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

for the

Mobile Data Platform Transceiver (900 MHz MDP)

With the

Dataradio Gemini Modem

FCC ID: EOTGPD9
Trade Name: GEMINI/PD+

December 1st , 2002

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 a Class II Permissive Change for EOTGPDB.

The certification EOTGPD9 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) 900 MHz Transceiver with the Dataradio Inc Gemini Modem. Dataradio Inc does the final assembly and markets the Gemini/PD unit. The EOTGPD9 certificate has been granted for a 2-level FSK (DGMSK) and a 4-level FSK (xRC4FSK) types of modulation scheme together with associated maximum deviation levels at various rates. The change consists of the addition of a 8-level FSK modulation scheme with 3 new proposed rates. This change involves the firmware only, with no change whatsoever occurring in the hardware.

EXISTING CONDITIONS

The units utilized for these measurements were obtained from prototypes. The transceiver is designed to operate on frequencies ranging from 896.000 MHz to 901.000 MHz. The frequency tolerance of the transceiver is .00015% or 1.5 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 GEMINI/PD+, 896-901 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 for Occupied Bandwidth and mask compliance as per 2.1043 (b)(2) were conducted in accordance with the Rules and Regulations Section 2.1041 and 2.1049 of Rules Service Co rev.2-163,Sep15,2002. Equipment performance 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 performance measurements were made between Nov 11, 2002 and Nov 15, 2002

CONCLUSION

Given the results of the measurements contained herein, the applicant requests to have accepted 8-FSK modulation scheme and to have the new emission designator 11K4F1D accepted to the list of the Certificate EOTGPD9 following the Class II Permissive Change, as per FCC part 2.1043(b)(2), in order to market the proposed rates with 8-FSK modulation scheme in 896-901MHz frequency band .

Constantin Pintilei

12/01/02

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

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ANNEXES:

Annex A: 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 25 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 8 Years experience in radio frequency measurements.

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

The certification EOTGPD9 has been granted to Dataradio Inc on 11/01/2002 for its Gemini/PD+ radio modem. Gemini/PD+ is comprised of the Dataradio COR Ltd. (DRL) Mobile Data Platform (MDP) 900 MHz Transceiver with the Dataradio Inc Gemini Modem. Dataradio Inc does the final assembly and markets the Gemini/PD+ unit.

The emission designator list of the certificate has the following values:

- 8K75 and 10K2F1D for 8kbps and 9.6 kbps DGMSK digital modulation
- 11K8, 10K7 and 9K92F1D for respectively 14.4, 16.0 and 19.2 kbps 4-FSK SRRC digital modulation

The current Class II permissive change request asks for following three new 8-FSK modulations along with their emission designators: 10K2, 11K4 and 11K8F1D for respectively 28.8, 24.0 and 21.6 kbps 8-FSK SRRC digital modulations.

Only the 11K4F1D emission designator is suggested to be appended to the current list, 10K2F1D and 11K8F1D values are already in use for other above mentioned speeds.

Following the FCC part 2.1043(b)(2) rule, in order to market the proposed change we must obtain the acknowledgment of the Commission that the change is acceptable. Therefore a Class II Permissive Change request from the certificate granted on 11/01/2002 has been considered.

All modulator source signal-related issues as per 2.1033 (c) (4) and (13) are explained below on page 9. This Class II permissive change involves the code of the DSP-driven modulation source only, with no change occurring elsewhere in the circuitry.

The characteristics affected 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(j)

They are entirely documented with the current report.

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 appended service-related information for 8 level FSK modulation rates is provided as appendix of the report.

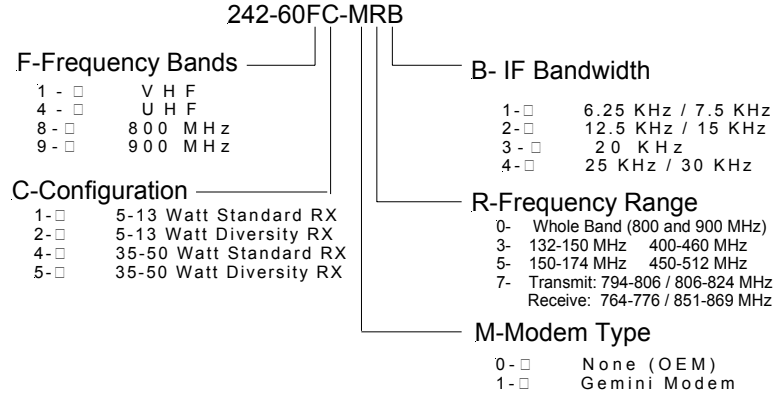
GENERAL INFORMATION ABOUT THE GRANTEE AND CERTIFICATED EQUIPMENT -2.1043 (b)(2)
(as per Rule Part Number: 2.1033 (c).(1),(2),(5),(6),(7))

