Engineering and Testing for EMC and Safety Compliance

CERTIFICATION APPLICATION REPORT
FCC AND INDUSTRY CANADA

Test Lab:	Applicant:
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FCC ID:	PH3DJ-596TMK2	**GRANTEE FRN:**	0005-1920-83
PLAT FORM:	N/A	**RTL WORK ORDER #:**	2002219
MODEL(S):	DJ-596TMkII	**RTL QUOTE #:**	QRTL02-634
DATE OF TEST REPORT:	December 31, 2002		

American National Standard Institute:	ANSI/TIA/EIA603 and ANSI/TIA/EIA 603-1
FCC Classification:	CSR – Scanning Receiver
FCC Rule Part(s):	Part 15.121: Scanning receivers and frequency converters used with scanning receivers
Industry Canada Standard:	RSS-215; Issue 1 (Provisional): Analogue Scanner Receivers
Digital Interface Information	Digital Interface was found to be compliant
Receiver Information	Receiver was found to be compliant

Frequency Range (MHz)	Output Power (W) EIRP	Frequency Tolerance	Emission Designator
136.000 – 173.995	N/A	N/A	N/A
400.000 – 511.995	N/A	N/A	N/A

We, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. 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, FCC Part 15, Industry Canada RSS-215, ANSI C63.4, ANSI/TIA/EIA603 and ANSI/TIA/EIA 603-1.

Signature: _____ Date: December 31, 2002

Typed/Printed Name: Desmond A. Fraser Position: President

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1 GENERAL INFORMATION

The following application for FCC Type Certification of a Transceiver (Analog Scanner Receiver portion) is prepared on behalf of Alinco Incorporated; Electronics Division, in accordance with Part 2, and Part 15, Subparts A and B of the Federal Communications Commission rules and regulations and Industry Canada RSS-215. The Equipment Under Test (EUT) was Model DJ-596TMkII, FCC ID: PH3DJ-596TMK2, VHF/UHF FM Handheld Transceiver. The test results reported in this document relate only to this model.

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. Calibration checks are performed regularly on the instruments, and all accessories including the high pass filter, preamplifier and cables.

All radiated emissions measurements were performed manually at Rhein Tech Laboratories, Inc. 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 emissions 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, including AC line conducted and radiated emissions testing (ANSI C63.4 1992).

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 in 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 errors.

1.1 MODIFICATIONS

No modifications were made during testing.

1.2 RELATED SUBMITTAL (S)/GRANT (S)

This is an original certification submission.

1.3 TEST METHODOLOGY

Radiated testing was performed according to the procedures in ANSI C63.4 2000. Radiated testing was performed at an antenna- to-EUT distance of 3 meters.

2 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 optimal reception. The EUT's Intermediate Frequencies (IF), Local Oscillators (LO), 2nd Local Oscillators (LO), 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 DJ-596TMkII is a receiver designed to function at the following frequency ranges: 136.000 MHz – 173.995 MHz and 400.000 MHz - 511.995 MHz. The following frequencies were tested: 136.000 MHz, 154.995 MHz, 173.995 MHz, 400.000 MHz, 455.995 MHz and 511.995 MHz. Each receiver frequency was measured independently. In order to activate the receiver circuitry; a signal was transmitted from a signal generator. This allowed the EUT to function in its typical state throughout the course of all testing.

2.3 TEST SYSTEM DETAILS

The FCC Identifiers for all equipment, plus descriptions of all cables used in the tested system are:

TABLE 1: EQUIPMENT UNDER TEST (EUT)

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
DUAL BAND FM TRANSCEIVER	ALINCO	DJ-596TMKII	N/A	PH3DJ-596TMK2	N/A	014881
NI MH BATTERY	ALINCO	N/A	072136	N/A	N/A	01884

