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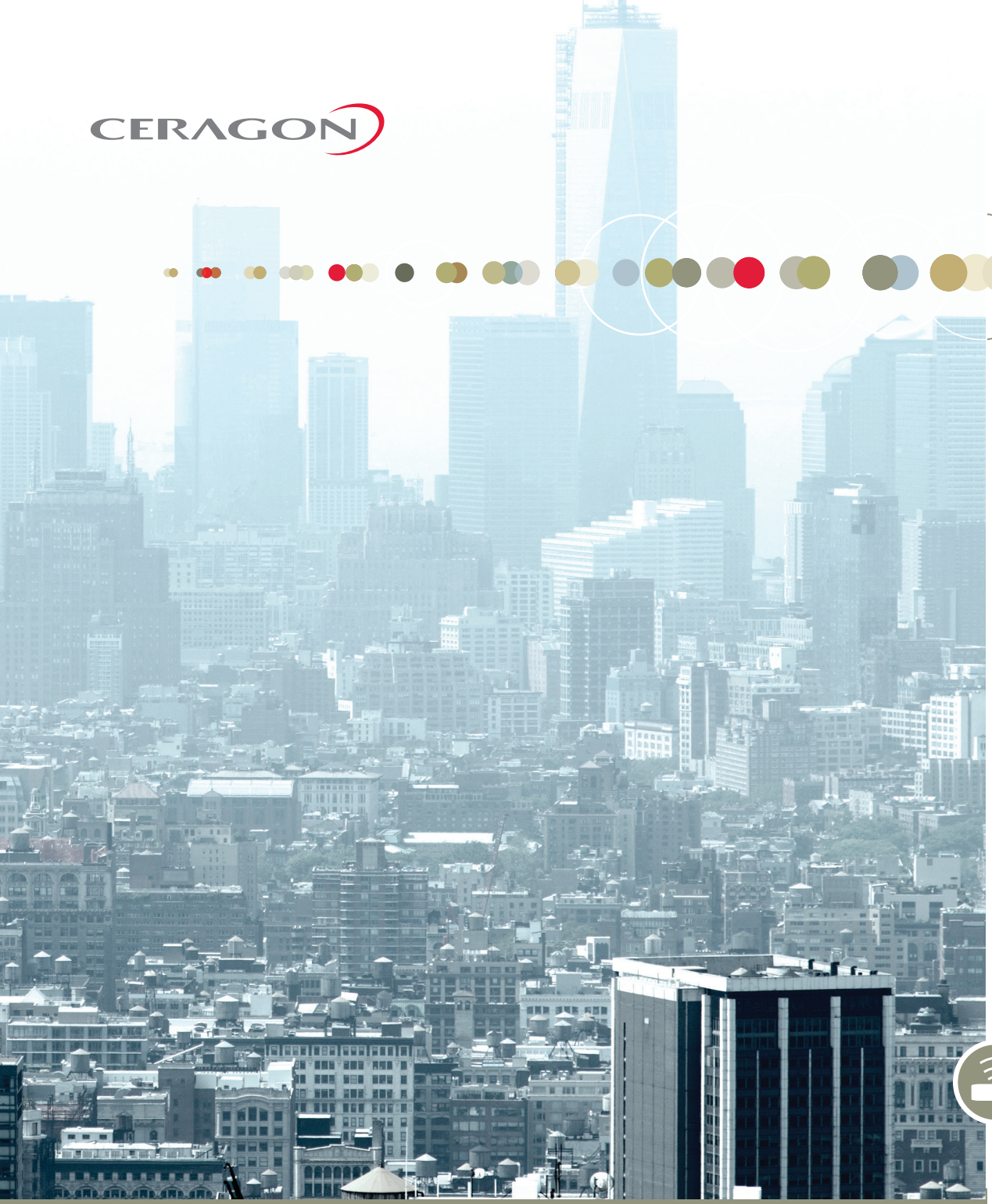

Data Sheet

FibeAir® IP-20E

Compact, All-outdoor, High-performance, E-band Virtual-fiber

Data Sheet

FibeAir® IP-20E

Compact, All-outdoor, High-performance, E-band Virtual-fiber Node

The FibeAir IP-20E high-performance wireless node for E-band applications delivers ultra-high capacity for cost-effective small-cell aggregation and macro-site interconnection

The high-performance FibeAir IP-20E provides capacity and security for demanding network applications in E-band. Whether the need is for small-cell backhaul, metro-network aggregation or any other E-band transport application, ultra-high capacity FibeAir IP-20E delivers a cost-efficient, comprehensive solution.