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: PART NUMBER:	GEMINI/PD+ GPDE-6095-11200
SERIAL NUMBER :	Prototype #3 comprised of 215-03322-105 Gemini modem firmware v3.17.(beta7cf), DSP v15.15 242-6095- 00005- 102 pilot run MDP transceiver
FCC ID NUMBER:	EOTGPD9
FCC RULES AND REGS:	FCC Part (s) 90, 90.603(a),(b)
FREQUENCY RANGE:	896.000 MHz - 901.000 MHz (896-901 Tx/935-941 Rx MHz Bands)
MAXIMUM POWER RATING:	27 Watts, (25 Watts Nominal 10-27 watts adjustable).
NUMBER OF CHANNELS:	16 Channel Modem
INPUT IMPEDANCE:	50 ohms, Nominal
VOLTAGE REQUIREMENTS:	10.9-16.3VDC (13.6 VDC Nominal)

EQUIPMENT IDENTIFICATION:

TRADE NAME	DESCRIPTION	DRI PART NUMBER
Gemini/PD+	wireless modem	GPDE- 609C-1RBGF
MDP6000	896-902TX/935-941RX MHz XCVR	242-609C-MRB
Gemini	Modem	050-03322-00x

DRL Part Number System for MDP: Gemini/PD+ catalog number adds G (0,1)- GPS option and F (0-F)-modem firmware



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

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
MPE limits compliance	2.1091
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 follow:

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 CHARACTHERISTICS AFFECTED BY THE CHANGE - Rule Part Number:2.1033(c) (3)

INSTRUCTION BOOK 2.1033 (c) (3)
Annex A . The attached Installation Guide for the GEMINI/PD+ Transceiver/Modem/GPS is a preliminary version.

TYPE OF EMISSION: 2.1033(c)(4)

For Class II Permissive Change 8levelFSK	(9600baud, 8 FSK)	**10K2F1D**
	(8000baud, 8 FSK)	**11K4F1D**
	(7200baud, 8 FSK)	**11K8F1D**
Previously granted for EOTGPD9	(9600baud, 4 FSK)	**9K92F1D**
	(8000baud, 4 FSK)	**10K7F1D**
	(7200baud, 4 FSK)	**11K8F1D**
	(9600baud, DGMSK)	**10K2F1D**
	(8000baud, DGMSK)	**8K75F1D**

DIGITAL MODULATION TECHNIQUES 2.1033 (c)(13)

The Gemini modem generates 2 level Differential Gaussian Frequency Shift Keying (DGFSK) and 2^n level Squared Root Raised Cosine Frequency Shift Keying. (SRRC xFSK). 2-level DGFSK and 4-level xRC has been granted with the certificate EOTGPD9. This measurement concerns only 8-level SRRC (squared root raised cosine) modulation, its description follows.

This digital modulation scheme is produced by the main CPU in conjunction with the DSP. The main CPU processes incoming binary data, applying Forward Error Correction (FEC), interleaving and scrambling, and from it generates an NRZ signal that is fed to the DSP processor for encoding and pulse shaping. The DSP processor assigns to every incoming group of three bits a symbol recorded in a level of frequency shift. The mapping follows a Gray scheme:100-highest positive frequency, 101-next highest positive, etc, to 000-lowest negative, resulting signal being a 8-DC level digital.

This 8-level signaling transmits three information bits per symbol (baud) which yields a bit rate of three times the on-air baud rate, hence the 28.8 kbps references in the Installation Guide correspond to a transmitter baud rate of 9600 baud. That digital signal is digitally filtered (Squared Root Raised Cosine pulse shaping with roll off factor 0.4) by the DSP then fed to the CODEC for digital to analogue conversion. This SRRC8FSK wave shape applied to the FM modulator will then produce a compact RF spectrum, when using proper frequency deviation, to fit inside the restrictive masks inherent to the intended channel bandwidth.

The transmitter deviation level and digital filter cutoff frequency (which is based on the raised cosine filter equation) are set according to the bit rate selected and channel bandwidth as shown in page 10.

