

*Electromagnetic Emissions Test Report
In Accordance With Industry Canada
Radio Standards Specification 133 issue 2,
FCC Part 24 Subpart E
on the
PalmOne, Inc.
Model: ACE CDMA*

FCC ID: O8FMADECA

UPN: 3959A-MADECA

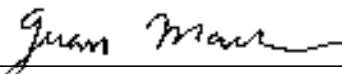
GRANTEE: PalmOne, Inc.
400 N. McCarthy Blvd.
Milpitas, CA 95035-5112

TEST SITE: Elliott Laboratories, Inc.
684 W. Maude Avenue
Sunnyvale, CA 94086

REPORT DATE: August 24, 2004

FINAL TEST DATE: July 23 and August 11, 2004

AUTHORIZED SIGNATORY:


Juan Martinez
Senior EMC Engineer



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FCC CERTIFICATION INFORMATION

The following information is in accordance with FCC Rules, 47CFR Part 2, Subpart J, Section 2.1033(C) & to Industry Canada RSP-100.

2.1033(c)(1) Grantee:

PalmOne, Inc.
400 N. McCarthy Blvd.
Milpitas, CA 95035-5112

2.1033(c)(3) & RSP-100 (7.2(a)) Instructions/Installation Manual

Please refer to Exhibit 7: User Manual, Theory of Operation, and Tune-up Procedure

2.1033(c)(4) & RSP-100 (7.2(b)(iii)) Type of emissions

FCC 24E & RSS-133: CDMA: 1M27F9W

2.1033(c)(5) & RSP-100 (7.2(a)) Frequency Range

FCC 24E & RSS-133: 1851.25 - 1908.75 MHz

2.1033(c)(6) & RSP-100 (7.2(a)) Range of Operation Power

FCC 24E & RSS-133: 0.282 Watts EIRP

2.1033(c)(7) & RSP-100 (7.2(a)) Maximum FCC & IC Allowed Power Level

24.235(b) & RSS-133 (6.2): Mobile/portable stations are limited to 2 watts E.I.R.P. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

2.1033(c)(8) & RSP-100 (7.2(a)) Applied voltage and currents into the final transistor elements

Refer to Exhibit 6. The schematic diagram

2.1033(c)(9) & RSP-100 (7.2(a)) Tune-up Procedure

Please refer to Exhibit 7: User Manual, Theory of Operation, and Tune-up Procedure

2.1033(c)(10) & RSP 100 (7.2(a)) Schematic Diagram of the Transmitter

Refer to Exhibit 6. The schematic diagram

2.1033(c)(10) & RSP-100 (7.2(a)) Means for Frequency Stabilization

Refer to Exhibit 6. The schematic diagram

2.1033(c)(10) & RSP-100 (7.2(a)) Means for Suppression of Spurious radiation

Refer to Exhibit 6. The schematic diagram

2.1033(c)(10) & RSP-100 (7.2(a)) Means for Limiting Modulation

For more information please refer to Exhibit 7: Theory of Operation

2.1033(c)(10) & RSP-100 (7.2(a)) Means for Limiting Power

Refer to Exhibit 6. The schematic diagram

2.1033(c)(11) & RSP-100 (7.2(g)) Photographs or Drawing of the Equipment Identification Plate or Label

Refer to Exhibit 4

2.1033(c)(12) & RSP-100 (7.2(c)) Photographs of equipment

Refer to Exhibit 5

2.1033(c)(13) & RSP-100 (7.2(a)) Equipment Employing Digital Modulation

For more information please refer to Exhibit 7: Theory of Operation

2.1033(c)(14) & RSP-100 (7.2(b)(ii)) Data taken per Section 2.1046 to 2.1057 and RSS-133 issue 2, Rev. 1.

Refer to Exhibit 2

DECLARATIONS OF COMPLIANCE

Equipment Name and Model:

ACE CDMA

Manufacturer:

PalmOne, Inc.
400 N. McCarthy Blvd.
Milpitas, CA 95035-5112

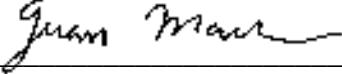
Tested to applicable standards:

RSS-133 Issue 2, Rev. 1 November 6, 1999 (2GHz Personal Communications Services)
FCC Part 24 Subpart E

Measurement Facility Description Filed With Department of Industry:

Departmental Acknowledgement Number: IC4549_5 Dated March 5, 2003

I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above mentioned departmental standards (through the use of TIA/EIA-603 and the specific RSS standards applicable to this device); and that the equipment performed in accordance with the data submitted in this report.

| | |
|-----------|--|
| Signature |  |
| Name | Juan Martinez |
| Title | Senior EMC Engineer |
| Company | Elliott Laboratories Inc. |
| Address | 684 W. Maude Ave Sunnyvale, CA 94086 USA |

Date: August 24, 2004

Maintenance of compliance with the above standards is the responsibility of the manufacturer. Any modification of the product which 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 or I/O cable changes, etc.).

SCOPE

FCC Part 24 Subpart E & IC RSS-133 testing was performed for the equipment mentioned in this report. The equipment was tested in accordance with the procedures specified in Sections 2.1046 to 2.1057 of the FCC Rules & IC RSS-133. TIA-603 was also used as a test procedure guideline to perform some of the required tests.

The intentional radiator above was tested in a simulated typical installation to demonstrate compliance with the relevant FCC & RSS 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.

OBJECTIVE

The primary objective of the manufacturer is compliance with the FCC 24 Subpart E & IC RSS-133. Certification of these devices is required as a prerequisite to marketing as defined in Section 2.1033 & RSP-100.

Certification is a procedure where the manufacturer or a contracted laboratory makes measurements and submits the test data and technical information to FCC & Industry Canada. FCC & Industry Canada issues a grant of equipment authorization and a certification number upon successful completion of their review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units subsequently manufactured.

Maintenance of 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 or I/O cable changes, etc.).

SUMMARY OF TEST RESULTS**Part 24E and RSS-133 Test Summary**

| Part 2 Measurements Required Section | FCC Part 24 Subpart E Section | RSS-133 Section | Test Performed | Measured Value | Test Procedure Used | Result |
|---|-------------------------------|-----------------|---|---|------------------------------|----------|
| Modulation Tested | GSM | GSM | - | - | - | - |
| 2.1047: Modulation characteristics | 24.238 (b) | 5.6 | 99% Bandwidth | 1.27 MHz | D | Complies |
| 2.1046: RF power output | 24.232 (b) | 6.2 | Output Power Test | 24.5 dBm (0.281Watts EIRP) | A | Complies |
| 2.1046: RF power output | 24.232 (b) | 6.2 | Conducted Output Power Test (Antenna Conducted) | 24.0 dBm (0.250 Watts) | B | Complies |
| 2.1051: Spurious emissions at antenna Port | 24.238 (a) & (b) | 6.3 | Emission Limits and/or Unwanted Emission 30MHz – 25GHz (Radiated Method) | All spurious emissions < -13dBm | N | Complies |
| 2.1049: Occupied Bandwidth | 24.238 (a) & (b) | 6.3 | Out of Block Emissions (Radiated Method) | All spurious emissions < -13dBm | I | Complies |
| 2.1053 Field strength of spurious radiation | 24.238 (a) & (b) | 6.3 | Radiated Spurious Emissions 30MHz – 25GHz | - 20 dBm @ 3818.621MHz (-7.0 dB) | N | Complies |
| 2.1055: Frequency stability | 24.235 | 7(a) | Frequency Stability (Frequency Vs. Temperature) | 30 Hz | Data provided by manufacture | Complies |
| 2.1055: Frequency stability | 24.235 | 7(b) | Frequency Stability (Frequency Vs. Voltage) | Battery End point | Data provided by manufacture | Complies |
| 2.1093: Exposure to portable devices | 24.52 | 8 | Exposure of Humans to RF Fields | SAR Report provided | N/A | - |
| - | - | 9 (ii) | Receiver Spurious Emissions (Antenna Conducted) | All spurious emission below 1 GHz < 2 nanowatts and above 1 GHz < 5 nanowatts | P | Complies |

Note 1:

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 are based on a 95% confidence level and were calculated in accordance with NAMAS document NIS 81.

| 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 PalmOne, Inc. model ACE CDMA is a Phone PDA which is designed to provide cellular phone, wireless Internet or network, and personal organizer features. Normally, the EUT would be placed on a table top during operation. The EUT was, therefore, treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120/240 V, 50/60 Hz, .2 Amps.

