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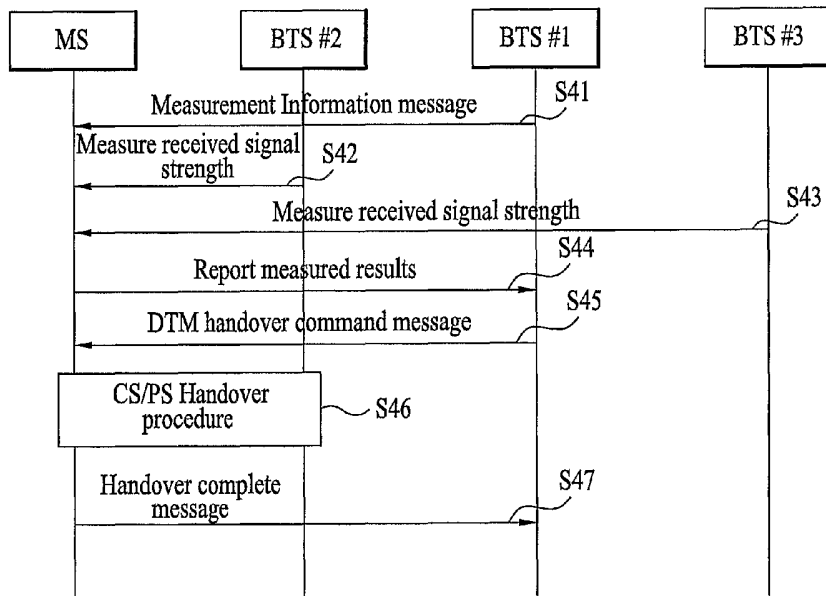
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(54) Title: A METHOD OF PERFORMING HANDOVER FOR A DUAL TRANSFER MODE IN A WIRELESS MOBILE COMMUNICATION SYSTEM



(57) Abstract: A method of performing Dual Transfer Mode (DTM) handover by a mobile station (MS) in a wireless mobile communication system is disclosed. More specifically, the MS receives information of neighbor cells, wherein the information is a list of neighbor cells whose signal strengths the MS should measure and transmits a message including results of the measured neighbor cells. Furthermore, the MS receives a message from a network, wherein the message is a DTM Handover Command message which instructs the MS to perform a DTM handover procedure with one of the neighbor cells. Lastly, the MS performs the DTM handover procedure.

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**A METHOD OF PERFORMING HANDOVER FOR A DUAL TRANSFER  
MODE IN A WIRELESS MOBILE COMMUNICATION SYSTEM**

**Technical Field**

5           The present invention relates to a method of performing handover, and more particularly, to a method of performing handover for Dual Transfer Mode (DTM) in a wireless mobile communication system.

**Background Art**

10           According to access methods, such as a Circuit Switched (CS), a Packet Switched (PS), and a Core Network (CN), a Global System for Mobile Communication (GSM)/General Packet Radio Service (GPRS)/Enhanced Data Rates for GSM Evolution (EDGE) system can be classified into three (3) classes, namely, Class A, Class B, and Class C. In Class A, a mobile station (MS) can receive the CS and the PS  
15 services simultaneously. In Class B, the MS can receive the CS service and the PS service but cannot receive both services simultaneously. In Class C, the MS can receive either the CS service or the PS service.

          In the GSM/GPRS/EDGE system, a dedicated mode, a packet transfer mode, and a Dual Transfer Mode (DTM) can be supported. The dedicated mode indicates the  
20 MS having the CS connection, the packet transfer mode indicates the MS having the PS connection, and the DTM indicates the MS having both the CS and the PS connections.

According to conventional art, the GSM/GPRS system, which is represented by the CS connection, supports hard handover. In addition, the GSM/GPRS system also supports handover in connection with the PS connection.

The conventional art does not provide detail explanation of the handover procedure for the DTM. More specifically, if handover is takes place when the MS has the CS connection during DTM, then the PS connection is released, and the CS handover procedure is performed in a same manner as if the MS is in the dedicated mode. Alternatively, if only the CS connection is released in DTM, then the PS connection is also released, thus entering idle mode. Thereafter, the MS enters the packet transfer mode from idle mode.

Currently, a Wideband Code Division Multiple Access (WCDMA) system supports services that allow data from the CS connection and the PS connection to be received simultaneously. In addition, it is possible for handover procedure to take place between the WCDMA system and the GSM/GPRS/EDGE system. However, if the GSM/GPRS/EDGE system does not support handover procedure during DTM, then the services enjoyed in the WCDMA cannot be received. That is, the data through the CS connection and the PS connection cannot be simultaneously received during DTM of the GSM/GPRS/EDGE system.

Consequently, the MS cannot efficiently perform handover procedure. Furthermore, the MS cannot reflect or incorporate priority in performing handover procedure even if one of the CS or the PS is considered more important.

**Description of the Invention**

Accordingly, the present invention is directed to a method of performing handover for Dual Transfer Mode (DTM) in a wireless mobile communication system that substantially obviates one or more problems due to limitations and disadvantages  
5 of the related art.

An object of the present invention is to provide a method of performing a Dual Transfer Mode (DTM) handover by a mobile station (MS) in a wireless mobile communication system.

Another object of the present invention is to provide a method of supporting a  
10 Dual Transfer Mode (DTM) handover by a network in a wireless mobile communication system.

A further object of the present invention is to provide a device for performing a Dual Transfer Mode (DTM) handover in a wireless mobile communication system.

Another object of the present invention is to provided a system for performing  
15 and supporting a Dual Transfer Mode (DTM) handover by a Mobile Station (MS) and a network in a wireless mobile communication system.

Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from  
20 practice of the invention. The objectives and other advantages of the invention may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, a method of performing a Dual Transfer Mode (DTM) handover by a mobile station (MS) in a wireless mobile communication system includes the MS for receiving information of neighbor cells, wherein the information is a list of neighbor cells whose signal strengths the MS should measure and transmits a message including results of the measured neighbor cells. Furthermore, the MS receives a message from a network, wherein the message is a DTM Handover Command message which instructs the MS to perform a DTM handover procedure with one of the neighbor cells. Lastly, the MS performs the DTM handover procedure.

