BreezeMAX 3000™ FDD

Product Release 5.0
Official Release Note

March 2008

General

This document details the main features, known limitations, version compatibility, bug fixing information and the documentation available for the BreezeMAX 3000 FDD product release 5.0. It corresponds to software versions 3.5.1.9. of the NPU (Network Processing Unit), 3.5.1.9 micro base station, 3.5.1.9 AU (access unit) and 3.5.1.11 SU (subscriber unit).

Introduction:

This release is based on SW version 3.0 of BreezeMAX 3000, and introduces new features in the product, mainly in the Base Station (both Modular and Micro). The new software version is named version 3.5, and is part of product release 5.0.

Main Content and Features:

- ARQ Improvement: Handshake protocol, which confirms the arrival of traffic over the air to its destination. If traffic has been lost (e.g. due to interference), data will be retransmitted. This mode of operation can be enabled or disabled by the operator, based on needs.
  It is important to note, that the acknowledgement of every packet transmitted over the air causes additional delays and thus some degradation in throughput. The throughput degradation may vary according to traffic pattern and level of retransmission required to ensure lower packet loss. It is related to BE and NRT services.

  It is not recommended to enable it when using voice calls or with short packets applications, in that case there is degradation of total sector throughput.

- Support for new channel spacing – 7MHz: The BreezeMAX FDD can support channels of 7MHz, doubling the maximum capacity per sector of the product as well as doubling the maximum pick rate per user. The support for 7MHz requires the following conditions:
  - Same AU-ODU
  - New AU-IDU 4 channel is required to support 7MHz
  - All CPEs in the sector must be dual mode, in order to activate the 7MHz channel
  - SW version 3.5 and up

  It is important to note that in order to downgrade the BreezeMAX network version from 3.5 to 3.0 or lower, all CPEs and Base Station sector should not be configured to work in 7MHz channels, otherwise, connection to these CPEs may be lost. Therefore, prior to downgrading to version 3.0 or lower, one must configure all BreezeMAX elements to work with 3.5MHz or 1.75MHz channels.

  It is also important to note that AU 4 channel card cannot accept a version lower than 3.5.

- Manual configuration of Base Station clock, to allow absolute time stamping of SNMP events, based on the local time of the device, without relying on the time stamping of the NMS (AlvariSTAR).
- New Power Interface Unit (PIU) is available enabling running the 4 channel AU card with High Power ODU, without the need of Power Feeder.

Known Problems & Limitations

Some problems and limitations will be addressed in future software versions.

Base Station

- AU ODU fails to initialize when IF cable is disconnected and connected again within 10 seconds.
- In 1.75MHz channel bandwidth, the distance between the BST and the CPE displayed on the monitor is not accurate
- When the bandwidth available at the Base Station backbone is less than the traffic at the wireless side, the prioritization of service types may not be maintained (it may happen that an RT service is not prioritized to a BE service)
- The maximum possible throughput for multicast connection forwarding rule is 2.5 Mbps for BreezeMAX PRO and PRO-S CPEs and 4.5 Mbps for BreezeMAX CPEs.
- The management port is for local management only. The management port may be used only when the network is different from the data port (i.e. another router interface). The restriction evolves from preventing the use of the same physical router MAC address for both data and management ports.
- Configuring an IP address 0.0.0.0 for either the data or management port is not allowed
- Setting factory defaults should be done from local RS-232, as management IP address is changed during the process.
- The bridge aging table in the NPU uses a fixed time definition for aging that is user configurable with default of 10 minutes.
- When testing Point-to-Point bi-directional UDP traffic, the ratio between downlink and uplink traffic may not be symmetric (downlink traffic will take higher bandwidth than uplink traffic).
- In cases where an AU channel was disabled and the AU was reset, first attempt to re-enable the channel will fail (although channel will report ("enabled")). However, second attempt to enable this channel will succeed.
- In some cases, in order to downgrade the Micro/Modular NPU version from 3.5 to 3.0 (or to a lower 3.5 version), one must go through downgrading the units version (in the shadow) to version 2.5 and only then go to version 3.0.
- If a channel is disabled and the AU is reset, after AU reboot, the first try to re-enable the channel will fail.

- In rare cases, when NPU Ethernet data port speed is configured to 1Gbps, the NPU may halt. It is recommended to use a configuration of 100Mbps in this case.
- If more than 200 SUs are associated to an AU, slow association of the SUs to the BS may be noticed in some situations.
- During normal operation, a slow response of the SNMP may be noticed due to timeout of SNMP requests from inactive SUs.
- In the process of upgrading an active 2 Ch AU with active services to 4 Ch AU, it is necessary to upgrade to version 3.5 the 2 Ch AU and save the configuration as it has version 3.5 on it. This configuration file can be later applied on the 4 channel AU and services will continue using the configuration file from the 2 Ch AU.
- **In the new 4 Ch AU only the first channel is supported in this software release.**

Subscriber units

- If ATPC is disabled, and TX power is set below 10 dB, the BreezeMAX PRO and PRO-S CPE units might transmit with an inaccuracy of up to 5 dB.
- The WEB monitor application does not ask for password after SU is reset while logged in.
- Alvarion's Voice Gateway will not work properly if Hybrid VLAN mode is enabled on one of the services passing through the VG. Requires working in transparent VLAN mode.
- Software download to a BreezeMAX CPEs may fail in case uplink traffic is higher than 2.5Mbps specifically per CPE.
- When downloading a previous saved configuration file to a CPE, the common name and location parameters are not updated.
- In BreezeMAX PRO CPE units, the following parameters are not present in the SU's monitor: Serial Number, RF Card HW Revision & Boot Version.
- In the Si CPE – in case external antenna is to be used, there is a need to configure the unit to work with it. The default configuration is internal antenna no 3.
- When downloading upgrade software to SUs under micro base-stations with a large number of SUs running in high load it is recommended to perform scheduled upgrade using AlvariSTAR with no more that 5 concurrent SUs.

