Nemko Test Report:	1L0697RUS1
Applicant:	Bitswave, Inc. 10700 Corporate Dr. Stafford, TX 77477
Equipment Under Test: (E.U.T.)	Gamepad
FCC ID:	P5G-368-397-YY
In Accordance With:	**FCC Part 15, Subpart C, 15.249** For 900 MHz Transmitters
Tested By:	Nemko Dallas Inc. 802 N. Kealy Lewisville, Texas 75057-3136
Authorized By:	 Tom Tidwell, EMC/Wireless Manager
Date:	10/31/02
Total Number of Pages:	15

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Section 1. Summary Of Test Results

Manufacturer: BitsTechInc

Model No.: HH-01A(Gamepad)

Serial No.: BWHH01A1201(Gamepad)

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15.249. All tests were conducted using measurement procedure ANSI C63.4-1992. Radiated Emissions were made on an open area test site.

☒ New Submission ☒ Production Unit

☐ Class II Permissive Change ☐ Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.
See " Summary of Test Data".

NVLAP LAB CODE: 100351-0

Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
Conducted Emissions	15.207	N/A*
Radiated Emissions	15.249	Complies

Footnotes For N/A's:

The Gamepad is battery powered.

Section 2. General Equipment Specification

Frequency Range:	Single
Operating Frequency(ies) of Sample:	910.7-917.7 MHz
Tunable Bands:	N/A
Number of Channels:	Eight
Channel Spacing:	1 MHz
Crystal Frequencies:	12 MHz
User Frequency Adjustment:	Dip Switches

