

US PCS –S1 Repeater System (60MHz)

Manual



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KOREA FIRST TELECOM CO., LTD.



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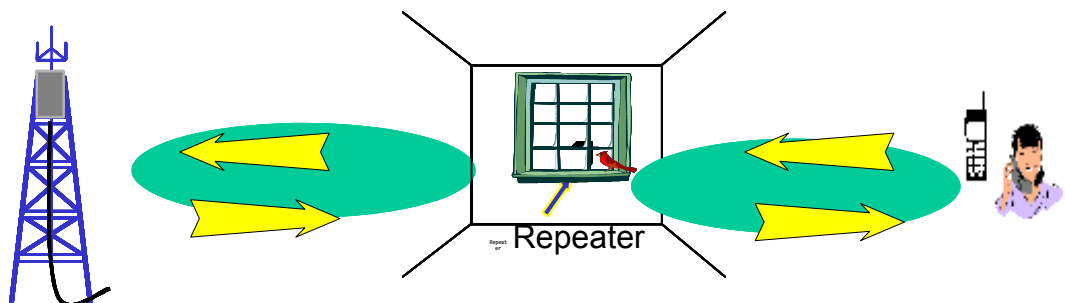
1. OVERVIEW

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

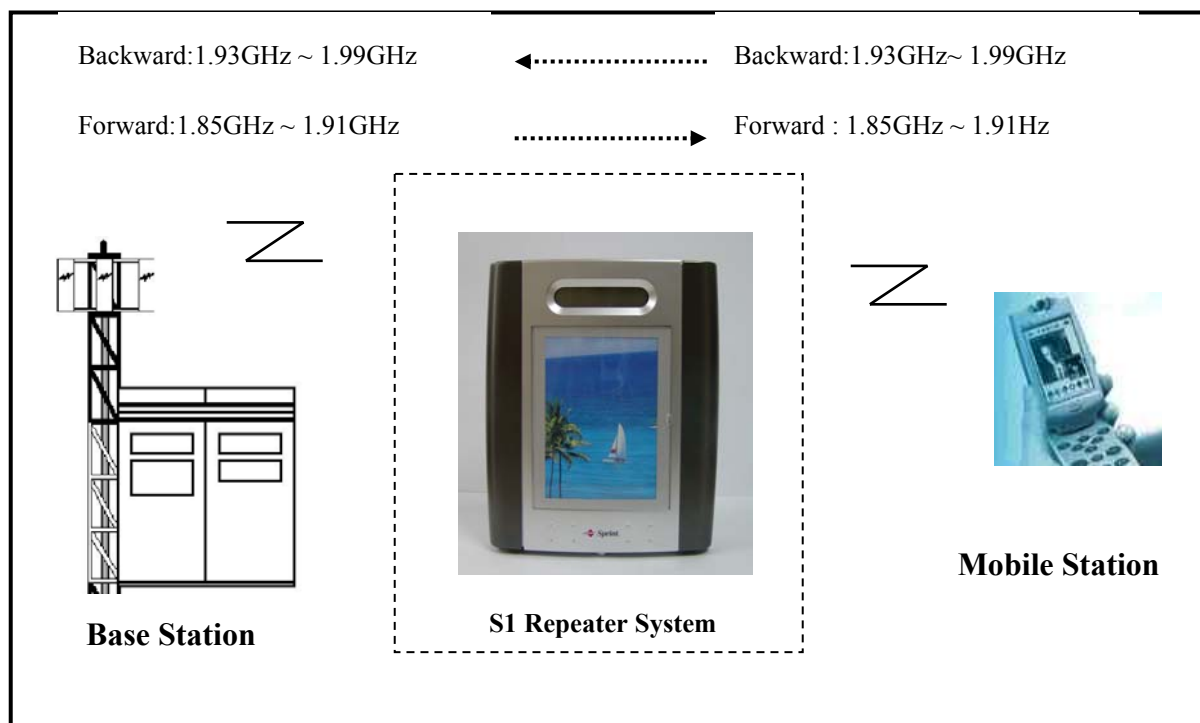
- In-building (For home & office) , Service in shadow area.
- Small & light Sized Equipment.
- Easy and simple installment
- Convenient Installment, Application and maintenance.
- Built-in Antenna
- Convenient Automatic Set-up Programmed
- Provide smooth-communication by Software which controlled Oscillation of Isolation.



