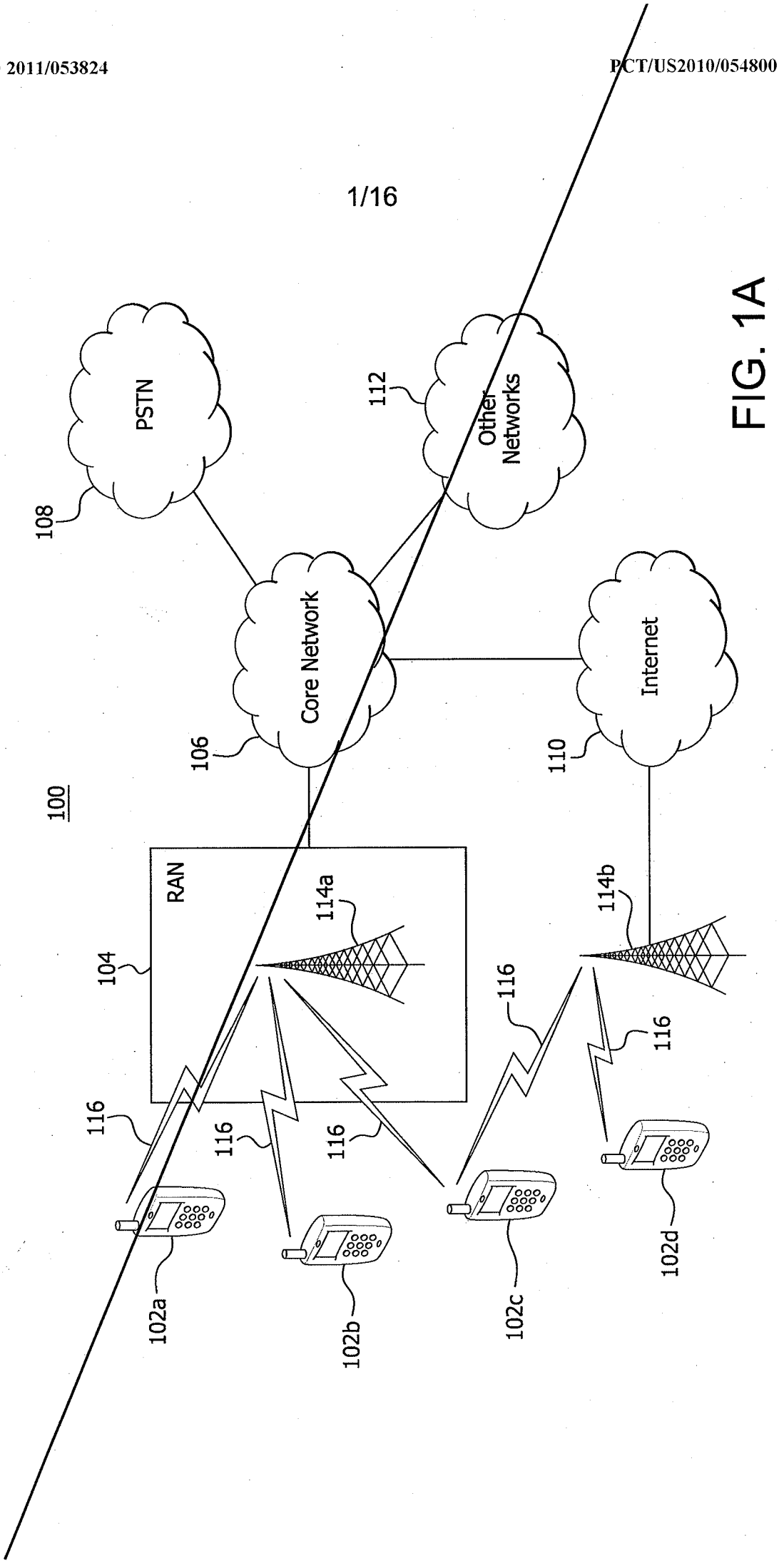

PSTN
108
Other Networks
112
Core Network
106
Internet
110
100
RAN
104
114a
114b
116
116
116
116
116
102a
102b
102c
102d

FIG. 1A

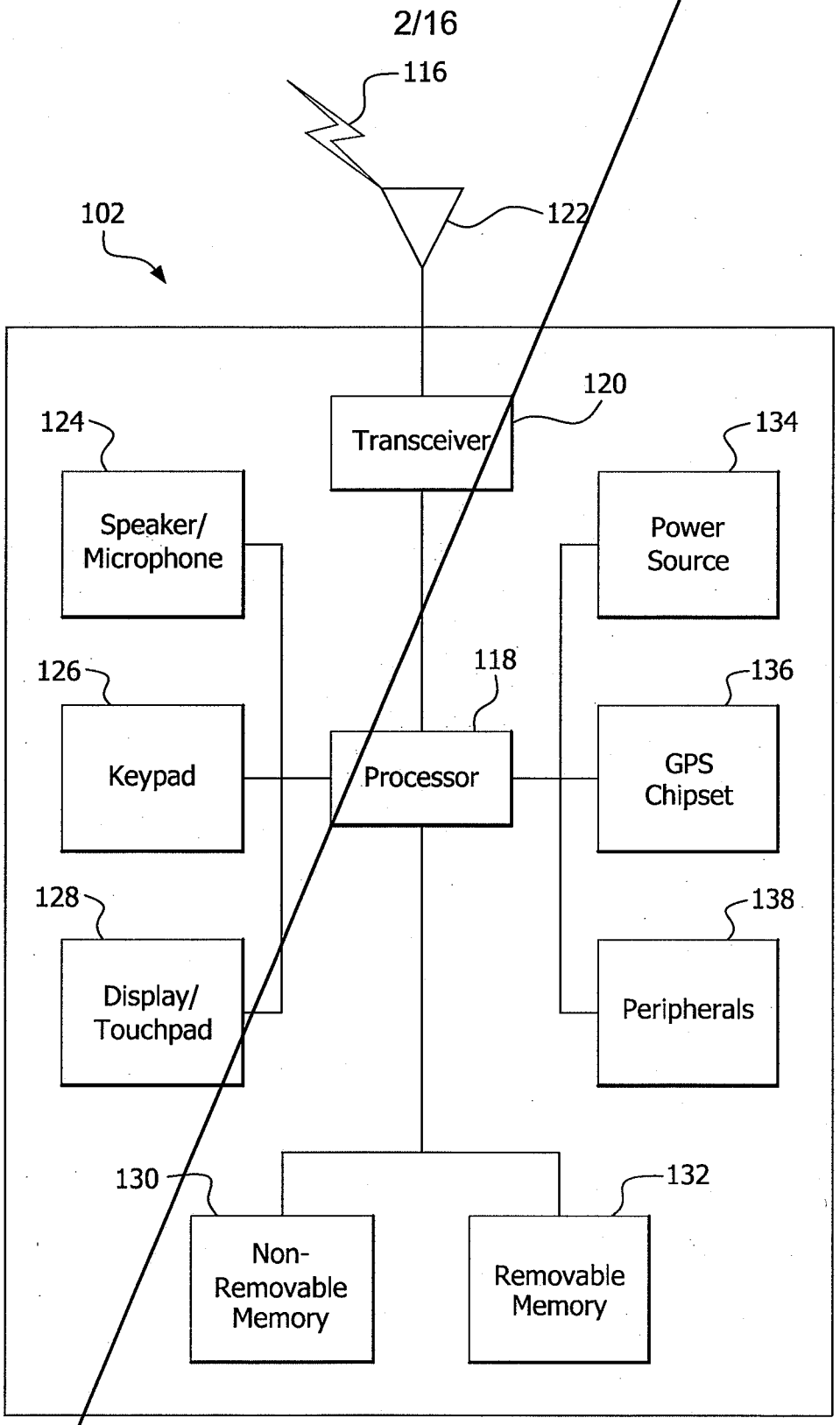

116
122
102
120
124
Transceiver
134
Speaker/
Microphone
Power
Source
126
118
136
Keypad
Processor
GPS
Chipset
128
138
Display/
Touchpad
Peripherals
130
132
Non-
Removable
Memory
Removable
Memory

FIG. 1B

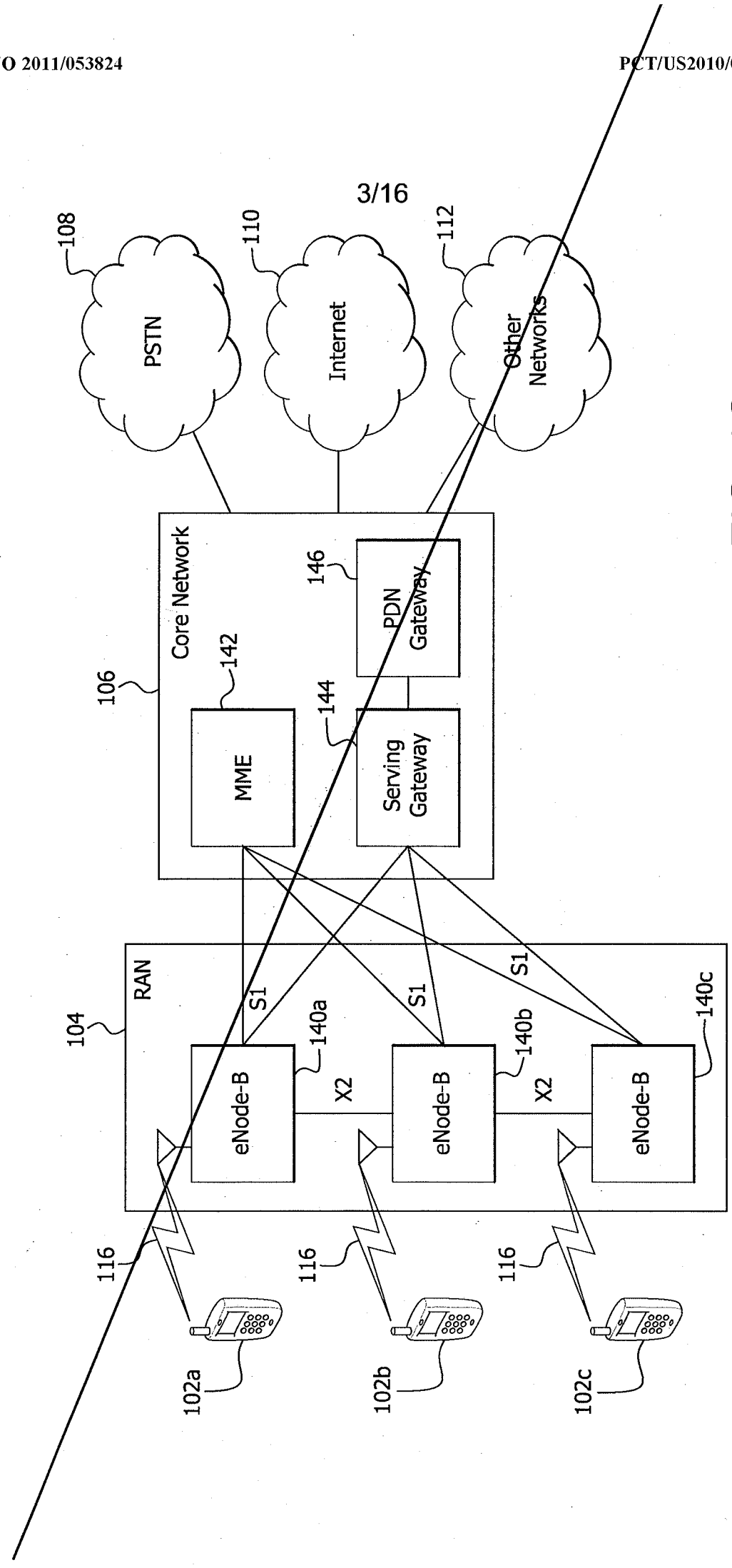

108
PSTN
110
Internet
112
Other Networks
106
Core Network
142
MME
144
Serving Gateway
146
PDN Gateway
104
RAN
S1
S1
S1
140a
140b
140c
eNode-B
eNode-B
eNode-B
X2
X2
116
116
116
102a
102b
102c

