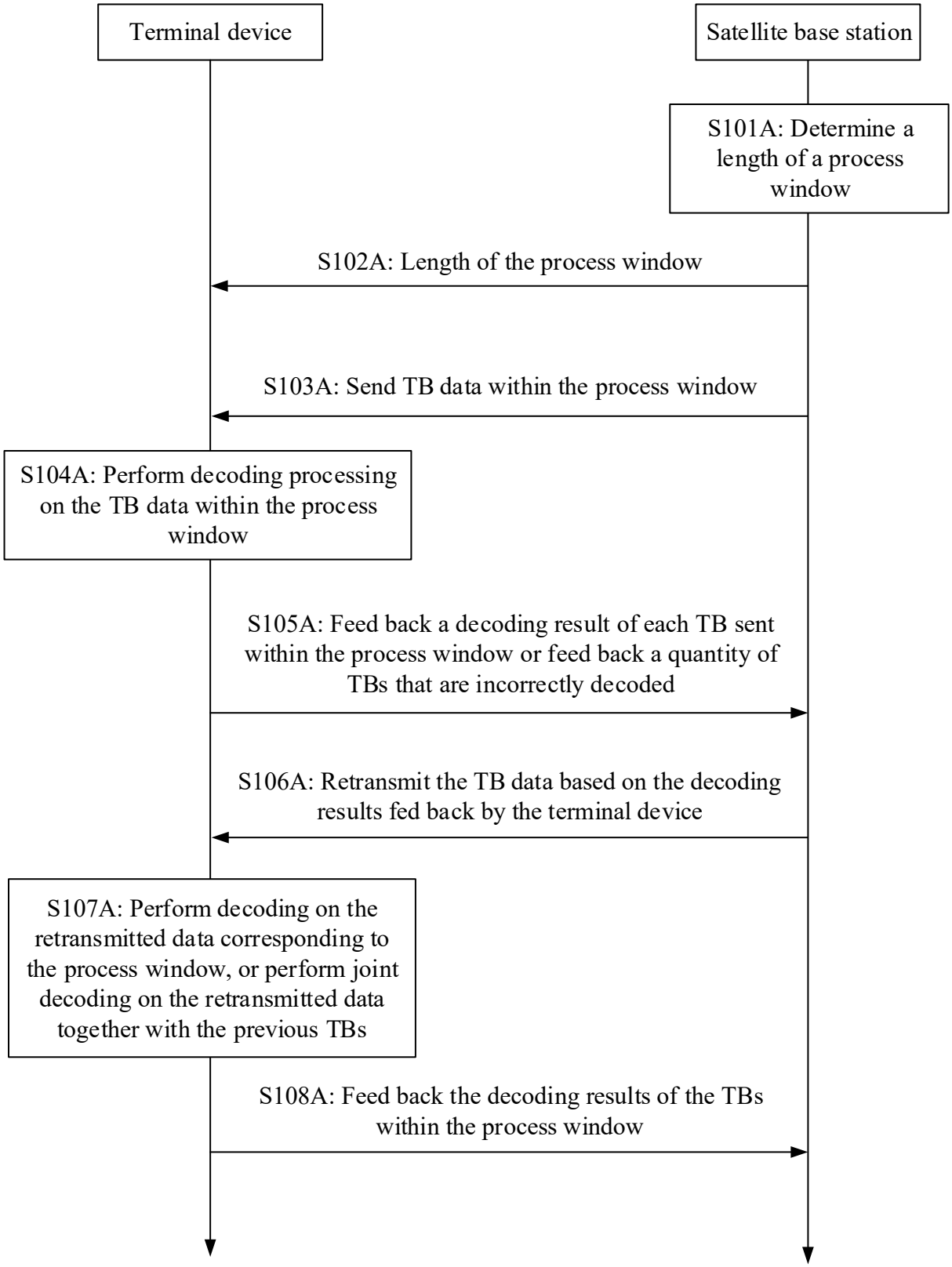

Terminal device
Satellite base station
S101A: Determine a length of a process window
S102A: Length of the process window
S103A: Send TB data within the process window
S104A: Perform decoding processing on the TB data within the process window
S105A: Feed back a decoding result of each TB sent within the process window or feed back a quantity of TBs that are incorrectly decoded
S106A: Retransmit the TB data based on the decoding results fed back by the terminal device
S107A: Perform decoding on the retransmitted data corresponding to the process window, or perform joint decoding on the retransmitted data together with the previous TBs
S108A: Feed back the decoding results of the TBs within the process window

FIG. 1A

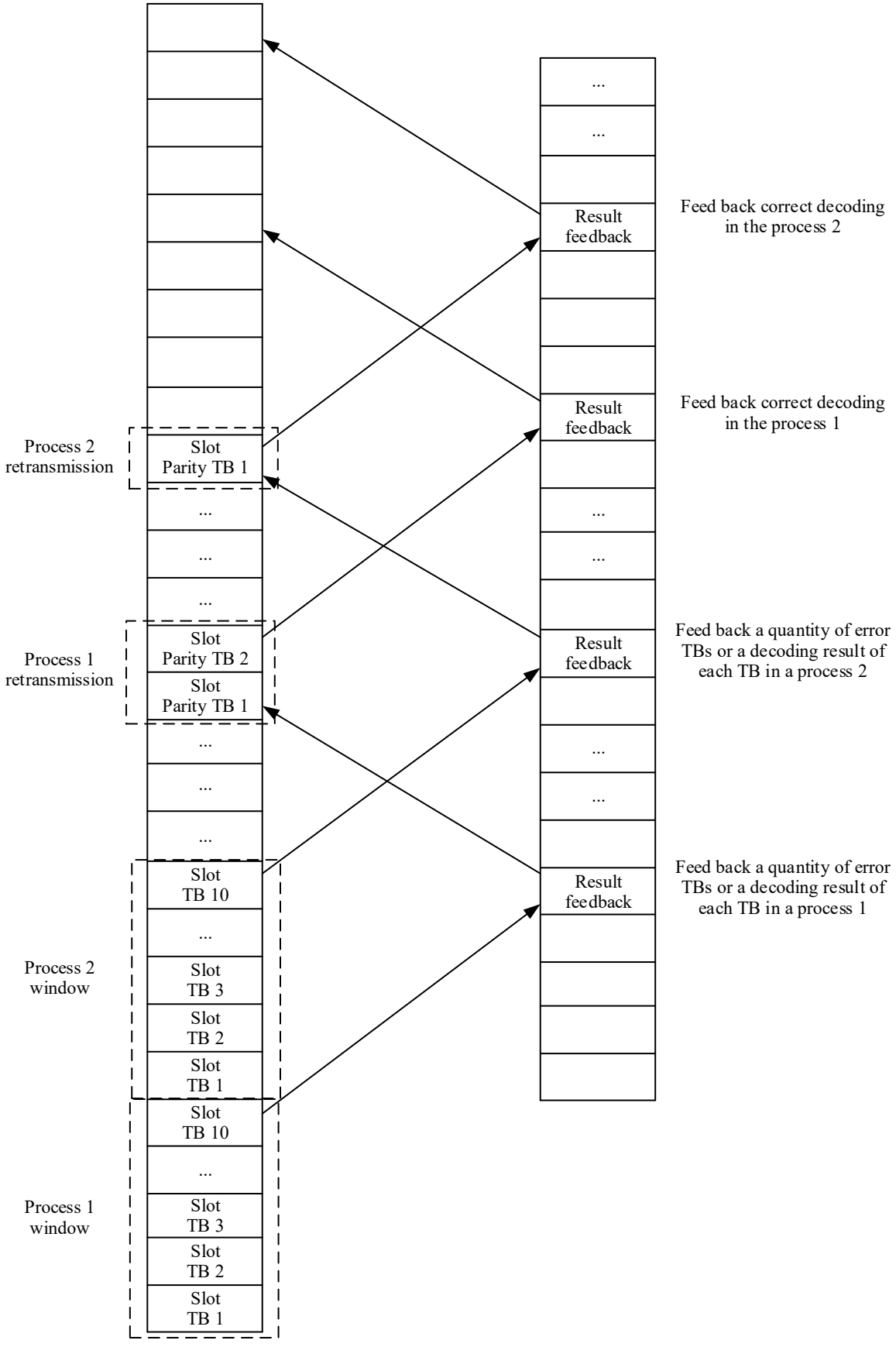

...
...
Result feedback
Feed back correct decoding in the process 2
Result feedback
Feed back correct decoding in the process 1
Process 2 retransmission
Slot Parity TB 1
...
...
...
...
...
Result feedback
Feed back a quantity of error TBs or a decoding result of each TB in a process 2
Process 1 retransmission
Slot Parity TB 2
Slot Parity TB 1
...
...
...
...
...
Result feedback
Feed back a quantity of error TBs or a decoding result of each TB in a process 1
Process 2 window
Slot TB 10
...
Slot TB 3
Slot TB 2
Slot TB 1
Process 1 window
Slot TB 10
...
Slot TB 3
Slot TB 2
Slot TB 1

