FCC CFR47 PART 22H & 24E
CERTIFICATION
TEST REPORT

FOR

GSM MULTI-BAND SELF-CONTAINED GPS TRACKING DEVICE WITH BEACON TECHNOLOGY

MODEL NAME: GT1040 & SNT-250

FCC ID: Q2USNT250

REPORT NUMBER: 06U10619-1C

ISSUE DATE: JANUARY 29, 2007

Prepared for
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Prepared by
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*Details of specific model(s) tested and model differences are identified in body of report

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	11/02/06	Initial Issue	Thu
B	12/11/06	Added MPE Section	Thu
C	1/29/07	Added Cross Reference Section	Thu

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	GEOTRAX PROTECTION LLC P O BOX 6021 SCOTTSDALE AZ 85261, USA
EUT DESCRIPTION:	GSM MULTI-BAND SELF-CONTAINED GPS TRACKIG DEVICE WITH BEACON TECHNOLOGY
MODEL TESTED:	GT1040
SERIAL NUMBER:	010666000084422
DATE TESTED:	OCTOBER 9-13, 2006

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22 H and 24 E	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

CHIN PANG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603C (2004), ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15 and FCC CFR 47 Part 22H and 24E.

3. CROSS REFERENCE TO OTHER REPORTS ON THIS PRODUCT

Other report is applicable to this product grant under FCC ID: MIVGSM0108 by Enfora L.P. manufacturer on 02/03/2004.

4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

5. CALIBRATION AND UNCERTAINTY

5.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The EUT is a GSM multi-band self-contained GPS device with beacon technology.
The radio module is manufactured by Enfora with FCC ID: MIVGSM0108
The device is manufactured by Geotrax Protection LLC.

The radio utilizes a dual-folded mono-pole antenna, with a maximum gain of 0dBi.

The device is a battery-power electronic device as depicted in Figure 1. It is comprised of a GSM (Global System for Mobile Communications) transceiver, a GPS receiver, an RF beacon transmitter, the necessary antennas, a battery, power conditioning circuits, an external connector for charging and on/off control, and a hard-case enclosure made of plastic. Unlike its related product, the SNT-250, the GT1040 does not have a magnet underneath for quick mounting as its weight is somewhat prohibitive for that application

6.2. MANUFACTURER'S DESCRIPTION OF MODEL DIFFERENCES

Both models SNT-250 & GT1040 used the same consists of a rugged, plastic shell encasing the device electronics, except the GT1040 has a large case & (10) additional batteries.

6.3. WORST-CASE CONFIGURATION AND MODE

All radiated emissions tests were performed on the GT1040 as worst case condition described above.

The portable configuration at Y-Axis has the worst field strength emissions for portable configuration. So, all radiated emissions tests were performed at Y-axis portable configuration.

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 836.52MHz.and 1880MHz from the communication test set.

6.4. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power and ERP & EIRP as follows:

824 to 849 MHz Authorized Band

Frequency Range (MHz)	Modulation	Conducted Output Power (dBm)	Conducted Output Power (mW)	ERP Output Power (dBm)	ERP Output Power (mW)
824.2 - 848.8	GSM	31.3	1348.96	29.70	933.25

1850 - 1910 MHz Authorized Band

Frequency Range (MHz)	Modulation	Conducted Output Power (dBm)	Conducted Output Power (mW)	EIRP Output Power (dBm)	EIRP Output Power (mW)
1850.2 - 1909.8	GSM	29.8	954.99	30.20	1047.13

6.5. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a dual-folded monopole antenna, with a maximum gain of 0dBi.

6.6. SOFTWARE AND FIRMWARE

The EUT is linked with CMU200 tester support equipment during testing.

6.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Communication Tester	R & S	CMU 200	838114/032	DoC
Antenna, Horn 1 ~ 18 GHz	ETS	3117	29310	NA

