EMC EMISSIONS - TEST REPORT

Test Report No.	**B944301**	Issue Date	January 23, 2001

Model / Serial No.	Thomas / EMC1
Product Type	UHF Hand Held TV Remote Control
Client	ICX International Inc.
Manufacturer	ICX International Inc.
License holder	ICX International Inc.
Address	8250 Park Meadow Drive, Suite 150 Littleton, CO 80124

Test Criteria Applied	FCC Part 15 Class B	Limits and methods of measurement of radio disturbance characteristics of information technology equipment.
Test Result	**PASS**	
Test Report Project No.	**BC1G944301**	
Total Pages including Appendices	28	

Reviewed By : Carlos Marrero

Reviewed By : Robert Cresswell

TÜV Product Service Inc is a subcontractor to TÜV Product Service, GmbH according to the principles outlined in ISO/IEC Guide 25 and EN 45001.

TÜV Product Service Inc reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. TÜV Product Service Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others fr Product Service Inc issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval of TÜV Product Service. This report shall not be used by the client to claim product endorsement by NVLAP or any agency of the US government.

TÜV Product Service Inc and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI

TÜV PRODUCT SERVICE INC 40 Meadow Road Pinewood Springs, Lyons, CO 80540 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

DIRECTORY - EMISSIONS

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. 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.

EUT Received Date: November 8, 1999

Testing Start Date: November 8, 1999

Testing End Date: November 9, 1999

TÜV PRODUCT SERVICE INC 40 Meadow Road Pinewood Springs, Lyons, CO 80540 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

EMISSIONS TEST REGULATIONS :

The tests were performed according to following regulations :

■ - Federal Communication Commission Part 15 ☐ - Class A ■ - Class B

All tests performed according to ANSI C63.4

Emission Test Results:

Conducted emissions 150 kHz - 30 MHz

Test Result	☐ - PASS	☐ - FAIL	■ - Not Applicable		
Passing Margin	_____ dB	at	_____ MHz		
Failing Margin	_____ dB	at	_____ MHz		

Remarks: _____

Radiated emissions (electric field) 30 MHz - 1000 MHz

Test Result	☐ - PASS	☐ - FAIL	☐ - Not Applicable		
Passing Margin	27.9 dB	at	31.99 MHz		
Failing Margin	_____ dB	at	_____ MHz		

Remarks: _____

GENERAL REMARKS:

Modifications required to pass: None

Test Specification Deviations: Additions to or Exclusions from: None

TÜV PRODUCT SERVICE INC 40 Meadow Road Pinewood Springs, Lyons, CO 80540 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Test-setup photo(s)
Radiated Emissions

TÜV PRODUCT SERVICE INC 40 Meadow Road Pinewood Springs, Lyons, CO 80540 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Appendix A

Test Data Sheets

and

Test Equipment Used

TÜV PRODUCT SERVICE INC 40 Meadow Road Pinewood Springs, Lyons, CO 80540 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

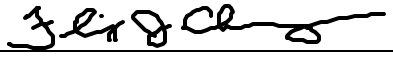
Radiated Electromagnetic Emissions

TÜV PRODUCT SERVICE

Test Report #:	**B9443 Run 01**	Test Area:	Pinewood Site 1 (3m)			
Test Method:		Test Date:	08-Nov-1999			
EUT Model #:	Thomas	EUT Power:				
EUT Serial #:	EMC1			Temperature:	24	°C
Manufacturer:	Compliance and More			Relative Humidity:	<18	%
EUT Description:	UHF Remote			Air Pressure:	80	kPa
Notes:				Page:	1 of 3	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB)	FINAL (dBuV/m)	POL/HGT/AZ (m)/(deg)	DELTA 1 None	DELTA2 None
EUT in worst case position, standing straight up.						
433.88	63.8Pk	1.2 / 16.2 / 0.0	81.1	V / 1.2 / 258.0	N/A	N/A
433.88	59.2Pk	1.2 / 16.2 / 0.0	76.6	H / 3.0 / 344.0	N/A	N/A
867.78	66.2Pk	1.8 / 22.5 / 30.0	60.4	H / 1.0 / 315.0	N/A	N/A
867.78	72.5Pk	1.8 / 22.4 / 30.0	66.7	V / 1.0 / 227.0	N/A	N/A
1301.68	52.4Pk	2.4 / 25.6 / 30.0	50.4	V / 1.0 / 248.0	N/A	N/A
1735.58	49.6Pk	2.7 / 27.7 / 30.0	50.0	V / 2.4 / 171.0	N/A	N/A
2169.48	53.4Pk	3.1 / 29.1 / 30.0	55.6	V / 1.4 / 132.0	N/A	N/A
2603.38	58.9Pk	3.4 / 31.1 / 30.0	63.4	V / 1.0 / 179.0	N/A	N/A
3037.27	50.5Pk	3.8 / 32.6 / 30.0	56.9	V / 1.0 / 101.0	N/A	N/A
3471.19	30.3Pk	4.1 / 33.3 / 30.0	37.7	V / 1.0 / 141.0	N/A	N/A
3905.07	38.1Pk	4.4 / 33.3 / 30.0	45.8	V / 1.0 / 130.0	N/A	N/A
1301.68	55.3Pk	2.4 / 25.6 / 30.0	53.3	H / 1.8 / 180.0	N/A	N/A
1735.58	42.0Pk	2.7 / 27.7 / 30.0	42.3	H / 1.4 / 10.0	N/A	N/A