In another aspect of the present invention, a network transmits information of neighbor cells, wherein the information is a list of neighbor cells whose signal strengths the MS should measure and receives a message including results of the measured signal strengths of the neighbor cells. Furthermore, the network transmits a message to the MS from a network, wherein the message is a DTM Handover Command message which instructs the MS to perform a DTM handover procedure with one of the neighbor cells.

In further aspect of the present invention, a device for performing a Dual Transfer Mode (DTM) handover in a wireless mobile communication system comprises a receiving block of a Radio Frequency (RF) module for receiving information of neighbor cells, wherein the information is a list of neighbor cells whose signal strengths the device should measure, and receiving a message from a network,

device to perform a DTM handover procedure with one of the neighbor cells. The device also comprises a transmitting block of the RF module for transmitting a message including results of the measured signal strengths of the neighbor cells.

In another aspect of the present invention, a system for performing and supporting a Dual Transfer Mode (DTM) handover by a Mobile Station (MS) and a network in a wireless mobile communication system comprises the network which transmits information of neighbor cells, wherein the information is a list of neighbor cells whose signal strengths the MS should measure, receives results of the measured signal strengths of the neighbor cells from a transmitting block of a Radio Frequency (RF) module of the MS, and transmits a DTM Handover Command message which instructs the MS to perform a DTM handover procedure with one of the neighbor cells. The system also comprises the RF module of the MS which receives at a receiving block the information of neighbor cells including the list of neighbor cells whose signal strengths the MS should measure, transmits from the transmitting block the results of the measured signal strengths of the neighbor cells, and receives at the receiving block the DTM Handover Command message.

It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

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### **Brief Description of the Drawings**

The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this

application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings;

FIG. 1 illustrates an example of a handover procedure in a dedicated mode;

FIG. 2 is an exemplary diagram illustrating a process of a DTM handover procedure further illustrating contemplation of priority between the CS and the PS services;

FIG. 3 is another exemplary diagram illustrating a process of a DTM handover procedure further illustrating contemplation of priority between the CS and the PS services;

FIG. 4 is an exemplary diagram illustrating a signal process of handover procedure in an intra-cell environment;

FIG. 5 is another exemplary diagram illustrating a signal process of a DTM Handover procedure in an intra-cell environment;

FIG. 6 is an exemplary exemplary diagram illustrating a signal process of handover procedure in an inter-cell environment;

FIG. 7 is another exemplary diagram illustrating a signal process of handover procedure in an intra-cell environment; and

FIG. 8 is an exemplary diagram illustrating a structure of a device for performing the functions according to the embodiment of the present invention.

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### **Best Mode for Carrying Out the Invention**

Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

Figure 1 illustrates an example of a handover procedure in a dedicated mode. As illustrated in Figure 1, the MS receives from Cell #1, which has a CS connection with the MS, a list of neighbor cells for measuring signal strengths and/or signal qualities transmitted from the neighbor cells (S11). Here, the list of neighbor cells is transmitted to the MS via a Measurement Information message. Moreover, Cell #1 is a cell which currently has established connection with the MS.

After receiving the list of neighbor cells via the Measurement Information message, the MS measures the signal strengths and/or signal qualities transmitted from the neighbor cells (e.g., Cell #2, Cell #3) which are in the list of neighbor cells (S12, S13). Here, the MS measures the strength of signals transmitted on a Broadcast Control Channel (BCCH). The measured signal strength/quality is transmitted to Cell #1 via a Measurement Report message. More specifically, the measured signal strength and/or quality information can be included in a Measurement Result Information Element, which is included in the Measurement Report message (S14). Furthermore, parameters (e.g., RX\_LEV and RX\_QUAL) included in the Measurement Result Information Element can be used to transmit the values of the measured results to each corresponding neighbor cells. Hereafter, signal strength can be used interchangeably with signal quality or to indicate both signal strength and signal quality.

When Cell #1 determines that a handover procedure should be performed with the MS, using the measured signal strength information of the neighbor cells as the basis, Cell #1 transmits a Handover Command message to the MS (S15). Here, the



Handover Command message can be transmitted on a Dedicated Control Channel (DCCH).

After receiving the Handover Command message, the MS transmits a Handover Access message to Cell #2 which is designated through the Handover Command message (S16). In response, Cell #2 transmits to the MS a Physical Information message which includes Timing Advance (TA) value (S17). The TA value represents an offset value caused by propagation delay between the MS and Cell #2.

Thereafter, the MS can know the exact timing information on the boundaries of the time slots with the TA value and then the MS can know the necessary information transmitted from Cell #2 to establish a main signaling link between Cell #2 and the MS (S18). After establishing the main signaling link with Cell #2, the MS transmits a Handover Complete message to Cell #2 (S19) and completes the handover procedure. As for Cell #1, it transmits the Handover Complete message to a Base Station Controller (BSC) to notify that a connection exists between Cell #2 and the MS. Lastly, the BSC disconnects or releases the channels which have been allocated to Cell #1. Hereafter, the BSC can be referred to as a network or alternatively, a Base Transceiver Station (BTS).

As mentioned above, the GSM/GPRS/EDGE system supports a packet transfer mode in addition to the dedicated mode. If the MS has to perform handover procedure during the packet transfer mode, the MS releases the PS connection for a specified time and enters packet idle mode. While in the packet idle mode, the MS selects a new cell through a cell reselection procedure and re-establishes the PS connection with the new cell so as to continue to transmit/receive packet data. In the cell reselection

procedure, similar to the CS handover procedure, the cell receives information related to the MS measured signal strengths of neighbor cells. With this information, the cell transmits information on whether to perform handover and with which cell to perform handover.