2. The Structure of Equipment (Functional Features)

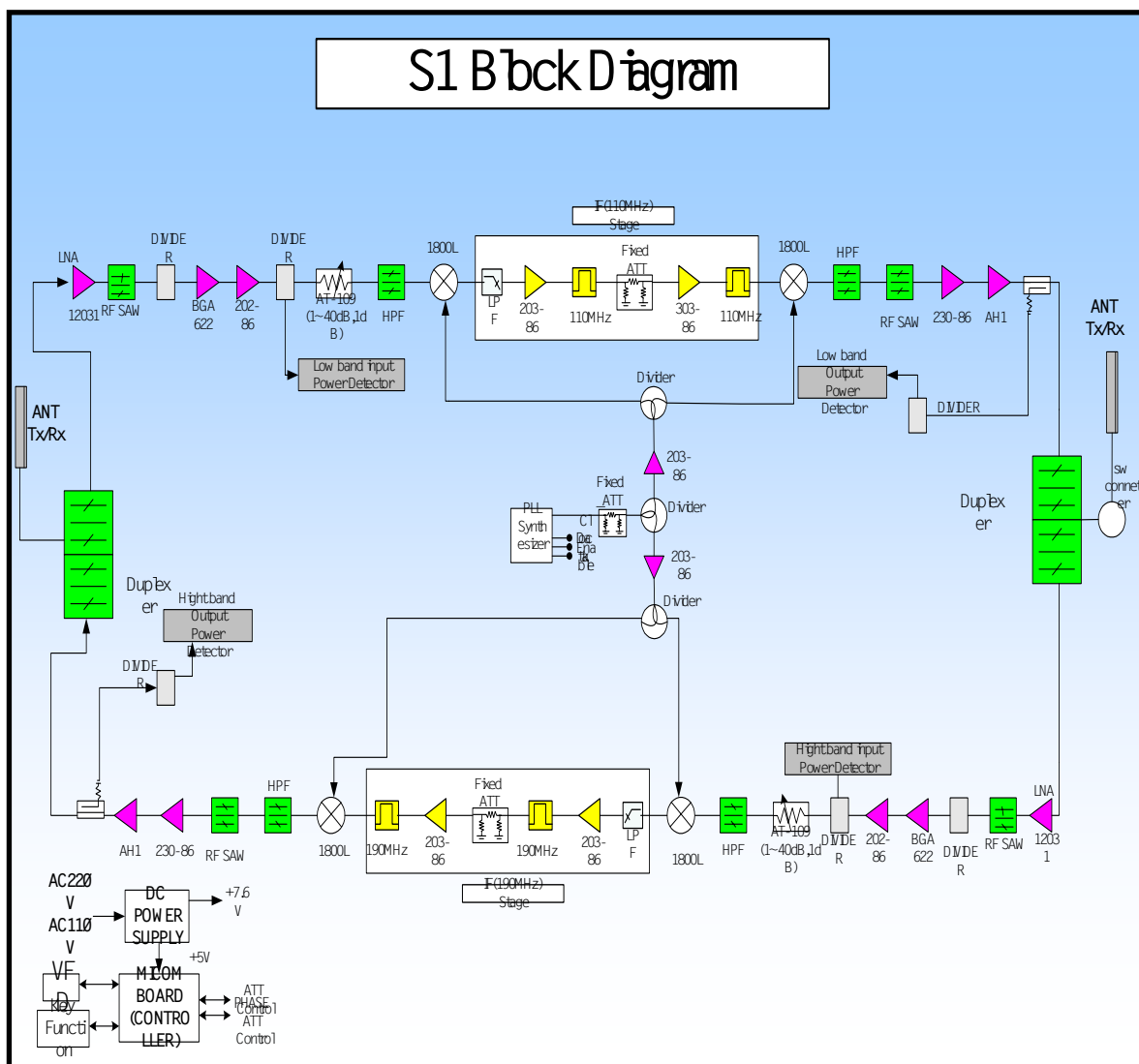
The Repeater system is for the relaying system that can supply the services Tx:1850~1910MHz, Rx:1930~1990MHz by one equipment.

