APPLICATION FOR PART 90
TYPE CERTIFICATION

Com-Net Ericsson Critical Radio Systems, Inc.
1 Mountain View Road
Room 2725
Lynchburg, VA 24502
804-592-6202 (Michael Fulk)

MODEL: EDACS 300P
FCC ID: OWDTR001-E0

February 15, 2000

This report concerns (check one): Original Grant: X **Class II Change:** **Equipment Type**: **Transmitter**
Deferred grant requested per 47 CFR 0.457 (d) (1) (ii)? Yes: No: X **If yes, defer until:** _____ ***Date*** **Company name agrees to notify the Commission by: _____(date) of the intended date of announcement of the product so that the grant can be issued on that date.**

REPORT PREPARED BY:

EMI Technician: Daniel Baltzell
Administrative Writer: Melissa Fleming

Rhein Tech Laboratories, Inc.

Document Number: 2000043 / QRTL00-230

TABLE OF CONTENTS

DANIEL BALTZELL **1**

1.0 GENERAL INFORMATION **6**

1.1 TEST METHODOLOGY 6
1.2 TEST FACILITY 6
1.3 RELATED SUBMITTAL(S)/GRANT(S) 6
1.4 EMISSIONS EQUIPMENT LIST 7
1.5 FIELD STRENGTH CALCULATION 8
1.6 RADIATED MEASUREMENT 9

2.0 STANDARD REQUIREMENTS **10**

2.1 FCC PART 90.217(A): EXEMPTION FROM TECHNICAL STANDARDS 10
2.2 FCC PART PART 2.987(D): MODULATION REQUIREMENTS AND CHARACTERISTICS 10
2.3 FCC PART 2.985: RF OUTPUT POWER 11
2.3.1 Methods of Measurement and Test Results *11*
2.4 FCC PART 2.989(B) AND ANSI C63.4, SECTION 13.1.7: OCCUPIED BANDWIDTH 11
2.5 FCC PART 2.997(A)(1): FREQUENCY SPECTRUM TO BE INVESTIGATED 11
2.6 FCC PART 2.991 AND PART 90.217(A): SPURIOUS EMISSIONS AT ANTENNA TERMINALS 12
2.6.1 Method of measurement: *12*
2.7 FCC PART 2.993 AND PART 90.217(A): FIELD STRENGTH OF SPURIOUS RADIATION 13
2.7.1 Method of measurement: *13*
2.8 FCC PART 90.213 AND PART 2.995(A): FREQUENCY STABILITY FUNCTION OF TEMPERATURE 13
2.8.1 Method of Measurement: *13*
2.8.2 Test Results: *13*

3.0 SYSTEM TEST CONFIGURATION **14**

3.1 JUSTIFICATION 14
3.2 EUT EXERCISE DESCRIPTION 14
3.3 SPECIAL ACCESSORIES 14
3.4 TEST SYSTEM DETAILS 14
3.5 BLOCK DIAGRAM OF TESTED SYSTEM 15
3.6 CONFORMANCE STATEMENT 16
4.0 FCC PART 2.993: FIELD STRENGTH OF SPURIOUS RADIATION 17

