DIGITAL MICROWAVE SYSTEM AND PRODUCE SERIES
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BRIEF INTRODUCTION OF THE COMPANY

Centron Communications Technologies Fujian Co., Ltd (hereinafter called CCTF) is one of the earliest enterprises that engaged in information and communications filed. It established in 1989, and now is the subsidiary of Centron Telecom International Holding Limited, a company listed on main board of HKSE. (Stock Code: 1155)

CCTF is dedicated to providing the clients with professional and cost effective information solutions. It has R&D centers respectively in Quanzhou, Shenzhen, Beijing and Xi’an. Now it has three product lines covering wireless coverage, wireless transmission and wireless access. It possesses several core technology and many independent intellectual property rights.

The production center of CCTF is located in Quanzhou, which is famous for its reputation of garden city and the starting point of Sea Silk Road. The total floor area is over 68,000 square meters, 60% of which is for standard communications equipment workshop. The annual production capacity can reach RMB 1,000,000,000. After years of development, a new company structure has been formed by four centers being established in four cities: the domestic marketing center in Beijing, overseas marketing center in Shenzhen, R&D center in Xi’an, and the production center in Quanzhou. This basic structure helps CCTF to build an integrated platform of R&D, manufacture and marketing, by which CCTF can adapt it to the large-scale development in the future.

Now, CCTF has established strategic partnership with many global telecommunication magnates, and tens of thousands pieces/sets of equipments are operating in the system of China Mobile, China Unicom, China Telecom, etc. Up to now, CCTF has set up 31 sales and service branches. Meanwhile overseas service branches have being established in Pacific Asia and Africa to offer updated optimization solutions and more efficient services.

CCTF focuses closely on the development of mobile communications industry. With innovative service concept and advanced technology, CCTF devotes itself to providing integrated solution and convenient communications platform.
SUMMARY

The early Digital Microwave communication specially refers to digital microwave relay communications, which means the wireless communication methods that use LoS and relay to transmit the digital information. Over the last 10 years, the wireless communication develops very fast and generates some new communication ways. The Digital Microwave Communication is not satellite communication, not scattering communication and also not the mobile communication; but is a wireless communication method that in microwave frequency band uses the LoS communication to transmit digital information, which includes both point-to-point and point-to-multipoint digital microwaves. The microwave communication that develops from the middle and later period of 1970s, until now have experiences more than 20 years of history. As a technology that played a major role in human communication, the Digital Microwave Communication Technology had been seen, with satellite and fiber, the three backbones of modern telecommunications transmission. They have their glorious years, but also encountered challenges and absent treatments. As a wireless digital microwave transmission, in the aspects of flexibility, resilience and mobility, the digital microwave has the incomparable merits that the optical transmission cannot reach, which is also its advantages.

The communications network basic framework before 1980s: the trunk line bases on wireless line (microwave, satellite) and in the sky; the consumer line based on wired line (city telephone cable) and in the ground. The communication network basic frame in the future: the relay line bases on wired line (cable) and in the ground; the consumer line based on wireless line and in the key, which provide the digital microwave with huge development opportunities.

From the opinion of the end-users, the consumer line can be divided into two types: mobile type and fixed type. The consumer line of the mobile type is definitely the domain of mobile communications, but the consumer line of the fixed type can be the type that digital microwave touches upon. Especially the development of broadband services and third generation mobile communication applications will require high demands to the fixed line of broadband service, which is a great development prospects for digital microwave.

CT-ML IP Digital Microwave Communication System is a good-quality and cost-effective product of PDH Digital Microwave Transmission independently developed by Centron Communication System (Asia) CO., LTD. It can help the Operators and some Exclusive Net users have the signal access that the Wire Transmission cannot achieve. So it is widely applied in the enterprises’ network access, base stations’ inter-connection, emergency communication, districts internet access and relay link connection. It is the indispensable product for the Telecom Operators and Special Net Users to quickly occupy the market and grasp the business opportunity.

The frequency range of M-Link series digital microwave transmission system is 7/8/13/15/18GHz. It is conformity with the standards of china MII, ETSI and FCC. It has the flexible interface configurations to support 4/8/16E1 and Ethernet connection.
The products of CT-ML Digital Microwave Transmission System include ODU, IDU, Middle Frequency Cable and Antenna, which compose a Terminal Station that can timely manage the microwave network through Network Management System. The working frequency is 7G, 8G, 13G, 15G, 18G, and the max. Transmission Capacity is 32Mbps. It has 4E1, 8E1, 16E1 four Baseband connectors that can select and assemble at will. There also have repeaters to cooperate with the solution.

- Cover 7G/8G/13G/15G/18G Frequency Band
- E1 port support, capacity 4 E1-16E1
- LAN (IP) port support, the largest bi-direction transmission rate 32/32=64 Mbps
CT-ML series configuration

CT-ML Series

Divided by Interface
- 4E1
- 8E1
- 16E1
- 4E1/LAN
- 8E1/LAN
- 16E1/LAN

Divided by IP Capacity
- 8/8 Mbps
- 16/16 Mbps
- 34/34 Mbps

Divided by Frequency
- 7 GHz
- 8 GHz
- 13 GHz
- 15 GHz
- 18 GHz

Equipments composing

CT-ML 1+0 System

- SNMP NMS
- 1+0/ODU
- IDU
- Ethernet port
- SNMP port
- IF port
- P.S port
- EOW port
- EOM port
- Embedded NMS LCD
- Local NMS port
- Alarm port
- Interface Card
- 4 - 16E1 ports
**CT-ML 1+1 System**

- RS Interface
- 4-16 E1 Ports
- RSU Connecting Interface
- Switching Control
  - Key-press
- RS connecting Cable
- Manual switching
  - Co-frequency backup
  - Different frequency backup
  - Switching Control
  - Key-press

