Communication Certification Laboratory

March 4, 2004

Mr. David Watanuki
Cosmos Corporation
319 Akeno, Obata-cho
Mie-ken, Japan

Dear David:

Communication Certification Laboratory (CCL) has completed Certification testing for the Heiwa Tokei CV01-H01. One set of documentation is enclosed for your files; the original copy has been electronically forwarded to the TCB for their review. Once this review is complete the TCB will issue the FCC grant.

Please let us know if we can be of further assistance in meeting your testing needs.

Sincerely yours,

COMMUNICATION CERTIFICATION LABORATORY

Joseph W. Jackson
V.P. Marketing

Enclosures
73-7939:nph

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1940 West Alexander Street Salt Lake City, Utah 84119-2039
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Exhibit 6

TEST REPORT FROM:

COMMUNICATION CERTIFICATION LABORATORY

TEST OF: CV01-H01

FCC ID: RT8H04A0

To FCC PART 15.203, 15.207, and 15.209, Subpart C

Test Report Serial No: 73-7939

Exhibit 6

TEST REPORT FROM:

COMMUNICATION CERTIFICATION LABORATORY
1940 W. Alexander Street
Salt Lake City, Utah
84119-2039

Type of Report: Certification

TEST OF: CV01-H01

FCC ID: RT8H04A0

To FCC PART 15.203, 15.207, and 15.209, Subpart C

Test Report Serial No: 73-7939

Applicant:

Heiwa Tokei Mfg. Co. Ltd
Electronic Equipment Division
7572 Myou, Matsuo
Iida-Shi, Nagano-Ken 395-8577
Japan

Dates of Test: February 24 & 25, 2004

Issue Date: March 2, 2004

Equipment Receipt Date: February 24, 2004

CERTIFICATION OF ENGINEERING REPORT

This report has been prepared by Communication Certification Laboratory to document compliance of the device described below with the requirements of Federal Communications Commission (FCC) Part 15.203, 15.207, and 15.209, Subpart C. This report may be reproduced in full, partial reproduction may only be made with the written consent of the laboratory. The results in this report apply only to the sample tested.

- Applicant: Heiwa Tokei Mfg. Co. Ltd
- Manufacturer: Heiwa Tokei Mfg. Co. Ltd
- Brand Name: Heiwa Tokei
- Model Number: CV01-H01
- FCC ID Number: RT8H04A0

On this 2nd day of March 2004, I, individually, and for Communication Certification Laboratory, certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge, and are made in good faith.

Although NVLAP has recognized that the Communication Certification Laboratory EMC testing facilities are in good standing, this report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

COMMUNICATION CERTIFICATION LABORATORY

Norman P Hansen

Tested by: Norman P. Hansen
EMC Technician

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SECTION 1.0 CLIENT INFORMATION

1.1 Applicant:

Company Name: Heiwa Tokei Mfg. Co. Ltd
Electronic Equipment Division
7572 Myou, Matsuo
Iida-Shi, Nagano-Ken 395-8577
Japan

Contact Name: Shuichi Sekigawa
Title: Manager

1.2 Manufacturer:

Company Name: Heiwa Tokei Mfg. Co. Ltd
Electronic Equipment Division
7572 Myou, Matsuo
Iida-Shi, Nagano-Ken 395-8577
Japan

Contact Name: Shuichi Sekigawa
Title: Manager

SECTION 2.0 EQUIPMENT UNDER TEST (EUT)

2.1 Identification of EUT:

Brand Name:	Heiwa Tokei
Model Name or Number:	CV01-H01
Serial Number:	PP-40100027
Options Fitted:	N/A
Country of Manufacture:	Japan

2.2 Description of EUT:

The CV01-H01 is a photograph printer that incorporates the use of an RFID reader/writer and associated RFID tag.

The RFID reader receives serial and control data from the printer circuitry. The CPU processes a modulation signal based on a 13.56MHz oscillator. The modulated signal is amplified, demodulated and matched into the appropriate impedance. Finally the signal is matched to the antenna and then it is radiated to RFID tag.

The RFID tag, which is a companion to RFID reader, requires no internal power supply. Its contactless interface generates the power supply and the system clock via the resonant circuitry by inductive coupling to the reader. The interface also demodulates data, which is transmitted from the reader to the label IC, and modulates the electromagnetic field for data transmission from the label IC to the reader. Data is stored in a non-volatile memory (EEPROM).

2.3 EUT and Support Equipment:

The FCC ID numbers for all the EUT and support equipment used during the test (including inserted cards) are listed below:

Brand Name Model Number Serial No.	FCC ID Number	Description	Name of Interface Ports / Interface Cables
BN: Heiwa Tokei MN: CV01-H01 (1) SN:PP-40100027	RT8H04A0	Photograph Printer	See Section 2.4
BN: Dell MN: Dimension 4100 SN: CTZD31S	DoC	Desktop Computer	USB/USB Cable Serial/Serial Mouse Cable
BN: Gateway MN: EV500 SN: 15017A444139	BEJCB575B	Monitor	Video/Attached Shielded Video Cable (4)
BN: Dell MN: SK-800 SN: None	DoC	Keyboard	PS/2 / Attached PS/2 Cable (3)
BN: Microsoft MN: Intellimouse 1.2A SN: None	DoC	PS/2 Mouse	PS/2 / Attached PS/2 Cable (3)
BN: Logitech MN: ClearCase SN: LT48127	DZL6QBC	Serial Mouse	Serial/Attached Serial Cable (3)

Note: (1) EUT.
(2) Interface port connected to EUT (See Section 2.4)
(3) Mouse and keyboard cable permanently attached.
(4) Monitor’s attached video cable includes manufacturer-supplied ferrite.

The support equipment listed above was not modified in order to

achieve compliance with this standard.

2.4 Interface Ports on EUT:

Name of Port	No. of Ports Fitted to EUT	Cable Descriptions/Length
USB	1	USB Cable/10 feet

2.5 Modification Incorporated/Special Accessories on EUT:

There were no modifications or special accessories required to comply with the specification.

Signature: Shuichi Sekigawa

Typed Name: Shuichi Sekigawa

Title: Manager

SECTION 3.0 TEST SPECIFICATION, METHODS & PROCEDURES

3.1 Test Specification:

Title: FCC PART 15, Subpart C (47 CFR 15)
15.203, 15.207, and 15.209

Limits and methods of measurement of radio interference characteristics of radio frequency devices.

Purpose of Test: The tests were performed to demonstrate initial compliance.

3.2 Methods & Procedures:

3.2.1 §15.203 Antenna Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

3.2.2 §15.207 Conducted Limits

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization

network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-peak	Average
0.15 – 0.5*	66 to 56*	56 to 46*
0.5 – 5	56	46
5 - 30	60	50

*Decreases with the logarithm of the frequency.

3.2.3 §15.209 Radiated Emission Limits, General Requirements

(a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency of emission (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F (kHz)	300
0.490 TO 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 80	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500**	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

(b) In the emission table above, the tighter limit applies at the band edges.

(c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other Sections within this Part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any

unwanted emissions shall not exceed the level of the fundamental frequency.

(d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

(e) The provisions in Sections 15.31, 15.33, and 15.35 for measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this Part.

(f) In accordance with Section 15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in Section 15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in Section 15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in Section 15.109 that are applicable to the incorporated digital device.

(g) Perimeter protection systems may operate in the 54-72 MHz and 76-88 MHz bands under the provisions of this section. The use of such perimeter protection systems is limited to industrial, business and commercial applications.

3.2.4 Test Procedure

The line conducted and radiated emissions testing was performed according to the procedures in ANSI C63.4 (2001). Testing was performed at CCL's Wanship open area test site #2, located at 550 West Wanship Road, Wanship, UT. This site has been fully described in a report submitted to the FCC, and was accepted in a letter dated August 11, 2003 (90504).

CCL participates in the National Voluntary Laboratory Accreditation Program (NVLAP) and has been accepted under NVLAP Lab Code:100272-0, which is effective until September 30, 2004.

For radiated emissions testing at 30 MHz or above that is performed at distances closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

SECTION 4.0 OPERATION OF EUT DURING TESTING

4.1 Operating Environment:

Power Supply: 120 VAC
AC Mains Frequency: 60 HZ

4.2 Operating Modes:

The CV01-H01 was active with repetitive communications between the RFID reader/writer and the RFID tag.

