FIG.1

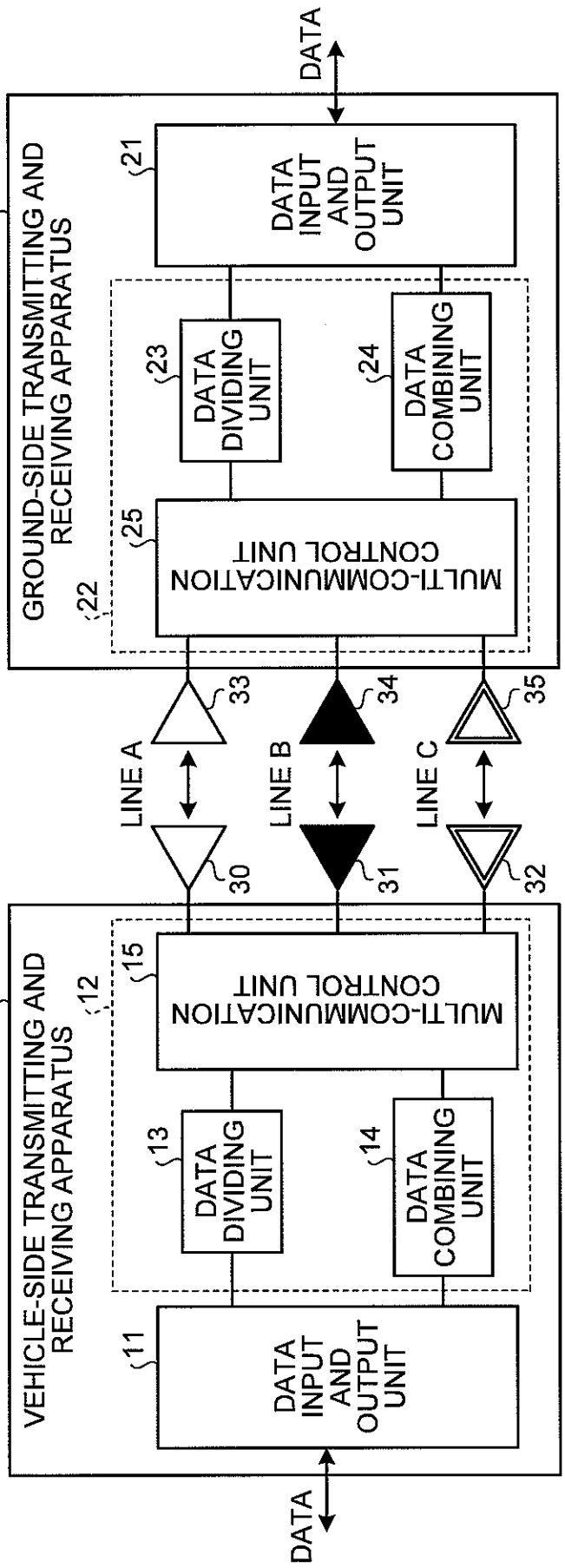

DATA
20
GROUND-SIDE TRANSMITTING AND RECEIVING APPARATUS
21
DATA INPUT AND OUTPUT UNIT
22
23
DATA DIVIDING UNIT
24
DATA COMBINING UNIT
25
MULTI-COMMUNICATION CONTROL UNIT
33
34
35
LINE A
LINE B
LINE C
30
31
32
10
VEHICLE-SIDE TRANSMITTING AND RECEIVING APPARATUS
12
15
MULTI-COMMUNICATION CONTROL UNIT
13
DATA DIVIDING UNIT
14
DATA COMBINING UNIT
11
DATA INPUT AND OUTPUT UNIT
DATA

