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

for the

Tait's T85x –3 (480-520MHz) base station

modulated with

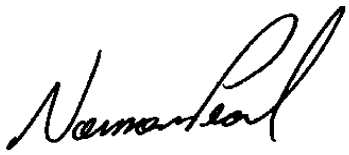
16FSK digital modulation from Dataradio Paragon III BDLC

FCC ID: EOTBDD4T85-3
Trade Name: Paragon/PD

July 9, 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.



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 EOTBDD4T85-3. All changes involved fall under Class II Permissive Change types and they are entirely detailed within the current report.

The certificate EOTBDD4T85-3 was originally granted to Dataradio for the transmitter of its UHF base station following a change in ID on 02/21/2001. Five more class II permissive changes were subsequently granted (03/30/2001, 05/29/2001,01/10/2002, 01/21/2003 and 03/17/2004) to append more digital modulation sources ($2^nFSK_{n=2,3}$ and IVIS controller) . The transmitter is comprised of the Exciter and PA modules, both belonging to the T85M-XY (see page 7 for part# description) UHF base station. Dataradio Inc. buys this UHF base station from Tait Electronics, fits the source for the proposed digital modulation scheme, does the final assembly of transmitter and controller and markets the completed UHF base station.

The Class II Permissive type of change demonstrated with this filing relates with the emission designator list because of a new proposed modulation source. The certificate EOTBDD4T85-3 is granted for the following list of emission designators: 10K7 and 15K7F3E, and 14K3, 15K9, 7K17, 8K00, 16K7, 16K5, 14K9, 8K33, 8K83 and 11K4 F1D. This change asks for the addition of a new digital modulation source which generates SRRC16FSK at four rates of 64.0 and 57.6kbps for 25kHz channels, and 32.0 and 28.8kbps for 12.5kHz channels. Their associated emission designators are already on the list. For both claims compliance has been demonstrated with mask 90.210C or D as required. This Class II permissive change involves the modulation source only and it is completely described in the current report.

EXISTING CONDITIONS

The unit utilized for these occupied bandwidth and mask-compliance measurements was a prototype built from a production EOTBDD4T85-3 and a prototype Paragon 3 controller used to create the modulation scheme. The exciter operates on frequencies ranging from 480.000 MHz to 520.000 MHz. The frequency tolerance of the exciter is .0001% or 1.0 parts per million and the output power of the PA is 100W as granted in EOTBDD4T85-3.

PROPOSED CONDITIONS

It is proposed to accept the Class II permissive change request for the EOTBDD4T85-3 certificate 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 for Occupied Bandwidth and mask compliance as per 2.1043 (b)(2) were conducted in accordance with the Rules and Regulations Section 2.1041and 2.1049 of Rules Service Co rev.2-167, Mar 15,2004. The measurements were made in the engineering laboratory located at 5500 Royalmount Ave, Montreal, Canada. All measurements were made and recorded by myself or under my direction. The measurements were made between July 5, 2004 and July 8, 2004.

CONCLUSION

Given the results of the measurements contained herein, the applicant requests a Class II Permissive Change for the Certificate EOTBDD4T85-3 to accept the use of 16K5F1D for 64kbpsSRRC16FSK and to append to the list 16K2F1D, 8K50F1D and 8K67F1D as the emission designator for the other 16FSK digital modulations proposed.

Constantin Pintilei

07/08/04

Constantin Pintilei
R&D Test Engineer, Dataradio Inc.

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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 Radiotechnique Electronic Engineering (1993) Technical University of Iasi, Romania
TECHNICAL EXPERIENCE:	Professional engineer since 2001 10 Years experience in radio frequency measurements.

Class II Permissive Change Information - Rule part 2.1043 (b)(2)

The certificate EOTBDD4T85-3 was granted to Dataradio Inc. following an ID change request from CASTEL0025. The certificate CASTEL0025 had been granted to Tait Electronics Ltd. for its transmitter comprised of T857 Exciter module and T859 PA module. It belongs to the T85M-XY (see page 7 for part# description) UHF base station. Dataradio Inc. uses this base station to build Paragon3, a base station for wireless data networks. In order to market it under a Dataradio logo a change in ID was done.

Further, several data speeds using 4-FSK and 8-FSK SRRC digital modulation were granted following three Class II Permissive Change requests. The certificate granted on 01/31/2003 has the following emission designators:

- 10K7 and 15K7F3E inherited from the original certificate CASTEL0025 (granted on 01/19/1999) following the ID change request granted on 02/21/2001
- 14K3 and 15K9F1D for 25.6kpbs and 19.2 kbps 4-FSK SRRC digital modulation granted on 13/30/2001 together with Class II permissive change request
- 7K50 and 7K00F1D,used for 16.0 and 14.4 kbps 4-FSK SRRC digital modulation granted on 05/29/2001 following a Class II permissive change request.
- 16K5F1D,used for 32.0 kbps 4-FSK RC digital modulation, granted on 01/10/2002 following a Class II permissive change request
- 8K00 and 7K17F1D replaced 7K50 and 7K00F1D used for 16.0 and 14.4 kbps 4-FSK SRRC digital modulation; new values of 16K7, 14K9 and 8K33F1D used for respectively 48.0kbps,43.2kbps and 21.6kbps at 8-FSK SRRC; the value of 8K00F1D also represents 24.0kbps at 8-FSK SRRC. All were granted on 01/21/2003 following a Class II permissive change request.
- 11K4F1D and 8K83F1D, used with 9.6kbps DRCFSK in 25kHz channels and 12.5kHz channel respectively, created by another modulation source, the IVIS controller. With the same application the emission designator of 15K9F1D was extended to also cover 19.2kbps DRCFSK (also generated by IVIS) in 25kHz channels. The application was granted on 03/17/2004 following a Class II permissive change request

The current Class II Permissive Change application requests emission designator 16K5F1D with the modulation 64.0kbps SRRC16FSK modulation, 16K2F1D with 57.6kbps SRRC16FSK modulation in 25kHz channels and 8K50F1D with 32.0kbps SRRC16FSK modulation and 8K67F1D 28.8kbps SRRC16FSK modulation in 12.5kHz channels. The modulation scheme proposed and the Paragon 3 modulation source are described in Annex A of this report where a detailed description of the modulation source is available. The compliance with masks C or D respectively is further demonstrated in the test section.

