Engineering and Testing for EMC and Safety Compliance

APPLICATION FOR FCC CLASS B CERTIFICATION

SCANNING RECEIVER

Alinco, Inc.
438 Amapola Ave.
Suite 130
Torrance, CA 90501

MODEL: DJ-X2000T
FCC ID: EUG DJ-X2000T

October 31, 2000

This report concerns (check one): Original Grant: X **Class II Change:** **Equipment Type: Scanning Receiver**
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.**

Transition Rules Request per 15.37? Yes: No: X **If no, assumed Part 15, subpart B for unintentional radiators - the new 47 CFR [10-1-90 Edition] provision..**

REPORT PREPARED BY:

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1.0 GENERAL INFORMATION

The following Application for FCC Type Certification of a Scanning Receiver is prepared on behalf of Alinco, Inc. in accordance with Part 2, and Part 15, Subparts A and B of the Federal Communications Commissions rules and regulations and Industry Canada RSS-210. The Equipment Under Test (EUT) was the DJ-X2000T, FCC ID: EUG DJ-X2000T. 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 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 instrument. 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 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. The FCC accepts Rhein Tech Laboratories, Inc. as a facility available to do measurement work for others on a contractual basis.

1.1 STANDARDS REFERENCED

STANDARDS REFERENCED FOR THIS REPORT	
FCC RULES AND REGULATION	PART 2 SUBPART J
FCC RULES AND REGULATION	PART 15 §15.109
FCC RULES AND REGULATION	PART 15 §15.111
FCC RULES AND REGULATION	PART 15 § 15.121
ANSI	C63.4:1992
INDUSTRY CANADA	RSS-210

1.2 BASIC INFORMATION ON THE EUT

FREQUENCY RANGE MHZ	OUTPUT POWER (W)	FREQUENCY TOLERANCE	EMISSION DESIGNATOR
30-960	N/A	N/A	N/A

1.3 MODIFICATIONS

Modifications were not made to the EUT during testing.

1.4 RELATED SUBMITTAL(S)/GRANT(S)

This is an original certification submission.

1.5 TEST METHODOLOGY

Radiated testing was performed according to the procedures in ANSI C63.4 1992. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.6 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, submitted to and approved by the Federal Communication Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 1992).

2.0 SYSTEM TEST CONFIGURATION

2.1 JUSTIFICATION

To complete the test configuration required by the FCC, the receiver was connected to an external antenna, which receives a signal from a signal generator output. With the antenna installed, the receiver indicator was used to determine optional reception. The EUT's IF, local oscillators, and crystal oscillators and harmonics of each were investigated. Conducted emission was measured from the AC port of the charger. All modes were investigated and tested including standby mode and scanning mode. The final radiated data was taken with the EUT locked to a set frequency.

2.2 EXERCISING THE EUT

The EUT was exercised using a Hewlett Packard Signal Generator to generate a continuous wave frequency, which was received by and activated the EUT receiver portion under test.

