

**ELECTROMAGNETIC INTERFERENCE TEST REPORT**

**Doc. 20050805R01/Project No. 1212**

**TEST STANDARDS: 47 CFR PART 15,**

**CP9- 2**

**FCC ID: D04CP9-2**

**CHECKPOINT SYSTEMS, INC.**

**THOROFARE, NJ 08086**

**TEST DATES: July 20<sup>th</sup> & 21<sup>st</sup>, 2005**

**ISSUE: August 16<sup>th</sup>, 2005**

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**AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION**

Certificate No: 1028.01

**ERRATA SHEET**

This document is revision 1 to document 20050805R and is marked as “PCTC Doc. No. 20050805R01”, dated 16 August 2005. This revision is issued to make the following corrections and clarifications:

| <b>Page</b> | <b>Change</b>                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------|
| 8           | Added duty cycle calculation                                                                                 |
| 9           | Corrected typographical error in paragraph 6 from “50 kHz” to “300 kHz.”                                     |
| 10          | Added Peak detector RBW and “Measurement Result – Average” table to show compliance to 15.223 average limit. |

## **PREFACE**

This report documents product testing conducted to verify compliance of the specified EUT with applicable standards and requirements as identified herein. EUT, test instrument configurations, test procedures and recorded data are generally described in this report. The reader is referred to the applicable test standards for detailed procedures. The following table summarizes the test results obtained during this evaluation.

## **SUMMARY**

The CP9- 2 was tested to the standards listed below, and found to have the following characteristics:

### **Emission Tests**

|                                                      | FCC         | Frequency Range   | RESULT                       |
|------------------------------------------------------|-------------|-------------------|------------------------------|
| Radiated Emissions Intentional Radiator, Fundamental | Part 15.223 | 1.705 to 10 MHz   | Below Max. Permissible Limit |
| Radiated Emissions Intentional Radiator, Harmonics   | Part 15.209 | 10 MHz to 1 GHz   | Below Max. Permissible Limit |
| Conducted Emissions Intentional Radiators            | Part 15.209 | 450 kHz to 30 MHz | Below Max. Permissible Limit |

### **EUT Modifications:**

Fair Rite p/n 0444164281 was added to the controller end of the antenna cable to suppress a radiated emission signal at 160.021 MHz.

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**1.0 Description of the Equipment Under Test (EUT)**

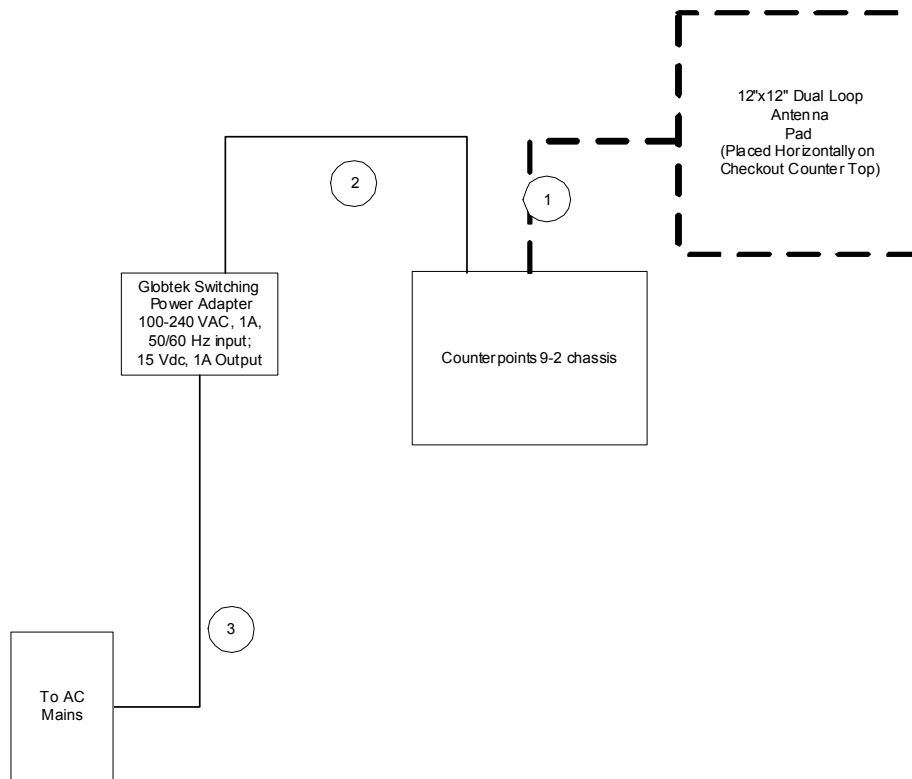
|                          |                                                         |
|--------------------------|---------------------------------------------------------|
| Equipment Identification | CP9-2                                                   |
| Serial Number            | None                                                    |
| Manufacturer             | Checkpoint Systems, Inc.                                |
| Technical Contact        | Greg Sleet, Bayode Olabisi                              |
| Condition Received       | Acceptable for Test                                     |
| Date Received            | 7/20/05                                                 |
| Sample Type              | Prototype                                               |
| Equipment Classification | Non-residential, Information Technology Equipment (ITE) |
| Unisys Test Personnel    | Paul Banker, Itamar Gonen                               |

