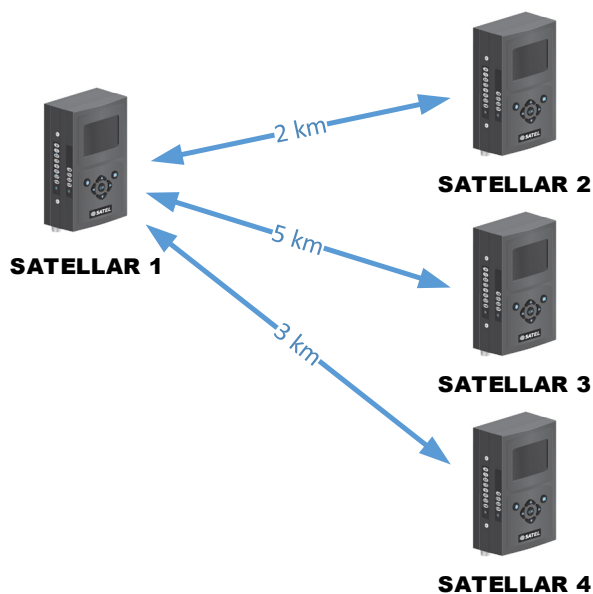


How to optimize power consumption with ATPC

ATPC (Automatic TX Power Optimization) is a feature that allows SATELLAR to use the minimum power required to get the wanted signal level and thus optimizing power consumption.

A remote SATELLAR is needed for reference. If there are multiple SATELLARs in the range, the one that has the weakest radio link should be selected. When the transmit power is set based on this device, all other devices should get at least as good a signal as well.



In this example there is a SATELLAR network consisting of four devices with RMAC addresses 1-4. ATPC needs to be enabled in the network, that each device gets at least RSSI between -85...-75 dBm. The ATPC is enabled in SATELLAR 1 first, and the starting transmit power of the device is 100 mW. ATPC is configured like this:

- Automatic TX Power Control:..... ON
- Target RMAC Address:..... 3
- Target RSSI Floor:..... -85 dBm
- Allowed RSSI Range: 10 dBm
- Update Period:..... 60 s

SATELLAR 3 is selected as the target because it is the farthest, and this ensures coverage to all the other devices. After the features are enabled, the power of SATELLAR 1 is optimized like this:

- SATELLAR 1 attempts to measure the RSSI seen by SATELLAR 3. It does not get any reply.
- After five unsuccessful attempts SATELLAR 1 increases transmission power to 200 mW.
- Now, SATELLAR 1 is able to measure that SATELLAR 3 receives a RSSI of -100 dBm, and it increases transmit power to 500 mW.
- Now, the measured RSSI is -83 dBm, and SATELLAR 1 stops changing the power.
- SATELLAR 1 keeps measuring the RSSI every 60 seconds, but it is always in the correct range so nothing is changed.
- At some point in the future, a better antenna is attached to SATELLAR 3. Now, the measured RSSI is suddenly -72 dBm. SATELLAR 1 decreases the transmit power to 200 mW.
- The measured RSSI is now -80 dBm, the power is no longer changed and ATPC can also be enabled in all the substations. The settings are exactly the same, but Target RMAC address is 1 for every device.