FCC CFR47 PART 15 SUBPART C CERTIFICATION

TEST REPORT

FOR

EUT: BASE STATION MODEM UNIT TRANSMITTER

MODEL: 300-00008-0001

FCC ID: QM4-300-00008

REPORT NUMBER: 04U2670-1

ISSUE DATE: APRIL 22, 2004

Prepared for
GameTech INTERNATIONAL, INC.
900 SANDHILL RD
RENO, NV 89521, USA

Prepared by
COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD,
MORGAN HILL, CA 95037, USA
TEL: (408) 463-0885
FAX: (408) 463-0888

TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION

COMPANY NAME: GAMETECH INTERNATIONAL
900 SANDHILL RD
RENO NEVADA 89521, USA

EUT DESCRIPTION: BASE STATION MODEM UNIT TRANSMITTER.

MODEL: 300-00008-0001

DATE TESTED: APRIL 22, 2004 – APRIL 23, 2004

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	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: This document reports conditions under which testing was conducted and results of tests performed. 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.

Approved & Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

THANH NGUYEN
EMC TECHNICIAN
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The Base Station Modem Unit transmitter (BSM) is the RF device used to transmit the Packet data from the Host Computer to the HandHeld Traveller device and the RF TED.

UNIT	Frequency Band (MHz)	Peak Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)
BSM	914.5	93.14	94.00	-0.86

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4/1992, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

4. FACILITIES AND ACCREDITATION

The open area test sites and conducted 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.

NVLAP®

LAB CODE:200065-0

No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

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:

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%.

5.3. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
Quasi-Peak Adaptor	HP	85650A	2521A01038	7/16/04
SA Display Section 3	HP	85662A	2314A04793	7/16/04
SA RF Section, 1.5 GHz	HP	85680A	2314A02604	7/16/04
Site C Preamplifier, 1300MHz	HP	8447D	2944A06550	8/18/04
Antenna, Biconical	Eaton	94455-1	1214	3/8/05
Antenna, Log Periodic 200 ~ 1000 MHz	EMCO	3146	9107-3163	3/8/05
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	10/13/04
Site A Line Stabilizer / Conditioner	Tripplite	LC-1800a	A0051681	CNR
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/13/04
EMI Test Receiver	R & S	ESHS 20	827129/006	7/17/04
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	2/4/05
Preamplifier, 1 ~ 26 GHz	Miteq	NSP10023988	646456	4/25/04
Spectrum Analyzer	HP	8593EM	3710A00205	10/01/04

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Device Type	Manufacturer	Model	Serial Number	FCC ID
8 Port Base Station Controller	Gametech	99-00009-0000	N/A	N/A

