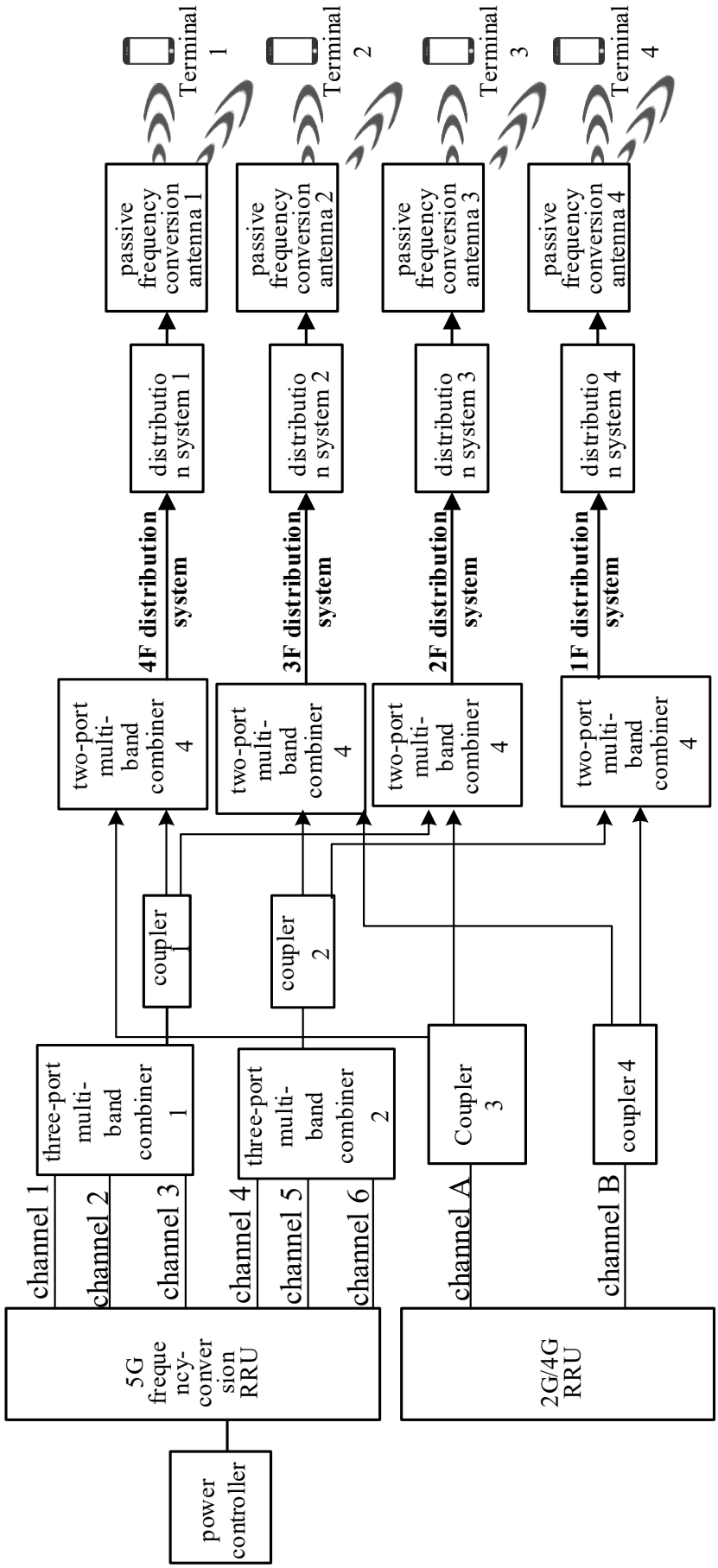

power controller
5G frequency-conversion RRU
2G/4G RRU
channel 1
channel 2
channel 3
channel 4
channel 5
channel 6
channel A
channel B
three-port multi-band combiner 1
three-port multi-band combiner 2
Coupler 3
coupler 4
coupler 1
coupler 2
two-port multi-band combiner 4
two-port multi-band combiner 4
two-port multi-band combiner 4
two-port multi-band combiner 4
4F distribution system
3F distribution system
2F distribution system
1F distribution system
distribution system 1
distribution system 2
distribution system 3
distribution system 4
passive frequency conversion antenna 1
passive frequency conversion antenna 2
passive frequency conversion antenna 3
passive frequency conversion antenna 4
Terminal 1
Terminal 2
Terminal 3
Terminal 4

