

September 11, 2000

Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD 21046

FCC ID: OWDTR-0003-A
731 Confirmation Number: EA98449
Correspondence Reference Number: 15882

Please address the following RF safety issues. Place your reply in the RF exposure info folder. A technical review is pending.

Ericsson EA 98449 -

1. ⁽¹⁾Filing is requesting for 20/40 W output, which do not match measured data. Test report indicates device has a maximum conducted output of 4.2 W . SAR report is indicating 4.31 W as possible maximum. ⁽²⁾A revised set of radiated data was submitted, which appears to be identical to the original. The radiated data is indicating a maximum output of 19.28 W ERP (42.85 dBm) using the whip antenna ("G"). The radiated output appears to be substantially higher than those typically produced by the types of antennas used/tested with similar devices. Please clarify discrepancies.

⁽¹⁾ The 731 Form is incorrect, please make corrections with the following information

FCC Rules Parts	Frequency Range	Output Power (W)	Freq. Tolerance	Emission Designator
22, 74, 90, 95 (A)	450-488 MHz	1	2.5 ppm	11K0F3E
22, 74, 90, 95 (A)	450-488 MHz	1	2.5 ppm	16K0F3E
22, 74, 90, 95 (A)	450-488 MHz	4	2.5 ppm	11K0F3E
22, 74, 90, 95 (A)	450-488 MHz	4	2.5 ppm	16K0F3E

⁽²⁾ Please see the following page.

3.2 Test Data

Settings:

- High Power: 4 Watt delivered to antenna (as specified by manufacturer – Unity Gain)
- 4W Panther 300P radiated power measurements (3 meter)

Frequency (MHz)	Level Measured (dBµV)	Site Factor (dB/m)	ERP Calculated (Watt)	ERP Calculated (dBm)	EIRP Calculated (dBm)	*ERP Substitution Method (dBm)	Antenna
450.025	101.6	34.4	7.3	38.6	40.8	39.3	G
469.975	99.9	36.2	7.5	38.8	40.9	38.1	G
487.975	99.1	35.4	5.2	37.2	39.3	38.6	G

*Measurement accuracy is +/- 1.5 dB

Frequency (MHz)	Level Measured (dBµV)	Site Factor (dB/m)	ERP Calculated (Watt)	ERP Calculated (dBm)	EIRP Calculated (dBm)	*ERP Substitution Method (dBm)	Antenna
450.025	100.9	34.4	6.2	37.9	40.1	38.6	H
469.975	97.5	36.2	4.3	36.3	38.5	35.7	H
487.975	98.7	35.4	4.7	36.7	38.9	38.2	I
469.975	96.7	36.2	3.6	35.5	37.7	34.9	I

* Measurement accuracy is +/- 1.5 dB

Calculations and Measurements:

ERP Substitution Method Data (dBm)					
Frequency (MHz)	Level Measured (dBµV)	Spectrum Analyzer Level with S/G = 6 dBm (dBµV)	SF (cl and Gain dBi)	Extrapolated Signal Generator Level (S/A + 6 – SF)	Antenna
450.025	101.6	-29.8	-0.1 (.3-.4)	39.3	G
469.975	99.9	-30.3	-0.1 (.3-.4)	38.1	G
487.975	99.1	-31.5	0 (.4-.4)	38.6	G

ERP Substitution Method Data (dBm)					
Frequency (MHz)	Level Measured (dBµV)	Spectrum Analyzer Level with S/G = 6 dBm (dBµV)	SF (cl and Gain dBi)	Extrapolated Signal Generator Level (S/A + 6 – SF)	Antenna
450.025	100.9	-29.8	-0.1 (.3-.4)	38.6	H
469.975	97.5	-30.3	-0.1 (.3-.4)	35.7	H
487.975	98.7	-31.5	0 (.4-.4)	38.2	I
469.975	96.7	-30.3	-0.1 (.3-.4)	34.9	I

3.3 Test Equipment

Spectrum Analyser HP8566B
 Antenna Roberts ½ wave dipoles

2. ⁽¹⁾The radiated output test procedures described corrections are needed for the gain of a 1.2 wave dipole used relative to a half-wave dipole. But test data indicates a half-wave Roberts dipole was used. ⁽²⁾The equation indicated in the test procedure does not seem to be correct; it should be the square of E-field instead of E only, please clarify.

[Please see the following page.](#)

3.0 Part 2.1046 (A) RF Power Output: Radiated - ERP

3.1 Test Procedure

Substitution Method:

The EUT was setup at an antenna to EUT distance of 3 meters on an open area test site. The EUT was placed on a nonconductive turntable approximately 0.8 meters above the ground plane.

