



**DKT2404-UDR100
Repeater
Operation Guide**

Publication Information

**Toshiba America Information Systems, Inc.
Telecommunication Systems Division**

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CIX-UG-2404-DECT-Repr-VA-E

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DKT2404-UDR100 DECT Repeater

Introduction

The DKT2404-UDR100 repeater lets you extend the coverage area of your cordless DECT telephone system. The base will hand-off calls to the repeaters as the user moves from the base station coverage area into a repeater coverage area.

Features

- Up to six repeaters per base station
- Up to three repeaters in a sequential or daisy-chain layout
- Automatic registration to a base station
- Repeater connection verification tone
- Low power consumption

Note: Each repeater, and each repeater in a group of repeaters, is registered to one DKT2404-DECT base station.



Figure 1 – DKT2404-UDR100 DECT Repeater

Package Contents

Each DKT2404-UDR100 DECT Repeater package (Part Number DKT2404-UDR100) includes the following items:

- DKT2404-UDR100 DECT repeater
- AC adapter (with six-foot cord)
- Mounting screw and wall anchor

DKT2404-UDR100 DECT Repeater

Specifications

Specifications

Table 1: DKT2404-UDR100 Repeater Specifications

Item	Specifications
AC Power Adapter	Input: 100 ~ 240 VAC 50 ~ 60 Hz Output: 5 VDC 500 mA
Unit Weight	5 oz. (142 g)
Unit Size (Approx.)	5.125 in. W x 5.87 in. H x 1.5 in. D (13 cm W x 150 cm H x 38 cm D)
Frequency Band	1.9 GHz
Transmitter Power	100 mW (+24 dBm)
Receiver Sensitivity	-91 dBm at 10^{-3} BER
Operating Temperature	32° ~ 104° F (0° ~ + 40° C)
Standards	<ul style="list-style-type: none">• Designed in accordance with the Digital Enhanced Cordless Telecommunications (DECT) standard.• Compliant with TBR6, TBR22 (Generic Access Profile, GAP), and ETS 300 700 - ETSI Wireless Relay Station Specification

Operation Range

Telephone base station ranges of 300 to 400 feet are possible depending on the building structure in which it is used. Each DKT2404-UDR100 repeater has similar range. The range is affected by the operating environment and can be impacted by factors including metal walls, walls with metal studs, office partitions, cabinets, other radio frequency (RF) sources in the area, and nearby equipment. For optimum range and performance from your handset, try the following:

- Place the repeaters at least three feet from metal structures; and six feet from computers, fax machines or other electronic equipment.
- Place the repeater unit as high as possible in the room
- Use an AC outlet not associated with computer or electromagnetic equipment.

Refer to [“Multiple Repeater Configuration”](#) on page 4, [“Map the Base Station Coverage ”](#) on page 9 and [“Installing the Repeater”](#) on page 10.

Extended Coverage

The DKT2404-UDR100 repeater extends the operating range of the base station in all directions, including up and down. When it's connected through the repeater, the mobile handset operates in the same manner as when connected to the base. Refer to [Figure 2](#). The handoff from the base to the repeater can be completely invisible to the end user, even during an active call. Each base station can support up to six repeaters, refer to [Figure 3](#). The repeater must be at least 35 feet (10 meters) from the base station. Use the mapping procedure ("[Map the Base Station Coverage](#)" on [Page 9](#)) to determine where to place repeaters.