**1.1 General Description**

The CP9-2 is one of Checkpoint's retail loss prevention products that utilize low power, narrow pulsing electromagnetic field to detect 2.0 MHz +/- 5% hard tags attached to merchandise in a Point of Sale environment. 2.0 MHz Hard tags that are within up to 15" of the antenna pad are detected, and tag detection results in an alarm event. The Globtek GT-21089 worldwide switching power supply provides 15 Vdc to power the CP9-2 chassis.

**1.2 Test Configurations**

The CP9-2 is to be tested as follows: the CP9-2 chassis, 12"x12" antenna pad, and Globtek power supply are mounted horizontally on a wooden test table/countertop. The VPA setting, which can increase/decrease the radiated and conducted field strength measurements, is fixed at 15 Vdc, and cannot be adjusted.



### Cable List

1. 8', 3-conductor #16 Antenna Pad Cable (black, white, drain), shielded
2. 6' 2-conductor Low Voltage DC Cable, unshielded
3. 6', IEC 320 Cordset, unshielded

### **EMI Test Setup Block Diagram of CP9- 2**

#### **EUT Hardware:**

| Description          | Manufacturer | Model#            | Serial#        |
|----------------------|--------------|-------------------|----------------|
| Counterpoint 9-2:    | Checkpoint   | CP 9-2            | Pre-production |
| Power Supply         | Globtek      | GT-21089-1515-T3  | N/A            |
| 12"x 12" Antenna Pad | Checkpoint   | CP9-2 Antenna Pad | N/A            |

### **1.3 Rationale for the Chosen Configuration**

The EUT configuration represent condition that will emit the maximum levels of RF energy – fixed VPA setting, typical installed I/O options, and power supply in its typical end installation.

## **1.4 EUT Modifications**

Fair Rite p/n 0444164281 was added to the controller end of the antenna cable to suppress a radiated emission signal at 160.021 MHz.



## **2.0 Operation of the EUT During Testing**

### **2.1 General**

#### **Climatic Environment**

The following were the ambient conditions in the laboratory during testing:

Temperature:  $22^{\circ}\text{C} \pm 5^{\circ}\text{C}$       Relative Humidity  $50\% \pm 10\% \text{ RH}$

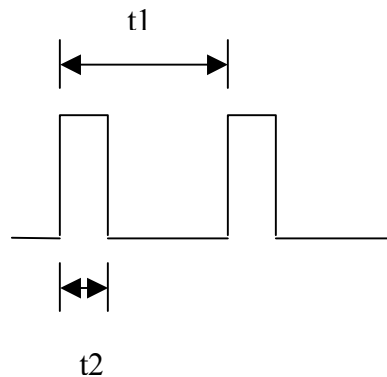
#### **Selection of AC Power Voltage/Frequencies**

The radiated and conducted emissions tests were performed with the EUT operating at 120 Vac / 60Hz.

### **2.2 Operating Mode**

The CP9-2 was tested with the 12"x12" antenna pad horizontally positioned on the test table. The Green power LED on the rear of the chassis stays ON at all times, and red LED comes on upon a tag detection/alarm event. A 2.0 MHz hard tag placed within a height of up to 15" of the antenna pad triggers an alarm event. A test tag is placed in the field of the antenna pad to observe any changes in the measured field strength.

Since the natural resonant frequency varies slightly from label to label, the RF transmission pattern must be a form of frequency hopping. The CP9-2 electronics will transmit (and receive) a slightly different frequency for each RF "blast". The array, on the following page, contains the discrete frequencies, in Hertz, generated by the CP9-2.



### 164 Hz Mode of Operation (Average Frequency)

Frequencies with in the 2MHz Band have the following timing characteristics:

- t1 transmission period: 6.09 msec
- t2 transmission On Time: 50µsec
- One frame constitutes 64 transmission bursts.
- Frames are repeated continuously.

