



# FibeAir® IP-20C

## Multi-Core Radio Solution Delivering Multi-Gbps Anywhere

FibeAir IP-20C sets a new standard in microwave transmission combining multi-core radio technology, 2048 QAM modulation and line-of-sight 4x4 MIMO in a compact, all-outdoor design

Mobile network operators are finding it increasingly difficult to cope with the demand for more capacity. FibeAir IP-20C breaks capacity barriers, offering a virtual fiber solution in licensed frequencies. Its versatility makes it ideal for a wide variety of cost-effective deployment scenarios including macrocell backhaul, small-cell aggregation and emerging fronthaul applications. As a software-defined radio, it can be remotely configured to quadruple capacity, double link distance and reduce power consumption. It is easily and quickly deployable compared with fiber, allowing operators to achieve faster time to new revenue streams, lower total cost of ownership and long-term peace of mind.

FibeAir IP-20C delivers multi-Gbps capacity on a single frequency channel setting a new standard for efficient spectrum use. Combining breakthrough multi-core radio architecture with 2048 QAM modulation and line-of-sight (LoS) 4X4 MIMO, it enables operators to reach capacities that quadruple those of existing solutions.

FibeAir IP-20C's unique multi-core radio architecture is based on an advanced parallel radio processing engine, built around Ceragon's in-house baseband modem and RFIC chipsets. The result is superior radio performance with reduced power consumption and form-factor.

### Multi-Gbps Radio

- **Multi-core radio technology**  
Parallel radio processing engine that boosts capacity, distance and availability
- **High capacity and spectral efficiency**  
2048 QAM modulation and LoS 4X4 MIMO
- **Virtual fiber in licensed frequencies**  
1 Gbps radio throughput over a single 28MHz channel
- **Simple Operation**  
Software-defined radio, rapid deployment, minimal truck rolls
- **Environment-Friendly**  
Compact, all-outdoor with low power consumption

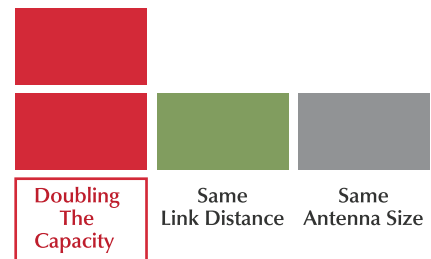


## Ceragon FibeAir IP-20C: Software-Defined Radio

FibeAir IP-20C is the most versatile radio available in the market today. Thanks to its innovative multi-core technology, it can be configured for optimized performance in any deployment scenario. Flexibility is the key.

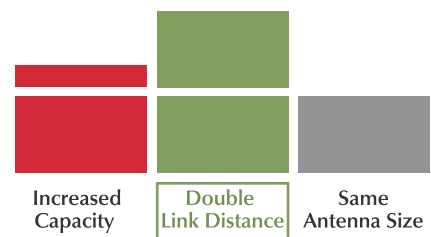
### Doubling capacity

FibeAir IP-20C's multi-core technology allows it to start with a single core and provides the option to turn on the second core remotely, instantaneously doubling link capacity either with a single or dual polarization.



### Doubling link distance

A second core can be utilized to double the link distance. FibeAir IP-20C splits the bitstream between its cores using Multi-carrier Adaptive Bandwidth Control, thus lowering the modulation scheme and significantly increasing system gain (both Tx power and Rx sensitivity). This results in the ability to achieve longer link spans – up to double the distance.



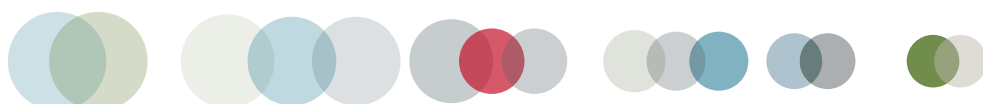
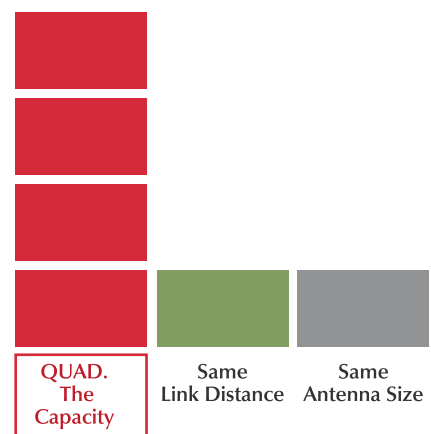
### Halving antenna size

FibeAir IP-20C's superior system gain can be leveraged to reduce antenna size lowering installation costs significantly. Antenna size reduction of 50% can be achieved.