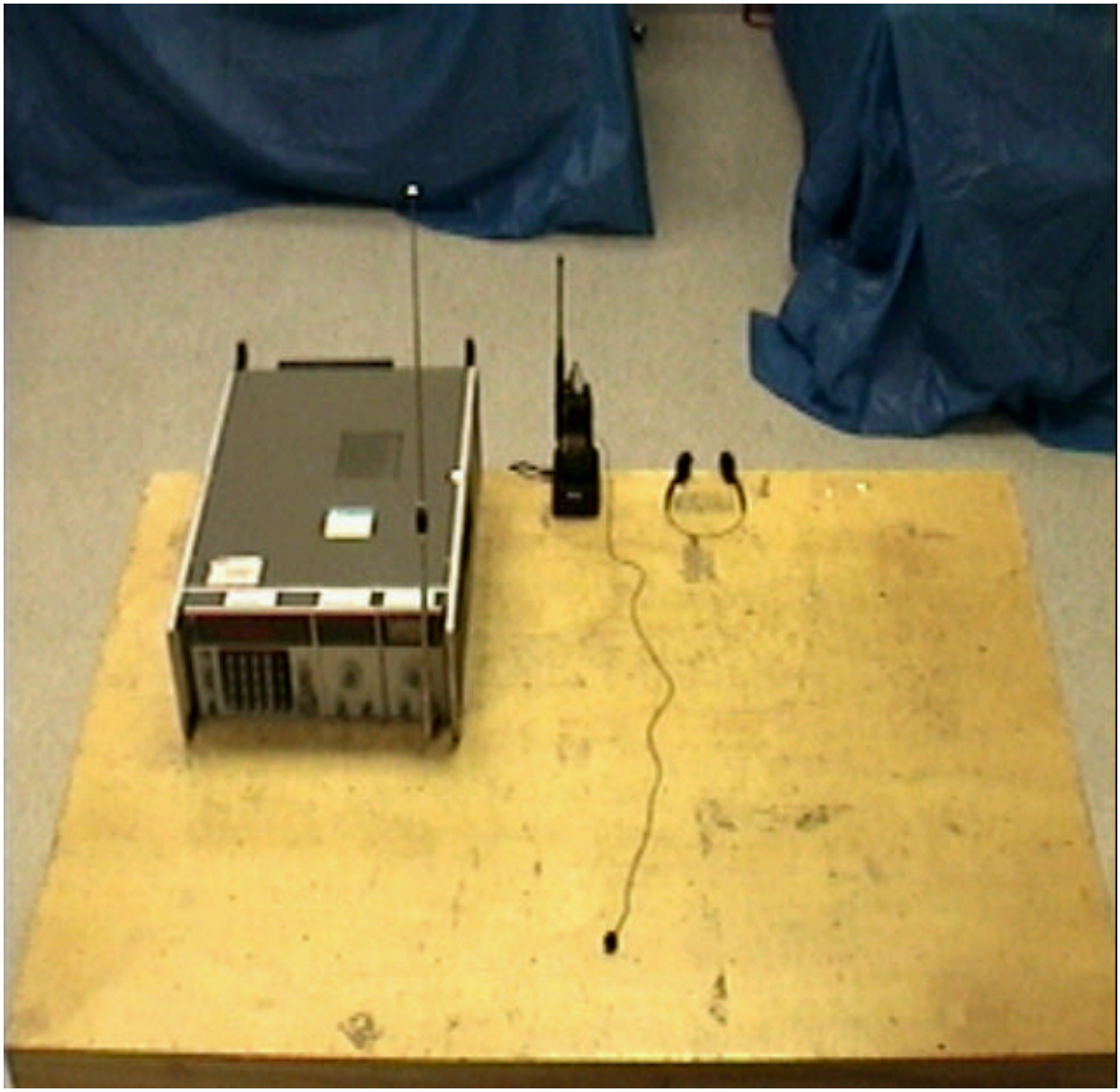
2.3 TEST SYSTEM DETAILS

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

EXTERNAL PERIPHERALS

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
BATTERY CHARGER	ALINCO	EDC-63	N0908V	N/A	UNSHIELDED POWER	008710
SIGNAL GENERATOR	HEWLETT PACKARD	8660C SYNTHESIZED SIGNAL GENERATOR	1947A02956	N/A	SHIELDED POWER	900059
HEAD PHONES	KOSS	STEREO	N/A	N/A	UNSHIELDED I/O	011140
ANTENNA	ALINCO	WHIP ANTENNA	8"	N/A		012697
RECIEVER (EUT)	**ALINCO**	**DJ-2000T**	**0000401**	**EUG DJ-X2000T**		**012698**

2.4 TEST SYSTEM CONFIGURATION PHOTOGRAPH



2.5 EMISSIONS EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. LAB
AMPLIFIER	HEWLETT PACKARD	11975A	2304A00348	TEST EQUITY
AMPLIFIER (S/A 1)	RHEIN TECH	PR-1040	00001	RTL
AMPLIFIER (S/A 2)	RHEIN TECH	RTL2	900723	RTL
AMPLIFIER (S/A 3)	RHEIN TECH	8447F	2944A03783	RTL
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
SPECTRUM ANALYZER 2	HEWLETT PACKARD	8567A	2841A00614	ACUCAL
SPECTRUM ANALYZER 4	HEWLETT PACKARD	8567A	2727A00535	ACUCAL
TUNABLE DIPOLE	EMCO	3121	274	LIBERTY LABS
ANTENNA	ATM	WR08	08443-6	ATM
MIXER	OLESON	M08HW	F80814-1	OLESON
MIXER	OLESON	M05HW	G80814-1	OLESON
DIPLEXER	OLESON	M05HW	G80814-1	OLESON
MIXER	HEWLETT PACKARD	11970U	2332A01110	ACUCAL
MIXER	HEWLETT PACKARD	11970V	2521A00512	TELOGY
MIXER	HEWLETT PACKARD	11970W	2521A00710	TELOGY
ANTENNA	ATM	WR15	15-443-6	ATM
ANTENNA	ATM	WR10	10-443-6	ATM
ANTENNA	ATM	WR05	05-443-6	ATM
SWEEP GENERATOR	HEWLETT PACKARD	83752A	3610A00866	HEWLETT PACKARD

2.6 TEST METHODOLOGY

CONDUCTED EMISSIONS MEASUREMENTS

The power line conducted emission measurements were performed in a Series 81 type shielded enclosure manufactured by Rayproof. The EUT was assembled on a wooden table 80 centimeters high. Power was fed to the EUT through a 50 ohm / 50 microhenry Line Impedance Stabilization Network (EUT LISN). The EUT LISN was fed power through an A.C. filter box on the outside of the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. A second LISN, the peripheral LISN, provides isolation for the EUT test peripherals. This peripheral LISN was also fed A.C. power. A metal power outlet box, which is bonded to the ground plane and electrically connected to the peripheral LISN, powers the EUT host peripherals.

