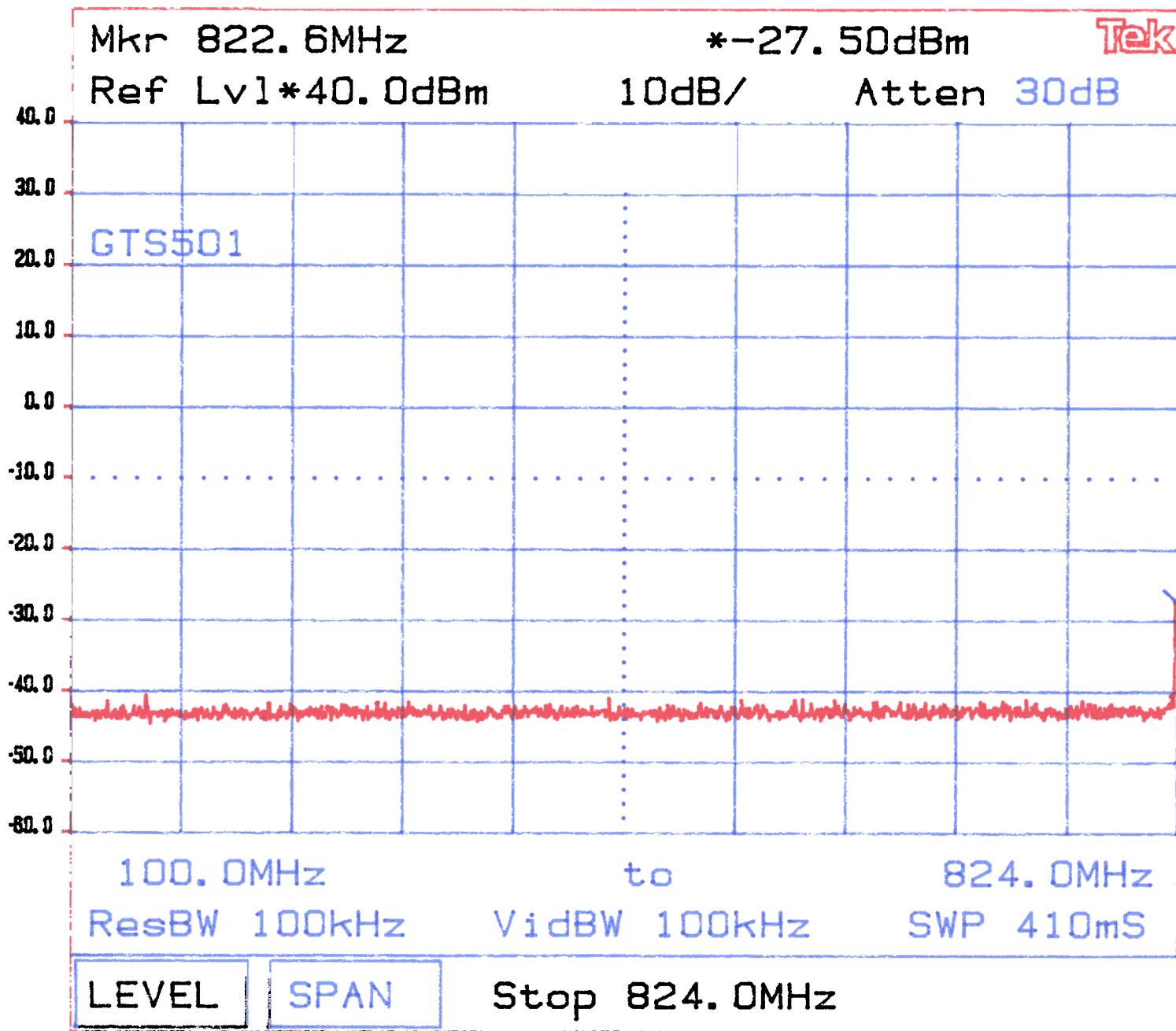




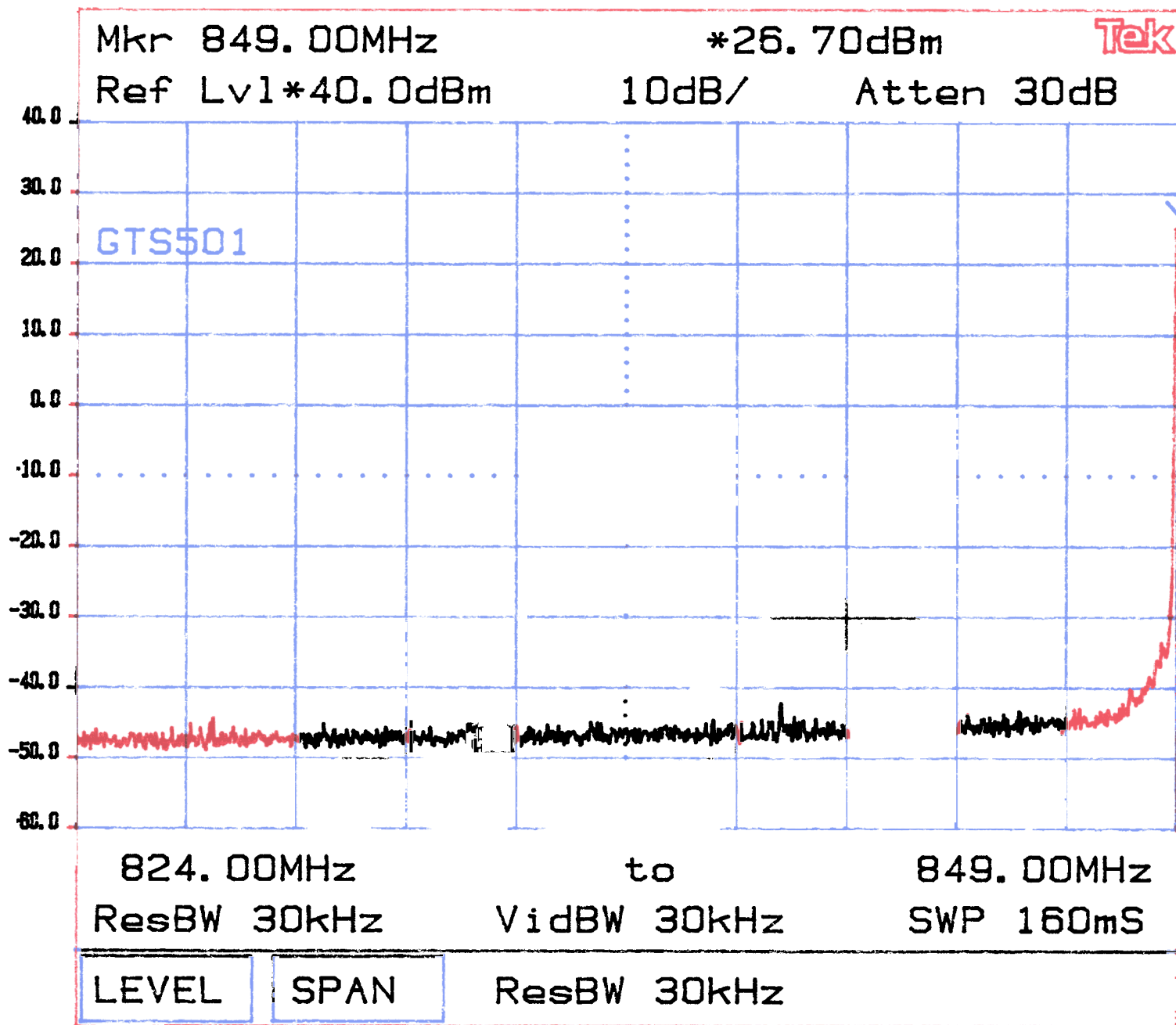
KNOB 2

KNOB 1

KEYPAD

Tektronix

2784



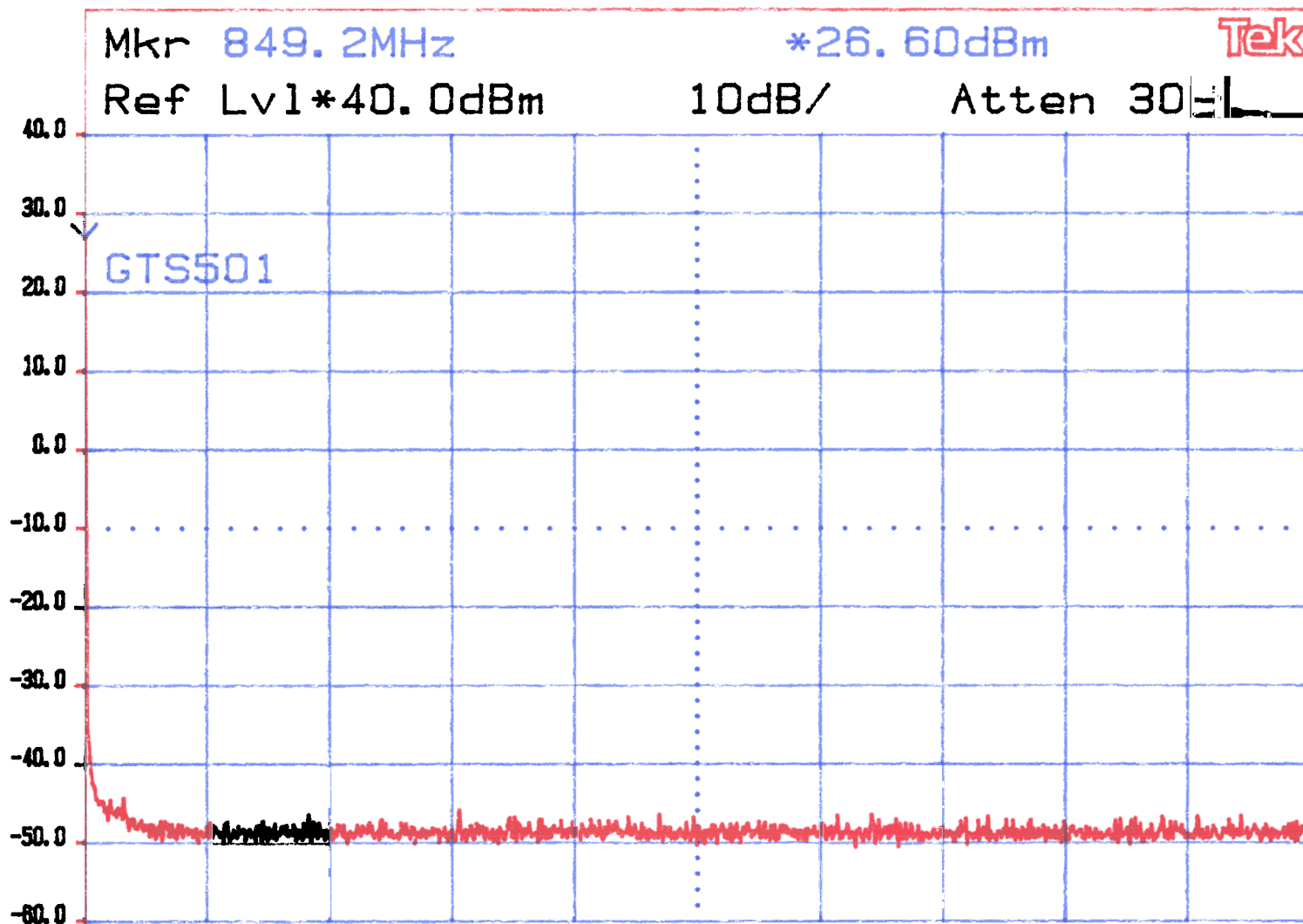
Knob 2

Knob 1

Keypad

Tektronix

2784



Plot 7.3.3 e

849.0MHz to 1.000 0GHz

ResBW 30kHz VidBW 30kHz SWP 960mS

LEVEL SPAN Stop 1.000 0GHz

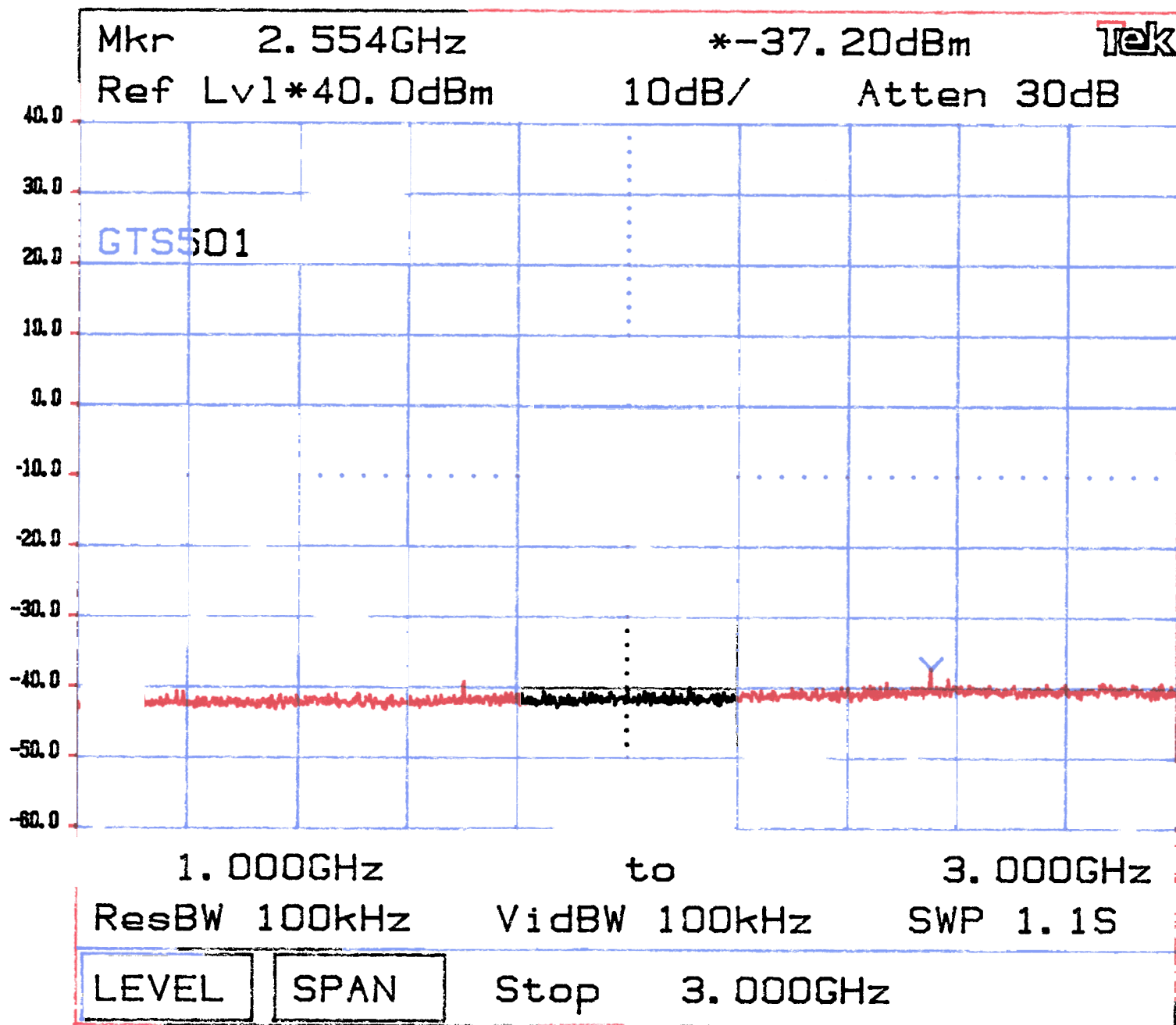
KnOB 2

KnOB 1

