RIDE THE RADWIN 5000 HPMP WIRELESS HIGHWAY

The RADWIN 5000 high-capacity Point-to-Multipoint (HPMP) solution delivers up to 250 Mbps per sector. It is the ideal choice for last mile enterprise connectivity, high-end applications that require guaranteed bandwidth per subscriber and mobile connectivity for vehicles in motion.
RADWIN 5000 HPMP HIGHLIGHTS
» Up to 250 Mbps per base station sector
» Fixed, Nomadic and Mobility capabilities for vehicles in motion
» Variety of subscriber units – 5, 10, 25, 50 Mbps
» Upgrade subscriber units’ capacity via a software key
» Small form factor MIMO subscriber units
» OFDM, MIMO 2x2 / Diversity enables nLOS deployment
» Low and constant latency
» Long range – 40 Km / 25 miles
» Supporting Multiband 4.9 to 6 GHz in the same unit
» Coexists with RADWIN’s Point-to-Point solutions

RADWIN 5000 HPMP MOBILITY CAPABILITIES OFFER
» Up to 100 Mbps per base station sector & mobile unit
» High speed - up to 200 Km/h
» Long range coverage of up to 10 Km / 6 miles

RADWIN 5000 HPMP APPLICATIONS
CARRIERS & ISPs
RADWIN 5000 HPMP is an excellent revenue generator for carriers and ISPs that are looking to deploy last mile enterprise connectivity and deliver high-capacity broadband access to end users. Carriers can leverage upon RADWIN 5000 HPMP high capacity capabilities to backhaul wireless and landline access systems such as Wi-Fi hot spots, cellular base stations and DSLAMs.

GOVERNMENT & ENTERPRISE NETWORKS
RADWIN 5000 HPMP offers exclusive wireless broadband infrastructure for government and enterprise networks to dramatically reduce their total cost of ownership when implementing the following applications:
» Connectivity of high resolution video surveillance
» Wide range inter-office connectivity
» Mission critical broadband applications

BROADBAND MOBILE NETWORKS FOR VEHICLES IN MOTION
RADWIN 5000 Mobility solution offers powerful, easy-to-deploy base stations that guarantee high capacity connectivity to ruggedized mobile units mounted on vehicles, trains and vessels.
RADWIN 5000 Mobility applications include:
» Perimeter security - video transmission to and from patrol vehicles
» On-board video surveillance & Internet access for public transportation
» Oil Rigs to Ships - video & data connectivity
» Remote control of heavy machinery for mines and ports
**Product Key Benefits**

**Highest Base Station Capacity for the Best User Experience**
RADWIN 5000 HPMP base station supports up to 250 Mbps per sector, delivering high capacity over a single radio unit. Together with high-capacity subscriber units (HSUs), RADWIN 5000 HPMP enables service capacity of up to 50 Mbps per subscriber.

**Greater Spectrum Efficiency for Faster ROI**
RADWIN 5000 HPMP provides the highest spectrum efficiency available (above 6 bps/Hz) in the Point-to-Multipoint sub-6 GHz arena for greater throughput over narrower channel bandwidth.

**Secured Service Level Agreement for Demanding Applications**
RADWIN 5000 HPMP uniquely secures available bandwidth per end user for guaranteed Service Level Agreements (SLAs).

**Superb Performance in Harsh Conditions**
RADWIN 5000 HPMP incorporates advanced interference mitigation techniques that assure superior operation in harsh conditions in licensed or unlicensed bands. Combined with OFDM, MIMO 2x2 and antenna diversity, RADWIN 5000 HPMP establishes robust link performance in nLOS /NLOS deployments.

**Full Span of Asymmetric Traffic**
RADWIN 5000 can deliver more than 90% of channel traffic in either an uplink or downlink direction. This capability is ideal for full asymmetrical applications (e.g. video surveillance, IPTV) as well as for symmetrical traffic.

**Multi-Band Capabilities - All in a Single Unit**
RADWIN 5000 HPMP radios support an extensive range of frequency bands in the same unit (5.9 - 6.4 GHz or 4.9 - 6 GHz or 3.3 - 3.8 GHz or 2.5 - 2.7 GHz) for flexible radio planning.

**Low Visual Impact Subscriber Units**
RADWIN 5000 HPMP offers a variety of HSUs, some guaranteeing exceptionally low visual impact due to the small form factor integrated MIMO antenna.

**TDD Synchronization, Enabling Dense Deployments with Maximum Performance**
RADWIN 5000 base station enables TDD synchronization of all collocated sectors within a site and between base stations located in different sites. This synchronization prevents mutual interference between closely situated radio units and saves tower space and spectrum.

**Co-Exist with RADWIN PtP**
RADWIN 5000 HPMP and RADWIN Point-to-Point solutions create complimentary TDD synchronized solutions for last mile and backhaul deployments using the same RADWIN Network Management System (RNMS).

**Broadband Mobility for Vehicles in Motion**
Offering long range coverage, unmatched capacity and simple installation, RADWIN 5000 Mobility solution enables an extremely cost effective deployment for a wide variety of bandwidth-demanding applications for vehicles in motion.

