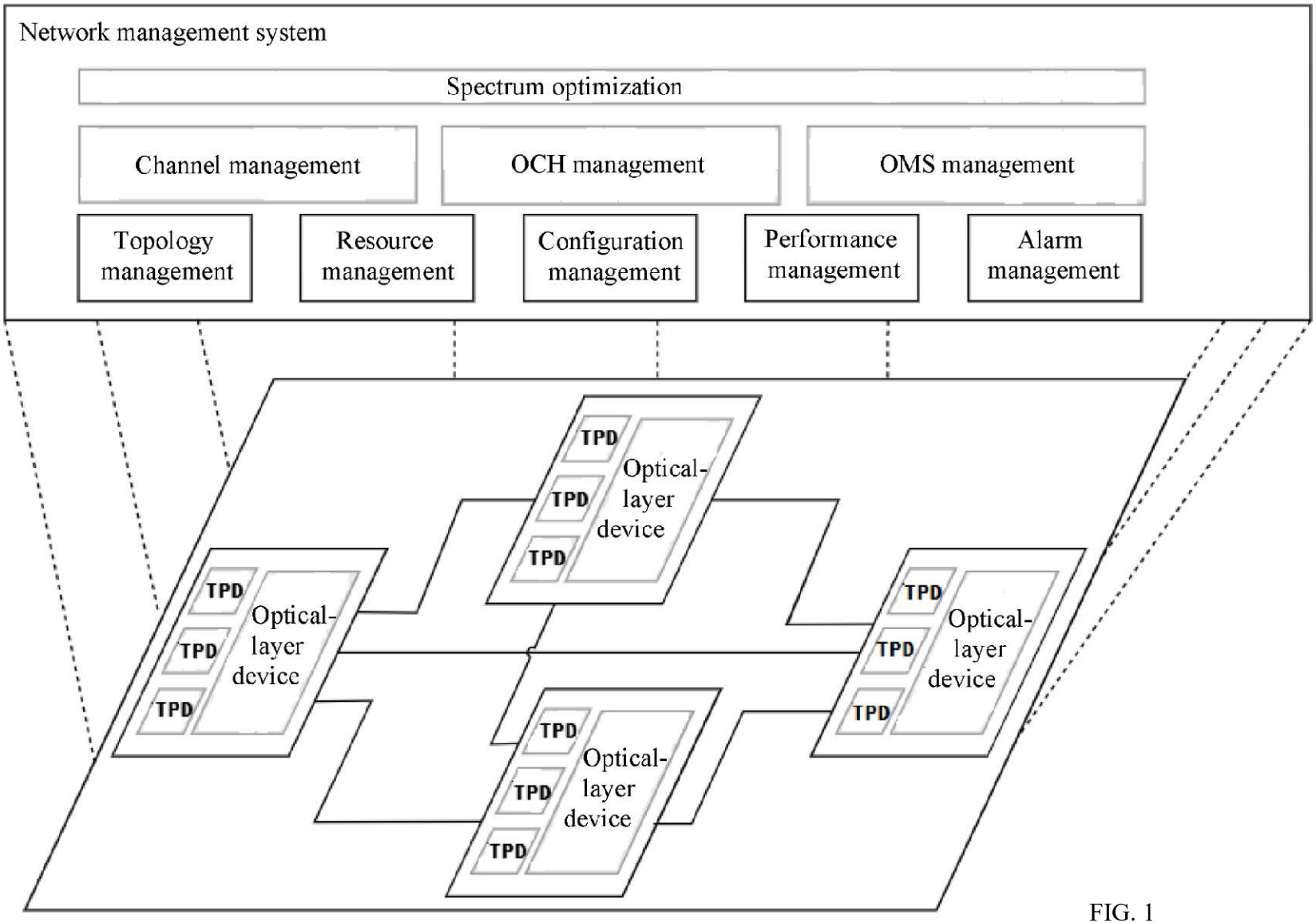

Network management system
Spectrum optimization
Channel management
OCH management
OMS management
Topology management
Resource management
Configuration management
Performance management
Alarm management
TPD
Optical-layer device
TPD
Optical-layer device
TPD
Optical-layer device
TPD
Optical-layer device