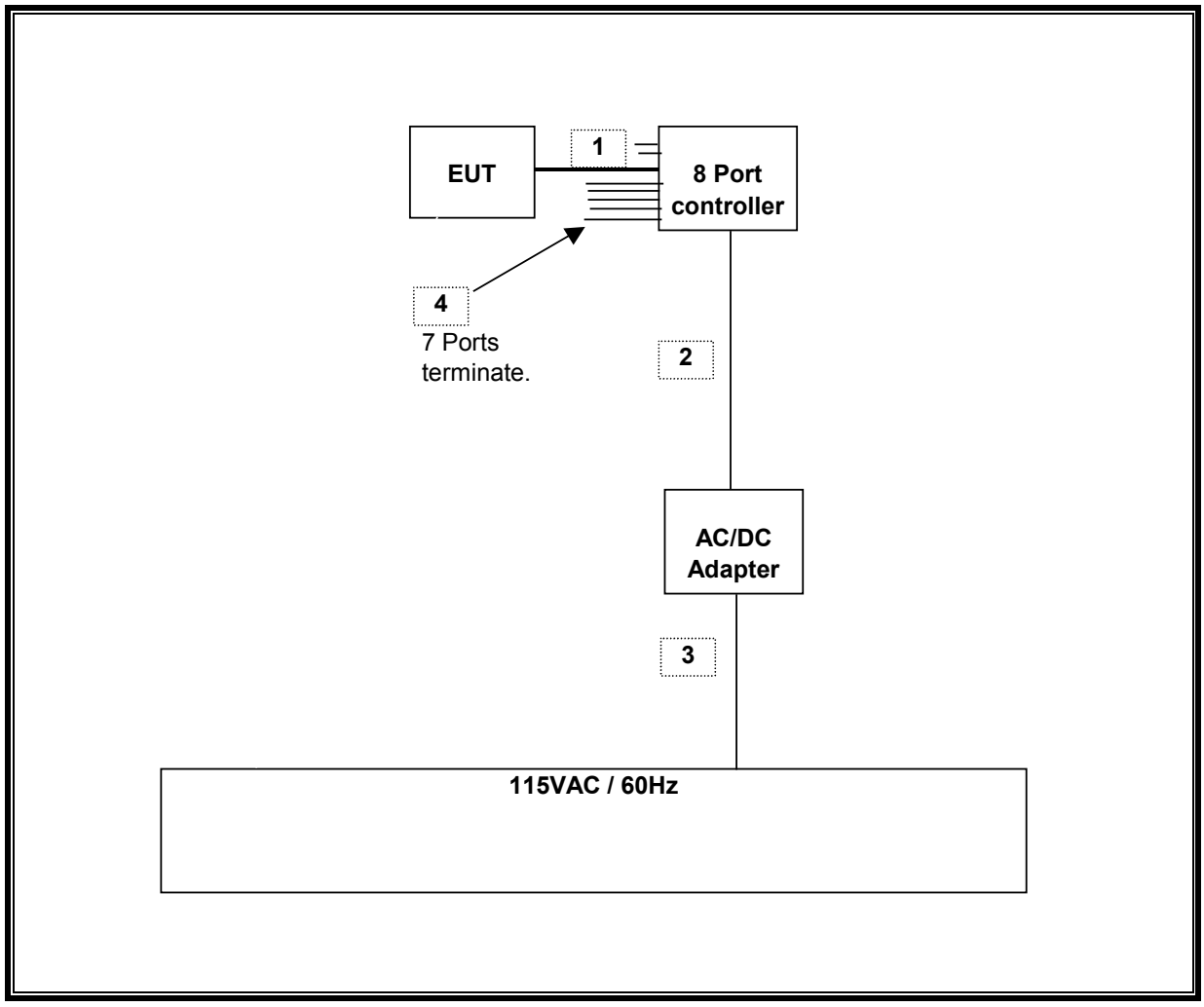
I/O CABLES

Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	Ethernet	1	RJ45	Unshielded	2m	Yes
2	DC	1	DC	Unshielded	2m	No
3	AC	1	US 115V	Un-shielded	2m	No
4	Ethernet	7	RJ45	Unshielded	5m	No

TEST SETUP

The BSM is connected to the 8 Port Base station controller, and activated by program Hyper Terminal transmitting the data packet.

SETUP DIAGRAM FOR TESTS



7. APPLICABLE LIMITS AND TEST RESULTS

7.1. RADIATED EMISSIONS

LIMITS

§15.249 Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902 - 928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 In the emission table above, the tighter limit applies at the band edges.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane, the X, Y, and Z positions (if necessary) shall be tested and the worst case reported. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The transmitter shall be switched on with typical modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to 905MHz signal.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

RESULTS

No non-compliance noted:

7.1.1. TRANSMITTER RADIATED EMISSIONS

FUNDAMENTAL MEASUREMENT:

COMPLIANCE Certification Services
FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #:	04U2670-1
Report #:	040422C1
Date& Time:	04/22/04 9:59 AM
Test Engr:	Thanh Nguyen
Company:	GameTech
EUT Description:	2 Way Base Station Modem 900MHz
Test Configuration :	EUT, 8Port Base station Controller
Type of Test:	FCC Part15.249 Class B
Mode of Operation:	Continously Transmit Packet at normal position.

