Mobile Signal Strength Recommendations

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Summary

This chapter is an overview of recommended signal strength levels for different mobile service modes.

Signal Measurement

Signal strength values are defined by a few different measurements which vary even more for different service modes, this page will cover the most relevant measurements for evaluating signal quality with Teltonika Telematics devices.

The measurements are as follows:

- **RSSI** - Received Signal Strength Indicator. RSSI is a negative value, and the closer to 0, the stronger the signal
- **RSRP** - the Reference Signal Received Power is the power of the LTE Reference Signals spread over the full bandwidth and narrowband
- **SINR** - Signal to Interference plus Noise Ratio. Indicates the throughput capacity of the channel. As the name implies, SINR is the strength of the signal divided by the strength of any interference

More on these measurements in separate service mode sections.

Determining Factors of Signal Signal Strength and Quality

Many different factors influence signal strength and quality, including but not limited to:

- Tower load
- Proximity to the cellular tower
- Signal going through a cellular repeater
- Competing signals
- Physical barriers (mountains, buildings, trains, etc.)
- Weather

Therefore, measurements like Signal Strength (RSSI) do not incorporate all of the relevant factors to describe the quality of the connection. For example, you may have an excellent RSSI value of -51 dBm, but the Tower Load (the number of mobile users) in your area is very high. In this case, even though you have a great Signal Strength value, you may not achieve maximum mobile data speeds.

2G (GSM)

2G (GSM) Signal strength is defined by only one value: **RSSI**

RSSI

To check the 2G signal strength value of your Teltonika Telematics device, go to configurator → I/O tab → check GSM Signal value:

In this element you will find that GSM signal has values from 0 to 5 and correlation to RSSI will be as shown:

GSM SIGNAL	RSSI
0	=<-111 or not known/not detectable
1	<-101
2	<-93
3	<-83
4	<-73
5	>=-73

NOTE: **"GSM Signal"** element is used only to determine **2G** network connection quality.

4G (LTE)

When checking LTE/4G signal strength, we should be looking at SINR and RSRP values.

SINR

RSRP

To check the LTE/4G signal strength values of your telematics device

NOTE: (Only applies to FMM devices)

Go to configurator → I/O tab → check Connectivity Quality element which provides detailed signal

quality information in LTE (only RSSI), eMTC and NB-IoT modes.

To know the reading of the quality you should convert the value to hexadecimal format and as shown in the screenshot convert each byte into decimal format.

Note: The device will send this value in hexadecimal format, so only conversion to decimal will be needed.