Appendix E: AFC Attestation

Please refer to the following page.

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ATTESTATION

Locked/unlocked AFC Operation

The VRBS7010 Vehicular Repeater Base System is comprised of three components, the VRB which operates on normal subscriber 700 and 800 MHz frequency plans, VR Traffic Controller which functions as site traffic controller and an RF Combiner. The VRB utilizes individual TCXOs as its single frequency reference. The VRB local oscillators is phase locked to the single references. The reference is specified to be better than +/- 1.5ppm over the operating temperature and voltage ranges. The reference oscillator has an electronic frequency control (EFC) range of 500 Hz. The EFC can be fine-tuned through software. The initial tuning is performed at factory test, calibration and configuration time.

Software control is used to implement AFC, when operating in the 700 MHz band (Part 90, Subpart R rules). In AFC locked mode, the digital signal processor examines the received base station signal and determines if there is any residual frequency error. The software then adjusts to minimize the residual frequency error. Hardware correction provides a resolution of below 0.1 ppm when adjusting the TCXO and so it is straightforward to control the TCXO to within the +/- 0.5 ppm requirement. The received base station signal correction is a continuously executed radio function.

When the radio operates on channels that are configuration defined the radio AFC uses the last determined correction value for frequency control.

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