

## TABLE OF CONTENTS LIST

APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL

FCC ID: PDHGMRS-2000

TEST REPORT:

PAGE 1.....COVER SHEET - GENERAL INFORMATION & TECHNICAL DESCRIPTIVE  
PAGE 2.....TECHNICAL DESCRIPTION CONTINUED & RF POWER OUTPUT  
PAGE 3.....MODULATION CHARACTERISTICS  
PAGE 4A.....MODULATION LIMITING - 300 Hz  
PAGE 4B.....MODULATION LIMITING - 1000 Hz  
PAGE 4C.....MODULATION LIMITING - 3000 Hz  
PAGE 5.....AUDIO FREQUENCY RESPONSE PLOT  
PAGE 6.....OCCUPIED BANDWIDTH  
PAGE 7A-7B..OCCUPIED BANDWIDTH PLOTS  
PAGE 8.....SPURIOUS EMISSIONS AT ANTENNA TERMINALS  
PAGE 9.....UNWANTED RADIATION  
PAGE 10.....METHOD OF MEASURING SPURIOUS EMISSIONS  
PAGE 11.....FREQUENCY STABILITY  
PAGE 12.....LIST OF TEST EQUIPMENT

EXHIBITS CONTAINING:

EXHIBIT 1.....FCC ID LABEL SAMPLE  
EXHIBIT 2.....SKETCH OF FCC ID LABEL LOCATION  
EXHIBIT 3A.....EXTERNAL TOP VIEW PHOTOGRAPH  
EXHIBIT 3B.....EXTERNAL BOTTOM VIEW PHOTOGRAPH  
EXHIBIT 3C-3D.....EXTERNAL SIDE VIEW PHOTOGRAPHS  
EXHIBIT 3E.....EXTERNAL REAR VIEW PHOTOGRAPH  
EXHIBIT 3F.....INTERNAL COMPONENT VIEW PHOTOGRAPH  
EXHIBIT 3G.....INTERNAL SOLDER VIEW PHOTOGRAPH  
EXHIBIT 4.....BLOCK DIAGRAM  
EXHIBIT 5.....SCHEMATICS  
EXHIBIT 6.....USER'S MANUAL  
EXHIBIT 7A-7C.....THEORY OF OPERATION  
EXHIBIT 8A-B.....TUNING PROCEDURE  
EXHIBIT 9.....AUDIO LOW PASS FILTER  
EXHIBIT 10.....TEST SET UP PHOTO

APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL

FCC ID: PDHGMRS-2000

DATE: FEBRUARY 21, 2001

REPORT #: T:\cus\T\TRIDENT\604zK0\604zk0rpt.doc

PAGE: TABLE OF CONTENTS

GENERAL INFORMATION REQUIRED  
FOR CERTIFICATION

2.1033(c)(1)(2) TRIDENT TECHNOLOGY INTERNATIONAL will manufacture the  
FCCID: PDHGMRS-2000 GMRS CHANNELS  
TRANSCEIVER in quantity, for use under FCC RULES  
PART 95.

TRIDENT TECHNOLOGY INTERNATIONAL  
EUNDO BLDG. #402, 737-19, BANPO-1DONG  
SEOCHO-KU, SEOUL, 137-041, KOREA

2.1033 (c) TECHNICAL DESCRIPTION

2.1033(c)(3) Instruction book. A draft copy of the instruction  
manual is included as EXHIBIT 6.

2.1033(c) (4) Type of Emission: 11KOF3E  
95.629

Bn = 2M + 2DK  
M = 3000  
D = 2.50K  
Bn = 2(3.0)+2(2.50) = 11.0K

2.1033(c)(5) Authorized Bandwidth 20.0KHz  
Frequency Range: 462.5500 - 462.7250 MHz  
95.627

2.10311c)(6)(7) The Maximum Output Power Rating:  
High: 2.0 Watts  
Low: .30 Watt effective radiated power.

