

FIG. 1

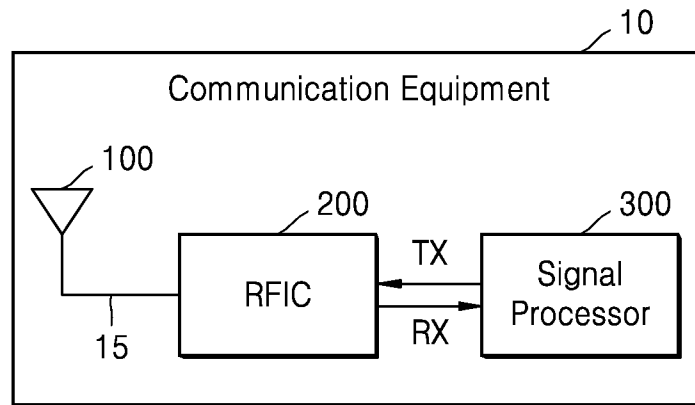


FIG. 2A

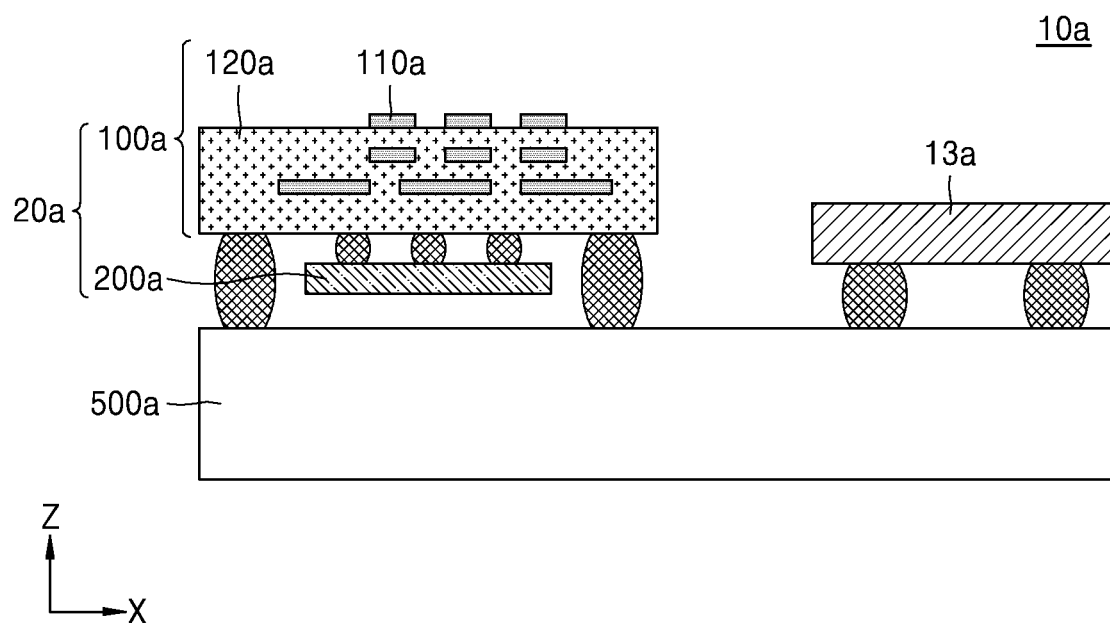


FIG. 2B

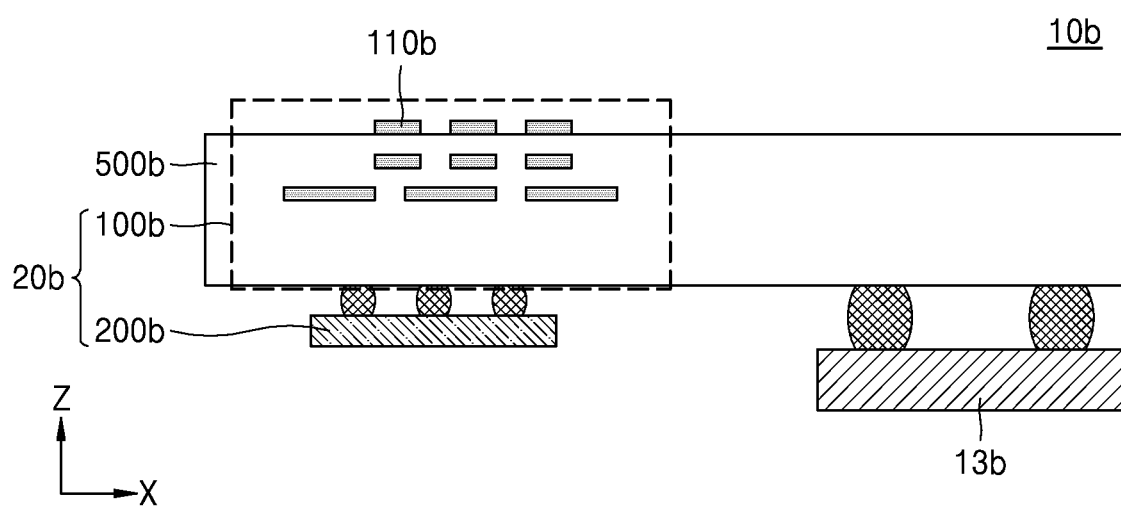


