FIG. 1 (PRIOR ART)

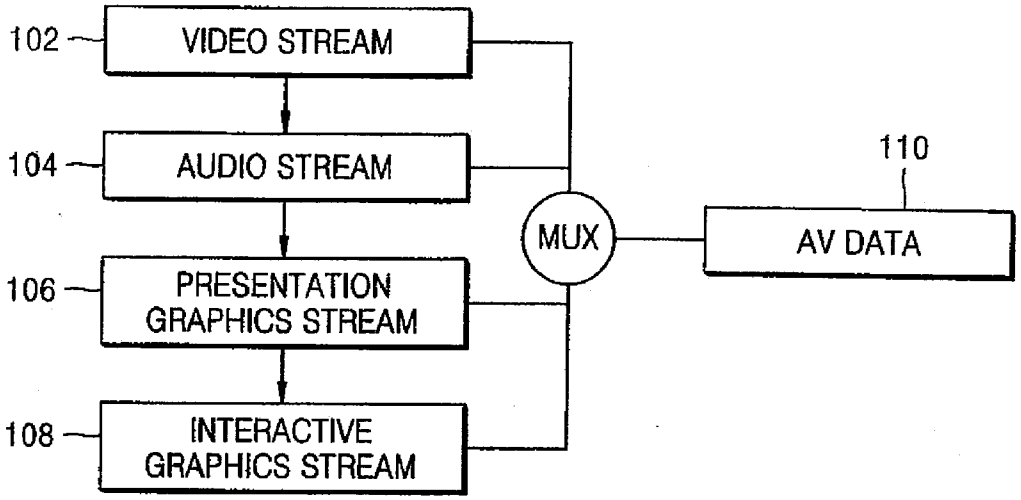


FIG. 2 (PRIOR ART)

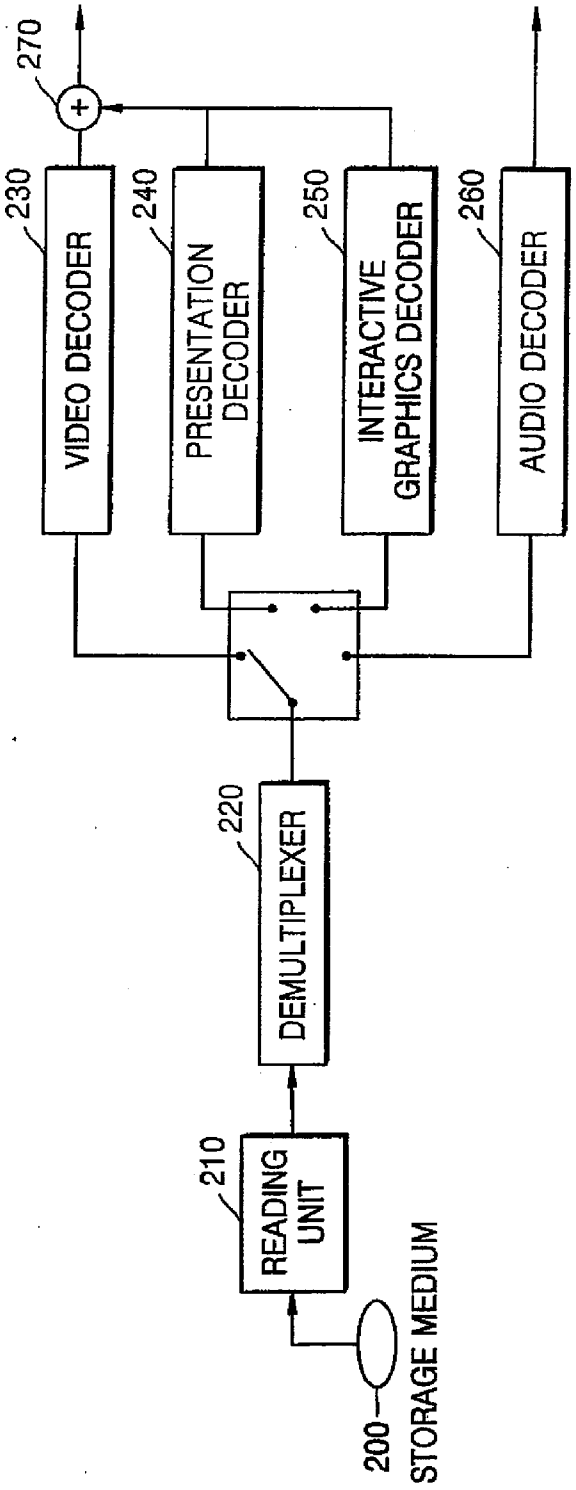


FIG. 3

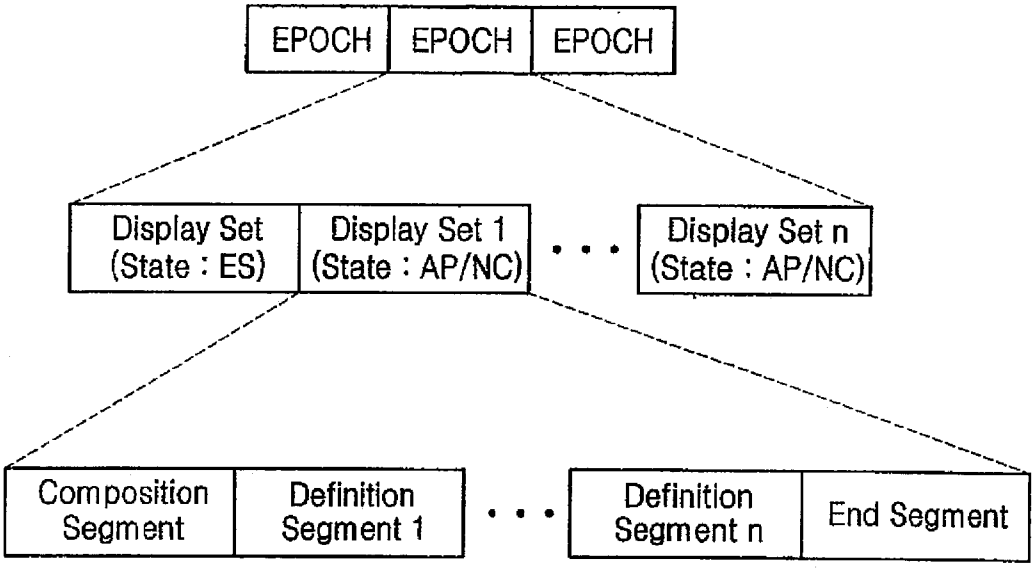

EPOCH
EPOCH
EPOCH
Display Set (State : ES)
Display Set 1 (State : AP/NC)
Display Set n (State : AP/NC)
Composition Segment
Definition Segment 1
Definition Segment n
End Segment