2.1033(c)(8) DC Voltages and Current into Final Amplifier:  
FINAL AMPLIFIER ONLY

FOR LOW POWER SETTING INPUT POWER: (7.5V)(.268A) = 2.01 Watts  
FOR HIGH POWER SETTING INPUT POWER:(7.5V)(.480A) = 3.60 Watts

2.1033(c)(9) Tune-up procedure. The tune-up procedure is included  
8.

APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID: PDHGMRS-2000  
DATE: FEBRUARY 21, 2001  
REPORT #: T:\cus\T\TRIDENT\604zk0\604zk0rpt.doc  
PAGE #: 1



2.1033(c)(10) Complete Circuit Diagrams: The circuit diagram is included as EXHIBIT 5 of this report. The block diagrams are included as EXHIBIT 4 of this report.

2.1033(c)(11) A photograph or a drawing of the equipment identification label is included as exhibit No. 1.

2.1033(c)(12) Photographs(8"X10") of the equipment of sufficient clarity to reveal equipment construction and layout, including meters, labels for controls, including any view under shields. See exhibits 3A-3G.

2.1033(c)(13) Digital modulation is not allowed.

2.1033(c)(14) The data required by 2.1046 through 2.1057 is submitted below.

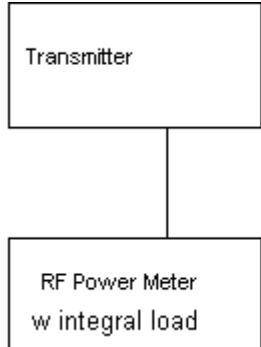
95.639 Power Output shall not exceed 50.0 Watts effective radiated power. There can be no provisions for increasing the power or varying the power.RF power output.

95.649

2.1046(a) RF power is measured by connecting a 50 ohm, resistive watt meter to the RF output connector. With a nominal battery voltage of 7.5 V, and the transmitter properly adjusted the RF output measures:

OUTPUT POWER: HIGH: 2.0 Watts  
LOW: 0.30 Watt

2.1046(a) RF power output. The test procedure used was TIA/EIA-603 S2.2.1.



APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID: PDHGMRS-2000  
DATE: FEBRUARY 21, 2001  
REPORT #: T:\cus\T\TRIDENT\604zk0\604zk0rpt.doc  
PAGE #: 2

2.1047(a)(b) Modulation characteristics:

AUDIO FREQUENCY RESPONSE

The audio frequency response was measured in accordance with TIA/EIA Specification 603. The audio frequency response curve is shown on the next page. The audio signal was fed into a dummy microphone circuit and into the microphone connector. The input required to produce 30 percent modulation level was measured. See Page 5.

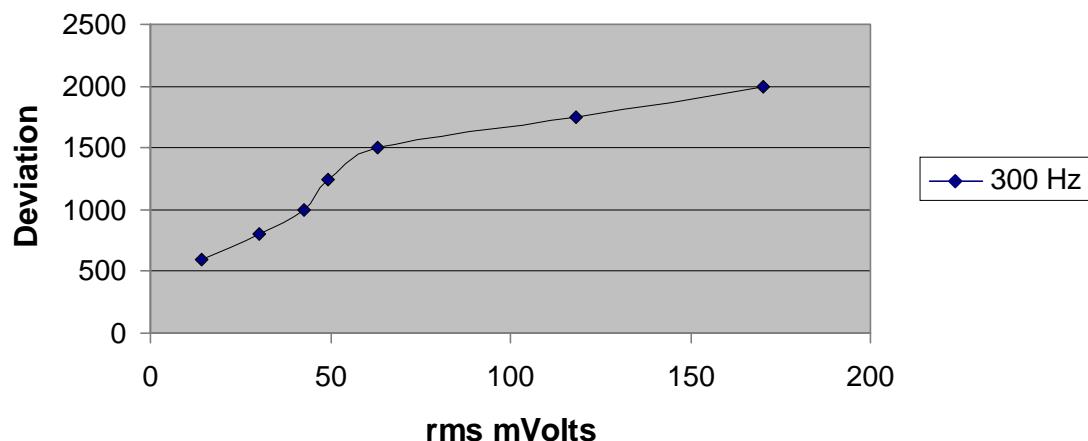
2.1047(b) Audio input versus modulation

The audio input level needed for a particular percentage of modulation was measured in accordance with TIA/EIA Specification 603. The audio input curves versus modulation are on the following pages. Curves are provided for audio input frequencies of 300, 1000, and 3000 Hz. See pages 4A-4C.

