AirSynergy 3000

High Capacity Outdoor LTE-Advanced Pico Base Station with Integrated Wireless Backhaul and Carrier Wi-Fi

Multi-Function, Compact and Versatile

Redefining the economics of LTE-Advanced HetNet Deployment

PRELIMINARY PRODUCT BRIEFING

Airspan

AirSynergy

The world's most **compact and versatile** 4G LTE Pico Base Station

Addressing unprecedented **mobile data traffic growth**

Mobile Carriers are currently experiencing an unprecedented growth in mobile data traffic, which today's 3G and 4G LTE networks are struggling to satisfy.

As part of a heterogeneous network, Pico Base Stations are located closer to the end user, providing much higher aggregate data rates.

The issue with most Pico Base Stations is the difficulty in connecting them with the rest of the network. AirSynergy solves this problem by combining a 4G Pico Base Station with an integrated, high capacity, self-connecting wireless backhaul.

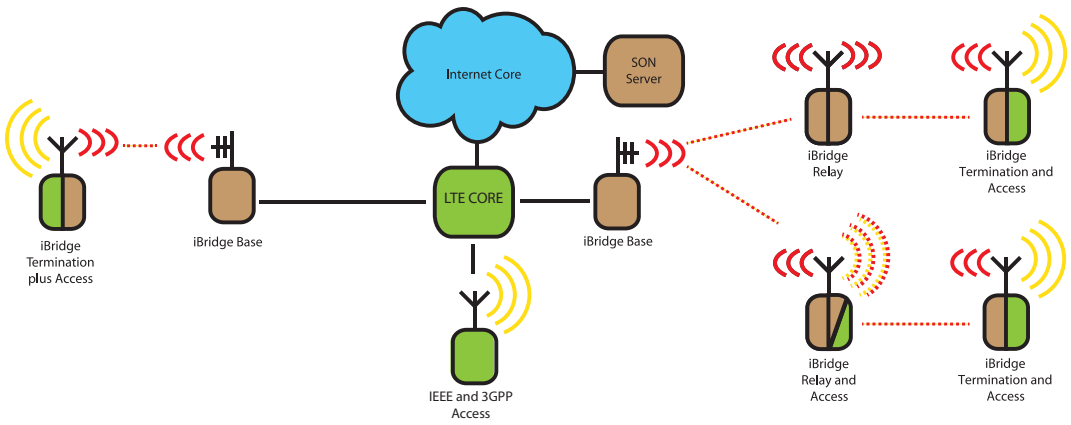
AirSynergy is Airspan's groundbreaking Pico base station using Software Defined Radio (SDR) technology, providing both data access and wireless backhaul from the same unit. AirSynergy is an all-in-one compact Pico Base Station which supports a wide range of radio interfaces including 4G LTE and WiMAX technologies.

> The integration of backhaul and access technologies is an industry first, and redefines the way in which networks can be constructed.

This technique enables AirSynergy to be deployed on street furniture (e.g. lamp posts), with connections automatically established through neighboring nodes to establish a backhaul connection with the network.

A key feature of the AirSynergy technology is the ability to self-configure, self-connect, self-heal and self-optimize when deployed as a network of elements. At the same time AirSynergy provides guaranteed levels of service with Quality of Service (QoS) characteristics in line with the requirements of the access interface

Network Architecture Diagram



RELEASE 10 LTE-ADVANCED

AirSynergy 3000 provides the outdoor Pico layer of a Heterogeneous LTE-Advanced network deployment (HetNet). Advanced Release 10 feature sets include support for SON and eICIC which enables N=1 frequency re-use with the Umbrella Macro cell. The cooperative QoS over the Backhaul interface ensures the Quality of Experience (QoE) from the Pico eNodeB matches the experience from the Macro cell.

THE POWER OF HETNETS

As operators struggle to cope with growing customer demand for higher throughput, they are discovering that layering small base stations into a macro cell coverage area, enables a significant increase in network capacity by filling in coverage gaps and addressing actual traffic distribution where demand is highest. AirSynergy 3000 is ideal for these networks, delivering high data rates where needed most, whether at the macro cell edge or closer to the user base, maximizing coverage and customer satisfaction.

BROADBAND ACCESS

AirSynergy 3000 supports either 3GPP LTE or IEEE Broadband access technologies in combination with Airspan's intelligent IEEE wireless backhaul technology, known as iBridge. AirSynergy 3000 also supports both IEEE 802.11ac and IEEE 802.16r radio interfaces for backhaul. Airspan's 3GPP LTE implementation is compliant with the 3GPP standards and has interoperable S1 and X2 interfaces and supports commercial GCF tested UE devices, including SmartPhones, Dongles and Tablet computers.

AirSynergy uses a unqiue combination of Software Defined Radio (SDR) and System-on-a-Chip (SoC) technologies to enable it to support a range of air interfaces simulatenaously.

INTEGRATED WIRELESS BACKHAUL

AirSynergy 3000 uniquely provides an integrated wireless backhaul solution using Airspan's iBridge IEEE P802.16r and LTE Relay technology. iBridge is a self-configuring, self-connecting point-to-multipoint backhaul solution, which automatically extends the reach of the network from existing Points of Interconnect (POI). iBridge supports multi-hop relay connections, providing backhaul for either LTE or IEEE access interfaces.

