

ENGINEERING TEST REPORT

NPX 138 TRANSCEIVER

IN ACCORDANCE WITH:

**FCC PART 15, SUBPART B VERIFICATION
RADIO RECEIVERS**

PROJECT NO. 5NO240-1C

TESTED FOR:

**NORTHERN AIRBORNE TECHNOLOGY LTD.
1925 KIRSCHER ROAD
KELOWNA, BRITISH COLUMBIA
V1Y 4N7**

TESTED BY:

**CERTELECOM LABORATORIES, INC.
3325 RIVER ROAD AT LIMEBANK ROAD
R.R. NO. 5
OTTAWA, ONTARIO
K1G 3N3**

DATE: MARCH 1995

EQUIPMENT: VHF TRANSCEIVER

MODEL NO.: NPX 138

SERIAL NO.: 1001

GENERAL:

These test were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15, Subpart B requirements for Radio Receivers.

The equipment was tested for radiated emissions from 30 MHz to 1000 MHz in accordance with the requirements of FCC Part 15, Subpart B. Frequencies were initially identified in a large shielded room. Amplitude measurements were made on an outdoor Open Area Test Site. Details of the outdoor site are on file with the FCC.

ABSTRACT:

<u>NAME OF TEST</u>	<u>PARA. NO.</u>	<u>RESULTS</u>
Powerline Conducted Emissions	15.107(a)	N/A
Radiated Emissions	15.109(a)	COMPLIES

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. None.

Conducted Emissions test was not performed since the E.U.T. does not interface the AC Power Mains.

TESTED BY: Thomas J. HillDATE: 22 March 1995APPROVED BY: W. W. WhiteDATE: 22nd March 1995

EQUIPMENT DETAILS

Type of Equipment: VHF Transceiver

Manufacturer: Northern Airborne Technology Ltd.
1925 Kirscher Road
Kelowna, British Columbia
V1Y 4N7

Model No.: NPX 138

Serial No.: 1001

Frequency Range: 138-173.95 MHz

Operating Frequency(ies) of Sample: 139.6 MHz, 155.1 MHz, 173.6 MHz

Crystal Frequency(ies): 20.945 MHz

Primary Power Requirement: +27.5 Vdc

Bandwidth and Emission Designator: 16KOF3E

Intermediate Frequency(ies): 21.4 MHz, 455 kHz

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.109(a)
TESTED BY: Tom Tidwell	DATE: March 16, 1995

TEST CONDITIONS: Standard Temperature and Humidity: +12°C, 50%
Standard Test Voltage: 27.5 Vdc

MINIMUM STANDARD:

<u>Frequency(MHz)</u>	<u>Field Strength(dBμV/m @3m)</u>
30 - 88	40.0
88 - 216	43.5
216 - 960	46.0
Above 960	54.0

TEST RESULTS: Complies
The worst-case emission level is 34.0 dB μ V/m @ 3m at
195 MHz. This is 9.5 dB below the specification limit.

MEASUREMENT DATA: See attached table.

The equipment was prescanned in a shielded room using a spectrum analyzer and broadband antenna. A list of frequencies was compiled for investigation in the open field. The equipment was then moved to an open area test site where amplitude measurements were made at a distance of 3 meters. The bandwidth was set to 120 kHz and the detector function was CISPR Quasi-Peak. Any emission within 6 dB of the specification limit is re-measured using a reference tuned dipole antenna per ANSI C63.4.

NOTE: The Spectrum was searched up to 1 Ghz.

Search was also made for the guard receiver local oscillator and harmonics.
These were not detectable.

NOTES: Tuned to 155.100 MHz

() Denotes failing emission level.

