Application Note

AH215 2450 MHz Reference Design

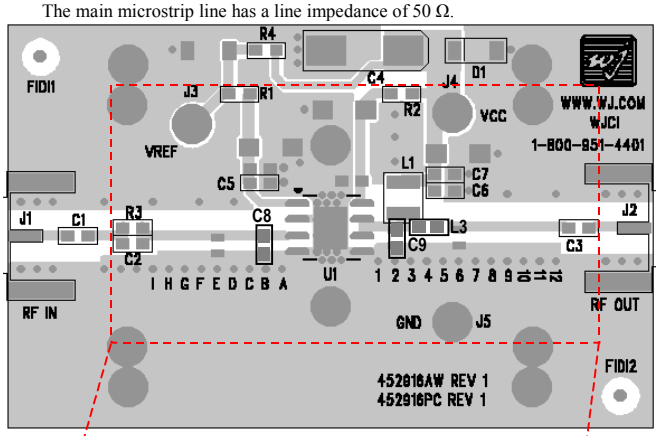
The Communications Edge ™

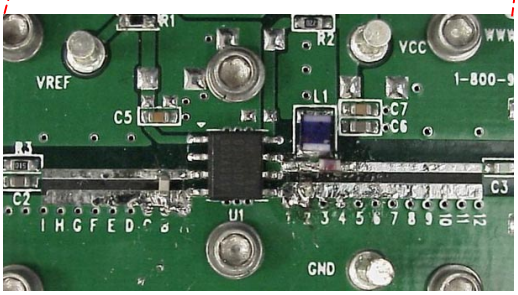
Product Information

Summary

The AH215 is a high linearity 1-Watt MMIC amplifier targeted for 2nd and 3rd generation wireless mobile infrastructure as well as other applications requiring high output power. At 1.9 GHz, the amplifier typically has 13 dB gain, +30 dBm P1dB, and +46 dBm OIP3. On the product's datasheet, the amplifier is shown as having an operational frequency range between 400 – 2300 MHz. The higher end of the frequency range is set at 2.3 GHz because of the limited amount of available gain from the device. **This application note examines the performance of the AH215 tuned for 2450 MHz, often a popular frequency for applications such as fixed wireless and RFID.** At this frequency, the amplifier has 10 dB gain, +32 dBm P1dB, and +41 dBm OIP3. More details of the circuit application are shown below. For applications requiring lower quiescent current, R1 can be increased in value to bias the device in Class AB operation, although the OIP3 and P1dB performance may be slightly degraded.

Circuit Board Material: .014" Getek ML200DSS (ε_r = 4.2), 1 oz copper
The main microstrip line has a line impedance of 50 Ω.





Measured RF Performance

Frequency	MHz	2400	2450	2500
S21 – Gain	dB	10.1	10.0	9.6
S11 – Input Return Loss	dB	-13	-16	-12
S22 – Output Return Loss	dB	-8	-10	-9
Output P1dB	dBm	+32		
Output IP3 (+10 dBm / tone, 1 MHz spacing)	dBm	+41		
Device / Supply Voltage	V	+5		
Device Current	mA	400