GX440 for Verizon LTE

Application Note

Internal Use Only

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Consult our website for up-to-date product descriptions, documentation, application notes, firmware upgrades, troubleshooting tips, and press releases.

Revision number	Release Date	Changes
1.0	December 2011	GX440 for Verizon LTE Application Note created.
1.1	February 2012	Application Note revised to address LTE/EV-DO/1x compatibility and LTE dormancy issues.

GX440 for Verizon LTE: Features and Limitations

This application note summarizes the features and limitations of the LTE (MC7750) radio module and the GX440 wireless router with Verizon as the featured cellular provider and ALEOS 4.2.2 as the installed Sierra Wireless software. The content of this application note is in an FAQ format.

The limitations of this network are as it is currently deployed. It must be emphasized that LTE is a new technology for Verizon, and they have not fully deployed all LTE features. Some of the limitations mentioned in this application note may be addressed by Verizon in the Q3/Q4 time frame.

LTE Throughput and MC7750

Q: What are the LTE theoretical and typical throughput speeds?

A:

	LTE Lab Test	LTE Typical
Download	70 Mbps/	10 - 15 Mbps
Upload	20 Mbps/s	5 - 8 Mbp

Q: How do typical LTE speeds compare to EV-DO speeds?

A: The approximate LTE download is 10x EV-DO, while LTE upload is 5x EV-DO.

Q: Does the MC7750 support other service levels besides LTE?

A: The MC7750 supports the lower speed CDMA protocols eHRPD, EV-DO, and 1xRTT.

Q: What determines when the MC7750 changes from LTE to a lower service level?

A: The Verizon network controls the MC7750 service type. Verizon prefers to keep the service level at LTE if possible, but it can change, even for stationary deployments, from LTE to a lower speed service at any time.

Q: Will the customer notice when the LTE service level changes?

A: Most likely. A service change from LTE to EV-DO could decrease data rates by 90%. In addition, a service level change from LTE to EV-DO will cause the cellular connection to be broken and then reestablished.

Q: Is there any way the customer can prevent LTE from changing to a lower service level?

A: No, there does not appear to be a way to lock the MC7750 to LTE service.

LTE Compatibility with EV-DO/1x

Q: What if LTE service is not available?

A: The GX440 will automatically attempt to connect to CDMA service (EV-DO or 1x).

Q: I noticed that I lost LTE service at a low signal level where I normally can get CDMA service. Why is that?

A: A minimum signal strength of -95 to -90 dBm is required fir LTE service. CDMA service is typically available down to -110 dBm.

Q: If the GX440 is connected to CDMA service, will it automatically reconnect to LTE service as soon as LTE coverage is available?

A: No. Per Verizon specification, there must be three minutes of no cellular traffic before the radio module can search for an LTE signal. PC devices sometimes generate traffic without knowledge of the user (e.g., Outlook). In this case, it is possible for a GX440 to change service levels from LTE to CDMA, and then **not** switch back to LTE service because a connected PC or other device was generating OTA traffic.

Q: Once the service level changes from CDMA to LTE, will my CDMA sessions still be active?

A: No. All CDMA sessions will be lost, unless the CDMA level was at eHRPD instead of EV-DO/1x. In our testing, all sessions were lost when a service level change took place.

Q: It sounds as though once the service level changes to CDMA, it might not be easy to get the service level to change back to LTE. Is there a way to force the GX440 to try to change service levels back to LTE?

A: Yes. There is a user configuration option to force the GX440 to search for an LTE signal even if there is OTA traffic. This is called the “LTE Active Rescan” feature, and it is available in the ACEmanager UI on the WAN/Cellular web page. The user must configure the length of time the GX440 is in CDMA mode before it will attempt to connect to LTE service. Note that when the GX440 attempts to reestablish LTE service, all current sessions will be lost and cellular service will not be available for approximately one minute.

Q: What if I know I’m going to have marginal LTE coverage, and I don’t want the GX440 to try to connect to LTE service. Is there a way to keep the GX440 at CDMA service?

A: Yes. In ACEmanager, on the WAN/Cellular web page, the user can set the LTE Data Service to either LTE Preferred or CDMA Only.

ALEOS Features and LTE

Q: Are all GX400 ALEOS services available for the GX440/LTE?

A: Most ALEOS services are available. There are a few limitations:

1. Private Addresses: By default, Verizon provides private IP addresses which cannot support modem terminated traffic and therefore should not be used by customers who plan to manage their devices remotely. (E.g., 10.1.2.3)
2. Public Addresses: At the current time, Verizon only provides static public IP addresses. These will cost an addition $500 per customer. Customers will need these addresses for remote management tools (ACEmanager, AMS, etc.). There is no plan to provide dynamic public IP addresses.

LTE Account Activation and LTE SIMs

Q: How are LTE accounts activated?

A: LTE requires the use of a Verizon LTE SIM. Although this SIM is very similar to the SIM used in GSM products, it can only be used for Verizon LTE. Any account parameters (private IP, static public IP, SMS, etc.) should be specified at the time the SIM is ordered so that the SIM can be configured appropriately. It may be possible to change SIM parameters once the SIM is ordered. Once the SIM is available, it is inserted into the GX440 and the device is powered up. The SIM will self-provision with the Verizon network.

Q: Is it necessary to specify an APN with the Verizon SIM?

A: No. Verizon discourages changing the APN. If necessary, the user can set the APN on the ACEmanager WAN/Cellular web page.

Q: How long should it take fkor Verizon to provision a new LTE SIM?

A: From 5 to 15 minutes.

Q: Is the Verizon LTE SIM tied to a particular IMEI?

A: No. A Verizon SIM can be used with any Verizon LTE product.

Q: Does the Verizon SIM support the SIM PIN feature?

A: The SIM does contain support for the SIM PIN, but it is not currently available in ACEmanager.

LTE Compatibility between Verizon and AT&T

Q: AT&T has announced LTE support. Are these two LTE versions compatible? Can LTE roam between Verizon and AT&T?

A: No. LTE service cannot roam between AT&T and Verizon. Verizon and AT&T use different frequencies for LTE.

LTE and Data Usage

Q: Could LTE increase data usage?

A: It may. Even without customer traffic, it has been observed that LTE traffic does take place, although we do not have specific numbers at this time. From the standpoint of the customer use case, higher bandwidth may encourage use of more bandwidth-intensive applications (e.g., video). The typical Verizon data usage plan, however, limits monthly usage at 5 GB, and data usage above this limit will incur additional charges. It is easy to exceeded 5 GB at LTE data rates. Once customers discover the costs of exceeding their data plan, they may inhibit their LTE usage.

LTE Dormancy

Q: I've noticed that sometimes I am unable to connect to my GX440 OTA. Why is that?

A: Occasionally, the radio in the GX440 goes into the "dormant" state in which it will not receive remote communications. The length of time in this state can vary, and has been observed to be as long as one hour. This dormancy event may take place once every couple of days.

Newark Engineering is actively pursuing a solution to this issue with the radio module developers.

IPv6 for LTE and ALEOS

Q: Is IPv6 currently supported in the GX440?

A: Not at the present time.

Q: Are there plans to fully support IPv6 on ALEOS?

A: Newark is committed to fully support IPv6 on ALEOS. This is a fairly large task which is still in the planning stage. Release date estimate is for Q3 or Q4 in 2012.

Applicability

- Platforms: GX440
- Software Versions: ALEOS 4.2.3


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