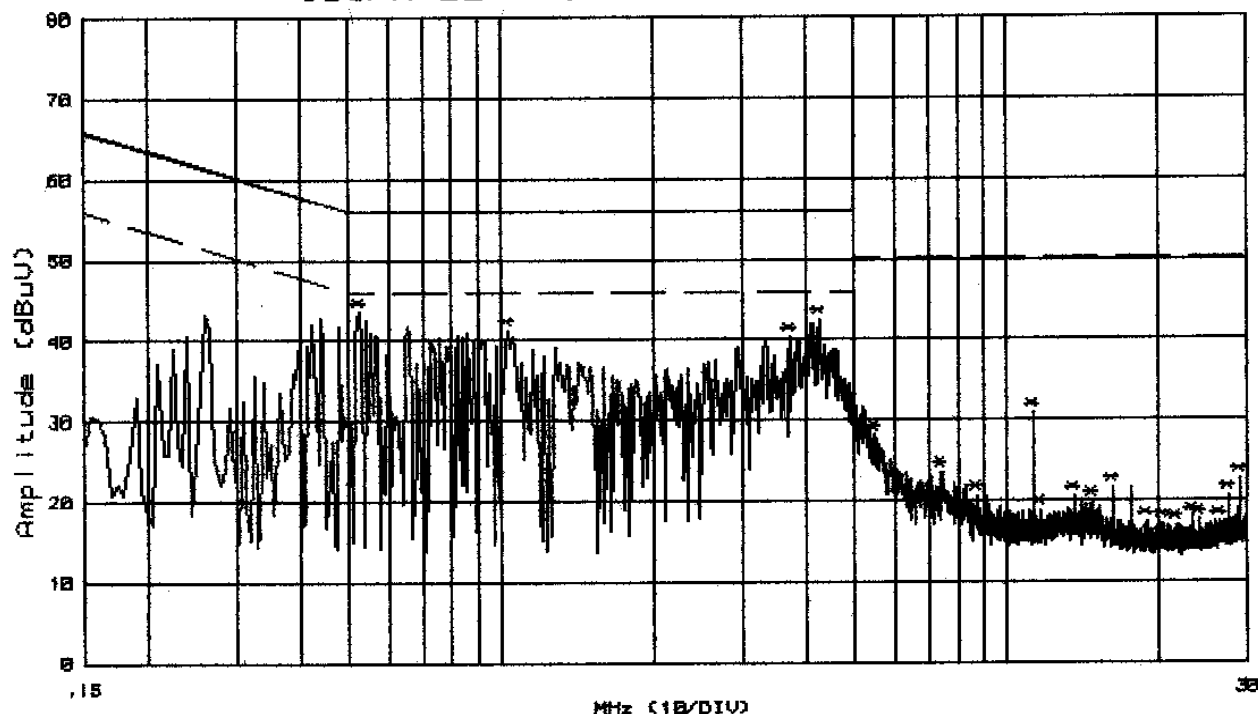


Customer: HTC File#: 416 Date : 3 Oct 2000 11:08:43
 Model : PB10 Humd.: 68 (%) Temp. : 29 (C)
 Mode : Port : L1 Tester: Jacky Wang
 Reading : Peak (R&S Receiver)
 Remark : USB CRADLE

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.535	43.8	.2	43.9	56.0	-12.1	
2	.925	40.7	.2	40.9	56.0	-15.1	
3	3.740	40.4	.3	40.7	56.0	-15.3	
4	4.120	41.5	.5	41.9	56.0	-14.1	
5	5.560	28.7	.5	29.2	60.0	-30.8	
6	7.460	23.5	.5	24.0	60.0	-36.0	
7	8.970	21.0	.5	21.5	60.0	-38.5	
8	11.290	30.0	.8	30.8	60.0	-29.2	
9	12.940	20.1	.8	20.9	60.0	-39.1	
10	13.460	19.9	.8	20.7	60.0	-39.3	
11	14.870	20.2	.8	21.0	60.0	-39.0	
12	16.230	21.5	1.0	22.5	60.0	-37.5	
13	19.050	16.7	1.0	17.7	60.0	-42.3	
14	20.460	17.5	1.1	18.6	60.0	-41.4	



C&C Lab. Co. Shielded Room4
 CISPR 22 - Class B QP/AV Limit



Customer: HTC File#: 417 Date : 3 Oct 2000 11:18:38
 Model : PB10 Humd.: 68 (%) Temp. : 29 (C)
 Mode : Port : L2 Tester: Jacky Wang
 Reading : Peak (R&S Receiver)
 Remark : USB CRADLE

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.525	43.3	.2	43.5	56.0	-12.5	
2	1.030	41.0	.2	41.2	56.0	-14.8	
3	3.740	40.1	.2	40.3	56.0	-15.7	
4	4.250	42.2	.3	42.5	56.0	-13.5	
5	5.500	27.8	.3	28.1	60.0	-31.9	
6	7.430	23.3	.3	23.6	60.0	-36.4	
7	8.750	20.3	.3	20.6	60.0	-39.4	
8	11.290	30.4	.4	30.8	60.0	-29.2	
9	11.670	18.4	.4	18.8	60.0	-41.2	
10	13.620	20.0	.4	20.4	60.0	-39.6	
11	14.820	19.5	.4	19.9	60.0	-40.1	
12	16.230	21.0	.6	21.6	60.0	-38.4	
13	19.050	16.7	.6	17.3	60.0	-42.7	
14	20.460	16.5	.6	17.1	60.0	-42.9	



SUMMARY DATA (RADIATED EMISSION TEST)

Model Number: PB10

Location: Site # 4

Tested by: Jacky Wang

Polar: Vertical -- 10m

Test Mode: Mode 1

Detector Function: Quasi-Peak

Test Results: Passed

Temperature: 29 °C

Humidity: 68%RH

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
56.10	18.9		7.5	26.4	30.0
-3.6					
84.60	17.0		8.8	25.8	30.0
-4.2					
143.81	12.7		11.9	24.6	30.0
-5.4					
163.72	15.2		10.6	25.8	30.0
-4.2					
182.96	13.5		11.5	25.0	30.0
-5.0					
603.80	11.7		21.5	33.2	37.0
-3.8					