M. Flom Associates, Inc. - Global Compliance Center
3356 North San Marcos Place, Suite 107, Chandler, Arizona 85225-7176
www.mflom.com general@mflom.com (480) 926-3100, FAX: 926-3598

Environmental Assessment

for

Mobiles/Fixed Base Station

for

FCC ID: FCC ID: FJ6-302395
Model:302395

to

Federal Communications Commission

47 CFR 1.1310 (MPE)
Radiofrequency Radiation Exposure Limits

Date Of Report: February 16, 2004

On the Behalf of the Applicant:

Modular Mining Systems Inc

At the Request of:

P.O. Deposit Check #85258

Modular Mining Systems Inc
3289 East Hemisphere Loop
Tucson, AZ 85706-5028

Attention of:

(520) 806-9127; FAX: 889-5790 (Headquarters)
Les Zoschke, Vice President, Product Development
Email: zoschke@mmsi.com
Romer Johnson, Supervisor, Product Design
(520) 806-3603; FAX: 3344
Email: johnsonr@mmsi.com

Supervised By:

Morton Flom, P. Eng.

Table of Contents

Required information per ISO/IEC Guide 25-1990, paragraph 13.2:

a)	**Test Report (Supplemental)**
b) Laboratory: (FCC: 31040/SIT) (Canada: IC 2044)	M. Flom Associates, Inc. 3356 N. San Marcos Place, Suite 107 Chandler, AZ 85225
c) Report Number:	d0420037
d) Client:	Modular Mining Systems Inc 3289 East Hemisphere Loop Tucson, AZ 85706-5028
e) Identification: Description:	302395 FCC ID: FJ6-302395 802.11b Unit
f) EUT Condition:	Not required unless specified in individual tests.
g) Report Date: EUT Received:	February 16, 2004
h, j, k):	As indicated in individual tests.
i) Sampling method:	No sampling procedure used.
l) Uncertainty:	In accordance with MFA internal quality manual.
m) Supervised by:	 Morton Flom, P. Eng.
n) Results:	The results presented in this report relate only to the item tested.
o) Reproduction:	This report must not be reproduced, except in full, without written permission from this laboratory.

Identification of the Equipment Under Test (EUT)

Name and Address of Applicant:

Modular Mining Systems Inc
3289 East Hemisphere Loop
Tucson, AZ 85706-5028

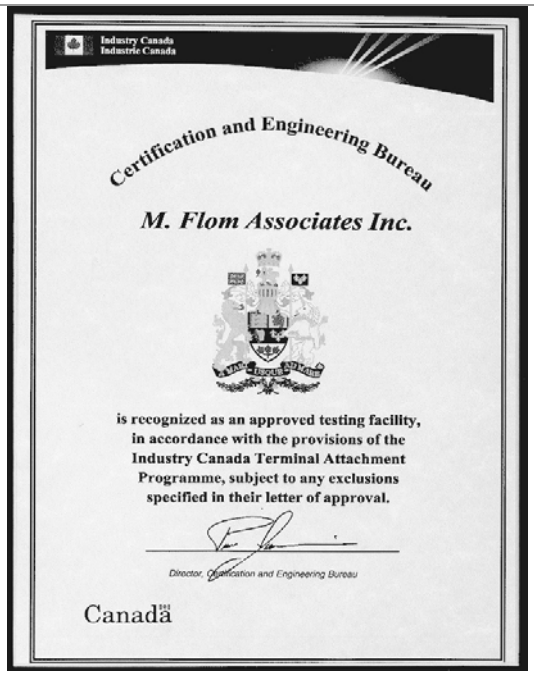
Manufacturer:

Modular Mining Systems Inc
3289 East Hemisphere Loop
Tucson, AZ 85706-5028

FCC ID:	FJ6-302395
Model Number:	302395
Description:	802.11b Unit
Type of Emission:	DSSS
Frequency Range, MHz:	2412 to 2454
Power Rating, Watts:	0.361 EIRP to 0.380 EIRP
____ Switchable ____ Variable	_x_ N/A
Modulation:	____ AMPS
	____ TDMA
	____ CDMA
	_x_ OTHER
Antenna:	____ Helical
	____ Monopole
	____ Whip
	_x_ Other

Note: For RF Safety test antenna gain taken at the upper range of expected gain (i.e. 0 dBd) and RF Power set to highest nominal power across all channels.