FIG. 2C

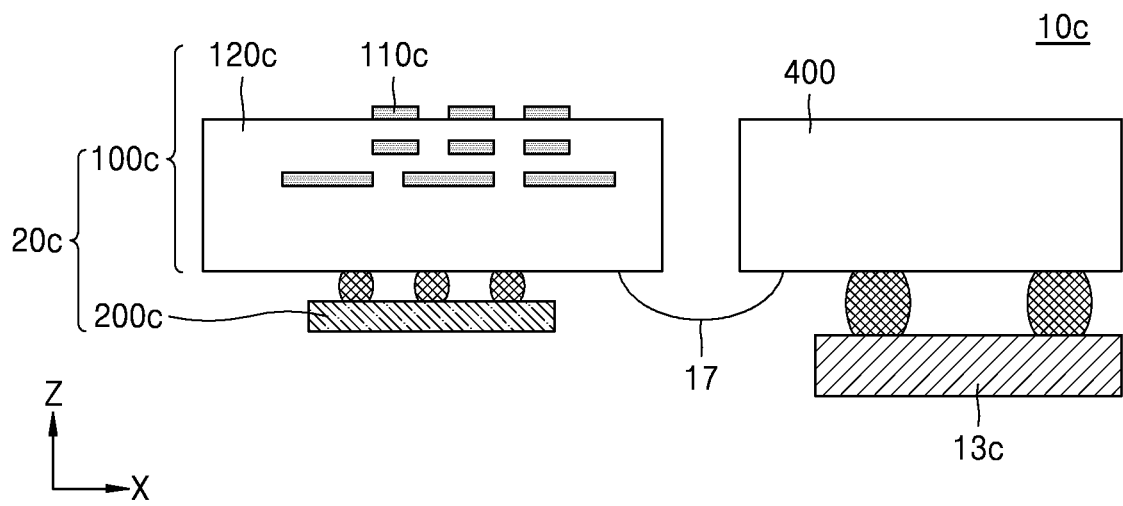


FIG. 3A

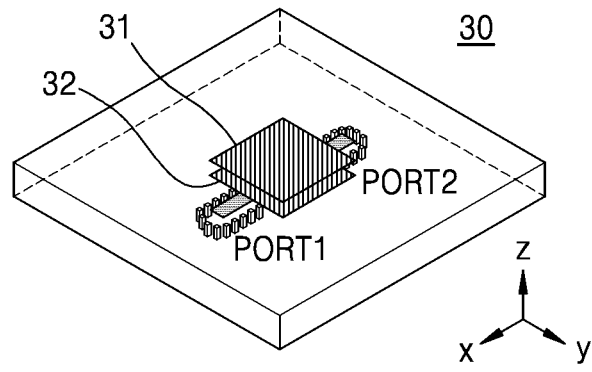


FIG. 3B

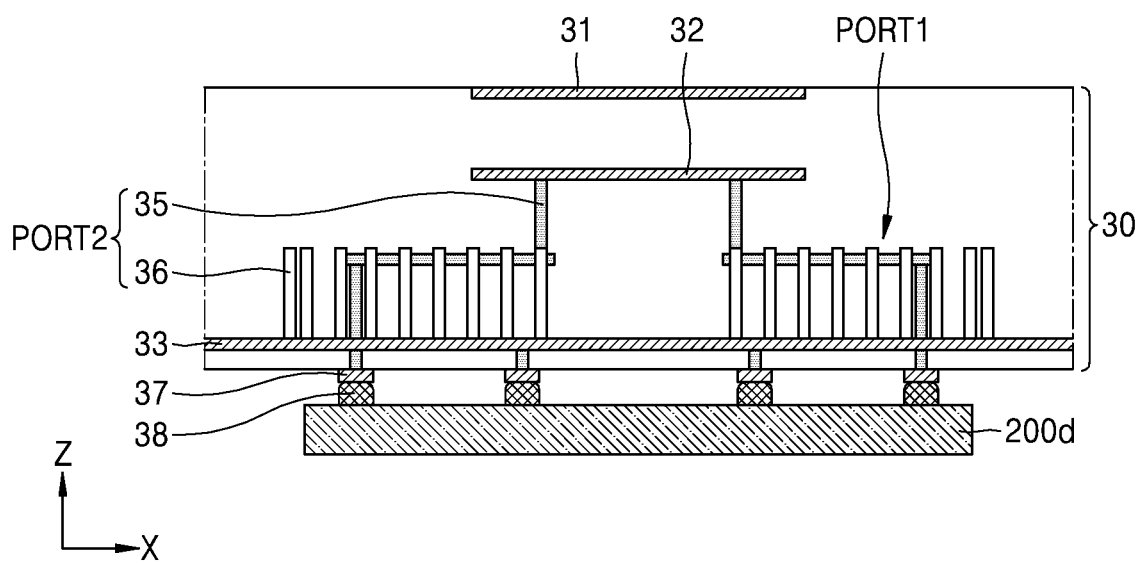


