RA-1000AW (II2)
GSM900 Outdoor Band Selective Optical Repeater

Features

- Optical fiber transmission up to 20km - suitable to cover town, highway and residential area.
- Highly scalable with maximum configuration of 1 main unit, 4 optical interface modules and up to 8 remote units.
- Low noise and high reliability.
- High output power of 5W, 10W or 20W.
- Laser technology with high linearity.
- Remote Unit is light weight and easily installed with wall mounting chassis.
- Built-in alarm interface for remote system monitoring.
- Optional external backup battery permits operation in unstable power supplies.

Product Description

The RA-1000AW is a GSM900 outdoor broadband optical RF repeater. It is mainly used for outdoor coverage enhancement and point-to-point indoor distribution system. It uses single-mode fiber and is suited for applications where large signal coverage is required, such as high-rise office buildings, highway, hotels, shopping malls, underground tunnels, airports and convention centers.
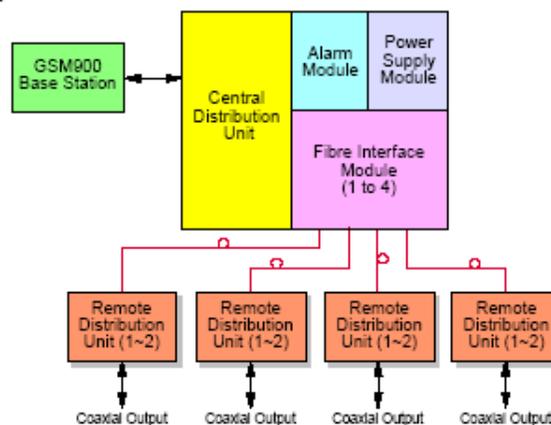
The system comprises of:

- A Central Distribution Unit (CDU) that connects the duplex RF ports of the base station to the Fiber Interface Module. The CDU comes installed in a rack-mountable 19" chassis.
- The Fiber Interface Module (FIM) converts the downlink RF signals to optical signals, and vice-versa for the uplink signals. Up to 4 FIMs can be installed in a chassis with a CDU, with each FIM supporting 2 single mode fibers.
- The Remote Unit (RU) converts the optical signals from the FIM to RF outputs. Each RU has one antenna ports for connection to passive antennas.
- The Alarm Module (ALM) can be installed to report alarms to the BTS.
- The Power Supply Unit (PSU) converts the ac voltage to power up the CDU, FIM and ALM.

Available Model

Model	Description
RA-1000AW-LD	Main Unit, Direct Coupling
RA-1000AW-LW	Main Unit, Wireless Coupling
RA-1000AW-R	Remote Unit

System Block Diagram

RA-1000AW (II2)
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Technical Specifications

RF Specifications

Frequency Range, Uplink – [MHz]	890 - 915
Frequency Range, Downlink – [MHz]	935 – 960
System Bandwidth – [MHz]	
- Direct Coupling	25
- Wireless Coupling (Option)	25, 2-19, 2-6
Max. System Gain – [dB]	
- Direct Coupling	60 ± 2
- Wireless Coupling	102 ± 2
Gain Adjustable Range (1dB step) – [dB]	0–30 ± 1.5
Max. Output Power (with ALC) – [dBm]	
- Downlink (Option)	37, 40, 43 ± 1
- Uplink (Direct Coupling)	0 ± 1
- Uplink (Wireless Coupling)	33 ± 1
3rd Order Intercept DL, OIP3 – [dBm]	
- 5W, 10W Models	55
- 20W Model	57
Pass Band Ripple, p-p – [dB]	≤ 4 (typ. 3)
Noise Figure, Uplink – [dB]	≤ 5
Spurious– [dBm]	
- 9kHz-1GHz	≤ -20
- 1-12.75GHz	≤ -30
Intermodulation, Downlink – [dBm]	
- 5W, 10W Models @ Pout = 25dBm	≤ -36
- 20W Model @ Pout = 22dBm	≤ -36
Input VSWR	≤ 1.5 (typ. 1.4)
System Group Delay – [μsec]	
- Direct Coupling	≤ 0.5
- Wireless Coupling	≤ 6.0
Maximum Input Power – [dBm]	
- DT port	+13
- MT Port	+10
Impedance – [Ω]	50

Optical Specifications

Wavelength (Option) – [nm]	1310, 1550 or 1310/1550 WDM
Optical Output Power – [dBm]	0 - 2
Max. Optical path Loss – [dB]	10
Optical Return Loss – [dB]	≥ 50
Connector Type	FC/ UPC

Environmental

Operating Temperature – [°C]	-25 to +55
Operating Humidity – [%]	≤ 95
MTBF – [hrs]	> 50,000
Environmental Class (Remote Unit)	IP65

Central Distribution Unit

RF Connectors	N-Female
Power Supply Options	155-285VAC / 45-55Hz or -48VDC or +24VDC
Power Consumption – [W]	≤ 35
CDU Enclosure Dimensions, HxWxD – [mm]	265 x 480 x 310 (19" 6U)
Weight – [kg]	15 (approx.)
MCU Battery Backup Time – [hr]	6

Fiber Interface Module

RF Connectors	SMA-Female
Single-Mode Fiber Connectors	1 pair
- Indoor	SC/APC Female
- Outdoor	FC/UPC Female
LED Alarm and Status Indicators	Optical Input
Power Supply – [VDC]	+9
Power Consumption – [W]	≤ 5
Dimensions, HxWxD – [mm]	352 x 190 x 71
Weight – [kg]	1.8

Alarm Module

RS-232 Interface	DB-9 connector
Remote Alarm Conn (contact closure)	RJ45
Communications (not used)	8-pin RJ-45
LED Alarm and Status Indicators	CDU Status
Power Supply – [VDC]	+9
Power Consumption – [W]	10
Dimensions, HxWxD – [mm]	352 x 190 x 71
Weight – [kg]	1.0

Power Supply Unit

LED Alarm and Status Indicators	Power
Power Supply – [VAC]	155-285 / 45-55Hz
Power Consumption – [W]	1.5
Dimensions, HxWxD – [mm]	352 x 190 x 71
Weight – [kg]	1.6

Remote Unit

RF Connectors	N-Female
Single-Mode Fiber Connectors	1 pair
- Indoor	SC/APC Female
- Outdoor	FC/UPC Female
LED Alarm and Status Indicators	Power
Power Supply – [VAC]	155-285 / 45-55Hz
Power Consumption – [W]	180 (20W output) 150 (10W output) 100 (5W output)
Dimensions, HxWxD – [mm]	600 x 450 x 195
Weight – [kg]	35 (approx.)
MCU Battery Backup Time – [hr]	6