significant increase in the already large infrastructure requirements of such systems. Therefore it would be advantageous to incorporate location determination capability into an HVAC-based distributed antenna system.

According to a first aspect of the present invention, there is~~Hence, in one respect, embodiments of the present system~~ provided a method of determining a location of a wireless mobile device with respect to an interconnected network of wireless transmission waveguides, the method comprising: receiving a wireless signal transmitted from a wireless mobile device at each of a first wireless probe at a first location within the interconnected network, a second wireless probe at a second location within the interconnected network, and a third wireless probe at a third location within the interconnected network; determining a first propagation delay of the wireless signal transmitted from the wireless mobile device to the first wireless probe, wherein the wireless signal enters the interconnected network through a first opening in a first wireless waveguide that is part of the interconnected network, and thereafter propagates to the first wireless probe along a first path within the interconnected network; determining a second propagation delay of the wireless signal transmitted from the wireless mobile device to the second wireless probe, wherein the wireless signal enters the interconnected network through a second opening in a second wireless waveguide that is part of the interconnected network, and thereafter propagates to the wireless second probe along a second path within the interconnected network; determining a third propagation delay of the wireless signal transmitted from the wireless mobile device to the third wireless probe, wherein the wireless signal enters the interconnected network through a third opening in a third wireless waveguide that is part of the interconnected network, and thereafter propagates to the third wireless probe along a third path within the interconnected network; and determining the location of the wireless mobile device with respect to the first, second, and third wireless probes using the first, second, and third propagation delays.

According to a second aspect of the present invention, there is~~In another respect, embodiments of the present system~~ provided a system for determining a location of a wireless mobile device with respect to an interconnected network of wireless transmission waveguides, the system comprising: a first wireless probe at a first location within the interconnected network, a second wireless probe at a second location within the interconnected network, and a third wireless probe at a third location within the interconnected network; means for determining a first propagation delay of a wireless signal transmitted from the wireless mobile device to the first wireless probe, wherein the wireless signal enters the interconnected network through a first opening in a first wireless waveguide that is part of the interconnected network, and thereafter propagates to the first wireless probe along a first path within the interconnected network; means for determining a second propagation delay of the wireless signal transmitted from the wireless mobile device to the second wireless probe, wherein the wireless signal enters the interconnected network through a second opening in a second wireless waveguide that is part of the interconnected network, and thereafter propagates to the wireless second probe along a second path within the interconnected network; means for determining a third propagation delay of the wireless signal transmitted from the wireless mobile device to the third wireless probe, wherein the wireless signal enters the interconnected network through a third opening in a third wireless waveguide that is part of the interconnected network, and thereafter propagates to the third wireless probe along a third path within the interconnected network; and means for determining the location of the wireless mobile device with respect to the first, second, and third wireless probes using the first, second, and third propagation delays.

According to a third aspect of the present invention, there is~~In yet another respect, embodiments of the present system~~ provided a tangible computer-readable medium having stored thereon computer-executable instructions that, if executed by the computing device, cause the computing device to perform a method comprising: determining a first propagation delay of a wireless signal transmitted from a