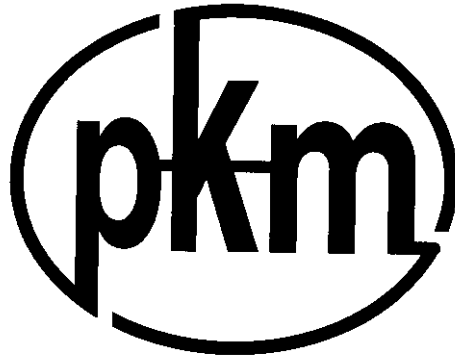




F C C - TESTREPORT

REPORT NO.: FCC-98/04-1000 / FCC98/04-1001

PKM electronic GmbH
Ohmstraße 1
D-84160 Frontenhausen
Tel. : 08732 - 6381
Fax : 08732 - 2345

 pkm electronic GmbH	FCC - Testreport No. FCC-98/04-1000 / 98/04-1001	Date: 06.04.1998 Page 2 (22)
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FCC listed testlab
acc. to Section 2.948 of the FCC - Rules

in compliance with the requirements of
ANSI C63.4 - 1992

Product : Transmitter
Model : Midisender Digital 212 / Digital 214
Importer : Marantec America Corporation, USA
Manufacturer : ELDAT GmbH



pkm electronic GmbH

FCC - Testreport**No. FCC-98/04-1000 / 98/04-1001**

Date: 06.04.1998

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9.	Notes for Radiation Measurement (acc. to ANSI C63.4 - 1992)
10., 11.	Interference Radiation (Datasheet)
12.	Notes for Measurement of Emissions within Band Edges
13. - 18.	Measurement of Emissions within Band Edges (Datasheet)
19. - 22.	Photos



pkM electronic GmbH

FCC - Testreport**No. FCC-98/04-1000 / 98/04-1001**

Date: 06.04.1998

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LABORATORY - REPORT

APPLICANT: Eldat GmbH
DATE OF SAMPLE RECEIVED: 01.04.1998
DATE OF TESTING: see attached data sheets

DESCRIPTION OF SAMPLE:

Product: Transmitter
Manufacturer: ELDAT GmbH
Model name: Digital 212 / Digital 214
Brand name: ---
Band Combination: ---
Origin: Made in Germany
Rating: DC 12 V

INVESTIGATIONS REQUESTED: Measurements to the relevant clauses of F.C.C. rules and regulations part 15 subpart C - Intentional Radiators

RESULTS: See the attached test sheets

CONCLUSIONS: From the measurement data obtained, the tested sample was considered to have **COMPLIED** with the requirements for the relevant clauses of Federal Communications Commission Rules for Intentional Radiators.

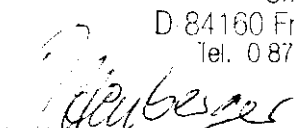


pkM electronic GmbH

Ohmstraße 1

D-84160 Frontenhausen

Tel. 0 87 32 / 63 81


 Authorized Signature



pkM electronic GmbH

FCC - Testreport**No. FCC-98/04-1000 / 98/04-1001**

Date: 06.04.1998

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Summary of testresults

1. Interference Radiation:

Test result: o.k.
Test data: see attached data sheets

2. Measurement of Emissions within Band Edges

Test result: o.k.
Test data: see attached data sheets

General Test Notes:

1. One sample of each device was tested.
2. To achieve compliance with acceptable limits, no modifications were made to the EUT during testing. The measurements performed indicated the unit to be in compliance with the applicable requirements when test in the as-received condition.
3. No special accessories were used other than the manufacturer's transmitter.
4. The device was tested while placed in 3 orthogonal axis.



pkM electronic GmbH

FCC - Testreport

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TEST EQUIPMENT LIST 1

Quantity	Equipment	Serial-number	Manufacturer
2	Receiver ESVS 30 Receiver ESVS 30	#82852/006 #833825/010	Rohde & Schwarz Rohde & Schwarz
3	Receiver ESHS 30 Receiver ESHS 30 Receiver ESHS 30	#839667/002 #839667/008 #839667/008	Rohde & Schwarz Rohde & Schwarz Rohde & Schwarz
2	Dipols VHA 9103	30 MHz - 300 MHz	Schwarzbeck
2	Dipols UHA 9105	300 MHz - 1000 MHz	Schwarzbeck
2	Broadband antenna CBL 6111	30 MHz - 1000 MHz	Chase
3	Shielded room DC... 10 GHz 3,5 m x 3,5 m		Siemens
2	LISN ESH2-Z5 LISN ESH2-Z5	#831079/018 #879675/028	Rohde & Schwarz Rohde & Schwarz
1	LISN NSLK 8127	#8127230	Schwarzbeck
2	Antenna mast system AM 9104		Schwarzbeck
3	Plotter HP7550A Plotter HP7550A Plotter HP7550B	#2936A43117 #2631A46736 #3026A03892	Hewlett Packard Hewlett Packard Hewlett Packard
1	Spectrum Analyzer 8562A	#3043A05643	Hewlett Packard
3	Controller 300 Controller 300 Controller 300		Hewlett Packard Hewlett Packard Hewlett Packard
3	Floppy-Disk-Drive 9122C Floppy-Disk-Drive 9122D Floppy-Disk-Drive 9122D	#2804A04362 #2614A63990 #2339A13495	Hewlett Packard Hewlett Packard Hewlett Packard
3	Monitor 35741B Monitor 35731B Monitor 35731B	#8838J26540 #8627K33194 #8619K25961	Hewlett Packard Hewlett Packard Hewlett Packard
3	Keyboard 46021AD Keyboard 46021AD Keyboard 46021AD	#2844S60217 #2645S20154 #2706S40044	Hewlett Packard Hewlett Packard Hewlett Packard



