

# Request for Additional Information for EMC Certification

Date Received: August 17, 2009

## Technical Review:

1. This is a handset that has WCDMA HSUPA capability. Has the applicant contacted the FCC for HSUPA test guidance in accordance with FCC KDB 941225 for the HSUPA PBA process? The SAR report does document MPR, but it does not follow the expected pattern. The HSUPA MPR does not conform to the 0,2,1,2,0 dB reductions as expected, but rather has 1.5,2,1,2,1.5 listed in the Theory of Op. The SAR report will be reviewed upon completion of this communication process with the FCC.

There have been changes in the UMTS specification earlier this year, [Exhibit 10a](#) is revised to reflect and clarify this, attached.

**Section 3.1.4.5.2 of Exhibit 10a describes, for both WCDMA2 and WCDMA5, the 2 MPR algorithms that are supported in HSUPA mode, along with an additional 1dB of attenuation that guarantees that HSUPA operation is on the linear part of the PA curve. The combined effect of these 2 algorithms and the extra 1dB is to give the sub-test modes the following amplitude relationship with WCDMA: 2.5, 3.0, 2.0, 3.0, 2.5. This relationship and description are repeated in the SAR report."**

2. The Operational Description implies that this device has GPRS 3-time slot capability. The Radiated RF Report documents the ERP/EIRP of the GPRS 1-time-slot operation, but does not document the 2 or 3 time slot operations as listed in the Operational Description. The SAR report only documents 2 time slots for GPRS operation. Please confirm the correct GPRS operations of this device and update all incorrect exhibits as needed.

For Radiated performance, Time slots are selected based on configuration giving the peak power, similarly worst case spurious emissions performance.

The Reply from our Nokia SAR Lab, as used for our other technically similar products is as follows:

**As indicated in Section 2 of the SAR report, this device is capable of 1-, 2- & 3-slot operation in both GPRS and EGPRS modes. As required by FCC rules, Section 3.3 of the same report states "Whenever a device has an intended multi-slot use against the head, it is also Head SAR tested in EGPRS mode." and the Section continues with "It should be noted that EGPRS transmit modes can have either GMSK or 8PSK modulation but, when tested, only 8PSK EGPRS will appear explicitly in the results tables, as GMSK EGPRS mode has identical time-averaged power to the reported GPRS mode." . As 8PSK EGPRS mode needs to operate on the linear part of the PA output curve it is, therefore, at a significantly lower power level than GMSK mode. Consequently only a single checking SAR test is carried out in 8PSK EGPRS mode in each band - in the n-slot mode that gave the highest SAR value for GPRS mode (2-slots in this filing) - to prove that there are no compliance issues with EGPRS.**

3. The Cellular Block Diagram lists a tunable antenna but the application does not seem to contain any technical information about this antenna. Please provide a technical description of this integral antenna.

There is a drawing error in the block diagram; the antenna is of a printed circuit **Matched Monopole** design. The tuning is fixed on completion of the R&D program.  
The corrected block diagram is attached in [Exhibit 4a,v2](#).

4. The Cellular Theory of Operation does not list the technical parameters for the WCDMA 850 MHz band but does list the technical parameters of the WCDMA 1900 MHz twice. Please correct.

A revised document [Exhibit,12a,v2](#) is attached.

5. The Cell/PCS RF Test reports do not document the Conducted tests required per FCC 2.1046 (RF Conducted power) and 2.1051(RF Conducted Spurious Emissions). Please provide the test documentation for these tests.

The equipment does not support a conducted, only a radiated port, as the antenna is integral part of its design and performance. The antenna is not interchangeable.

Both 2.1046 and 2.1051 require testing from antenna terminals. If you do not have external antenna connector, these tests are not applicable.

There are radiated counterparts for these test cases (22.913/24.232 and 2.1053) to cover the issue - purpose of conducted ones is to ensure compliance in cases where the user, not the case here, directly connects something to that terminal.

6. The BT Block Diagram exhibit does not seem to contain any Bluetooth circuitry. Please correct.  
Corrected [Exhibit,4b,v2](#): Document is attached.
7. The BT theory of operation states Bluetooth 2.1 +EDR compliance, but the Cellular Theory of Operation states Bluetooth 2.2 +EDR. Please confirm and correct the appropriate exhibit.

The BT Document is correct, and the Cellular document is in error, please find corrections in [Exhibit,12a,v2](#): Document is attached.

8. The form 731 states that the Frequency Tolerance is 2.55 ppm, but the FCC Rules require a Frequency tolerance of 2.5 PPM or lower. Please confirm that the data is compliant and then amend the Form 731 appropriately. Also, the frequency listing should only list the 850 MHZ band for Part 22 and the 1900 MHz band for Part 24. The form should also list the actual measured RF power (ERP and EIRP). Please amend the FCC Form 731 and the IC Appendix II to show the 99% BW as measured in the test report:

Form 731 has been updated to reflect the correct Frequency Tolerance of 2.5 ppm. The rest of the data has been verified and appears to be correct.

Compliance Testing Engineer: John Erhard

Date of Response: 8/28/09

Submitted By: Karen Springer