

*FCC PART 15.225
TEST REPORT*

for

CARD PRINTER with RFID
Model: P430I
FCC ID: I28-P430I

Prepared for

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DATE: NOVEMBER 14, 2005

| | REPORT BODY | APPENDICES | | | | | TOTAL |
|-------|----------------|------------|---|---|----|----|-----------|
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GENERAL REPORT SUMMARY

This electromagnetic emission report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form except in full, without the written permission of Compatible Electronics.

This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Device Tested: Card Printer with RFID
Model: P430I
S/N: None

Product Description: This is a card printer that can print on both sides of a PVC card in one pass through the printer.

Modifications: The EUT was not modified during the testing.

Manufacturer: Zebra Technologies, Corp.
1001 Flynn Rd.
Camarillo, CA 93012

Test Date: September 20, 2005

Test Specifications: EMI requirements
FCC CFR Title 47, Part 15 Subpart C
Test Procedure: ANSI C63.4: 2003.

SUMMARY OF TEST RESULTS

| TEST | DESCRIPTION | RESULTS |
|------|--|--|
| 1 | Radiated RF Emissions, 9kHz to 1GHz | The RFID Complies with the limits of FCC CFR Title 47, Part 15 Subpart C 15.209, 15.225 and 15.205 |
| 2 | Conducted RF Emissions, 150 kHz – 30 MHz | The RFID Complies with the limits of FCC CFR Title 47, Part 15 Subpart C 15.207 (a). |

1. PURPOSE

This document is a Qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Card Printer with RFID Model: P430I. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2003. The tests were performed in order to determine whether the electromagnetic emissions from the RFID portion of the equipment under test, referred to as EUT hereafter, are within the specification limits defined in FCC CFR Title 47, Subpart C 15.207 (a), 15.209, 15.205 and 15.225.

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

| SPEC | TITLE |
|---|---|
| FCC CFR Title 47, Subpart C. Subpart B | FCC Rules – Intentional Radiators. FCC Rules - Unintentional Radiators |
| CISPR 16 1993 | Specification for radio disturbance and immunity measuring apparatus and methods. |
| ANSI C63.4 2003 | Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz. |

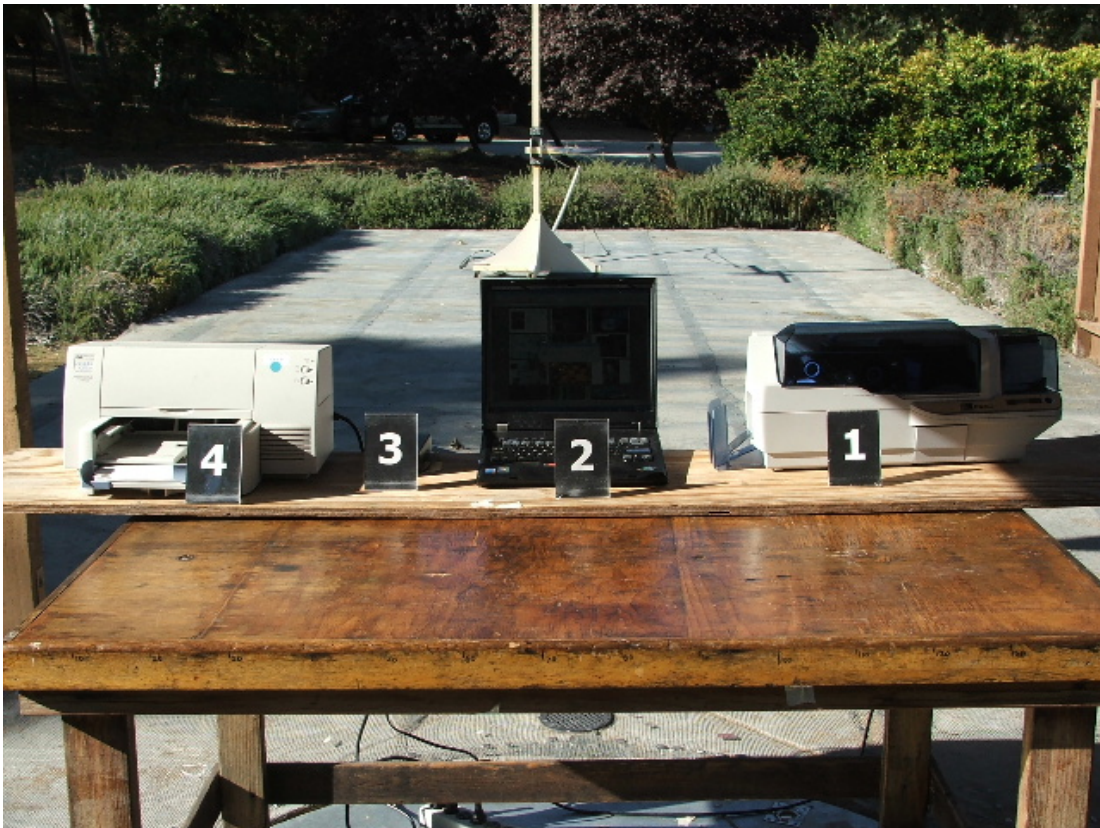
4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

The Card Printer with RFID was setup in a tabletop configuration. The Printer was connected to the laptop computer via the USB port. A Ethernet option was also tested but was determined that the USB option emitted the highest emissions. A printer was also connected to the laptop computer. The Zebra P430I uses color dye-sublimation ribbons or thermal transfer ribbons to transfer digital images to a PVC card. Ribbon recognition and security is maintained through RFID technology within the printer. The RFID board and the contactless smartcards use separate transmitters each operating at a frequency of 13.56 MHz. in the ISM band. The RFID system uses an I CODE1 format. The Card Printer with RFID was continuously printing & transmitting throughout the test.

The highest emissions were found when the EUT was running in the above configuration. The final radiated and conducted data was taken in this mode of operation. All initial investigations were performed with the spectrum analyzer in manual mode scanning the frequency range continuously. The EUT was setup and tested as shown in the photographs in Appendix D.

4.1.1 Photograph of Test Configuration – EMI



4.1.2 Cable Construction and Termination

Cable 1 This is a 1.5 meter, foil shielded, round USB cable connecting the EUT to the laptop computer. There is a USB connector at both ends of the cable. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connectors.