The change above described involves the modulation source only therefore it falls under a Class II Permissive Change as per 2.1043 (b)(2). No other changes occur elsewhere in the circuitry of the exciter module or of the PA module.

The characteristics affected by the first modification of above are:

- Digital Modulation Techniques - part 2.1033.(c)(13)
- Type of emission and Emission designators list - part 2.1033 (c)(4), 90.209
- Occupied bandwidth and mask compliance requirement - part 2.1049,90.210(c)(d)

All this Class II permissive change data as per 2.1043 are completely described with the current report.

General Information about the Grantee and Certified Equipment -2.1043 (B)(2)
(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:	Tait Electronics Ltd., Burnside Christchurch 5, New Zealand (T85x UHF Base station) DATARADIO Inc., Town of Mount Royal, Quebec, Canada, H4P 1H7
MODEL NUMBER:	Paragon3 (Paragon base station with Paragon 3 BDLC)
PART NUMBER:	BDD4-85XY PPPS
SERIAL NUMBER (S):	Paragon 3 controller–280-03446-00x –proto PCB prototype DSP -16FSK ver 1.02Beta FC or HC firmware NextGen DATARADIO Paragon-III G3[02] v1.00(Build:1) T857-36-0200 s.n 245655 Exciter module T859-30-0005 s.n 731716 PA module
FCC ID NUMBER:	EOTBDD4T85-3
FCC RULES AND REGS:	FCC Part (s) 22, 90
FREQUENCY RANGE:	480MHz -520 MHz as per EOTBDD4T85-3 certificate
MAXIMUM POWER RATING:	100Watts as per EOTBDD4T85-3 certificate.
NUMBER OF CHANNELS:	1 Channel selectable from 256 channels as per Tait manual
OUTPUT IMPEDANCE:	50 ohms, Nominal
VOLTAGE REQUIREMENTS:	10.9-16.3VDC (13.6 VDC Nominal)

EQUIPMENT IDENTIFICATION:
Part Number of the Tait UHF base station T85M-XY

M	Module Type	X	Freq Range	Y	Channel Bandwidth
7	Exciter (1W)	1	400-440 MHz	0	25 kHz
5	Receiver	2	440-480 MHz	5	12.5 kHz
9	Power Amplifier	3	480-520 MHz		

Part Number of the Paragon3 UHF data base station BDP3 –85OXY PPPS O – guard receiver option

X	Freq Range	Y	Channel Bandwidth	PPP	Transmitted Power	S	Supply
1	400-440 MHz	0	25 KHz	100	100W	0	12VDC external
2	440-480 MHz	5	12.5 KHz			2	dual 120V AC
3	480-520 MHz						

TRADE NAME	**DESCRIPTION**	**Dataradio Inc PART NUMBER**
T85x	UHF Base Station	T85M-XY
BDLC P3 (NextGen)	Base Data Link Controller (BDLC P3)	280-03446-00x
Paragon 3	Assembly	BDP3-85OXY0- PPPS

Data And Characteristics Not Affected By The Change-Rule Part Number: 2.1033 (c)(8),(9),(10),(11),(12),(15),(16)

DC Voltages And Currents Into Final Amplifier (T881)	2.1033(c).(8)
Transmitter Tune Up Procedure	2.1033 (c) (9)
Description of Circuitry, Schematics and Transistor, Diode, and IC Functions	2.1033 (C)(10)
FCC Label	2.1033 (c) (11)
Internal/External Photographs	2.1033 (c) (12)
Data addressing Rule Part Number	2.1033(c) (15),(16): this unit is not designed for the mentioned purposes
Test results not affected by the change	2.1033(c)(14), 2.1041

Test data according to:
Part 2: 2.1046, 2.1051, 2.1053, and 2.1055
Part 90, Subpart I: 90.213
as follows:

Transmitter Rated Power Output	2.1046
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),(4),(13),(14)

INSTRUCTION BOOK 2.1033 (c) (3)
Annex B . The attached Technical Manual for the Paragon 3 data base station Manual is the first preliminary version.

TYPE OF EMISSION: 2.1033(c)(4)

For Class II Permissive Change Squared Root Raised Cosine 16FSK
-emission designators for SRRC16FSK modulation scheme

25kHz ch. (64.0kbps, 16000baud, 16 FSK)	**16K5F1D**
25kHz ch. (57.6 kbps, 14400baud, 16 FSK)	**16K2F1D**
12.5kHz ch. (32.0kbps,8000baud, 16 FSK)	**8K50F1D**
12.5kHz ch. (28.8kbps, 7200baud, 16 FSK)	**8K67F1D**

Previously granted for EOTBDD4T85-3:

25kHz ch. voice	**15K7F3E**
25kHz ch. (19.2kbps, DRCFSK)	**15K9F1D**
25kHz ch. (9.6kbps, DRCFSK)	**11K4F1D**
25kHz ch. (25.6kbps, 12800baud, 4 FSK)	**14K3F1D**
25kHz ch. (19.2kbps, 9600baud, 4 FSK)	**15K9F1D**
25kHz ch. (32.0kbps, 16000baud, 4 FSK)	**16K5F1D**
25kHz ch. (48.0kbps, 16000baud, 8 FSK)	**16K7F1D**
25kHz ch. (43.2kbps, 9600baud, 8 FSK)	**14K9F1D**
12.5kHz ch. voice	**10K7F3E**
12.5kHz ch. (9.6kbps, DRCFSK)	**8K83F1D**
12.5kHz ch. (16.0kbps, 8000baud, 4 FSK)	**7K17F1D**
12.5kHz ch. (14.4kbps, 7200baud, 4 FSK)	**8K00F1D**
12.5kHz ch. (24.0kbps,8000baud, 8 FSK)	**8K00F1D**
12.5kHz ch. (21.6kbps, 7200baud, 8 FSK)	**8K33F1D**

