

PRODUCT SUMMARY

SKY77916-11 SkyLiTE™ Tx-Rx FEM for Quad-Band GSM / GPRS / EDGE w/ 14 Linear TRx Switch Ports, Dual-Band TD-SCDMA, and TDD LTE Band 39

Applications

- Cellular handsets encompassing Quad-Band GSM/EDGE, Dual-Band TD-SCDMA, and TDD LTE
 - Class 4 GSM850/900
 - Class 1 DCS1800/PCS1900
 - Class 12 GPRS multi-slot operation
 - Linear EDGE operation
 - TD-SCDMA Bands 34/39
 - TDD LTE Band 39

Features

- Small, low profile package
 - 5.5 mm x 5.3 mm x 0.8 mm Max
 - 38-pad configuration
- Fully programmable MIPI® RFFE control
- Fourteen low-insertion-loss TRx ports (five ultra-low loss) with enhanced linearity, for state-of-the-art 4G performance and GPS / WiFi compatibility
- Integrated noise suppression notch filter for WiFi coexistence
- Built-in IEC-compliant antenna ESD protection
- Integrated broadband directional coupler
- High Efficiency (inclusive of coupler)
 - 40% GSM850 36% DCS1800
 - 40% GSM900 36% PCS1900
- Wide GMSK input power range: -1 dBm to 6 dBm
- Tx-VCO-to-antenna and antenna-to-Rx-SAW filter RF interface
- Tx harmonics below -40 dBm
- Current limiting and over-voltage protection for ruggedness and extended battery life
- Input/Output ports internally matched to 50 Ω load
- High impedance control inputs: 20 μ A, maximum
- Power control circuitry built-in for improved TRP variation



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.

Description

SkyLiTE™ is Skyworks' newest family of LTE devices which consists of highly integrated modules incorporating the amplification, switching, WiFi filtering and coupler functions required to support all major FDD/TDD bands. With the addition of external duplexers, this product family provides OEMs with a scalable and reconfigurable front-end system suitable for markets worldwide.

SKY77916-11 SkyLiTE™ is a key building block for global or five-mode front-end implementation. As a Transmit / Receive Front-End Module (FEM), the SKY77916-11 SkyLiTE™ supports 3G / 4G handsets and operates efficiently in WCDMA, TD-SCDMA, and LTE modes. The module is fully programmable through a Mobile Industry Processor Interface (MIPI®).

By design, this Tx-Rx Front End Module offers a complete transmit VCO-to-Antenna and Antenna-to-receive SAW filter solution for advanced cellular handsets comprising quad-band GSM and linear 2.5G operation. Developed in a compact form factor, it features a very low profile of 0.8 mm (Max.). The SKY77916-11 supports Class 12 General Packet Radio Service (GPRS) and EDGE multi-slot operation, and TD-SCDMA and TDD LTE linear transmission. Fourteen transmit / receive (TRx) ports and an integrated directional coupler enables broadband 3G/4G RF switch-through.

The module consists of a CMOS Power Amplifier (PA) Controller, a low band (LB) PA block to support GSM850/900 bands and a high band (HB) PA block to support DCS1800/PCS1900, TD-SCDMA bands 34/39, and TDD LTE band 39. Also included are RF ports internally matched to 50 ohm impedance loads, Tx harmonic filtering, RF switching, and a directional coupler at the antenna output. The custom low-current PA controller includes the Mobile Industry Processor Interface (MIPI®) and decoder circuitry to control the RF switch.

All RF ports are internally matched to 50 ohm impedance to minimize external components on the phone board. The GaAs fabricated Heterojunction Bipolar Transistor (HBT) PA blocks share common power supply pads to distribute current. Extremely low leakage current of the SKY77916-11 maximizes handset standby time. Fourteen TRx pads and the PA outputs connect to the antenna through a high-linearity, low-loss switch. The TRx ports feature a 0 volts DC offset level that eliminates external blocking capacitors. An integrated directional coupler precludes any external coupler requirements.

The GaAs die and the switch die, the CMOS controller, and passive components are mounted on a multi-layer laminate substrate with the entire assembly encapsulated with plastic overmold.

MIPI® controls the RF signal flows including mode control and selection of LB or HB PA or TRx port.

For GMSK modes, the PA controller provides envelope amplitude control as a function of VRAMP and reduces sensitivity to the variations in input drive, temperature, power supply, and process. Skyworks' Finger-Based Integrated Power Amplifier Control (FB-iPAQ) minimizes

output power variation into mismatch. Proper timing of MIPI® commands and VRAMP input ensures high isolation between the antenna and Tx-VCO while the VCO is tuned prior to the transmit burst.

For EDGE and TD-SCDMA / TDD LTE linear modes, VRAMP voltage along with MIPI-based bias settings optimize the PA linearity and efficiency.

Ordering Information

Product Name	Order Number	Evaluation Board Part Number
SKY77916-11 Tx-Rx Front-End Module	SKY77916-11	TBD

© 2014, Skyworks Solutions, Inc. All Rights Reserved.

Information in this document is provided in connection with Skyworks Solutions, Inc. ("Skyworks") products or services. These materials, including the information contained herein, are provided by Skyworks as a service to its customers and may be used for informational purposes only by the customer. Skyworks assumes no responsibility for errors or omissions in these materials or the information contained herein. Skyworks may change its documentation, products, services, specifications or product descriptions at any time, without notice. Skyworks makes no commitment to update the materials or information and shall have no responsibility whatsoever for conflicts, incompatibilities, or other difficulties arising from any future changes.

No license, whether express, implied, by estoppel or otherwise, is granted to any intellectual property rights by this document. Skyworks assumes no liability for any materials, products or information provided hereunder, including the sale, distribution, reproduction or use of Skyworks products, information or materials, except as may be provided in Skyworks Terms and Conditions of Sale.

THE MATERIALS, PRODUCTS AND INFORMATION ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE, INCLUDING FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, PERFORMANCE, QUALITY OR NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT; ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED. SKYWORKS DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. SKYWORKS SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING BUT NOT LIMITED TO ANY SPECIAL, INDIRECT, INCIDENTAL, STATUTORY, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THE MATERIALS OR INFORMATION, WHETHER OR NOT THE RECIPIENT OF MATERIALS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Skyworks products are not intended for use in medical, lifesaving or life-sustaining applications, or other equipment in which the failure of the Skyworks products could lead to personal injury, death, physical or environmental damage. Skyworks customers using or selling Skyworks products for use in such applications do so at their own risk and agree to fully indemnify Skyworks for any damages resulting from such improper use or sale.

Customers are responsible for their products and applications using Skyworks products, which may deviate from published specifications as a result of design defects, errors, or operation of products outside of published parameters or design specifications. Customers should include design and operating safeguards to minimize these and other risks. Skyworks assumes no liability for applications assistance, customer product design, or damage to any equipment resulting from the use of Skyworks products outside of stated published specifications or parameters.

Skyworks, the Skyworks symbol, and SkyLiTE are trademarks or registered trademarks of Skyworks Solutions, Inc., in the United States and other countries. Third-party brands and names are for identification purposes only, and are the property of their respective owners. Additional information, including relevant terms and conditions, posted at www.skyworksinc.com, are incorporated by reference.