KEYPAD

Tektronix

2784



Plot 7.3.3f

8.3.a

Radiated Emissions Test Data

Company:	Continental Divide	Model #:	Skyguard500/GTS501	Standard	FCC § 15B
EUT:	Beltpack Tracking system	S/N #:	Not Labeled	Limit	2
Project #:	J20030421	Test Date:	Dec 6, 2000	Test Distance	3 meters
Test Mode:	Normal	Engineer:	Suresh K	Duty Relaxation	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	9	7	0	5	0	0	22	0	0	0
Model:	EMCO 3104	EM LPA-25	None	CDI_P950	None	None	Grn_M+L	None	None	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
350.20E+0	37.0	Peak	7	5	H	16.2	17.9	2.3	0.0	37.6	46.0	-8.4
368.60E+0	35.5	Peak	7	5	H	17.7	17.9	2.3	0.0	37.6	46.0	-8.4
423.90E+0	37.7	Peak	7	5	H	16.8	17.7	2.6	0.0	39.4	46.0	-6.6
442.40E+0	36.1	Peak	7	5	H	17.0	17.7	2.6	0.0	38.0	46.0	-8.0
460.80E+0	37.4	Peak	7	5	V	16.8	17.0	2.8	0.0	40.0	46.0	-6.0
423.97E+0	40.0	Peak	7	5	V	16.1	17.7	2.6	0.0	41.0	46.0	-5.0
442.40E+0	37.6	Peak	7	5	V	16.7	17.7	2.6	0.0	39.2	46.0	-6.8

Notes:	a) D.C.F.: Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss - Transducer Loss - Duty Relaxation (transmitter only)
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.