FIG. 4

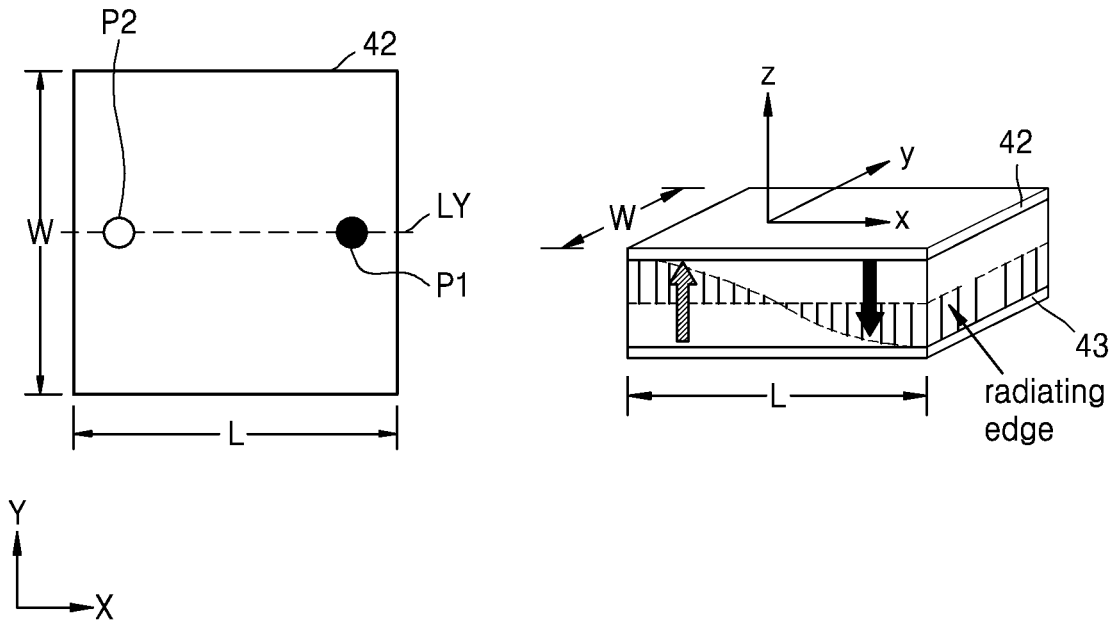
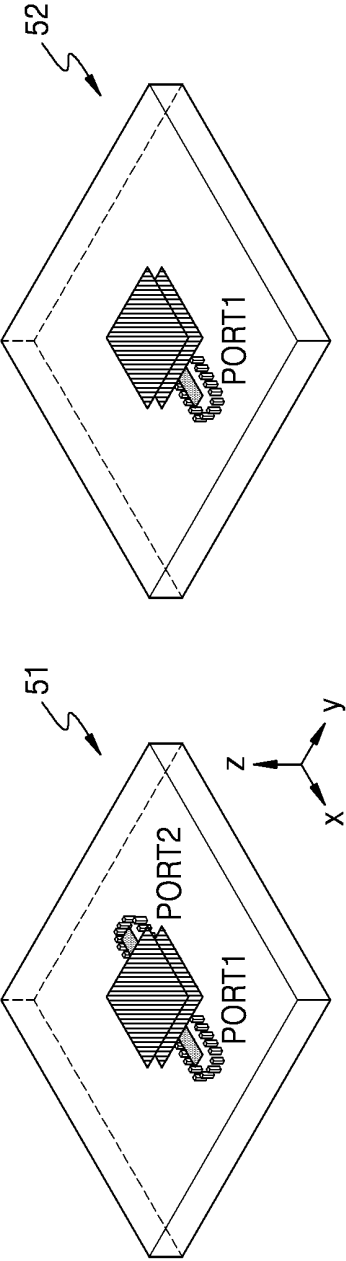
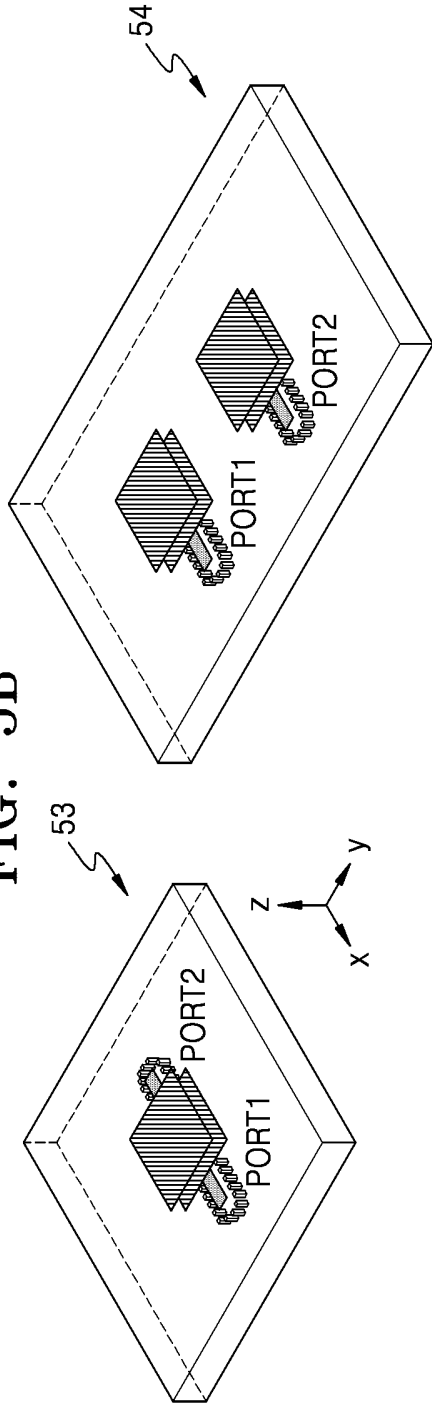


