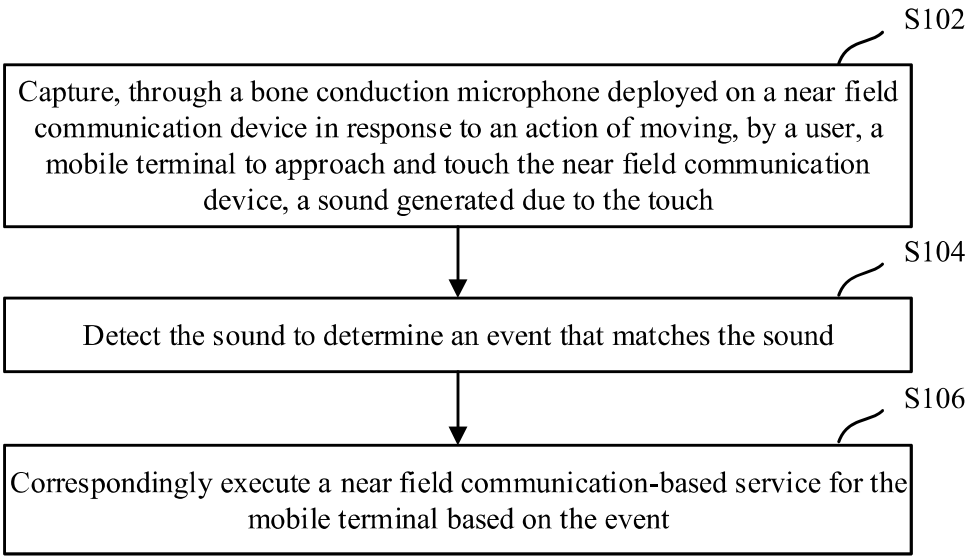

S102
Capture, through a bone conduction microphone deployed on a near field communication device in response to an action of moving, by a user, a mobile terminal to approach and touch the near field communication device, a sound generated due to the touch
S104
Detect the sound to determine an event that matches the sound
S106
Correspondingly execute a near field communication-based service for the mobile terminal based on the event