5 Further to the two modes discussed above, the GSM/GPRS/EDGE system supports the Dual Transfer Mode (DTM). According to the DTM enhancement scheme, the PS connection can be maintained even if the CS connection is released during DTM. The DTM enhancement scheme can be applied when both the MS and the cell supports this scheme.

10 The operation of handover procedure during DTM will be discussed in detail. Since the handover procedures for the CS connection is similar to that of the PS connection, the CS handover and the PS handover can be performed independently. More specifically, the MS receives from a current cell (e.g., Cell #1) a list of neighbor cells, whose strength of signals transmitted on the BCCH are measured by the MS. In  
15 the dedicated mode, the idle mode, the packet idle mode, or the packet transfer mode, the MS regularly measures the signal strengths transmitted on the BCCH corresponding to each neighbor cells included in the list of neighbor cells. In addition, even when a Packet Broadcast Control Channel (PBCCH) for the PS service is supported, the signal strengths transmitted on the PBCCH, instead of the BCCH, can  
20 be measured with respect to the PS connection.

When handover procedure is performed for each of the PS connection and the CS connection during DTM, an issue of priority between the PS and the CS can arise. In other words, the issue relates to which handover procedure should be first performed

between the PS and the CS handovers. In the conventional GSM/GPRS/EDGE system, the handover for the CS was performed first. However, with increasing number of diverse PS-based services becoming prevalent, at times, the packet-based service can be considered more important than voice communication service (i.e., CS service). For example, assume that the MS is using the voice communication service (e.g., talking on the phone) while being connected to an internet service. If the MS is performing an operation through the internet (e.g., internet banking), in such a situation, the packet-based service (i.e., PS service) should be considered more important than the voice communication service (i.e., CS service) such as a phone conversation.

Furthermore, in DTM handover, the priority with respect to which handover procedure should be first performed between the CS and the PS should be considered. However, since the degree of importance between the CS and the PS can change based on the request or configuration by the user, the MS can determine the priority between the CS and the PS at the application layer. For example, in a situation where the DTM handover is performed, the MS can configure a specific parameter to assign priority between the CS and the PS at the application layer. In detail, the specific parameter can be referred to as 'Priority\_DTM.' If the specific parameter is configured to 'Priority\_DTM = CS channel,' then the CS connection is given priority over the PS connection when handover arises during DTM. Alternatively, if the specific parameter is configured to 'Priority\_DTM = PS channel,' then the PS connection is given priority over the CS connection when handover arises during DTM. Although a value of 'Priority\_DTM' can be modified by a user, a default setting can be configured to favor the CS connection (i.e. 'Priority\_DTM = CS channel'). In addition, the value of

'Priority\_DTM' determined at the application layer can be transmitted to the cell via a MS classmark 3 Information Element (IE) and a MS Radio Access Capability (RAC) IE.

Figure 2 is an exemplary diagram illustrating a process of a DTM handover procedure further illustrating contemplation of priority between the CS and the PS services. As illustrated in Figure 2, the MS measures the signal strengths of neighbor cells (S21). Thereafter, the MS transmits the measured signal strengths to the current cell to which connection is currently established (S22). Then the MS receives a DTM Handover Command message from the cell (S23). After receiving the DTM handover command message, the MS checks for priority between the CS and the PS (S24). If the CS is determined to have priority over the PS, the CS handover procedure can be initiated first with a new cell using the information contained in the Handover Command message (S25). After the CS handover procedure is initiated, the PS handover procedure can be initiated (S26). Alternatively, if the PS is determined to have priority over the CS, the PS handover procedure can be initiated first to the new cell using the information contained in the DTM Handover Command message (S27). After the PS handover procedure is initiated, the CS handover procedure can be initiated (S28).

Figure 3 is another exemplary diagram illustrating a process of a DTM handover procedure further illustrating contemplation of priority between the CS and the PS services. If a failure arises during DTM handover, Figure 3 illustrates which of either CS handover or PS handover to be performed first over the other. In other words, depending on which of the two (i.e., CS or PS) has priority, the MS can decide to

perform the handover procedure for the selected service (CS service or PS service) when the MS cannot perform the handover procedure for both the CS service and the PS service due to the DTM handover failure. As illustrated in Figure 3, the MS measures the signal strengths of neighbor cells (S31) and transmits the measured signal strengths of neighbor cells to the current cell (S32). Thereafter, the MS receives a DTM Handover Command message from the current cell (S33) and detects occurrence of failure during the DTM handover procedure using the information contained in the DTM Handover Command message (S34). Due to the DTM handover failure, if the handover of only one of either the CS connection or the PS connection can be successfully performed, the MS can check the priority between the CS and the PS (S35). After checking the priority, if the CS has priority over the PS, then the CS handover can be performed (S36). Alternatively, if the PS has priority over the CS, then the PS handover can be performed (S37).

In Figure 2 or Figure 3, during the CS connection and the PS connection, the MS regularly measures the strength of signals transmitted on the BCCH. If there is the PBCCH in the cell, the MS can measure the strength of signals transmitted on the PBCCH instead of the BCCH.

Figure 4 is an exemplary diagram illustrating a signal process of a DTM handover procedure in an intra-cell environment. As illustrated in Figure 4, the MS receives a list of neighbor cells for measuring signal strengths and/or signal qualities of the neighbor cells from Cell #1 during DTM (S41). The list of neighbor cells is transmitted to the MS via a Measurement Information message.

The MS measures the received signal strengths from the cells (e.g., Cell #2, Cell #3) corresponding to the cells in the list of neighbor cells (S42, S43). Here, the measured signal strength is transmitted on the BCCH. Furthermore, the information of the MS measured signal strengths is transmitted to Cell #1 through a Measurement Report message, and more specifically, the information is transmitted through the Measurement Result Information Element included in the Measurement Report message (S44). In addition, the measured results can be transmitted via the parameters (i.e., RX\_LEV, RX\_QUAL) included in the Measurement Result Information Element to Cell #1.

