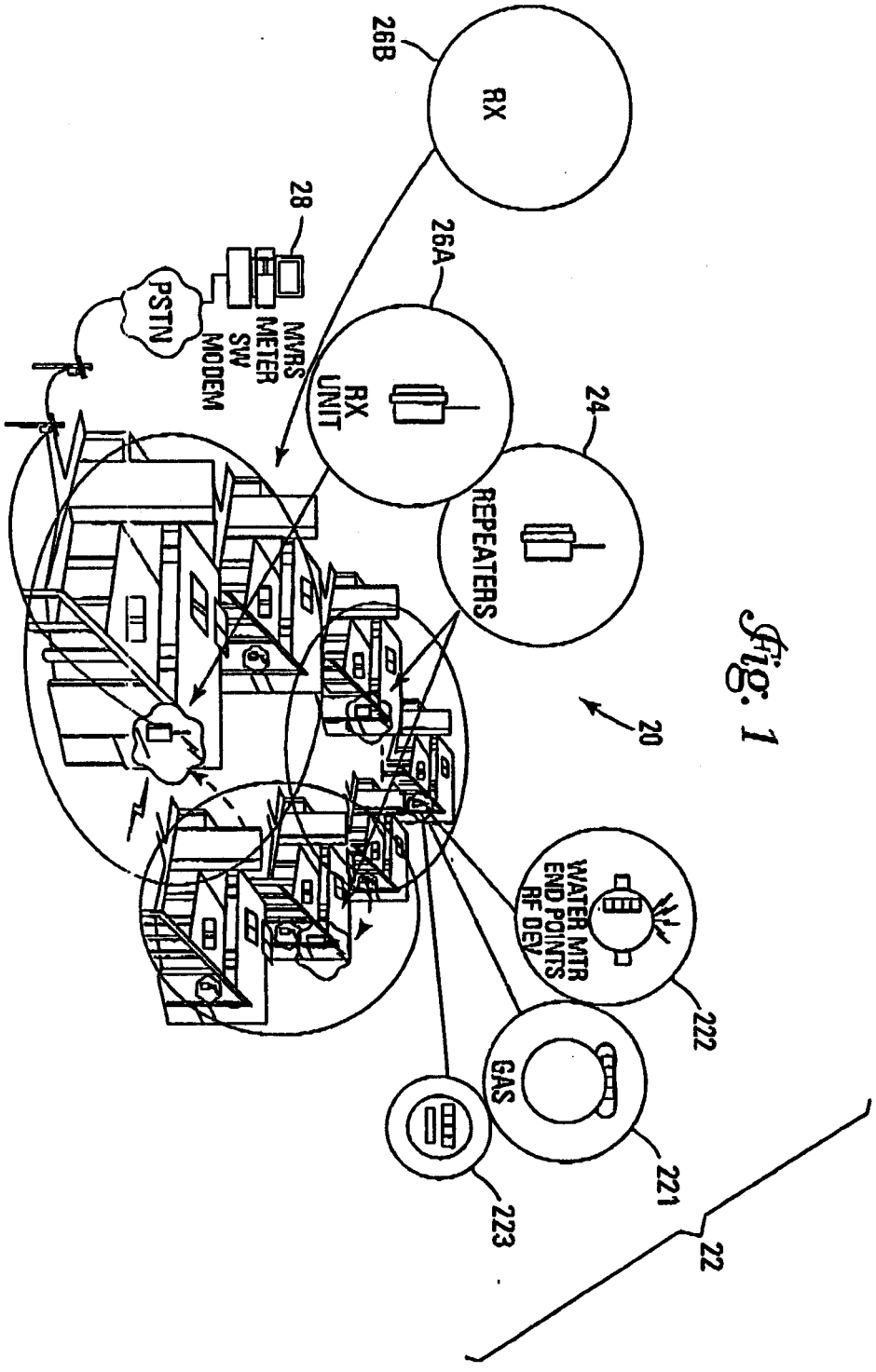
26B
RX
28
26A
PSTN
MVRS
METER
SW
MODEM
RX
UNIT
24
REPEATERS
20
WATER MTR
END POINTS
RF DEV
222
GAS
221
223
22