FIG. 1B

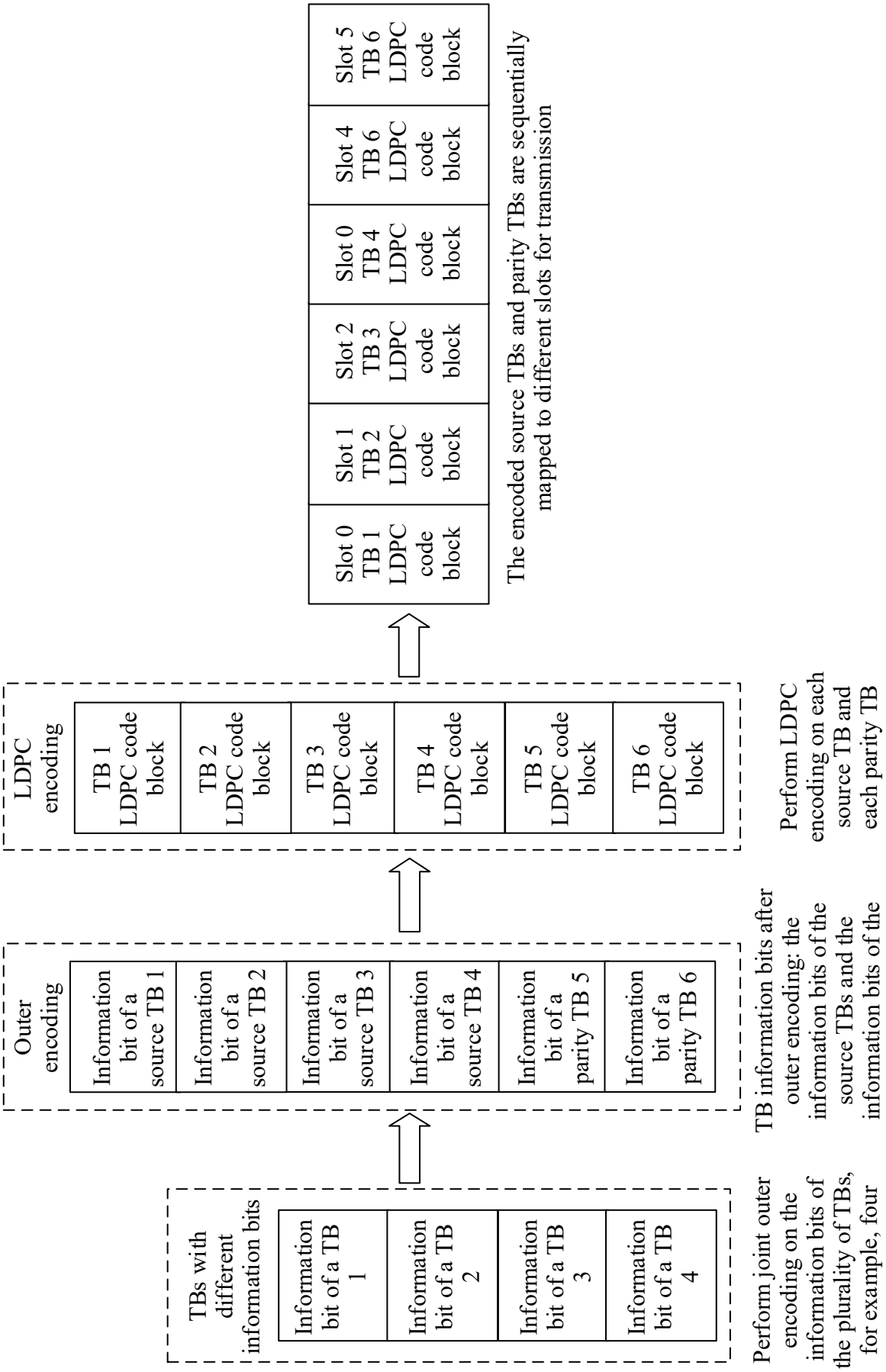

TBs with different information bits
Information bit of a TB 1
Information bit of a TB 2
Information bit of a TB 3
Information bit of a TB 4
Perform joint outer encoding on the information bits of the plurality of TBs, for example, four TBs
Outer encoding
Information bit of a source TB 1
Information bit of a source TB 2
Information bit of a source TB 3
Information bit of a source TB 4
Information bit of a parity TB 5
Information bit of a parity TB 6
TB information bits after outer encoding: the information bits of the source TBs and the information bits of the parity TBs
LDPC encoding
TB 1 LDPC code block
TB 2 LDPC code block
TB 3 LDPC code block
TB 4 LDPC code block
TB 5 LDPC code block
TB 6 LDPC code block
Perform LDPC encoding on each source TB and each parity TB
Slot 0 TB 1 LDPC code block
Slot 1 TB 2 LDPC code block
Slot 2 TB 3 LDPC code block
Slot 0 TB 4 LDPC code block
Slot 4 TB 6 LDPC code block
Slot 5 TB 6 LDPC code block
The encoded source TBs and parity TBs are sequentially mapped to different slots for transmission

FIG. 2A

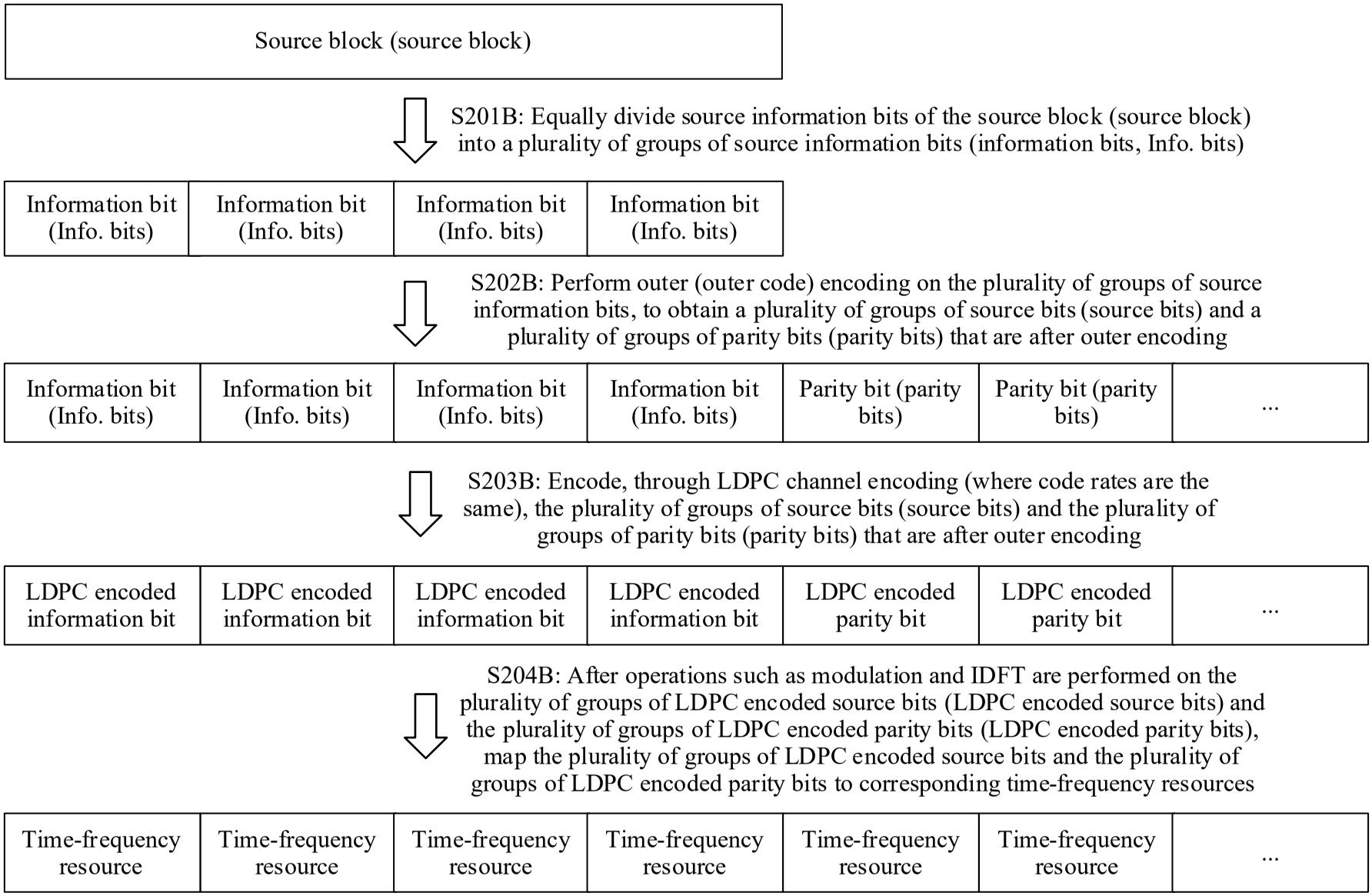

Source block (source block)
S201B: Equally divide source information bits of the source block (source block) into a plurality of groups of source information bits (information bits, Info. bits)
Information bit (Info. bits)
Information bit (Info. bits)
Information bit (Info. bits)
Information bit (Info. bits)
S202B: Perform outer (outer code) encoding on the plurality of groups of source information bits, to obtain a plurality of groups of source bits (source bits) and a plurality of groups of parity bits (parity bits) that are after outer encoding
Information bit (Info. bits)
Information bit (Info. bits)
Information bit (Info. bits)
Information bit (Info. bits)
Parity bit (parity bits)
Parity bit (parity bits)
...
S203B: Encode, through LDPC channel encoding (where code rates are the same), the plurality of groups of source bits (source bits) and the plurality of groups of parity bits (parity bits) that are after outer encoding
LDPC encoded information bit
LDPC encoded information bit
LDPC encoded information bit
LDPC encoded information bit
LDPC encoded parity bit
LDPC encoded parity bit
...
S204B: After operations such as modulation and IDFT are performed on the plurality of groups of LDPC encoded source bits (LDPC encoded source bits) and the plurality of groups of LDPC encoded parity bits (LDPC encoded parity bits), map the plurality of groups of LDPC encoded source bits and the plurality of groups of LDPC encoded parity bits to corresponding time-frequency resources
Time-frequency resource
Time-frequency resource
Time-frequency resource
Time-frequency resource
Time-frequency resource
Time-frequency resource
...

