



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

Sub-part
1.1307:

AMENDED SUPPLEMENTAL REPORT

ENVIRONMENTAL ASSESSMENT

General Population / Uncontrolled Exposure,
Maximum Permissible Exposure
and Specific Absorption Rate

EQUIPMENT IDENTIFICATION

Ericsson Inc.
FCC ID: AXATR-390-A2

DATE OF REPORT

October 5, 1999

SUPERVISED BY:

A handwritten signature in black ink, reading 'M. Flom P. Eng.' with a stylized, cursive-like script.


Morton Flom, P. Eng.

TABLE OF CONTENTS

| <u>RULE</u> | <u>DESCRIPTION</u> | <u>PAGE</u> |
|-------------|--|-------------|
| | Test Report | 1 |
| | Identification of the Equipment Under Test | 2 |
| | Standard Test Conditions and Engineering Practices | 4 |
| 1.1310 | Environmental Assessment | 5 |

PAGE NO. 1 of 10.

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: d9990049
- d) Client: Ericsson Inc.
1 Mountain View Road
Lynchburg, VA 24502
- e) Identification: EDACS 500M
FCC ID: AXATR-390-A2
Description: UHF FM Mobile Transceiver
- f) EUT Condition: Not required unless specified in individual tests.
- g) Report Date: September 20, 1999
EUT Received: 1999-Sep-13
- 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 NO. 2 of 10.

IDENTIFICATION OF THE EQUIPMENT UNDER TEST (EUT)

NAME AND ADDRESS OF APPLICANT:

Ericsson Inc.
1 Mountain View Road
Lynchburg, VA 24502

MANUFACTURER:

Applicant

FCC ID: AXATR-390-A2

MODEL NO: EDACS 500M

DESCRIPTION: UHF FM Mobile Transceiver

TYPE OF EMISSION:

FREQUENCY RANGE, MHz: 806 to 870

POWER RATING, Watts: 6 to 25
x Switchable _____ Variable _____ N/A

MODULATION:
_____ AMPS
_____ TDMA
_____ CDMA
x _____ FCC
_____ OTHER

ANTENNA:
_____ HELICAL
x _____ MONOPOLE
_____ OTHER

PAGE NO.

3 of 10.

M. Flom Associates, Inc. is accredited by the American Association for Laboratory Association (A2LA) as shown in the scope below.



**THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION**

ACCREDITED LABORATORY

A2LA has accredited

M. FLOM ASSOCIATES, INC.
Chandler, AZ

for technical competence in the field of

Electrical (EMC) Testing

The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC Guide 25-1990 "General Requirements for the Competence of Calibration and Testing Laboratories" (equivalent to relevant requirements of the ISO 9000 series of standards) and any additional program requirements in the identified field of testing.


Presented this 24th day of November, 1998.





President
For the Accreditation Council
Certificate Number 1008.01
Valid to December 31, 2000

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical (EMC) Scope of Accreditation



American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25-1990 AND EN 45001


M. FLOM ASSOCIATES, INC.
Electronic Testing Laboratory
3356 North San Marcos Place, Suite 107
Chandler, AZ 85224-1571
Morton Flom Phone: 602 926 3100

ELECTRICAL (EMC)

Valid to: December 31, 2000 Certificate Number: 1008-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electromagnetic compatibility tests:

| Tests | Standard(s) |
|-------------------------|---|
| RF Emissions | FCC Part 15 (Subparts B and C) using ANSI C63.4-1992; CISPR 11; CISPR 13; CISPR 14; CISPR 22; EN 55011; EN 55013; EN 55014; EN 55022; EN 50081-1; EN 50081-2; FCC Part 18; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1 |
| RF Immunity | EN 50082-1; EN 50082-2; AS/NZS 4251.1 |
| Radiated Susceptibility | EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3 |
| ESD | EN 61000-4-2; IEC 1000-4-2; IEC 801-2 |
| EFT | EN 61000-4-4; IEC 1000-4-4; IEC 801-4 |
| Surge | EN 61000-4-5; ENV 50142; IEC 1000-4-5; IEC 801-5 |
| 47 CFR (FCC) | 2, 21, 22, 23, 24, 74, 80, 87, 90, 95, 97 |



5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8307 • Phone: 301 644 3200 • Fax: 301 662 2974

"This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this report have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report."