FIG. 5A



	Dual-fed patch	Single-fed patch
Antenna gain (total)	6.52 dBi	5.92 dBi
Radiation patten (2D, $\phi=90^\circ$)		
Element. Pout	10 dBm	10 dBm
Pout_total	13 dBm	10 dBm
EIRP (cal.)	19.52 dBm	15.92 dBm
Radiated power (sim.)	-12.11 dBm	-15.62 dBm
Dimension	8 mm x 8 mm	8 mm x 8 mm

FIG. 5B



	Dual-fed patch	1by2 patch array
Antenna gain (total)	6.52 dBi	8.69 dBi
Radiation patten (2D, $\phi=90^\circ$)		
Element. Pout	10 dBm	10 dBm
Pout_total	13 dBm	13 dBm
EIRP (cal.)	19.52 dBm	21.69 dBm
Radiated power (sim.)	-12.11 dBm	-9.91 dBm
Dimension	8 mm x 8 mm	13 mm x 8 mm

FIG. 6A

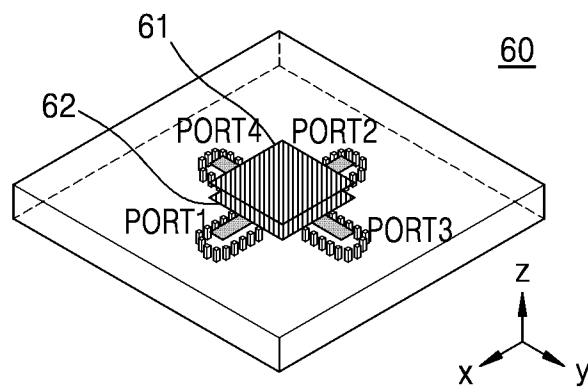


FIG. 6B

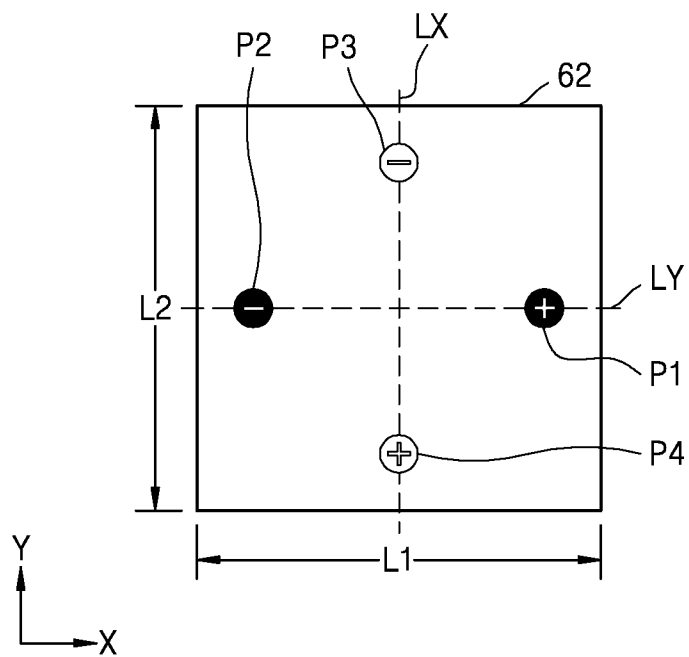
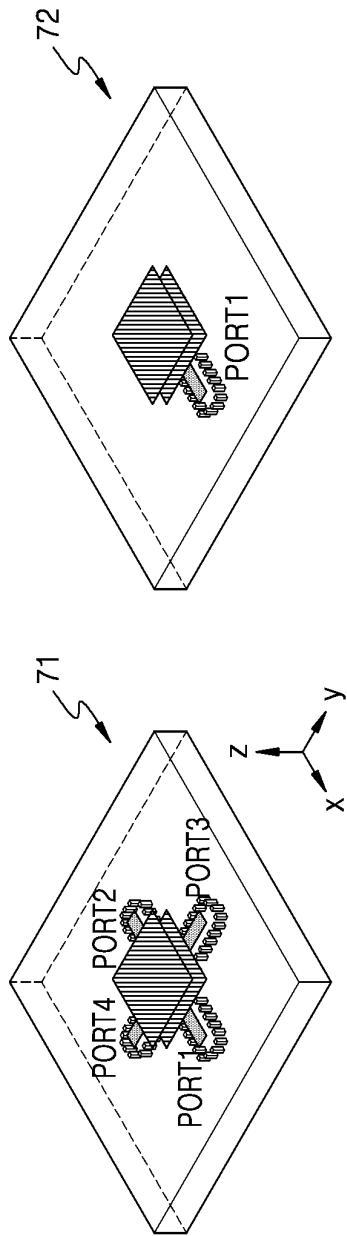


