NQW 267-26

CHOMERICS TEST SERVICES

TEST REPORT

FOR

LEXENT CORPORATION

COMPANY PRODUCT NAME

MODEL 2000

FCC PART 15 SUBPART C PARAGRAPH 15.231 CERTIFICATION

Submitted to:
Michael D'Angelo
Lexent Corporation
111 Heywood Avenue
Melrose, Massachusetts 02176

Prepared by: Robert Foster
Date: December 1, 1998
Test Report: TR1924A.98
Purchase Order: Credit Card
Number of Pages: 19

I attest to the accuracy of the test data in this report:

Technician/Test Engineer

Test Services Approved Signatory

Official responsible for marketing this equipment

ADMINISTRATIVE DATA

Purpose of Test:	FCC Part 15 Subpart C ragraph 15.231 Certification
Test Specification:	FCC Part 15 Subpart C
Manufacturer:	Lexent Corporation
Manufacturer's Type or Model Number:	Model 2000
Number of Items Tested:	One
Date of Test:	November 12, 1998
Test Observed By:	Michael D'Angelo
Affiliated With:	Lexent Corporation
Test Location:	Chomerics Open Area Test Site A
Tests Conducted By:	Robert Foster
Condition of Test Equipment Upon Arrival:	Good
Customer's Equipment Returned VIA:	Hand Carried

TEST RESULTS

The Lexent Corporation Model 2000 meets FCC Part 15 Subpart C Paragraph 15.231.

The Lexent Corporation Model 2000 is an intelligent proximity sensor used for Personal Laptop Comp security.

TEST SERVICES FACILITY INFORMATION

Chomerics Test Facility is recognized under the National Voluntary Laboratory Accreditation (NVLAP) Program for NVLAP Codes 12/C01 and 12/R01. Tests within this report not conforming to 12/C01 and 12/R01 NVLAP Codes are not covered under Chomerics NVLAP accreditation.

Chomerics Test Facility operates under the current revision of Chomerics Quality Assurance Manual Document Number QA002.

The QA manual has been constructed to reflect a quality program in accordance with the requirements of the National Institute of Standards and Technology (NIST), ISO 9002, ISO Guide 25, NIST Handbook 150, EN 45001, MIL-I-45208A, MIL-STD-461D, 462D and Chomerics Quality Assurance Program (QAP).

The QA manual outlines and describes the procedures for establishing and maintaining the quality of analysis, research, inspection, and testing within Chomerics Test Service (CTS).

This test report does not represent an endorsement by the U.S. Government.

The results and/or conclusions within this test report refer and/or apply only to the unit(s) tested as defined by this report.

Measurements performed for this test are traceable to the National Institute of Standards and Technology (NIST) based on the fact that all test equipment used for the measurements were previously calibrated using standards traceable to NIST.

No deviations, additions to, or exclusions from the test specification

The system amplitude accuracy for the measurements made during the radiated emission tests was "3dB.

TEST SITE DESCRIPTIONS

The following is a description of Test Services Open Field Test Sites. Refer to Administrative Data on page 2, line 9 for the specific test site used for testing.

OPEN AREA TEST SITE A: Chomerics open area test site "A" is located in the parking lot behind the Seeger Building at Chomerics, 77 Dragon Court, Woburn, Massachusetts.

The open area test site "A" is a wooden "A" frame, bounded by Dragon Court, a one story brick building, and a paved area. Photographs of the site and site attenuation data are on file with the Federal Communications Commission.

The supporting structure used for support of the equipment under test is a wooden rotatable platform .8 meters high. A similar supporting structure is used for the measuring equipment. The mast supporting the antenna can be adjusted from one to four meters in height.

OPEN AREA TEST SITE B: Chomerics open area test site "B" is located in the lower parking lot behind the Seeger Building at Chomerics, 77 Dragon Court, Woburn, Massachusetts.

Photographs of the site and site attenuation data are on file with the Federal Communications Commission.

Parking is permitted on one side of test site "B" at a discrete distance from the imaginary ellipse.

The open area site B enclosure is a wooden structure measuring 56 X 30 X 25 feet in size with galvanized steel sheet metal used as the ground plane. The structure is sized to allow both 3 and 10 meter measurements and is heated and/or air conditioned.

The structure used to support equipment under test is a 14 foot diameter motorized turntable. The sheet metal surface is flush with the ground plane. To ground the turntable, 175 copper fingers (1" x 1.5") are mounted around the outer edge of the turntable using machine screws. The spring fingers are equally spaced and provide a uniform interface between the turntable metal surface and ground plane. When needed for table top equipment, a wooden table measuring 3 x 6 feet in size is positioned at the center of the turntable, at the proper height above the ground plane.

The addition at the end of the open area test site is the location for the test personnel and equipment to ensure they are outside the imaginary ellipse.

Both Test Site A and B are listed by the Federal Communications Commission (FCC).

RADIATED EQUIPMENT LIST

Test Equipment		Asset #	Serial #	Cal Date
	Tektronix 496 Spectrum Analyzer	1	B010559	10/98
	H/P 8566B Spectrum Analyzer	47	2637A04064	06/99
	H/P 85685A RF Preselector	48	2648A00483	06/99
	H/P OPT462 Display Unit	46	2648A14289	06/99
	Rhode and Schwartz ESV Test Receiver	15	875931049	9/98
	Hewlett Packard 8447D Pre Amp	12	2944A06414	1/99
	EMCO 3120 Tuned Dipole Antenna B1	477	56	1/99
	EMCO 3121 Tuned Dipole Antenna B2	478	176	1/99
	EMCO 3121 Tuned Dipole Antenna B3	479	728	1/99
	EMCO 3115 Microwave Horn Antenna	376	2796	1/99

Equipment Calibration: The calibration of Chomerics test facility equipment is controlled under the current revision of Chomerics Laboratory Test Equipment Calibration Manual Document Number QA001.

The test equipment used throughout this test sequence conforms to laboratory calibration standards, MIL-STD-45662A, traceable to the National Institute of Science and Technology. The date of the next due scheduled calibration is listed in the table above for Chomerics Test Services equipment used during testing.

All test equipment is calibrated annually.

Test Personnel: The test personnel used to perform or supervise the tests are accredited by the National Association of Radio and Telecommunications Engineers, Inc. (NARTE) as Certified Electromagnetic Compatibility Engineers (N.C.E.) and Technicians (N.C.T.).

FIELD STRENGTH OF FUNDAMENTAL FREQUENCY
418MHz

Test No: ONE (1)

Equipment Tested: Lexent Corporation Model 2000

Configuration: The Lexent Model 2000 was set up on a wooden turntable 3 meters from the tunable dipole antenna.

No support equipment was needed to run the Model 2000 in its normal mode of operation.

Any emissions radiating from the Model 2000 were maximized by rotating the test table and placing the cables in their worst case configuration.

Test Mode: The test was performed in two modes of operation: (a) Model 2000 Controller on at high power; (b) Model 2000 Controller on at low power.

Results: The Lexent Corporation Model 2000 meets the Spurious emission requirements of FCC Part 15 Subpart C Paragraph 15.213 as configured for testing.

Fixes: None

FIELD STRENGTH OF SPURIOUS EMISSIONS
30 MHz to 10 GHz

Test No: **TWO (2)**

Equipment Tested: Lexent Corporation Model 2000

Configuration: The Lexent Model 2000 was set up on a wooden turntable 3 meters from the tunable dipole antenna.

No support equipment was needed to run the Model 2000 in its normal mode of operation.

Any emissions radiating from the Model 2000 were maximized by rotating the test table and placing the cables in their worst case configuration.

Test Mode: The test was performed in two modes of operation: (a) Model 2000 Controller on at high power; (b) Model 2000 Controller on at low power.

Results: The Lexent Corporation Model 2000 meets the Spurious emission requirements of FCC Part 15 Subpart C Paragraph 15.213 as configured for testing.

Fixes: None

REQUIRED BANDWIDTH
418MHz

Test No: **THREE (3)**

Equipment Tested: Lexent Corporation Model 2000

Configuration: The Lexent Model 2000 was set up on a wooden turntable 3 meters from the tunable dipole antenna.

No support equipment was needed to run the Model 2000 in its normal mode of operation.

Any emissions radiating from the Model 2000 were maximized by rotating the test table and placing the cables in their worst case configuration.

Test Mode: The test was performed in two modes of operation: (a) Model 2000 Controller on at high power; (b) Model 2000 Controller on at low power.

Results: The Lexent Corporation Model 2000 meets the Spurious emission requirements of FCC Part 15 Subpart C Paragraph 15.213 as configured for testing.

Fixes: None

RADIATED EMISSIONS
30 MHz to 10 GHz

Test No: **FOUR (4)**

Equipment Tested: Lexent Corporation Model 2000

Configuration: The Lexent Model 2000 was set up on a wooden turntable 3 meters from the tunable dipole antenna.

No support equipment was needed to run the Model 2000 in its normal mode of operation.

Any emissions radiating from the Model 2000 were maximized by rotating the test table and placing the cables in their worst case configuration.

Test Mode: The test was performed with the transmitted turned off, in receive mode only.

Results: The Lexent Corporation Model 2000 meets the radiated emission requirements of FCC Part 15 Subpart B Class B.

Fixes: None

SUMMARY OF RECOMMENDATIONS

The Lexent Corporation Model 2000 will not require modifications in order to insure compliance with the FCC Part 15 Subpart C requirements.

Please note that if any modifications and or fixes were implemented to the EUT to achieve compliance, that other approaches to solving the problem may exist. In addition, any EMI/EMC shielding products listed in this report may be substituted with an equivalent.

APPENDIX A

TEST DATA

TEST LOG

NEW 207-26

Customer: Lexent Tech Program: _____

EUT: Model 2-000 S/N _____

PRE-TEST CHECKLIST

DATE	COMMENTS
	Test Plan/Procedure: FCC Part 15
	Test Specification: FCC Part 15 15.231
	Chomerics Procedure: CHO TEP# T1
	EUT Power Requirement Verified:
	Voltage Battery Frequency _____ Phase _____
	Voltage _____ Frequency _____ Phase _____
	EUT Functional Operational Check: [ ] Pass [ ] Fail
	Environmental: Ambient Temperature 72 °F
	Humidity: 40 % Atmospheric Pressure: 30"
	Bonding / Grounding: NA Safety Issues: NA

IN-PROCESS TEST CHECKLIST

Date	Test Type	Test Equipment Calibrated	Test Performed Properly- Data Accepted	EUT Setup Check / Operational Check	EUT Pass/Fail
11/10/98	Rad.	✓	✓	✓	Pass
11/10/98	Bandwidth	✓	✓	✓	Pass
11/12/98	Receiver	✓	✓	✓	Pass

POST TEST CHECKLIST

Date: 11/12/98

EUT Functional Operational Check: [✓] Pass [ ] Fail

Robert Fast David Chamberlain

Test Engineer Test Services Mgr

CTS-FORM-010

RADIATED E FIELD EMISSION MEASUREMENTS

CUSTOMER: Lexent Tech. Inc.

EQUIPMENT: Model 2000 High Power

TESTED BY: K. Foster

BANDWIDTH: [X] 100 kHz (PEAK) / 120 kHz (QP)

OTHER (SPECIFY)

FREQUENCY RANGE: [X] 30MHz - 1GHz

OTHER (SPECIFY) 30MHz - 10GHz

DATE: 11/12/98

TEST NUMBER: 1 & 2

OPERATING MODE: High Power

TEST SPEC: FCC Part 15 Subpart C

PROCEDURE: ANSI C63.4

ANTENNA DISTANCE: [X] 3 METERS [ ] 10 METERS

Frequency MHz	Peak Measured Level -dBm	Quasi-Peak Measured Level dBuV	Antenna Height (Meters)	Turntable Azimuth (Degrees)	Antenna H/V	Antenna Fac/Cable Loss dB	Field Level dB uV/m **	Limit dBuV/m (QP)
418	56	-	1½	0	V	28.7	79.7	80.28
836	-	-	1	0	H	15.6	68.6	70.6
1254	90	-	1	0	H	24.9	41.9	70.6
1672	92	-	1	0	H	26.9	41.9	70.6
2090	96	-	1	0	H	27.3	38.3	70.6
3344	94	-	1	0	H	32.0	44.0	70.6
3762	94	-	1	0	H	32.7	45.7	70.6
4180	90	-	1	0	H	34.1	57.1	70.6
4598	92	-	1	0	H	33.2	48.2	70.6
5016	92	-	1	0	H	35.6	50.6	70.6
			No Other Signals detected					

** All signals greater than 3dB from the limit are calculated to the nearest whole number.

** Field Level (dBuV/m) = [107 - Measured Level (dBm)] + Antenna Factor/Cable Loss (dB)

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RADIATED E FIELD EMISSION MEASUREMENTS

CUSTOMER: Lexent Tech Inc.

EQUIPMENT: Model 2000 Low Power

TESTED BY: R. Foster

BANDWIDTH: [√] 100 kHz (PEAK) / 120 kHz (QP)

OTHER (SPECIFY) _____

FREQUENCY RANGE: [√] 30MHz - 1GHz

OTHER (SPECIFY) 30MHz - 10GHz

DATE: 11/12/98

TEST NUMBER: 1 #2

OPERATING MODE: Low Power

TEST SPEC: FCC Part 15 Subpart C

PROCEDURE: ANSI C62.4

ANTENNA DISTANCE: [√] 3 METERS [ ] 10 METERS

Frequency MHz	Peak Measured Level -dBm	Quasi-Peak Measured Level dBuV	Antenna Height (Meters)	Turntable Azimuth (Degrees)	Antenna H/V	Antenna Fac/Cable Loss dB	Field Level dB uV/m **	Limit dBuV/m (QP)
478	76	-	1½	0	H	28.7	59.7	80.28
836	77	-	1	0	H	19.6	49.6	70.28
			No other Signals detected					

** All signals greater than 3dB from the limit are calculated to the nearest whole number.

** Field Level (dBuV/m) = [107 - Measured Level (dBm)] + Antenna Factor/Cable Loss (dB)

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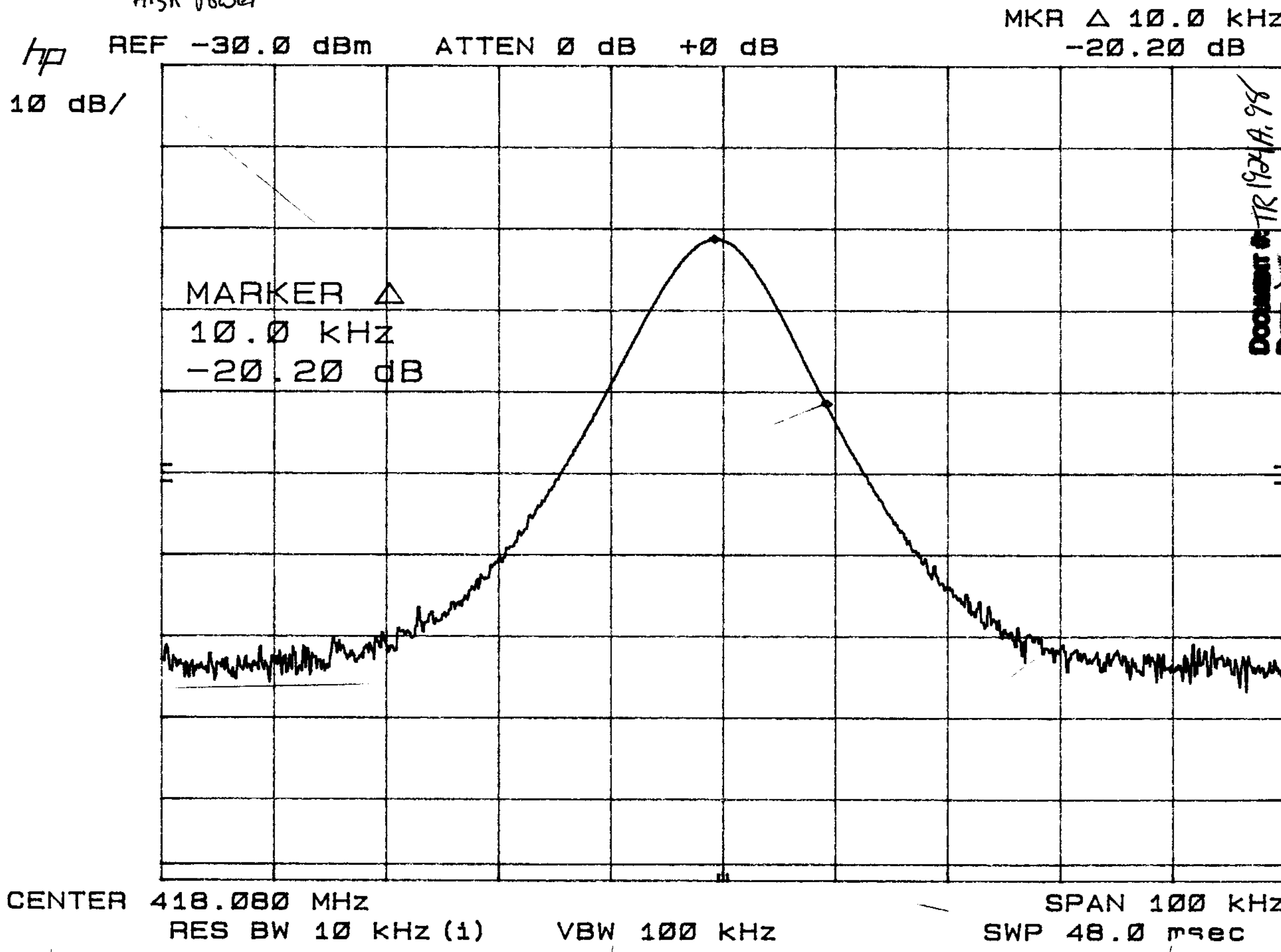
92-L92 332

High Power



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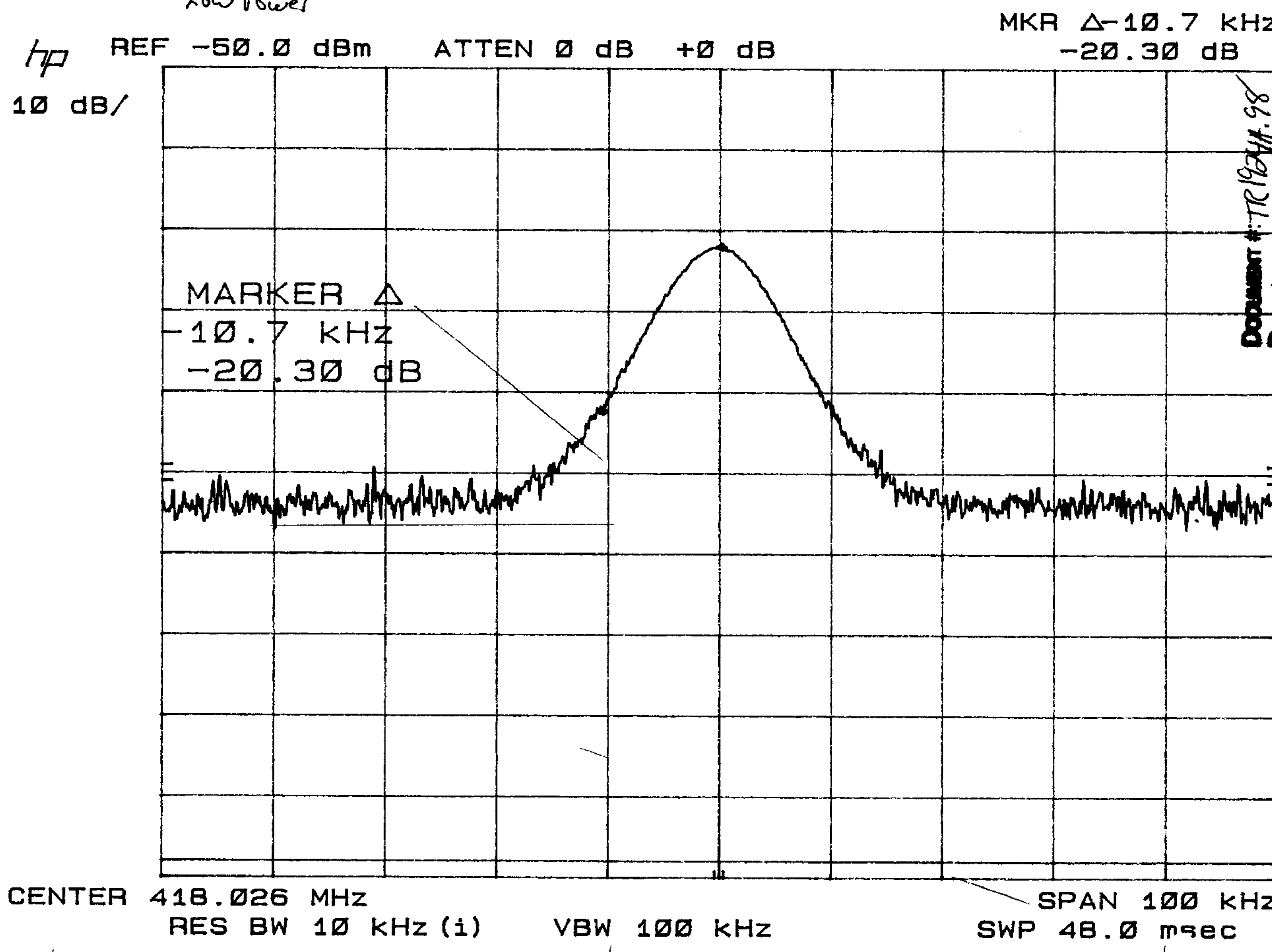
Low Power



RADIATED E FIELD EMISSION MEASUREMENTS

CUSTOMER: Lexent Tech Inc

EQUIPMENT: Model 2000

TESTED BY: R. Foster

BANDWIDTH: [X] 100 kHz (PEAK) / 120 kHz (QP)

OTHER (SPECIFY)

FREQUENCY RANGE: [X] 30MHz - 1GHz

OTHER (SPECIFY) 30MHz - 10GHz

DATE: 11/2/98

TEST NUMBER: 4

OPERATING MODE: Receiving

TEST SPEC: FCC Part 15 Subpart B

PROCEDURE: ANSI C63.4

ANTENNA DISTANCE: [X] 3 METERS [ ] 10 METERS

Frequency MHz	Peak Measured Level -dBm	Quasi-Peak Measured Level dBuV	Antenna Height (Meters)	Turntable Azimuth (Degrees)	Antenna H/V	Antenna Fac/Cable Loss dB	Field Level dB uV/m **	Limit dBuV/m (QP)
30	96	-	3	0	V	1.9	13	40.0
100	96	-	2½	0	V	12.9	24	43.5
250	92	-	2	0	V	0.4	15	46.0
500	92	-	2	0	V	10	25	46.0
1,000	90	-	1	0	V	23.2	38	54.0
5000	95	-	1	0	V	35.6	48	54.0
			No Signals detected					
			Noise Floor Only					

** All signals greater than 3dB from the limit are calculated to the nearest whole number.

** Field Level (dBuV/m) = [107 - Measured Level (dBm)] + Antenna Factor/Cable Loss (dB)

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APPENDIX B

SETUP PHOTOGRAPHS