

**FCC PART 15.231**  
**MEASUREMENT AND TEST REPORT**  
For

EUT Name: Remote Digital Meat Thermometer  
Item No.: 01095  
FCC ID: X4E01095T  
Serial No.: Not supplied by client

Prepared for : BASE4 Group, Inc.  
2611 Westgrove Drive #109 Carrollton, Texas 75019 USA

Prepared by : Shenzhen Toby Technology Co., Ltd.  
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Report Number : **TB-F106202**  
Date of Test : Apr. 19-20, 2010  
Date of Report : Apr. 21-22, 2010

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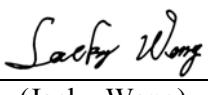
## TEST REPORT DECLARATION

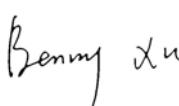
Applicant : BASE4 Group, Inc.  
Manufacturer : SUNYAN ELECTRONIC CO., LTD.  
EUT Description : Remote Digital Meat Thermometer  
Model No. : 01095

The device described above is tested by SEM. Test Compliance Service Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits for both radiation and conduction emissions.

The measurement results are contained in this test report and Shenzhen Toby Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Toby Technology Co., Ltd.

Reported by:  Date: Apr. 20, 2010  
(Jacky Wang)

Reviewer:  Date: Apr. 22, 2010  
(Benny Xu)

Approved by:  Date: Apr. 23, 2010  
(Justin Zhang)

## 1. GENERAL INFORMATION

### 1.1. Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant : BASE4 Group, Inc.  
 Address : 2611 Westgrove Drive #109 Carrollton, Texas 75019 USA  
 Manufacturer : SUNYAN ELECTRONIC CO., LTD.  
 Address : NO.2, 7TH South Street, QingGong Road 3, FoShan City, GuangDong, P.R.China

#### General Description of E.U.T

| Items            | Description                     |
|------------------|---------------------------------|
| EUT Description: | Remote Digital Meat Thermometer |
| Trade Name:      | Char-Broil                      |
| Model No.:       | 01095                           |
| Rated Voltage:   | DC 3V Batteries                 |
| Out Power:       | <10 uW                          |
| Frequency Range: | 433.92MHz±200Hz                 |
| Tape of Antenna: | Integral Antenna                |
| Size:            | 9.3cm x 4.5cm x 1.5cm           |
| Comment:         | Auto Operation Device           |

For more information refer to the circuit diagram form and the user's manual.

The test data is gathered from a production sample, provided by the manufacturer.

### 1.2. Test Standards

The following report is prepared on behalf of the BASE4 Group, Inc. in accordance with FCC Part 15, Subpart C, and section 15.231, 15.203, 15.205 and 15.209 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.231, 15.203, 15.205 and 15.209 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

### 1.3. Related Submittal(s)/Grant(s)

No Related Submittal(s).

### 1.4. Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions. The EUT was set to keep transmitting during the test.

### 1.5. Accessories Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|--------------|-------------|-------|---------------|
| /            | /           | /     | /             |

### 1.6. EUT Cable List and Details

| Cable Description | Length (M) | Shielded/<br>Unshielded | With Core/<br>Without Core |
|-------------------|------------|-------------------------|----------------------------|
| /                 | /          | /                       | /                          |

### 1.7. Test Location

#### FCC – Registration No.: 994117

SEM. Test Compliance Service 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 and the Registration is 994117.

SEM. Test Compliance Service Co., Ltd. Lab.

Address: 3/F, Jinbao Commerce Building, Xin'an Fanshen Road,  
Bao'an District, Shenzhen, P. R. C.

## 2. SUMMARY OF TEST RESULTS

| DESCRIPTION OF TEST                 | RESULT    |
|-------------------------------------|-----------|
| §15.203 Antenna Requirement         | Compliant |
| §15.205 Restricted Band             | Compliant |
| §15.209 General Requirement         | Compliant |
| §15.231 (e) Deactivation Testing    | Compliant |
| §15.231 (c) 20dB Band Width Testing | Compliant |
| §15.231 (e) Radiated Emission       | Compliant |

### **3. §15.203 - ANTENNA REQUIREMENT**

#### **3.1. Standard Applicable**

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

#### **3.2. Test Result**

This product has a permanent antenna, fulfill the requirement of this section.

## 4. §15.205, §15.209, §15.231 (E) RADIATED EMISSION

### 4.1. Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is  $\pm 3.0$  dB.

### 4.2. Standard Applicable

According to §15.231(e), the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

| Fundamental Frequency (MHz) | Field Strength of Fundamental (microvolts/meter) | Field Strength of Spurious Emission (microvolts/meter) |
|-----------------------------|--|--|
| 40.66-40.70                 | 1000   | 100  |
| 70-130                      | 500  | 50   |
| 130-174                     | 500 to 1500**                                    | 50-150**   |
| 174-260                     | 1500   | 150  |
| 260-470                     | 1500 to 5000**                                   | 150 to 500**   |
| Above 470                   | 5000   | 500  |

\*\* linear interpolations

The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.

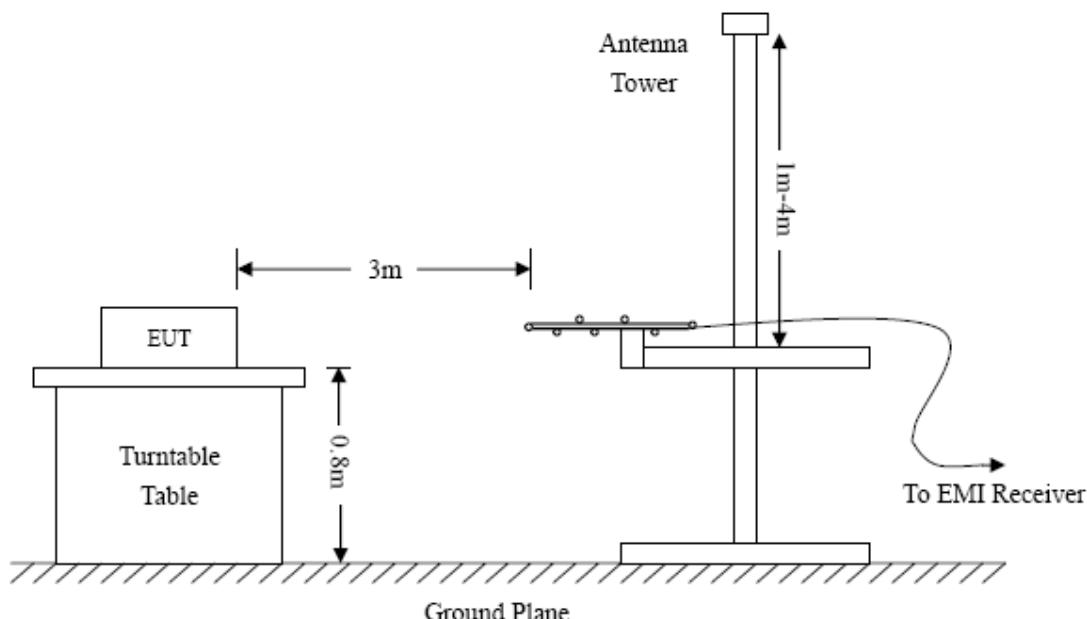
### 4.3. Test Equipment List and Details

| Description              | Manufacturer   | Model No. | Serial No. | Cal. Date  | Cal. Date  |
|--------------------------|----------------|-----------|------------|------------|------------|
| Spectrum Analyzer        | ROHDE& SCHWARZ | FSEA20    | DE25181    | 2009-08-12 | 2010-08-11 |
| Positioning Controller   | C&C            | CC-C-1F   | N/A        | 2009-08-12 | 2010-08-11 |
| Trilog Broadband Antenna | SCHWARZBECK    | VULB9163  | 9163-333   | 2009-07-21 | 2010-07-20 |
| Horn Antenna             | SCHWARZBECK    | BBHX 9120 | 9120-426   | 2009-07-21 | 2010-07-20 |
| RF Switch                | EM             | EMSW18    | SW060023   | 2009-08-12 | 2010-08-11 |
| Amplifier                | Agilent        | 8447F     | 3113A06717 | 2009-08-12 | 2010-08-11 |
| Coaxial Cable            | SCHWARZBECK    | AK9513    | 9513-10    | 2009-08-12 | 2010-08-11 |
| EMI Test Receiver        | ROHDE& SCHWARZ | ESPI      | 25498514   | 2009-08-12 | 2010-08-11 |
| EMI Test Receiver        | ROHDE& SCHWARZ | ESI26     | 838786/103 | 2009-08-12 | 2010-08-11 |
| Receiver Horn Antenna    | ROHDE& SCHWARZ | HF906     | 100013     | 2009-08-12 | 2010-08-11 |

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

#### 4.4. Test Procedure

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.205 15.231(e) and FCC Part 15.209 Limit.



#### 4.5. Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and

subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Loss} + \text{Cab. Loss} - \text{Ampl. Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB $\mu$ V means the emission is 6dB $\mu$ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.231 Limit}$$

#### **Limit Calculation for Fundamental (Xf):**

$$(20\log X_f - 1500)/(434-260) = (5000-1500)/(470-260)$$

Limit Xf=**72.87dB $\mu$ V/m**

#### **Limit Calculation for Spurious Emission (Xs):**

$$(20\log X_s - 150)/(434-260) = (500-150)/(470-260)$$

Limit Xs=**52.87dB $\mu$ V/m**

#### **4.6. Environmental Conditions**

|                    |           |
|--------------------|-----------|
| Temperature:       | 21° C     |
| Relative Humidity: | 56 %      |
| ATM Pressure:      | 1011 mbar |

#### **4.7. Summary of Test Results/ Plots**

According to the data below, the FCC Part15.205, 15.209 and 15.231 standards, and had the worst margin of:

-13.22 dB $\mu$ V/m at 1302 MHz in the Vertical polarization, 30 MHz to 5 GHz, 3Meters

## Plot of Radiation Emissions Test Data

Radiated Disturbance

EUT: Remote Digital Meat Thermometer

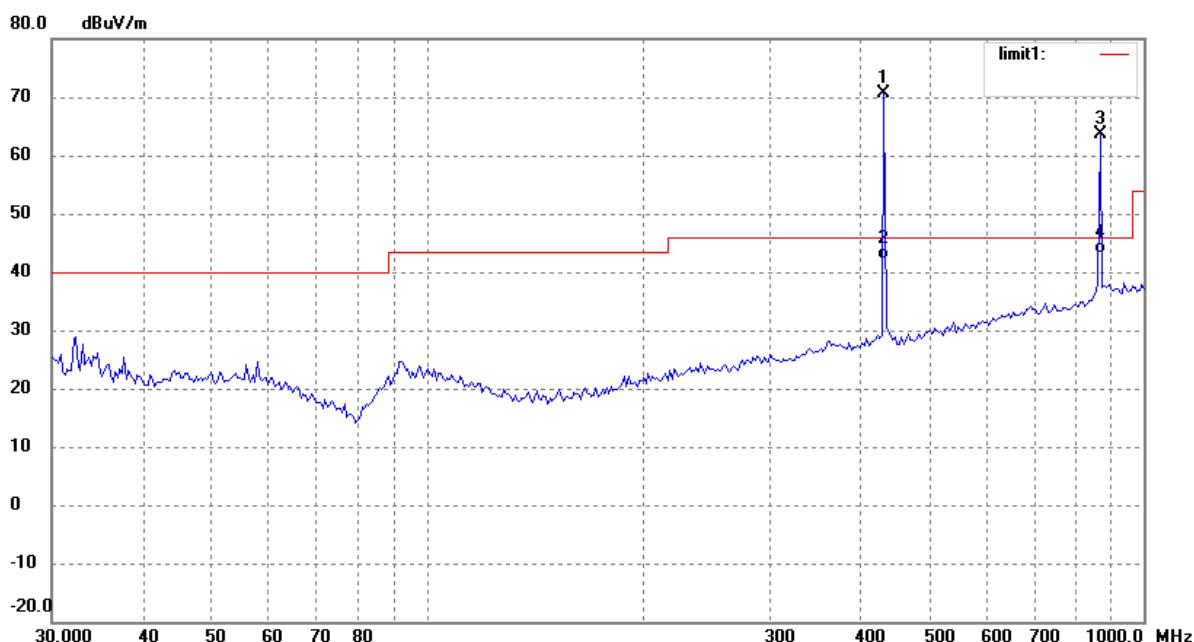
M/N: 01095

Operating Condition: TX

Test Specification: Horizontal & Vertical

Comment: DC3V

Horizontal

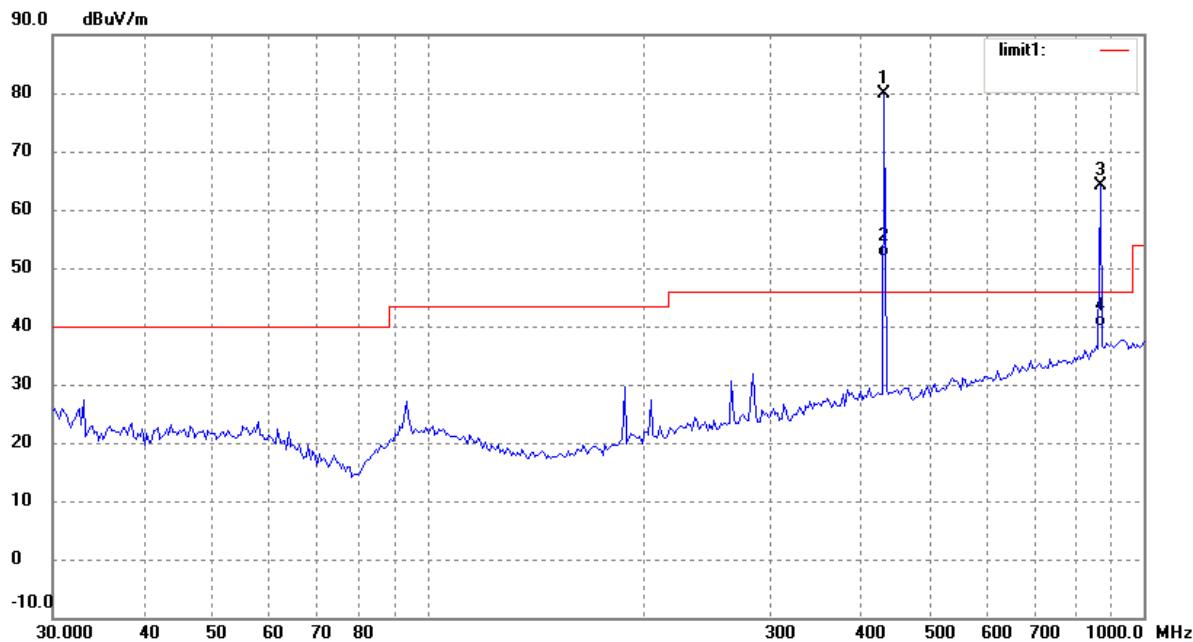


| No. | Frequenc<br>y<br>(MHz) | Reading<br>(dBuV/m) | Correct<br>Factor<br>(dB) | Result<br>(dBuVm) | Limit<br>(dBuV/m) | Margin<br>(dB) | Degre<br>e<br>(°) | Heigh<br>t<br>(cm) | Remark |
|-----|------------------------|---------------------|---------------------------|-------------------|-------------------|----------------|-------------------|--------------------|--------|
| 1   | 434.0649               | 57.89               | 12.65                     | 70.54             | 92.87             | -22.33         | 185               | 100                | PEAK   |
| 2   | 434.0651               | 29.58               | 12.65                     | 42.23             | 72.87             | -30.64         | 215               | 100                | AVG    |
| 3   | 869.1299               | 43.60               | 20.06                     | 63.66             | 72.87             | -9.21          | 230               | 100                | PEAK   |
| 4   | 869.1302               | 23.12               | 20.06                     | 43.18             | 52.87             | -9.69          | 215               | 100                | AVG    |

Above 1GHz

| No. | Frequenc<br>y<br>(MHz) | Reading<br>(dBuV/m) | Correct<br>Factor<br>(dB) | Result<br>(dBuVm) | Limit<br>(dBuV/m) | Margin<br>(dB) | Degre<br>e<br>(°) | Heigh<br>t<br>(cm) | Remark |
|-----|------------------------|---------------------|---------------------------|-------------------|-------------------|----------------|-------------------|--------------------|--------|
| 1   | 1302                   | 31.22               | 20.80                     | 52.02             | 74.00             | -21.98         | 90                | 100                | PEAK   |
| 2   | 1736                   | 27.65               | 22.52                     | 50.17             | 74.00             | -23.83         | 300               | 100                | PEAK   |
| 3   | 1302                   | 26.78               | 20.80                     | 47.58             | 54.00             | -6.42          | 90                | 100                | AVG    |
| 4   | 1736                   | 22.46               | 22.52                     | 44.98             | 54.00             | -9.02          | 300               | 100                | AVG    |

## Vertical



| No. | Frequency<br>(MHz) | Reading<br>(dBuV/m) | Correct<br>Factor<br>(dB) | Result<br>(dBuVm) | Limit<br>(dBuV/m) | Margin<br>(dB) | Degre<br>e<br>(°) | Heigh<br>t<br>(cm) | Remark |
|-----|--------------------|---------------------|---------------------------|-------------------|-------------------|----------------|-------------------|--------------------|--------|
| 1   | 434.0650           | 67.32               | 12.65                     | 79.97             | 92.87             | -12.90         | 180               | 100                | PEAK   |
| 2   | 434.0651           | 39.35               | 12.65                     | 52.00             | 72.87             | -20.87         | 180               | 100                | AVG    |
| 3   | 869.1301           | 44.14               | 20.06                     | 64.20             | 72.87             | -8.67          | 210               | 100                | PEAK   |
| 4   | 869.1302           | 19.84               | 20.06                     | 39.90             | 52.87             | -12.97         | 210               | 100                | AVG    |

## Above 1GHz

| No. | Frequenc<br>y<br>(MHz) | Reading<br>(dBuV/m) | Correct<br>Factor<br>(dB) | Result<br>(dBuVm) | Limit<br>(dBuV/m) | Margin<br>(dB) | Degre<br>e<br>(°) | Heigh<br>t<br>(cm) | Remark |
|-----|------------------------|---------------------|---------------------------|-------------------|-------------------|----------------|-------------------|--------------------|--------|
| 1   | 1302                   | 30.51               | 20.80                     | 51.31             | 74.00             | -22.69         | 90                | 100                | PEAK   |
| 2   | 1736                   | 26.74               | 22.52                     | 49.26             | 74.00             | -24.74         | 300               | 100                | PEAK   |
| 3   | 1302                   | 25.66               | 20.80                     | 46.46             | 54.00             | -7.54          | 90                | 100                | AVG    |
| 4   | 1736                   | 21.53               | 22.52                     | 44.05             | 54.00             | -9.95          | 300               | 100                | AVG    |

**Note:** The EUT was tested in all three orthogonal planes and frequency rang 30MHz to the tenth harmonics. Emissions attenuated closely to the noise base are not reported.

## 5. §15. 231(C) 20DB BANDWIDTH TESTING

### 5.1. Standard Applicable

According to FCC 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. Bandwidth is determined at the points 20 dB down from the modulated carrier.

### 5.2. Test Equipment List and Details

| Description          | Manufacturer      | Model No.    | Serial No. | Cal. Date  | Cal. Date  |
|----------------------|-------------------|--------------|------------|------------|------------|
| Agilent              | Spectrum Analyzer | E4402B       | US41192821 | 2009-08-12 | 2010-08-11 |
| EMI Test Receiver    | Rohde & Schwarz   | ESPI         | 101611     | 2009-08-12 | 2010-08-11 |
| Receiver Antenna     | ETS               | 2175         | 57337      | 2009-08-12 | 2010-08-11 |
| 50 ohm Coaxial Cable | ETS               | SUCOFLEX 104 | 25498514   | 2009-08-12 | 2010-08-11 |

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

### 5.3. Test Procedure

With the EUT's antenna attached, the EUT's 20dB Bandwidth power was received by the test antenna, which was connected to the spectrum analyzer with the START, and STOP frequencies set to the EUT's operation band.

### 5.4. Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 20° C     |
| Relative Humidity: | 54 %      |
| ATM Pressure:      | 1011 mbar |

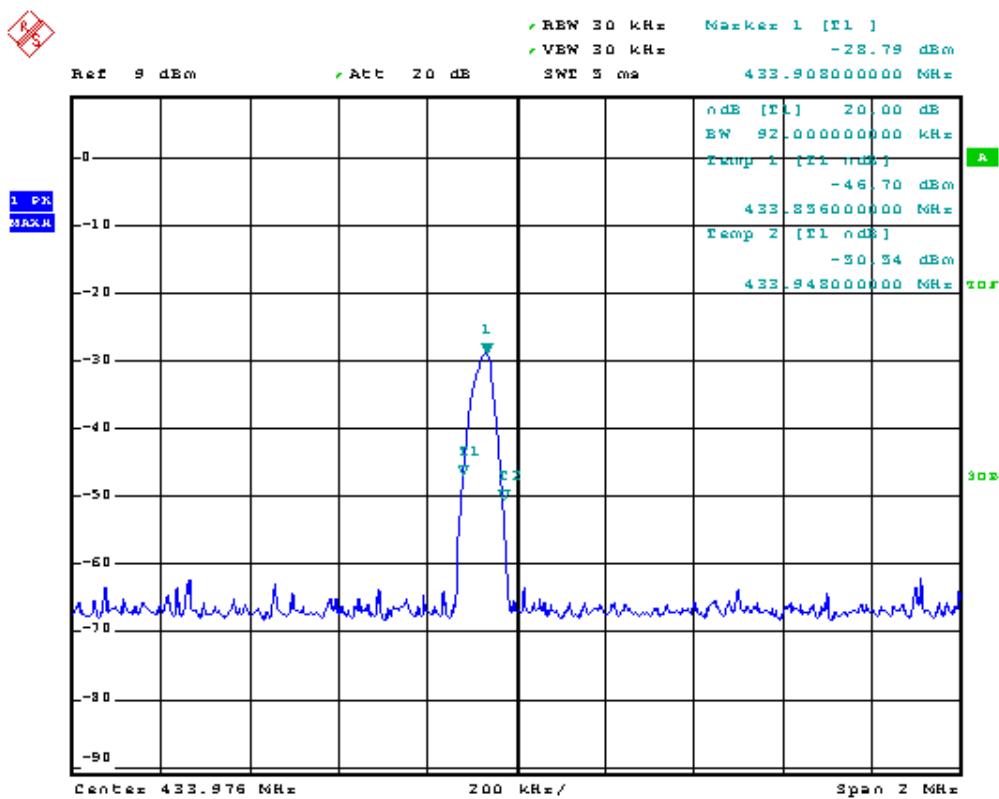
### 5.5. Summary of Test Results/Plots

| Frequency 20dB MHz | Bandwidth kHz | Limit kHz | Result |
|--------------------|---------------|-----------|--------|
| 433.908            | 92.00         | 1084.77   | Pass   |

Limit=Fundamental Frequency×0.25%=433.908×0.25%=1084.77kHz

**Test Result: Pass**

Refer to the attached plots.



Date: 20.APR.2010 15:14:39

## 6. §15.231(E) DEACTIVATION TESTING

### 6.1. Standard Applicable

According to FCC 15.231 (a)(3) there is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

According to FCC 15.231 (e) 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.

### 6.2. Test Equipment List and Details

| Description          | Manufacturer      | Model No.    | Serial No. | Cal. Date  | Cal. Date  |
|----------------------|-------------------|--------------|------------|------------|------------|
| Agilent              | Spectrum Analyzer | E4402B       | US41192821 | 2009-08-12 | 2010-08-11 |
| EMI Test Receiver    | Rohde & Schwarz   | ESPI         | 101611     | 2009-08-12 | 2010-08-11 |
| Receiver Antenna     | ETS               | 2175         | 57337      | 2009-08-12 | 2010-08-11 |
| 50 ohm Coaxial Cable | ETS               | SUCOFLEX 104 | 25498514   | 2009-08-12 | 2010-08-11 |

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

### 6.3. Test Procedure

With the EUT's antenna attached, the EUT's output signal was received by the test antenna, which was connected to the spectrum analyzer. Set the center frequency to 433.908MHz, then set the spectrum analyzer to Zero Span for the release time reading.

### 6.4. Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 21° C     |
| Relative Humidity: | 55 %      |
| ATM Pressure:      | 1011 mbar |

### 6.5. Summary of Test Results/Plots

Refer to the attached plots.

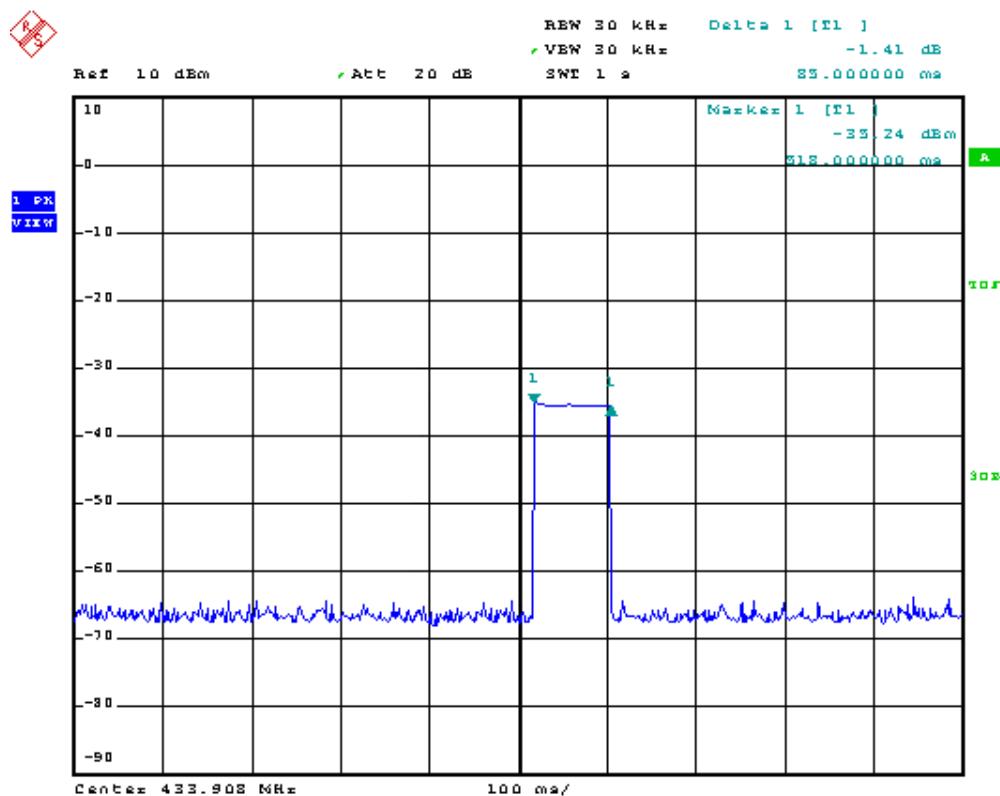
$$\begin{aligned}
 \text{The total transmission time} &= \text{Transmission time} * 3600 \text{ s} / \text{Silent time} \\
 &= 0.083 \text{ s} * 3600 \text{ s} / 266.4 \text{ s} \\
 &= 1.121 \text{ s} < 2 \text{ s}
 \end{aligned}$$

Transmission time = 0.083s < 1 s

Silent time = 266.4 s > 10 s and Silent time = 266.4 s > 30 \* 0.083 s = 2.49 s

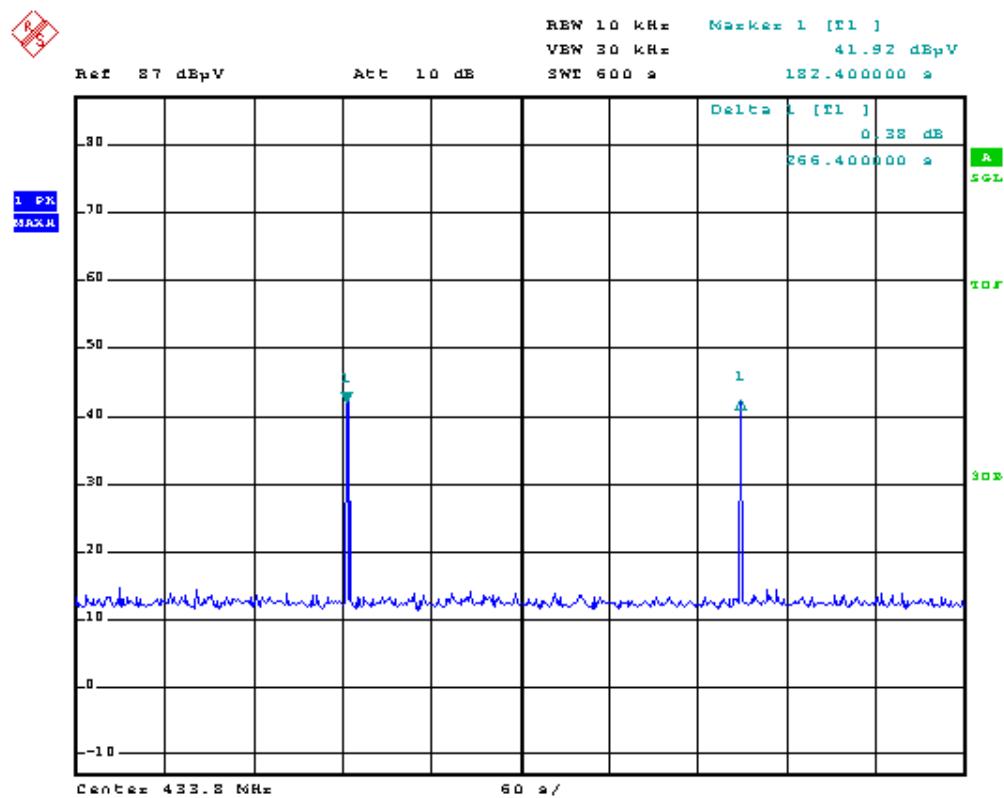
**Test Result: Pass**

Transmission Time:



Date: 20.APR.2010 15:53:20

Silent Time:



Date: 20.APR.2010 13:39:55

## Temperature data normal transmitting plot:

