# Picocell 1900 Radio Unit Installation

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## Installation Method – 02-0245

September 3, 1998

Issue Number: 01.02

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# 1.0 General Information

## 1.1 Description

**Purpose**: This method will describe how to unpack and install the PICOCELL 1900 Transceiver).

**Equipment**: The PICOCELL 1900 Transceiver and mounting hardware.

**Application:** This method will cover installation of initials, upgrades and extensions.

**Service Impact**: There is no service impact at this time.

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## 1.2 Sequence

1. This method is to be performed after the building cabling has been installed and is ready to recieve the PICOCELL 1900 Transceivers.
2. PICOCELL 1900 Planning Method 04-0242 has been reviewed.

## 1.3 Reason for Reissue

Changes from Project Team Review Sept 1, 1998:

- Updated section 4.2 Power supply
- Revised figures 5, 8, 9
- Section 5 removed reference
- Global change MBS1900 to Picocell 1900
- Cleared Table 3 contents until mounting hardware is finalized

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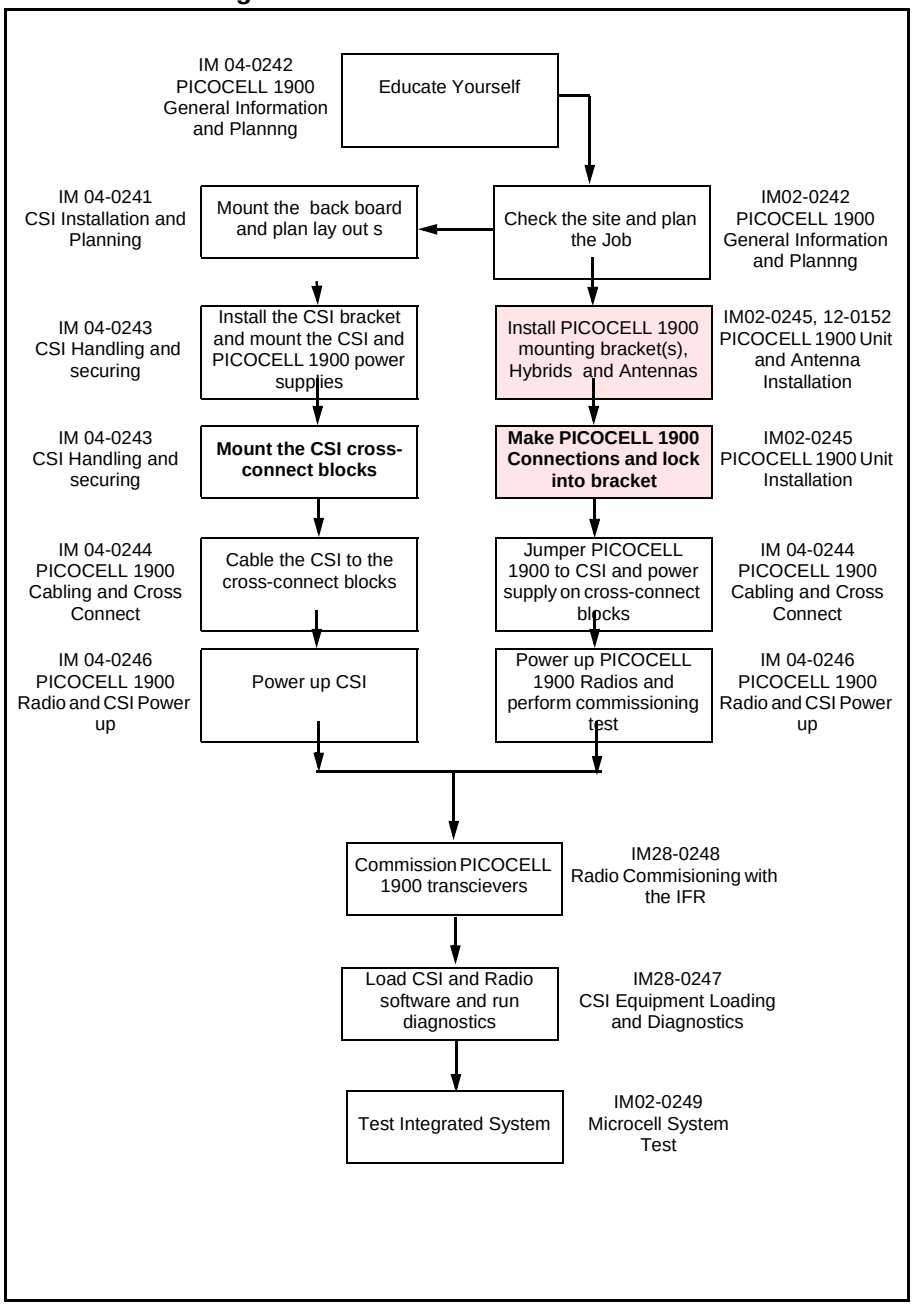
**Figure 1 – You are here diagram**



# 2.0 Material Requirements

## 2.1 Required Documents

Installation Safety Manual (ISM/IM0) - can be requested from the Regional Tool Facility.

## 2.2 Tools

The tools listed in Figure 2 are required to perform this method.

| Table 1 – Tools | | |
|---|---|---|
| **U.S. Tool** | **Canadian Tool** | **Description** |
| Tool Kit | Tool Kit | Installers Tool Kit |

## 2.3 Stock List and Mounting Kits

| Table 2 – Stock List and Mounting Kits | | |
|---|---|---|
| **Quantity** | **CPC/PEC** | **Product Description** |
| 1 | P0880222 | PICOCELL 1900 Mounting bracket |
| 1 | NTMQ7025 | PICOCELL Point of Use Power Supply |
| | NTMQ40AA | Picocell Basestation, 1900MHz A Band |
| | NTMQ50AA | Picocell Basestation, 1900MHz B Band |
| | NTMQ60AA | Picocell Basestation, 1900MHz C Band |
| | NTMQ70AA | Picocell Basestation, 1900MHz 60MHz Band |
| | NTMQ75AA | Picocell Basestation, 1900MHz 60MHz Band |

| Table 3 – Mounting Hardware | | |
|---|---|---|
| **Quantity** | **CPC/PEC** | **Product Description** |
| | | |
| | | |
| | | |
| | | |
| | | |

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**Figure 2 – PICOCELL 1900 front view**

## 2.4 Customer Supplied Equipment

1. Building wiring must be installed between each PICOCELL 1900 transceiver location and the equipment location where the CSI is located. The mounting of each PICOCELL 1900 transceiver is independent of CSI and MDF which may be installed later.

2. Floor plans indicating PICOCELL 1900 mounting locations and locations for CSI and MDF

3. Cabling and pair assignment matching PICOCELL 1900 transceivers to cable pair numbers.

4. Building access authorization, security clearance if required and keys for access to restricted CSI and PICOCELL 1900 equipment locations.