FIG. 4

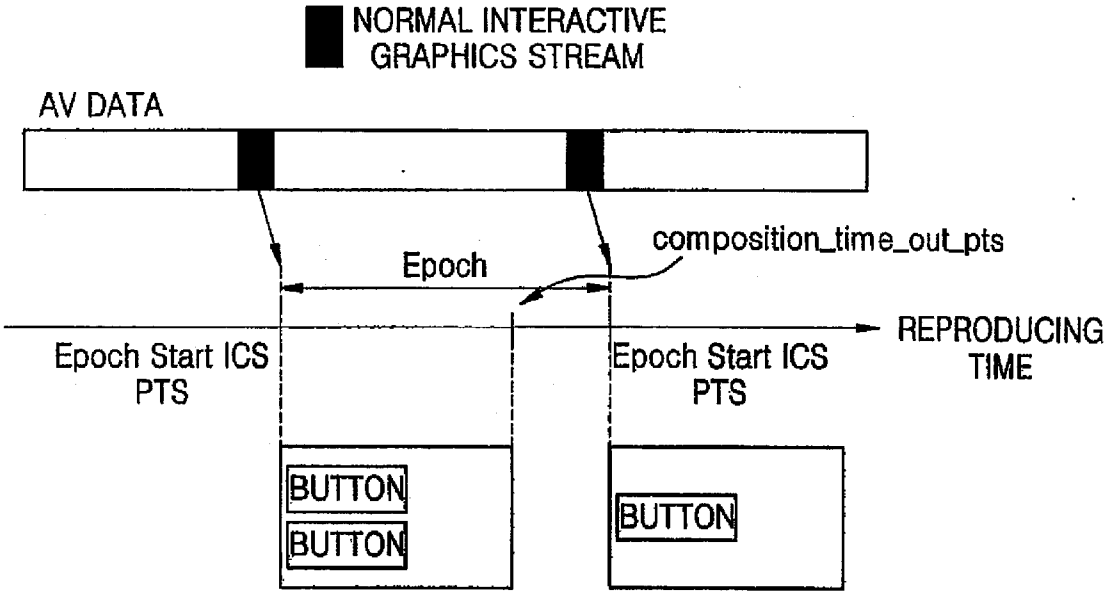

NORMAL INTERACTIVE GRAPHICS STREAM
AV DATA
composition_time_out_pts
Epoch
REPRODUCING TIME
Epoch Start ICS PTS
Epoch Start ICS PTS
BUTTON
BUTTON
BUTTON

FIG. 5A

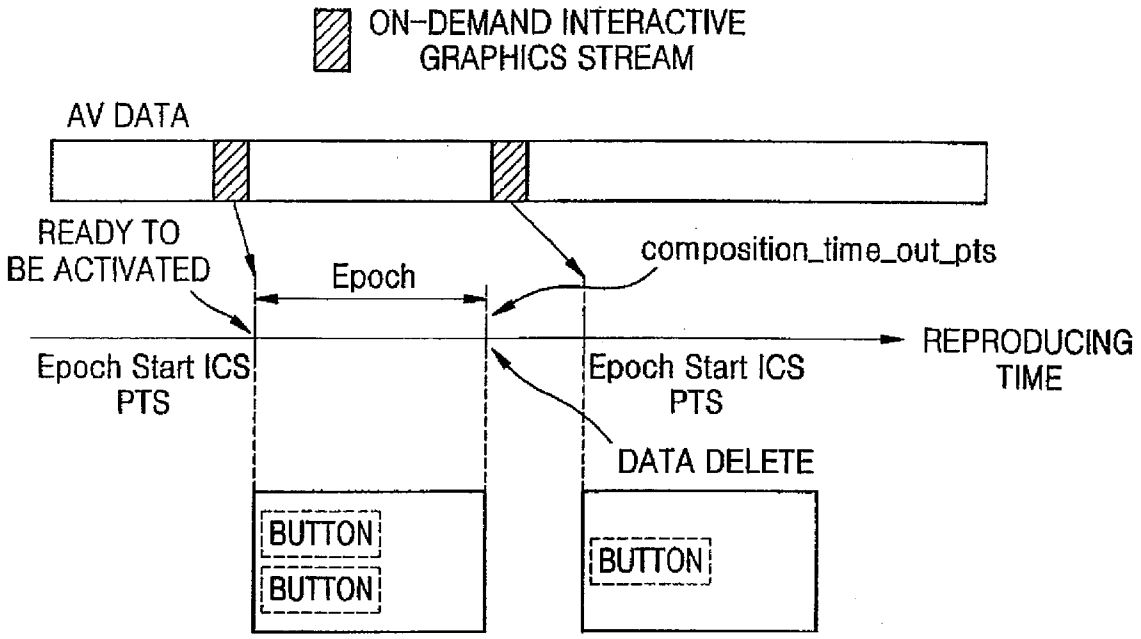

ON-DEMAND INTERACTIVE GRAPHICS STREAM
AV DATA
READY TO BE ACTIVATED
Epoch
composition_time_out_pts
REPRODUCING TIME
Epoch Start ICS PTS
Epoch Start ICS PTS
DATA DELETE
BUTTON
BUTTON
BUTTON

