3.9

Field Strength data of Spurious Radiation for the RT-138 are indicated on the following two pages. The Field Strength Measurements were contracted to Rogers Consulting.

2.993 Measurements required: Field Strength of Spurious Radiation.

Type/Model: RT-138

Frequency Investigation: 0 to 2 Ghz

Mod Freq: 2500 Hz 16 db above 50% deviation.

Data taken per 2.993(a), 2.993(b)(2) and 2.997.

Procedure used per IEC Publication 106 and 106A.

Description of test site is on file with FCC for ROGERS CONSULTING. Reference: 6810/EQU 4-3-0, submittals to FCC April 1977, revised July 1978 and revised October 1980.

The transmitter was placed on a wooden turntable 4 feet above groundplane and a distance of 10 feet (3m) from the FSM antenna. Each spurious frequency was maximized by raising and lowering the FSM antenna, and by rotating the 4 foot turntable. Dipole antennas were used from 30 Mhz to 1000 Mhz and a conical log-spiral antenna was used from 1 Ghz to 2 Ghz.

The attenuation of the spurious emissions were measured with a FSM and compared to transmitter power in accordance with the following:

Spurious attenuation (db) = $P_o$ in dbm
- site correction in db
- FSM reading in dbm

Sample Calculation: $P_o$ = 10 watts = + 40 dbm

Spurious attenuation = +40 dbm - 40 db -(-91 dbm)
= 91 db

| Carrier Frequency Mhz | Spurious Frequency Mhz | FSM Reading @ 3m in dbm | Site Correction in db | Spurious Level Below Carrier in db (calculated) |
|---|---|---|---|---|
| 138.100 | 276.20 | -85 | -25 | 106 |
| | 414.30 | -86 | -30 | 96 |
| 155.000 | 310.00 | -88 | -27 | 101 |
| | 465.00 | -81 | -32 | 89 |
| | 620.00 | -80 | -35 | 85 |
| 173.987 | 347.98 | -88 | -28 | 100 |
| | 521.96 | -90 | -33 | 97 |
| | 695.95 | -84 | -36 | 88 |
| | 869.94 | -90 | -39 | 91 |
| Guard | | | | |
| 165.000 | 330.00 | -80 | -27 | 93 |
| | 495.00 | -93 | -32 | 101 |
| | 660.00 | -89 | -35 | 94 |

All spurious emissions were more than 20 db below permissible limits of $43 + 10 \log_{10} P_o$ (53 db).

Specifications of Paragraph 2.993(a), 2.993(b)(2) and 2.997 are met.

## TEST EQUIPMENT LIST FOR ROGERS CONSULTING

TEST PROCEDURE & TEST EQUIPMENT LIST per 2.983(e), 2.999 and 2.947.

Measurement Procedure: Standard Engineering practices were used in collecting the test data.

Reference Material: IEEE-187, EIA-RS378, EIA-RS237, EIA-RS152B, IEC-106 & 106A, ICAO-Annex 10, FCC-OCE-24, ITT Ref Data for Radio Eng. 5th Edition.

2.947(d) List of Test Equipment Used:

1. VTVM: Beckman 3010
2. Scope: Tektronic 475
3. R.F. Load: Bird 8085
4. Wattmeter: Bird 43
5. Power Supply: Sorensen SRL20-25
6. R.F. Generator: Boonton 102F
7. Spectrum Analyzer: HP 141T, HP8555A, HP 8552B
8. Counter: Weston 1255
9. Antennas: Singer KT-105D, Stoddard 90924-2, APR/4

The equipment is used daily and kept in good calibration and operating condition.

# QUALIFICATIONS

of

Noel A. Rogers, President
ROGERS CONSULTING

Mr. Rogers has approximately 28 years experience in the field of electronics; 24 of which have been devoted directly to the design and development of radio communications equipment.

## POSITIONS HELD:

| | | |
|---|---|---|
| Junior Engineer: | Avionic Division<br>John Oster Mfg. Co. | 2 Years |
| Project Engineer: | Learcal Division<br>Lear, Inc. | 2 Years |
| Sr. Project Engineer: | Motorola, Inc. | 4 Years |
| Group Leader Eng: | King Radio Corp. | 10 Years |
| President: | Rogers Consulting | 8 Years |

## EDUCATIONAL BACKGROUND:

1) Bachelor of Science Degree in Electrical Engineering from Milwaukee School of Engineering.

2) 15 Hours toward MSEE at UCLA.

3) Several Specialized Training courses and seminars pertaining to Digital Techniques, Microprocessors and Software programming.

Noel A. Rogers

Noel A. Rogers

8-19-82

Date