The sample was received on July 21, 2004 and tested on July 23 and August 11, 2004. The EUT consisted of the following component(s):

| Manufacturer | Model | Description | Serial Number | Proposed FCC ID |
|--------------|----------------|--------------|---------------|-----------------|
| PalmOne | ACE CDMA | PDA phone | N/A | TBD |
| PalmOne | DSC-51F-52P US | Power Supply | 14-0028-02 | N/A |

ENCLOSURE

The EUT enclosure is primarily constructed of plastic. It measures approximately 6 cm wide by 2.3 cm deep by 13 cm high.

MODIFICATIONS

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

SUPPORT EQUIPMENT

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

| Manufacturer | Model | Description | Serial Number | FCC ID |
|-----------------|-----------|------------------------|---------------|--------|
| Rhode & Schwarz | CMU | Communication Test Set | N/A | N/A |
| Cushcraft | S18512RPP | Patch Antenna | N/A | N/A |
| PalmOne | N/A | Dipole | N/A | N/A |

No equipment was used as remote support equipment for emissions testing:

EUT INTERFACE PORTS

| Port | Connected To | Cable(s) | | |
|-------|---------------|-------------|------------------------|-----------|
| | | Description | Shielded or Unshielded | Length(m) |
| DC in | AC/DC adaptor | multiwire | Unshielded | 1.7 |

EUT OPERATION DURING TESTING

EUT was transmitting at full power on the low, middle, and high channel.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on July 23 and August 11, 2004 at the Elliott Laboratories Chamber # 5 located Fremont, 41039 Boyce Road, Fremont CA 94538. Pursuant to Section 2.948 of the FCC Rules, construction, calibration, and equipment data has been filed with the Commission.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing are performed in conformance with Section 2 of FCC Rules. Measurements are made with the EUT connected to a spectrum analyzer through an attenuator to prevent overloading the analyzer.

RADIATED EMISSIONS CONSIDERATIONS

Radiated measurements are performed in an open field environment or Anechoic Chamber. The test site is maintained free of conductive objects within the CISPR 16-1 defined elliptical area.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers are capable of measuring over the frequency range of 9 kHz up to 2000 MHz. 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 particular 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. If average measurements above 1000MHz are performed, the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz is used.

INSTRUMENT CONTROL COMPUTER

A personal computer is utilized to record the receiver measurements of the field strength at the antenna, which is then compared directly with the appropriate specification limit. The receiver is programmed with appropriate factors to convert the received voltage into field strength at the antenna. Results are printed in a graphic and/or tabular format, as appropriate.

The test receiver also provides a visual display of the signal being measured.

PEAK POWER METER

A peak power meter and thermister mount may be used for output power measurements from transmitters as they provide a broadband indication of the power output.

FILTERS/ATTENUATORS

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

ANTENNAS

A biconical antenna is used to cover the range from 30 MHz to 300 MHz and a log periodic antenna is utilized from 300 MHz to 1000 MHz. Narrowband tuned dipole antennas are used over the 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 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.

The requirements of ANSI C63.4 were used for configuration of the equipment turntable. It 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 from 3 to 12 mm 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

General: For Transmitters with detachable antenna, direct measurements for output power, modulation characterization, occupied bandwidth, and frequency stability are performed with the antenna port of the EUT connected to either the power meter, modulation analyzer, or spectrum analyzer via a suitable attenuator and/or filter. The attenuators and/or filters are used to ensure that the transmitter fundamental will not overload the front end of the measurement instrument.

Procedure A – Power Measurement (Radiated Method): The following procedure was used for transmitters that do not use external antennas or with devices with test port where the output power can be measured directly, but Power must still be made with antenna attached.

- 1) Set the EUT to maximum power and to the lowest channel.
- 2) A spectrum analyzer was used to measure the power output. The search antenna was located 3 meter from the EUT.
- 3) The spectrum analyzer resolution and video bandwidth was set to 2 MHz to measure the power output. No amplifier was used since the fundamental will cause the amplifier to saturate.
- 4) The EUT was then rotated for a complete 360 degrees and the search antenna was raised and lowered to maximize the fundamental. Both vertical and horizontal polarization's were performed. All correction factors are applied to the fundamental.
- 5) Substitution is then performed. Substitution method is performed by replacing the EUT with a transmit antenna and signal generator. The substitution antenna can be reference to a half-wave dipole in dBi. The signal generator is then set to a fix output level of either -10 or -20dBm. This is then injected into the substitution antenna. The field strength produced by the substitution antenna is then measured. This measured value is then used to determine the conversion factor to convert the EUT's field strength levels to a dBm value.
- 6) Steps 1 to 5 are repeated for the middle and the highest channel.

Procedure B – Power Measurement (Conducted Method): The following procedure was used for transmitters that do use external antennas.

- 1) Set the EUT to maximum power and to the lowest channel.
- 2) Either a power meter or a spectrum analyzer was used to measure the power output.
- 3) If a spectrum analyzer was used a resolution and video bandwidth 1MHz was used to measure the power output. Corrected for any external attenuation used for the protection of the input of analyzer. In addition, For CDMA or TDMA modulations set spectrum analyzer resolution to 1MHz and video to 30 kHz. Use video averaging with a 100-sample rate.
- 4) If a power meter was used, corrected for any external attenuation used for the protection of the input of the sensor head. Also set the power sensor correction by setting up the frequency range that will be measured.
- 5) Repeat this for the high channel and all modulations that will be used and all output ports used for transmission

Procedure D - Occupied Bandwidth (Conducted Method): Either for analog, digital, or data modulations, occupied bandwidth was performed. The EUT was set to transmit the appropriate modulation at maximum power. The bandwidth was measured using following methods:

- 1) The built-in 99% function of the spectrum analyzer was used.
- 2) If the built-in 99% is not available then the following method is used:

26-dB was subtracted to the maximum peak of the emission. Then the display line function was used, in conjunction with the marker delta function, to measure the emissions bandwidth.
- 3) For the above two methods a resolution and video bandwidth of 10 or 30 kHz was used to measure the emission's bandwidth.

Procedure H - Other Types of Equipment: Either digital or data modulated signals were simulated, by software or external sources, to performed the required tests. The EUT was set to transmit the appropriate digital modulation.

Procedure I – Bandedge: Where Bandedge measurements are specified the following procedure was performed:

- 1) Set the transmitting signal as close as possible to the edge of the frequency band/block as specified in the standard. Power is set to maximum
- 2) Set the spectrum analyzer display line function to –13 dBm.
- 3) Set the spectrum analyzer bandwidth to the minimum 1% of the emission bandwidth. The emission bandwidth is determined by using **procedure D**. For CDMA or TDMA modulations used trace averaging set to 100 sweeps.
- 4) Set the marker function to the FCC or IC specified frequency band/block.
- 5) Set the spectrum analyzer span to show any emission within 2 MHz above or below the frequency band/block. All spurious or intermodulation emission must not exceed the –13 dBm limit.
- 6) Steps 1 to 5 were repeated for all modulations and output ports that will be used for transmission. Also, bandedge is determined for blocks high edge and low edge.

Procedure N - Field Strength Measurement: The EUT was set on the turntable and the search antenna position 3 meters away. The output antenna terminal was terminated with a 50-ohm terminator. The EUT was set at the middle of the frequency band and set at maximum output power.