Tested by: Steve Brauns (Printed) — Signature On File (Signature)

Reviewed by: Felix J. Chavez (Printed) —  (Signature)

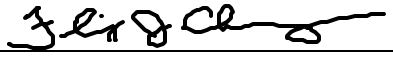
TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Radiated Electromagnetic Emissions

Test Report #:	**B9443 Run 01**	Test Area:	Pinewood Site 1 (3m)			
Test Method:		Test Date:	08-Nov-1999			
EUT Model #:	Thomas	EUT Power:				
EUT Serial #:	EMC1			Temperature:	24	°C
Manufacturer:	Compliance and More			Relative Humidity:	<18	%
EUT Description:	UHF Remote			Air Pressure:	80	kPa
Notes:				Page:	2 of 3	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB)	FINAL (dBuV/m)	POL/HGT/AZ (m)/(deg)	DELTA 1 None	DELTA2 None
2169.47	60.2Pk	3.1 / 29.1 / 30.0	62.5	H / 1.0 / 180.0	N/A	N/A
2603.37	57.6Pk	3.4 / 31.1 / 30.0	62.1	H / 1.0 / 184.0	N/A	N/A
3037.27	53.4Pk	3.8 / 32.6 / 30.0	59.7	H / 1.1 / 334.0	N/A	N/A
3471.17	33.8Pk	4.1 / 33.3 / 30.0	41.2	H / 1.3 / 325.0	N/A	N/A
3905.06	37.6Pk	4.4 / 33.3 / 30.0	45.2	H / 1.0 / 337.0	N/A	N/A
4338.96	42.2Pk	4.4 / 34.8 / 40.0	41.4	H / 1.0 / 73.0	N/A	N/A
4338.97	45.1Pk	4.4 / 34.8 / 40.0	44.3	V / 1.0 / 191.0	N/A	N/A

Tested by: Steve Brauns (Printed) — Signature On File (Signature)

Reviewed by: Felix J. Chavez (Printed) —  (Signature)

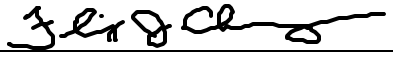
TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Radiated Electromagnetic Emissions

Test Report #:	**B9443 Run 01**	Test Area:	Pinewood Site 1 (3m)			
Test Method:		Test Date:	08-Nov-1999			
EUT Model #:	Thomas	EUT Power:				
EUT Serial #:	EMC1			Temperature:	24	°C
Manufacturer:	Compliance and More			Relative Humidity:	<18	%
EUT Description:	UHF Remote			Air Pressure:	80	kPa
Notes:				Page:	3 of 3	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB)	FINAL (dBuV/m)	POL/HGT/AZ (m)/(deg)	DELTA 1 None	DELTA2 None
********** MEASUREMENT SUMMARY **********						
433.88	63.8Pk	1.2 / 16.2 / 0.0	81.1	V / 1.2 / 258.0	N/A	N/A
867.78	72.5Pk	1.8 / 22.4 / 30.0	66.7	V / 1.0 / 227.0	N/A	N/A
1301.68	55.3Pk	2.4 / 25.6 / 30.0	53.3	H / 1.8 / 180.0	N/A	N/A
1735.58	49.6Pk	2.7 / 27.7 / 30.0	50.0	V / 2.4 / 171.0	N/A	N/A
2169.47	60.2Pk	3.1 / 29.1 / 30.0	62.5	H / 1.0 / 180.0	N/A	N/A
2603.38	58.9Pk	3.4 / 31.1 / 30.0	63.4	V / 1.0 / 179.0	N/A	N/A
3037.27	53.4Pk	3.8 / 32.6 / 30.0	59.7	H / 1.1 / 334.0	N/A	N/A
3471.17	33.8Pk	4.1 / 33.3 / 30.0	41.2	H / 1.3 / 325.0	N/A	N/A
3905.07	38.1Pk	4.4 / 33.3 / 30.0	45.8	V / 1.0 / 130.0	N/A	N/A
4338.97	45.1Pk	4.4 / 34.8 / 40.0	44.3	V / 1.0 / 191.0	N/A	N/A

Tested by: Steve Brauns (Printed) — Signature On File (Signature)

Reviewed by: Felix J. Chavez (Printed) —  (Signature)

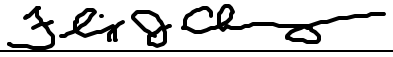
TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Radiated Electromagnetic Emissions

Test Report #:	**B9443 Run 02**	Test Area:	Pinewood Site 1 (3m)		
Test Method:		Test Date:	08-Nov-1999		
EUT Model #:	Thomas	EUT Power:			
EUT Serial #:	EMC1			Temperature:	24 °C
Manufacturer:	Compliance and More			Relative Humidity:	<18 %
EUT Description:	UHF Remote			Air Pressure:	80 kPa
Notes:				Page:	1 of 4

