Evolium™ Multi-standard GSM/GPRS/EDGE/UMTS Base Stations

Flexibility that pays

ALCATEL

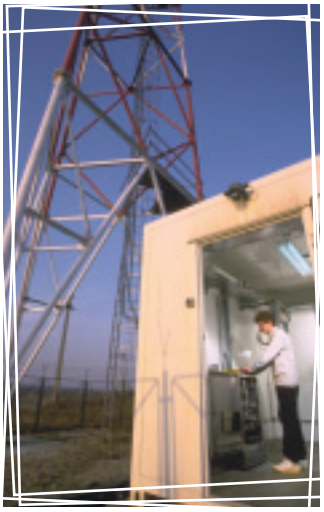
ARCHITECTS OF AN INTERNET WORLD


GSM
GPRS
EDGE
UMTS

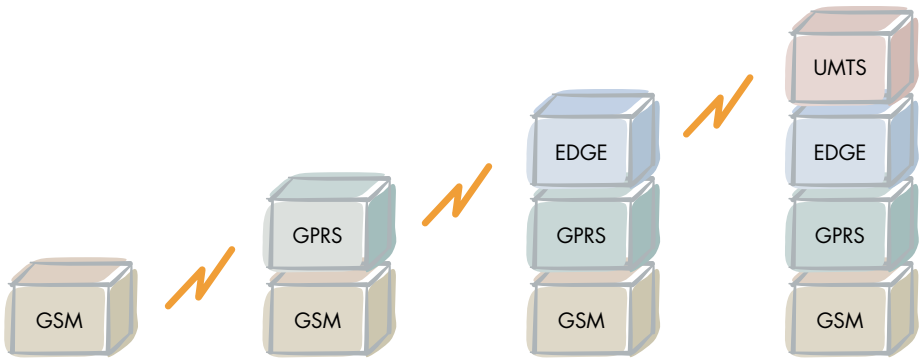
Optimal coverage - minimal investment

The Base Transceiver Station (BTS) or Node B base station is undoubtedly the most critical single element in a GSM or UMTS network. Right from service rollout, you need maximum coverage of target areas to offer high Quality of Service to your subscribers. The ongoing costs of operating, maintaining and upgrading hundreds or thousands of base stations affect operating budgets and profits significantly.
And time-to-market service launching delays can have a major impact on revenues and market share.

The quality and performances of Evolium™ base stations will help you reduce the global cost of site acquisition, equipment installation and maintenance while speeding up delivery of services that count on your bottom line.
Base station multi-standard capability is a vital issue for UMTS operators.
This essential feature protects their GSM investments during UMTS network deployment, reduces UMTS investments, optimizes hardware configurations and cuts network operation expenditures.



Evolium™ : Multi-standard since 1998



Evolium™ Multi-standard Base Stations: designed to meet all your needs

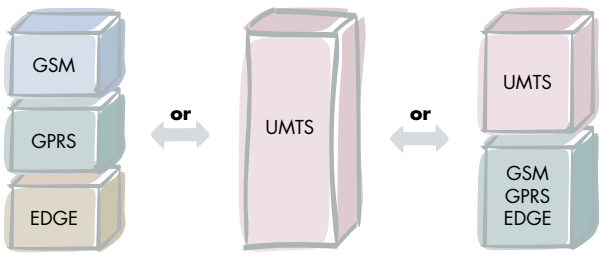
To fully satisfy your requirements for more flexible, multi-standard solution network design, Alcatel offers a new generation of leading-edge equipment, Evolium™ Multi-standard Base Stations (MBS). Evolium™ Multi-standard Base Stations are a set of basic modules that enable you to deploy GSM alone, UMTS alone, or GSM and UMTS networks together. And all this in the same cabinets.

