

Technical Bulletin CS-19-03

Versity BootLoader Menu

This technical bulletin explains the Spectralink Versity BootLoader menus and how to use or recover from each of the different boot modes.

System Affected

Spectralink Versity – all handset models

Description

The Spectralink Versity handset has a bootloader menu that provides access to different boot modes depending on what you need to do with the handset. The primary purpose for the bootloader menu is for support, manufacturing and development but there are ways that customers can interact with these menus. And in some cases those interactions can result in making the phone largely unusable until it can be recovered. Because this can happen, Spectralink has intentionally made it difficult to get into the bootloader menu in the hope that it will prevent accidentally impacting the usage of a device.

First, let's cover how to access the bootloader menu to make it clear how someone might get into one of these states before we discuss how to resolve them or how they might be used. The following figure (Figure 1) shows the various buttons on the device and the ones highlighted with the red boxes are the buttons that are used in the process of accessing the bootloader menu. Depending on your handset's software version, the specific buttons used may be different.



Figure 1



Note

Please be aware that the method for accessing the bootloader menu is different depending on the version of software on your Versity handset. Handsets running version 1.1.0 or earlier will use only the Volume Down and Power Button to access the bootloader menu.

You must start with the handset powered off. Once the handset is off do the following:

1. Press and hold the Alarm button.
2. Press the Power button until the handset vibrates then release the Power button, continue holding the Alarm button.
3. Once the screen displays the bootloader you can release the Alarm button.

You will now see a screen that looks like Figure 2:



Figure 2

You can use the Volume buttons to cycle through the different bootloader menu options. Quite often you will end up on one of these other options when coming into the bootloader menu simply because you were holding the Volume Down button. The screens we will discuss are as follows:

- Start (as shown in Figure 2)
- Restart bootloader
- Recovery mode
- Power off
- Boot to FFBM
- Boot to QMMI

The Restart bootloader screen is perhaps one of the more basic menus as it simply causes the phone to reboot and return the current menu.



Figure 3

You have the option of then choosing a different selection from the bootloader menu or you can always hold the Power button until the phone powers off.

Next is the Recovery Mode. This is probably the single most important and likely the only reason a customer might ever need to access the bootloader menu of the Versity handset. The Recovery Mode provides access to a number of highly useful tools for troubleshooting, device recovery, software update and factory default, among others. From the bootloader menu, cycle through the options until the screen displays “Recovery mode” and then press the Power button.



Figure 4

The handset will reboot and return to a new screen that displays the Android icon on its side as shown in Figure 5.



Figure 5

From this screen you will need to press and hold the Power button and then quickly press the Volume Up button to enter the Recovery Menu screen. The display will then change to what's shown in Figure 6.



Figure 6

Figure 6 is quite hard to read here so we'll list out the menu options available to make the discussion of the options easier.

1. Reboot system now
2. Reboot to bootloader
3. Apply update from ADB
4. Apply update from SD card
5. Wipe data/factory reset
6. Mount /system
7. View recovery logs
8. Run graphics test

9. Power off

Let's walk through each item in the list and explain what each does and why you might use it.

Reboot System Now

This option is pretty self explanatory. It causes the phone to reboot immediately and will return it to normal operation. This will be important for another bootloader menu item we discuss later one.

Reboot to Bootloader

Also a fairly self explanatory function. When selected the phone will reboot immediately but will then return to the bootloader menu where you previously selected the Recovery Mode option from initially. This may be helpful if you didn't intend to enter Recovery Mode or simply want to return to the bootloader and select a different boot option.

Apply Update from ADB

This is one of the most common reasons you might need to access Recovery Mode. It allows you to apply a software update to a Versity handset using the Android Debug Bridge (ADB) software. In order to do this you must have already install ADB onto your PC.



Web

You can download ADB software here:

<https://developer.android.com/studio/releases/platform-tools.html>

Please note that you will need to install ADB outside of the Program Files folder of your PC if you are running Windows 8.x or Windows 10. Install to your C:\ drive, perhaps to C:\Android_SDK, to ensure the program is able to run properly.

You will also need the version of Versity software you want to apply. Spectralink Versity software is available for download from the Spectralink Support Portal:
<https://support.spectralink.com/versity>

Before connecting the phone to your PC using the USB cable provided with each handset, highlight the "Apply update from adb" from the Recovery menu using the Volume buttons to scroll and the Power button select. The screen will change and indicate that it is now ready to receive the software image.

From your PC, you will need to open a command window with Administrator permissions and then navigate to the location you installed ADB and subsequently the platform-tools folder as shown in Figure 7.


```
C:\WINDOWS\system32>cd C:\Android_SDK\platform-tools
```

Figure 7



Timesaver

You may want to place the software image you want to load onto the handset into platform-tools folder to help simplify the update commands. Otherwise you will need to specify the entire path to the file which could be very long. If the file is in the platform-tools folder you do not have to specify the path, just the filename.

Now you can connect the phone to your PC and you should hear your PC play a tone indicating it is recognizing the connection and attempting to install drivers.



Web

You may need to install the Spectralink Versity drivers in order to use ADB properly. Drivers are available from the Spectralink Support Portal:

https://support.spectralink.com/system/tdf/resource_files/SpectralinkUSBDriver_v2.0.0.zip?file=1&type=node&id=13453

Start out by verifying that the phone is recognized by ADB and your PC by issuing the command: adb devices

You should see something that looks like Figure 8 if the phone is recognized by your PC and ADB.

```
C:\Android_SDK\platform-tools>adb devices
List of devices attached
nwlg02bdplb000m sideload
```

Figure 8

The first portion is the serial number of the handset followed by the state the handset is currently in. In this case the phone is in “sideload” mode waiting for software to be pushed to it. This is what we expected so now we can issue the command to start the software update to the phone. This is done using the command: adb sideload apollo-ota_update-signed-1.4.0.1124.zip

The filename at the end is the software image to be loaded to the handset so it may change depending on which version you are loading to the phone.



