

FCC PART 15, SUBPART C
TEST METHOD: ANSI C63.4-1992
TEST REPORT

for

OEM KEYFOB TRANSMITTERS

P/N's: CMD-KEYX-418 and CMD-KEYX-433

Prepared for

LINX TECHNOLOGIES
575 ASHLEY PLACE
GRANTS PASS, OREGON 97526

COMPATIBLE ELECTRONICS INC.
114 OLINDA DRIVE
BREA, CALIFORNIA 92823
(714) 579-0500

DATE: JULY 25, 2000

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	16	2	2	12	28	2	62

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FIGURE	TITLE
1	Conducted Emissions Test Setup
2	Plot Map And Layout of Test Site



GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form unless done so in full with the written permission of Compatible Electronics.

This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Device Tested: OEM Keyfob Transmitters
 P/N's: CMD-KEYX-418 and CMD-KEYX-433
 S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was not modified during the testing.

Manufacturer: Linx Technologies
 575 Ashley Place
 Grants Pass, Oregon 97526

Test Dates: July 8 and 24, 2000

Test Specifications: EMI requirements
 CFR Title 47, Part 15 Subpart C, Sections 15.205, 15.209, and 15.231

Test Procedure: ANSI C63.4: 1992

Test Deviations: The test procedure was not deviated from during the testing.

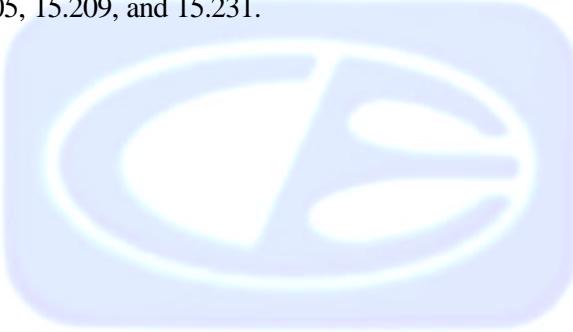
SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 450 kHz - 30 MHz	This test was not performed because the EUT runs off one 3-volt lithium cell only and cannot be powered by any device that runs off of the AC public mains.
2	Radiated RF Emissions, 10 kHz - 4400 MHz	Complies with the limits of CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.231



1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the OEM Keyfob Transmitters P/N's: CMD-KEYX-418 and CMD-KEYX-433. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 1992. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the specification limits defined by CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.231.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Linx Technologies

Paul True President

Compatible Electronics Inc.

Kyle Fujimoto Test Engineer
Scott McCutchan Lab Manager

2.4 Date Test Sample was Received

The test sample was received on July 7, 2000.

2.5 Disposition of the Test Sample

The test sample has not been returned to Linx Technologies as of July 25, 2000.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network



3.**APPLICABLE DOCUMENTS**

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
CFR Title 47, Subpart C	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators
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



4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

Setup and operation of the equipment under test.

The OEM Keyfob Transmitters P/N's: CMD-KEYX-418 and CMD-KEYX-433 (EUT) was tested as a stand alone unit and placed in the middle of the table. The EUT was tested in three orthogonal axis. The EUT was continuously transmitting. The final radiated data was taken in the mode above. The antenna is a PCB trace.

Note: Each transmitter was tested separately. The CMD-KEYX-418 is the 418 MHz version and was tested on **July 8, 2000**. The CMD-KEYX-433 is the 433.92 MHz version and was tested on **July 24, 2000**.

Please see Appendix D for the data sheets.



4.1.1 **Cable Construction and Termination**

There were no external cables connected to the EUT.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	PART NUMBER	SERIAL NUMBER	FCC ID
OEM KEYFOB TRANSMITTER (EUT)	LINX TECHNOLOGIES	CMD-KEYX-418	N/A	OJM-LTKEYX4XXCMD
OEM KEYFOB TRANSMITTER (EUT)	LINX TECHNOLOGIES	CMD-KEYX-433	N/A	OJM-LTKEYX4XXCMD



5.2 EMI Test Equipment for the CMD-KEYX-418

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	March 31, 2000	Mar. 31, 2001
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22279	March 31, 2000	Mar. 31, 2001
Preamplifier	Com Power	PA-102	1670	December 7, 1999	Dec. 7, 2000
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	June 24, 2000	June 24, 2001
Biconical Antenna	Com Power	AB-100	1548	Oct. 14, 1999	Oct. 14, 2000
Log Periodic Antenna	Com Power	AL-100	1011	July 9, 1999	July 9, 2000
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	HP98561A	2522A05178	N/A	N/A
Printer	Hewlett Packard	2225A	2925S33268	N/A	N/A
Plotter	Hewlett Packard	7440A	8726K38417	N/A	N/A
Microwave Preamplifier	Com-Power	PA-122	25195	Jan. 13, 2000	Jan. 13, 2001
Horn Antenna	Antenna Research	DRG-118/A	1053	Dec. 8, 1995	N/A
Loop Antenna	Com-Power	AL-130	25309	May 25, 2000	May 25, 2001



5.3 EMI Test Equipment for the CMD-KEYX-433

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08768	June 24, 2000	June 24, 2001
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22262	June 24, 2000	June 24, 2001
Preamplifier	Com Power	PA-102	1017	Jan. 11, 2000	Jan. 11, 2001
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	June 24, 2000	June 24, 2001
Biconical Antenna	Com Power	AB-100	1548	Oct. 14, 1999	Oct. 14, 2000
Log Periodic Antenna	Com Power	AL-100	16039	Oct. 14, 1999	Oct. 14, 2000
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	HP98561A	2522A05178	N/A	N/A
Printer	Hewlett Packard	2225A	2925S33268	N/A	N/A
Plotter	Hewlett Packard	7440A	8726K38417	N/A	N/A
Microwave Preamplifier	Com-Power	PA-122	25195	Jan. 13, 2000	Jan. 13, 2001
Horn Antenna	Antenna Research	DRG-118/A	1053	Dec. 8, 1995	N/A
Loop Antenna	Com-Power	AL-130	25309	May 25, 2000	May 25, 2001



6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.



7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1

Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, and the Com-Power Model: PA-122 was used for frequencies above 1 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps. The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets. The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 4.4 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 1992. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain final test data.



7.2 Bandwidth of the Fundamental

The -20 dB bandwidth was checked to see that it was within 0.25% of the fundamental frequency for the EUT. A plot of the -20 dB bandwidth is in Appendix D.



8. CONCLUSIONS

The OEM Keyfob Transmitter P/N's: CMD-KEYX-418 and CMD-KEYX-433 meets all of the specification limits defined in CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.231.



APPENDIX A

MODIFICATIONS TO THE EUT



MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.231 specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

Modifications:

No modifications were made to the EUT.



APPENDIX B

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***



ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

OEM Keyfob Transmitters
P/N's: CMD-KEYX-418 and CMD-KEYX-433
S/N: N/A

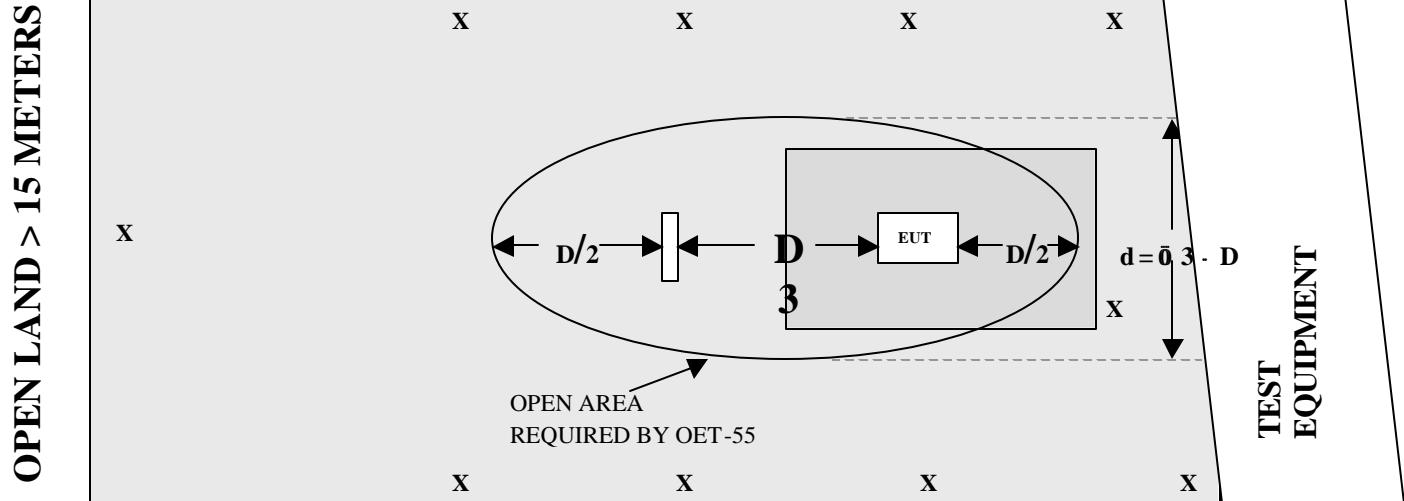
There were no additional models covered under this report.



APPENDIX C

DIAGRAMS, CHARTS AND PHOTOS



FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE**OPEN LAND > 15 METERS****OPEN LAND > 15 METERS**

	= GROUND RODS		= GROUND SCREEN
	= TEST DISTANCE (meters)		= WOOD COVER





FRONT VIEW

LINX TECHNOLOGIES
OEM KEYFOB TRANSMITTER
P/N: CMD-KEYX-418

FCC SUBPART C - RADIATED EMISSIONS – 7-8-00

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



**REAR VIEW**

LINX TECHNOLOGIES
OEM KEYFOB TRANSMITTER
P/N: CMD-KEYX-418

FCC SUBPART C - RADIATED EMISSIONS – 7-8-00

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**





FRONT VIEW

LINX TECHNOLOGIES
OEM KEYFOB TRANSMITTER
P/N: CMD-KEYX-433

FCC SUBPART C - RADIATED EMISSIONS – 7-24-00

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**





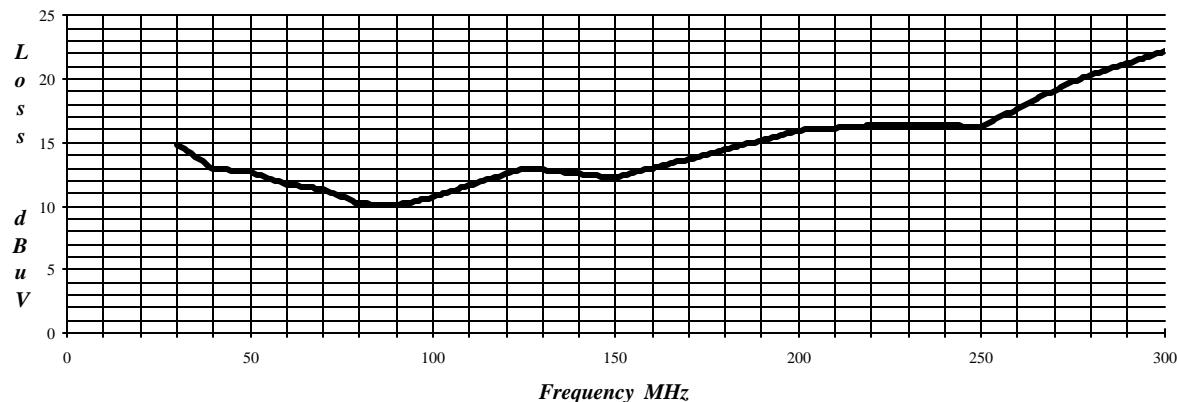
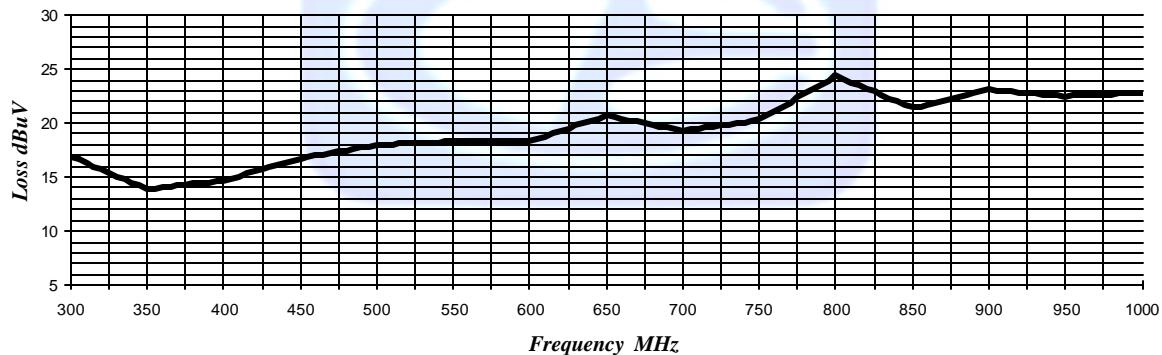
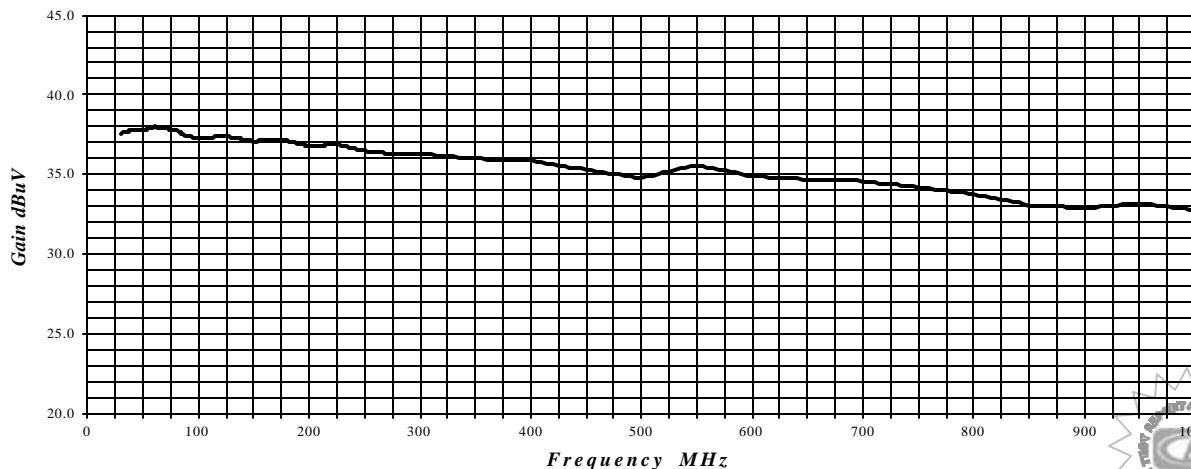
REAR VIEW

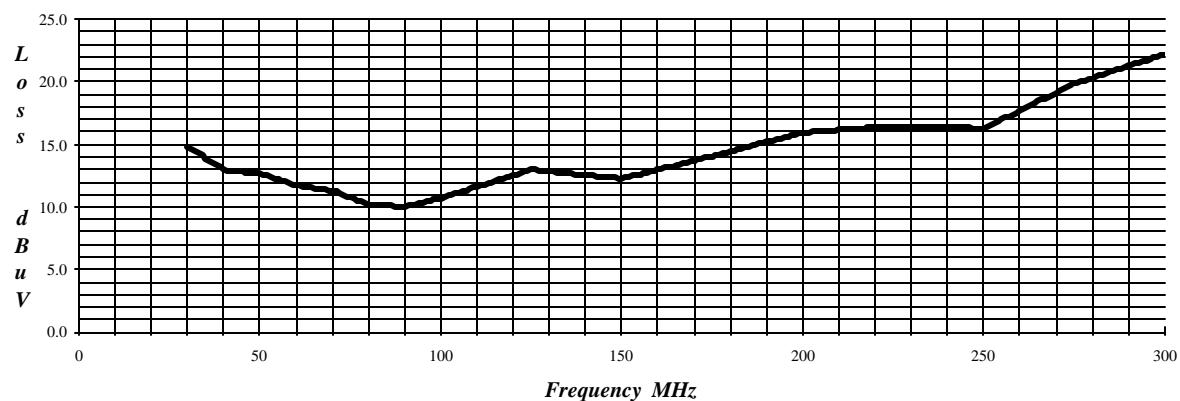
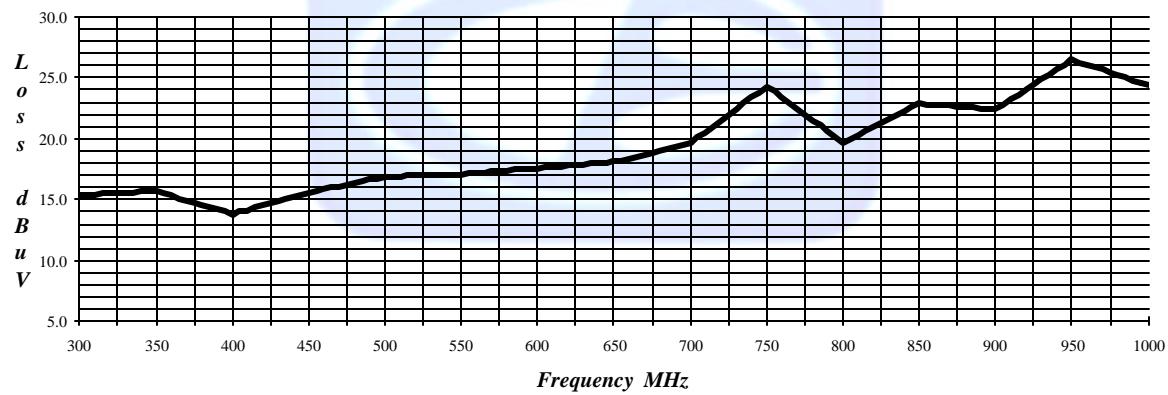
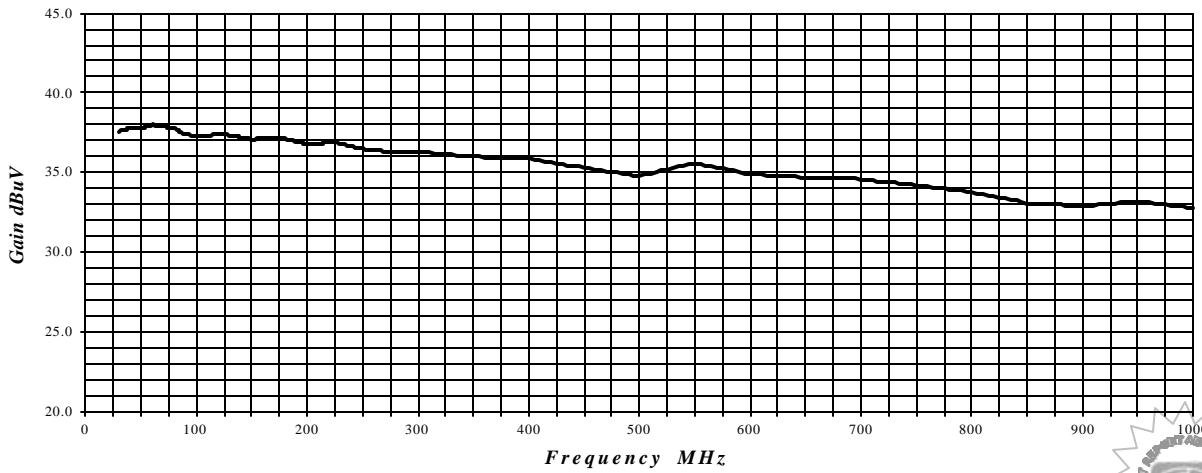
LINX TECHNOLOGIES
OEM KEYFOB TRANSMITTER
P/N: CMD-KEYX-433

FCC SUBPART C - RADIATED EMISSIONS – 7-24-00

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



LAB "B" BICONICAL ANTENNA AB-100 S/N 01548 Cal: 10-14-99**LAB B LOG PERIODIC ANTENNA AL-100 S/N: 1011 Cal: 7-9-99****PREAMPLIFIER EFFECTIVE GAIN AT 3 METERS PA-102 S/N: 1017 Effective 1-13-00**

LAB "D" BICONICAL ANTENNA AB-100 S/N 01548 Cal: 10-14-99**LAB "D" LOG PERIODIC ANTENNA AL-100 S/N 16039 Cal: 10-14-99****PREAMPLIFIER EFFECTIVE GAIN AT 3 METERS PA-102 S/N: 1017 Effective 1-13-00**

Com-Power Corporation
(949) 587-9800

Preamplifier Calibration

Equipment:	Preamplifier		
Model:	PA-102		
Serial Number:	1670		
Calibration Date:	12/07/99 (mm/dd/yy)		
Frequency MHz	Factors dB	Frequency MHz	Factors dB
1	32.7	250	33.4
5	33.8	300	33.3
10	33.8	350	33.2
15	33.8	400	33.2
20	33.8	450	33.0
25	33.7	500	32.9
30	33.8	550	33.0
40	33.7	600	32.9
50	33.8	650	32.9
60	33.6	700	32.9
70	33.7	750	32.8
80	33.7	800	32.9
90	33.7	850	32.7
100	33.6	900	32.7
125	33.7	950	32.9
150	33.7	1000	33.5
175	33.6		
200	33.5		

COM-POWER PA-122
MICROWAVE PREAMPLIFIER
S/N: 25195

CALIBRATION DATE: JANUARY 13, 2000

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	34.4	9.0	30.7
1.1	34.1	9.5	31.5
1.2	34.2	10.0	31.0
1.3	34.1	10.5	31.4
1.4	33.9	11.0	30.7
1.5	33.8	11.5	29.5
1.6	33.0	12.0	27.8
1.7	33.3	12.5	31.4
1.8	33.3	13.0	31.0
1.9	31.9	13.5	31.0
2.0	32.7	14.0	31.5
2.5	31.8	14.5	30.2
3.0	31.7	15.0	29.2
3.5	31.9	15.5	30.1
4.0	31.0	16.0	29.0
4.5	31.4	16.5	27.8
5.0	31.1	17.0	30.8
5.5	31.0	17.5	31.5
6.0	32.0	18.0	30.8
6.5	31.6		
7.0	32.3		
7.5	32.9		
8.0	32.1		
8.5	31.6		



E-FIELD ANTENNA FACTOR CALIBRATION

$$E(\text{dB V/m}) = V_o(\text{dB V}) + AFE(\text{dB/m})$$

Model number : DRG-118/A

Frequency GHz	AFE dB/m	Gain dBi
1	22.3	8.0
2	26.7	9.5
3	29.7	10.1
4	29.5	12.8
5	32.3	12.0
6	32.4	13.4
7	36.1	11.0
8	37.4	10.9
9	36.8	12.5
10	39.5	10.7
11	39.6	11.5
12	39.8	12.0
13	39.7	12.8
14	41.8	11.3
15	41.9	11.9
16	38.1	16.3
17	41.0	13.9
18	46.5	8.9

Serial number : 1053
Job number : 96-092
Remarks : 3 meter calibration
Standards : LPD-118/A, TE-1000

Temperature : 72° F
Humidity : 56 %
Traceability : A01887
Date : December 08, 1995

Calibrated By

Com-Power Corporation

(949) 587-9800

Antenna Calibration

Antenna Type:			Loop Antenna
Model:			AL-130
Serial Number:			25309
Calibration Date:			05/25/00
Frequency MHz	Magnetic (dB/m)	Electric dB/m	
0.009	-41.0	10.5	
0.01	-41.0	10.5	
0.02	-41.9	9.6	
0.05	-41.9	9.6	
0.075	-41.8	9.7	
0.1	-42.2	9.3	
0.15	-42.2	9.3	
0.25	-40.7	10.8	
0.5	-42.1	9.4	
0.75	-40.9	10.6	
1	-41.3	10.2	
2	-40.8	10.7	
3	-41.1	10.4	
4	-41.2	10.3	
5	-40.7	10.8	
10	-40.6	10.9	
15	-42.0	9.5	
20	-42.0	9.5	
25	-42.9	8.6	
30	-42.3	9.2	
Trans. Antenna Height	2 meter		
Receiving Antenna Height	2 meter		

APPENDIX D

DATA SHEETS



RADIATED EMISSIONS FOR THE 418 MHz Tx

DATA SHEETS



RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	LINX TECHNOLOGIES	DATE	7/8/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-418	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 1

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



COMPATIBLE
ELECTRONICS

COMPANY	LINX TECHNOLOGIES	DATE	7/8/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-418	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 2

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	LINX TECHNOLOGIES	DATE	7/8/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-418	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

- CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED BEARING

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RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	LINX TECHNOLOGIES	DATE	7/8/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-418	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

• DELTA = SPEC LIMIT - CORRECTED READING

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RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	LINX TECHNOLOGIES	DATE	7/8/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-418	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

- CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

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RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



COMPATIBLE ELECTRONICS

COMPANY	LINX TECHNOLOGIES	DATE	7/8/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-418	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

**** DELTA = SPEC LIMIT - CORRECTED READING**

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	LINX TECHNOLOGIES	DATE	7/8/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-418	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

- **CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN**

** DELTA = SPEC LIMIT - CORRECTED READING

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RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



COMPATIBLE ELECTRONICS

COMPANY	LINX TECHNOLOGIES	DATE	7/8/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-418	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

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RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



COMPATIBLE ELECTRONICS

COMPANY	LINX TECHNOLOGIES	DATE	7/8/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-418	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

- CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

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RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



**COMPATIBLE
ELECTRONICS**

COMPANY	LINX TECHNOLOGIES	DATE	7/8/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-418	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

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Page: 1 of 1

Test location: Compatible Electronics
Customer : LINX TECHNOLOGIES Date : 7/8/2000
Manufacturer : LINX TECHNOLOGIES Time : 16.31
EUT name : OEM KEYFOB TRANSMITTER P/N: CMD-KEYX-418
Specification: Fcc_B Test distance: 3.0 mtrs Lab: B
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode :
SPURIOUS EMISSIONS 10 kHz - 4400 MHz
TEMPERATURE 81 DEGREES F., RELATIVE HUMIDITY 35%
TESTED BY: Kyle Fujimoto
KYLE FUJIMOTO

NO SPURIOUS EMISSIONS FOUND FOR THE EUT FROM
10 kHz TO 4400 MHz IN EITHER POLARIZATION

RADIATED EMISSIONS FOR THE 433.92 MHz Tx

DATA SHEETS



RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



COMPATIBLE
ELECTRONICS

COMPANY	LINX TECHNOLOGIES	DATE	7/24/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-433	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 1

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



COMPATIBLE ELECTRONICS

COMPANY	LINX TECHNOLOGIES	DATE	7/24/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-433	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 2

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



COMPATIBLE
ELECTRONICS

COMPANY	LINX TECHNOLOGIES	DATE	7/24/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-433	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

- CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

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RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



**COMPATIBLE
ELECTRONICS**

COMPANY	LINX TECHNOLOGIES	DATE	7/24/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-433	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

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RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	LINX TECHNOLOGIES	DATE	7/24/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-433	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

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RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



**COMPATIBLE
ELECTRONICS**

COMPANY	LINX TECHNOLOGIES	DATE	7/24/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-433	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

- CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

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RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



COMPATIBLE
ELECTRONICS

COMPANY	LINX TECHNOLOGIES	DATE	7/24/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-433	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

- **CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN**

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



COMPATIBLE ELECTRONICS

COMPANY	LINX TECHNOLOGIES	DATE	7/24/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-433	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 8

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



COMPATIBLE ELECTRONICS

COMPANY	LINX TECHNOLOGIES	DATE	7/24/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-433	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 9

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)



**COMPATIBLE
ELECTRONICS**

COMPANY	LINX TECHNOLOGIES	DATE	7/24/00
EUT	OEM KEYFOB TRANSMITTER	DUTY CYCLE	48.00 %
MODEL	P/N: CMD-KEYX-433	PEAK TO AVG	-6.38 dB
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

- CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

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Page: 1 of 1

Test location: Compatible Electronics

Date : 7/24/2000

Customer : LINX TECHNOLOGIES

Time : 15.48

Manufacturer : LINX TECHNOLOGIES

P/N: CMD-KEYX-433

EUT name : OEM KEYFOB TRANSMITTER

Lab: D

Specification: Fcc_B Test distance: 3.0 mtrs

: 0.00

Distance correction factor(20*log(test/spec))

Test Mode :

SPURIOUS EMISSIONS 10 kHz - 4400 MHz

TEMPERATURE 81 DEGREES F., RELATIVE HUMIDITY 35%

TESTED BY: Kyle Fujimoto

KYLE FUJIMOTO

NO SPURIOUS EMISSIONS FOUND FOR THE EUT FROM
10 kHz TO 4400 MHz IN EITHER POLARIZATION

BAND EDGE

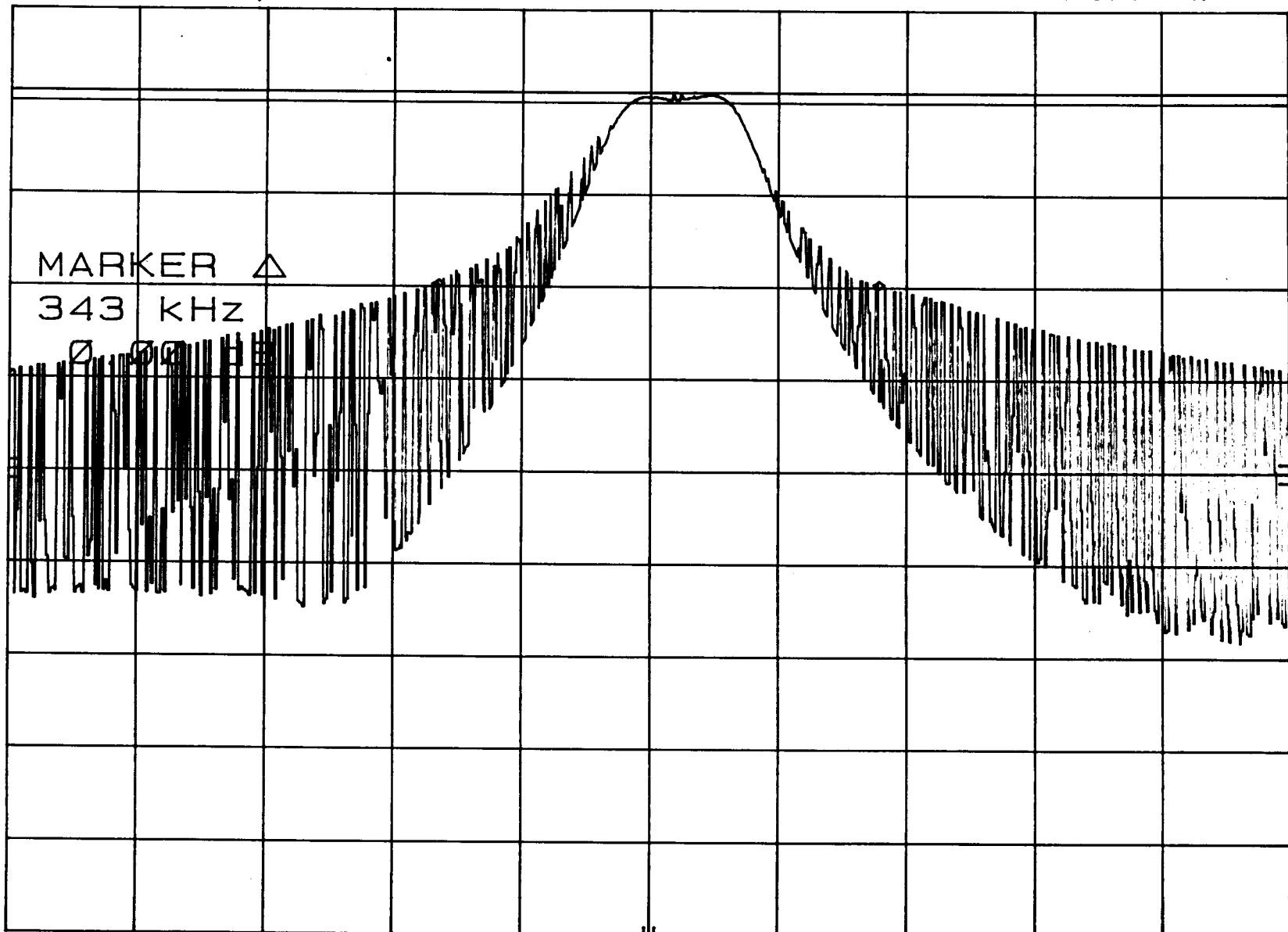
DATA SHEETS



-20 dB BANDWIDTH OF FUNDAMENTAL
REF 110.0 dB μ V ATTEN 20 dB

hp MKR Δ 343 kHz
0.00 dB

10 dB/



CENTER 418.00 MHz

RES BW 1 MHz

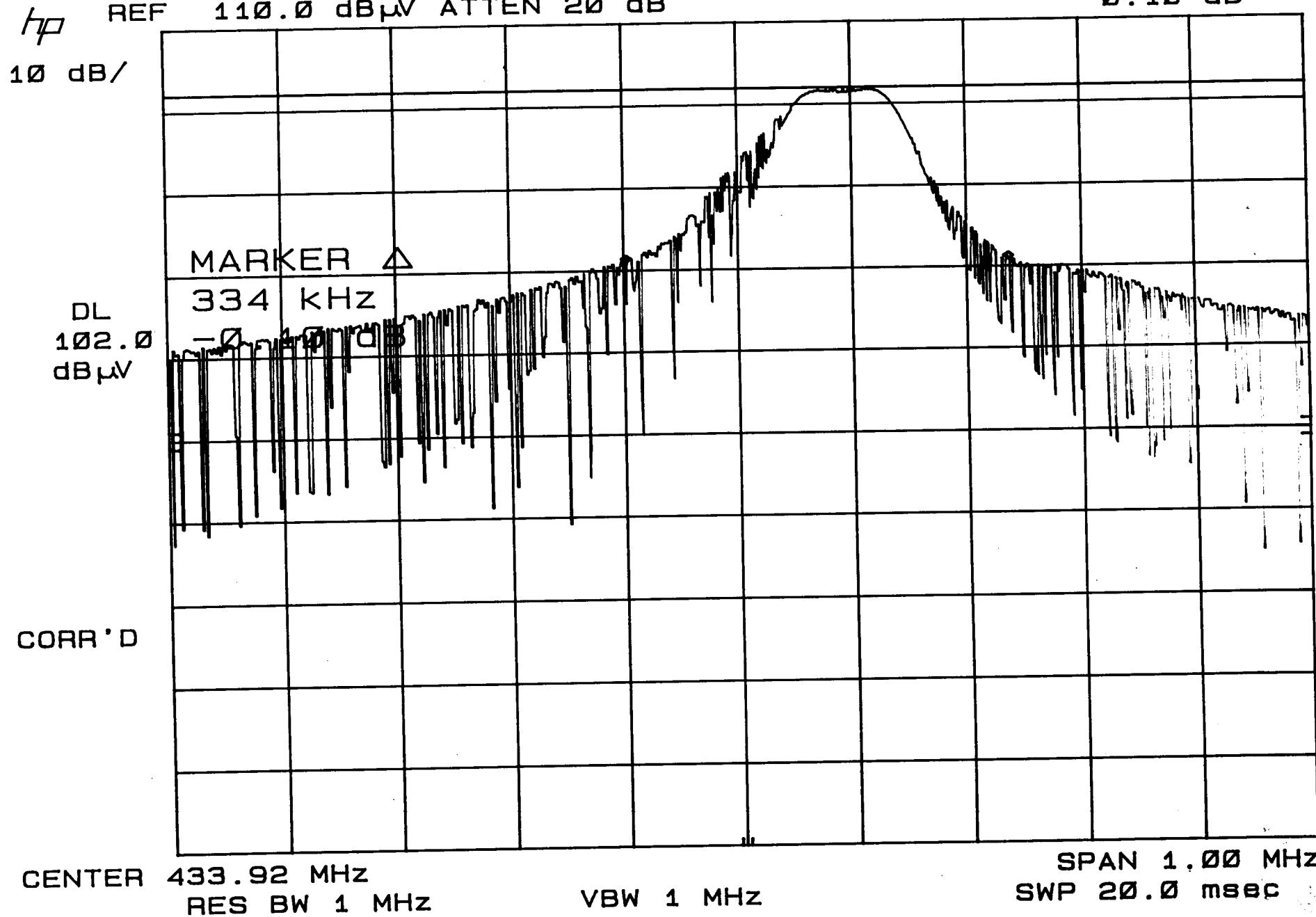
VBW 1 MHz

SPAN 1.00 MHz

SWP 20.0 msec

-20 dB BANDWIDTH OF FUNDAMENTAL
REF 110.0 dB μ V ATTN 20 dB

MKR Δ 334 kHz
-0.10 dB



APPENDIX E

LABORATORY RECOGNITIONS



LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200063-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)

Technology International (Europe) Ltd.