FIG. 5B

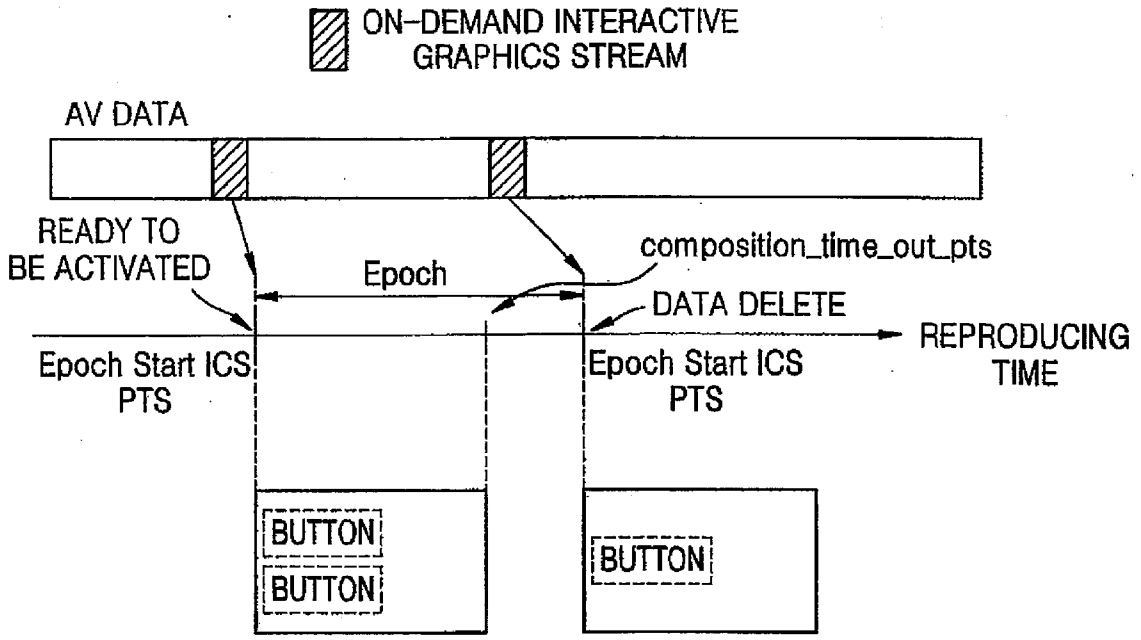

ON-DEMAND INTERACTIVE GRAPHICS STREAM
AV DATA
READY TO BE ACTIVATED
Epoch
composition_time_out_pts
DATA DELETE
REPRODUCING TIME
Epoch Start ICS PTS
Epoch Start ICS PTS
BUTTON
BUTTON
BUTTON

FIG. 6A

```
graphics_segment ( ) {
        segment_descriptor ( ) —602
        segment_data
}
```

FIG. 6B

```
segment_descriptor ( ) {
        segment_type ( ) —604
        segment_length
}
```

FIG. 6C

value	segment_type	
0x00 - 0x13	reserved	
0x14	Palette Definition Segment	
0x15	Object Definition Segment	
0x16	Presentation Composition Segment	
0x17	Window Definition Segment	
0x18	Normal_ICS	— 606
0x19	On_demand_ICS	— 607
0x1A - 0x7F	reserved	
0x80	End of Display Set Segment	
0x81 - 0xFF	reserved	

FIG. 7

```
interactive_composition_segment ( ) {
    segment_type
    segment_length
    ICS_type —702
    . . .
}
```