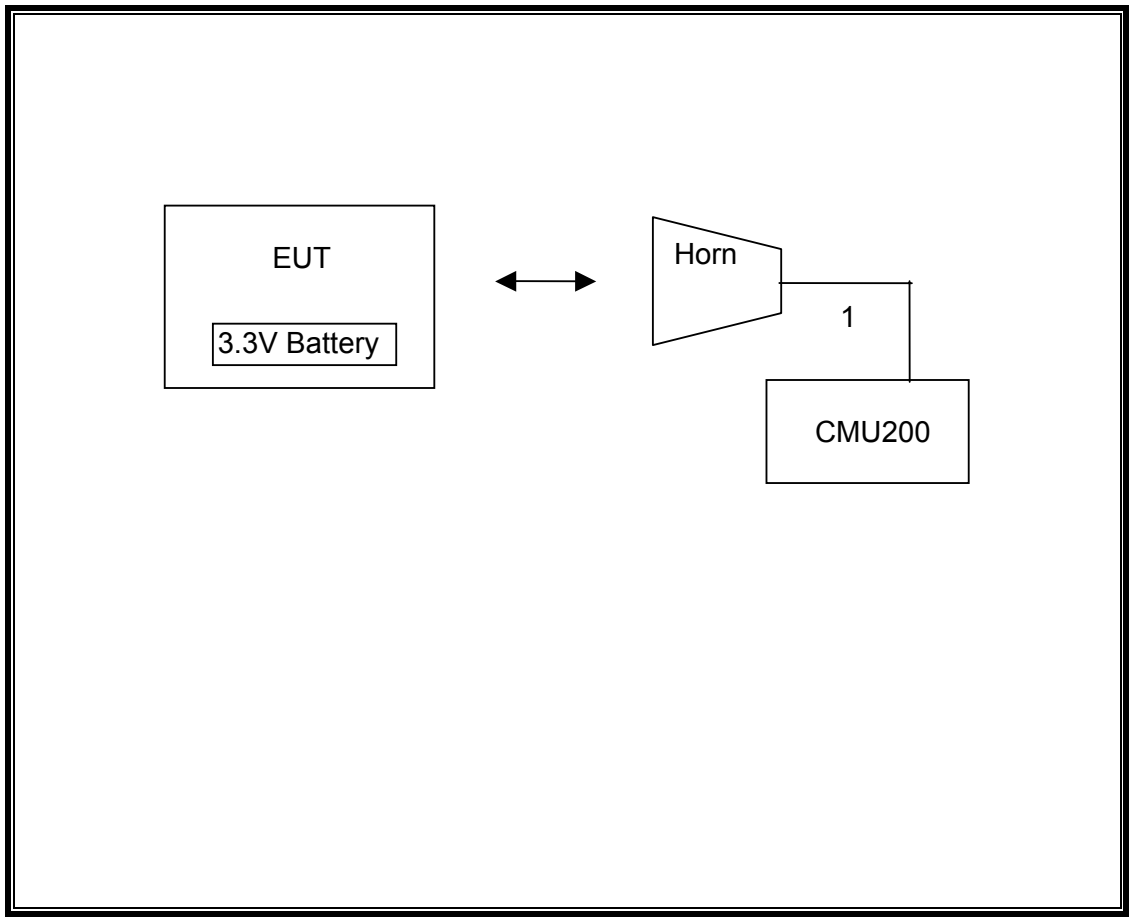
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	RF out	1	Horn	Un-Shielded	2m	Link Wireless Set to GSM Device

TEST SETUP

The EUT is installed as a stand-alone device during the tests. The Wireless Communication test set exercised the EUT

SETUP DIAGRAM FOR TESTS



7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Description	Manufacturer	Model	Serial Number	Cal Due
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	9/3/2007
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent / HP	8542E	3942A00286	2/4/07
RF Filter Section	Agilent / HP	85420E	3705A00256	2/4/07
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	9001-3245	4/22/07
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00561	10/3/07
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	29800	6/10/07
EMI Test Receiver	R & S	ESHS 20	827129/006	6/3/07
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/07
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY43360112	5/3/07
Communication Tester	R & S	CMU 200	838114/032	12/17/07
Signal Generator, 10 MHz ~ 20 GHz	HP	83732B	US34490599	7/7/07
Tuned Dipole Antenna 400~1000 MHz	ETS	3121CDB4	1620	5/7/07
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	9/12/07

8. LIMITS AND RESULTS

8.1. OCCUPIED BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the -26 dB bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal -26 dB bandwidth function is utilized.

RESULTS

No non-compliance noted:

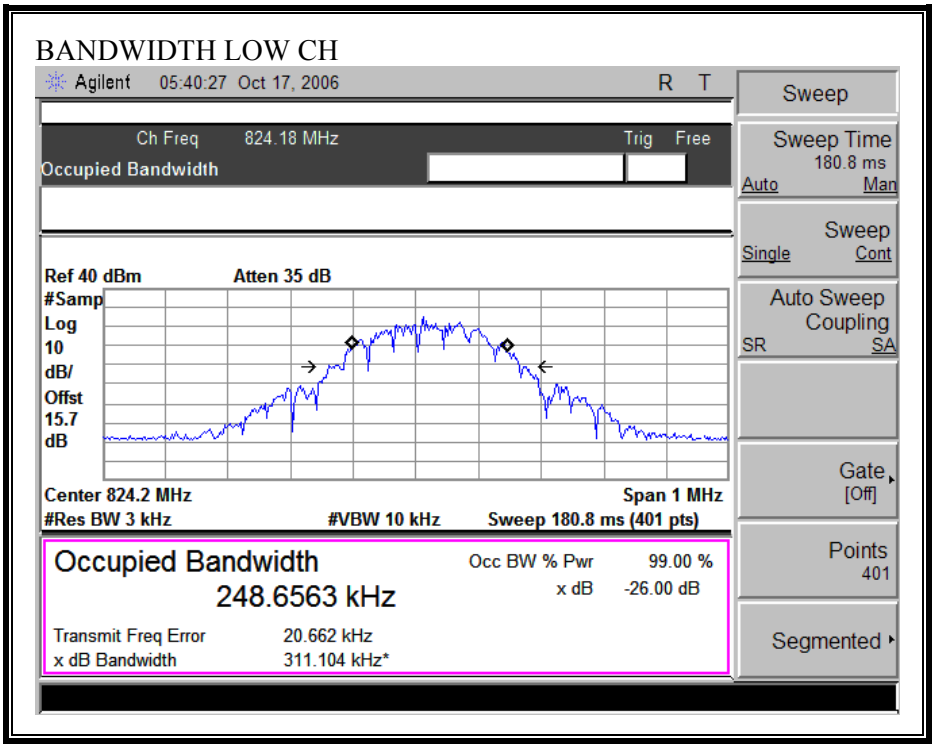
GSM850 Modulation

Channel	Frequency (MHz)	Bandwidth (kHz)
Low	824.2	311.104
Middle	836.5	320.361
High	848.8	317.509

