MEASUREMENT AND TECHNICAL REPORT

OMNEX CONTROL SYSTEMS INCORPORATED
74-1833 Coast Meridian Road
Port Coquitlam, BC V3C 6G5
Canada

DATE: 01 November 2004

This Report Concerns:	Original Grant: X	Class II Change:
Equipment Type:	T245	
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?	Yes: **Defer until:**	No: X
Company Name **agrees to notify the Commission by:** **of the intended date of announcement of the product so that the grant can be issued on that date.**	N/A	
Transition Rules Request per 15.37?	Yes:	No: X*

(*) FCC Part 15, Paragraph(s) **15.209(a), 15.247(a), (b) and (c) and RSS 210, 5.9.1**

Report Prepared by:

TÜV AMERICA, INC
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 858 678 1400
Fax: 858 546 0364

TÜV AMERICA

TABLE OF CONTENTS

TÜV AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 678 1400 FAX 858 546 0364

1.0 GENERAL INFORMATION

1.1 Product Description

T245

1.2 Related Submittal Grant

None

1.3 Tested System Details

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system are:

None

1.4 Test Methodology

Purpose of Test: To demonstrate compliance with the following tests.

TEST	FCC CFR 47#	PASS/FAIL
Bandwidth	15.247(a)(1)(i) & RSS 210, 5.9.1	Pass
Channel Separation	15.247(a)(1)	Pass
Time of Occupancy	15.247(a)(1)(i)	Pass
Number of Hopping Frequencies	15.247(a)(1)(i)	Pass
RF Conducted	15.247(c)	Pass
Radiated Spurious Emissions	15.247(c)	Pass
Radiated Emissions	15.209(a)	Pass
RF Output Power	15.247(b)	Pass

Testing was performed according to the procedures in FCC/ANSI C63.4 and CSA 108.8-M1983.

1.5 Test Facility

The open area test site and conducted measurement data were tested by:

TÜV AMERICA, INC
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 858 678 1400
Fax: 858 546 0364

The Test Site Data and performance comply with ANSI C63.4 and are registered with the FCC, 7435 Oakland Mills Road, Columbia Maryland 21046. All Measurement Data is acquired according to the content of FCC Measurement Procedure and ANSI C63.4, unless supplemented with additional requirements as noted in the test report.

2.0 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was initially tested for FCC emissions in the following configuration:

See Test Setup Photos Exhibit

2.2 EUT Exercise Software

None

2.3 Special Accessories

None

2.4 Equipment Modifications

None

2.5 Configuration of Test System

See Test Setup Photos Exhibit

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3.0 BANDWIDTH EQUIPMENT/DATA

Test Conditions: BANDWIDTH: FCC Part 15.247(a)(1)(i) & RSS 210, 5.9.1
CHANNEL SEPARATION: FCC Part 15.247(a)(1)
TIME OF OCCUPANCY: FCC Part 15.247(a)(1)(i)
NUMBER OF HOPPING FREQUENCIES: 15.247(a)(1)(i)
RF CONDUCTED: FCC Part 15.247(c)
RADIATED SPURIOUS EMISSIONS: FCC Part 15.247(c)
RF OUTPUT POWER FCC Part 15.247(b)
RADIATED EMISSIONS: FCC Part 15.209(a)

The following measurements were performed at the San Diego Testing Facility:

☐ **- Test not applicable**

■ - Roof (Small Open Area Test Site)
■ - Canyon #1 (3-, 10- and 30-Meter Open Area Test Site), Carroll Canyon, San Diego

Test Equipment Used:

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Date Cal'ed
85662A	6676	Spectrum Analyzer	Hewlett Packard	2318A05571	08/04
8594E	430	Spectrum Analyzer	Hewlett Packard	--	07/04
3115	251	Double Ridge Guide Antenna	EMCO	2495	01/04
LPB 2520/A	738	Antenna, Bilog	Antenna Research	1169	09/04
ESVS30	6723	EMI Testing Receiver	Rohde & Schwarz	830350/006	01/04

Remarks: One year calibration cycle for all test equipment and sites.

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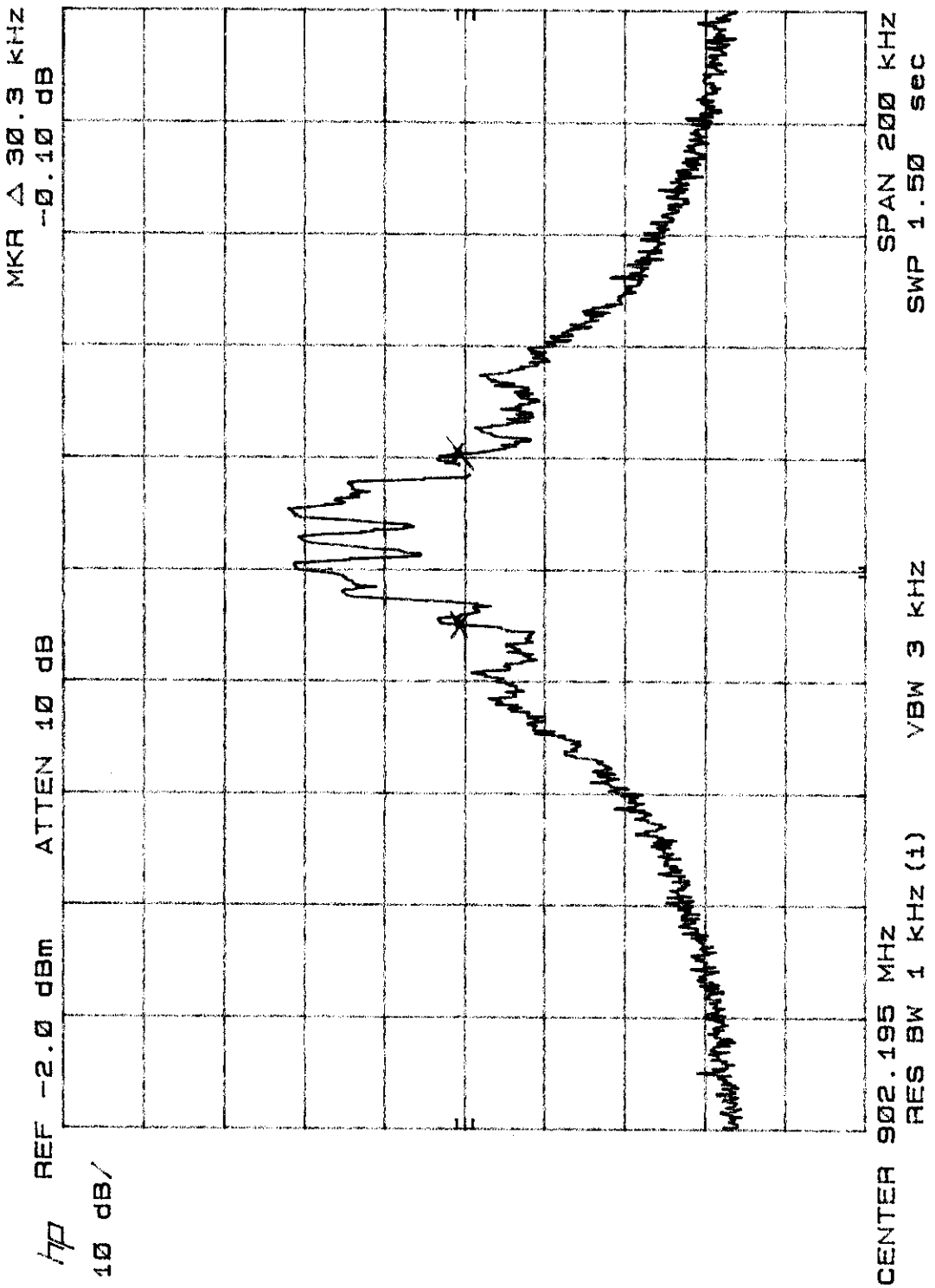
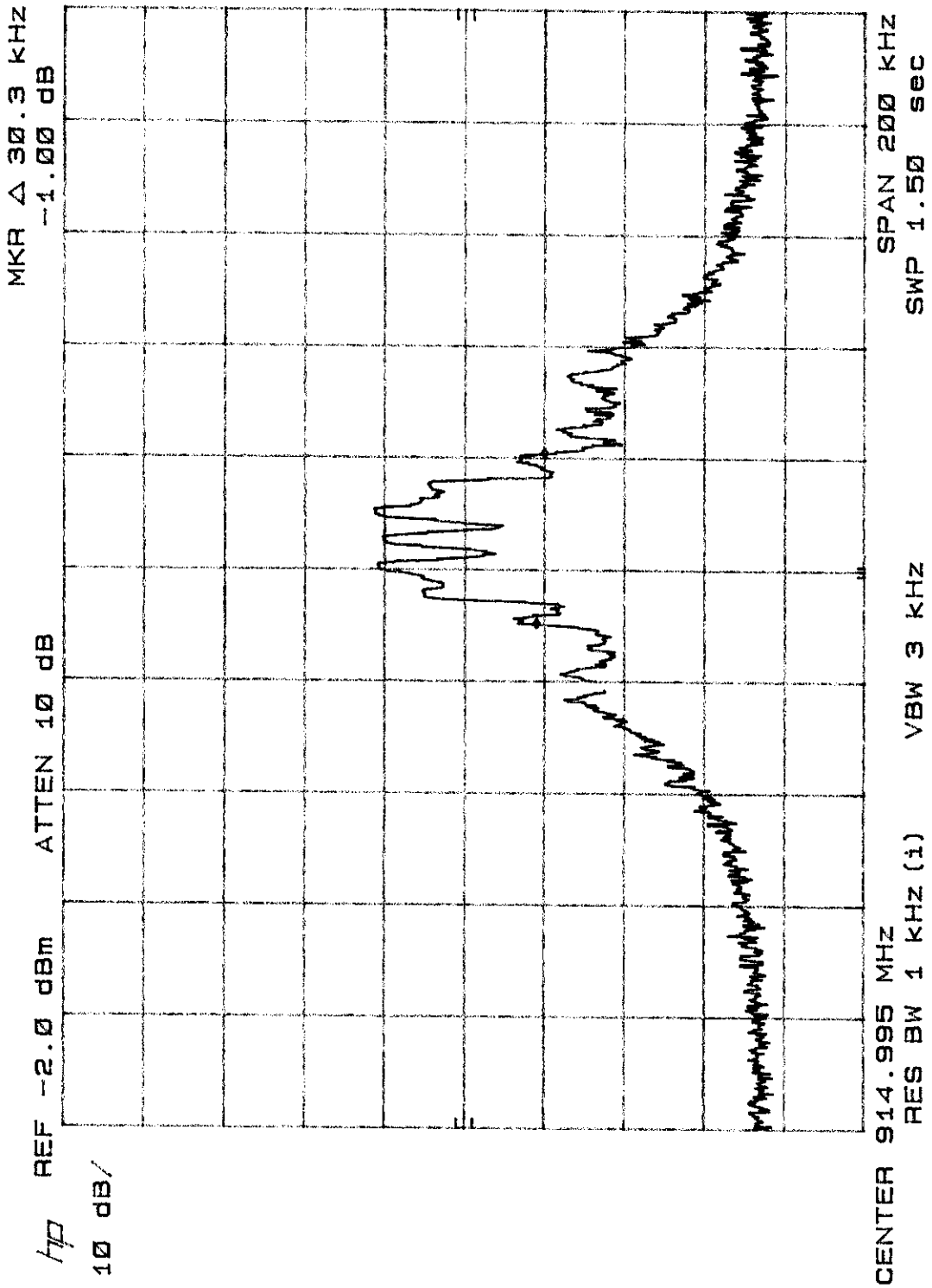
FCC Part 15.247(a)(1)(i): Bandwidth