FIG. 8

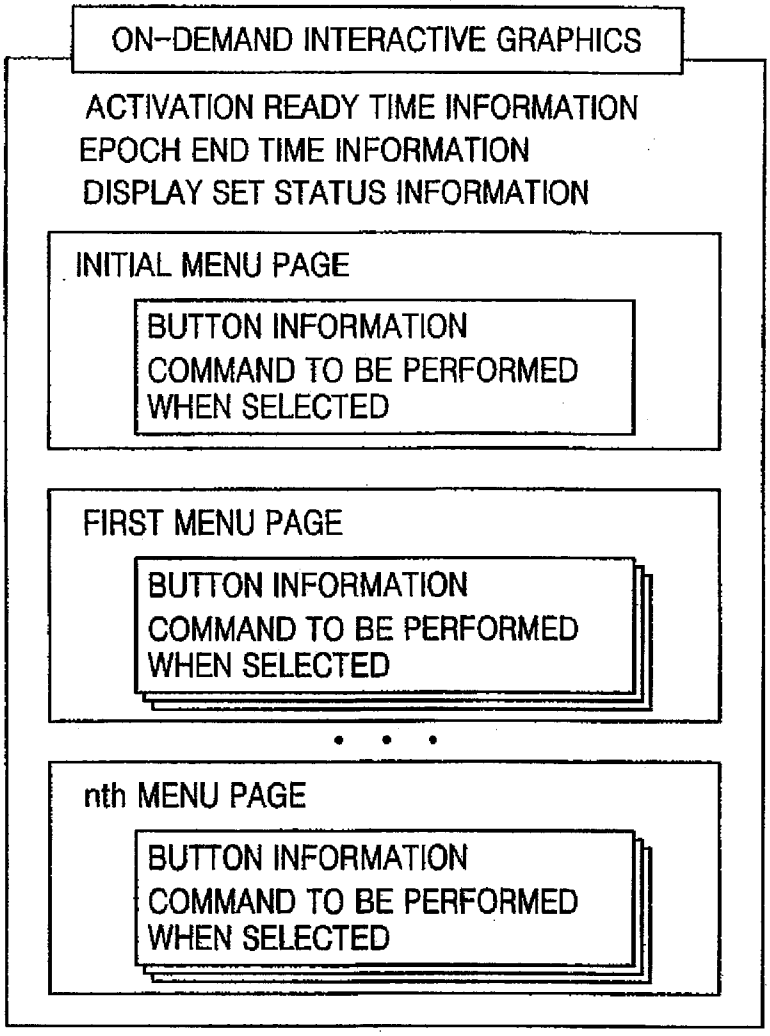


FIG. 9

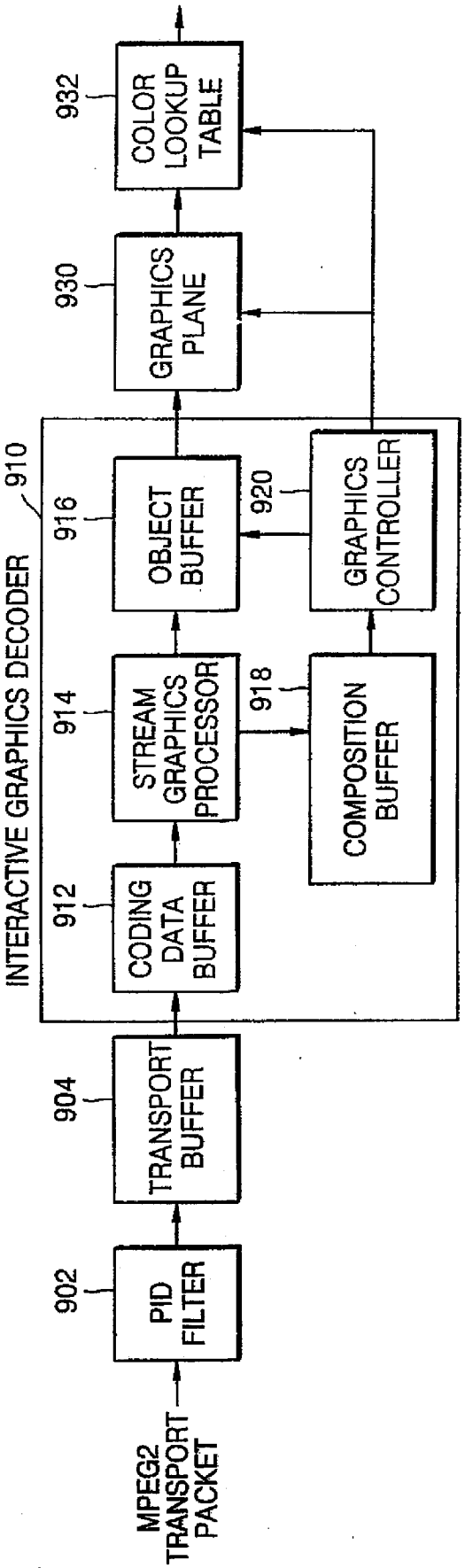

MPEG2 TRANSPORT PACKET
902
PID FILTER
904
TRANSPORT BUFFER
INTERACTIVE GRAPHICS DECODER
910
912
CODING DATA BUFFER
914
STREAM GRAPHICS PROCESSOR
916
OBJECT BUFFER
918
COMPOSITION BUFFER
920
GRAPHICS CONTROLLER
930
GRAPHICS PLANE
932
COLOR LOOKUP TABLE

FIG. 10

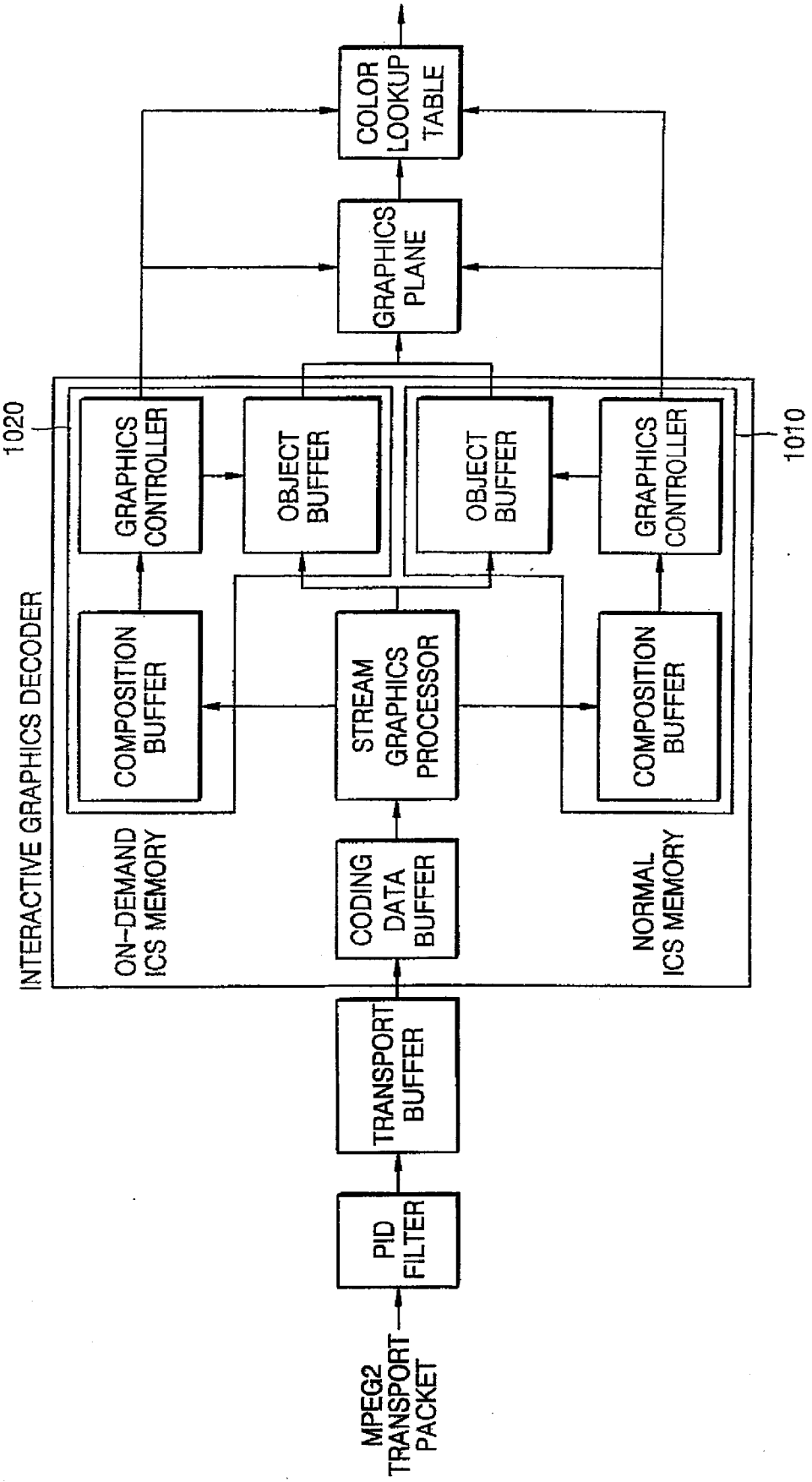

MPEG2 TRANSPORT PACKET
PID FILTER
TRANSPORT BUFFER
CODING DATA BUFFER
STREAM GRAPHICS PROCESSOR
COMPOSITION BUFFER
COMPOSITION BUFFER
GRAPHICS CONTROLLER
OBJECT BUFFER
OBJECT BUFFER
GRAPHICS CONTROLLER
GRAPHICS PLANE
COLOR LOOKUP TABLE
INTERACTIVE GRAPHICS DECODER
ON-DEMAND ICS MEMORY
NORMAL ICS MEMORY
1020
1010

