

Recognized by the  
Federal Communications Commission  
**Anechoic chamber registration no.: 90462 (FCC)**  
**Anechoic chamber registration no.: 3463 (IC)**  
TCB ID:DE 0001



Accredited by the  
German Accreditation Council  
DAR-Registration Number  
DAT-P-176/94-D1



Independent ETSI  
compliance test house



Accredited Bluetooth<sup>®</sup> Test Facility (BQTF)

|                      |                                         |
|----------------------|-----------------------------------------|
| Test report no.      | : 2-3997-01-02/05                       |
| Applicant            | : B.E.A. Inc.                           |
| Type                 | : B.E.A. loop detector<br>MATRIX family |
| Test Standard        | : FCC Part 15 / RSS210                  |
| FCC ID               | : G9B-MATRIX                            |
| Certification No. IC | : 4680A-MATRIX                          |

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## 1 General information

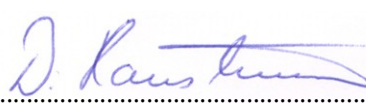
### 1.1 Administrative data of the test facility

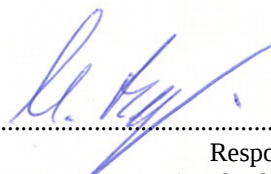
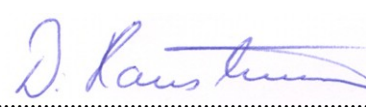
#### 1.1.1 Identification of the testing laboratory

|                                     |                                                                                                                                       |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Company name:                       | Cetecom ICT Services GmbH                                                                                                             |
| Address:                            | Untertürkheimerstr. 6-10<br>D-66117 Saarbruecken<br>Germany                                                                           |
| Laboratory accreditation:           | DAR-Registration No. DAT-P-176/94-D1<br>Bluetooth Qualification Test Facility (BQTF)<br>Federal Communications Commission (FCC)       |
| Responsible for testing laboratory: | Identification/Registration No : 90462<br>Michael Berg<br>Phone: +49 681 598 0<br>Fax: +49 681 598 9075<br>email: info@ict.cetecom.de |

### 1.2 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

 /   
.....  
Responsible for testing laboratory  
(Michael Berg / Dirk Hausknecht)

 /   
.....  
Responsible for test report  
(Michael Berg / Dirk Hausknecht)

### **1.3 Details of Applicant**

Name : B.E.A. Inc.  
Address : 100 Enterprise Drive, RIDC Park West  
City : Pittsburgh, PA 15275  
Country : U.S.A.  
Phone : + 1 412 249 4100  
Fax : + 1 412 249 4101

USA Contact : Mr Thomas Schluep  
Phone : + 1 412 249 4100  
Fax : + 1 412 249 4101  
e-mail : tpschluep@beainc.com  
Europe Contact : Mr Yves Borlez  
Phone : + 32 4 361 68 68  
Fax : + 32 4 361 28 68  
e-mail : yves.borlez@bea.be

### **1.4 Application Details**

Date of receipt of application : 2005-07-14  
Date of receipt of test item : 2005-07-14  
Date(s) of test : 2005-07-14  
Date of report : 2005-07-14

# CETECOM ICT Services GmbH

Untertürkheimer Str. 6-10, 66117 Saarbruecken  
RSC-Laboratory

Phone: +49 (0) 681 598-0  
Phone: +49 (0) 681 598-0

Fax: -9075  
Fax: -9075

Test report no.: 2-3997-01-02/05

Date: 2005-07-14

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## 1.5 Test Item

|                                                  |   |                                                                                                                                                                              |
|--------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of equipment                                | : | inductive loop reader                                                                                                                                                        |
| Model name                                       | : | B.E.A. loop detector MATRIX family, consists of :<br>MATRIX-S-12-24<br>MATRIX-D-12-24<br>MATRIX-S-110<br>MATRIX-D-100<br>MATRIX-2-S-12-24<br>MATRIX-2-S-110<br>10MATRIXII-RH |
| Manufacturer                                     | : | B.E.A. Inc.                                                                                                                                                                  |
| Address                                          | : | 100 Enterprise Drive, RIDC Park West                                                                                                                                         |
| City                                             | : | Pittsburgh, PA 15275                                                                                                                                                         |
| Country                                          | : | U.S.A.                                                                                                                                                                       |
| Tested to Radio Standards Specification(RSS) No. | : | 210 Issue 5                                                                                                                                                                  |
| Open Area Test Site Industry Canada Number       | : | 3463                                                                                                                                                                         |
| Frequency Range (or fixed frequency)             | : | 55 – 62 kHz                                                                                                                                                                  |
| R F: Power in Watts                              | : | -/-                                                                                                                                                                          |
| Field Strength (at what distance)                | : | 103 dBµV/m in 3m                                                                                                                                                             |
| Occupied Bandwidth (99% BW)                      | : | 1 kHz                                                                                                                                                                        |
| Type of Modulation                               | : | N0N (inductive loop)                                                                                                                                                         |
| Antenna Information                              | : | Loop antenna                                                                                                                                                                 |
| Emission Designator                              | : | 1k00N0N                                                                                                                                                                      |
| Transmitter Spurious (worst case)                | : | 812µV/m in 3m                                                                                                                                                                |
| Receiver Spurious (worst case)                   | : | Not applicable                                                                                                                                                               |
| IC no.                                           | : | 4680A-MATRIX                                                                                                                                                                 |
| FCC ID                                           | : | G9B-MATRIX                                                                                                                                                                   |

### ATTESTATION:

**DECLARATION OF COMPLIANCE:** I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

### Laboratory Manager :

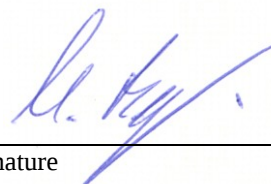
2005-07-14

Michael Berg

Date

Name

Signature



## 1.6 Test Setup

Hardware :  
Software :

## 1.7 Test Specifications

|             |                         |
|-------------|-------------------------|
| <b>FCC:</b> | <b>CFR Part 15.209</b>  |
| <b>IC:</b>  | <b>RSS 210, Issue 5</b> |

## 1.8 Additional informations

The Matrix family consists of three different type of readers.

1. The Matrix loop reader, powered either with low voltage from 12-24 V AC or DC (here used 15V DC) or main voltage 100-130 VAC (here used 117 VAC) or 220-240 VAC. All able to drive one or two loop antennas.
2. The Martix II loop reader, same as above, but different connectors.
3. The Matrix Rite-Hite loop reader, without housing , low voltage from 12-24V AC or DC, here 15V DC used, Single loop antenna only.

We tested the Matrix reader completely, the Matrix II and the Rite-Hite partional.

As the antenna size may vary, we tested the smallest loop with about 3m<sup>2</sup> and four turns of wire and the biggest one with about 10m<sup>2</sup> and two turns of wire.

The samples without transformator (12-24V AC/DC) were tested with a power supply from our house.

## 2 Statement of Compliance

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

### 2.1 Summary of Measurement Results

#### 2.1.1 CFR 47 Part 15 Radio frequency devices

| Section in this Report | Test Name / Section FCC Part 15                                          | Test Name / Section RSS 210 Issue 5           | applicable | Verdict |
|------------------------|--------------------------------------------------------------------------|-----------------------------------------------|------------|---------|
| 4.1                    | § 15.35 (c)<br>Timing of the transmitter (Duty cycle correction factor ) | 6.5 Pulsed Operation                          | NO         |         |
| 4.2                    | § 15.209 (a)<br>FIELDSTRENGTH OF<br>FUNDAMENTAL                          | 6.2.1                                         | YES        | pass    |
| 4.3                    | § 15.209 (a)<br>FIELDSTRENGTH OF<br>HARMONICS and SPURIOUS               | 6.2.1                                         | YES        | pass    |
| 4.4                    | § 15.109<br>Receiver spurious emissions<br>(radiated)                    | 7.3 Receiver Spurious Emissions<br>(Radiated) | NO         |         |
| 4.5                    | § 15.107 / 15.207 Conducted Limits                                       | Section 6.6 , 7.4                             | YES        | pass    |
|                        |                                                                          |                                               |            |         |
|                        |                                                                          |                                               |            |         |

## 3 Measurements and results

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber.

The receiving antennas are conform with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2003 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test set-ups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received.

The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.4-2003 clause 4.2.

Antennas are conform with ANSI C63.2-1996 item 15.

150 kHz - 30 MHz: Quasi Peak measurement, 9kHz Bandwidth, passive loop antenna.

30 MHz - 200 MHz: Quasi Peak measurement, 120KHz Bandwidth, biconical antenna

200MHz - 1GHz: Quasi Peak measurement, 120KHz Bandwidth, log periodic antenna

>1GHz: Average, RBW 1MHz, VBW 10 Hz, wave guide horn

All measurement settings are according to FCC 15.109 and 15.107

## 4 FCC Part 15 Subpart C

### 4.1 Timing of the transmitter

#### Not applicable

#### Reference

|      |                                       |
|------|---------------------------------------|
| FCC: | CFR Part SUBCLAUSE § 15.35 (c)        |
| IC:  | RSS 210, ISSUE 5 6.5 Pulsed operation |

#### Limits: § 15.35 (c)

(c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

## 4.2 Field strength of the fundamental

### Reference

|      |                                 |
|------|---------------------------------|
| FCC: | CFR Part SUBCLAUSE § 15.209 (a) |
| IC:  | RSS 210, Issue 5, 6.2.1         |

**Maximum output power (quasi peak) - (radiated), measured at 3m and recalculated to 300m with 80dB according FCC-rules.**

| TEST CONDITIONS            |                          | MAXIMUM POWER (dB $\mu$ V/m, QP) |                   |                  |
|----------------------------|--------------------------|----------------------------------|-------------------|------------------|
| Single loop, small antenna |                          | Matrix                           | MatrixII          | Rite-Hite        |
| Frequency                  |                          | 55 kHz                           | 55 kHz            | 55 kHz           |
| T <sub>nom</sub> +23 °C    | V <sub>nom</sub> 15V DC  | 97.6 dB $\mu$ V/m                | 98.3 dB $\mu$ V/m | 97.3dB $\mu$ V/m |
| T <sub>nom</sub> +23 °C    | V <sub>nom</sub> 117V AC | 97.2 dB $\mu$ V/m                | 98.0 dB $\mu$ V/m | Not applicable   |
| Measurement uncertainty    |                          | ±3dB                             |                   |                  |

RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz,  
1Mhz above 1 GHz

### Limits

### SUBCLAUSE § 15.209 (a)

| Fundamental Frequency (MHz) | Field strength of Fundamental ( $\mu$ V/m) | Measurement Distance (meters) |
|-----------------------------|--------------------------------------------|-------------------------------|
| 0.009 – 0.490               | 2400 / F (kHz)                             | 300 (112 dB $\mu$ V/m at 3m)  |
| 0.490 – 1.705               | 24000 / F (kHz)                            | 30                            |
| 1.705 – 30.0                | 30                                         | 30                            |
| 30.0 – 88.0                 | 100                                        | 3                             |
| 88 – 216                    | 150                                        | 3                             |
| 216 – 960                   | 200                                        | 3                             |
| Above 960                   | 500                                        | 3                             |

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

| TEST CONDITIONS            |                          | MAXIMUM POWER (dB $\mu$ V/m, QP) |                   |                |
|----------------------------|--------------------------|----------------------------------|-------------------|----------------|
| Double loop, small antenna |                          | Matrix                           | MatrixII          | Rite-Hite      |
| Frequency 55 kHz           |                          |                                  | 55 kHz            |                |
| T <sub>nom</sub> +23 °C    | V <sub>nom</sub> 15V DC  | Not tested                       | 97.4 dB $\mu$ V/m | Not applicable |
| T <sub>nom</sub> +23 °C    | V <sub>nom</sub> 117V AC | Not tested                       | 97.9 dB $\mu$ V/m | Not applicable |
| Measurement uncertainty    |                          | $\pm 3$ dB                       |                   |                |

RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz,  
1Mhz above 1 GHz

## Limits

## SUBCLAUSE § 15.209 (a)

| Fundamental Frequency (MHz) | Field strength of Fundamental ( $\mu$ V/m) | Measurement Distance (meters) |
|-----------------------------|--------------------------------------------|-------------------------------|
| 0.009 – 0.490               | 2400 / F (kHz)                             | 300 (112 dB $\mu$ V/m at 3m)  |
| 0.490 – 1.705               | 24000 / F (kHz)                            | 30                            |
| 1.705 – 30.0                | 30                                         | 30                            |
| 30.0 – 88.0                 | 100                                        | 3                             |
| 88 – 216                    | 150                                        | 3                             |
| 216 – 960                   | 200                                        | 3                             |
| Above 960                   | 500                                        | 3                             |

| TEST CONDITIONS          |                          | MAXIMUM POWER (dB $\mu$ V/m, QP) |                    |                   |
|--------------------------|--------------------------|----------------------------------|--------------------|-------------------|
| Single loop, big antenna |                          | Matrix                           | MatrixII           | Rite-Hite         |
| Frequency                |                          | 62 kHz                           | 62 kHz             | 62 kHz            |
| T <sub>nom</sub> +23 °C  | V <sub>nom</sub> 15V DC  | 99.4 dB $\mu$ V/m                | 101.2 dB $\mu$ V/m | 99.1 dB $\mu$ V/m |
| T <sub>nom</sub> +23 °C  | V <sub>nom</sub> 117V AC | 99.7 dB $\mu$ V/m                | 102.9 dB $\mu$ V/m | Not applicable    |
| Measurement uncertainty  |                          | ±3dB                             |                    |                   |

RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz,  
1Mhz above 1 GHz

## Limits

## SUBCLAUSE § 15.209 (a)

| Fundamental Frequency (MHz) | Field strength of Fundamental ( $\mu$ V/m) | Measurement Distance (meters) |
|-----------------------------|--------------------------------------------|-------------------------------|
| 0.009 – 0.490               | 2400 / F (kHz)                             | 300 (112 dB $\mu$ V/m at 3m)  |
| 0.490 – 1.705               | 24000 / F (kHz)                            | 30                            |
| 1.705 – 30.0                | 30                                         | 30                            |
| 30.0 – 88.0                 | 100                                        | 3                             |
| 88 – 216                    | 150                                        | 3                             |
| 216 – 960                   | 200                                        | 3                             |
| Above 960                   | 500                                        | 3                             |

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

| TEST CONDITIONS          |                          | MAXIMUM POWER (dB $\mu$ V/m, QP) |                    |                |
|--------------------------|--------------------------|----------------------------------|--------------------|----------------|
| Double loop, big antenna |                          | Matrix                           | MatrixII           | Rite-Hite      |
| Frequency                |                          |                                  | 62 kHz             |                |
| T <sub>nom</sub> +23 °C  | V <sub>nom</sub> 15V DC  | Not tested                       | 102.7 dB $\mu$ V/m | Not applicable |
| T <sub>nom</sub> +23 °C  | V <sub>nom</sub> 117V AC | Not tested                       | 102.9 dB $\mu$ V/m | Not applicable |
| Measurement uncertainty  |                          | $\pm 3$ dB                       |                    |                |

RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz,  
1Mhz above 1 GHz

## Limits

## SUBCLAUSE § 15.209 (a)

| Fundamental Frequency (MHz) | Field strength of Fundamental ( $\mu$ V/m) | Measurement Distance (meters) |
|-----------------------------|--------------------------------------------|-------------------------------|
| 0.009 – 0.490               | 2400 / F (kHz)                             | 300 (112 dB $\mu$ V/m at 3m)  |
| 0.490 – 1.705               | 24000 / F (kHz)                            | 30                            |
| 1.705 – 30.0                | 30                                         | 30                            |
| 30.0 – 88.0                 | 100                                        | 3                             |
| 88 – 216                    | 150                                        | 3                             |
| 216 – 960                   | 200                                        | 3                             |
| Above 960                   | 500                                        | 3                             |

## 4.3 Field strength of the harmonics and the spurious

### Reference

|      |                                 |
|------|---------------------------------|
| FCC: | CFR Part SUBCLAUSE § 15.209 (a) |
| IC:  | RSS 210, Issue 5, 6.2.1         |

### Small antenna

| EMISSION LIMITATIONS    |  |                                                  |                                                                    |                                                                  |                        |
|-------------------------|--|--------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------|------------------------|
| f<br>(MHz)              |  | amplitude of<br>emission<br>(dB $\mu$ V/m)<br>QP | limit<br>max. allowed<br>emmission power<br>dB $\mu$ V/m at 3m ,QP | actual<br>attenuation<br>below frequency<br>of operation<br>(dB) | results                |
| 0.055                   |  |                                                  |                                                                    |                                                                  | Operating<br>frequency |
| 0.110                   |  | 55.2                                             | 106.8                                                              |                                                                  | pass                   |
| 0.165                   |  | 56.9                                             | 103.3                                                              |                                                                  | pass                   |
|                         |  |                                                  |                                                                    |                                                                  |                        |
|                         |  |                                                  |                                                                    |                                                                  |                        |
|                         |  |                                                  |                                                                    |                                                                  |                        |
|                         |  |                                                  |                                                                    |                                                                  |                        |
|                         |  |                                                  |                                                                    |                                                                  |                        |
|                         |  |                                                  |                                                                    |                                                                  |                        |
|                         |  |                                                  |                                                                    |                                                                  |                        |
|                         |  |                                                  |                                                                    |                                                                  |                        |
| Measurement uncertainty |  |                                                  | $\pm 3\text{dB}$                                                   |                                                                  |                        |

RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz

### Limits

### SUBCLAUSE § 15.209 (a)

| Fundamental Frequency<br>(MHz) | Field strength of<br>Fundamental ( $\mu$ V/m) | Measurement Distance<br>(meters) |
|--------------------------------|-----------------------------------------------|----------------------------------|
| 0.009 – 0.490                  | 2400 / F (kHz)                                | 300                              |
| 0.490 – 1.705                  | 24000 / F (kHz)                               | 30                               |
| 1.705 – 30.0                   | 30                                            | 30                               |
| 30.0 – 88.0                    | 100                                           | 3                                |
| 88 – 216                       | 150                                           | 3                                |
| 216 – 960                      | 200                                           | 3                                |
| Above 960                      | 500                                           | 3                                |