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“**RADWIN 5000 operates in the toughest conditions, including non line-of-sight scenarios. The subscriber units are lightweight and unobtrusive and the installation was carried out easily.**”

Eamonn O'Donnell, President
Bandwidth Telecommunications Ireland

“**What we love about RADWIN 5000 is that it provides up to 100 Mbps full duplex throughput at a great price.**”

Robert van Kempen
President, WiFi4All
Netherlands

“**The RADWIN 5000 high-capacity systems allow us to connect businesses with guaranteed bandwidth. They also have a small footprint and low power usage, making them the perfect fit for our needs.**”

Stefan Englhardt
COO Genias
Germany
RADWIN 5000 HPMP Components

RADWIN 5000 HPMP base station and subscriber units comply with IP67 for effective deployment in harsh conditions. Supporting multiple frequency bands, 5.9 - 6.4 GHz or 4.9 to 6 GHz or 3.3 to 3.8 GHz or 2.5-2.7 GHz, these units comply with a variety of regulations: ETSI, FCC, IC (Canada) WPC (India) and MII (China). All radio units consume low power and are fed through a PoE device.

HBS – High Capacity Base Stations

HBS is a high capacity OFDM / MIMO 2x2 outdoor base station unit that can cover a single sector in MIMO mode, using dual polarized antenna, or dual sectors when working with two single-polarized antennas. RADWIN HBS portfolio supports fixed and nomadic applications, providing varying levels of capacity: 250, 100, 50 Mbps, and a low visual impact HBS delivering 25 Mbps.

A specialized HBS unit supports mobility applications for vehicles in motion, supporting up to 100 Mbps.

HSU – High Capacity Subscriber Units

RADWIN 5000 HPMP provides a variety of high capacity subscriber units (HSUs) that deliver 5, 10, 25 and 50 Mbps for fixed and nomadic applications. The capacity of the units can easily be upgraded from 5 to 25 Mbps via a software key. This enables low initial investment while securing further capacity growth.

Four types of models are available:

HSU with Integrated MIMO Antenna

This HSU model includes a low visual impact dual polarized MIMO antenna that is attached to the radio unit for easy installation.

Connectorized HSU for External Antennas

This HSU model includes dual connectors for a high gain external antenna that enables long range, high-capacity deployments.

HSU with Integrated MIMO Antenna for Video Cameras

This HSU model includes a dedicated PoE port for video camera connectivity together with an integrated antenna and AC power feed. The unit simplifies and reduces the costs of video camera installations.

High Capacity Mobile Subscriber Unit (HMU)

The HMU is built for mobile applications such as deployments on vehicles and vessels. This model includes dual connectors for Omni Directional antennas.
### Interfaces

- **Ethernet Interface**:
  - HBS: 10/100/1000BaseT
  - HSU / HMU: 10/100BaseT

### Networking

- **Sub convergence layer**: Layer 2
- **QoS**: Supported Packet classification to 4 queues according to 802.1p and Diffserv
- **VLAN**: Supported 802.1Q, 802.1P, QinQ

### Management

- **HBS & HSU/HMU Management Application**: RADWIN Manager or Web based management
- **Protocol**: SNMP, Telnet, HTTP
- **NMS Application**: RADWIN NMS (RNMS)

### Product Specifications

#### Capacity

<table>
<thead>
<tr>
<th></th>
<th>Base Station</th>
<th>Subscriber units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBS 5025</td>
<td>HBS 5050</td>
<td>HBS 5100</td>
</tr>
<tr>
<td>Maximum Net</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggregate Capacity</td>
<td>25 Mbps</td>
<td>50 Mbps</td>
</tr>
<tr>
<td>Mobility Support</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

#### Frequency Bands & Antenna Configurations

<table>
<thead>
<tr>
<th>Frequency Bands</th>
<th>Configurations</th>
<th>HBS 5025</th>
<th>HBS 5050</th>
<th>HBS 5100</th>
<th>HBS 5200</th>
<th>HBS 5800</th>
<th>HSU 505</th>
<th>HSU 510</th>
<th>HSU 610</th>
<th>HSU 520</th>
<th>HSU 525</th>
<th>HSU 550</th>
<th>HMU 5700</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 - 2.7 GHz</td>
<td>Con.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3 - 3.8 GHz</td>
<td>Con.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.9 - 6.0 GHz</td>
<td>Int. 90º</td>
<td>Int. 90º</td>
<td>Con.</td>
<td>Con.</td>
<td>Int. 15dbi</td>
<td>Int. 15dbi</td>
<td>Int. 15dbi</td>
<td>Int. 15dbi</td>
<td>Int. 23dbi</td>
<td>Int. 23dbi</td>
<td>Con.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.9 - 6.4 GHz</td>
<td>Con.</td>
<td></td>
<td></td>
<td>Int. 24dbi</td>
<td>Int. 24dbi</td>
<td>Int. - 24dbi</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

