WFDS-Dual mode RU User Manual

Product Type Technical Description

Version	Date	Author	Approved By	Remarks
V1.00	2009-01-12			Not open to the Third Party

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1 System Description

1.1 Topology of Distribution System Solution based on WFDS

The typical topology of distribution system solution based on WFDS is as shown in Figure 1

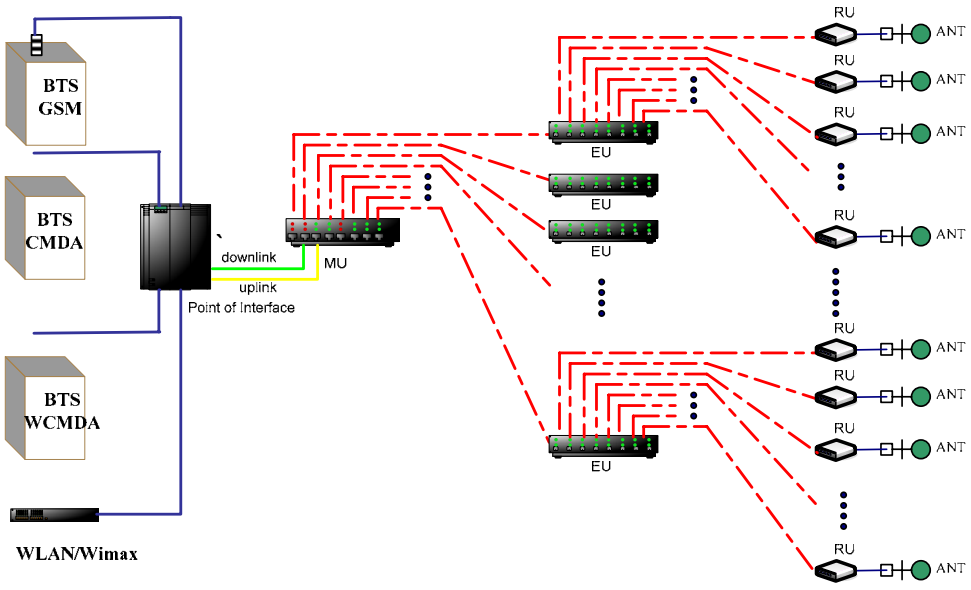


Figure 1 Topology of WFDS

The solution can divided into several parts, signal source, point of interface and WFDS as the distribution system. For downlink signal the point of interface gets the signal from several BTSs and data equipment, then combines them into one signal and feeds Main Unit. Main Unit converts it into optical signal and distributes the signal to Expansion Unit and Remote Unit. The Remote Unit transfers the signal into radio frequency and outputs to the antenna. At each Remote Unit, the operator can set the gain for each system such as GSM, CDMA and 3G independently, which optimizes the coverage for each system and makes future adjustment convenient.

1.1.1 WFDS Functional Module

Table 1 WFDS Functional Module

Functional Modules	Description
MU	Transport RF signal with signal source and Implement the transformation between RF signal and optical signal
EU	Expand one optical signal to 8 way optical signal
RU	Implement the transformation between optical signal and RF signal, transport the RF signal with terminal

2 WFDS Remote Units

2.1 About This Chapter

This chapter consists of the following sections:

The compendium of function

Principle of Work and Specifications

Application of RU

RU Installation and Power Supply

2.2 The compendium of function

The remote unit is an active transceiver which connects the expansion unit or the main unit. RU is the last step in the entire system, and it takes a very important part in the whole system, that is amplifying.

RU receives UL fiber optical signal, then it transmitted into the optical module and transform the optical signal into electric signal, after enlargement, it send by the external connection antenna; in a similar way, equipment receives uplink RF signal by the external connection antenna, and amplified in uplink then input to the optical module. Then output the fiber optical signal to the EU (or MU) after the optical module transform the electrical signal to the optical signal.

2.3 Principle of Work and Specifications

2.3.1 Principle of Work

The equipment includes the optical module, UL amplifier, DL amplifier, duplexer, monitoring unit and power supplier.

.DL: RU receives the DL fiber optical signal from the expansion unit or the main unit, then the optical module transmits the optical signal into RF signal. After amplifying, the signal is sent through coaxial cable by the RF antenna.

Meanwhile, RU can receive setting and inquiring information from Expansion and Main Unit.

UL: RU receives RF signal from antenna UL transmitted from coaxial cable. Signal is enlarged by low noise amplifier then transmitted by optical modules. And at last optical signal is sent to expansion unit or main unit.

The power of the RU is supplied by upper unit.

