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Deutscher Akkreditierungs Rat
DAR
DAP-P-01.212-01-90-01
DAT-P-011 / 91-01
TTI - P-G 089 / 94-20

FCC ID: L7O003

EMISSION -- TESTREPORT

Testreport file no. : **T15463-1-00 SM** Date of issue : September 04, 1998

Model : 003

Type : Transmitter for Keyless Entry

Applicant : Stribel GmbH

Manufacturer : Stribel GmbH

Licence holder : Stribel GmbH

Address : Benzstrasse

72636 Frickenhausen / Germany

Test result accrdg. to the regulation(s) at page 3 : ● **Positive** O **Negative**

This testreport with appendix consists of **47** pages.
The testresult only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the testlaboratory.

MIKES PRODUCT SERVICE GmbH Ohmstrasse 2-4 94342 Strasskirchen Tel.:+9424-9407 0 Fax.:9424 9407 60 Rev.No. 7.2

DIRECTORY

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TESTREGULATIONS

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 - Group 1 o - Group 2; o - class A o - class B

o - EN 55014 / 4.1993 — o - Household appliances and similar; o - tools; o - Semiconductor devices

o - EN 55014 / A2:1990
o - EN 55104 / 5.1995 — Category:

o - EN 55015 / A1:1990
o - EN 55015 / 12.1993

o - EN 55022 / 5.1995 — o - class A o - class B

o - prEN 55103-1/ 3.1995
o - prEN 50121-3-2 / 3.1995
o - EN 60601-1-2 / 4.1994

o - VCCI — o - class 1 o - class 2

● - 47 CFR Part 15 Subpart C (15.231)

ENVIRONMENTAL CONDITIONS

Temperature:	15-35 ° C
Humidity	45-60 %
Atmospheric pressure	860-1060 mbar

POWER SUPPLY SYSTEM UTILIZED

Power supply system : DC Input: 6 V

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 that can account for a nominal measurement error of ±4dB. 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.

SHORT DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT)

The 003 Unit consists of a transceivers for keyless entry, which transfers a code to an already approved receiver unit to lock and unlock vehicles

Number of received/tested samples: 1 / 1

DEFINITIONS FOR SYMBOLS USED IN THIS TEST REPORT

● - Black box indicates that the listed condition, standard or equipment is applicable for this Report.
o - Blank box indicates that the listed condition, standard or equipment was not applicable for this Report.

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TESTCONDITIONS

The **measurement of the conducted emissions (interference voltage)** were performed in a shielded room.

● - **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

Used testinstruments :

o - ESH 3	Rohde & Schwarz	O.-No.: 04-7/63-89-009
o - ESHS 20	Rohde & Schwarz	O.-No.: 42-7/63-94-001
o - ESHS 30	Rohde & Schwarz	O.-No.: 04-7/63-92-045
o - SMV - 11	RFT	O.-No.: 42-7/63-86-007
o - FMLK 1518	Schwarzbeck	O.-No.: 04-7/63-90-017

Test - accessories :

o - ESH 2-Z5	Rohde & Schwarz	O.-No.: 04-7/60-87-032
o - ESH 2-Z5	Rohde & Schwarz	O.-No.: 04-7/60-90-033
o - NNB 111	RFT	O.-No.: 04-7/60-92-225
o - NSLK 8127	Schwarzbeck	O.-No.: 04-7/60-90-036
o - NNLK 8121	Schwarzbeck	O.-No.: 04-7/60-89-037
o - NTFM 8132	Schwarzbeck	O.-No.: 04-7/60-87-058
o - NNLA 8120	Schwarzbeck	O.-No.: 04-7/60-93-250
o - NNBM 8114	Schwarzbeck	O.-No.: 04-7/60-95-341
o - NNBM 8116	Schwarzbeck	O.-No.: 04-7/60-95-342
o - NNLK 8129	Schwarzbeck	O.-No.: 04-7/60-96-349
o - T1 - NNB	BOSSE	O.-No.: 04-7/60-87-059
o - T2 - NNB	BOSSE	O.-No.: 04-7/60-87-060
o - TK11	RFT	O.-No.: 04-7/60-83-062
o - TK12	RFT	O.-No.: 04-7/60-83-063
o - ESH 3-Z6	Rohde & Schwarz	O.-No.: 04-7/60-94-263
o - EZ - 10	Rohde & Schwarz	O.-No.: 04-7/60-92-209
o - Lampshade	MIKES	O.-No.: 04-7/60-91-143
o - ESH 2-Z5	Rohde & Schwarz	O.-No.: 42-7/60-94-002
o - ESH 3-Z5	Rohde & Schwarz	O.-No.: 42-7/60-94-003
o - Vehicle - LISN	MIKES	O.-No.: 42-7/60-89-004
o - ESH 2-Z3	Rohde & Schwarz	O.-No.: 42-7/60-94-005
o - Vehicle - LISN	MIKES	O.-No.: 42-7/60-89-038

All used test-instruments as well as the Test-accessories are calibrated regularly.

The **measurement of the spurious emissions (magnetic field)** were performed

● - Test not applicable

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

Used testinstruments :

o - ESH 3	Rohde & Schwarz	O.-No.: 04-7/63-89-009
o - ESHS 20	Rohde & Schwarz	O.-No.: 42-7/63-94-001
o - ESHS 30	Rohde & Schwarz	O.-No.: 04-7/63-92-045
o - SMV - 11	RFT	O.-No.: 42-7/63-86-007
o - FMLK 1518	Schwarzbeck	O.-No.: 04-7/63-90-017

Test - accessories :

o - HFH 2 Z 2	Rohde & Schwarz	O.-No.: 04-7/62-87-016
o - FMA 11	RFT	O.-No.: 42-7/62-86-006
o - FMZB 1516	Schwarzbeck	O.-No.: 04-7/62-90-018
o - Loop Antenna 2m	MIKES	O.-No.: 04-7/62-96-328

The measurement of the radiated spurious emissions (electric field) in the frequency range of 30 MHz-1000 MHz were performed in horizontal and vertical antenna polarisation at a non-reflecting open-site and a testdistance of:

o - Test not applicable

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

Used testinstruments :

● - ESVP	Rohde & Schwarz	O.-No.: 04-7/63-89-008
o - ESVS 30	Rohde & Schwarz	O.-No.: 04-7/63-95-056
o - ESU 2	Rohde & Schwarz	O.-No.: 42-7/63-93-008
o - SMV 21	RFT	O.-No.: 04-7/63-90-007

Test - accessories :

● - BBA 9106	Schwarzbeck	O.-No.: 04-7/62-86-072
o - BBA 9106	Schwarzbeck	O.-No.: 04-7/62-91-044
o - BBA 9106	Schwarzbeck	O.-No.: 04-7/62-92-048
o - UHALP 9107	Schwarzbeck	O.-No.: 04-7/62-83-010
● - UHALP 9107	Schwarzbeck	O.-No.: 04-7/62-91-071
o - UHALP 9107	Schwarzbeck	O.-No.: 04-7/62-92-047
o - UHALP 9107	Schwarzbeck	O.-No.: 42-7/62-94-002
o - UHA 9105	Schwarzbeck	O.-No.: 42-7/62-94-003
o - VHA 9103	Schwarzbeck	O.-No.: 42-7/62-94-004
o - BBA 9106	Schwarzbeck	O.-No.: 42-7/62-94-005

All used test-instruments as well as the Test-accessories are calibrated regularly.

The measurement of the radiated spurious emissions (electric field) in the frequency range 1 GHz - 18 GHz was performed in horizontal and vertical antenna polarisation at a non-reflecting test-site and a testdistance of:

o - Test not applicable

Testlocation :

o - Open-site 1
o - Open-site 2
● - Anechoic chamber
o - Full compact chamber

o - 1 meters
● - 3 meters
o - 10 meters

Used testinstruments :

o - 492P	Tektronix	O.-No.: 04-7/74-87-001
o - R 4131 B	ADVANTEST	O.-No.: 04-7/63-92-045
● - FSEM-30	Rhode & Schwarz	O.-No.: 04-7/74-97-001

Test - accessories :

o - BBHA 9120	Schwarzbeck	O.-No.: 04-7/62-88-212
● - 3115	EMCO	O.-No.: 04-7/62-
o - Model 613A	NARDA	O.-No.: 04-7/62-88-213
o - Model 612	NARDA	O.-No.: 04-7/62-88-214
o - Model 640	NARDA	O.-No.: 04-7/62-88-215
o - Model 639	NARDA	O.-No.: 04-7/62-88-216
● - AWT 4534	AVANTEK	O.-No.: 04-7/66-89-217
● - AMT 8035	AVANTEK	O.-No.: 04-7/66-89-218
o - AMT 12435	AVANTEK	O.-No.: 04-7/66-89-219
o - AMF-5D-120180	AVANTEK	O.-No.: 04-7/66-94-270
● - Sucoflex 104	Suhner	O.-No.: 04-7/60-90-231

All used test-instruments as well as the Test-accessories are calibrated regularly.