Fig. 1

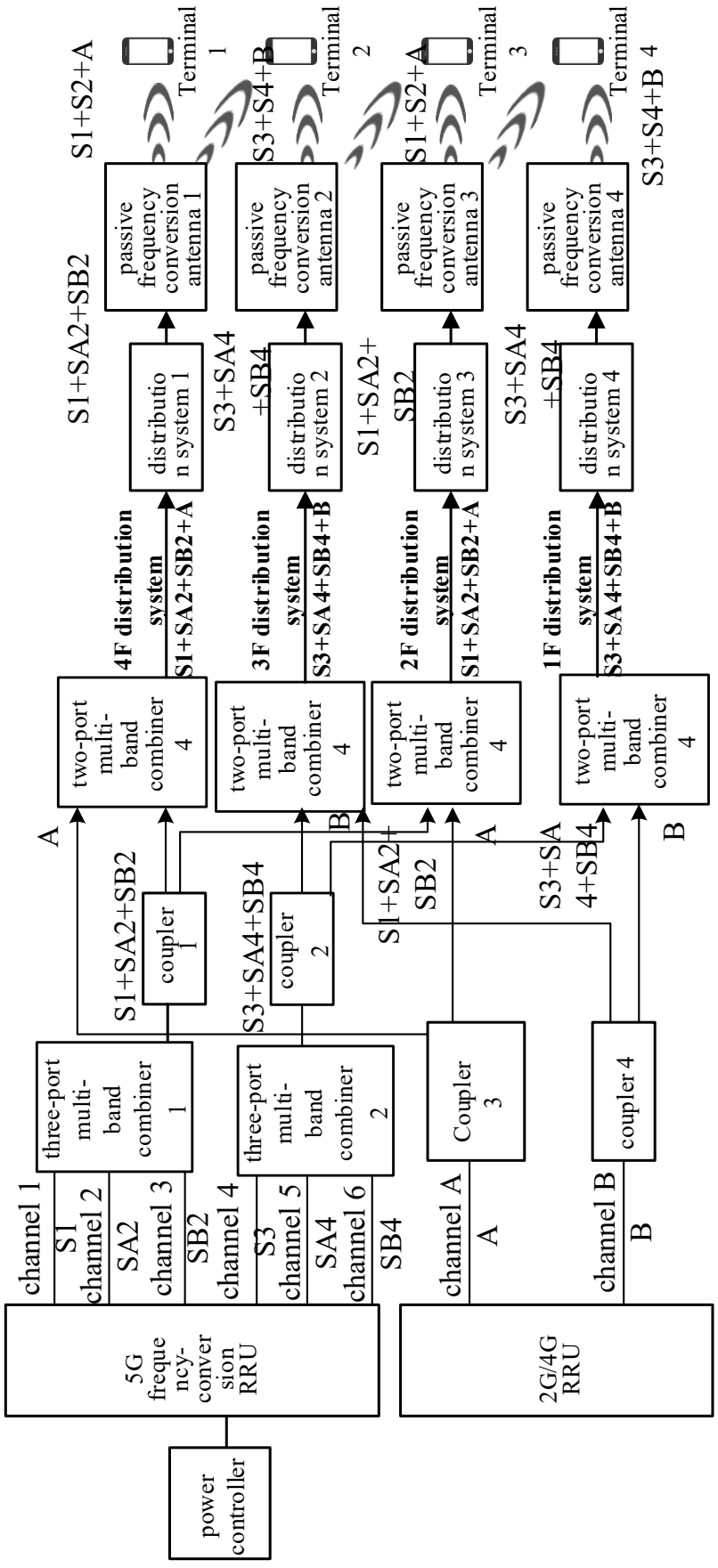
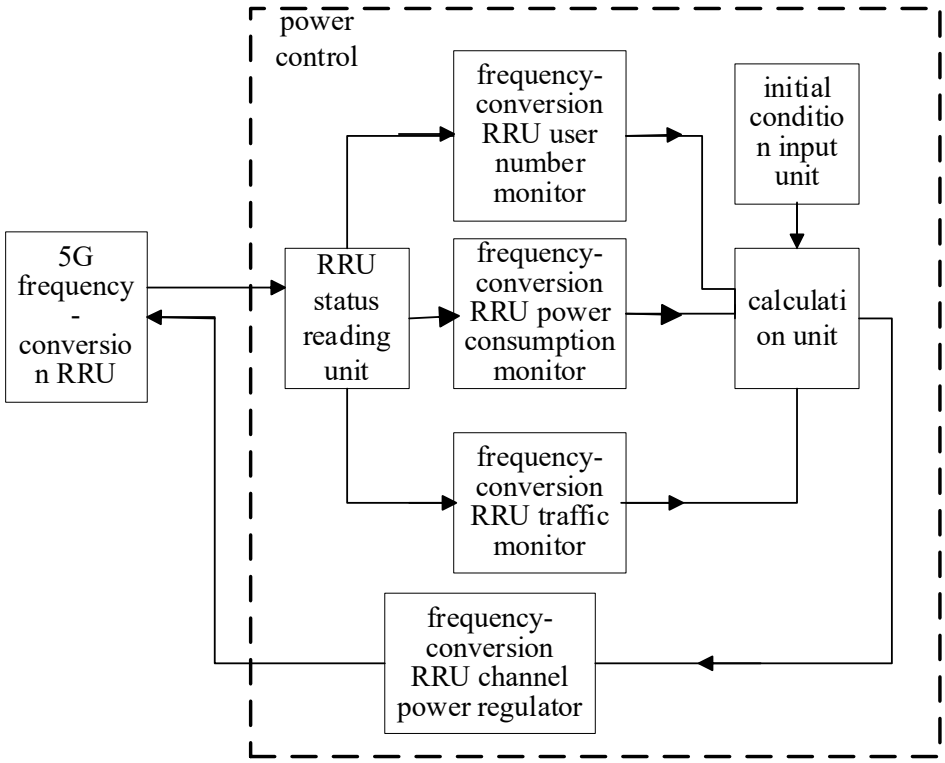

