# **RADWIN 2000 Alpha Series**

Point-to-Point Radio - Data Sheet (RW2000/ODU/Alpha/F54/UNI/INT/350M)



### RW-2954-6HC5

# **Product Description**

RW-2954-6HC5 is a carrier-class radio that belongs to the RADWIN 2000 Alpha Series and supports 4.9 to 6 GHz frequency range.

The Radio complies with Universal bands with a factory default of 5.4 GHz Universal.

RW-2954-6HC5 delivers up to 350 Mbps throughput.

The unit includes an integrated 22dBi antenna.

# **Product Highlights**

- Up to 350 Mbps net aggregated throughput
- Telco-grade, extremely robust in harsh conditions
- Supports intra-site synchronization to maximize capacity (via future SW upgrade)
- Configurable asymmetric throughput
- Advanced OFDM & MIMO technologies for operation in nLOS/NLOS and dense radio environments
- Integrated 22dBi antenna.

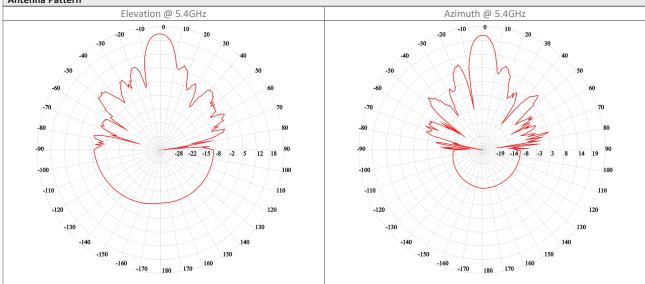


# **Product Specifications:**

Configuration						
Architecture	Outdoor Unit with an integrated antenna					
PoE to ODU Interface	Outdoor CAT-5e; Maximum cable length: 100m for 10/100BaseT and 75m for 1000BaseT					
Radio	1					
Max Capacity	350 Mbps net aggregate throughput					
Range	Up to 40 km / 25 miles					
Channel Bandwidth	Configurable: 10, 20, 40, 80 MHz (for the default band)					
Modulation	MIMO-OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)					
Adaptive Modulation & Coding	Supported					
Automatic Channel Selection	Supported upon power up					
DFS	Not Supported					
Diversity	Supported					
Spectrum Viewer	Supported					
Max Tx Power	26 dBm					
Duplex Technology	TDD					
Error Correction	FEC k = 1/2, 2/3, 3/4, 5/6					
Encryption						
Support Indoor units	AES 128 RADWIN PoE devices (9921-102X)					
Uplink / Downlink Allocation		ymmetric or Asyr	1			
QoS		, ,		g to 802.1P or Dif	ion.	
		. ,	queues accordin	g to 802.1P of Diff	Serv	
VLAN Support	802.1Q, QinQ, 4					
TDD Intra Site Synchronization		by software upgr		/ <b>F</b>	· · · · () · · · · · · · · · · · · · · ·	
TDD Inter Site Synchronization	Supported thro	ugn common GP:	s receiver per site	(Future support i	by software upgrade)	
Supported Bands						
Band	CBW 10MHz	CBW 20MHz	CBW 40MHz	CBW 80MHz	Radio Compliance	
	[GHz]	[GHz]	[GHz]	[GHz]	-	
5.4 GHz Universal (default)	[GHz] 5.470-5.725	[GHz] 5.465-5.730	[GHz] 5.455-5.740	[GHz] 5.455-5.760	Universal	
5.4 GHz Universal (default) 4.9 GHz Universal	<u> </u>	- · ·	<u> </u>	<u> </u>	Universal Universal	
× 7	5.470-5.725	5.465-5.730	5.455-5.740	5.455-5.760		
4.9 GHz Universal	5.470-5.725 4.900-4.995	5.465-5.730 4.900-4.995	5.455-5.740 4.900-4.995	5.455-5.760 4.900-4.995	Universal	
4.9 GHz Universal 6.0 GHz Universal	5.470-5.725 4.900-4.995 5.695-6.055	5.465-5.730 4.900-4.995 5.690-6.060	5.455-5.740 4.900-4.995 5.680-6.070	5.455-5.760 4.900-4.995 5.680-6.090	Universal Universal	
4.9 GHz Universal6.0 GHz Universal5.9 GHz Universal	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990	Universal Universal Universal	
4.9 GHz Universal6.0 GHz Universal5.9 GHz Universal5.9 GHz Universal	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850	Universal Universal Universal Universal	
4.9 GHz Universal6.0 GHz Universal5.9 GHz Universal5.9 GHz Universal5.1 GHz Universal	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850	Universal Universal Universal Universal	
4.9 GHz Universal6.0 GHz Universal5.9 GHz Universal5.9 GHz Universal5.1 GHz UniversalMechanical	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850	Universal Universal Universal Universal	
4.9 GHz Universal6.0 GHz Universal5.9 GHz Universal5.9 GHz Universal5.1 GHz UniversalMechanicalODU Dimensions	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850	Universal Universal Universal Universal	
4.9 GHz Universal 6.0 GHz Universal 5.9 GHz Universal 5.9 GHz Universal 5.1 GHz Universal Mechanical ODU Dimensions ODU Weight	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l) 2 kg / 4.41 lbs	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850	Universal Universal Universal Universal	
