

FibeAir IP-20E

REV. A.03 | MAY 2017



Radio

Supported Frequency Range

71-76 GHz, 81-86 GHz

Radio Configurations

1+0, 2+0

Radio Features

BPSK to 1024 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

Two options for third 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
- SFP cage supported Regular SFP – single ETH interface. In this option, management is assigned to the RJ-45 interface

Note: 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)

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 or +24 VDC (Optional)
DC Input range: $\pm(18/40.5 \text{ to } 60)$ 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 $\pm(18-60)$ V is available)

Product Images

IP-20E



Radio Specifications

Capacity

| | Capacity (Mbps) | Capacity De-Dup | Capacity (Mbps) | Capacity De-Dup |
|-------------------|-----------------|-----------------|-----------------|-----------------|
| Modulation | 62.5 MHz | | 125 MHz | |
| 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 | - | - |
| Modulation | 250 MHz | | 500 MHz | |
| 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 = 10⁻⁶)

| 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 | 14 | | -75.5 | -72.5 | -70.0 | -67.0 |
| 16 QAM | | 17 | 17 | 15 | 13 | | -73.0 | -69.5 | -67.0 | -64.0 |
| 32 QAM | | 17 | 17 | 15 | 13 | | -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 | | 14 | - | - | - | | -54.0 | - | - | - |