FIG. 11A

FIG. 11B

FIG. 11C

FIG. 11D

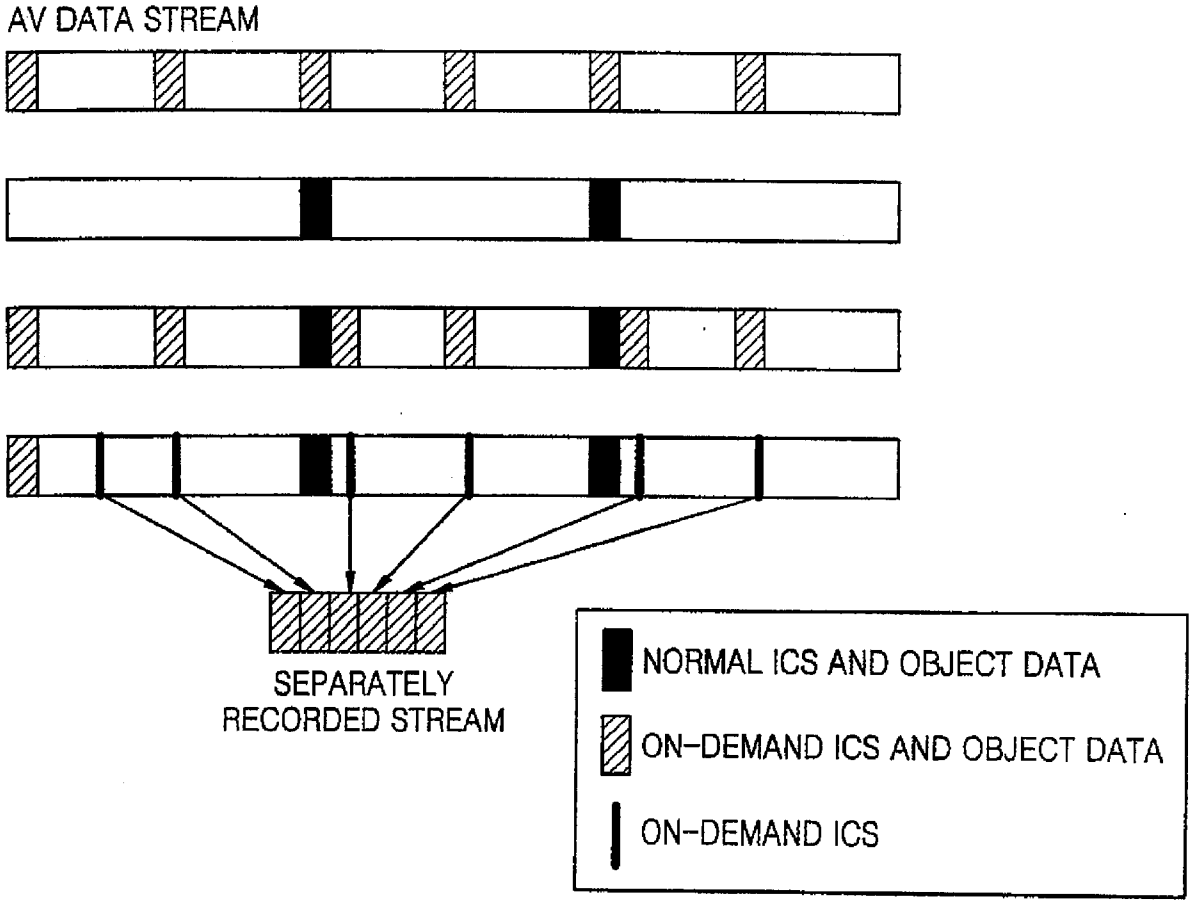


FIG. 12

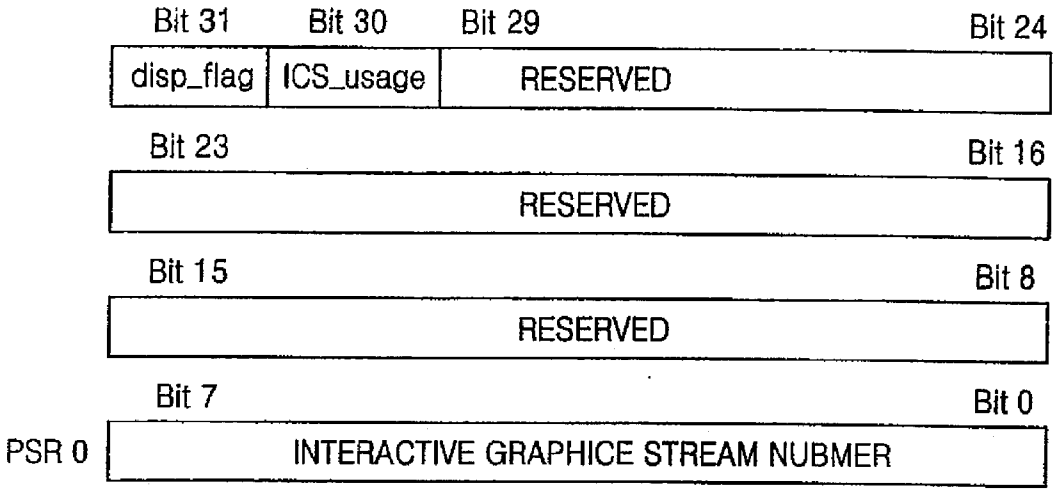

Bit 31
Bit 30
Bit 29
Bit 24
disp_flag
ICS_usage
RESERVED
Bit 23
Bit 16
RESERVED
Bit 15
Bit 8
RESERVED
Bit 7
Bit 0
PSR 0
INTERACTIVE GRAPHICE STREAM NUBMER

