ECOS-D RGW4000 25W is a modular voice and data Gateway with embedded Radio Base Station (RBS) functionalities, designed to meet and exceed the requirements of professional and land mobile radio systems.

Its high quality, combined with state of the art reliability and outstanding modularity makes the ECOS-D RGW4000 25W a digital based equipment, able to support analogue FM, digital DMR conventional Tier II and digital DMR trunking Tier III with all the power given by a SIP interface to make available all voice and data communications over LAN. The ECOS-D RGW4000 25W can be used in a real time dual mode Analog FM/Digital DMR conventional Tier II or in digital DMR trunking Tier III mode.

All the modes of operation of the ECOS-D RGW4000 25W support natively the flagship simulcast technology without any external ancillary. The ECOS-D RGW4000 25W can be used from stand-alone repeater to conventional simulcast to digital multi-site trunking with a configuration change only.

ECOS-D RGW4000 25W can be connected to build a system natively with IP, E1, 4W+E/M links.
MAIN FEATURES

- 3 RU device designed to be hosted in 19-inch rack
- Available in Low-VHF, VHF, UHF, High-UHF Frequency bands at 12.5kHz/20kHz/25kHz programmable channel spacing
- IP Gateway with RBS and Stand alone repeater mode of operation:
  - Conventional Analog FM only
  - Digital DMR Conventional Tier II only
  - Real Time Automatic dual-mode conventional analog FM/ Digital DMR Conventional Tier II with priority mode setting
  - Digital DMR Trunking Tier III (embedded trunking controller)
- Designed to natively support Simulcast technology:
  - Multi-site simulcast support: available for both conventional and trunking operations
  - Simulcast Master, Sub-Master, Slave mode within the same device (virtually no limits in the number of RBS per simulcast channel)
  - Reliable fall-back mode: Slave in-cabinet repeating and Backup Master automatic reconfiguration
  - Synchronization: GPS and/or Precise Time Protocol IEEE 1588v2 with fall-back Voting: analog FM and digital DMR best in class voting
  - Auto Adaptive Technology (A2T): eache RBS “adapts” itself to the time and frequency response of the backbone and automatically compensate time-variant differences
- Multiple-link Support: IP (SoIP – Simulcast over IP – technology), E1, 4W+E&M link interfaces
- Redundant link management between RBSs (E1, 4W+E&M and IP)
- Dispatching and third party API
  - SIP based interface: AISIP (voice) and UDP/IP (data) for DMR Tier II / Tier III and Conventional Analog FM
  - Designed for PSTN link support: PBX SIP Trunk 2.0 interface
- 4W+E&M for Conventional Analog FM
- Provides high levels of protection from access by unauthorised radio users, via the Unauthorised Access Protection procedure
- Embedded AMBE+2 vocoder for DMR Tier II clear or encrypted (ARC4) voice communications from a local microphone (embedded loudspeaker)
- DMR Data transmission ports (RS232/RS485/LAN), digital I/O and analog inputs available.

MAINTENANCE

- Display and keypad for easy local maintenance and fault handling
- Modular structure for easy front and back cards replacement. In the event of failure, all modules are individually removable
- Digital I/O, Analog inputs, power supply, antenna connectors and backbone interfaces hosted on dedicated back-cards, easily removable from the back and insulated from voltage overload
- Remote Firmware upgrade over LAN with integrity control (embedded dual-flash memory for storage of two firmware)
- SNMPv2c Network Management System (each RBS is a SNMP agent) and MIB availability for integration with third party NMS system.

INTEROPERABILITY

Interoperability (IOP) certificates with DMR major terminals vendors in Tier II and Tier III modes of operations. For further details, please visit the DMR Association website at: www.dmrassociation.org.

TECHNICAL DATA

<table>
<thead>
<tr>
<th>GENERAL SPECIFICATION</th>
<th>Dimensions 3 RU compatible with 19-inch rack mounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>From 13Kg (28.6 lbs)</td>
</tr>
<tr>
<td>Supported Modulations</td>
<td>FM/PM for analogue mode, 4FSK/C4FM for digital mode with I&amp;Q modulator</td>
</tr>
<tr>
<td>Frequency Generation</td>
<td>Synthesized</td>
</tr>
<tr>
<td>Channel Spacing</td>
<td>12.5 kHz / 20 kHz / 25 kHz</td>
</tr>
<tr>
<td>Mode of Operation</td>
<td>Simplex / Half-Duplex / Duplex</td>
</tr>
<tr>
<td>Digital Data gross bit Rate</td>
<td>9600 bps with 4FSK/C4FM digit</td>
</tr>
</tbody>
</table>
Synchronization

