



Datasheet

IP-20C-HP

February 2024 | Rev F.02
ETSI Version



High-power, all-outdoor, all-IP multicore node

Ceragon's IP-20C-HP is a high-power version of Ceragon's ground-breaking MultiCore IP-20C, operating in the 6-11 GHz bands and providing TX power of up to 35 dBm. IP-20C-HP sets a new standard in microwave transmission, combining high TX power with MultiCore radio technology, QPSK to 2048 QAM modulation, and line-of-sight (LoS) 4x4 MIMO in a compact, all-outdoor design. IP-20C-HP represents a new generation of radio technology, capable of high bit rates and longer reach, and suitable for diverse deployment scenarios.

Radio

Supported Frequency Range

4-11 GHz

Supported Channel Bandwidth

7-80 MHz

Field-replaceable diplexers

Radio Configurations

1+0, 2+0 XPIC, 1+0 SD, 1+1 HSB-SD, 2 x 1+0 East-West, 2+2 SD/HSB, 2+0 SP/DP, 2 x 2+2 SP/DP, 4x4 MIMO, AFR*

Multiband (with IP-50E or IP-20E)

Layer 1 Link Bonding (with IP-50C)

Layer 1 Link Bonding (with IP-20N)

Radio Features

Multi-Carrier Adaptive Bandwidth Control (up to 2+0)

Protection: 1+1 HSB/2+2 HSB

High spectral utilization: QPSK to 2048 QAM w/ACM XPIC

4x4 MIMO

Advanced Space Diversity (ASD)

Advanced Frequency Reuse (AFR)*

Ethernet

Ethernet Interfaces

Traffic Interfaces –

- 1 x 10/100/1000Base-T (RJ-45)
- 1 x 1000Base-X (Optical SFP) or 1000Base-T (Electrical SFP)

Management Interface - 1 x 10/100 Base-T (RJ-45)

SFP Types - Optical 1000Base-LX (1310 nm) or SX (850 nm)

Note: SFP devices must be of industrial grade (-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

MSTP, ERP (ITU-T G.8032)

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)

Y.1731 Ethernet OAM

Y.1731 Ethernet Bandwidth Notification (ETH-BN)

Adaptive Bandwidth Notification (ABN, also known as EOAM)

Management Protocols

SNMP

REST

SDN Support:

- NETCONF/YANG

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.

* Planned for future release.



IEEE-1588

Optimized Transport for reduced PDV

IEEE-1588 TC

IEEE-1588 BC

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

Radio Encryption – AES 256

Secured protocols:

- HTTPS
- SNMPv3
- SSH
- SFTP

RADIUS authentication and authorization

TACACS+ Authentication, Authorization, and Accounting (session-based)

Standards Compliance

Radio Spectral Efficiency: EN 302 217-2

EMC: EN 301 489-4, EN 301 489-1, FCC 47 CFR, part 15, subpart B, ICES-003, TEC/SD/DD/EMC-221/05/OCT-16, IEC 61000-4-29

Surge: EN61000-4-5, Class 4 (for PWR and ETH1 ports)

Safety: EN 62368-1, IEC 62368-1, UL 62368-1 CSA-C22.2 No.62368-1

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 – 358mm(H), 286mm(W), 164mm(D), 15.5 kg. (includes diplexer or OCU unit)

Pole Diameter Range (for Remote Mount Installation) – 8.89 cm – 11.43 cm

Environmental Specifications

-33°C to +55°C

Power Input Specifications

Standard Input: -48 VDC

DC Input range: -40 to -60 VDC

Separate DC feed

Power Consumption Specifications

Maximum Power Consumption (Multi-Core Operation): 135W

Maximum Power Consumption (1+0 Operation): 81W

Physical View

IP-20C-HP



Radio Specifications

Capacity

Notes: For full specifications, please contact your Ceragon sales representative.

