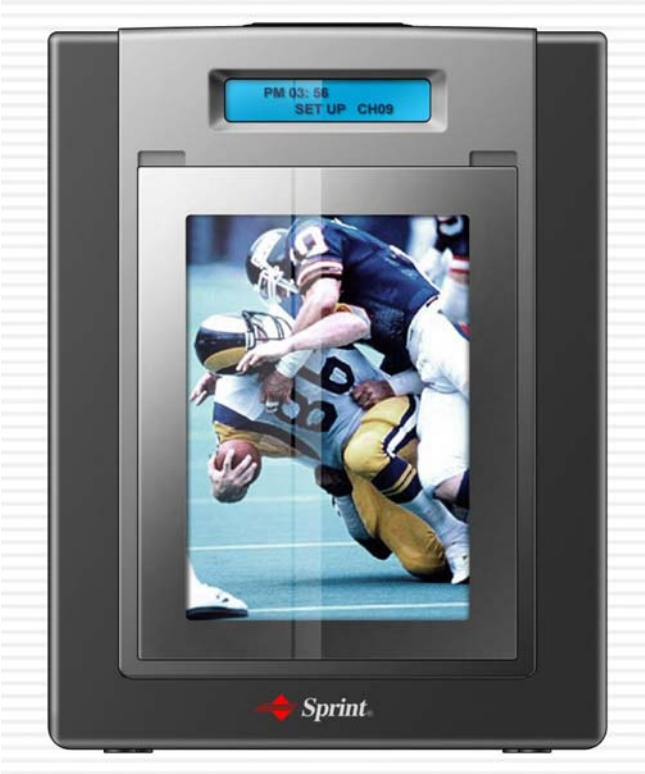
US PCS Repeater System Manual



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(주) Wireless Date Communication

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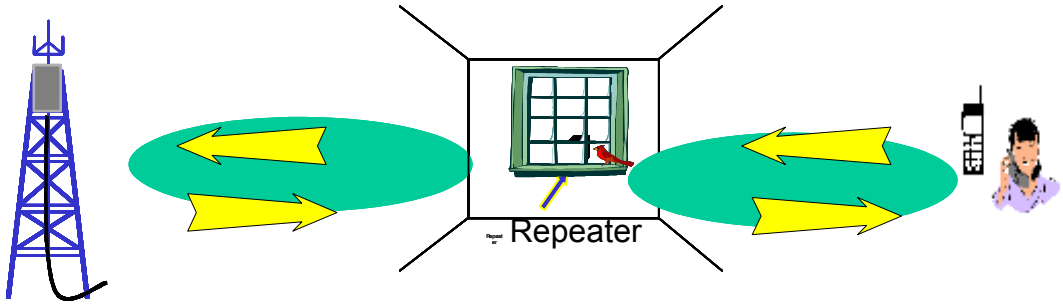
1. OVERVIEW

1.1 Purpose

This repeater system is designed to provide high-quality service in communication which inevitably come obstacles in the shadow area

1.2 Applicable Range

US-PCS-S1 repeater is providing the telecommunication services of the good quality of the bad-lined & interrupted area in communication service area.



1.3 General

To improve the equipment install-expenses and efficiency utility, Service signal among ultra-mixed PCS signal of other operation preferentially amplify and relay to the shadow area so that it would be provided good-quality service economically & efficiently.

This repeater is using method by converting the weak RF signal from the Base Station into IF band, amplifying and then resending the RF signal.

It is consist of Duplexer, SAW FILTER by IF, power supply device, controller and exterior case, is designed of being satisfied with the spurious condition of high-output in signal.