APPENDIX LISTING

APPENDIX A: PRODUCT DESCRIPTION..... **ERROR! BOOKMARK NOT DEFINED.**
A1: **PRODUCT SPECIFICATION (TRANSMITTER)**..... **ERROR! BOOKMARK NOT DEFINED.**
A2: **PRODUCT SPECIFICATION (RECEIVER)** ..... **ERROR! BOOKMARK NOT DEFINED.**
A3: **PRODUCT SPECIFICATION (SYSTEM)** ..... **ERROR! BOOKMARK NOT DEFINED.**
A4: **PRODUCT SPECIFICATION** ..... **ERROR! BOOKMARK NOT DEFINED.**
A5: **PRODUCT SPECIFICATION (UDC)**..... **ERROR! BOOKMARK NOT DEFINED.**
APPENDIX B: LABEL INFORMATION ..... **ERROR! BOOKMARK NOT DEFINED.**
B1: **FCC ID LABEL** ..... **ERROR! BOOKMARK NOT DEFINED.**
B2: LOCATION OF LABEL ON EUT ..... **ERROR! BOOKMARK NOT DEFINED.**
APPENDIX C: TEST PHOTOS ..... **ERROR! BOOKMARK NOT DEFINED.**
C1: **RADIATED MEASUREMENT PHOTOS**..... **ERROR! BOOKMARK NOT DEFINED.**
APPENDIX D: TEST PLOTS ..... **ERROR! BOOKMARK NOT DEFINED.**
D1: **MODULATION LIMITING CHANNEL 1** ..... **ERROR! BOOKMARK NOT DEFINED.**
D2: **MODULATION LIMITING CHANNEL 5** ..... **ERROR! BOOKMARK NOT DEFINED.**
D3: **MODULATION LIMITING CHANNEL 6** ..... **ERROR! BOOKMARK NOT DEFINED.**
D4: **MODULATION LIMITING CHANNEL 8** ..... **ERROR! BOOKMARK NOT DEFINED.**
D5: **AUDIO FREQUENCY RESPONSE CHANNEL 1** ..... **ERROR! BOOKMARK NOT DEFINED.**
D6: **AUDIO FREQUENCY RESPONSE CHANNEL 5** ..... **ERROR! BOOKMARK NOT DEFINED.**
D7: **AUDIO FREQUENCY RESPONSE CHANNEL 6** ..... **ERROR! BOOKMARK NOT DEFINED.**
D8: **AUDIO FREQUENCY RESPONSE CHANNEL 8** ..... **ERROR! BOOKMARK NOT DEFINED.**
D9: **RADIATED SPURIOUS (9KHZ TO 150 KHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D10: **RADIATED SPURIOUS (150KHZ TO 30 MHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D11: **RADIATED SPURIOUS (30 MHZ TO 1 GHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D12: **RADIATED SPURIOUS (1 GHZ TO 2 GHZ)**..... **ERROR! BOOKMARK NOT DEFINED.**
D13: **RADIATED SPURIOUS (2 GHZ TO 4 GHZ)**..... **ERROR! BOOKMARK NOT DEFINED.**
D14: **RADIATED SPURIOUS (4 GHZ TO 8.7 GHZ)**..... **ERROR! BOOKMARK NOT DEFINED.**
D15: **CONDUCTED SPURIOUS CHANNEL 1 (9 KHZ TO 150 KHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D16: **CONDUCTED SPURIOUS CHANNEL 1 (150 KHZ TO 30 MHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D17: **CONDUCTED SPURIOUS CHANNEL 1 (30 MHZ TO 805 MHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D18: **CONDUCTED SPURIOUS CHANNEL 1 (806 MHZ TO 1 GHZ)**..... **ERROR! BOOKMARK NOT DEFINED.**
D19: **CONDUCTED SPURIOUS CHANNEL 1 (1 GHZ TO 2 GHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D20: **CONDUCTED SPURIOUS CHANNEL 1 (2 GHZ TO 9 GHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D21: **CONDUCTED SPURIOUS CHANNEL 5 (9 KHZ TO 150 KHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D22: **CONDUCTED SPURIOUS CHANNEL 5 (150 KHZ TO 30 MHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D23: **CONDUCTED SPURIOUS CHANNEL 5 (30 MHZ TO 824 MHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D24: **CONDUCTED SPURIOUS CHANNEL 5 (825 MHZ TO 1 GHZ)**..... **ERROR! BOOKMARK NOT DEFINED.**
D25: **CONDUCTED SPURIOUS CHANNEL 5 (1 GHZ TO 2.5 GHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D26: **CONDUCTED SPURIOUS CHANNEL 5 (2.5 GHZ TO 9 GHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D27: **CONDUCTED SPURIOUS CHANNEL 6 (9 KHZ TO 150 KHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D28: **CONDUCTED SPURIOUS CHANNEL 6 (150 KHZ TO 30 MHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D29: **CONDUCTED SPURIOUS CHANNEL 6 (30 MHZ TO 850 MHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D30: **CONDUCTED SPURIOUS CHANNEL 6 (850 MHZ TO 1 GHZ)**..... **ERROR! BOOKMARK NOT DEFINED.**
D31: **CONDUCTED SPURIOUS CHANNEL 5 (1 GHZ TO 2.5 GHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D32: **CONDUCTED SPURIOUS CHANNEL 5 (2.5 GHZ TO 9 GHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D33: **CONDUCTED SPURIOUS CHANNEL 8 (9 KHZ TO 150 KHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D34: **CONDUCTED SPURIOUS CHANNEL 8 (150 KHZ TO 30 MHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D35: **CONDUCTED SPURIOUS CHANNEL 8 (30 MHZ TO 870 MHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D36: **CONDUCTED SPURIOUS CHANNEL 8 (870 MHZ TO 1 GHZ)**..... **ERROR! BOOKMARK NOT DEFINED.**
D375: **CONDUCTED SPURIOUS CHANNEL 8 (1 GHZ TO 2 GHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D38: **CONDUCTED SPURIOUS CHANNEL 8 (2 GHZ TO 9 GHZ)** ..... **ERROR! BOOKMARK NOT DEFINED.**
D39: **OCCUPIED BANDWIDTH CHANNEL 1** ..... **ERROR! BOOKMARK NOT DEFINED.**
D40: **OCCUPIED BANDWIDTH CHANNEL 5** ..... **ERROR! BOOKMARK NOT DEFINED.**
D41: **OCCUPIED BANDWIDTH CHANNEL 6** ..... **ERROR! BOOKMARK NOT DEFINED.**

D42: **OCCUPIED BANDWIDTH CHANNEL 8** ..... **ERROR! BOOKMARK NOT DEFINED.**
APPENDIX E: EUT PHOTOS ..... **ERROR! BOOKMARK NOT DEFINED.**
E1: **OCCUPIED BANDWIDTH CHANNEL 6** ..... **ERROR! BOOKMARK NOT DEFINED.**
E1: **OCCUPIED BANDWIDTH CHANNEL 6** ..... **ERROR! BOOKMARK NOT DEFINED.**
APPENDIX F: SCHEMATICS / BLOCK DIAGRAMS ..... **ERROR! BOOKMARK NOT DEFINED.**
APPENDIX G: PRELIMINARY USER'S MANUAL ..... **ERROR! BOOKMARK NOT DEFINED.**

TABLE INDEX

TABLE 1: TEST SYSTEM DETAILS 14
TABLE 2: RADIATED EMISSIONS: FCC PART 2.993 17

1.0 GENERAL INFORMATION

The following application for Certification of an FCC Part 90 Type Certification, is prepared on behalf of Com-Net Ericsson Critical Radio Systems, Inc. in accordance with Part 2, and Part 90, of the Federal Communications Commissions rules and regulations. The Equipment Under Test (EUT) was the EDACS-300P. The test results reported in this document relate only to the item that was tested.

All measurements contained in this application were conducted in accordance with CFR 47, Part 90, ANSI C63.4 Methods of Measurement of Radio Noise Emissions, 1992. The instrumentation utilized for the measurements conforms to the ANSI C63.4 standard for EMI and Field Strength Instrumentation. Some accessories are used to increase sensitivity and prevent overloading of the measuring instruments. These are explained in the appendix of this report. Calibration checks are performed regularly on the instruments, and all accessories including the high pass filter, preamplifier and cables.

All radiated and conducted emissions measurement were performed manually at Rhein Tech, Incorporated. The radiated emissions measurements required by the rules were performed on the three meter, open field, test range maintained by Rhein Tech Laboratories, Inc., 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. Complete description and site attenuation measurement data have been placed on file with the Federal Communications Commission. The power line conducted emission measurements were performed in a shielded enclosure also located at the Herndon, Virginia facility. Rhein Tech Laboratories, Inc. is on the FCC accepted lab list as a facility available to do measurement work for others on a contract basis.

1.1 TEST METHODOLOGY

All tests were performed according to the procedures in FCC Part 90 and FCC Part 2. Field strength of spurious radiation testing was performed at an antenna to EUT distance of 3 meters. Additionally, RF power output, spurious emissions at antenna terminal, occupied bandwidth, frequency stability versus temperature and modulated characteristics were measured per FCC Rules and Regulations: CFR 47, part 90, October 1, 1997 and Part 2, October 1, 1997.

1.2 TEST FACILITY

The open area test site and conducted measurement facility used to collect the radiated data is located on the parking lot of Rhein Tech Laboratories, Inc. 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report dated March 3, 1994, submitted to and approved by the Federal Communication Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 1992).

