



## INTRODUCTION

The Baicells Nova436Q is an advanced two-carrier outdoor eNodeB (eNB) compliant with 3GPP LTE TDD technology. This 4x1W eNB operates in Carrier Aggregation (CA) mode or Dual Carrier (DC) mode.

In CA mode, Nova436Q supports 2CC (2 Component Carriers) DL/UL CA. 2CC DL/UL CA doubles DL/UL peak throughput compared to a single carrier by aggregating two separate spectrum resources into a virtual contiguous spectrum resource.

In DC mode, each carrier is treated as an independent cell, supporting 96+96 users, with each cell supporting 5, 10, 15, or 20 MHz bandwidth. Using a Nova436Q in DC mode simplifies and streamlines the deployment of split sectors.

In addition, HaloB (an embedded EPC option) is available on the Nova436Q 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 Bands 42/48
  - Customization can be requested:
    - Email [sales\\_na@baicells.com](mailto:sales_na@baicells.com) for North America.
    - Email [contact@baicells.com](mailto:contact@baicells.com) for all other regions.
- GUI-based local and remote Web management
- Excellent Non-Line-of-Sight (NLOS) coverage
- Peak rate: Up to DL 290 Mbps and UL 70 Mbps with 2x20 MHz 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)
- 96 RRC connected users per carrier (96+96 in DC mode), upgradeable to higher capacity in future releases
- Supports 4-port antenna or 2 antennas with 2 ports
- Integrated small cell form factor for quick and easy installation
- Configured out-of-the-box to work with Baicells CloudCore
- HaloB as embedded EPC solution
- Supports Transparent Bridge Mode
- Supports Citizens Broadband Radio Service (CBRS)
- Plug-and-play with Self-Organizing Network (SON) capabilities
- Interoperable with 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 SmartUPS

## TECHNOLOGY

|                                |  |
|--------------------------------|--|
| <b>Standard</b>                | LTE TDD RAN (3GPP Release 15 compliant)  |
| <b>TDD UL/DL Configuration</b> | 1, 2, 6 (with Special Subframe Configuration 7)                                      |
| <b>Frequency Band</b>          | B42 (3400 MHz–3600 MHz)<br>B48 (3550 MHz–3700 MHz)                                   |
| <b>Channel Bandwidth</b>       | SC: 5/10/15/20 MHz<br>CA: 40 MHz as maximum aggregated bandwidth                     |
| <b>Multiplexing</b>            | MIMO: 2x2 (DL)   |
| <b>Security</b>                | Radio: SNOW 3G/AES-128<br>Backhaul: IPsec (X.509 AES-128, AES-256, SHA-128, SHA-256) |

## INTERFACE

|                           |  |
|---------------------------|--|
| <b>Ethernet Interface</b> | 1 optical (SFP) and 1 RJ-45 Ethernet interface (1 GE)  |
| <b>Power Supply</b>       | -40 VDC to -57 VDC, nominal -48 VDC<br>AC adaptor (multi-national standards)                       |
| <b>Protocols Used</b>     | IPv4/IPv6 (Dual Stack), UDP, TCP, ICMP, SNMPv2c, NTP, SSH, IPsec, TR-069, HTTP/HTTPS, 1588v2, DHCP |
| <b>Network Management</b> | IPv4/IPv6, HTTP/HTTPS, SNMPv2c, TR-069, SSH, Embedded EPC  |
| <b>VLAN/VxLAN</b>         | 802.IQ/VxLAN   |
| <b>LED Indicators:</b>    | 4 x status LED<br>CELL1/CELL2/ALM/PWR  |

## PERFORMANCE

| <b>Peak Data Rate (DC)</b> | <b>2x20 MHz</b> | <b>DL (Mbps)</b> | <b>UL (Mbps)</b> |
|----------------------------|-----------------|------------------|------------------|
|                            | UL/DL Config 1  | 2x105            | 2x28             |
|                            | UL/DL Config 2  | 2x145            | 2x14             |
|                            | UL/DL Config 6  | 2x85             | 2x35             |
| <b>Peak Data Rate (CA)</b> | <b>2x10 MHz</b> | <b>DL (Mbps)</b> | <b>UL (Mbps)</b> |
|                            | UL/DL Config 1  | 2x51             | 2x14             |
|                            | UL/DL Config 2  | 2x70             | 2x7              |
|                            | UL/DL Config 6  | 2x42             | 2x17             |
| <b>Peak Data Rate (CA)</b> | <b>2x20 MHz</b> | <b>DL (Mbps)</b> | <b>UL (Mbps)</b> |
|                            | UL/DL Config 1  | 210              | 56               |
|                            | UL/DL Config 2  | 290              | 28               |
|                            | UL/DL Config 6  | 170              | 70               |