	Yes	**No**
Integral Antenna	☒	☐

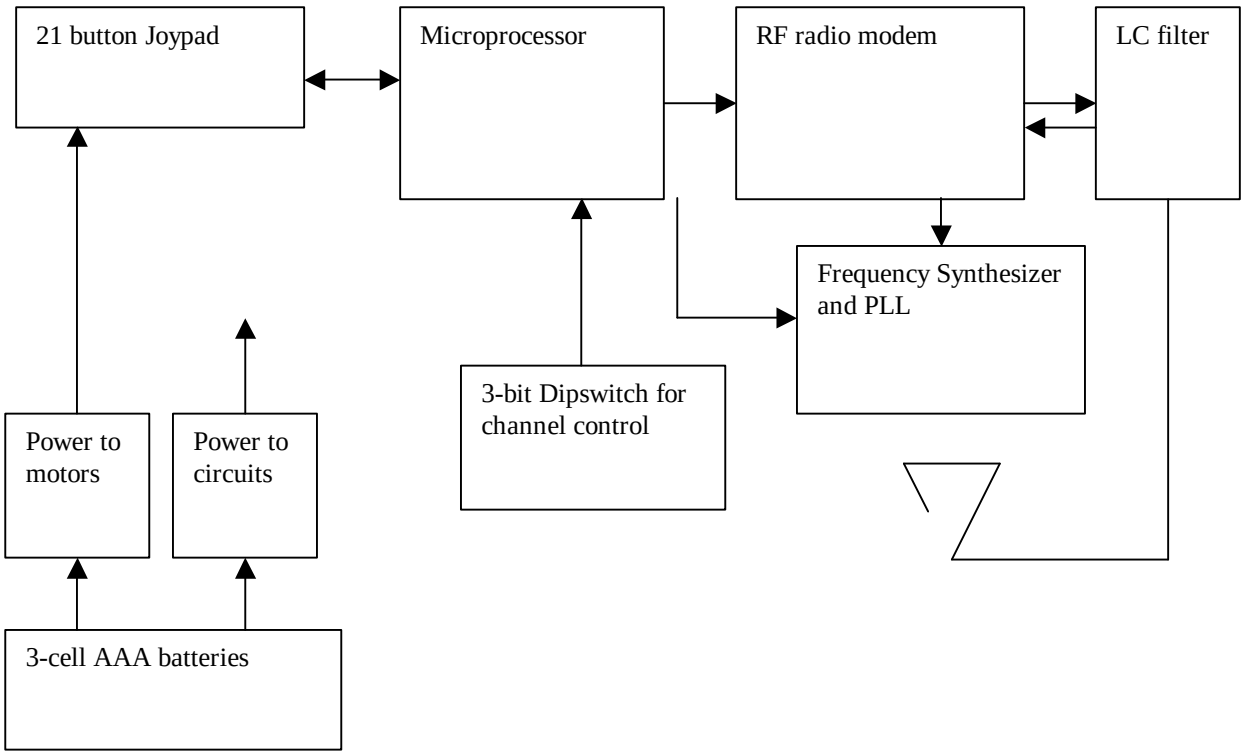
Theory of Operation

Joypad Side Radio

Joypad side radio operates in similar way to Station Side Radio as described in previous section. However, this radio works as a slave compared to the Station Side Radio. When powered on, this radio is in receiving mode and waits until a command from Station Side Radio is received. It scans keystrokes on the joypad and replies the command with the keystroke data to the Station Side Radio. Similarly, the data is packetized in the same way as Station Side Radio. The joypad radio is powered by 3-AAA side batteries and down regulated to 3.3V. Another power regulator (3.0V) provides power for two vibration motors in the joypad.

Wireless Joypad Block Diagram

Joypad Side



Section 3. Radiated Emissions

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.249
TESTED BY: Lance Walker	DATE: 12/19/2001

Minimum Standard: Para no. 15.249

(a) The field strengths shall not exceed the following:

Fundamental (MHz)	Field Strength (mV/m)	Field Strength (dBmV)	Harmonic (µV/m)	Harmonic (dBmV)
902-928	50	94	500	54

(b) Field strength limits are specified at a distance of 3 metres.

(c) 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 limits of 15.209 whichever is the less attenuation.

(d) …for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

Test Results: Complies

Measurement Data: See attached table.

Maximizing Emission Levels: The EUT was measured in three orthogonal axis in order to determine worst-case orientation. The turntable and antenna height were manipulated to maximize the emission levels.

Radiated Emissions

Page 1 of 2

Job No.: 1L0697R Date: 12/6/01

Specification: FCC 15.247 Sub C Temperature(°C): 22

Tested By: Lance Walker Relative Humidity(%) 50

E.U.T.: controller

Configuration: Normal Tx

Sample Number:

Location: AC 3 RBW: 1 MHz

Detector Type: Peak see note VBW: 1 MHz

Test Equipment Used

Antenna:	1304	Directional Coupler:	#N/A
Pre-Amp:	1016	Cable #1:	1484
Filter:	#N/A	Cable #2:	1485
Receiver:	1464	Cable #3:	1626
Attenuator #1	#N/A	Cable #4:	#N/A
Attenuator #2:	#N/A	Mixer:	#N/A

Additional equipment used:

Measurement Uncertainty: +/- .7 dB

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Delta (dB)	Comment
0.911	63.5	23.8	2	0	89.3	94	-4.7	
1.821	69.2	25.1	2.8	33.3	63.8	74	-10.2	Pk 2nd Hor, low Ch
1.821	69.2	25.1	2.8	33.3	51.4	54	-2.6	Avg 2nd Hor, low Ch
2.732	56.5	29.0	3.6	33.5	55.6	74	-18.4	Pk 3rd Hor, low Ch
2.732	56.5	29.0	3.6	33.5	43.2	54	-10.8	Avg 3rd ""
3.643	43.5	30.8	3.5	33.6	44.2	54	-9.8	4th Hor low Ch NF
4.554	42.8	32.0	4.1	33.8	45.1	54	-8.9	5th Hor low Ch NF
5.464	41	34.1	4.7	33.5	46.3	54	-7.7	6th Hor low Ch NF
0.918	62.5	23.8	2	0	88.3	94	-5.7	high fundamental
1.835	67.2	25.1	2.8	33.3	61.8	74	-12.2	Pk 2nd Hor, High Ch
1.835	67.2	25.1	2.8	33.3	49.4	54	-4.6	Avg 2nd Hor, High Ch
2.753	52	29.0	3.6	33.5	51.1	54	-2.9	3rd hor high ch
3.671	43.2	30.8	3.5	33.6	43.9	54	-10.1	4th hor high ch NF
4.589	43.5	32.0	4.1	33.8	45.8	54	-8.2	5th hor high ch NF
5.506	42.8	34.1	4.7	33.5	48.1	54	-5.9	6th hor high ch NF
0.916	61.3	23.8	2	0	87.1	94	-6.9	mid fundamental
1.831	69.7	25.1	2.8	33.3	64.3	74	-9.7	Pk 2nd Hor, Mid Ch
1.831	69.7	25.1	2.8	33.3	51.9	54	-2.1	Avg 2nd Hor, Mid Ch
2.747	52	29.0	3.6	33.5	51.1	54	-2.9	3rd hor mid ch
3.663	44.5	30.8	3.5	33.6	45.2	54	-8.8	4th hor mid ch NF
4.579	42.2	32.0	4.1	33.8	44.5	54	-9.5	5th hor mid ch NF
5.494	42.7	34.1	4.7	33.5	48.0	54	-6.0	6th hor mid ch NF

Notes: Unless otherwise noted measurements made with peak meter and avg limits. Avg. readings were derived by adding a duty cycle correction factor of -12.5 dB to the peak reading.

