RADIO INNOVATION
SWEDEN AB
Concepts for Technoeconomic Excellence

RI's Rule # 2: Vertical Gain and Lobe
The Robin Hood Principle

R RULE 002

A standard antenna on a 50-meter mast radiates its signal mostly very close to the site, as below:

Distance from site	Standard antenna 16/12.5 dBi	RI antenna 28.6 dBi	Ideal Robin Hood 39.6 dBi
0 m – 2 000 m	**60%**	**9%**	1%
2 000 m – 5 000 m	10%	35%	6%
5 000 m – 20 000 m	**4%**	**32%**	90%
20 000 m – sky up to +90°	26%	24%	3%
Total, from −90° up to +90°	100%	100%	100%

A standard antenna distributes more than 1000 times too much signal to 5% of customers nearby, and too little signal to 95% of customers in the fringe area. Also, the signal up in the sky is normally wasted. This results in a range of around 5 km per site for GSM-960, for indoor voice coverage.

An ideal Robin Hood or RI antenna takes the too strong signal from the near zone and focuses it vertically to the customers out up to 25 km from a site, covering an area **25 times** larger. Additional actions are taken to improve the RI antenna signal for customers in the fringe area.