TEST REPORT
for
APPLICATION of CERTIFICATION

For

GARMIN INTERNATIONAL, INC.
1200 East 151st Street
Olathe, KS 66062
Phone: (913)397-8200

MODEL: VHF 725
011-00520-( )
FREQUENCY: 156.025-157.425 Transmit

FCC ID: IPH-37800

Test Date: May 5, 1999

Certifying Engineer: Scot D Rogers

Scot D. Rogers
ROGERS LABS, INC.
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Overland Park, Kansas 66210
Phone: (913)837-3214
FAX: (913)837-3214

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FORWARD:

In accordance with the Federal Communications Code of Federal Regulations, dated October 1, 1998, Part 2 Subpart J, Paragraphs 2.907, 2.911, 2.913, 2.925, 2.926, 2.1031 through 2.1057; Part 80, Subchapter E, Paragraphs 80.201 through 80.227; and Report and Order FCC 98-58 the following is submitted:

List of Test Equipment

A Hewlett Packard 8591EM and or 8562A Spectrum Analyzer was used as the measuring device for the emissions testing. The analyzer settings used are described in the following table. Refer to Appendix for a complete list of Test Equipment.

HP 8591EM SPECTRUM ANALYZER SETTINGS		
CONDUCTED EMISSIONS:		
RBW	AVG. BW	DETECTOR FUNCTION
9 kHz	30 kHz	Peak/Quasi Peak
RADIATED EMISSIONS (30 - 1000 MHz):		
RBW	AVG. BW	DETECTOR FUNCTION
120 kHz	300 kHz	Peak/Quasi Peak
HP 8562A SPECTRUM ANALYZER SETTINGS		
RADIATED EMISSIONS (1 - 40 GHz):		
RBW	AVG. BW	DETECTOR FUNCTION
1 MHz	1 MHz	Peak/Average
ANTENNA CONDUCTED EMISSIONS:		
RBW	AVG. BW	DETECTOR FUNCTION
100 kHz	300 kHz	Peak

2.1033(c) Application for Type Acceptance

1. Manufacturer: GARMIN INTERNATIONAL, INC.
   1200 East 151st Street
   Olathe, KS 66062

2. Identification: Model: VHF 725
   FCC I.D.: IPH-37800

3. Refer to Installation and Operating Instructions Manual.

4. Emission Type: 11KOF3E

5. Frequency Range: 156.025-157.425 MHz, Marine Channels 1A-88A, WX1-WX10. NOTE: Channels 2,4,60 and 62 are not accessible for U.S. mode of operation.

6. Operating Power Level:

   Variable: LOW = 1.0 Watts; HIGH = 5.0 Watts

7. Max P_o: 10.0 Watts

8. Power into final amplifier: 11.25 Watts (7.5 V @ 1.5A).

9. Tune Up Procedure for Output Power:

   The VHF 725 has one manual adjustment. Other adjustments are made in software using a test monitor program.

   Transmit frequency is set by adjusting the variable capacitor C111.

   The test monitor program is used to adjust high and lower power settings from the microcontroller and these values are stored in memory. Next, a standard modulating signal is applied to the external microphone input and digital potentiometer I205-A is adjusted to limit maximum modulation capability to <5 kHz deviation. This setting is also stored in memory.

10. Function of Each Semiconductor Device in Transmitter:

Reference Designator	Function
Q307, Q310	Apply battery voltage to ALC circuit, T/R Switch and pre-driver stage.
Q305	Transmitter driver stage. Output power is approximately +19 dBm.
D306, I301-A	Part of the ALC circuit.
I301-D	Provides transmit output power feedback to microcontroller.
Q301	Transmitter final output stage (power module). Output power is approximately +37 dBm.
D302	Part of T/R Switch.

Circuit Diagrams:

Refer to Schematic Diagrams.

11. FCC ID Label:

Refer to Appendix of this Report for Label Location.

12. Photographs of Equipment.

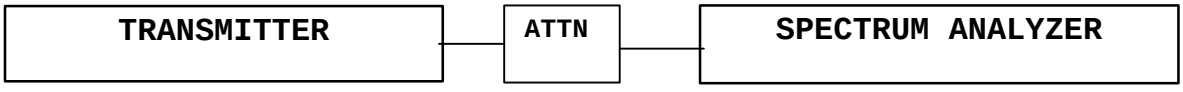
Refer to Appendix of this Report.

2.1046 RF Power Output

Measurements Required:

Measurements shall be made to establish the radio frequency power delivered by the transmitter into the standard output termination. The power output shall be monitored and recorded and no adjustment shall be made to the transmitter after the test has begun, except as noted below:
If the power output is adjustable, measurements shall be made for the highest and lowest power levels.

Test Arrangement:



The r.f. power output was measured at the antenna terminals by replacing the antenna with appropriate attenuation, a spectrum analyzer and cable (with .5 dB loss in the cable).

The spectrum analyzer had impedance of 50Ω to match the impedance of the standard antenna. A HP 8591EM Spectrum Analyzer was used to measure the r.f. power at the antenna port. The data was taken in dBm and converted to watts as shown in the following Table. Refer to Figures 1 through 6 showing the output power of the transmitter. Data taken per Paragraph 2.1046 and applicable parts of Part 80.

P_{dBm} = power in dB above 1 milliwatt.
Milliwatts = $10^{(PdBm/10)}$
Watts = (Milliwatts)(0.001)(W/mW)

29.64 dBm = $10^{(29.64/10)}$
= 920.4 mW
= 0.92 Watts

Results:

LOW POWER

CHANNEL	FREQUENCY	P_{dBm}	P_{mw}	P_w
1A	156.050	29.64	920.4	0.92
25	157.250	29.71	935.4	0.93
88A	157.425	28.87	770.9	0.77

HIGH POWER

CHANNEL	FREQUENCY	P_{dBm}	P_{mw}	P_w
1A	156.050	36.90	4897.7	4.90
25	157.250	36.86	4852.8	4.85
88A	157.425	36.56	4528.9	4.53

The specifications of Paragraph 2.1046 and applicable Parts of 80 are met. There are no deviations to the specifications.

