

**FCC Part 90  
Transmitter Certification**

**Test Report**

**FCC ID: DNY0A5EC2900**

**FCC Rule Part: CFR 47 Part 90**

**ACS Report Number: 06-0470-90**

Manufacturer: EMS Wireless  
Equipment Type: 900 Paging Fiber Optic DAS  
Tradename: EkoCell II  
Model: EC2900

**Manual**

# Installation Guide EkoCell™ II PA/LNA

Model Numbers:

**EC2PCS**  
**EC2CELL**  
**EC2ESMR**  
**EC2900**





2850 Colonnades Court NW  
Norcross, GA 30071  
Phone: 770-582-0555  
Fax: 770-263-0282

A Division of EMS Technologies, Inc.

Every attempt has been made to make this material complete, accurate, and up-to-date. Users are cautioned, however, that EMS Wireless reserves the right to make changes without notice and shall not be responsible for any damages, including consequential, caused by reliance on the material presented, including, but not limited to, typographical, arithmetical, or listing errors.

#### Copyright Information

© EMS Wireless, Norcross, Georgia

#### Safety Considerations

When installing or using this product, observe all safety precautions during handling and operation. Failure to comply with the following general safety precautions and with specific precautions described elsewhere in this manual violates the safety standards of the design, manufacture, and intended use of this product. EMS Wireless assumes no liability for the customer's failure to comply with these precautions.

#### **WARNING**

WARNING calls attention to a procedure or practice, which if ignored, may result in damage to the system or system component. Do not perform any procedure preceded by a WARNING until described conditions are fully understood and met.

#### **WARNINGS, CAUTIONS, AND GENERAL NOTES**

#### **FCC Class A**

Note: This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. 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.

Cet appareillage numérique de la classe A répond à toutes les exigences de l'interférence canadienne causant des règlements d'équipement. L'opération est sujette aux deux conditions suivantes: (1) ce dispositif peut ne pas causer l'interférence nocive, et (2) ce dispositif doit accepter n'importe quelle interférence reçue, y compris l'interférence qui peut causer l'opération peu désirée.



2850 Colonnades Court NW  
Norcross, GA 30071  
Phone: 770-582-0555  
Fax: 770-263-0282

A Division of EMS Technologies, Inc.

The Manufacturer's rated output power of this equipment is for single carrier operation. For situations when multiple carrier signals are present, the rating would have to be reduced by 3.5 dB, especially where the output signal is re-radiated and can cause interference to adjacent band users. This power reduction is to be by means of input power or gain reduction and not by an attenuator at the output of the device.

Installation should be made per ANSI/NFPA 70, the National Electrical Code (NEC), Article 810 specifically for clearances from power and lighting conductors, mounting and grounding.

The screen of the coax cable must be connected to earth (grounded) at the entrance to the building. This should be done in accordance with applicable National Electrical Code (NEC) installation codes. In the U.S., this is required by Section 820.93 of the National Electrical Code, ANSI/NFPA



## **WARNING – For Your Safety:**

**This unit is intended for use in Restricted Access Areas only.**

**Disconnect all power before servicing the unit.**

**Install the product securely on a stable surface. Install the product in a protected location where no one can step or trip over the supply cord, and where the supply cord will not be damaged.**

**Do not expose this device to rain or other moisture.**

**If a system is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient. Consideration should be given to installing the unit in an environment compatible with the maximum recommended ambient temperature of 45° C.**

**Install the unit in a rack so that the amount of airflow required for safe operation is not compromised. The recommended clearance on the front, top, and rear of the unit is at least 1”.**

**Mounting of the unit in a rack should be such that no hazardous condition is achieved due to uneven mechanical loading.**

**Use supplied hardware to mount the unit to the equipment rack, EMS part number SCR160145, Panel Mount Screw or SCR160146 and WSH170179, Screw and Washer.**

**A readily accessible disconnect device that is suitably approved and rated shall be incorporated into the field wiring.**



A Division of EMS Technologies, Inc.