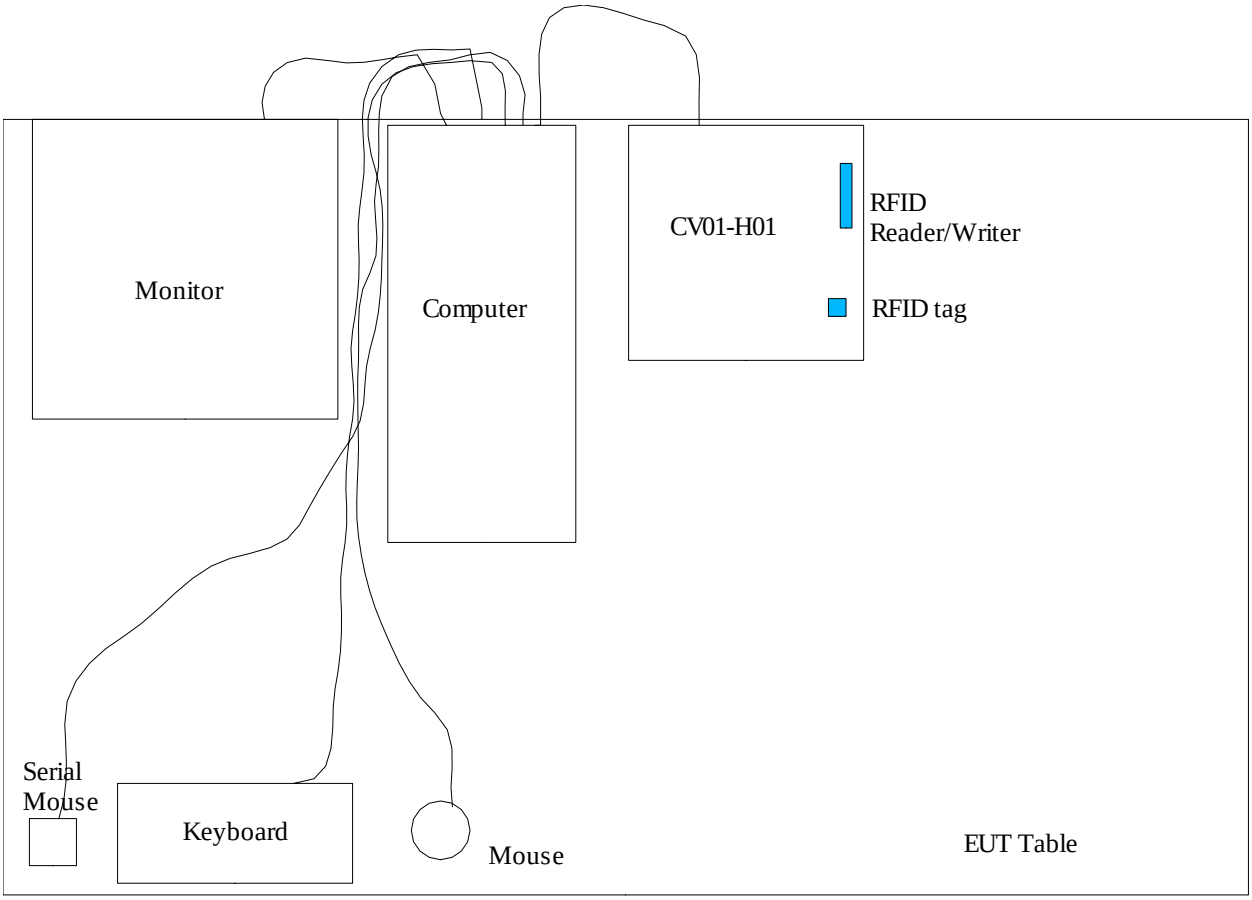
4.3 EUT Exercise Software:

Test software from Heiwa Tokei was used to keep the transceiver link active.

4.4 Configuration & Peripherals:

The CV01-H01 was placed on the table and connected to the support equipment listed in Section 2.3 via each port listed in Section 2.4. Shown in Section 4.5 is a block diagram of the test configuration.

4.5 Block Diagram of Test Configuration:



SECTION 5.0 SUMMARY OF TEST RESULTS

5.1 FCC Part 15.203, 15.207, and 15.209, Subpart C

5.1.1 Summary of Tests:

Section	Environmental Phenomena	Frequency Range (MHz)	Result
15.203	Antenna Requirement	N/A	Complied
15.207	Conducted Disturbance at Mains Ports (Hot Lead to Ground)	0.15 to 30	Complied
15.207	Conducted Disturbance at Mains Ports (Neutral Lead to Ground)	0.15 to 30	Complied
15.209	Radiated Disturbance (Below 30 MHz)	13 to 30	Complied
15.209	Radiated Disturbance (Vertical Polarity)	30 to 2000	Complied
15.209	Radiated Disturbance (Horizontal Polarity)	30 to 2000	Complied

5.2 Result

In the configuration tested, the EUT complied with the requirements of the specification.

SECTION 6.0 MEASUREMENTS, EXAMINATIONS AND DERIVED RESULTS

6.1 General Comments:

This section contains the test results only. Details of the test methods used and a list of the test equipment used during the measurements can be found in Appendix 1 of this report.

This report covers the transmitter only. The receiver and digital circuitry is covered under separate verification report.

6.2 Test Results:

6.2.1 §15.203 Antenna Requirement

The CV01-H01 antenna is located internal to the EUT on a circuit board specific to this application. There is no provision to replace the antenna with an antenna other than the antenna PCB furnished by the manufacturer.

The antenna provisions listed above meet the requirements and demonstrate compliance to FCC Part 15.203.

6.2.2 §15.207 Conducted Disturbance at Mains Ports Data (Hot Lead)

Frequency (MHz)	Detector	Measured Level ($dB\mu V$)	§15.207 Limit ($dB\mu V$)	Margin (dB)
0.17	Peak (Note 1)	47.7	55.0	-7.3
0.23	Peak (Note 1)	40.7	52.4	-11.7
4.40	Peak (Note 1)	31.6	46.0	-14.4
4.50	Peak (Note 1)	31.5	46.0	-14.5
4.77	Peak (Note 1)	33.0	46.0	-13.0
13.18	Peak (Note 1)	37.3	50.0	-12.7

Note 1: The reference detector used for the measurements was Quasi-Peak or Peak and the data was compared to the average limit; therefore, the EUT was deemed to meet both the average and quasi-peak limits.

Note 2: The reference detector used for the measurements was quasi-peak and average and the data was compared to the respective limits.

Measurement Uncertainty

The measurement uncertainty (with a 95% confidence level) for this test was: $\pm$ 3.3 dB.

RESULT

The EUT complied with the specification limit by a margin of 7.3 dB.

6.2.3 §15.207 Conducted Disturbance at Mains Ports Data (Neutral Lead)

Frequency (MHz)	Detector	Measured Level ($dB\mu V$)	§15.207 Limit ($dB\mu V$)	Margin (dB)
0.17	Peak (Note 1)	40.6	55.2	-14.6
1.37	Peak (Note 1)	32.0	46.0	-14.0
1.65	Peak (Note 1)	32.3	46.0	-13.7
4.50	Peak (Note 1)	31.4	46.0	-14.6
4.68	Peak (Note 1)	31.4	46.0	-14.6
4.77	Peak (Note 1)	32.1	46.0	-13.9
13.10	Peak (Note 1)	35.5	50.0	-14.5

Note 1: The reference detector used for the measurements was Quasi-Peak or Peak and the data was compared to the average limit; therefore, the EUT was deemed to meet both the average and quasi-peak limits.

Note 2: The reference detector used for the measurements was quasi-peak and average and the data was compared to the respective limits.

Measurement Uncertainty

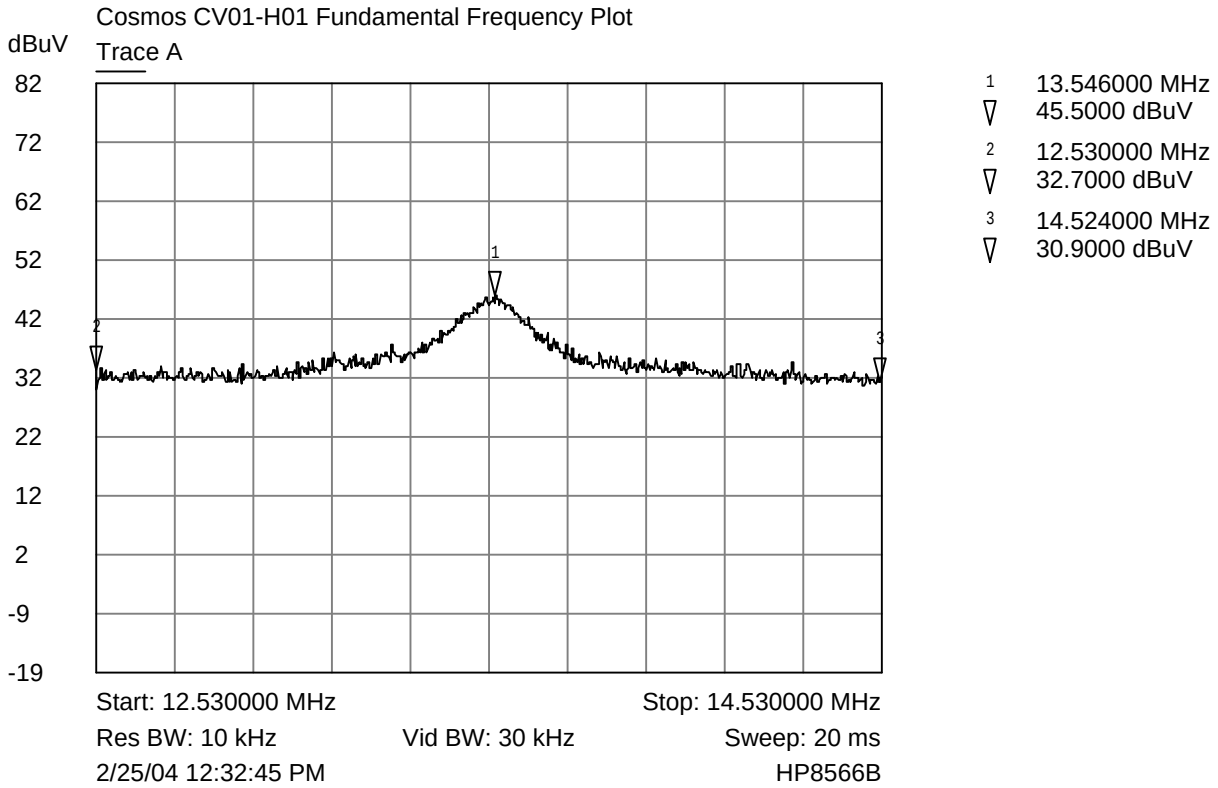
The measurement uncertainty (with a 95% confidence level) for this test was: $\pm$ 3.3 dB.

RESULT

The EUT complied with the specification limit by a margin of 13.7 dB.

6.2.4 §15.209 Radiated Emission Data (Below 30 MHz)

Shown below is the plot of the maximum fundamental emission. It was necessary to perform this measurement at 1 meter as the emission at 3 meter distance was at or below the noise floor.



1 meter with correction factors

The fundamental frequency of 13.546 MHz was measured at an emission level of 45.5 dBµV/m at a distance of 1 meter. Using and extrapolation factor of 40 dB per decade, the emission level would be –13.6 dBµV/m if measured at 30 meters. The specified 30 meter limit is 29.5 dBµV/m.

No other spurious emissions were seen in the frequency range of 13.0 MHz to 30 MHz.

RESULT

The EUT complied with the specification limit by a margin of 43.1 dB.

6.2.5 §15.209 Radiated Emission Data 30 to 2000 MHz (Vertical Polarity)

Frequency (MHz)	Detector	Receiver Reading ($dB_{\mu}V$)	Correction Factor (dB/m)	Field Strength ($dB_{\mu}V/m$)	§15.207 3 m Limit ($dB_{\mu}V/m$)	Margin (dB)
53.6	Peak (Note 1, 2)	19.6	9.3	28.9	40.0	-11.1
56.0	Peak (Note 1, 2)	22.9	8.7	31.6	40.0	-8.4
63.8	Peak (Note 1, 2)	21.4	8.1	29.5	40.0	-10.5
71.8	Quasi-Peak (Note 1, 2)	28.8	7.7	36.5	40.0	-3.5
80.2	Peak (Note 1, 2)	22.8	7.8	30.6	40.0	-9.4
366.4	Peak (Note 1, 2)	11.9	18.4	30.3	46.0	-15.7
433.6	Peak (Note 1, 2)	15.2	19.7	34.9	46.0	-11.1
512.8	Peak (Note 1, 2)	14.8	21.7	36.5	46.0	-9.5
667.2	Peak (Note 1, 2)	8.3	24.6	32.9	46.0	-13.1
961.6	Peak (Note 1, 2)	14.2	28.4	42.6	54.0	-11.4

Note 1: The reference detector used for the measurements was peak or quasi-peak and the data was compared to the quasi-peak limit.

Note 2: This emission was determined to be from the support equipment and not related to the transceiver (EUT).

Measurement Uncertainty

The measurement uncertainty (with a 95% confidence level) for this test was: ± 4.3 dB (30 MHz to 200 MHz) and ± 6.0 dB @ 3 meters ± 2.7 dB @ 10 meters (200 MHz to 1 GHz).

RESULT

§15.209 (c) requires that the level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. The emissions in the table above were from the support equipment and not from the transceiver under test; therefore, the EUT complies with the specification.

6.2.6 §15.209 Radiated Emission Data 30 to 2000 MHz (Horizontal Polarity)

Frequency (MHz)	Detector	Receiver Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Class B 3 m Limit (dBμV/m)	Margin (dB)
56.0	Peak (Note 1, 2)	15.3	8.7	24.0	40.0	-16.0
63.7	Peak (Note 1, 2)	21.8	8.1	29.9	40.0	-10.1
71.7	Quasi-Peak (Note 1, 2)	30.1	7.7	37.8	40.0	-2.2
80.0	Peak (Note 1, 2)	23.8	7.8	31.6	40.0	-8.4
167.0	Peak (Note 1, 2)	17.7	10.3	28.0	43.5	-15.5
299.2	Peak (Note 1, 2)	15.5	15.8	31.3	46.0	-14.7
366.4	Peak (Note 1, 2)	15.3	18.4	33.7	46.0	-12.3
433.6	Peak (Note 1, 2)	18.4	19.7	38.1	46.0	-7.9
600.0	Peak (Note 1, 2)	6.3	23.6	29.9	46.0	-16.1
667.2	Peak (Note 1, 2)	10.6	24.6	35.2	46.0	-10.8

Note 1: The reference detector used for the measurements was peak or quasi-peak and the data was compared to the quasi-peak limit.

Note 2: This emission was determined to be from the support equipment and not related to the transceiver (EUT).

Measurement Uncertainty

The measurement uncertainty (with a 95% confidence level) for this test was: ± 4.3 dB (30 MHz to 200 MHz) and ± 6.0 dB @ 3 meters ± 2.7 dB @ 10 meters (200 MHz to 1 GHz).

RESULT

§15.209 (c) requires that the level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. The emissions in the table above were from the support equipment and not from the transceiver under test; therefore, the EUT complies with the specification.

6.3 Sample Field Strength Calculation:

The field strength is calculated by adding the Correction Factor (Antenna Factor + Cable Factor), to the measured level from the receiver. The receiver amplitude reading is compensated for any amplifier gain. The basic equation with a sample calculation is shown below:

FS = RA + CF Where

FS = Field Strength
RA = Receiver Amplitude Reading (Receiver Reading - Amplifier Gain)
CF = Correction Factor (Antenna Factor + Cable Factor)

Assume a receiver reading of 42.5 dBμV is obtained from the receiver, an amplifier gain of 26.5 dB and a correction factor of 8.5 dB/m. The field strength is calculated by subtracting the amplifier gain and adding the correction factor, giving a field strength of 24.5 dBμV/m, FS = (42.5 - 26.5) + 8.5 = 24.5 dBμV/m.

APPENDIX 1 TEST PROCEDURES AND TEST EQUIPMENT

Conducted Disturbance at Mains Ports:

The conducted disturbance at mains ports from the ITE was measured using a spectrum analyzer with a quasi-peak adapter for peak, quasi-peak and average readings. The quasi-peak adapter uses a bandwidth of 9 kHz, with the spectrum analyzer's resolution bandwidth set at 100 kHz, for readings in the 150 kHz to 30 MHz frequency ranges.

The conducted disturbance at mains ports measurements are performed in a screen room using a (50 Ω/50 μH) Line Impedance Stabilization Network (LISN).

Where mains flexible power cords are longer than 1 m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4 m in length.

Where the EUT is a collection of ITE with each ITE having its own power cord, the point of connection for the LISN is determined from the following rules:

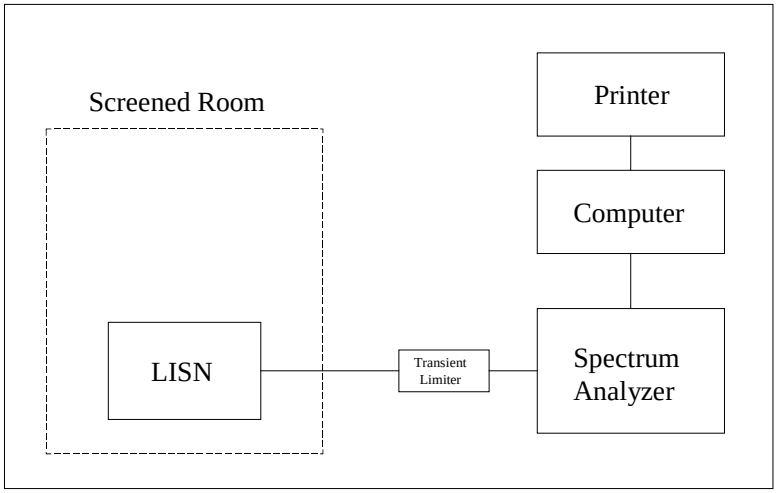
a) Each power cord, which is terminated in a mains supply plug, shall be tested separately.
b) Power cords, which are not specified by the manufacturer to be connected via a host unit, shall be tested separately.
c) Power cords which are specified by the manufacturer to be connected via a host unit or other power supplying equipment shall be connected to that host unit and the power cords of that host unit connected to the LISN and tested.
d) Where a special connection is specified, the necessary hardware to effect the connection is supplied by the manufacturer for the testing purpose.
e) When testing equipment with multiple mains cords, those cords not under test are connected to an artificial mains network (AMN) different than the AMN used for the mains cord under test.