The physical arrangement of the EUT and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters in order to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations.

The worst-case, maximum radiated emission was recorded and used as reference for the ERP measurement.

The EUT was then replaced by an ½ wave dipole antenna and polarized in accordance with the EUT's antenna polarization. The ½ wave dipole antenna was connected to a RF signal generator with a coaxial cable.

The search antenna height, and search antenna polarity was set to levels that produced the maximum reading obtained in step 3. The signal generator was adjusted to a level that produced the radiated emission level obtained in step 3.

The signal generator level was recorded and corrected by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal ½ wave dipole antenna. The signal generator corrected level is the ERP level

Calculation Method:

$$P_{Watt} = \frac{E_{v/m}^2 \times d_m^2}{30 \times 1.64}$$

3. ⁽¹⁾Filing is requesting for a frequency range of 450 - 488 MHz for this device. The SAR report indicates there are three antennas applicable for this device - a whip (G), a stub (H) and a spring-whip stub (I). These three antennas are for covering three separate frequency ranges - 450-512, 440-470 and 470-512 MHz bands. ⁽²⁾ The frequencies specified for the antennas are extending outside of the transmitting frequency range requested for this filing and the radiated output was only measured for two of the antennas. Antenna "I" was not addressed in the EMC report. ⁽³⁾The instruction manual indicates "KRD 103 153/3" matches the frequency range of this filing and there is another device "KRD 103 153/4", not applicable for this filing, that operates in the 470-512 MHz band. It appears the three antennas indicated in the SAR report may not be applicable for the device tested for this filing. Please review all info and test data, clarify discrepancies and identify all antennas applicable for this filing that are supported by the needed EMC/SAR test data.

⁽¹⁾ Frequency programming capability: An attestation was provided for compliance with Part 90.203(e). The device cannot be programmed by the end-user outside the frequency band 450-488MHz. The PC Programmer software sets the frequency range to 450-488MHz. Additionally, a specific circuitry on the main board senses, which split of hardware, is in the radio.

⁽²⁾ The radiated power output was measured for the three antennae - See test data provided in item 1.

⁽³⁾ Please see the revised manual uploaded in attachments

4. The tissue dielectric parameters specified, measured and reported in the SAR results for both head and body are at 835 MHz. This is a 450-488 MHz device. Please verify if the wrong tissue parameters were used, if so, new SAR results with correct tissue parameters must be submitted. Otherwise, please submit correct tissue dielectric measurement data and composition of ingredients used for the tissue materials. Please also verify if the E-field probe calibration are correct for the operating frequency of this device.

5. SAR report indicates the device was tested with a specific belt-clip supplied for this device for body-worn use with a specific microphone accessory. Specific info in the manual has indicated 1 cm separation is needed for body-worn use. Please provide a photo of this belt-clip and verify the separation distance from the device and its antenna, as provided by this belt-clip for body-worn use, to a user's body.