2850 Colonnades Court NW  
Norcross, GA 30071  
Phone: 770-582-0555  
Fax: 770-263-0282

## **If You Need Help**

If you need additional copies of this manual, or have questions about system options, or need help with installation and using of the system, please contact EMS Wireless' Customer Support Department.

EMS Wireless  
Customer Support Department  
2850 Colonnades Court NW, Norcross, GA 30071  
770.582.0555 x5310

## **Service**

Only authorized service personnel will service any part of this product and only in accordance with procedures outlined in this manual. If the product does not meet its warranted specifications, or if a problem is encountered that requires service, notify EMS Wireless' customer support department. Service will be rendered according to the EMS Wireless' warranty and repair policy. The product shall not be returned without contacting EMS Wireless and obtaining a return authorization number from the Customer Support department.

When returning a product for service, include the following information: Owner, Model Number, Serial Number, Return Authorization Number (obtained in advance from EMS Wireless Customer Support Department), service required and/ or a description of the problem encountered.

## **Warranty and Repair Policy**

The EMS Wireless Quality Plan includes product test and inspection operations to verify the quality and reliability of our products.

EMS Wireless uses every reasonable precaution to ensure that every device meets published electrical, optical, and mechanical specifications prior to shipment. Customers are asked to advise their incoming inspection, assembly, and test personnel as to the precautions required in handling and testing ESD sensitive opto-electronic components. Physical damage to the external surfaces voids warranty.

These products are covered by the following warranties:

### **1. General Warranty**



2850 Colonnades Court NW  
Norcross, GA 30071  
Phone: 770-582-0555  
Fax: 770-263-0282

A Division of EMS Technologies, Inc.

EMS Wireless warrants to the original purchaser all standard products sold by EMS Wireless to be free of defects in material and workmanship for the duration of the warranty period of one (1) year from date of shipment from EMS Wireless. During the warranty period, EMS Wireless' obligation, at our option, is limited to repair or replacement of any product that EMS Wireless proves to be defective. This warranty does not apply to any product, which has been subject to alteration, abuse, improper installation or application, accident, electrical or environmental over-tress, negligence in use, storage, transportation or handling.

## 2. Specific Product Warranty Instructions

All EMS Wireless products are manufactured to high quality standards and are warranted against defects in workmanship, materials and construction, and to no further extent. Any claim for repair or replacement of a device found to be defective on incoming inspection by a customer must be made within 30 days of receipt of the shipment, or within 30 days of discovery of a defect within the warranty period.

This warranty is the only warranty made by EMS Wireless and is in lieu of all other warranties, expressed or implied, except as to title, and can be amended only by a written instrument signed by an officer of EMS Wireless. EMS Wireless customer support representatives are not authorized to make commitments on warranty returns.

In the event that it is necessary to return any product against the above warranty, the following procedure shall be followed:

- a. Return authorization shall be received from the EMS Wireless Customer Support prior to returning any device. Advise EMS Wireless Customer Support of the model, serial number, and the discrepancy. The device shall then be forwarded to EMS Wireless, transportation prepaid. Devices returned freight collect or without authorization may not be accepted.
- b. Prior to repair, EMS Wireless Customer Support will advise the customer of EMS Wireless test results and will advise the customer of any charges for repair (usually for customer caused problems or out-of-warranty conditions).

If returned devices meet full specifications and do not require repair, or if non-warranty repairs are not authorized by the customer, the device may be subject to a standard evaluation charge. Customer approval for the repair and any associated costs will be the authority to begin the repair at EMS Wireless. Customer approval is also necessary for any removal of certain parts, such as connectors, which may be necessary for EMS Wireless testing or repair.

- c. Repaired products are warranted for the balance of the original warranty period, or at least 90 days from date of shipment.

## 3. Limitations of Liabilities



2850 Colonnades Court NW  
Norcross, GA 30071  
Phone: 770-582-0555  
Fax: 770-263-0282

A Division of EMS Technologies, Inc.