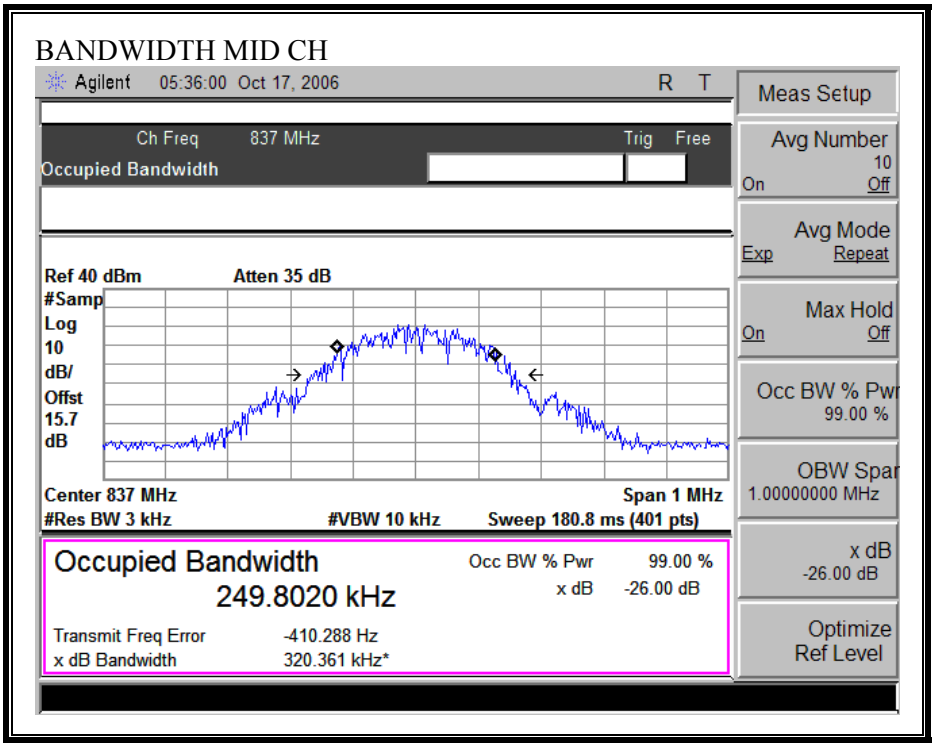
GSM1900 Modulation

Channel	Frequency (MHz)	Bandwidth (kHz)
Low	1850.2	311.329
Middle	1880	313.124
High	1909.8	310.704