10 If the network determines that DTM handover procedure should be performed based on the information of the MS measured signal strengths, the network via Cell #1 may send a DTM Handover Command message requesting the MS to switch to a different cell (e.g., Cell #2) managed by the same BSC (S45). Alternatively, the DTM Handover Command message can request the MS to switch to a different cell managed  
15 by a different BSC (S45).

Before the BSC instructs the MS to perform DTM handover, the BSC can activate the channels in a target cell (e.g., Cell #2). That is, Cell #2 can allocate the CS channels and the PS channels in Cell #2 to be used by the MS according to the multi-slot class. Here, the DTM Handover Command message can be transmitted on a  
20 Dedicated Control Channel (DCCH).

Upon receipt of the DTM Handover Command message, the MS can initiate the DTM Handover procedure. Because the CS handover and the PS handover are handled independently during the DTM handover, the MS can configure the process of

each handover where the CS handover or the PS handover should be initiated according to the predefined priority (S46). After a series of procedures associated with each handover are completed and the main signaling link is established between the MS and the Cell #2, the MS can transmit the Handover Complete message to Cell #2 (S47). Furthermore, Cell #2 can transmit the Handover Complete message to the BSC, and subsequently, the BSC transmits the DTM Handover Complete message to the Mobile Services Switching Center (MSC) and the SGSN. Thereafter, the channels allocated to the MS while released by Cell #1, then the handover is completed.

Figure 5 is another exemplary diagram illustrating a signal process of a DTM Handover procedure in an intra-cell environment. As described with respect to Figure 4, steps S51 – S55 are same as steps S41 – S45.

Alternatively, upon receipt of the DTM Handover Command message, the MS can abandon the packet session and can initiate the access on the target cell. That is, after receiving the DTM Handover Command message, the MS can transmit a Handover Access message on the target cell (Cell # 2) (S56). In response, Cell #2 can transmit a Physical Information message to the MS (S57). The Physical Information message includes a value of the TA for synchronizing with Cell #2 so as to allow the GSM/GPRS operation to resume. Using the Physical Information message, when the main signal link between the MS and Cell #2 is established (S58), the MS can transmit a RA/cell update message to a Serving GPRS Support Node (SGSN) for the PS connection and can transmit a DTM Handover Complete message to Cell #2 (S59).

If Cell #2 supports DTM, the handover procedure can be performed according to the process described above. However, if Cell #2 does not support DTM, the

handover procedure can be changed based on the priority value (i.e., Priority\_DTM value) between the CS and the PS. For example, if 'Priority\_DTM = CS channel,' the CS is given priority over the PS. As such, in operation, the PS connection is released when the MS receives the DTM Handover Command message from the cell, and the handover procedure is performed as if there is only the CS connection available. Alternatively, if 'Priority\_DTM = PS channel,' the PS is given priority over the CS. As such, in operation, the CS connection is released when the MS receives the DTM Handover Command message from the cell, and the handover procedure is performed as if there is only the PS connection available.

Figure 6 and Figure 7 depict exemplary diagrams illustrating a signal process of a DTM Handover procedure in an inter-cell environment. More specifically, a detailed description of Figure 6 can be referred to the detailed description of Figure 4, the difference being that Figure 6 relates to the inter-cell environment. Similarly, a detailed description of Figure 7 can be referred to the detailed description of Figure 5, the difference being that Figure 7 relates to the inter-cell environment. As such, the detailed description of Figures 6 and 7 are provided with respect to Figures 4 and 5, respectively.

Figure 8 is an exemplary diagram illustrating a structure of a device for performing the functions according to the embodiment of the present invention. More specifically, a device 80 (e.g., mobile station) comprises a Radio Frequency (RF) module 81 and a controller 82. The RF module can be further divided into a transmitting block 83 and a receiving block 84. That is, the receiving block 84 can be used for receiving information of neighbor cells. Here, the information includes



neighbor cells whose signal strengths and/or signal qualities the device can measure. After the signal strengths/qualities are measured, the device can use the transmitting block 83 to transmit results of the measured signal strengths of the neighbor cells to a network 85 (e.g., BSC, BSS, BTS).

5           After the network 85 receives the results of the measured signal strengths, based on the results, the network 85 can instruct the device 80 to perform DTM handover with one of the neighbor cells. Then the receiving block 84 can receive a DTM Handover Command message from the network 85. Thereafter, the device 80 can perform the DTM handover procedure with the neighbor cell designated by the  
10 network 85.

It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the inventions. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of  
15 the appended claims and their equivalents.

**Claims**

1. A method of performing a Dual Transfer Mode (DTM) handover by a mobile station (MS) in a wireless mobile communication system, the method  
5 comprising:

receiving information of neighbor cells, wherein the information is a list of neighbor cells whose signal strengths the MS should measure;

transmitting a message including results of the measured signal strengths of the neighbor cells;

10 receiving a message from a network, wherein the message is a DTM Handover Command message which instructs the MS to perform a DTM handover procedure with one of the neighbor cells; and

performing the DTM handover procedure.

15 2. The method of claim 1, wherein the network is a Base Station Controller (BSC) or a Base Station Subsystem (BSS).

3. The method of claim 2, wherein the information is transmitted from a source BSC or BSS.

20

4. The method of claim 2, wherein the one of the neighbor cells is a cell managed by the BSC or the BSS.

5. The method of claim 4, further comprising:  
transmitting a DTM Handover Access message to the one of the neighbor cells, wherein the one of the neighbor cells is a cell assigned by the BSC or the BSS;
- 5 receiving a Physical Information message from the assigned cell; and  
establishing a main signaling link with the assigned cell.
6. The method of claim 4, wherein the BSC or the BSS allocates circuit-switched (CS) channels and packet-switched (PS) channels to the one of the neighbor
- 10 cells prior to instructing the MS to perform handover procedure.
7. The method of claim 1, wherein the network is a Base Transceiver Station (BTS).
- 15 8. The method of claim 7, wherein the information is transmitted from a source BTS.
9. The method of claim 7, wherein the one of the neighbor cells is a cell managed by the BTS.
- 20 10. The method of claim 9, further comprising:  
transmitting a DTM Handover Access message to the one of the neighbor cells, wherein the one of the neighbor cells is a cell assigned by the BTS;

receiving a Physical Information message from the assigned cell; and  
establishing a main signaling link with the assigned cell.