Duty Cycle = 50 usec/6.09msec = .00821 or .821%

| Frequency Table (1.9 – 2.1 MHz) |         |         |         |         |         |         |         |
|---------------------------------|---------|---------|---------|---------|---------|---------|---------|
| 2099609                         | 2093506 | 2086792 | 2080078 | 2073975 | 2067261 | 2061157 | 2054443 |
| 2048340                         | 2041626 | 2034912 | 2028809 | 2022095 | 2015991 | 2009277 | 2003174 |
| 1996460                         | 1989746 | 1983643 | 1976929 | 1970825 | 1964111 | 1958008 | 1951294 |
| 1944580                         | 1938477 | 1931763 | 1925659 | 1918945 | 1912842 | 1906128 | 1899414 |
| 1903076                         | 1909180 | 1915283 | 1921387 | 1928101 | 1934204 | 1940308 | 1946411 |
| 1953125                         | 1959229 | 1965332 | 1971436 | 1977539 | 1984253 | 1990356 | 1996460 |
| 2002563                         | 2009277 | 2015381 | 2021484 | 2027588 | 2034302 | 2040405 | 2046509 |
| 2052612                         | 2058716 | 2065430 | 2071533 | 2077637 | 2083740 | 2090454 | 2096558 |

## 2.3 Rationale for the Chosen Mode of Operation

The chosen operating mode fully exercises and duplicates all normal activity that may be expected in the unit's end installation.

## 3.0 Applicable Requirements, Methods and Procedures

The results of the measurement of the radio disturbance characteristics of the EUT described herein may be applied, and where appropriate provide a presumption of compliance to one or more of the following requirements or to other requirement at the discretion of the client, regulatory agencies, or other entities.



47 CFR, Part 15, Subpart B, "Unintentional Radiators, General Rules and Regulations"

### **Basic Test Methods and Procedures**

The applicable regulatory product family or generic standards require that radio disturbance/interference and immunity tests be performed in accordance with the following:

ANSI C63.4, 2003 "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz".

CISPR 22: 1993, A1/1995, A2/1996 "Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment."

### **Deviations or Exclusions from the Requirements and Standards**

In agreement with FCC, for measurement of the fundamental and harmonic emissions in the band 1.705 MHz to 10 MHz, a 20 dB reduction from the true peak is to be compared to the limits of 100  $\mu$ V/meter (40 dB $\mu$ V/meter) at 30 meters. The EUT is to be modulated as normally installed. True peak is the point at which the analyzer bandwidth is adjusted for minimum pulse desensitization. A copy of the correspondence between Checkpoint and FCC is attached in Appendix B for reference.

Measurement of the fundamental, 1.9 to 2.1 MHz, was performed by setting a spectrum analyzer to "max-hold", peak detector, a 300 kHz bandwidth, and a span from 1.75 to 2.25 MHz. Increasing the resolution bandwidth above 300 kHz did not increase fundamental signal level.

## **4.0 Test Results**

### **4.1 Radiated Emissions**

|                                      |                                                                                                             |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Test Standard:</b>                | USA: 47 CFR Parts 15 B                                                                                      |
| <b>Frequency Range:</b>              | 9 kHz to 1000 MHz                                                                                           |
| <b>Test Distances:</b>               | 3 and 30 Meters                                                                                             |
| <b>Antenna Polarity and Height:</b>  | 1.705 MHz – 30 MHz: Three orthogonal axes @ 1 meter<br>30MHz-1 GHz: Vertical and Horizontal @ 1 to 4 Meters |
| <b>AC Power:</b>                     | 120 Vac, 60 Hz                                                                                              |
| <b>EUT Type:</b>                     | Table Top                                                                                                   |
| <b>Highest Oscillator Frequency:</b> | 40 MHz                                                                                                      |
| <b>Measurement Uncertainty:</b>      | 5.0 dB (CISPR 16-4: 2002)                                                                                   |
| <b>Field Strength Calculations:</b>  | Field Strength (dB $\mu$ V/m) = meter reading (dB $\mu$ V) + antenna factor (dB/m)+ Cable Loss (dB)         |

#### 4.1.1 Radiated Emissions Test Results (7/20/05)

##### Radiated Emissions 9 kHz – 30 MHz (FCC 15.209, 15.223)

Measurement Distance is 30 meters. Vert | is antenna perpendicular, Vert = is antenna parallel

| Freq. (MHz) | Description | Polarity | Azimuth | Corrected Peak Level | Cable Loss (dB) | Corrected Level (dBμV/m) | Limit (30 meters) | Δ      |
|-------------|-------------|----------|---------|----------------------|-----------------|--------------------------|-------------------|--------|
| 1.9         | Fundamental | Vert     | 360     | 52.31                | 0.50            | 52.81                    | 60.00             | -7.19  |
| 1.9         | Fundamental | Vert =   | 360     | 53.11                | 0.50            | 53.61                    | 60.00             | -6.39  |
| 1.9         | Fundamental | Horiz    | 360     | 51.32                | 0.50            | 51.82                    | 60.00             | -8.18  |
| 2           | Fundamental | Vert     | 360     | 55.55                | 0.50            | 56.05                    | 60.00             | -3.95  |
| 2           | Fundamental | Vert =   | 360     | 55.92                | 0.50            | 56.42                    | 60.00             | -3.58  |
| 2           | Fundamental | Horiz    | 360     | 53.92                | 0.50            | 54.42                    | 60.00             | -5.58  |
| 2.1         | Fundamental | Vert     | 360     | 51.31                | 0.50            | 51.81                    | 60.00             | -8.19  |
| 2.1         | Fundamental | Vert =   | 360     | 51.59                | 0.50            | 52.09                    | 60.00             | -7.91  |
| 2.1         | Fundamental | Horiz    | 360     | 48.25                | 0.50            | 48.75                    | 60.00             | -11.25 |

The true peak signal level of the fundamental was measured using a peak detector. True Peak was determined by increasing the receiver bandwidth until a point where the peak excursion stopped increasing. (300 kHz RBW)

The levels of the 2<sup>nd</sup> through 4<sup>th</sup> harmonics of the fundamental were not detected at 30 meters. No other signals associated with the EUT were detected between 9 kHz and 30 MHz.

#### • MEASUREMENT RESULT - AVERAGE

As indicated in section 2.2, the CP9-2 transmitter operates with a duty cycle of 0.821%. This would result in the following calculations for conversion from peak to average and a subsequent comparison of the fundamental with the average limit. (Guidance for this calculation was taken from HP Application Note 150-2 Spectrum Analysis – Pulsed RF).

**Table 1 – Calculated Average vs. Average Limit**

|                                                               |                   |
|---------------------------------------------------------------|-------------------|
|                                                               | 2 MHz Fundamental |
| Corrected Maximum True Peak:                                  | 56.42 dBμV/m      |
| Pulse Duty Cycle:                                             | .0821%            |
| Correction to Average:<br>20 * Log <sub>10</sub> (Duty Cycle) | -41.7dB           |
| Average Level:<br>(True Peak + Average Correction)            | 14.7 dBμV/m       |
| Limit:                                                        | 40 dBμV/m         |
| Margin with Limit:                                            | -25.3 dB          |

**Spurious Emissions: 30 MHz - 1000 MHz (FCC 15.209)**

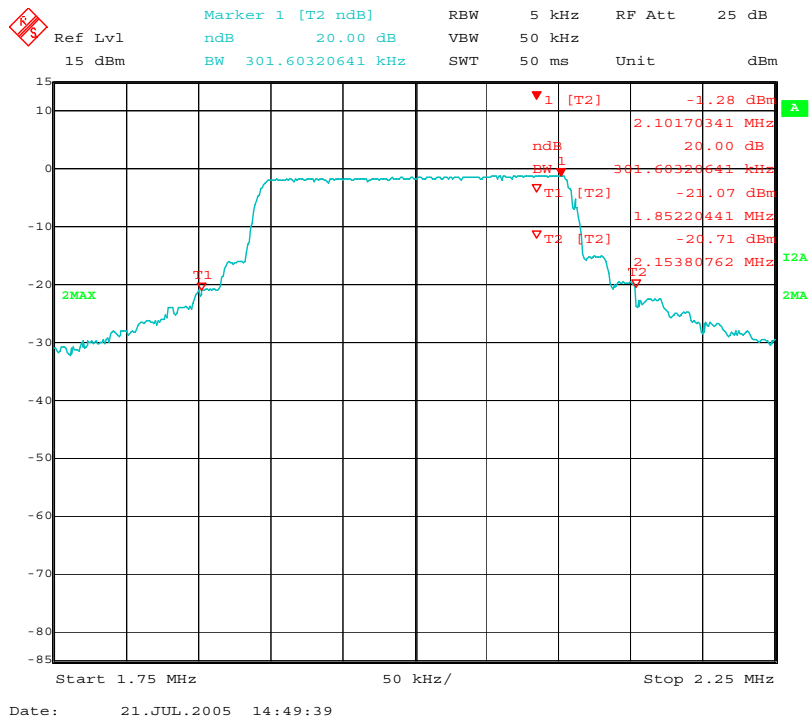
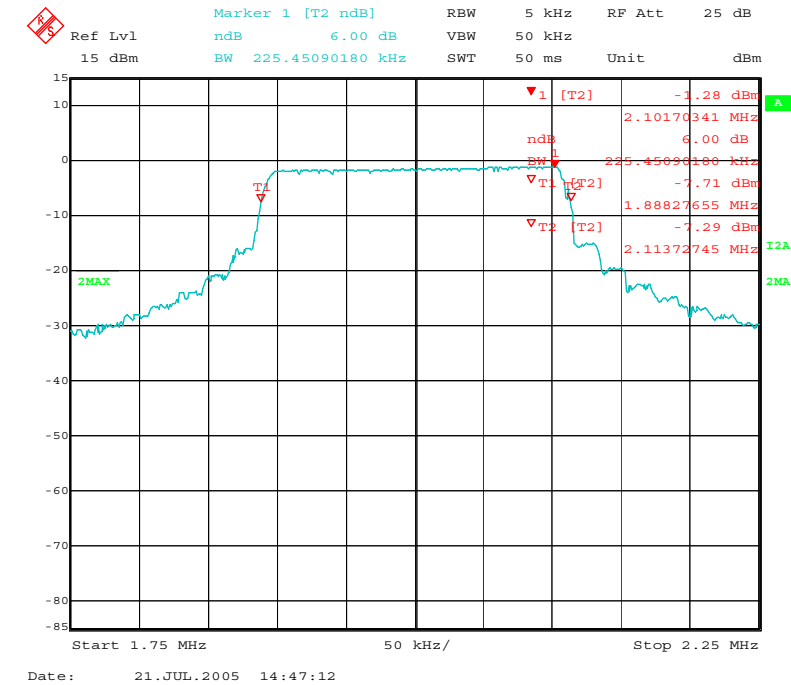
The tables below show the highest amplitude quasi-peak detected field strengths of spurious emissions measured from the EUT over the frequency range from 30 MHz to 1000 MHz, at a distance of 3 meters compared to the maximum permissible 47 CFR Part 15C limit at 3 meters.