GSM850 26 dB BANDWIDTH



BANDWIDTH MID CH



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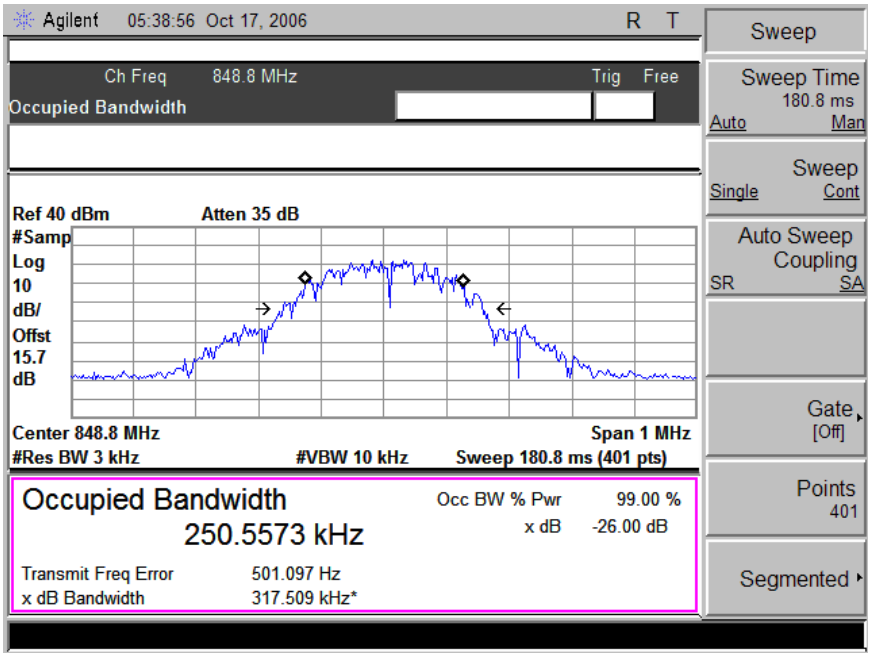
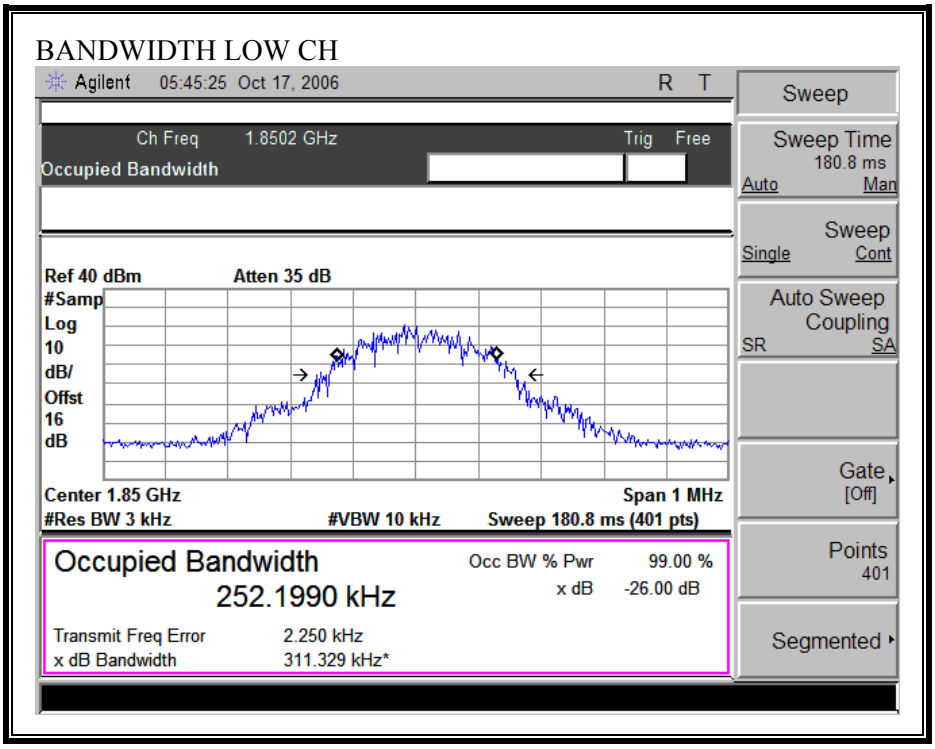
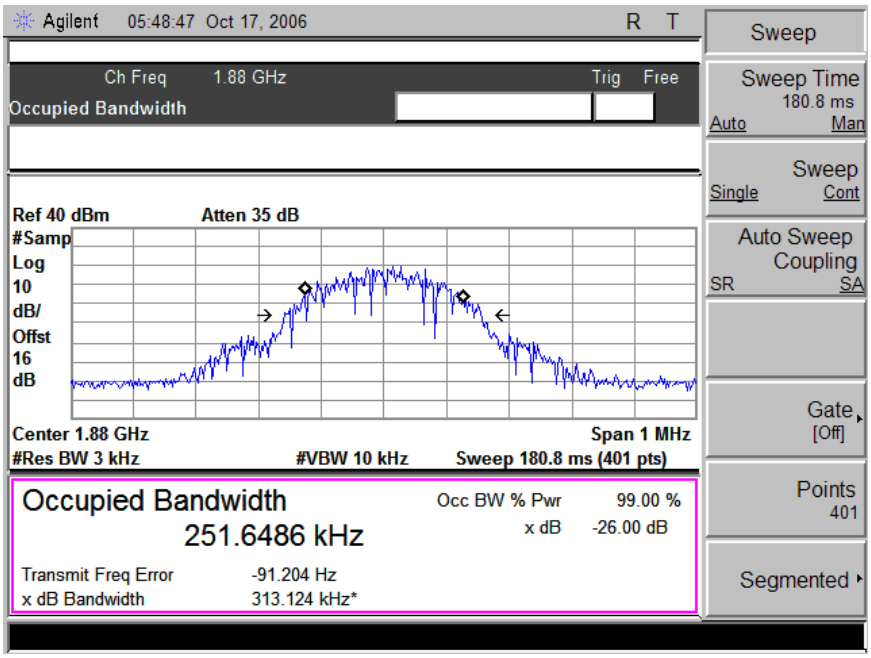


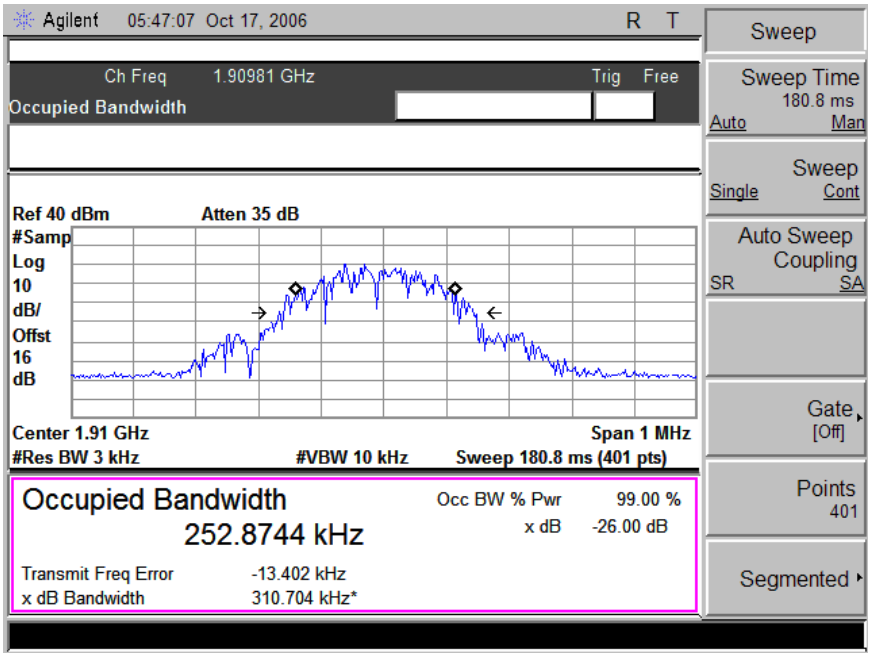
GSM1900 26 dB BANDWIDTH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



8.2. RF POWER OUTPUT

LIMIT

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(b) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.2.17

RESULTS

No non-compliance noted.

