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September 6, 2006

Blanca Piedra
Plantronics
345 Encinal Street
Santa Cruz, CA 95061-0635

Subject: FCC Emissions Report, CA12CD

Dear Mrs. Piedra:

A report has been created detailing the results of the FCC electromagnetic emissions testing performed on the CA12CD. Please find this report enclosed.

Per Federal Communication Commission regulations, the signature of an official of the company responsible for marketing the CA12CD is required, for this report, to be acceptable for determining compliance. We recommend filing this report in a safe place for future reference.

Once an official has signed page 3 of this report, you may begin shipping the CA12CD provided any additional necessary certifications have also been completed. Each unit must be manufactured with any modifications described in the report, the proper FCC label should be attached and the appropriate FCC statement should be included in the operator's manual.

If you have any questions, please don't hesitate to call us at 408-245-7800.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Chu", written in a cursive style.

Conrad Chu
Manager, EMC Engineering

CC/dmg
Enclosure: Emissions Report



Test Certificate

A sample of the following product received on September 5, 2006 and tested on September 5, 2006 complied with the requirements of FCC Part 15 Subpart B and ICES-003 for a Class B product given the measurement uncertainties as detailed in Elliott report R65257.

**Plantronics
Model CA12CD**

A handwritten signature in black ink, appearing to read "C. Chu", written over a horizontal line.

Conrad Chu
Manager, EMC Engineering

A handwritten signature in black ink, appearing to read "Blanca Piedra", written over a horizontal line.

Blanca Piedra
Product Assurance Engineer
Plantronics



2016-01

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Elliott Laboratories Inc.
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**Electromagnetic Emissions Test Report
and
Verification of Compliance per
FCC Part 15, Subpart B Specifications for a
Class B Digital Device and ICES-003 Class B
on the
Plantronics
Model: CA12CD**

MANUFACTURER: Plantronics
345 Encinal Street
Santa Cruz, CA 95061-0635

TEST SITE: Elliott Laboratories, Inc.
41039 Boyce Road.
Fremont, CA. 94538-2435

REPORT DATE: September 6, 2006

FINAL TEST DATE: September 5, 2006

AUTHORIZED SIGNATORY:



Conrad Chu
Manager, EMC Engineering



2016-01

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REVISION HISTORY

Revision #	Date	Comments	Modified By
1	September 8, 2006	Initial Release	David Guidotti

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SCOPE

The Federal Communications Commission (FCC) establishes rules and regulations regarding the electromagnetic emissions of all electronic devices. An electromagnetic emissions test has been performed on the Plantronics model CA12CD pursuant to Subpart B of Part 15 of FCC Rules for digital devices. Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in ANSI C63.4-2003 as outlined in Elliott Laboratories test procedures. The test data has been provided as an appendix to this report for reference. Additionally the results are deemed satisfactory evidence of compliance with Industry Canada Interference-Causing Equipment Standard ICES-003 (Issue 4, February 2004)

The digital device above has been tested in a simulated typical installation to demonstrate compliance with the relevant FCC performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the Plantronics model CA12CD and therefore apply only to the tested sample. The sample was selected and prepared by Blanca Piedra of Plantronics.

VALIDATING SIGNATURES

The tested sample of the cable location and Class B digital device submitted to and tested by Elliott Laboratories complied with the requirements of Subpart B of Part 15 of the Federal Communications Commissions Rules as specified in this report.



Conrad Chu
Manager, EMC Engineering
Elliott Laboratories, Inc.

The official of the company responsible for marketing the device tested.



Blanca Piedra
Product Assurance Engineer
Plantronics

OBJECTIVE

The primary objective of the manufacturer is compliance with Subpart B of Part 15 of FCC Rules for the radiated and conducted emissions of digital devices. Since the subject device is intended for operation in any environment including residential areas, equipment verification is required.

Equipment verification is a procedure where the manufacturer or a contracted laboratory makes measurements and takes necessary steps to ensure that the equipment complies with the appropriate technical standards. Submittal of a sample unit or test data to the FCC is not required unless specifically requested by the Commission. Once equipment verification has been obtained, a label indicating compliance must be attached to all identical units subsequently manufactured. Specific cautionary information must also be included in the operator's manual. These FCC labeling requirements are included as an appendix to this report.