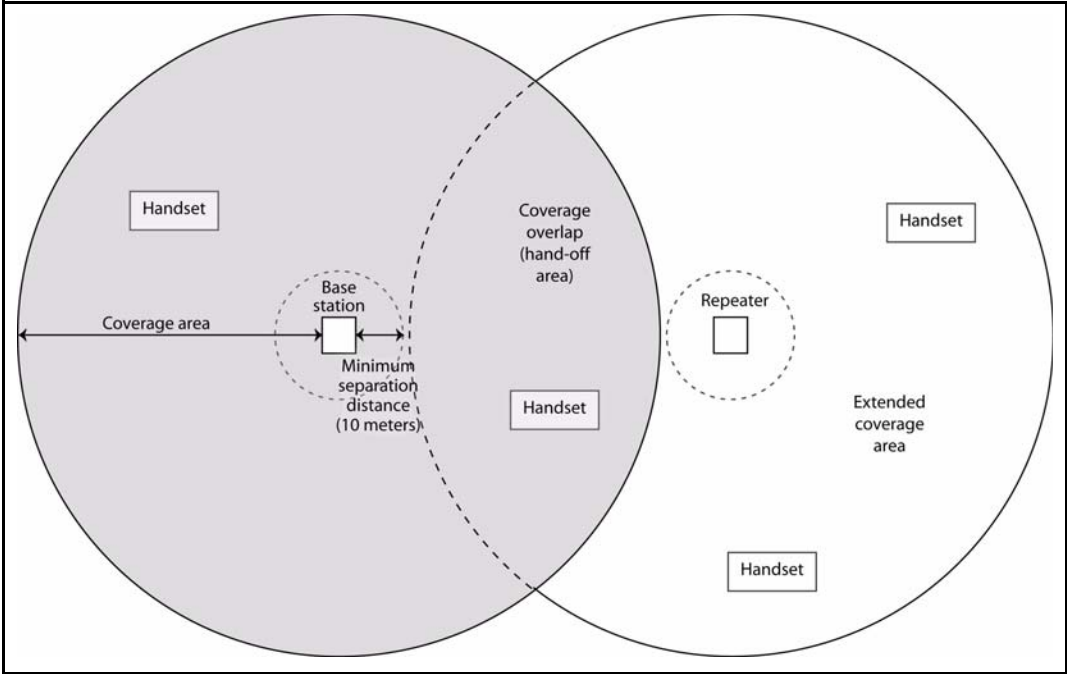


Figure 2 – Coverage with a Base Station and One Repeater

DKT2404-UDR100 DECT Repeater

Multiple Repeater Configuration

Multiple Repeater Configuration

Up to six repeaters can be registered to a base station. Base station and repeaters operate in all directions. Coverage is spherical, extending in all directions including up and down.

Repeaters must be at least 35 feet (10 m) apart and the same minimum distance from the base station.

