

Exhibit 2/A

MIST Freedom II-M

Wireless Point of Sale Device

FCC ID: O3JF2R902M1

**ERP Measurement Report**

(With Test Setup Photographs)



# Assessment of Compliance

for

Measurement of Effective Radiated Power (ERP) in  
accordance with the FCC Rules & Regulations Part 2.1046

## MIST Freedom II-M Wireless Point of Sale Terminal

MIST Inc.



May 2000

MISB-FREEDOM-MOBITEX-3423

51 Spectrum Way Nepean ON K2R 1E6  
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## Engineering Report

**Subject:** Measurement of Effective Radiated Power (ERP) in accordance with the FCC Rules & Regulations Part 2.1046

**FCC ID:** O3JF2R902M1

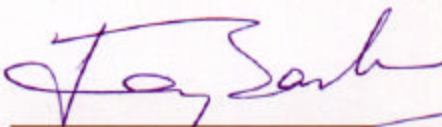
**Equipment:** Wireless Point of Sale Terminal

**Model:** MIST Freedom II-M

**Client:** MIST Inc.  
703 Evans Avenue, Suite 500  
Toronto, Ontario, M9C 5E9  
Canada  
Tel: (416) 621-1911, Fax: (416) 621-8875

**Project #:** MISB-FREEDOM II RIM 902 MOBITEX-3423

**Prepared By:** APREL Laboratories,  
Regulatory Compliance Division

**Approved by:**  Date: May 10, 2000

**Jay Sarkar**  
Director, Standards & Certification

**Released by:**  Date: May 10/2000

**Dr. Jack J. Wojcik, P.Eng.**



"SOLUTIONS FOR THE WIRELESS FUTURE"

FCC ID: O3JF2R902M1  
Applicant: Mist Inc.  
Equipment: Wireless Point of Sale Terminal  
Model: MIST Freedom II-M  
Standard: FCC Rules and Regulations Part 2.1046

### ENGINEERING SUMMARY

This report contains the results of the effective radiated power (ERP) measurement performed on a MIST Freedom II-M Wireless Point of Sale Terminal operating with a built-in Research in Motion R902M-2-0 radio transmitter. The measurements were carried out in accordance with the FCC Rules and Regulations Part 2.1046. The product was evaluated for ERP when it was set at the maximum power level.

The MOBITEX version of the Wireless Point of Sale Terminal (MIST Freedom II-M) was tested for ERP at high, middle, and low frequencies with the maximum ERP obtained at channel (No. 480) with the frequency being 896.00 MHz and ERP: 1.738 W. The test data is presented in this report under the section: Test Results, Table 1. Additionally, measurement data for RF output when measured using conducted method is also given in Table 1.

### Summary of the Results

Test Description	Page No.	Test Set-up Figure No.	Results Summary
RF Power Output as Radiated Ref. Paragraph 2.1046	8	1	<b>Passed</b>

## INTRODUCTION

### General

This report describes the results of the effective radiated power (ERP) measurement conducted on a Wireless Point of Sale Terminal, model MIST Freedom II-M operating with a built-in Research in Motion R902M-2-0 radio transmitter.

### Test Facility

The tests were performed for MIST Inc. by APREL Laboratories at APREL's EMI facility located in Nepean, Ontario, Canada. The laboratory operates an (3m and 10m) Open Area Test Site (OATS). The measurement facility is calibrated in accordance with ANSI C63.4-1992.

A description of the measurement facility in accordance with the radiated and AC line conducted test site criteria per ANSI C63.4-1992 is on file with the Federal Communications Commission and is in compliance with the requirements of Section 2.948 of the Commissions rules and regulations.

***APREL's registration number is 90416***

APREL is accredited by Standard Council of Canada, under PALCAN program (ISO Guide 25). APREL is also accredited by Industry Canada (formerly DOC) and recognised by the Federal Communications Commissions (FCC).

### Standard

The evaluation and analysis were conducted in accordance with FCC Rules and Regulations Parts 2.1046 and the appropriate limits.

### Test Equipment

The test equipment used during the evaluation is listed in Appendix A with calibration due dates.

### Environmental Conditions

Measurements were conducted in open area test site.

