

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

**for the**

**Digital Base Station Transmitter in 700MHz band**

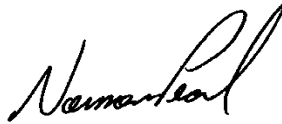
**FCC ID: EOTBDP3-T881**

**Trade Name: Dataradio P3**

June 19<sup>th</sup>, 2004

**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.



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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. Dataradio Inc requests certification for the 700 MHz 5W base station transmitter forming part of the data base station DATARADIO P3. The modulation source of the base station is a model P3 - Basestation Data Link Controller (BDLC). The data base station will serve the fleet of mobile Gemini G3 approved under EOTGPD7, also manufactured by Dataradio Inc. The transmitter will operate in the frequency range 762-773 MHz, split into two bands of 762-764MHz and 767-773 MHz. Dataradio, Canada, purchases the OEM transmitter from Tait Electronics Inc, under part# T881-10 (see page 6 for part# description). Dataradio will modify it to fit digital transmission requirements of the P3 BDLC and perform final assembly of the Paragon P3 basestation. The transmitter along with the other components of the base station (receivers, BDLC, power supplies) will be identified by the Dataradio part number BDP3- 87S-RBWWPMM and marketed under the Model name P3. The transmitter based on T881 module will be identified by the FCC number EOTBDP3-T881. The transmitter operates pursuant to Part(s) 2,90 and 27 of the Rules and Regulations. The T881-10 Transmitter's RF power is continuously variable from 1-5 watts and its nominal power is 5W.

EXISTING CONDITIONS

These Certification measurements were obtained using a production transmitter modulated by a prototype modem. The transceiver is designed to operate on frequencies ranging from 762.000 MHz to 773.000 MHz. The frequency tolerance of the transceiver is .0001% or 1.0 parts per million, controlled by a temperature compensated crystal oscillator (TCXO) operating at 12.8 MHz.

PROPOSED CONDITIONS

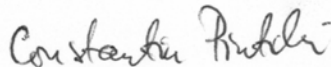
It is proposed to accept the request for the Dataradio P3 762-773 MHz 5W base station transmitter for operation in the band of frequencies previously outlined. The applicant anticipates marketing the device for use in wireless transmission of data.

PERFORMANCE MEASUREMENTS

All measurements were conducted in accordance with the code 47 CFR Section 2.1041 and 2.1049 rev.2-167, Mar 15,2004, Section 90 Subpart R (90.521 to 90.555) rev 90-66 Sep 15, 2004 and Section 27 Subpart C rev Oct 1, 2001. Equipment performance measurements were made in the engineering laboratory of either Dataradio Inc, Montreal, Canada or subcontracted to April Laboratories on the FCC certified Open Area Test Site at Nepean, Ontario, Canada. All measurements were made under my direction. The performance measurements were made between May 1<sup>st</sup>, 2004 and June 3<sup>rd</sup>, 2004

CONCLUSION

Given the results of the measurements contained herein, the applicant requests that Certification be granted for the Dataradio P3, 762-773 MHz 5W digital base station transmitter as tested for data communications.



06/08/2004

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

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ANNEXES( -document index):

Annex A (-741): Test reports section. General.(2.1033c(14), 90.535(a)(c)90.543(e),27.54(e))

A1- Transmitter Rated Power Output (2.1046, 90.541)

A2- Modulation characteristics (2.1047, 90.535)

A3-Occupied bandwidth (2.1049, 90.543(d), 27.53(d)(4))

A4 -Spurious Emissions at Antenna Terminals (2.1051,90.543(c), 27.53(d) )

A5- Field Strength of Spurious Radiation (2.1053,90.543(c),27.53 (d)). Issued by Aprel Laboratories.

A6- Frequency Stability vs Variation in Ambient Temperature (2.1055(a), 90.539,27.54)

A7- Frequency Stability vs Variation in Supply Voltage (2.1055(d),90.539,27.54)

A8- Emission Limitations (ACCP) (90.543 (a),(b)), 27.53(d)

Annex B (-742): Circuit Description

Annex C (-743): Transistor, Diode and IC Functions

Annex D (-744): Transmitter Tune Up Procedure

Annex E (-745): Schematics

E1 – 5W Transmitter OEM schematics

E2 – Schematic of the changes applied to OEM to fit digital modulation source

Annex F (-746): Pictures: Label, External Photographs, Internal Photographs

F1- Label

F2- Internal Pictures

F3- External pictures

Annex G (-747): 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  
27 Years experience in radio communications

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  
10 Years experience in radio frequency measurements.

**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 Inc., Town of Mount Royal, Quebec, Canada, H4P 1H7  
 based on OEM - Exciter manufactured by Tait,

MODEL NUMBER: Dataradio Paragon 3  
 based on Tait’s T881-10-0020 OEM 5W transmitter

PART NUMBER: BDP3-87S-xx005xX

SERIAL NUMBER (S): Exciter –s/n 13012190  
 modulation source: BDLC P3 prototype unit #29; pcb# 280-03434-00B

FCC ID NUMBER: EOTBDP3-T881

FCC RULES AND REGS: FCC Part (s): 90 subpart R, 27 subpart C

FREQUENCY RANGE: 762.000 MHz - 776.000 MHz (762-764MHz as per FCC part 27.53(d) and  
 767-773MHz as per FCC part 90.531 in bands dedicated for 50kHz channels)

MAXIMUM POWER RATING: 5 Watts, (5 Watts Nominal, 1-5 watts adjustable).

NUMBER OF CHANNELS: single channel selectable from a list of 128 Channels

INPUT IMPEDANCE: 50 ohms, Nominal

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

EQUIPMENT IDENTIFICATION:

<u>TRADE NAME</u>	<u>DESCRIPTION</u>	<u>DRI PART NUMBER/Details</u>
<b>Dataradio Paragon 3</b> BDP3	wireless digital base station base station PowerPC controller and modem, RF-shelf mount	BDP3- 87S-RBWWWPM 280-03434-00x
87S- 005 RBWWWPM	T881 Transmitter 762-776 MHz, 5W software/hardware characteristics and options	T881-10 R-frequency range : 1 ⇔ 746-776MHz Tx B-station bandwidth: 0 ⇔ 25kHz, 1 ⇔ 12.5kHz, 7 ⇔ 50kHz WWW- RF power (005 –5W, TBD) P –power source 0- no power supply (existent 13.8V DC) 1- Heavy Duty 120VAC supply M- Modulation type and network protocol A- 128kbps, P3 NextGen

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

## INSTRUCTION BOOK

RULE PART NUMBER: 2.1033 (c) (3)

Annex G. The attached Service Manual for the Paragon 3 base station/transmitter 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, page2

## TRANSMITTER TESTS

RULE PART NUMBER: 2.1033 (c)(14) and also 90 subpart R, 27 subpart C

Annex A, test reports parts A1 to A8

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