(○) A-Site (○) B-Site (●) C-Site (○) F-Site [6 Worst Data] [Descending]

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
914.50	64.60	23.38	5.16	0.00	93.14	94.00	-0.86	3mV	0.00	1.00	P
914.51	54.10	23.38	5.16	0.00	82.64	94.00	-11.36	3mH	0.00	1.00	P

The Measurement above is for the normal position of the EUT full strenght Tx Packet data.
Total data #: 2
V.2c

HARMONICS AND SPURIOUS EMISSIONS

04/22/04 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thanh Nguyen
Project #: 04U2670-1
Company: GameTech.
EUT Descrip.: 2 Way Base Station Modem 900MHz
EUT M/N: 300-00008-0001
Test Target: FCC part 15.249 Class B.
Mode Oper: Transmit mode, at Normal Position

Test Equipment:

EMCO Horn 1-18GHz	Spectrum Analyzer	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T73; S/N: 6717 @3m	HP 8593EM Analyzer	T87 Miteq 924342		

Hi Frequency Cables: ☑ (2 ft) ☐ (2 ~ 3 ft) ☐ (4 ~ 6 ft) ☑ (12 ft)

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1 MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
			The Fundamental Tx Frequency is 914.525MHz												
			Harmonics Emissions Measurement.												
1.828	9.8	57.7	54.4	27.4	1.9	-43.3	0.0	1.0	44.6	41.4	74.0	54.0	-29.4	-12.6	V
2.744	9.8	52.5	42.4	30.0	2.4	-43.2	0.0	1.0	42.6	32.6	74.0	54.0	-31.4	-21.4	V
3.658	9.8	52.3	47.9	31.9	2.7	-43.7	0.0	1.0	44.1	39.8	74.0	54.0	-29.9	-14.2	V
4.573	9.8	45.3	33.0	33.1	3.1	-44.5	0.0	1.0	38.0	25.7	74.0	54.0	-36.0	-28.3	Noise Floor
1.828	9.8	50.2	44.9	27.4	1.9	-43.3	0.0	1.0	37.2	31.8	74.0	54.0	-36.8	-22.2	H
2.744	9.8	48.7	35.6	30.0	2.4	-43.2	0.0	1.0	38.8	25.7	74.0	54.0	-35.2	-28.3	H
3.658	9.8	46.3	36.5	31.9	2.7	-43.7	0.0	1.0	38.2	28.4	74.0	54.0	-35.8	-25.6	H
4.573	9.8	43.8	33.0	33.1	3.1	-44.5	0.0	1.0	36.6	25.7	74.0	54.0	-37.4	-28.3	Noise Floor
			No more Harmonic and Spurious emissions above 4th harmonic.												

7.1.2. WORST-CASE RADIATED EMISSIONS BELOW 1 GHZ

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)

COMPLIANCE Certification Services

FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #:	04U2670-1
Report #:	040422C2
Date& Time:	04/22/04 10:20 AM
Test Engr:	Thanh Nguyen

Company:	GameTech
EUT Description:	2 Way Base Station Modem 900MHz
Test Configuration :	EUT, 8Port Base station Controller
Type of Test:	FCC Part15.249 Class B
Mode of Operation:	Continously Transmit Packet at normal position.

