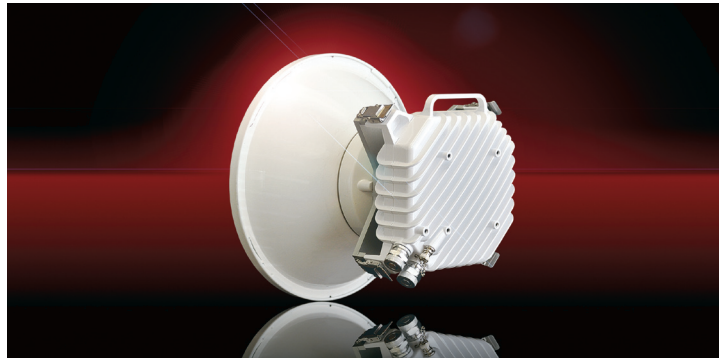




ExtendAir G2™ All-Outdoor FCC



Gigabit Ethernet Microwave Systems for High Capacity Backhaul

All-outdoor ExtendAir G2™ systems are high performance, point-to-point Gigabit Ethernet radios built for use in bands from 6 to 43 GHz. Designed to deliver guaranteed full-duplex Ethernet throughput up to 370 Mbps for short-haul and medium-range applications, the ExtendAir G2 all-outdoor radios are rugged, zero footprint systems requiring no cabinet space. Exalt's ExtendAir G2 yields a cost-effective, yet feature rich radio solution for service provider and enterprise applications where high reliability transmission is critical.

At a Glance

- High Performance
- Lowest Cost per Bit
- Data Rates up to 370 Mbps
- QPSK–256QAM with Adaptive Modulation
- Power-over-Ethernet
- 128/256-bit AES Encryption
- Zero Footprint
- Easy Sparing with Field Replaceable Diplexers
- Extended Temperature Range

Applications

- Mobile Networks
- Small Cell Backhaul
- WISP/Service Providers
- Government (Public Safety)
- Enterprise (Oil/Gas, Energy, Utilities, Transportation)
- Campus (Education, Healthcare, B2B)

ExtendAir G2 features and benefits include:

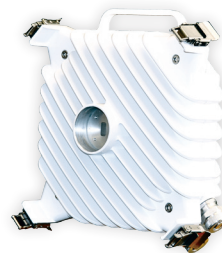
Single-unit sparing. A single ExtendAir G2 radio can be used to spare an entire 6, 11, 15, 18, 23 or 38 GHz frequency band, thanks to the industry's first field-replaceable diplexer in an all-outdoor radio. Compared to traditional approaches, the use of ExtendAir G2 drops the cost of spares by up to 90%.

Errorless adaptive modulation. With a rate adaptation range of 256QAM to QPSK, ExtendAir G2 can be used to deliver even higher ranges and data rates at high availability levels, then temporarily reduce throughput in the event of a fade while still ensuring the delivery of high priority traffic.

Data networking. ExtendAir G2 systems support jumbo frames and incorporate full Layer 2 switching along two GbE ports in combination with critical features such as 802.1Q (VLAN tagging), 802.1p (QoS) and Ethernet rate limiting.

Remote management. ExtendAir G2 systems include a full set of remote management tools such as Telnet/Command Line Interface (CLI), RS232, HTTP, HTTPS and SNMPv1, v2c and v3.

High security. ExtendAir G2 systems allow network managers to support the most stringent security requirements with hardware-based FIPS 197-compliant AES 128-bit and 256-bit encryption for data traffic protection and support for both encrypted SNMP v3 and SSL/SSH to ensure management security.



Primary Specifications

Maximum Capacity Ethernet (Full Duplex)

Frequency (GHz)

ExtendAir G2

rc06020, rc11020, rc15020
rc18020, rc23020, rc38020

370 Mbps

6 GHz (5.925–6.875 GHz), 11 GHz (10.700–11.700 GHz), 15 GHz (14.500–15.350 GHz)
18 GHz (17.700–19.700 GHz), 23 GHz (21.200–23.600 GHz), 38 GHz (38.600–40.000 GHz)