11. The method of claim 10, wherein the BTS allocates circuit-switched  
5 (CS) channels and packet-switched (PS) channels to the one of the neighbor cells prior  
to instructing the MS to perform handover procedure.

12. The method of claim 1, wherein the message is a measurement report of  
10 signal strength and signal quality of each neighbor cell listed in the information.

13. The method of claim 1, wherein the message is transmitted via a  
Dedicated Control Channel (DCCH).

14. The method of claim 1, wherein the DTM handover procedure is  
15 performed according to a defined priority between a packet-switched (PS) service and  
a circuit-switched (CS) service.

15. The method of claim 1, further comprising:  
20 if the DTM handover procedure fails, performing a circuit-switched  
(CS) handover procedure.

16. The method of claim 1, further comprising:

if the DTM handover procedure fails, performing a packet-switched (PS) handover procedure.

5 17. The method of claim 1, further comprising:

if the DTM handover procedure fails, performing one of a circuit-switched (CS) handover procedure or a packet-switched (PS) handover procedure according to a defined priority between a packet-switched (PS) service and a circuit-switched (CS) service.

10

18. A method of supporting a Dual Transfer Mode (DTM) handover by a network in a wireless mobile communication system, the method comprising:

transmitting information of neighbor cells, wherein the information is a list of neighbor cells whose signal strengths the MS should measure;

15 receiving a message including results of the measured signal strengths of the neighbor cells; and

transmitting a message to the MS from a network, wherein the message is a DTM Handover Command message which instructs the MS to perform a DTM handover procedure with one of the neighbor cells.

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19. The method of claim 18, wherein the network is a Base Station Controller (BSC) or a Base Station Subsystem (BSS).

20. The method of claim 18, wherein the network is a Base Transceiver Station (BTS).

21. A device for performing a Dual Transfer Mode (DTM) handover in a wireless mobile communication system, the device comprising:

a receiving block of a Radio Frequency (RF) module for:

receiving information of neighbor cells, wherein the information is a list of neighbor cells whose signal strengths the device should measure, and

receiving a message from a network, wherein the message is a DTM Handover Command message which instructs the device to perform a DTM handover procedure with one of the neighbor cells; and

a transmitting block of the RF module for transmitting a message including results of the measured signal strengths of the neighbor cells.

22. The device of claim 21, wherein the device is a mobile station (MS).

23. The method of claim 21, wherein the network is a Base Station Controller (BSC) or a Base Station Subsystem (BSS).

24. The method of claim 21, wherein the network is a Base Transceiver Station (BTS).

25. A system for performing and supporting a Dual Transfer Mode (DTM) handover by a Mobile Station (MS) and a network in a wireless mobile communication system, the system comprising:
- the network which:
- 5                   transmits information of neighbor cells, wherein the information is a list of neighbor cells whose signal strengths the MS should measure,
- receives results of the measured signal strengths of the neighbor cells from a transmitting block of a Radio Frequency (RF) module of the MS, and
- transmits a DTM Handover Command message which instructs the MS
- 10                   to perform a DTM handover procedure with one of the neighbor cells; and
- the RF module of the MS which:
- receives at a receiving block the information of neighbor cells including the list of neighbor cells whose signal strengths the MS should measure,
- transmits from the transmitting block the results of the measured signal
- 15                   strengths of the neighbor cells, and
- receives at the receiving block the DTM Handover Command message.