The spectrum analyzer was connected to the A.C. line through an isolation transformer. The 50-ohm output of the EUT LISN was connected to the spectrum analyzer input through a Solar 400 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 400 kHz. Conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The analyzer's 6 dB bandwidth was set to 9 kHz. No video filter less than 10 times the resolution bandwidth was used. Average measurements are performed in linear mode using a 10 kHz resolution bandwidth, a 1 Hz video bandwidth, and by increasing the sweep time in order to obtain a calibrated measurement. The emission spectrum was scanned from (150/450) kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in this report.

RADIATED EMISSIONS MEASUREMENTS

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, 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 EMCO log periodic and biconical antenna. In order to gain sensitivity, a New Circuits ZHL-4240W 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. The spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. No video filter less than 10 times the resolution bandwidth was used. When any clock exceeds 108 MHz, the EUT was tested between 1 to 2 Gigahertz in peak mode with the resolution bandwidth set at 1 MHz as stated in ANSI C63.4. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

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.

3.0 CONDUCTED EMISSION DATA

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. If the conducted emissions exceed the limit with the instrument set to the quasi-peak mode, then measurements are made in the average mode. If the quasi-peak measurement is at least 6dB higher than the amplitude in the average mode, the level measured in the quasi-peak mode may be reduced by 13dB before comparing it to the limit.

The conducted test was performed with the EUT exercise program loaded, and the emissions were scanned between 450 kHz to 30 MHz on the NEUTRAL SIDE and HOT SIDE, herein referred to as L1 and L2, respectively.

TABLE 1: Conducted Emissions: (69 MHz)

Neutral Side (L1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
1.340	Pk	18.8	0.7	19.5	48.0	-28.5	48.0	-28.5
3.970	Pk	17.6	1.3	18.9	48.0	-29.1	48.0	-29.1
11.590	Pk	17.2	2.0	19.2	48.0	-28.8	48.0	-28.8
17.530	Pk	17.4	3.2	20.6	48.0	-27.4	48.0	-27.4
24.650	Pk	16.4	3.3	19.7	48.0	-28.3	48.0	-28.3
29.121	Pk	17.6	4.2	21.8	48.0	-26.2	48.0	-26.2

Hot Side (L2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
0.540	Pk	18.3	0.4	18.7	48.0	-29.3	48.0	-29.3
4.350	Pk	16.7	1.3	18.0	48.0	-30.0	48.0	-30.0
11.210	Pk	16.6	1.8	18.4	48.0	-29.6	48.0	-29.6
15.580	Pk	16.7	2.6	19.3	48.0	-28.7	48.0	-28.7
22.200	Pk	17.2	2.6	19.8	48.0	-28.2	48.0	-28.2
28.290	Pk	17.1	3.8	20.9	48.0	-27.1	48.0	-27.1

(1)Pk = Peak; QP = Quasi-Peak; Av = Average

TEST PERSONNEL:

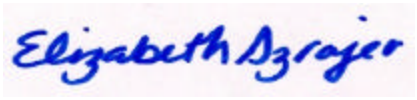
Signature:  Date: October 28, 2000

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TABLE 2: Conducted Emissions: (129 MHz)

Neutral Side (L1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
5.710	Pk	18.0	1.7	19.7	48.0	-28.3	48.0	-28.3
9.430	Pk	18.0	1.9	19.9	48.0	-28.1	48.0	-28.1
12.650	Pk	17.6	2.2	19.8	48.0	-28.2	48.0	-28.2
15.520	Pk	17.9	2.7	20.6	48.0	-27.4	48.0	-27.4
19.300	Pk	18.3	3.0	21.3	48.0	-26.7	48.0	-26.7
24.030	Pk	18.7	3.2	21.9	48.0	-26.1	48.0	-26.1

Hot Side (L2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
3.970	Pk	18.0	1.2	19.2	48.0	-28.8	48.0	-28.8
8.010	Pk	17.9	1.8	19.7	48.0	-28.3	48.0	-28.3
14.550	Pk	18.6	2.4	21.0	48.0	-27.0	48.0	-27.0
19.690	Pk	18.6	3.0	21.6	48.0	-26.4	48.0	-26.4
22.790	Pk	18.5	2.7	21.2	48.0	-26.8	48.0	-26.8
26.930	Pk	18.9	3.2	22.1	48.0	-25.9	48.0	-25.9

