FCC CFR47 CERTIFICATION (CLASS II CHANGE)

PART 24E

TEST REPORT

for

POCKET PC PHONE WITH BLUETOOTH AND GPRS 900/1800/1900 MHz

MODEL: PH10A / PH10B

FCC ID: NM8HIMALAYAS

REPORT NUMBER: 04T2576-1

ISSUE DATE: 3/16/2004

Prepared for
HIGH TECH COMPUTER CORP.
1F, 6-3, BAU-CHIAN RD., HSIN TIEN
TAIPAI, TAIWAN, 231

Prepared by
COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD, ROUTE 2
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1. TEST RESULT CERTIFICATION

COMPANY NAME: HIGH TECH COMPUTER CORP.
1F, 6-3, BAU-CHIAN RD., HSIN TIEN
TAIPAI, TAIWAN, 231

CONTACT PERSON: JESSE KUO / ENGINEER

TELEPHONE NO: +886 2 8912 4138 EXT 8391

EUT DESCRIPTION: POCKET PC PHONE WITH BLUETOOTH AND GPRS 900/1800/1900 MHz

MODEM NAME: PH10A / PH10B

DATE TESTED: 3/11/2004

TYPE OF EQUIPMENT	INTENTIONAL RADIATOR, LICENSED TX MODULE IN MOBILE APPLICATION
MEASUREMENT PROCEDURE	ANSI 63.4 / 2001, TIA/EIA 603
PROCEDURE	CERTIFICATION (CLASS II CHANGE)
FCC RULE	CFR 47 PART 24 Subpart E

Compliance Certification Services, Inc. tested the above equipment for compliance with the requirement set forth in CFR 47, PART 24 Subpart E-Broadband PCS. The equipment in the configuration described in this report, shows the measured emission levels emanating from the equipment do not exceed the specified limit.

Note : This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Tested By:

CHIN PANG
EMC TECHNICIAN
COMPLIANCE CERTIFICATION SERVICES

Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

2. EUT CLASS II CHANGE DESCRIPTION

A new LCD was added to the EUT, model: TD03STEB2, Brand: TOPPOLY

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures documented on chapter 13 of ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

4. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5. ACCREDITATION AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200065-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (reference no: 31040/SIT (1300B3) and 31040/SIT (1300F2))

6. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

7. TEST SETUP, PROCEDURE AND RESULT

7.1. SECTION 2.1053: FIELD STRENGTH OF SPURIOUS RADIATION

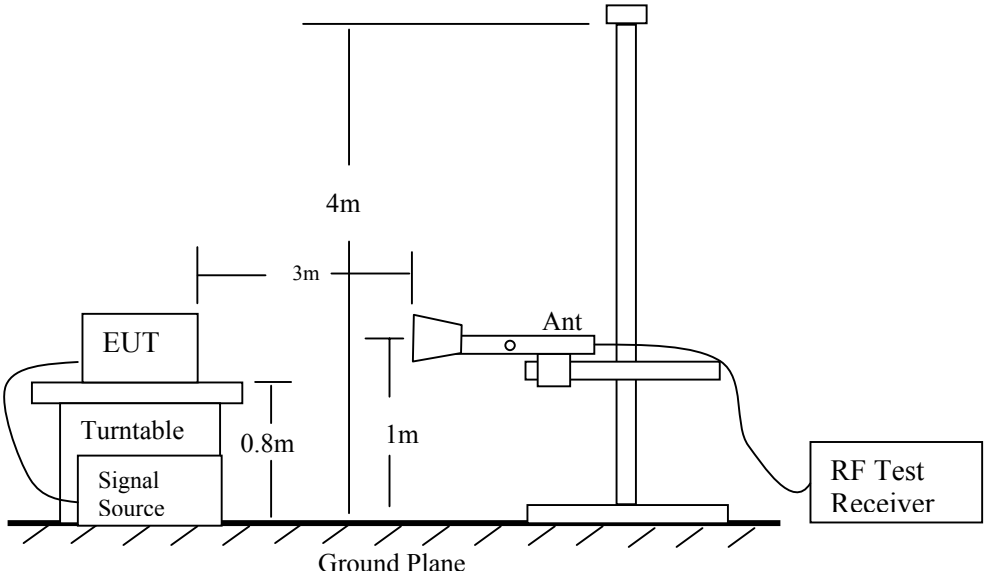
INSTRUMENTS LIST

TEST EQUIPMENT LIST				
Name of Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Due Date**
Spectrum Analyzer, 26.5 GHz	**HP**	**8593EM**	**3710A00205**	**10/1/04**
Communication Tester	**R & S**	**CMU 200**	**838114/032**	**11/14/04**
EMI Receiver, 9 kHz ~ 2.9 GHz	**HP**	**8542E**	**3942A00286**	**11/20/04**
RF Filter Section	**HP**	**85420E**	**3705A00256**	**11/20/04**
EMI Test Receiver	**R & S**	**ESHS 20**	**827129/006**	**7/17/04**
Line Filter	**Lindgren**	**LMF-3489**	**497**	**CNR**
LISN, 10 kHz ~ 30 MHz	**FCC**	**LISN-50/250-25-2**	**2023**	**10/13/04**
Bilog	**Sunol Sciences**	**JB1**	**A121003**	**12/22/04**
Horn	**EMCO**	**3117**	**29310**	**12/26/04**

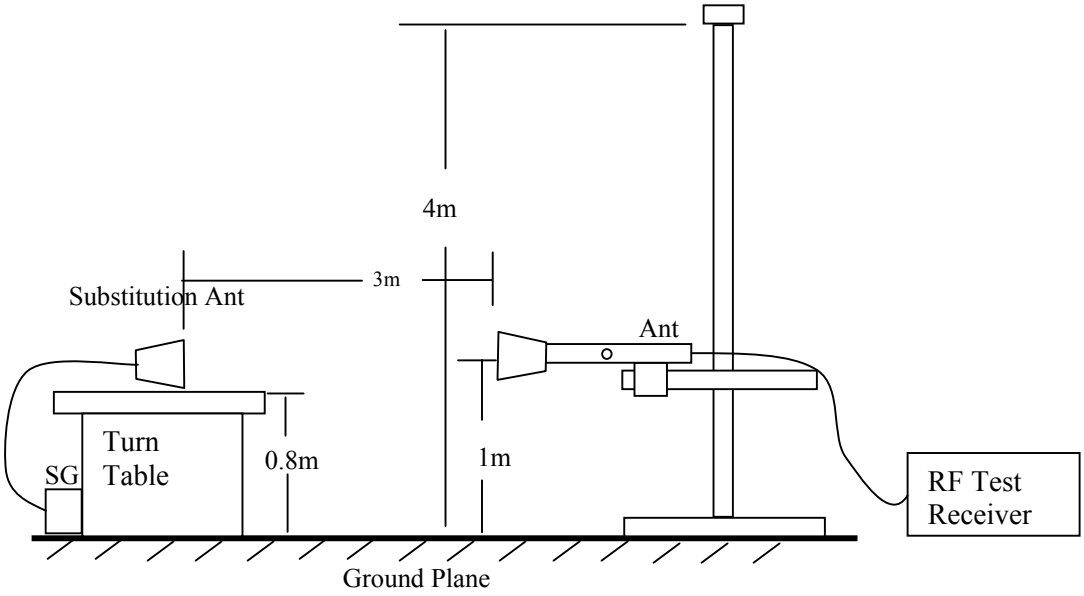
Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 1 MHz ☐ 1 MHz	☒ 1 MHz ☐ 10 Hz

TEST SETUP



Radiated Emission Measurement



Radiated Emission – Substitution Method set-up

TEST PROCEDURE

1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
2). The test antenna shall be oriented initially for vertical polarization located 1m from the EUT to correspond to the frequency of the transmitter.
3). The output of the test antenna shall be connected to the measuring receiver and either a peak or average detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
4). The transmitter shall be switched on, if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
5). The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
6). The transmitter shall than be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7). The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
8). The maximum signal level detected by the measuring receiver shall be noted.
9). The transmitter shall be replaced by a substitution antenna.
10). The substitution antenna shall be oriented for vertical polarization.
11). The substitution antenna shall be connected to a calibrated signal generator.
12). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
14). The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
15). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.
17). The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