4.9 GHz Universal 6.0 GHz Universal 5.9 GHz Universal 5.9 GHz Universal 5.1 GHz Universal Mechanical ODU Dimensions ODU Weight Power	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l) 2 kg / 4.41 lbs	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345 h) x 6.4(d) cm	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850	Universal Universal Universal Universal	
<ul> <li>4.9 GHz Universal</li> <li>6.0 GHz Universal</li> <li>5.9 GHz Universal</li> <li>5.9 GHz Universal</li> <li>5.1 GHz Universal</li> <li>Mechanical</li> <li>ODU Dimensions</li> <li>ODU Weight</li> <li>Power</li> <li>Power Feeding</li> <li>Power Consumption</li> </ul>	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l) 2 kg / 4.41 lbs	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345 h) x 6.4(d) cm	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850	Universal Universal Universal Universal	
<ul> <li>4.9 GHz Universal</li> <li>6.0 GHz Universal</li> <li>5.9 GHz Universal</li> <li>5.9 GHz Universal</li> <li>5.1 GHz Universal</li> <li>Mechanical</li> <li>ODU Dimensions</li> <li>ODU Weight</li> <li>Power</li> <li>Power Feeding</li> <li>Power Consumption</li> <li>Environmental</li> </ul>	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l 2 kg / 4.41 lbs Power provided <13W	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345 h) x 6.4(d) cm	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850	Universal Universal Universal Universal	
<ul> <li>4.9 GHz Universal</li> <li>6.0 GHz Universal</li> <li>5.9 GHz Universal</li> <li>5.9 GHz Universal</li> <li>5.1 GHz Universal</li> <li>Mechanical</li> <li>ODU Dimensions</li> <li>ODU Weight</li> <li>Power</li> <li>Power Feeding</li> <li>Power Consumption</li> <li>Environmental</li> <li>Operating Temperatures</li> </ul>	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l 2 kg / 4.41 lbs Power provided <13W	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345 h) x 6.4(d) cm	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850 5.130-5.375	Universal Universal Universal Universal Universal	
<ul> <li>4.9 GHz Universal</li> <li>6.0 GHz Universal</li> <li>5.9 GHz Universal</li> <li>5.9 GHz Universal</li> <li>5.1 GHz Universal</li> <li>Mechanical</li> <li>ODU Dimensions</li> <li>ODU Weight</li> <li>Power</li> <li>Power Feeding</li> <li>Power Consumption</li> <li>Environmental</li> <li>Operating Temperatures</li> <li>Humidity</li> </ul>	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l 2 kg / 4.41 lbs Power provided <13W	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345 h) x 6.4(d) cm	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850 5.130-5.375	Universal Universal Universal Universal	
<ul> <li>4.9 GHz Universal</li> <li>6.0 GHz Universal</li> <li>5.9 GHz Universal</li> <li>5.9 GHz Universal</li> <li>5.1 GHz Universal</li> <li>Mechanical</li> <li>ODU Dimensions</li> <li>ODU Weight</li> <li>Power</li> <li>Power Feeding</li> <li>Power Consumption</li> <li>Environmental</li> <li>Operating Temperatures</li> <li>Humidity</li> <li>Safety</li> </ul>	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l 2 kg / 4.41 lbs Power provided <13W -35°C to 60°C / 100% condensi	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345 h) x 6.4(d) cm d over ODU-IDU c	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355 able	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850 5.130-5.375	Universal Universal Universal Universal Universal mmersion in water up to 1m)	
4.9 GHz Universal 6.0 GHz Universal 5.9 GHz Universal 5.9 GHz Universal 5.1 GHz Universal Mechanical ODU Dimensions ODU Weight Power Power Feeding Power Consumption Environmental Operating Temperatures Humidity Safety US/CAN (cTUVus)	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l 2 kg / 4.41 lbs Power provided <13W -35°C to 60°C / 100% condensi	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345 h) x 6.4(d) cm -31°F to 140°F ng, IP67 (totally p 60950-22, CAN/0	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355 able	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850 5.130-5.375	Universal Universal Universal Universal Universal mmersion in water up to 1m)	
