TECHNICAL REPORT

NAME OF VENDOR:

Solectek Corporation
6370 Nancy Ridge Drive, Suite 109
San Diego, CA 92121

TRADE NAME:

Solectek Corporation

FCC ID:

KA324WAN4

MODEL NO:

MP1100

PHOTOGRAPHS:

SEE LIST OF EXHIBITS

MEASUREMENT STANDARD & PROCEDURE:

F.C.C. RULE PART 15

EXPOSITORY STATEMENT

1. NUMBER OF BANDS = 1
2. NUMBER OF CHANNELS = 3
3. TUNING RANGE, MHz = 2420 to 2458
4. OSCILLATOR RANGE, MHz = 2140 to 2178
5. I.F., MHz = 280
6. BLOCK DIAGRAM = ATTACHED
7. SPREAD SPECTRUM METHOD = DIRECT SEQUENCE

GENERAL INFORMATION

DESCRIPTION OF MEASUREMENT FACILITIES:

A description of the measurement facilities was filed with the Commission and was found to be in compliance with requirements of Section 2.948, by letter dated October 21, 1996. All pertinent changes will be reported to the Commission by an up-date.

IDENTIFICATION OF AN AUTHORIZED DEVICE:

DRAWING - SEE EXHIBITS

LOCATION OF LABEL - SEE PHOTOS

2.1033 Test and Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2, Sub Part J, sections 2.1033, 2.1035, 2.1041, 2.1043, 2.1045 and the following individual Parts:

15.247: Operation within the bands 902-928MHz, 2400-2483.5MHz and 5725-5850MHz (Spread Spectrum)

TEST EQUIPMENT

DEVICE	MODEL	SERIAL NUMBER	CALIBRATION DUE
HP Analyzer and Display	8566B	2747A04729	20-Sept-98
Quasi-Peak Adapter	85650A	2043A00211	20-Sept-98
Preselector	85685A	2648A00410	14-Oct-98
HP Peak Power Meter	8900D	9607U00511	12-Dec-98
HP Peak Power Sensor	84811A	3318A04705	1-Sept-98

EESI'S TEST EQUIPMENT & TEST FACILITIES CALIBRATION PROGRAM

EESI operates a comprehensive equipment calibration program in order to ensure the validity of all test data. EESI's calibration program is fully compliant to the requirements of ANSI/NCSL Z540-1 (1994) and of ISO 10012-1 (1993-05-01). EESI's calibration program therefore meets or exceeds the US national commercial and military requirements (N.B. ANSI/NCSL Z540-1 (1994) replaces MIL-STD-45662A) and meets the requirements of ISO-9000. Specifically, all of EESI's *primary reference standard devices* (e.g., resistor and capacitor decade boxes, vector voltmeters, multimeters, attenuators and terminations, RF power meters (and their detector heads), oscilloscope mainframes and plug-ins, spectrum analyzers, RF preselectors, quasi-peak adapters, interference analyzers, impulse generators, signal generators and pulse/function generators, etc.) and certain *secondary standard devices* (e.g., RF preamplifiers used in CISPR 11/22 and FCC Part 15/18 tests) are calibrated by EESI-approved independent (third party) metrology laboratories, using NIST-traceable standards. In all cases, the metrology laboratory furnishes EESI with Certificates oOf Calibration on each item of equipment that has been successfully recalibrated.

Calibration intervals are normally one year, except when the manufacturer advises a shorter interval (e.g., the HP 8568B Spectrum Analyzer is recalibrated every 6 months) or if US Government directives demand a shorter interval (e.g., the Eaton 533X-11 Impulse Generator is required to be recalibrated every six months for use in TEMPEST testing). Items of equipment which fail during routine use, or which suffer visible mechanical damage (during use or while in transit), are sidelined pending repair and recalibration. (Repairs are carried out either by the EESI-approved independent (third party) metrology laboratories, or by the manufacturer of the equipment.

EESI typically determines the Antenna Factors in its test antennas in-house. Antennas used for CISPR 11, CISPR 22 and FCC Part 15 and Part 18 Radiated Emissions testing (and for testing to the European Norms) aare calibrated against NIST-traceable, FCC-approved Roberts™ Dipoles, using the methods specified in both Annex G.5 of CISPR 16-1 (1993) and ANSI C63.5 (1991), including the "Three-Antenna Method." Certain other antennas (e.g., log-conic spirals) are calibrated using the procedures specified in SAE ARP-958A. In accordance with FCC regulations, EESI recalibrates its suite of antennas used for FCC tests on an annual basis. These calibrations are performed as a precursor to the FCC-required annual revalidation of the *Normalized Site Attenuation* properties of EESI's Open Area Test Site[1]. In those instances where antennas are acquired directly fromt eh manufacturer, EESI will purchase and Antenna Factor Calibration Data Package. Finally, EESI may send antennas out to NIST-traceable/military-approved independent antenna range laboratories, or to the original equipment manufacturer.

[1] EESI uses the procedures contained in both Subclause 16.6 and Annex G.2 of CISPR 16-1 (1993), and ANSI C63.4 (1992) when performing Normalized Site Attenuation measurement for calibration of EESI's Open Area Test Site.

NAME OF TEST: MAXIMUM PEAK OUTPUT POWER

PARAGRAPH: 15.247 (b)

TEST CONDITIONS: S. T. & H.