SUSTAINABLE DEPLOYMENT

AirSynergy 3000 Pico Cells can be installed on existing street poles (lamp posts or utility poles) which are either OPEX free, or have nominal on-going expenses, thus avoiding the recurring costs associated with a traditional Macro site acquisition. AirSynergy also requires a fraction of the power of a Macro base station, further reducing the OPEX, and allowing renewable energy sources, such as solar panels, to be used.

ALL-IN-ONE SOLUTION

AirSynergy consists of a single self-contained unit, removing the need for an equipment rack or any indoor equipment. Units are powered from a compact power supply unit based on AC or -48V DC power sources

PLUG AND PLAY

AirSynergy 3000 supports automated configuration from the management system, simplifying the installation of each base station. Airspan's unique self-aligning Antenna technology cuts installation time. This automation, coupled with the self-connecting iBridge backhaul results in a true plug and play solution, allowing Pico cells to be rapidly deployed.

REDUCED CAPEX / OPEX

AirSynergy 3000 is a compact all-outdoor 3GPP LTE Pico Base Station, which can be installed without conventional indoor infrastructure and associated power and air-conditioning systems. The integration of wireless backhaul reduces the equipment installed per site, as separate backhaul infrastructure is not required. This in turn reduces spares holding and inventories. The iBridge backhaul supports self healing, allowing the network to automatically recover in the event of failure. This increases overall service availability and customer satisfaction.

FLEXIBLE ARCHITECTURE

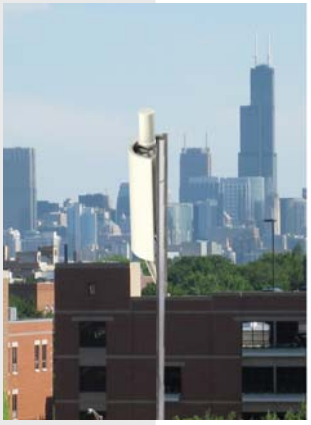
The iBridge network can support different topologies as new elements are added to the network, enabling a highly flexible and versatile deployment. Each AirSynergy 3000 node can adopt an access and backhaul functionality, automatically changing backhaul role from termination to relay to ensure a dynamic self-adapting architecture.

Through the use of Airspan's real-time iBridge SON Server, iBridge supports self-continuous optimization of backhaul links, ensuring interference between iBridge nodes is minimized and delivering end-to-end QoS across the network with minimal spectrum consumption.

RADIO PLANNING with SON

AirSynergy is designed to integrate with standardized LTE Access SON solutions. AirSynergy SON is layered and consists of both Integrated eNodeB SON technology, based on Qualcomm's UltraSON™ and a standardized SON interface (which supoport TR. 69) for network based SON. When deployed using iBridge backhaul AirSynergy also integrates Backhaul SON into the LTE SON Framework. This allows a network to be optimized for both LTE access and Backhaul simultaneously without the need for extensive, formal planning.

The products self-configure, self-connect, and self-optimize. In addition, unlike conventional mobile network planning and design, expansion of the coverage area can be optimized and adapted depending on the local need.



3GPP LTE-Advanced ACCESS SPECIFICATIONS

RADIO INTERFACE

Version:	Release 8,9 and 10 Feature Sets
Operational Frequency Bands:	Band 7 and 41 (2.6 GHz) Band 12, 13, 14 and 17 (700 MHz) Band 20 (800 MHz) Band 40 (2.3-2.4 GHz) Band 42 and 43 (3.4-3.8 GHz) Band 3 (1.7-1.8 GHz) Band 44 (700 MHz) Band 4 (1.7-2.1 GHz*) Band 25 (1.9 GHz*) Band 5 (850 MHz*) Band 1 (1.9-2.1 GHz*)
Duplex:	FDD & TDD
Max Channel BW:	3 x 20 MHz
Max Transmit Power:	+33 dBm per Tx
MCS Support:	Up to 64-QAM
Synchronization:	GNSS(GPS) & IEEE1588 PTPv2

KEY FEATURES

Advanced Antenna Techniques

- 2 x 2 MIMO: SM and TxD
- SU-MIMO
- MU-MIMO

System Features

- Inter-RAT Mobility
- RAN Sharing
- Automatic Neighbor Relation (ANR)
- eICIC, ABS and CRE
- Embedded SON

IEEE iBridge BACKHAUL SPECIFICATIONS

IEEE 802.16r RADIO INTERFACE

Operational Frequency Bands:	Various (between 400 MHz and 6 GHz)
Duplex:	TDD
Interface:	Layer 2 Ethernet or internal
MIMO Streams:	2x2 MIMO
MIMO Modes:	Downlink and Uplink, Spatial Multiplexing & STC
Frame Size:	2.5 and 5ms
Max Channel BW:	10, 20, 40 and 80 MHz (2x40 MHz)
Max Output Power:	Up to +30dBm per Tx
MCS Support:	Up to 256-QAM rate 5/6

