

PRODUCT SUMMARY

# SKY77554-21 Tx Quad-Band / Rx Dual-Band BiFET iPAC™ FEM for GSM / GPRS (824-915 MHz and 1710-1910 MHz) w/ Dual WCDMA TRx Switch

## Applications

- Dual-band cellular handsets encompassing
  - Class 4 GSM850/900
  - DCS1800/PCS1900
  - Class 12 GPRS multi-slot operation

## Features

- High efficiency
  - 42% (GSM850)
  - 42% (GSM900)
  - 42% (DCS1800)
  - 41% (PCS1900)
- Low transmit supply current
  - 1.36 A (GSM850)
  - 1.36 A (GSM900)
  - 0.86 A (DCS1800/PCS1900)
- Internal ICC sense resistor for iPAC
- Closed loop iPAC
- 50 Ω matched Input/Output
- Tx-VCO-to-antenna and antenna-to-Rx-SAW filter RF interface
- RF switch affords high linearity, low insertion loss, and 0 V DC on Rx ports
- Small, low profile package
  - 6 mm x 6 mm x 0.9 mm
  - 28-pad configuration

## Description

SKY77554-21 is a transmit and receive Front-End Module (FEM) with Integrated Power Amplifier Control (iPAC™) for Dual-band cellular handsets comprising GSM850/900 and DCS1800/PCS1900 operation. Designed in a low profile, compact form factor, the SKY77554-21 offers a complete Transmit VCO-to-Antenna and Antenna-to-Receive SAW filter solution. The FEM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.

The module consists of a GSM850/900 PA block and a DCS1800/PCS1900 PA block, impedance-matching circuitry for 50 ohm input and output impedances, Tx harmonics filtering, high linearity / low insertion loss RF switch, and a Power Amplifier Control (PAC) block with internal current sense resistor. Two Heterojunction Bipolar Transistor (HBT) PA blocks, a BiFET PAC, and switch control circuit are fabricated onto a single Gallium Arsenide (GaAs) die. One PA block supports the GSM850/900 bands and the other PA block supports the DCS1800/PCS1900 bands. Both PA blocks share common power supply pads to distribute current. The output of each PA block and the outputs to the two receive pads are connected to the antenna pad through an RF switch. The GaAs die, Switch die and passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

Band selection and control of transmit and receive are performed using four external control pads. Refer to the block diagram in Figure 1 below. The band select pad, BS, selects GSM850, GSM900, DCS, and PCS modes of operation.

Transmit enable TxEN controls receive or transmit mode of the RF switch (Tx = logic 1) and sets the turn-on threshold for VRAMP (VRAMP threshold = V(TxEN) ÷ 7). Proper timing between transmit enable TxEN and Analog Power Control VRAMP allows for high isolation between the antenna and Tx-VCO while the VCO is being tuned prior to the transmit burst.

The SKY77554-21 is compatible with logic levels from 1.2 V to 2.9 V for BS, TxEN, MODE, and VSW\_EN pads.

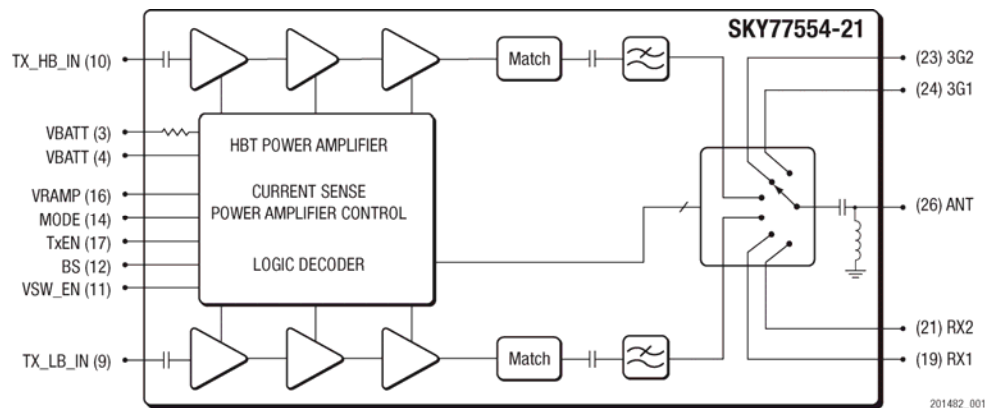


Figure 1. SKY77554-21 Functional Block Diagram

**NEW** Skyworks Green™ products are RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, are halogen free according to IEC-61249-2-21, and contain < 1,000 ppm antimony trioxide in polymeric materials.

## Ordering Information

Model Number	Manufacturing Part Number	Product Revision	Package	Operating Temperature
SKY77554	SKY77554-21	-21	MCM 6 mm x 6 mm x 0.9 mm	-20 °C to +85 °C

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