Cable 2 This is a 2 meter, braid and foil shielded, round parallel cable connecting the Printer to the laptop computer. There is a metallic 36 pin Centronics type connector at the EUT end and a metallic DB-25 pin connector at the computer end of the cable. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connectors.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

| # | EQUIPMENT TYPE | MANUFACTURER | MODEL | SERIAL NUMBER |
|---|--------------------------------|--------------------------|--------------|------------------------|
| 1 | CARD PRINTER with RFID (EUT) | ZEBRA TECHNOLOGIES CORP. | P430I | FCC ID: I28-P430I |
| 2 | LAPTOP COMPUTER | IBM | 2647-3CU | 78-KMDCG |
| 3 | POWER SUPPLY (LAPTOP COMPUTER) | IBM | P/N: 02K6661 | 11802K66612122JY13T5K4 |
| 4 | ACCESSORY PRINTER | HEWLETT PACKARD | C2162A | SG49R130MP |

5.2 EMI Test Equipment

| EQUIPMENT TYPE | MANUFACTURER | MODEL NUMBER | SERIAL NUMBER | CAL. DATE | CAL. DUE DATE |
|-----------------------------------|------------------------|---------------------|----------------------|------------------|----------------------|
| Spectrum Analyzer | Hewlett Packard | 8566B | 2729A04566 | Dec. 24, 2004 | Dec. 24, 2005 |
| Quasi-Peak Adapter | Hewlett Packard | 85650A | 2521A00682 | Dec. 24, 2004 | Dec. 24, 2005 |
| Preamplifier | Com Power | CPPA-103 | 161068 | Dec. 07, 2004 | Dec. 07, 2005 |
| LISN | Com Power | LI-215 | 12037 | Oct. 15, 2004 | Oct. 15, 2005 |
| LISN (Accessory) | Com Power | LI-115 | 02030 | Oct. 15, 2004 | Oct. 15, 2005 |
| Transient Limiter | Com Power | HZ560 | #3549 | Dec. 30, 2004 | Dec. 30, 2005 |
| Biconical Antenna | Com Power | AB-100 | 01535 | Jan. 13, 2005 | Jan. 13, 2006 |
| Log Periodic Antenna | Com Power | AL-100 | 01116 | Dec. 28, 2004 | Dec. 28, 2005 |
| Antenna Mast | Com Power | AM-400 | N/A | N/A | N/A |
| Turntable | Com Power | TTW-595 | N/A | N/A | N/A |
| Computer | Hewlett Packard | Pavilion 4530 | US91912022 | N/A | N/A |
| Printer | Hewlett Packard | C6427B | MY066160TW | N/A | N/A |
| Conducted Emissions Test Software | Compatible Electronics | SR21 | 3.1 | N/A | N/A |
| Radiated Emissions Test Software | Compatible Electronics | Vcap1A | 2.3 | N/A | N/A |

5.2.1 EMI Test Equipment (continued)

| EQUIPMENT TYPE | MANU-FACTURER | MODEL NUMBER | SERIAL NUMBER | CAL. DATE | CAL. DUE DATE |
|-------------------------------------|---------------------------|---------------------|----------------------|------------------|----------------------|
| Temperature Chamber | Despatch Industries, Inc. | 16212A | 149857 | Mar. 09, 2004 | Mar. 09, 2006 |
| EMI Receiver | Rohde & Schwarz | ESIB40 | 100172 | Oct. 28, 2004 | Oct. 28 2005 |
| Preamplifier | Com Power | CPPA-102 | 1017 | Jan. 06, 2004 | Jan. 06, 2005 |
| Probe Set | Com Power | PS-400 | 1810 | N.C.R. | N/A |
| Variac | Staco Energy Products | 3PN1010 | None | N.C.R. | N/A |
| Step-up Transformer 110V to 220V | Magnetek Triad | N-5MG | None | N.C.R. | N/A |

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1.2 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was grounded through the AC power cord.

7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 RF Emissions

7.1.1 Conducted Emissions Test

The Spectrum Analyzer was used as a measuring meter along with the quasi-peak adapter. The data was collected with the Spectrum Analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the Spectrum Analyzer input stage, and the Spectrum Analyzer offset was adjusted accordingly to read the actual data measured. The LISN output was read by the Spectrum Analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for the conducted emissions test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 2003. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The initial test data was taken in manual mode while scanning the frequency ranges of 0.15 MHz to 1.6 MHz, 1.6 MHz to 5 MHz and 5 MHz to 30 MHz. The conducted emissions from the EUT were maximized for operating mode as well as cable placement. Once a predominant frequency (within 12 dB of the limit) was found, it was more closely examined with the spectrum analyzer span adjusted to 1 MHz.

The final data was collected under program control by the computer in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The test data is located in Appendix E.

7.1.2 Radiated Emissions Test

The spectrum analyzer was used as a measuring meter along with a quasi-peak adapter. A Preamplifier was used to increase the sensitivity of the instrument. The Spectrum Analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps. This final reading is then recorded into the a Computer data recording program, which takes into account the cable loss, amplifier gain and antenna factors, so that a true reading is compared to the true limit. The quasi-peak was used only for those readings, which are marked accordingly on the data sheets. The effective measurement bandwidth used for the radiated emissions test was according to the frequency measured (200 Hz for 10kHz-150kHz, 9 kHz for 0.150kHz-30MHz and 120 kHz for 30-1000MHz).

Broadband loop, biconical and log periodic antennas were used as transducers during the measurement. The loop antenna was used from 9 kHz to 30 MHz the biconical antenna was used from 30 MHz to 300 MHz and the log periodic antenna was used from 300 MHz to 1 GHz. The final data was taken with a frequency span of 1 MHz. Furthermore, the frequency span was reduced during the preliminary investigations as deemed necessary.

In the frequency range of 9kHz to 30MHz, a calibrated loop antenna was used and positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The loop antenna was also positioned horizontally at the specified distance from the EUT. The center of the loop shall be 1 m above the ground.

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2003. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength).

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a test distance of 3 meters to obtain final test data. The test data is located in Appendix E.