Maintenance of FCC compliance is the responsibility of the manufacturer. Any modification of the product that may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing and/or I/O cable changes, etc.).

EMISSION TEST RESULTS

The following emissions tests were performed on the Plantronics model CA12CD. The actual test results are contained in an appendix of this report.

LIMITS OF CONDUCTED INTERFERENCE VOLTAGE

The EUT tested complied with the limits detailed in FCC Rules Part 15 Section 15.107(a).

The following measurement was extracted from the data recorded during the conducted emissions scan and represents the highest amplitude emission relative to the specification limit. The actual test data and any correction factors are contained in an appendix of this report.

0.15 - 30MHz, 120V/60Hz

Frequency MHz	Level dBuV	Power Lead	Class B		Detector QP/Ave	Comments
			Limit	Margin		
0.164	10.5	Neutral	55.3	-44.8	Average	

LIMITS OF RADIATED INTERFERENCE FIELD STRENGTH

The EUT tested complied with the limits detailed in FCC Rules Part 15 Section 15.109(g).

The following measurement was extracted from the data recorded during the radiated electric field emissions scan and represents the highest-amplitude emission relative to the specification limit. The actual test data and any correction factors are contained in an appendix of this report.

30 – 1000 MHz

Frequency MHz	Level dBuV/m	Pol v/h	Class B		Detector Pk/QP/Avg	Azimuth Degrees	Height Meters	Comments
			Limit	Margin				
30.247	26.6	H	40.0	-13.4	QP	315	3.0	

MEASUREMENT UNCERTAINTIES

ISO Guide 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below were calculated using the approach described in CISPR 16-4-2:2003 using a coverage factor of $k=2$, which gives a level of confidence of approximately 95%. The levels were found to be below levels of U_{cispr} and therefore no adjustment of the data for measurement uncertainty is required.

Measurement Type	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions	0.15 to 30	± 2.4
Radiated Emissions	30 to 1000	± 3.6

EQUIPMENT UNDER TEST (EUT) DETAILS**GENERAL**

The Plantronics model CA12CD is a wireless remote adaptor for use in air-traffic-control and public safety applications. It is designed to use the UPCS (Unlicensed Personal Communications Service) band and operate under FCC Part 15 Subpart D. The system is comprised of a remote and associated base unit.

Normally, the base unit would be placed on a tabletop during operation. The remote is handheld or clipped onto the user's belt. A variety of Plantronics "H-" style headsets may be attached to the remote. The base unit was treated as tabletop equipment during testing to simulate the end-user environment. The remote was tested out of the charging well and oriented as best as possible to represent its intended use. A Plantronics model H91A headset was attached to the remote.

The electrical rating of the base unit is 120 V, 60 Hz, and it draws a maximum of approximately 250 mA dc when the radio link is active and both batteries are being charged (via an external AC-DC adapter). The remote is battery-powered and the base unit charges the battery when the remote is installed in the charging well. The base also has an auxiliary charging well for a spare battery.

The sample was received on September 5, 2006 and tested on September 5, 2006. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number
Plantronics	CA12CD	Remote	233
Plantronics	CA12CD	Base	253
Plantronics	Part # 45561-02	120 V/60Hz to 9V DC Power Supply	-

OTHER EUT DETAILS

The low channel is 1921.536MHz. The remote links to the frequency of the base. The antenna is integral to both remote and base unit, thereby meeting the requirements of FCC 15.203.

ENCLOSURE

The base unit enclosure is primarily constructed of plastic. It measures approximately 12 cm wide by 12 cm deep by 5.8 cm high.

The remote unit enclosure is primarily constructed of plastic. It measures approximately 5.8 cm wide by 12.4 cm deep by 3.2 cm high (laying on its side).

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with emissions specifications.

SUPPORT EQUIPMENT

The following equipment was used as local support equipment for emissions testing:

Manufacturer	Model	Description	Serial Number
Plantronics	H91A	Head Set	-
Plantronics	N/A	50-Ohm Resistive Load	N/A
Plantronics	N/A	600-Ohm Resistive Load	N/A

No remote support equipment was used during emissions testing.