For the first scan, a pre-liminary measurement is performed. A preliminary scan of emissions is conducted in which all significant EUT frequencies are identified with the system in a nominal configuration. One or more of these is with the antenna polarized vertically while the one or more of these are 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.

For the final measurement, Substitution method is performed on spurious emissions not being 20-dB below the calculated radiated limit. Substitution method is performed by replacing the EUT with a transmit antenna and signal generator. The substitution antenna can be reference to a half-wave dipole in dBi. The signal generator is then set to a fix output level of either –10 or –20dBm. This is then injected into the substitution antenna. The field strength produced by the substitution antenna is then measured. This measured value is then used to determine the conversion factor to convert the EUTs field strength levels to a dBm value.

Procedure P – Receiver Antenna Conducted Emissions: Receiver spurious emission was measured at the antenna terminal, as a port was available.

- 1) Set the receiver was set to the midpoint of the operating band as specified in the standard.
- 2) Set the spectrum analyzer display line function to 2 nanowatts for measurements below 1 GHz and 5 nanowatts for measurements above 1 GHz.
- 3) Set the spectrum analyzer bandwidth to 1 MHz.
- 4) For the spectrum analyzer, the start frequency was set to 30 MHz and the stop frequency set to the 5th harmonic of the receiver LO. All spurious or intermodulation emission must not exceed the specified limit.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS**RADIATED EMISSIONS SPECIFICATION LIMITS**

The limits for radiated emissions are based on the power of the transmitter at the operating frequency. Data is measured in the logarithmic form of decibels relative to one milliwatt (dBm) or one microvolt/meter (dBuV/m.). The field strength of the emissions from the EUT is measured on a test site with a receiver.

Below is a formula example used to calculate the attenuation requirement, relative to the transmitters power output, in dBuV/m. For this example an operating power range of 3 watts is used. The radiated emissions limit for spurious signals outside of the assigned frequency block is $43 + 10\log_{10}$ (mean output power in watts) dB below the measured amplitude at the operating power.

CALCULATIONS – EFFECTIVE RADIATED POWER

$$E(V/m) = \frac{\sqrt{30 * P * G}}{d}$$

E= Field Strength in V/m

P= Power in Watts (for this example we use 3 watts)

G= Gain of antenna in numeric gain (Assume 1.64 for ERP)

d= distance in meters

$$E(V/m) = \frac{\sqrt{30 * 3 \text{ watts} * 1.64 \text{ dB}}}{3 \text{ meters}}$$

$$20 * \log (4.049 \text{ V/m} * 1,000,000) = 132.14 \text{ dBuV/m} @ 3 \text{ meters}$$

FCC Rules request an attenuation of $43 + 10 \log (3)$ or 47.8 dB for all emissions outside the assigned block, the limit for spurious and harmonic emissions is:

$$132.1 \text{ dBuV/m} - 47.8 \text{ dB} = 84.3 \text{ dBuV/m} @ 3 \text{ meter.}$$

Note: Substitution Method is performed for spurious emissions with less than 20dB of margin relative to the calculated field strength limit.

EXHIBIT 1: Test Equipment Calibration Data

1 Page

Radiated Spurious Emissions, 80 - 9,000MHz, 21-Jul-04**Engineer: Chris Byleckie**

| Manufacturer | Description | Model # | Asset # | Cal Due |
|---------------------|--|----------------|----------------|----------------|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 08-Jan-05 |
| Hewlett Packard | EMC Spectrum Analyzer 9KHz-26.5GHz, non programmable | 8563E | 284 | 15-Mar-05 |
| EMCO | Horn Antenna, D. Ridge 1-18GHz | 3115 | 868 | 20-Apr-06 |
| Rohde & Schwarz | EMI Test Receiver, 20Hz-7GHz | ESIB7 | 1538 | 26-May-05 |
| Sunol Sciences | Biconilog, 30-3000MHz | JB3 | 1548 | 29-Mar-05 |
| Com-Power | Pre Amplifier , 30-1000MHz | PA-103 | 1633 | 27-Jan-05 |

Radiated Emissions & Conducted Emissions, 22-Jul-04**Engineer: Elijah Garcia**

| Manufacturer | Description | Model # | Asset # | Cal Due |
|---------------------|------------------------------|----------------|----------------|----------------|
| EMCO | LISN, 10kHz-100MHz | 3825/2 | 1292 | 25-Jun-05 |
| EMCO | LISN, 10kHz-100MHz | 3825/2 | 1293 | 25-Jun-05 |
| Com-Power | Pre Amplifier, 30-1000MHz | PA-103 | 1543 | 26-Nov-04 |
| Rohde & Schwarz | Pulse Limiter | ESH3 Z2 | 1594 | 04-May-05 |
| Rohde & Schwarz | EMI Test Receiver, 20Hz-7GHz | ESIB7 | 1630 | 05-Jan-05 |
| Sunol Sciences | Biconilog, 30-3000MHz | JB3 | 1657 | 24-Feb-05 |

Radiated and Antenna conducted emission, 12-Aug-04**Engineer: Juan Martinez**

| Manufacturer | Description | Model # | Asset # | Cal Due |
|---------------------|--|----------------|----------------|----------------|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 08-Jan-05 |
| Hewlett Packard | EMC Spectrum Analyzer 9KHz-26.5GHz, non programmable | 8563E | 284 | 15-Mar-05 |
| EMCO | Horn Antenna, D. Ridge 1-18GHz | 3115 | 868 | 20-Apr-06 |
| Rohde & Schwarz | EMI Test Receiver, 20Hz-7GHz | ESIB7 | 1538 | 26-May-05 |
| Sunol Sciences | Biconilog, 30-3000MHz | JB3 | 1548 | 29-Mar-05 |
| Sunol Sciences | Biconilog, 30-3000MHz | JB3 | 1549 | 13-Apr-05 |
| Rohde & Schwarz | EMI Test Receiver, 20Hz-7GHz | ESIB7 | 1630 | 05-Jan-05 |

Substitution Method, 12-Aug-04**Engineer: Juan Martinez**

| Manufacturer | Description | Model # | Asset # | Cal Due |
|----------------------|--|------------------------|----------------|----------------|
| Elliott Laboratories | Tunable Dipole Antenna | (White) (410-1000 MHz) | 323 | 16-Mar-05 |
| Hewlett Packard | EMC Spectrum Analyzer, 9KHz-26.5GHz | 8593EM | 1141 | 23-Mar-05 |
| Hewlett Packard | Signal Generator (sweep) 0.01 - 26.5 GHz | 8340A | 1244 | N/A |
| Rohde & Schwarz | Power Meter, Single Channel | NRVS | 1290 | 22-Apr-05 |
| Rohde & Schwarz | Peak Power Sensor 100uW - 2 Watts | NRV-Z32 | 1423 | 18-Mar-05 |

EXHIBIT 2: Test Data Log Sheets

ELECTROMAGNETIC EMISSIONS

TEST LOG SHEETS

AND

MEASUREMENT DATA

T56460 18 Pages
Stability Data 1 Pages



EMC Test Data

| | | | |
|-----------------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| | | Account Manager: | - |
| Contact: | David Waitt | | |
| Emissions Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | - |
| Immunity Spec: | N/A | Environment: | - |

EMC Test Data

For The

Palm

Model

Ace CDMA

Date of Last Test: 8/11/2004



EMC Test Data

| | | | |
|-----------------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| | | Account Manager: | - |
| Contact: | David Waitt | | |
| Emissions Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | - |
| Immunity Spec: | N/A | Environment: | - |

EUT INFORMATION

General Description

The EUT is a Phone PDA which is designed to provide cellular phone, wireless Internet or network, and personal organizer features. Normally, the EUT would be placed on a table top during operation. The EUT was, therefore, treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120/240 V, 50/60 Hz, .2

Equipment Under Test

| Manufacturer | Model | Description | Serial Number | FCC ID |
|--------------|----------------|--------------|---------------|--------|
| PalmOne | ACE CDMA | PDA phone | N/A | TBD |
| PalmOne | DSC-51F-52P US | Power Supply | 14-0028-02 | N/A |

Other EUT Details

EUT Enclosure

The EUT enclosure is primarily constructed of plastic. It measures approximately 6 cm wide by 2.3 cm deep by 13 cm high.