2.3.2 RU Specifications

Dual Mode Remote Unit

Specification		Description
Working frequency（MHz）	GSM 850MHz:	UL824-849, DL869-894
	PCS 1900MHz:	UL1850-1910, DL1930-1960
DL output RF power（dBm）		21
Noise Figure（dB）		≤6
Max Gain（dB）		35
Gain Adjusting（dB）		≥30, 1dB step
modulation（dBc）		-45
Spurious emission （dBm）		≤-36/100KHz@9KHz-1GHz
		≤-30/1MHz@1GHz-12.75GHz
ripple in the band（dB）		≤6
RF Port Input VSWR		≤2.0
delaying Time（μs）		≤1μs
MTBF (h)		100,000 hour
Fiber Connector		1 pair FC/APC Connector
RF Connectors		1 N-type, female
Power consumption (W)		20
Dimensions		260mm×250mm×75mm
Weight (Kg)		2
Operating Temperature (℃)		-10～+50℃
Operating Humidity, non-condensing		5% to 95%

2.4 Application of RU

2.4.1 Function

The function of DL power amplifier, UL low noise amplifier, DL Optical and Electric Transmitted, UL Electric and Optical transmitted, DGC in UL and DL, digital AGC in UL and DL, System Gain Retrieve

Realize the highest power output by local and remote ALC adjustment.

UL and DL AGC, ALC controller (and output power) and UL DL switch.

2.4.2 Equipment Ports

RF Port：N-F（Connect the antenna）

Light Port：FC-APC

Local Monitoring Port：RS-232

2.5 RU Installation and Power Supply

Installation Mode: Wall mounted、belt tied 、pole;

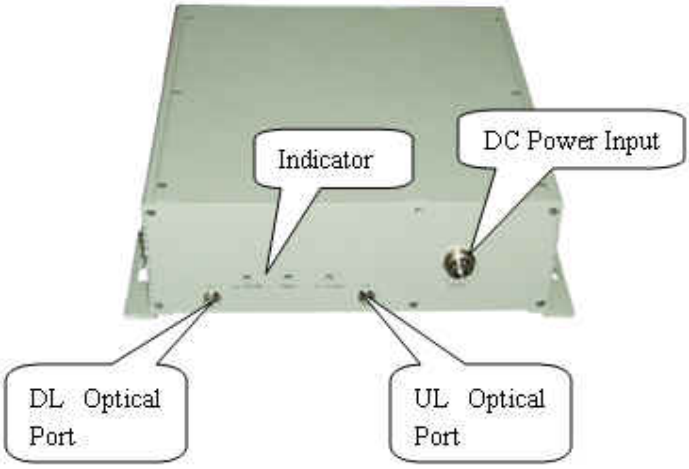
power supply: Power DC48V±5V，remote power supply in 500 m distance

2.5.1 RU Installation

Step1: Fix RU at the position based on the design with screw:

Figure 2 Fixing RU

Step2: Connect relative connectors and ports. DC power input here is the DC power supplying for RU, which is supplied by Remote Power Supply. Indicators will show the working status of RU. The DL and UL optical ports are for optical signal from EU or MU.



The RF port is in the rear side of cabinet.

Figure 3 RU connector

2.5.2 EU and RU Address Setting

EU Address Setting:

Switch dip down means ON

The Address of MU does not need to be set

The left side of Address from 1-4 dips mean: Each dip shows the cascaded degree of EU. For example, if the dip 1 is on, it means the current EU is placed in the 1st – degree of cascaded connection. If the dip 2 is on, it means the current EU is placed in 2nd – degree of cascaded connection. (WFDS supports Max two- degree cascaded EU connection)

The right side of Address from 1-8 dips mean: The port number of upper equipment connected with current EU.

For example, if No.5 dip is on, it means the current EU is connected to the 5th port of upper EU or MU

Example:

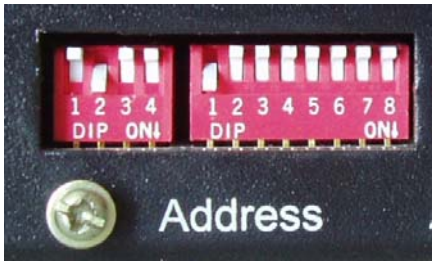


Figure 4 Dip switch of EU

The Address setting tells us:

The current EU is placed in the 2nd – degree cascaded connection

It connects the No.1 port of the upper EU

3 Aphorism

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/ TV technician for help.

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

FCC RF Radiation Exposure:

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 30cm between the radiation and your body.

