

/ BASE NODE
(/S/TOPIC/0TO8X00000114NO...

Frame Alignment Offset

Aug 3, 2023 · Knowledge

Description

Frame Alignment

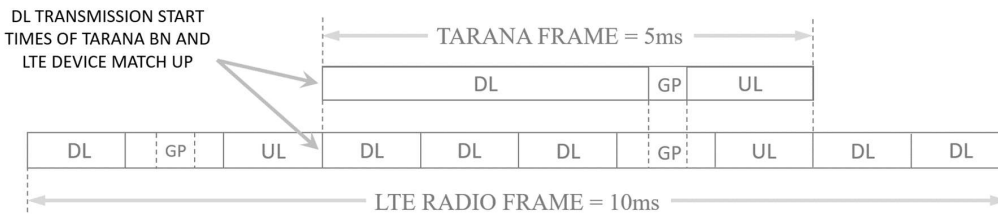
Telecommunication networks require accurate and reliable synchronization to correctly operate. TDD radio frames require time and phase alignment between radio base stations to prevent interference and related loss of traffic.

Frame Alignment Offset

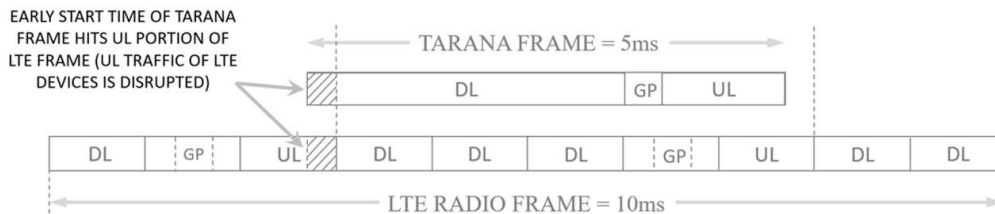
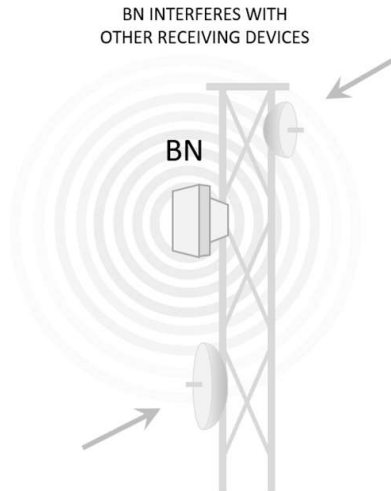
Tarana G1 devices have timing compatibility with LTE devices that use TDD Config 2 Special Subframe 7 frame timing. Provided the respective devices are synced in start timing, they will theoretically not interfere with each other; adjacent devices will transmit simultaneously so that neither device will be receiving the other's transmissions. The Frame Alignment Offset allows adjusting the start of the Tarana frame relative to the 1 pulse-per-second PPS from the GPS receiver. This setting is provided on CBRS devices only.