FIG. 1

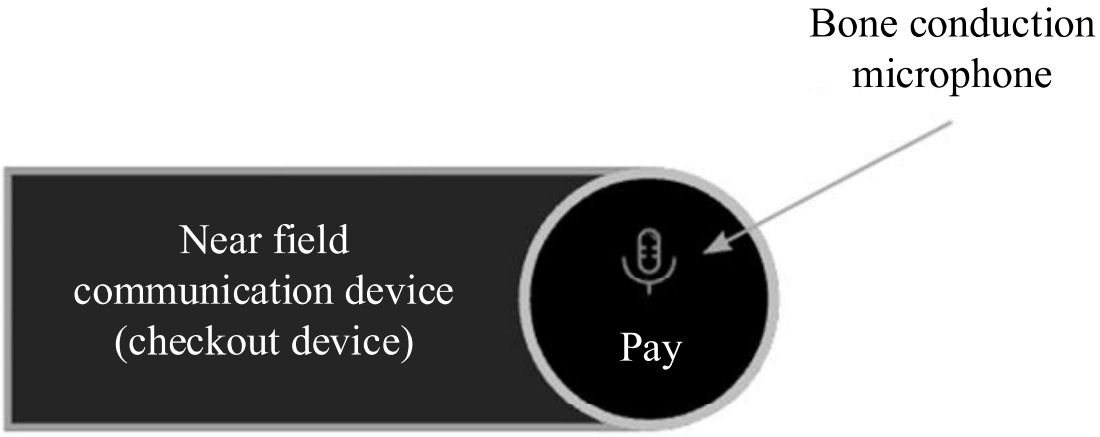

Bone conduction microphone
Near field communication device (checkout device)
Pay

FIG. 2

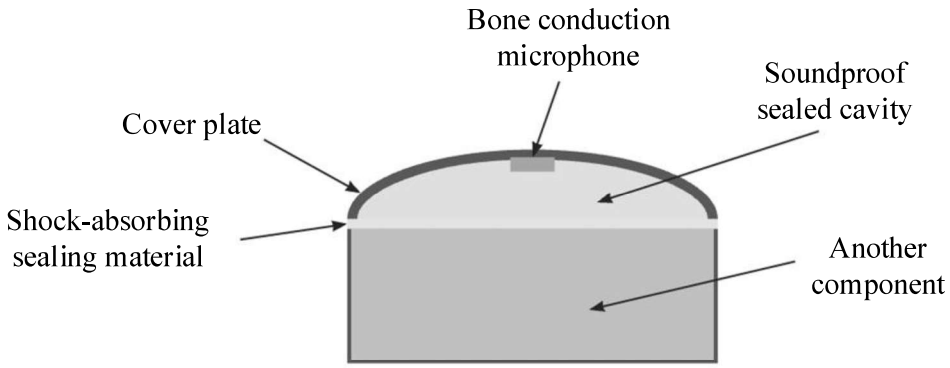



FIG. 3

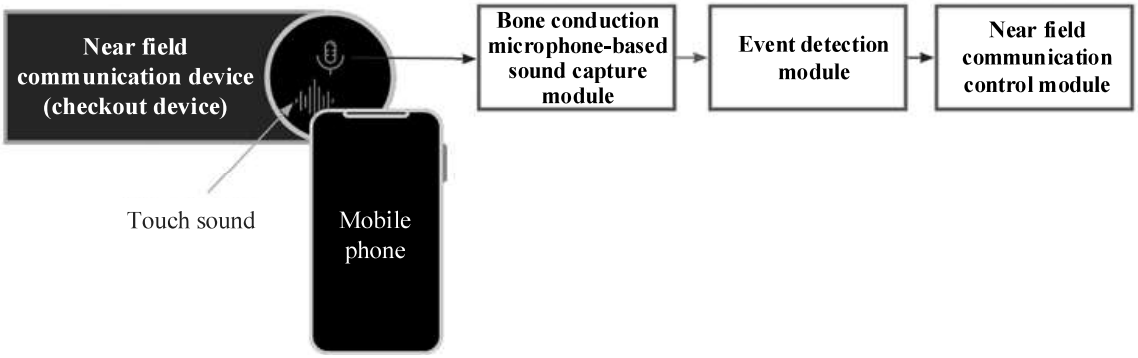



FIG. 4




FIG. 5

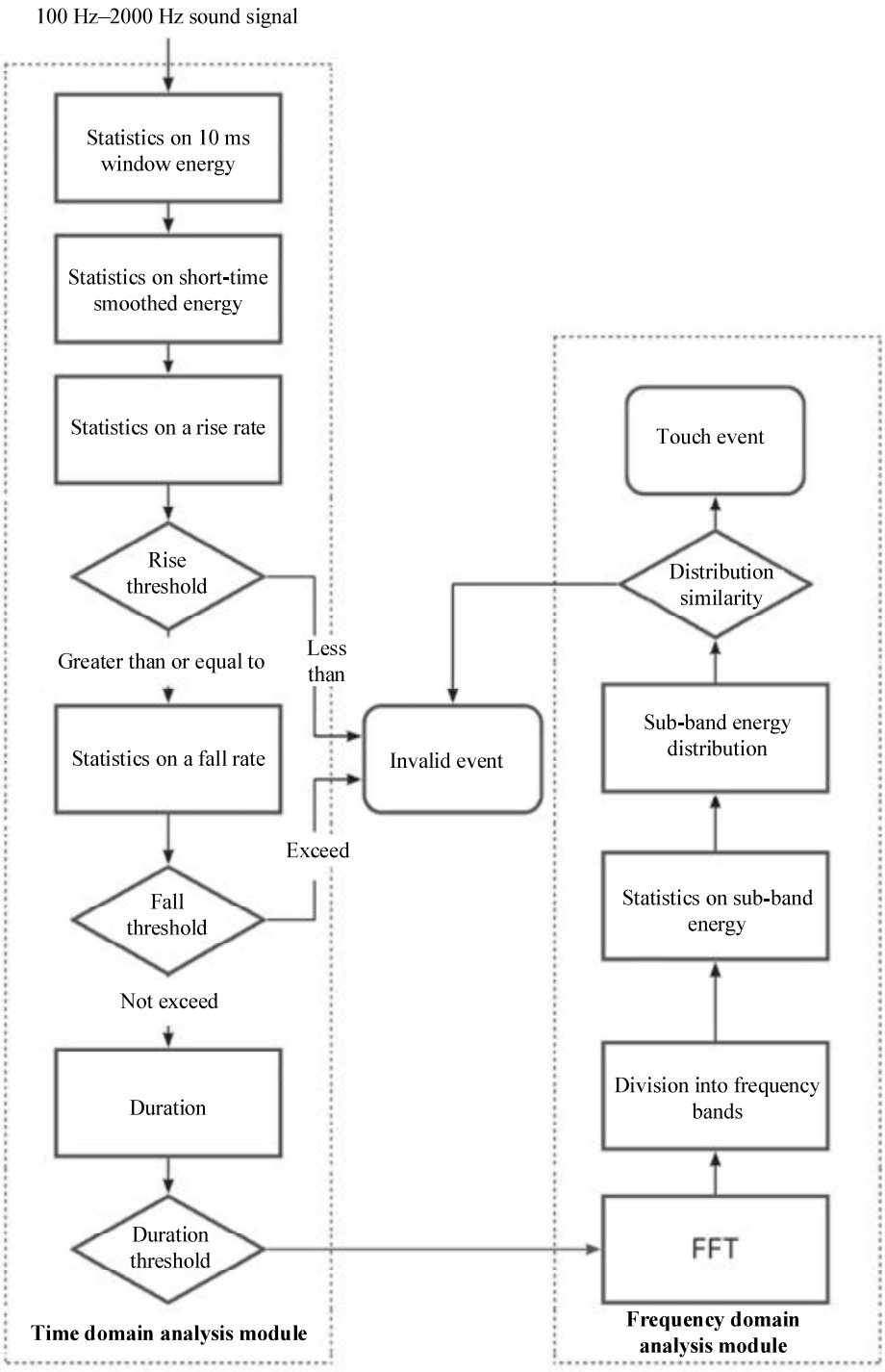

100 Hz–2000 Hz sound signal
Statistics on 10 ms window energy
Statistics on short-time smoothed energy
Statistics on a rise rate
Rise threshold
Greater than or equal to
Less than
Statistics on a fall rate
Invalid event
Exceed
Fall threshold
Not exceed
Duration
Duration threshold
Time domain analysis module
Touch event
Distribution similarity
Sub-band energy distribution
Statistics on sub-band energy
Division into frequency bands
FFT
Frequency domain analysis module