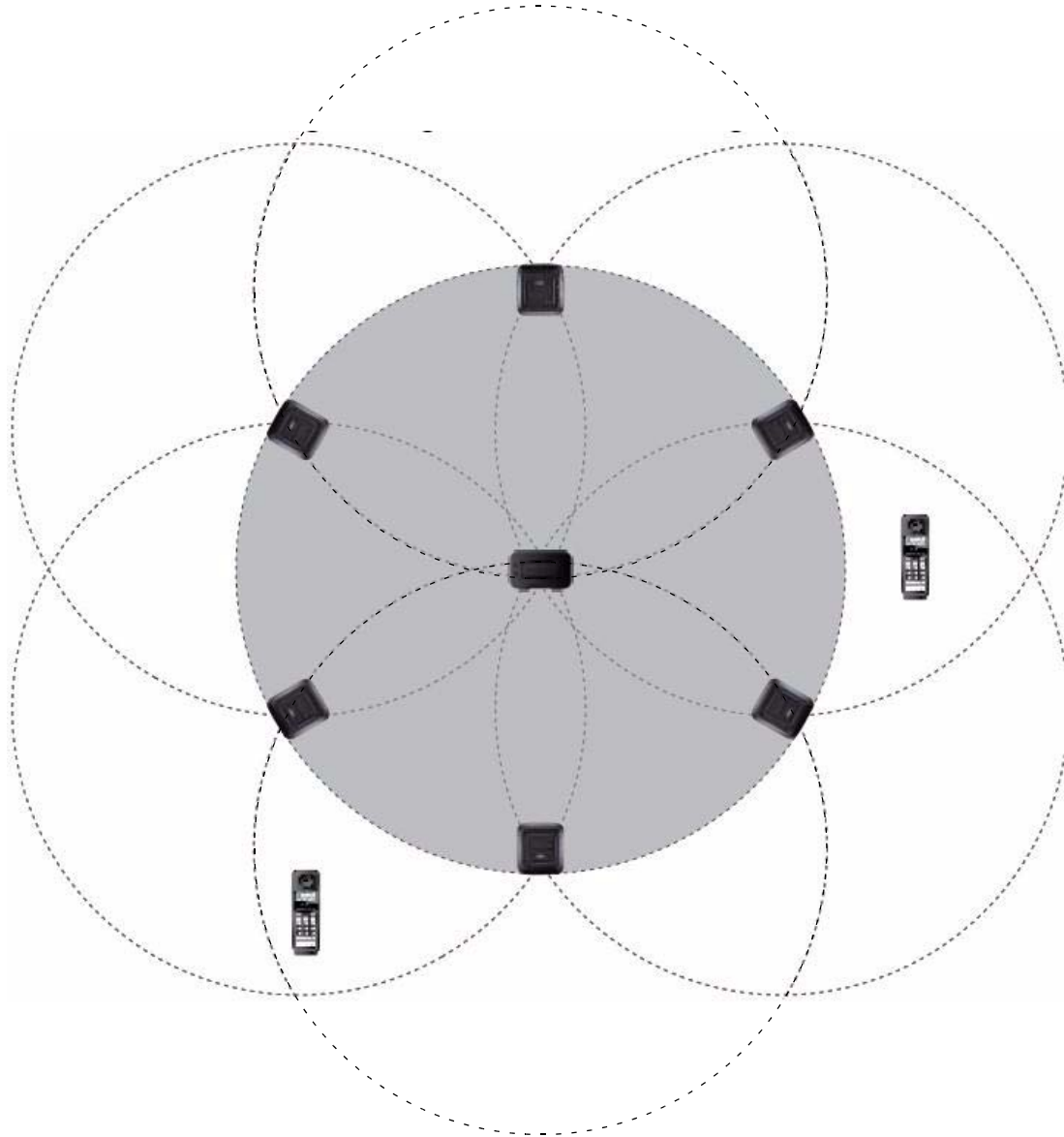


Figure 3 – Overhead view of Multiple Repeater Coverage

Repeaters can be daisy chained to increase the coverage area in one direction.

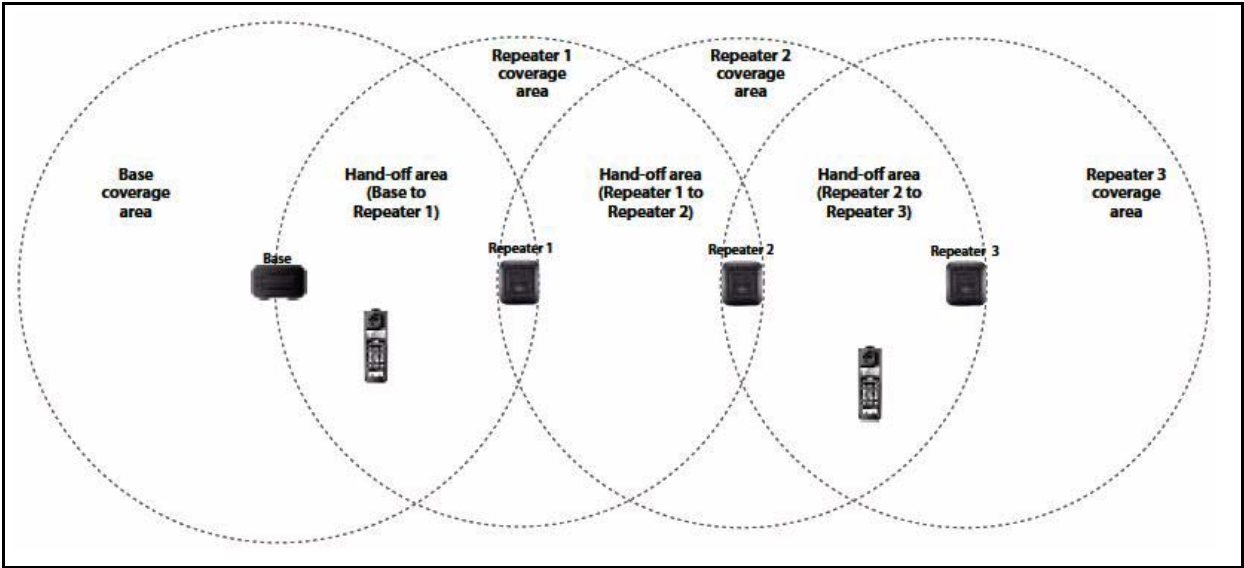


Figure 4 – Daisy-chain Repeater Configuration

The coverage area of the base stations and repeaters is spherical, it extends through walls, floors and ceilings.