<< Main Sheet

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
66.35	50.40	7.08	1.33	27.24	31.57	40.00	-8.43	3mV	0.00	1.00	P
38.18	43.90	13.45	1.05	27.32	31.07	40.00	-8.93	3mV	0.00	1.00	P
55.29	47.20	9.86	1.24	27.28	31.02	40.00	-8.98	3mH	0.00	1.50	P
33.27	43.30	13.46	0.98	27.34	30.39	40.00	-9.61	3mV	0.00	1.00	P
232.25	45.70	12.38	2.35	26.56	33.88	46.00	-12.12	3mV	0.00	1.00	P
431.32	37.70	16.84	3.30	27.28	30.56	46.00	-15.44	3mV	0.00	1.00	P
6 Worst Data											

7.2. POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

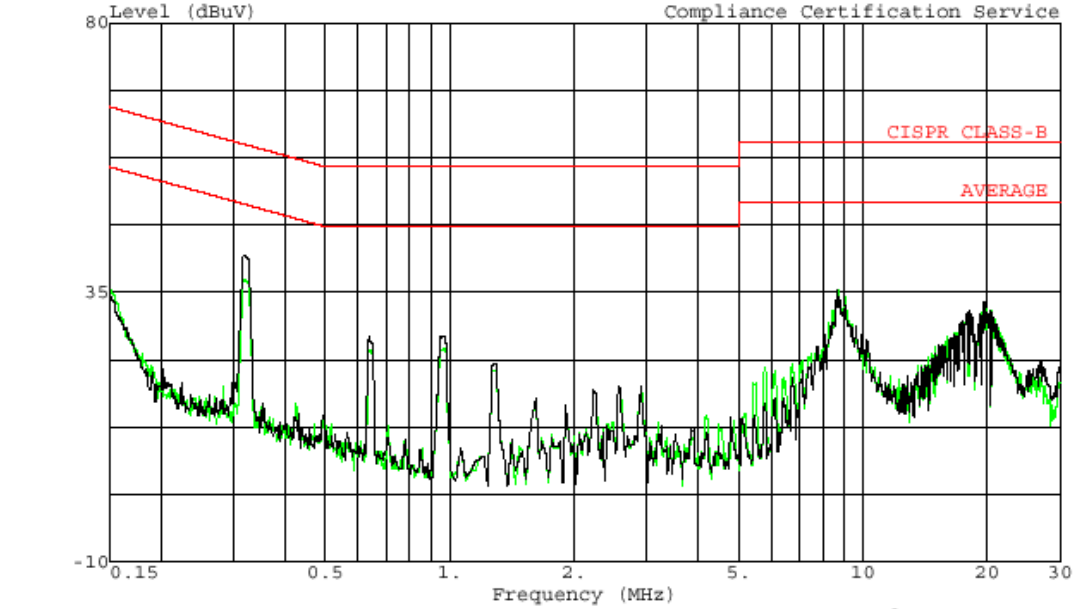
No non-compliance noted:

6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.32	37.24	--	--	0.00	61.23	51.23	-23.99	-13.99	L1
8.37	35.54	--	--	0.00	60.00	50.00	-24.46	-14.46	L1
19.74	33.18	--	--	0.00	60.00	50.00	-26.82	-16.82	L1
0.32	41.16	--	--	0.00	61.23	51.23	-20.07	-10.07	L2
8.64	35.38	--	--	0.00	60.00	50.00	-24.62	-14.62	L2
19.74	33.48	--	--	0.00	60.00	50.00	-26.52	-16.52	L2
6 Worst Data									

LINE 1 and 2 RESULTS

COMPLIANCE Engineering Services, Inc.
561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888



