

CLAIMS

1. A channel boundary locating method, characterized in comprising:

receiving (101), by a base station of non-time reference cell, cell timing information delivered by a network, wherein the cell timing information comprises a non-time reference parameter, and the non-time reference parameter corresponds to a smallest timing difference between a downlink F-DPCH frame of time reference cell and an HS-PDSCH subframe of time reference cell;

calculating (102), by the base station of non-time reference cell, boundary information HS-SCCH CFN_DRX n of a high speed shared control channel (HS-SCCH) according to the non-time reference parameter; and

acquiring (103), by the base station of non-time reference cell, boundary information of a high speed dedicated physical control channel (HS-DPCCH) according to the boundary information of the HS-SCCH;

wherein the calculating the boundary information HS-SCCH CFN_DRX n of the HS-SCCH according to the non-time reference parameter further comprises:

aligning a start time of HS-SCCH CFN_DRX n with a start time of an HS-SCCH subframe, wherein the HS-SCCH subframe is an HS-SCCH subframe behind τ_{DRX} chips in a start time of F-DPCH CFN n, τ_{DRX} meets $-3840chips \leq \tau_{DRX} - T_0 - 7680 * DRX_OFFSET < 3840chips$, and T_0 is 1024 chips, wherein

CFN_DRX is a connection frame number in a discontinuous reception (DRX) state, and n in CFN_DRX n is a serial number of CFN_DRX; F-DPCH CFN is a connection frame number of an F-DPCH, and n in CFN n is a serial number of CFN; DRX_OFFSET is an offset of discontinuous reception (DRX); and τ_{DRX} is a timing difference between HS-SCCH CFN_DRX n and F-DPCH CFN n, wherein

$$DRX_OFFSET \text{ is } \left\lfloor \frac{\frac{T_{TX_diff2}}{2560} - 0.9}{3} \right\rfloor - \left\lfloor \frac{\frac{T_{TX_diff1}}{2560} - 0.9}{3} \right\rfloor;$$

T_{TX_diff1} is equal to the Non-time Reference; and

if T_{TX_diff3} is less than 7680×1.5 , less than 7680×2 , or less than 7680×2.5 , T_{TX_diff2} is equal to T_{TX_diff3} ; and if T_{TX_diff3} is greater than or equal to 7680×1.5 , greater than or equal to 7680×2 , or greater than or equal to 7680×2.5 , T_{TX_diff2} is equal to $T_{TX_diff3} - 38400$, wherein

T_{TX_diff3} is equal to a timing difference between a downlink F-DPCH frame of non-time

reference cell and an HS-PDSCH subframe of non-time reference cell, and a hybrid automatic retransmission request acknowledgement (HARQ-ACK) field corresponding to the HS-PDSCH subframe corresponding to T_{TX_diff3} and a hybrid automatic retransmission request acknowledgement (HARQ-ACK) field corresponding to the HS-PDSCH subframe corresponding to the Non-time Reference are in a same HS-DPCCH subframe.

2. The method according to claim 1, wherein the acquiring the boundary information of the HS-DPCCH according to the boundary information of the HS-SCCH further comprises:

determining boundary information of an HS-DPCCH subframe that is closest in time to $1280 + T_{TX_diff1} - T_{TX_diff2}$ chips after the start time of the boundary information of the HS-SCCH, that is, HS-SCCH CFN_DRX n, as the boundary information of the HS-DPCCH, that is, HS-DPCCH CFN_DRX n, wherein n in HS-SCCH CFN_DRX n is a serial number of HS-SCCH CFN_DRX, and n in HS-DPCCH CFN_DRX n is a serial number of HS-DPCCH CFN_DRX.

3. A channel boundary locating method, characterized in comprising:

calculating (401), by a user equipment (UE), boundary information HS-SCCH CFN_DRX n of a high speed shared control channel (HS-SCCH) according to a smallest timing difference between a downlink F-DPCH frame of time reference cell and an HS-PDSCH subframe of time reference cell; and

acquiring (402), by the UE, boundary information of a high speed dedicated physical control channel (HS-DPCCH) according to the boundary information of the HS-SCCH;

wherein the calculating the boundary information HS-SCCH CFN_DRX n of the HS-SCCH according to the smallest timing difference between the downlink F-DPCH frame of time reference cell and the HS-PDSCH subframe of time reference cell comprises:

aligning a start time of HS-SCCH CFN_DRX n with a start time of an HS-SCCH subframe, wherein the HS-SCCH subframe is an HS-SCCH subframe behind τ_{DRX} chips in a start time of F-DPCH CFN n, τ_{DRX} meets $-3840chips \leq \tau_{DRX} - T_0 - 7680 * DRX_OFFSET < 3840chips$, and T_0 is 1024 chips, wherein