Desktop ITE are placed on a non-conducting table at 0.8 meters from the metallic floor. The vertical coupling plane (wall of the screened room) is located 40 cm to the rear of the EUT. Floor standing equipment is placed directly on the earth grounded floor.

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration
Wanship Open Area Test Site #2	CCL	N/A	N/A	12/27/2003
Test Software	CCL	Conducted Emissions	Revision 1.2	N/A
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711	10/03/2003
Quasi-Peak Detector	Hewlett Packard	85650A	3107A01582	10/016/2003
LISN	EMCO	3825/2	9305-2099	02/03/2004
Conductance Cable Wanship Site #2	CCL	Cable J	N/A	12/09/2003
Transient Limiter	Hewlett Packard	11947A	3107A02266	12/08/2003

An independent calibration laboratory or CCL personnel calibrates all the equipment listed above every 12 months following outlined calibration procedures. All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to tractability is on file and is available for examination upon request.

Conducted Emissions Test Setup



Radiated Disturbance:

The radiated disturbance from the ITE was measured using a spectrum analyzer with a quasi-peak adapter for peak and quasi-peak readings. A preamplifier with a fixed gain of 26 dB and a power amplifier with a fixed gain of 22 dB were used to increase the sensitivity of the measuring instrumentation. The quasi-peak adapter uses a bandwidth of 120 kHz, with the spectrum analyzer's resolution bandwidth set at 1 MHz, for readings in the 30 to 1000 MHz frequency ranges.

An active loop antenna was used to measure the frequency range of 13 to 30 MHz at distances of 1 and 3 meters. A biconilog antenna was used to measure the frequency range of 30 to 1000 MHz, at a distance of 3 meters from the EUT. The readings obtained by these antennas are correlated to the levels obtained with a tuned dipole antenna by adding antenna factors. A double-ridged guide antenna was used to measure the emissions at frequencies above 1000 MHz at a distance of 3 meters from the EUT.

The configuration of the ITE was varied to find the maximum radiated emission. The EUT was connected to the peripherals listed in Section 2.3 via the interconnecting cables listed in Section 2.4. A technician manually manipulated these interconnecting cables to obtain worst-case radiated disturbance. The ITE was rotated 360 degrees, and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission. Where there was multiple interface ports all of the same type, cables are either placed on all of the ports or cables added to these ports until the emissions do not increase by more than 2 dB.

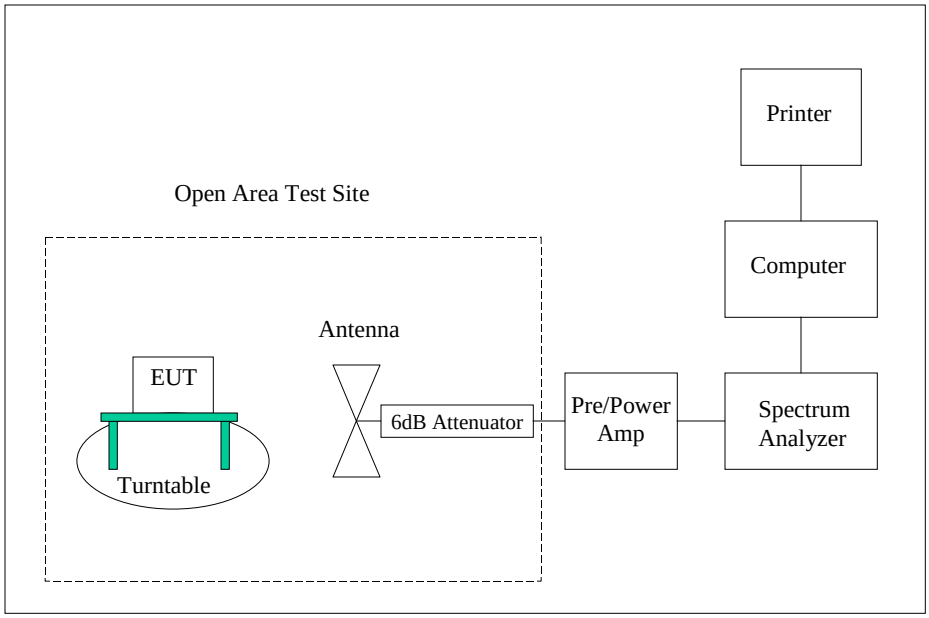
Desktop ITE is measured on a non-conducting table 0.8 meters above the ground plane. The table is placed on a turntable, which is level with the ground plane. For equipment normally placed on floors, the equipment shall be placed directly on the turntable.

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration
Wanship Open Area Test Site #2	CCL	N/A	N/A	12/27/2003
Test Software	CCL	Radiated Emissions	Revision 1.3	N/A
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711	10/03/2003

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration
Quasi-Peak Detector	Hewlett Packard	85650A	3107A01582	10/016/2003
Active Loop Antenna	Emco	6502	2011	06/13/2003
Biconilog Antenna	EMCO	3142	9601-1009	12/26/2003
Double Ridged Guide Antenna	EMCO	3115	2129	06/10/2003
High Frequency Amplifier	Hewlett Packard	8449B	3008A00990	04/25/2003
3 Meter Radiated Emissions Cable Wanship Site #2	CCL	Cable K	N/A	12/09/2003
Pre/Power-Amplifier	Hewlett Packard	8447F	3113A05161	09/15/2003
6 dB Attenuator	Hewlett Packard	8491A	32835	12/09/2003

An independent calibration laboratory or CCL personnel calibrates all the equipment listed above every 12 months following outlined calibration procedures. All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to tractability is on file and is available for examination upon request.

Radiated Emissions Test Setup



APPENDIX 2 PHOTOGRAPHS

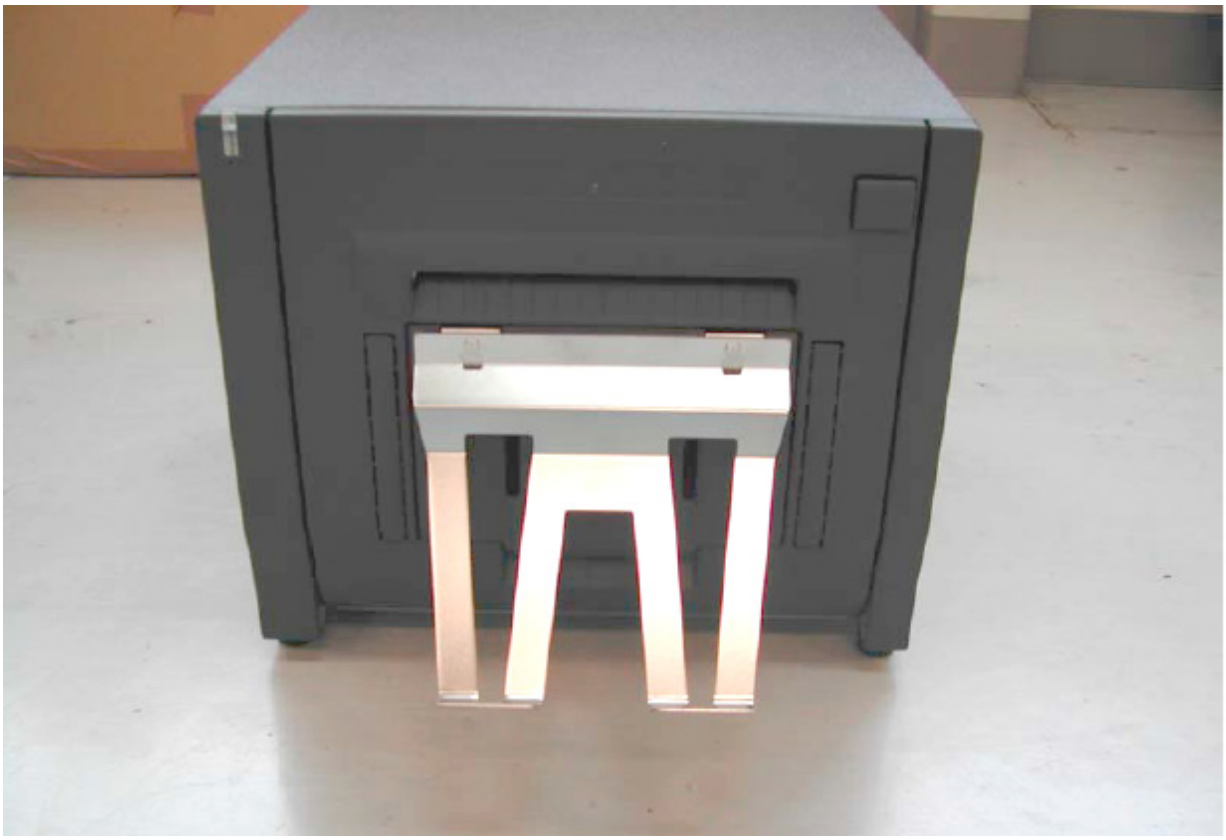
Photograph 1 – Front View of the Radiated Emissions Testing Setup

