

WJ Broadband Fixed Wireless System Transceiver Installation and Replacement Instructions

Revision Date: July 21, 2000

To be used with all of the following Standard Power Transceivers:

SX1121 MMDS Standard Power Point-to-Multipoint Transceiver

SX1121A MMDS Standard Power Point-to-Multipoint Transceiver with Integrated Antenna

SX1123 MDS/MMDS Standard Power Point-to-Multipoint Transceiver

SX1123A MDS/MMDS Standard Power Point-to-Multipoint Transceiver with Integrated Antenna

SX1126A UNII Standard Power Point-to-Multipoint CPE Transceiver with Integrated Antenna

SX1127 UNII Standard Power Point-to-Multipoint Head End Transceiver

WJ Broadband Fixed Wireless System Transceiver Installation and Replacement Instructions

Product Numbers: SX1121, SX1121A, SX1123, SX1123A, SX1126A, SX1127.

This document explains how to install, remove, or replace the standard power wireless transceiver component of a broadband fixed wireless system. It includes instructions for powering down the system, removing an installed transceiver, and installing a new transceiver.

NOTE: Use this document in conjunction with the *Cisco uBR7200 Series Universal Broadband Router Installation and Configuration Guide* and *Regulatory Compliance and Safety Information for the Cisco uBR7200 Series Universal Broadband Router* that shipped with your Cisco uBR7200 series router, and the *Cisco uBR7200 Series Universal Broadband Router Wireless Modem Card and Subsystem Installation and Configuration* document that shipped with your broadband fixed wireless modem card and subsystem.

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If You Need More Information

To obtain general information about documentation, refer to the “Cisco Connection Online” section on page 23, or call customer service at 800 553-6387 or 408 526-7208. Customer service hours are 5:00 a.m. to 6:00 p.m. Pacific time, Monday through Friday (excluding Cisco-observed holidays). You can also send e-mail to cs-rep@cisco.com, or you can refer to the *Cisco Information Packet* that shipped with your router.

Wireless Transceiver Overview

The wireless transceiver (often referred to as the outdoor unit or ODU) is the control and data interface to the indoor router subsystems. It provides up/down conversion for IF to RF frequencies and power amplification.

The wireless transceiver consists of the following components:

- RF head
- Connector port for IF input/output, control, and power
- Connector port for antenna

Figure 1 shows three views of the common chassis used for the standard power Wireless Transceiver. A description of the connectors shown here is listed in Table 1.