Industry Canada



Industry Canada
Industrie Canada

Certification and Engineering Bureau

M. Flom Associates Inc.

is recognized as an approved testing facility, in accordance with the provisions of the Industry Canada Terminal Attachment Programme, subject to any exclusions specified in their letter of approval.

Director, Certification and Engineering Bureau

Canada

Industrie Canada Industry Canada

Certification and Engineering Bureau
1241 Clyde Avenue
Ottawa, Ontario
K2C 1Y3

Tel. No. (613) 952-3650
Fax. No. (613) 952-1088

February 24, 1998

Our File: 46327- 2044
Submission: 19320 O

Mr. M. Flom
M. Flom Associates, Inc.
3356 North San Marcos Place, Suite 107
Chandler, Arizona 85224-1571

Dear Mr. Flom,

The Bureau has received your test report for the Open Area Test Site located at Chandler, Arizona, dated January 30, 1998 and the supplemental information received February 24, 1998. I have reviewed the report and find it complies with RSP 100, Issue 7, section 3.3 Description of Open Area Test Site.

The site is acceptable to Industry Canada for the performance of radiated measurements. Please reference the file number " IC 2044 " in the body of all test reports containing measurements made on this site. This reference number is the indication of Industry Canada's acceptance of your site. Your company has been added to our published list of qualified sites on the Bureau's web page. It is located at: http://spectrum.ic.gc.ca/~cert/ Please keep the contact information current by notifying us if it changes or is in error.

Keep informed of the latest Industry Canada regulations by visiting the Bureau's site on the World Wide Web;

http://spectrum.ic.gc.ca/~cert/
or the Industry Canada main site at;
http://strategis.ic.gc.ca

Whenever major construction or repairs to the site are completed, a re-submission of the site attenuation characteristics will be required.