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

## big antenna

| EMISSION LIMITATIONS    |  |                                                          |                                          |                                                                  |                        |
|-------------------------|--|----------------------------------------------------------|------------------------------------------|------------------------------------------------------------------|------------------------|
| f<br>(MHz)              |  | amplitude of<br>emission<br>(dB $\mu$ V/m)<br>Average/QP | limit<br>max. allowed<br>emmission power | actual<br>attenuation<br>below frequency<br>of operation<br>(dB) | results                |
| 0.062                   |  |                                                          |                                          |                                                                  | Operating<br>frequency |
| 0.124                   |  | 56.0                                                     | 105.7                                    |                                                                  | pass                   |
| 0.186                   |  | 57.2                                                     | 102.2                                    |                                                                  | pass                   |
|                         |  |                                                          |                                          |                                                                  |                        |
|                         |  |                                                          |                                          |                                                                  |                        |
|                         |  |                                                          |                                          |                                                                  |                        |
|                         |  |                                                          |                                          |                                                                  |                        |
|                         |  |                                                          |                                          |                                                                  |                        |
|                         |  |                                                          |                                          |                                                                  |                        |
|                         |  |                                                          |                                          |                                                                  |                        |
|                         |  |                                                          |                                          |                                                                  |                        |
| Measurement uncertainty |  |                                                          | $\pm 3$ dB                               |                                                                  |                        |

RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz

## Limits

## SUBCLAUSE § 15.209 (a)

| Fundamental Frequency<br>(MHz) | Field strength of<br>Fundamental ( $\mu$ V/m) | Measurement Distance<br>(meters) |
|--------------------------------|-----------------------------------------------|----------------------------------|
| 0.009 – 0.490                  | 2400 / F (kHz)                                | 300                              |
| 0.490 – 1.705                  | 24000 / F (kHz)                               | 30                               |
| 1.705 – 30.0                   | 30                                            | 30                               |
| 30.0 – 88.0                    | 100                                           | 3                                |
| 88 – 216                       | 150                                           | 3                                |
| 216 – 960                      | 200                                           | 3                                |
| Above 960                      | 500                                           | 3                                |

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

## 4.4 Plots of measurements

### Part 15.209 Magnetics TX , Big antenna

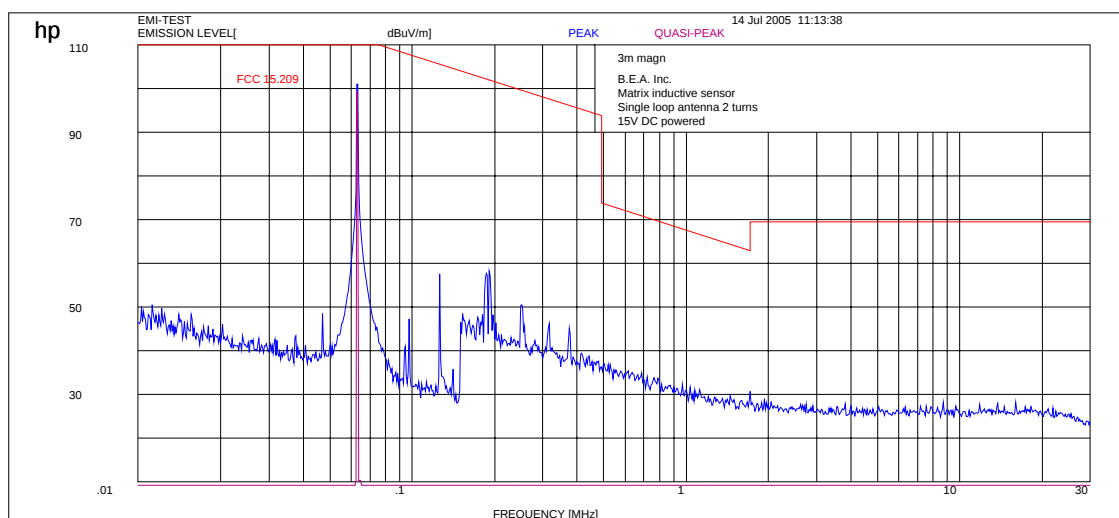
RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz,  
1 Mhz above 1 GHz

**(to convert the measuring distance from 10m to 30m and 30 to 300m a correction factor from 40 dB/decade was used. Here we use 80 dB to recalculate from 3m to 300m)**

Measurement distance 3 m

This measurement was done in 3 planes, the plot shows the worst case

Plot 1: 9 kHz to 30 MHz, single loop, Matrix, 15V DC



## Limits

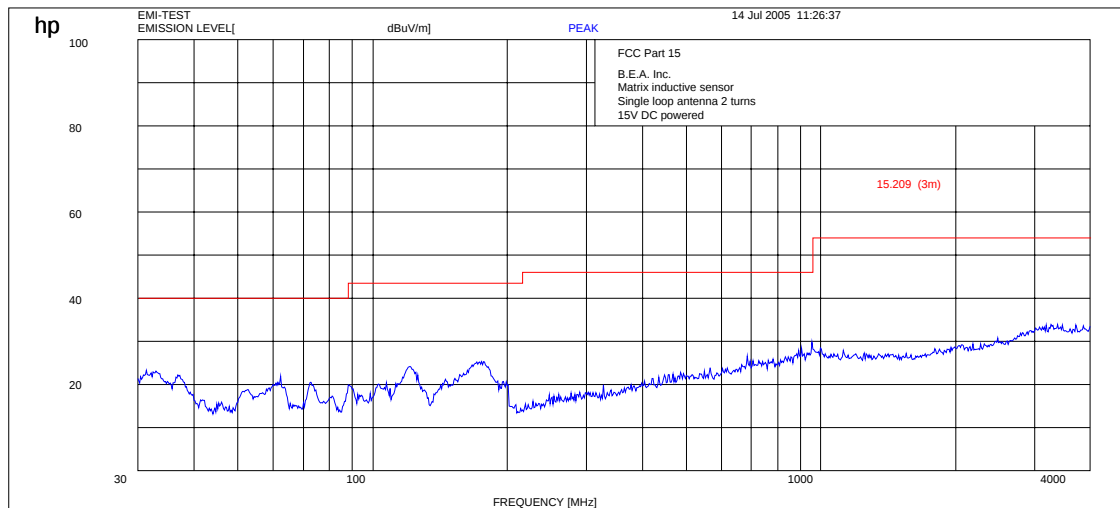
## SUBCLAUSE § 15.209

| Frequency (MHz) | Field strength (µV/m) | Measurement distance (m) |
|-----------------|-----------------------|--------------------------|
| 0.0009 – 0.490  | 2400/F(kHz)           | 300                      |
| 0.490 – 1.705   | 24000/F(kHz)          | 30                       |
| 1.705 - 30      | 30                    | 30                       |
| 30 - 88         | 100                   | 3                        |
| 88 - 216        | 150                   | 3                        |
| 216 - 960       | 200                   | 3                        |
| above 960       | 500                   | 3                        |

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

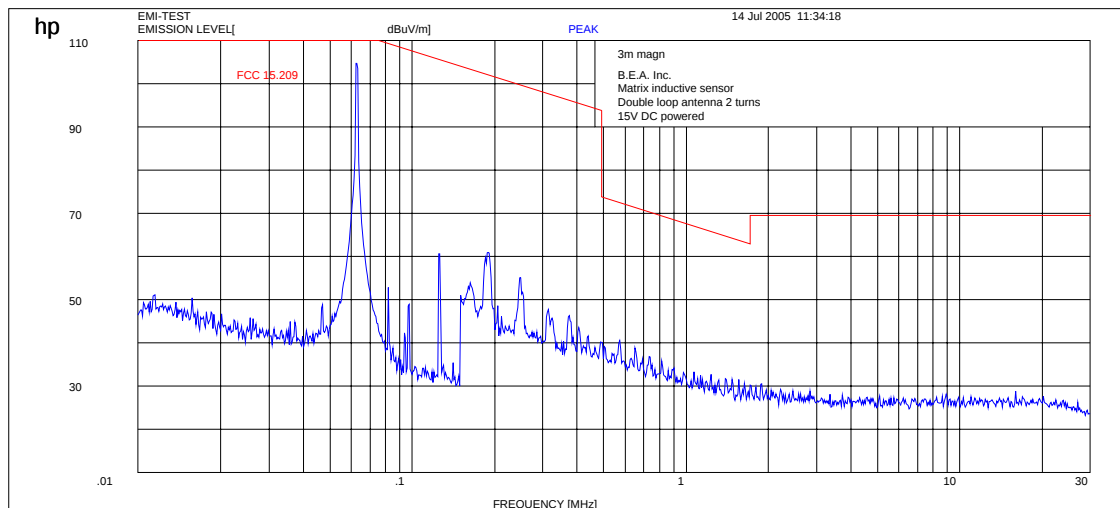
Plot 2:

30 MHz to 4 GHz, single loop, Matrix, 15V DC



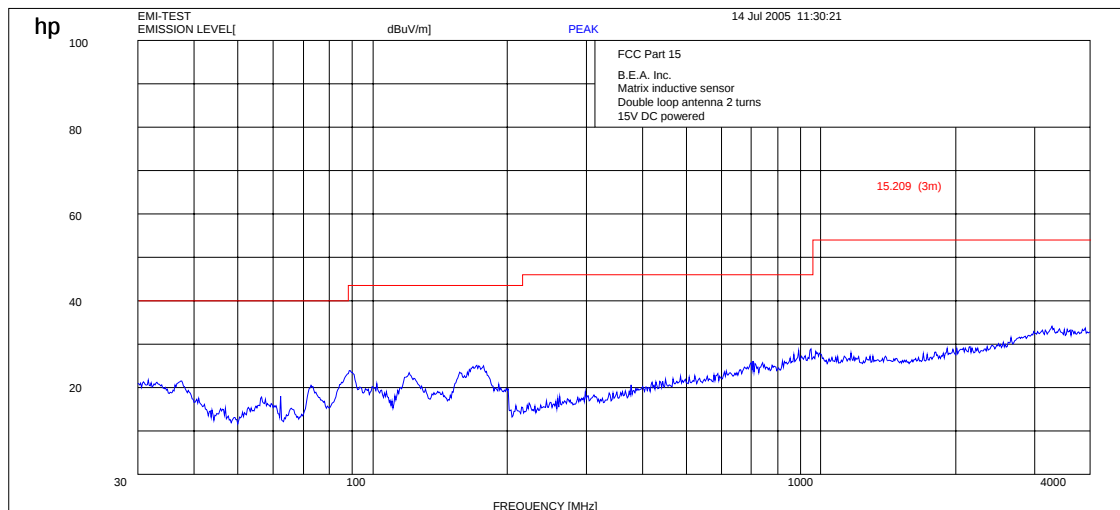
Plot 3:

9 kHz to 30 MHz, double loop, Matrix, 15V DC

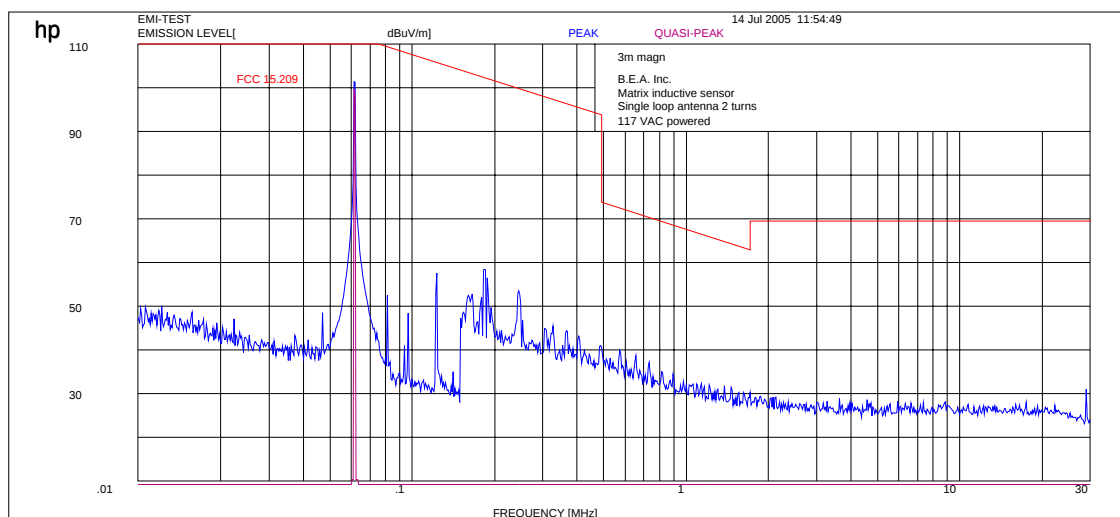


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 4: 30 MHz to 4 GHz, double loop, Matrix, 15V DC

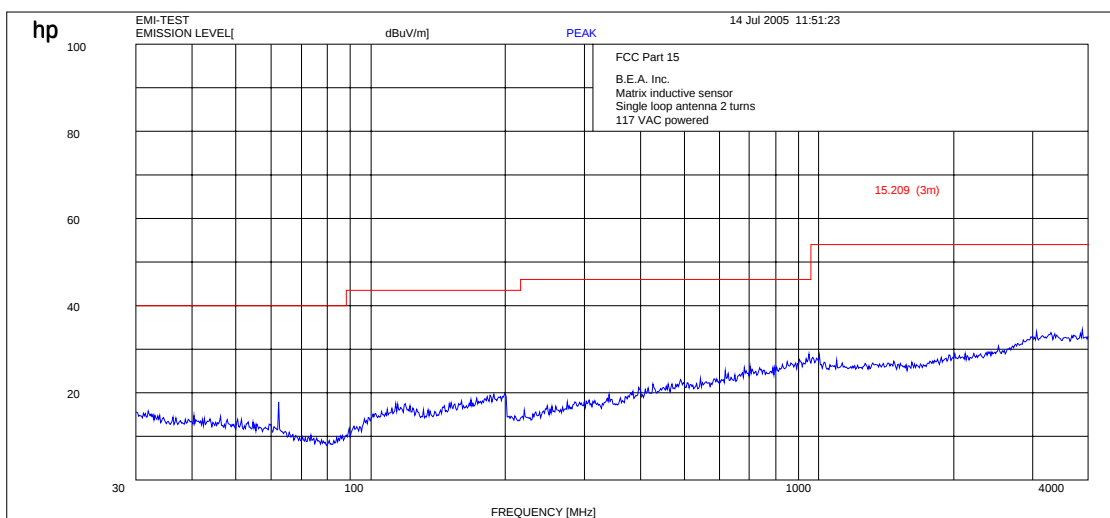


Plot 5: 9 kHz to 30 MHz, single loop, Matrix, 117V AC

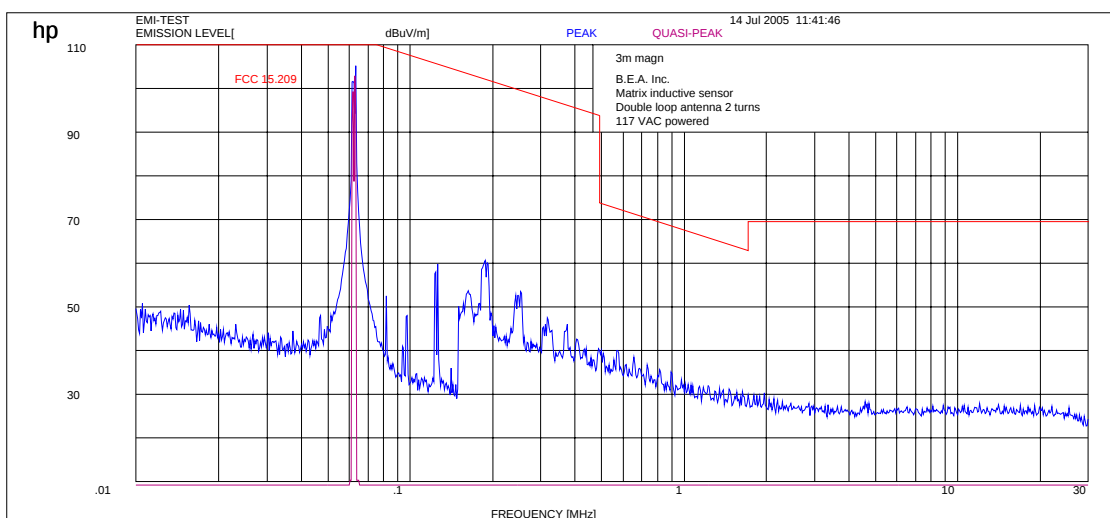


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 6: 30 MHz to 4 GHz, single loop, Matrix, 117V AC

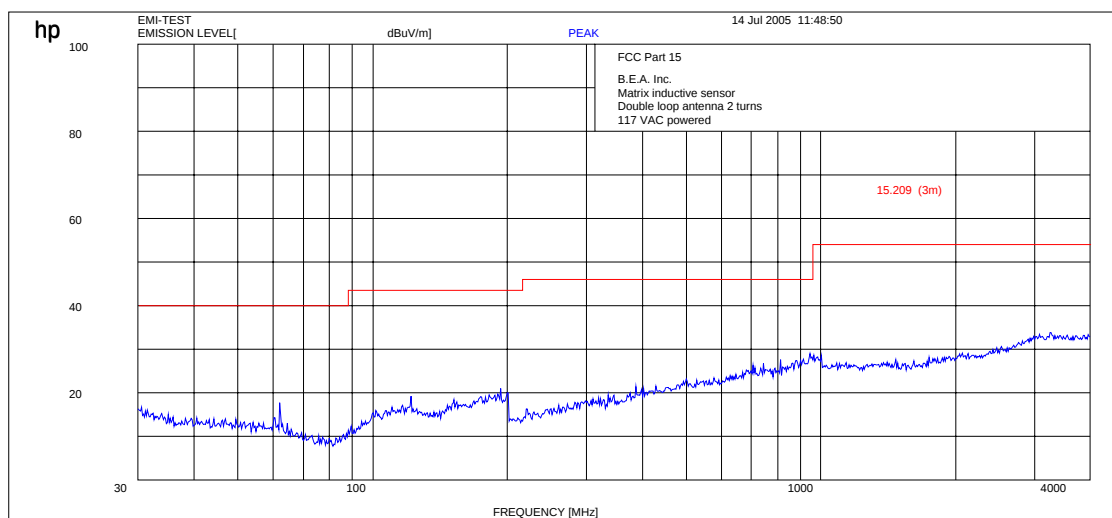


Plot 7: 9 kHz to 30 MHz, Double loop, Matrix, 117V AC

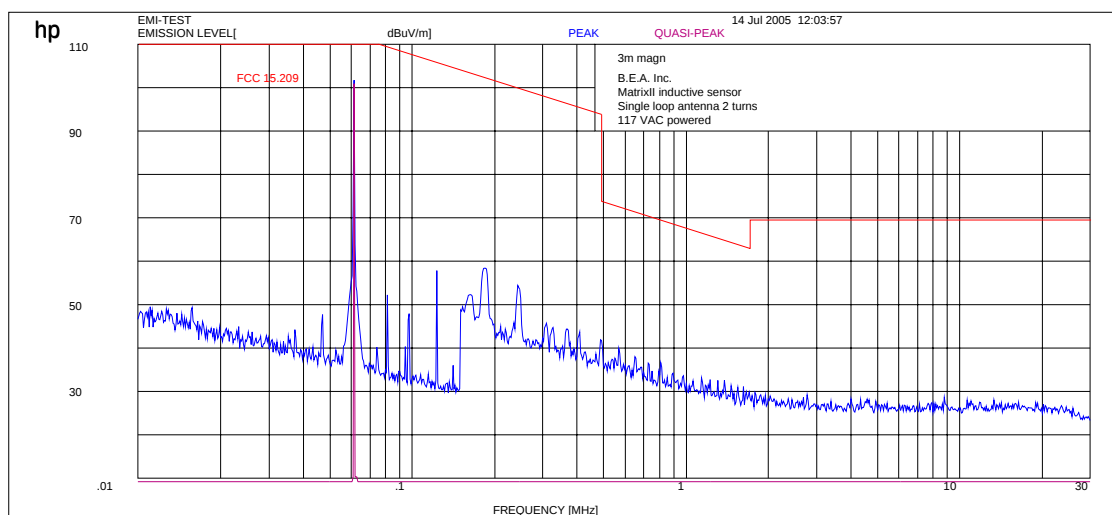


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 8: 30 MHz to 4 GHz, Double loop, Matrix, 117V AC