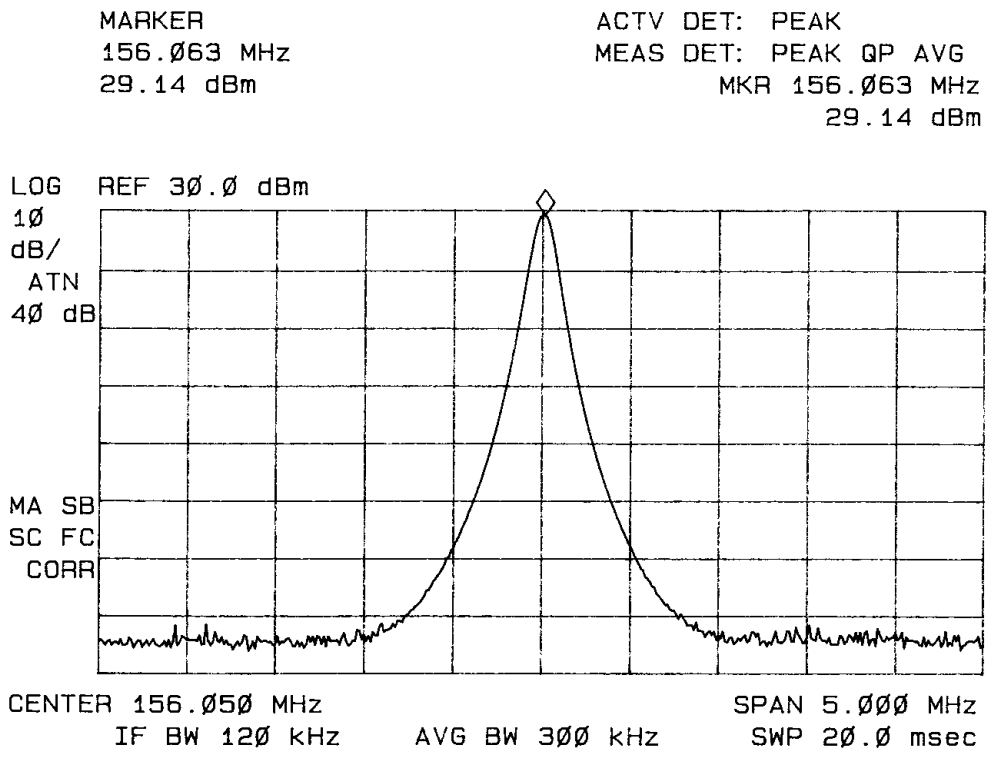


Figure 1: Low Power Output Channel 1A

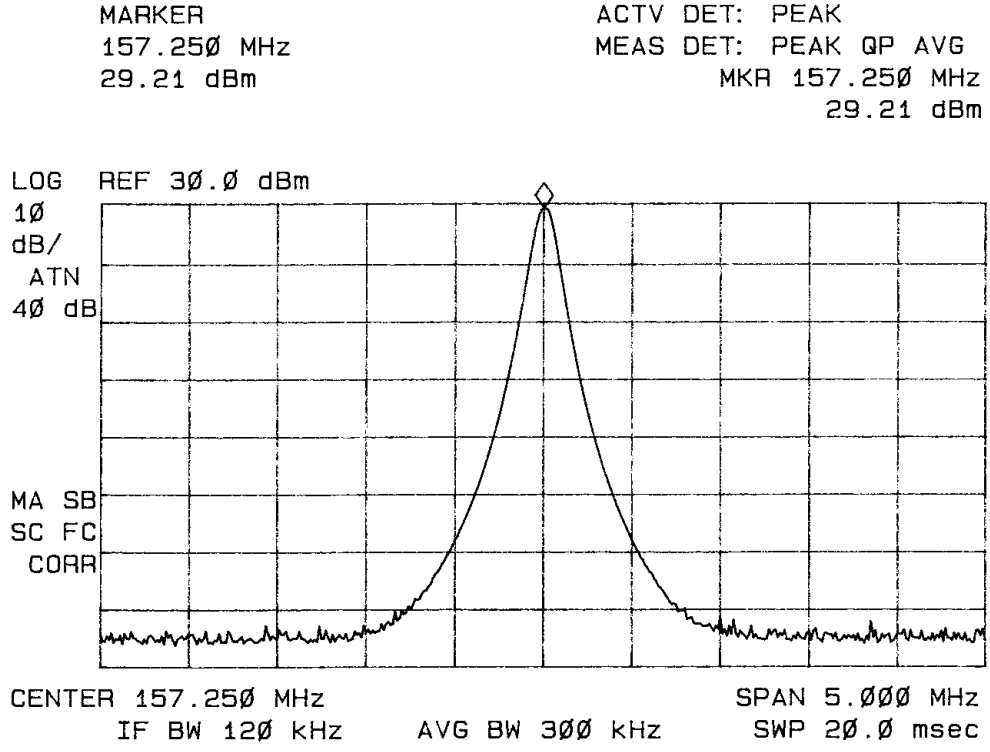


Figure 2: Low Power Output Channel 25

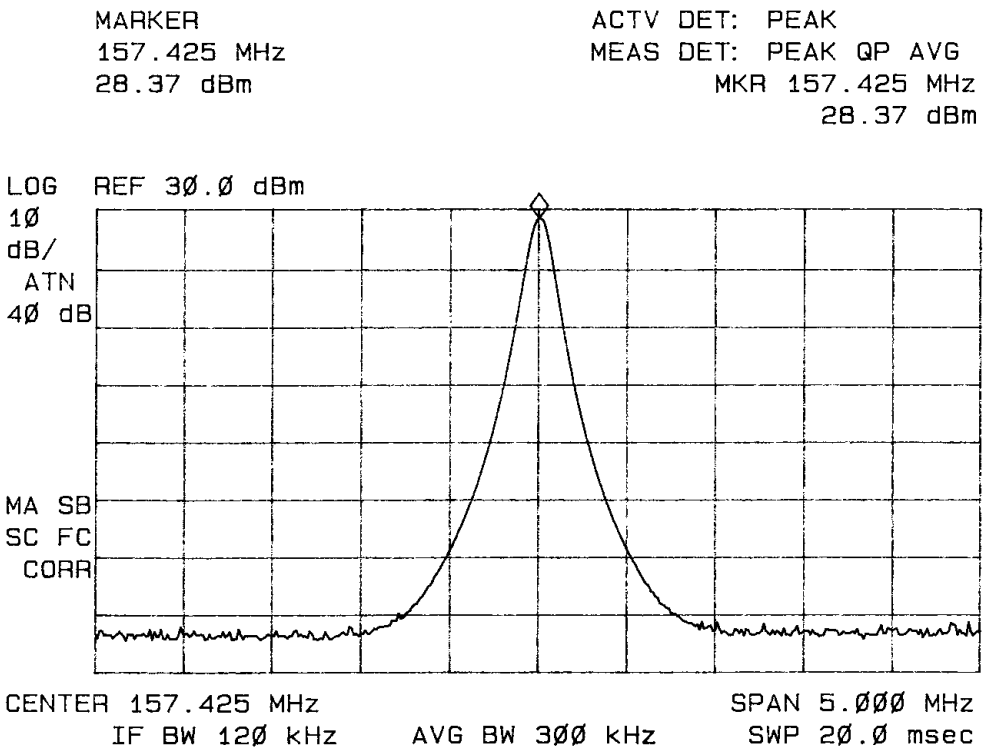


Figure 3: Low Power Output Channel 88A

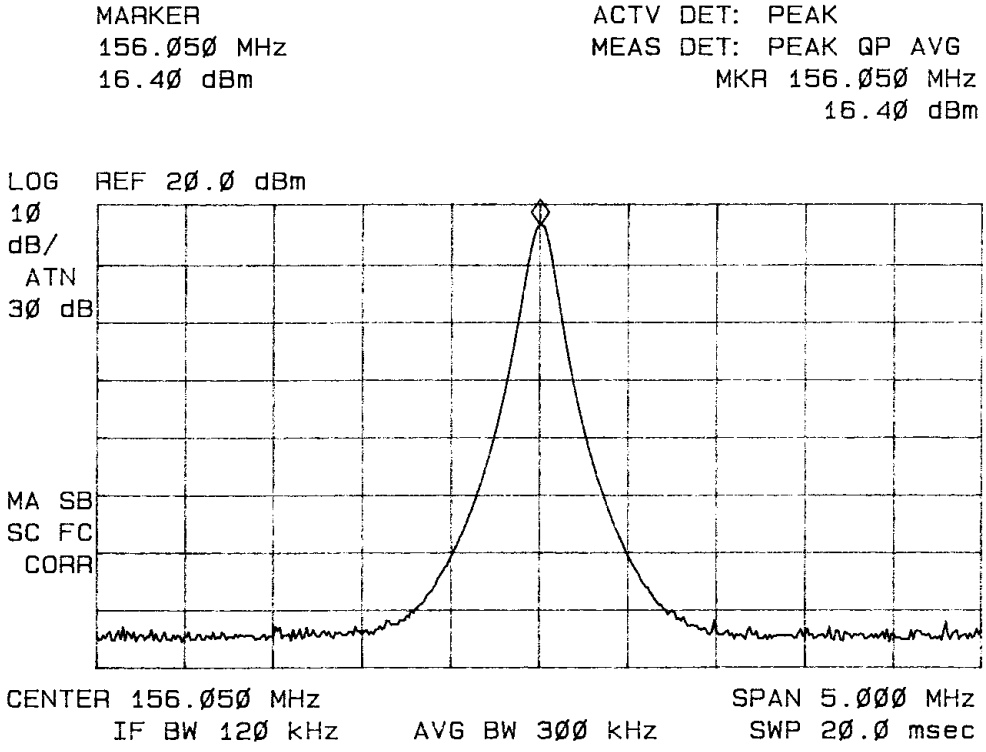


Figure 4: High Power Output Channel 1A

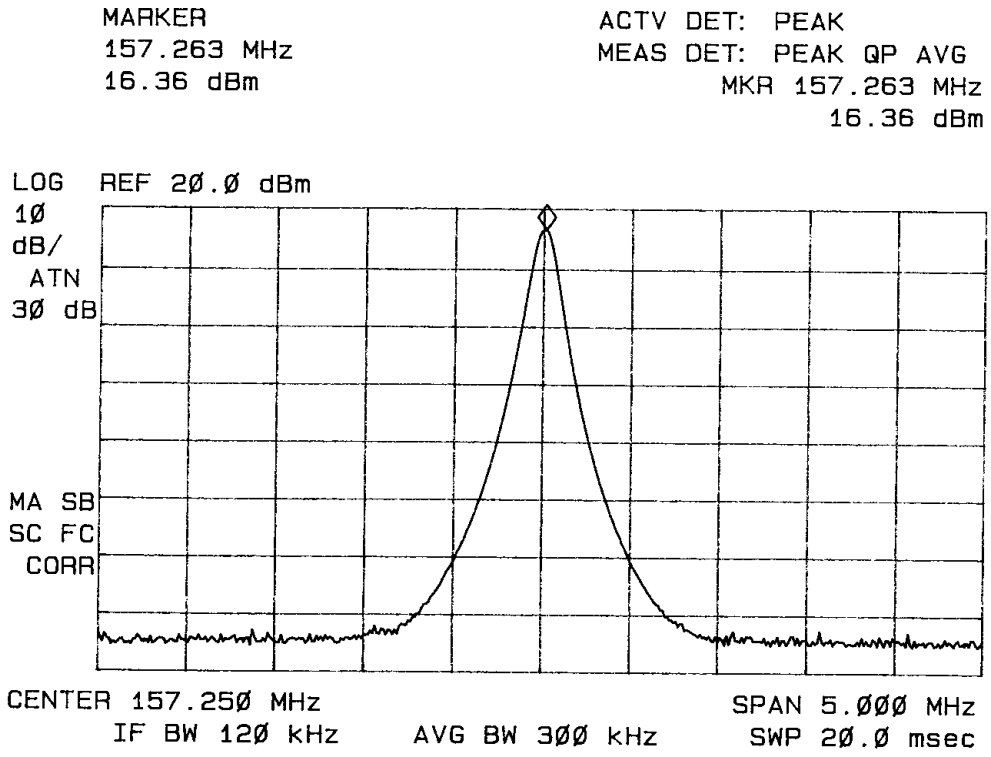


