

## EMISSION -- TEST REPORT

Test Report File No. : T 21187-1-09 KJ Date : October 15, 2001  
of issue

Type Designation : STRATA

Family variations : STRATA SX EURO / STRATA GX EURO / STRATA ILX

Kind of Product : Electronic Article Surveillance Detection System

Applicant : Checkpoint Systems, Inc.

Manufacturer : Pikatron Feinwektechnik GmbH&Co KG

Licence holder : Checkpoint Systems, Inc.

Address : 101 Wolf Drive, Thorofare  
New Jersey 08086

**Test result** accdg. to the regulation(s) at page 3

**Positive**

This test report with attachment consists of **35** pages.  
The test result only corresponds to the tested sample. It is not permitted to copy this report, in part or in full, without the permission of the test laboratory.

FCC ID: DO4STRATA  
**DIRECTORY**

	<b>Page</b>
<b><u>Documentation</u></b>	
Directory	<u>2</u>
Test regulations	<u>3</u>
General information	<u>4-6</u>
Discovery of worst case condition	<u>7</u>
Ferrite location	<u>8-11</u>
Equipment under Test	<u>21</u>
Summary	<u>22</u>
<b><u>Test data</u></b>	
Conducted emissions 10/150 kHz - 30 MHz	<u>12</u>
Spurious emissions (magnetic field) 10 kHz - 30 MHz	<u>13-15</u>
Spurious emissions (electric field) 30 MHz - 1000 MHz	<u>16</u>
Spurious emissions (electric field) 1 GHz - 18 GHz	<u>17</u>
Radiated power of the fundamental wave	<u>18-19</u>
Conducted power of the fundamental wave measured on the antenna terminals	<u>20</u>
<b><u>Attachment</u></b>	
A) Test data (interference voltage test)	<u>A1-A2</u>
Bandwith plots	<u>A3-A5</u>
B) List of Test Equipment	<u>B1</u>
C) Photos of the test setup	<u>C1-C5</u>
D) Technical description of the test sample (e.g. CDF, Declaration)	<u>D1-D7</u>
E) External photos of the EuT	<u>E1-E11</u>
Internal photos of the EuT	<u>E12-E20</u>
F) Measurement Protocol for FCC, VCCI and AUSTEL	<u>--</u>

**TEST REGULATIONS**

The tests were performed according to following regulations :

- o - EN 50081-1 / 2.1991
- o - EN 50081-2 / 7.1993

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- o - EN 55011 / 3.1991
  - o - EN 55014 / 4.1993
  - o - EN 55014 / A2:1990
  - o - EN 55104 / 5.1995
  - o - EN 55015 / A1:1990
  - o - EN 55015 / 12.1993
  - o - EN 55022 / 5.1995
  - o - prEN 55103-1 / 3.1995
  - o - prEN 50121-3-2 / 3.1995
  - o - EN 60601-1-2 / 4.1994
  - o - VCCI
  - - Part 15 Subpart C (15.223)
  - o - Part 15 Subpart C (15.231)
- o - Group 1
  - o - class A
  - o - Household appliances and similar
  - o - tools
  - o - Semiconductor devices
  - Category:
  - o - class A
  - o - class B
  - o - class 1
  - o - class 2
- o - Group 2
  - o - class B

**ADDRESS OF THE TEST LABORATORY**

- - **MIKES BAPT PRODUCT SERVICE GmbH**  
**Ohmstrasse 2-4**  
**D - 94342 Strasskirchen**

- o - \_\_\_\_\_  
\_\_\_\_\_

**ENVIRONMENTAL CONDITIONS**

Temperature: 15-35 ° C

Humidity 45-60 %

Atmospheric pressure 860-1060 mbar

**POWER SUPPLY SYSTEM UTILIZED**

Power supply system

- o 230V/50 Hz / 1φ
- o 400V/50 Hz 3PE
- 110V/60 Hz / 1φ
- o 400V/50 Hz 3NPE

**STATEMENT OF 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 accdg. to NIS 81 /5.1994 „The Treatment of Uncertainty in EMC Measurements“ and is documented in the MIKES BAPT Product Service quality system accdg. to EN 45001. 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.

**DESCRIPTION OF THE EQUIPMENT UNDER TEST (EuT)**

Number of received/tested samples: 3/3

Serial Number: STRATA SX EURO: 728349601U0718010002  
STRATA GX EURO: 705350702U0904010013  
STRATA ILX: 717878801U0820010101

The STRATA SX EURO, STRATA GX EURO and STRATA ILX are Electronic Article Surveillance Systems (EAS). The systems detects target tags attached to merchandise. The targets resonate in the region of 8.2 to 9.5 MHz. When an article of merchandise is purchased, the target is deactivated which causes it to no longer resonate. The STRATA SX EURO, STRATA GX EURO and STRATA ILX system monitors an area 3-feet on either side of the antenna in the 7.4 to 10 MHz range, and triggers an alarm when a non-deactivated target is detected.

The STRATA SX EURO, STRATA GX EURO and STRATA ILX utilizes the Model TR4022 \*61 Printed Circuit Board (PCB). Checkpoint Systems, Inc. manufactures several different types of antennae that are used with the TR4022 PCB. The Strata system is a transceiver with a 3-loop, 2-loop and 1-loop antenna design. The 1-loop is used as a shield and is tied to ground. This antenna design provides the system with different views of the detection field. It also eliminates “holes” typically found at the crossbars of typical swept antennae.

FCC ID: DO4STRATA

Two identical transmitters, each operating in a push-pull class D mode of operation, are used to drive the 2-loop and 3-loop antennae separately. The control signals are timed for 64 six microsecond bursts at a 100 Hz rate. During an antenna’s cycle the system performs two “blasts” which are called a “bin”. A bin consists of two “noise” cycles and two blast cycles. A blast is a transmit cycle followed by a receive cycle. During the noise cycle, the system does not transmit but only receives ambient noise. This allows the system to establish the baseline noise level of the environment for later comparison. The system then transmits or “pulses” the field and then receives or “listens” for an echo of a target signal.

The overall duty cycle for transmitter operation is 3.84%.

The transmitter on time for one discrete frequencies is  $3.84\% / 16 = \underline{0.24\%}$

$(2 \text{ antennae} * 16 \text{ bins} * 2 \text{ blasts per bin} * 6 \mu\text{sec/blast}) = 384 \mu\text{sec}$

$384/\text{frame rate } 100 \text{ Hz (10 milliseconds)} = 0.0384$

The TR4022 is a digital swept frequency hopping transmitter. The TR4022 hops on discrete frequencies. The frequencies that can be transmitted by the TR4022 are as follows:

Frequency 8.2 MHz:

7.600 MHz	7.673 MHz	7.747 MHz	7.820 MHz
7.893 MHz	7.967 MHz	8.040 MHz	8.113 MHz
8.187 MHz	8.260 MHz	8.333 MHz	8.407 MHz
8.480 MHz	8.553 MHz	8.627 MHz	8.700 MHz

Frequency 8.6 MHz:

7.800 MHz	7.907 MHz	8.013 MHz	8.120 MHz
8.227 MHz	8.333 MHz	8.440 MHz	8.547 MHz
8.653 MHz	8.760 MHz	8.867 MHz	8.973 MHz
9.080 MHz	9.187 MHz	9.293 MHz	9.400 MHz

Frequency 9.5 MHz:

8.900 MHz	8.960 MHz	9.020 MHz	9.080 MHz
9.140 MHz	9.200 MHz	9.260 MHz	9.320 MHz
9.380 MHz	9.440 MHz	9.500 MHz	9.560 MHz
9.620 MHz	9.680 MHz	9.740 MHz	9.800 MHz

The restricted frequency bands (per FCC Part 15 Clause 15.205) in the operating frequency band of the EuT are as follows:

- 8.291 – 8.294 MHz
- 8.362 – 8.366 MHz
- 8.37625 – 8.38675 MHz
- 8.41425 – 8.41475 MHz

The transmitter is not capable of hopping into or operating in the restricted bands.

**DEFINITIONS FOR SYMBOLS USED IN THIS TEST REPORT**

■ The black square indicates that the listed condition, standard or equipment is applicable for this report.

○ Blank box indicates that the listed condition, standard or equipment was not applicable for this report.

## **MEASUREMENT PROTOCOL FOR FCC, VCCI AND AUSTEL**

### **Test Methodology**

Conducted and radiated emission testing is performed according to the procedures in International Special Committee on Radio Interference (CISPR) Publication 22 (1993), European Standard EN 55022 and Australian Standard AS 3548 (which are based on CISPR 22).

The Japanese standard, "Voluntary Control Council for Interference (VCCI) by Data Processing Equipment and Electronic Office Machines, Technical Requirements" is technically equivalent to CISPR 22 (1993). For official compliance, a conformance report must be sent to and accepted by the VCCI.

In compliance with FCC Docket 92-152, "Harmonization of Rules for Digital Devices Incorporate International Standards", testing for FCC compliance may be done following the ANSI C63.4-1992 procedures and using the FCC limits or the CISPR 22 Limits.

### **Measurement Uncertainty**

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. These test systems have a measurement uncertainty of  $\pm 4.5$  dB. The equipment comprising the test systems are calibrated on an annual basis.

### **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 into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

### **General Standard Information**

The test methods used comply with CISPR Publication 22 (1993), EN 55022 (1987) and AS 3548 (1992) - "Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment" and with ANSI C63.4-1992 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

For detailed description of each measurement please refer to section test results.