power controller
5G frequency-conversion RRU
2G/4G RRU
channel 1
S1 channel 2
SA2 channel 3
SB2 channel 4
S3 channel 5
SA4 channel 6
SB4
channel A
A
channel B
B
three-port multi-band combiner 1
three-port multi-band combiner 2
Coupler 3
coupler 4
coupler 1
coupler 2
S1+SA2+SB2
S3+SA4+SB4
S1+SA2+SB2
S3+SA4+SB4
A
B
A
B
two-port multi-band combiner 4
two-port multi-band combiner 4
two-port multi-band combiner 4
two-port multi-band combiner 4
4F distribution system S1+SA2+SB2+A
3F distribution system S3+SA4+SB4+B
2F distribution system S1+SA2+SB2+A
1F distribution system S3+SA4+SB4+B
distributio n system 1
distributio n system 2
distributio n system 3
distributio n system 4
S1+SA2+SB2
S3+SA4+SB4
S1+SA2+SB2
S3+SA4+SB4
passive frequency conversion antenna 1
passive frequency conversion antenna 2
passive frequency conversion antenna 3
passive frequency conversion antenna 4
S1+S2+A
S3+S4+B
S1+S2+A
S3+S4+B
Terminal 1
Terminal 2
Terminal 3
Terminal 4

Fig. 2


power control
frequency-conversion RRU user number monitor
initial condition input unit
5G frequency-conversion RRU
RRU status reading unit
frequency-conversion RRU power consumption monitor
calculation unit
frequency-conversion RRU traffic monitor
frequency-conversion RRU channel power regulator
Fig. 3

