



# Nemko

**Test Report:** 3W07091

**Applicant:** Instantel Inc.  
309 Legget Drive  
Kanata, Ontario  
K2K 3A3

**Equipment Under Test:  
(EUT)** Baby Tag

**FCC ID:** ISEBTG

**In Accordance With:** **FCC Part 15, Subpart C, 15.231  
Class II Permissive Change**

**Tested By:** Nemko Canada Inc.  
303 River Road, R.R. 5  
Ottawa, Ontario K1V 1H2

**Authorized By:**

Kevin Carr, EMC Specialist

**Date:** 29 April 2003

**Total Number of Pages:** 15

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## **Section 1. Summary of Test Results**

### **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 Part 15, Subpart C. All tests were conducted using measurement procedure ANSI C63.4-1992. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

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



TESTED BY: \_\_\_\_\_  
Glen Westwell, Wireless Technologist

DATE: 24 April 2003

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This report applies only to the items tested.

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**Summary Of Test Data**

| Name of Test                                   | Para. Number | Results  |
|------------------------------------------------|--------------|----------|
| Transmission Requirements                      | 15.231(a)    | N/A      |
| Radiated Emissions                             | 15.231(b)    | Complies |
| Occupied Bandwidth                             | 15.231(c)    | Complies |
| Frequency Tolerance                            | 15.231(d)    | N/A      |
| Periodic Alternate Field Strength Requirements | 15.231(e)    | Complies |

**Description of Changes to Hugs Tag Transmitter**

The following change was made to change the operating Frequency of the Transmitter from 217.003MHz to 216.6645MHz:

| Designator | Part Identifier | Description                |
|------------|-----------------|----------------------------|
| Was:       |                 |                            |
| Y1         | 80600701        | XTMR Crystal 72.332833MHz  |
| Becomes:   |                 |                            |
| Y1         | XTL 72.220000   | Crystal,72.220000MHz, UM-5 |

**Test Conditions:**

**Indoor**                      Temperature: 22°C  
                                    Humidity: 45%

**Outdoor**                    Temperature: 5°C  
                                    Humidity: 55%

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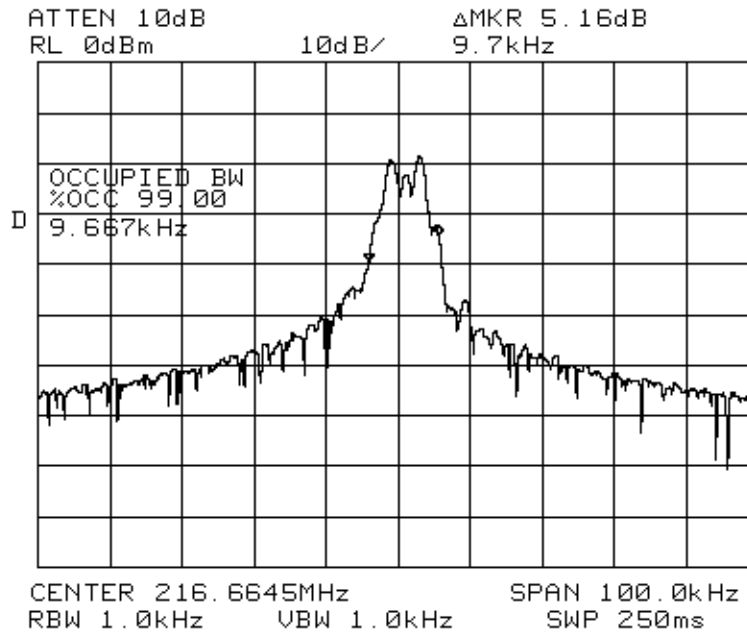
## **Section 2.        Equipment Under Test**

### **General Equipment Information**

|                                     |                |
|-------------------------------------|----------------|
| <b>Manufacturer:</b>                | Instantel Inc. |
| <b>Model No.:</b>                   | 806A2402       |
| <b>Serial No.:</b>                  | None           |
| <b>Date Received In Laboratory:</b> | 23 April 2003  |
| <b>Nemko Identification No.:</b>    | 1              |
| <b>Transmit Frequency (fixed)</b>   | 216.6645MHz    |
| <b>20 dB Bandwidth:</b>             | 10.0kHz        |
| <b>Type of Modulation:</b>          | FSK            |
| <b>Emission designator:</b>         | 9K7P0D         |
| <b>Occupied Bandwidth (99% BW):</b> | 9.7kHz         |

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## 99% Occupied Band Width



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### **Section 3.       Transmission Requirements**

**Para. No.: 15.231(a)**

|                                         |
|-----------------------------------------|
| <b>Test Performed By: Glen Westwell</b> |
|-----------------------------------------|

|                                    |
|------------------------------------|
| <b>Date of Test: 23 April 2003</b> |
|------------------------------------|

**Minimum Standard:**       15.231(a) Continuous transmissions such as voice, video or data transmissions are not permitted.

15.231(a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds after being released.

15.231(a)(2) A transmitter activated automatically shall cease transmission within 5 seconds of activation.

15.231(a)(3) Periodic transmissions at regular pre-determined intervals are not permitted. However polling or supervisory transmissions to determine system integrity of transmitters used in security or safety applications are allowed if the periodic rate of transmission does not exceed one transmission of not more than one second duration per hour for each transmitter.

15.231(a)(4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm.

**Test Results:**               N/A  
EUT was tested to 15.231(e), Reduced Field Strengths.

**Test Data:**               Compliance was determined by verification of technical specifications and a functional test on the equipment.

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## **Section 4. Occupied Bandwidth**

**Para. No.: 15.231(c)**

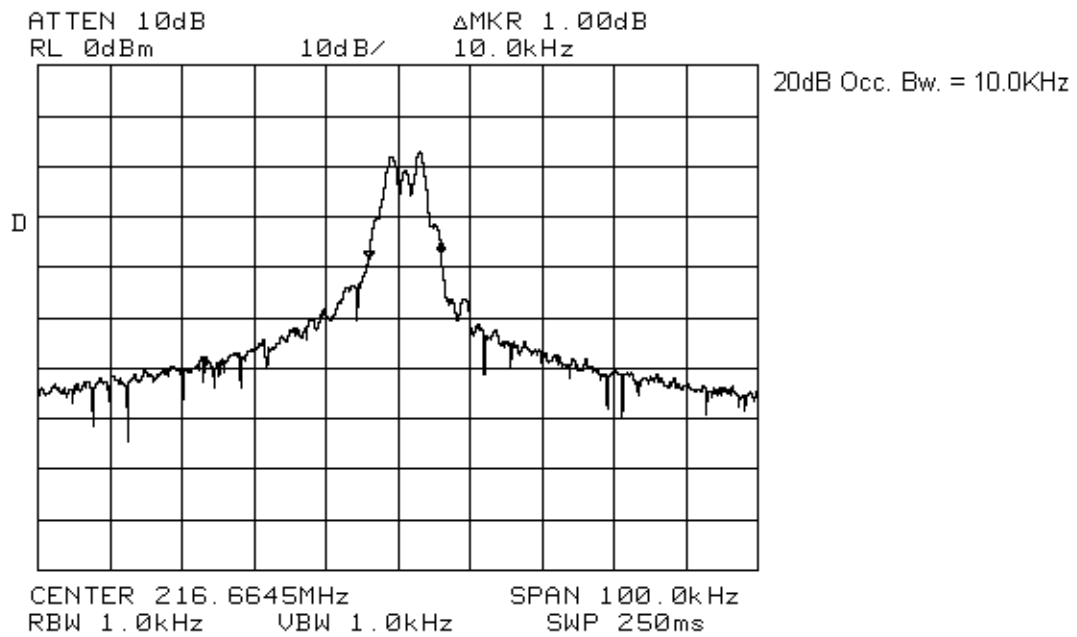
|                                         |                                    |
|-----------------------------------------|------------------------------------|
| <b>Test Performed By: Glen Westwell</b> | <b>Date of Test: 23 April 2003</b> |
|-----------------------------------------|------------------------------------|

**Minimum Standard:** 15.231(c) 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.

**Test Results:** Complied.

**Test Data:** See attached graph.

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**Section 5. Periodic Alternate Field Strength Requirements**

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**Para. No.: 15.231(e)****Test Performed By: Glen Westwell****Date of Test: 23 April 2003**

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**Minimum Standard:** 15.231(e) Intentional radiators may operate at a periodic rate exceeding that specified in paragraph (a) of this section and may be employed for any type of operation, including operation prohibited in paragraph (a) of this section, provided the intentional radiator complies with the provisions of paragraphs (b) through (d) of this section, except the field strength table in paragraph (b) of this section is replaced by the following.

| <b>Fundamental Frequency (MHz)</b> | <b>Field Strength of Fundamental (<math>\mu\text{V/m @ 3m}</math>)</b> | <b>Field Strength of Spurious Emissions (<math>\mu\text{V/m @ 3m}</math>)</b> |
|------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 40.66 - 40.70                      | 1,000                                                                  | 100                                                                           |
| 70 - 130                           | 500                                                                    | 50                                                                            |
| 130 - 174                          | 500 to 1,500                                                           | 50 to 150                                                                     |
| 174 - 260                          | 1,500                                                                  | 150                                                                           |
| 260-470                            | 1,500 to 5,000                                                         | 150 to 500                                                                    |
| Above 470                          | 5,000                                                                  | 500                                                                           |

In addition, devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

**Test Results:** Complied. The EUT was verified for maximum amplitude in three orthogonal axis. Worst case has been reported.

Emissions were searched up to the 10<sup>th</sup> harmonic with a fresh battery.

**Test Data:** As per attached tabulated data.  
Duty Cycle= -11.0dB.

*EQUIPMENT: Baby Tag***Test Data - Radiated Emissions**

| Test Distance<br>(meters) : 3 |                | Range:<br>C |              | Receiver:<br>ESVS 30, HP8566B |                          |                         | RBW(kHz):<br>100, 1000         |                                   | Detector:<br>Peak, Peak |                |
|-------------------------------|----------------|-------------|--------------|-------------------------------|--------------------------|-------------------------|--------------------------------|-----------------------------------|-------------------------|----------------|
| No.                           | Freq.<br>(MHz) | Ant.        | Pol<br>(V/H) | RCVD<br>Signal<br>(dBμV)      | Ant.<br>Factor<br>(dB)** | Amp.<br>Gain<br>(dB)*** | Duty<br>Cycle<br>Corr.<br>(dB) | Field<br>Strength<br>(dBμV/<br>m) | Limit<br>(dBμV/m)       | Margin<br>(dB) |
| 1                             | 216.66         | BL          | V            | 45.0                          | 12.6                     |                         | -11.0                          | 46.6                              | 63.5                    | 16.9           |
| 2                             | 216.66         | BL          | H            | 59.0                          | 12.6                     |                         | -11.0                          | 60.6                              | 63.5                    | 2.9            |
| 3                             | 433.329        | BL          | V            | N.D.                          | 20.2                     |                         | -11.0                          | N.D.                              | 43.5                    | ---            |
| 4                             | 433.329        | BL          | H            | N.D.                          | 20.2                     |                         | -11.0                          | N.D.                              | 43.5                    | ---            |
| 5                             | 649.993        | BL          | V            | 50.7                          | 23.2                     | 27.0                    | -11.0                          | 35.9                              | 43.5                    | 7.6            |
| 6                             | 649.993        | BL          | H            | 56.2                          | 23.2                     | 27.0                    | -11.0                          | 41.4                              | 43.5                    | 2.1            |
| 7                             | 866.65         | BL          | V            | N.D.                          | 25.6                     |                         | -11.0                          | N.D.                              | 43.5                    | ---            |
| 8                             | 866.65         | BL          | H            | N.D.                          | 25.6                     |                         | -11.0                          | N.D.                              | 43.5                    | ---            |
| 9                             | 1083.32        | BL          | V            | N.D.                          | 27.8                     |                         | -11.0                          | N.D.                              | 54                      | ---            |
| 10                            | 1083.32        | BL          | H            | N.D.                          | 27.8                     |                         | -11.0                          | N.D.                              | 54                      | ---            |
| 11                            | 72.336         | BL          | V            | 17.1                          | 8.2                      |                         |                                | 25.3                              | 40                      | 14.7           |
| 12                            | 72.336         | BL          | H            | 14.0                          | 8.2                      |                         |                                | 22.2                              | 40                      | 17.8           |

**Notes:**

B/C = Biconical, BL = Bilog, L/P = Log-Periodic, H = Horn, D/P = Dipole, E/D = EMCO  
Dipole

\* Re-measured using dipole antenna.

\*\* Includes cable loss when amplifier is not used.

\*\*\* Includes cable loss.

