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

for the

Tait T881s2 (800-870MHz) base station

modulated with

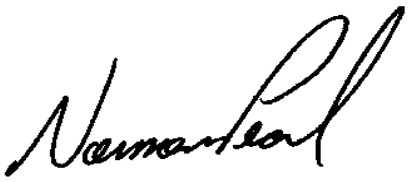
16FSK digital modulation from Dataradio Paragon III BDLC

FCC ID: EOTBDD4T881S2
Trade Name: Paragon/PD

July 19, 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 EOTBDD4T881S2. All changes involved fall under Class II Permissive Change types and they are entirely detailed within the current report.

The certificate EOTBDD4T881S2 was originally granted to Dataradio for the transmitter of its 800 MHz base station following a change in ID on 04/20/2001. Four more class II permissive changes were subsequently granted (05/30/2001,01/14/2002, 04/22/2002 and 01/21/2003) 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 T88M-XY (see page 7 for part# description) 800 MHz base station. Dataradio Inc. buys this 800 MHz 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 EOTBDD4T81S2 is granted for the following list of emission designators: 16K0F3E, and 14K3, 15K9, 9K50, 11K0, 13K7, 14K9, 9K17 and 11K9 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 masks 90.210G or H 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 EOTBDD4T881S2 and a prototype Paragon 3 controller used to create the modulation scheme. The exciter operates on frequencies ranging from 800.000 MHz to 870.000 MHz. The frequency tolerance of the exciter is .0001% or 1.0 parts per million and the output power is 5W as granted in EOTBDD4T881S2

PROPOSED CONDITIONS

It is proposed to accept the Class II permissive change request for the EOTBDD4T881S2 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 EOTBDD4T881S2 to accept the use of 13K7F1D for 64kbps SRRC16FSK and to append to the list 13K4F1D, 10K0F1D and 10K7F1D as the emission designator for the other 16FSK digital modulations proposed.

07/09/04

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 EOTBDD4T881S2 was granted to Dataradio Inc. following an ID change request from CASTEL0043. The certificate CASTEL0043 had been granted to Tait Electronics Ltd. for its transmitter comprised of T881 Exciter module. It belongs to the T88M-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 the Dataradio logo a change in ID was done.

Further, several data speeds using 4-FSK and 8-FSK SRRC digital modulation were granted following four Class II Permissive Change requests. The emission designator list of the certificate granted on 01/08/2003 has the following emission designators:

- 16K0F3E inherited from the original certificate CASTEL0043 following the ID change request granted on 02/16/2001 (EA 100077)
- 14K3, 15K9, 9K50 and 11K0F1D, used for 25.6 kbps, 19.2kbps, 16.0 kbps and 14.4 kbps 4-FSK SRRC digital modulation granted on 05/30/2001 following a Class II permissive change request (EA100968)
- 15K9F1D for 32.0 kbps 4-FSK RC digital modulation granted on 01/14/2002 following a Class II permissive change request (EA 593852).
- 11K0 and 9K50F1D for 25.6 kbps, 19.2 kbps 4-FSK SRRC digital modulation granted on 04/22/2002 following a Class II permissive change request (EA 257831)
- 13K7,14K9,9K17 and 11K9F1D for 48.0 kbps, 43.2 kbps, 28.8 kbps and 24.0 kbps 8-FSK SRRC digital modulation granted on 01/08/2003 following a Class II permissive change request (EA 642110)

The current Class II Permissive Change application requests the emission designator 13K6F1D with 64.0kbps SRRC16FSK modulation, 13K4F1D with 57.6kbps SRRC16FSK modulation in 25kHz channel and 10K0F1D 32.0kbps SRRC16FSK modulation, 10K7F1D 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 G or H 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(g)(h)

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)
(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:	Tait Electronics Ltd., Burnside Christchurch 5, New Zealand (T88x 800MHz Base station) DATARADIO Inc., Town of Mount Royal, Quebec, Canada, H4P 1H7 (Paragon base station with Paragon 3 BDLC)
MODEL NUMBER:	Paragon3
PART NUMBER:	BDP3-88OXY0- 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) T881-10-0200 s/n 13012189 Exciter module
FCC ID NUMBER:	EOTBDD4T8881S2
FCC RULES AND REGS:	FCC Part (s) 22, 90
FREQUENCY RANGE:	800MHz -870 MHz as per EOTBDD4T881S2 certificate
MAXIMUM POWER RATING:	5Watts adjustable down to 1W as per EOTBDD4T81S2 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 800 MHz base station T88M-XY

M	Module Type	X	Freq Range	Y	Channel Bandwidth
1	Exciter (5W)	1	800-870 MHz	0	25 kHz
5	Receiver	2	860-910 MHz	5	12.5 kHz
9	Power Amplifier	3	890-960 Mhz		

Part Number of the Paragon3 UHF data base station BDP3 –88OXY PPPS O – guard receiver option

X	Freq Range	Y	Channel Spacing	PPP	Transmitted Power	S	Supply
1	800-870 MHz	0	25 KHz	100	100W	0	12VDC external
2	860-910 MHz	5	12.5 KHz			2	dual 120V AC
3	890-960 MHz						

TRADE NAME	**DESCRIPTION**	**Dataradio Inc PART NUMBER**
T88x	UHF Base Station	T88M-XY
BDLC P3 (NextGen)	Base Data Link Controller (BDLC P3)	280-03446-00x
Paragon 3	Assembly	BDP3-88OXY0- 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)	**13K6F1D**
25kHz ch. (57.6 kbps, 14400baud, 16 FSK)	**13K4F1D**
12.5kHz ch. (32.0kbps, 8000baud, 16 FSK)	**10K0F1D**
12.5kHz ch. (21.6kbps, 7200baud, 8 FSK)	**10K7F1D**

Previously granted for EOTBDD4T881S2

25kHz ch.	**16K0F3E**
25kHz ch. (25.6kbps, 12800baud, 4 FSK)	**14K3F1D**
25kHz ch. (19.2kbps, 9600baud, 4 FSK)	**15K9F1D**
25kHz ch. (32.0kbps, 16000baud, 4 FSK)	**15K9F1D**
25kHz ch. (48.0kbps, 16000baud, 8 FSK)	**13K7F1D**
25kHz ch. (57.6kbps, 14400baud, 8 FSK)	**14K9F1D**
12.5kHz ch. (14.4kbps, 7200baud, 4 FSK)	**11K0F1D**
12.5kHz ch. (16.0kbps, 8000baud, 4 FSK)	**9K50F1D**
12.5kHz ch. (19.2kbps, 9600baud, 4 FSK)	**9K50F1D**
12.5kHz ch. (25.6kbps, 12800baud, 4 FSK)	**11K0F1D**
12.5kHz ch. (28.8kbps, 9600baud, 8 FSK)	**9K17F1D**
12.5kHz ch. (24.0kbps, 8000baud, 8 FSK)	**11K9F1D**