- Temperature: 18 °C ± 2
- Relative Humidity: 30 - 50 %

- Air Pressure: 101 kPa  $\pm$  3

## FCC SUBMISSION INFORMATION

**FCC ID:** O3JF2R902M1

Equipment: Wireless Point of Sale Terminal

Model: MIST Freedom II-M

For: Certification

Applicant: MIST Inc.  
703 Evans Avenue, Suite 500  
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Canada  
Tel: (416) 621-1911, Fax: (416) 621-8875

Manufacturer: MIST Inc.  
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Evaluated by: APREL Laboratories  
51 Spectrum Way  
Nepean, Ontario  
Canada K2R 1E6

## MANUFACTURER'S DATA

**FCC ID No:** O3JF2R902M1

**Equipment Type:** Wireless Point of Sale Terminal

**Model:** MIST Freedom II-M

**Reference:** FCC Rules and Regulations Parts 2 and Part 90

**Manufacturer:** MIST Inc.

**Power Source:** 7.2 VDC Battery

**Development Stage of Unit:** Production

## GENERAL SPECIFICATIONS

1. Frequency Range: 896 to 902 MHz (Transmitter)
2. Rated Transmitted Output Power: 2.0 W
3. Frequency Tolerance:  $\pm 1.5$  PPM
4. Type of Modulation: GMSK, F1D
5. Emission Designators (See 47 CFR § 2.201 and §2.202): 12K8F1D
6. Antenna Impedance: 50 Ohms



**TEST RESULTS**

**FOR**

**Effective Radiated Power (ERP)**

**Of**

**Wireless Point of Sale Terminal**

**MIST Freedom II-M with a Research in**

**Motion R902M-2-0**

**Radio transmitter**

**MIST Inc.**

**Test:** RF Power Output as Radiated (ERP)

**Ref.:** FCC Part 2 paragraph 2.1046 and 90

**Criteria:** N/A

**Set-up:** See Figure No. 1.

**Equipment:** See Appendix A.

**Procedure:** RF Power Measurement by Radiated Method (ERP):

Test site: The radiated RF power measurement was taken at APREL Laboratory's open area test site (OATS). This open area test site is calibrated to ANSI C63.4 document and a description of the measurement facility is on file with the Federal Communications Commission and is in compliance with the requirement of Section 2.948 of the Commissions rules and regulations.(FCC Registration No.: 90416)

The test was set-up as illustrated in Fig.1. The *Wireless Point of Sale Terminal* was configured to operate at maximum power with carrier unmodulated. The equipment under test was placed on a turntable positioned 3 m away from the calibrated receiving antenna, which in turn was connected to the spectrum analyzer.

For each transmitter frequency, the received signal was maximised by rotating the turntable and adjusting the height of the receiving antenna. To obtain the actual ERP, the *Wireless Point of Sale Terminal* was replaced by a vertically polarised half-wave dipole antenna fed by a RF power amplifier and signal generator. The center of the dipole antenna was placed in the same location as the *Wireless Point of Sale Terminal*. The signal generator level was adjusted until the reading on the spectrum analyzer was identical to that obtained when the *Wireless Point of Sale Terminal* was on the turntable. The output of power amplifier was disconnected from the substitute dipole and connected to a RF power meter. **The effective radiated power was read directly from the power meter.**

**The process was repeated for two more channels.**

**Results:** See Table 1

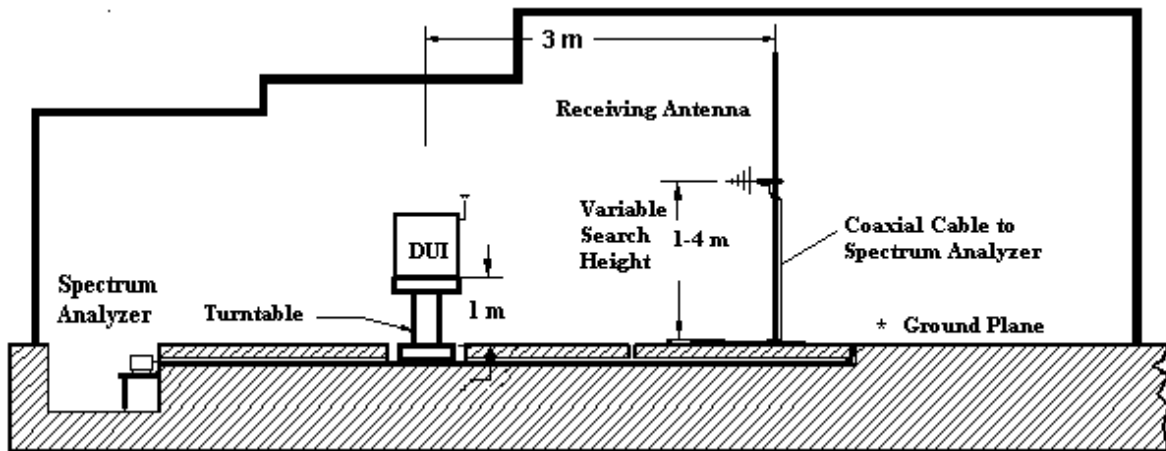


Figure 1.a Test set up for the Radiated Power (ERP) Measurement in OATS (not to scale)



Fig. 1.b APREL's OATS (Open Area Test Site)