Fig. 1


250 KHz block of spectrum allocated to an nVanta system
200
210

Fig. 2A

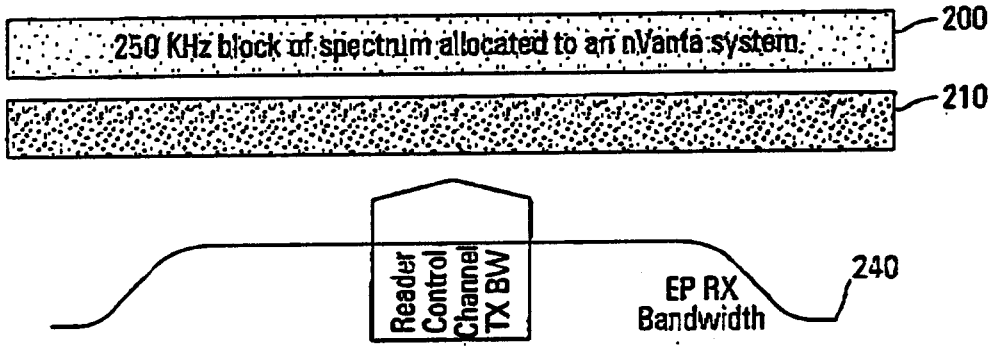
250 KHz block of spectrum allocated to an nVanta system
200
210
Reader Control Channel TX BW
EP RX Bandwidth
240

Fig. 2B

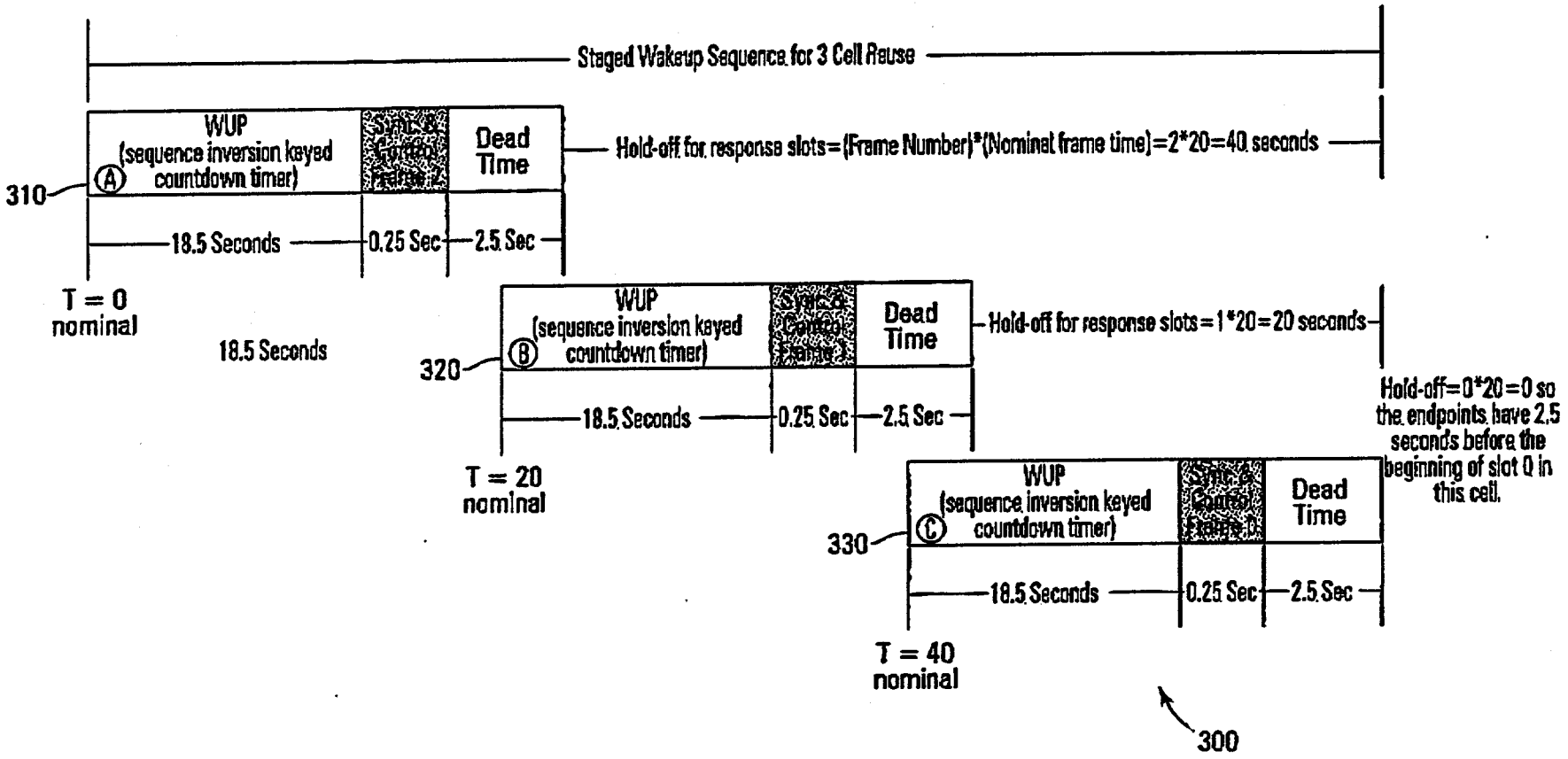
Staged Wakeup Sequence for 3 Cell Reuse
WUP
(sequence inversion keyed countdown timer)
Dead Time
Hold-off for response slots=(Frame Number)*(Nominal frame time)=2*20=40 seconds
310
A
18.5 Seconds
0.25 Sec
2.5 Sec
T = 0
nominal
18.5 Seconds
WUP
(sequence inversion keyed countdown timer)
Dead Time
Hold-off for response slots=1*20=20 seconds
320
B
18.5 Seconds
0.25 Sec
2.5 Sec
T = 20
nominal
Hold-off=0*20=0 so the endpoints have 2.5 seconds before the beginning of slot 0 in this cell.
WUP
(sequence inversion keyed countdown timer)
Dead Time
330
C
18.5 Seconds
0.25 Sec
2.5 Sec
T = 40
nominal
300