Radiated Emissions Test Data

Company:	Continental Divide Robotics	Model #:	Skyguard 500//GTS501	Standard_	FCC § 15B
EUT:	Belt Pack Tracking System	S/N #:		Limits	2
Project #:	J20030241	Test Date:	Dec 7, 2000	Test Distance_	3 meters
	Normal	Engineer:	Suresh	Duty Relaxation	0 dB

	Antenna Used			Pre-Amp Used		Cable Used			Transducer Used	
Number:	2	14	7	5	8	0	21	0	0	0
Model:	EMCO 3143	EMCO 3115	EM LPA-25	CDI_P950	CDI_P1000	None	Gm_M+L	None	None	None

Frequency	Reading	Detector	Ant	Amp	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
988.68	20.9	Peak	7	5	V	23.8	9.4	2.3	0.0	37.6	54.0	-16.4
1977.20	25.9	Peak	14	8	V	26.6	29.2	2.2	0.0	25.5	54.0	-28.5
1001.19	30.2	Peak	14	8	V	26.2	30.3	2.3	0.0	28.4	54.0	-25.6
2002.30	24.8	Peak	14	8	V	30.1	29.1	2.3	0.0	28.1	54.0	
1013.61	26.4	Peak	14	8	V	26.2	30.3	2.3	0.0	24.6	54.0	
2027.20	25.1	Peak	14	8	V	30.1	29.1	2.3	0.0	28.4	54.0	

Notes:

a) D.C.F.: Distance Correction Factor

b) Insert. Loss (dB) = Cable A + Cable B + Cable C

c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. Transducer Loss - Duty Relaxation (transmitter only)

d) Negative signs (-) in Margin column signify levels below the limits.

e) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.

Radiated Emissions Test Data

Company: Continental Divide Robotics Inc

Model #: Skyguard
500/GTS501

Req: FCC 2.993

EUT: Belt pack Tracking System

S/N or FCC #:

Test Dist: 3 meter
s

Project #:

Test Date: Dec 6, 2000

TP: 0.60 Watt

Test Mode: Tx @ 825.015MHz

Engineer: Bob M.

Min. Attn: 40.78 dBc

Number:	Antenna Used			Pre-Amp Used		Cable Used			Transducer Used	
	7	14	12	5	8					
Model:	EM LPA-25	EMCO 3115	EMCO 3104	CDI_P950	CDI_P1000	None	Gm_M+L	None	None	None

Frequency	Reading	Detector	Ant Amp		Ant. Pol	Ant. Factor	Pre-Amp	Insert. Loss	Net	ERP	Attn.	Margin
MHz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB(μV/m)	mW	dBc	dB
825.02	93.1	Peak	7	0	V	21.9	0.0	2.0	117.0	9.17E+01	0.0	N/A
1650.03	35.2	Peak	14	0	V	26.6	0.0	3.0	64.8	5.52E-04		
1650.03	27.8	Ave.	14	0	V	26.6	0.0	3.0	57.4	1.01E-04		
2475.08	50.9	Peak	14	8	V	30.1	28.5	2.3	54.8	5.52E-05		
2475.08	46.7	Ave.	14	8	V	30.1	28.5	2.3	50.6	2.10E-05		
3300.03	45.3	Peak	14	8	V	31.3	27.9	2.5	51.2	2.41E-05		
3300.03	43.5	Ave.	14	8	V	31.3	27.9	2.5	49.4	1.59E-05		
4125.05	47.5	Peak	14	8	V	34.2	27.9	2.9	56.7	8.56E-05		
4125.05	46.1	Ave.	14	8	V	34.2	27.9	2.9	55.3	6.20E-05		
4950.06	36.1	Peak	14	8	V	33.9	28.1	3.2	45.1	5.92E-06		
4950.06	23.5	Ave.	14	8	V	33.9	28.1	3.2	32.5	3.25E-07		
5775.17	39.7	Peak	14	8	V	36.1	28.3	3.7	51.2	2.41E-05		
5775.17	31.3	Ave.	14	8	V	36.1	28.3	3.7	42.8	3.49E-06		
6600.09	41.5	Peak	14	8	V	36.4	28.0	4.2	54.1	4.70E-05		
6600.09	32.7	Ave.	14	8	V	36.4	28.0	4.2	45.3	6.20E-06		
7425.11	36.7	Peak	14	8	V	38.0	28.0	4.3	51.0	2.30E-05		
7425.11	26.2	Ave.	14	8	V	38.0	28.0	4.3	40.5	2.05E-06		
8250.15	35.0	Peak	14	8	V	37.9	27.2	4.8	50.5	2.05E-05		
8250.15	24.6	Ave.	14	8	V	37.9	27.2	4.8	40.1	2.01E-05		

Notes:

a) O.C.F.: Other Correction Factor

b) Insert. Loss = Cable A + Cable B + Cable C + Transducer.

c) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.

d) Attn. = Field Strength (Fundamental) - Field Strength (Harmonics).

e) Negative signs (-) in Margin column signify levels below the limits.

