Test Results Summary

All test data appears in Exhibit M, in the order listed below.

Results of Radio Frequency Power Output and Power Amplifier Input Voltage/Current Measurement [§2.1046 & 2.1033 (c) (8)]

RF power output and PA input voltage /current test procedures appear in Exhibit K, paragraph 2.1.

Measurements were made at three transmitter operating frequencies (894.101500 MHz, 895.005500 MHz, and 895.901500 MHz). To satisfy the requirement of §2.1033 (c) (8), PA input voltage /current measurements were made at the minimum and the maximum transmitter power output levels.

Test data indicates that the minimum and maximum transmitter power output power levels are .7 mW. and 7.95 W. respectively. At the maximum transmitter power output levels, the PA DC input voltage and current are 25.7 V. and approximately 1.9A. At the minimum transmitter power output levels, the PA DC input voltage and current are 25.9 V. and .325A.

Results of the Occupied Bandwidth Measurement (Communication Channels) [§2.1049]

Occupied bandwidth test procedure for the communication channels, appears in Exhibit K, paragraph 2.2.1

Measurements were made at the two operating frequencies (listed above) and at three RF power levels (maximum, 3 dB below maximum, and minimum).

Test data indicates that the minimum and maximum 99% occupied bandwidths are 4.7 kHz and 4.8 kHz, respectively, satisfying the 6 kHz specification with margin.

Occupied bandwidth test procedure for the control channels, appears in Exhibit K, paragraph 2.2.2

Measurements were made at the two operating frequencies and at four RF power levels. The control channel frequencies tested were 894.1941 MHz and 895.9941 MHz. The power levels tested were maximum, -3 dB, -13 dB, and minimum RF output power.

Test data indicates that the minimum and maximum 99% occupied bandwidths are 2.53 kHz to 2.57 kHz, satisfying the 3.2 kHz specification with margin.

Results of Spurious Emissions Measurement at the Antenna Terminals [§2.1051]

Spurious emissions measurement test procedure, for the transmitter operated as a communication channel, appears in Exhibit K, paragraph 2.3.1

Measurements were made at the three operating frequencies (listed above) and at six RF power levels (maximum, 1, 2, 3, and 13 dB below maximum, and minimum).

Test data indicates that the ARTU satisfies the adjacent channel and in band emissions limits of §22.861 with margin.

All adjacent channel emissions are attenuated more than 30 dB below the peak power of the main emission and all emissions elsewhere in the 894 to 896 MHz band are attenuated more than 50 dB.

All emissions on the intervals from 10 MHz (lowest radio frequency generated in the transmitter) to 894 MHz, and 896 MHz to the tenth harmonic of the transmitter operating frequency, are attenuated at least 62 dB. A limitation on airborne transmitter emissions outside is not specified in §22.861. Inspection of the test data indicates that the ARTU satisfies (with margin) the general technical standard of part 22, Subpart C which indicates that the out-of-band emissions be attenuated at least $43 + 10\log_{10}(P)$, where P is the average transmitter power output in Watt.

Results of Spurious Emissions Measurement at the Antenna Terminals [§2.1051]

Spurious emissions measurement test procedure, for the transmitter operated as a control channel, appears in Exhibit K, paragraph 2.3.1

Measurements were made at the two operating frequencies and at four RF power levels. The control channel frequencies tested were 894.1941 MHz and 895.9941 MHz. The power levels tested were maximum, -3 dB, -13 dB, and minimum RF output power.

Test data indicates that the ARTU satisfies the adjacent channel and in band emissions limits of §22.861 with margin.

All adjacent channel emissions are attenuated more than 30 dB below the peak power of the main emission and all emissions elsewhere in the 894 to 896 MHz band are attenuated more than 50 dB.

All emissions on the intervals from 10 MHz (lowest radio frequency generated in the transmitter) to 894 MHz, and 896 MHz to the tenth harmonic of the transmitter operating frequency, are attenuated at least 62 dB. A limitation on airborne transmitter emissions outside is not specified in §22.861. Inspection of the test data indicates that the ARTU satisfies (with margin) the general technical standard of part 22, Subpart C which indicates that the out-of-band emissions be attenuated at least $43 + 10\log_{10}(P)$, where P is the average transmitter power output in Watt.

Results of Field Strength of Spurious Radiation Measurements [§2.1053]

Procedure for the measurement of the field strength of spurious radiation appears in Exhibit K, paragraph 2.4.

Measurements were made at an open area test site with the transmitter operating at the maximum power output level at two the transmitter operating frequencies (894.101500 MHz and 895.901500 MHz).

Test Data indicates that the ARTU satisfies the radiated emissions limits with margin. All spurious emissions radiated from the equipment cabinet and associated wiring are attenuated at least 68 dB with respect to the maximum radiated power of the transmitter. Note that emissions at the ARTU operating frequencies are also shown.

Results of Frequency Stability Measurements [§2.1055]

Frequency Stability measurement procedures appear in Exhibit K, paragraph 2.5.

Measurements were performed with the transmitter operating at the maximum power output level at 895.005500 MHz.

Frequency stability versus temperature measurements were made with the transmitter powered (initially unkeyed) and thermally stabilized at ambient temperatures of -30^0C, 50^0C, and at temperature increments of 10^0C over the range from -30^0C to 50^0C. Test data indicates that the deviation from the assigned frequency ranged from 0.0082 ppm to 0.0107 ppm over the entire temperature range. The maximum change in frequency observed was 2.3 Hz.

Frequency stability versus temperature measurements were also made with power removed from the transmitter and with the transmitter thermally stabilized at -30^0C, 0^0C, and 30^0C. Test data indicates that the deviation from the assigned frequency ranged from 0.0077 ppm to 0.0107 ppm over the entire temperature range. The maximum change in frequency observed was 2.7 Hz.

During frequency stability versus temperature tests, oven cycling and transmitter keying did not cause any notable transient effect on frequency.

Frequency stability versus supply voltage measurements were made with power supply voltage varied over the range from 85% to 115% of the nominal (28 VDC) power input voltage. Test data indicates that the deviation from the assigned frequency ranged from 0.0086 ppm to 0.0097 ppm over the entire voltage range. The maximum change in frequency observed was 1.0 Hz.

In all cases, the ARTU satisfies the .1 ppm tolerance of §22.863 with margin.