



ExtendAir® G2™ All-Outdoor Licensed



Gigabit Ethernet Microwave Systems for High Capacity Backhaul

All-outdoor ExtendAir® G2 systems hit the sweet spot of microwave price and high performance, in a point-to-point Gigabit Ethernet radio solution. Built for use in bands from 7 to 42 GHz and designed to deliver guaranteed full-duplex Ethernet throughput up to 370 Mbps for short-haul and medium-haul applications, 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.

ExtendAir G2 features and benefits include:

At-a-Glance:

- High Performance
- Data rates up to 370 Mbps
- QPSK to 256QAM with Adaptive Modulation
- 802.3at 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)
- Campus (Education, Healthcare, B2B)
- Utilities (Oil & Gas, Energy, Transportation)
- Enterprise (Private Networks)

Lowest Total Cost of Ownership. ExtendAir G2 brings affordability and lowest OPEX for a microwave backhaul solution. Its compact all-outdoor architecture uses standards based 802.3at PoE with low power consumption, while a single CAT5 cable for power and data simplifies and reduces installation costs. Installation is worry-free with direct slip-fit antenna interfaces and user manual built into the radio's operating system.

Single Unit Sparing. A single ExtendAir G2 radio can be used to spare an entire 7, 8, 11, 13, 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 microwave solutions, the use of ExtendAir G2 can lower 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), HTTP, HTTPS and SNMPv1, v2c and v3.

Maximum 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.

High Reliability. ExtendAir G2 systems are IP67 rated and operate at extended temperature ranges compared to other microwave solutions. This ruggedized, zero-foot print radio has been designed to provide years of maintenance-free connectivity.

Primary Specifications

		ExtendAir G2 rc07020, rc08020, rc11020, rc13020, rc15020, rc18020, rc23020, rc38020
Maximum Capacity	Ethernet (Full Duplex)	370 Mbps
Frequency (GHz)		7 GHz (7.125–8.500 GHz), 8 GHz (7.90–8.50 GHz), 11 GHz (10.70–11.70 GHz), 13 GHz (12.75–13.25 GHz), 15 GHz (14.40–15.35 GHz), 18 GHz (17.70–19.70 GHz), 23 GHz (21.20–23.60 GHz), 38 GHz (37.00–40.00 GHz)

Specifications **ExtendAir G2 All-Outdoor Licensed**

System

Models ¹	7 GHz: rc07020; 8 GHz: rc08020; 11 GHz: rc11020; 13 GHz: rc13020; 15 GHz: rc15020; 18 GHz: rc18020; 23 GHz: rc23020; 38 GHz: rc38020							
Freq. Bands	7 GHz	8 GHz	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz	38 GHz
Freq. Range (GHz)	7.125–7.900	7.900–8.500	10.700–11.700	12.750–13.250	14.400–15.350	17.700–19.700	21.200–23.600	37.000–40.000
TR Spacing (MHz)	154, 161, 168, 196, 245	119/126, 266, 311.32	490/500/530	266	315, 420, 475, 490, 728	1008, 1010, 1560	1008, 1200, 1232	700, 1260
Standards	F.385	F.386	Part 101.147 / F.387	F.497	F.636	Part 101.147 / F.595	Part 101.147 / F.637	Part 101.147 / F.749
Antenna Interface	1.025" / 26.035mm dia	1.025" / 26.035mm dia	WR-75/UBR120	WR-75/UBR120	WR-62/UBR140	WR-42/UBR220	WR-42/UBR220	0.219" dia

Output Power (dBm)

QPSK	26	26	26	26	26	24	22	21
16QAM	24	24	24	24	24	23	20	19
32QAM	23	23	23	23	23	22	19	18
64QAM	21	21	21	21	21	20	17	16
128QAM	21	21	21	21	21	20	17	16
256QAM	20	20	20	20	20	19	16	15
Min. Output Power (dBm)	3	3	0	0	0	0	0	0

Receiver Threshold (BER=10⁻⁶ typical (dBm))