8.3.d

Radiated Emissions Test Data

Company: Continental Divide Robotics
EUT: Backpack Tracking System

Model #: Skyguard 500/GTS501
S/N or FCC #:

Req	FCC 2.993	
Test Dist	3	meters
TP	0.60	Watt
Min Attn	40.78	dBc

Project #: J22030428
Test Mode: TX@836.55MHz

Antenna Used			Pre-Amp Used		Cable Used			Transducer Used
Number:	7	14	12	8	0	21	0	0
Model:	EM LPA-25	EMCO 3115	EMCO 3104	CDI_P100 0	None	Grn_M+L	None	None

Frequency	Reading	Detector	Ant	Amp	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	Net	ERP	Attn.	Margin
MHz	dB(μV)	P/A/Q	#	#	H/V	dB(f/m)	dB	dB	dB(μV/m)	mW	dBc	dB
836.55	100.0	Peak	7	0	V	22.2	0.0	2.0	124.2	4.81E+02	0.0	N/A
1673.10	38.9	Peak	14	0	V	26.6	0.0	3.0	68.5	1.30E-03	55.7	-14.9
1673.10	28.6	Ave.	14	0	V	26.6	0.0	3.0	58.2	1.21E-04	66.0	-25.2
2509.65	67.2	Peak	14	8	V	30.4	28.5	2.3	71.4	2.53E-03	52.8	-12.0
2509.65	65.0	Ave.	14	8	V	30.4	28.5	2.3	69.2	1.52E-03	55.0	-14.2
3346.20	54.4	Peak	14	8	V	31.3	27.9	2.5	60.3	1.96E-04	63.9	-23.1
3346.20	52.2	Ave.	14	8	V	31.3	27.9	2.5	58.1	1.18E-04	66.1	-25.3
4182.75	58.1	Peak	14	8	V	34.2	27.9	2.9	67.3	9.82E-04	56.9	-16.1
4182.75	55.8	Ave.	14	8	V	34.2	27.9	2.9	65.0	5.78E-04	59.2	-18.4
5019.30	55.0	Peak	14	8	V	35.4	28.3	3.5	65.6	6.64E-04	58.6	-17.8
5019.30	52.5	Ave.	14	8	V	35.4	28.3	3.5	63.1	3.73E-04	61.1	-20.3
5855.85	52.1	Peak	14	8	V	36.1	28.3	3.7	63.6	4.19E-04	60.6	-19.8
5855.85	49.8	Ave.	14	8	V	36.1	28.3	3.7	61.3	2.47E-04	62.9	-22.1
6692.40	51.0	Peak	14	8	V	36.4	28.0	4.2	63.6	4.19E-04	60.6	-19.8
6692.40	46.5	Ave.	14	8	V	36.4	28.0	4.2	59.1	1.49E-04	65.1	-24.3
7528.95	45.4	Peak	14	8	V	37.8	28.0	4.6	59.8	1.75E-04	64.4	-23.6
7528.95	35.3	Ave.	14	8	V	37.8	28.0	4.6	49.7	1.71E-05	74.5	-33.7
8365.50	46.7	Peak	14	8	V	37.9	27.2	4.8	62.2	3.04E-04	62.0	-21.2
8365.50	26.4	Ave.	14	8	V	37.9	27.2	4.8	41.9	2.83E-06	82.3	-41.5

Notes:

- a) O.C.F.: Other Correction Factor
- b) Insert. Loss = Cable A + Cable B + Cable C + Transducer.
- c) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.
- d) Attn. = Field Strength (Fundamental) - Field Strength (Harmonics).
- e) Negative signs (-) in Margin column signify levels below the limits.

