

Technical Bulletin CS-15-13

Spectralink 84-Series Self-Test Functionality

This technical bulletin explains how to initiate, use and interpret the results of the integrated self-test functionality of the Spectralink 84-Series handset.

System Affected

All Spectralink 84-Series Handset models

Description

The Spectralink 84-Series Handset has a built in self-test function that allows a user or admin to verify various hardware components in the handset. These tests are extremely useful to help prevent an RMA by confirming a user's reported failures and to help narrow down what might be wrong with a handset or with the environment by ruling out the handset.

The hardware self-test menu is accessible by navigating to Settings → Status → Diagnostics → Test Hardware. Within the Test Hardware menu are six different tests to verify the audio of the handset, keypad, display, LCD brightness, notification LED and vibrator motor.

Audio Diagnostics

The Audio Diagnostics menu allows you to verify the handset microphones and the speakers. You'll note I said microphones. Yes, there are two microphones, one in the front and one in the back. The rear microphone is used for echo cancellation and noise cancellation. If you look at the back of the phone, in the top right corner of the phone is a small hole for the rear microphone. Keep this in mind when we get into some of the audio testing as it will be relevant.

Microphone Testing

When you first enter the Audio Diagnostics menu, your first option will be for Record/Play Test which is used to verify the functionality of the microphones. From here you will first be presented with the ability to test the front microphone.

The first audio testing screen is shown in Figure 2.



Figure 1

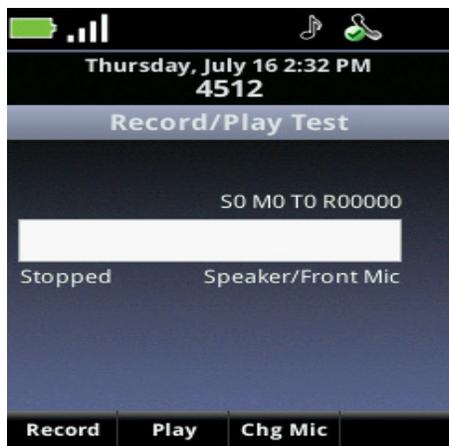


Figure 2

From the Record/Play test you can press the Record soft key to begin recording audio through the front microphone of the handset. You can either speak into the microphone or, as I like to, play music so you get a continuous flow of sound. Once you've finished recording you can either press the Stop soft key, if the bar hasn't completely filled and stopped automatically, or just let the it stop automatically. Then press the Play soft key to hear the audio play out the rear speaker of the handset. If you don't hear any audio playing then it may well be the rear speaker that's bad and not the microphone so keep testing.

Next we need to test the rear microphone. On the same screen shown in Figure 2, press the Chg Mic soft key to switch to the rear microphone. You'll see the text under the white bar change to read "Speaker/Rear Mic". You can then press the Record button once more and speak or play music into the rear microphone. Remember to speak directly into the microphone on the rear of the phone. Once you're done, play the audio back using the Play soft key. The audio will play out of the rear speaker again.

So you may be thinking to yourself now, but what if I didn't hear the audio played out the rear speaker? Or, I heard it for the rear microphone but not the front microphone. If the audio plays for one microphone and not the other then you've at least narrowed down that there is indeed a microphone problem. Otherwise, let's keep testing.

Speaker Testing

If you're already in the Record/Play Test screen, just press the back key on the phone's keypad, just above the End call key, to return to the Audio Diagnostics menu. From here you'll be presented again with the three options as shown in Figure 1.

If you press the 2 key on the keypad you'll conduct the front speaker audio test. This will play a tone out the front speaker of the handset each time you press the 2 key. Place the handset up near your ear and press the 2 key over and over to play to tone and verify the speaker works. If you do not hear any audio playing then the front speaker is defective.

If you press the 3 key on the keypad you'll conduct the rear speaker audio test. Just like with the front speaker test, a tone will play but out of the rear speaker. Do not place the phone up to your ear for this test as it will be audible. Continue pressing the 3 key to hear the tone played. With this test, we can verify that the rear speaker is working. If you remember back to the microphone testing, this will help determine if it's the speaker or the microphone that's faulty. If you're hearing the tone played but didn't hear the recorded audio then it's the microphone. Otherwise, it's the speaker.

