Exhibit B – Test Report

Bluespan LLC
ionKids Wrist Tag Transmitter

Project Number: 04231-10

Prepared for:
BLUESPAN LLC
802 Cornell Drive
Pflugerville, TX

By

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November 2003

CERTIFICATION
Electromagnetic Interference
Test Report

BLUESPAN LLC
IONKIDS WRIST TAG TRANSMITTER

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Certificate of Compliance

Applicant:	Bluespan LLC
Applicant's Address:	802 Cornell Drive Pflugerville, TX
Model:	ionKids Wrist Tag Transmitter
FCC ID:	RLN895663
Project Number:	04231-10

The **Bluespan LLC ionKids Wrist Tag Transmitter** was tested to and found to be in compliance with FCC Part 15.203, 15.205, 15.209 and 15.249 for Intentional Radiators.

The highest average emissions generated by the above equipments are listed below:

	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Fundamental	921.179	91.7	94	-2.3

I, Jeffrey A. Lenk, for Professional Testing (EMI), Inc., being familiar with the FCC rules and test procedures have reviewed the test setup, measured data and this report. I believe them to be true and accurate.

Jeffrey A. Lenk
President

1.0 EUT Description

The Equipment Under Test (EUT) is the **Bluespan LLC, ionKids Wrist Tag Transmitter**.The wrist tag is a watch sized transceiver worn on the wrist of a child. The transmitter on the wrist tag works in conjunction with the ionKids base station. The purpose is for radiolocation of the child by a caretaker holding the associated base station. The unit is powered by a rechargeable lithium ion battery. It has audible alerts and warning lights.

The EUT is a frequency hopping transmitter. There are 50 hopping frequencies, selected in a random but predetermined order. The average time of occupancy per channel is 15 ms.
The average channel spacing is 280 kHz.

The EUT was tested for compliance to 15.249.

47 CFR 15.249 Fundamental and Harmonic Radiated Power
47 CFR 15.209 Spurious Radiated Emission Limits
47 CFR 15.203 Antenna Requirements

The system tested consisted of the following:

Manufacturer & Model	**Serial #**	**FCC ID #**	**Description**
Bluespan LLC ionKids Wrist Tag Transmitter	None	RLN895663	Wrist Tag worn used for tracking a child

System Peripherals
None.
Remote Peripherals
None

1.1 EUT Operation

The EUT was made to transmit continuously with the hopping stopped. For the in-band check, the hopping was started.

2.0 Electromagnetic Emissions Testing

Professional Testing (EMI), Inc. (PTI), follows the guidelines of NIST for all uncertainty calculations, estimates and expressions thereof for EMC testing. A copy of PTI's policy for EMC Measurement Uncertainty is provided in Appendix C.

2.1 Conducted Emissions Measurements

Conducted emissions were not measured. The EUT operates strictly from battery power. This test is not required.

2.2 Radiated Emissions Measurements

Radiated emission measurements were made on transmitter Fundamental emissions generated by the **Bluespan LLC ionKids Wrist Tag Transmitter**.

Measurements of the maximum emission levels for the fundamental emissions of the transmitter were made at the Professional Testing "Open Field" Site 3, located in Round Rock, Texas. A "Description of Measurement Facilities" has been submitted to the FCC and approved pursuant to Section 2.948 of CFR 47 of the FCC rules.

Tests of the fundamental for the device were performed to determine the worst case orientation and polarization of the device.

2.2.1 Test Procedure

The following testing procedure was applied to the EUT mentioned above.

The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The table was centered on a motorized turntable, which allows 360-degree rotation. For measurements of the fundamental signal, a measurement antenna was positioned at a distance of 3 meters as measured from the closest point of the EUT. The radiated emissions were maximized by placing the EUT in all three orthogonal positions and by rotating the table and by scanning the receive antenna height.

A Spectrum Analyzer with peak detection was used to find the maximums of the radiated emissions during the variability testing. A drawing showing the test setup is given as Figure 1.