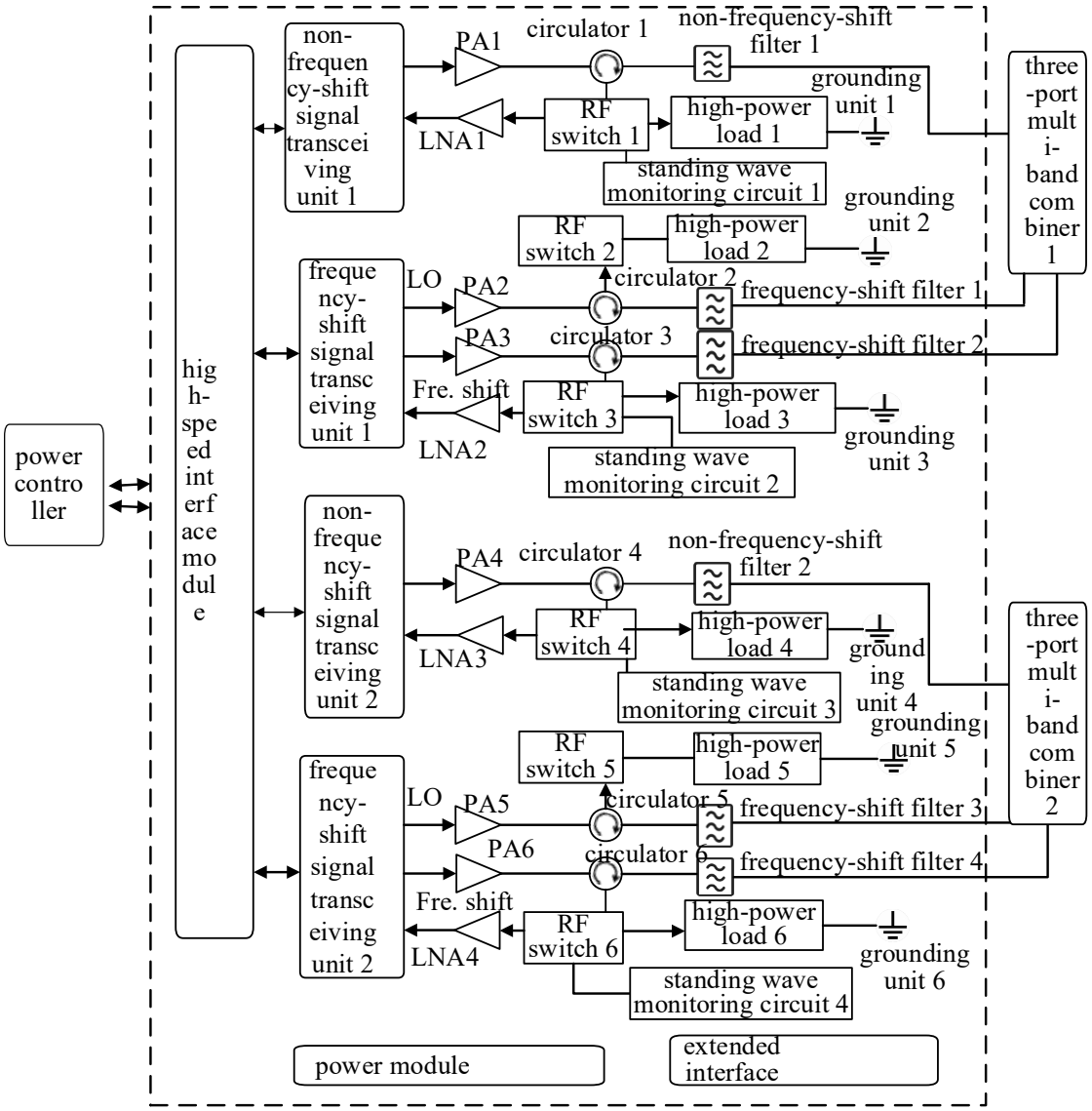

power controller
high-speed interface module
non-frequency-shift signal transceiving unit 1
PA1
LNA1
circulator 1
non-frequency-shift filter 1
RF switch 1
high-power load 1
grounding unit 1
standing wave monitoring circuit 1
RF switch 2
high-power load 2
grounding unit 2
frequency-shift signal transceiving unit 1
LO
PA2
PA3
Fre. shift
LNA2
circulator 2
circulator 3
frequency-shift filter 1
frequency-shift filter 2
RF switch 3
high-power load 3
grounding unit 3
standing wave monitoring circuit 2
non-frequency-shift signal transceiving unit 2
PA4
LNA3
circulator 4
non-frequency-shift filter 2
RF switch 4
high-power load 4
grounding unit 4
standing wave monitoring circuit 3
RF switch 5
high-power load 5
grounding unit 5
frequency-shift signal transceiving unit 2
LO
PA5
PA6
Fre. shift
LNA4