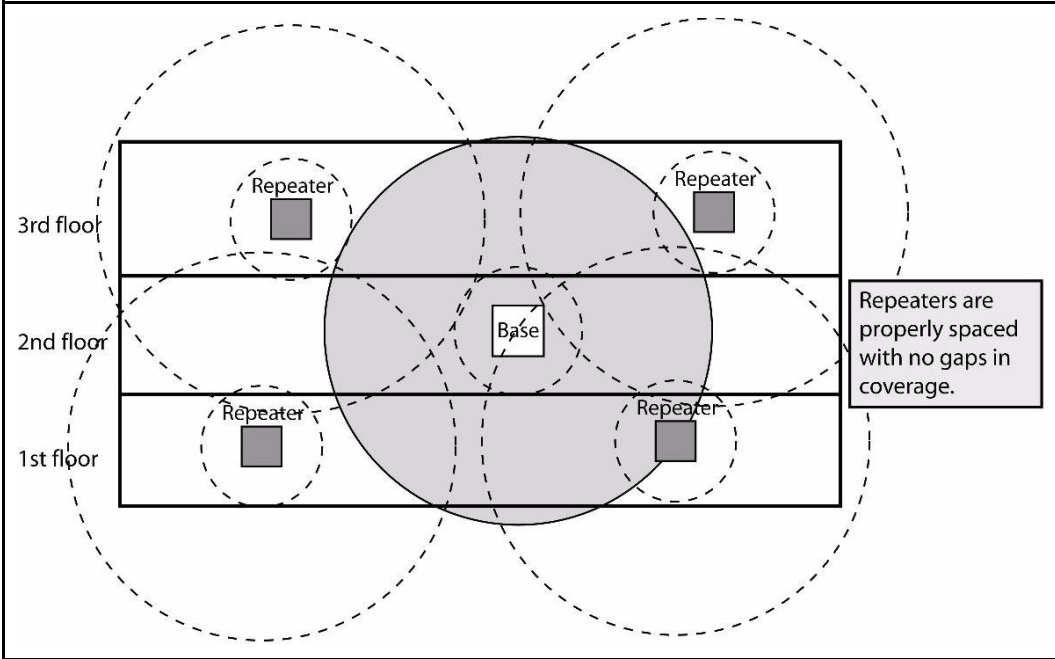


Figure 5 – Correct Repeater Placement

DKT2404-UDR100 DECT Repeater
Multiple Repeater Configuration

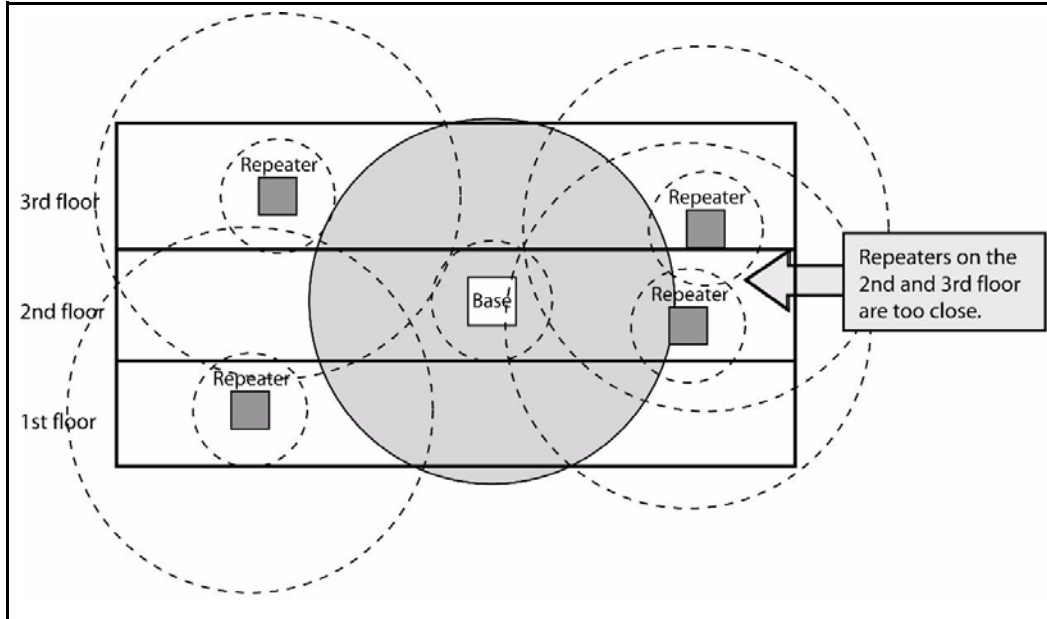


Figure 6 – Incorrect Repeater Placement

Setting Up Your Repeater

Before installing the repeater, you need to activate the repeater mode on your base and then register the repeater to the base and any handsets. Before you start the registration process, be sure you have

- A working base station
- A working handset registered to that base station
- The repeaters you want to register to this base (you must complete the registration process separately for each repeater)
- The AC adapter supplied with the repeater.