EUT INTERFACE PORTS

The I/O cabling configuration during emissions testing was as follows:

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Headset Port of Remote	Headset	Audio Cable	Unshielded	1.0
Console Port of Base	Resistive Load Across Sending Output of Base (50 Ohm)	2 Wire	Unshielded	0.5
Console Port of Base	Resistive Load Across Receiving Input of Base (600 Ohm)	2 Wire	Unshielded	0.5
DC Power of Base	AC to DC Power Supply	2 Wire	Unshielded	2.0

EUT OPERATION

During emissions testing the EUT was in RF-link enabled mode. The LED on the remote was blinking green and was on the table.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on September 5, 2006 at the Elliott Laboratories Anechoic Chamber 4 located at 41039 Boyce Road Fremont, California. The test site contains separate areas for radiated and conducted emissions testing. Pursuant to section 2.948 of the Rules, construction, calibration, and equipment data has been filed with the Commission.

The FCC recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent FCC requirements.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions tests are performed in conformance with ANSI C63.4-2003. Measurements are made with the EUT connected to the public power network through nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a non-anechoic shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an Open Area Test Site or anechoic chamber. The test site is maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4 guidelines.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 7 GHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs that control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty micro-Henry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250-uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low-pass and high-pass filters on the EUT and measurement ports, respectively.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high-amplitude transient events.

ANTENNAS

A biconilog antenna is used to cover the range from 30 MHz to 1000 MHz. Narrowband tuned dipole antennas are used over the entire 30 to 1000 MHz range for precision measurements of field strength. Above 1000 MHz, a horn antenna is used. The antenna calibration factors are included in site factors that are programmed into the test receivers.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor drive to vary the antenna height.

ANSI C63.4 specifies that the test height above ground for table-mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material up to 12 mm thick if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An appendix of this report contains the list of test equipment used and calibration information.

TEST PROCEDURES**EUT AND CABLE PLACEMENT**

The FCC requires that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4, and the worst-case orientation is used for final measurements.

CONDUCTED EMISSIONS

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.

RADIATED EMISSIONS

Radiated emissions measurements are performed in two phases as well. A preliminary scan of emissions is conducted in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed from 30 MHz up to the frequency required by the regulation specified on page 1. One or more of these is with the antenna polarized vertically while the one or more of these is with the antenna polarized horizontally. During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied and cable positions are varied to determine the highest emission relative to the limit.

A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth that results in the highest emission is then maintained while varying the antenna height from one to four meters. The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain. Emissions that have values close to the specification limit may also be measured with a tuned dipole antenna to determine compliance.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted and radiated emissions given below are taken from the first edition of CISPR Pub. 22 (1997), "Limits and Methods of Measurements of Radio Interference Characteristics of Information Technology Equipment." Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The limits are based on the use of an average or quasi-peak detector as indicated.

CONDUCTED EMISSIONS SPECIFICATION LIMITS,

Frequency Range (MHz)	Average Limit (dBuV)	Quasi Peak Limit (dBuV)
0.150 to 0.500	Linear decrease on logarithmic frequency axis between 56.0 and 46.0	Linear decrease on logarithmic frequency axis between 66.0 and 56.0
0.500 to 5.000	46.0	56.0
5.000 to 30.000	50.0	60.0

RADIATED EMISSIONS SPECIFICATION LIMITS

Frequency Range (MHz)	Class B Limit (uV/m @ 3m)	Class B Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

RADIATED EMISSIONS SPECIFICATION LIMITS

Note: The limits for radiated emissions above 1000 MHz are based on the use of an average detector. In addition, limits based on the use of a peak detector are specified as 20 dB above the limits based on the use of an average detector.

Frequency (MHz)	Average Limit (uV/m @ 3m)	Average Limit (dBuV/m @ 3m)
above 1000	500	54.0

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form). The calculation is as follows:

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements. A distance factor, when used for electric field measurements, is calculated by using the following formula:

$$F_d = 20 * \text{LOG}_{10} (D_m/D_s)$$

where:

$$F_d = \text{Distance Factor in dB}$$

$$D_m = \text{Measurement Distance in meters}$$

$$D_s = \text{Specification Distance in meters}$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

$$R_r = \text{Receiver Reading in dBuV/m}$$

$$F_d = \text{Distance Factor in dB}$$

$$R_c = \text{Corrected Reading in dBuV/m}$$

$$L_s = \text{Specification Limit in dBuV/m}$$

$$M = \text{Margin in dB Relative to Spec}$$

APPENDIX A: Test Equipment Calibration Data

1 Page

Radiated Emissions, 30 - 1,000 MHz, 05-Sep-06

Engineer: Riaz Momand

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	08-Aug-07
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1657	21-Mar-07