(1)Pk = Peak; QP = Quasi-Peak; Av = Average

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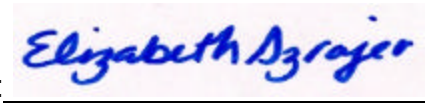
Signature:  Date: October 28, 2000

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TABLE 3: Conducted Emissions: (195 MHz)

Neutral Side (L1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
1.630	Pk	17.4	0.8	18.2	48.0	-29.8	48.0	-29.8
7.540	Pk	18.6	1.9	20.5	48.0	-27.5	48.0	-27.5
9.520	Pk	18.7	1.9	20.6	48.0	-27.4	48.0	-27.4
13.160	Pk	18.5	2.2	20.7	48.0	-27.3	48.0	-27.3
16.970	Pk	18.3	3.1	21.4	48.0	-26.6	48.0	-26.6
26.810	Pk	19.2	3.7	22.9	48.0	-25.1	48.0	-25.1

Hot Side (L2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
3.670	Pk	18.2	1.2	19.4	48.0	-28.6	48.0	-28.6
6.010	Pk	18.1	1.7	19.8	48.0	-28.2	48.0	-28.2
9.430	Pk	17.7	1.9	19.6	48.0	-28.4	48.0	-28.4
20.430	Pk	17.7	2.8	20.5	48.0	-27.5	48.0	-27.5
22.020	Pk	18.4	2.5	20.9	48.0	-27.1	48.0	-27.1
28.850	Pk	17.8	3.9	21.7	48.0	-26.3	48.0	-26.3

(1)Pk = Peak; QP = Quasi-Peak; Av = Average

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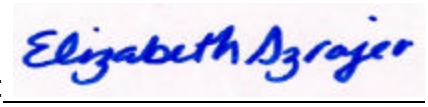
Signature:  Date: October 28, 2000

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TABLE 4: Conducted Emissions: (355 MHz)

Neutral Side (L1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
2.870	Pk	17.0	1.2	18.2	48.0	-29.8	48.0	-29.8
9.110	Pk	17.9	1.9	19.8	48.0	-28.2	48.0	-28.2
11.440	Pk	17.6	2.0	19.6	48.0	-28.4	48.0	-28.4
15.310	Pk	17.2	2.6	19.8	48.0	-28.2	48.0	-28.2
19.780	Pk	16.8	2.9	19.7	48.0	-28.3	48.0	-28.3
25.740	Pk	17.8	3.4	21.2	48.0	-26.8	48.0	-26.8

Hot Side (L2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
2.520	Pk	17.4	1.0	18.4	48.0	-29.6	48.0	-29.6
9.610	Pk	17.8	1.8	19.6	48.0	-28.4	48.0	-28.4
13.040	Pk	18.2	2.1	20.3	48.0	-27.7	48.0	-27.7
19.010	Pk	16.9	3.1	20.0	48.0	-28.0	48.0	-28.0
25.690	Pk	18.2	3.1	21.3	48.0	-26.7	48.0	-26.7
29.470	Pk	19.0	3.9	22.9	48.0	-25.1	48.0	-25.1

(1)Pk = Peak; QP = Quasi-Peak; Av = Average

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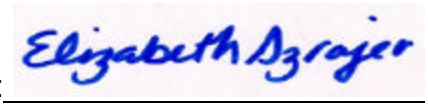
Signature:  Date: October 28, 2000

Typed/Printed Name: E. Szrajer

TABLE 5: Conducted Emissions: (685 MHz)

Neutral Side (L1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
1.660	Pk	17.3	0.8	18.1	48.0	-29.9	48.0	-29.9
11.210	Pk	18.7	1.9	20.6	48.0	-27.4	48.0	-27.4
15.490	Pk	18.3	2.7	21.0	48.0	-27.0	48.0	-27.0
21.670	Pk	18.0	2.7	20.7	48.0	-27.3	48.0	-27.3
23.260	Pk	18.7	3.1	21.8	48.0	-26.2	48.0	-26.2
25.860	Pk	18.2	3.4	21.6	48.0	-26.4	48.0	-26.4

Hot Side (L2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
1.930	Pk	18.5	0.9	19.4	48.0	-28.6	48.0	-28.6
6.890	Pk	17.8	1.7	19.5	48.0	-28.5	48.0	-28.5
12.710	Pk	17.9	2.0	19.9	48.0	-28.1	48.0	-28.1
16.260	Pk	19.2	2.8	22.0	48.0	-26.0	48.0	-26.0
18.180	Pk	18.1	3.1	21.2	48.0	-26.8	48.0	-26.8
22.320	Pk	17.9	2.6	20.5	48.0	-27.5	48.0	-27.5

(1)Pk = Peak; QP = Quasi-Peak; Av = Average

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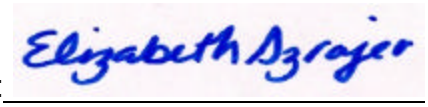
Signature:  Date: October 28, 2000

