

## Appendix II

### Test Report Cover Sheet

COMPANY NUMBER: 3506A

MODEL NUMBER: APS 1000

MANUFACTURER: Sensormatic Electronics Corporation

TESTED TO RADIO STANDARD SPECIFICATION NO. : RSS 210

OPEN AREA TEST SITE INDUSTRY CANADA NUMBER: 3506

FREQUENCY RANGE (or fixed frequency): 58

R.F. POWER IN WATTS: na

FIELD STRENGTH (at what distance): 15.9 dBuV/m @300 m

OCCUPIED BANDWIDTH (99% BW): 4.2 kHz

TYPE OF MODULATION: Pulse

EMISSION DESIGNATOR (TRC-43): 4K20P0N

TRANSMITTER SPURIOUS (worst case): -5.8 dBuV

RECEIVER SPURIOUS (worst case): na; transmitter on continuously

**ATTESTATION:** I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above mentioned departmental standard(s), and that the radio equipment identified in this application has been subject to all the applicable test conditions specified in the departmental standards and all of the requirements of the standard have been met.

**Signature:**



Date: October 21, 2002

**NAME AND TITLE (Please print or Type):**

Donald J. Umbdenstock

Sr. Principal Engineer, Compliance Engineering

**Note:** This form must be completed and provided with the submission.

FCC ID: BVCAPS1000  
IC: 3506A – APS1000

|                          |   |
|--------------------------|---|
| <b>COMPANY</b>           | Sensormatic Electronics Corp.<br>6600 Congress Ave<br>Boca Raton, Florida |
| <b>PRODUCT TESTED</b>    | APS 1000<br>FCC ID: BVCAPS1000<br>IC: 3506A-APS1000                       |
| <b>FCC RULES</b>         | 15.207, 15.209  |
| <b>IC SPECIFICATIONS</b> | RSS 210   |
| <b>TEST DATE</b>         | October 9 – October 16, 2002  |
| <b>SUBMITTED BY</b>      | Donald J. Umbdenstock   |



## I. Summary of Results

|                |                     |          |
|----------------|---------------------|----------|
| 47 CFR 15.207  | CONDUCTED EMISSIONS | COMPLIES |
| 47 CFR 15.209  | RADIATED EMISSIONS  | COMPLIES |
| RSS 210: 5.9.1 | OCCUPIED BANDWIDTH  | PROVIDED |

## II. General Information

### 1.1 Test Methodology

Both conducted and radiated emissions testing were performed according to the procedures in ANSI C63.4-1992, and the requirements of 15.31, 15.33, 15.35, 15.207, and 15.209. Radiated emissions measurements below 30 MHz were performed at a distance of 10 meters and the results extrapolated to the distance specified per 15.31 and 15.209. The auxiliary device operating at 900 MHz complies with the requirements of 15.247 per the previous submission under FCC ID: BVCDEACSLNK.

### 1.2 Test Facility

Measurements per 15.207 and 15.209 were performed at Sensormatic Electronics Corporation.

The shielded room conducted emissions measurement facility and the radiated emissions Open Area Test Site are located at Sensormatic Electronics Corporation Headquarters at 6600 Congress Avenue, Boca Raton, Florida 33487. These sites have been found acceptable by and are on file with the FCC per FCC Registration Number 90925, and Industry Canada per file number IC 3506.

### 1.3 Test System Description.

The system consists of 2 pedestals, one called a primary and the other called a secondary. The primary pedestal houses loop antennas and electronics for transmit, receive, alarm and data processing electronics. The secondary pedestal houses a loop antenna and tuning circuit only. The pedestal system operates at 58 kHz, detecting an acousto-magnet tag placed within the field generated by the pedestals.

In some applications, the system also includes a previously authorized auxiliary device identified as Sync Link (FCC ID: BVCDEACSLNK). The device provides a RF link to synchronize nearby 58 kHz devices. The Sync Link device is located inside of the primary pedestal below the pedestal's transmitter assembly and operates at 900 MHz, transmitting at a 5 mW level.

The product tested was a pre-production unit built to production drawings. The system was tested with the Sync Link installed.

15.203. The antenna is an internal integral antenna, therefore the antenna is compliant with the requirements of this clause.

## III. Conducted Emissions

15.207. Conducted emissions data are presented in Section VIII "Data", Part A, Conducted Emissions. The product demonstrated compliance with the requirements. The product was tested at 120 V, 60 Hz.