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(j)
are provided in next section of this Engineering Report

The following test report have been generated for Class II Permissive Change notification for EOTGPD9, Gemini/PD+ radio modem. Gemini/PD+ is comprised of the Dataradio COR Ltd. (DRL) Mobile Data Platform (MDP) 900 MHz Transceiver with the Dataradio Inc Gemini Modem. Dataradio Inc does the final assembly and markets the Gemini/PD unit

Unless otherwise noted, all of the measurements were conducted following the procedures set forth in the TIA/EIA-603 revA standards. The resolution bandwidth value was set closest to 1% of the authorized bandwidth hence 100Hz RBW was used.

TEST DATA **2.1033 (c)(14)**
Next section.

TEST DATA Section 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
are provided in next section of this Engineering Report

Modulation Characteristic Part 2.1047 (d), 90.209 (b) 90.210(j): Other types of equipment: this equipment is not provided with hardware audio low-pass filters, the filtering is entirely result of DSP firmware.

The transmitter deviation level and digital filter cutoff frequency (which is based on the raised cosine filter equation) are set according to the bit rate selected and channel bandwidth as follows:

Bit rate	Baud rate	Raised Cosine filter's 3dB cut-off frequency	Deviation
28800 b/s	9600bauds	4.8 kHz	± 3.0 kHz
24000 b/s	8000bauds	4.0 kHz	± 3.6 kHz
21600 b/s	7200bauds	3.6 kHz	± 3.9 kHz

NAME OF TEST:
Transmitter Occupied Bandwidth

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

Emission Designator Determination

Necessary Bandwidth Measurement (90.209.(b))

This radiomodem uses digital modulation signals, passing through a Raised Cosine α=0.4 DSP implemented low-pass filter to an FM transceiver. The necessary bandwidth calculation for this type of modulation (RC4FSK) is not covered by paragraphs (1), (2) or (3) from 2.202(c), the result exceeding the real 99% necessary bandwidth obtained through simulations or measurement.

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

The results of 99% Occupied Bandwidth measurement are:

Baud rate	Deviation	Occupied Bandwidth	Authorised Bandwidth	Proposed Emission Designator
28800 b/s	± 3.0 KHz	10170 Hz	13600Hz	10K2F1D
24000 b/s	± 3.6 KHz	11330 Hz	13600Hz	11K4F1D
21600 b/s	± 3.9 KHz	11830 Hz	13600Hz	11K8F1D

The measurement theory and set-up explanations follow.

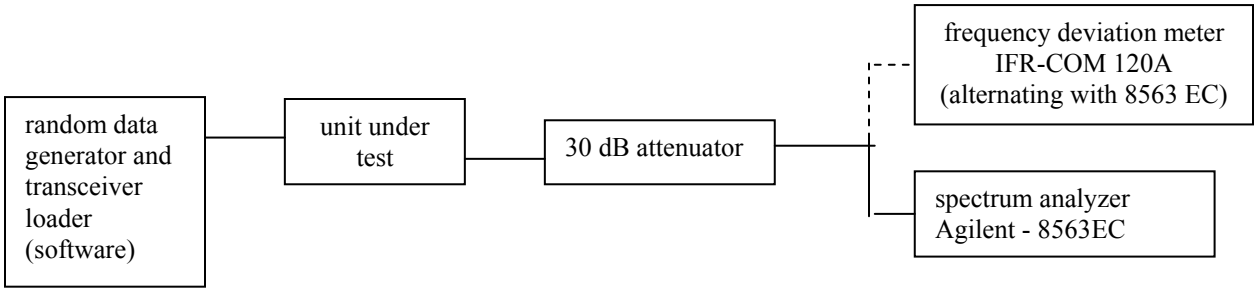
Occupied Bandwidth Measurement

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*** "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 J, the resulting value was recorded as Occupied Bandwidth.