Typed/Printed Name: E. Szrajer

TABLE 6: Conducted Emissions: (900 MHz)

Neutral Side (L1)

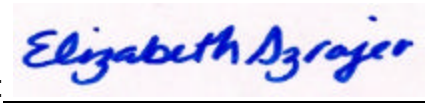
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
0.690	Pk	17.1	0.4	17.5	48.0	-30.5	48.0	-30.5
3.430	Pk	16.9	1.2	18.1	48.0	-29.9	48.0	-29.9
6.390	Pk	16.5	1.8	18.3	48.0	-29.7	48.0	-29.7
13.160	Pk	16.7	2.2	18.9	48.0	-29.1	48.0	-29.1
17.970	Pk	17.6	3.3	20.9	48.0	-27.1	48.0	-27.1
23.200	Pk	15.7	3.1	18.8	48.0	-29.2	48.0	-29.2

Hot Side (L2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)
2.400	Pk	17.3	1.0	18.3	48.0	-29.7	48.0	-29.7
5.680	Pk	17.6	1.6	19.2	48.0	-28.8	48.0	-28.8
9.400	Pk	17.6	1.9	19.5	48.0	-28.5	48.0	-28.5
11.920	Pk	17.3	1.9	19.2	48.0	-28.8	48.0	-28.8
15.880	Pk	16.9	2.7	19.6	48.0	-28.4	48.0	-28.4
25.180	Pk	16.5	3.1	19.6	48.0	-28.4	48.0	-28.4

(1)Pk = Peak; QP = Quasi-Peak; Av = Average

TEST PERSONNEL:

Signature:  Date: October 28, 2000

Typed/Printed Name: E. Szrajer

4.0 RADIATED EMISSION DATA

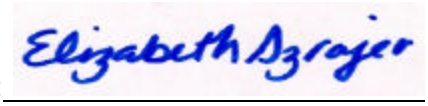
TABLE 7: Radiated Emissions: (30 MHz)

(Temperature: 58°F Degree, Humidity: 36%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
146.960	Qp	V	15	1.0	32.0	-16.6	15.4	43.5	-28.1
173.940	Qp	V	0	1.0	30.5	-17.2	13.3	43.5	-30.2
192.000	Qp	H	270	4.0	31.7	-18.1	13.6	43.5	-29.9
238.338	Qp	H	135	4.0	34.4	-15.8	18.6	46.0	-27.4
769.450	Qp	V	325	1.0	41.6	-3.8	37.8	46.0	-8.2
844.500	Qp	H	210	1.0	41.8	-3.2	38.6	46.0	-7.4

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature:  Date: October 30, 2000

Typed/Printed Name: E. Szrajer

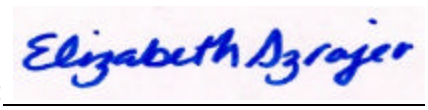
TABLE 8: Radiated Emissions: (69 MHz)

(Temperature: 60°F Degree, Humidity: 35%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
128.040	Qp	H	265	4.0	31.3	-15.9	15.4	43.5	-28.1
173.940	Qp	H	15	4.0	30.8	-17.7	13.1	43.5	-30.4
192.120	Qp	V	15	1.0	31.5	-17.8	13.7	43.5	-29.8
217.766	Qp	V	355	1.0	31.9	-17.4	14.5	46.0	-31.5
769.450	Qp	V	324	1.0	40.8	-3.8	37.0	46.0	-9.0

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature:  Date: October 30, 2000

Typed/Printed Name: E. Szrajer

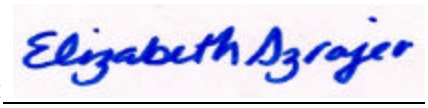
TABLE 9: Radiated Emissions: (108 MHz)

(Temperature: 61°F Degree, Humidity: 35%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
128.034	Qp	H	125	4.0	32.3	-15.9	16.4	43.5	-27.1
173.940	Qp	H	10	4.0	31.5	-17.7	13.8	43.5	-29.7
192.096	Qp	V	90	1.0	32.7	-17.8	14.9	43.5	-28.6
217.740	Qp	V	15	1.0	32.8	-17.5	15.3	46.0	-30.7
769.450	Qp	V	320	1.0	41.9	-3.8	38.1	46.0	-7.9
922.500	Qp	H	180	1.0	42.9	-2.3	40.6	46.0	-5.4

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature:  Date: October 30, 2000

Typed/Printed Name: E. Szrajer

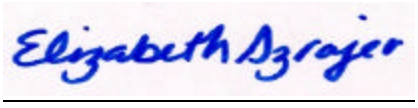
TABLE 10: Radiated Emissions: (129 MHz)