Radiated Spurious Emissions

Page 2 of 2 — **Continuation Page**

Job No.: 1L0679R — Date: 11/23/02

Specification: CFR 47, Part 15 — Temperature(°F): 72

Tested By: #N/A — Relative Humidity(%) 50

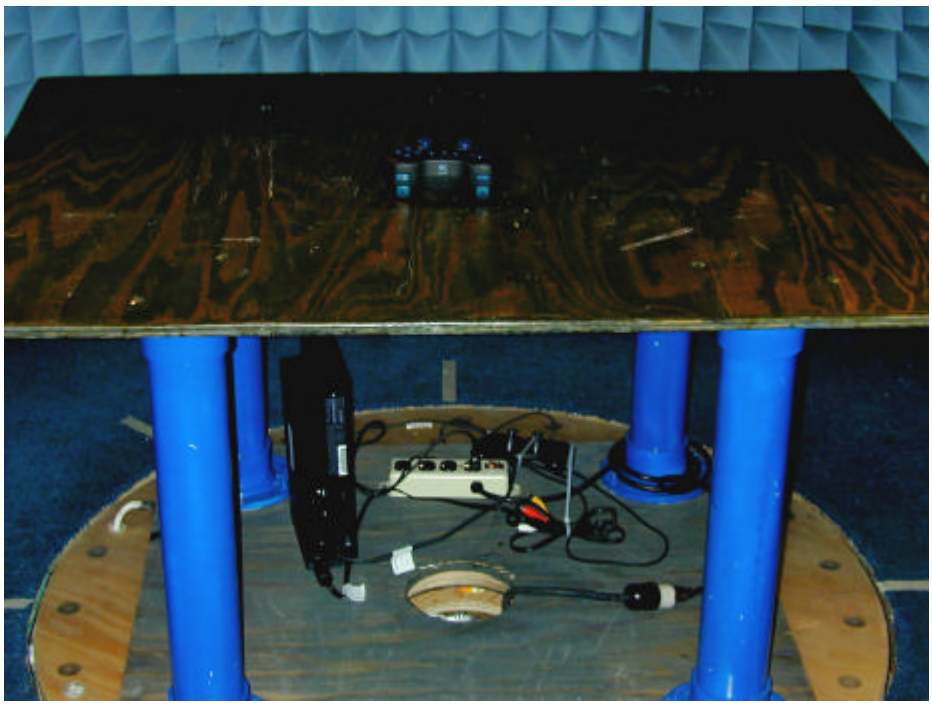
E.U.T.: controller

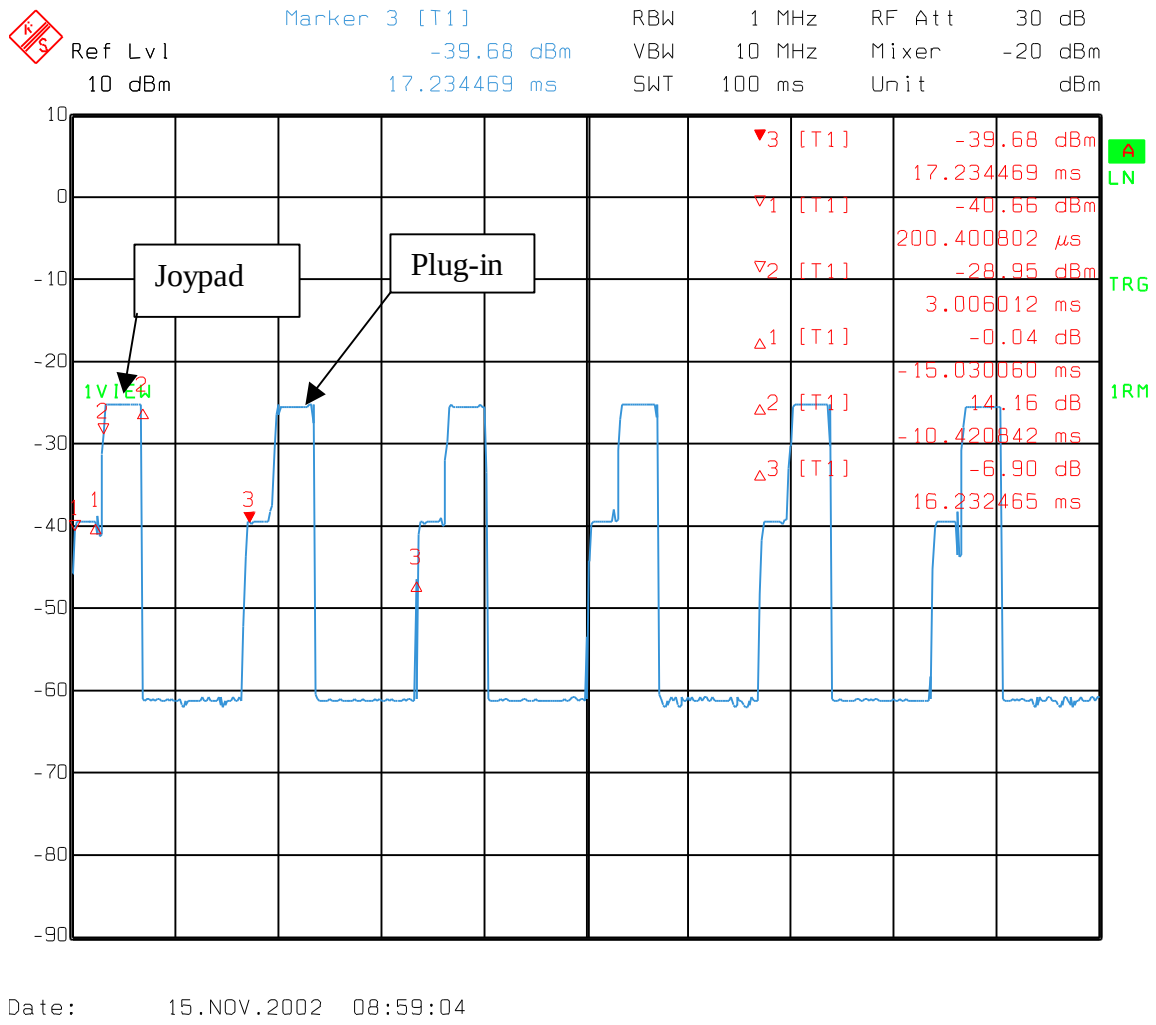
Configuration: Normal Tx

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Delta (dB)	Comment
0.911	63.5	23.8	2	0	89.3	94	-4.7	low fundamental
1.821	68.7	25.1	2.8	33.3	63.3	74	-10.7	Pk 2nd Ver, low Ch
1.821	68.7	25.1	2.8	33.3	50.9	54	-3.1	Avg 2nd Ver, low Ch
2.732	56.2	29.0	3.6	33.5	55.3	74	-18.7	Pk 3rd Ver, low Ch
2.732	56.2	29.0	3.6	33.5	42.9	54	-11.1	Avg 3rd ""
3.643	43.5	30.8	3.5	33.6	44.2	54	-9.8	4th Ver low Ch NF
4.554	42.8	32.0	4.1	33.8	45.1	54	-8.9	5th Ver low Ch NF