Conducted Emissions - AC Power Ports, 05-Sep-06

Engineer: Riaz Momand

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	06-Jul-07
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	08-Aug-07
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	1594	18-Apr-07

APPENDIX B: Test Data Log Sheets

ELECTROMAGNETIC EMISSIONS

TEST LOG SHEETS

AND

MEASUREMENT DATA

T65241 11 Pages



EMC Test Data

Client:	Plantronics	Job Number:	J65170
Model:	CA12CD	Test-Log Number:	T65241
		Project Manager:	Esther Zhu
Contact:	Blanca Piedra / Tim Eells		
Emissions Spec:	FCC	Class:	B
Immunity Spec:	-	Environment:	-

EMC Test Data

For The

Plantronics

Model

CA12CD

Date of Last Test: 9/5/2006



EMC Test Data

Client:	Plantronics	Job Number:	J65170
Model:	CA12CD	Test-Log Number:	T65241
		Project Manager:	Esther Zhu
Contact:	Blanca Piedra / Tim Eells		
Emissions Spec:	FCC	Class:	B
Immunity Spec:	-	Environment:	-

EUT INFORMATION

The following information was collected during the test sessions(s).

General Description

The EUT is a wireless remote adaptor for use in air-traffic-control and public safety applications. It is designed to use the UPCS (Unlicensed Personal Communications Service) band and operate under FCC Part 15 Subpart D. The system is comprised of a remote and associated base unit.

Normally, the base unit would be placed on a tabletop during operation. The remote is handheld or clipped onto the user's belt. A variety of Plantronics "H-" style headsets may be attached to the remote. The base unit was treated as tabletop equipment during testing to simulate the end-user environment. The remote was tested out of the charging well and oriented as best as possible to represent its intended use. A Plantronics model H91A headset was attached to the remote.

The electrical rating of the base unit is 120 V, 60 Hz, and it draws a maximum of approximately 250 mA dc when the radio link is active and both batteries are being charged (via an external AC-DC adapter). The remote is battery-powered and the base unit charges the battery when the remote is installed in the charging well. The base also has an auxiliary charging well for a spare battery.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Plantronics	CA12CD	Remote	233	-
Plantronics	CA12CD	Base	253	-
Plantronics	Part # 45561-02	120 V/60Hz to 9V DC Power Supply	-	-

Other EUT Details

The low channel is 1921.536MHz. The remote links to the frequency of the base.

EUT Antenna (Intentional Radiators Only)

The antenna is integral to both remote and base unit, thereby meeting the requirements of FCC 15.203.



EMC Test Data

Client:	Plantronics	Job Number:	J65170
Model:	CA12CD	Test-Log Number:	T65241
Contact:	Blanca Piedra / Tim Eells	Project Manager:	Esther Zhu
Emissions Spec:	FCC	Class:	B
Immunity Spec:	-	Environment:	-

EUT Enclosure

The base unit enclosure is primarily constructed of plastic. It measures approximately 12 cm wide by 12 cm deep by 5.8 cm high.

The remote unit enclosure is primarily constructed of plastic. It measures approximately 5.8 cm wide by 12.4 cm deep by 3.2 cm high (laying on its side).

Modification History

Mod. #	Test	Date	Modification
1	-	-	None

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.