QPSK	1.75 MHz ¹	see note	see note	see note	see note	see note	see note	see note
	3.5 MHz	-94.0	-94.0	-94.0	-93.5	-93.5	-93.0	-92.5
	5 MHz	-92.5	-92.5	-92.5	-92.0	-92.0	-91.5	-91.0
	7 MHz	-91.0	-91.0	-91.0	-90.5	-90.5	-90.0	-89.5
	10 MHz	-89.5	-89.5	-89.5	-89.0	-89.0	-88.5	-88.0
	13.75/14 MHz	-88.0	-88.0	-88.0	-87.5	-87.5	-87.0	-86.5
	20 MHz	-86.5	-86.5	-86.5	-86.0	-86.0	-85.5	-85.0
	25 MHz	-85.5	-85.5	-85.5	-85.0	-85.0	-84.5	-84.0
	27.5/28 MHz	-85.0	-85.0	-85.0	-84.5	-84.5	-84.0	-83.5
	29.65/30 MHz	-84.5	-84.5	-84.5	-84.0	-84.0	-83.5	-83.0
16QAM	40 MHz	-83.5	-83.5	-83.5	-83.0	-83.0	-82.5	-82.0
	50 MHz	-82.5	-82.5	-82.5	-82.0	-82.0	-81.5	-81.0
	55/56/60 MHz	-81.5	-81.5	-81.5	-81.0	-81.0	-80.5	-80.0
	1.75 MHz ¹	see note	see note	see note	see note	see note	see note	see note
	3.5 MHz	-87.5	-87.5	-87.5	-87.0	-87.0	-86.5	-86.0
	5 MHz	-86.0	-86.0	-86.0	-85.5	-85.5	-85.0	-84.5
	7 MHz	-84.5	-84.5	-84.5	-84.0	-84.0	-83.5	-83.0
	10 MHz	-83.0	-83.0	-83.0	-82.5	-82.5	-82.0	-81.5
	13.75/14 MHz	-81.5	-81.5	-81.5	-81.0	-81.0	-80.5	-80.0
	20 MHz	-80.0	-80.0	-80.0	-79.5	-79.5	-79.0	-78.5
32QAM	25 MHz	-79.0	-79.0	-79.0	-78.5	-78.5	-78.0	-77.5
	27.5/28 MHz	-78.5	-78.5	-78.5	-78.0	-78.0	-77.5	-77.0
	29.65/30 MHz	-78.0	-78.0	-78.0	-77.5	-77.5	-77.0	-76.5
	40 MHz	-77.0	-77.0	-77.0	-76.5	-76.5	-76.0	-75.5
	50 MHz	-76.0	-76.0	-76.0	-75.5	-75.5	-75.0	-74.5
	55/56/60 MHz	-75.0	-75.0	-75.0	-74.5	-74.5	-74.0	-73.5
	1.75 MHz ¹	see note	see note	see note	see note	see note	see note	see note
	3.5 MHz	-84.0	-84.0	-84.0	-83.5	-83.5	-83.0	-82.5
	5 MHz	-82.5	-82.5	-82.5	-82.0	-82.0	-81.5	-81.0
	7 MHz	-81.0	-81.0	-81.0	-80.5	-80.5	-80.0	-79.5
64QAM	10 MHz	-79.5	-79.5	-79.5	-79.0	-79.0	-78.5	-78.0
	13.75/14 MHz	-78.0	-78.0	-78.0	-77.5	-77.5	-77.0	-76.5
	20 MHz	-76.5	-76.5	-76.5	-76.0	-76.0	-75.5	-75.0
	25 MHz	-75.5	-75.5	-75.5	-75.0	-75.0	-74.5	-74.0
	27.5/28 MHz	-75.0	-75.0	-75.0	-74.5	-74.5	-74.0	-73.5
	29.65/30 MHz	-74.5	-74.5	-74.5	-74.0	-74.0	-73.5	-73.0
	40 MHz	-73.5	-73.5	-73.5	-73.0	-73.0	-72.5	-72.0
	50 MHz	-72.5	-72.5	-72.5	-72.0	-72.0	-71.5	-71.0
	55/56/60 MHz	-71.5	-71.5	-71.5	-71.0	-71.0	-70.5	-70.0
	1.75 MHz ¹	see note	see note	see note	see note	see note	see note	see note
	3.5 MHz	-81.0	-81.0	-81.0	-80.5	-80.5	-80.0	-79.5
	5 MHz	-79.5	-79.5	-79.5	-79.0	-79.0	-78.5	-78.0
	7 MHz	-78.0	-78.0	-78.0	-77.5	-77.5	-77.0	-76.5
	10 MHz	-76.5	-76.5	-76.5	-76.0	-76.0	-75.5	-75.0
	13.75/14 MHz	-75.0	-75.0	-75.0	-74.5	-74.5	-74.0	-73.5
	20 MHz	-73.5	-73.5	-73.5	-73.0	-73.0	-72.5	-72.0
	25 MHz	-72.5	-72.5	-72.5	-72.0	-72.0	-71.5	-71.0
	27.5/28 MHz	-72.0	-72.0	-72.0	-71.5	-71.5	-71.0	-70.5
	29.65/30 MHz	-71.5	-71.5	-71.5	-71.0	-71.0	-70.5	-70.0
	40 MHz	-70.5	-70.5	-70.5	-70.0	-70.0	-69.5	-69.0
	50 MHz	-69.5	-69.5	-69.5	-69.0	-69.0	-68.5	-68.0
	55/56/60 MHz	-68.5	-68.5	-68.5	-68.0	-68.0	-67.5	-67.0