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(g),(h)
are provided in next section of this Engineering Report

The following reports have been generated for Class II Permissive Change request for EOTBDD4T881S2 Transmitter. Paragon 3 is comprised of the Tait Electronics Ltd. T88M –3Y 800MHz 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. [1)]	Maximum Digital Deviation[1)]	Occupied Bandwidth	Emission designator
64000 bps/25kHz	0.625Vpp	± 2.89 kHz	± 3.79 kHz	13595 Hz	13K6F1D
576000bps/25kHz	0.682Vpp	±3.52 kHz	± 4.95 kHz	13306 Hz	13K4F1D
32000bps/12.5kHz	0.650Vpp	±3.05kHz	± 3.92kHz	9908 Hz	10K0F1D
28800bps/12.5kHz	0.587Vpp	± 2.73 kHz	± 4.25 kHz	10617 Hz	10K7F1D

1) Annex A provides plots supporting these values. An IF filter bandwidth of 30kHz was used for deviation measurements.

The set-up explanations follow.

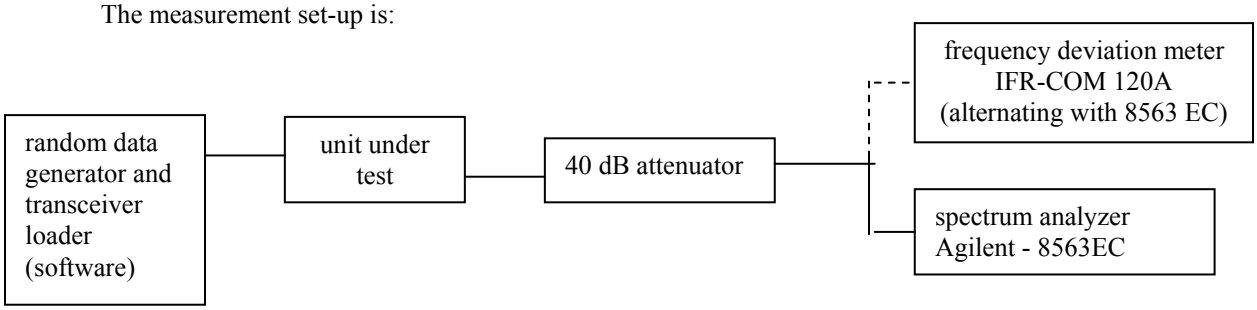
Occupied Bandwidth Measurement

The Occupied Bandwidth measurement option of the instrument (E4401B 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 G or H, and 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.
The measurement set-up is:



NAME OF TEST: Mask Compliance Data
Paragon 3 Modem at 64000bps, 16000 baud 16FSK

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

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

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

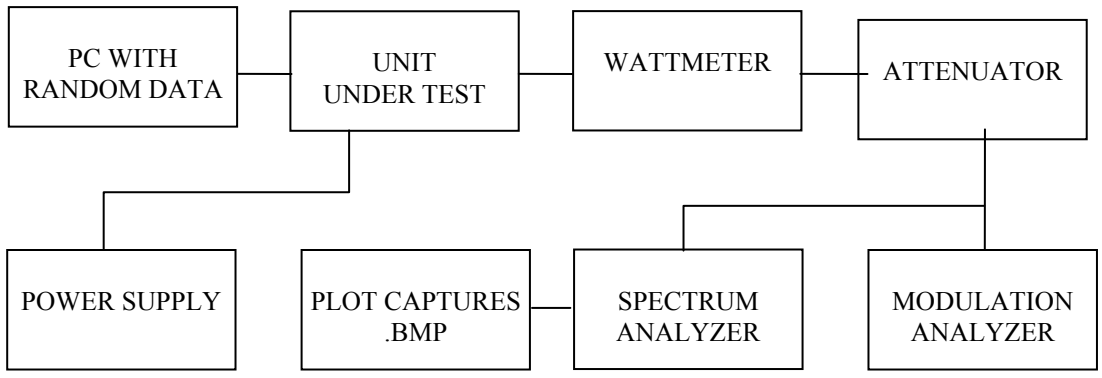
Fo to 5.0 kHz	Attenuation = 0 dB
>5.0 kHz to 10.0 kHz	Attenuation= 83*log(f_d KHz /5) dB
>10.0 kHz to 250% Auth BW	Attenuation = Lesser of: 116*log(f_d KHz /6.1) dB, 50+10log$_{10}$(P) OR 70 dB
>250% Auth BW	43 + 10*log(P)
Corner Points:	
f_0 to 5.0 kHz	Attenuation = 0 dB
>5.0 kHz to 10.0 kHz	Attenuation= 0 dB to 25 dB
>10.0 kHz to 25.0 KHz	Attenuation = 25 dB to 70 dB
>25.0 kHz to 50kHz	Attenuation = 70dB (minimum 57dB -5W)
>250% Auth BW	Attenuation = 50 dB (minimum 50 dB -5 W)

TEST RESULTS: Meets minimum standard (see data on the following pages)

TEST CONDITIONS: Standard Test Conditions, 25 C
TEST EQUIPMENT: Attenuator, BIRD Model / 150-SA-FFN-10 / 10 dB / 150 Watt
Attenuator, BIRD Model /50-A-MFN-30 / 30 dB / 50 Watt
Wattmeter Coaxial Dynamics model 81050
DC Power Source, Model Tait T808-10-00CA
Communication Analyzer, Model IFR COM120B for Modulation Analyzer
Spectrum Analyzer, Model HP E4401

