



No.198 Kezhu Road, Science Town Economic& Technology Development District

Guangzhou, China 510663

**FEDERAL COMMUNICATIONS COMMISSION**

Registration number: 282399

Report No.: GLEMO060200245RFF

Page: 1 of 14

FCC ID: T2EUT-MRR05-GENIS

## **FCC TEST REPORT**

**Application No.** : GLEMO060200245RF

**Applicant** : Uin-Tat International (HK) Ltd.

**FCC ID** : T2EUT-MRR05-GENIS

**Fundamental Frequency** : 433.92MHz

**Equipment under Test (EUT):**

Name : Mini Reminder

Model : MRR05, MRR05M

**Standards** : FCC PART 15, SUBPART C : 2005 (Section 15.231)

**Date of Receipt** : 24 February 2006

**Date of Test** : 15 to 24 February 2006

**Date of Issue** : 24 February 2006

|                      |               |
|----------------------|---------------|
| <b>Test Result :</b> | <b>PASS *</b> |
|----------------------|---------------|

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Jerry Chen  
Manager

This report refers to the General Conditions for Inspection and Testing Services, printed overleaf. This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

All test results in this report can be traceable to National or International Standards.

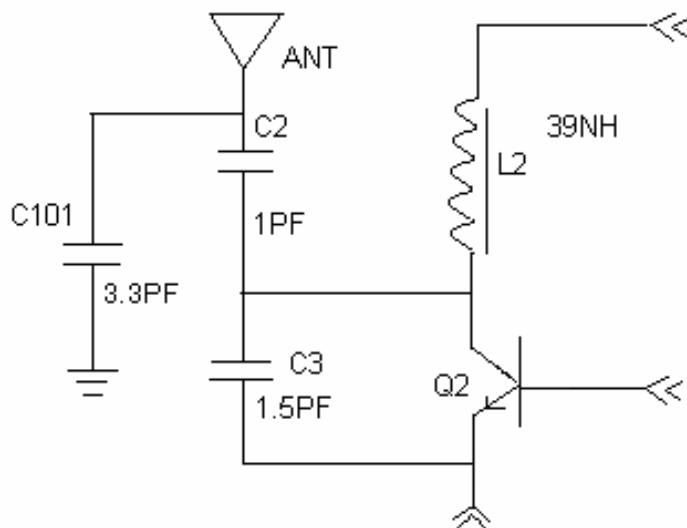
## 2 Test Summary

| Test                                    | Test Requirement  | Standard Paragraph | Result |
|---|-------------------|--------------------|--------|
| Radiated Emission<br>(30MHz to 1000MHz) | FCC PART 15 :2005 | Section 15.231     | PASS   |
| Occupied Bandwidth                      | FCC PART 15 :2005 | Section 15.231     | PASS   |
| Dwell Time                              | FCC PART 15 :2005 | Section 15.231     | PASS   |

Remark:

The EUT passed Radiated Emission test after the modification as shown as the below:

1.Add one SMD capacitor C101(3.3PF) as the following figure.



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## **4 General Information**

### **4.1 Client Information**

Applicant: Uin-Tat International (HK) Ltd.  
Address of Applicant: Room 1302, 13/F, Times Tower, 928 Cheung Sha Wan Road, Kowloon, HongKong.

### **4.2 Details of E.U.T.**

Product Name: Mini Reminder  
Model: MRR05, MRR05M  
Power Supply: 3.0V Li-Ion ( 1 x 'CR-2032' Size Cell Batteriy) for transmitter.

### **4.3 Description of Support Units**

The EUT was tested as an independent unit: a 433.92MHz radio transmitter.

### **4.4 Test Location**

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory, No.198 Kezhu Road, Science Town Economic& Technology Development District Guangzhou, China 510663

Tel: +86 20 82155555      Fax: +86 20 3848 1006

### **4.5 Other Information Requested by the Customer**

None.