**DISCOVERY OF WORST CASE MEASUREMENT CONDITION:**

The model STRATA consists of 3 different versions STRATA SX EURO, STRATA GX EURO and STRATA ILX. All the 3 versions are technically identical except the following items:

- different type of antennas SX EURO, GX EURO and ILX
- two different type of power supply units (Worldwide 224 Module and Worldwide 425 Module)
- STRATA SX EURO and STRATA ILX have additional a matching board. For more detailed information, please see technical documentation set.

To find out the worst case conditions for the complete measurement the following tests have been performed:

- Measurement of the conducted emission of the 3 versions. This measurement have been performed in order to find out the maximum spurious emissions of the transmitter (antenna).
- Measurement of the radiated fieldstrength of the operating frequency of the 3 versions. This measurement have been performed in order to find out the transmitter (antenna) with the maximum fieldstrength.
- Measurement of the radiated spurious emissions of the 3 versions. This measurement have been performed in order to find out the maximum spurious emissions of the transmitter (antenna).

**Summarizing:**

- ⇒ maximum conducted emission: STRATA SX EURO (difference to STRATA GX EURO: 4.6 dB)
- ⇒ maximum fieldstrength: STRATA ILX (difference to STRATA GX EURO: 0.7 dB)
- ⇒ maximum spurious emission: STRATA GX EURO
- ⇒ bandwidth plots: no essential differences on the 3 versions

Based on his test results, the measurements have been performed completely on the version: STRATA GX EURO with power supply worldwide 425 Module. This test results are documented in the following sections of the testreport.

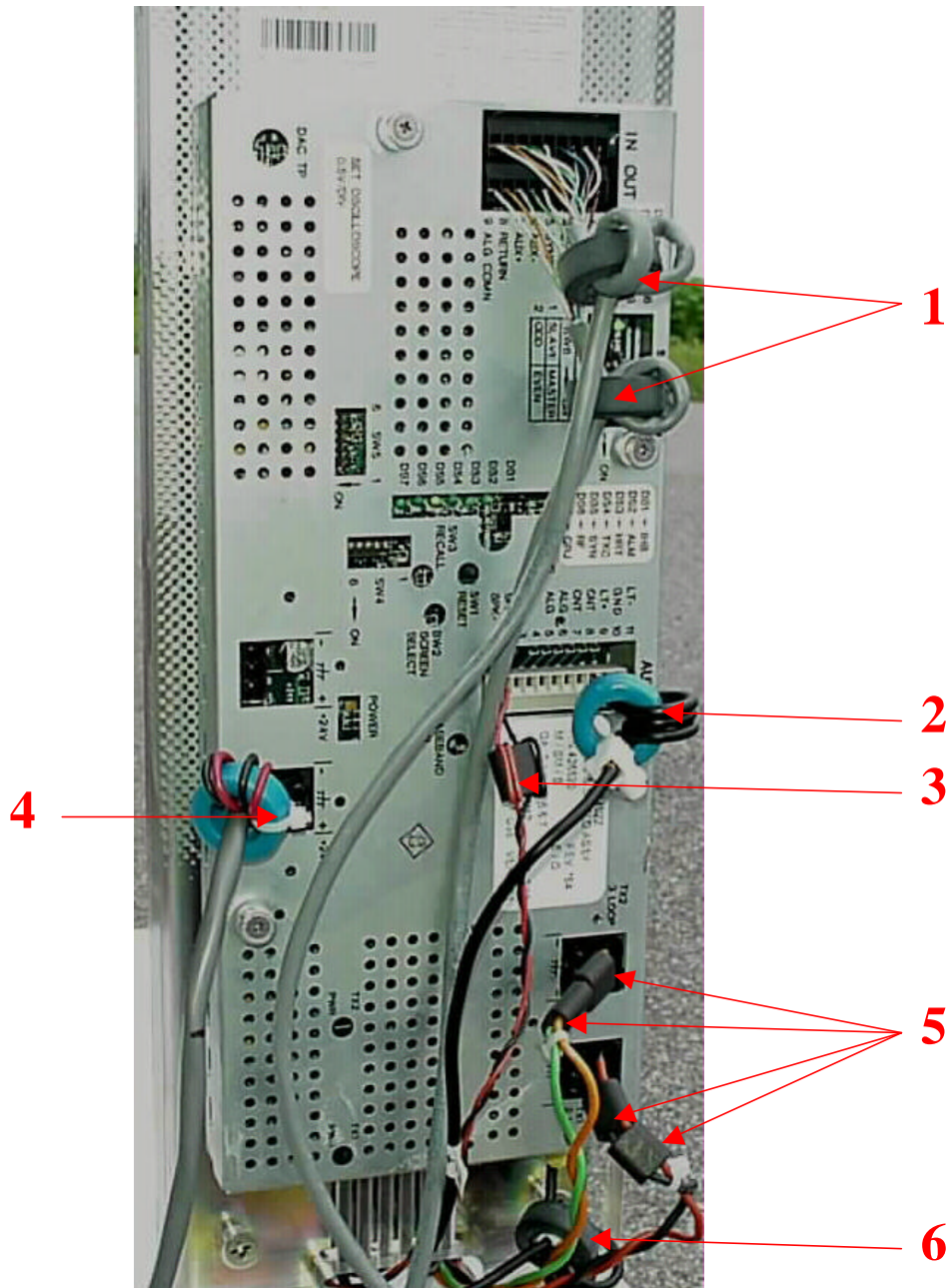
**Ferrite Locations:**

1. Fair Rite P/N 734021 (Order No 2643801502) – Add 2 on the end of the Network cable with three turns through ferrite.
2. Fair Rite P/N 734021 (Order No 2643801502) – Add 1 on the end of the loop1 cable with four turns through ferrite.
3. Fair Rite P/N 734020 (Order No 2865-000-202) or Yeng Tat (Order No R5-RID 7.5x14.35x13.3) - Add 1 on the end of the buzzer connection with three turns through ferrite.
4. Fair Rite P/N 734021 (Order No 2643801502) – Add 1 on the end of the DC cable with four turns through ferrite.
5. Fair Rite P/N 734020 (Order No 2865-000-202) or Yeng Tat (Order No R5-RID 7.5x14.35x13.3) - Add each 2 on the end of the loop2 and loop3 connection with one turn through ferrite.
6. Fair Rite P/N 734021 (Order No 2643801502) – Add 1 on the end of the loop1 cable with four turns through ferrite.
7. Fair Rite P/N 734021 (Order No 2643801502) – Add 1 on the end of the DC cable with four turns through ferrite.
8. Fair Rite P/N 734021 (Order No 2643801502) – Add 1 on the end of the loop1 cable with four turns through ferrite.
9. Fair Rite P/N 734020 (Order No 2865-000-202) or Yeng Tat (Order No R5-RID 7.5x14.35x13.3) - Add 1 on the end of the lamp connection with two turns through ferrite.



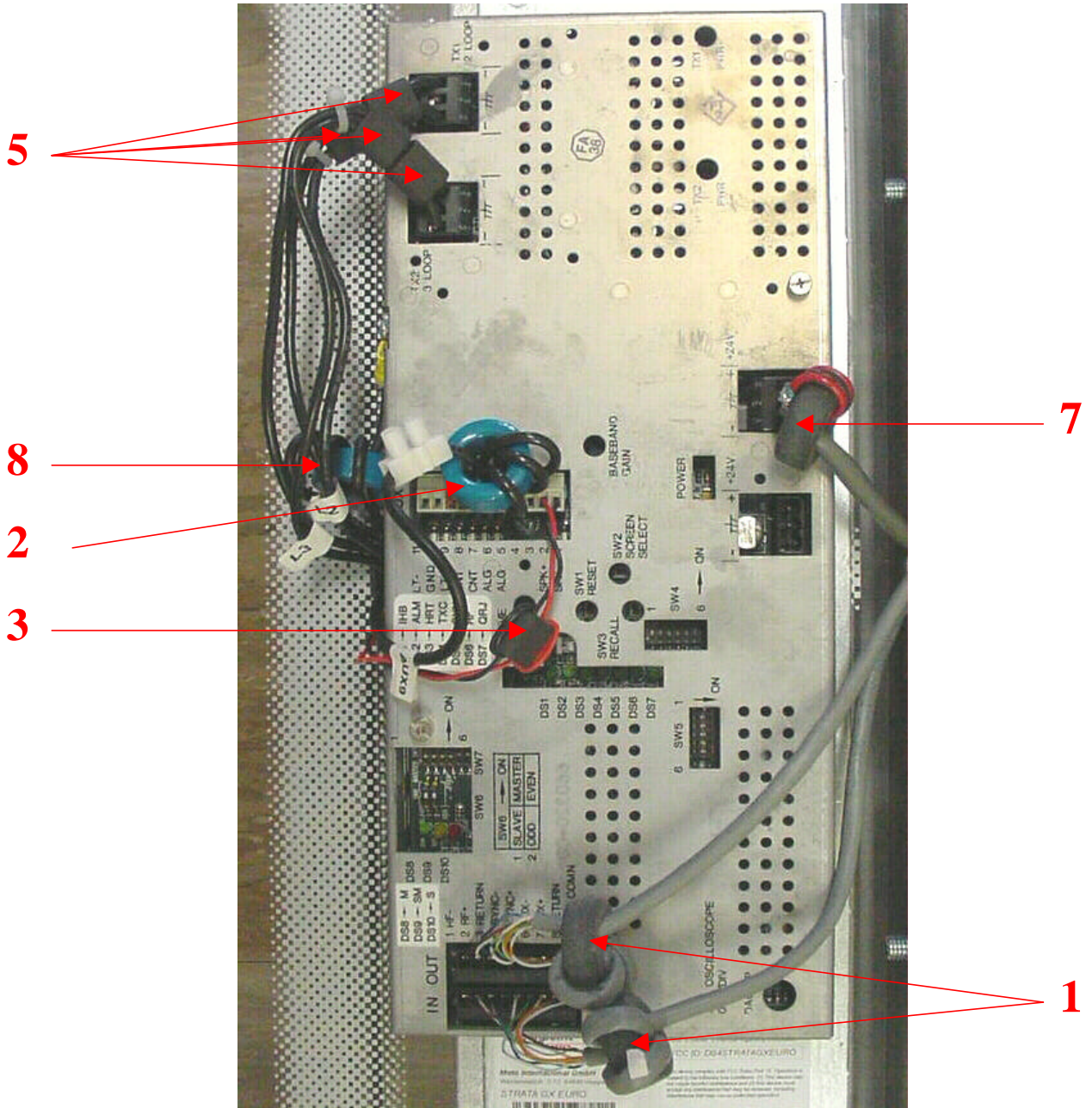
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STRATA SX EURO  
Ferrite locations