FCC Part 15.247(a)(1)(i): Bandwidth



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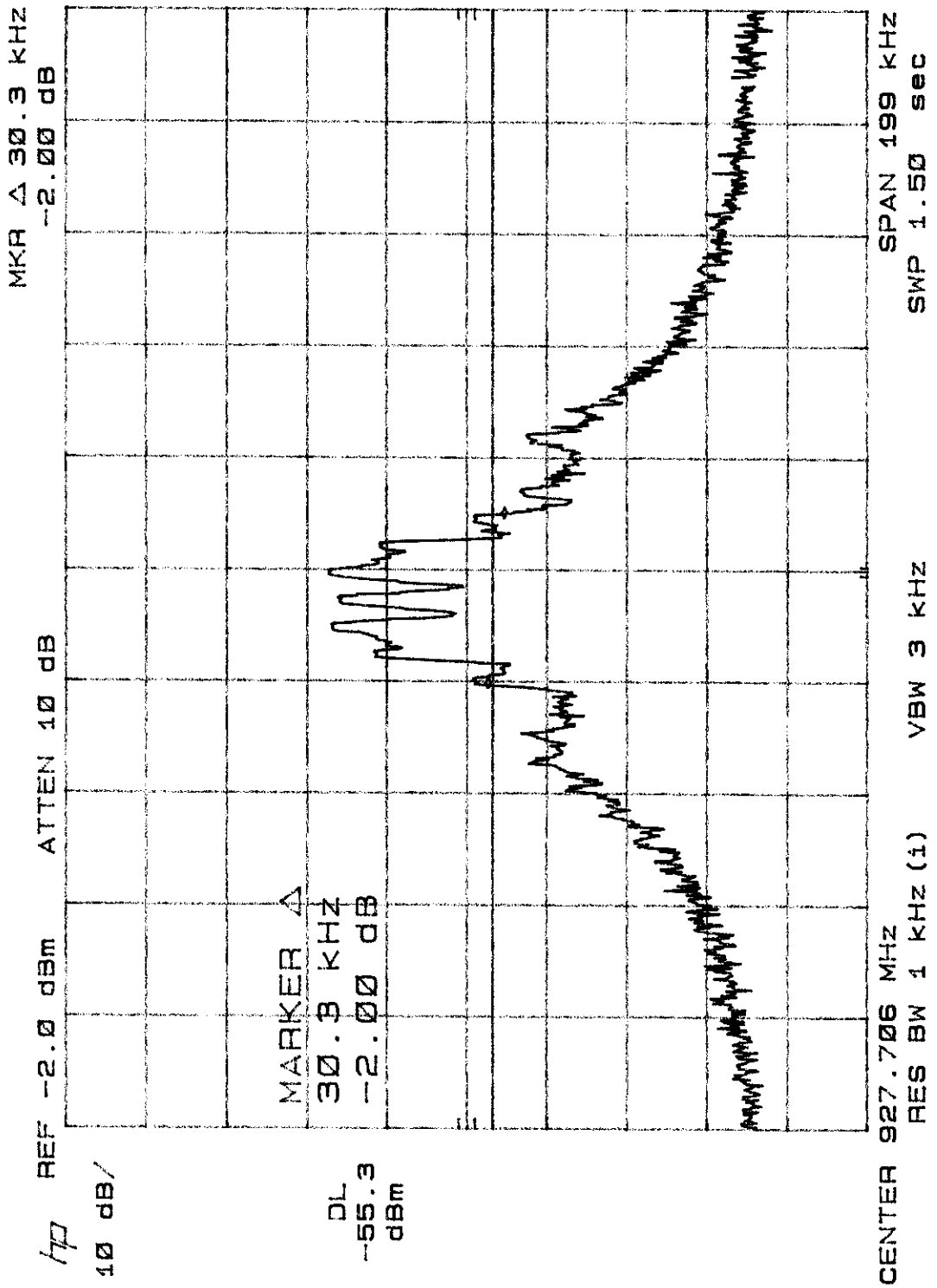
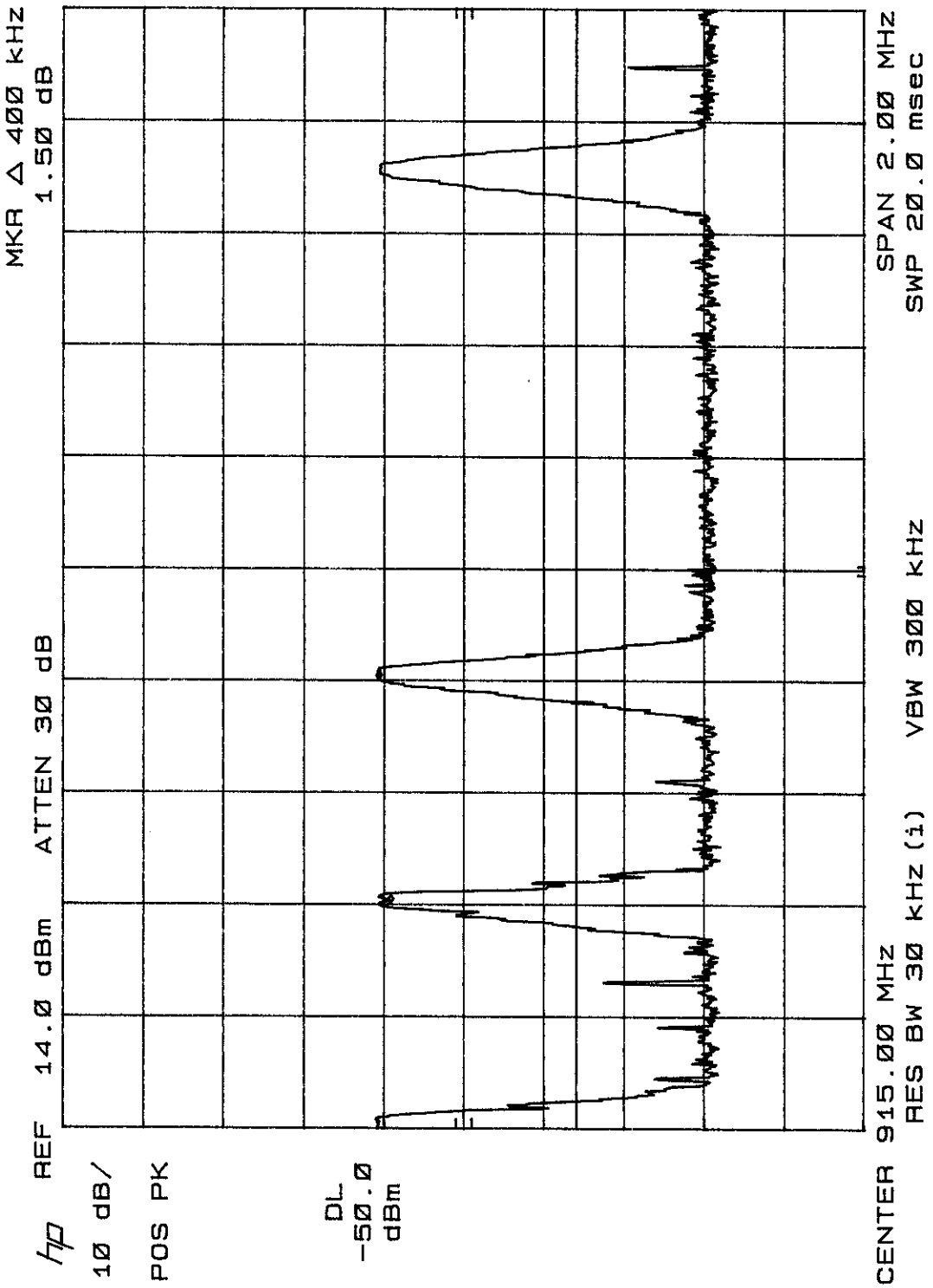
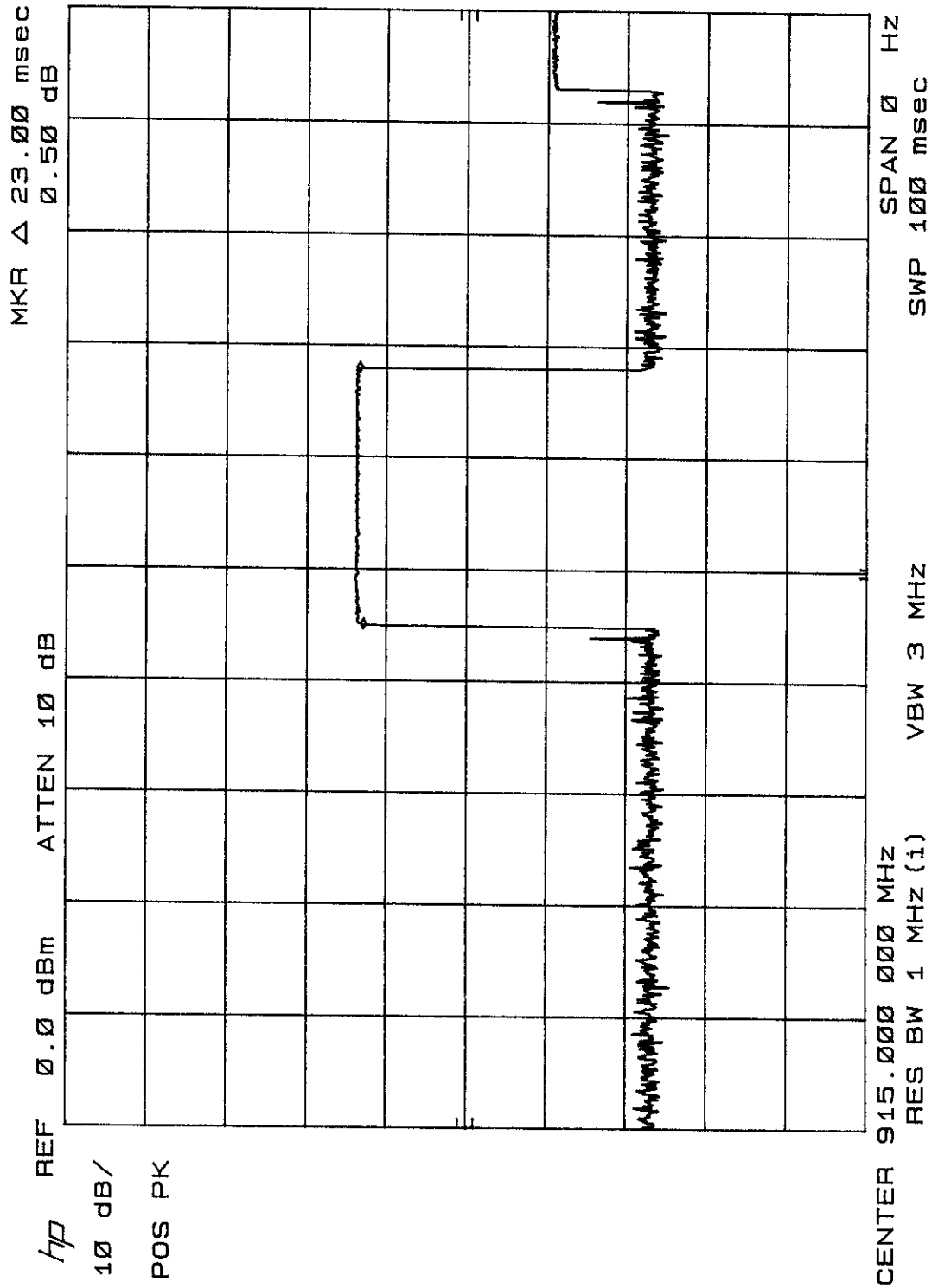
FCC Part 15.247(a)(1)(i): Bandwidth