# 3.0 Precautions and Preparations

## 3.1 Precautions

Observe the general safety precautions against personal injury and equipment damage outlined in the ISM/IM0 at all times.

Picocell transcievers may be handled without static protection. Use of a grounded wrist strap is mandatory when handling all other exposed circuit packs or modules.

This method is for indoor installations only.

Picocell 1900 transcievers and antennae are for indoor installations only and mounting of some or all; transcievers, antennas, hybrids and cabling in an outside environment may create a potential fire hazard from lightning. Custom design is required to address outdoor requirements.

Avoid thermal trapped air cavities. In particular, the Picocell cannot be mounted above the ceiling as this is deemed a plenum installation, and different, tighter safety specifications are enforced.

**CAUTION**
Maintain minimum or greater distances from interference sources and from equipment and apparatus which may be affected by RF energy.

## 3.2 Preparations

Prior to starting the operations presented in this method, arrange all materials, tools, and test equipment at the work location so as to minimize fatigue and inconvenience.

1. Has an Installation Planning Checklist per IM-0242 been completed?
2. Are System design and site floor plans available with equipment locations ?
3. Is building wiring installed and accessible?
4. Is all the test equipment necessary to complete the job on site?
5. Is all the PICOCELL transceiver and antenna equipment on site and inventoried?
6. Is the customer supplied equipment (back boards, MDF blocks) on site and installed?
7. Has the loadbuild sent all required switch load tapes to the MTX site?

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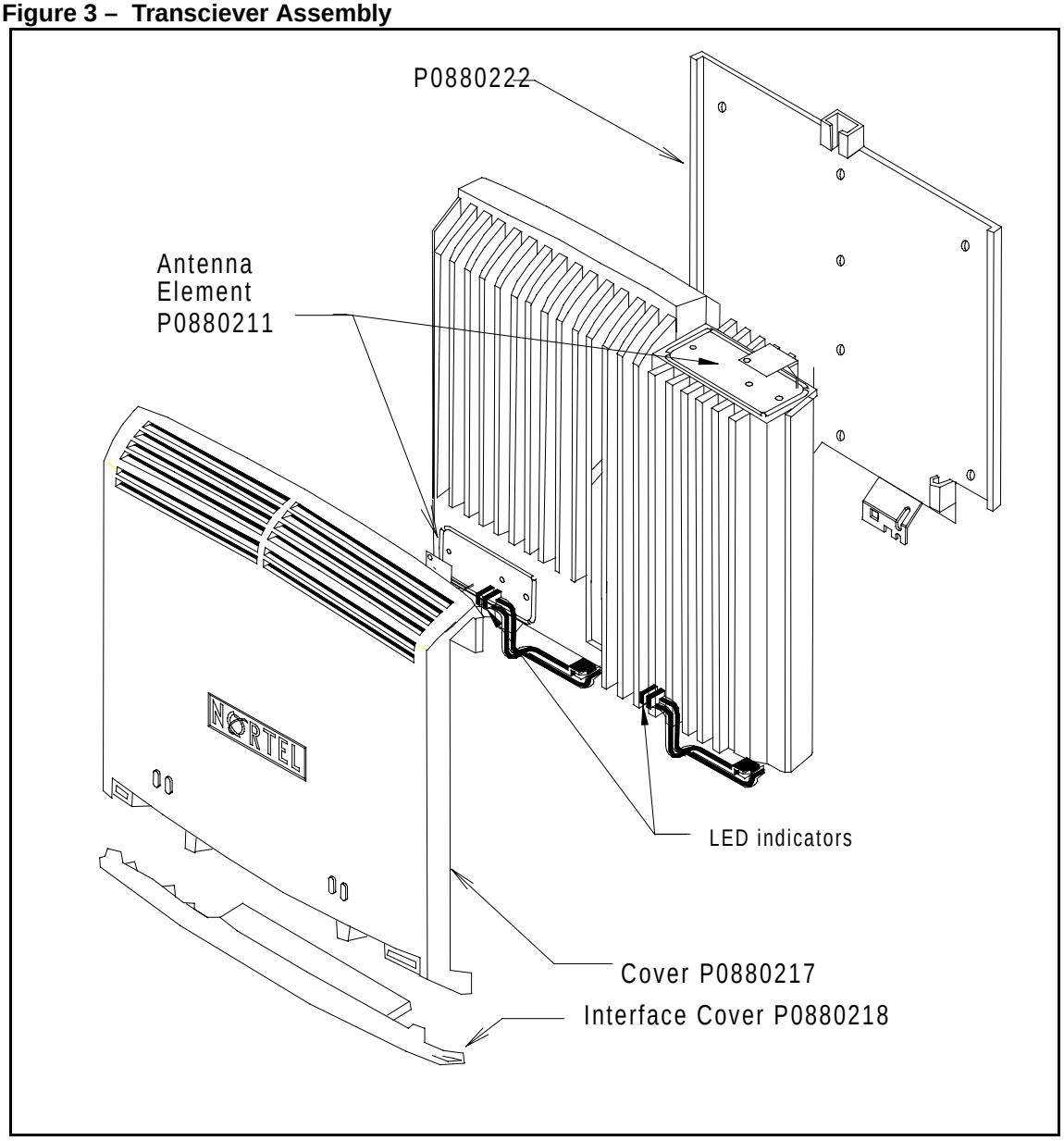
8. Are System T1s facilities ordered (if required) and what is the availability date?

9. Is the antenna system design cabling Interconnect Schematic available?

**Figure 3 – Transciever Assembly**

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# 4.0 Procedure

## 4.1 Overview

Below is a list of procedures required to install the PICOCELL 1900:

Procedure 1 - Unpacking and Inventory transciever Material

Procedure 2 - Wall Mounting and securing the Radio Mounting Bracket

Procedure 3 - Ceiling Mounting and securing the Radio Mounting Bracket

Procedure 4 - Installation of PICOCELL Transceiver onto Wall Mounting Bracket

Procedure 5 - Co-located AC power supply Installation

Procedure 6 - Remote AC power supply Installation

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| **Procedure 1 – Unpacking and Inventory transciever Material** | | |
|---|---|---|
| **Step** | **Action** | **Observation** |
| 1 | Inspect the cartons for any damage. | |
| 2 | Refer to Section 2.3 Product Stock List and Mounting Kits, for a list of parts to be included in the cartons | Table 2, “Stock List and Mounting Kits,” on page 9 |
| 3 | Remove all equipment from their cartons and verify the equipment received is not damaged. After all of the parts are removed from the cartons and inspected, inventory them making sure that all the parts listed in Section 2.3 are on site. | |
| 4 | Refer to the PICOCELL 1900 Installation Planning Method 02-0242 and the System Design Specification to determine how many CSI and PICOCELL 1900 (PICOCELL 1900 Base Station) transcievertranscievers are required and to determine where and how to position the units. | |
| 5 | Also take into consideration the desired location of the Hybrid. Due to the length of the antenna cables, the transceiver(s) and Hybrid(s) will have to reside close together. Refer to the PICOCELL 1900 Installation Planning Method 04-0242 and Antenna installation 12-0152 for spacing requirements and cable length considerations. | |

