

EMI -- TEST REPORT

Test Report No. : T31172-00-00HU	15. November 2006
	Date of issue

Type / Model Name : Liberty PX with Emerald Electronic

Product Description : Electronic Article Surveillance Detection System

Applicant : Checkpoint Systems, Inc.

Address : 101 Wolf Drive, Thorofare

New Jersey, USA 08086

Manufacturer : Checkpoint Systems Dominican Republic

Address : Checkpoint Caribbean, Zona Franca Los Alcarrizos

Manzana A. Edif No 1, Apartado Postal No. 182-0

Los Alcarrizos, Santo Domingo, Republica Dominicana

Licence holder : Checkpoint Systems, Inc.

Address : 101 Wolf Drive, Thorofare

New Jersey, USA 08086

Test Result according to the standards listed in clause 1 test standards:	POSITIVE
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The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15 Subpart C - Intentional Radiators (October 01, 2005)

Part 15, Subpart C, Section 15.223	Operation in the band 1.705-10 MHz §15.223(a) Radiated emissions, Fundamental & Harmonics
Part 15, Subpart C, Section 15.207(a)	AC Line conducted emissions
Part 15, Subpart C, Section 15.209(a)	Radiated emissions, general requirements
Part 15, Subpart C, Section 15.215(c)	Additional Provisions to the general radiated emission limitations

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2 SUMMARY

GENERAL REMARKS:

None

FINAL ASSESSMENT:


The equipment under test **fulfills** the EMI requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 09. October 2006

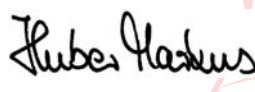
Testing concluded on : 25. October 2006

Checked by:


Klaus Gegenfurtner
Ich bestätige die
Richtigkeit und Integrität
dieses Dokuments
2006.11.15 08:53:40
+01'00'

Klaus Gegenfurtner
Dipl.-Ing.(FH)
Manager. Radio Group

Tested by:


Huber Markus
Ich bin der Verfasser
dieses Dokuments
2006.11.15 08:45:07
+01'00'

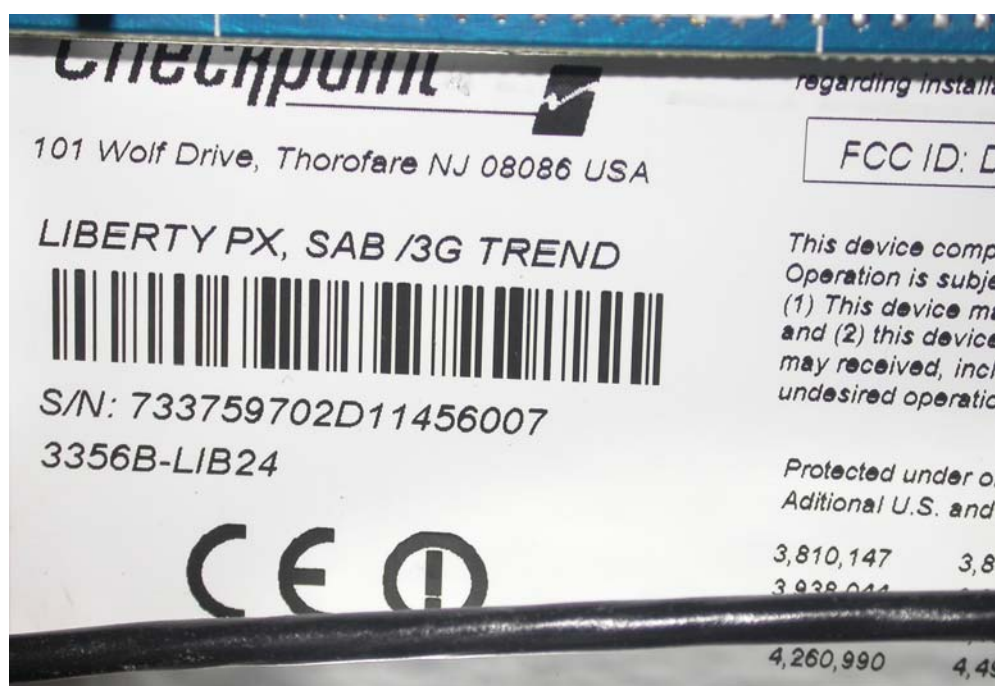
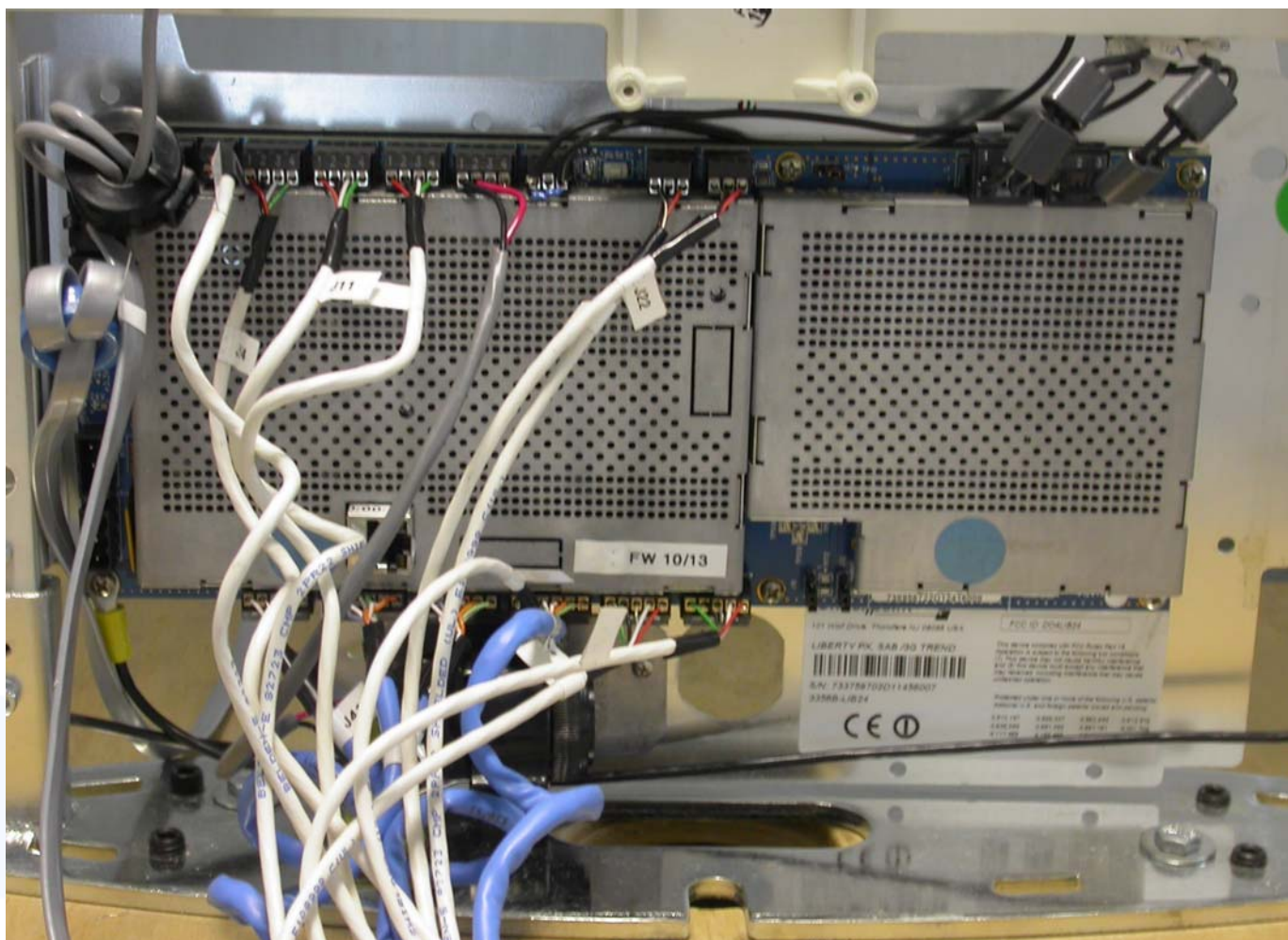
Huber Markus