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Receiver Threshold (BER=10⁻⁶ typical (dBm)) continued

Freq. Bands	7 GHz	8 GHz	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz	38 GHz
128QAM	1.75 MHz ¹	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3.5 MHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5 MHz	-76.5	-76.5	-76.5	-76.0	-76.0	-75.0	-72.5
	7 MHz	-75.0	-75.0	-75.0	-74.5	-74.5	-74.0	-71.0
	10 MHz	-73.5	-73.5	-73.5	-73.0	-73.0	-72.5	-69.5
	13.75/14 MHz	-72.0	-72.0	-72.0	-71.5	-71.5	-71.0	-68.0
	20 MHz	-70.5	-70.5	-70.5	-70.0	-70.0	-69.5	-66.5
	25 MHz	-69.5	-69.5	-69.5	-69.0	-69.0	-68.5	-65.5
	27.5/28 MHz	-69.0	-69.0	-69.0	-68.5	-68.5	-68.0	-65.0
	29.65/30 MHz	-68.5	-68.5	-68.5	-68.0	-68.0	-67.5	-64.5
	40 MHz	-67.5	-67.5	-67.5	-67.0	-67.0	-66.5	-63.5
	50 MHz	-66.5	-66.5	-66.5	-66.0	-66.0	-65.5	-62.5
	55/56/60 MHz	-65.5	-65.5	-65.5	-65.0	-65.0	-64.5	-61.5
	1.75 MHz ¹	N/A	N/A	N/A	N/A	N/A	N/A	N/A
256QAM	3.5 MHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5 MHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	7 MHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10 MHz	-70.5	-70.5	-70.5	-70.0	-70.0	-69.5	-66.5
	13.75/14 MHz	-69.0	-69.0	-69.0	-68.5	-68.5	-68.0	-65.0
	20 MHz	-67.5	-67.5	-67.5	-67.0	-67.0	-66.5	-63.5
	25 MHz	-66.5	-66.5	-66.5	-66.0	-66.0	-65.5	-62.5
	27.5/28 MHz	-66.0	-66.0	-66.0	-65.5	-65.5	-65.0	-62.0
	29.65/30 MHz	-65.5	-65.5	-65.5	-65.0	-65.0	-64.5	-61.5
	40 MHz	-64.5	-64.5	-64.5	-64.0	-64.0	-63.5	-60.5
	50 MHz	-63.5	-63.5	-63.5	-63.0	-63.0	-62.5	-59.5
	55/56/60 MHz	-62.5	-62.5	-62.5	-62.0	-62.0	-61.5	-58.5

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

	QPSK	16QAM	32QAM	64QAM	128QAM	256QAM
1.75 MHz ¹	see note	see note	see note	see note	see note	see note
3.5 MHz	6 / 5	13 / 10	16 / 13	20 / 16	N/A	N/A
5 MHz	9 / 8	20 / 16	25 / 20	30 / 24	35 / 28	N/A
7 MHz	13 / 11	27 / 22	34 / 27	41 / 33	48 / 38	N/A
10 MHz	19 / 16	39 / 32	49 / 40	60 / 48	70 / 56	80 / 64
13.75/14 MHz	28 / 22	56 / 45	70 / 56	84 / 68	98 / 79	112 / 90
20 MHz	40 / 33	81 / 65	101 / 82	122 / 98	142 / 115	162 / 131
25 MHz	48 / 40	98 / 80	123 / 100	150 / 120	175 / 140	200 / 160
27.5/28 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
55/56/60 MHz	113 / 91	227 / 183	284 / 229	341 / 275	398 / 321	455 / 367