Figure 5: High Power Output Channel 25

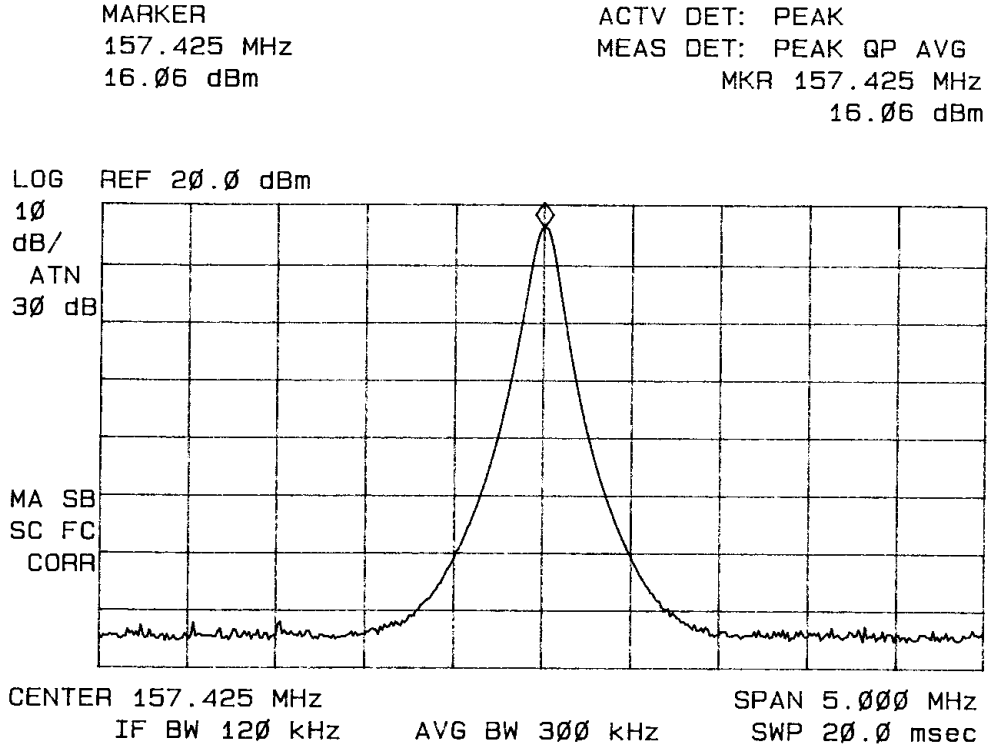


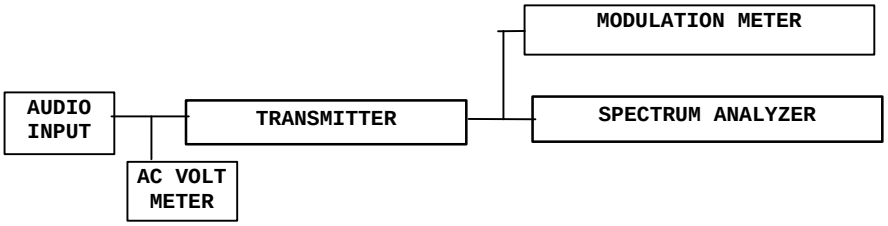
Figure 6: High Power Output Channel 88A

2.1047 Modulation Characteristics

Measurements Required:

A curve or equivalent data, which shows that the equipment will meet the modulation requirements of the rules, under which the equipment is to be licensed, shall be submitted.