MEASUREMENT RESULT

No non-compliance noted, as shown below

GSM Harmonics & Spurious Emissions: Low, Mid, & High Channels:

03/11/04 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Chin Pang
Project #: 04T2576-1
Company: High Tech Computer
EUT Descrip.: Pocket PC Phone with Bluetooth and GPRS 900/1800/1900 MHz (Class II)
EUT M/N: PH10A/PH10B
Test Target: FCC Part 24
Mode Oper: Tx

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz	Limit
T73; S/N: 6717 @1n	T87 Miteq 924342	Agilent E4446A Analyzer		FCC 24

Hi Frequency Cables
☐ (2 ft) ☑ (2 ~ 3 ft) ☐ (4 ~ 6 ft) ☐ (12 ft)

Peak Measurements:
Fundamental: RBW>99% or 26dB Emissions BW, VBW=RBW
Bandedge: RBW=>1% Emissions BW, VBW=> 3*RBW
Spurious: RBW=1MHz, VBW=1MHz

f GHz	SA reading (dBm)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Transmitting at low Ch, 1851.25MHz									
3.703	69.8	-32.0	0.6	8.7	6.6	-23.8	-13.0	-10.8	V
5.554	64.5	-34.9	0.7	10.2	8.1	-25.4	-13.0	-12.4	V
7.405	63.2	-34.6	0.9	10.6	8.5	-24.8	-13.0	-11.8	V
9.256	58.2	-30.0	1.0	10.4	8.3	-20.6	-13.0	-7.6	V
3.703	68.3	-33.5	0.6	8.7	6.6	-25.3	-13.0	-12.3	H
5.554	62.5	-36.9	0.7	10.2	8.1	-27.4	-13.0	-14.4	H
7.405	60.3	-37.5	0.9	10.6	8.5	-27.7	-13.0	-14.7	H
9.256	56.4	-40.3	1.0	10.4	8.3	-30.9	-13.0	-17.9	H
Transmitting at Mid Ch, 1880MHz									
3.760	68.6	-33.1	0.6	8.8	6.6	-24.9	-13.0	-11.9	V
5.640	63.5	-35.7	0.7	10.3	8.1	-26.2	-13.0	-13.2	V
7.520	60.7	-37.0	0.9	10.6	8.4	-27.3	-13.0	-14.3	V
9.400	56.4	-40.3	1.0	10.7	8.5	-30.7	-13.0	-17.7	V
3.760	66.7	-35.0	0.6	8.8	6.6	-26.8	-13.0	-13.8	H
5.640	57.1	-42.1	0.7	10.3	8.1	-32.6	-13.0	-19.6	H
7.520	59.0	-38.7	0.9	10.6	8.4	-29.0	-13.0	-16.0	H
9.400	55.0	-41.7	1.0	10.7	8.5	-32.1	-13.0	-19.1	H
Transmitting at High Ch, 1908.75MHz									
3.818	70.2	-31.4	0.6	8.8	6.7	-23.2	-13.0	-10.2	V
5.726	65.8	-33.3	0.7	10.3	8.1	-23.8	-13.0	-10.8	V
7.635	58.0	-39.7	0.9	10.6	8.4	-30.0	-13.0	-17.0	V
9.544	54.6	-42.1	1.0	10.9	8.8	-32.2	-13.0	-19.2	V
3.818	66.1	-35.5	0.6	8.8	6.7	-27.3	-13.0	-14.3	H
5.726	58.3	-40.8	0.7	10.3	8.1	-31.3	-13.0	-18.3	H
7.635	57.5	-40.2	0.9	10.6	8.4	-30.5	-13.0	-17.5	H
9.544	53.8	-42.9	1.0	10.9	8.8	-33.0	-13.0	-20.0	H

Note: GPRS readings are same as GSM readings above.