FIG. 6

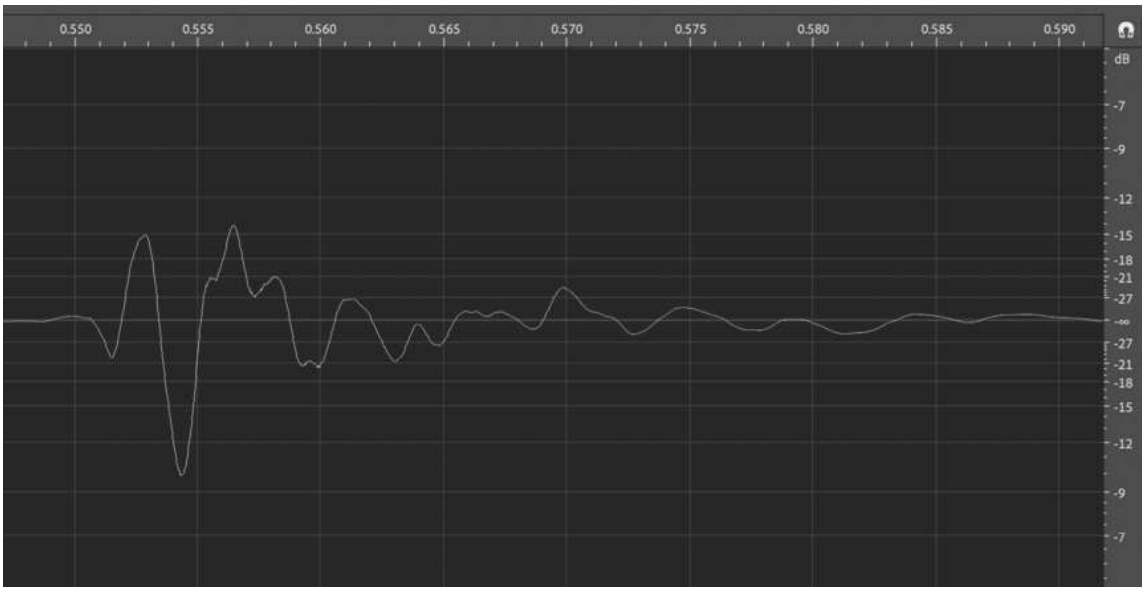

0.550
0.555
0.560
0.565
0.570
0.575
0.580
0.585
0.590
dB
-7
-9
-12
-15
-18
-21
-27
-∞
-27
-21
-18
-15
-12
-9
-7