SPECTRUM EFFICIENCY STANDARD DATA 90.203 (j)(3)

The Paragon 3 SRRC16FSK modulation source transmits 64000 bps in 25 kHz channel bandwidth.
This represents more than 4800*4=19200bps required for 6.25*4=25kHz channel bandwidth
The Paragon 3 16FSK modulation source transmits 32000 bps in 12.5 kHz channel bandwidth.
This represents more than 4800*2=9600bps required for 6.25*2=12.5kHz channel bandwidth

DIGITAL MODULATION TECHNIQUES 2.1033 (c)(13)
Annex A. Data Concerning the Modulation Source

TX Data Test Pattern:

The transmit “test data” pattern command produces an 8,388,607 bit pseudo- random pattern. This pattern is generated by the DSP using the polynomial form X23+X5+1 and a 23-bit shift register with an initial value of 1. The 8,388,607 bit sequence is repeated thereafter as long is necessary to complete the test duration, this sequence lasts 131seconds at 128 kbps, 193 seconds at 96 kbps or 263 seconds at 32 kbps.
This pattern is applied to the DSP modulator for mapping to 16-FSK and pulse shaping with SRRC a=0.4.

Modulation Characteristic Part 2.1047 (d), 90.209 (b), 90.210(c): Other types of equipment: this equipment is not provided with hardware audio low-pass filters, the filtering is entirely the result of the DSP-based digital filter controlled by firmware in the modulation source.

TEST DATA Rule Part Number: 2.1033 (c)(14)
All applicable test data according to:

-Part 2: 2.1043 (b)(2), 2.1049
-Part 90, Subpart I: 90.209 and 90.210(c),(d)
are provided in next section of this Engineering Report
The following reports have been generated for Class II Permissive Change request for EOTBDD4T85-3 Transmitter.
Paragon 3 is comprised of the Tait Electronics Ltd. T85M –3Y UHF Base station with the Dataradio Inc NextGen Base Data Link Controller (BDLC). Dataradio Inc does the changes to fit the transmitter to digital modulation, does final assembly and markets the Paragon3 unit.
Unless otherwise noted, all of the measurements were conducted following the procedures set forth in the TIA/EIA-603 revA standards.

SECTION 2 - TEST REPORT Rule Part Number: 2.1033 (c)(14)

NAME OF TEST: Emission Designator

RULE PART NUMBER: 2.201, 2.202, 2.1033 c (14), 2.1049 (h), 2.1041

For the SRRC N FSK type of emission, a Paragon 3 base station controller was the source of the digital modulation signals. The random signal generator passes the test sequence through a DSP-based digital SRRC filter to feed the FM modulator. The necessary bandwidth calculation for this type of modulation (SRRC16FSK) is not covered by paragraphs (1), (2) or (3) from 2.202(c), the result exceeding by far the real necessary bandwidth obtained through measurement of the 99% of the occupied bandwidth.

Therefore, the approach outlined in (2.202(c)(4)) is applicable in this case.

Necessary Bandwidth Measurement (90.209.(b))
The results of 99% Occupied Bandwidth measurement are:

Bit rate/channel	V_{pp}analog voltage ref	Ref. deviation for 1kHz tone	Maximum Digital Deviation[1)]	Occupied Bandwidth[1)]	Emission designator
64000 bps/25kHz	1.294 V_{pp}	± 4.19 kHz	± 5.45 kHz	16500 Hz	16K5F1D
576000bps/25kHz	1.300 V_{pp}	± 4.24 kHz	± 5.60 kHz	16130 Hz	16K2F1D
32000bps/12.5kHz	0.656 V_{pp}	±2.10 kHz	± 2.84 kHz	8500 Hz	8K50F1D
28800bps/12.5kHz	0.681V_{pp}	± 2.21 kHz	± 3.27 kHz	8670 Hz	8K67F1D

[1)] –Annex A supplies supporting plots for these values. The deviation meter has an IF filter bandwidth of 30kHz. The set-up explanations follow.

Occupied Bandwidth Measurement

The Occupied Bandwidth measurement option of the instrument (8563EC spectrum analyzer from Agilent) calculates and provides the values used above for the emission designator.

The percentage setting of the measurement has been set to 99% following the definition of the ***Occupied Bandwidth*** as "the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission" (FCC 2.202).

The measurement has been performed during the tests for compliance with mask C or D, the highest resulting value was recorded for the Occupied Bandwidth. V_{pp} amplitude of the modulating signal applied to exciter input was measured between input and ground, AC coupled at the output of Paragon 3.

The measurement set-up is detailed along with mask compliance test reports.

NAME OF TEST: Mask compliance data

NAME OF TEST: Mask Compliance data for
Paragon3 Modem at 28800 bps 16 FSK

Mask compliance data in support of support of 28800 bps 7200 baud 16 FSK

RULE PART NUMBER: 2.201, 2.202, 2.1033 c (14), 2.1049 (h), 2.1041, 90.209 (b)(5), 90.210 (d)

MINIMUM STANDARD: Mask D
Sidebands and Spurious [Rule 90.210 (d)]
Authorized Bandwidth = 11.25 kHz [Rule 90.209(b) (5)]

Fo to 5.625 kHz	Attenuation = 0 dB
>5.625 kHz to 12.5 kHz	Attenuation= 7.27(f_d -2.88kHz) dB
>12.5kHz	Lesser of 50 + 10*log(P) dB or 70dB

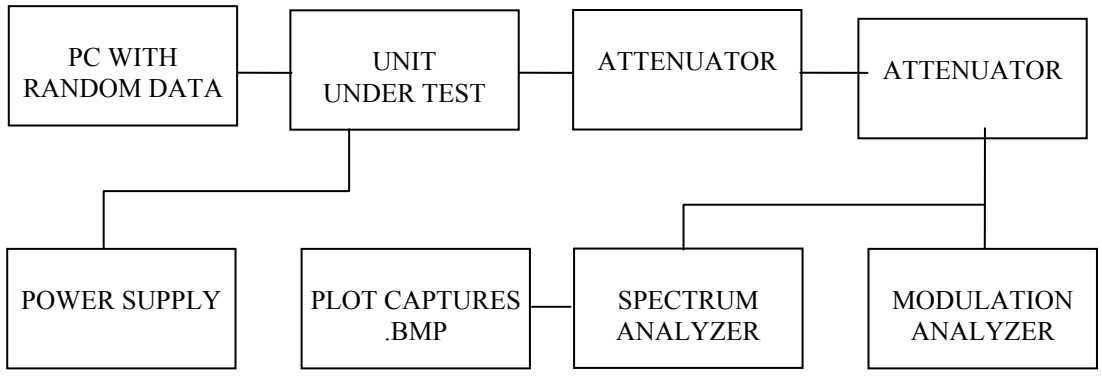
Corner Points:

Fo to 5.625 kHz	Attenuation = 0 dB
>5.625 kHz to 12.5 kHz	Attenuation=20 dB to 70 dB
>12.5 kHz	Attenuation =70dB (100W)

TEST RESULTS: Meets minimum standard (see data on the following pages)
TEST CONDITIONS: Standard Test Conditions, 25 C
TEST EQUIPMENT: Attenuator, BIRD Model / 100-A-FFN-10 / 10 dB / 100 Watt
Attenuator, BIRD Model / 50-A-MFN-30 / 30 dB / 50 Watt
DC Power Supply, Astron Model VS-20M
IFR COM-120B- communication analyzer used for deviation meter
Spectrum analyzer HP(Agilent) 8563EC
HP power meter model#E4418B
HP Benchlink -software for plot captures.

PERFORMED BY: Constantin Pintilei DATE: 07/08/2004

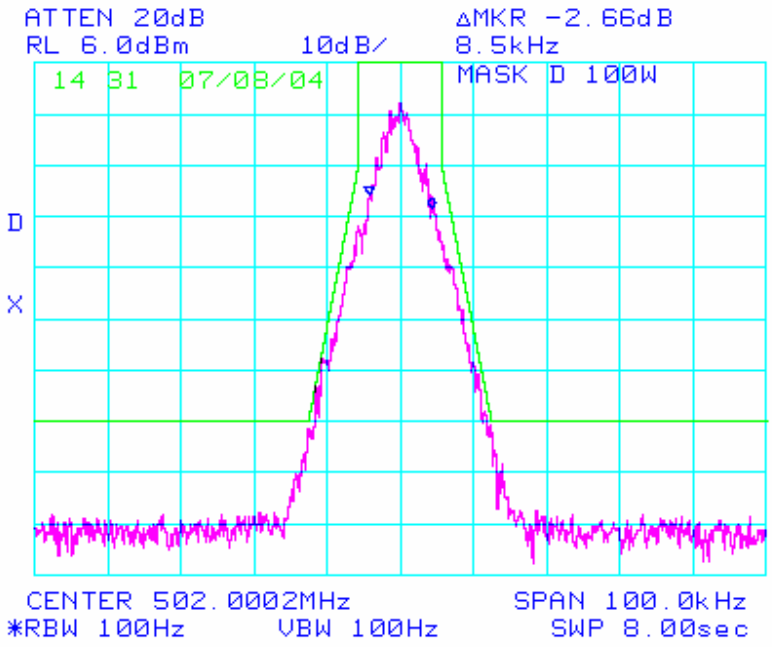
TEST SET-UP:



NAME OF TEST: Mask compliance data (Continued)
Paragon3 Modem at 28800 bps 16FSK

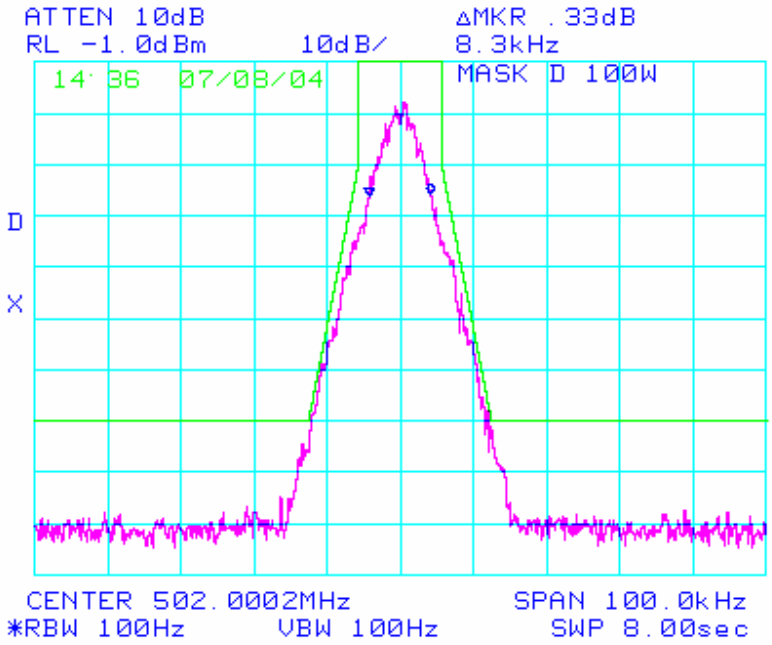
MASK: D 7200baud, 2.2kHz dev, 100 W

OUTPUT POWER: 100 Watts
28800 bps, 16level FSK
PEAK DEVIATION = 3270 Hz
SPAN = 100 kHz



MASK: D 7200baud, 2.2kHz dev, 20 W

OUTPUT POWER: 20 Watts
28800 bps, 16level FSK
PEAK DEVIATION = 3270 Hz
SPAN = 100 kHz



NAME OF TEST: Mask compliance data for
Paragon3 Modem at 32000 bps 16 FSK

Mask compliance data in support of support of 32000 bps 8000 baud 16 FSK

RULE PART NUMBER: 2.201, 2.202, 2.1033 c (14), 2.1049 (h), 2.1041, 90.209 (b)(5), 90.210 (d)

MINIMUM STANDARD: Mask D
Sidebands and Spurious [Rule 90.210 (d)]
Authorized Bandwidth = 11.25 kHz [Rule 90.209(b) (5)]

