ENGINEERING STATEMENT

In Regard to Measurements on

GRAYSON ELECTRONICS COMPANY

MODEL: WSL4

FCC ID: JTEWSL4

A. INTRODUCTION

Hyak Laboratories, Inc. has been authorized by Grayson Electronics Company to determine compliance with FCC rules, Part 15, Subpart B.

The device operates in the 806 - 849 MHz band and is intended for use as a location sensor.

B. DESCRIPTION OF DEVICE

The device incorporates a dual conversion, super-heterodyne design.

The following information is supplied as requested in FCC Bulletin OCE 24:

1. Service in which the device will be used: Part 15 (22).

2. Function of device: Location Sensor for cellular systems.

3. Tuning range: 806 - 849 MHz.

4. IF used: 240 MHz; 5 MHz

5. Fundamental frequency of principal oscillators in the device.

   First local oscillator: (F_o+240) MHz (PLL).

   Second local oscillator 245 MHz.

C. DESCRIPTION OF MEASUREMENT FACILITIES

A description of the Hyak Laboratories' radiation test facility is a matter of record with the FCC. The facility was accepted for radiation measurements from 30 to 1000 MHz on October 1, 1976, and is currently listed as an accepted site.

D. DESCRIPTION OF MEASUREMENT PROCEDURE: RADIATED EMISSIONS

Measurements of radiated field strength were made using ANSI C63.4 (1992) as the basic procedure. Measurements were made with 3-meter spacing between the device under test and the test equipment antenna. The antenna(s) connected to the device under test consisted of a vertically polarized, dipole antenna approximately 10 cm long.

The device under test was placed on a rotatable table 80 cm in height.

Measurement of field strength was made through use of Tektronix 494P spectrum analyzer in conjunction with Singer DM-105A series or EMCO 3221 calibrated dipoles or EMCO 3115 DRG horn.

For each spurious emission identified between 30 to 5500 MHz (per Para 15.33(b)(1)), the test sample was rotated for maximum pickup, the test antenna varied in elevation, and the test antenna polarization shifted between horizontal to vertical in order to maximize observed signals.

E. REPORT OF RADIATED EMISSIONS

1. Table 1 lists the frequency and amplitude of all signals observed from 30 to 5500 MHz including those 20 dB below the limits of paragraph 15.109 of the FCC Rules.

2. Emissions from associated processor were within Class A verification limits.

TABLE 1

RADIATED SPURIOUS EMISSIONS
Measured at 3 meters
PART 15(B) PARA. 15.109

Frequency To Which Tuned (MHz)	Frequency of Emission (MHz)	Meter Reading (dBm)	Antenna Factor (dB)	Field[1] Intensity uV/m @ 3m	FCC Limit uV/m @ 3m	dB to Limit
806.000	1046.00	-101.6	24.5	31.3	500	-24
827.500	1067.50	-100.0	24.5	36	500	-23
849.000	1089.00	-100.0	24.6	38	500	-22

Note 1: $uV/m = \text{Log}^{-1\frac{dBu/m}{20}}$

dBu = dBm + antenna factor + 107

All other emissions were more than 20 dB below FCC limit.

RADIATED SPURIOUS EMISSIONS
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TABLE 1

F. PROCEDURE - AC LINE CONDUCTED SPURIOUS

The WLS4 operates from cell site/central office house dc battery supplies; there is no connection to ac power lines.

G. STATEMENT

Technical test data are from tests performed by me or under my supervision. My qualifications are a matter of record with the Federal Communications Commission. I personally attest to the accuracy of the test data submitted as a part of this engineering statement.

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Rowland S. Johnson

Dated: June 11, 2001