## Claims

1. A system comprising:

a rectangular-to-circular waveguide transition comprising a front section and a back section ~~opposite the front section~~, the rectangular-to-circular waveguide transition defining a ~~circular~~ hole having a substantially circular cross section and extending ~~from~~ through the front section ~~through~~ and the back section, the rectangular-to-circular waveguide transition further ~~having a first arcuate region on the face of the transition, the first arcuate region~~ defining a first cavity extending ~~from~~ at least partially through the front section and integrating with the ~~circular~~ hole ~~through the first arcuate region~~ and not extending through the back section, the rectangular-to-circular waveguide transition also ~~having a second arcuate region~~ defining a second cavity opposite the first cavity, the second cavity extending ~~from~~ at least partially through the front section and integrating with the ~~circular~~ hole ~~through the second arcuate region~~ and not extending through the back section; and

a filter card configured to be placed across the first cavity, the ~~circular~~ hole ~~of the rectangular-to-circular waveguide transition~~, and the second cavity.

2. The system of claim 1, wherein the filter card extends vertically across the circular hole of the rectangular-to-circular waveguide transition.

3. The system of claim 1, wherein the ~~first arcuate region~~ rectangular-to-circular waveguide transition further defines a first recess within the first cavity and ~~the second arcuate region further defines~~ a second recess within the second cavity.

4. The system of claim 3, wherein the filter card has a first edge and a second edge, and the filter card comprises tabs along the first edge and the second ~~edges~~ edge, the tabs limiting a position within the recesses ~~of the first and second edges~~.

5. The system of claim ~~1~~ 3, wherein the filter card has a first edge and a second edge, and the first recess and the second ~~recesses~~ recess are configured to receive ~~a~~ the first edge and the second edge of the filter card to position the filter card across the circular hole.

~~6. The system of claim 1, wherein the filter card suppresses high-order modes.~~

6~~7~~. The system of claim 1, wherein the filter card comprises a substrate of woven glass cloth impregnated with thermosetting resin.

7~~8~~. The system of claim 1, wherein the filter card comprises a resistance film comprising a nickel chromium alloy.

8~~9~~. The system of claim 1, wherein the filter card attenuates at least some wave energy.

9~~10~~. The system of claim 1, further comprising an antenna and an outdoor unit (ODU) whereby signals from the antenna are received by the ODU via the rectangular-to-circular waveguide transition.

~~11. The system of claim 1, wherein the rectangular-to-circular waveguide transition is compact.~~

10~~12~~. A method comprising:

receiving, by a rectangular-to-circular waveguide transition, wave energy from an antenna, the rectangular-to-circular waveguide transition including a front section and a back section ~~opposite the front section~~, the rectangular-to-circular waveguide transition defining a ~~circular~~ hole having a substantially circular cross section and extending ~~from~~ through the front section ~~through~~ and the back section, the rectangular-to-circular waveguide transition further ~~having a first arcuate region on the face of the transition, the first arcuate region~~ defining a first cavity extending ~~from~~ at least partially through the front section and integrating with the ~~circular~~ hole ~~through the first arcuate region~~ and not extending through the back section, the rectangular-to-circular waveguide transition also ~~having a second arcuate region~~ defining a second cavity opposite the first cavity, the second cavity extending ~~from~~ at least partially through the front section and integrating with the ~~circular~~ hole ~~through the second arcuate region~~ and not extending through the back section; and

filtering the wave energy from the antenna with a filter card configured to be placed across the first cavity, the ~~circular~~ hole ~~of the rectangular-to-circular waveguide transition~~, and the second cavity.

11~~13~~. The method of claim ~~12~~ 10, wherein the filter card extends vertically across the circular hole of the rectangular-to-circular waveguide transition.

12~~14~~. The method of claim ~~12~~ 10, wherein the ~~first arcuate region~~ rectangular-to-circular waveguide transition further defines a first recess within the first cavity and ~~the second arcuate region further defines~~ a second recess within the second cavity.

13~~15~~. The method of claim ~~14~~ 12, wherein the filter card has a first edge and a second edge, and the filter card comprises tabs along the first edge and the second ~~edges~~ edge, the tabs limiting a position within the recesses ~~of the first and second edges~~.

14~~16~~. The method of claim 12, wherein the filter card has a first edge and a second edge, and the first recess and the second ~~recesses~~ recess are configured to receive ~~a~~ the first edge and the second edge of the filter card to position the filter card across the circular hole.

~~17. The method of claim 12, wherein the filter card suppresses high-order modes.~~

15~~18~~. The method of claim ~~12~~ 10, wherein the filter card comprises a substrate of woven glass cloth impregnated with thermosetting resin.

16~~19~~. The method of claim ~~12~~ 10, wherein the filter card comprises a resistance film comprising a nickel chromium alloy.

17~~20~~. The method of claim ~~12~~ 10, further comprising an antenna and an outdoor unit (ODU) whereby signals from the antenna are received by the ODU via the rectangular-to-circular waveguide transition.

~~21. The method of claim 12, wherein the rectangular-to-circular waveguide transition is compact.~~

18~~22~~. A system comprising:

a rectangular-to-circular waveguide transition including a front section and a back section ~~opposite the front section~~, the rectangular-to-circular waveguide transition defining a ~~circular~~ hole having a substantially circular cross section and extending ~~from~~ through the front section ~~through~~ and the back section, the rectangular-to-circular waveguide transition further ~~having a first arcuate region on the face of the transition, the first arcuate region~~ defining a first cavity extending ~~from~~ at least partially through the front section and integrating with the ~~circular~~ hole ~~through the first arcuate region~~ and not extending through the back section, the rectangular-to-circular waveguide transition also ~~having a second arcuate region~~ defining a second cavity opposite the first cavity, the second cavity extending ~~from~~ at least partially through the front section and integrating with the ~~circular~~ hole ~~through the second arcuate region~~ and not extending through the back section; and

a filtering means for filtering wave energy, the filtering means configured to be placed across the first cavity, the ~~circular~~ hole ~~of the rectangular-to-circular waveguide transition~~, and the second cavity.