CLAIMS:

1. A multiplexer for very high frequency applications comprising:
   a first bandpass filter having a first passband, the first bandpass filter comprising:
      a first multi-stage LC ladder circuit connecting an input terminal to a first output terminal;
      a first capacitor connected in series between a series inductor and a parallel capacitor of a final stage of the first multi-stage LC ladder circuit on a path connecting the input terminal and the first output terminal, wherein the first capacitor has a resonant frequency located within the first passband; and
   a second bandpass filter having a second passband, the second bandpass filter comprising:
      a second multi-stage LC ladder circuit connecting the input terminal to a second output terminal;
      a second capacitor connected in series between a series inductor and a parallel capacitor of a final stage of the second multi-stage LC ladder circuit on a path connecting the input terminal and the second output terminal, wherein the second capacitor has a resonant frequency located within the second passband.

2. The multiplexer according to claim 1 wherein the resonant frequency of the first capacitor introduces an additional pole in the first passband, and the resonant frequency of the second capacitor introduces an additional pole in the second passband.

3. The multiplexer according to claims 1 or 2, further comprising:
   a third bandpass filter having a third passband, the third bandpass filter comprising:
      a third multi-stage LC ladder circuit connecting the input terminal to a third output terminal;
      a third capacitor connected in series between a series inductor and a parallel capacitor of a final stage of the third multi-stage LC ladder circuit on a path connecting the input terminal and the third output terminal, wherein the third capacitor has a resonant frequency located within the third passband; and
   a fourth bandpass filter having a fourth passband, the fourth bandpass filter comprising:
      a fourth multi-stage LC ladder circuit connecting the input terminal to a fourth output terminal;

a fourth capacitor connected in series between a series inductor and a parallel capacitor of a final stage of the fourth multi-stage LC ladder circuit on a path connecting the input terminal and the fourth output terminal, wherein the fourth capacitor has a resonant frequency located within the fourth passband.

4. The multiplexer according to claim 3 wherein the resonant frequency of the third capacitor introduces an additional pole in the third passband, and the resonant frequency of the fourth capacitor introduces an additional pole in the fourth passband.

5. The multiplexer according to any one of claims 1 to 4 wherein each multi-stage LC ladder circuit comprises a 3-stage LC ladder circuit.

6. The multiplexer according to claim 3 wherein the final stage of each of the multi-stage LC ladder circuits comprises a 3rd stage of each of the multi-stage LC ladder circuits.

7. The multiplexer according to any one of claims 1 to 6, wherein all the passbands of all the bandpass filters are within a very high frequency range (VHF).

8. The multiplexer according to any one of claims 1 to 7, wherein all the inductors and capacitors comprise surface mount devices.

9. The multiplexer according to any one of claims 3-4 and 6, wherein the first passband has a centre frequency of 110 MHz, the second passband has a centre frequency of 130 MHz, the third passband has a centre frequency of 150 MHz, and the fourth passband has a centre frequency of 170 MHz.

10. A method for forming a multiplexer for very high frequency applications on a microstrip circuit, the method comprising the steps of:
forming a first bandpass filter having a first passband on the microstrip circuit, the first bandpass filter comprising:
a first multi-stage LC ladder circuit formed on the microstrip circuit connecting an input terminal to a first output terminal;
a first capacitor connected in series between a series inductor and a parallel capacitor of a final stage of the first multi-stage LC ladder circuit on a path connecting the input

terminal and the first output terminal, wherein the first capacitor has a resonant frequency located within the first passband; and

forming a second bandpass filter having a second passband on the microstrip circuit, the second bandpass filter comprising:

a second multi-stage LC ladder circuit formed on the microstrip circuit connecting the input terminal to a second output terminal;

a second capacitor connected in series between a series inductor and a parallel capacitor of a final stage of the second multi-stage LC ladder circuit on a path connecting the input terminal and the second output terminal, wherein the second capacitor has a resonant frequency located within the second passband.

11. The method according to claim 10 wherein the resonant frequency of the first capacitor introduces an additional pole in the first passband, and the resonant frequency of the second capacitor introduces an additional pole in the second passband.

12. The method according to claims 10 or 11, further comprising the steps of:

forming a third bandpass filter having a third passband on the microstrip circuit, the third bandpass filter comprising:

a third multi-stage LC ladder circuit formed on the microstrip circuit connecting the input terminal to a third output terminal;

a third capacitor connected in series between a series inductor and a parallel capacitor of a final stage of the third multi-stage LC ladder circuit on a path connecting the input terminal and the third output terminal, wherein the third capacitor has a resonant frequency located within the third passband; and

forming a fourth bandpass filter having a fourth passband on the microstrip circuit, the fourth bandpass filter comprising:

a fourth multi-stage LC ladder circuit formed on the microstrip circuit connecting the input terminal to a fourth output terminal;

a fourth capacitor connected in series between a series inductor and a parallel capacitor of a final stage of the fourth multi-stage LC ladder circuit on a path connecting the input terminal and the fourth output terminal, wherein the fourth capacitor has a resonant frequency located within the fourth passband.

13. The method according to claim 12 wherein the resonant frequency of the third capacitor introduces an additional pole in the third passband, and the resonant frequency of the fourth capacitor introduces an additional pole in the fourth passband.

14. The method according to any one of claims 10 to 13 wherein each multi-stage LC ladder circuit comprises a 3-stage LC ladder circuit.

15. The method according to claim 12 wherein the final stage of each of the multi-stage LC ladder circuits comprises a 3rd stage of each of the multi-stage LC ladder circuits.

16. The method according to any one of claims 10 to 15, wherein all the passbands of all the bandpass filters are within a very high frequency range (VHF).

17. The method according to any one of claims 10 to 16, wherein all the inductors and capacitors comprise surface mount devices.

18. The method according to any one of claims 12-13 and 15, wherein the first passband has a centre frequency of 110 MHz, the second passband has a centre frequency of 130 MHz, the third passband has a centre frequency of 150 MHz and the fourth passband has a centre frequency of 170 MHz.