

**FCC ID: ESD-SA896941R9**

Exhibit 2

**Engineering Report**  
**a)ERP (2.1046)**



# **Assessment of Compliance**

for

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

**Rugged handheld computer with  
integrated wireless communications**

**Sidearm ALL-Terrain Handheld PC ä**

**Melard Technologies, Inc.**



**October 2000**

MELB-Mobitex Sidearm-3604

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## **Engineering Report**

**Subject:** Measurement of Effective Radiated Power (ERP) in accordance with the FCC Rules & Regulations Parts 2.1046 and 90

**FCC ID:** ESD-SA896941R9

**Equipment:** Rugged handheld computer with integrated wireless communications

**Model:** Sidearm ALL-Terrain Handheld PCTM

**Client:** Melard Technologies, Inc.  
28 Kaysal Court  
Armonk, NY 10504  
U.S.A.

**Project #:** MELB - Mobitex Sidearm - 3604

**Prepared by:** APREL Laboratories,  
Regulatory Compliance Division  
51 Spectrum Way  
Nepean, Ontario  
K2R 1E6

**Approved by:**  Date: Feb. 16, 2001  
**Jay Sarkar**  
Technical Director, Standards & Certification

**Submitted by:**  Date: Feb. 16, 2001  
**Jay Sarkar**  
Technical Director, Standards & Certification

**Released by:**  Date: Feb 16/01  
**Dr. Jack J. Wojcik, P.Eng.**

"SOLUTIONS FOR THE WIRELESS FUTURE"

**FCC ID:** ESD-SA896941R9  
**Applicant:** Melard Technologies Inc.  
**Equipment:** Rugged handheld computer with integrated wireless communications  
**Model:** Sidearm ALL-Terrain Handheld PC™  
**Standard:** FCC Rules and Regulations Part 2.1046 and 90

### ENGINEERING SUMMARY

This report contains the results of the effective radiated power (ERP) measurement performed on a Melard Wireless Rugged handheld computer with integrated wireless communications operating with a built-in Research in Motion MOBITEX radio transmitter. The measurements were carried out in accordance with the FCC Rules and Regulations Part 2.1046 and 90. The product was evaluated for ERP when it was set at the maximum power level.

Melard Sidearm ALL-Terrain Handheld PC™ was tested for ERP at high, middle, and low frequencies with the maximum ERP obtained at channel No.: 720 with the frequency being 899.00 MHz. The test data is presented in this report under the section: Test Results. **The measured ERP is 0.676 W.**

(The results presented in this report relate only to the sample tested.)

## Summary of the Results

| Test Description                                            | Page No. | Test Set-up Figure No. | Results Summary |
|-------------------------------------------------------------|----------|------------------------|-----------------|
| RF Power Output as Radiated<br>Ref. Paragraph 2.1046 and 90 | 8        | 1                      | <b>Passed</b>   |

## INTRODUCTION

### General

This report describes the results of the effective radiated power (ERP) measurement conducted on a Melard Technologies Rugged handheld computer with integrated wireless communications model: Sidearm ALL-Terrain Handheld PC™ operating with a built-in Research in Motion MOBITEK radio transmitter.

### Test Facility

The tests were performed for Melard Technologies, 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. APREL is also accredited by Industry Canada 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: 25 °C ± 2
- Relative Humidity: 30 - 50 %
- Air Pressure: 101 kPa ± 3