TABLE 2: EXTERNAL COMPONENTS IN TEST CONFIGURATION

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
SIGNAL GENERATOR	HEWLETT PACKARD	8648C	3537A01741	N/A	SHIELDED POWER	900917
ANTENNA	ALINCO	WHIP ANTENNA	N/A	N/A	N/A	014882
SPEAKER MICROPHONE	ALINCO	EMS-47	N/A	N/A	SHIELDED I/O	012009

2.4 CONFIGURATION OF TESTED SYSTEM

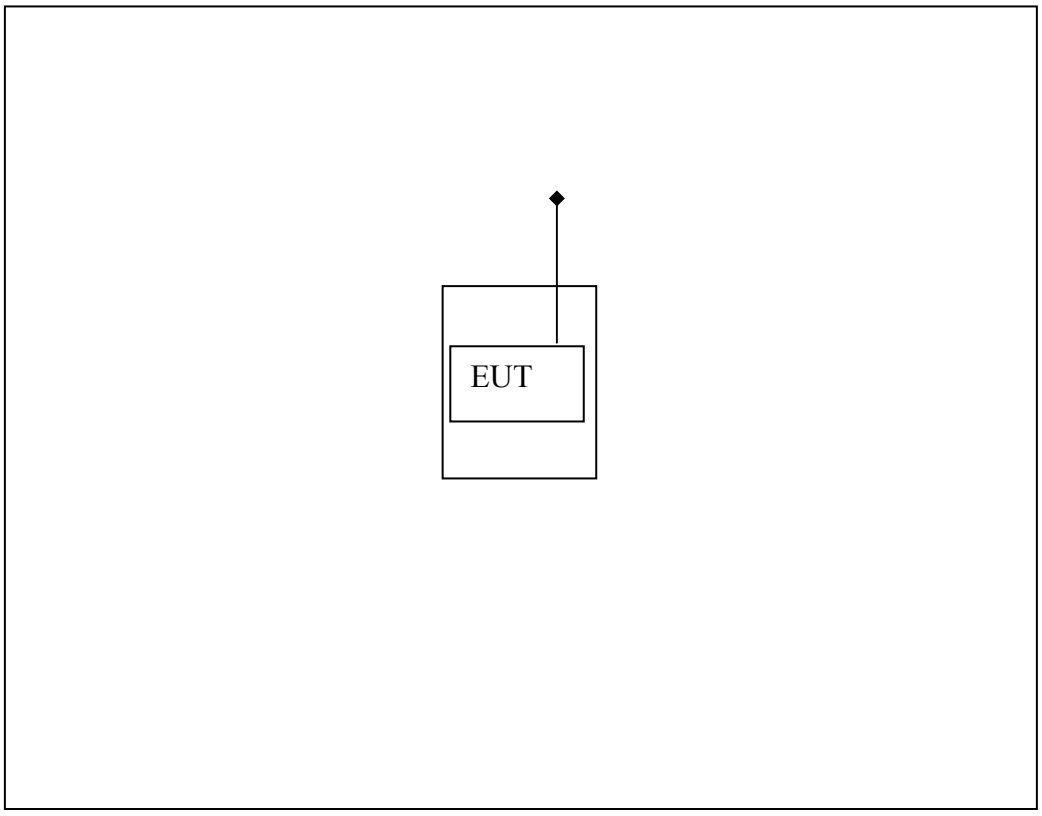


FIGURE 1: CONFIGURATION OF TEST SYSTEM

3 CONDUCTED EMISSIONS

3.1 TEST METHODOLOGY FOR 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.

3.2 CONDUCTED EMISSIONS TEST

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 PHASE SIDE.

