# GSM1800 Bandwidth Adjustable + WCDMA2100 Bandwidth Adjustable Dual Band Repeater

RD-7820

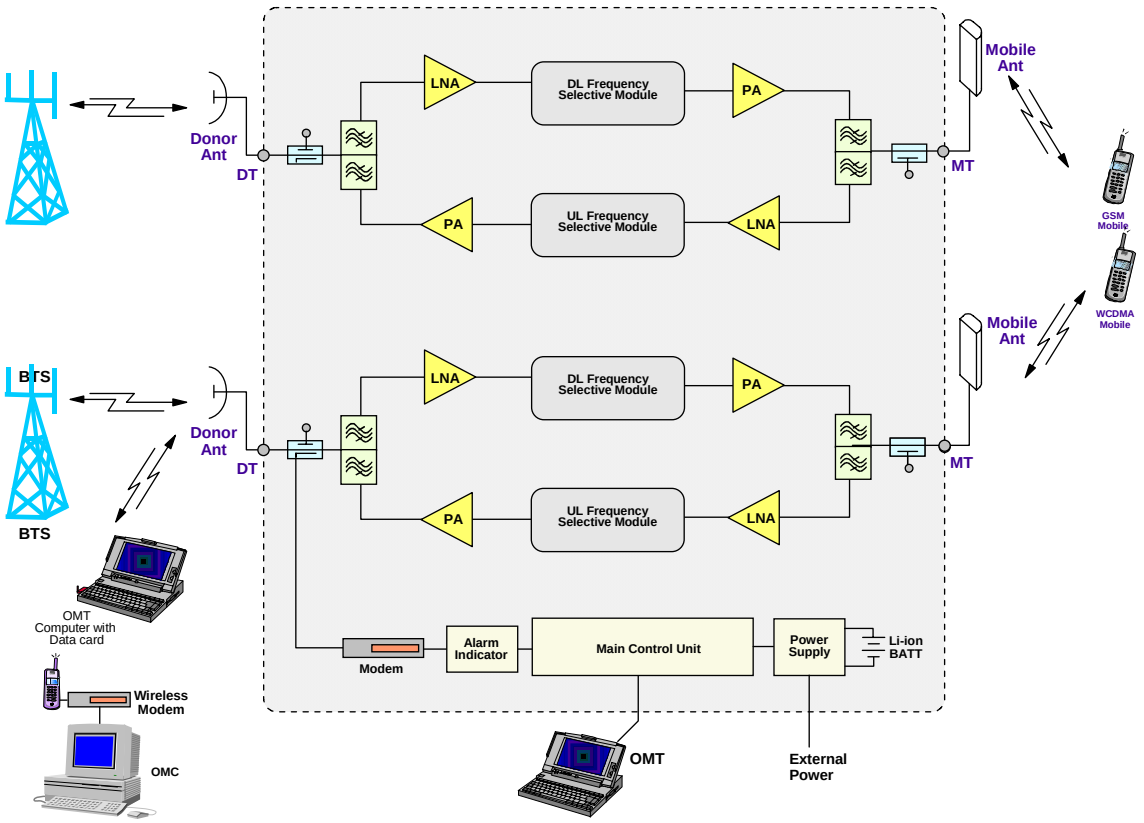
## Features

- Dual band configuration consists of GSM1800 (2W, 5W, 10W) and WCDMA (2W, 5W) in a single unit minimized installation footprint.
- GSM1800 - Adjustable bandwidth from 2 to 25MHz, WCDMA – Support 1-3 channels.
- Integrated wireless modem for remote configuration, monitoring and control.
- Internal backup battery keeps the alarm unit running for up to three hours after power failure.
- Optional OMC is available for remote operation and maintenance of a group of repeaters.
- Designed for all weather outdoor installation – waterproof, damp-proof and omni-sealed (IP65).

## Product Description

RD-7820 outdoor dualband repeater is designed for dualband GSM1800/WCDMA2100 application. Independent Band-specific linear amplifier and filtering effectively amplifies the desired BTS carriers and provides superior out-of-band rejection. Remote configuration and surveillance is possible through Comba's remote control and monitoring system, via PC or wireless modem to the OMT/OMC. Internal Li-ion backup battery ensures alarm signals are sent out during power failure. The RD-7820 comes in a completely sealed, cast aluminum enclosure, suitable for all weather conditions.

