nCELL-T5000

5G Virtualized BaseBand Units

5GNR

4 Cells

3GPP Release R16

DL 1.5Gbps/UL 260Mbps

800 Active Users per BBU

The nCELL-T5000 from BTI WIRELESS is used to realize 5G NR base station processing unit to centrally control and manage the entire base station system. It realizes direct access and data interaction with 5G core network, with NGAP and XnAP interface. Also, the product realizes 5G NR access network protocol stack function, RRC, PDCP, SDAP, RLC, MAC and PHY protocol layer functions, as well as baseband processing functions.

PROCESSOR PARAMETERS	
CPU	CPU Intel® Xeon® D-2177NT Processor 105W (14C/28T) CPU Intel® Xeon® D-2187NT Processor 110W (16C/32T)
Photolithography	14nm
Processor Base Frequency	XeonD-2177NT Processor – 1.9GHz XeonD-2187NT Processor – 2.0GHz
Maximum Turbo Frequency	3.00 GHz
Cache	19 MB
Memory Type	DDR4-2666
Supported ECC Memory	Yes
Maximum Number of Memory Channels	4
Maximum Memory Speed	2667 MHz
Maximum Memory (Depending on Memory Type)	256 GB
Chipset	Intel® Xeon® SoC
Size	482.6 x 420 x 44.5 mm | 19.00 x 16.54 x 1.75 in
Weight	7.2 kg | 15.87 lbs
Power Supply	450W 1+1 redundant PSUs 100V to 240V AC @50-60Hz -36V to -72V DC
MTBF	150,000 h

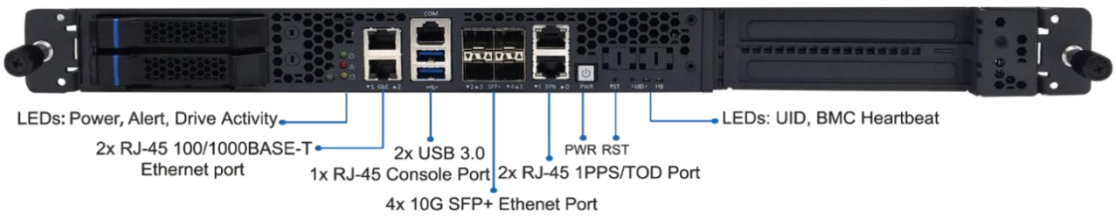
FUNCTIONAL INDICATORS	
Standard	3GPP R16
Server Platform	Xeon D-2177NT Processor Xeon D-2187NT Processor
Maximum Number of Cells	2 (XeonD-2177NT Processor) 4 (XeonD-2187NT Processor)
Carrier Bandwidth	20MHz/40MHz/50MHz/60MHz/80MHz/100 MHz
Subcarrier Spacing	30 kHz
Number of Active Users	800 users per BBU
Downlink Peak Rate	1.5 Gbps (DDDSU), 658Mbps (DSUUU)
Uplink Peak Rate	260 Mbps (DDDSU), 669Mbps (DSUUU)
Maximum Number of Data Streams	Downlink 4 streams
	Uplink 2 streams
Number of Concurrently Scheduled Users	4 users / Slot

RF Front End	RRU with FPGA/DSP
RF Front End	< 6 GHz
Duplex Mode	TDD, FDD
BS Spatial Layers	4
UE Spatial Layers	2
Fronthaul Bandwidth	10G
Number of Fronthaul Interfaces	4
Return Bandwidth	10G
Number of Return Interfaces	2

ENVIRONMENTAL SPECIFICATIONS

Temperature	**Operation**	-5 °C ~ +55 °C | +23 °F ~ +131 °F
	Storage	-40 °C ~ +70 °C | -40 °F ~ +158 °F
Humidity	**Operation**	10% ~ 85% RH @40 °C, non-condensing
	Storage	5% ~ 90% RH, non-condensing
Fan	6 fans, adaptive speed	
Shock	Operating time: Half sine 2G, 11ms pulse, 100 pulses in each direction	
	Non-operating: Trapezoid, 25G, 170 inches/sec DeltaV, 3 drop tests in each direction	
Vibration	Non-operating time: 2.2Grms, 10 minutes per axis per direction	
Decibel	Sound pressure < 75 dBA @1m, all fans run at maximum speed	