Maximum RSL	0dBm, no damage -20dBm, error-free (QPSK) -25dBm, error-free (16QAM–256QAM)
Adaptive Modulation	QPSK–256QAM fully configurable; errorless
Error Floor	10 ⁻¹²
FEC	Reed Solomon T=8
Interfaces	PoE + 10/100/1000BaseT; 10/100/1000BaseT; RSL
Ethernet Connections	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 Frame Size	9720 bytes
Latency	40–170µs (<115µs typical) at full throughput (GigE) with AES encryption enabled
Data Security	NIST FIPS 197-compliant 128-bit AES and 256-bit AES ⁵ (optional) or 96-bit proprietary encryption
Management	In-band management, Out-of-band management
Security	SSL/SSH and secure, encrypted SNMPv3
HTTPS	Embedded web server GUI (Internet Explorer, Firefox, Safari, Chrome)
CLI/Telnet	via 10/100/1000BaseT
SNMP	v1, v2c, and secure v3
Syslog	Up to 1000 events stored locally
MIB support	MIB I, MIB II, Exalt MIB

Installation and Management Manual	Embedded in radio, accessible via HTTP GUI
Physical	
Dimensions (H x W x D)	23.9 cm x 23.9 cm x 11.4 cm; 9.4" x 9.4" x 4.5"
Weight	4.3 kg / 9.5 lbs
Operating Temperature	-40° to +65°C; -40° to +149°F
Full Spec Temperature	-40° to +60°C; -40° to +140°F
Altitude	4600 m / 15,000 ft.
Humidity	100% condensing
Environmental	NEMA 4 / IP67
DC Power	40-60VDC, <30W at radio PoE input 45-60VDC, <30W at PoE Injector input, 100m cable
AC Power Adapter (optional)	10/100/1000BaseT
Input	100–240 VAC 1.0A
Output	33W, 56 VDC
Temperature Range	-20 to +50°C; -8 to +122°F
Humidity	5 to 90%
Standards	802.3at
Radio Warranty	Two years ⁷
Compliance	
RF	FCC Part 101; EN 302 217-2-2 v2.1.1 (2013-07); EN 301 126-2-2 v1.1.1 (2000-11)
EMI	FCC Part 15; EN 301 489-1, EN 301 489-4
Safety	EN 60950-1, EN-60950-22; IEC 60950-1

- 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.
- 8 GHz 119/126 MHz T/R spacing limited to 28 MHz channel bandwidth maximum.