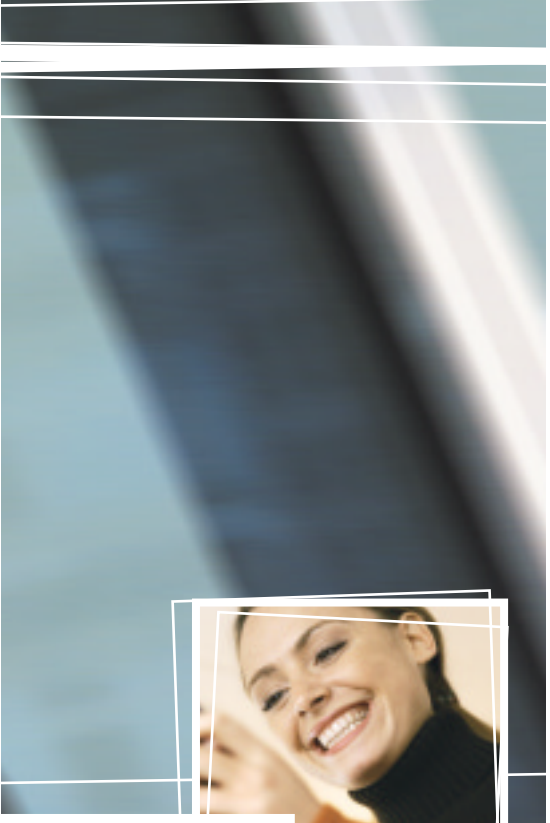
Evolium™ Multi-standard Base Stations for GSM and/or UMTS networks are designed to facilitate rapid, trouble-free network deployment and expansion. With Evolium™ Multi-standard Base Stations you'll reduce capital outlays and operating costs. What's more, you'll grow revenues and improve customer satisfaction through new and enhanced services, combining GPRS, EDGE and UMTS.

If you are a GSM operator migrating to UMTS, the Evolium™ Multi-standard Base Station solution protects your GSM investments by integrating your legacy GSM site equipment, evolutions and environment. So you slash costs while achieving a fast UMTS rollout.

And if you are an operator deploying UMTS from scratch, Evolium™ Multi-standard Base Stations allow you to add GSM at a later stage and optimize site configurations.

Backward and upward compatibity: the most flexible, cost-effective solution





GSM APPLICATIONS

> ***35W/45W output power for all frequency ranges as a standard feature.***
> ***Receiver sensitivity surpassing GSM standards (-111dBm).***
> ***60W high power transceiver for GSM 1800.***
> ***Range Extension Kit for enhanced coverage in rural areas for GSM 900.***
> ***Dynamic power control for discontinuous transmission and reception.***
> ***Synthesized Frequency Hopping as a standard feature.***
> ***Optimized A-bis interface with sub-multiplexing schemes to handle more stations or transceivers in multidrop configurations.***
> ***Selectable ciphering algorithms.***

UMTS APPLICATIONS

> ***20W output power for all frequency ranges as a standard feature.***
> ***35W high power transmitter to boost performance for high load conditions.***
> ***Receiver sensitivity surpassing 3GPP standards (up to -125dBm).***
> ***Optional use of TMA for enhanced coverage and capacity gain.***
> ***Closed loop and open loop power control.***
> ***RX and TX diversity (TX optional) to boost coverage.***
> ***4 way RX diversity (optional).***

>> Evolium™ Multi-standard Base Station advantages

Whether you are a GSM operator rolling out UMTS, or you are deploying UMTS initially, Evolium™ Multi-standard Base Stations offer you boosted radio performance, greater modularity, optimal compactness, higher availability, superior reliability, easier maintenance and more optimized features.

Boosted radio performance

The Evolium™ family of Multi-standard Base Stations offers unmatched, field-proven radio performance through a range of compact units engineered to meet your current and future requirements:

Greater modularity

Modular and scalable, Evolium™ Multi-standard Base Stations enable you to adapt the capacity of each cell to your precise traffic requirements. Excellent performance, very high extension capacity and easy reconfiguration mean you'll need fewer total units in a real multi-standard environment.

There are 4 basic modules offering a broad array of configurations for GSM or UMTS operators, and only 6 basic modules for multi-standard UMTS and GSM configurations.

Optimal compactness

Compact and power-efficient, Evolium™ Base Stations slash site acquisition and installation costs.

Both omnidirectional and sectored configurations are possible with up to 6 sectors, as the footprint is only 0.27m^2 for indoor cabinets. Additional transmission equipment, such as HDSL or microwave, can be integrated. You have a smart solution for MBS outdoor cabinets, and compact-size MBS indoor cabinets.

For your UMTS and multi-standard configurations, there are up to 24 cells per cabinet, 4 frequencies per PA and antenna module, and 43 liters per cell with 20W or 21 liters per cell with 10W. Up to 12 TRXs per cabinet are provided for GSM configurations.

Higher availability

Equipment and radio network availability is reinforced thanks to protection mechanisms.