1.3 RELATED SUBMITTAL(S)/GRANT(S)

N/A. This is an original submission for Certification.

1.4 EMISSIONS EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. LAB
PRE-AMPLIFIER	HEWLETT PACKARD	11975A	2304A00348	TEST EQUITY
PRE-AMPLIFIER	HEWLETT PACKARD			TEST EQUITY
PRE-AMPLIFIER (S/A 1)	RHEIN TECH	PR-1040	00001	RTL
PRE-AMPLIFIER (S/A 2)	RHEIN TECH	RTL2	900723	RTL
PRE-AMPLIFIER (S/A 3)	RHEIN TECH	8447F	2944A03783	RTL
PRE-AMPLIFIER (S/A 4)	RHEIN TECH	8447D	2727A05397	RTL
BICONICAL/LOG ANTENNA 1	ANTENNA RESEARCH	LPB-2520	1037	LIBERTY LABS
BICONICAL/LOG ANTENNA 2	ANTENNA RESEARCH	LPB-2520	1036	LIBERTY LABS
FIELD SITE SOURCE	EMCO	4610	9604-1313	RTL
FILTER (ROOM 1)	SOLAR	8130	947305	RTL
FILTER (ROOM 2)	SOLAR	8130	947306	RTL
HARMONIC MIXER 1	HEWLETT PACKARD	11970K	2332A00563	TELOGY
HARMONIC MIXER 2	HEWLETT PACKARD	11970A	2332A01199	TELOGY
HORN ANTENNA 1	EMCO	3160-10	9606-1033	EMCO
HORN ANTENNA 2	EMCO	3160-9	9605-1051	EMCO
HORN ANTENNA 3	EMCO	3160-7	9605-1054	EMCO
HORN ANTENNA 4	EMCO	3160-8	9605-1044	EMCO
HORN ANTENNA 5	EMCO	3160-03	9508-1024	EMCO
LISN (ROOM 1/L1)	SOLAR	7225-1	900727	ACUCAL
LISN (ROOM 1/L2)	SOLAR	7225-1	900726	ACUCAL
LISN (ROOM 2/L1)	SOLAR	7225-1	900078	ACUCAL
LISN (ROOM 2/L2)	SOLAR	7225-1	900077	ACUCAL
PRE-AMPLIFIER	HEWLETT PACKARD	8449B OPT	3008A00505	TELOGY
QUASI-PEAK ADAPTER (S/A 1)	HEWLETT PACKARD	85650A	3145A01599	ACUCAL
QUASI-PEAK ADAPTER (S/A 2)	HEWLETT PACKARD	85650A	2811A01276	ACUCAL
QUASI-PEAK ADAPTER (S/A 3)	HEWLETT PACKARD	85650A	2521A00473	ACUCAL
QUASI-PEAK ADAPTER (S/A 4)	HEWLETT PACKARD	85650A	2521A01032	ACUCAL
RF PRESELECTOR (S/A 1)	HEWLETT PACKARD	85685A	3146A01309	ACUCAL
SIGNAL GENERATOR (HP)	HEWLETT PACKARD	8660C	1947A02956	ACUCAL
SIGNAL GENERATOR (WAVETEK)	WAVETEK	3510B	4952044	ACUCAL
SPECTRUM ANALYZER 1	HEWLETT PACKARD	8566B	3138A07771	ACUCAL
EMI RECEIVER	HEWLETT PACKARD	8546A	3325A00159	ACUCAL
SPECTRUM ANALYZER 2	HEWLETT PACKARD	8567A	2841A00614	ACUCAL
SPECTRUM ANALYZER 4	HEWLETT PACKARD	8567A	2727A00535	ACUCAL
TUNABLE DIPOLE	EMCO	3121	274	LIBERTY LABS
HARMONIC MIXER	HEWLETT PACKARD	11970A	2332A01199	ACUCAL
HARMONIC MIXER	HEWLETT PACKARD	11970K	2332A00563	ACUCAL

1.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FI(dBuV/m) = SAR(dBuV) + SCF(dB/m)$$

FI = Field Intensity
SAR = Spectrum Analyzer Reading
SCF = Site Correction Factor

The Site Correction Factor (SCF) used in the above equation is determined empirically, and is expressed in the following equation:

$$SCF(dB/m) = - PG(dB) + AF(dB/m) + CL(dB)$$

SCF = Site Correction Factor
PG = Pre-amplifier Gain
AF = Antenna Factor
CL = Cable Loss

The field intensity in microvolts per meter can then be determined according to the following equation:

$$FI(uV/m) = 10^{FI(dBuV/m)/20}$$

For example, assume a signal at a frequency of 125 MHz has a received level measured as 49.3 dBuV. The total Site Correction Factor (antenna factor plus cable loss minus preamplifier gain) for 125 MHz is
-11.5 dB/m. The actual radiated field strength is calculated as follows:

$$49.3 \text{ dBuV} - 11.5 \text{ dB/m} = 37.8 \text{ dBuV/m}$$

$$10^{37.8/20} = 10^{1.89} = 77.6 \text{ uV/m}$$

1.6 Radiated measurement

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at one meter and three meter distances if necessary in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to insure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three-meter, open-field test site. The EUT was placed on a nonconductive turntable approximately 0.8 meters above the ground plane. The spectrum was examined from 30 MHz to 1000 MHz using a Hewlett Packard 8566B spectrum analyzer, a Hewlett Packard 85650A quasi-peak adapter, and an Antenna Research bilog antenna. In order to gain sensitivity, an RTL PR-1040 preamplifier was connected in series between the antenna and the input of the spectrum analyzer.

At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters in order to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations.

Note: Rhein Tech Laboratories, Inc. has implemented procedures to minimize errors that occur from test instruments, calibration, procedures, and test setups. Test instrument and calibration errors are documented from the manufacturer or calibration lab. Other errors have been defined and calculated within the Rhein Tech quality manual, section 6.1. Rhein Tech implements the following procedures to minimize errors that may occur: yearly as well as daily calibration methods, technician training, and emphasis to employees on avoiding error.

