



## INTRODUCTION

The Baicells Nova430i is an advanced two-carrier outdoor eNodeB (eNB) compliant with 3GPP LTE TDD technology. This 4x250mW eNB operates in Carrier Aggregation (CA) mode or Dual Carrier (DC) mode.

In CA mode, Nova430i supports 2CC (2 component carriers) DL/UL CA. 2CC DL/UL CA doubles DL/UL peak throughput comparing to that of a single carrier. By aggregating 2 separated spectrum resources into a virtual contiguous spectrum resource. In DC mode, each carrier is treated as an independent cell, supporting 128+128 users with each cell supporting 5, 10, 15, or 20 MHz bandwidth. Using a Nova430i in DC mode simplifies and streamlines the deployment of split sectors.

In addition, HaloB (an embedded EPC option) is available on the Nova430i as part of the base software. The Baicells patented HaloB solution migrates the necessary core network functions to the eNB.

This product comes with a standard one-year warranty; an extended warranty is available.

## HIGHLIGHTS

*NOTE: Features can vary based on model or region.*

- Standard LTE TDD Band 48
- GUI-based local and remote Web management
- Compact, all-in-one design of internal antenna and GPS
- Excellent Non-Line-of-Sight (NLOS) coverage
- Peak rate: Up to DL 290Mbps and UL 70Mbps with 2x20MHz bandwidth
- 2CC DL/UL CA improves the spectrum efficiency of fragmented spectrum resources.
- Suitable for private and public deployments; any IP based backhaul can be used, including public transmission protected by Internet Protocol Security (IPsec)
- 128 RRC connected users per carrier (128+128 in DC mode); upgradeable to higher capacity in future releases
- Integrated small cell form factor for quick and easy installation
- Configured out of the box to work with Baicells Cloud Core
- HaloB as embedded EPC solution
- Supports Transparent Bridge Mode
- Supports Citizens Broadband Radio Service (CBRS) with proxy/direct Spectrum Access System (SAS)
- Supports Multi Operator Radio Access Network (MORAN)
- Support Inter Cell Interference Coordination (ICIC) with static
- Plug-and-play with Self-Organizing Network (SON) capabilities

- Inter operation with all standard LTE Evolved Packet Core (EPC)
- Supports TR-069 network management interface
- Lower power consumption, which reduces OPEX, can be powered easily by Baicells compact outdoor smart UPS

## TECHNOLOGY

|                         |                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------|
| Standard                | LTE TDD RAN (3GPP R15 compliant)                                                     |
| TDD UL/DL Configuration | 1, 2, 6 (with Special Subframe Configuration 7)                                      |
| Frequency Band          | B48 (3550 MHz – 3700 MHz)                                                            |
| Channel Bandwidth       | SC: 5/10/15/20 MHz<br>CA: 40 MHz as maximum aggregated aggregated bandwidth          |
| Multiplexing            | MIMO: 2x2 (DL)                                                                       |
| Security                | Radio: SNOW 3G/AES-128<br>Backhaul: IPsec (X.509 AES-128, AES-256, SHA-128, SHA-256) |

## INTERFACE

|                    |                                                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------|
| Ethernet Interface | 1 RJ-45 Ethernet interface (1 FE/GE)                                                               |
| Power Supply       | PoE++ (IEEE 802.3bt compliant)                                                                     |
| Protocols Used     | IPv4/IPv6 (Dual Stack), UDP, TCP, ICMP, SNMPv2c, NTP, SSH, IPsec, TR-069, HTTP/HTTPS, 1588v2, DHCP |
| Network Management | IPv4/IPv6, HTTP/HTTPS, SNMPv2c, TR-069, SSH, Embedded EPC                                          |
| VLAN/VxLAN         | 802.IQ/VxLAN                                                                                       |
| LED Indicators     | 4 X STATUS LED<br>CELL1/CELL2/ALM/PWR                                                              |

## PERFORMANCE

| Peak Data Rate (DC) | 2x20 MHz       | DL (Mbps) | UL (Mbps) |
|---------------------|----------------|-----------|-----------|
|                     | UL/DL Config 1 | 2x105     | 2x28      |
|                     | UL/DL Config 2 | 2x145     | 2x14      |
|                     | UL/DL Config 6 | 2x85      | 2x35      |
|                     | 2x10 MHz       | DL (Mbps) | UL (Mbps) |
|                     | UL/DL Config 1 | 2x51      | 2x14      |