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| **Procedure 2 – Wall Mounting and securing the Radio Mounting Bracket** | | |
|---|---|---|
| **Step** | **Action** | **Observation** |
| 1 | Locate the wall mounting bracket and the screws provided. Determine the required direction transcieverf the wall mount bracket orientation from the System Design floor plan. Refer also to Appendix B - Orientation | |
| 2 | Locate the 4 mounting screws with the mounting bracket . If external antennas are used, the transcievers and Hybrid(s) will have to reside close together. Reference Method 04-0152 for antenna system installation. | Figure 4 |
| 3 | Square the bracket with the wall and/or ceiling and fasten the bracket with the first screw. | Appendix B |
| 4 | After one top corner has been fastened to the wall, check to make sure the wall mounting bracket is still level before installing the additional wood screws | |
| 5 | Install the remaining wood screws into the wall mounting bracket. | Figure 4 |
| 6 | Position the transciever into the bracket and ensure that the locking retainer is locked and correctly positioned . | |

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**Figure 4 – PICOCELL Transceiver Bottom view**

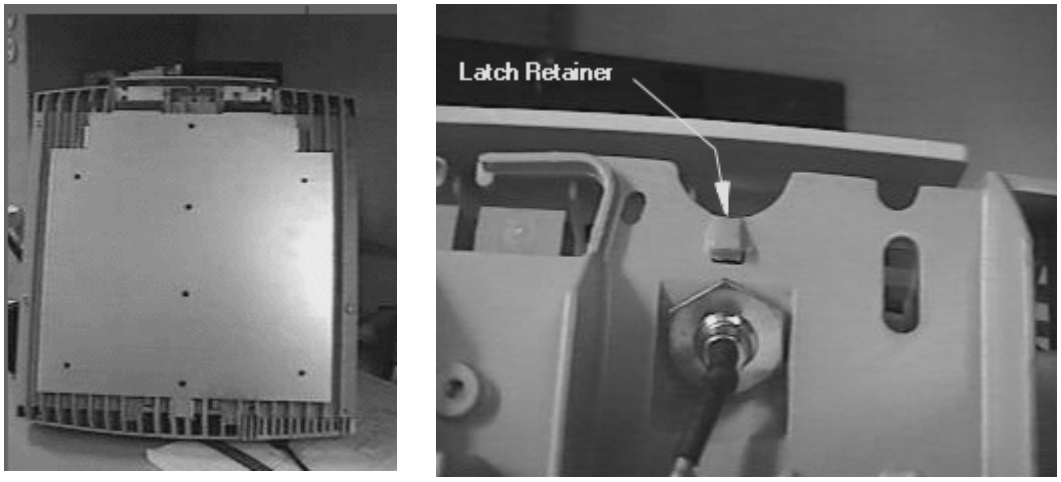
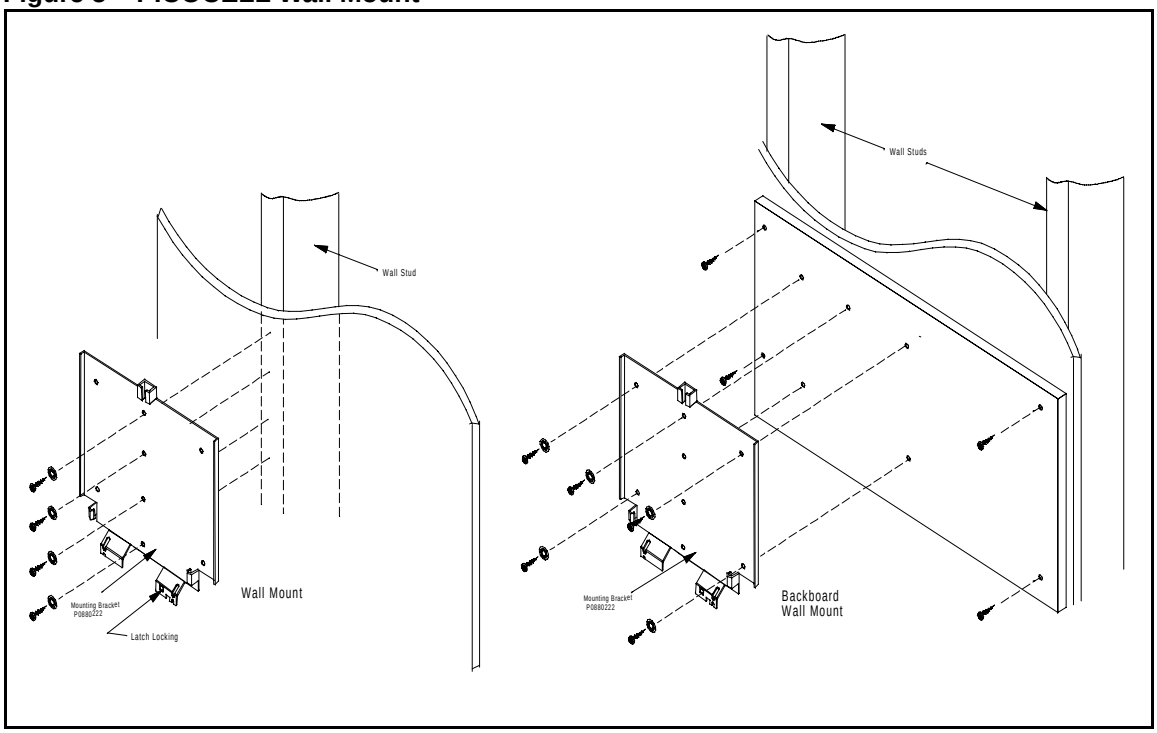



**Figure 5 – PICOCELL Wall Mount**



| **Procedure 3 – Ceiling Mounting and securing the Radio Mounting Bracket** | | |
|---|---|---|
| **Step** | **Action** | **Observation** |
| 1 | Locate the wall mounting bracket and the screws provided. Determine the desired direction of the wall mount bracket orientation. Refer to the system layout document to determine readio orienation. | |
| 2 | Locate the ceiling main support track closest to the desired mounting location and attach the IDS clips as shown in Figure 6 . If the ceiling track is poorly supported use drop wire from each IDS clip to a secure point above the mouning location in main ceiling. Replace the ceiling panel | Figure 6 |
| 3 | Attach the mounting bracket to the ceiling as shown in Figure 7 using spacers between the bracket and the IDS clips. Note that the nuts on the IDS clips must be flusch to permit the transciever to lock into the mounting bracket to | Appendix B |
| 4 | Drill an access hole near the front of the transciever for the facility cable pairs. | |
| 5 | Lock the transciever into the bracket and complete the wired connections. | |