Fo to 5.625 kHz	Attenuation = 0 dB
>5.625 kHz to 12.5 kHz	Attenuation= 7.27(f_d -2.88kHz) dB
>12.5kHz	Lesser of 50 + 10*log(P) dB or 70dB

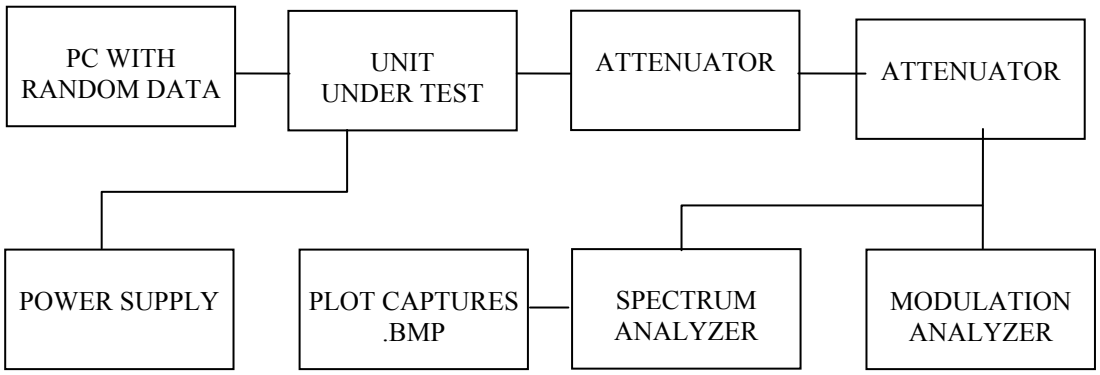
Corner Points:

Fo to 5.625 kHz	Attenuation = 0 dB
>5.625 kHz to 12.5 kHz	Attenuation=20 dB to 70 dB
>12.5 kHz	Attenuation =70dB (100W)

TEST RESULTS: Meets minimum standard (see data on the following pages)
TEST CONDITIONS: Standard Test Conditions, 25 C
TEST EQUIPMENT: Attenuator, BIRD Model / 100-A-FFN-10 / 10 dB / 100 Watt
Attenuator, BIRD Model / 50-A-MFN-30 / 30 dB / 50 Watt
DC Power Supply, Astron Model VS-20M
IFR COM-120B- communication analyzer used for deviation meter
Spectrum analyzer HP(Agilent) 8563EC
HP power meter model#E4418B
HP Benchlink -software for plot captures.

PERFORMED BY: Constantin Pintilei DATE: 07/08/2004
Constantin Pintilei

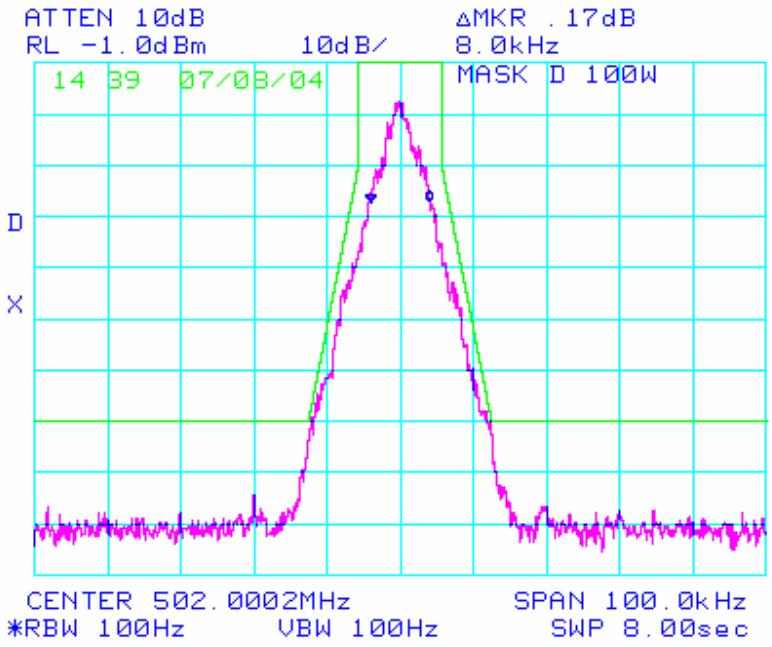
TEST SET-UP:



NAME OF TEST: Mask compliance data (Continued)
Paragon3 Modem at 32000 bps 16 FSK

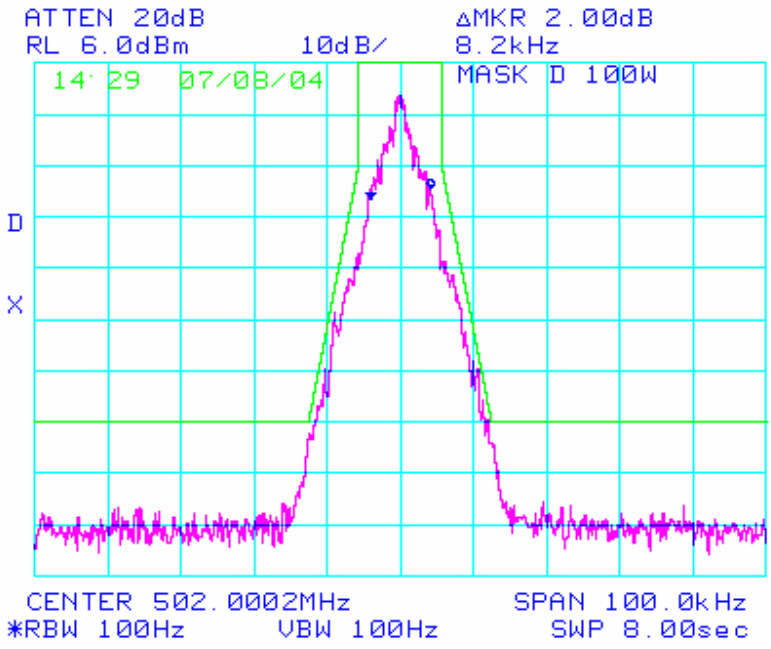
MASK: D 8000baud, 2.1kHz dev, 20 W

OUTPUT POWER: 20 Watts
32000 bps, 16level FSK
PEAK DEVIATION = 2840 Hz
SPAN = 100 kHz