5.464	41	34.1	4.7	33.5	46.3	54	-7.7	6th Ver low Ch NF
0.918	63.2	23.8	2	0	89.0	94	-5.0	high fundamental
1.835	68.5	25.1	2.8	33.3	63.1	74	-10.9	Pk 2nd Ver, High Ch
1.835	68.5	25.1	2.8	33.3	50.7	54	-3.3	Avg 2nd Ver, High Ch
2.753	53.5	29.0	3.6	33.5	52.6	54	-1.4	3rd ver high ch
3.671	43.2	30.8	3.5	33.6	43.9	54	-10.1	4th ver high ch NF
4.589	43.5	32.0	4.1	33.8	45.8	54	-8.2	5th ver high ch NF
5.506	42.8	34.1	4.7	33.5	48.1	54	-5.9	6th ver high ch NF
0.916	60.7	23.8	2	0	86.5	94	-7.5	mid fundamental
1.831	68.5	25.1	2.8	33.3	63.1	74	-10.9	Pk 2nd Ver, Mid Ch
1.831	68.5	25.1	2.8	33.3	50.7	54	-3.3	Avg 2nd Ver, Mid Ch
2.747	51.8	29.0	3.6	33.5	50.9	54	-3.1	3rd ver mid ch
3.663	44.5	30.8	3.5	33.6	45.2	54	-8.8	4th ver mid ch NF
4.579	42.2	32.0	4.1	33.8	44.5	54	-9.5	5th ver mid ch NF
5.494	42.7	34.1	4.7	33.5	48.0	54	-6.0	6th ver mid ch NF