FIG. 2B

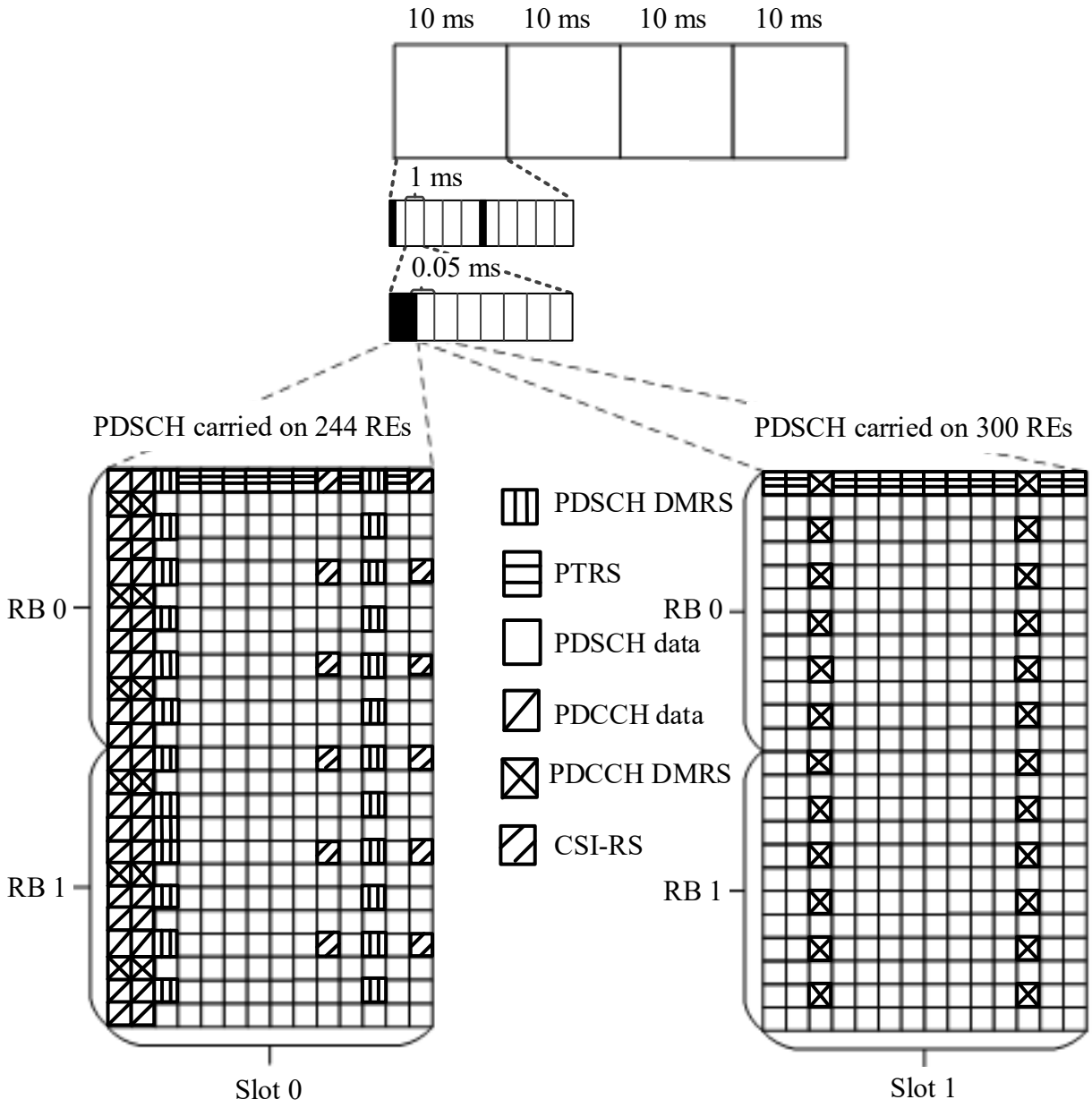

10 ms
10 ms
10 ms
10 ms
1 ms
0.05 ms
PDSCH carried on 244 REs
PDSCH carried on 300 REs
PDSCH DMRS
PTRS
PDSCH data
PDCCH data
PDCCH DMRS
CSI-RS
RB 0
RB 1
RB 0
RB 1
Slot 0
Slot 1

FIG. 3

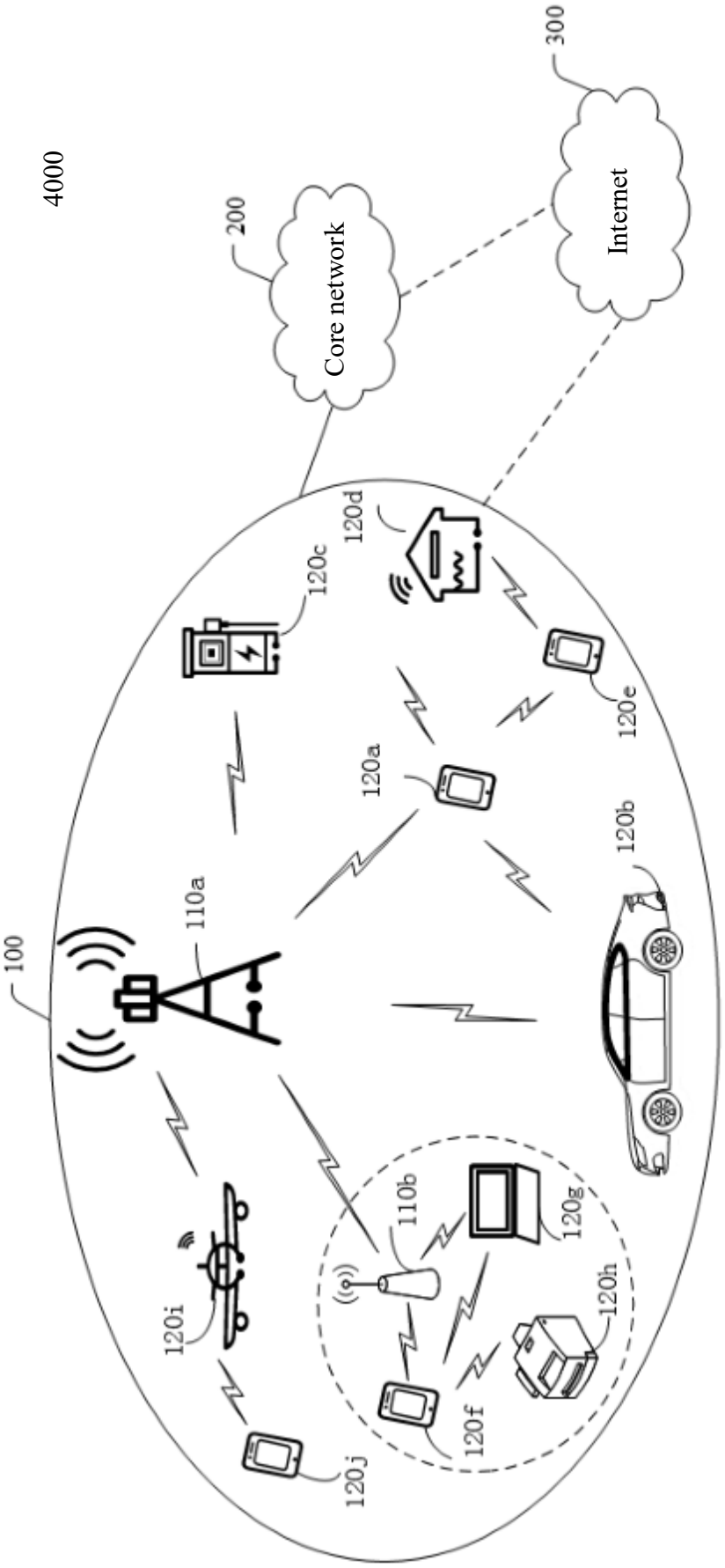

4000
300
Internet
200
Core network
120d
120c
120e
120a
120b
110a
100
110b
120g
120h
120i
120f
120j

FIG. 4A

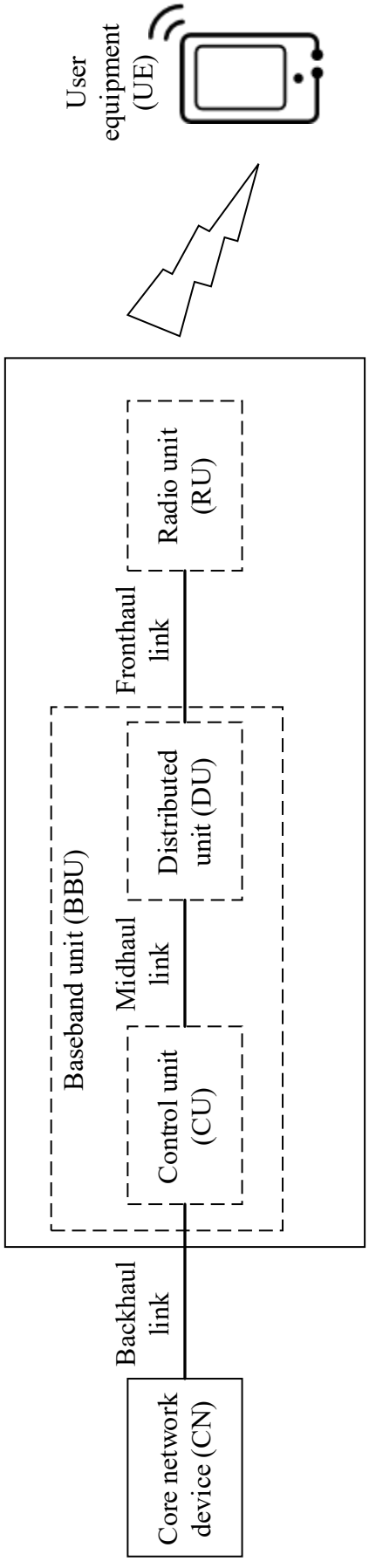

User equipment (UE)
Core network device (CN)
Backhaul link
Baseband unit (BBU)
Control unit (CU)
Midhaul link
Distributed unit (DU)
Fronthaul link
Radio unit (RU)