The measurement of the conducted spurious emissions in the frequency range 30 MHz - 18 GHz was performed in a shielded room:

● - Test not applicable

Testlocation :
o - Shielded room No. 2
o - Shielded room No. 3
o - Shielded room No. 4
o - Full compact chamber

Used testinstruments :

o - 492P	Tektronix	O.-No.: 04-7/74-87-001
o - R 4131 B	ADVANTEST	O.-No.: 04-7/63-92-045
o - FSEM-30	Rhode & Schwarz	O.-No.: 04-7/74-97-001

Test - accessories :

o - HP-55.25/50/N	Rohrbacher	O.-No.: 04-7/60-95-280
o - BS-26M/D60/Z50/N	Rohrbacher	O.-No.: 04-7/60-95-288
o - BS-26M/D60/Z50/N	Rohrbacher	O.-No.: 04-7/60-96-431
o - BS-430M/D60/Z50/N	Rohrbacher	O.-No.: 04-7/60-95-290
o - Sucoflex 104	Suhner	O.-No.: 04-7/60-90-231

All used test-instruments as well as the Test-accessories are calibrated regularly.

The **measurement of the Radiated power of the fundamental wave** were performed in an open site.

o - Test not applicable

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

Used testinstruments :

● - ESVP	Rohde & Schwarz	O.-No.: 04-7/63-89-008
o - ESVS 30	Rohde & Schwarz	O.-No.: 04-7/63-95-056

Test - accessories :

o - BBA 9106	Schwarzbeck	O.-No.: 04-7/62-86-072
o - BBA 9106	Schwarzbeck	O.-No.: 04-7/62-91-044
o - BBA 9106	Schwarzbeck	O.-No.: 04-7/62-92-048
o - UHALP 9107	Schwarzbeck	O.-No.: 04-7/62-83-010
● - UHALP 9107	Schwarzbeck	O.-No.: 04-7/62-91-071
o - UHALP 9107	Schwarzbeck	O.-No.: 04-7/62-92-047
o - UHALP 9107	Schwarzbeck	O.-No.: 42-7/62-94-002
o - UHA 9105	Schwarzbeck	O.-No.: 42-7/62-94-003
o - VHA 9103	Schwarzbeck	O.-No.: 42-7/62-94-004
o - BBA 9106	Schwarzbeck	O.-No.: 42-7/62-94-005

All used test-instruments as well as the Test-accessories are calibrated regularly.

The **measurement of the frequency error** was performed in a climatic chamber under variation of temperature and supply voltage:

● - Test not applicable

o - Climatic test chamber VLK	Heraeus Vötsch	O.-Nr.: 04-1/90-89-001

Used testinstruments :

o - FSEM-30	Rhode & Schwarz	O.-No.: 04-7/74-97-001
o - CMS 54	Rohde & Schwarz	O.-No.: 04-7/63-94-052
o - CMS 54	Rohde & Schwarz	O.-No.: 04-7/63-94-062

Test - accessories :

o - Power Supply	Statron	O.-No.: 04-7/49-95-279
o - Power Supply	EA3016	O.-No.: 04-7/49-86-118

All used test-instruments as well as the Test-accessories are calibrated regularly.

The **measurement for keeping the requirements of the emission mask** between 50 % and 250 % away of the authorized bandwidth were performed in a climatic chamber under variation of temperature and supply voltage:

● - Test not applicable

o - Climatic test chamber VLK	Heraeus Vötsch	O.-Nr.: 04-1/90-89-001

Used testinstruments :

o - FSEM	Rhode & Schwarz	O.-No.: 04-7/74-97-001

Test - accessories :

o - Power Supply	Statron	O.-No.: 04-7/49-95-279
o - Attenuator 20 dB	Spinner	O.-No.: 04-7/60-91-065

All used test-instruments as well as the Test-accessories are calibrated regularly.

The **measurement of the frequency deviation** was performed in a climatic chamber under normal conditions:

● - Test not applicable

o - Climatic test chamber VLK	Heraeus Vötsch	O.-Nr.: 04-1/90-89-001

Used testinstruments :

o - CMS 54	Rohde & Schwarz	O.-No.: 04-7/63-94-052
o - CMS 54	Rohde & Schwarz	O.-No.: 04-7/63-94-062

Test - accessories :

o - Power Supply	Statron	O.-No.: 04-7/49-95-279

EQUIPMENT UNDER TEST

Operation - mode of the EUT.:
The equipment under test was operated during the measurement under following conditions:

o - Standby

o - Testprogram (H - Pattern)

o - Testprogram (color bar)

o - Testprogram (customer specific)

● - permanent Transmit

o - _____

o _____

o _____

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

o - _____ Type : _____

o - _____ Type : _____

o - _____ Type : _____

o - _____ Type : _____

o - _____ Type : _____

o - _____ Type : _____

o - unshielded power cable

o - unshielded cables

o - shielded microphone cable (length about 2 m)

o - customer specific cables

o - _____

o - _____

TESTRESULT

Conducted emissions 10/150 kHz - 30 MHz

● - Test not applicable

The requirements are O - MET O - NOT MET

Min. limit margin _____ dB at _____ MHz

Max. limit exceeding _____ dB at _____ MHz

Remarks: The EUT is only battery powered.

Spurious emissions (magnetic field) 10 kHz - 30 MHz

● - Test not applicable

The requirements are O - MET O - NOT MET

Min. limit margin _____ dB at _____ MHz

Max. limit exceeding _____ dB at _____ MHz

Remarks: Not applicable.

Spurious emissions radiated (electric field) 30 MHz - 1000 MHz

o - Test not applicable

The requirements are ● - MET O - NOT MET

Min. limit margin >5 dB at 30-1000 MHz

Max. limit exceeding _____ dB at _____ MHz

Remarks: The limits are met.

For plot see page B1-B2.

TESTRESULT

Spurious emissions radiated 1 GHz - 18 GHz

o - Test not applicable

The requirements are	● - MET		O - NOT MET	
Min. limit margin	>5	dB	at 1-5	GHz
Max. limit exceeding	_____	dB	at _____	GHz

Remarks: The limits are met. The measurement has been performed in Peak-mode, critical results have been remeasured in average mode. For plot see page B5 -B6.

Spurious emissions conducted 30 MHz - 18 GHz

● - Test not applicable

The requirements are	O - MET		O - NOT MET	
Min. limit margin	_____	dB	at _____	GHz
Max. limit exceeding	_____	dB	at _____	GHz

Remarks: _____

Radiated power of the fundamental wave measured in the open site (3 m)

o - Test not applicable

The requirements are	● - MET	O - NOT MET	
Max. ERP of fundamental wave	~~48.2~~ 59.9	dBµV/m	at 418.04 MHz
Max. limit margin	_____	dB	

Remarks: The limits are met. For plot see Page B3 - B4 .

TESTRESULT

Frequency deviation

● - Test not applicable

The requirements are O - MET O - NOT MET

Max. frequency deviation _____ kHz

Max. limit exceeding _____ kHz

Remarks: _____

Frequency error

● - Test not applicable

The requirements are O - MET O - NOT MET

Frequency range of equipment								
Tempera-ture/°C	DC supply voltage/V	Frequency error/kHz	Frequency error/kHz	Frequency error/kHz	Frequency error/kHz	Frequency error/kHz	Frequency error/kHz	Frequency error/kHz
-30								
-20								
-10								
0								
+10								
+20								
+30								
+40								
+50								

Remarks: _____

TESTRESULT

Keeping the requirements of the emission mask

● - Test not applicable

The requirements are **O - MET** **O - NOT MET**

The requirements are as following:
Attenuation on any frequencies removed from the transmit frequency
between 50 and 100 % of the authorized bandwidth: at least 25 dB
between 100 and 250 % of the authorized bandwidth: at least 35 dB
more than 250 % of the authorized bandwidth: see spurious emissions

The following table is showing the minimal margin to the required attenuations:

Frequency range of equipment							
Tempera-ture/°C	DC supply voltage/V	±50-100% [dB]	±100-250% [dB]	±50-100% [dB]	±100-250% [dB]	±50-100% [dB]	±100-250% [dB]
-30							
-20							
-10							
0							
+10							
+20							
+30							
+40							
+50							

Remarks: _____

_____

MEASUREMENT PROTOCOL FOR FCC, VCCI AND AUSTEL

GENERAL INFORMATION

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 CISPR 22 Limits.

Measurement Error

The test system for conducted emissions is defined as the LISN, tuned receiver and coaxial cable. The test system for spurious emissions is defined as the antenna, the pre-amplifier, the tuned receiver and the coaxial cable. These test systems have an expected error of ±3 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 it's characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

CONDUCTED EMISSIONS

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 CISPR limit, which is equivalent to the Australian AS 3548 limit.

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

dBµV = 20(log µV)

µV = Inverse log(dBµV/20)

SPURIOUS EMISSIONS

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 is done automatically in the EMI receiver, where the correction factor are stored. This result then has the 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)	=	Final (dBµV/m)	-	CISPR B Limit (dBµV/m)	=	Delta CISPR B (dB)
37.19	10.2	+	12.0	=	22.2	-	39.5	=	-17.3

DETAILS OF TEST PROCEDURES

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."

Conducted Emissions

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 quasipeak detection, and a Line Impedance Stabilization Network (LISN), with 50Ω /50 µH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters 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 quasipeak and average detection and recorded on the data sheets.