Preliminary Testing and Monitoring:

Preliminary testing was done at a distance of 1 meter instead of 3 meters to determine the predominant harmonics and spurious emission frequencies. An open field test site was used for the preliminary investigations. Broadband antennas were used to scan large frequency bands while manipulating the unit. If and when any frequency was found to be above 30 microvolts/meter level (at a 1 meter distance), this frequency was recorded as a significant frequency. All significant frequencies were further examined carefully at a frequency span on the spectrum analyzer while changing the antenna height and EUT orientation. The EUT was tested again at a test distance of 3 meters to obtain the final test data. The bandwidth of the spectrum analyzer was varied to ensure that pulse desensitization did not occur.

7.1.3 Radiated Emissions – Frequency Tolerance

The EUT was placed in a temperature cycling chamber. The chamber was set for –20 degrees and the EUT was exposed to this temperature for a period of 30 minutes. The temperature was subsequently increased in 10 degree steps up to + 50 degrees with a 30 minute acclimation periods between each temperature. At each temperature step the EUT was checked with a Spectrum Analyzer to determine whether the carrier signal remained within 0.01% of the fundamental frequency at startup, 2 minutes, 5 minutes and 10 minutes after removal from the temperature chamber. The frequency tolerance of the carrier signal was maintained within 0.01% of the operating temperature variation testing –20 degrees to + 50 degrees C at normal voltage and variations at 85% to 100% at 20 degrees C.

8. TEST PROCEDURE DEVIATIONS

There were no deviations from the test procedures.

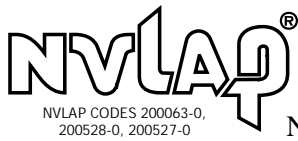
9. CONCLUSIONS

The Card Printer complies with Class A limits of the FCC CFR, title 47 part 15 subpart B, sec. 15.109, and 15.107.

APPENDIX A

LABORATORY ACCREDITATIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS



For US, Canada, Australia/New Zealand, Taiwan and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025 an ISO 9002 equivalent. Please follow the link to the NIST site for each of our facilities NVLAP certificate and scope of accreditation.

Silverado/Lake Forest Division: <http://ts.nist.gov/ts/hdocs/210/214/scopes/2005270.htm>

Brea Division: <http://ts.nist.gov/ts/hdocs/210/214/scopes/2005280.htm>

Agoura Division: <http://ts.nist.gov/ts/hdocs/210/214/scopes/2000630.htm>



Compatible Electronics has been accredited by ANSI and appointed by the FCC to serve as a Telecommunications Certification Body (TCB). Compatible Electronics ANSI TCB listing can be found at: http://www.ansi.org/public/ca/ansi_cp.html



Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA). Compatible Electronics NIST US/EU CAB listing can be found at: <http://ts.nist.gov/ts/hdocs/210/gsig/emc-cabs-mar02.pdf>



Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA). Compatible Electronics NIST US/APEC CAB listing can be found at: <http://ts.nist.gov/ts/hdocs/210/gsig/apec/bsmi-cabs-may02.pdf>



Compatible Electronics has been validated by NEMKO against ISO/IEC 17025 under the NEMKO EMC Laboratory Authorization (ELA) program to all EN standards required by the European Union (EU) EMC Directive 89/336/EEC. Please follow the link to the Compatible Electronics' web site for each of our facilities NEMKO ELA certificate and scope of accreditation. <http://www.celectronics.com/certs.htm>

We are also certified/listed for IT products by the following country/agency:



Compatible Electronics VCCI listing can be found at: http://www.vcci.or.jp/vcci_e/member/tekigo/setsubi_index_id.html

Just type "Compatible Electronics" into the Keyword search box.



Compatible Electronics FCC listing can be found at: https://gullfoss2.fcc.gov/prod/oet/index_ie.html

Just type "Compatible Electronics" into the Test Firms search box.



Compatible Electronics IC listing can be found at: http://spectrum.ic.gc.ca/~cert/labs/oats_lab_c_e.html

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

There were no modifications made to the EUT during the test.

APPENDIX C

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

CARD PRINTER WITH RFID
Model: P430I

There were no additional models covered under this report.

APPENDIX D

DIAGRAMS, CHARTS AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP (LAB F)