CAUTION! Use ONLY the power adapter that came with your repeater. A different power adapter may cause an electrical hazard or damage the repeater.

Automatic Registration (One Repeater)

Automatic registration is used to register a single repeater to a base station. To register multiple repeaters to a base station use the [Manual Registration \(Multiple Repeaters\)](#) procedure. During the registration procedure the repeater should be close to the base station. The repeater will register to the base station with strongest DECT/GAP signal.

1. Ensure that the repeater is not connected to the power adapter, and that the repeater is close to the base station.
2. Set the base into registration mode.
 - A. Press and hold the base station button (left of the power LED) for three seconds.
 - B. The base station power lamp will begin to flash (about twice per second). Registration mode will time-out in one minute.
3. Connect the AC adapter cable to the repeater. The LED on the repeater will flash briefly, then remain on and steady to indicate that the repeater has registered to the base station. If the LED continues to flash, try registering the repeater again. Return to [Step 1](#) of this procedure.

The repeater is now registered to this base and is ready to use. You can safely disconnect the power. The repeater remains registered even if you disconnect the AC adapter or there is a power failure. Move the repeater to the selected location, the repeater will stay registered to the base.

To clear the registration, so you can register to a different base, you must reset the repeater. Refer to [Registering to a Different Base](#).

Manual Registration (Multiple Repeaters)

Use this procedure to register more than one repeater to a base station. To register repeaters in a daisy-chain or sequential configuration refer to [Daisy-Chain Registration](#). This procedure requires the base station, a handset registered to that base station, and the repeaters to be registered. Before starting, label the repeaters. Assign a number (2 ~ 7) to each repeater.

DKT2404-UDR100 DECT Repeater

Setting Up Your Repeater

Perform the following procedure for each repeater.

1. Choose a number (2 ~ 7) for each repeater, label the repeaters.
2. Connect a repeater to power for one to five seconds then, disconnect the power.
3. Reconnect the power to one repeater. The LED on the repeater will slowly flash. This indicates that the repeater is in registration mode.
4. Press and hold the button on the base station (to the left of the power LED) for five seconds to put it into registration mode. The Power LED on the base station will flash.
5. The LED on the repeater will flash quickly at a steady rate, with no interruptions.

Note: If the repeater LED does not flash at a steady rate, if there are brief interruptions, change the base station PIN. Use the handset registered to the base station. From the handset menu select **Change PIN**, set the PIN to **0000**.

6. On the handset, press the **TALK** key, the LED on the repeater will stop flashing.
7. On the handset keypad press the digit (2 ~ 7) for the number of that repeater. These numbers are not related to extension numbers.
8. When the repeater accepts the assignment the LED on the repeater will flash the same number of times as the assigned number.
9. To confirm the registration press the handset star (*) key then, the **END** key. The repeater LED will go dark for two seconds, flash for a moment then, remain on.
10. This repeater is now registered to the base station. The repeater will remain registered to this base station, even when power is removed until the registration is manually reset. To manually reset a repeater refer to [Registering to a Different Base](#).
11. Disconnect the power cable from this repeater.
12. Repeat this procedure for the rest of the repeaters you want registered to this base station.

Note: The base station will remain in registration mode for five minutes. If more time is required to register repeaters return to [Step 2](#).

Daisy-Chain Registration

Registering the repeaters to operate in a daisy-chain or sequential layout requires network administrator access and configuration software. Refer to the DKT2404-UDR100 Programming Kit (P/N DKT2404-PRGKT).

Registering to a Different Base

Once the repeater is registered, you need to reset it before you can change the registration to a different base. Use the following steps to reset the repeater and clear its registration:

1. Disconnect the power.
2. Reconnect the power for 1 to 5 seconds, and disconnect it again.
3. Reconnect the power for 25 to 35 seconds.
4. Disconnect the power, and register the repeater to the new base.