## 4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **NVLAP – Lab Code: 200611-0**  
SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0. Effective through December 31, 2005.
- **ACA**  
SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.
- **VCCI**  
The 3m Semi-anechoic chamber and Shielded Room (11.5m x 4m x 4m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1599 and C-1706 respectively.  
Date of Registration: June 01, 2005. Valid until February 22, 2008
- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**  
Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.
- **CNAL – LAB Code: L0141**  
SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of Testing Laboratories.
- **FCC – Registration No.: 282399**  
SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002. With the above and NVLAP's accreditation, SGS-CSTC is an authorised test laboratory for the DoC process.
- **Industry Canada (IC)**  
The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5169.

## 5 Test Results

### 5.1 Test Instruments

| RE in Chamber |                            |                  |               |                |                      |                         |
|---------------|----------------------------|------------------|---------------|----------------|----------------------|-------------------------|
| No:           | Test Equipment             | Manufacturer     | Model No.     | Serial No.     | Cal. Date (dd-mm-yy) | Cal.Due date (dd-mm-yy) |
| 1             | 3m Semi- Anechoic Chamber  | Frankonia        | N/A           | N/A            | 31-01-2005           | 30-01-2006              |
| 2             | EMI Test Receiver          | Rohde & Schwarz  | ESIB26        | 100249         | 26-03-2005           | 25-03-2006              |
| 3             | EMI Test Software          | Audix            | E3            | N/A            | N/A                  | N/A                     |
| 4             | Coaxial cable              | SGS              | N/A           | N/A            | 05-12-2004           | 04-12-2005              |
| 5             | Bilog Type Antenna         | Schaffner -Chase | CBL6143       | 5070           | 17-01-2005           | 16-01-2006              |
| 6             | Horn Antenna               | Rohde & Schwarz  | HF906         | 100095         | 10-05-2005           | 09-05-2006              |
| 7             | Spectrum Analyzer          | Rohde & Schwarz  | FSP30         | 100324         | 29-10-2004           | 28-10-2005              |
| 8             | 0.1-1300 MHz Pre-Amplifier | HP               | 8447D OPT 010 | 2944A0625<br>2 | 31-06-2005           | 30-06-2006              |
| 9             | 1-26.5 GHz Pre-Amplifier   | Agilent          | 8449B         | 3008A0164<br>9 | 26-01-2005           | 25-01-2006              |
| 10            | Active Loop Antenna        | EMCO             | 6502          | 00042963       | 14-01-2005           | 14-01-2006              |

### 5.2 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C  
Humidity: 50 % RH  
Atmospheric Pressure: 1006 mbar

EUT Operation:

Test the EUT in operation mode.

## 5.3 Test Procedure & Measurement Data

### 5.3.1 Radiated Emissions

Test Requirement: FCC Part15 C 15.231(e)  
Test Method: ANSI C63.4  
Test Date: 15 February 2006 (initial test) , 22 February 2006 (final test)  
Measurement Distance: 3m (Semi-Anechoic Chamber)  
Frequency range 30 MHz – 5.0GHz for transmitting mode.  
Test instrumentation resolution bandwidth 120 kHz (30 MHz - 1000 MHz)  
1 MHz (1000 MHz – 25GHz)  
Receive antenna scan height 1 m - 4 m, polarization Vertical/Horizontal

#### Requirements:

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

| Fundamental Frequency<br>MHz | Field Strength of Fundamental<br>(dB $\mu$ V/m @ 3m) | Field Strength of Harmonics<br>and Spurious Emissions<br>(dB $\mu$ V/m @ 3m) |
|------------------------------|--|--|
| 40.66 to 40.70               | 60.0   | 40.0   |
| 70 to 130                    | 54.0   | 34.0   |
| 130 to 174                   | 54.0 to 63.5   | 34.0 to 43.5   |
| 174 to 260                   | 63.5   | 43.5   |
| 260 to 470                   | 63.5 to 74.0   | 43.5 to 54.0   |
| 470 and above                | 74.0   | 54.0   |

\*\* linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, uV/m at 3 meters =  $22.72727(F) - 2454.545$ ; for the band 260-470 MHz, uV/m at 3 meters =  $16.6667(F) - 2833.3333$ . The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

Since the device is a pulsed transmission with a periodic rate less than 20 pulses per second (20Hz).

The fundamental frequency of the EUT is 433.92MHz

According to 15.231(e),the limit for field strength dB $\mu$ V/m for the fundamental frequency= 72.8dB $\mu$ V/m.

No fundamental is allowed in the restricted bands.

The limit for average field strength dB $\mu$ V/m for the harmonics and spurious frequencies = 52.8dB $\mu$ V/m. Spurious in the restricted bands must be less than 54.0dB $\mu$ V/m or 15.209. Whichever limit permits a stricter field strength is apply.

And according 15.35(a)

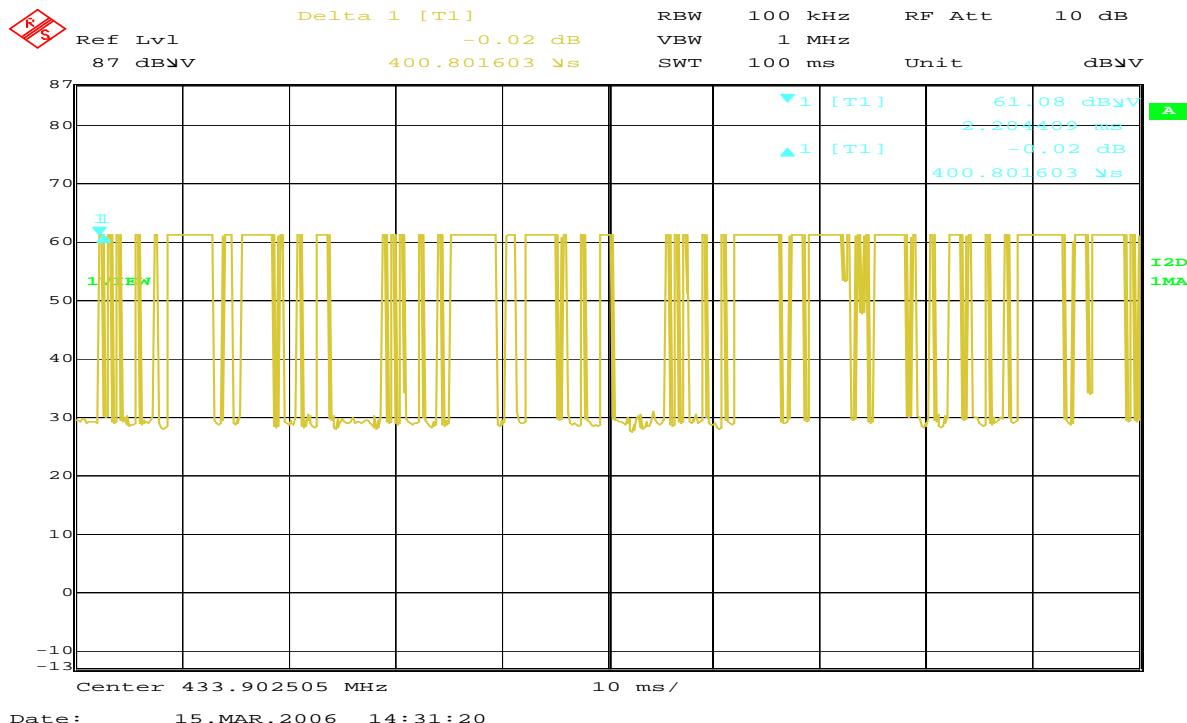
15.35(a) On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and related measurement bandwidths, unless otherwise specified. The specifications for the measuring instrument using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Interference (CISPR) of the International Electrotechnical Commission. As an alternative to CISPR quasi-peak measurements, the responsible party, at its option, may demonstrate compliance with the emission limits using measuring equipment employing a peak detector function, properly adjusted for such factors as pulse desensitization, as long as the same bandwidths as indicated for CISPR quasi-peak measurements are employed.

Note: For pulse modulated devices with a pulse-repetition frequency of 20 Hz or less and for which CISPR quasi-peak measurements are specified, compliance with the regulations shall be demonstrated using measuring equipment employing a peak detector function, properly adjusted for such factors as pulse desensitization, using the same measurement bandwidths that are indicated for CISPR quasi-peak measurements.

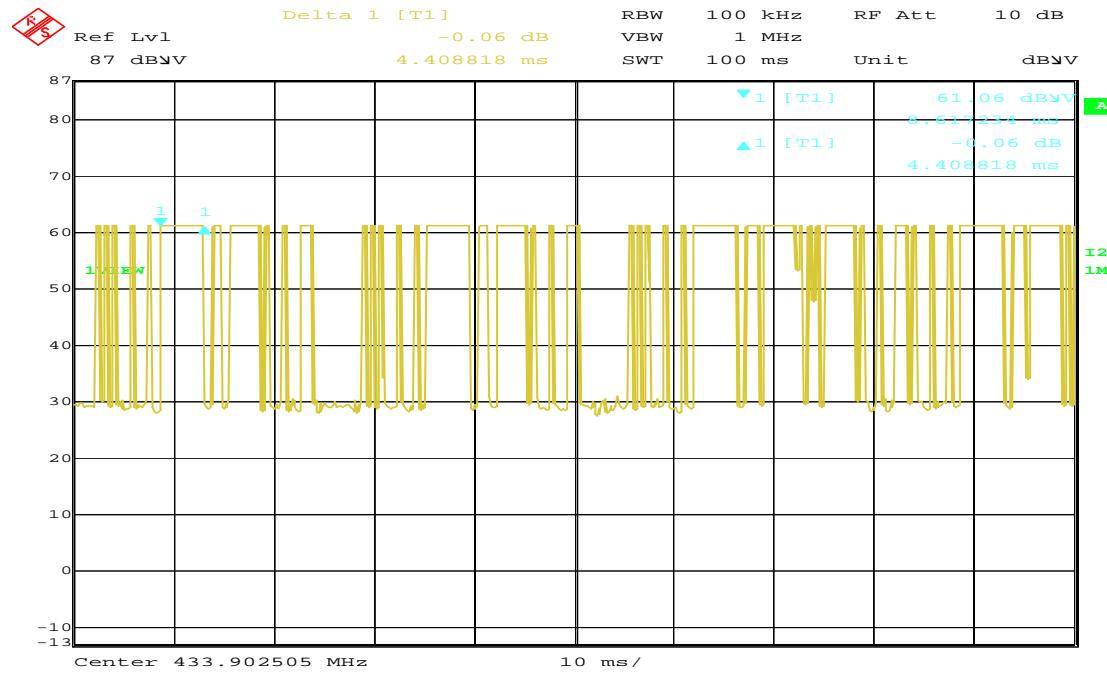
According to 15.35 (b) Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, e.g., see §§ 15.250, 15.252, 15.255, and 15.509-15.519 of this part, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device, e.g., the total peak power level. Note that the use of a pulse desensitization correction factor may be needed to determine the total peak emission level. The instruction manual or application note for the measurement instrument should be consulted for determining pulse desensitization factors, as necessary.

The average correction factor is computed by analyzing the "worst case" on time in any 100 msec time period. Analysis of the remote transmitter worst case on time in any 100 msec time period is an on time of 100 msec, therefore the average value of fundamental frequency is: Average = Peak value + 20log (Duty cycle), where the duty factor is calculated from following formula:

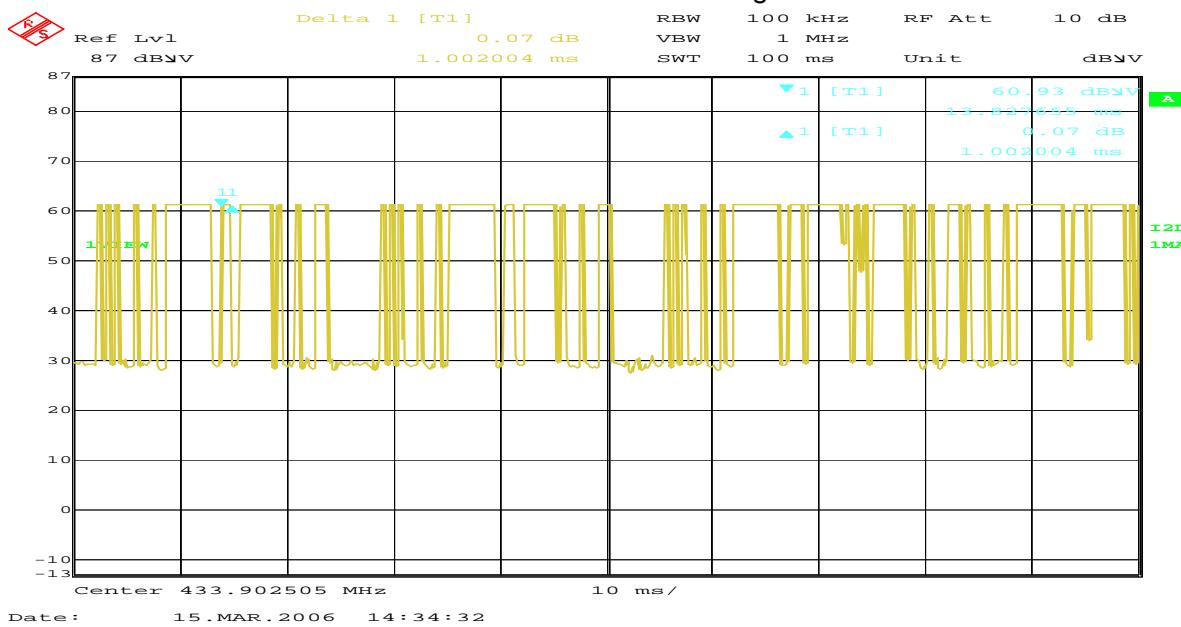
$$20\log (\text{Duty cycle}) = 20\log(T_{pulse}/100\text{ms}) = 20\log(49.4/100\text{ms}) = -6.1\text{dB}$$



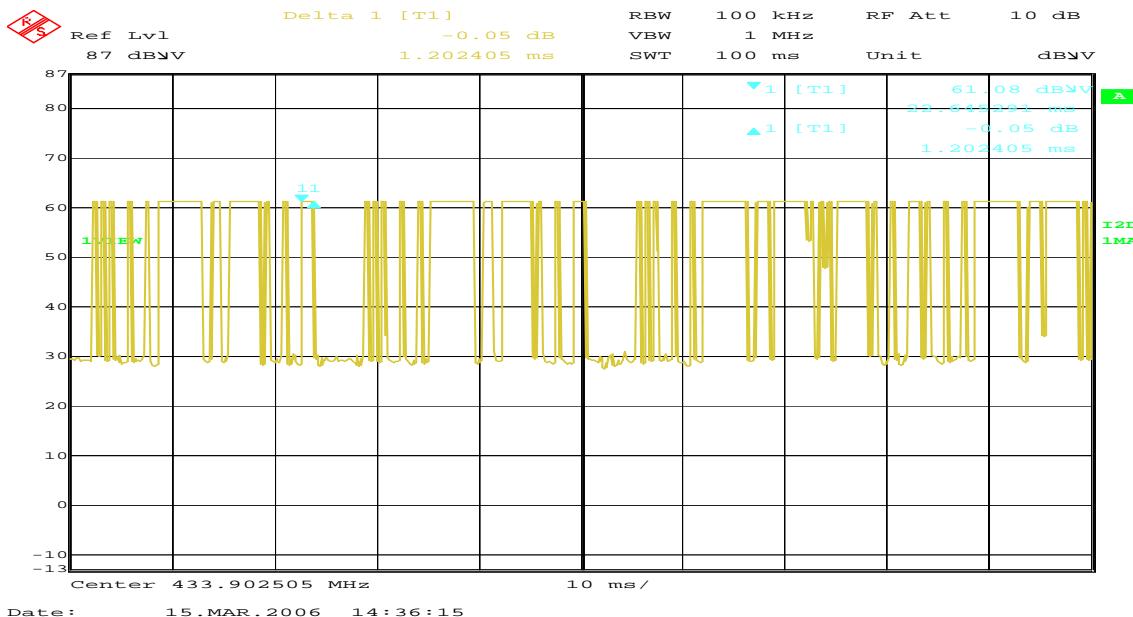
$$T_1 = 0.4\text{ms} \times 26 = 10.4\text{ms}$$



$$T_2 = 4\text{ms} \times 4 = 16\text{ms}$$



$$T_3 = 1\text{ms} \times 8 = 8\text{ms}$$



$$T_4 = 3\text{ms} \times 5 = 15\text{ms}$$

$$T_{pulse} = T_1 + T_2 + T_3 + T_4 = 10.4 + 16 + 8 + 15\text{ms} = 49.4\text{ms}$$

**Test Procedure:** The procedure used was ANSI Standard C63.4-2003. The receiver was scanned from 30MHz to 5.0GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes.

The field strength is calculated by adding the Antenna Factor, Cable Factor & Peramplifier . The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Peramplifier Factor

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. The EUT was measured by Bilog antenna with 2 orthogonal polarities.

The following test results were performed on the EUT on 22 February 2006:

1. Fundamental emission

| Test Frequency (MHz) | Peak (dB $\mu$ V/m) |            | Limits (dB $\mu$ V/m) | Margin (dB) |            |
|----------------------|---------------------|------------|-----------------------|-------------|------------|
|                      | Vertical            | Horizontal |                       | Vertical    | Horizontal |
| 433.920              | 45.8                | 58.5       | 92.8                  | 47.0        | 34.3       |

| Test Frequency (MHz) | Average (dB $\mu$ V/m) |            | Limits (dB $\mu$ V/m) | Margin (dB) |            |
|----------------------|------------------------|------------|-----------------------|-------------|------------|
|                      | Vertical               | Horizontal |                       | Vertical    | Horizontal |
| 433.920              | 39.7                   | 52.4       | 72.8                  | 33.1        | 20.4       |

2. Harmonics & Spurious Emissions

| Test Frequency (MHz) | Peak (dB $\mu$ V/m) |            | Limits (dB $\mu$ V/m) | Margin (dB) |            |
|----------------------|---------------------|------------|-----------------------|-------------|------------|
|                      | Vertical            | Horizontal |                       | Vertical    | Horizontal |
| 867.84               | 40.4                | 49.6       | 72.8                  | 32.4        | 23.2       |
| 1301.76              | 27.2                | 28.6       | 72.8                  | 45.6        | 44.2       |
| 1735.68              | 29.6                | 31.6       | 72.8                  | 43.2        | 41.2       |
| 2169.60              | 31.7                | 31.9       | 72.8                  | 41.1        | 40.9       |
| 2603.52              | 34.5                | 34.0       | 72.8                  | 38.3        | 38.8       |
| 3037.44              | 36.5                | 36.8       | 72.8                  | 36.3        | 36.0       |
| 3471.36              | 37.6                | 37.5       | 72.8                  | 35.2        | 35.3       |
| 3905.28              | 38.9                | 39.4       | 72.8                  | 33.9        | 33.4       |
| 4339.20              | 38.3                | 38.7       | 72.8                  | 34.5        | 34.1       |

| <b>Test Frequency (MHz)</b> | <b>Average (dB<math>\mu</math>V/m)</b> |            | <b>Limits (dB<math>\mu</math>V/m)</b> | <b>Margin (dB)</b> |            |
|-----------------------------|--|------------|---------------------------------------|--------------------|------------|
|                             | Vertical                               | Horizontal |                                       | Vertical           | Horizontal |
| 867.84                      | 34.3                                   | 43.5       | 52.8                                  | 18.5               | 9.3        |
| 1301.76                     | 21.1                                   | 22.5       | 52.8                                  | 31.7               | 30.3       |
| 1735.68                     | 23.5                                   | 25.5       | 52.8                                  | 29.3               | 27.3       |
| 2169.60                     | 25.6                                   | 25.8       | 52.8                                  | 27.2               | 27.0       |
| 2603.52                     | 28.4                                   | 27.9       | 52.8                                  | 24.4               | 24.9       |
| 3037.44                     | 30.4                                   | 30.7       | 52.8                                  | 22.4               | 22.1       |
| 3471.36                     | 31.5                                   | 31.4       | 52.8                                  | 21.3               | 21.4       |
| 3905.28                     | 32.8                                   | 33.3       | 52.8                                  | 20.0               | 19.5       |
| 4339.20                     | 32.2                                   | 32.6       | 52.8                                  | 20.6               | 20.2       |

**Remark:**

According to 15.35 (b) When average radiated emission measurements are specified in the regulations, including emission measurements below 1000 MHz, there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules, e.g..

**TEST RESULTS: The unit does meet the FCC Part 15 C Section 15.231 requirements.**

### 5.3.2 Occupied Bandwidth

Test Requirement: FCC Part15 C

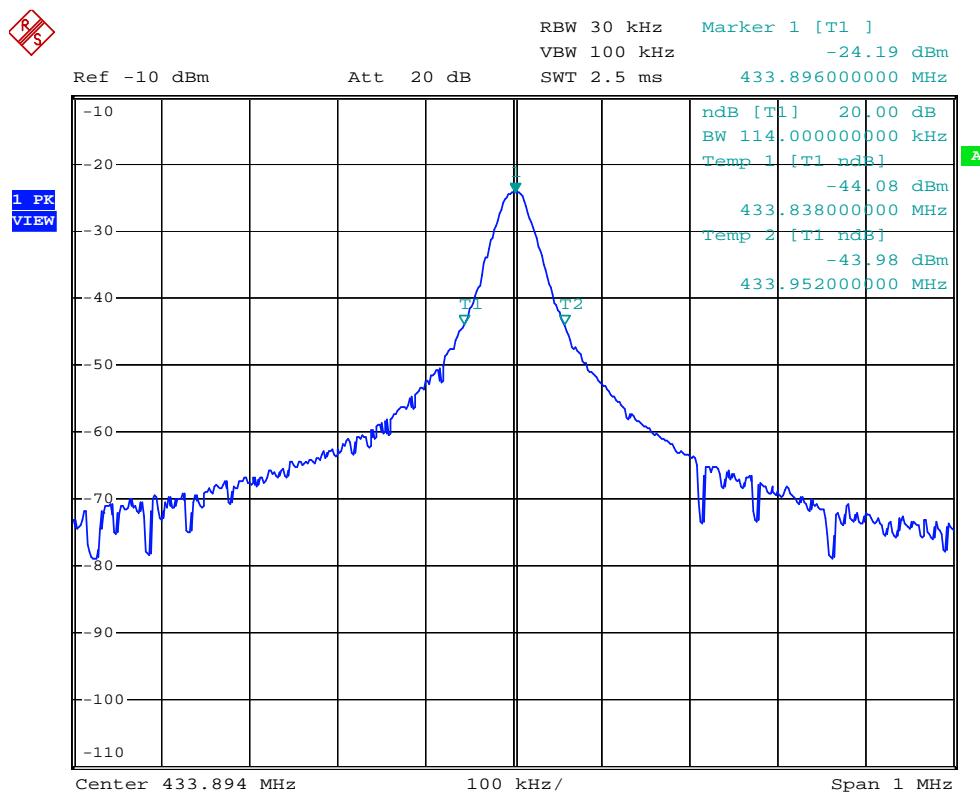
Test Method: ANSI C63.4

Test Date: 15 February 2006 (initial test) , 24 February 2006 (final test)

Requirements: 15.231 (c3) 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.

