



**FCC CFR47 PART 15 SUBPART C
CERTIFICATION
CLASS II PERMISSIVE CHANGE**

FOR

PDA PHONE

MODEL NUMBER: PA10A

FCC ID: NM8PA10A

REPORT NUMBER: 05T3562-1

ISSUE DATE: JULY 15, 2005

Prepared for
**HIGH TECH COMPUTER CORP.
1F, 6-3, BAU-CHIAN RD., HSINTIEN
TAIPEI, 231 TAIWAN**

Prepared by
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NVLAP[®]
LAB CODE:200065-0

Revision History

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<u>A</u>	<u>7/15/05</u>	<u>Initial Issue</u>	<u>Thu</u>

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: HIGH TECH COMPUTER CORP.
1F, 6-3, BAU-CHIAN RD., HSINTIEN
TAIPEI, 231 TAIWAN

EUT DESCRIPTION: PDA PHONE

MODEL: PA10A

SERIAL NUMBER: HT510E600023

DATE TESTED: JULY 12, 2005

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. 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. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES



CHIN PANG
EMC TECHCIAN
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a PDA phone.

The software that resides on the phone does not allow co-transmission of the Bluetooth and the WLAN.

EUT auxiliary equipment

Auxiliary Equipment	Brand	Model No.
Li-Ion Rechargeable Battery	Celxpert Energy Co.	PA16A
AC adaptor	Delta Electronic	ADP-5FH B
USB Cable	MEC	60-4008-201A
Headset	Merry	EMC147-012-01

5.2. CLASS II PERMISSIVE CHANGE DESCRIPTION

The EUT was originally tested and reported under CCS project no.: 05T3291, and granted by TCB on August 19, 2005. The major change filed under this application is:

1. Bluetooth Antenna Change

Bluetooth Antenna has been changed from Patch type antenna with a maximum gain of -2.0dBi to FPC type antenna with a maximum gain of 0.5dBi.

So, all additional tests were conducted on radiated emissions for band edges, and harmonic spurious measurements.

5.3. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output BT power as follows:

2400 to 2483.5 MHz Authorized Band

Frequency Range (MHz)	Output Power (dBm)	Output Power (mW)
2402 - 2480	0.74	1.19

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a FTC Antenna, with a peak gain of 0.5dBi on Bluetooth modulation.

5.5. SOFTWARE AND FIRMWARE

The test software is installed in the EUT during testing is BTTestMode Rev 0.1

5.6. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 2402 MHz.

5.7. DESCRIPTION OF TEST SETUP

SETUP FOR RF WIRELESS TESTS

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Delta Electronic	ADP-5FH B	3UW0511008890	NA
Headset	Merry	EMC147-012-01	NA	NA

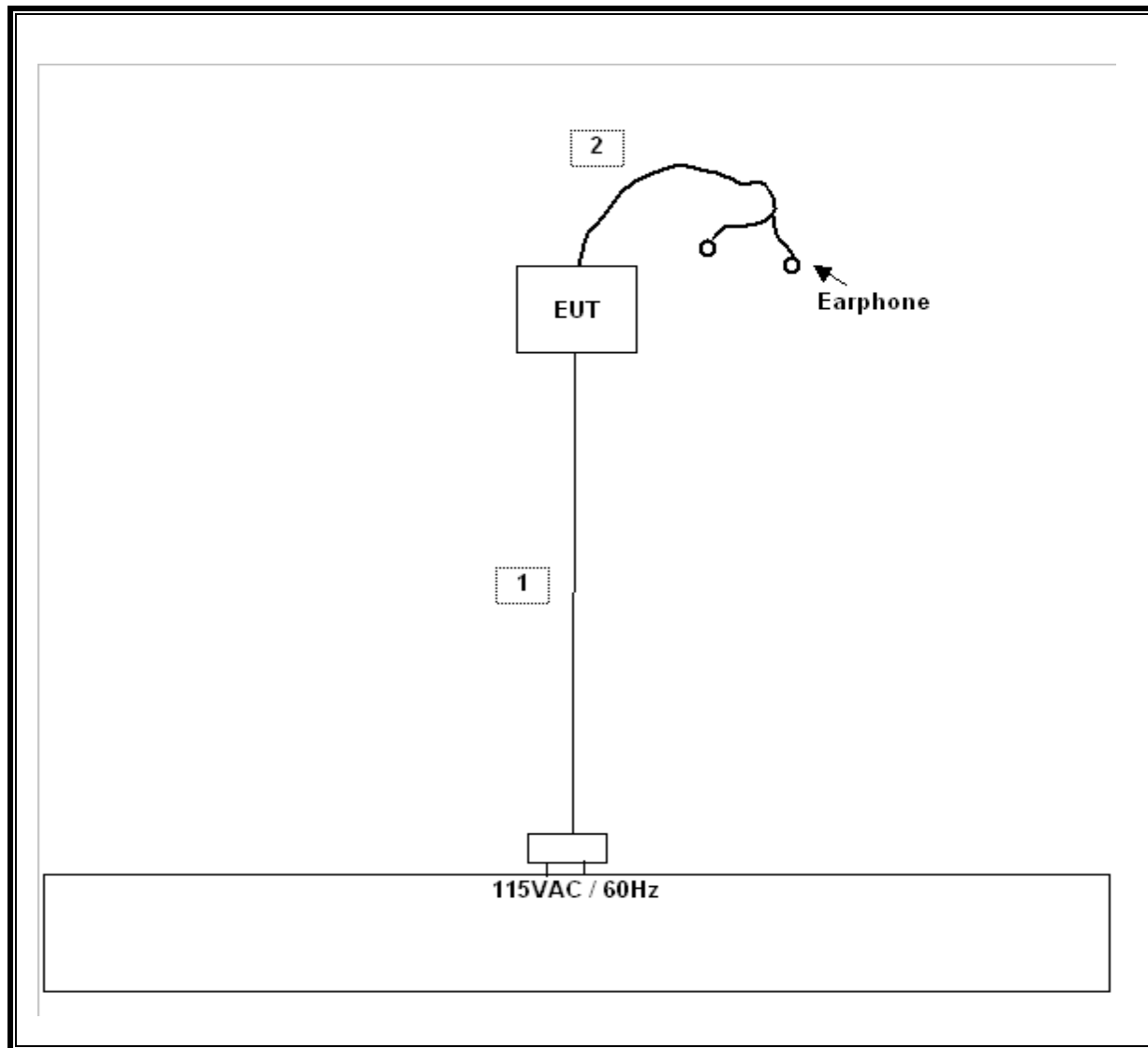
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC	1	DC	Un-shielded	2m	No
2	Mic	1	Din	Un-shielded	2m	No