Two software versions can be supported simultaneously, so new versions can be quickly downloaded without service interruption. Backup batteries are available to prevent equipment failure during normal power supply outage.

For GSM configurations, bridge over on the A-bis interface automatically directs traffic to the next station in a multidrop configuration in case of failure.

Superior reliability

Reliability is an essential cost-saving issue. Evolium™ Multi-standard Base Stations are designed to achieve optimal reliability.

Fault-tolerant units offer maximal MTBF times and automatic recovery features. And backup batteries provide instantaneous service continuity in case of power failure.

Easier maintenance

The entire family of indoor and outdoor Evolium™ Multi-standard Base Stations is built around a limited number of modules. So your maintenance specialists can get up to speed faster and there's no need to stock loads of spare parts. Smart facilities are built-in for easier maintenance.

Automatic test routines constantly monitor operations while remote analysis provide network supervisors with complete, up-to-date Node B radio configurations. Other easier maintenance-related features include antenna VSWR monitoring, front-only access, easy insertion of new modules, trouble-free fan exchange and upgrade from legacy GSM to Multi-standard (GSM + UMTS) in less than an hour.

GSM APPLICATIONS

> ***Multiple or single-antenna operation.***
> ***Dual-Rate, Enhanced Full-Rate and Adaptive Multi-Rate voice processing.***
> ***Ability to build a multiband site in one cabinet. This means you can run GSM 900/1800, dualband operations from a single, existing rack.***
> ***Supports multiband cell configurations.***
> ***Introduce GPRS with no hardware changes thanks to easy software download.***
> ***All TRXs are GSM/GPRS/EDGE compatible; functionality can be activated by simple SW download.***

More advanced features

Thanks to their modular design, all Evolium™ Multi-standard Base Stations are ready to deliver more advanced features to your network.
Hardware components are hot insertion Plug and Play, and reduced noise emission lets you install even in environmentally sensitive areas.

UMTS AND UMTS/GSM APPLICATIONS

> ***Built-in redundancy for all traffic-handling modules.***
> ***Ability to build a Multi-standard Node B in one cabinet. This means you can run GSM and UMTS networks from a single, existing rack.***
> ***The low power consumption of all Evolium™ Multi-standard Base Stations significantly cuts your UTRAN operating costs (less than 700W with 3 sectors, without TXdiv).***

>> A unique set of solutions

The Evolium™ family of Base Stations is designed to offer a variety of configurations that meet all your operational and field constraints. Whether you want low or high capacity, you'll find the right size to operate indoors or outdoors. Just select the optimal measurements from the wide range of configuration options.

Indoor cabinets

Evolium™ Multi-standard Base Station indoor units comprise "Small" cabinets for space-critical installations or small base stations and "Medium"cabinets for concentrated power in a space-saving unit. So you can satisfy growing traffic demand in a variety of indoor settings, from bustling downtown office plazas to indoor malls and shopping centers.

"Small" indoor cabinet: Performance in a nutshell

About the size of a dishwasher, the "Small" indoor cabinet fits into sites too small for rival products. 130 cm high, it accomodates 3 subracks, with a footprint of 0.27 m^2. It is available in AC and DC versions. Backup batteries are available for short power supply outages.

"Small" indoor cabinet

GSM APPLICATIONS

> ***6 TRXs in omnidirectional configuration.***
> ***3x2 TRXs in sectored configuration.***

"Medium" indoor cabinet: A space saving powerhouse

The "Medium" indoor cabinet is the most compact and powerful multi-standard solution on the market. 194 cm high, it accomodates 5 subracks, with a footprint of 0.27 m^2. It is available in AC and DC versions. Backup batteries are available for short and long power supply outages.

Fully-equipped, the "Medium" indoor cabinet has all the capacity you need to support high volumes in dense GSM and UMTS network traffic areas. And it can be installed indoors in non-telecom environments.