EMC Test Data

Client:	Plantronics	Job Number:	J65170
Model:	CA12CD	T-Log Number:	T65241
Contact:	Blanca Piedra / Tim Eells	Project Manager:	Esther Zhu
Emissions Spec:	FCC	Class:	B
Immunity Spec:	-	Environment:	-

Test Configuration #1

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Plantronics	H91A	Headset	-	-
Plantronics	N/A	50-Ohm Resistive Load	N/A	N/A
Plantronics	N/A	600-Ohm Resistive Load	N/A	N/A

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
None	-	-	-	-

Cabling and Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Headset Port of Remote	Headset	Audio Cable	Unshielded	1.0
Console Port of Base	Resistive Load Across Sending Output of Base (50 Ohm)	2 Wire	Unshielded	0.5
Console Port of Base	Resistive Load Across Receiving Input of Base (600 Ohm)	2 Wire	Unshielded	0.5
DC Power of Base	AC to DC Power Supply	2 Wire	Unshielded	2.0

EUT Operation During Emissions Tests

During emissions testing the EUT was in RF-link enabled mode. The LED on the remote was blinking green and was on the table.



EMC Test Data

Client: Plantronics	Job Number: J65170
Model: CA12CD	T-Log Number: T65241
	Account Manager: Esther Zhu
Contact: Blanca Piedra / Tim Eells	
Standard: FCC	Class: B

Conducted Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 9/5/2006	Config. Used: 1
Test Engineer: Riaz Momand	Config Change: None
Test Location: Fremont Chamber # 4	EUT Voltage: 120V / 60Hz

General Test Configuration

For tabletop equipment, the EUT was located on a wooden table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80cm from the LISN.

Ambient Conditions:	Temperature:	22 °C
	Rel. Humidity:	44 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power, 120V/60Hz	EN 55022 Class B	Pass	10.5 dBµV @ 0.164 MHz (-44.8 dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

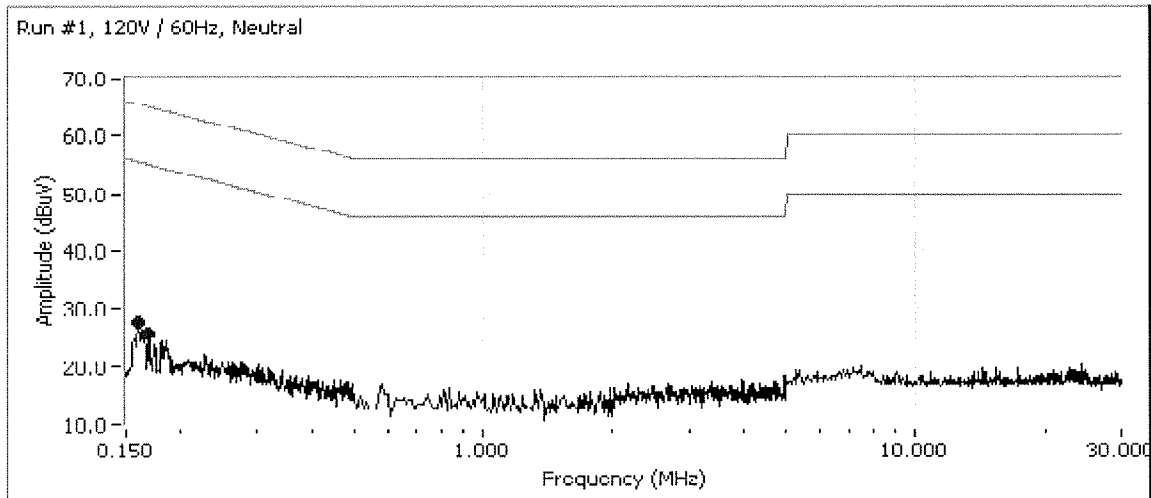
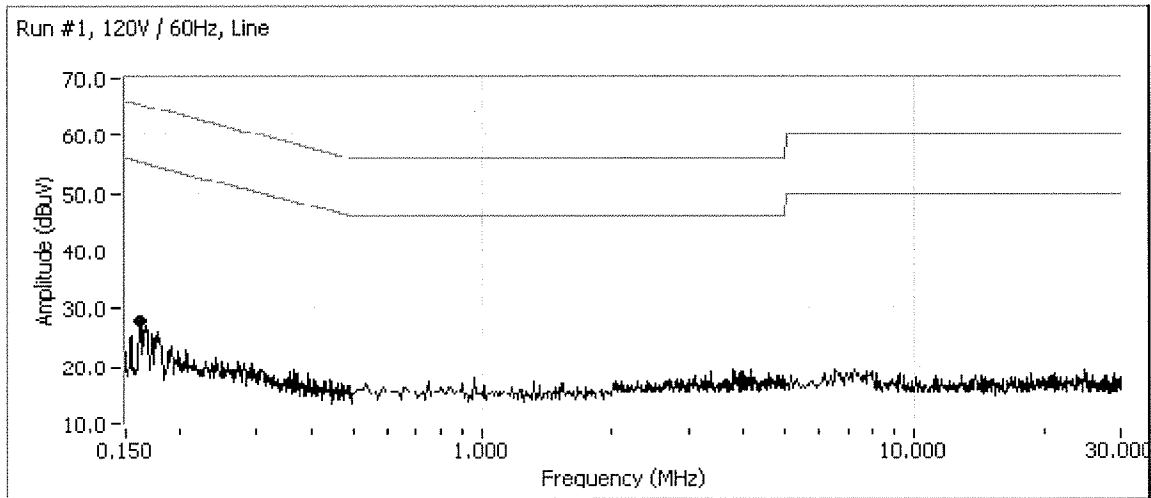
No deviations were made from the requirements of the standard.



