# Global EMC Inc. Labs

**EMC & RF Test Report** 

G L CRSS 210 Issue 7:2007

FCC Part 15 Subpart C:2010
Unlicensed Intentional Radiators

on the

**Audiovox Remote** 

model ARRZ100BB

Raymond Lee Au Project Engineer Global EMC Inc. 180 Brodie Drive, Unit 2 Richmond Hill, ON, L4B 3K8 Canada

Ph: (905) 883-8189



See Appendix A for full customer & EUT details.









| Client      | Unify4Life   |
|-------------|--|
| Product     | Audiovox Remote ARRZ100BB                            |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 |



# **Table of Contents**

| Table of Contents   | 2      |
|---|--------|
| Report Scope  | 3      |
| Summary   | 4      |
| Test Results Summary  Justifications, Descriptions, or Deviations  Applicable Standards, Specifications and Methods  Sample calculation(s)  Document Revision Status  | 6<br>7 |
| Definitions and Acronyms  | 9      |
| Testing Facility  | 10     |
| Calibrations and Accreditations Testing Environmental Conditions and Dates  |        |
| Detailed Test Results Section   | 12     |
| Spurious Radiated Emissions Channel Carrier Separation for Frequency Hopping Systems Maximum Peak Envelope Conducted Power Spurious Conducted Emissions Frequency Occupancy for Frequency Hopping Systems Number of Channels for Frequency Hopping Systems Channel Carrier Bandwidth of Frequency Hopping Systems Maximum Permissible Exposure Power Line Conducted Emissions |        |
| Appendix A – EUT Summary  | 64     |
| Appendix B – EUT and Test Setup Photographs   | 65     |

| Client      | Unify4Life   | CLARATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC  |

### **Report Scope**

This report addresses the EMC verification testing and test results of the Audiovox Remote,, herein referred to as EUT (Equipment Under Test) performed at Global EMC Labs.

The EUT was tested for compliance against the following standards:

RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010

Test procedures, results, justifications, and engineering considerations, if any, follow later in this report.

The results contained in this report relate only to the item(s) tested.

This report does not imply product endorsement by A2LA or any other accreditation agency, any government, or Global EMC Inc.

Opinions/interpretations expressed in this report, if any, are outside the scope of Global EMC Inc accreditation. Any opinions expressed do not necessarily reflect the opinions of Global EMC Inc, unless otherwise stated.

| Client      | Unify4Life   | CLARA  |
|-------------|--|--------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENCINC |

# Summary

The results contained in this report relate only to the item(s) tested.

| EUT FCC Certification #, FCC ID:         | WOQARRZ100BB                   |
|--|--------------------------------|
| EUT Industry Canada Certification #, IC: | 7987A-ARRZ100BB                |
| EUT Passed all tests performed.          | Yes (see test results summary) |
| Tests conducted by                       | Raymond Lee Au                 |

| Client      | Unify4Life   |
|-------------|--|
| Product     | Audiovox Remote ARRZ100BB                            |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 |



# Test Results Summary

| Standard/Method                                       | Description                                | Class/Limit                    | Result                    |
|---|--|--------------------------------|---------------------------|
| FCC 15.203<br>RSS 210 Section 5.5                     | Antenna Requirement                        | Unique                         | Pass<br>See Justification |
| FCC 15.205<br>RSS 210 Section 6.3 (Table 2)           | Restricted Bands for intentional operation | None within chart              | Pass<br>See Justification |
| FCC 15.207<br>RSS 210 Section 6.6                     | Power line conducted emissions             | QuasiPeak<br>Average           | Pass                      |
| FCC 15.209<br>RSS 210 Section 6.2.1<br>(Tables 3 & 7) | Radiated emissions                         | QuasiPeak<br>Average           | Pass                      |
| FCC 15.247(a)(1)<br>RSS 210 6.2.2(o)                  | Channel Separation                         | > 25 kHz                       | Pass                      |
| FCC 15.247(a)(1)(i)<br>RSS 210 6.2.2(o)               | Number of channels                         | > 50                           | Pass                      |
| FCC 15.247(a)(1)(i)<br>RSS 210 6.2.2(o)               | Time of occupancy                          | < 400 mSec in<br>20 sec period | Pass                      |
| FCC 15.247(b)<br>RSS 210 6.2.2(o)                     | Max output power                           | < 1 Watt                       | Pass                      |
| FCC 15.247(b)(4)<br>RSS 210 6.2.2(o)                  | Antenna Gain                               | < 6 dBi                        | Pass<br>See Justification |
| FCC 15.247(d)<br>RSS 210 6.2.2(d)                     | Antenna conducted spurious                 | > 20 dBc                       | Pass                      |
| FCC 15.247(h)   | FHSS Intelligence                          | No<br>coordination             | Pass<br>See Justification |
| FCC 15.247(i)<br>IC Safety code 6                     | Maximum Permissible<br>Exposure            | > 20 cm<br>separation.         | Pass<br>See justification |
| Overall   | Result                                     |                                | PASS                      |

| Client      | Unify4Life   | CLODATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

All tests were performed by Raymond Lee Au.

If the product as tested or otherwise complies with the specification, the EUT is deemed to comply with the requirement and is deemed a 'PASS' grade. If not 'FAIL' grade will be issued. Note that 'PASS' / 'FAIL' grade is independent of any measurement uncertainties. A 'PASS' / 'FAIL' grade within measurement uncertainty is marked with a '\*'.

### Justifications, Descriptions, or Deviations

The following justifications for tests not performed or deviations from the above listed specifications apply:

For the Antenna requirement specified in FCC 15.203 (RSS 210 section 5.5), this device uses a SMT chip antenna, and has no provisions for end-user replacement.

For the Restricted Bands of operation, the EUT is designed to only operate between 2.4 to 2.4835 GHz band.

For the Antenna gain, the stated gain according to the antenna manufacturer is less than 6 dBi. The EUT was flipped vertically and horizontally in order to obtain the maximum emissions.

For maximum permissible exposure, this device operates at less than 1 Watt and is designed to operate greater than 20 cm from personnel during normal operation. No testing is required, however worst case calculated exposure compliance follows later in this report.

The EUT is not a hybrid system and FCC 15.247 (f) does not apply to it. However the 15.247 (d) requirement of power density were met and are detailed in this test report.

| Client      | Unify4Life   | CLODATE    |
|-------------|--|------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL TAN |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC     |

# Applicable Standards, Specifications and Methods

| ANSI C63.4:2003  | - Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz                |
|------------------|---|
| ANSI C63.10:2009 | - American national standard for testing unlicensed wireless devices  |
| CFR 47 FCC 15    | - Code of Federal Regulations – Radio Frequency Devices   |
| CISPR 22:1997    | - Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement  |
| ICES-003:2004    | - Digital Apparatus - Spectrum Management and<br>Telecommunications Policy Interference-Causing Equipment<br>Standard                                 |
| ISO 17025:2005   | - General Requirements for the competence of testing and calibration laboratories   |
| RSS 210:2007     | - Issue 6: Spectrum Management and Telecommunications Policy.<br>Radio Standards Specification Low Power Licence-Exempt<br>Radiocommunication Devices |

| Client      | Unify4Life   | CLADA   |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENICING |

### Sample calculation(s)

 $Margin = limit - (received\ signal + antenna\ factor + cable\ loss - pre-amp\ gain)$ 

Margin = 50.5dBuV/m - (50dBuV + 10dB + 2.5dB - 20dB)

Margin = 8.5 dB

### **Document Revision Status**

Revision 1 - August 31, 2010

| Client      | Unify4Life   | CLARATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

# **Definitions and Acronyms**

The following definitions and acronyms are applicable in this report. See also ANSI C63.14.

**AE** – Auxiallary Equipment.

**BW** – Bandwidth. Unless otherwise stated, this is refers to the 6 dB bandwidth.

**EMC** – Electro-Magnetic Compatibility

**EMI** – Electro-Magnetic Immunity

**EUT** – Equipment Under Test

**ITE** – Information Technology Equipment with a primary function(s) of entry, storage, display, retrieval, transmission, processing, switching, or control, of data.

**LISN** – Line impedance stabilization network

NCR – No Calibration Required

**RF** – Radio Frequency

| Client      | Unify4Life   | CLODA  |
|-------------|--|--------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENCINC |

### **Testing Facility**

Testing for EMC on the EUT was carried out at Global EMC labs in Toronto, Ontario, Canada. The testing lab consists of a 3m semi-anechoic chamber calibrated to be able to allow measurements on an EUT with a maximum width or length of up to 2m and height up to 3m. The chamber is equipped with a turn table that is capable of testing devices up to 3300lb in weight. This facility is capable of testing products that are rated for 120 Vac and 240Vac single phase, or 208 Vac 3 phase input. DC capability is also available. The chamber is equipped with an antenna mast that controls polarization and height from the control room adjoining the shielded chamber. Radiated emissions measurements are performed using a Bilog, and Horn antenna where applicable. Conducted emissions, unless otherwise stated, are performed using a LISN.

#### Calibrations and Accreditations

The measurement site used is registered with Federal Communications Commission (FCC) and Industry Canada (IC). This site is calibrated for Normalized Site Attenuation (NSA) using test procedures outlined in ANSI C63.4 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The semi-anechoic chamber is lined with ferrite tiles and absorption cones to minimize any undesired reflections. All measuring equipment is calibrated on an annual or bi-annual basis as listed for each respective test. Global EMC is accredited by A2LA for testing as listed on the A2LA website.

Page 10 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

| Client      | Unify4Life   | CLARATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

# Testing Environmental Conditions and Dates

Following were the environmental conditions in the facility during time of testing –

| Date                 | Test | Init. | Temperature (°C) | Humidity (%) | Pressure<br>(kPa) |
|----------------------|------|-------|------------------|--------------|-------------------|
| Aug. 3 - 10,<br>2010 | All  | RA    | 20-25°C          | 30-45%       | 100 -103kPa       |

Page 11 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

| Client      | Unify4Life   | CLODATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

# **Detailed Test Results Section**

| Client      | Unify4Life   | CLARATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC  |

### **Spurious Radiated Emissions**

#### **Purpose**

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT does not exceed the limits listed below as defined in the applicable test standard, as measured from a receiving antenna. This helps protect broadcast radio services such as television, FM radio, pagers, cellular telephones, emergency services, and so on, from unwanted interference.

### Limit(s) and Method

The method is as defined in ANSI C63.4:2003.

The limits, as defined in 15.247(d) for unintentional radiated emissions apply for those emissions that fall in the restricted bands, as defined in Section 15.205(a). These emissions must comply with the radiated emission limits specified in Section 15.209(a).