FIG. 1

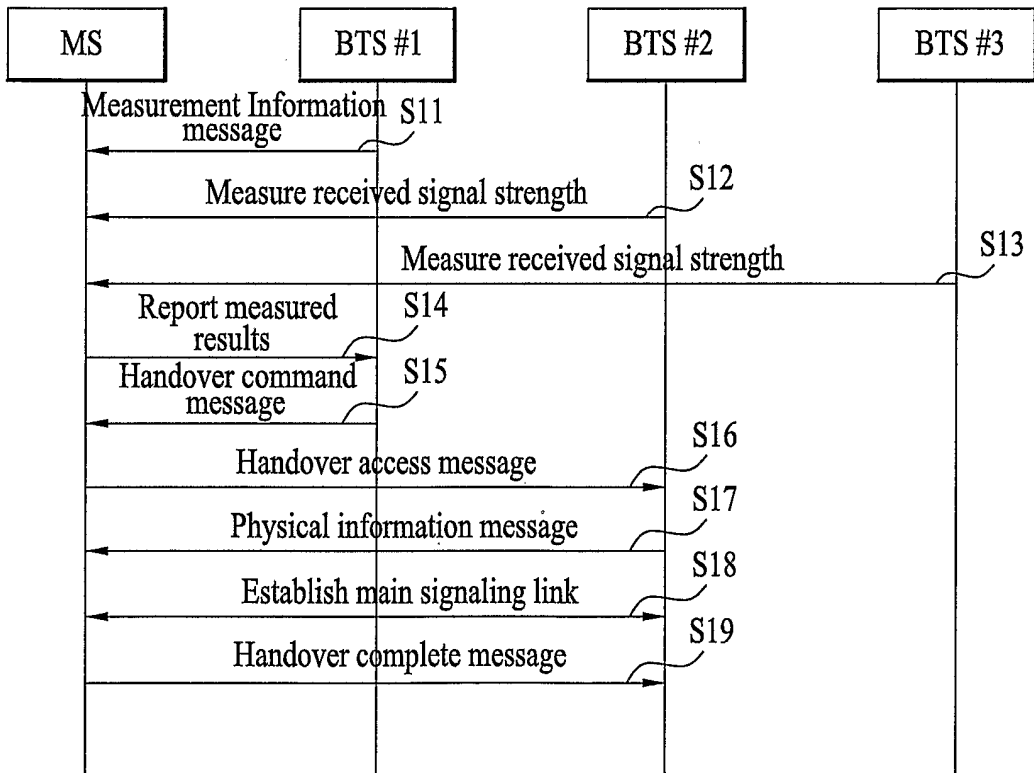




FIG. 2

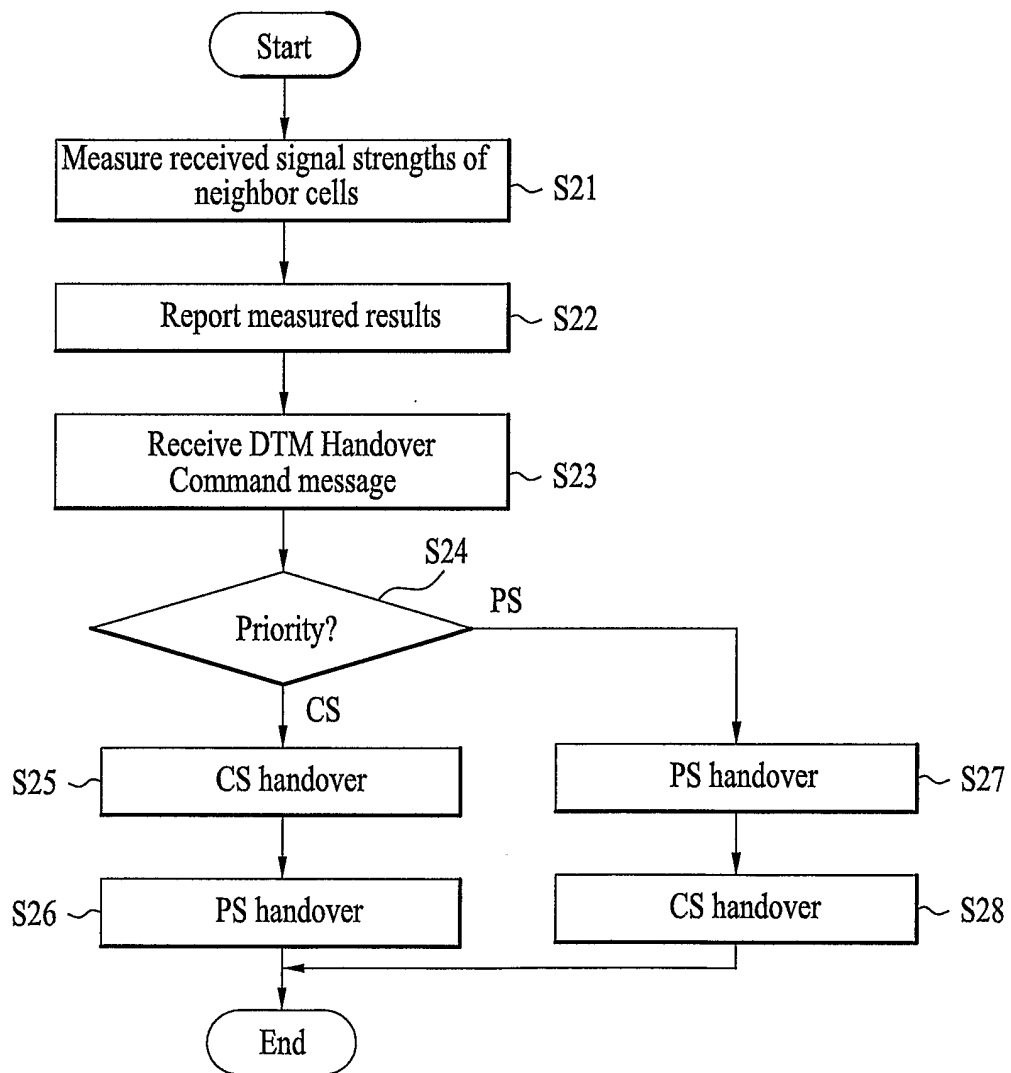


FIG. 3