Figure 1. Wireless Transceiver

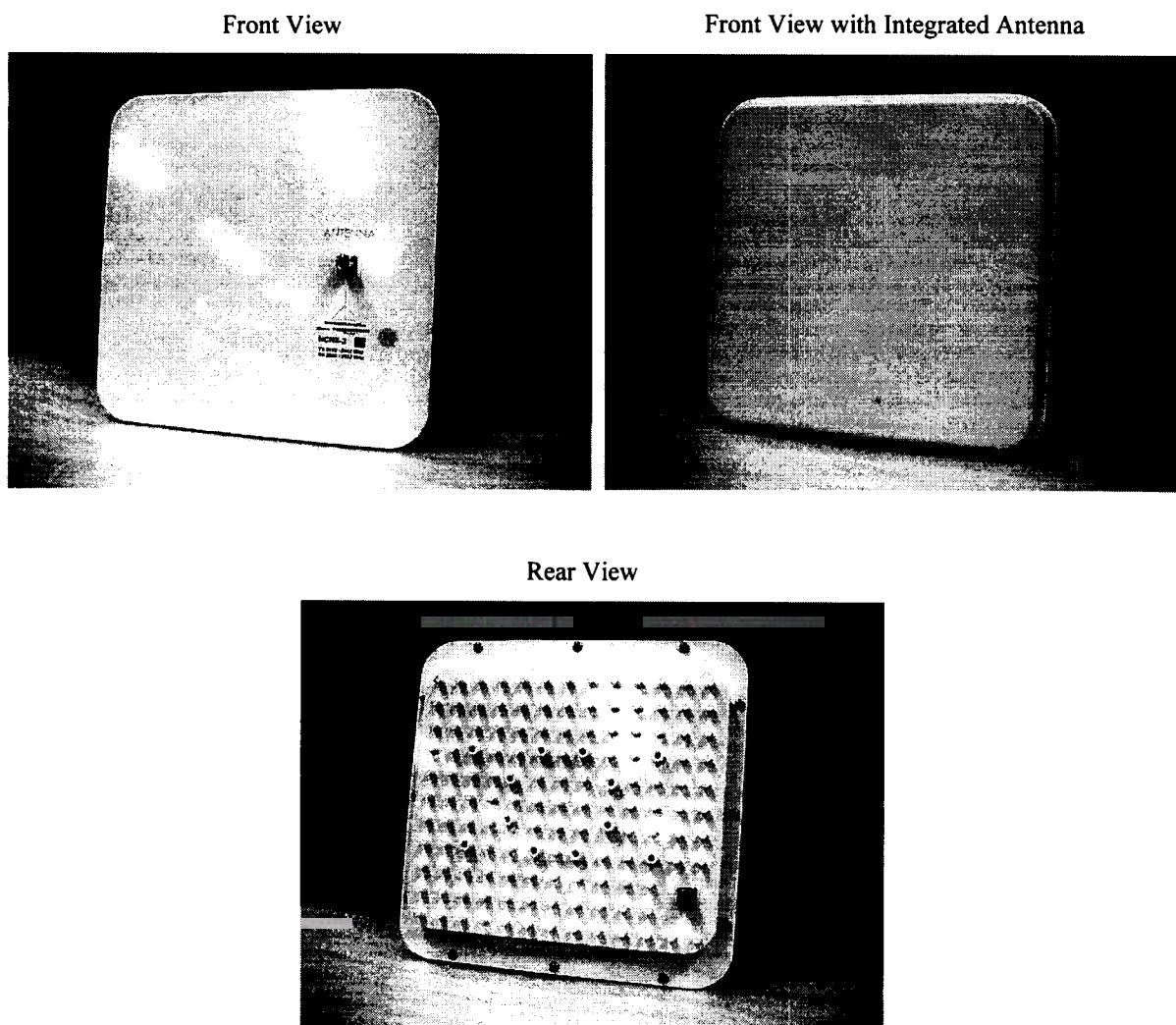


Table 1. Wireless Transceiver Connectors

Connector	Type	Input/Output	Function
Antenna connector	N-type weatherized (female)	Input and Output	Antenna connection
IF Input/ Control/Power	N-type weatherized (female)	Input and Output	Carries receive and transmit IF signals, power, IF reference frequency, and RF subsystem control interface

Installation Prerequisites

This section provides a list of parts and tools you need to install, remove, or replace a wireless transceiver at the antenna site. This section also includes safety and ESD-prevention guidelines to help you avoid injury to yourself and damage to the equipment.

Parts and Tools

You need the following tools and parts to install, remove, or replace the transceiver. If you need additional equipment, contact a service representative for ordering information.

NOTE: Some N-type connectors require specific tools. Obtain this information from your cable supplier.

- Wireless transceiver: SX1121, SX1121A, SX1123, SX1123A, SX1126A or SX1127.
- Number 2 Phillips screwdriver
- Soldering iron/gun
- 9/16-inch open-end wrench
- Open-end adjustable wrench
- Cable wrap
- Antenna tools (refer to the antenna manufacturer's instructions)
- Mounting kit (provided with the new transceiver)
- Ground lug (provided in mounting kit)
- 50 ohm coaxial cable with N-type (male) connectors to cable the wireless transceiver to the antenna
- Your own ESD-prevention equipment.