Equipped with Ceragon's advanced modem technology, FibeAir IP-20E ensures a high level of service, security and ultra-high capacity, even under extreme link conditions.

FibeAir IP-20E offers future-proof connectivity with networks that require full-duplex, gigabit Ethernet. This solution scales to 2.5Gbps of capacity, making it ideal for capacity-demanding network applications, especially in growing and dynamic heterogeneous networks (HetNets).

FibeAir IP-20E provides capacity at a fraction of the cost of buried fiber alternatives; its dedicated wireless technology proves much more economical than leasing high-capacity services over fiber.

Like all other IP-20 solutions, the FibeAir IP-20E ensures interoperability with all other IP-20 solutions via the CeraOS operating system, a unified, simple-to-operate-and-manage approach for building, expanding and maintaining wireless backhaul. Programmable network processors ensure a long life of flexible, cost-effective operation.

FibeAir IP-20E can be deployed in conjunction with the FibeAir IP-20N multi-technology aggregation node for comprehensive backhaul and aggregation-point settings, especially appropriate for fast, efficient installation and long-term functionality.

Wireless Virtual Fiber

- Ultra-high capacity
- Full-duplex, 2.5Gbps radio capacity
- Advanced wideband modem design and latest in-house RFIC technology
- Rapid deployment
- Small form fit consumes less space; ideal for wall and rooftop installations
- Narrow beam with high reuse factor
- All-outdoor and split-mount configurations
- Attractive licensing schemes with light licensing
- Carrier-grade wireless solution
- Integrated Carrier Ethernet switch, MEF CE 2.0-compliant
- Comprehensive service and link OAM capabilities

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Radio

Supported Frequency Range

- 71-76 GHz, 81-86 GHz

Configurations

- 1+0, 2+0

Radio Features

- Protection: 1+1 HSB*
- BPSK to 256 QAM w/ACM**

Ethernet

Ethernet Interfaces

- 1 x 10/100/1000Base-T (RJ-45) used with Proprietary PoE or external DC support (adapter)
- SFP cage supporting:
  - Regular SFP – single ETH interface
  - CSFP (BiDir SFP) – Dual ETH interface
- 1 x 10/100/1000Base-T (RJ-45) used as default management port or for traffic – management can be reassigned to any data port by configuration

Note: SFP devices must be of industrial grade (-40°C to +85°C)

Ethernet Features

- MTU – 9600 Bytes
- Quality of Service
  - Multiple Classification criteria (VLAN ID, p-bits, IPv4 DSCP, IPv6 TC, MPLS EXP)
  - 8 priority queues
  - Deep buffering (configurable up to 64 Mbit per queue)
  - WRED
  - Hierarchical QoS – high service granularity *
  - P-bit marking/remarking
- 4K VLANs
- VLAN add/remove/translate
- Frame Cut Through – controlled latency and PDV for delay sensitive applications
- Header DeDuplication – Capacity boosting by eliminating inefficiency in all layers (L2,MPLS, L3,L4, Tunneling – GTP for LTE, GRE)*
- Ethernet OAM – EFM (IEEE 802.3ah), CFM (IEEE 802.1ag), ITU-T Y.1731*

Synchronization

Synchronization Distribution

- Sync Distribution over any traffic interface (GE/FE)*
- SyncE (ITU-T G.8261, G.8262)*
- SSM/ESMC Support for ring/mesh applications (ITU-T G.8264)*
- SyncE Regenerator mode, providing PRC grade (ITU-T G.811) performance for smart pipe applications*

IEEE-1588

- Optimized Transport for reduced PDV*
- IEEE-1588 TC*

Standards

MEF

- Carrier Ethernet 2.0 (CE 2.0)***

Supported Ethernet Standards

- 10/100/1000base-T/X (IEEE 802.3)
- Ethernet VLANs (IEEE 802.3ac)
- Virtual LAN (VLAN, IEEE 802.1Q)
- Class of service (IEEE 802.1p)
- Provider bridges (QinQ – IEEE 802.1ad)
- Link aggregation (IEEE 802.3ad)
- Auto MDI/MDIX for 1000baseT
- RFC 1349: IPv4 TOS
- RFC 2474: IPv4 DSCP
- RFC 2460: IPv6 Traffic Classes