FIG. 13

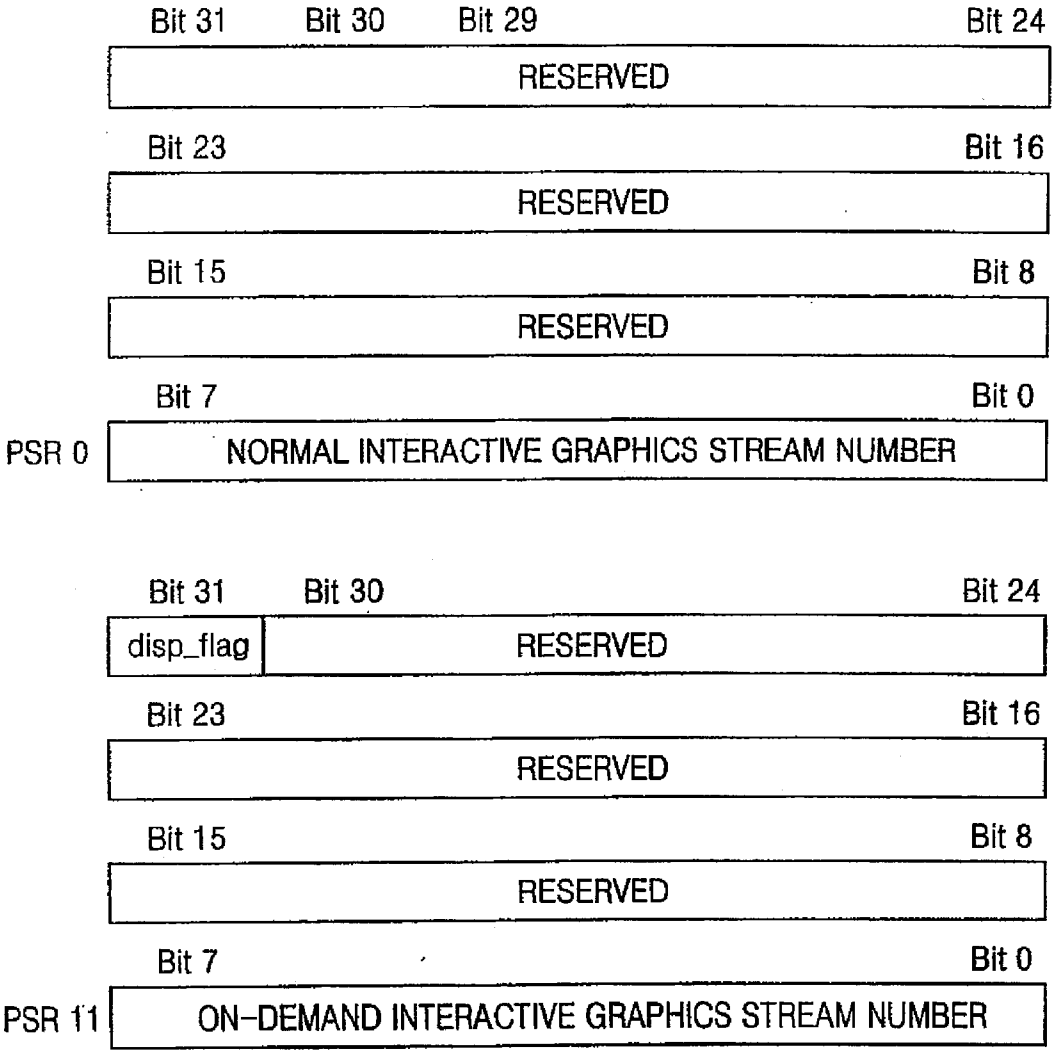

Bit 31
Bit 30
Bit 29
Bit 24
RESERVED
Bit 23
Bit 16
RESERVED
Bit 15
Bit 8
RESERVED
Bit 7
Bit 0
PSR 0
NORMAL INTERACTIVE GRAPHICS STREAM NUMBER
Bit 31
Bit 30
Bit 24
disp_flag
RESERVED
Bit 23
Bit 16
RESERVED
Bit 15
Bit 8
RESERVED
Bit 7
Bit 0
PSR 11
ON-DEMAND INTERACTIVE GRAPHICS STREAM NUMBER

FIG. 14

```
Activate_On_demand ( ) {
    if (On-demand ICS ready) {
       On-demand ICS display
       set focus
    }
    else {
         do nothing
              or
    display message - "Not available On-demand ICS"
    }
}
```

FIG. 15A

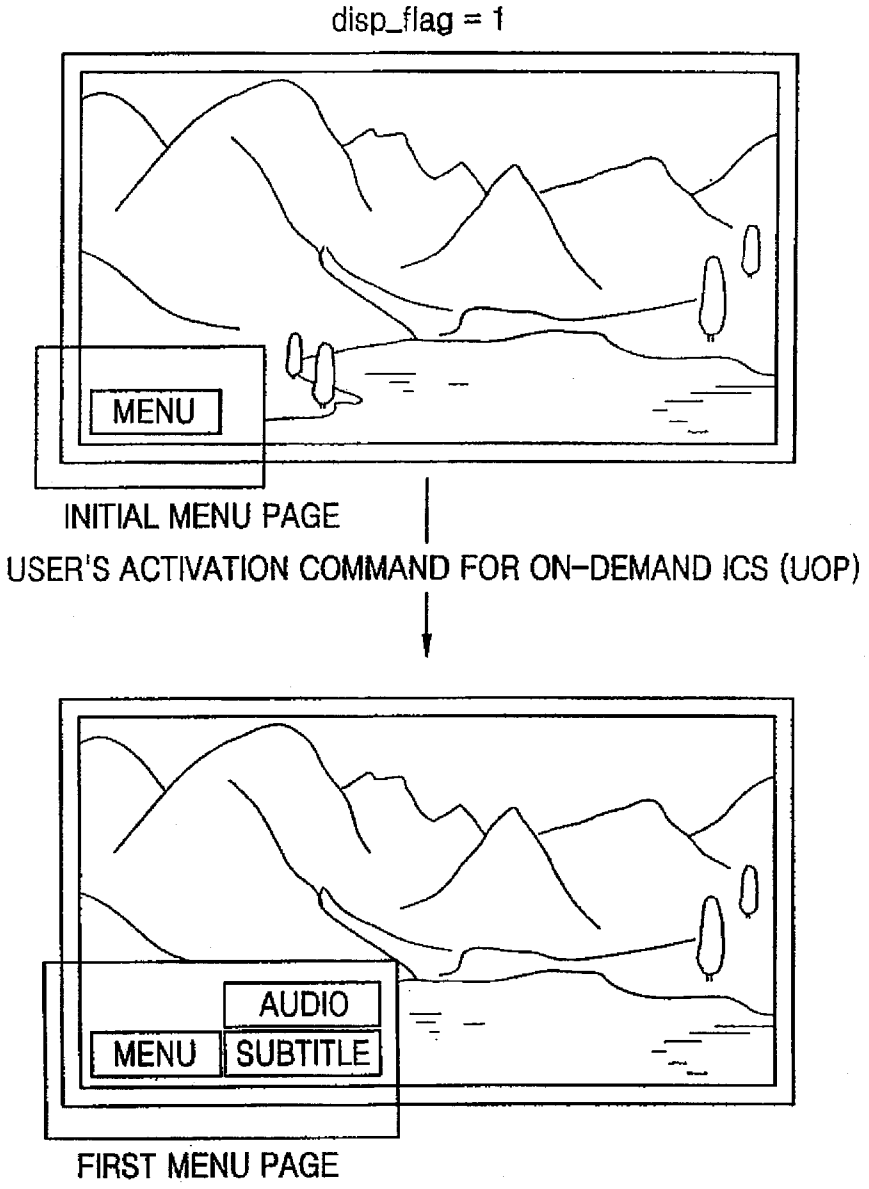

disp_flag = 1
MENU
INITIAL MENU PAGE
USER'S ACTIVATION COMMAND FOR ON-DEMAND ICS (UOP)
AUDIO
MENU
SUBTITLE
FIRST MENU PAGE