Photograph 2 – Back View of the Radiated Emissions Testing Setup

Photograph 3 – Front View of the Conducted Emissions Testing Setup

Photograph 4 – Back/Side View of the Conducted Emissions Testing Setup

Photograph 5 – Front View of the CV01-H01 and Optional Paper Tray

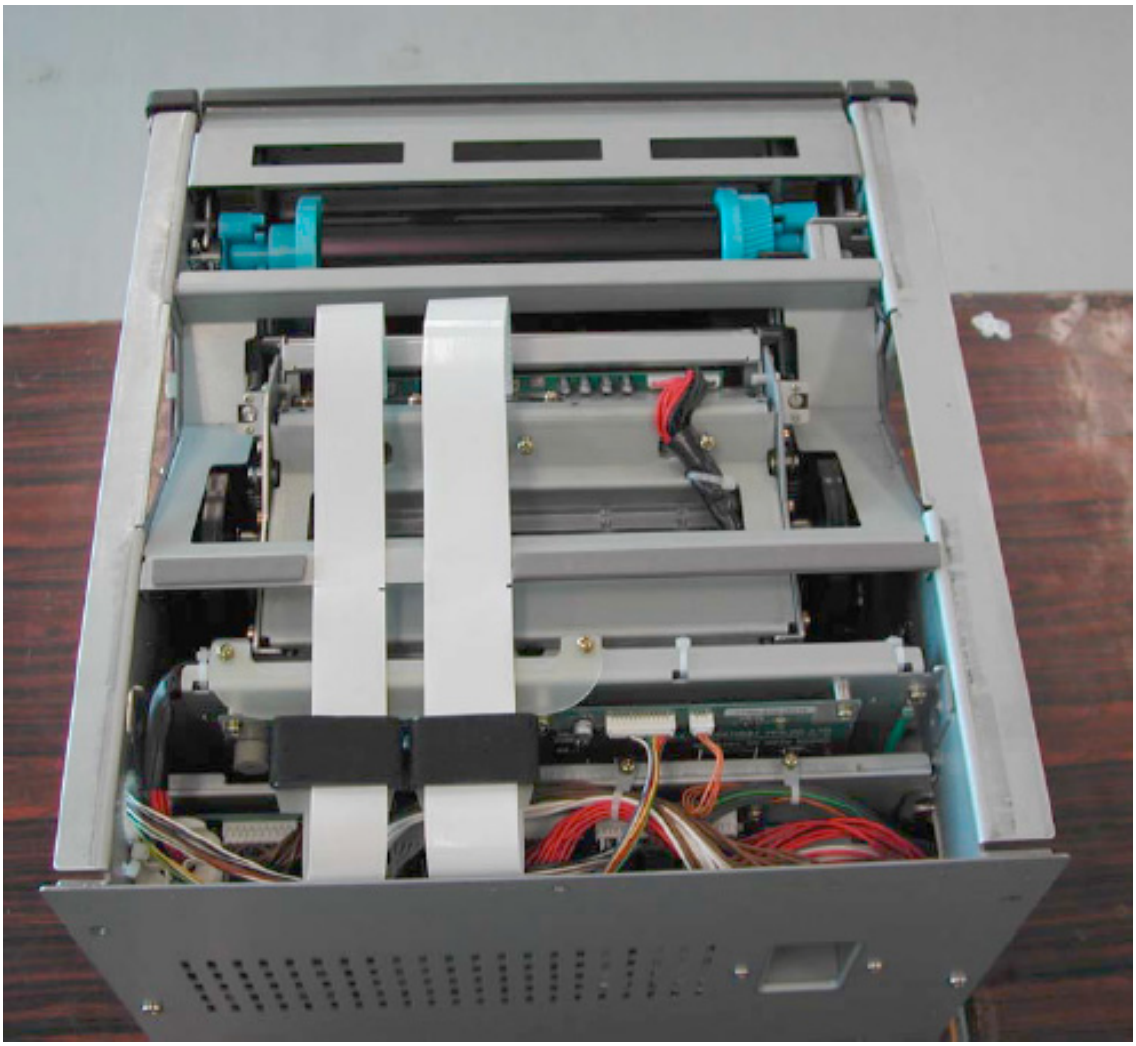


Photograph 6 – Back View or the CV01-H01

Photograph 7 – Left Side of the CV01-H01

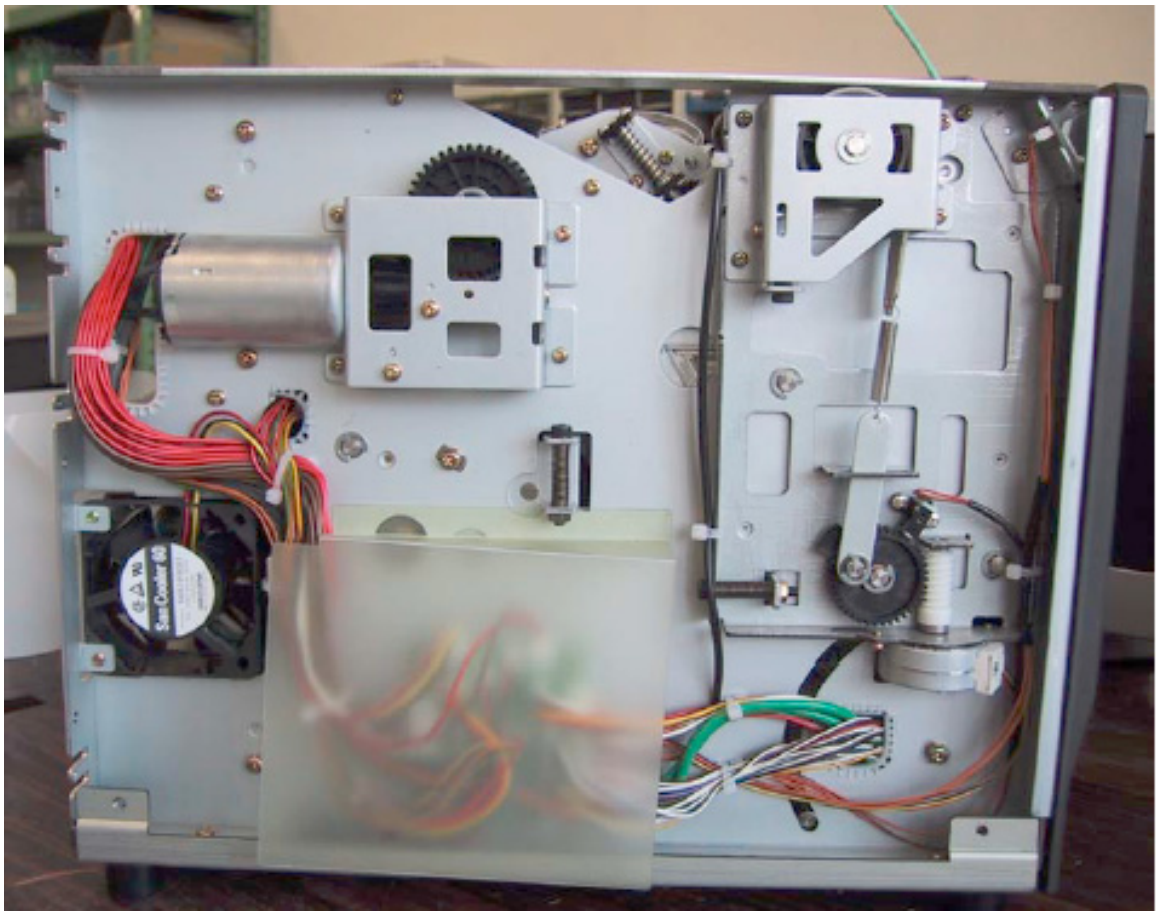
Photograph 8 – Right Side of the CV01-H01