FIG. 7

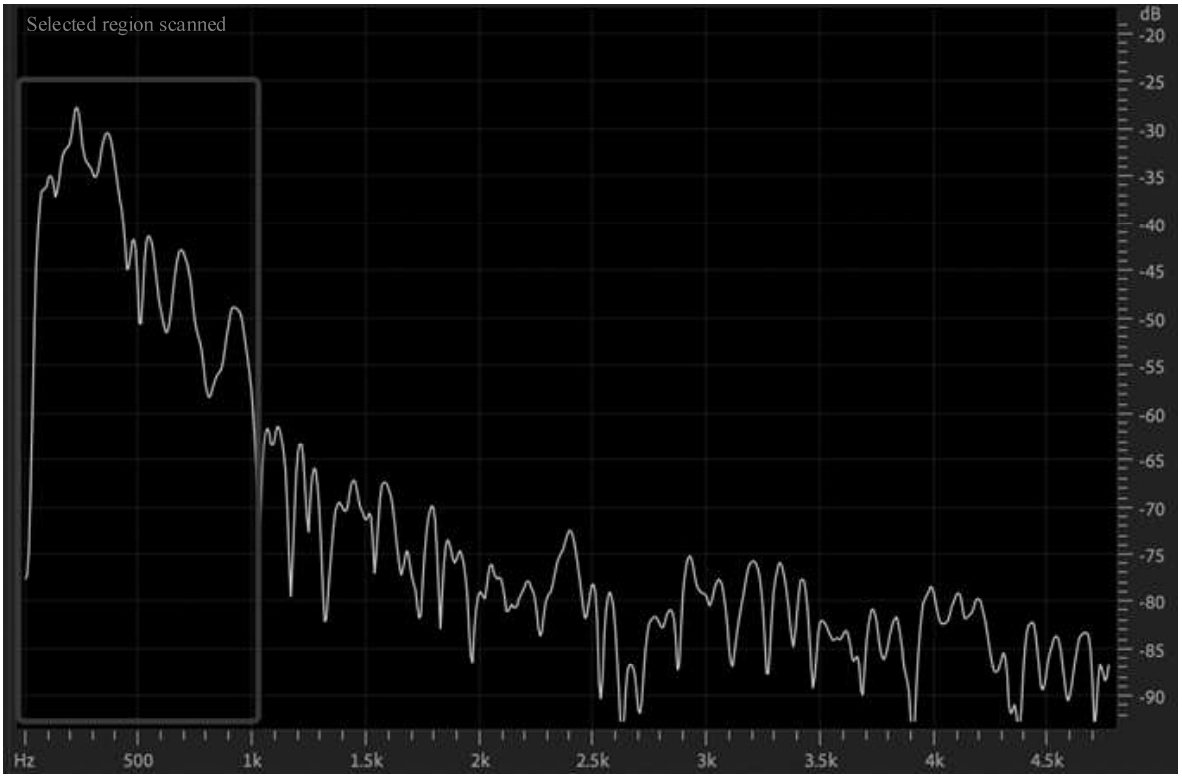

Selected region scanned
dB
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
Hz
500
1k
1.5k
2k
2.5k
3k
3.5k
4k
4.5k