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**Figure 6 – Track Ceiling support IDSClips**

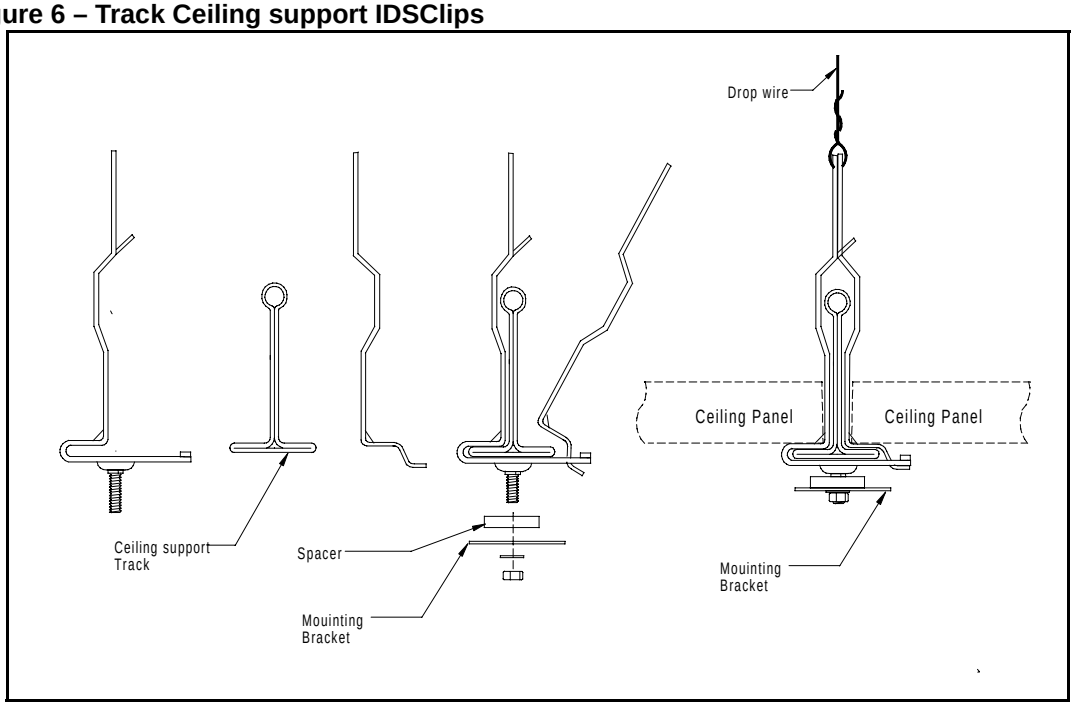
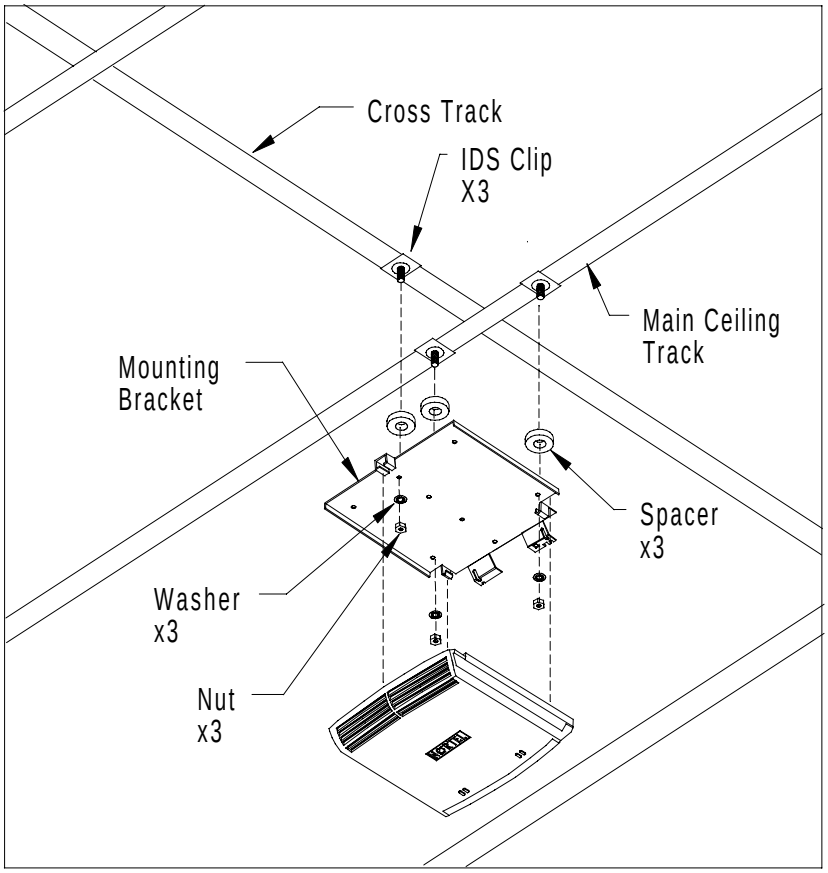



**Figure 7 – PICOCELL Transciever Ceiling mount**



| **Procedure 4 – Installation of PICOCELL Transceiver onto Wall Mounting Bracket** | | |
|---|---|---|
| **Step** | **Action** | **Observation** |
| 1 | Remove the connector access cover and position the transciever onto the mounting bracket and slide the unit so that the radio locks onto the bracket and the retainer catch engages with the latch hole. | See Figure 4 and Figure 8 |
| 2 | At this point PICOCELL 1900 wiring connections can be completed by opening the interface panel cover and making connections per Figure 12. | |
| 3 | PICOCELL 1900 cabling and commissioning can be completed, proceed with Method 12-0152 and 04-0244. | |

