



# ExploreAir<sup>®</sup> LR All-Outdoor Licensed



- Highest system gain, longest range, smallest antennas, lowest cost per Mbps-mile
- Highest sub-60 GHz capacity in a single carrier: 740 Mbps full-duplex @ 512QAM

- XPIC-ready for 1 Gbps+ in a single channel
- Single-unit sparing: industry's lowest TCO
- Fiber/SFP interface with PoE or Coax DC

ExploreAir LR (Long Range) all-outdoor radios are ultra-high capacity, ultra-high system gain zero footprint microwave systems operating in the 6 – 43 GHz bands. Designed to significantly reduce required antenna diameter and featuring the industry's only field-replaceable diplexers, ExploreAir LR systems offer dramatic TCO savings over competitive alternatives. With the industry's only 80 MHz channel and XPIC readiness, ExploreAir LR systems can deliver up to 1500 Mbps full-duplex Layer 1 uncompressed throughput in a single channel, delivering the industry's lowest cost per Mbps-mile. ExploreAir LR provides a true wire speed alternative to fiber for high capacity ring and aggregation applications in 3G+ and 4G/LTE service provider networks as well as high speed campus connectivity and safety and security applications in enterprise and government networks. Additional features and benefits include:

**Layer 1 capacity aggregation.** ExploreAir LR features the industry's most sophisticated link aggregation technology, automatically load balancing traffic across separate streams running at any channel size, modulation or data rate.

**Link performance optimization.** For any given channel and modulation setting, users can choose from three settings: maximum system gain, maximum throughput or balanced performance, allowing users to minimize antenna size or increase link availability, to maximize traffic-carrying capacity or to establish a balance between system gain, throughput and latency.

**Errorless and jitterless adaptive modulation.** With a programmable adaptive modulation range of 512QAM to QPSK, ExploreAir LR can deliver up to wire speed capacity at even greater ranges at high availability levels, then temporarily reduce throughput in the event of a fade while still ensuring the delivery of high priority traffic based on QoS/CoS.

**Data networking.** ExploreAir LR systems include an integrated hardened Layer 2 switch along with two GbE data ports (1000BaseX SFP, 10/100/1000BaseT), allowing ExploreAir LR to support Ethernet backhaul requirements and features such as 802.1p (QoS), 802.1q (VLAN tagging) and Ethernet rate limiting.

**Flexible remote management and security.** ExploreAir LR systems include a full set of remote management tools such as secure Telnet/ Command Line Interface (CLI), RS232, HTTP, HTTPS and SNMP v1, v2c and v3. In addition, a separate data (PoE) port provides unique out-of-band management functionality allowing both endpoints of a link to be managed independently. ExploreAir supports hardware-based, FIPS 197-compliant AES 128- and 256-bit payload encryption.

**Interface flexibility.** ExploreAir LR supports both copper and fiber Gigabit Ethernet interfaces for the ultimate in deployment flexibility. The copper GbE port support PoE, allowing for the use of low cost Cat5 cable while the fiber SFP port, in conjunction with DC power, allows for electromagnetic interference-free operation on even the tallest tower with a high degree of lightning immunity.

## Specifications

ExploreAir LR  
rc11150  
rc6x150

**Maximum Capacity** Ethernet Layer 1 (Full-duplex)

742 Mbps

**Frequency (GHz)**

6 GHz (5.925–6.425 / 6.535–6.875 GHz), 7 GHz (6.875–7.125 GHz), 11 GHz (10.700–11.700 GHz)

**Specifications**

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System				
Model <sup>1</sup>	rcxx150: 1xDC + 1x10/100/1000BaseT PoE + 1x1000BaseX (SFP) + XPIC			
Frequency Bands	6 GHz Lower	6 GHz Upper		11 GHz
Frequency Range (GHz)	5.925–6.425 GHz	Upper 6.525–6.875	7 Lower <sup>5</sup> 6.875–7.125	10.700–11.700
TR Spacing (MHz)	252.04	160	150	490 / 500
Channel Bandwidth (MHz)	10, 29.65/30, 40, 60 <sup>2</sup>	10, 30	12.5, 25	10, 28/30, 40, 80 <sup>2</sup>
Antenna Interface	1.259" / 285.98 mm dia	1.259" / 285.98 mm dia	1.259" / 285.98 mm dia	WR-75 / UBR120
Output Power (dBm) <sup>3</sup>	QPSK-128QAM / 256QAM / 512QAM <sup>4</sup>			
	30 / 30 / 27	30 / 30 / 27	30 / 30 / 27	28 / 27 / 25
Minimum Output Power(dBm)	10	10	10	10

