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M/A COM, Inc.
MASTRIII/Sitepro VHF Radio
FCC ID: OWDTR-0017-E
FCC Part 90 & IC RSS-119
Report Number: 2003013

APPENDIX C: PRODUCT DESCRIPTION

Please see the following pages.

3.0 Turn-On Procedure

The System Module loads the transmit and receive frequency code to the TX and Rx synthesizer modules of the VHF station. Upon power up or reset, a micro-controller in the System Module loads the receive synthesizer with 48 bits of serial data that sets the local oscillator to the desired frequency. A fault indication is provided by the receive synthesizer and sampled by the micro-controller. If the synthesizer is not locked onto frequency (fault flag true) the micro-controller will initiate another load sequence until lock occurs.

Upon power-up, the micro-controller loads the transmit synthesizer with 48 bits of serial data that sets the transmit carrier to the proper frequency. A fault indication is provided by the transmit synthesizer and sampled by the micro-controller. If the synthesizer is not locked onto frequency, the micro-controller will not key the RF power amplifier, and will initiate another load sequence until lock occurs. Note that upon a PTT, the power amplifier will not be keyed as long as the synthesizer is unlocked.

2.983 (d) (10-U)
(10) Oscillator and Other Frequency Stabilizing Circuit Descriptions:

Reference Oscillator

The reference oscillator is a self-contained high stability reference generator which supplies 12.8 MHz to transmitter and receiver synthesizers in the VHF system. The oscillator module is located in the receive synthesizer. The module is a quartz crystal controlled oscillator with temperature compensation providing ±1.5 ppm stability over a wide temperature range. Measured performance for temperature and supply voltage is within this specification. Reference for the transmitter is coupled from the receive synthesizer module by an external coaxial cable.

The oscillator frequency is adjusted by a multi-turn piston trimmer capacitor for frequency setability of less than ± 0.3 ppm.

(11) Circuits or Devices Employed for Suppression of Spurious Radiation:

The transmit synthesizer board uses die-cast shields on the top and bottom sides of the board. A lowpass filter is used to reject out-of-band spurious frequencies at the exciter output stage at J2.

The power amplifier (PA) is totally encased in a separate aluminum sheet-metal housing, with internal shielding to provide additional isolation of harmonic energy. Tuned input and output circuits and an internal low-pass filter prevent harmonics and out-of-band spurious from reaching the output RF signal path. Power and control leads exit and enter through bulkhead feed-through capacitors. RF enters and exits through bulkhead RF connectors.

Circuits or Devices Employed for Limiting Modulation:

The audio processing circuitry has three high gain integrated circuit audio amplifiers with appropriate feedback. The first stage (U1A) of the limiter and post-limiter filters provides pre-emphasized gain and limiting. Amplitude limiting of the audio occurs when diodes conduct and produce 100% feedback, thereby amplitude limiting the input signal.

Active filters provide 18 dB per octave attenuation beginning at 2.8 kHz for post-limiter filtering.

2.983 (d) (12) SitePro Filters:

The filters on the SitePro used to perform wave shaping on the digital and audio signals include the low-speed data encode filter, the low-speed data decode filter and high-speed data filter.

The low-speed data encode filter is used to smooth out the subaudible signaling generated by the SitePro.

The low-speed data decode filter is used to low pass filter the subaudible signaling and eliminate voice audio in order that the low-speed data can be detected by the microcomputer. The characteristics of this filter are identical to the low-speed data encode filter.

The high-speed data filter is a GMSK filter used to filter the 9600-baud NRZ signaling used by the SitePro.