Radiated Emissions Test Data

Company:	Continental Divide Robotics Inc	Model #:	Skyguard 500/GTS 501	Req	FCC 2 993
EUT:	Beltpack Tracking System	S/N or FCC #:		Test Dist	3 meter s
Project #:	J20030241	Test Date:	Dec 6, 2000	TP	0.60 Watt
Test Mode:	Tx@848.97	Engineer:	Suresh K.	Min Attn	40.78 dBc

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	7	14	12	8	3	13	21	0	0	0
Model:	EM LPA-25	EMCO 3115	EMCO 3104	CDI_P100 0	MC 15542	ACO/400	Gm_M+L	None	None	None

2

Frequency	Reading	Detector	Ant	Amp	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	Net	ERP	Attn.	Margin
MHz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB(μV/m)	mW	dBc	dB
848.97	100.0	Peak	7	0	V	22.0	0.0	2.0	124.0	4.59E+02	0.0	N/A
1697.94	32.2	Peak	14	0	V	26.6	0.0	3.0	61.8	2.77E-04		
1697.94	22.6	Ave.	14	0	V	26.6	0.0	3.0	52.2	3.04E-05		
2546.91	69.2	Peak	14	8	V	30.4	28.5	2.3	73.4	4.00E-03		
2546.91	68.1	Ave.	14	8	V	30.4	28.5	2.3	72.3	3.11E-03		
3395.88	56.6	Peak	14	8	V	31.3	27.9	2.5	62.5	3.25E-04		
3395.88	54.9	Ave.	14	8	V	31.3	27.9	2.5	60.8	2.20E-04		
4244.85	63.0	Peak	14	8	V	34.2	27.9	2.9	72.2	3.04E-03		
4244.85		Ave.	14	8	V	34.2	27.9	2.9	70.2	1.92E-03		
5093.82		Peak	14	8	V	35.4	28.3	3.5	69.3	1.56E-03		
5093.82		Ave.	14	8	V	35.4	28.3	3.5	67.5	1.03E-03		
5942.79		Peak	14	8	V	36.1	28.3	3.7	63.9	4.49E-04		
5942.79	51.5	Ave.	14	8	V	36.1	28.3	3.7	63.0	3.69E-04		
6791.76	48.7	Peak	14	8	V	36.4	28.0	4.2	61.3	2.47E-04		
6791.76	46.7	Ave.	14	8	V	36.4	28.0	4.2	59.3	1.56E-04		
7640.73		Peak	14	8	V	37.8	27.8	4.6	56.4	7.99E-05		
7640.73	35.3	Ave.	14	8	V	37.8	27.8	4.6	49.9	1.79E-05		
	38.3	Peak	14	8	V	37.9	27.1	4.8	53.9	4.49E-05		
	26.4	Ave.	14	8	V	37.9	27.1	4.8	42.0	2.90E-06		

- Notes:**
- a) O.C.F. Other Correction Factor
 - b) Insert. Loss = Cable A + Cable B + Cable C + Transducer.
 - c) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.
 - d) Attn. = Field Strength (Fundamental) - Field Strength (Harmonics).
 - e) Negative signs (-) in Margin column signify levels below the limits.

Spurious Emissions Attenuation Measured by Substitution Method

Company: Continental Divide Robotics EUT: Beltpack Tracking System Model: Sky Guard 500/GTS 501

Frequency MHz	Field from EUT dBuv/m	Signal Generator Level required to generate same field as EUT; dBm	ERP dBm	Attenuation dBm
1650.04	64.8	-44.50	-39.6	64.3
2475.06	54.8	-52.70	-47.20	71.90
3300.08	51.2	-53.50	-47.50	72.20
4125.10	49.4	-54.40	-48.40	73.10
4950.12	56.7	-48.60	-42.00	66.70
5775.14	51.2	-54.30	-47.70	72.40
6600.16	54.1	-51.70	-43.80	68.50
7425.18	51.0	-54.20	-46.40	71.10
8250.20	50.5	-56.30	-47.40	72.10

Spurious Emissions Attenuation Measured by Substitution Method

Company: Continental Divide Robotics EUT: Beltpack Tracking System Model: Sky Guard 500/GTS 501

Frequency MHz	Field from EUT dBuV/m	Signal Generator Level required to generate same field as EUT; dBm	ERP dBm	Attenuation dBm
1673.10	68.5	-40.80	-35.9	61.1
2509.65	71.4	-36.10	-30.60	55.80
3346.20	69.2	-35.50	-29.50	54.70
4182.75	67.3	-36.50	-30.50	55.70
5019.30	65.6	-39.70	-33.10	58.30
5855.85	63.6	-41.90	-35.30	60.50
6692.40	63.6	-42.20	-34.30	59.50
7528.95	59.8	-45.40	-37.60	62.80
8365.50	62.0	-44.80	-35.90	61.10

