

4 December 2023

i89 i93 Radio Notes

Version:

Firmware Version: 1.1.10.6hxzhangxueminT
Firmware Release Time: 20231121_8ee211f
RADIO (0) :hx_1w
RadioVersion: 00.05

Discussion

In the USA most (99%) of users with FCC Licenses are constrained to 12.5 KHz bandwidth. The i89/i93 have these protocols available to meet this restriction:

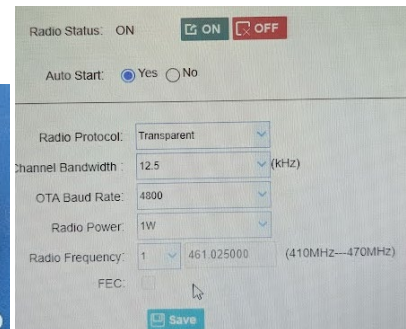
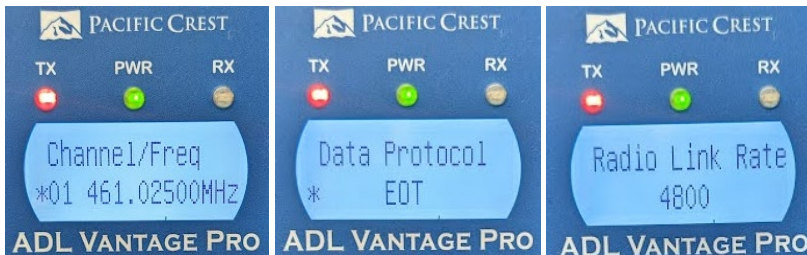
- TT450 (aka TTv1) 4800 baud
- EOT (Transparent End of Transmission) 4800 baud
- Satel 9600 baud, FEC ON or OFF

The Satel format works with Harxon base radios and Satel base radios, however the Satel format from Trimble / PacCrest radios is not currently compatible with the i89 and i93.

To use 4800 baud protocols with RTCM3.x it is necessary to limit the number of characters per second broadcast. This can be very difficult to implement and it is a limiting factor for integrating the i89 and i93 into Trimble projects using UHF radios.

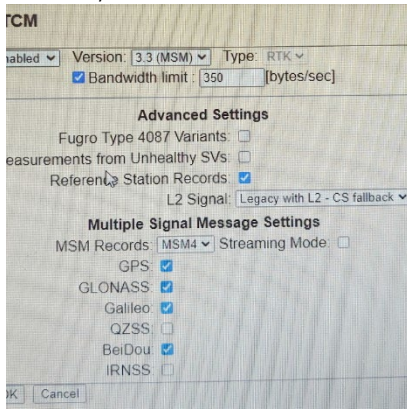
Known to Work with Trimble / PacCrest Radios

Transparent EOT:

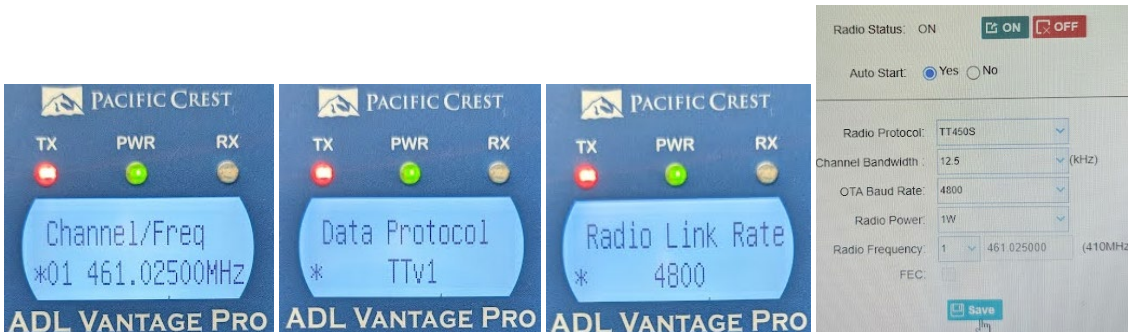


Note that FEC is not configurable on the i89 web interface. It apparently is forced ON.

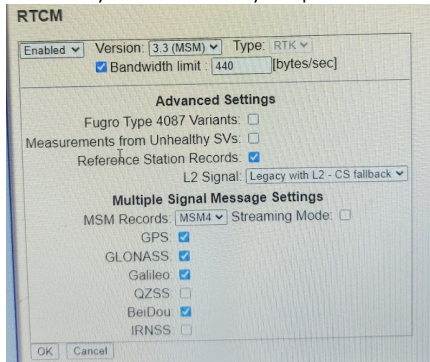
It is necessary to bandwidth limit the message being transmitted to 350 bytes per second:



TT450



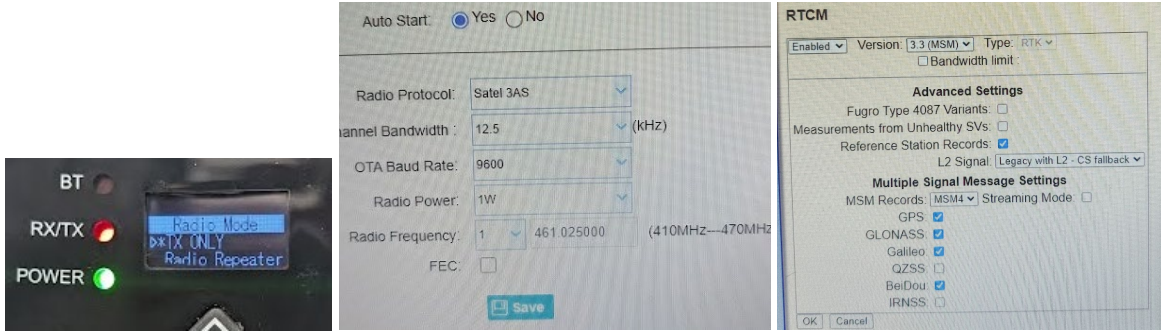
It is necessary to limit the bytes per second to 440 bytes per second:



Satel

The Satel 9600 baud, FEC=OFF format is recommended for all applications that don't include Trimble or PacCrest radios. For a Harxon/iGage base:





Note that no bandwidth limiting is needed.

Because Satel FEC had 30% or higher overhead, when compared to FEC OFF, it is recommended to utilize FEC OFF.