



## INTRODUCTION

The Baicells Nova452 is an advanced two-carrier outdoor eNodeB (eNB) compliant with 3GPP LTE TDD and hardware-ready for NR 5G technology. This 4x40W eNB operates in either Carrier Aggregation (CA) mode or Dual Carrier (DC) mode.

In CA mode, Nova452 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 512+512 users with each cell supporting 5, 10, 15, 20 or 100MHz(only for NR) bandwidth. Using a Nova452 in DC mode simplifies and streamlines the deployment of split sectors.

In addition, HaloB (an embedded EPC option) is available on the Nova452 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 40, 41, 42
- GUI-based local and remote Web management
- Excellent Non-Line-of-Sight (NLOS) coverage
- Suitable for private and public deployments; any IP based backhaul can be used, including public transmission protected by Internet Protocol Security (IPsec)
- Peak rate: Up to DL 580Mbps\* with 4x4 MIMO Carrier Aggregation (CA) mode and UL 56Mbps with CA mode
- Supports 512 RRC connected users per cell, 512+512 RRC connected users in DC mode
- Supports downlink of 256QAM
- 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
- Plug-and-play with Self-Organizing Network (SON) capabilities
- Inter operation with all standard LTE Evolved Packet Core (EPC)
- Highly secured with equipment certification against potential intrusion risk
- Supports TR-069 network management interface
- Lower power consumption, which reduces OPEX, can be powered easily by Baicells compact outdoor smart UPS
- Supports software update to 5G or 4G+5G RRU
- Supports RET function AISG 2.0

\* Planned for future release

## TECHNOLOGY

Standard	LTE TDD RAN (3GPP R15 compliant)
TDD UL/DL Configuration	1, 2, 6 (with Special Subframe Configuration 7)
Frequency Band	B40(2300 MHz – 2400 MHz) B41 (2496 MHz – 2690 MHz) B42 (3400 MHz– 3600 MHz)
Channel Bandwidth	SC: 5/10/15/20 MHz, or Max 100MHz in NR mode CA: 40 MHz as maximum aggregated bandwidth
Multiplexing	4x4 MIMO (DL)
Security	Radio: SNOW 3G/AES-128 Backhaul: IPsec (AES-128, AES-256, SHA-128, SHA-256)

## INTERFACE

Ethernet Interface	1 optical interface (SFP) 1 optical interface (SFP) or eCPRI (config as RRU mode)
Power Supply	-40VDC ~ -57VDC, nominal -48VDC AC adaptor (multi-national standards)
Protocols Used	IPv4/IPv6 (Dual Stack), UDP, TCP, ICMP, NTP, SSH, IPsec, TR-069, HTTP/HTTPS, DHCP
Network Management	IPv4/IPv6, HTTP/HTTPS, TR-069, SSH, Embedded EPC
VLAN/VxLAN	802.IQ/VxLAN
LED Indicators	5 x status LED RUN/ACT/ALM/LINK0/LINK1

## PERFORMANCE

Peak Data Rate (DC)	2x20 MHz		DL256QAM (Mbps)	DL64QAM (Mbps)	UL64QAM (Mbps)
UL/DL Config 1	DL 2x2 MIMO		2x105	2x80	2x28
	DL 4x4 MIMO		2x210*	2x160	2x28
UL/DL Config 2	DL 2x2 MIMO		2x145	2x110	2x14
	DL 4x4 MIMO		2x290*	2x220	2x14
UL/DL Config 6	DL 2x2 MIMO		2x85	2x65	2x35

			DL 4x4 MIMO	2x174*	2x132	2x35
	2x10 MHz			DL256QAM (Mbps)	DL64QAM (Mbps)	UL64QAM (Mbps)
	UL/DL Config 1	DL 2x2 MIMO		2x51	2x38	2x14
		DL 4x4 MIMO		2x103*	2x77	2x14
	UL/DL Config 2	DL 2x2 MIMO		2x70	2x52	2x7
		DL 4x4 MIMO		2x141*	2x106	2x7
	UL/DL Config 6	DL 2x2 MIMO		2x42	2x31	2x17
		DL 4x4 MIMO		2x84*	2x63	2x17
	2x20 MHz			DL256QAM (Mbps)	DL64QAM (Mbps)	UL64QAM (Mbps)
	UL/DL Config 1	DL 2x2 MIMO		210	160	56
		DL 4x4 MIMO		420*	320	56
	UL/DL Config 2	DL 2x2 MIMO		290	220	28
		DL 4x4 MIMO		580*	440	28
Peak Data Rate (CA)	UL/DL Config 6	DL 2x2 MIMO		170	130	70
		DL 4x4 MIMO		348*	264	70
	2x10 MHz			DL256QAM (Mbps)	DL64QAM (Mbps)	UL64QAM (Mbps)
	UL/DL Config 1	DL 2x2 MIMO		102	76	28
		DL 4x4 MIMO		206*	154	28
	UL/DL Config 2	DL 2x2 MIMO		140	104	14
		DL 4x4 MIMO		282*	212	14
	UL/DL Config 6	DL 2x2 MIMO		84	62	34
		DL 4x4 MIMO		168*	126	34
	20MHz + 10MHz			DL256QAM (Mbps)	DL64QAM (Mbps)	UL64QAM (Mbps)
	UL/DL Config 1	DL 2x2 MIMO		156	118	42
		DL 4x4 MIMO		313*	237	42
	UL/DL Config 2	DL 2x2 MIMO		215	162	21