2.0 STANDARD REQUIREMENTS

TYPE CERTIFICATION FCC PART 90: PRIVATE LAND MOBILE RADIO SERVICES
SUBPART I : GENERAL TECHNICAL STANDARDS
AND FCC PART 2 SUBPART J: EQUIPMENT AUTHORIZATION PROCEDURES

2.1 FCC PART 90.217(A): EXEMPTION FROM TECHNICAL STANDARDS

Transmitters used at stations licensed below 800 MHz on any frequency listed in subparts B and C of this part or licensed on a business category channel above 800 MHz which have an output power not exceeding 120 milliwatts are exempt from the technical requirements set out in this subpart, but must instead comply with the following:

> For equipment designed to operate with a 25kHz channel bandwidth, the sum of the bandwidth occupied by the signal plus the bandwidth required for frequency stability shall be adjusted so that any mission appearing on a frequency 40 kHz or more removed from the assigned frequency is attenuated at least 30dB below the unmodulated carrier.

2.2 PART 2.987(D): MODULATION REQUIREMENTS AND CHARACTERISTICS

The curve provided in Section 5.1, shows that the equipment met the modulation requirements of the rules under which the equipment is to be licensed.

2.3 FCC PART 2.985: RF OUTPUT POWER

2.3.1 Method of Measurement and Test Results

Transmitter antenna port connected to EMI receiver or Power Meter.

Termination	Frequency (MHz)	Level (dBuV)	Output Power (mW)
50 ohm	151.513	118.8	15.2
	151.645	119.6	18.2

2.4 FCC PART 2.989(B) AND ANSI C63.4, SECTION 13.1.7: OCCUPIED BANDWIDTH

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the following conditions as applicable:

Other keyed transmitters—when keyed at the maximum machine speed.

2.5 FCC PART 2.997(A)(1): FREQUENCY SPECTRUM TO BE INVESTIGATED

(a) In all of the measurements set forth in 2.991 and 2.993, the spectrum shall be investigated from the lowest radio frequency signal generated in the equipment, without going below 9kHz, up to at least the frequency shown below:

(1) If the equipment operates below 10GHz: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

2.6 FCC Part 2.991 and Part 90.217(a): Spurious Emissions at Antenna Terminals

2.6.1 Method of measurement:

The transmitter was properly loaded with a 50 Ohm termination and operated under normal condition in its intended use. That is the maximum rated conditions under which the equipment will be operated.

For measuring emissions up to and including 50kHz from the edge of the authorized bandwidth, the resolution bandwidth was adjusted to 100Hz with the measuring instrument in a peak hold mode. A sufficient number of sweeps was measured to insure that the emission profile is developed. If video filtering is used, its bandwidth must no be less than the instrument resolution bandwidth. For frequencies more that 50kHz removed from the edge of the authorized bandwidth a resolution of at least 10 kHz was used for frequencies below 1000 MHz. Above 1000 MHz the resolution bandwidth of the instrumentation was at least 1 MHz.

For equipment designed to operate with a 25 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 40 kHz or more removed from the assigned frequency is attenuated at least 30dB below the unmodulated carrier.

2.7 FCC PART 2.993 AND PART 90.217(a): FIELD STRENGTH OF SPURIOUS RADIATION

2.7.1 Method of measurement:

A 50 Ohm dummy load is used to terminate the transmitter antenna output port. A second antenna is placed adjacent to the device under test and is connected to a signal generator providing a reference power level. The requirement assumes that all emissions are radiated from half-wave dipole antennas.

2.8 FCC PART 90.213 AND PART 2.995(A): FREQUENCY STABILITY FUNCTION OF TEMPERATURE

2.8.1 Method of Measurement:

The transmitter is set in operation with the maximum rated output power specified by the manufacturer. A Thermotron temperature chamber is used to perform the test. The transmitter is exercised with a transmission mode providing a continuous stream of data.
The ambient temperature is varied from -30° to +50°C. The device under test is operated for 15 minutes prior to testing. A sufficient period of time (about 30 minutes) before any measurements was observed to stabilize all the transmitter components for each temperature level.

2.8.2 Test Results:

Frequency (MHz)	Frequency Stability (ppm)
151.513	10
151.645	10

3.0 SYSTEM TEST CONFIGURATION

3.1 JUSTIFICATION

The EUT was tested in all three orthogonal planes in order to determine worst case emission. The EUT was investigated and tested from 30 MHz to 2 GHz.

3.2 EUT EXERCISE DESCRIPTION

The EUT was exercised using external modulation through a TQ-0613 into the UDC port. The TQ-0613 provides a switch for Push To Talk (PTT) and a speaker which is also switchable to an external speaker

3.3 SPECIAL ACCESSORIES

N/A.