Test Arrangement:



The r.f. output was coupled to a HP Spectrum Analyzer and a modulation meter. The spectrum analyzer was used to observe the r.f. spectrum with the transmitter operating in its various modes. The modulation meter was used to measure the frequency deviation.

Results:

Figure 7 displays the graph made showing the audio frequency response of the modulator. The frequency generator was set to 1 kHz and injected into the audio input port of the EUT. The amplitude was adjusted such that the modulation meter read 4.5 kHz frequency deviation. The frequency of the generator was then varied and the output level recorded while holding the 4.5 kHz deviation constant.

Figure 8 shows the modulation level versus the microphone audio input. The frequency is held constant the input voltage is varied and the frequency deviation is read from the modulation meter. The specifications of Paragraph 2.1047 and 80.213(a)(2) are met.

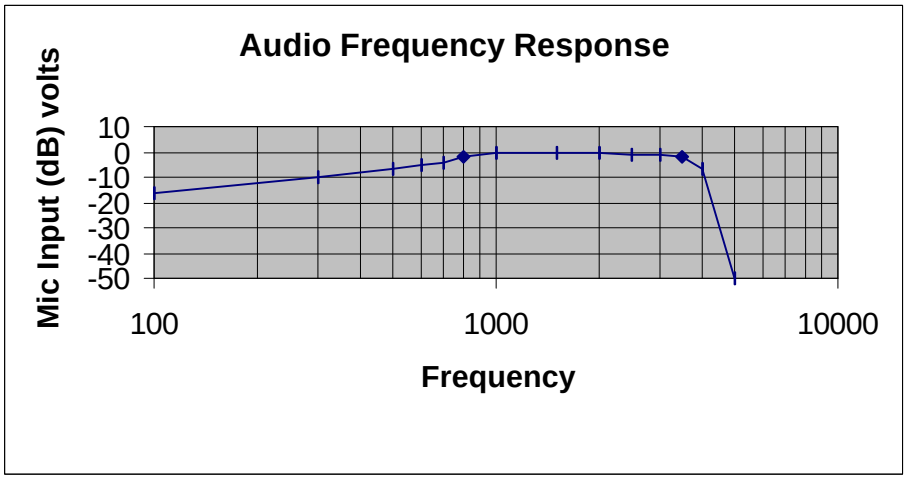


Figure 7: Modulation Characteristics.

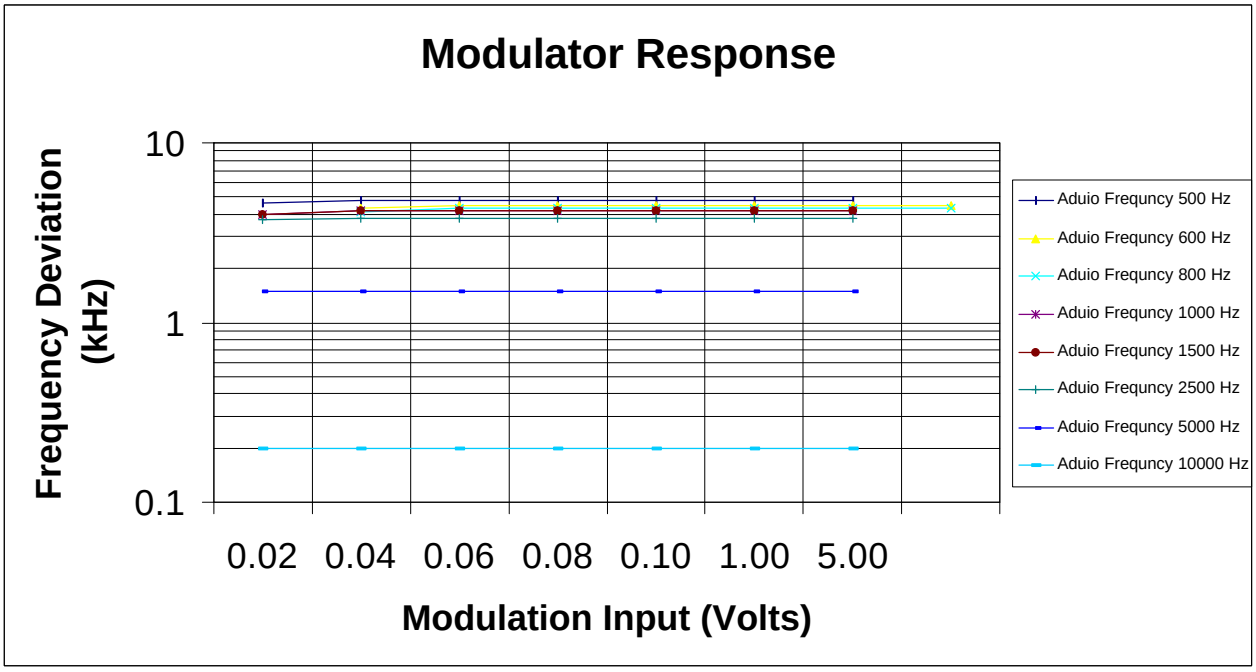


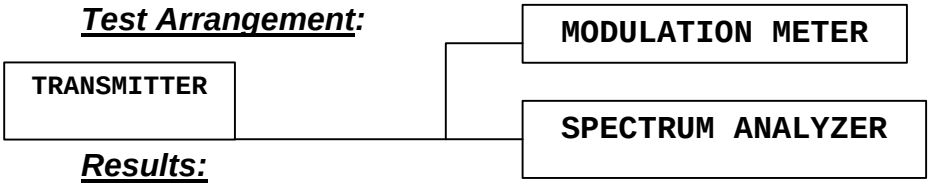
Figure 8: Modulation Characteristics.

2.1049 Occupied Bandwidth

Measurements Required:

The occupied bandwidth, that is the frequency bandwidth such that below its lower and above its upper frequency limits, the mean powers radiated are equal to 0.5 percent of the total mean power radiated by a given emission.

Test Arrangement:



Results:

POWER	f_c	O.B. kHz
LOW	157.25	10.63
HIGH	157.25	10.63

REFER TO FIGURES 9 and 10.

A spectrum analyzer was used to observe the R.F. spectrum with the transmitter operating in a normal mode, modulated by a frequency of 2500 Hz at a level 16 dB above 50% modulation. The power ratio in dB representing 99% of the total mean power was recorded from the spectrum analyzer.

Requirements of 2.1049(c)(1) and 80.213(a)(2) are met. There are no deviations to the specifications.