850 MHz GSM Mode

Channel	Frequency (MHz)	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low	824.7	29.40	870.96
Middle	836.5	29.70	933.25
High	848.31	27.90	616.60

1900 MHz GSM Mode

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1850.2	29.60	912.01
Middle	1880.00	30.20	1047.13
High	1909.8	29.40	870.96

RBW=VBW=1MHz

GSM850 Output Power (ERP)

Cellular Fundamental Substitution Measurement
Compliance Certification Services, Morgan Hill Immunity Chamber

Company:Geotrax
Project #:06U10619-1
Date:10/08/06
Test Engineer:Chin Pang
Configuration:EUT Only
Mode:TX, GSM850 (Worst Case -Y Position)

Test Equipment:
Receiving: EMCO LP T17, and 12 ft Chin SMA Cable (Setup this one for testing EUT)
Substitution: Dipole ETS S/N: 1629, and 6ft SMA Cable Warehouse S/N: 208947 002

f MHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Channel									
824.70	104.3	V	29.9	0.5	0.0	29.4	38.5	-9.1	
824.70	97.6	H	23.3	0.5	0.0	22.8	38.5	-15.6	
Mid Channel									
836.52	104.9	V	30.3	0.6	0.0	29.7	38.5	-8.8	
836.52	97.2	H	22.7	0.6	0.0	22.1	38.5	-16.3	
High Channel									
848.31	103.2	V	28.6	0.7	0.0	27.9	38.5	-10.5	
848.31	97.0	H	22.4	0.7	0.0	21.7	38.5	-16.7	

GSM1900 Output Power (EIRP)

PCS Fundamental Substitution Measurement
Compliance Certification Services, Morgan Hill Immunity Chamber

Company:Geotrax
Project #:06U10619-1
Date:10/8/2006
Test Engineer:Chin Pang
Configuration:EUT Only
Mode:TX, GSM1900 (Worst Case--Y Position)

Test Equipment:
Receiving: Horn T59, and Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT)
Substitution: Horn T60, and 6ft SMA Cable Warehouse S/N: 208947 002

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Channel									
1.850	96.2	V	22.2	0.9	8.3	29.6	33.0	-3.4	
1.850	91.0	H	15.0	0.9	8.3	22.4	33.0	-10.6	
Mid Channel									
1.880	95.9	V	22.8	0.9	8.3	30.2	33.0	-2.8	
1.880	92.8	H	18.0	0.9	8.3	25.4	33.0	-7.6	
High Channel									
1.910	95.2	V	21.9	0.9	8.4	29.4	33.0	-3.6	
1.910	92.0	H	16.9	0.9	8.4	24.4	33.0	-8.6	

8.3. FIELD STRENGTH OF SPURIOUS RADIATION

LIMIT

§22.917 (a) and §24.238 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

TEST PROCEDURE

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density
NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

ANSI / TIA / EIA 603 Clause 3.2.12, FCC 22.917 (h), & FCC 24.238 (b)

RESULTS

No non-compliance noted.

Note: No emissions were found within 30-1000MHz & after the third harmonic of 20dB below the system noise.

GSM850 Spurious & Harmonic (ERP)

Cellular Harmonic Substitution Measurement
Compliance Certification Services, Morgan Hill Immunity Chamber

Company:Geotrax
Project #:06U10619-1
Date:10/8/2006
Test Engineer:
Configuration:Chin Pang
Mode:TX, GSM Cell
Worst Case Position, Y
Test Equipment:
Receiving: Horn T59, Pre-amp T34, Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT)
Substitution: Horn T60, 6ft SMA Cable Warehouse S/N: 208947 002