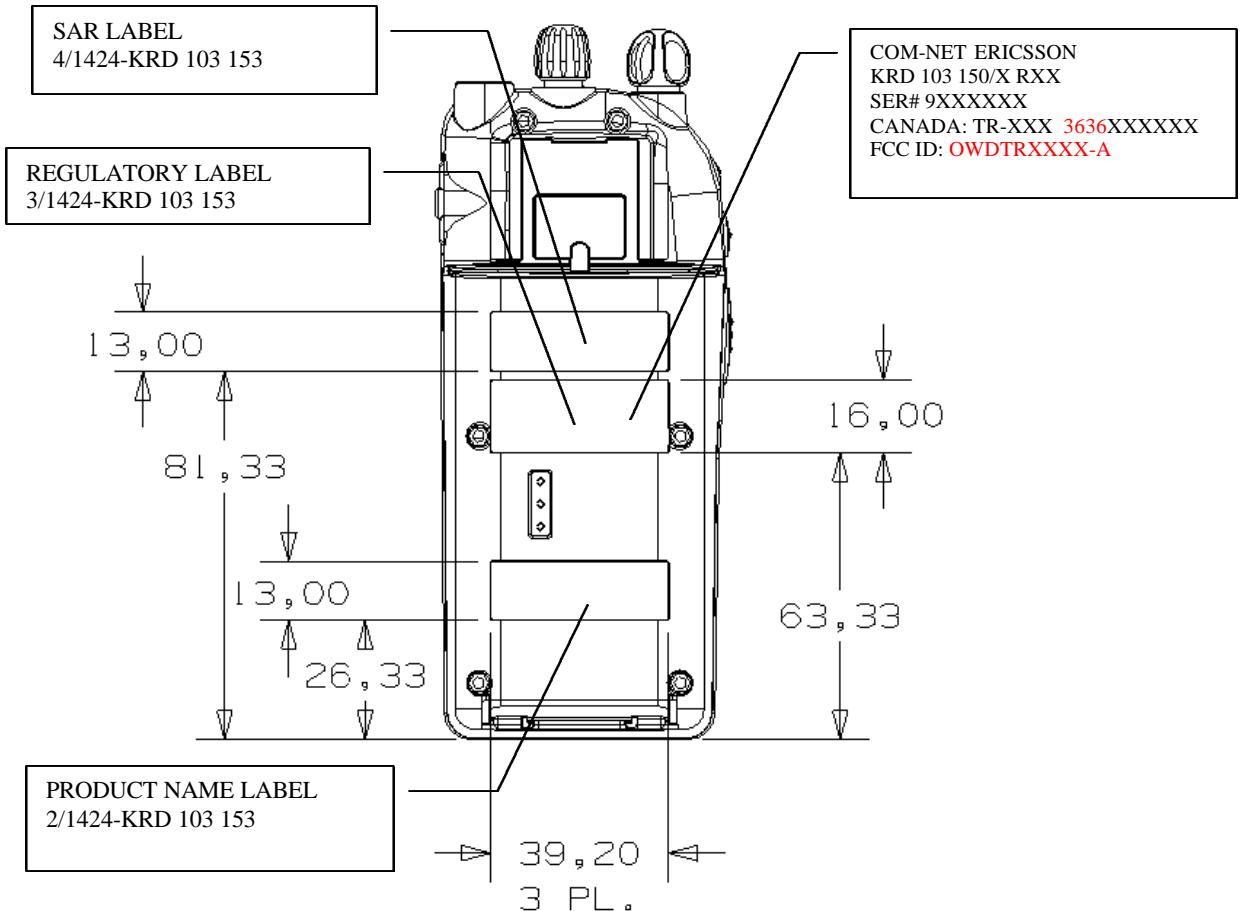
Please see the following photographs.





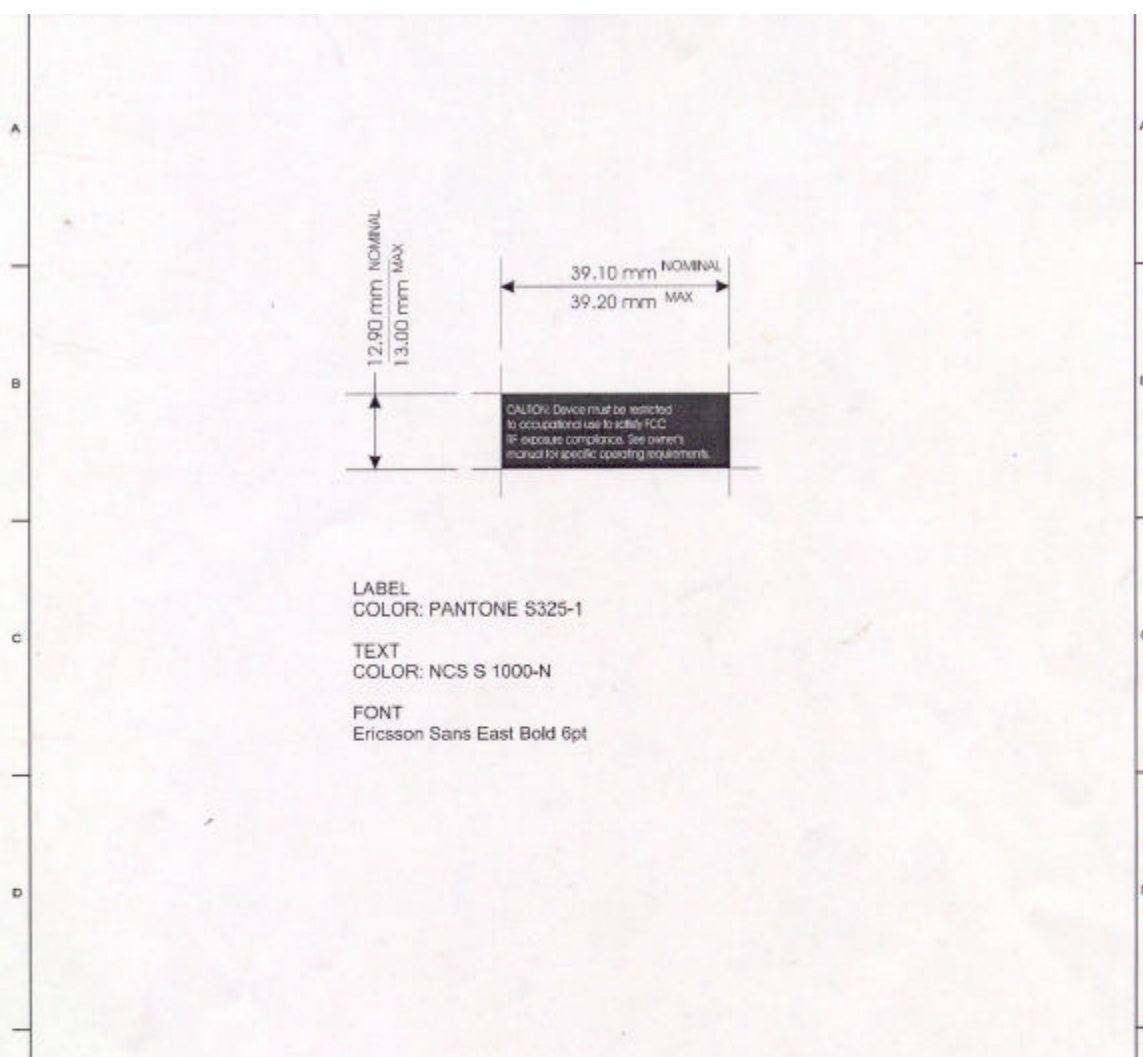
6. This device has to meet Occupational/Controlled Exposure requirements. Device operating requirements and instructions have been included in the users manual. Please verify if any specific user training will be provided or by what mechanism would the end-user know about the controlled exposure requirements for satisfying RF exposure compliance. Either specific user training or a label on the device directing users to the specific training info may be accepted, please provide the applicable info for this device to satisfy the controlled exposure requirement.