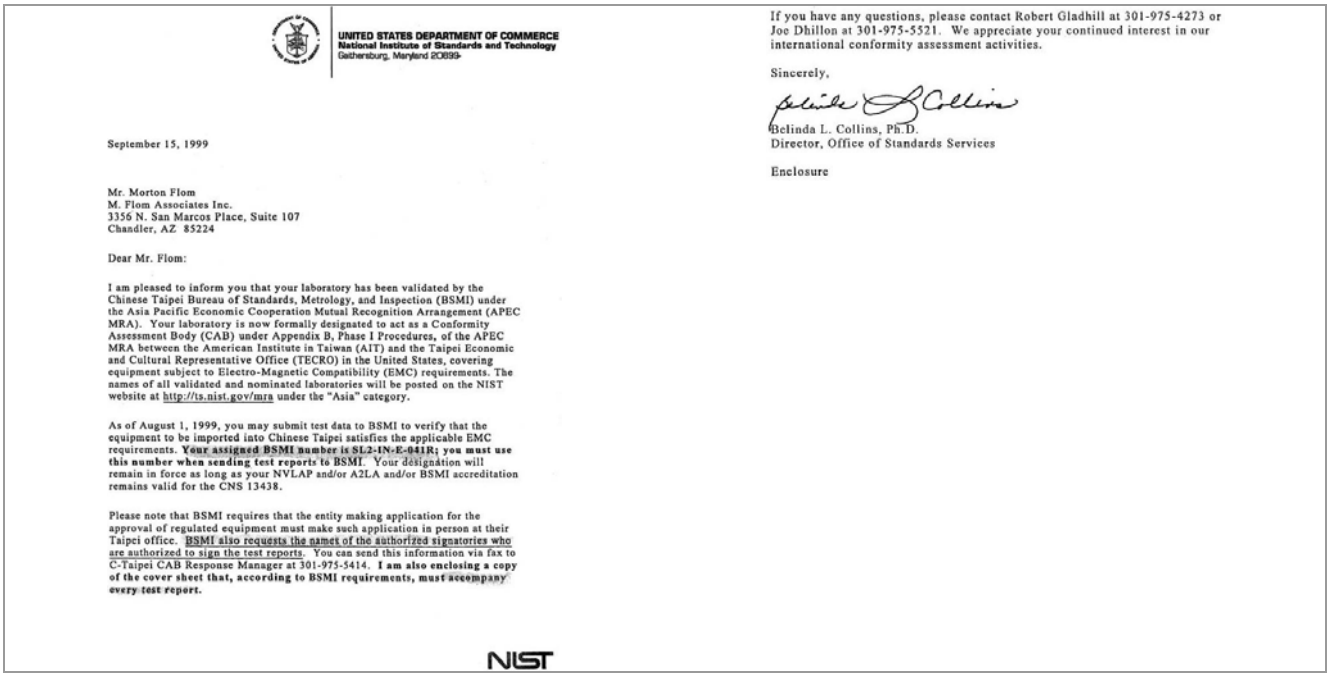
Yours sincerely,

Brian Kasper

Brian Kasper
Head, EMC and Standards
Certification and Engineering Bureau

Canada

NIST



UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

September 15, 1999

Mr. Morton Flom
M. Flom Associates Inc.
3356 N. San Marcos Place, Suite 107
Chandler, AZ 85224

Dear Mr. Flom:

I am pleased to inform you that your laboratory has been validated by the Chinese Taipei Bureau of Standards, Metrology, and Inspection (BSMI) under the Asia Pacific Economic Cooperation Mutual Recognition Arrangement (APEC MRA). Your laboratory is now formally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA between the American Institute in Taiwan (AIT) and the Taipei Economic and Cultural Representative Office (TECRO) in the United States, covering equipment subject to Electro-Magnetic Compatibility (EMC) requirements. The names of all validated and nominated laboratories will be posted on the NIST website at http://ts.nist.gov/mra under the "Asia" category.

As of August 1, 1999, you may submit test data to BSMI to verify that the equipment to be imported into Chinese Taipei satisfies the applicable EMC requirements. **Your assigned BSMI number is SL2-IN-E-041R; you must use this number when sending test reports to BSMI.** Your designation will remain in force as long as your NVLAP and/or A2LA and/or BSMI accreditation remains valid for the CNS 13438.

Please note that BSMI requires that the entity making application for the approval of regulated equipment must make such application in person at their Taipei office. BSMI also requests the names of the authorized signatories who are authorized to sign the test reports. You can send this information via fax to C-Taipei CAB Response Manager at 301-975-5414. **I am also enclosing a copy of the cover sheet that, according to BSMI requirements, must accompany every test report.**

If you have any questions, please contact Robert Gladhill at 301-975-4273 or Joe Dhillon at 301-975-5521. We appreciate your continued interest in our international conformity assessment activities.

Sincerely,

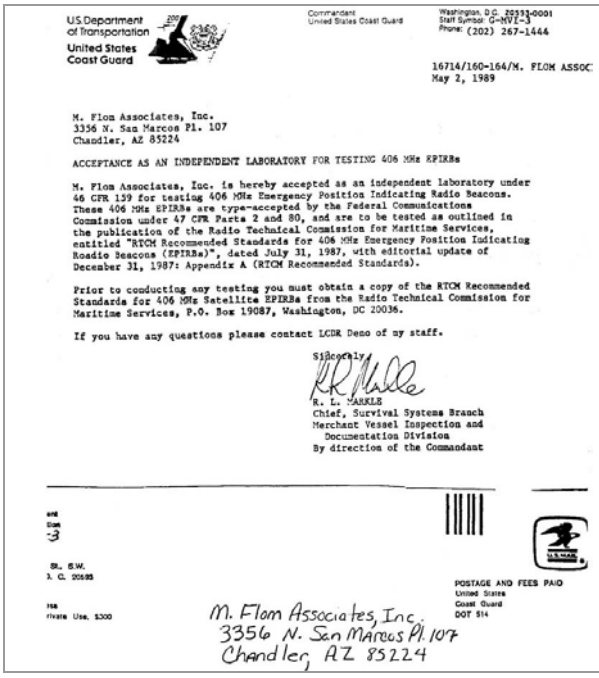
Belinda L. Collins, Ph.D.
Director, Office of Standards Services

Enclosure

NIST

Page Number 4 of 7.