SPEC. LIMIT: ≤ 1 Watt (peak)

TEST EQUIPMENT: AS SHOWN

MEASUREMENT DATA

ANTENNA GAIN, dBi

OMNI WITH 30 DEG REFLECTOR	= 15
PARABOLIC DISH	= 20.4 (ANT-DIR-21)
PARABOLIC DISH AND SHROUD	= 21.2 (ANT-DIR-22)

POWER OUTPUT USING 100 FOOT CABLE (dBm)

CHANNEL	2.420 GHz	2.439 GHz	2.458 GHz
PARABOLIC ANT-DIR-21	+13.4	+13.5	+13.5
PARABOLIC ANT-DIR-22	+13.4	+13.5	+13.5
OMNI 30°	+20.1	+19.5	+19.7
SHORT CIRCUIT♦	<-30	<-30	<-30
OPEN CIRCUIT♦	<-30	<-30	<-30

♦ If a non-Solectek antenna is attached, typically a DC open or short, the ODU will not transmit. This circuitry satisfies the intent of the FCC requirement for a unique connector as described in section 15.203. Refer to Page 33 for data and plots.

PEAK POWER INTERCONNECTION CABLE

CONNECTION	I/O CABLE
EUT MP1100	Coaxial TNC LMR 400 (100 feet)

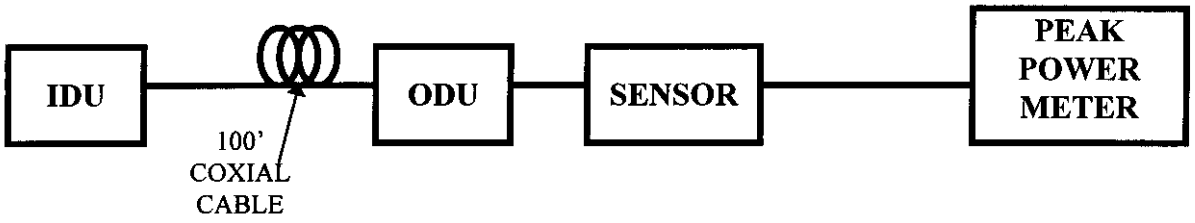
TEST RESULTS - CONDUCTED EMISSIONS

15.247(b) The maximum peak output of the transmitter is ≤1W (EIRP ≤ 4)

1. The calculated Peak output of the 30° Omni Antenna = 35.1dBm (ch. 1)
2. The calculated Peak output of the Parabolic Dish ANT-DIR-21 = 33.9dBm (ch. 2)
3. The calculated Peak output of the Parabolic Shroud ANT-DIR-22 = 34.7dBm (ch. 3)

		POWER		ANTENNA GAIN		EIRP
EUT (Peak power)	=	20.1 dBm	+	15.0 dBi	=	35.1 dBm*
EUT (Peak power)	=	13.5 dBm	+	20.4 dBi	=	33.9 dBm*
EUT (Peak power)	=	13.5 dBm	+	21.2 dBi	=	34.7 dBm*

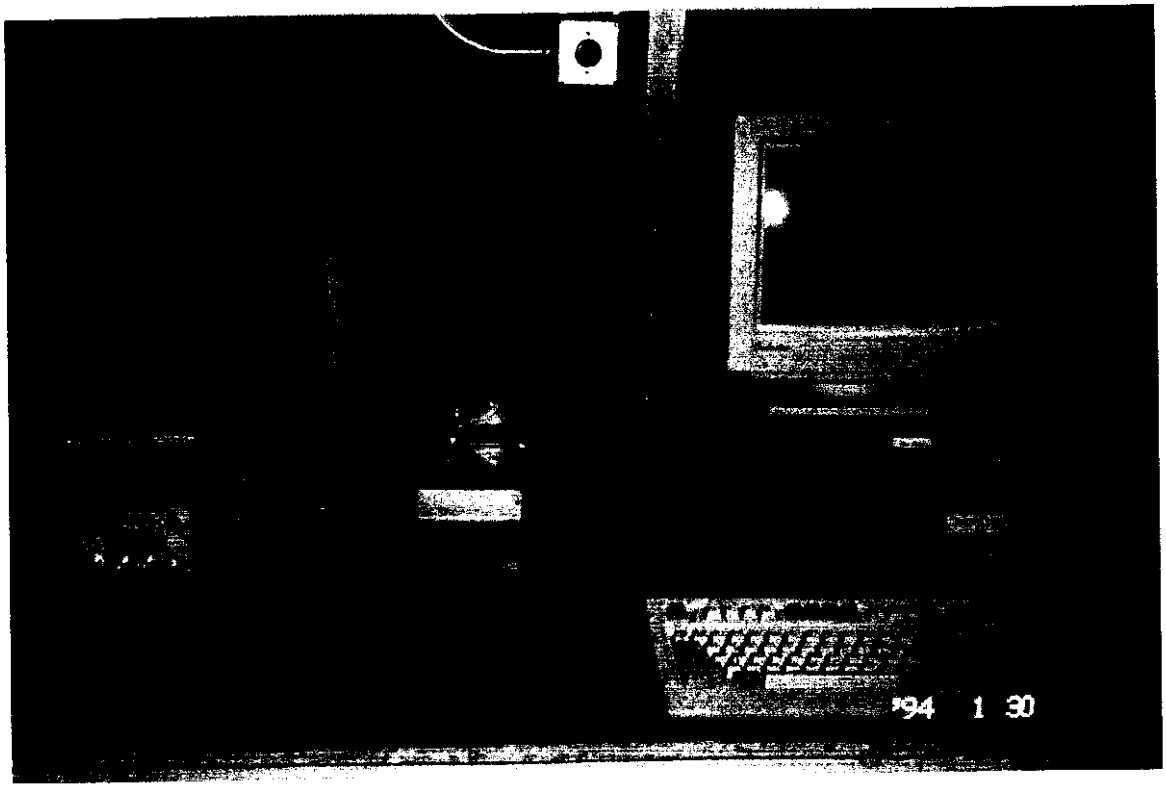
TEST DIAGRAM



TEST EQUIPMENT USED

UNIT	SPECTRUM ANALYSER
MODEL NUMBER	8566B
SERIAL NUMBER	2747A04729
UNIT	PEAK POWER METER
MODEL NUMBER	HP 9800D
SERIAL NUMBER	3607400511
UNIT	POWER SENSOR
MODEL NUMBER	HP 84811A
SERIAL NUMBER	3318A04705

