WHITE PAPER

WiFi & LTE Guide for Rendr Platform In-Home EEG Studies

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This guide has been created to advise Lifelines Neuro customers of considerations when using LTE plans to stream data. Technology advances rapidly, and this guide will be periodically updated to provide the latest information.

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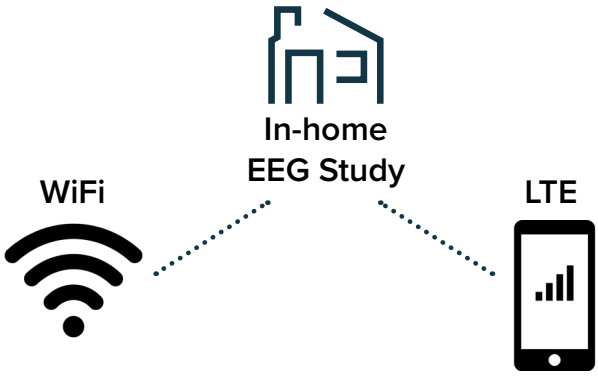


Introduction

The Rendr Platform has been engineered from the ground up for cloud computing, to enable Rendr Acquisition to stream EEG data to the Rendr Portal for review. A reliable and robust internet connection is essential for a positive experience with Rendr. When performing an EEG study in a patient's home, there can be variable strength to a patient's in-home WiFi system. The WiFi performance may depend on the type of internet plan, data speed, and what type of streaming devices are in use in the patient's home during the study. And to access the patient's WiFi the patient must share their password and internet connection, which is not ideal.

As an alternative to WiFi, consider using an LTE, or "long-term evolution" data service which is industry jargon used to describe cell service and the particular type of 4G or 5G that delivers the fastest mobile internet experience. This is especially important for studies lasting more than 24 hours of recording length. It is possible to subscribe to an LTE service that will allow you to connect to the internet from anywhere that can receive a cellular signal. Connection speed and availability are two primary concerns, however LTE plans often have limitations for the bandwidth (the speed of data transfer) and total data that can be transferred before bandwidth is reduced by the carrier, known as "throttling."

LTE plans typically connect to one of three networks, commonly known by the carriers that own the towers: AT&T, Verizon, or T-Mobile. Lifelines Neuro allows its customers to select and subscribe to their own LTE data service to meet user considerations and needs. Subscribe to plans directly with the carrier or with a third-party provider.

LTE Plan Considerations

The Customer Experience Team at Lifelines Neuro recommends that when selecting an LTE service these criteria are considered:

1) the total data required per device, per month for your expected workflow

2) the needed territory coverage for your service

3) the required bandwidth

4) ensure the LTE sim card is compatible with the device used for service

1 - Total Data Required

The Rendr Platform will require, per 24hr recording:

10 GB for video

+ 3 GB for data

13 GB for Rendr

+ 1GB of data for monitoring activities

14GB TOTAL DATA NEEDED PER 24HR RECORDING

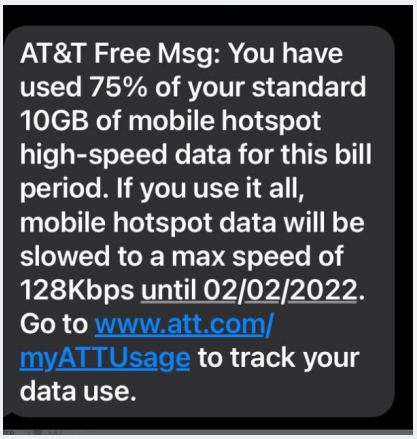
Therefore, a single 72hr EEG (typical for in-home recordings) will transmit 42GB of total data.

Also consider how many studies you will run per month, per device. Many customers will strive to maximize equipment utilization and record two 72hr recordings per week, or eight total studies per month. This yields a requirement of 336GB of data per month and does not include uploading Cloud Sync Packages to Rendr using an LTE plan.

Be aware that standard LTE on even "unlimited" commercial cell phone plans will throttle data and limit the speed at which the data travels. Many commercially-available plans will throttle in the range of 26GB of data – barely enough to cover 2 days of recording before throttling.

Here's an example of an alert commercial cell phone plan from AT&T, notifying the user of the that the hotspot data will be throttled.

For this reason, we do not recommend relying on standard commercial LTE services. Instead, we suggest considering third-party services such as those available through Unlimita.Net, through AT&T's Firstnet service, and carrier-specific IoT (Internet-of-Things) services.



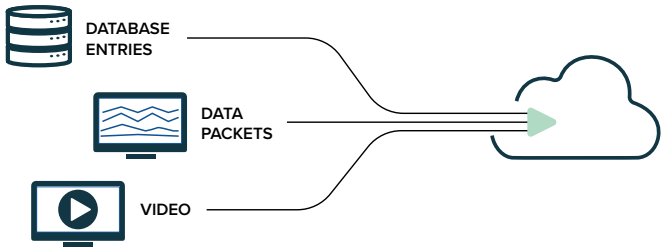
2 - Territory Coverage

LTE coverage and availability can vary based on the location of the recording and will depend on the cell tower service selected – typically, Verizon, AT&T, or T-Mobile. Please keep this in mind when selecting the best provider for your needs. Coverage maps are generally available through the providers. If subscribing to multiple carriers/services, consider using the carrier's coverage maps or tools to ensure you utilize the best service recording.

3 - Bandwidth

Rendr uploads studies in three pieces:

- Database entries (information such as events, start/stop recording times, etc.)
- Data packets (the actual EEG recording)
- Video



Database entries and data packets are continuously streamed to the portal, whereas video is uploaded in 5-minute files, when each file completes the recording. From testing experience, a continuously connected 5MBps (megabit per second) upload bandwidth is sufficient to maintain near real-time synchronization of data and video on the portal for review. If there is an internet outage for any reason, data and video will record to the hard drive on the device. If there is a significant outage duration, higher up-bandwidth may be required to stream both the ongoing recording and the additional saved data and video from the outage in a timely manner.