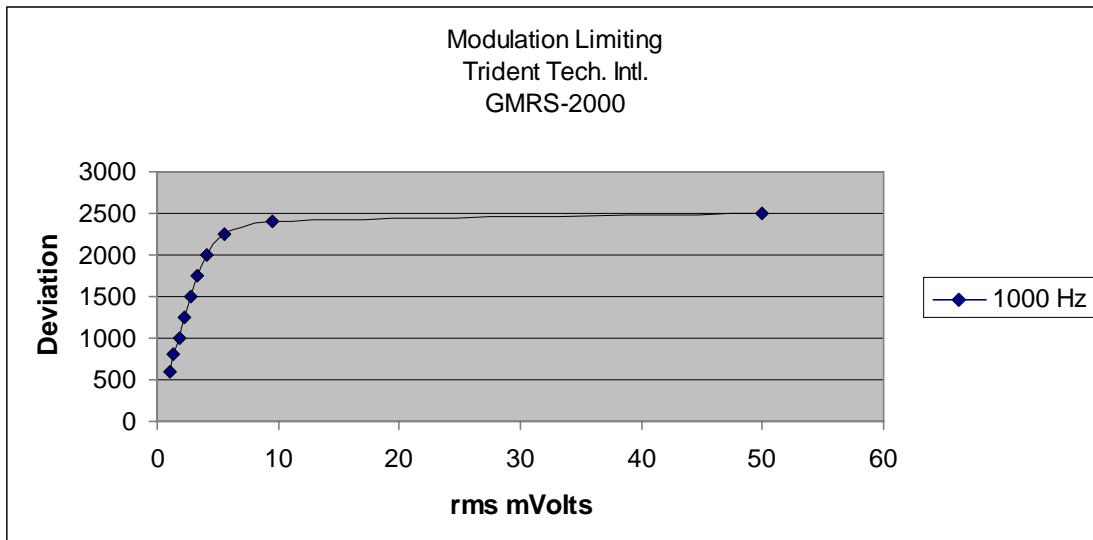
95.637 Post Limiter Filter Each GMRS transmitter, except a mobile station transmitter with a power of 2.5Watts or less, must be equipped with an audio low pass filter. At any frequency between 3 & 20KHz the filter must have an attenuation of  $60\log(f/3)$  greater than the attenuation at 1KHz. See Exhibit 9.



Modulation Limiting  
Trident Tech. Intl.  
GMRS-2000



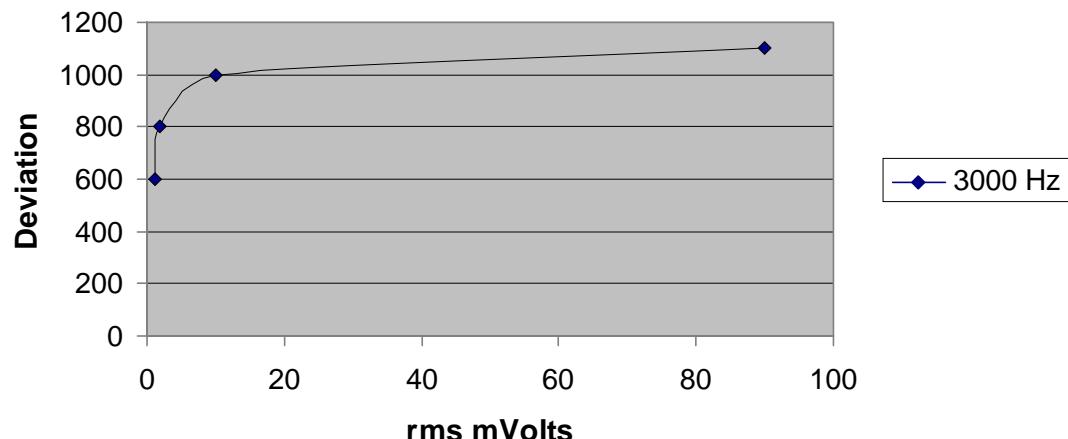
APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID: PDHGMRS-2000  
DATE: FEBRUARY 21, 2001  
REPORT #: T:\cus\T\TRIDENT\604zK0\604zk0rpt.doc  
PAGE #: 4A