PoE Out | IEEE 802.3af

**Con.** - Connectorized unit; **Int.** - Integrated Antenna

#### Radio

- **Number of HSUs per HBS**: Up to 32 HSUs or HMUs simultaneously
- **Range**: Up to 40 Km / 25 miles
- **Frequency Bands**: Multiband radio supporting 4.9 to 6 GHz or Multiband 3.3-3.8 GHz or 2.5-2.7 GHz
- **Channel Bandwidth**: Configurable: 5, 10, 20, 40 MHz
- **Modulation**: 2x2 MIMO-OFDM (BPSK/QPSK/16QAM/64QAM)
- **Adaptive Modulation & Coding**: Supported
- **Sector Bandwidth Allocation**: Configurable: Symmetric or Asymmetric
- **DFS (FCC & ETSI)**: Supported
- **End to End Latency**: Typical: 4msec to 12msec
- **Diversity**: Supported at HBS & HSU / HMU
- **Max Tx Power**: 25 dBm at HBS & HSU / HMU
- **Duplex Technology**: TDD
- **TDD Synchronization**: Inter & Intra site synchronization (co-existence with RADWIN PtP)
- **Encryption, US Security**: AES 128, FIPS-197

#### Interfaces

- **Ethernet Interface**: HBS: 10/100/1000BaseT
  - HSU / HMU: 10/100BaseT

#### Networking

- **Sub convergence layer**: Layer 2
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#### Management

- **HBS & HSU/HMU Management Application**: RADWIN Manager or Web based management
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Mechanical

ODU Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBS 5200, 5100, 5050 connectorized</td>
<td>19.5(w) x 27.0(h) x 8.0(d) cm</td>
</tr>
<tr>
<td>HBS 5050 with integrated antenna</td>
<td>20(w) x 50(h) x 14(d) cm</td>
</tr>
<tr>
<td>HBS 5025 with integrated antenna</td>
<td>24.1(w) x 19.7(h) x 8.3(d) cm</td>
</tr>
<tr>
<td>HSU 5.xGHz 505, 510, 525 connectorized</td>
<td>17.1(w) x 19.6(h) x 7.2(d) cm</td>
</tr>
<tr>
<td>HSU 5.xGHz 505, 510, 610, 525 with integrated antenna</td>
<td>24.1(w) x 19.7(h) x 7.7(d) cm</td>
</tr>
<tr>
<td>HSU 3.x, 2.5, 6.4GHz 510, 520, HSU 550 connectorized</td>
<td>19.5(w) x 27.0(h) x 8.0(d) cm</td>
</tr>
</tbody>
</table>

ODU Weight

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBS 5200, 5100, 5050 connectorized</td>
<td>1.8 kg / 3.6 lbs</td>
</tr>
<tr>
<td>HBS 5050 with integrated antenna</td>
<td>1.7 kg / 3.5 lbs</td>
</tr>
<tr>
<td>HBS 5025 with integrated antenna</td>
<td>2.2 kg / 4.8 lbs</td>
</tr>
<tr>
<td>HSU 5.xGHz 505, 510, 525 connectorized</td>
<td>1.1 kg / 2.4 lbs</td>
</tr>
<tr>
<td>HSU 5.xGHz 505, 510, 610, 525 with integrated antenna</td>
<td>1.3 kg / 2.8 lbs</td>
</tr>
<tr>
<td>HSU 3.x, 2.5, 6.4 GHz 510, 520, HSU 550 connectorized</td>
<td>1.8 kg / 3.6 lbs</td>
</tr>
</tbody>
</table>

Power

Power Feeding

Power provided over PoE interface

Power Consumption

<table>
<thead>
<tr>
<th>Model</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBS &lt;25W</td>
<td>HSU520,550, HMU &lt; 20W</td>
</tr>
<tr>
<td>HSU505, 510, 525, 610&lt;12W</td>
<td></td>
</tr>
</tbody>
</table>

Environmental

Operating Temperatures

-35°C to 60°C / -31°F to 140°F

Humidity

100% condensing, IP67

Radio Regulations

FCC


IC

IC RSS-210 issue 7, IC RSS-111 issue 3, IC RSS-192 issue 3, IC RSS-197 issue 1 Restricted Mode

ETSI

ETSI EN 302 502, ETSI EN 301 893, EN 302 326-2 V1.2.2

WPC

WPC GSR-38

MII

MII for 5.8 GHz

Safety

FCC/IC (cTUVus)

UL 60950-1, UL 60950-22, CAN/CSA C22.2 60950-1, CAN/CSA C22.2 60950-22

ETSI

EN/IEC 60950-1, EN/IEC 60950-22

EMC

FCC

47 CFR Class B, Part15, Subpart B

ETSI

EN 300 386, EN 301 489-1, EN 301 489-4

CAN/CSA-CEI/IEC

CISPR 22-04 Class B

AS/NZS

CISPR 22-2004 Class B

About RADWIN

Delivering best of breed wireless connectivity solutions, RADWIN is committed to providing a complete offering for the Sub 6 GHz domain. Recognized as the market leader, RADWIN provides competitively priced products that achieve unmatched reliability, flexibility and installation simplicity. Deployed in over 150 countries around the world, RADWIN’s success is due to swift delivery of high quality wireless connectivity products that secure unrivaled performance for broadband access, backhaul connectivity, private networks and specialized broadband mobility applications.

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