EMC Test Data

Client: Plantronics	Job Number: J65170
Model: CA12CD	T-Log Number: T65241
Contact: Blanca Piedra / Tim Eells	Account Manager: Esther Zhu
Standard: FCC	Class: B

Run # 1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz





EMC Test Data

Client: Plantronics	Job Number: J65170
Model: CA12CD	T-Log Number: T65241
Contact: Blanca Piedra / Tim Eells	Account Manager: Esther Zhu
Standard: FCC	Class: B

Run # 1 Continued

Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency MHz	Level dB μ V	AC Line	EN55022 Class B		Detector QP/Ave	Comments
			Limit	Margin		
0.157	27.9	Line	55.4	-27.5	Peak	
0.165	27.7	Neutral	55.5	-27.8	Peak	
0.163	25.5	Neutral	55.0	-29.5	Peak	

Final quasi-peak and average readings

Frequency MHz	Level dB μ V	AC Line	EN55022 Class B		Detector QP/Ave	Comments
			Limit	Margin		
0.164	10.5	Neutral	55.3	-44.8	Average	
0.162	10.3	Neutral	55.4	-45.1	Average	
0.156	10.4	Line	55.7	-45.3	Average	
0.162	18.9	Neutral	65.4	-46.5	QP	
0.164	18.6	Neutral	65.3	-46.7	QP	
0.156	18.6	Line	65.7	-47.1	QP	



EMC Test Data

Client: Plantronics	Job Number: J65170
Model: CA12CD	T-Log Number: T65241
Contact: Blanca Piedra / Tim Eells	Account Manager: Esther Zhu
Standard: FCC	Class: B

Radiated Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 9/5/2006	Config. Used: 1
Test Engineer: Riaz Momand	Config Change: None
Test Location: Fremont Chamber # 4	EUT Voltage: 120V / 60Hz

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing.

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, **preliminary** testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. **Maximized** testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Ambient Conditions:

Temperature:	22 °C
Rel. Humidity:	44 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	RE, 30 - 1000 MHz, Preliminary Scan	FCC Class B	Pass	26.6 dBµV/m @ 30.247 MHz (-13.4 dB)
2	RE, 30 - 1000 MHz, Maximized Emissions	FCC Class B	Pass	26.6 dBµV/m @ 30.247 MHz (-13.4 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