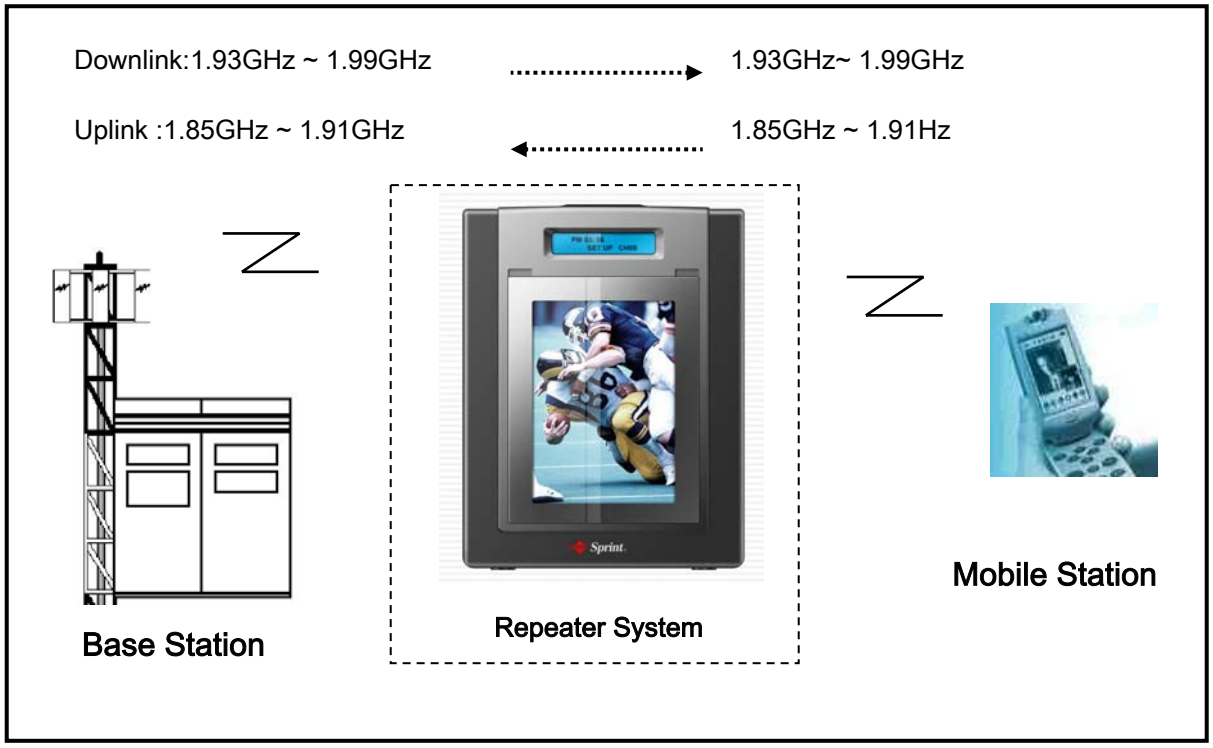
1.4 General Equipment Features

- In-building (For home & office) , Service in shadow area.
- Small & light Sized Equipment.
- Easy and simple installment
- Convenient Installment, Application and maintenance.
- Built-in Antenna
- Convenient Automatic Set-up Programmed