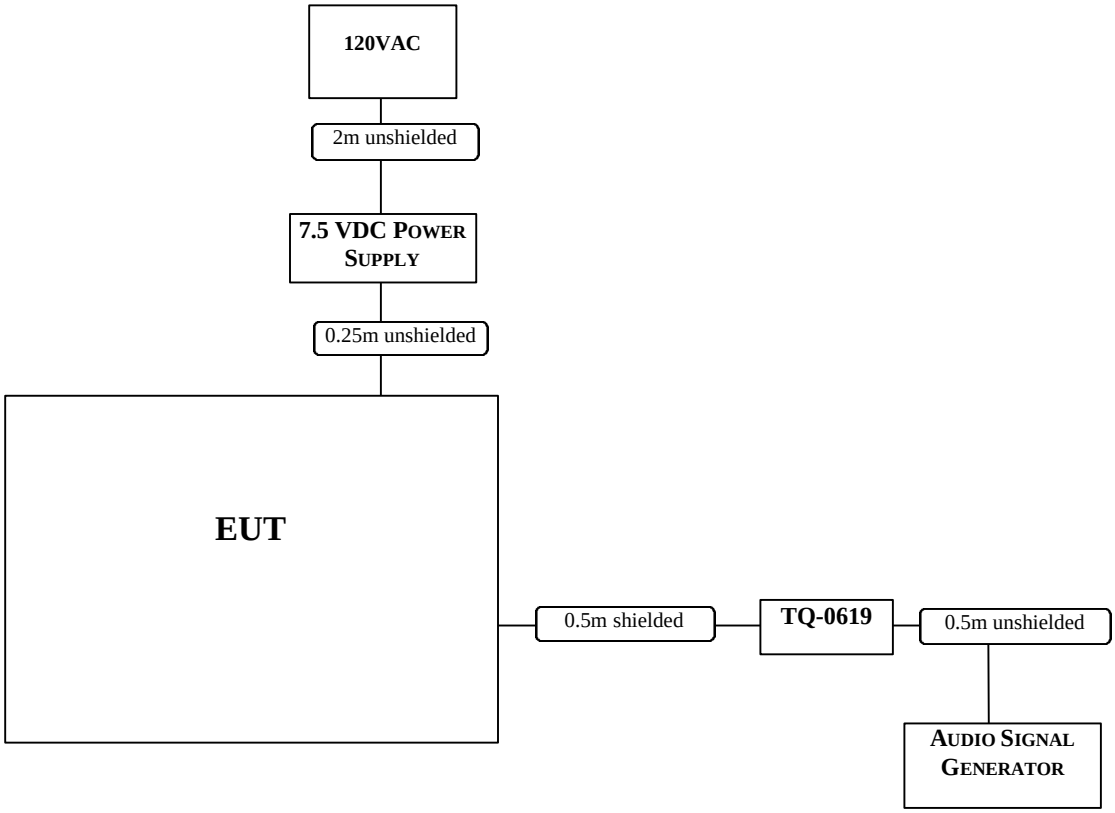
3.4 TEST SYSTEM DETAILS

The FCC Identifiers for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

TABLE 1: TEST SYSTEM DETAILS

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
POWER SUPPLY	HEWLETT PACKARD	6291	1928A05385	N/A	UNSHIELDED POWER	900773
CONTROL BOX	ERICSSON	TQ0613	N/A	N/A		011447
BATTERY	EDACS	CABLES INSIDE	MAKESHIFT	N/A		011449
CABLE	ERICSSON	SERIAL CABLE	N/A	N/A	SHIELDED I/O	011448
BATTERY	EDACS	NM-145C	N/A	N/A		011443
ANTENNA	ERICSSON	1/4 WAVE ANTENNA	806-869 MHz	SAMPLE		011580
ANTENNA	EDACS	N/A	N/A	N/A		011445
AUDIO SIGNAL GENERATOR	TEKTRONIX	ASG 100	B032374	N/A	UNSHIELDED POWER; UNSHIELDED I/O	900927
RADIO (EUT)	**ERICSSON**	**EDACS 300P**	**0019**	**OWDTR001-E0**		**011475**
RADIO (EUT)	**EDACS**	**EDACS 300P**	**0010**	**OWDTR001-E0**		**011440**

3.5 BLOCK DIAGRAM OF TESTED SYSTEM



3.6 CONFORMANCE STATEMENT

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this attached test record. No modifications were made to the equipment during testing in order to achieve compliance with these standards.

Furthermore, there was no deviation from, additions to or exclusions from the FCC Part 2 and FCC Part 90 Type Certification Transmitter VHF Manchester FSK test methodology.

Signature: _____ Date: February 15, 2000

Typed/Printed Name: Desmond Fraser Position: President
(NVLAP Signatory)

Accredited by the National Voluntary Accreditation Program for the specific scope of accreditation under Lab Code 20061-0.

Note: This report may not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

4.0 FCC PART 2.993: FIELD STRENGTH OF SPURIOUS RADIATION

The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, plus the limit. Explanation of the Correction Factor is given in paragraph 6.0.

TABLE 2: RADIATED EMISSIONS: FCC PART 2.993

Ericsson EDACS 300P
Channel 1
806.025 MHz (3.45 Watt)

Frequency (MHz)	Polarity	S/G (dBm)	CL	AF	SCF	Emission Level (dBuV/m)	Limit	Margin
143.765	H	-62.6	0.2	11.0	-28.8	15.6	43.5	-27.9
154.824	H	-57.8	0.2	12.2	-27.6	21.6	43.5	-21.9
165.888	H	-61.2	0.2	12.6	-27.2	18.6	43.5	-24.9
420.245	H	-77.2	0.2	20.8	-19	10.8	94.0	-83.2
442.3595	H	-82.6	0.2	21.0	-18.8	5.6	94.0	-88.4
805.719	V	-62.4	0.2	26.7	-13.1	31.5	94.0	-62.5
806.020	H	1.2	0.2	26.7	-13.1	95.1	94.0	1.1
1611.452	H	-82.5	0.3	27.0	-12.7	11.8	94.0	-82.2
1612.050	H	-31.6	0.3	27.0	-12.7	62.7	94.0	-31.3
1735.670	V	-40	0.3	28.0	-11.7	55.3	94.0	-38.7
2418.100	V	-30.1	0.3	29.0	-0.7	76.2	94.0	-17.8
3224.130	H	-38.2	0.0	31.2	1.2	70.0	94.0	-24
3222.900	V	-40.9	0.2	31.1	1.3	67.4	94.0	-26.6
4431.450	V	-41.2	0.5	32.8	3.3	69.1	94.0	-24.9
4834.293	V	-42.8	0.8	33.0	3.8	68.0	94.0	-26
4836.188	H	-23.7	0.3	33.0	3.3	86.6	94.0	-7.4
5237.170	H	-47.8	0.7	34.2	4.9	64.1	94.0	-29.9
4030.130	V	-36.2	0.3	33.2	3.5	74.3	94.0	-19.7
5642.147	V	-38.2	0.3	34.5	4.8	73.6	94.0	-20.4
6448.138	V	-36.4	1.0	35.5	6.5	77.1	94.0	-16.9
7254.238	V	-38.6	1.2	36.5	7.7	76.1	94.0	-17.9
8060.263	V	-44.2	0.5	37.0	7.5	70.3	94.0	-23.7

TEST PERSONNEL:

Signature**:** _____ **D**ate**:** OWD?