FIG. 7



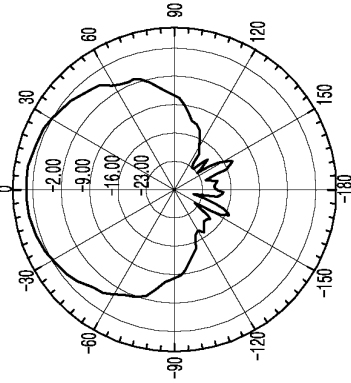
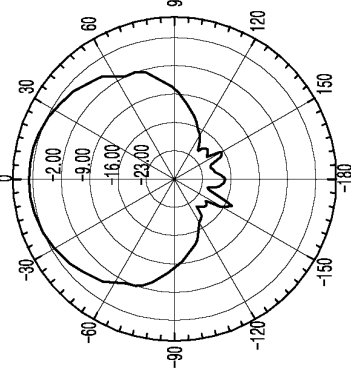
	Dual-fed, dual-pol patch	Single-fed patch
Antenna gain (total)	5.4 dBi(V-pol), 5.42dBi(H-pol)	5.92 dBi
Radiation patten (2D, $\phi=90^\circ$)		
Element. Pout	10 dBm	10 dBm
Pout_total	13 dBm	10 dBm
EIRP (cal.)	18.4 dBm(V-pol), 18.42dBm(H-pol)	15.92 dBm
Radiated power (sim.)	-13.17 dBm(V-pol), -12.77dBm(H-pol)	-15.62 dBm
Dimension	8 mm x 8 mm	8 mm x 8 mm