Spurious emissions

Spurious emissions from the EUT are measured in the frequency range of 30 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 quasipeak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters 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 polarizations and the EUT are rotated 360 degrees.

Conducted power of the fundamental wave measured on the antenna terminals

The conducted power of the fundamental wave measured on the antenna terminals in a climatic test chamber. The integrated antenna was removed and an antenna jack was established thereof. 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.

Frequency deviation

The frequency deviation was measured on the antenna terminals in a climatic test chamber. The integrated antenna was removed and an antenna jack was established thereof. 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 a modulation frequency and voltage accdg. to the specification of the manufacturer. The audio frequency was provided by the communication test receiver. 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. The test was performed on three different frequencies within the audio frequency range. The test datas are showing the worst case.

Frequency error

The frequency error was measured on the antenna terminals in a climatic test chamber. The integrated antenna was removed and an antenna jack was established thereof. 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. The frequency error is defined as the deviation of the transmitting frequency from the nominal frequency.

Keeping the requirements of the emission mask

The keeping of the requirements of the emission mask was measured on the antenna terminals in a climatic test chamber. The integrated antenna was removed and a antenna jack was established thereof. The antenna jack was connected to the input of a spectrum anlayzer. The spectrum analyzer was set up as following:
- video and resolution bandwidth: 10 kHz
- attenuation: automatic, low noise
- center frequency: nominal transmit frequency
- frequency span: 1 MHz (± 250% of the channel bandwidth).

The reference level was set to the maximum value of the unmodulated carrier. The internal batteries have been removed also and a variable DC power supply was used instead. The measurements have been made with a modulation frequency and voltage accdg. to the specification of the manufacturer. The audio frequency was provided by a communication test receiver. 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.

Requirements for the modulation characteristique

The modulation characteristique was measured on the antenna jacket. The input modulation have been varied between the specification of the manufacturer. All other measurements have been performed with the worst case modulation (full modulated) or unmodulated where it is necessary.
The modulation characteristique was measured with different Resolution Bandwidth of the Analyzer also.

SUMMARY

GENERAL REMARKS:

The test was performed on the following frequency:
transmitting frequency 418.04 MHz

FINAL JUDGEMENT:

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

● - met.

o - **not** met.

The equipment under test

● - **Fulfills** the general approval requirements cited on page 3.

o - **Does not** fulfill the general approval requirements cited on page 3.

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

Testing Start Date : August 25, 1998

Testing End Date : August 25, 1998

- MIKES PRODUCT SERVICE GmbH -

i.V. D. Fröhlich
Günter Mikes
Dipl.-Ing.(FH)

Test-engineer

Martin Stern
Dipl.-Ing. (FH)

FCC ID: L7O003

CONSTRUCTIONAL DATAFORM FOR TESTING OF RADIO EQUIPMENT

Licence holder:	Stribel GmbH
Address:	Benzstrasse / 72636 Frickenhausen / Germany
Manufacturer:	Stribel GmbH
Address:	Benzstrasse / 72636 Frickenhausen / Germany
Type:	Transmitter for Keyless Entry (Remote Central Locking)
Model:	003
Serial-No.:	Protection class:

Application for getting

- national approval in the following countries: Germany
- EC-type examination

Additional informations to the above named model:

Antenna:

transmitter: Type: 898893

Length/size: 47 x 31 x 11

receiver: Type:

Length/size:

Power supply of the transmitter:

Type: **Lithium Battery** nominal voltage: **6 V**

lowest voltage: **5 V** highest voltage: **6.5 V**

Power supply of the receiver:

Type: nominal voltage:

Ancillary equipment:

Description:		Type:		Serial-no.:	
Description:		Type:		Serial-no.:	
Description:		Type:		Serial-no.:	

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)

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

Connectable cables:

Name of the cable	Digital	Length/m	shielded
	O yes O no		O yes O no
	O yes O no		O yes O no
	O yes O no		O yes O no
	O yes O no		O yes O no
	O yes O no		O yes O no

O If applicable, if necessary complete overleaf

Applicant: _____ Model-name: _____

FCC ID: L7O003

Type designation:
003

Name and type designation of individual units comprising the radio equipment:

Type of equipment:

☐ Radiotelephone equipment	● Remote-control equipment	☐ Radiomaritime equipment	● LPD
☐ One-way radiotelephone equipment	☐ Inductive loop system	☐ Inland waterways equipment	☐ RLAN
☐ Personal paging system	☐ Radio-relay system	☐ Radionavigation equipm.	☐ Domestic transmission of sound and vision
☐ Satellite earth station	☐ CB radiotelephone equipment	☐ Antenna	☐
☐ Data transmission equipment	☐ Movement detector	☐ Aeronautical equipment	☐

Technical characteristics:

	Transmitter-receiver	Transmitter	Receiver
Frequency range		418.00 MHz	
Maximum no. of channels		--	
Channel spacing		--	
Class of emission (type of modulation)		L1D	
Maximum RF output power			
Maximum effective radiated power (ERP)		< 1mW	
Output power variable		no	
Channel switching frequency range		only one channel	

Method of frequency generation	☐ Synthesizer	☐ Crystal	● Other
Frequency generation TX	SAW-Resonator 418.00 MHz		
Frequency generation RX			
IF	1st IF	2nd IF	3rd IF
Integral selective calling			
Audio-frequency interface level at external data socket	no		
Modes of operation	☐ Duplex mode	☐ Semi-duplex mode	● Simplex mode
Power source	☐ Mains	☐ Vehicle-regulated	● Integral
Antenna socket	☐ BNC ☐ M ● None	☐ TNC ☐ UHF ☐ F Type	☐ N ☐ Adapter ☐

Type approval specifications:

O If applicable, if necessary complete overleaf

Applicant: Stribel GmbH Model-name: 003

FCC ID: L7O003

Declarations:

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

STRIBEL GMBH
Benzstraße
72636 Frickenhausen

Frickenhausen, date 98-07-16
place of issue

Stefan Walz (Dipl-Ing.(FH))
Seal and signature of applicant

O If applicable, if necessary complete overleaf

mikes
PRODUCT SERVICE

FCC ID: L7O003

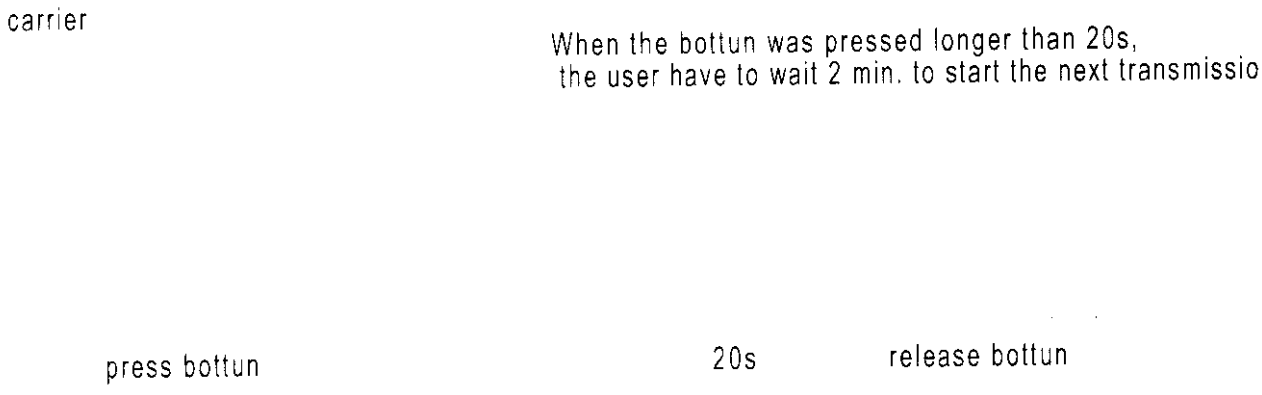
APPENDIX A10

Timeing Diagram

File-No. T 15463-1-00 SM

Timeing diagram, if the bottun is not longer pressed than 20s

Timeing diagram, if the bottun is pressed longer than 20s

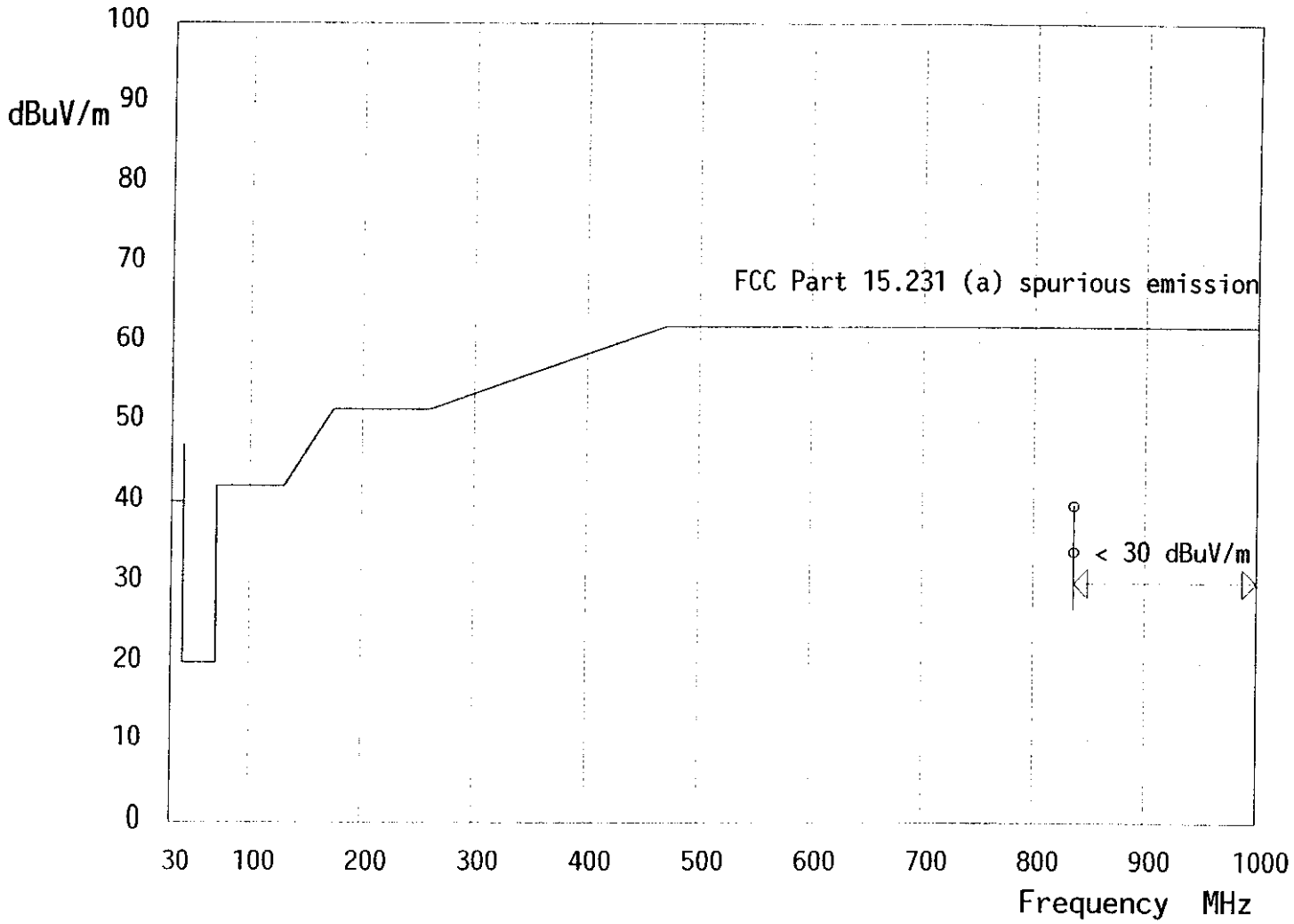


mikes
PRODUCT SERVICE

Radiation-Test

accdg.FCC Part 15

Typ:	0030	Testdistance:	3m
Manufacturer:	Stribel GmbH	Testreceiver:	ESVP
Client:	Stribel GmbH	Antenna:	BBA/UHALP
Regulation:	FCC part 15	Testengineer:	Stern
Order No.:	T 15463-1-00 SM	Date:	25-08-1998
Operation Mode:	permanent transmit		
Remarks:	The limits are kept		



mikes
PRODUCT SERVICE

Radiation-Test

accdg.FCC Part 15

Typ: 0030
Manufacturer: Stribel GmbH
Client: Stribel GmbH
Regulation: FCC part 15
Order No.: T 15463-1-00 SM
eration Mode: permanent transmit
Remarks: The limits are kept

Testdistance: 3m
Testreceiver: ESVP
Antenna: BBA/UHALP
Testengineer: Stern
Date: 25-08-1998

Result	Frequency [MHz]	Reading [dBuV/m]	Korr [dB]	Final [dBuV/m]	Limit [dBuV/m]	DLimit [dB]	Polarisation	Noise
	836.09	-.70	34.63	33.93	62.00	28.07	Vertikal	Diskret
	836.09	5.00	34.63	39.63	62.00	22.37	Horizontal	Diskret

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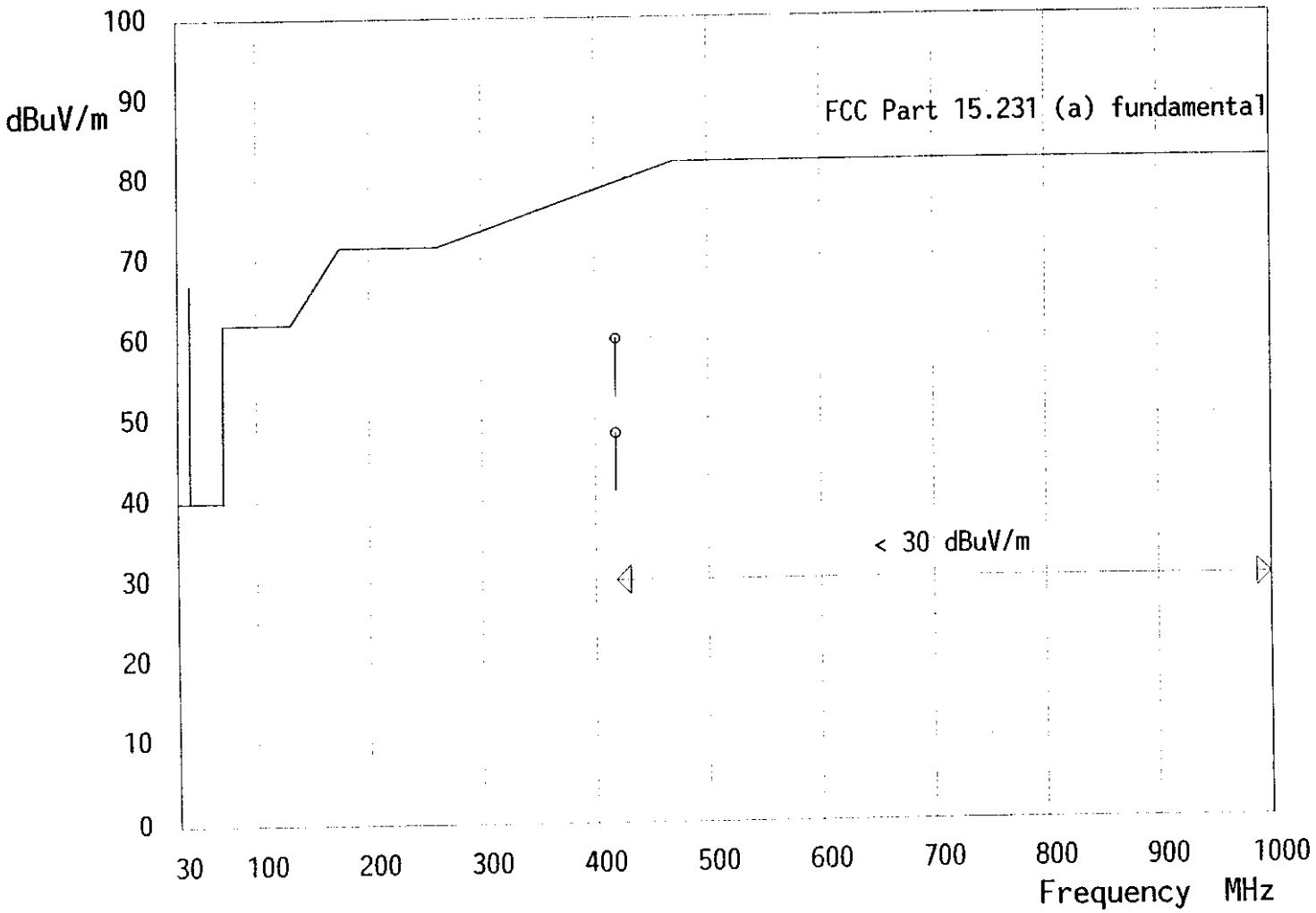
PRODUCT SERVICE

Radiation-Test

accdg.FCC Part 15

Typ:	0030
Manufacturer:	Stribel GmbH
Client:	Stribel GmbH
Regulation:	FCC part 15
Order No.:	T 15463-1-00 SM
Operation Mode:	permanent transmit
Remarks:	The limits are kept

