FCC ID: ESD-SA824894NE

Exhibit 2

Engineering Reports
b)Radiated Spurious Emissions (2.1053)

Assessment of Compliance

for

Field Strength of Spurious Radiation in accordance with the FCC Rules & Regulations Part 2.1053

Rugged handheld computer with integrated wireless communications

Sidearm ALL-Terrain Handheld PCä

Melard Technologies, Inc.

October 2000

MELB-Novatel Expedite CDPD Sidearm-3607

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Engineering Report

Subject: **Measurement of Field Strength of Spurious Radiation in accordance with the FCC Rules & Regulations Part 2.1053**

FCC ID: **ESD-SA824894NE**

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

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

Client: **Melard Technologies Inc.**
28 Kaysal Court
Armonk NY 10504
USA

Project #: **MELB - Novatel Expedite CDPD Sidearm - 3607**

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

Approved by: _____ Date: January 10, 2001

Jay Sarkar
Technical Director, Standards & Certification

Released by: _____ Date: March 10/2001

Dr. Jack J. Wojcik, P.Eng.

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FCC ID: **ESD-SA824894NE**
Applicant: Melard Technologies
Equipment: Rugged handheld computer with integrated wireless communication
Model: Sidearm ALL-Terrain Handheld PC™
Standard: FCC Rules and Regulations Part 2.1053

ENGINEERING SUMMARY

This report contains the results of Field Strength of Spurious Radiation measurement performed on a Melard Technologies **Rugged handheld computer with integrated wireless communications** operating with a built-in Novatel Wireless CDPD radio transmitter. The measurements were carried out in accordance with the FCC Rules and Regulations Part 2.1053. The product was evaluated for spurious when it was set at the maximum power level.

(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
Field Strength of Spurious Radiation Ref. Paragraph 2.1053	8	1	**Passed**

INTRODUCTION

General

This report describes the results of the Field Strength of Spurious Radiation measurement conducted on a Melard Technologies **Rugged handheld computer with integrated wireless communications** operating with a built-in Novatel Wireless CDPD radio transmitter, .

Test Facility

The tests were performed for Melard Technologies 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 2.1053 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: 24 °C ± 2
- Relative Humidity: 30 - 50 %
- Air Pressure: 101 kPa ± 3

FCC SUBMISSION INFORMATION

FCC ID:	**ESD-SA824894NE**
Equipment:	**Rugged handheld computer with integrated wireless communications**
Model:	Sidearm ALL-Terrain Handheld PC™
For:	Certification
Applicant:	**Melard Technologies** 28 Kaysal Court Armonk, NY 10504 U.S.A.
Manufacturer:	**Melard Technologies** 28 Kaysal Court Armonk, NY 10504 U.S.A.
Evaluated by:	**APREL Laboratories** 51 Spectrum Way Nepean, Ontario Canada K2R 1E6

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Test: **Field Strength of Spurious Radiation**

Ref: FCC Parts 2.1053 and 22

Criteria: On any frequency twice or more than twice the fundamental frequency of the mobile, the mean power of spurious emmissions shall be attenuated below the power of the unmodulated carrier by at least 43+10log(P)dB.

This was calculated to be 84.6dBµV/m at 3 meters

Set-up: See Figure 1.a

Conditions: Voltage Supply: 7.4/8.4 DC Battery

Equipment: See Appendix A.

Procedure: The final measurements were taken at APREL Laboratory's open area test site (OATS) measurement facility. 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 requirements of Section 2.948 of the Commissions rules and regulations.
(FCC Registration No.:90416).

The **DUI** was configured to operate at maximum power with appropriate modulation. Special software was employed in order that the transmitter was processing data in a normal manner.

Prior to final measurement in the OATS, preliminary radiated spurious emissions were scanned in a shielded enclosure at a distance of 1 m using biconical, log-periodic and horn antennas in order to determine the characteristic frequencies of the field strength of spurious emissions. Based on this information, measurements were performed in the OATS at these characteristic frequencies using calibrated antennas.

All field strength measurements were made with a spectrum analyser and the appropriate calibrated antenna for the frequency range from 9 kHz up to 10th harmonics of the transmit frequency (see equipment list for the calibrated antenna used). **The Power of the carrier frequency was also measured in the OATS.**