electronic GmbH

FCC - Testreport**No. FCC-98/04-1000 / 98/04-1001**

Date: 06.04.1998

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TEST EQUIPMENT LIST 2

Quantity	Equipment	Serial-number	Manufacturer
1	Spectrum Analyzer RF-Unit FSMS26 Analyzer Display Unit FSA-D	#839014/004 #838509/010	Rohde & Schwarz Rohde & Schwarz
1	Antenna RGA 50/60 1-18 GHz	#2753	Electro Metric
1	RF-Amplifier MWPAFB 003		PKM



pkM electronic GmbH

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Radiated Emission Testprocedure**TESTFACILITY**

Equipment under test
(on turntable)

required test distance (3m, 10m, ..)

Testreceiver
ESVS 30 R&S

IEEE-Bus

Monitor
35731B
HP

Computer 300
HP

Keyboard 46021AD
HP

FDD 9122C
HP

Plotter 7550A
HP

 pkm electronic GmbH	FCC - Testreport No. FCC-98/04-1000 / 98/04-1001	Date: 06.04.1998 Page 9 (22)
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Notes for Radiation Measurement

acc. to ANSI C63.4 - 1992

- 1. Measurement facility:**
Measurement facility located at Frontenhausen (Germany) on field with the FCC Pursuant to Section 2.948 of the FCC Rules.
- 2. Distance between the EUT and measuring antenna:**
3 meters.
- 3. Measuring instrumentations:**
Rohde & Schwarz ESVS 30 Test Receiver (20 - 1000 MHz) with a CISPR weighting QP detector, 6 dB bandwidth set at 120 KHz.
In the frequency range above 1000 MHz Spectrum Analyzer FMSM26 and Analyzer Display Unit FSA-D are used, bandwidth set at 100 kHz.
- 4. Measuring antenna:**
Broad-band antenna for the frequency range 30 - 1000 MHz, connected with 10 meters coaxial cable. Cable loss of the coaxial cable included in the Antenna Factor for measurement data. The antennas are capable of measuring both horizontal and vertical polarizations.
In the frequency range above 1 GHz horn-antenna RGA 50/60 is used.
- 5. Frequency range scanned:**
The frequency range 30 - 5000 MHz has been scanned. Readings of the highest emissions relating to the limit were reported as above.
- 6. Arrangement of EUT:**
During the test, the sample was operated at rated supply voltage and arranged for maximum emissions.
- 7. Measuring Procedure:**
In accordance with the relevant sections of American National Standards Institute (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".

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Operator: RA

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[illegible]

Operator: AT



electronic GmbH

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Notes for Measurement of Emissions within Band Edges

1. **Measurement facility:**
Measurement facility located at Frontenhausen (Germany) on field with the FCC Pursuant to Section 2.948 of the FCC Rules.
2. **Measuring instrumentations:**
Spectrum Analyzer 8562A Hewlett Packard.
3. **Frequency range scanned:**
The frequency range acc. to FCC rules and regulations part 15 subpart C - Intentional Radiators.
4. **Arrangement of EUT:**
During the test, the sample was operated.
5. **Measuring Procedure:**
In accordance with the relevant sections of American National Standards Institute (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".



pkm electronic GmbH

FCC - Testreport

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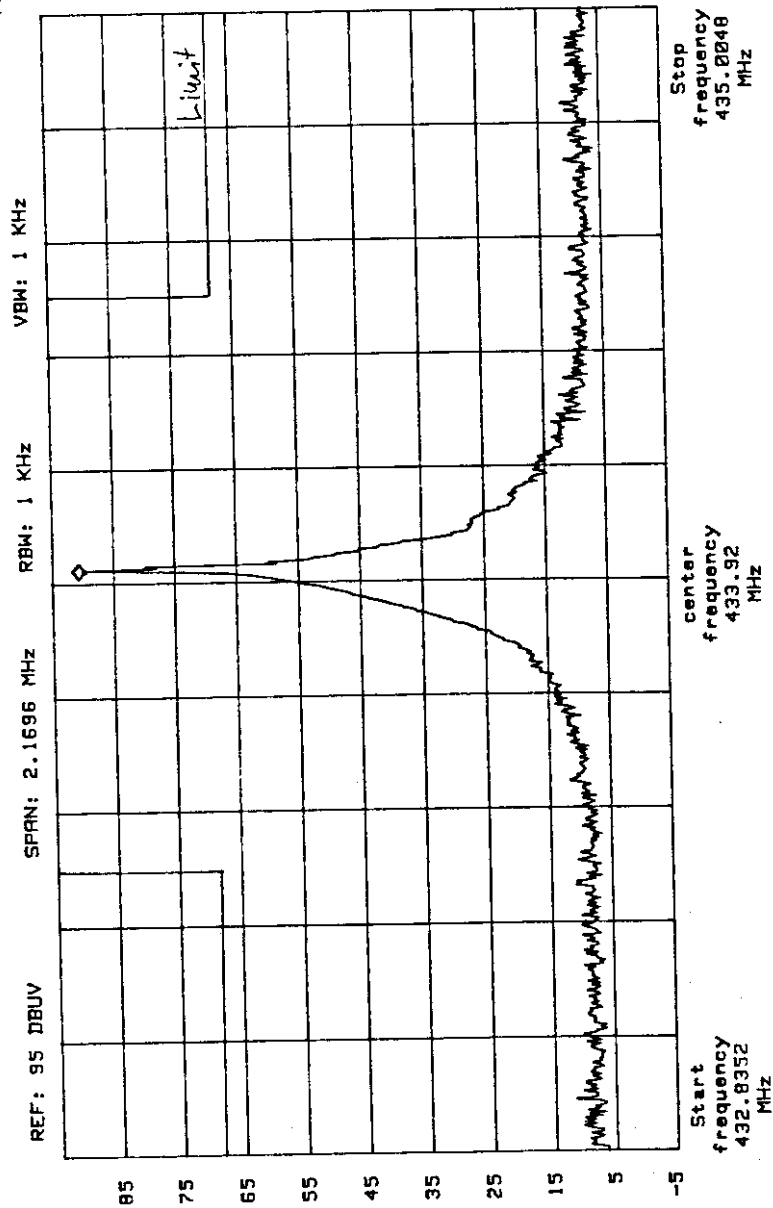
Measurement of Emissions
within band edges

acc. FCC Rules Part 15 Section 15.231

pkm electronic GmbH
Ohmstrasse 1
84168 Frontenhausen

Date: 2 Apr 1998
Model: DIGITAL 212
pkm/Ser#: 01
Man.: ELDAT
Imp.: MIDI-SENDEL
set u. test: AT
Operator: AT
result: OK

MKF: 433.941696 MHz
MKR: 89.67 DBUV



Remarks: FUNCTION SWITCH 1 PRESSED



pkM electronic GmbH

FCC - Testreport

No. FCC-98/04-1000 / 98/04-1001

Date: 06.04.1998

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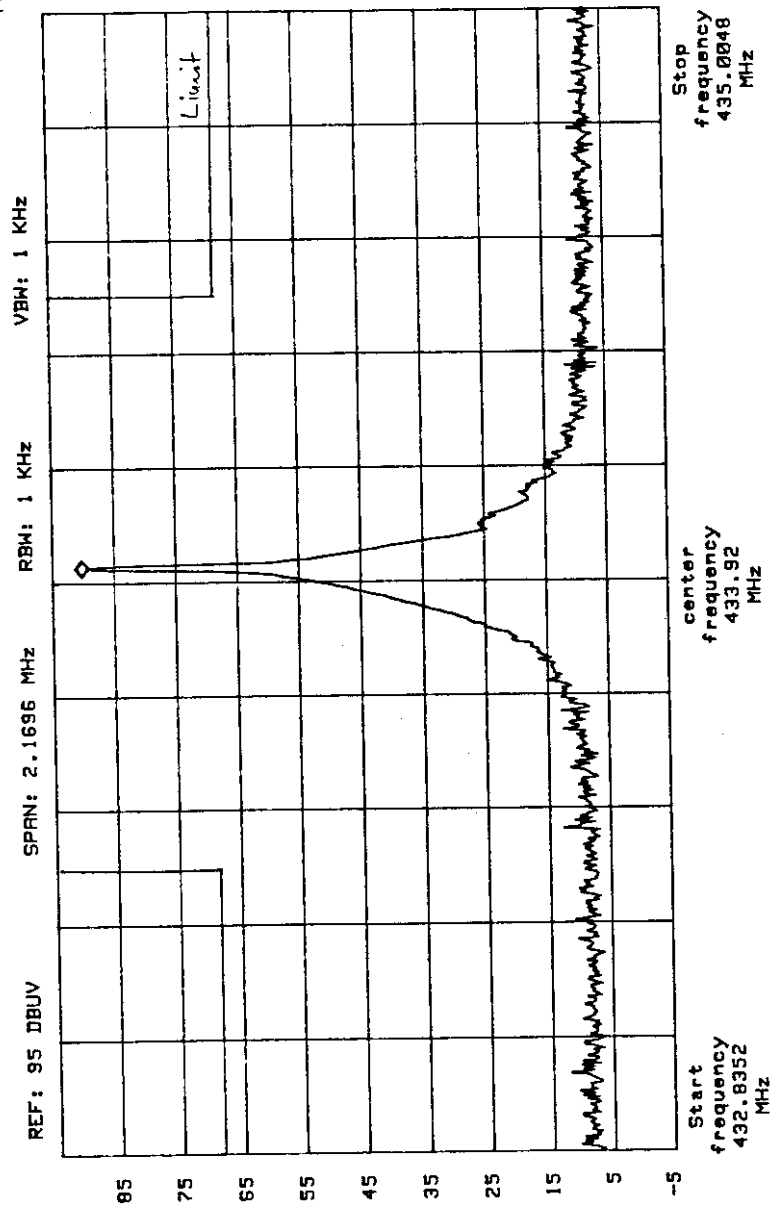
pkM electronic GmbH
 Ohmstrasse 1
 84160 Frontenhausen

Measurement of Emissions within band edges

acc. FCC Rules Part 15 Section 15.231

Date: 2 Apr 1998
 Model: DIGITAL 212
 pkM/Ser#: 01
 Man.:
 Imp.: ELDRAT
 set u. test: MIDI-SENDEL
 Operator: AT
 result:

MKF: 433.945312 MHz
 MKR: 89.17 DBUV



Remarks: FUNCTION SWITCH 2 PRESSED



electronic GmbH

FCC - Testreport

No. FCC-98/04-1000 / 98/04-1001

Date: 06.04.1998

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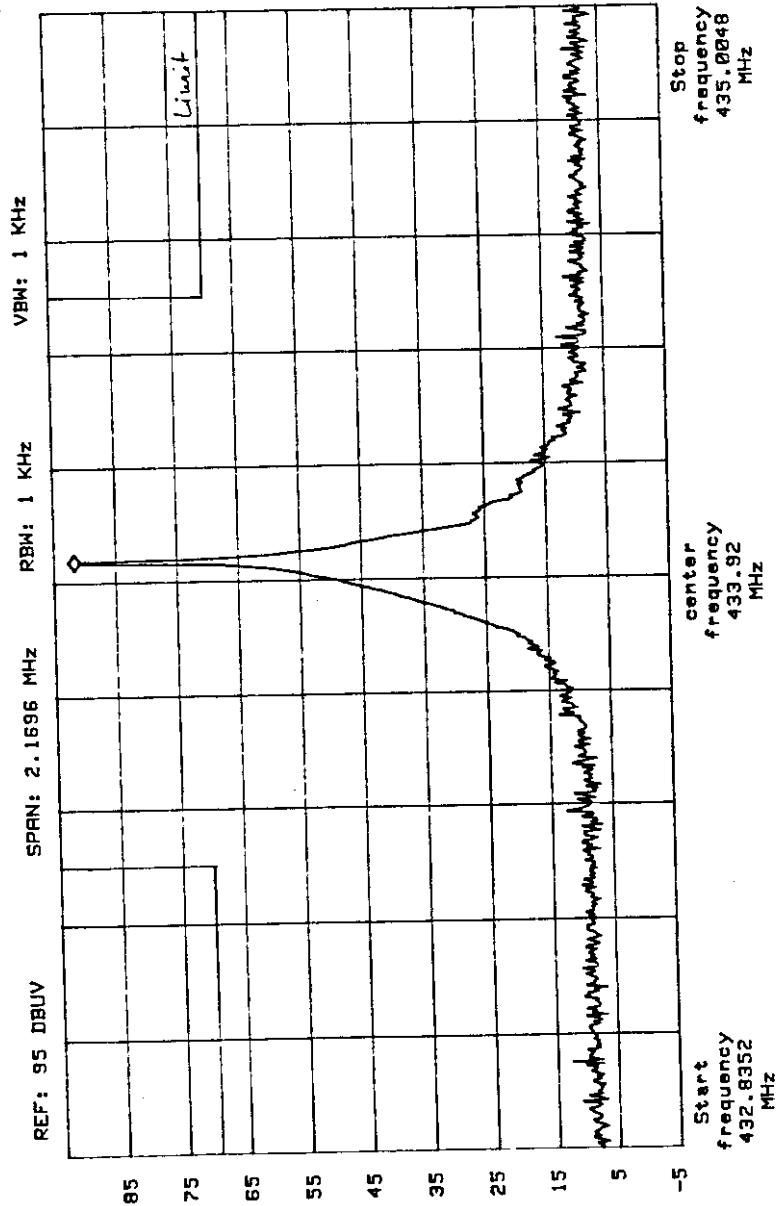
pkM electronic GmbH
 Ohmstrasse 1
 84160 Frontenhausen

Measurement of Emissions within band edges

acc. FCC Rules Part 15 Section 15.231

Date: 2 Apr 1998
 Model: DIGITAL 214
 pkM/Serial: 01
 Man.:
 Imp.: ELDAT
 set u. test: MIDI-SENDEL
 Operator: AT
 result: *OK*.....

MKF: 433.95616 MHz
 MKR: 90.67 DBUV



Remarks: FUNCTION SWITCH 1 PRESSED



electronic GmbH

FCC - Testreport

No. FCC-98/04-1000 / 98/04-1001

Date: 06.04.1998

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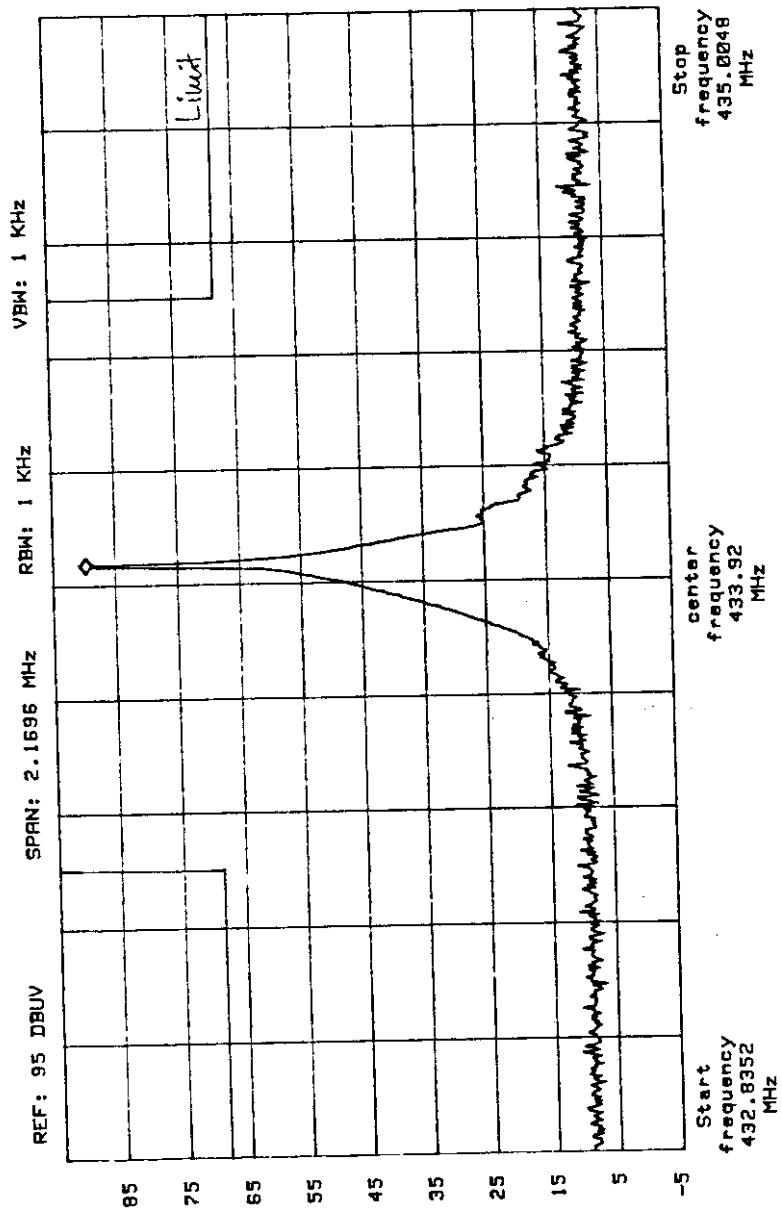
Measurement of Emissions
within band edges