Standards Compliance

- EMC: EN 301 489-1, EN 301 489-4, Class B (Europe), FCC 47 CFR, part 15, class B (US), ICES-003, Class B (Canada), TEC/EMI/TEL-001/01, Class B (India)
- Surge: EN61000-4-5, Class 4 (for PWR and ETH1/PoE ports)
- Safety: EN 60950-1, IEC 60950-1, UL 60950-1, CSA-C22.2 No.60950-1, EN 60950-22, UL 60950-22, CSA C22.2.60950-22
- Storage: ETSI EN 300 019-1-1 Class 1.2
- Transportation: ETSI EN 300 019-1-2 Class 2.3

Technical Specifications

Mechanical Specifications

- Dimensions
  - Direct Mount: 198mm(H), 220mm(W), 75mm(D), 3kg (direct mount)
  - 38dBi Integrated antenna: 210mm(H), 220mm(W), 102mm (D), 3kg
  - 43dBi Integrated antenna: 280mm(H), 280mm(W), 110mm (D), 3.5kg
- Pole Diameter Range (for Remote Mount Installation) – 8.89 cm – 11.43 cm

Environmental Specifications

- -33°C to +55°C (-45°C to +60°C extended)

Power Input Specifications

- Standard Input: -48 VDC
- DC Input range: -40.5 to -60 VDC

Power Consumption Specifications

- Active: 43W
- Standby: 36W

PoE Injector Mechanical Specifications

- Dimensions – 134mm(H), 190mm(W), 62mm(D), 1 kg

PoE Injector Environmental Specifications

- 33°C to +55°C (-45°C to +60°C extended)

PoE Injector Power Input Specifications

- Standard Input: -48 or +24 VDC (Optional)
- DC Input range: ±(18/40.5 to 60) VDC (+18VDC extended range is supported as part of the nominal +24VDC support)

PoE Injector Interfaces

- GbE Data Port supporting 10/100/1000Base-T
- Power-Over-Ethernet (PoE) Port
- DC Power Port –40V to -60V (a PoE supporting two redundant DC feeds each supporting ±(18-60)V is available)

* Planned for future release.

** 256 QAM is planned for future release.

*** Certification pending.

	Transmit Power (dBm)				RSL (dBm @ BER = 10-6)			
Channel Spacing (MHz)	62.5	125	250	500	62.5	125	250	500
BPSK	12	12	12	8	-80.6	-77.6	-74.6	-71.6
4 QAM	12	12	12	8	-79.0	-76.0	-73.0	-70.0
8 QAM	12	12	10	8	-73.7	-70.7	-67.7	-64.7
16 QAM	11	11	9	7	-72.3	-69.3	-66.3	-63.3
32 QAM	11	11	9	5	-68.4	-65.4	-62.4	-59.4
64 QAM	10	10	8	3	-65.7	-62.7	-59.7	-56.7
128 QAM	10	10	8	NA	-62.6	-59.6	-56.6	NA
256 QAM	9	9	6	NA	-59.6	-56.6	-53.6	NA

	Capacity (Mbps)	Capacity De-Dup	Capacity (Mbps)	Capacity De-Dup
	62.5 MHz		125 MHz	
BPSK	40-49	42-153	85-104	89-322
4 QAM	92-112	96-349	179-218	188-680
8 QAM	137-168	144-522	266-325	279-1011
16 QAM	187-228	196-711	362-442	380-1376
32 QAM	245-300	258-934	476-582	500-1811
64 QAM	299-365	314-1138	584-714	613-2222
128 QAM	361-441	379-1372	706-863	742-2500
256 QAM	411-503	432-1565	777-950	816-2500

	Capacity (Mbps)	Capacity De-Dup	Capacity (Mbps)	Capacity De-Dup
	250 MHz		500 MHz	
BPSK	180-220	189-684	361-441	379-1372
4 QAM	376-459	395-1430	754-921	792-2500
8 QAM	558-682	586-2122	1117-1366	1174-2500
16 QAM	758-926	796-2500	1519-1856	1595-2500
32 QAM	997-1219	1047-2500	1997-2441	2097-2500
64 QAM	1224-1496	1285-2500	2449-2500	2500-2500
128 QAM	1473-1801	1547-2500	NA	NA
256 QAM	1676-2049	1760-2500	NA	NA

Notes: For LTE-Optimized Header De-Duplication, the capacity figures are for LTE packets encapsulated inside GTP tunnels with IPv4/UDP encapsulation and double VLAN tagging (QinQ). Capacity for IPv6 encapsulation is higher.

Header De-Duplication is planned for future release.

Support for 125 and 500 MHz channels is planned for future release.

Support for 256 QAM is planned for future release.