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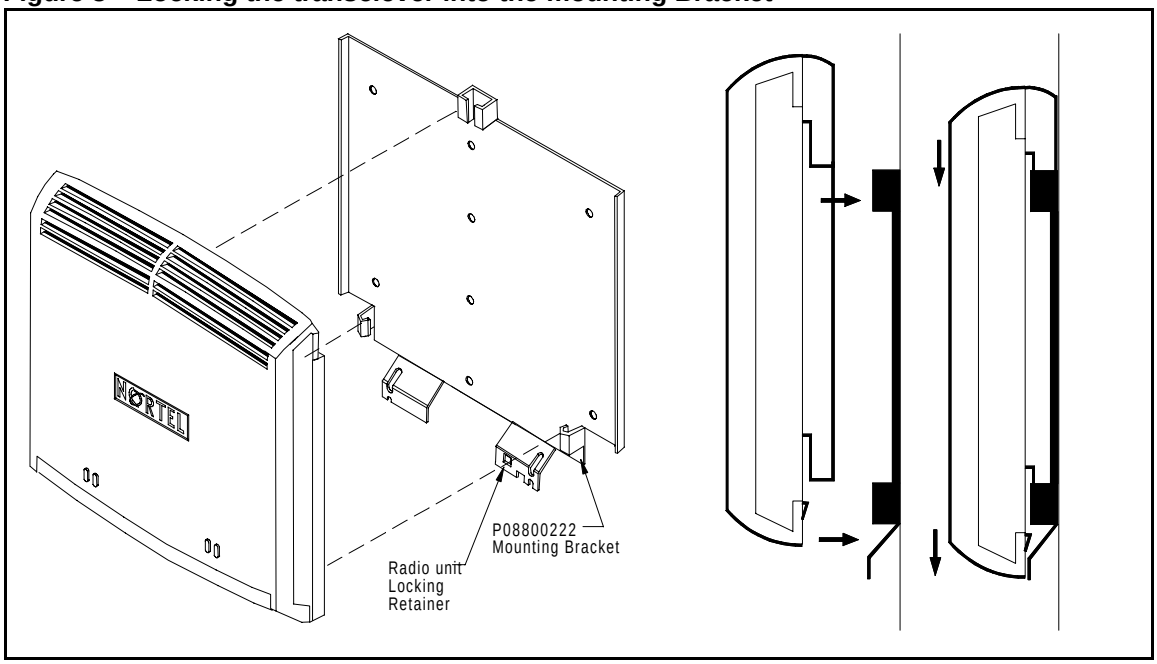
**Figure 8 – Locking the transciever into the mounting Bracket**



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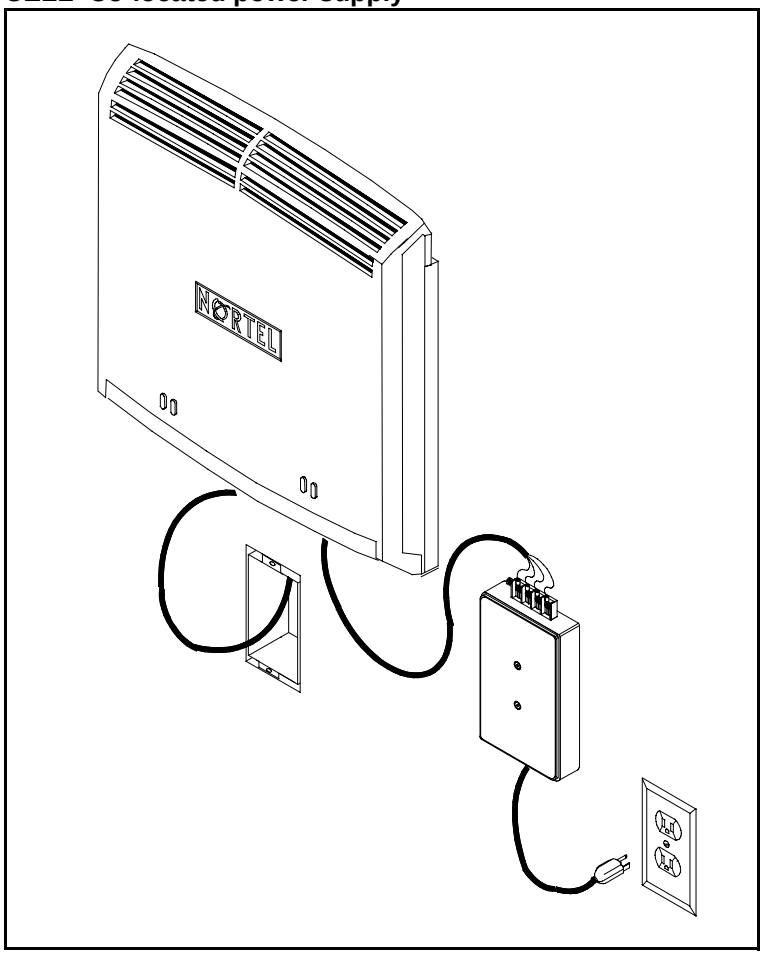
| **Procedure 5 – Co-located AC power supply Installation** | | |
|---|---|---|
| **Step** | **Action** | **Observation** |
| | Note that an AC outlet must be provided by a qualified electrician. | |
| 1 | Locate the AC-DC power supplies and mount as shown in Figure 9. Coil excess cord and tie back excess cable with tie wraps. | |
| 2 | Connect the power supply to the transciever and terminate power wires as shown on Figure 12 | |
| 3 | Plug the power supply into the AC outlet and verify the supply output power.<br>Verify the transciever operation in IM 04-0246 | - 48VDC<br>transciever powers up with activity on LEDs |

**Figure 9 – PICOCELL Co-located power supply**



| **Procedure 6 – Remote AC power supply Installation** | | |
|---|---|---|
| **Step** | **Action** | **Observation** |
| | Note that AC outlets must be provided by a qualified electrician. | AC outlet placement per IM 04-0241 and Figure 10. |
| 1 | Locate the AC-DC power supplies and mount as shown in Figure 10. Coil excess cord and tie back excess cable with tie wraps. | |
| 2 | Connect the power supply jumpers to the MDF blocks see IM-04-0244 for jumpers and cabling. transciever and terminate power wires as shown on Figure 10 | |
| 3 | Plug the power supply into the AC outlet and verify the supply output power.<br>Verify the transciever operation in IM 04-0246 | - 48VDC |
| 4 | See IM 18-0244 fro cabling and jumpering of DC power. | |