*In Roadmap

LTE Relay SPECIFICATIONS

Release 8/9 UE Relay

Operational Frequency Bands:	Standard LTE 3GPP Bands
Duplex:	FDD and TDD
MIMO:	DL: 2x2 MIMO, UL SISO
Max Channel BW:	20 MHz (2 x 20 MHz: iBridge 400)
Max Transmit Power:	+30dBm per Tx
MCS Support:	64-QAM rate 5/6 (256 QAM Ready)
UE Class:	Cat 4 (Cat 5/8: iBridge 400)

Release 10 3GPP Compliant Relay

Operational Frequency Bands:	Standard LTE 3GPP Bands
Duplex:	FDD or TDD
MIMO:	DL: 4x4 MIMO, UL 2x2 MIMO
Max Channel BW:	20 MHz (2 x 20 MHz: iBridge 400)
Max Transmit Power:	+30dBm per Tx
MCS Support:	64-QAM rate 5/6 (256QAM ready)
UE Class:	Cat 5/8

iBridge Relay Products

Integrated iBridge 200

UE Silicon based UE Relay
Works wth any Release 8/9 eNodeB
Single 20 MHz FDD or TDD interface
Various Relay EPC Options
Standalone or Integrated with eNodeB

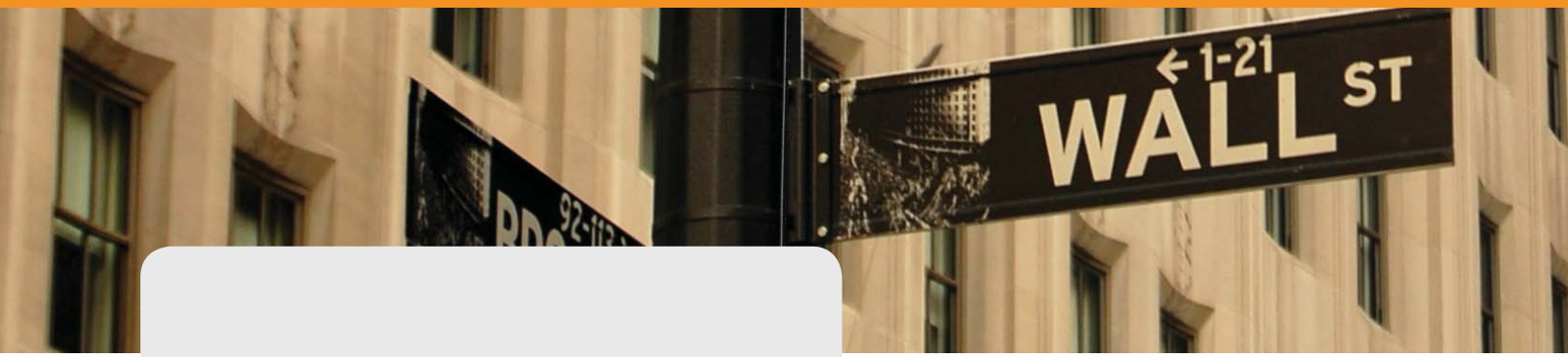
Integrated iBridge 400

SDR Backhaul radio for LTE Relay
Multiple NLOS backhaul options
802.16r, UE Relay, Release 10 3GPP Relay
Standalone or Integrated with eNodeB

PHYSICAL SPECIFICATIONS

eNode/BS Configurations:	Triple LTE Access plus NLOS Small Cell Backhaul radios 3GPP plus IEEE 802.11abgn/ac and/or IEEE 802.16r
Antenna Configurations:	X-Polar Omni Triple X-Polar Smart Switching Directional X-Polar Sectored Quad X-Polar Sectored
Site Configurations:	Omni Access (with or without iBridge Backhaul) Multi-sector (with or without iBridge Backhaul) iBridge Relay (with or without Access) iBridge Base
*Dimensions:	560 x 230 x 190 mm / 22 x 9 x 7.5 in.
*Weight:	20 kg / 44 lb
*Power Consumption:	Up to 220 Watts
Operating Temperature Range:	-40°C to +55°C / -40°F to +130°F
IP Rating:	IP67

*Triple LTE interfaces and single NLOS backhaul



For more information about Airspan, its products and solutions, please visit our web site:

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or email:

sales@airspan.com

Airspan has sales offices in the following countries

- Finland
- Poland
- Russia
- United Kingdom
- United States
- Australia
- India
- Indonesia
- Israel
- Japan
- Philippines
- Sri Lanka
- UAE
- South Africa

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AirSynergy 3000 rev. I

About Airspan

With over 1000 customers in over 100 countries and as a top vendor for carrier-class 3GPP and IEEE broadband wireless solutions, Airspan is recognized as a leader and pioneer in 3GPP and IEEE broadband wireless technologies.

Providing an expansive product portfolio, Airspan offers customers the widest selection of 4G LTE products in the industry with an unsurpassed level of technology to benefit their business case. Airspan has solutions spanning the 700 MHz to 6.4 GHz frequency bands.

Contact Airspan today!

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