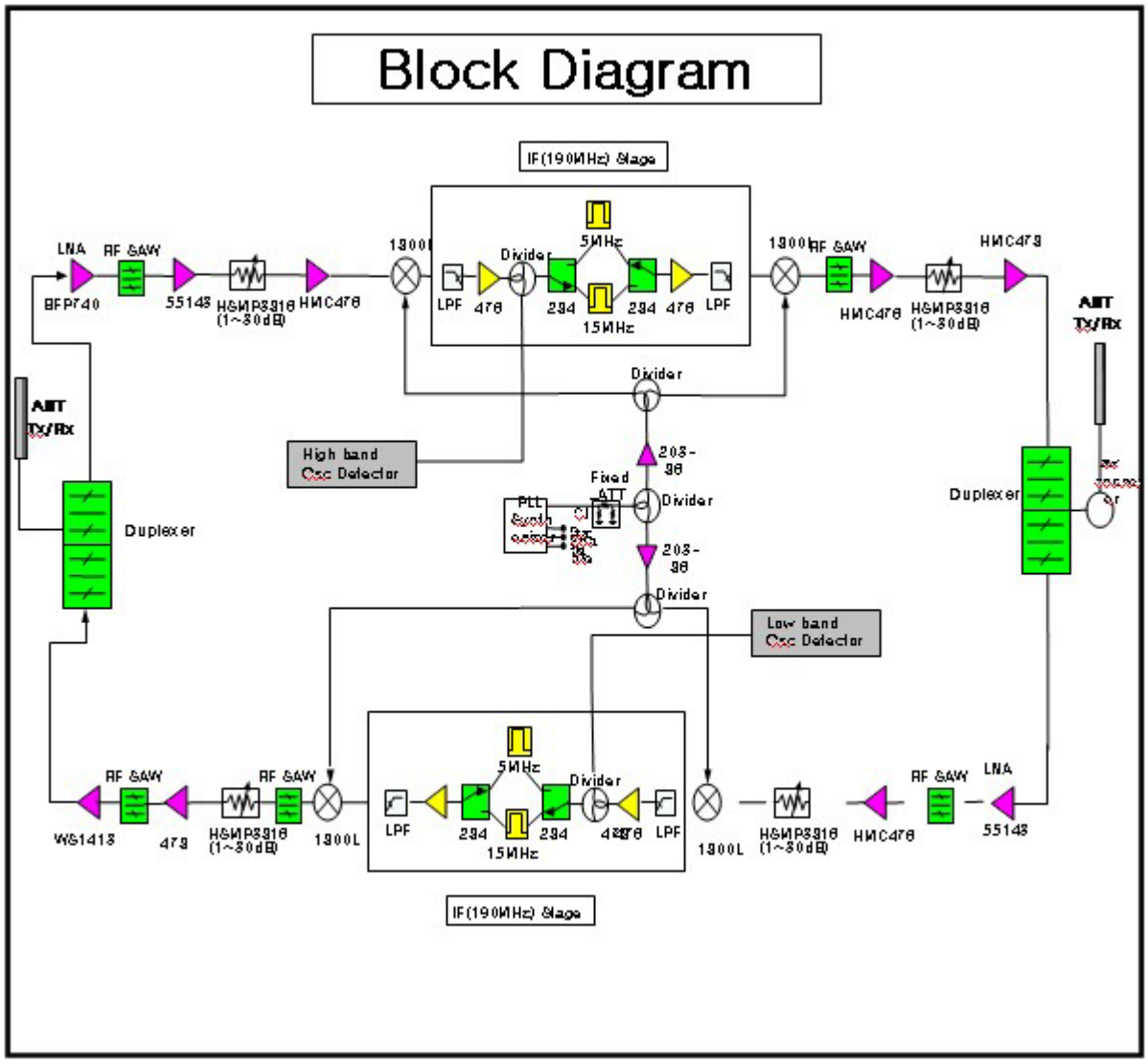
2. The Structure of Equipment (Functional Features)

The Repeater system is for the relaying system that can supply the services Tx/Rx:1850~1910MHZ, Tx/Rx:1930~1990MHz by one equipment.

This is installing a wide service of 120MHz bandwidth in the shade area between the Base Station and Mobile Station. It improves the telecommunication quality by amplifying the verified signal from coming out the Base Station and then selecting the signal through the SAW Filter and adjusting to the same output.