FIG.2

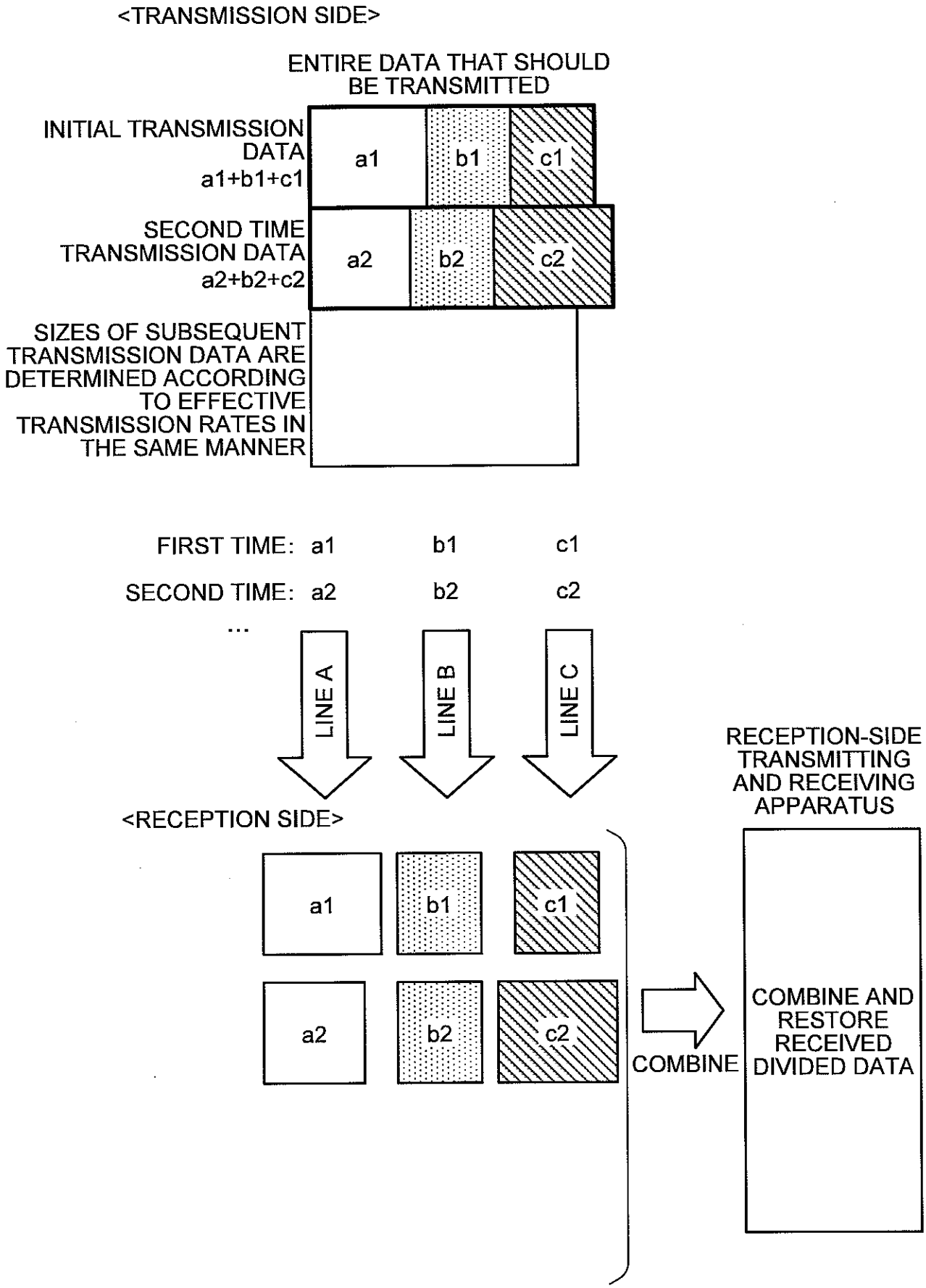

<TRANSMISSION SIDE>
ENTIRE DATA THAT SHOULD BE TRANSMITTED
INITIAL TRANSMISSION DATA a1+b1+c1
a1
b1
c1
SECOND TIME TRANSMISSION DATA a2+b2+c2
a2
b2
c2
SIZES OF SUBSEQUENT TRANSMISSION DATA ARE DETERMINED ACCORDING TO EFFECTIVE TRANSMISSION RATES IN THE SAME MANNER
FIRST TIME: a1 b1 c1
SECOND TIME: a2 b2 c2
...
LINE A
LINE B
LINE C
<RECEPTION SIDE>
RECEPTION-SIDE TRANSMITTING AND RECEIVING APPARATUS
a1
b1
c1
a2
b2
c2
COMBINE
COMBINE AND RESTORE RECEIVED DIVIDED DATA

