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(54) Title: CELLULAR RADIO SIGNAL (E.G., 5G MILLIMETER WAVE) TRANSMISSION THROUGH HIGH ENERGY EFFICIENT BUILDING MATERIALS

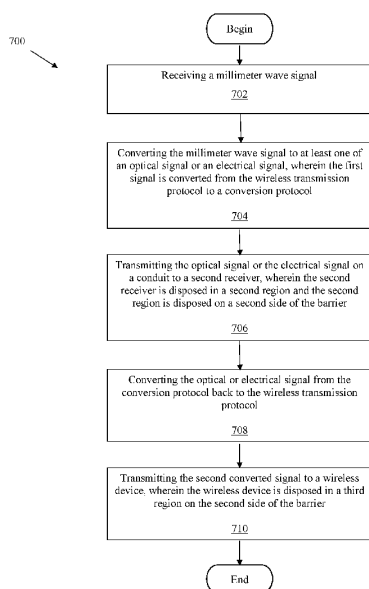


Figure 7

(57) Abstract: A method, system, and apparatus for improving the signal strength of millimeter wave signals inside structures received from outside of the structure. In an embodiment, a method 700 includes receiving, at a first receiver external to a barrier, a millimeter wave signal, the millimeter wave signal comprising a wireless transmission protocol 702. The method 700 also includes converting the millimeter wave signal to an optical or electrical signal using a converted protocol that preserves the original signal's stack layer 704. The method 700 also includes transmitting the optical signal or the electrical signal on a conduit to a second receiver disposed on a second side of the barrier 706. The method 700 also includes converting the optical or electrical signal from the protocol back to the wireless transmission protocol 708 and transmitting the converted signal in the original wireless transmission protocol to a wireless device disposed within the structure 710.



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