3.3 CONDUCTED EMISSIONS TEST DATA

TABLE 3: CONDUCTED EMISSIONS TEST (NEUTRAL SIDE) (136.000 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.450	Pk	42.2	0.8	43.0	48.0	-5.0
0.881	Pk	30.6	0.7	31.3	48.0	-16.7
1.012	Pk	29.4	0.7	30.1	48.0	-17.9
1.612	Pk	24.7	1.0	25.7	48.0	-22.3
11.500	Pk	17.2	2.3	19.5	48.0	-28.5
23.260	Pk	17.3	3.2	20.5	48.0	-27.5

TABLE 4: CONDUCTED EMISSIONS TEST (PHASE SIDE) (136.000 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.450	Pk	41.6	0.8	42.4	48.0	-5.6
0.668	Pk	32.0	0.7	32.7	48.0	-15.3
1.024	Pk	27.3	0.7	28.0	48.0	-20.0
6.970	Pk	17.9	1.9	19.8	48.0	-28.2
18.970	Pk	17.5	3.1	20.6	48.0	-27.4
27.350	Pk	17.2	3.5	20.7	48.0	-27.3

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

TEST PERSONNEL:

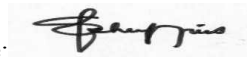
Signature:  Date: December 23, 2002 Typed Name: Franck Schuppius

TABLE 5: CONDUCTED EMISSIONS TEST (NEUTRAL SIDE) (154.995 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.450	Pk	42.1	0.8	42.9	48.0	-5.1
0.745	Pk	28.6	0.7	29.3	48.0	-18.7
1.008	Pk	29.6	0.7	30.3	48.0	-17.7
5.060	Pk	17.7	1.6	19.3	48.0	-28.7
11.650	Pk	18.2	2.4	20.6	48.0	-27.4
28.150	Pk	17.2	3.6	20.8	48.0	-27.2

TABLE 6: CONDUCTED EMISSIONS TEST (PHASE SIDE) (154.995 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.451	Pk	41.8	0.8	42.6	48.0	-5.4
0.644	Pk	32.4	0.7	33.1	48.0	-14.9
1.032	Pk	27.8	0.7	28.5	48.0	-19.5
6.855	Pk	17.7	1.9	19.6	48.0	-28.4
15.730	Pk	18.1	2.8	20.9	48.0	-27.1
20.000	Pk	17.9	3.1	21.0	48.0	-27.0

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

TEST PERSONNEL:

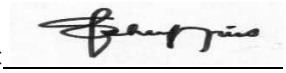
Signature:  Date: December 23, 2002 Typed Name: Franck Schuppius

TABLE 7: CONDUCTED EMISSIONS TEST (NEUTRAL SIDE) (173.995 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.451	Pk	41.6	0.8	42.4	48.0	-5.6
1.032	Pk	27.7	0.7	28.4	48.0	-19.6
1.528	Pk	23.8	1.0	24.8	48.0	-23.2
6.545	Pk	17.7	1.8	19.5	48.0	-28.5
10.140	Pk	17.4	2.1	19.5	48.0	-28.5
25.390	Pk	17.1	3.4	20.5	48.0	-27.5

TABLE 8: CONDUCTED EMISSIONS TEST (PHASE SIDE) (173.995 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.450	Pk	41.9	0.8	42.7	48.0	-5.3
1.024	Pk	27.8	0.7	28.5	48.0	-19.5
1.556	Pk	25.0	1.0	26.0	48.0	-22.0
5.080	Pk	17.4	1.7	19.1	48.0	-28.9
11.680	Pk	18.3	2.4	20.7	48.0	-27.3
21.700	Pk	17.4	3.2	20.6	48.0	-27.4

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

TEST PERSONNEL:

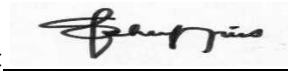
Signature:  Date: December 23, 2002 Typed Name: Franck Schuppius

TABLE 9: CONDUCTED EMISSIONS TEST (NEUTRAL SIDE) (400.000 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.452	Pk	42.0	0.8	42.8	48.0	-5.2
1.008	Pk	30.2	0.7	30.9	48.0	-17.1
1.576	Pk	24.9	1.0	25.9	48.0	-22.1
5.575	Pk	18.2	1.7	19.9	48.0	-28.1
13.110	Pk	17.5	2.5	20.0	48.0	-28.0
27.140	Pk	17.4	3.4	20.8	48.0	-27.2