FIG.3

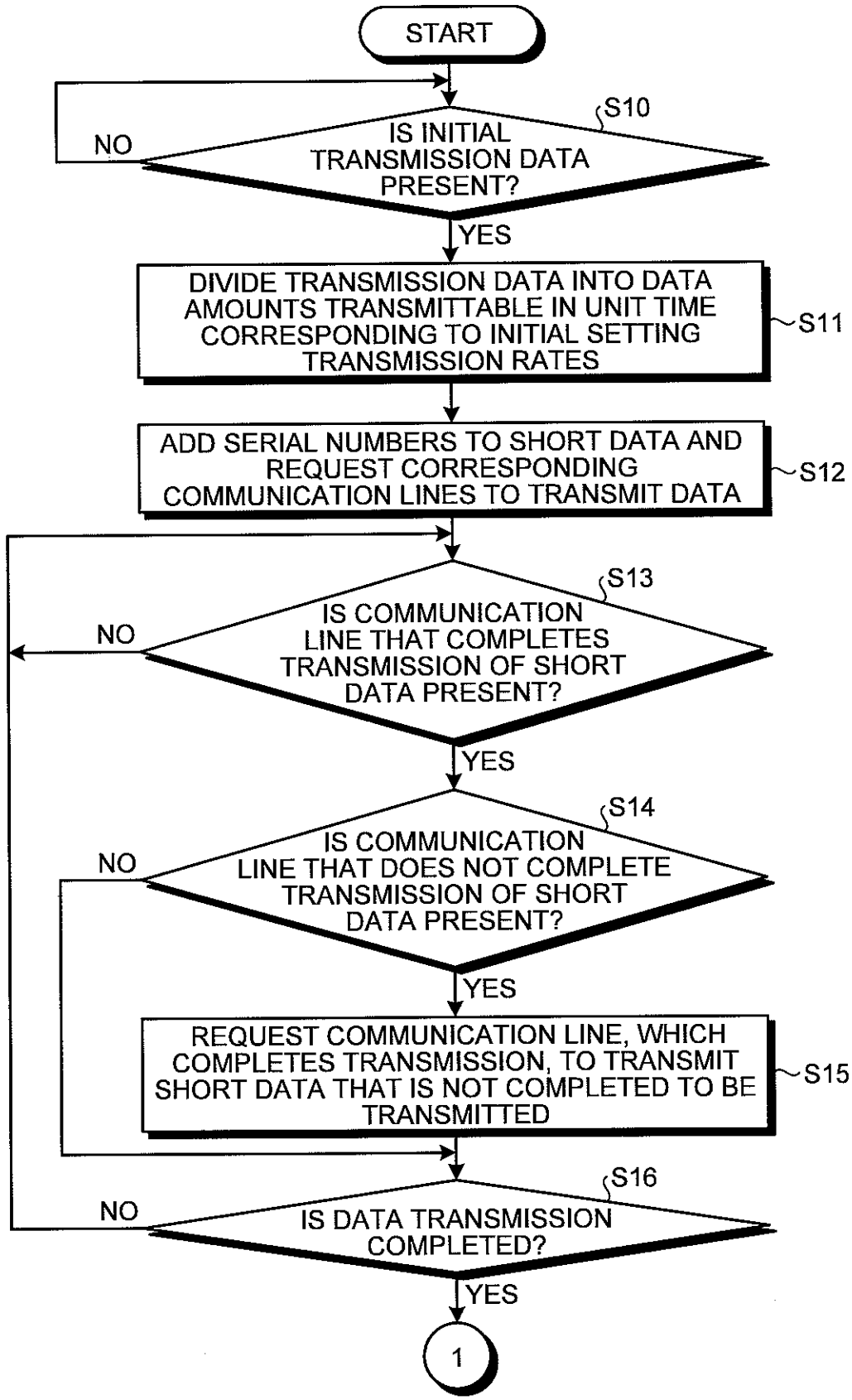

START
S10
IS INITIAL TRANSMISSION DATA PRESENT?
NO
YES
DIVIDE TRANSMISSION DATA INTO DATA AMOUNTS TRANSMITTABLE IN UNIT TIME CORRESPONDING TO INITIAL SETTING TRANSMISSION RATES
S11
ADD SERIAL NUMBERS TO SHORT DATA AND REQUEST CORRESPONDING COMMUNICATION LINES TO TRANSMIT DATA
S12
S13
IS COMMUNICATION LINE THAT COMPLETES TRANSMISSION OF SHORT DATA PRESENT?
NO
YES
S14
IS COMMUNICATION LINE THAT DOES NOT COMPLETE TRANSMISSION OF SHORT DATA PRESENT?
NO
YES
REQUEST COMMUNICATION LINE, WHICH COMPLETES TRANSMISSION, TO TRANSMIT SHORT DATA THAT IS NOT COMPLETED TO BE TRANSMITTED
S15
S16
IS DATA TRANSMISSION COMPLETED?
NO
YES
1