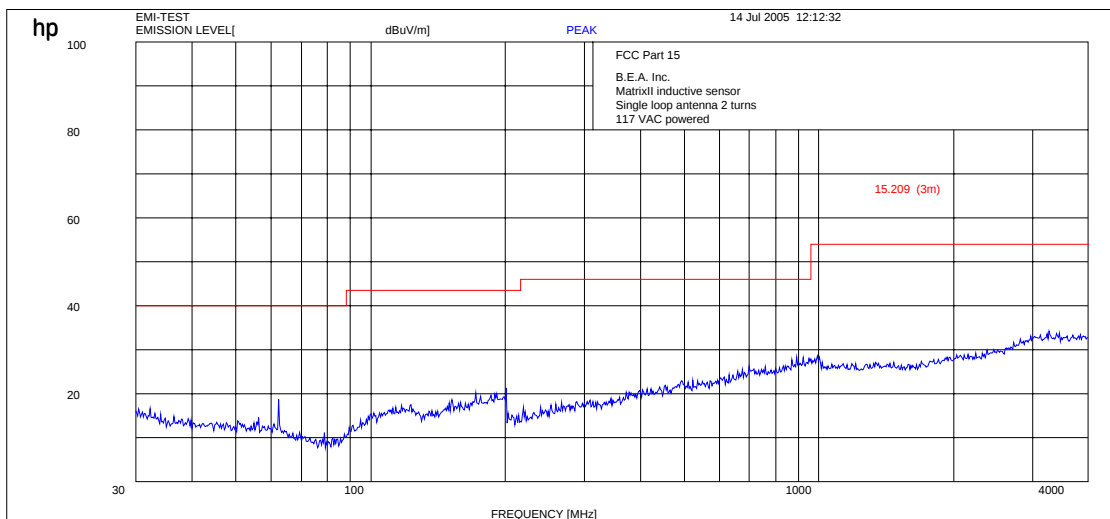


Plot 9: 9 kHz to 30 MHz, Matrix II, single loop, 117V AC

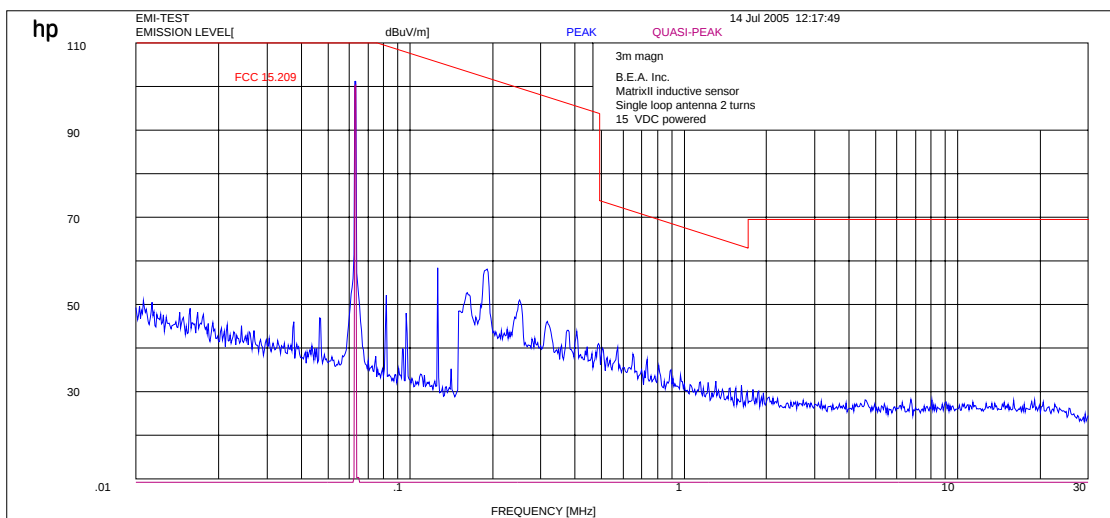


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 10: 30 MHz to 4 GHz, Matrix II, single loop, 117V AC

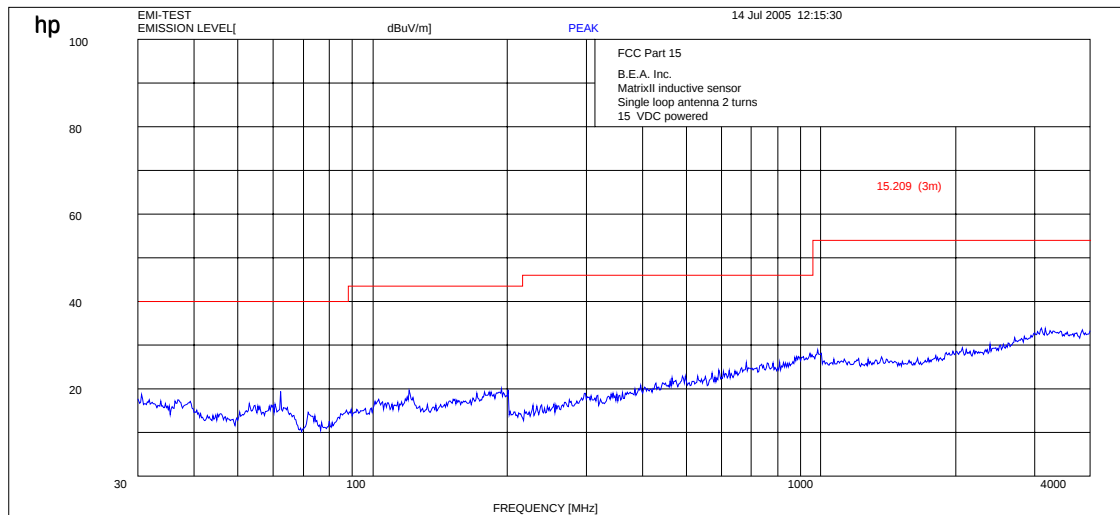


Plot 11: 9 kHz to 30 MHz, Matrix II, single loop, 15V DC

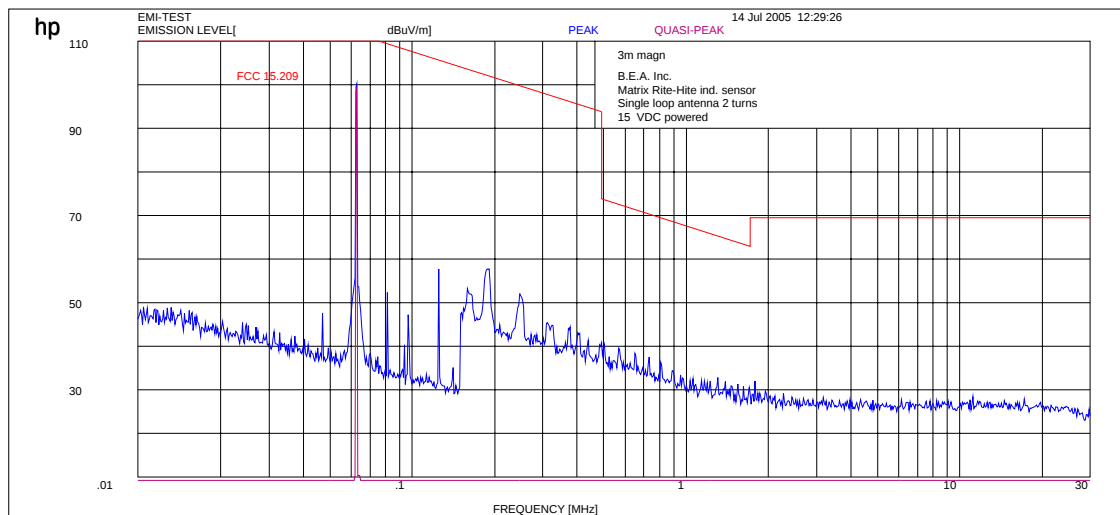


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 12: 30 MHz to 4 GHz, Matrix II, single loop, 15V DC

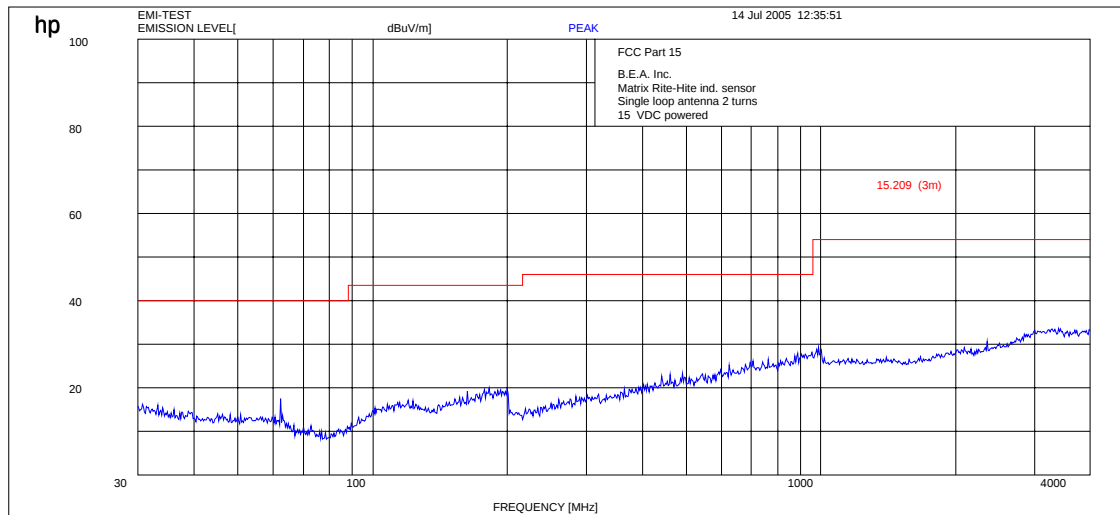


Plot 13: 9 kHz to 30 MHz, Matrix Rite-Hite, single loop, 15V DC



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 14: 30 MHz to 4 GHZ, Matrix Rite-Hite, single loop, 15V DC



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

## Part 15.209 Magnetics TX , small antenna antenna

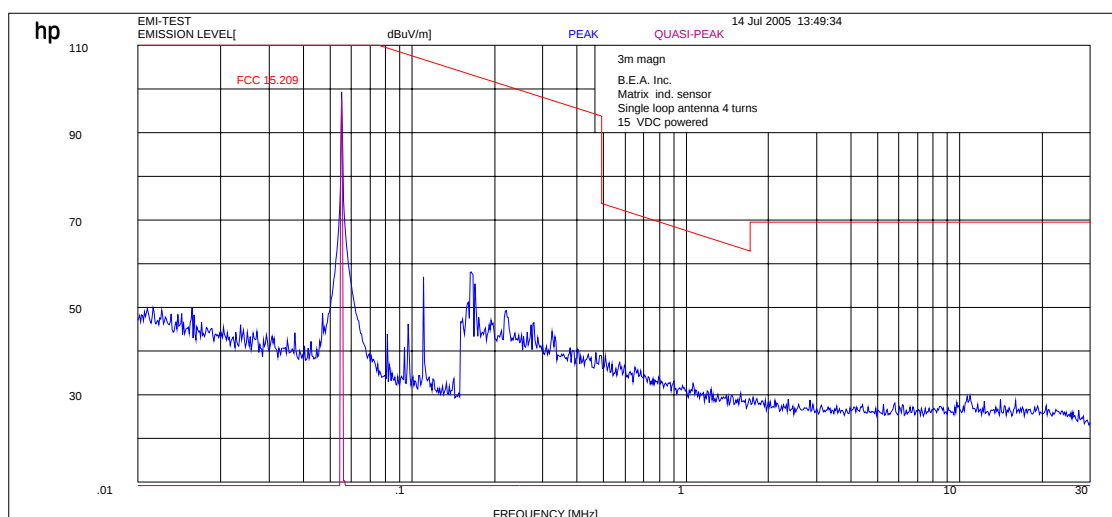
RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz,  
1 Mhz above 1 GHz

**(to convert the measuring distance from 10m to 30m and 30 to 300m a correction factor from 40 dB/decade was used. Here we use 80 dB to recalculate from 3m to 300m)**

Measurement distance 3 m

This measurement was done in 3 planes, the plot shows the worst case

Plot 1: 9 kHz to 30 MHz, single loop, Matrix, 15V DC



## Limits

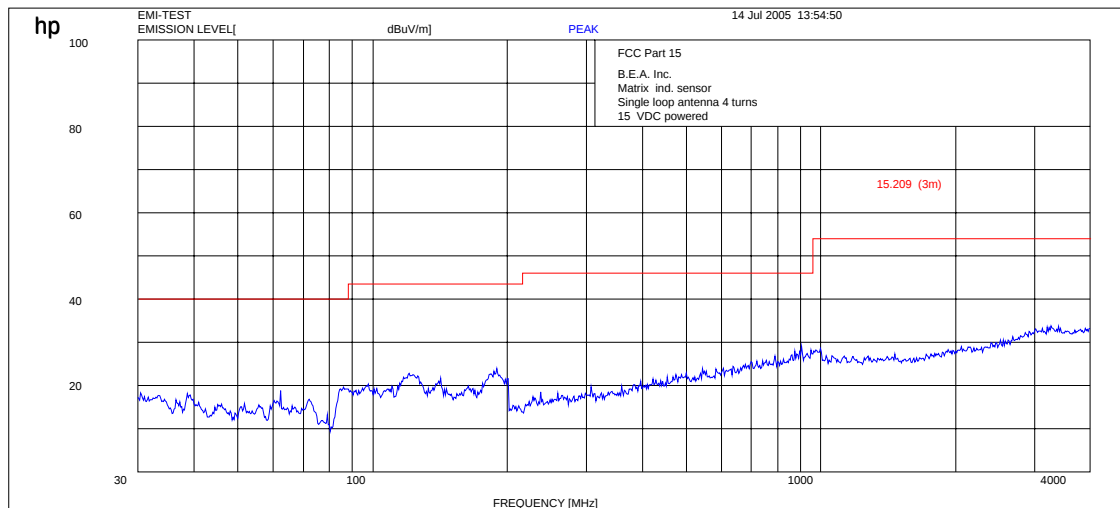
## SUBCLAUSE § 15.209

| Frequency (MHz) | Field strength (µV/m) | Measurement distance (m) |
|-----------------|-----------------------|--------------------------|
| 0.0009 – 0.490  | 2400/F(kHz)           | 300                      |
| 0.490 – 1.705   | 24000/F(kHz)          | 30                       |
| 1.705 - 30      | 30                    | 30                       |
| 30 - 88         | 100                   | 3                        |
| 88 - 216        | 150                   | 3                        |
| 216 - 960       | 200                   | 3                        |
| above 960       | 500                   | 3                        |

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

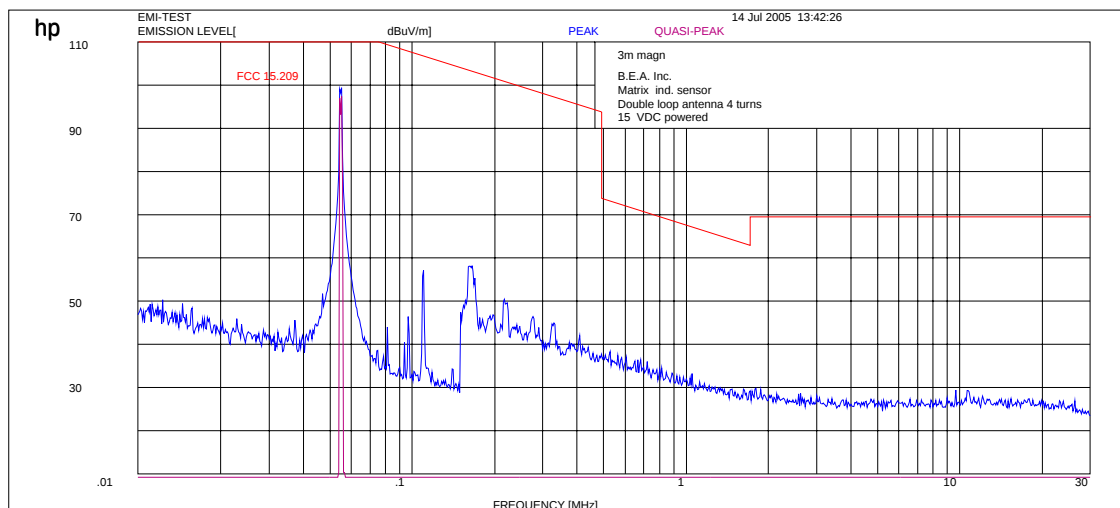
Plot 2:

30 MHz to 4 GHz, single loop, Matrix, 15V DC



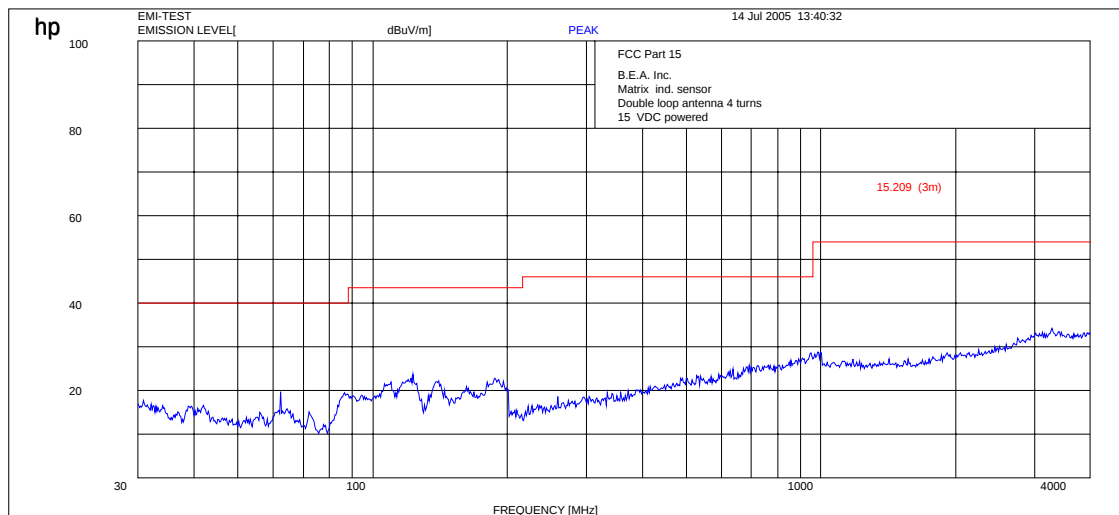
Plot 3:

9 kHz to 30 MHz, double loop, Matrix, 15V DC

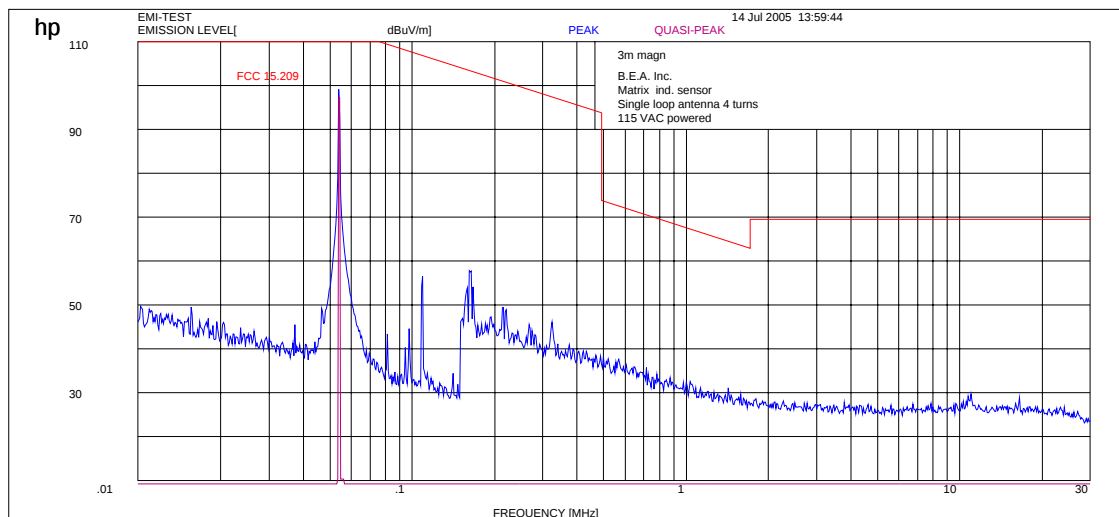


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 4: 30 MHz to 4 GHz, double loop, Matrix, 15V DC

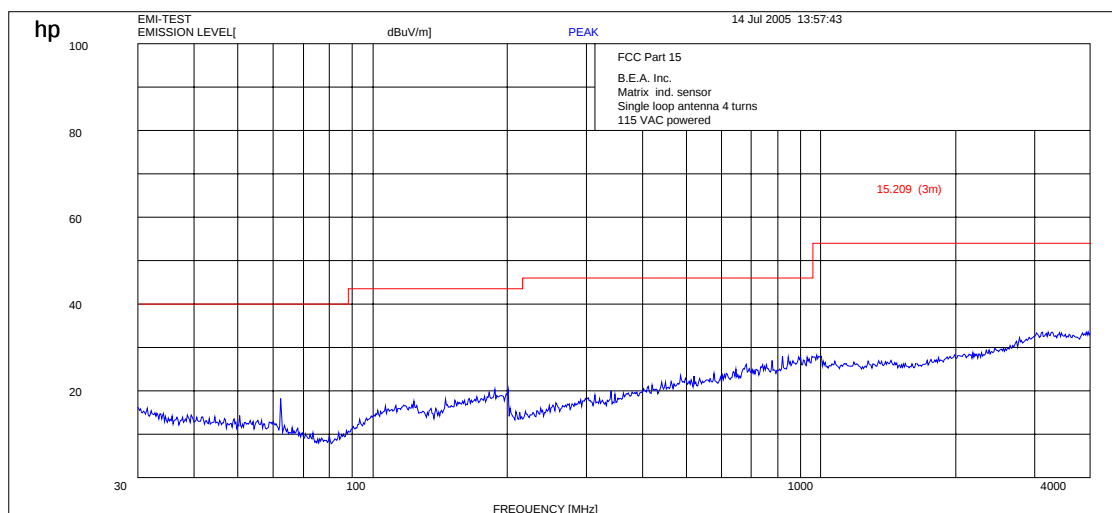


Plot 5: 9 kHz to 30 MHz, single loop, Matrix, 117V AC

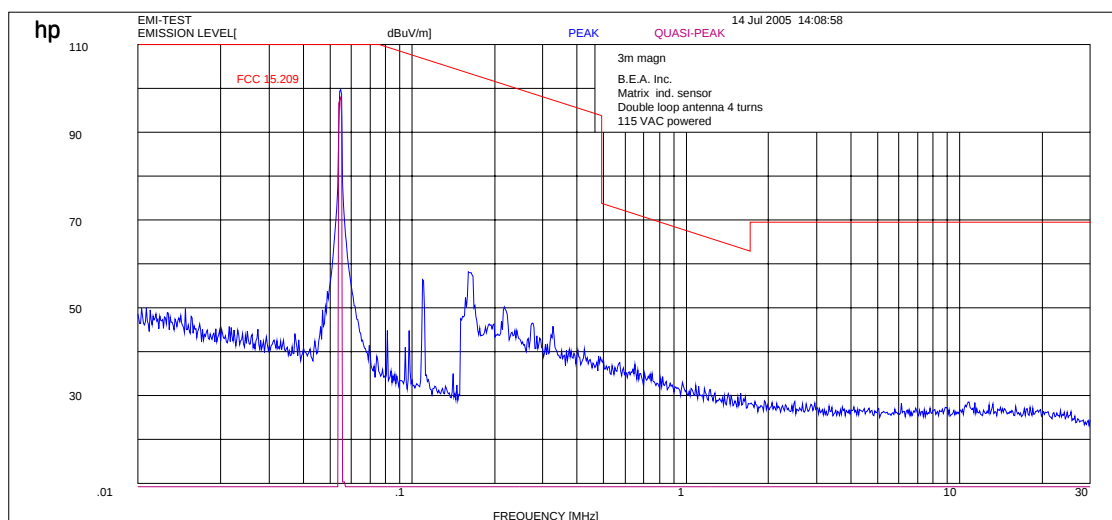


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 6: 30 MHz to 4 GHz, single loop, Matrix, 117V AC

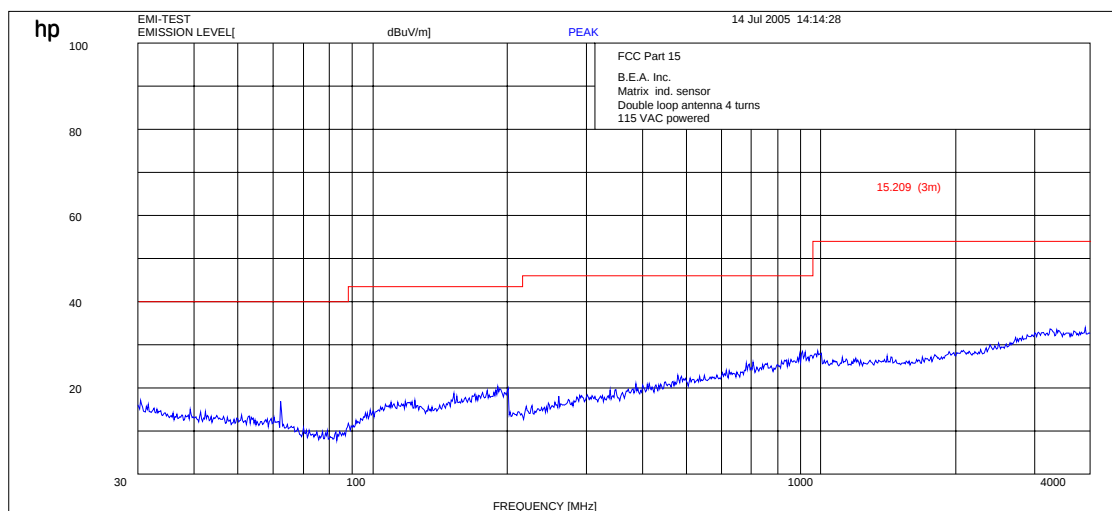


Plot 7: 9 kHz to 30 MHz, Double loop, Matrix, 117V AC

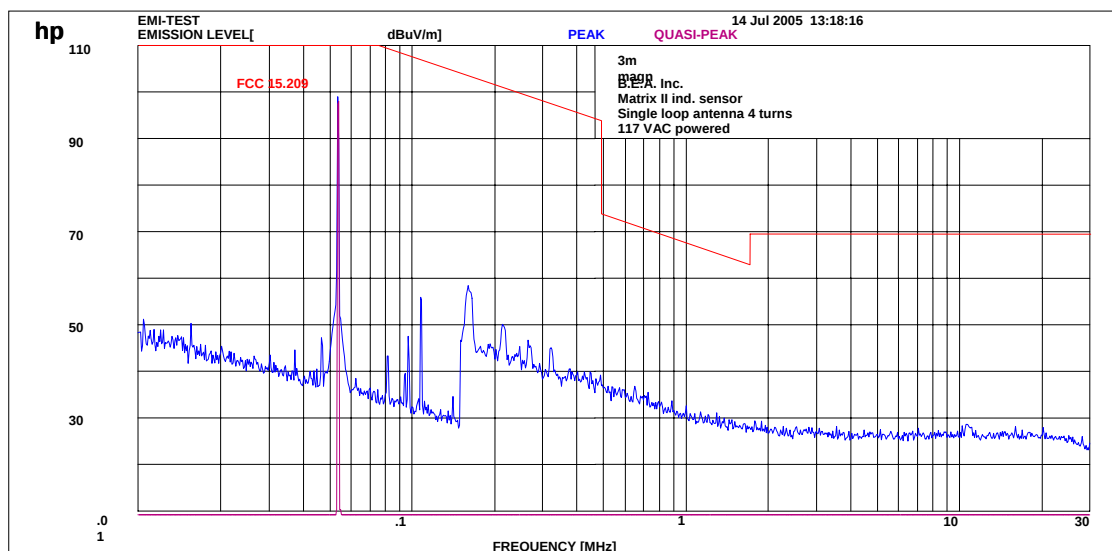


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 8: 30 MHz to 4 GHz, Double loop, Matrix, 117V AC

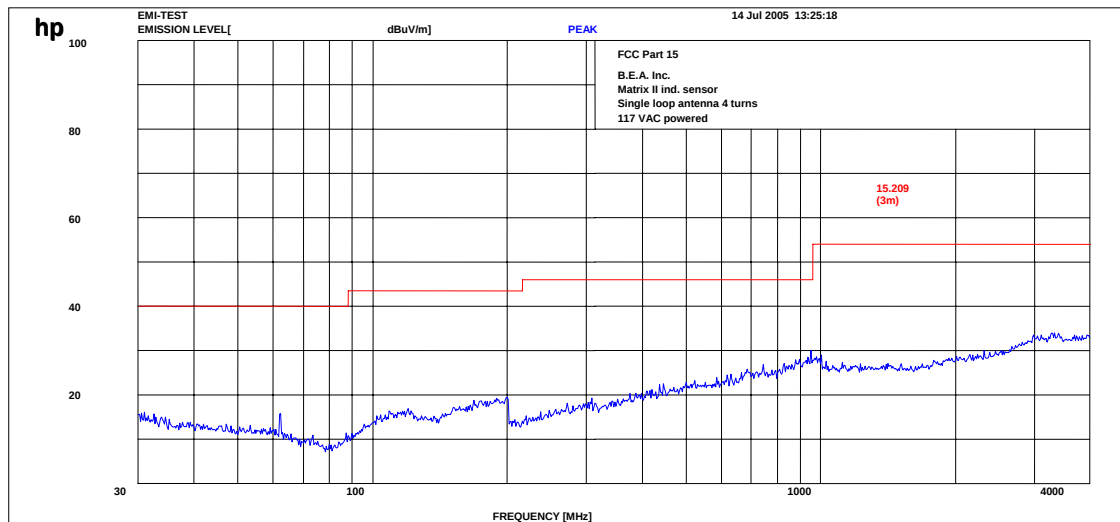


Plot 9: 9 kHz to 30 MHz, Matrix II, single loop, 117V AC

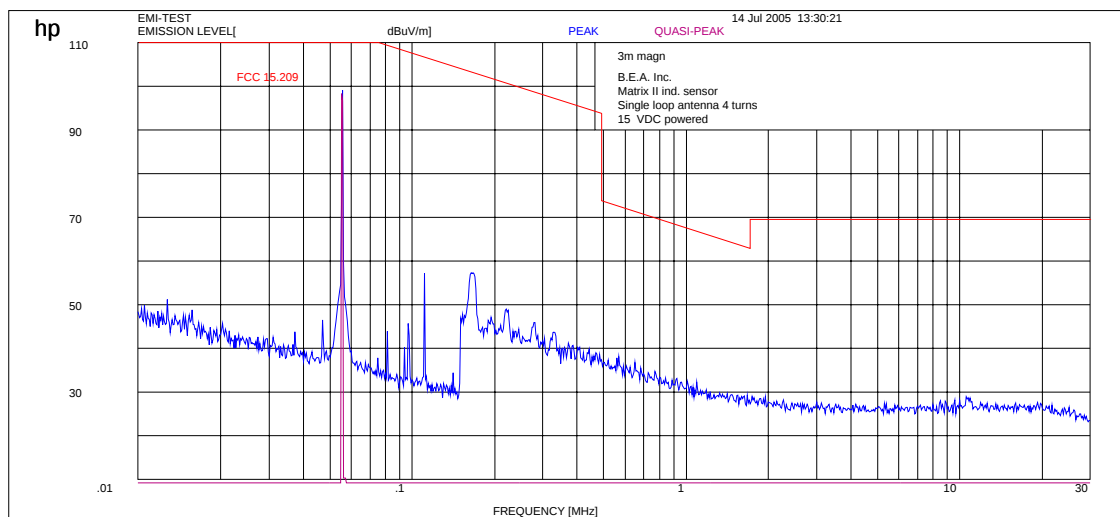


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 10: 30 MHz to 4 GHz, Matrix II, single loop, 117V AC

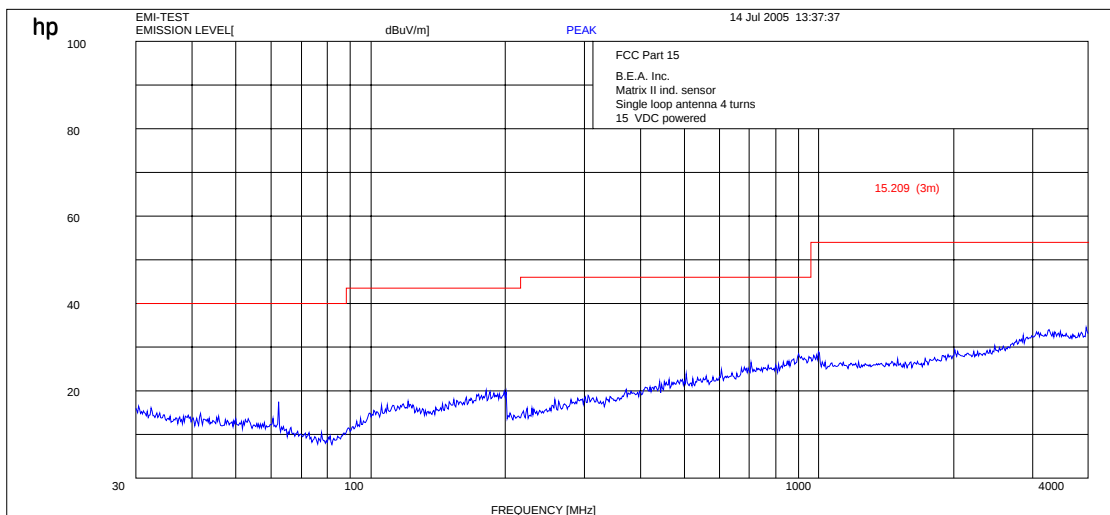


Plot 11: 9 kHz to 30 MHz, Matrix II, single loop, 15V DC

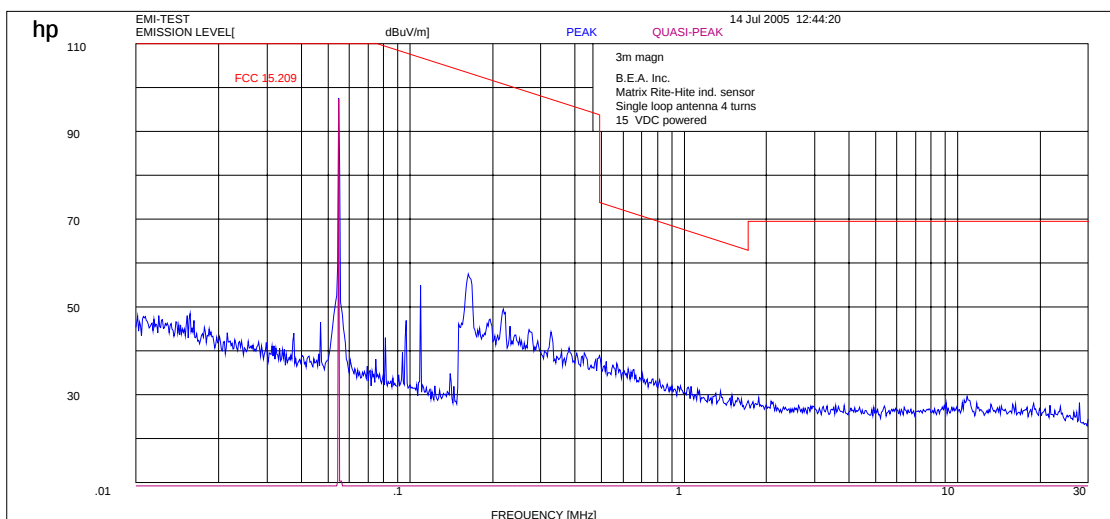


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 12: 30 MHz to 4 GHz, Matrix II, single loop, 15V DC

