Technical Note

Cellular Connectivity: Using a Snyper LTE GraphyteTM for Site Survey

Scope

A site survey for cellular connectivity is a key requirement for every ChargePoint charging station installation. Cellular connectivity is required for key features such as:

- User authentication, access control, and billing for charging sessions
- Station utilization, energy usage, and session details for reporting.
- Power management
- Notifications to drivers for waitlists, end of charging session, and pricing increases for overstay.
- Station diagnostics
- Software updates

This document explains how to complete a site survey using a <u>Siretta Snyper LTE GraphyteTM</u> in the North American region. The tool can be purchased online from <u>Newark</u>, <u>Digi-Key</u> and other suppliers.

Orientation

- a. Back
- b. Power
- c. OK/Select
- d. Right
- e. Left
- f. Up
- g. Down



Setup

A one-time setup of the device is required before beginning the site survey. Check and update each of these settings as needed.

- 1. Hold the **Power** button for 3 seconds to power up the device.
- 2. Use the **Down** button to navigate to **Setup**. Press **OK**.
- 3. Use the **Down** button to navigate to **Document**. Press **OK**.
- 4. Update the Document settings to:
 - HTML: OnCSV: On
 - Auto-Save: On
- 5. Press **OK**.
- 6. Use the **Down** button to navigate to **System**. Press **OK**.
- 7. Update the Document settings to:
 - Mode: AdvancedITU Region: AMERDebug Log: Off
- 8. Press OK.
- 9. Use the **Down** button to navigate to **Set Time**. Press **OK**.
- 10. Verify that the date and time are correct or update to be accurate for your location.

Surveying a Station Location

The survey must be conducted for each station (or for each Gateway for CPF installations). Surveying the general area is insufficient. Each individual station must be checked for connectivity.

To survey a station:

- 1. To power up the device, hold the **Power** button for 3 seconds.
- 2. Use the **Down** button to navigate to **Survey**. Press **OK**.
- 3. Navigate to select **Full Survey**. Press **OK**.
- 4. Select the number of cycles.

NOTE: You must do at least one cycle per station, but if cellular service seems problematic or fluctuates, you may want to run more than one survey per location.

5. Press **OK**.

The device says, "Please wait." Each survey cycle takes approximately 2 minutes. It may take slightly longer if signal is weak or noisy.

NOTE: If the display dims during a survey, you can press **OK** to wake it.

When complete, the device displays the results.

6. Record the file names for the .csv and .htm files and the associated charging station location for these results.

Repeat the surveying process for each charging location at the site.



Important: Results represent a snapshot of cellular signal at the time of the survey. Results vary by time of day, weather conditions, and various other factors that affect cellular connectivity.

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Download and Review Files

Use a Windows or Mac computer to review the files.

To review the files:

- 1. Hold the **Power** button for 3 seconds to power up the device.
- 2. Use the **Down** button to navigate to **PC Connect**. Press **OK**.
- 3. Use the **Right** button to select **On**. The device says "PC Enabled."
- 4. Use the included USB cable to connect the device to your computer.
- 5. Go to Windows Explorer or Finder (Mac) and find the GRAPHYTE drive/location.
- 6. Copy the files from the device to a preferred location on your computer.
- 7. Open the HTM file for the station location you wish to review.

Understanding Your Results

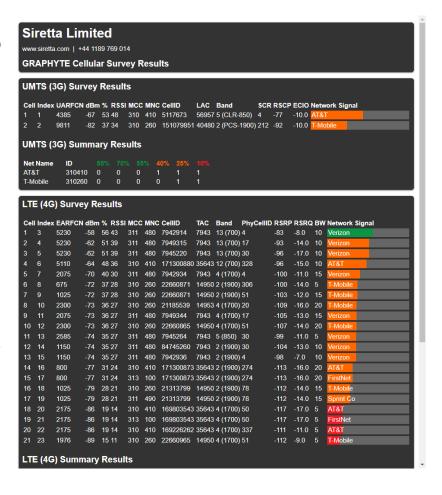
Results display separately for UMTS (3G) and LTE (4G). Verify what type of modem is in the charging station or Gateway being installed. All modems sold by ChargePoint in North America in 2020 are 4G modems with 3G for backup. Older models were 3G only.

Results display in three Network Signal strengths:

- Green: Good
- Orange: Marginal to poor
- Red: Extremely weak or barely detectable

Cellular carriers often appear multiple times using different bands. Some bands are more commonly used than others.

Review additional details on signal strength and quality by reviewing the RSRQ + RSRP values for LTE (4G) or the RSSI + ECIO values for UMTS (3G).



For LTE (4G):

RSRP	RSRQ	Signal Strength
Greater than -80 dBm	-3 to -10 dB	Excellent
-80 dBm to -90 dBm	-3 to -10 dB	Acceptable
-90 dBm to -140 dBm	-10.5 to -19.5 dB	Remediation required

For UMTS (3G)

RSSI	ECIO	Signal Strength
Greater than -70 dBm	-3 to -10 dB	Excellent
-70 dBm to -85 dBm	-3 to -10 dB	Acceptable
-86 dBm to -113 dBm	-10.5 and higher	Remediation required

- If the results show Green results across several carriers and bands, that station location is good to go.
- If the results show connectivity is Orange or Red, is only available across one or two bands, or is only available via a single carrier, you likely need to install a repeater or distributed antenna system (DAS). Contact ChargePoint Solutions Engineering at solutionsengineering@chargepoint.com for additional guidance.



Important: For sites with complex conditions, a cellular specialist may be required to survey and remediate the site.

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