TEST SETUP

The EUT is a PDA unit and operates in standalone. Test software exercised the EUT is BTTestMode.

SETUP DIAGRAM FOR RF WIRELESS TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	Cal Due
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	3/29/2006
RF Filter Section	HP	85420E	3705A00256	3/29/06
Antenna, Bilog 30MHz ~ 2Ghz	Sunol Sciences	JB1	A121003	3/3/06
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/06
Preamplifier, 1 ~ 26 GHz	Miteq	NSP2600-SP	924341	12/23/05
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent	E4446A	US42510266	8/25/05
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/05
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/21/05
Site A Line Stabilizer/Conditioner	Tripplite	LC-1800a	A005181	CNR
EMI Test Receiver	R & S	ESHS 20	827129/006	6/3/06

7. LIMITS AND RESULTS

7.1. RADIATED EMISSIONS ABOVE 1GHz

7.1.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

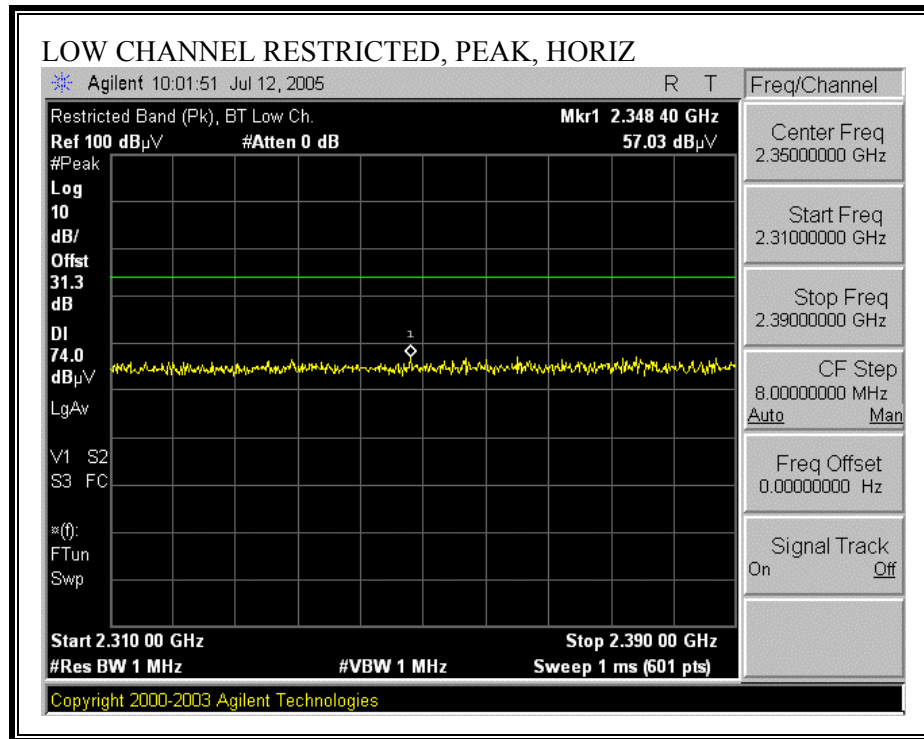
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