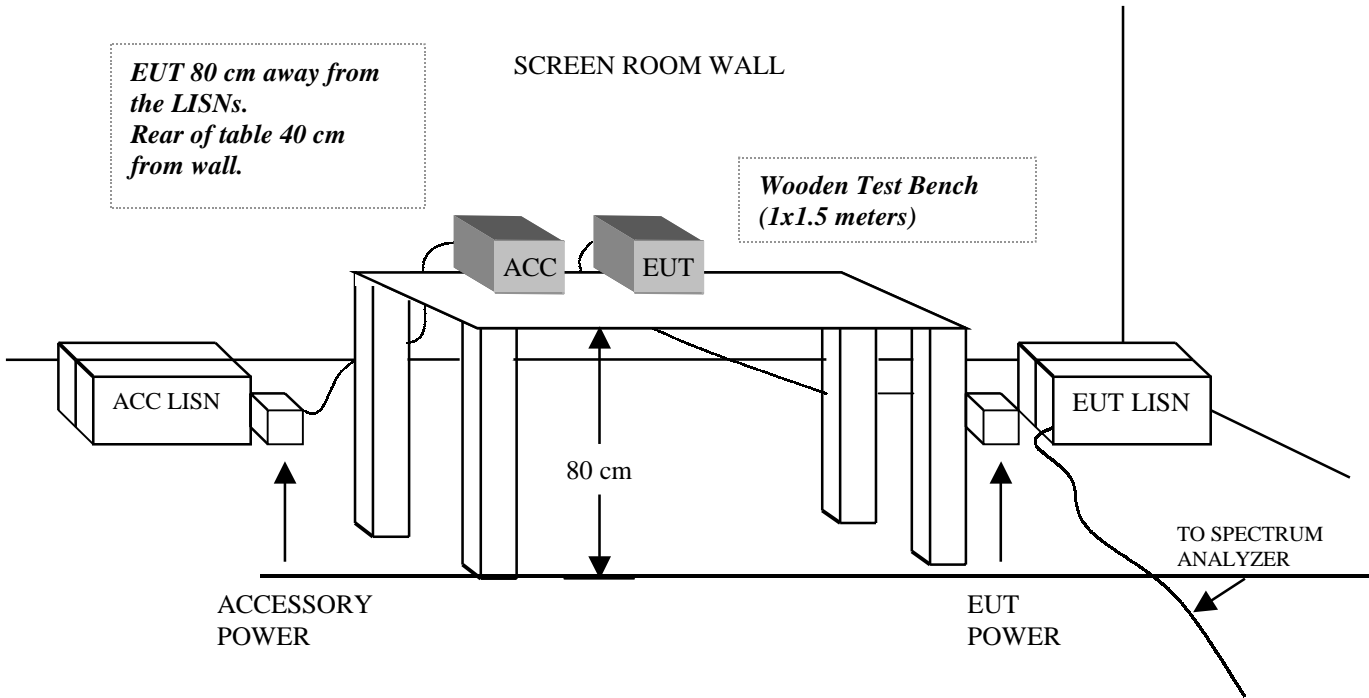
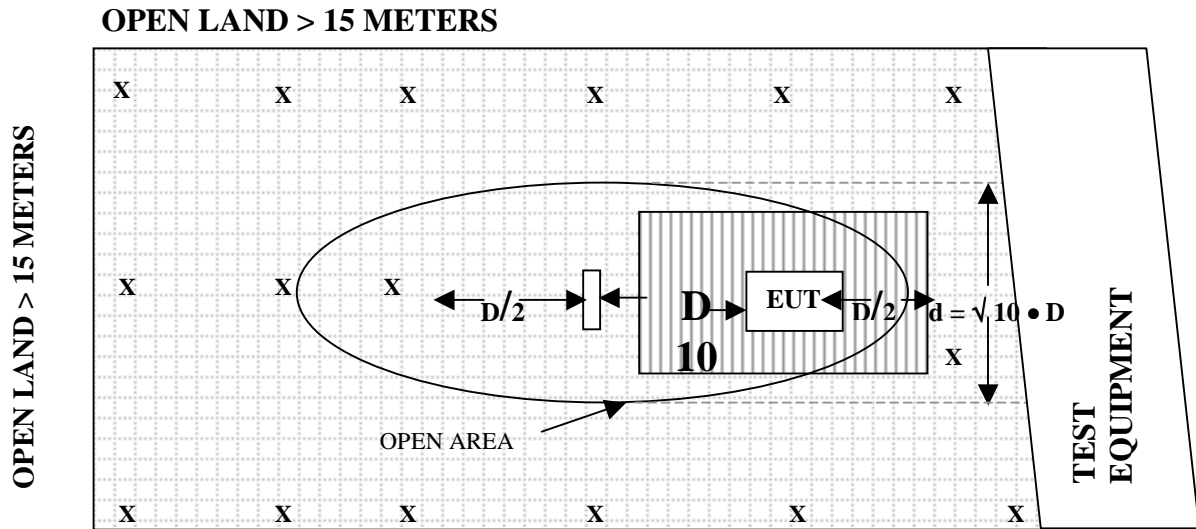
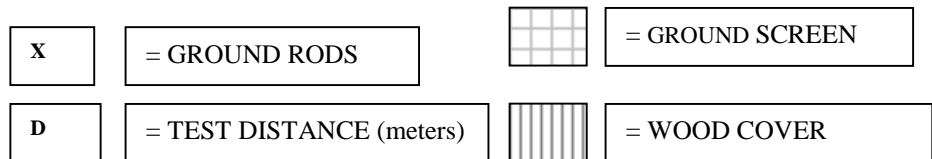


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE (LAB F)



OPEN LAND > 15 METERS



COM-POWER AL-130
ACTIVE LOOP ANTENNA

S/N: 17067

CALIBRATION DATE: MARCH 11, 2005

| FREQUENCY (MHz) | FACTOR (dB) | FREQUENCY (MHz) | FACTOR (dB) |
|-----------------|-------------|-----------------|-------------|
| 0.009 | 9.46 | 1 | 10.51 |
| 0.01 | 10.19 | 2 | 10.9 |
| 0.02 | 10.36 | 3 | 11.07 |
| 0.03 | 10.04 | 4 | 11.06 |
| 0.04 | 10.6 | 5 | 10.89 |
| 0.05 | 10.39 | 6 | 10.8 |
| 0.06 | 10.16 | 7 | 10.94 |
| 0.07 | 9.99 | 8 | 10.96 |
| 0.08 | 9.89 | 9 | 11.49 |
| 0.09 | 10.29 | 10 | 11.23 |
| 0.1 | 10.09 | 15 | 12.1 |
| 0.2 | 10.26 | 20 | 11.31 |
| 0.3 | 10.19 | 25 | 10.73 |
| 0.4 | 10.56 | 30 | 9.44 |
| 0.5 | 10.24 | | |
| 0.6 | 10.9 | | |
| 0.7 | 10.1 | | |
| 0.8 | 10.27 | | |
| 0.9 | 10.3 | | |

COM-POWER AB-100

BICONICAL ANTENNA

S/N: 1535

CALIBRATION DATE: JAN. 13, 2005

| FREQUENCY (MHz) | FACTOR (dB) | FREQUENCY (MHz) | FACTOR (dB) |
|--------------------|----------------|--------------------|----------------|
| 30 | 16.0 | 120 | 10.7 |
| 35 | 13.8 | 125 | 11.2 |
| 40 | 13.6 | 140 | 11.7 |
| 45 | 13.2 | 150 | 12.6 |
| 50 | 12.4 | 160 | 13.6 |
| 55 | 11.2 | 175 | 14.3 |
| 60 | 10.6 | 180 | 13.7 |
| 65 | 9.7 | 200 | 15.8 |
| 70 | 9.5 | 225 | 16.7 |
| 80 | 7.7 | 250 | 15.8 |
| 90 | 8.4 | 275 | 16.5 |
| 100 | 9.3 | 300 | 18.9 |