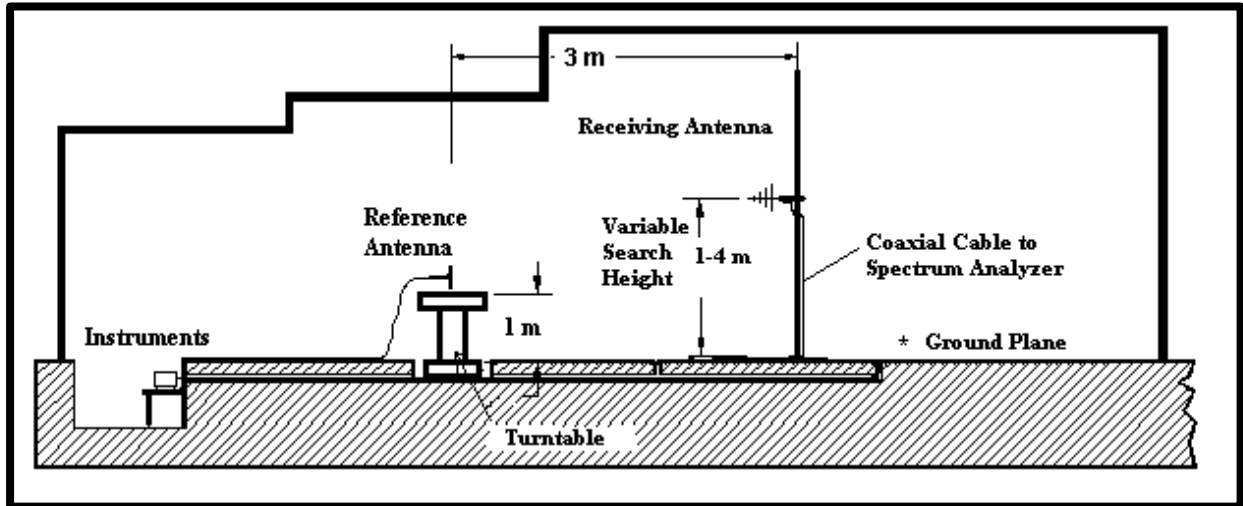


Figure 1.c Test set up for the Radiated Power (ERP) Measurement in OATS (not to scale)  
The device is replaced by Reference Dipole Antenna.

**Table 1.**  
**RF Output Power Measurement**  
**ERP**  
**Power Level: 0**

Channel No.	Nominal Transmit Frequency	Manufacturer's Rated Output Power	Measured Conducted Output Power	Measured Conducted Output Power	Measured Effective Radiated Power (ERP)	Measured Effective Radiated Power (ERP)
	(MHz)	(W)	(dBm)	(W)	(dBm)	(W)
480	896.00	2.0	33.0	1.995	32.4	1.738
720	899.00	2.0	33.0	1.995	31.6	1.445
880	901.00	2.0	32.9	1.950	31.7	1.479

# APPENDIX A

## List of Test Equipment

**List of Equipment**

<b>Description</b>	<b>Manufacturer</b>	<b>Model #</b>	<b>Asset #</b>	<b>Cal . Due Data</b>
Spectrum Analyzer	Anritsu	MS2661C	301330	Dec 10, 2000
20 dB Attenuator	Narda	4779-20	301370	May 18, 2000
Signal Generator	Hewlett-Packard	HP 8662A	100456	Nov 1, 2000
RF Power Amplifier	Amplifier Research	25W100M	100735	Sep 16, 2000
Substitute Reference Dipole	APREL Inc.	D-8355	S/N 101	June 16, 2000
Log-Periodic Antenna	Eaton	ALP-1	100761	July 21, 2000
Turntable with Controller	EMCO	1060-1.241	100506	CNR
Computer Controlled Antenna Position Mast	EMCO	1051-12	100507	CNR
OATS	APREL Inc.	3m & 10m	N/A	N/A