Fig. 3A

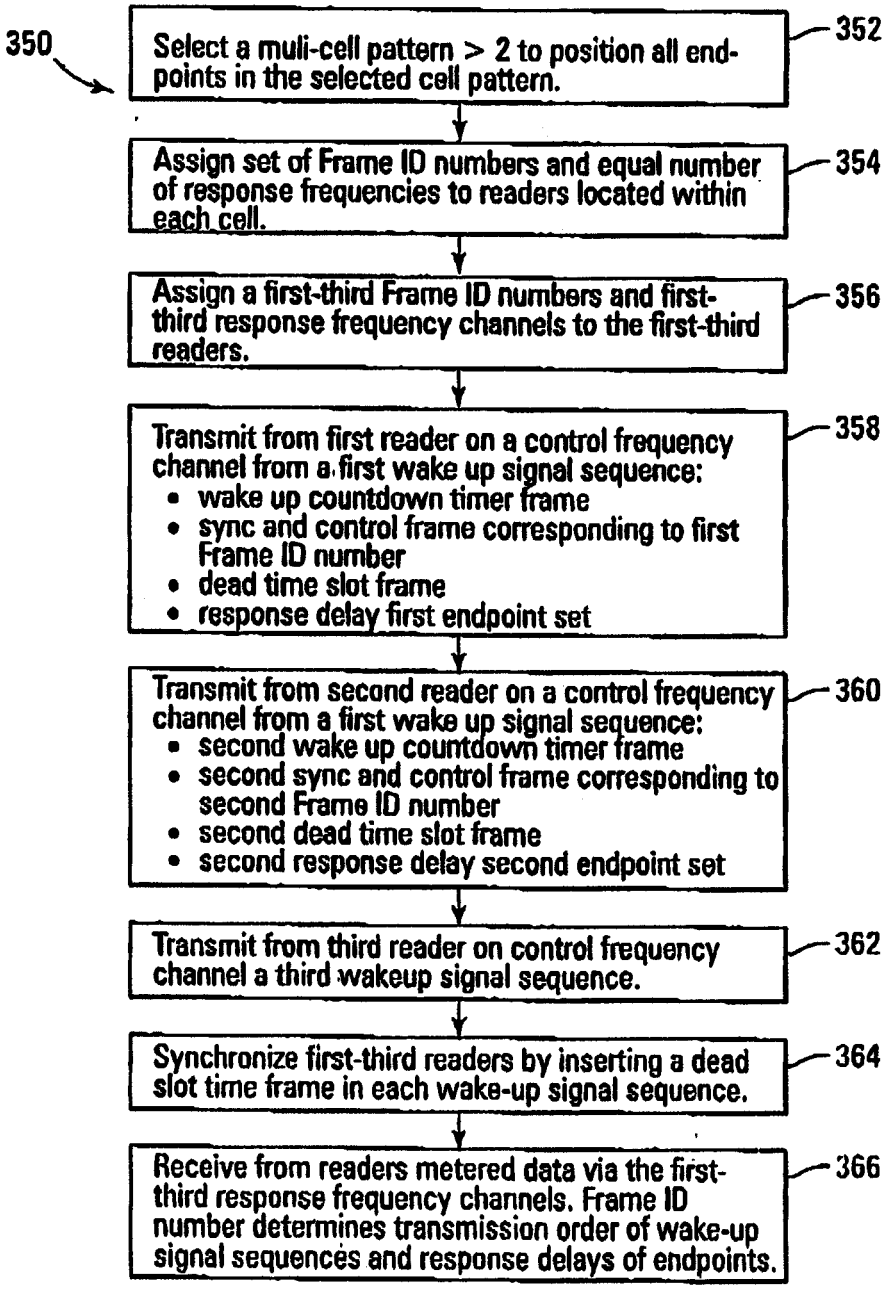
350
Select a muli-cell pattern > 2 to position all end-points in the selected cell pattern.
352
Assign set of Frame ID numbers and equal number of response frequencies to readers located within each cell.
354
Assign a first-third Frame ID numbers and first-third response frequency channels to the first-third readers.
356
Transmit from first reader on a control frequency channel from a first wake up signal sequence:
• wake up countdown timer frame
• sync and control frame corresponding to first Frame ID number
• dead time slot frame
• response delay first endpoint set
358
Transmit from second reader on a control frequency channel from a first wake up signal sequence:
• second wake up countdown timer frame
• second sync and control frame corresponding to second Frame ID number
• second dead time slot frame
• second response delay second endpoint set
360
Transmit from third reader on control frequency channel a third wakeup signal sequence.
362
Synchronize first-third readers by inserting a dead slot time frame in each wake-up signal sequence.
364
Receive from readers metered data via the first-third response frequency channels. Frame ID number determines transmission order of wake-up signal sequences and response delays of endpoints.
366