3 EQUIPMENT UNDER TEST

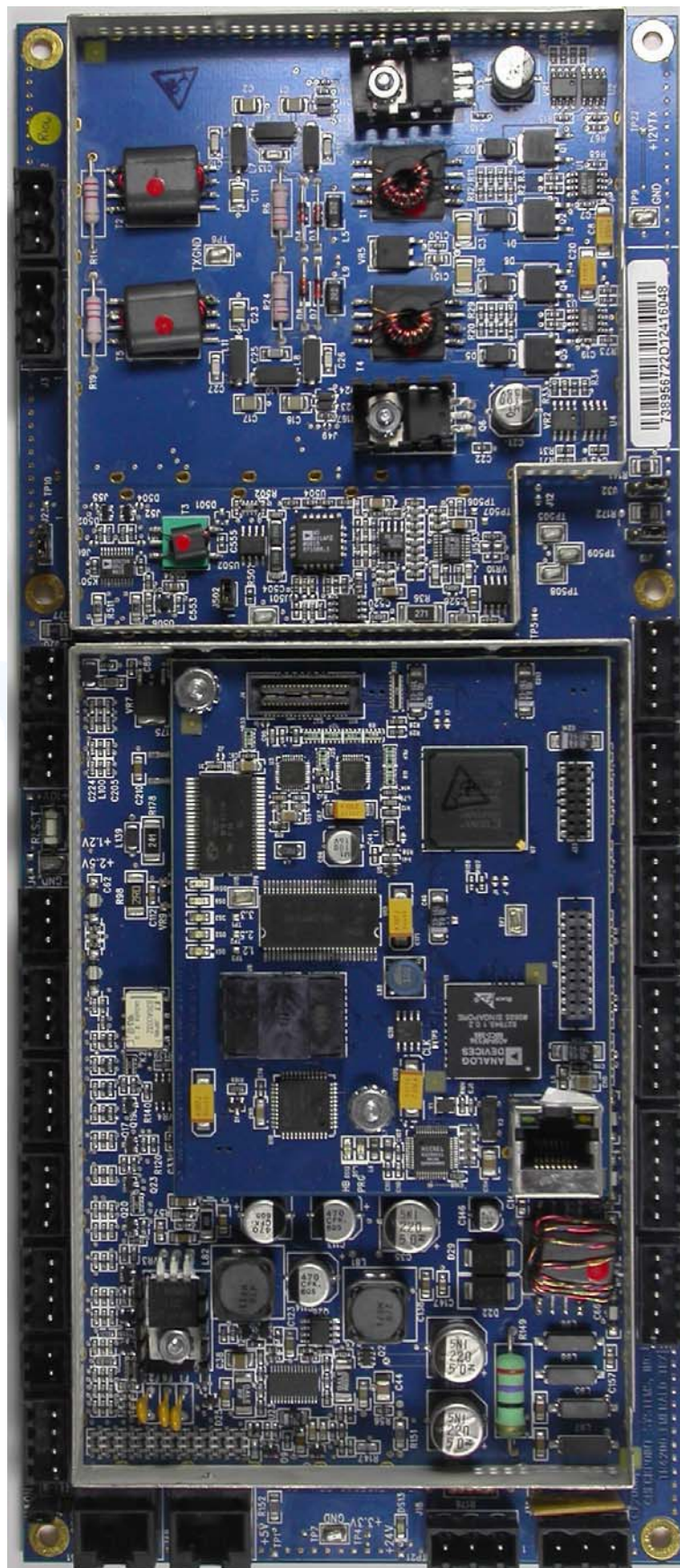
3.1 Photo documentation of the EuT



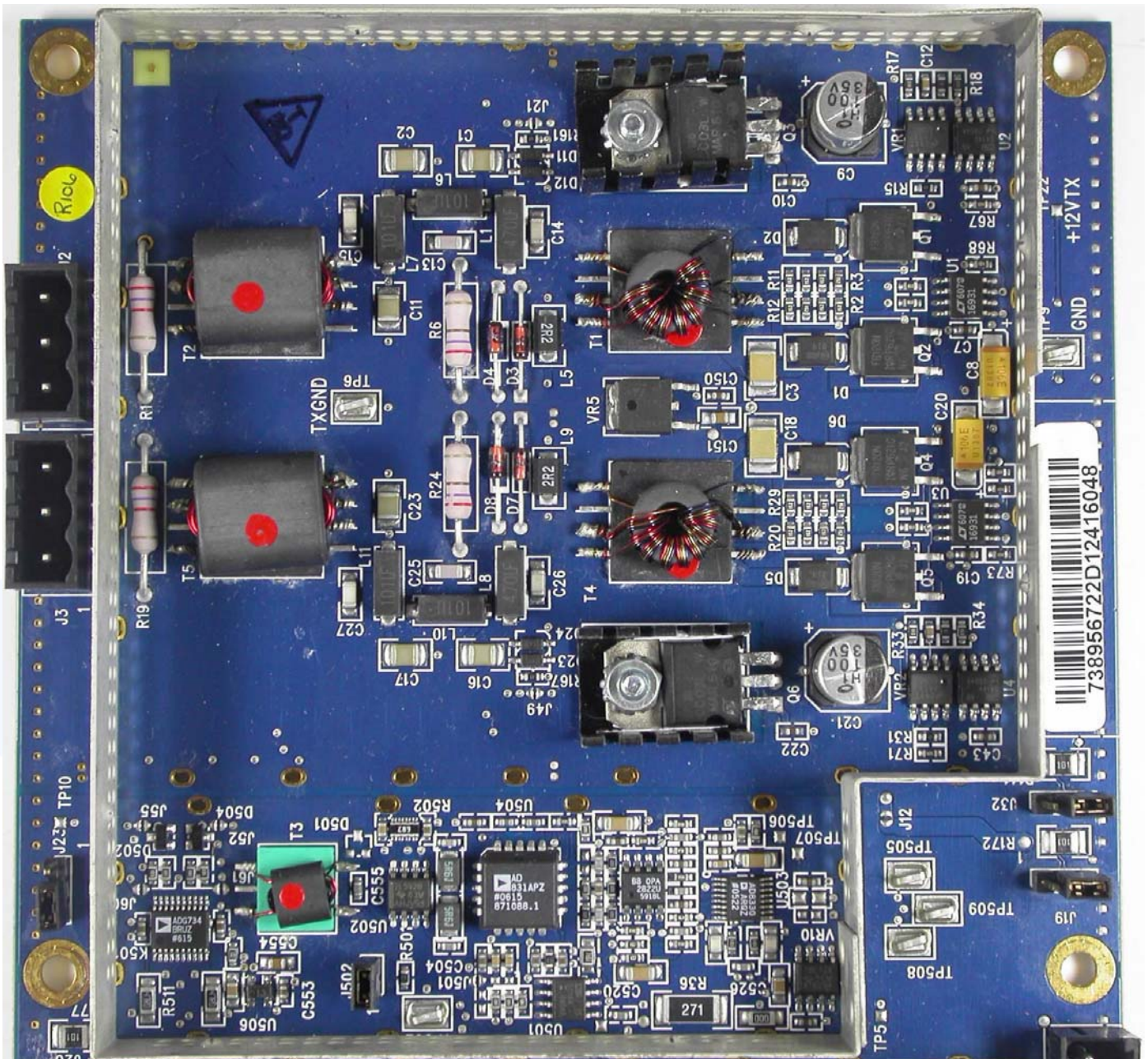
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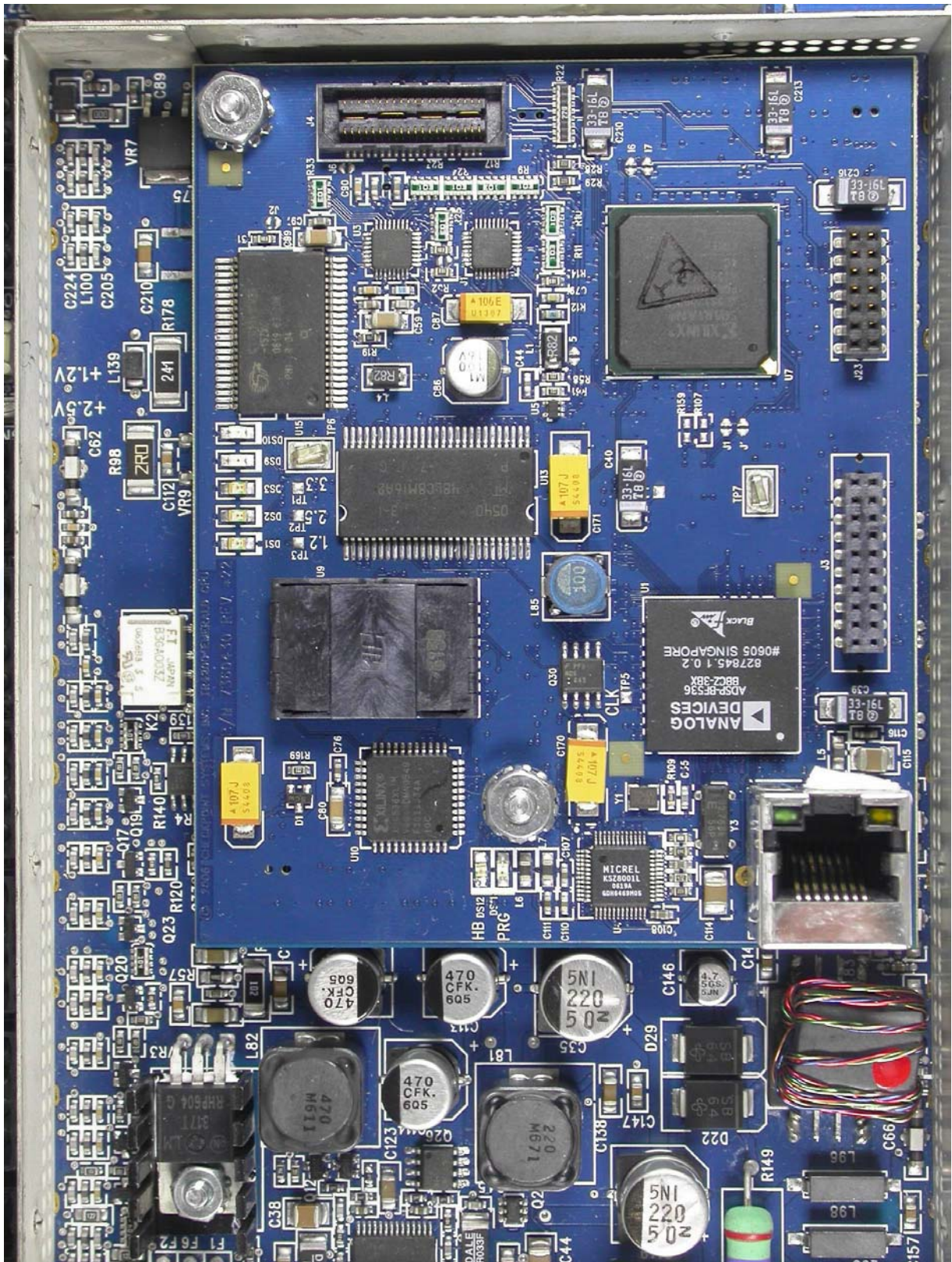