TABLE 10: CONDUCTED EMISSIONS TEST (PHASE SIDE) (400.000 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.451	Pk	41.8	0.8	42.6	48.0	-5.4
1.004	Pk	28.0	0.7	28.7	48.0	-19.3
1.528	Pk	25.0	1.0	26.0	48.0	-22.0
5.080	Pk	19.3	1.7	21.0	48.0	-27.0
17.490	Pk	17.5	2.8	20.3	48.0	-27.7
20.120	Pk	18.1	3.1	21.2	48.0	-26.8

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

TEST PERSONNEL:

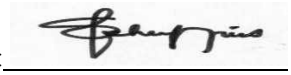
Signature:  Date: December 23, 2002 Typed Name: Franck Schuppius

TABLE 11: CONDUCTED EMISSIONS TEST (NEUTRAL SIDE) (455.995 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.450	Pk	41.9	0.8	42.7	48.0	-5.3
1.008	Pk	30.4	0.7	31.1	48.0	-16.9
1.544	Pk	24.4	1.0	25.4	48.0	-22.6
5.080	Pk	18.3	1.6	19.9	48.0	-28.1
11.960	Pk	17.8	2.5	20.3	48.0	-27.7
26.500	Pk	17.7	3.4	21.1	48.0	-26.9

TABLE 12: CONDUCTED EMISSIONS TEST (PHASE SIDE) (455.995 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.451	Pk	41.7	0.8	42.5	48.0	-5.5
1.040	Pk	28.2	0.7	28.9	48.0	-19.1
1.560	Pk	24.1	1.0	25.1	48.0	-22.9
8.370	Pk	18.0	2.0	20.0	48.0	-28.0
19.450	Pk	17.7	3.1	20.8	48.0	-27.2
27.010	Pk	17.4	3.5	20.9	48.0	-27.1

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

TEST PERSONNEL:

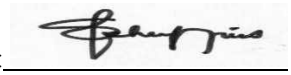
Signature:  Date: December 23, 2002 Typed Name: Franck Schuppius

TABLE 13: CONDUCTED EMISSIONS TEST (NEUTRAL SIDE) (511.995 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.451	Pk	41.0	0.8	41.8	48.0	-6.2
1.008	Pk	30.1	0.7	30.8	48.0	-17.2
1.512	Pk	25.1	1.0	26.1	48.0	-21.9
5.065	Pk	17.7	1.6	19.3	48.0	-28.7
10.460	Pk	17.7	2.2	19.9	48.0	-28.1
20.040	Pk	17.8	3.1	20.9	48.0	-27.1

TABLE 14: CONDUCTED EMISSIONS TEST (PHASE SIDE) (511.995 MHZ)

Temperature: 68°F Humidity: 27%						
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**Limit (dBuV)**	**Margin (dBuV)**
0.450	Pk	41.7	0.8	42.5	48.0	-5.5
1.004	Pk	28.3	0.7	29.0	48.0	-19.0
1.520	Pk	24.5	1.0	25.5	48.0	-22.5
5.080	Pk	17.4	1.7	19.1	48.0	-28.9
19.950	Pk	17.8	3.1	20.9	48.0	-27.1
23.210	Pk	16.9	3.3	20.2	48.0	-27.8

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

TEST PERSONNEL:

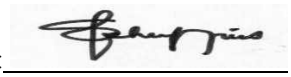
Signature:  Date: December 23, 2002 Typed Name: Franck Schuppius

TABLE 15: EQUIPMENT USED FOR TESTING

Conducted Emissions					
RTL Asset #	**Manufacturer**	**Model**	**Part Type**	**Serial Number**	**Calibration Due Date**
900897	Hewlett Packard	85650A	Spectrum Analyzer (10 kHz – 1.5 GHz)	N/A	11/09/03
900339	Hewlett Packard	N/A	Quasi-Peak Adapter	N/A	11/09/03
901084	AFJ	LS16	LISN	N/A	11/09/03