## IV. Radiated Emissions

15.209. Radiated emissions data for this product are presented in Section VIII "Data", Part B, Radiated Emissions. The product demonstrated compliance with the requirements. Radiated emissions measurements were performed at 10 meters. Propagation loss was determined by extrapolating the results to 300 meters as per 15.31(f)(2), using the 2 point roll-off extrapolation method.

Maximum radiation was determined by first assessing symmetry while applying incremental rotation of the product. The product exhibited quadrant symmetry. Measurements were taken at radials of 22.5° throughout one quadrant. The measurement antenna was rotated for maximum pickup about the vertical and horizontal axis of the measurement antenna at the radial of the EUT with the maximum emission. The maximum emission was determined to be with the measurement loop antenna in the vertical polarization, parallel to the plane of the transmit loop antenna.

The product was tested at input voltages to the transformer ranging from 102 – 138 V, 60. See Section VIII, Part B.

## **V. Occupied Bandwidth**

RSS 210:5.9.1. The 20 dB bandwidth measurements for this product are presented in Section VII “Data”, Part C, Occupied Bandwidth. A bandwidth requirement was not specified for 58 kHz products, so the default 20 dB bandwidth was measured. The HP 8591EM spectrum analyzer cannot measure a bandwidth over 1.8 kHz in quasi-peak detection mode, so the bandwidth was measured in peak detection mode, providing a worst case occupied bandwidth.

## **VI. RF Exposure Compliance Requirements**

The recommended installation location of the Sync Link transmitter is inside the pedestal below the Electronic Article Surveillance transmitter. Any persons walking by the pedestal to which the Sync Link is attached will be greater than 20 cm away. The power radiated by Synk Link is approximately 5 mW. Based on the low power and separation distance, the device complies with the RF exposure requirements.

## VII. LIST OF MEASURING EQUIPMENT

The equipment used for determining compliance of the Ultra Post system with the requirements of 15.207 and 15.209 is marked with an “X” in the first column of the table below.

|          | <u>Model</u>   | <u>Description</u>      | <u>Vendor</u>       | <u>Serial #</u> |
|----------|----------------|-------------------------|---------------------|-----------------|
| <b>X</b> | ALP -70        | Loop Antenna            | Electro Metrics     | 163             |
|          | 3110B          | Biconnical Antenna      | Electro Metrics     | 1017            |
|          | 3146           | Log Periodic Antenna    | EMCO                | 3909            |
|          | 3825/2         | Line Imp Stable Network | EMCO                | 1562            |
| <b>X</b> | 3816/2NM       | Line Imp Stable Network | EMCO                | 9703 1064       |
|          | 6060B          | Frequency Generator     | Giga-tronics        | 5850202         |
|          | FM2000         | Isotropic Field Monitor | Amplifier Research  | 15171           |
|          | FP2000         | Isotropic Field Probe   | Amplifier Research  | 15214           |
|          | 888            | Leveler                 | Amplifier Research  | 14998           |
|          | 75A220         | Low Band Amplifier      | Amplifier Research  | 15208           |
|          | 10W1000A       | High Band Amplifier     | Amplifier Research  | 15138           |
|          | PEFT Junior    | EFT Generator           | Haefely Trench      | 083 180-16      |
|          | PEFT Junior    | Capacitive Cable Clamp  | Haefely Trench      | 083-078-31      |
|          | NSG435         | ESD Simulator           | Schaffner           | 1197            |
|          | NSG431         | ESD Simulator           | Schaffner           | 1267            |
| <b>X</b> | HP8591EM       | EMC Analyzer            | Hewlett - Packard   | 3520A00190      |
|          |                | Power Source            | Pacific Instruments |                 |
|          | F-2031         | EM Injection Clamp      | Fischer Cust. Comm. | 30              |
|          | FCC-801-M3-16  | Coupling Decoupling Nwk | Fischer Cust. Comm. | 58              |
|          | FCC-801-M3-16  | Coupling Decoupling Nwk | Fischer Cust. Comm. | 59              |
|          | F-33-1         | RF Current Probe        | Fischer Cust. Comm. | 304             |
|          | EM 7600        | Transient Limiter       | Electro-Metrics     | 187             |
|          | Roberts Ant    | Tunable Dipole Set      | Compliance Design   | 003282          |
|          | Roberts Ant    | Tunable Dipole Set      | Compliance Design   | 003283          |
|          | HP8594E        | Spectrum Analyzer       | Hewlett Packard     | 3246A00300      |
| <b>X</b> | HP8447F Opt 64 | Dual Preamplifier       | Hewlett Packard     | 2805A03473      |

## VIII. Data

Part A contains conducted emissions data; Part B contains magnetic field radiated emissions data; Part C contains occupied bandwidth data.