Bluetooth; Harmonics & Spurious Emissions: Low, Mid, & High Channels:

03/11/04 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr:Chin Pang
Project #:04T2576-1
Company:High Tech Computer
EUT Descrip.:Pocket PC Phone with Bluetooth and GPRS 900/1800/1900 MHz (Class II)
EUT M/N:PH10A/PH10B
Test Target:FCC Part 15.247
Mode Oper:Tx on Bluetooth Mode

Test Equipment:

EMCO Horn 1-18GHz	Spectrum Analyzer	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T120; S/N: 29310 @3m	HP 8593EM Analyzer	T34 HP 8449B		

Hi Frequency Cables: ☐ (2 ft) ☑ (2 ~ 3 ft) ☐ (4 ~ 6 ft) ☑ (12 ft)

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1 MHz Resolution Bandwidth
10Hz Video Bandwidth

BlueTooth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Transmitting at low Ch, 2402MHz															
4.804	9.8	49.2	35.5	34.5	2.9	-34.6	0.0	1.0	53.0	39.3	74.0	54.0	-21.0	-14.7	V
7.206	9.8	47.7	34.0	36.5	3.7	-34.0	0.0	1.0	54.8	41.1	74.0	54.0	-19.2	-12.9	V
4.804	9.8	47.9	33.2	34.5	2.9	-34.6	0.0	1.0	51.7	37.0	74.0	54.0	-22.3	-17.0	H
7.206	9.8	47.0	33.6	36.5	3.7	-34.0	0.0	1.0	54.1	40.7	74.0	54.0	-19.9	-13.3	H
Transmitting at Mid Ch, 2441MHz															
4.882	9.8	52.0	36.0	34.6	2.9	-34.5	0.0	1.0	55.9	39.9	74.0	54.0	-18.1	-14.1	V
7.332	9.8	48.0	34.5	36.5	3.7	-34.0	0.0	1.0	55.1	41.6	74.0	54.0	-18.9	-12.4	V
4.882	9.8	48.6	35.0	34.6	2.9	-34.5	0.0	1.0	52.5	38.9	74.0	54.0	-21.5	-15.1	H
7.332	9.8	47.3	33.7	36.5	3.7	-34.0	0.0	1.0	54.4	40.8	74.0	54.0	-19.6	-13.2	H
								1.0							
Transmitting at High Ch, 2480MHz															
4.960	9.8	52.4	36.6	34.7	3.0	-34.5	0.0	1.0	56.5	40.7	74.0	54.0	-17.5	-13.3	V
7.440	9.8	48.2	34.6	36.5	3.7	-34.1	0.0	1.0	55.4	41.8	74.0	54.0	-18.6	-12.2	V
4.960	9.8	49.5	35.6	34.7	3.0	-34.5	0.0	1.0	53.6	39.7	74.0	54.0	-20.4	-14.3	H
7.440	9.8	47.5	33.8	36.5	3.7	-34.1	0.0	1.0	54.7	41.0	74.0	54.0	-19.3	-13.0	H

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

Co-location; Harmonics & Spurious Emissions

03/11/04 **High Frequency Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Chin Pang
Project # : 04T2576-1
Company: High Tech Computer
EUT Descrip.: Pocket PC Phone with Bluetooth and GPRS 900/1800/1900 MHz (Class II)
EUT M/N: PH10A/PH10B
Test Target: FCC Part 24
Mode Oper: Tx at High ch on both BT and GSM

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz	Limit
T72; S/N: 6739 @3m	T87 Miteq 924342	Agilent E4446A Analyzer		FCC 24

Hi Frequency Cables: ☐ (2 ft) ☑ (2 ~ 3 ft) ☐ (4 ~ 6 ft) ☐ (12 ft)

Peak Measurements:

Fundamental:	Bandedge:	Spurious
RBW>99% or 26dB Emissions BW	RBW=>1% Emissions BW	RBW=1MHz
VBW=RBW	VBW=> 3*RBW	VBW=1MHz