## FCC SUBMISSION INFORMATION

**FCC ID:** ESD-SA896941R9

**Equipment:** Rugged handheld computer with integrated wireless communications

**Model:** Sidearm ALL-Terrain Handheld PC™

**For:** Certification

**Applicant:** **Melard Technologies Inc.**  
28 Kaysal Court  
Armonk, NY 10504  
U.S.A.

**Manufacturer:** **Melard Technologies Inc.**  
28 Kaysal Court  
Armonk, NY 10504  
U.S.A.

**Evaluated by:** **APREL Laboratories**  
51 Spectrum Way  
Nepean, Ontario  
Canada K2R 1E6

**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.

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

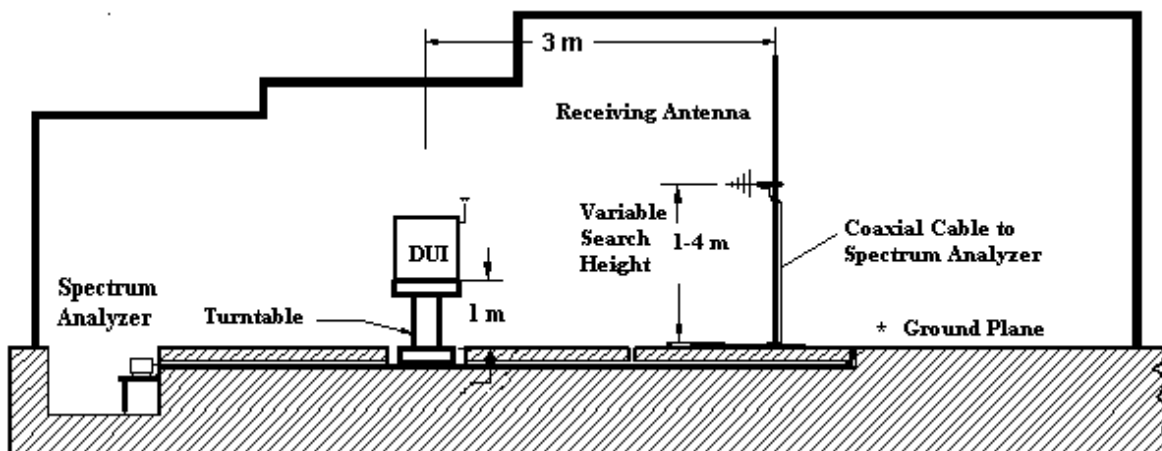
Test site: The radiated RF power measurement was taken at APREL Laboratory's open area test site (OATS). This open area test site is calibrated to ANSI C63.4 document and a description of the measurement facility is on file with the Federal Communications Commission and is in compliance with the requirement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

The test was set-up as illustrated in Fig.1. The DUI 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 DUI was replaced by a vertically polarised half-wave dipole antenna resonant to that frequency and fed by a RF power amplifier and signal generator. The center of the dipole antenna was placed precisely in the same location as the DUI . It was ensured that the orientation of the rotating table and the height of the receiving antenna were unmoved. The signal generator level was adjusted until the peak reading on the spectrum analyzer was identical to that obtained when the Hand Held Computer was on the turntable. The two signals were matched by superimposing one signal to the other on the spectrum analyzer screen. The output of power amplifier was disconnected from the substitute dipole antenna and connected to a RF power meter. **The effective radiated power was read directly form the power meter.**