4 RADIATED EMISSIONS

4.1 TEST METHODOLOGY FOR 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 ensure 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 spectrum analyzer, a quasi-peak adapter, and EMCO log periodic and biconical antenna. In order to gain sensitivity, a 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. The second harmonic of the highest LO was tested. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

4.2 RADIATED EMISSION DATA

TABLE 16: RADIATED EMISSIONS: (INPUT FREQUENCY: 136.000 MHZ)

Temperature: 35°F Humidity: 57%									
Emission Frequency (MHz)	**Test Detector**	**Antenna Polarity (H/V)**	**Turntable Azimuth (deg)**	**Antenna Height (m)**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB/m)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
198.000	Qp	V	145	1.0	35.1	-19.0	16.1	43.5	-27.4
277.200	Qp	V	145	1.0	34.4	-15.8	18.6	46.0	-27.4
350.300	Qp	V	145	1.0	36.9	-13.7	23.2	46.0	-22.8
525.450	Qp	V	225	1.0	34.9	-9.4	25.5	46.0	-20.5
700.600	Qp	V	150	1.0	36.3	-7.0	29.3	46.0	-16.7
1050.900	Av	V	0	1.0	33.6	-2.7	30.9	54.0	-23.1
1226.050	Av	V	360	1.0	35.0	-1.3	33.7	54.0	-20.3
1401.200	Av	V	145	1.0	31.9	1.8	33.7	54.0	-20.3
1576.350	Av	V	175	1.0	35.1	3.3	38.4	54.0	-15.6
1751.500	Av	V	225	1.0	34.6	4.4	39.0	54.0	-15.0

1st IF = 39.15 MHz, 2nd IF = 450 KHz, 1st LO = 175.150 MHz, 2nd Harmonic of 1st LO = 350.300 MHz, Harmonics of 19.8 MHz x 2 and 3.68 MHz clock oscillators
**All readings are quasi-peak, unless stated otherwise.*

TABLE 17: RADIATED EMISSIONS: (INPUT FREQUENCY: 154.995 MHZ)

Temperature: 35°F Humidity: 57%									
Emission Frequency (MHz)	**Test Detector**	**Antenna Polarity (H/V)**	**Turntable Azimuth (deg)**	**Antenna Height (m)**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB/m)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
194.145	Qp	V	0	1.0	45.1	-19.0	26.1	43.5	-17.4
198.000	Qp	V	45	1.0	32.2	-19.0	13.2	43.5	-30.3
237.600	Qp	V	45	1.0	32.3	-17.2	15.1	46.0	-30.9
294.145	Qp	V	145	1.0	30.3	-15.5	14.8	46.0	-31.2
394.145	Qp	V	145	1.0	32.9	-12.4	20.5	46.0	-25.5
435.600	Qp	V	145	1.0	30.1	-11.1	19.0	46.0	-27.0
494.145	Qp	V	145	1.0	32.9	-10.0	22.9	46.0	-23.1
794.145	Qp	V	225	1.0	33.5	-5.7	27.8	46.0	-18.2
994.145	Qp	V	145	1.0	31.1	-4.0	27.1	54.0	-26.9
1094.145	Av	V	245	1.0	30.0	-2.3	27.7	54.0	-26.3
1494.145	Av	V	45	1.0	30.6	2.5	33.1	54.0	-20.9
1894.145	Av	V	90	1.0	32.4	7.5	39.9	54.0	-14.1

1st IF = 39.15 MHz, 2nd IF = 450 KHz, 1st LO = 194.145 MHz, 2nd Harmonic of 1st LO = 388.290 MHz, Harmonics of 19.8 MHz x 2 and 3.68 MHz clock oscillators
**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature:  Date: December 24, 2002 Typed Name: Franck Schuppius

TABLE 18: RADIATED EMISSIONS: (INPUT FREQUENCY: 173.995 MHZ)