FIG. 4B

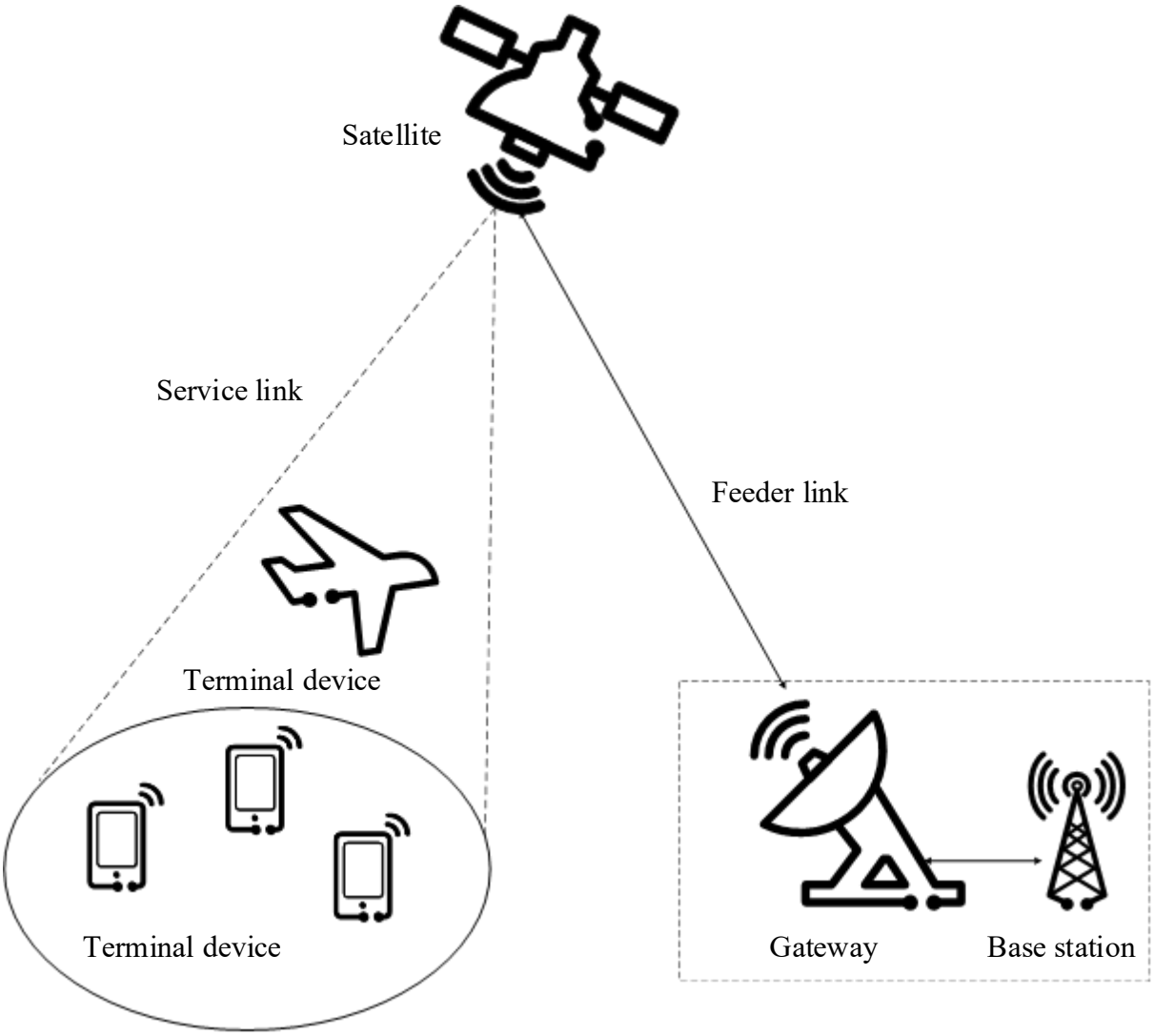


FIG. 4C

S501: A first communication apparatus determines a first transmission resource, where the first transmission resource includes transmission resources respectively corresponding to M transport blocks, and at least two of the M transport blocks correspond to transmission resources of unequal sizes

S502: Obtain, based on the first transmission resource, M second transmission resources for transmitting the M transport blocks, where all the second transmission resources are of equal size

FIG. 5

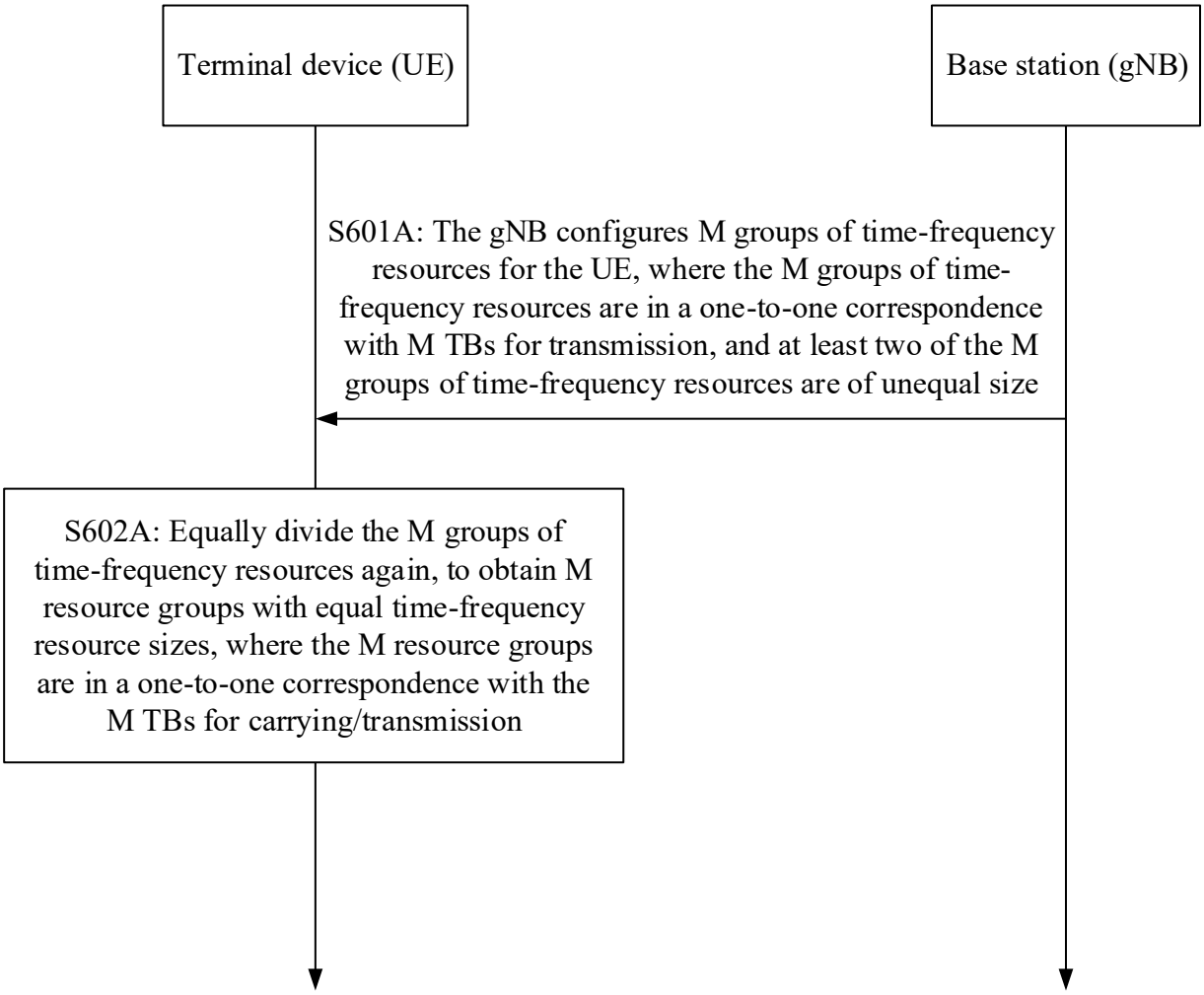

Terminal device (UE)
Base station (gNB)
S601A: The gNB configures M groups of time-frequency resources for the UE, where the M groups of time-frequency resources are in a one-to-one correspondence with M TBs for transmission, and at least two of the M groups of time-frequency resources are of unequal size
S602A: Equally divide the M groups of time-frequency resources again, to obtain M resource groups with equal time-frequency resource sizes, where the M resource groups are in a one-to-one correspondence with the M TBs for carrying/transmission