FCC Part 15.247(a)(1): Channel Separation



FCC Part 15.247(a)(1)(i): Time of Occupancy



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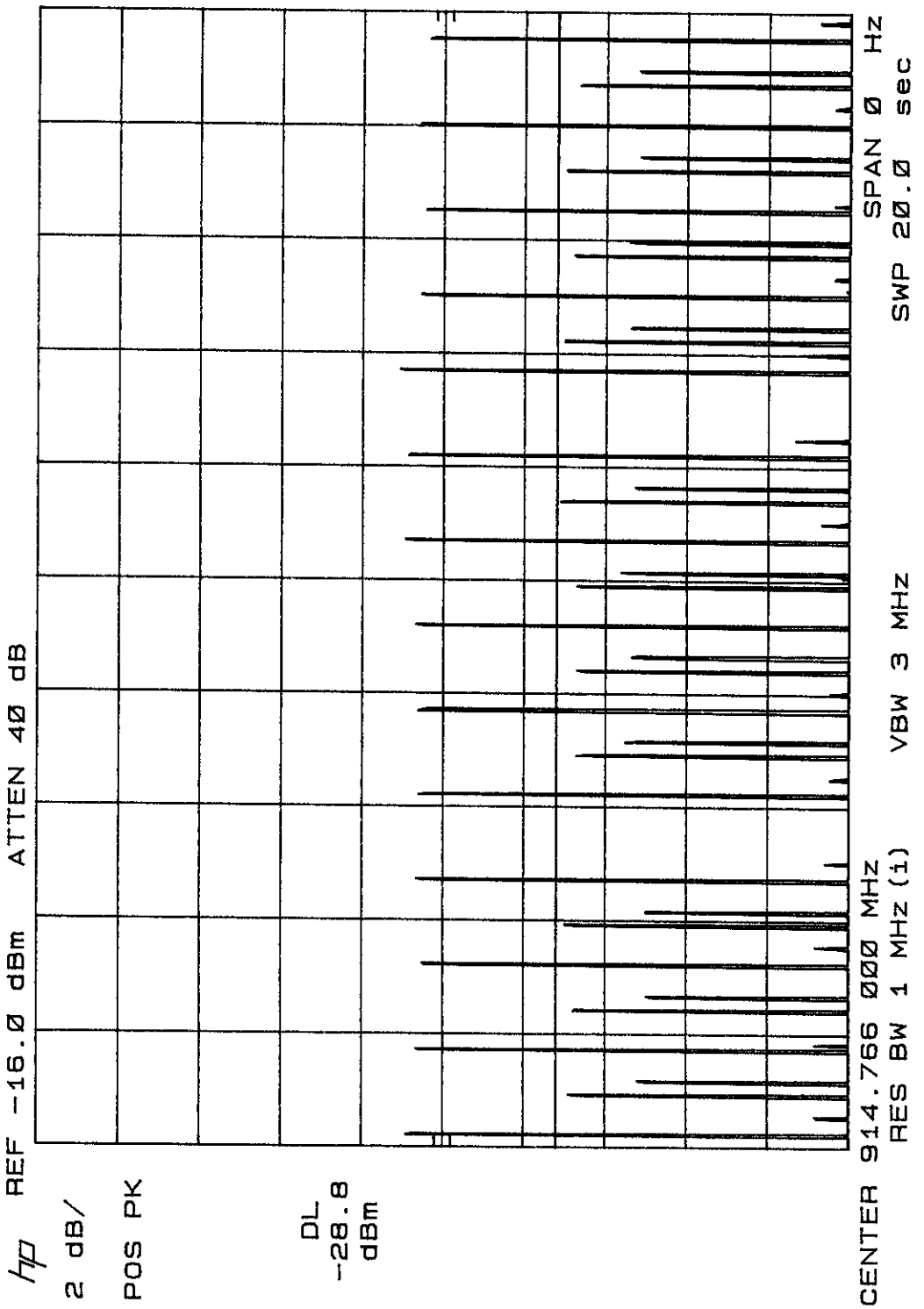
FCC Part 15.247(a)(1)(i): Time of Occupancy



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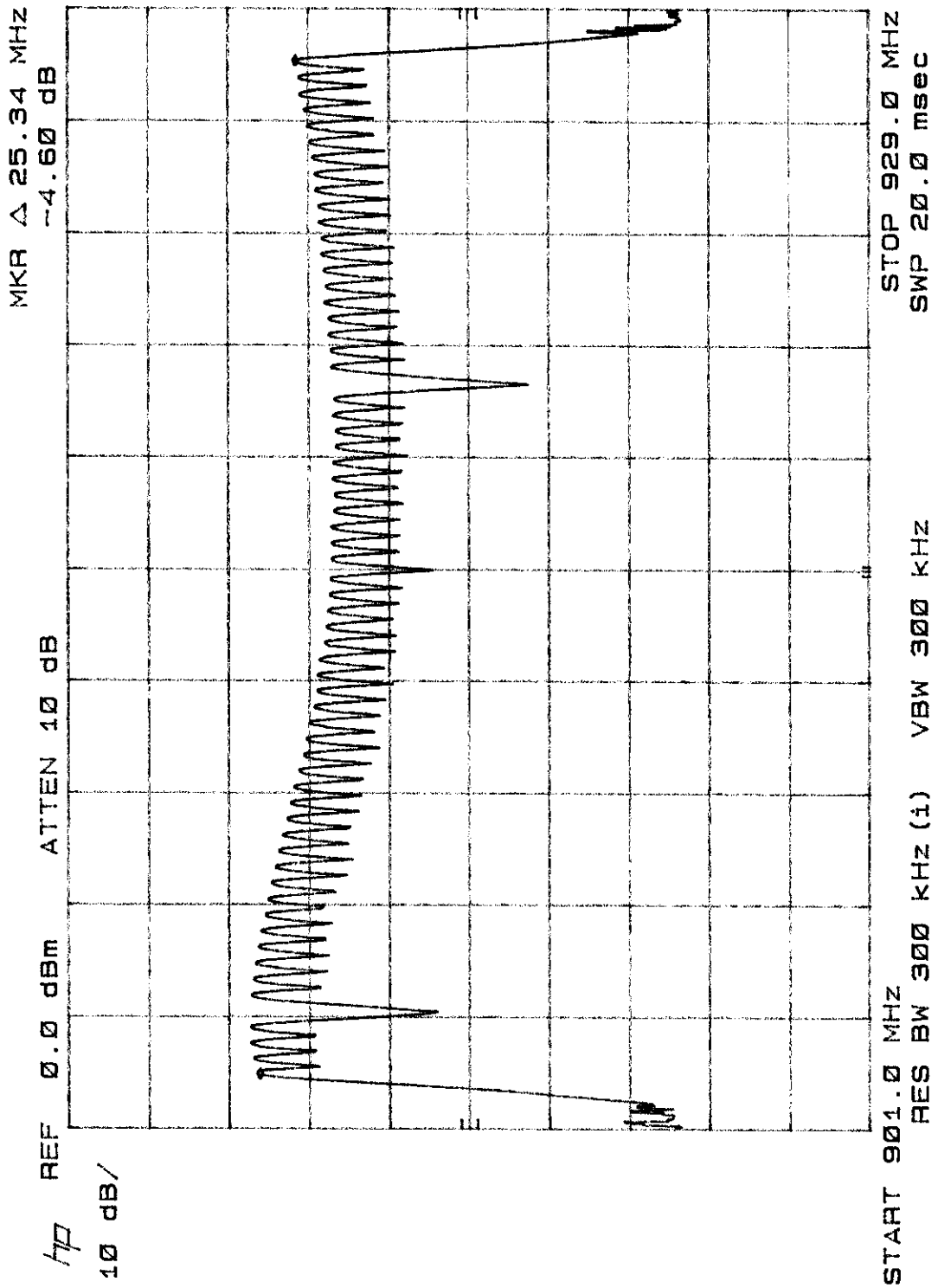
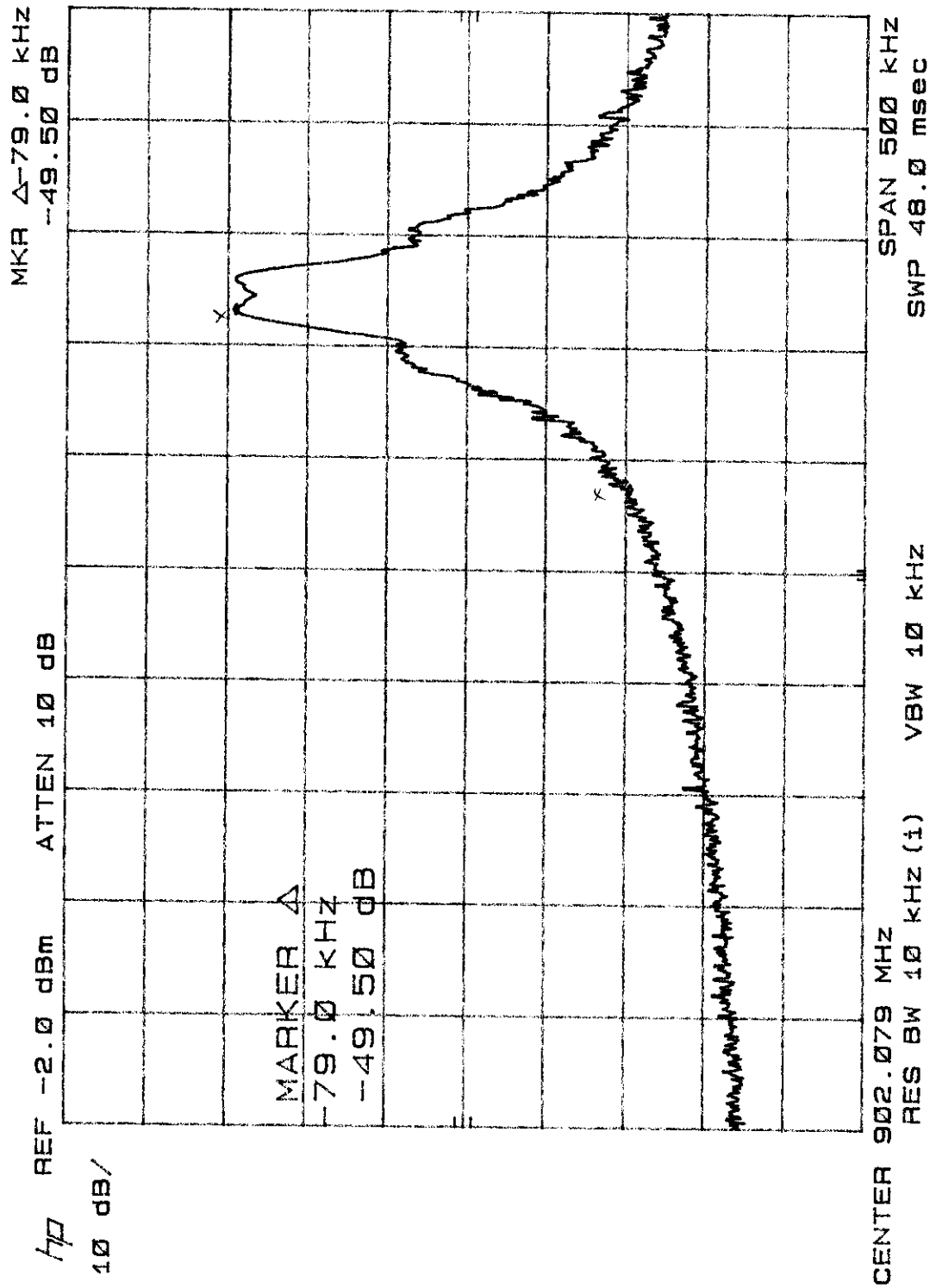
FCC Part 15.247(a)(1)(i): Number of Hopping Frequencies