FIG. 1

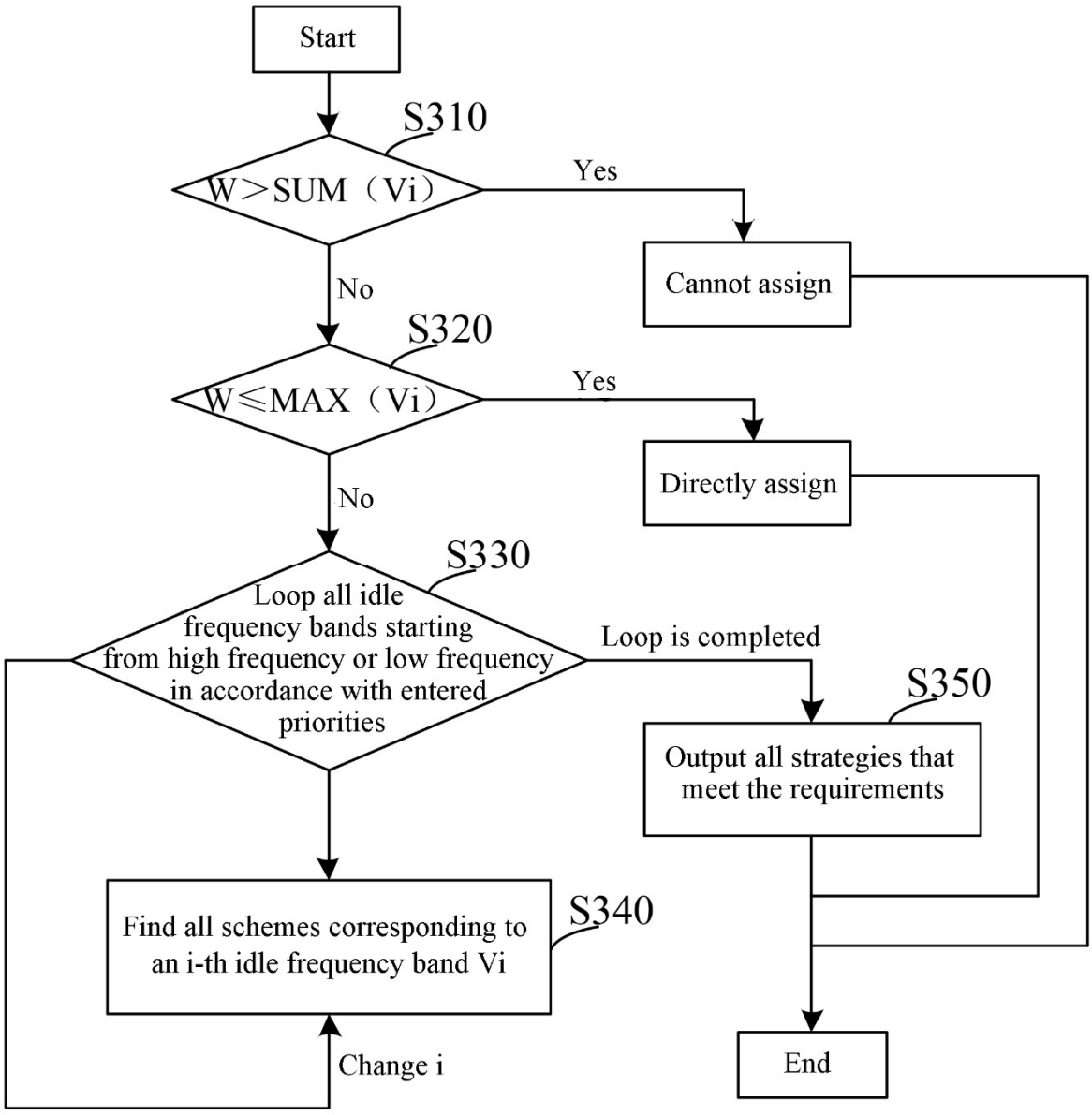

Start
S310
W＞SUM（Vi）
Yes
Cannot assign
No
S320
W≤MAX（Vi）
Yes
Directly assign
No
S330
Loop all idle frequency bands starting from high frequency or low frequency in accordance with entered priorities
Loop is completed
S350
Output all strategies that meet the requirements
Find all schemes corresponding to an i-th idle frequency band Vi
S340
Change i
End