Photograph 9 – Internal Top View of the CV01-H01

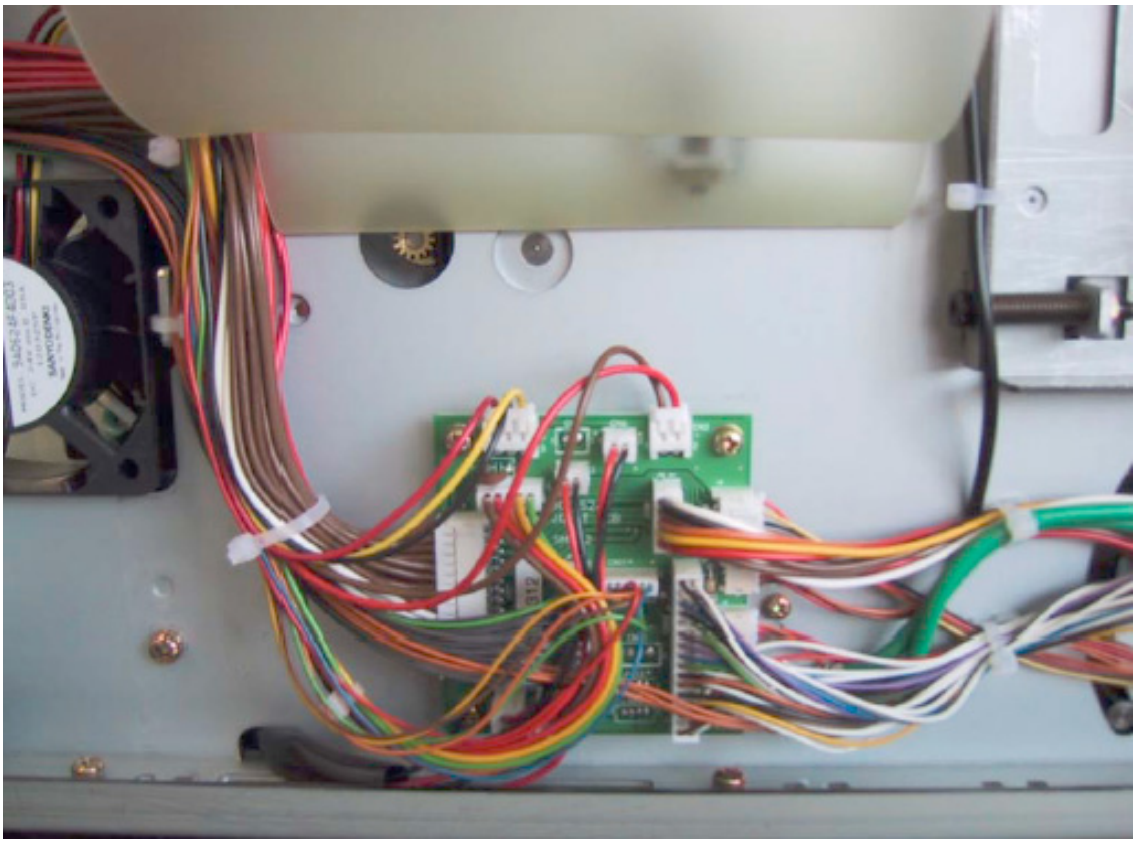


Photograph 10 – Internal Right Side View of the CV01-H01

Photograph 11 – Internal Left Side View of the CV01-H01

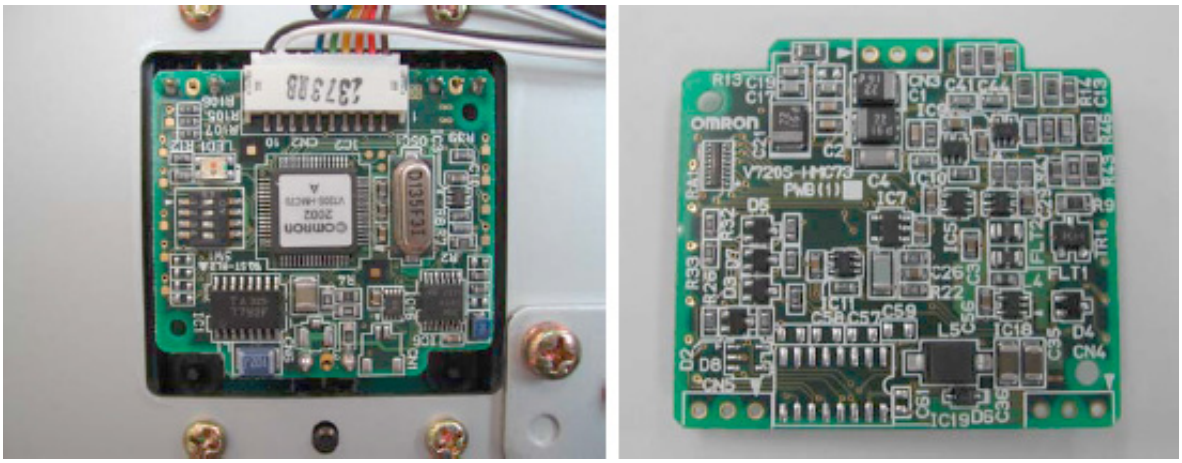


Photograph 12 – Internal Left Side View of the CV01-H01 with Cover Removed

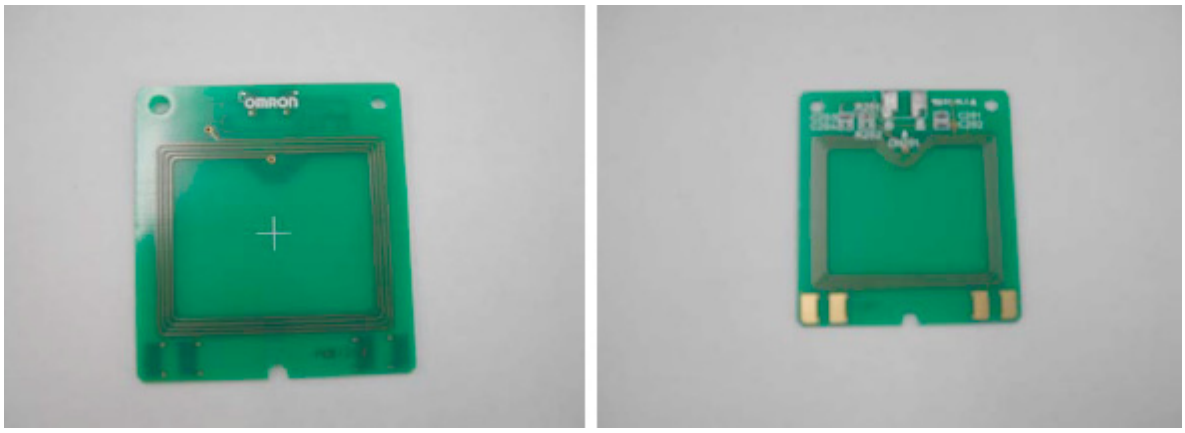


Photograph 13 – Internal Back View of the CV01-H01

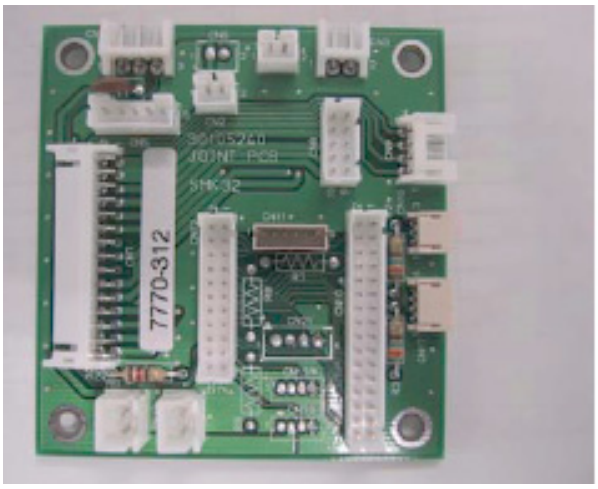
Photograph 14 & 15 – Top and Bottom View of the RFID Read/Write Control PCB