**Receiver Threshold (BER=10<sup>-6</sup> typical (dBm))<sup>3</sup>**

Performance Modes	MaxThroughput and Min Latency	Maximum System Gain	Balanced Performance	Performance Modes	MaxThroughput and Min Latency	Maximum System Gain	Balanced Performance
Ethernet Latency <sup>6</sup>	<50 μs	<125 μs	<100 μs	Ethernet Latency <sup>6</sup>	<50 μs	<125 μs	<100 μs
<b>Band: 6 GHz Lower</b>				<b>7 GHz Lower<sup>5</sup></b>			
QPSK 10 MHz	-88.0	-	-	QPSK 12.5 MHz	-87.0	-	-
29.65/30 MHz	-83.0	-	-	25 MHz	-84.0	-	-
40 MHz	-82.0	-	-	16QAM 12.5 MHz	-80.0	-82.5	-82.0
60 MHz	-	-	-	25 MHz	-77.0	-79.5	-79.0
16QAM 10 MHz	-82.0	-84.5	-84.0	32QAM 12.5 MHz	-77.0	-79.5	-79.0
29.65/30 MHz	-77.0	-79.5	-79.0	25 MHz	-74.0	-76.5	-76.0
40 MHz	-76.0	-78.5	-78.0	64QAM 12.5 MHz	-74.0	-76.5	-76.0
60 MHz	-74.0	-76.5	-76.0	25 MHz	-71.0	-73.5	-73.0
32QAM 10 MHz	-79.0	-81.5	-81.0	128QAM 12.5 MHz	-71.0	-73.5	-73.0
29.65/30 MHz	-74.0	-76.5	-76.0	25 MHz	-68.0	-70.5	-70.0
40 MHz	-73.0	-75.5	-75.0	256QAM 12.5 MHz	-68.0	-70.5	-70.0
60 MHz	-71.0	-73.5	-73.0	25 MHz	-65.0	-67.5	-67.0
64QAM 10 MHz	-76.0	-78.5	-78.0	512QAM <sup>5</sup> 12.5 MHz	-65.0	-67.5	-67.0
29.65/30 MHz	-71.0	-73.5	-73.0	25 MHz	-62.0	-64.5	-64.0
40 MHz	-70.0	-72.5	-72.0	<b>Band: 11 GHz</b>			
60 MHz	-68.0	-70.5	-70.0	QPSK 10 MHz	-89.0	-	-
128QAM 10 MHz	-73.0	-75.5	-75.0	28/30 MHz	-84.0	-	-
29.65/30 MHz	-68.0	-70.5	-70.0	40 MHz	-83.0	-	-
40 MHz	-67.0	-69.5	-69.0	80 MHz	-80.0	-	-
60 MHz	-65.0	-67.5	-67.0	16QAM 10 MHz	-82.0	-84.5	-84.0
256QAM 10 MHz	-70.0	-72.5	-72.0	28/30 MHz	-77.0	-79.5	-79.0
29.65/30 MHz	-65.0	-67.5	-67.0	40 MHz	-76.0	-78.5	-78.0
40 MHz	-64.0	-66.5	-66.0	80 MHz	-73.0	-75.5	-75.0
60 MHz	-62.0	-64.5	-64.0	32QAM 10 MHz	-79.0	-81.5	-81.0
512QAM <sup>4</sup> 10 MHz	-66.0	-68.5	-68.0	28/30 MHz	-74.0	-76.5	-76.0
29.65/30 MHz	-61.0	-63.5	-63.0	40 MHz	-73.0	-75.5	-75.0
40 MHz	-60.0	-62.5	-62.0	80 MHz	-70.0	-72.5	-72.0
60 MHz	-58.0	-60.5	-60.0	64QAM 10 MHz	-76.0	-78.5	-78.0
<b>Band: 6 GHz Upper</b>				28/30 MHz	-71.0	-73.5	-73.0
QPSK 10 MHz	-87.5	-	-	40 MHz	-70.0	-72.5	-72.0
30 MHz	-82.5	-	-	80 MHz	-67.0	-69.5	-69.0
16QAM 10 MHz	-81.5	-84.0	-83.5	128QAM 10 MHz	-73.0	-75.5	-75.0
30 MHz	-76.5	-79.0	-78.5	28/30 MHz	-68.0	-70.5	-70.0
32QAM 10 MHz	-78.5	-81.0	-80.5	40 MHz	-67.0	-69.5	-69.0
30 MHz	-73.5	-76.0	-75.5	80 MHz	-64.0	-66.5	-66.0
64QAM 10 MHz	-75.5	-78.0	-77.5	256QAM 10 MHz	-	-	-
30 MHz	-70.5	-73.0	-72.5	28/30 MHz	-65.0	-67.5	-67.0
128QAM 10 MHz	-72.5	-75.0	-74.5	40 MHz	-64.0	-66.5	-66.0
30 MHz	-67.5	-70.0	-69.5	80 MHz	-61.0	-63.5	-63.0
256QAM 10 MHz	-69.5	-72.0	-71.5	512QAM <sup>4</sup> 10 MHz	-	-	-
30 MHz	-64.5	-67.0	-66.5	28/30 MHz	-61.0	-63.5	-63.0
512QAM <sup>4</sup> 10 MHz	-65.5	-68.0	-67.5	40 MHz	-60.0	-62.5	-62.0
30 MHz	-60.5	-63.0	-62.5	80 MHz	-57.0	-59.5	-59.0

