

WISYMAX-BSE

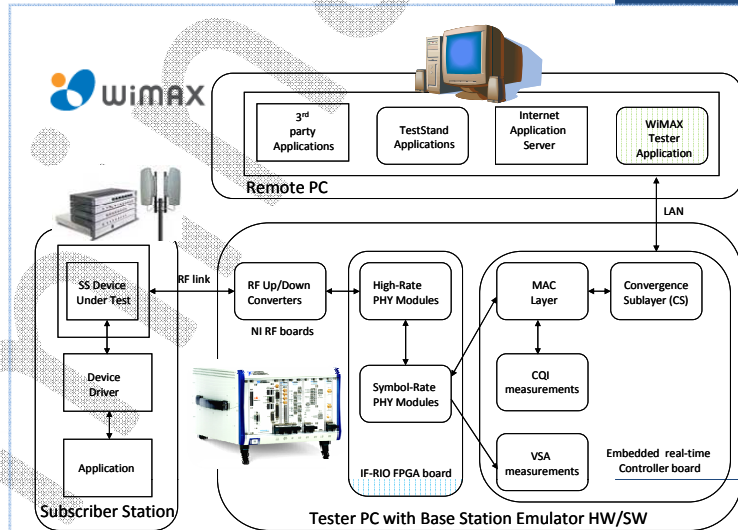
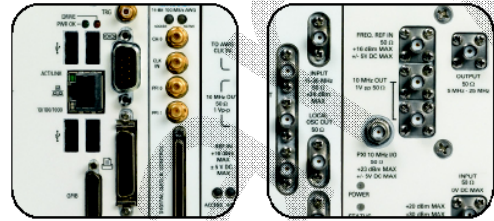
WisyMAX-BSE (WiMAX Base Station Emulator) is NI LabVIEW® based system for real-time test and validation of Mobile WiMAX IEEE802.16e Subscriber Stations (SS) PHY and MAC layers.

WisyMAX-BSE fully emulates a Mobile WiMAX Base Station by implementing both PHY and MAC layers of the Mobile WiMAX standard (according to the IEEE 802.16-2004 Cor2/D3 document) in order to test Wave1 and Wave2 (partially) CRSL 2.0 compliant Subscriber Stations.

WisyMAX-BSE is a flexible tool set based on proprietary IPs to be used as a RF signal generator/analyzer and as a protocol tester for Mobile WiMAX compliant product validation in R&D and manufacturing.

WisyMAX-BSE is a widely customizable system, based on the NI PXI RIO processing boards and Labview Realtime embedded controllers.

WisyMAX-BSE includes a complete set of NI LabVIEW® VIs and source code examples of common WiMAX testing application to easily create dedicated tests for custom WiMAX devices.



Features & Benefits

- ❑ Provides Mobile WiMAX PHY & MAC bi-directional links for multiple subscriber stations validation & testing.
- ❑ High-level stand-alone Tester application (for MS Windows PCs) for detailed analysis of MAC packets and RF measurements of Mobile WiMAX signals.
- ❑ Tester software can be easily adapted for custom WiMAX devices and systems.
- ❑ Proprietary MAC & PHY IPs are available for customized Mobile WiMAX applications.