Counters

- RbPMConnDLI counter is not working.
- IfOutDiscards and ifInDiscards counters present inaccurate information.

- Packet loss counting for service performance monitor (Tx Vs. Rx) has a minor inaccuracy due to the sampling time of transmitted vs. received counters.

  Over long periods (several minutes), the inaccuracy is negligible.

ARQ

- Limited to 3.5MHz and 1.75MHz channel BW
- Limited to 256 SUs
- Packets per second on UL limited to 4500 pps. 512Bytes average packet size is the point when throughout is not degraded.
- When SUs are out of link, capacity is reduced and therefore recovery is more exposed to loss due to traffic
- If service QOS profile changes priority queue, ARQ will be immediately effective, only next time connection will be established.
  - E.g. changing from NRT to RT, ARQ will continue to be applied until next time the link to the SU will be established
- Packet loss due to capacity problem cannot be recovered. Therefore, to avoid packet loss due to capacity, the system should not work in congestion. The packets discarded indication can indicate whether this is the situation.

7MHz Mode

- HW Limitation
  - Base Station must have 4 Channels AU card
  - In this release, only the first channel out of the 4 channels is active, also in 3.5MHz Channel BW mode
  - SU must be Dual mode CPE Pro or Dual mode CPE Pro-S or Dual mode SU Self Install.
- Limited to 256 SUs
- Only single channel out of the 4 channels is active
- By design – SU MIR is limited to 12 mbps
- SW (AU/SU) downgrade is blocked if 7MHz is configured

Notice Information

- If one ODU unit is already connected with traffic running through it, and the second ODU unit is connected, there is a small interference period of 350 milliseconds on the first ODU unit. Traffic may be interrupted and some CPEs may re-synch.
- When installing HP-ODU in existing or as replacement to ODU installations, it is necessary to check if the IF cable needs to be changed due to different power consumption. More information is detailed in the installation section of the BST manual.

- After installing unlimited BW license to the BST, the user must reset either the BST, AU or the SU in order to change the operating status and receive the unlimited BW.
- In the 3.5GHz, installations of AU-ODU-HP requires using also a power feeder to provide the power for these units.

Bugs Fixed

- In high load sectors serving more than 150 SUs, the modulation rate in downlink could drop to 1 in all SUs. This was caused due to processing efficiency when there was a simultaneous demand for service from a high number of SUs.
- In sectors where more than 250 SUs are served, SUs would sporadically disconnect for a very short period and reconnect back immediately, with no reason for errors on radio.
- Accuracy of packet counting was improved. View more changes on the manual where packet loss counters are mentioned.
- UL multicast polling window size was bigger than planned causing less efficiency on UL traffic.
- Efficiency in utilizing all UL BW was damaged if many SUs mad simultaneous bi-directional traffic
- ARQ packet loss indication counters were corrected.
- Starting with SW version 3.0 the PPPoE forwarding rule was changed from forward unknown to reject unknown
- After AU reset, the channels are not automatically enabled.
- Fixes regarding PPPoE service in relation with the forwarding rule and multicast connection.
- SU remaining in Grace Period after licensing was applied.

Compatibility

BreezeMAX software version is compatible according to the following tables:

Type of BST	BMAX 3300 CPE ver. 3.5	BMAX 3500 CPE ver. 3.5	BMAX 3600 CPE ver. 3.5
Modular	2.6 and 3.0	2.6 and 3.0	2.6 and 3.0
Micro	2.6 and 3.0	2.6 and 3.0	2.6 and 3.0

Type of CPE	BMAX 3300 BST ver. 3.5	BMAX 3500 BST ver. 3.5	BMAX 3600 BST ver. 3.5
CPE	2.5, 3.0	2.5, 3.0	-
PRO	-	2.5, 3.0	-
PRO-S	-	2.5 and 3.0	2.5 and 3.0
Si	-	3.0	-
PRO-S 802.16e ready	-	3.0	-
Si 802.16e ready	-	3.0	-

Documentation

- BreezeMAX™ FDD Modular Base Station - System Manual
- BreezeMAX™ FDD Micro Base Station - System Manual
- BreezeMAX™ CPEs (PRO and Si CPEs) - Product Manual
- Base Stations (Modular & Micro) Installation & Maintenance - User Manual
- PRO CPE_S_Installation & Maintenance Manual
- CPE-IDU-1D and CPE-ODU-PRO Quick Installation Guide
- Si CPE Quick Installation Guide
- BreezeMAX™ FDD - Troubleshooting Guide
- BreezeMAX™ FDD - Traps and Alarms
- BreezeMAX™ FDD - Firmware Upgrade Procedure
- BreezeMAX™ 3000 FDD - Release Note
- Using the Multi Channel Modem (MMC) Feature – Technical Note
- MIB Changes – Technical Note
- BreezeMAX™ Getting and Loading Feature Licenses
- AlvariSTAR™ Getting and Loading Feature Licenses