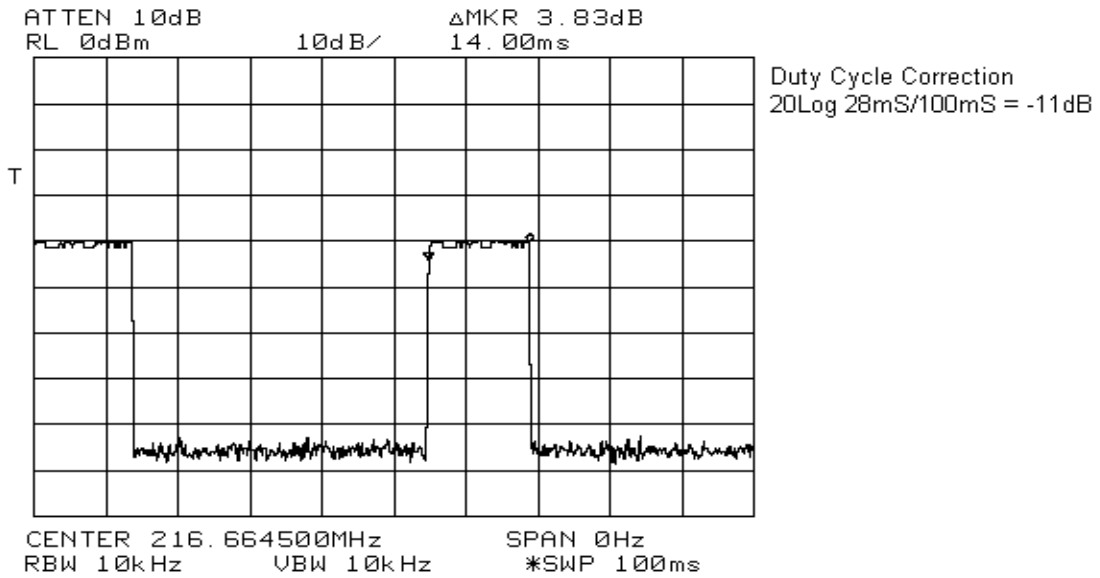
() Denotes failing emission level.

N.D. = Not Detected

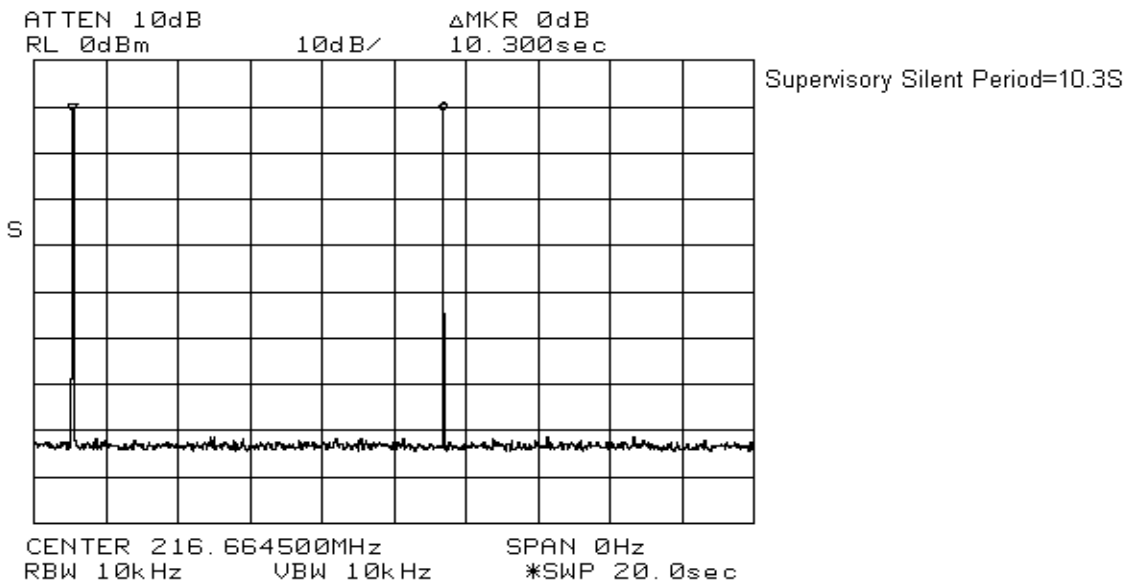
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## Duty Cycle:

### Transmission



### Transmission Characteristics, 15.231(e)



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## **OATS, SET UP PHOTO**

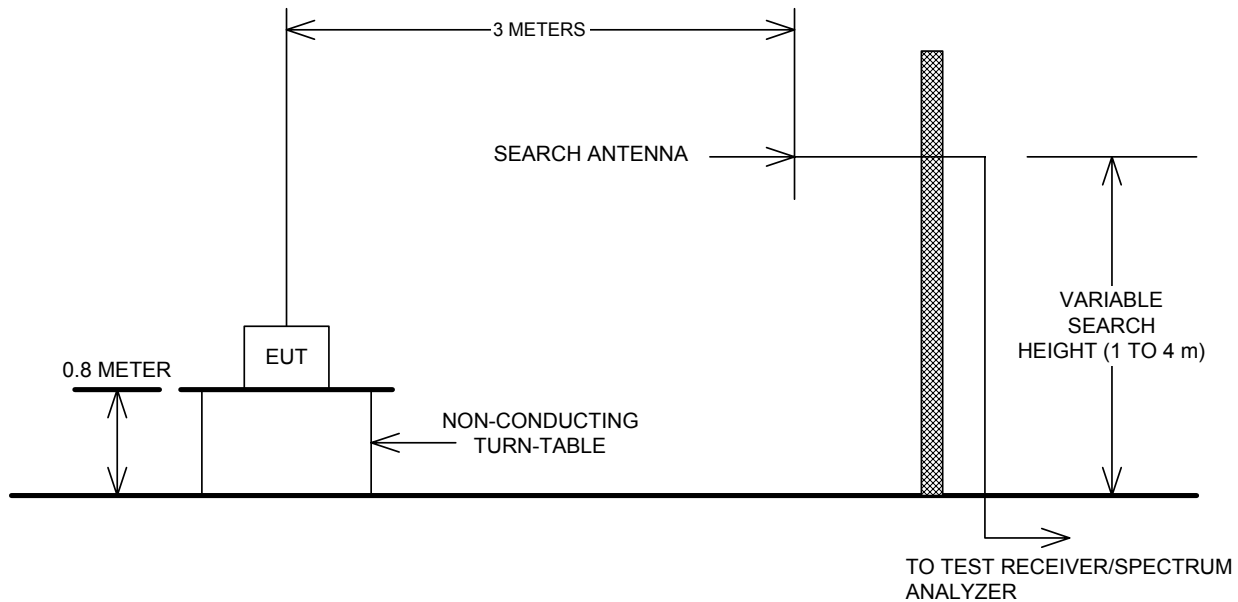


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## Section 6. Block Diagrams

### Outdoor Test Site For Radiated Emissions



The spectrum was searched up to the 10th harmonic of the fundamental frequency of operation.

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**Section 7. TEST EQUIPMENT LIST NEMKO CANADA - OTTAWA**

| <b>CAL Cycle</b> | <b>Equipment</b>            | <b>Manufacturer</b> | <b>Model No.</b> | <b>Asset/Serial No.</b> | <b>Last Cal.</b> | <b>Next Cal.</b> |
|------------------|-----------------------------|---------------------|------------------|-------------------------|------------------|------------------|
| 1 Year           | Receiver                    | Rohde & Schwarz     | ESVS-30          | FA001445                | June. 07/02      | June. 07/03      |
| Extended         | Spectrum Analyzer           | Hewlett-Packard     | 8566B            | FA001431                | Dec. 11/02       | Jun. 11/03       |
| Extended         | Spectrum Analyzer Display   | Hewlett-Packard     | 85662A           | FA001432                | Dec. 11/02       | Jun. 11/03       |
| 1 Year           | Bilog                       | Schaffner           | CBL6112B         | FA001503                | July. 02/02      | July. 02/03      |
| 1 Year           | Pre-Amplifier 0.6- 26.5 GHz | Hewlett-Packard     | HP 8449          | FA001761                | 23 Apr 03        | C.O.U.           |
| 1 Year           | Spectrum Analyzer           | Hewlett-Packard     | 8565E            | FA000981                | July. 15/02      | July. 15/03      |
| 1 Year           | Horn Antenna #1             | EMCO                | 3115             | FA000649                | Dec. 23/02       | Dec. 23/03       |

Note: N/A = Not Applicable  
NCR = No Cal Required  
COU = CAL On Use  
OUT = Out For CAL/Repair