

TEST NUMBER - 268-00

**FEDERAL COMMUNICATIONS COMMISSION**  
**PART 15.249 CERTIFICATION TESTING 902 - 928 MHz**  
**Subpart C - Intentional Radiators**

for

Akoo.com  
2500 North Harlem Avenue  
Elmwood Park, IL 60707  
202-418-2470

of

Kima

900 MHz base unit

FCCID#: 05UKS110B

on

July 19, 2000

Tested by

---

Clifton P. Brick

Reviewed by

---

Larry K. Stillings

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

## TABLE OF CONTENTS

- Test Description
- Test Results and Conclusions
- Test Procedures
- Part 15 Subpart C Test Limits
- Measurement Uncertainty Budget and Calculations
- Test Facility Description
- Test Setup and Connection Information
- Test Measurements and Results
  - Radiated Measurements
  - Radiated Output Power & Occupied Bandwidth
  - Conducted Measurements
- Notes and Comments
- Photographs
  - Radiated Test Setup (Front & Rear)
  - Conducted Test Setup (Front & Rear)
  - Exterior and Interior Photographs of Product

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

## TEST DESCRIPTION

### 1. TEST OBJECTIVE

**To test the Kima 900 MHz base unit to FCC Part 15.249, Subpart C limits and write a report.**

### 2. E.U.T. DESCRIPTION

#### GENERAL

**The Kima 900 MHz base unit is a transmitter that connects to the audio out port of a sound card on a PC. The purpose of this is to allow transmission of MP3 music technology to the remote receiver in the 902-928 MHz band.**

#### SERIAL NUMBERS:

Pre-Production Prototype.

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

## TEST RESULTS AND CONCLUSIONS

PRODUCT TESTED - Kima

MODEL NUMBER - 900 MHz base unit

### RADIATED TEST RESULTS

The test results show that the emissions radiated from this equipment are in compliance with FCC Rules, Part 15, Subpart C, Section 15.209.

### OCCUPIED BANDWIDTH & OUTPUT POWER

The test results show that the occupied bandwidth and output power of this equipment are in compliance with FCC Rules, Part 15, Subpart C, Section 15.239.

### CONDUCTED TEST RESULTS

The test results show that the emissions conducted through the power line from this equipment are in compliance with FCC Rules, Part 15, Subpart C, Section 15.207.

### ANALYSIS AND CONCLUSIONS

Based upon the radiated and conducted measurements we find that this equipment is within the limits of the FCC Rules, Part 15, Subpart C.

**NOTES** (Special conditions unique to this test)

**NONE.**

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

## TEST PROCEDURES

### 1. TEST EQUIPMENT

- A. HP 8546A (9 kHz - 6.5 GHz) EMI Receiver w/ RF Filter Section, S/N 3704A00323 / 3650A00360. Calibration Date 7-18-2000, calibrated annually.
- B. HP 8593E (9 kHz - 26.5 GHz) Spectrum Analyzer, S/N 3829A03887. Calibration Date 9-3-1999, calibrated annually.
- C. Electro-Metrics BiConical Antenna, Model EM6912A, S/N 149. Calibration Date 2-22-2000, calibrated annually.
- D. Electro-Metrics Log Periodic Antenna, Model EM-6950, S/N 1017. Calibration Date: 2-22-2000, calibrated annually.
- E. Com-Power Corporation Horn Antenna, Model AH-118, S/N 10078. Calibration Date: 8-16-1999, calibrated annually.
- F. HP 1 - 26.5 GHz Preamplifier, Model 08449B, S/N 3008A01323. Calibration Date: 9-29-1999, calibrated annually.
- G. LISN, Compliance Worldwide, Model 50  $\mu$ H / 50 ohm, S/N 100. Calibration Date 2-22-2000, calibrated annually.

### 2. FREQUENCY RANGE TO BE SCANNED.

- A. Radiated Test from 30 MHz to 40 GHz (or the 10<sup>th</sup> harmonic of the highest frequency whichever is lower).
- B. Conducted Test from 450 kHz to 30 MHz.

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

### 3. TEST PROCEDURES.

#### **Radiated test procedure**

The EUT, associated cables and peripheral devices are placed on the supporting table and any support equipment is placed off the site. The EUT is turned on and any necessary operating or test software installed and allowed to warm up. The frequency band from 30 MHz to 40 GHz is scanned. When an emission is found the emission is maximized by varying the bundle position of the connecting cables, the antenna height, the antenna polarization (vertical and horizontal) and the table orientation (360 degrees). The maximum reading is recorded and the next signal is searched for.

#### **Conducted test procedure**

The power line of the EUT is connected to the LISN (Line Impedance Stabilization Network). A measurement of the emissions are made from the power line for both phase and neutral on the analyzer in the frequency range from 450 kHz to 30 MHz. The maximum readings are recorded for each phase.

All measurements are made according to the procedures defined in: "ANSI C63.4-1992 Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz, American National Standard for (ISBN 1-55937-215-5).

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

## PART 15 SUBPART C TEST LIMITS

### 1. 15.209, 15.235 & 15.249 Radiation Limits (Quasi-Peak):

| Frequency<br>MHz | Distance<br>meters | Limit<br>dBμV/m | Limit<br>μV/m |
|------------------|--------------------|-----------------|---------------|
| 1.705 - 30       | 30                 | 29.5*           | 30*           |
| 30 - 88          | 3                  | 40.0            | 100           |
| 49.82 - 49.90    | 3                  | 80.0*           | 10,000*       |
| 88 - 216         | 3                  | 43.5            | 150           |
| 216 - 960        | 3                  | 46.0            | 200           |
| 902 - 928        | 3                  | 94.0*           | 50,000*       |
| 960 - 1000       | 3                  | 54.0            | 500           |
| 1000 - 40000     | 3                  | 54.0*           | 500*          |

\*NOTE: Average Limits

### 2. 15.207 Conduction Limits (Quasi-Peak):

| Frequency<br>MHz | Limit<br>dBμV/m | Limit<br>μV/m |
|------------------|-----------------|---------------|
| 0.450 - 30.0     | 48.0            | 250           |



TEST NUMBER - 268-00

Akoo.com

Kima - 900 MHz base unit



### **TEST FACILITY DESCRIPTION**

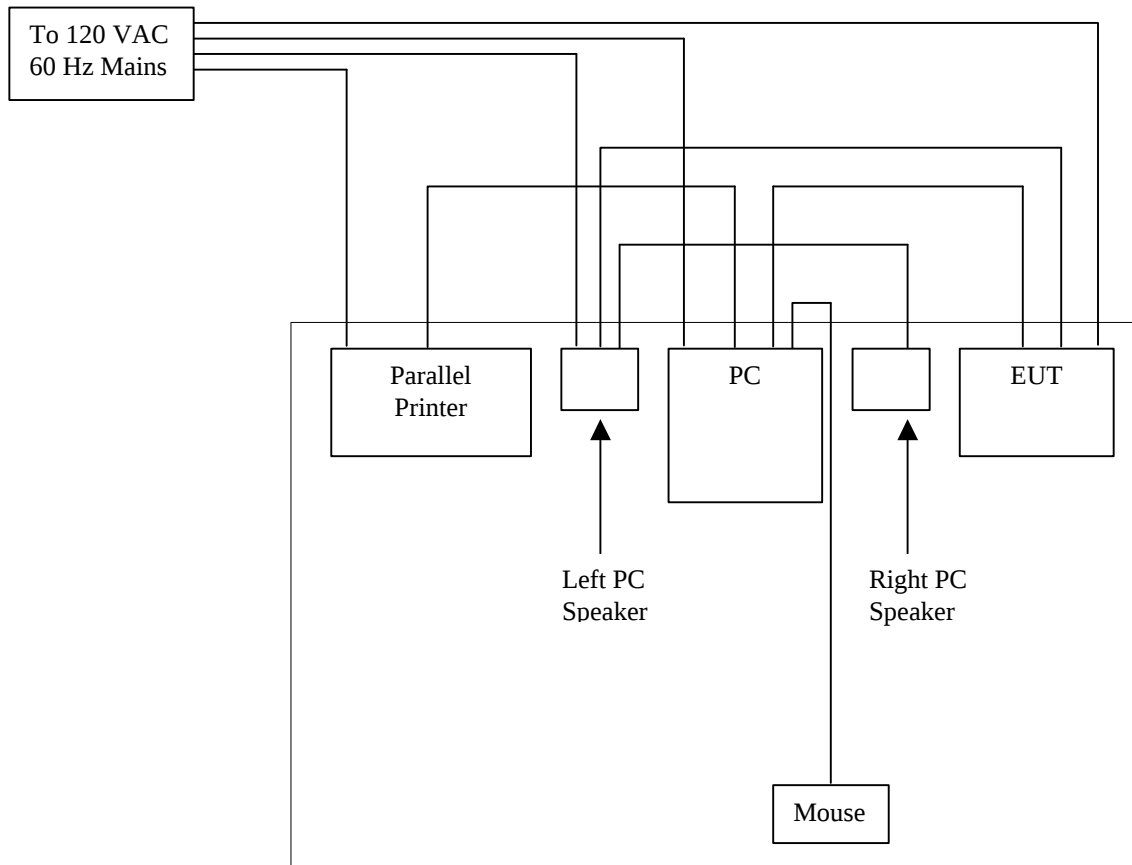
In keeping with the requirements of Section 2.948 of the Federal Communications Commission's Rules, Compliance Worldwide has filed a Test Facility Description with the F.C.C.

Anyone wishing to review this Test Facility Description is referred to registration number 96392. This is currently on file at the FCC's Authorization and Evaluation Lab in Columbia, Maryland, U.S.A.

**DATE ON FILE: March 6, 2000**

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

**TEST SET UP  
AND  
PERIPHERAL CONNECTION INFORMATION**



TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

PLEASE NOTE - EUT (equipment under test) is Kima.

The cables directly connected to this equipment are listed below.  
Please see below for a complete list of FCC ID's etc. on the  
supporting equipment.

### Connection Descriptions

1. Power Cable  
(description)  
Kima  
(from device)  
AC Mains via 6VDC 100mA Class 2 Power Supply  
(to device)  
CABLE LENGTH 2M (S) SHIELDED or (U) UNSHIELDED U
2. Power Cable  
(description)  
PC FCC ID# CJ6UK436  
(from device)  
AC Mains  
(to device)  
CABLE LENGTH 2M (S) SHIELDED or (U) UNSHIELDED U
3. Power Cable  
(description)  
PC Speakers Harman/Kardon model 02320  
(from device)  
AC Mains via class 2 DC Power Supply  
(to device)  
CABLE LENGTH 2M (S) SHIELDED or (U) UNSHIELDED U

**Connection Descriptions (Continued)**

4. Stereo Cable  
(description)  
PC FCC ID# CJ6UK436  
(from device)  
Kima (EUT)  
(to device)  
CABLE LENGTH 2M (S) SHIELDED or (U) UNSHIELDED S
5. Stereo Cable  
(description)  
PC Speakers Harman/Kardon model 02320  
(from device)  
Kima (EUT)  
(to device)  
CABLE LENGTH 2M (S) SHIELDED or (U) UNSHIELDED U
6. Parallel Cable  
(description)  
PC FCC ID# CJ6UK436  
(from device)  
Parallel Printer FCC ID# AA08W726-1280  
(to device)  
CABLE LENGTH 2M (S) SHIELDED or (U) UNSHIELDED S
7. Mouse Cable  
(description)  
Mouse FCC ID# DZL211029  
(from device)  
PC FCC ID# CJ6UK436  
(to device)  
CABLE LENGTH 1.5M (S) SHIELDED or (U) UNSHIELDED S



TEST NUMBER - 268-00

Akoo.com

Kima - 900 MHz base unit



### Connection Descriptions (Continued)

8. 18 Gauge 2 conductor cord  
(description)

Left PC Speaker Harman/Kardon model 02320  
(from device)

Right PC Speaker Harman/Kardon model 02320  
(to device)

CABLE LENGTH 2M (S) SHIELDED or (U) UNSHIELDED U

9 Power Cable  
(description)

Printer FCC ID# AA08W726-1280  
(from device)

PC FCC ID# CJ6UK436  
(to device)

CABLE LENGTH 1.5M (S) SHIELDED or (U) UNSHIELDED S

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

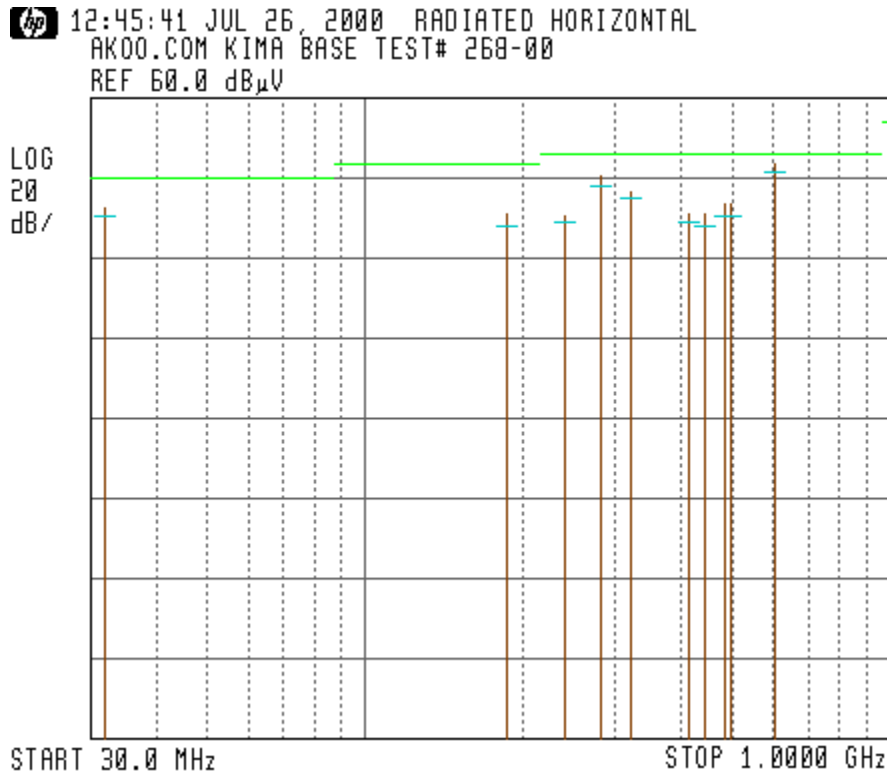
### **RADIATED TEST RESULTS**

Frequency Range: 30 - 9280 MHz.  
Measurement Distance: 3.0 Meters.  
Bandwidth: 120 kHz, Per ANSI C63.4-1992.\*  
Detector Functions: Peak, Quasi Peak, Average  
Video Filter: 300 kHz  
Table Height: 0.8 meters  
Antenna Height Variation: 1 - 4 Meters.  
Horizontal and Vertical Polarization Measurements Taken.

\*Measurement Bandwidth is 1 MHz above 1 GHz

**PLEASE SEE NEXT PAGE FOR RADIATED TEST DATA**

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

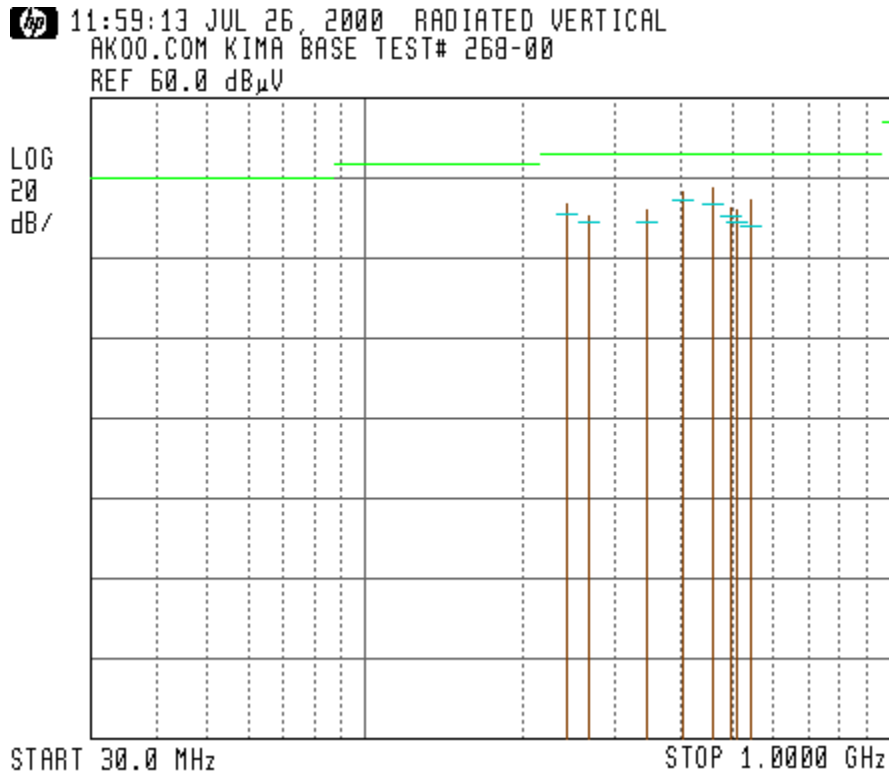


TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

### Radiated Horizontal Tabular Data

| Frequency (MHz) | Azimuth (Degrees) | Antenna Height (Meters) | Peak Amplitude (dBuv) | Quasi Peak Amplitude (dBuV) | Quasi Peak Limit (dBuV) | Margin (dB) |
|-----------------|-------------------|-------------------------|-----------------------|-----------------------------|-------------------------|-------------|
| 32.01           | 1                 | 2.9                     | 33.4                  | 31.0                        | 40.0                    | -9.0        |
| 185.40          | 177               | 2.3                     | 31.3                  | 28.4                        | 43.5                    | -15.1       |
| 239.98          | 132               | 1.7                     | 30.9                  | 29.3                        | 46.0                    | -16.7       |
| 280.62          | 126               | 1.6                     | 40.5                  | 38.2                        | 46.0                    | -7.8        |
| 320.71          | 202               | 1.6                     | 37.3                  | 35.5                        | 46.0                    | -10.5       |
| 410.90          | 223               | 1.6                     | 31.9                  | 29.0                        | 46.0                    | -17.0       |
| 440.96          | 316               | 1.0                     | 31.2                  | 28.7                        | 46.0                    | -17.3       |
| 479.96          | 94                | 1.0                     | 33.9                  | 30.9                        | 46.0                    | -15.1       |
| 496.11          | 93                | 1.0                     | 33.7                  | 30.8                        | 46.0                    | -15.3       |
| 599.94          | 111               | 1.0                     | 44.3                  | 41.8                        | 46.0                    | -4.2        |

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit



Radiated Vertical Tabular Data

| Frequency<br>(MHz) | Azimuth<br>(Degrees) | Antenna<br>Height<br>(Meters) | Peak<br>Amplitude<br>(dBuV) | Quasi<br>Peak<br>Amplitude<br>(dBuV) | Quasi Peak<br>Limit<br>(dBuV) | Margin<br>(dB) |
|--------------------|----------------------|-------------------------------|-----------------------------|--------------------------------------|-------------------------------|----------------|
| 240.52             | 222                  | 2.3                           | 33.8                        | 31.7                                 | 46.0                          | -14.3          |
| 265.57             | 173                  | 2.6                           | 31.1                        | 28.8                                 | 46.0                          | -17.2          |
| 341.95             | 2                    | 1.5                           | 32.5                        | 29.3                                 | 46.0                          | -16.7          |
| 400.88             | 337                  | 1.5                           | 36.8                        | 34.9                                 | 46.0                          | -11.1          |
| 456.00             | 177                  | 1.8                           | 37.9                        | 34.1                                 | 46.0                          | -11.9          |
| 496.07             | 146                  | 1.4                           | 33.5                        | 30.9                                 | 46.0                          | -15.1          |
| 506.12             | 122                  | 1.0                           | 31.9                        | 29.2                                 | 46.0                          | -16.8          |
| 539.99             | 70                   | 1.2                           | 34.5                        | 28.6                                 | 46.0                          | -17.4          |

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

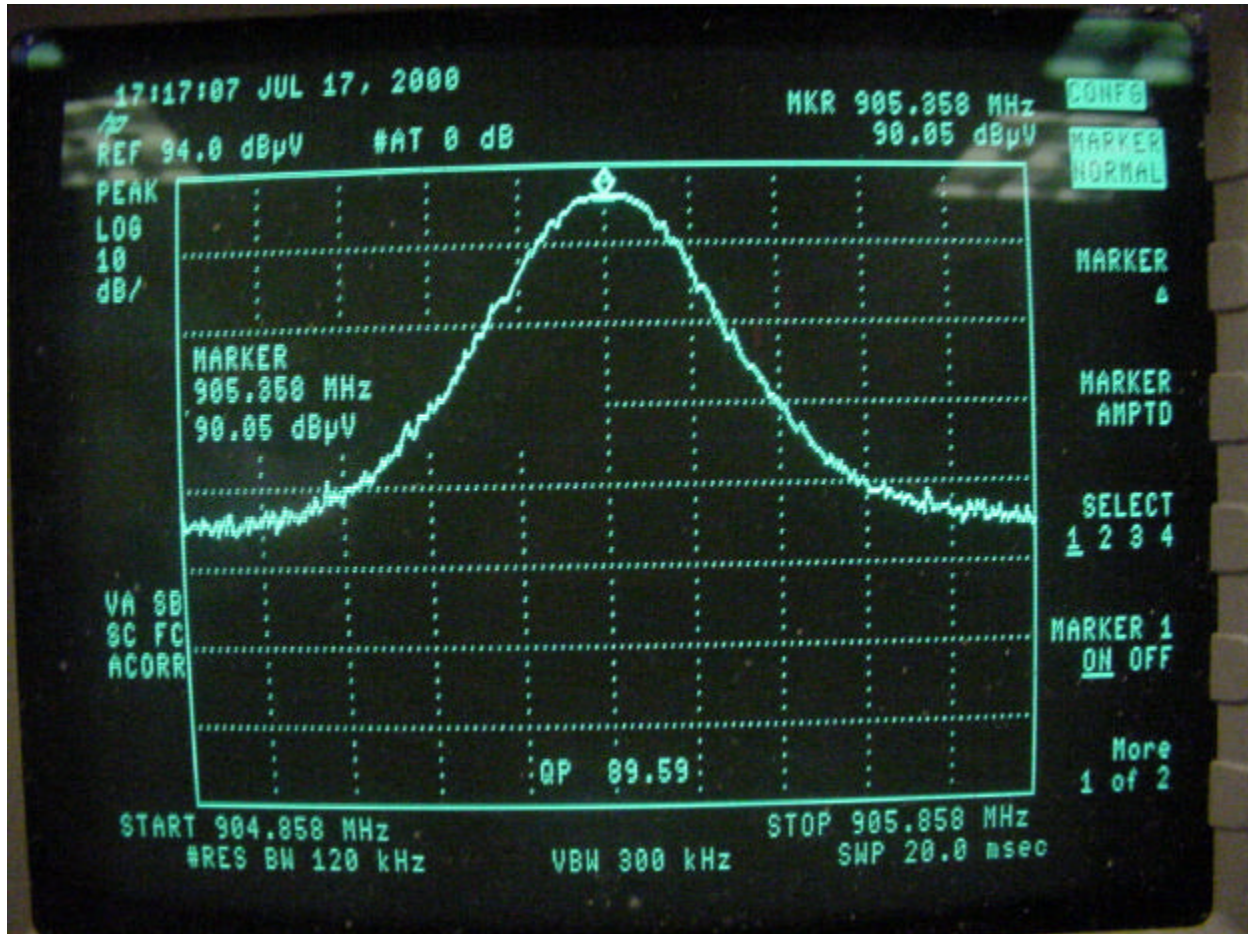
### **RADIATED OUTPUT POWER & OCCUPIED BANDWIDTH TEST RESULTS**

Frequency Range: 902 - 928 MHz.  
Measurement Distance: 3.0 Meters.  
Bandwidth: 120 kHz, Per ANSI C63.4-1992.  
Detector Functions: Peak, Quasi Peak, Average.  
Video Filter: 300 kHz  
Table Height: 0.8 meters  
Antenna Height Variation: 1 - 4 Meters.  
Horizontal and Vertical Polarization Measurements Taken.

**PLEASE SEE NEXT PAGE(S) FOR OCCUPIED BANDWIDTH RADIATED TEST DATA**

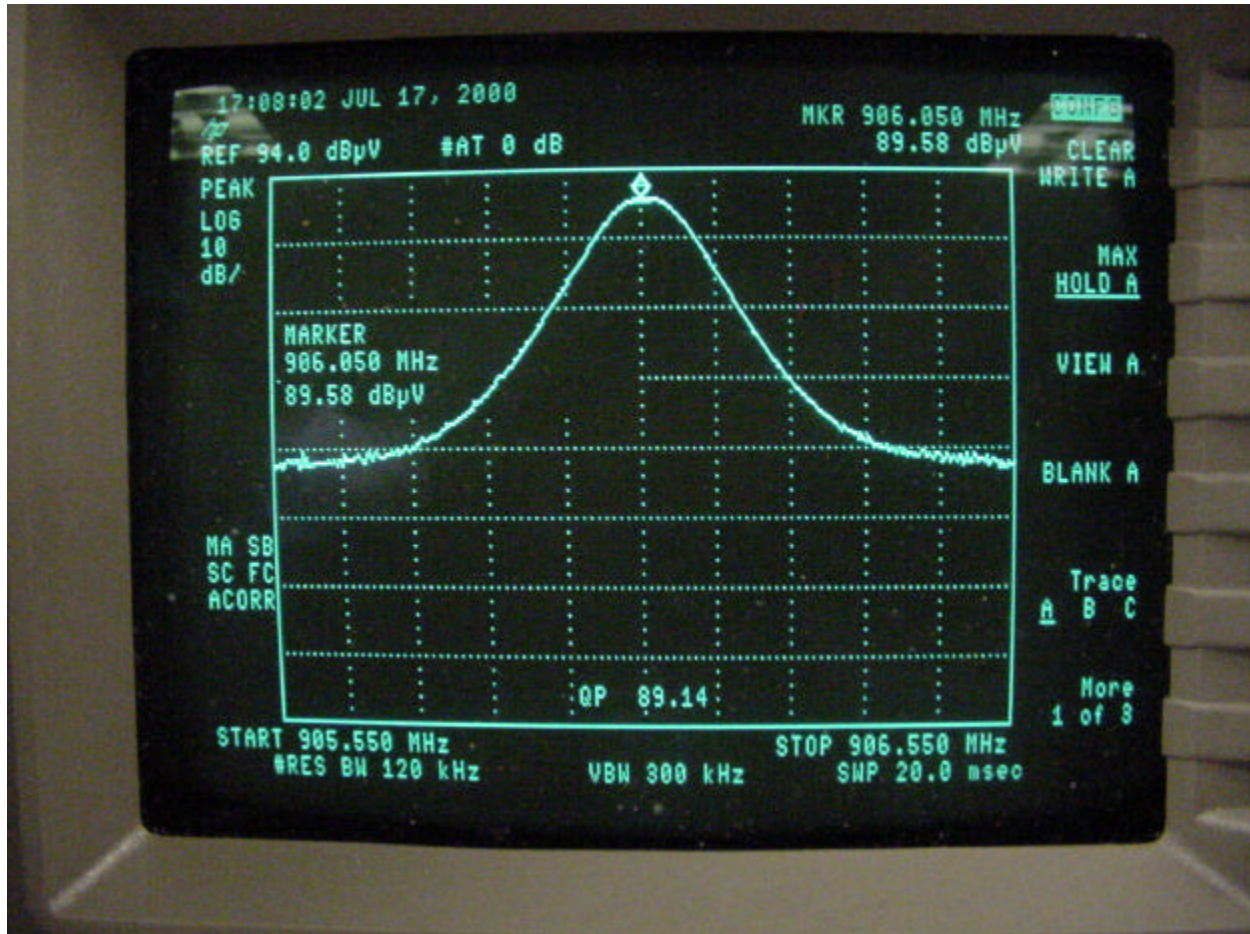
TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

Channel A



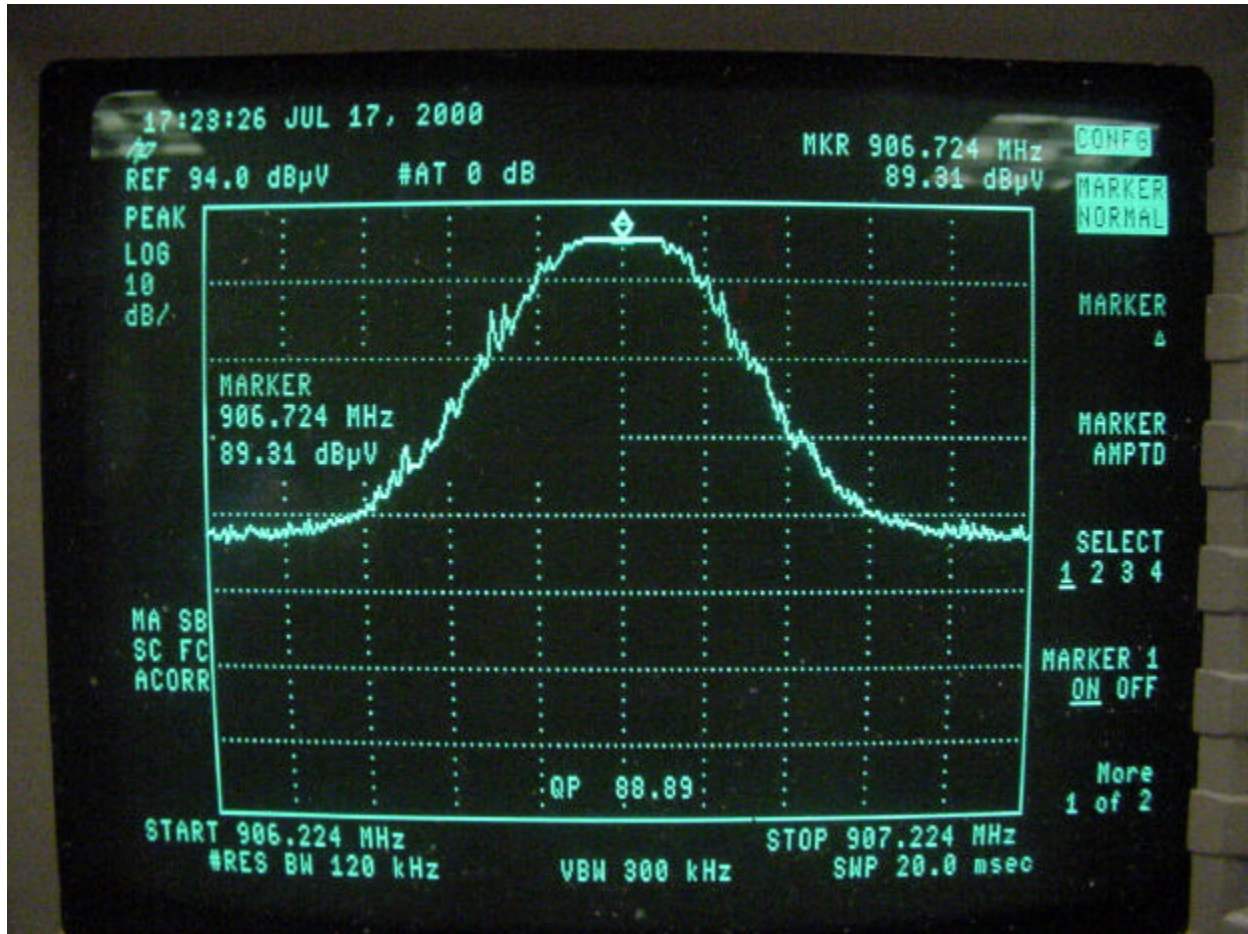
TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