Temperature: 35°F Humidity: 57%									
Emission Frequency (MHz)	**Test Detector**	**Antenna Polarity (H/V)**	**Turntable Azimuth (deg)**	**Antenna Height (m)**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB/m)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
213.145	Qp	V	175	1.0	48.3	-18.8	29.5	43.5	-14.0
237.600	Qp	V	45	1.0	35.9	-17.2	18.7	46.0	-27.3
316.800	Qp	V	145	1.0	37.6	-14.7	22.9	46.0	-23.1
426.290	Qp	V	245	1.0	38.4	-11.2	27.2	46.0	-18.8
639.435	Qp	V	45	1.0	35.1	-7.3	27.8	46.0	-18.2
1065.725	Av	V	45	1.0	34.6	-2.5	32.1	54.0	-21.9
1278.870	Av	V	45	1.0	34.6	-0.3	34.3	54.0	-19.7
1492.015	Av	V	45	1.0	33.9	2.5	36.4	54.0	-17.6
1705.160	Av	V	45	1.0	36.8	4.6	41.4	54.0	-12.6

1st IF = 39.15 MHz, 2nd IF = 450 KHz, 1st LO = 213.145 MHz, 2nd Harmonic of 1st LO = 426.290 MHz, Harmonics of 19.8 MHz x 2 and 3.68 MHz clock oscillators

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

TABLE 19: RADIATED EMISSIONS: (INPUT FREQUENCY: 400.000 MHZ)

Temperature: 35°F Humidity: 57%									
Emission Frequency (MHz)	**Test Detector**	**Antenna Polarity (H/V)**	**Turntable Azimuth (deg)**	**Antenna Height (m)**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB/m)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
79.200	Qp	V	90	1.0	37.3	-23.0	14.3	40.0	-25.7
118.800	Qp	V	225	1.0	36.1	-16.5	19.6	43.5	-23.9
360.850	Qp	V	145	1.0	48.7	-13.1	35.6	46.0	-10.4
475.200	Qp	V	90	1.0	35.0	-10.4	24.6	46.0	-21.4
721.700	Qp	V	45	1.0	36.5	-6.6	29.9	46.0	-16.1
1069.200	Av	V	45	1.0	34.7	-2.5	32.2	54.0	-21.8
1443.400	Av	V	145	1.0	34.9	2.3	37.2	54.0	-16.8
1804.250	Av	V	90	1.0	36.9	4.7	41.6	54.0	-12.4

1st IF = 39.15 MHz, 2nd IF = 450 KHz, 1st LO = 360.850 MHz, 2nd Harmonic of 1st LO = 721.700 MHz, Harmonics of 19.8 MHz x 2 and 3.68 MHz clock oscillators

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

TEST PERSONNEL:

Signature:  Date: December 24, 2002 Typed Name: Franck Schuppius

TABLE 20: RADIATED EMISSIONS: (INPUT FREQUENCY: 455.995 MHZ)

Temperature: 35°F Humidity: 57%									
Emission Frequency (MHz)	**Test Detector**	**Antenna Polarity (H/V)**	**Turntable Azimuth (deg)**	**Antenna Height (m)**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB/m)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
198.000	Qp	V	145	1.0	36.1	-19.0	17.1	43.5	-26.4
416.845	Qp	V	90	1.0	42.7	-11.5	31.2	46.0	-14.8
435.600	Qp	V	45	1.0	35.2	-11.1	24.1	46.0	-21.9
673.200	Qp	V	0	1.0	36.5	-7.2	29.3	46.0	-16.7
833.690	Qp	V	45	1.0	37.9	-5.5	32.4	46.0	-13.6
1250.535	Av	V	225	1.0	35.7	-1.0	34.7	54.0	-19.3
1667.380	Av	V	225	1.0	34.3	3.4	37.7	54.0	-16.3

1st IF = 39.15 MHz, 2nd IF = 450 KHz, 1st LO = 416.845 MHz, 2nd Harmonic of 1st LO = 833.690 MHz, Harmonics of 19.8 MHz x 2 and 3.68 MHz clock oscillators
**All readings are quasi-peak, unless stated otherwise.*