Specifications **ExtendAir G2 Licensed FCC Series**

System							
Models¹							
Frequency Bands	6 GHz Lower	6 GHz Upper	11 GHz	15 GHz	18 GHz	23 GHz	38 GHz
Frequency Range (GHz)	5.925–6.425	6.425–6.875	10.700–11.700	14.500–15.350	17.700–19.700	21.200–23.600	38.600–40.000
TR Spacing (MHz)	252.04	160	490/500/530	475	1560	1200	700
Channel Bandwidth (MHz)²	5, 10, 28, 29.65, 30, 40, 60 MHz	5, 10, 30 MHz	5, 10, 30, 40 MHz	5, 10, 20, 30, 40 MHz	5, 10, 20, 30, 40, 50 MHz	5, 10, 20, 30, 40, 50 MHz	5, 10, 20, 30, 40, 50 MHz
Standards	Part 101.147 / F.383	Part 101.147	Part 101.147 / F.387	F.497	Part 101.147 / F.595	Part 101.147 / F.637	Part 101.147 / F.749
Antenna Interface	Non-Standard	Non-Standard	WR-75/UBR120	WR-62/UBR140	WR-42/UBR220	WR-42/UBR220	0.219" dia
Output Power (dBm)							
QPSK	26	26	26	26	25	22	21
16QAM	24	24	24	24	23	20	19
32QAM	23	23	23	23	22	19	18
64QAM	21	21	21	21	20	17	16
128QAM	21	21	21	21	20	17	16
256QAM	20	20	20	20	19	16	15

Receiver Threshold (BER=10⁻⁶ typical (dBm))									
QPSK	5 MHz	-93.0	-93.0	-92.0	-92.0	-91.5	-91.0	-88.5	
	10 MHz	-90.0	-90.0	-89.0	-89.0	-88.5	-88.0	-85.5	
	20 MHz	-87.0	-87.0	-86.0	-86.0	-85.5	-85.0	-82.5	
	28 MHz	-86.0	-86.0	-85.0	-84.5	-84.0	-83.5	-81.0	
	29.65 / 30 MHz	-85.5	-85.5	-84.5	-84.0	-83.5	-83.0	-80.5	
	40 MHz	-84.0	-84.0	-83.0	-83.0	-82.5	-82.0	-79.5	
	50 MHz	-83.0	-83.0	-82.0	-82.0	-81.5	-81.0	-78.5	
	60 MHz	-83.0	-83.0	-82.0	-81.5	-81.0	-80.5	-78.0	
	16QAM	5 MHz	-87.0	-87.0	-86.0	-85.0	-85.0	-84.0	-82.0
		10 MHz	-84.0	-84.0	-83.0	-82.0	-82.0	-81.0	-79.0
20 MHz		-81.0	-81.0	-80.0	-79.0	-79.0	-78.0	-76.0	
28 MHz		-79.0	-79.0	-78.0	-78.0	-77.5	-77.0	-74.5	
29.65 / 30 MHz		-79.0	-79.0	-78.0	-77.5	-77.0	-76.5	-74.0	
40 MHz		-78.0	-78.0	-77.0	-76.0	-76.0	-75.0	-73.0	
50 MHz		-77.0	-77.0	-76.0	-75.0	-75.0	-74.0	-72.0	
60 MHz		-76.0	-76.0	-75.0	-75.0	-74.5	-74.0	-71.5	
32QAM		5 MHz	-83.0	-83.0	-82.5	-82.0	-81.5	-81.0	-78.5
		10 MHz	-80.0	-80.0	-79.5	-79.0	-78.5	-78.0	-75.5
	20 MHz	-77.0	-77.0	-76.5	-76.0	-75.5	-75.0	-72.5	
	28 MHz	-76.0	-76.0	-75.0	-74.5	-74.0	-73.5	-71.0	
	29.65 / 30 MHz	-75.5	-75.5	-74.5	-74.0	-73.5	-73.0	-70.5	
	40 MHz	-74.0	-74.0	-73.5	-73.0	-72.5	-72.0	-69.5	
	50 MHz	-73.0	-73.0	-72.0	-72.0	-71.5	-71.0	-68.5	
	60 MHz	-73.0	-73.0	-72.0	-71.5	-71.0	-70.5	-68.0	
	64QAM	5 MHz	-80.0	-80.0	-79.5	-79.0	-78.5	-78.0	-75.5
		10 MHz	-77.0	-77.0	-76.5	-76.0	-75.5	-75.0	-72.5
20 MHz		-74.0	-74.0	-73.5	-73.0	-72.5	-72.0	-69.5	
28 MHz		-73.0	-73.0	-72.0	-71.5	-71.0	-70.5	-68.0	
29.65 / 30 MHz		-72.5	-72.5	-71.5	-71.0	-70.5	-70.0	-67.5	
40 MHz		-71.0	-71.0	-70.5	-70.0	-69.5	-69.0	-66.5	
50 MHz		-70.0	-70.0	-69.0	-69.0	-68.5	-68.0	-65.5	
60 MHz		-70.0	-70.0	-69.0	-68.5	-68.0	-67.5	-65.0	
126QAM		5 MHz	-77.0	-77.0	-76.5	-76.0	-75.5	-75.0	-72.5
		10 MHz	-74.0	-74.0	-73.5	-73.0	-72.5	-72.0	-69.5
	20 MHz	-71.0	-71.0	-70.5	-70.0	-69.5	-69.0	-66.5	
	28 MHz	-70.0	-70.0	-69.0	-68.5	-68.0	-67.5	-65.0	
	29.65 / 30 MHz	-69.5	-69.5	-68.5	-68.0	-67.5	-67.0	-64.5	
	40 MHz	-68.0	-68.0	-67.5	-67.0	-66.5	-66.0	-63.5	
	50 MHz	-67.0	-67.0	-66.0	-66.0	-65.5	-65.0	-62.5	
	60 MHz	-67.0	-67.0	-66.0	-65.5	-65.0	-64.5	-62.0	
	256QAM	5 MHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		10 MHz	-71.0	-71.0	-70.5	-70.0	-69.5	-69.0	-66.5
20 MHz		-68.0	-68.0	-67.5	-67.0	-66.5	-66.0	-63.5	
28 MHz		-67.0	-67.0	-66.0	-65.5	-65.0	-64.5	-62.0	
29.65 / 30 MHz		-65.5	-65.5	-65.0	-65.0	-64.5	-64.0	-61.5	
40 MHz		-65.0	-65.0	-64.5	-64.0	-63.5	-63.0	-60.5	
50 MHz		-64.0	-64.0	-63.0	-63.0	-62.0	-62.0	-59.5	
60 MHz		-64.0	-64.0	-63.0	-62.5	-62.0	-61.5	-59.0	