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Channel (824.7MHz)									
1.649	93.0	V	-20.3	0.8	4.9	-16.2	-13.0	-3.2	
2.474	80.0	V	-30.4	1.0	7.1	-24.2	-13.0	-11.2	
3.299	75.0	V	-30.5	1.2	7.3	-24.4	-13.0	-11.4	
4.124	70.0	V	-35.5	1.3	7.8	-29.0	-13.0	-16.0	
5.773	64.0	V	-38.6	1.7	9.2	-31.1	-13.0	-18.1	
8.247	61.0	V	-37.7	1.9	10.0	-29.7	-13.0	-16.7	
1.649	90.0	H	-24.3	0.8	4.9	-20.2	-13.0	-7.2	
2.474	88.0	H	-22.7	1.0	7.1	-16.5	-13.0	-3.5	
3.299	72.0	H	-35.4	1.2	7.3	-29.3	-13.0	-16.3	
4.124	70.0	H	-35.7	1.3	7.8	-29.3	-13.0	-16.3	
5.773	63.0	H	-38.8	1.7	9.2	-31.2	-13.0	-18.2	
8.247	62.0	H	-36.0	1.9	10.0	-28.0	-13.0	-15.0	
Mid Channel (836.52MHz)									
1.673	92.0	V	-21.1	0.8	5.0	-16.9	-13.0	-3.9	
2.510	79.5	V	-29.9	1.0	7.1	-23.8	-13.0	-10.8	
3.346	67.0	V	-39.8	1.2	7.3	-33.6	-13.0	-20.6	
5.019	64.0	V	-39.5	1.5	8.9	-32.1	-13.0	-19.1	
5.856	67.5	V	-34.8	1.7	9.4	-27.1	-13.0	-14.1	
6.692	59.0	V	-41.2	1.8	9.8	-33.2	-13.0	-20.2	
1.673	90.5	H	-23.7	0.8	5.0	-19.5	-13.0	-6.5	
2.510	82.0	H	-29.0	1.0	7.1	-22.9	-13.0	-9.9	
4.183	66.0	H	-39.5	1.4	7.9	-33.0	-13.0	-20.0	
5.019	64.0	H	-38.5	1.5	8.9	-31.1	-13.0	-18.1	
5.856	60.0	H	-41.6	1.7	9.4	-33.9	-13.0	-20.9	
6.692	59.5	H	-39.6	1.8	9.8	-31.6	-13.0	-18.6	
High Channel (848.31MHz)									
1.697	90.0	V	-22.9	0.8	5.1	-18.6	-13.0	-5.6	
2.545	77.0	V	-31.8	1.0	7.1	-25.6	-13.0	-12.6	
4.242	70.0	V	-35.9	1.4	8.0	-29.3	-13.0	-16.3	
5.938	68.0	V	-34.1	1.7	9.5	-26.3	-13.0	-13.3	
6.786	60.0	V	-40.3	1.8	9.8	-32.3	-13.0	-19.3	
8.483	56.0	V	-42.3	2.0	10.2	-34.1	-13.0	-21.1	
1.697	88.0	H	-25.7	0.8	5.1	-21.4	-13.0	-8.4	
2.545	80.0	H	-31.3	1.0	7.1	-25.2	-13.0	-12.2	
4.242	66.0	H	-39.3	1.4	8.0	-32.7	-13.0	-19.7	
5.938	62.0	H	-39.5	1.7	9.5	-31.7	-13.0	-18.7	
8.483	60.0	H	-37.3	2.0	10.2	-29.1	-13.0	-16.1	

GSM1900 Spurious & Harmonic (EIRP)

PCS Harmonic Substitution Measurement
Compliance Certification Services, Morgan Hill Immunity Chamber

Company:Geotrax
Project #:06U10619
Date:10/8/2006
Test Engineer:Chin Pang
Configuration:EUT Only
Mode:TX, GSM1900 (Worst Case)

Test Equipment:
Receiving: Horn T59, Pre-amp T34, and Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT)
Substitution: Horn T60, and 6ft SMA Cable Warehouse S/N: 208947 002

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Channel (1851.25MHz)									
3.703	81.5	V	-23.5	1.2	9.7	-15.1	-13.0	-2.1	
5.554	75.0	V	-27.5	1.6	11.0	-18.1	-13.0	-5.1	
7.405	64.0	V	-35.6	1.9	12.0	-25.5	-13.0	-12.5	
9.256	58.0	V	-39.8	2.1	12.7	-29.2	-13.0	-16.2	
11.108	57.6	V	-39.1	2.3	13.8	-27.6	-13.0	-14.6	
12.959	55.0	V	-40.0	2.5	15.1	-27.4	-13.0	-14.4	
3.703	83.0	H	-23.5	1.2	9.7	-15.1	-13.0	-2.1	
5.554	74.5	H	-27.5	1.6	11.0	-18.1	-13.0	-5.1	
7.405	66.0	H	-32.7	1.9	12.0	-22.6	-13.0	-9.6	
9.256	67.0	H	-29.7	2.1	12.7	-19.0	-13.0	-6.0	
11.108	62.0	H	-34.1	2.3	13.8	-22.6	-13.0	-9.6	
12.959	53.0	H	-40.5	2.5	15.1	-27.9	-13.0	-14.9	
Mid Channel (1880MHz)									
3.760	79.6	V	-24.9	1.3	9.7	-16.5	-13.0	-3.5	
5.640	66.0	V	-36.8	1.7	11.2	-27.3	-13.0	-14.3	
7.520	64.0	V	-36.4	1.9	12.0	-26.3	-13.0	-13.3	
9.400	53.0	V	-43.5	2.1	12.7	-32.9	-13.0	-19.9	
11.280	52.0	V	-43.8	2.3	13.9	-32.3	-13.0	-19.3	
13.160	50.0	V	-44.2	2.6	15.2	-31.6	-13.0	-18.6	
3.760	81.4	H	-24.7	1.3	9.7	-16.2	-13.0	-3.2	
5.640	70.0	H	-31.9	1.7	11.2	-22.4	-13.0	-9.4	
7.520	66.0	H	-33.1	1.9	12.0	-23.0	-13.0	-10.0	
9.400	57.0	H	-38.8	2.1	12.7	-28.1	-13.0	-15.1	
11.280	50.0	H	-45.6	2.3	13.9	-34.1	-13.0	-21.1	
13.160	53.0	H	-38.5	2.6	15.2	-25.9	-13.0	-12.9	
High Channel (1908.75MHz)									
3.818	78.5	V	-25.7	1.3	9.7	-17.3	-13.0	-4.3	
5.726	73.0	V	-29.5	1.7	11.3	-19.9	-13.0	-6.9	
7.635	63.0	V	-37.0	1.9	12.0	-26.8	-13.0	-13.8	
9.544	54.0	V	-41.6	2.1	12.7	-31.0	-13.0	-18.0	
11.453	50.0	V	-45.2	2.4	14.0	-33.6	-13.0	-20.6	
13.361	52.0	V	-42.9	2.6	15.3	-30.2	-13.0	-17.2	
3.818	77.0	H	-28.4	1.3	9.7	-19.9	-13.0	-6.9	
5.726	67.0	H	-35.2	1.7	11.3	-25.6	-13.0	-12.6	
7.635	65.0	H	-33.9	1.9	12.0	-23.8	-13.0	-10.8	
9.544	53.0	H	-42.6	2.1	12.7	-32.0	-13.0	-19.0	
11.453	48.0	H	-47.5	2.4	14.0	-35.9	-13.0	-22.9	
13.361	52.0	H	-39.8	2.6	15.3	-27.1	-13.0	-14.1	