**Emission Designators**

10 MHz	10M0W7D
12.5 MHz	12M5W7D
25 MHz	25M0W7D
30 MHz	30M0W7D
40 MHz	40M0W7D
60 MHz	60M0W7D
80 MHz	80M0W7D



## Specifications (cont.) ExploreAir LR All-Outdoor Licensed

### Throughput (Mbps full-duplex) (Max system layer 1/Max Ethernet layer 2)<sup>7</sup>

Performance Mode: Maximum Throughput and Minimum Latency

	QPSK	16QAM	32QAM	64QAM	128QAM	256QAM	512QAM <sup>4</sup>
10 MHz	20 / 16	39 / 32	49 / 39	58 / 47	67 / 54	79 / 64	89 / 72
12.5 MHz	25 / 20	49 / 40	61 / 49	73 / 59	87 / 70	99 / 80	-
25 MHz	50 / 40	100 / 82	125 / 101	151 / 122	176 / 142	202 / 163	227 / 183
30 MHz	60 / 49	121 / 98	152 / 122	182 / 147	213 / 172	243 / 196	274 / 221
40 MHz	82 / 66	162 / 131	204 / 164	244 / 197	286 / 230	327 / 264	367 / 296
60 MHz	122 / 99	245 / 198	307 / 248	369 / 298	431 / 348	493 / 398	555 / 448
80 MHz	163 / 132	329 / 265	412 / 332	494 / 399	577 / 466	660 / 532	742 / 600

Performance Mode: Maximum System Gain / Balanced Performance

	QPSK	16QAM	32QAM	64QAM	128QAM	256QAM	512QAM <sup>4</sup>
10 MHz	-	34 / 28	44 / 35	53 / 43	62 / 50	71 / 58	-
12.5 MHz	-	43/35	55/44	67/54	81/65	93/75	-
25 MHz	-	89/72	113/92	139/112	164/132	188/152	215/173
30 MHz	-	106 / 86	137 / 110	167 / 134	198 / 159	228 / 184	259 / 209
40 MHz	-	142 / 114	183 / 147	224 / 181	265 / 214	306 / 247	347 / 280
60 MHz	-	215 / 173	277 / 223	338 / 273	400 / 323	462 / 373	524 / 423
80 MHz	-	288 / 232	370 / 298	453 / 366	535 / 432	618 / 499	701 / 566

Maximum RSL	0 dBm no damage
11 GHz	-25 dBm / -30 dBm error-free
QPSK-256QAM / 512QAM <sup>4</sup>	
6 GHz	-20 dBm / -25 dBm error-free
QPSK-256QAM / 512QAM <sup>4</sup>	
Power Control Step Size	0.5 dB
Error Floor	10 <sup>-12</sup>
Base FEC	Reed Solomon T=8
Data Security	NIST FIPS 197-compliant 128-bit AES and 256-bit AES <sup>8</sup>

