

**The Approval  
Specialists****BWS Tech, Inc.**294-9, Jungdae-Dong, Gwangju-City, Gyeonggi-do 464-809 Korea  
TEL: 82 31 764 0125 FAX: 82 31 764 0126**FCC EMI TEST REPORT**

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**Date of Test** : December 26, 2001

**Test Report No** : 01BWS003.FCC

**Test Site** : BWS Tech, Inc. (Registration No. : 553281)

**Trade Name** : N/A  
**Manufacturer** : NAITs INC  
**Address** : SeoHwa B/D #839-8 YeokSam-Dong, KangNam-Gu, Seoul, Korea.

**Contact Person** : Chang Il, Kim  
Tel No. : 82-2-569-5869  
Fax No. : 82-2-569-5847

**Product** : Wireless Kid Guard

**Model** : Kid Guard

**Fcc Rule Part(s)** : FCC Part 15 Subpart C

**Classification** : N/A

The device bearing the trade name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C.63.4-2000.

I attest to the accuracy of data and all measurement reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualification of all persons taking them.



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TaeHyun Nam  
President-BWS Tech, Inc.  
<http://www.approvalspecialists.co.kr>

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## 1. DESCRIPTION OF DEVICE

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### 1.1 General

Responsible Party	NAITS INC
Contact Person	<b>Chang Il, Kim</b> <b>Tel No. : 82-2-569-5869</b> <b>Fax No. : 82-2-569-5847</b>
Manufacturer	<b>NAITS INC</b> <b>SeoHwa B/D #839-8 YeokSam-Dong,</b> <b>KangNam-Gu, Seoul, Korea.</b>

- Trade name           **N/A**
- Model name           **Kid Guard**
- EUT Type             **Wireless Kid Guard**
- Classification       **N/A**
- Tx Frequency        **311.06 MHz**
- Clock Speed         **Main Clock : 311.06 MHz**
- Rule Part(s)         **FCC Part 15 Subpart C § 15.231**
- Test Procedure(s)   **ANSI C63.4(2000)**
- Date of Tests        **DECEMBER. 26, 2001**
- Place of Tests       **BWS Tech, Inc.**

### 1.2 EUT Description

This product is radio system that is manufactured by missing child prevention.

☒ **Note.**

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☒ **Note.**

Please refer to the duties and responsibilities of the Responsible Party attached.

## 2. TEST FACILITY

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The open field test site and conducted measurement facility used for this measurement, is located following address. This site was fully described in a report dated Dec. 26, 2001 that was submitted to the FCC. Our site and facility had been accepted in a letter dated Dec. 26, 2001(Registration No. : 553281) :

BWS Tech, Inc.

Address : 294-9, Jungdae-Dong, Gwangju-City, Gyeonggi-Do 464-809 Korea

The detailed description of the measurement facility was found to be in compliance with the requirements of §2.948 according to ANSI C63.4 on Dec. 08, 2000.

## 3. SUMMARY OF RESULTS

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### 3.1 Electromagnetic Emission

RFI Voltage Measurement ..... **N/A**

RFI Field Strength Measurement ..... **PASS**

Although the measured emissions indicate that the EUT complies with the required limits, some measurement are close to these limits.

When the uncertainty of measurement is considered, there is some possibility that the EUT may not be compliant.

### 3.2 Modifications to the EUT : None

## 4. TESTED SYSTEM DETAILS

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### 4.1 Peripherals and Others :

Description	Model Name	Serial No.	Manufacturer	FCC ID
EUT	Kid Guard	-	NAITS INC	-

### 4.2 Type of Cables Used:

Device from	Device to	Type of Cable	Length	Type of shield
-	-	-	-	-

### 4.3 System layout on EUT and peripherals

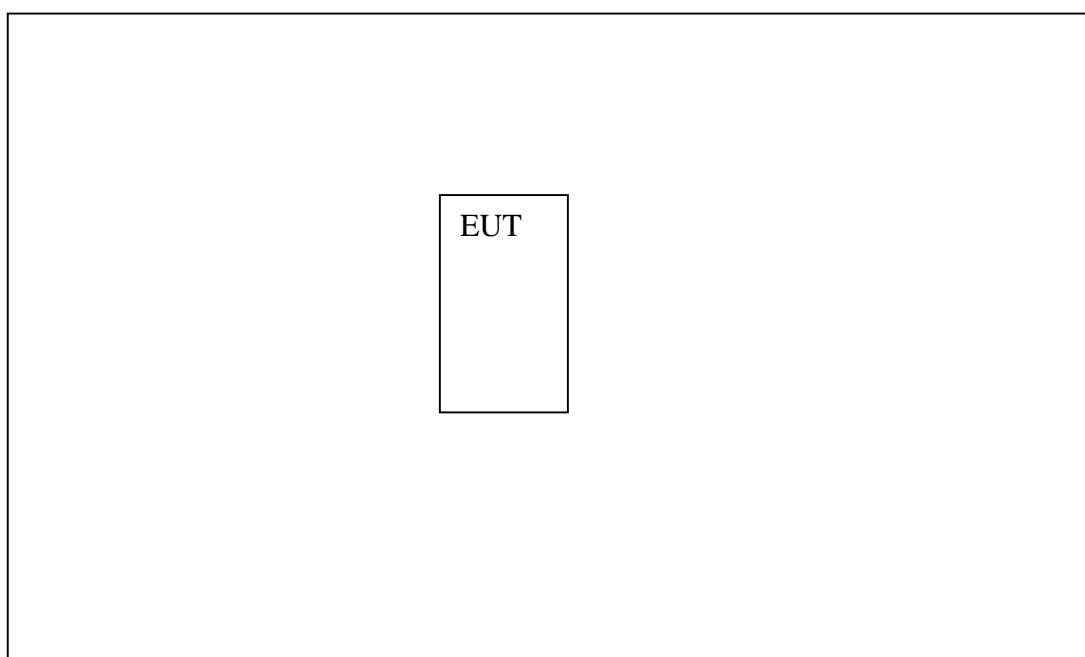


Figure 4-1 System layout

## 5. TEST RESULT

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### 5.1 RFI Voltage Measurement    N/A

### 5.2 RFI Field Strength Measurement

#### 5.2.1 Measurement Instrumentation Used

(30MHz ~ 1000MHz)

Signal Analyzer ..... (PMM9000/3100J70602/PMM/10 Oct. 2001/Oct. 2002)

Spectrum Analyzer.....(R3261/61720002/Advantest/25 Aug. 2001/Aug. 2002)

Biconical antenna ..... (BC01/0020J70501/PMM/10 Oct. 2001/Oct. 2002)

Log periodic antenna ..... (LP01/0020J70501/PMM/10 Oct. 2001/Oct. 2002)

Coaxial cable ..... (RG213U/---/MARLOW/--/--)

(Over 1000MHz)

Pre-amplifier                      (8449B/3008A00682)HP/02 Jun. 2001/Jun. 2002)

Spectrum Analyzer                (8563E/3450A02895)HP/25 Jun. 2001/Jun. 2002)

Horn Antenna                      (BBHA9120D/0501/SCHWARZBECK/23 Mar. 2001/Mar. 2002)

Coaxial cable                      (Sucoflex 104/---/SUCOFLEX/--/--)

#### 5.2.2 Measurement Procedure

Final test was performed according to ANSI C63.4-2000 at the open field site .  
Deviations from the standard were none.

The EUT was placed in a 0.8 m high table along with the peripherals. The turn table was separated from the antenna with the distance of 3 meter. Cables were placed in a position to produce maximum emissions as determined by experimentation, and operation mode was selected for maximum.

The frequencies and amplitudes of maximum emission were measured at varying azimuths, antenna heights and antenna polarities. **We measured device in normal operation mode.**  
We reported at maximum emission levels.

#### 5.2.3 Operation Modes

EUT was tested according to the specifications given by the manufacturer, and exercised in the most unfavorable manner.

### 5.2.4 Measurement Uncertainty

Measurement uncertainty of RFI Field Strength Measurement test was estimated at  $\pm 3.5$  dB(k=2)

### 5.2.5 Test Data

#### RFI Field Strength Measurement Results(30 MHz to 10 GHz)

Testing mode : **Carrier & harmonic test**

Test procedure : **ANSI C63.4-2000**

Date of measurement : **DECEMBER. 26, 2001**

Temperature : **7°C**

Humidity : **45 %**

Model : **Kid Guard**

Frequency (MHz)	Level (dBuV)	Antenna Ppolarity (H/V)	Factor (dB)	Loss (dB)	Level (dBuV/m)	Level (uV/m)	Limit (uV/m)	Margin (dB)
311.06	46.91	H	14.30	3.74	64.95	1768.07	2351	2.48
622.12	14.46	H	20.06	5.51	40.03	100.35	235	7.40
933.18	9.92	H	24.70	6.87	41.49	118.71	235	5.94
1244.24	5.19	H	25.80	8.72	39.71	96.72	235	8.02
1555.30	3.22	H	25.30	10.42	38.94	88.51	235	8.49

Table 1. Radiated Measurements at 3meters.

#### Note :

- This device is body-worn product. So we tested rotated through three orthogonal axes and the worst-case emissions are reported.**
- The limit for fcc part 15 subpart C § 15.231 is the following**
  - 15.231(e)**

Fundamental frequency (MHz)	Field strength of fundamental (Millivolts/Meter)	Field strength of harmonics (Microvolts/Meter)
260 - 470	1500 to 5000	150 to 500

\* AFCL = Antenna Factor and Cable Loss

\*\* Measurements using CISPR quasi-peak mode. Above 1 GHz, peak detector function mode is using a resolution bandwidth of 1 MHz and a video bandwidth of 1 MHz.

The peak level complies with the average limit. Peak mode is used with linearly polarized horn antenna and low-loss microwave cable.



Tested by **Hyung-Seok Lee**

**Bandwidth of the emission Results(30 MHz to 10 GHz)**Testing mode : **Bandwidth of the emission**Test procedure : **ANSI C63.4-2000**Date of measurement : **DECEMBER. 26, 2001**Temperature : **7°C**Humidity : **42 %**Model : **Kid Guard**

Frequency (MHz)	Antenna Ppolarity (H/V)	Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
311.06	H	340.00	778	438.00

Table 2. Bandwidth Measurements

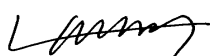
**Note :**

1. This device is body-worn product. So we tested rotated through three orthogonal axes and the worst-case emissions are reported.
2. The limit for fcc part 15 subpart C § 15.231 is the following

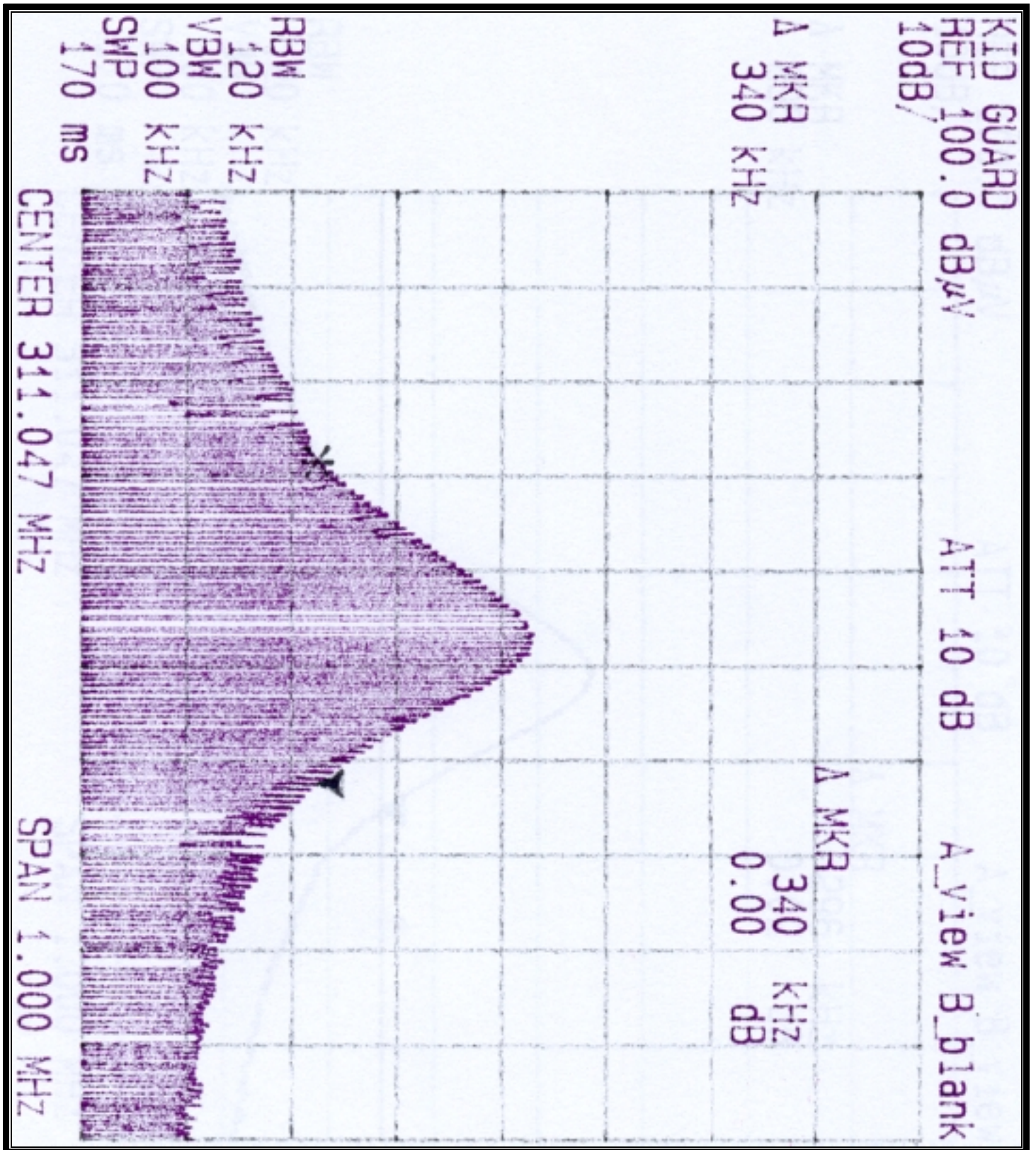
**b.15.231(c)**

Fundamental frequency (MHz)	Bandwidth of the emission (%)	Bandwidth of the emission (Hz)
311.0625	0.25	777656.25

\* The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.


Tested by **Hyung-Seok Lee**





### 5.3 Minimum Margin

#### Radiated emission

Kid Guard

TX mode

311.0625 MHz,

10.43 dB

### 5.4 SAMPLE CALCULATIONS

$$\text{dB}\mu\text{V} = 20 \log_{10} (\mu\text{V}/\text{m})$$

$$\mu\text{V} = 10^{(\text{dB}\mu\text{V}/20)}$$

#### EX. 1.

@ 311.06 MHz                      limit = 2351.04  $\mu\text{V}/\text{m}$  = 67.43 dB $\mu\text{V}/\text{m}$

Reading = 46.91 dB $\mu\text{V}$ (calibrated level)

Antenna factor + Cable Loss = 18.04 dB

Total = 64.95 dB $\mu\text{V}/\text{m}$

(64.95/20)

10                      = 1768.07  $\mu\text{V}/\text{m}$

Margin = 67.43 – 64.95 = 2.48 dB

**2.48 dB ; below limit**

## 6. MEASUREMENT PHOTOS

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### 6.1 Setup with the Maximized RFI Field Strength Emission Level