Map the Base Station Coverage

Use this process to map the base station coverage area.

- 1. Stand near the base and make a call.
- 2. Continue the call, and carry the handset away from the base.
- 3. Make a note where you start to hear noise on the line, which indicates the signal is getting weaker.

The optimum location for the repeater is as far from the base as possible while still maintaining a good signal, or just inside the location where the noise became noticeable.

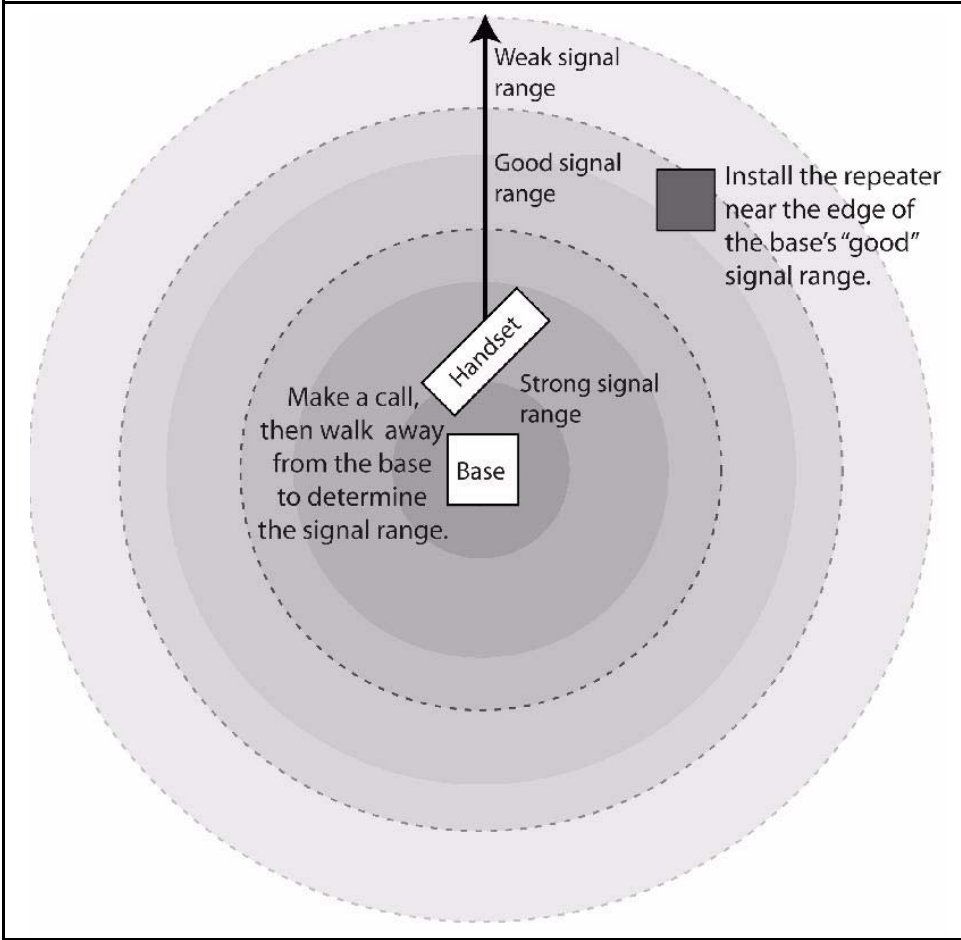


Figure 7 – Mapping the Base Station Coverage Area

Verification Tone The verification tone is a useful tool for troubleshooting installation problems. When the verification tone is activated a handset beeps whenever it moves into the coverage area of the repeater. The handset will beep every few seconds as long as it is connected to the repeater. This lets you use the verification tone to map the coverage area of each repeater. When repeaters are daisy-chained the handset will receive one beep while connected to the first repeater area and two beeps while connected to the second repeater.

DKT2404-UDR100 DECT Repeater

Installing the Repeater

- Tone On** Turning on the verification tone:
1. Disconnect the power.
 2. Reconnect the power for 1 to 5 seconds, and disconnect it again.
 3. Reconnect the power and wait for the LED on front of the repeater to start a slow flash.
 4. Disconnect the power, and immediately reconnect it. The verification tone is then activated.
- Tone Off** To turn the verification tone off again, repeat the Tone On procedure.

