

**Engineering Exhibit in Support of
Class II Permissive Change Request
FCC Form 731**

for the

Mobile Data Platform Transceiver (800 MHz MDP)

With the

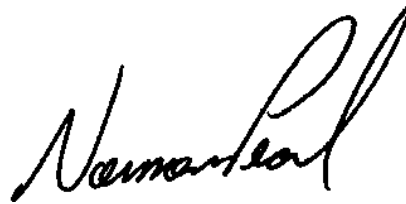
Data Radio Gemini Modem

Trade Name: GEMINI/PD

8 March, 2001

AFFIDAVIT

The technical data included in this report has been accumulated through tests that were performed by me or by engineers under my direction. To the best of my knowledge, all of the data is true and correct.

A handwritten signature in black ink, appearing to read "Norman Pearl". The signature is fluid and cursive, with the first name "Norman" and last name "Pearl" clearly distinguishable.

Norman D Pearl
Vice-president Engineering, Dataradio Inc.

Dataradio Inc.
Montreal, Canada

**ENGINEERING STATEMENT
OF CONSTANTIN PINTILEI**

The application consisting of the attached engineering exhibit and associated FCC form 731 has been prepared in support of a request for a Class II Permissive Change for EOTGPDB.

The certification EOTGPDB has been granted to Dataradio Inc for its Gemini/PD radio modem. Gemini/PD is comprised of the Dataradio COR Ltd. (DRL) Mobile Data Platform (MDP) 800 MHz Transceiver with the Dataradio Inc Gemini Modem. Dataradio Inc does the final assembly and markets the Gemini/PD unit. The original certificate has been granted for a 2% "source-based" limitation on the duty cycle such that the ERP was below 1.5W and the unit was exempted from routine environmental MPE evaluation as per Rule Part 2.1091. The change consists in the increase of the duty cycle to 25%. The results of the routine environmental MPE evaluation as per 2.1091 are provided along with the request. This change involves "source-based" limitation counter of the firmware only, with no change whatsoever occurring in the hardware. Consequently, a Class II Permissive Change has been requested.

EXISTING CONDITIONS

The unit utilized for these occupied bandwidth and mask-compliance measurements was a prototype built from production EOTGPDB with beta-level firmware used to allow 25% duty cycle. The transceiver operates on frequencies ranging from 806.000 MHz to 824.000 MHz. The frequency tolerance of the transceiver is .00015% or 1.5 parts per million as granted in EOTGPDB.

PROPOSED CONDITIONS

It is proposed to accept the request for the GEMINI/PD, 806-824 MHz Transceiver/Modem/GPS for operation in the band of frequencies previously outlined. The applicant anticipates marketing the device for use in wireless transmission of data.

ROUTINE ENVIRONMENTAL MPE MEASUREMENTS

The measurements for MPE evaluation used an off-the-shelf 5dB gain antenna. Aprel Laboratories made the measurements on December 16, 2000. The assessment of compliance along with the engineering report issued by Aprel is available on Appendix A.

CONCLUSION

Given the results of the measurements contained herein, the applicant requests a Class II Permissive Change for the Certificate EOTGPD to change the RF exposure requirements note to state maximum 25% transmission duty factor, 5db maximum antenna gain and the separation distance of 50 cm/19.7in or more for the vehicle-mounted antenna.



03/08/01

Constantin Pintilei
R&D Test Engineer, Dataradio Inc.

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ANNEXES:

- Annex A: Assessment of MPE Compliance issued by Aprel Laboratories
- Annex B: Instruction Manual

QUALIFICATIONS OF ENGINEERING PERSONNEL

NAME: **Norman Pearl**

TITLE: Vice-president Engineering

TECHNICAL EDUCATION: Bachelor of Engineering (Electrical)
(1979) McGill University, Montreal, Canada.

TECHNICAL EXPERIENCE: Professional engineer since 1979
24 Years experience in radio communications

NAME: **Constantin Pintilei**

TITLE: R&D Test Engineer

TECHNICAL EDUCATION: Bachelor of Science Degree in Radiotechnique Electronic Engineering
(1993) Technical University of Iasi, Romania.

TECHNICAL EXPERIENCE: 7 Years experience in radio frequency measurements.

CLASS II PERMISSIVE CHANGE INFORMATION REQUESTED BY GRANTEE - Rule part 2.1043 (b)(2)

The certification EOTGPDB has been granted to Dataradio Inc for its Gemini/PD radio modem. Gemini/PD is comprised of the Dataradio COR Ltd. (DRL) Mobile Data Platform (MDP) 800 MHz Transceiver with the Dataradio Inc Gemini Modem. Dataradio Inc does the final assembly and markets the Gemini/PD unit. The original certificate has been granted with the note for a 2% limitation in the duty cycle.

The original request has been for a 2% “source-based” limitation on the duty cycle such that the ERP was below 1.5W and the unit was exempted from routine environmental MPE evaluation as per Rule Part 2.1091.

The change consists in the increase of the duty cycle limit to 25%. The results of the routine environmental MPE evaluation as per 2.1091 are provided along with the request. This change involves “source-based “ limitation counter of the firmware only. There are no hardware changes involved in either the radio or the modem/controller circuits. Also there are no changes in those modules of the firmware that control the transceiver. Therefore we request a Class II Permissive Change to modify the RF exposure requirements note along the following line:

The device must operate with a maximum transmission duty factor not exceeding 25% and the antenna must be a vehicle-mounted monopole having a gain not exceeding 5dB and providing a separation distance of 50cm/19.7 in or more from all the persons for satisfying RF exposure requirements.

The original data affected is :
Maximum Permissive Exposure - part 2.1091.(c),)(d2) and 1.1310

The new values for the maximum RF exposure are stated briefly on page 9 below in “MPE Limits Compliance” paragraph and are entirely documented with the appendix A comprised of the “Assessment of MPE Compliance” and its engineering report issued by Aprel Laboratories.