FIG. 1C

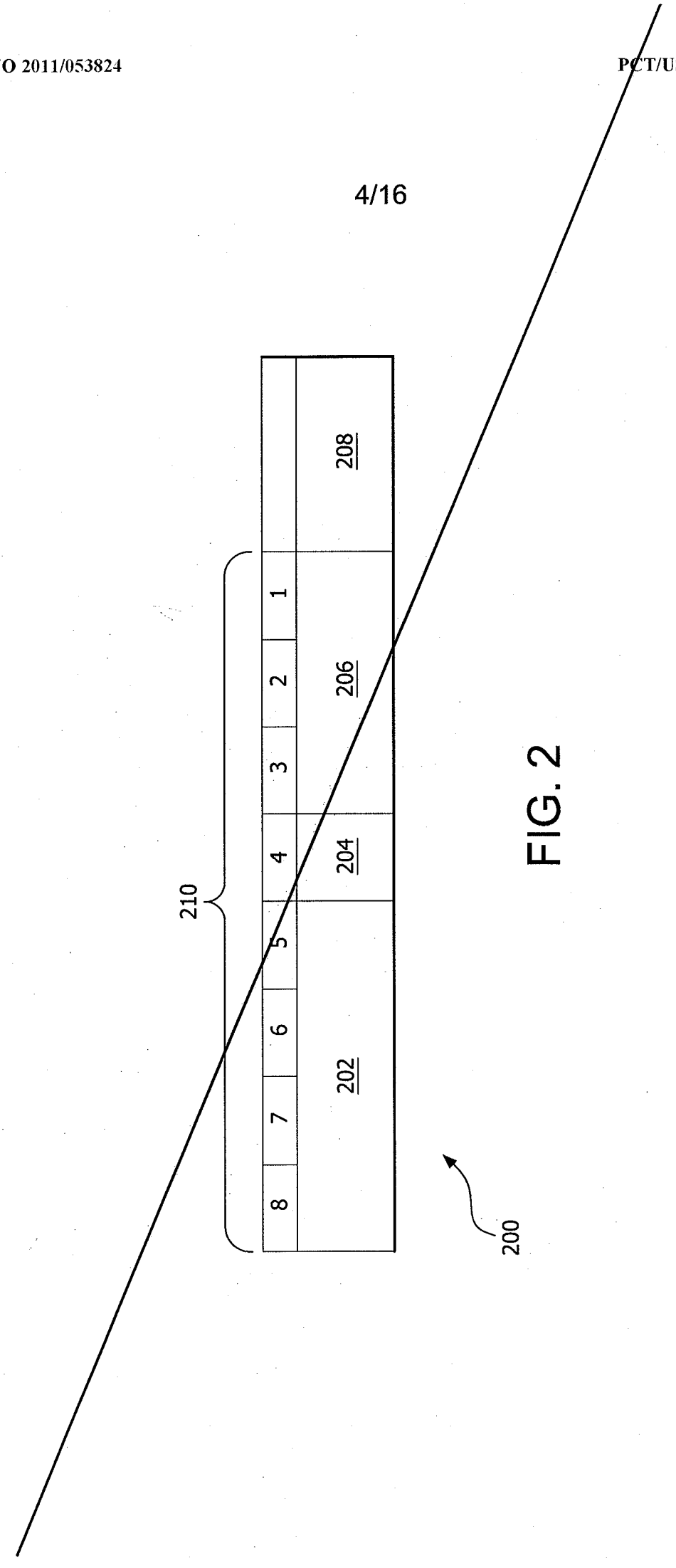


FIG. 2

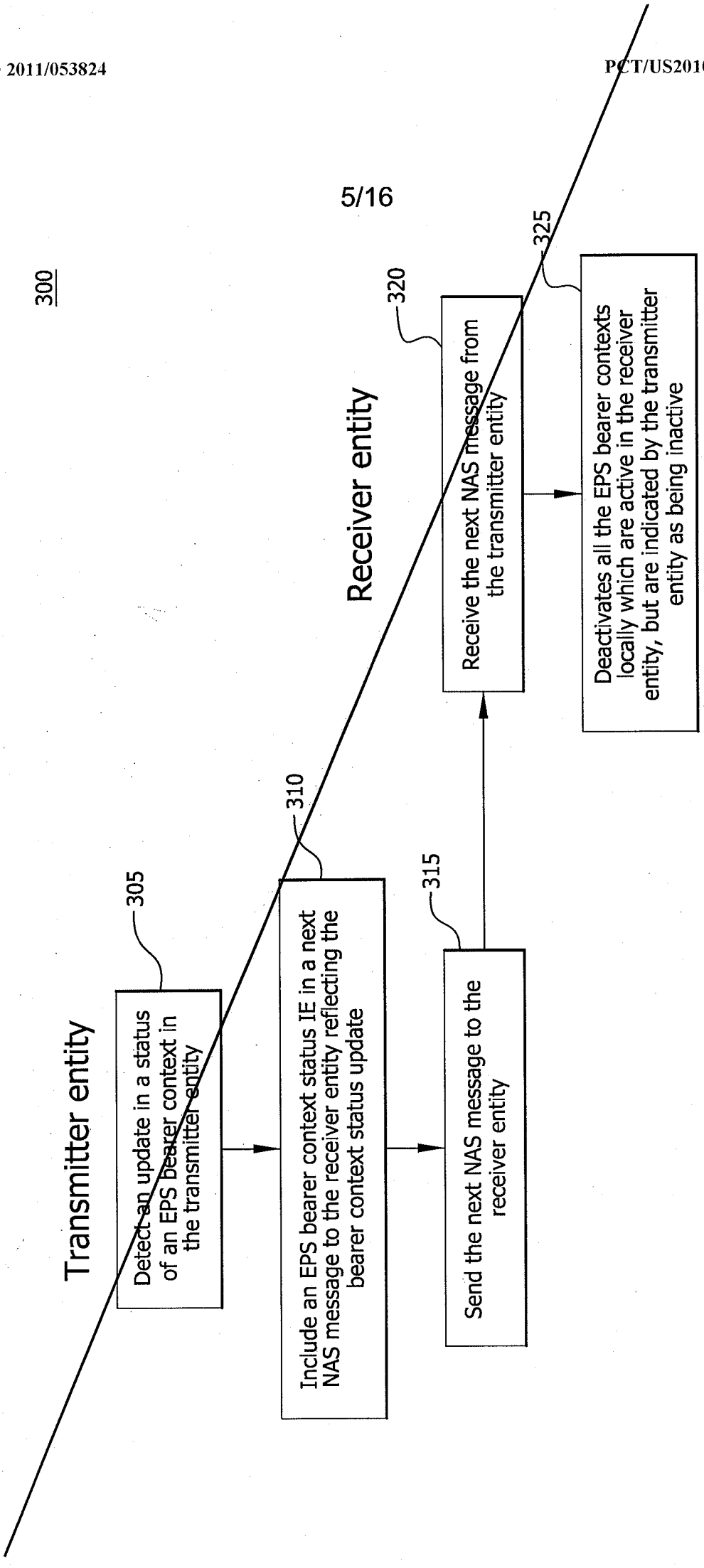

300
Transmitter entity
Receiver entity
305
Detect an update in a status of an EPS bearer context in the transmitter entity
310
Include an EPS bearer context status IE in a next NAS message to the receiver entity reflecting the bearer context status update
315
Send the next NAS message to the receiver entity
320
Receive the next NAS message from the transmitter entity
325
Deactivates all the EPS bearer contexts locally which are active in the receiver entity, but are indicated by the transmitter entity as being inactive

FIG. 3

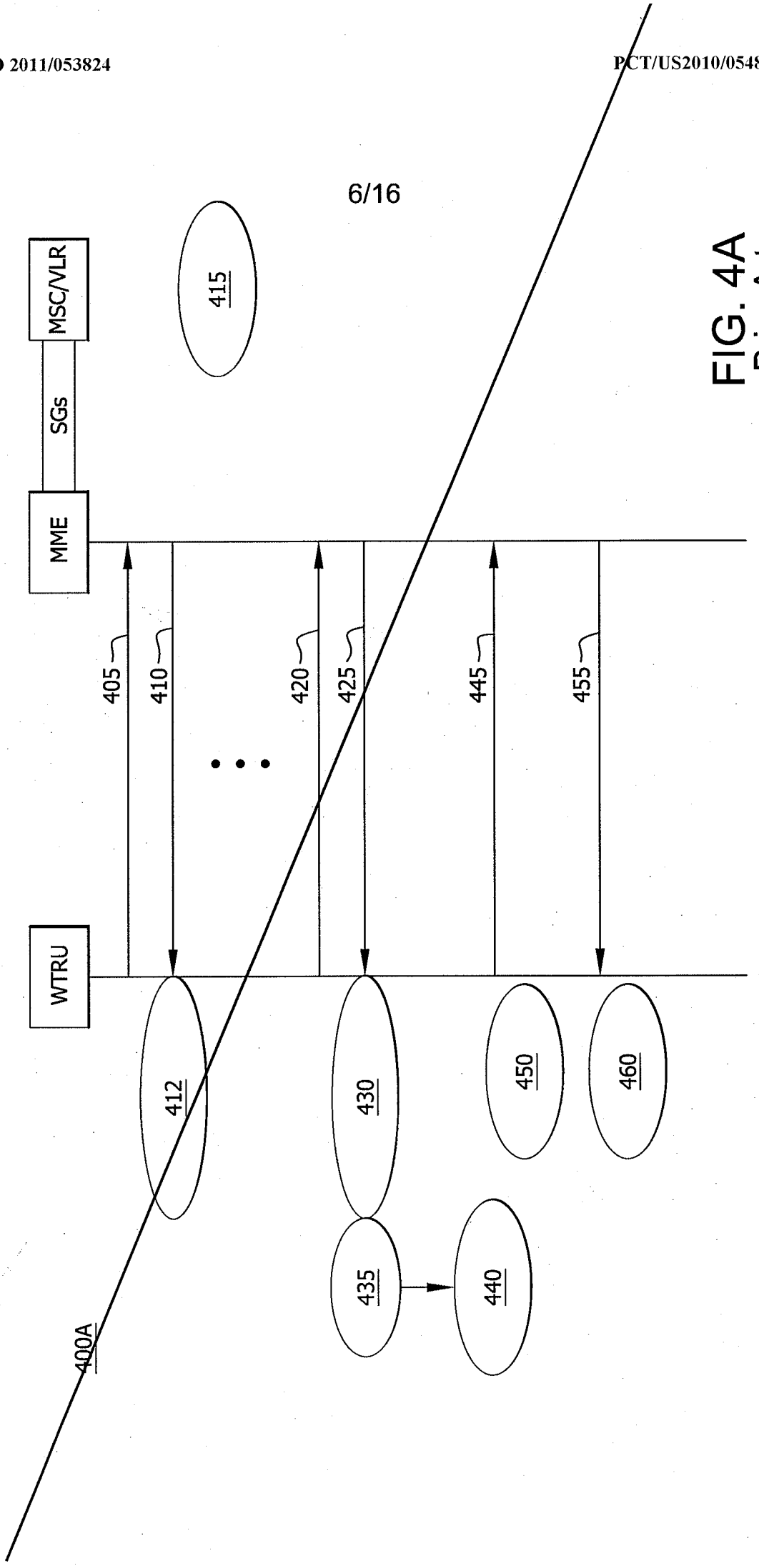


FIG. 4A
Prior Art

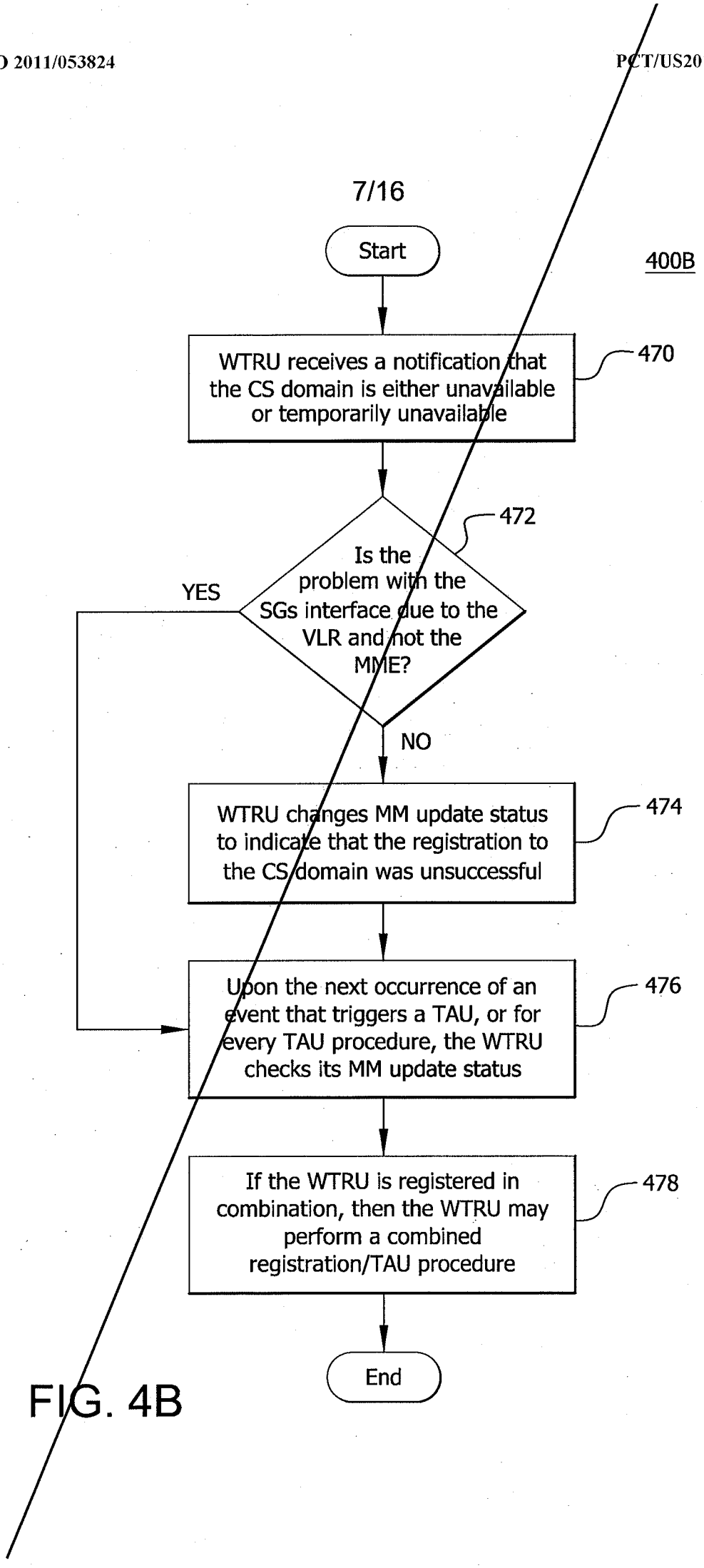

Start
400B
WTRU receives a notification that the CS domain is either unavailable or temporarily unavailable
470
Is the problem with the SGs interface due to the VLR and not the MME?
472
YES
NO
WTRU changes MM update status to indicate that the registration to the CS domain was unsuccessful
474
Upon the next occurrence of an event that triggers a TAU, or for every TAU procedure, the WTRU checks its MM update status
476
If the WTRU is registered in combination, then the WTRU may perform a combined registration/TAU procedure
478
End