DEVICE INTERFACE



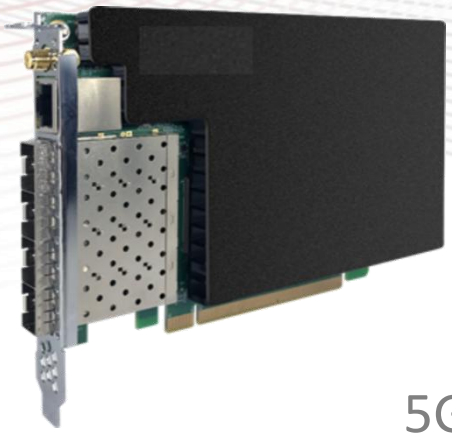
IO Interface	2 x RJ-45 100/ 1000BASE-T Ethernet port
	4 x 10G SFP+ Ethernet port
	2 x RJ-45 1PPS/ TOD port
	1 x RJ-45 console port
	2 x USB 3.0
Back Interface	1 x VGA rear
	1 x Power Plug

INTERNAL INTERFACE

IO Interface	1 x USB 2.0
	1 x COM
	4 x 1PPS SMA input/ output
PCIe	2 x PCIe x16 Gen3 single-slot FHFL interfaces, up to 110W each
	Or 1 x PCIe x16 Gen3 single-slot FHFL interface, up to 250W 1 x PCIe x8 Gen3 OCP NIC v2
Storage	2 x 2.5” hot-swappable SATA 6 Gb/s
	1 x onboard M.2 NVME socket, 2242 M Key
	1 x onboard M.2 NVME socket, 2280 M Key

FGAF Acceleration Card

5G Virtualized Units



5G ORAN Prequel

5G Baseband Processing Acceleration

10G Ethernet 1588V2 Clock Synchronization Service

The integrated fronthaul accelerator card FGAF uses Xilinx's Zynq Ultra Scale+ MPSOC and Kintex Ultra Scale+ FPGA to realize the functions of baseband processing acceleration and data forwarding, and meets the application requirements of high bandwidth, low latency and multi-cell deployment required by the 5G BBU system. Very high integration and ease of use.

This card is a single-slot, full-height half-length (FHHL) card, using PCIeGen3x16 interface (supports bifurcation into two sets of Gen3x8 interfaces) to connect to the system, and externally supports 4 SFP+ optical ports.

The card is equipped with a high-precision clock source and clock phase-lock circuit, supports external 1588V2 and GPS input, and can provide stable clock synchronization services to the next-level network node through the SFP+ fronthaul interface.

