RESEARCH IN MOTION

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Our Ref: 02464-CERT-FCC-CORRESP_13808   May 12, 2000

Mr. Joe Dichoso
Federal Communications Commission,
Equipment Authorization Division
Application Processing Branch
7435 Oakland Mills Road
Columbia, MD 21045

Subject : Response to the FCC Correspondence Reference # 13808 for Additional Information for RIM DataTAC handheld radio device FCC ID: L6AR857D-2-5, 731 Confirmation # EA97380

The following addresses the comments on your correspondence Reference # 13808, dated May 3, 2000.

ITEM 1:

The duty factor limiting algorithm for the handheld radio device R857D-2-5 is a firmware algorithm that directly inhibits the radio firmware which generates transmit pulses. This algorithm will be permanently integrated with the radio firmware and installed at time of manufacture in the production facility. The algorithm cannot be modified or disabled by the user.

The radio within the handheld device operates on a packet data network. The network controls the timing of most aspects of the radio signaling protocol. The shortest transmit event over which the mobile device has timing control is an entire uplink (transmit) transaction which is a series of transmit pulses. From the perspective of the mobile device this in an "atomic" event – i.e. the network controls the timing of the signaling within the transaction and the transaction can not be broken into smaller independent sub-parts.

We have implemented and tested a duty factor limiting algorithm for the handheld to comply with the requirement for limiting the duty factor at all times. To limit the duty factor at all times the algorithm controls the timing of when uplink (transmit) transactions are initiated. When an uplink (transmit) transaction occurs the algorithm accrues the actual transmit time. The algorithm ensures that the idle (transmitter off) time is sufficient to ensure the duty factor is less than the limit (7%) before the next uplink (transmit) transaction is initiated. This ensures that the duty factor is limited to the maximum allowable over all times.

ITEM 2:

Additional SAR testing has been carried out for the handheld device in the belt-clip holster and the test results are provided by APREL Laboratories at the end of this letter.
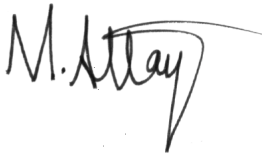
ITEM 3:

Since the antenna in the handheld is an integral antenna, the power requested to be listed on the grant should be the radiated power of 2.64 W ERP.

The network limits the frequency band in which the device actually transmits while in operation, because the device will not transmit on a frequency unless it hears valid identification packets from the network on a given frequency. Moreover, the device will only scan channels that are in its channel list which are set at production (806 – 821 MHz).

The user is not capable of modifying the frequency of operation for the device.

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

Sincerely yours,

Masud Attayi, P.Eng.,
Senior Certification Engineer
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12 May, 2000

Mr. Joe Dichoso
FCC Application Processing Branch

Re: Questions from the FCC

FCC ID:	**L6AR857D-2-5**
Correspondence Reference Number:	**13808**
731 Confirmation Number	**EA97380**
Date of Original E-Mail:	**05/03/2000**

Dear Mr. Dichoso:

Pursuant to your e-mail to Research in Motion's Masud Attayi, I am forwarding to you our response to item 2. The relevant portions of the FCC's e-mail follow with our response inserted in the appropriate place:

> **> Sent:**   Wednesday, May 03, 2000 3:06 PM
> **> Subject:** RF safety only.
> **> To:**   Masud Attayi, mattayi@rim.net
>   Research In Motion Limited
> **> From:**   **Joe Dichoso,** jdichoso@fcc.gov
> >   FCC Application Processing Branch
> **> Re:**   FCC ID L6AR857D-2-5
> **> Applicant:**   Research In Motion Limited
> **> Correspondence Reference Number:** 13808
> **> 731 Confirmation Number:**   EA97380
> **> Date of Original E-Mail:**   05/03/2000
> **>**
> **> Please address the following RF safety issues. Place your reply in the RF exposure infor folder.**
>
> **> RIM, EA 97380 -**
>
> **> 1.** Device was tested at 19.3% duty factor. To meet SAR requirements, a 7 % duty factor was proposed. Please identify and describe the mechanism used to achieve the proposed 7% duty factor for satisfying source-based time-averaging requirements of 2.1091.

To be responded to by Research in Motion Limited.

> **> 2.** Device has a belt-clip/holster, please confirm that there is no metallic component in the assembly of this accessory that could affect SAR and upload a photo of this accessory.