EMS Wireless' liability on any claim of any kind, including negligence, for any loss or damage arising from, connected with, or resulting from the purchase order, contract, or quotation, or from the performance or breach thereof, or from the design, manufacture, sale, delivery, installation, inspection, operation or use of any equipment covered by or furnished under this contract, shall in no case exceed the purchase price of the device which gives rise to the claim.

EXCEPT AS EXPRESSLY PROVIDED HEREIN, EMS WIRELESS MAKES NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, WITH RESPECT TO ANY GOODS, PARTS AND SERVICES PROVIDED IN CONNECTION WITH THIS AGREEMENT INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. EMS WIRELESS SHALL NOT BE LIABLE FOR ANY OTHER DAMAGE INCLUDING, BUT NOT LIMITED TO, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH FURNISHING OF GOODS, PARTS AND SERVICE HEREUNDER, OR THE PERFORMANCE, USE OF, OR INABILITY TO USE THE GOODS, PARTS AND SERVICE.

EMS Wireless test reports or data indicating mean-time-to-failure, mean-time-between-failure, or other reliability data are design guides and are not intended to imply that individual products or samples of products will achieve the same results. These numbers are to be used as management and engineering tools, and are not necessarily indicative of expected field operations. These numbers assume a mature design, good parts and no degradation of reliability due to manufacturing procedures and processes.

## **Field Wiring instructions**

The voltage input range for the EkoCell™ II PA/LNA is 100-240 VAC, single phase, 50-60 Hz.

Use supplied power cord, EMS Part Number PSC-532F for making connection to a grounded electrical outlet.

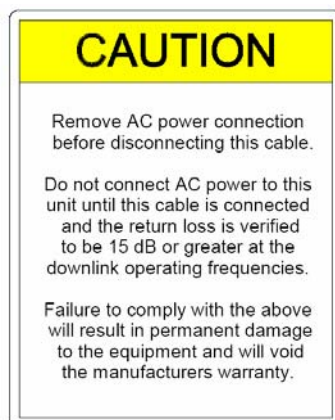
Use only a grounded electrical outlet when connecting the unit to a power source. If you do not know whether the outlet is grounded, consult with a qualified electrician.

Reliable earth grounding of rack-mount equipment should be maintained. Particular attention should be given to supply connection other than direct connections to the branch circuit (e.g., use of power strips).

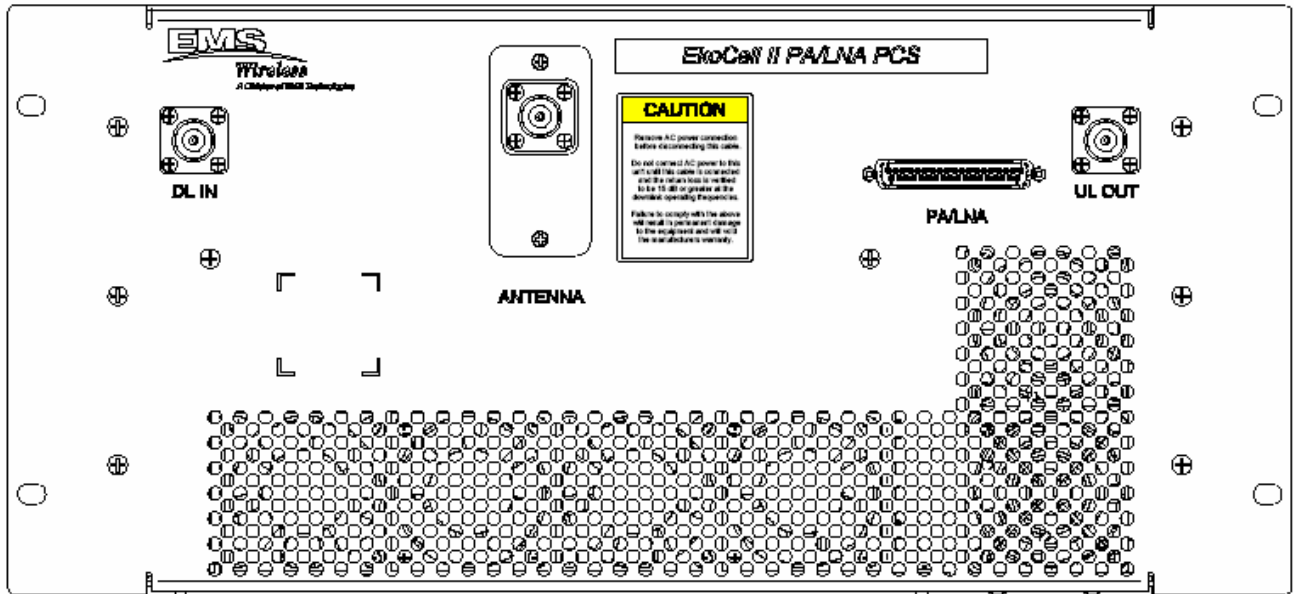
Wiring methods used for the connection of this equipment to the DC Mains supply shall be in accordance with the U.S. National Electrical Code, ANSI/NFPA 70, and the Canadian Electrical Code, Part 1, CSA C22.

