

08 December, 2000

Bryan McWatters
Staff Engineer, Regulatory Programs
Ericsson Inc., Lynchburg VA

Re: Questions from the FCC

FCC ID: **OWDTR0007-E**
Correspondence Reference Number: **17141**
731 Confirmation Number **EA99080**

Dear Bryan:

Pursuant to your e-mail to Paul G. Cardinal, I am forwarding to you our responses to 1, 2 and 4 through 9. The relevant portions of the FCC's e-mail follow with our response inserted in the appropriate place:

To: Bryan McWatters, Ericsson Inc.
From: Joe Dichoso
jdichoso@fcc.gov
FCC Application Processing Branch
Re: FCC ID OWDTR0007-E
Applicant: Com-Net Ericsson Critical Radio Systems, Inc.
Correspondence Reference Number: 17141
731 Confirmation Number: EA99080

1. For the different operating configurations, please verify/confirm the output power actually measured before and/or after the SAR tests.

Response: We measured the output power before starting the SAR measurements to confirm the unit was operating at the nominal power. Wide area scans were performed to determine the worst case scenario were performed with fully charged batteries. During the final measurements (area scans, zooms and depth) for the worst case scenario power, the conducted RF power was sampled as shown in Report 3497-page 6-Table 1 and Report 3498-page 6-Table 1.

IMPORTANT: The sampled conducted RF power readings corresponding to the analysis in front of face were taken at the antenna port of the speaker-microphone where as the power readings corresponding to the analysis on body and hand were taken at the handset feed point of the antenna,

while the auxiliary speaker-microphone was removed. That is why the two tables show an apparent discrepancy. There is a ~1.3 dB loss in the cable and speaker-microphone.

The analysis on body was finished prior the analysis in front of face. For the analysis on body, the conducted power readings were performed on the point where they had been performed on previous similar projects. Later on, when performing the analysis in front of face, it was considered more appropriate to take these measurements at the actual feed point of the antenna (on the speaker/microphone antenna port). In the future, we will take these readings at the same point for every given device.



SAR Analysis in Front of face - Report 3497-Page 6-Table 1. Sampled Conducted RF Power

Scan		Power Readings (dBm)		D (dB)	Battery #
Type	Height (mm)	Before	After		
Area	2.5	7.93	7.90	-0.03	6
Area	12.5	7.96	7.94	-0.02	3
Zoom	2.5	7.98	7.89	-0.09	4
Zoom	7.5	7.93	7.91	-0.02	5
Zoom	12.5	7.94	7.91	-0.03	4
Depth	2.5 – 22.5	8.00	7.88	-0.12	5

NOTE: These readings were taken at the antenna port of the speaker microphone, and do not include the 23dB of attenuation, not the adapter losses.

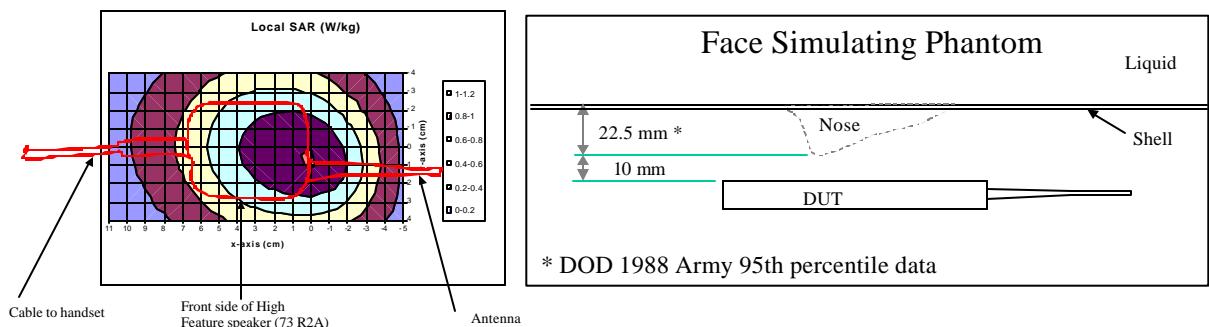
SAR Analysis on Body and Hand - Report 3498-Page 6-Table 1. Sampled Conducted RF Power

Scan		Power Readings (dBm)		D (dB)	Battery #
Type	Height (mm)	Before	After		
Area	2.5	9.29	9.25	-0.04	4
Area	12.5	9.31	9.30	-0.01	5
Zoom	2.5	9.33	-	-	6
Zoom	7.5	-	-	-	6
Zoom	12.5	-	9.28	-0.05	6
Depth	2.5 – 22.5	9.36	9.30	-0.06	3

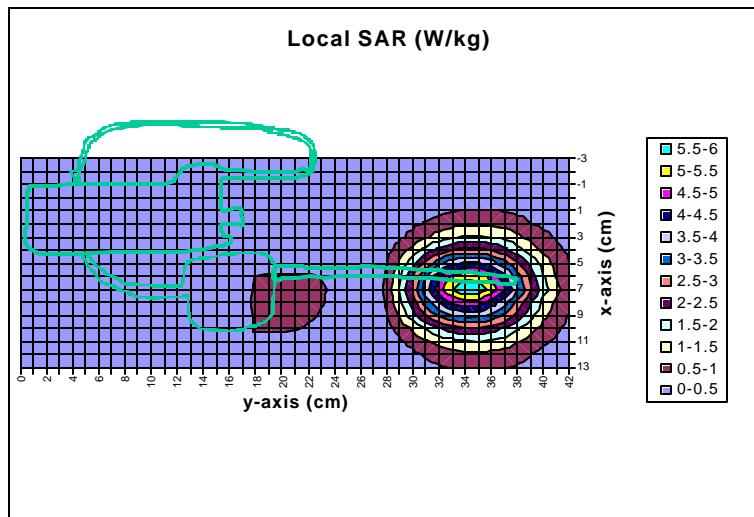
NOTE: These readings do not include the 23dB of attenuation, not the adapter losses.