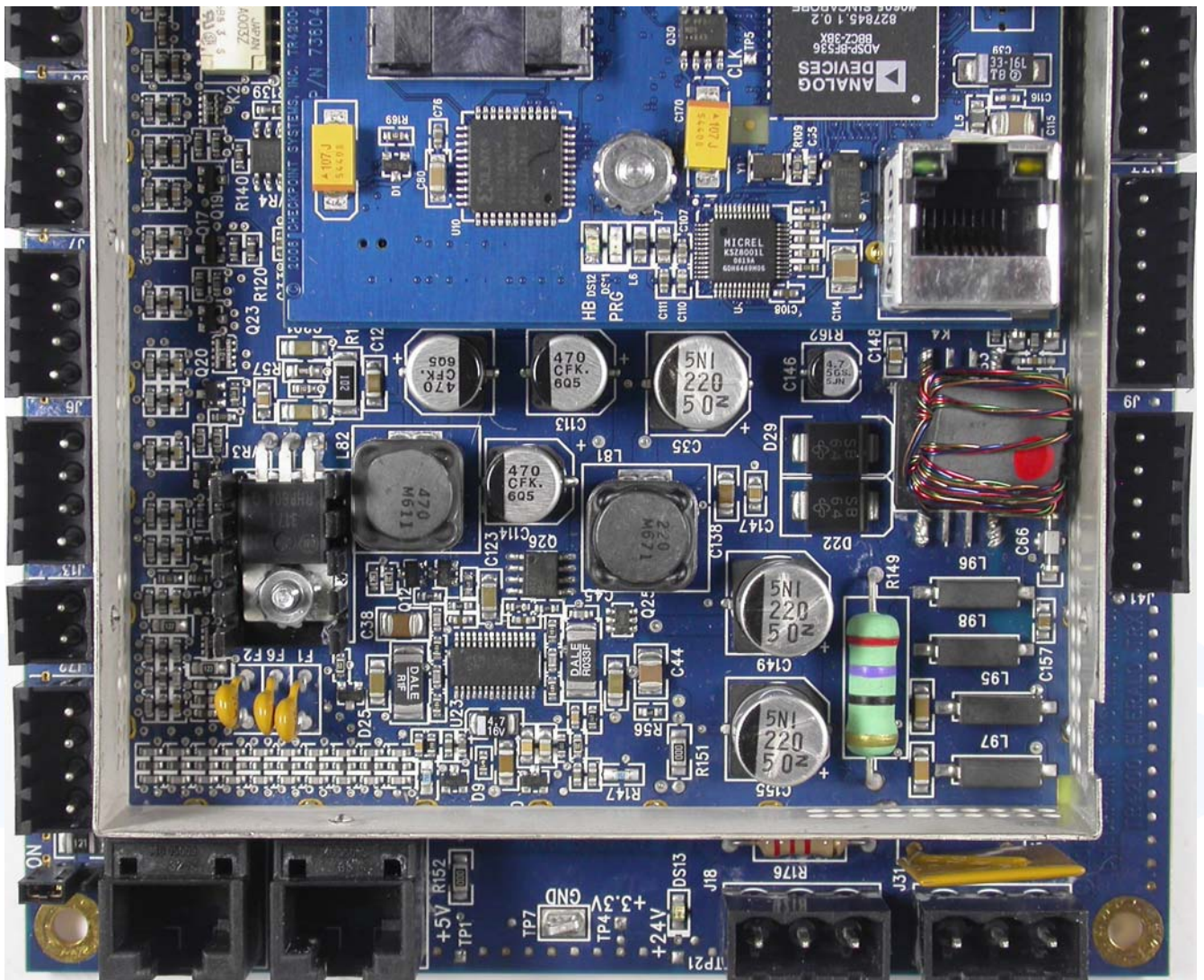
Emerald Electronic:

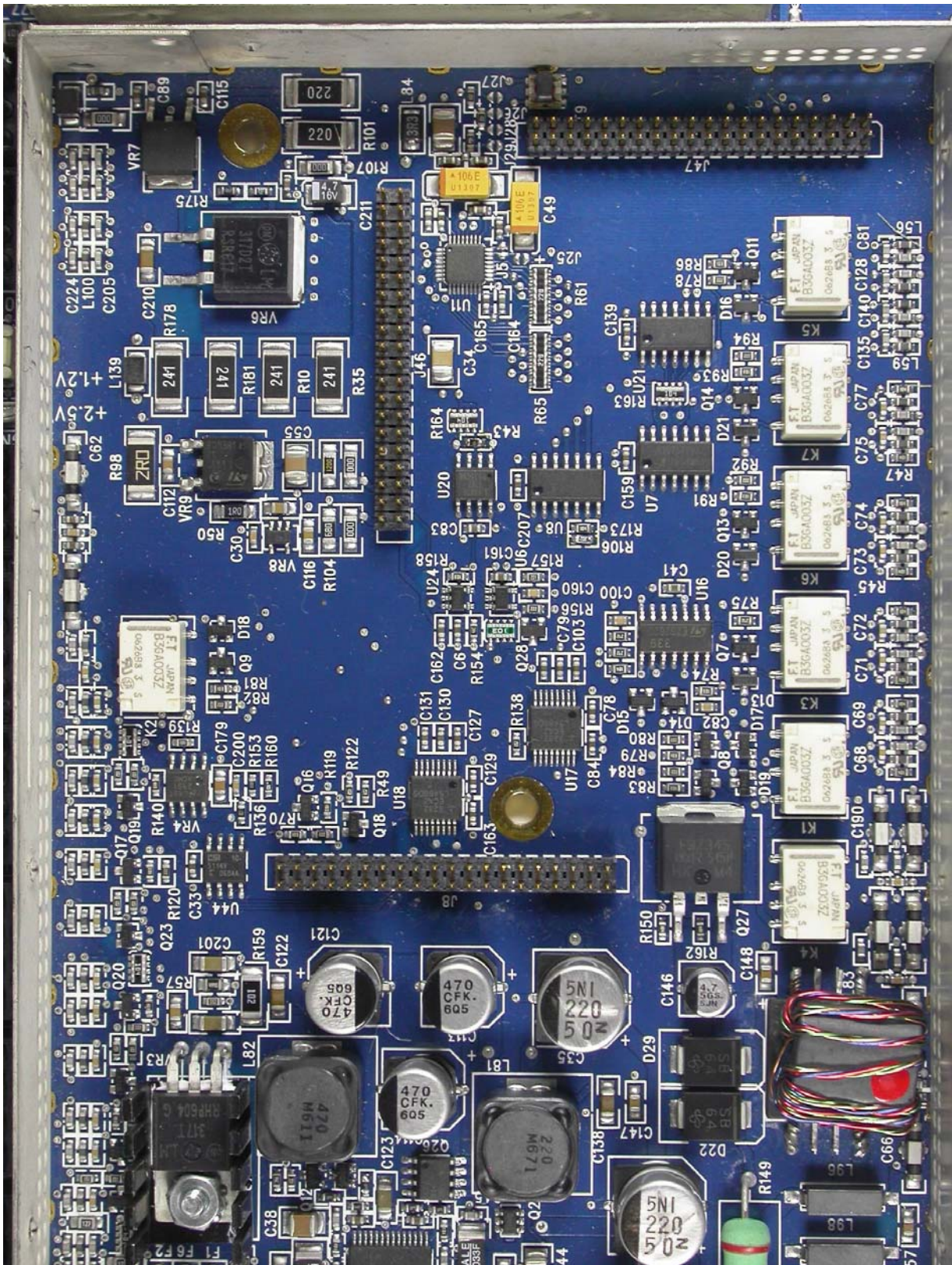


FCC ID: DO4EMRLDUP

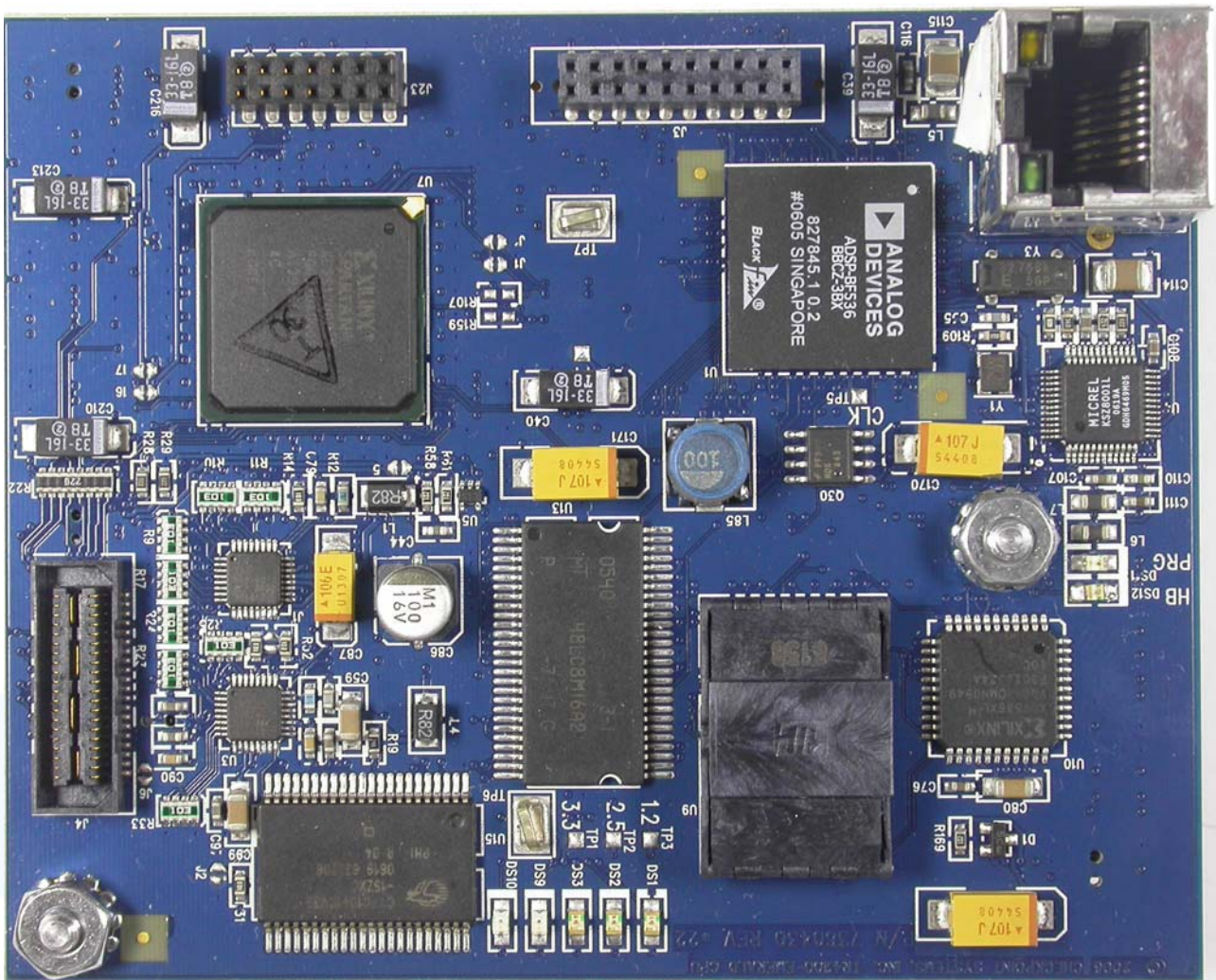


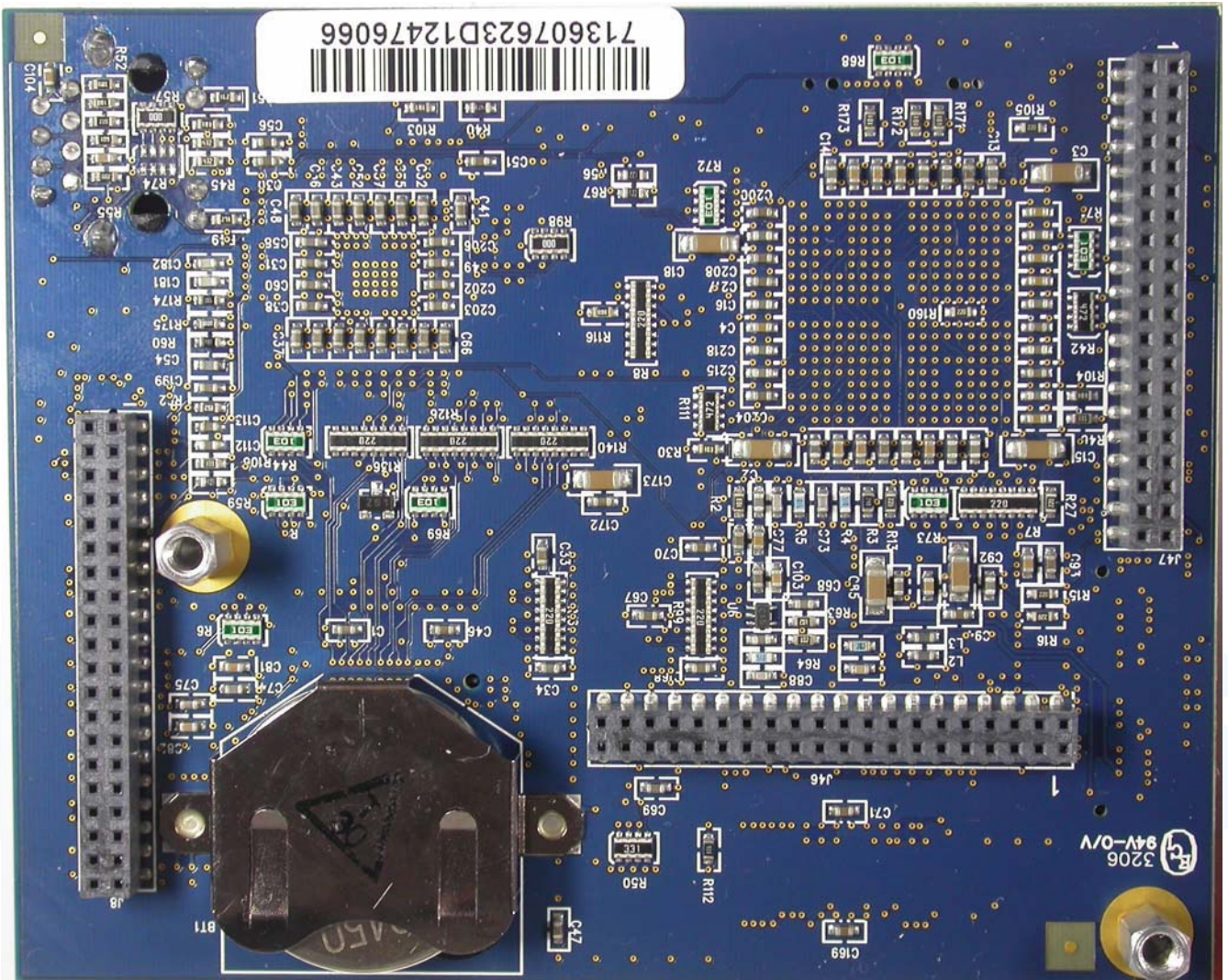




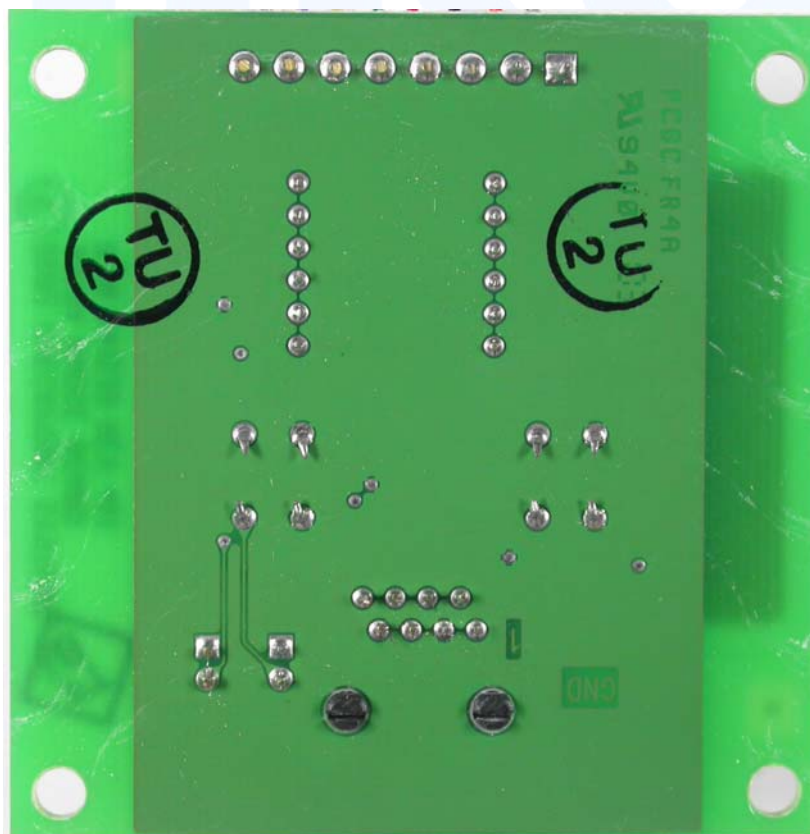
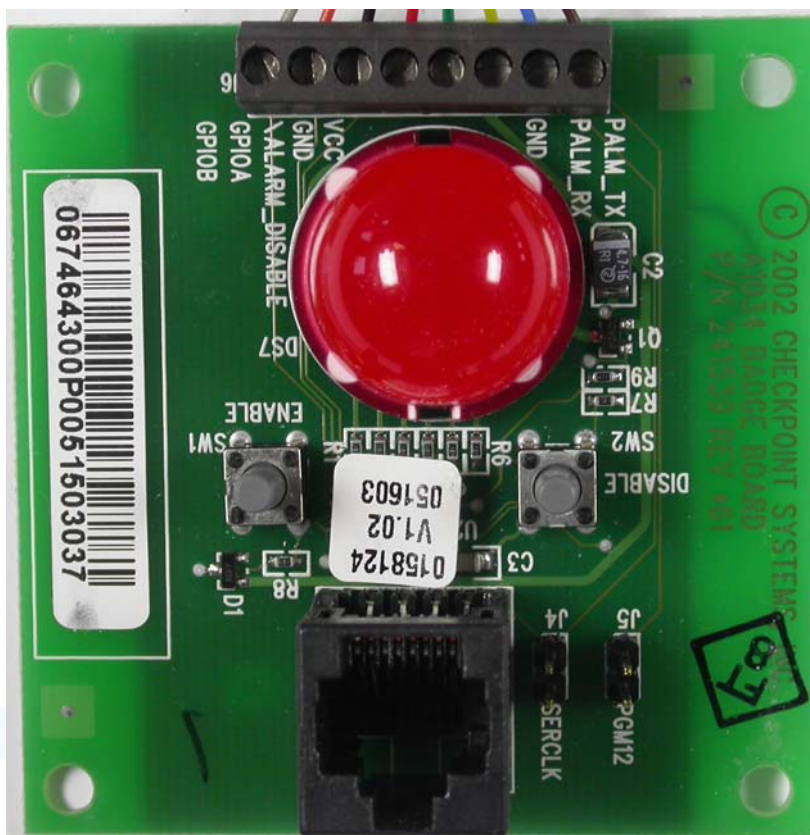


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