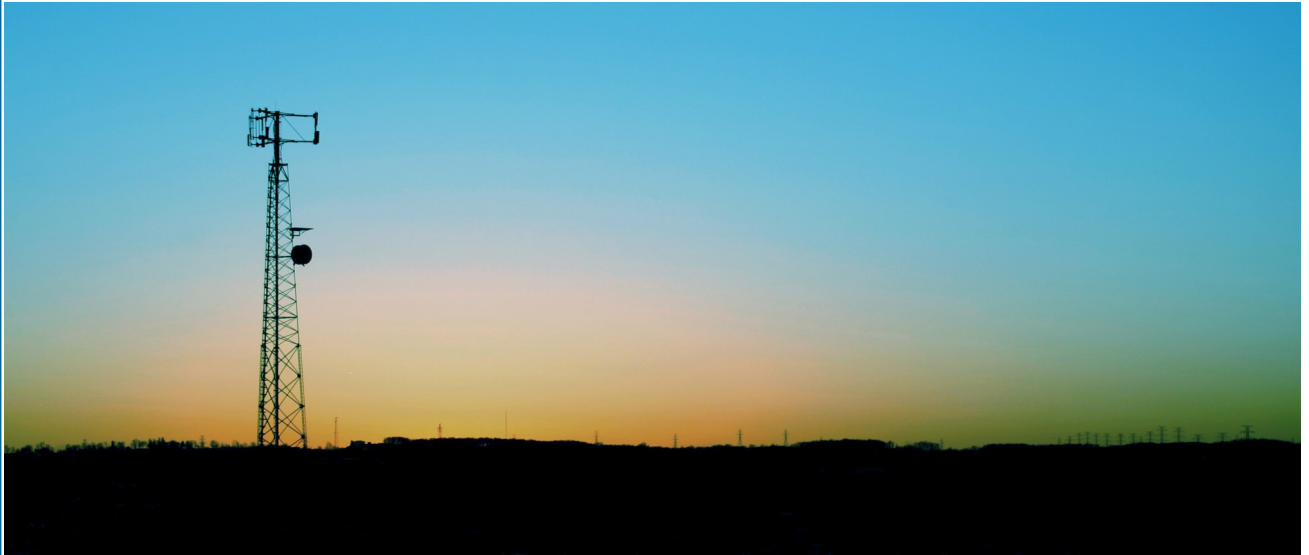


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Turn-Key Solutions that Enhance Network Performance

- 3G UMTS Cositing Equipment
- Coverage Enhancement Systems
- Feeder Line Reduction
- Link Balanced Amplification Systems
- Interference Reduction

About Communication Components Inc.

Communication Components Inc. is a leading provider of wireless base station enhancement products. Our innovative solutions are designed to increase the performance of existing network equipment via improved coverage, capacity, and call quality, at a fraction of the cost of adding additional basestations to the network. Recognizing the need to quickly deploy these systems to solve network problems, CCI's philosophy is simple: create low cost, efficient, and rapidly deployable solutions that precisely fit the requirement. With tens of thousands of field-proven solutions deployed throughout North America, CCI brings expertise, technology, reliability and service to the demanding needs of today's wireless operator.

Wireless Operators are racing to deploy their next generation networks, and are often forced to use existing antenna infrastructure due to difficult deployment schedules and local municipal policies. CCI's **3G Cositing** product series allows wireless operators to accelerate their 3G deployments while simultaneously lowering cost and improving performance. CCI's **capacity expansion** products are highlighted by its MCPA / SCPA based amplification systems, GSM Booster/Combiners, and UMTS WCDMA Multi-channel Power Booster product families which allow carriers to add capacity to their networks without investing in additional antenna infrastructure. Additional **capacity expansion** products include high performance Receiver Multi-Couplers for reducing Rx feeder requirements, Bi-Directional Amplifiers for improving in-building performance, and Hybrid or Low Loss Filter Combiners for adding transmit signals without adding feedlines.