pkm electronic GmbH
Ohmstrasse 1
84168 Frontenhausen

acc. FCC Rules Part 15 Section 15.231

Date: 2 Apr 1998
Model: DIGITAL 214
pkm/Ser#: 01
Man.:
Imp.: ELDAT
set u. test: MIDI-SENDEL
Operator: AT
result: *OK*

MKF: 433.95616 MHz
MKR: 88.67 DBUV



Remarks: FUNCTION SWITCH 2 PRESSED



electronic GmbH

FCC - Testreport

No. FCC-98/04-1000 / 98/04-1001

Date: 06.04.1998

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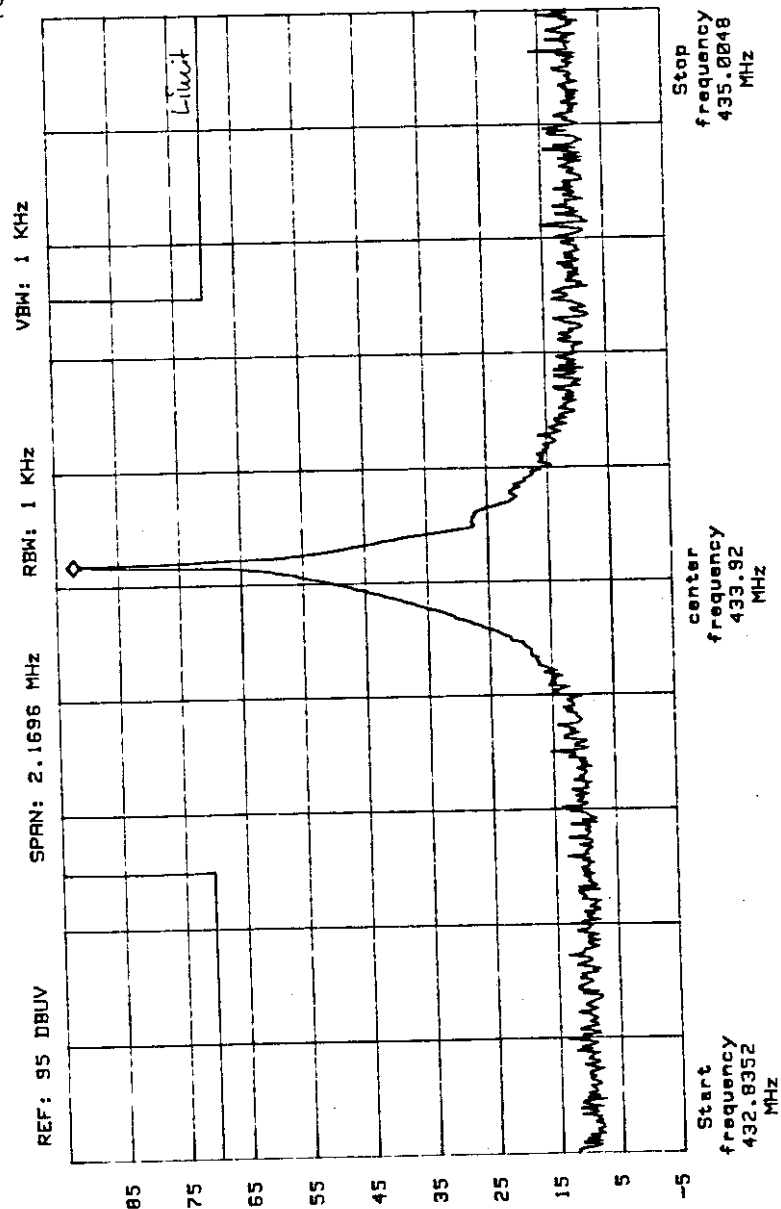
Measurement of Emissions
within band edges

acc. FCC Rules Part 15 Section 15.231

pkm electronic GmbH
Ohmstrasse 1
84160 Frontenhausen

Date: 2 Apr 1998
Model: DIGITAL 214
pkm/Ser#: 01
Man.: ELBAT
Imp.: set u. test: MIDI-SENDEI
Operator: AT
result:

MKF: 433.95516 MHz
MKR: 91.17 DBUV



Remarks: FUNCTION SWITCH 3 PRESSED



pk m electronic GmbH

FCC - Testreport

No. FCC-98/04-1000 / 98/04-1001

Date: 06.04.1998

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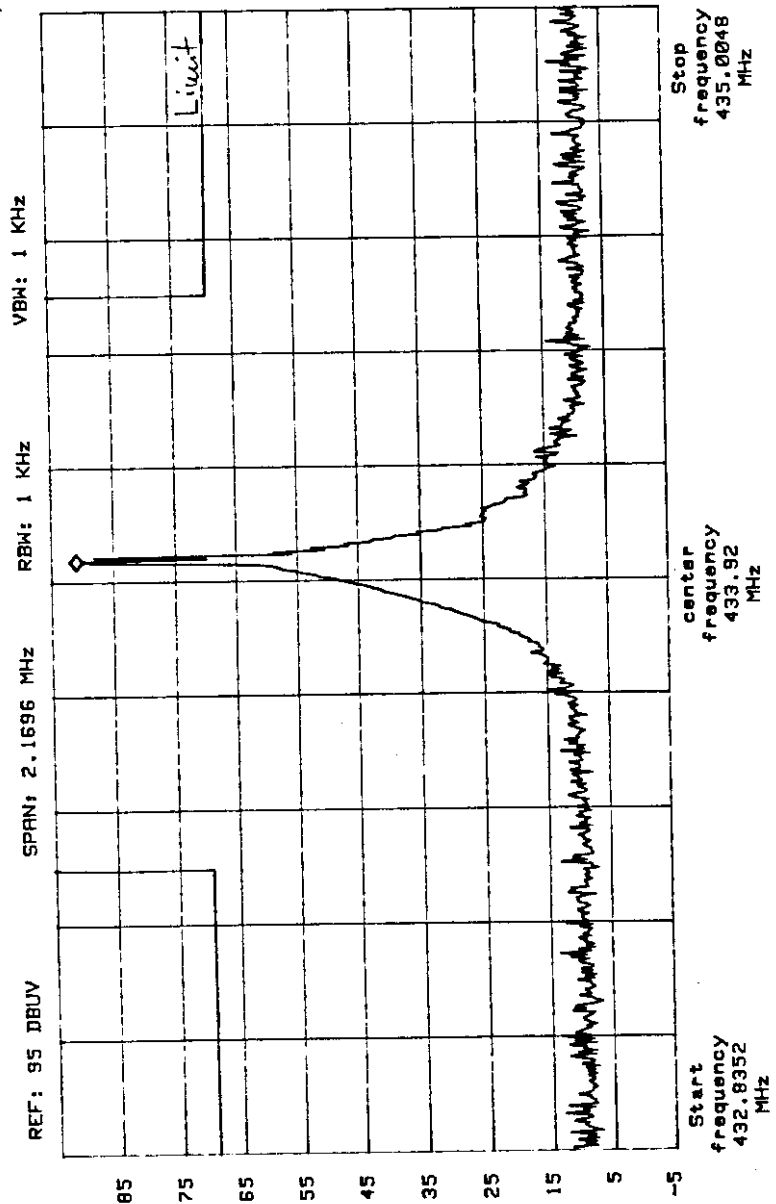
pk m electronic GmbH
Ohmstrasse 1
84150 Frontenhausen

Measurement of Emissions within band edges

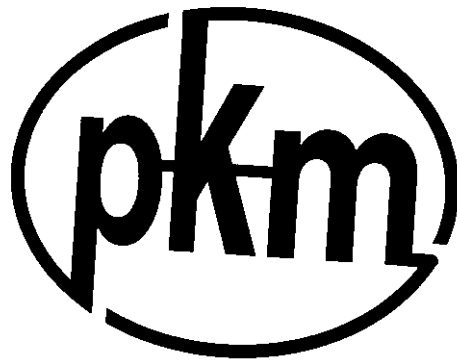
acc. FCC Rules Part 15 Section 15.231

Date: 2 Apr 1998
Model: DIGITAL 214
pk m/Ser#: 01
Man.:
Imp.: ELDAY
set u. test: MIDI-SENDEI
Operator: AT
result: *OK*.....

MKF: 433.95616 MHz
MKR: 90 DBUV



Remarks: FUNCTION SWITCH 4 PRESSED



FCC ID: NKPD211

F C C - TESTREPORT

REPORT NO.: FCC-98/03-1089

pkm electronic GmbH
Ohmstraße 1
D-84160 Frontenhausen
Tel. : 08732 - 6381
Fax : 08732 - 2345



electronic GmbH

FCC - Testreport

No. FCC-98/03-1089

Date: 18.03.1998

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FCC listed testlab
acc. to Section 2.948 of the FCC - Rules

in compliance with the requirements of
ANSI C63.4 - 1992

Product : Transmitter
Model : Midisender 433 MHz US Digital 211
Importer : Marantec America Corporation
Manufacturer : EL DAT GmbH



electronic GmbH

FCC ID: NKPD211

FCC - Testreport

No. FCC-98/03-1089

Date: 18.03.1998

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8. Radiated Emission Testprocedure
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10. Interference Radiation (Datasheet)
11. Notes for Measurement of Emissions within Band Edges
12. Measurement of Emissions within Band Edges (Datasheet)
13. - 15. Photos



electronic GmbH

FCC ID: NKPD211

FCC - Testreport

No. FCC-98/03-1089

Date: 18.03.1998

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LABORATORY - REPORT

APPLICANT:

ELDAT GmbH

DATE OF SAMPLE RECEIVED:

12.03.1998

DATE OF TESTING:

see attchd data sheets

DESCRIPTION OF SAMPLE:

Product:

Transmitter

Manufacturer:

ELDAT GmbH

Model name:

Midisender 433 MHz US Digital 211

Brand name:

Band Combination:

Origin:

Made in Germany

Rating:

DC 12V

INVESTIGATIONS REQUESTED:

Measurements to the relevant clauses of F.C.C. rules and regulations part 15 subpart C - Intentional Radiators

RESULTS:

See the attached test sheets

CONCLUSIONS:

From the measurement data obtained, the tested sample was considered to have COMPLIED with the requirements for the relevant clauses of Federal Communications Commission Rules for Intentional Radiators.



electronic GmbH

Ohmstraße 1

D-84160 Frontenhausen

Tel. 08732 - 6381

Fax. 08732 - 2345

Authorized Signature



Summary of testresults

1. Interference Radiation:

Test result: o.k.
Test data: see attached data sheets

2. Measurement of Emissions within Band Edges

Test result: o.k.
Test data: see attached data sheets

General Test Notes:

1. One sample of each device was tested.
2. To achieve compliance with acceptable limits, no modifications were made to the EUT during testing. The measurements performed indicated the unit to be in compliance with the applicable requirements when test in the as-received condition.
3. No special accessories were used other than the manufacturer's transmitter.
4. The device was tested while placed in 3 orthogonal axis.



electronic GmbH

FCC ID: NKPD211

FCC - Testreport

No. FCC-98/03-1089

Date: 18.03.1998

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TEST EQUIPMENT LIST 1

Quantity	Equipment	Serial-number	Manufacturer
2	Receiver ESVS 30 Receiver ESVS 30	#82852/006 #833825/010	Rohde & Schwarz Rohde & Schwarz
3	Receiver ESHS 30 Receiver ESHS 30 Receiver ESHS 30	#839667/002 #839667/008 #839667/008	Rohde & Schwarz Rohde & Schwarz Rohde & Schwarz
2	Dipols VHA 9103	30 MHz - 300 MHz	Schwarzbeck
2	Dipols UHA 9105	300 MHz - 1000 MHz	Schwarzbeck
2	Broadband antenna CBL 6111	30 MHz - 1000 MHz	Chase
3	Shielded room DC... 10 GHz 3,5 m x 3,5 m		Siemens
2	LISN ESH2-Z5 LISN ESH2-Z5	#831079/018 #879675/028	Rohde & Schwarz Rohde & Schwarz
1	LISN NSLK 8127	#8127230	Schwarzbeck
2	Antenna mast system AM 9104		Schwarzbeck
3	Plotter HP7550A Plotter HP7550A Plotter HP7550B	#2936A43117 #2631A46736 #3026A03892	Hewlett Packard Hewlett Packard Hewlett Packard
1	Spectrum Analyzer 8562A	#3043A05643	Hewlett Packard
3	Controller 300 Controller 300 Controller 300		Hewlett Packard Hewlett Packard Hewlett Packard
3	Floppy-Disk-Drive 9122C Floppy-Disk-Drive 9122D Floppy-Disk-Drive 9122D	#2804A04362 #2614A63990 #2339A13495	Hewlett Packard Hewlett Packard Hewlett Packard
3	Monitor 35741B Monitor 35731B Monitor 35731B	#8838J26540 #8627K33194 #8619K25961	Hewlett Packard Hewlett Packard Hewlett Packard
3	Keyboard 46021AD Keyboard 46021AD Keyboard 46021AD	#2844S60217 #2645S20154 #2706S40044	Hewlett Packard Hewlett Packard Hewlett Packard

 pkm electronic GmbH	FCC - Testreport No. FCC-98/03-1089	Date: 18.03.1998 Page 7 (15)
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TEST EQUIPMENT LIST 2

Quantity	Equipment	Serial-number	Manufacturer
1	Spectrum Analyzer RF-Unit FSMS26 Analyzer Display Unit FSA-D	#839014/004 #838509/010	Rohde & Schwarz Rohde & Schwarz
1	Antenna RGA 50/60 1-18 GHz	#2753	Electro Metric
1	RF-Amplifier MWPAFB 003		PKM



electronic GmbH

FCC - Testreport**No. FCC-98/03-1089**

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Radiated Emission Testprocedure**TESTFACILITY**

Equipment under test
(on turntable)

required test distance (3m, 10m, ..)

Testreceiver
ESVS 30 R&S

IEEE-Bus

Monitor
35731B
HP

Computer 300
HP

Keyboard 46021AD
HP

FDD 9122C
HP

Plotter 7550A
HP

 pk-m electronic GmbH	FCC - Testreport No. FCC-98/03-1089	Date: 18.03.1998 Page 9 (15)
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Notes for Radiation Measurement

acc. to ANSI C63.4 - 1992

1. **Measurement facility:**
Measurement facility located at Frontenhausen (Germany) on field with the FCC Pursuant to Section 2.948 of the FCC Rules.
2. **Distance between the EUT and measuring antenna:**
3 meters.
3. **Measuring instrumentations:**
Rohde & Schwarz ESVS 30 Test Receiver (20 - 1000 MHz) with a CISPR weighting QP detector, 6 dB bandwidth set at 120 KHz.
In the frequency range above 1000 MHz Spectrum Analyzer FMSM26 and Analyzer Display Unit FSA-D are used, bandwidth set at 100 kHz.
4. **Measuring antenna:**
Broad-band antenna for the frequency range 30 - 1000 MHz, connected with 10 meters coaxial cable. Cable loss of the coaxial cable included in the Antenna Factor for measurement data. The antennas are capable of measuring both horizontal and vertical polarizations.
In the frequency range above 1 GHz horn-antenna RGA 50/60 is used.
5. **Frequency range scanned:**
The frequency range 30 - 5000 MHz has been scanned. Readings of the highest emissions relating to the limit were reported as above.
There was no duty cycle correction factor applied to the CISPR quasi peak emission levels for comparison to the limits in section 15.231(b) of the FCC rules.
6. **Arrangement of EUT:**
During the test, the sample was operated at rated supply voltage and arranged for maximum emissions.
The handheld transmitter was tested while placed in three orthogonal axes (acc. to Section 13.1.4.1. of ANSI C63.4-1992)
7. **Measuring Procedure:**
In accordance with the relevant sections of American National Standards Institute (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".