This is installing a wide service of 60 MHz band 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



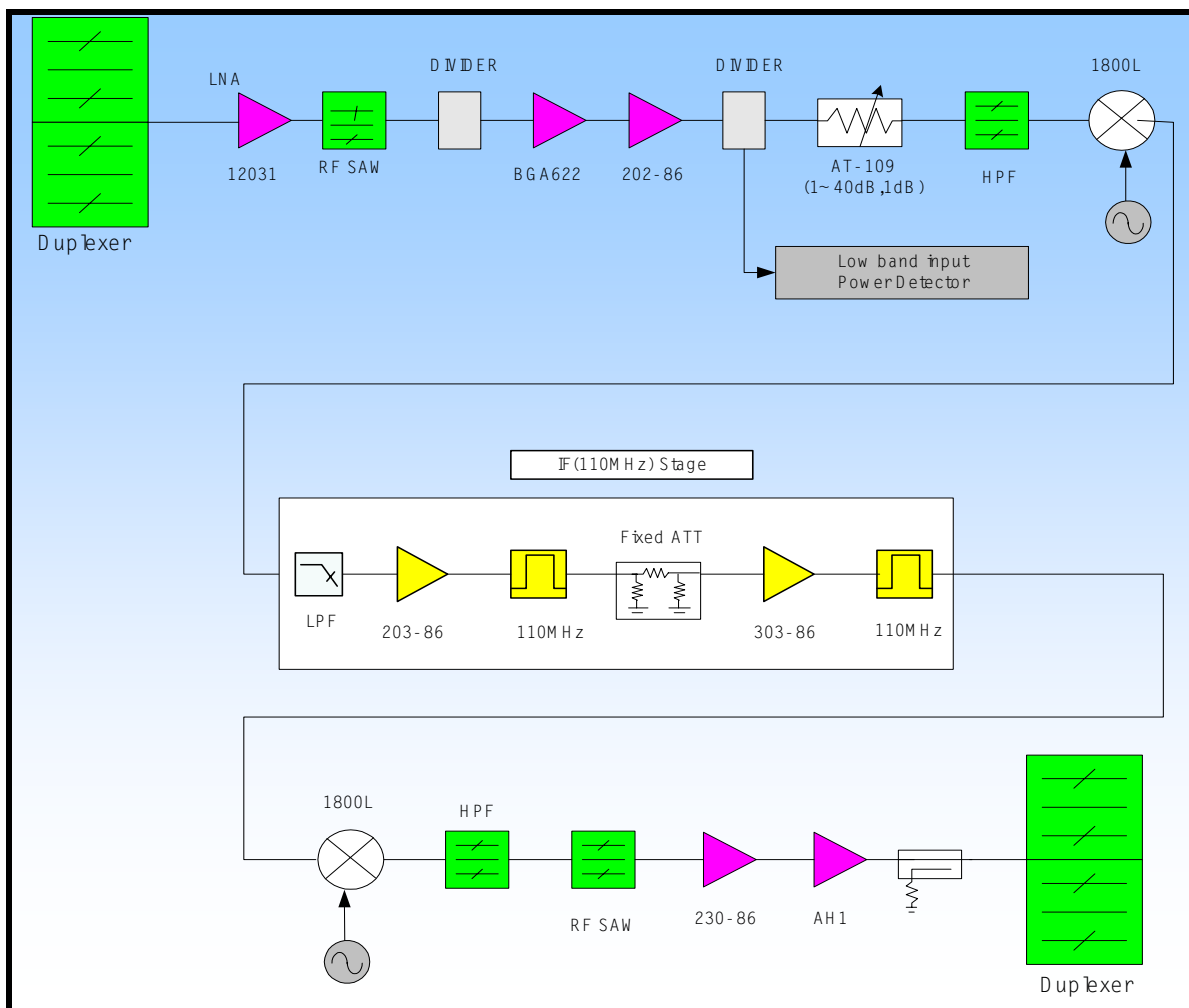
<System Block Diagram >



2.2 Forwards

This repeater consists 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:



<Forward 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 UP CONVERTER

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

2.2.5 AMP

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

2.2.6 AMP (AH1)

AM1 is a final output terminal of UP Link, amplifying the high signal output in order to supply the service to the customer using a AMP being satisfied P1 18dBm/total based on 4Fa through the Duplexer & Antenna

