

R E L E A S E 1 . 1

MainStreet Base Station Outdoor Radio Equipment

Highly scalable and fully managed as part of a multiservices solution, Newbridge broadband wireless products together provide a powerful, cost-effective broadband wireless access solution for last-mile delivery of a wide range of data, Internet, voice and video services.

Quick and easy to deploy, the Newbridge® broadband wireless access solution enables operators to capture new markets and revenue immediately. Its multiservices platform supports the simultaneous delivery of data, Internet, voice and video, and its integrated network and service management permits one-platform management of both wireline and wireless resources. Value-added applications also provide a host of differentiated business and residential services.

A key component of the Newbridge broadband wireless solution is the MainStreet® base station outdoor radio equipment. The base station outdoor radio equipment, which includes transmitters, receivers, repeaters and antennas, comprises one part of an integrated wireless solution.

The broadband wireless product portfolio is a family of products, that are designed to work together. NIUs (network interface units) are connected to multiservices base stations via wireless links, and the base stations are, in turn, connected to the backbone network through wired or point-to-point wireless links. The system provides a communications infrastructure with both narrowband WAN and broadband ATM points of attachment. The entire network is managed end-to-end by the industry-leading MainStreetXpress™ network and service management suite.

BASE STATION OUTDOOR RADIO EQUIPMENT

The base station is the hub that delivers and collects all the traffic to and from subscribers within the coverage area. It is also the linking point between subscribers and the backbone network.

The base station is comprised of four key elements:

- common control and switching
- ATM radio interface cards (ARICs)
- radio frequency equipment, including transmitters and receivers with integrated antennas
- field deployed repeaters used to selectively fill holes on an “as required” basis

For common control and switching, the MainStreetXpress 36170 Multiservices Switch is the ideal switch used to maximize the broadband wireless network. It encompasses a highly integrated solution for base station equipment by combining and managing the ATM and radio technologies under a single network management system. The ARIC fits into universal card slots on the MainStreetXpress 36170 and provides an interface between the wireline and wireless

worlds. Its main functions are ATM cell grooming and distribution, radio modulation/demodulation, FEC (forward error correction) and digital coding. In order to increase the overall system service capacity, TDMA (time division multiple access) is implemented for the uplink, so that a shared bandwidth environment is created at the ATM air interface level for subscriber access. Once the individual IF (intermediate frequency) signals are combined, the signals are subsequently applied to the broadband transmitter (or receiver) within a given cell or section.

Solid State Base Station Outdoor Transmitter (24 – 31.3 GHz)

The base station outdoor transmitter (OTX) is collocated with its respective sector antenna and provides managed multicarrier, wide bandwidth up-conversion and power amplification functions. The output RF (radio frequency) signal is a frequency-translated version of the modulated input RF signals derived from the ARICs.

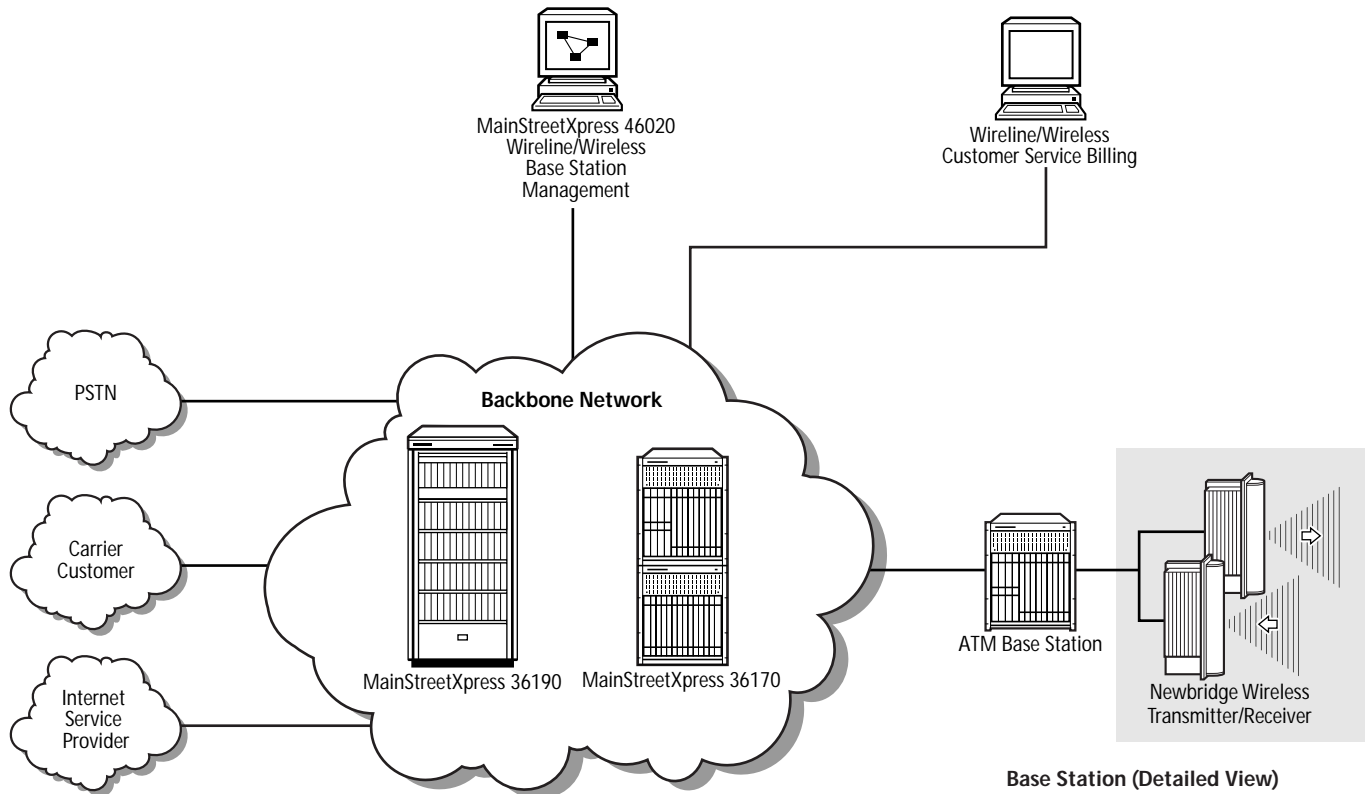
Solid State Base Station Outdoor Receiver (24 – 31.3 GHz)