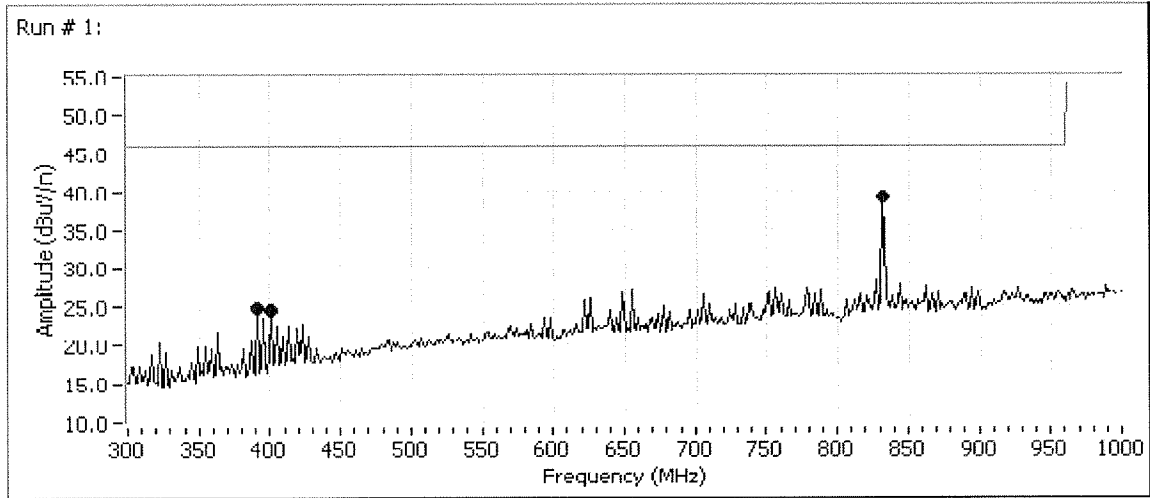
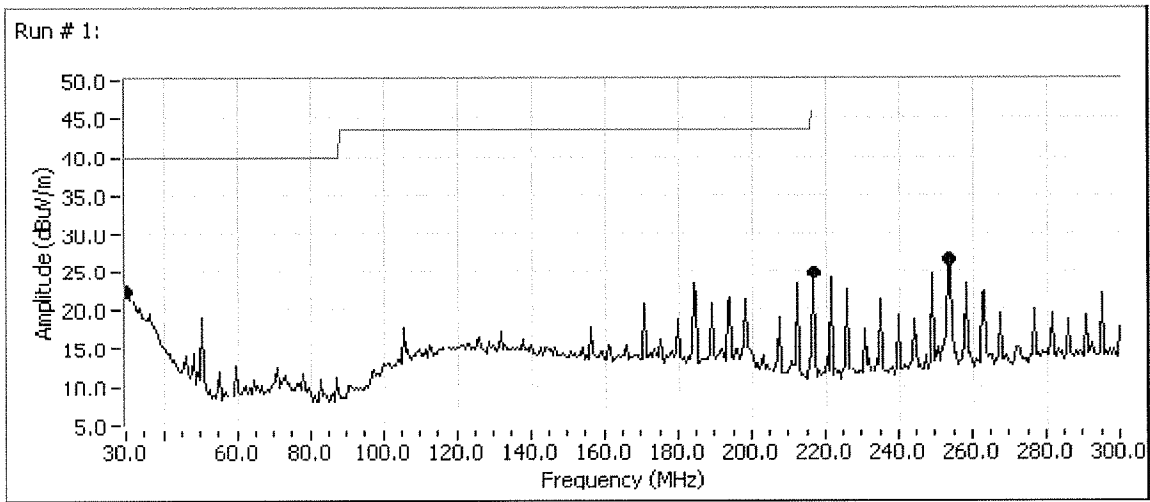
No deviations were made from the requirements of the standard.



EMC Test Data

Client: Plantronics	Job Number: J65170
Model: CA12CD	T-Log Number: T65241
Contact: Blanca Piedra / Tim Eells	Account Manager: Esther Zhu
Standard: FCC	Class: B

Run # 1: Preliminary Radiated Emissions, 30 - 1000 MHz





EMC Test Data

Client:	Plantronics	Job Number:	J65170
Model:	CA12CD	T-Log Number:	T65241
Contact:	Blanca Piedra / Tim Eells	Account Manager:	Esther Zhu
Standard:	FCC	Class:	B

Run # 1 Continued

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
30 - 1000 MHz	3	3	0.0

Preliminary peak readings captured during pre-scan

Frequency MHz	Level dB μ V/m	Pol v/h	FCC Class B		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
216.582	24.8	H	46.0	-21.2	Peak	139	1.0	
831.472	39.2	H	46.0	-6.8	Peak	147	2.0	
253.480	26.6	H	46.0	-19.4	Peak	245	1.5	
391.687	24.9	H	46.0	-21.1	Peak	284	1.0	
400.901	24.6	H	46.0	-21.4	Peak	300	1.0	
30.247	22.5	H	40.0	-17.5	Peak	311	3.0	

Preliminary quasi-peak readings (no manipulation of EUT interface cables)