Should this report contain any data for tests for which we are not accredited, or which have been undertaken by a subcontractor that is not A2LA accredited, such data would not covered by this laboratory's A2LA accreditation.

PAGE NO.

4 of 10.

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, 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 NO. 5 of 10.

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 $\text{Power Density} = \text{EIRP} / 4\pi R^2$ (Peak Watts/m²). 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 NO. 6 of 10.

TEST SETUP: Maximum Permissible Exposure (MPE)
g9990101: 1999-Sep-16 Thu 16:57:37
STATE: 0:General



TEST SETUP: Maximum Permissible Exposure (MPE)
g9990102: 1999-Sep-16 Thu 16:57:37
STATE: 0:General



PAGE NO.

7 of 10.

TEST SETUP: Maximum Permissible Exposure (MPE)
g9990103: 1999-Sep-16 Thu 16:57:37
STATE: 0:General



TEST SETUP: Maximum Permissible Exposure (MPE)
g9990104: 1999-Sep-16 Thu 16:57:37
STATE: 0:General



PAGE NO. 8 of 10.

Name of test: Environmental Assessment of **Antenna Only**

Tested Distance: = 0.77 m (30.3 in.)

Rated Probe Power Density: Narda 8761D Probe = 10 $\mu\text{W}/\text{cm}^2$ to 20 mW/cm^2

Error Margin: Narda 8717 Meter = 1%

EUT Description: See Page 2.

Power[W ERP] = 25 Watts

Test Frequency, MHz = 824.9875

Ant. Model 19B209568P5

Ant. Gain[dBi] 2.15 dBi

Power[W EIRP] $P[\text{W ERP}] \times 10^{(2.15/10)}$, Watts EIRP = 41

MPE Limit [mW/cm^2] = $f/1500$ (formula for test frequency)

MPE Limit [mW/cm^2] = 0.55 (calculated result)

MPE Limit [W/m^2] = 5.5 (final units)

Theoretical safe distance: $R[\text{m}] = [(P[\text{W EIRP}]) / (4\pi \times \text{Limit}[\text{W}/\text{m}^2])]^{1/2}$
 $R[\text{m}] = 0.77 \text{ m}$
 $R[\text{inches}] = 30.3 \text{ inches}$

Results:
at tested distance

| Probe Height, m | Power Density, mW/cm^2 |
|-----------------|--|
| 2.0 | 0.47 |
| 1.8 | 0.50 |
| 1.6 | 0.33 |
| 1.4 | 0.83 |
| 1.2 | 0.56 |
| 1.0 | 0.41 |
| 0.8 | 0.31 |
| 0.6 | 0.51 |
| 0.4 | 0.28 |
| 0.2 | 0.28 |

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

For whole body: Average of 0.2 to 2.0 m, $\text{mW}/\text{cm}^2 = 0.488$

For lower body: Average of 0.2 to 0.8 m, $\text{mW}/\text{cm}^2 = 0.345$

For upper body: Average of 1.0 to 2.0 m, $\text{mW}/\text{cm}^2 = 0.5166$

SUPERVISED BY:

Morton Flom, P. Eng.

PAGE NO. 9 of 10.

Name of test: Environmental Assessment of **Antenna Only**

Tested Distance: = 0.779 m (30.7 in.)

Rated Probe Power Density: Narda 8761D Probe = 10 $\mu\text{W}/\text{cm}^2$ to 20 mW/cm^2

Error Margin: Narda 8717 Meter = 1%

EUT Description: See Page 2.

Power[W ERP] = 25 Watts

Test Frequency, MHz = 806.0125

Ant. Model 19B209568P5

Ant. Gain[dBi] 2.15 dBi

Power[W EIRP] $P[\text{W ERP}] \times 10^{(2.15/10)}$, Watts EIRP = 41.0

MPE Limit [mW/cm^2] = $f/1500$ (formula for test frequency)

MPE Limit [mW/cm^2] = 0.537 (calculated result)

MPE Limit [W/m^2] = 5.37 (final units)

Theoretical safe distance: $R[\text{m}] = [(P[\text{W EIRP}]) / (4\pi \times \text{Limit}[\text{W}/\text{m}^2])]^{1/2}$
 $R[\text{m}] = 0.779 \text{ m}$
 $R[\text{inches}] = 30.7 \text{ inches}$