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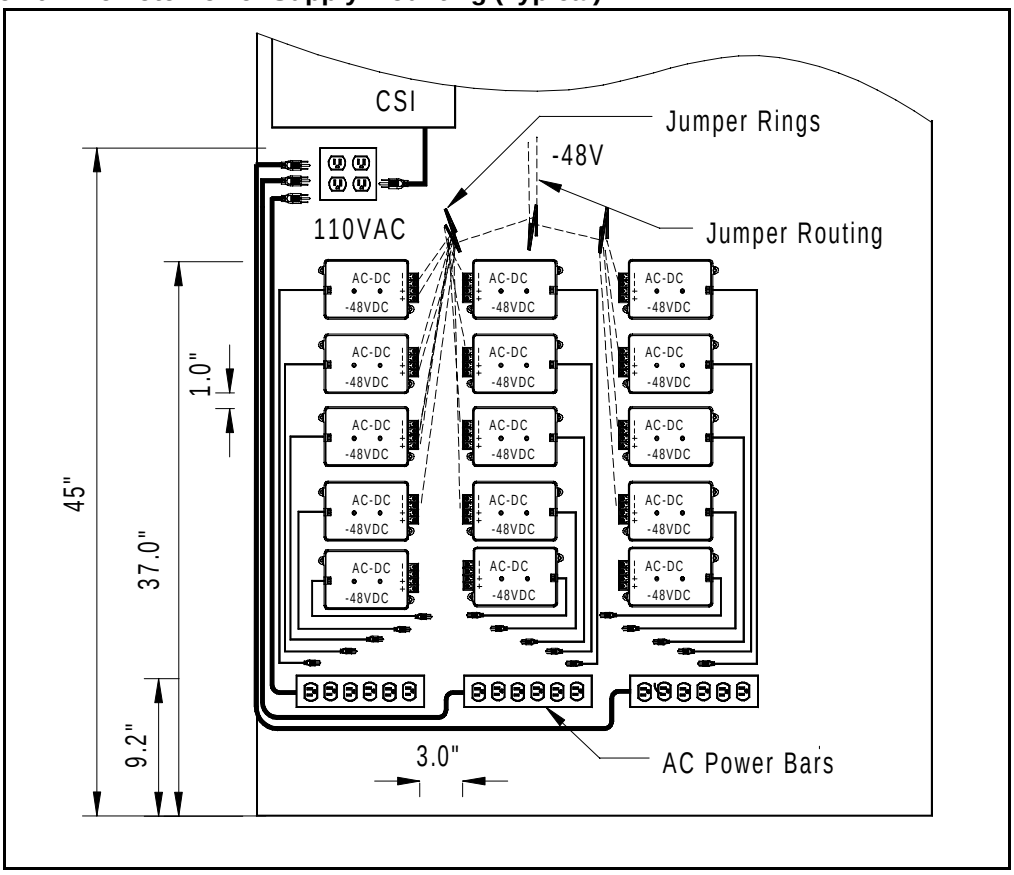
**Figure 10 – Remote Power Supply Mounting (Typical)**



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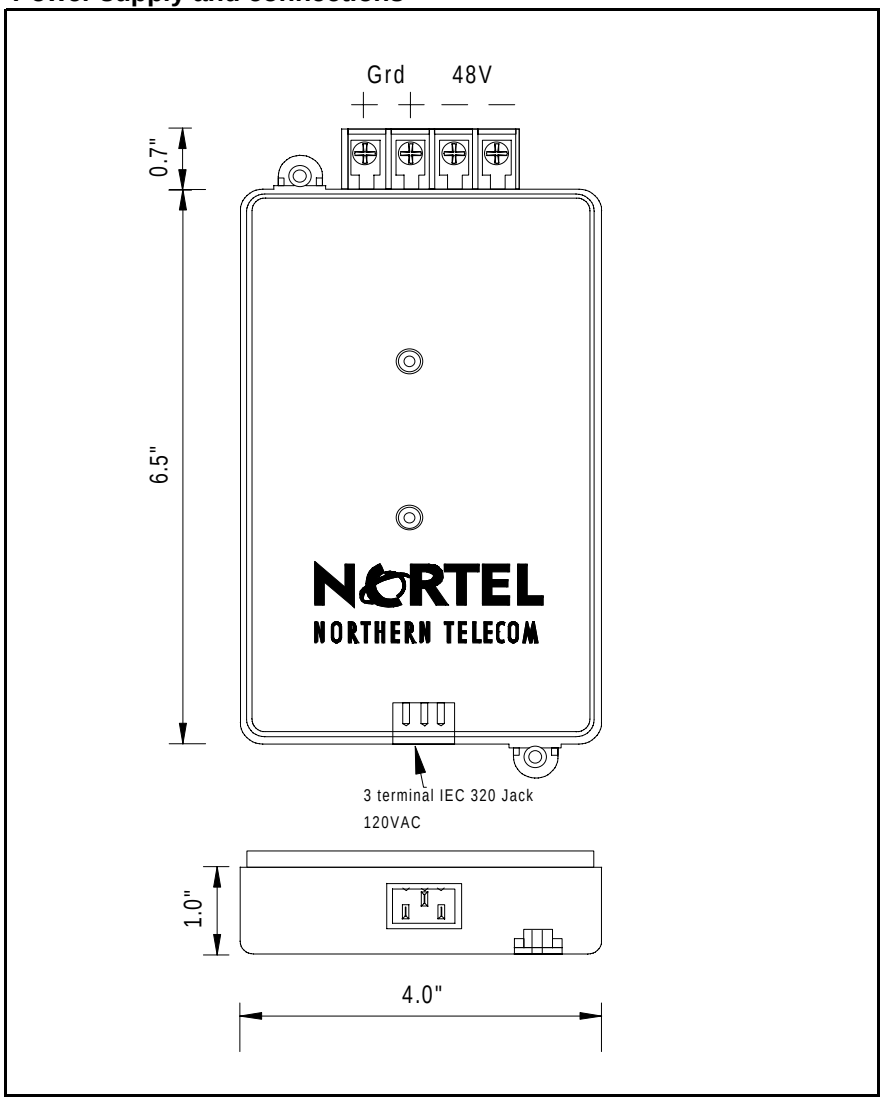
## 4.2 Power Supply connections

The PICOCELL 1900 transciever is powered by an AC to -48VDC supply which is mounted either at the CSI location or near the PICOCELL transceiver mounting position. If it is mounted near the transciever (co-located), an AC outlet must also be within close proximity. When the supply is co-located near the transceiver, the power wiring may or may not be accommodated in the station wiring conduit and may need to be dressed neatly on the wall or ceiling surface. See Figure 9.

See IM 02-0241 for placement, mounting and connection of the power supply at the remote CSI location.