2.2.7 PLL

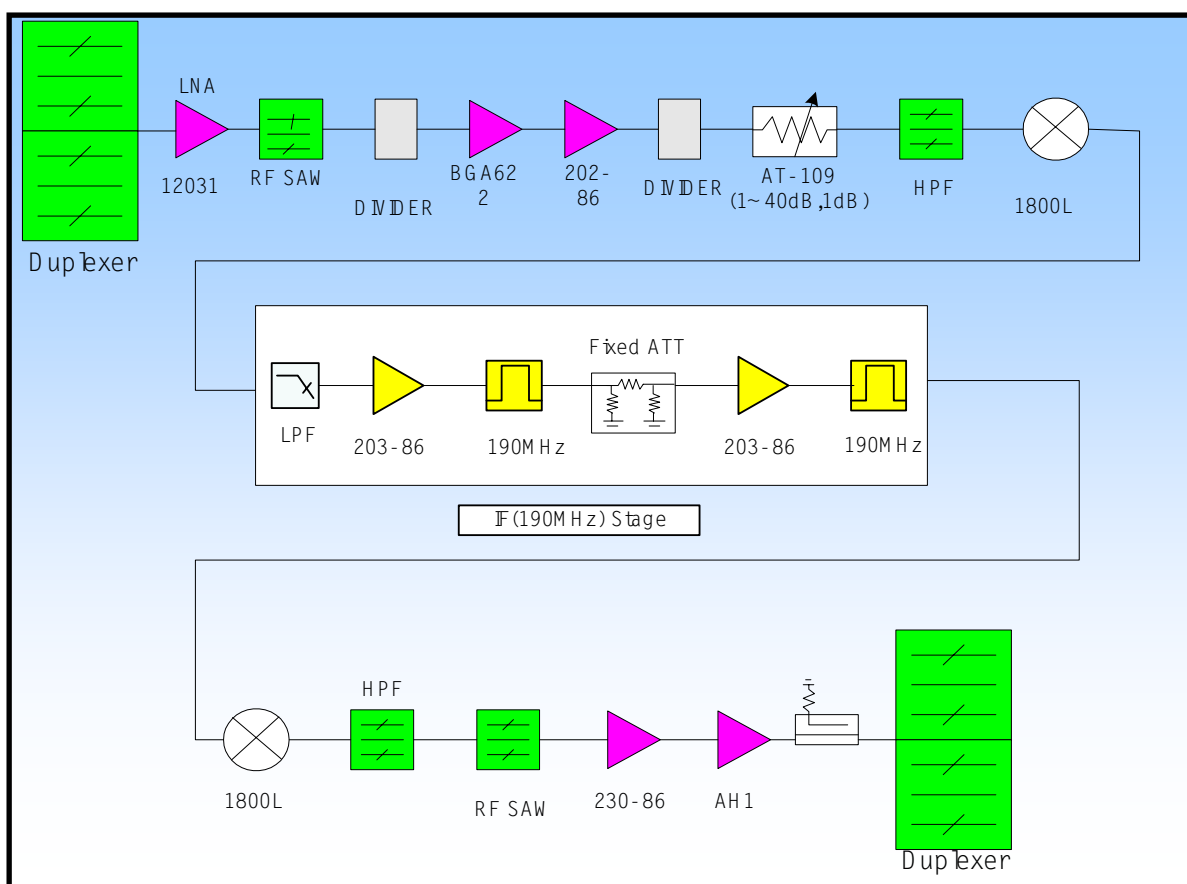
PLL Local Oscillator is Synchronous signal which convert the signal to RF into IF, IF into RF and has a good phase noise that can convert the frequency without changed the signal features being input.



2.3 Backward

This repeater consists 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:



<Backward 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 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.



2.3.5 AMP

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

2.3.6 AMP (AM1)

AM1 is a final output terminal of UP Link, amplifying the high signal output in order to supply the service to the customer using a AMP being satisfied P1 18dBm/total based on 4Fa through the Duplexer & Antenna.

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 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℃

2.5 Operation & Observation

2.5.1 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

- A1: No.1 CH (Down link :1850~1855MHz,UP link :1930~1935 MHz)
- A2: No.2 CH (Down link :1855~1860MHz,UP link :1935~1940 MHz)
- A3: No.3 CH (Down link :1860~1865MHz,UP link :1940~1945 MHz)
- D: No.4 CH (Down link :1865~1870MHz,UP link :1945~1950 MHz)
- B1: No. 5CH (Down link :1870~1875MHz,UP link :1950~1955 MHz)
- B2: No.6 CH (Down link :1875~1880MHz,UP link :1955~1960 MHz)
- B3: No. 7 CH (Down link :1880~1885MHz,UP link :1960~1965 MHz)
- E: No. 8 (Down link :1885~1890MHz,UP link :1965~1970 MHz)
- F: No. 9 (Down link :1890~1895MHz,UP link :1970~1975 MHz)
- C1: No. 10 CH (Down link :1895~1900MHz,UP link :1975~1980 MHz)
- C2: No. 11CH (Down link :1900~1905MHz,UP link :1980~1985 MHz)
- C3: No.12 H (Down link :1905~1910MHz,UP link :1985~1990 MHz)

SW2: RF ON/OFF function