FIG. 8

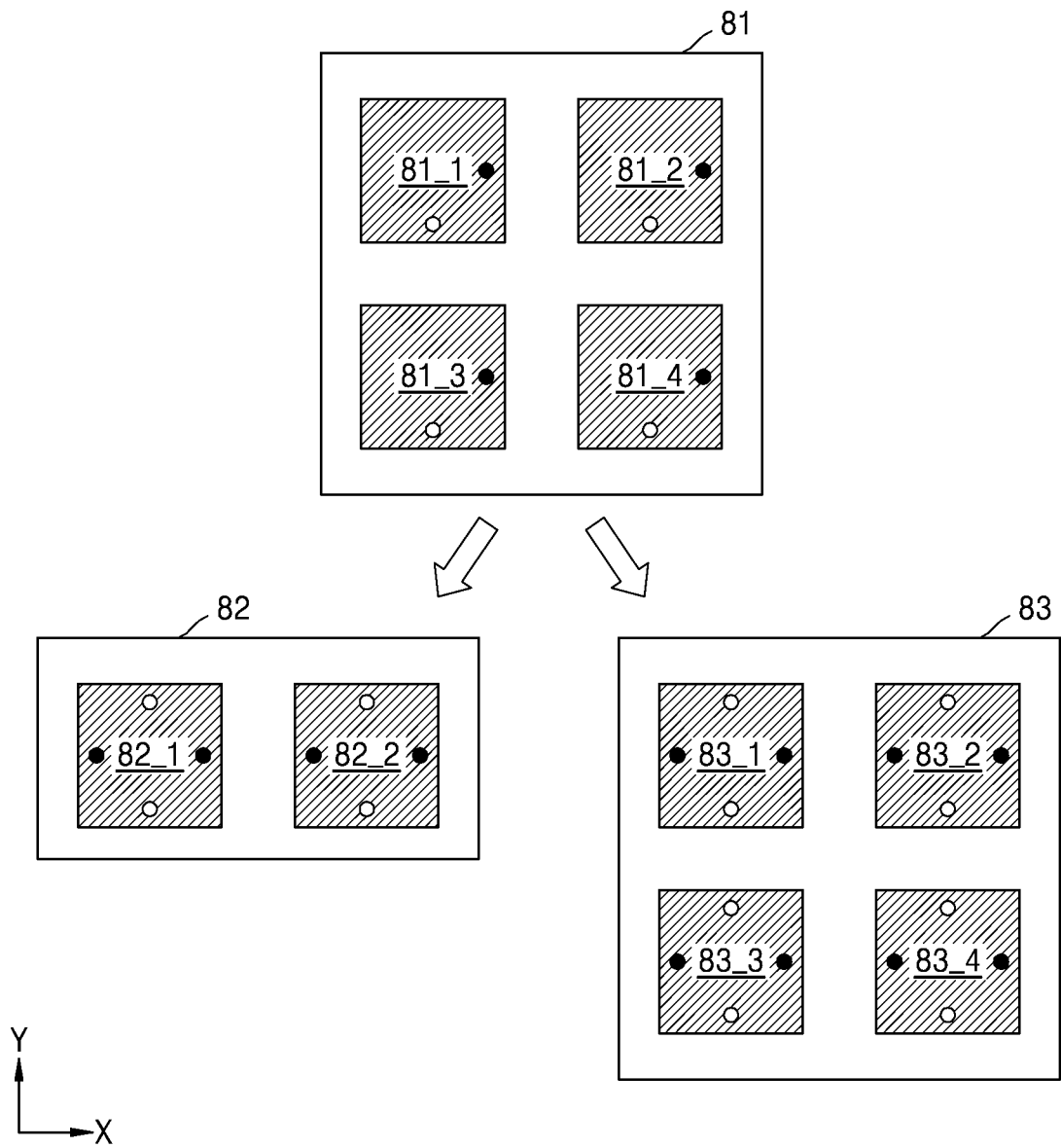


FIG. 9A

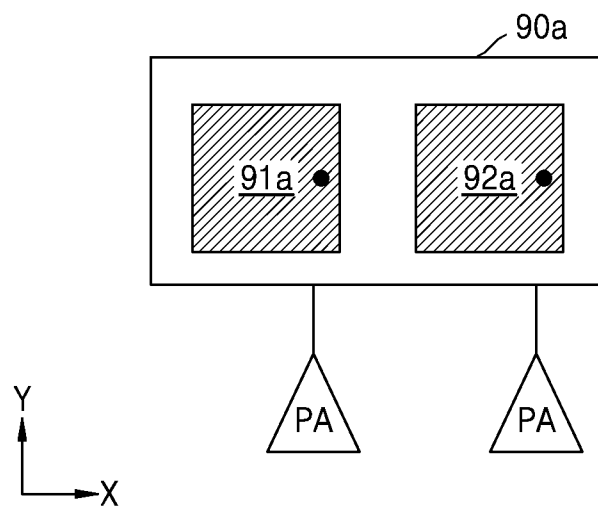


FIG. 9B

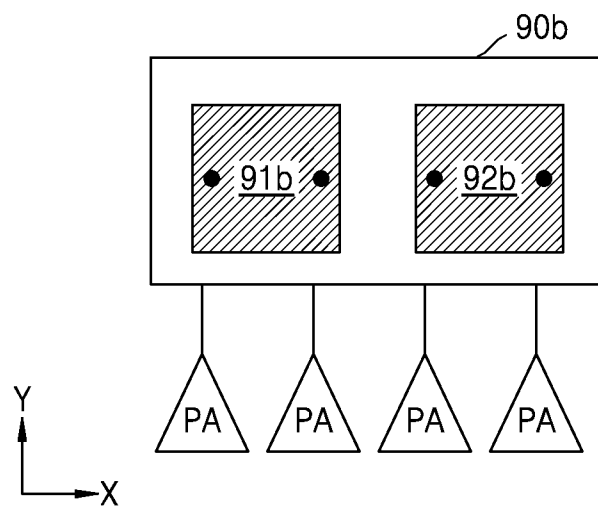