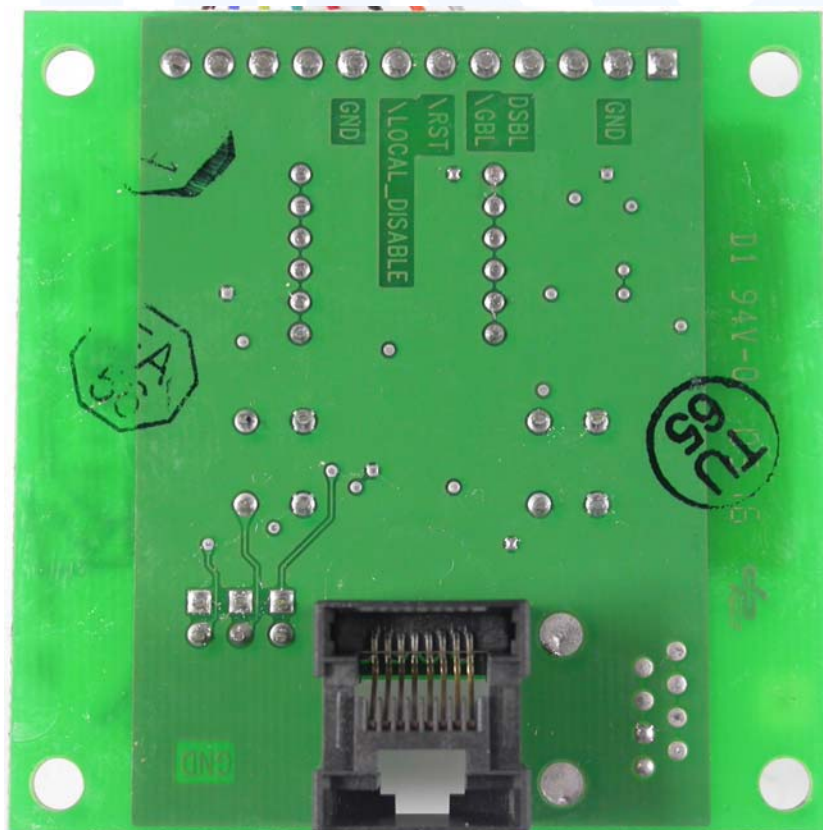




Badge Board Type 1:



Badge Board Type 2:



FCC ID: DO4EMRLDUP

GlobTek PSU:



Checkpoint®

ITE POWER SUPPLY(开关电源适配器)

CHECKPOINT P/N(料号):7375794

GLOBTEK P/N(料号):GS-599 UF

MODEL(型号):GT-2S5024D-R

INPUT(输入):100-240V~1.6A MAX,50-60Hz,60-70VA

OUTPUT(输出):+24V === 2.1A

OUTPUT POWER(输出功率):50W MAX

Checkpoint® **GlobTek®, Inc.**
KETI
HU10040-4014A
품명: 적류전원장치
모델명: GT-2S5024D-R
정격입력: 100-240V~50-60Hz 1.6A
정격출력: DC 24V, 2.1A
A/S 센터: GlobTek, Inc. Tel) 02-3665-3367
제조사: 세니 컴퓨터 테크놀로지 유한회사
제조국: 중국

LEVEL 3 **UL** LISTED 6D44 US E170507 I.T.E. POWER SUPPLY

GS TÜV Rheinland

CE

N4292 Q04758

SAE A005049 **LPS**

PS CHECKPOINT JAPAN

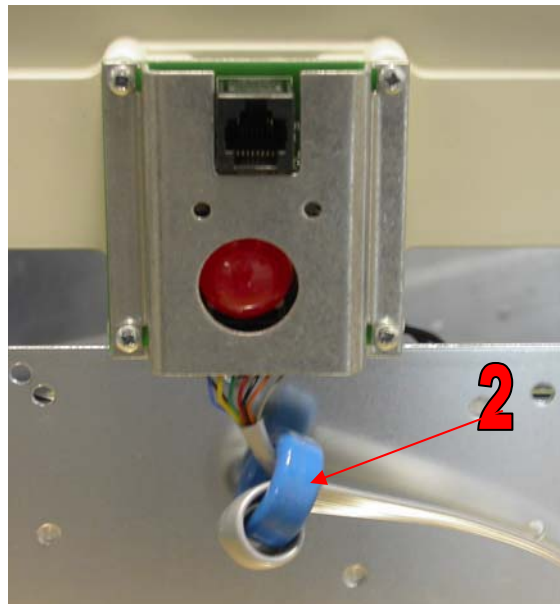
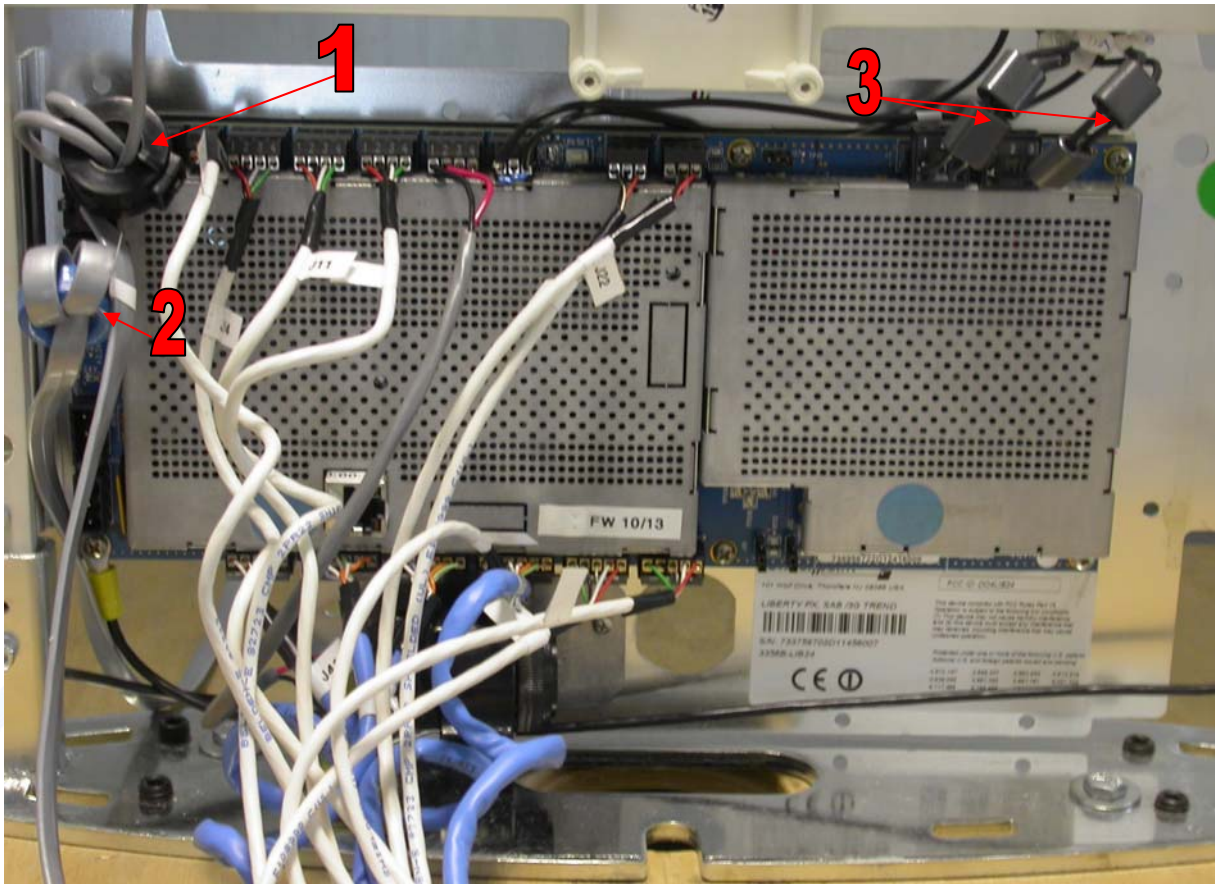
RED:+
BLACK:COM

GlobTek, Inc. MADE IN CHINA 中国制造

CPC

RoHS00984803/06

3.2 Ferrite Locations





Ferrite Locations:

1. Fair Rite P/N 284760 (Order No 0443806406) – Add a ferrite on the end of the People Counter Sensor Cable with three turns through the ferrite.
2. Fair Rite P/N 7118986 (Order No B6429-L618-X35) – Add a ferrite on each end of the Badge Board Cable with three turns through the ferrite.
3. Fair Rite P/N (Order No 2865-000-202) – Add two ferrites on the end of the Tx1 and Tx2 connection with one turn.
4. Fair Rite P/N 284760 (Order No 0443806406) – Add a ferrite on the end of the DC Output cable of the GlobTek PSU with three turns through the ferrite.

3.3 Power supply system utilised

Power supply voltage : 115 V / 60 Hz / 1 ϕ
24 V / DC

3.4 Short description of the Equipment under Test (EuT)

The Liberty PX Antenna with Emerald Electronic is an Electronic Article Surveillance System (EAS). The system detects target tags attached to merchandise. The targets resonate in the region of 8.2 MHz or 9.5 MHz. When an article of merchandise is purchased, the target is deactivated which causes it to no longer resonate. The Liberty PX Antenna with Emerald Electronic monitors an area 3-feet on either side of the antenna in the 7.4 to 10.0 MHz range and triggers an alarm when a non-deactivated target is detected.

Number of tested samples: 1
Serial number: see Photo documentation of the EuT under Point 3 / Equipment Under Test

EuT operation mode:

The equipment under test was operated during the measurement under the following conditions:

- Continuous sweep mode

-

-

EuT configuration:

(The CDF filled by the applicant can be viewed at the test laboratory.)

The following peripheral devices and interface cables were connected during the measurements:

- PSU (Power Supply Unit) GlobTek Model : GT-2S5024D-R, S/N RoHS00984803/06
- Standard AC mains cable Model :
- Model :
- Model :
- Model :
- Model :

- customer specific cables

- For detailed information about the connected cables during the test and other technical details, see attached CDF (Subclause 7) which was filled out from the manufacturer and Photo documentation of the EuT under Point 3 / Equipment Under Test.

4 TEST ENVIRONMENT

4.1 Address of the test laboratory

mikes-testingpartners gmbh
Ohmstrasse 2-4
94342 Strasskirchen
Germany

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 /11.2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.4 Measurement Protocol for FCC, VCCI and AUSTEL

4.4.1 GENERAL INFORMATION

4.4.1.1 Test Methodology

Conducted and radiated disturbance testing is performed according to the procedures in International Special Committee on Radio Interference (CISPR) Publication 22, European Standard EN 55022 as shown under section 1 of this report.

In compliance with 47 CFR Part 15 Subpart A Section 15.38 testing for FCC compliance may be done following the ANSI C63.4-2003 procedures and using the CISPR 22 Limits.

4.4.1.2 Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral using the appropriate impedance characteristic or left unterminated. Where appropriate, cables are manually manipulated with respect to each other thus obtaining maximum disturbances from the unit.

4.4.2 DETAILS OF TEST PROCEDURES

General Standard Information

The test methods used comply with CISPR Publication 22, EN 55022 - "Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement" and with 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."

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4.5 Discovery of worst case measurement conditions

There are two types of Emerald Electronic. The difference between the types is the Firmware. The different firmware allows the Emerald Electronic to work in two frequency ranges:

- Pulsed Frequency Table 1 (Firmware Version 9/22/06)

Center frequency 8.2MHz +/- 300KHz

Value CT_8200_300[] = {8500, 8460, 8420, 8390, 8340, 8300, 8260, 8220, 8180, 8140, 8100, 8060, 8020, 7980, 7940, 7900};

Center frequency 8.6MHz +/- 300KHz

Value CT_8600_300[] = {8900, 8860, 8820, 8780, 8740, 8700, 8660, 8620, 8580, 8540, 8500, 8460, 8420, 8390, 8340, 8300};

Center frequency 9.0MHz +/- 300KHz

Value CT_9000_300[] = {9300, 9260, 9220, 9180, 9140, 9100, 9060, 9020, 8980, 8940, 8900, 8860, 8820, 8780, 8740, 8700};

Center frequency 9.2MHz +/- 300KHz

Value CT_9200_300[] = {9500, 9460, 9420, 9380, 9340, 9300, 9260, 9220, 9180, 9140, 9100, 9060, 9020, 8980, 8940, 8900};

Center frequency 9.5MHz +/- 300KHz

Value CT_9500_300[] = {9800, 9760, 9720, 9680, 9640, 9600, 9560, 9520, 9480, 9440, 9400, 9360, 9320, 9280, 9240, 9200};

Multi tag with bins 0-7 center frequency 9.2MHz and bins 8-16 center frequency 8.2MHz each range +/- 300KHz

Value CTMult_9200_8200_300[] = {9500, 9404, 9329, 9243, 9157, 9071, 8986, 8900, 8500, 8414, 8329, 8243, 8157, 8071, 7986, 7900};

- Pulsed Frequency Table 2 (Firmware Version 10/13/06)

Center frequency 8.2MHz +/- 410KHz

Value CT_8200_300[] = {8610, 8555, 8500, 8446, 8391, 8337, 8282, 8227, 8173, 8118, 8063, 8009, 7954, 7899, 7845, 7790};

Center frequency 8.6MHz +/- 430KHz

Value CT_8600_300[] = {9030, 8973, 8915, 8858, 8801, 8743, 8686, 8629, 8571, 8514, 8457, 8399, 8342, 8285, 8227, 8170};

Center frequency 9.0MHz +/- 450KHz

Value CT_9000_300[] = {9450, 9390, 9330, 9270, 9210, 9150, 9090, 9030, 8970, 8910, 8850, 8790, 8730, 8670, 8610, 8550};

Center frequency 9.2MHz +/- 460KHz

Value CT_9200_300[] = {9660, 9599, 9537, 9476, 9415, 9353, 9292, 9231, 9169, 9108, 9047, 8985, 8924, 8863, 8801, 8740};

Center frequency 9.5MHz +/- 480KHz

Value CT_9500_300[] = {9980, 9916, 9852, 9788, 9724, 9660, 9596, 9532, 9468, 9404, 9340, 9276, 9212, 9148, 9084, 9020};

Multi tag with bins 0-7 center frequency 9.2MHz and bins 8-16 center frequency 8.2MHz each range +/- 300KHz

Value CTMult_9200_8200_300[] = {9500, 9404, 9329, 9243, 9157, 9071, 8986, 8900, 8500, 8414, 8329, 8243, 8157, 8071, 7986, 7900};

There are also two types of the Badge Boards. The hardware differences between the two boards are that unlike Badge I, Badge II has:

- 1) Longer switch "shafts" that extend beyond the metal cover plate
- 2) Recessed RJ-45 connector
- 3) Dual opto-isolator IC
- 4) 12 position connector instead of 8 position connector in Badge I.

Measurements shows that the differences between the Badge boards has no influence to the emissions of the PX with the Emerald Electronic.

To find out the worst case conditions for the complete measurements the following tests have been performed with both Emerald Electronics:

- ⇒ Measurement of the radiated fieldstrength of the operating frequency of the 2 versions. This measurement have been performed in order to find out if the Firmware has an influence to the magnetic field strength.
- ⇒ Measurement of the radiated spurious emissions of the 2 versions. This measurement have been performed in order to find out if the different Firmware has an influence to the spurious emissions.
- ⇒ Bandwidth plots on all operating frequencies of the 2 versions.

Summarizing:

- ⇒ Conducted emissions: no essential differences on the 2 versions
Test was performed on Emerald with Pulsed Frequency Table1
- ⇒ Magnetic field strength: no essential differences on the 2 versions
Test was performed on Emerald with Pulsed Frequency Table1
- ⇒ Spurious emissions: no essential differences on the 2 versions
Test was performed on Emerald with Pulsed Frequency Table1
- ⇒ Bandwidth plots:
Test was performed on Emerald with Pulsed Frequency Table 2

This test results are documented in the following sections of this test report.

The product Liberty PX with Emerald Electronic has been tested on the following frequencies:

Cont. sweep mode. 8.2 MHz
 8.2 MHz & 9.2 MHz (Multi tag)

For detailed information about the connected cables during the test and other technical details, see attached CDF (Subclause 7) which was filled out from the manufacturer and Photo documentation of the EuT under Point 3 / Equipment Under Test.

4.6 Deviations or Exclusions from the Requirements and Standards

Measurement of the fundamental – 7.4 to 10.0 MHz – was performed by setting a spectrum analyzer to “max-hold”, peak detector, a 300 kHz bandwidth and a span from 6.5 MHz to 10 MHz. A resolution bandwidth of 300 kHz was used in performing the “true peak” measurements, because increasing the bandwidth above 300 kHz did not increase the detected peak of the fundamental.