Yagi or not Yagi - that is the question

I had a call from a customer the other day saying a competitor's cellular Yagi antenna was no good, even though they claim it is very high gain. As Siretta offer a number of good quality Yagi antennas, I thought this would be a sales opportunity. I asked few more questions only to find out he had installed his antenna facing the building. I explained Yagi antennas are good… but not that good and he should really install his antenna in as clear a line of sight to the base station as possible to get a good result. A couple of days later he called back thanking me. It seems I can spot a good sales opportunity but not the sales.

Anyhow, the question of whether to use a Yagi or an omnidirectional antenna is a valid one.

In many situations where signal strength is weak (long range - cellular or short range – ISM) many users assume that using a high gain Yagi (directional) antenna will solve their problem.

However, there are a few points to take into consideration:

- Yagi antennas - by definition - are tuned to a very narrow receiving angle, meaning that if not correctly positioned they will not perform well, whatever the gain.
- RF signals will only go in a straight line if there is nothing blocking them. Therefore, if there are high buildings around, signals will bounce, providing multipath signal. A Yagi antenna with its narrow receiving angle will not necessarily receive these signals.
- In many cellular (2G, 3G, 4G) applications users automatically assume that the nearest base station will provide the strongest signal. This is not necessarily the case and users should try pointing their antenna to other available base stations and test.

On the other hand, omnidirectional antennas have lower gain as they cover a greater area, but they might be what is needed if you can't avoid obstacles in your application.

So, what is the best antenna to use? The answer is I don't know, and the users will not know either unless they try different types of antennas. This may be more time consuming and costly to start with but will save time and money in the long run. The best practice is to place your antenna as high as possible to avoid large constructions such as buildings and trees, in which case the higher up they are there will be more losses through the cable.

This means you should use low loss cables, and as it happens, Siretta manufacture a good number of low loss cables with different cable lengths and vast array of connector combinations. Try them, they are good.

If your equipment is in an area with lots of buildings, then the best type of antenna to use is an omnidirectional one. If there is a clear line of

sight to the transmitting modem, then a Yagi antenna may be the best.

At Siretta we have a number of high quality directional and omnidirectional antennas for outdoor use (Oscar Family) manufactured with low loss cables and covering a wide variety of frequencies. They are used by companies that install routers, meters (utility and industrial), security companies, car parks and many others.

Siretta Ltd
Basingstoke Road
Spencers Wood
Reading
Berkshire RG7 1PW

sales
email
web

+44(0)118 976 9000
sales@siretta.com
www.siretta.com