Modification History

| Mod. # | Test | Date | Modification |
|--------|------|------|--------------|
| 1 | | | |
| 2 | | | |
| 3 | | | |

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



EMC Test Data

| | | | |
|-----------------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| | | Account Manager: | - |
| Contact: | David Waitt | | |
| Emissions Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | - |
| Immunity Spec: | N/A | Environment: | - |

Test Configuration #1

Local Support Equipment

| Manufacturer | Model | Description | Serial Number | FCC ID |
|-----------------|-----------|------------------------|---------------|--------|
| Rhode & Schwarz | CMU | Communication Test Set | N/A | N/A |
| Cushcraft | S18512RPP | Patch Antenna | N/A | N/A |
| PalmOne | N/A | Dipole | N/A | N/A |

Remote Support Equipment

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

Interface Cabling and Ports

| Port | Connected To | Cable(s) | | |
|-------|---------------|-------------|------------------------|-----------|
| | | Description | Shielded or Unshielded | Length(m) |
| DC in | AC/DC adaptor | multiwire | Unshielded | 1.7 |

EUT Operation During Emissions

EUT was transmitting at full power on the low, middle, and high channel.



EMC Test Data

| | | | |
|----------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| | | Account Manager: | - |
| Contact: | David Waitt | | |
| Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | N/A |

Radiated & RF Port Emissions, FCC Part 24E & RSS-133

Test Specifics

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: 7/23/2004

Config. Used: 1

Test Engineer: Jmartinez

Config Change: None

Test Location: Fremont Chamber #5

EUT Voltage: 120V/60Hz

General Test Configuration

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

The measurement antenna was located 3 meters from the EUT.

Antenna conducted emission was performed for Standby, Control power output, and mobile emission

Ambient Conditions:

Temperature: 17 °C

Rel. Humidity: 45 %

Summary of Results

| Run # | Test Performed | Limit | Result | Margin |
|-------|--|-----------------------|--------|------------------------|
| 1a-1c | RE, 1900 - 20,000 MHz - Spurious Emissions Transmit Mode | FCC Part 24 & RSS-133 | Pass | -7.0dB @ 3818.621 MHz |
| 1a-1c | Power Output | Part 24 & RSS-133 | Pass | 24.5dBm EIRP |
| 2 | RE, 30 - 25,000 MHz, Antenna Emissions Receiver | RSS-133 (9) | Pass | 794.3 pW @ 13,4800 MHz |

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

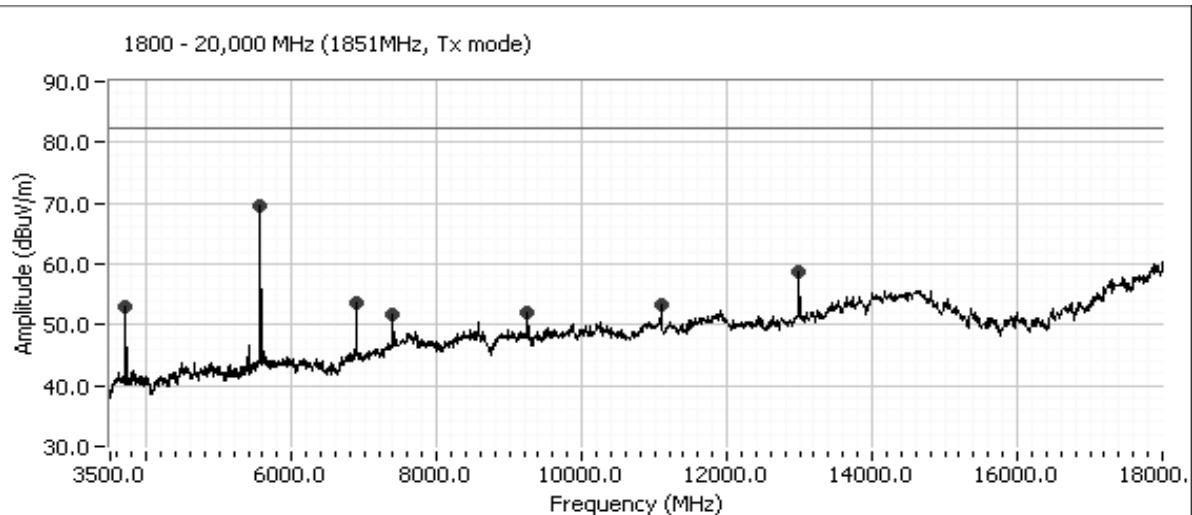
No deviations were made from the requirements of the standard.



EMC Test Data

| | | | |
|----------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| | | Account Manager: | - |
| Contact: | David Waitt | | |
| Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | N/A |

Run #1a: Radiated Spurious Emissions, Transmit Mode, 1900 - 20,000 MHz. EUT @ 1851.23 MHz



| Frequency | Level | Pol | FCC Part 24 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-------------|--------|-----------|---------|--------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5553.758 | 57.2 | H | 82.2 | -25.1 | AVG | 156 | 1.9 | |
| 3702.229 | 53.1 | V | 82.2 | -29.2 | Peak | 72 | 1.0 | |
| 6866.667 | 53.5 | H | 82.2 | -28.7 | Peak | 69 | 1.0 | |
| 7404.402 | 51.8 | V | 82.2 | -30.4 | Peak | 159 | 1.3 | |
| 9256.368 | 52.1 | V | 82.2 | -30.1 | Peak | 170 | 1.3 | |
| 11106.73 | 53.4 | H | 82.2 | -28.8 | Peak | 232 | 1.3 | |
| 12959.97 | 58.7 | V | 82.2 | -23.5 | Peak | 168 | 1.3 | |

Note 1: The limit in the table above is an approximate field strength limit. It has been calculated from the erp or eirp limit detailed in the EN standard using Friis' equation for free space propagation: $E = 30PG/d$. This limit is a conservative limit because it does not consider the presence of the ground plane. The actual signal level, in terms of erp or eirp, is determined from a substitution measurement for all signals with less than 20dB of margin relative to the calculated field strength limit.



EMC Test Data

| Client: | Palm | | | | Job Number: | J55849 | | |
|---|----------------------------|-------------------|-----------------------------|------------------|------------------|-------------------|------------------|--------------|
| Model: | Ace CDMA | | | | T-Log Number: | T56460 | | |
| Contact: | David Waitt | | | | Account Manager: | - | | |
| Spec: | FCC 22 & 24, RSS-129 & 133 | | | | Class: | N/A | | |
| Frequency MHz | Substitution measurements | | Site Factor ⁴ | EUT measurements | | eirp Limit dBm | erp Limit dBm | Margin dB |
| 1851.250 | Pin ¹ | Gain ² | FS ³ | FS ⁵ | eirp (dBm) | erp (dBm) | | |
| | 4.37 | 7.7 | 92.0 | 79.9 | 104.4 | 24.5 | 22.3 | |
| <i>No substitution performed all emissions are 20-dB of the limit</i> | | | | | | | | |

Note 1: Pin is the input power (dBm) to the substitution antenna

Note 2: Gain is the gain (dBi) for the substitution antenna. A dipole has a gain of 2.2dBi.

Note 3: FS is the field strength (dBuV/m) measured from the substitution antenna.

Note 4: Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.

