Abbreviations

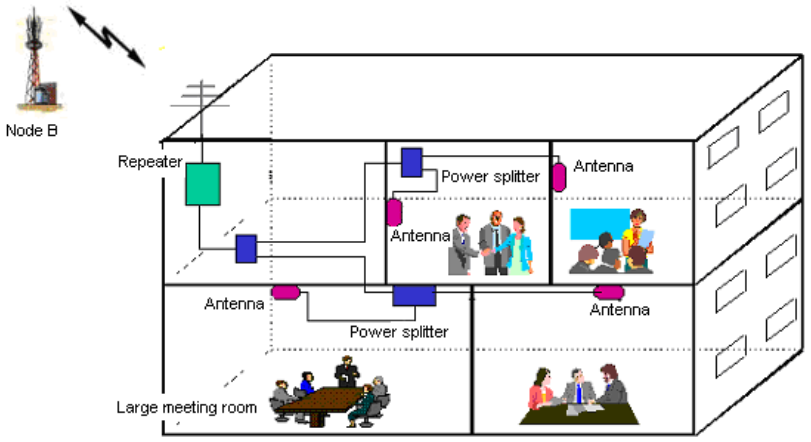
	Meaning
BTS	Base Transmitting Station
CDMA	Code Division Multiple Access
DL	Downlink
GSM	Global System for Mobile Communications
iDEN	Integrated Digital Enhanced Network
MS	Mobile Station
PCS	Personal Communication System
RF	Radio Frequency signals
UL	Uplink *(Communication channel from mobile device to cell tower)*
DL	Downlink *(Communication channel from cell tower to mobile device)*
Donor	Outdoor Antenna
LED	Light Emitting Diode

1. Preface

Nowadays, personal mobile communication is developing at a very rapid rate and persons are having higher expectations and demands on the mobile communication network. A high-speed and high-capacity communication network has become the trend of future development. At present second-generation (2G) mobile communication systems like GSM is widely used all over the world, but mostly in developing nations, whereas third-generation (3G) and forth-generation (4G) mobile communication technology is widely used in Europe, North America and Korea.

For example, Code Division Multiple Access (CDMA) technology is used which greatly extends the signal width -- the so-called spread spectrum modulation. As an advanced wireless communication technology, it features good multi-channel access capability, anti-multipath fading capacity, anti-narrowband interference capability and security protection capabilities.

The CDMA network has, what is called a



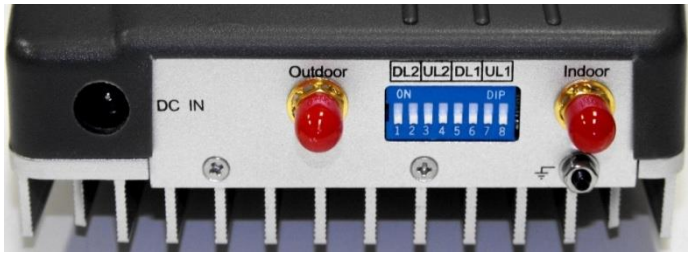
2. Introduction

This full duplex mobile communications repeater from JDTECK is the perfect solution for providing a wireless improvement in the cellular reception of a home, office, restaurant, VIP Room, apartment, building or shopping mall, in the quickest time possible.

It is designed to improve the call quality of an area by receiving, amplifying and re-transmitting signals of the base station into a specified area via the service antenna of the repeater.

To maintain safe and specific output signal levels, this repeater has a built-in signal oscillation detection circuit with color changing LEDs to indicate its environmental status. The Alarm LEDs located on the front of the unit (Alarm Low & Alarm High) will change color from green to orange or red, (depending on the intensity) if the system detects signal oscillation in either band or, if the input signal is beyond a safe limit so as to avoid interference to the cellular network.

This repeater also has an automatic gain control (AGC) feature that will reduce the output power of the repeater if oscillation is detected. This range can vary from 15-20dB depending on the model of your repeater. If the range of the AGC is less than the value of the gain the repeater needs to be reduced by, then the end user can make use of yet another feature of manual gain control to further reduce the gain by using the dip switches to manually attenuate (reduce) the repeater



3. Installation

1. The repeater

3.1 Installation Procedure – Cont.

- Check the contents supplied.
- Identify a suitable location where you would like to mount the donor antenna on your roof. Confirm this location has the best input signal from the cell tower.
- Ensure the location is properly isolated from the indoor antenna and at the same time, ensure the cable length supplied is sufficient to complete your installation.
- Install the donor antenna and route the coax to the proposed location for the indoor base unit. **DO NOT COIL UP** any excess coax you may have.
- Connect the indoor service antennas, coax and power supply. Power up the unit and monitor the LED status for errors.
- Rotate the donor antenna until the best signal strength or call quality is achieved on your mobile device, while making sure the LEDs stay green on the repeater.

We suggest getting someone to help rotate the donor antenna while you monitor both your mobile device (Phone or PC Card) and the LEDs on the repeater at the same time.

- If signal oscillation is between 1~4dB then the Alarm LED for the relevant band will turn orange. Please adjust the dip switches till the LEDs turn green. (See dip switch adjustment)
- If the signal oscillation is between 15-18dB then the Alarm LED for the relevant band will turn red, and the repeater will then shut down. This is as a result of not having enough isolation between the donor and service antennas. In this case attenuate the dip switches on the repeater. (See dip switch settings for adjustments)

3.2 Antenna Installing and Cable Wiring

We do not recommend installing the donor antenna of your repeater system in the attic or at the side of a single story building. Doing so will reduce the quality of the input signal from the cell tower. Also you increase the risk of signal oscillation taking place, thus having to attenuate the output power of your.

