Miniature SDR Base Station Platform

The OCTBTS 3000 is a miniature, software defined base station platform that supports ready-to-deploy LTE and 2G/3G solutions, and is also an exceptional development platform for custom waveforms. The OCTBTS 3000 is a perfect fit for applications requiring the smallest possible size, very low power consumption, and exceptional frequency agility. OEMs can use the platform to implement complete systems including portable small cell base stations, network analyzers, and specialized embedded radio systems.

Key Features
- Miniature form factor
- Pre-packaged solutions for GSM, HSPA, CDMA2000 and LTE
- Up to 32 3G users
- Up to 30 / 15 Mbps LTE throughput
- Frequency agility from 400 MHz to 6 GHz available
- 2 X 2 MIMO radio
- 20 Km range for all cellular standards
- Embedded Wi-Fi Access Point

OCTBTS 3000 Applications
- Deployable wireless networks for Emergency, Public Safety, and Tactical use
- Man-portable, vehicle-mounted, and airborne base stations for tactical and search & rescue use
- Embedded communications systems on UAVs and remotely-controlled vehicles
- Custom waveforms and mesh networks
- Portable network analyzers and UE testers
- Outdoor small cell base stations with full mobility and extended range
- Self-contained Network-in-a-Box (NIB)

Multi-Mode, Frequency Agile Base Station

The OCTBTS 3000 platform incorporates Octasic's flexiPHY GSM, HSPA, CDMA2000, and LTE software, and is pre-integrated with a range of commercial Layer 2/3 stacks from leading vendors, saving months of development work. OEMs can leverage the complete solution to deliver high-performance base stations offering their own differentiating features, while reducing development time, cost, and risk. OEMs also have the option to integrate their own Layer 2/3 stack, or to implement fully custom waveforms using Octasic's Opus Studio development environment.
Full Featured Base Station Platform

Platform Description

The OCTBTS 3000 includes all network interface, packet processing, baseband processing, and low-power RF functions. The platform integrates the OCT2224W baseband SoC, a frequency agile 2 X 2 MIMO transceiver, and a Freescale i.MX6 ARM control/application processor. The OCT2224W runs Octasic’s flexiPHY modem software, while the ARM processor runs the Layer 2/3 software.

The OCTBTS 3000 also includes a Wi-Fi module to offer local Wi-Fi services in the vicinity of the base station.

Software Solution

Users of the OCTBTS 3000 have access to integrated hardware/software packages that dramatically reduce the time to bring a base station to market. Octasic has already integrated its flexiPHY modem software with Layer 2/3 software from leading vendors including Aricent and Radisys. Standard software solutions are available for GSM, HSPA, CDMA2000, and LTE.

From Platform to System

To produce a marketable system, OEMs select and license the appropriate flexiPHY software and the corresponding Layer 2/3 software stack for their application.

OEMs supply their own RF front ends (power amplifier, duplexer, and if necessary, low-noise amplifier), power supply, and packaging, as well as any necessary software applications.

Extended RF Performance

The standard OCTBTS 3000 configuration covers the frequency range from 400 MHz to 3 GHz. The OCTBTS 3000 is also available in an Extended Performance configuration (XPS option), which offers extended frequency agility covering the range from 400 MHz to 6 GHz.

In addition, all versions of the OCTBTS 3000 are available in FDD or TDD Duplexing configurations.
Built for Software and Hardware Expansion

High Performance SDR Platform

The OCTBTS 3000 is a fully-programmable SDR platform that offers a range of features to optimize the performance of base stations and radio systems, including:

- Hardware acceleration blocks (HAB) in the OCT2224W SoCs enable range in excess of 20 Km for all cellular standards, including WCDMA/HSPA, and other CDMA-based standards.
- Support for vehicular-speed mobility with macro base station style channel estimation and Doppler frequency shift correction.

Development Environment

Octasic provides a complete set of development tools for customers wishing to integrate their own Layer 2/3 software, or develop their own PHY layer and waveform code, including:

- Opus Studio integrated development environment
- OCTBTS Evaluation Kit (hardware and software)
- OCT2224W board support package (drivers)
- Source code licenses for flexiPHY

If you are interested in custom SDR development on the OCTBTS 3000 platform, please contact Octasic for further details.

Applications Support

To support customers’ unique application requirements, the OCTBTS 3000 includes a powerful ARM i.MX6 CPU applications processor, and also offers the option of a customer-supplied Interposer board.

For autonomous operation the OCTBTS 3000’s application processor can support a complete core network. Features of the i.MX6 facilitate customer-specific capabilities such as video processing, encryption, or other proprietary functions.

The interposer, which adds only 6.5 mm to the thickness of the platform, can provide access to all of the i.MX6 CPU interface ports, including video ports, and can also add complementary hardware to the base station to perform functions such as hardware-based encryption.
**OCTBTS 3000 Technical Description**

**Transceiver Specifications**
- MIMO Support ............................................. 2 x 2
- Duplexing .................................................. TDD and FDD options available
- Frequency of operation ................................ Standard: 400 MHz to 3 GHz
  XPS option: 400 MHz to 6 GHz
- Tuning time ............................................... 25 micro-seconds
- Channel sizes .............................................. 200 KHz to 20 MHz
- Airlink support .......................... GSM/EDGE, UMTS/HSPA, LTE, and CDMA standards, as well as custom waveforms
- RF Compliance ........................................ 36.104 (E-UTRA), 25.104 (UTRA)
- RF Output Power ......................................... 5 dBm
- Rx Noise Figure .......................................... 5.5 dB
- RF Connectors ........................................... 50 ohms, SMP, full detent, edge mount

**Digital Section Specifications**
- DSP .................................................. Octasic OCT2224W Baseband SoC
- CPU .................................................. Freescale i.MX6 quad core ARM A9
- CPU Operating System ................................ Linux version 3.0.35

**Interface ports**
- Network Interface .................................. Ethernet 10/100/1000 Base T, 802.1 VLAN support
- Management Ports .................................. 1 x USB; 1 x RS-232
- Synchronization sources ............................ GPS (on-board), NTP, SyncE, external reference (1 pps – 10 MHz)

**Mechanical, Power, Environmental**
- Size ............................................. 70 mm x 75 mm x 14 mm (2.76 x 2.95 x 0.56 inches)
- Weight ............................................. 100 grams (3.5 ounces)
- with heat spreader: 81 mm x 75 mm x 22 mm (3.19 x 2.95 x 0.86 inches)
- with heat spreader: 200 grams (7.1 ounces)
- Supply Voltage ........................................... 9 V – 14.4 V
- Power Consumption (typical) ..................... 12 W
- Operating Temperature .......................... 0°C – 75°C (equipped with heat spreader)
- -40°C – 75°C (using EMIC)

**Options**
- Wi-Fi Module (for local Wi-Fi coverage)
  - WLAN IEEE802.11 11a/11b/11g/11n
  - 2.4 GHz and 5 GHz