



Instructions For Using The RSSI Tool

For DuraFon 1X, PRO, PSL, UHF & DuraWalkie

Note: Serial number must be 114000001 or higher

1. "RSSI" stands for receive signal strength indicator. Many phones provide a simple graphical bar indicator of signal strength. These EnGenius models have an advanced RSSI tool built into each handset for more in-depth site surveys. Industry standard for RSSI readings are measured in negative dBm.

2. Handset to Base signal testing:

a. Press MENU * # # *, then press "1" for "BER". Next choose the correct base ID (see note below).

Note:

The DuraFon 1X primary base ID is 10 and additional bases 20, 30, or 40.

The PSL & PRO, the primary base ID is 00 and 01-07 if you have additional bases.

While in BER mode press "star" which will bring up the -dBm and frequency deviation screen.

3. Handset-to-handset signal testing (separate test if 2-way intercom or broadcast is used):

Note: If handset-to-handset 2-way intercom or broadcast operation coverage performance estimated is wanted, then perform the RSSI test with handset-to-handset. Testing can be performed with the low profile or high performance handset antennas to see the difference. Remember, handsets are mobile so it is likely that both handsets are moving about the premises, so the RSSI reading will not be consistent.

b. First note which 2-digit handset ID you have, then press MENU, * # # *, followed by "2" for "HS BER".

Then while the handset is displaying "HS BER READY", grab another handset and 2-way call the first handset. The first handset will automatically answer – putting it in test mode.

Now press the star key to pull up the RSSI screen on the first handset. RSSI readings can be viewed on both handsets. Remember to note what you are testing, like across the length or width or diagonal from handset to handset within the environment. In this test it is very easy to lose track of performance.

4. Readings:

Note: Frequency deviation should not exceed 3000Hz or 3kHz.

Any more may mean there is a hardware problem.

RSSI and -dBm:

The closer to zero the readout is the better the signal strength. The below readings are a guideline for likely call performance.

Readings from -30 to -80 are strong, and communication should be very good.

Readings between -80 to -85 may experience lower voice quality, but likely still acceptable for most environments.

Readings between -85 to -100 may experience dropped calls and noticeable reduction in voice quality.

Reading greater than (more negative) -100 will likely result in call not being connected, dropped and very poor voice quality.

If you are experiencing dropped calls or poor voice quality, but have a good RSSI reading, the likely cause is from other RF interference. A spectrum analyzer can be used to identify what other RF is within the environment. These DuraFon systems operate at 900 MHz and you would want to look for frequencies near or at that bandwidth.



Good sources for additional learning:

<http://en.wikipedia.org/wiki/DBm>

<http://en.wikipedia.org/wiki/Rssi>

http://en.wikipedia.org/wiki/Wireless_site_survey

http://www.wireless-nets.com/resources/tutorials/conduct_wireless_site_survey.html

MetaGeek Wi-Spy 900X offer a low cost spectrum analyzer at the time of this resource research, but this is not a recommendation or endorsement.

Doing the signal test:

Use a building blueprint or map, denote the base station location and signal strength readings from the handset at various locations.

The base unit does not need to have phone line connected to conduct the RSSI testing, just power.

Be sure just one handset and one base is on during the initial test.

TESTING with the STUBBY ANTENNA and then the LONG HANDSET ANTENNA:

Do your testing with the antenna that will actually be used. There is a 2 dB difference between the long (high performance) and short (low profile) handset antenna.

After the initial testing, move the base closer to weaker areas or around or above obstacles and retest.

Remember to only change one variable at a time, like the base location and not multiple variables like base location and handset antenna.

Other things to be aware of:

If communication is being used outdoors, you may get good signals during the fall or winter, but then in the spring and summer it drops, this may be caused by the tree foliage.

If used in an environment with machinery or computers, these will generate their own RF signal that may interfere with the system's signal, resulting in after-hours performance being very good, but then business hour performance dropping.

The corner of the building's phone closet may be easy to put the base, but that may not be the best area for the base antenna to provide coverage. Think central and away from obstacles.