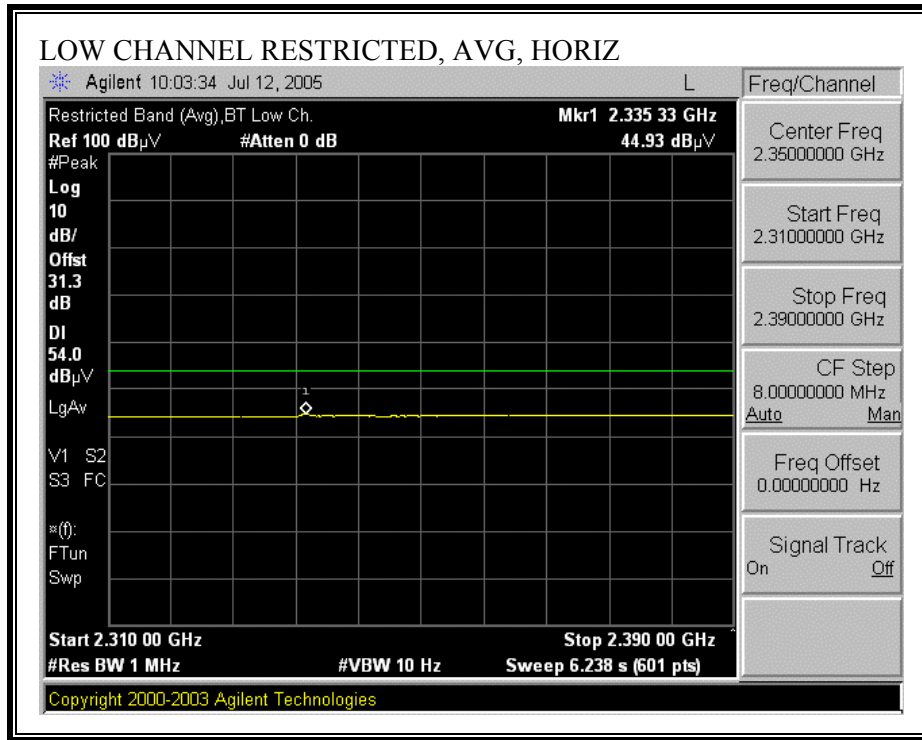
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

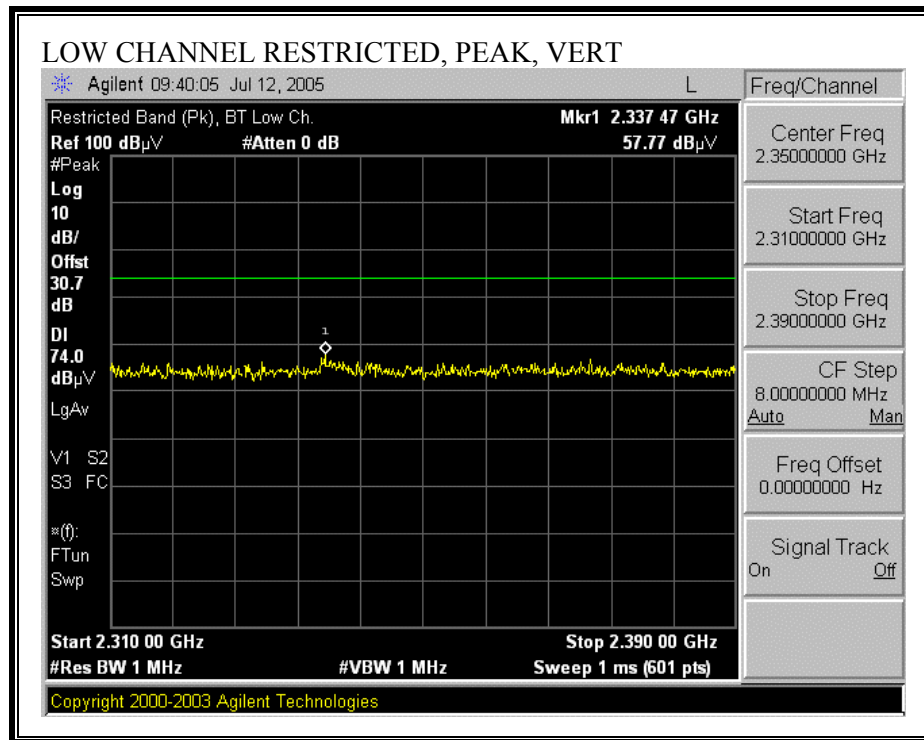
7.1.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ

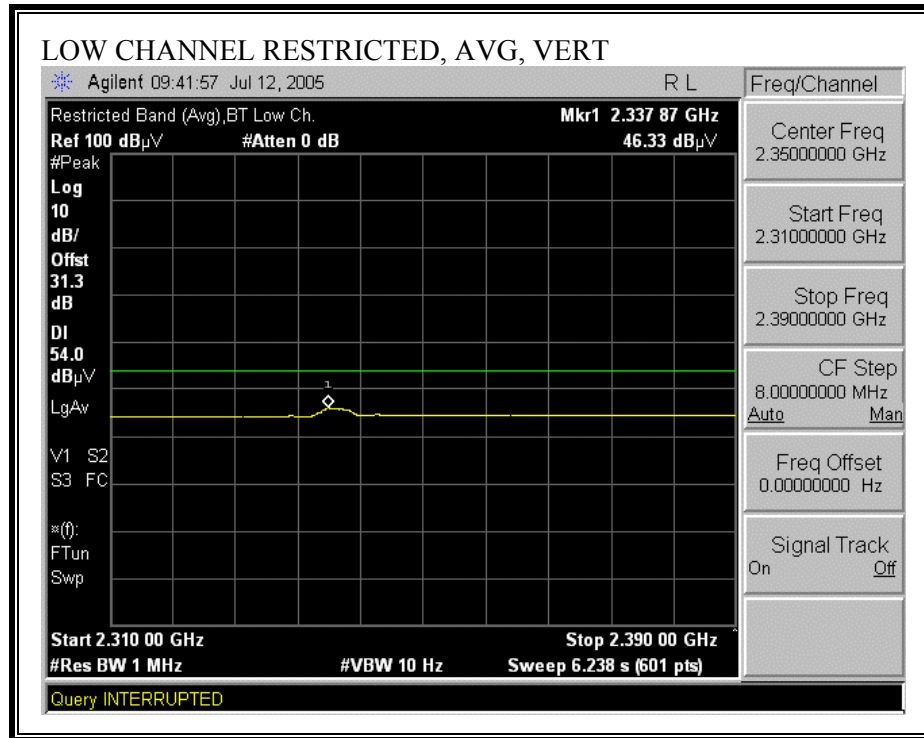
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