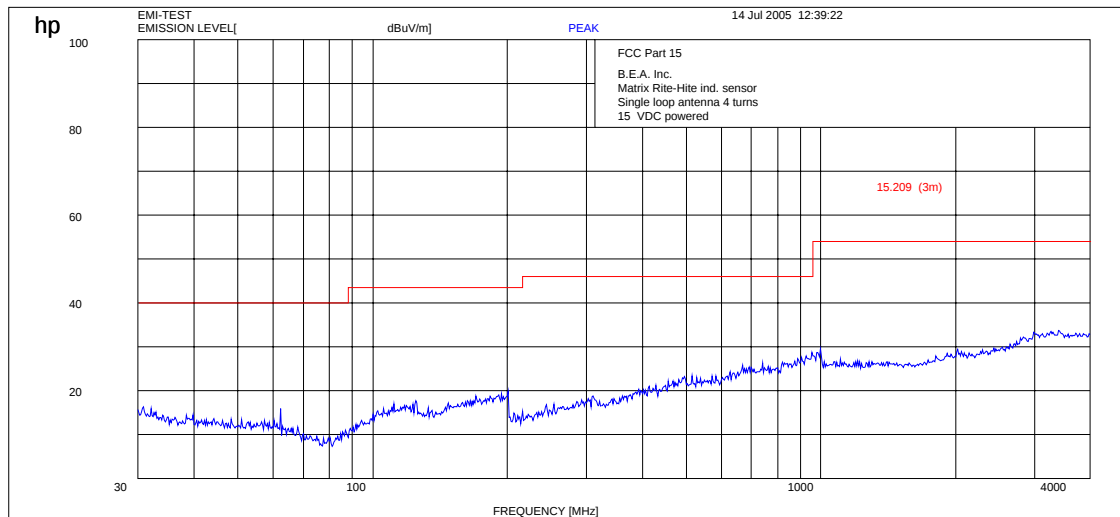


Plot 13: 9 kHz to 30 MHz, Matrix Rite-Hite, single loop, 15V DC



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 14: 30 MHz to 4 GHZ, Matrix Rite-Hite, single loop, 15V DC



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

## 4.5 Receiver spurious emission (radiated)

### Not applicable

#### Reference

|      |                                                                      |
|------|----------------------------------------------------------------------|
| FCC: | CFR Part SUBCLAUSE § 15.109                                          |
| IC:  | RSS 210, Issue 5, Section 7.3 Receiver Spurious Emissions (Radiated) |

| SPURIOUS EMISSIONS LEVEL ( $\mu\text{V/m}$ ) |          |                           |                    |          |                           |              |          |                           |
|----------------------------------------------|----------|---------------------------|--------------------|----------|---------------------------|--------------|----------|---------------------------|
| Low Channel                                  |          |                           | Middle Channel     |          |                           | High Channel |          |                           |
| MHz                                          |          |                           | MHz                |          |                           | MHz          |          |                           |
| F [MHz]                                      | Detector | Level [ $\mu\text{V/m}$ ] | F [MHz]            | Detector | Level [ $\mu\text{V/m}$ ] | F [MHz]      | Detector | Level [ $\mu\text{V/m}$ ] |
|                                              |          |                           |                    |          |                           |              |          |                           |
|                                              |          |                           |                    |          |                           |              |          |                           |
|                                              |          |                           |                    |          |                           |              |          |                           |
|                                              |          |                           |                    |          |                           |              |          |                           |
|                                              |          |                           |                    |          |                           |              |          |                           |
|                                              |          |                           |                    |          |                           |              |          |                           |
| Measurement uncertainty                      |          |                           | $\pm 3 \text{ dB}$ |          |                           |              |          |                           |

$f < 1 \text{ GHz}$  : RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$  : RBW/VBW: 1 MHz

#### Limits

#### SUBCLAUSE § 15.109

| Frequency (MHz) | Field strength ( $\mu\text{V/m}$ ) | Measurement distance (m) |
|-----------------|------------------------------------|--------------------------|
| 30 - 88         | 100                                | 3                        |
| 88 - 216        | 150                                | 3                        |
| 216 - 960       | 200                                | 3                        |
| above 960       | 500                                | 3                        |

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

## 4.6 Conducted Limits

### Reference

|      |                                     |
|------|-------------------------------------|
| FCC: | CFR Part 15.207, 15.107             |
| IC:  | RSS 210, Issue 4, Section 6.6 , 7.4 |

Operating Condition: Transmitting Mode  
Test Site: CETECOM ICT Services Room 006  
Test Specification: EN 55022 / CISPR 22  
Power Supply: 117V AC

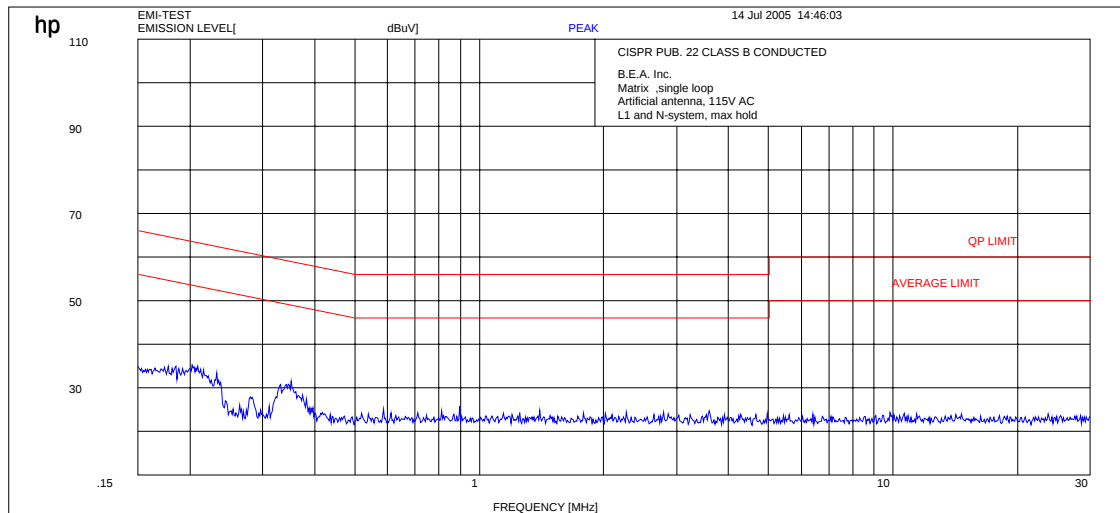
**Limits:** § 15.107 / 15.207

| 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         |

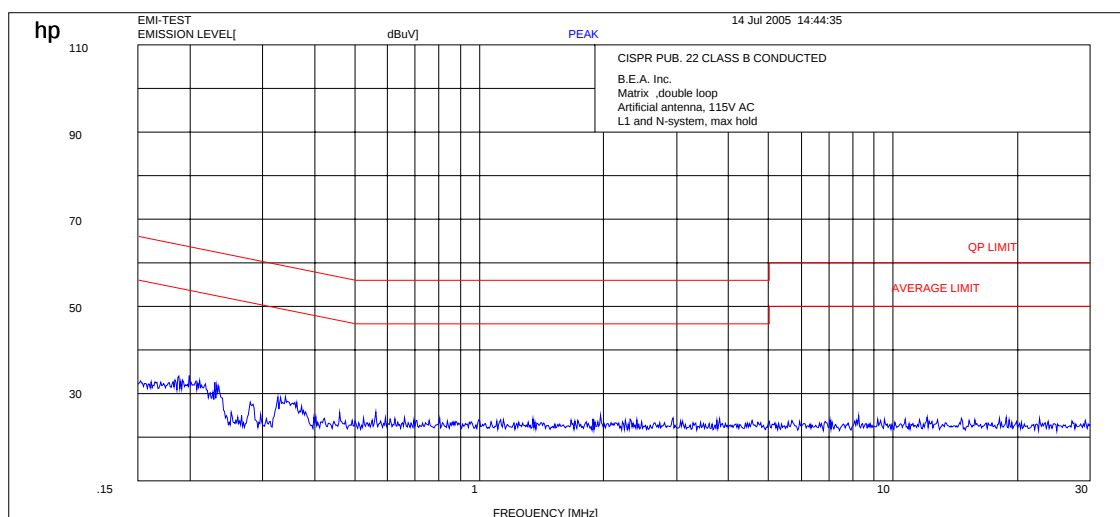
\* Decreases with the logarithm of the frequency

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 1: Matrix, single loop, artificial antenna

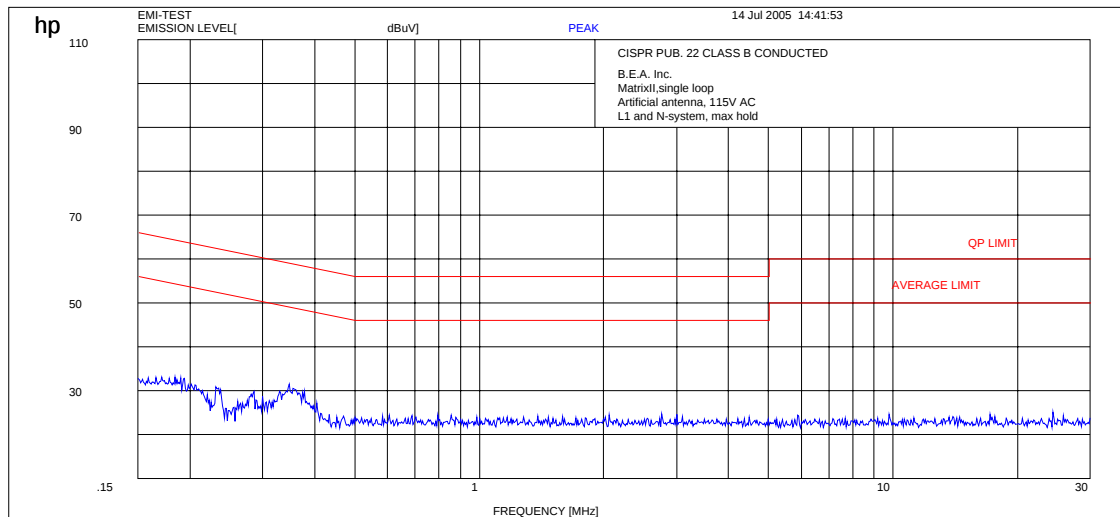


Plot 2: Matrix, double loop, artificial antenna

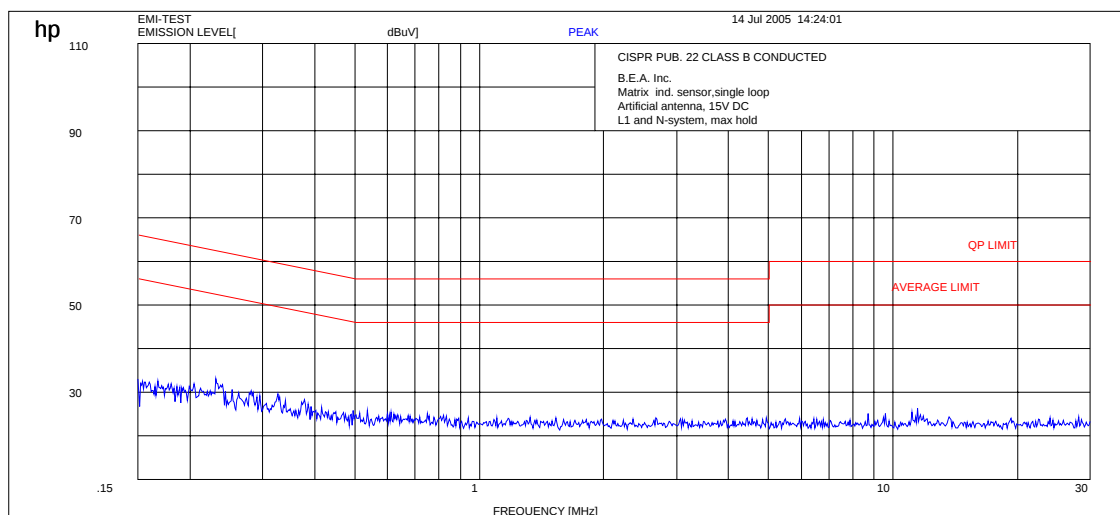


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 3: Matrix II, single loop, artificial antenna

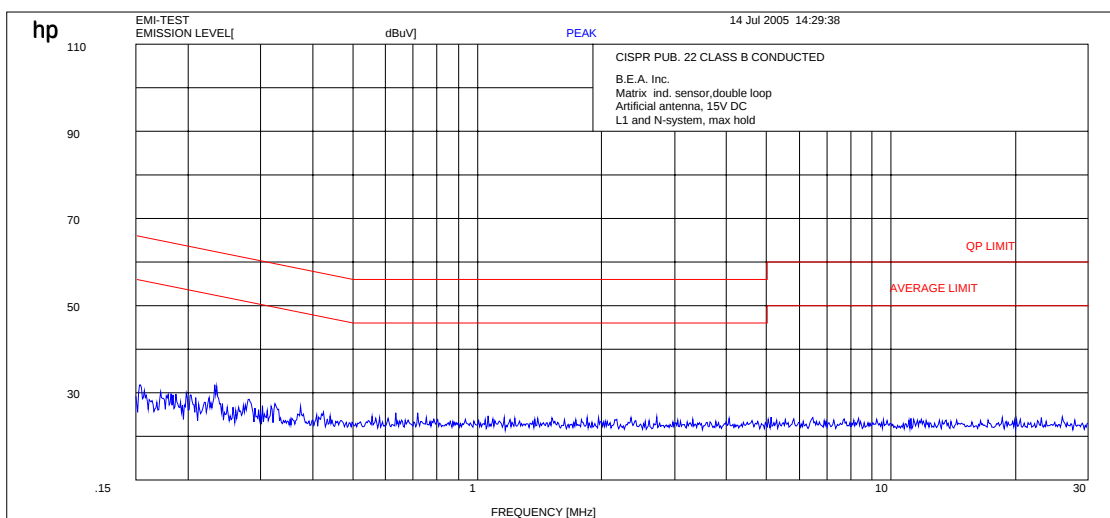


Plot 4: Matrix , single loop, artificial antenna, 15v DC via Power supply from our house

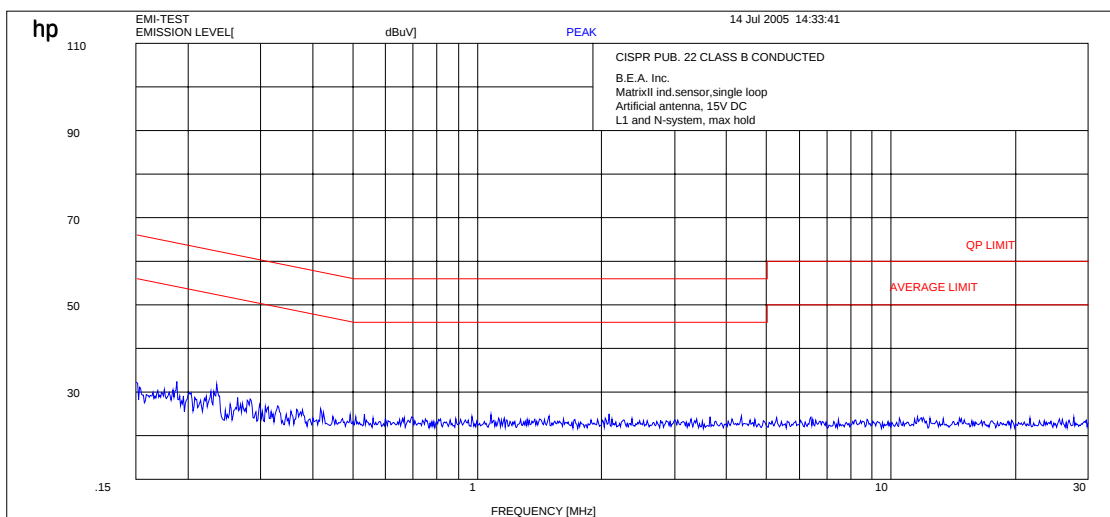


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 5: Matrix , double loop, artificial antenna, 15v DC via Power supply from our house

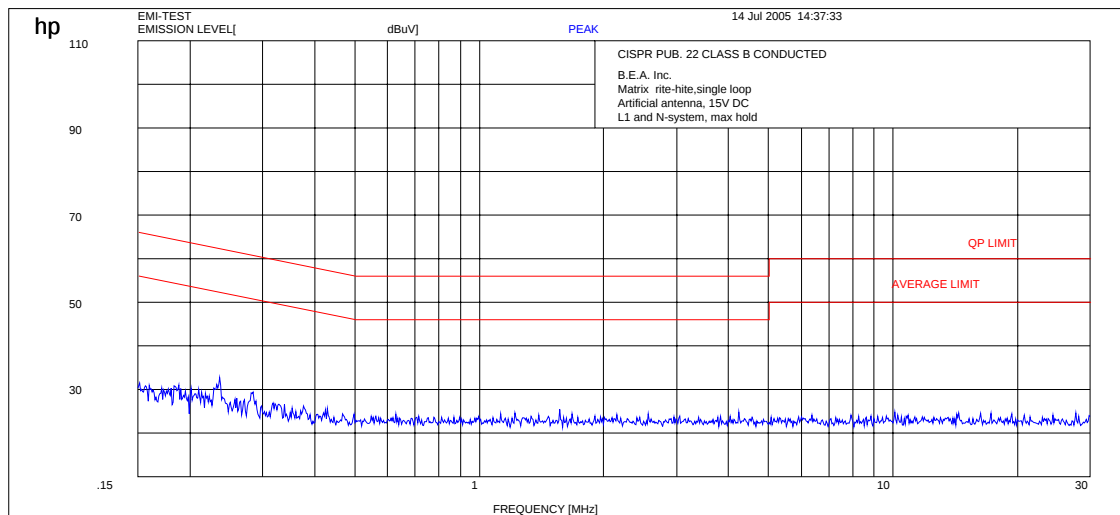


Plot 6: Matrix II, single loop, artificial antenna, 15v DC via Power supply from our house



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Plot 6: Matrix Rite-Hite, single loop, artificial antenna, 15v DC via Power supply from our house



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

## Used Testequipment

| Device                    | Manufacturer | Type      | S/N Number | Inv. No. Cetecom |
|---------------------------|--------------|-----------|------------|------------------|
| Spektrum Analyser         | HP           | 8566B     | 2747A05306 | 300001000        |
| Spektrum Analyser Display | HP           | 85662A    | 2816A16541 | 300002297        |
| Quasi-Peak-Adapter        | HP           | 85650A    | 2811A01131 | 300000999        |
| Power Dupply              | HP           | 6032A     | 2818A03450 | 300001040        |
| Power Attenuator          | Byrd         | 8325      | 1530       | 300001595        |
| Bikonical Antenna         | EMCO         | 3104      | 3758       | 300001602        |
| Log. Period. Antenna      | EMCO         | 3146      | 2130       | 300001603        |
| Double Ridged Antenna     | EMCO         | HP 3115P  | 3088       | 300001032        |
| Active Loop Antenna       | EMCO         | 6502      | 2210       | 300001015        |
| Antenna VDE/FCC           |              | HP11965B  |            | 300002298        |
| SRM-Drive                 | HP           | 9144A     | 2823e46556 | 300001044        |
| Software                  | HP           | EMI       |            | 300000983        |
| Busisolator               | Kontron      |           |            | 300001056        |
| Absorberhalle             | MWB          |           | 87400/02   | 300000996        |
| Salzsäule                 | Kontron      |           |            | 300001055        |
| Antenna                   | R&S          | HMO20     | 832211/003 | 300002243        |
| Indukt.Tast Antenna       | R&S          | HFH 2 Z4  | 881468/026 | 300001464        |
| System-Rack               | HP I.V.      | 85900     | *          | 300000222        |
| Spectrum Analyzer         | HP           | 8566B     | 2747A05275 | 300000219        |
| Quasi-Peak-Adapter        | HP           | 85650A    | 2811A01135 | 300000216        |
| RF-Preselector            | HP           | 85685A    | 2837A00779 | 300000218        |
| Rahmen Antenne            | R&S          | HFH2-Z2   | 891847-35  | 300001169        |
| Leitungsteiler            | HP           | 11850C    |            | 300000997        |
| Breitband-Hornantenne EMI | HP           | 35155P    |            | 300002300        |
| PC                        | HP           | Vectra VL |            | 300001688        |
| VHF Meßantenne            | Schwarzbeck  | VHA 9103  |            | 300001778        |
| Spectrum Analyzer Display | HP           | 85662A    | 2816A16497 | 300001690        |
| VHF Meßantenna            | Schwarzbeck  | VHA 9103  |            | 300001780        |
| Biconical Antenna         | EMCO         | 3104 C    | 9909-4868  | 300002590        |

## SRD Laboratory:

| Device                          | 300001207 | Type           | S/N Number | Inv. No. Cetecom |
|---------------------------------|-----------|----------------|------------|------------------|
| Spectrum Analyzer               | 300001208 | 494AP          | B010241    | 300000863        |
| Spectrum Analyzer               | HP        | 71210A (70000) | 2731A02347 | 300000321        |
| Spectrum Analyzer Display       | HP        | 70206A         | 2840A01553 | 300002017        |
| Reference Frequency             | HP        | 70310A         | 2736A00707 | 300002018        |
| Local Oscillator                | HP        | 70900A         | 2842A02221 | 300002019        |
| ZF-Modul 10Hz-300 kHz           | HP        | 70902A         | 2840A02145 | 300002020        |
| ZF-Modul 100 kHz-3 MHz          | HP        | 70903A         | 2835A01069 | 300002021        |
| HF-Teil für 71210A 100Hz- 22GHz | HP        | 70908A         |            | 300002022        |
| Spectrum Analyzer 2             | HP        | 85660B         | 3138A07614 |                  |
| Spectrum Analyzer Display 2     | HP        | 85662A         | 3144A20627 |                  |

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

|                                |                 |           |            |           |
|--------------------------------|-----------------|-----------|------------|-----------|
| Signal Generator DC-600 KHz    | HP              | 8904A     | 2822A01213 | 300001157 |
| Signal Generator DC-600 KHz    | HP              | 8904A     | 2822A01214 | 300001158 |
| Powersupply                    | HP              | 6038A     | 3122A11097 | 300001204 |
| Netznachbildung                | R&S             | ESH3-Z5   | 828576/020 | 300001210 |
| Amplituden Controller          | R&S             | SMDU-Z2   | 871829/051 | 300002309 |
| Trenntrafo                     | Erfi            | 913501    |            | 300001205 |
| Trenntrafo                     | Grundig         | RT5A      | 9242       | 300001627 |
| Relais Matrix                  | HP              | 3488A     | 2719A15013 | 300001156 |
| Multimeter                     | Siemens         | Multizet  |            | 300001102 |
| Peak Power Calibrator          | HP              | 8900B     |            | 300001084 |
| Schallgeber                    | Schomandl       | SG 1      | 10159      | 300001209 |
| Schallgeber                    | Schomandl       | SG 2      | 10176      | 300002473 |
| Filter                         | FSY Microwave   |           |            | 300001206 |
| Attenuatorer                   | Pro Nova        |           |            | 300002476 |
| Klimaschrank                   | Heraeus Voetsch | VUK04/500 |            | 300001012 |
| Spectrum Analyzer 3            | HP              | 8566A     | 1925A00257 | 300001098 |
| Spectrum Analyzer Display 3    | HP              | 85662     | 1925A00860 | 300002306 |
| Oszilloscope                   | Tektronix       | 2432      | 110261     | 300001165 |
| Radiocom. Analyzer             | R&S             | CMTA 54   | 894043/010 | 300001175 |
| Powersupply                    | HP              | 6038A     | 2848A07027 | 300001174 |
| Signal Generator 0.01-1280 MHz | HP              | 8662A     | 2224A01012 | 300001110 |
| Signal Generator (Funktionen)  | R&S             | AFGU      | 862490/032 | 300001201 |
| Trenntrafo                     | Erfi            | MPL       | 91350      | 300001155 |
| Relais Matrix                  | R&S             | PSU       | 893285/020 | 300001173 |
| Power Meter                    | HP              | 436A      | 2101A12378 | 300001136 |
| Powersensor                    | HP              | 8484A     | 2237A10156 | 300001140 |
| Powersensor                    | HP              | 8482A     | 2237A06016 | 300001139 |
| Relais Matrix                  | R&S             | PSU       | 282628/004 | 300001214 |
| Powersupply                    | Zentro          |           | 2007       | 300001109 |
| Oszilloscope                   | Tektronix       | 7633      |            | 300001111 |
| Klimaschrank                   | Heraeus Voetsch | VUK04/500 | 32926      | 300001500 |
| Quasi-Peak Adapter             | HP              | 85650A    | 2811A01204 | 300002308 |
| Radiocom. Analyzer             | R&S             | CMTA 84   | 894199/012 | 300001176 |
| Oszilloscope                   | HP              | 54510A    | 3022A02062 | 300001202 |
| Funkmeßplatz                   | Schomandl       | FD1000    | 34982      | 300001115 |
| Signal Generator               | R&S             | SMPC      | 882416/019 | 300001162 |
| Frequency counter              | HP              | 5340A     | 2116A08138 | 300001104 |
| Power Meter                    | HP              | 436A      | 2031U01461 | 300001105 |
| Powersensor                    | HP              | 8482A     |            | 300001106 |
| Powersensor                    | HP              | 8484A     |            | 300001107 |
| Powersensor                    | HP              | 8485A     |            | 300001108 |
| Powersupply                    | HP              | 6038A     | 2752A04866 | 300001161 |
| Reflectionsmeter               | R&S             | NAP       | 879191     | 300001132 |
| Signal Generator NF            | R&S             | SPN       | 880139/068 | 300001142 |
| Trenntrafo                     | Erfi            | MPL       | 91350      | 300001151 |
| Attenuator                     | JFW             | 30 db     | 1350h/104  | 300001703 |
| Attenuator                     | JFW             | 10 db     | 1350h/103  | 300001704 |
| Attenuator                     | JFW             | 20 db     | 1350h/106  | 300001705 |
| Attenuator                     | JFW             | 20 db     | 1350h/105  | 300001766 |
| Filter                         | Spinner         | 153755    |            | 300001791 |

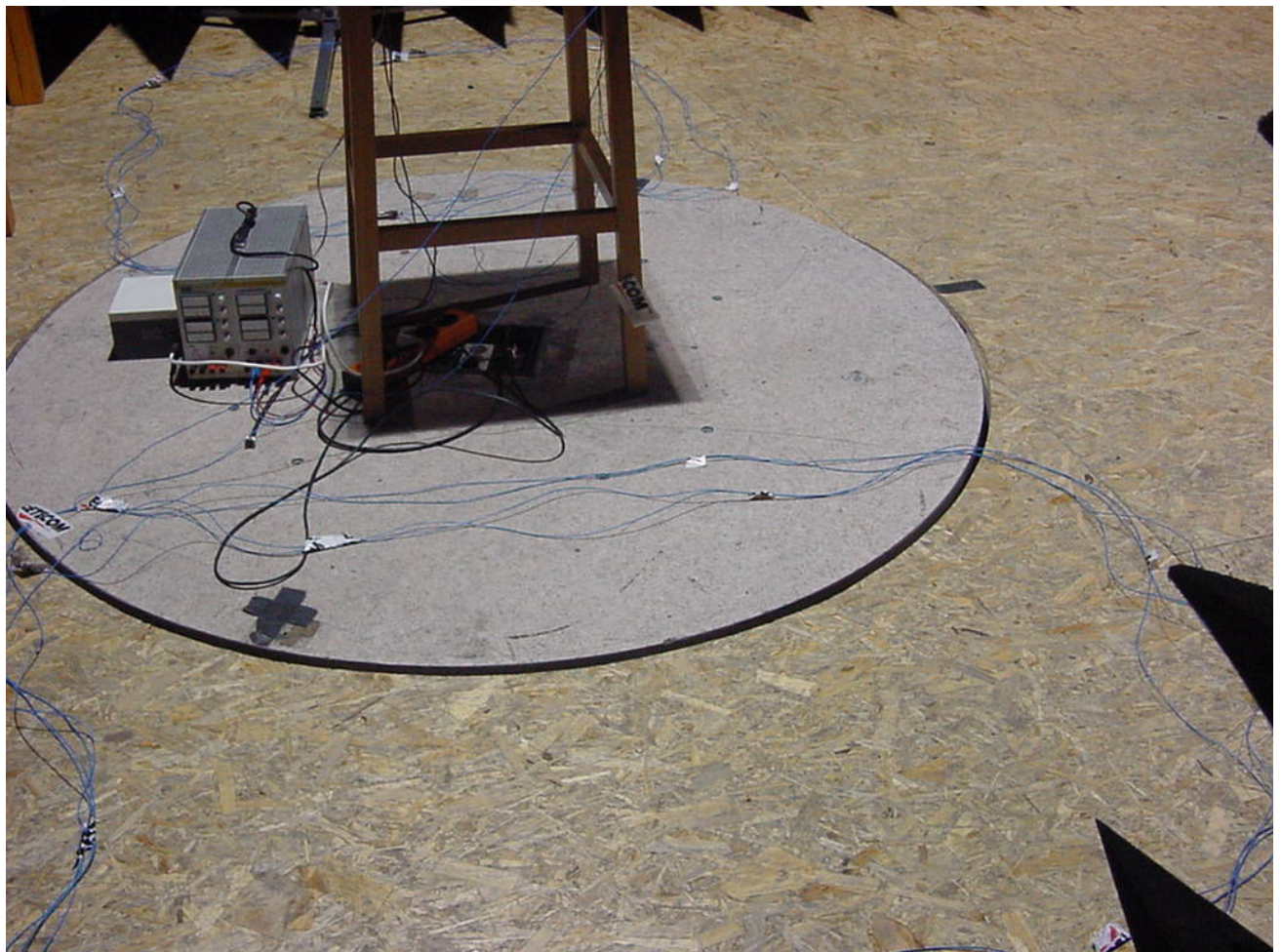
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

|                                |                 |           |            |           |
|--------------------------------|-----------------|-----------|------------|-----------|
| Powersensor                    | HP              | 8484A     | 2237A10494 | 300001666 |
| Powersupply                    | HP              | 6038A     | 3122A11097 | 300001204 |
| Netznachbildung                | R&S             | ESH3-Z5   | 828576/020 | 300001210 |
| Amplituden Controllor          | R&S             | SMDU-Z2   | 871829/051 | 300002309 |
| Trenntrafo                     | Erfi            | 913501    |            | 300001205 |
| Trenntrafo                     | Grundig         | RT5A      | 9242       | 300001627 |
| Relais Matrix                  | HP              | 3488A     | 2719A15013 | 300001156 |
| Multimeter                     | Siemens         | Multizet  |            | 300001102 |
| Peak Power Calibrator          | HP              | 8900B     |            | 300001084 |
| Schallgeber                    | Schomandl       | SG 1      | 10159      | 300001209 |
| Schallgeber                    | Schomandl       | SG 2      | 10176      | 300002473 |
| Filter                         | FSY Microwave   |           |            | 300001206 |
| Attenuatorer                   | Pro Nova        |           |            | 300002476 |
| Klimaschrank                   | Heraeus Voetsch | VUK04/500 |            | 300001012 |
| Spectrum Analyzer 3            | HP              | 8566A     | 1925A00257 | 300001098 |
| Spectrum Analyzer Display 3    | HP              | 85662     | 1925A00860 | 300002306 |
| Oszilloscope                   | Tektronix       | 2432      | 110261     | 300001165 |
| Radiocom. Analyzer             | R&S             | CMTA 54   | 894043/010 | 300001175 |
| Powersupply                    | HP              | 6038A     | 2848A07027 | 300001174 |
| Signal Generator 0.01-1280 MHz | HP              | 8662A     | 2224A01012 | 300001110 |
| Signal Generator (Funktionen)  | R&S             | AFGU      | 862490/032 | 300001201 |
| Trenntrafo                     | Erfi            | MPL       | 91350      | 300001155 |
| Relais Matrix                  | R&S             | PSU       | 893285/020 | 300001173 |
| Power Meter                    | HP              | 436A      | 2101A12378 | 300001136 |
| Powersensor                    | HP              | 8484A     | 2237A10156 | 300001140 |
| Powersensor                    | HP              | 8482A     | 2237A06016 | 300001139 |
| Relais Matrix                  | R&S             | PSU       | 282628/004 | 300001214 |
| Powersupply                    | Zentro          |           | 2007       | 300001109 |
| Oszilloscope                   | Tektronix       | 7633      |            | 300001111 |
| Klimaschrank                   | Heraeus Voetsch | VUK04/500 | 32926      | 300001500 |
| Quasi-Peak Adapter             | HP              | 85650A    | 2811A01204 | 300002308 |
| Radiocom. Analyzer             | R&S             | CMTA 84   | 894199/012 | 300001176 |
| Oszilloscope                   | HP              | 54510A    | 3022A02062 | 300001202 |
| Funkmeßplatz                   | Schomandl       | FD1000    | 34982      | 300001115 |
| Signal Generator               | R&S             | SMPC      | 882416/019 | 300001162 |
| Frequency counter              | HP              | 5340A     | 2116A08138 | 300001104 |
| Power Meter                    | HP              | 436A      | 2031U01461 | 300001105 |
| Powersensor                    | HP              | 8482A     |            | 300001106 |
| Powersensor                    | HP              | 8484A     |            | 300001107 |
| Powersensor                    | HP              | 8485A     |            | 300001108 |
| Powersupply                    | HP              | 6038A     | 2752A04866 | 300001161 |
| Reflectionsmeter               | R&S             | NAP       | 879191     | 300001132 |
| Signal Generator NF            | R&S             | SPN       | 880139/068 | 300001142 |
| Trenntrafo                     | Erfi            | MPL       | 91350      | 300001151 |
| Attenuator                     | JFW             | 30 db     | 1350h/104  | 300001703 |
| Attenuator                     | JFW             | 10 db     | 1350h/103  | 300001704 |
| Attenuator                     | JFW             | 20 db     | 1350h/106  | 300001705 |
| Attenuator                     | JFW             | 20 db     | 1350h/105  | 300001766 |
| Filter                         | Spinner         | 153755    |            | 300001791 |
| Powersensor                    | HP              | 8484A     | 2237A10494 | 300001666 |

|                               |                    |                          |            |           |
|-------------------------------|--------------------|--------------------------|------------|-----------|
| Powersensor                   | HP                 | 8485A                    | 2238A00849 | 300001668 |
| Bandfilter                    | Telonic            | TTF7255EE                | 20293-11   | 300001300 |
| Bandfilter                    | Telonic            | TTF12555EE               | 20292-6    | 300001302 |
| Bandfilter                    | Telonic            | TTF25055EE               | 20291-8    | 300001304 |
| Bandfilter                    | Telonic            | TTF50055EE               | 20290-7    | 300001305 |
| Bandfilter                    | Telonic            | TTF100055EE              | 20289-7    | 300001307 |
| Bandfilter                    | Telonic            | TTA300055EESN            | 20370-2    | 300001312 |
| Bandstop                      | Telonic            | TTR3753EE1               | 30013-1    | 300001314 |
| Bandstop                      | Telonic            | TTR723EE                 | 20417-2    | 300001316 |
| Bandstop                      | Telonic            | TTR95-3EE                | 20372-4    | 300001318 |
| Bandstop                      | Telonic            | TTR1903EE                | 30036-4    | 300001320 |
| Bandstop                      | Telonic            | TTR3753EE                | 20369-5    | 300001321 |
| Bandstop                      | Telonic            | TTR750-3EE1              | 90177-1    | 300002387 |
| Highpass                      | Pro Nova           | HDP120-6GG               | ohne       | 300001348 |
| Highpass                      | Pro Nova           | HMC500-6AA               | HJ67-01?   | 300001350 |
| Highpass                      | Narda              | NHP 9000                 | 0004       | 300001362 |
| Highpass                      | Narda              | HDP16-6GH                | JV70-01    | 300001364 |
| Highpass                      | RSD                | HDP50-6GH,<br>HDP200-6GG |            | 300001371 |
| Highpass                      | RSD                | 2099-02-01               |            | 300000370 |
| Signal Generator 0.1-2060 MHz | HP                 | 8657A                    | 2838U00736 | 300001009 |
| Radio Code Analyzer           | Schlumberger       | SL4922                   |            | 300001038 |
| Signal Analyzer               | B&K                | 2033                     |            | 300001047 |
| Frequency counter             | HP                 | 5386A                    | 2704A01243 | 300000998 |
| Laufzeitelement               | WR-Elektronik      |                          |            | 300001036 |
| Powersupply Stromversorgung   | Syston             | M5P 40/15A               | 828233     | 300001291 |
| Powersupply                   | Heiden             | 1108-32                  | 1701       | 300001392 |
| Powersupply                   | Heiden             | 1108-32                  | 1802       | 300001383 |
| Powersupply                   | Heiden             | 1108-32                  | 003202     | 300001187 |
| Powersupply                   | Zentro             | LA 2x30/5GB1             | 2011       | 300001276 |
| Powersupply                   | Zentro             | LA 2x30/5GB2             | 2012       | 300001275 |
| Powersupply                   | Zentro             | LA 30/5GA                | 2041,2042  | 300001287 |
| Trenntrafo                    | Grundig            | RT5A                     | 8781       | 300001277 |
| Trenntrafo                    | Grundig            | RT5A                     | 9242       | 300001263 |
| Multimeter                    | Goerz Elektro      | Unigor 6e P              | 911 355    | 300001625 |
| Multimeter                    | Goerz Elektro      | Unigor 6e P              | 911 391    | 300001281 |
| Climatic Box                  | Heraeus Voetsch    | VUK04/500                | 32679      | 300000299 |
| Powersensor + Att.            | HP                 | 8482B                    | 2703A02586 | 300001492 |
| Attenuator 30 dB              | HP                 | 8498A                    | 1801A02445 | 300001475 |
| Signal Generator NF           | HP                 |                          | 2822A01203 | 300001004 |
| Attenuator                    | Spinner            | BN 534171 D              | 51881      | 300001516 |
| Attenuator coaxial            | Bird               | 8325                     | 2429       | 300001513 |
| Impulsbegrenzer               | R&S                | ESH 3 Z2                 |            | 300001460 |
| 4Port Box                     | R&S                | 4Port Box                | 860457/005 | 300001472 |
| Signal Generator 0.1-4200 MHz | HP                 | 8665A                    | 2833A0011  | 300002299 |
| NF-Spektrumanalyzer           | B&K                | 2033A                    |            | 300002301 |
| Swissphone Freifeld-Messbox   | Swissphone Schweiz |                          |            | 300002302 |
| Trenntrafo regelbar           | Grundig            | RT5H                     | 9242       | 300001628 |
| Signal Generator              | HP                 | 8111A                    | 2215G00867 | 300001117 |

## 5 Annex B: Photographs of Test site

Photo 1 (Radiated Emissions):



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 2 (Radiated Emissions):



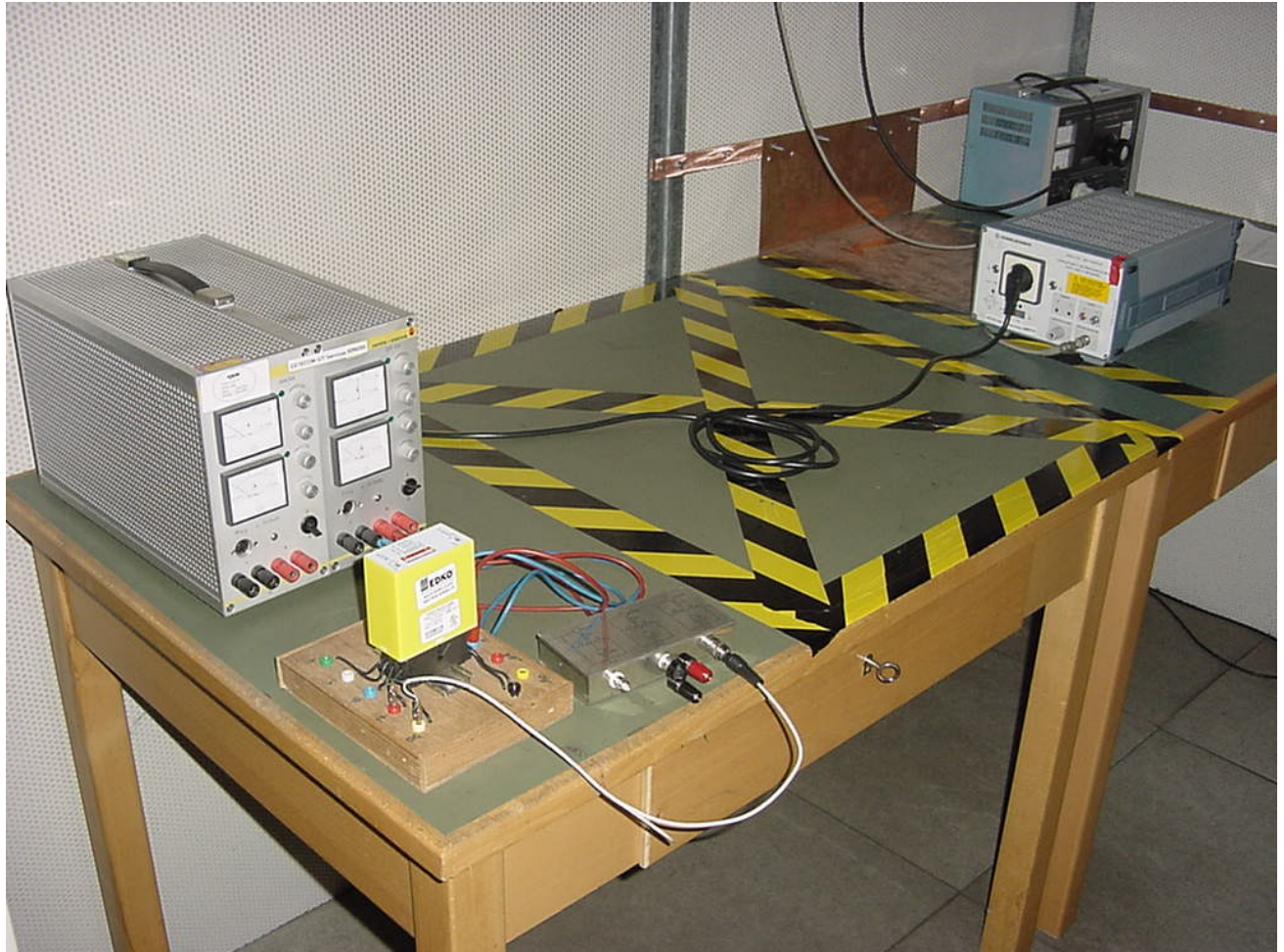
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 3 (Conducted Emissions):



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 4(Conducted Emissions):



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 5 (Conducted Emissions):



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 6 (Conducted Emissions):



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

## 6 Annex C: External Photographs of the Equipment

Photo 1: Matrix



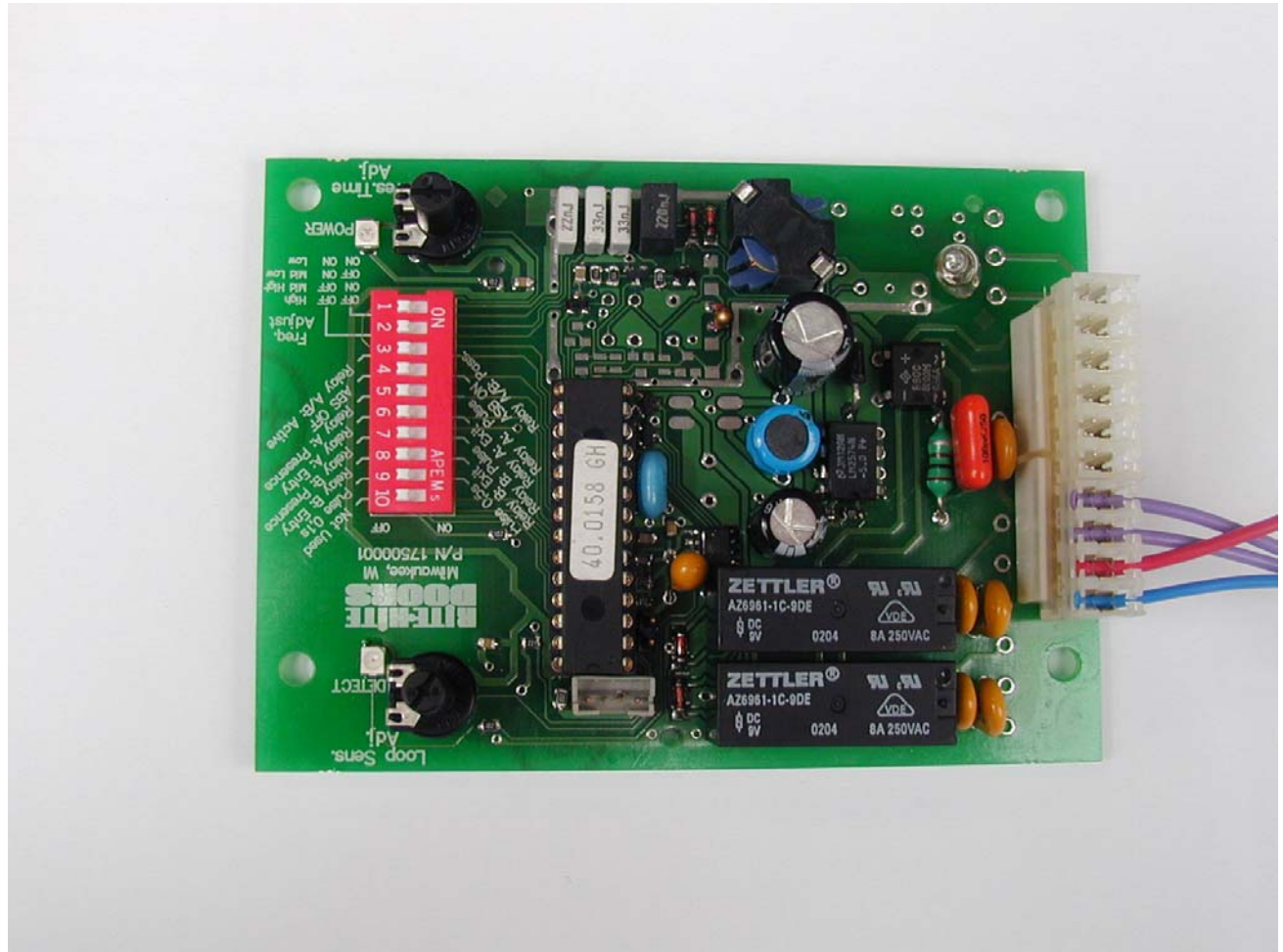
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 2: Matrix II



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

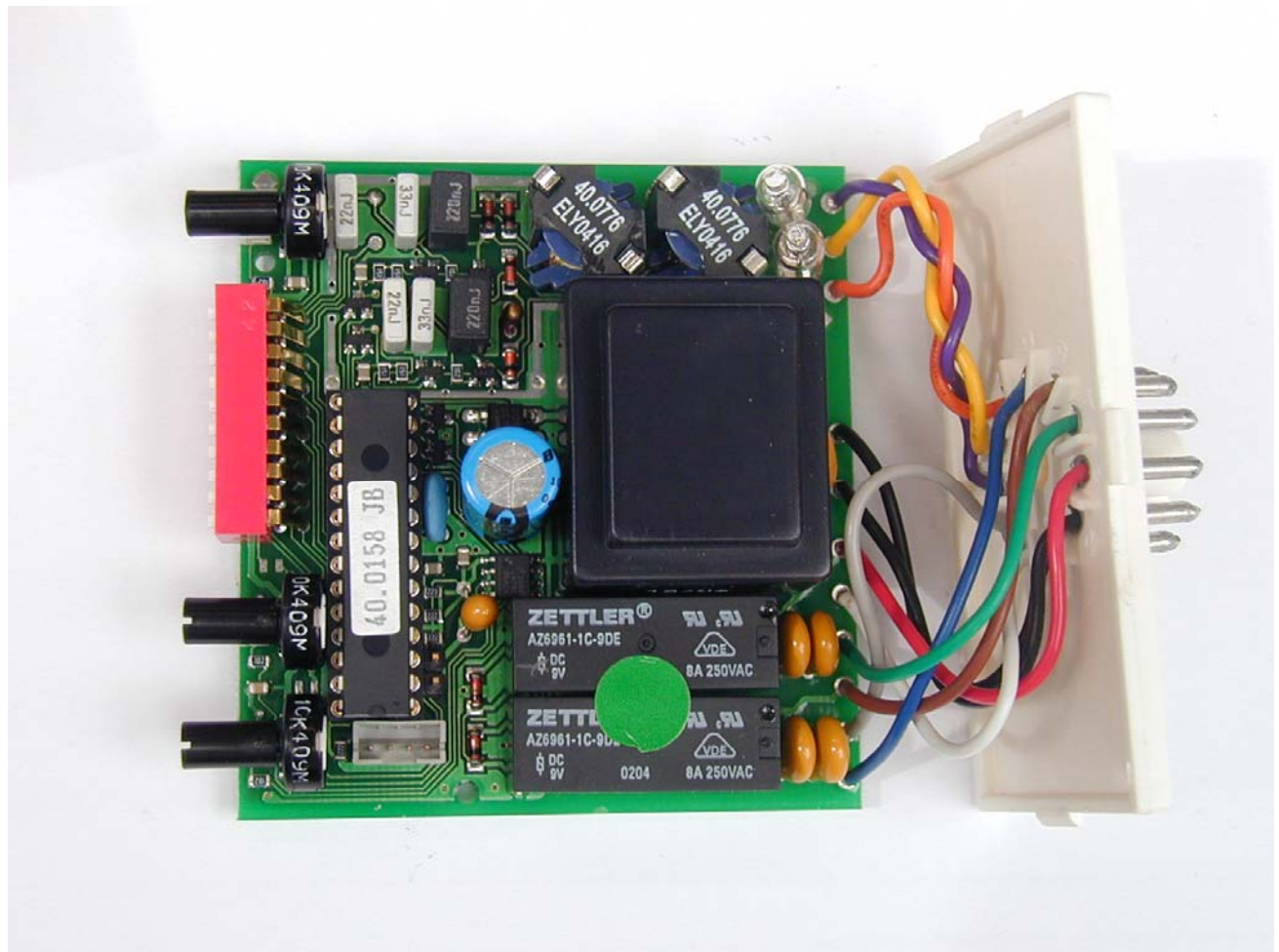
Photo 3: Matrix Rite-Hite



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

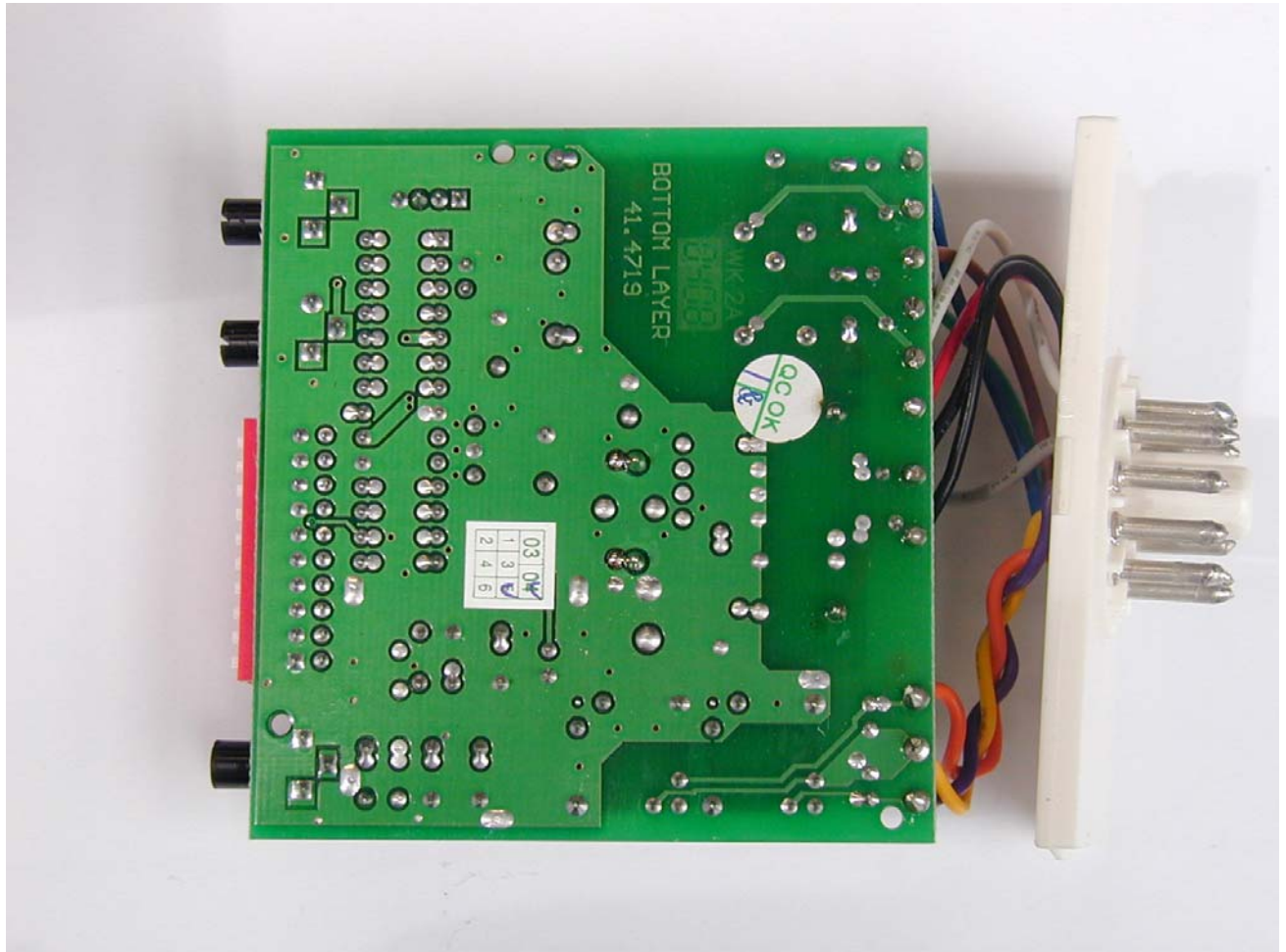
## 7 Annex D: INTERNAL PHOTOGRAPHS OF THE EQUIPMENT