Specifications ExtendAir G2 Licensed FCC Series

Throughput (Mbps full-duplex) (Max system layer 1/Max Ethernet layer 2)³

	QPSK	16QAM	32QAM	64 QAM	128 QAM	256 QAM
5 MHz	9 / 8	20 / 16	25 / 20	30 / 24	35 / 28	-
10 MHz	19 / 16	39 / 32	49 / 40	60 / 48	70 / 56	80 / 64
20 MHz	40 / 33	81 / 65	101 / 82	122 / 98	142 / 115	162 / 131
28 MHz	56 / 45	113 / 91	141 / 114	170 / 137	198 / 160	226 / 183
29.65 / 30 MHz	60 / 48	121 / 98	151 / 122	182 / 147	212 / 171	243 / 196
40 MHz	80 / 65	162 / 130	202 / 163	243 / 196	284 / 229	324 / 262
50 MHz	95 / 80	195 / 160	245 / 200	300 / 240	350 / 280	400 / 320
60 MHz	113 / 91	227 / 183	284 / 229	341 / 275	398 / 321	455 / 367

RF Diplexers⁶

Frequency Bands

6 GHz Lower	6 GHz Upper	11 GHz	15 GHz	18 GHz	23 GHz	38 GHz
TR 252.04 MHz Hi/Lo	TR 160 MHz Hi/Lo	TR 490/500/530 MHz Hi/Lo	TR 475 MHz Hi/Lo	TR 1560 MHz Hi/Lo	TR 1200 MHz Hi/Lo	TR 700 MHz Hi/Lo
Band 1: 6.167–6.242 GHz / 5.915–5.990 GHz	Band 1: 6.700–6.670 GHz / 6.540–6.600 GHz	Band 1: 11.195–11.400 GHz / 10.695–10.895 GHz	Band 1: 14.975–15.143 GHz / 14.500–14.668 GHz	Band 1: 19.260–19.560 GHz / 17.700–18.000 GHz	Band 1: 22.400–22.800 GHz / 21.200–21.600 GHz	Band 1: 39.295–39.505 GHz / 38.595–38.805 GHz
Band 2: 6.226–6.301 GHz / 5.974–6.049 GHz	Band 2: 6.740–6.800 GHz / 6.580–6.640 GHz	Band 2: 11.275–11.480 GHz / 10.775–10.975 GHz	Band 2: 15.135–15.303 GHz / 14.660–14.828 GHz	Band 2: 19.400–19.700 GHz / 17.840–18.140 GHz	Band 2: 22.800–23.200 GHz / 21.600–22.000 GHz	Band 2: 39.495–39.705 GHz / 38.795–39.005 GHz
Band 3: 6.286–6.360 GHz / 6.034–6.108 GHz	Band 3: 6.780–6.840 GHz / 6.620–6.680 GHz	Band 3: 11.350–11.555 GHz / 10.850–11.050 GHz	Band 3: 15.190–15.358 GHz / 14.175–14.883 GHz		Band 3: 23.200–23.600 GHz / 22.000–22.400 GHz	Band 3: 39.695–39.905 GHz / 38.995–39.205 GHz
Band 4: 6.345–6.420 GHz / 6.093–6.168 GHz	Band 4: 6.820–6.870 GHz / 6.660–6.710 GHz	Band 4: 11.425–11.630 GHz / 10.925–11.125 GHz				Band 4: 39.895–40.105 GHz / 39.195–39.405 GHz
		Band 5: 11.500–11.705 GHz / 11.000–11.200 GHz				

Maximum RSL	0 dBm no damage
QPSK	-20 dBm error-free
16QAM-256QAM	-25 dBm error-free
Output Power (min power)	0 to +3dBm depending on frequency band
Power Control Step Size	0.5 dB
ATPC ⁴	Yes
Error Floor	10 ⁻¹²
FEC	Reed Solomon T=8
Ethernet Latency	40-170µS (<115µSec typical) at full throughput (GigE) with AES encryption enabled
Data Security	NIST FIPS 197-compliant 128-bit AES and 256-bit AES ⁵ or 96-bit proprietary encryption
Adaptive Modulation	QPSK-256QAM fully configurable; errorless
Management	In-band management, Out-of-band management
Security	SSL/SSH and secure, encrypted SNMPv3
HTTP	Embedded web server GUI (Internet Explorer, Firefox, Safari, Chrome)
CLI/Telnet	via 10/100/1000BaseT
SNMP	v1, v2c, and secure v3
MIB support	MIB I, MIB II, Exalt MIB
Installation and Management Manual	Embedded in radio, accessible via HTTP GUI
Compliance	SNMP v1, v2c, v3
RF	FCC Part 101, IC SRSP 314.5; 317.8; 321.8
EMI	FCC Part 15
Safety	EN 60950-1, IEC 60950-1
Physical	
Dimensions (H x W x D)	9.4" x 9.4" x 4.5" 23.9 cm x 23.9 cm x 11.4 cm
Operating Temperature	-40 to +65°C; -40 to +149°F
Full Spec Temperature	-40 to +60°C; -40 to +140°F
Weight	9.5 lbs / 4.3 kg
Environmental	NEMA 4 / IP67
Altitude	4600m / 15,000 ft.
Humidity	100% condensing
Interfaces	PoE + 10/100/1000BaseT 10/100/1000BaseT RSL

Ethernet	RJ48C/RJ45 Female (x2)
Interface Speed	10/100/1000BaseT (ETH1/PoE + ETH2)
Duplex	Half, Full, Auto
Compliance	802.3 with MDIX
VLAN	802.1q, transparent, trunk, and management only
QoS ⁴	8 priority levels, 4 queues; 802.1p, 802.1q (VLAN ID), source MAC address, destination MAC address)
Ethernet Rate Limiting	Configurable per port via software
Maximum Packet Size	9720 bytes
DC Power, Nominal	<30W, 48 VDC, 0.65 A
AC Power Adapter	
Input	90-260 VAC, 1.0 A
Output	33W, 56 VDC
Temperature Range	-20°C to +50°C; -8°F to +122°F
Humidity	5 to 90%
Standards	802.3at
Warranty	Two years ⁷

- Consult with your Exalt sales representative for availability.
- Not all channel bandwidths are available for every channel plan. Consult your Exalt sales representative for availability.
- Maximum layer 1 throughput as measured with 64-byte packets and maximum layer 2 Ethernet throughput as measured with 1522 byte packets. In both cases, throughput includes source address, destination address and CRC overhead. Base configurations start at 25 Mbps full-duplex with 50, 100, 200, 300, and 370 Mbps upgrades.
- Software upgrade required.
- Software license key option.
- Field replaceable. Refer to warranty terms and conditions.
- Terms and conditions apply. Consult your Exalt sales representative for details.



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