Note

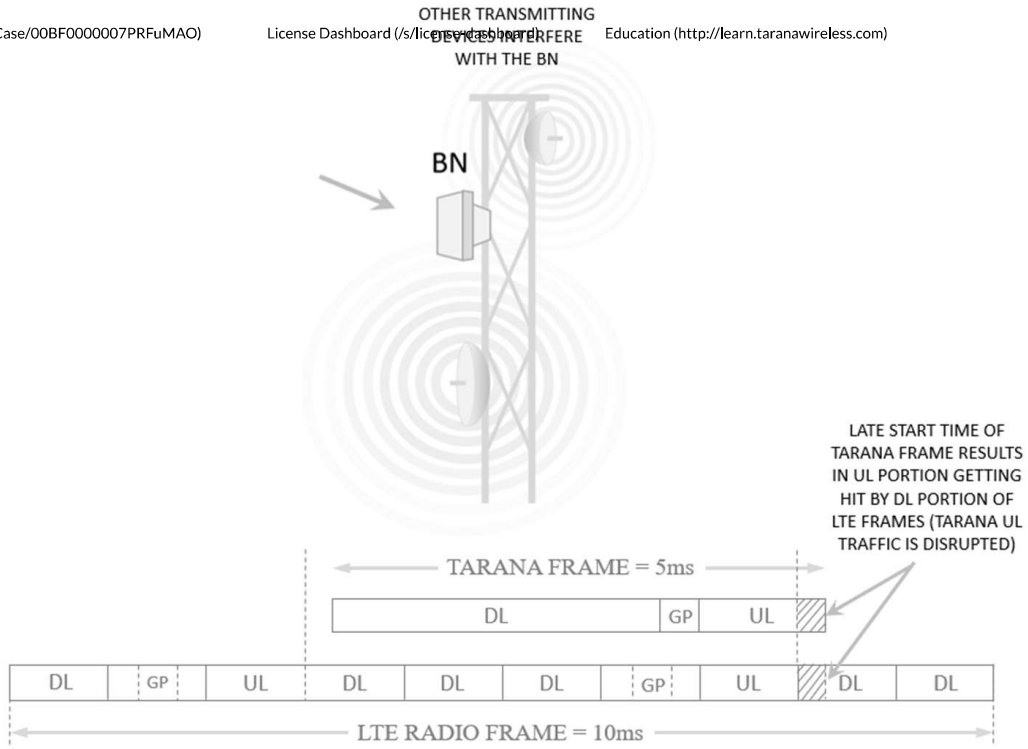
The minimum software release this feature is 0.997.028.00.



If the timing between the LTE devices and Tarana base nodes is out of sync, this can cause repeated near-field interference with each transmitted or received frame, depending on the offset of the timing. In the graphic below, it can be seen how a Tarana frame that is offset too early can have a negative effect on other devices' uplink traffic flow.



If the Tarana frame is offset too late, it can result in poorer uplink throughput on the Tarana base node. Appropriate fine-tuning the frame alignment can alleviate such interference.



Any frame alignment offset implemented on a base node should be configured consistently across all other base nodes in range of this base node that share either of the same carrier frequencies. It is not possible to use the frame alignment offset to align with multiple frame configurations. The frame alignment offset only applies to the base node. The remote nodes automatically align to the base node's frame timing. An adjustment of the offset will disconnect any connected remote nodes, but they reconnect and realign with the base node's timing automatically.

The table below shows the compatible Tarana network profiles with the supported LTE configuration.

Tarana Network Profiles Supported LTE configuration

Network Profile 1	TDD Config 2 Special Subframe 7
Network Profile 2	TDD Config 2 Special Subframe 9
Network Profile 5	Unsupported
Network Profile 6	Unsupported

The frame alignment offset allows adjusting the start of the Tarana frame relative to the 1 PPS pulse from the GPS receiver. The value ranges from -187 μs (min) to 4821 μs (max). It is important to note that the base node will experience a radio reset when a change is made to the frame alignment offset, which will temporarily disconnect all connected remote nodes.

To set the frame alignment offset, go to the Admin → Network Configuration section in TCS. Navigate to the Cell level and click Edit. Fill in the desired value, then click DONE.

The screenshot shows the configuration interface for 'Tower3'. Fields include Tower3, Description, Set ID (1), Cell ID (3), Band (3 GHz), and Network Profile (1). The 'Frame Alignment Offset (μs)' field is highlighted with a red box and an arrow, indicating where to enter the offset value. 'CANCEL' and 'DONE' buttons are at the bottom.

Please contact Tarana Support for recommendations on proper frame alignment offset values.

Attachment

Title
Frame Alignment Offset

URL Name

Support Tickets (/s/case/case-008X0000014RPMAG) License Dashboard (/s/license-dashboard) Education (http://learn.taranawireless.com)

Base Node (/s/topic/OTO8X00000114...

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