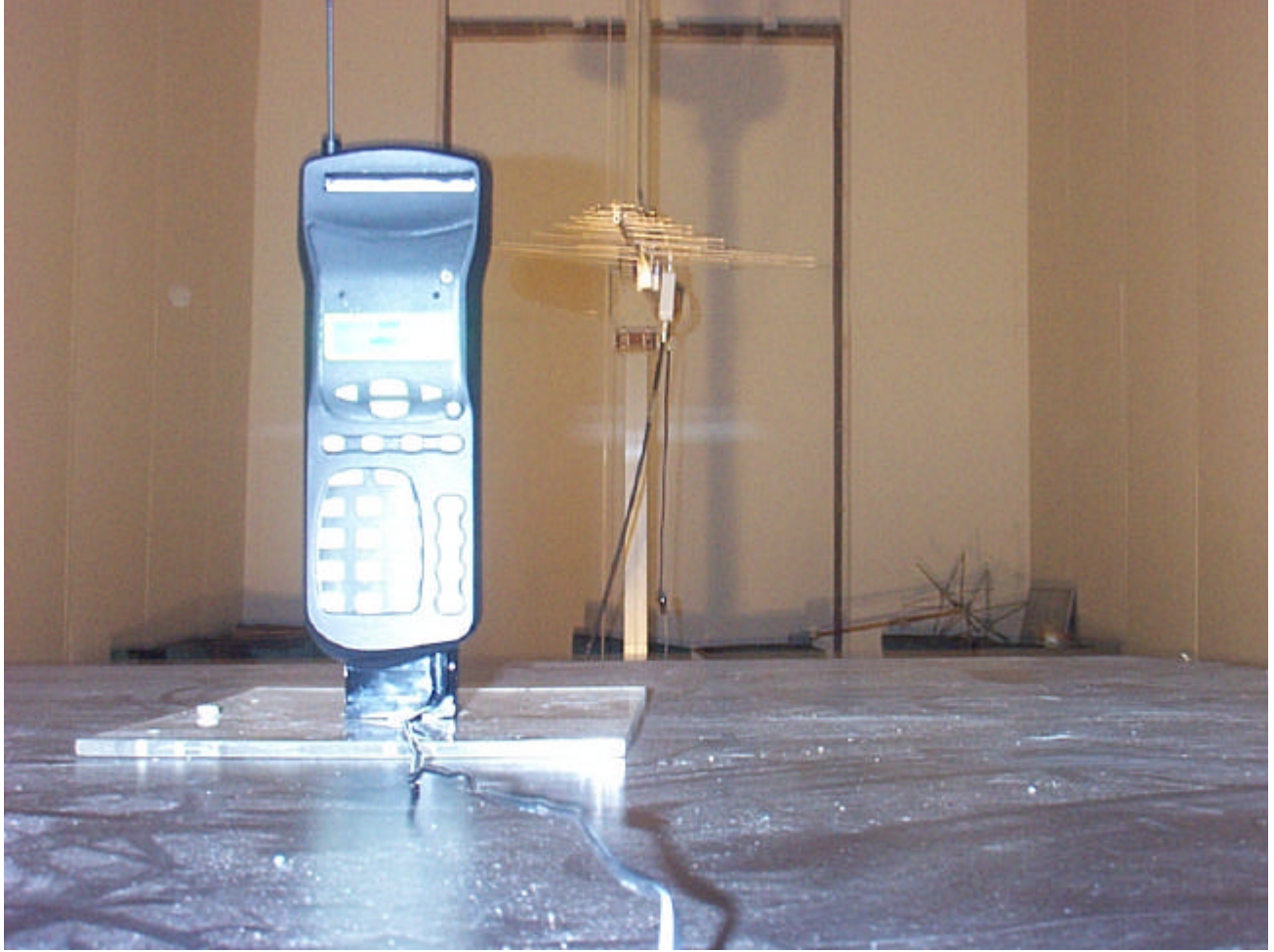
# APPENDIX B

## Photographs

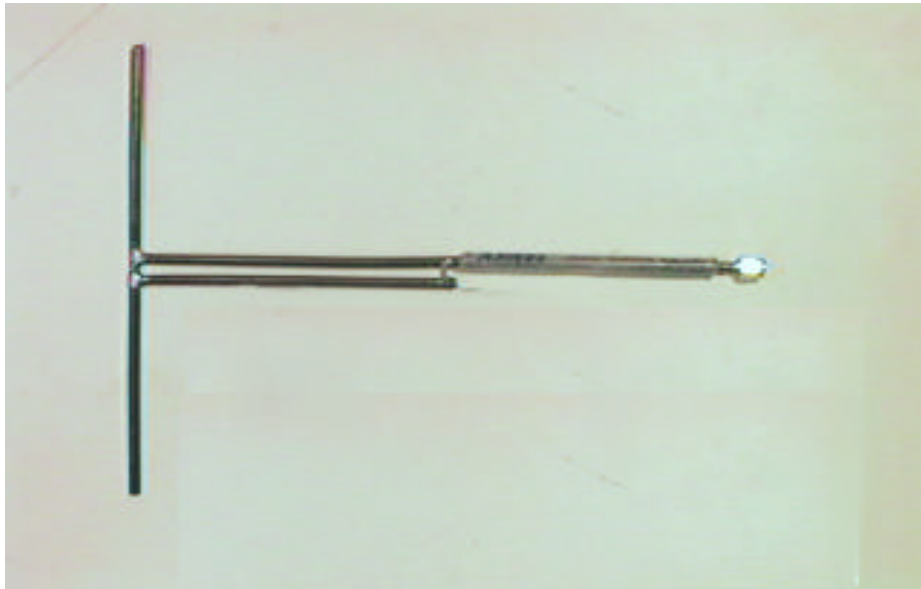




**MIST Freedom II-M**



**ERP measurement in OATS**



**Substitute Reference Dipole Antenna Used for ERP Measurement**