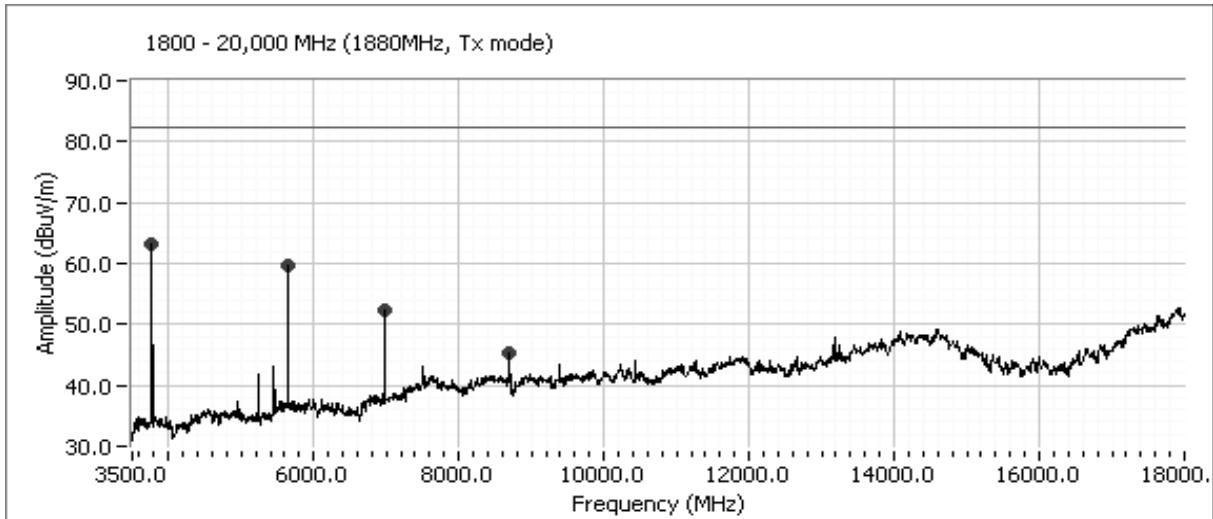
Note 5: EUT field strength as measured during initial run.



EMC Test Data

| | | | |
|----------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| | | Account Manager: | - |
| Contact: | David Waitt | | |
| Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | N/A |

Run #1b: Radiated Spurious Emissions, Transmit Mode, 1900 - 20,000 MHz. EUT @ 1880 MHz



| Frequency | Level | Pol | FCC Part 24 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-------------|--------|-----------|---------|--------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 6968.874 | 51.7 | H | 82.2 | -30.6 | AVG | 57 | 1.0 | |
| 6968.874 | 54.1 | H | 82.2 | -28.1 | PK | 57 | 1.0 | |
| 8711.169 | 43.7 | H | 82.2 | -38.5 | AVG | 120 | 1.3 | |
| 8711.169 | 49.9 | H | 82.2 | -32.3 | PK | 120 | 1.3 | |
| 5639.917 | 53.7 | V | 82.2 | -28.5 | AVG | 175 | 1.0 | |
| 5639.917 | 66.6 | V | 82.2 | -15.6 | PK | 175 | 1.0 | |
| 3760.978 | 54.8 | V | 82.2 | -27.4 | AVG | 189 | 1.0 | |
| 3760.978 | 67.1 | V | 82.2 | -15.1 | PK | 189 | 1.0 | |

Note 1: The limit in the table above is an approximate field strength limit. It has been calculated from the erp or eirp limit detailed in the EN standard using Friis' equation for free space propagation: $E = 30PG/d$. This limit is a conservative limit because it does not consider the presence of the ground plane. The actual signal level, in terms of erp or eirp, is determined from a substitution measurement for all signals with less than 20dB of margin relative to the calculated field strength limit.



EMC Test Data

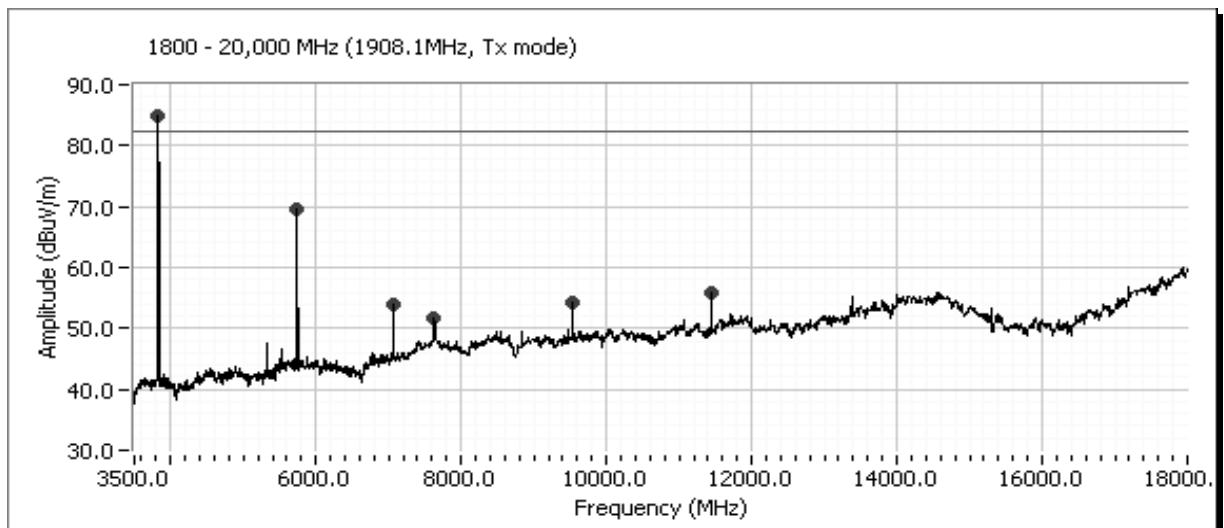
| Client: | Palm | | | | Job Number: | J55849 | | | |
|--|---|-------------------|-----------------------------|------------------|------------------|-----------|-------------------|------------------|--------------|
| Model: | Ace CDMA | | | | T-Log Number: | T56460 | | | |
| | | | | | Account Manager: | - | | | |
| Contact: | David Waitt | | | | | | | | |
| Spec: | FCC 22 & 24, RSS-129 & 133 | | | | Class: | N/A | | | |
| Frequency MHz | Substitution measurements | | Site Factor ⁴ | EUT measurements | | | eirp Limit dBm | erp Limit dBm | Margin dB |
| 1880.000 | Pin ¹ | Gain ² | FS ³ | FS ⁵ | eirp (dBm) | erp (dBm) | | | |
| <i>No substitution performed all emissions are 20-dB of the limit</i> | | | | | | | | | |
| Note 1: | Pin is the input power (dBm) to the substitution antenna | | | | | | | | |
| Note 2: | Gain is the gain (dBi) for the substitution antenna. A dipole has a gain of 2.2dBi. | | | | | | | | |
| Note 3: | FS is the field strength (dBuV/m) measured from the substitution antenna. | | | | | | | | |
| Note 4: | Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm. | | | | | | | | |
| Note 5: | EUT field strength as measured during initial run. | | | | | | | | |



EMC Test Data

| | | | |
|----------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| | | Account Manager: | - |
| Contact: | David Waitt | | |
| Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | N/A |

Run #1c: Radiated Spurious Emissions, Transmit Mode, 1900 - 20,000 MHz. EUT @ 1907.75 MHz



| Frequency | Level | Pol | FCC Part 24 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-------------|--------|-----------|---------|--------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 3818.621 | 73.1 | V | 82.2 | -9.1 | AVG | 18 | 1.0 | |
| 5725.913 | 56.3 | H | 82.2 | -25.9 | AVG | 156 | 1.0 | |
| 7070.902 | 53.8 | H | 82.2 | -28.4 | Peak | 78 | 1.0 | |
| 7625.000 | 51.6 | H | 82.2 | -30.7 | Peak | 221 | 1.6 | |
| 9533.333 | 54.1 | H | 82.2 | -28.1 | Peak | 163 | 1.3 | |
| 11441.67 | 55.9 | H | 82.2 | -26.4 | Peak | 173 | 1.3 | |

| | |
|---------|--|
| Note 1: | The limit in the table above is an approximate field strength limit. It has been calculated from the erp or eirp limit detailed in the EN standard using Friis' equation for free space propagation: $E = 30PG/d$. This limit is a conservative limit because it does not consider the presence of the ground plane. The actual signal level, in terms of erp or eirp, is determined from a substitution measurement for all signals with less than 20dB of margin relative to the calculated field strength limit. |
|---------|--|