FCC Part 15.247(c): RF Conducted



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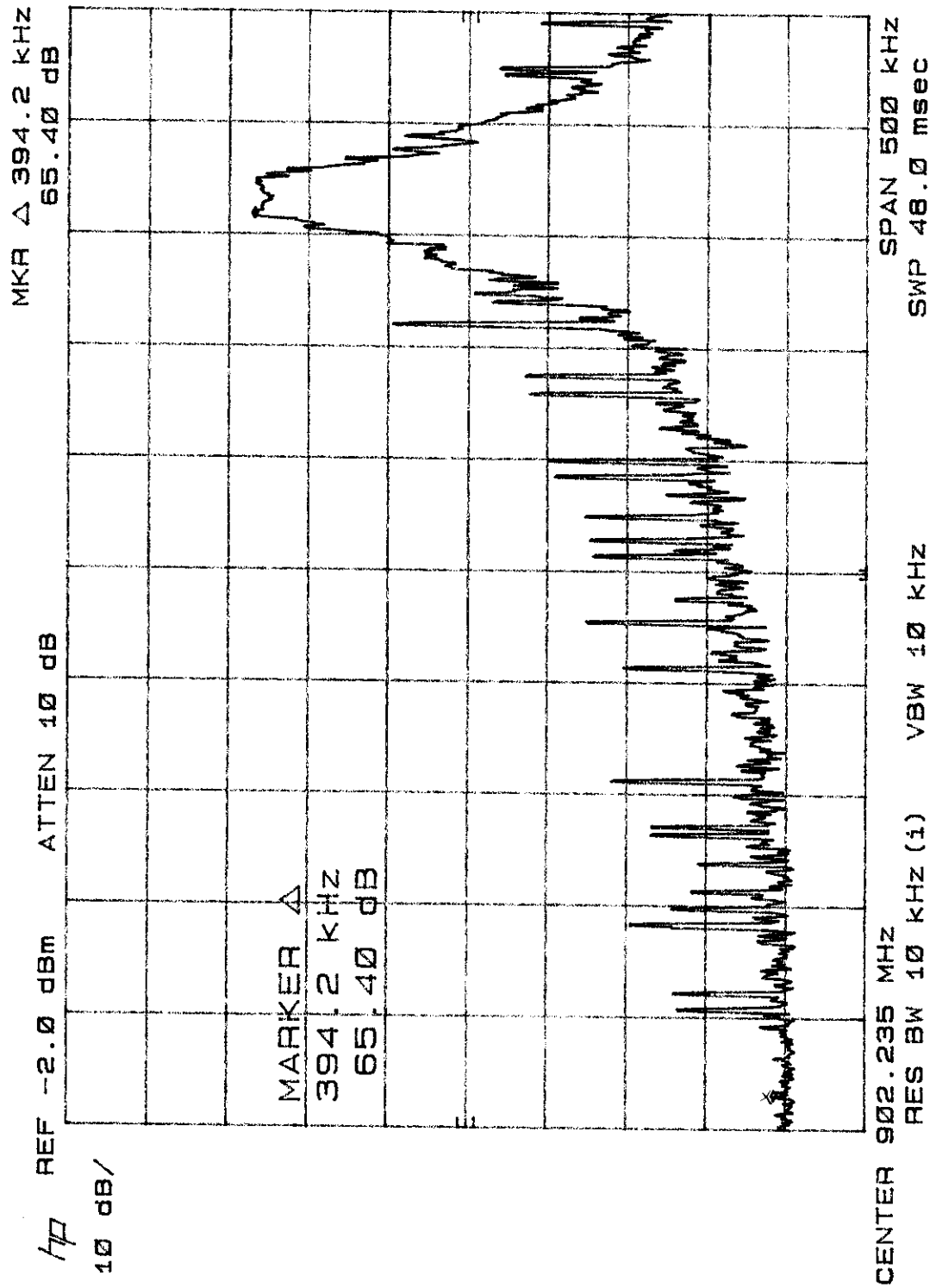
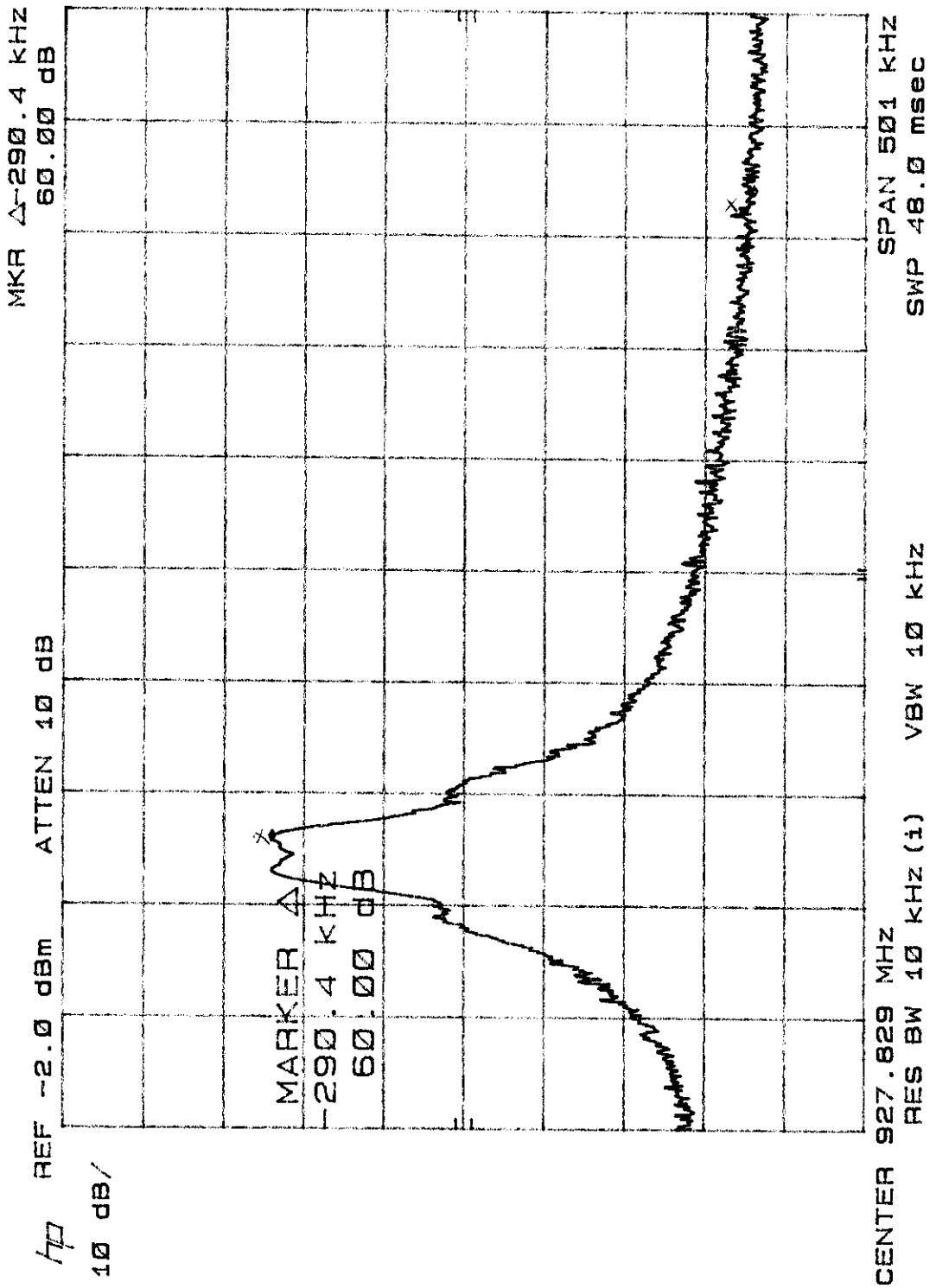
FCC Part 15.247(c): RF Conducted