**Note: Antenna installation shall be in accordance with NEC Article 810 and CEC Section 54.**

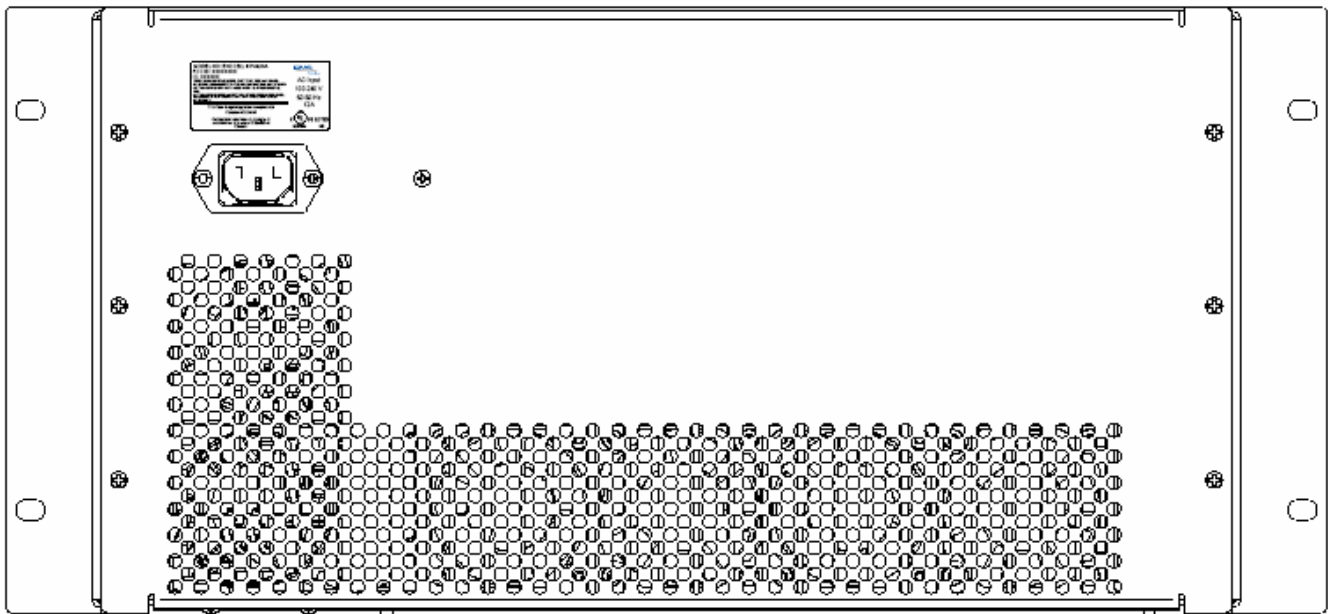
Refer to the following caution label on the unit prior to connecting power to unit:







**Figure 1**  
**Front View**



**Figure 2**  
**Rear View**

# Installation Guide EkoCell™ II REMOTE Model Numbers:

**EC2PCS**  
**EC2CELL**  
**EC2ESMR**  
**EC2900**





2850 Colonnades Court NW  
Norcross, GA 30071  
Phone: 770-582-0555  
Fax: 770-263-0282

A Division of EMS Technologies, Inc.