CFN_DRX is a connection frame number in a discontinuous reception (DRX) state, and n in CFN_DRX n is a serial number of CFN_DRX; F-DPCH CFN is a connection frame number of an F-DPCH, and n in CFN n is a serial number of CFN; DRX_OFFSET is an offset of discontinuous reception (DRX); and τ_{DRX} is a timing difference between HS-SCCH CFN_DRX n and F-DPCH CFN n, wherein

$$\text{DRX_OFFSET is } \left\lfloor \frac{\frac{T_{TX_diff\ 2} - 0.9}{2560}}{3} \right\rfloor - \left\lfloor \frac{\frac{T_{TX_diff\ 1} - 0.9}{2560}}{3} \right\rfloor;$$

$T_{TX_diff\ 1}$ is equal to the smallest timing difference between the downlink F-DPCH frame of time reference cell and the HS-PDSCH subframe of time reference cell; and

if $T_{TX_diff\ 3}$ is less than 7680×1.5 , less than 7680×2 , or less than 7680×2.5 , $T_{TX_diff\ 2}$ is equal to $T_{TX_diff\ 3}$; and if $T_{TX_diff\ 3}$ is greater than or equal to 7680×1.5 , greater than or equal to 7680×2 , or greater than or equal to 7680×2.5 , $T_{TX_diff\ 2}$ is equal to $T_{TX_diff\ 3} - 38400$, wherein

$T_{TX_diff\ 3}$ is a timing difference between a downlink F-DPCH frame of non-time reference cell and an HS-PDSCH subframe of non-time reference cell, and an HARQ-ACK field corresponding to the HS-PDSCH subframe corresponding to $T_{TX_diff\ 3}$ and an HARQ-ACK field corresponding to the HS-PDSCH subframe corresponding to $T_{TX_diff\ 1}$ are in a same HS-DPCCH subframe.

4. The method according to claim 3, wherein the acquiring the boundary information of the HS-DPCCH according to the boundary information of the HS-SCCH comprises:

determining boundary information of an HS-DPCCH subframe that is closest in time to $1280 + T_{TX_diff\ 1} - T_{TX_diff\ 2}$ chips after the start time of the boundary information of the HS-SCCH, that is, HS-SCCH CFN_DRX n, as the boundary information of the HS-DPCCH, that is, HS-DPCCH CFN_DRX n, wherein n in HS-SCCH CFN_DRX n is a serial number of HS-SCCH CFN_DRX, and n in HS-DPCCH CFN_DRX n is a serial number of HS-DPCCH CFN_DRX.

5. A base station, characterized in comprising:

a receiving module (701), configured to receive cell timing information delivered by a network, wherein the cell timing information comprises a non-time reference parameter, and the non-time reference parameter corresponds to a smallest timing difference between a downlink F-DPCH frame of time reference cell and an HS-PDSCH subframe of time reference cell; and

a processing module (702), configured to calculate boundary information HS-SCCH CFN_DRX n of a high speed shared control channel (HS-SCCH) according to the non-time reference parameter, wherein:

the processing module (702) is further configured to acquire boundary information of a high speed dedicated physical control channel (HS-DPCCH) according to the boundary information of the HS-SCCH;

wherein the processing module (702) is further configured to:

align a start time of HS-SCCH CFN_DRX n with a start time of an HS-SCCH subframe, wherein the HS-SCCH subframe is an HS-SCCH subframe behind τ_{DRX} chips in a start time of F-DPCH CFN n, τ_{DRX} meets $-3840chips \leq \tau_{DRX} - T_0 - 7680 * DRX_OFFSET < 3840chips$, and T_0 is 1024 chips, wherein

CFN_DRX is a connection frame number in a discontinuous reception (DRX) state, and n in CFN_DRX n is a serial number of CFN_DRX; F-DPCH CFN is a connection frame number of an F-DPCH, and n in CFN n is a serial number of CFN; DRX_OFFSET is an offset of discontinuous reception (DRX); and τ_{DRX} is a timing difference between HS-SCCH CFN_DRX n and F-DPCH CFN n, wherein

$$DRX_OFFSET \text{ is } \left\lfloor \frac{\frac{T_{TX_diff2} - 0.9}{2560}}{3} \right\rfloor - \left\lfloor \frac{\frac{T_{TX_diff1} - 0.9}{2560}}{3} \right\rfloor;$$

T_{TX_diff1} is equal to the Non-time Reference; and

if T_{TX_diff3} is less than 7680×1.5 , less than 7680×2 , or less than 7680×2.5 , T_{TX_diff2} is equal to T_{TX_diff3} ; and if T_{TX_diff3} is greater than or equal to 7680×1.5 , greater than or equal to 7680×2 , or greater than or equal to 7680×2.5 , T_{TX_diff2} is equal to $T_{TX_diff3} - 38400$, wherein

T_{TX_diff3} is equal to a timing difference between a downlink F-DPCH frame of non-time reference cell and an HS-PDSCH subframe of non-time reference cell, and a hybrid automatic retransmission request acknowledgement (HARQ-ACK) field corresponding to the HS-PDSCH subframe corresponding to T_{TX_diff3} and a hybrid automatic retransmission request acknowledgement (HARQ-ACK) field corresponding to the HS-PDSCH subframe corresponding to the Non-time Reference are in a same HS-DPCCH subframe.

