RESEARCH IN MOTION

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Federal Communications Commission,
Equipment Authorization Division
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Subject : Response to the FCC Request Correspondence Reference # 8138 for Additional Information for RIM two-way pager FCC ID: L6AR800D-2-PW, 731 Confirmation # EA93550

The following addresses the comments on your correspondence Reference # 8138, dated June 9, 1999.

ITEM 1:
There is clearly a subtle difference between the "test" and "commercial" firmware in the device.

The test firmware allows the ON and OFF periods to be set independently to any value larger than 100 ms. The system timing introduces a small difference between measured duty factors and the calculated duty factor based on the ON and OFF settings. Therefore the measured duty factor is used in all SAR calculations. The 31% (measured) duty factor was setup with 100 ms ON and 200 ms OFF, for a period of 300 ms. Similarly, the 18% (measured) df was setup with 100 ms ON and 400 ms OFF, for a period of 500 ms.
These pulse periods are relatively long compared to the overall scan times used during the SAR testing. The test start and stop times are not synchronized with the pulse period and it is possible that during the test, part of a pulse is missed. Higher test duty factors have a lower probability of missing an entire pulse and therefore have a lower measurement uncertainty. Lower test duty factors are closer to the operational duty factor and therefore have a lower scaling extrapolation uncertainty.
Consequently, a higher df is chosen to determine the worst case condition (i.e. High, Middle, and Low Channel vs. UP or DOWN position) while a lower duty factor closer to the expected required duty factor is used to determine the peak 1g SAR.

The duty factor that will produce a peak 1 g SAR of ~1.5 W/kg is then "fixed" in the firmware that is loaded in the pagers sold to the public.
The last sentence in the Engineering Summary of the SAR report dated 17 March, 1999 should read [β]

> Based on the test results, "and as the pager will be marketed," it is certified that the product meets the requirements as set forth in the above specification, for "an" uncontrolled RF exposure environment.

The last sentence in 3. Equipment Under Test should read:

> The device "as it will be marketed will" intrinsically restrict the transmit duty factor to less than 9% (32 seconds) in any 6 minute time window.

A new set of SAR tests were obtained in the lower end of the duty factor curve near the limit at 9.5% and 4.6%, and the corresponding measured peak SAR as well as a calculated 1 g SAR is

[β] changes are between the "...".

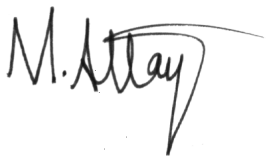
plotted. An 8 % duty factor limit produces a peak 1g SAR of 1.55W/kg (as per attached new SAR report). This represents 29 seconds of transmit time per 6 minutes window. Please see the new SAR test report dated June 14, 1999, section 7, Figure 9 for more detail on this.

ITEM 2:
The data in section 6.1 table is not correctly presented. The two area scans were performed consecutively on the same battery under computer software control so that the relative power measured was before the 2.5 mm area scan and after the 12.5 mm area scan. Thus only the -0.5 dB entry should appear for both area scans. Similarly, only the -1 dB entry should appear for the set of 3 zoom scans. The power drops more for the zooms because there were 3 scans performed instead of 2.
Because of the period of the cycles, APREL's RF power meter wasn't responding well to the test duty factors. It was found by trial and error that a more stable power reading could be obtained with an ON time of 500 ms and an OFF time of 100 ms. All power measurements in the table were made with these ON/OFF times.
The worst power drop (-1 dB) is included in the first line of the uncertainty calculation as follows:
Battery uncertainty = 10^(+1dB/2/10) - 1

ITEM 3:
Peak ERP measurements are similarly scaled as the SAR results to the 0.5 dB calibration tolerance in the new EMC test report – this is attached for your review. The peak ERP measured was the maximum radiated power attainable while operating on the DataTAC network in a normal manner. Experiments were done on other duty factors, and there were no radiated peak power variations. The duty factor at which the EMC testing was done, was chosen for repeatability and to be able to reliably capture the peak power during testing. A new set of test data is represented for your review in a new EMC test report.

Should you have any questions please do not hesitate to call.

Sincerely yours,



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