"Medium" indoor cabinet

GSM APPLICATIONS

> ***Up to 12 TRXs in omnidirectional configuration.***
> ***Up to 3x4 or 2x6 TRXs in sectored configuration.***

UMTS AND UMTS/GSM APPLICATIONS

> ***Available for Multi-standard solutions (GSM and UMTS in one cabinet).***
> ***Up to 6 GSM TRXs in omnidirectional or 3x2 GSM TRXs in sectored configuration together with 3x4 carriers UTRA-FDD (20W per sector).***
> ***Up to 4 GSM TRXs omnidirectional or 3x1 GSM TRXs in sectored configuration together with 3x2 carriers UTRA-FDD (40W per sector).***
> ***For UMTS only, 6x4 carriers with up to 40W per sector.***

UMTS APPLICATIONS

> ***Can be used for GSM or UMTS applications.***
> ***For UMTS, 6 sectors with 4 carriers per sector (6x4) at 20W per sector.***
> ***In versions not requiring GSM/UMTS Multi-standard configurations, the small cabinet is ideal for coverage of high-traffic UMTS cells.***
> ***Can be installed in non-telecom indoor environments.***

Outdoor cabinets

Outdoor versions are designed to withstand even the most severe climates. To expand capacity, just add a cabinet. Weather and vandal-proof, the reduced size fits into a variety of outdoor settings easily. This lightweight cabinet requires no special lifting equipment, so installation is quick and easy. Front access and cabling make the unit easy to maintain. If desired, optical line terminals, microwave transmission equipment, LMDS or HDSL hardware can also be housed in the cabinet, and there is space built in for an optional backup battery.

"Small" outdoor cabinet

Equipped with a built-in heat exchanger and closed air circulation, the "Small" outdoor cabinet operates smoothly even in the most extreme climatic conditions.

Mounted on a steel and concrete base, the light construction and left side cable entry (top or bottom) enable to install the Base Station virtually anywhere.

"Small" outdoor cabinet

GSM APPLICATIONS

> ***A single outdoor cabinet can house up to 8 TRXs in omnidirectional configuration or up to 3x2 TRXs in sectored configuration.***

UMTS APPLICATIONS

> ***A single outdoor cabinet can house up to 3x4 UMTS carriers in sectored configuration (20W per sector).***

"Medium" outdoor cabinet

Simple, easy-to-install extension lets you turn the "Small" outdoor cabinet into the "Medium" right on the site.

"Medium" outdoor cabinet

GSM APPLICATIONS

> ***Capacity boosted up to 12 TRXs in omnidirectional or sectored configuration.***

UMTS AND GSM/UMTS APPLICATIONS

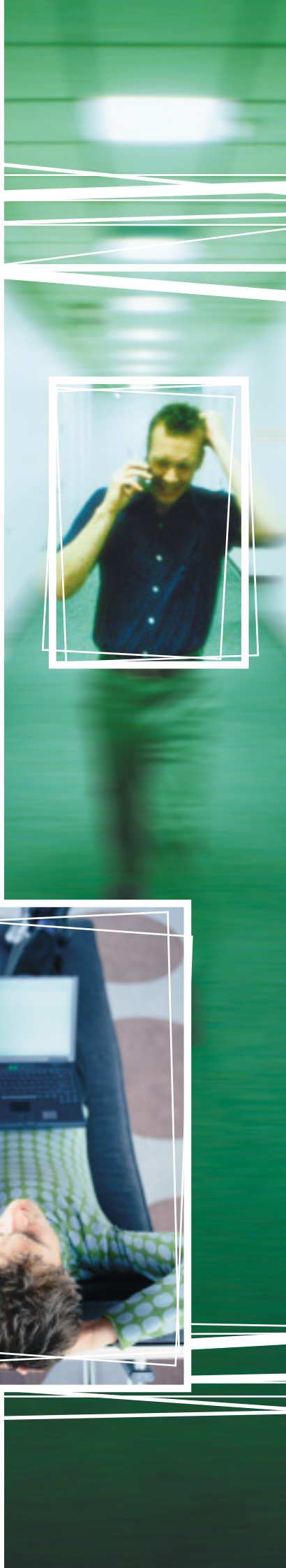
> ***Capacity boosted to multi-standard capability with GSM and UMTS in one cabinet (e.g., a one-rack GSM cabinet with 6 TRXs omnidirectional or 3x2 TRXs sectored configuration can be extended to a 2-rack Multi-standard configuration).***

> ***In addition to the GSM configuration, 3x4 UMTS carriers can be installed in the extension rack.***

>> Future-proof

Evolium™ Multi-standard Base Stations are ready to meet your GSM, UMTS and multi-standard needs, and are fully compliant with 3GPP specifications. Alcatel is constantly improving performances, enhancing existing features and adding new ones. The new modular design ensures compatibility with future RF enhancement features.

Future-proofing is built into the entire Evolium™ Multi-standard Base Station family.