Spurious Emissions Attenuation Measured by Substitution Method

Company: Continental Divide Robotics EUT: Beltpack Tracking System Model: Sky Guard 500/GTS 501

Frequency MHz	Field from EUT dBuv/m	Signal Generator Level required to generate same field as EUT; dBm	ERP dBm	Attenuation dBm
1697.94	61.8	-47.50	-42.6	67.6
2546.91	73.4	-34.10	-28.60	53.60
3395.88	62.5	-42.20	-36.20	61.20
4244.85	72.2	-31.60	-25.60	50.60
5093.82	69.3	-36.00	-29.40	54.40
5942.79	63.9	-41.60	-35.00	60.00
6791.76	61.3	-44.50	-36.60	61.60
7640.73	56.4	-48.80	-41.00	66.00
8489.70	53.9	-52.90	-44.00	69.00

Continental Divide Robotics, Model No: GTS501

Date of Test: 12/6-8/00 & 1/26-27/01

FCC ID: PI8SG501

8.4 Configuration Photographs

Radiated Emissions Test Setup



Continental Divide Robotics, Model No: GTS501

Date of Test: 12/6-8/00 & 1/26-27/01

FCC ID: PI8SG501

8.4 Configuration Photographs (Continued)

Radiated Emissions Test Setup



Continental Divide Robotics, Model No: GTS501
FCC ID: PI8SG501

Date of Test: 12/6-8/00 & 1/26-27/01

9.0 Line Conducted Emissions
FCC 15.107

9.1 Test Procedure

Test procedure described in the ANSI C63.4 Standard was employed.

Test not applicable

9.2 Test Results - Line Conducted Emissions

Test not performed as EUT is Battery Powered.

Continental Divide Robotics, Model No: GTS501
FCC ID: PI8SG501

Date of Test: 12/6-8/00 & 1/26-27/01

10.0 Frequency Stability vs Temperature
FCC 2.1055, 22.355

Frequency Tolerance: 2.5 ppm

10.1 Test Procedure

The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feedthrough attenuators. The EUT was placed inside the temperature chamber. The DC leads, RF output cable, and external PTT cable exited the chamber through an opening made for that purpose.

After the temperature stabilized for approximately 20 minutes, the external PTT switch was activated, and the frequency output was recorded from the counter.

10.2 Test Equipment

Temperature Chamber, -50C to +100C
Hewlett Packard 5383A Frequency Counter
Goldstar DC Power Supply, GR303
Rohde & Schwarz ESVP Test Receiver

10.3 Test Results

Test Result:	Passed
--------------	--------

Frequency: 836.52 MHz			
Temperature, C	Frequency (MHz)	Difference (Hz)	Output Power, (dBm)
60	836.519013	-987	26.8
50	836.519588	-412	26.8
40	836.519838	-162	26.8
30	836.519763	-237	26.9
20	836.519700	-300	26.7
10	836.519813	-187	26.7
0	836.519688	-312	26.5
-10	836.519775	-225	26.5
-20	836.519900	-100	26.4
-30	836.519625	-375	26.4

Continental Divide Robotics, Model No: GTS501
FCC ID: PI8SG501

Date of Test: 12/6-8/00 & 1/26-27/01

11.0 Frequency Stability vs Voltage
FCC 2.1055, 22.355

Frequency Tolerance: 2.5 ppm

Test Procedure

An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminates; i.e., the battery end point. The output frequency was recorded for each battery voltage.

Test Equipment

Hewlett Packard 5383A Frequency Counter
DC Power Supply
Rohde & Schwarz ESVP Test Receiver

Test Results.

Test Result:	Passed
--------------	--------

Tx Frequency: 836.01 MHz
Tolerance: +/- 2091 Hz

Supply (Battery) Volts	Frequency (MHz)	Difference (“ Hz)	Output Power (dBm)
3.4	836.010084	84	25.86
3.6	836.010128	128	26.03
3.9	836.010177	177	26.23
4.5	836.010199	199	26.31

Continental Divide Robotics, Model No: GTS501
FCC ID: PI8SG501

Date of Test: 12/6-8/00 & 1/26-27/01

12.0 Miscellaneous Comments

None.