* Highest Emission Used

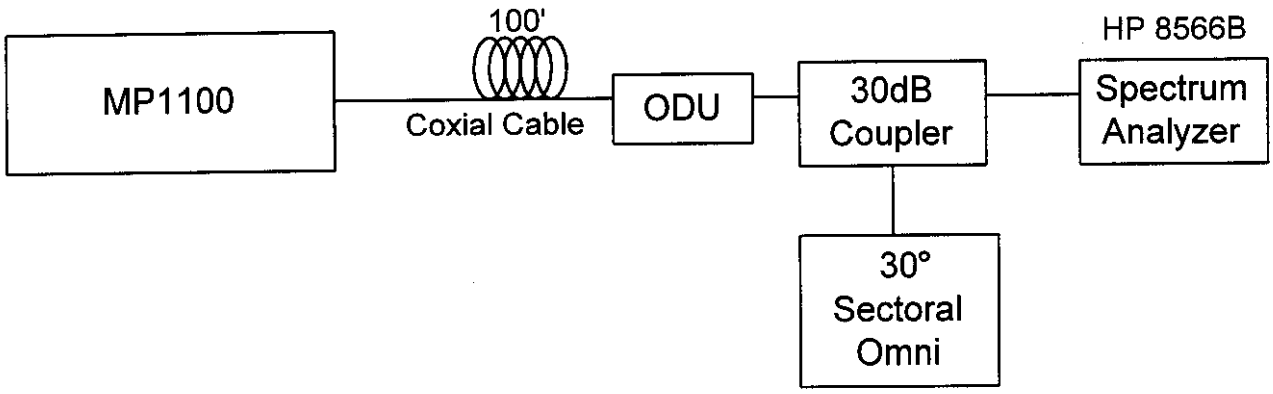


Peak Power Output Set-Up
MP1100

15.247(c)(1) Spurious Emissions (RF Antenna Conducted Test)

In any 100KHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of desired power based on either RF conducted or a radiated measurement.

NOTE: The 30° Omni was selected as it causes the Out Door Unit to generate the greatest power.

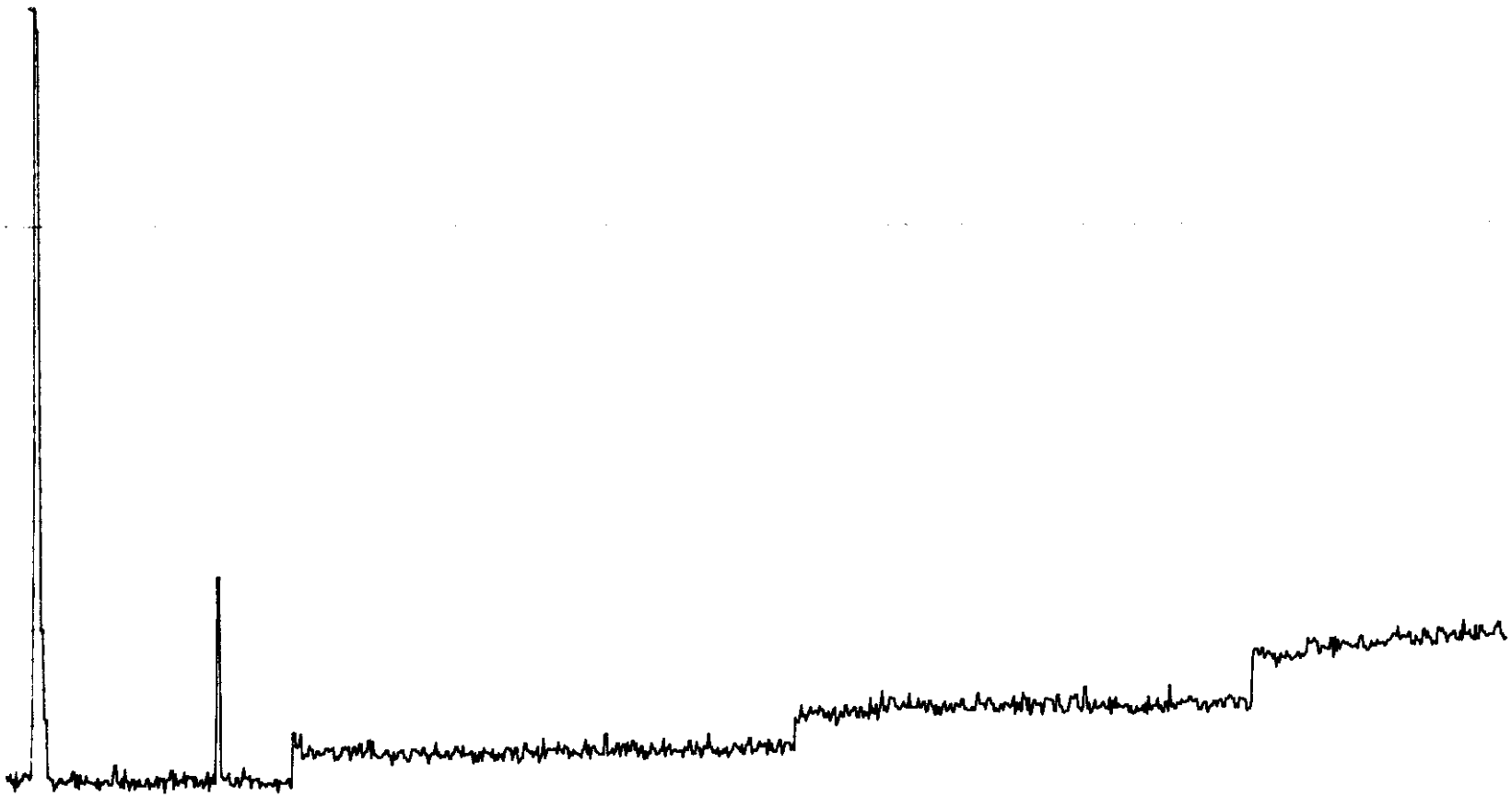


KA324WAN4
Power: 20.1dBm
EUT Frequency: 2.420GHz
Spurious Emissions

15.247.C.1.

