

American Telecommunications Certification Body Inc.

6731 Whittier Ave, McLean, VA 22101

February 17, 2003

RE: Nokia, Inc.

FCC ID: PPINPL-2H

After a review of the submitted information, I have a few comments on the above referenced Application.

EMC Report/General:

- 1) Please provide photographs of both sides of the main board. Only one side appears in the internal photographs provided.
Answer: Photos are uploaded to ATCB website to folder Internal Photographs.
File name: Int_photog_ver2.pdf
- 2) Information in this application states that the device is capable of GSM 900 and GSM 1800 outside of the US. Please explain what precautions are built into the device to keep this part of the device from functioning in the U.S.
Answer: This device is designed in a way that transmitter won't get activated unless a base station is available. GSM900 and GSM1800 are not available in USA.
- 3) Information given in the theory of operation (pages 1 & 4) and tune up procedure (pages 5-7) state the conducted power maximum is 1 Watt, while the maximum conducted power measured was 0.818 W. Please explain.
Answer: The original power level measurements were made with spectrum analyzer through power divider. We have remeasured the power levels with R&S CMU 200 GSM tester. The latter one is regarded to be more accurate. The results for the highest power level are:
Ch 512 30.2 dBm
Ch 661 29.9 dBm
Ch 810 29.5 dBm
Additionally, we have decided to change mass production target for the highest power level from 30.0 dBm to 29.7 dBm. Mass production power level tuning is carried out on mid channel.

SAR Report:

- 4) The FCC likes to be able to confirm that the 15 cm liquid depth was present by supporting test configuration photographs or Z-axis data that is measured to 15 cm. This supplemental information was not provided for the actual test. Please confirm that the liquid depth was at least 15 cm, and if available please provide the photograph.
Answer: The shape of the Z-axis plots show, that there were no harmful reflections from upper surface of the liquid in the depth where the actual cube scanning took place. We confirm that the liquid depth was 15 +/- 0.5 cm during all measurements as stated in the SAR report.
- 5) The FCC prefers for all plots to be provided. Please provide a justification for not providing all plots. Note that if the channels tested for each configuration (left, right, cheek, tilt/ear, extended, retracted etc.) have similar SAR distributions, a plot of the highest SAR for each test configuration should be sufficient as long as this is stated; otherwise additional plots should be included to document the different SAR distributions in order to identify peak locations relative to device and phantom.
Answer: The SAR distribution plots are substantially similar or equivalent to the plots submitted regardless of used channel in each mode and position.

- 6) During z-axis plots, the first 2 points should be made in the first 10 mm. This does not appear to have been the case for one of the z-axis plots.

Answer: The problem is related only to the visualization software. The SAR scans have been performed correctly. Please see quotation from SPEAG correspondence:

We have carefully analyzed your problem. As predicted, it is just a problem of visualization.

All data are assessed correctly. The surface is not at point 0 but at the location of the first triangle in the plot. This is a result of the measurement strategy implemented in DASY3 which has been completely revised in DASY4, i.e., DASY4 always evaluates the correct z-scan. Unfortunately, we are not able to fix this problem in DASY3 at this time. In summary:

- The spatial peak SAR averaged over 1g and 10g are correctly evaluated
- The z-scan is correctly displayed. The location of the surface is at the first shown triangular point, i.e., the first extrapolated point is on the surface. Please be aware that the z-scan is normal to the coordinate system of the probe and not necessarily to the surface of the phantom.

- 7) Please provide a description of the averaging (integration) procedures to get 1-g SAR from final interpolated grid.

Answer: The measured volume of 32x32x35mm (cube 5x5x7) contains about 35g of tissue. The first procedure is an extrapolation (incl. boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume in a 1mm grid (3500 points). In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is then moved around until the highest averaged SAR is found.

- 8) The FCC asks that the SAR laboratory re-measure the peak power to ensure that the device is fully functioning during the SAR test at maximum TX power. Reported power results appear to be identical to EMC EIRP reported values. Were conducted measurements made during SAR testing? . What assurance can be provided that the device was functioning correctly at full maximum power during the SAR test.

Answer: Power levels were not measured during or after SAR measurements and so such data is not available.

The phone was packed carefully for transportation between the labs. If the package had shown signs of rough handling, the sample had not been used for SAR measurements. Power level setting is stored in digital format in memory and power level setting does not change due to environmental conditions. The phones have been designed to stand transportation e.g. from factory to consumer.

Call was established by communication tester and highest power level was chosen for EMC and SAR measurements. The battery was fully charged for each scan.

It is evident, that power levels have been the same in EIRP and SAR measurements except for the minor power drift typical for the tested handset model.

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The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information may result in application termination.

Correspondence should be considered part of the permanent submission and may be viewed from the Internet after a Grant of Equipment Authorization is issued.