Installing the Repeater

Register the repeaters before installing them. Repeaters can be installed:

- Wide area array where are base stations are within the range of the base station
- Daisy-chain (sequential) array
- Mix of both.

Ensure that each repeater is at least 35 feet (10 m) away from the base station or other repeaters. Refer to [Figure 2](#) on [Page 3](#).

Correct Location

- Place the repeater as high as possible. It should be at least six feet above the floor.
- Make sure you have good reception from the base, refer to [“Map the Base Station Coverage”](#) on [Page 9](#).
- Make sure the location is close enough to a standard 120 V AC power outlet for the power cord to reach the repeater. Never install electrical cords across traffic areas where they cause a trip hazard. If the cords become damaged, they may create fire or electrical hazards.
- Allow at least 35 feet between repeaters. When installing repeaters across multiple floors allow at least 35 feet vertically.
- Avoid sources of electrical interference, such as hi-fi systems, office equipment or microwave ovens.
- Avoid heat sources and direct sunlight.
- Avoid things that can interfere with radio signals, such as metal doors, thick walls, niches and cupboards.

Test The Location

Plug the AC adapter into the repeater, then hold the repeater in the place where you plan to mount it. The LED should remain on and steady, indicating that the repeater has a good signal from the base. If the LED flashes, the repeater is not getting a good signal. The repeater may be too far away from the base, there may be interference from electronic devices, or the signal might be blocked by thick walls or metal objects. Try moving the repeater to another location.

Installation

1. Hold the repeater in its final location, and mark the center of the top edge.
2. From the edge mark, measure down about 1½ inches (approximately 38 mm), and mark the screw location.

DKT2404-UDR100 DECT Repeater

Installing the Repeater

3. At the screw location, use a 3/16 inch (4.8 mm) drill bit to make a pilot hole approximately 1 inch (25.5 mm) deep.
4. Place the wall anchor into the pilot hole and tap it gently with a hammer until the anchor is flush with the wall.
5. Insert the mounting screw into the anchor, leaving approximately 1/4 inch (6.4 mm) of space between the screw head and the wall.
6. Plug the AC power adapter cable into the repeater.
7. Put the repeater over the screw head and slide it down into place.
8. Plug the AC adapter to a 120 V AC power outlet.

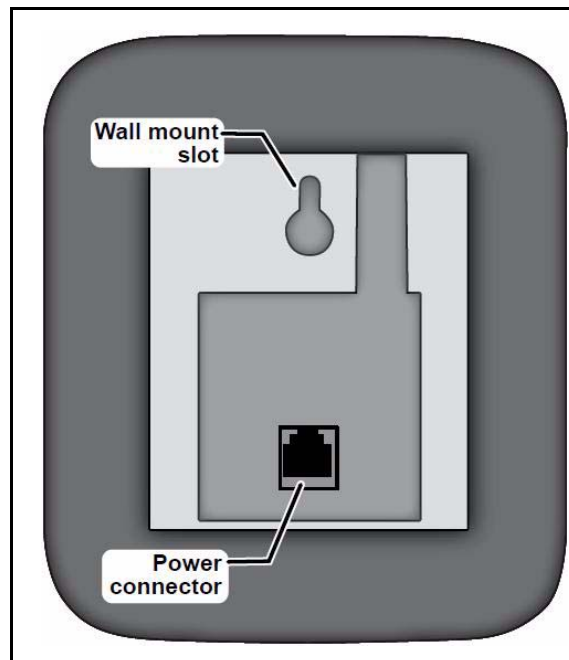


Figure 8 – DKT2404-DECT Repeater Rear View

DKT2404-UDR100 DECT Repeater

Maintenance

Maintenance

There are no user adjustments on the DKT2404-UDR100 Repeater. Maintenance is only cleaning the case as needed.

CAUTION! Unplug the repeater from the AC power outlet before cleaning.

- Wipe the front of the repeater with a damp cloth or antistatic wipe.
- Do not apply liquid cleaners directly on the repeater.
- Never use aerosol cleaners or solvents.
- To avoid static discharge, never use a plain dry cloth.