Caution

The Spectralink Versity handset cannot be downgraded to prior releases of software. You can attempt to push downrev software to a Versity handset via ADB using the sideload method but at the end of the upload process the handset will report that the software update failed.

Once you start the software update process via sideload you will need to allow it to finish. You will not damage the phone if you interrupt the update process but it is best to allow it to finish. If the update fails for any reason the handset screen will display the reason for the failure. Figure 9 shows what your PC screen will look like once the software update completes.

```
C:\Android_SDK\platform-tools>adb sideload apollo-ota_update-signed-1.4.0.1124.zip  
Total xfer: 2.00x
```

Figure 9

When the update completes, regardless of whether it is successful or fails, the handset will return the Recovery Menu where you can then choose the option that is most appropriate for you. Most often after a software update that will simply be to “Reboot system now” which will cause the handset to reboot and apply the software update, if it was successful.

Apply Update from SD Card

This function is intended to allow the handset to load a software image that was previously stored on an SD Card. However, since the Versity handset does not have a removeable SD Card, this option will not function and will return an error that the SD Card could not be mounted.

Wipe Data/Factory Reset

The next most likely reason a customer might need to access the Recovery Menu, this menu option allows you to restore a device to factory defaults. It will return a device to the out-of-box state.



Warning

Android devices that have been signed into Google accounts or have other Device Ownership will have Factory Wipe Protection enable. This feature will prevent the device from being fully wiped and will require you to have the Google account information in order to access the device even after the restore to factory defaults from the Recovery Menu.



Admin Tip

In order to complete restore a handset that has been signed into a Google account, you must perform the Restore to Factory Defaults via the Settings menu of the handset. This will clear the Google account from the device, remove the Factory Wipe Protection, and restore the device to factory defaults.

Mount /system

More of an engineering or development function, this menu item simply mounts the file system. This would only be relevant for an unlocked device that would then allow access to the file system for additional testing. For a production device, nothing further is possible with this menu item beyond mounting the file system.

View Recovery Logs

A troubleshooting tool, this menu item allows you to view the system logs directly on the handset. If you performed a software update via sideload and it failed to complete then you could use this menu option to review the logs in more detail to see what happened. It also allows you to see how the phone booted up and whether any failures occurred. It's unlikely a customer would find this information of much value but it may aid Spectralink Technical Support or Spectralink Development in resolve potential issues.

Run Graphics Test

This is a very basic self-test function that perform a series of screen tests on the device by display a sequence of images and actions on the screen. These images and actions will complete automatically and return you back to the Recovery Menu. There is no pass/fail feedback, this test simply is a means of determining whether the screen is operating.

Power Off

Fairly straightforward, this menu option allows you to immediately power off the handset from the Recovery Menu. This might be handy if you're deploying handsets and have just completed the software update on it but aren't ready to hand them out so you want to turn off the phone. This would save you quite a bit of time and keypresses that it would normally take to power off the phone.

Now we can move onto the next screen in the bootloader menu. The next screen that displays is the Power Off menu option, Figure 10.



Figure 10

From this menu you can press the Power button and it will immediately cause the handset power down. Pretty self-explanatory behavior.

The next menu item in the boot loader is “Boot to FFBM”. This is an exclusively manufacturing menu item and would have no value to anyone but manufacturing. However, this menu does have the potential to put the handset into a state that may make it unusable.



Figure 11

If you boot a handset into FFBM mode the display will consistently boot into the same mode over and over again which will prevent the user from utilizing the handset for its normal purpose. Figure 12 shows what the screen looks like if the handset gets into this state.



Figure 12

It is possible to recover from this state using the bootloader menus. To accomplish this you will need to do the following:

1. Press and hold the Alarm button and Volume Down button.
2. Now press and hold the Power button as well.
3. It will take about 15 seconds of holding all three buttons before the handset will restart.
4. Handset will restart into bootloader menu, cycle through and select Recovery Mode.
5. From the Recovery Mode menu select "Rebot system now"

The handset will reboot and return to normal operation.

The last menu option in the bootloader is called “Boot to QMMI”. This menu item is a manufacturing menu as well but it is not quite the same as the FFBM menu we just reviewed. In this case, if this menu item is selected the handset will simply reboot. The menu item is used for testing during manufacturing so there is no value to customer or anyone outside of the manufacturing facility.



Figure 13

The bootloader menu is a useful tool when troubleshooting a number of functions of the handset or when you need to do software updates. However, most of the menu items are not intended for customers which means it is important to understand what they do to prevent encountering any issues should you find yourself facing a handset in one of these states.

Just remember that none of these states will damage the phone or require it to be replaced. If you have additional questions or encounter issues not covered by this document, please contact the Spectralink Support team at 800-775-5330, or review the regional contact options here: <https://support.spectralink.com/contact-support>

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Contact Information

US Location

+1 800-775-5330

Spectralink Corporation
2560 55th Street
Boulder, CO 80301
USA

info@spectralink.com

Denmark Location

+45 7560 2850

Spectralink Europe ApS
Bygholm Soepark 21 E Stuen
8700 Horsens
Denmark

infoemea@spectralink.com

UK Location

+44 (0) 20 3284 1536

Spectralink Europe UK
329 Bracknell, Doncastle Road
Bracknell, Berkshire, RG12 8PE
United Kingdom

infoemea@spectralink.com