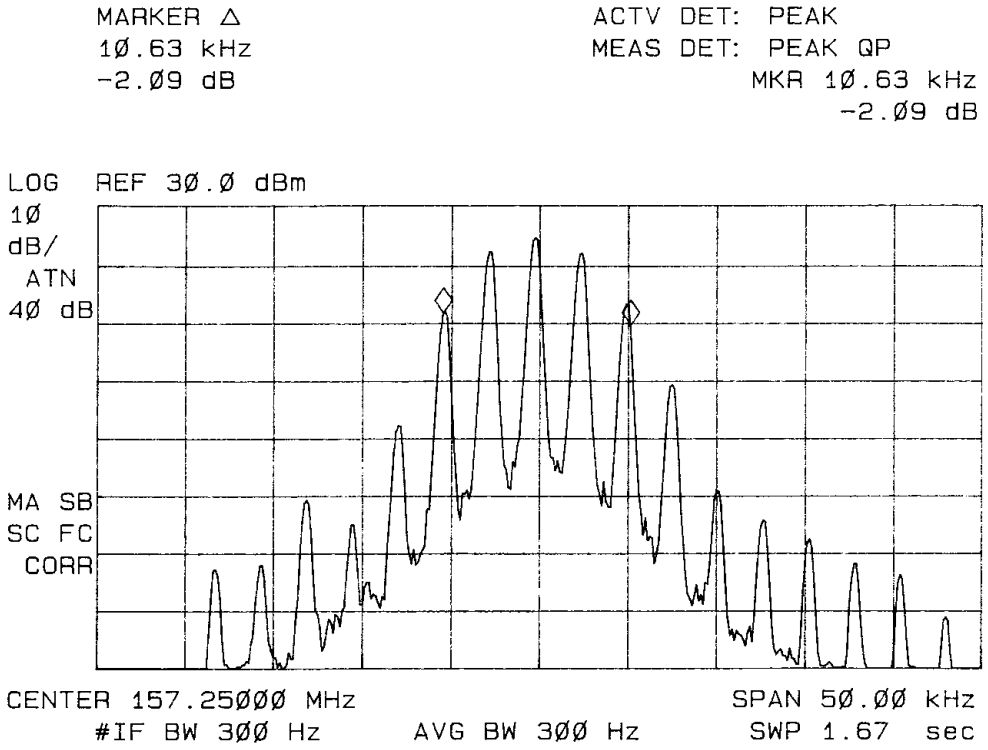


Figure 9: Occupied Band Width Channel 25 Low Power.

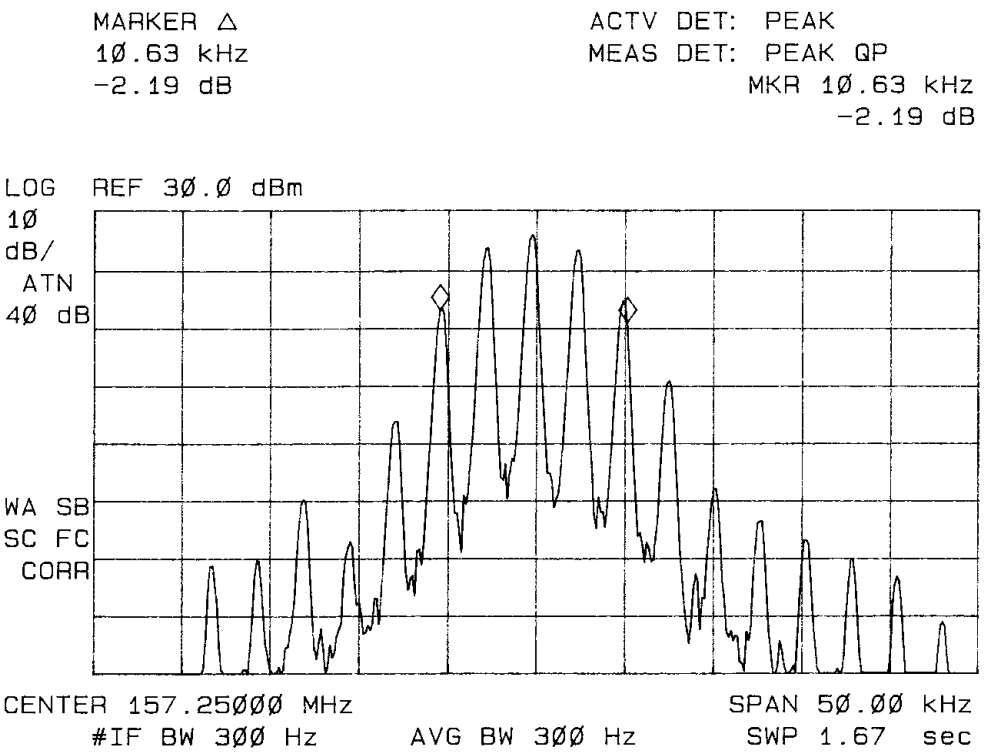


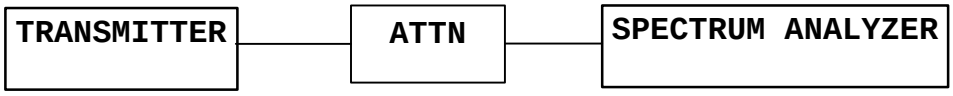
Figure 10: Occupied Band Width Channel 25 High Power.

2.1051 Spurious Emissions at Antenna Terminals

Measurements Required:

The radio frequency voltage or power generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna.

Test Arrangement:



The r.f. output was coupled to a HP 8591EM Spectrum Analyzer. The spectrum analyzer was used to observe the r.f. spectrum with the transmitter operated in a normal mode. The frequency spectrum from 10 MHz to 1.6 GHz was observed and plots produced of the frequency spectrum. Figures 11 and 12 represent data for the VHF 725. Data taken per 2.1051, 2.1057, 2.1049 and 80.211(f).

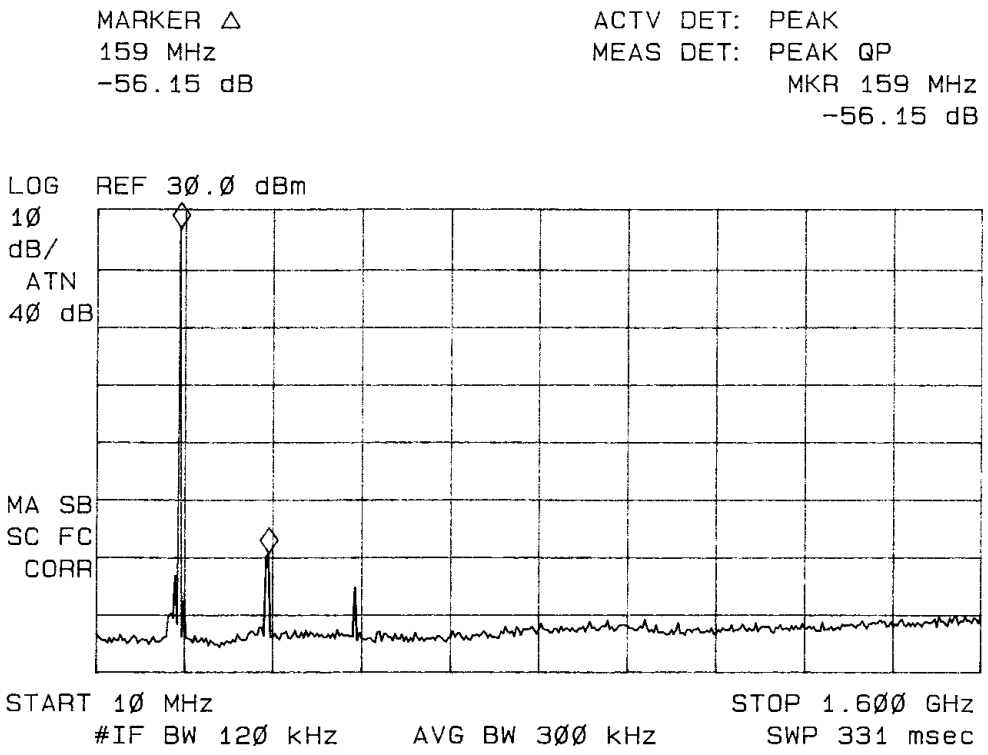


Figure 11: Emissions at Antenna Terminal.

