CLAIMS

1. A method for communicating RF wireless signals between a remote wireless base station and customer premises equipment (CPE), comprising:

employing an RF communication device to perform actions, including:

configuring one or more external antennas to communicate RF wireless signals with the remote wireless base station, wherein the configuration includes one or more of a direction or a shape of a waveform provided by the one or more external antennas for communicating the RF wireless signals with the remote wireless base station;

employing one or more amplifiers to provide a separately selectable gain to an upload RF wireless signal and provide another separately selectable gain to a download RF wireless signal, wherein the upload RF wireless signal is communicated to the remote wireless base station and the one or more internal antennas are employed to communicate the download RF wireless signal with the other separate gain to the CPE;

adjusting a scan impedance of the one or more external antennas to improve communication by the one or more external antennas of the upload and download RF wireless signals through a barrier; and

in response to a value of a power of the upload RF wireless signal meeting a threshold, determining that the CPE is in communication with an authorized RF wireless base station, wherein the gain and the other gain are adjusted to improve communication of the upload and download RF wireless signals between the CPE and the authorized remote wireless base station.

2. The method of claim 1, wherein determining the CPE is in communication with the authorized RF wireless base station further comprises, adjusting the one or more of the direction or the shape of the waveform to further improve communication of the upload and download RF signals with the authorized remote RF wireless base station.

3. The method of claim 1, wherein providing the separate gain and the other separate gain further comprises, employing a bi-static amplifier to simultaneously provide separately selectable gains to the upload and download RF wireless signals.

4. The method of claim 1, wherein providing the separate gain and the other separate gain further comprises, employing a bi-directional amplifier to provide separately selectable gains to the upload and download RF wireless signals.

5. The method of claim 1, wherein the RF communication device performs further actions, including enabling one or more of an application or a web page to enable a user to wirelessly communicate with the RF communication device.

6. The method of claim 1, wherein the RF communication device performs further actions comprising employing one or more RF couplers to communicate the upload and download RF signals through the barrier, wherein the one or more RF couplers include near field couplers, glass field couplers, or inductive couplers.

7. The method of claim 1, wherein the RF communication device performs further actions comprising employing one or more arrays of patch antennas to communicate the upload and download RF signals through a glass barrier, and wherein the one or more arrays of

patch antennas are slanted 35 to 60 degrees from an orientation of a communication path through the glass barrier to improve impedance matching with the glass barrier during communication of the upload and download RF wireless signals.

8. The method of claim 1, wherein the RF communication device performs further actions comprising employing automatic gain control to provide separately selectable gains for the upload and download RF wireless signals.

9. The method of claim 1, wherein the RF communication device performs further actions comprising employing a radome that incorporates wide angle impedance match material to increase the separate gains of the upload and download RF wireless signals communicated by the one or more external antennas.

10. The method of claim 1, wherein the RF communication device performs further actions comprising employing an RF isolation spacer when simultaneously communicating upload and download signals through the barrier.

11. The method of claim 1, wherein the RF communication device performs further actions comprising employing the one or more CPEs to communicate the wireless signals in a communication format that is compatible with one or more of a wireless communication device or a wired communication device that is disposed on the interior side of the barrier.

12. The method of claim 1, wherein the RF communication device performs further actions comprising positioning all of the components of the RF communication device on an exterior surface of the barrier, positioning all of the components of the RF communication device on an interior surface of the barrier, or positioning a portion of the components of the RF communication device on the exterior surface and positioning another portion of the components of the RF communication device on the interior surface.

13. The method of claim 1, wherein the RF communication device further comprises employing one or more low power electrical sources that include one or more of a solar cell, inductive charger, or a battery.

14. An apparatus for communicating RF wireless signals with a remote wireless base station and customer premises equipment (CPE), comprising:

one or more external antennas;

one or more internal antennas;

one or more amplifiers; and

processing circuitry that is arranged to perform actions, including:

configuring the one or more external antennas to communicate RF wireless signals with the remote wireless base station, wherein the configuration includes one or more of a direction or a shape of a waveform provided by the one or more external antennas for communicating the RF wireless signals with the remote wireless base station;

employing the one or more amplifiers to provide a separately selectable gain to an upload RF wireless signal and provide another separately selectable gain to a download RF wireless signal, wherein the upload RF wireless signal is communicated to the remote wireless base station and the one or more internal antennas are

employed to communicate the download RF wireless signal with the other separate gain to the CPE;

adjusting a scan impedance of the one or more external antennas to improve communication by the one or more external antennas of the upload and download RF wireless signals through a barrier; and

in response to a value of a power of the upload RF wireless signal meeting a threshold, determining that the CPE is in communication with an authorized RF wireless base station, wherein the gain and the other gain are separately adjusted to improve communication of the upload and download RF wireless signals between the CPE and the authorized remote wireless base station.