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB)	FINAL (dBuV/m)	POL/HGT/AZ (m)/(deg)	DELTA 1 FCC B (< 1GHz)	DELTA2 None
Bicon/vertical						
1 M initial height						
No emissions were found at 0 deg						
No emissions were found at 90 deg						
No emissions were found at 180 deg						
No emissions were found at 270 deg						
Bicon/Horizontal, 1 M initial height						
No emissions found at 0 deg						
No emissions found at 90 deg						
No emissions found at 180 deg						
No emissions found at 270 deg						
The following are noise floor measurements:						
31.99	28.6Qp	0.4 / 13.1 / 30.0	12.1	H / 1.0 / 0.0	-27.9	N/A
53.47	30.0Qp	0.5 / 10.3 / 30.0	10.8	H / 1.0 / 0.0	-29.2	N/A
80.00	31.2Qp	0.5 / 7.9 / 30.0	9.7	H / 1.0 / 0.0	-30.3	N/A
120.54	27.2Qp	0.6 / 11.1 / 30.0	8.9	H / 1.0 / 0.0	-34.6	N/A
181.93	27.6Qp	0.7 / 13.0 / 30.0	11.4	H / 1.0 / 0.0	-32.1	N/A
199.86	28.6Qp	0.8 / 13.3 / 30.0	12.7	H / 1.0 / 0.0	-30.8	N/A

Tested by: Steve Brauns (Printed) Signature On File (Signature)

Reviewed by: Felix J. Chavez (Printed)  (Signature)

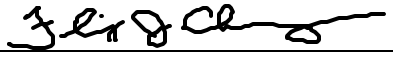
TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Radiated Electromagnetic Emissions

Test Report #:	**B9443 Run 02**	Test Area:	Pinewood Site 1 (3m)		
Test Method:		Test Date:	08-Nov-1999		
EUT Model #:	Thomas	EUT Power:			
EUT Serial #:	EMC1			Temperature:	24 °C
Manufacturer:	Compliance and More			Relative Humidity:	<18 %
EUT Description:	UHF Remote			Air Pressure:	80 kPa
Notes:				Page:	2 of 4

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB)	FINAL (dBuV/m)	POL/HGT/AZ (m)/(deg)	DELTA 1 FCC B (< 1GHz)	DELTA2 None
Log/vertical, 1 M height						
No emissions found at 0 deg						
No emissions found at 90 deg						
No emissions found at 180 deg						
No emissions found at 270 deg						
Log/Horizontal, 1 M height						
No emissions found at 0 deg						
No emissions found at 90 deg						
No emissions found at 180 deg						
No emissions found at 270 deg						
The following are noise floor measurements:						
200.12	26.8Qp	0.8 / 12.2 / 30.0	9.7	H / 1.0 / 0.0	-33.8	N/A
300.00	27.9Qp	1.0 / 13.7 / 30.0	12.5	H / 1.0 / 0.0	-33.5	N/A
500.00	24.5Qp	1.3 / 17.1 / 30.0	12.9	H / 1.0 / 0.0	-33.1	N/A
600.00	23.9Qp	1.5 / 19.6 / 30.0	15.1	H / 1.0 / 0.0	-30.9	N/A

Tested by: Steve Brauns (Printed) Signature On File (Signature)

Reviewed by: Felix J. Chavez (Printed)  (Signature)

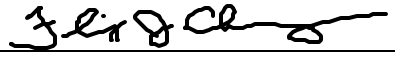
TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Radiated Electromagnetic Emissions

Test Report #:	**B9443 Run 02**	Test Area:	Pinewood Site 1 (3m)			
Test Method:		Test Date:	08-Nov-1999			
EUT Model #:	Thomas	EUT Power:				
EUT Serial #:	EMC1			Temperature:	24	°C
Manufacturer:	Compliance and More			Relative Humidity:	<18	%
EUT Description:	UHF Remote			Air Pressure:	80	kPa
Notes:				Page:	3 of 4	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB)	FINAL (dBuV/m)	POL/HGT/AZ (m)/(deg)	DELTA 1 FCC B (< 1GHz)	DELTA2 None
700.00	23.4Qp	1.6 / 20.8 / 30.0	15.8	H / 1.0 / 0.0	-30.2	N/A
800.00	23.1Qp	1.7 / 21.3 / 30.0	16.1	H / 1.0 / 0.0	-29.9	N/A

Tested by: Steve Brauns (Printed) — Signature On File (Signature)

Reviewed by: Felix J. Chavez (Printed) —  (Signature)

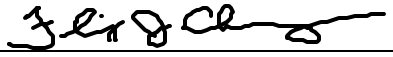
TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Radiated Electromagnetic Emissions