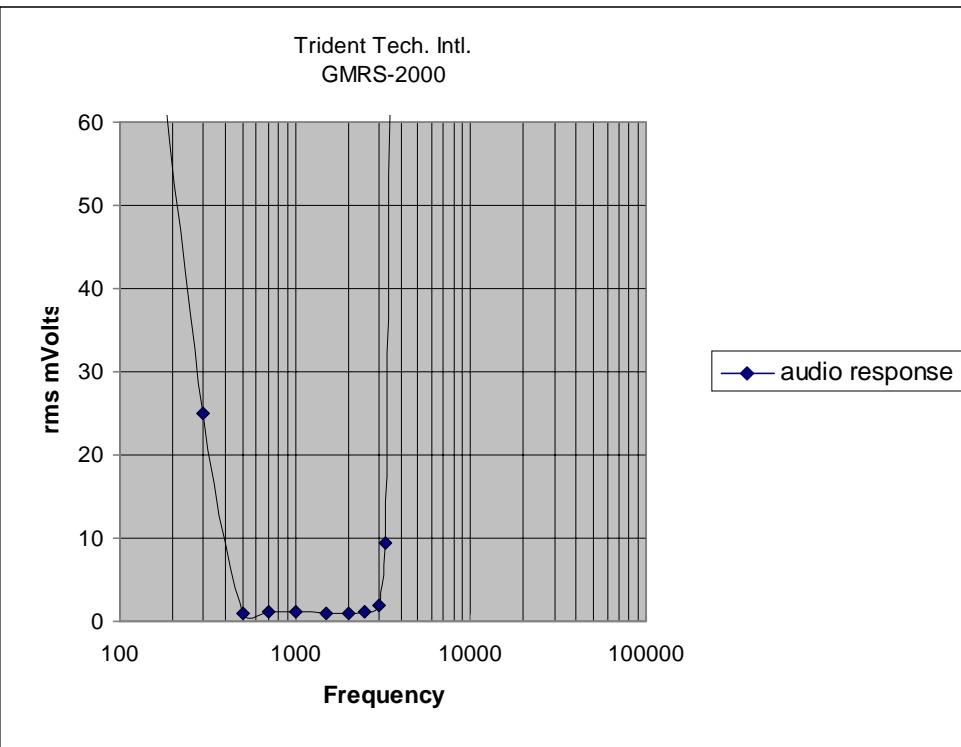
APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID: PDHGMRS-2000  
DATE: FEBRUARY 21, 2001  
REPORT #: T:\cus\T\TRIDENT\604zK0\604zk0rpt.doc  
PAGE #: 4B



Modulation Limiting  
Trident Tech. Intl.  
GMRS-2000



APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID: PDHGMRS-2000  
DATE: FEBRUARY 21, 2001  
REPORT #: T:\cus\T\TRIDENT\604zk0\604zk0rpt.doc  
PAGE #: 4C



TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID: PDHGMRS-2000  
JOB #: 604ZK0  
EXHIBIT #: 11

APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID: PDHGMRS-2000  
DATE: FEBRUARY 21, 2001  
REPORT #: T:\cus\T\TRIDENT\604zk0\604zk0rpt.doc

