Measurement of WiFi Signal Strength

1.The Purpose

Get used to the WiFi system and accomplish the sampling and measuring of WiFi signal strength through programming in Android on smartphone.

2.The Main Content

Researchers are generally required to complete mobile terminal scanning to indoor WiFi Routers, especially in indoor positioning, WiFi access point selection and other popular fields. As the result of the dynamic characteristics of the wireless channel, the wireless signal received by mobile terminals is always unstable. As shown in Figure.1, the signal measured at a settled position from a certain router is distributed in a specific distribution(not a fixed value). Therefore, the signal should be measured repeatedly, though the position is fixed. Then, the result needs to be analyzed as random data in a certain distribution.
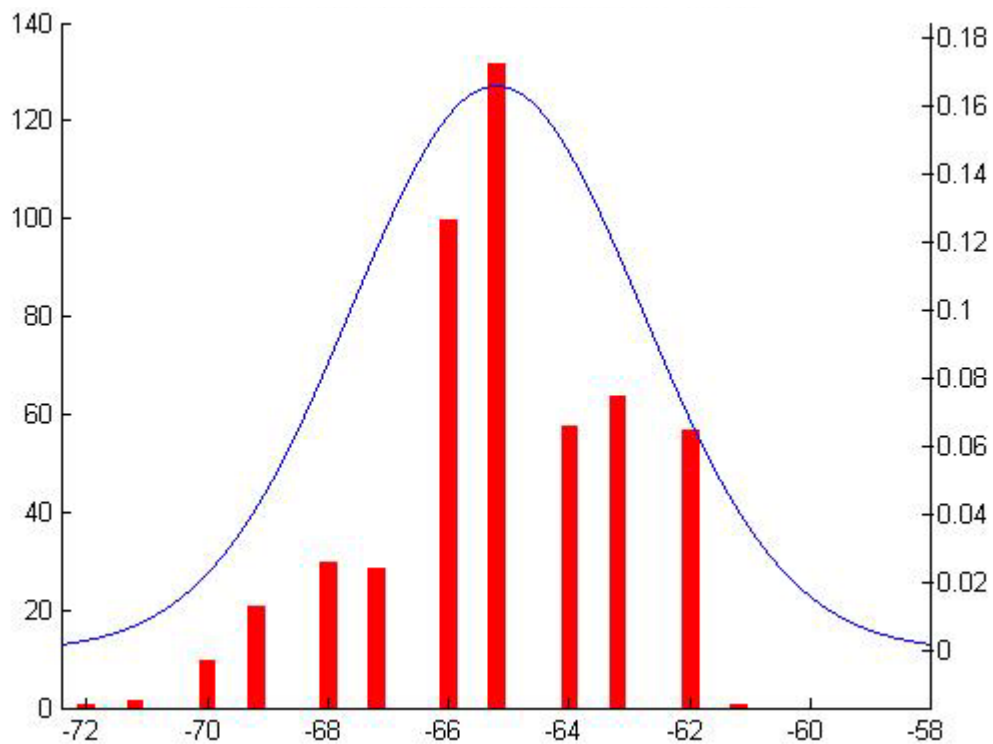

Figure 1 WiFi Signal Strength Distribution

Eclipse, etc is used as the compiler in the experiment to write the Android program. It will scan the WiFi Routers(named "IWCTAP1", "IWCTAP2", ... ,"IWCTAP10") settled around the mobilephone continuously, record the signal strength, display the result on the mobilephone screen and write it to the SD card of the phone by the WiFi system of the Android.

3.Questions

   (1)Why is necessary to record all the measured value rather than only the average value?Please give your own explanation.

   (2)Besides the WiFi signal strength, what other information of the Routers can be got in the test?

   (3)Why does the scanning need to be operated in thread"scanThread"?

4.Additional Questions

Design an indoor positioning system based on WiFi signal strength by using the signal strength measuring function of Android mobilephone. Any positioning algorithm is available.