EMC Test Data

| Client: | Palm | | | | Job Number: | J55849 | | | |
|------------------|---|-------------------|-----------------|-----------------------------|------------------|------------|-------------------|------------------|--------------|
| Model: | Ace CDMA | | | | T-Log Number: | T56460 | | | |
| | | | | | Account Manager: | - | | | |
| Contact: | David Waitt | | | | | | | | |
| Spec: | FCC 22 & 24, RSS-129 & 133 | | | | Class: | N/A | | | |
| Frequency MHz | Substitution measurements | | | Site Factor ⁴ | EUT measurements | | eirp Limit dBm | erp Limit dBm | Margin dB |
| 1907.750 | Pin ¹ | Gain ² | FS ³ | 82.3 | FS ⁵ | eirp (dBm) | erp (dBm) | | |
| 3818.621 | 3.5 | 7.7 | 93.5 | 106.3 | 24.0 | 21.8 | | | |
| | -7.3 | 9.0 | 94.8 | 93.1 | 73.1 | -20.0 | -22.2 | -13.0 | -7.0 |
| Note 1: | Pin is the input power (dBm) to the substitution antenna | | | | | | | | |
| Note 2: | Gain is the gain (dBi) for the substitution antenna. A dipole has a gain of 2.2dBi. | | | | | | | | |
| Note 3: | FS is the field strength (dBuV/m) measured from the substitution antenna. | | | | | | | | |
| Note 4: | Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm. | | | | | | | | |
| Note 5: | EUT field strength as measured during initial run. | | | | | | | | |

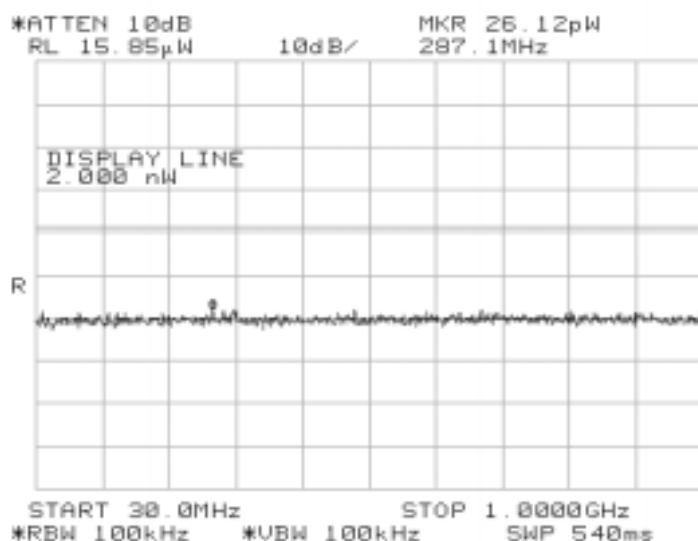


EMC Test Data

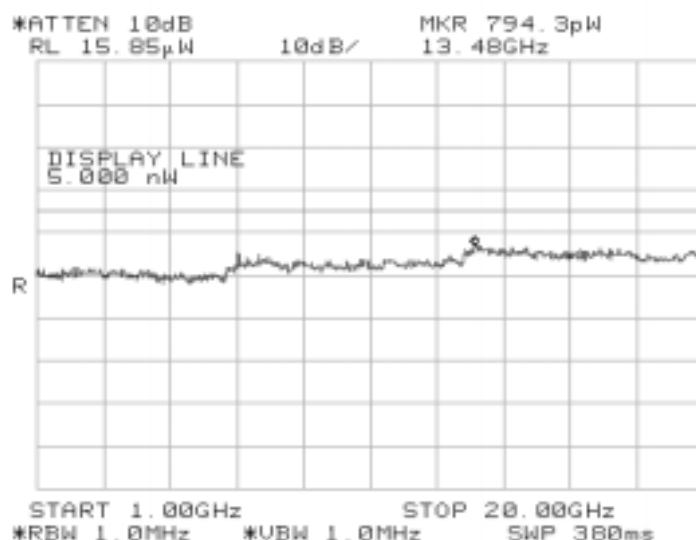
| | | | |
|----------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| | | Account Manager: | - |
| Contact: | David Waitt | | |
| Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | N/A |

Run #2: Antenna Conducted Emissions, 30-25,000 MHz

RSS-133 (9)(ii) Rx



RSS-133 (9)(ii) Rx





EMC Test Data

| | | | |
|----------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| Contact: | David Waitt | Account Manager: | - |
| Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | N/A |

Radio Performance Test - FCC24E & RSS-133 RF Port Measurements

Test Specifics

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: 9/7/2004

Config. Used: 1

Test Engineer: David Waitt

Config Change: None

Test Location: Palm Facility

EUT Voltage: 120V/60Hz

General Test Configuration

The EUT's rf port was connected to the measurement instrument's rf port, via an attenuator or dc-block if necessary.

Ambient Conditions:

Temperature: 19 °C

Rel. Humidity: 51 %

Summary of Results

| Run # | Test Performed | Limit | Result | Value / Margin |
|-------|----------------------------|-------------------|--------|------------------------|
| 1 | Power Output | FCC 24E & RSS-133 | Pass | Refer to run |
| 2a | Bandwidth | FCC 24E & RSS-133 | Pass | Refer to run |
| 2b | Bandedge | FCC 24E & RSS-133 | Pass | All emissions < -13dBm |
| 3a-3b | Antenna Spurious Emissions | FCC 24E & RSS-133 | Pass | All emissions < -13dBm |

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: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| Contact: | David Waitt | Account Manager: | - |
| Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | N/A |

Run #1: Power Measurements - Average

| Freq (MHz) | Pmeas | Duty Cycle | Pout |
|------------|-------|------------|------|
| 1850 | 24.3 | 1 | 24.3 |
| 1880 | 24.1 | 1 | 24.1 |
| 1910 | 24.0 | 1 | 24.0 |

Setting: software power setting of EUT

Pmeas: Measured output power (average)

Duty Cycle: Duty cycle of transmissions (1 = 100%)