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RF-Amplifier MWPAFB003

[illegible]

Operator: AT

 pkM electronic GmbH	FCC - Testreport No. FCC-98/03-1089	Date: 18.03.1998 Page 11 (15)
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Notes for Measurement of Emissions within Band Edges

1. Measurement facility:

Measurement facility located at Frontenhausen (Germany) on field with the FCC Pursuant to Section 2.948 of the FCC Rules.

2. Measuring instrumentations:

Spectrum Analyzer 8562A Hewlett Packard.

3. Frequency range scanned:

The frequency range acc. to FCC rules and regulations part 15 subpart C - Intentional Radiators.

4. Arrangement of EUT:

During the test, the sample was operated.

5. Measuring Procedure:

In accordance with the relevant sections of American National Standards Institute (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".



pkm electronic GmbH

FCC - Testreport

No. FCC-98/03-1089

Date: 18.03.1998

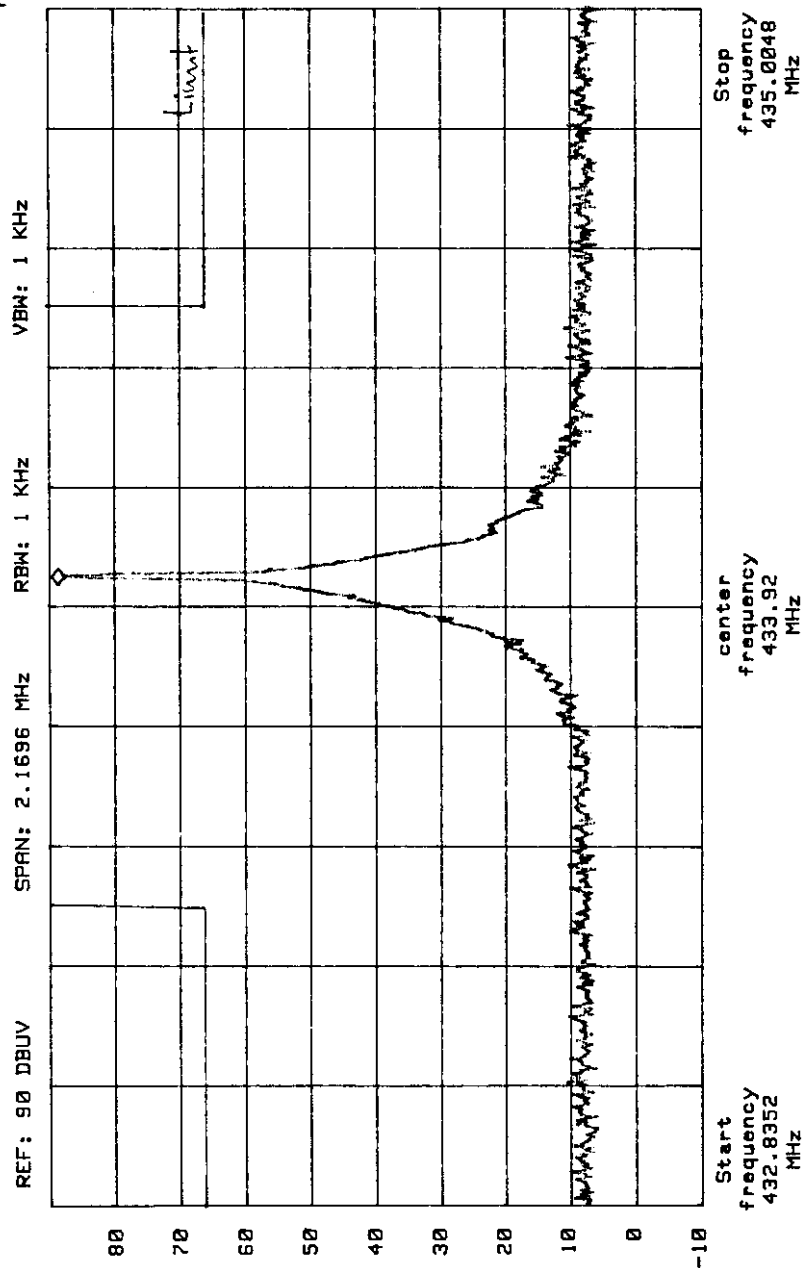
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Measurement of Emissions
within band edges

acc. FCC Rules Part 15 Section 15.231

Date: 12 Mar 1998
Model: MIDISENDER 433MHz
pkm/Ser#: 01 (2.0kOhm)
Man.:
Imp.: ELDAT
set u. test: 433MHz TRAI
Operator: AT
result: *OK*.....

MKF: 433.970624 MHz
MKA: 87.67 DBUV



Remarks: FUNCTION SWITCH PRESSED