	Capacity (Mbps)	Capacity De-Dup	Capacity (Mbps)	Capacity De-Dup	Capacity (Mbps)	Capacity De-Dup
Modulation	7 MHz		14 MHz		28 MHz	
QPSK	8-10	9-32	19-24	20-74	43-52	45-162
8 PSK	13-16	13-48	29-36	31-112	62-76	65-236
16 QAM	18-22	19-69	40-49	42-153	87-107	92-332
32 QAM	24-30	26-92	53-65	56-203	115-140	121-437
64 QAM	30-37	32-114	66-80	69-249	141-173	149-538
128 QAM	36-44	38-137	79-97	83-301	170-208	179-648
256 QAM	42-51	44-158	90-110	95-344	196-239	206-745
512 QAM	45-54	47-169	100-122	105-380	209-255	219-794
1024 QAM Strong	48-58	50-182	106-129	111-402	228-278	239-866
1024 QAM Light	51-62	53-194	112-137	118-426	241-295	253-917
2048 QAM	–	–	–	–	263-321	276-1000
Modulation	40 MHz		56 MHz		80 MHz	
QPSK	58-71	61-220	87-106	91-331	114-140	120-435
8 PSK	86-105	90-328	127-155	133-482	162-198	170-618
16 QAM	117-143	123-446	176-215	185-670	231-283	243-880
32 QAM	154-189	162-588	232-283	243-881	304-371	319-1000
64 QAM	190-232	199-722	284-348	299-1000	371-454	390-1000
128 QAM	229-280	241-873	344-420	361-1000	439-536	461-1000
256 QAM	247-302	259-939	397-485	416-1000	505-618	531-1000
512 QAM	270-330	284-1000	426-521	448-1000	555-679	583-1000
1024 QAM Strong	306-375	322-1000	464-567	487-1000	604-738	634-1000
1024 QAM Light	325-398	342-1000	493-602	517-1000	641-784	673-1000
2048 QAM	352-430	370-1000	534-653	561-1000	679-829	713-1000

Transmit Power

Transmit Power (dBm)	4-5GHz	6GHz	7GHz	8GHz	10GHz	11GHz
QPSK	35	37	37	36	33	34
8 QAM	35	37	37	36	33	34
16 QAM	35	36	36	35	32	33
32 QAM	35	36	36	35	32	33
64 QAM	34	35	35	34	31	32
128 QAM	34	34	34	33	30	32
256 QAM	33	33	32	32	29	31
512 QAM	33	33	32	32	29	31
1024 QAM	32	31	30	30	29	30
2048 QAM	31	31	29	29	28	29

Note: Nominal TX power is subject to change until the relevant frequency band is formally released. See the frequency rollout plan.

The values listed in this section are typical. Actual values may differ in either direction by up to 1dB.

The Transmit Power values shown in the tables below are for the radio unit only. To determine the TX power of the complete IP-20C-HP unit, diplexer losses must also be considered.

Diplexer Unit Typical Losses

Frequency	6-8 GHz	11 GHz
Losses	1.3 dB	0.7 dB



Receiver Threshold (RSL) (dBm @ BER = 10⁻⁶)

