

**PRODUCT SUMMARY**

# SKY78187-11: SkyOne® LiTE Mid / High Band Front-End Module with 3G/4G Power Amplifiers for LTE Applications

## Applications

- Multi-band 2G / 3G / 4G Mobile Devices
- Handsets, Data Cards, M2M
- LTE Advanced Carrier Aggregation (CA)
- Supports 4 Downlink CA and 2 Uplink CA

## Features

- Optimized for Envelope Tracking
- Paired with SKY78184 or SKY78185 for a complete 2G / 3G / 4G solution
- Two separate MIPI® RFFE 2.0 control interfaces w/ 1.8 V nominal supply
- Two antenna support for Mid and High Band
- Multi-close antenna switches
- Integrated switched quadplexer filter for Bands 1/3 and 2/66
- Integrated duplexer filter for Band 7
- Integrated TDD band-pass filter for Band 41
- Four auxiliary Tx outputs for external filters
- Four auxiliary TRx ports to support additional bands
- Two auxiliary TDD Rx switch outputs
- Auxiliary Mid-Band antenna switch input for 2G Tx output from SKY78184/ SKY78185
- Integrated bi-directional RF couplers with cascade support
- All RF I/O ports matched to 50 ohm impedance
- 8 kV ESD compliant on both antenna ports
- Small, low profile package:
  - 8.6 mm x 6.5 mm x 0.75 mm
  - 62-pad Large Grid Array (LGA) configuration

## 3G features:

- WCDMA, HSPA+
- TD-SCDMA, TD-HSPA
- CDMA2000 1x RC1, RC3, EVDO (Rev A)

## 4G features:

- FDD/TDD LTE (includes Band 34)
- Uplink QPSK, 16QAM, and 64QAM

## 4G features

- Intra-band Uplink Carrier Aggregation
- 35 MHz (175RB) for Band 39
- 40 MHz (200RB) for Bands 1, 2, 3, 7, 38, 40, 41
- 60 MHz (300RB) for Bands 40, 41
  - Inter-band Downlink/Uplink CA support (MB-to-MB cases supported by SKY77782 PA module add-on)

## Description

The SKY78187-11 Multimode Multiband Tx-Rx Front-End Module (FEM) supports 2G / 3G / 4G mobile devices and operates efficiently in 3G / 4G modes. The FEM consists of separate 3G/4G PA blocks operating mid and high bands, a silicon controller containing the MIPI RFFE interface, RF band switches, MB and HB antenna switches, bi-directional couplers, and integrated filters for Bands 1, 3, 7, 2, 41 and 66. RF I/O ports are internally matched to 50 ohms to minimize the need for external components. Extremely low leakage current maximizes device standby time.

The IC die and passive components are mounted on a multi-layer laminate substrate. The assembly encapsulated in an 8.6 mm x 6.5 mm x 0.8 mm, 62-pad MCM, SMT plastic package allows a highly manufacturable, low cost solution.

The SKY78187-11 FEM is optimized for LTE Advanced, where Carrier Aggregation is utilized for higher data rates. The combined filtering, RF matching, and TRx switching internal to the FEM optimizes performance for popular Downlink (DL) CA band combinations, all in a compact and low cost solution. The FEM contains all necessary components between the antenna and RFIC transceiver and are optimized to provide superior Rx sensitivity and Tx efficiency.

Exceptional RF coexistence planning and system techniques are employed to minimize Rx de-sensitizing ("de-sense").

For the Uplink, the PA blocks support very wide bandwidth operation by intra-band CA up to 40 MHz (200RB) for Bands 1, 2, 3, 7, 38, 40 and 41, and up to 60 MHz (300RB) for Bands 40 and 41. The FEM also supports Downlink/Uplink CA.



Skyworks Green™ products are compliant with all applicable legislation and are halogen-free. For additional information, refer to Skyworks Definition of Green™, document number SQ04-0074.

## Ordering Information

Product Name	Order Number	Evaluation Board Part Number
SKY78187-11 SkyOne® LiTE Mid / High Band Front-End Module with 3G/4G Power Amplifiers for LTE Applications	SKY78187-11	SKY78187-11EK1

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