Testdistance:	3m
Testreceiver:	ESVP
Antenna:	UHALP
Testengineer:	Stern
Date:	25-08-1998



mikes
PRODUCT SERVICE

Radiation-Test

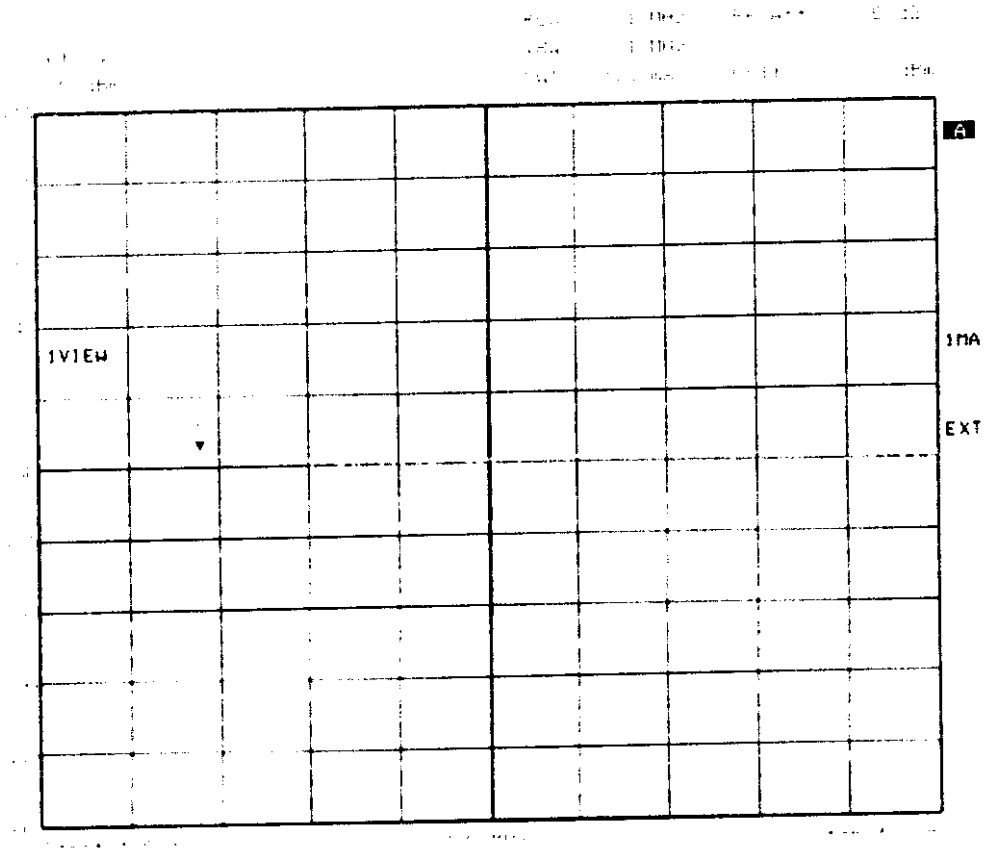
accdg.FCC Part 15

Typ: 0030
Manufacturer: Stribel GmbH
Client: Stribel GmbH
Regulation: FCC part 15
Order No.: T 15463-1-00 SM
eration Mode: permanent transmit
Remarks: The limits are kept

Testdistance: 3m
Testreceiver: ESVP
Antenna: UHALP
Testengineer: Stern
Date: 25-08-1998

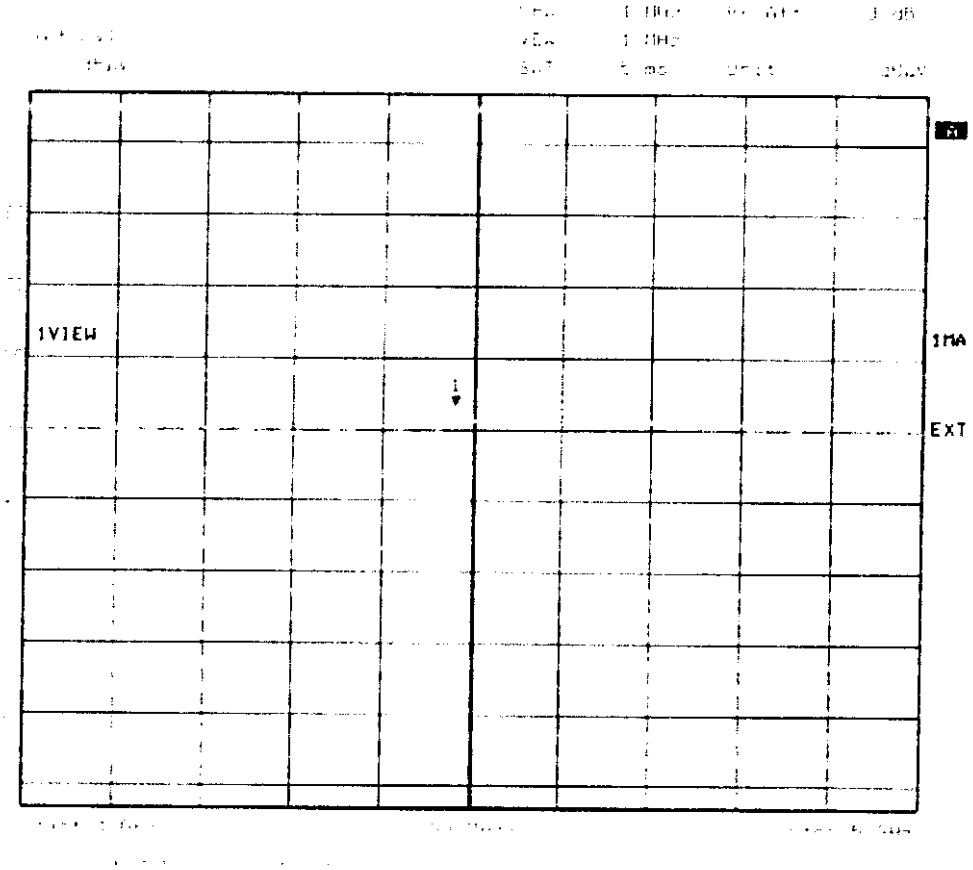
Result	Frequency [MHz]	Reading [dBuV/m]	Korr [dB]	Final [dBuV/m]	Limit [dBuV/m]	DLimit [dB]	Polarisation	Noise
	418.04	22.00	26.21	48.21	79.40	31.19	Vertikal	Diskret
	418.04	33.70	26.21	59.91	79.40	19.49	Horizontal	Diskret