2.2.2 Test Criteria

The table below shows FCC 15.249 radiated limits for an intentional radiator operating at 902 to 928 MHz. In addition to these requirements, the EUT must meet the restricted emission band requirements of §15.205 and §15.209. The measurements of the harmonics and spurious emissions were performed to the 10th harmonic of the fundamental.

Signal Type	**Frequency (MHz)**	**3 m Limit Per §15.249 or§15.209**	**Field Strength (dB uV/m)**
Fundamental	915.156	50 mV/m	94
Signal Type	**Frequency (MHz)**	**1 m Limit Per §15.249 or§15.209**	**Field Strength (dB uV/m)**
2nd Harmonic	1830	500 µV/m	63.5
3rd Harmonic	2745	500 µV/m	63.5
4th Harmonic	3660	500 µV/m	63.5
5th Harmonic	4575	500 µV/m	63.5
6th Harmonic	5490	500 µV/m	63.5
7th Harmonic	6406	500 µV/m	63.5
8th Harmonic	7321	500 µV/m	63.5
9th Harmonic	8236	500 µV/m	63.5
10th Harmonic	9151	500 µV/m	63.5

Note: Radiated emissions above 1000 MHz were measured at 1 meter and the limit was increased to 63.5 dBuV/m.

2.2.3 Test Results

The radiated test data for the fundamental is included in Appendix A. The emissions were maximized at each frequency and the highest emissions identified were measured using peak detection. The radiated emissions generated by the Bluespan LLC ionKids Wrist Tag Transmitter are below the FCC Part 15.2149 maximum emission criteria.

2.3 Occupied Bandwidth Measurements

As per §15.249 measurements of occupied bandwidth for the fundamental signals of the EUT are not required. To prevent out of band emissions, the operating frequencies have been selected to the center of the band. Datasheets showing occupied bandwidth measurements are in Appendix B.

3.0 Antenna Requirement

An analysis of the **Bluespan LLC ionKids Wrist Tag Transmitter** was performed to determine compliance with Section 15.203 of the Rules. This section requires specific handling and control of antennas used for devices subject to regulations under the Intentional Radiator portions of Part 15.

3.1 Evaluation Procedure

The structure and application of the **Bluespan LLC, ionKids Wrist Tag Transmitter** were analyzed with respect to the rules. The antenna for this unit is an internal antenna permanently attached to the EUT. An auxiliary antenna port is not present.

3.2 Evaluation Criteria

Section 15.203 of the rules states that the subject device must meet at least one of the following criteria:

(a) Antenna be permanently attached to the unit.

(b) Antenna must use a unique type of connector to attach to the EUT.

(c) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

3.3 Evaluation Results

The **Bluespan LLC, ionKids Wrist Tag Transmitter** meets the criteria of this rule by virtue of having an internal antenna located inside the enclosure. There is no means of relocating the antenna externally. The EUT is therefore compliant with §15.203.

4.0 Receiver Portion

The **Bluespan LLC, ionKids Wrist Tag Transmitter – Receiver Portion** was tested and found to be in compliance with FCC Part 15 for Receivers and for Class B Digital Devices.

The Receiver portion was verified for compliance with 47 CFR 15.109 of the FCC rules. Radiated emission measurements were made on the emission levels generated by the Receiver portion of the **Bluespan LLC ionKids Wrist Tag Transmitter** and were found to be below the FCC Part 15.109 maximum emission criteria. A DoC has been prepared for the receiver portion.

5.0 RF Safety

The FCC safety criteria that invokes measurement of specific absorption rate (SAR), from OET Bulletin 65 Supplement C, is 300 mW for 915 MHz operating frequency. There are three different limit calculations required for compliance.