Every attempt has been made to make this material complete, accurate, and up-to-date. Users are cautioned, however, that EMS Wireless reserves the right to make changes without notice and shall not be responsible for any damages, including consequential, caused by reliance on the material presented, including, but not limited to, typographical, arithmetical, or listing errors.

#### Copyright Information

© EMS Wireless, Norcross, Georgia

#### Safety Considerations

When installing or using this product, observe all safety precautions during handling and operation. Failure to comply with the following general safety precautions and with specific precautions described elsewhere in this manual violates the safety standards of the design, manufacture, and intended use of this product. EMS Wireless assumes no liability for the customer's failure to comply with these precautions.

#### **WARNING**

WARNING calls attention to a procedure or practice, which if ignored, may result in damage to the system or system component. Do not perform any procedure preceded by a WARNING until described conditions are fully understood and met.

#### **WARNINGS, CAUTIONS, AND GENERAL NOTES**

#### **FCC Class A**

Note: This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. 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.

Cet appareillage numérique de la classe A répond à toutes les exigences de l'interférence canadienne causant des règlements d'équipement. L'opération est sujette aux deux conditions suivantes: (1) ce dispositif peut ne pas causer l'interférence nocive, et (2) ce dispositif doit accepter n'importe quelle interférence reçue, y compris l'interférence qui peut causer l'opération peu désirée.

A Division of EMS Technologies, Inc.

The Manufacturer's rated output power of this equipment is for single carrier operation. For situations when multiple carrier signals are present, the rating would have to be reduced by 3.5 dB, especially where the output signal is re-radiated and can cause interference to adjacent band users. This power reduction is to be by means of input power or gain reduction and not by an attenuator at the output of the device.

Installation should be made per ANSI/NFPA 70, the National Electrical Code (NEC), Article 810 specifically for clearances from power and lighting conductors, mounting and grounding.

The screen of the coax cable must be connected to earth (grounded) at the entrance to the building. This should be done in accordance with applicable National Electrical Code (NEC) installation codes. In the U.S., this is required by Section 820.93 of the National Electrical Code, ANSI/NFPA 70.



## **WARNING – For Your Safety:**

**This unit is intended for use in Restricted Access Areas only.**

**Disconnect all power before servicing the unit.**

**Install the product securely on a stable surface. Install the product in a protected location where no one can step or trip over the supply cord, and where the supply cord will not be damaged.**

**Do not expose this device to rain or other moisture.**

**If a system is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient. Consideration should be given to installing the unit in an environment compatible with the maximum recommended ambient temperature of 45° C.**

**Install the unit in a rack so that the amount of airflow required for safe operation is not compromised. The recommended clearance on the front, top, and rear of the unit is at least 1”.**

**Mounting of the unit in a rack should be such that no hazardous condition is achieved due to uneven mechanical loading.**

**Use supplied hardware to mount the unit to the equipment rack, EMS part number SCR160145, Panel Mount Screw or SCR160146 and WSH170179, Screw and Washer.**



### **If You Need Help**

If you need additional copies of this manual, or have questions about system options, or need help with installation and using of the system, please contact EMS Wireless' Customer Support Department.

EMS Wireless  
Customer Support Department  
2850 Colonnades Court NW, Norcross, GA 30071  
770.582.0555 x5310

### **Service**

Only authorized service personnel will service any part of this product and only in accordance with procedures outlined in this manual. If the product does not meet its warranted specifications, or if a problem is encountered that requires service, notify EMS Wireless' customer support department. Service will be rendered according to the EMS Wireless' warranty and repair policy. The product shall not be returned without contacting EMS Wireless and obtaining a return authorization number from the Customer Support department.