FCC ID: L7OØØ3



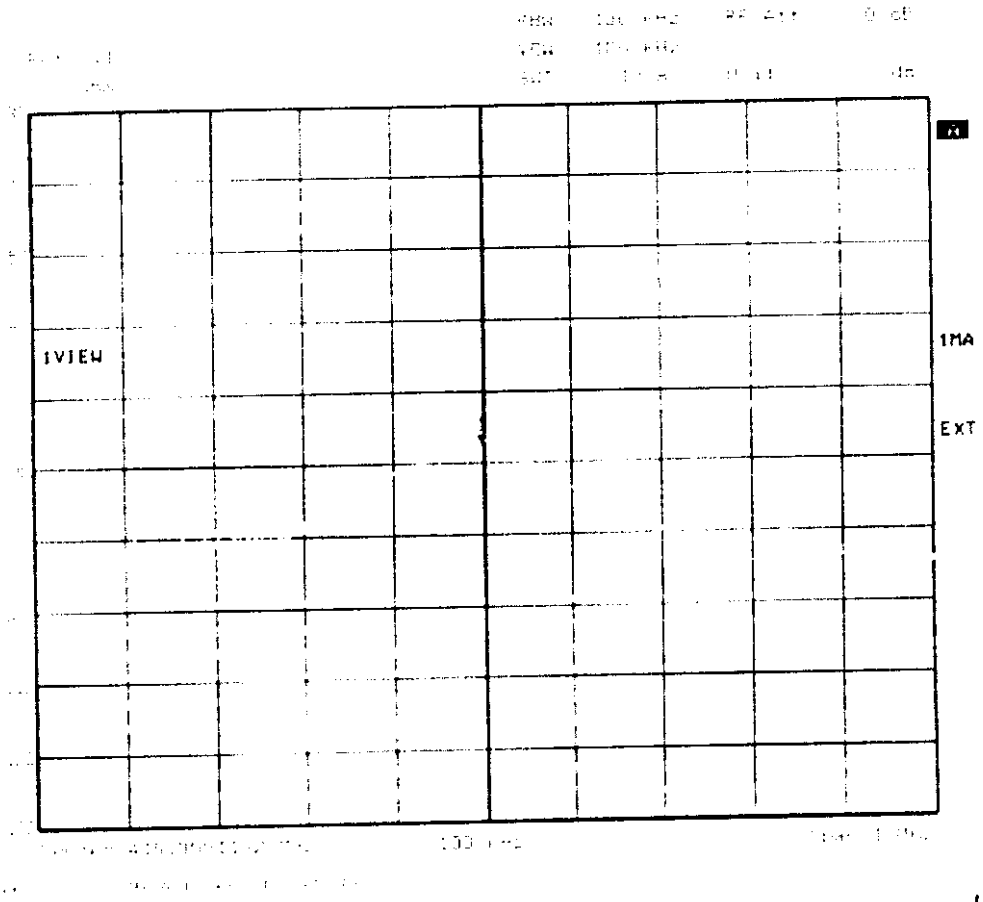
Peak Detector

FCC ID: L7OØØ3



Peak Detector

FCC ID: L7OØØ3



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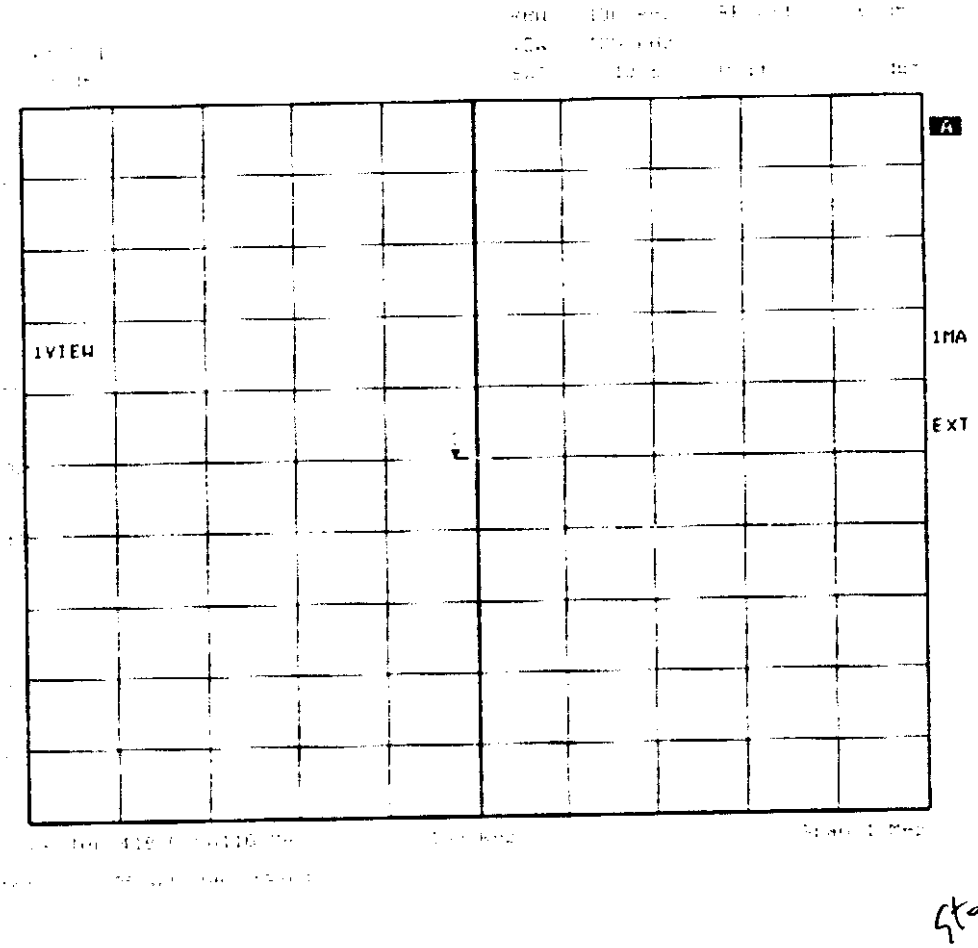

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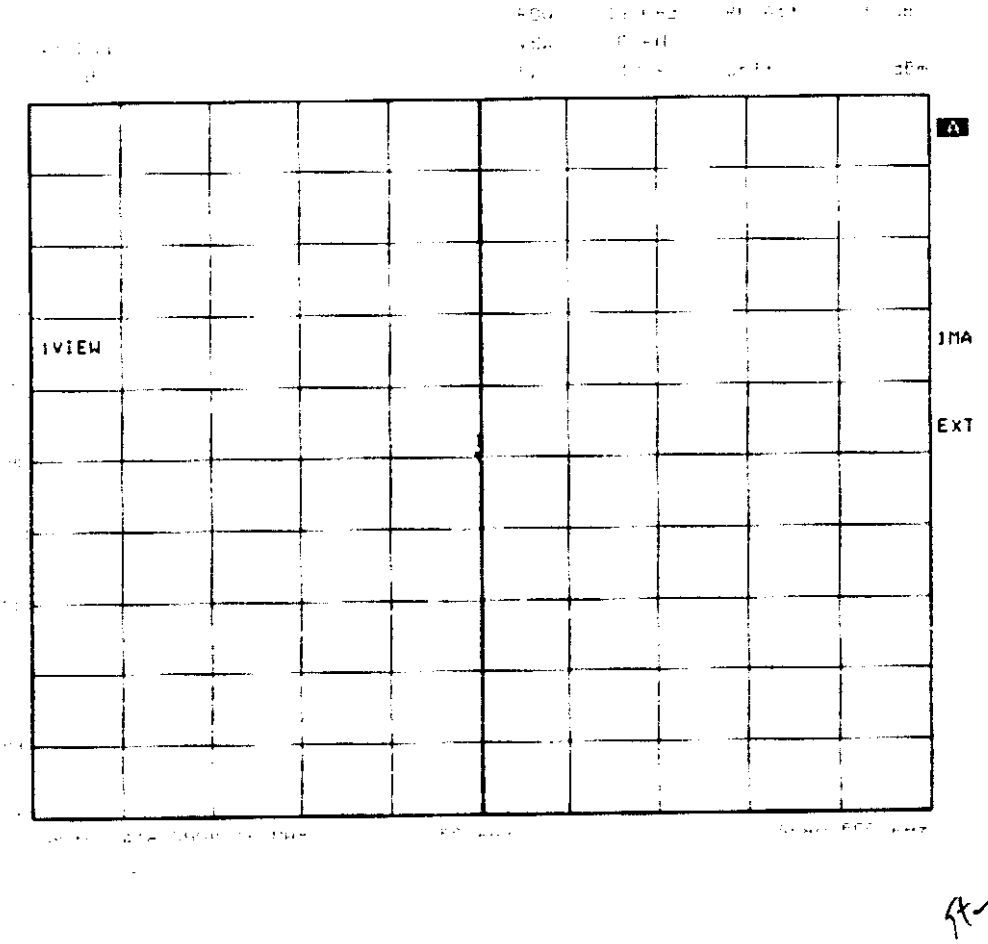

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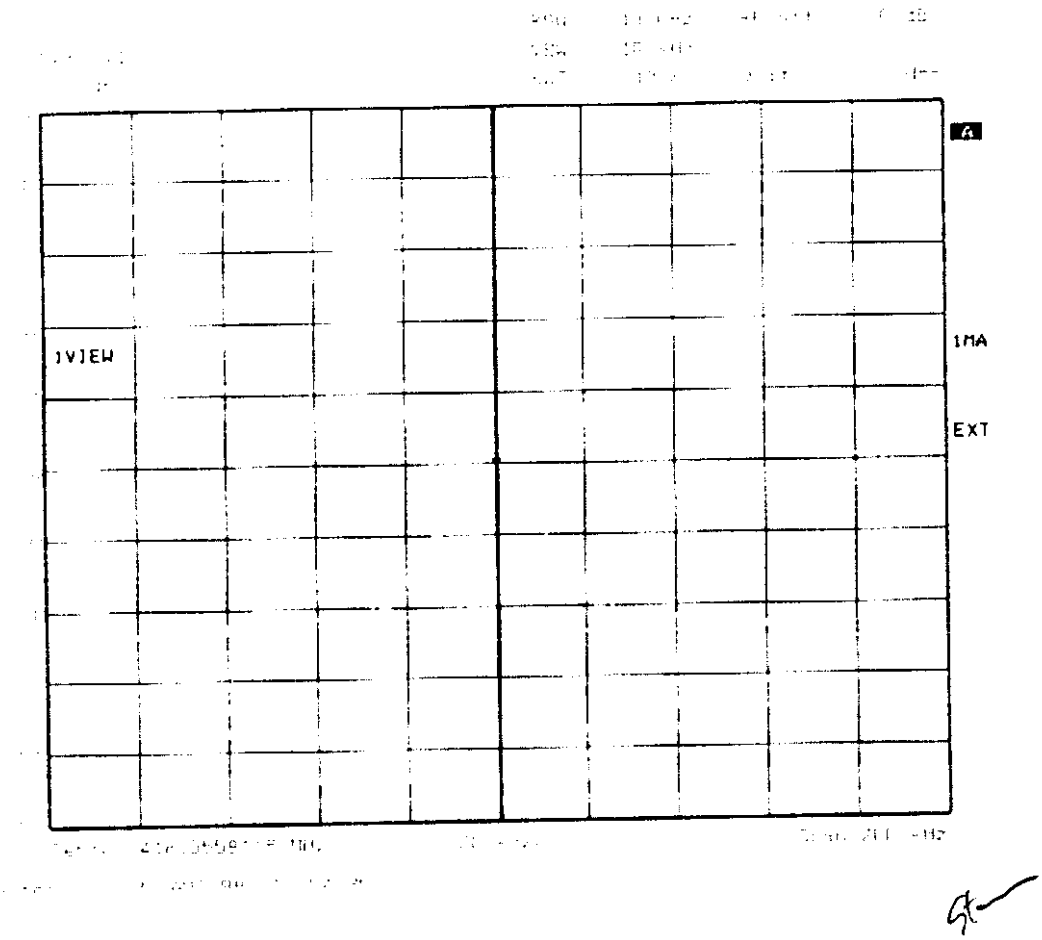