Typed/Printed Name: Daniel Baltzell

TABLE 3: RADIATED EMISSIONS: FCC PART 2.993

Ericsson EDACS 300P
Channel 3
821.996 MHz (3.46 Watt)

Frequency (MHz)	Polarity	S/G (dBm)	CL	AF	SCF	Emission Level (dBuV/m)	Limit	Margin
165.882	H	-59.8	0.2	12.3	-27.5	19.7	43.5	-23.8
820.680	H	-55.9	0.2	27.0	-12.8	38.3	94.0	-55.7
820.980	H	-3.8	0.2	27.0	-12.8	90.4	94.0	-3.6
979.083	H	-46.9	0.2	28.4	-11.4	48.7	94.0	-45.3
1641.908	H	-27	0.3	27.0	-12.7	67.3	94.0	-26.7
2464.943	V	-41	0.3	28.0	-1.7	64.3	94.0	-29.7
2464.908	V	-29.6	0.3	28.0	-1.7	75.7	94.0	-18.3
3288.033	H	-39.2	0.2	31.2	1.4	69.2	94.0	-24.8
3286.800	V	-39.4	0.2	31.1	1.3	68.9	94.0	-25.1
4109.967	V	-31.9	0.5	32.8	3.3	78.4	94.0	-15.6
4519.250	V	-45.8	0.8	33.0	3.8	65.0	94.0	-29
4931.896	V	-33	0.8	33.8	4.6	78.6	94.0	-15.4
5733.892	H	-41.5	0.7	34.6	5.3	70.8	94.0	-23.2
6575.938	V	-46.4	1	35.9	6.9	67.5	94.0	-26.5
7397.859	V	-46	1.2	34.5	5.7	66.7	94.0	-27.3
8209.858	V	-42.9	0.5	36.9	7.4	71.5	94.0	-22.5

TEST PERSONNEL:

Signature**:** _____ **D**ate**:** OWD?

Typed/Printed Name: Daniel Baltzell

TABLE 4: RADIATED EMISSIONS: FCC PART 2.993

Ericsson EDACS 300P
Channel 5
824.9875 MHz (3.33 Watt)

Frequency (MHz)	Polarity	S/G (dBm)	CL	AF	SCF	Emission Level (dBuV/m)	Limit	Margin
143.764	H	-63.3	0.2	11	-28.8	14.9	43.5	-28.6
154.822	H	-55.8	0.2	12.2	-27.6	23.6	43.5	-19.9
165.879	H	-61.7	0.2	12.6	-27.2	18.1	43.5	-25.4
824.683	V	-58	0.2	27.0	-12.8	36.2	94.0	-57.8
824.988	H	-2.8	0.2	27.0	-12.8	91.4	94.0	-2.6
1649.308	H	-64.1	0.3	27.0	-12.7	30.2	94.0	-63.8
1649.967	H	-23.8	0.3	27.0	-12.7	70.5	94.0	-23.5
2424.980	V	-30.6	0.3	29.6	-0.1	76.3	94.0	-17.7
3299.950	V	-40.3	0.3	31.0	1.3	68.0	94.0	-26
4124.925	H	-44.7	0.3	33.0	3.3	65.6	94.0	-28.4
4535.770	V	-42	0.6	33.0	3.6	68.6	94.0	-25.4
4948.100	V	-31.5	0.7	33.8	4.5	80.0	94.0	-14
4949.896	V	-35.8	0.5	33.8	4.3	75.5	94.0	-18.5
5774.958	H	-42.4	0.7	34.6	5.3	69.9	94.0	-24.1
6599.921	H	-42.9	1	36.1	7.1	71.2	94.0	-22.8
7424.842	V	-48.9	1.2	36.5	7.7	65.8	94.0	-28.2
8249.833	V	-39.9	0.5	37.0	7.5	74.6	94.0	-19.4

TEST PERSONNEL:

Signature**:** _____ **D**ate**:** December 4, 1998

Typed/Printed Name: Daniel Baltzell

TABLE 5: RADIATED EMISSIONS: FCC PART 2.993

Ericsson EDACS 300P
Channel 6
851.025 MHz (2.77 Watt)

Frequency (MHz)	Polarity	S/G (dBm)	CL	AF	SCF	Emission Level (dBuV/m)	Limit	Margin
143.766	H	-61.7	0.2	11.0	-28.8	16.5	43.5	-27
154.828	H	-54.4	0.2	12.2	-27.6	25.0	43.5	-18.5
165.887	H	-62.6	0.2	12.6	-27.2	17.2	43.5	-26.3
805.718	H	-56.0	0.2	27.0	-12.8	38.2	94.0	-55.8
851.023	H	-5.6	0.2	27.0	-12.8	88.6	94.0	-5.4
1611.403	V	-67.0	0.3	27.0	-12.7	27.3	94.0	-66.7
1702.050	H	-28.6	0.2	27.0	-12.8	65.6	94.0	-28.4
2553.070	V	-31.3	0.3	29.6	-0.1	75.6	94.0	-18.4
3222.975	V	-42.0	0.2	31.0	1.2	66.2	94.0	-27.8
3404.200	V	-37.7	0.3	31.2	1.5	70.8	94.0	-23.2
4255.200	V	-28.8	0.4	32.0	2.4	80.6	94.0	-13.4
4431.542	V	-40.9	0.5	33.0	3.5	69.6	94.0	-24.4
4834.375	V	-43.1	0.8	33.8	4.6	68.5	94.0	-25.5
5106.190	V	-25.8	0.7	34.2	4.9	86.1	94.0	-7.9
5237.170	H	-46.1	0.7	34.3	5.0	65.9	94.0	-28.1
5956.630	H	-36.1	0.7	35.0	5.7	76.6	94.0	-17.4
6807.760	V	-37.6	1.0	36.0	7.0	76.4	94.0	-17.6
7659.150	V	-37.1	1.2	37.0	8.2	78.1	94.0	-15.9
8510.233	V	-38.7	0.6	36.7	7.3	75.6	94.0	-18.4

TEST PERSONNEL:

Signature**:** _____ **D**ate**:** OWD?