FIG. 6A

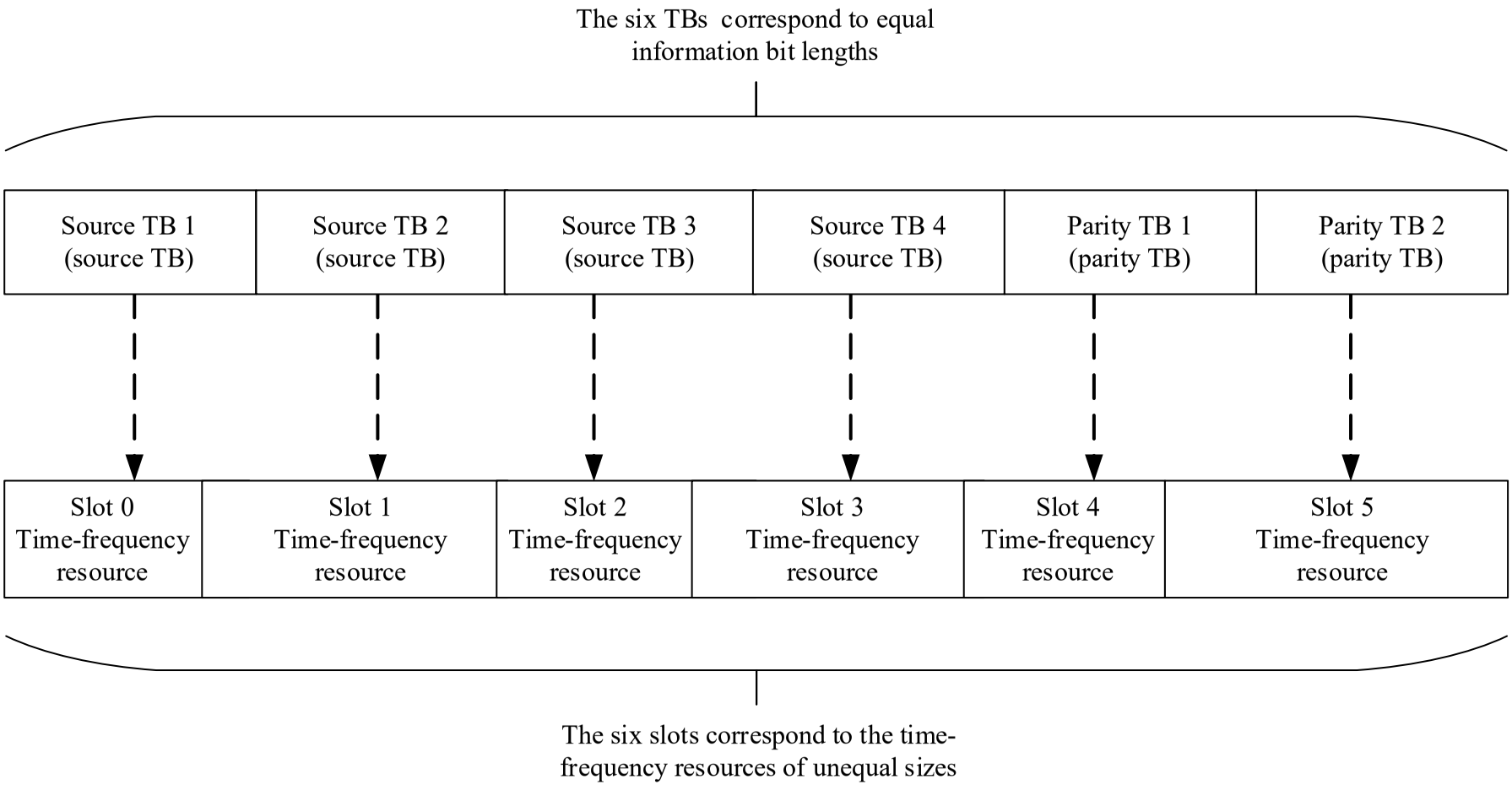

The six TBs correspond to equal information bit lengths
Source TB 1 (source TB)
Source TB 2 (source TB)
Source TB 3 (source TB)
Source TB 4 (source TB)
Parity TB 1 (parity TB)
Parity TB 2 (parity TB)
Slot 0 Time-frequency resource
Slot 1 Time-frequency resource
Slot 2 Time-frequency resource
Slot 3 Time-frequency resource
Slot 4 Time-frequency resource
Slot 5 Time-frequency resource
The six slots correspond to the time-frequency resources of unequal sizes

FIG. 6B

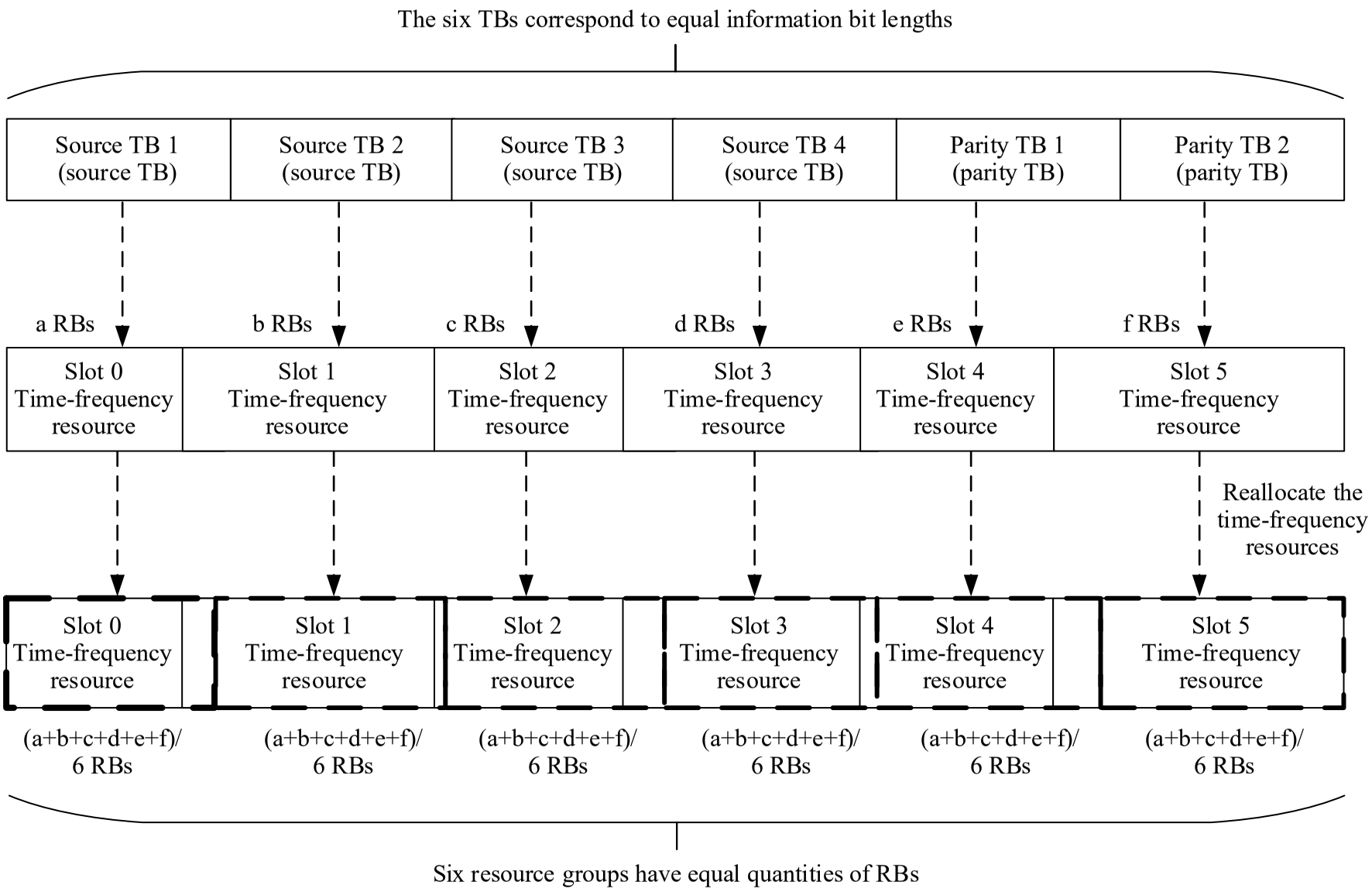

The six TBs correspond to equal information bit lengths
Source TB 1 (source TB)
Source TB 2 (source TB)
Source TB 3 (source TB)
Source TB 4 (source TB)
Parity TB 1 (parity TB)
Parity TB 2 (parity TB)
a RBs
b RBs
c RBs
d RBs
e RBs
f RBs
Slot 0 Time-frequency resource
Slot 1 Time-frequency resource
Slot 2 Time-frequency resource
Slot 3 Time-frequency resource
Slot 4 Time-frequency resource
Slot 5 Time-frequency resource
Reallocate the time-frequency resources
Slot 0 Time-frequency resource
Slot 1 Time-frequency resource
Slot 2 Time-frequency resource
Slot 3 Time-frequency resource
Slot 4 Time-frequency resource
Slot 5 Time-frequency resource
(a+b+c+d+e+f)/ 6 RBs
(a+b+c+d+e+f)/ 6 RBs
(a+b+c+d+e+f)/ 6 RBs
(a+b+c+d+e+f)/ 6 RBs
(a+b+c+d+e+f)/ 6 RBs
(a+b+c+d+e+f)/ 6 RBs
Six resource groups have equal quantities of RBs