FIG. 4B

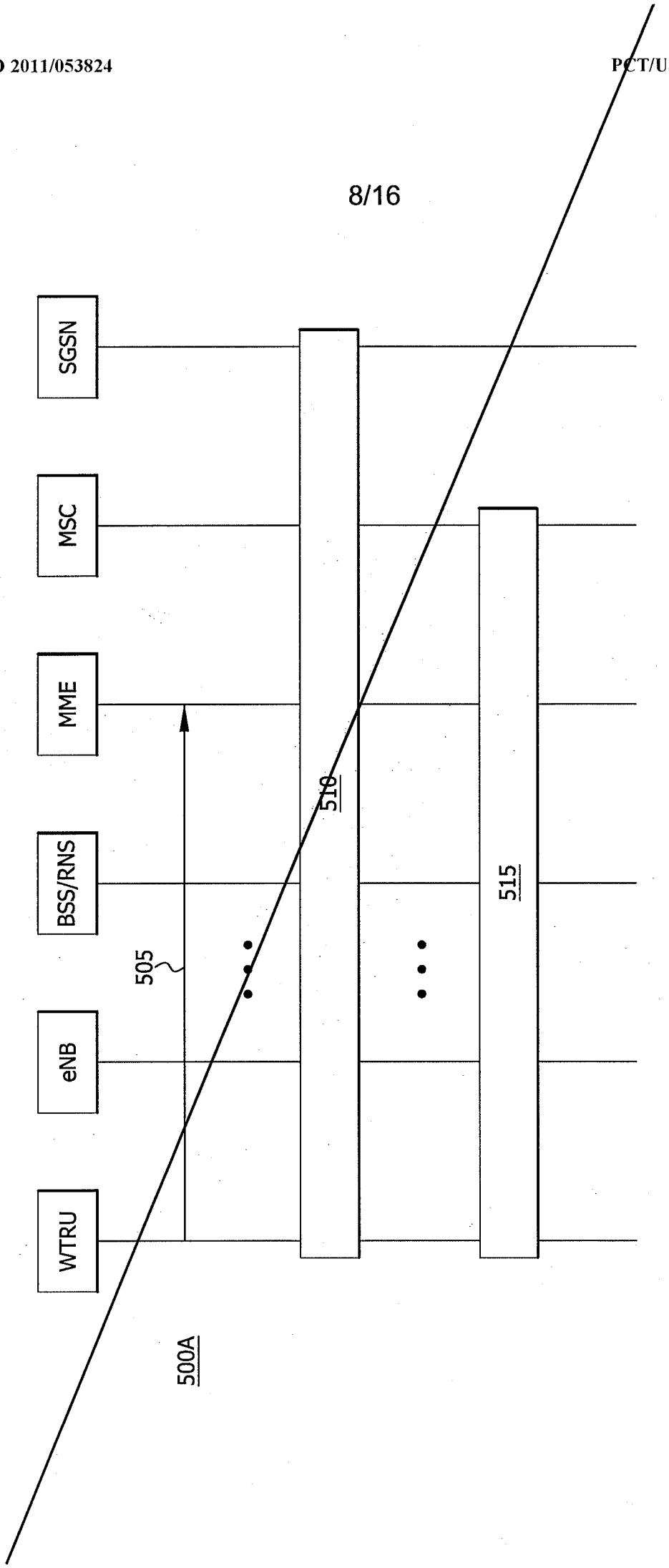


FIG. 5A
Prior Art

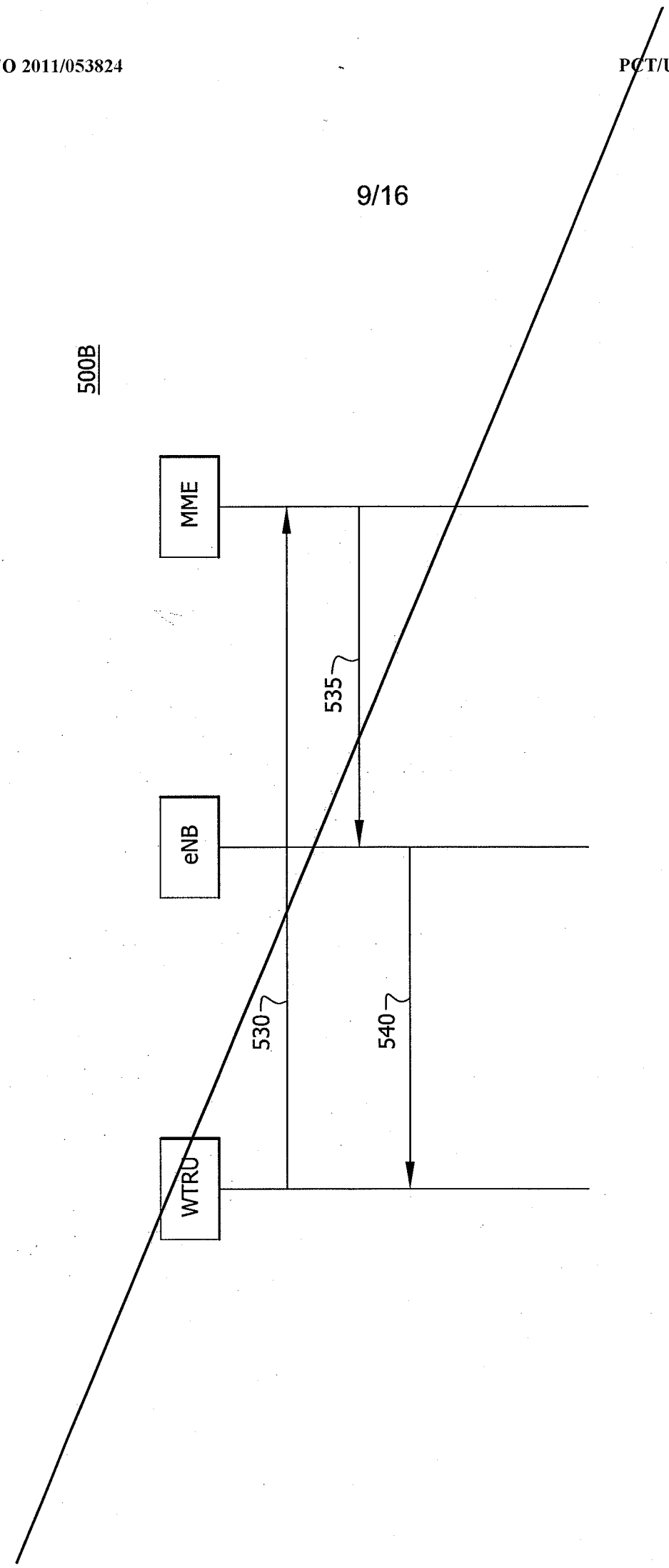


FIG. 5B

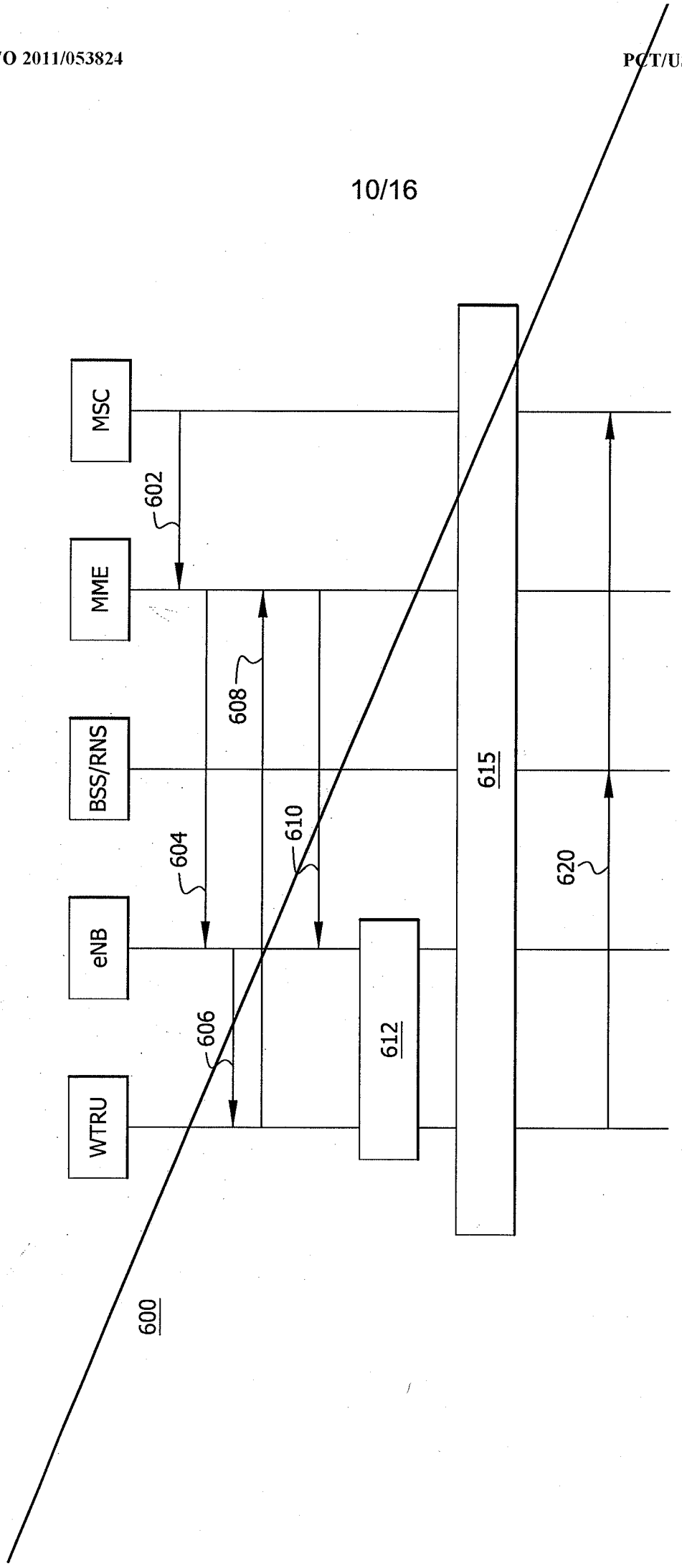


FIG. 6
Prior Art

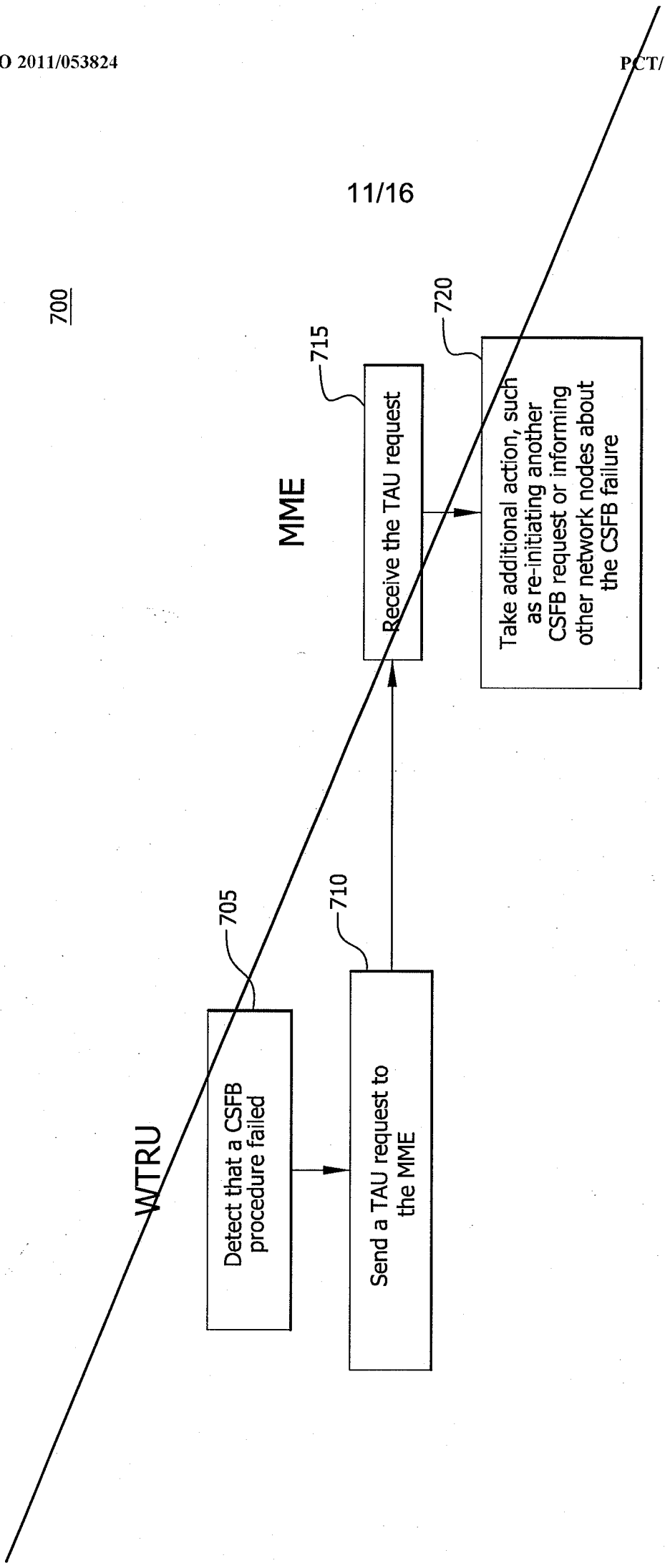

700
WTRU
MME
Detect that a CSFB procedure failed
705
Send a TAU request to the MME
710
Receive the TAU request
715
Take additional action, such as re-initiating another CSFB request or informing other network nodes about the CSFB failure
720

