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FAA
Spectrum Engineering Division
800 Independence Ave. SW
Washington, DC 20591

Ladies and Gentlemen,

Wulfsberg Electronics is in the process of FCC certifying an aircraft transceiver that can operate in the 136 to 174 MHz, 403 to 470 MHz, 450 to 520 MHz and 806 to 870 MHz frequency bands. This letter fulfills the notification requirements outlined in 47CFR87.147(d).

FCC IDs:

136 to 174 MHz: FRW2000-VHF
403 to 470 MHz: FRW2000-UHF1
450 to 520 MHz: FRW2000-UHF2
806 to 870 MHz: FRW2000-800

Description of Equipment:

The Flexcomm 2000 Family tactical communications system to be manufactured for aircraft installation has two configurations: a panel mounted transceiver, P-2000; or a separate radio control head, C-2000, with the transceiver, RT-2000, remotely mounted. The C-2000 can also be used as a master or slaved, dual controller for the P-2000 radio. The Flexcomm 2000 Family provides voice communication between aircraft and ground locations for the public safety and air medical rescue communities, over 136 to 174 MHz, 403 to 470 MHz, 450 to 520 MHz and 806 to 870 MHz frequency bands. Only one or two of the bands are available in each P-2000 or RT-2000. The Flexcomm 2000 Family communications system is not flight critical.

Installed in the P-2000 and RT-2000 is one or optionally two Internal Transceiver Modules (ITM). There are four different frequency bands of ITMs available and the customer can select either one or two frequency bands. The 4 available frequency bands are stated above.

Manufacturer's Identification:

The P-2000 Panel Mounted Transceiver, the C-2000 Controller, and the RT-2000 Remote Mounted Transceiver make up the Flexcomm 2000 Family tactical FM radio system described above.

Antenna Characteristics:

There are three models of antennas available. The customer selects the antennas to match the frequency range of the internal transceiver modules. All of the antennas are designed for aircraft use. The antenna RF characteristics are summarized below:

Model Number: AT-695
Frequency Range: 138 – 174 MHz
Impedance: 50 Ohms
VSWR: 3.0:1 Max
Maximum Power: 50 Watts
Patterns: Omni-directional in azimuth

Model Number: AT-462
Frequency Range: 406 – 512 MHz
Impedance: 50 Ohms
VSWR: 2.0:1 Max
Maximum Power: 100 Watts
Polarization: Vertical
Patterns: Typical of a quarter wavelength stub

Model Number: AT-806
Frequency Range: 806 -960 MHz and 1030 – 1090 MHz
Impedance: 50 Ohms
VSWR: 1.75:1 Max @806 to 960 MHz and 1.5:1 Max @ 1030 – 1090 MHz
Maximum Power: 100 Watts
Polarization: Vertical
Patterns: Equivalent of a quarter wavelength stub

Rated Output Power, FCC Emission Type and Frequencies:

FCC Rules Parts	Frequency Range (MHz)	Output Watts	Frequency Tolerance	Emission Designator
90	136.0 – 174.0	10.0	2.5 PPM	16K0F3E
90.210	136.0 – 174.0	10.0	2.5 PPM	11K0F3E
90.210	136.0 – 174.0	10.0	2.5 PPM	8K10F1E
90.210	136.0 – 174.0	10.0	2.5 PPM	8K10F1D
90.210	136.0 – 174.0	10.0	2.5 PPM	20K0F1E
80.379, 87.187(l)	156.0 – 158.0	1.0	2.5 PPM	16K0FE3
87.505	143.75 – 148.15 *		2.5 PPM	*
90	403.0 – 470.0	10.0	2.5 PPM	16K0F3E
90.210	403.0 – 470.0	10.0	2.5 PPM	11K0F3E
90.210	403.0 – 470.0	10.0	2.5 PPM	8K10F1E
90.210	403.0 – 470.0	10.0	2.5 PPM	8K10F1D
90.210	403.0 – 470.0	10.0	2.5 PPM	20K0F1E
90	450.0 – 520.0	10.0	2.5 PPM	16K0F3E
90.210	450.0 – 520.0	10.0	2.5 PPM	11K0F3E
90.210	450.0 – 520.0	10.0	2.5 PPM	8K10F1E
90.210	450.0 – 520.0	10.0	2.5 PPM	8K10F1D
90.210	450.0 – 520.0	10.0	2.5 PPM	20K0F1E
90	806.0 – 870.0	3.0	1.5 PPM	16K0F3E
90	806.0 – 870.0	3.0	1.5 PPM	11K0F3E
90	806.0 – 870.0	3.0	1.5 PPM	8K10F1E
90	806.0 – 870.0	3.0	1.5 PPM	8K10F1D
90	806.0 – 870.0	3.0	1.5 PPM	20K0F1E

In all cases above, the power is conducted and switchable to 1.0 W.

* The frequency, emission and maximum power will be determined by Headquarters Civil Air Patrol in accordance with the Civil Air Patrol Communications Plan

Emission Characteristics:

16K0F3E – 16kHz necessary bandwidth, frequency modulated, single channel analog, telephony

11K0F3E – 11kHz necessary bandwidth, frequency modulated, single channel analog, telephony

8K10F1E – 8.1kHz necessary bandwidth, frequency modulated, single channel digital without modulating sub-carrier, telephony

8K10F1D - 8.1kHz necessary bandwidth, frequency modulated, single channel digital without modulating sub-carrier, data transmission

20K0F1E – 20 kHz necessary bandwidth, frequency modulated, single channel digital without modulating sub-carrier, telephony

Essential Receiver Characteristics:

Frequency Range: One or two of the four frequency ranges specified above.

Receiver Sensitivity FM: 0.6 μ V, 12 dB SINAD

Channel Spacing: 12.5 kHz, 20 kHz, and 25 kHz

Hum and Noise Squelched: 50 mVRMS max.

Hum and Noise Unsquelched: 100 mVRMS max.

Selectivity 25 kHz FM channel: -60 dB

Selectivity 12.5 kHz FM channel: -60 dB

Selectivity 20 kHz FM channel: -60 dB

Audio Distortion: 5% max.

Frequency Stability: +/- 2.5 PPM or +/- 1.5 PPM depending on the frequency range

Temperature Range -30°C to +60°C

If the FAA objects to the application for equipment authorization, it should mail its objection with a showing that the equipment is incompatible with the National Airspace System to:

Office of Engineering and Technology Laboratory

Authorization and Evaluation Division

7435 Oakland Mills Rd.

Columbia, MD 21046

Please contact me at 928-708-1543 if you require any additional information.

Regards,

/S/ Mary Beaumont

Mary Beaumont

Principal RF Engineer

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