U.S. Coast Guard



U.S. Department of Transportation
United States Coast Guard

Commandant
United States Coast Guard

Washington, D.C. 20593-0001
Staff Symbol: G-MVI-3
Phone: (202) 267-1444

16714/160-164/M. FLOM ASSOC
May 2, 1989

M. Flom Associates, Inc.
3356 N. San Marcos Pl. 107
Chandler, AZ 85224

ACCEPTANCE AS AN INDEPENDENT LABORATORY FOR TESTING 406 MHz EPIRBs

M. Flom Associates, Inc. is hereby accepted as an independent laboratory under 46 CFR 159 for testing 406 MHz Emergency Position Indicating Radio Beacons. These 406 MHz EPIRBs are type-accepted by the Federal Communications Commission under 47 CFR Parts 2 and 80, and are to be tested as outlined in the publication of the Radio Technical Commission for Maritime Services, entitled "RTCM Recommended Standards for 406 MHz Emergency Position Indicating Roadio Beacons (EPIRBs)", dated July 31, 1987, with editorial update of December 31, 1987: Appendix A (RTCM Recommended Standards).

Prior to conducting any testing you must obtain a copy of the RTCM Recommended Standards for 406 MHz Satellite EPIRBs from the Radio Technical Commission for Maritime Services, P.O. Box 19087, Washington, DC 20036.

If you have any questions please contact LCDR Deno of my staff.

Sincerely,

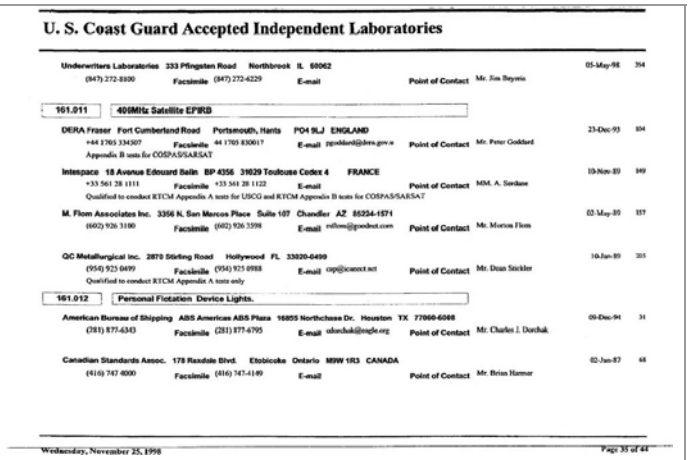
R. L. HARRLE
Chief, Survival Systems Branch
Merchant Vessel Inspection and
Documentation Division
By direction of the Commandant

St., S.W.
). C. 20593

ate
rivate Use, $300

POSTAGE AND FEES PAID
United States
Coast Guard
DOT 514

M. Flom Associates, Inc.
3356 N. San Marcos Pl. 107
Chandler, AZ 85224



U. S. Coast Guard Accepted Independent Laboratories

Underwriters Laboratories 333 Pfingsten Road Northbrook IL 60062					05-May-98 354
(847) 272-8800	Facsimile (847) 272-6229	E-mail	Point of Contact	Mr. Jim Beyrau	
161.011	**406MHz Satellite EPIRB**				
DERA Fraser Fort Cumberland Road Portsmouth, Hants PO4 9LJ ENGLAND					23-Dec-93 104
+44 1705 334307	Facsimile 44 1705 830017	E-mail jpgoddard@dera.gov.u	Point of Contact	Mr. Peter Goddard	
Appendix B tests for COSPAS/SARSAT					
Intespace 18 Avenue Edouard Belin BP 4356 31029 Toulouse Cedex 4 FRANCE					10-Nov-89 149
+33 561 28 1111	Facsimile +33 561 28 1122	E-mail	Point of Contact	MM. A. Serdane	
Qualified to conduct RTCM Appendix A tests for USCG and RTCM Appendix B tests for COSPAS/SARSAT					
M. Flom Associates Inc. 3356 N. San Marcos Place Suite 107 Chandler AZ 85234-1571					02-May-89 157
(602) 926 3100	Facsimile (602) 926 3598	E-mail mflom@goodnet.com	Point of Contact	Mr. Morton Flom	
QC Metallurgical Inc. 2870 Stirling Road Hollywood FL 33020-6499					16-Jan-89 205
(954) 923 0499	Facsimile (954) 923 0988	E-mail qcp@icanect.net	Point of Contact	Mr. Dean Stickler	
Qualified to conduct RTCM Appendix A tests only					
161.012	**Personal Flotation Device Lights.**				
American Bureau of Shipping ABS Americas ABS Plaza 16855 Northchase Dr. Houston TX 77060-6008					09-Dec-94 31
(281) 877-6343	Facsimile (281) 877-6795	E-mail odorchak@eagle.org	Point of Contact	Mr. Charles J. Dorchak	
Canadian Standards Assoc. 178 Rexdale Blvd. Etobicoke Ontario M9W 1R3 CANADA					02-Jun-87 68
(416) 747 4000	Facsimile (416) 747-4149	E-mail	Point of Contact	Mr. Brian Harmer	

Standard Test Conditions
and
Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-1992/2000, section 6.1.9, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst-case measurements.

