scramble code establishment. When the scramble code establishment is made by the spreading code and spreading timing detecting circuit **13**, the received data processing circuit **14** demodulates the I component signal and the Q component signal of the perch channel and spreading code and spreading timing information is stored in the spreading code and spreading timing memory circuit **15**.

On the other hand, if the timer value of the timer **17** is less (shorter) than the communication stop time interval threshold value T_{max} at the step S**5**, the known signal replica generating circuit **16** stops and resets the timer **17** (step S**6**) and generates, on the basis of information stored in the spreading code and spreading timing memory circuit **15**, a spreading code used on previous communication. The delay profile calculating circuit **12** calculates, by using the spreading code produced by the known signal replica generating circuit **16**, the delay profile near to the previous communication spreading timing produced by the spreading code and spreading timing memory circuit **15**. A processing after that is similar to the normal cell search processing and the spreading code and spreading timing detecting circuit **13** attempts the scramble code establishment (step S**7**).

When the scramble code establishment is made or when the perch channel is detected (YES in a step S**8**), the received data processing circuit **14** executes demodulation of the I component signal and the Q component signal of the perch channel and stores the spreading code and spreading timing information in the spreading code and spreading timing memory circuit **15** (step S**1**). If the scramble code establishment is not made in the previous used spreading code and spreading timing (NO in the step S**8**), the normal cell search processing is started (the step S**10**).

FIG. **3** illustrates a flow chart of the cell search processing. The normal cell search processing detects one timing from timing candidates which are equal in number to [256(chips)×10(symbols)×16(slots)×(the number of over-sampling)] at a step S**21**. The step S**21** is followed by a step S**22** at which the normal cell search processing detects one group from thirty-two groups for the second search code at a detected timing of the step S**21**. The step S**22** proceeds to a step S**23** at which the normal cell search processing detects, from thirty-two scramble codes in the detected group at the step S**22**, a particular scramble code assigned to its own cell (sector).

That is, in the normal cell search processing, candidates for establishing a spread code and a spreading timing are equal in number to [256 (chips)×10 (symbols)×16 (slots)× (the number of the over-sampling)×32 (second search code groups)×32 (scramble codes/groups)].

On the other hand, according to this invention, it is possible to decrease the candidates to [1 (scramble code)× (1+2×M) (timings)] by using the previous cell search result proposed by this invention although redetection is carried out to the timings of M samples before and after. Accordingly, it is possible to carry out the cell search in the same cell at a high speed and to decrease a consumed power.

Referring to FIG. **4**, the description will proceed to a main part (a cell search circuit) of the mobile station MS which realizes a cell search method according to a second embodiment of this invention. The illustrated cell search circuit can achieve a high-speed processing and decreasing of the consumed power not only on re-cell search processing in the same sector but also on re-cell search processing in the same cell with an inter-sector movement by taking a timing offset between sectors in the same cell into consideration.

The illustrated cell search circuit is similar in structure and operation to that illustrated in FIG. **1** except that the cell search circuit further comprises a spreading timing controlling circuit **18**. Accordingly, the same reference symbols are attached to those having similar functions to those illustrated in FIG. **1**. The cell search circuit illustrated in FIG. **4** uses a first communication stop time interval threshold value T_{max1} and a second communication stop time interval threshold value T_{max2} which is longer than the first communication stop time interval threshold value T_{max1}.

If the timer value of the timer **17** is less (shorter) than the first communication stop time interval threshold value T_{max1} on starting of re-communication, the delay profile calculating circuit **12** calculates the delay profile only near to the spreading timing stored in the spreading code and spreading timing memory circuit **15**.

On the other hand, it will be assumed that the timer value of the timer **17** is not less (shorter) than the first communication stop time interval threshold value T_{max1} and is less (shorter) than the second communication stop time interval threshold value T_{max2}. In this event, the spreading timing controlling circuit **18** generates spreading timings which take account of the spreading timing stored in the spreading code and spreading timing memory circuit **15** and timing offsets between sectors. By carrying out the cell search processing near to the generated spreading timings, it is possible to achieve a high-speed processing and decreasing of the consumed power in the re-cell search processing when the mobile station MS moves between the sectors in the same cell.

In addition, if the timer value of the timer **17** is not less (shorter) than the second communication stop time interval threshold value T_{max2}, the normal cell search processing is carried out by generating the known signal replicas for the N codes in the known signal replica generating circuit **16**.

While this invention has thus far been described in conjunction with a few preferred embodiments thereof, it will now be readily possible for those skilled in the art to put this invention into various other manners. For example, only one communication stop time interval threshold value T_{max} may be used in the second embodiment although the first and the second communication stop time interval threshold values T_{max1} and T_{max2} are used in the above-mentioned second embodiment. In this event, when the timer value of the timer **17** is shorter than the communication stop time interval threshold value T_{max} on starting of re-communication, the cell search is carried out in consideration of the timing offset between the sectors by the spreading timing controlling circuit **18**. Although this case may expect a similar merit in the above-mentioned second embodiment, an unnecessary processing is carried out in a case of the re-communication in the same sector. However, this case has a merit where control is simplified.

In addition, it is possible to more correctly carry out control by determining the re-communication in the same sector (cell) by using not only the communication stop time interval but also a moving speed of the mobile station MS. In this event, the moving speed may be estimated by using a fading pitch or the like from the received data and a moving distance may be estimated on the basis of the estimated moving speed and the timer value. By taking the moving speed into consideration, it is possible to more correctly estimate the moving distance in comparison with determination of use of only time. That is, it is possible to more correctly determine whether or not the re-communication in the same sector (cell).

What is claimed is:

1. A method of searching a cell in a code division multiple access (CDMA) system, said method comprising the step of