Because this change is implemented in the operating firmware only, there are no change whatsoever occurring in schematics, part list, mechanical assembly, shape, label or any other hardware related issues. A preliminary version of the manual that contains service-related information is provided as appendix B of the report.

GENERAL INFORMATION ABOUT THE GRANTEE AND CERTIFICATED EQUIPMENT -2.1043 (b)(2) and 2.1033 (c).(1),(2),(5),(6),(7))

APPLICANT/GRANTEE Dataradio Inc.,
5500 Royalmount Ave, suite 200,
Town of Mount Royal, Quebec, Canada, H4P 1H7

MANUFACTURER: Dataradio COR Ltd., Waseca, MN 56093 (MDP Transceiver)
DATARADIO Inc., Town of Mount Royal, Quebec, Canada, H4P 1H7
(Gemini- final assembly)

MODEL NUMBER: GEMINI/PD
PART NUMBER: GPDD-6085-xyz

SERIAL NUMBER (S): AAA-prototype 25% duty cycle limit Gemini modem
6085- 10033 - 104 production MDP transceiver

FCC ID NUMBER: EOTGPDB
FCC RULES AND REGS: FCC Part (s) 90

FREQUENCY RANGE: 806.000 MHz - 824.000 MHz
(806-821/851-866 and 821-824/866-869 MHz Bands)

MAXIMUM POWER RATING: 40.00 Watts (5-40 watts variable).

NUMBER OF CHANNELS: 16 Channel Modem

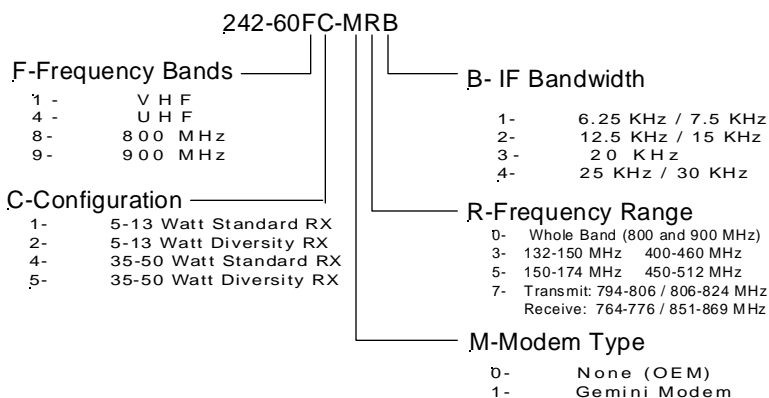
INPUT IMPEDANCE: 50 ohms, Nominal

VOLTAGE REQUIREMENTS: 10.9-16.3VDC (13.6 VDC Nominal)

EQUIPMENT IDENTIFICATION:

<u>TRADE NAME</u>	<u>DESCRIPTION</u>	<u>DRI PART NUMBER</u>
MDP6000	806-824/851-869MHz XCVR	242-608C-MRB
Gemini	Modem	050-03322-00x

DRL Part Number System for MDP:



DATA AND CHARACTERISTICS NOT AFFECTED BY THE CHANGE - Rule Part Number: 2.1033 (c),(4)(8),(9),(10),(11),(12) ,(13),(14),(15),(16)

Circuit functions and Type Of Emission:	2.1033(C)(4)
DC Voltages And Currents Into Final Amplifier	2.1033(C).(8)
Transmitter Tune Up Procedure	2.1033 (C_ (9)
Description Of Circuitry	2.1033 (C)(10)
Schematics	2.1033 (C)(10)
Transistor, Diode, And IC Functions	2.1033 C (10)
FCC Label	2.1033 C (11)
Photographs	2.1033 C (12)
Digital Modulation Techniques	2.1033(c).(13)
Data addressing Rule Part Number	2.1033(c) 15, 16: this unit is not designed for the mentioned purposes
Test results	2.1033C 14, 2.1041
Test data according to:	
Part 2: 2.1046, 2.1051, 2.1053, and 2.1055	
Part 90, Subpart I: 90.209, 90.210, 90.213.	
as follow:	
Transmitter Rated Power Output	2.1046
Modulation Characteristics	2.1047
Occupied bandwidth	2.1049, 90.209
Transmitter Spurious And Harmonic Outputs	2.1051
Field Strength Of Spurious Radiation	2.1053
Frequency Stability and Frequency Tolerance	2.1055,90.213

DATA AND CHARACTERISTICS AFFECTED BY THE CHANGE - Rule Part Number: 2.1033(c) (3)

MPE LIMITS COMPLIANCE

2.1091(c)(d2), 1.1310

Appendix A . The attached Assessment of MPE Compliance issued by Aprel Laboratories and its engineering report shows that the MPE limit is not exceeded. Quoted below is the conclusion of the report:

“ The DUI consisting of an Dataradio Gemini/PD Mobile Transceiver transmitting at 40W with a 25% duty cycle and equipped with external vehicle-top mounting monopole antenna with less or equal then 5dB gain will not exceed the MPE requirements at given distance exceeding 50cm. The maximum power exposure level measured at 50 cm was 0.489 mW/cm^2 .”

INSTRUCTION BOOK

2.1033 (c) (3)

Appendix B . The attached Installation Guide for the GEMINI/PD Transceiver/Modem/GPS is a preliminary version.

TEST DATA Section Rule Part Number: 2.1033 (c)(14)

The attached report has been generated for Class II Permissive Change request for EOTGPDB ,Gemini/PD radio modem. The antenna and the installation kit (mag-mount, cable, connector) are off -the-shelf products for 800MHz band mobile communications.