PERFORMED BY: Constantin Pintilei DATE: 07/08/04

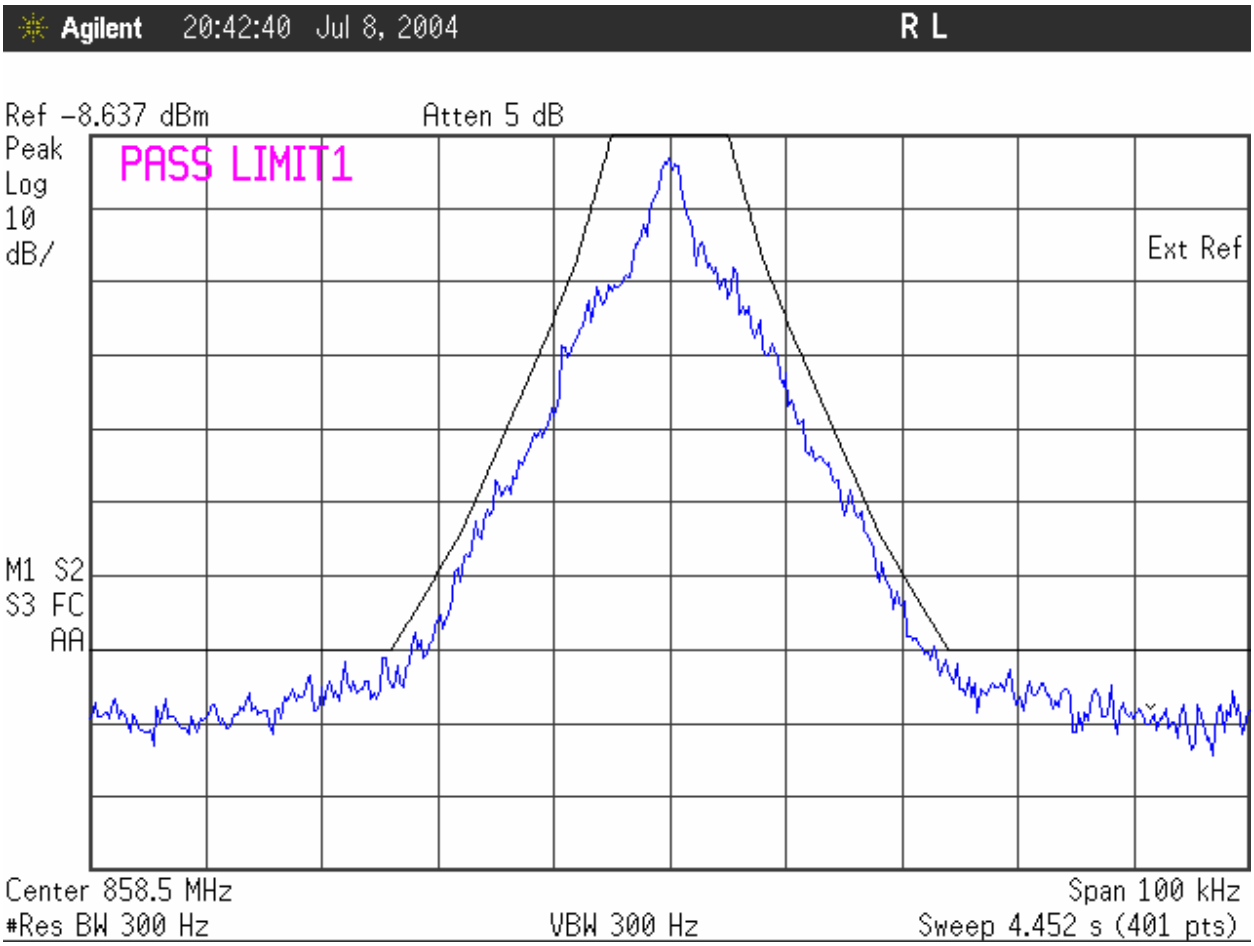
TEST SET-UP:



NAME OF TEST: Mask Compliance Data (Continued)
Paragon 3 Modem at 16000 baud 16FSK

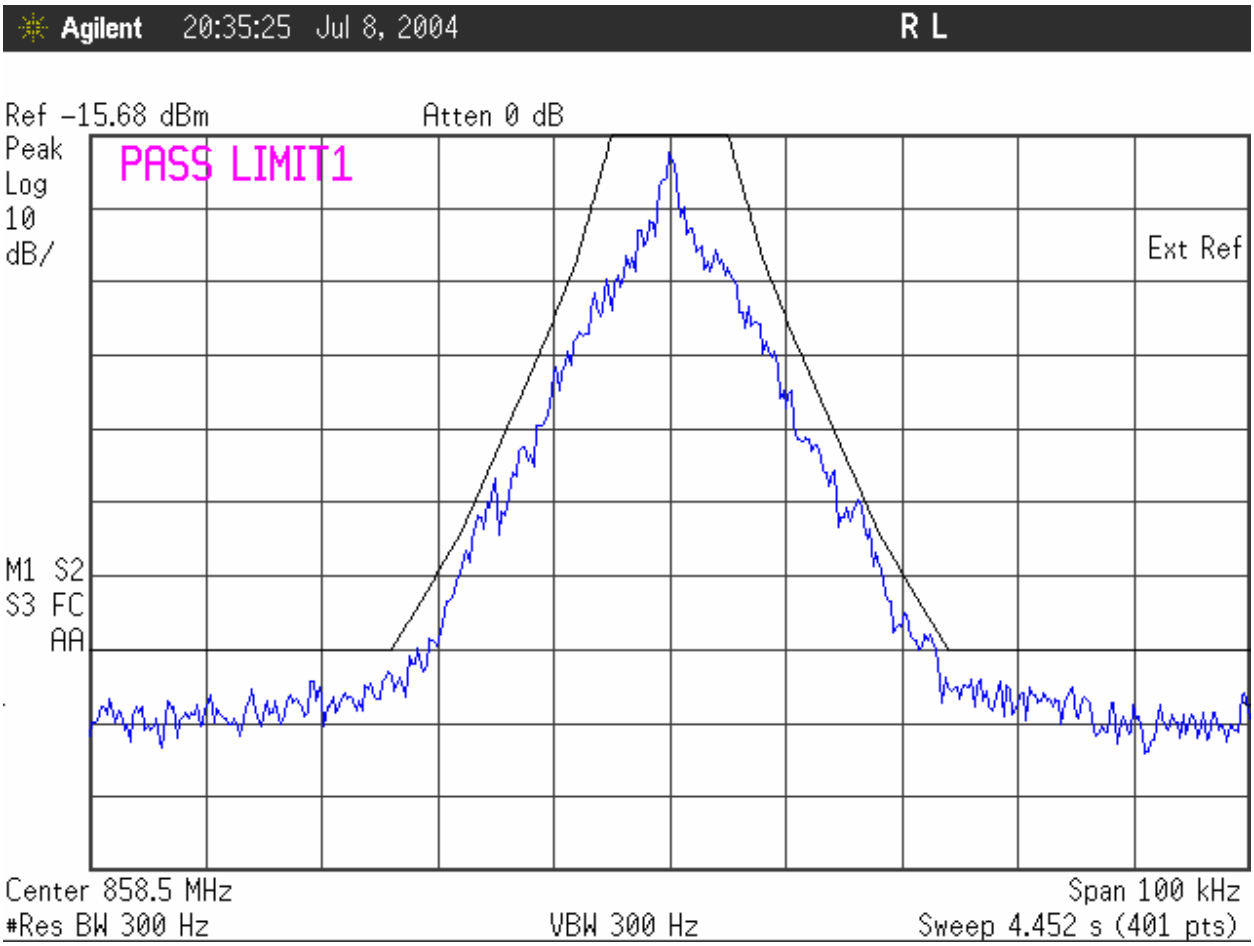
MASK: G, 5W – 16.0kbaud, 2.89kHz dev

OUTPUT POWER: 5 Watts
16000 baud, 16 level FSK
PEAK DEVIATION = 3790 Hz
SPAN = 100 kHz



