Benetel
We know wireless.

RF Module for QorIQ Qonverge

LTE-FDD/TDD and WCDMA (HSPA+) Capable RF Module

Designed for QorIQ Qonverge BSC913X SoC-based small cell platforms

Overview

The RF module for BSC913X-based development platforms, designed by Benetel, can enable all major frequency bands worldwide, including LTE-FDD/TDD and WCDMA (HSPA+) air interfaces. The module features 13 dBm output power at the antenna as well as a low-band Tx/Rx (700 to 1000 MHz) and a high-band Tx/Rx (1700 to 2700 MHz) in a 2x2 MIMO configuration. The design utilizes a 3G/4G transceiver chip and enhanced by our low-noise amplifiers and power amplifiers for maximum stability, accuracy and efficiency.

The RF module is designed for small cell applications with a JESD207 and a MaxPHY interface to the BSC913X SoC. As an integral part of our development platform, the module enables home eNodeB development by wireless infrastructure OEMs. The RF module is designed to support 2x2 MIMO operation in addition to dual frequency bands via software selection. These dual frequency bands are configured as high and low bands—the low ranging from 700 to 1000 MHz and the high from 1700 to 2700 MHz, enabling Benetel to supply a wide range of band combinations. The module includes two transmit outputs and two receiver inputs for each frequency band, allowing support for 2x2 LTE and 3GPP WCDMA (HSPA+) transmission and reception.

freescale

Freescale linear GaAs HBT power amplifiers and GaAs E-pHEMT low-noise amplifiers complete the Tx/Rx signal path. The MMZ09312B and MMZ25332B are two-stage high efficiency, class AB amplifiers suitable for all air interface standards. Excellent receiver sensitivity is provided by the MML09211H and MML20211H low-noise amplifiers. These power amplifiers and low-noise amplifiers provide frequency coverage over all UMTS frequency bands.

Features

- 2x2 MIMO on a single card
- Dual-band operation on a single card
- Flexible RF card architecture enables various band combinations
- Dual RF receivers for 2x2 LTE system
- Dual RF transmitters for 2x2 LTE system
- FDD and TDD versions
- Supports all LTE bands and bandwidths
- Supports all WCDMA (HSPA+) bands on a single antenna port
- Modulation schemes up to 64 QAM
- Supports bandwidth from 1.4 MHz to 20 MHz with maximum TX output power of +13 dBm

Interface

- JESD207 and MAxPHY to baseband
- Programmable through the SPI interface
- Dual RF output
- Three supply voltages: 1.8V CMOS, 3.3V, 5V PA

RF Module Block Diagram
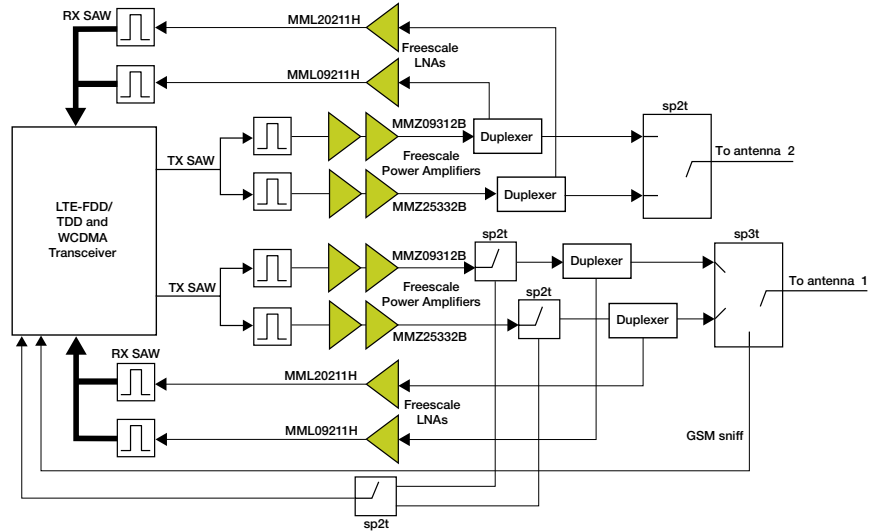
RF Module

Product Number	Supports Freescale Product	Function	Application	Band Support
PSC913XRFBD-0713	BSC9131RDB and BSC 9132QDS	4G/3G RF module	Small cell infrastructure	RF module for BSC913X boards for 4G/3G bands 7 and 13
PSC913XRFBD-0113	BSC9131RDB and BSC 9132QDS	4G/3G RF module	Small cell infrastructure	RF module for BSC913X boards for 4G/3G bands 1 and 13
PSC913XRFBD-0205	BSC9131RDB and BSC 9132QDS	4G/3G RF module	Small cell infrastructure	RF module for BSC913X boards for 4G/3G bands 2 and 5
PSC913XRFBD-0413	BSC9131RDB and BSC 9132QDS	4G/3G RF module	Small cell infrastructure	RF module for BSC913X boards for 4G/3G bands 4 and 13

Benetel RF Card Band Configurations*

FEM Version	Upper Band		Lower Band		Duplex
	UL [MHz]	DL [MHz]	UL [MHz]	DL [MHz]	
B1B13	BC1		BC13		FDD
	1920–1980	2110–2170	777–787	746–756	
B4B13	BC4		BC13		FDD
	1710–1755	2110–2155	777–787	746–756	
B7B13	BC7		BC13		FDD
	2500–2570	2620–2690	777–787	746–756	
B2B5	BC2		BC5		FDD
	1850–1910	1930–1990	824–849	869–894	

*Please contact Benetel for additional band combinationss for FDD and TDD

For more information on the RF module for QorIQ Qonverge, visit freescale.com/BSC913XRF

For more information on the QorIQ Qonverge platform, visit freescale.com/QorIQQonverge

For more information on our RF portfolio, visit freescale.com/RFMMIC