15. The apparatus of claim 14, wherein determining the CPE is in communication with the authorized RF wireless base station further comprises, adjusting the one or more of the direction or the shape of the waveform to further improve communication of the upload and download RF signals with the authorized remote RF wireless base station.

16. The apparatus of claim 14, wherein the one or more amplifiers further comprise a bi-static amplifier to simultaneously provide separately selectable gains to the upload and download RF wireless signals.

17. The apparatus of claim 14, wherein the one or more amplifiers further comprise a bi-directional amplifier to provide separately selectable gains to the upload and download RF wireless signals.

18. The apparatus of claim 14, further comprising a wireless interface that enables a user to employ one or more of an application or a web page to wirelessly communicate with the apparatus.

19. The apparatus of claim 14, wherein the processing circuitry performs further actions comprising employing one or more RF couplers to communicate the upload and download RF signals through the barrier, wherein the one or more RF couplers include near field couplers, glass field couplers, or inductive couplers.

20. The apparatus of claim 14, wherein the processing circuitry performs further actions comprising employing one or more arrays of patch antennas to communicate the upload and download RF signals through a glass barrier, and wherein the one or more arrays of patch antennas are slanted 35 to 60 degrees from an orientation of a communication path through the glass barrier to improve impedance matching with the glass barrier during communication of the upload and download RF wireless signals.

21. The apparatus of claim 14, wherein the processing circuitry performs further actions comprising employing automatic gain control to provide separately selectable gains for the upload and download RF wireless signals.

22. The apparatus of claim 14, further comprising a radome that incorporates wide angle impedance match material to increase the separately selectable gains of the upload and download RF wireless signals communicated by the one or more external antennas.

23. The apparatus of claim 14, further comprising an RF isolation spacer when simultaneously communicating upload and download RF signals through the barrier.

24. The apparatus of claim 14, wherein the RF communication device performs further actions comprising employing the one or more CPEs to communicate the wireless signals in

a communication format that is compatible with one or more of a wireless communication device or a wired communication device that is disposed on the interior side of the barrier.

25. The apparatus of claim 14, further comprising positioning all of the components of the RF communication device on an exterior surface of the barrier, positioning all of the components of the RF communication device on an interior surface of the barrier, or positioning a portion of the components of the RF communication device on the exterior surface and positioning another portion of the components of the RF communication device on the interior surface.

26. The apparatus of claim 14, further comprising one or more low power electrical sources that include one or more of a solar cell, inductive charger, or a battery.

27. A processor readable non-transitory storage medium that includes instructions for communicating RF wireless signals between a remote wireless base station and customer premises equipment (CPE), wherein execution of the instructions by processing circuitry of an RF communication device, performs actions comprising:

configuring one or more external antennas to communicate RF wireless signals with the remote wireless base station, wherein the configuration includes one or more of a direction or a shape of a waveform provided by the one or more external antennas for communicating the RF wireless signals with the remote wireless base station;

employing one or more amplifiers to provide a separately selectable gain to an upload RF wireless signal and provide another separately selectable gain to a download RF wireless signal, wherein the upload RF wireless signal is communicated to the remote wireless base station and the one or more internal antennas are employed to communicate the download RF wireless signal with the other separate gain to the CPE;

adjusting a scan impedance of the one or more external antennas to improve communication by the one or more external antennas of the upload and download RF wireless signals through a barrier; and

in response to a value of a power of the upload RF wireless signal meeting a threshold, determining that the CPE is in communication with an authorized RF wireless base station, wherein the gain and the other gain are adjusted to improve communication of the upload and download RF wireless signals between the CPE and the authorized remote wireless base station.

28. The processor readable non-transitory storage medium of claim 27, wherein the actions further comprise one of:

employing a bi-static amplifier to simultaneously provide separately selectable gains to the upload and download RF wireless signals; or

employing a bi-directional amplifier to provide separately selectable gains to the upload and download RF wireless signals.