Results:

at tested distance

| Probe Height, m | Power Density, mW/cm^2 |
|-----------------|--|
| 2.0 | 0.47 |
| 1.8 | 0.51 |
| 1.6 | 0.68 |
| 1.4 | 0.36 |
| 1.2 | 0.51 |
| 1.0 | 0.34 |
| 0.8 | 0.40 |
| 0.6 | 0.50 |
| 0.4 | 0.44 |
| 0.2 | 0.47 |

Calculations:

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

For whole body: Average of 0.2 to 2.0 m, $\text{mW}/\text{cm}^2 = 0.468$

For lower body: Average of 0.2 to 0.8 m, $\text{mW}/\text{cm}^2 = 0.453$

For upper body: Average of 1.0 to 2.0 m, $\text{mW}/\text{cm}^2 = 0.478$

SUPERVISED BY:

Morton Flom, P. Eng.

PAGE NO. 10 of 10.

Name of test: Environmental Assessment of **Antenna Only**

Tested Distance: = 0.774 m (30.5 in.)

Rated Probe Power Density: Narda 8761D Probe = 10 $\mu\text{W}/\text{cm}^2$ to 20 mW/cm^2

Error Margin: Narda 8717 Meter = 1%

EUT Description: See Page 2.

Power[W ERP] = 25 Watts

Test Frequency, MHz = 815.5000

Ant. Model 19B209568P5

Ant. Gain[dBi] 2.15 dBi

Power[W EIRP] $P[\text{W ERP}] \times 10^{(2.15/10)}$, Watts EIRP = 41.0

MPE Limit [mW/cm^2] = $f/1500$ (formula for test frequency)

MPE Limit [mW/cm^2] = 0.544 (calculated result)

MPE Limit [W/m^2] = 5.44 (final units)

Theoretical safe distance: $R[\text{m}] = [(P[\text{W EIRP}]) / (4\pi \times \text{Limit}[\text{W}/\text{m}^2])]^{1/2}$
 $R[\text{m}] = 0.774 \text{ m}$
 $R[\text{inches}] = 30.5 \text{ inches}$

Results:

at tested distance

| Probe Height, m | Power Density, mW/cm^2 |
|-----------------|--|
| 2.0 | 0.38 |
| 1.8 | 0.20 |
| 1.6 | 0.19 |
| 1.4 | 0.24 |
| 1.2 | 0.21 |
| 1.0 | 0.25 |
| 0.8 | 0.49 |
| 0.6 | 0.57 |
| 0.4 | 0.35 |
| 0.2 | 0.18 |

Calculations:

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

For whole body: Average of 0.2 to 2.0 m, $\text{mW}/\text{cm}^2 = 0.306$

For lower body: Average of 0.2 to 0.8 m, $\text{mW}/\text{cm}^2 = 0.397$

For upper body: Average of 1.0 to 2.0 m, $\text{mW}/\text{cm}^2 = 0.245$

SUPERVISED BY:

Morton Flom, P. Eng.

Addendum:

(THE FOLLOWING WILL BE PLACED IN INSTRUCTION MANUAL)

Maximum Permissible Exposure (MPE)

In August, 1996, the FCC adopted an updated safety standard for human exposure to RF electromagnetic energy emitted by FCC-regulated equipment. Ericsson PRS subscribes to this same updated safety standard for the use of its radio products.

Mobile or Fixed Station Operation

The antenna specified above is a $\frac{1}{4}$ -wave, monopole, unity-gain, omni-directional antenna. It is the only 800 MHz antenna offered for sale by Ericsson for use with the EDACS 500M radio. MPE has been evaluated with this antenna, only, in combination with the EDACS 500M. These evaluations indicate that the FCC limits of Maximum Permissible Exposure (MPE) for General Population/Uncontrolled Exposure, as specified in 47 CFR § 1.1310, are not exceeded at distances of more than 31 inches (78 cm) from the antenna, when mounted in accordance with the prescribed procedure and locations. Similar installations of antennas of the same type should exhibit similar MPE performance. However, installation of other type antennas, and/or installations not in accordance with the procedures and locations prescribed herein, may result in electromagnetic exposure which is different from the above indicated performance.

TESTIMONIAL
AND
STATEMENT OF CERTIFICATION

THIS IS TO CERTIFY:

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, reading "M. Flom P. Eng.", with a horizontal line drawn underneath the signature.

Morton Flom, P. Eng.