The measurement set-up is:



Transmitter Occupied Bandwidth for 28800 bps 8FSK, In Support of Emission Designator 10K2F1D

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

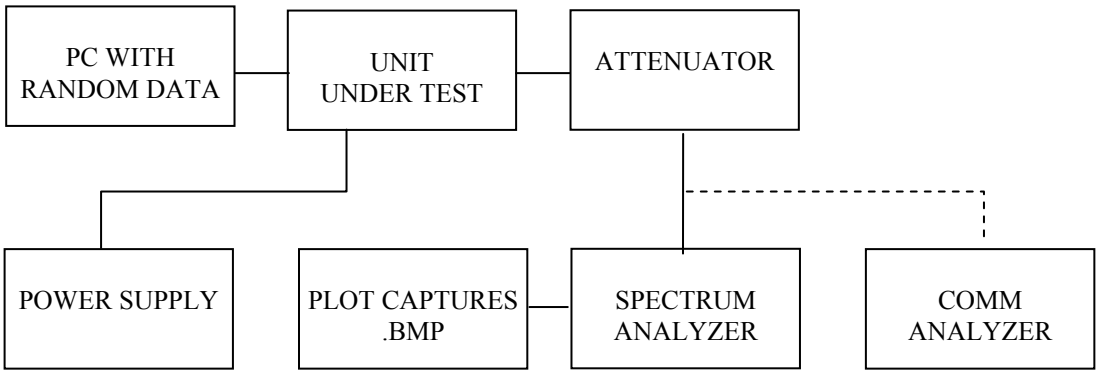
MINIMUM STANDARD: Mask J
Sidebands and Spurious [Rule 90.210 (j)]
Authorized Bandwidth = 13.6 kHz [Rule 90.209(b) (5)]

Fo to 2.5 kHz	Attenuation = 0 dB
>2.5 kHz to 6.25 kHz	Attenuation= 53*log(f_d KHz /2.5) dB
>6.25 kHz to 9.5kHz	Attenuation = 103 log (f_d/3.9)dB
>9.5kHz	lesser of 50 + 10*log(P) or 157 log (f_d/5.3) or 70dB
Corner Points:	
f_0 to 2.5 kHz	Attenuation = 0 dB
>2.5 kHz to 3.8 kHz	Attenuation= 0 dB to 10 dB
>3.8 kHz to 6.25 KHz	Attenuation = 10 dB to 21 dB
>6.25 kHz to 7.6 KHz	Attenuation = 21 dB to 30 dB
>7.6 kHz to 9.5 KHz	Attenuation = 30 dB to 40 dB
>9.5 kHz to 11.2 KHz	Attenuation = 40 dB to51 dB
>11.2 kHz to 13.8kHz	Attenuation = 51 dB to65 dB
>13.8kHz	Attenuation = minimum 65 dB (30W)

UNIT UNDER TEST Prototype#3
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-MFN-30 / 30 dB / 50 Watt
DC Power Supply , Astron Model VS-20M
IFR COM-120B , IF filter set to 30kHz - for deviation meter
Spectrum Analyzer, Model HP8563E
HP Benchlink -software for plot captures.

PERFORMED BY: Constantin Pintilei, DATE:11/16/2002
Constantin Pintilei, Eng

TEST SET-UP:



NAME OF TEST: Transmitter Occupied Bandwidth (Continued)
GEMINI Modem at 28800 bps
In Support of Emission Designator **10K2F1D**

TX Data Test Pattern:

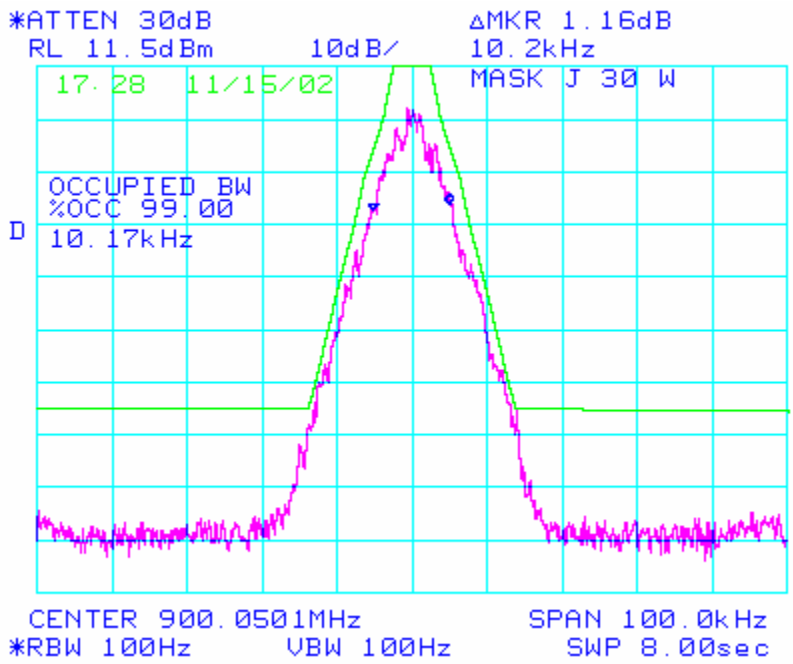
The transmit "test data" pattern command produces a 2047 bit pseudo-random pattern. This pattern is generated by the internal software using the polynomial $X^{11}+X^{9}+1$ form and a 12-bit shift register. Initial value of the register is 111111111110 (FFE hex). The 2047 bit sequence is repeated thereafter as long is necessary to complete the test duration (55 sec). This pattern is applied to the DSP processor data input for encoding and pulse shaping as described above.