| Freq<br>[MHz] | Pk<br>[dBmV/m] | Q-Pk<br>[dBmV/m] | Pol | Angle<br>[deg] | Ht<br>[cm] | CF<br>[dB] | Limit<br>[dBmV/m] | Delta<br>[dB] |
|---------------|----------------|------------------|-----|----------------|------------|------------|-------------------|---------------|
| 160.021       | 57.11          | 41.4             | V   | 275            | 100        | 11.9       | 43.5              | -2.1          |
| 160.021       | 41.05          | 38.26            | H   | 292            | 111        | 11.9       | 43.5              | -5.24         |
| 180.038       | 31.63          | 21.52            | V   | 206            | 100        | 11.45      | 43.5              | -21.98        |
| 180.038       | 29.43          | 20.75            | H   | 83             | 141        | 11.45      | 43.5              | -22.75        |
| 260.047       | 33.67          | 30.92            | V   | 112            | 119        | 15.09      | 46                | -15.08        |
| 320.068       | 36.1           | 34.38            | V   | 288            | 153        | 16.65      | 46                | -11.62        |
| 340.074       | 36.23          | 34.69            | V   | 83             | 100        | 17.17      | 46                | -11.31        |
| 380.081       | 34.07          | 31.84            | V   | 319            | 123        | 18.34      | 46                | -14.16        |
| 380.081       | 37.52          | 35.52            | H   | 125            | 100        | 18.34      | 46                | -10.48        |
| 460.09        | 40.45          | 39.3             | V   | 241            | 100        | 19.93      | 46                | -6.7          |
| 460.09        | 40.08          | 38.71            | H   | 199            | 158        | 19.93      | 46                | -7.29         |
| 500.099       | 42.39          | 40.6             | V   | 269            | 100        | 20.61      | 46                | -5.4          |
| 500.099       | 42.01          | 37.81            | H   | 217            | 177        | 20.61      | 46                | -8.19         |
| 540.103       | 42.31          | 40.11            | V   | 146            | 100        | 21.58      | 46                | -5.89         |
| 540.103       | 45.56          | 41.65            | H   | 289            | 136        | 21.58      | 46                | -4.35         |

**Overall Results:** All radiated emissions are recorded at a various distances from the CP9- 2 are below the specified limits. There were no other emissions detected from the EUT.

## 4.1.2 Occupied Bandwidth (7/20/05)

The 6-dB and 20-dB bandwidth plots are shown below is for the CP9-2.