Fig. 3B

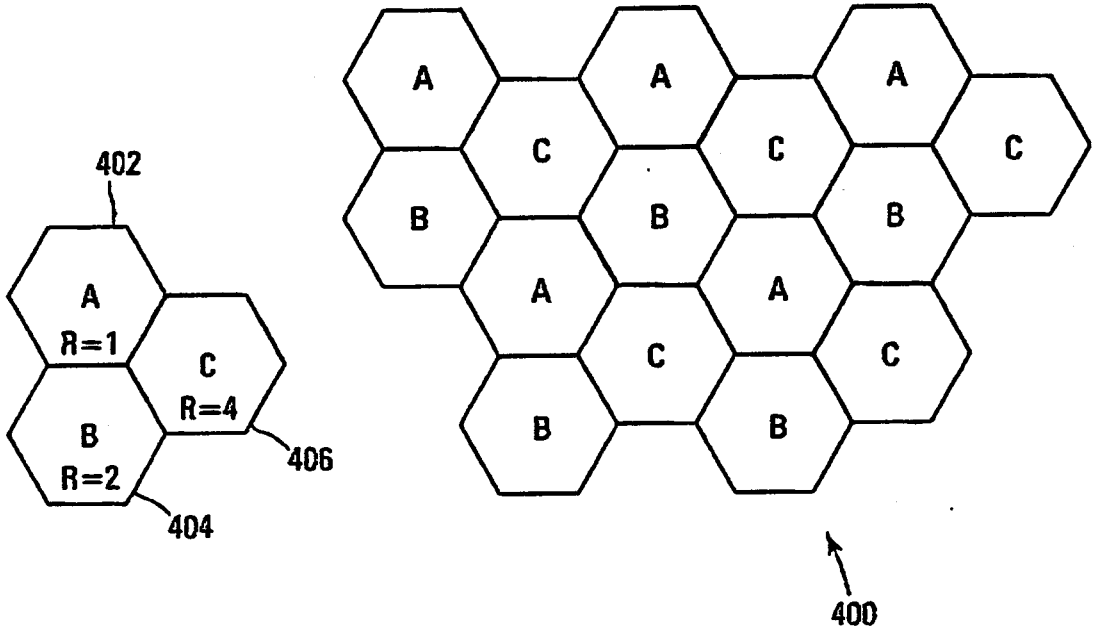

Fig. 4

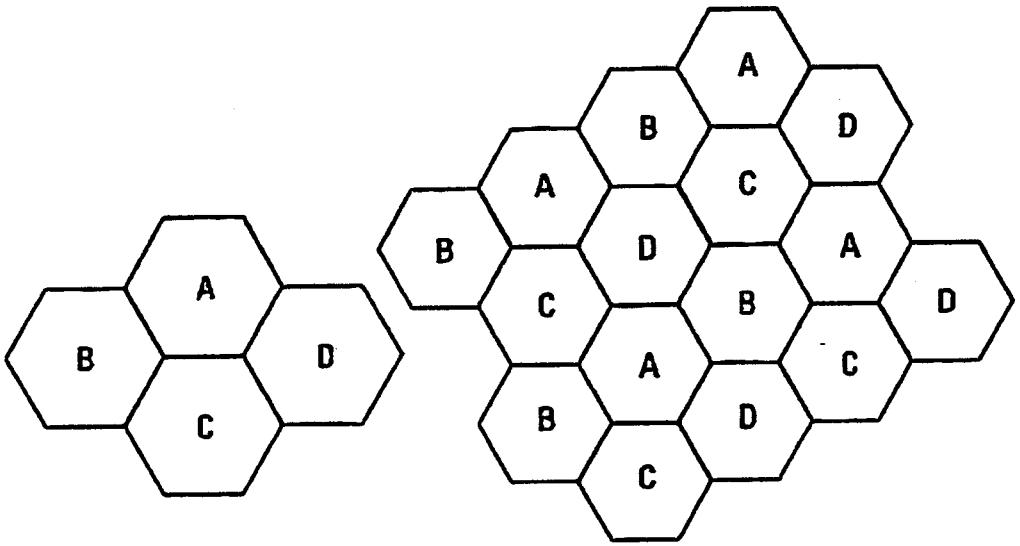

Fig. 5A

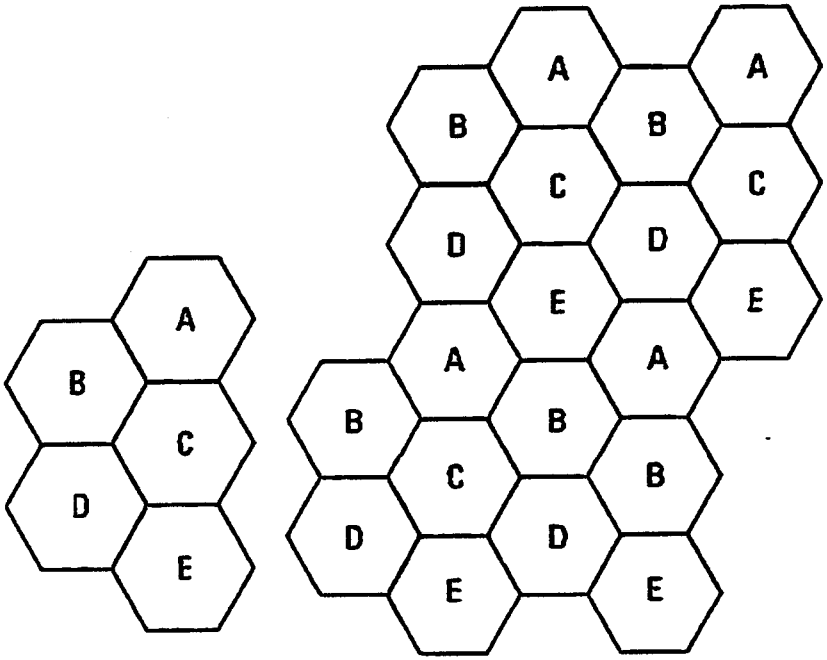

Fig. 5B

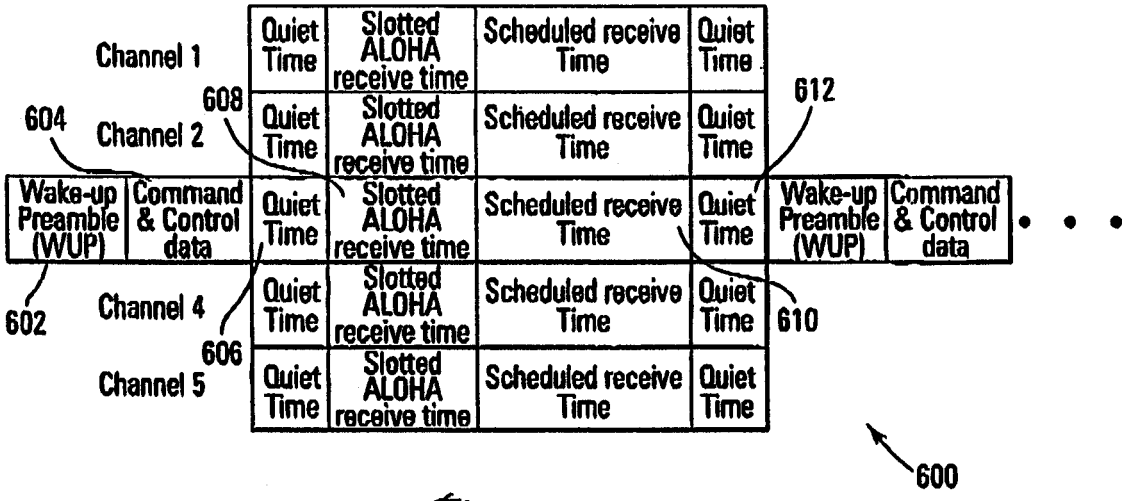
Channel 1
Channel 2
Channel 4
Channel 5