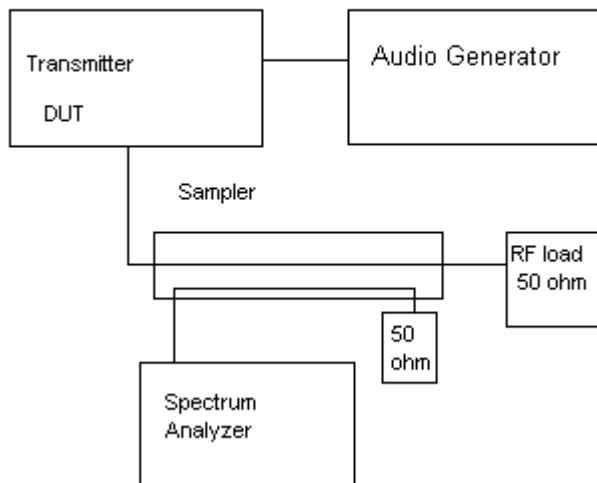
PAGE #: 5

2.1049 Occupied bandwidth:

95.635(b)(1)(3)(7)

At least 25dB on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth. At least 35 dB on any frequency removed from the center of the authorized BW by more than 100% up to and including 250% of the authorized BW. At least  $43 + \log_{10}(T)$  on any frequency removed from the center of the authorized bandwidth by more than 250%.