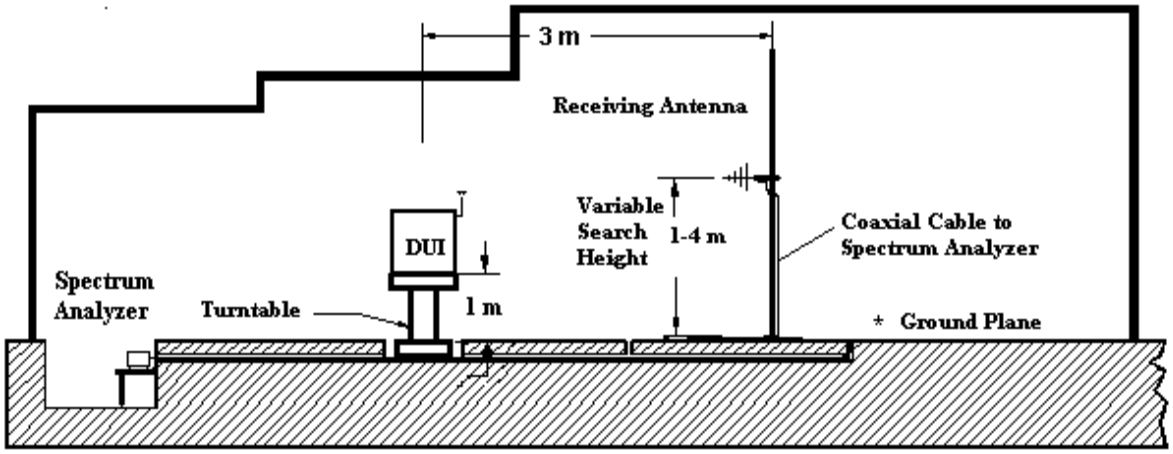


Figure 1.a Test set up for the Field Strength of Spurious Radiation Measurement in OATS (Not to scale)

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

The equipment under test was placed on a turntable positioned 3 meters away from the calibrated receiving antenna, which in turn was connected to the spectrum analyzer. For each identified frequency, the received signal was maximized by the positioning of the turntable and the height of the antenna. The process was repeated for both horizontal and vertical polarisation.

Information submitted includes the relative radiated power of each spurious emissions with reference to the rated transmit power assuming all emissions are radiated from half-wave dipole antenna.

Measurements given in the spurious emissions test result tables contain:
analyzer reading, correction factor, and final reading. The final field strength level are derived from the analyzer measurement and the correction factor (antenna factor and cable loss) as shown in the following example:

Sample Calculation

A. Spectrum analyzer reading (Direct measurement)

At 1672.02 MHz, a spurious level of 30.8 dBµV @ 3 meters is measured.

B. Correction factor (antenna factor and cable loss)

Cable loss: 0.4 dB
Antenna Factor: 27.0 dB
Total Correction Factor: 0.4 + 27.0 = 27.4 dB/m

C. Final reading (Field Strength of spurious emission):

C = A + B
C = 30.8 dBµV + 27.0 dB
C = 58.2 dBµV/m @ 3 meters

D. The criteria level.

The field intensity, which would be produced by the transmitter carrier operating into a half-wave dipole antenna (gain of 1.64), at a distance of 3 m, was calculated using the following formula:

Field Strength of unmodulated carrier (dBµV/m) = $10 \log_{10} (PtG/4\pi r^2) + 146$ dB

Pt is transmitter carrier power, unmodulated
G is gain, 1.64
R is distance, 3 meters

Criteria (reference) level at 3 meters from 0.372 Watt (ERP) into half-wave dipole antenna is 84.6 dBµV/m.

E = Margin (spurious emission below the reference level)

E = D – C
E = 84.6 dBµV/m– 58.2 dBµV/m
E = 26.4 dBµV/m

Results: **Passed. See Tables 1 and 2**

Table 1
Field Strength of Spurious Radiation
Transmitter Frequency: 836.01 MHz
Antenna Polarization: Vertical
Resolution Bandwidth:
10 kHz (below 1 GHz)
100 kHz (above 1 GHz)

Frequency (MHz)	Measured Level (dBμV) "A"	Correction Factor (dB/m) "B"	Field Strength (dBμV/m) "C"	Criteria Level (dBμV/m) "D"	Margin (dB) "E"
836.01 Carrier	99.8	23.0	122.8	-	-
1672.02 2nd harmonic	30.8	27.4	58.2	84.6	26.4
2508.03 3rd harmonic	25.1	32.2	57.3	84.6	27.4
3344.04 4th harmonic	25.5	38.5	64.0	84.6	20.6
4180.05 5th harmonic	20.8	40.7	61.5	84.6	23.1
5016.06 6th harmonic	19.9 noise floor	46.2	66.1	84.6	18.6
5852.07 7th harmonic	19.3 noise floor	54.7	74.0	84.6	10.6

Test performed by: Kelsa Powers Date: October, 2000

Table 2
Field Strength of Spurious Radiation
Transmitter Frequency: 836.01 MHz
Antenna Polarization: Horizontal
Resolution Bandwidth:
10 kHz (below 1 GHz)
100 kHz (above 1 GHz)