Safety Guidelines

Following are safety guidelines that you should follow when working with any equipment that connects to electrical power or telephone wiring.

Place picture of unit mounted to post and connected to antenna with RF cables

Place picture of unit mounted to wall and connected to antenna with RF cables

Place picture of unit with integrated antenna mounted to post and connected to RF cables

Place picture of unit with integrated antenna mounted to wall and connected to RF cables



Warning This warning symbol means *danger*. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. To see translations of the warnings that appear in this publication, refer to the “Regulatory Compliance and Safety Information” section in this document.

Waarschuwing Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen. Voor vertalingen van de waarschuwingen die in deze publicatie verschijnen, kunt u het document *Regulatory Compliance and Safety Information* (Informatie over naleving van veiligheids- en andere voorschriften) raadplegen dat bij dit toestel is ingesloten.

Varoitus Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. Tässä julkaisussa esiintyvien varoitusten käännökset löydät laitteen mukana olevasta *Regulatory Compliance and Safety Information* -kirjasta (määräysten noudattaminen ja tietoa turvallisuudesta).

Attention Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions d'avertissements figurant dans cette publication, consultez le document *Regulatory Compliance and Safety Information* (Conformité aux règlements et consignes de sécurité) qui accompagne cet appareil.

Warnung Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt. Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise finden Sie im Dokument *Regulatory Compliance and Safety Information* (Informationen zu behördlichen Vorschriften und Sicherheit), das zusammen mit diesem Gerät geliefert wurde.

Avvertenza Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti. La traduzione delle avvertenze riportate in questa pubblicazione si trova nel documento *Regulatory Compliance and Safety Information* (Conformità alle norme e informazioni sulla sicurezza) che accompagna questo dispositivo.

Advarsel Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du være oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker. Hvis du vil se oversettelser av de advarslene som finnes i denne publikasjonen, kan du se i dokumentet *Regulatory Compliance and Safety Information* (Overholdelse av forskrifter og sikkerhetsinformasjon) som ble levert med denne enheten.

Aviso Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes. Para ver as traduções dos avisos que constam desta publicação, consulte o documento *Regulatory Compliance and Safety Information* (Informação de Segurança e Disposições Reguladoras) que acompanha este dispositivo.

¡Advertencia! Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los

procedimientos estándar de prevención de accidentes. Para ver una traducción de las advertencias que aparecen en esta publicación, consultar el documento titulado *Regulatory Compliance and Safety Information* (Información sobre seguridad y conformidad con las disposiciones reglamentarias) que se acompaña con este dispositivo.

Varning! Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador. Se förklaringar av de varningar som förekommer i denna publikation i dokumentet *Regulatory Compliance and Safety Information* (Efterrättelse av föreskrifter och säkerhetsinformation), vilket medföljer denna anordning.

Electrical Equipment Guidelines

Follow these basic guidelines when working with any electrical equipment:

- Disconnect all power and external cables before moving a chassis.
- Do not work alone if potentially hazardous conditions exist.
- Never assume that power has been disconnected from a circuit; always check.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Carefully examine your work area for possible hazards such as moist floors, ungrounded power extension cables, and missing safety grounds.



Warning Do not locate the transceiver near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits.



Warning Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.



Warning This equipment contains an energy hazard. Disconnect the system before servicing.



Warning Do not work on the system or connect or disconnect cables during periods of lightning activity.



Warning Antenna Installation Instructions: FCC RF Exposure Limits

The WJ SX1121 and SX1123 transceivers, used in conjunction with 18 and 24 dBi gain antennas, are to be employed in point -to- multipoint applications only. The transceivers are either provided with an integral antenna, or provided without an integral antenna. If the transceiver is provided without an integral antenna, then antennas used for these transmitters shall be professionally installed on permanent structures for outdoor operations. The installer is responsible for ensuring that the systems using high-gain, directional antennas are used exclusively for fixed, point-to-multipoint operations.