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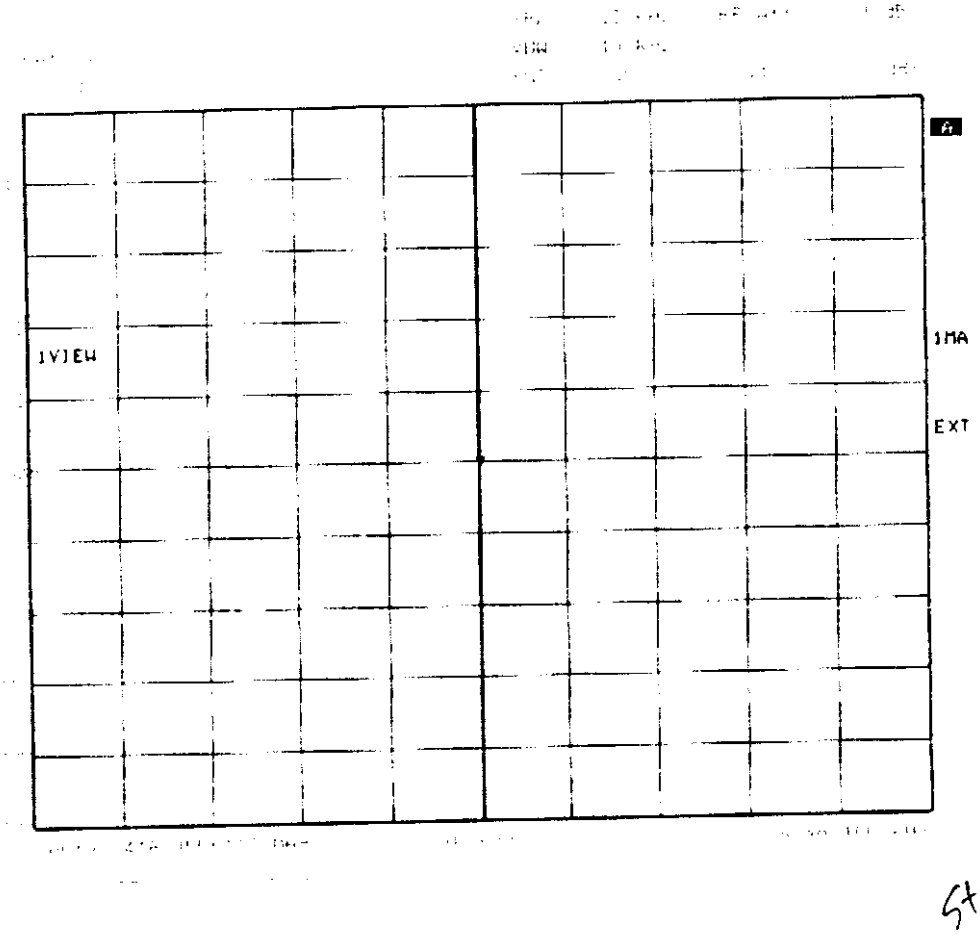

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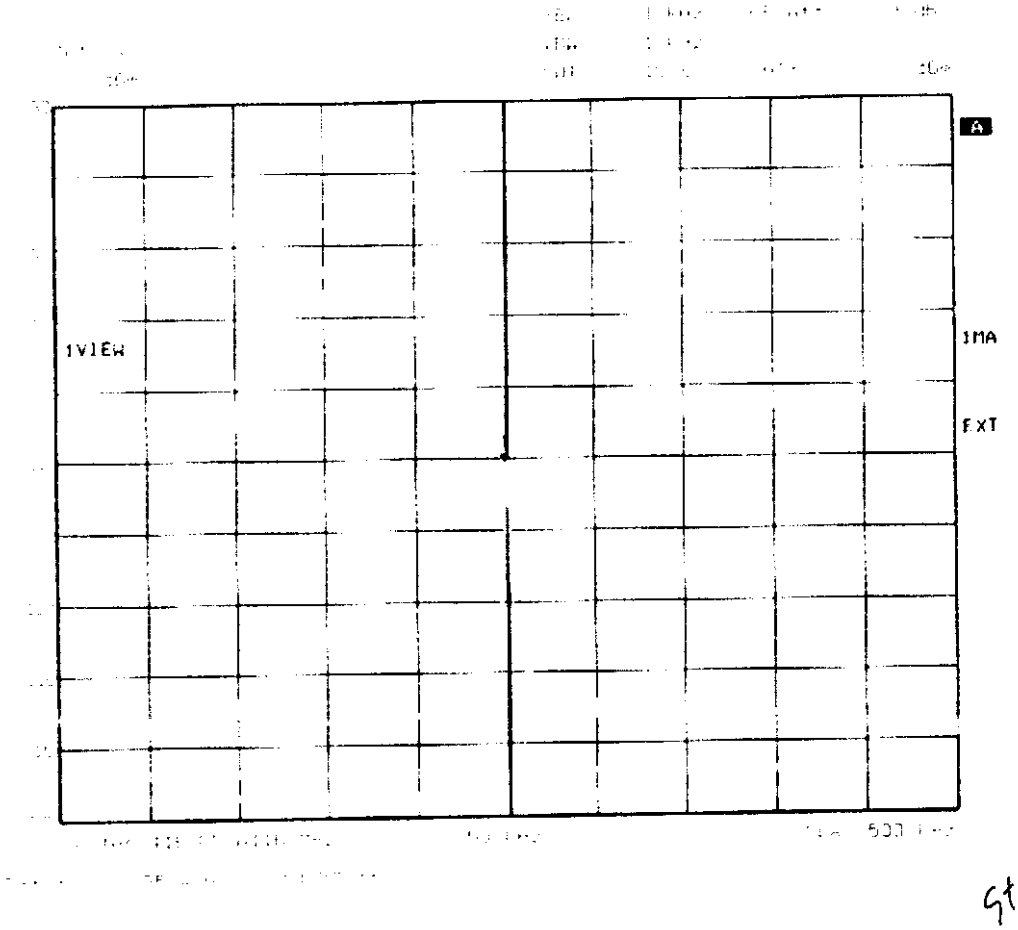

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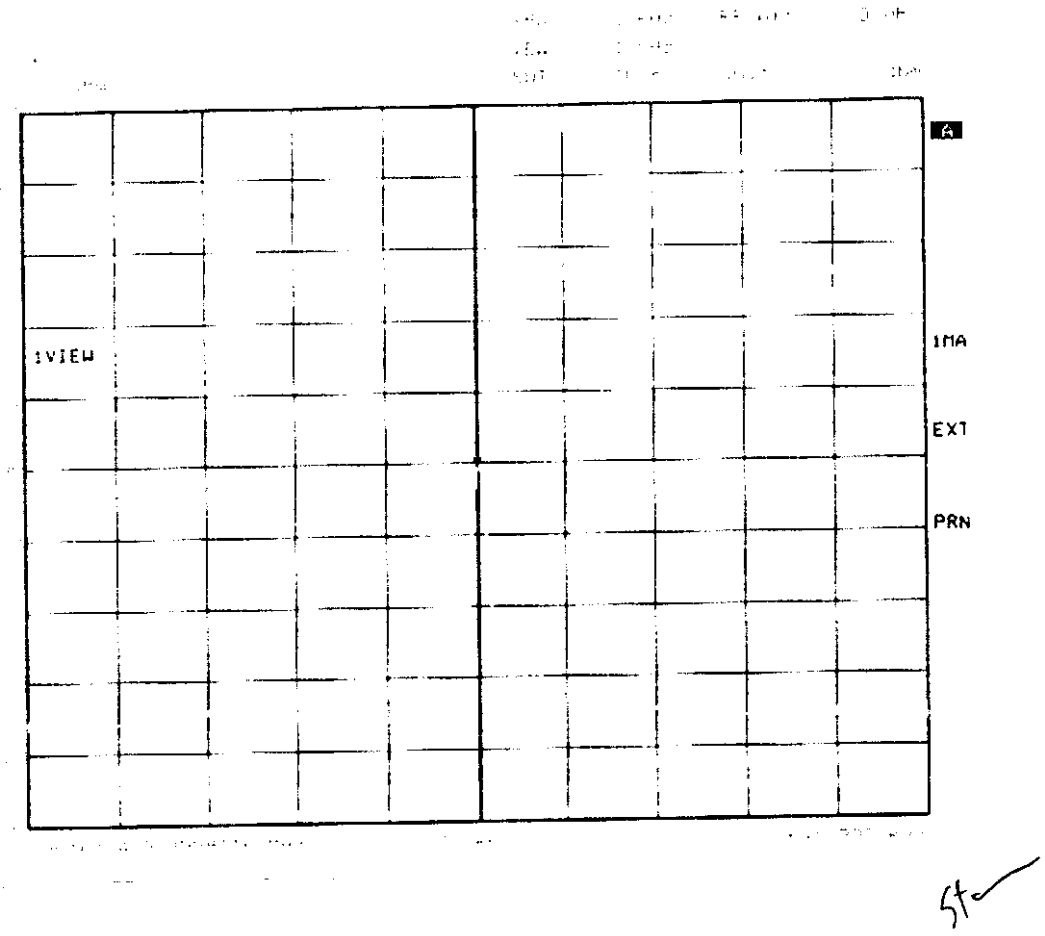