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3G UMTS Cositing Series



Wireless Operators face increasingly difficult deployments in expanding their tower infrastructure because the traditional method of *add a network, add an antenna system* is no longer always a viable option. Restrictions prevent the addition of feeder lines and antennas to existing sites due to physical limitations and local municipal policies. CCI's 3G UMTS Cositing Product Series represents a major breakthrough in network deployment as it enables wireless operators to control, manage, and share their existing tower and antenna infrastructure amongst legacy, current, and next-generation basestation technologies without adding any additional feedlines and antennas. By centralizing

access to the tower infrastructure and controlling common BTS functions such as the Rx signal strength and Tx combining, CCI's cositing equipment provides an open platform for interfacing current and future technologies. This system also enhances performance of both the 2G and 3G systems, and has demonstrated improved range, call quality, and capacity in live testing. One central distribution point, the RX Air Interface Tray, becomes the gatekeeper of the Rx (uplink) signal to multiple basestations. As additional BTSs or air interface technologies are brought online, no additional lines are needed, and there is no longer a performance degradation as in traditional feeder expansion systems. It is complemented by Duplexer modules that make the Rx signal available to fully duplexed basestations. Transmit combining via Diplexer modules allow combining of Cellular and PCS transmitters, and CCI's Low-Loss UMTS/GSM Combiner allows UMTS transmit signals to be overlaid onto existing GSM transmit feeder lines.

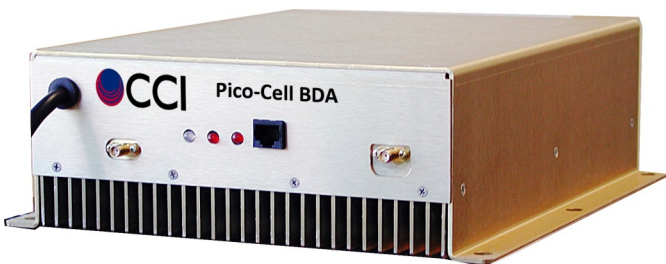
Cell Booster Combiner System (SCPA)

CCI's SCPA System provides a pathway towards GSM growth without the high cost of MCPAs or feeder line additions. It provides a cost-effective means to add capacity to GSM BTS's by combining multiple radios onto a common antenna port without suffering any combining losses. Consequently, the capacity of existing sites can be expanded without any changes to the existing feeder line and antenna infrastructure. The Cell Booster product series is designed to integrate seamlessly with existing basestation equipment without retrofitting or replacement. The system has multiple mounting options to minimize the impact to the site, often requiring no floor space. These highly efficient amplifiers use a fraction of the power of MCPAs systems, saving hundreds of dollars per month in OPEX. They are rapidly deployable and come with a range of accessories to adapt to every installation scenario.



CCI's Bi-directional Amplifier (BDA) and Outdoor Repeater products improve the sensitivity and coverage area of base stations in indoor and outdoor locations. They are available for SMR, PCS, and Cellular bands with various gain and output power ratings. Specifically designed for low system group delay to minimize Bit-Error-Rate of digital transmissions, they are available in both narrow-band and channelized configurations.

Pico-Cell BDA



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CCI's new series of band-selective Repeaters are designed to operate in today's multi-spectrum environment where operators have frequency allocations in multiple bands. They increase revenue and lower service costs due to amplifying and repeating any two operating bands while rejecting their unwanted frequencies.

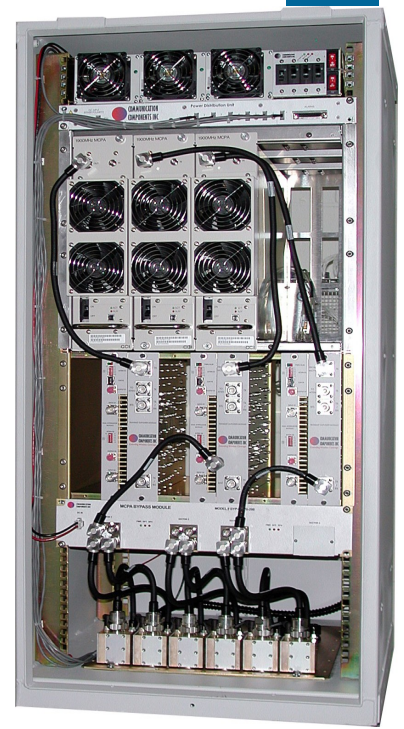
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Cell Extender System with High Power MCPA

CCI's Multi-Carrier Amplifier System breaks with traditional integration concepts and sets a new direction with our seamlessly integrated **direct mounting systems**. Derived from our SCPA product line, our MCPA hanging cabinets and enclosures require no dedicated pad space, saving valuable deployment time and cost. The system employs a new highly efficient MCPA design that is an integral part of CCI's complete turn-key MCPA system. High power density of the MCPA module and power plant create a powerful compact package. The MCPA system supports multiple simultaneous formats such as GSM/EDGE, CDMA1X/DO, and UMTS. Multiple radios are combined on high capacity sites to reduce the required number of feeders without impacting coverage. CCI's MCPA is a key element in upgrading or cositing existing (growth) or new base stations. Optional N+1 redundancy configurations and integrated VSWR monitoring with I/P addressability are available.