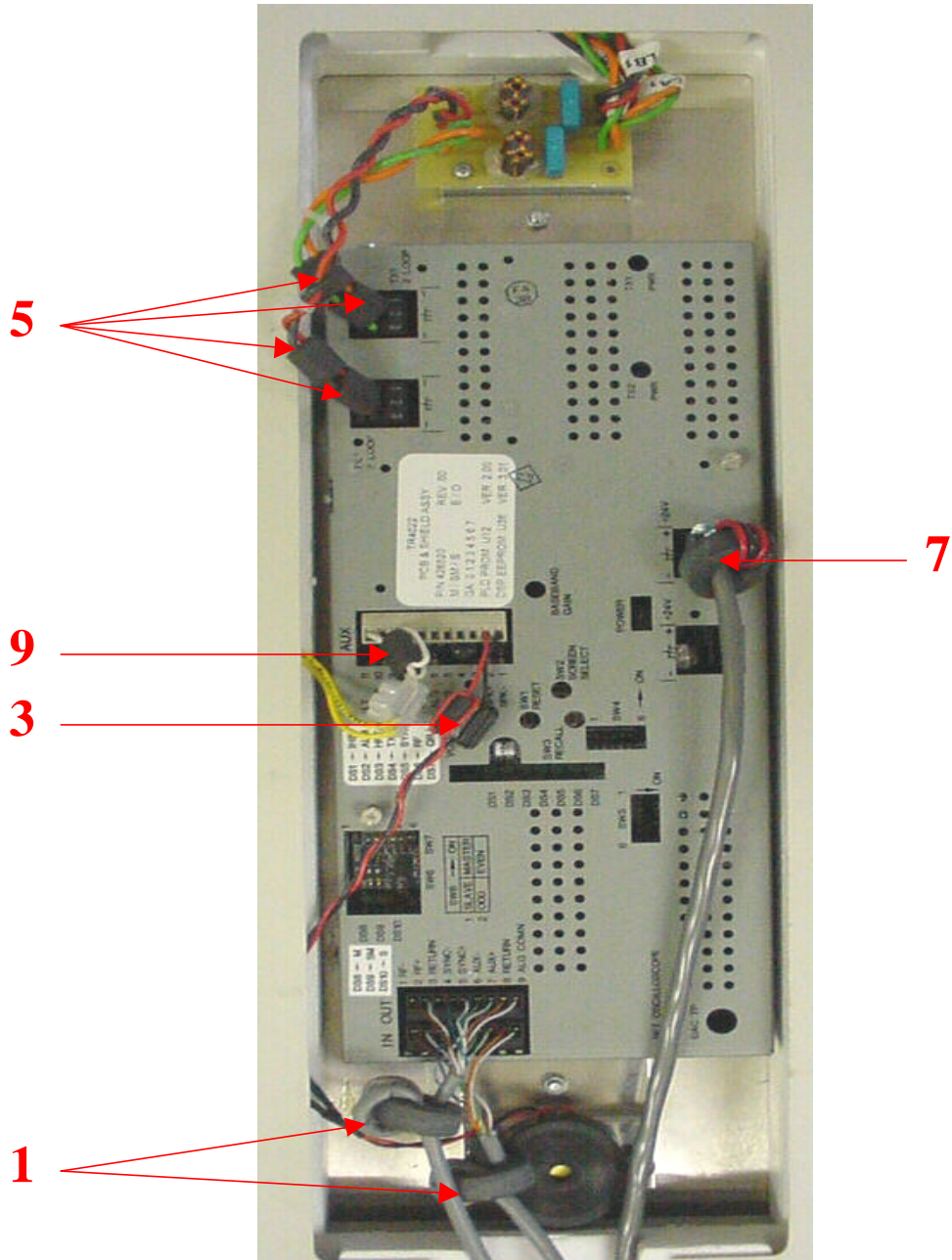
FCC ID: DO4STRATA

STRATA GX EURO  
Ferrite locations



FCC ID: DO4STRATA

STRATA ILX  
Ferrite locations



**TEST RESULT**

**CONDUCTED EMISSIONS - 10/150 kHz - 30 MHz**

- Test not applicable

**Test location :**

- Shielded room no. 1
- Shielded room no. 2
- Shielded room no. 3
- Shielded room no. 4
- Shielded room no. 5
- Shielded room no. 6
- Shielded room no. 7
- Anechoic chamber
- Full compact chamber

For test instruments and test accessories used please see attachment B A4

**Description of Measurement**

The final level, expressed in dBµV, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the FCC Limit or to the CISPR limit, which is equivalent to the Australian AS 3548 limit.

To convert between dBµV and µV, the following conversions apply:

$$\text{dB}\mu\text{V} = 20(\log \mu\text{V})$$

$$\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$$

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EuT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω/50 µH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeter's above the floor and is positioned 40 centimeter's from the vertical ground plane (wall) of the screen room. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

**Test result:**

The requirements are

**■ - MET**

**○ - NOT MET**

Min. limit margin

5.5 dB at 8.009 MHz

Max. limit exceeding

\_\_\_\_\_ dB at \_\_\_\_\_ MHz

Remarks: The limits are met.

For more detailed informations, please see page A1 to A2.

**SPURIOUS EMISSION**

Spurious emissions from the EuT are measured in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. Measurements have been made in all three orthogonal axes and the shielded loop antenna was rotated to locate the maximum of the emissions.

Spurious emissions from the EuT are measured in the frequency range of 30 MHz to 10 times the highest used frequency using a tuned receiver and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection, remeasurement of results which may be critical will be repeated in average mode. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimetres to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimetres from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarization`s and the EuT are rotated 360 degrees.

**SPURIOUS EMISSION (MAGNETIC FIELD) 9 kHz - 30 MHz**

**o - Test not applicable**

- o - in a shielded room
- - at a non - reflecting open-site and
- - in a test distance of 3 meters.
- - in a test distance of 30 meters.

For test instruments and test accessories used please see attachment B SER1

**Description of Measurement**

The final level, expressed in dBµV/m, is arrived at by taking the reading from the EMI receiver (Level dBµV) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has to be compared with the relevant FCC limit.

The resolution bandwidth during the measurement is as follows:

- 9 kHz – 150 kHz: ResBW: 200 Hz
- 150 kHz – 30 MHz: ResBW: 10 kHz

Example:

Frequency (MHz)	Level (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	Limit (dBµV/m)	=	Delta (dB)
1.705	5	+	20	=	25	30	=	5

**Testresult in detail:**

STRATA GX EURO – 8.2 MHz

Distance: 30 m

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]
-	-	-	-	20	-	-	-	-

STRATA GX EURO – 8.2 MHz

Distance: 3 m

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]
16.4	38.2	12.0	32.8	20	58.2	32.0	52.8	69.5
24.6	3.4	-1.2	11.4	20	23.4	18.8	31.4	69.5

STRATA GX EURO – 8.6 MHz

Distance: 30 m

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]
-	-	-	-	20	-	-	-	-

STRATA GX EURO – 8.6 MHz

Distance: 3 m

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]
17.2	38.6	13.1	33.2	20	58.6	33.1	53.2	69.5
25.8	19.4	-1.0	13.7	20	39.4	19.0	33.7	69.5

STRATA GX EURO – 9.5 MHz

Distance: 30 m

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]
-	-	-	-	20	-	-	-	-

STRATA GX EURO – 9.5 MHz

Distance: 3 m

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]
19.0	38.8	12.5	32.9	20	58.8	32.5	52.9	69.5

FCC ID: DO4STRATA

The requirements are

■ - MET

○ - NOT MET

Min. limit margin

16.3 dB

17.2 MHz

Min. limit margin

\_\_\_\_\_ dB

\_\_\_\_\_ MHz

Remarks: The limits are kept.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**SPURIOUS EMISSIONS (electric field) 30 MHz - 1000 MHz**

- Test not applicable

**Test location :**

- - Open-site 1
- o - Open-site 2
- - 3 meters
- o - 10 meters
- o - 30 meters

For test instruments and test accessories used please see attachment B SER2

**Description of Measurement**

The final level, expressed in dBµV/m, is arrived by taking the reading from the EMI receiver (Level dBµV) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page 24 - 25. The CISPR 22 limit is equivalent to the Australian AS 3548 limit.