Frequency (GHz)	4-5	6	7	8	11		Frequency (GHz)	4-5	6	7	8	11
7 MHz							14 MHz					
QPSK	-94.6	-93.5	-93.0	-93.0	-93.5		QPSK	-91.6	-91.3	-91.5	-90.9	-91.0
8 PSK	-90.6	-87.5	-87.0	-87.0	-87.5		8 PSK	-87.6	-87.3	-87.5	-86.9	-87.0
16 QAM	-87.5	-87.0	-86.5	-86.5	-87.0		16 QAM	-84.5	-84.2	-84.4	-83.8	-83.9
32 QAM	-84.4	-83.5	-83.0	-83.0	-83.5		32 QAM	-81.4	-81.1	-81.3	-80.7	-80.8
64 QAM	-81.2	-80.5	-80.0	-80.0	-80.5		64 QAM	-78.2	-77.9	-78.1	-77.5	-77.6
128 QAM	-78.0	-77.5	-76.5	-76.5	-77.5		128 QAM	-75.0	-74.7	-74.9	-74.3	-74.4
256 QAM	-74.6	-74.0	-73.5	-73.5	-74.0		256 QAM	-71.6	-71.3	-71.5	-70.9	-71.0
512 QAM	-71.4	-72.0	-71.5	-71.5	-72.0		512 QAM	-68.4	-68.1	-68.3	-67.7	-67.8
1024 QAM	-67.9	-68.5	-68.0	-68.0	-68.5		1024 QAM Strong	-64.9	-64.6	-64.8	-64.2	-64.3
1024 QAM Light	-67.4	-68.0	-67.0	-67.0	-67.5		1024 QAM Light	-64.4	-64.1	-64.3	-63.7	-63.8
28 MHz							40 MHz					
QPSK	-88.5	-88.2	-88.4	-87.8	-87.9	QPSK	QPSK	-87.3	-87.0	-87.2	-86.6	-86.7
8 PSK	-84.5	-84.2	-84.4	-83.8	-83.9	8 PSK	8 PSK	-83.3	-83.0	-83.2	-82.6	-82.7
16 QAM	-81.5	-81.2	-81.4	-80.8	-80.9	16 QAM	16 QAM	-80.4	-80.1	-80.3	-79.7	-79.8
32 QAM	-78.2	-77.9	-78.1	-77.5	-77.6	32 QAM	32 QAM	-77	-76.7	-76.9	-76.3	-76.4
64 QAM	-75.1	-74.8	-75.0	-74.4	-74.5	64 QAM	64 QAM	-73.9	-73.6	-73.8	-73.2	-73.3
128 QAM	-72.1	-71.8	-72.0	-71.4	-71.5	128	128 QAM	-70.9	-70.6	-70.8	-70.2	-70.3
256 QAM	-68.9	-68.6	-68.8	-68.2	-68.3	256	256 QAM	-68.6	-68.3	-68.5	-67.9	-68.0
512 QAM	-66.6	-66.3	-66.5	-65.9	-66.0	512	512 QAM	-65.8	-65.5	-65.7	-65.1	-65.2
1024 QAM	-63.3	-63.0	-63.2	-62.6	-62.7	1024	1024 QAM Strong	-62.3	-62.0	-62.2	-61.6	-61.7
1024 QAM Light	-62.5	-62.2	-62.4	-61.8	-61.9	1024	1024 QAM Light	-61.6	-61.3	-61.5	-60.9	-61.0
2048 QAM	-60.0	-59.7	-59.9	-59.3	-59.4	2048	2048 QAM	-59.3	-59.0	-59.2	-58.6	-58.7
56 MHz							80 MHz					
QPSK	-85.4	-85.1	-85.3	-84.7	-84.8		QPSK	-84.4	-84.1	-84.3	-83.7	-83.8
8 PSK	-81.6	-81.3	-81.5	-80.9	-81.0		8 PSK	-80.7	-80.4	-80.6	-80.0	-80.1
16 QAM	-78.4	-78.1	-78.3	-77.7	-77.8		16 QAM	-77.7	-77.4	-77.6	-77.0	-77.1
32 QAM	-75.1	-74.8	-75.0	-74.4	-74.5		32 QAM	-74.3	-74.0	-74.2	-73.6	-73.7
64 QAM	-72.0	-71.7	-71.9	-71.3	-71.4		64 QAM	-71.4	-71.1	-71.3	-70.7	-70.8
128 QAM	-69.2	-68.9	-69.1	-68.5	-68.6		128 QAM	-68.4	-68.1	-68.3	-67.7	-67.8
256 QAM	-66.0	-65.7	-65.9	-65.3	-65.4		256 QAM	-65.7	-65.4	-65.6	-65.0	-65.1
512 QAM	-63.5	-63.2	-63.4	-62.8	-62.9		512 QAM	-63.0	-62.7	-62.9	-62.3	-62.4
1024 QAM	-60.2	-59.9	-60.1	-59.5	-59.6		1024 QAM Strong	-59.8	-59.5	-59.7	-59.1	-59.2
1024 QAM Light	-59.4	-59.1	-59.3	-58.7	-58.8		1024 QAM Light	-59.4	-59.1	-59.3	-58.7	-58.8
2048 QAM	-57.1	-56.8	-57.0	-56.4	-56.5		2048 QAM	-56.5	-56.2	-56.4	-55.8	-55.9