FIG. 6C

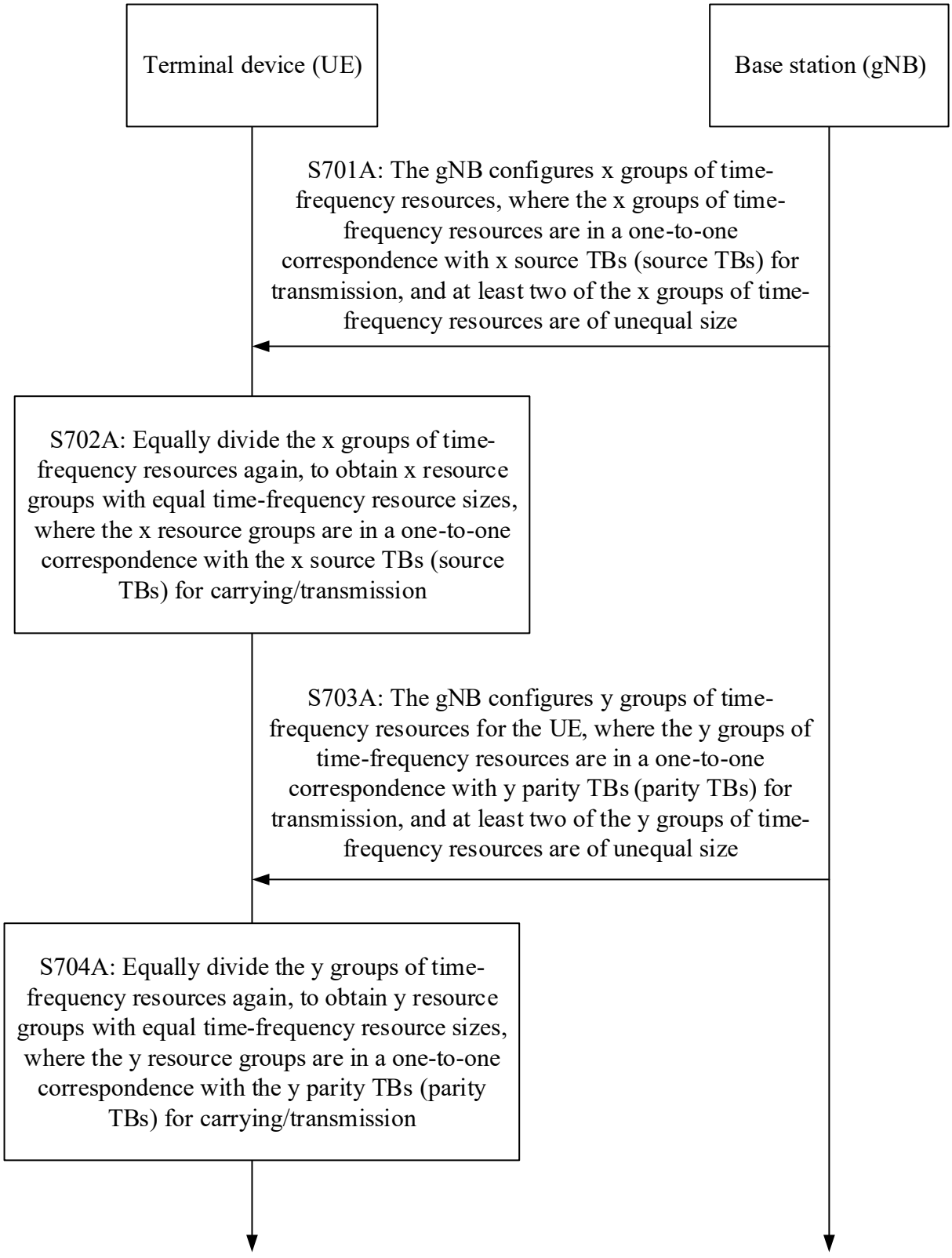

Terminal device (UE)
Base station (gNB)
S701A: The gNB configures x groups of time-frequency resources, where the x groups of time-frequency resources are in a one-to-one correspondence with x source TBs (source TBs) for transmission, and at least two of the x groups of time-frequency resources are of unequal size
S702A: Equally divide the x groups of time-frequency resources again, to obtain x resource groups with equal time-frequency resource sizes, where the x resource groups are in a one-to-one correspondence with the x source TBs (source TBs) for carrying/transmission
S703A: The gNB configures y groups of time-frequency resources for the UE, where the y groups of time-frequency resources are in a one-to-one correspondence with y parity TBs (parity TBs) for transmission, and at least two of the y groups of time-frequency resources are of unequal size
S704A: Equally divide the y groups of time-frequency resources again, to obtain y resource groups with equal time-frequency resource sizes, where the y resource groups are in a one-to-one correspondence with the y parity TBs (parity TBs) for carrying/transmission

FIG. 7A

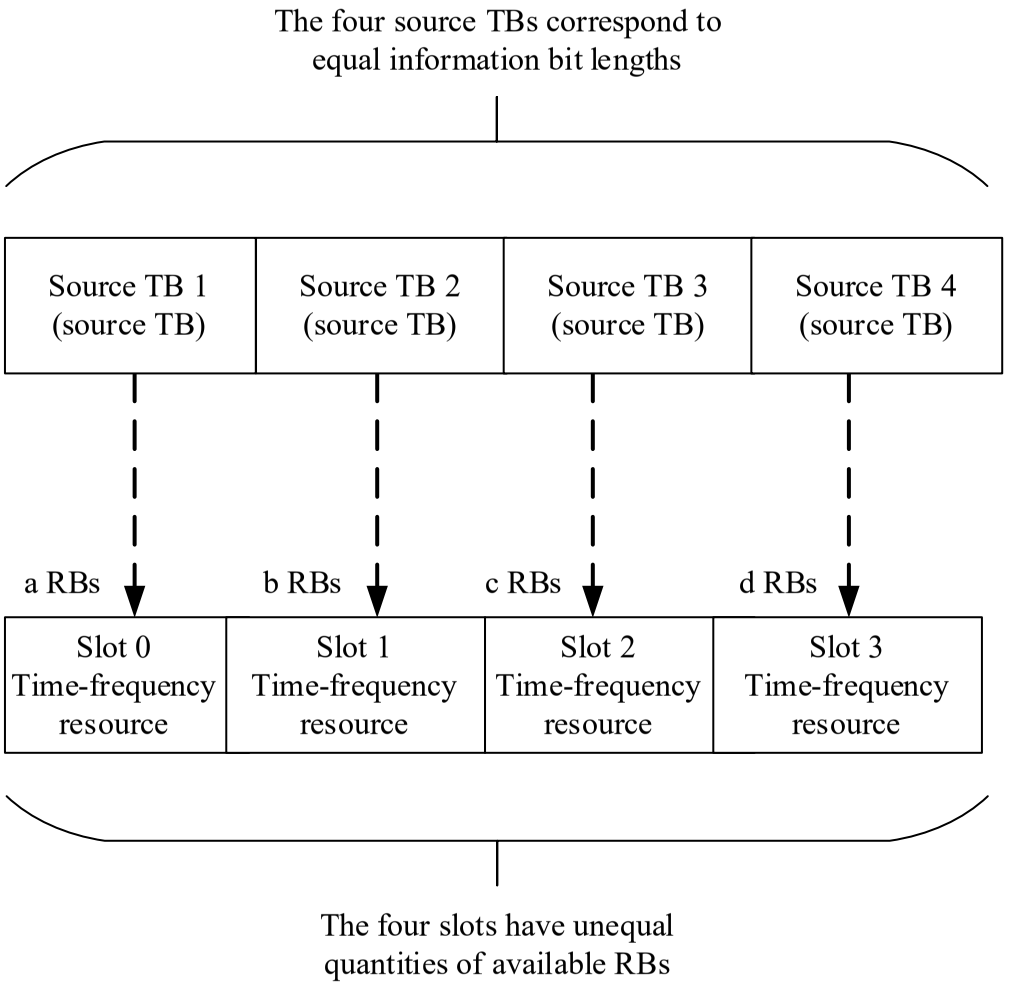


FIG. 7B(1)

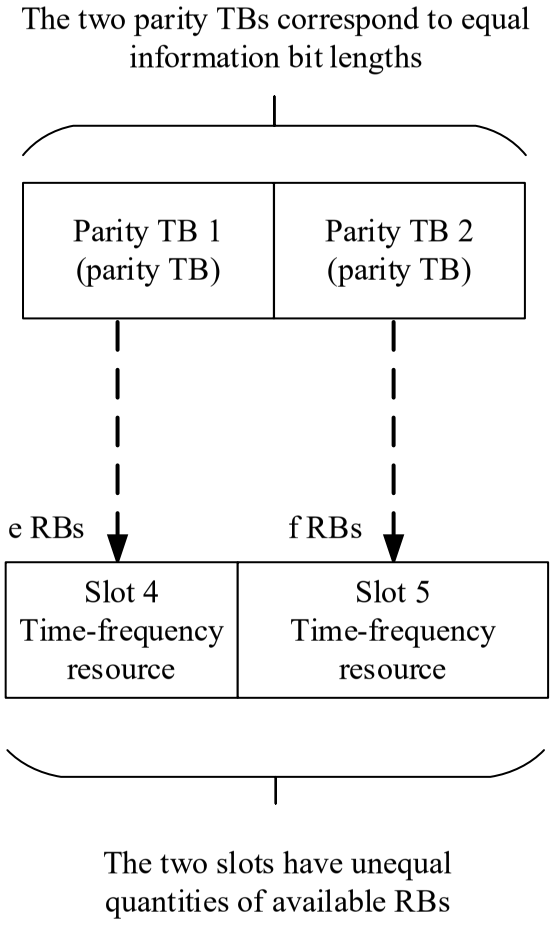


FIG. 7B(2)