MASK: G, 1W – 16.0kbaud, 2.89kHz dev

OUTPUT POWER: 1 Watts
16000 baud, 16 level FSK
PEAK DEVIATION = 3790 Hz
SPAN = 100 kHz



NAME OF TEST: Mask Compliance Data
Paragon 3 Modem at 14400 baud 16FSK

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

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

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

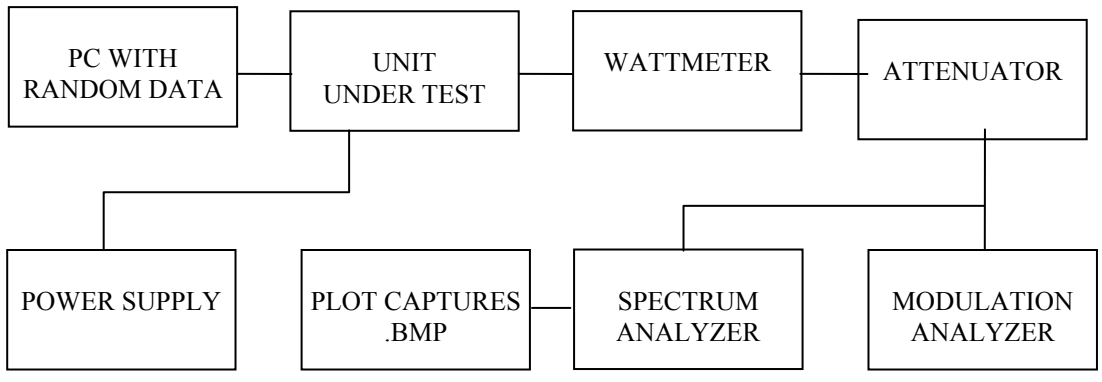
Fo to 5.0 kHz	Attenuation = 0 dB
>5.0 kHz to 10.0 kHz	Attenuation= 83*log(f_d KHz /5) dB
>10.0 kHz to 250% Auth BW	Attenuation = Lesser of: 116*log(f_d KHz /6.1) dB, 50+10log$_{10}$(P) OR 70 dB
>250% Auth BW	43 + 10*log(P)
Corner Points:	
f_0 to 5.0 kHz	Attenuation = 0 dB
>5.0 kHz to 10.0 kHz	Attenuation= 0 dB to 25 dB
>10.0 kHz to 25.0 KHz	Attenuation = 25 dB to 70 dB
>25.0 kHz to 50kHz	Attenuation = 70dB (minimum 57dB -5W)
>250% Auth BW	Attenuation = 50 dB (minimum 50 dB -5 W)

TEST RESULTS: Meets minimum standard (see data on the following pages)

TEST CONDITIONS: Standard Test Conditions, 25 C
TEST EQUIPMENT: Attenuator, BIRD Model / 150-SA-FFN-10 / 10 dB / 150 Watt
Attenuator, BIRD Model /50-A-MFN-30 / 30 dB / 50 Watt
Wattmeter Coaxial Dynamics model 81050
DC Power Source, Model Tait T808-10-00CA
Communication Analyzer, Model IFR COM120B for Modulation Analyzer
Spectrum Analyzer, Model HP E4401

PERFORMED BY: Constantin Pintilei DATE: 07/09/04

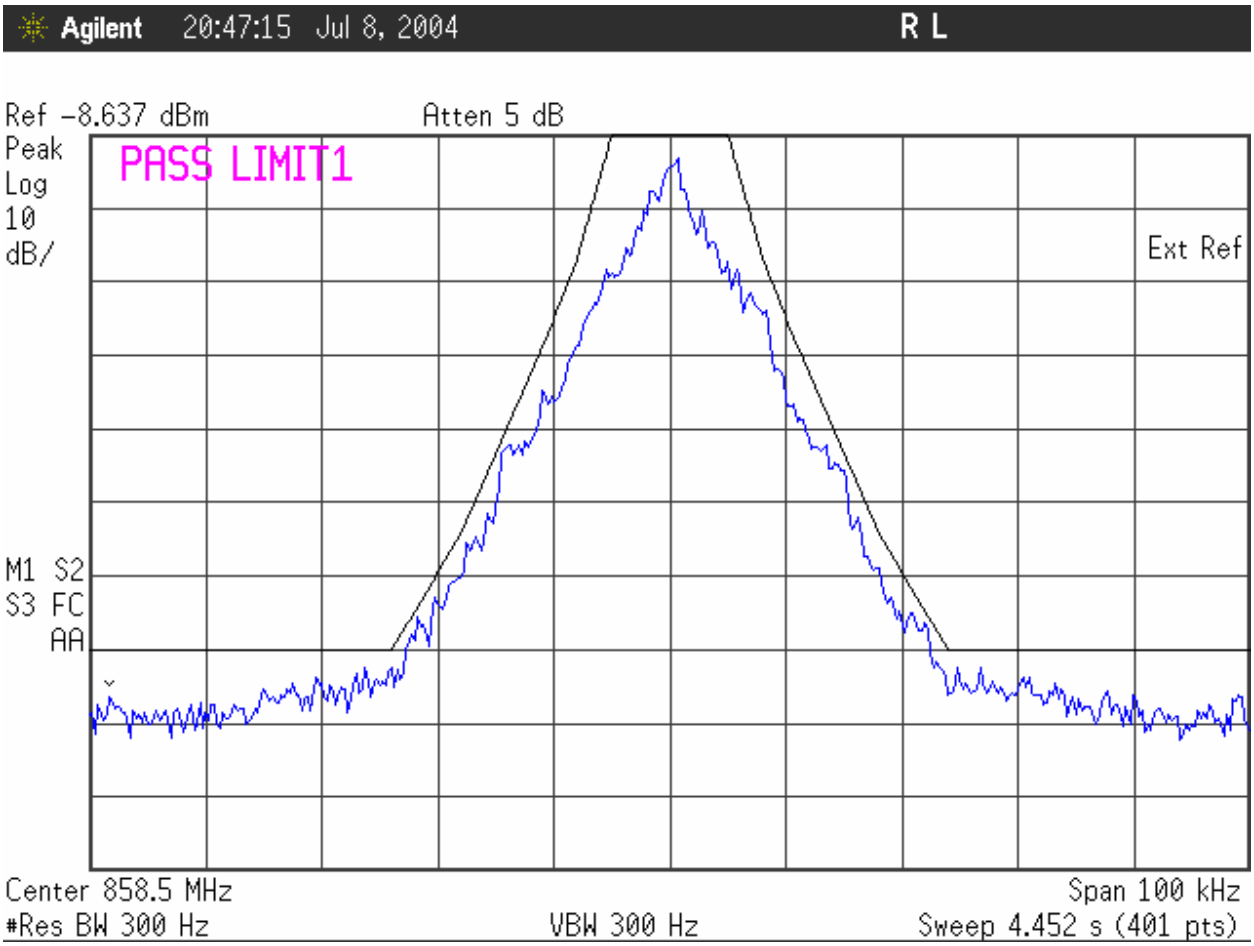
TEST SET-UP:



NAME OF TEST: Mask Compliance Data (Continued)
Paragon 3 Modem at 14400 baud 16FSK

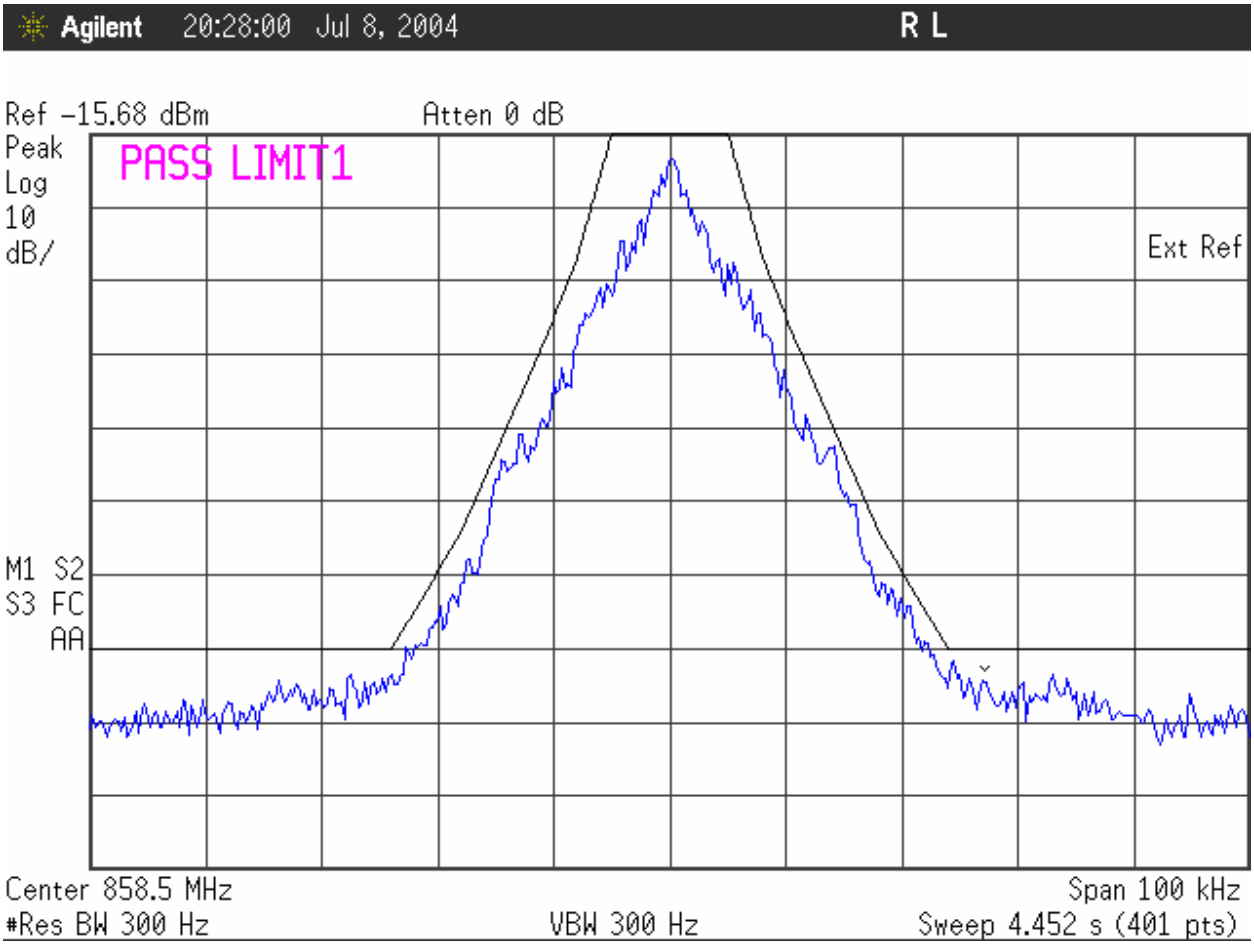
MASK: G, 5W – 14.4kbaud, 3.52kHz dev

OUTPUT POWER: 5 Watts
14400 baud, 16 level FSK
PEAK DEVIATION = 4950 Hz
SPAN = 100 kHz



MASK: G, 1W – 14.4kbaud, 3.52kHz dev

OUTPUT POWER: 1 Watts
14400 baud, 16 level FSK
PEAK DEVIATION = 4950 Hz
SPAN = 100 kHz



NAME OF TEST: Mask Compliance Data
Paragon3 Modem at 8000 baud 16FSK

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

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

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

Fo to 4.0 kHz	Attenuation = 0 dB
>4.0 kHz to 8.5 kHz	Attenuation= $107*\log(f_d /4)$ dB
>8.5 kHz to 15 kHz	Attenuation= $40.5*\log(f_d /1.16)$ dB
>15 kHz to 25kHz	Attenuation = $116*\log(f_d /6.1)$ dB
>25kHz	43 + 10*log(P) dB

Corner Points:

Fo to 4.0 kHz	Attenuation = 0 dB
>4.0 kHz to 8.5 kHz	Attenuation= 0 dB to 35 dB
>8.5 kHz to 15 kHz	Attenuation = 35 dB to 45 dB
>15 kHz to 25 kHz	Attenuation =45 dB to 71 dB
>25 kHz	Attenuation =53dB (10W-generic limit)

The limits would read 43dB for 1W and 50dB for 5W output.

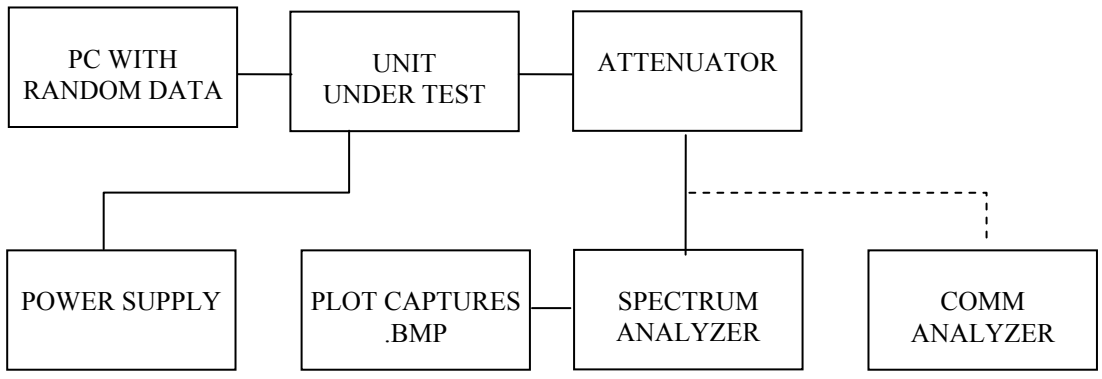
TEST RESULTS: Meets minimum standard (see data on the following pages)