2.1 The Structure of System

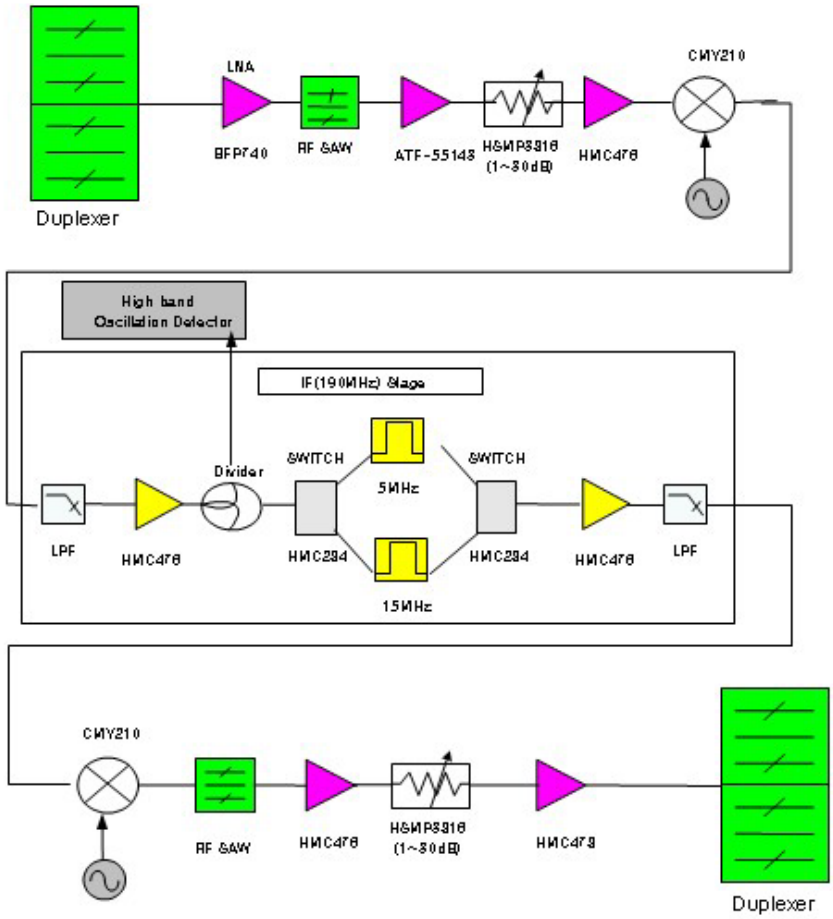


<System Block Diagram >

2.2 Downlink

This repeater consist of LNA receiving CDMA signal(Down Link) from the Base Station and amplifying first step after filtering the other company's signal through the Duplexer, Down Converter converting the RF into IF signal, Amp amplifying the power, and PLL Local for the Down/Up converting

The functions for each block are as follows:



<Downlink Block Diagram >

2.2.1 DUPLEXER

Link Duplexer is a device to transfer Down Link signal and Up Link Signal by using one port.

Down Link signal received Antenna from the BTS, it remove the other band signal and transfer LNA signal.

Up Link signal is being filtered the last and come out forward Base Station.

The signal frequency relaying toward terminal from Base Station is 1850 MHz ~ 1910Mhz.

The signal frequency relaying toward Base Station from the terminal is KTF:1930 MHz~1990 MHz.

Tx/Rx Isolation is more than 50 dBc.

2.2.2 LNA

LNA is as a AMP amplifying first step received the weak signals through the DUPLEXER, has a excellent specific device of NF(1dB under)

It improves the whole system of NF and IP3 is rather high that can come out the stable output.

2.2.3 DOWN CONVERTER

Down Converter would convert IF signal from low-noise amplified signal for filtering SAW Filter having a good SCIRT.

In case of converting into IF signal it would be easier the process than RF signal, it can receive excellent selectivity only passing through the setting frequency range.

2.2.4 IF Block

IF block selects bandwidth, it can be chosen Convert IF signal by filtering SAW Filter having a good SCIRT.

2.2.5 UP CONVERTER

UP Converter is excellent selectivity that the IF signal being filtered can supply the RF signal as service signal.

2.2.6 AMP

AMP receives the converted signal from the UP converter and improves the signal's advantage adjustment and IP3 features together

2.2.7 PLL

PLL Local Oscillator is Synchronous signal which convert the signal to RF into IF, IF into RF and has a good phase noise that can convert the frequency without changed the signal features being input.

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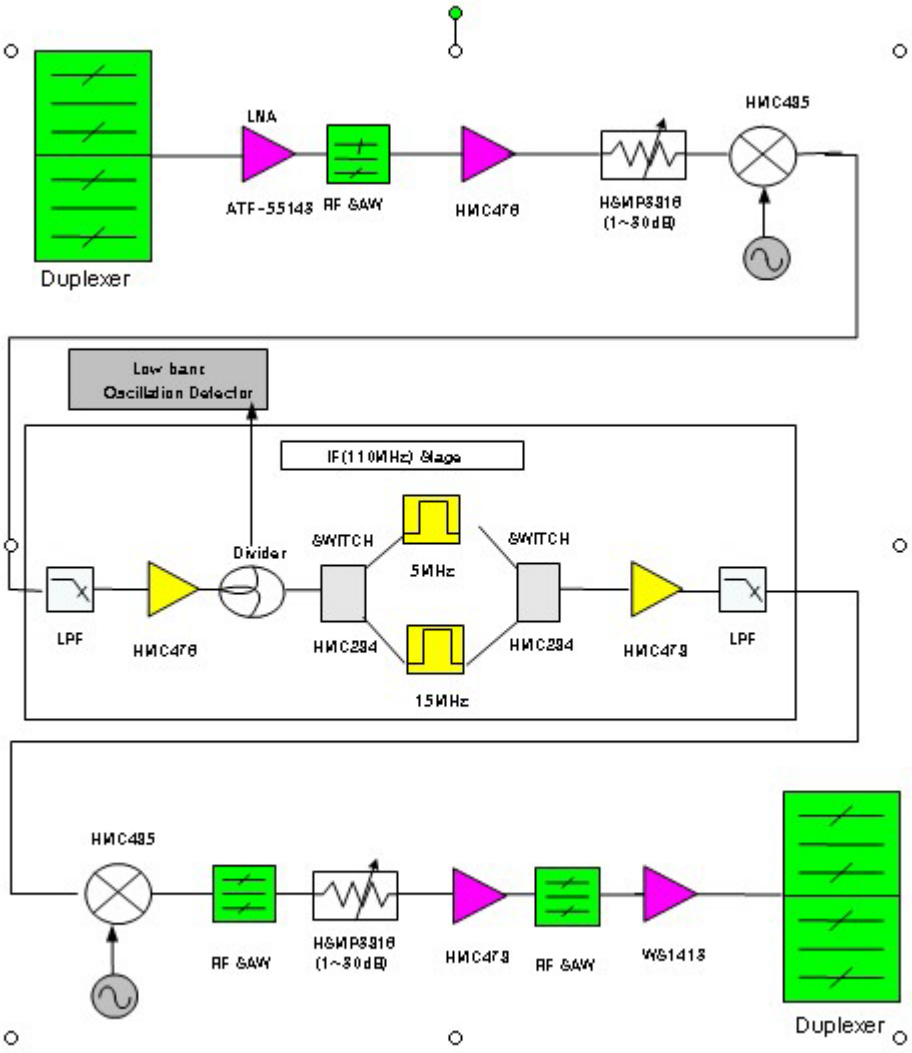
2.3 Up link