6. The base station according to claim 5, wherein the processing module (702) is further configured to:

determine boundary information of an HS-DPCCH subframe that is closest in time to $1280 + T_{TX_diff1} - T_{TX_diff2}$ chips after the start time of the boundary information of the HS-SCCH, that is, HS-SCCH CFN_DRX n, as the boundary information of the HS-DPCCH, that is, HS-DPCCH CFN_DRX n, wherein n in HS-SCCH CFN_DRX n is a serial number of HS-SCCH CFN_DRX, and n in HS-DPCCH CFN_DRX n is a serial number of HS-DPCCH CFN_DRX.

7. A user equipment (UE), characterized in comprising:

a preprocessing module (901), configured to calculate boundary information HS-SCCH

CFN_DRX n of a high speed shared control channel (HS-SCCH) according to a smallest timing difference between a downlink F-DPCH frame of time reference cell and an HS-PDSCH subframe of time reference cell; and

a processing module (902), configured to acquire boundary information of a high speed dedicated physical control channel (HS-DPCCH) according to the boundary information of the HS-SCCH;

wherein the preprocessing module (901) is further configured to:

align a start time of HS-SCCH CFN_DRX n with a start time of an HS-SCCH subframe, wherein the HS-SCCH subframe is an HS-SCCH subframe behind τ_{DRX} chips in a start time of F-DPCH CFN n, τ_{DRX} meets $-3840chips \leq \tau_{DRX} - T_0 - 7680 * DRX_OFFSET < 3840chips$, and T_0 is 1024 chips, wherein

CFN_DRX is a connection frame number in a discontinuous reception (DRX) state, and n in CFN_DRX n is a serial number of CFN_DRX; F-DPCH CFN is a connection frame number of an F-DPCH, and n in CFN n is a serial number of CFN; DRX_OFFSET is an offset of discontinuous reception (DRX); and τ_{DRX} is a timing difference between HS-SCCH CFN_DRX n and F-DPCH CFN n, wherein

$$DRX_OFFSET \text{ is } \left\lfloor \frac{\frac{T_{TX_diff2} - 0.9}{2560} - 0.9}{3} \right\rfloor - \left\lfloor \frac{\frac{T_{TX_diff1} - 0.9}{2560} - 0.9}{3} \right\rfloor;$$

T_{TX_diff1} is equal to the smallest timing difference between the downlink F-DPCH frame of time reference cell and the HS-PDSCH subframe of time reference cell; and

if T_{TX_diff3} is less than 7680×1.5 , less than 7680×2 , or less than 7680×2.5 , T_{TX_diff2} is equal to T_{TX_diff3} ; and if T_{TX_diff3} is greater than or equal to 7680×1.5 , greater than or equal to 7680×2 , or greater than or equal to 7680×2.5 , T_{TX_diff2} is equal to $T_{TX_diff3} - 38400$, wherein

T_{TX_diff3} is a timing difference between a downlink F-DPCH frame of non-time reference cell and an HS-PDSCH subframe of non-time reference cell, and a hybrid automatic retransmission request acknowledgement (HARQ-ACK) field corresponding to the HS-PDSCH subframe corresponding to T_{TX_diff3} and a hybrid automatic retransmission request acknowledgement (HARQ-ACK) field corresponding to the HS-PDSCH subframe corresponding to T_{TX_diff1} are in a same HS-DPCCH subframe.

8. The UE according to claim 7, wherein the processing module (902) is further configured to:

determine boundary information of an HS-DPCCH subframe that is closest in time to $1280 + T_{TX_diff1} - T_{TX_diff2}$ chips after the start time of the boundary information of the HS-SCCH, that is, HS-SCCH CFN_DRX n, as the boundary information of the HS-DPCCH, that is, HS-DPCCH CFN_DRX n, wherein n in HS-SCCH CFN_DRX n is a serial number of HS-SCCH CFN_DRX, and n in HS-DPCCH CFN_DRX n is a serial number of HS-DPCCH CFN_DRX.

9. A base station, comprising a memory and a processor, wherein the memory is connected to the processor; and

the memory stores an execution instruction; and when the base station runs, the processor communicates with the memory, and the processor executes the execution instruction, so that the base station executes the method according to claim 1 or 2.

10. A user equipment (UE), comprising a memory and a processor, wherein the memory is connected to the processor; and

the memory stores an execution instruction; and when the UE runs, the processor communicates with the memory, and the processor executes the execution instruction, so that the UE executes the method according to claim 3 or 4.