Frequency MHz	Level dB μ V/m	Pol v/h	FCC Class B		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
30.247	26.6	H	40.0	-13.4	QP	283	3.0	
831.472	29.5	H	46.0	-16.5	QP	211	2.0	
400.901	26.7	H	46.0	-19.3	QP	290	1.0	
391.687	25.8	H	46.0	-20.2	QP	276	1.0	
216.582	25.1	H	46.0	-20.9	QP	124	1.0	
253.480	24.2	H	46.0	-21.8	QP	248	1.5	



EMC Test Data

Client: Plantronics	Job Number: J65170
Model: CA12CD	T-Log Number: T65241
Contact: Blanca Piedra / Tim Eells	Account Manager: Esther Zhu
Standard: FCC	Class: B

Run # 2: Maximized Readings From Run # 1

Maximized quasi-peak readings (includes manipulation of EUT interface cables)

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
30 - 1000 MHz			

Frequency MHz	Level dB μ V/m	Pol v/h	FCC Class B		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
30.247	26.6	H	40.0	-13.4	QP	315	3.0	
831.472	30.3	H	46.0	-15.7	QP	220	2.0	
216.582	27.5	H	46.0	-18.5	QP	124	1.0	
400.901	26.7	H	46.0	-19.3	QP	290	1.0	
391.687	25.8	H	46.0	-20.2	QP	276	1.0	
253.480	24.2	H	46.0	-21.8	QP	248	1.5	

APPENDIX C: Radiated Emissions Test Configuration Photographs

APPENDIX E: Reference Documents

Title 47 CFR, Part 2, Subpart I	"Marketing of Radiofrequency Devices"
Title 47 CFR, Part 2, Subpart J	"Equipment Authorization Procedures"
Title 47 CFR, Part 2, Subpart K	"Importation of Devices Capable of Causing Harmful Interference"
Title 47 CFR, Part 15, Subpart B	"Unintentional Radiators"
ANSI C63.4-2003	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"
FCC/OST Bulletin # 61 (1993)	"The FCC Equipment Authorization Program for Radio Frequency Devices"
FCC/OST Bulletin # 62 (1993)	"Understanding the FCC Regulations Concerning Computing Devices"
Title 47 USC, Sections 501-504	Penalties for Non-compliance with FCC Rules
CISPR Pub. 22 (1997)	"Limits and Methods of Measurements of Radio Interference Characteristics of Information Technology Equipment"

APPENDIX F: FCC Labeling and User Information

The following information has been provided to clarify equipment labeling requirements and the information which must be included in the operator's manual. These requirements are found in the FCC Rules for radio frequency devices, Part 15.

LABEL

Digital Device Label

Each digital device which has been verified as complying with the Class B limits shall have permanently attached in a conspicuous location for the user to observe, a label with the following statement:

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Label Location

The FCC has defined *conspicuous location* as any location readily visible to the user of the device without the use of tools.

Label Attachment

The FCC has defined *permanently attached* as a label that can normally be expected to remain fastened to the equipment during the equipment's expected useful life. A paper gum label will generally not meet this condition.

FCC Labeling and User Information**OPERATOR'S MANUAL**

The following warning or similar statement shall be provided in a conspicuous location in the operator's manual such that the user of the equipment is aware of its interference potential. Additional information about corrective measures may also be provided to the user at the manufacturer's option.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Accessories

Where special accessories, such as shielded cables, are required in order to meet FCC emission limits, appropriate instructions regarding the need to use such accessories must be contained on the first page of text concerned with the installation of the device in the operator's manual.

Modifications

The operator's manual must caution the user that changes or modifications not expressly approved by you, the manufacturer, could void their right to operate the equipment.

Binding

The FCC has indicated that the radio interference statement be bound in the same manner as the operator's manual. Thus, a loose-leaf insert page in a bound or center-spine stapled manual would not meet this condition.

APPENDIX G: Industry Canada Information

For ICES-003 (digital apparatus), the product must be labeled with a notice indicating compliance, e.g.

"This Class B digital apparatus complies with Canadian ICES-003."

If it is not feasible to fix a label to the product, the notice may be included in the user manual.

The label or notice may be in English, French or both, based on the intended market, company marketing policies, and any other applicable provincial or federal regulations.