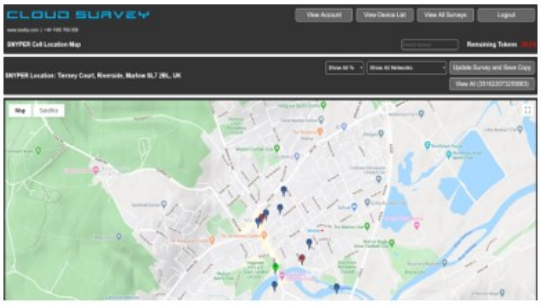

As you would expect Cellular surveys have become a pre-requisite for any new site where cellular connectivity is to be deployed, as well as sites where cellular communications already exist but need to be checked or need to be upgraded.

What is a cellular survey?
A cellular survey will look to measure a number of cellular base-station signal parameters such that those charged with planning, designing or servicing and maintaining cellular connectivity can determine what the environment is like in a given location.

What's important?
When assessing a site there are a number of different factors to take into account, not least whether a new site has any acceptable wireless coverage at all, or if an existing site has patchy coverage caused by a recent change to the infrastructure or due to a network fault.
It will be important to understand what network technology is available in the area i.e. LTE, 3G or 2G, and then how strong the signals are in each case. The higher the technology level available the more acceptable this will be for those who are transmitting and receiving large amounts of data on a generally frequent basis. In the majority of machine to machine or industrial IoT applications it may well be that narrower bandwidths and lesser data rates are more than adequate.

Another important factor is whether there is any tie to a particular MNO (Mobile Network Operator), as dependent on their availability in a particular area may prompt changes to contracts, a move to a new provider or a roaming SIM requirement. It could well be that in a circular area around the site being surveyed there could be a great signal from a preferred MNO, but it is the only signal from that MNO in the immediate vicinity. On the other hand another un-preferred MNO may have 3 or 4 base-stations in the same circle but with satisfactory signals. In terms of reliable connection it may well be that the un-preferred MNO wins out as it is better to have multiple base-stations available in the event of cell disconnections or faults.

Siretta Limited
www.siretta.com | +44 1189 769 014
GRAPHYTE Cellular Average Survey Results

GSM (2G) Average Survey Results

Cell	Index	Seen	ARFCN	AV dBm	AV %	AV RSSI	MCC	MNC	CellID	LAC	Band	Network Signal
1	1	97 (97%)	96	-71	68	21	234	15	7568	304	9 (E-GSM-900)	Vodafone
2	2	100 (100%)	87	-76	60	19	234	15	6053	304	9 (E-GSM-900)	Vodafone
3	3	100 (100%)	101	-76	60	19	234	10	35251	21481	9 (E-GSM-900)	O2 UK
4	4	100 (100%)	111	-81	52	16	234	10	20184	21481	9 (E-GSM-900)	O2 UK

The quality of signal is also important not just the strength of a signal. All signals are prone to being affected by interference, whether this be

electro-magnetic or radio frequency interference. This interference is called noise and the greater it is vs. the signal strength the worse it is for what is called the signal to noise ratio.

How can cellular connectivity be determined?

Dependent on the requirement there are a number of ways that those investigating cellular connectivity may try to establish suitability and key characteristics of a site. For many applications the solution is a handheld cellular signal analyser, such as one of the devices from Siretta's SNYPER family of products. These have the advantage of being extremely low in cost vs. other solutions. They are highly portable, supplied in a rugged carrycase with a number of accessories. They are capable of providing many survey results from different parts of a site in a relatively quick period of time. They contain physical measurements such as power and quality, plus metadata that cell towers communicate over the air to provide identification of the MNO, location codes, and RF channel information. The results can be downloaded from a SNYPER to a PC via it's USB port, and then through Siretta's subscription service, CloudSURVEY portal, they can be stored and mapped.

If you want to know more about Siretta's antennas, modems, routers and SNYPERs why not take a look at our website.

For more insightful articles please visit the Blogs page on the Siretta website: https://www.siretta.com/blogs

Siretta Ltd
Basingstoke Road
Spencers Wood
Reading
Berkshire RG7 1PW
sales
email
web
+44(0)118 976 9000
sales@siretta.com
www.siretta.com