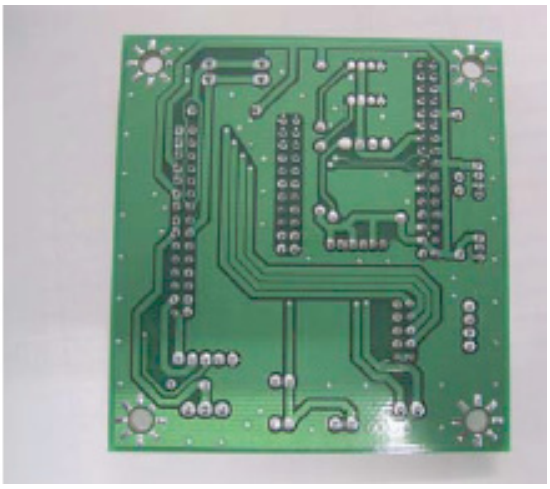


Photograph 16 & 17 – Top and Bottom View of the RFID Read/Write Antenna PCB

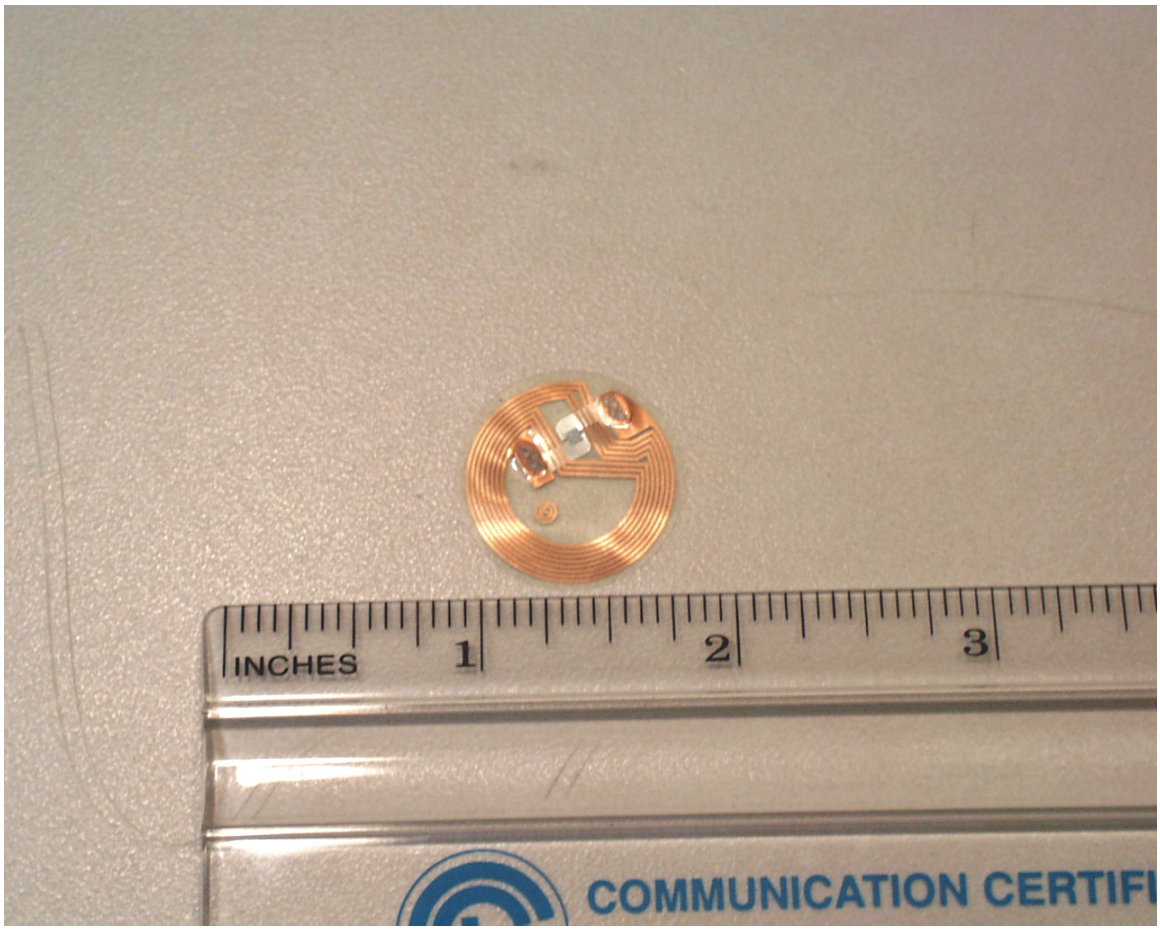


Photograph 18 & 19 – Top and Bottom View of the Joint PCB





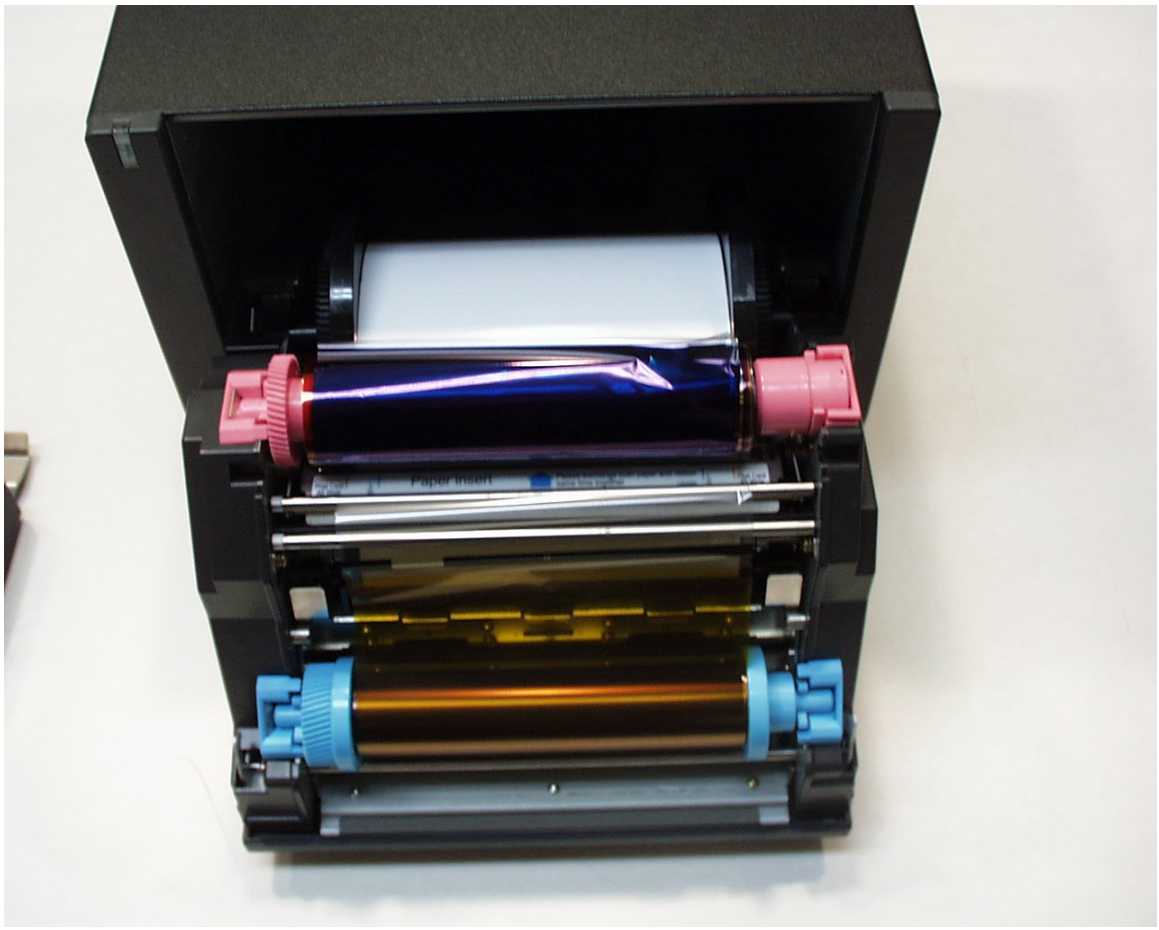
Photograph 20 – Top View of the RFID tag



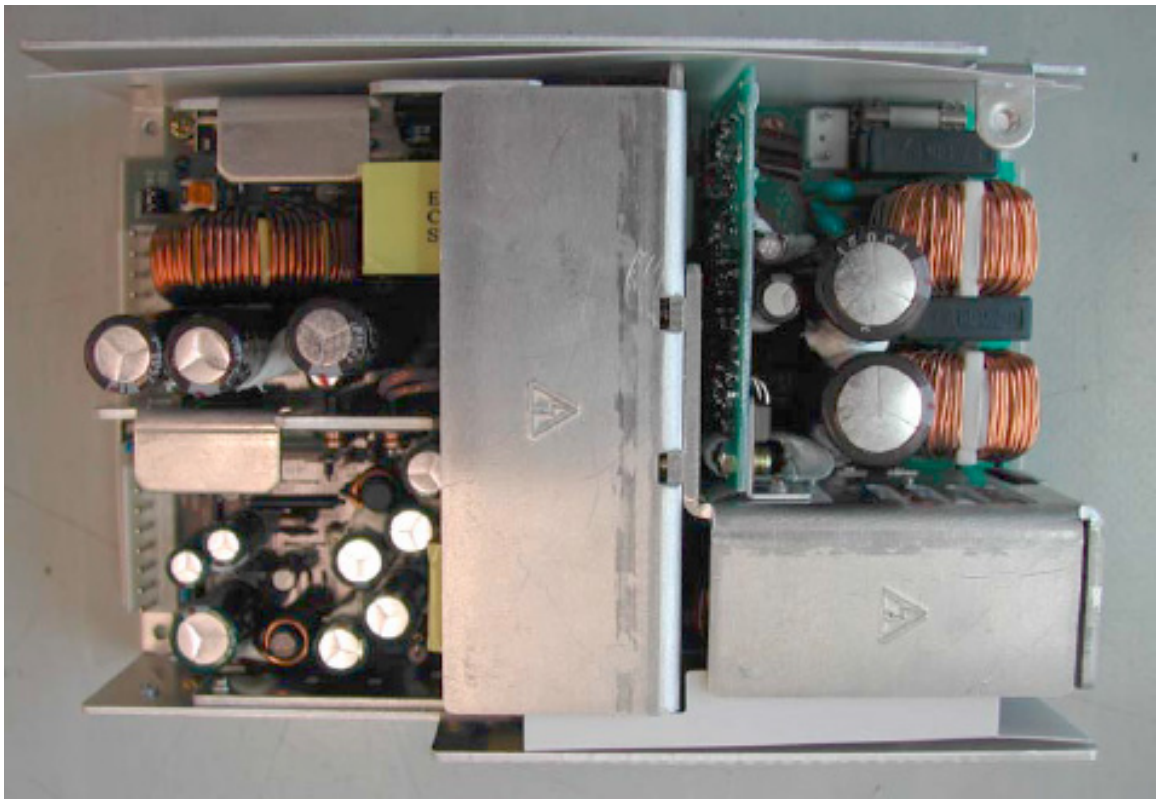
Photograph 21 – Bottom View of the RFID tag