Typed/Printed Name: Daniel Baltzell

TABLE 6: RADIATED EMISSIONS: FCC PART 2.993

Ericsson EDACS 300P
Channel 7
860.15 MHz (2.83 Watt)

Frequency (MHz)	Polarity	S/G (dBm)	CL	AF	SCF	Emission Level (dBuV/m)	Limit	Margin
143.769	H	-59.1	0.2	11.0	-28.8	19.1	43.5	-24.4
154.826	H	-55.2	0.2	12.2	-27.6	24.2	43.5	-19.3
165.885	H	-64.0	0.2	12.6	-27.2	15.8	43.5	-27.7
814.845	H	-60.1	0.2	26.8	-13.0	33.9	94.0	-60.1
860.149	H	-5.8	0.2	27.2	-12.6	88.6	94.0	-5.4
1629.649	V	-60.8	0.3	27.0	-12.7	33.5	94.0	-60.5
1720.275	H	-29.1	0.2	27.0	-12.8	65.1	94.0	-28.9
2580.450	V	-35.7	0.3	29.6	-0.1	71.2	94.0	-22.8
3259.370	V	-35.7	0.2	31.0	1.2	72.5	94.0	-21.5
3440.600	V	-32.7	0.3	31.2	1.5	75.8	94.0	-18.2
4300.700	V	-33.8	0.4	32.0	2.4	75.6	94.0	-18.4
4481.630	V	-42.6	0.4	33.0	3.4	67.8	94.0	-26.2
5160.883	V	-24.8	0.7	34.2	4.9	87.1	94.0	-6.9
6021.092	V	-40.5	0.8	35.2	6.0	72.5	94.0	-21.5
6881.175	V	-40.7	1.1	35.8	6.9	73.2	94.0	-20.8
7741.367	V	-40.3	1.0	36.8	7.8	74.5	94.0	-19.5
8601.467	V	-49.4	0.6	36.7	7.3	64.9	94.0	-29.1

TEST PERSONNEL:

Signature**:** _____ **D**ate**:** OWD?

Typed/Printed Name: Daniel Baltzell

TABLE 7: RADIATED EMISSIONS: FCC PART 2.993

Ericsson EDACS 300P
Channel 8
869.9875 MHz (2.80 Watt)

Frequency (MHz)	Polarity	S/G (dBm)	CL	AF	SCF	Emission Level (dBuV/m)	Limit	Margin
143.764	H	-59.1	0.2	11.0	-28.8	19.1	43.5	-24.4
154.829	H	-54.7	0.2	12.2	-27.6	24.7	43.5	-18.8
165.888	H	-63.0	0.2	12.6	-27.2	16.8	43.5	-26.7
824.679	V	-60.9	0.2	26.8	-13.0	33.1	94.0	-60.9
869.996	H	-4.1	0.2	27.2	-12.6	90.3	94.0	-3.7
1649.391	H	-63.5	0.3	27.0	-12.7	30.8	94.0	-63.2
1739.975	H	-28.0	0.2	27.0	-12.8	66.2	94.0	-27.8
2610.000	H	-33.7	0.3	29.6	-0.1	73.2	94.0	-20.8
3298.930	V	-38.0	0.2	31.0	1.2	70.2	94.0	-23.8
3480.010	V	-37.0	0.3	31.2	1.5	71.5	94.0	-22.5
4349.938	V	-39.5	0.4	32.0	2.4	69.9	94.0	-24.1
4535.717	V	-46.0	0.6	33.0	3.6	64.6	94.0	-29.4
5219.867	V	-28.6	0.7	34.2	4.9	83.3	94.0	-10.7
6089.888	V	-38.0	0.8	35.2	6.0	75.0	94.0	-19
6959.867	V	-37.8	1.1	35.8	6.9	76.1	94.0	-17.9
7829.913	V	-32.5	1.0	36.8	7.8	82.3	94.0	-11.7
8699.800	V	-46.5	0.6	36.7	7.3	67.8	94.0	-26.2

TEST PERSONNEL:

Signature**:** _____ **D**ate**:** OWD

Typed/Printed Name: Daniel Baltzell

TABLE 8: FREQUENCY STABILITY: CHANNEL 1

Voltage	Temperature (C)		Frequency	PPM	Level (dBuV)
6.375	-30		806.025632	0.784095	134.98
7.5	-30		806.025752	0.932974	135.05
8.625	-30		806.025707	0.877144	134.94
6.375	-20		806.025767	0.951583	135.03
7.5	-20		806.025737	0.914364	135.1
8.625	-20		806.025692	0.858534	135.05
6.375	-10		806.025737	0.914364	135.1
7.5	-10		806.025767	0.951583	135.08
8.625	-10		806.025797	0.988803	135.1
6.375	0		806.025572	0.709655	135.03
7.5	0		806.025632	0.784095	135.03
8.625	0		806.025647	0.802705	134.98
6.375	10		806.025407	0.504947	134.91
7.5	10		806.025452	0.560777	134.96
8.625	10		806.025422	0.523557	135.01
6.375	20		806.024895	-0.13027	134.82
7.5	20		806.024895	-0.13027	134.94
8.625	20		806.02491	-0.11166	134.94
6.375	30		806.02479	-0.26054	134.75
7.5	30		806.024895	-0.13027	134.7
8.625	30		806.024985	-0.01861	134.72
6.375	40		806.024775	-0.27915	134.84
7.5	40		806.024835	-0.20471	134.96
8.625	40		806.02485	-0.1861	134.05
6.375	50		806.024805	-0.24193	134.8
7.5	50		806.024775	-0.27915	134.89
8.625	50		806.0247	-0.3722	134.96

TABLE 9: FREQUENCY STABILITY: CHANNEL 2

Voltage	Temperature (C)		Frequency	PPM	Level (dBuV)
6.375	-30		815.150716	0.878366	134.95
7.5	-30		815.150746	0.915169	135.04
8.625	-30		815.150731	0.896767	135.04
6.375	-20		815.150761	0.933571	134.99
7.5	-20		815.150716	0.878366	135.04
8.625	-20		815.150716	0.878366	135.06
6.375	-10		815.150716	0.878366	134.85
7.5	-10		815.150776	0.951972	134.9
8.625	-10		815.150776	0.951972	135.09
6.375	0		815.150656	0.80476	134.85
7.5	0		815.150611	0.749555	1334.97
8.625	0		815.150641	0.786358	135.02
6.375	10		815.150446	0.547139	134.83
7.5	10		815.150446	0.547139	134.95
8.625	10		815.150446	0.547139	134.85
6.375	20		815.149949	-0.06257	134.77
7.5	20		815.149919	-0.09937	134.79
8.625	20		815.149949	-0.06257	134.83
6.375	30		815.149784	-0.26498	134.83
7.5	30		815.149874	-0.15457	134.97
8.625	30		815.149934	-0.08097	135.06
6.375	40		815.149814	-0.22818	134.81
7.5	40		815.149829	-0.20978	134.97
8.625	40		815.149739	-0.32019	134.97
6.375	50		815.149769	-0.28338	134.68
7.5	50		815.149784	-0.26498	134.88
8.625	50		815.149784	-0.26498	134.9

