CLAIMS

1. A switching circuit comprising:

a transmission line arrangement comprising a plurality of transmission lines coupled to each other by at least one of an electric coupling or a magnetic coupling; and

at least one switching element arrangement coupled to at least one transmission line of the plurality of transmission lines,

wherein, in a first mode of operation, the at least one switching element arrangement is configured in a first state,

wherein, in a second mode of operation, the at least one switching element arrangement is configured in a second state, and

wherein the transmission line arrangement is configured to, depending on whether the at least one switching element arrangement is configured in the first state or whether the at least one switching element arrangement is configured in the second state, generate a standing wave from an input signal received by the transmission line arrangement, the standing wave being coupled between at least some of the plurality of transmission lines through the at least one transmission line into an output signal, wherein the output signal is transmitted from the transmission line arrangement.

2. The switching circuit as claimed in claim 1, wherein, in the second mode of operation, the at least one transmission line is at least substantially non-transmissive to at least one of the input signal or the output signal.

3. The switching circuit as claimed in claim 1, wherein the at least one switching element arrangement is coupled between the at least one transmission line and ground.

4. The switching circuit as claimed in claim 1, wherein each transmission line comprises:

an end side connected to ground; and

a node,

wherein the at least one switching element arrangement is coupled to at least one of the nodes, and

wherein adjacent transmission lines of the plurality of transmission lines are arranged with their respective end sides arranged on a same side of the transmission line arrangement.

5. The switching circuit as claimed in claim 1, wherein each transmission line comprises:

an end side connected to ground; and

a node,

wherein the at least one switching element arrangement is coupled to at least one of the nodes, and

wherein adjacent transmission lines of the plurality of transmission lines are arranged with their respective end sides arranged on opposite sides of the transmission line arrangement.

6. The switching circuit as claimed in claim 1, further comprising:

a plurality of switching element arrangements,

wherein a first switching element arrangement of the plurality of switching element arrangements is coupled to one transmission line of the plurality of transmission lines, and

wherein a second switching element arrangement of the plurality of switching element arrangements is coupled to another transmission line of the plurality of transmission lines.

7. The switching circuit as claimed in claim 1, wherein each transmission line of the plurality of transmission lines comprises a resonator.

8. The switching circuit as claimed in claim 7, wherein the resonator comprises a quarter-wavelength resonator or a half-wavelength resonator.

9. The switching circuit as claimed in claim 7, wherein the resonator comprises an inductor and capacitor (LC) resonant circuit.

10. The switching circuit as claimed in claim 1, wherein each transmission line of the plurality of transmission lines comprises an inductive element.

11. The switching circuit as claimed in claim 1, wherein the at least one switching element arrangement comprises at least one switching element comprising at least one of a capacitor, a varactor, a diode, a resistor, a switch or a transistor.

12. The switching circuit as claimed in claim 11, further comprising a capacitive element arrangement connected in parallel with the at least one switching element.

13. The switching circuit as claimed in claim 1, wherein the at least one switching element arrangement comprises a transistor comprising:

a first terminal connected to ground or configured to receive a power supply voltage;

a second terminal connected to the at least one transmission line; and

a third terminal configured to receive a control signal,

wherein the at least one switching element arrangement is configured to be in the first state or the second state in response to the control signal.

14. The switching circuit as claimed in claim 1, wherein the at least one switching element arrangement comprises at least two transistors connected in series, each transistor comprising:

a first terminal;

a second terminal; and

a third terminal,

wherein the first terminal of a first transistor of the at least two transistors is connected to ground,

wherein the second terminal of a last transistor of the at least two transistors is connected to the at least one transmission line,

wherein the respective third terminals are configured to receive a respective control signal, and

wherein the at least one switching element arrangement is configured to be in the first state or the second state in response to the respective control signals.

15. The switching circuit as claimed in claim 1, wherein the at least one switching element arrangement comprises at least two transistors connected in series, each transistor comprising:

a first terminal;

a second terminal; and

a third terminal,

wherein the second terminal of a first transistor of the at least two transistors is connected to the at least one transmission line,

wherein the first terminal of a last transistor of the at least two transistors is configured to receive a power supply voltage,

wherein the respective third terminals are configured to receive a respective control signal, and

wherein the at least one switching element arrangement is configured to be in the first state or the second state in response to the respective control signals.

16. The switching circuit as claimed in claim 1, wherein the at least one switching element arrangement comprises at least two transistors connected in parallel, each transistor comprising:

a first terminal;

a second terminal; and

a third terminal,

wherein the first terminals of the at least two transistors are connected to ground or configured to receive a power supply voltage,

wherein the second terminals of the at least two transistors are connected to the at least one transmission line,

wherein the respective third terminals are configured to receive a respective control signal, and

wherein the at least one switching element arrangement is configured to be in the first state or the second state in response to the respective control signals.

17. The switching circuit as claimed in claim 1, further comprising:

at least two input or output ports coupled to the transmission line arrangement,

wherein the input signal is received via one input or output port of the at least two input or output ports, and

wherein the output signal is transmitted via another input or output port of the at least two input or output ports.

18. The switching circuit as claimed in claim 1, wherein the at least one switching element arrangement comprises an inductor connected in series with a capacitor, wherein the inductor and the capacitor are connected between the at least one transmission line and ground.

19. The switching circuit as claimed in claim 1, wherein the switching element arrangement comprises:

a diode arrangement connected between the at least one transmission line and ground,

wherein the at least one switching element arrangement is configured to be in the first state or the second state in response to a biasing voltage applied to the diode arrangement.

20. A transceiver comprising a switching circuit as claimed in claim 1.