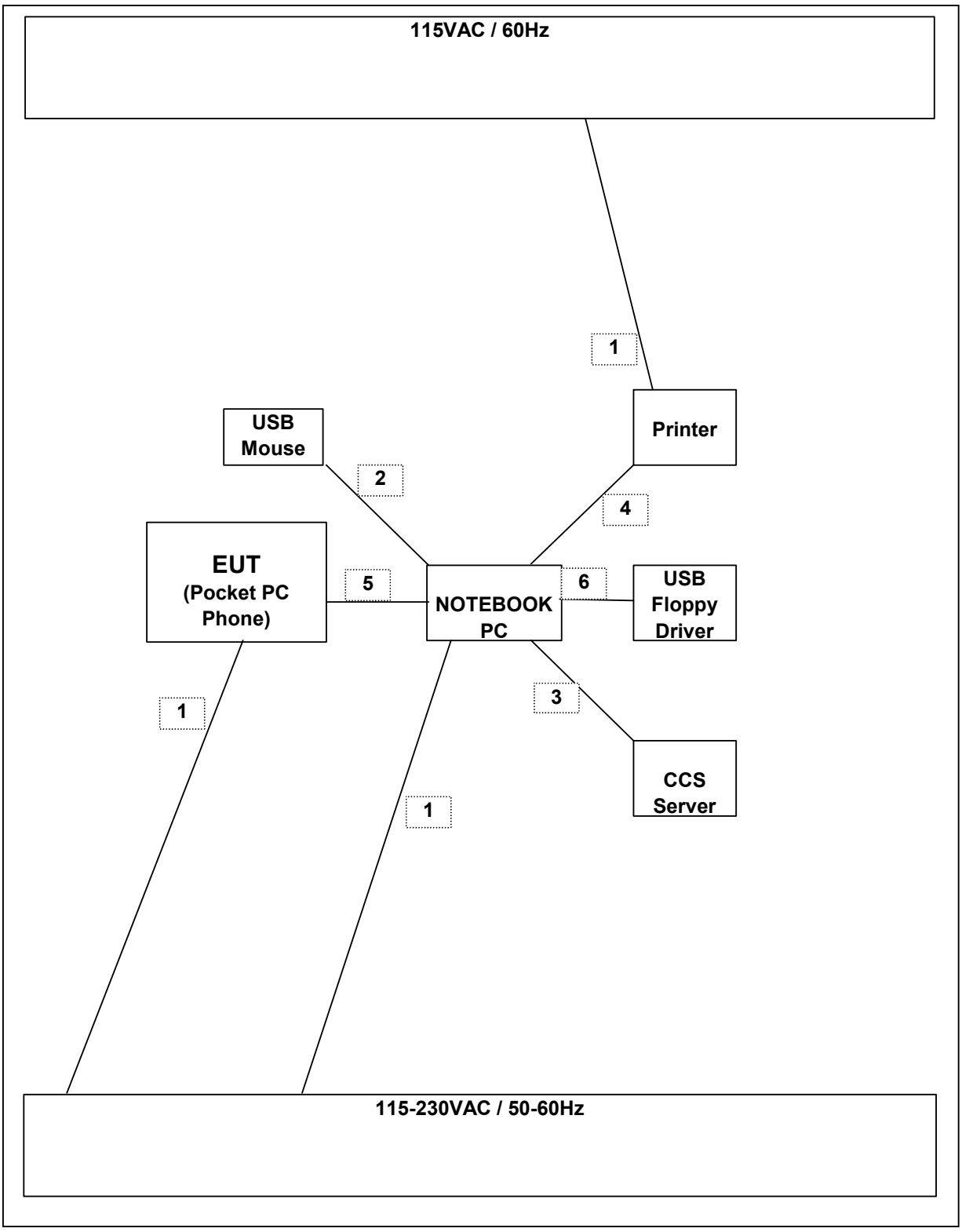
f GHz	SA reading (dBm)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Transmitting at High Ch, 1908.75MHz									
3.819	65.4	-37.0	0.6	9.6	7.5	-28.0	-13.0	-15.0	V
5.728	58.0	-42.1	0.7	11.2	9.1	-31.6	-13.0	-18.6	V
7.635	53.4	-45.2	0.9	11.5	9.3	-34.6	-13.0	-21.6	V
9.544	52.6	-44.3	1.0	11.1	9.0	-34.2	-13.0	-21.2	V
3.818	63.6	-38.8	0.6	9.6	7.5	-29.8	-13.0	-16.8	H
5.726	55.3	-44.8	0.7	11.2	9.1	-34.3	-13.0	-21.3	H
7.635	51.2	-47.4	0.9	11.5	9.3	-36.8	-13.0	-23.8	H
9.544	50.5	-46.4	1.0	11.1	9.0	-36.3	-13.0	-23.3	H