NECESSARY BANDWIDTH (Bn) measurement

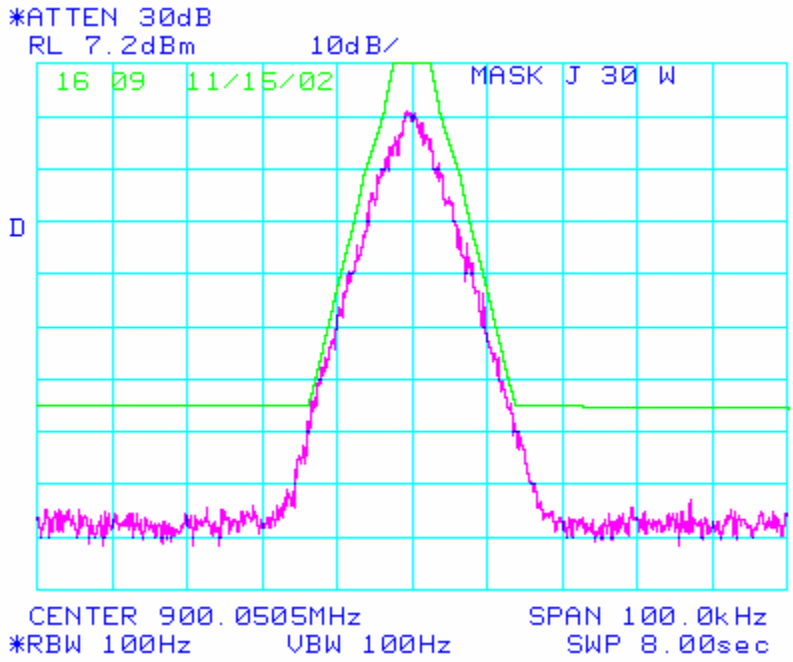
See page 11 for emission designator determination.

The corresponding emission designator prefix for necessary bandwidth = **10K2**
The corresponding deviation for 28800 Bps is 3.0KHz
TEST DATA: Refer to the following graphs:

MASK: J , 11K8F1D, 27W
SPECTRUM FOR EMISSION **10K2F1D**
OUTPUT POWER: 27 Watts
28800 bps 8 FSK
PEAK DEVIATION = 3000 Hz
SPAN = 100 kHz



MASK: J, 10K2F1D, 10W
SPECTRUM FOR EMISSION **10K2F1D**
OUTPUT POWER: 10 Watts
28800 bps 8 FSK
PEAK DEVIATION = 3000 Hz
SPAN = 100 kHz



Transmitter Occupied Bandwidth for 24000 bps 8FSK, In Support of Emission Designator 11K4F1D

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

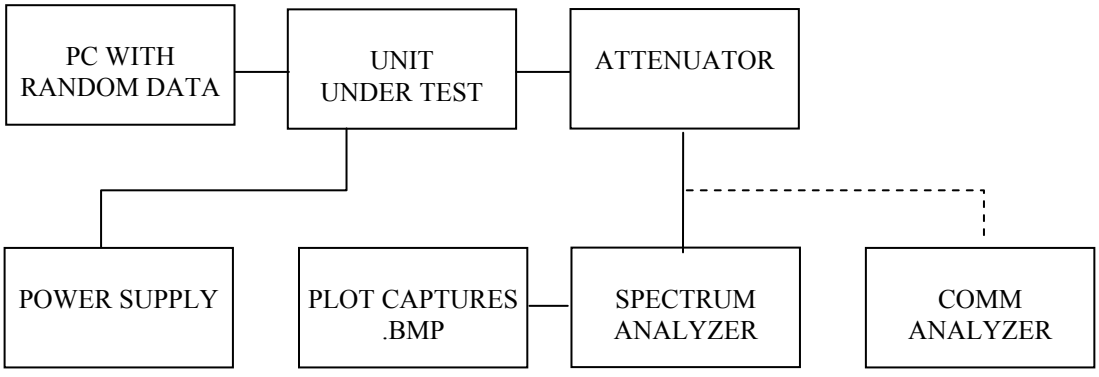
MINIMUM STANDARD: Mask J
Sidebands and Spurious [Rule 90.210 (j)]
Authorized Bandwidth = 13.6 kHz [Rule 90.209(b) (5)]