FIG. 2

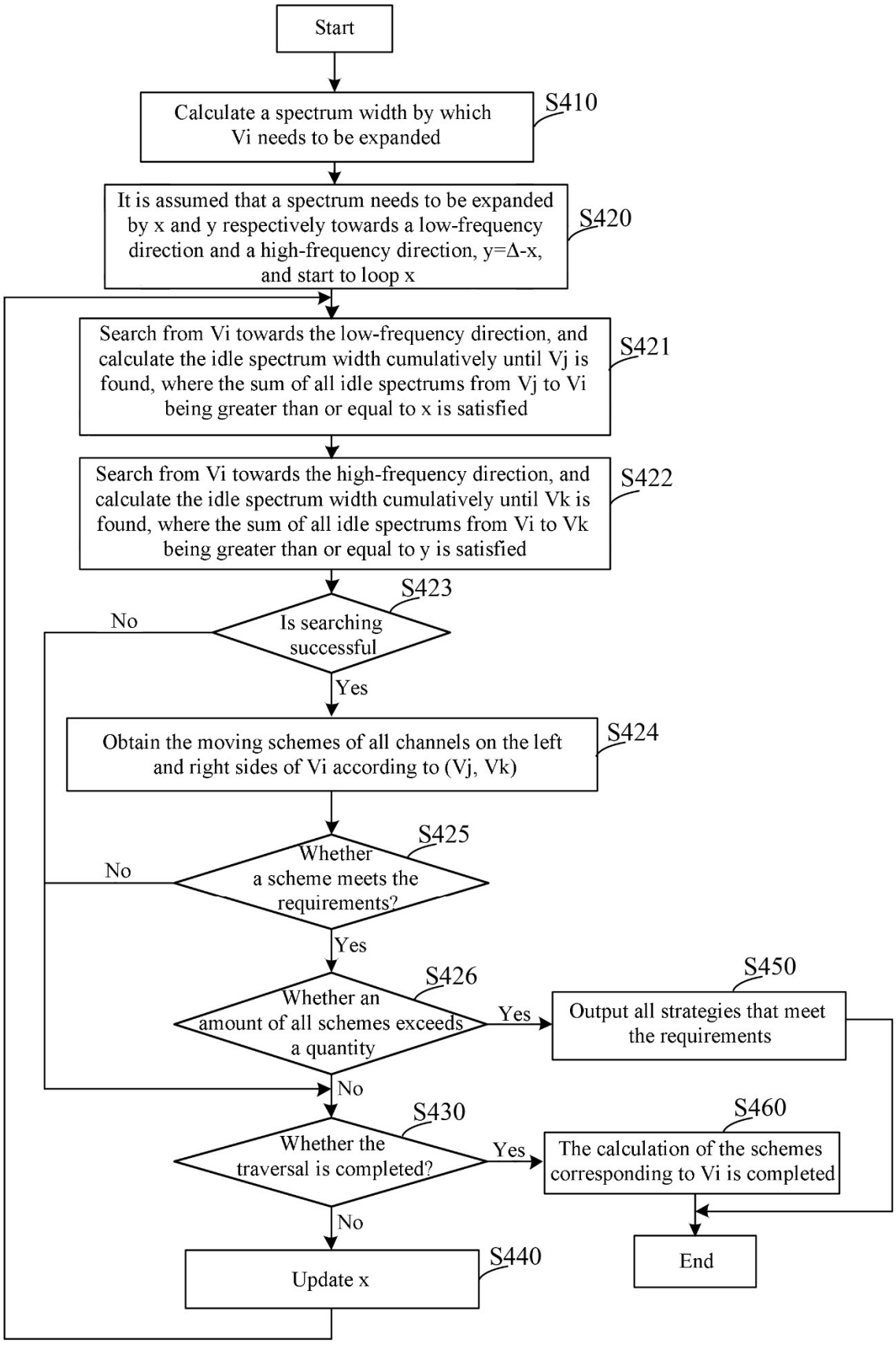

Start
Calculate a spectrum width by which Vi needs to be expanded
S410
It is assumed that a spectrum needs to be expanded by x and y respectively towards a low-frequency direction and a high-frequency direction, y=Δ-x, and start to loop x
S420
Search from Vi towards the low-frequency direction, and calculate the idle spectrum width cumulatively until Vj is found, where the sum of all idle spectrums from Vj to Vi being greater than or equal to x is satisfied
S421
Search from Vi towards the high-frequency direction, and calculate the idle spectrum width cumulatively until Vk is found, where the sum of all idle spectrums from Vi to Vk being greater than or equal to y is satisfied
S422
S423
Is searching successful
No
Yes
Obtain the moving schemes of all channels on the left and right sides of Vi according to (Vj, Vk)
S424
S425
Whether a scheme meets the requirements?
No
Yes
S426
Whether an amount of all schemes exceeds a quantity
Yes
S450
Output all strategies that meet the requirements
No
S430
Whether the traversal is completed?
Yes
S460
The calculation of the schemes corresponding to Vi is completed
No
S440
Update x
End