(Temperature: 61°F Degree, Humidity: 35%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
128.044	Qp	H	115	4.0	32.2	-15.9	16.3	43.5	-27.2
173.930	Qp	H	95	4.0	31.4	-17.7	13.7	43.5	-29.8
192.100	Qp	V	355	1.0	32.3	-17.8	14.5	43.5	-29.0
217.734	Qp	V	15	1.0	31.9	-17.5	14.4	46.0	-31.6
769.450	Qp	V	320	1.0	42.4	-3.8	38.6	46.0	-7.4
943.512	Qp	H	180	1.0	43.0	-2.4	40.6	46.0	-5.4

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature:  Date: October 30, 2000

Typed/Printed Name: E. Szrajer

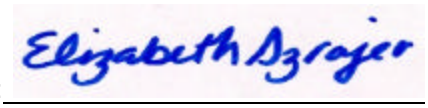
TABLE 11: Radiated Emissions: (150 MHz)

(Temperature: 61°F Degree, Humidity: 34%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
173.940	Qp	H	0	4.0	32.0	-17.7	14.3	43.5	-29.2
195.050	Qp	V	190	1.0	32.0	-17.7	14.3	43.5	-29.2
390.100	Qp	V	270	1.0	31.3	-10.8	20.5	46.0	-25.5
585.150	Qp	V	350	1.0	30.2	-6.0	24.2	46.0	-21.8
769.450	Qp	V	145	1.0	40.7	-3.8	36.9	46.0	-9.1
780.200	Qp	H	195	1.0	28.5	-3.8	24.7	46.0	-21.3

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature:  Date: October 30, 2000

Typed/Printed Name: E. Szrajer

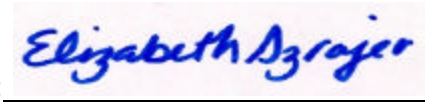
TABLE 12: Radiated Emissions: (195 MHz)

(Temperature: 63°F Degree, Humidity: 34%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
128.050	Qp	V	255	1.0	31.9	-15.4	16.5	43.5	-27.0
192.050	Qp	V	270	1.0	31.8	-17.8	14.0	43.5	-29.5
240.014	Qp	H	155	1.9	35.9	-15.6	20.3	46.0	-25.7
480.010	Qp	V	180	1.0	32.3	-8.3	24.0	46.0	-22.0
720.000	Qp	H	175	1.0	43.9	-4.5	39.4	46.0	-6.6
769.450	Qp	V	75	1.0	40.5	-3.8	36.7	46.0	-9.3

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature:  Date: October 30, 2000

Typed/Printed Name: E. Szrajer

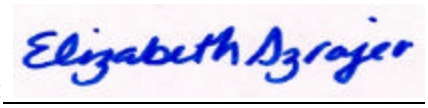
TABLE 13: Radiated Emissions: (240 MHz)

(Temperature: 63°F Degree, Humidity: 34%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
173.940	Qp	V	125	1.0	31.3	-17.2	14.1	43.5	-29.4
192.040	Qp	H	10	4.0	31.2	-18.1	13.1	43.5	-30.4
285.050	Qp	H	270	19.0	30.1	-13.5	16.6	46.0	-29.4
570.100	Qp	H	330	1.5	32.0	-6.1	25.9	46.0	-20.1
769.450	Qp	V	130	1.0	40.8	-3.8	37.0	46.0	-9.0
855.150	Qp	H	185	1.0	30.6	-2.4	28.2	46.0	-17.8

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature:  Date: October 30, 2000

Typed/Printed Name: E. Szrajer

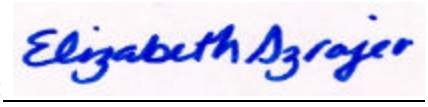
TABLE 14: Radiated Emissions: (355 MHz)

(Temperature: 63°F Degree, Humidity: 34%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
128.050	Qp	H	120	4.0	32.0	-15.9	16.1	43.5	-27.4
173.640	Qp	H	35	4.0	31.3	-17.6	13.7	43.5	-29.8
192.010	Qp	V	25	1.0	30.8	-17.8	13.0	43.5	-30.5
400.150	Qp	V	170	1.0	32.7	-10.4	22.3	46.0	-23.7
769.450	Qp	V	325	1.0	40.8	-3.8	37.0	46.0	-9.0
800.100	Qp	V	255	1.0	28.7	-3.8	24.9	46.0	-21.1

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature:  Date: October 30, 2000

Typed/Printed Name: E. Szrajer

TABLE 15: Radiated Emissions: (470 MHz)