Test Report #:	**B9443 Run 02**	Test Area:	Pinewood Site 1 (3m)			
Test Method:		Test Date:	08-Nov-1999			
EUT Model #:	Thomas	EUT Power:				
EUT Serial #:	EMC1			Temperature:	24	°C
Manufacturer:	Compliance and More			Relative Humidity:	<18	%
EUT Description:	UHF Remote			Air Pressure:	80	kPa
Notes:				Page:	4 of 4	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB)	FINAL (dBuV/m)	POL/HGT/AZ (m)/(deg)	DELTA 1 FCC B (< 1GHz)	DELTA2 None
********** **MEASUREMENT SUMMARY** **********						
31.99	28.6Qp	0.4 / 13.1 / 30.0	12.1	H / 1.0 / 0.0	-27.9	N/A
53.47	30.0Qp	0.5 / 10.3 / 30.0	10.8	H / 1.0 / 0.0	-29.2	N/A
80.00	31.2Qp	0.5 / 7.9 / 30.0	9.7	H / 1.0 / 0.0	-30.3	N/A
120.54	27.2Qp	0.6 / 11.1 / 30.0	8.9	H / 1.0 / 0.0	-34.6	N/A
181.93	27.6Qp	0.7 / 13.0 / 30.0	11.4	H / 1.0 / 0.0	-32.1	N/A
199.86	28.6Qp	0.8 / 13.3 / 30.0	12.7	H / 1.0 / 0.0	-30.8	N/A
200.12	26.8Qp	0.8 / 12.2 / 30.0	9.7	H / 1.0 / 0.0	-33.8	N/A
300.00	27.9Qp	1.0 / 13.7 / 30.0	12.5	H / 1.0 / 0.0	-33.5	N/A
500.00	24.5Qp	1.3 / 17.1 / 30.0	12.9	H / 1.0 / 0.0	-33.1	N/A
600.00	23.9Qp	1.5 / 19.6 / 30.0	15.1	H / 1.0 / 0.0	-30.9	N/A
700.00	23.4Qp	1.6 / 20.8 / 30.0	15.8	H / 1.0 / 0.0	-30.2	N/A
800.00	23.1Qp	1.7 / 21.3 / 30.0	16.1	H / 1.0 / 0.0	-29.9	N/A

Tested by: Steve Brauns (Printed) — Signature On File (Signature)

Reviewed by: Felix J. Chavez (Printed) —  (Signature)

TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Equipment Report

8-Nov-1999

Project Number: B944301 **Project Date:** 8-Nov-1999

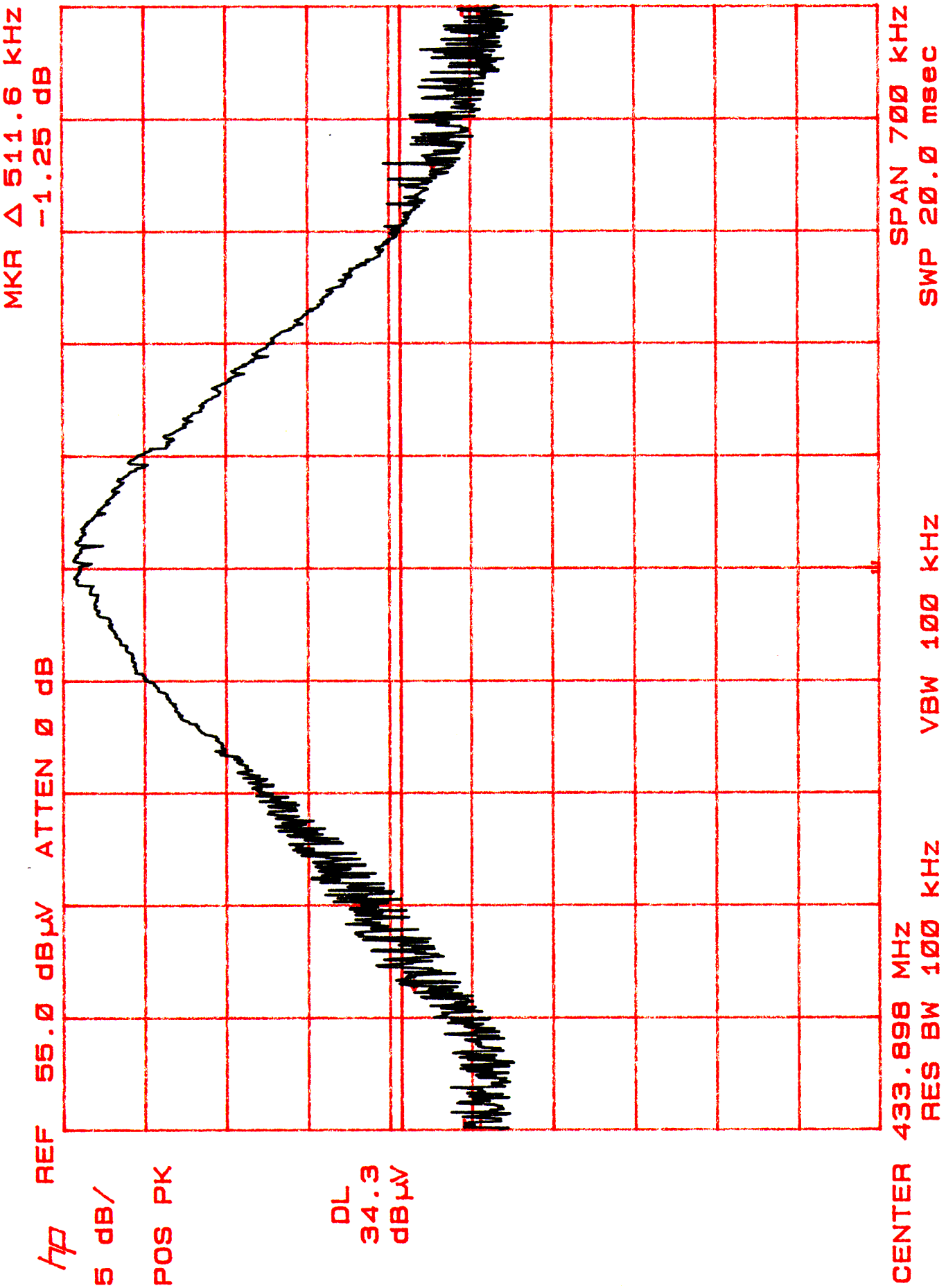
Company Name: ICX International Inc.