**ODU Description**

- GND
- IF cable connector
- Receiving level Monitoring
- Antenna connector
- Antenna combiner
- IF cable
- ODU
- Antenna
Relay Transmitting

★ Passive Transmitting
Using the high-gain, wide-radii passive antenna to transmit

★ Active transmitting

CT-ML Digital Microwave Transmission system’s application range

★ Telecom Operators
  - Telecom Operators such as China Telecom, China Netcom, China Unicom, China Mobile, CTT, Satellite Communication and Radio and TV Administration
  - ISP Operators

★ Dedicated Network for Public Utility
  - Dedicated Network for Electricity, Waterpower, Coal, Mining, Forestry, Large building sites and so on

★ The Governmental Network
  - Dedicated Network for Banking, Taxation, Traffic, Public Security, Transport
  - Emergency Communications

★ Army Private Network
  - Customer Premises Network
  - Emergency Communications
SYSTEM FEATURE

1st: Card structure
- Module design, only change the interface card, which can change the radio system to the capacity 4E1/8E1/16E1.
- Provide the 75ohm BNC interface and 120ohm RJ48 interface.

2nd: 4E1-16E1 expand smoothly
- When the system capacity expands, only to do is change the interface card, you can get 4E1-8E1-16E1.
- When the system capacity is expand, ODU don’t need to change, it can adjust the bandwidth to 7M/14M/28M according to the IDU’s capacity.

3rd: Support E1 and IP at the same time
- The perfect combine of the E1 and IP, M-Link can support E1 interface and IP interface at the same time, the capacity can divided dynamically.
- E1 without use can be packed automatically to transport through IP.

4th: Super embedded LCD NMS
- Embedded NMS and LCD function, support all the configuration and display (set the frequency point, power, etc), very convenience for the engineering of operating and maintaining the radio onsite, don’t need the help of other equipments.
- The alarm of the temperature of ODU and the alarm of receive level, preventing the fault in advance.
- Kinds of alarm display.
- Kinds of testing recycling.
- Important alarm light. Set password, assure the security.
- Can watch two terminals at one site.
- BER testing inside, watching the quality of communication of the path at any moment.

5th: 1+1 different frequency standby
- Support the real 1+1 mode of different frequency standby.
- Support the standby of different frequency or sub-frequency.
- The switch can be set to automatic and manual.
- The fault radio unit can be changed during the ordinary working of the standby.
6th: 1+1 same frequency hot-standby

⭐ Support the real 1+1 mode of same frequency hot standby.
⭐ The switch can be set to automatic and manual.
⭐ The fault radio unit can be changed during the ordinary working of the standby.

7th: 1+1 SD and without SD

⭐ When the system use hot standby of same frequency, it can be configured as SD structure with two antennas.
⭐ No matter what kind of structure the system use, same frequency or different frequency hot standby, they all can be use the combiner and one antenna, that is without SD.

8th: Base on SNMP network management system

⭐ Support SNMP V2.0 protocol, can manage the radio system through the third network management software, can manage about 4096 links of radio.

9th: SNMP network management

⭐ SNMP network system support the interface connect, it can transport the information of the next station without other equipment’s help, and not occupy the service channel.

10th: Professional network planning software

⭐ Transmission link performance
⭐ Transmission distance calculation
⭐ Section parameter input
⭐ Reflection point calculation
⭐ Antenna height calculation
⭐ Antenna pitch angle calculation
⭐ Rain fade calculation
### System Production Specification

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<th>Frequency</th>
<th>7GHz</th>
<th>8GHz</th>
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<td>-88/-85/-82dBm</td>
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**PRODUCT'S APPLICATION**

Typical mode of operation solution

1st: Mobile base station interconnection

- E1 service transportation between BSC and BS of 2G-2.5G
- E1 service transportation between RNC and NodB of 3G

2G/2.5G BSC  
3G RNC

3G BTS NodeB  
2G BS  
WiMAX BS

Remote switching module
Service multiplexer
Private E1 data channel
IP Switch
IP Router
IP Server

2nd: WiMAX base station interconnection

- IP service transportation between BSC and BS in WiMax of 3G

WiMAX IPRNC

34/34Mbps

WiMAX BS

34/34Mbps
3rd: Enterprise voice and data Access
☆ Service of voice and data of one company access to the key nod of service provider
Such as: office building, dwelling house, big corporation, internet bar, etc

4th: Dedicated transparent transmission channels
☆ Used for kinds of service access for special network
☆ voice, data, data special line, internet, IP phone, etc

5th: Emergency communication
☆ Emergency service communication, service enhancement and temporary service in large scale activities
SUPER NETWORK MANAGEMENT

CT-ML equipment builds in a network management system, this network management system can achieve the management of the remote equipment connecting to this equipment, greatly facilitate installation and maintenance of the project.

At the same time, CT-ML equipment supply the special network class SNMP network management system; It can be applied Windows2000/XP platform. It is an open system, can manage all the microwave link net unit by TCP/IP.

Main Interface Instruction

Main Interface general include three parts:
Part A : Equipment Topology distribution window display
  1. Display various MapPage titles, click it can change MapPage;
  2. MapPage's background picture;
  3. Equipment Button;
  4. Decorate icon;
Part B : Equipment events window display
  Various events relevant to the equipment will show here.
Part C : Equipment status monitor window
  This window has five pages

Other Function Instruction

- Information Preservation
- Backup and remove record
- Timing backup and remove records
- Modify main window title
- Some system timing assignments
- Show equipment performance
- Timing reset equipment button color
Centron Communications Technologies Fujian Co., Ltd.
Add: Centron Communications Technologies Fujian Co., Ltd. Xunmei, Quanzhou, Fujian, China.

http://www.centron.com.cn