2. Please identify the peak SAR locations, with respect to the device, for the SAR configurations tested.

Response: The SAR measurements were performed on both the speaker-microphone and the keyboard side of the DUI, as these are the parts of the DUI that would come close to the face. The DUI sides were located 30 mm away from the bottom surface of the phantom, being 1cm away from the 'imaginary' nose according to DOD 1988 Army 95th percentile data (See below Figure Face Simulating Phantom. In this case, the DUT corresponds to the speaker-microphone). The peak SAR is located close to the feed-point of the antenna in the speaker-microphone. The SAR graph underneath shows that it is between 1 and 1.2 W/kg.



(Report 3497) SAR Analysis in Front of face



(Report 3498) SAR Analysis on Body and Hand

The peak SAR is located close to the tip of the antenna. The graph shows that it is between 5.5 and 6 W/kg.

3. Please verify the actual size of the proposed RF exposure label and its location on the device. This question is to be addressed by Comnet-Ericsson.

4. Please indicate the separation distances provided by the belt-clip and belt-loop used for all the applicable operating configurations of this device, including the speaker/microphone.

Response: The belt-clip provided a separation distance of 11 mm between the handset and the phantom. The belt-loop provided a separation distance of 1 mm between the handset and the phantom. The clip on the speaker-microphone provided a separation distance of 11 mm from the phantom.



5. The manual instruction asks users to maintain a separation distance of at least 1 cm between the antenna and the user's body. PTT mode was tested at 3 cm from the mouth, which conflicts with this proposed statement. Please review all test configuration and results and revise the user info accordingly.



Note: For future filings, the desired separation distance should be tested. Extrapolation to reduced distances are highly dependent on the peak SAR location and device performance issues, which may not always be acceptable or applicable.

Response: The PTT was effectively tested at 3cm from the mouth, which is equivalent to 1 cm from the nose, considering that the nose provides a separation of 2cm (according to DOD 1988 Army 95th percentile data (See above Figure Face Simulating Phantom).

6. Please clarify what separation distances were used between the phantom and the device for testing the hand and body-worn configurations. Was a hand phantom used, please clarify the test configuration for the hand.

Response: Due to the fact that the DUI will be in direct contact with the hand and body, the SAR test was performed with the clip touching the phantom. Since both hand and body are composed by muscle tissue, both SAR measurements were performed using a flat phantom with muscle simulating tissue. The maximum 1g SAR applies to the body exposure, while the 10g SAR applies to the hand exposure.

7. The SAR results in Table 3 of the Body-worn configurations indicate a belt-clip has been used for two configurations, the speaker/microphone (S) and the speaker/microphone with antenna port (SWA). It appears the (S) configuration has the antenna on the device and the (SWA) configuration has the antenna on the speaker/microphone. Please clarify how does the (SWA) configuration work with the belt-clip and provide illustrations to clarify the test configurations.

The SAR measurements in Table 2 were performed without belt clip/loop or speaker on different sides of the device, because we wanted to get as close as possible to the handheld radio, as the user's hand would be. On the other hand, the SAR measurements in Table 3 were performed simulating the different body-worn configurations. These include the handset being worn on the waist with the belt clip or the belt loop, and one of the two speakers. On the "S speaker-mic" configuration the antenna was connected to the handheld radio, while on the "SWA speaker-mic" configuration the antenna was connected to the antenna port on the



speaker-microphone.

(a)

(b)

(c)

(d)

- (a) handheld radio with “SWA” type speaker-microphone
- (b) handheld radio with “S” type speaker-microphone
- (c) handheld radio with belt clip
- (d) handheld radio with belt loop

8. In Table 3 (body-worn SAR), SAR results at the middle channel, for the (SWA) configuration with the half-wave antenna and clip is missing. It is unclear if higher SAR could be expected for the missing channel.

Response: SAR was measured for this middle channel for the (SWA) configuration (body-worn SAR) with half-wave antenna and clip having a SAR value of 4.94 W/kg. Inadvertently, there was an error in data processing and the mid row was omitted from the table.

9. Please complete the 10-g hand SAR analysis. The value, 15.82 W/kg is a raw number.

Response: Since the highest peak hand SAR more than 20% below the limit (20 W/kg) and the averaged 10g SAR always turns to be lower than the peak value measured, we considered more important to concentrate on the 1-g Body SAR analysis for the peak SAR value was closer to the FCC limit. However, for future projects, we will always calculate both the 10-g and 1-g averaged SAR (when applicable).

Regards,

Delia Zapata, BSEE
Engineering Staff