Fo to 2.5 kHz	Attenuation = 0 dB
>2.5 kHz to 6.25 kHz	Attenuation= 53*log(f_d KHz /2.5) dB
>6.25 kHz to 9.5kHz	Attenuation = 103 log (f_d/3.9)dB
>9.5kHz	lesser of 50 + 10*log(P) or 157 log (f_d/5.3) or 70dB
Corner Points:	
f_0 to 2.5 kHz	Attenuation = 0 dB
>2.5 kHz to 3.8 kHz	Attenuation= 0 dB to 10 dB
>3.8 kHz to 6.25 KHz	Attenuation = 10 dB to 21 dB
>6.25 kHz to 7.6 KHz	Attenuation = 21 dB to 30 dB
>7.6 kHz to 9.5 KHz	Attenuation = 30 dB to 40 dB
>9.5 kHz to 11.2 KHz	Attenuation = 40 dB to51 dB
>11.2 kHz to 13.8kHz	Attenuation = 51 dB to65 dB
>13.8kHz	Attenuation = minimum 65 dB (30W)

UNIT UNDER TEST Prototype#3
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-MFN-30 / 30 dB / 50 Watt
DC Power Supply , Astron Model VS-20M
IFR COM-120B , IF filter set to 30kHz - for deviation meter
Spectrum Analyzer, Model HP8563E
HP Benchlink -software for plot captures.

PERFORMED BY: Constantin Pintilei, DATE:11/16/2002
Constantin Pintilei, Eng

TEST SET-UP:



NAME OF TEST: Transmitter Occupied Bandwidth (Continued)
GEMINI Modem at 24000 bps
In Support of Emission Designator **11K4F1D**

TX Data Test Pattern:

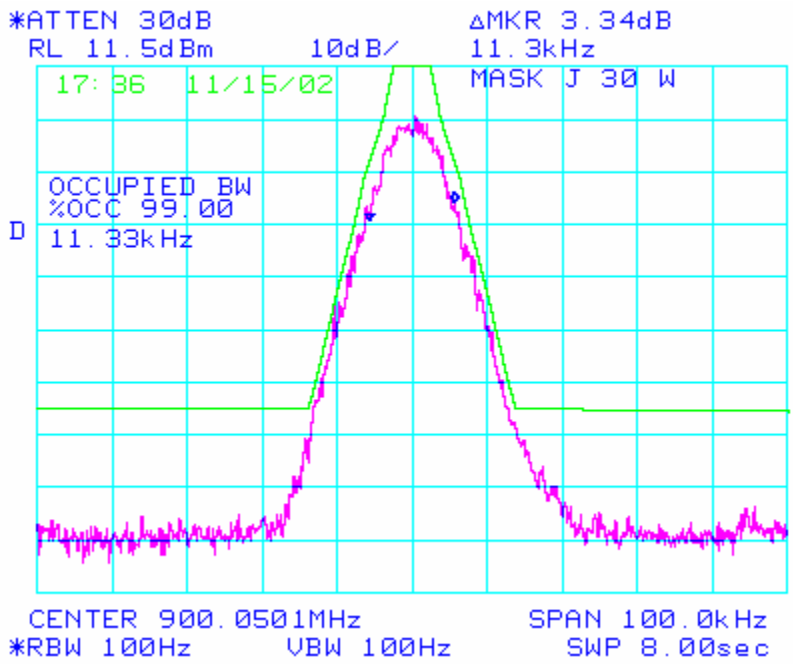
The transmit "test data" pattern command produces a 2047 bit pseudo-random pattern. This pattern is generated by the internal software using the polynomial $X^{11}+X^{9}+1$ form and a 12-bit shift register. Initial value of the register is 111111111110 (FFE hex). The 2047 bit sequence is repeated thereafter as long is necessary to complete the test duration (55 sec). This pattern is applied to the DSP processor data input for encoding and pulse shaping as described above.