COM-POWER AL-100
LOG PERIODIC ANTENNA

S/N: 01116

CALIBRATION DATE: DEC. 28, 2004

| FREQUENCY (MHz) | FACTOR (dB) | FREQUENCY (MHz) | FACTOR (dB) |
|--------------------|----------------|--------------------|----------------|
| 300 | 12.1 | 650 | 19.8 |
| 330 | 16.7 | 700 | 20.5 |
| 340 | 15.2 | 725 | 21.4 |
| 350 | 14.0 | 750 | 23.0 |
| 360 | 14.1 | 800 | 25.2 |
| 370 | 13.2 | 850 | 24.7 |
| 400 | 13.9 | 900 | 25.0 |
| 425 | 13.5 | 925 | 24.4 |
| 450 | 13.9 | 950 | 25.6 |
| 500 | 15.6 | 975 | 25.3 |
| 550 | 16.9 | 1000 | 24.4 |
| 600 | 16.5 | | |

COM-POWER PA-103**PREAMPLIFIER**

S/N: 161068

CALIBRATION DATE: DEC. 7, 2004

| FREQUENCY (MHz) | FACTOR (dB) | FREQUENCY (MHz) | FACTOR (dB) |
|----------------------------|------------------------|----------------------------|------------------------|
| 30 | 33.3 | 300 | 32.7 |
| 40 | 33.3 | 350 | 32.8 |
| 50 | 33.2 | 400 | 32.7 |
| 60 | 33.2 | 450 | 32.5 |
| 70 | 33.2 | 500 | 32.6 |
| 80 | 33.2 | 550 | 32.4 |
| 90 | 33.2 | 600 | 32.1 |
| 100 | 33.0 | 650 | 32.6 |
| 125 | 33.1 | 700 | 32.1 |
| 150 | 33.1 | 750 | 32.2 |
| 175 | 33.0 | 800 | 32.0 |
| 200 | 32.9 | 850 | 32.1 |
| 225 | 32.8 | 900 | 32.0 |
| 250 | 32.9 | 950 | 31.8 |
| 275 | 32.9 | 1000 | 31.5 |



FRONT VIEW

ZEBRA TECHNOLOGIES CORP.
CARD PRINTER with RFID
Model: P430I

FCC PART 15 SUBPART C - RADIATED EMISSIONS – 9-20-05

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

ZEBRA TECHNOLOGIES CORP.

CARD PRINTER with RFID

Model: P430I

FCC PART 15 SUBPART C - RADIATED EMISSIONS – 9-20-05

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

ZEBRA TECHNOLOGIES CORP.

CARD PRINTER with RFID

Model: P430I

FCC PART 15 SUBPART C - CONDUCTED EMISSIONS – 9-20-05

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

ZEBRA TECHNOLOGIES CORP.
CARD PRINTER with RFID
Model: P430I

FCC PART 15 SUBPART C - CONDUCTED EMISSIONS – 9-20-05

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



ZEBRA TECHNOLOGIES CORP.
CARD PRINTER with RFID
Model: P430I
FCC PART 15 SUBPART C – FREQUENCY TOLERANCE EMISSIONS – 9-29-05

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

APPENDIX E

DATA SHEETS

CALCULATION OF LIMIT:

Spec limit: $15,848 \text{ uV/m} = 15,848 \log_{10} 20 = 83.99 \text{ dBuV/m}$

$30\text{m to } 3\text{m} = 30/3 = 10 \log_{10} 40 = 40$

LIMIT = 123.99



COMPATIBLE ELECTRONICS

Test Location : Compatible Electronics **Page** : 1/1
Customer : **Date** : 09/20/2005
Manufacturer : Zebra Technologies, Corp. **Time** : 01:46:47 PM
Eut name : Card Printer **Lab** : F
Model : P430I **Test Distance** : 3.00 Meters
Serial # : none
Specification : FCC Pt. 15- Class B
Distance correction factor (20 * log(test/spec)) : 0.00
Test Mode : Engineering
Clocks: 13.56MHz.
Test Engineer: R. Ramirez

| Pol | Freq | Reading | Cable loss | Antenna factor | Amplifier gain | Corr'd rdg = R | Limit = L | Delta R-L |
|-----|--------|---------|------------|----------------|----------------|----------------|-----------|-----------|
| | MHz | dBuV | dB | dB | dB | dBuV/m | dBuV/m | dB |
| 1V | 27.129 | 24.70 | 1.80 | 10.15 | 0.00 | 36.65 | 69.54 | -32.89 |



COMPATIBLE ELECTRONICS

Test Location : Compatible Electronics **Page** : 1/1
Customer : **Date** : 09/20/2005
Manufacturer : Zebra Technologies, Corp. **Time** : 02:11:48 PM
Eut name : Card Printer **Lab** : F
Model : P430I **Test Distance** : 3.00 Meters
Serial # : none
Specification : FCC Pt. 15- Class B
Distance correction factor (20 * log(test/spec)) : 0.00
Test Mode : Engineering
Clocks: 13.56MHz.
Test Engineer: R. Ramirez

| Pol | Freq MHz | Reading dBuV | Cable loss dB | Antenna factor dB | Amplifier gain dB | Corr'd rdg = R dBuV/m | Limit = L dBuV/m | Delta R-L dB |
|-----|-------------|-----------------|---------------------|-------------------------|-------------------------|-----------------------------|------------------------|--------------------|
| 1V | 40.689 | 42.60 | 2.02 | 13.54 | 33.29 | 24.86 | 40.00 | -15.14 |
| 2V | 54.249 | 48.70 | 2.33 | 11.37 | 33.20 | 29.21 | 40.00 | -10.79 |
| 3V | 67.809 | 47.70 | 2.42 | 9.59 | 33.20 | 26.51 | 40.00 | -13.49 |
| 4V | 81.369 | 47.60 | 2.70 | 7.80 | 33.20 | 24.90 | 40.00 | -15.10 |
| 5V | 108.494 | 53.80 | 2.94 | 9.93 | 33.04 | 33.63 | 43.50 | -9.87 |
| 6V | 122.050 | 45.80 | 2.99 | 10.91 | 33.09 | 26.61 | 43.50 | -16.89 |
| 7V | 135.610 | 43.20 | 3.09 | 11.56 | 33.10 | 24.75 | 43.50 | -18.75 |
| 8H | 40.686 | 42.80 | 2.02 | 13.54 | 33.29 | 25.07 | 40.00 | -14.93 |
| 9H | 54.248 | 43.80 | 2.33 | 11.37 | 33.20 | 24.31 | 40.00 | -15.69 |
| 10H | 67.808 | 42.20 | 2.42 | 9.59 | 33.20 | 21.01 | 40.00 | -18.99 |
| 11H | 81.368 | 42.30 | 2.70 | 7.80 | 33.20 | 19.60 | 40.00 | -20.40 |
| 12H | 108.499 | 48.70 | 2.94 | 9.93 | 33.04 | 28.53 | 43.50 | -14.97 |
| 13H | 122.052 | 41.40 | 2.99 | 10.91 | 33.09 | 22.21 | 43.50 | -21.29 |
| 14H | 135.604 | 45.80 | 3.09 | 11.56 | 33.10 | 27.35 | 43.50 | -16.15 |