When returning a product for service, include the following information: Owner, Model Number, Serial Number, Return Authorization Number (obtained in advance from EMS Wireless Customer Support Department), service required and/ or a description of the problem encountered.

### **Warranty and Repair Policy**

The EMS Wireless Quality Plan includes product test and inspection operations to verify the quality and reliability of our products.



2850 Colonnades Court NW  
Norcross, GA 30071  
Phone: 770-582-0555  
Fax: 770-263-0282

A Division of EMS Technologies, Inc.

EMS Wireless uses every reasonable precaution to ensure that every device meets published electrical, optical, and mechanical specifications prior to shipment. Customers are asked to advise their incoming inspection, assembly, and test personnel as to the precautions required in handling and testing ESD sensitive opto-electronic components. Physical damage to the external surfaces voids warranty.

These products are covered by the following warranties:

#### 1. General Warranty

EMS Wireless warrants to the original purchaser all standard products sold by EMS Wireless to be free of defects in material and workmanship for the duration of the warranty period of one (1) year from date of shipment from EMS Wireless. During the warranty period, EMS Wireless' obligation, at our option, is limited to repair or replacement of any product that EMS Wireless proves to be defective. This warranty does not apply to any product, which has been subject to alteration, abuse, improper installation or application, accident, electrical or environmental over-tress, negligence in use, storage, transportation or handling.

#### 2. Specific Product Warranty Instructions

All EMS Wireless products are manufactured to high quality standards and are warranted against defects in workmanship, materials and construction, and to no further extent. Any claim for repair or replacement of a device found to be defective on incoming inspection by a customer must be made within 30 days of receipt of the shipment, or within 30 days of discovery of a defect within the warranty period.

This warranty is the only warranty made by EMS Wireless and is in lieu of all other warranties, expressed or implied, except as to title, and can be amended only by a written instrument signed by an officer of EMS Wireless. EMS Wireless customer support representatives are not authorized to make commitments on warranty returns.

In the event that it is necessary to return any product against the above warranty, the following procedure shall be followed:

a. Return authorization shall be received from the EMS Wireless Customer Support prior to returning any device. Advise EMS Wireless Customer Support of the model, serial number, and the discrepancy. The device shall then be forwarded to EMS Wireless, transportation prepaid. Devices returned freight collect or without authorization may not be accepted.

b. Prior to repair, EMS Wireless Customer Support will advise the customer of EMS Wireless test results and will advise the customer of any charges for repair (usually for customer caused problems or out-of-warranty conditions).

If returned devices meet full specifications and do not require repair, or if non-warranty repairs are not authorized by the customer, the device may be subject to a standard



2850 Colonnades Court NW  
Norcross, GA 30071  
Phone: 770-582-0555  
Fax: 770-263-0282

A Division of EMS Technologies, Inc.

evaluation charge. Customer approval for the repair and any associated costs will be the authority to begin the repair at EMS Wireless. Customer approval is also necessary for any removal of certain parts, such as connectors, which may be necessary for EMS Wireless testing or repair.

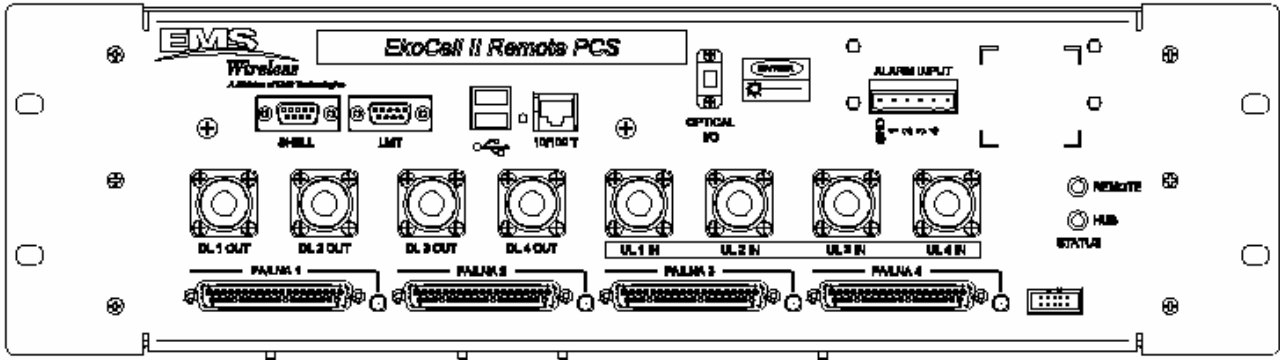
c. Repaired products are warranted for the balance of the original warranty period, or at least 90 days from date of shipment.

### 3. Limitations of Liabilities

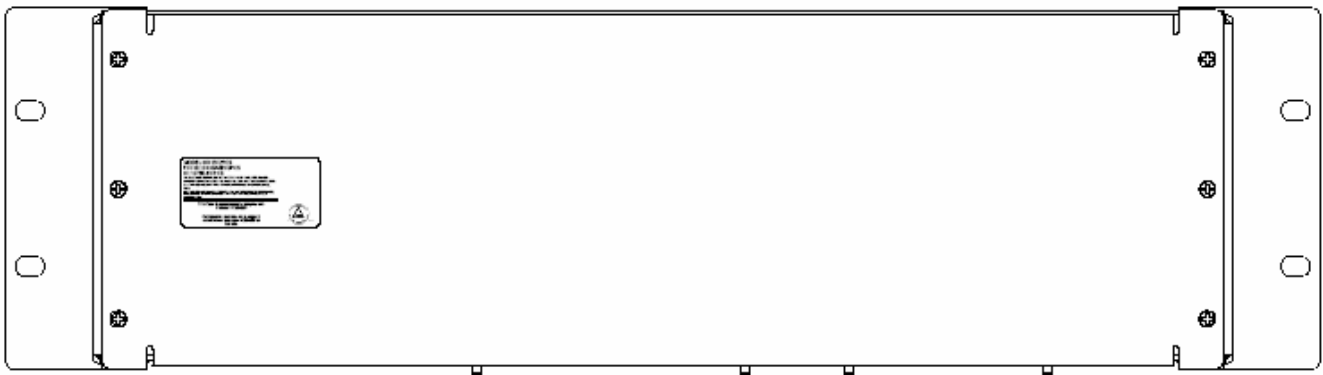
EMS Wireless' liability on any claim of any kind, including negligence, for any loss or damage arising from, connected with, or resulting from the purchase order, contract, or quotation, or from the performance or breach thereof, or from the design, manufacture, sale, delivery, installation, inspection, operation or use of any equipment covered by or furnished under this contract, shall in no case exceed the purchase price of the device which gives rise to the claim.

EXCEPT AS EXPRESSLY PROVIDED HEREIN, EMS WIRELESS MAKES NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, WITH RESPECT TO ANY GOODS, PARTS AND SERVICES PROVIDED IN CONNECTION WITH THIS AGREEMENT INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. EMS WIRELESS SHALL NOT BE LIABLE FOR ANY OTHER DAMAGE INCLUDING, BUT NOT LIMITED TO, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH FURNISHING OF GOODS, PARTS AND SERVICE HEREUNDER, OR THE PERFORMANCE, USE OF, OR INABILITY TO USE THE GOODS, PARTS AND SERVICE.

EMS Wireless test reports or data indicating mean-time-to-failure, mean-time-between-failure, or other reliability data are design guides and are not intended to imply that individual products or samples of products will achieve the same results. These numbers are to be used as management and engineering tools, and are not necessarily indicative of expected field operations. These numbers assume a mature design, good parts and no degradation of reliability due to manufacturing procedures and processes.



**Figure 1**  
**Front View**



**Figure 2**  
**Rear View**