



ExploreAir™ All-Outdoor ITU/ETSI



Gigabit Ethernet Microwave Systems for High Capacity Backhaul

All-outdoor ExploreAir™ systems are a first-of-their-kind line of high performance, point-to-point Gigabit Ethernet radios built for use in bands from 2 to 40 GHz. Designed to deliver guaranteed full-duplex Ethernet throughput up to 370 Mbps for both short-haul and long-haul applications, the ExploreAir all-outdoor radios are rugged, zero footprint systems requiring no cabinet space. ExploreAir features and benefits include:

Single-unit sparing. A single ExploreAir radio can be used to spare an entire 11, 13, 15, 18, 23 GHz frequency band, thanks to the industry’s first field-replaceable diplexer in an all-outdoor radio. Compared to traditional approaches, the use of ExploreAir drops the cost of spares by up to 90%.

On-tower hub aggregation. With up to three Gigabit Ethernet ports (xx105 models), ExploreAir can aggregate traffic from two lower capacity ExploreAir or ExtendAir® links without the need for an external switch or extra cable runs. All aggregated traffic can be delivered to the site router over a single CAT5 cable.

The native TDM difference. ExploreAir features optional native 4xT1/E1, providing a means to easily and reliably carry legacy TDM, regardless of IP traffic behavior, making ExploreAir the ideal solution for low-latency backhaul of co-located 2G, 3G and 4G/LTE sites.

Errorless and jitterless adaptive modulation. With a rate adaptation range of 256QAM to QPSK, ExploreAir 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. ExploreAir systems incorporate full Layer 2 switching along with optional 3xGbE in combination with critical features such as 802.1Q (VLAN tagging), 802.1p (QoS) and Ethernet rate limiting.

Remote management. ExploreAir systems include a full set of remote management tools such as Telnet/Command Line Interface (CLI), RS232, HTTP, HTTPS and SNMPv1, v2c and v3. In addition, the three Ethernet port xx105 models provide unique out-of-band management functionality allowing both endpoints of a link to be managed independently.

High security. ExploreAir systems allow network managers to support the most stringent security requirements with optional 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		ExploreAir	ExploreAir
		rc11100 / rc11105 rc13100 / rc13105 rc15100 / rc15105 rc18100 / rc18105 rc23100 / rc23105 rc38100 / rc38105	rc11110 rc13110 rc15100 rc18110 rc23110 rc38110
Maximum Capacity	Ethernet (Full-Duplex)	370 Mbps	
	TDM	–	4xE1/T1
Frequency (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 (21.2–23.60 GHz)		

Specifications

ExploreAir Licensed ITU/ETSI Series

System

Models¹
 rc11100 HP
 rc11100, rc13100, rc15100, rc18100, rc23100, rc38100: 1x10/100/1000BaseT PoE
 rc11105 HP: 1x10/100/1000BaseT PoE + 3x10/100/1000BaseT
 rc11105, rc13105, rc15105, rc18105, rc23105, rc38105: 1x10/100/1000BaseT PoE + 2x10/100/1000BaseT
 rc11110 HP: 1x10/100/1000BaseT PoE + 1x10/100/1000BaseT + 4xT1/E1
 rc11110, rc13110, rc15110, rc18110, rc23110; rc38110: 1x10/100/1000BaseT PoE + 4xE1/T1
 rc11120 HP: 1xDC + 2x10/100/1000BaseT + 1x1000BaseX (SFP)

Frequency Bands (GHz)	10.70 – 11.70		12.75 – 13.250	14.40 – 15.35	17.70 – 19.70	21.20 – 23.60	37.04 – 40.00
TR Spacing (MHz)	490 / 500		266	315, 420, 490, 728	1010	1008, 1232	1260
Channel Bandwidth (MHz)	10, 30, 40, 80 ²		14, 28, 56	14, 28, 56	14, 27.5/28, 56	14, 28, 56	14, 28, 56
Antenna Interface	WR-75A / UBR120		WR-75 / UBR120	WR-62 / UBR140	WR-42 / UBR220	WR-42 / UBR220	0.219" dia
Output Power (dBm) ³	Standard/Power Upgrade ⁴	High Power	Standard				
QPSK	25 / 26	29	24	23	23	21	20
16QAM	23 / 26	29	22	21	21	19	18
32QAM	22 / 26	29	21	21	21	18	17
64QAM	21 / 25	29	21	20	20	17	16
128QAM	20 / 25	29	20	19	19	16	15
256QAM	19 / 23	28	19	18	18	15	13