FIG.4

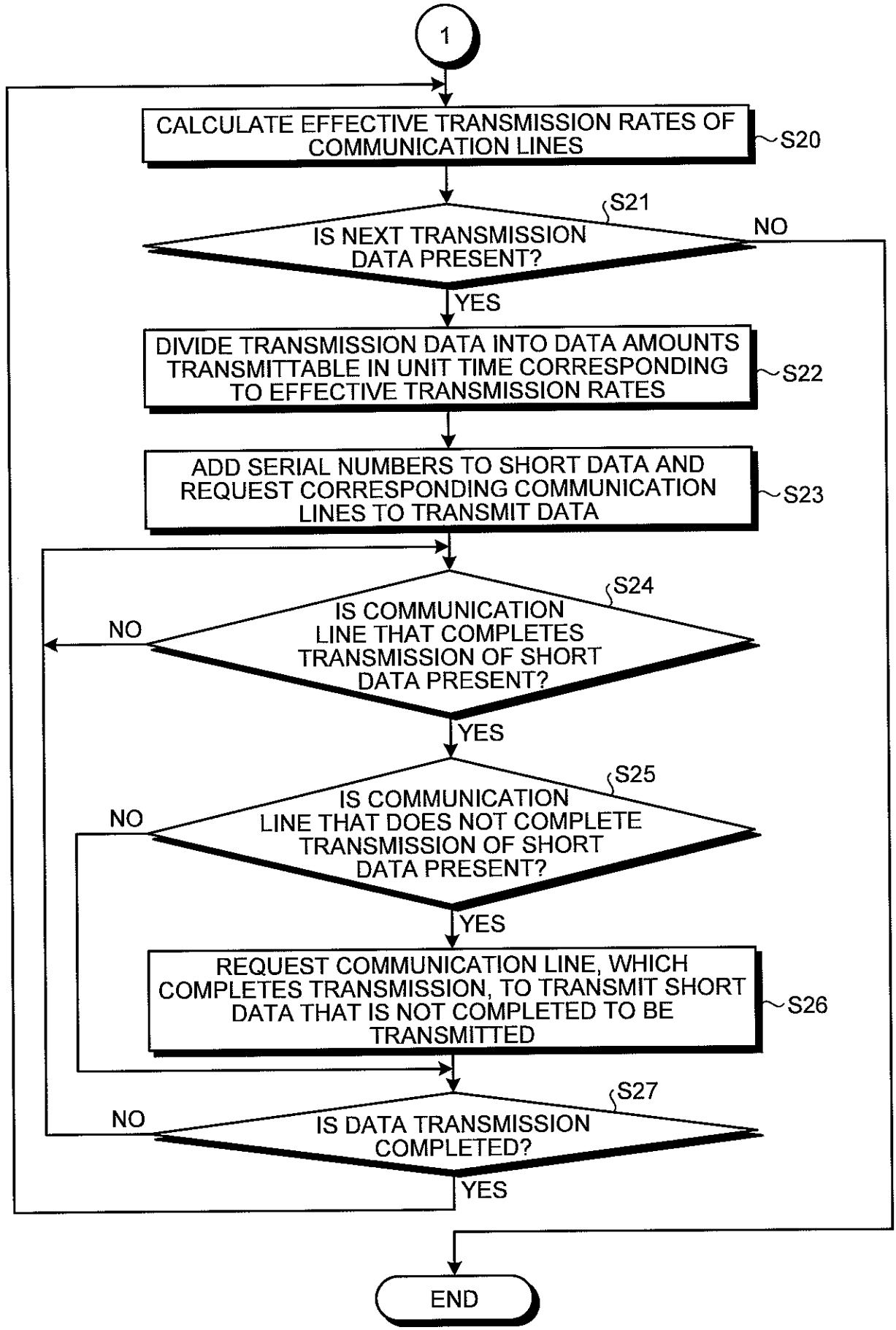

1
CALCULATE EFFECTIVE TRANSMISSION RATES OF COMMUNICATION LINES
S20
S21
IS NEXT TRANSMISSION DATA PRESENT?
NO
YES
DIVIDE TRANSMISSION DATA INTO DATA AMOUNTS TRANSMITTABLE IN UNIT TIME CORRESPONDING TO EFFECTIVE TRANSMISSION RATES
S22
ADD SERIAL NUMBERS TO SHORT DATA AND REQUEST CORRESPONDING COMMUNICATION LINES TO TRANSMIT DATA
S23
S24
IS COMMUNICATION LINE THAT COMPLETES TRANSMISSION OF SHORT DATA PRESENT?
NO
YES
S25
IS COMMUNICATION LINE THAT DOES NOT COMPLETE TRANSMISSION OF SHORT DATA PRESENT?
NO
YES
REQUEST COMMUNICATION LINE, WHICH COMPLETES TRANSMISSION, TO TRANSMIT SHORT DATA THAT IS NOT COMPLETED TO BE TRANSMITTED
S26
S27
IS DATA TRANSMISSION COMPLETED?
NO
YES
END

