



**Datasheet**

# FibeAir IP-20E

Rev A.11 | January 2019



## Radio

### Supported Frequency Range

71-76 GHz, 81-86 GHz

### Radio Configurations

1+0, 2+0

Multiband (with IP-20C or third-party radio carrier)

### Radio Features

BPSK to 1024 QAM w/ACM

## Ethernet

### Ethernet Interfaces

Port 1:

- Electric: 10/100/1000Base-T RJ-45
- Ceragon-approved PoE

Port 2:

- SFP cage which supports – Regular and CSFP standards
  - Regular SFP provides Eth2
  - CSFP (Dual BiDir SFP) provides Eth2 and Eth3

Port 3:

- Three hardware options:
  - 1 x 10/100/1000Base-T (RJ-45) used for management only; OR
  - SFP cage supporting Regular SFP – single ETH interface; OR
  - SFP+ cage supporting a 10GE single ETH interface.

**Notes:** Port numbering differs for different hardware models.

SFP devices must be of industrial grade (-40°C to +85°C, -40°F to +185°F)

### Ethernet Features

MTU – 9600 Bytes

Quality of Service

- Multiple Classification criteria (VLAN ID, P-bits, IPv4 DSCP, IPv6 TC, MPLS EXP)
- 8 priority queues per port
- Deep buffering (configurable up to 64 Mbit per queue)
- WRED
- P-bit marking/remarking

4K VLANs

VLAN add/remove/translate

Frame Cut Through – controlled latency and PDV for delay sensitive applications

Y.1731 Ethernet OAM\*

Header DeDuplication – Capacity boosting by eliminating inefficiency in all layers (L2,MPLS, L3,L4, Tunneling – GTP for LTE, GRE)\*\*

Adaptive Bandwidth Notification ABN, also known as EOAM)

## 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)

Optical 10Gbase-X (IEEE 802.3ae)

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

## Security

Secured protocols:

- HTTPS
- SNMPv3
- SSH
- SFTP

\* Planned for future release.

\*\* Not available for 500 MHz channels.



## Standards Compliance

Radio Spectral Efficiency: EN 302 217-2-2

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.

## Technical Specifications

### Mechanical Specifications

Dimensions (Direct Mount HW) –  
220mm(H), 198mm(W), 75mm(D), 3 kg.  
8.66”(H), 7.8”(W), 2.95”(D), 6.6 lbs.

Dimensions (43dBi Integrated Antenna) –  
280mm(H), 280mm(W), 110mm(D), 3.5 kg.  
11.02”(H), 11.02”(W), 4.33”(D), 7.7 lbs.

Pole Diameter Range (for Remote Mount Installation) –  
8.89cm – 11.43cm; 3.5” – 4.5”

### Environmental Specifications

-33°C to +55°C (-45°C to +60°C extended)  
-27°F to +131°F (-49°F to +140°F 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

134mm(H), 190mm(W), 62mm(D), 1 kg.  
5.28”(H), 7.48”(W), 2.44”(D), 2.2 lbs.

### PoE Injector Environmental Specifications

-33°C to +55°C (-45°C to +60°C extended)  
-27°F to +131°F (-49°F to +140°F extended)

### PoE Injector Power Input Specifications

Standard Input: -48 VDC (Optional)  
DC Input range: -(18/40.5 to 60) VDC

### 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)

## Product Images

*IP-20E*



## Radio Specifications

### Capacity

	Capacity (Mbps)	Capacity De-Dup	Capacity (Mbps)	Capacity De-Dup
<b>Modulation</b>	<b>62.5 MHz</b>		<b>125 MHz</b>	
BPSK	38-47	40-146	86-105	90-328
QPSK	90-110	94-342	184-225	194-702
8 QAM	135-165	142-515	275-337	289-1048
16 QAM	185-226	194-703	376-459	394-1430
32 QAM	243-297	256-926	495-605	520-1884
64 QAM	297-364	312-1132	608-744	639-2315
128 QAM	358-438	376-1364	733-896	770-2500
256 QAM	409-500	429-1556	835-1020	877-2500
512 QAM	450-550	472-1711	919-1124	965-2500
1024 QAM	501-612	526-1907	-	-
<b>Modulation</b>	<b>250 MHz</b>		<b>500 MHz</b>	
BPSK	177-216	186-673	358-438	-
QPSK	373-457	392-1421	752-919	-
8 QAM	556-679	583-2115	1116-1364	-
16 QAM	756-924	794-2500	1516-1854	-
32 QAM	995-1216	1045-2500	1994-2438	-
64 QAM	1221-1493	1283-2500	2447-2500	-
128 QAM	1471-1798	1545-2500	-	-
256 QAM	1650-2016	1732-2500	-	-
512 QAM	-	-	-	-
1024 QAM	-	-	-	-

### Transmit Power and Receiver Threshold (RSL) (dBm @ BER = 10<sup>-6</sup>)

Frequency (GHz)	Transmit Power	62.5	125	250	500	Receiver Threshold (RSL)	62.5	125	250	500
BPSK		18	18	18	15		-83.0	-80.0	-77.0	-74.0
QPSK		18	18	18	15		-79.5	-76.5	-73.5	-70.5
8 QAM		18	18	16	11		-75.5	-72.5	-70.0	-67.0
16 QAM		17	17	15	10		-73.0	-69.5	-67.0	-64.0
32 QAM		17	17	15	10		-69.0	-66.0	-63.0	-60.0
64 QAM		16	16	14	9		-66.0	-63.0	-60.0	-57.0
128 QAM		16	16	14	-		-63.0	-60.0	-57.0	-
256 QAM		15	15	13	-		-59.5	-57.0	-54.0	-
512 QAM		14	14	-	-		-57.0	-54.0	-	-
1024 QAM		13	-	-	-		-54.0	-	-	-