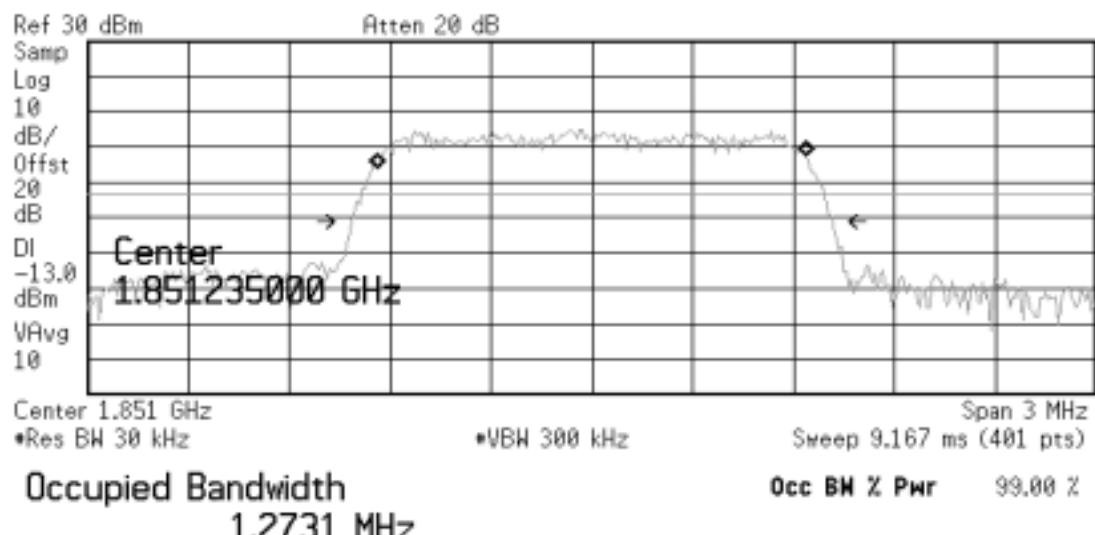


EMC Test Data

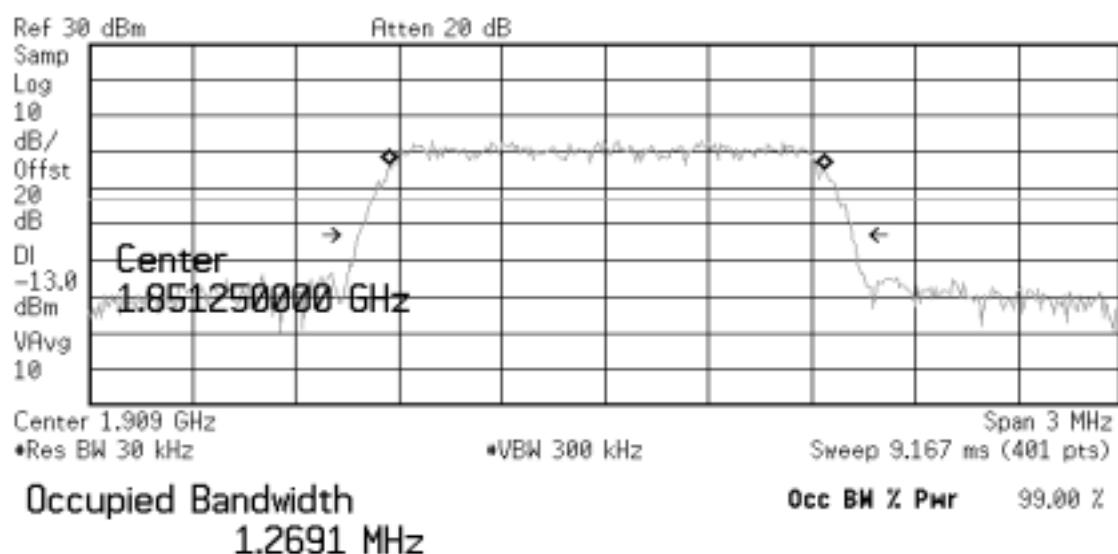
| | | | |
|----------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| Contact: | David Waitt | Account Manager: | - |
| Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | N/A |

Run #2a: Bandwidth

Agilent 14:20:33 Sep 2, 2004



Agilent 15:06:51 Sep 2, 2004



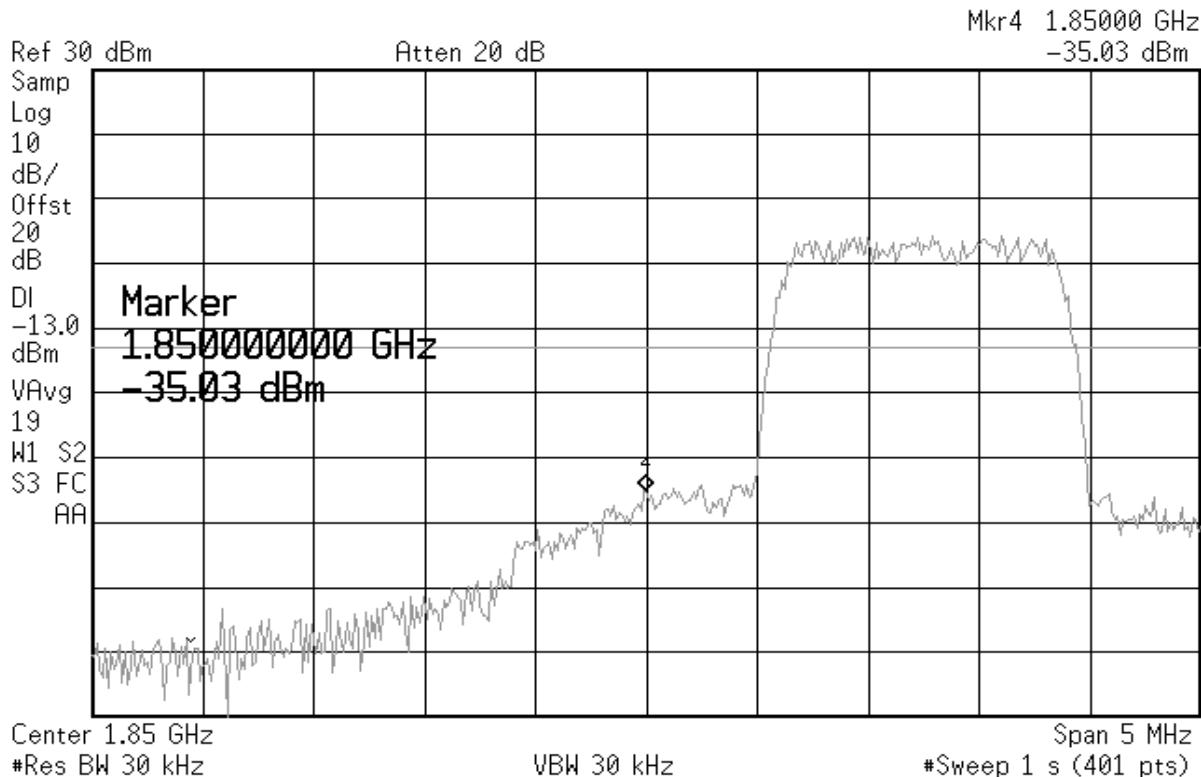


EMC Test Data

| | | | |
|----------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| Contact: | David Waitt | Account Manager: | - |
| Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | N/A |