FIG. 9C

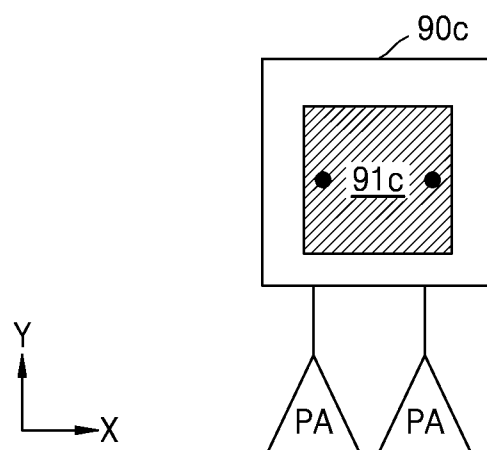


FIG. 10

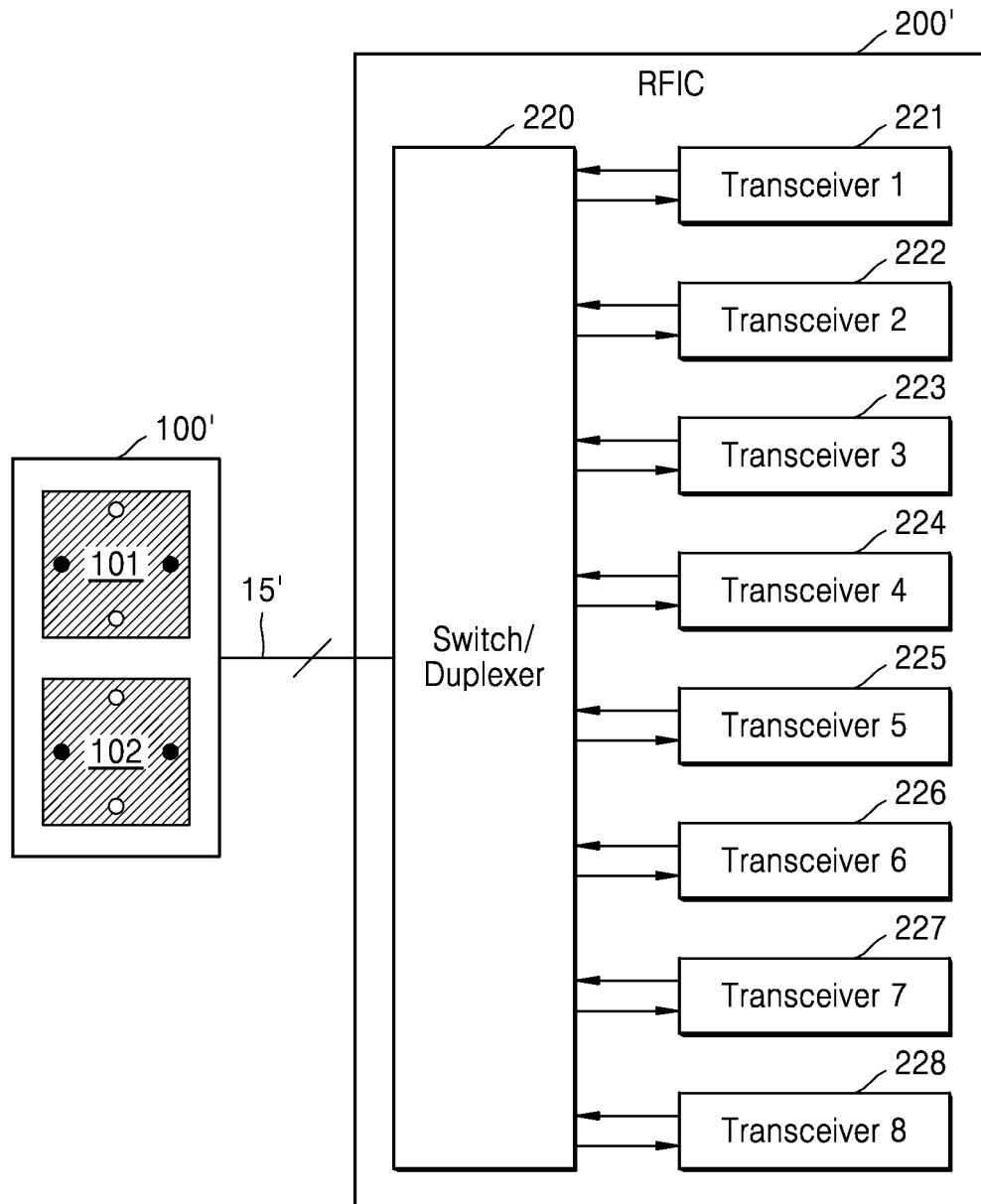


FIG. 11