This repeater consist of LNA receiving CDMA signal(UP Link) from the Base Station and amplifying first step after filtering the other company's signal through the Duplexer, Down Converter converting the RF into IF signal, HPA amplifying the power, and PULL Local for the Down/Up converting.

The functions for each block are as follows:



<Up link Block Diagram >

2.3.1 DUPLEXER

Link Duplexer is a device to transfer Down Link signal and Up Link Signal by using one port

UP Link signal received Antenna from the terminal, it remove the other band signal and transfer LNA signal.

Down Link signal is being filtered the last and come out in the way of Terminal.

The signal frequency relaying toward terminal from Base Station is 1930 MHz ~ 1990MHz.

The signal frequency relaying toward Base Station from the terminal is KTF:1850 MHz~1910 MHz.

Tx/Rx Isolation is more than 50 dBc.

2.3.2 LNA

LNA is as a AMP amplifying first step received the weak signals through the DUPLEXER, has a excellent specific device of NF(1dB under)

It improves the whole system of NF and IP3 is rather high that can come out the stable output.

2.3.3 DOWN CONVERTER

Down Converter would convert IF signal from low-noise amplified signal for filtering SAW Filter having a good SCIRT.

In case of converting into IF signal it would be easier the process than RF signal, it can receive a excellent selectivity only passing through the set frequency range.

2.3.4 IF Block

IF block selects bandwidth, it can be chosen Convert IF signal by filtering SAW Filter having a good SCIRT.

2.3.5 UP CONVERTER

UP Converter is a excellent selectivity that the IF signal being filtered can supply the RF signal after converting into a service signal.

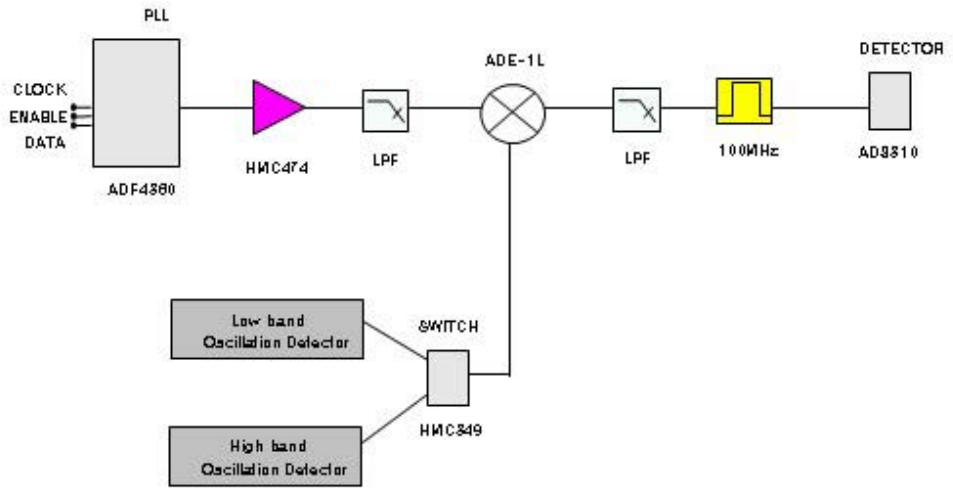
2.3.6 AMP

AMP receives the converted signal from the UP converter and improves the signal's advantage adjustment and IP3 features together.