Example:

Frequency (MHz)	Level (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	Limit (dBµV/m)	=	Delta (dB)
719	75	+	32.6	=	107.6	110	=	-2.4

**Testresult in detail:**

STRATA GX EURO

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]
35.61	30.3	-2.4	21.6	16.3	46.6	13.9	37.9	40
40.00	31.1	-2.6	23.4	16.4	47.5	13.8	39.8	40
44.80	31.3	-3.0	23.0	16.9	48.2	13.9	39.9	40
46.29	29.0	-2.1	20.6	16.6	45.6	14.5	37.2	40
80.00	26.5	16.1	18.4	15.6	42.1	31.7	34.0	40
600.00	17.8	14.8	15.6	28.1	45.9	42.9	43.7	46
640.00	21.1	14.7	17.5	28.4	49.5	42.8	45.9	46

**Test result:**

The requirements are

■ - MET

o - NOT MET

Min. limit margin

0.1 dB

44.8 MHz

Min. limit margin

\_\_\_\_\_ dB

\_\_\_\_\_ MHz

Remarks:

The limits are met.



**SPURIOUS EMISSION 1 GHz - 18 GHz**

■ - Test not applicable

**Testlocation :**

- o - Open-site 1
- o - Open-site 2
- o - Anechoic chamber
- o - Full compact chamber
  
- o - 1 meters
- o - 3 meters
- o - 10 meters

For test instruments and test accessories used please see attachment B SER3

**Description of Measurement**

The final level, expressed in dBµV/m, is arrived by taking the reading from the Spectrumalyzer in dBµV and adding the correction factors of the test setup incl. cables.

Example of the correction value at 1.8 GHz

Level reading at 1.8 GHz	Correction EMCO 3115	correction Amplifier AWT 4534 + cable	Correction factor (summarized)	corrected level
56 dBµV	+27.3 dB	-41.2 dB	-13.9 dB	42.1 dBµV/m

**Testresult in detail:**

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]

**Testresult**

The requirements are

o - MET

o - NOT MET

Min. limit margin

\_\_\_\_\_ dB

\_\_\_\_\_ MHz

Min. limit margin

\_\_\_\_\_ dB

\_\_\_\_\_ MHz

Remarks: NOT APPLICABLE

(Transmission frequencies: 8.2 MHz, 8.6 MHz, 9.5 MHz)

**FIELD STRENGTH OF THE FUNDAMENTAL WAVE**

- Test not applicable

- - Open-site 1
- o - Open-site 2
- - 3 meters
- o - 10 meters
- - 30 meters

For test instruments and test accessories used please see attachment B CPR1

**Description of Measurement**

The final level, expressed in dBµV/m, is arrived by taking the reading from the EMI receiver (Level dBµV) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page 24 - 25. The CISPR 22 limit is equivalent to the Australian AS 3548 limit.

Example:

Frequency	Level	+	Factor	=	Level	-	Limit	=	Delta
(MHz)	(dBµV)		(dB)		(dBµV/m)		(dBµV/m)		(dB)
315	45	+	22.5	=	67.5	-	74.3	=	-6.8

**Testresult in detail:**

STRATA GX EURO – 8.2 MHz  
Distance: 30 m

Frequency [MHz]	L: PK [dB.µV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]
8.2	38.6	17.6	33.2	20	58.6	37.6	53.2	40.0

Distance: 3 m

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]
8.2	65.1	41.9	60.5	20	85.1	61.9	80.5	80.0

FCC ID: DO4STRATA

STRATA GX EURO – 8.6 MHz

Distance: 30 m

Frequency [MHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]
8.6	38.8	13.9	33.2	20	58.8	33.9	53.2	40.0

Distance: 3 m

Frequency [MHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]
8.6	64.3	38.7	58.9	20	84.3	58.7	78.9	80.0

STRATA GX EURO – 9.5 MHz

Distance: 30 m

Frequency [MHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]
9.5	38.3	16.7	33.5	20	58.3	36.7	53.5	40

Distance: 3 m

Frequency [MHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]
9.5	64.3	43.4	59.8	20	84.3	63.4	79.8	80

**Testresult**

The requirements are

■ - MET

○ - NOT MET

Min. limit margin

2.4 dB

8.2 MHz

Min. limit margin

\_\_\_\_\_ dB

\_\_\_\_\_ MHz

Remarks: The limits are kept.

---



---

**CONDUCTED POWER OF THE FUNDAMENTAL WAVE MEASURED ON THE ANTENNA TERMINALS**

■ - Test not applicable

**Testlocation :**

- o - Shielded room no. 1
- o - Shielded room no. 2
- o - Shielded room no. 3
- o - Shielded room no. 4
- o - Shielded room no. 5
- o - Shielded room no. 6
- o - Shielded room no. 7
- o - Anechoic chamber
- o - Full compact chamber
- o - Climatic test chamber VLK

For test instruments and test accessories used please see attachment B CPC2

**Description of Measurement**

The conducted power of the fundamental wave measured on the antenna terminals in a climatic test chamber. The antenna jack was connected to the input of a communication test receiver. The internal batteries have been removed also and a variable DC power supply was used instead. The measurements have been made with the EuT unmodulated. During the test the supply voltage and the temperature were varied and applied simultaneously. The lower supply voltage was given by the manufacturer. In case the equipment was switching off before, the switch off voltage was used instead.

**Testresult**

The requirements are

**o - MET**

**o - NOT MET**

Frequency range of equipment								
Temperature °C	DC supply voltage V	Power dBm	Power dBm	Power dBm	Power dBm	Power dBm	Power dBm	Power dBm
-30								
-20								
-10								
0								
+10								
+20								
+30								
+40								
+50								

Remarks: NOT APPLICABLE

**EQUIPMENT UNDER TEST**

**Operation - mode of the EuT.:**

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

- Standby
- Test program (H - Pattern)
- Test program (colour bar)
- Test program (customer specific)
- Operating mode. A security tag was swept through the field of the STRATA GX EURO antenna every 2 seconds to initiate a verification cycle.  
\_\_\_\_\_  
\_\_\_\_\_

**Configuration of the equipment under test:** see attachment D  
**Following periphery devices and interface cables were connected during the measurement:**

- PSU (Power supply unit) Type : WORLDWIDE 425 MODULE
- IMU 23 Type : Filtered and ferrite coated mains cords
- Type : \_\_\_\_\_
- Type : \_\_\_\_\_
- Type : \_\_\_\_\_
- Type : \_\_\_\_\_
  
- unshielded power cable
- unshielded cables
- shielded cables MBPS.No.:
- customer specific cables
- \_\_\_\_\_
- \_\_\_\_\_

**SUMMARY**

**GENERAL REMARKS:**

The product STRATA GX EURO has been tested on the following frequency:

TX-Mode: 8.2 MHz  
8.6 MHz  
9.5 MHz

This model was defined as the worst condition model of all 3 versions:

STRATA SX EURO  
STRATA GX EURO  
STRATA ILX

the bandwidth requirements are kept.

**FINAL JUDGEMENT:**

The requirements according to the technical regulations and tested operation modes are

- - met.
- o - **not** met.

The Equipment Under Test

- - **Fulfils** the general approval requirements according to page 3.
- o - **Does not** fulfil the general approval requirements according to page 3.

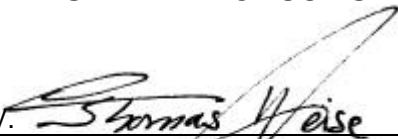
Date of receipt of test sample : accdg. to storage record of MBPS

Testing Start Date : September 25, 2001

Testing End Date : October 02, 2001

- MIKES BABT PRODUCT SERVICE GmbH -

Test engineer :

i. V.   
Günter Mikes  
Dipl.Ing.(FH)