FIG. 15B

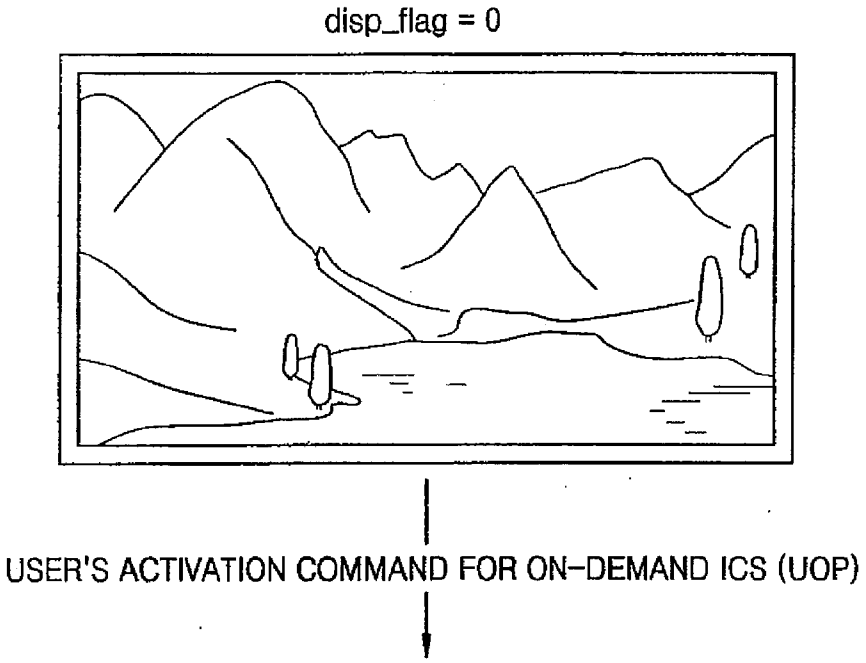

disp_flag = 0
USER'S ACTIVATION COMMAND FOR ON-DEMAND ICS (UOP)
IGNORE USER'S ACTIVATION COMMAND
OR
DISPLAY FIRST MENU PAGE

FIG. 16

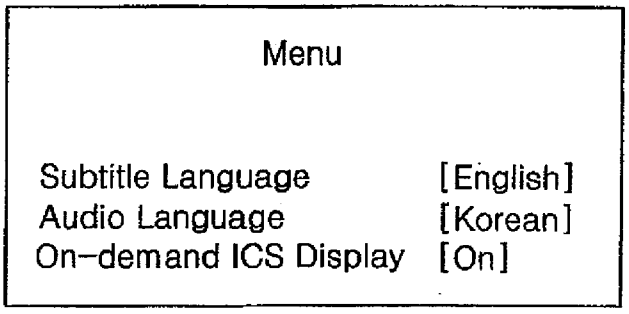

Menu
Subtitle Language [English]
Audio Language [Korean]
On-demand ICS Display [On]