FIG. 7

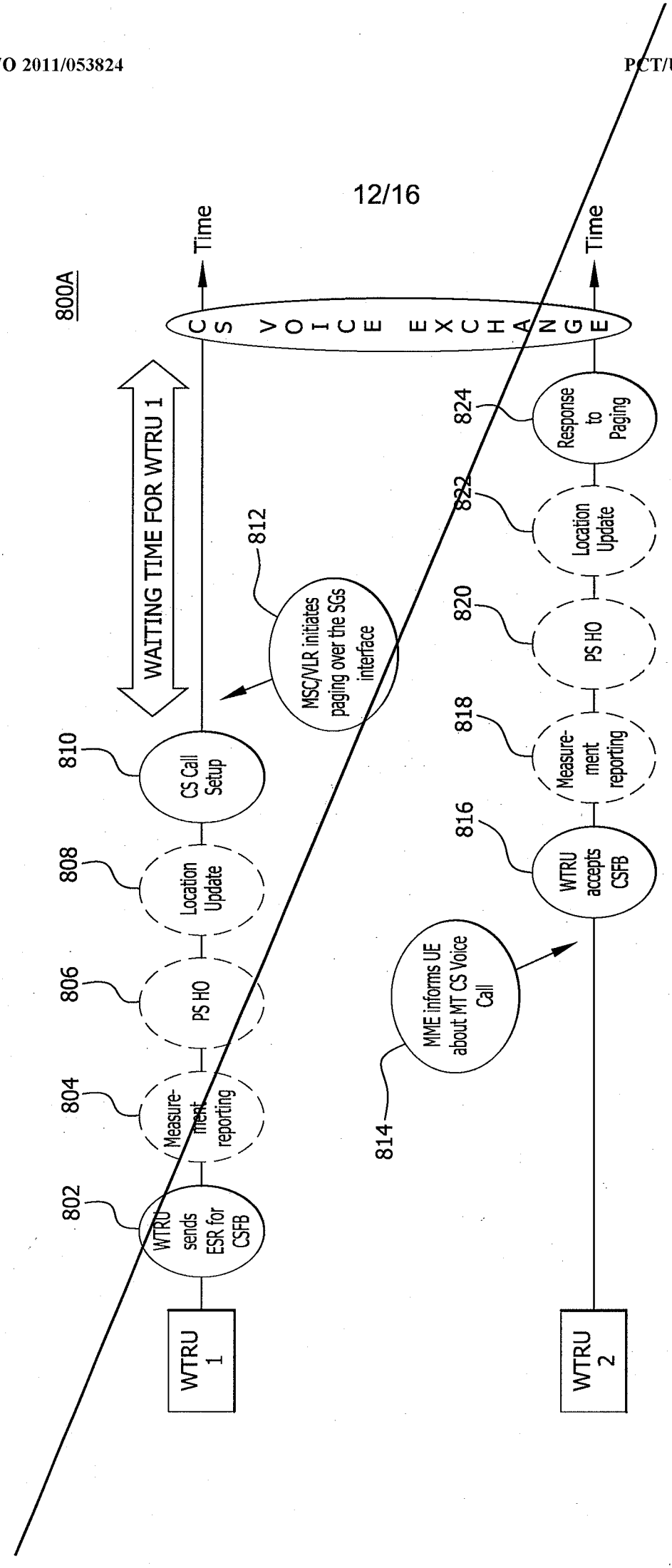


FIG. 8A
Prior Art

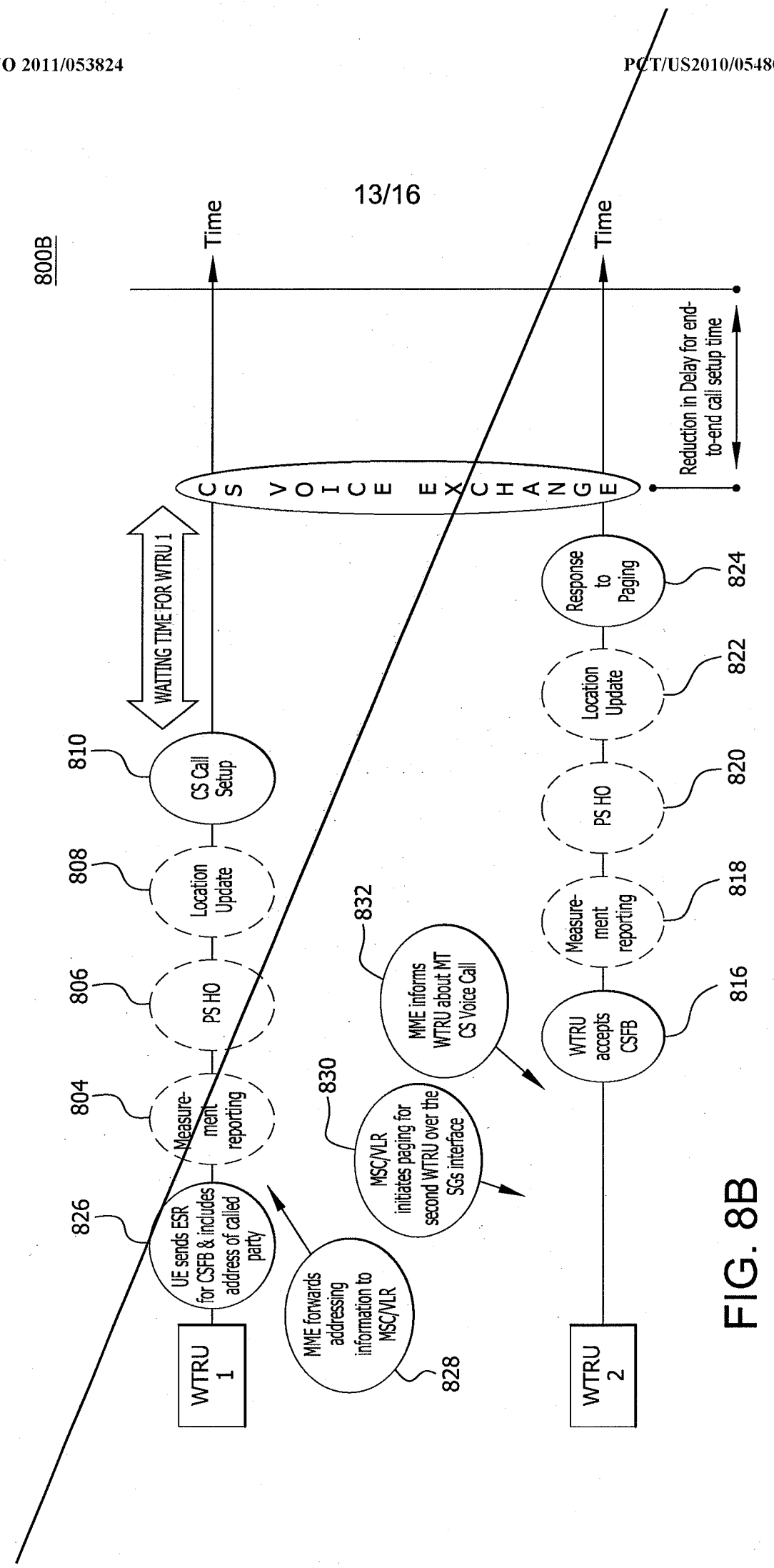
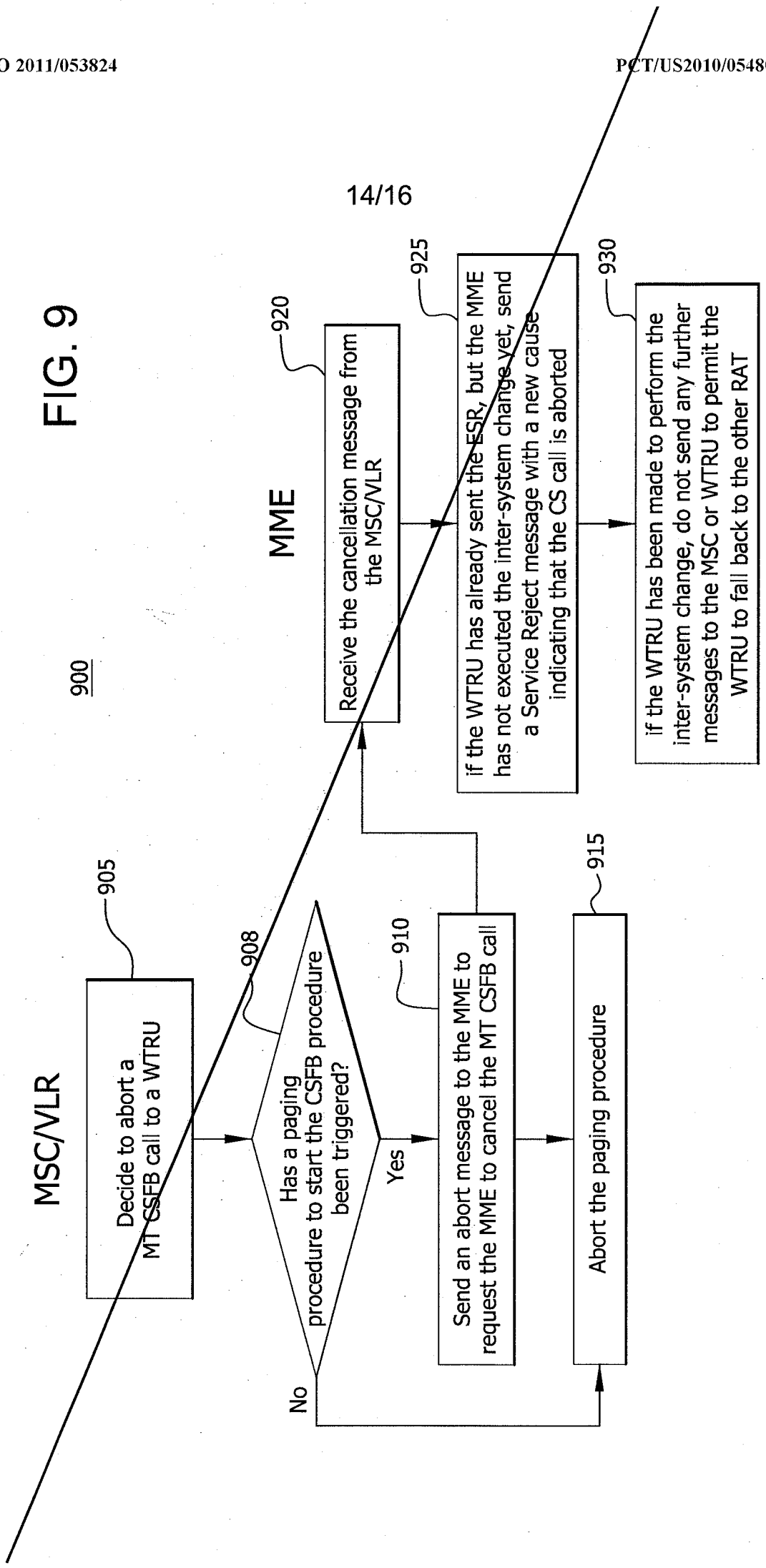