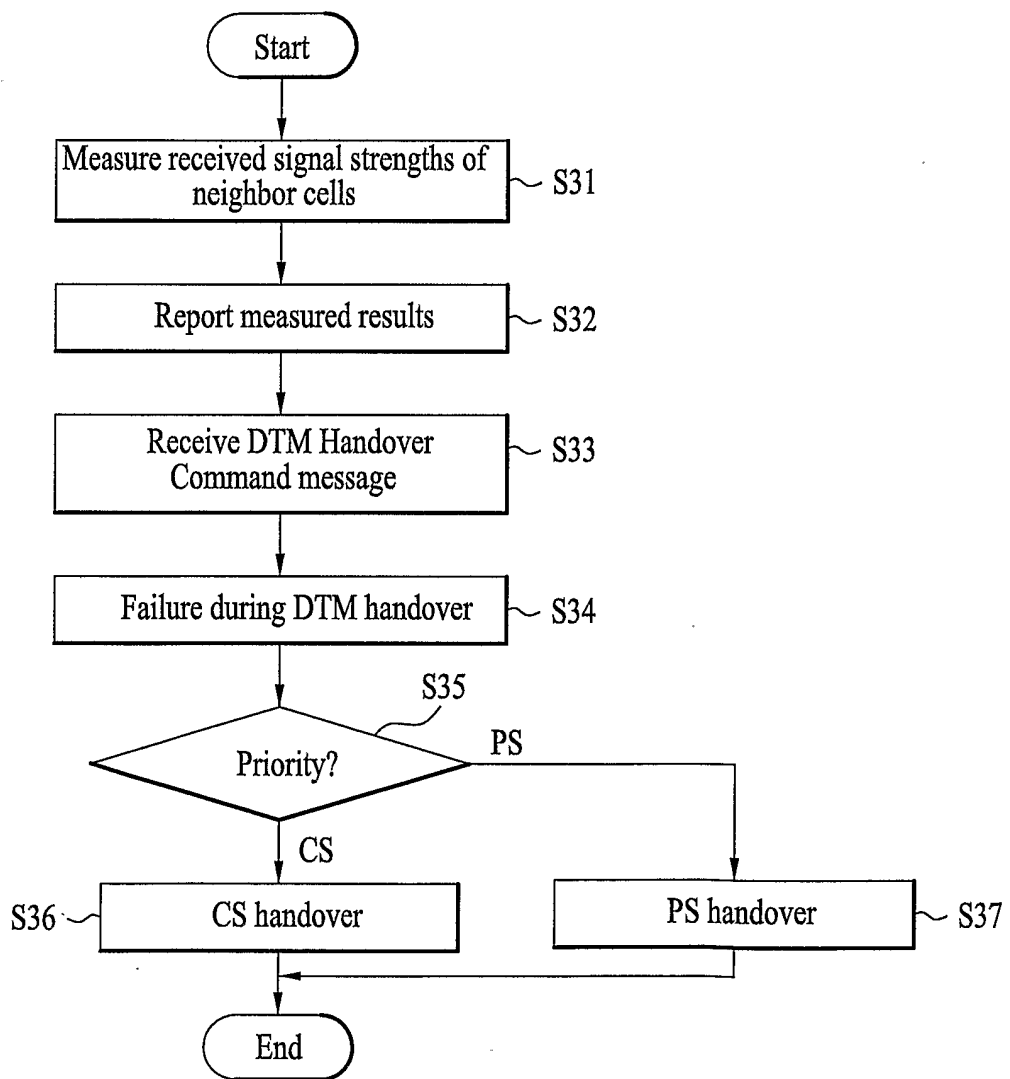


FIG. 4

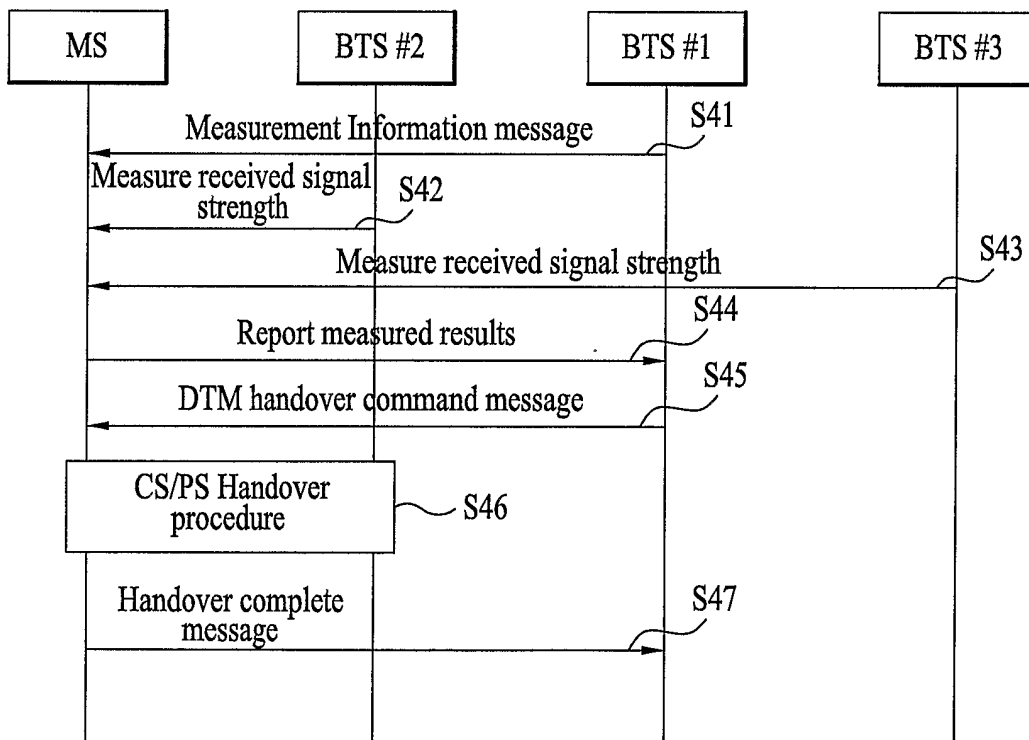


FIG. 5

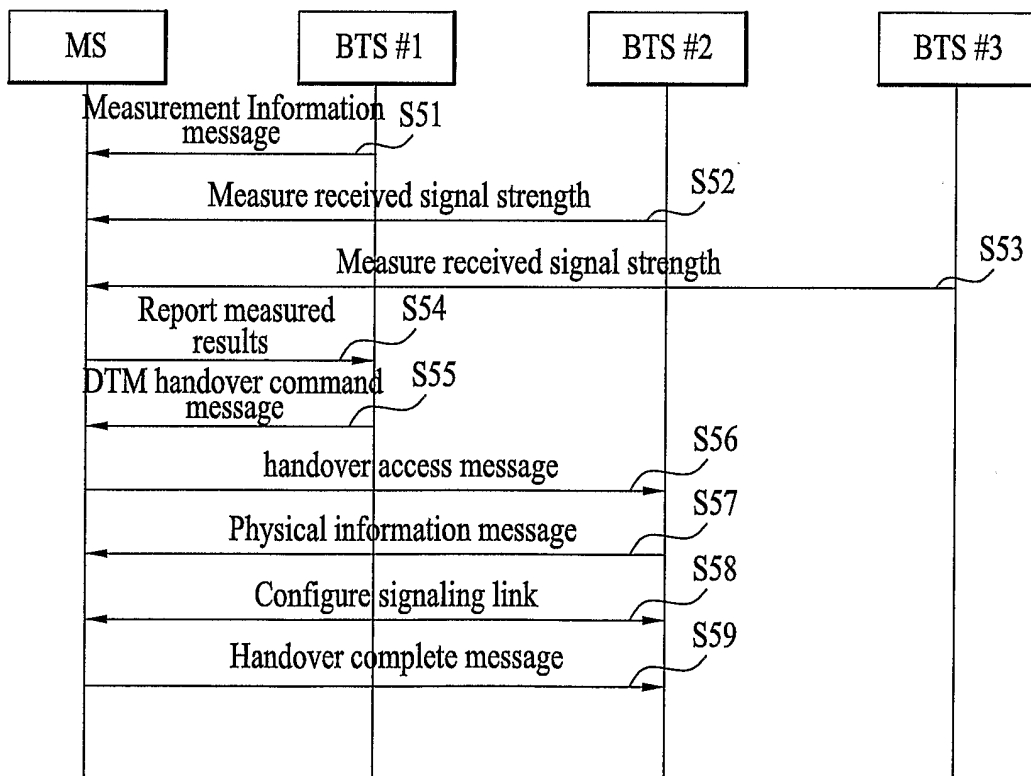


