

# Spectralink 84-Series Battery Best Practices

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This technical bulletin explains battery best practices for the Spectralink 84-Series handsets.

This technical bulletin applies to Spectralink 84- Series handsets

## **Battery Pack Technical Specifications**

Each Spectralink 84-Series battery pack, both standard and extended, utilizes advanced Lithium-ion (Li-ion) cell chemistry with the following performance specifications:

- Talk time - up to 8/12 hours (see Table 1)
- Standby time - up to 80/120 hours (see Table 1)
- Call server protocol, WLAN infrastructure; and Push-to-Talk will reduce actual performance
- Some conditions which negatively affect performance: Talk time is known to be reduced in a network environment with excessive jitter. Standby time is known to be reduced if handsets experience frequent reboots or frequent disconnections and reconnections to the wireless network. If handsets are frequently rebooting for no apparent cause contact the designated service organization to identify the specific issue.
- Full charge time – 3.5/5 hours (see Table 1)
- When proper storage and charging practices are followed; the battery pack is expected to have a service life of approximately 500 charge/discharge cycles. Based on typical use behavior, Spectralink suggests planning to replace battery packs every fifteen to eighteen months.
- Battery packs can be charged either in Spectralink 8400 handsets; or in the rear slot of a dual slot charger or docking station; or in a quad charger slot; or using the USB charger while inserted into a Spectralink 8400 handset
- Charging the battery pack in the handset is possible powered off or powered on in the “Standby” state. If the handset is powered off when inserted in the charger it will power on automatically to begin charging. When charging, the handset will emit a beep to indicate charging has started
- Ensure that you fully charge the battery pack the first few times, as the battery pack becomes most efficient after the first few charge cycles
- If multiple battery packs are supplied with your handset, Spectralink recommends that each be fully charged upon receipt to prolong battery life. Battery packs will slowly lose charge if unused. To maintain battery potential, charge unused battery packs occasionally or alternate battery pack use

Table 1

| Type             | Talk Time | Standby Time | Charging Time*     |
|------------------|-----------|--------------|--------------------|
| Standard (RS657) | 8 hours   | 80 hours     | 3.5 hours typical* |
| Extended (RS658) | 12 hours  | 120 hours    | 5 hours typical*   |

\* Using the Quad Charger or 12-Bay Charger



**User Tip: Fastest charging**

The Quad Charger/12-Bay Chargers are the fastest. If you use the handset while it is in the Dual or USB Charger, charging time will be prolonged.

**Battery Pack Storage & Inventory Recommendations**

Spectralink’s 84-Series battery packs are designed to be resistant to high temperatures, safely used in harsh work environments, and deliver a long service life provided optimal storage and charging practices are followed.

As with other rechargeable Li-Ion based products, Spectralink 84-series battery packs should not be stored or kept idle for an extended period of time, rather they should be cycled at regular intervals to ensure they maintain the expected lifetime.

During sales channel distribution and prior to deployment at a customer site, battery stock should be managed by shipping or using older batteries first, i.e. typically those received first, using a FIFO (First In, First Out) process. This will help ensure, on average, batteries do not sit on-the-shelf longer than necessary.

It is recommended to maintain lean inventory levels to avoid holding batteries for extended duration. If batteries are stored for an extended period of time, periodic maintenance charges may be necessary.

This model battery pack storage recommendations are as follows:

- Battery packs must be fully charged using the appropriate Spectralink battery charger before first use. Full charge time is dependent on battery model (see Table 1 above)
- Battery packs should not be stored more than five months at room temperature prior to use/sale
- If for some reason a battery pack is stored more than five months it must have a periodic maintenance charge to maximize battery’s useful lifetime. The maintenance charge should bring the battery up to its full capacity.
- In cases where battery packs are stored for an extended time (greater than five months) the battery should return to almost complete capacity after two to three charge/discharge cycles. The first battery pack charge after prolonged storage usually yields a lower capacity than normal.
- After a period of non-use (more than a few days) batteries may deliver slightly less than full performance for the first few charge cycles.

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## **Battery Charge Cycles & Life Expectancy**

If handsets no longer deliver talk or standby time that they used to, typically, batteries are past their useful life, and usually because customers don't recall how long the batteries have been in service. To help prevent this type of dissatisfaction, customers can use a battery replacement or battery management strategy.

When batteries approach their end of life, stand-by time will degrade before talk-time. Li-Ion battery performance degrades consistently until near end of life when performance degrades sharply until battery will no longer accept a charge.

Spectralink 84-Series Lithium-Ion (Li-Ion) batteries will deliver approximately 500 charge cycles before performance starts to degrade. For this battery technology a single charge cycle is defined as each time a battery is drained of approximately 80% of full charge capacity. The 80% or greater discharge could occur in a single use or in multiple uses followed by a full charge. Example: Battery is drained of 20% of capacity then charged four times; the total of the four 20% discharges equals an 80% discharge – one charge cycle.

To obtain the maximum service life from the Li-Ion batteries:

- Charge batteries after each use without regard to “Low Battery” warning (Note: discharges to handset “low battery” message or full discharges (to handset power off) do not reduce useful battery life
- Handsets should be powered off when not in use
- Powered on handsets should stay within the facility wireless coverage area, handsets discharge batteries more quickly when the wireless network is extremely weak; not stable; or is unavailable
- Extreme environments negatively affects battery life, specifically extreme cold (below -5°F or - 20°C) and in extreme heat (greater than 158°F or 70°C); it is important to never heat battery packs above 45°C, 113°F, as this can result in serious damage to battery packs and may result in a risk of fire or chemical burn
- Batteries do not suffer from the “memory effect” however fully discharging batteries (until handsets power off) may result in a slightly longer service life per charge cycle. It is recommended that a full discharge, until the “Low Battery” message displays on the handset, is carried out approximately every 30 days

## **Battery Management & Replacement Recommendations**

With a large number of handsets, tracking each battery's actual performance can be tedious for an administrator and battery management becomes a reactive process, making it harder to budget and manage replacement inventory. A better methodology is to plan periodic replacements (based on usage and charge patterns, e.g. lifespan of 12-18 months) from when batteries entered service. The easiest approach is to replace all the batteries periodically. But if system expansion has occurred and/or batteries are not all of the same age, another option is to write the date each battery first enters service on the battery label, and then periodically review the batteries, replacing those batteries approaching end of the expected life based on the planned lifespan.

Each battery has unique serial number that is used to log when it was shipped from Spectralink. A customer can use the battery serial number with the Spectralink support web portal to approximate date of service for the battery. Typically a battery will have experienced some delay through sales distribution before getting to the customer however.

### Locating the Battery Serial Number for Warranty Replacements

Each battery has unique serial number on the battery label used to log when it was shipped from Spectralink. If a battery's performance is degraded within the battery warranty period a customer can request a replacement using the support web portal using the battery serial number.



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