MASK: D 8000baud, 2.1kHz dev, 100 W

OUTPUT POWER: 100 Watts
32000 bps, 16level FSK
PEAK DEVIATION = 2840 Hz
SPAN = 100 kHz



NAME OF TEST: Mask compliance data for
Paragon3 Modem at 57600 bps 16 FSK

Mask compliance data in support of support of 57600 bps 14400 baud 16 FSK

RULE PART NUMBER: 2.201, 2.202, 2.1033 c (14), 2.1049 (h), 2.1041, 90.209 (b)(5), 90.210 (c)

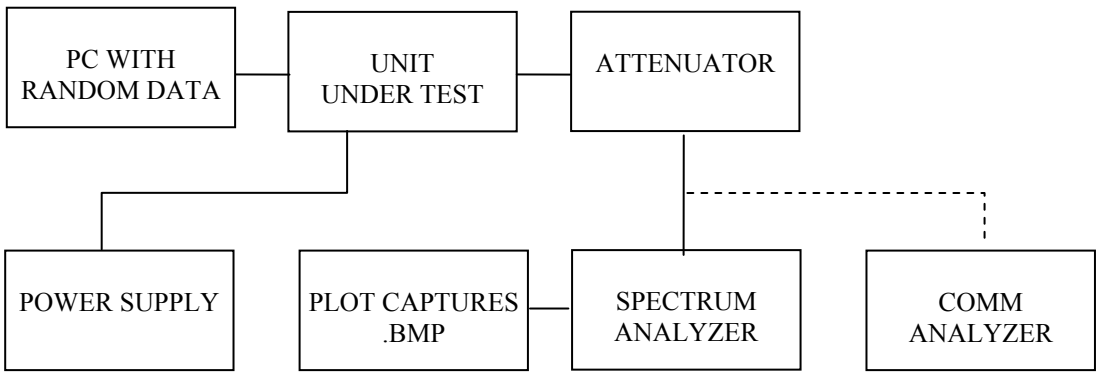
MINIMUM STANDARD: Mask C
Sidebands and Spurious [Rule 90.210 (c)]
Authorized Bandwidth = 20 kHz [Rule 90.209(b) (5)]

Fo to 5.0 kHz	Attenuation = 0 dB
>5.0 kHz to 10.0 kHz	Attenuation= 83*log(f_d KHz /5) dB
>10.0 kHz to 250% Auth BW	Attenuation = Lesser of: 50dB or 29 log (fd2/11)dB,
250% Auth BW	43 + 10*log(P)
Corner Points:	
f_0 to 5.0 kHz	Attenuation = 0 dB
>5.0 kHz to 10.0 kHz	Attenuation= 0 dB to 25 dB
>10.0 kHz to 15.0 KHz	Attenuation = 27.8 dB to 38 dB
>15.0 kHz to 20.0 KHz	Attenuation = 38 dB to 45.2 dB
>20.0 kHz to 24.0 KHz	Attenuation = 45.2 dB to 50 dB
>24.0 kHz to 50.0 KHz	Attenuation = 50 dB
>250% Auth BW	Attenuation = minimum 63 dB (100 W)

TEST RESULTS: Meets minimum standard (see data on the following pages)
TEST CONDITIONS: Standard Test Conditions, 25 C
TEST EQUIPMENT: Attenuator, BIRD Model / 100-A-FFN-10 / 10 dB / 100 Watt
Attenuator, BIRD Model / 50-A-MFN-30 / 30 dB / 50 Watt
DC Power Supply, Astron Model VS-20M
IFR COM-120B- communication analyzer used for deviation meter
Spectrum analyzer HP(Agilent) 8563EC
HP power meter model#E4418B
HP Benchlink -software for plot captures.

PERFORMED BY: Constantin Pintilei DATE: 07/08/2004
Constantin Pintilei

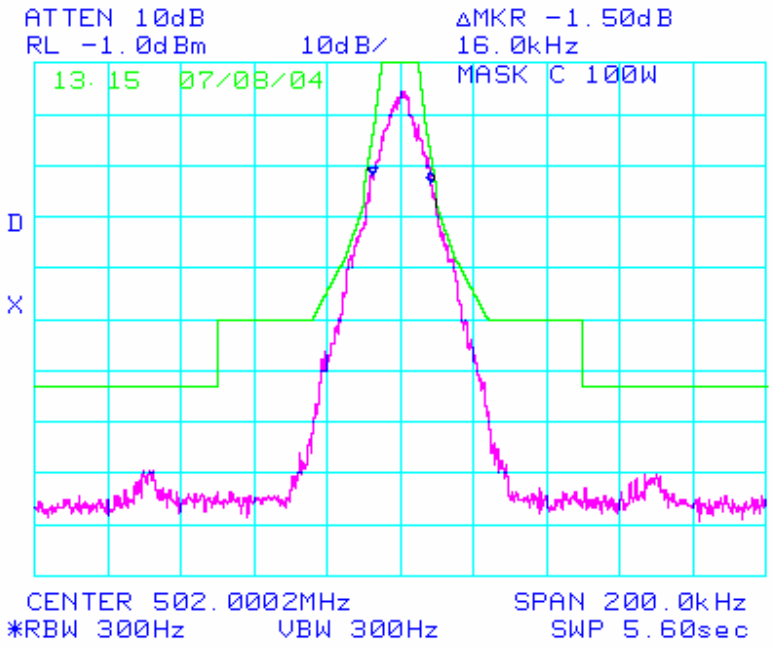
TEST SET-UP:



NAME OF TEST: Mask compliance data (Continued)
Paragon3 Modem at 57600 bps 16 FSK