3.26.98

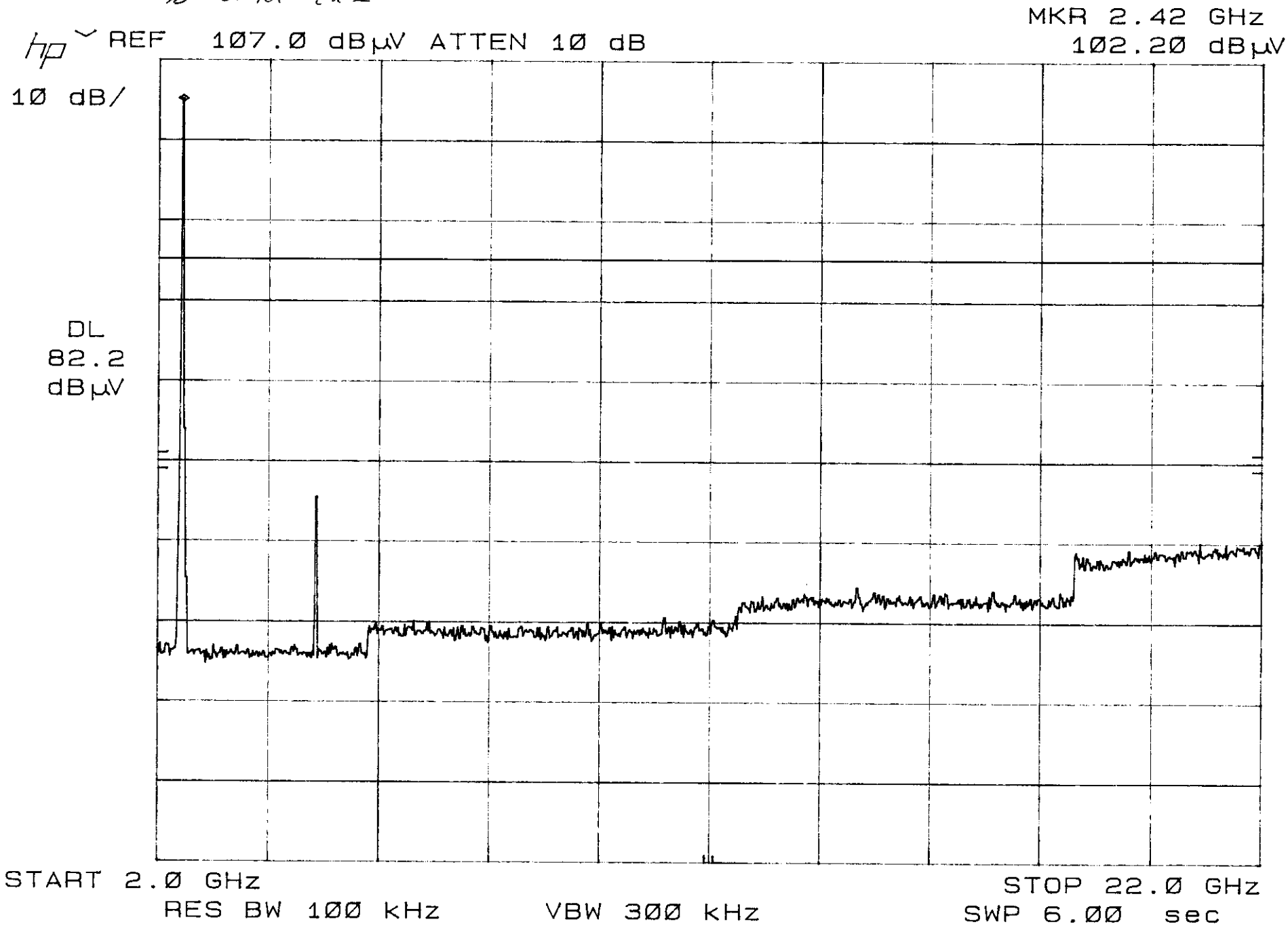
30° OMNI ch1



KA324WAN4
Power: 19.5 dBm
EUT Frequency: 2.4396 GHz
Spurious Emissions

15.247, C.1.
30° OMNI ch 2

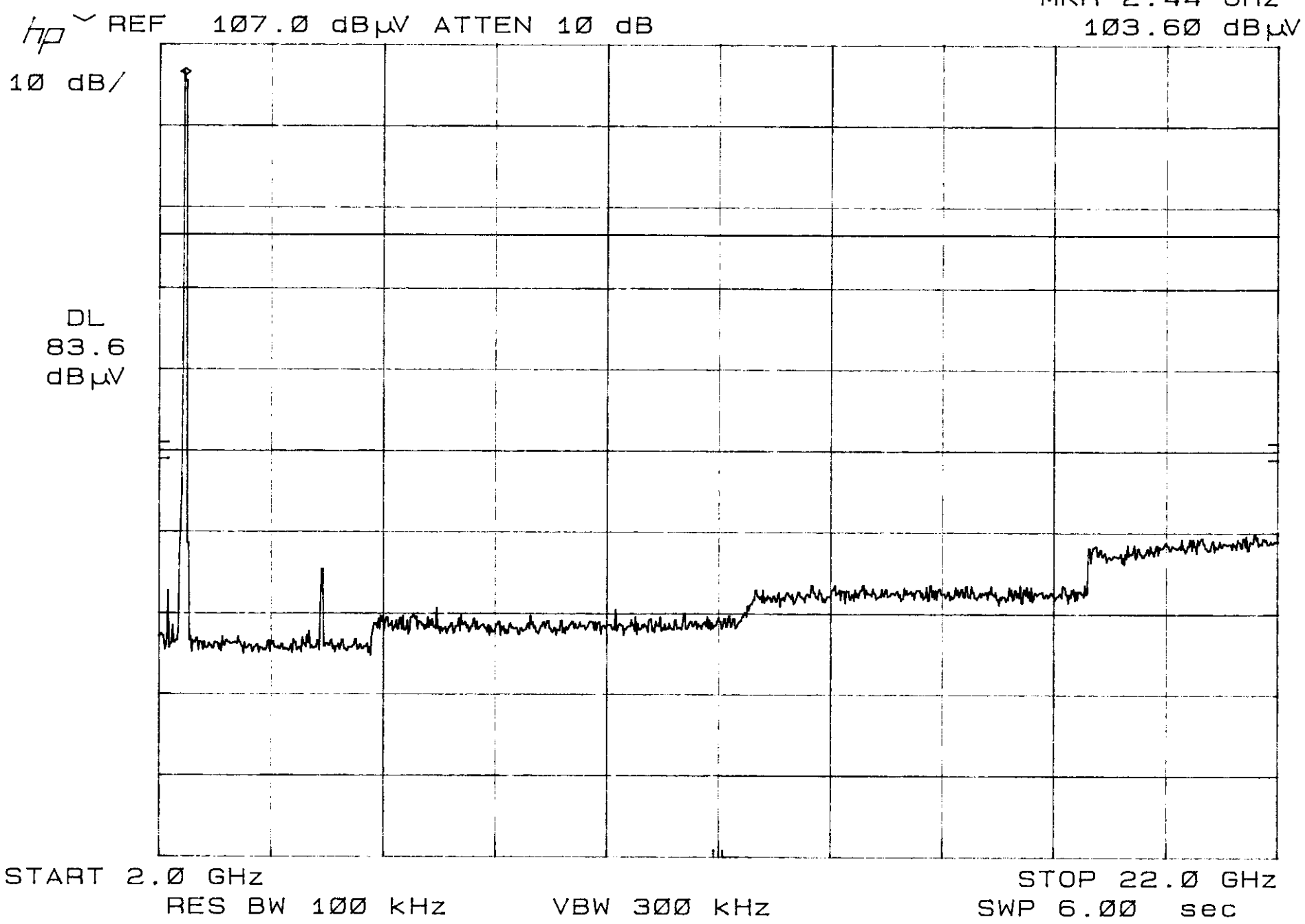
3-26-98



KA324WAN4
Power: 19.7 dBm
EUT Frequency: 2.458 GHz
Spurious Emissions

15.247.c.1,
30° omni ch 3

3-26-98



15.247(c)(2)

Out of Band Radiated Measurements For Part 15 Transmitters

Radiated Measurements

Range of Measurement	Specification	Resolution B/W	Video B/A
30 to 1000 MHz	CISPR	≥ 100 kHz	≥ 100 kHz
> 1000 MHz	FCC, 15.37(b)	1 MHz	≥ 1 MHz
(if averaging)	FCC, 15.37(b)	1 MHz	10 Hz

Measuring Equipment

a. Antennas:

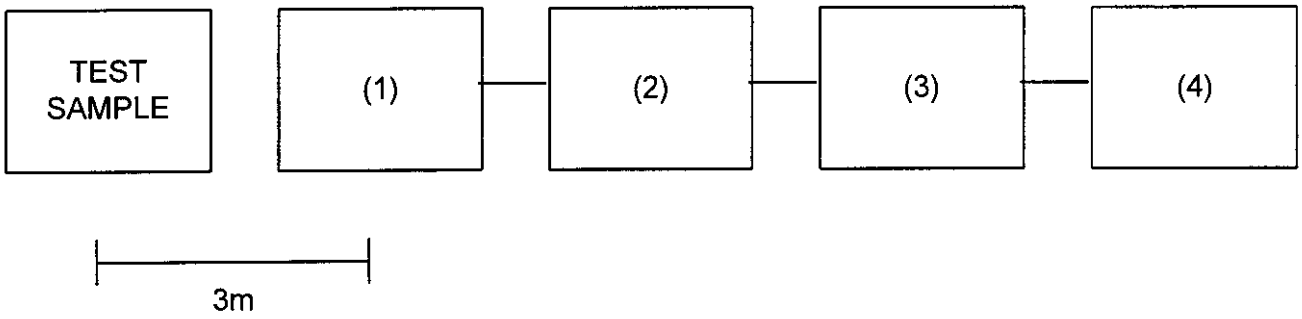
EMCO 3146	20 - 200MHz
EMCO 1412	200 - 1000MHz
EMCO 3115	1 - 18GHz

b. Instruments

HP8566B	Spectrum Analyzer
HP85685A	Preselector, w/preamp below 2 GHz
HP85650A	Quasi Peak Adapter
HP8449	Preamp, above 2 GHz

All test instrumentation is calibrated every 6 months. In addition, all test instrumentation is calibrated daily, or as required by the manufacturer.

Transmitter Radiated Measurements



1. Transducer
   EMCO 3115
   EMCO 1412 Log Periodic

2. High Pass Filter
   Trilithic Filter 23042

3. Preamp
   HP 8449 (+30dB)
   (Out-of-band only)

4. Spectrum Analyzer
   HP8566B

OUT OF BAND EMISSIONS

MEASUREMENT PROCEDURE:

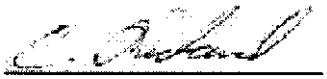
At first, bench tests were performed to locate the emissions at the antenna terminals.

In the field, tests were conducted over the range shown. The test sample was set up on a wooden turntable above ground, and at a distance of three meters from the antenna connected to the spectrum analyzer.