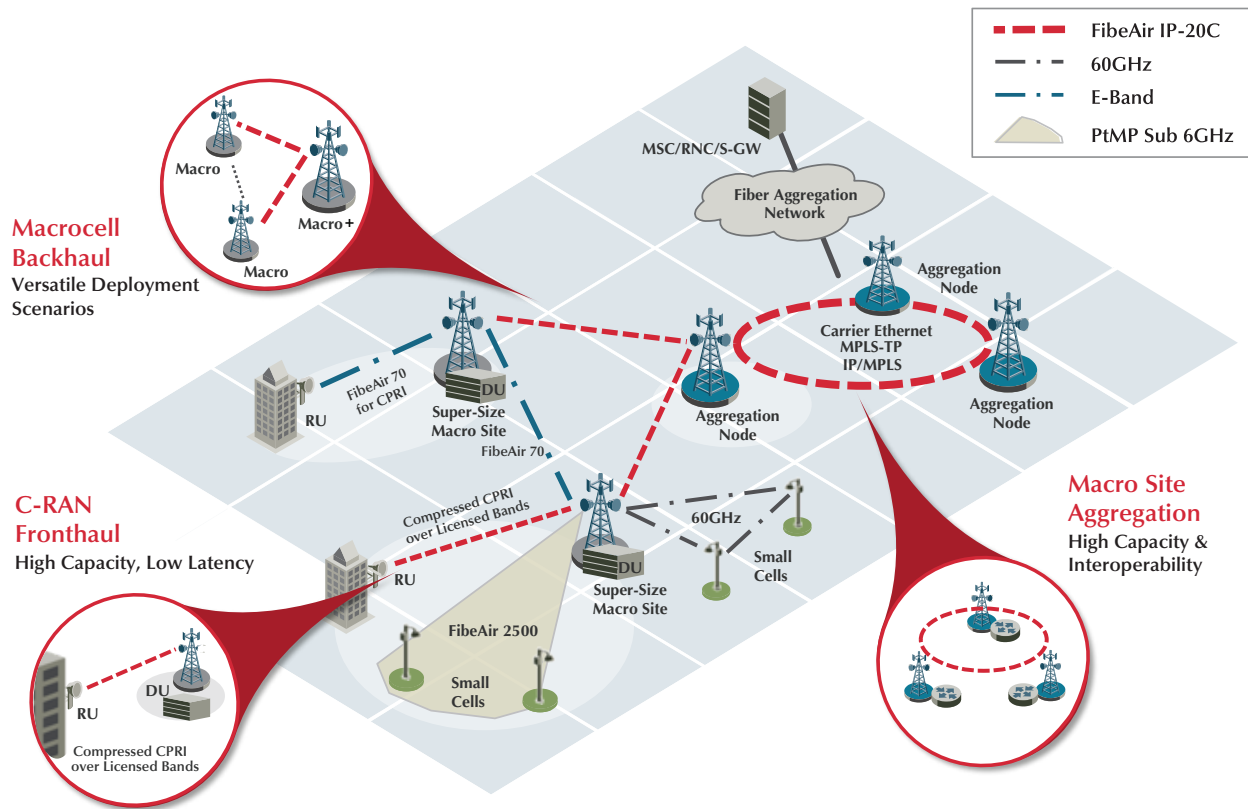
### Quadrupling capacity

In the 4X4 LoS MIMO configuration, quadrupling of capacity is achievable using the same channel bandwidth. A new record in microwave spectral efficiency!



## Future-Proofing Mobile Networks with FibeAir IP-20C

FibeAir IP-20C applies Ceragon's Holistic HetNet Hauling (3H) vision to the emerging HetNet architectures. Ceragon is organizing wireless backhaul and fronthaul requirements into a comprehensive network solution that is easily deployed, operated and maintained. Breaking the barriers of network planning paradigms requiring fiber infrastructure to serve multi-Gbps sites, FibeAir IP-20C's superior radio throughput, low latency and flexibility make it the solution of choice for a wide variety of hauling scenarios previously deemed impossible to implement with microwave.



FibeAir IP-20C's different deployment scenarios in a future 4G/LTE-A Network

### Macrocell Backhaul

Today's tail sites in the macrocell layer are quickly becoming aggregation hubs for the small cells that are deployed to handle additional capacity and coverage below the macrocell layer. FibeAir IP-20C's versatility and flexibility make it suitable for the different demanding scenarios of macrocell backhaul by future-proofing backhaul capacity and supporting service-awareness to assure user quality of experience.

### C-RAN Fronthaul

Compressed CPRI is offered as a method of compacting the 2.5Gbps CPRI interface into GbE dimensions. FibeAir IP-20C is the ideal wireless solution for compressed CPRI fronthaul, boasting high spectral efficiency with 1Gbps radio throughput over a single 28 MHz channel and extremely low latency required for fronthaul.

### Macro-Site Aggregation

Macro sites, future networks' aggregation layer and usually based on advanced packet transport protocols such as Carrier Ethernet 2.0, MPLS-TP and IP/MPLS, are best served by FibeAir IP-20C's interoperability with any packet transport technology. It can transport higher capacities over longer distances than alternative wireless solutions. Its scalable capacity to multi-Gbps ensures operators' long-term peace of mind especially in areas where fiber is not a viable solution.

# Key Features

## Multi-Core Technology

- In-house developed chipset: baseband modem and RFIC
- Parallel radio processing engine
- Flexible radio architecture enables doubling of capacity/link distance and reduction in power consumption

## High capacity and spectral efficiency

- 2048 QAM modulation
- Integrated XPIC in a single unit
- LoS 4X4 MIMO quadrupling capacity using only 2 radio units
- Up to 30% more spectral efficiency using multi-layer header compression
- Wide channel support: 28, 40, 56, 112 MHz

## Virtual fiber in licensed frequencies

- Operates in the 6-42 GHz frequency range
- 1Gbps radio throughput over a single 28 MHz channel
- Over 2 Gbps maximum capacity using wider channels

## Simple Operation

- Single software-defined product for many different deployment scenarios
- Remotely configurable, scalable performance for minimal truck rolls
- Quickly deployed, all-outdoor installation

## Environment Friendly

- Half the form-factor of conventional radio terminals
- 20% less power consumption per carrier
- As much as 50% less power consumption using innovative dynamic power management

## Ceragon Comprehensive Network Offering:



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ref: **FibeAir IP-20C**, Dec. 2012