All unintentional emissions must also meet the 'Spurious Conducted Emissions' requirements of -20 dBc or greater. See also 'Spurious Conducted Emissions' for further details.

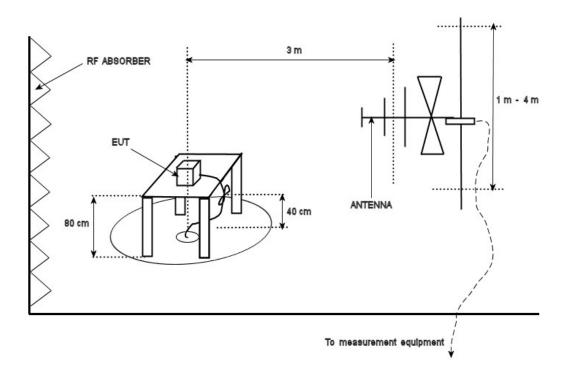
```
30 \text{ MHZ} - 88 \text{ MHz}, 100 \text{ uV/m} (40.0 \text{ dBuV/m}^1) \text{ at } 3 \text{ m}  88 \text{ MHz} - 216 \text{ MHz}, 150 \text{ uV/m} (43.5 \text{ dBuV/m}^1) \text{ at } 3 \text{ m}  216 \text{ MHz} - 960 \text{ MHz}, 200 \text{ uV/m} (46.4 \text{ dBuV/m}^1) \text{ at } 3 \text{ m}  Above 960 \text{ MHz}, 500 \text{ uV/m} (54.0 \text{ dBuV/m}^1) \text{ at } 3 \text{ m}  Above 1000 \text{ MHz}, 500 \text{ uV/m} (54.0 \text{ dBuV/m}^2) \text{ at } 3 \text{ m}
```

Page 13 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

<sup>&</sup>lt;sup>1</sup>Limit is with 120 kHz measurement bandwidth and a using a Quasi Peak detector. <sup>2</sup>Limit is with 1 MHz measurement bandwidth and using an Average detector, scanned in accordance with 15.33 to above the 10<sup>th</sup> harmonic (26 GHz).

| Client      | Unify4Life   | CLADAT     |
|-------------|--|------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL TAR |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU     |

### **Typical Radiated Emissions Setup**



| Client      | Unify4Life   | CLODA  |
|-------------|--|--------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENCINC |

### **Measurement Uncertainty**

The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is +/-4.4 dB with a 'k=2' coverage factor and a 95% confidence level.

### **Preliminary Graphs**

Note the graphs shown below are for graphical illustration only. For final measurements with the appropriate detector, please refer to the final measurement table where applicable. The graph shown below is a maximized peak measurement graph, measured with a resolution bandwidth greater then the final required detector and over a full 0-360° rotation. This peaking process is done as a worst case measurement. This process enables the detection of frequencies of concern for final measurement, and provides considerable time savings.

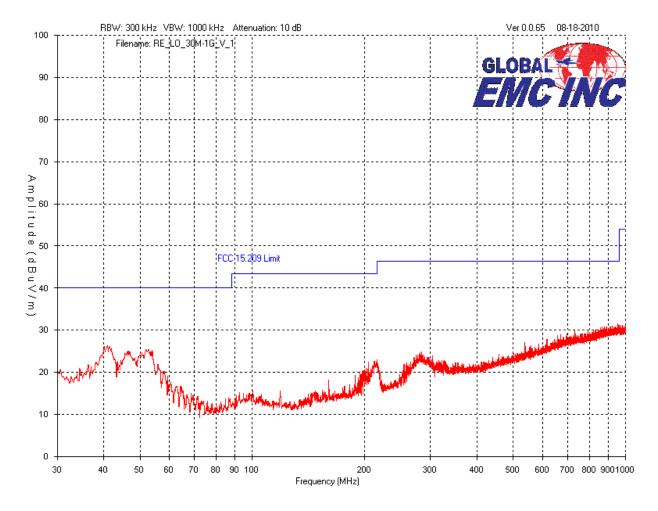
In accordance with FCC Part 15, Subpart A, Section 15.33, the device was scanned to a minimum of a 26 GHz.

Low, middle, and high modes as well as frequency hopping was investigated, however the worst case graphs are presented.

Page 15 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

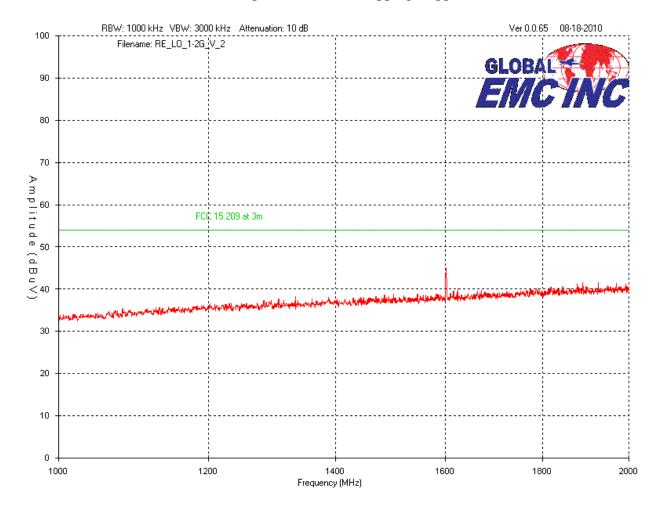
| Client      | Unify4Life   | OLODATE AND A |
|-------------|--|---------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL        |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU        |

### Vertical – Peak Emissions Graph – Low Band (hopping stopped) 30MHz – 1 GHz



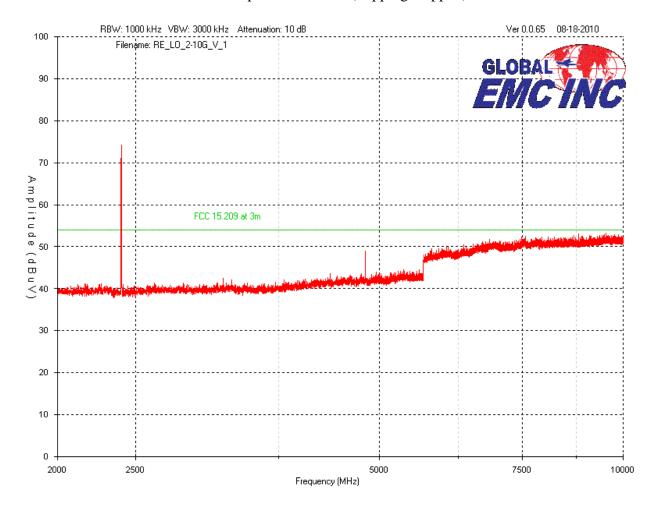
| Client      | Unify4Life   | CLARATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

### Vertical – Peak Emissions Graph – Low Band (hopping stopped) 1 GHz – 2 GHz



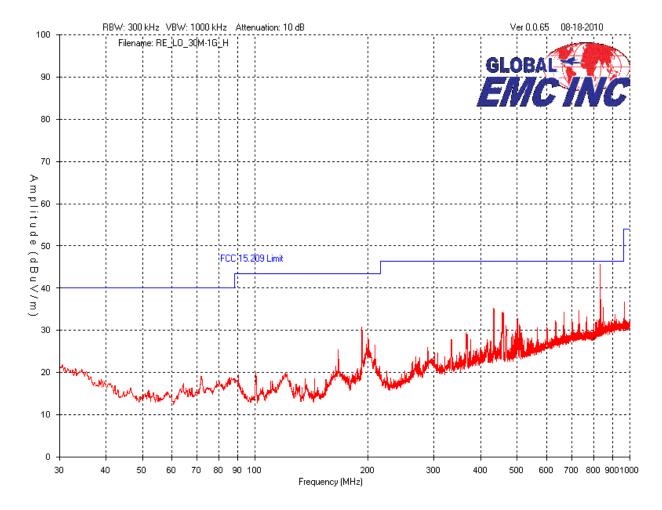
| Client      | Unify4Life   | CLARATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

### Vertical – Peak Emissions Graph – Low Band (hopping stopped) 2 GHz – 10 GHz



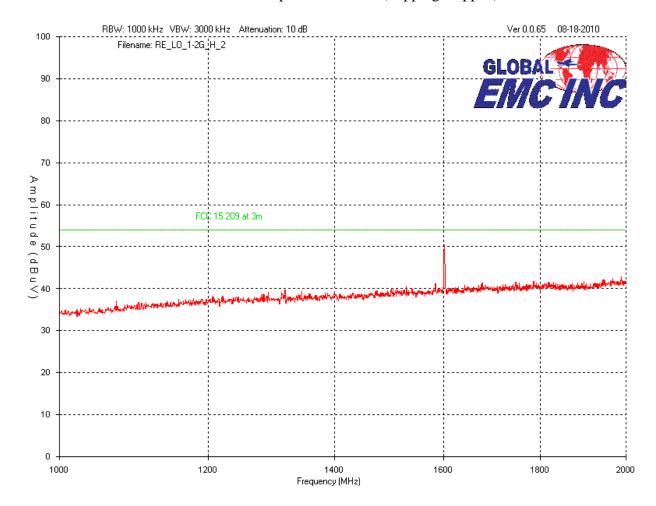
| Client      | Unify4Life   | CLARATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

### Horizontal – Peak Emissions Graph – Low Band (hopping stopped) 30MHz – 1 GHz



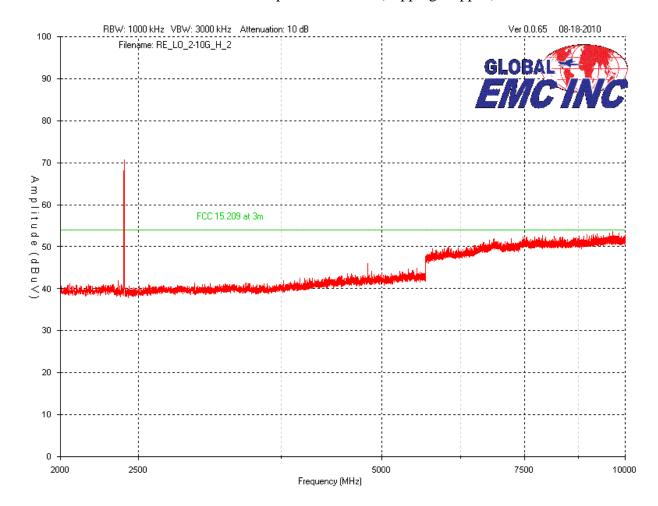
| Client      | Unify4Life   | CLARA  |
|-------------|--|--------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENCINC |

### Horizontal – Peak Emissions Graph – Low Band (hopping stopped) 1 – 2 GHz



| Client      | Unify4Life   | CLARATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

### Horizontal – Peak Emissions Graph – Low Band (hopping stopped) 2 – 10 GHz



| Client      | Unify4Life   | OLODATE AND A |
|-------------|--|---------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL        |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU        |

#### **Final Measurements**

Note: In accordance with 15.247(d), only radiated emissions exceeding the 15.209 limit that occur within the bands listed in 15.205, need to be verified with a quasi-peak detector or an average detector.

The requirement of -20dBc is verified by the conducted method, please see 'Spurious Antenna Conducted Emissions' section of this report.

The frequency shown on the peak graphs between 2000 - 2500 MHz, which are above the 15.209 limits, falls at 2400 MHz, which are not within the restricted bands as listed in FCC 15.205 and does not need to be verified.

For information purposes, the fundamental was measured to be 76.9 dBuV/m at 3 meters, and none of the unintentional radiated emissions that fall outside of the restricted bands exceeded the -20dBc (or 56.9dBuV/m) requirement.

The following measurements were made at the harmonics shown in the above graphs.

See 'Spurious Antenna Conducted Emissions' measurements for -20 dBc requirements.

| Client      | Unify4Life   | CLARATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

### Radiated Emissions Measurements

| Product category            | Class A Gro                   | oup 1                              |                         |                         |                                  |                  |                           |                                |                               |                  |        |
|-----------------------------|-------------------------------|------------------------------------|-------------------------|-------------------------|----------------------------------|------------------|---------------------------|--------------------------------|-------------------------------|------------------|--------|
| Project<br>Name /<br>Number | Audiovox Remote/19762         |                                    |                         |                         |                                  |                  |                           |                                |                               |                  |        |
| Test<br>Frequency<br>(MHz)  | Detection<br>mode<br>(Q-Peak) | Antenna<br>polarity<br>(Horz/Vert) | Raw<br>signal<br>dB(µV) | Antenna<br>factor<br>dB | Cable loss<br>dB +<br>Preselecor | Attenuator<br>dB | Pre-<br>Amp<br>Gain<br>dB | Received<br>signal<br>dB(µV/m) | Emission<br>limit<br>dB(µV/m) | Margin<br>dB(μV) | Result |
|                             |                               |                                    |                         |                         | Low Chann                        | nel              |                           |                                |                               |                  |        |
| 2401                        | Peak                          | Horz                               | 77.6                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 74.2                           |                               |                  | PASS   |
| 2401                        | Avg                           | Horz                               | 50.1                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 46.7                           |                               |                  | PASS   |
| 2401                        | Peak                          | Vert                               | 80.3                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 76.9                           |                               |                  | PASS   |
| 2401                        | Avg                           | Vert                               | 49.5                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 46.1                           |                               |                  | PASS   |
| 2390                        | Peak                          | Horz                               | 44.1                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 40.7                           | 74.0                          | 33.3             | PASS   |
| 2390                        | Avg                           | Horz                               | 31.7                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 28.3                           | 54.0                          | 25.7             | PASS   |
| 2390                        | Peak                          | Vert                               | 44.3                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 40.9                           | 74.0                          | 33.1             | PASS   |
| 2390                        | Avg                           | Vert                               | 31.7                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 28.3                           | 54.0                          | 25.7             | PASS   |
| 2400                        | Peak                          | Horz                               | 44.4                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 41.0                           | 74.0                          | 33.0             | PASS   |
| 2400                        | Avg                           | Horz                               | 25.8                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 22.4                           | 54.0                          | 31.6             | PASS   |
| 2400                        | Peak                          | Vert                               | 44.6                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 41.2                           | 74.0                          | 32.8             | PASS   |
| 2400                        | Avg                           | Vert                               | 26.5                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 23.1                           | 54.0                          | 30.9             | PASS   |
| 2398                        | Peak                          | Horz                               | 44.3                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 40.9                           | 74.0                          | 33.1             | PASS   |
| 2398                        | Avg                           | Horz                               | 31.9                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 28.5                           | 54.0                          | 25.5             | PASS   |
| 2398                        | Peak                          | Vert                               | 44.7                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 41.3                           | 74.0                          | 32.7             | PASS   |
| 2398                        | Avg                           | Vert                               | 32.4                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 29.0                           | 54.0                          | 25.0             | PASS   |
| 4802                        | Peak                          | Horz                               | 48.9                    | 33.7                    | 2.9                              | 0.0              | 35.7                      | 49.8                           | 74.0                          | 24.2             | PASS   |
| 4802                        | Avg                           | Horz                               | 34.8                    | 33.7                    | 2.9                              | 0.0              | 35.7                      | 35.7                           | 54.0                          | 18.3             | PASS   |
| 4802                        | Peak                          | Vert                               | 49.9                    | 33.7                    | 2.9                              | 0.0              | 35.7                      | 50.8                           | 74.0                          | 23.2             | PASS   |
| 4802                        | Avg                           | Vert                               | 35.0                    | 33.7                    | 2.9                              | 0.0              | 35.7                      | 35.9                           | 54.0                          | 18.1             | PASS   |
|                             |                               |                                    |                         |                         | Mid chann                        | el               |                           |                                |                               |                  |        |
| 2441                        | Peak                          | Horz                               | 71.3                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 67.9                           |                               |                  | PASS   |
| 2441                        | Avg                           | Horz                               | 45.5                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 42.1                           |                               |                  | PASS   |
| 2441                        | Peak                          | Vert                               | 73.0                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 69.6                           |                               |                  | PASS   |
| 2441                        | Avg                           | Vert                               | 46.5                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 43.1                           |                               |                  | PASS   |
| 4882                        | Peak                          | Horz                               | 49.1                    | 33.7                    | 2.9                              | 0.0              | 35.7                      | 50.0                           | 74.0                          | 24.0             | PASS   |
| 4882                        | Avg                           | Horz                               | 34.3                    | 33.7                    | 2.9                              | 0.0              | 35.7                      | 35.2                           | 54.0                          | 18.8             | PASS   |
| 4882                        | Peak                          | Vert                               | 50.7                    | 33.7                    | 2.9                              | 0.0              | 35.7                      | 51.6                           | 74.0                          | 22.4             | PASS   |
| 4882                        | Avg                           | Vert                               | 35.4                    | 33.7                    | 2.9                              | 0.0              | 35.7                      | 36.3                           | 54.0                          | 17.7             | PASS   |
|                             | ,                             |                                    |                         |                         | High channe                      |                  |                           | T                              | T                             | ı                |        |
| 2480                        | Peak                          | Horz                               | 70.6                    | 30.6                    | 2.2                              | 0.0              | 36.2                      | 67.2                           |                               |                  | PASS   |

| Client      | Unify4Life   | CLADA         |
|-------------|--|---------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL        |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | <b>EMCINC</b> |

| 2480   | Avg  | Horz | 45.5 | 30.6 | 2.2 | 0.0 | 36.2 | 42.1 |      |      | PASS |
|--------|------|------|------|------|-----|-----|------|------|------|------|------|
| 2480   | Peak | Vert | 71.0 | 30.6 | 2.2 | 0.0 | 36.2 | 67.6 |      |      | PASS |
| 2480   | Avg  | Vert | 45.5 | 30.6 | 2.2 | 0.0 | 36.2 | 42.1 |      |      | PASS |
| 2483.5 | Peak | Horz | 47.0 | 30.6 | 2.2 | 0.0 | 36.2 | 43.6 | 74.0 | 30.4 | PASS |
| 2483.5 | Avg  | Horz | 33.5 | 30.6 | 2.2 | 0.0 | 36.2 | 30.1 | 54.0 | 23.9 | PASS |
| 2483.5 | Peak | Vert | 45.8 | 30.6 | 2.2 | 0.0 | 36.2 | 42.4 | 74.0 | 31.6 | PASS |
| 2483.5 | Avg  | Vert | 33.1 | 30.6 | 2.2 | 0.0 | 36.2 | 29.7 | 54.0 | 24.3 | PASS |
| 4960   | Peak | Horz | 50.1 | 33.7 | 2.9 | 0.0 | 35.7 | 51.0 | 74.0 | 23.1 | PASS |
| 4960   | Avg  | Horz | 35.0 | 33.7 | 2.9 | 0.0 | 35.7 | 35.9 | 54.0 | 18.1 | PASS |
| 4960   | Peak | Vert | 53.2 | 33.7 | 2.9 | 0.0 | 35.7 | 54.1 | 74.0 | 19.9 | PASS |
| 4960   | Avg  | Vert | 36.6 | 33.7 | 2.9 | 0.0 | 35.7 | 37.5 | 54.0 | 16.5 | PASS |

# **Test Equipment List**

| Equipment                           | Model<br>No.                         | Manufacturer | Last calibration date | Next calibration due date | Asset #   |
|-------------------------------------|--------------------------------------|--------------|-----------------------|---------------------------|-----------|
| IFR Spectrum<br>Analyzer            | AN940                                | IFR          | 12/29/2009            | 12/29/2011                | GEMC 6350 |
| BiLog Antenna                       | 3142-C                               | ETS          | 2009-02-12            | 2011-02-12                | GEMC 8    |
| Horn Antenna                        | 6878/24                              | Q-Par        | 25/08/2008            | 25/08/2010                | GEMC 6365 |
| 1-26G pre-amp                       | HP 8449B                             | HP           | 25/08/2008            | 25/08/2010                | GEMC 6351 |
| Schaffner<br>Preamp 9kHz -<br>2 GHz | CPA9231A                             | Schaffner    | 8/26/2008             | 8/26/2010                 | GEMC 116  |
| RF Cable 7m                         | LMR-400-7M-<br>50OHM-MN-<br>MN       | LexTec       | NCR                   | NCR                       | GEMC 28   |
| RF Cable 1m                         | LMR-400-1M-<br>50OHM-MN-<br>MN       | LexTec       | NCR                   | NCR                       | GEMC 29   |
| RF Cable 0.5M                       | LMR-400-<br>0.5M-<br>50OHM-MN-<br>MN | LexTec       | NCR                   | NCR                       | GEMC 31   |

This report module is based on GEMC template "FCC - 15.209 - Radiated Emissions\_Rev2.doc"

| Client      | Unify4Life   | CLADATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCING  |

### Channel Carrier Separation for Frequency Hopping Systems

### **Purpose**

The purpose of this test is to ensure that the RF energy of frequency hopping systems is sufficiently spread over a spectrum and that the radio energy is not overly dense. This limit helps allow for other spread spectrum devices to co-exist in the same frequency spectrum. This also helps prevent corruption of data by ensuring adequate channel separation to distinguish the reception of the intended information.

#### Limits

The limits are as defined in 47 CFR FCC Part 15 Section 15.247(a)(1)

|               | 902 to 928 MHz                  | 2.4 to 2.4835 GHz               | 5.275 to 5.85 GHz               |
|---------------|---------------------------------|---------------------------------|---------------------------------|
| No conditions | 25 kHz or 20 dB BW <sup>1</sup> | 25 kHz or 20 dB BW <sup>1</sup> | 25 kHz or 20 dB BW <sup>1</sup> |
| < 125  mW     | 25 kHz or 20 dB BW <sup>1</sup> | 25 kHz or 2/3 of 20 dB          | 25 kHz or 20 dB BW <sup>1</sup> |
|               |                                 | $BW^1$                          |                                 |

Note 1: Whichever is greater. The 20 dB BW of the system was measured to be 720 kHz, so a limit of 720 kHz applies.

#### Results

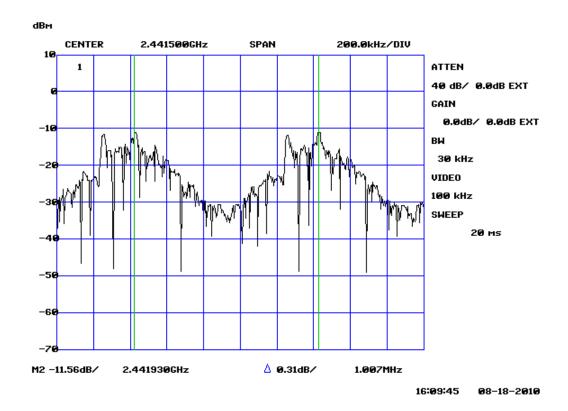
The EUT passed the requirements of channel carrier spacing exceeding the measured 20 dB BW of the EUT. The 20 dB BW previously measured was 720 kHz, and the device had a channel spacing of 1.0 MHz.

Page 25 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

| Client      | Unify4Life   | CLADATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCING  |

### Graph(s)

The graphs shown below shows the channel spacing during the operation of the device. This is measured by a max hold on the spectrum analyzer and the highest resolution bandwidth that is sufficiently low to exhibit the channel spacing of the signal being measured. This measurement is a peak measurement. Max hold is performed for a duration of not less then 1 minute.



Note: See 'Appendix B – EUT & Test Setup Photographs' for photos showing the test setup.

| Client      | Unify4Life   | CLODATE    |
|-------------|--|------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL THE |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EINCINC    |

## **Test Equipment List**

| Equipment                    | Model No.                      | Manufacturer  | Last<br>calibration<br>date | Next calibration due date | Asset #      |
|------------------------------|--------------------------------|---------------|-----------------------------|---------------------------|--------------|
| Attenuator 1 dB              | FP-50-1                        | Trilithic     | NCR                         | NCR                       | GEMC 38      |
| Attenuator 3 dB              | FP-50-3                        | Trilithic     | NCR                         | NCR                       | GEMC 40      |
| Attenuator 6 dB              | FP-50-6                        | Trilithic     | NCR                         | NCR                       | GEMC 41      |
| Attenuator 10<br>dB          | FP-50-10                       | Trilithic     | NCR                         | NCR                       | GEMC 42      |
| Attenuator 20<br>dB          | FP-50-20                       | Trilithic     | NCR                         | NCR                       | GEMC 43      |
| IFR Spectrum<br>Analyzer     | AN940                          | IFR           | 12/29/2009                  | 12/29/2011                | GEMC<br>6350 |
| RF Cable 1m                  | LMR-400-1M-<br>50OHM-MN-<br>MN | LexTec        | NCR                         | NCR                       | GEMC 29      |
| Power<br>Attenuator 20<br>dB | 25-A-FFN-20                    | Bird / Hutton | NCR                         | NCR                       | GEMC 49      |

This report module is based on GEMC template "FCC – Power Line Conducted Emissions Class B\_Rev1"

| Client      | Unify4Life   | CLODA  |
|-------------|--|--------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENCINC |

### Maximum Peak Envelope Conducted Power

### **Purpose**

The purpose of this test is to ensure that the maximum power conducted to the radiating element does not exceed the limits specified.

#### Limits

The limits are defined in 15.247(b).

For frequency hopping systems operating in the 902-928 MHz band emplying more then 50 hopping channels, the peak limit is 1 watt.

#### **Results**

The EUT passed. The peak power measured was -0.6 dBm (0.9 mW).

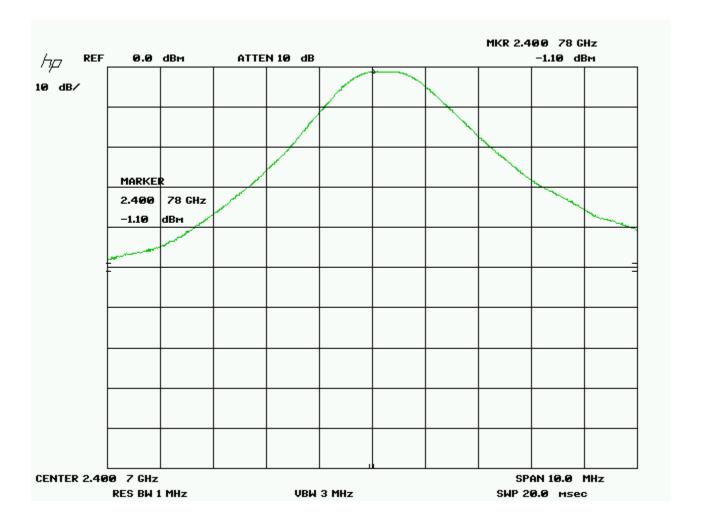
| Client      | Unify4Life   | CLADATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENICING |

### Graph(s)

The graphs shown below shows the peak power output of the device during the antenna conducted measurement during transmit operation of the EUT. Note there was 10 dB of external attenuation taken during this measurement.

The calculated value is:

- -1.1 dBm + 0.5 dB (cable loss)
- = -0.6 dBm or 0.9 mW.



| Client      | Unify4Life   | CLODATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

Note: See 'Appendix B - EUT & Test Setup Photographs' for photos showing the test setup.

### **Test Equipment List**

| Equipment                    | Model No.                      | Manufacturer  | Last<br>calibration<br>date | Next calibration due date | Asset #      |
|------------------------------|--------------------------------|---------------|-----------------------------|---------------------------|--------------|
| Attenuator 1 dB              | FP-50-1                        | Trilithic     | NCR                         | NCR                       | GEMC 38      |
| Attenuator 3 dB              | FP-50-3                        | Trilithic     | NCR                         | NCR                       | GEMC 40      |
| Attenuator 6 dB              | FP-50-6                        | Trilithic     | NCR                         | NCR                       | GEMC 41      |
| Attenuator 10<br>dB          | FP-50-10                       | Trilithic     | NCR                         | NCR                       | GEMC 42      |
| Attenuator 20<br>dB          | FP-50-20                       | Trilithic     | NCR                         | NCR                       | GEMC 43      |
| IFR Spectrum<br>Analyzer     | AN940                          | IFR           | 12/29/2009                  | 12/29/2011                | GEMC<br>6350 |
| RF Cable 1m                  | LMR-400-1M-<br>50OHM-MN-<br>MN | LexTec        | NCR                         | NCR                       | GEMC 29      |
| Power<br>Attenuator 20<br>dB | 25-A-FFN-20                    | Bird / Hutton | NCR                         | NCR                       | GEMC 49      |

This report module is based on GEMC template "FCC – Power Line Conducted Emissions Class B\_Rev1"

| Client      | Unify4Life   | OL ODA |
|-------------|--|--------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENCINC |

### **Spurious Conducted Emissions**

### **Purpose**

The purpose of this test is to ensure that the maximum power conducted to the radiating element does not exceed the limits specified.

#### Limits

The limits are defined in 15.247(d).

In any 100 kHz band, the peak spurious harmonics emissions must be at least 20 dB below the fundamental.

#### Results

The EUT passed the requirements. Low, middle, high bands, and hopping were measured. The worst case is presented as a graph for the spectrum.

The -20 dBc requirement is shown for the lower band edge at 2.401 GHz in the low band and at 2.480 GHz in the high band.

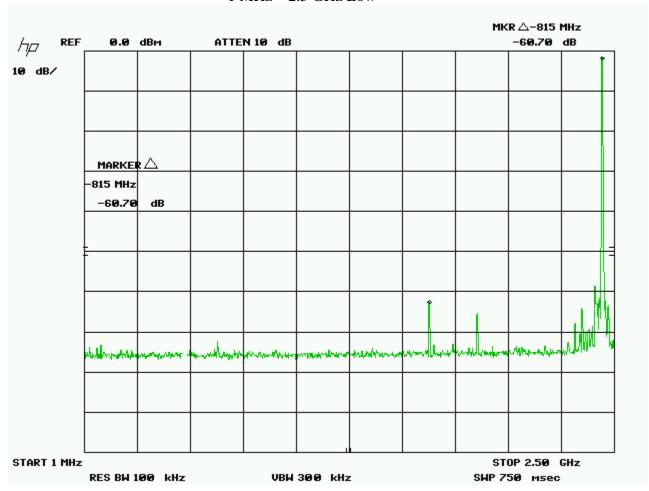
### Graph(s)

The graphs shown below shows the peak power output of the device during the antenna conducted measurement during transmit operation of the EUT.

Page 31 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

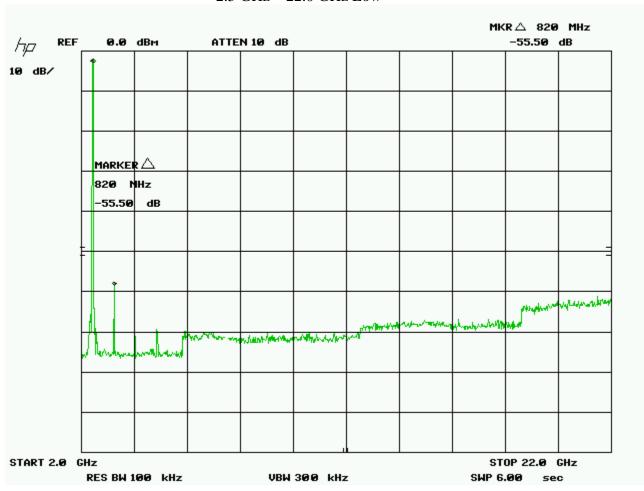
| Client      | Unify4Life   | CLARA  |
|-------------|--|--------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC |

### 1 MHz – 2.5 GHz Low



| Client      | Unify4Life   | CLODATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

#### 2.5 GHz - 22.0 GHz Low



| Client      | Unify4Life   | OLONA THE REST |
|-------------|--|----------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL         |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENICING        |

### 2.40 GHz Band Edge Low



| Client      | Unify4Life   | CLODATE     |
|-------------|--|-------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL TALA |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EINCINC     |

2483.5 MHz Band Edge Hi



Note: See 'Appendix B-EUT & Test Setup Photographs' for photos showing the test setup.

Page 35 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

| Client      | Unify4Life   | CLODATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

# **Test Equipment List**

| Equipment                    | Model No.                      | Manufacturer  | Last calibration date | Next calibration due date | Asset #      |
|------------------------------|--------------------------------|---------------|-----------------------|---------------------------|--------------|
| Attenuator 1 dB              | FP-50-1                        | Trilithic     | NCR                   | NCR                       | GEMC 38      |
| Attenuator 3 dB              | FP-50-3                        | Trilithic     | NCR                   | NCR                       | GEMC 40      |
| Attenuator 6 dB              | FP-50-6                        | Trilithic     | NCR                   | NCR                       | GEMC 41      |
| Attenuator 10<br>dB          | FP-50-10                       | Trilithic     | NCR                   | NCR                       | GEMC 42      |
| Attenuator 20<br>dB          | FP-50-20                       | Trilithic     | NCR                   | NCR                       | GEMC 43      |
| IFR Spectrum<br>Analyzer     | AN940                          | IFR           | 12/29/2009            | 12/29/2011                | GEMC<br>6350 |
| RF Cable 1m                  | LMR-400-1M-<br>50OHM-MN-<br>MN | LexTec        | NCR                   | NCR                       | GEMC 29      |
| Power<br>Attenuator 20<br>dB | 25-A-FFN-20                    | Bird / Hutton | NCR                   | NCR                       | GEMC 49      |

This report module is based on GEMC template "FCC – Power Line Conducted Emissions Class B\_Rev1"

| Client      | Unify4Life   | OLODATE A |
|-------------|--|-----------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL    |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU    |

## Frequency Occupancy for Frequency Hopping Systems

#### **Purpose**

The purpose of this test is to ensure that the RF energy of frequency hopping systems is hopping at a minimum defined rate. This helps ensure sufficient time off to enable other frequency hopping devices to co-operate within this allocated band.

#### Limits

For 2400 – 2483.5 MHz systems, the limits are as defined in 47 CFR FCC Part 15 Section 15.247(a)(1)(iii).

For frequency hopping systems in 2400 - 2483.5 MHz, the unit shall use at least 15 channels. The average time of occupancy shall not be greater than 0.4s in a period of 0.4s X # of channels occupied.

#### Results

The EUT passed the requirements. The EUT cycles through its pseudo-random generated list of hopping frequencies. There are 79 channels occupied in total. The average occupancy time is 0.38 ms per channel and each channel is repeated every 99.18 ms. The complete observation time is

- = # of channels x 400 ms
- $= 79 \times 400 \text{ ms}$
- = 31,600 ms
- = 31.6 s

Number of time a channel is occupied in 31.6s = 31.6s / 99.11ms

- = 31600 ms / 98.18 ms
- = 318.87 times.

Total occupancy time in 31.6 s is

- $= 318.87 \times 0.38 \text{ ms}$
- = 121.17 ms

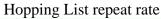
The EUT has an average occupancy of 121.17 msec within a 31.6 second period. This is under the 400 msec limit as per 15.247 (a) 1 (iii)

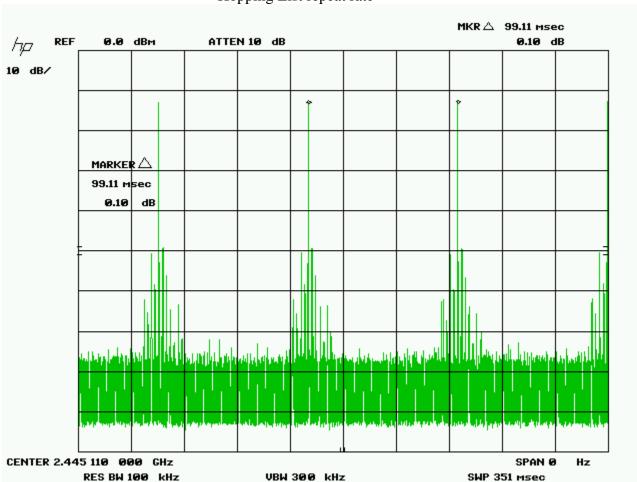
Page 37 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

| Client      | Unify4Life   | CLADATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC  |

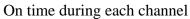
## Graph(s)

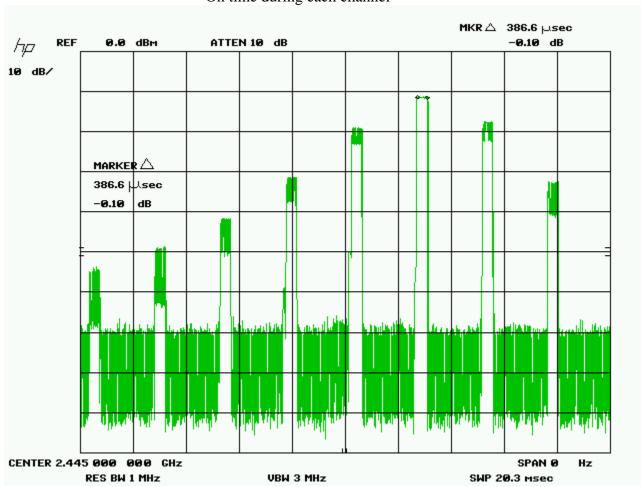
The first graph shown below shows the repeat time of the pseudorandom generated hopping list. The second graph shows the on time. Note that in the first graph, the peak represents the 'on' of the frequency being measured. The lower signals are artifacts of nearby channels due to the wide resolution BW used.





| Client      | Unify4Life   | CLODATE     |
|-------------|--|-------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL TALA |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EINCINC     |





Note: See 'Appendix B-EUT & Test Setup Photographs' for photos showing the test setup.

| Client      | Unify4Life   | AL ARA      |
|-------------|--|-------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLOR!       |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | <b>EIVI</b> |



# **Test Equipment List**

| Equipment                    | Model No.                      | Manufacturer  | Last<br>calibration<br>date | Next calibration due date | Asset #      |
|------------------------------|--------------------------------|---------------|-----------------------------|---------------------------|--------------|
| Attenuator 1 dB              | FP-50-1                        | Trilithic     | NCR                         | NCR                       | GEMC 38      |
| Attenuator 3 dB              | FP-50-3                        | Trilithic     | NCR                         | NCR                       | GEMC 40      |
| Attenuator 6 dB              | FP-50-6                        | Trilithic     | NCR                         | NCR                       | GEMC 41      |
| Attenuator 10<br>dB          | FP-50-10                       | Trilithic     | NCR                         | NCR                       | GEMC 42      |
| Attenuator 20<br>dB          | FP-50-20                       | Trilithic     | NCR                         | NCR                       | GEMC 43      |
| IFR Spectrum<br>Analyzer     | AN940                          | IFR           | 12/29/2009                  | 12/29/2011                | GEMC<br>6350 |
| RF Cable 1m                  | LMR-400-1M-<br>50OHM-MN-<br>MN | LexTec        | NCR                         | NCR                       | GEMC 29      |
| Power<br>Attenuator 20<br>dB | 25-A-FFN-20                    | Bird / Hutton | NCR                         | NCR                       | GEMC 49      |

This report module is based on GEMC template "FCC – Power Line Conducted Emissions Class B\_Rev1"

| Client      | Unify4Life   | OLODATE AND A |
|-------------|--|---------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL        |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU        |

# Number of Channels for Frequency Hopping Systems

### **Purpose**

The purpose of this test is to ensure that the RF energy of frequency hopping systems is sufficiently spread over a spectrum and that the radio energy is not overly dense. This limit helps allow for other spread spectrum devices to co-exist in the same frequency spectrum. This also helps prevent corruption of data by ensuring adequate channel separation to distinguish the reception of the intended information.

#### Limits

The limits are as defined in 47 CFR FCC Part 15 Section 15.247(a)(1)

|                 | 902 to 928 MHz | 2.4 to 2.4835 GHz | 5.275 to 5.85 GHz |
|-----------------|----------------|-------------------|-------------------|
| No conditions   | >= 50 channels | >= 15 channels    | >= 75 channels    |
| 20 dB BW        | >= 25 channels | >= 15 channels    | >= 75 channels    |
| exceeds 250 kHz |                |                   |                   |

#### Results

The EUT passed the requirements of the number of channels. The number of channels the device occupies is 79 channels in the allocation band of 2400 MHz - 2483.5 MHz.

Page 41 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

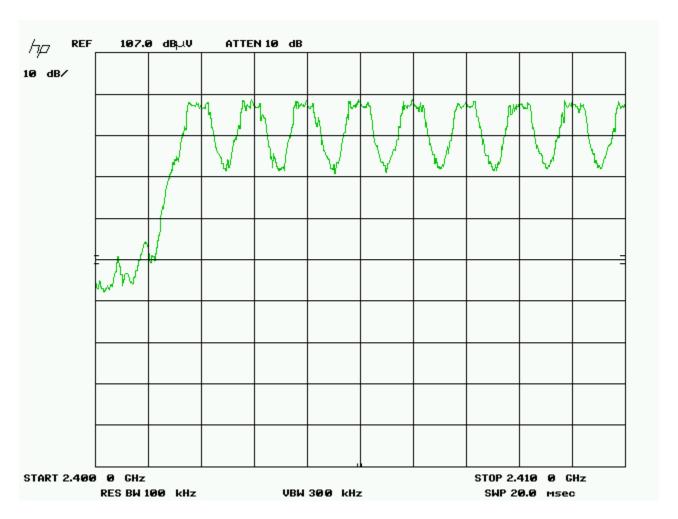
| Client      | Unify4Life   | CLADATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC  |

## Graph(s)

The graphs shown below shows the number of occupied channels during the operation of the device. This is measured by a max hold on the spectrum analyzer and the highest resolution bandwidth that is sufficiently low to exhibit the channel spacing of the signal being measured. This measurement is a peak measurement. Max hold is performed for a duration of not less then 10 minutes, or as sufficient to capture the channels occupied.

The number of Channels is 79

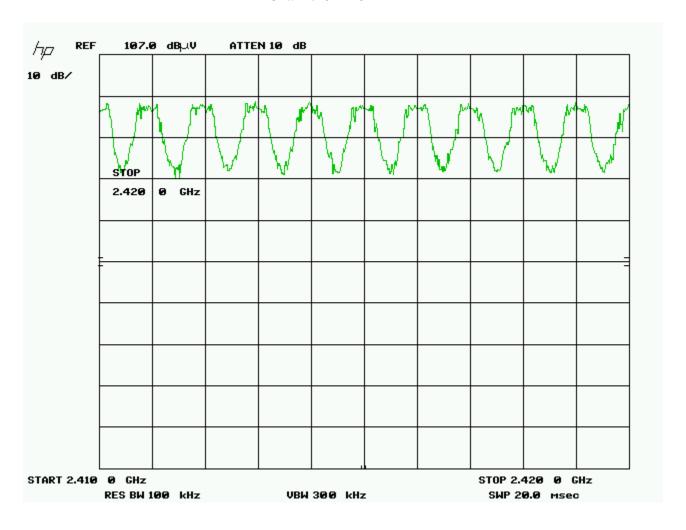
Channel 1 - 8



Page 42 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

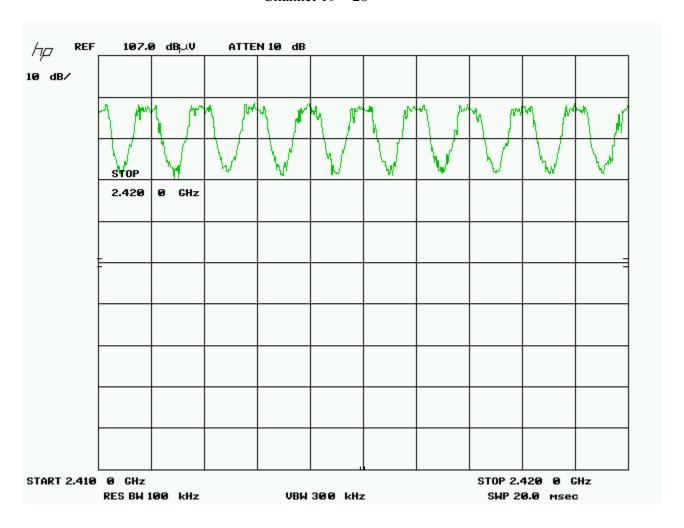
| Client      | Unify4Life   | CLODA      |
|-------------|--|------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL TAR |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC     |

Channel 9-18



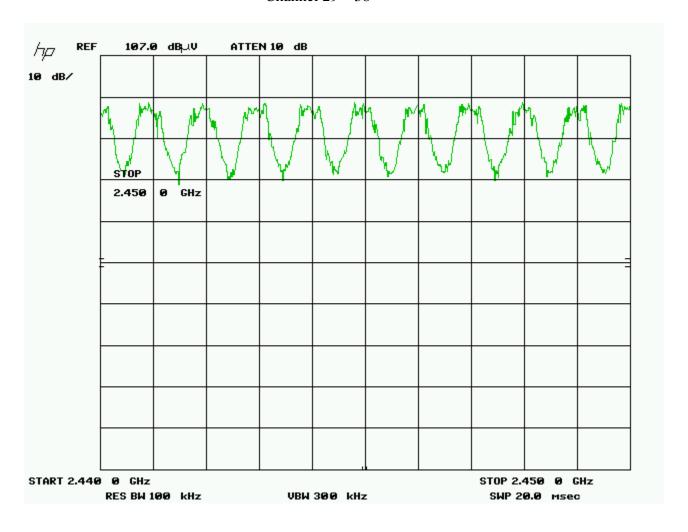
| Client      | Unify4Life   | CLODATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

Channel 19 – 28



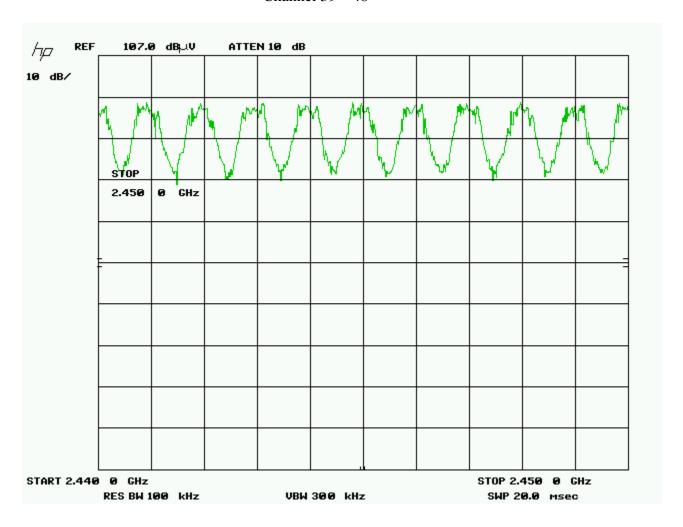
| Client      | Unify4Life   | CLODA      |
|-------------|--|------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL TAR |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC     |

Channel 29 – 38



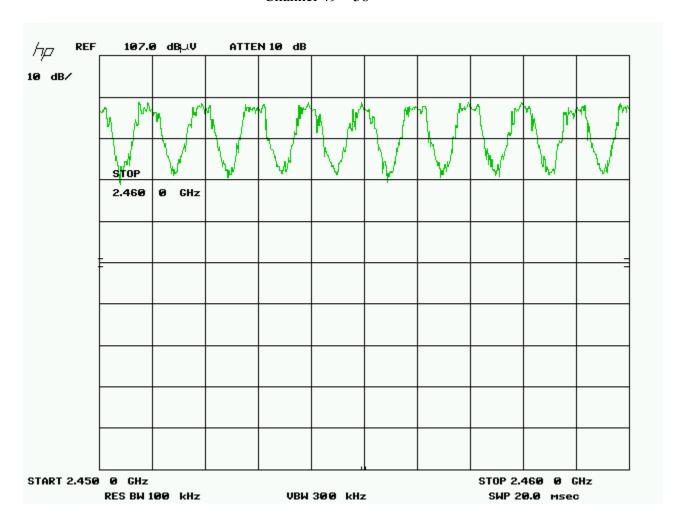
| Client      | Unify4Life   | OLODA T |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

Channel 39 – 48



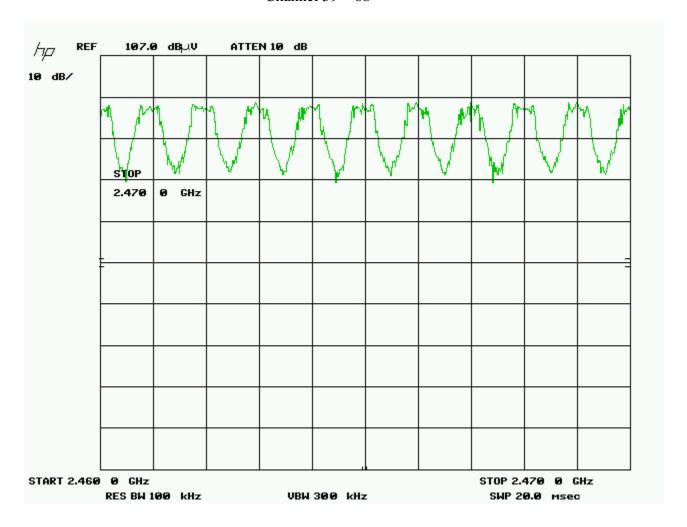
| Client      | Unify4Life   | CLODA      |
|-------------|--|------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL TAR |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC     |

Channel 49 – 58



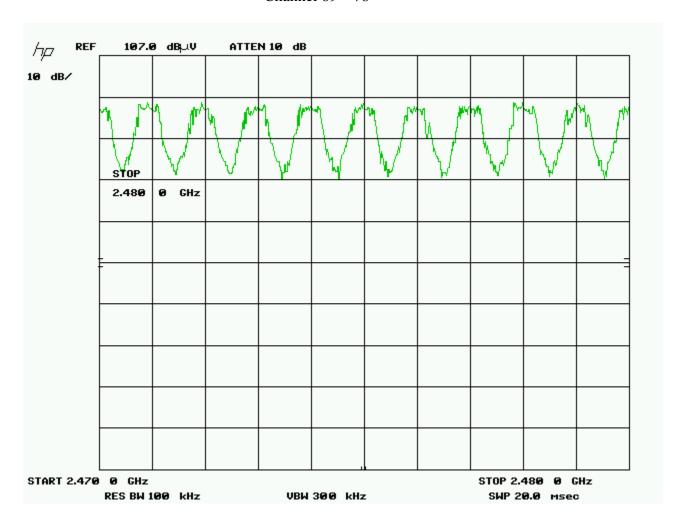
| Client      | Unify4Life   | OLODA T |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

Channel 59 – 68



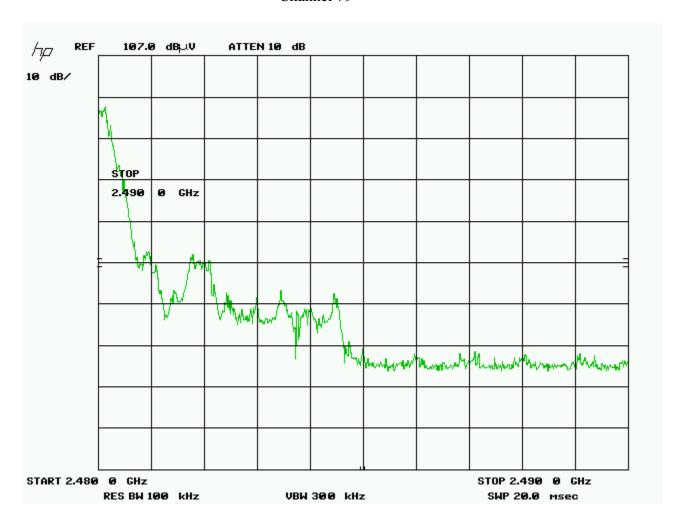
| Client      | Unify4Life   | OLODA T |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

Channel 69 – 78



| Client      | Unify4Life   | CLODATE     |
|-------------|--|-------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL TALA |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EINCINC     |

Channel 79



Note: See 'Appendix B - EUT & Test Setup Photographs' for photos showing the test setup.

| Client      | Unify4Life   | CLODA  |
|-------------|--|--------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENCINC |

# **Test Equipment List**

| Equipment                    | Model No.                      | Manufacturer  | Last calibration date | Next calibration due date | Asset #      |
|------------------------------|--------------------------------|---------------|-----------------------|---------------------------|--------------|
| Attenuator 1 dB              | FP-50-1                        | Trilithic     | NCR                   | NCR                       | GEMC 38      |
| Attenuator 3 dB              | FP-50-3                        | Trilithic     | NCR                   | NCR                       | GEMC 40      |
| Attenuator 6 dB              | FP-50-6                        | Trilithic     | NCR                   | NCR                       | GEMC 41      |
| Attenuator 10<br>dB          | FP-50-10                       | Trilithic     | NCR                   | NCR                       | GEMC 42      |
| Attenuator 20<br>dB          | FP-50-20                       | Trilithic     | NCR                   | NCR                       | GEMC 43      |
| IFR Spectrum<br>Analyzer     | AN940                          | IFR           | 12/29/2009            | 12/29/2011                | GEMC<br>6350 |
| RF Cable 1m                  | LMR-400-1M-<br>50OHM-MN-<br>MN | LexTec        | NCR                   | NCR                       | GEMC 29      |
| Power<br>Attenuator 20<br>dB | 25-A-FFN-20                    | Bird / Hutton | NCR                   | NCR                       | GEMC 49      |

This report module is based on GEMC template "FCC – Power Line Conducted Emissions Class B\_Rev1"

| Client      | Unify4Life   | CLADATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC  |

# Channel Carrier Bandwidth of Frequency Hopping Systems

#### **Purpose**

The purpose of this test is to allow for results that are used to help establish other limits. Although there is not specific limit for this requirement, the derived limits dependant on this information helps allow for other spread spectrum devices to co-exist in the same frequency spectrum. This also helps prevent corruption of data by ensuring adequate channel separation to distinguish the reception of the intended information.