Channel B



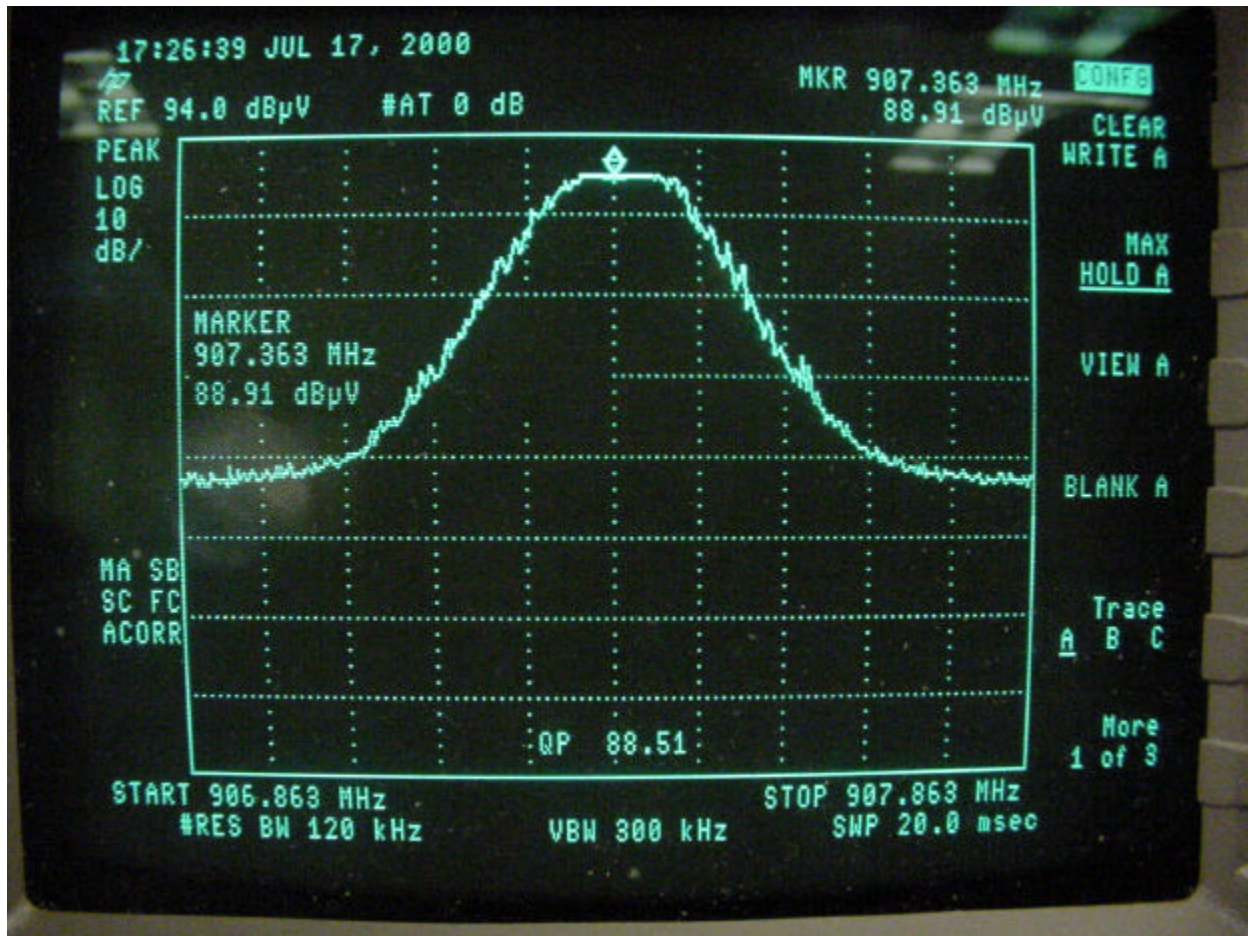
TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

Channel C



TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

Channel D



TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

Radiated Output Power Tabular Data

| Channel | Frequency<br>(MHz) | Azimuth<br>(Degrees) | Antenna<br>Height<br>(Meters) | Peak<br>Amplitude<br>(dBuV) | Quasi<br>Peak<br>Amplitude<br>(dBuV) | Quasi Peak<br>Limit<br>(dBuV) | Margin<br>(dB) |
|---------|--------------------|----------------------|-------------------------------|-----------------------------|--------------------------------------|-------------------------------|----------------|
| A       | 904.9              | 22                   | 1.2                           | 90.1                        | 89.6                                 | 94.0                          | -4.4           |
| B       | 906.0              | 23                   | 1.1                           | 89.6                        | 89.1                                 | 94.0                          | -4.9           |
| C       | 906.7              | 24                   | 1.2                           | 89.3                        | 88.9                                 | 94.0                          | -5.1           |
| D       | 907.3              | 23                   | 1.1                           | 88.9                        | 88.5                                 | 94.0                          | -5.5           |

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

### CONDUCTED TEST RESULTS

|                     |                            |
|---------------------|----------------------------|
| Frequency Range:    | 450 kHz to 30.0 MHz.       |
| Bandwidth:          | 9 kHz per ANSI C63.4-1992. |
| Detector Functions: | Peak, Quasi-Peak, Average  |
| Table Height:       | 0.8 meters                 |
| Video Bandwidth:    | 30 kHz.                    |

Phase and Neutral Measurements Taken.