(Temperature: 62°F Degree, Humidity: 35%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
173.940	Qp	V	95	1.0	32.3	-17.2	15.1	43.5	-28.4
192.030	Qp	H	35	4.0	31.8	-18.1	13.7	43.5	-29.8
217.766	Qp	H	0	4.0	32.0	-17.3	14.7	46.0	-31.3
515.050	Qp	H	180	1.4	31.3	-7.6	23.7	46.0	-22.3
518.500	Qp	V	145	1.0	45.5	-7.8	37.7	46.0	-8.3
774.304	Qp	H	175	1.2	38.9	-3.8	35.1	46.0	-10.9

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature: Elizabeth Szrajer Date: October 31, 2000

Typed/Printed Name: E. Szrajer

TABLE 16: Radiated Emissions: (685 MHz)

(Temperature: 63°F Degree, Humidity: 35%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
128.050	Qp	H	200	4.0	31.4	-15.9	15.5	43.5	-28.0
173.640	Qp	H	325	4.0	32.4	-17.6	14.8	43.5	-28.7
192.050	Qp	V	100	1.0	30.9	-17.8	13.1	43.5	-30.4
217.766	Qp	V	0	1.0	30.9	-17.4	13.5	46.0	-32.5
518.500	Qp	V	225	1.0	46.5	-7.8	38.7	46.0	-7.3
730.050	Qp	V	320	1.0	31.7	-3.9	27.8	46.0	-18.2

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature: Elizabeth Szrajer Date: October 31, 2000

Typed/Printed Name: E. Szrajer

TABLE 17: Radiated Emissions: (900 MHz)

(Temperature: 63°F Degree, Humidity: 35%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
128.050	Qp	V	45	1.0	31.8	-15.4	16.4	43.5	-27.1
173.940	Qp	V	15	1.0	31.2	-17.2	14.0	43.5	-29.5
192.030	Qp	V	25	1.0	31.7	-17.8	13.9	43.5	-29.6
217.766	Qp	H	330	4.0	32.3	-17.3	15.0	46.0	-31.0
518.500	Qp	V	205	1.0	46.6	-7.8	38.8	46.0	-7.2
945.050	Qp	H	180	1.0	28.8	-2.6	26.2	46.0	-19.8

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature: Elizabeth Szrajer Date: October 31, 2000

Typed/Printed Name: E. Szrajer

TABLE 18: Radiated Emissions: (930 MHz)

(Temperature: 63°F Degree, Humidity: 35%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
128.050	Qp	H	295	4.0	30.7	-15.9	14.8	43.5	-28.7
173.940	Qp	H	335	4.0	32.9	-17.7	15.2	43.5	-28.3
192.030	Qp	V	180	1.0	31.8	-17.8	14.0	43.5	-29.5
217.766	Qp	V	25	1.0	30.6	-17.4	13.2	46.0	-32.8
518.500	Qp	V	275	1.0	46.8	-7.8	39.0	46.0	-7.0
884.950	Qp	V	45	1.0	34.8	-2.8	32.0	46.0	-14.0

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature: Elizabeth Szrajer Date: October 31, 2000

Typed/Printed Name: E. Szrajer

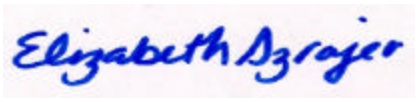
TABLE 18: Radiated Emissions: (960 MHz)

(Temperature: 63°F Degree, Humidity: 35%)

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV/m)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
128.040	Qp	V	95	1.0	32.2	-15.4	16.8	43.5	-26.7
173.940	Qp	V	0	1.0	32.4	-17.2	15.2	43.5	-28.3
192.030	Qp	H	10	4.0	32.3	-18.1	14.2	43.5	-29.3
217.766	Qp	V	25	1.0	30.6	-17.4	13.2	46.0	-32.8
518.500	Qp	V	190	1.0	46.1	-7.8	38.3	46.0	-7.7
914.950	Qp	H	165	1.0	27.4	-2.6	24.8	46.0	-21.2

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature:  Date: October 31, 2000

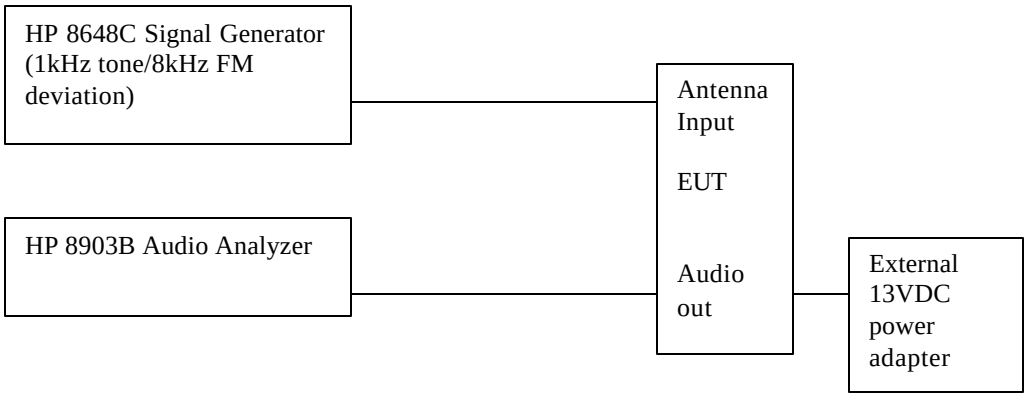
Typed/Printed Name: E. Szrajer

4.1 38dB Rejection Test

A signal generator was connected to the receiver under test, and the output of the receiver was connected to an audio analyzer.