* No other emissions were found up to 10th harmonic.

8.4. MAXIMUM PERMISSIBLE EXPOSURE

LIMITS

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*($900/f^2$)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*($180/f^2$)	30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density
NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

CALCULATIONS

Given

$E = \sqrt{(30 * P * G)} / d$

and

$S = E ^ 2 / 3770$

where

E = Field Strength in Volts/meter
P = Power in Watts
G = Numeric antenna gain
d = Distance in meters
S = Power Density in milliwatts/square centimeter

Combining equations and rearranging the terms to express the distance as a function of the remaining variables yields:

$d = \sqrt{((30 * P * G) / (3770 * S))}$

Changing to units of Power to mW and Distance to cm, using:

P (mW) = P (W) / 1000 and
d (cm) =100 * d (m)

yields

$d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$
$d = 0.282 * \sqrt{(P * G / S)}$

where

d = distance in cm
P = Power in mW
G = Numeric antenna gain
S = Power Density in mW/cm^2

Substituting the logarithmic form of power and gain using:

P (mW) = 10 ^ (P (dBm) / 10) and
G (numeric) = 10 ^ (G (dBi) / 10)

yields

$d = 0.282 * 10 ^ ((P + G) / 20) / \sqrt{S}$ Equation (1)

where

d = MPE distance in cm
P = Power in dBm
G = Antenna Gain in dBi
S = Power Density Limit in mW/cm^2

Equation (1) and the measured peak power is used to calculate the MPE distance.

LIMITS

From §1.1310 Table 1 (B), S = 1.0 mW/cm^2

RESULTS

No non-compliance noted:

Mode	Power Density Limit (mW/cm^2)	Output Power (dBm)	Antenna Gain (dBi)	MPE Distance (cm)
800MHz Celllar	0.6	31.30	0.00	13.84
1900 MHz PCS	1.0	29.80	0.00	8.71