Receiver Threshold (BER=10⁻⁶ typical (dBm))²

QPSK / 16 QAM	10 MHz	-85 / -82	-85 / -82	-	-	-	-
	14 MHz	-	-	-87 / -81	-87 / -80	-86 / -79	-85 / -79
	27.5 / 28 MHz	-85 / -79	-85 / -79	-84 / -78	-84 / -77	-83 / -76	-82 / -76
	40 MHz	-79 / -76	-79 / -76	-	-	-	-
	56 MHz	-	-	-81 / -75	-80 / -74	-79 / -73	-79 / -73
32 QAM / 64 QAM	10 MHz	-79 / -76	-79 / -76	-	-	-	-
	14 MHz	-	-	-78 / -75	-77 / -74	-76 / -73	-76 / -73
	27.5 / 28 MHz	-74 / -71	-74 / -71	-75 / -72	-74 / -71	-73 / -70	-73 / -70
	40 MHz	-73 / -70	-73 / -70	-	-	-	-
	56 MHz	-	-	-72 / -69	-71 / -68	-70 / -67	-70 / -67
128 QAM / 256 QAM	10 MHz	-73 / -70	-73 / -70	-	-	-	-
	14 MHz	-	-	-72 / -69	-71 / -68	-70 / -67	-70 / -67
	27.5 / 28 MHz	-68 / -65	-68 / -65	-69 / -66	-68 / -65	-67 / -64	-67 / -64
	40 MHz	-67 / -64	-67 / -64	-	-	-	-
	56 MHz	-	-	-66 / -63	-65 / -62	-64 / -61	-64 / -61

Throughput (Mbps full-duplex) (Max system layer 1/Max Ethernet layer 2)⁵

		QPSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM
11 GHz	10 MHz	19 / 16	38 / 31	48 / 39	58 / 47	67 / 54	77 / 62
	27.5 / 28 MHz	58 / 47	113 / 91	141 / 114	170 / 137	198 / 160	227 / 183
	40 MHz	77 / 62	154 / 124	192 / 155	231 / 186	269 / 218	308 / 249
	80 MHz	157 / 128	315 / 258	394 / 323	473 / 387	533 / 452	633 / 517
All other bands	14 MHz	27 / 22	54 / 44	67 / 54	81 / 65	94 / 76	108 / 87
	27.5 / 28 MHz	58 / 47	113 / 91	141 / 114	170 / 137	198 / 160	227 / 183
	56 MHz	108 / 87	216 / 174	269 / 218	323 / 261	399 / 322	456 / 370



Specifications (Cont.) ExploreAir Licensed ITU/ETSI Series

Maximum RSL	0 dBm no damage	
	QPSK	-25 dBm error-free
	16QAM-256QAM	-30 dBm error-free
Output Power (min power)	0 dBm	
Power Control Step Size	0.5 dB	
ATPC	Yes	
Error Floor	10 ⁻¹²	
FEC	Reed Solomon T=8	
TDM latency	< 1ms typical	
Ethernet Latency	40-125µs (<100µs typical) at full throughput (GigE) with AES encryption enabled	
Data Security	NIST FIPS 197-compliant 128-bit AES and 256-bit AES ⁶	
Link Security	96-bit security key	
Spectrum Analyzer⁷	Embedded	
Adaptive Modulation	QPSK - 256QAM fully configurable; errorless and jitterless	
Management	In-band management Out-of-band management (xx105 models only)	
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 EN 302 217-2-2 v1.4.1 (2010-03) EN 301 126-2-2 v1.1.1 (2000-11) EN 301 489-4 EN 60950-1, IEC 60950-1	
Physical	All Models Except High Power	High Power (11 GHz only)
Dimensions (H x W x D)	23.9 cm x 23.9 cm x 13.3 cm 9.4 in x 9.4 in x 5.25 in	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	-40 to +65 °C; -40 to +149 °F
Full Spec Temperature	-40 to +60 °C; -40 to +140 °F	-33 to +60 °C; -27 to +140 °F
Weight	3.6 kg / 8.2 lbs	7.7 kg / 17 lbs
Environmental	NEMA 4 / IP66	
Altitude	4600 m / 15,000 ft	
Humidity	100% condensing	