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

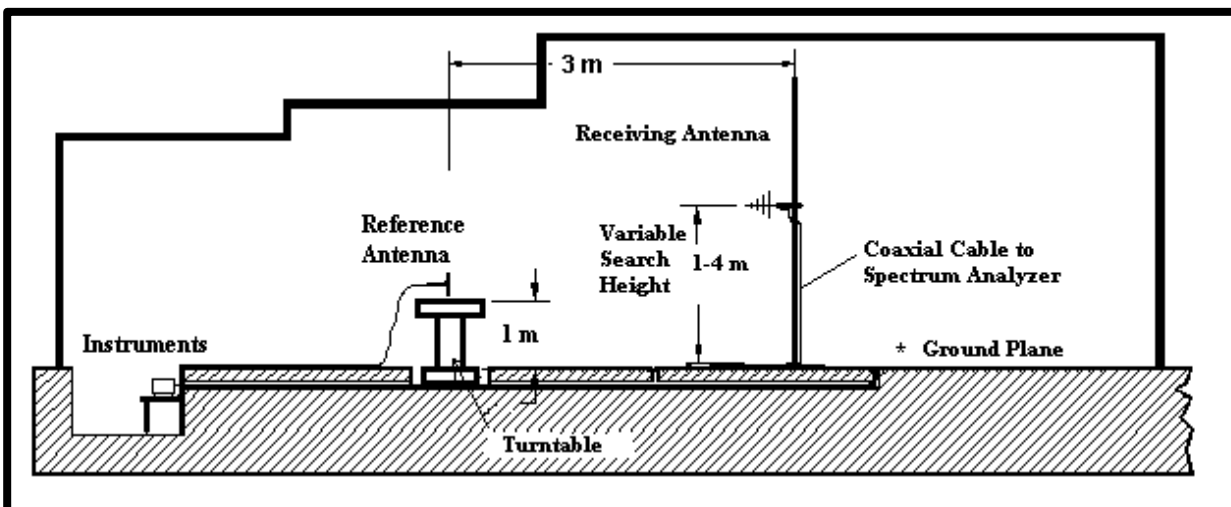
**Results:** See Table 1



**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 DUI is replaced by Reference Dipole Antenna.**

**Table 1.**  
**RF Output Power Measurement**  
**ERP**

| Channel No. | Nominal<br>Transmit<br>Frequency | Measured<br>Output Power<br>ERP | ERP   |
|-------------|----------------------------------|---------------------------------|-------|
|             | (MHz)                            | (dBm)                           | (W)   |
| 480         | 896.00                           | 27.0                            | 0.501 |
| 720         | 899.00                           | 28.3                            | 0.076 |
| 880         | 901.00                           | 27.7                            | 0.589 |

Test performed by: Kurtz Power Date: October, 2000

## **APPENDIX A**

### List of Test Equipment

### List of Equipment used

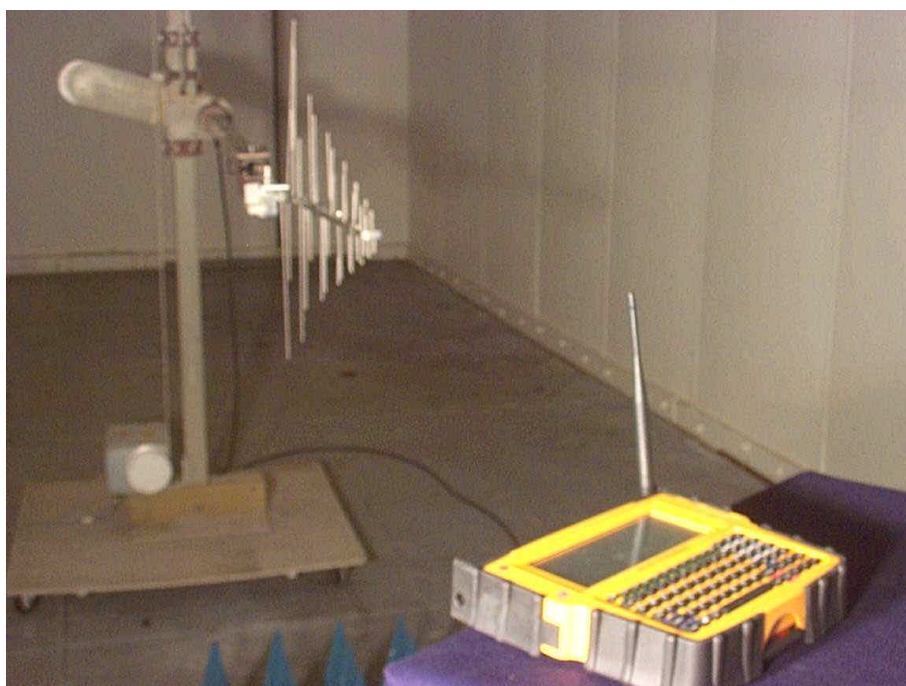
| Description                               | Manufacturer       | Model #    | Asset # | Calibration Due Data |
|-------------------------------------------|--------------------|------------|---------|----------------------|
| Spectrum Analyzer                         | Anritsu            | MS2661C    | 301330  | Dec 10, 2000         |
| Power Meter                               | Rhode & Schwarz    | NRVS       | 100851  | July 21, 2001        |
| 20 dB Attenuator                          | Pasternack         | PE7002-20  | 301370  | May 18, 2001         |
| Signal Generator                          | Hewlett-Packard    | HP 8340B   | 100955  | Oct 5, 2001          |
| RF Power Amplifier                        | Amplifier Research | 25W100M    | 100735  | CBT                  |
| Reference Half wave Dipole                | APREL Inc.         | D-8355     | N/A     | June 16, 2001        |
| Log Periodic Antenna                      | Eaton              | ALP-1      | 100553  | July 21, 2001        |
| 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***



**Melard Sidearm ALL-Terrain Handheld PC™  
With Mobitex R902**



**Sidearm ALL-Terrain Handheld PC™ for ERP at the OATS**



**Reference Dipole Antenna Used for ERP Measurement**