Run #2b: Bandedge

* Agilent 15:10:24 Sep 2, 2004

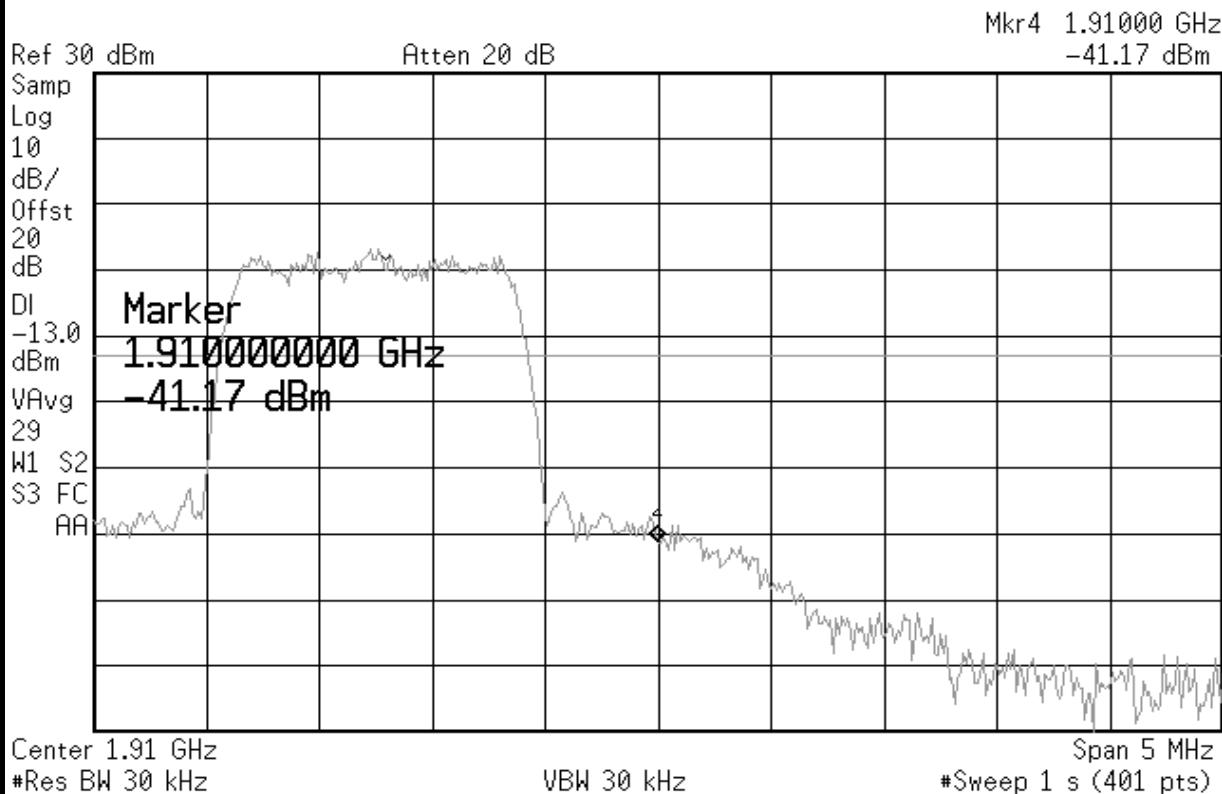




EMC Test Data

| | | | |
|----------|---------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| Contact: | David Waitt | Account Manager: | - |
| Spec: | FCC 22 & 24,RSS-129 & 133 | Class: | N/A |

* Agilent 15:08:36 Sep 2, 2004

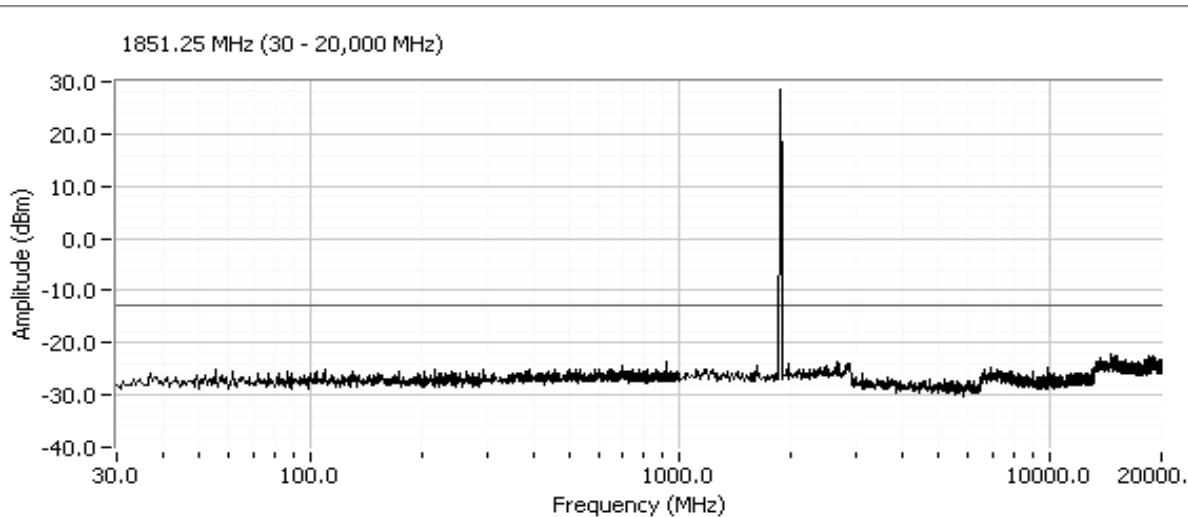




EMC Test Data

| | | | |
|----------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| Contact: | David Waitt | Account Manager: | - |
| Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | N/A |

Run #3a: Antenna Port Conducted Spurious Emissions, Transmit Mode, 30 - 20,000 MHz. EUT on 1850.2 MHz



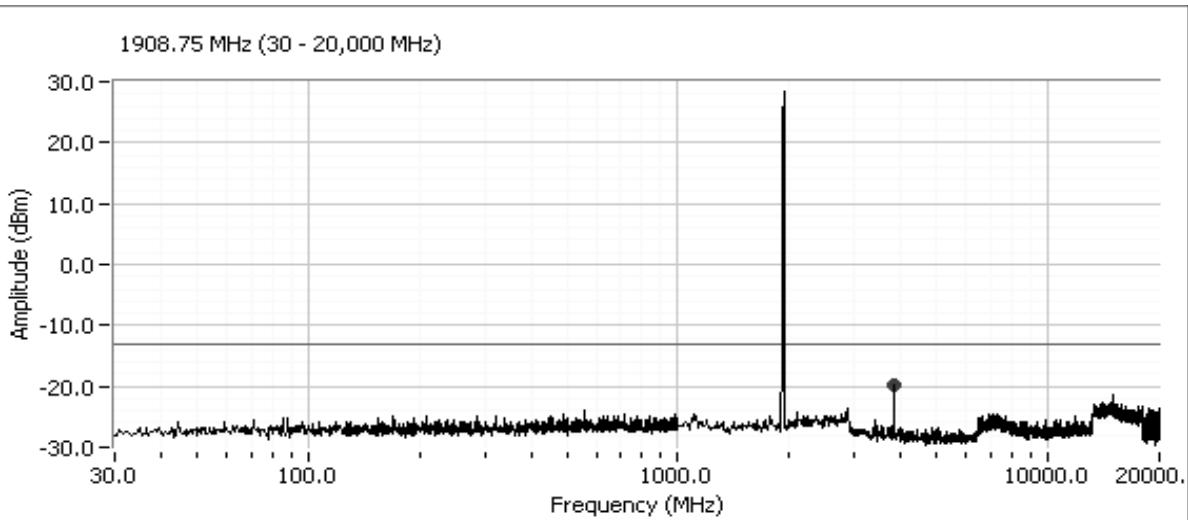
| Frequency MHz | Level dBm | Port | FCC 24E Limit | Detector Margin | Comments |
|-----------------------|-----------|------|---------------|-----------------|----------|
| NO emissions detected | | | | | |



EMC Test Data

| | | | |
|----------|----------------------------|------------------|--------|
| Client: | Palm | Job Number: | J55849 |
| Model: | Ace CDMA | T-Log Number: | T56460 |
| Contact: | David Waitt | Account Manager: | - |
| Spec: | FCC 22 & 24, RSS-129 & 133 | Class: | N/A |

Run #3b: Antenna Port Conducted Spurious Emissions, Transmit Mode, 30 - 20,000 MHz. EUT on 1909.8 MHz



| Frequency MHz | Level dBm | Port | FCC 24E | | Detector | Comments |
|------------------|--------------|---------|---------|--------|----------|----------|
| | | | Limit | Margin | | |
| 3830.000 | -19.7 | RF Port | -13.0 | -6.7 | Peak | |

Treo 650 Freq / Power drift vs. temp.

CDMA 1900MHz

| Temp © | Chan | Freq (MHz) | Tot Freq Error(Hz) | Freq Error (PPM) | Power Drift from 25C (dBm) |
|--------|------|------------|--------------------|------------------|----------------------------|
| -20 | 25 | 1851.5 | 20.0 | 0.0108 | 0.1 |
| -20 | 600 | 1880.0 | 20.0 | 0.0106 | -0.1 |
| -20 | 1175 | 1908.8 | 0.0 | 0.0000 | 0.0 |
| 25 | 25 | 1851.5 | 10.0 | 0.0054 | 0.0 |
| 25 | 600 | 1880.0 | 20.0 | 0.0106 | 0.0 |
| 25 | 1175 | 1908.8 | 10.0 | 0.0052 | 0.0 |
| 55 | 25 | 1851.5 | 30.0 | 0.0162 | 0.2 |
| 55 | 600 | 1880.0 | 20.0 | 0.0106 | 0.1 |
| 55 | 1175 | 1908.8 | 10.0 | 0.0052 | 0.1 |