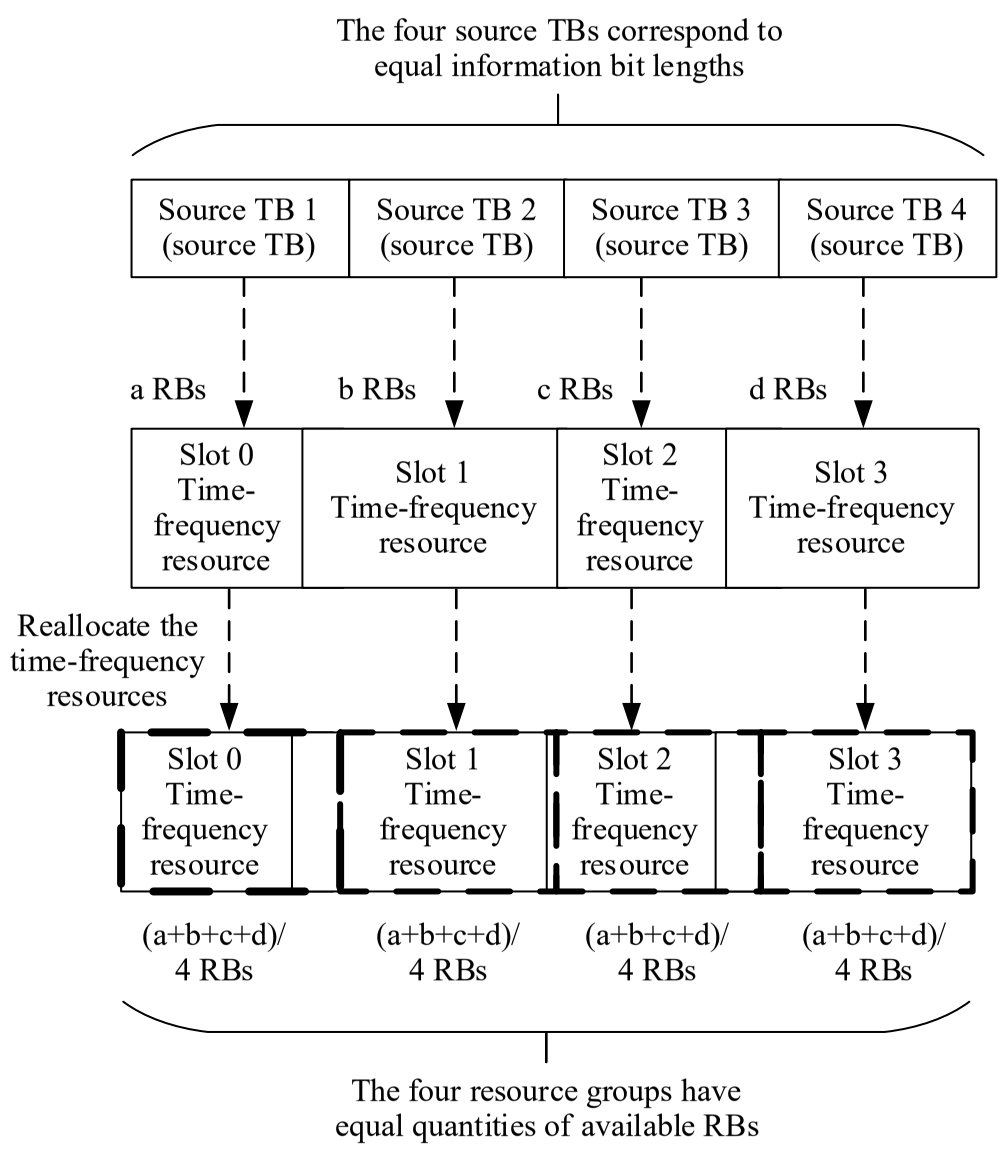


FIG. 7C(1)

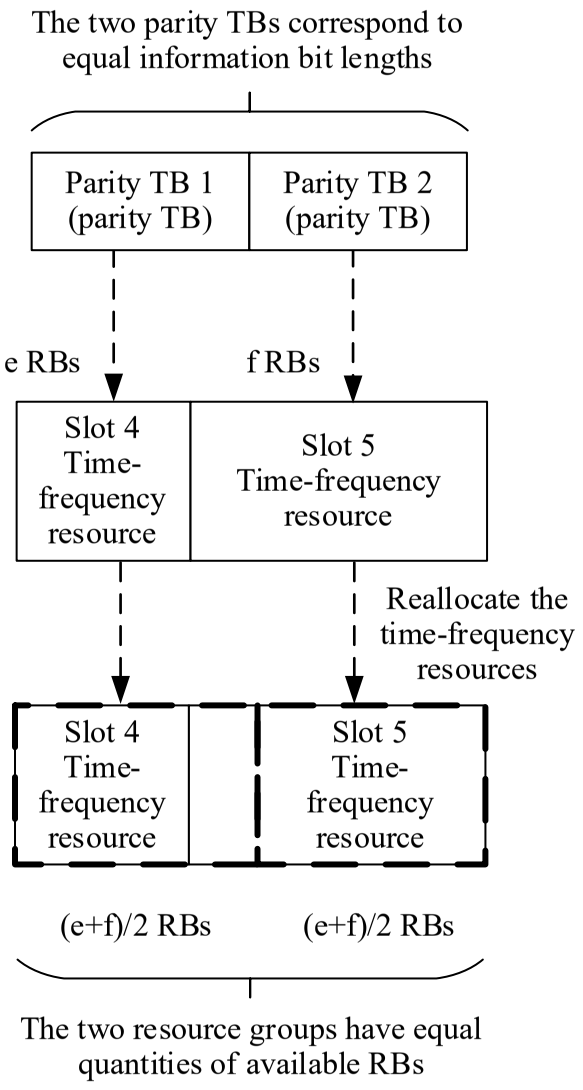


FIG. 7C(2)

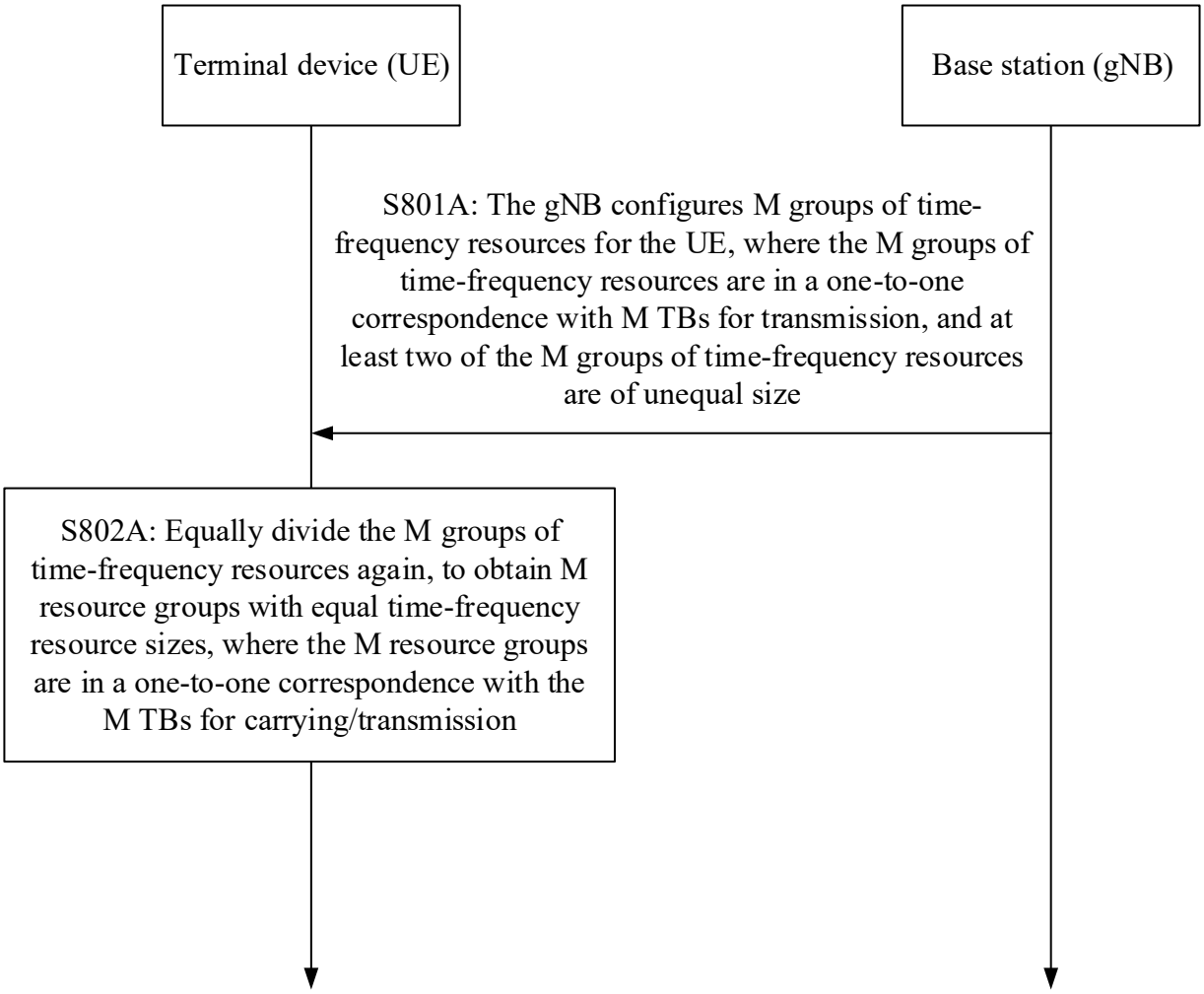

Terminal device (UE)
Base station (gNB)
S801A: The gNB configures M groups of time-frequency resources for the UE, where the M groups of time-frequency resources are in a one-to-one correspondence with M TBs for transmission, and at least two of the M groups of time-frequency resources are of unequal size
S802A: Equally divide the M groups of time-frequency resources again, to obtain M resource groups with equal time-frequency resource sizes, where the M resource groups are in a one-to-one correspondence with the M TBs for carrying/transmission