FIG. 3

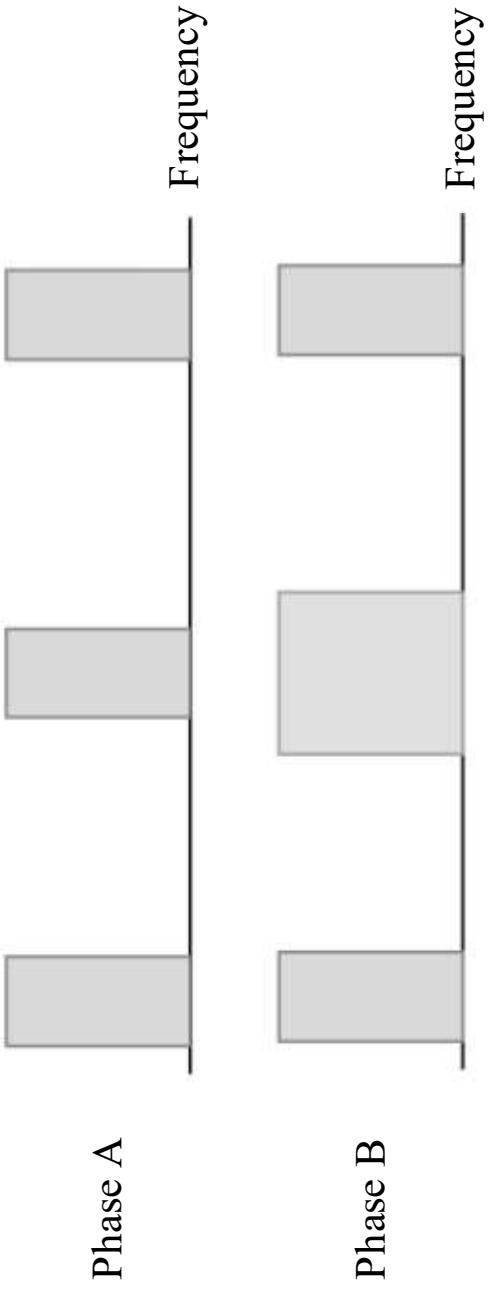


FIG. 4

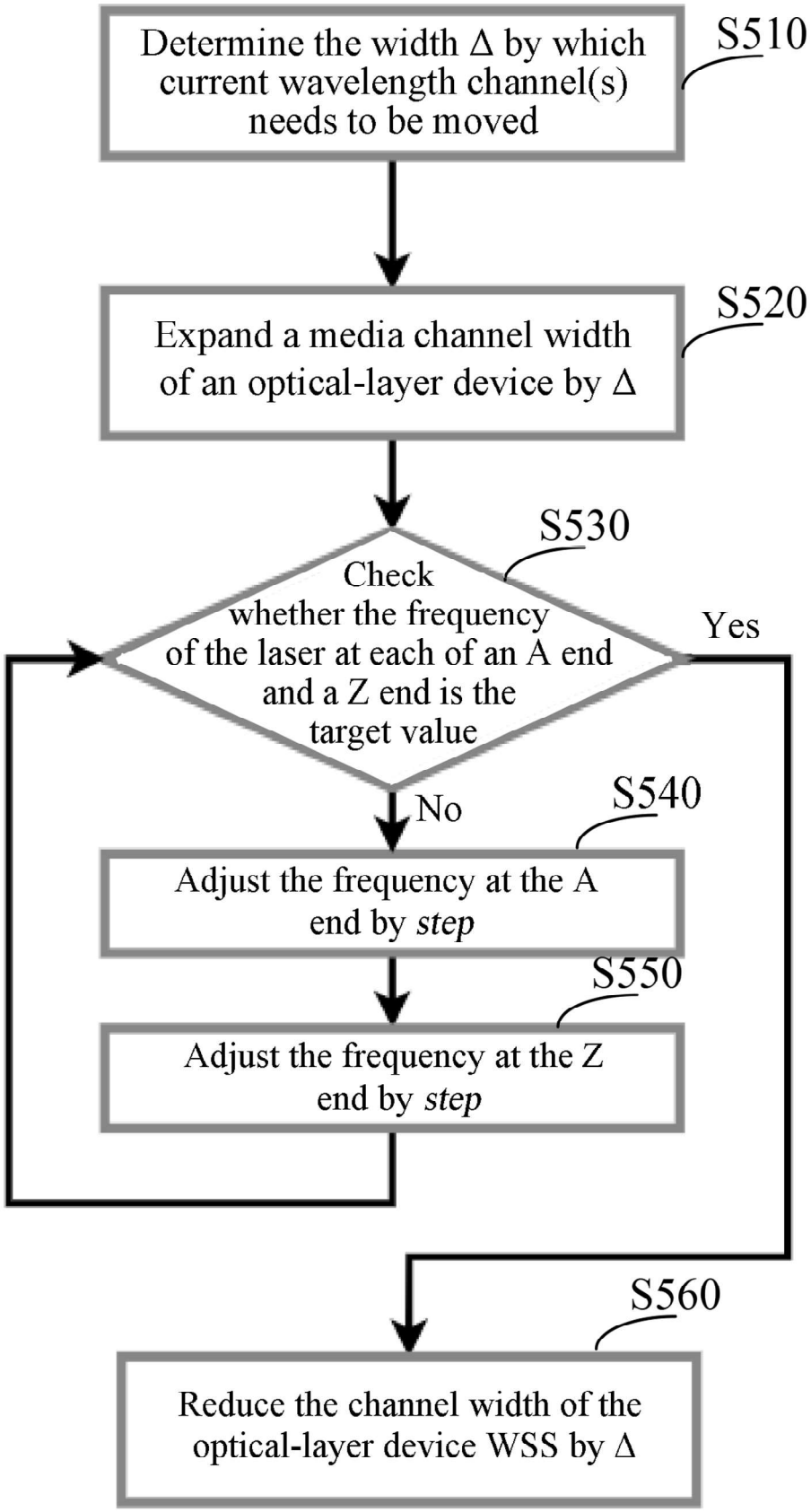

Determine the width Δ by which current wavelength channel(s) needs to be moved
S510
Expand a media channel width of an optical-layer device by Δ
S520
S530
Check whether the frequency of the laser at each of an A end and a Z end is the target value
Yes
No
S540
Adjust the frequency at the A end by *step*
