



INTRODUCTION

The Baicells Aurora 454 is an advanced outdoor 5G Sub-6G integrated ALL-IN -ONE base station (gNB), which is designed and developed based on a Qualcomm 5G SoC solution. This 4×60 W gNB features low power consumption, a compact form factor, and easy maintenance.

This product helps operators to enhance the coverage performance of 5G networks effectively, improve the capacity of 5G networks and eliminate the coverage blind spots. It also can help to reduce overall system power consumption.

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

HIGHLIGHTS

NOTE: Features can vary based on model or region.

- Standard NR FR1 Bands n41
- Complies with 3GPP Release 16 and Release 17 RedCap*
- GUI-based local and remote Web management
- Supports **100MHz** carrier bandwidth and 2-carrier aggregation*
- Peak rate: Up to DL 1500Mbps, UL 660Mbps
- Supports up to 1200 users
- Supports Standalone (SA) mode
- Supports SCTP control (IKE SCTP)

- Supports EN-DC option 3x
- Integrated small cell form factor for quick and easy installation
- Supports flexible xHaul
- Highly secure 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

* Planned for future release

TECHNOLOGY

Standard	5G NR TDD (3GPP R16 and R17* compliant)
TDD UL/DL Configuration	5ms periodicity ($\mu=1$): DDDDD+DDSUU 2.5ms dual periodicity ($\mu=1$): DDDSU+DDSUU 2.5ms single periodicity ($\mu=1$): DSUUU
Frequency Band	n41 (2496 MHz – 2690MHz)
Channel Bandwidth	n41: 10/20/30/40/50/60/70/80/90/100MHz
Multiplexing	4x4 MIMO (DL: 4L, UL: SU 2L, and MU 4L*)
Security	Radio: Null/SNOW 3G/AES-128/ZUC Backhaul: IPsec (X.509 AES-128, AES-256, SHA-128, SHA-256)

* Planned for future release

INTERFACE

Ethernet Interface	1 x 2.5GE RJ-45 3 x 10GE optical interfaces (SFP+)
Power Supply	-40VDC ~ -57VDC, nominal -48VDC
Protocols Used	IPv4/IPv6, UDP, TCP, ICMP, NTP, SSH, IPsec, TR-069, HTTP/HTTPS, DHCP
Network Management	IPv4/IPv6, HTTP/HTTPs, TR-069, SSH, Embedded 5GC*
VLAN/VxLAN	802.1Q/VxLAN
LED Indicators	5 status LEDs

	RUN/ACT/ALM/BH/FB
RF Antenna	4T4R external high gain antenna with N-Type connectors, or integrated antenna*
GNSS Antenna	External GNSS antenna, N-Type connector

* Planned for future release

PERFORMANCE

Peak Data Rate	100 MHz	DL (Mbps)	UL (Mbps) with 256QAM
	5ms periodicity (DDDDD+DDSUU, 6:4:4)	1500	230
	2.5ms dual periodicity (DDDSU+DDSUU, 10:2:2)	1300	330
	2.5ms single periodicity (DSUUU, 10:2:2)	660	660
User Capacity	Up to 1200 users per carrier		
Maximum Deployment Range	15km (60km*)		
Latency	Round-trip delay (RTD) less than 10 milliseconds		
Receive Sensitivity	-98 dBm (per channel)		
Modulation	UL: MCS0 (QPSK) to MCS27 (256QAM) DL: MCS0 (QPSK) to MCS27 (256QAM)		
Transmit Power Range	38dBm to 47.78 dBm per channel (combined +54dBm, configurable) (1 dB interval)		
Quality of Service	Complies with 3GPP standard 5G QoS Identifier (5QI)		
ARQ/HARQ	Supported		
Synchronization	GNSS		

* Planned for future release

FEATURES

Voice	VoNR/ViNR/EPS-FB
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SON*	Self-Organizing Network - Automatic Neighbor Relation (ANR) - PCI conflict detection
RET support	AISG2.0, 20VDC ~30VDC, RS-485, 3GPP TS 25.461
Maintenance	- Local/Remote Web maintenance - Online status management - Performance statistics - Fault management - Local/Remote software upgrade - Logging - Connectivity diagnosis - Auto startup

LINK BUDGET

VSWR	≤ 1.5
EIRP	Antenna gain = G EIRP = (54+G)dBm/100MHz
Power Control	UL Open-loop/Closed-loop Power Control, DL Power Allocation (3GPP TS 38.213 compliant)

MODULATION LEVELS (ADAPTIVE, DL LOS)

MCS	Modulation Scheme	RSRP (dBm)	Coverage Distance (km)
20~27	256QAM	$-90 \leq \text{RSRP} < -50$	$D \leq 6$
11~19	64QAM	$-102 \leq \text{RSRP} < -90$	$6 < D \leq 8$
5~10	16QAM	$-107 \leq \text{RSRP} < -102$	$8 < D \leq 9$
0~4	QPSK	$-117 \leq \text{RSRP} < -107$	$9 < D \leq 14$

PHYSICAL

Surge Suppression	Power interface: Differential mode: 2 KA; Common mode: 4 KA
Lightning Protection	Power interface: Differential mode: ± 10 KA; Common mode: ± 20 KA
MTBF	≥ 150000 hours
MTTR	≤ 1 hour
Ingress Protection Rating	IP66
Operating Temperature	-40°F to 131°F / -40°C to 55°C
Storage Temperature	-58°F to 149°F / -50°C to 65°C
Humidity	5% to 95% RH
Atmospheric Pressure	70 kPa to 106 kPa
Power Consumption	Maximum 650W
Weight	18kg
Dimensions (HxWxD)	527 x 308 x 120 millimeters
Installation	Pole or wall mount

MODEL NUMBERS

BSQ7041A454	Aurora454 outdoor 5G NR integrated TDD gNB –n41(2496MHz-2690MHz),4T4R,4*60W, -48VDC, external antenna, 1*(2.5G)RJ45+3*(10GE)OPT FCC: 2AG32BSQ7041A454
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NOTE: Customized versions can be requested.