Safety Information

When using telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electrical shock, and injury to persons, including the following:

- Read and understand all instructions.
- Follow all warnings and instructions marked on the product.
- Do not use this product near water; for example, near a sink or in a wet area.
- Do not place this product on an unstable cart, stand, or table. The unit can fall, causing serious damage to the unit.
- To protect the product from overheating, do not block or cover any slots or openings in the base unit. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless the proper ventilation is provided.
- This product should be operated only from the type of power source indicated on the marking label.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be damaged by people walking on it.
- Do not overload wall outlets and extension cords, as this can result in the risk of fire or electrical shock.
- Never push objects of any kind into this product through the base unit slots, as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock. Never spill liquid of any kind on the product.
- To reduce the risk of electric shock, do not disassemble this product. Contact qualified service personnel when some service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the appliance is subsequently used.

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power supply cord is damaged or frayed.
- If liquid has been spilled onto the product.

- If the product has been exposed to water or rain.
- If the product does not operate normally when following the operating instructions. Adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls can result in damage, and will often require extensive work by a qualified technician to restore the product to normal operation.
- If the product has been dropped, or the cabinet has been damaged.
- If the product exhibits a distinct change in performance.

Trouble Shooting

Table 2: Trouble Shooting for Users

Problem	Solution
There is a lot of static when calls hand-off to the repeater. AND/OR the LED on the repeater won't stop flashing.	Move the repeater closer to the base. Check for interference from electronic devices. Make sure the repeater is not too close to metal objects or thick walls.
I used to be able to connect to the base, but now I can't.	Make sure the repeater is powered on. Reset the repeater and register it to the base again (see "Registering to a Different Base" on Page 8).
When I'm on a call, the handset starts beeping.	Turn off the verification tone, refer to "Verification Tone" on Page 9 .
Calls won't hand-off to the repeater.	Make sure the repeater is inside the base's good signal range. Make sure there is at least 35 feet between repeaters. Reset the repeater and register it to the base again (see "Registering to a Different Base" on Page 8).

Important Electrical Considerations

WARNING! Do not attempt to unplug any appliance during an electrical storm.

Unplug all electrical appliances when you know an electrical storm is approaching. Lightning can pass through your household wiring and damage any device connected to it. This repeater is no exception.

Changes or modifications to this product not expressly approved by Toshiba America Information Systems, Inc., or operation of this product in any way other than as detailed by this manual, could void your authority to operate this product.

DKT2404-UDR100 DECT Repeater

FCC Regulatory Information

FCC Regulatory Information

Information for users in the United States.

Part 15 Compliance

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. Privacy of communications may not be ensured when using this phone.

Privacy Information

Cordless telephones are radio devices. Communications between the handset and base of the cordless telephone are accomplished by means of radio waves which are broadcast over the open airways. Because of the inherent physical properties of radio waves, communication can be received by radio receiving devices other than your own telephone unit, consequently, any communications using the cordless telephone may not be private.

Radio Interference Information

Radio interference may occasionally cause buzzing and humming in your cordless handset, or clicking noises in the base unit. This interference is caused by external sources such as TV, fluorescent lighting, or electrical storm. Your unit is NOT DEFECTIVE. If these noises continue and are too distracting, check around your office to see what appliances may be causing the problem. In addition, we recommend that the base not be plugged into a circuit that also powers a major appliance because of the potential of interference. For best performance, ensure that the antenna on the base unit is fully extended.

In the unlikely event that you consistently hear other voices or distracting transmissions on your telephone, you may be receiving radio signals for another cordless telephone or other source of interference. If you cannot eliminate this type of interference, you need to change to a different channel.

Finally, it should be noted that some cordless telephones operate at frequencies that may cause interference to nearby TVs and VCRs. To minimize or prevent such interference, the base of the cordless telephone should not be placed near or on top of a TV or VCR. If interference is experienced, moving the cordless telephone farther away from the TV or VCR will often reduce or eliminate the interference.

Radio interference causes interruptions in conversation. When this happens, your unit is not defective. When noise continues, move to a different location while you talk. (You might even need to move the base unit.) When the situation persists, contact Customer Service.

CAUTION! The base station must be placed at least 8 inches (20 cm) from nearby persons for compliance with FCC exposure guidelines.

I.C. Notice Information for users in Canada.

Terminal Equipment NOTICE: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

Radio Equipment The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. "Privacy of communications may not be ensured when using this telephone."

THIS IS THE END OF THE DOCUMENT.