**Test Setup Photos**



Radiated Emissions Test Setup – Rear View



Radiated Emissions Test Setup – Front View

**4.2 Conducted Emissions**

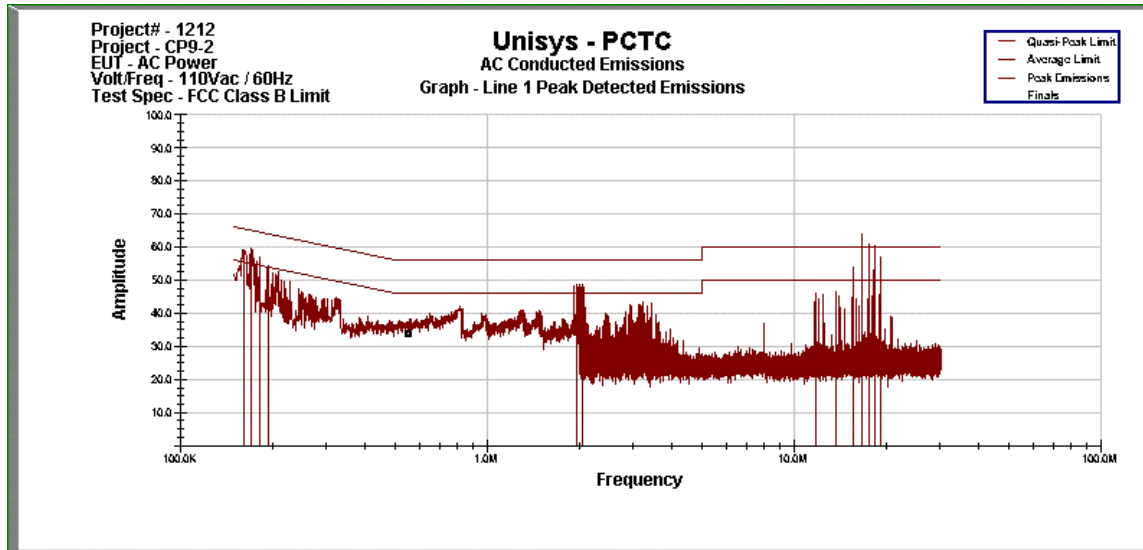
|                                        |                                                                                        |
|----------------------------------------|----------------------------------------------------------------------------------------|
| <b>Test Standard:</b>                  | USA: CISPR 22 Class B                                                                  |
| <b>Frequency Range:</b>                | 150kHz to 30 MHz                                                                       |
| <b>AC Power:</b>                       | 120 Vac, 60 Hz                                                                         |
| <b>EUT Type:</b>                       | Table Top                                                                              |
| <b>Highest Oscillator Frequency:</b>   | 40 MHz                                                                                 |
| <b>Measurement Uncertainty:</b>        | 5.0 dB (CISPR 16-4: 2002)                                                              |
| <b>Conducted Emission Calculation:</b> | Peak Emission (dBuV Peak) = Meter reading (dBuV) + cable loss (dB) + Limiter loss (dB) |

**4.2.1 Conducted Emission Test Results (7/21/05)**

The conducted emissions recorded on the EUT AC power cord (s), displayed against the limits for CISPR 22, Class A devices are presented on the following pages. Conducted emission amplitudes (dBuV PK) measured with a peak detector are compared with CISPR 22, Class A average limit and displayed on the graph. Where the measured peak detector emission exceeded the average limit, or found to be within 1 dB of average limit, re-measurement using quasi-peak and average detector functions was made. The re-measured emissions are presented in a table below the appropriate table of peak detector emissions, which displays quasi-peak measurements vs. the quasi-peak limit and the average measurements vs. the average limit.

### Conducted Emission Test Results (FCC 15.207)

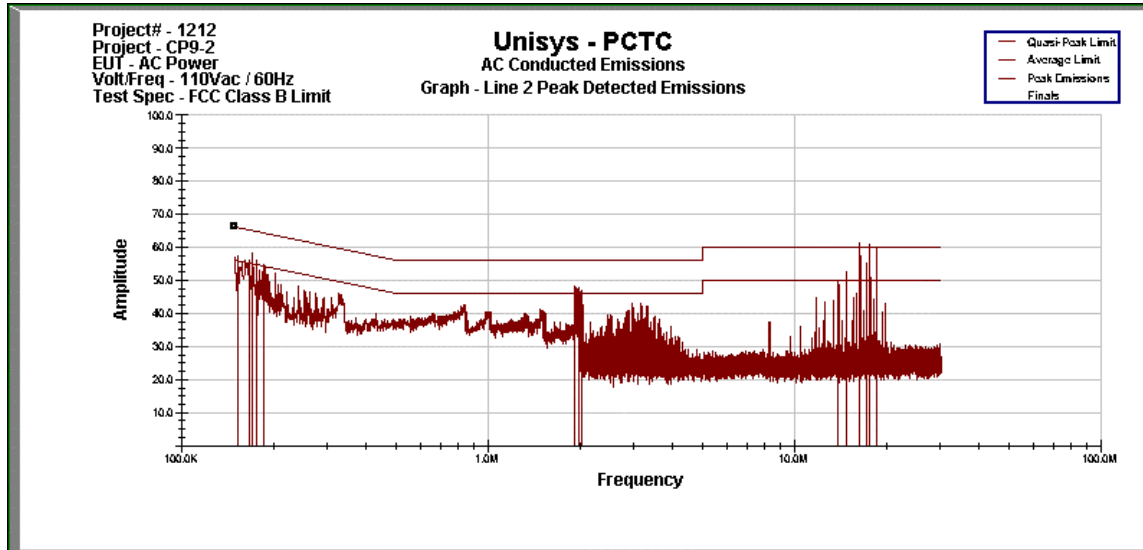
CP9-2, with Globtek GT-21089-1515-T3 power supply, 120Vac/60 Hz, Neutral Line