Specifications (Cont.) ExploreAir Licensed ITU/ETSI Series

Interfaces

RF Diplexers⁸

11 GHz	13 GHz	15 GHz	18 GHz	23 GHz	38 GHz
TR 490/500 MHz Hi/Lo	TR 266 MHz Hi/Lo	TR 315 MHz Hi/Lo	TR 490 MHz Hi/Lo	TR 1010 MHz Hi/Lo	TR 1260 MHz Hi/Lo
Band 1: 10.70–10.90 / 11.20–11.40 GHz	Band 1: 13.02–13.08 / 12.75–12.81 GHz	Band 1: 14.94–15.05 / 14.63–14.73 GHz	Band 1: 14.89–15.01 / 14.40–14.52 GHz	Band 1: 18.7–19.0 / 17.69–17.99 GHz	Band 1: 38.304–38.892 / 37.044–37.632
Band 2: 10.85–11.05 / 11.35–11.55 GHz	Band 2: 13.07–13.14 / 12.81–12.87 GHz	Band 2: 15.04–15.16 / 14.73–14.84 GHz	Band 2: 15.01–15.12 / 14.52–14.63 GHz	Band 2: 18.94–19.24 / 17.93–18.23 GHz	Band 2: 38.864–39.452 / 37.604–38.192
Band 3: 11.00–11.20 / 11.50–11.70 GHz	Band 3: 13.13–13.19 / 12.86–12.93 GHz	Band 3: 15.14–15.24 / 14.82–14.93 GHz	Band 3: 15.12–15.24 / 14.63–14.75 GHz	Band 3: 19.19–19.49 / 18.18–18.48 GHz	
	Band 4: 13.19–13.25 / 12.92–12.98 GHz	TR 420 MHz Hi/Lo	Band 4: 15.23–15.35 / 14.74–14.86 GHz	Band 4: 19.41–19.71 / 18.40–18.70 GHz	
		Band 1: 14.92–15.03 / 14.50–14.61 GHz	TR 728 MHz Hi/Lo		
		Band 2: 15.03–15.15 / 14.61–14.73 GHz	Band 1: 15.23–15.34 / 14.50–14.62 GHz		
		Band 3: 15.14–15.26 / 14.72–14.84 GHz			
		Band 4: 15.24–15.35 / 14.82–14.93 GHz			

Ethernet	RJ48C/RJ45 Female (x1 or x3)	
Interface Speed	10/100/1000BaseT (PoE or PoE + ETH2 + ETH3)	
Duplex	Half, Full, Auto	
Compliance	802.3 with MDIX	
VLAN	802.1q, transparent, trunk, and management only	
QoS⁷	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	
E1/T1 (xx110 models only)⁹	T1 (x4)	E1 (x4)
	RJ48C/RJ45 Female (x2)	
Impedance	100 ohms, balanced	120 ohms, balanced
Line Code	AMI, B8ZS, selectable per channel	HDB3
Data Rate	1.544 Mbps	2.048 Mbps
Compliance	ANSI T1.102-1987; ITU-T; G.823; GR-499-CORE	CEPT-1; G.703; ITU-T-G.703
Loopback Modes	Remote Internal; Remote External; Local Line	
DC Power	All Models Except High Power	High Power (11 GHz only)
	<40 W, 48 VDC, 0.8 A	-
AC Power Adapter		
Input	100–240 VAC, 2.3 A	100–240 VAC, 2.3 A
Output	72 W, 48 VDC	130 W, 55 VDC
Warranty	Two years ¹⁰	

¹ Consult with your Exalt sales representative for availability.

² 80 MHz channel subject to country regulations.

³ ± 1 dB over temperature.

⁴ Power upgrade is a license key option to improve system gain when required. System requires software release version 1.1.0 or later.

⁵ 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, 370 Mbps upgrades available depending on the band of operation.

⁶ Software license key option.

⁷ Software upgrade required.

⁸ Field-replaceable. Refer to warranty terms and conditions.

⁹ xx110 TDM models include a single PoE 10/100BaseT port. xx105 models include one PoE 10/100/1000BaseT port and two additional 10/100/1000BaseT ports.

¹⁰ Terms and conditions apply. Consult your Exalt sales representative for details.