## Functional Block Diagram



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## Technical Specifications

| Model | | | | | |
|---|---|---|---|---|---|
| **Electrical – GSM Unit** | | | | | |
| Frequency Range, Uplink | | MHz | 1710 – 1785 | | |
| Frequency Range, Downlink | | MHz | 1805 – 1880 | | |
| Operating Bandwidth | | MHz | 2 – 25 | | |
| Uplink Total Output Power | | dBm | 33 ± 1 | | |
| Downlink Total Output Power | | dBm | 33 ± 1 | 37 ± 1 | 40 ± 1 |
| Maximum System Gain | | dB | 90 ± 2 | | |
| Gain Adjustment Range (1dB step) | | dB | 0 - 30 | | |
| Downlink 3rd Order Intercept, OIP3 | | dBm | ≥ 52 | ≥ 56 | ≥ 56 |
| Pass Band Ripple, p-p | | dB | ≤ 5 | | |
| System Noise Figure at Maximum Gain | | dB | ≤ 5 | | |
| Group Delay | | μsec | ≤ 6 | | |
| Out-of-band Gain | Offset ≥ 600KHz | dBm | ≤ 40 | | |
| | Offset ≥ 1MHz | dBm | ≤ 35 | | |
| | Offset ≥ 5MHz | dBm | ≤ 25 | | |
| Spurious | 9kHz to 1GHz | dBm | ≤ -36 | | |
| | 1GHz to 12.75GHz | dBm | ≤ -30 | | |
| Input VSWR | | | ≤ 1.5 | | |
| Absolute Maximum RF Input Power | | dBm | +10 | | |
| Impedance | | Ω | 50 | | |
| **Electrical – WCDMA Unit** | | | | | |
| Frequency Range, Uplink | | MHz | 1920 – 1980 | | |
| Frequency Range, Downlink | | MHz | 2110 – 2170 | | |
| Number of Channels | | | 1 to 3 | | |
| Total output Power, Uplink | | dBm | 23 ± 1 | | |
| Total output Power Downlink | | dBm | 33 ± 1 | 37 ± 1 | |
| Maximum System Gain, Uplink | | dB | 85 ± 2 | 85 ± 2 | |
| Maximum System Gain, Downlink | | dB | 85 ± 2 | 85 ± 2 | |
| Gain Adjustment Range (1dB Step) | | dB | 0 - 30 | | |
| Pass Band Ripple within 3.84MHz, p-p | | dB | ≤ 2 | | |
| System Noise Figure at Maximum Gain | | dB | ≤ 5 | | |
| System Group Delay | | μsec | ≤ 5 | | |
| Out-of-Band Emission | | | 3GPP TS 25.106 compliant | | |
| Out-of-Band Gain | | | | | |
| Spurious and Intermodulation | | | | | |
| Modulation Accuracy | | | | | |
| Input VSWR | | | ≤ 1.5 | | |
| Absolute Maximum RF Input Power | | dBm | +13 | | |
| Impedance | | Ω | 50 | | |
| **Power, Mechanical & Environmental** | | | | | |
| Dimensions, H x W x D | | mm | 606 x 390 x 336 | | |
| Weight | | kg | 46 | | |
| Power Supply | | VAC | 85 – 135 / 47 – 63Hz | | |
| | | | 176 – 264 / 47 – 63Hz | | |
| Power Consumption (approx.) | | W | 360 | | |
| Power Up Waiting Time (approx.) | | sec | 60 | | |
| MCU Battery Backup Time (approx.) | | hr | 3 | | |
| Enclosure Color | | | Grey | | |
| Enclosure Material | | | Aluminum | | |
| Enclosure Cooling | | | Convection | | |
| RF Connectors | | | N-Female | | |
| Operating Temperature | | °C | -33 to +55 | | |
| Operating Humidity | | | ≤ 95% | | |
| Environmental Class | | | IP65 | | |
| MTBF | | hr | ≥ 50,000 | | |

Note: Typical specification at room temperature

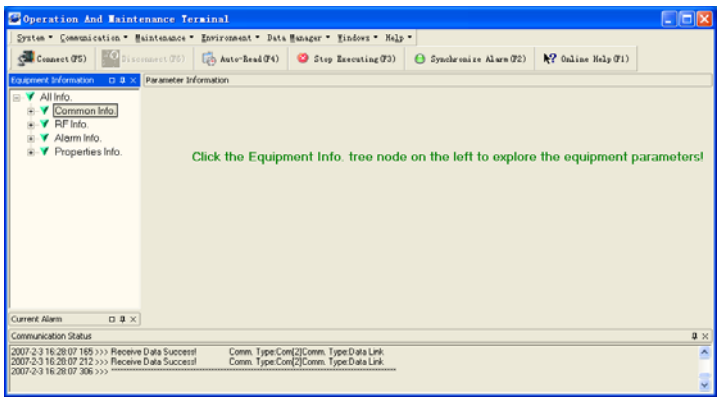
## Operation and Maintenance

Using only a direct serial connection to a PC, installation and commissioning of the RD-7820 is accomplished with OMT, and using the integrated wireless modem (data or SMS), equipment parameters can be monitored remotely.

Controlled equipment parameters include: **GSM Unit**: Channel No., ATT, RF Switch, Over-Temp Threshold, DL Input Power Threshold, DL Output Power Threshold and Alarm Report Enable.
**WCDMA Unit**: Channel No., ATT, RF Switch, Over-Temp Threshold, DL Input Power Threshold, DL Output Power Threshold and Alarm Report Enable.

Monitored equipment parameters include: **GSM Unit**: Alarms (LNA, PA, PLL unlock, Power Down, PSU Fault, Chassis Lock, DL Output Power Low, DL Input power Overload, Over Temp, VSWR), DL Output Power and DL Input Power.
**WCDMA Unit**: Alarms (LNA, PA, PLL unlock, Power Down, PSU Fault, Chassis Lock, Self-Oscillation, DL Input Power Overload, DL Output Power Low, Over Temp, VSWR), DL Output Power and DL Input Power

RD-7820 has been developed to take advantage of advanced network operation, with the OMC (optional) being an effective solution to monitoring a group of Comba products centrally.




## Outline Drawing