### Part A

### Conducted Emissions

|                 |                                       |               |                    |
|-----------------|---------------------------------------|---------------|--------------------|
| Project Name    | Conducted Emissions FCC Class B Limit | Filename      |                    |
| EUT Name        | APS 1000                              | Serial Number |                    |
| Engineer        | Guillermo Padula                      | Phone Number  |                    |
| Date of Test    | 10/11/2002                            | Test Name     | Conducted Emission |
| Reg. Technician | Stephen Krizmanich                    | Reviewed By   | Don Umbdenstock    |

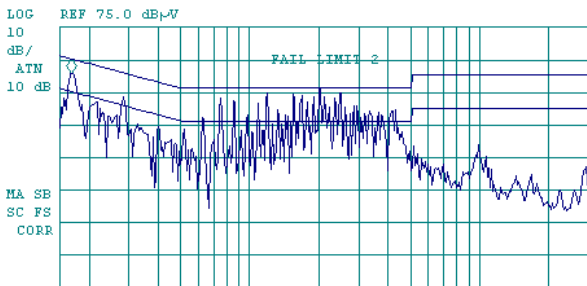
|          |                      |
|----------|----------------------|
| Comments | Line In: 120vac 60hz |
|----------|----------------------|

### Signal List

| Signal | Freq (MHz) | Peak Amp (dBuV) | QP Amp (dBuV) | Avg Amp (dBuV) | QP / Avg Limits (dBuV) | Comments |
|--------|------------|-----------------|---------------|----------------|------------------------|----------|
| 1      | .1745      | 60.5            | 55.6          | 31.7           | 64.7/54.7              | Complies |
| 2      | 2.02       | 55.5            | 52.3          | 25.1           | 56.0/46.0              | Complies |
| 3      | 1.21       | 54.0            | 52.0          | 29.0           | 56.0/46.0              | Complies |
| 4      | .290       | 54.4            | 51.6          | 28.4           | 61.0/51.0              | Complies |
| 5      | 1.67       | 54.0            | 51.6          | 26.7           | 56.0/46.0              | Complies |
| 6      | 2.48       | 54.3            | 50.7          | 20.7           | 56.0/46.0              | Complies |

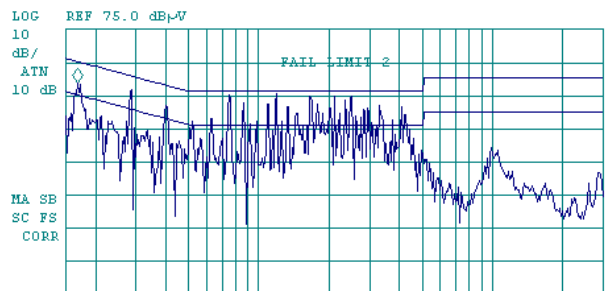
11:11:23 OCT 11, 2002  
 APS1000 FCC Class B Limit L1

ACTV DET: PEAK  
 MEAS DET: PEAK QP AVG  
 MKR 170 kHz  
 60.61 dBµV



11:15:10 OCT 11, 2002  
 APS1000 FCC Class B Limit L2

ACTV DET: PEAK  
 MEAS DET: PEAK QP AVG  
 MKR 170 kHz  
 58.64 dBµV





**Part B**

**Radiated Emissions**

|              |                    |               |                   |
|--------------|--------------------|---------------|-------------------|
| Project Name | Radiated Emissions | Filename      |                   |
| EUT Name     | APS 1000           | Serial Number | Prototype         |
| Engineer     | Guillermo Padula   | Phone Number  |                   |
| Date of Test | October 11, 2002   | Test Name     | Radiated Emission |
| Reg. Staff   | Steve Krizmanich   | Reviewer      | Don Umbdenstock   |

|          |   |
|----------|---|
| Comments | 1. Average detector specified; peak detector and associated calculations to arrive at average detector measurement used per previous FCC instructions.<br>2. 2 point extrapolation used.<br>3. Measurement distance 10 meters |
|----------|---|

