Nokia Flexi Multiradio 10 Base Station
Benchmark in flexibility to make mobile broadband more profitable for operators

The Nokia Networks Global Mobile traffic forecast, predicts mobile data traffic will grow 1,000 fold by 2015, fuelled by video streaming and HD applications. Operators must increase capacity and coverage to satisfy this demand and do it quickly and cost-effectively to maintain profitability. GSM bands are opening up for HSPA and LTE, bringing more complex network configurations. Facing fierce competition, operators promise mobile coverage “anytime anywhere” without sacrificing quality or capacity.

Field proven Nokia Flexi Multiradio 10 Base Station helps meet these aims at the lowest cost per megabyte for LTE and HSPA. Offering more flexibility, higher efficiency, lower costs and a superior customer experience, this award-winning LTE-Advanced capable base station has achieved a world record data speed of 4 Gbps.

The Nokia Flexi Multiradio 10 Base Station is the world’s smallest high-capacity, software-defined, multi-technology base station and can be used both indoors and outdoors without a bulky cabinet and cooling.
**World’s only outdoor 3 RAT sharing system module**

The high capacity, compact 25 liter, IP65-certified, Flexi Multiradio 10 System Module caters for growing mobile broadband traffic. The same hardware supports GSM/ EDGE, WCDMA/HSPA+ and LTE (TD/FDD)/LTE-Advanced and offers capacity sharing across radio technologies through unique system module sharing software. It also offers flexible capacity through the plug-in capacity extension sub-modules. This enables operators to grow capacity flexibly and cost-effectively and therefore meeting rising demand without needing more footprint. Additionally the flexibility means, the Flexi Multiradio 10 Base Station expansion slots can also be complemented with Liquid Applications (Radio Applications Cloud Server - RACS).

Field proven highest capacity in loaded LTE live network with cutting-edge performance and flexible hardware maximizes flexibility and return on investment.

**Highest level radio integration for lowest cost per megabyte**

The Flexi RFM 3-pipe 240 W is a 3-sector RF industry unit providing 240 W per sector (maximum 80 W per antenna connector) when one RF module per sector is used. The module is suitable for indoor and outdoor use, for standard and distributed antenna deployments and for ground, tower or mast-top installation to build either three-sector or six-sector sites.

With small size and high output the Flexi RRH 2-pipe 120 W enables radio technologies to run concurrently on one radio head enabling deployment of HSPA+ and LTE on GSM frequency bands while still maintaining GSM services. Furthermore, the lightweight RRH can be mounted on existing masts, avoiding costly new support structures.

The Flexi RRH 4-pipe 120 W is a 4-pipe outdoor unit for the efficient rollout of advanced antenna schemes. For enhanced data rates at the cell edge, this 4x30 W radio head supports high-performance LTE networks by using advanced antenna schemes with four transmission and reception paths, enabling 4-Way Receiver Diversity (4WRD) and 4x2 MIMO or 4x4 MIMO in addition to the conventional two paths.

Flexi RFM 6-pipe 360 W is a 6-pipe, three sector site solution housed in a single, compact, 25 kg outdoor unit which enables the most compact, three-sector 2x2 MIMO configuration (360 W output power and a zero footprint) with just one module. It also supports a compact solution for 4x4 MIMO with just two modules.

Flexi Radio Antenna System (RAS) combines an ultra wideband antenna and multiple Remote Radio Heads (RRH) in a single enclosure, providing a higher level of space saving to the operator, reducing feeder losses and simplifying installation & maintenance. World’s first Multi-Band Multi-technology Active Antenna supporting higher order MIMO (4TX) in each band.

Flexi RRH 2-pipe 450 MHz 80 Wenables 450 MHz spectrum usage for LTE while ensuring superior user experience and affordable wide LTE coverage for areas such as IoT, M2M and Healthy Public Safety services. Up to 90% less LTE basestation sites are needed in comparison to LTE 1800 MHz band. Hence affordable indoor and rural coverage and IoT readiness with global roaming for dispersed population, which is not possible with CDMA 450 MHz.

In addition, the lean Flexi Multiradio 10 Base Station reduces maintenance costs by eliminating multiple complex products and cabinets. Flexi Book Mount scheme allows compact arrangement of multiple RRHs, improving operator OPEX by significantly reducing site space in multi-band and multi-sector deployments. Modular capacity steps and flexible resource allocation are inherent Multicontroller RNC capabilities, helping to meet the challenges created by data-hungry subscribers. Multicontroller RNC can be evolved with software upgrades to meet future requirements, thus safeguarding investments.

**Powered by phenomenal software**

Unique unit level system module sharing software enables to share the capacity across radio technologies. Liquid Radio Software Suites are the most effective ways to monetize mobile broadband. They enable operators to optimize Flexi Multiradio 10 Base Station radio equipment, increase performance, improve spectrum efficiency and balance the load in all network layers. With re-farming, the rollout of mobile broadband services is easier, more cost-efficient and helps increase revenue.

Nokia intelligent SON (iSON) supports GSM, WCDMA, LTE, as well as boosting operational efficiency and giving faster rollouts. The Flexi Multiradio 10 Base Station is managed from a single point by the multi-technology, multi-vendor NetAct OSS platform.

**An eye on the future**

The Flexi Multiradio 10 Base Station delivers top mobile broadband performance at lower cost. Industry leading BTS platform capacity enables a future proof investment. Operators can protect investments by expanding existing Flexi Base Stations with new Flexi Multiradio 10 Base Station units. Our IP65-compliant Flexi Multiradio 10 System Module is LTE-Advanced ready, so today's WCDMA and LTE networks can match 3GPP evolution with a simple software upgrade. Built-in high-speed Ethernet interfaces support 3GPP-compliant Network Domain Security with an integrated wire-speed IPSec engine. Backhaul traffic separation and prioritization is operator-configurable on the Ethernet and IP layers. Ethernet-based chaining and QoS-aware switching is supported across all available interfaces. The Flexi Multiradio 10 Base Station’s synchronization options - Timing over Packet (IEEE1588-2008), Synchronous Ethernet, GPS, 2 MHz, and 2 Mbit/s – effectively fulfill today’s and future requirements.

**Leaner and greener**

Flexi Multiradio 10 Base Station uses around 1 kW* to serve all current 3GPP technologies simultaneously. Efficient hardware and energy efficiency software gives a 30% reduction in power consumption, slashing base station operating costs. Its outdoor capability, small size and modularity also minimize site investments and the carbon footprint from logistics, transport and construction.

**Customized services, more value**

Tailored services, an exhaustive resource bank and efficient processes all help operators perform better. Nokia Networks uses its experience in deploying multi-vendor environments, greenfield and modernization projects to improve the experiences of operators and their subscribers.
About Nokia

Nokia invests in technologies important in a world where billions of devices are connected. We are focused on three businesses: network infrastructure software, hardware and services, which we offer through Nokia Networks; location intelligence, which we provide through HERE; and advanced technology development and licensing, which we pursue through Nokia Technologies. Each of these businesses is a leader in its respective field.

Nokia Networks is the world’s specialist in mobile broadband. From the first ever call on GSM, to the first call on LTE, we operate at the forefront of each generation of mobile technology. Our global experts invent the new capabilities our customers need in their networks. We provide the world’s most efficient mobile networks, the intelligence to maximize the value of those networks, and the services to make it all work seamlessly. www.networks.nokia.com

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