2.3.7 PLL

PLL Local Oscillator is Synchronous signal which convert the signal to RF into IF, IF into RF and has a good phase noise that can convert the frequency without changed the signal features being input.

2.4 Oscillation Detector



<Oscillation Detector Block Diagram >

2.4.1 PLL

PLL Local Oscillator is Synchronous signal which convert the signal to RF into IF, IF into RF and has a good phase noise that can convert the frequency without changed the signal features being input.

2.4.2 AMP

AMP receives the signal from the PLL and improves the signal's advantage adjustment and IP3 features together.

2.4.3 DOWN CONVERTER

Down Converter would convert IF signal from Low band or High band switched signal for filtering SAW Filter having a good SCIRT.

In case of converting into IF signal it would be easier the process than RF signal, it can receive a excellent selectivity only passing through the set frequency range.

2.4.4 IF SAW

IF block selects bandwidth, it can be chosen Convert IF signal by filtering SAW Filter having a good SCIRT.

2.4.5 Power Detector

Power Detector would measure the signal power from the IF SAW filter.

2.5 Power Supply

- It would receive AC100V ~ 240V(50Hz~60Hz) and supply the power to the equipment in DC7.5V(1.33A)
- Operation conditions is designed to work safely during -20 ~ 40□

2.6 Operation & Observation

2.6.1 The function of VFD

It can be easily recognized configuration data through VFD in controlling of S/W1, S/W2 which showing in the front.

SW1: Able to switch the Channel (1~12CH) to 5 MHz

- A: No.1 CH (Down link :1850~1855MHz,UP link :1930~19435 MHz)
- D: No.2 CH (Down link :1865~1870MHz,UP link :1945~1950 MHz)
- B: No.3 CH (Down link :1870~1885MHz,UP link :1950~1965 MHz)
- E: No. 4 CH(Down link :1885~1890MHz,UP link :1965~1970 MHz)
- F: No. 5 CH(Down link :1890~1895MHz,UP link :1970~1975 MHz)
- C: No. 6 CH(Down link :1895~1910MHz,UP link :1975~1990 MHz)

SW2: RF ON/OFF function

3. System standards

3.1 The Electronic characteristics

3.1.1 The RF characteristics

Items	Specifications
Operating Frequency	1930MHz ~ 1990MHz Down link 1850MHz ~ 1910MHz Up link
Output power	3dBm Down link 18dBm Up link
RF Gain	60dB Up link
Port to Port Group Delay	Less than or equal to 1 ms
Noise Figure	Less than or equal to 5 dB
Impedance	50Ω