Quiet Time
Slotted ALOHA receive time
Scheduled receive Time
Wake-up Preamble (WUP)
Command & Control data
604
608
612
602
606
610
600

Fig. 6

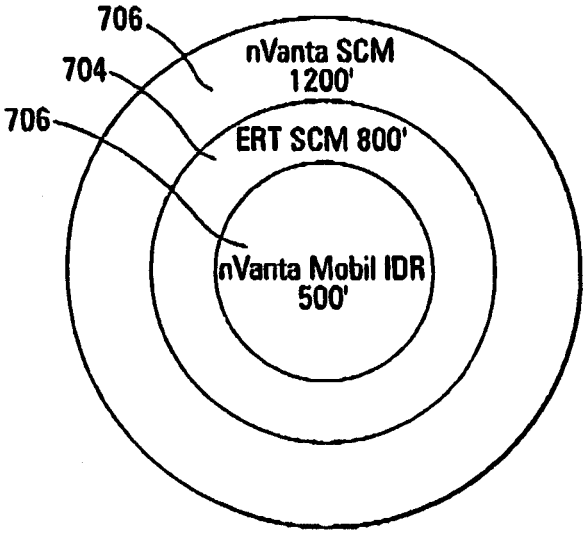
706
nVanta SCM 1200'
704
ERT SCM 800'
706
nVanta Mobil IDR 500'