Method of measurement: A small sample of the transmitter output was fed into the Spectrum Analyzer and the attached plot was taken. The vertical is set to 10dB per division. The horizontal scale is set to 100KHz per division.

The graph as below, represents the emissions take for this device.



Date: 24.FEB.2006 10:01:04

The fundamental frequency is 433.92MHz, so the 20dB bandwidth is 1.08MHz, so the upper frequency point is 435.00MHz, and lower frequency point is 432.84MHz.

**The results: The unit does meet the FCC Part 15C Section 15.231 requirements.**

### 5.3.3 Dwell Time

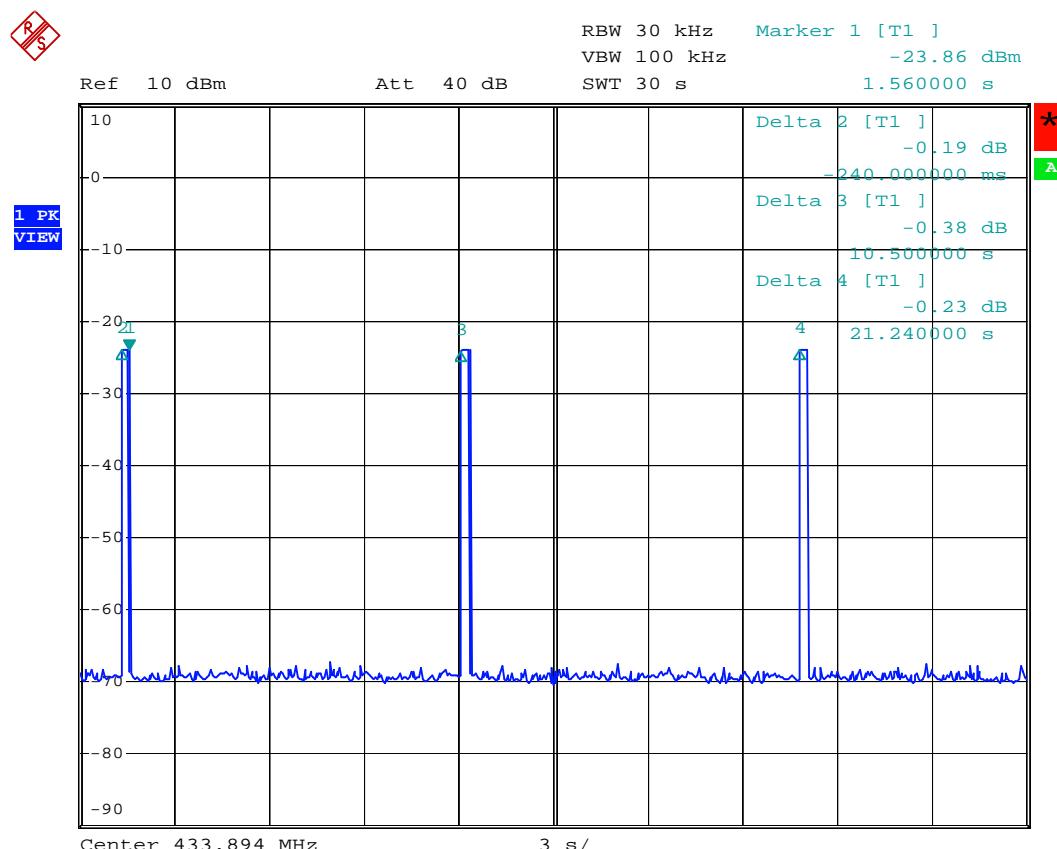
Test Requirement: FCC Part15 C  
Test Method: FCC Part15 C Section 15.231.  
Test Date: 15 February 2006 (initial test) , 24 February 2006 (final test)  
Requirements:

**1. Regulation 15.231 (e)** 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.

#### Result:

The duration of the EUT transmission is about 240ms, and the silent period between transmissions is about 10.5s greater than 10 seconds.

The EUT does meet the requirements of this section.



Date: 24.FEB.2006 09:54:03

**The results: The unit does meet the FCC Part 15C Section 15.231 requirements.**