FCC Part 15.247(c): RF Conducted



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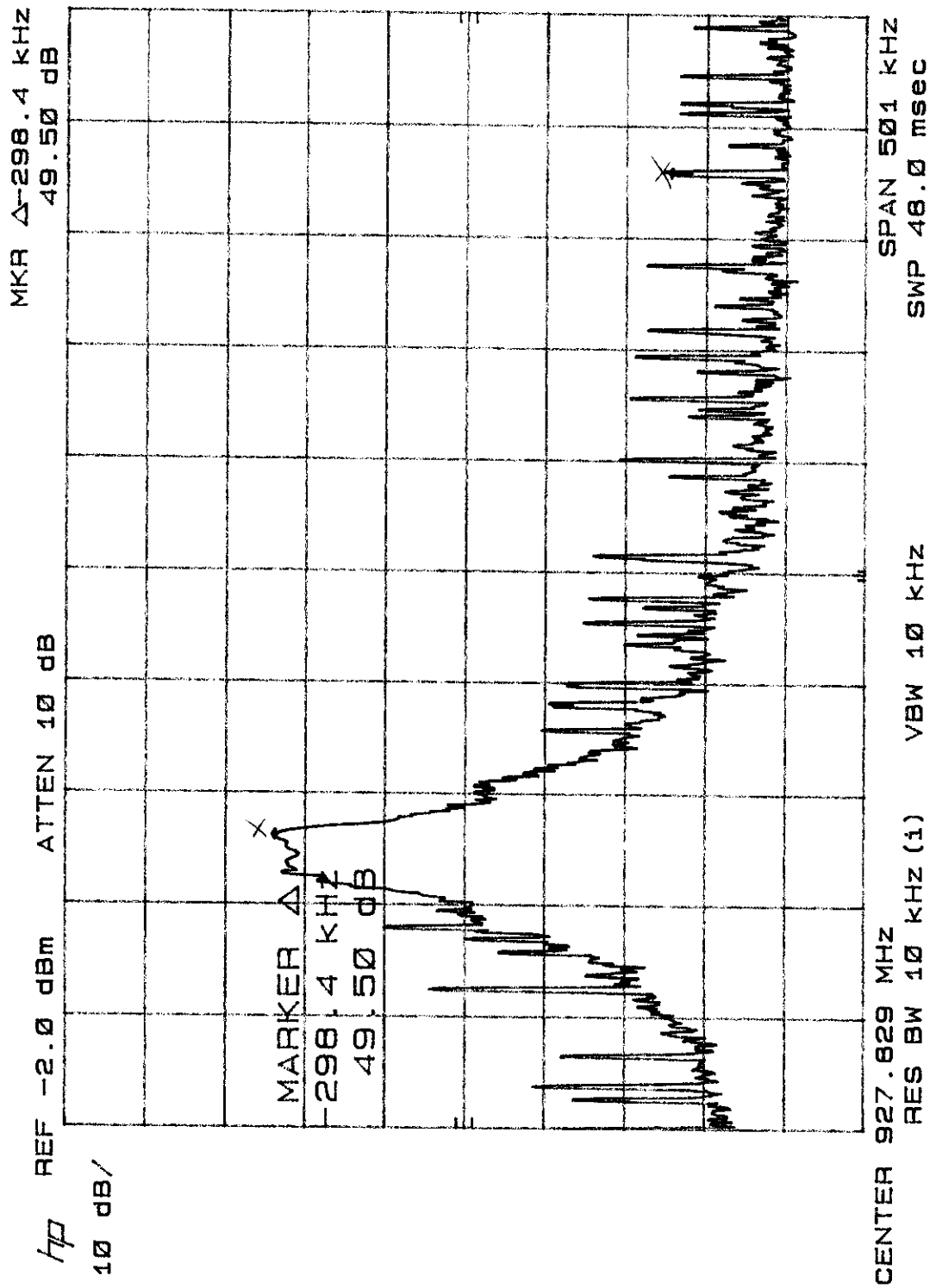
FCC Part 15.247(c): RF Conducted



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REPORT No: SI404348 TESTER: Jim Owen SPEC: FCC Part 15 para 15.209(a)

CUSTOMER: Omnex Controls TEST DIST: 3 Meters

E U T: T245 TEST SITE: Roof

EUT MODE: Xmt - 902MHz BICONICAL: N/A

DATE: September 22, 2004 LOG: N/A

NOTES: OTHER: 251

above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG

below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG

CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

Duty Cycle = 23mSec DC = -12.77dB

v.beta1a

FREQ (MHz)	VERTICAL (dBuv) pk	VERTICAL (dBuv) av	HORIZONTAL (dBuv) pk	HORIZONTAL (dBuv) av	CF (dB/m)	MAX LEVEL (dBuV/m) pk	MAX LEVEL (dBuV/m) av	SPEC LIMIT (dBuV/m) pk	SPEC LIMIT (dBuV/m) av	MARGIN (dB) pk	MARGIN (dB) av	EUT Rotation	Antenna Height	Notes
1365	54.8	54.8			-11.299	**43.5**	**43.5**	74	54	-30.5	-10.5			1300 to 1427 MHz - ambient
1530	53.2	53.2			-10.09	**43.11**	**43.1**	74	54	-30.9	-10.9			1435 to 1626.5 MHz - ambient
1685	58	58			-9.005	**49**	**49**	74	54	-25	-5.01			1660 to 1710 MHz - ambient
1720.5	54.6	54.6			-8.7565	**45.84**	**45.8**	74	54	-28.2	-8.16			1718.8 to 1722.2 MHz - ambient
2250	62.9	54.9			-5.65	**57.25**	**49.3**	74	54	-16.8	-4.75			2200 to 2300 MHz - ambient
2390	59.8	55.9			-5.006	**54.79**	**50.9**	74	54	-19.2	-3.11			2310 to 2390 MHz - ambient
2492	63.4	56.6			-4.5368	**58.86**	**52.1**	74	54	-15.1	-1.94			2483.5 to 2500 MHz - ambient
2706.6	62.4	59.5	62.3	59.1	-3.79756	**58.6**	**42.9**	74	54	-15.4	-11.1	0	1.3	2655 to 2900 MHz * DC applied
3264	47	47			-1.8496	**45.15**	**45.2**	74	54	-28.8	-8.85			3260 to 3267 MHz - ambient
3335	47.2	47.2			-1.594	**45.61**	**45.6**	74	54	-28.4	-8.39			3332 to 3339 MHz - ambient
3358	46.9	46.9			-1.5112	**45.39**	**45.4**	74	54	-28.6	-8.61			3345.8 to 3358 MHz - ambient
3608.8	60.2	55.2	60.3	55.7	-0.69536	**59.6**	**42.2**	74	54	-14.4	-11.8	167	1.3	3600 to 4400 MHz * DC Applied
4511	57.4	49	58.1	50.6	-0.5714	**57.53**	**37.3**	74	54	-16.5	-16.7	161	1.4	4500 to 5150 MHz * DC Applied
5413.2	54.5	43.5	54.5	43.9	3.67504	**58.18**	**34.8**	74	54	-15.8	-19.2	27	140	5350 to 5460 MHz * DC Applied
7500	37.9	37.9			8.4	**46.3**	**46.3**	74	54	-27.7	-7.7			7250 to 7750 MHz - ambient
8263	39	39			9.4786	**48.48**	**48.5**	74	54	-25.5	-5.52			8025 to 8500 MHz - ambient
9100	38.8	38.8			10.82	**49.62**	**49.6**	74	54	-24.4	-4.38			9000 to 9200 MHz - ambient

REPORT No: SI404348 TESTER: Jim Owen SPEC: FCC Part 15 para 15.209(a)

CUSTOMER: Omnex Controls TEST DIST: 3 Meters

E U T: T245 TEST SITE: Roof

EUT MODE: Xmt - 915MHz BICONICAL: N/A

DATE: October 15, 2004 LOG: N/A

NOTES: OTHER: 251

above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG

below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG

CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

Duty Cycle = 23mSec DC = --12.77dB v.beta1a

FREQ (MHz)	VERTICAL (dBuv) pk	VERTICAL (dBuv) av	HORIZONTAL (dBuv) pk	HORIZONTAL (dBuv) av	CF (dB/m)	MAX LEVEL (dBuV/m) pk	MAX LEVEL (dBuV/m) av	SPEC LIMIT (dBuV/m) pk	SPEC LIMIT (dBuV/m) av	MARGIN (dB) pk	MARGIN (dB) av	EUT Rotation	Antanna Height	Notes
1365	54.8				-11.299	**43.5**	**-24**	74	54	-30.5	-78.1			1300 to 1427 MHz - ambient
1530	53.2				-10.09	**43.11**	**-23**	74	54	-30.9	-76.9			1435 to 1626.5 MHz - ambient
1685	58				-9.005	**49**	**-22**	74	54	-25	-75.8			1660 to 1710 MHz - ambient
1720.5	54.6				-8.7565	**45.84**	**-22**	74	54	-28.2	-75.5			1718.8 to 1722.2 MHz - ambient
2250	62.9				-5.65	**57.25**	**-18**	74	54	-16.8	-72.4			2200 to 2300 MHz - ambient
2390	59.8				-5.006	**54.79**	**-18**	74	54	-19.2	-71.8			2310 to 2390 MHz - ambient
2492	63.4				-4.5368	**58.86**	**-17**	74	54	-15.1	-71.3			2483.5 to 2500 MHz - ambient
2745	59	56.6	54.8	50.2	-3.667	**55.33**	**40.2**	74	54	-18.7	-13.8	255	1.3	2655 to 2900 MHz * DC applied
3264	47				-1.8496	**45.15**	**-15**	74	54	-28.8	-68.6			3260 to 3267 MHz - ambient
3335	47.2				-1.594	**45.61**	**-14**	74	54	-28.4	-68.4			3332 to 3339 MHz - ambient
3358	46.9				-1.5112	**45.39**	**-14**	74	54	-28.6	-68.3			3345.8 to 3358 MHz - ambient
3660	51.7	47.1	53.4	49.4	-0.552	**52.85**	**36.1**	74	54	-21.2	-17.9	145	1.2	3600 to 4400 MHz * DC Applied
4575	49.7	42.4	49.5	40.1	-0.405	**49.3**	**29.2**	74	54	-24.7	-24.8	181	1.1	4500 to 5150 MHz * DC Applied
5405	45.6				3.616	**49.22**	**-9.1**	74	54	-24.8	-63.1			5350 to 5460 MHz - ambient
7320	46.4	38.3			8.004	**54.4**	**33.5**	74	54	-19.6	-20.5	168	1.1	7250 to 7750 MHz * DC Applied
8235	46.8	38			9.417	**56.22**	**34.7**	74	54	-17.8	-19.3	174	1	8025 to 8500 MHz * DC Applied
9150	45				10.68	**55.68**	**-2.1**	74	54	-18.3	-56.1			9000 to 9200 MHz - ambient

REPORT No: SI404348 TESTER: Jim Owen SPEC: FCC Part 15 para 15.209(a)

