



Test Report:

4W08120

Applicant:

Advanced Radiotech Corp.
1F, 288-3, Hsin Ya Road
Chien Chen District
Kaohsiung, Taiwan (R.O.C.)

**Equipment Under Test:
(EUT)**

Flex 4/8/12EX

In Accordance With:

**EN 300 220-3 V1.1.1 (2000-09)
Electromagnetic compatibility and Radio Spectrum
Matters(ERM);
Short Range Devices (SRD);
Radio equipment to be used in the 25 MHz to 1000 MHz
frequency range with power levels ranging up to 500mW;
Part 3: Harmonized EN covering essential requirements
Under article 3.2 of the R&TTE Directive**

Tested By:

Nemko Canada Inc.
303 River Road, R.R. 5
Ottawa, Ontario K1V 1H2

A handwritten signature in blue ink that reads 'Kevin Carr'.

Authorized By:

Kevin Carr, EMC/EMI/Wireless Specialist.

Date:

14 June 2004

Total Number of Pages:

19

Table of Contents

Section 1.	Summary of Test Results	3
Section 2.	Equipment Under Test (EUT)	5
Section 3.	Frequency Error	6
Section 4.	Effective Radiated Power	7
Section 5.	Range of Modulation Bandwidth For Wideband Equipment (≥ 25 kHz) .	9
Section 6.	Spurious Emissions	13
Section 7.	Frequency Stability Under Low Voltage Conditions.....	15
Section 8.	Duty Cycle.....	16
Section 9.	Test Setup Diagrams.....	17
Section 10.	Test Equipment	19

EQUIPMENT: FLEX 4/8/12EX

Section 1. Summary of Test Results

General

All measurements are traceable to national standards.

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with EN 300 220-3, V1.1.1 (2000-09).

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

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATION HAVE BEEN MADE.



Test Performed By: _____
Glen Westwell, Wireless Specialist.

Date: 7 June 2004

Nemko Canada Inc., a testing laboratory, is accredited by the Standards Council of Canada. The tests included in this report are within the scope of this accreditation. The results apply only to the samples tested.

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This report applies only to the items tested.

EQUIPMENT: FLEX 4/8/12EX

Summary of Test Data

Test Results	C	NC	NT	NA	Remarks
8.1 Frequency Error	X				
8.2 Carrier Power (Conducted)			X		Integral antenna
8.3 Effective Radiated Power	X				
8.4.1 Frequency Deviation				X	No Analogue speech
8.4.2 Modulation Depth				X	No Analogue speech
8.5 Adjacent Channel Power				X	Wideband equipment
8.6 Range At Modulation Bandwidth For Wide Band Equipment (>25kHz)	X				
8.7 Spurious Emissions	X				
8.8 Frequency Stability Under Low Voltage Conditions	X				
8.9 Duty Cycle	X				
9.1 Adjacent Channel Selectivity (Inband)				X	Transmitter Only
9.2 Adjacent Band Selectivity				X	Transmitter Only
9.3 Blocking or Desensitization				X	Transmitter Only
9.4 Spurious Radiation (Receiver)				X	Transmitter Only
Note: C: Compliant NC: Non-Compliant NT: Not Tested NA: Not Applicable					

EQUIPMENT: FLEX 4/8/12EX

Section 2. Equipment Under Test (EUT)

Manufacturer: Advanced Radiotech Corp.

Model No.: Flex 4EX, Flex 8EX & Flex 12EX
All models contain the identical radio and antenna.

Serial No of EUT Tested: Flex 12EX S/N 000003

Date Received In Laboratory: April 26 2004

Nemko Identification No.: #4

Transmit Range of EUT: 433-434.525MHz

Number of selectable Channels: 60, (Ch.2-Ch.61)

Channel Spacing: 25kHz

Output power of EUT (rated): 0.25mW Fixed (integral antenna)

Modulation: GFSK

Power Class: 7a

EQUIPMENT: FLEX 4/8/12EX

Section 3. Frequency Error

Para. No.: 8.1

Test Performed By: Glen Westwell	Date of Test: 1 June 2004
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Minimum Standard: 8.1.4

Test Conditions: Ambient Temperature: 23°C
Relative Humidity: 44%
Voltage: 3Vdc

Measurement Uncertainty: $\pm 10^{-7}$

Measurement Data:

Ambient	Low Temperature Extreme -20°C	High Temperature Extreme +55°C
433.7513MHz	433.7502MHz	433.7852MHz

Maximum drift = 33.9kHz
Limit = 100ppm (43kHz)

The EUT was not equipped to produce an un-modulated carrier. Therefore the frequency drift of the emission was measured at a common reference point resolved on the spectrum analyzer.