7.2. RADIATED EMISSION

Detector Setting of Spectrum Analyzer

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	☒ Peak ☒ Quasi Peak	☒ 100 KHz ☒ 1 MHz	☒ 100 KHz ☒ 1 MHz

TEST SETUP



TEST PROCEDURE

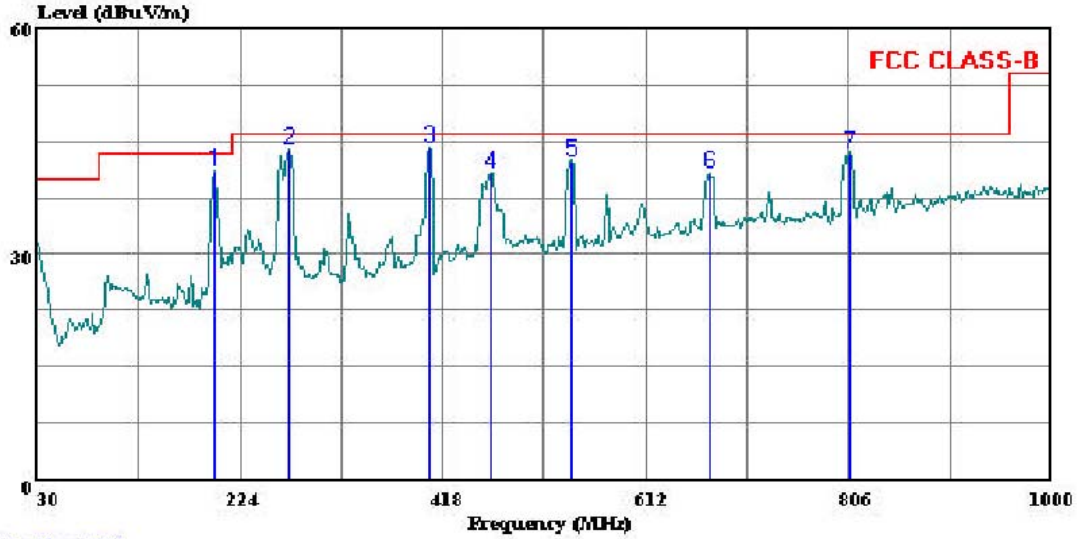
1. The EUT was placed on the turn table 0.8 meter above ground inside 3 meter Anechoic Chamber.
2. Set the resolution bandwidth to 120KHz in the test receiver and select Peak function to scan the frequency below 1 GHz.
3. Shift the interference-receiving antenna located in antenna tower upwards and downwards between 1 and 4 meters above ground and find out the local peak emission on frequency domain.
4. Locate the interference-receiving antenna at the position where the local peak reach the maximum emission.
5. Rotate the turn table and stop at the angle where the measurement device has maximum reading
6. Shift the interference-receiving antenna again to detect the maximum emission of the local peak
7. If the reading of the local peak under Peak function is lower than limit by 6dB, then Quasi Peak detection is not needed and this reading should be recorded. And if it is higher than Peak limit, then the test is fail. Others, switch the receiver to Quasi Peak function, set the resolution bandwidth to 100kHz and repeat the procedures (3)~(6). If the reading is lower than limit, this reading should be recorded, otherwise, the test is fail.