S550
Adjust the frequency at the Z end by *step*
S560
Reduce the channel width of the optical-layer device WSS by Δ

FIG. 5

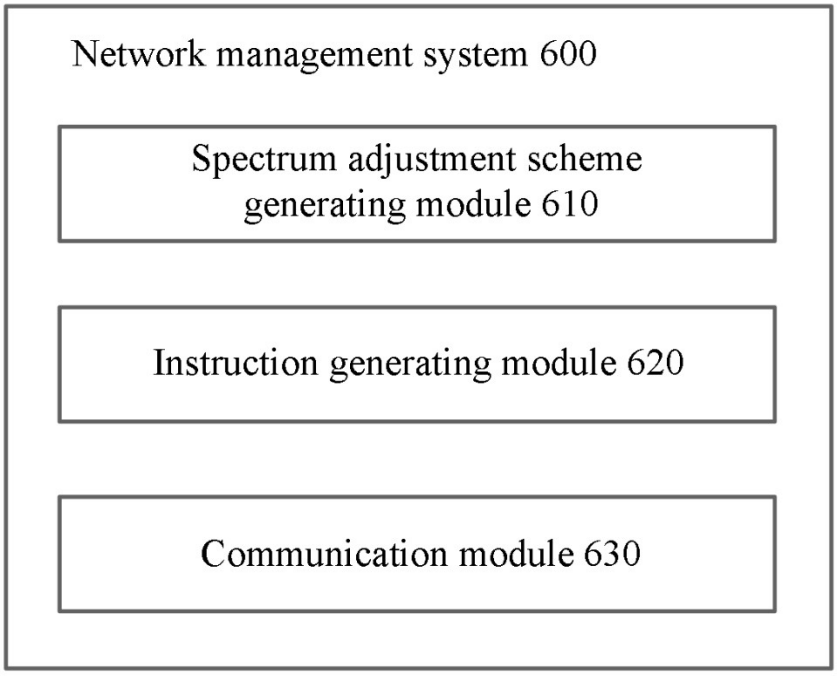

Network management system 600
Spectrum adjustment scheme generating module 610
Instruction generating module 620
Communication module 630

FIG. 6

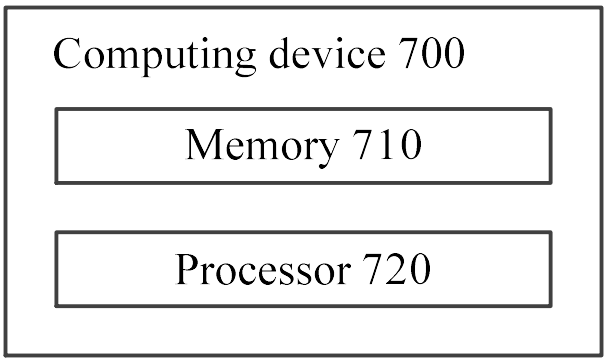

Computing device 700
Memory 710
Processor 720

FIG. 7