NECESSARY BANDWIDTH (Bn) measurement

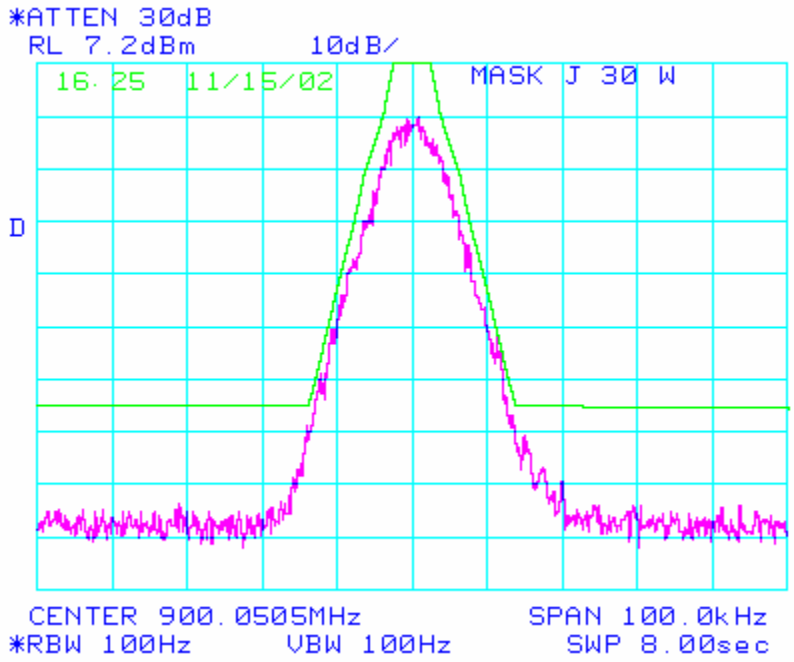
See page 11 for emission designator determination.

The corresponding emission designator prefix for necessary bandwidth = **11K4**
The corresponding deviation for 24000 Bps is 3.60 kHz
TEST DATA: Refer to the following graphs:

MASK: J , 11K4F1D, 27W
SPECTRUM FOR EMISSION **11K4F1D**
OUTPUT POWER: 27 Watts
24000 bps 4 FSK
PEAK DEVIATION = 3600 Hz
SPAN = 100 kHz



MASK: J, 11K8F1D, 10W
SPECTRUM FOR EMISSION **11K4F1D**
OUTPUT POWER: 10 Watts
24000 bps 8 FSK
PEAK DEVIATION = 3600 Hz
SPAN = 50 kHz



Transmitter Occupied Bandwidth for 21600 bps 8FSK, In Support of Emission Designator 11K8F1D

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

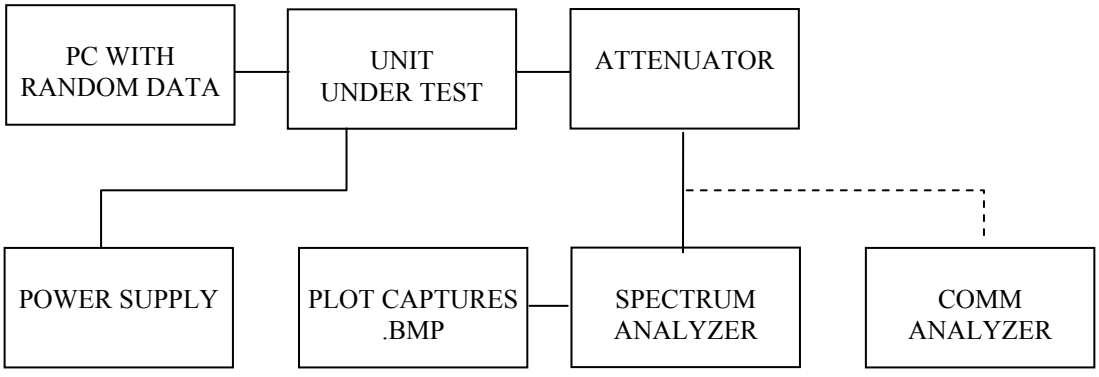
MINIMUM STANDARD: Mask J
Sidebands and Spurious [Rule 90.210 (j)]
Authorized Bandwidth = 13.6 kHz [Rule 90.209(b) (5)]