The installer shall mount all transmit antennas so as to comply with the limits for human exposure to radio frequency (RF) fields per paragraph 1.1307 of the Federal Communications Commission (FCC) Regulations. The FCC requirements incorporate limits for Maximum Permissible Exposure (MPE) in terms of electric field strength, magnetic field strength, and power density.

The WJ SX1121 and SX1123 transceivers are intended to be installed in customer premises areas. Table 2 below specifies the **minimum** distance that must be maintained between the antenna and any areas where persons may have access, including rooftop walkways, sidewalks, as well as through windows and other RF-transparent areas behind which persons may be located.

Table 2. Antenna Radiation Hazard

Power output, dBm	Antenna gain, dBi	MPE Distance, cm
26.0	18.0	44.7
26.0	24.0	89.2
24.0	18.0	35.5
24.0	24.0	70.9
22.0	18.0	28.2
22.0	24.0	56.3

In addition, the following label wording is required to be placed on the subscriber unit antenna

CAUTION: To comply with FCC RF exposure requirements, antennas used for this device must be installed to provide a separation distance of at least 90 cm from all persons to satisfy RF exposure compliance.

This label will be placed on the antenna or on the device so that it is easily visible at a distance of 1 meter.

Antenna manufacturer-supplied installation instructions for specific models generally contain information regarding antenna mounting, aiming, lightning protection, and other relevant factors. In addition to meeting these requirements, the antenna system installer is responsible for installing antennas so that they comply with FCC RF exposure requirements. The FCC RF exposure requirements at a given location are based on the sum total of contributions from all radio sources. For WJ system antennas placed in close proximity to other transmitters (e.g., on a shared rooftop or tower installation), installers shall take steps to insure that MPE guidelines in 1.1307 of the Rules continue to be met with the inclusion of the contribution from the new antenna. Further information and guidance can be found in FCC Bulletin OET 65, available for download at <http://www.fcc.gov/oet/rfsafety/>.



Warning Antenna Installation Instructions: FCC RF Exposure Limits

The WJ SX1126A and SX1127 transceivers, used in conjunction with their respective antennas are to be employed in point-to-multipoint applications only. The antenna used for the SX1127 shall be professionally installed on a permanent structure for outdoor operations. The installer is responsible for ensuring that the systems using high-gain, directional antennas are used exclusively for fixed, point-to-multipoint operations.

The installer shall mount all transmit antennas so as to comply with the limits for human exposure to radio frequency (RF) fields per paragraph 1.1307 of the Federal Communications Commission (FCC) Regulations. The FCC requirements incorporate limits for Maximum Permissible Exposure (MPE) in terms of electric field strength, magnetic field strength, and power density.

The WJ SX1126A and SX1127 transceivers are intended to be installed in customer premises areas. Table 3 below specifies the **minimum** distance that must be maintained, under all conditions of operation, between the antenna and any areas where persons may have access, including rooftop walkways, sidewalks, as well as through windows and other RF-transparent areas behind which persons may be located.

Table 3. Antenna Radiation Hazard

Max. Power output, dBm	Antenna gain, dBi	MPE Distance, cm
SX1126A:		
19.0	22.5	33.5
SX1127:		
13.3	17.5	9.8
15.0	8.0	4.0

Antenna manufacturer-supplied installation instructions for specific models generally contain information regarding antenna mounting, aiming, lightning protection, and other relevant factors. In addition to meeting these requirements, the antenna system installer is responsible for installing antennas so that they comply with FCC RF exposure requirements. The FCC RF exposure requirements at a given location are based on the sum total of contributions from all radio sources. For WJ system antennas placed in close proximity to other transmitters (e.g., on a shared rooftop or tower installation), installers shall take steps to insure that MPE guidelines in 1.1307 of the Rules continue to be met with the inclusion of the contribution from the new antenna. Further information and guidance can be found in FCC Bulletin OET 65, available for download at <http://www.fcc.gov/oet/rfsafety/>.