MEASUREMENT RESULT

No non-compliance noted, as shown below.

561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 10 File#: HTC 04i2576.EMI Date: 03-17-2004 Time: 20:34:24



(Audix ATC)

Trace: 9 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Chin Pang
Project #: : 04I2576-1
Company: : High Tech Computer
EUT: : Pocket PC with Bluetooth & GPRS 900/1800
: /1900 MHz (Class B)
Model No: : PH10A / PH10B
Configuration: : EUT/Support Equipment
Target of Test: : FCC Class B
Mode of Operation: Communication Link

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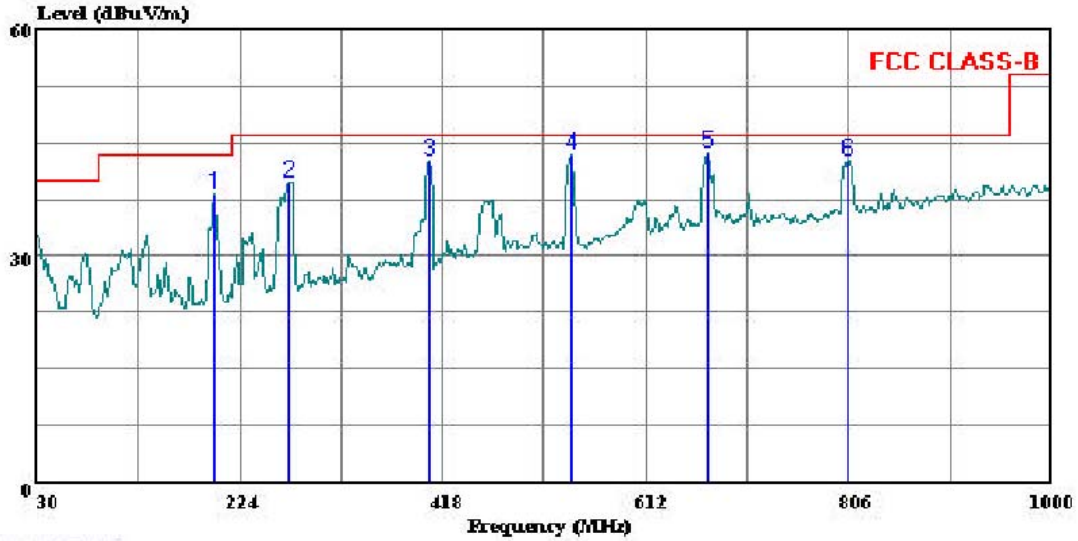
	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	198.780	Peak	27.37	13.58	40.95	43.50	-2.55
2	271.530	Peak	28.65	15.15	43.80	46.00	-2.20
3	404.420	Peak	25.82	18.30	44.12	46.00	-1.88
4	463.590	Peak	20.97	19.78	40.75	46.00	-5.25
5	540.220	Peak	21.47	20.96	42.43	46.00	-3.57
6	672.140	Peak	17.44	23.31	40.75	46.00	-5.25
7	806.970	Peak	18.21	25.07	43.29	46.00	-2.71

COMPLIANCE Engineering Service, Inc.
561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 8 File#: HTC 04i2576.EMI Date: 03-17-2004 Time: 20:32:02



(Audix ATC)

Trace: 7 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Chin Pang
Project #: : 04I2576-1
Company: : High Tech Computer
EUT: : Pocket PC with Bluetooth & GPRS 900/1800
: /1900 MHz (Class B)
Model No: : PH10A / PH10B
Configuration: : EUT/Support Equipment
Target of Test: : FCC Class B
Mode of Operation: Communication Link

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	198.780	Peak	24.49	13.58	38.07	43.50	-5.43
2	271.530	Peak	24.69	15.15	39.84	46.00	-6.16
3	404.420	Peak	24.35	18.30	42.65	46.00	-3.35
4	541.190	Peak	22.43	20.93	43.36	46.00	-2.64
5	670.200	Peak	20.41	23.27	43.68	46.00	-2.32
6	805.030	Peak	17.63	25.06	42.69	46.00	-3.31

Radiated Emission photos

Front View:

Back View:

7.3. POWERLINE CONDUCTED EMISSION

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
150 KHz to 30 MHz	☒ Peak ☐ CISPR Quasi Peak	☒ 9 KHz	☒ 9 KHz

Power Line Conducted Emission photos

Front View:

Side View:

TEST PROCEDURE

1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor. The EUT was set to transmit in a continuous mode.