FIG.5

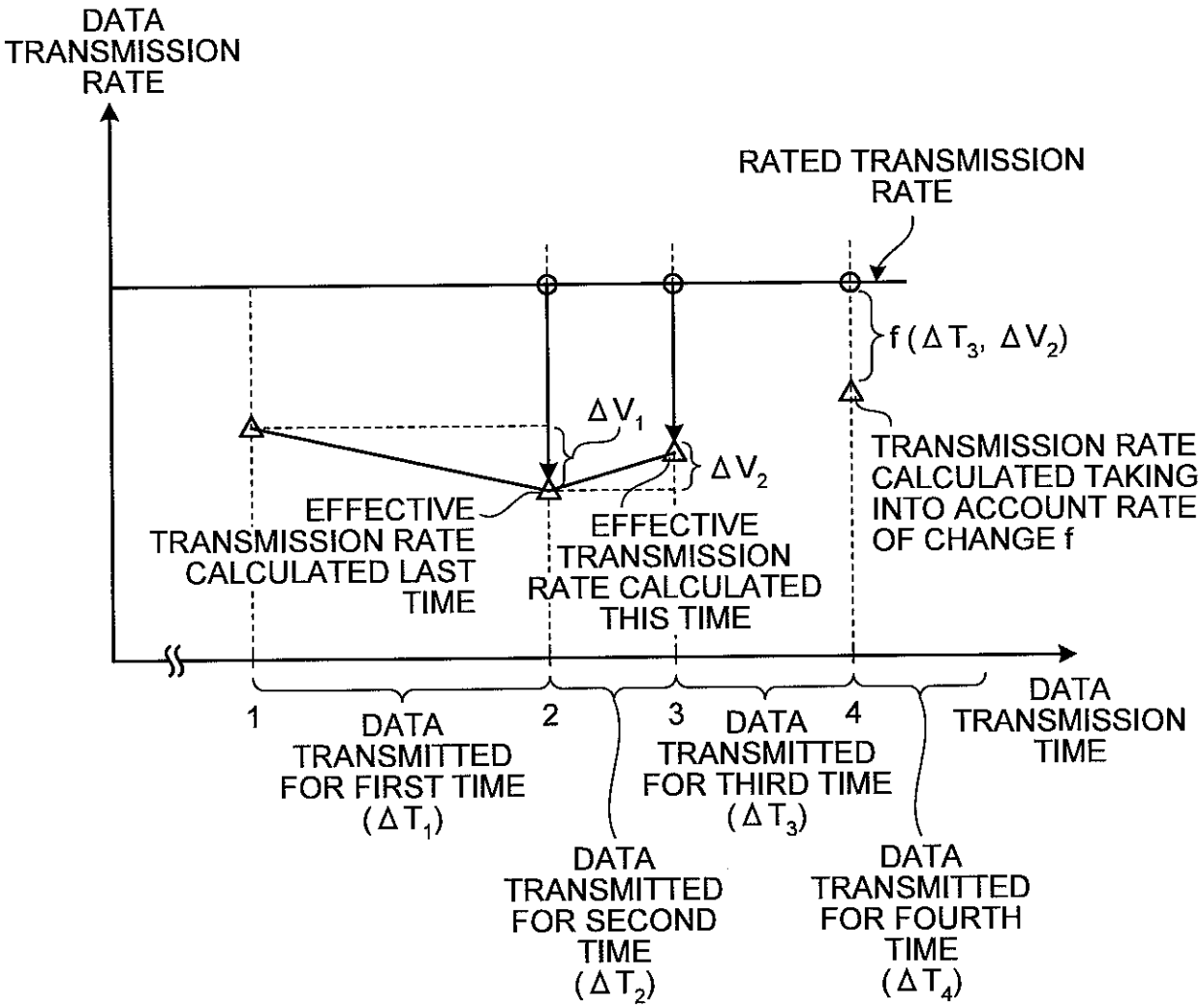