CUSTOMER: Omnex Controls TEST DIST: 3 Meters

E U T: T245 TEST SITE: Roof

EUT MODE: Xmt - 927.5MHz BICONICAL: N/A

DATE: October 15, 2004 LOG: N/A

NOTES: OTHER: 251

above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG

below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG

CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

Duty Cycle = 23mSec DC = --12.77dB v.beta1a

FREQ (MHz)	VERTICAL (dBuv) pk	av	HORIZONTAL (dBuv) pk	av	CF (dB/m)	MAX LEVEL (dBuV/m) pk	av	SPEC LIMIT (dBuV/m) pk	av	MARGIN (dB) pk	av	EUT Rotation	Antenna Height	Notes
1365	54.8				-11.299	**43.5**	**-24**	74	54	-30.5	-78.1			1300 to 1427 MHz - ambient
1530	53.2				-10.09	**43.11**	**-23**	74	54	-30.9	-76.9			1435 to 1626.5 MHz - ambient
1685	58				-9.005	**49**	-22	74	54	-25	-75.8			1660 to 1710 MHz - ambient
1720.5	54.6				-8.7565	**45.84**	**-22**	74	54	-28.2	-75.5			1718.8 to 1722.2 MHz - ambient
2250	62.9				-5.65	**57.25**	**-18**	74	54	-16.8	-72.4			2200 to 2300 MHz - ambient
2390	59.8				-5.006	**54.79**	**-18**	74	54	-19.2	-71.8			2310 to 2390 MHz - ambient
2492	63.4				-4.5368	**58.86**	**-17**	74	54	-15.1	-71.3			2483.5 to 2500 MHz - ambient
2782.5	58.4	56.7	58.3	56.3	-3.5395	**54.86**	**40.4**	74	54	-19.1	-13.6	316	1.4	2655 to 2900 MHz * DC applied
3264	47				-1.8496	**45.15**	**-15**	74	54	-28.8	-68.6			3260 to 3267 MHz - ambient
3335	47.2				-1.594	**45.61**	**-14**	74	54	-28.4	-68.4			3332 to 3339 MHz - ambient
3358	46.9				-1.5112	**45.39**	**-14**	74	54	-28.6	-68.3			3345.8 to 3358 MHz - ambient
3710.5	53	47.5	52.7	47.9	-0.4106	**52.59**	**34.7**	74	54	-21.4	-19.3	135	1.2	3600 to 4400 MHz * DC Applied
4638	49.8	42.5	47.8	39.1	-0.2412	**49.56**	**29.5**	74	54	-24.4	-24.5	245	1.4	4500 to 5150 MHz * DC Applied
5405	44.5				3.616	**48.12**	**-9.1**	74	54	-25.9	-63.1			5350 to 5460 MHz - ambient
7420.5	43				8.2251	**51.23**	**-4.5**	74	54	-22.8	-58.5			7250 to 7750 MHz - ambient
8348	44.8				9.6656	**54.47**	**-3.1**	74	54	-19.5	-57.1			8025 to 8500 MHz - ambient
9150	44.2				10.68	**54.88**	**-2.1**	74	54	-19.1	-56.1			9000 to 9200 MHz - ambient

REPORT No: SC404383 SPEC: FCC Part 15 para 15.209(a)

CUSTOMER: Omnex Controls TEST DIST: 3 Meters

E U T: T245 TEST SITE: 1

EUT MODE: Transmit BICONICAL: 738

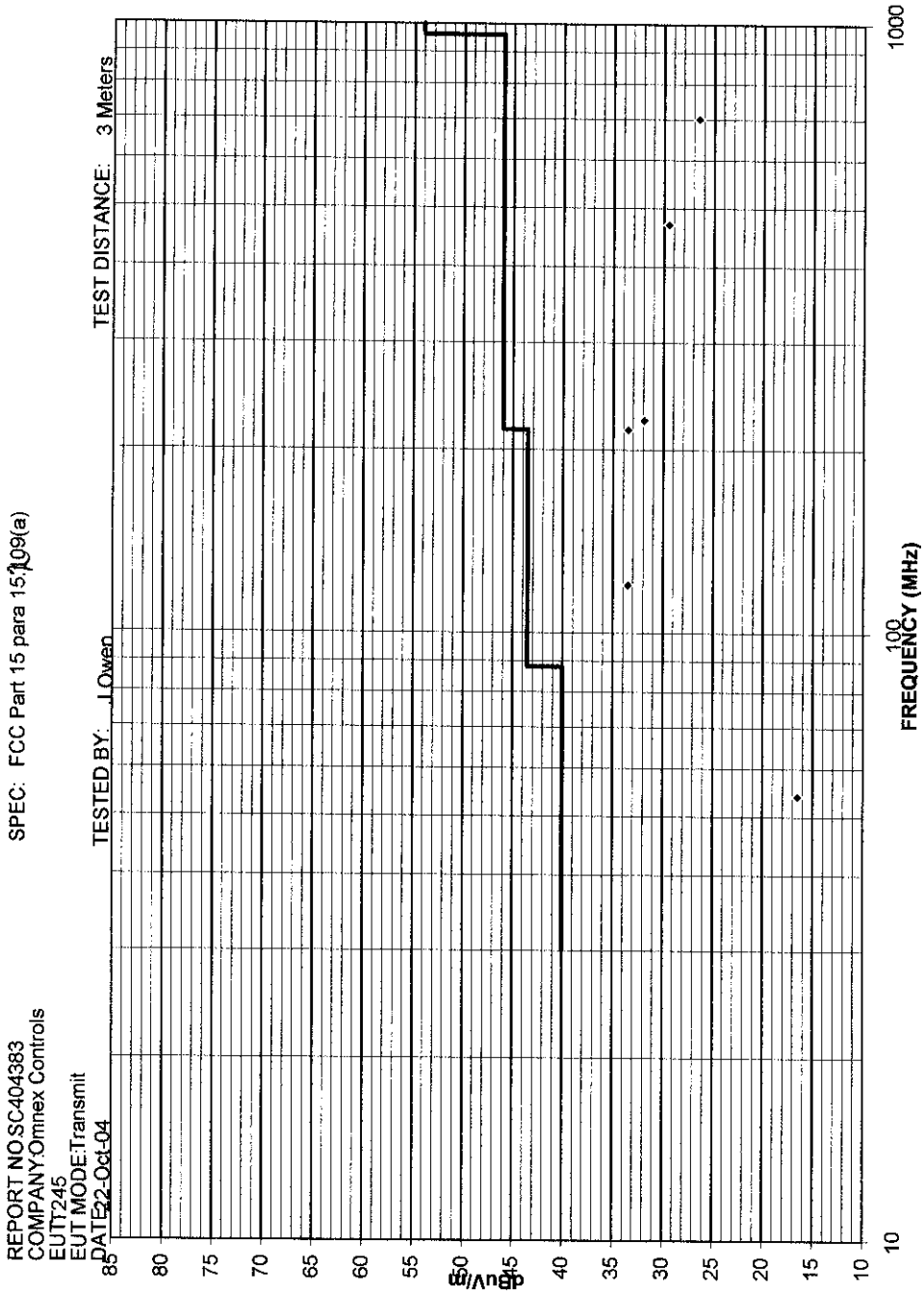
DATE: 22-Oct-04 TESTED BY: J Owen LOG PERIODIC: 738

NOTES: Quasi-Peak with 120 KHz measurement bandwidth. RCVR: 6723

Temperature: Relative Humidity:

EUT MARGIN -10.0 dB at 120 MHz ver 1.8b

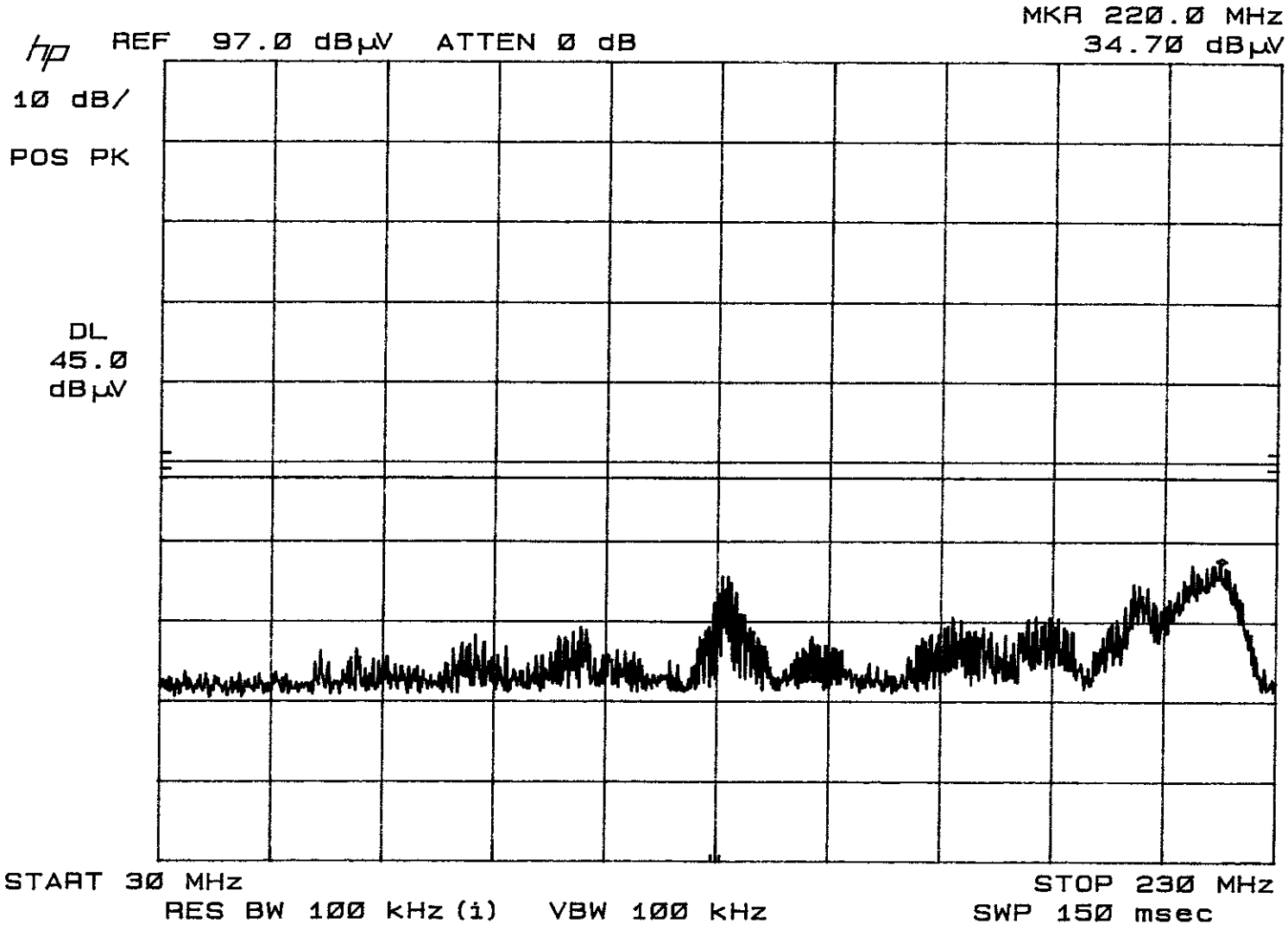
FREQUENCY (MHz)	VERTICAL measured (dBuv)	HORIZONTAL measured (dBuV)	CORRECTION FACTOR (dB/m)	MAXIMUM CORRECTED (dBuV/m)	SPECIFIED LIMIT (dBuV/m)	EUT MARGIN (dB)	EUT ROTATION (degrees)	ANTENNA HEIGHT (meters)	NOTE
215.70	18.5	11.1	15.0	**33.5**	43.5	-10.0	180	2	
223.60	16.4	9.8	15.5	**31.9**	46	-14.1	184	1.5	
120.00	14.4	18.9	14.6	**33.5**	43.5	-10.0	240	2.7	
470.00	7.1	0.8	22.4	**29.5**	46	-16.5	123	1	
700.00	-1		27.5	**26.5**	46	-19.5			ambient
54.00	0.5		16.0	**16.5**	40	-23.5			ambient