A FM signal was applied to the receiver antenna input with a 1kHz tone modulated at 8 kHz deviation, and adjusted with the audio analyzer to produce a 12 dB SINAD. This was done across the receiver bands to determine a reference level. The reference level used was that with the highest sensitivity in all of the bands.

The output of the signal generator was then adjusted to a level 40 dB above the reference level established and set to a low, medium and high frequency in both the mobile and base cellular bands. (Mobile = 824.04 MHz through 848.97 MHz, Base = 869.04 MHz through 893. 97 MHz). The squelch of the receiver was then set to a minimum threshold level and scanning began from the lowest to the highest channel. Whenever the receiver stopped and "un-squelched" that frequency was noted as a response. After all the frequencies of responses were noted, the signal generator was set to measure the sensitivity at each of these response frequencies. This measurement was the reference sensitivity for the particular received frequency measured. The audio analyzer measurement was used to measure the 12 dB SINAD and that is the spurious value. The difference between the reference sensitivity and the spurious value is the rejection ratio and must be at least 38 dB.



Frequencies used on the Signal Generator were 824.04, 836.50, 848.97 MHz for the Mobile and 869.04, 887.73, 893.97 MHz for the Base.

The DJ-X2000T unit reference level used was –50 dBm from the signal generator, this was determined from the highest sensitivity from 930 MHz at –90.0 dBm measurement of 12dB SINAD. The DJ-X2000T unit was scanned from 30 - 960 MHz for all channels (manufacturers spec.). Signals that were noted as responses were checked with the signal generator off and if they still existed as a response were determined as ambient signals and removed from the response list. There was one signal available for the 38 dB rejection test requirements.

38dB Rejection

Cellular Band (869.04 - 893.97) MHz
Date: 10/31/00
Temp: 74°F
Humidity: 33%
Model: DJ-X2000T

Table 1

Frequency Injected 869.04MHz				
Frequency Detected (MHz)	Level 12dB SINAD at 869.04MHz	Level 12dB at frequency detected	Rejection	Margin
No Frequencies Detected	N/A	N/A	N/A	N/A

Table 2

Frequency Injected 887.73MHz				
Frequency Detected (MHz)	Level 12dB SINAD at 887.73MHz	Level 12dB at frequency detected	Rejection	Margin
No Frequencies Detected	N/A	N/A	N/A	N/A

Table 3

Frequency Injected 893.97MHz				
Frequency Detected (MHz)	Level 12dB SINAD at 893.97MHz	Level 12dB at frequency detected	Rejection	Margin
No Frequencies Detected	N/A	N/A	N/A	N/A

38dB Rejection

Mobile Band (824.04- 848.97) MHz
Date: 10/31/00
Temp: 74°F
Humidity: 33%
Model: DJ-X2000T

Table 1

Frequency Injected 824.04MHz				
Frequency Detected (MHz)	Level 12dB SINAD at 824.04MHz	Level 12dB at frequency detected	Rejection	Margin
No Frequencies Detected	N/A	N/A	N/A	N/A

Table 2

Frequency Injected 836.50MHz				
Frequency Detected (MHz)	Level 12dB SINAD at 836.50MHz	Level 12dB at frequency detected	Rejection	Margin
719.00	-57dBm	-101dBm	44dB	6dB

Table 3

Frequency Injected 848.97MHz				
Frequency Detected (MHz)	Level 12dB SINAD at 848.97MHz	Level 12dB at frequency detected	Rejection	Margin
No Frequencies Detected	N/A	N/A	N/A	N/A

5.0 CONFORMANCE STATEMENT

STANDARDS REFERENCED FOR THIS REPORT	
FCC RULES AND REGULATION	PART 2 SUBPART J
FCC RULES AND REGULATION	PART 15 §15.109
FCC RULES AND REGULATION	PART 15 §15.111
FCC RULES AND REGULATION	PART 15 § 15.121
ANSI	C63.4:1992
INDUSTRY CANADA	RSS-210

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described above. Modifications were not made during testing to the equipment in order to achieve compliance with these standards.

Furthermore, there was no deviation from, additions to or exclusions from the ANSI C63.4 test methodology.

Signature: _____ Date: October 31, 2000

Typed/Printed Name: Desmond A. 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.