



**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: RY9SKS900

Model: SKS-900

to

**Federal Communications Commission**

**47 CFR 1.1310 (MPE)**

Radiofrequency Radiation Exposure Limits

**Date Of Report:** April 5, 2004

### **On the Behalf of the Applicant:**

Space Data Corporation

### **At the Request of:**

P.O. 20611

Space Data Corporation  
460 S. Benson Lane, Suite 11-12  
Chandler, AZ 85224

Attention of:

Gerard J. Quenneville, Vice President Engineering  
(480) 722-2100; FAX: (480) 403-0021  
jerryq@spacedata.net  
Bill McCullough

Supervised By:

A handwritten signature in black ink, reading 'M. Flom P. Eng.' with a stylized flourish at the end.

Morton Flom, P. Eng.

## Table of Contents

<b>Rule</b>	<b>Description</b>	<b>Page</b>
	Test Report	1
	Identification of the Equipment Under Test	2
	Standard Test Conditions and Engineering Practices	4
1.1310	Environmental Assessment	5

Page Number 1 of 7.

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

a) **Test Report (Supplemental)**

b) Laboratory: M. Flom Associates, Inc.  
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107  
(Canada: IC 2044) Chandler, AZ 85225

c) Report Number: d0440005

d) Client: Space Data Corporation  
460 S. Benson Lane, Suite 11-12  
Chandler, AZ 85224

e) Identification: SKS-900  
FCC ID: RY9SKS900  
Description: Narrow Band PCS

f) EUT Condition: Not required unless specified in individual tests.

g) Report Date: April 5, 2004  
EUT Received: 2004-Mar-01

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.

Page Number

2 of 7.

**Identification of the Equipment Under Test (EUT)****Name and Address of Applicant:**

Space Data Corporation  
 460 S. Benson Lane, Suite 11-12  
 Chandler, AZ 85224

**Manufacturer:**

Applicant

**FCC ID:**

RY9SKS900

**Model Number:**

SKS-900

**Description:**

Narrow Band PCS

**Type of Emission:**

10K0F1D

**Frequency Range, MHz:**

901 to 941

**Power Rating, Watts:**

2.0

☐ Switchable☐ Variable☒ N/A**Modulation:**☐ AMPS☐ TDMA☐ CDMA☒ OTHER**Antenna:**☐ Helical☐ Monopole☒ Whip☐ Other

**Note:** For RF Safety test antenna gain taken at the upper range of expected gain (i.e. 3 dBi) and RF Power set to highest nominal power across all channels.

Page Number 3 of 7.

NIST



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

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

Enclosure

September 15, 1999

Mr. Morton Flom  
M. Flom Associates Inc.  
3355 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.

NIST

**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 5 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 Feb-2003)

**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  $\text{Power Density} = \text{EIRP} / 4\pi R^2$  (Peak Watts/m<sup>2</sup>). 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° to 360°.
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

6 of 7.

**Test Setup:**

Maximum Permissible Exposure (MPE)





Page Number 7 of 7.

**Name of Test:** R.F. Radiation ExposureFCC Rules: 1.1307, 1.1310, 1.1311, 2.1091  
Description, EUT: See page 2 of Test Report

Limits: Uncontrolled Exposure  
47 CFR 1.1310  
Table 1, (B)

0.3-1.234 MHz:	Limit [mW/cm <sup>2</sup> ] = 100
1.34-30 MHz:	Limit [mW/cm <sup>2</sup> ] = (180/f <sup>2</sup> )
30-300 MHz:	Limit [mW/cm <sup>2</sup> ] = 0.2
300-1500 MHz:	Limit [mW/cm <sup>2</sup> ] = f/1500
1500-100,000 MHz:	Limit [mW/cm <sup>2</sup> ] = 1.0

Test Frequency, MHz: 930.3675  
Power, Conducted, W: = 2.0  
Antenna Gain: = 3 dBi  
Antenna Model: Helical Whip  
Pre-test Calculations:  

$$\text{Power}_{[W \text{ EIRP}]} = P_{[\text{conducted}]} \times G_{[\text{antenna}]} = 4.0$$

$$\text{Limit}_{[mW/cm^2]} = 0.62$$

$$\text{Limit}_{[W/m^2]} = 10 \times \text{Limit}_{[mW/cm^2]} = 6.20$$

$$R_{[m]} = [P_{[W \text{ EIRP}]} / (4\pi \times \text{Limit}_{[W/m^2]})]^{1/2} = 0.243$$

Instruments  
X Narda 8717-1174R, Radiation Meter  
Narda 8760B, E-field probe (300 kHz – 1 GHz)  
X Narda 8761D, E-field probe (300 kHz – 3 GHz)

Results at tested distances	Probe Height, m	Power Density, mW/cm <sup>2</sup> Freq. 930.3675 MHz Distance 100 cm
	2.0	0.030
	1.8	0.046
	1.6	0.089
	1.4	0.153
	1.2	0.199
	1.0	0.210
	0.8	0.198
	0.6	0.170
	0.4	0.135
	0.2	0.105

Power Density Calculations: The measured power density readings were summed and the results divided by the number of readings to calculate the average.

	930.3675 MHz
Whole body average (0.2 - 0.8 m, mW/cm <sup>2</sup> ) =	0.121
Lower body average (0.2 - 0.8 m, mW/cm <sup>2</sup> ) =	0.152
Upper body average (1.0 - 2.0 m, mW/cm <sup>2</sup> ) =	0.133



Supervised By:

Morton Flom, P. Eng.

**(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:** 100cm (3.25 feet) .

Antenna Gain: 3dB referenced to isotropic.

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. **100cm**

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 **100cm**.

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:

A handwritten signature in black ink, appearing to read "M. Flom P. Eng.", with a horizontal line drawn underneath the signature.

Morton Flom, P. Eng.