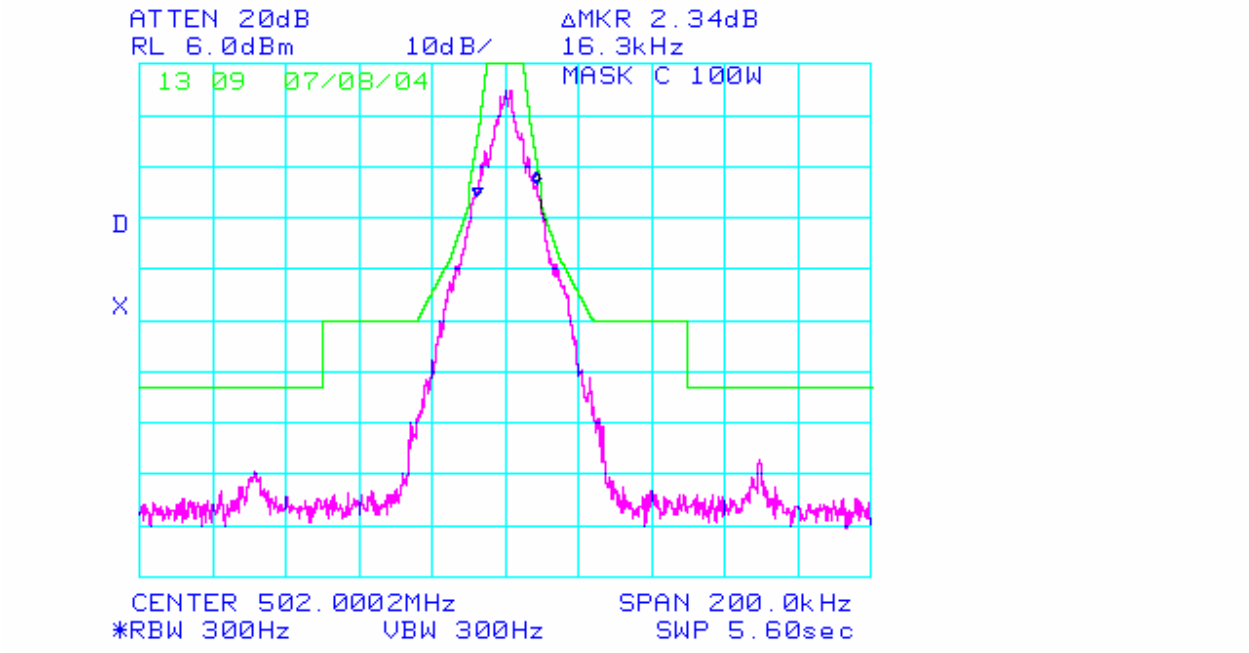
MASK: 14400baud, 4.2kHz dev, 20 W

OUTPUT POWER: 20 Watts
57600 bps, 16level FSK
PEAK DEVIATION = 5600 Hz
SPAN = 200 kHz



MASK: 14400baud, 4.2kHz dev, 100 W

OUTPUT POWER: 100 Watts
57600 bps, 16level FSK
PEAK DEVIATION = 5600 Hz
SPAN = 200 kHz



NAME OF TEST: Mask compliance data for
Paragon3 Modem at 64000 bps16 FSK

Mask compliance data in support of 64000 bps 16000 baud 16 FSK

RULE PART NUMBER: 2.201, 2.202, 2.1033 c (14), 2.1049 (h), 2.1041, 90.209 (b)(5), 90.210 (c)

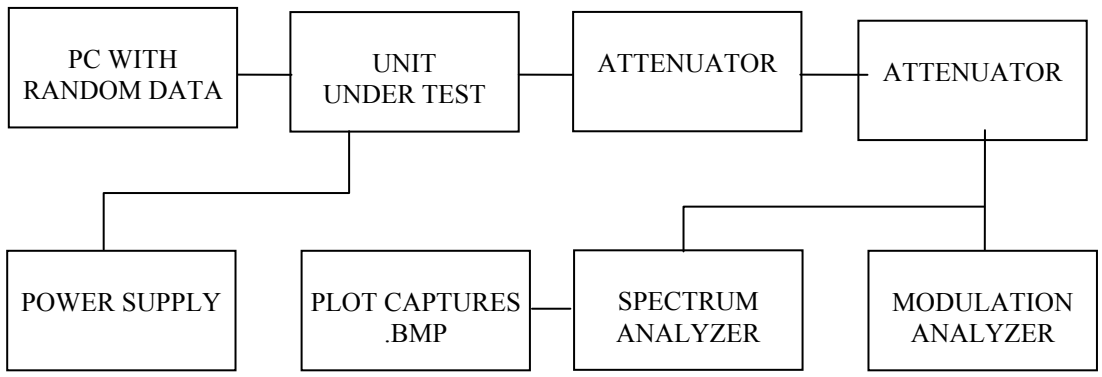
MINIMUM STANDARD: Mask C
Sidebands and Spurious [Rule 90.210 (c)]
Authorized Bandwidth = 20 kHz [Rule 90.209(b) (5)]

Fo to 5.0 kHz	Attenuation = 0 dB
>5.0 kHz to 10.0 kHz	Attenuation= 83*log(f_d KHz /5) dB
>10.0 kHz to 250% Auth BW	Attenuation = Lesser of: 50dB or 29 log (fd2/11)dB,
250% Auth BW	43 + 10*log(P)
Corner Points:	
f_0 to 5.0 kHz	Attenuation = 0 dB
>5.0 kHz to 10.0 kHz	Attenuation= 0 dB to 25 dB
>10.0 kHz to 15.0 KHz	Attenuation = 27.8 dB to 38 dB
>15.0 kHz to 20.0 KHz	Attenuation = 38 dB to 45.2 dB
>20.0 kHz to 24.0 KHz	Attenuation = 45.2 dB to 50 dB
>24.0 kHz to 50.0 KHz	Attenuation = 50 dB
>250% Auth BW	Attenuation = minimum 63 dB (100 W)

TEST RESULTS: Meets minimum standard (see data on the following pages)
TEST CONDITIONS: Standard Test Conditions, 25 C
TEST EQUIPMENT: Attenuator, BIRD Model / 100-A-FFN-10 / 10 dB / 100 Watt
Attenuator, BIRD Model / 50-A-MFN-30 / 30 dB / 50 Watt
DC Power Supply, Astron Model VS-20M
IFR COM-120B- communication analyzer used for deviation meter
Spectrum analyzer HP(Agilent) 8563EC
HP power meter model#E4418B
HP Benchlink -software for plot captures.