  
Josef Knab

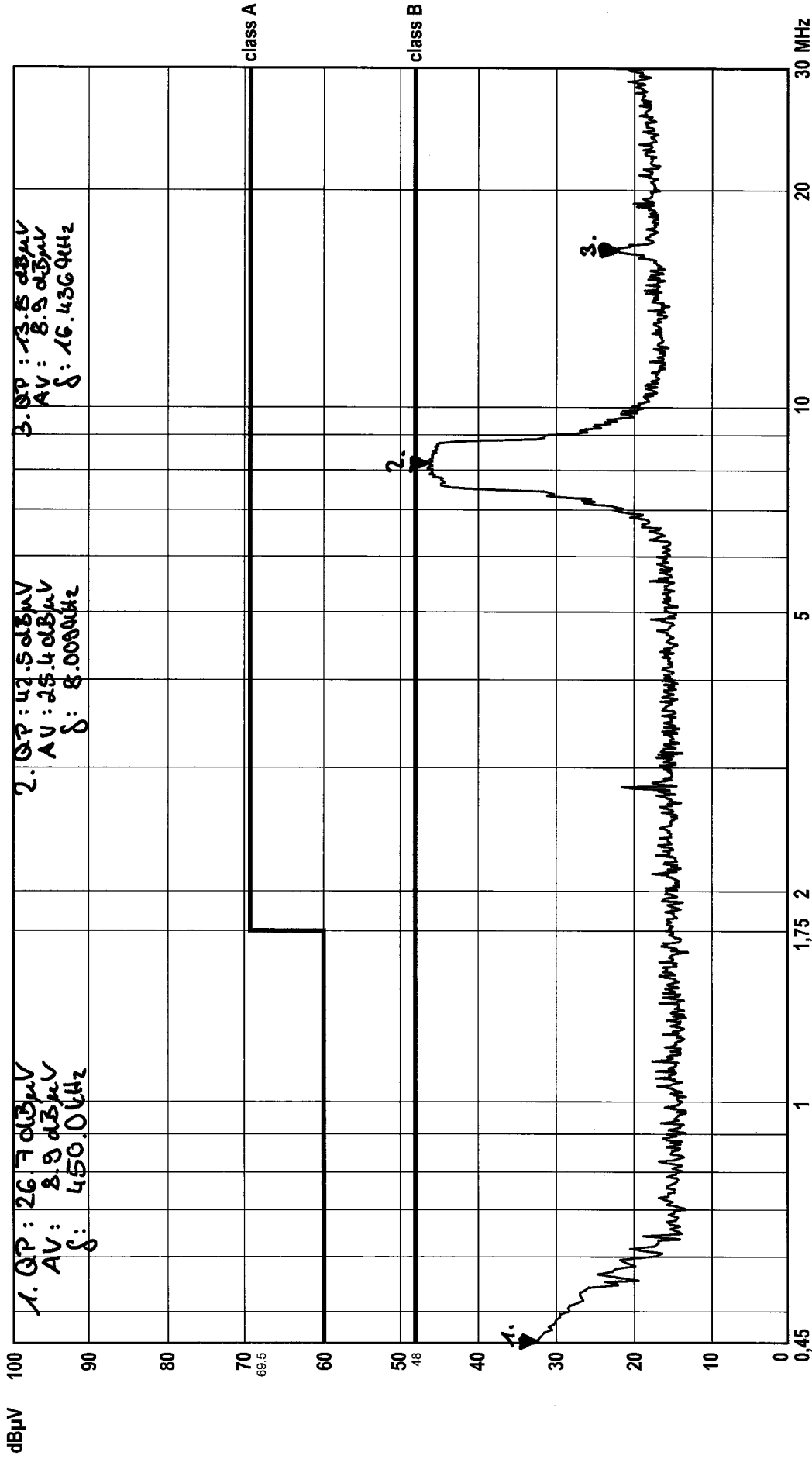
# INTERFERENCE VOLTAGE-TEST 450 KHZ - 30 MHZ



FCC Part 15 Subpart B

File No.: T21187  
 Type / Model: WJ 425 Module  
 Ser. No.: 191856

Client: Checkpoint  
 Test mode: Normal Mode with GX  
 Test point: L1 - 110V



Detection mode:

- P
- QP
- AV

Test result:

- PASS
- FAIL

tested	date	name	page of pages
	26.09.01	John Debus	A4
			F1 of A5

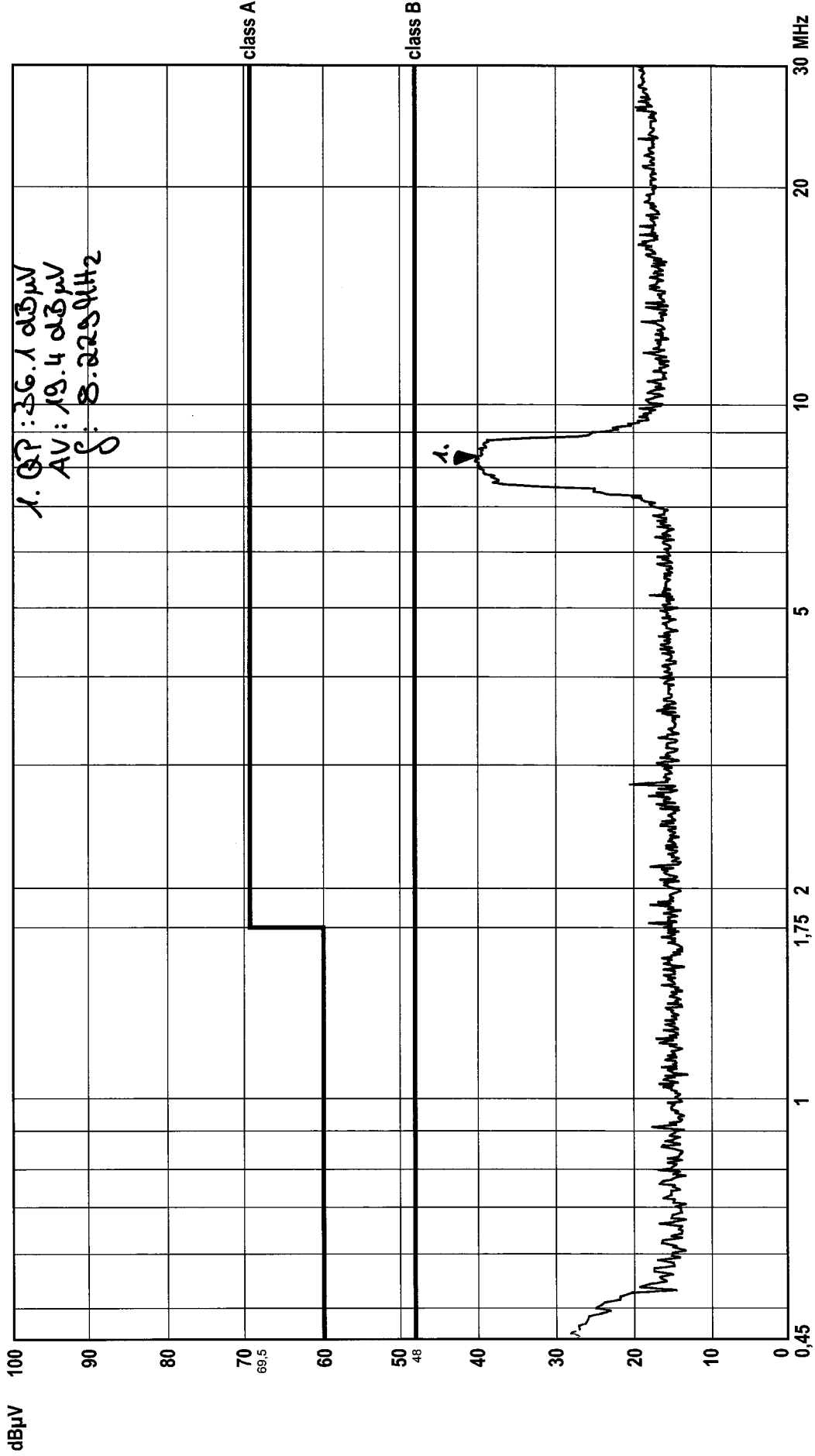
# INTERFERENCE VOLTAGE-TEST 450 KHZ - 30 MHZ



FCC Part 15 Subpart B

File No.: T2M187  
 Type / Model: NW 425 Module  
 Ser. No.: 181856

Client: Checkpoint  
 Test mode: Denial Mode mit GX  
 Test point: N - 110V



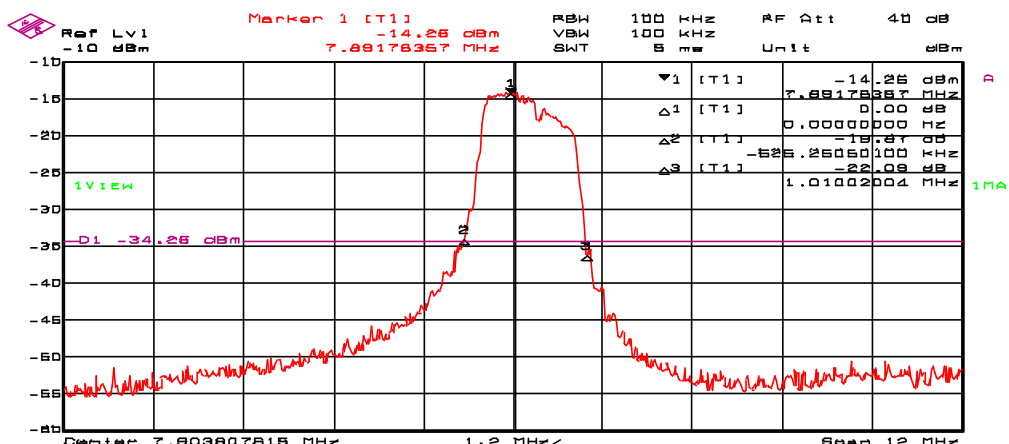
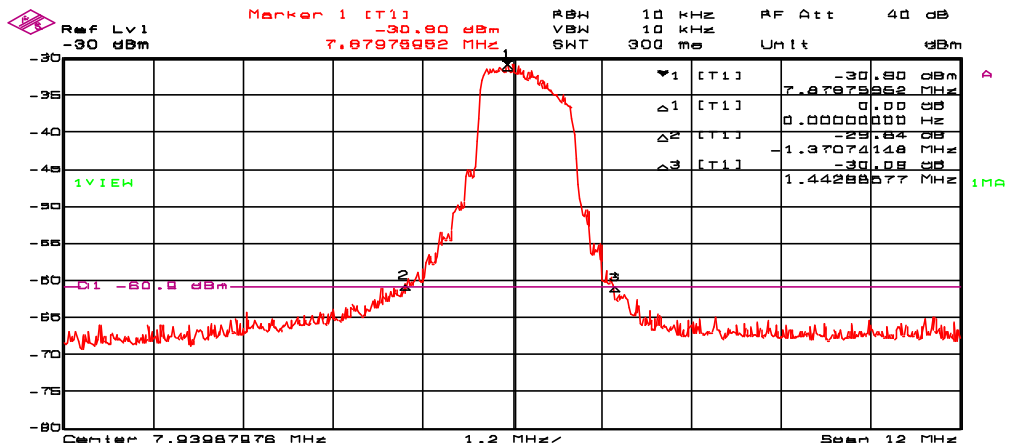
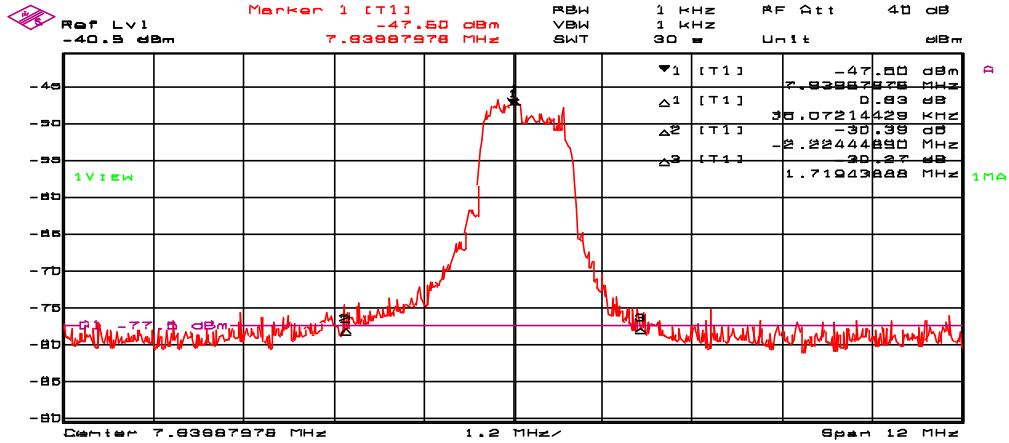
Detection mode:  P  QP  AV

Test result:  PASS  FAIL

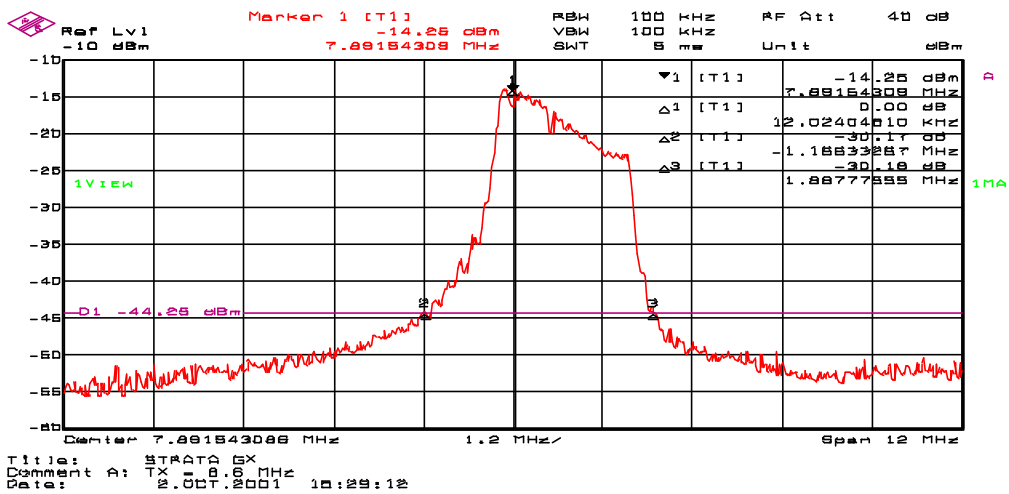
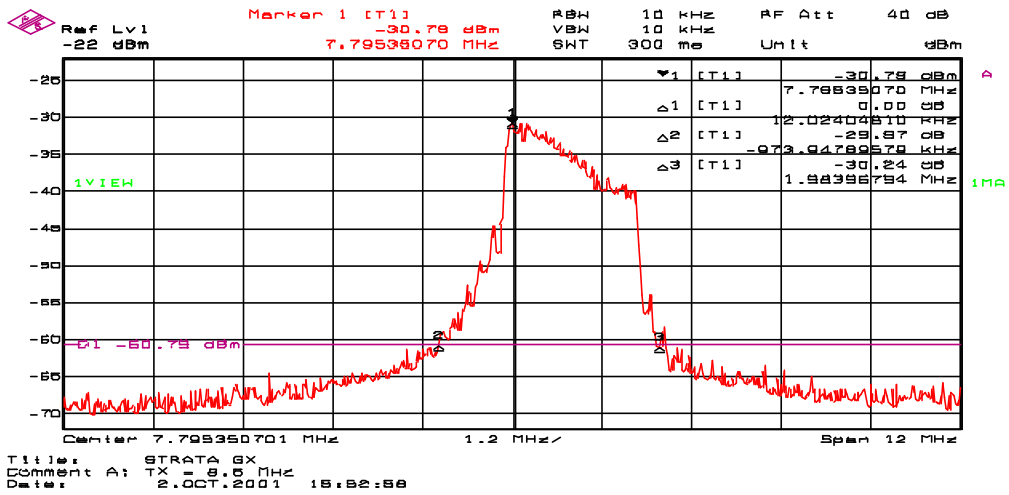
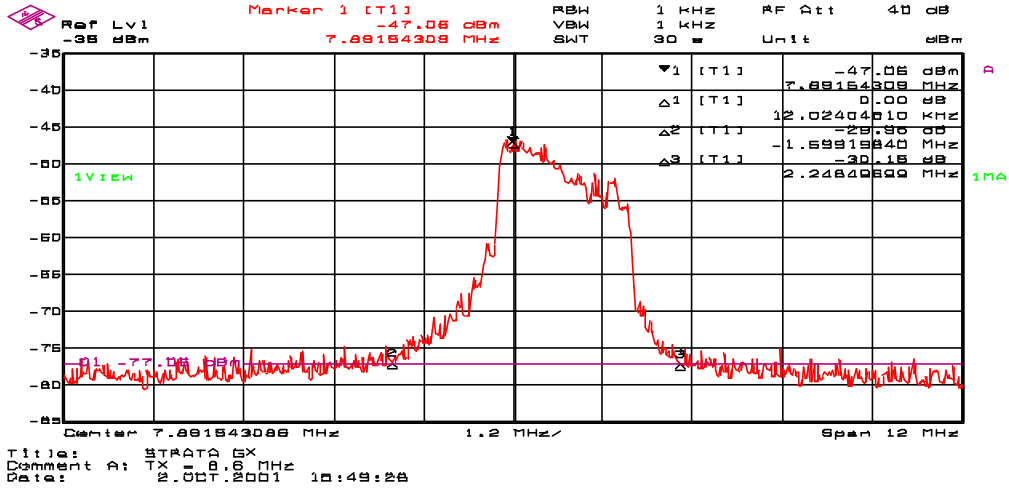
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			A4