1. Absorption must be less than 0.08 W/kg averaged over the whole body.
Calculation:
-Assume all of the energy radiated is absorbed by the body.
-Assume the body is 1kg or greater mass.
The absorption rate would be 21mW/kg or less, which is less than the limit of 80mW/kg.

2. Absorption must be less than 1.6W/kg averaged over any one gram, where the one gram is in the shape of a cube, except the hands, wrists, feet and ankles.

-Assume product is held in hand.
-Assume product is held 20cm from the body and head.
-Assume product radiates isotropically at 21mW EIRP.
-Assume body or head density is near that of water, so that one gram has dimensions approximately 1cm cubed. The power density 20cm away from the source is 21mW/(4*pi*r^2) = 21mW/5024cm^2 = 4.18uW/g =4.18mW/kg which is much less than the limit of 1.6W.

3. Absorption must be less than 4W/kg averaged over any 10 grams for the hands, wrists, feet, and ankles. The 10 grams is in the shape of a cube.

-Assume that the unit is held in the hand, and that half of the radiance is absorbed by 10 grams in the hand.
-Assume that the remaining energy escapes into the atmosphere. Half of the power is 10.5mW. 10.5mW/10g = 1.05W/kg, which is less than 4W/kg.

Therefore, the output of this transmitter meets the requirements of FCC rules 2.1091 & 2.1093.

6.0 Modifications to Equipment

No modification was made to the **Bluespan LLC ionKids Wrist Tag Transmitter** during the testing process.

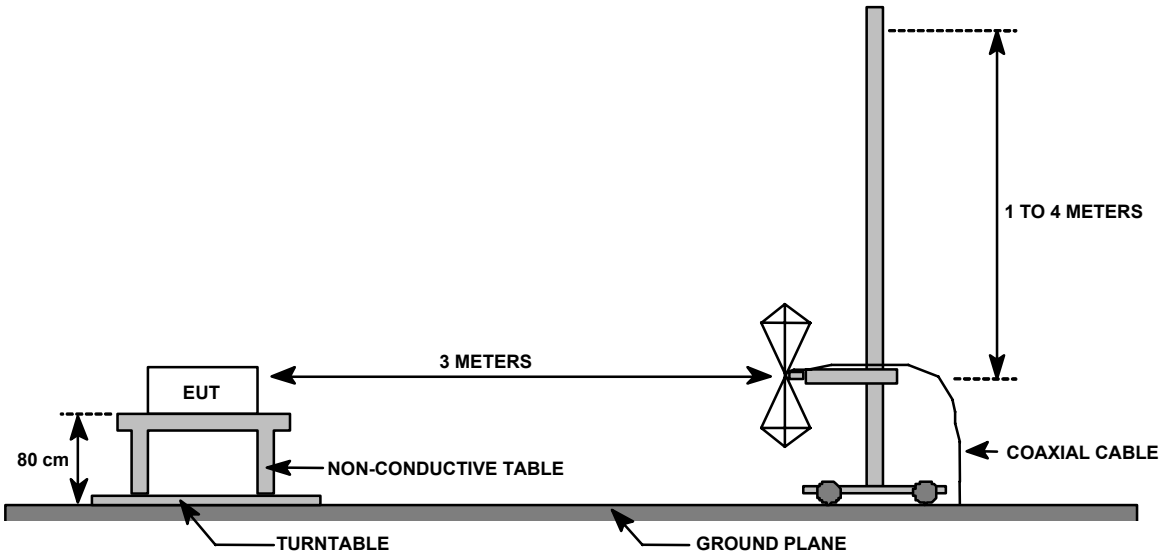
7.0 List of Test Equipment

A list of the test equipment utilized to perform the testing is given below. The date of calibration is given for each.