Frequency (MHz)	Measured Level (dBμV) "A"	Correction Factor (dB/m) "B"	Field Strength (dBμV/m) "C"	Criteria Level (dBμV/m) "D"	Margin (dB) "E"
836.01 Carrier	89.1	23.0	112.1	-	-
1672.02 2nd harmonic	21.9	27.4	49.3	84.6	35.3
2508.03 3rd harmonic	23.1	32.2	55.3	84.6	29.4
3344.04 4th harmonic	20.9 noise floor	38.5	59.4	84.6	25.2
4180.05 5th harmonic	20.4 noise floor	40.7	61.1	84.6	23.5
5016.06 6th harmonic	20.2 noise floor	46.2	66.4	84.6	18.3
5852.07 7th harmonic	19.6 noise floor	54.7	74.3	84.6	10.3

Test performed by: Kelly Powers Date: October, 2000

APPENDIX A

List of Test Equipment

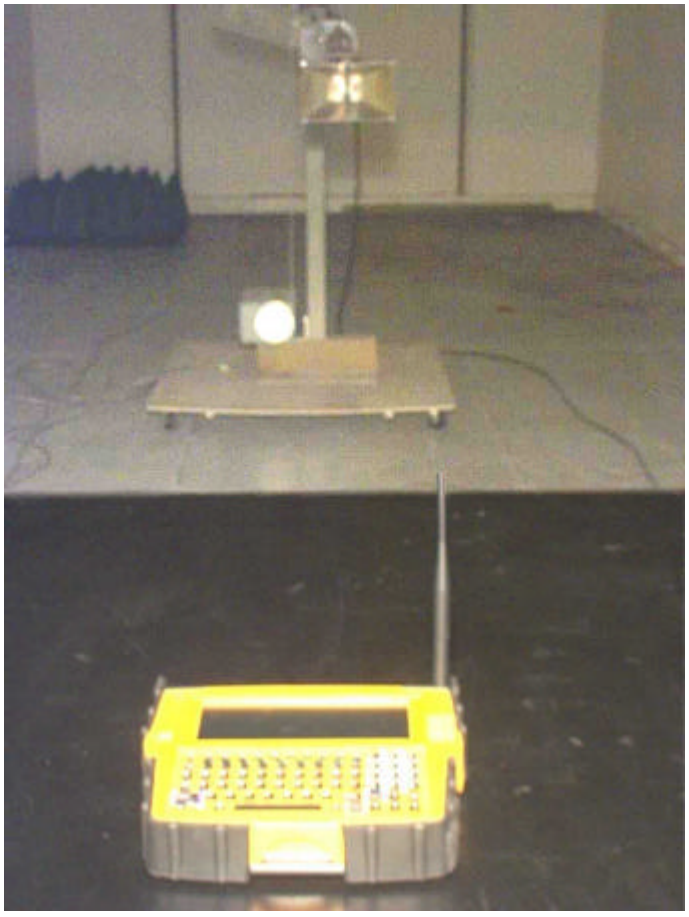
List of Equipment

Description	Range	Manufacturer	Model #	APREL Asset #	Cal. Due Date
Spectrum Analyzer	9 kHz - 3 GHz	Anritsu	MS2661C	301330	Dec 10, 2000
Spectrum Analyzer	9 kHz - 30 GHz	Anritsu	MS2667C	301436	Nov 3, 2000
Biconical Antenna	20 MHz - 200 MHz	Eaton	94455-1	100890	July 21, 2001
Log - Periodic Antenna	200 MHz -1.0 GHz	Eaton	ALP-1	100761	July 21, 2001
Horn Antenna	1 – 18 GHz	APREL Inc.	AA – 118	100553	March 12, 2001
Anechoic Shielded Room	10 kHz - 10 GHz	APREL Inc.	_	301329	N/A
OATS	30 MHz – 1 GHz	APREL Inc.	3 m & 10 m	N/A	N/A
Mast with the Controller	1 m – 4 m	EMCO	1051 – 12	100507	N/A
Turntable with the Controller	0° - 360°	EMCO	1060 – 1.241	100506	N/A
Notch Filter	DC - 6 GHz	APREL Inc.	NFLT-835	301470	CBT
Attenuator	20 dB	Pasternack	PE 7002-20	301370	May 18, 2001
Amplifier (LNA)	30-1000 MHz	APREL Inc.	APRLNA-001	301415	June 20, 2001

APPENDIX B

PHOTOGRAPHS

Melard Technologies Inc.'s Sidearm ALL-Terrain Handheld PC™



Melard Technologies Inc.'s Sidearm ALL-Terrain Handheld PC™
Tested for Spurious Emissions at the OATS