800B
Time
Time
CS VOICE EXCHANGE
Reduction in Delay for end-to-end call setup time
WAITING TIME FOR WTRU 1
WTRU 1
WTRU 2
826
UE sends ESR for CSFB & includes address of called party
804
Measure-ment reporting
806
PS HO
808
Location Update
810
CS Call Setup
828
MME forwards addressing information to MSC/VLR
830
MSC/VLR initiates paging for second WTRU over the SGs interface
832
MME informs WTRU about MT CS Voice Call
816
WTRU accepts CSFB
818
Measure-ment reporting
820
PS HO
822
Location Update
824
Response to Paging

FIG. 8B

FIG. 9


900
MSC/VLR
MME
905
Decide to abort a MT CSFB call to a WTRU
908
Has a paging procedure to start the CSFB procedure been triggered?
Yes
No
910
Send an abort message to the MME to request the MME to cancel the MT CSFB call
915
Abort the paging procedure
920
Receive the cancellation message from the MSC/VLR
925
if the WTRU has already sent the ESR, but the MME has not executed the inter-system change yet, send a Service Reject message with a new cause indicating that the CS call is aborted
930
if the WTRU has been made to perform the inter-system change, do not send any further messages to the MSC or WTRU to permit the WTRU to fall back to the other RAT

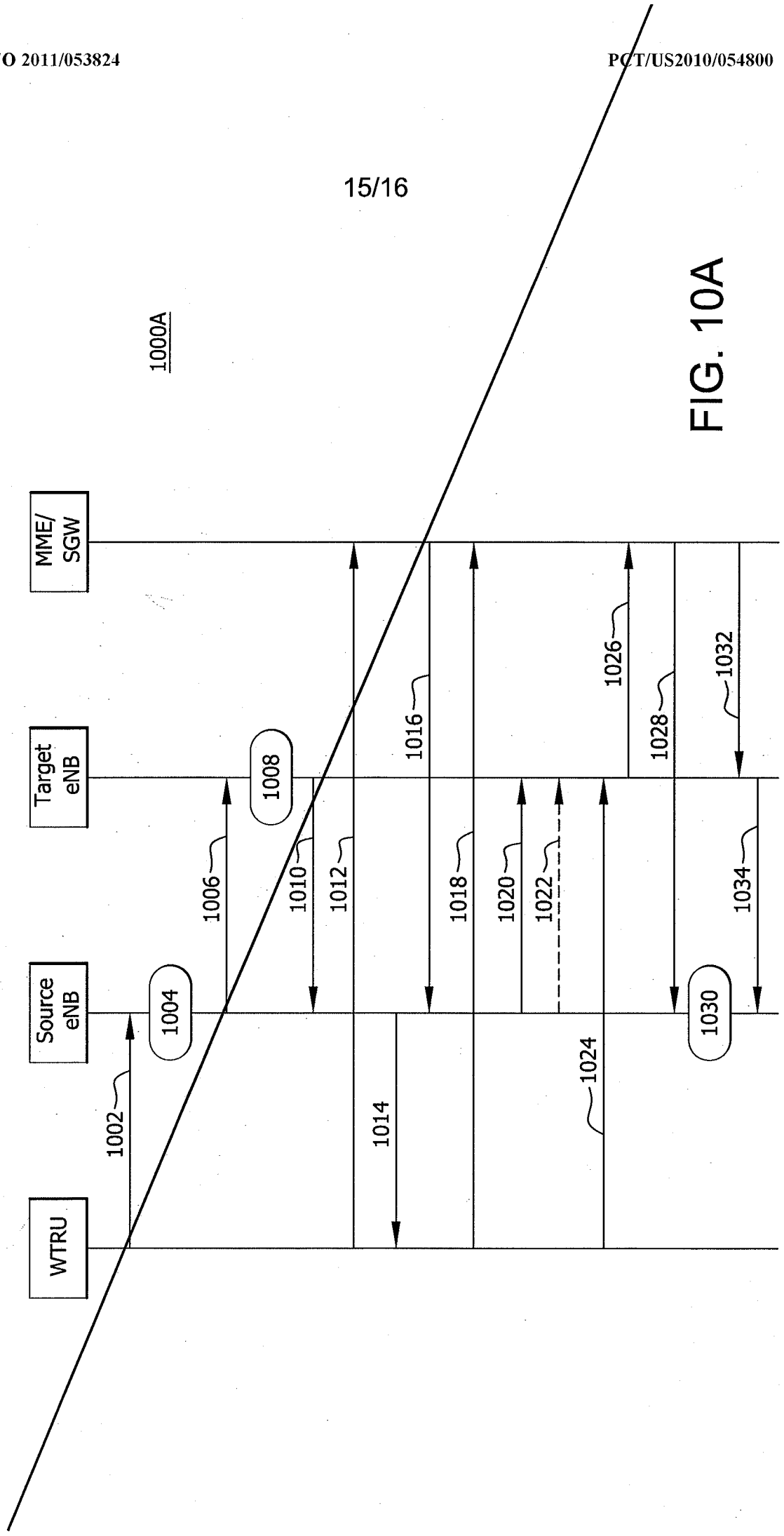

1000A
WTRU
Source eNB
Target eNB
MME/ SGW
1002
1004
1006
1008
1010
1012
1014
1016
1018
1020
1022
1024
1026
1028
1030
1032
1034

FIG. 10A

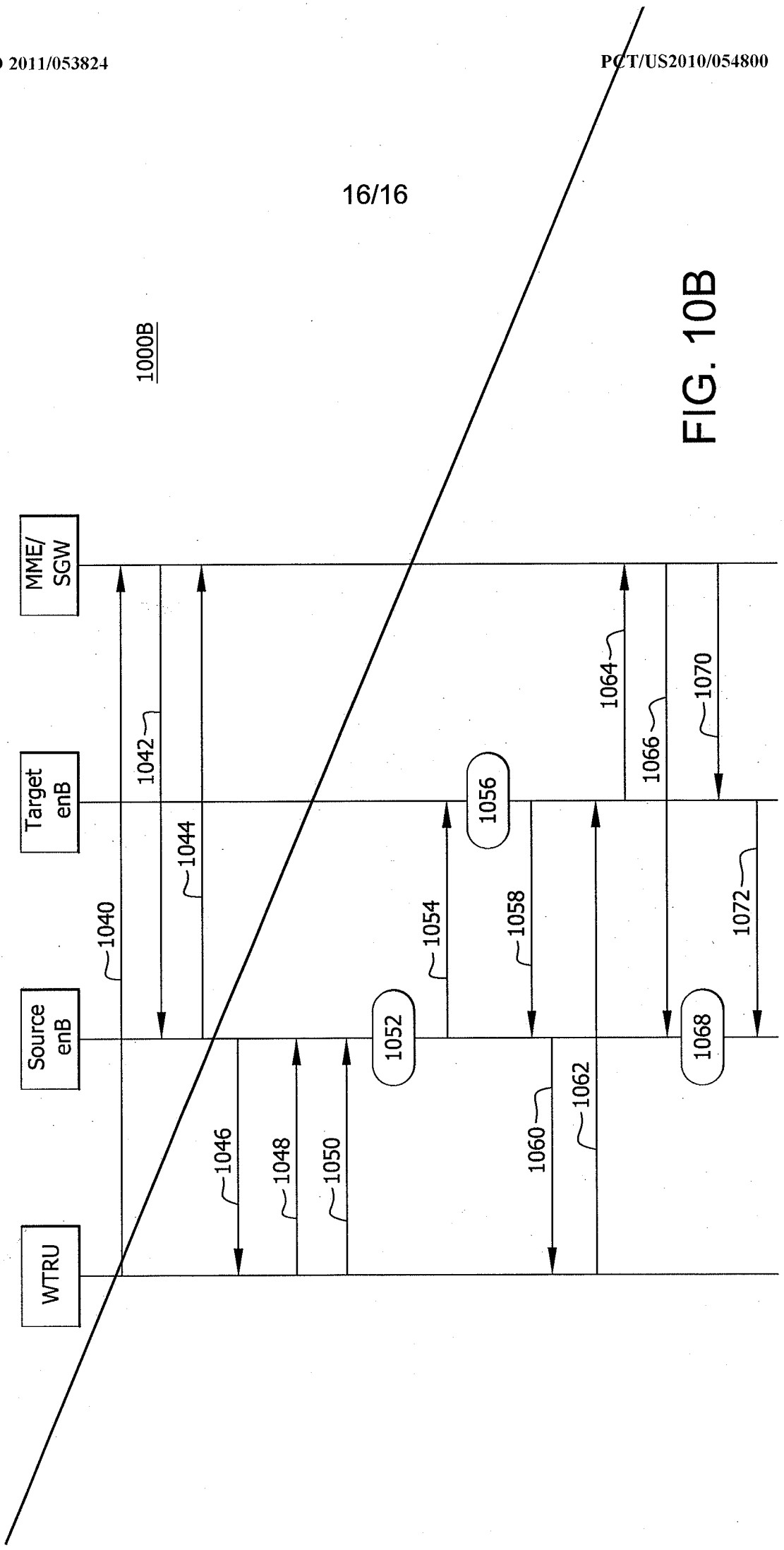

1000B
MME/ SGW
Target enB
Source enB
WTRU
1040
1042
1044
1046
1048
1050
1052
1054
1056
1058
1060
1062
1064
1066
1068
1070
1072

FIG. 10B

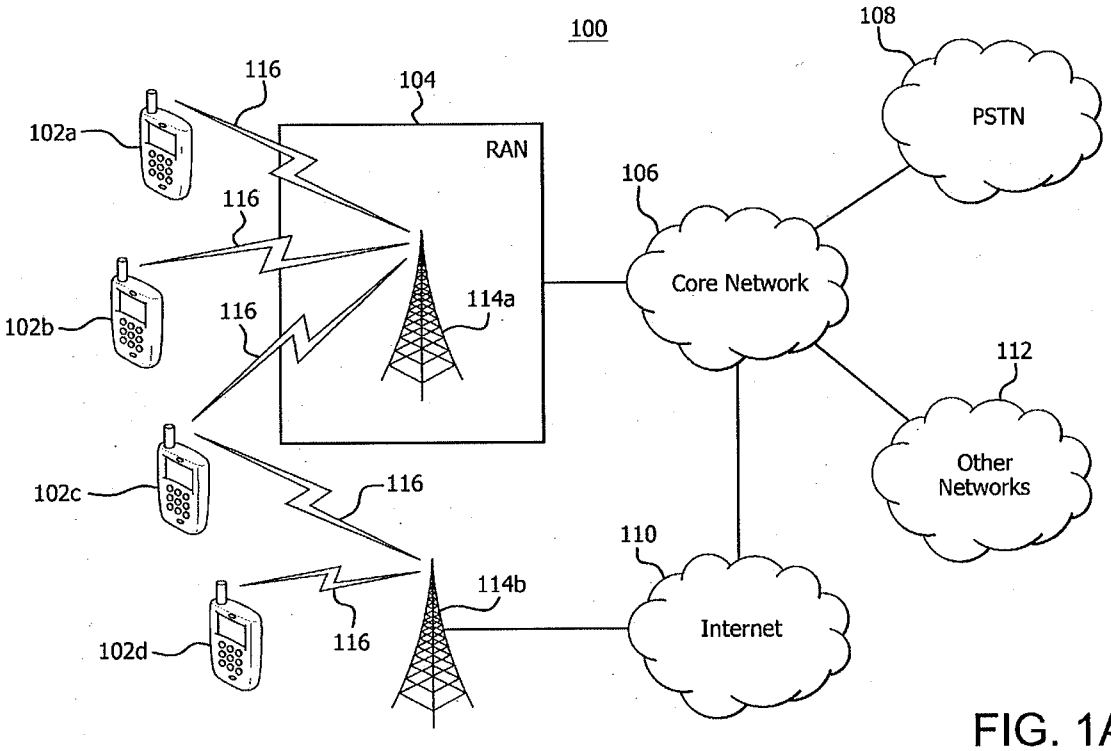

100
108
PSTN
116
104
102a
RAN
106
116
Core Network
102b
116
114a
112
Other
Networks
102c
116
110
114b
Internet
102d
116