TEST CONDITIONS: Standard Test Conditions, 25 C

TEST EQUIPMENT: Attenuator, BIRD Model / 150-SA-FFN-10 / 10 dB / 150 Watt
Attenuator, BIRD Model /50-A-MFN-30 / 30 dB / 50 Watt
Wattmeter Coaxial Dynamics model 81050
DC Power Source, Model Tait T808-10-00CA
Communication Analyzer, Model IFR COM120B for Modulation Analyzer
Spectrum Analyzer, Model HP E4401

PERFORMED BY: Constantin Pintilei DATE: 07/09/04
Constantin Pintilei

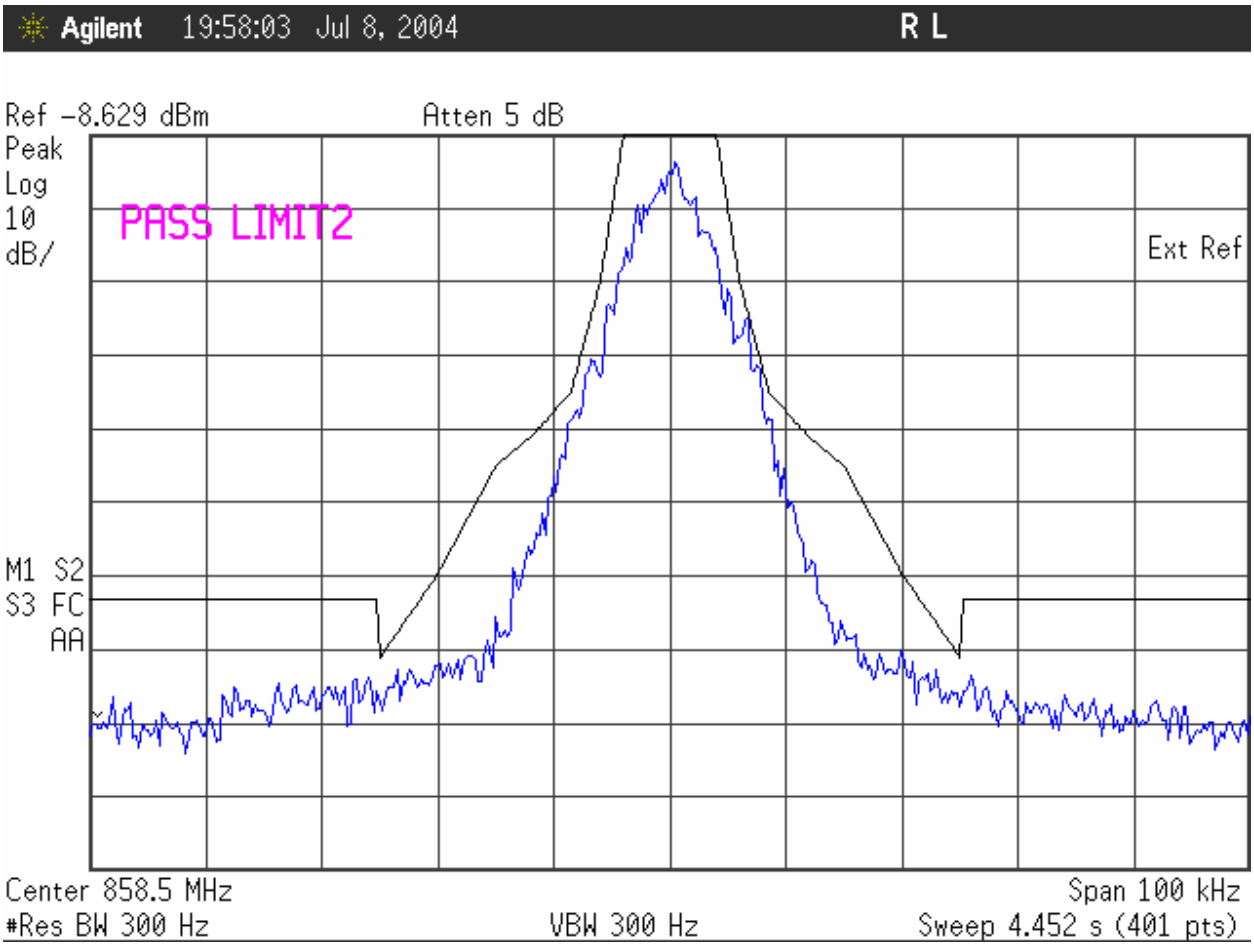
TEST SET-UP:



NAME OF TEST: Mask Compliance Data (Continued)
Paragon 3 Modem at 8000 baud 16FSK