STANDARD: FCC Part 15, Subpart B				E.U.T. S/N.: 1001			DETECTOR: CISPR QPK			
TESTED BY: Tom Tidwell				TEST DISTANCE(metres): 3m			ANTENNA: Dipole			
DATE: March 16, 1995				TEST RECEIVER: ESVP			ANTENNA MODEL: 3121C			
E.U.T. MODEL NO.: NPX 138				RECEIVER BW: 120 kHz			ANTENNA S/N.: 1029			
FREQ. (MHz)	POL. (V/H)	ANTENNA HEIGHT (m)	TABLE AZIMUTH (Degrees)	RECEIVED SIGNAL (dBuV)	ANTENNA FACTOR (dB)*	AMP GAIN (dB)**	DUTY CYCLE (dB)	FIELD STRENGTH (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)
161.00	V	-	-	15.3	14.5	-	-	29.8	43.5	13.7
161.00	H	-	-	10.6	14.5	-	-	25.1	43.5	18.4
	V									
	H									
	V									
	H									
	V									
	H									
	V									
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NOTES: Tuned to 139.6 MHz										

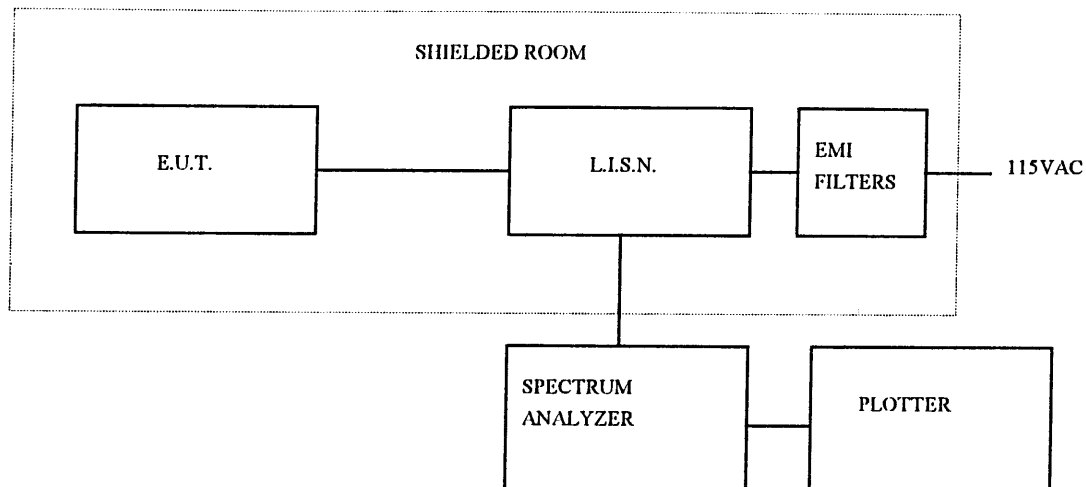
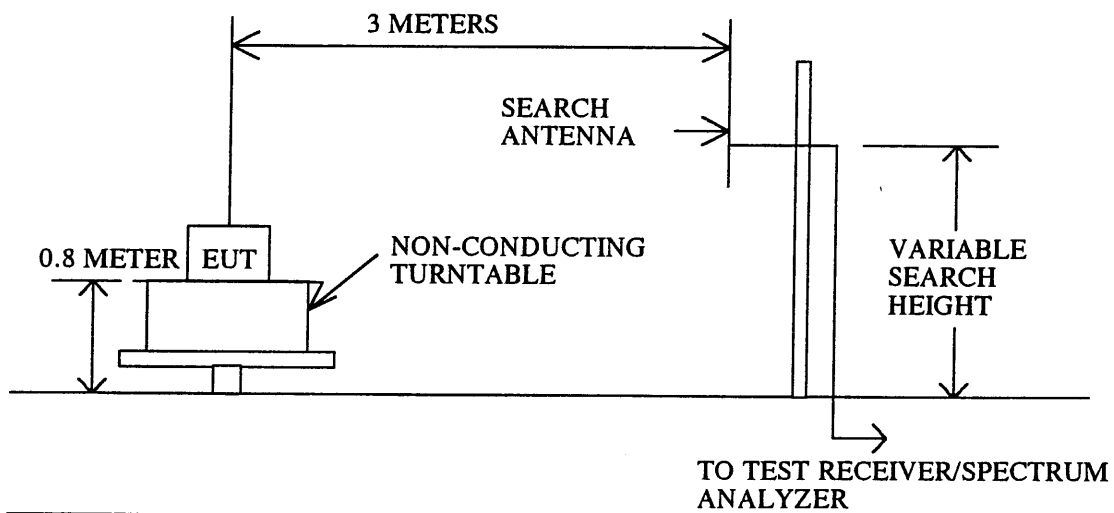
* Includes cable loss when amplifier is not used.
 ** Includes cable loss.
 () Denotes failing emission level.