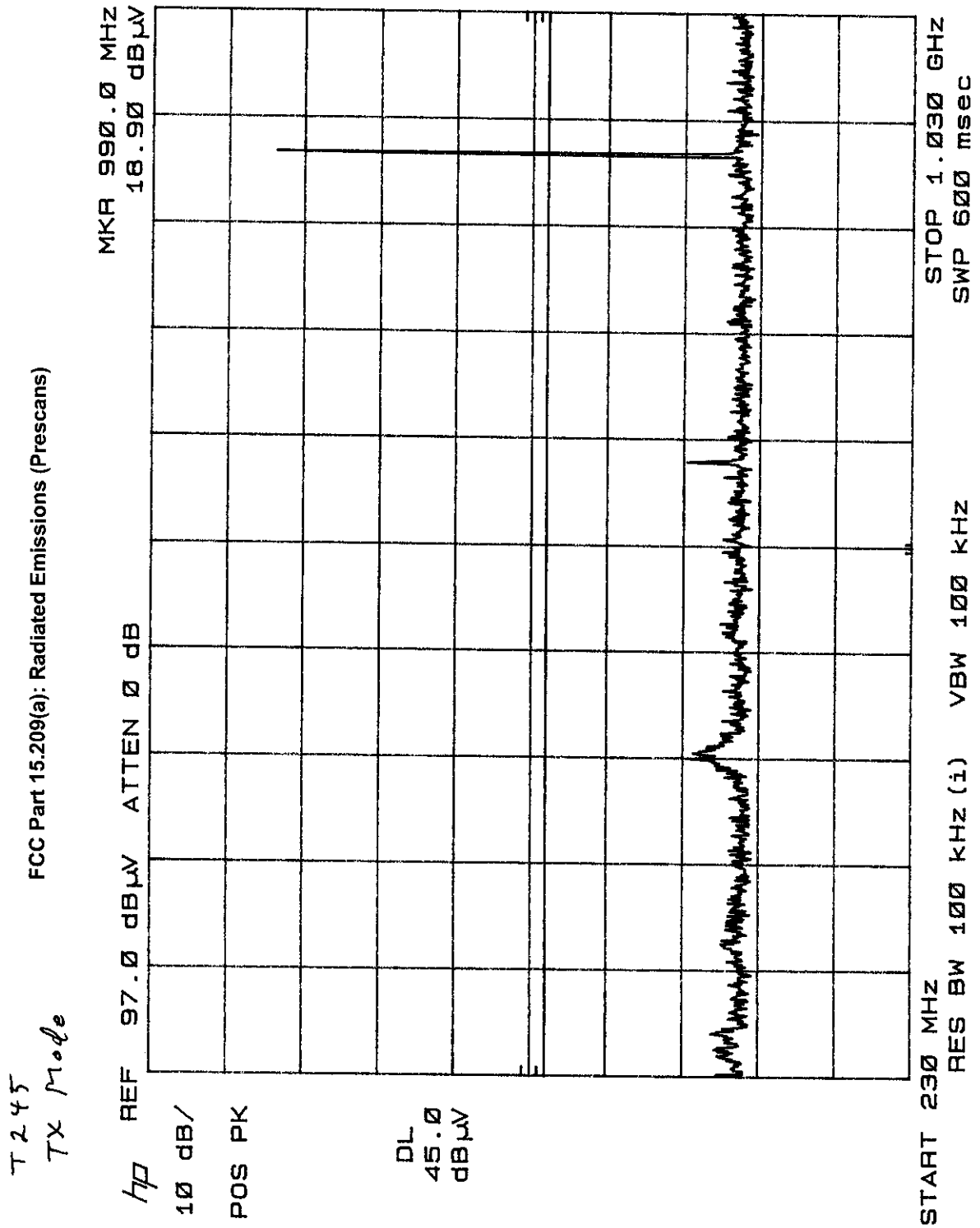


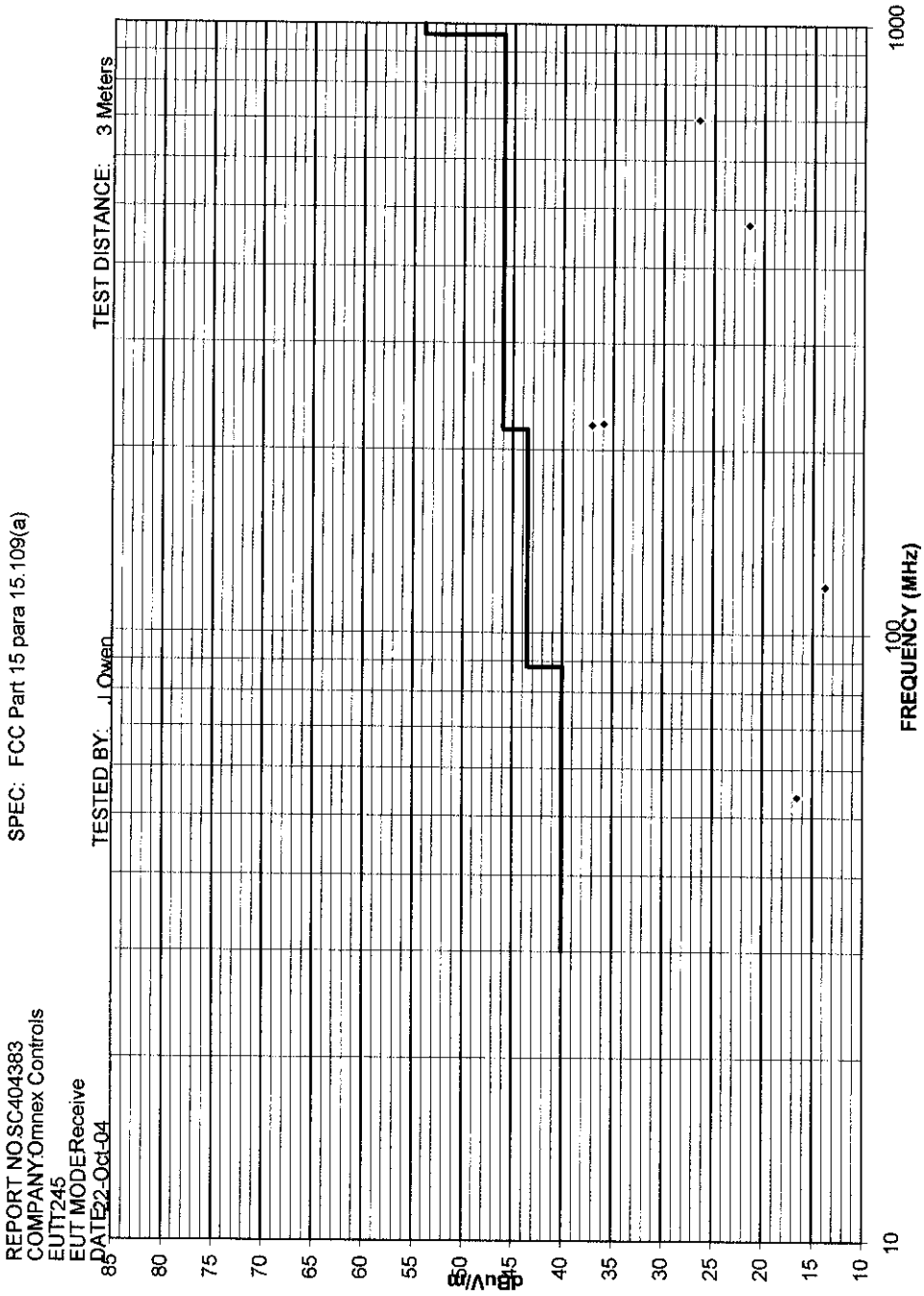
TÜV AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 678 1400 FAX 858 546 0364

T245
TX Mode

FCC Part 15.209(a): Radiated Emissions (Prescans)




T245
TX Mode
FCC Part 15.209(a): Radiated Emissions (Prescans)
hp
REF 97.0 dBµV
ATTEN 0 dB
10 dB/
POS PK
DL
45.0
dBµV
MKR 990.0 MHz
18.90 dBµV
START 230 MHz
RES BW 100 kHz (i)
VBW 100 kHz
STOP 1.030 GHz
SWP 600 msec



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REPORT No: SC404383 SPEC: FCC Part 15 para 15.109(a)

CUSTOMER: Omnex Controls TEST DIST: 3 Meters

E U T: T245 TEST SITE: 1

EUT MODE: Receive BICONICAL: 738

DATE: 22-Oct-04 TESTED BY: J Owen LOG PERIODIC: 738

NOTES: Quasi-Peak with 120 KHz measurement bandwidth. RCVR: 6723

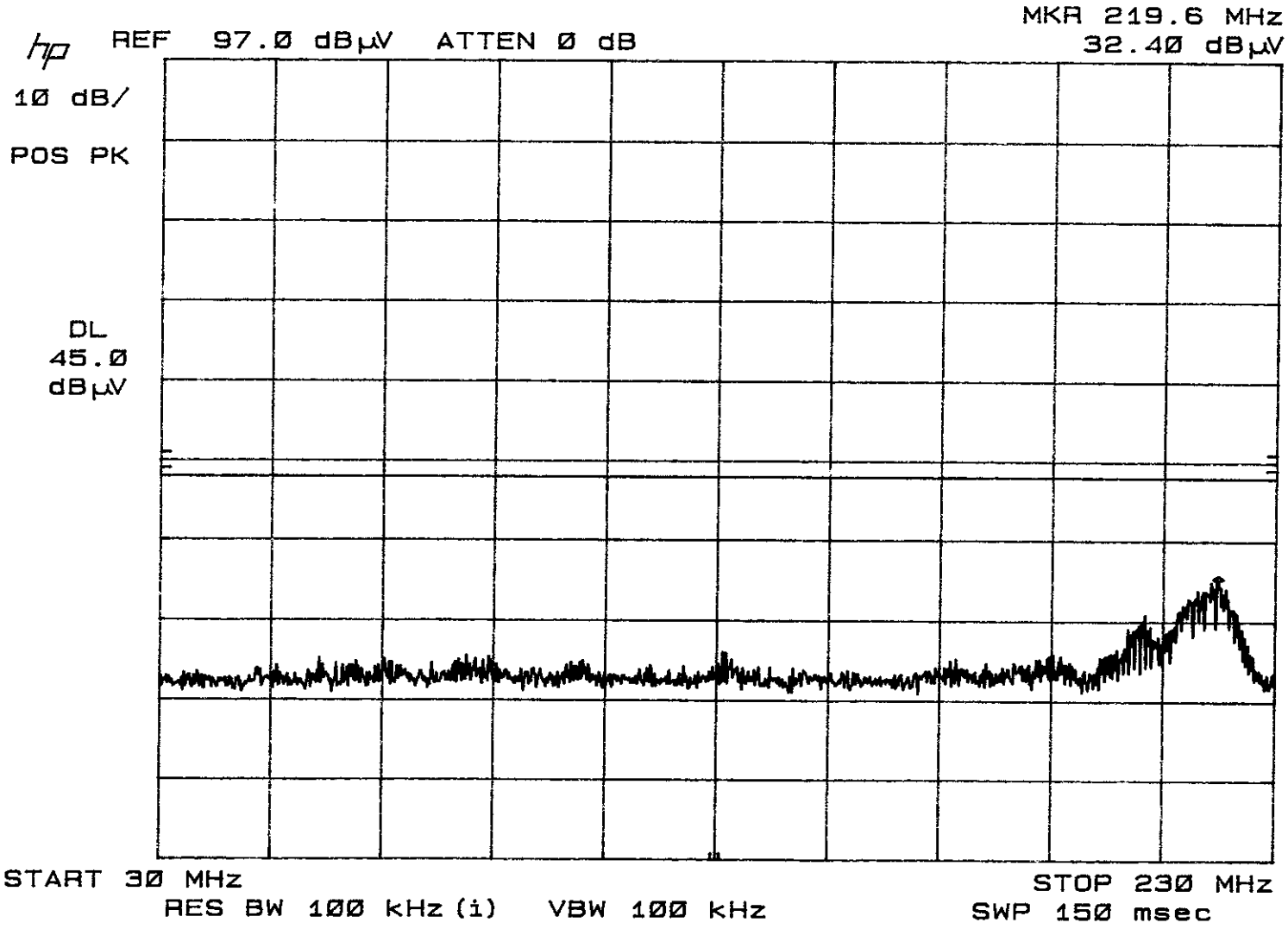
Temperature: Relative Humidity:

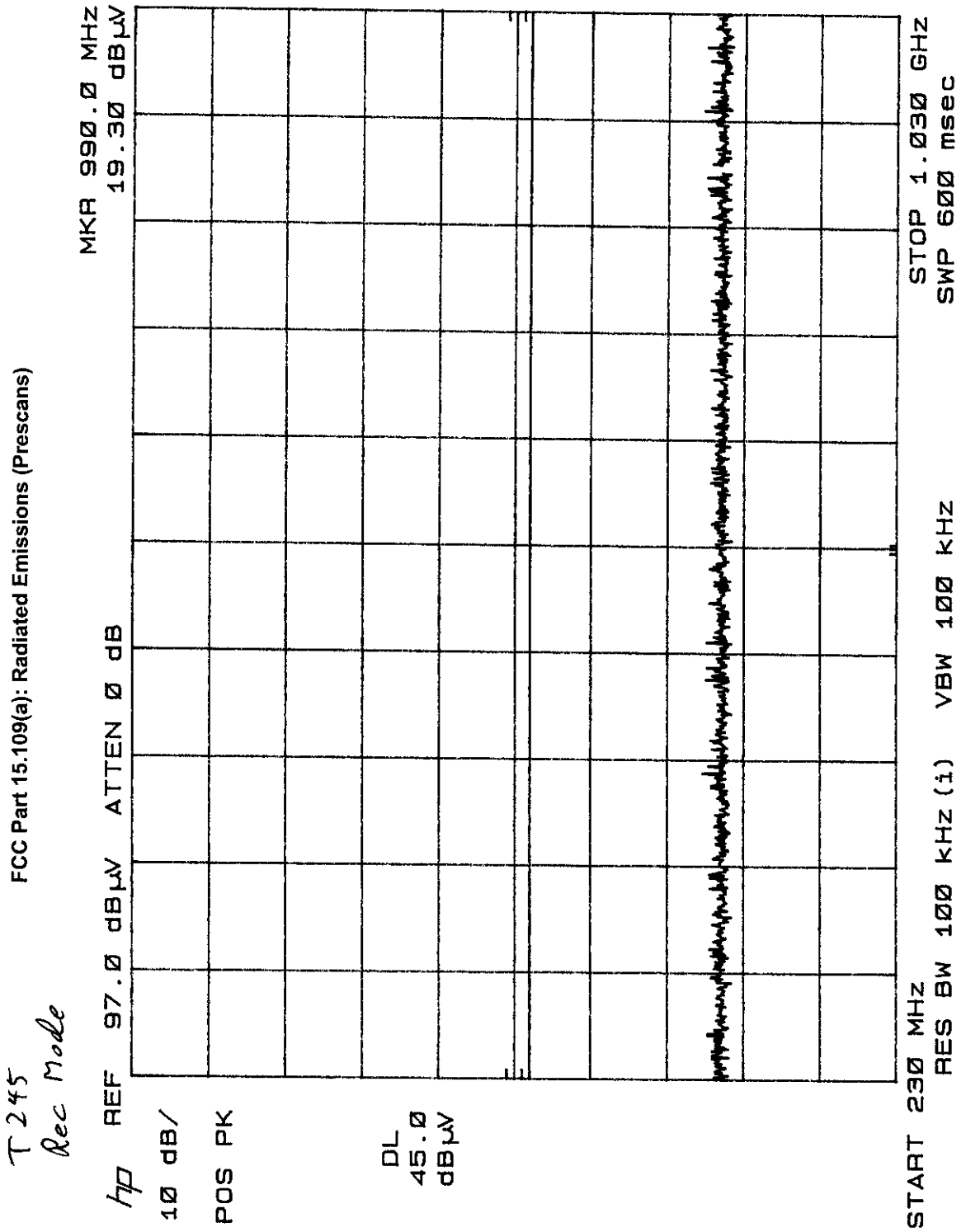
EUT MARGIN -8.9 dB at 219.5 MHz ver 1.8b

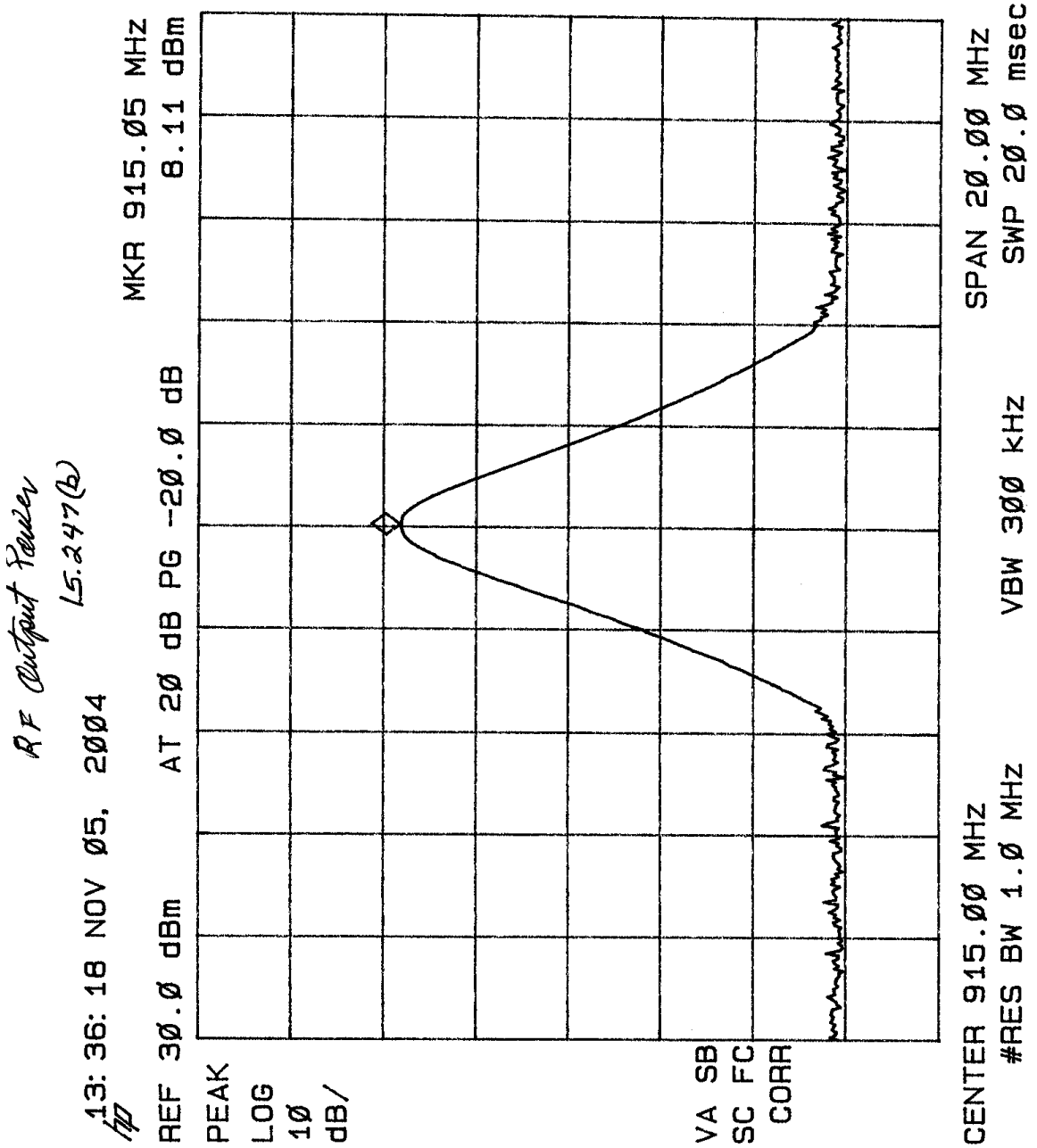
FREQUENCY (MHz)	VERTICAL measured (dBuv)	HORIZONTAL measured (dBuV)	CORRECTION FACTOR (dB/m)	MAXIMUM CORRECTED (dBuV/m)	SPECIFIED LIMIT (dBuV/m)	EUT MARGIN (dB)	EUT ROTATION (degrees)	ANTENNA HEIGHT (meters)	NOTE
54.00	0.5		16.0	**16.5**	40	-23.5			ambient
120.00	-0.8		14.6	**13.8**	43.5	-29.7			ambient
219.50	16.8	21.8	15.3	**37.1**	46	-8.9	282	1.6	
221.00	16.2	20.6	15.4	**36.0**	46	-10.0	282	1.6	
470.00	-0.9		22.4	**21.5**	46	-24.5			ambient
700.00	-1		27.5	**26.5**	46	-19.5			ambient

T145
Rec Mode

FCC Part 15.109(a): Radiated Emissions (Prescans)




FCC Part 15.109(a): Radiated Emissions (Prescans)
T 245
Rec Mode
hp
REF 97.0 dBµV
ATTEN 0 dB
10 dB/
POS PK
DL
45.0
dBµV
MKR 990.0 MHz
19.30 dBµV
START 230 MHz
RES BW 100 kHz (i)
VBW 100 kHz
STOP 1.030 GHz
SWP 600 msec



TÜV AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 678 1400 FAX 858 546 0364

4.0 ATTESTATION STATEMENT

GENERAL REMARKS:

SUMMARY:

All tests were performed per CFR 47, Part(s) **15.209(a), 15.247(a), (c) and RSS 210, 5.9.1**

■ - Performed

The Equipment Under Test

■ - **Fulfills** the requirements of CFR 47, Part(s) **15.209(a), 15.247(a), (c) and RSS 210, 5.9.1**

Testing Start Date: 22 September 2004

Testing End Date: 22 October 2004

- TÜV AMERICA, INC. -

Responsible Engineer:

Jim Owen
(EMC Manager)

TÜV AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 678 1400 FAX 858 546 0364