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The belt-clip/holster does have metallic components in the assembly of this accessory that could possibly affect SAR (Figures 1 and 2). Figure 3 shows the holster beside a Proton handheld – note the notch in the top of the case to the right side of the clip. The handheld is intended to be inserted into the holster (Figure 4) with the keyboard facing the clip so that the small LED indicator fits into this notch (see left side of Figure 2).
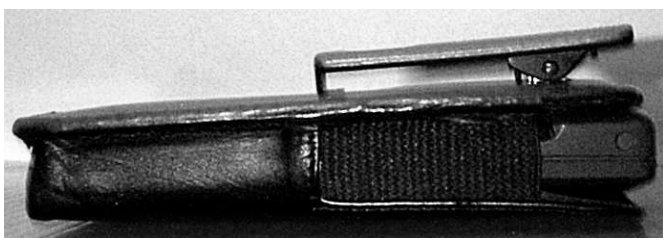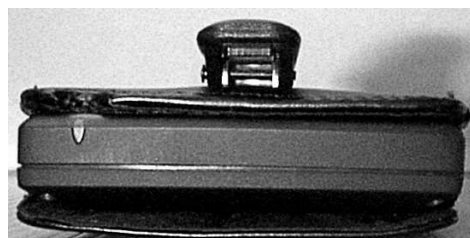

Figure 1. Side view of holster
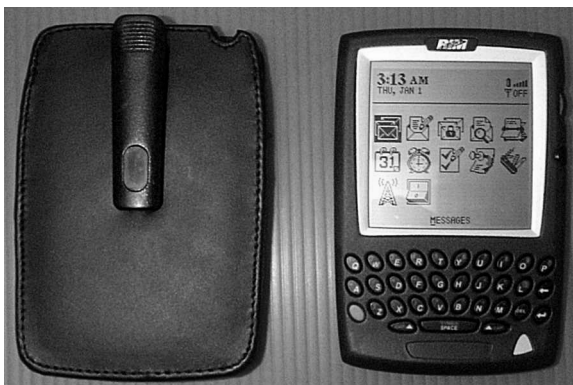

Figure 2. Top view of holster

Figure 3. Holster beside a Proton handheld

Figure 4. Proton handheld being inserted into its holster

Consequently, wide area scans were performed for the low (2000_h, 806 MHz), middle ($22D0_h$, 815 MHz) and high ($24B0_h$, 821 MHz) channels with the DUT inside its holster for both the keyboard up, towards the clip, and keyboard down (the holster is actually designed to have the keyboard facing the clip but the user may accidently place the device the other way). The scans were performed with a 19.3% duty factor. Figures 5 and 6 show the holster (with handheld inside) placed against the bottom of the UniHead, and the alignment used for the measurements.
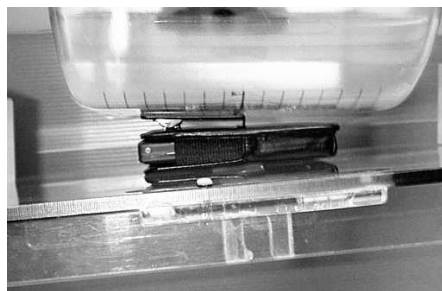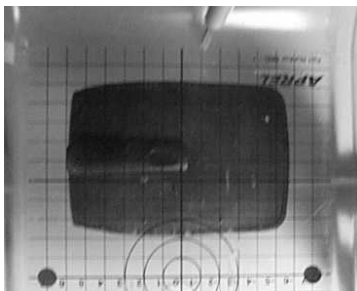
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Figure 5. Holster setup with UniHead – top view Figure 6. Holster setup with UniHead – side view

The peak single point SAR for the scans were:

Channel	Channel # [hexadecimal]	Frequency [MHz]	Proton orientation	Highest Peak SAR [W/kg]
Low	2000	806	Keyboard up	1.55
Middle	22D0	815	Keyboard up	1.44
High	24B0	821	Keyboard up	1.47
Low	2000	806	Keyboard down	2.03
Middle	22D0	815	Keyboard down	1.85
High	24B0	821	Keyboard down	1.89

The highest peak SAR for the DUT transmitting inside its holster on a person's belt is less than a half of the highest peak SAR measured previously for shirt pocket operation.

> Note: Maximum output is 2.64 W ERP, but requested only 2 W (conducted). Filing requested for 806-821 MHZ but EMC report indicated device has capability to transmit from 806 to 825 MHZ.

> Grant Condition - to include applicable duty factor for SAR compliance.

> Kwok Chan

To be responded to by Research in Motion Limited.

I trust that the above will answer your inquiries to those items that are in our purview to address. If not, feel free to contact me.

Regards,

Paul G. Cardinal, Ph.D.
Director, Laboratory Operations

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