Page Number	6 of 7.
Name of Test:	Environmental Assessment
Specification:	FCC: 47 CFR 1.1310
Measurement Guide:	ANSI/IEEE C95.1 1992
Test Equipment:	Maximum Permissible Exposure (MPE) measurement system, consisting of: Narda 8717-1174R, Radiation meter Narda 8761D, E-field probe (300 kHz – 3 GHz) (Calibrated Nov-98)
Measurement Procedure:	1. The following measurements were performed with a Narda probe using ANSI/IEEE C95.1 as a guide. 2. Prior to making any measurements, the measurements system was calibrated in accordance with the manufacturer's procedures. 3. The EUT's radiating element (antenna) was placed on a 1 m tall table for ease of testing. For equipment normally operated on a metal surface, a ground plane was used. 4. The remaining equipment necessary to operate the EUT was maintained at a distance from the measurement arrangement suitable to minimize interference with the measurements. 5. The minimum safe distance was calculated from the formula Power Density = EIRP / $4\pi R^2$ (Peak Watts/m^2). The calculation is shown with the measurement data. 6. With the EUT operating at maximum power, a search was initiated for worst case emissions with the probe raised and lowered over a range of 0.2 to 2 meters in height and over a horizontal plane of 0^o to 360^o. 7. Average values were calculated for the whole body (0.2-2.0m), lower body (0.2-0.8m) and upper body (1.0-2.0m).
Results:	Attached.

Page Number	7 of 7.
Name of Test:	R.F. Radiation Exposure
FCC Rules:	1.1307, 1.1310, 1.1311, 2.1091
Description, EUT:	See page 2 of Test Report

MPE Calculation

Frequency	=	2412 MHz
R.F. Power	=	7.244 W EIRP (Maximum with 25 dB antenna)
Minimum Safe Distance (Occupational Controlled)	=	$[7.244/(12.56 \times 50)]^{1/2}$
	=	0.1074 meters
	=	10.74 cm

(The following will be placed in the Instruction Manual)

Mandatory Safety Instructions to Installers & Users

Use only manufacturer or dealer supplied antenna.

Antenna Minimum Safe Distance: 20 cm**.**

The Federal Communications Commission has adopted a safety standard for human exposure to RF (Radio Frequency) energy which is below the OSHA (Occupational Safety and Health Act) limits.

Antenna Mounting: The antenna supplied by the manufacturer or radio dealer must not be mounted at a location such that during radio transmission, any person or persons can come closer than the above indicated minimum safe distance to the antenna i.e. 20 cm.

To comply with current FCC RF Exposure limits, the antenna must be installed at or exceeding the minimum safe distance shown above, and in accordance with the requirements of the antenna manufacturer or supplier.

Base Station Installation: The antenna should be fixed-mounted on an outdoor permanent structure. RF Exposure compliance must be addressed at the time of installation.

Antenna Substitution: Do not substitute any antenna for the one supplied or recommended by the manufacturer or radio dealer. You may be exposing person or persons to excess radio frequency radiation. You may contact your radio dealer or the manufacturer for further instructions.

Warning: Maintain a separation distance from the antenna to a person(s) of at least 20 cm.

You, as the qualified end-user of this radio device must control the exposure conditions of bystanders to ensure the minimum separation distance (above) is maintained between the antenna and nearby persons for satisfying RF Exposure compliance. The operation of this transmitter must satisfy the requirements of Occupational/Controlled Exposure Environment, for work-related use. Transmit only when person(s) are at least the minimum distance from the properly installed, externally mounted antenna.

Testimonial
and
Statement of Certification

This is to certify that:

1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.

2. **That** the technical data supplied with the application was taken under my direction and supervision.

3. **That** the data was obtained on representative units, randomly selected.

4. **That**, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

Certifying Engineer: Morton Flom, P. Eng.