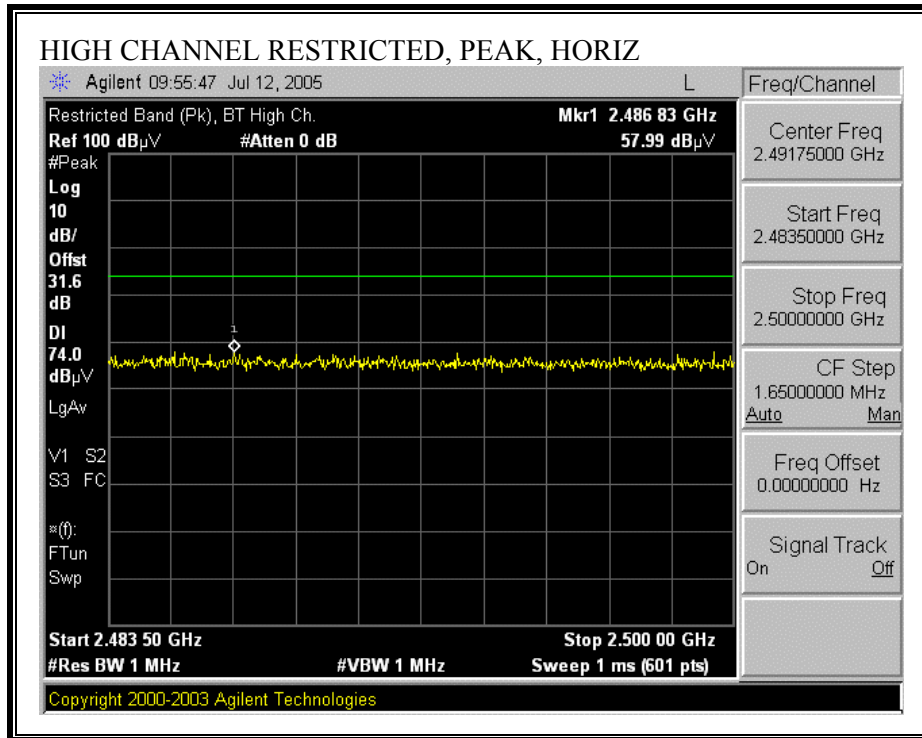


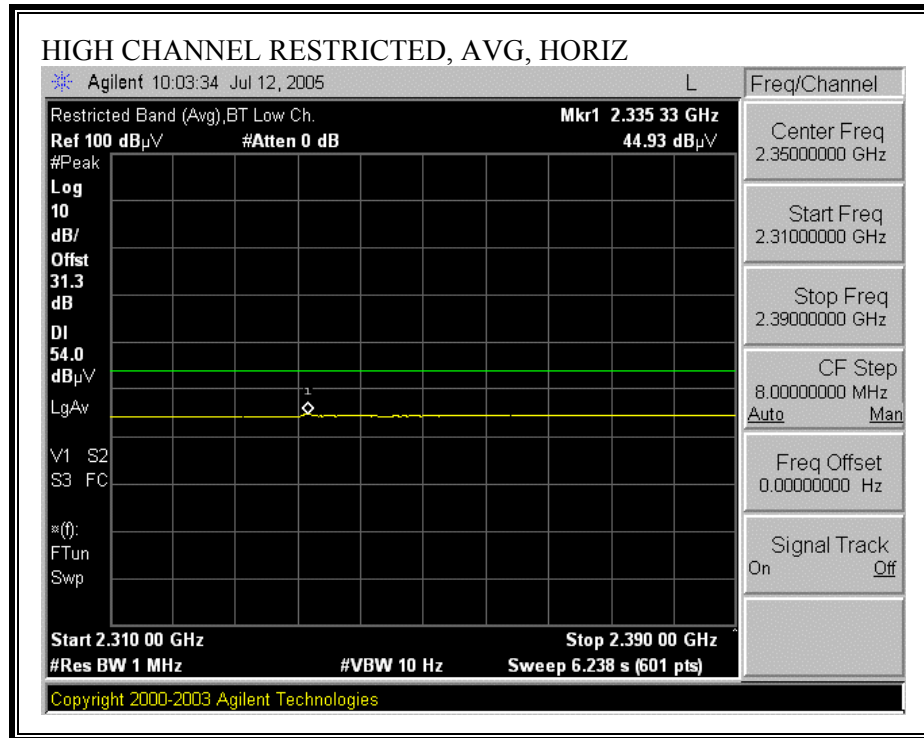
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