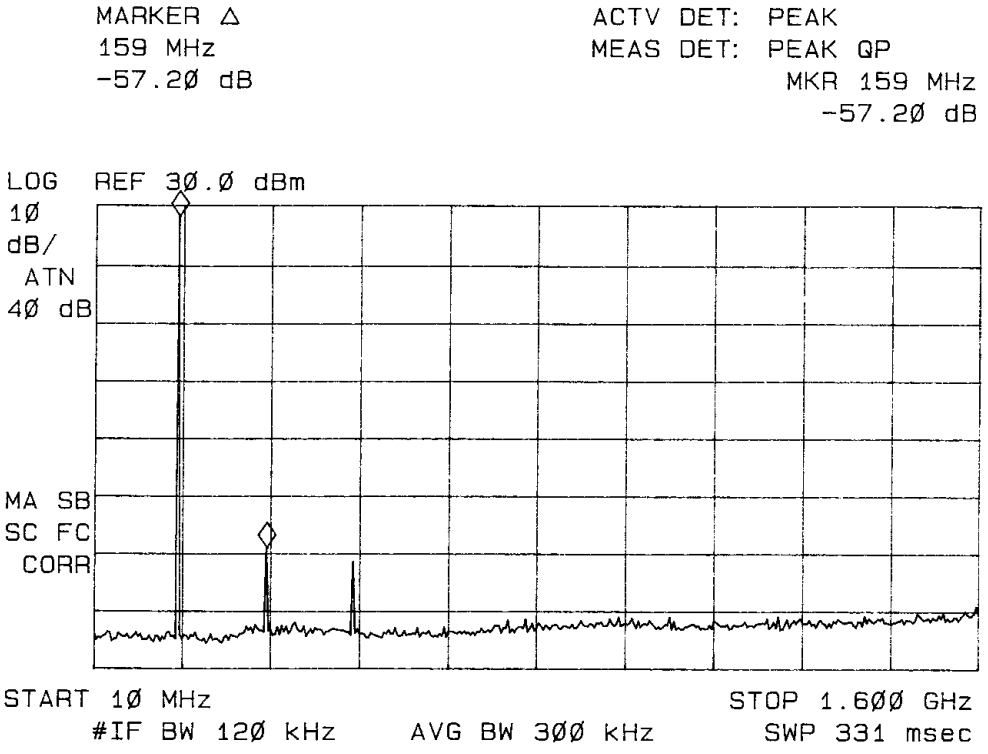


Figure 12: Emissions at Antenna Terminal.

Results:

Data taken per 2.1051 and applicable paragraphs of Part 80. Specifications of Paragraphs 2.1051, 2.1057 and 80.211 are met. There are no deviations to the specifications.

FCC Limit:
1 Watt = 43 + 10 LOG(P_o)
= 43 + 10 LOG(1)
= 43.0

Low Power

FREQUENCY MHz	SPURIOUS FREQ. (MHz)	LEVEL BELOW CARRIER (dB)
157.25	314.5	56.15
	471.75	62.03

FCC Limit:
5 Watt = 43 + 10 LOG(P_o)
= 43 + 10 LOG(5)
= 49.99

High Power

FREQUENCY MHz	SPURIOUS FREQ. (MHz)	LEVEL BELOW CARRIER (dB)
157.25	314.5	57.2
	471.75	59.5

The output of the unit was coupled to a HP Spectrum Analyzer and the frequency emissions were plotted.

2.1053 Field Strength of Spurious Radiation

Measurements Required:

Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation.

Test Arrangement:

The transmitter was placed on a wooden turntable 0.8 meters above the ground plane and at a distance of 3 meters from the FSM antenna. The transmitter was activated and the frequency spectrum of the fundamental was observed. The turntable was rotated though 360 degrees to locate the position registering the highest amplitude emission. The amplitude of the fundamental frequency was measured and recorded. The frequency spectrum was then searched for spurious emissions generated from the transmitter. The amplitude of each spurious emission was maximized by raising and lowering the FSM antenna and rotating the turntable before data was recorded. A Biconilog antenna for frequencies of 30 MHz to 1 GHz or a log periodic antenna was used for frequencies of 200 MHz to 5 GHz, and pyramidal horn antennas for frequencies of 5 GHz to 40 GHz. Emission levels were measured and recorded from the spectrum analyzer in dBµV. This level was then added to the antenna factor to calculate the field strength at 3 meters. Data was taken at the ROGERS LABS, INC. 3 meters open area test site (OATS). A description of the test facility is on file with the FCC, Reference: 31040/SIT, 1300F2, dated February 6, 1998. The testing procedures used conform to the procedures stated in the ANSI 63.4-1992 document.
Calculations made are as follows:
CFS = Calculated Field Strength
FSM = Field Strength Measurement
CFS = FSM + Antenna Factor – Amp. Gain
CFS = 108.1 + 10.7 - 0
CFS = 118.8

The limit for emissions are defined by the following equations:

Limit = Amplitude of spurious emission must be attenuated by this amount below the level of the fundamental.

On any frequency removed from the assigned frequency by more than 250% of the authorized bandwidth: at least 43 + 10 Log (P_o) dB.

Attenuation = 43 + 10 $Log_{10}(P_w)$
= 43 + 10 $Log_{10}(1.0)$
= 43.0 dB
Low Power Limit = 115.1 - 43.0
= 72.8
High Power Limit = 120.4 – 49.98
= 70.4

Results:

Channel 1A Low Power

Frequency (MHz)	FSM Horz. (dBµV)	FSM Vert. (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	CFS Horz. @ 3m (dBµV/m)	CFS Vert. @ 3m (dBµV/m)	Limit
156.05	108.1	114.1	10.7	0	118.8	124.8	-
312.10	65.6	62.3	14.7	35	45.3	42.0	72.8
468.15	64.8	65.9	16.9	35	46.7	47.8	72.8
624.20	61.3	61.5	20.2	35	46.5	46.7	72.8
780.25	52.0	52.7	21.4	35	38.4	39.1	72.8
936.30	57.6	65.1	23.4	35	46.0	53.5	72.8
1092.35	48.7	52.8	25.2	35	38.9	43.0	72.8
1248.40	51.7	52.9	25.0	35	41.7	42.9	72.8

