CLAIMS

1. A matchbox comprising:

   a housing;

   a match circuitry located within the housing;

   a switch circuit located within the housing, the switch circuit including:

      a plurality of switches; and

      a plurality of parametric elements spaced apart from each other, wherein each of the plurality of parametric elements is connected to a corresponding one of the plurality of switches, wherein each of the plurality of switches is configured to be connected to ~~a return path of~~ a radio frequency (RF) tunnel of an RF transmission line to modify an impedance of an RF return signal transferred via the ~~return path~~RF tunnel towards an RF generator.

2. The matchbox of claim 1, wherein the match circuitry includes a plurality of circuit elements to match an impedance of a load coupled to the match ~~circuit~~circuitry with that of a source coupled to the match circuitry.

3. The matchbox of claim 1, wherein one of the plurality of switches is connected to one of the plurality of parametric elements, and another one of the plurality of switches is connected to another one of the plurality of parametric elements, wherein each of the plurality of parametric elements is a metal strap.

4. The matchbox of claim 1, wherein the ~~return path includes an~~ RF tunnel ~~that~~ surrounds an RF rod of the RF transmission line.

~~5. The matchbox of claim 1, wherein the return path includes a portion of the housing and an RF sheath of an RF cable that couples the match circuitry to an RF generator.~~

~~6.~~5. The matchbox of claim 1, wherein each of the plurality of parametric elements is a capacitor or an inductor.

~~7.~~6. The matchbox of claim 1, wherein the match circuitry is coupled to an RF rod of the RF transmission line.

~~8.~~7. A system comprising:

a housing;

a match circuitry located within the housing;

a switch circuit located outside the housing, the switch circuit including:

a plurality of switches; and

a plurality of parametric elements spaced apart from each other, wherein each of the plurality of parametric elements is connected to a corresponding one of the plurality of switches, wherein each of the plurality of switches is connected to ~~a return path of~~ a radio frequency (RF) tunnel of an RF transmission line to modify an impedance of an RF return signal transferred via the RF ~~return path~~tunnel towards an RF generator.

~~9.~~8. The system of claim ~~8~~7, wherein the match circuitry includes a plurality of circuit elements to match an impedance of a load coupled to the match circuitry with that of a source coupled to the match circuitry.

~~10.~~9. The system of claim ~~8~~7, wherein one of the plurality of switches is connected to one of the plurality of parametric elements, and another one of the plurality of switches is connected to another one of the plurality of parametric elements, wherein each of the plurality of parametric elements is a metal strap.

~~11. The system of claim 8, wherein the return path includes an RF tunnel that surrounds an RF rod of the RF transmission line.~~

~~13. The system of claim 8, wherein the return path includes a portion of the housing and an RF sheath of an RF cable that couples the match circuitry to an RF generator.~~

~~15.~~10. The system of claim ~~8~~7, wherein each of the plurality of parametric elements is a capacitor or an inductor.

~~16.~~11. The system of claim ~~8~~7, wherein the match circuitry is coupled to an RF rod of the RF transmission line.

~~17.~~12. A system comprising:

a controller;

a switch circuit coupled to the controller, the switch circuit including:

a plurality of switches; and

a plurality of parametric elements spaced apart from each other, wherein each of the plurality of parametric elements is connected to a corresponding one of the plurality of switches, wherein the plurality of switches are connected to ~~a return path of~~ a radio frequency (RF) tunnel of an RF transmission line, wherein the controller is

configured to control the plurality of switches to modify an impedance of an RF return signal transferred via the ~~return path~~RF tunnel towards an RF generator.

~~18.~~13. The system of claim ~~15~~12, wherein the switch circuit is coupled to a housing of a match circuitry, wherein the match circuitry is configured to match an impedance of a load connected to the match circuitry with the source connected to the match circuitry.

~~19.~~14. The system of claim ~~15~~12, wherein one of the plurality of switches is connected to one of the plurality of parametric elements, and another one of the plurality of switches is connected to another one of the plurality of parametric elements, wherein each of the plurality of parametric elements is a metal strap.

~~20. The system of claim 15, wherein the return path includes an RF tunnel that surrounds an RF rod of the RF transmission line.~~

~~22.~~15. The system of claim ~~15~~12, ~~wherein the return path includes a portion of a housing of a match circuitry and an RF sheath of an RF cable that couples the match circuitry to an RF generator,~~ wherein the match circuitry is coupled to an RF rod of the RF transmission line.

~~23.~~16. The system of claim ~~15~~12, wherein each of the plurality of parametric elements is a capacitor or an inductor.