In order to obtain the maximum response at each frequency, the turntable was rotated, and the search antenna was raised and lowered. The E.U.T. was also adjusted for maximum response.

15.247(c)(2)

Electromagnetic Engineering Services, Incorporated
FCC, Part 15B, Class "B" Radiated Emissions Data Sheet
(3m Open Area Test)

Client: **Solectek** *Conducted by:* 
EUT: **Wireless LAN Tranceiver** *Date of Test:* **03-28-98**
Model #: **MP1100 (30 OMNI Transmit Antenna)** *Test Distance, Amp. gain:* **3m, 30dB**

Frequency (MHz)	Spectrum Analyzer Reading at 3m (dBµV)	Antenna Polori-zation (vertical or horizontal)	Amp. Gain & Cable Loss, Distance & Antenna Factor Correction for 3m (dBuV/m)	Total Interference Level at 3m (dBµV/m)	Emission Spec. Limit at 3m (dBµV/m)	Difference Margin at 3m
1111.115	2.5	v	28.0	30.5	54.0	-23.5
1120.100	7.1	v	28.0	35.1	54.0	-18.9
1152.385	4.0	v	28.1	32.1	54.0	-21.9
2439.800	***33.6***	***v***	***34.7***	***68.3***	***137.2***	***-68.9***
4878.045	-3.9	v	40.6	36.7	54.0	-17.3
4916.015	-7.3	v	41.0	33.7	54.0	-20.3

No additional emissions were observed up to 22 GHz.

NOTE: All test data conforms with the requirements of CFR47, Part 15.35(b) in that average detection was used for all measurements over 1GHz, and that in no case did the Peak detected signal ever exceed the average detected signal by more than 20dB.

The low, mid, and high channels were tested for this Antenna. Only the worst case data is shown in the table above. Appendix A contains the raw untabulated data from this test.

Test Conditions: Standard radiated emissions test set up on FCC registered open field site. The highest emissions for all antenna heights, polarities, and table orientations are the only emissions recorded.

15.247(c)(2)

Electromagnetic Engineering Services, Incorporated
FCC, Part 15B, Class "B" Radiated Emissions Data Sheet
(3m Open Area Test)

Client: **Solectek** *Conducted by:*
EUT: **Wireless LAN Tranceiver** *Date of Test:* **04-02-98**
Model #: **MP1100 (ANT-DIR-21 Transmit Antenna)** *Test Distance, Amp. gain:* **3m, 30dB**

Frequency (MHz)	Spectrum Analyzer Reading at 3m (dBµV)	Antenna Polori-zation (vertical or horizontal)	Amp. Gain & Cable Loss, Distance & Antenna Factor Correction for 3m (dBuV/m)	Total Interference Level at 3m (dBµV/m)	Emission Spec. Limit at 3m (dBµV/m)	Difference Margin at 3m
2458.000	***74.3***	***v***	***34.7***	***109.0***	***140.2***	***-31.2***
4356.200	10.8	v	39.9	50.7	54.0	-3.3
6534.025	2.6	v	43.3	45.9	54.0	-8.1

No additional emissions were observed up to 22 GHz.

NOTE: All test data conforms with the requirements of CFR47, Part 15.35(b) in that average detection was used for all measurements over 1GHz, and that in no case did the Peak detected signal ever exceed the average detected signal by more than 20dB.

The low, mid, and high channels were tested for this Antenna. Only the worst case data is shown in the table above. Appendix A contains the raw untabulated data from this test.

Test Conditions: Standard radiated emissions test set up on FCC registered open field site. The highest emissions for all antenna heights, polarities, and table orientations are the only emissions recorded.

15.247(c)(2)

Electromagnetic Engineering Services, Incorporated
FCC, Part 15B, Class "B" Radiated Emissions Data Sheet
(3m Open Area Test)

Client:	**Solectek**	*Conducted by:*	
EUT:	**Wireless LAN Tranceiver**	*Date of Test:*	**04-02-98**
Model #:	**MP1100 (ANT-DIR-22 Transmit Antenna)**	*Test Distance, Amp. gain:*	**3m, 30dB**

Frequency (MHz)	Spectrum Analyzer Reading at 3m (dBµV)	Antenna Polori-zation (vertical or horizontal)	Amp. Gain & Cable Loss, Distance & Antenna Factor Correction for 3m (dBuV/m)	Total Interference Level at 3m (dBµV/m)	Emission Spec. Limit at 3m (dBµV/m)	Difference Margin at 3m
1878.600	13.4	v	32.3	45.7	54.0	-8.3
2458.000	***76.7***	***v***	***64.7***	***111.4***	***141.2***	***-29.8***
4480.000	4.4	v	37.9	42.3	54.0	-11.7

No additional emissions were observed up to 22 GHz.

NOTE: All test data conforms with the requirements of CFR47, Part 15.35(b) in that average detection was used for all measurements over 1GHz, and that in no case did the Peak detected signal ever exceed the average detected signal by more than 20dB.

The low, mid, and high channels were tested for this Antenna. Only the worst case data is shown in the table above. Appendix A contains the raw untabulated data from this test.

Test Conditions: Standard radiated emissions test set up on FCC registered open field site. The highest emissions for all antenna heights, polarities, and table orientations are the only emissions recorded.

Name of Test: Emissions at Band Edges

Paragraph:

Test Conditions S. T. & H.

Spec. Limit:

Test Equipment: As for "Out of Band Emissions"

Procedure: As for "Out of Band Emissions"

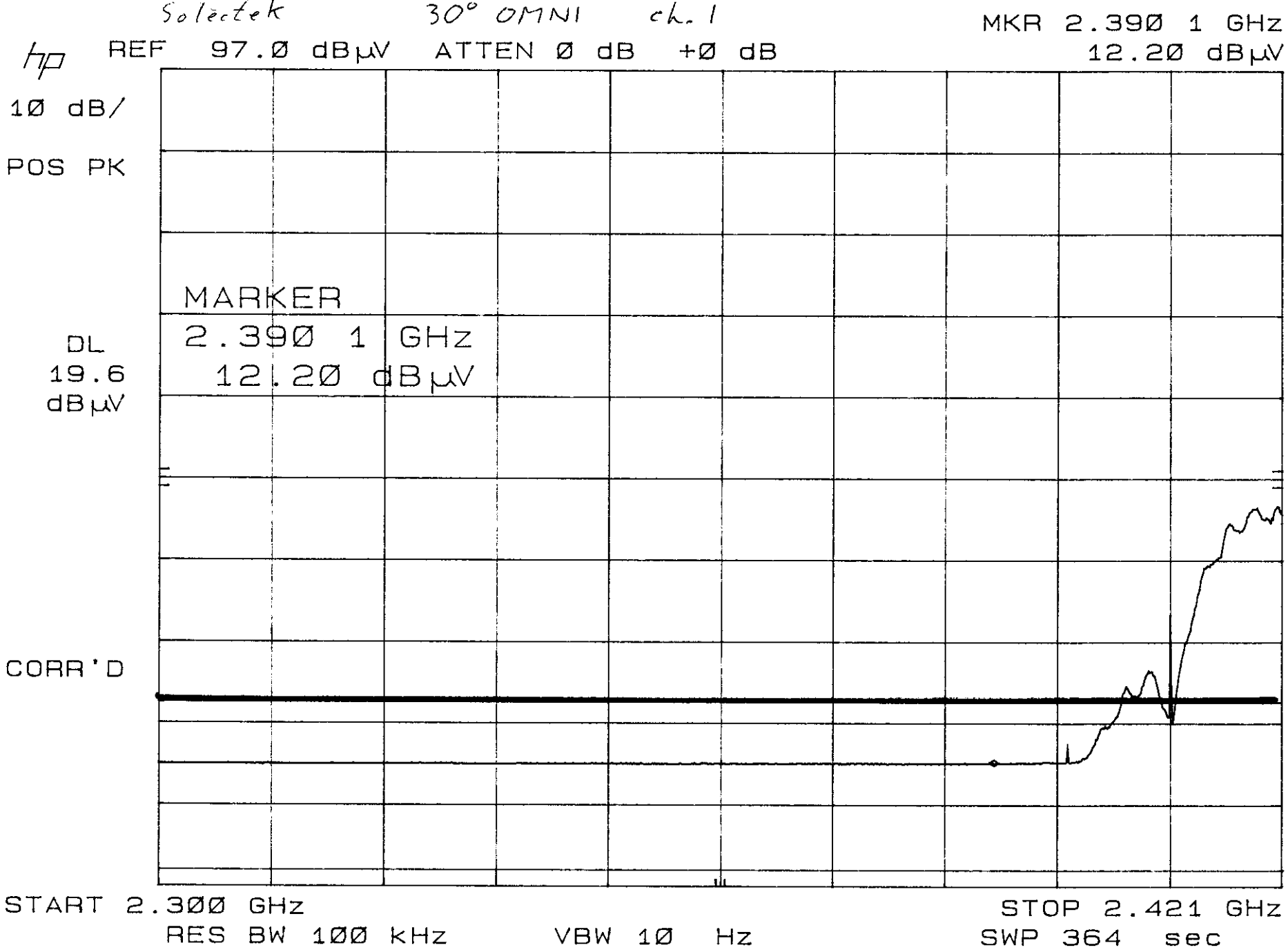
Measurement Results

Attached

15.247.C.2