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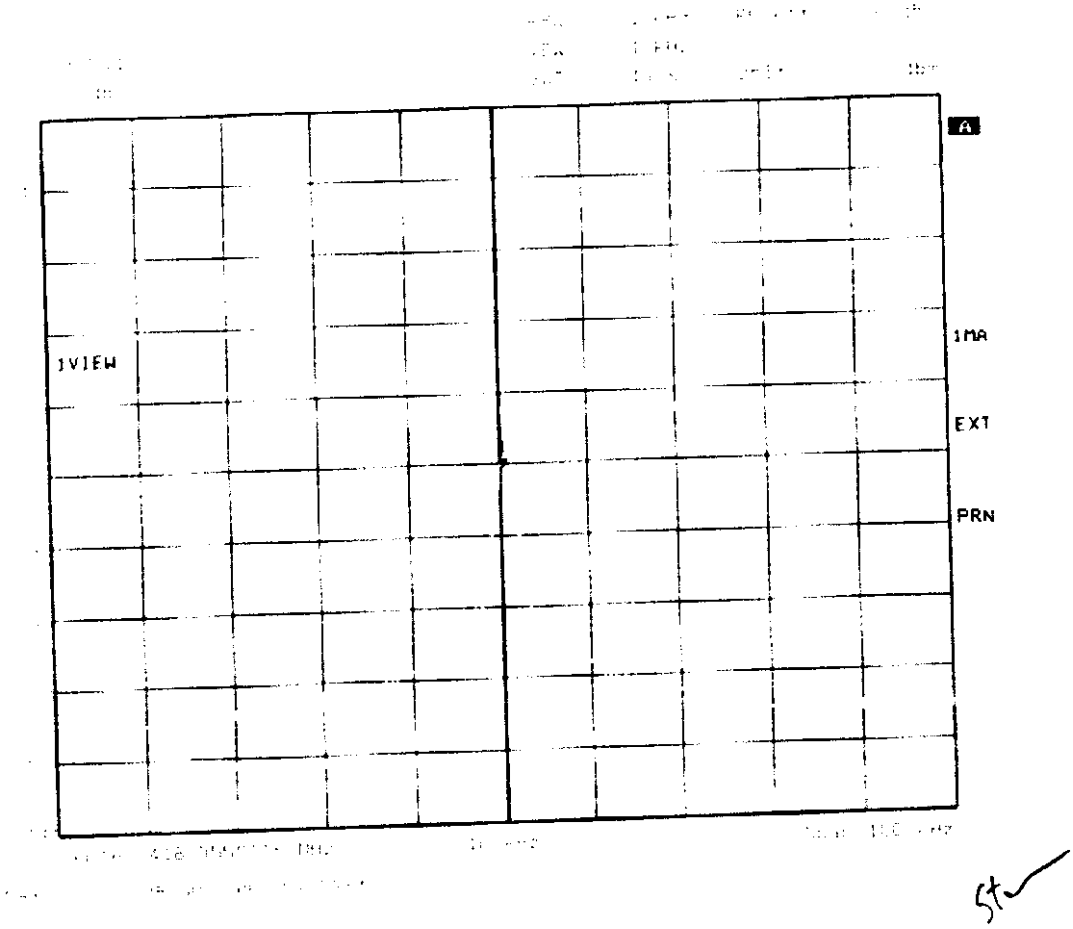

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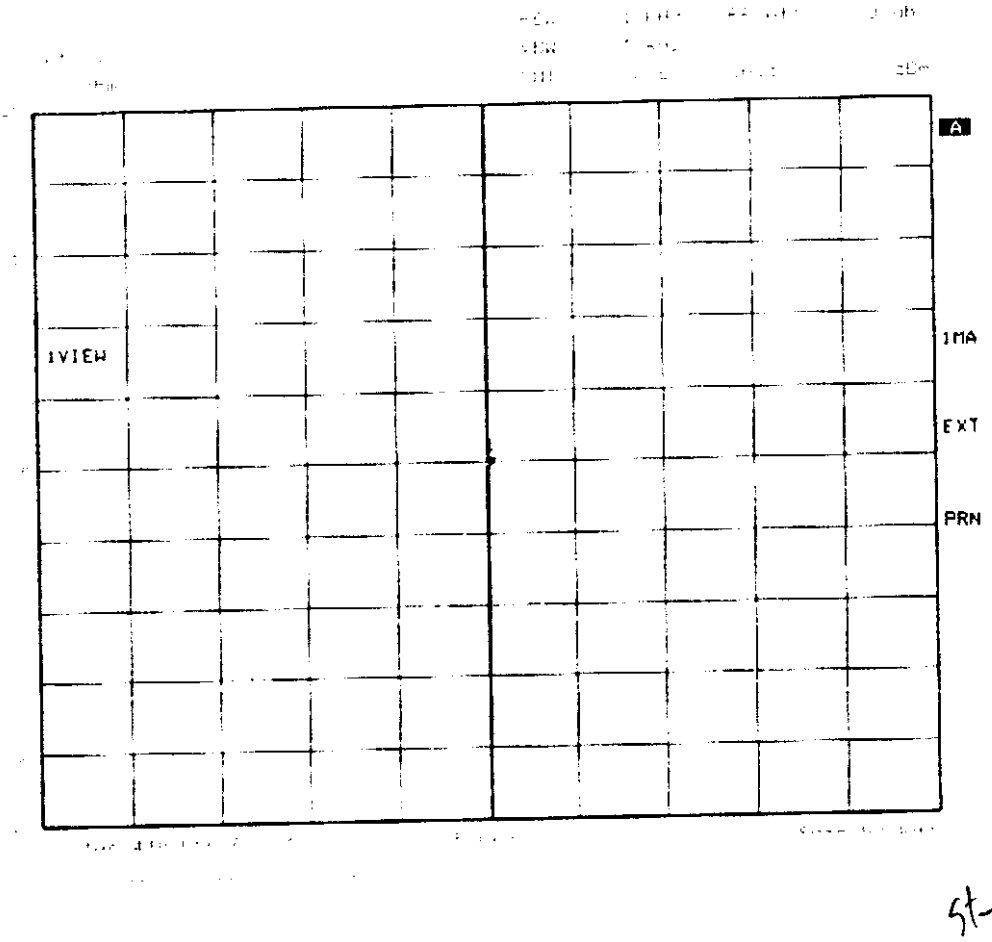

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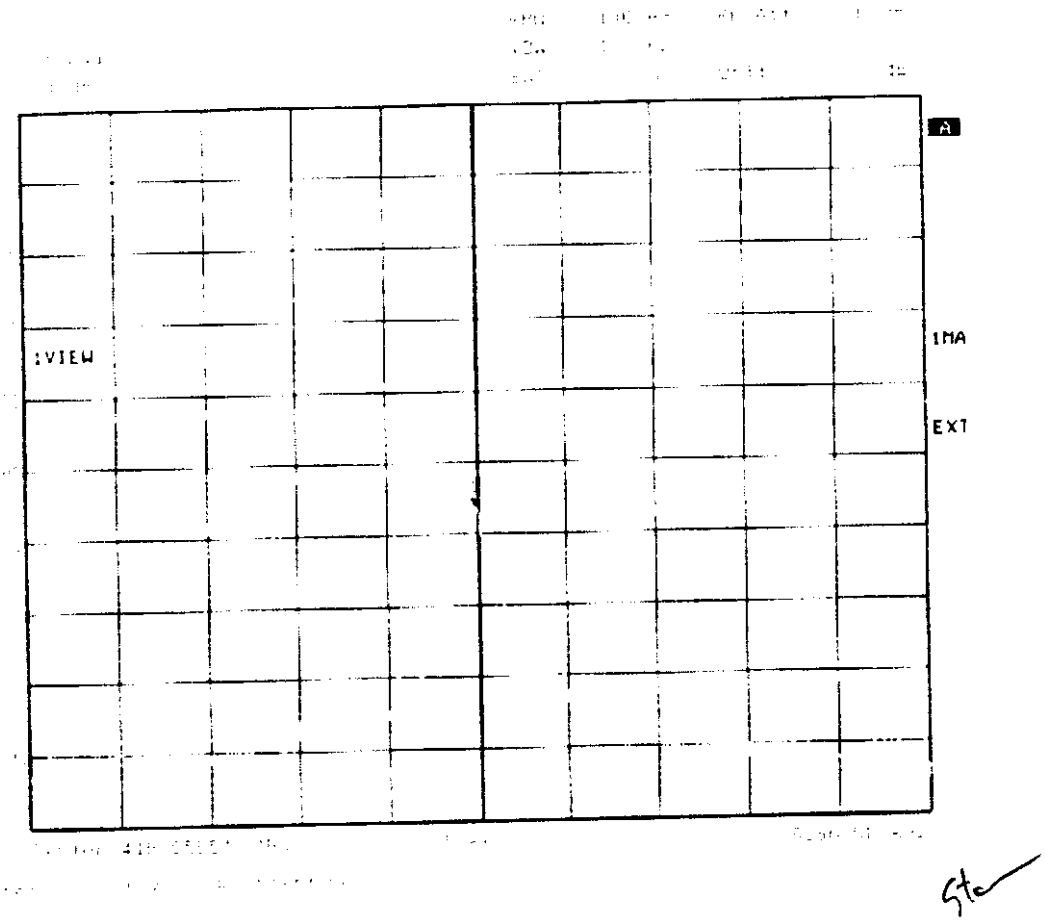

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