#### Limits

There is no specified limit. However, an approximate calculated maximum limit can be obtained by dividing the maximum bandwidth of the frequency allocation by the minimum number of channels. Note that this is a maximum bandwidth, and the measurement is used to calculate other limits.

| 902 to 928 MHz <sup>1</sup> | 902 to 928 $MHz^2$ | 2.4 to 2.4835 GHz | 5.725 GHz to 5.85 GHz |
|-----------------------------|--------------------|-------------------|-----------------------|
| 26 MHz / 50                 | 26 MHz / 25        | 83.5 MHz / 15     | 125 MHz / 75          |
| 520 kHz                     | 1.04 MHz           | 5.57 MHz          | 1.67 MHz              |

Note 1: When the 20 dB BW is less then 250 kHz Note 2: When the 20 dB BW is greater then 250 kHz

#### Results

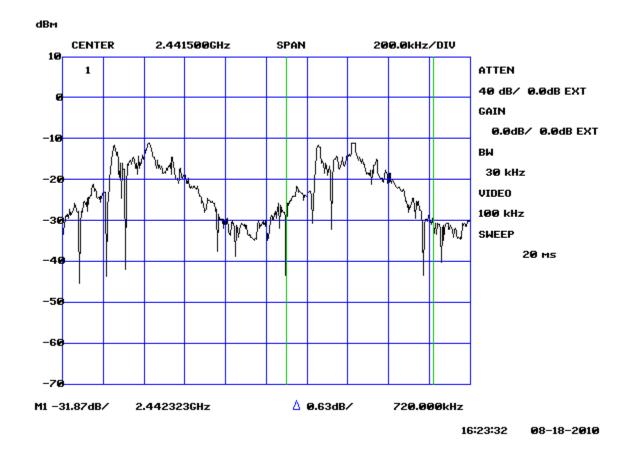
The EUT passed. The 20 dB BW measured was 720 kHz.

Page 52 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

| Client      | Unify4Life   | CLODA  |
|-------------|--|--------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENCINC |

## Graph(s)

The graphs shown below shows the channel spacing during the operation of the device. This is measured by a max hold on the spectrum analyzer and the highest resolution bandwidth that is sufficiently low to exhibit the 20 dB bandwidth of a channel during operation of the EUT. This measurement is a peak measurement. Max hold is performed for a duration of not less then 1 minute.



Note: See 'Appendix B - EUT & Test Setup Photographs' for photos showing the test setup.

| Client      | Unify4Life   | OLODA T |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

# **Test Equipment List**

| Equipment                    | Model No.                      | Manufacturer  | Last<br>calibration<br>date | Next calibration due date | Asset #      |
|------------------------------|--------------------------------|---------------|-----------------------------|---------------------------|--------------|
| Attenuator 1 dB              | FP-50-1                        | Trilithic     | NCR                         | NCR                       | GEMC 38      |
| Attenuator 3 dB              | FP-50-3                        | Trilithic     | NCR                         | NCR                       | GEMC 40      |
| Attenuator 6 dB              | FP-50-6                        | Trilithic     | NCR                         | NCR                       | GEMC 41      |
| Attenuator 10<br>dB          | FP-50-10                       | Trilithic     | NCR                         | NCR                       | GEMC 42      |
| Attenuator 20<br>dB          | FP-50-20                       | Trilithic     | NCR                         | NCR                       | GEMC 43      |
| IFR Spectrum<br>Analyzer     | AN940                          | IFR           | 12/29/2009                  | 12/29/2011                | GEMC<br>6350 |
| RF Cable 1m                  | LMR-400-1M-<br>50OHM-MN-<br>MN | LexTec        | NCR                         | NCR                       | GEMC 29      |
| Power<br>Attenuator 20<br>dB | 25-A-FFN-20                    | Bird / Hutton | NCR                         | NCR                       | GEMC 49      |

This report module is based on GEMC template "FCC – Power Line Conducted Emissions Class B\_Rev1"

| Client      | Unify4Life   | OLODA T |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

# Maximum Permissible Exposure

## **Purpose**

The purpose of this test is to ensure that the RF energy intentionally transmitted, in terms of power density emitted from the EUT at a stated operating distance does not exceed the limits listed below as defined in the applicable test standard, as calculated based upon readings obtained during testing. This helps protect human exposure to excessive RF fields.

# Limit(s) and Method

The limits, as defined in FCC 15.247(i), and FCC 1.1310 Table 1 (B) limits for general public exposure was applied. The limit for the frequency range of 1.5 GHz to 100 GHz was applied. This is a limit of  $1.0 \, \text{mW/cm}^2$  The distance used for calculations was 20cm, as this is the minimum distance an operator will be from the EUT during normal operation, as stated by the manufacturer.

Page 55 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

| Client      | Unify4Life   | CLODA      |
|-------------|--|------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL THE |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU     |

#### Results

The EUT passed the requirements. The worst case calculated power density was 0.0003 mW/cm<sup>2</sup>, this is significantly under the 1.0 mW/cm<sup>2</sup> requirement.

#### **Calculations**

Method 1 (conducted power)

 $P_d = (P_t *G) / (4*pi*R^2)$ 

Where Pt = -0.6 dBm or 0.9 mW as per Peak power conducted output

Where G = 2.4 dBi, or numerically 1.74

Where R = 20 cm

$$\begin{split} P_{d} &= (0.9 \text{ mW} * 1.74) \, / \, (4 * pi * 20 \text{cm}^2) \\ P_{d} &= 1.566 \text{ mW} \, / \, 5026 \text{ cm}^2 \\ P_{d} &= 0.0003 \text{ mW/cm}^2 \end{split}$$

| Client      | Unify4Life   | CLADATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCING  |

#### **Power Line Conducted Emissions**

#### **Purpose**

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT's power line does not exceed the limits listed below as defined in the applicable test standard, as measured from a LISN. This helps protect lower frequency radio services such as AM radio, shortwave radio, amateur radio operators, maritime radio, CB radio, and so on, from unwanted interference.

#### **Limits & Method**

The limits are as defined in 47 CFR FCC Part 15 Section 15.207 Method is as defined in ANSI C64:2003

| Averag                         | e Limits                            | QuasiPea                          | ak Limits     |
|--------------------------------|-------------------------------------|-----------------------------------|---------------|
| 150  kHz - 500  kHz            | 56 to 46 dBuV                       | 150  kHz - 500  kHz               | 66 to 56 dBuV |
| 500  kHz - 5  MHz              | 46 dBuV                             | 500  kHz - 5  MHz                 | 56 dBuV       |
| 5 MHz – 30 MHz                 | 50 dBuV                             | 500  kHz - 30  MHz                | 60 dBuV       |
| The limit decreases linearly v | vith the logarithm of the frequency | ency in the range 0.15 MHz to 0.5 | 0 MHz.        |

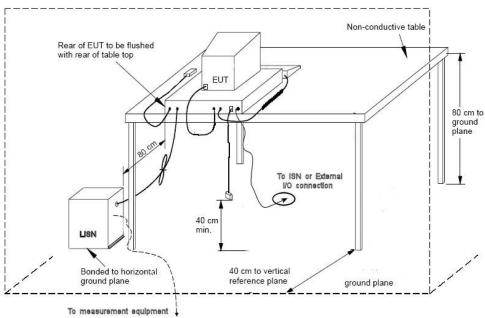
Note: If the Peak or Quasi Peak detector measurements do not exceed the Average limits, then the EUT is deemed to have passed the requirements.

Both limits are applicable, and each is specified as being measured with a 9 kHz measurement bandwidth.

Page 57 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

| Client      | Unify4Life   | CLADATE      |
|-------------|--|--------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL       |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | <b>EMC11</b> |

## **Typical Setup Diagram**



Note: The vertical reference plane is optional as per ANSI C63.4 section 5.2.2

| Client      | Unify4Life   | CLODA  |
|-------------|--|--------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENCINC |

## **Measurement Uncertainty**

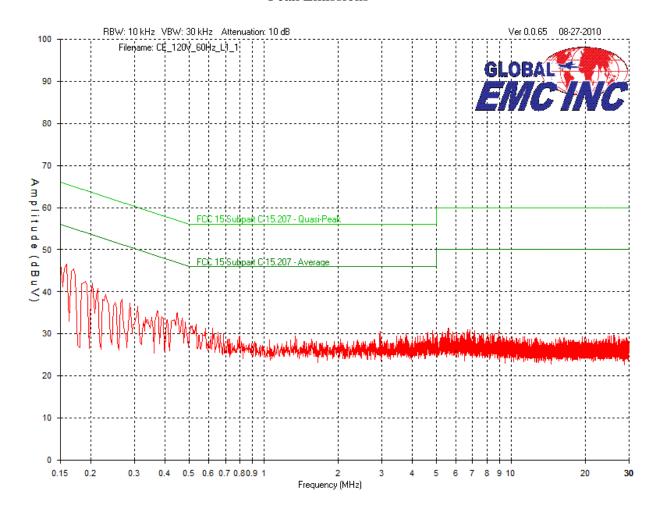
The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is +/-3.6 dB with a 'k=2' coverage factor and a 95% confidence level.