BASEBAND PROCESSING ACCELERATION PERFORMANCE

	Throughput Rate	Delay
LDPC Encoding	17.8 Gbps	14μs
LDPC Decoding	8.1 Gbps	16μs

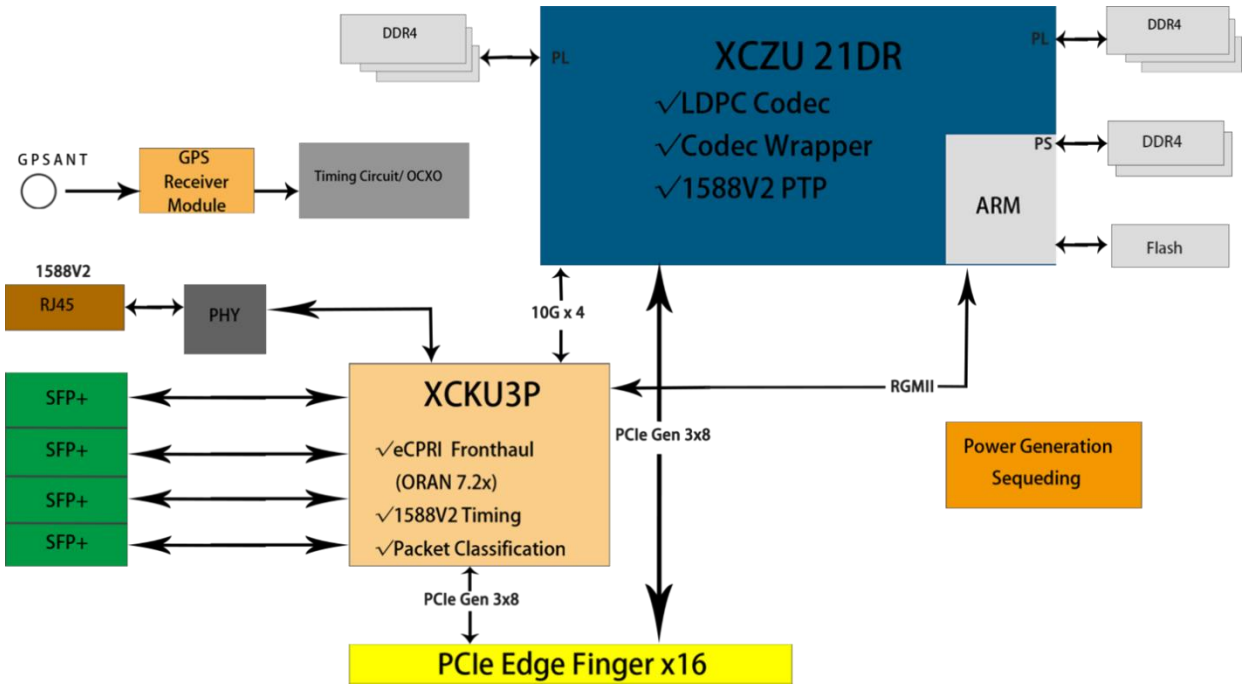
FRONTHAUL DATA FORWARDING PERFORMANCE

	Downlink Rate	Uplink Rate	Remarks
Single optical port rate	10 Gbps	10 Gbps	Full package mode, 4 concurrent ports
Single optical port rate	9 Gbps	9 Gbps	Burst32, large and small packet interval mode, 4 concurrent ports

CLOCK SYNCHRONIZATION PERFORMANCE

Support Standard	Index	Uplink Rate
Grand master	Support clock synchronization of 128 nodes	Number of Slavers
SyncE G.8262	All 4 interfaces support	
Keep ability	1.5μs over 8 Hours	Choose high stability OCXO

SINGLE BOARD FRAME



SINGLE BOARD SPECIFICATIONS				
Physical layer acceleration	LDPC codec	Codec encapsulation logic, supports CRC, rate matching and de-rate matching		
Fronthaul	4x10G eCPRI Supports 1588V2	Data aggregation	Data cache	Package classification management
Clock circuit	Onboard OCXO, high-precision phase-locked loop synchronization circuit	Onboard GPS receiver module	Supports external 1588V2 input	

CHIPSET SPECIFICATIONS		
Chip Model	Xilinx | Zynq Ultra Scale Plus RFSoC | XCZU21DR	
	Xilinx | Kintex Ultra Scale+ | XCKU3P	
System Resource	**XCZU21DR** • System Logic cells - 930K • CLB LUT - 425K • SDFEC -8 • DSP Slices - 4,272 • BRAM - 38.0Mb • URAM - 22.5Mb	**XCKU3P** • System Logic cells - 365K • CLB LUT - 163K • DSP Slices - 1,368 • BRAM - 12.7Mb • URAM - 13.5Mb • GTY Transceivers - 16
Structure Size	Full-height, half-length (FHHL) x16 PCIe form factor W x H x D: 169.6 x 110.6 mm x 18.6 mm | 6.68 x 4.35 x 0.73 in	
PCIe Interface	PCIe Gen3 x16 interface bifurcated to two PCIe Gen3 x8	
Onboard RAM Resources	• 2xBanks of 512M x 48 –PL • 1xBank of 512Mx 32 –PS • Total Capacity 6GB in PL • Total Capacity 2GB in PS	/
Onboard FLASH Resources	1Gb SPI FLASH NOR SLC	256Mb SPI FLASH NOR SLC
Network Interface	4 SFP+ optical ports	
Cooling Method	Module with cooling teeth, cooling through internal air ducts in the case	
Single Board Management	• Single board power-up sequence management and hot reset and shutdown functions • Supports local software upgrade	

	• JTAG daisy-chaining design to support burning and debugging of two devices • On-board RS232 debug port • On-board Ethernet debug port
Single Board Working Temperature	0 ℃ ~ +80 ℃ | +32 °F ~ +176 °F
Single Board Power Consumption	< 35W
Single Board Clock Synchronization Mode	• Supports external GPS antenna for GPS synchronization • Supports 1588V2 time information input via external Ethernet RJ45 • Optional high stability crystal oscillator for local clock keeping within 8 hours with time accuracy deviation less than ±1.5μs

Contact Us
www.btiwireless.com
sales@btiwireless.com