Unisys - PCTC  
 Line 1 Conducted Emissions  
 12:56:20 PM, Thursday, July 21, 2005

|                               | 1     | 2     | 3      | 4     | 5     | 6      | 7      |
|-------------------------------|-------|-------|--------|-------|-------|--------|--------|
| Frequency                     | AVG   | AVG   | AVG    | QP    | QP    | QP     | Corr   |
| MHz                           | dBuV  | Limit | Margin | dBuV  | Limit | Margin | Factor |
| 161.000 KHz                   | 36.73 | 55.69 | -18.96 | 49.62 | 65.69 | -16.06 | 13.105 |
| 170.000 KHz                   | 40.26 | 55.43 | -15.16 | 51.14 | 65.43 | -14.29 | 12.758 |
| 181.000 KHz                   | 30.07 | 55.11 | -25.04 | 44.08 | 65.11 | -21.04 | 12.333 |
| 193.000 KHz                   | 25.66 | 54.77 | -29.11 | 39.88 | 64.77 | -24.89 | 11.870 |
| 1.958 MHz                     | 17.52 | 46.00 | -28.48 | 33.03 | 56.00 | -22.97 | 10.113 |
| 2.048 MHz                     | 19.21 | 46.00 | -26.79 | 34.72 | 56.00 | -21.28 | 10.110 |
| 11.724 MHz                    | 17.23 | 50.00 | -32.77 | 25.61 | 60.00 | -34.39 | 10.294 |
| 13.740 MHz                    | 17.18 | 50.00 | -32.82 | 24.60 | 60.00 | -35.40 | 10.335 |
| 15.511 MHz                    | 17.05 | 50.00 | -32.95 | 33.51 | 60.00 | -26.49 | 10.380 |
| 16.691 MHz                    | 18.09 | 50.00 | -31.91 | 36.94 | 60.00 | -23.06 | 10.428 |
| 17.523 MHz                    | 18.89 | 50.00 | -31.11 | 35.32 | 60.00 | -24.68 | 10.461 |
| 18.370 MHz                    | 18.98 | 50.00 | -31.02 | 35.91 | 60.00 | -24.09 | 10.495 |
| 19.154 MHz                    | 17.91 | 50.00 | -32.09 | 29.61 | 60.00 | -30.39 | 10.526 |
|                               |       |       |        |       |       |        |        |
|                               |       |       |        |       |       |        |        |
|                               |       |       |        |       |       |        |        |
| Project# - 1212               |       |       |        |       |       |        |        |
| Project - CP9-2               |       |       |        |       |       |        |        |
| EUT - AC Power                |       |       |        |       |       |        |        |
| Volt/Freq - 110Vac / 60Hz     |       |       |        |       |       |        |        |
| Test Spec - FCC Class B Limit |       |       |        |       |       |        |        |

**CP9-2, with Globtek GT-21089-1515-T3 power supply, 120Vac/60 Hz, Phase Line**



**Unisys - PCTC**  
**Line 2 Conducted Emissions**  
**12:51:19 PM, Thursday, July 21, 2005**

|                               | 1      | 2      | 3       | 4      | 5      | 6       | 7      |
|-------------------------------|--------|--------|---------|--------|--------|---------|--------|
| Frequency                     | AVG    | AVG    | AVG     | QP     | QP     | QP      | Corr   |
| MHz                           | dBuV   | Limit  | Margin  | dBuV   | Limit  | Margin  | Factor |
| 152.000 KHz                   | 28.842 | 55.943 | -27.101 | 45.915 | 65.943 | -20.027 | 13.453 |
| 166.000 KHz                   | 38.981 | 55.543 | -16.562 | 51.292 | 65.543 | -14.251 | 12.912 |
| 171.000 KHz                   | 36.486 | 55.400 | -18.914 | 49.108 | 65.400 | -16.292 | 12.719 |
| 176.000 KHz                   | 30.165 | 55.257 | -25.092 | 47.091 | 65.257 | -18.166 | 12.526 |
| 185.000 KHz                   | 26.905 | 55.000 | -28.095 | 41.120 | 65.000 | -23.880 | 12.179 |
| 1.910 MHz                     | 16.677 | 46.000 | -29.323 | 32.933 | 56.000 | -23.067 | 10.117 |
| 1.974 MHz                     | 21.698 | 46.000 | -24.302 | 36.554 | 56.000 | -19.446 | 10.112 |
| 2.028 MHz                     | 20.442 | 46.000 | -25.558 | 35.293 | 56.000 | -20.707 | 10.110 |
| 13.800 MHz                    | 16.903 | 50.000 | -33.097 | 26.812 | 60.000 | -33.188 | 10.336 |
| 14.699 MHz                    | 17.009 | 50.000 | -32.991 | 27.458 | 60.000 | -32.542 | 10.354 |
| 16.218 MHz                    | 17.339 | 50.000 | -32.661 | 34.489 | 60.000 | -25.511 | 10.409 |
| 17.143 MHz                    | 18.504 | 50.000 | -31.496 | 33.366 | 60.000 | -26.634 | 10.446 |
| 17.621 MHz                    | 19.687 | 50.000 | -30.313 | 34.545 | 60.000 | -25.455 | 10.465 |
| 18.548 MHz                    | 19.108 | 50.000 | -30.892 | 33.213 | 60.000 | -26.787 | 10.502 |
|                               |        |        |         |        |        |         |        |
|                               |        |        |         |        |        |         |        |
|                               |        |        |         |        |        |         |        |
| Project# - 1212               |        |        |         |        |        |         |        |
| Project - CP9-2               |        |        |         |        |        |         |        |
| EUT - AC Power                |        |        |         |        |        |         |        |
| Volt/Freq - 110Vac / 60Hz     |        |        |         |        |        |         |        |
| Test Spec - FCC Class B Limit |        |        |         |        |        |         |        |