Fo to 2.5 kHz	Attenuation = 0 dB
>2.5 kHz to 6.25 kHz	Attenuation= 53*log(f_d KHz /2.5) dB
>6.25 kHz to 9.5kHz	Attenuation = 103 log (f_d/3.9)dB
>9.5kHz	lesser of 50 + 10*log(P) or 157 log (f_d/5.3) or 70dB
Corner Points:	
f_0 to 2.5 kHz	Attenuation = 0 dB
>2.5 kHz to 3.8 kHz	Attenuation= 0 dB to 10 dB
>3.8 kHz to 6.25 KHz	Attenuation = 10 dB to 21 dB
>6.25 kHz to 7.6 KHz	Attenuation = 21 dB to 30 dB
>7.6 kHz to 9.5 KHz	Attenuation = 30 dB to 40 dB
>9.5 kHz to 11.2 KHz	Attenuation = 40 dB to51 dB
>11.2 kHz to 13.8kHz	Attenuation = 51 dB to65 dB
>13.8kHz	Attenuation = minimum 65 dB (30W)

UNIT UNDER TEST Prototype#3
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-MFN-30 / 30 dB / 50 Watt
DC Power Supply , Astron Model VS-20M
IFR COM-120B , IF filter set to 30kHz - for deviation meter
Spectrum Analyzer, Model HP8563E
HP Benchlink -software for plot captures.

PERFORMED BY: Constantin Pintilei, DATE:11/16/2002
Constantin Pintilei, Eng

TEST SET-UP:



NAME OF TEST: Transmitter Occupied Bandwidth (Continued)
GEMINI Modem at 21600 bps
In Support of Emission Designator **11K8F1D**

TX Data Test Pattern:

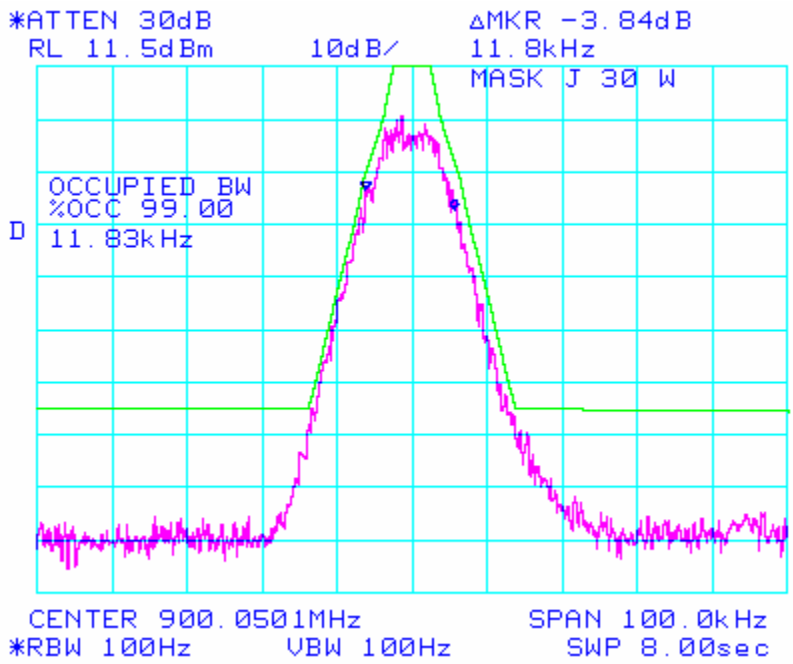
The transmit "test data" pattern command produces a 2047 bit pseudo-random pattern. This pattern is generated by the internal software using the polynomial $X^{11}+X^{9}+1$ form and a 12-bit shift register. Initial value of the register is 111111111110 (FFE hex). The 2047 bit sequence is repeated thereafter as long is necessary to complete the test duration (55 sec). This pattern is applied to the DSP processor data input for encoding and pulse shaping as described above.

NECESSARY BANDWIDTH (Bn) measurement

See page 11 for emission designator determination.

The corresponding emission designator prefix for necessary bandwidth = **11K8**
The corresponding deviation for 21600 Bps is 3.90KHz
TEST DATA: Refer to the following graphs:

MASK: J , 11K8F1D, 27W
SPECTRUM FOR EMISSION **11K8F1D**
OUTPUT POWER: 27 Watts
21600 bps 8 FSK
PEAK DEVIATION = 3900 Hz
SPAN = 100 kHz



MASK: J, 11K8F1D, 10W
SPECTRUM FOR EMISSION **11K8F1D**
OUTPUT POWER: 10 Watts
21600 bps 8 FSK
PEAK DEVIATION = 3900 Hz
SPAN = 100 kHz