TABLE 10: FREQUENCY STABILITY: CHANNEL 4

Voltage	Temperature (C)		Frequency	PPM	Level (dBuV)
6.375	-30		821.013169	0.814848	134.96
7.5	-30		821.013259	0.924468	135.03
8.625	-30		821.013244	0.906198	135.1
6.375	-20		821.013154	0.796577	135.03
7.5	-20		821.013184	0.833118	135.13
8.625	-20		821.013184	0.833118	135.13
6.375	-10		821.013304	0.979279	134.94
7.5	-10		821.013259	0.924468	134.99
8.625	-10		821.013259	0.924468	135.06
6.375	0		821.013094	0.723497	134.87
7.5	0		821.013184	0.833118	135.01
8.625	0		821.013184	0.833118	135.13
6.375	10		821.012897	0.483549	134.87
7.5	10		821.012927	0.52009	134.94
8.625	10		821.012897	0.483549	134.99
6.375	20		821.01243	-0.08526	134.74
7.5	20		821.012475	-0.03045	134.96
8.625	20		821.012475	-0.03045	134.99
6.375	30		821.012445	-0.06699	134.89
7.5	30		821.01246	-0.04872	135.06
8.625	30		821.012445	-0.06699	135.1
6.375	40		821.012235	-0.32277	134.81
7.5	40		821.012325	-0.21315	135.03
8.625	40		821.01231	-0.23142	134.96
6.375	50		821.012295	-0.24969	134.67
7.5	50		821.012295	-0.24969	134.99
8.625	50		821.01231	-0.23142	134.83

TABLE 11: FREQUENCY STABILITY: CHANNEL 6

Voltage	Temperature (C)		Frequency	PPM	Level (dBuV)
6.375	-30		851.025779	0.915367	134.13
7.5	-30		851.025809	0.950618	134.18
8.625	-30		851.025809	0.950618	134.2
6.375	-20		851.025719	0.844864	134.18
7.5	-20		851.025719	0.844864	134.07
8.625	-20		851.025659	0.77436	134.32
6.375	-10		851.025779	0.915367	134.11
7.5	-10		851.025794	0.932993	134.16
8.625	-10		851.025809	0.950618	134.23
6.375	0		851.025599	0.703857	134.07
7.5	0		851.025719	0.844864	134.25
8.625	0		851.025674	0.791986	134.3
6.375	10		851.025282	0.331365	134
7.5	10		851.025387	0.454746	134.07
8.625	10		851.025434	0.509973	134.18
6.375	20		851.02504	0.047002	133.95
7.5	20		851.02504	0.047002	133.95
8.625	20		851.024995	-0.00588	134.13
6.375	30		851.024935	-0.07638	134.09
7.5	30		851.02495	-0.05875	134.25
8.625	30		851.024965	-0.04113	134.32
6.375	40		851.02483	-0.19976	134.04
7.5	40		851.024845	-0.18213	134.25
8.625	40		851.024845	-0.18213	134.27
6.375	50		851.024755	-0.28789	133.86
7.5	50		851.024815	-0.21738	134.09
8.625	50		851.0248	-0.23501	134.11

TABLE 12: FREQUENCY STABILITY: CHANNEL 7

Voltage	Temperature (C)		Frequency	PPM	Level (dBuV)
6.375	-30		860.150849	0.987037	134.2
7.5	-30		860.150849	0.987037	134.36
8.625	-30		860.150864	1.004476	134.41
6.375	-20		860.150849	0.987037	132.95
7.5	-20		860.150774	0.899843	134.38
8.625	-20		860.150714	0.830088	134.36
6.375	-10		860.150819	0.95216	134.15
7.5	-10		860.150819	0.95216	134.34
8.625	-10		860.150864	1.004476	134.29
6.375	0		860.150699	0.812649	134.22
7.5	0		860.150729	0.847527	134.36
8.625	0		860.150729	0.847527	134.31
6.375	10		860.150412	0.478986	134.04
7.5	10		860.150382	0.444109	134.17
8.625	10		860.150367	0.42667	134.27
6.375	20		860.149915	-0.09882	134.04
7.5	20		860.150005	0.005813	134.22
8.625	20		860.150065	0.075568	134.22
6.375	30		860.149975	-0.02906	134.15
7.5	30		860.14996	-0.0465	134.36
8.625	30		860.14999	-0.01163	134.48
6.375	40		860.149885	-0.1337	134.22
7.5	40		860.149885	-0.1337	134.36
8.625	40		860.14987	-0.15114	134.36
6.375	50		860.149795	-0.23833	133.99
7.5	50		860.14981	-0.22089	134.2
8.625	50		860.149735	-0.30809	134.13

TABLE 13: FREQUENCY STABILITY: CHANNEL 8

Voltage	Temperature (C)		Frequency	PPM	Level (dBuV)
6.375	-30		869.988404	1.039095	134.21
7.5	-30		869.988434	1.073579	134.33
8.625	-30		869.988419	1.056337	134.4
6.375	-20		869.988329	0.952887	134.24
7.5	-20		869.988374	1.004612	134.19
8.625	-20		869.988479	1.125304	134.42
6.375	-10		869.988329	0.952887	134.28
7.5	-10		869.988254	0.866679	134.28
8.625	-10		869.988299	0.918404	134.45
6.375	0		869.988284	0.901162	134.19
7.5	0		869.988179	0.780471	134.19
8.625	0		869.988239	0.849437	134.31
6.375	10		869.987862	0.416098	134.03
7.5	10		869.987892	0.450581	134.19
8.625	10		869.987922	0.485064	134.31
6.375	20		869.987575	0.086208	134.1
7.5	20		869.98759	0.10345	134.26
8.625	20		869.98756	0.068967	134.33
6.375	30		869.987455	-0.05172	134.24
7.5	30		869.98744	-0.06897	134.26
8.625	30		869.98747	-0.03448	134.45
6.375	40		869.987335	-0.18966	134.12
7.5	40		869.98741	-0.10345	134.31
8.625	40		869.98744	-0.06897	134.38
6.375	50		869.987153	-0.39886	133.84
7.5	50		869.987378	-0.14023	134.12
8.625	50		869.987318	-0.2092	134.19