Photo 4: Matrix with transformer



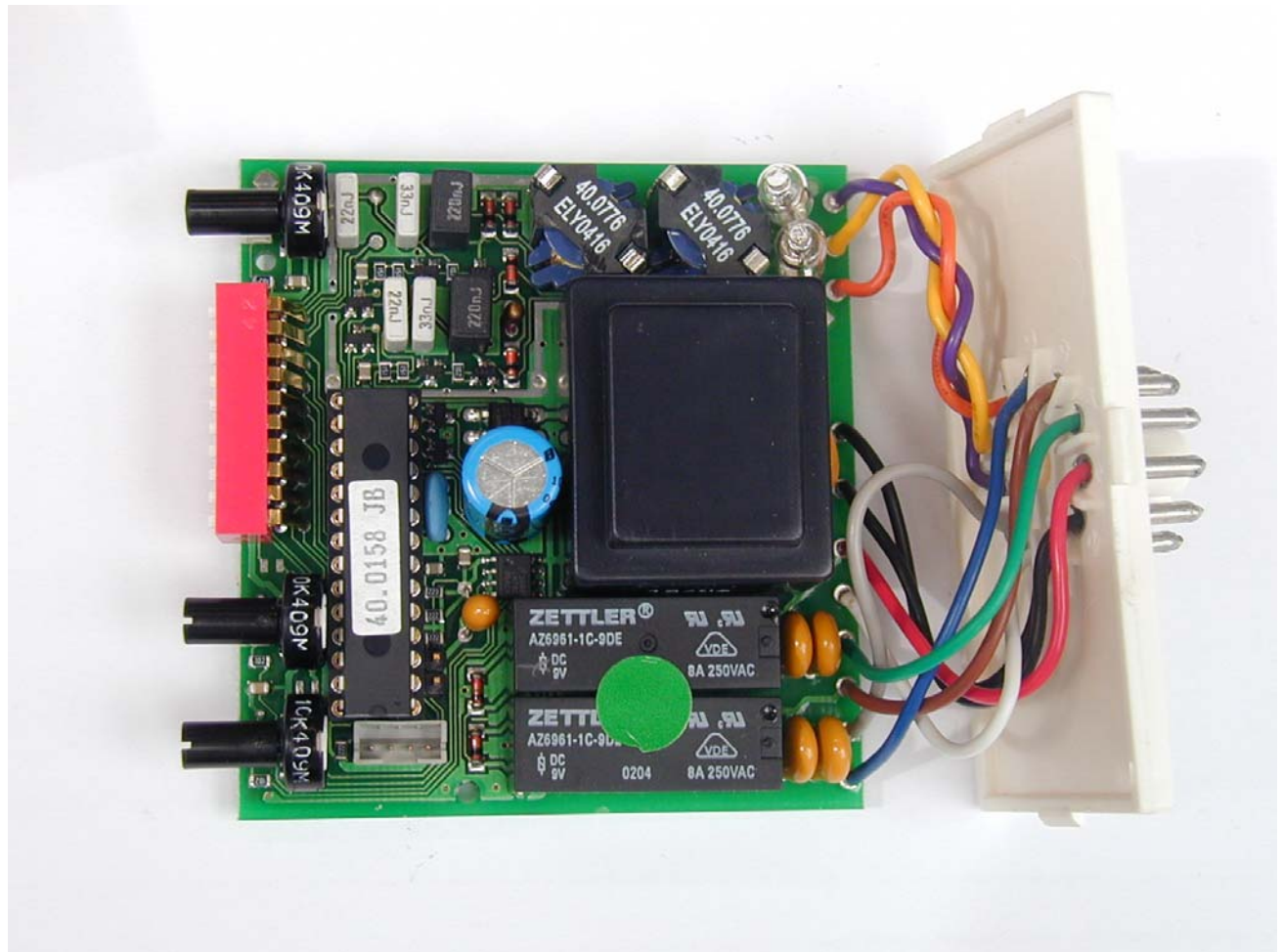
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 5: Matrix with transformer



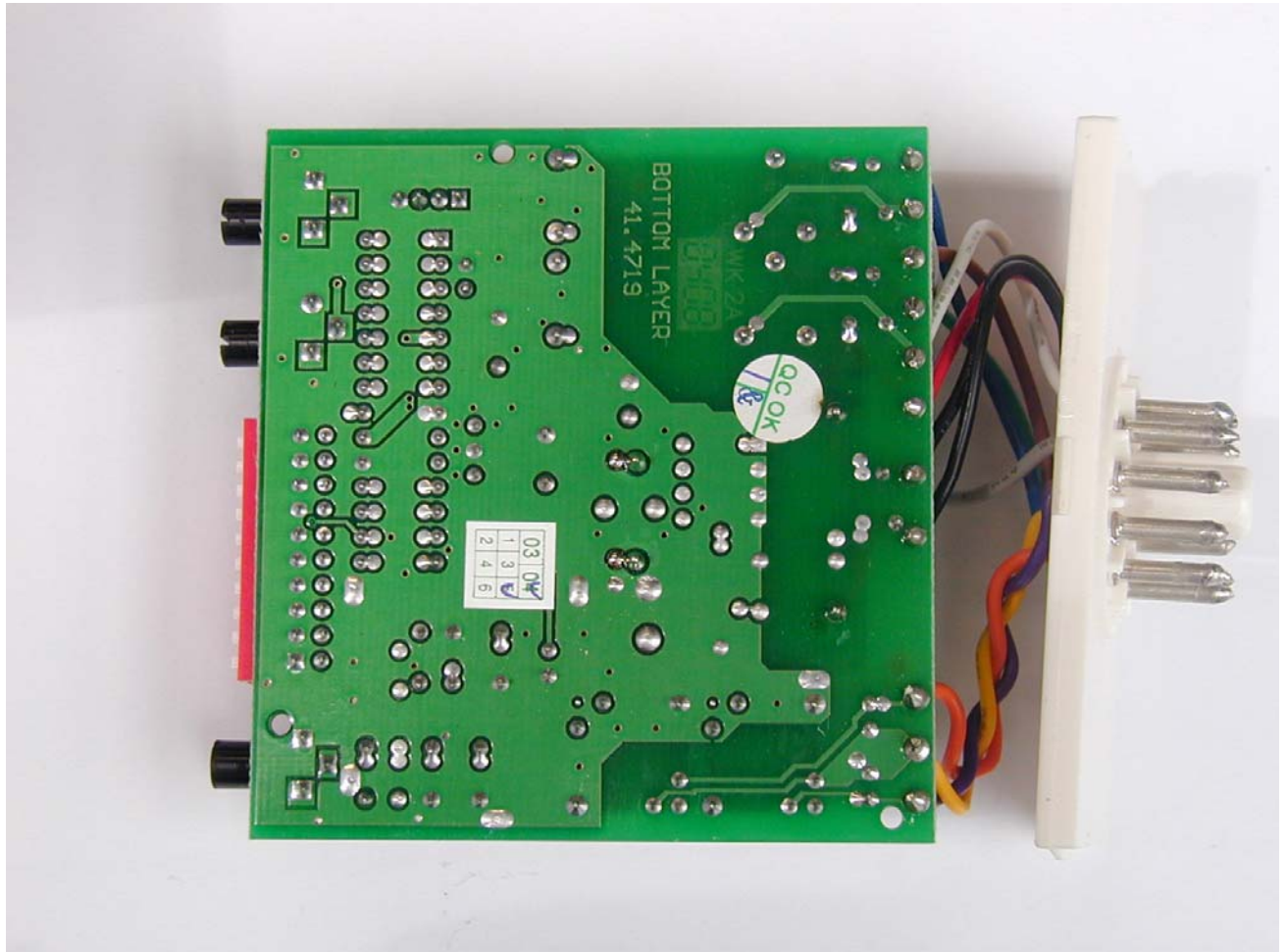
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 4: Matrix with transformer



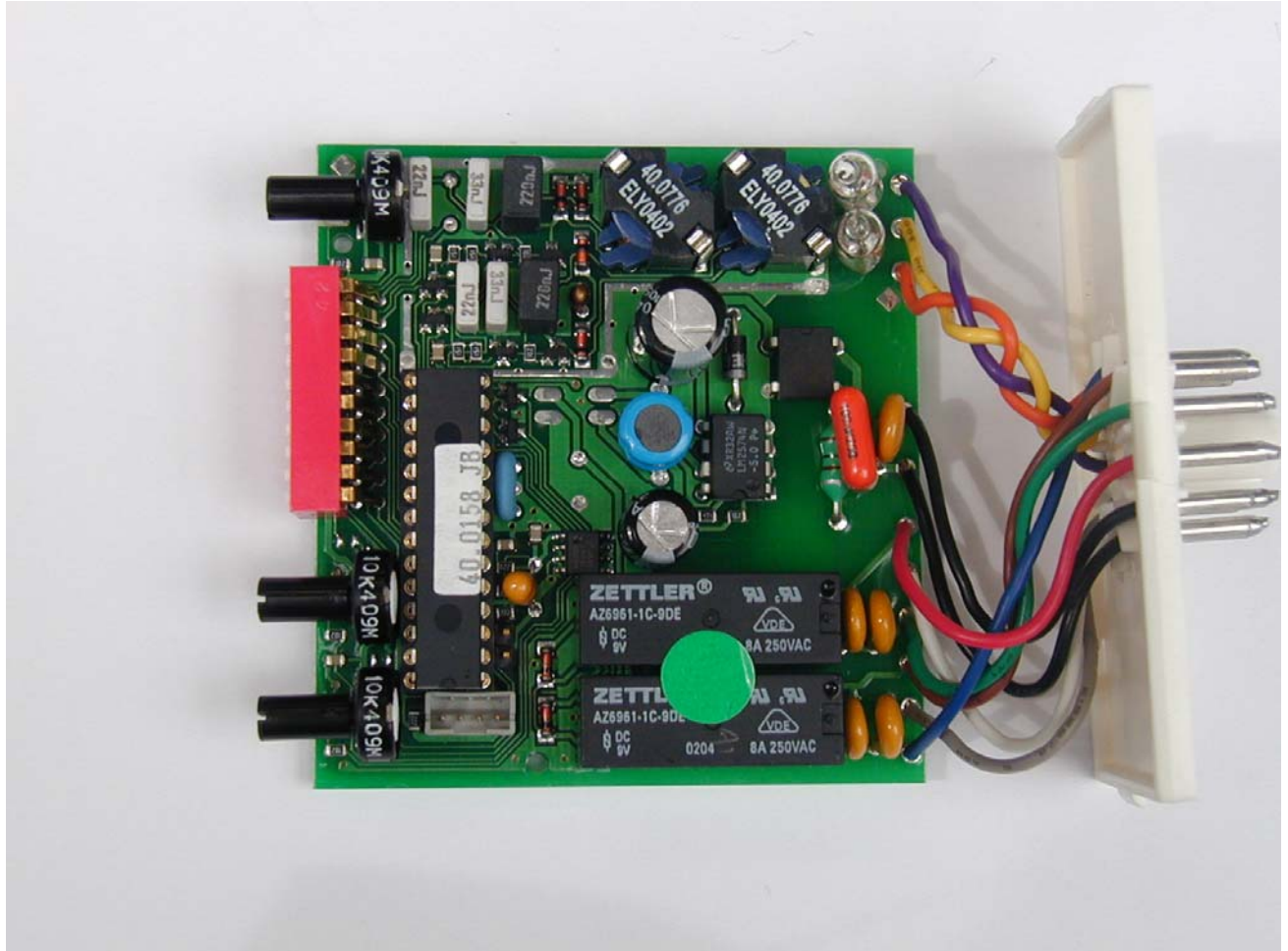
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 5: Matrix with transformer



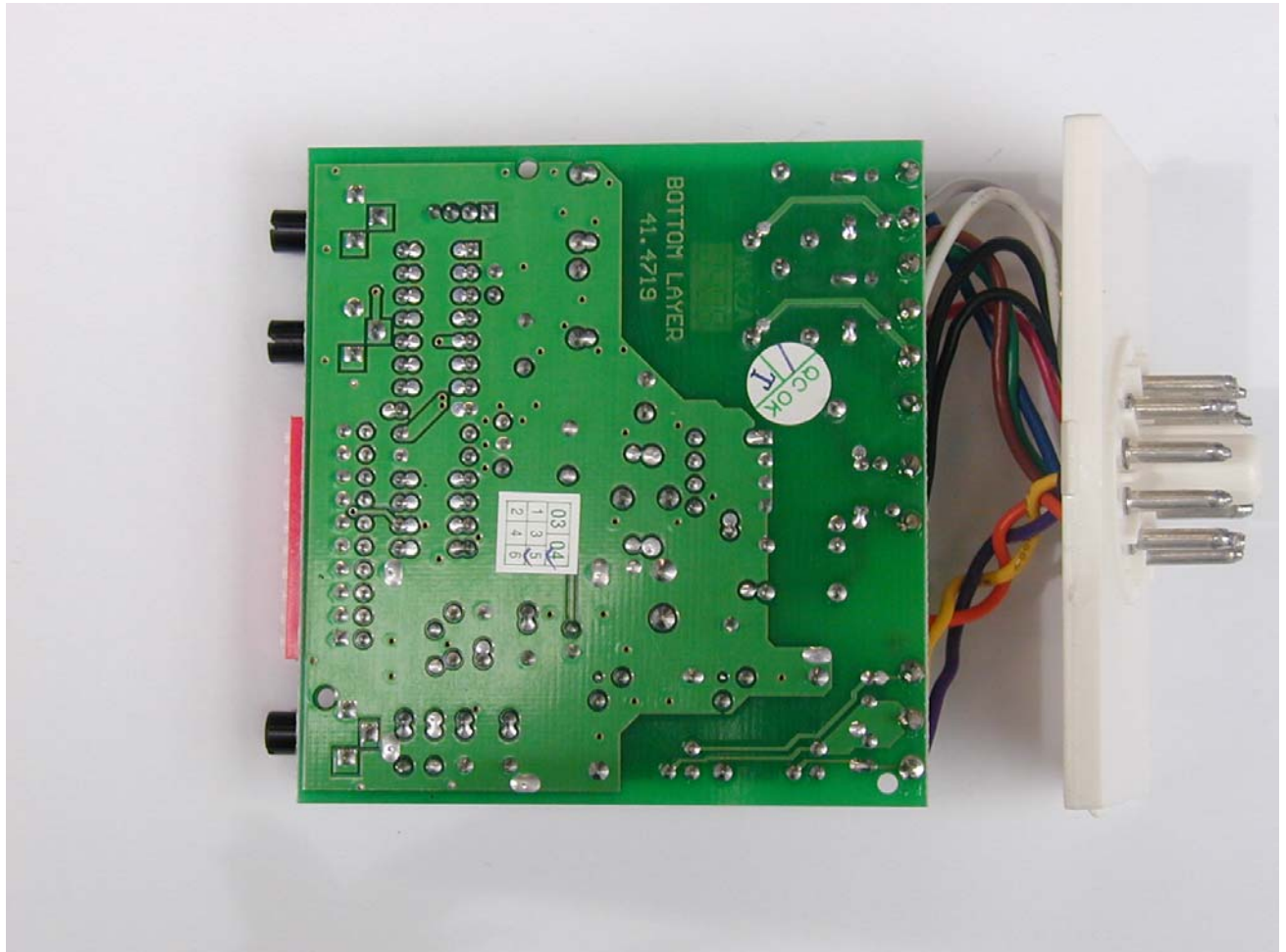
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 6: Matrix without transformer



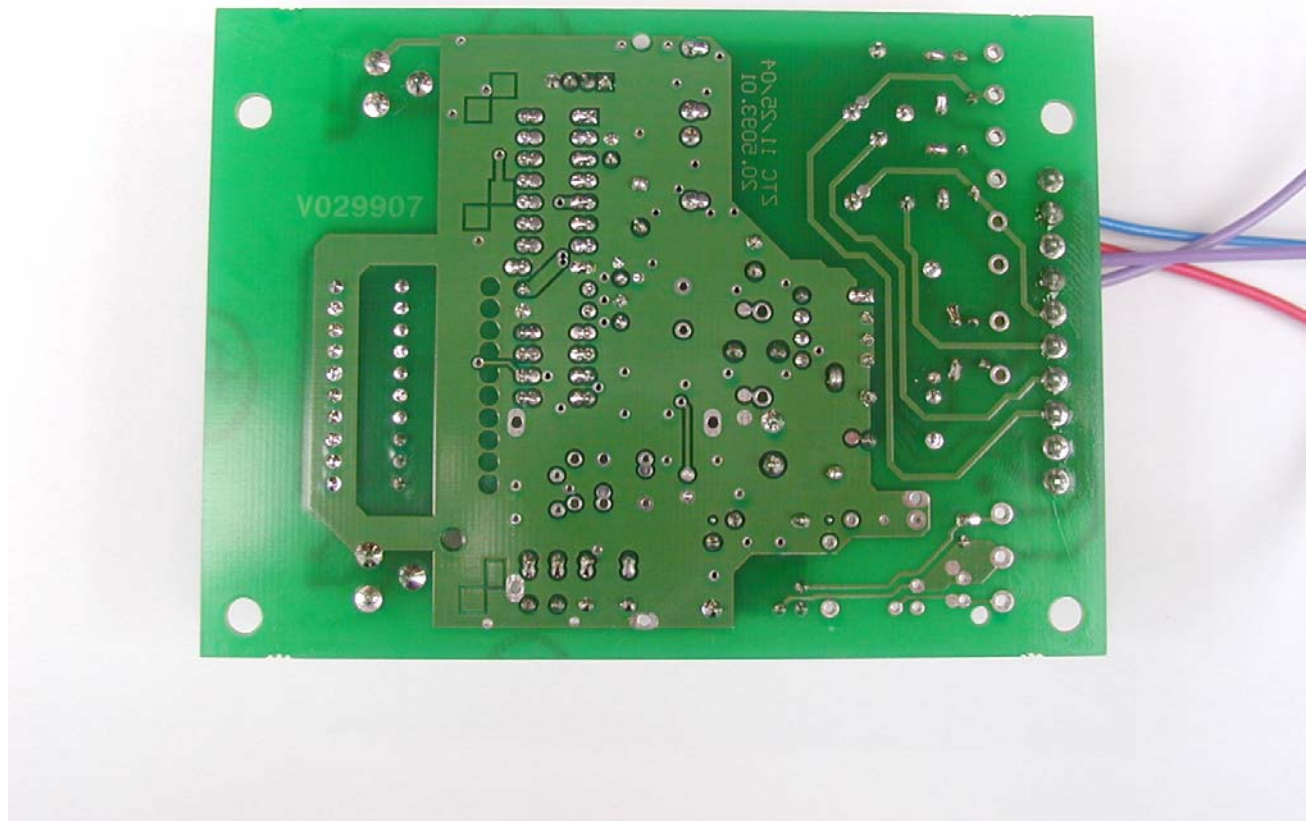
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 7: Matrix without transformer



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 8: Matrix Rite-Hite backsite



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)

Photo 9: Matrix connector system



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :  
( see test equipment listing)