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

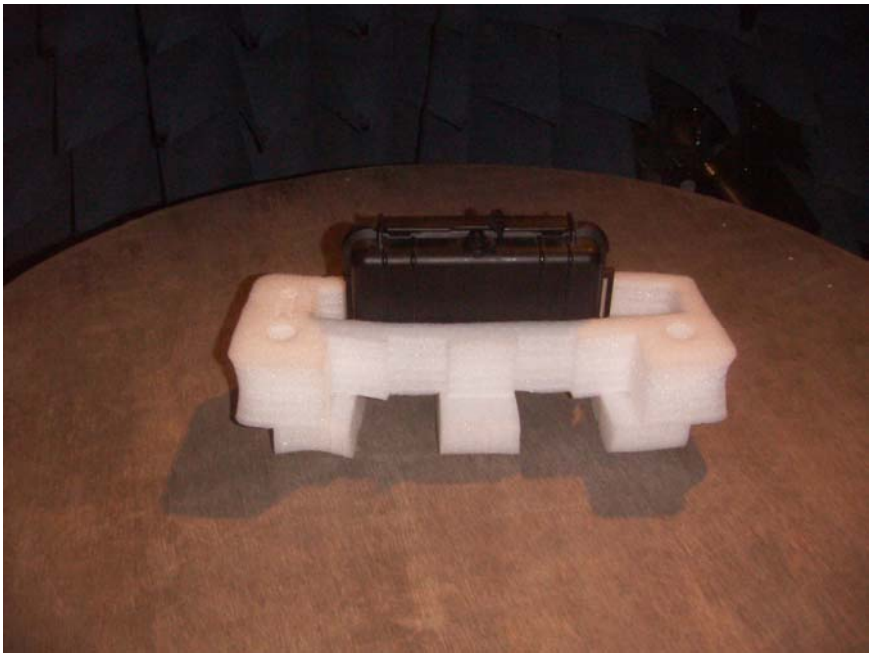
9. SETUP PHOTOS

RADIATED RF MEASUREMENT SETUP FOR PORTABLE CONFIGURATION

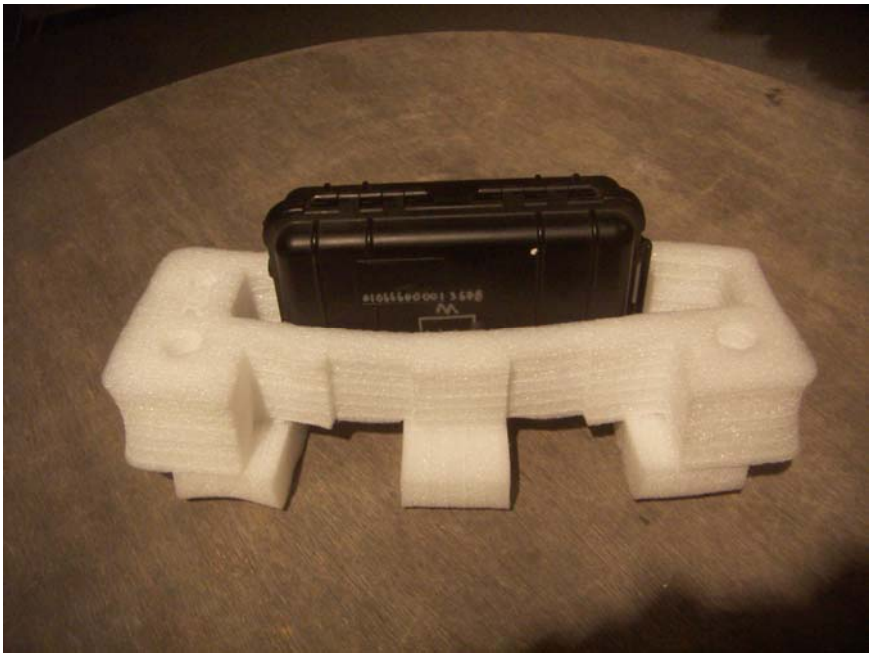
X-AXIS FRONT PHOTO

X-AXIS BACK PHOTO

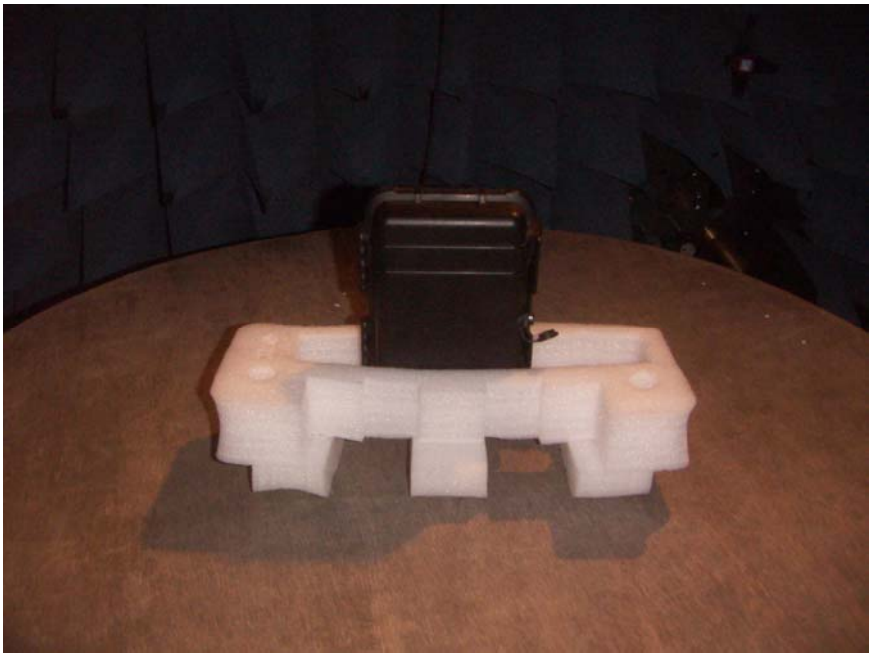
Y-AXIS FRONT PHOTO



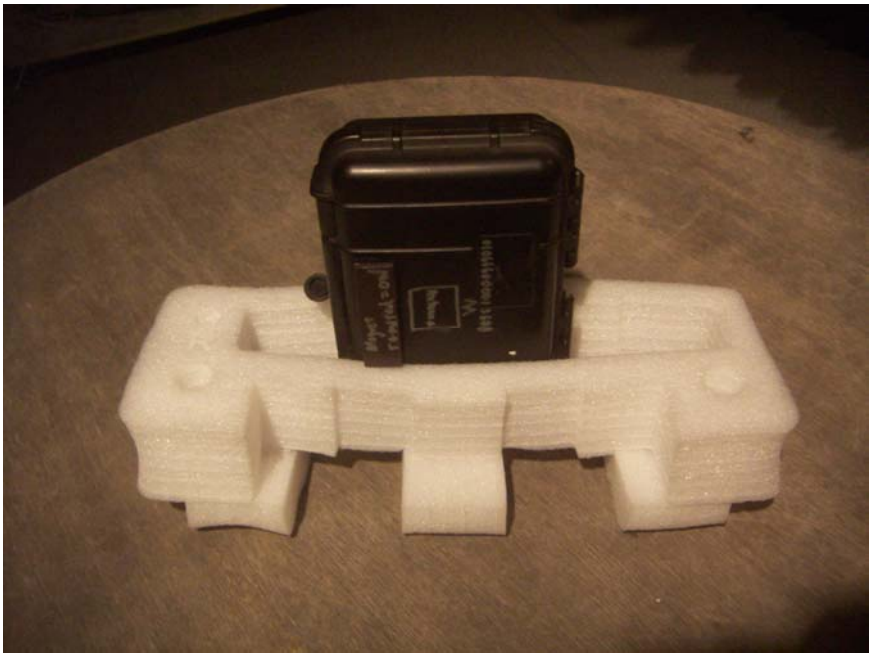
Y-AXIS BACK PHOTO



Z-AXIS FRONT PHOTO



Z-AXIS BACK PHOTO



END OF REPORT