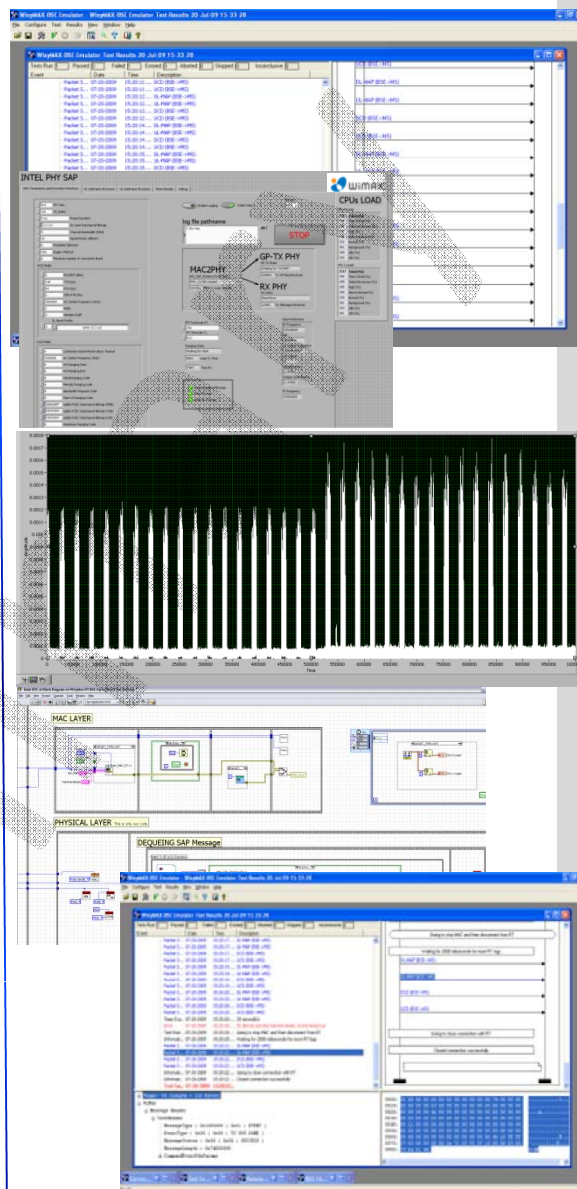
PHY/MAC WiMAX Tester functionalities.

WisyMAX-BSE provides the SS performance assessment and testing for both DownLink (DL) and UpLink (UL)

- DL/UL testing of Mobile WiMAX signals
- Calibrated UL/DL RF generation and analysis
- UL transmitter measurements (e.g., power, CFO, ScFO, I/Q offset, EVM, CCDF, modulation parameters, spectrum flatness)
- Control functions of session parameters (e.g., ID, DL-MAP, UL-MAP, DCD, UCD)
- BER/PER measurements
- MAC processing, packet analysis and logging
- IP Interface (IPv4 CS layer).

Wisymax-BSE supports the following PHY & MAC features:

- **Cyclic Prefix Size:** 1/4, 1/8, 1/16, 1/32
- **Frame Length:** 2 ms, 2.5 ms, 4 ms, 5 ms, 8 ms, 10 ms, 12.5 ms, 20 ms
- **FFT Size:** 128, 512, 1024, 2048
- **Nominal Bandwidth:** 5 MHz, 7 MHz, 8.75 MHz, 10 MHz
- **TTG and RTG guard time for TDD and H-FDD mode**
- **Up to 8 zones for DL Frame**
- **Up to 64 burst in a DL Frame**
- **Up to 16 concurrent bursts in a DL Frame**
- **Uplink Frame Decoding** for only one SS device. In the UL frame, only one data burst or only one ranging region is supposed to be present (sequential SS tests)
- **DL PUSC and DL FUSC Permutation**
- **UL PUSC Permutation**
- **Initial Ranging and Handover Ranging** in UL PUSC zone with 2 or 4 symbols
- **Periodic Ranging and Bandwidth Ranging** in UL PUSC zone with 1 or 3 symbols
- **Timing Offset, Power Offset and Carrier Frequency Offset (CFO)** estimation from the Ranging Zone
- **Convolutional Coding (CC)** with Tail Biting
- **Randomization and Interleaving**
- **QPSK, 16-QAM and 64-QAM Data Modulation**
- **Repetition Coding:** 2, 4 and 6 (also FCH repetition coding)
- **Subcarrier PRBS Randomization**
- **BPSK Pilot Modulation**
- **All Preamble Index Support**
- **IPv4 Convergence Sub-layer**
- **MAC PDU Formats**
- **MAC Feedback Mechanism**
- **Network Entry**
- **ARQ support**
- **QoS support**
- **Data Delivery Methods:** UGS, RTVR, NRTVR, ERTVR, BE
- **Request Grant Mechanism**
- **Normal MAP**
- **Closed Loop Power Control**
- **Reset command and Deregistration message**
- **Channel Measurements message/command support**
- **DL CINR report Base Station Support**
- **Contention Resolution.**



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