Link Security	96-bit security key
ATPC	Yes
Space diversity <sup>4</sup>	Yes
XPIC <sup>4</sup>	Yes
Spectrum Analyzer <sup>4</sup>	Embedded
Capacity Aggregation	2+0 XPIC with aggregation
Adaptive Modulation	QPSK-512QAM fully configurable; Errorless and jitterless (Max throughput performance mode only)

<b>Management</b>	In-band management Out-of-band management (PoE+SFP)
<b>Security</b>	SSL/SSH and secure, encrypted SNMPv3
<b>Web GUI</b>	HTTP, HTTPS (Internet Explorer, Firefox, Safari, Chrome)
<b>CLI</b>	Telnet, SSH via Ethernet
<b>SNMP</b>	v1, v2c, and secure v3
<b>MIB</b>	MIB I, MIB II, Exalt MIB
<b>Manual</b>	Embedded in radio, accessible via HTTP GUI
<b>Compliance</b>	SNMP v1, v2c, v3 FCC Part 101, Part 15 IC SRSP-305-9-i5e (6 GHz L, 10/30 MHz, TR 252.04 MHz) IC SRSP-310.7 (11 GHz, 10/30/40 MHz, TR 490 MHz) EN 302-217-2-2 v1.4.1 ITU R-REC-F.383-8 (6 GHz L, 29.65/40/60 MHz, TR 252.04 MHz) ITU R-REC-F.387-11 (11 GHz, 28 MHz, 40 MHz, TR 500 MHz) EN 301 489-4, EN 60950-1, IEC 60950-1

<b>Physical</b>	
Dimensions (H x W x D)	27.7 cm x 17 cm x 31.8 cm / 10.9 in x 6.7 in x 12.5 in
Operating Temperature	-40 to +65 °C; -40 to +149 °F
Full Spec Temperature	-33 to +60 °C; -27 to +140 °F
Weight	7.7 kg / 17 lbs
Environmental	NEMA 4 / IP67
Altitude	4600m / 15,000 ft.
Humidity	100% condensing

<b>Interfaces</b>	
Ethernet	RJ48C/RJ45 Female (x1) SFP (x1)
Interface Speed	10/100/1000BaseT (with PoE) 1000BaseX (fiber only)
Duplex	Half, Full, Auto
Compliance	802.3 with MDIX
VLAN	802.1q, transparent, trunk, and management only
QoS <sup>5</sup>	8 priority levels, 8 queues; 802.1p, 802.1q(VLAN ID), source MAC address, destination MAC address
Ethernet Rate Limiting	Configurable per port via software
Maximum Packet Size	9728 bytes
XPIC	RJ45 Female x2 (XCON1, XCON2)
DC	Type-N Female x 1
RSL	BNC-F x1
Expansion	RJ45 Female x1

<b>Power Consumption</b>	
Max DC power consumption	
at radio DC input	-40 to -60 VDC, 84 W
at radio PoE input	55 VDC 1.6 A, 88 W
AC Power adapter	
Input	100-240 VAC, 2.3 A
Output	130 W, 55VDC
Temperature range	0 to +50 °C; 32 to +122 °F
Warranty	Two years <sup>9</sup>

<sup>1</sup> Consult your Exalt Sales representative for availability of specific models and configurations. Available for FCC and ITU/ETSI. 6 GHz Upper and 7 GHz Lower are FCC only.

<sup>2</sup> Channel operation is subject to FCC waiver or amendment to Part 101 rules.

<sup>3</sup> ± 1dB over temperature.

<sup>4</sup> Software upgrade required. Consult Exalt for availability.

<sup>5</sup> Preliminary

<sup>6</sup> Typical, Layer 2 cut-through with AES encryption enabled.

<sup>7</sup> Maximum layer 1 throughput as measured with 64-byte packets and maximum layer 2 Ethernet with 1536-byte packets. In both cases throughput includes source address, destination address and CRC overhead. Base configurations start at 100 Mbps full-duplex with 100, 200, 300, 400, 500 and 600 Mbps upgrades available depending on the band of operation.

<sup>8</sup> Software license key option.

<sup>9</sup> Terms and conditions apply. Consult your Exalt sales representative for details.



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