Congratulations! You just completed the first hardware self-test on the handset. These audio tests are the most common tests that will be conducted with the handset. Now we'll discuss some of the other self-test functions.

Keypad Diagnostics

The self-test for the keypad is pretty straight forward and can be launched from the Test Hardware menu. Figure 3 shows what the keypad test looks like. Each time you press a key the phone will verify it by indicating which key has been pressed in the Verify: line of the display. Press every key, volume, PTT, soft keys, etc, to verify they work and when you're done you can press any key twice in a row to exit back to the Test Hardware menu.

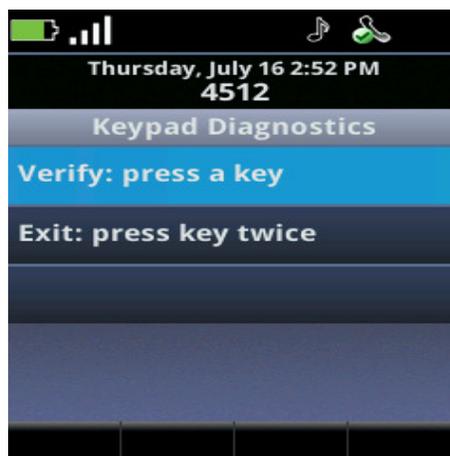


Figure 3

Display Diagnostics

The next test is for the handset's display. This tests that the color screen capabilities are working correctly by cycling through different color patterns on the screen in both solid and gradient patterns. The test will continue until you press another key on the phone to end the test and return to the Test Hardware menu.

Brightness Diagnostics

The brightness diagnostics test is very similar to the display tests but is verifying the screen's backlight by stepping through different levels of brightness; from brightest to completely off and back again. This test will also continuously run until any key is pressed to return to the Test Hardware menu.

LED Diagnostics

For the LED diagnostics test you are only testing whether the small red LED on the top right corner of the phone will turn on and off. When you enter this test you can press the 1 key to turn the LED on and off. You can then press any other key to end the test and return to the Test Hardware menu. If you let the phone sit for about a minute it will automatically return to the standby screen too.

Vibrator Diagnostics

All of the 84-Series handset models come equipped with a vibrator. With this test you can verify that the vibrator motor is working correctly. Much like with the LED test, when you enter the test screen you can press the 1 key to turn the vibrator motor on and off. Simply press any other key to end the test and return to the Test Hardware menu.

Accelerometer Diagnostics

Depending on your model of handset, your phone may be equipped with an accelerometer. The accelerometer is used as part of the Man-Down feature to determine the motion and position of the handset. When you start this test the screen displayed will show the X, Y and Z axis information for the handset in space. See Figure 4 as an example. As you move the handset around the values will change relative to the phone's position.

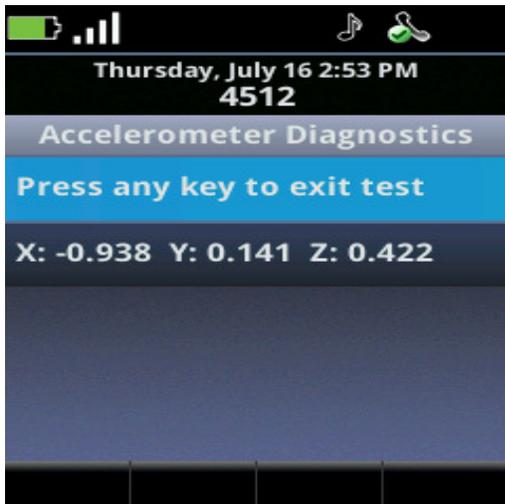


Figure 4

Conclusion

The 84-Series handset has a number of different self-test functions built into the handset that will allow a user or admin to conduct extensive tests on the phone's hardware. These tests are extremely helpful in verifying that a failure reported is what is actually wrong with a phone. As with any troubleshooting, the key is to eliminate possible causes until you discover the true cause of the failure. This information will also be helpful when submitting an RMA request to your Spectralink business partner or to Spectralink directly.

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