Channel 1A High Power

Frequency (MHz)	FSM Horz. (dBµV)	FSM Vert. (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	CFS Horz. @ 3m (dBµV/m)	CFS Vert. @ 3m (dBµV/m)	Limit
156.05	112.5	122.5	10.7	0	123.2	133.2	-
312.10	71.2	76.1	14.7	35	50.9	55.8	70.4
468.15	61.3	65.4	16.9	35	43.2	47.3	70.4
624.20	60.6	63.5	20.2	35	45.8	48.7	70.4
780.25	50.3	64.6	21.4	35	36.7	51.0	70.4
936.30	55.1	59.8	23.4	35	43.5	48.2	70.4
1092.35	47.7	54.2	25.2	35	37.9	44.4	70.4

Channel 25 Low Power

Frequency (MHz)	FSM Horz. (dBµV)	FSM Vert. (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	CFS Horz. @ 3m (dBµV/m)	CFS Vert. @ 3m (dBµV/m)	Limit
157.25	104.4	114.3	10.7	0	115.1	125.0	-
314.50	73.7	74.8	14.7	35	53.4	54.5	72.8
471.75	60.2	65.9	16.9	35	42.1	47.8	72.8
629.00	61.7	64.3	20.2	35	46.9	49.5	72.8
786.25	51.5	65.2	21.4	35	37.9	51.6	72.8
943.50	52.3	57.8	23.4	35	40.7	46.2	72.8
1100.75	49.8	54.8	25.0	35	39.8	44.8	72.8

Channel 25 High Power

Frequency (MHz)	FSM Horz. (dBµV)	FSM Vert. (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	CFS Horz. @ 3m (dBµV/m)	CFS Vert. @ 3m (dBµV/m)	Limit
157.25	109.7	121.3	10.7	0	120.4	132.0	-
314.50	68.8	65.5	14.7	35	48.5	45.2	70.4
471.75	66.5	68.7	16.9	35	48.4	50.6	70.4
629.00	58.2	60.2	20.2	35	43.4	45.4	70.4
786.25	47.8	59.0	21.4	35	34.2	45.4	70.4
943.50	53.9	61.5	23.4	35	42.3	49.9	70.4
1100.75	50.2	53.2	25.0	35	40.2	43.2	70.4

Channel 88A Low Power

Frequency (MHz)	FSM Horz. (dBµV)	FSM Vert. (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	CFS Horz. @ 3m (dBµV/m)	CFS Vert. @ 3m (dBµV/m)	Limit
157.43	104.6	114.4	10.7	0	115.3	125.1	-
314.85	72.5	74.8	14.7	35	52.2	54.5	72.8
472.28	60.5	66.6	16.9	35	42.4	48.5	72.8
629.70	61.5	63.2	20.2	35	46.7	48.4	72.8
787.13	54.2	64.6	21.4	35	40.6	51.0	72.8
944.55	50.9	60.5	23.4	35	39.3	48.9	72.8
1101.98	52.1	54.1	25.0	35	42.1	44.1	72.8

Channel 88A High Power

Frequency (MHz)	FSM Horz. (dBµV)	FSM Vert. (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	CFS Horz. @ 3m (dBµV/m)	CFS Vert. @ 3m (dBµV/m)	Limit
157.43	111.0	121.0	10.7	0	121.7	131.7	-
314.85	70.0	64.2	14.7	35	49.7	43.9	70.4
472.28	66.6	68.3	16.9	35	48.5	50.2	70.4
629.70	59.3	60.0	20.2	35	44.5	45.2	70.4
787.13	47.0	59.8	21.4	35	33.4	46.2	70.4
944.55	56.7	61.8	23.4	35	45.1	50.2	70.4
1101.98	49.2	51.3	25.0	35	39.2	41.3	70.4

Specifications of Paragraph 2.993, 2.997 and 80.211 are met. There are no deviations to the specifications.

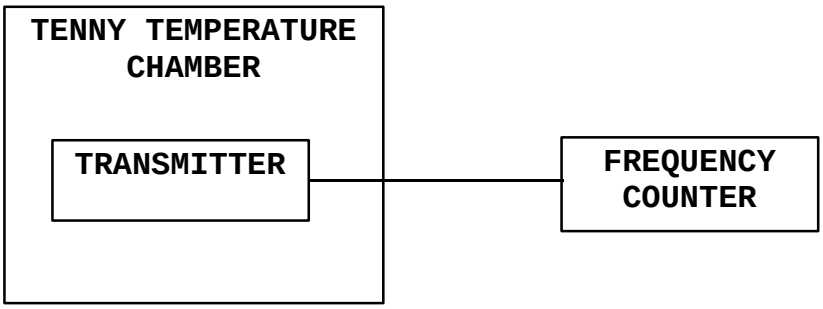
2.1055 Frequency Stability

Measurements Required:

The frequency stability shall be measured with variations of ambient temperature from -20° to +50° centigrade. Measurements shall be made at the extremes of the temperature range and at intervals of not more than 10° centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. In addition to temperature stability the frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
(2) For hand carried, batteries powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.
(3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

Test Arrangement:



The measurement procedure outlined below shall be followed:

Step 1: The transmitter shall be installed in an environmental test chamber whose temperature is controllable. Provision shall be made to measure the frequency of the transmitter.
Step 2: With the transmitter inoperative (power switched “OFF”), the temperature of the test chamber

shall be adjusted to +25ºC. After a temperature stabilization period of one hour at +25ºC, the transmitter shall be switched "ON" with standard test voltage applied.
Step 3: The carrier shall be keyed "ON", and the transmitter shall be operated unmodulated at full r.f. power output at the duty cycle for which it is rated, for a duration of at least 5 minutes. The r.f. carrier frequency shall be monitored and measurements shall be recorded.
Step 4: The test procedures outlined in Steps 2 and 3, shall be repeated after stabilizing the transmitter at the environmental temperatures specified, -20ºC to 50ºC in 10 degree increments.

The frequency stability was measured with variations in the power supply voltage from 85 to 115 percent of the nominal value and at the battery end point. A Sorenson DC Power Supply was used to vary the dc voltage for the power input from 6.8 Vdc to 9.2 Vdc. The frequency was measured and the variation in parts per million was calculated. Data was taken per Paragraphs 2.1055(a)(2) and 80.209.

Results:

FREQ. (MHz)	FREQUENCY STABILITY VS TEMPERATURE IN PARTS PER MILLION (PPM)							
	Temperature in °C							
	-20	-10	0	+10	+20	+30	+40	+50
157.2500	-4.7	-0.06	1.7	1.6	0.4	-2.7	-2.9	3.1

FREQUENCY IN MHz	**STABILITY VS VOLTAGE VARIATION (±15%) IN PPM INPUT VOLTAGE**		
	6.8 V_{dc}	**8.0 V_{dc}**	**9.2 V_{dc}**
157.25	0	0	0

Specifications of Paragraphs 2.1055 and applicable parts of 80 are met. There are no deviations to the specifications.