TABLE 21: RADIATED EMISSIONS: (INPUT FREQUENCY: 511.995 MHZ)

Temperature: 35°F Humidity: 57%									
Emission Frequency (MHz)	**Test Detector**	**Antenna Polarity (H/V)**	**Turntable Azimuth (deg)**	**Antenna Height (m)**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB/m)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
118.800	Qp	V	45	1.0	37.4	-16.5	20.9	43.5	-22.6
472.845	Qp	V	90	1.0	48.2	-10.5	37.7	46.0	-8.3
514.800	Qp	V	180	1.0	33.6	-9.5	24.1	46.0	-21.9
945.690	Qp	V	45	1.0	41.6	-4.0	37.6	46.0	-8.4
1069.200	Av	V	45	1.0	34.4	-2.5	31.9	54.0	-22.1
1418.535	Av	V	90	1.0	34.7	2.0	36.7	54.0	-17.3
1891.380	Av	V	180	1.0	34.5	7.4	41.9	54.0	-12.1

1st IF = 39.15 MHz, 2nd IF = 450 KHz, 1st LO = 472.845 MHz, 2nd Harmonic of 1st LO = 945.690 MHz, Harmonics of 19.8 MHz x 2 and 3.68 MHz clock oscillators
**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature:  Date: December 24, 2002 Typed Name: Franck Schuppius

TABLE 22: EQUIPMENT USED FOR TESTING

Radiated Emissions					
RTL Asset #	**Manufacturer**	**Model**	**Part Type**	**Serial Number**	**Calibration Due Date**
900897	Hewlett Packard	8565A	Spectrum Analyzer (10kHz – 1.5 GHz)	N/A	03/27/03
901053	Schaffner & Chase	CBL6112B	Bilog antenna (20 MHz - 2 GHz)	2648	05/24/03
900905	Rhein Tech Laboratories, Inc.	PR-1040	Pre Amplifier 40dB (10MHz – 2 GHz)	1006	N/A
900099	Marconi instruments	52022-910	Signal generator	119044/189	N/A

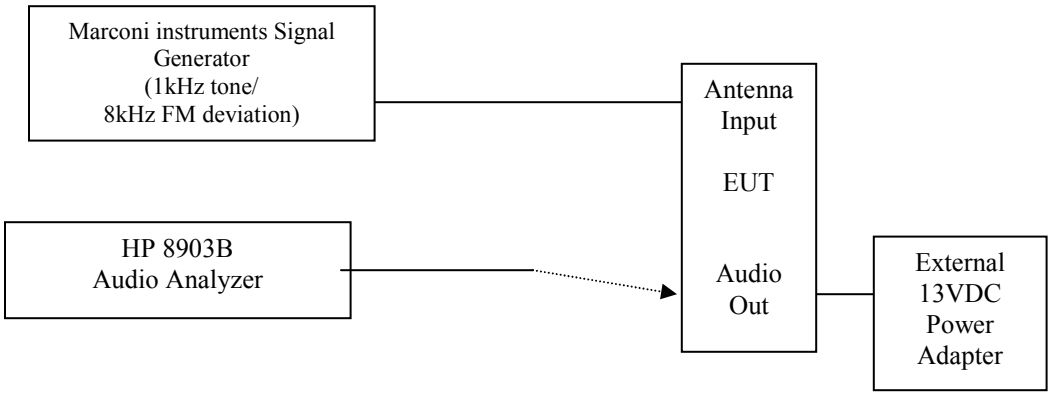
* Note: The preamplifier's gain is included in the site correction factor.

5 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.

An FM signal was applied to the receiver antenna input with a 1 kHz 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 - 848.97 MHz; base = 869.04 MHz - 893.97 MHz. The squelch of the receiver was then set to a minimum threshold level and scanning begun 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 MHz, 836.50 MHz, and 848.97 MHz for the mobile, and 869.04 MHz, 881.50 MHz, and 893.97 MHz for the base.