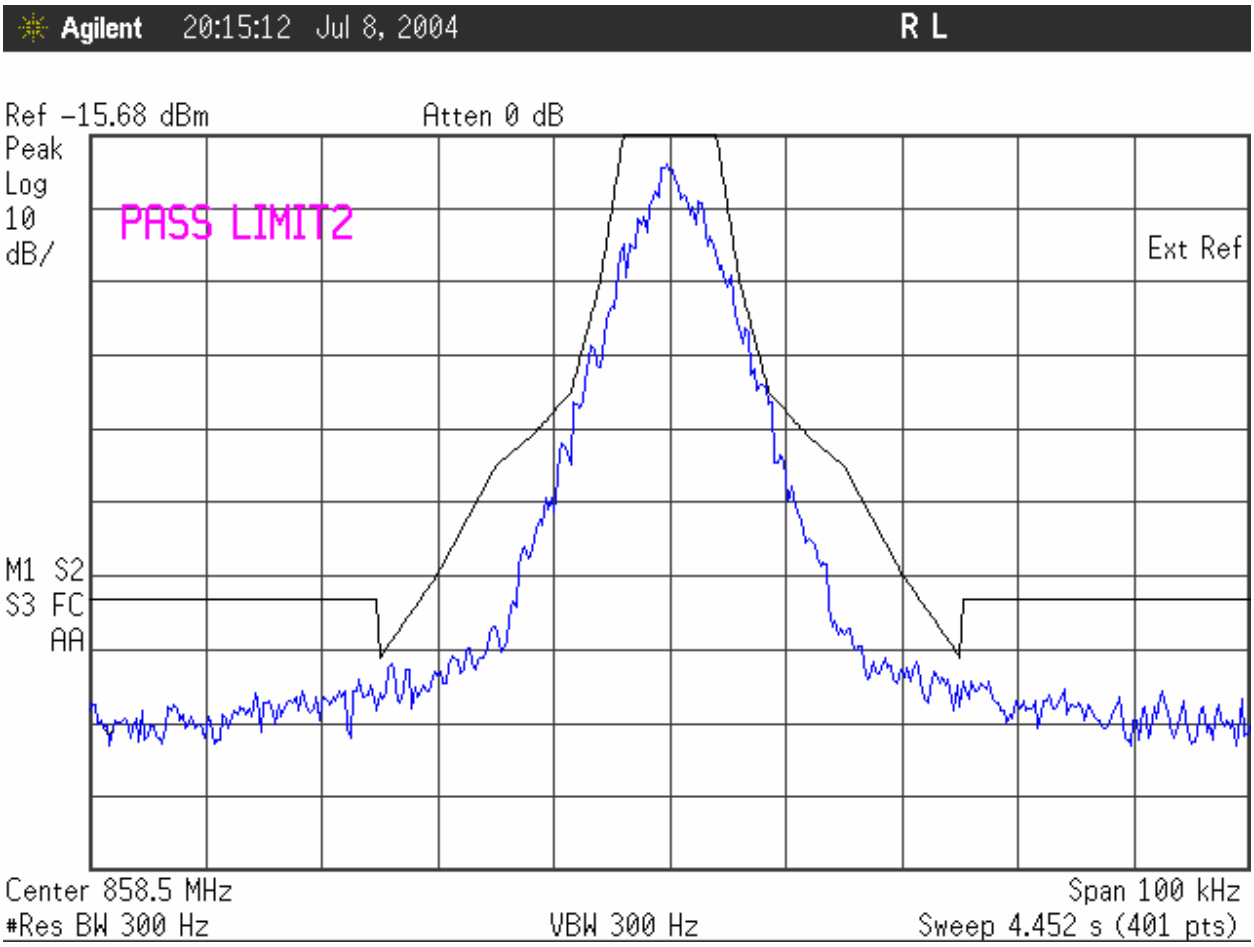
MASK: H, 5W – 8.0kbaud, 3.05kHz dev

OUTPUT POWER: 5 Watts
8000 baud, 16 level FSK
PEAK DEVIATION = 3920 Hz
SPAN = 100 kHz



MASK: H, 1W – 8.0kbaud, 3.05kHz dev

OUTPUT POWER: 1 Watts
8000 baud, 16 level FSK
PEAK DEVIATION = 3920Hz
SPAN = 100 kHz



NAME OF TEST: Mask Compliance Data
Paragon 3 Modem at 7200 baud 16FSK

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

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

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

Fo to 4.0 kHz	Attenuation = 0 dB
>4.0 kHz to 8.5 kHz	Attenuation= $107*\log(f_d/4)$ dB
>8.5 kHz to 15 kHz	Attenuation= $40.5*\log(f_d/1.16)$ dB
>15 kHz to 25kHz	Attenuation = $116*\log(f_d/6.1)$ dB
>25kHz	43 + 10*log(P) dB

Corner Points:

Fo to 4.0 kHz	Attenuation = 0 dB
>4.0 kHz to 8.5 kHz	Attenuation= 0 dB to 35 dB
>8.5 kHz to 15 kHz	Attenuation = 35 dB to 45 dB
>15 kHz to 25 kHz	Attenuation =45 dB to 71 dB
>25 kHz	Attenuation =53dB (10W-generic limit)

The limits would read 43dB for 1W and 50dB for 5W output.

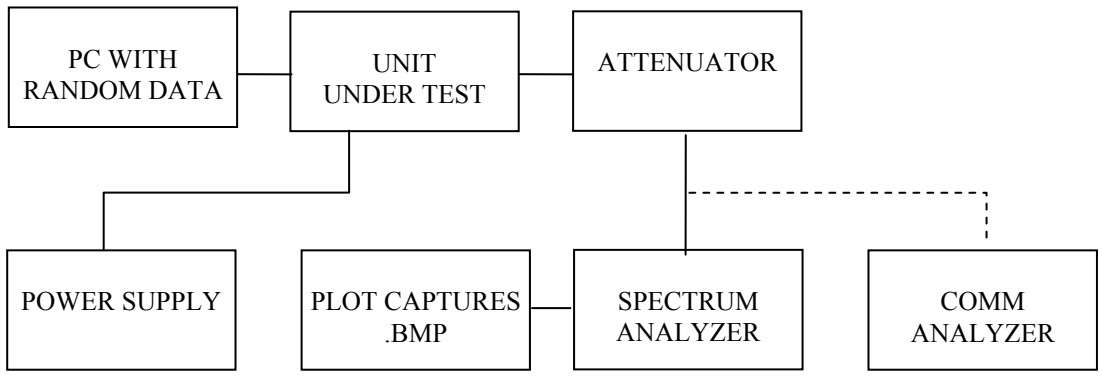
TEST RESULTS: Meets minimum standard (see data on the following pages)

TEST CONDITIONS: Standard Test Conditions, 25 C

TEST EQUIPMENT: Attenuator, BIRD Model / 150-SA-FFN-10 / 10 dB / 150 Watt
Attenuator, BIRD Model /50-A-MFN-30 / 30 dB / 50 Watt
Wattmeter Coaxial Dynamics model 81050
DC Power Source, Model Tait T808-10-00CA
Communication Analyzer, Model IFR COM120B for Modulation Analyzer
Spectrum Analyzer, Model HP E4401

