

**Engineering Exhibit in Support of
Certification
FCC Form 731**

for the

Mobile Data Platform Transceiver (700 MHz MDP)

With the

Dataradio G3 Modem

**FCC ID: EOTGPD7
Trade Name: Dataradio G3**

February 6, 2003

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", is centered on the page.

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 Certification. Certification is requested for the radio modem Dataradio G3 comprised of the (DRL) Mobile Data Platform (MDP) 700 MHz Transceiver manufactured by Dataradio COR Ltd with the G3 GCU Modem manufactured by Dataradio Inc. The modem/transceiver will operate in the frequency range 792-803 MHz in Transmit and 762-773 MHz in Receive where 50kHz and more wideband operation is authorized. Dataradio, Canada, will buy the MDP from DRL, Waseca, with the part# 242-607C-MRB (see page 6 for part# description). Dataradio will install the modem and perform final assembly. Along with the modem a GPS receiver option is also available. The MDP Transceiver mated with the Dataradio G3 Modem and GPS receiver will be identified by the Dataradio part number GPD7-6075-1RBGF and marketed under the Model name G3. The Transceiver/Modem/GPS will be identified by the FCC number EOTGPD7. The transceiver operates pursuant to Part(s) 90 of the Rules and Regulations. The MDP Transceiver RF power is continuously variable from 10-31 watts and its nominal power is 30W.

EXISTING CONDITIONS

The units utilized for these Certification measurements were obtained from prototypes. The transceiver is designed to operate on frequencies ranging from 792.000 MHz to 803.000 MHz where 50kHz and more wideband operation is authorized (792-794MHz under part 27 and 796-803 MHz under part 90). The frequency tolerance of the transceiver is .000125% or 1.25 parts per million. The frequency stability of the transceiver is controlled by a temperature compensated crystal oscillator (TCXO) operating at 17.5 MHz.

PROPOSED CONDITIONS

It is proposed to accept the request for the Dataradio G3 792-803 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.

PERFORMANCE MEASUREMENTS

All measurements were conducted in accordance with the code 47 CFR Section 2 rev.2-164, Nov 15,2002, Section 90 Subpart R(90.521 to 90.555) rev 90-62 Nov 15, 2002 and Section 27 revised Oct 1, 2001. Equipment performance measurements were made in the engineering laboratory of either Dataradio Inc, Montreal, Canada or Dataradio COR LTD, Waseca, Minnesota, on the FCC certified Open Area Test Site at the Transcript International / E.F. Johnson Radio Products located at 299 Johnson Avenue in Waseca, Minnesota. All measurements were made under my direction. The performance measurements were made between Dec 1st, 2002 and Jan 20, 2003

CONCLUSION

Given the results of the measurements contained herein, the applicant requests that Certification be granted for the Dataradio G3, 792-803 MHz wideband Transceiver/Modem/GPS as tested for data communications.



Constantin Pintilei, Eng
R&D Test Engineer, Dataradio Inc.

01/28/2003

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- A1- Transmitter Rated Power Output (2.1046, 90.541, 27.50(a)(2))
- A2- Modulation characteristics (2.1047, 90.535)
- A3-Occupied bandwidth (2.1049, 90.543(d), 27.53(d)(4))
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- A5- Field Strength of Spurious Radiation (2.1053,90.543(c), 27.53(c))
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- A7- Frequency Stability vs Variation in Ambient Temperature (2.1055(a), 90.539,27.54)
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- A9- Emission Limitations (ACCP) (90.543 (a),(b), 27.53(d))

Annex B (-502): Transceiver Theory of Operation, Synthesizer Block Diagram, Transceiver Block Diagram, Modem Theory of Operation, Modem Block Diagram

Annex C (-503): Transistor, Diode and IC Functions

Annex D (-504): Transmitter Tune Up Procedure

Annex E (-505): Schematics

- E1 – MDP-60xx – transceiver schematics
- E2 – GCU3 – modem schematics

Annex F (-506): Pictures: Label, External Photographs, Internal Photographs

- F1- Label
- F2- Internal Pictures
- F3- External pictures

Annex G (-507): Instruction Manual (preliminary version)

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
25 Years experience in radio communications

NAME: **Chris Ludewig**

TITLE: Engineering Manager (Dataradio COR Ltd.)

TECHNICAL EDUCATION: Bachelor of Science in Electrical and Electronic Engineering
(1984) From North Dakota State University

TECHNICAL EXPERIENCE: 17 years experience in design of portable and mobile radio equipment

NAME: **Constantin Pintilei**

TITLE: R&D Test Engineer

TECHNICAL EDUCATION: Bachelor of Science Degree in Electrical Engineering, specialization Radioelectronic
(1993) Technical University of Iasi, Romania.

TECHNICAL EXPERIENCE: Professional Engineer since 2001
8 Years experience in radio frequency measurements.