COMPATIBLE ELECTRONICS

Test Location : Compatible Electronics **Page** : 1/2
Customer : **Date** : 09/20/2005
Manufacturer : Zebra Technologies, Corp. **Time** : 02:25:52 PM
Eut name : Card Printer **Lab** : F
Model : P430I **Test Distance** : 3.00 Meters
Serial # : none
Specification : FCC Pt. 15- Class B
Distance correction factor (20 * log(test/spec)) : 0.00
Test Mode : Engineering
Clocks: 14.7456, 32, 24, 10MHz.
Test Engineer: R. Ramirez
Spurious Emissions

| Pol | Freq MHz | Reading dBuV | Cable loss dB | Antenna factor dB | Amplifier gain dB | Corr'd rdg = R dBuV/m | Limit = L dBuV/m | Delta R-L dB |
|-----|-------------|-----------------|---------------------|-------------------------|-------------------------|-----------------------------|------------------------|--------------------|
| 1V | 49.637 | 57.10 | 2.19 | 12.46 | 33.20 | 38.55 | 40.00 | -1.45 |
| 2V | 49.640Qp | 54.81 | 2.19 | 12.45 | 33.20 | 36.26 | 40.00 | -3.74 |
| 3V | 58.986 | 60.00 | 2.47 | 10.72 | 33.20 | 39.99 | 40.00 | -0.01 |
| 4V | 59.000Qp | 55.55 | 2.47 | 10.72 | 33.20 | 35.54 | 40.00 | -4.46 |
| 5V | 73.756 | 57.00 | 2.52 | 8.80 | 33.20 | 35.11 | 40.00 | -4.89 |
| 6V | 32.008 | 56.20 | 1.92 | 15.08 | 33.30 | 39.90 | 40.00 | -0.10 |
| 7V | 32.010Qp | 55.30 | 1.92 | 15.07 | 33.30 | 39.00 | 40.00 | -1.00 |
| 8V | 64.032 | 49.70 | 2.46 | 9.87 | 33.20 | 28.83 | 40.00 | -11.17 |
| 9V | 72.035 | 54.70 | 2.46 | 9.11 | 33.20 | 33.08 | 40.00 | -6.92 |
| 10V | 117.979 | 53.40 | 2.97 | 10.57 | 33.07 | 33.87 | 43.50 | -9.63 |
| 11V | 128.029 | 47.40 | 3.03 | 11.31 | 33.10 | 28.63 | 43.50 | -14.87 |
| 12V | 147.462 | 40.10 | 3.18 | 12.38 | 33.10 | 22.56 | 43.50 | -20.94 |
| 13V | 160.008 | 44.50 | 3.24 | 13.60 | 33.06 | 28.28 | 43.50 | -15.22 |
| 14V | 192.044 | 48.30 | 3.37 | 14.99 | 32.93 | 33.73 | 43.50 | -9.77 |
| 15V | 224.026 | 42.50 | 3.50 | 16.67 | 32.80 | 29.86 | 46.00 | -16.14 |
| 16V | 240.060 | 44.10 | 3.56 | 16.15 | 32.86 | 30.95 | 46.00 | -15.05 |
| 17V | 250.040 | 44.20 | 3.60 | 15.80 | 32.90 | 30.70 | 46.00 | -15.30 |
| 18H | 32.011 | 51.30 | 1.92 | 15.07 | 33.30 | 35.00 | 40.00 | -5.00 |
| 19H | 49.619 | 38.60 | 2.19 | 12.46 | 33.20 | 20.05 | 40.00 | -19.95 |
| 20H | 58.991 | 41.00 | 2.47 | 10.72 | 33.20 | 20.99 | 40.00 | -19.01 |
| 21H | 72.051 | 44.50 | 2.46 | 9.11 | 33.20 | 22.88 | 40.00 | -17.12 |
| 22H | 73.769 | 41.80 | 2.52 | 8.79 | 33.20 | 19.91 | 40.00 | -20.09 |
| 23H | 192.034 | 54.10 | 3.37 | 14.99 | 32.93 | 39.53 | 43.50 | -3.97 |
| 24H | 240.064 | 53.40 | 3.56 | 16.15 | 32.86 | 40.25 | 46.00 | -5.75 |
| 25H | 250.037 | 44.30 | 3.60 | 15.80 | 32.90 | 30.80 | 46.00 | -15.20 |
| 26V | 336.071 | 50.50 | 4.02 | 15.78 | 32.77 | 37.53 | 46.00 | -8.47 |
| 27V | 352.012 | 51.40 | 4.12 | 14.02 | 32.80 | 36.74 | 46.00 | -9.26 |
| 28V | 398.129 | 40.70 | 4.49 | 13.86 | 32.70 | 26.34 | 46.00 | -19.66 |
| 29V | 412.907 | 38.10 | 4.50 | 13.69 | 32.65 | 23.64 | 46.00 | -22.36 |
| 30V | 480.072 | 38.20 | 4.62 | 14.94 | 32.56 | 25.21 | 46.00 | -20.79 |
| 31V | 511.994 | 45.00 | 4.70 | 15.92 | 32.55 | 33.07 | 46.00 | -12.93 |
| 32H | 336.070 | 56.00 | 4.02 | 15.78 | 32.77 | 43.03 | 46.00 | -2.97 |
| 33H | 336.079Qp | 54.77 | 4.02 | 15.78 | 32.77 | 41.80 | 46.00 | -4.20 |
| 34H | 352.000 | 52.00 | 4.12 | 14.02 | 32.80 | 37.34 | 46.00 | -8.66 |
| 35H | 398.129 | 43.70 | 4.49 | 13.86 | 32.70 | 29.34 | 46.00 | -16.66 |