Equip ID	Manufacturer	Model Number	Serial Number	Description	Calibration Date	Interval	Due	Cal Code
Test Performed R		Radiated Emissions						
7531	EMCO	3104C	3519	Biconical Antenna	19-Jan-1999	12	19-Jan-2000	G
8014	EMCO	3146	9203-3376	Log Periodic Antenna	29-Jun-1999	12	28-Jun-2000	G
8047	MINI-CIRCUITS LAB	ZHL-1042J	D012599-14	Pre-Amplifier	12-Mar-1999	12	11-Mar-2000	G
8051	HEWLETT PACKARD	85662A	2112A02220	Display Section	04-May-1999	12	03-May-2000	G
8052	HEWLETT PACKARD	8566B	2115A00853	Spectrum Analyzer	04-May-1999	12	03-May-2000	G
8215	HEWLETT PACKARD	85650A	2043A00256	Quasi Peak Adapter (set 1)	18-Jun-1999	12	17-Jun-2000	G

Cal Code Legend: G=Out Source, Y=No Cal required, R=Out of Service, B=In-House Verification Required ***1 of 1***

TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

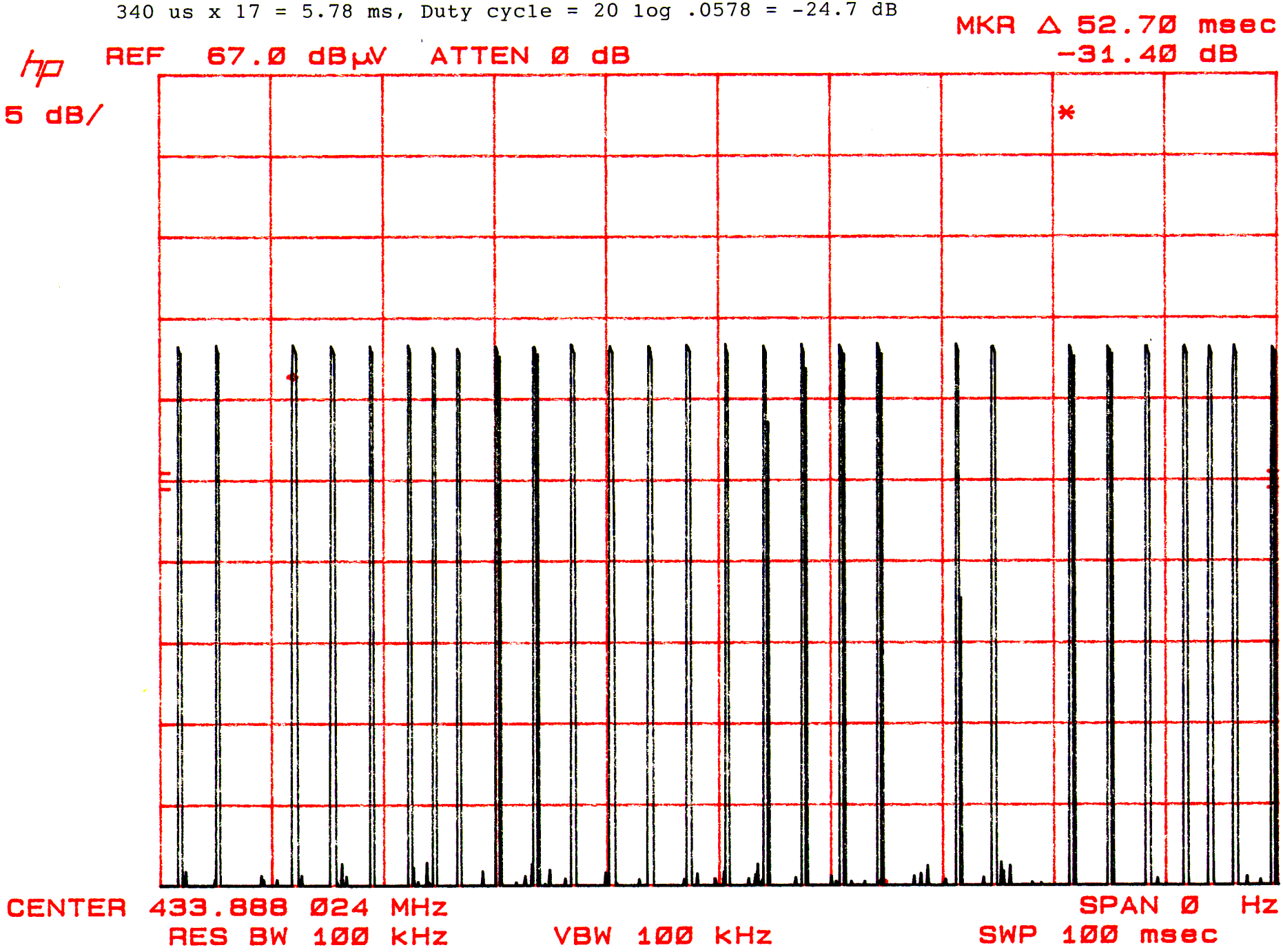
B9443 ICX Remote Control 20dB Bandwidth Plot 08 November 1999



TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

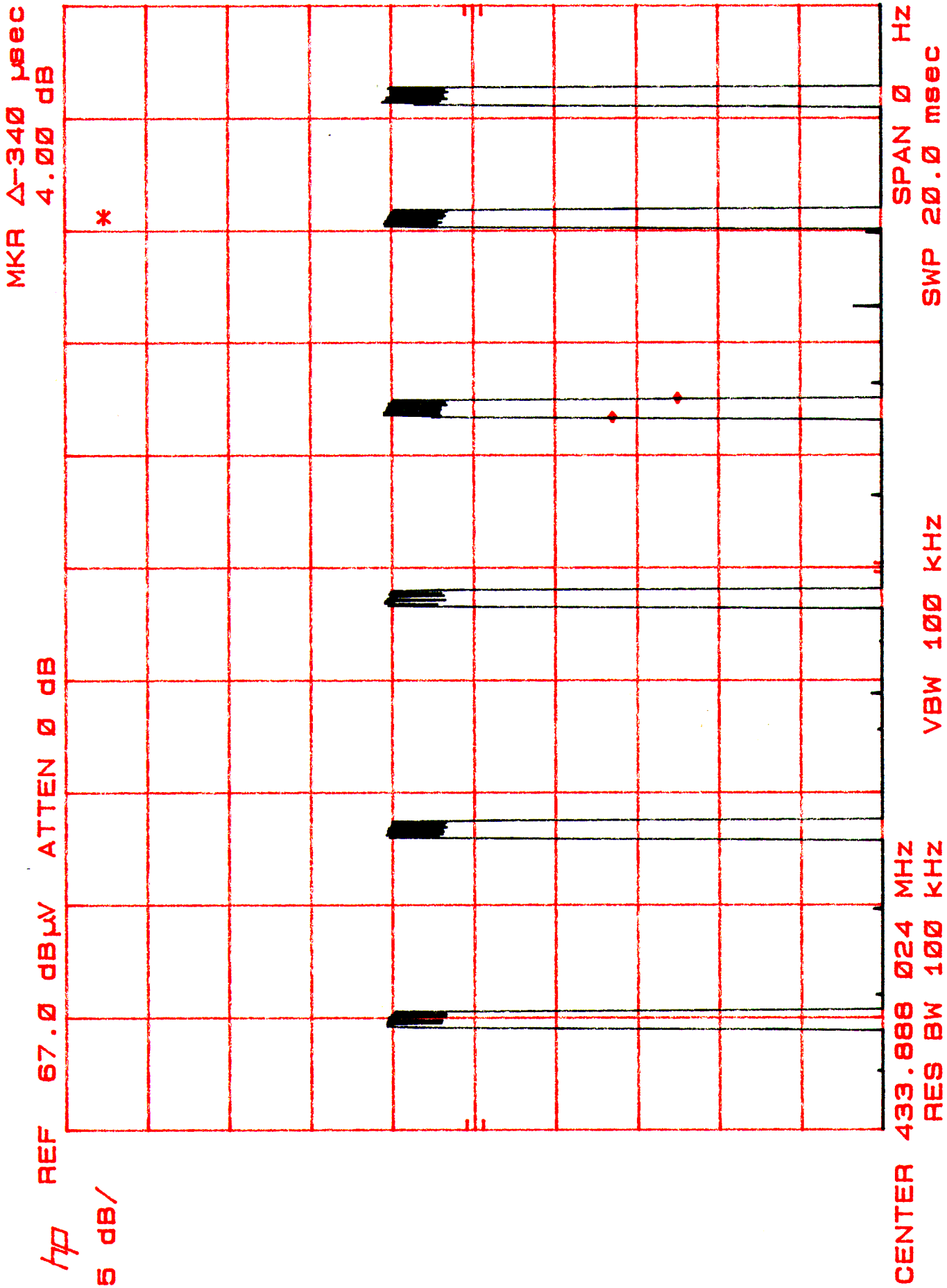
B9443 ICX Remote Control Duty Cycle Plot 08 November 1999

340 us x 17 = 5.78 ms, Duty cycle = 20 log .0578 = -24.7 dB



TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004

B9443 ICX Remote Control Duty Cycle Plot 08 November 1999



TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Appendix B

Test Plan

and

Constructional Data Form

TÜV PRODUCT SERVICE INC 40 Meadow Road Pinewood Springs, Lyons, CO 80540 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Test Plan
for Electromagnetic Compatibility Testing

General Information (if you need assistance completing this form contact your TÜV Product Service representative.)

Company:	**ICX International, I**	Quote Number:	**B1980831ag02**
Contact:	**Doug Barnes**	Phone: (business hrs)	**303 663 3396**
E-mail Address:		Phone: (after hrs)	

Product Description

Description: **UHF Remote Control**

Model Number: **Thomas** Serial Number: **EMC1**

Test Objective

- ☐ EMC Directive 89/336/EEC (EMC)
- ☐ Machinery Directive 89/392/EEC (EMC
- ☐ Medical Device Directive 93/42/EEC (EMC)
- ☒ FCC **15** Part **B** (list)
- ☐ Vehicle Directive 72/245/EEC (EMC)
- ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC)
- ☐ Other _____ (list)

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

Failure

If a failure occurs, TUV Product Service should:

- ☐ Call contact listed above, if not available then stop testing.
- ☐ Continue testing to complete test series.
- ☒ Continue testing to define corrective action.
- ☐ Stop testing.

Authorization

Doug Barnes	**10-29-99**
Customer authorization to perform tests according to this test plan.	Date
Doug Barnes	**10-29-99**
Test Plan Prepared By (please print)	Date
Robert Cresswell	**01/23/01**
Reviewed by TÜV Product Service Associate	Date

Test Plan
for Electromagnetic Compatibility Testing

Equipment Under Test Transportation

☒ Transportation between sites by customer.
☐ Other (consult your TÜV Product Service representative)

Dimensions and Weight

Length **8 inches** Width **2 inches**

Height **1.5 inches** Weight **1 lb**

Facilities

Power Requirements

☐	230 VAC 50 Hz	Single Phase	_____	Amps
☐	400 VAC 50 Hz	Three Phase	_____	Amps per phase
☐	120 VAC 60 Hz	Single Phase	_____	Amps
☐	208 VAC 60 Hz	Three Phase	_____	Amps per phase
☐	_____	VDC	_____	Amps
☒	Battery **3**	VDC	Expected life _____	hours
☐	Other			

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Other

☐ Air _____ cfm _____ psi ☐ Water _____ gpm _____ psi
☐ Other _____ (describe)

Test Plan Attachments

Constructional *Data Form (CDF)* * The CDF is required for all test plans.
☒ Applicable (attached)

Immunity Test Plan Details
☐ Applicable (attached) ☐ N/A

Emissions Test Plan Details
☒ Applicable (attached) ☐ N/A

On Site Test Plan Details
☐ Applicable (attached) ☐ N/A

Constructional Data Form
for Electromagnetic Compatibility Testing

A completed form helps ensure that product testing will go smoothly. Add attachments as necessary for additional documentation. For additional help, please contact your TÜV Product Service Representative.

Press TAB to go to the next field.

Applicant -- Enter company information pertaining to the location where the product is manufactured and for the manufacturer's contact soliciting the testing.

Company: **ICX International Inc.**

Address: **8250 Park Meadow Drive, Suite 150**

Littleton, CO 80124

Phone: **303 792 0494** Fax: **303 792 2098**

Contact: **Craig Skeppstrom** Position: **VP**

General Equipment Description -- Indicate which attachments you are providing with this document. It is recommended that you provide those listed.

Type of Equipment: **Remote Control** Model No.: **Thomas**

Serial No.: **EMC1** FCC ID No.: **not yet assigned**

General description: **UHF hand held TV remote control**

Product Variant/Options: **none**

Attachments: (only required for certification)

☐ External Photographs ☐ Product Literature ☐ High Level Bill of Materials

Press TAB to go to the next field. Date and sign each page of the CDF. Original signatures must be present on each page.

Date: 11-1-99 **Signature of Applicant:**

Constructional Data Form
for Electromagnetic Compatibility Testing

Installation and Environmental Conditions (describe) -- Describe the intended installation. Include details such as power connection and system grounding approaches. Describe the intended operating environment, include details such as humidity, cooling, heating and hazardous environments. Attaching a copy of an Installation manual is recommended for proper documentation of your system. Please indicate.

indoor home use

☐ Installation manual/instructions (attached, only required for certification)

Power Requirements -- Indicate your system power requirements for the equipment to be tested.

Rated Voltage **battery (2 AA)** Rated Input Power **3 VDC**

Protection Class -- Indicate your product's protection class. Contact your TÜV Product Service representative and is only required for certification.

Type: _____ Class: _____

Press TAB to go to the next field. Date and sign each page of the CDF. Original signatures must be present on each page.

Date: 11-1-99 **Signature of Applicant:**

Constructional Data Form
for Electromagnetic Compatibility Testing

I/O Ports and Cables

Indicate all interface cables which can be attached to the equipment even if they are not sold as part of your system. Describe the port (e.g., Parallel, Serial, SCSI), list its type (e.g., AC, DC, Signal, Control) and number of ports/cables of type. Indicate if the I/O port is to be exercised during testing. List the type of transmission and if the cable is an EUT assembly-to-assembly interconnection cable (PC to printer, to modem). Indicate whether the cable is shielded or not, type of shield (e.g. Braid, Foil) and how terminated (e.g. 360 degree to conductive shell, pigtail) at both ends of the cable. If a cable can have a typical length of ≥ 3.0 meters, then it is required to test with a cable of at least 3.0 meters.