NAME: **Allen Frederick**

TITLE: Electrical Engineer III (Dataradio COR Ltd.)

TECHNICAL EDUCATION: Bachelor of Science Degree in Electronic Engineering Technology(1998) from Mankato State University.

TECHNICAL EXPERIENCE: 4 years experience in radio frequency communications equipment design

GENERAL INFORMATION ABOUT THE GRANTEE AND CERTIFICATED EQUIPMENT -2.1043 (b)(2)
 (as per Rule Part Number: 2.1033 (c).(1),(2),(5),(6),(7))

APPLICANT: 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: Dataradio G3
 PART NUMBER: GPD7-6075-11200

SERIAL NUMBER (S): 215-03434-00x G3 prototype modem firmware v (beta3), DSP v00.04
 242-6075- 00003- 102 prototype MDP transceiver

FCC ID NUMBER: EOTGPD7

FCC RULES AND REGS: FCC Part (s): 90 (Subpart R) and 27.

FREQUENCY RANGE: 792.000 MHz - 803.000 MHz (792-803 Tx/762-773 Rx MHz only on authorized
 wideband channels as follows: 792-794/762-764MHz under part 27 and 796-803/766-773
 MHz under part 90.)

MAXIMUM POWER RATING: 30 Watts, (30 Watts Nominal 10-31 watts adjustable).

NUMBER OF CHANNELS: 16 Channel Modem

INPUT IMPEDANCE: 50 ohms, Nominal

VOLTAGE REQUIREMENTS: 10.9-16.3VDC (13.8 VDC Nominal)

EQUIPMENT IDENTIFICATION:

TRADE NAME

Dataradio G3
 MDP6000
 G3

DESCRIPTION

wireless modem
 797-803TX/767-773RX MHz XCVR
 Modem

DRI PART NUMBER

GPD7- 607C-1RBGF
 242-609C-MRB
 215-03434-00x

DRL Part Number System for MDP:

Gemini/PD+ catalog number adds G (0,1)- GPS option and F (0-F)-modem firmware

242-60FC-MRB

F-Frequency Bands

- 1 - ☐ V H F
 4 - ☐ U H F
 8 - ☐ 800 MHz
 9 - ☐ 900 MHz

C-Configuration

- 1-☐ 5-13 Watt Standard RX
 2-☐ 5-13 Watt Diversity RX
 4-☐ 35-50 Watt Standard RX
 5-☐ 35-50 Watt Diversity RX

B- IF Bandwidth

- 1-☐ 6.25 KHz / 7.5 KHz
 2-☐ 12.5 KHz / 15 KHz
 3-☐ 20 KHz
 4-☐ 25 KHz / 30 KHz

R-Frequency Range

- 0- Whole Band (800 and 900 MHz)
 3- 132-150 MHz 400-460 MHz
 5- 150-174 MHz 450-512 MHz
 7- Transmit: 794-806 / 806-824 MHz
 Receive: 764-776 / 851-869 MHz

M-Modem Type

- 0-☐ None (OEM)
 1-☐ Gemini Modem

OTHER DATA- Rule Part Number: 2.1033 (c).(3),(8),(9),(10),(11),(12),(13),(15),(16), 1.1091, 15.209

INSTRUCTION BOOK

RULE PART NUMBER: 2.1033 (c) (3)

Annex G. The attached Service Manual for the G3 Transceiver/Modem/GPS is a preliminary version.

DC VOLTAGES AND CURRENTS INTO FINAL AMPLIFIER

RULE PART NUMBER 2.1033(c).(8)

refer to the Transmitted Rated Output Power test report in Annex A part A1

TRANSMITTER TUNE UP PROCEDURE

RULE PART NUMBER: 2.1033 c (9)

Annex D

DESCRIPTION OF CIRCUITRY

RULE PART NUMBER: 2.1033 (c)(10)

Annex B

SCHEMATICS

RULE PART NUMBER : 2.1033 (c)(10)

Annex E

TRANSISTOR, DIODE, AND IC FUNCTIONS

RULE PART NUMBER: 2.1033 c (10)

Annex C

FCC LABEL:

RULE PART NUMBER: 2.1033 c (11)

Annex F, set F1

PHOTOGRAPHS:

RULE PART NUMBER: 2.1033 c (12)

Annex F, sets F2, F3

DIGITAL MODULATION TECHNIQUES

RULE PART NUMBER 2.1033(c).(13)

refer to Test results section Annex A, part A0, page3

TRANSMITTER TESTS

RULE PART NUMBER: 2.1033 (c)(14), 2.1091, 15.207, 15.209, 90 subpart R, 27.

Annex A, test reports parts A1 to A9

Data addressing RULE PART NUMBER 2.1033(c) 15, 16: this unit is not designed for the mentioned purposes