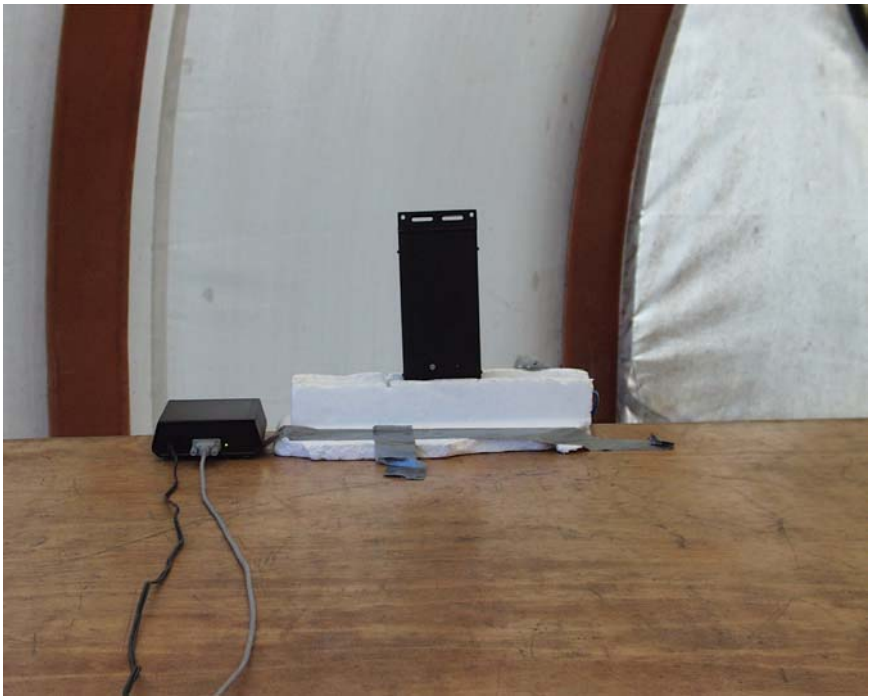
Trace: 3 Ref Trace:
Project # : 04U2670-1
Test Operator : Thanh Nguyen
Company : GameTech
EUT : 2 Way Base Station Modem Unit Transmitte
Model : 300-00008-0001
Configuration : EUT, 8-Port Base Station Controller
Mode of Operation: Tx data Packet.
Target of Test : FCC Part15.249, CLASS B
Voltage : 115Vac, 60Hz
: Peak: L1(Green), L2 (Black)

8. SETUP PHOTOS

RADIATED MEASUREMENT SETUP

RADIATED FRONT PHOTO

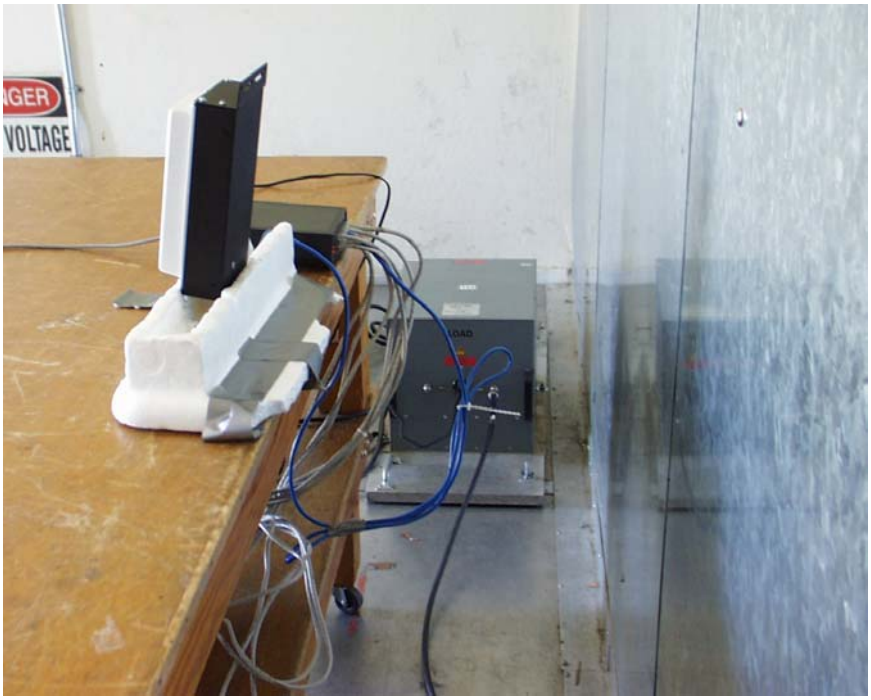
RADIATED BACK PHOTO



LINE CONDUCTED FRONT PHOTO

POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED BACK PHOTO



END OF REPORT