Label information below:



LABEL RECESSES IN BACK COVER (BATTERY PACK REMOVED FOR CLARITY)

The top terminal is A-.
The middle terminal is the Smart Battery Data port
The bottom terminal is A+.



LABEL
 COLOR: PANTONE S325-1

TEXT
 COLOR: NCS S 1000-N

FONT
 Ericsson Sans East Bold 6pt

NOTES:

1. THIS DRAWING IS FOR REFERENCE ONLY. ARTWORK IS TO BE CREATED BY VENDOR USING THE ELECTRONIC FILE SHOWN BELOW, WHICH IS SUPPLIED AND ARCHIVED IN THE "INTRALINK/LABELS" DIRECTORY AT ERICSSON (BRL/ME) IN LYNCHBURG
2. IMAGE SETTER OUTPUT TO BE HIGH RES. (2500 DPI) EMULSION SIDE DOWN.
3. FCC AND INDUSTRY CANADA NUMBERS CALLED FOR ON 1301-KDR 103 153 Uen.

MARKING DRAWING

ERICSSON   	Uppgård (även faktansvarig om annan • Prepared (also subject responsible if other)		
	Deklarativ/Declarative - Doc respons/Approved PHIL JONES (MS FALK)		Datum - Date 2000-08-21
	Produktbenämning - Product name SAR LABEL, REAR, PANTHER 300P, ERICSSON		
	Dokumentnr - Document No 4/1424-KRD 103 153 Uen		Bild - Sheet 1 (1)
Referenser - References CAD: CorelDRAW 9 FILE: 4-1424-KRD103153-RA.cdr DRAWING RULES: 1011-386 TOLERANCE: DOCUMENT SIZE: A SCALE: 1:1 UNITS: mm			

Note: Output is 4.2 W conducted, ERP remains to be determined.

Proposed Grant Conditions – Output is at the antenna terminal (or ERP ??). This transmitter may operate with the antennas tested for this filing in Push-to-Talk and body-worn configurations and must be restricted for use in Occupational/Controlled RF exposure Environment. It must be used for work related operations. Qualified end-users of this device must have the knowledge to control their exposure conditions and/or duration to comply with Occupational /Controlled SAR limit and requirements. A label must be displayed on the device to direct users to specific training information and users must be provided with the training information for meeting RF exposure requirements. The highest reported SAR values are - Head: 2.36 W/kg, Body-worn: 6.32 W/kg.

Output is at the Antenna Terminal.