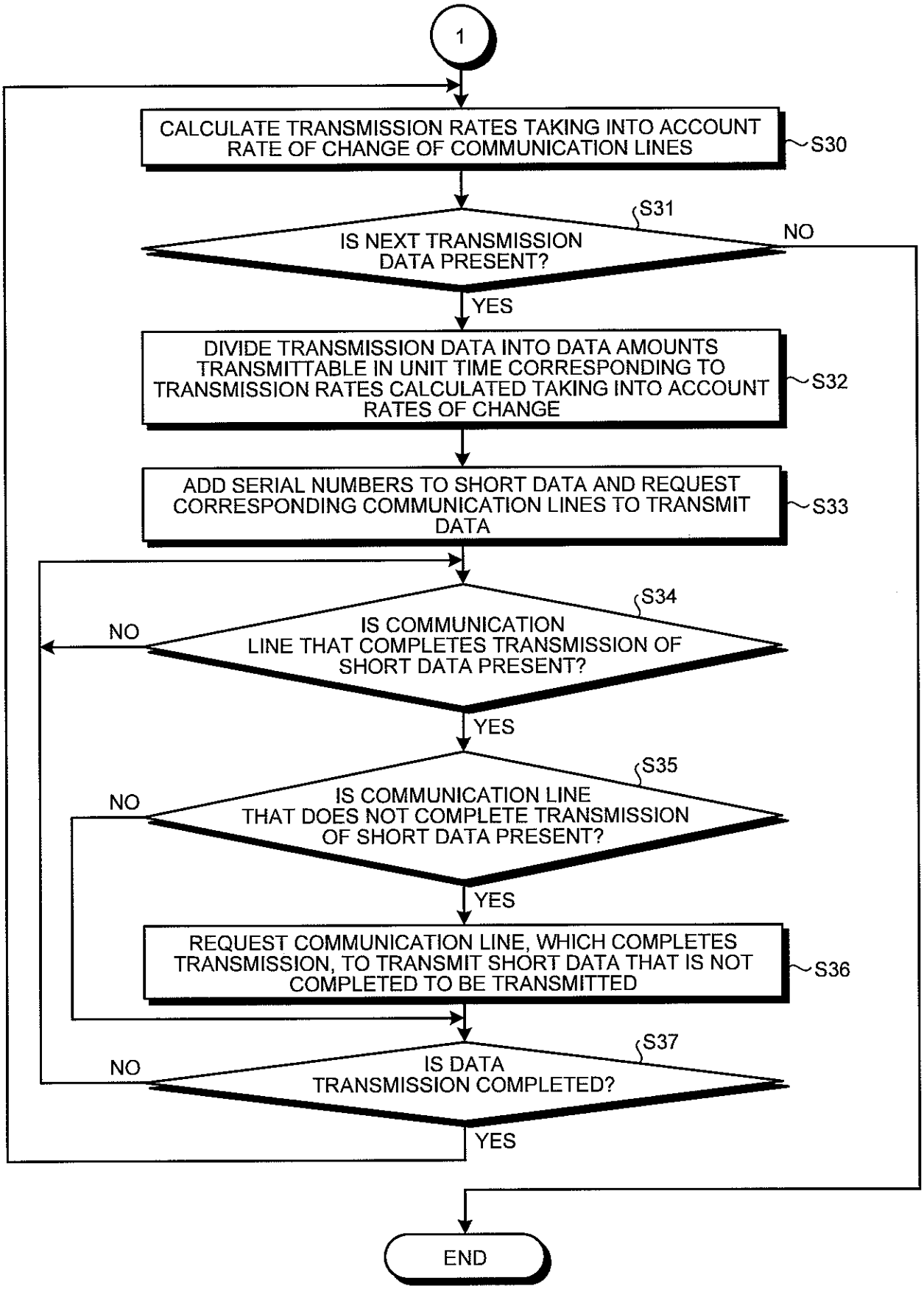