| Freq<br>kHz | S.A.<br>dBuV | Det | BW   | Ant<br>Fact<br>dB | ACF   | DCF<br>dB | Actual<br>dBuV/m | Limit<br>dBuV/m |
|-------------|--------------|-----|------|-------------------|-------|-----------|------------------|-----------------|
| 58/10       | 59.4         |     |      |                   |       |           |                  |                 |
| 58/20       | 41.3         |     |      |                   |       |           |                  |                 |
| 58(pwr-15%) | 57.2         |     |      |                   |       |           |                  |                 |
| 58(pwr+15%) | 61.5         |     |      |                   |       |           |                  |                 |
| 58          | 59.4         | pk  | 9kHz | 62.5              | -17.4 | -88.6     | 15.9             | 32.3/300        |
| 116         | 28           | pk  | 9kHz | 56.6              | -17.4 | -88.6     | -21.4            | 26.3/300        |
| 174         | 27.2         | pk  | 9kHz | 53.1              | -17.4 | -88.6     | -25.7            | 22.8/300        |
| 232         | 17.7         | pk  | 9kHz | 50.6              | -17.4 | -88.6     | -37.7            | 20.3/300        |
| 290         | 16.5         | pk  | 9kHz | 48.7              | -17.4 | -88.6     | -40.8            | 18.4/300        |
| 348         | 9.6          | pk  | 9kHz | 47.1              | -17.4 | -88.6     | -49.3            | 16.8/300        |
| 406         | 10.3         | pk  | 9kHz | 45.7              | -17.4 | -88.6     | -50.0            | 15.4/300        |
| 464         | 0.2          | pk  | 9kHz | 44.6              | -17.4 | -88.6     | -61.2            | 14.3/300        |
| 522         | -3.9         | qp  | 9kHz | 43.5              | -17.4 | -28.6     | -6.4             | 33.3/30         |
| 580*        | 6.4          | qp  | 9kHz | 42.6              | -17.4 | -28.6     | 3.0              | 32.3/30         |

\*: Ambient

**SA:** Spectrum Analyzer

**Det:** Detector

**BW:** Band Width

**ACF:** Average Correction Factor; duty cycle converted to dB.

$$ACF = 20 \cdot \log(1.6/22.2) = -17.4 \text{ dB}$$

Where 1.6 is the tx "on" time, 22.2 is the worst case period.

**DCF:** Distance Correction Factor

$$DCF = 20 \log(\text{Test Dist} / 300)P = 20 P \log(\text{Test Dist} / 300)$$

Where P is the roll-off exponent. P is found as follows:

$$P = (\text{Level}(\text{at Distance 1}) - \text{Level}(\text{at Distance 2})) / 20 \log(\text{Distance 2} / \text{Distance 1})$$

$$P = 3$$

**Ant Fact:** Antenna Factor

**Actual:** Level = SA + Ant Fact + ACF + DCF. Cable factors are negligible at these frequencies.

**Limit:** 20 log (limit values, uV)

**Part C**

**Occupied Bandwidth**

|              |                                       |               |                       |
|--------------|---------------------------------------|---------------|-----------------------|
| Project Name | BandWidth Measurement Industry Canada | Filename      |                       |
| EUT Name     | APS 1000                              | Serial Number |                       |
| Engineer     | Guillermo Padula                      | Phone Number  |                       |
| Date of Test | October 16, 2002                      | Test Name     | BandWidth Measurement |
| Reg. Staff   | Steve Krizmanich                      | Reviewer      | Don Umbdenstock       |

|          |                         |
|----------|-------------------------|
| Comments | Line Input: 120VAC 60Hz |
|----------|-------------------------|

| Test conditions       |                        | Modulation Bandwidth (kHz) |              |                   |
|-----------------------|------------------------|----------------------------|--------------|-------------------|
|                       |                        | Low Cut-Off Freq           | Nominal Freq | High Cut-Off Freq |
|                       |                        | -20 dB                     | 58 kHz       | +20 dB            |
| T <sub>nom</sub> 25°C | V <sub>nom</sub> 120 V | 55.8 kHz                   | 57.85 kHz    | 60 kHz            |
|                       |                        |                            |              |                   |

Bandwidth set to 100 Hz  
 Transmitter set to power level reported on previous page.

```

14:09:45 OCT 14, 2002
APS1000 Modulation BandWidth 120vac
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 55.75 kHz
87.46 dBµV
  
```