FIG. 8

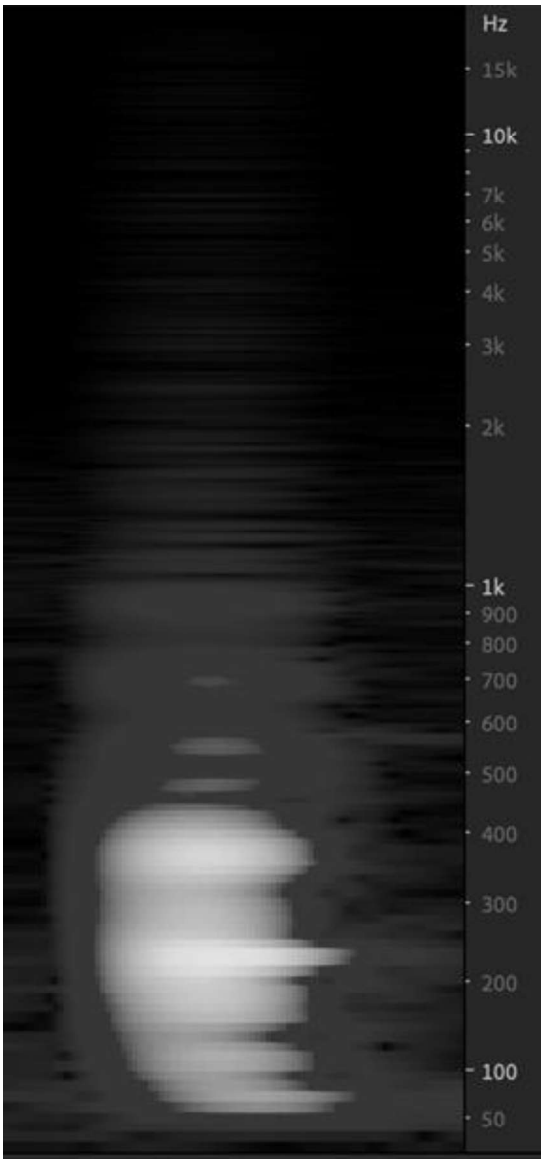

Hz
15k
10k
7k
6k
5k
4k
3k
2k
1k
900
800
700
600
500
400
300
200
100
50

FIG. 9

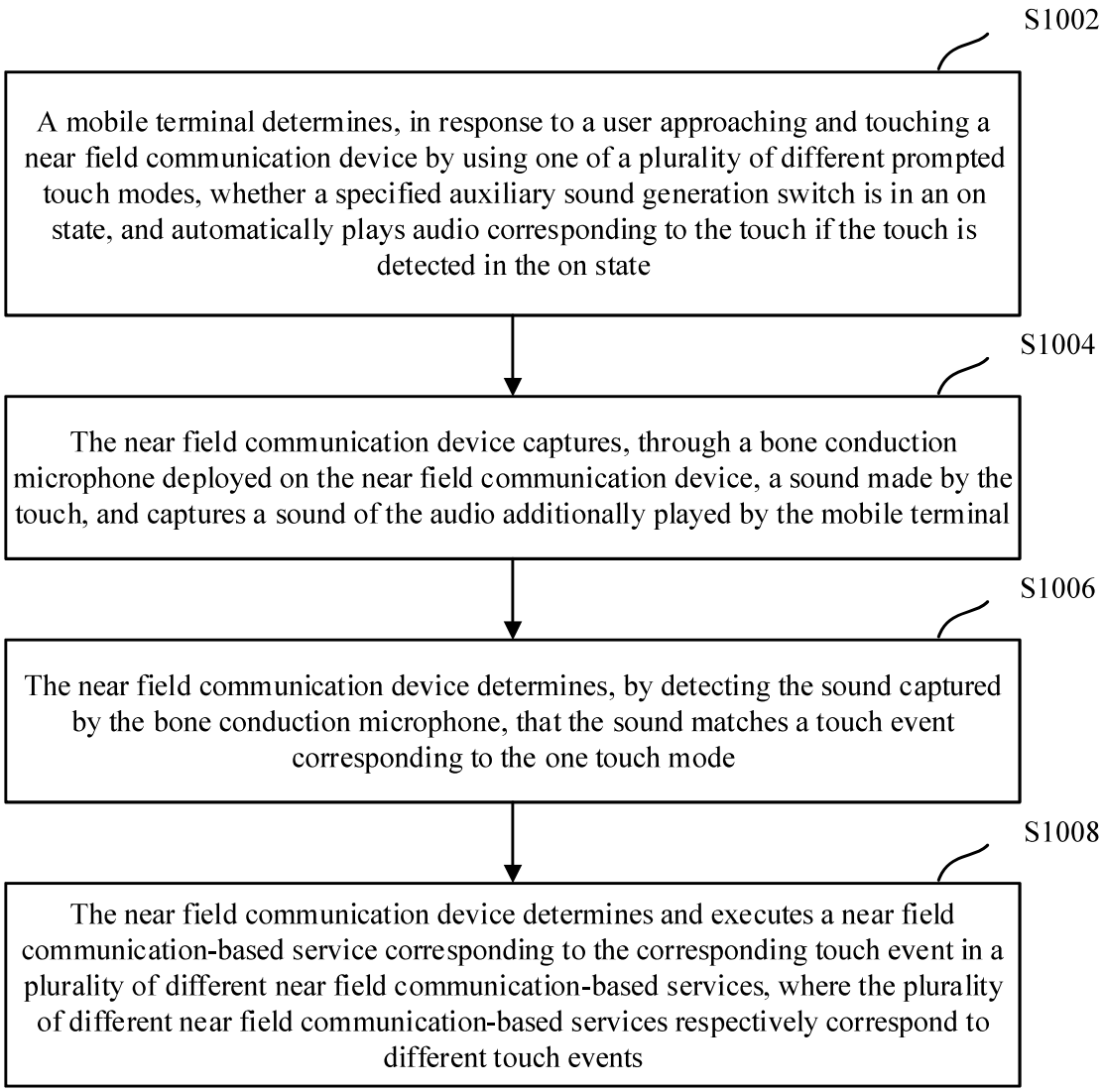

S1002
A mobile terminal determines, in response to a user approaching and touching a near field communication device by using one of a plurality of different prompted touch modes, whether a specified auxiliary sound generation switch is in an on state, and automatically plays audio corresponding to the touch if the touch is detected in the on state
S1004
The near field communication device captures, through a bone conduction microphone deployed on the near field communication device, a sound made by the touch, and captures a sound of the audio additionally played by the mobile terminal
S1006
The near field communication device determines, by detecting the sound captured by the bone conduction microphone, that the sound matches a touch event corresponding to the one touch mode
S1008
The near field communication device determines and executes a near field communication-based service corresponding to the corresponding touch event in a plurality of different near field communication-based services, where the plurality of different near field communication-based services respectively correspond to different touch events