COMPATIBLE ELECTRONICS

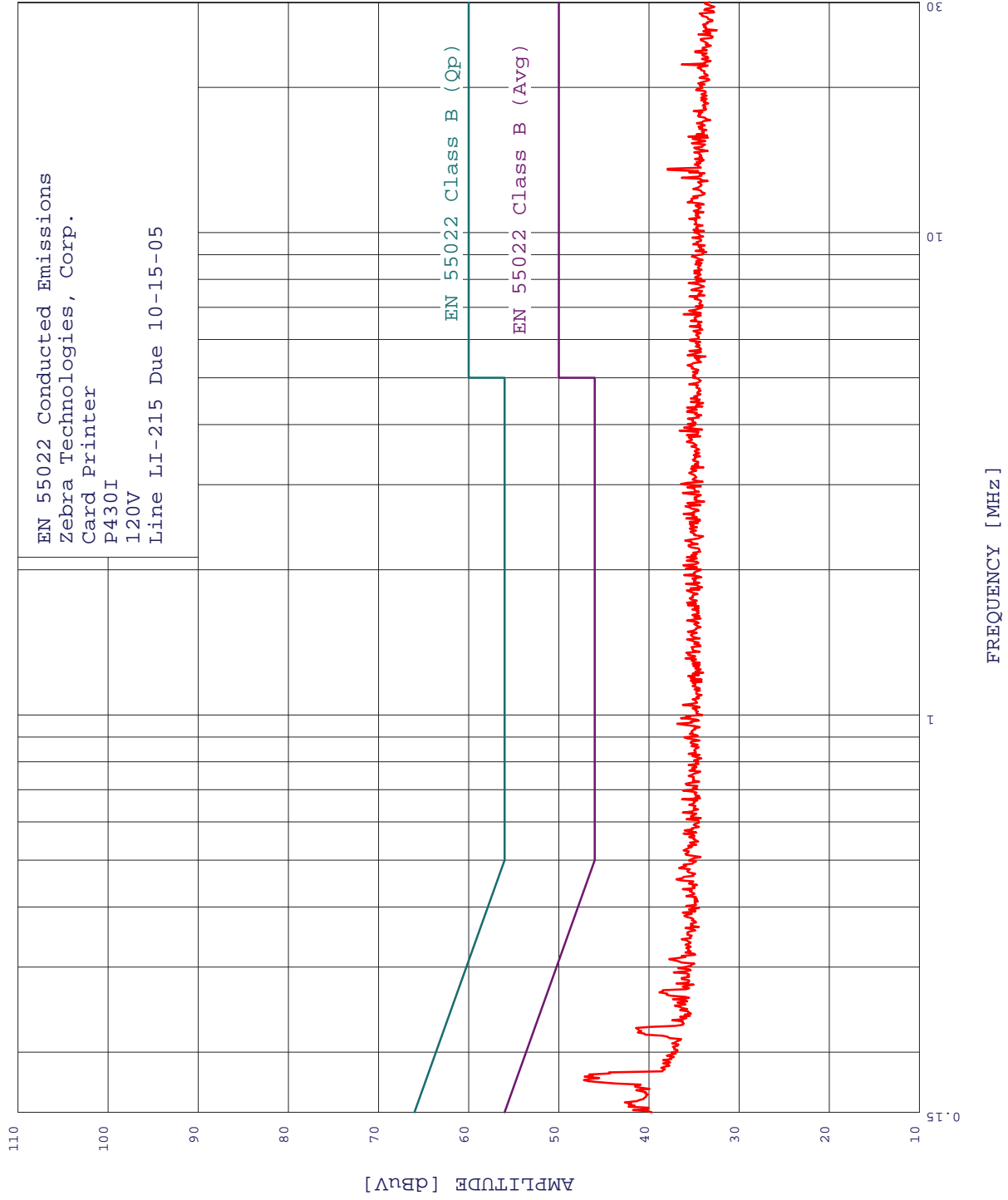
Test Location : Compatible Electronics **Page** : 2/2
Customer : **Date** : 09/20/2005
Manufacturer : Zebra Technologies, Corp. **Time** : 02:25:52 PM
Eut name : Card Printer **Lab** : F
Model : P430I **Test Distance** : 3.00 Meters
Serial # : none
Specification : FCC Pt. 15- Class B
Distance correction factor (20 * log(test/spec)) : 0.00
Test Mode : Engineering
Clocks: 14.7456, 32, 24, 10MHz.
Test Engineer: R. Ramirez
Spurious Emissions

| Pol | Freq MHz | Reading dBuV | Cable loss dB | Antenna factor dB | Amplifier gain dB | Corr'd rdg = R dBuV/m | Limit = L dBuV/m | Delta R-L dB |
|-----|-------------|-----------------|---------------------|-------------------------|-------------------------|-----------------------------|------------------------|--------------------|
| 36H | 412.891 | 42.20 | 4.50 | 13.69 | 32.65 | 27.74 | 46.00 | -18.26 |
| 37H | 479.999 | 45.70 | 4.62 | 14.94 | 32.56 | 32.70 | 46.00 | -13.30 |
| 38H | 511.997 | 41.30 | 4.70 | 15.92 | 32.55 | 29.37 | 46.00 | -16.63 |



8/01/2005 10:55:12

EMISSION LEVEL [dBuV] PEAK
Graph for Peak





EN 55022 Conducted Emissions
Zebra Technologies, Corp.
Card Printer
P430I
120V
Line LI-215 Due 10-15-05
TEST ENGINEER : R. Ramirez