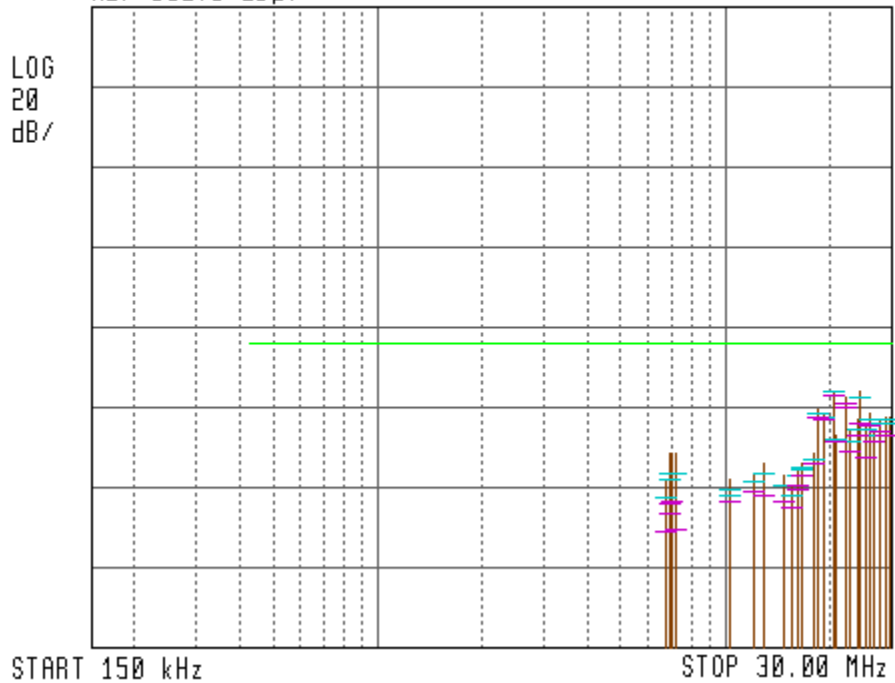
**PLEASE SEE NEXT PAGE FOR CONDUCTED TEST DATA**

TEST NUMBER - 268-00

Akoo.com

Kima - 900 MHz base unit

13:04:34 JUL 25, 2000  
AKOO.COM KIMA BASE CONDUCTED PHASE TEST#268-00  
REF 132.0 dB $\mu$ V



TEST NUMBER - 268-00

Akoo.com  
Kima - 900 MHz base unit

### Conducted Phase Tabular Data

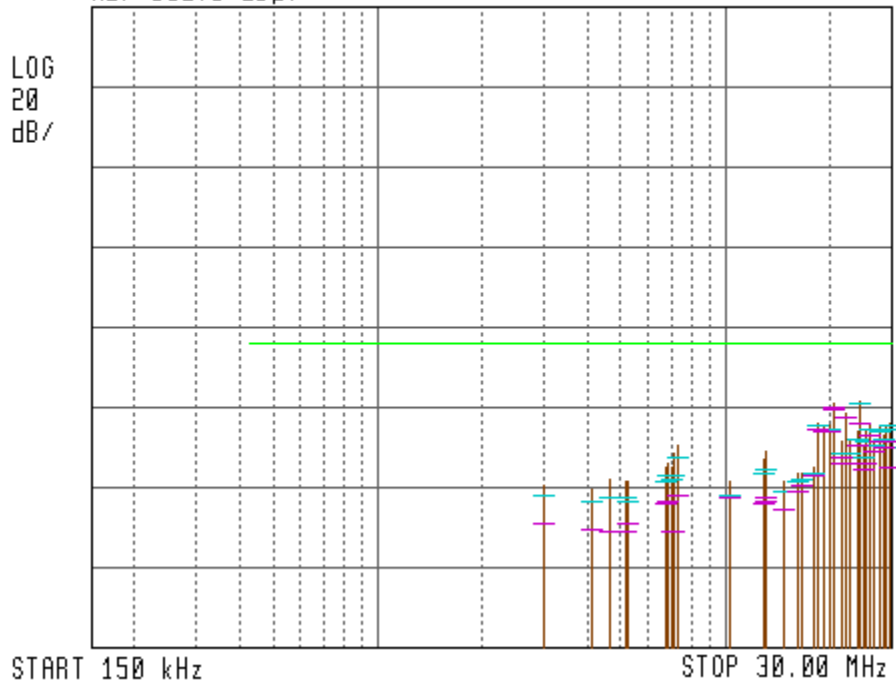
| Frequency (MHz) | Peak Amplitude (dBuV) | Quasi Peak Amplitude (dBuV) | Quasi Peak Limit (dBuV) | Margin (dB) |
|-----------------|-----------------------|-----------------------------|-------------------------|-------------|
| 6.92            | 20.5                  | 16.4                        | 48.0                    | -31.6       |
| 7.20            | 21.0                  | 16.1                        | 48.0                    | -31.9       |
| 10.18           | 14.0                  | 11.9                        | 48.0                    | -36.1       |
| 12.02           | 15.9                  | 14.0                        | 48.0                    | -34.0       |
| 12.86           | 18.2                  | 16.4                        | 48.0                    | -31.6       |
| 16.00           | 16.9                  | 15.7                        | 48.0                    | -32.3       |
| 17.87           | 20.6                  | 19.4                        | 48.0                    | -28.6       |
| 18.37           | 31.9                  | 31.0                        | 48.0                    | -17.0       |
| 19.04           | 31.1                  | 30.3                        | 48.0                    | -17.7       |
| 20.21           | 36.4                  | 36.0                        | 48.0                    | -12.0       |
| 22.04           | 34.5                  | 33.4                        | 48.0                    | -14.6       |
| 22.71           | 26.6                  | 23.7                        | 48.0                    | -24.4       |
| 24.00           | 36.5                  | 35.2                        | 48.0                    | -12.8       |
| 25.05           | 28.4                  | 26.7                        | 48.0                    | -21.3       |
| 25.72           | 30.2                  | 28.9                        | 48.0                    | -19.1       |
| 26.55           | 26.5                  | 25.4                        | 48.0                    | -22.6       |
| 26.39           | 26.4                  | 25.2                        | 48.0                    | -22.8       |
| 27.56           | 29.4                  | 28.2                        | 48.0                    | -19.8       |
| 29.39           | 30.1                  | 29.2                        | 48.0                    | -18.8       |

TEST NUMBER - 268-00

Akoo.com

Kima - 900 MHz base unit

12:36:05 JUL 25, 2000  
AKOO.COM KIMA BASE CONDUCTED NUETRAL TEST#268-00  
REF 132.0 dB $\mu$ V



TEST NUMBER - 268-00

Akoo.com  
Kima - 900 MHz base unit

### Conducted Neutral Tabular Data

| Frequency (MHz) | Peak Amplitude (dBuV) | Quasi Peak Amplitude (dBuV) | Quasi Peak Limit (dBuV) | Margin (dB) |
|-----------------|-----------------------|-----------------------------|-------------------------|-------------|
| 3.01            | 13.4                  | 10.5                        | 48.0                    | -37.6       |
| 4.09            | 12.3                  | 9.1                         | 48.0                    | -38.9       |
| 5.18            | 13.9                  | 9.4                         | 48.0                    | -38.6       |
| 4.64            | 14.6                  | 9.9                         | 48.0                    | -38.1       |
| 5.17            | 13.8                  | 9.6                         | 48.0                    | -38.4       |
| 6.68            | 17.3                  | 14.1                        | 48.0                    | -33.9       |
| 6.81            | 18.5                  | 15.2                        | 48.0                    | -32.8       |
| 7.09            | 20.6                  | 15.6                        | 48.0                    | -32.4       |
| 6.96            | 17.4                  | 14.8                        | 48.0                    | -33.2       |
| 7.22            | 23.4                  | 20.1                        | 48.0                    | -27.9       |
| 10.19           | 13.8                  | 10.7                        | 48.0                    | -37.3       |
| 12.86           | 19.5                  | 16.3                        | 48.0                    | -31.7       |
| 13.02           | 18.2                  | 16.7                        | 48.0                    | -31.4       |
| 14.70           | 13.5                  | 11.4                        | 48.0                    | -36.6       |
| 16.53           | 16.2                  | 14.5                        | 48.0                    | -33.5       |
| 16.00           | 15.6                  | 13.8                        | 48.0                    | -34.2       |
| 16.53           | 16.5                  | 14.6                        | 48.0                    | -33.4       |
| 17.87           | 17.9                  | 16.2                        | 48.0                    | -31.8       |
| 18.37           | 28.4                  | 27.8                        | 48.0                    | -20.2       |
| 19.04           | 27.8                  | 26.9                        | 48.0                    | -21.1       |
| 19.71           | 28.0                  | 26.7                        | 48.0                    | -21.3       |
| 20.21           | 33.3                  | 32.5                        | 48.0                    | -15.5       |
| 21.47           | 23.9                  | 20.6                        | 48.0                    | -27.4       |
| 21.54           | 23.5                  | 20.6                        | 48.0                    | -27.4       |
| 22.04           | 31.0                  | 30.0                        | 48.0                    | -18.0       |
| 22.71           | 24.2                  | 20.2                        | 48.0                    | -27.8       |
| 23.88           | 26.5                  | 24.8                        | 48.0                    | -23.2       |
| 24.00           | 34.3                  | 33.1                        | 48.0                    | -15.0       |
| 24.88           | 22.6                  | 20.4                        | 48.0                    | -27.7       |
| 25.05           | 26.3                  | 24.2                        | 48.0                    | -23.8       |
| 25.72           | 27.9                  | 26.8                        | 48.0                    | -21.3       |
| 26.55           | 24.7                  | 23.2                        | 48.0                    | -24.8       |
| 26.39           | 24.3                  | 23.1                        | 48.0                    | -24.9       |
| 27.56           | 27.6                  | 26.1                        | 48.0                    | -21.9       |
| 28.56           | 28.1                  | 27.1                        | 48.0                    | -20.9       |
| 29.39           | 28.6                  | 27.6                        | 48.0                    | -20.4       |



TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

### NOTES AND COMMENTS

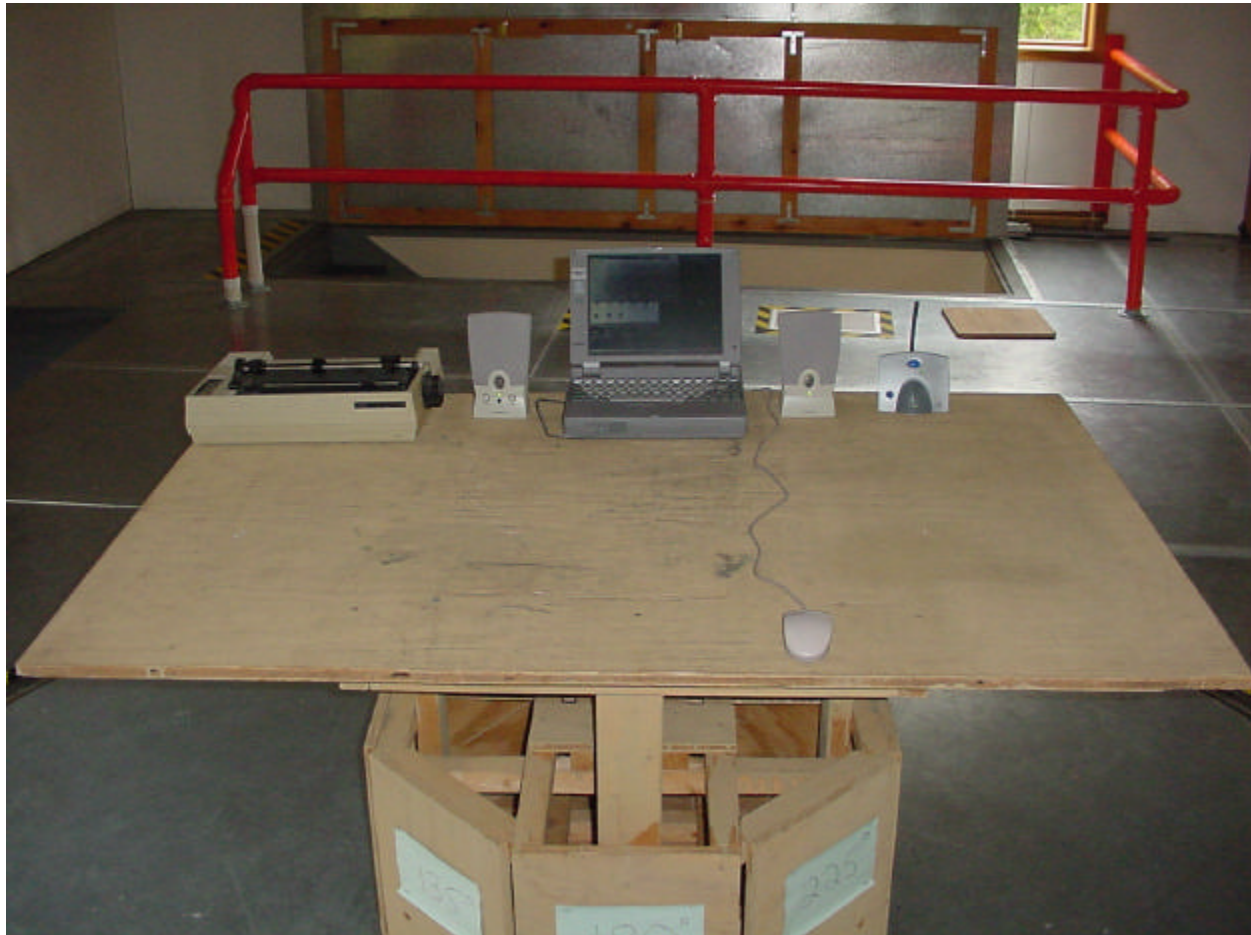
(Special conditions unique to this test)

None.

TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

## PHOTOGRAPHS

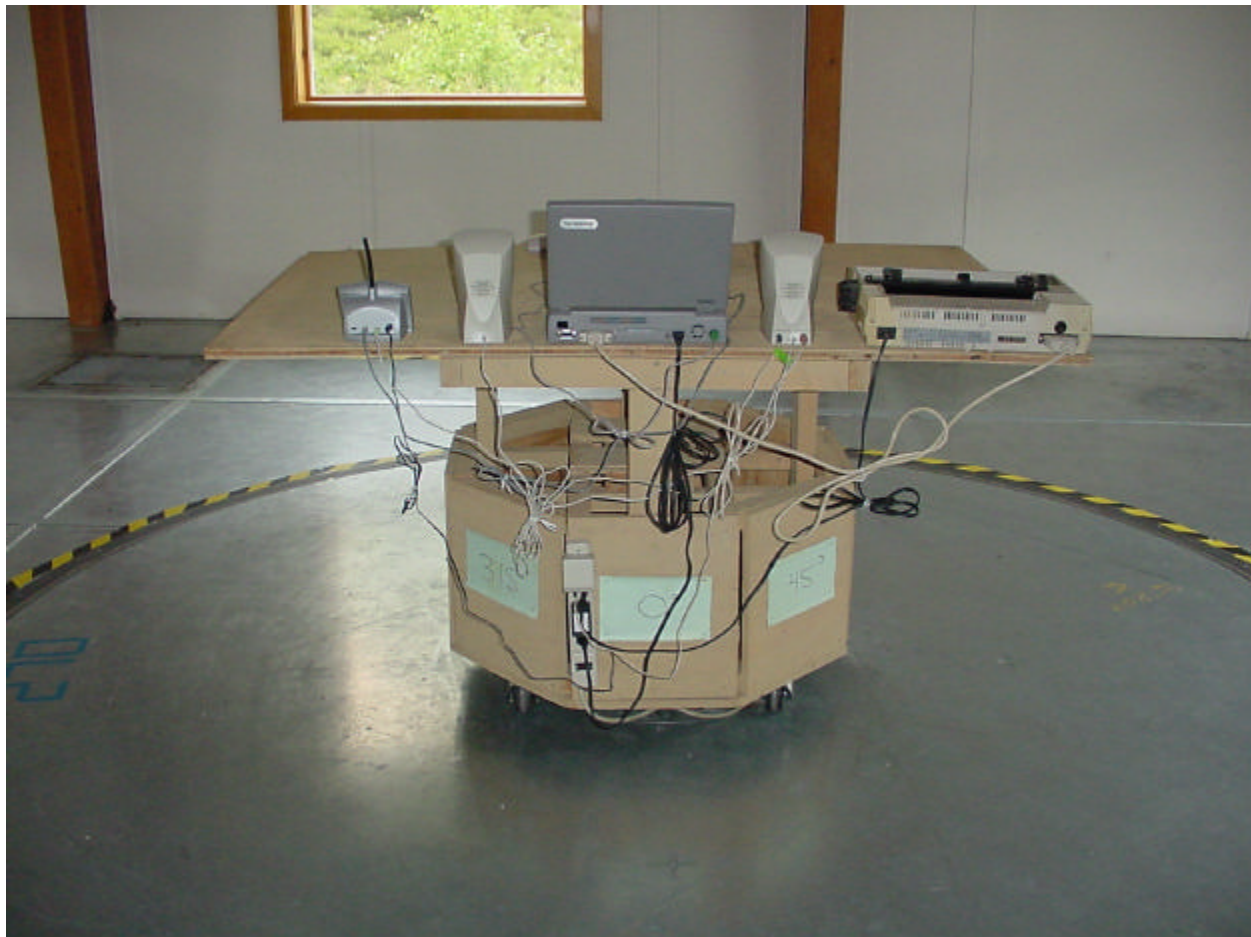
Radiated Test Setup (Front)



TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

## PHOTOGRAPHS

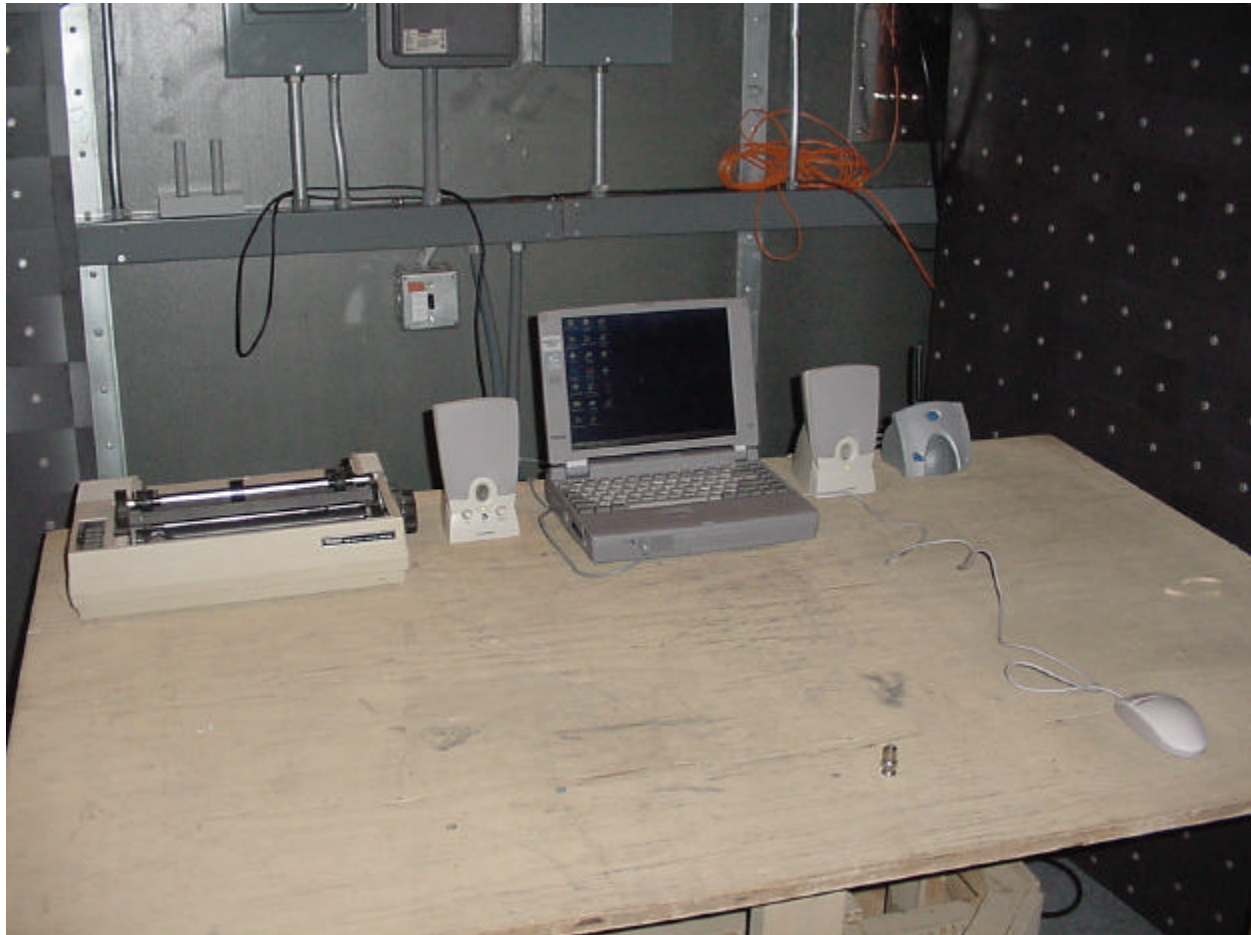
Radiated Test Setup (Rear)



TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

## PHOTOGRAPHS

Conducted Test Setup (Front)



## PHOTOGRAPHS

Conducted Test Setup (Rear)



## PHOTOGRAPHS

### Exterior Product Photographs (Rear)



TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

## PHOTOGRAPHS

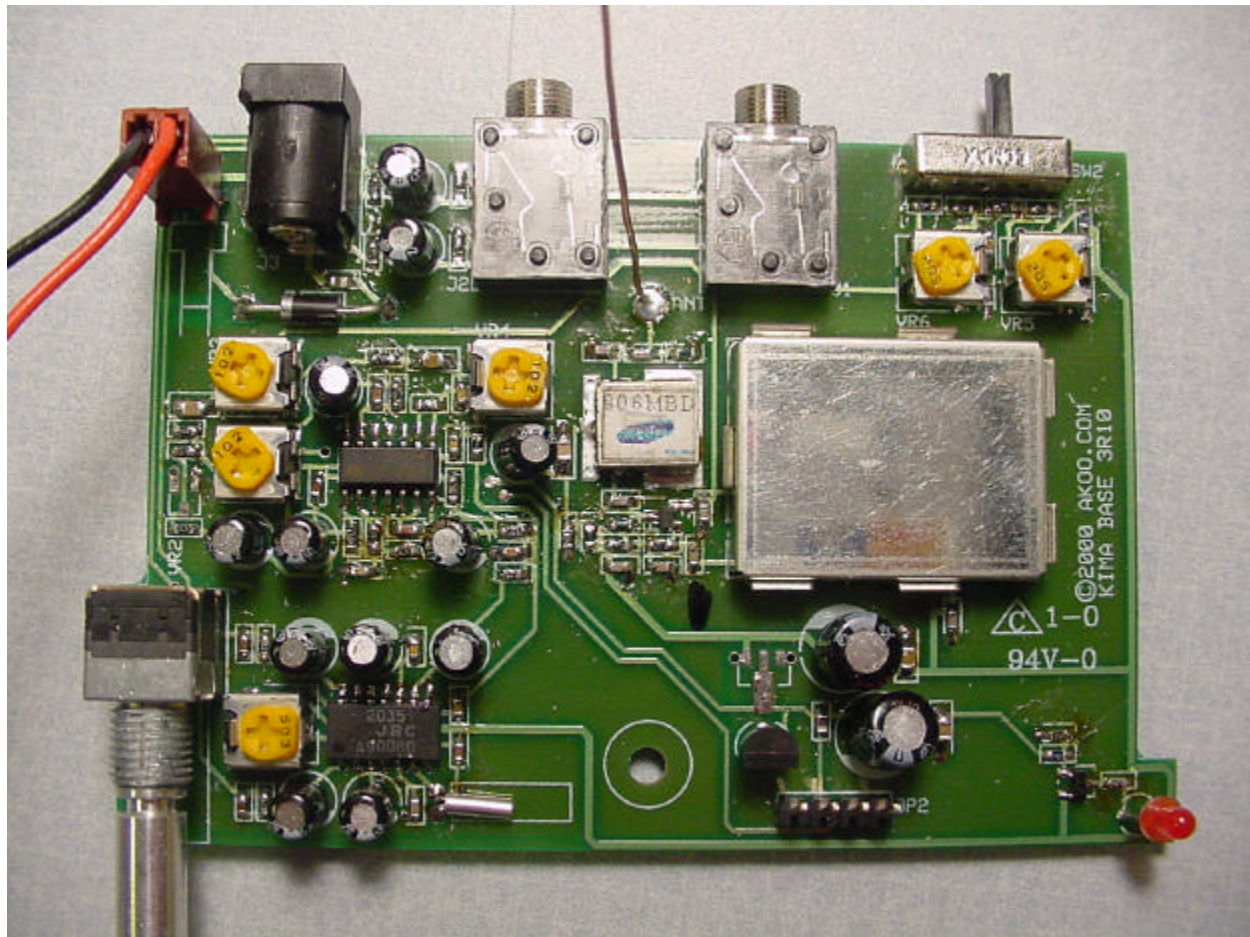
Exterior Product Photographs (Front)



TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

## PHOTOGRAPHS

Interior Circuit Board Photographs (Top)



TEST NUMBER - 268-00  
Akoo.com  
Kima - 900 MHz base unit

## PHOTOGRAPHS

Interior Circuit Board Photographs (Bottom)

