

SkyAbis™ GSM

Efficient Backhaul for GSM



Benefits

- No geographical boundaries
- Cost effective
- Scalable to many remote sites
- Fully transparent
- Space segment reduction using silence removal and Bandwidth on Demand
- Central management and control



SOLUTIONS

SkyAbis for GSM

Widespread popular demand for GSM is increasingly motivating mobile operators to extend wireless services to small, isolated and remote communities. Many of those areas are simply beyond the reach of terrestrial infrastructure, so GSM via satellite is an obvious solution. However, operators are concerned about the economic viability of satellite connections. The SkyAbis™ satellite solution drastically reduces operational costs incurred by operators by up to 80%, making GSM over satellite a profitable and efficient solution.

SkyAbis

Gilat, the world leader in rural communications with two decades of experience in data and telephony, has created SkyAbis for cellular backhaul over satellite. SkyAbis enables GSM operators to quickly and seamlessly expand their wireless services to remote areas, and minimize operational costs associated with leasing satellite bandwidth.

Meeting the high quality standards of mobile operators, SkyAbis is an easy to install, flexible solution with central control and real-time management. Extending services to accommodate higher traffic loads or cover more geographical area can be done quickly and economically with SkyAbis since additional sites require minimal additional infrastructure.

Abis Over Satellites

SkyAbis transparently connects multiple Base Transceiver Stations (BTS) to a Base Station Controller (BSC) via satellite without changing the interface at either end. SkyAbis analyzes the payload inside the E1 timeslots and removes timeslots with “idle” or “silence” codes. It then converts the original BTS to BSC traffic to IP packets. By only transmitting information-carrying bits, SkyAbis drastically reduces bandwidth needs. At the BSC, SkyAbis converts the packets back to Abis interface with timeslots that carry voice and data information together with code for “idle” and “silence” in the E1.

Bandwidth on Demand

As opposed to traditional solutions such as SCPC, which occupy permanent bandwidth regardless of actual traffic, SkyAbis uses Bandwidth on Demand (BoD) to dynamically allocate bandwidth. The result is significant space segment savings. The bandwidth controller, located at the SkyEdge™ Hub, continuously monitors traffic generated by each BTS, allocating bandwidth from a common pool to each VSAT according to real-time demand.

Using BoD presents a major advantage over traditional technology, which uses a predefined “busy hour” to determine permanent bandwidth required to ensure satisfactory service. BoD results in up to 80% savings in space segment usage.

SkyAbis Architecture

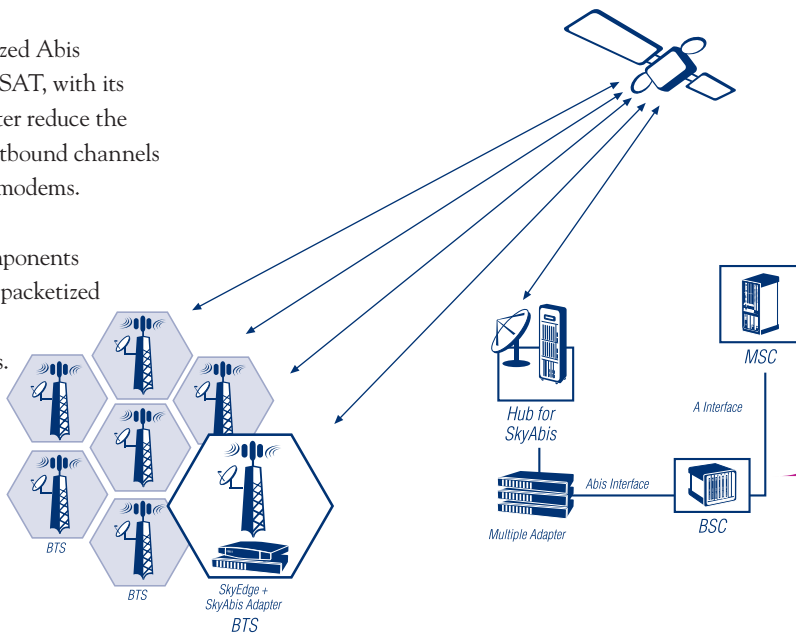
Gilat's SkyAbis solution includes:

- SkyAbis adapter at each site for each E1 line with Abis interface.
- SkyEdge IP VSAT with SkyAbis solution software at each BTS site.
- Central Redundant SkyEdge Basic Hub facility.
- Network Management System for the SkyAbis Solution.

Gilat's SkyAbis adapter connects to the BTS via the E1 interface, enabling full Abis support. The SkyAbis adapter connects to the SkyEdge IP VSAT via a LAN interface.

The VSAT transmits and receives the packetized Abis information over the satellite channel. The VSAT, with its sophisticated software, and the SkyAbis adapter reduce the throughput required over the inbound and outbound channels by up to 80% compared to traditional SCPC modems.

The SkyEdge Hub is comprised of several components operating in concert and communicating the packetized Abis information from the BSC side to the multiple VSATs and the connected BTS units.



As SkyAbis is completely transparent to the GSM network, users can enjoy all GSM applications such as voice calls, data and SMS.

Outstanding Savings

The table below illustrates the savings for a sample network with 30 BTS sites of different cell sizes. The operating expenditure for space segment has been significantly reduced, making rural GSM profitable and allowing mobile operators to reduce the risk associated with extending services to rural areas. Yearly leasing prices of a (36 MHz) transponder range from \$1.2M to \$2M. Using a 30 BTS network as an example, each with 9 TRXs (table, line 5), results in savings ranging from \$1.5M to \$2.4M for the 44 MHz.

Cell Size (TRX)	Cell Size (Calls in Busy Hours)	Modem Bandwidth (Mhz)	SkyAbis Bandwidth (MHz)	SkyAbis Savings (Mhz)	SkyAbis Savings (%)
3	24	21	6	15	70%
4	32	28	7	21	75%
5	40	35	7	28	80%
6	48	42	11	31	74%
9	72	63	19	44	70%
12	96	84	28	56	67%

It is easy to see that operating expenditures are drastically reduced, making rural GSM profitable and allowing mobile operators to reduce the risk associated with extending services to rural areas.

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