Notes: Unless otherwise noted measurements made with peak meter and avg limits. Avg. readings were derived by adding a duty cycle correction factor of -12.5 dB to the peak reading.

Radiated Photographs (Worst Case Configuration)





Plot 1 - Normal Operation joypad and plug-in

Duty Cycle: The Joypad transmits six 4msec..rf pulses in 100 ms.
Correction factor(dB) = 20 log (6x4ms/100ms) = -12.4 dB

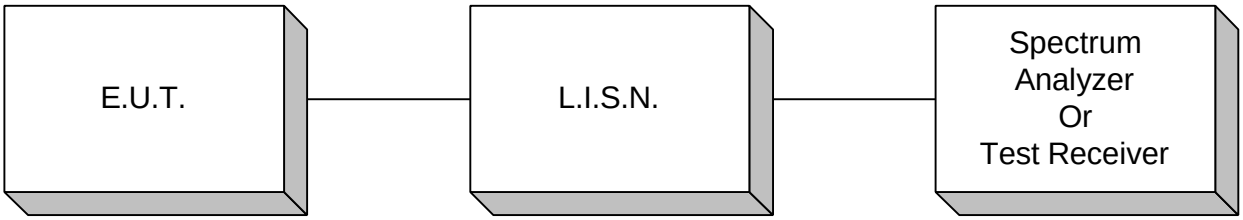
Section 4. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	07/30/01
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	06/01/01
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	06/01/01
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/02/01
1626	CABLE, 5 ft	MEGAPHASE 10311 1GVT4	N/A	CBU
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	05/30/01
1038	CABLE, .5m	KTL RG223	N/A	05/29/01
1267	CABLE, 14.8m	KTL RG223	N/A	05/10/01
545	LISN	Schwarz Beck 8120	8120350	07/09/01
1555	Filter high pass 5KHz	Solar Electronics 7930-5.0	933125	05/29/01
674	LIMITER	HP 11947A	3107A02200	11/04/00

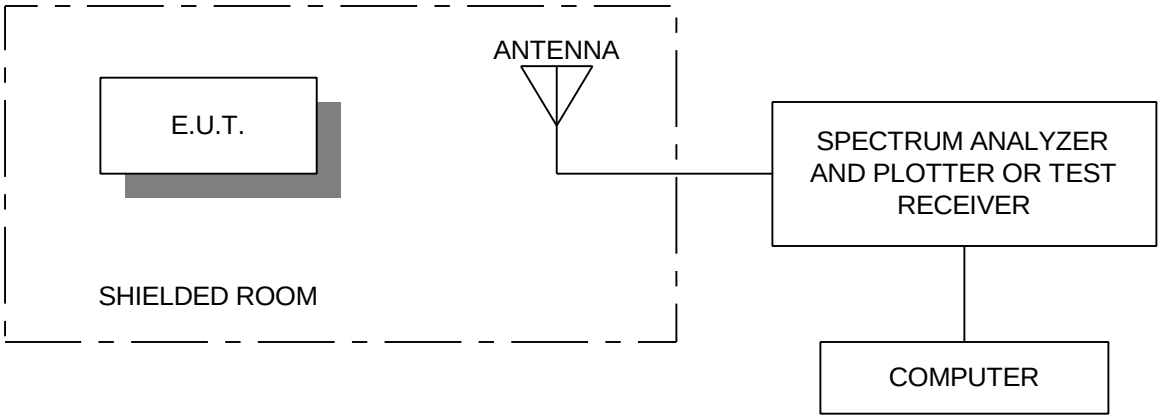
ANNEX A

TEST DIAGRAMS

Conducted Emissions



Radiated Prescan



Test Site For Radiated Emissions