EQUIPMENT: FLEX 4/8/12EX

Section 4. Effective Radiated Power

Para. No.: 8.3

Test Performed By: Glen Westwell	Date of Test: 5 June 2004
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Minimum Standard: 8.3.3

Test Conditions: Ambient Temperature: 23°C
Relative Humidity: 44%
Voltage: 3Vdc

Measurement Uncertainty: ± 6dB

Measurement Data:

Emission (MHz)	Polarity of Antenna	Field Strength (dBuV)	Power Level (dBm)	Limit (dBm)
433.775	V	58.7	-21.9	+7.0
	H	67.7	-14.5	+7.0

EQUIPMENT: FLEX 4/8/12EX

Effective Radiated Power



EQUIPMENT: FLEX 4/8/12EX

Section 5. Range of Modulation Bandwidth For Wideband Equipment (≥ 25 kHz)

Para. No.: 8.6

Test Performed By: Glen Westwell	Date of Test: 5 June 2004
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Minimum Standard: 8.6.3

Test Conditions: Ambient Temperature: 23°C
Relative Humidity: 44%
Voltage: 3Vdc

Measurement Uncertainty: $\pm 10^{-7}$, ± 0.75 dB

Measurement Data: Operating Band of EUT = 433.0-434.525MHz

Temperature Profile	Range of Modulation	Range of Operating Band Limit
Ambient	1.494MHz	1.525MHz
FL = 433.017MHz FH = 434.511MHz		
Low Temperature Extreme	1.492MHz	1.525MHz
FL = 433.013MHz FH = 434.505MHz		
High Temperature Extreme	1.495MHz	1.525MHz
FL = 433.013MHz FH = 434.508MHz		

EQUIPMENT: FLEX 4/8/12EX

Section 6. Spurious Emissions

Para. No.: 8.7

Test Performed By: Dave Duchesne	Date of Test: 12 May 2004
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Minimum Standard: 8.7.5

Test Conditions: Ambient Temperature: 23°C
Relative Humidity: 44%
Voltage: 3Vdc

Measurement Uncertainty: ± 0.75dB, ± 6dB

Measurement Data: The EUT was searched in operating and standby modes. Worst case data has been presented.

Emission (MHz)	Polarity of Antenna	Field Strength (dBuV)	Power Level (dBm)	Limit (dBm)
46.0	V	16.9	-67.9	-57.0
59.0	V	16.0	-68.8	-57.0
110.0	V	20.3	-64.5	-57.0
146.2	V	19.6	-65.2	-57.0
238.7	V	21.5	-63.3	-57.0
321.5	V	25.0	-59.7	-57.0

EQUIPMENT: FLEX 4/8/12EX

Radiated Emissions



EQUIPMENT: FLEX 4/8/12EX

Section 7. Frequency Stability Under Low Voltage Conditions

Para. No.: 8.8

Test Performed By: Glen Westwell	Date of Test: 7 June 2004
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Minimum Standard: 8.8.3

Test Conditions: Ambient Temperature: 23°C
Relative Humidity: 44%
Voltage: 3Vdc

Measurement Uncertainty: $\pm 10^{-7}$

Measurement Data: The voltage was varied between both extremes. The carrier frequency remained on channel with no shift in frequency over voltage. Beyond the low voltage extreme the carrier turned off with no shift in frequency prior to drop out.