PERFORMED BY: Constantin Pintilei DATE: 07/09/04
Constantin Pintilei

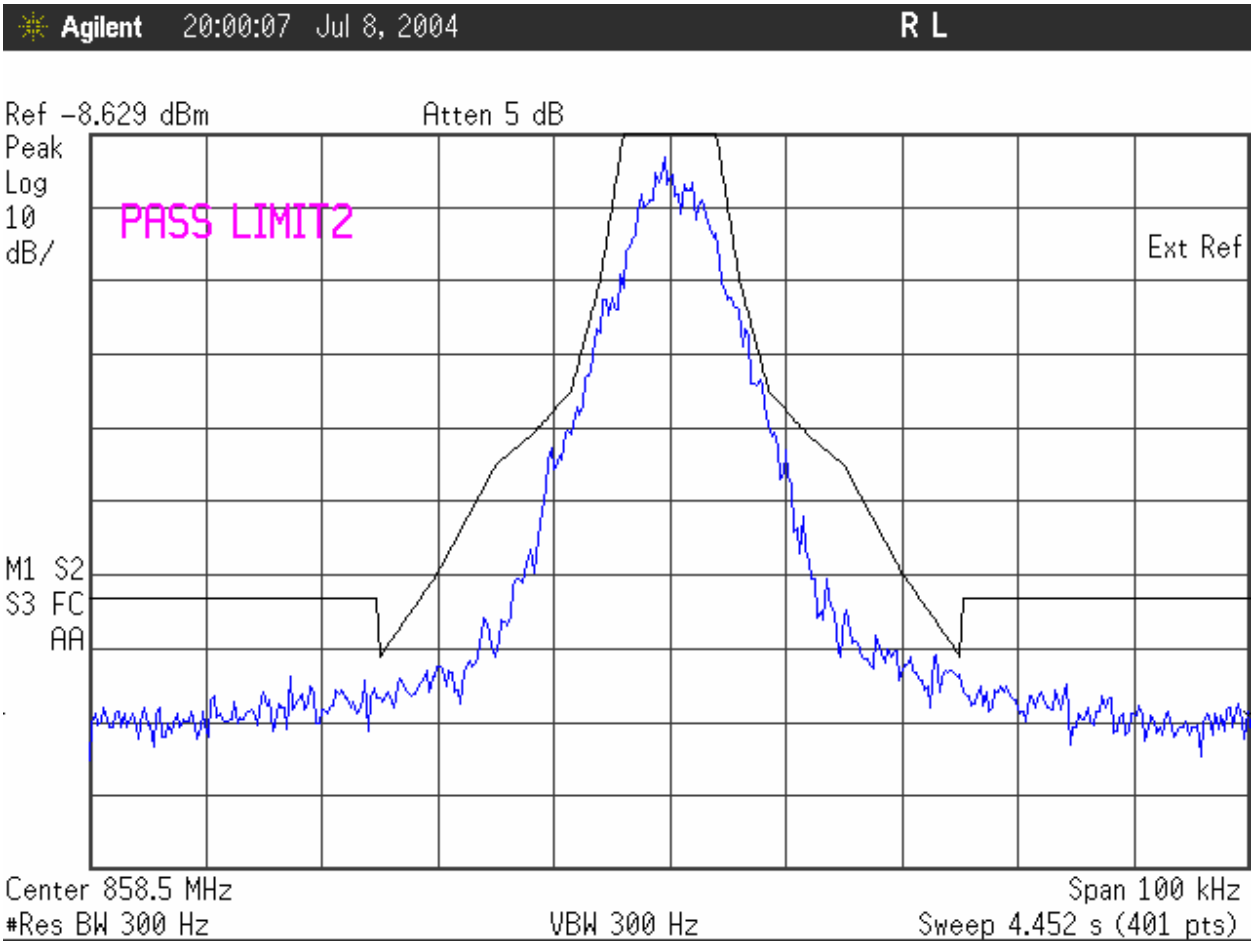
TEST SET-UP:



NAME OF TEST: Mask Compliance Data (Continued)
Paragon3 Modem at 7200 baud 16FSK

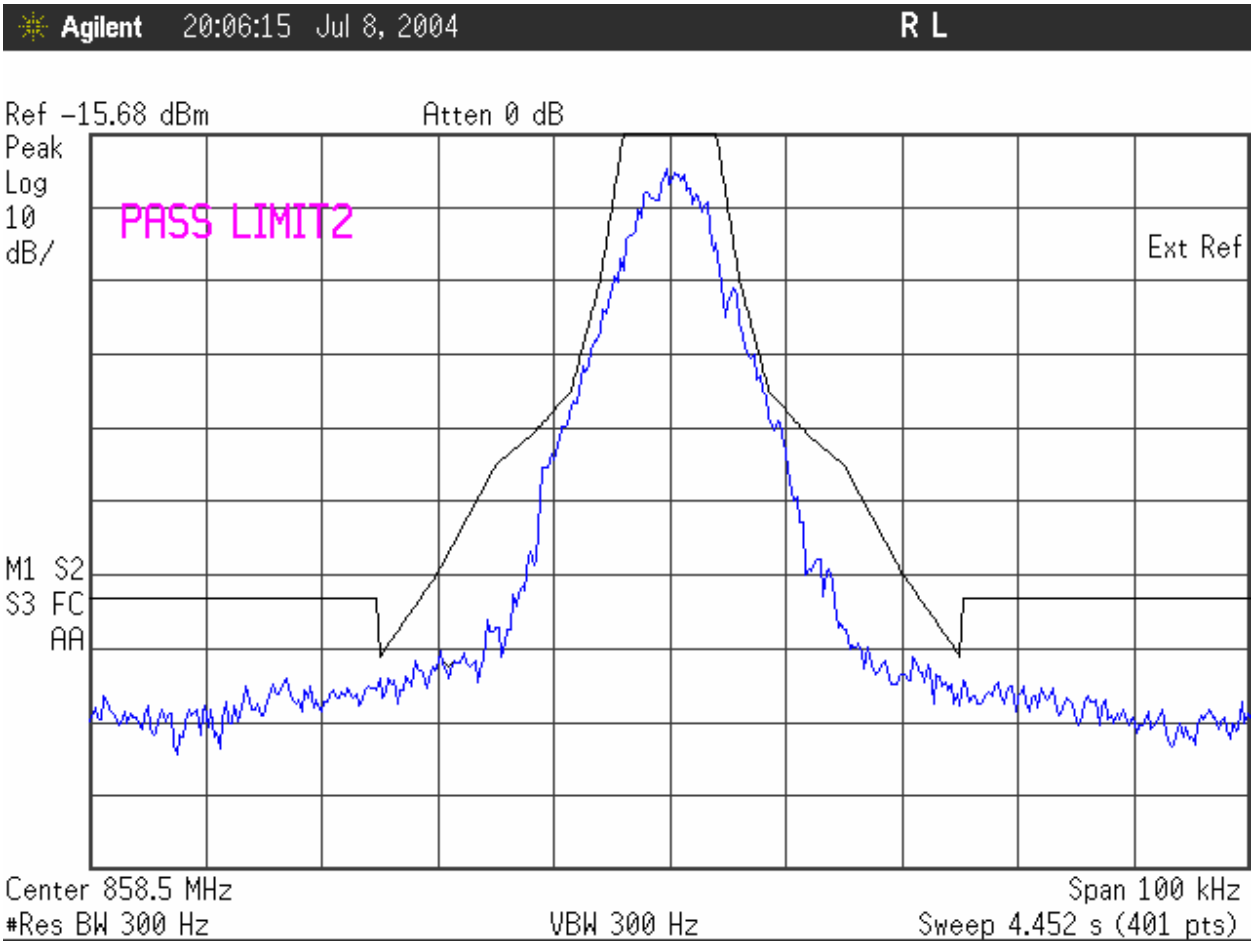
MASK: H, 5W – 7.2kbaud, 2.73kHz dev

OUTPUT POWER: 5 Watts
7200 baud, 16 level FSK
PEAK DEVIATION =4250 Hz
SPAN = 100 kHz



MASK: H, 1W – 7.2kbaud, 2.73kHz dev

OUTPUT POWER: 1 Watts
7200 baud, 16 level FSK
PEAK DEVIATION = 4250 Hz
SPAN = 100 kHz



Annex : LIST OF 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-30	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) E4401B	39440398	DR624
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 oscilloscope	US38060758	DR222