The DJ-596TMkII unit reference level used was –78.5 dBm from the signal generator. The DJ-596TMkII 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. If they were still present, they were determined as ambient signals and removed from the response list. There was no signal available for the 38 dB rejection test requirements.

5.1 38DB REJECTION TEST DATA FOR BASE BAND (869.040-893.970 MHZ)

TABLE 23: 38DB REJECTION {FREQUENCY INJECTED: 869.040 MHZ} (CELLULAR BAND)

Frequency Injected: 869.040 MHz		**Temperature: 74°F; Humidity: 45%**		
Frequency Detected (MHz)	**Level 12dB SINAD at 869.040 MHz**	**Level 12dB at frequency detected**	**Rejection**	**Margin**
No Frequencies Detected	N/A	N/A	N/A	N/A

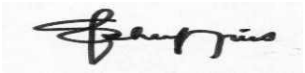
TABLE 24: 38DB REJECTION {FREQUENCY INJECTED: 881.500 MHZ} (CELLULAR BAND)

Frequency Injected: 881.500 MHz		**Temperature: 74°F; Humidity: 45%**		
Frequency Detected (MHz)	**Level 12dB SINAD at 881.500 MHz**	**Level 12dB at frequency detected**	**Rejection**	**Margin**
No Frequencies Detected	N/A	N/A	N/A	N/A

TABLE 25: 38DB REJECTION {FREQUENCY INJECTED: 893.970 MHZ} (CELLULAR BAND)

Frequency Injected: 893.970 MHz		**Temperature: 74°F; Humidity: 45%**		
Frequency Detected (MHz)	**Level 12dB SINAD at 893.970 MHz**	**Level 12dB at frequency detected**	**Rejection**	**Margin**
No Frequencies Detected	N/A	N/A	N/A	N/A

TEST PERSONNEL:

Signature:  Date: December 30, 2002 Typed Name: Franck Schuppius

5.2 38DB REJECTION TEST DATA FOR MOBILE BAND (824.040-848.970 MHZ)

TABLE 26: 38DB REJECTION {FREQUENCY INJECTED: 824.040 MHZ} (MOBILE BAND)

Frequency Injected: 824.040 MHz		**Temperature: 74°F; Humidity: 45%**		
Frequency Detected (MHz)	**Level 12dB SINAD at 824.040 MHz**	**Level 12dB at frequency detected**	**Rejection**	**Margin**
No Frequencies Detected	N/A	N/A	N/A	N/A

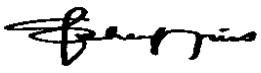
TABLE 27: 38DB REJECTION {FREQUENCY INJECTED: 836.500 MHZ} (MOBILE BAND)

Frequency Injected: 836.500 MHz		**Temperature: 74°F; Humidity: 45%**		
Frequency Detected (MHz)	**Level 12dB SINAD at 836.500 MHz**	**Level 12dB at frequency detected**	**Rejection**	**Margin**
No Frequencies Detected	N/A	N/A	N/A	N/A

TABLE 28: 38DB REJECTION {FREQUENCY INJECTED: 848.970 MHZ} (MOBILE BAND)

Frequency Injected: 848.970 MHz		**Temperature: 74°F; Humidity: 45%**		
Frequency Detected (MHz)	**Level 12dB SINAD at 848.970 MHz**	**Level 12dB at frequency detected**	**Rejection**	**Margin**
No Frequencies Detected	N/A	N/A	N/A	N/A

TEST PERSONNEL:

Signature:  Date: December 30, 2002 Typed Name: Franck Schuppius

6 CONCLUSION

The data in this measurement report shows that the Alinco Incorporated Model DJ-596TMkII, FCC ID: PH3DJ-596TMK2, VHF/UHF FM Handheld Transceiver, complies with all the requirements of Parts 2 and 15.121 of the FCC Rules and Industry Canada RSS-215, Issue 1.