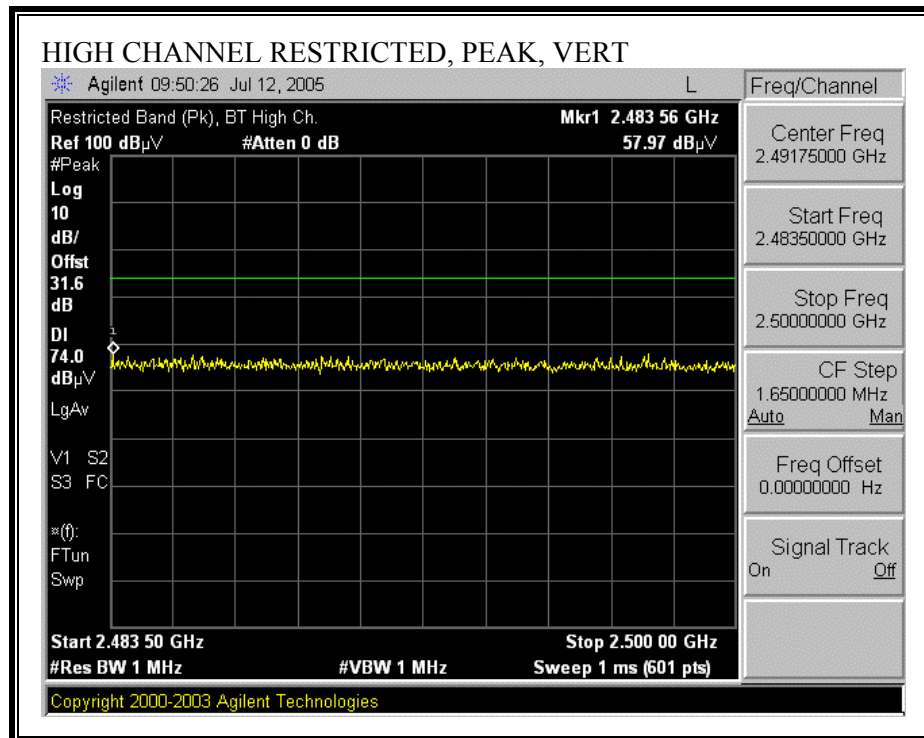


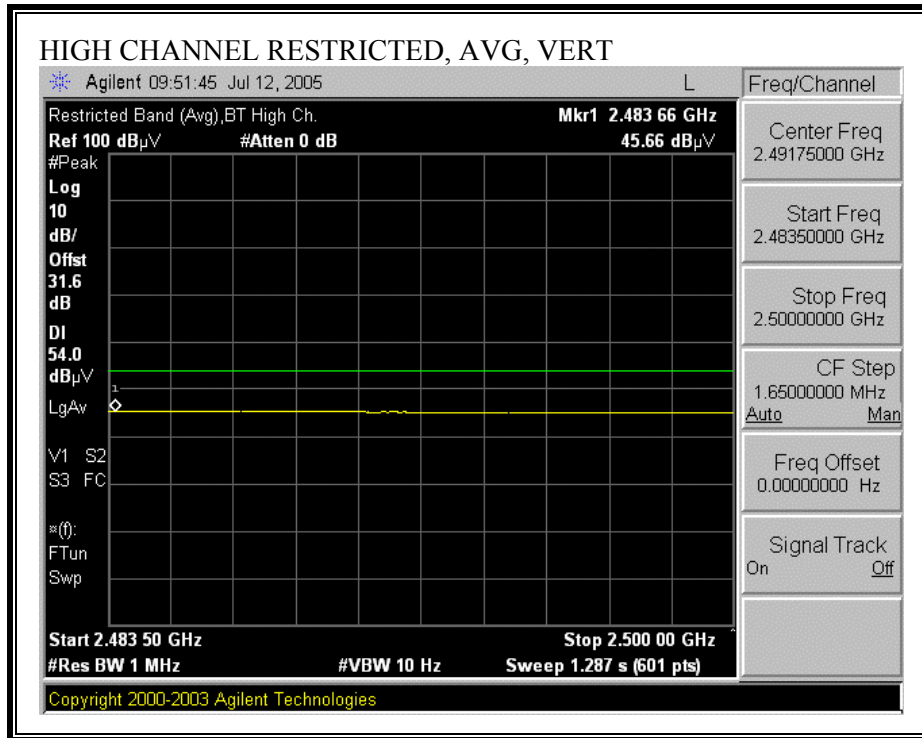
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

07/12/05 High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thanh Nguyen
Project #:05T3562
Company: High Tech Computer (HTC)
EUT Descr.: PDA Phone.
EUT M/N:PA10A
Test Target:FCC Part 15.247, CLASS II Change
Mode Oper:Tx BT
Average Power Meter: Low = 0.5 dBm, Mid = 0.3 dBm, High = -0.3 dBm

Test Equipment:

EMCO Horn 1-18GHz T73; S/N: 6717 @3m	Pre-amplifier 1-26GHz T86 Miteq 924341	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit FCC 15.209
Hi Frequency Cables				
2 foot cable 2_Thanh	3 foot cable	4 foot cable	12 foot cable 40G 2210	HPF HPF_4.0GHz
Reject Filter				
Peak Measurements RBW=VBW=1MHz				
Average Measurements RBW=1MHz ; VBW=10Hz				

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
BT Tx LOW Channel															
4.804	3.0	52.0	39.2	33.7	5.1	-44.0	0.0	0.6	47.3	34.5	74	54	-26.7	-19.5	H
7.206	3.0	48.3	38.4	35.4	6.9	-44.5	0.0	0.6	46.7	36.9	74	54	-27.3	-17.1	Noise Floor
4.804	3.0	50.8	38.1	33.7	5.1	-44.0	0.0	0.6	46.1	33.5	74	54	-27.9	-20.5	V
7.206	3.0	48.2	37.8	35.4	6.9	-44.5	0.0	0.6	46.6	36.2	74	54	-27.4	-17.8	Noise Floor
BT Tx MID Channel															
4.882	3.0	50.3	37.2	33.8	5.1	-44.1	0.0	0.6	45.7	32.6	74	54	-28.3	-21.4	V
7.323	3.0	49.2	37.5	35.5	7.0	-44.4	0.0	0.6	48.0	36.3	74	54	-26.0	-17.7	Noise Floor
4.882	3.0	50.2	39.6	33.8	5.1	-44.1	0.0	0.6	45.6	35.1	74	54	-28.4	-18.9	H
7.723	3.0	49.0	37.2	36.0	7.3	-44.3	0.0	0.7	48.7	36.9	74	54	-25.3	-17.1	Noise Floor
BT Tx High Channel															
4.960	3.0	49.1	36.6	33.9	5.2	-44.2	0.0	0.6	44.6	32.2	74	54	-29.4	-21.8	H
7.440	3.0	49.9	37.7	35.7	7.1	-44.4	0.0	0.6	48.9	36.7	74	54	-25.1	-17.3	Noise Floor
4.960	3.0	50.0	37.0	33.9	5.2	-44.2	0.0	0.6	45.6	32.5	74	54	-28.4	-21.5	V
7.440	3.0	50.1	7.6	35.7	7.1	-44.4	0.0	0.6	49.2	6.6	74	54	-24.8	-47.4	Noise Floor

No other spurious emissions were detected above 3rd Harmonic.