STANDARD: FCC Part 15, Subpart B				E.U.T. S/N.: 1001		DETECTOR: CISPR QPK				
TESTED BY: Tom Tidwell				TEST DISTANCE(metres): 3m		ANTENNA: Dipole				
DATE: March 16, 1995				TEST RECEIVER: ESVP		ANTENNA MODEL: 3121C				
E.U.T. MODEL NO.: NPX 138				RECEIVER BW: 120 kHz		ANTENNA S/N.: 1029				
FREQ.	POL.	ANTENNA HEIGHT	TABLE AZIMUTH	RECEIVED SIGNAL	ANTENNA FACTOR	AMP GAIN	DUTY CYCLE	FIELD STRENGTH	LIMIT	MARGIN
(MHz)	(V/H)	(m)	(Degrees)	(dBuV)	(dB)*	(dB)**	(dB)	(dBuV/m)	(dBuV/m)	(dB)
195.0	V	-	-	18.7	14.7	-	-	33.4	43.5	10.1
195.0	H	-	-	19.3	14.7	-	-	34.0	43.5	9.5
	V									
	H									
	V									
	H									
	V									
	H									
	V									
	H									
	V									
	H									
	V									
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	H									
NOTES: Tuned to 173.6 MHz										

* Includes cable loss when amplifier is not used.

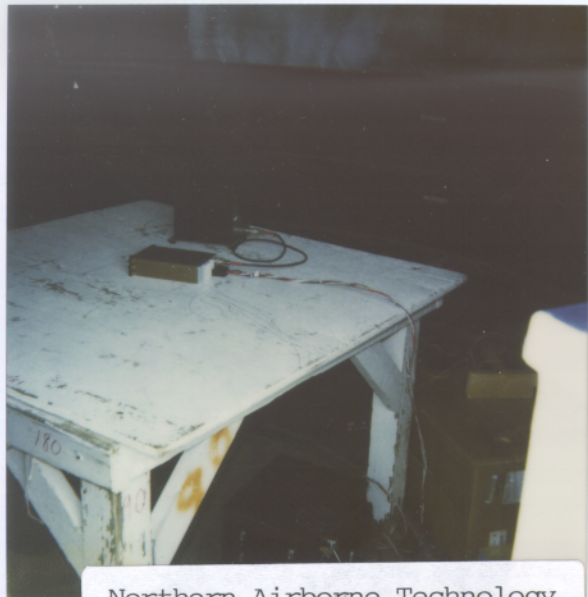
** Includes cable loss.

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BLOCK DIAGRAMSPOWERLINE CONDUCTED EMISSIONSTEST SITE FOR RADIATED EMISSIONS

TEST EQUIPMENT LIST

<u>Equipment</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Serial</u>	<u>Last Cal.</u>	<u>Next Cal.</u>
Spectrum Analyzer	Hewlett Packard	8566B	2311A02238	Jan. 5/95	July 5/95
Spectrum Analyzer Display	Hewlett Packard	8566B	2314A04759	Jan. 5/95	July 5/95
Dipole Antenna Set	EMCO	3121C	1029	May 21/94	Nov. 21/95
Test Receiver	Rohde & Schwarz	ESVP	879962/021	Jan. 6/95	Jan. 6/96
Waveguide Antenna	EMCO	3115	4336	Aug. 1/94	Feb. 1/96



Northern Airborne Technology
Project No. 5N0240-1C
Model: NPX138
Worst-Case Test Set-Up On The
Outside Range - Radiated