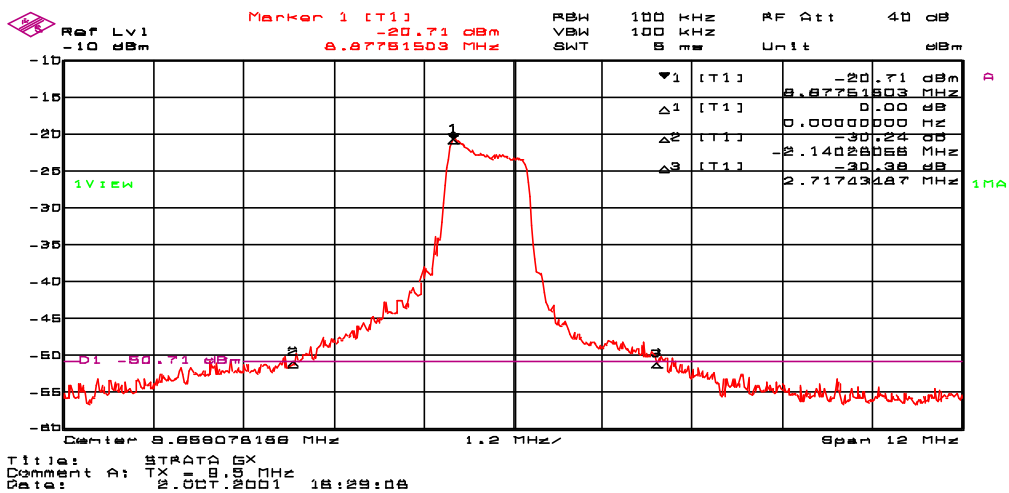
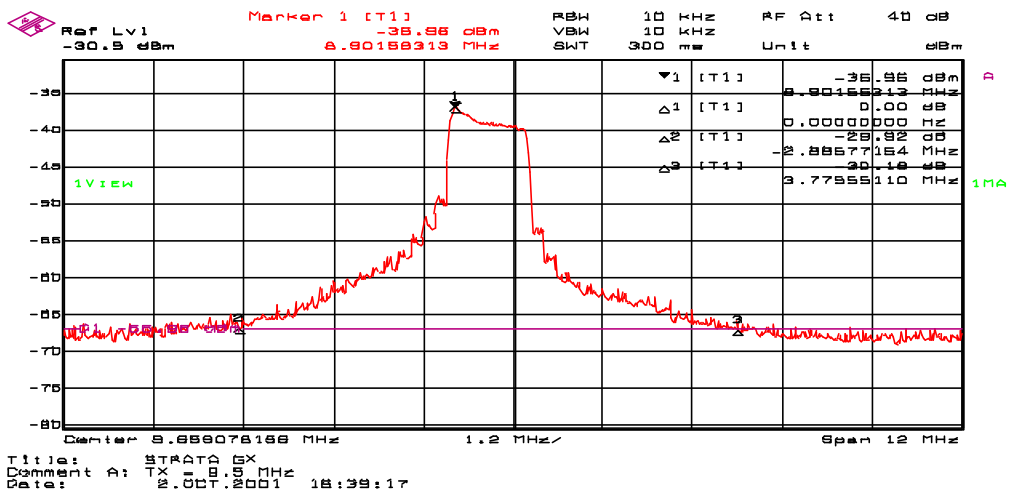
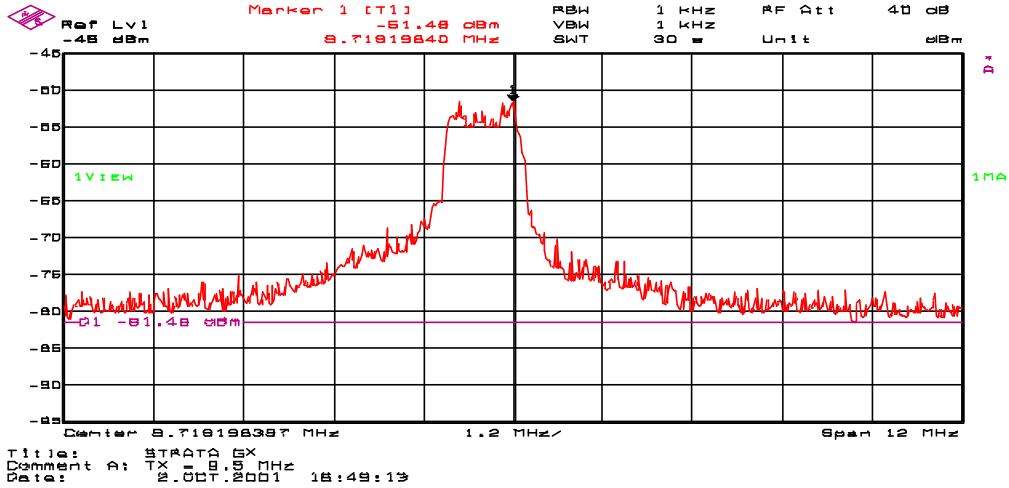
### Bandwith plots



### Bandwith plots



### Bandwith plots



## Attachment : B

### List of Test Equipment

All test instruments used, in addition to the test accessories, are calibrated and verified regularly.

Test Report No:	T 21187-1-09 KJ
Beginning of Testing:	25-September-2001

Test ID	Model Type	Kind of Equipment	Manufacturer	Equipment No.
A4	SP 103 3.5-60	Transformer 220 V / 11	MIKES PRODUCT SERVICE (	04-07/54-91-053
	ESH 2 - Z 5	LISN	Rohde & Schwarz München	04-07/60-90-033
	ESH 3 - Z 2	Pulse Limiter	Rohde & Schwarz München	04-07/60-90-140
	RG 223	RF Cable 1 m	Rosenberger HF-Technik	04-07/60-98-027
	RG 223	RF Cable	Rosenberger HF-Technik	04-07/60-99-023
	HF 1/2 inch	RF Cable	Rosenberger HF-Technik	04-07/60-99-024
	ESCS-30	Test Receiver	Rohde & Schwarz München	04-07/63-01-001
CPR1	FMZB 1516	Antenna	Schwarzbeck Mess-Elektroni	04-07/62-90-018
	ESHS 30	Test Receiver	Rohde & Schwarz München	04-07/63-92-045
SER1	FMZB 1516	Antenna	Schwarzbeck Mess-Elektroni	04-07/62-90-018
	ESHS 30	Test Receiver	Rohde & Schwarz München	04-07/63-92-045
SER2	Controller for Turntable	Controller	EMISYS Vertriebs GmbH	04-07/59-89-157
	HCC	Controller Ant.-Mast	Rohde & Schwarz München	04-07/59-97-001
	RG 214 U	Antenna Cable 2 m	Huber+Suhner	04-07/60-89-463
	HF 7/8 inch	Antenna Cable 13 m	Huber+Suhner	04-07/60-99-001
	HF 7/8 inch	Antenna Cable 20 m	Huber+Suhner	04-07/60-99-002
	HF 7/8 inch	Antenna Cable 40 m	Huber+Suhner	04-07/60-99-003
	KR - 200	Coax Antenna Switch	Rosenberger HF-Technik	04-07/60-99-004
	VULB - 9165	Super Broadband Antenn	Schwarzbeck Mess-Elektroni	04-07/62-00-001
	ESVP	Test Receiver	Rohde & Schwarz München	04-07/63-89-008
	ESVP-EZM	Spectrum Monitor	Rohde & Schwarz München	04-07/74-86-016
	Turntable 5m	Turntable	EMISYS Vertriebs GmbH	04-07/92-88-155
	Antenna Mast	Antenna Mast	Rohde & Schwarz München	04-07/92-97-001

## CONSTRUCTIONAL DATAFORM FOR TESTING OF RADIO EQUIPMENT

Licence holder:	Checkpoint Systems, Inc.		
Address:	101 Wolf Drive, Thorofare, New Jersey 08086		
Manufacturer:	Pikatron Feinwerktechnik GmbH&Co KG		
Address:	Raiffeisenstr. 10, 61250 Usingen, Germany		
Type:	Electronic Article Surveillance Detection Systems		
Model:	STRATA (family) Models: SX EURO, GX EURO, and ILX		
Serial-No.:	STRATA SX EURO S/N 728349601U07180100001 S/N 728349601U07180100002	STRATA GX EURO S/N 705350702U07240100011 S/N 705350702U09040100013	STRATA ILX S/N 717878801U06130100001 S/N 717878801U08200100101

### Additional informations to the above named model:

<b>Antenna:</b> <b>transmitter:</b>	Type: <b>Loop Antennas</b>		
	Length/size: <b>SX EURO</b> <b>W:155mm H:1580mm</b>	Length/size: <b>GX EURO</b> <b>W:500mm H:1620mm</b>	Length/size: <b>ILX</b> <b>W:540mm H:1450mm</b>
<b>receiver:</b>	Type: <b>Same as transmitter</b>		
	Length/size: <b>Same as transmitter</b>		
<b>Power supply of the transmitter:</b> <b>Type:</b>	nominal voltage:		<b>24.0 V</b>
	lowest voltage:		<b>18.0 V</b>
	highest voltage:		<b>25.0 V</b>
	current consumption		<b>0.4 A</b>
<b>Power supply of the receiver:</b> <b>Type:</b>	<b>Same as TX</b>	nominal voltage:	<b>V</b>
		current consumption	<b>A</b>

### Ancillary equipment:

Description:	<b>PSU</b>	Type:	<b>Worldwide 224 Module</b>	Serial-no.:	<b>TR3369</b>
Description:	<b>PSU</b>	Type:	<b>Worldwide 425 Module</b>	Serial-no.:	<b>191856</b>
Description:	<b>IMU 23</b>	Type:	<b>Filtered and ferrite coated mains cords</b>	Serial-no.:	<b>-</b>

### Extreme temperature range in which the approval test should be performed:

O Category I: General (-20°C to +55°C)

O Category II: Portable (-10°C to +55°C)

X Category III: Equipment for normal indoor use (0°C to +55°C)

### Connectable cables:

Name of the cable	Digital	Length/m	shielded
<b>Sync-Cable IN</b>	O yes X no	<b>4,30</b>	X yes O no
<b>Sync-Cable OUT</b>	O yes X no	<b>4,30</b>	X yes O no
<b>DC-Cable</b>	O yes X no	<b>4,30</b>	X yes O no
	O yes O no		O yes O no

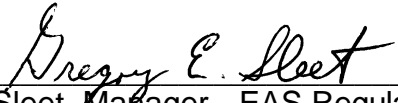
**O If applicable, if necessary complete overleaf**