RBS Main Clock
OCXO (Oven Controlled Crystal Oscillator)
50 ppb temperature stability with programmable zero-offset compensation

Simulcast Synchronization
From Built-in GPS (1+1 option available on request)
From incoming P/GMC/BC/PTP IEEE 1588v2
From incoming E1 stream (2.048 MHz)
From 4W Out of Band tone (3400 Hz)

TIER II CONVENTIONAL / ANALOG FM CONVENTIONAL

Configuration Mode
Stand-Alone Repeater

Simulcast Configuration
Radio Base Station: Macro-cell Master/ Sub-Master/ Slave

TIER III TRUNKING

Configuration Mode
Radio Base Station with Embedded Trunking Controller: Control Channel RBS/Traffic Channel RBS

Simulcast Configuration
Radio Base Station Macro-cell Master with Embedded Trunking Controller /Macro-cell Master for Traffic Channel/Sub-Master/Slave

Transmitter

Frequency in MHz
VHF-L VHF UHF UHF-H
66-88 136-174 400-470 854-921

Output Power
Programmable from 2W up to 25W (0.1 dB step)

Maximum Deviation (RSD)
12.5/20/25 kHz ± 2.5/± 4/± 5 kHz

Adjacent Channel Power
<-60 dB/±12.5 kHz / -70 dB/±25 kHz (ETSI)

Spurious and Harmonic
<-36 dBm < 1 GHz

Audio Response
+1, -3dB; 300-3000 Hz

Audio Distortion
< 3% @ 1000Hz; 60% RSD

S/N
>45dB (12.5 kHz)
>50dB (25 kHz)

RECEIVER

Frequency in MHz
VHF-L VHF UHF UHF-H
66-88 136-174 400-470 854-921

RF Input Impedance
50 Ohms

Analog Sensitivity
FM modulation: < -79 dBm @ 12 dB SINAD psso

Digital sensitivity
C4FM: < -120 dBm @ BER = 5 x 10^-2

4FSK: < -120 dBm @ BER = 5 x 10^-2

Adjacent Channel Selectivity
12.5/20/25 kHz >60 dB / 70 db / 70 db (ETSI)

Intermodulation Rejection
12.5/20/25 kHz >70 dB (ETSI)

Spurious and Image Response Rejection
>70 dB (ETSI)

Audio Response
< 1.5 dB, 300-5000 Hz

Audio Distortion
< 3% @ 1000Hz; 60% RSD

S/N
>45dB (12.5 kHz)
>50dB (25 kHz)

Line Output
-10dBm

EMISSION DESIGNATORS

Analog FM/PM
8K50F3E/8K50G3E, 11K0F3E/11K0G3E

Digital 4FSK
7K60FXD/7K60FXE

Digital C4FM
8K10F1D/8K10F1E

COMPLIANCES

FCC
CFR Title 47 - Part 90 - Part 15B

CE
R&TTE Directive 1999/5/EC

Safety
EN 60950-1, EN 50385, EN 62311

EMC
EN 301 489-1, EN 301 489-3, EN 301-489-5

Not all variants and features might be available in all countries or in all geographic areas.

RGW4000 (IP links ordering guide*)

<table>
<thead>
<tr>
<th>A</th>
<th>RGW4000G-</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>L</th>
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</thead>
<tbody>
<tr>
<td>0000</td>
<td>No Radio (gateway features only)</td>
<td>0</td>
<td>No receiver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1025</td>
<td>25W VHF-L (66 - 88 MHz)</td>
<td>W</td>
<td>Single receiver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3025</td>
<td>25W VHF (136 - 174 MHz)</td>
<td>D</td>
<td>Receiver Diversity</td>
<td></td>
<td></td>
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<tr>
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<td></td>
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<tr>
<td>V1000</td>
<td>Receive Only VHF-L (66 - 88 MHz)</td>
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<td></td>
<td></td>
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<tr>
<td>V3000</td>
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RGW4000G-4W0-E100-S2-V2L

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*4W + E/M and E1 links available on request.

Specifications subject to change without notice

1 According with the national regulations where RBS is used 2 Value is to be intended for a fully equipped RBS configuration 3 Depending on RBS equipment