PERFORMED BY: Constantin Pintilei DATE: 07/08/2004
Constantin Pintilei

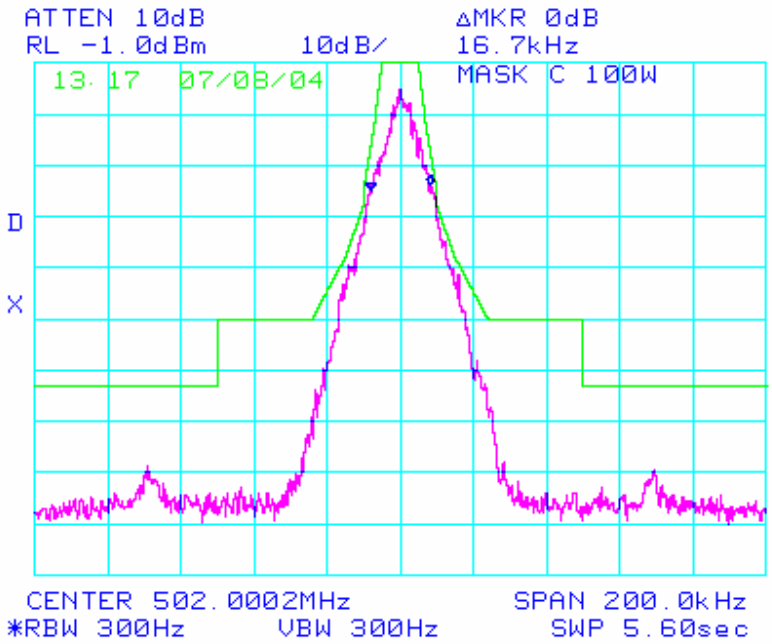
TEST SET-UP:



NAME OF TEST: Mask compliance data (Continued)
Paragon3 Modem at 64000 bps 16000 baud 16 FSK

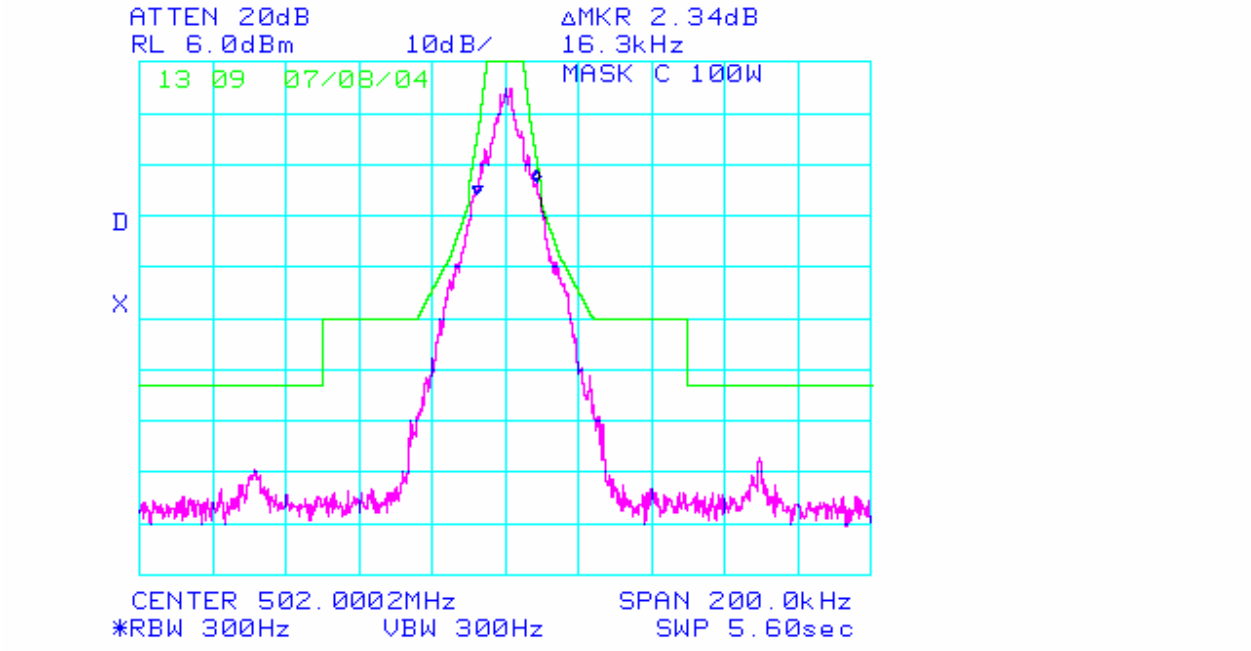
MASK: 16000baud, 4.1kHz dev, 20 W

OUTPUT POWER: 20 Watts
64000 bps, 16level FSK
PEAK DEVIATION = 5450 Hz
SPAN = 200 kHz



MASK: 16000baud, 4.1kHz dev, 100 W

OUTPUT POWER: 100 Watts
64000 bps, 16level FSK
PEAK DEVIATION = 5450 Hz
SPAN = 200 kHz



Annex: LIST OF THE TEST EQUIPMENT:

Equipment	Manufacturer and model	serial number	inventory
Digital pseudo-random sequence generator	Dataradio Paragon 3 BDLC software commands	NA	R&D firmware DSP
Attenuator 10 dB / 150 Watt	BIRD Model / 150-A-FFN-10	NA	NA – R&D
Attenuator 30 dB / 50 Watt	BIRD Model / 50-A-MFN-30	NA	DR998
Communication Analyzer (used for Modulation Analyzer)	IFR COM120B	500008432	DR611
Spectrum Analyzer	HP(Agilent) 8563EC	4103A01135	DR231
DC Power Source 13.8V 25A	Tait T808-10-0012 from the T800 base station assembly	13073482	NA – R&D
DC Power Source 13.8V 15A	Tait T807-10-0012 from the T800 base station assembly	13072356	NA – R&D
Oscilloscope	HP 54645D – Mega Zoom digital mixed signal osciloscope	US38060758	DR222