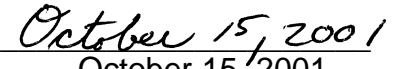
Page D1

<b>Type designation:</b> <b>STRATA (family) Models: SX EURO, GX EURO, and ILX</b>			
<b>Name and type designation of individual units comprising the radio equipment:</b> <b>PSU, Worldwide 224 Module, CP 683</b> <b>PSU, Worldwide 425 Module, 11794XA</b>			
<b>Type of equipment:</b>			
<input type="checkbox"/> Radiotelephone equipment	<input type="checkbox"/> Remote-control equipment	<input type="checkbox"/> Radiomaritime equipment	<input type="checkbox"/> LPD
<input type="checkbox"/> One-way radiotelephone equipment	<input checked="" type="checkbox"/> Inductive loop system	<input type="checkbox"/> Inland waterways equipment	<input type="checkbox"/> RLAN
<input type="checkbox"/> Personal paging system	<input type="checkbox"/> Radio-relay system	<input type="checkbox"/> Radionavigation equipm.	<input type="checkbox"/>
<input type="checkbox"/> Satellite earth station	<input type="checkbox"/> CB radiotelephone equipment	<input type="checkbox"/> Antenna	<input type="checkbox"/>
<input type="checkbox"/> Data transmission equipment	<input type="checkbox"/> Movement detector	<input type="checkbox"/> Aeronautical equipment	<input type="checkbox"/>
<b>Technical characteristics:</b>			
	Transmitter-receiver	Transmitter	Receiver
Frequency range	<b>7.4 MHz – 8.8 MHz</b>		
Maximum no. of channels	<b>1</b>		
Channel spacing			
Class of emission (type of modulation)	<b>LXN</b>		
Maximum RF output power			
Maximum effective radiated power (ERP)	<b>9 dB µA/m at 10 m</b>		
Output power variable	<b>Yes</b>		
Channel switching frequency range			
Method of frequency generation	<input checked="" type="checkbox"/> Synthesizer	<input type="checkbox"/> Crystal	<input type="checkbox"/> Other
Frequency generation TX			
Frequency generation RX			
IF	1st IF	2nd IF	3rd IF
Integral selective calling			
Audio-frequency interface level at external data socket			
Modes of operation	<input type="checkbox"/> Duplex mode	<input type="checkbox"/> Semi-duplex mode	<input checked="" type="checkbox"/> Simplex mode
Power source	<input checked="" type="checkbox"/> Mains	<input type="checkbox"/> Vehicle-regulated	<input type="checkbox"/> Integral
Antenna socket	<input type="checkbox"/> BNC <input type="checkbox"/> M <input checked="" type="checkbox"/> None	<input type="checkbox"/> TNC <input type="checkbox"/> UHF <input type="checkbox"/>	<input type="checkbox"/> N <input type="checkbox"/> Adapter <input type="checkbox"/>
<b>Test specifications:</b> <b>EN 300 330 –2 V1.1.1 (2001-06)</b> <b>EN 301 489 –3 V1.2.1 (2000-08)</b>			

**Declarations:**

- We declare that the above information are correct and the named model was supplied with the maximum configuration to the accredited test laboratory.

  
\_\_\_\_\_  
Gregory E. Sleet, Manager - EAS Regulatory Engineering

  
\_\_\_\_\_  
October 15, 2001

# Loop Currents and System Setup for EMC-Tests

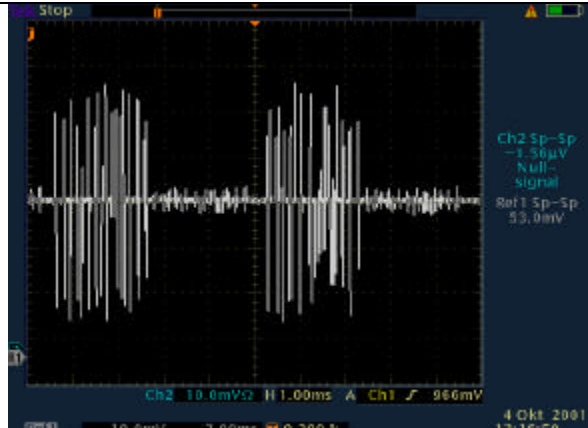
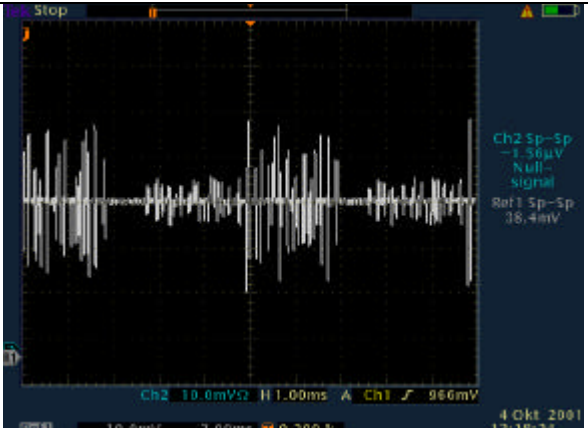
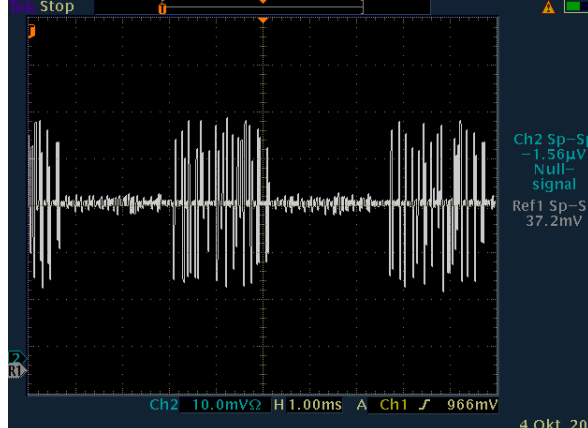
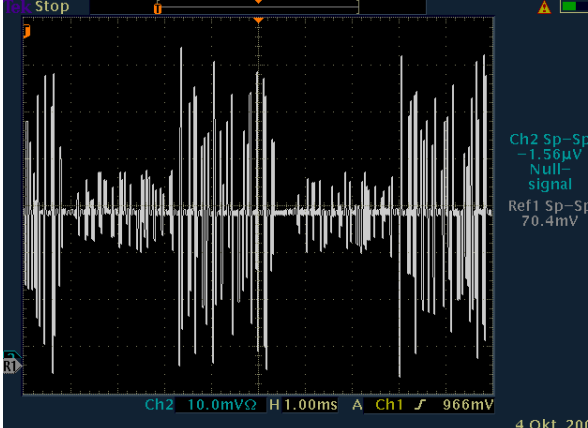
<p>2Loop current for CE measurements  <math>6.76 \cdot 200\text{mA} = 1.35\text{A}</math></p>	<p>3Loop current for CE measurements  <math>7.1 \cdot 200\text{mA} = 1.42\text{A}</math></p>
<p>Potentiometer setting 12h</p>	<p>Potentiometer setting 12h</p>
<p>2Loop current for FCC measurements  <math>6.86 \cdot 200\text{mA} = 1.37\text{A}</math></p>	<p>3Loop current for FCC measurements  <math>7.08 \cdot 200\text{mA} = 1.41\text{A}</math></p>
<p>Potentiometer setting 12h</p>	<p>Potentiometer setting 12h</p>

O If applicable, if necessary complete overleaf

Page D 4



# Loop Currents and System Setup for EMC-Tests

GX EURO	
	
2Loop current for CE measurements $5.3 \cdot 500\text{mA} = 2.65\text{A}$	3Loop current for CE measurements $3.84 \cdot 500\text{mA} = 1.92\text{A}$
Potentiometer setting 12h	Potentiometer setting 12h
	
2Loop current for FCC measurements $3.72 \cdot 500\text{mA} = 1.86\text{A}$	3Loop current for FCC measurements $7.04 \cdot 200\text{mA} = 1.4\text{A}$
Potentiometer setting 1h	Potentiometer setting 1h

O If applicable, if necessary complete overleaf

Page D 5

# Loop Currents and System Setup for EMC-Tests

<p>TX1 Loop current for CE measurements  <math>6.08 \cdot 200\text{mA} = 1.21\text{A}</math></p>	<p>TX2 Loop current for CE measurements  <math>6.32 \cdot 200\text{mA} = 1.26\text{A}</math></p>
<p>Potentiometer setting 2h</p>	<p>Potentiometer setting 2h</p>
<p>2Loop current for FCC measurements  <math>4.12 \cdot 200\text{mA} = 0.82\text{A}</math></p>	<p>3Loop current for FCC measurements  <math>4.20 \cdot 200\text{mA} = 0.84\text{A}</math></p>
<p>Potentiometer setting 3h</p>	<p>Potentiometer setting 3h</p>

O If applicable, if necessary complete overleaf

Page D 6

## Loop Currents and System Setup for EMC-Tests

### Measuring Equipment:

Current Probe Tektronix A6303

Amplifier for Current Probe Tektronix AM503

Oscilloscope Tektronix TD3012

Settings Current Probe: 0.2 A/div = 10 mV at the screen of the Oscilloscope

0.5 A/div = 10 mV at the GX Loop Measurements

### Note:

The current probe was connected at the TX-wires, direct at the TX1- and TX2-Connectors from the TR4022. The current in both directions was measured and the maximum value was recorded. Power Supply WORLDWIDE 425 MODULE

	FCC Test Units	CE Tests Units
STRATA SX EURO	728349601U0718010002	728349601U07180100001
STRATA GX EURO	705350702U0904010013	705350702U07240100011
STRATA ILX	717878801U0820010101	717878801U06130100001

### DIP-Switch settings:

SW6	1, 2	ON, ON
SW7	1,2,3,4,5,6	All OFF for CE-Test, for FCC only 6 on and for 9.5 MHz 5+6 ON
SW4	1,2,3,4,5,6	ON, ON, OFF, OFF, OFF, ON
SW5	1,2,3,4,5,6	ON, OFF, OFF, OFF, OFF, OFF

### Cables/Connections:

AC-Cable(to PSU): unshielded for CE measurements with WW224, for all FCC and CE measurements with the WW425 shielded with Filter, Checkpoint P/N 623532 CORD POWER, 120V W/IEC IMU14, Eupen IMU14

DC-Cable: Shield not connected to the TR4022, 3 turns through Ferrit, Siemens R25/10T35, Checkpoint P/N 734021

Sync-Cables: 1 connected to the IN-Connector, 1 connected to the OUT-Connector, Ferrites with 3 turns at both ends, Siemens R25/10T35, Checkpoint P/N 734021