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		

7.2. RADIATED EMISSIONS BELOW 1 GHz

7.2.1. WORST-CASE RADIATED EMISSIONS (TX MODE)

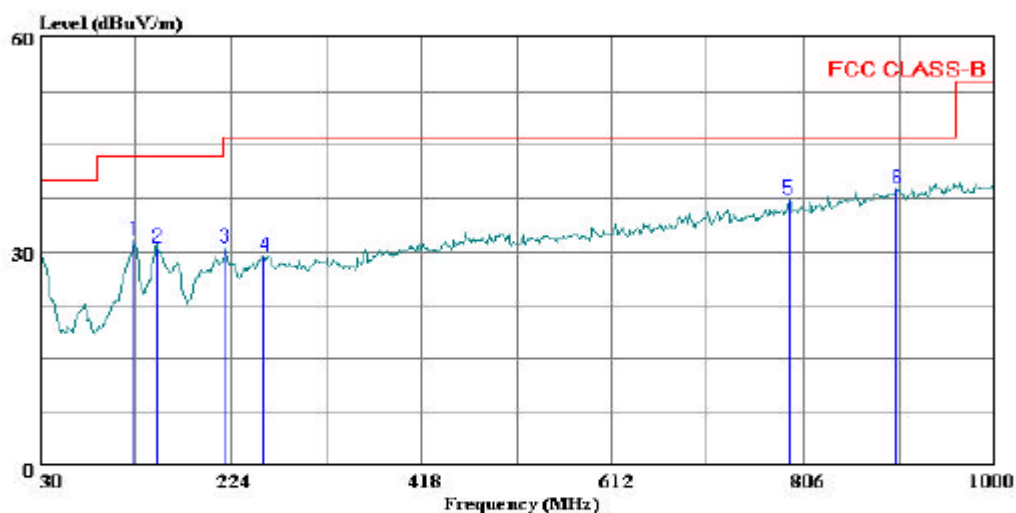
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 2 File#: HTC PA10.EMI Date: 07-12-2005 Time: 07:44:38



(Auxiliary ATC)

Trace: 1

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Chin Pang
Project #: : 05T3562-1
Company: : High Tech Computer
EUT: : PDA Phone (Class II Changed)
Model No. : PA10A
Configuration : EUT/AC Adapter/Earphone
Target of Test : FCC Class B
Mode of Operation: Tx, worst case

HORIZONTAL DATA

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	126.030	16.27	15.25	31.52	43.50	-11.98	Peak
2	149.310	16.23	14.26	30.49	43.50	-13.02	Peak
3	218.180	18.01	12.51	30.52	46.00	-15.48	Peak
4	257.950	15.02	14.23	29.25	46.00	-16.75	Peak
5	790.480	12.85	24.43	37.28	46.00	-8.72	Peak
6	900.090	12.99	25.88	38.87	46.00	-7.13	Peak

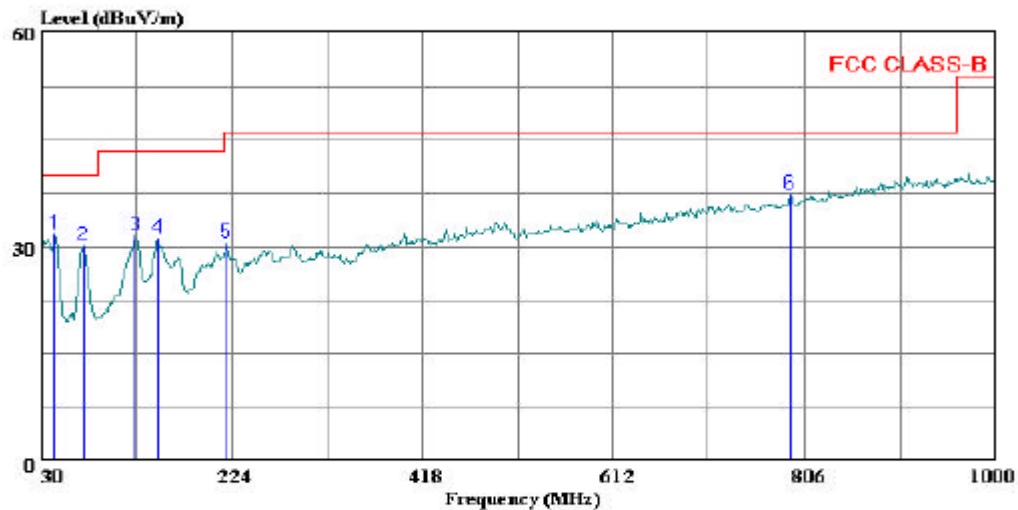
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 4 File#: HTC PA10.EMI Date: 07-12-2005 Time: 07:53:22



(Auxiliary ATC)

Trace: 3

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Chin Pang
Project #: : 05T3562-1
Company: : High Tech Computer
EUT: : PDA Phone (Class II Changed)
Model No. : PA10A
Configuration : EUT/AC Adapter/Earphone
Target of Test : FCC Class B
Mode of Operation: Tx, worst case

VERTICAL DATA

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	43.580	18.83	13.02	31.85	40.00	-8.15	Peak
2	72.680	20.84	9.23	30.07	40.00	-9.93	Peak
3	126.030	16.27	15.25	31.52	43.50	-11.98	Peak
4	148.340	16.84	14.33	31.16	43.50	-12.34	Peak
5	218.180	18.01	12.51	30.52	46.00	-15.48	Peak
6	790.480	12.85	24.43	37.28	46.00	-8.72	Peak