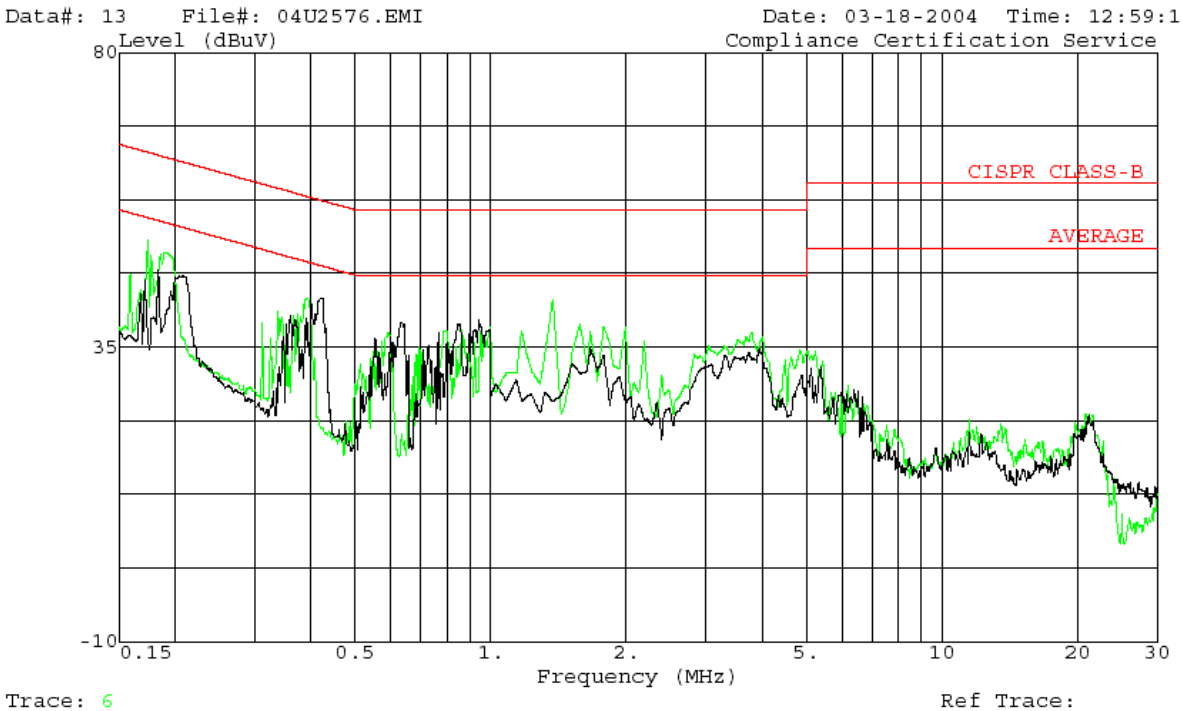
2. Line conducted data was recorded for both NEUTRAL and HOT lines.

MEASUREMENT RESULT

No non-compliance noted, as shown below.

Line1 & 2:

COMPLIANCE Engineering Services, Inc.
561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888



Trace: 6 Ref Trace:
Project # : 04T2576
Test Operator : Ben
Company : HTC
EUT : Pocket PC Phone
Model : PH17B
Configuration : EUT/Laptop, Printer, Floppy, MS
Mode of Operation: Transfere Data w/ Laptop
Target of Test : CISPR Class B
Voltage : 115 VAC / 60 Hz
: Peak : LINE 1(Green), LINE 2 (Black)

END OF REPORT