Electromagnetic Emissions Test Equipment

Model	Description	Calibration Due
HP 85662A	Display Unit	November 2004
HP 85650A	Quasi-Peak Adapter	November 2004
EMC 3115	Ridge Guide Antenna	June 2004
MITEQ	20 GHz Preamplifier	December 2004
HP8566B	Spectrum Analyzer	November 2004
Tektronix 2706	RF Preselector	December 2003
HP 8447D	Preamplifier	November 2004
Compliance Design B-100	Biconical Antenna	December2004
EMCO 3146	Log Periodic Antenna	December 2004

FIGURE 1: Radiated Emissions Test Setup



Appendix A Emissions Data Sheets

Fundamental Radiated Data Sheet
Bluespan LLC
ionKids Wrist Tag Transmitter

DATE: October 30, 2003 DETECTOR FUNCTION: Peak
PROJECT #: 04231-10 MEASUREMENT DISTANCE (m): 3

Antenna Polarization: Horizontal

Freq. (MHz)	EUT Dir (Deg.)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
915.156	170	1	55.4	0.0	25.2	9.0	89.6	94	-4.4
915.156	100	1	57.3	0.0	25.2	9.0	91.5	94	-2.5
915.156	90	1	54.6	0.0	25.2	9.0	88.8	94	-5.2
908.942	350	1	56.9	0.0	25.2	8.9	91.0	94	-3.0
921.179	330	2	57.3	0.0	25.2	9.2	91.7	94	-2.3

Antenna Polarization: Vertical

Freq. (MHz)	EUT Dir (Deg.)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
915.156	180	1.2	56.9	0.0	25.2	9.0	91.1	94	-2.9
915.156	180	1.1	57.3	0.0	25.2	9.0	91.5	94	-2.5
915.156	270	1	56.8	0.0	25.2	9.0	91.0	94	-3.0
908.942	350	1.5	56.2	0.0	25.2	8.9	90.3	94	-3.7
921.179	330	1.5	56.1	0.0	25.2	9.2	90.5	94	-3.5

Corrected Level = Recorded Level - Amplifier Gain + Antenna Factor + Cable Loss

Comment: No other signals were detected within 10 dB of the general limit, 30MHz to 1GHz

Test Engineer: Mike Royer

Microwave Radiated Data Sheet
Bluespan LLC
ionKids Wrist Tag Transmitter

DATE: October 30, 2003 DETECTOR FUNCTION: Peak
PROJECT #: 04231-10 MEASUREMENT DISTANCE (m): 1

Antenna Polarization: Horizontal

Freq. (MHz)	EUT Dir (Deg.)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/M)	Cable Loss (dB)	Corrected Level (dBuV/M)	Limit (dBuV/M)	Margin (dB)
1830	Maxed	1	44.9	22.9	26.8	2.4	51.2	63.5	-12.3
2745	Maxed	1	43.2	22.6	29.5	3.0	53.1	63.5	-10.4
3660	Maxed	1	41.8	22.9	32.1	3.6	54.6	63.5	-8.9
4575	Maxed	1	43.1	23.2	33.5	4.1	57.5	63.5	-6.0
5490	Maxed	1	44.9	23.0	35.0	4.4	61.3	63.5	-2.2
6406	Maxed	1	39.1	22.2	35.1	5.2	57.3	63.5	-6.2
7321	Maxed	1	35.6	21.3	36.9	5.4	56.5	63.5	-7.0
8236	Maxed	1	26.3	21.2	37.5	5.3	48.0	63.5	-15.5
9151	noise	floor	19	21.1	37.4	5.7	41.0	63.5	-22.5

Antenna Polarization: Vertical

Freq. (MHz)	EUT Dir (Deg.)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/M)	Cable Loss (dB)	Corrected Level (dBuV/M)	Limit (dBuV/M)	Margin (dB)
1830	Maxed	1	52.1	22.9	26.8	2.4	58.4	63.5	-5.1
2745	Maxed	1	46.6	22.6	29.5	3.0	56.5	63.5	-7.0
3660	Maxed	1	43.8	22.9	32.1	3.6	56.6	63.5	-6.9
4575	Maxed	1	42.3	23.2	33.5	4.1	56.7	63.5	-6.8
5490	Maxed	1	43.8	23.0	35.0	4.4	60.2	63.5	-3.3
6406	Maxed	1	33.8	22.2	35.1	5.2	52.0	63.5	-11.5
7321	Maxed	1	34.6	21.3	36.9	5.4	55.5	63.5	-8.0
8236	Maxed	1	30.1	21.2	37.5	5.3	51.8	63.5	-11.7
9151	noise	floor	19.4	21.1	37.4	5.7	41.4	63.5	-22.1