7.3. POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

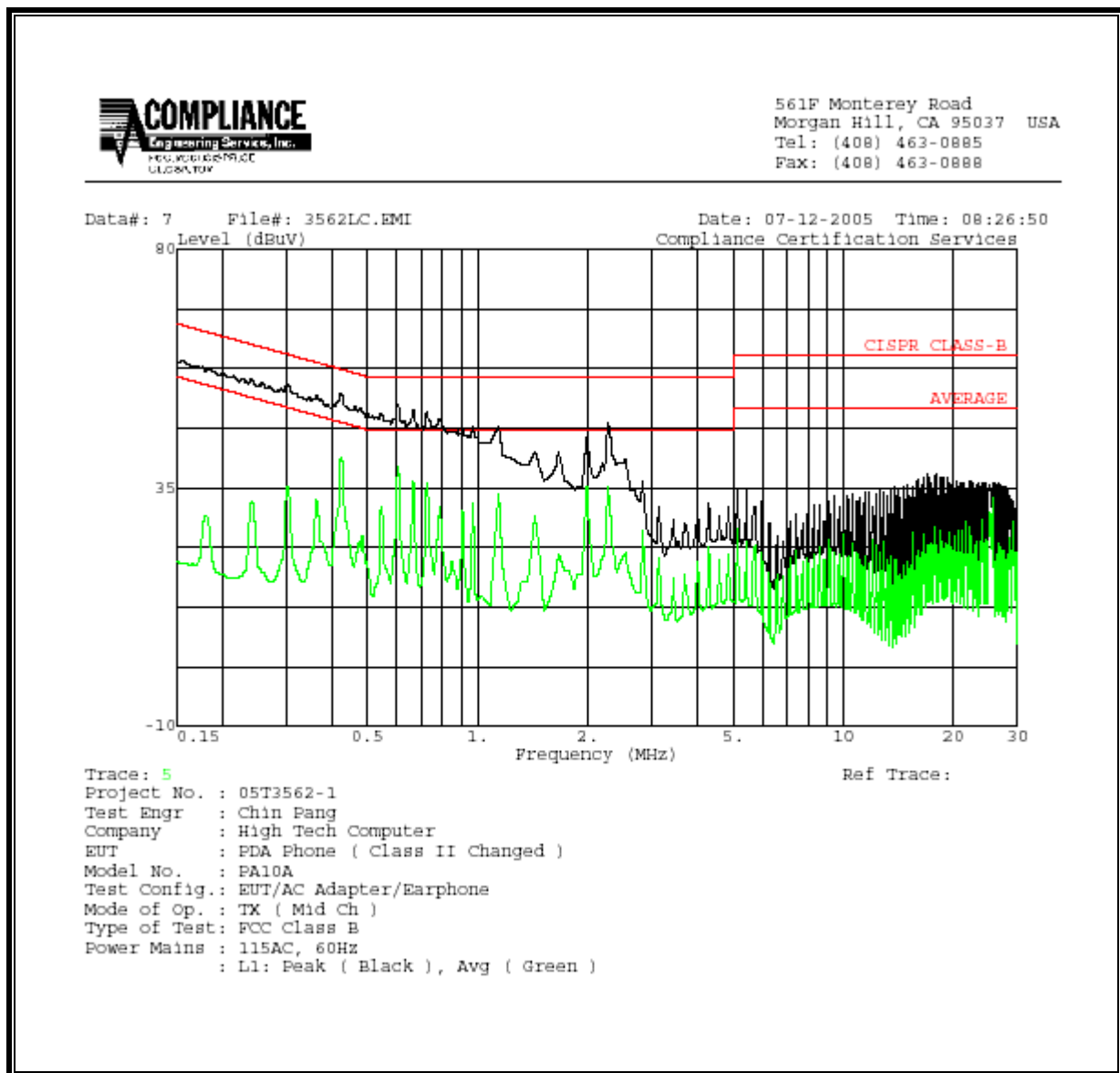
7.3.1. WORST-CASE LINE CONDUCTED EMISSIONS (TX MODE)

EUT AND AC ADAPTER:

6 WORST EMISSIONS:

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.16	58.84	--	29.64	0.00	65.62	55.62	-6.78	-25.98	L1
0.42	52.84	--	40.76	0.00	57.43	47.43	-4.59	-6.67	L1
2.27	47.38	--	35.11	0.00	56.00	46.00	-8.62	-10.89	L1
0.16	47.33	--	13.99	0.00	65.36	55.36	-18.03	-41.37	L2
0.51	40.64	--	16.24	0.00	56.00	46.00	-15.36	-29.76	L2
2.19	32.52	--	18.20	0.00	56.00	46.00	-23.48	-27.80	L2
6 Worst Data									

LINE 1 RESULT



LINE 2 RESULT