circulator 5
circulator 6
frequency-shift filter 3
frequency-shift filter 4
RF switch 6
high-power load 6
grounding unit 6
standing wave monitoring circuit 4
three-port multi-band combiner 1
three-port multi-band combiner 2
power module
extended interface

Fig. 4

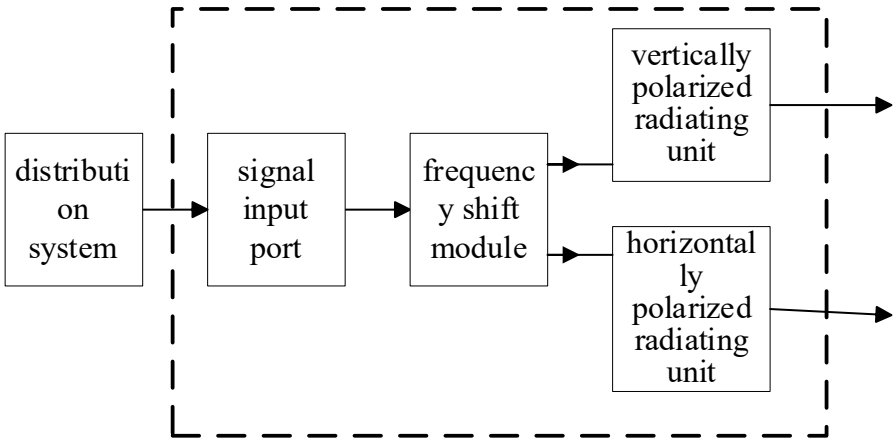

distributi
on
system
signal
input
port
frequenc
y shift
module
vertically
polarized
radiating
unit
horizontal
ly
polarized
radiating
unit

Fig. 5

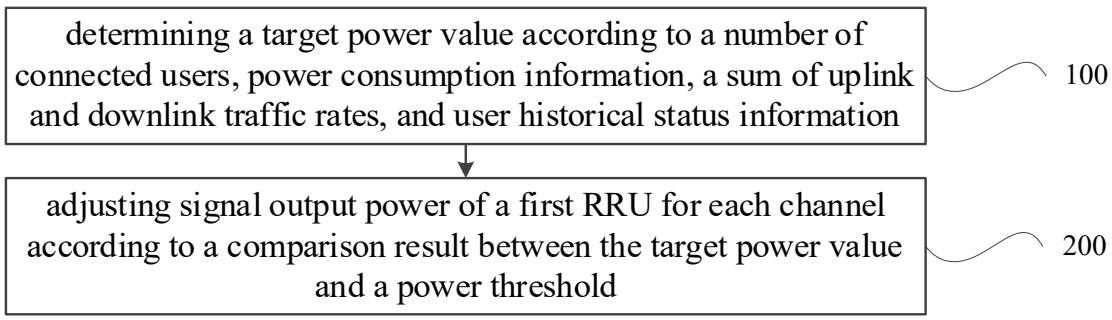

determining a target power value according to a number of connected users, power consumption information, a sum of uplink and downlink traffic rates, and user historical status information
100
adjusting signal output power of a first RRU for each channel according to a comparison result between the target power value and a power threshold
200

Fig. 6