		DL 4x4 MIMO	431*	326	21
	UL/DL Config 6	DL 2x2 MIMO	127	96	52
		DL 4x4 MIMO	258*	195	52
User Capacity	Up to 512 RRC connected users per cell <ul style="list-style-type: none"> <li>SC/CA: 512 RRC connected users</li> <li>DC: 512+512 RRC connected users</li> </ul>				
Maximum Deployment Range	60 kilometers				
Latency	30 milliseconds				
Receive Sensitivity	-103dBm (per channel)				
Modulation	MCS0 (QPSK) to MCS27 (256QAM) DL: QPSK, 16QAM, 64QAM, 256QAM UL: QPSK, 16QAM, 64QAM				
Transmit Power Range	37dBm to 46dBm per channel (combined +52dBm, configurable) (1 dB interval)				
Quality of Service	Nine-level priority indicated by QoS Class Identifiers (QCI)				
ARQ/HARQ	Supported				
Synchronization	GPS				

\* Planned for future release

## MODULATION LEVELS (ADAPTIVE)

MCS	Modulation Scheme	RSRP (dBm)	Coverage Distance (km)
0 - 4	QPSK	$-120 \leq \text{RSRP} < -110$	$40 < D \leq 60$
5 - 10	16QAM	$-110 \leq \text{RSRP} < -100$	$10 < D \leq 40$
11-19	64QAM	$-100 \leq \text{RSRP} < -85$	$4 < D \leq 10$
20 - 27	256QAM	$\text{RSRP} \geq -85$	$D \leq 4$

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, Circuit Switched Fallback (CSFB)
SON	Self-Organizing Network <ul style="list-style-type: none"> <li>Automatic setup</li> </ul>

	<ul style="list-style-type: none"> <li>Automatic Neighbor Relation (ANR)</li> <li>PCI confliction detection</li> </ul>
EPC	HaloB (Embedded EPC)
RET support	Yes
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> <li>Local/Remote software upgrade</li> <li>Logging</li> <li>Connectivity diagnosis</li> </ul>

\* Planned for future release

## LINK BUDGET

Antenna Connection	4T4R external high gain antenna with mini-DIN connectors
GPS Antenna	External GPS antenna, N-Type connector
VSWR	< 1.5
Power Control	UL Open-loop/Closed-loop Power Control, DL Power Allocation (3GPP TS 36.213 compliant)
RET	AISG2.0, 24VDC ~30VDC, RS-485, 3GPP TS 25.461

## PHYSICAL

Surge Suppression	Yes
Power Interface Lightning Protection	Differential mode: $\pm 10$ KA Common mode: $\pm 20$ KA
MTBF	$\geq 150000$ hours
MTTR	$\leq 1$ hour
Ingress Protection Rating	IP66
Operating Temperature	-40°F to 131°F / -40°C to 55°C
Storage Temperature	-49°F to 158°F / -45°C to 70°C
Humidity	5% to 95% RH

Atmospheric Pressure	70 kPa to 106 kPa
Power Consumption	Typical 360W, maximum 480W
Weight	Without bracket: 30.9lbs / 14.0kg With pre-installed bracket: 32.2lbs / 14.6kg
Dimensions (HxWxD)	16.5 x 12.4 x 4.8 inches 420 X 315 X 123 millimeters
Installation	Pole or wall mount

## MODEL NUMBERS

sBS77400	Nova452 outdoor TDD eNB - B40(2300MHz-2400MHz),4T4R,4*40W,48VDC, external antenna, 1*OPT +1*OPT)
sBS77410	Nova452 outdoor TDD eNB - B41(2496MHz-2690MHz),4T4R,4*40W,48VDC, external antenna, 1*OPT+1*OPT)
sBS77420	Nova452 outdoor TDD eNB - B42(3400MHz-3600MHz),4T4R,4*40W,48VDC, external antenna, 1*OPT+1*OPT)

NOTE: Customized versions can be requested. (AC version will be ready in the future)