DATA TRANSMISSION RATE
RATED TRANSMISSION RATE
f (ΔT3, ΔV2)
ΔV1
ΔV2
TRANSMISSION RATE CALCULATED TAKING INTO ACCOUNT RATE OF CHANGE f
EFFECTIVE TRANSMISSION RATE CALCULATED LAST TIME
EFFECTIVE TRANSMISSION RATE CALCULATED THIS TIME
1
2
3
4
DATA TRANSMITTED FOR FIRST TIME (ΔT1)
DATA TRANSMITTED FOR SECOND TIME (ΔT2)
DATA TRANSMITTED FOR THIRD TIME (ΔT3)
DATA TRANSMITTED FOR FOURTH TIME (ΔT4)
DATA TRANSMISSION TIME

FIG.6


1
CALCULATE TRANSMISSION RATES TAKING INTO ACCOUNT RATE OF CHANGE OF COMMUNICATION LINES
S30
S31
IS NEXT TRANSMISSION DATA PRESENT?
NO
YES
DIVIDE TRANSMISSION DATA INTO DATA AMOUNTS TRANSMITTABLE IN UNIT TIME CORRESPONDING TO TRANSMISSION RATES CALCULATED TAKING INTO ACCOUNT RATES OF CHANGE
S32
ADD SERIAL NUMBERS TO SHORT DATA AND REQUEST CORRESPONDING COMMUNICATION LINES TO TRANSMIT DATA
S33
S34
IS COMMUNICATION LINE THAT COMPLETES TRANSMISSION OF SHORT DATA PRESENT?
NO
YES
S35
IS COMMUNICATION LINE THAT DOES NOT COMPLETE TRANSMISSION OF SHORT DATA PRESENT?
NO
YES
REQUEST COMMUNICATION LINE, WHICH COMPLETES TRANSMISSION, TO TRANSMIT SHORT DATA THAT IS NOT COMPLETED TO BE TRANSMITTED
S36
S37
IS DATA TRANSMISSION COMPLETED?
NO
YES
END