

# EXHIBIT 19-11

# EXHIBIT 10



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(12) **United States Patent**  
**Sorrells et al.**

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(54) **METHODS AND SYSTEMS FOR DOWN-CONVERTING A SIGNAL USING A COMPLEMENTARY TRANSISTOR STRUCTURE**

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 See application file for complete search history.

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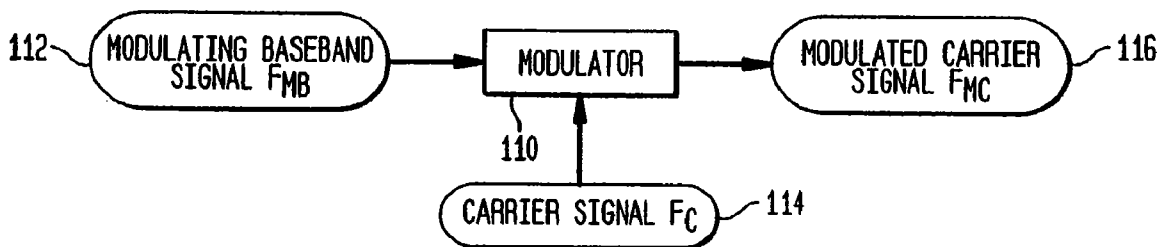
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(57) **ABSTRACT**

Methods, systems, and apparatuses for down-converting a modulate carrier signal to a demodulated baseband signal by sampling the energy of the carrier signal are described herein. Briefly stated, such methods systems, and apparatuses operate by receiving a modulated carrier signal and using pulses with apertures to control a switch so as to (a) transfer energy from the modulated carrier signal and accumulate the transferred energy in a capacitor when the switch is closed during the apertures of the pulses and (b) discharge some of the previously accumulated energy from the capacitor into load circuitry at least when the switch is open. The demodulated baseband signal is generated from (i) accumulating energy transferred to the capacitor each time the switch is closed during the apertures of the pulses, and (ii) discharging some of the previously accumulated energy into the load circuitry each time the switch is opened.

**28 Claims, 178 Drawing Sheets**



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