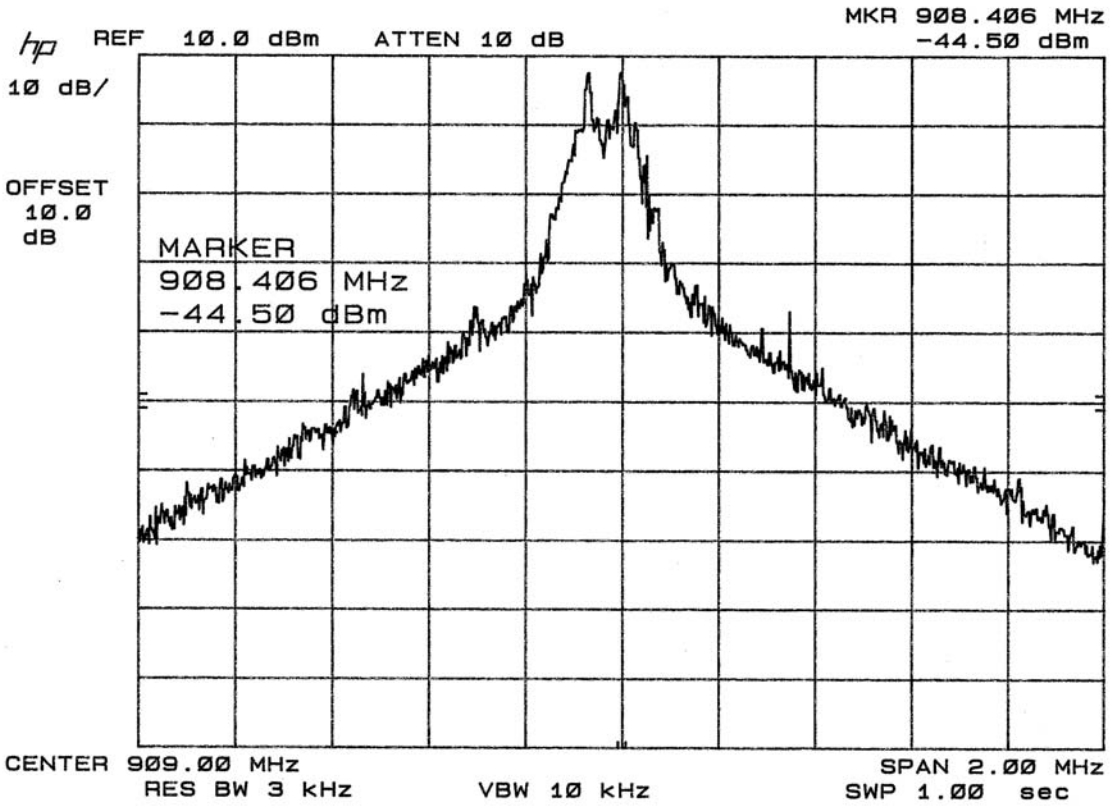
Corrected Level = Recorded Level - Amplifier Gain + Antenna Factor + Cable Loss

Comment: No signals within 20 dB of the strongest fundamental transmission were found outside of the 902-928 MHz band, from 30 MHz to 9.29 GHz.

Test Engineer: Mike Royer

Appendix B Occupied Bandwidth Data

Occupied Bandwidth - Low Frequency



Occupied Bandwidth - High Frequency