|                                 |  |                  |                  |
|---------------------------------|--|------------------|------------------|
|                                 | <b>2x10 MHz</b>  | <b>DL (Mbps)</b> | <b>UL (Mbps)</b> |
|                                 | UL/DL Config 1   | 102              | 28               |
|                                 | UL/DL Config 2   | 140              | 14               |
|                                 | UL/DL Config 6   | 84               | 34               |
|                                 | <b>20 MHz + 10 MHz</b>   | <b>DL (Mbps)</b> | <b>UL (Mbps)</b> |
|                                 | UL/DL Config 1   | 156              | 42               |
|                                 | UL/DL Config 2   | 215              | 21               |
|                                 | UL/DL Config 6   | 127              | 52               |
|                                 | <b>20 MHz + 15 MHz</b>   | <b>DL (Mbps)</b> | <b>UL (Mbps)</b> |
|                                 | UL/DL Config 1   | 182              | 49               |
|                                 | UL/DL Config 2   | 250              | 24               |
|                                 | UL/DL Config 6   | 148              | 61               |
| <b>User Capacity</b>            | Up to 96 RRC connected users per cell (4 users per TTI) <ul style="list-style-type: none"> <li>• SC/CA: 96 RRC connected users</li> <li>• DC: 96+96 RRC connected users</li> </ul> |                  |                  |
| <b>Maximum Deployment Range</b> | 12 kilometers  |                  |                  |
| <b>Latency</b>                  | 30 milliseconds  |                  |                  |
| <b>Receive Sensitivity</b>      | -100 dBm (per channel)   |                  |                  |
| <b>Modulation</b>               | MCS0 (QPSK) to MCS27 (256 QAM)<br>DL: QPSK, 16 QAM, 64 QAM, 256 QAM<br>UL: QPSK, 16 QAM, 64 QAM  |                  |                  |
| <b>Transmit Power Range</b>     | 0 to 30 dBm per channel (combined +36 dBm, configurable) (1 dB interval)   |                  |                  |
| <b>Quality of Service</b>       | Nine-level priority indicated by QoS Class Identifiers (QCI)   |                  |                  |
| <b>ARQ/HARQ</b>                 | Supported  |                  |                  |
| <b>Synchronization</b>          | GPS, 1588v2 (default)  |                  |                  |

## MODULATION LEVELS (ADAPTIVE)

| MCS   | Modulation Scheme | RSRP (dBm)                     | Coverage Distance (km) |
|-------|-------------------|--------------------------------|------------------------|
| 0–4   | QPSK              | $-120 \leq \text{RSRP} < -110$ | $9 < D \leq 12$        |
| 5–9   | 16 QAM            | $-110 \leq \text{RSRP} < -100$ | $4 < D \leq 9$         |
| 10–19 | 64 QAM            | $-100 \leq \text{RSRP} < -85$  | $2 < D \leq 4$         |
| 20–27 | 256 QAM           | $\text{RSRP} \geq -85$         | $D \leq 2$             |

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

|                        |   |
|------------------------|---|
| <b>Voice</b>           | VoLTE*  |
| <b>NSA</b>             | Supported   |
| <b>SON</b>             | 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>   |
| <b>EPC</b>             | HaloB (Embedded EPC)  |
| <b>Traffic Offload</b> | Local breakout  |
| <b>Layer 2 Support</b> | Transparent Bridge Mode   |
| <b>Maintenance</b>     | <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> <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

|                           |   |
|---------------------------|---|
| <b>Antenna Connection</b> | External high-gain antenna with N-Type connectors, either (2) 2-port antennas or (1) 4-port antenna |
| <b>GPS Antenna</b>        | External GPS antenna, N-Type connector  |
| <b>Power Control</b>      | UL Open-loop/Closed-loop Power Control, DL Power Allocation (3GPP TS 36.213 compliant)              |

## PHYSICAL

|   |  |
|---|--|
| <b>Surge Suppression</b>                    | Yes  |
| <b>Power Interface Lightning Protection</b> | Differential mode: $\pm 10$ KA<br>Common mode: $\pm 20$ KA |
| <b>MTBF</b>                                 | $\geq 150000$ hours  |
| <b>MTRR</b>                                 | $\leq 1$ hour  |
| <b>Ingress Protection Rating</b>            | IP66   |
| <b>Operating Temperature</b>                | -40°F to 131°F / -40°C to 55°C                             |
| <b>Storage Temperature</b>                  | -49°F to 158°F / -45°C to 70°C                             |

|                             |   |
|-----------------------------|---|
| <b>Humidity</b>             | 5% to 95% RH  |
| <b>Atmospheric Pressure</b> | 70 kPa to 106 kPa   |
| <b>Power Consumption</b>    | Typical 60 W, maximum 100 W   |
| <b>Weight</b>               | 16.5 lb/7.5 kg  |
| <b>Dimensions (HxWxD)</b>   | With joint: <ul style="list-style-type: none"> <li>• 13.1 x 9.4 x 4.1 inches</li> <li>• 333 x 240 x 105 millimeters</li> </ul> Without joint and handle: <ul style="list-style-type: none"> <li>• 11.8 x 9.4 x 4.1 inches</li> <li>• 300 x 240 x 105 millimeters</li> </ul> |
| <b>Installation</b>         | Pole or wall mount  |

## MODEL NUMBERS

|                  |  |
|------------------|--|
| <b>mBS31001B</b> | Nova436Q Outdoor TDD eNB – LTE Release 15, 4x1W (30 dBm), 1 GE+1 OPT, 3.5 GHz (3550 MHz–3700 MHz), B48, external antenna <ul style="list-style-type: none"> <li>• FCC certification: 2AG32MBS3100196N</li> <li>• IC certification: 20982-MBS31001</li> <li>• UL certified – Ordinary location</li> <li>• UL certified – HazLoc C1D2</li> </ul> |
| <b>mBS31004</b>  | Nova436Q Outdoor TDD eNB – LTE Release 15, 4x1W (30 dBm), 1 GE+1 OPT, 3.5 GHz (3400 MHz–3600 MHz), B42, external antenna   |

NOTE: Customized versions can be requested.