**Figure 11 – Power supply and connections**



## 4.3 PICOCELL Transceiver Connections

Connections to the PICOCELL 1900 transciever consist of bare wire terminations on the PICOCELL 1900 terminal strip which provides terminals for the following:

**Figure 12 – PICOCELL transciever Connections**

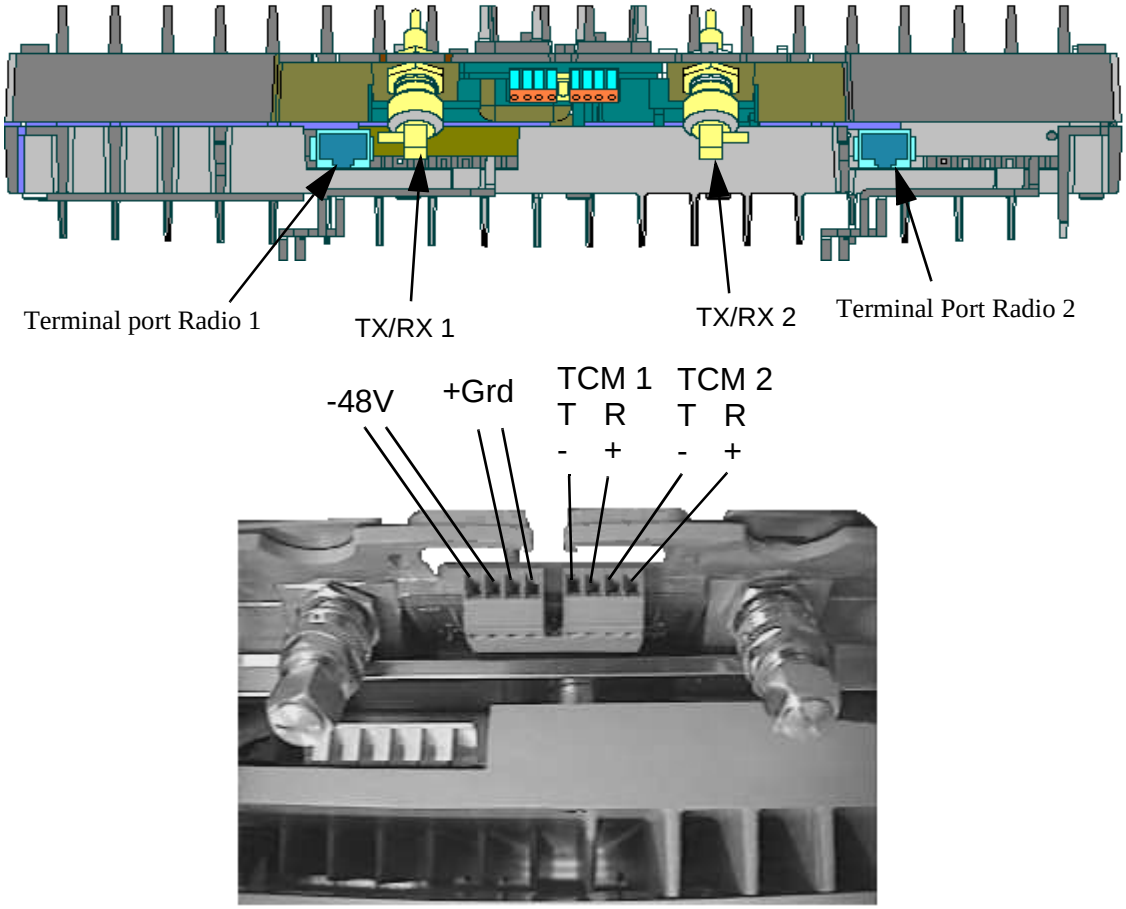



**Figure 13 – PICOCELL 1900 cabling and connections**

| Description | From | | |
|---|---|---|---|
| | Frame | Block Pos | Pair |
| TCM 1 T (-) | MDF | 1 | 1 T |
| TCM 1 R (+) | MDF | 2 | 1 R |
| Power - 48V | MDF | 3 | 2 T |
| Power - 48V | MDF | 4 | 2 R |
| TCM 2 T (-) | MDF | 5 | 3 T |
| TCM 2 R (+) | MDF | 6 | 3 R |
| Power + Grd | MDF | 7 | 4 T |
| power+ Grd | MDF | 8 | 4 R |

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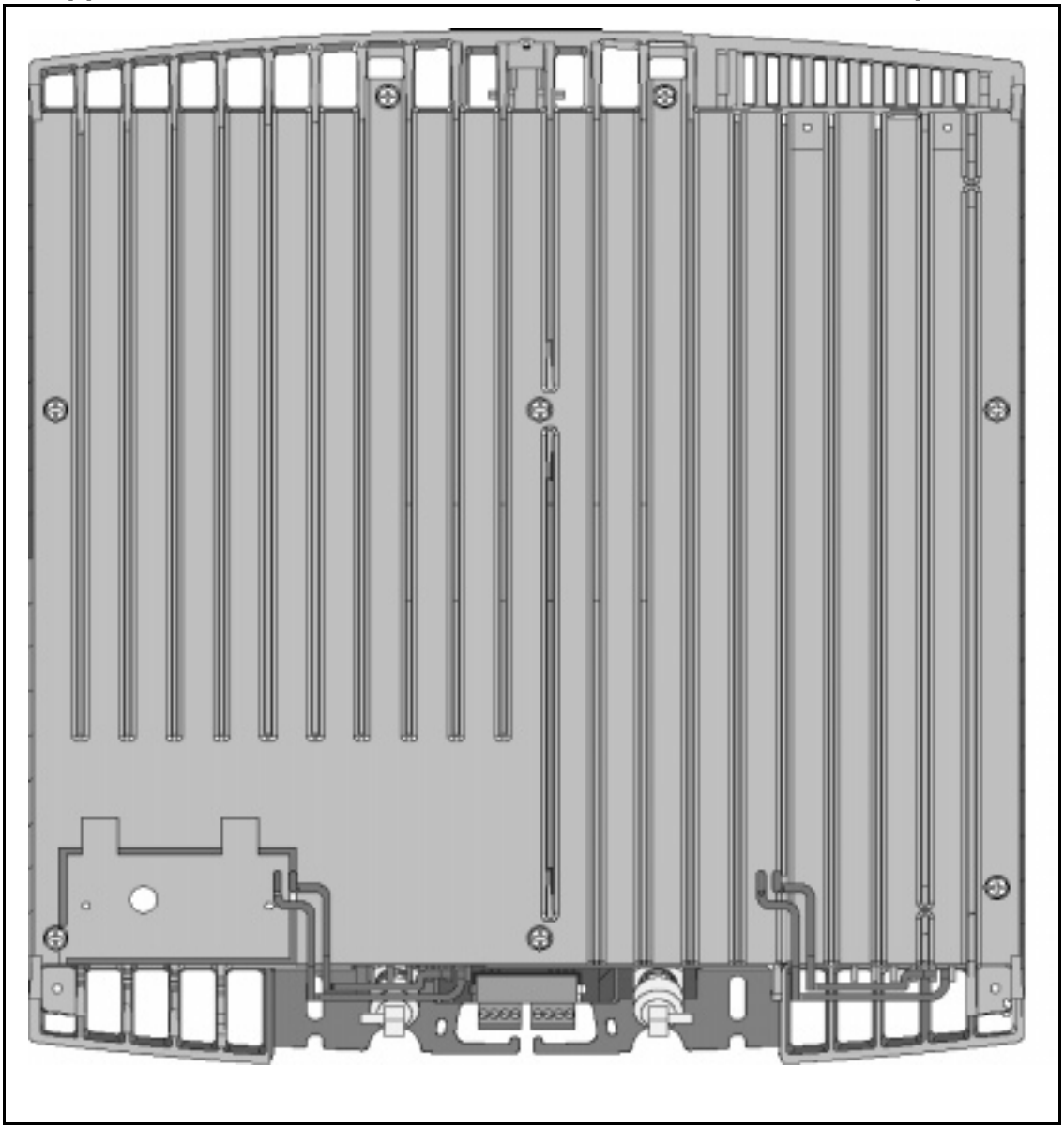
# 5.0 References

