Amplifier FAQ's

QUESTION: Why do the amplifiers require external matching?
ANSWER: External matching optimizes the overall device performance. Support components (capacitors and inductors) Q-values are much higher in off-chip form and thereby provide low loss, highly tuned matching circuits. External matching also provides the user with flexibility. Tradeoffs between output power, power-added efficiency (PAE), frequency response, and gain can be made via an external matching network to support the critical requirements of your application. TI does provide specific component elements and values for the intended application, optimizing a solution for the best overall performance for all parameters simultaneously. Additionally, our application notes identify variations in the matching network to optimize an individual performance parameter.

QUESTION: Do you have modules with 50 Ohms input and output impedance?
ANSWER: Our present focus is not on modules with internal matching to achieve 50 ohms input and output. Most of our amplifiers require minimal external components for biasing and matching. We utilize PCB material and component elements commonly used throughout industry. Our goal is to provide easy transition from our evaluation board to your application.

QUESTION: Are discrete transistors available?
ANSWER: Yes. We presently offer the TRF7003 device housed in a SOT-89 package. Information about this product is available via our Web page. Please visit our Web page for future new discrete product announcements.

QUESTION: Do you have amplifiers for handsets, basestations, or both?
ANSWER: Our present focus is to develop amplifiers for handsets. However, as cell sizes decrease, direct application of our devices into basestation environments is possible.

QUESTION: What is the typical leakage current for your amplifiers?
ANSWER: Leakage current various significantly depending on both the process technologies utilized and the components incorporated in the integrated circuit. Since TI's products cover a variety of these factors, providing a single number is not necessarily accurate. However, two examples are available. The TRF7003 product offers leakage currents less than 1 uA. The TRF8010 has a leakage current of ~50 uA.

QUESTION: Do you have dual band and/or dual mode amplifiers?

ANSWER: At this time TI does not offer a dual band (Cellular and PCS) amplifier. However, there are plans to develop amplifiers with this feature. Some of TI's amplifiers are utilized in dual mode applications. Please review our application notes or visit our Web page.

QUESTION: Are the amplifiers single-ended or dual-ended, or both?
ANSWER: Presently our amplifiers are single-ended. The input impedance is nominally 50 ohms and usually requires little, if any, external matching. The output generally requires off-chip matching. Usually, our amplifiers require no off-chip interstage matching.

QUESTION: Do your amplifiers require a negative voltage?
ANSWER: Our silicon based amplifiers do not require a negative voltage for operation. Some gallium arsenide products may require a negative voltage. Sometimes this negative voltage is generated "on-chip" and therefore not required to be supplied by the customer. Product datasheets and evaluation board test instructions provide complete and detailed information concerning the requirements for supply voltages.

QUESTION: Can I operate the amplifiers in CW mode?
ANSWER: Most cellular standards utilize pulsed amplifier operation. To maximize device performance, TI configures the integrated circuit and the packaging to these pulsed conditions as required by the standard; and this, for some products, prohibits CW operation. This is mainly due to thermal capabilities of the packaging. Thermal management (attachment of the package to the PCB) is a major concern for any high power amplifier. The end user is critical in providing appropriate thermal management. Please refer to our thermal management application note. It is possible to operate some of our amplifiers in CW mode under certain conditions.

QUESTION: Can I change the frequency on the amplifiers?
ANSWER: To maximize overall electrical performance our products are generally tuned to the transmit frequency band for a specific standard. However, some amplifiers can effectively operate over different standards that are relatively close in transmit frequency band. For example, the AMPS and GSM transmit bands are approximately 60 MHz apart. Some of our products cover both these bands. The device application note usually details this capability. Often, a change in the frequency band for an amplifier will require board layout and component value modifications.