Low Loss BTS Combiner (LLC)

CCI's Remote Tunable Narrow Guard Band Low Loss Filter Combiner (LLC) combines two TXs from separate basestations onto a single line, eliminating the cost and delay associated with adding feeders. Additionally, the LLC loss is extremely low, typically less than 0.5 dB, which eliminates the high loss normally associated with passive combiners. This new model reduces the guard band requirement to only 500KHz, restoring lost spectrum associated with previous units. A precisely matched tunable UMTS filter can be positioned anywhere in the band, and provides high rejection of unwanted spurious and noise. Transmit paths are fully isolated to prevent intermodulation products. When not tuning, no power is required, effectively becoming a pure passive low-loss filter combiner. The unit is housed in a single rack-mounted 19" assembly, and is tuned via a single IP addressable port, requiring no external controller or software.

UMTS Power Booster

With UMTS replacing GSM for voice, coverage has become a critical issue where UMTS power available for voice is less than that from GSM, effectively reducing the Cellsite's footprint. CCI's UMTS Power Booster returns lost power to power starved UMTS sites and restores GSM sized footprint to the UMTS channel. It can be used to combine two UMTS carriers so that a second carrier can be added without additional antenna work or loss of coverage due to reduced power.



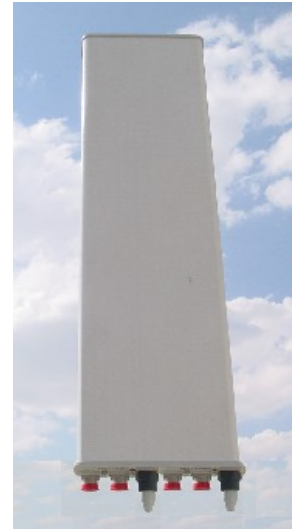
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Basestation Antennas for Tough Environments

CCI's mini-RET is an example of antenna design to meet a specific application. This antenna covers both PCS & AWS bands with 15dBi gain and 65 degree beamwidth for each polarization and with up to 12 degrees of Downtilt. Height has been optimized at under 27 inches for restricted Metro site deployment. It provides complete Remote Tilt capability when combined with CCI's Remote Electrical Tilt System. All CCI antenna products are 100% tested for IMD and built to rigorous ISO9001 standards. Designed for superior gain, front-to-back ratio and pattern symmetry relative to similar antennas of this size. This antenna provides excellent cross-polar discrimination across the entire coverage sector – rivaling the performance of space diversity systems using a single antenna.



Tower Top Amplifiers (TMA)



CCI's Tower Top Amplifier (TMA or MHA) systems improve the receive sensitivity of base stations in locations where there is a significant amount of cable loss between the antenna and the base station. The TMA system is available for single or multi-sector configurations with one, two, or three branch diversity systems. The tower top amplifier is packaged in a single compact tower mount IP65 enclosure. CCI's Power Distribution Unit (PDU) provides power and alarm monitoring functions for all TMAs on the site and is compatible with AISG 1.1 and 2.0.

TMAs are available in frequency bands with integrated lightning surge protection, full LNA redundancy, bypass, alarm and monitoring functions, and AISG 1.1 / 2.0 compatibility.

Complete Installation Services and In-Building Solutions

CCI provides complete turn-key installation services for its systems and equipment. Services range from initial site evaluation and design of the site, installation of the equipment, verification testing, drive testing, and ongoing maintenance services. In all phases of the installation, CCI provides comprehensive on-site project management covering all aspects of the project. Through its nationwide network of trained and certified installers, CCI can design, install and maintain our wireless solutions throughout North America. CCI can provide a variety of optional maintenance services, including custom level SLAs for true 24x7 support.

CCI also manufactures in-building components to deliver the best and most cost effective solutions for each application. These components include bi-directional amplifiers (BDAs), high-power repeaters, power dividers, couplers and indoor low visibility antennas.

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