I/O Ports and Cables

Description: **none**

Type of Port: # of ports/cables of type

Exercised during testing? ☐ Yes ☐ No

Assembly ↔ Assembly Interconnect ☐ Yes ☐ No

Cable shielded: ☐ Yes ☐ No

Shield Type (describe)

Termination: (describe)

Transmission Type: ☐ Analog ☐ Digital

Length of cable: Maximum: Tested:

I/O Ports and Cables

Description: **none**

Type of Port: # of ports/cables of type

Exercised during testing? ☐ Yes ☐ No

Assembly ↔ Assembly Interconnect ☐ Yes ☐ No

Cable shielded: ☐ Yes ☐ No

Shield Type (describe)

Termination: (describe)

Transmission Type: ☐ Analog ☐ Digital

Length of cable: Maximum: Tested:

I/O Ports and Cables

Description: **none**

Type of Port: # of ports/cables of type

Exercised during testing? ☐ Yes ☐ No

Assembly ↔ Assembly Interconnect ☐ Yes ☐ No

Cable shielded: ☐ Yes ☐ No

Shield Type (describe)

Termination: (describe)

Transmission Type: ☐ Analog ☐ Digital

Length of cable: Maximum: Tested:

Press TAB to go to the next field. Date and sign each page of the CDF. Original signatures must be present on each page.

Date: **11-1-99** **Signature of Applicant:**

Constructional Data Form
for Electromagnetic Compatibility Testing

EUT configurations -- Provide a technical description of all possible EUT configurations. Specify if more than one configuration is to be tested.

hand held only

EUT Software and Operation Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. Consult with your TÜV Product Service Representative when typical operating modes are not practical. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. This pattern must be sent to the parallel port device, serial port device, and must be write/read/verified to each storage device. Monitors must display the H pattern, typically in white letters on a black background. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing.

General Description: **no software**
(describe)

Software Revision Level:
(list and describe)

Operating modes to be tested: (list and describe)

☐ Operation manual/instructions (attached)

Press TAB to go to the next field. Date and sign each page of the CDF. Original signatures must be present on each page.

Constructional Data Form
for Electromagnetic Compatibility Testing

System, Subsystem, Major Subassemblies or Internal Peripherals -- List and describe all system, subsystem, major subassemblies and all internal peripherals. This should include such things as an external monitor, parallel interface peripheral, serial interface peripheral, internal disk drives or internal circuit boards. It is recommended that circuit diagrams, assembly and subassembly drawings be attached. Please indicate.

Description	*Model #*	*Serial #*	*FCC ID #*
none			

☐ **Technical Drawings attached**

Interfacing Equipment and/or Simulators (which are not part of the EUT) -- List and Describe all equipment or peripherals that will be connected to the EUT. For FCC testing a minimum configuration is required. If you have questions about this minimum configuration contact your TÜV Product Service representative.

Description	*Model #*	*Serial #*	*FCC ID #*
none			

Press TAB to go to the next field. Date and sign each page of the CDF. Original signatures must be present on each page.

Date: 11-1-99 **Signature of Applicant:**

Constructional Data Form
for Electromagnetic Compatibility Testing

EMC System Details -- List all frequencies and sub-harmonics which are 10kHz or above for such things as oscillators, horizontal line rate of monitors, and clock rates of incorporated OEM assemblies. List all power supplies. Indicate switching frequencies. List power line filters and indicate the manufacturer, model and location on EUT. Indicate all components used for high frequency noise reduction. (e.g., ceramic capacitor, 0.01µF, 1 ea. at C12 - C20).

Oscillator Frequencies

Frequency	*Sub-harmonics*	*EUT Location*	*Description of Use*
433.9 MHz			

Power Supply

Frequency	*Manufacturer*	*Model #*	*Serial #*	*Type (list frequency)*
battery				

Power Line Filters

Manufacturer	*Model #*	*Qty*	*Location on EUT*
none			

Critical EMI Components (Capacitors, ferrites, etc.)

Description	*Manufacturer*	*Part # or Value*	*Qty*	*Location on EUT*
crystal				

Press TAB to go to the next field. Date and sign each page of the CDF. Original signatures must be present on each page.

Constructional Data Form
for Electromagnetic Compatibility Testing

Other EMI Critical Construction Detail -- Indicate any other measures taken to reduce high frequency noise, (e.g., grounding the circuit board on the right rear corner with 0.25" braid, 3 inches long to the chassis).

NONE

Description of Enclosure -- Describe the principle materials of the enclosure (e.g., plastic, plastic with shielding material, metal, metal with specific shielding contact points, metal with paint on all surfaces).

plastic

Press TAB to go to the next field. Date and sign each page of the CDF. Original signatures must be present on each page.

Date: 11-1-99 **Signature of Applicant:**

Constructional Data Form
for Electromagnetic Compatibility Testing

System Configuration Block Diagram -- Provide a line drawing identifying the EUT, simulators, support equipment, I/O cables, power cables, and any other pertinent components to be used during testing. Use a dashed line to separate the equipment in the testing field versus equipment outside testing field.

N/A

Date and sign each page of the CDF. Original signatures must be present on each page.

Date: 11-1-99 **Signature of Applicant:**

FCC Emissions
Test Plan Details
(ATTACHMENT)

If testing levels other than those desired, then indicate the requested test levels under Engineering Justifications / Test Deviations.

Standards to be Applied

☐ CISPR 22
- ☐ Class A
- ☐ Class B

X FCC Part 15 (list) Class **B** (list)

☐ Other _____ (list)

Description	Basic Document	Requirement
Radiated & Conducted Emissions	ANSI 63.4	Reference Basic Document or Applicable Standard

Engineering Justifications / Test Deviations

None