Occupied BW Test Equipment Setup



APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL

FCC ID: PDHGMRS-2000

DATE: FEBRUARY 21, 2001

REPORT #: T:\cus\T\TRIDENT\604zK0\604zk0rpt.doc

PAGE #: 6

hp REF 68.4 dB $\mu$ V ATTEN 10 dB +0 dB

MKR 462.600 2 MHz

68.20 dB $\mu$ V

10 dB/

OFFSET  
-20.0  
dB

TRIDENT TECHNOLOGY  
INTERNATIONAL  
JOB #: 604ZK0  
FCC ID: PDHGMRS-2000  
PAGE #: 7A

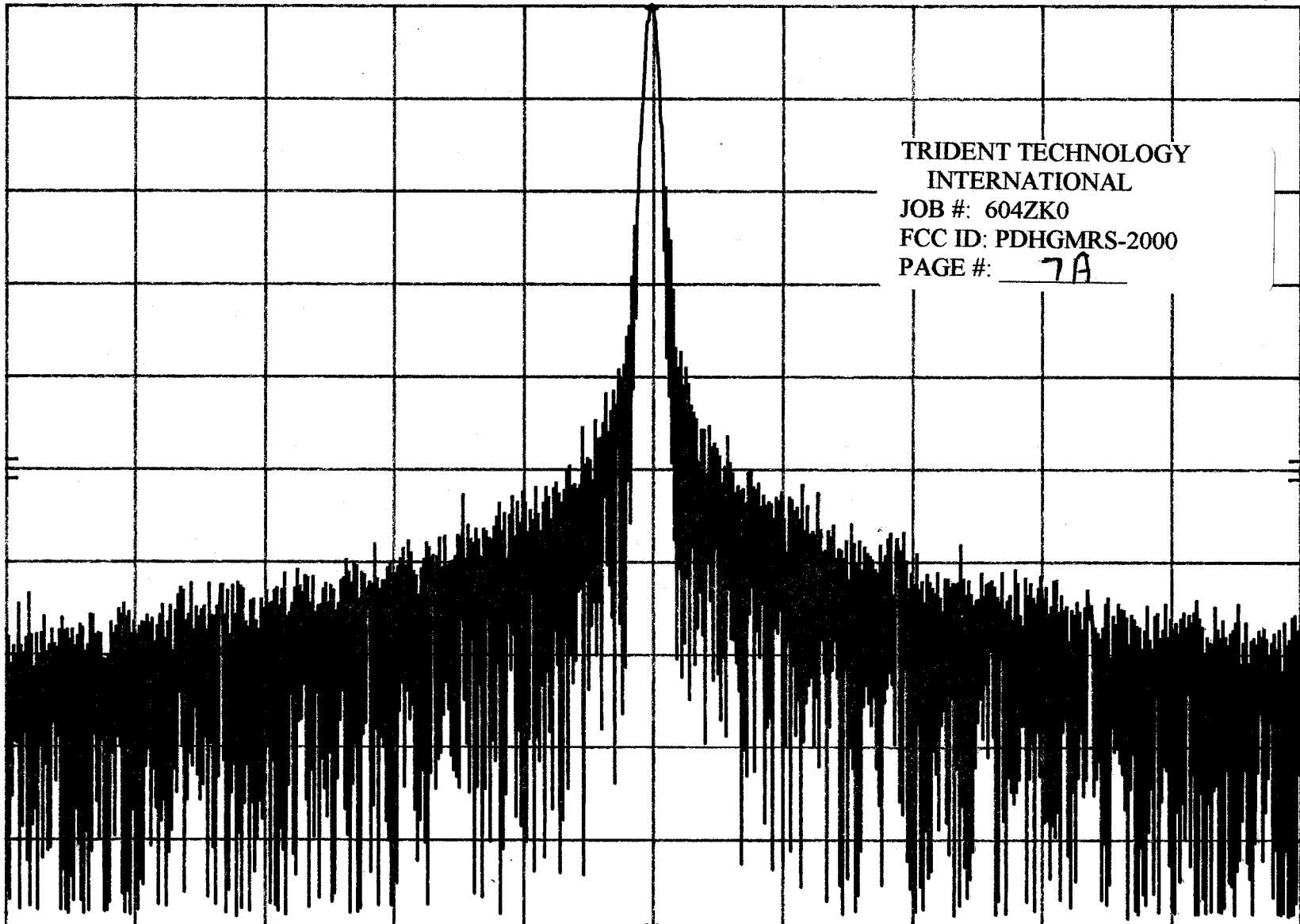
CENTER 462.600 MHz

RES BW 1 kHz (i)

VBW 100 kHz

SPAN 100 kHz

SWP 4.00 sec



MKR 462.600 4 MHz  
67.50 dB $\mu$ V

hp

REF 68.4 dB $\mu$ V ATTEN 10 dB +0 dB

10 dB/

OFFSET  
-20.0  
dB

TRIDENT TECHNOLOGY  
INTERNATIONAL  
JOB #: 604ZK0  
FCC ID: PDHGMRS-2000  
PAGE #: 7B

CENTER 462.600 MHz

RES BW 1 kHz (i)

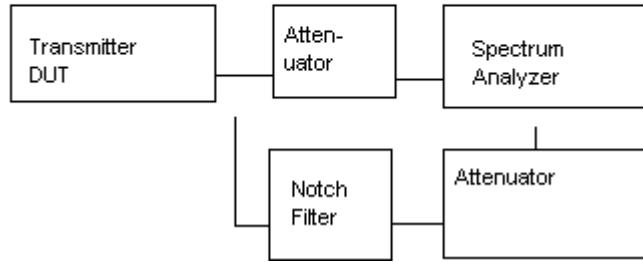
VBW 100 kHz

SPAN 100 kHz

SWP 4.00 sec

2.1051 Spurious emissions at antenna terminals (conducted):  
 The following data shows the level of conducted spurious responses at the antenna terminal. The test procedure used was TIA/EIA 603 S2.2.13 with the exception that the emissions were recorded in dBc. The spectrum was scanned from 0.4 to at least the 10th harmonic of the fundamental.

Spurious Emissions at  
 Antenna Terminals



Method of Measuring Conducted Spurious Emissions

2.1051 Spurious emissions at the Antenna Terminals

NAME OF TEST: SPURIOUS EMISSIONS AT ANTENNA TERMINALS

REQUIREMENTS: Emissions must be  $43 + 10\log(P_o)$  dB below the mean power output of the transmitter.