Fig. 7

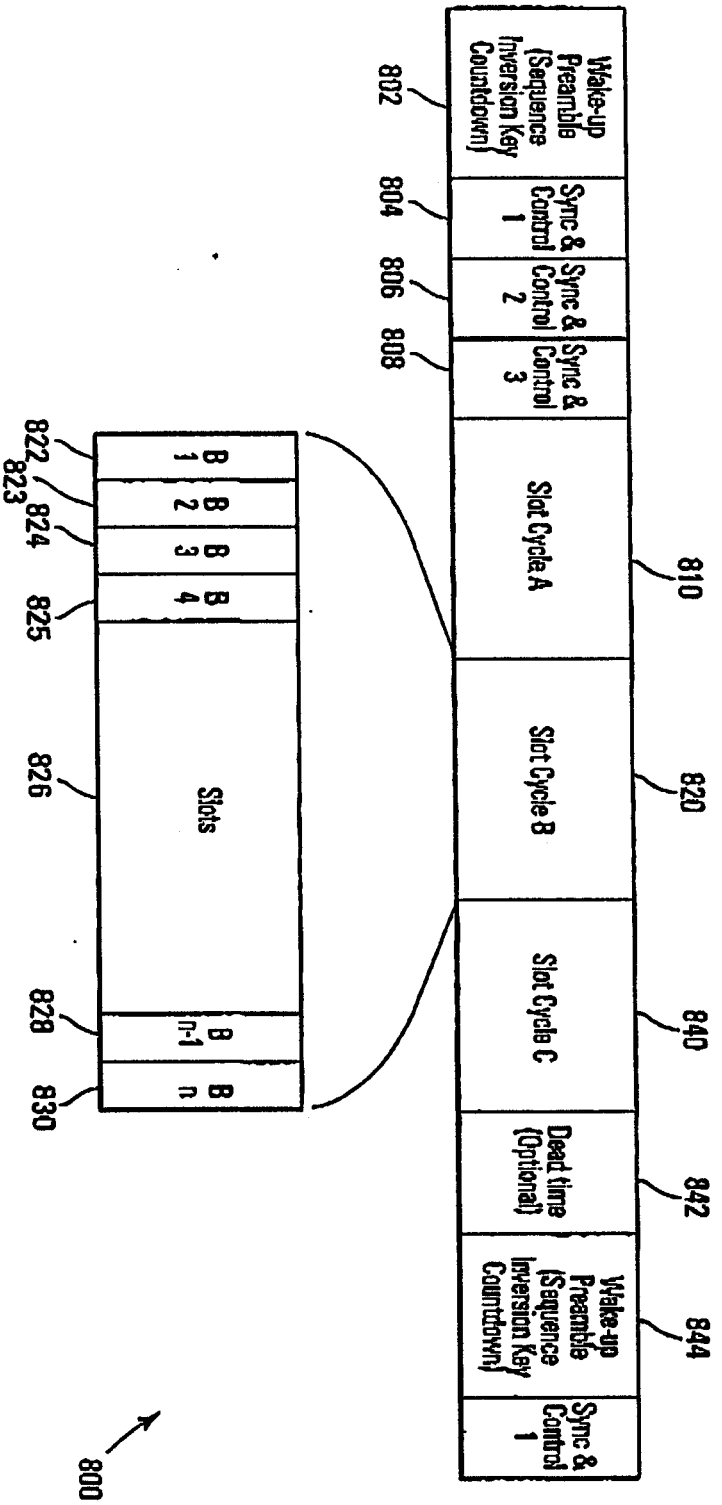
Wake-up Preamble (Sequence Inversion Key Countdown)
Sync & Control 1
Sync & Control 2
Sync & Control 3
Slot Cycle A
Slot Cycle B
Slot Cycle C
Dead time (Optional)
Wake-up Preamble (Sequence Inversion Key Countdown)
Sync & Control 1
802
804
806
808
810
820
840
842
844
800
B 1
B 2
B 3
B 4
Slots
B n-1
B n
822
823
824
825
826
828
830

Fig. 8