## **Preliminary Graphs**

Note the graphs shown below are for graphical illustration only. For final measurements with the appropriate detector where applicable, please refer to the table. The graph shown below is a peak measurement graph, measured with a resolution bandwidth greater then or equal to the final required detector. These graphs are performed as a worst case measurement to enable the detection of frequencies of concern and for considerable time savings.

| Client      | Unify4Life   | CLADAT         |
|-------------|--|----------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL         |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | <b>EMCIN</b> ( |

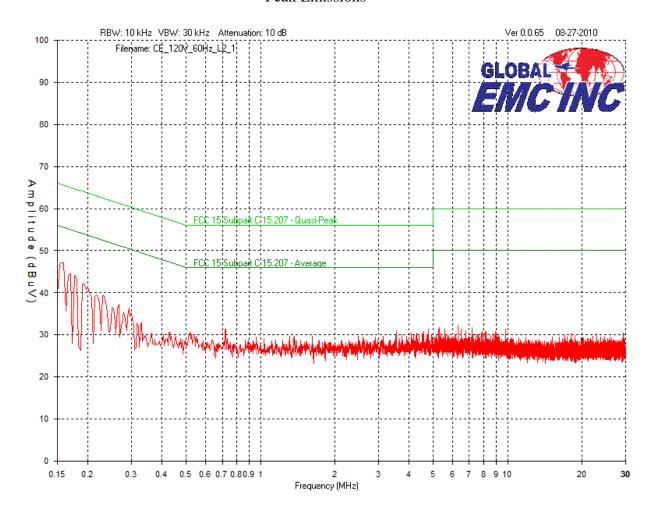
## 120V, 60Hz Phase Line Peak Emissions



Page 60 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

| Client      | Unify4Life   | CLODATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC  |

## 120V, 60Hz Neutral Line Peak Emissions



| Client      | Unify4Life   | CLODA  |
|-------------|--|--------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | ENCINC |

## **Final Measurements**

### Emissions Table Phase Line

| Test<br>Frequency<br>(MHz) | Detector | Received<br>signal<br>(dBµV) | Attenuator (dB) | Cable<br>loss<br>(dB) | LISN<br>factor<br>(dB) | Emission<br>Level<br>(dBuV) | Quasi-<br>Peak<br>Emission<br>limit<br>(dBµV) | Average<br>Emission<br>limit<br>(dBµV) | Quasi-<br>Peak<br>Margin<br>(dB) | Average<br>Margin<br>(dB) | Result |
|----------------------------|----------|------------------------------|-----------------|-----------------------|------------------------|-----------------------------|---|--|----------------------------------|---------------------------|--------|
| 0.160                      | Peak     | 35                           | 10              | 0.1                   | 1.4                    | 46.5                        | 65.5  | 55.5                                   | 19                               | 9                         | Pass   |
| 0.170                      | Peak     | 34.1                         | 10              | 0.1                   | 1.3                    | 45.5                        | 65  | 55                                     | 19.5                             | 9.5                       | Pass   |
| 0.203                      | Peak     | 31                           | 10              | 0.1                   | 1                      | 42.1                        | 63.5  | 53.5                                   | 21.4                             | 11.4                      | Pass   |
| 0.190                      | Peak     | 31.3                         | 10              | 0.1                   | 1.1                    | 42.5                        | 64  | 54                                     | 21.5                             | 11.5                      | Pass   |
| 0.446                      | Peak     | 24.7                         | 10              | 0.1                   | 0.2                    | 35                          | 56.9  | 46.9                                   | 21.9                             | 11.9                      | Pass   |
| 0.267                      | Peak     | 27.5                         | 10              | 0.1                   | 0.7                    | 38.3                        | 61.2  | 51.2                                   | 22.9                             | 12.9                      | Pass   |

### Emissions Table Neutral Line

| Test<br>Frequency<br>(MHz) | Detector | Received<br>signal<br>(dBµV) | Attenuator<br>(dB) | Cable<br>loss<br>(dB) | LISN<br>factor<br>(dB) | Emission<br>Level<br>(dBuV) | Quasi-<br>Peak<br>Emission<br>limit<br>(dBµV) | Average<br>Emission<br>limit<br>(dBµV) | Quasi-<br>Peak<br>Margin<br>(dB) | Average<br>Margin<br>(dB) | Result |
|----------------------------|----------|------------------------------|--------------------|-----------------------|------------------------|-----------------------------|---|--|----------------------------------|---------------------------|--------|
| 0.157                      | Peak     | 35.6                         | 10                 | 0.1                   | 1.4                    | 47.1                        | 65.6  | 55.6                                   | 18.5                             | 8.5                       | Pass   |
| 0.170                      | Peak     | 33.1                         | 10                 | 0.1                   | 1.3                    | 44.5                        | 65  | 55                                     | 20.5                             | 10.5                      | Pass   |
| 0.177                      | Peak     | 32.8                         | 10                 | 0.1                   | 1.2                    | 44.1                        | 64.6  | 54.6                                   | 20.5                             | 10.5                      | Pass   |
| 0.190                      | Peak     | 31                           | 10                 | 0.1                   | 1.1                    | 42.2                        | 64  | 54                                     | 21.8                             | 11.8                      | Pass   |
| 0.230                      | Peak     | 28.5                         | 10                 | 0.1                   | 0.9                    | 39.5                        | 62.5  | 52.5                                   | 23                               | 13                        | Pass   |
| 0.217                      | Peak     | 28.5                         | 10                 | 0.1                   | 0.9                    | 39.5                        | 62.9  | 52.9                                   | 23.4                             | 13.4                      | Pass   |

Note: See 'Appendix B - EUT & Test Setup Photographs' for photos showing the test set-up for the highest line conducted emission.

Peak measurements meet Average and Quasi-Peak requirements for both lines. EUT passes test requirements.

Page 62 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

| Client      | Unify4Life   | OLODA T |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

# **Test Equipment List**

| Equipment                | Model No.                       | Manufacturer | Last<br>calibration<br>date | Next calibration due date | Asset #      |
|--------------------------|---------------------------------|--------------|-----------------------------|---------------------------|--------------|
| IFR Spectrum<br>Analyzer | AN940                           | IFR          | 12/29/2009                  | 12/29/2011                | GEMC<br>6350 |
| LISN                     | FCC-LISN-<br>50/250-16-2-<br>01 | FCC          | 2009-02-11                  | 2011-02-11                | GEMC 65      |
| RF Cable 7m              | LMR-400-7M-<br>50OHM-MN-<br>MN  | LexTec       | NCR                         | NCR                       | GEMC 28      |
| RF Cable 1m              | LMR-400-1M-<br>50OHM-MN-<br>MN  | LexTec       | NCR                         | NCR                       | GEMC 29      |
| Attenuator 10<br>dB      | FP-50-10                        | Trilithic    | NCR                         | NCR                       | GEMC 42      |

This report module is based on GEMC template "FCC – Power Line Conducted Emissions Class B\_Rev1"

| Client      | Unify4Life   | CLODA          |
|-------------|--|----------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL         |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | <b>EMC'INC</b> |

# Appendix A – EUT Summary

For further details for filing purposes, refer to filing package.

## **General EUT Description**

| Client Details                    |  |  |
|-----------------------------------|--|--|
| Organization / Address            | Unify4Life Corporation 130 Esna Park Drive   |  |
|                                   | Markham, Ontario, L3R 1E3  |  |
| Contact                           | Minh Doan  |  |
| Phone                             | 905.940.1117   |  |
| Email                             | mdoan@unify4life.com   |  |
| EUT Details                       |  |  |
| EUT Model number                  | ARRZ100BB  |  |
| <b>Equipment Category</b>         | Residential  |  |
| <b>Basic EUT Functionality</b>    | The EUT allows the end user to control their home entertainment devices via Bluetooth functionality. |  |
| Input Voltage and Frequency       | 120V 60Hz via DC adaptor   |  |
| Connectors available on EUT       | DC input   |  |
| Peripherals Required for Test     | None.  |  |
| Release type                      | Final  |  |
| Intentional Radiator<br>Frequency | 2401 – 2480.0 MHz for Bluetooth protocol.  |  |

Note the EUT is considered to have been received the date of the commencement of the first test, unless otherwise stated. For a close-up picture of the EUT, see 'Appendix B - EUT & Test Setup Photographs'.

Page 64 of 70 Report issue date: 8/31/2010 GEMC File #: GEMC-FCC-19762R1

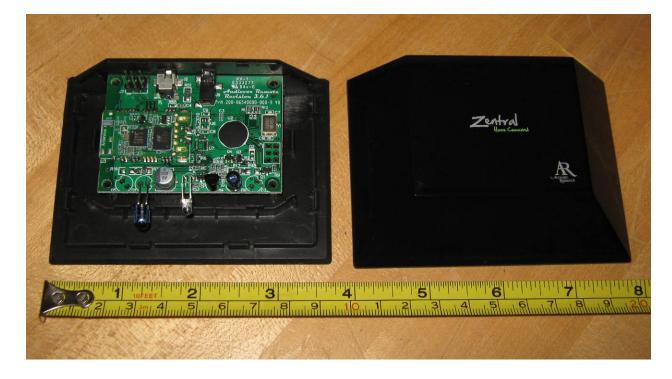
| Client      | Unify4Life   | OLONA TAR |
|-------------|--|-----------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL    |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC    |

# Appendix B – EUT and Test Setup Photographs

| Client      | Unify4Life   | CLODATE     |
|-------------|--|-------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL TALA |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EINCINC     |

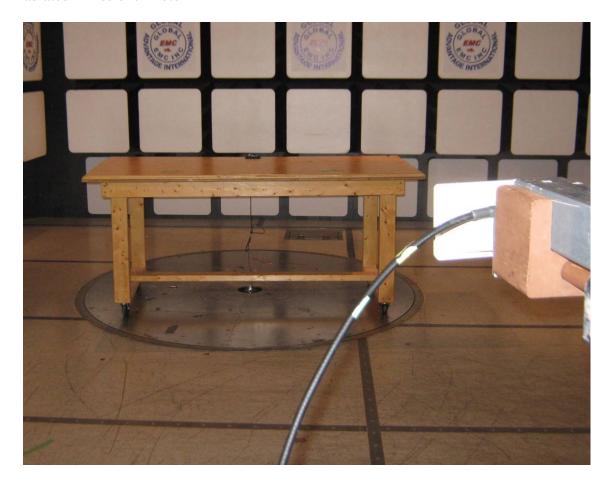
Note: These photos are for information purposes only. Also refer to PDF files that are separate from this test report.

EUT (enclosure top removed and beside unit)



| Client      | Unify4Life   | CLODATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

# Radiated Emissions Photo 1



| Client      | Unify4Life   | CLODATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

# Radiated Emissions Photo 2



| Client      | Unify4Life   | CLODATE |
|-------------|--|---------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL  |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMUINU  |

# Power Line Conducted Emissions



| Client      | Unify4Life   | CLODA      |
|-------------|--|------------|
| Product     | Audiovox Remote ARRZ100BB                            | GLUBAL TAR |
| Standard(s) | RSS 210 Issue 7:2007 / FCC Part 15 Subpart C 15:2010 | EMCINC     |

## Antenna conducted measurements