| Document | Number | Title |
|---|---|---|
| IM | 04-0241 | PICOCELL 1900 CSI Installation and Planning |
| IM | 04-0242 | PICOCELL 1900 General Information and Plannng |
| IM | 08-0243 | PICOCELL 1900 CSI Equipment Handling and Securing |
| IM | 04-0244 | PICOCELL 1900 System Cabling and Cross Connect |
| IM | 12-0152 | PICOCELL 1900 Antenna System Installation |
| IM | 02-0245 | PICOCELL 1900 transciever Installation |
| IM | 22-0246 | PICOCELL 1900 Radio and CSI Power up |
| IM | 24-0247 | PICOCELL 1900 Equipment Loading and Diagnostics |
| IM | 28-0248 | PICOCELL 1900 Radio Commissioning with the IFR 1900 |
| IM | 28-0249 | PICOCELL 1900 System Test |

# 6.0 Appendices

**Appendix A - PICOCELL 1900 transciever Cover removed Top view**



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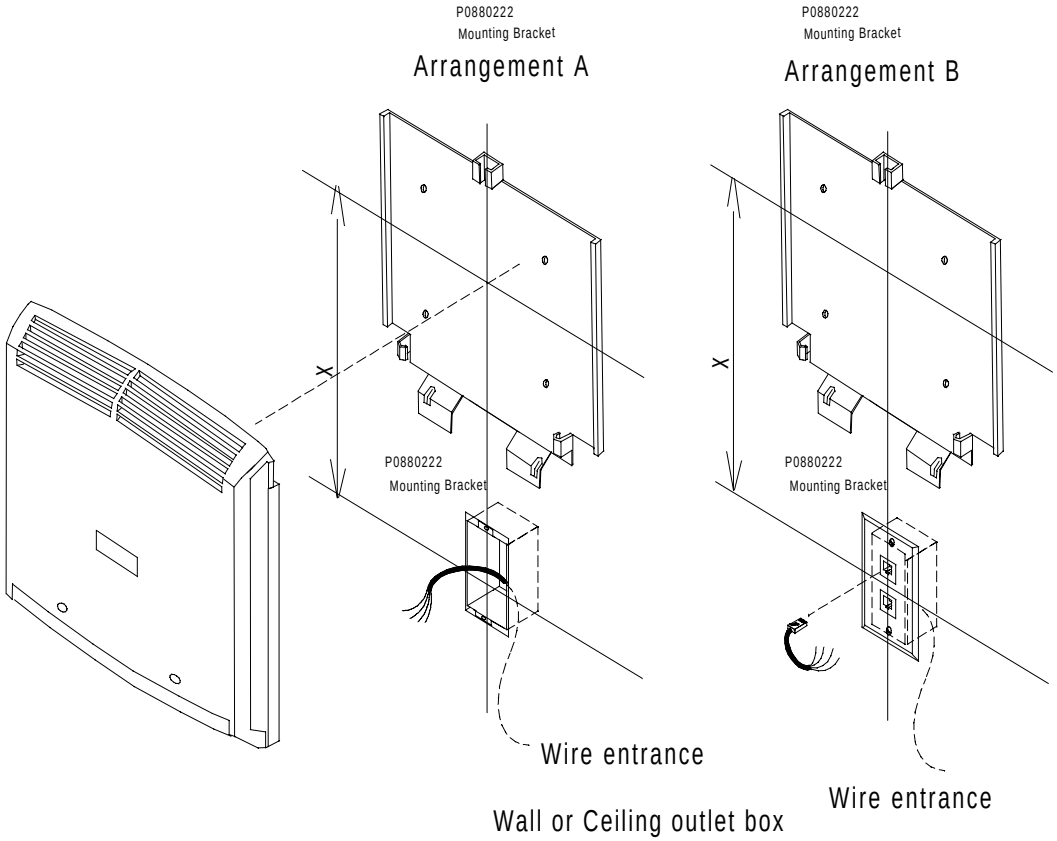
## Appendix B - Mounting Orientation and Isolation




*Note: Ensure station wiring does not loop or coil near the PICOCELL 1900 antenna. The unit installation should mount as shown with maximum spacing between the antenna and entrance wiring to avoid interference with RF signals.*

## Appendix C - Picocell 1900 Technical Specifications

- Maxcimum length twisted pair distribution, 3000’ (TCM)
- Maximum length remote Power (see IM 04-0242 section 4.2)
- 1900MHz Version IS 136 TDMA operation
- 100mW (+20dBm) ERP
- 2 RF channels per PICOCELL 1900 RF unit (Internal duplexer)
- Internal Omni Antenna
- Receiver Diversity
- Distributed Omni and directional Antenna Support
- 4 twisted pair per unit for power and digital link (TCM)
- 48 Volt DC power 32W nominal
- Visually pleasing, non-obtrusive design
- Individual transciever Alarms
- 15 PICOCELL 1900s per CSI (30 RF channels)
- Standard Nortel TRU maintenance interface.
- 12.8" W x 13.6" L x 3.25" D
- 14 lb unit weight

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## AC REQUIREMENTS

Each non-switched dedicated outlet must have the following:

- Voltage110 - 120 VAC
- Frequency47Hz to 53Hz or 57 Hz to 63 Hz
- Power (I/P max)300 VA
- Receptacles-120V 15A service NEMA IG 5-15R
- -208/240V 15A service NEMA IG 6 15R
- Warnings for AC power cord:

**WARNING**
The socket-outlet shall be installed near the equipment and shall be easily accessible. Power cords are 6ft maximum.

Note: See local electrical codes for 240VAC outlet requirements

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## Picocell 1900 Power Supply Specifications

Input

- Voltage: 120/240 VAC Nominal
- Line Frequency 50/60 Hz Nominal
- Power rating 90W
- Protection Internal primary current fuse, Inrush limiting
- Configuration In Case IEC320 with Ground
- 6 ft., 5 Conductor, 18 AWG,

Output

- Voltage -48VDC +/- .5V
- Nominal current 2.0 A Max.
- Combined Line and Load Voltage Regulation
- output current limiting
- Short circuit protection

Mechanical

- 6.58 L x 4.0 W x 1.25 H(in)
- Case Material: Black 94V0 Polycarbonate
- Weight: 22 ounces, 625 grams (excluding cords)

**Last Page**