>> Evolium™ Multi-standard Base Stations (Alcatel 9100 MBS)

GSM applications

	INDOOR CABINETS		OUTDOOUR CABINETS	
	SMALL/MBI3	MEDIUM/MBI5	SMALL/MB01	MEDIUM/MB02
Specifications	GSM 850/900/1800/1900	GSM 850/900/1800/1900	GSM 850/900/1800/1900	GSM 850/900/1800/1900
Max. number of TRX	8	12	8	12
Max. number of sectors	3	6	3	6
Sensitivity (acc.GSM11.21)	-111dBm	-111dBm	-111dBm	-111dBm
TX output power	46.53 dBm+/- 0.5 dB (45W, GSM 850/900/1900) 45.44 dBm+/- 0.5 dB (35W, GSM 1800) 47.78 dBm+/- 0.5 dB (60W, GSM 1800)	46.53 dBm+/- 0.5 dB (45W, GSM 850/900/1900) 45.44 dBm+/- 0.5 dB (35W, GSM 1800) 47.78 dBm+/- 0.5 dB (60W, GSM 1800)	46.53 dBm+/- 0.5 dB (45W, GSM 850/900/1900) 45.44 dBm+/- 0.5 dB (35W, GSM 1800) 47.78 dBm+/- 0.5 dB (60W, GSM 1800)	46.53 dBm+/- 0.5 dB (45W, GSM 850/900/1900) 45.44 dBm+/- 0.5 dB (35W, GSM 1800) 47.78 dBm+/- 0.5 dB (60W, GSM 1800)
Power supply	40...72 V DC, 187...264 V AC	40...72 V DC, 187...264 V AC	187...264 V AC 47...63Hz	187...264 V AC 47...63Hz
Temperature range (normal operation)	-5°C to +45°C	-5°C to +45°C	-45°C to +55°C	-45°C to +55°C
Max. power consumption	1450/1360/1850W (8 TRX)	1880/1750/2560W (12 TRX)	2250/2150/2650W (8 TRX)	3160/3030/3960W (12 TRX)
Cabinet size (HxWxD)	130 x 60 x 45 cm	194 x 60 x 45 cm	150 x 80 x 70 cm	150 x 140 x 70 cm
Cabinet weight (fully equipped)	160 kg	270 kg	395 kg (1)	565 kg (1)

(1)= with battery

UMTS and GSM/UMTS applications

	INDOOR CABINETS		OUTDOOUR CABINETS	
	SMALL/MBI3	MEDIUM/MBI5	SMALL/MB01	MEDIUM/MB02
Specifications	UMTS	GSM and UMTS	UMTS	GSM and UMTS
Max. number of PAs for UMTS and TRX for GSM	6	3 x UMTS + 6 x GSM or 12 x UMTS only	3	6 x UMTS + 6 x GSM or 6 x UMTS only
Max. number of sectors	6	3 x UMTS + 3 x GSM or 6 x UMTS only	3	3 x UMTS + 3 x GSM or 6 x UMTS only
Sensitivity	-125dBm	-125dBm	-125dBm	-125dBm
TX output power (at antenna connector)	43dBm (20W, UMTS) 45.44 dBm (35W, UMTS)	43dBm (20W, UMTS) 46.53 dBm (45W, GSM 850/900/1900) 45.44dBm (35W, GSM 1800) 47.78dBm (60W, GSM 1800)	43dBm (20W, UMTS) 45.44 dBm (35W, UMTS)	43dBm (20W, UMTS) 46.53 dBm (45W, GSM 850/900/1900) 45.44dBm (35W, GSM 1800) 47.78dBm (60W, GSM 1800)
Power supply	40...72 V DC, 187...264 V AC	40...72 V DC, 187...264 V AC	187...264 V AC 47...63Hz	187...264 V AC 47...63Hz
Temperature range	-5°C to +45°C	-5°C to +45°C	-45°C to +55°C	-45°C to +55°C
Max. power consumption	1800/2050W (6 PAs/4 PAs)	2500W (3 PAs + 6 TRX)	1650/2150W (3 PAs/3 PAs)	3950W (6 PAs + 6 TRX)
Cabinet size (HxWxD)	130 x 60 x 45 cm	194 x 60 x 45 cm	149 x 90 x 74 cm	149 x 152 x 74 cm
Cabinet weight (fully equipped)	150 kg	270 kg	255 kg	520 kg

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