Specifications **ExtendAir G2 All-Outdoor Licensed**

RF Diplexers⁶

Frequency Bands

7 GHz	8 GHz	11 GHz	13 GHz
TR 154 MHz Hi/Lo Band 1: 7.582–7.638 / 7.428–7.484 GHz Band 2: 7.624–7.680 / 7.470–7.526 GHz Band 3: 7.666–7.722 / 7.512–7.568 GHz TR 161 MHz Hi/Lo Band 1: 7.275–7.338 / 7.114–7.177 GHz Band 2: 7.310–7.373 / 7.149–7.212 GHz Band 3: 7.345–7.408 / 7.184–7.247 GHz Band 4: 7.380–7.443 / 7.219–7.282 GHz Band 5: 7.400–7.463 / 7.239–7.302 GHz Band 6: 7.435–7.498 / 7.274–7.337 GHz Band 7: 7.470–7.533 / 7.309–7.372 GHz Band 8: 7.505–7.568 / 7.344–7.407 GHz Band 9: 7.575–7.638 / 7.414–7.477 GHz Band 10: 7.610–7.679 / 7.449–7.512 GHz Band 11: 7.645–7.708 / 7.484–7.547 GHz Band 12: 7.680–7.744 / 7.519–7.582 GHz Band 13: 7.700–7.763 / 7.539–7.602 GHz Band 14: 7.735–7.798 / 7.574–7.637 GHz Band 15: 7.770–7.833 / 7.609–7.672 GHz Band 16: 7.805–7.868 / 7.644–7.707 GHz TR 168 MHz Hi/Lo Band 1: 7.611–7.667 / 7.443–7.499 GHz Band 2: 7.653–7.709 / 7.485–7.541 GHz Band 3: 7.695–7.751 / 7.527–7.583 GHz	TR 196 MHz Hi/Lo Band 1: 7.289–7.345 / 7.093–7.149 GHz Band 2: 7.317–7.373 / 7.121–7.177 GHz Band 3: 7.345–7.401 / 7.149–7.205 GHz Band 4: 7.373–7.429 / 7.177–7.233 GHz Band 5: 7.401–7.457 / 7.205–7.261 GHz TR 245 MHz Hi/Lo Band 1: 7.645–7.729 / 7.400–7.484 GHz Band 2: 7.729–7.813 / 7.484–7.568 GHz Band 3: 7.813–7.897 / 7.568–7.652 GHz	TR 119/126 MHz⁸ Hi/Lo Band 1: 8.398–8.433 / 8.279–8.314 GHz Band 2: 8.412–8.447 / 8.293–8.328 GHz Band 3: 8.426–8.461 / 8.307–8.342 GHz Band 4: 8.440–8.475 / 8.321–8.356 GHz Band 5: 8.454–8.489 / 8.335–8.370 GHz Band 6: 8.468–8.503 / 8.349–8.384 GHz TR 266 MHz Hi/Lo Band 1: 8.171–8.290 / 7.905–8.024 GHz Band 2: 8.283–8.402 / 8.017–8.136 GHz TR 311.32 MHz Hi/Lo Band 1: 8.042–8.178 / 7.731–7.867 GHz Band 2: 8.146–8.282 / 7.835–7.971 GHz	TR 490/500/530 MHz Hi/Lo Band 1: 11.200–11.400 / 10.700–10.900 GHz Band 3: 11.350–11.550 / 10.850–11.050 GHz Band 5: 11.500–11.700 / 11.000–11.200 GHz TR 266 MHz Hi/Lo Band 1: 13.017–13.080 / 12.751–12.814 GHz Band 2: 13.073–13.136 / 12.807–12.870 GHz Band 3: 13.129–13.192 / 12.863–12.926 GHz Band 4: 13.185–13.248 / 12.919–12.982 GHz

15 GHz		18 GHz	23 GHz	38 GHz
TR 315 MHz Hi/Lo Band 1: 14.942–15.047 / 14.627–14.732 GHz Band 2: 15.040–15.159 / 14.725–14.844 GHz Band 3: 15.138–15.243 / 14.823–14.928 GHz	TR 490 MHz Hi/Lo Band 1: 14.893–15.012 / 14.403–14.522 GHz Band 2: 15.005–15.124 / 14.515–14.634 GHz Band 3: 15.117–15.236 / 14.627–14.746 GHz Band 4: 15.229–15.348 / 14.739–14.858 GHz	TR 1010 MHz Hi/Lo Band 1: 18.700–19.000 / 17.690–17.990 GHz Band 2: 18.940–19.240 / 17.930–18.230 GHz Band 3: 19.190–19.490 / 18.180–18.480 GHz Band 4: 19.410–19.710 / 18.400–18.700 GHz	TR 1008 MHz Hi/Lo Band 1: 23.008–23.322 / 22.000–22.314 GHz Band 2: 23.294–23.608 / 22.286–22.600 GHz TR 1200 MHz Hi/Lo Band 1: 22.400–22.820 / 21.200–21.620 GHz Band 2: 22.790–23.210 / 21.590–22.010 GHz Band 3: 23.180–23.600 / 21.980–22.400 GHz TR 1232 MHz Hi/Lo Band 1: 22.432–22.852 / 21.200–21.620 GHz Band 2: 22.810–23.230 / 21.578–21.988 GHz Band 3: 23.188–23.608 / 21.956–22.376 GHz	TR 700 MHz Hi/Lo Band 1: 39.295–39.505 / 38.595–38.805 GHz Band 2: 39.495–39.705 / 38.795–39.005 GHz Band 3: 39.695–39.905 / 38.995–39.205 GHz Band 4: 39.895–40.105 / 39.195–39.405 GHz TR 1260 MHz Hi/Lo Band 1: 38.304–38.892 / 37.044–37.632 GHz Band 2: 38.864–39.452 / 37.604–38.192 GHz



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