HIGH POWER  $43 + 10\log(2.0) = 46.01$  dB OR 70dB Whichever is the lessor

LOW POWER  $43 + 10\log(0.30) = 37.77$  dB

EMISSION FREQUENCY MHz	dB BELOW CARRIER	EMISSION FREQUENCY MHz	Db BELOW CARRIER
<u>HIGH POWER</u>		<u>LOW POWER</u>	
462.60	00.0	462.60	00.0
925.20	54.2	925.20	45.5
1387.80	77.5	1387.80	76.1
1850.40	74.7	1850.40	72.5
2313.00	91.1	2313.00	80.9
2775.60	92.3	2775.60	91.9
3238.20	96.3	3238.20	100.2
3700.08	82.3	3700.80	86.1
4163.40	105.8	4163.40	94.1
4626.00	99.8	4626.00	94.1

APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL

FCC ID: PDHGMRS-2000

DATE: FEBRUARY 21, 2001

REPORT #: T:\cus\T\TRIDENT\604zK0\604zk0rpt.doc

PAGE #: 8



2.1053  
95.635(b)(7)

UNWANTED RADIATION:

The tabulated Data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 to at least the 10th harmonic of the fundamental. This test was conducted per TIA/EIA Standard 603 paragraph 2.2.12, the substitution method.

REQUIREMENTS: HIGH POWER:  $43 + 10\log(2.0) = 46.01$  dB  
LOW POWER:  $43 + 10\log(0.30) = 37.77$  dB

TEST DATA:

EMISSION FREQUENCY <u>MHz</u>	ATTN <u>dB</u>	MARGIN <u>dB</u>
-------------------------------------	-------------------	---------------------

LOW

462.60	0.00	0.00
925.20	52.54	14.77
1387.80	58.49	20.72
1850.40	66.23	28.46
2313.00	64.18	26.41
2775.60	74.95	37.18
3238.20	73.33	35.56
3700.80	69.20	31.43
4163.40	67.90	30.13
4626.00	68.41	30.64

HIGH

462.60	0.00	0.00
925.20	55.04	9.03
1387.80	75.29	29.28
1850.40	82.03	36.02
2313.00	90.38	44.37
2775.60	94.05	48.04
3700.80	87.90	41.89

METHOD OF MEASUREMENT: The procedure used was TIA/EIA 603. The measurements were made at the test site located at TIMCO ENGINEERING INC. 849 NW State Road 45 Newberry, Florida 32669.

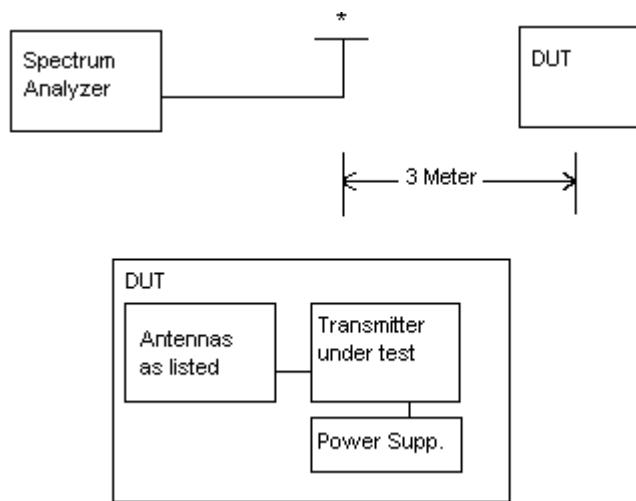
APPLICANT : TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID : PDHGMRS-2000  
DATE : FEBRUARY 21, 2001

REPORT # : T:\cus\T\TRIDENT\604zK0\604zk0rpt.doc  
PAGE # : 9

APPLICANT : TRIDENT TECHNOLOGY INTERNATIONAL

FCC ID : PDHGMRS-2000

Method of Measuring Radiated Spurious Emissions



Equipment placed 80cm above ground  
on a rotatable platform.

\* Appropriate antenna raised from 1 to 4 M.

APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID: PDHGMRS-2000  
DATE: FEBRUARY 21, 2001  
REPORT #: T:\cus\T\TRIDENT\604zk0\604zk0rpt.doc  
PAGE #: 10



2.1055  
95.621(b)

Frequency stability:

Temperature and voltage tests were performed to verify that the frequency remains within the 0.0005%, 5 ppm specification limit. The test was conducted as follows: The transmitter was placed in the temperature chamber at 25 degrees C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15 second intervals. The worse case number was taken for temperature plotting. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -30 degrees C after which the transmitter was again allowed to stabilize for one hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15 second intervals. The worst case number was recorded for temperature plotting. This procedure was repeated in 10 degree increments up to + 50 degrees C.

Readings were also taken at plus and minus 15% of the battery voltage of 7.5 VDC.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 462.600 000

TEMPERATURE_°C	FREQUENCY_MHz	PPM
REFERENCE_____	462.600000	00.00
-30C_____	462.600540	+1.16
-20C_____	462.600650	+1.40
-10C_____	462.601850	+4.00
0C_____	462.601630	+4.47
10C_____	462.601630	+3.52
20C_____	462.600770	+1.67
30C_____	462.599850	-0.33
40C_____	462.599020	-2.12
50C_____	462.598580	-3.07

BATT. %	BATT. DATA	VOLTS	BATT. PPM
-15%	462.600455	6.375	0.98
+15%	462.600482	8.625	1.04

RESULTS OF MEASUREMENTS: The maximum frequency variation over the temperature range was -3.07 to +4.47 ppm. The maximum frequency variation with voltage was 1.04 ppm.

APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID: PDHGMRS-2000  
DATE: FEBRUARY 21, 2001

REPORT #: T:\cus\T\TRIDENT\604zK0\604zk0rpt.doc  
PAGE #: 11

APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID: PDHGMRS-2000

TEST EQUIPMENT LIST

1.  Spectrum Analyzer: HP 8566B-Opt 462, S/N 3138A07786, w/  
preselector HP 85685A, S/N 3221A01400, Quasi-Peak Adapter  
HP 85650A, S/N 3303A01690 & Preamplifier HP 8449B-OPT H02,  
S/N 3008A00372 Cal. 10/17/99
2.  Biconnical Antenna: Eaton Model 94455-1, S/N 1057
3.  Biconnical Antenna: Electro-Metrics Model BIA-25, S/N 1171
4.  Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632
5.  Log-Periodic Antenna: Electro-Metrics Model LPA-30, S/N 409
6.  Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180,  
1-18 GHz, S/N 2319
7.  18-26.3GHz Systron Donner Standard Gain Horn #DBE-520-20
8.  Horn 40-60GHz: ATM Part #19-443-6R
9.  Line Impedance Stabilization Network: Electro-Metrics Model  
ANS-25/2, S/N 2604 Cal. 2/9/00
10.  Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7
11.  Frequency Counter: HP Model 5385A, S/N 3242A07460 Cal 10/6/99
12.  Peak Power Meter: HP Model 8900C, S/N 2131A00545
13.  Open Area Test Site #1-3meters Cal. 12/22/99
14.  Signal Generator: HP 8640B, S/N 2308A21464 Cal. 9/23/99
15.  Signal Generator: HP 8614A, S/N 2015A07428
16.  Passive Loop Antenna: EMCO Model 6512, 9KHz to 30MHz, S/N  
9706-1211 Cal. 6/10/00
17.  Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 153  
Cal. 11/24/99
18.  AC Voltmeter: HP Model 400FL, S/N 2213A14499 Cal. 9/21/99
19.  Digital Multimeter: Fluke Model 8012A, S/N 4810047 Cal 9/21/99
20.  Digital Multimeter: Fluke Model 77, S/N 43850817 Cal 9/21/99
21.  Oscilloscope: Tektronix Model 2230, S/N 300572 Cal 9/23/99

APPLICANT: TRIDENT TECHNOLOGY INTERNATIONAL  
FCC ID: PDHGMRS-2000  
DATE: FEBRUARY 21, 2001  
REPORT #: T:\cus\T\TRIDENT\604zk0\604zk0rpt.doc

PAGE #: 12