Nominal operating voltage = 3.0Vdc
Low Voltage = 2.7Vdc
High Voltage = 3.9Vdc

EQUIPMENT: FLEX 4/8/12EX

Section 8. Duty Cycle

Para. No.: 8.9

Test Performed By: Glen Westwell	Date of Test: 7 June 2004
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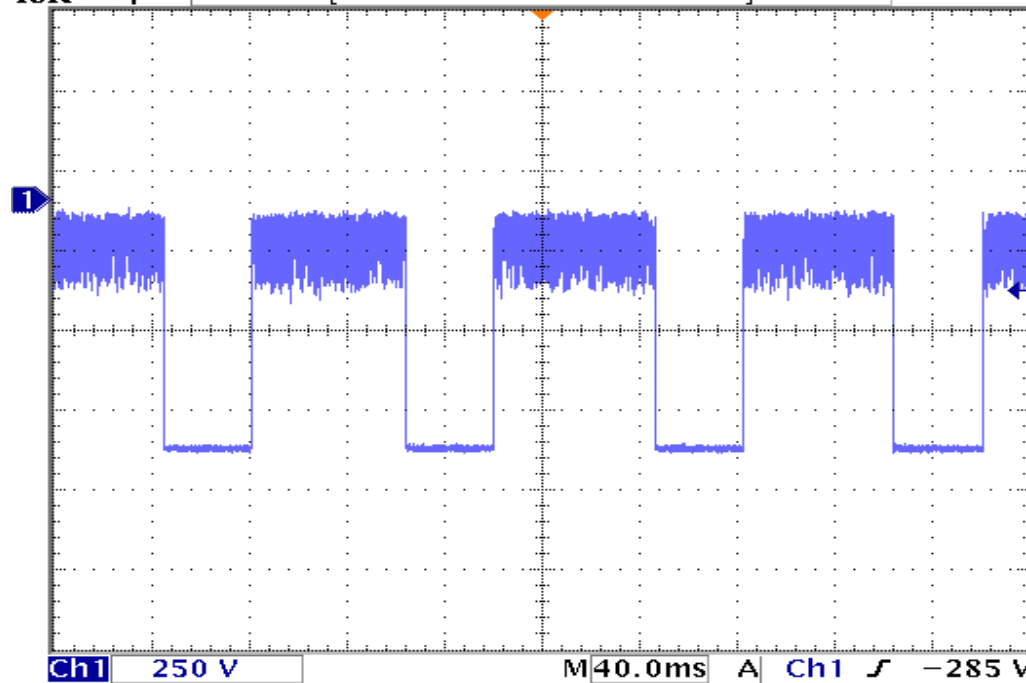
Minimum Standard: Duty Cycle class 4, >10%, up to 100%

Test Conditions: Ambient Temperature: 23°C
Relative Humidity: 44%
Voltage: 3Vdc

Measurement Uncertainty: $\pm 0.01\%$

Measurement Data:

Tek Stop



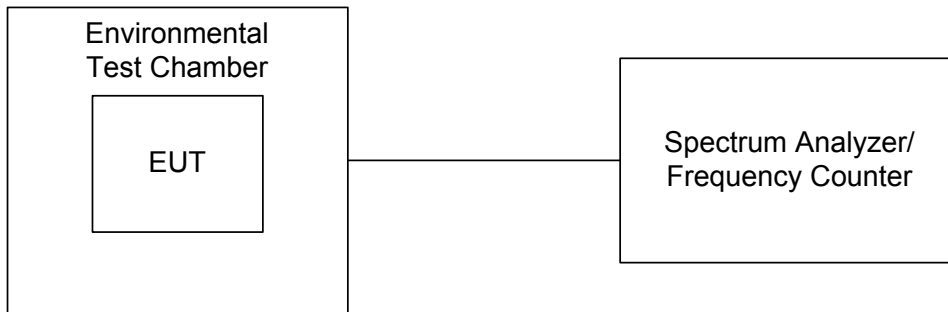
Duty Cycle:

Ch1 -Duty
36.10 %

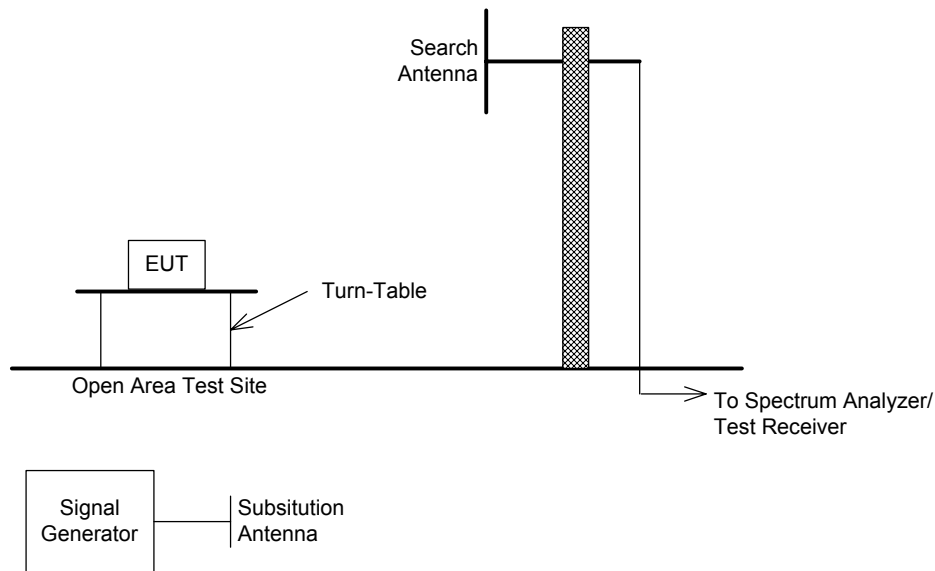
10 Jun 2004
14:27:55

Section 9. Test Setup Diagrams

Frequency Error Frequency Stability Under Low Voltage Conditions

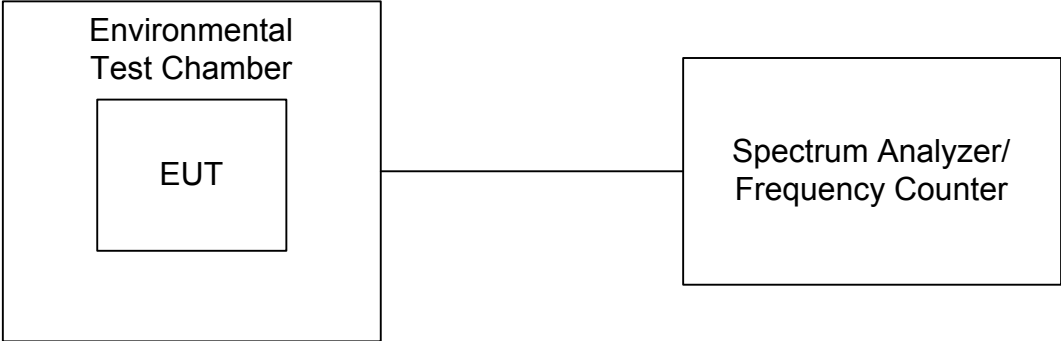


Effective Radiated Power Spurious Emissions



EQUIPMENT: FLEX 4/8/12EX

Range of Modulation Bandwidth



EQUIPMENT: FLEX 4/8/12EX

Section 10. Test Equipment

RADIO TEST EQUIPMENT LIST

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	Last Cal.	Next Cal.
1 Year	Spectrum Analyzer	Hewlett Packard	8564E	FA01367	13 May 03	13 Aug 04
1 Year	Oscilloscope	Tektronix	TDS 3012	FA001560	14 Aug 03	14 Aug 04
1 Year	Climate Chamber	Thermotron	SM-16C	15649-S	COU	COU
1 Year	RF AMP	MITEQ	AM-4A-0510	FA001495	COU	COU
1 Year	Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	May 28/04	May 28/05
1 Year	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	May 28/04	May 28/05
NCR	Bilog	Schaffner	CBL6112B	FA001504	NCR	NCR
1 Year	Receiver	Rohde & Schwarz	ESVS-30	FA001445	June 27/03	June 27/04
1 Year	Bilog	Schaffner	CBL6112B	FA001503	Nov. 18/03	Nov. 18/04