Photograph 22 – View of the RFID tag Retainer

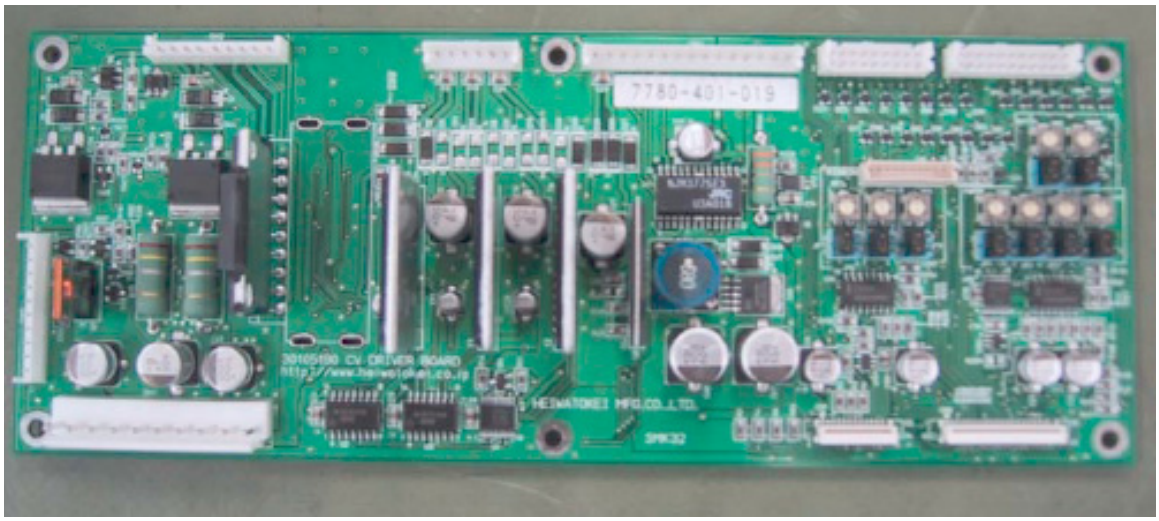
Photograph 23 – View of the CV01-H01 with Front Cover Open
Showing Placement of the RFID Tag In the Printer



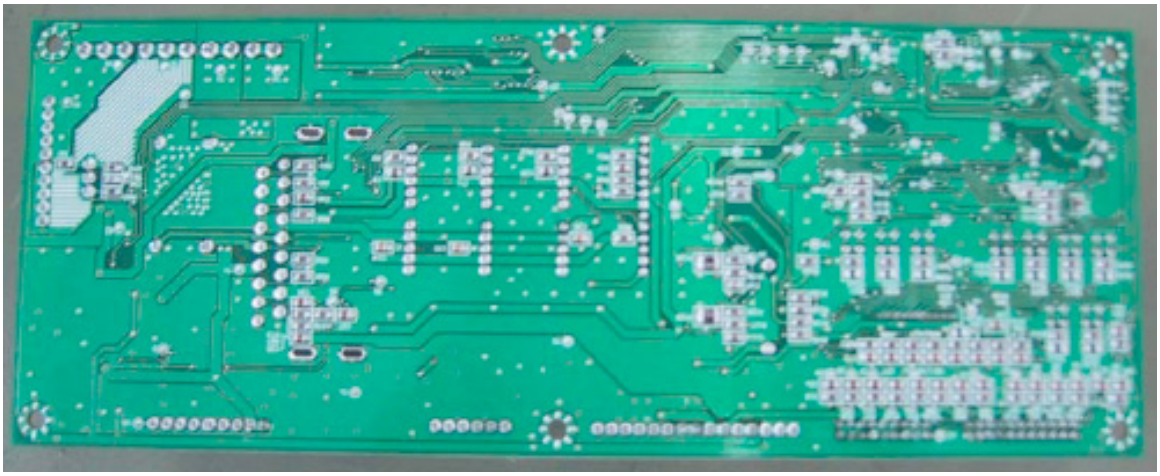
Photograph 24 – View of the Power Supply Module



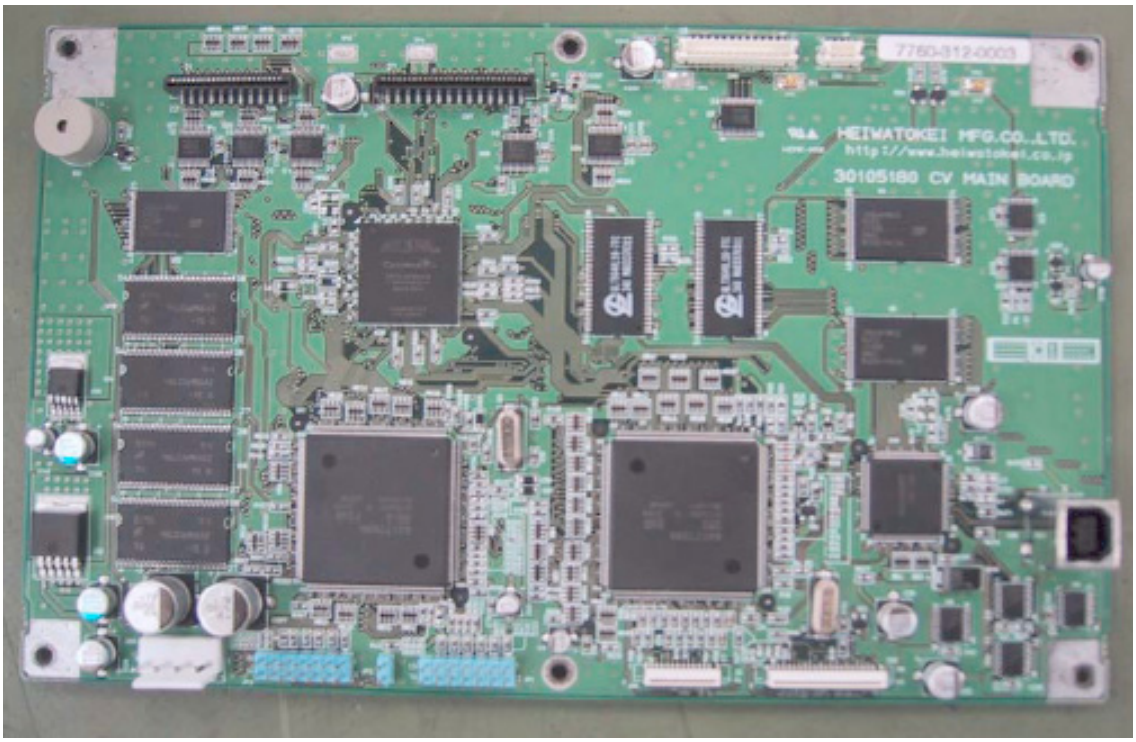
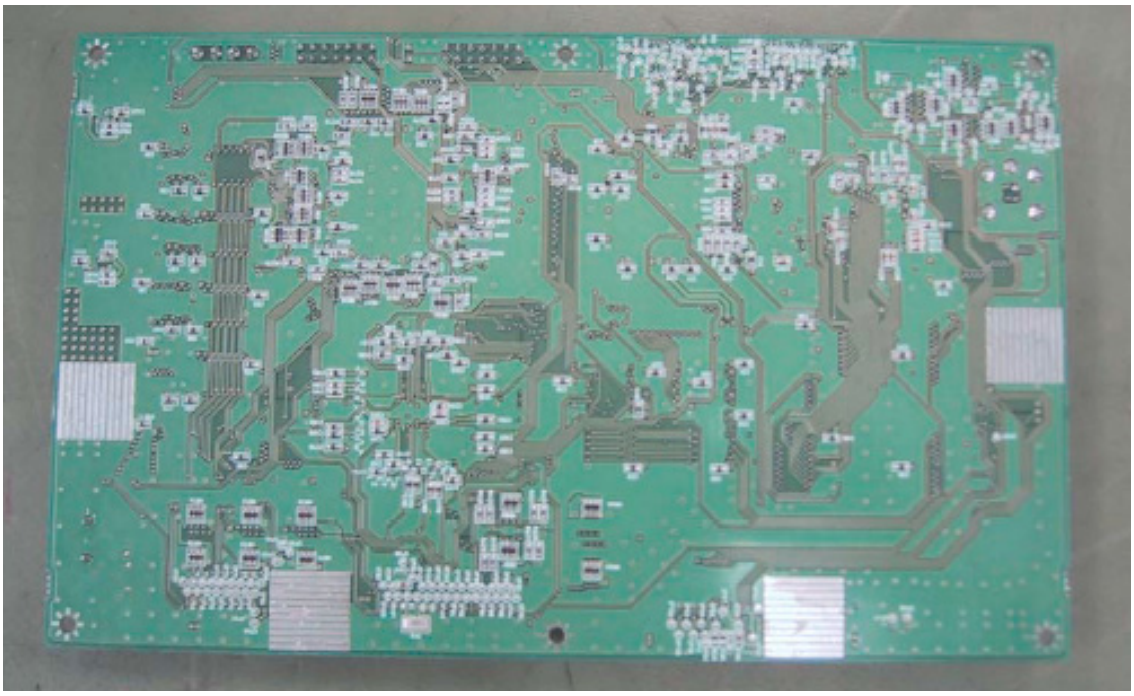
Photograph 25 – Top View of the Driver PCB



Photograph 26 – Bottom View of the Driver PCB



Photograph 27 – Top View of the Main PCB



Photograph 28 – Bottom View of the Main PCB