FIG. 1A

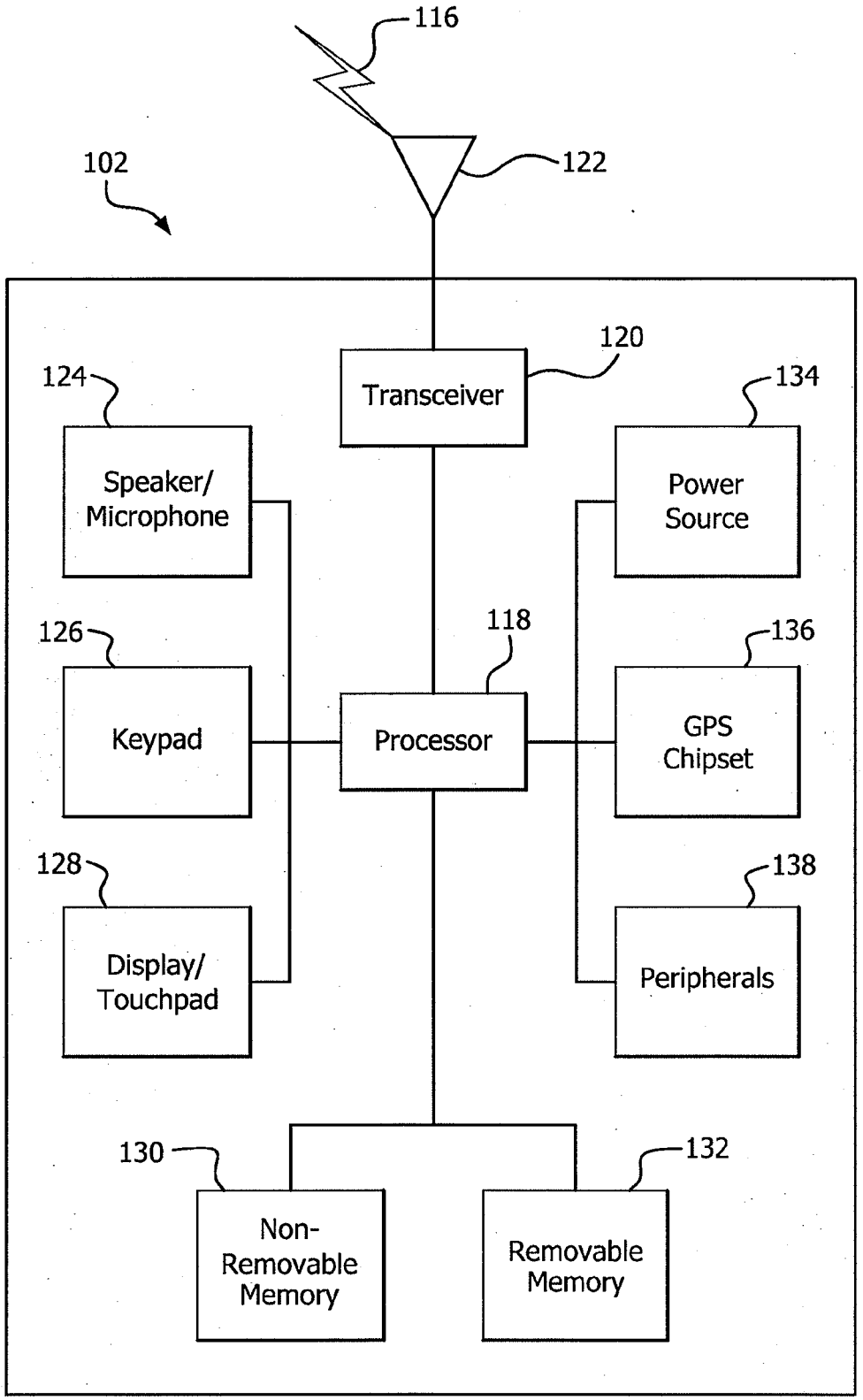

116
122
102
120
Transceiver
124
Speaker/
Microphone
134
Power
Source
126
Keypad
118
Processor
136
GPS
Chipset
128
Display/
Touchpad
138
Peripherals
130
Non-
Removable
Memory
132
Removable
Memory

FIG. 1B

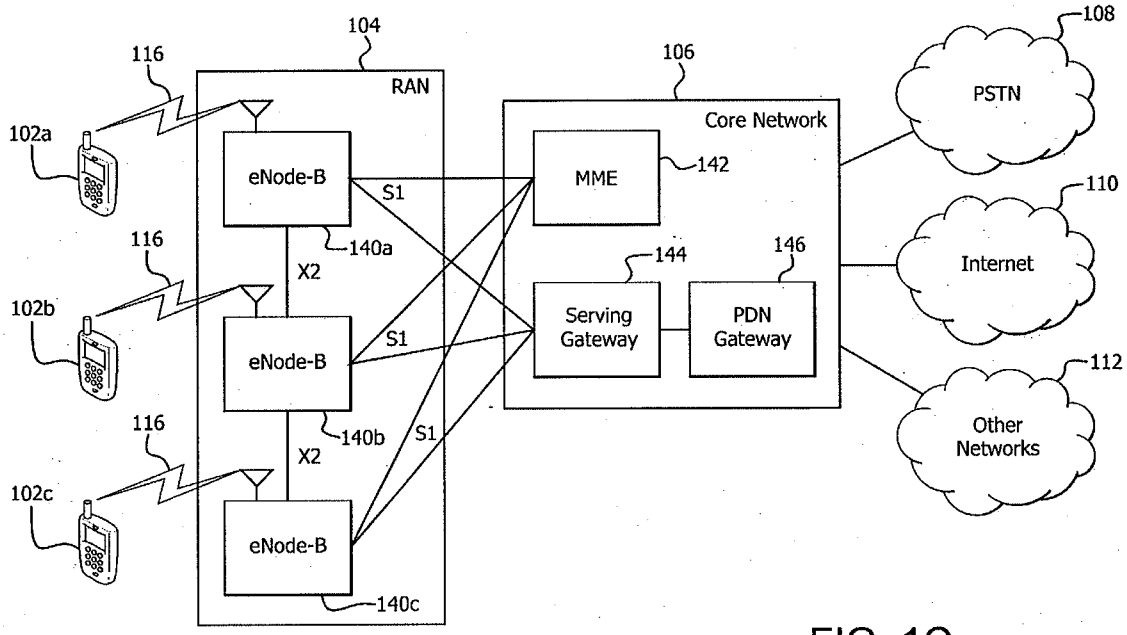

104
RAN
116
102a
eNode-B
S1
140a
X2
116
102b
eNode-B
S1
140b
X2
116
102c
eNode-B
S1
140c
106
Core Network
MME
142
144
Serving Gateway
146
PDN Gateway
108
PSTN
110
Internet
112
Other Networks

FIG. 1C

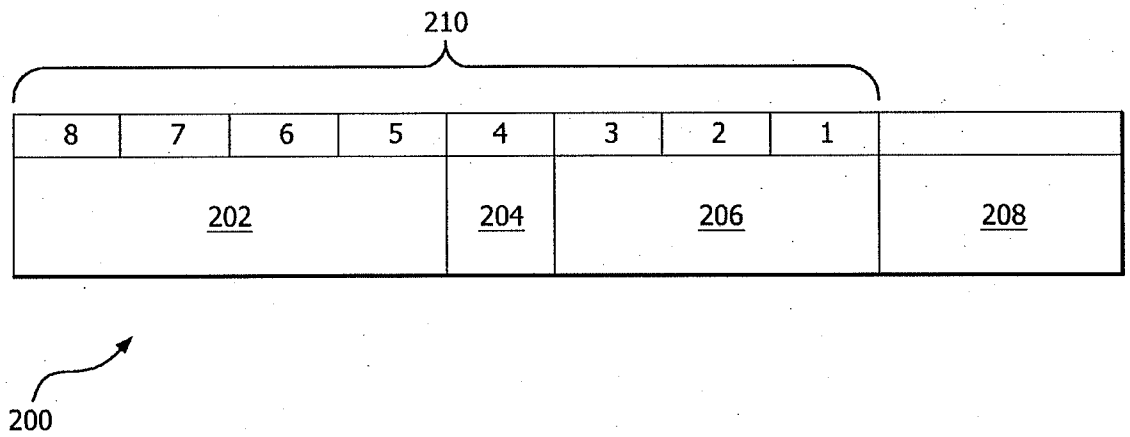


FIG. 2

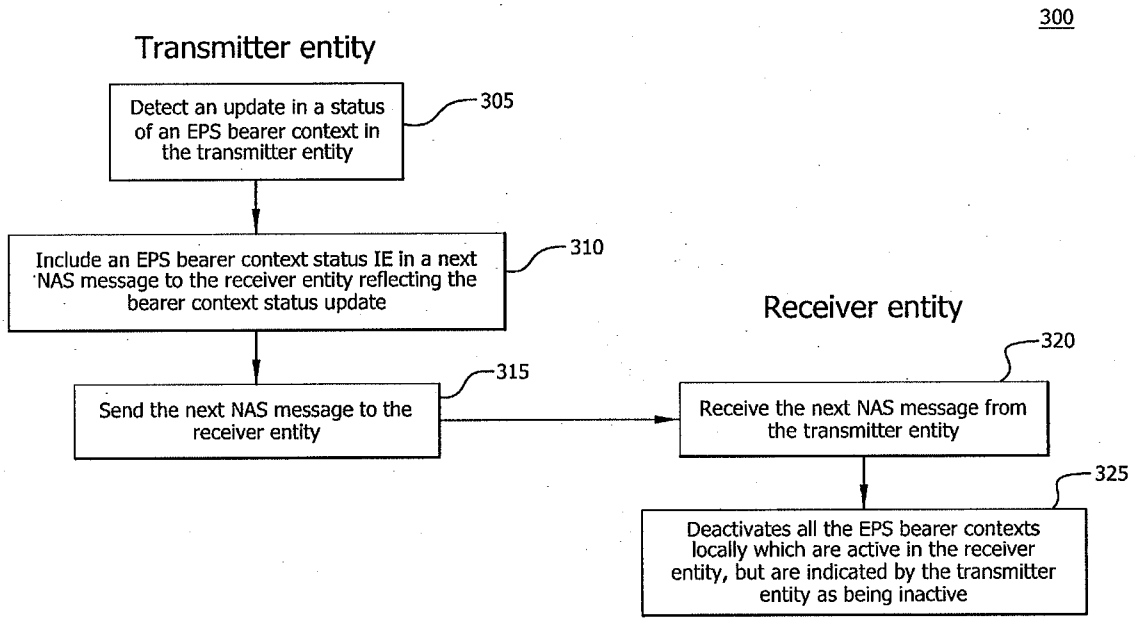

300
Transmitter entity
Detect an update in a status of an EPS bearer context in the transmitter entity
305
Include an EPS bearer context status IE in a next NAS message to the receiver entity reflecting the bearer context status update
310
Send the next NAS message to the receiver entity
315
Receiver entity
320
Receive the next NAS message from the transmitter entity
325
Deactivates all the EPS bearer contexts locally which are active in the receiver entity, but are indicated by the transmitter entity as being inactive