We recommend a minimum of 5MBps upload speed to use Rendr and an upload speed of 10MBps or higher for robust performance.

Different carriers offer different plans with maximum allowed upload speeds. Check with your carrier and plan.

4 - SIM card and device compatibility

Not all LTE Sim cards will work with all devices. SIM cards are often rated as carrier-specific or BYOD (bring your own device) compatible.

BYOD (Bring Your Own Device)

LTE Sim cards rated for BYOD are generally compatible with most LTE modems and in testing by Lifelines Neuro, generally work in any Lifelines devices.

Carrier-specific compatibility

LTE Sim cards are typically inserted into an LTE modem that provides network compatibility. Every LTE modem has what is known as an IMEI (International Mobile Equipment Identity) number. IMEI is a 15-17-digit code that is given to every mobile device. This number is used by service providers to uniquely identify valid devices. Specifically, IMEI code can enable a Global System for Mobile communication (GSM) or Universal Mobile Telecommunications Service (UMTS) network to prevent a misplaced or stolen device from using the designated network.

Some carriers will only support certain devices by their IMEI numbers. This may require not only obtaining the sim card from the carrier but also a compatible "mobile hotspot" or "portable hotspot device" that is supported by their LTE sim card and service. Currently, Verizon is the most restrictive carrier with respect to BYOD vs Carrier-Specific Compatibility based on our research and experience. Be sure to discuss this with the plan carrier before committing to the plan, and request a trial period for the service to ensure that it is compatible with your setup before committing to a long-term contract.

NOTE: Most Trackit F and Trackit V video systems have built-in LTE modules supported by BYOD plans. Customers can feel free to provide their own SIM card connected to their cellular plan to achieve this same connectivity that an external hotspot would provide.

FREQUENTLY ASKED QUESTIONS (FAQs)

What is a SIM card?

A SIM card is a card that is inserted into a device (such as a cell phone) and that is used to identify a subscriber on a communications network and to store data (such as phone numbers or contact information). The SIM card will associate the device to a specific data plan. You will need one SIM card per Trackit V or Trackit F system.

Note that there are three different standard sizes for LTE SIM cards: Mini, Micro, and Nano. Please confirm what size SIM card is required before obtaining the card.

How much data will I use with Rendr Acquisition?

We recommend a data plan that can provide at least 350GB of data per month based on the following assumptions:

The Rendr Platform will require, per 24hrs of recording:

Many customers intend to operate their systems for two 72hr recordings per week, or approximately 24 recording days per month:

Also, additional data will be needed for monitoring via a remote desktop sharing program such as Teamviewer or ScreenConnect. For intermittent monitoring of studies, we recommend at least an additional 30GB of data per month for monitoring.

What bandwidth is needed for Rendr Acquisition?

Bandwidth defines how much data can be sent as megabits per second (MBps). Bandwidth utilization for Trackit systems fluctuates depending on whether it is uploading data, data and video, and whether a remote desktop service is running. A minimum of 5MBps is required for Trackit systems running Rendr, however, 10MBps is recommended and more bandwidth will provide a more robust and positive experience with Rendr. These bandwidth rates have been tested and verified with Rendr and Teamviewer, and with Rendr and ScreenConnect. If a different desktop sharing service for monitoring purposes is being used, please note that it should be tested to verify bandwidth and data requirements.

Can I use a regular AT&T unlimited data plan?

We ***do not*** recommend using a regular AT&T Unlimited Data Plan.

At the time of this publication, AT&T plans, including "unlimited" plans, have data limits at which point the plan will begin to throttle data. The AT&T Unlimited Starter, Unlimited Extra (premium data up to 50GB and Hotspot data up to 15GB), and Unlimited Elite (BYOD restrictions and Hotspot data up to 40GB) plans all throttle at different data usage. See the following link or follow up with your carrier.

https://www.att.com/plans/unlimited-data-plans/

Can I use a hotspot?

Lifelines Neuro does not recommend using a separate hotspot for your Rendr Acquisition data transmission. The Trackit V and Trackit F computer devices have a built-in slot where you can install a SIM card. Note that some service plans have even lower data caps for "Hotspot" data compared to data used by the primary device. Some hotspots may be acceptable, be sure to consider the four major requirements listed above.

What LTE options do Lifelines Neuro recommend?

Based on our testing and your total data needs, Lifelines Neuro currently recommends the following plan options:

Unlimita.net

Unlimita is a third-party service carrier with an array of options. Lifelines Neuro recommends the 125 and 185 Plan Premium plans, see https://www.unlimita.net/att-data-plans

Note that we do NOT recommend the 55 Plan Basic (not unlimited data) or 85 Plan Standard (not unlimited data and not BYOD). The 285 plan is also an option but in our testing and experience is probably more expensive and more capable than needed.

AT&T Firstnet

https://www.firstnet.com/

Some Lifelines Neuro customers have advised they were able to sign up for unlimited LTE data services through AT&T's Firstnet program, which was originally set up and intended for critical applications such as needs for First Responders.

Verizon LTE Business Internet

https://www.verizon.com/business/products/networks/connectivity/lte-business-internet/

Depending on data needs, you may want to consider Verizon's LTE Business Internet options. They have plans up to 150GB of premium network access per month with a total data cap of 300GB total monthly data allowance. Verizon generally does not support full BYOD service, so be sure to confirm the device you will use for the LTE SIM card, the IMEI number for the device, and confirm with your carrier whether the Verizon plan you select will work with that device.

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