FIG. 8A

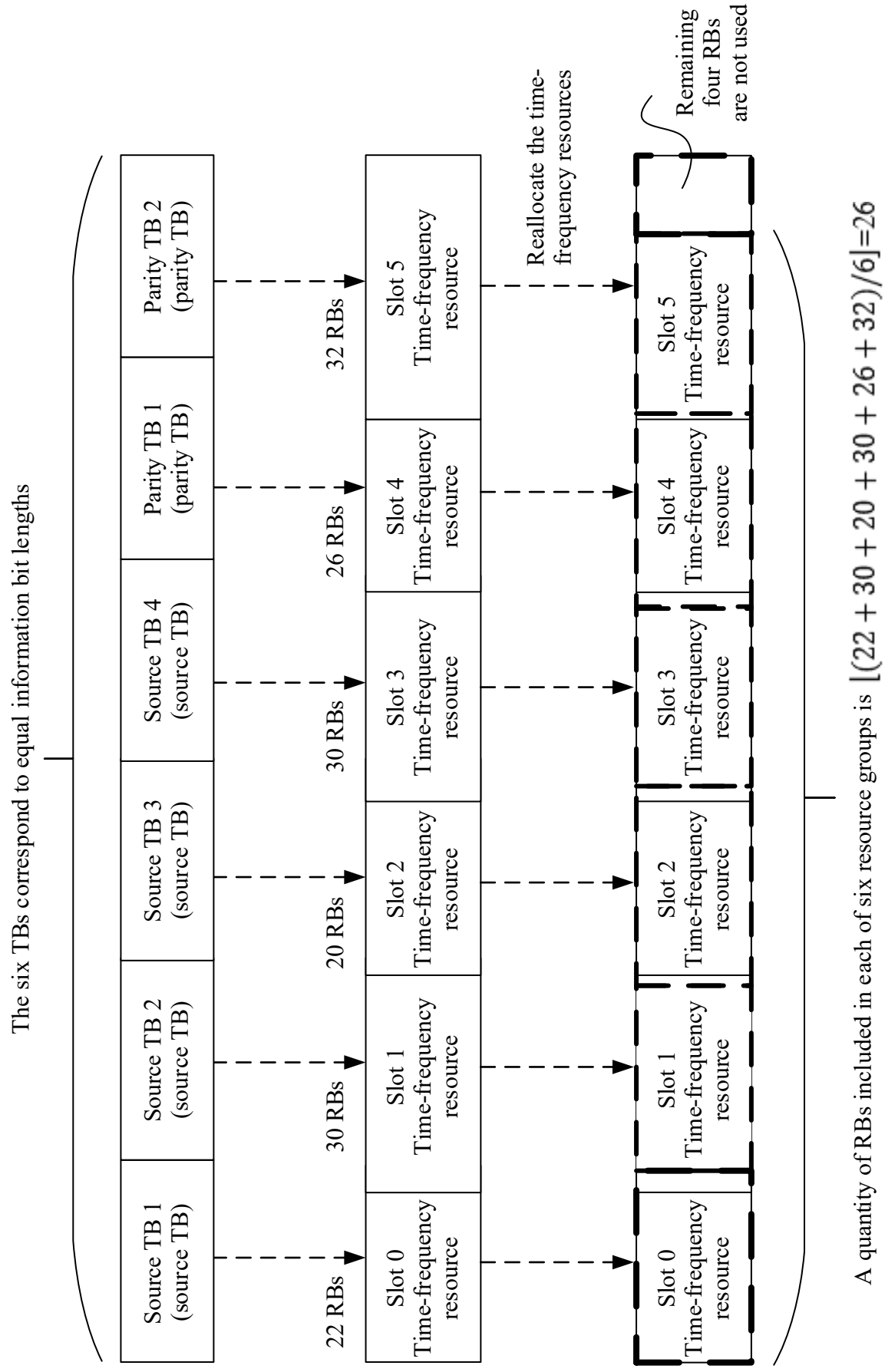

The six TBs correspond to equal information bit lengths
Source TB 1 (source TB)
Source TB 2 (source TB)
Source TB 3 (source TB)
Source TB 4 (source TB)
Parity TB 1 (parity TB)
Parity TB 2 (parity TB)
22 RBs
30 RBs
20 RBs
30 RBs
26 RBs
32 RBs
Slot 0 Time-frequency resource
Slot 1 Time-frequency resource
Slot 2 Time-frequency resource
Slot 3 Time-frequency resource
Slot 4 Time-frequency resource
Slot 5 Time-frequency resource
Reallocate the time-frequency resources
Slot 0 Time-frequency resource
Slot 1 Time-frequency resource
Slot 2 Time-frequency resource
Slot 3 Time-frequency resource
Slot 4 Time-frequency resource
Slot 5 Time-frequency resource
Remaining four RBs are not used
A quantity of RBs included in each of six resource groups is $\lfloor(22+30+20+30+26+32)/6\rfloor=26$

FIG. 8B

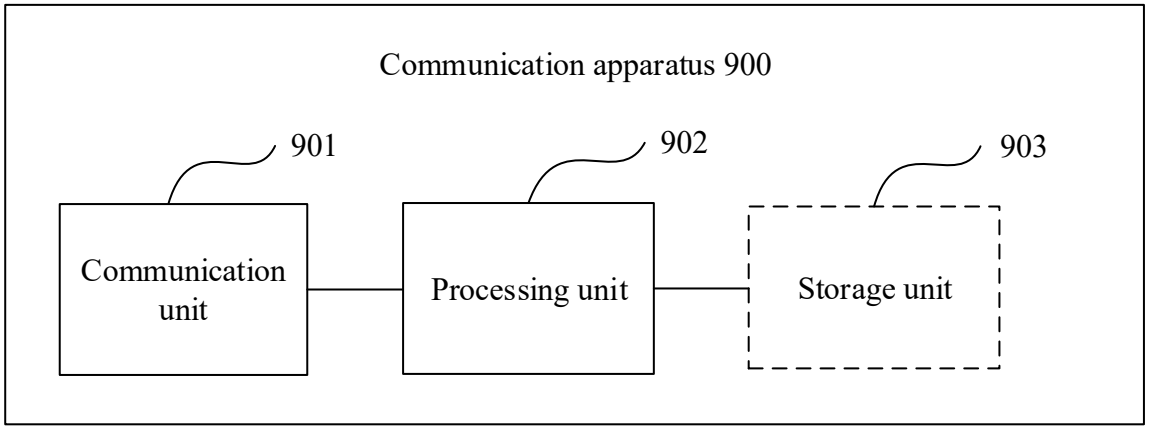


FIG. 9

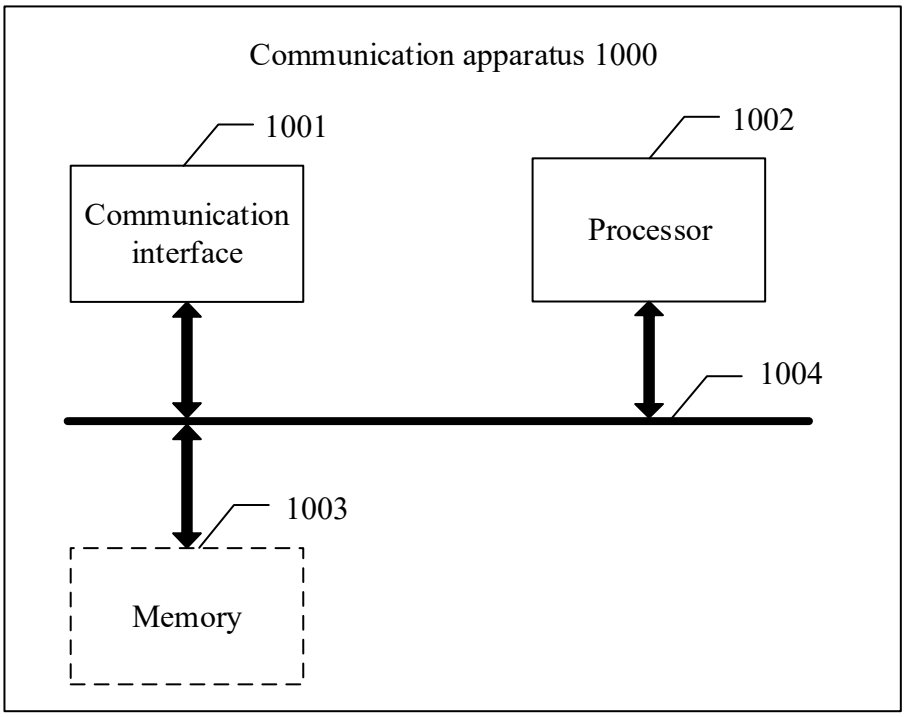


FIG. 10

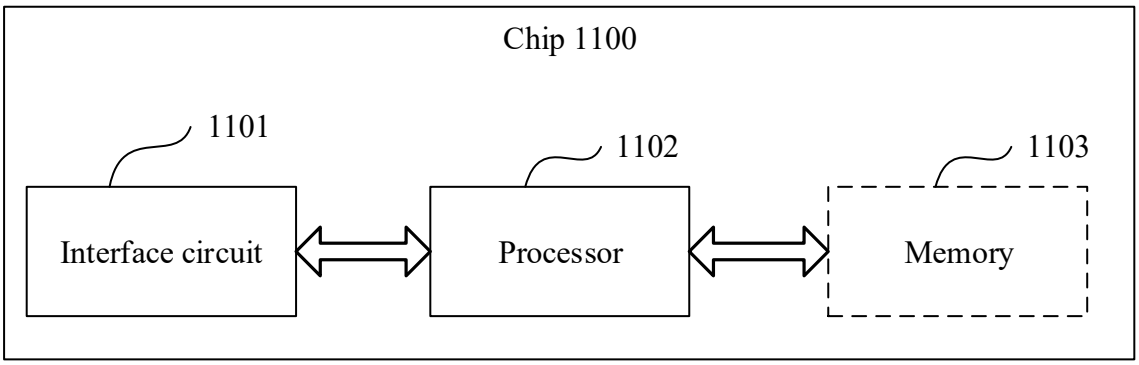


FIG. 11