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Client: Harris Corporation
Model: XG-15P UHF-H
IDs: OWDTR-0136-E/3636B-0136
Standards: FCC Parts 22/74/80/90/IC RSS-119
Report #: 2015156

Appendix F: AFC Attestation Letter

Please refer to the following pages.

ATTESTATION

Locked/unlocked AFC Operation

The XG-15P UHF-H Portable Radio uses a single TCXO (19.2 MHz) as its frequency reference.   All local oscillators are phase locked to this single reference.   The reference is specified to be better than +/- 1.5ppm over the operating temperature and voltage ranges.   This reference oscillator has an electronic frequency control (EFC) range of +/ 410 Hz. The EFC can be fine-tuned through software.   The initial tuning is performed at factory test, calibration and configuration time. This function is performed by providing a GPS locked RF carrier to the radio under test, while the radio's AFC function is enabled. The radio software computes the difference between the internal reference and the applied GPS locked RF carrier and adjusts the EFC voltage to minimize the difference. The radio is then commanded to transmit an unmodulated carrier and the frequency of that carrier is checked to confirm that it is within tolerance.   The EFC correction factor is stored in the radio's non-volatile memory.

Software control is used to implement AFC.   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 +/- 0.4 ppm requirement.   The received base station signal correction is a continuously executed radio function.

When the radio is switched from a trunked system to a conventional system, the radio's AFC uses the last determined base station correction value for frequency control. When the radio powers up on a conventional channel, calibration data will be used.

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