|                          |                                                                                                                                                                                        |           |           |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|
|                          | UL/DL Config 2                                                                                                                                                                         | 2x70      | 2x7       |
|                          | UL/DL Config 6                                                                                                                                                                         | 2x42      | 2x17      |
| Peak Data Rate (CA)      | 2x20 MHz                                                                                                                                                                               | DL (Mbps) | UL (Mbps) |
|                          | UL/DL Config 1                                                                                                                                                                         | 210       | 56        |
|                          | UL/DL Config 2                                                                                                                                                                         | 290       | 28        |
|                          | UL/DL Config 6                                                                                                                                                                         | 170       | 70        |
|                          | 2x10 MHz                                                                                                                                                                               | DL (Mbps) | UL (Mbps) |
|                          | UL/DL Config 1                                                                                                                                                                         | 102       | 28        |
|                          | UL/DL Config 2                                                                                                                                                                         | 140       | 14        |
|                          | UL/DL Config 6                                                                                                                                                                         | 84        | 34        |
|                          | 20MHz + 10MHz                                                                                                                                                                          | DL (Mbps) | UL (Mbps) |
|                          | UL/DL Config 1                                                                                                                                                                         | 156       | 42        |
|                          | UL/DL Config 2                                                                                                                                                                         | 215       | 21        |
|                          | UL/DL Config 6                                                                                                                                                                         | 127       | 52        |
|                          | 20MHz + 15MHz                                                                                                                                                                          | DL (Mbps) | UL (Mbps) |
|                          | UL/DL Config 1                                                                                                                                                                         | 182       | 49        |
|                          | UL/DL Config 2                                                                                                                                                                         | 250       | 24        |
|                          | UL/DL Config 6                                                                                                                                                                         | 148       | 61        |
| User Capacity            | Up to 128 RRC connected users per cell (4 users per TTI) <ul style="list-style-type: none"> <li>• SC/CA: 128 RRC connected users</li> <li>• DC: 128+128 RRC connected users</li> </ul> |           |           |
| Maximum Deployment Range | 5 kilometers                                                                                                                                                                           |           |           |
| Latency                  | 30 milliseconds                                                                                                                                                                        |           |           |
| Receive Sensitivity      | -100 dBm (per channel)                                                                                                                                                                 |           |           |
| Modulation               | MCS0 (QPSK) to MCS27 (256QAM)<br><br>DL: QPSK, 16QAM, 64QAM, 256QAM                                                                                                                    |           |           |

|                      |                                                                         |
|----------------------|-------------------------------------------------------------------------|
|                      | UL: QPSK, 16QAM, 64QAM                                                  |
| Transmit Power Range | 0 to 24 dBm per channel (combined +30dBm, configurable) (1 dB interval) |
| Quality of Service   | Nine-level priority indicated by QoS Class Identifiers (QCI)            |
| ARQ/HARQ             | Yes                                                                     |
| Synchronization      | GPS (built-in), 1588v2                                                  |

## MODULATION LEVELS (ADAPTIVE)

| MCS     | Modulation Scheme | RSRP (dBm)                     | Coverage Distance (km) |
|---------|-------------------|--------------------------------|------------------------|
| 0 - 4   | QPSK              | $-120 \leq \text{RSRP} < -110$ | $4 < D \leq 5$         |
| 5 - 9   | 16QAM             | $-110 \leq \text{RSRP} < -100$ | $3 < D \leq 4$         |
| 10 - 19 | 64QAM             | $-100 \leq \text{RSRP} < -85$  | $2 < D \leq 3$         |
| 20 - 27 | 256QAM            | $\text{RSRP} \geq -85$         | $D \leq 2$             |

NOTE: The information provided is for reference only as the environment can impact modulation levels.

Scenario: Base Station height is 30 meters; Customer User Equipment (CPE) height is two meters.

## FEATURES

|                 |                                                                                                                                                                            |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Voice           | VoLTE*                                                                                                                                                                     |
| NSA             | Supported                                                                                                                                                                  |
| SON             | Self-Organizing Network <ul style="list-style-type: none"> <li>Automatic setup</li> <li>Automatic Neighbor Relation (ANR)</li> <li>PCI confliction detection</li> </ul>    |
| EPC             | HaloB (Embedded EPC)                                                                                                                                                       |
| Traffic Offload | Local breakout                                                                                                                                                             |
| Layer 2 Support | Transparent Bridge Mode                                                                                                                                                    |
| Maintenance     | <ul style="list-style-type: none"> <li>Local/Remote Web maintenance</li> <li>Online status management</li> <li>Performance statistics</li> <li>Fault management</li> </ul> |

|  |                                                                                                                                                                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>Local/Remote software upgrade</li> <li>Logging</li> <li>Connectivity diagnosis</li> <li>Automatic start and configuration</li> <li>Alarm reporting</li> <li>User information tracing</li> <li>Signaling trace</li> </ul> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

