

CLAIMS

1. An apparatus comprising:
 - a first amplifier stage configured to receive and amplify an input radio frequency (RF) signal and provide a first output RF signal to a first load circuit when the first amplifier stage is enabled, the input RF signal comprising transmissions sent on multiple carriers at different frequencies to a wireless device; and
 - a second amplifier stage configured to receive and amplify the input RF signal and provide a second output RF signal to a second load circuit when the second amplifier stage is enabled.

2. The apparatus of claim 1, the first amplifier stage comprising a first gain transistor coupled to a first cascode transistor, the second amplifier stage comprising a second gain transistor coupled to a second cascode transistor, and the input RF signal being provided to both the first and second gain transistors.

3. The apparatus of claim 2, the first amplifier stage further comprising a first inductor coupled to the first gain transistor, and the second amplifier stage further comprising a second inductor coupled to the second gain transistor.

4. The apparatus of claim 2, the first and second gain transistors having sources coupled to circuit ground.

5. The apparatus of claim 2, the first and second amplifier stages providing the first and second output RF signals in a first mode and providing the first output RF signal but not the second output RF signal in a second mode, the first and second cascode transistors being enabled in the first mode, and only one of the first and second cascode transistors being enabled in the second mode.

6. The apparatus of claim 5, the first and second gain transistors being applied the input RF signal in both the first mode and the second mode, and one of the first and second gain transistors operating in a saturation region and the other one of the first and second gain transistors operating in a linear region in the second mode.

7. The apparatus of claim 1, further comprising:
a feedback circuit coupled between an output and an input of at least one of the first and second amplifier stages.

8. The apparatus of claim 7, the feedback circuit comprising a resistor, or a capacitor, or both a resistor and a capacitor.

9. The apparatus of claim 1, further comprising:
a first attenuation circuit coupled to the first amplifier stage and configured to receive the input RF signal; and
a second attenuation circuit coupled to the second amplifier stage and configured to receive the input RF signal.

10. The apparatus of claim 1, further comprising:
an attenuation circuit coupled to the first and second amplifier stages and configured to receive the input RF signal.

11. The apparatus of claim 1, further comprising:
an input matching circuit coupled to the first and second amplifier stages and configured to receive a receiver input signal and provide the input RF signal.

12. The apparatus of claim 11, the input matching circuit being tunable and comprising at least one adjustable circuit component.

13. The apparatus of claim 1, further comprising:
a third amplifier stage configured to receive and amplify a second input RF signal and provide the first output RF signal to the first load circuit when the third amplifier stage is enabled; and

a fourth amplifier stage configured to receive and amplify the second input RF signal and provide the second output RF signal to the second load circuit when the fourth amplifier stage is enabled.

14. The apparatus of claim 1,
the first amplifier stage configured to receive and amplify the input RF signal or a second input RF signal and provide the first output RF signal to the first load circuit when the first amplifier stage is enabled, and

the second amplifier stage configured to receive and amplify the input RF signal or the second input RF signal and provide the second output RF signal to the second load circuit when the second amplifier stage is enabled.

15. The apparatus of claim 2, the first amplifier stage further comprising a third gain transistor coupled to a third cascode transistor, the second amplifier stage further comprising a fourth gain transistor coupled to a fourth cascode transistor, and a second input RF signal being provided to both the third and fourth gain transistors.

16. The apparatus of claim 14, further comprising:

a third amplifier stage configured to receive and amplify a third input RF signal or a fourth input RF signal and provide the first output RF signal to the first load circuit when the third amplifier stage is enabled; and

a fourth amplifier stage configured to receive and amplify the third input RF signal or the fourth input RF signal and provide the second output RF signal to the second load circuit when the fourth amplifier stage is enabled.

17. A method comprising:

amplifying a first input radio frequency (RF) signal with a first amplifier stage to obtain a first output RF signal when the first amplifier stage is enabled, the first input RF signal comprising transmissions sent on multiple carriers at different frequencies to a wireless device; and

amplifying the first input RF signal or a second input RF signal with a second amplifier stage to obtain a second output RF signal when the second amplifier stage is enabled.

18. The method of claim 17, further comprising:

enabling the first and second amplifier stages in a first mode to obtain the first and second output RF signals; and

enabling the first amplifier stage and disabling the second amplifier stage in a second mode to obtain the first output RF signal but not the second output RF signal.

19. An apparatus comprising:

first means for amplifying configured to amplify a first input radio frequency (RF) signal and provide a first output RF signal when the first means for amplifying is enabled, the first input RF signal comprising transmissions sent on multiple carriers at different frequencies to a wireless device; and

second means for amplifying configured to amplify the first input RF signal or a second input RF signal and provide a second output RF signal when the second means for amplifying is enabled.

20. The apparatus of claim 19, further comprising:

means for enabling the first and second means for amplifying in a first mode to obtain the first and second output RF signals; and

means for enabling the first means for amplifying and disabling the second means for amplifying in a second mode to obtain the first output RF signal but not the second output RF signal.