FIG. 17

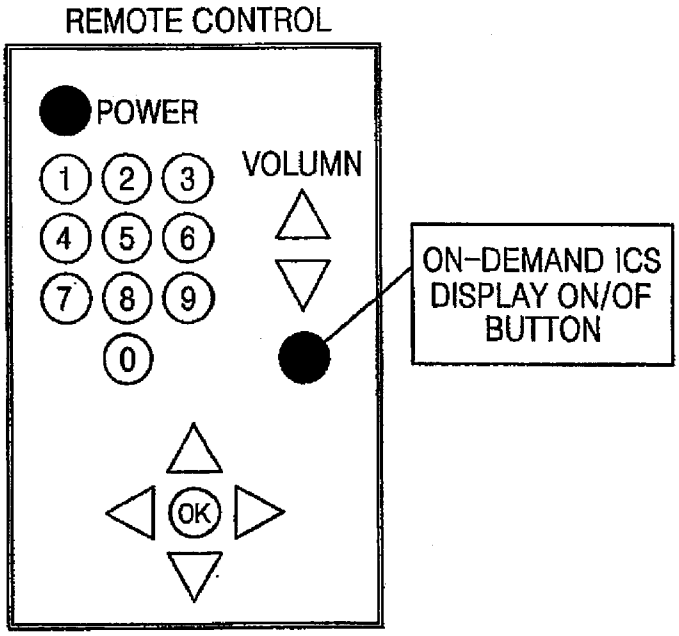

REMOTE CONTROL
POWER
VOLUMN
1
2
3
4
5
6
7
8
9
0
OK
ON-DEMAND ICS DISPLAY ON/OF BUTTON

FIG. 18

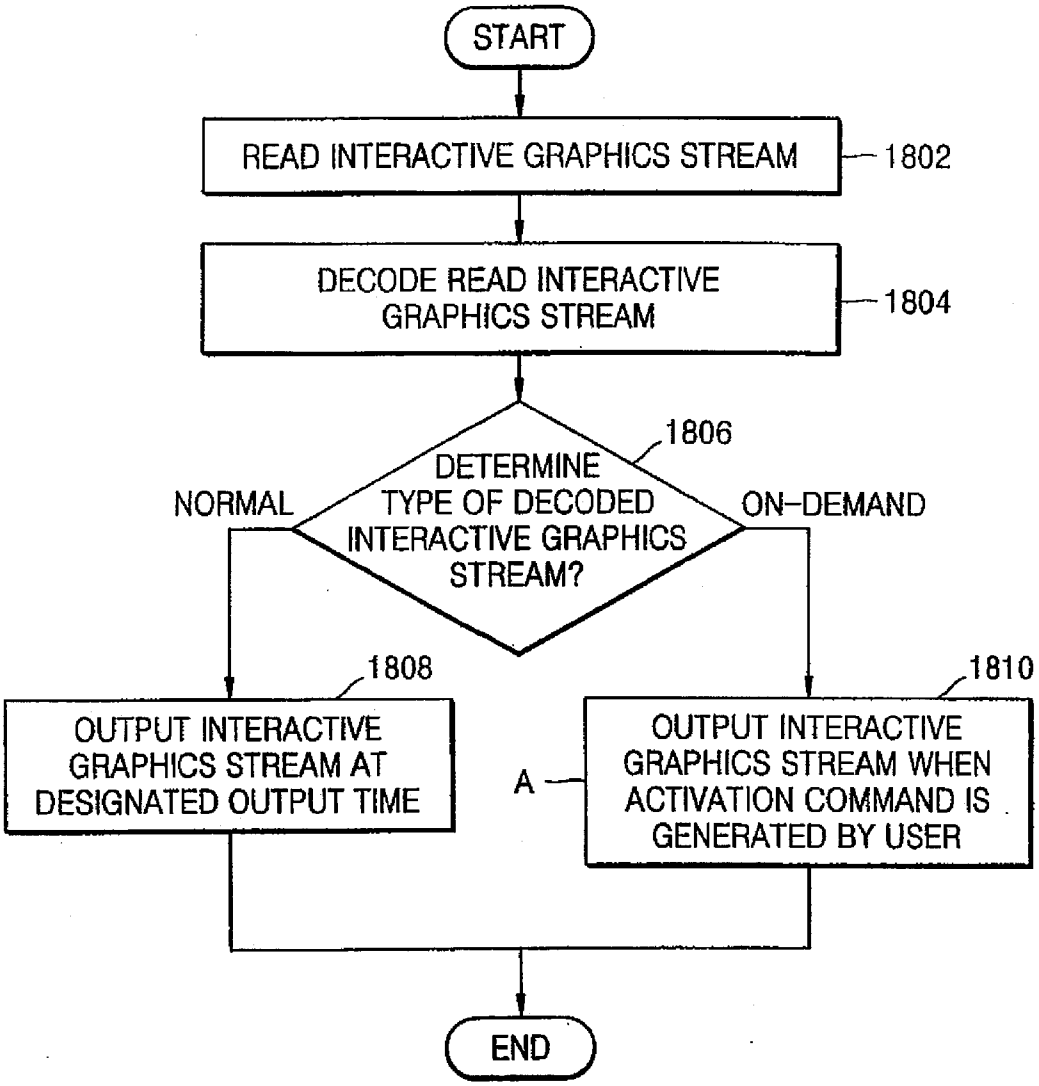
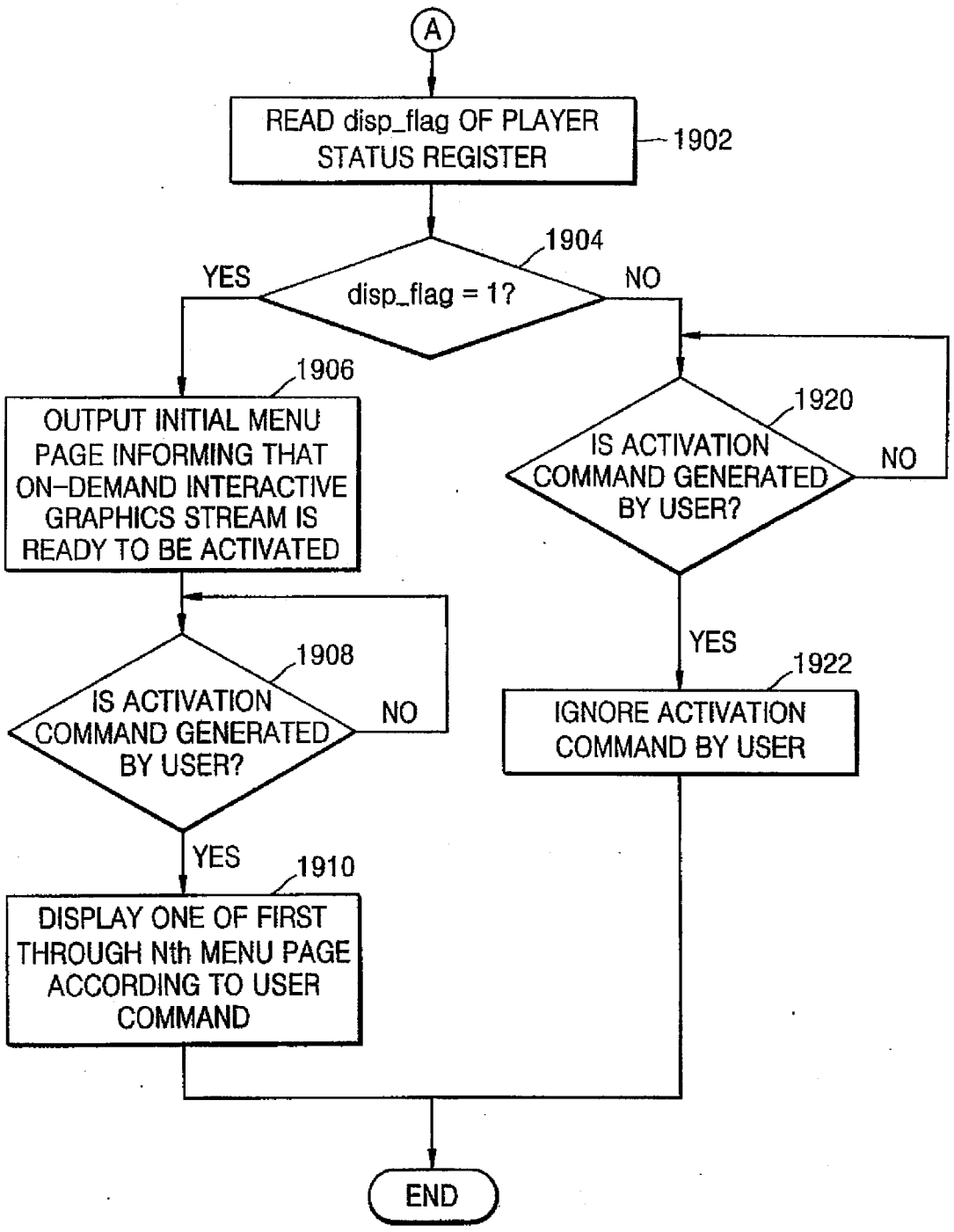

START
READ INTERACTIVE GRAPHICS STREAM
1802
DECODE READ INTERACTIVE GRAPHICS STREAM
1804
1806
DETERMINE TYPE OF DECODED INTERACTIVE GRAPHICS STREAM?
NORMAL
ON-DEMAND
1808
OUTPUT INTERACTIVE GRAPHICS STREAM AT DESIGNATED OUTPUT TIME
A
1810
OUTPUT INTERACTIVE GRAPHICS STREAM WHEN ACTIVATION COMMAND IS GENERATED BY USER
END

FIG. 19


A
READ disp_flag OF PLAYER STATUS REGISTER
1902
1904
disp_flag = 1?
YES
NO
1906
OUTPUT INITIAL MENU PAGE INFORMING THAT ON-DEMAND INTERACTIVE GRAPHICS STREAM IS READY TO BE ACTIVATED
1908
IS ACTIVATION COMMAND GENERATED BY USER?
NO
YES
1910
DISPLAY ONE OF FIRST THROUGH Nth MENU PAGE ACCORDING TO USER COMMAND
1920
IS ACTIVATION COMMAND GENERATED BY USER?
NO
YES
1922
IGNORE ACTIVATION COMMAND BY USER
END