4.9 GHz Universal 6.0 GHz Universal 5.9 GHz Universal 5.9 GHz Universal 5.1 GHz Universal Mechanical ODU Dimensions ODU Weight Power Power Feeding Power Consumption Environmental Operating Temperatures Humidity Safety US/CAN (cTUVus) CE/IEC	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l 2 kg / 4.41 lbs Power provided <13W -35°C to 60°C / 100% condensi	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345 h) x 6.4(d) cm d over ODU-IDU c	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355 able	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850 5.130-5.375	Universal Universal Universal Universal Universal mmersion in water up to 1m)	
4.9 GHz Universal 6.0 GHz Universal 5.9 GHz Universal 5.9 GHz Universal 5.1 GHz Universal Mechanical ODU Dimensions ODU Weight Power Power Feeding Power Consumption Environmental Operating Temperatures Humidity Safety US/CAN (cTUVus) CE/IEC EMC	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l 2 kg / 4.41 lbs Power provided <13W -35°C to 60°C / 100% condensi UL 60950-1, UL EN/IEC 60950-1	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345 h) x 6.4(d) cm -31°F to 140°F ng, IP67 (totally p 60950-22, CAN/0 ., EN/IEC 60950-2	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355 able protected against	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850 5.130-5.375	Universal Universal Universal Universal Universal mmersion in water up to 1m)	
4.9 GHz Universal 6.0 GHz Universal 5.9 GHz Universal 5.9 GHz Universal 5.1 GHz Universal Mechanical ODU Dimensions ODU Weight Power Power Feeding Power Consumption Environmental Operating Temperatures Humidity Safety US/CAN (cTUVus) CE/IEC EMC FCC	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l 2 kg / 4.41 lbs Power provided <13W -35°C to 60°C / 100% condensi UL 60950-1, UL EN/IEC 60950-1 47 CFR, Part15,	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345 h) x 6.4(d) cm d over ODU-IDU c -31°F to 140°F ng, IP67 (totally p 60950-22, CAN/0 ., EN/IEC 60950-2 Subpart B, Class	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355 able crotected against CSA C22.2 60950- 2 B	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850 5.130-5.375	Universal Universal Universal Universal Universal mmersion in water up to 1m)	
4.9 GHz Universal 6.0 GHz Universal 5.9 GHz Universal 5.9 GHz Universal 5.1 GHz Universal Mechanical ODU Dimensions ODU Weight Power Power Feeding Power Consumption Environmental Operating Temperatures Humidity Safety US/CAN (cTUVus) CE/IEC EMC	5.470-5.725 4.900-4.995 5.695-6.055 5.725-5.955 5.725-5.850 5.145-5.340 32.5(w) x 32.5(l 2 kg / 4.41 lbs Power provided <13W -35°C to 60°C / 100% condensi UL 60950-1, UL EN/IEC 60950-1 47 CFR, Part15,	5.465-5.730 4.900-4.995 5.690-6.060 5.720-5.960 5.725-5.850 5.140-5.345 h) x 6.4(d) cm d over ODU-IDU c -31°F to 140°F ng, IP67 (totally p 60950-22, CAN/0 ., EN/IEC 60950-2 Subpart B, Class N 301 489-4, EN	5.455-5.740 4.900-4.995 5.680-6.070 5.710-5.970 5.725-5.850 5.130-5.355 able crotected against CSA C22.2 60950- 2 B	5.455-5.760 4.900-4.995 5.680-6.090 5.710-5.990 5.725-5.850 5.130-5.375	Universal Universal Universal Universal Universal mmersion in water up to 1m)	



Integrated Antenna	
Gain	21 dBi
VSWR	2.0:1
3 dB Azimuth Beamwidth	10 Deg. (typ)
Polarization	Dual Linear (Vertical and Horizontal)
Sidelobes Level	-12 dB(typ)
Cross Polarization	-25dB (typ)
F/B Ratio	-25 dB
Port To Port Isolation	30 dB (typ)
Lightning Protection	DC Grounded
Antenna Pattern	



#### Ordering Info

Part Number: RW-2954-6HC5

**Description:** RADWIN 2000 Alpha ODU, with an integrated antenna, supporting multi frequency bands at 5.x GHz, factory default 5.4 GHz Universal.

Datasheet information can be changed by manufacturer without prior notice