\* Planned for future release

## LINK BUDGET

|                      |                                                                                                                                                                                                                                  |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Antenna              | Integrated 4T4R antennas <ul style="list-style-type: none"> <li>Horizontal Beam width <math>65\pm 10^\circ</math></li> <li>Vertical Beam width <math>17^\circ</math></li> <li>Polarization: <math>\pm 45^\circ</math></li> </ul> |
| Electrical Down Tilt | $6^\circ$                                                                                                                                                                                                                        |
| Antenna Gain         | $13 \pm 1$ dBi                                                                                                                                                                                                                   |
| Maximum EIRP         | 40 dBm per sector                                                                                                                                                                                                                |
| Power Control        | UL Open-loop/Closed-loop Power Control, DL Power Allocation (3GPP TS 36.213 compliant)                                                                                                                                           |

## PHYSICAL

|                                      |                                                                                        |
|--------------------------------------|----------------------------------------------------------------------------------------|
| Surge Suppression                    | Yes                                                                                    |
| Power Interface Lightning Protection | Differential mode: $\pm 10$ KA<br>Common mode: $\pm 20$ KA                             |
| MTBF                                 | $\geq 150000$ hours                                                                    |
| MTTR                                 | $\leq 1$ hour                                                                          |
| Ingress Protection Rating            | IP65                                                                                   |
| Operating Temperature                | $-40^\circ\text{F}$ to $131^\circ\text{F}$ / $-40^\circ\text{C}$ to $55^\circ\text{C}$ |
| Storage Temperature                  | $-49^\circ\text{F}$ to $158^\circ\text{F}$ / $-45^\circ\text{C}$ to $70^\circ\text{C}$ |
| Humidity                             | 5% to 95% RH                                                                           |
| Atmospheric Pressure                 | 70 kPa to 106 kPa                                                                      |

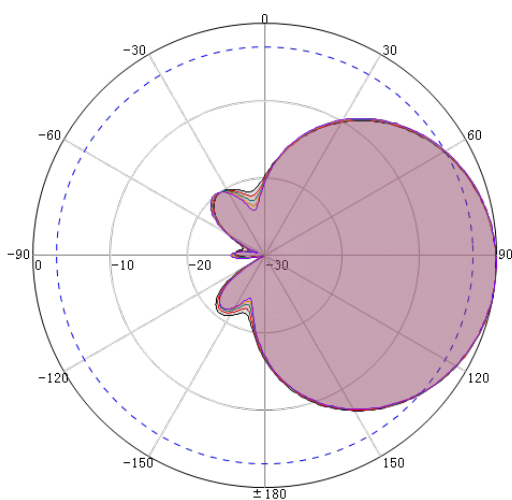
|                    |                                                        |
|--------------------|--------------------------------------------------------|
| Power Consumption  | Typical 20W, maximum 25W                               |
| Weight             | 10.7lbs / 4.85kg (without bracket)                     |
| Dimensions (HxWxD) | 12.6 x 8.9 x 4.1 inches<br>319 x 227 x 104 millimeters |
| Installation       | Pole or wall mount                                     |

## MODEL NUMBERS

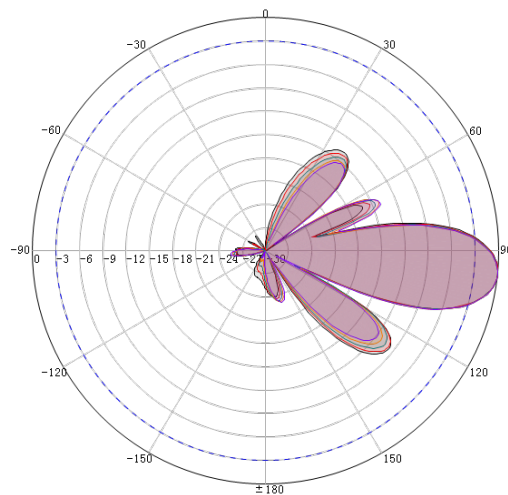
|          |                                                                                                                                                                                                                                                                    |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| pBS3101S | <p>Nova430i outdoor TDD eNB - LTE Release 15, 4x250mW (24 dBm), 1FE/GE, PoE++, 3.5 GHz (3550MHz -3700MHz), B48, built-in antenna.</p> <ul style="list-style-type: none"> <li>FCC certification: 2AG32PBS3101S</li> <li>IC certification: 20982-PBS3101S</li> </ul> |
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NOTE: Customized versions can be requested.

## ANTENNA PATTERN



H-Pattern



V-Pattern