6 highest peaks above -50.00 dB of EN 55022 Class B (Avg) limit line

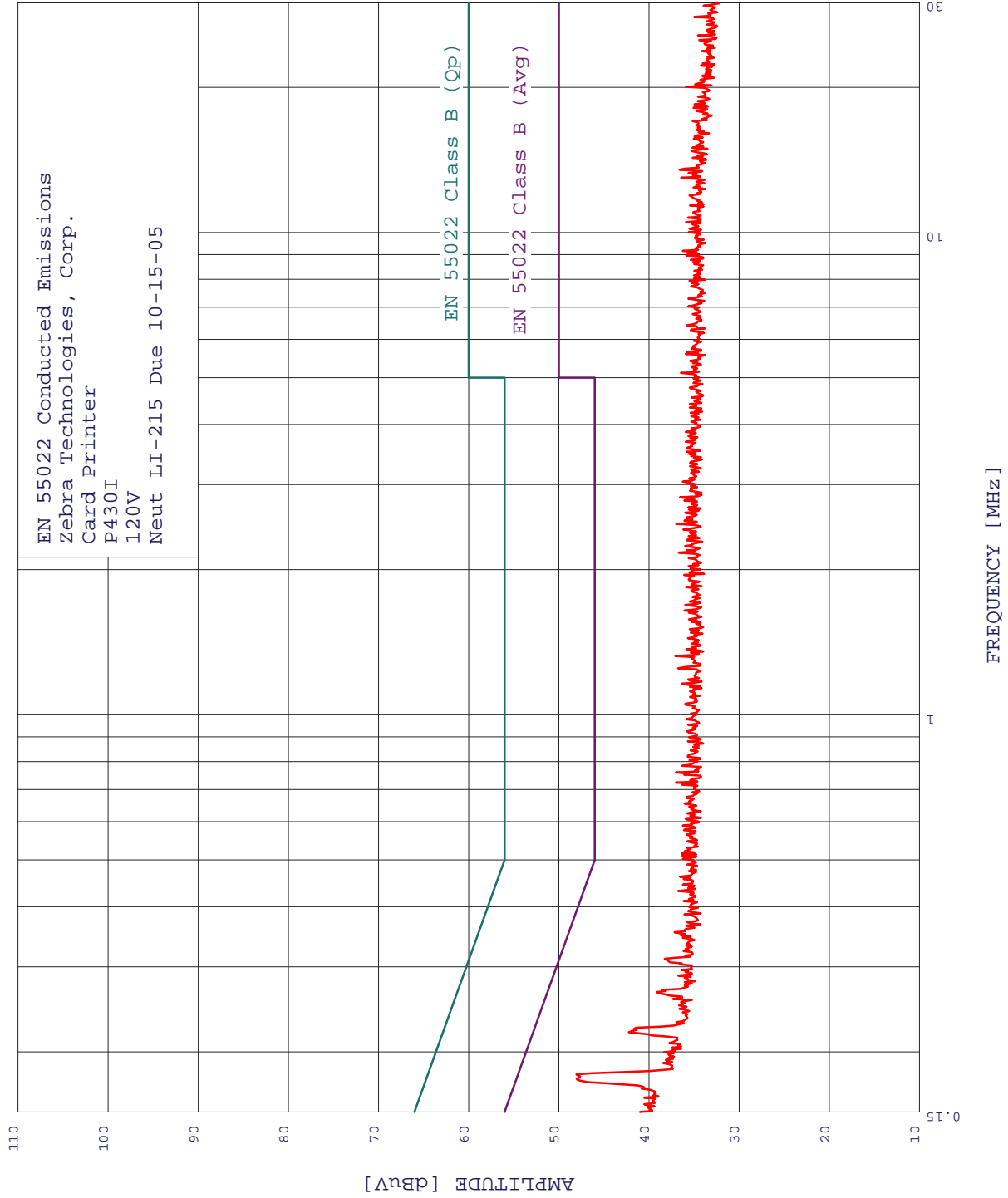
Peak criteria : 3.00 dB, Curve : Peak

| Peak# | Freq(MHz) | Amp(dBuV) | Limit(dB) | Delta(dB) |
|-------|-----------|-----------|-----------|-----------|
| 1 | 0.175 | 47.21 | 54.72 | -7.51 |
| 2 | 0.224 | 41.43 | 52.65 | -11.23 |
| 3 | 13.486 | 37.92 | 50.00 | -12.08 |
| 4 | 0.266 | 38.84 | 51.24 | -12.41 |
| 5 | 22.310 | 36.37 | 50.00 | -13.63 |
| 6 | 0.150 | 39.69 | 56.00 | -16.31 |



8/01/2005 10:59:22

EMISSION LEVEL [dBuV] PEAK
Graph for Peak





EN 55022 Conducted Emissions
Zebra Technologies, Corp.
Card Printer
P430I
120V
Neut LI-215 Due 10-15-05
TEST ENGINEER : R. Ramirez

7 highest peaks above -50.00 dB of EN 55022 Class B (Avg) limit line

Peak criteria : 3.00 dB, Curve : Peak

| Peak# | Freq(MHz) | Amp(dBuV) | Limit(dB) | Delta(dB) |
|-------|-----------|-----------|-----------|-----------|
| 1 | 0.180 | 48.02 | 54.50 | -6.48 |
| 2 | 1.325 | 37.06 | 46.00 | -8.94 |
| 3 | 2.488 | 36.97 | 46.00 | -9.03 |
| 4 | 0.220 | 42.23 | 52.83 | -10.59 |
| 5 | 0.312 | 38.25 | 49.92 | -11.67 |
| 6 | 0.266 | 39.14 | 51.24 | -12.10 |
| 7 | 0.150 | 41.00 | 56.00 | -15.00 |

COMPATIBLE ELECTRONICS

Test Location : Compatible Electronics
Customer :
Manufacturer :
Eut name :
Model :
Serial # :
Specification : FCC Pt. 15- Class B
Distance correction factor (20 * log(test/spec)) : 0.00
Test Mode :
Page : 1/1
Date : 05/03/2006
Time : 07:37:58 AM
Lab : F
Test Distance : 3.00 Meters

| Pol | Freq MHz | Reading dBuV | Cable loss dB | Antenna factor dB | Amplifier gain dB | Corr'd rdg = R dBuV/m | Limit = L dBuV/m | Delta R-L dB |
|-----|-------------|-----------------|---------------------|-------------------------|-------------------------|-----------------------------|------------------------|--------------------|
| 1V | 13.553 | 28.20 | 1.53 | 10.19 | 0.00 | 39.92 | 40.00 | -0.08 |
| 2V | 13.567 | 25.70 | 1.53 | 10.18 | 0.00 | 37.42 | 40.00 | -2.58 |