***Overall Results:*** The conducted emissions recorded from the CP9- 2 are below the specified limits.



Conducted Emission Test Setup

**Appendix A – Test Equipment List****Emission Test Equipment**

| <b>Description</b>              | <b>Freq Range (Hz)</b> | <b>Model Number</b> | <b>Manufacturer</b> | <b>ID / SN</b> | <b>Last Cal Date</b> |
|---------------------------------|------------------------|---------------------|---------------------|----------------|----------------------|
| EMI Test Receiver               | 20 – 40 G              | ESIB40              | Rohde & Schwarz     | C-062          | 12/7/04              |
| Antenna                         | 25 M – 2 G             | LPB-2520/A          | ARA                 | B965           | 9/27/04              |
| Antenna, Active Loop            | 1 k – 30 M             | 6507                | EMCO                | D-244          | 4/20/05              |
| Controller, Tower and Turntable | NA                     | 2090                | EMCO                | B812           | NA                   |
| EMI Test Receiver               | 20 – 26.5 G            | ESIB26              | Rohde & Schwarz     | C-232          | 3/18/05              |
| Filter, Bandpass                | 0.15 M – 30 M          | NA                  | Unisys              | NA             | NA                   |
| Limiter, Pulse                  | DC – 30 M              | ESH3-Z2             | Polarad             | NA             | NA                   |
| LISN                            | 9 k – 30 M             | 8012-50-R-24-BNC    | Chase               | U775           | 9/21/04              |

Appendix B – FCC Correspondence

MAR 13 '97 10:59 TO:012105223396  
JUL 29 '98 15:19 TO:018013443089

FROM:CHECKPOINT SYSTEMS INC  
FROM:CHECKPOINT SYSTEMS INC

T-085 P.02/02 F-071  
T-031 P.01/02 F-074



CHECKPOINT SYSTEMS, INC.  
FACSIMILE TRANSMISSION COVER

To: F.C.C. Lab

Date: 7/26/96

Attention: Mr. Ed Gibbons

Fax No.: (301) 344-3080

No. of Pages: 3  
(Incl. Cover)

From: Mr. Gregory E. Sleet  
CHECKPOINT SYSTEMS, INC.  
101 WOLF DRIVE, P.O. BOX 188  
THOROFARE, N.J. 08086

Telephone: (609) 344-3339 Direct  
Toll Free: (800) 257-6640 Ext. 2339  
Fax No.: (609) 384-2366

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Dear Mr. Gibbons:

Following up on our recent phone conversations, please confirm and if necessary correct our understanding of the points discussed below. Based on the details of our fax dated 7/3/96:

- ✓ • Our pulsed emissions will be treated as frequency hopping, where the bandwidth will be considered the spectrum contained between the lowest and highest carrier frequency we pulse.
- ✓ • A simple ratio of the maximum single restricted band infringed upon divided by the bandwidth of our fundamental emission must be less the 1% to satisfy section 15.205 of the rules.  
*in the band 1.785-10 mhz*
- • For fundamental and harmonic emissions ~~below 30 MHz~~, a 20 dB reduction from the true peak is to be compared to the limits of 100uV/meter and 30uW/meter ~~respectively~~ at 30 meters. The unit is modulated as normally installed. True peak refers to the point at which the analyzer bandwidth is adjusted for minimum pulse desensitization.
- • For ~~harmonics above 30 MHz~~ *emissions outside the 1.785-10 mhz band* CISPR, quasi-peak measurements will be made with the unit modulating as normally installed. Based on the bandwidth plot, care must be given to measure multiples of the worst case emission points. Limits are as specified in section 15.209.
- ✓ • Conducted emissions remain as specified in part 15 of the rules.

*Ed Gibbons*  
8/2/96