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(71) Applicant: QUALCOMM INCORPORATED [US/US]; 6455 Lusk Boulevard, San Diego, CA 92121 (US).

(72) Inventors: CICCARELLI, Steven, C.; 45272 Callesita Ordenes, Temecula, CA 92592 (US). YOUNIS, Saed, G.; 12767 Jordan Ridge Court, San Diego, CA 92130 (US).

(74) Agents: MILLER, Russell, B. et al.; Qualcomm Incorporated, 6455 Lusk Boulevard, San Diego, CA 92121 (US).

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(54) Title: METHOD AND APPARATUS FOR DOWNCONVERTING SIGNALS TRANSMITTED USING A PLURALITY OF MODULATION FORMATS TO A COMMON INTERMEDIATE FREQUENCY RANGE

(57) Abstract

A receiver (2) that downconverts input signals modulated using first, second, third and fourth modulation formats to a common intermediate frequency range. The first and second modulation formats are transmitted to the receiver in a first frequency range, the third modulation format is transmitted to the receiver in a second frequency range, and the fourth modulation format is transmitted to the receiver in a third frequency range. The input signals are provided to first, second and third band selection filters (10, 12, 14) that respectively select first, second and third frequency ranges. A first downconverter (20) is coupled to an output of the first band selection filter, and downconverts

signals from the first frequency range to the common intermediate frequency range. A second downconverter (24) is selectively coupled by a switch (16) to either an output of the second band selection filter (12) or an output of the third band selection filter (14), and downconverts signals from either the second frequency range or the third frequency range to the common intermediate frequency range. The second downconverter has an input coupled to a frequency doubling circuit (26). Switching circuitry (28) selectively couples one of either a first oscillating signal (30) from a voltage controlled oscillator (VCO) (34) having a VCO frequency range or a second oscillating signal (32) at a second frequency that is outside the VCO frequency range to an input of the first downconverter (20) and an input of the frequency doubling circuit (26).