APPENDIX

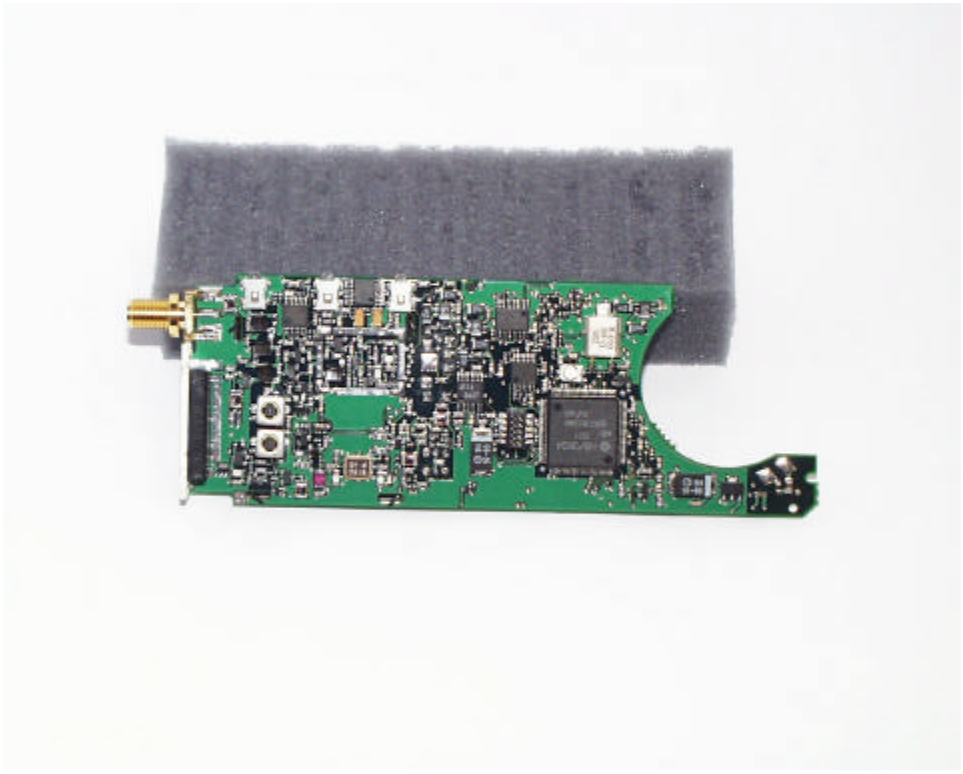
Model: VHF 725

1. Photos of Radiated Emissions Test Set Up.
2. Photos Case Front and Back.
3. Photos RF PC Board.
4. Photo FCC ID Label Location.
5. Test Equipment List.
6. Rogers Qualifications.
7. FCC Site Approval Letter.

GARMIN INTERNATIONAL, INC.
Model: VHF 725
Photos Radiated Emissions Test Setup

GARMIN INTERNATIONAL, INC.
Model: VHF 725
Photos Case Front and Back

GARMIN INTERNATIONAL, INC.
Model: VHF 725
Photos RF PC Board



GARMIN INTERNATIONAL, INC.
Model: VHF 725
Photo FCC ID Label Location

TEST EQUIPMENT LIST FOR ROGERS LABS, INC.

The equipment is used daily and kept in good calibration and operating condition. Calibration of critical items are checked for accuracy each time used.

List of Test Equipment:	Calibration Date:
Scope: Tektronix 2230	2/99
Wattmeter: Bird 43 with Load Bird 8085	2/99
Power Supplies: Sorensen SRL 20-25, DCR 150, DCR 140	2/99
H/V Power Supply: Fluke Model: 408B (SN: 573)	2/99
R.F. Generator: Boonton 102F	2/99
R.F. Generator: HP 606A	2/99
R.F. Generator: HP 8614A	2/99
R.F. Generator: HP 8640B	2/99
Spectrum Analyzer: HP 8562A, Mixers: 11517A, 11980A & 11980K HP Adapters: 11518, 11519, 11520	2/99
Spectrum Analyzer: HP 8591 EM	6/98
Frequency Counter: Weston 1255	2/99
Frequency Counter: Leader LDC 825	2/99
Antenna: EMCO Log Periodic	9/98
Antenna: BCD 235/BNC Antenna Research	9/98
Antenna: EMCO Dipole Set 3121C	2/99
Antenna: C.D. B-100	2/99
Antenna: Solar 9229-1 & 9230-1	2/99
Antenna: EMCO 6509	2/99
Microline Freq. Meter: Model 27B	2/99
Dana Modulation Meter: Model 9008	2/99
Audio Oscillator: H.P. 200CD	2/99
R.F. Power Amp 65W Model: 470-A-1000	9/97
R.F. Power Amp 50W M185- 10-500	9/97
R.F. PreAmp CPPA-102	9/97
Shielded Room 5 M x 3 M x 3.0 M (100 dB Integrity)	
LISN 50 µHy/50 ohm/0.1 µf	9/98
LISN Compliance Eng. 240/20	2/99
SCS Power Amp Model: 2350A	2/99
Power Amp A.R. Model: 10W 1000M7	2/99
Power Amp EIN Model: A300	1/99
Linear Amp Mini Circuits: ZHL-1A (2 Units)	2/99
Combiner Unit Mini Circuits: ZSC-2-1 (2 Units)	2/99
ELGAR Model: 1751	2/99
ELGAR Model: TG 704A-3D	2/99
ELGAR Model: 400SD (PB)	2/99
ESD Test Set 2000i	10/95
Fast Transient Burst Generator Model: EFT/B-100	10/95
Current Probe: Singer CP-105	8/97
Current Probe: Solar 9108-1N	8/97
Field Intensity Meter: EFM-018	10/95

03/01/99

QUALIFICATIONS

Of

SCOT D. ROGERS, ENGINEER

ROGERS LABS, INC.

Mr. Rogers has approximately 12 years experience in the field of electronics. Six years working in the automated controls industry and 6 years working with the design, development and testing of radio communications and electronic equipment.

POSITIONS HELD:

Systems Engineer:	A/C Controls Mfg. Co., Inc. 6 Years
Electrical Engineer:	Rogers Consulting Labs, Inc. 5 Years
Electrical Engineer:	Rogers Labs, Inc. Current

EDUCATIONAL BACKGROUND:

1) Bachelor of Science Degree in Electrical Engineering from Kansas State University.

2) Bachelor of Science Degree in Business Administration Kansas State University.

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

Scot D Rogers

Scot D. Rogers

05/16/1999
Date

1/11/99

FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road
Columbia, MD 21046
Telephone: 301-725-1585 (ext-218)
Facsimile: 301-344-2050

February 6, 1998

IN REPLY REFER TO
31040/SIT
1300F2

Rogers Labs, Inc.
4405 West 259th Terrace
Louisburg, KS 66053

Attention: Scot D. Rogers

Re: Measurement facility located at above address
(3 and 10 meter site)

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for certification or notification under Parts 15 or 18 of the Commission's Rules. Our list will also indicate that the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4-1992. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

Per your request, the above mentioned facility has been also added to our list of those who perform these measurement services for the public on a fee basis. This list is updated monthly and is available on the Laboratory's Public Access Link (PAL) at 301-725-1072, and also on the Internet at the FCC Website www.fcc.gov/oet/info/database/testsite/.

Sincerely,

Thomas W. Phillips
Electronics Engineer
Customer Service Branch