FIG. 3

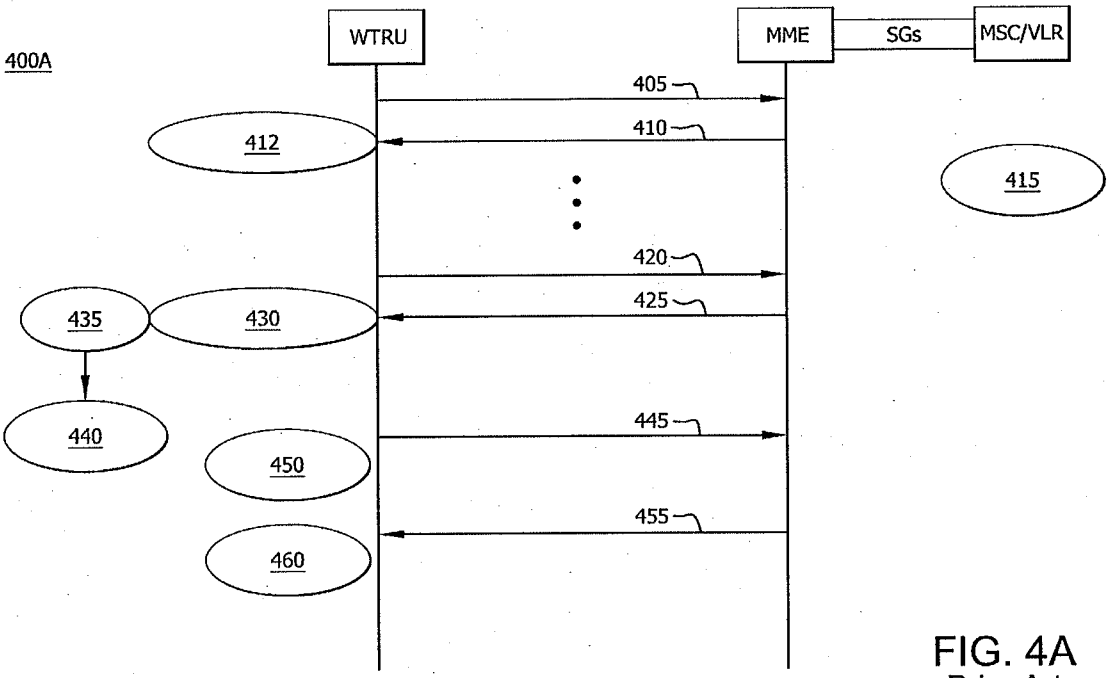


FIG. 4A
Prior Art

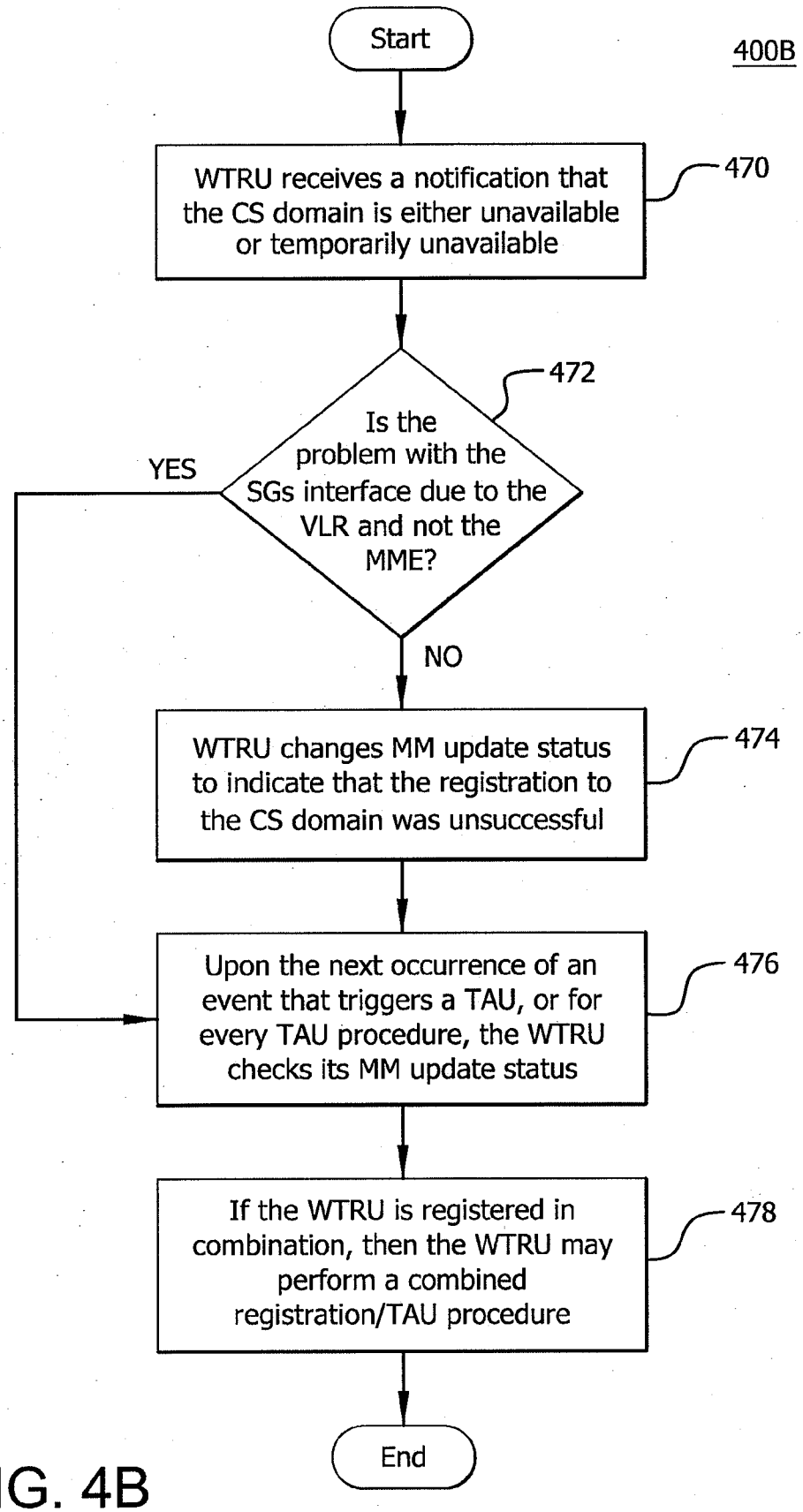

Start
400B
WTRU receives a notification that the CS domain is either unavailable or temporarily unavailable
470
Is the problem with the SGs interface due to the VLR and not the MME?
472
YES
NO
WTRU changes MM update status to indicate that the registration to the CS domain was unsuccessful
474
Upon the next occurrence of an event that triggers a TAU, or for every TAU procedure, the WTRU checks its MM update status
476
If the WTRU is registered in combination, then the WTRU may perform a combined registration/TAU procedure
478
End

FIG. 4B

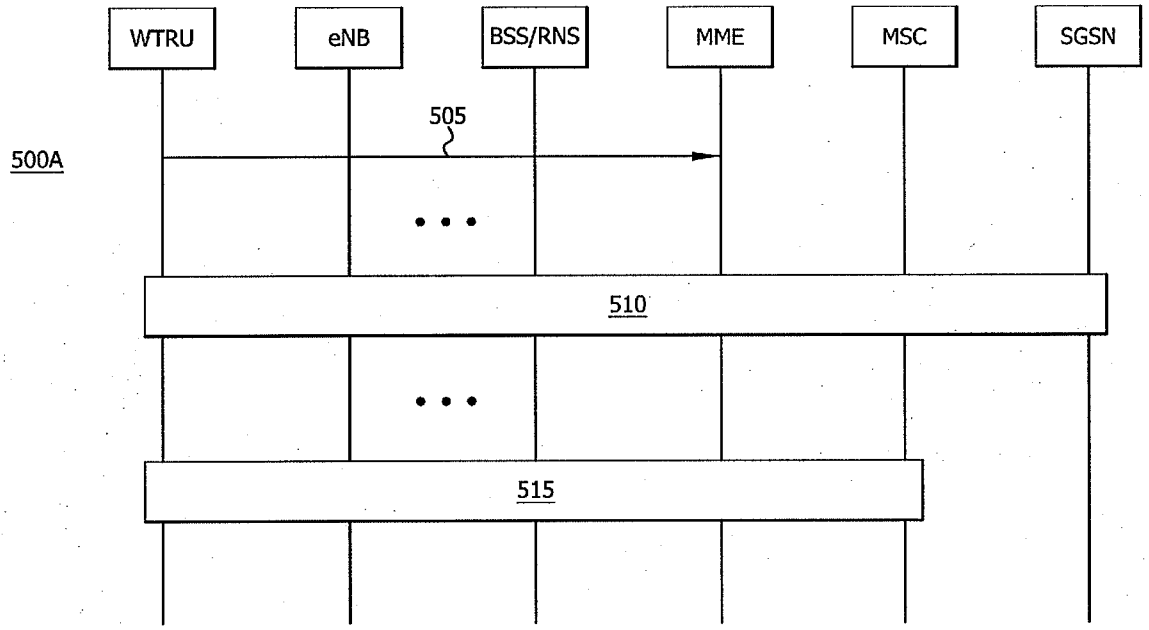


FIG. 5A
Prior Art

500B

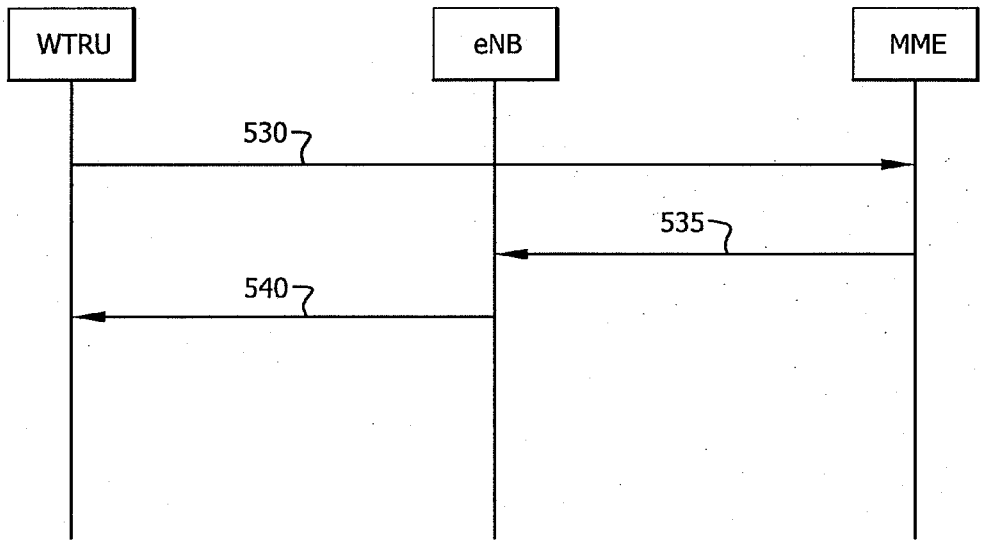


FIG. 5B

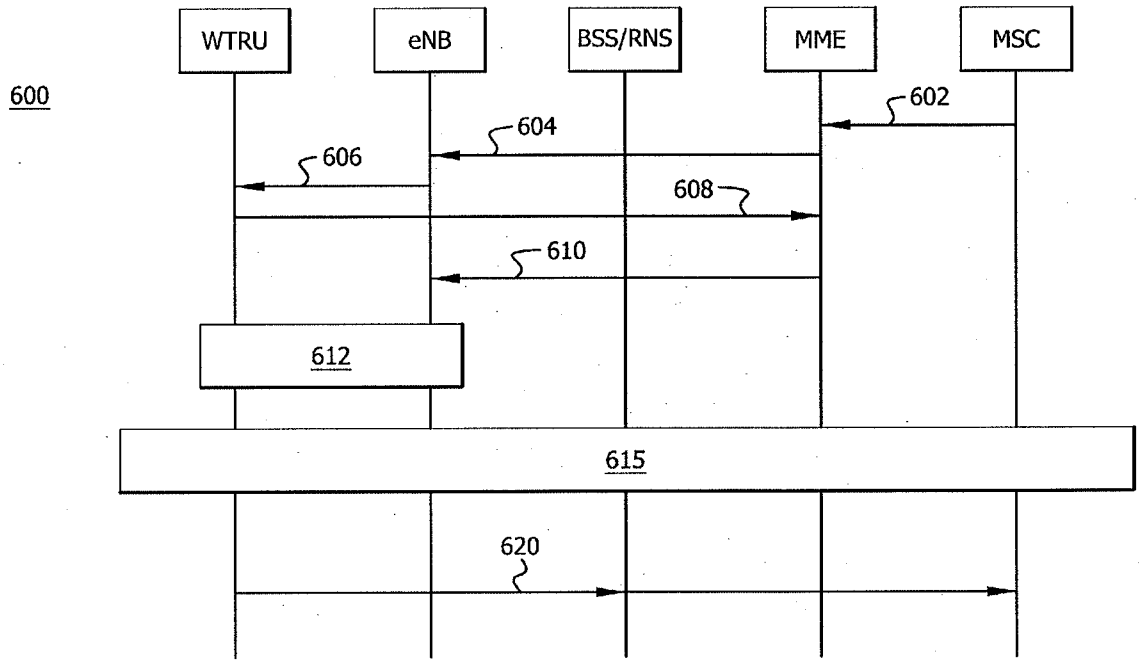


FIG. 6
Prior Art

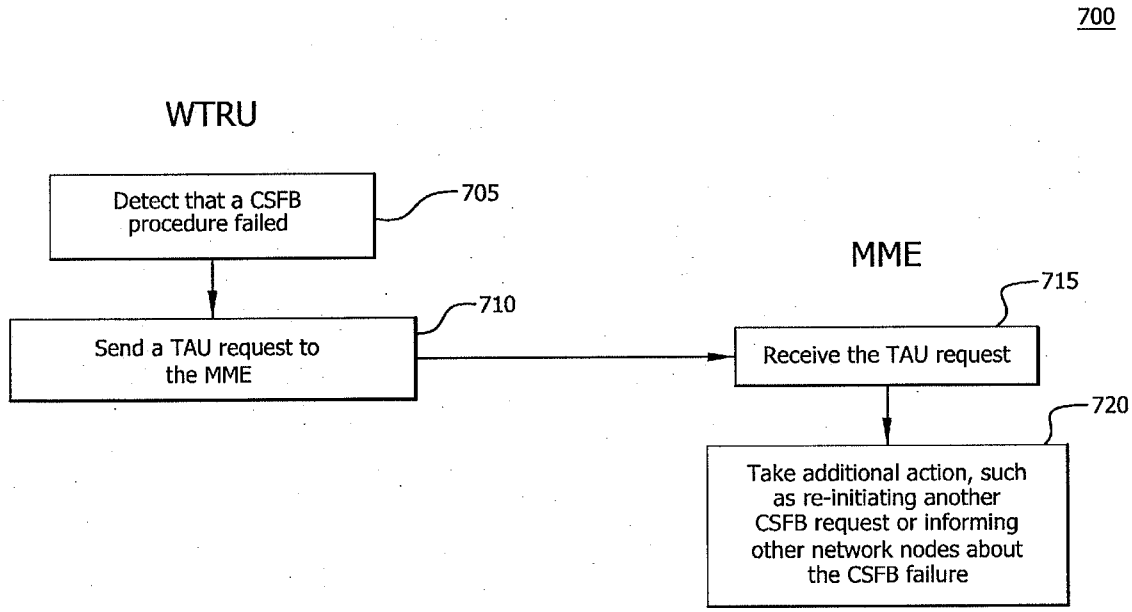

700
WTRU
Detect that a CSFB procedure failed
705
Send a TAU request to the MME
710
MME
715
Receive the TAU request
720
Take additional action, such as re-initiating another CSFB request or informing other network nodes about the CSFB failure