The base station outdoor receiver (ORX) is collocated with its respective sector antenna and provides managed multicarrier, wide bandwidth down-conversion and low noise amplification functions. The signal produced by the ORX is a frequency-translated version of the over-air signal. This signal is routed to the ARICs for subsequent signal processing.

Base Station Sector Antenna (24 – 31.3 GHz)

The base station sector antenna is collocated with its respective sector transmitter and receiver. The antenna provides focused beam coverage of a controlled azimuth sector ranging from 30° to 180° (90° is typically deployed), all packaged in a common form factor.

Typically the antennas are mounted at the base station, and aligned to the specific cell sector that they are servicing/covering. A single antenna is installed with each base station outdoor transmitter and/or receiver.



Intercell Links (ICLs)

In a large metropolitan network system, intercell linking can have significant impact on implementation and/or operating costs. The Newbridge wireless ATM access system allows a wide variety of managed intercell linking options in order to optimally address this issue.

- Fiber ICLs: OC-3, OC-12, STM-1, STM-4
- Wireline ICLs: DS-3, NxTI/E1, E3
- Wireless ICLs: use of FDMA (frequency division multiple access) ARIC cards to construct a modular wireless ICL
- Support of OEM radios: termination of conventional TDM or ATM point-to-point radios

Repeaters

The Newbridge system offers the ability to deploy non-regenerative repeaters which can be employed to fill shadow areas or provide sector/cell range extensions. The repeater kits are configured using the following:

- BTS-side antennas (up and down link), 60 cm (24 in.) diameter (typical)
- CPE side sector antennas (up and down link), 30° to 180° azimuth coverage
- variable gain active non-regenerative repeater units (up and down link)
- flex waveguide (quantity of 4)

Technical Summary

Solid State Base Station Outdoor Transmitter: Electrical Performance Attributes

- RF output frequency: 24 – 31.3 GHz range, bandwidth and center frequency defined/selected to meet license and usage requirements
- Maximum output RF power: > 1W at P1dB (shared among RF carriers)
- DC power consumption: < 35 W

Solid State Base Station Outdoor Receiver: Electrical Performance Attributes

- RF output frequency: 24 – 29.5, 31 GHz range, bandwidth and center frequency defined/selected to meet license and usage requirements
- RF noise figure: < 6 dB at 25° C
- Out-of-band rejection: > 30 dB at 50 MHz from defined band edge
- Input RF compression: -25 dBm at P1dB, for single carrier operation
- DC power consumption: < 25 W

Base Station Sector Antenna: Electrical Performance Attributes (90° sector variant)

- RF output frequency: 24 – 31.3 GHz range
- Azimuth beamwidth: approximately 90° typical (30° to 180°, omni-available)
- Elevation beamwidth: approximately 2.5° typical
- Polarization: vertical or horizontal linear, selected at time of deployment
- Cross polarization isolation: approximately -24 dB, main, side and back lobes (azimuth)
- Peak gain: +21 dBi, copolarized (90° sector)

Outdoor Gap Filling Repeater: Electrical Performance Attributes

- RF output frequency: 24 – 29.5, 31 GHz range, bandwidth and center frequency defined/selected to meet license and usage requirements
- RF noise figure: < 4 dB at +25° C
- Out-of-band rejection: > 30 dB at 50 MHz from defined band edge
- Gain: 40 – 70 dB adjustable
- DC power consumption: < 25 W

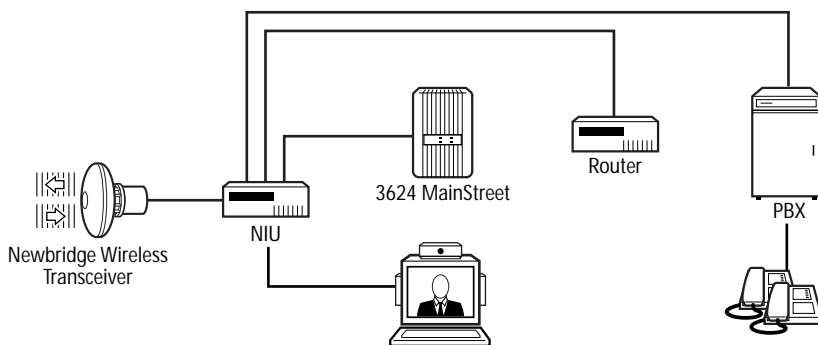
Operating Environment

- -40° to 50° C
- 0% to 100% relative humidity

Dimensions

(Outdoor Transmitter/Receiver and Companion Sector Antenna)

high	38.10 cm (15 in.)
wide	10.16 cm (4 in.)
deep	20.32 cm (8 in.)



Customer Premises Equipment

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