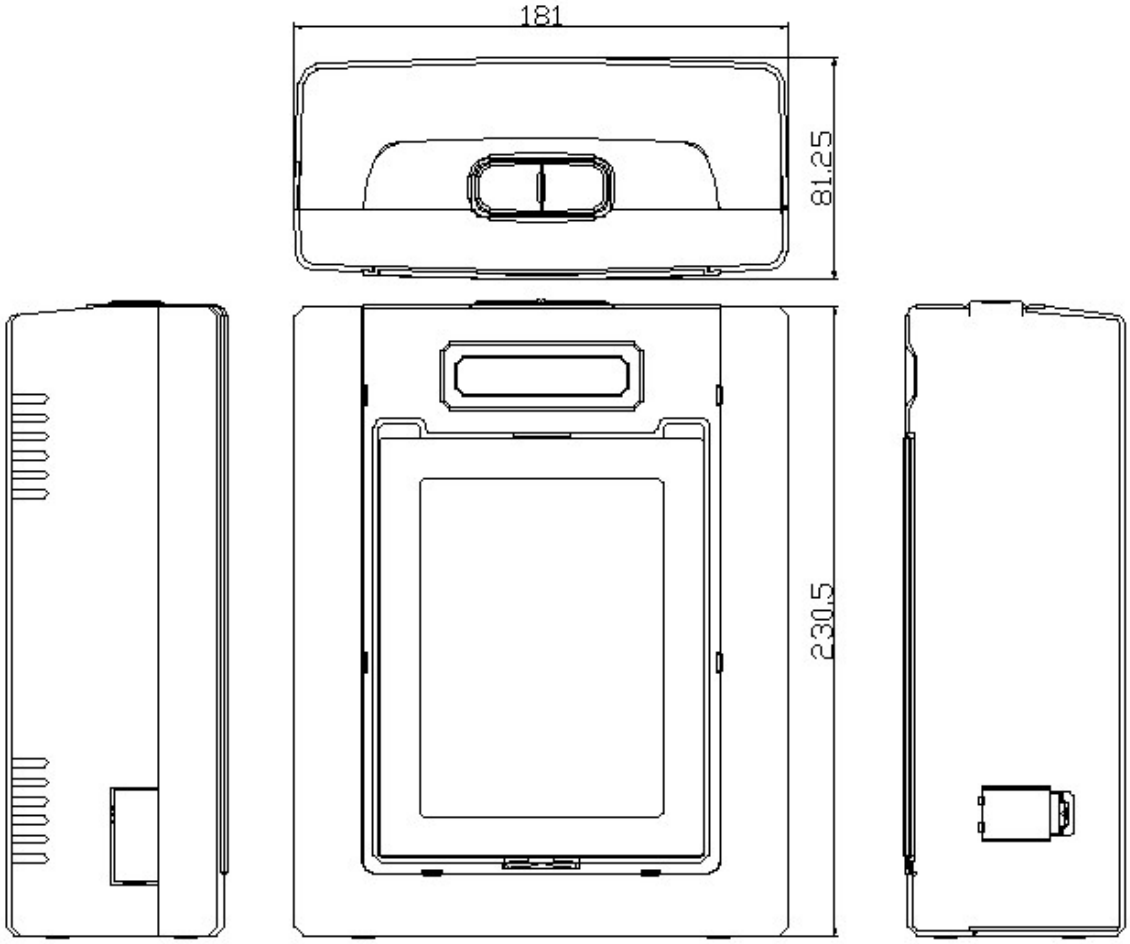
3.1.2 Power Supply characteristics

Items	Specifications
Power	DC 7.5V 2.4A
Power Supply	External Supply Input 120VAC/0.5A
Temperature range	-20°C ~ 40°C
Warranty period	1 year

3.1.3 The Antenna characteristics

Items	Specifications
Operating Frequency	1930MHz ~ 1990MHz 1850MHz ~ 1910MHz
Pattern	directional
Antenna Gain	8dBi
VSWR	1 : 1.5
Beamwidth	120°
Impedance	50Ω

3.2 The Mechanical characteristics



Items	Specifications
Status Display	STN Graphic LCD
Size	181 x 230.5 x 81.25 (W x H x D) mm

4. The Operation of Equipment

4.1 The order of Equipment installation

Find the best widow receiving the best powerful signal of Handy-phone in checking out every corner of home or office by using the handy-phone.

Take the suitable place and install the repeater safely in the window.

Connect the AC adapter in the repeater and plug in the power.

4.2 The equipment Operation

CER system is as a exclusive CDMA repeater in the US PCS band, performing on relaying the received signal from the Base Station and outputting to the mobile terminal (forward), relaying the received signal from the mobile terminal and outputting to the Base Station (Backward).

5. Troubleshooting

5.1 Not turn on the power VFD or light in the Front.

➔ Cuase

- When does not connect the cable in the Power supply
- When Back Light function does not work.
- VFD abnormal

➔ Correction

- Check out the Power connection (reset the power)
- Check out if the Back Light has no problem.
- Check out the VFD connection and if not problem, replace.

5.2 Does not come out the signal on repeater.

➔ Cause

- When the repeater not RF ON
- When the channel (1~12CH) of repeater doesn't' meet the signal from the BTS.

➔ Correction

- Turn on the repeater system on pressing the channel switch 2
- Press the channel switch 1 and go though the work from 1~12
- Check out the connection part of power in the PCS of repeater.
- Check out being delivered any notice on the repeater for the abnormal work or strange signal.

INFORMATION TO THE USER

“Note: The manufacturer is not responsible for any Radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user’s authority to operate the equipment.”

“CAUTION: RF Exposure to Radio Frequency Radiation.
This equipment must be installed and provided minimum separation distance of 20 cm from the body of user and near by person. In addition to separation distance, this device cannot be transmitted and operating in conjunction with any other transmitter or antenna.