FIG. 6

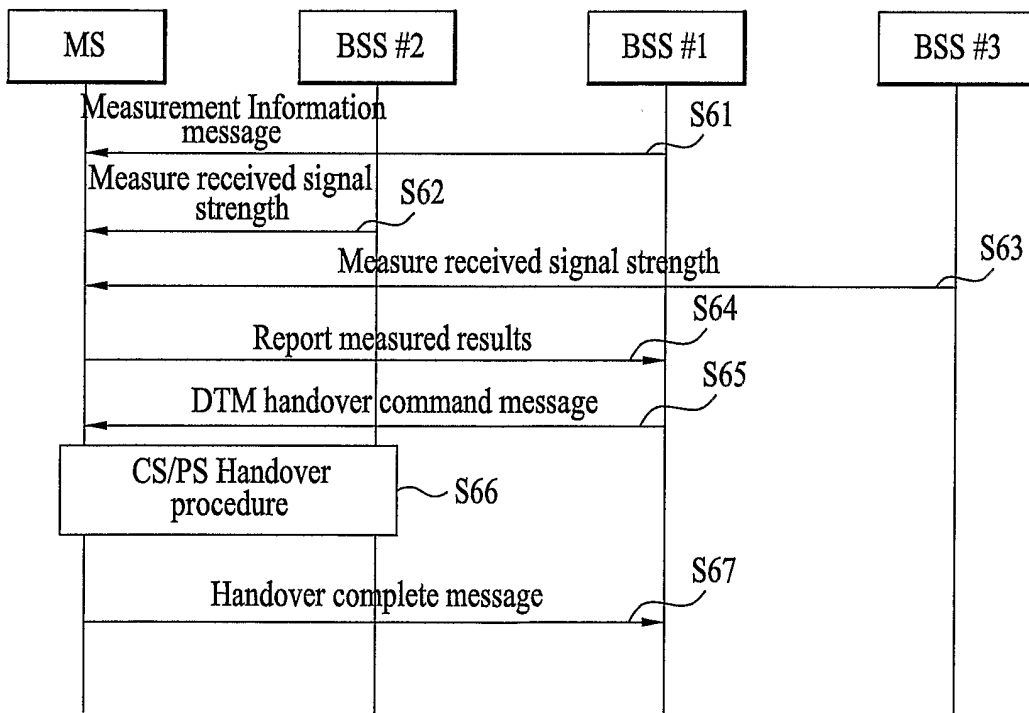


FIG. 7

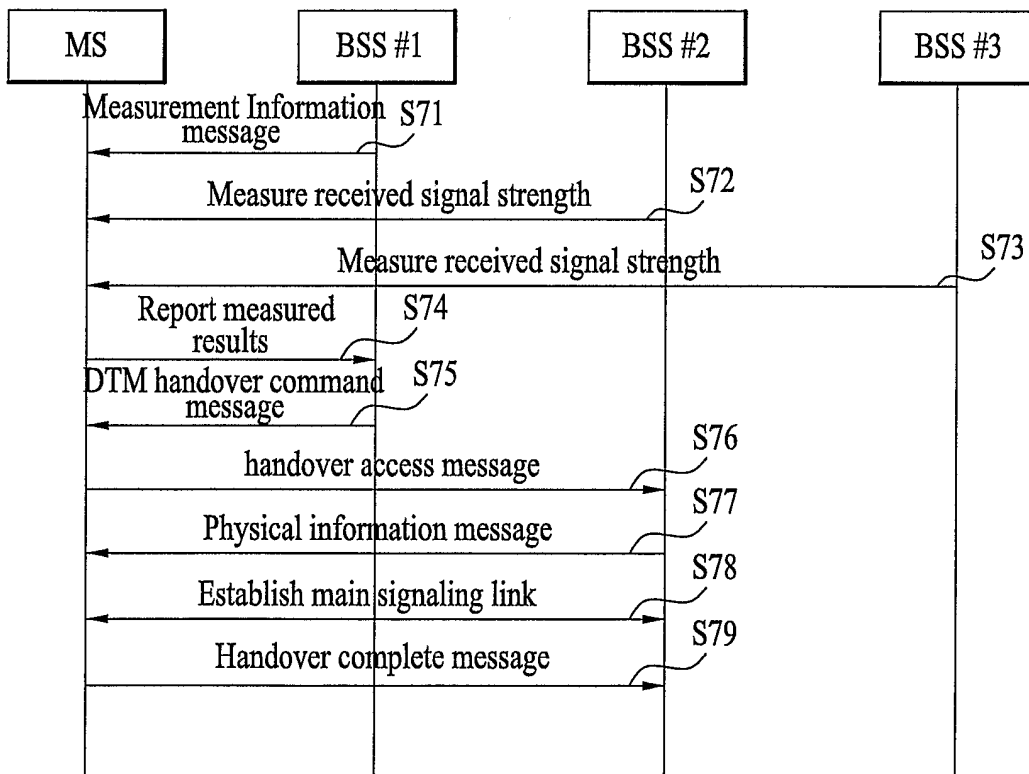


FIG. 8