FIG. 7

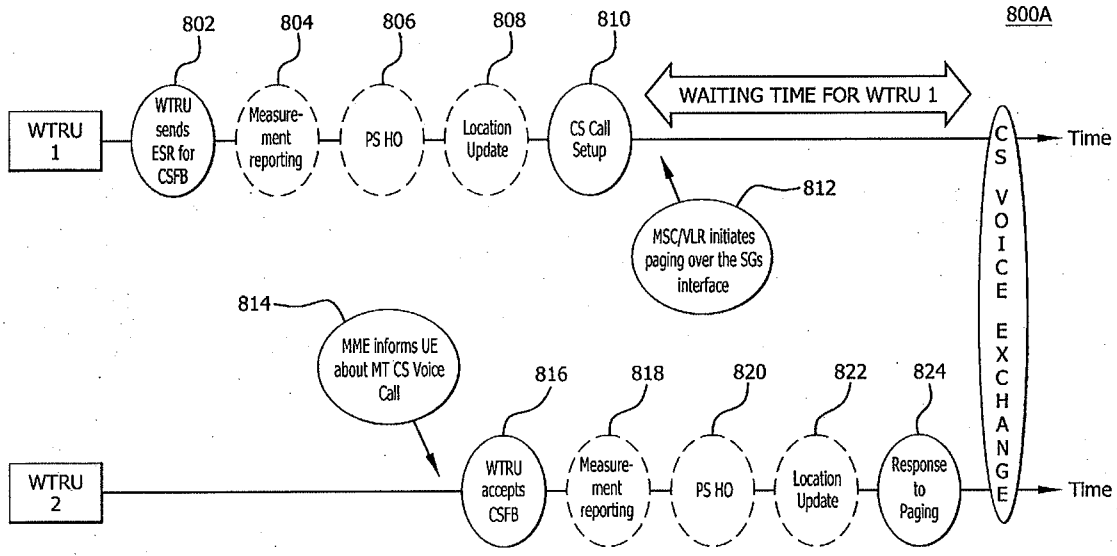


FIG. 8A
Prior Art

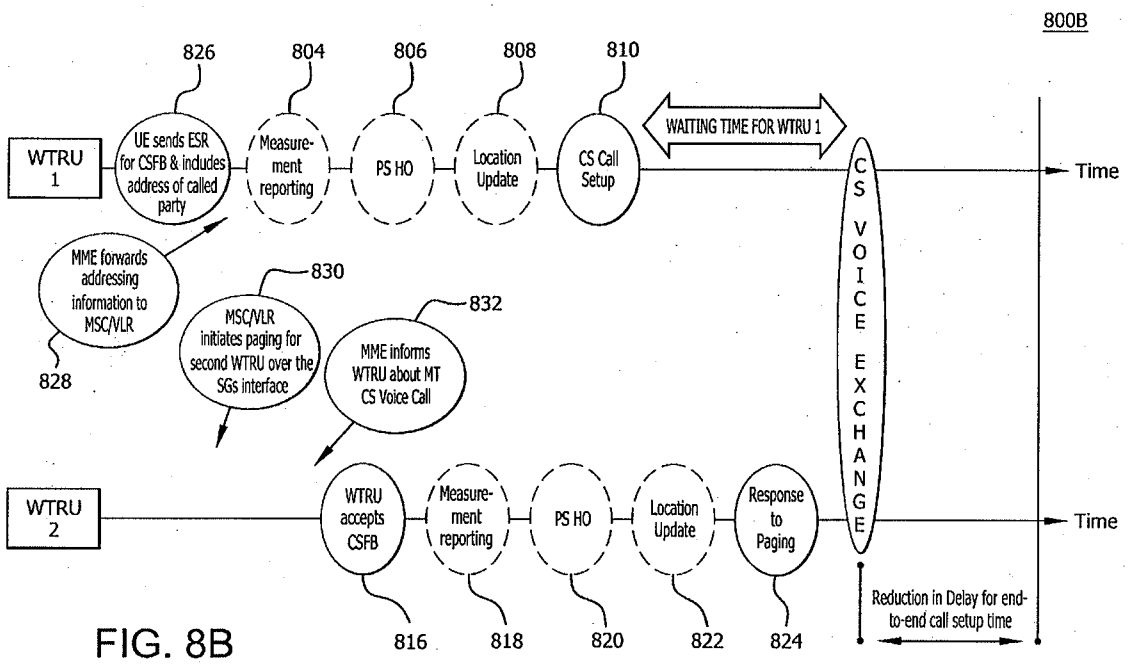

800B
826
804
806
808
810
WTRU 1
UE sends ESR for CSFB & includes address of called party
Measure-ment reporting
PS HO
Location Update
CS Call Setup
WAITING TIME FOR WTRU 1
Time
C S V O I C E E X C H A N G E
MME forwards addressing information to MSC/VLR
828
830
MSC/VLR initiates paging for second WTRU over the SGs interface
832
MME informs WTRU about MT CS Voice Call
WTRU 2
WTRU accepts CSFB
Measure-ment reporting
PS HO
Location Update
Response to Paging
Time
Reduction in Delay for end-to-end call setup time
816
818
820
822
824

FIG. 8B

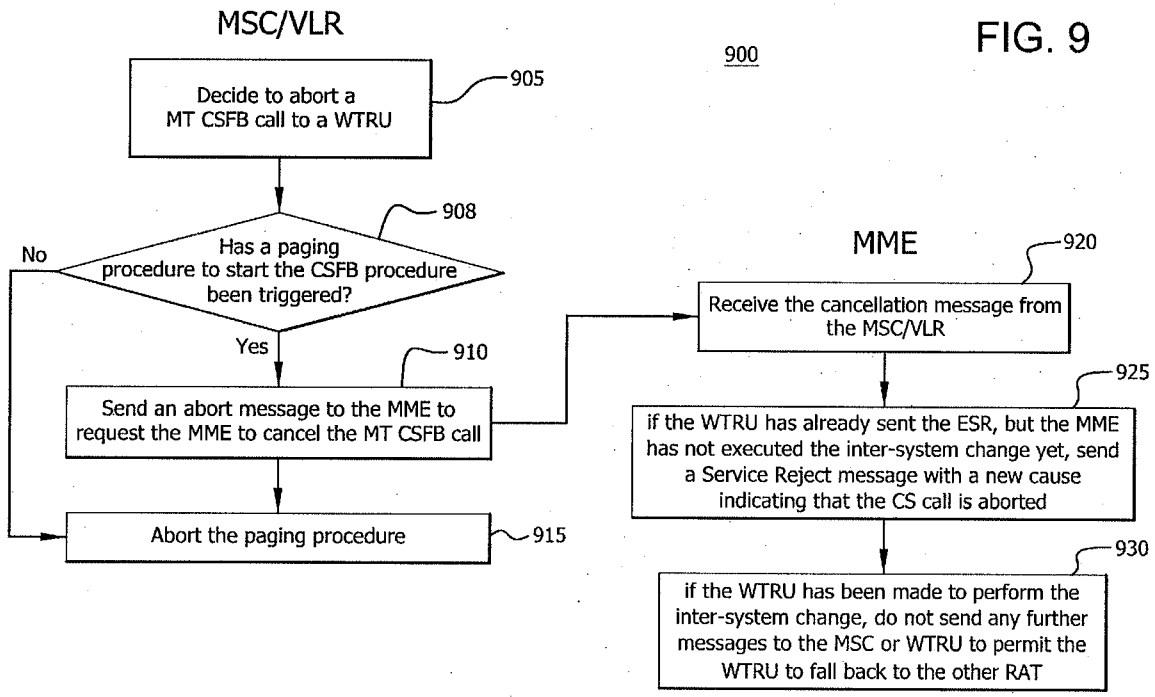

MSC/VLR
900
Decide to abort a MT CSFB call to a WTRU
905
Has a paging procedure to start the CSFB procedure been triggered?
908
No
Yes
Send an abort message to the MME to request the MME to cancel the MT CSFB call
910
Abort the paging procedure
915
MME
Receive the cancellation message from the MSC/VLR
920
if the WTRU has already sent the ESR, but the MME has not executed the inter-system change yet, send a Service Reject message with a new cause indicating that the CS call is aborted
925
if the WTRU has been made to perform the inter-system change, do not send any further messages to the MSC or WTRU to permit the WTRU to fall back to the other RAT
930

FIG. 9

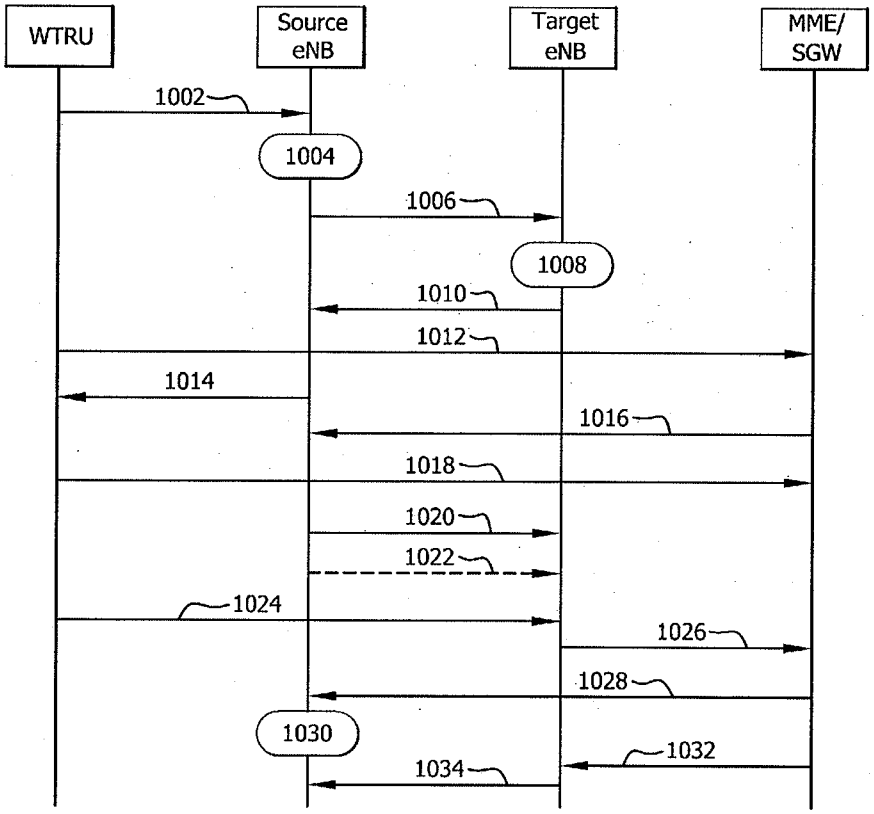

WTRU
Source eNB
Target eNB
MME/ SGW
1002
1004
1006
1008
1010
1012
1014
1016
1018
1020
1022
1024
1026
1028
1030
1032
1034
1000A

FIG. 10A

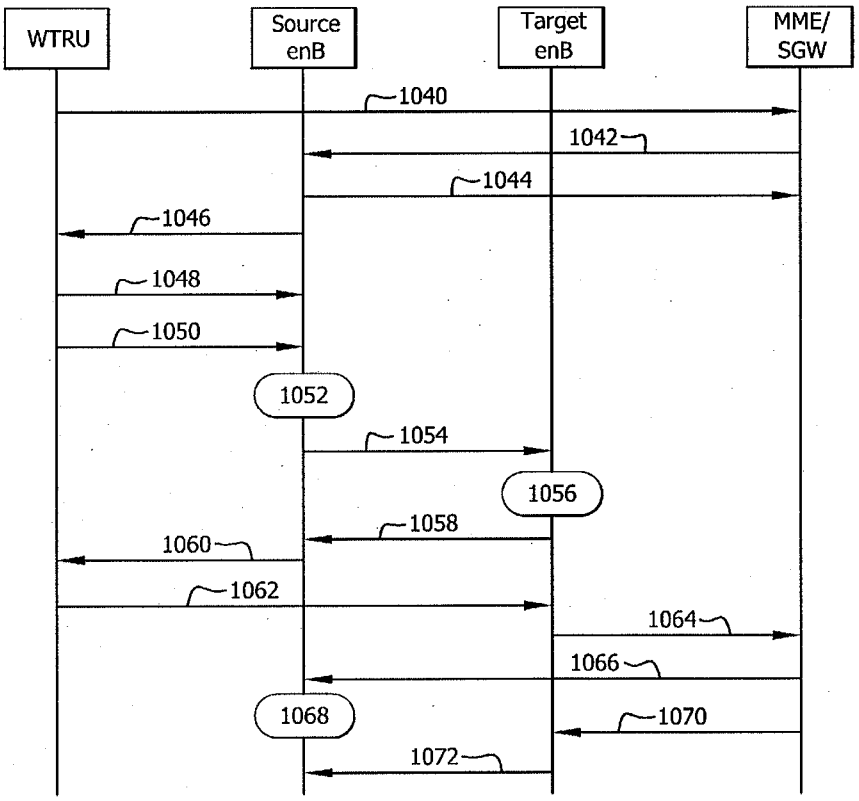

WTRU
Source enB
Target enB
MME/ SGW
1040
1042
1044
1046
1048
1050
1052
1054
1056
1058
1060
1062
1064
1066
1068
1070
1072
1000B

FIG. 10B