FIG. 10

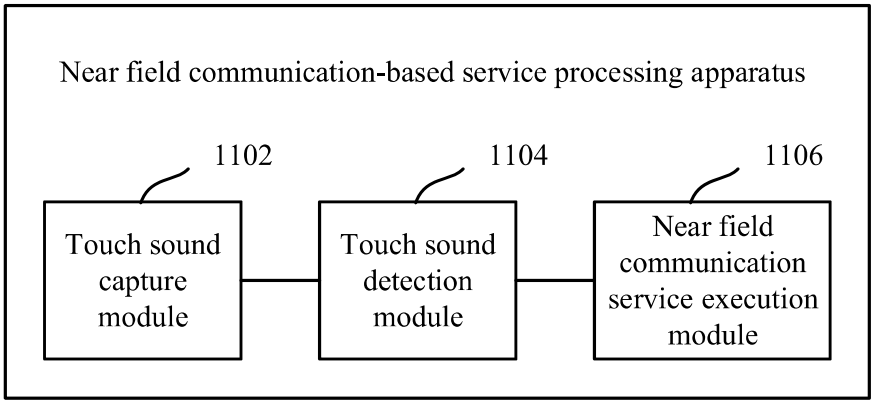

Near field communication-based service processing apparatus
1102
1104
1106
Touch sound capture module
Touch sound detection module
Near field communication service execution module

FIG. 11

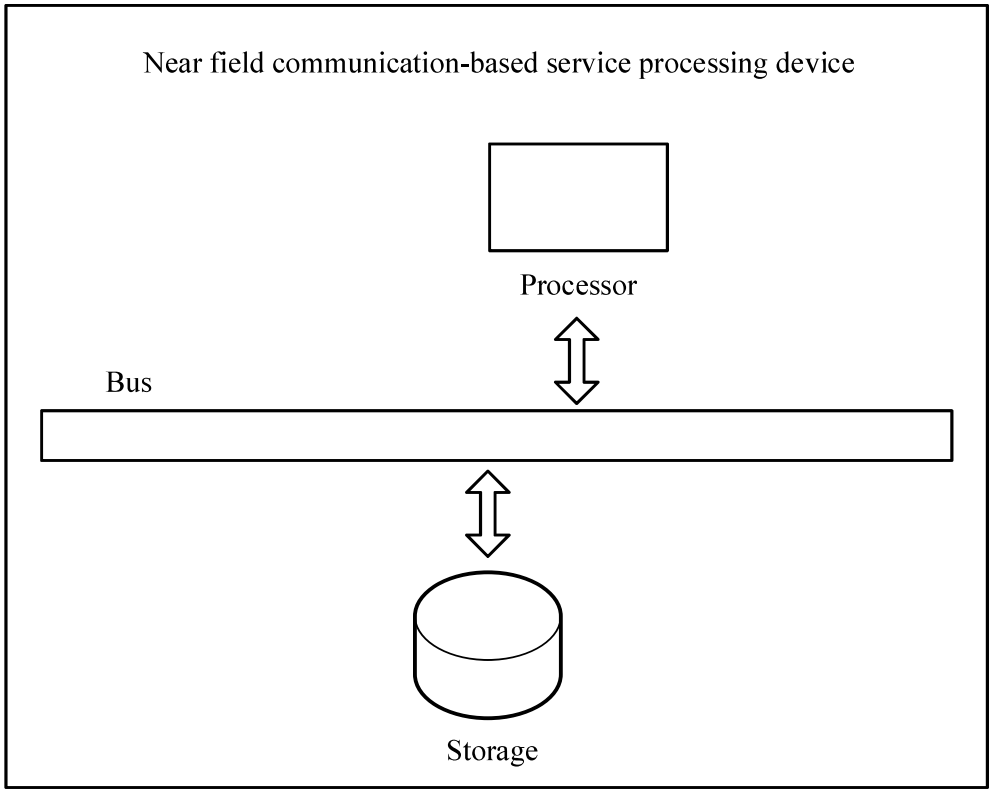

Near field communication-based service processing device
Processor
Bus
Storage

FIG. 12