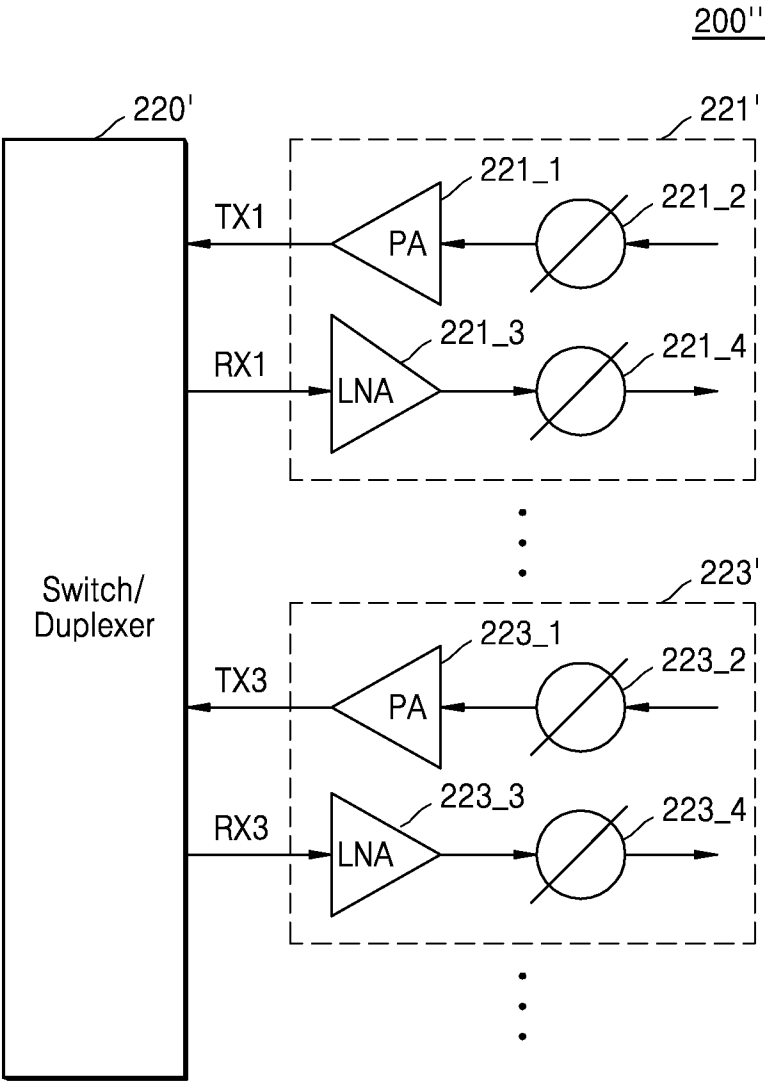


FIG. 12

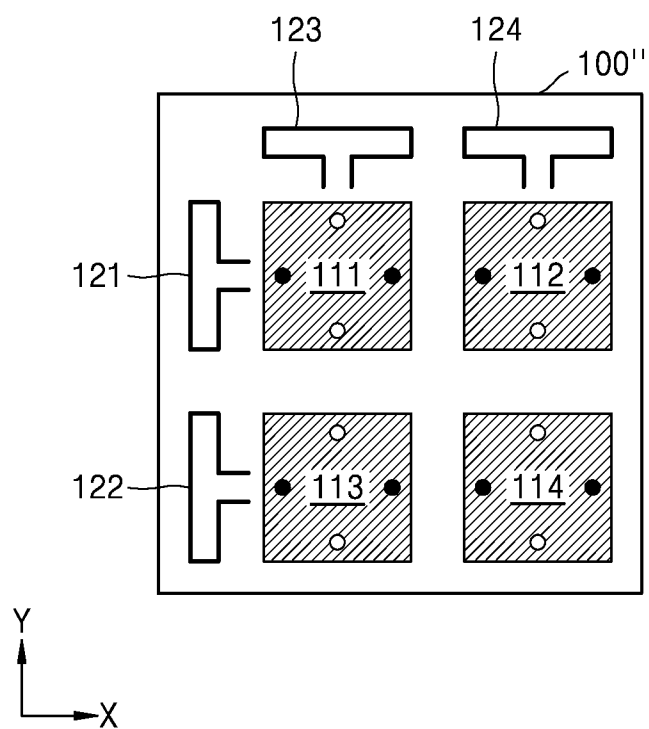


FIG. 13

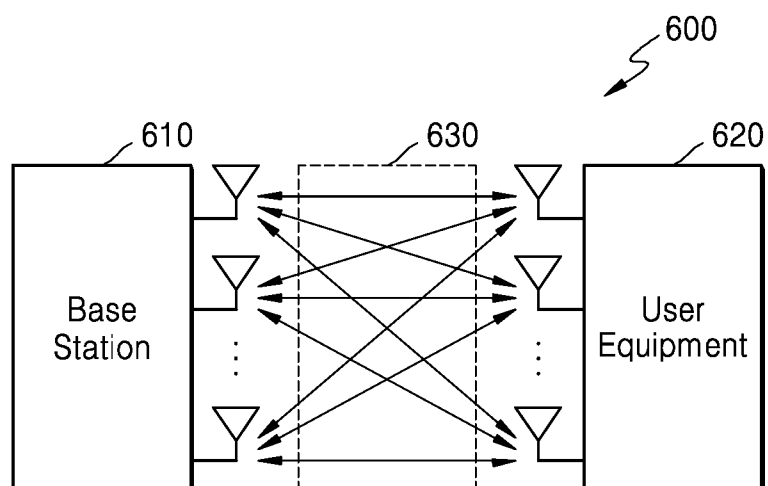


FIG. 14