- Do not install the donor antenna near high voltage power lines.
- Please take the necessary safety measures when working on heights.
- Do not mount near or in the path of other antennas or satellite dishes.



It is recommended that you mount your donor antenna in a spot that is free of any immediate obstructions. Making use of a pole or mounting bracket is recommended for optimum antenna performance.

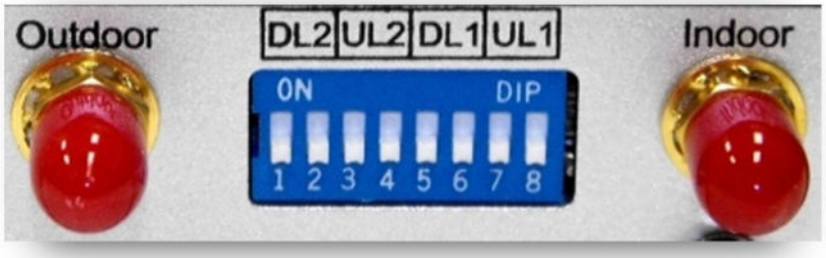


3.3 Manual Gain Adjustment ~ UL / DL

In order to meet safe environmental requirements for seamless network integration, this repeater is equipped with a dip switch assembly that allows you to manually control the Uplink / Downlink gain individually. The UL / DL attenuator control range is from 0dB to -15dB by 5dB increments.

Depending on the frequency band of your repeater, it will determine the dip switches you will need to adjust and the corresponding LED that will show the status of the adjustments made.

(DL1 & UL1



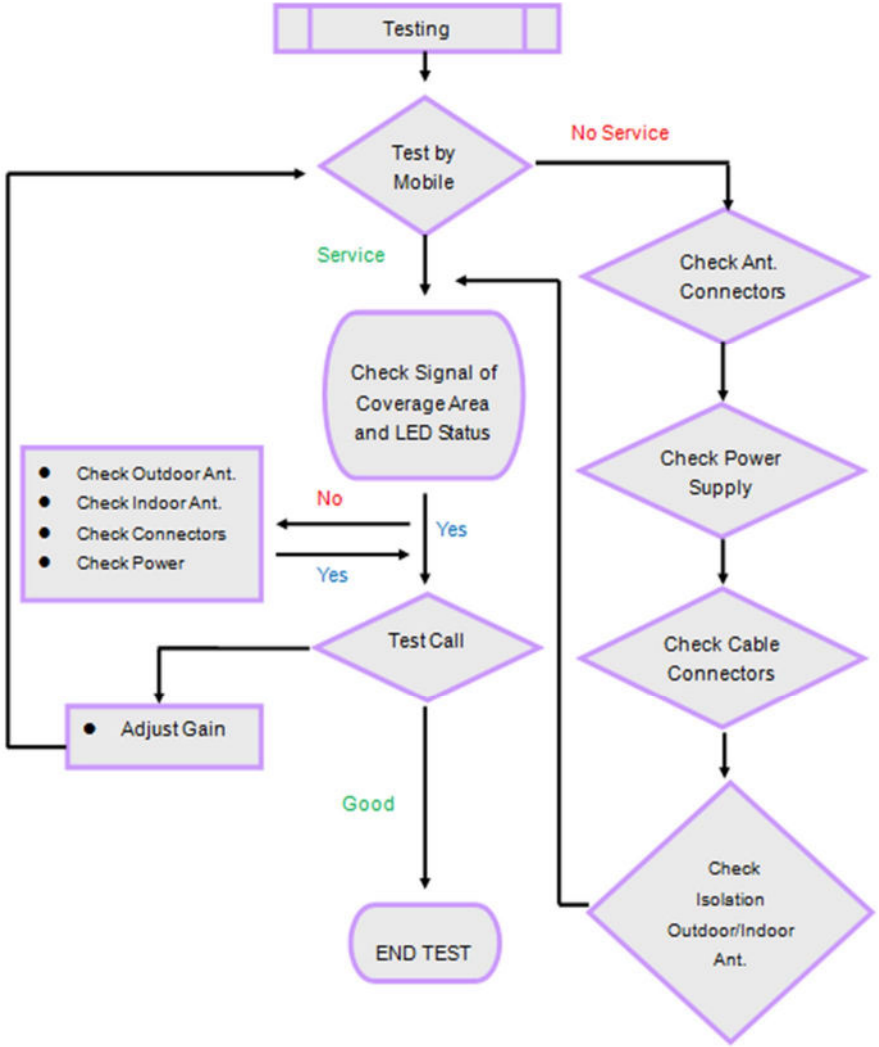
3.3 Manual Gain Adjustment ~ UL / DL – Con't.

If after connecting back the indoor antenna or service line, the LED changes back to amber or red then signal oscillation is taking place. This is the result of your indoor and outdoor antennas being too close to each other and should be separated more. You could also attenuate the DL DIP Switches by 1dB increments till the LEDs turn green again then you must match the same attenuation value to UL DIP switches.

Try making some test calls throughout the desired area of coverage while monitoring the LEDs to see if it changes color. If you are showing strong signal strength but your calls are not going through, it could be that you need to attenuate your Uplink a bit more. Keep in mind however that you do not want to have more than a 5dB difference between the uplink and downlink values for optimum system performance.

We encourage you to call us when commissioning your repeater system to make sure you have seamless integration to the cellular network. We are always happy to help**. 1-866-4-JDTECK (53-8325).**

3.4 Testing



Mechanical Specifications

Input / Output Port	SMA - Female
Impedance	50

FCC Statement

PLEASE NOTE: It is normal for your repeater to be quite warm while in use.

Note: This equipment has been tested and found to comply with the limits for a Class B 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: