02 October, 2000

Mr. Joe Dichoso
FCC Application Processing Branch

Re: Questions from the FCC

FCC ID:	**O2SNURIT3010A**
Correspondence Reference Number:	**16217**
731 Confirmation Number	**EA98745**
Date of Original E-Mail:	**09/20/2000**

Dear Mr. Dichoso:

Pursuant to your e-mail to Lipman USA's John Carpino, I am forwarding to you our responses. The relevant portions of the FCC's e-mail follow with our responses inserted in the appropriate place:

> Sent: Wednesday, September 20, 2000 4:46 PM
> To: John Carpino, JCarpino@lipmanusa.com
>   Lipman USA, inc.
> From: Joe Dichoso, jdichoso@fcc.gov
>   FCC Application Processing Branch
> Re: FCC ID O2SNURIT3010A
> Applicant: LIPMAN USA, INC.
> Correspondence Reference Number: 16217
> 731 Confirmation Number: EA98745
> Date of Original E-Mail: 09/20/2000
>
> 1. It is indicated in the SAR report that the device may be carried in a case that hooks onto a belt. Please confirm if the device may transmit in body-worn configurations and if so, verify that the 3.2 cm separation needed separation determined for 1-g SAR compliance can be provided by this belt-worn configuration.

The plastic of the holster actually prevents a credit card from being swiped and therefore the terminal cannot transmit when in the holster.

> 2. Duty factor info indicates regular transaction time is 6 seconds and it takes another 10 seconds before the next transaction can occur. This would result in a typical transmission duty factor of $6/16 = 37.5\%$. Note: For RF exposure purposes, maximum duty factor is need. Depending on the transmission protocol and network implementation, byte counts may not always be applicable for determining RF exposure duty factor; especially when RF carrier stays on when no bytes are sent at certain intervals. Please clarify and provide additional info that is applicable for determining the worst case source-based time-averaging duty factor (see 2.1093).

51 Spectrum Way   tel: (613) 820-2730
Nepean, Ontario   visit our Web Pages: www.aprel.com   fax: (613) 820-4161
Canada K2R 1E6   email: info@aprel.com

The POS does not in fact transmit for the whole 6 seconds. It only transmits a maximum of 500 bytes of data, which would take about 200 milliseconds of the 6 seconds at 19200bps. The fastest possible transaction duration is 3 seconds which includes: swiping the credit card/debit card, keying in the transaction amount, keying transmit, transmitting, printing out and tearing off the transaction slip. The absolute maximum duty factor in this case would be 6.94% for a 500 byte transaction.

> 3. The SAR report has indicated that the manufacturer of this POS device will implement additional software to limit the maximum duty factor to 2.1% but the info described in Appendix G does not relate to software, please clarify.

The letter you received in Appendix G explaining the Duty Factor was actually an incorrect version (it is only relevant for the Mobitex version of the POS). A letter that is relevant to the Ardis/ DataTAC hardware within this version of Lipman's Point of Sale (POS) terminal is appended to this letter along with the other affected pages of the Bystander and User SAR reports.

The mechanical activities associated with completing a transaction (see 2. above) are sufficient to limit the duty factor. The fastest possible transaction, with network authorization disabled, is 3 seconds, which would result in a maximum practical duty factor of 6.94%. Consequently, an additional layer of software overtop of the modem's own 25% duty factor limiting firmware is not necessary.

> 4. Depending on the source-based time averaging duty factor that is applicable for this device, additional device operating instructions may be need in the manual, to allow end-users to satisfy RF exposure compliance requirements. If necessary, please consider incorporating such instructions or caution statements.

The following warnings have been added to the user manual:

To comply with FCC RF exposure requirements, users must limit device operations to no more than one transaction in any 3 second time period and must keep the device at least 4 cm away from bystanders or parts of the user's body other than their hands.

> 5. Please re-confirm all SAR values for the hand and body with respect to the final duty factor determined according to the above.

The SAR values related to the maximum practical duty factor have been corrected after replacing the incorrect duty factor explanation letter that was originally included as Appendix G in both the Bystander and User versions of the SAR report. These corrected pages are appended to this letter.

> 6. FYI - Technical descriptions has included incorrect transmitting frequencies, those frequencies are for cellular band but this device operates in the Part 90 SMR band.

51 Spectrum Way
Nepean, Ontario
Canada K2R 1E6

visit our Web Pages: www.aprel.com

tel: (613) 820-2730
fax: (613) 820-4161
email: info@aprel.com

The OEM modem is capable of transmitting over the 806-825 MHz range to address markets around the world. However, Lipman's has only implemented transmitting in the FCC approved 806 – 821 MHz band for the Ardis/DataTAC version of their POS.

> 7. FYI - The SAR report has used 2.1% and 3.0% as the maximum duty factor, a specific number is needed for this filing (see above on applicable duty factor).

The correct duty factor is 6.94% (this may be rounded to 7% when used with "less than").

I trust that the above will answer your inquiries to those. If not, feel free to contact me.

Regards,

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

51 Spectrum Way
Nepean, Ontario
Canada K2R 1E6

visit our Web Pages: www.aprel.com

tel: (613) 820-2730
fax: (613) 820-4161
email: info@aprel.com

APPENDIX A: Corrected Pages from User Exposure SAR Report

51 Spectrum Way
Nepean, Ontario
Canada K2R 1E6

visit our Web Pages: www.aprel.com

tel: (613) 820-2730
fax: (613) 820-4161
email: info@aprel.com

FCC ID: O2SNURIT3010A
Applicant: Lipman USA Inc.
Equipment: Wireless Point of Sale Terminal with a Research in Motion R802D-2-O Radio
Modem (DataTAC / Ardis network)
Model: Nurit 3010, Data TAC / Ardis
Standard: FCC 96 –326, Guidelines for Evaluating the Environmental Effects of Radio-
Frequency Radiation

ENGINEERING SUMMARY

This report contains the results of the engineering evaluation performed on a Lipman Nurit 3010 wireless point of sale terminal (POS) operating with a built-in Research in Motion R802-2-D DataTAC/Ardis radio modem. This report is supplementary to the engineering evaluation for bystander exposure, report LPMB-Nurit 3010 DataTAC-3516B. The measurements were carried out in accordance with FCC 96-326. The POS was evaluated at its nominal maximum power level (2W / 33dBm). The duty factor of the production R802D-2-O modems will be controlled to be intrinsically restricted to 25% (see Appendix F).

For the SAR Analysis for the User, the Lipman Nurit 3010 wireless point of sale terminal (POS) was tested at low, middle and high channels with the antenna oriented in one position (at the antenna side of the terminal, 0°, where it is most likely to come in contact with the user's hand). The maximum SAR (4.45 W/kg) was found to coincide with the peak performance RF output power of channel 2000 (low, 806 MHz), with the antenna side of the DUI facing up against the bottom of the phantom. Test data and graphs are presented in this report.

Based on the test results and on how the device will be used, with the duty factor of the POS practically limited to less than 7% (1 transaction per 3 seconds - see Appendix G), it is certified that the product meets the requirements as set forth in the above specifications, for an uncontrolled RF exposure environment for extremities (hand).

(The results presented in this report relate only to the sample tested.)

7. DUTY FACTORS

The firmware of the production Research in Motion OEM R802D-2-O radio modem that is built into the wireless point of sale device (POS) limits its duty factor to 25% (see Appendix F). In addition, the manufacturer's software limits the operation further to 6.9% (see Appendix G).

The test software supplied by Research in Motion permitted the SAR testing to also be performed with a duty factor of 25%. However, testing with a duty factor of 6.9% was impractical as the period for one cycle would be 1.44 seconds with the current test software (minimum transmit on time of 100ms).

Consequently, the maximum 1g SAR for the end product, with a maximum 6.9% duty factor, has to be estimated using proportional scaling with respect to the duty factor. The **maximum 1g SAR value at the surface averaged over 1 gram is** 1.24 W/kg.

8. CONCLUSIONS

The maximum Specific Absorption Rate (SAR) averaged over 10 grams, determined at 806 MHz (channel 2000, low, antenna side, antenna stowed, 2W / 33dBm) of the Lipman Nurit 3010 wireless point of sale terminal (POS), which incorporates a Research in Motion R-802D-2-O radio modem (DataTAC / Ardis network) operating with a 25% duty factor, is 4.45 W/kg. The overall margin of uncertainty for this measurement is ±14.1 % (Appendix C). The SAR limit given in the FCC 96-326 safety guideline for uncontrolled exposure of extremities (4 W/kg reduced by the measurement uncertainty) is 3.44 W/kg.

Considering the above, this unit as tested, and as it will be marketed, with a POS practical duty factor of less than 7% (Appendix G), is found to be compliant with this requirement.

51 Spectrum Way
Nepean, Ontario, K2R 1E6

Project #: LPMB-Nurit 3010 DataTAC-3516U
Tel. (613) 820-2730
Fax (613) 820 4161
e-mail: info@aprel.com

APPENDIX G. Duty Factor Limitation of Lipman Nurit 3010 POS

Lip LIPMAN U.S.A. Inc. *The Ideal Solution*®

50 Gordon Drive
Syosset, New York 11791

September 29, 2000

Federal Communications Commision
Equipment Authorization Branch
7435 Oakland Mills Road
Columbia, MD 21406

To Whom It May Concern:

A typical authorization financial transaction in the POS industry consists of approximately 100 bytes of request that is transmitted by the POS device and 50 bytes of response received by the POS device. The fastest transaction time that has been achieved on the Ardis / DataTAC network was 3 seconds. A regular transaction time is about 6 seconds and it takes another 10 seconds before the next transaction can be run after swiping the next card and entering the amount.

To be conservative, we will still assume that we can transmit one transaction per 3 sec continuously. According to Research in Motion, Ardis / DataTAC transmits at a maximum of 19200 bits per second, which would be 57600 bits in 3 seconds. The maximum duty factor is therefore 100 bytes * 8 bits/byte / 57600 = 0.0139 or 1.4%.

Some of the financial institutions may require the terminal to submit all transactions as a batch at the end of each day. During this batch upload terminal uploads all necessary transactions to the host computer.

The current maximum byte stream transmitted for a transaction in a batch upload is 250.

Assuming the worst condition situation, the terminal will submit one transaction (500-byte stream, double the size of current numbers) per 3 seconds. According to Research in Motion, Ardis / DataTAC transmits at a maximum of 19200 bits per second, which would be 57600 bits in 3 seconds. The maximum duty factor is therefore 500 (bytes per transaction) * 8 bits/byte / 57600 bits (per 3 seconds shortest transaction interval) = 0.0694 or 6.9%.

Sincerely,
Bulent Ozayaz
Chief Engineer

APPENDIX B: Corrected Pages from Bystander Exposure SAR Report

51 Spectrum Way
Nepean, Ontario
Canada K2R 1E6

visit our Web Pages: www.aprel.com

tel: (613) 820-2730
fax: (613) 820-4161
email: info@aprel.com

Applicant: Lipman USA Inc.
Equipment: Wireless Point of Sale Terminal with a Research in Motion R802D-2-O Radio
            Modem (DataTAC / Ardis network)
Model: Nurit 3010, Data TAC / Ardis
Standard: FCC 96 –326, Guidelines for Evaluating the Environmental Effects of Radio-
            Frequency Radiation

ENGINEERING SUMMARY

This report contains the results of the engineering evaluation performed on a Lipman Nurit 3010 wireless point of sale terminal (POS) operating with a built-in Research in Motion R802-2-D DataTAC/Ardis radio modem. This report is supplementary to the engineering evaluation for user's hand exposure, report LPMB-Nurit 3010 CDPD-3516U. The measurements were carried out in accordance with FCC 96-326. The POS was evaluated at its nominal maximum power level (2W / 33dBm).). The duty factor of the production R802D-2-O modems will be controlled to be intrinsically restricted to 25% (see Appendix F).

For the SAR Analysis for the Bystander, the Lipman Nurit 3010 wireless point of sale terminal (POS) was tested at low, middle and high channels with the antenna oriented in two positions (at the antenna side of the terminal, 0°, and pointing straight out, 180°) as well as the keyboard, battery, antenna, right and top sides. The maximum SAR (8.59 W/kg) was found to coincide with the peak performance RF output power of channel 2000 (low, 806 MHz), with the antenna side of the DUI facing up against the bottom of the phantom and the antenna pointing straight out. Test data and graphs are presented in this report.

At a separation distance of 4 cm from the device, the maximum 1g SAR is 0.21 W/kg at the practical duty factor limit of 6.9% (1 transaction per 3 seconds).

The user manual will have a warning to keep bystanders, and parts of the user's body other than extremities, at least 4 cm away from the antenna.

Based on the test results and on how the device will be used, with the duty factor of the POS intrinsically limited to less than 7% (see Appendix G), it is certified that the product meets the requirements as set forth in the above specifications, for an uncontrolled RF partial body exposure environment.

(The results presented in this report relate only to the sample tested.)

Using this equation with the previous section's data:

Maximum 1g SAR at the surface = 8.59W/kg
Tissue to DUI separation = 3 mm,

results in a k = 10.463 W/kg, which corresponds to the maximum 1g SAR when the separation is 0 mm. A conservative maximum 1g SAR of 1.23 W/kg (1.6 W/kg reduced by our measurement uncertainty) would occur for a separation of 32.6 mm.

At a standard separation distance of 4 cm the maximum 1g SAR would be 0.75 W/kg.

8.   DUTY FACTORS

The firmware of the production Research in Motion OEM R802D-2-O radio modem that is built into the wireless point of sale device (POS) limits its duty factor to 25% (see Appendix F). In addition, the manufacturer's software limits the operation further to 6.9% (see Appendix G).

The test software supplied by Research in Motion permitted the SAR testing to also be performed with a duty factor of 25%. However, testing with a duty factor of 6.9% was impractical as the period for one cycle would be 1.44 seconds with the current test software (minimum transmit on time of 100ms).

Consequently, the maximum 1g SAR for the end product, with a maximum 6.9% duty factor, has to be estimated using proportional scaling with respect to the duty factor. The **maximum 1g SAR value at the surface averaged over 1 gram is** 2.38 W/kg.

Similarly, using the previous section's analysis, a conservative maximum 1g SAR of 1.23 W/kg (1.6 W/kg reduced by our measurement uncertainty) would occur for a separation of 13.0 mm, with a duty factor of 6.9%.

At a standard separation distance of 4 cm the maximum 1g SAR with a 6.9% duty factor would be 0.21 W/kg.

9.   CONCLUSIONS

The maximum Specific Absorption Rate (SAR) averaged over 1 gram, determined at 806 MHz (channel 2000, low, antenna side, antenna pointing straight out, 2W / 33dBm) of the Lipman Nurit 3010 wireless point of sale terminal (POS), which incorporates a Research in Motion R-802D-2-O radio modem (DataTAC / Ardis network) operating with a 25% duty factor, is 8.59 W/kg. The overall margin of uncertainty for this measurement is ±23.2 % (Appendix C). The SAR limit given in the FCC 96-326 safety guideline for uncontrolled RF partial body exposure (1.6 W/kg reduced by the measurement uncertainty) is 1.23 W/kg.

Considering the above, this unit as tested and as it will be marketed and used, with a duty factor of less than 7% and a warning in the manual to keep bystanders at least 13mm (1/2") from the Point of Sale device's antenna, is found to be compliant with this requirement.

Project #: LPMB-Nurit 3010 DataTAC-3516B
Tel. (613) 820-2730
Fax (613) 820 4161
e-mail: info@aprel.com

APPENDIX G. Duty Factor Limitation of Lipman Nurit 3010 POS

Lip LIPMAN U.S.A. Inc. *The Ideal Solution*®

50 Gordon Drive
Syosset, New York 11791

September 29, 2000

Federal Communications Commision
Equipment Authorization Branch
7435 Oakland Mills Road
Columbia, MD 21406

To Whom It May Concern:

A typical authorization financial transaction in the POS industry consists of approximately 100 bytes of request that is transmitted by the POS device and 50 bytes of response received by the POS device. The fastest transaction time that has been achieved on the Ardis / DataTAC network was 3 seconds. A regular transaction time is about 6 seconds and it takes another 10 seconds before the next transaction can be run after swiping the next card and entering the amount.

To be conservative, we will still assume that we can transmit one transaction per 3 sec continuously. According to Research in Motion, Ardis / DataTAC transmits at a maximum of 19200 bits per second, which would be 57600 bits in 3 seconds. The maximum duty factor is therefore 100 bytes * 8 bits/byte / 57600 = 0.0139 or 1.4%.

Some of the financial institutions may require the terminal to submit all transactions as a batch at the end of each day. During this batch upload terminal uploads all necessary transactions to the host computer.

The current maximum byte stream transmitted for a transaction in a batch upload is 250.

Assuming the worst condition situation, the terminal will submit one transaction (500-byte stream, double the size of current numbers) per 3 seconds. According to Research in Motion, Ardis / DataTAC transmits at a maximum of 19200 bits per second, which would be 57600 bits in 3 seconds. The maximum duty factor is therefore 500 (bytes per transaction) * 8 bits/byte / 57600 bits (per 3 seconds shortest transaction interval) = 0.0694 or 6.9%.

Sincerely,
Bulent Ozayaz
Chief Engineer