

### 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:

$$\begin{aligned} \text{Spurious attenuation (db)} &= P_o \text{ in dbm} \\ &\quad - \text{site correction in db} \\ &\quad - \text{FSM reading in dbm} \end{aligned}$$

$$\text{Sample Calculation: } P_o = 10 \text{ watts} = + 40 \text{ dbm}$$

$$\begin{aligned} \text{Spurious attenuation} &= +40 \text{ dbm} - 40 \text{ db} - (-91 \text{ dbm}) \\ &= 91 \text{ db} \end{aligned}$$

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.

*YAC*

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

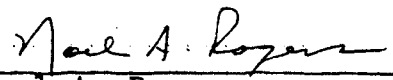
Mr. Rogers has approximately 28 years experience in the field of electronics; 24 of which have been devoted directly to the design and development of radio communications equipment.

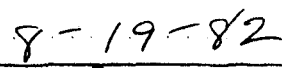
### POSITIONS HELD:

Junior Engineer:	Avionic Division John Oster Mfg. Co.	2 Years
Project Engineer:	Learcal Division 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.

  
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Noel A. Rogers

  
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Date