Selectek 30° OMNI ch. 1

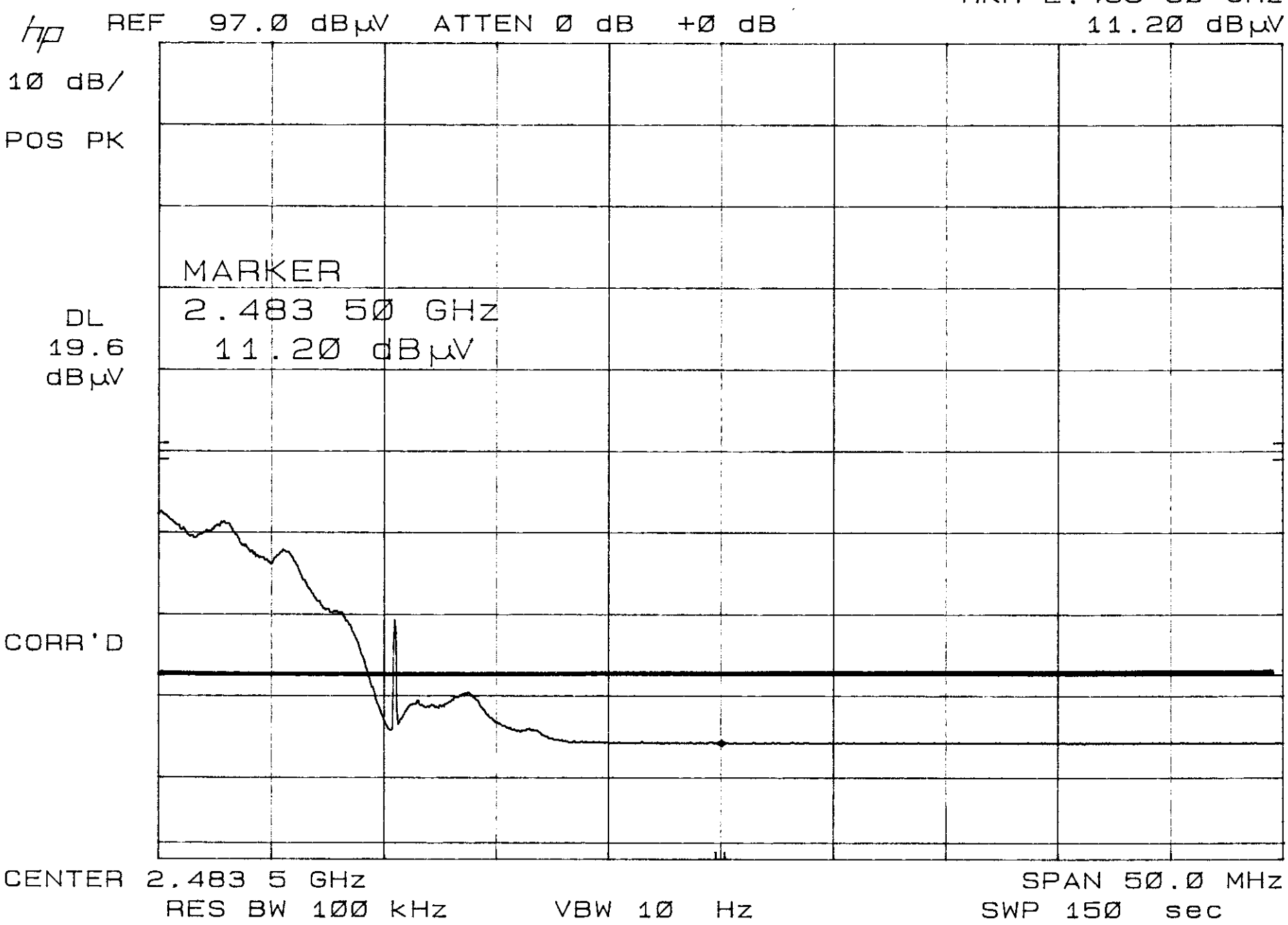
4-2-98



15.247.C.2

Selectek 30° OMNI ch. 3

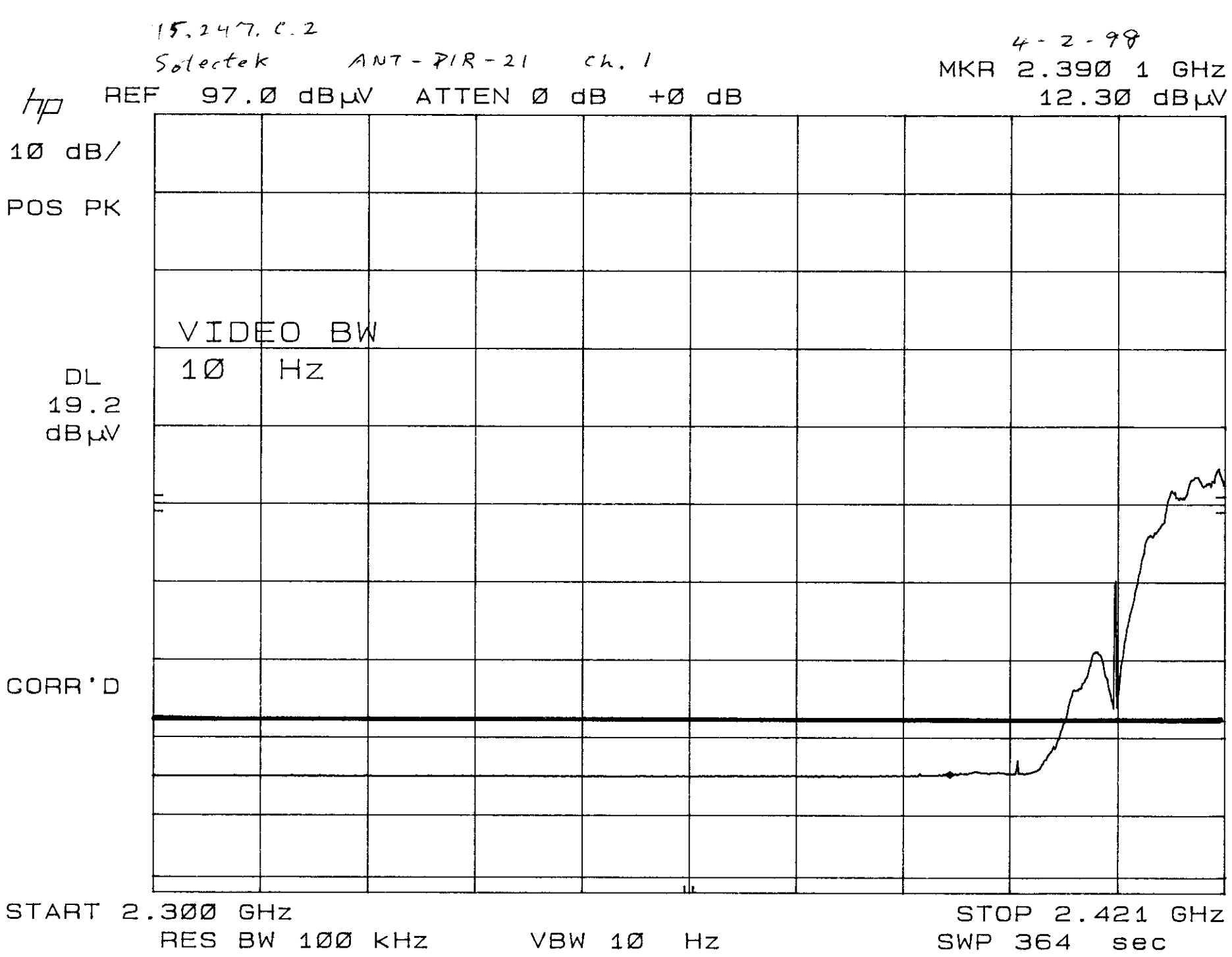
4-2-98



15.247. C.2

Selectek ANT-PIR-21 ch. 1

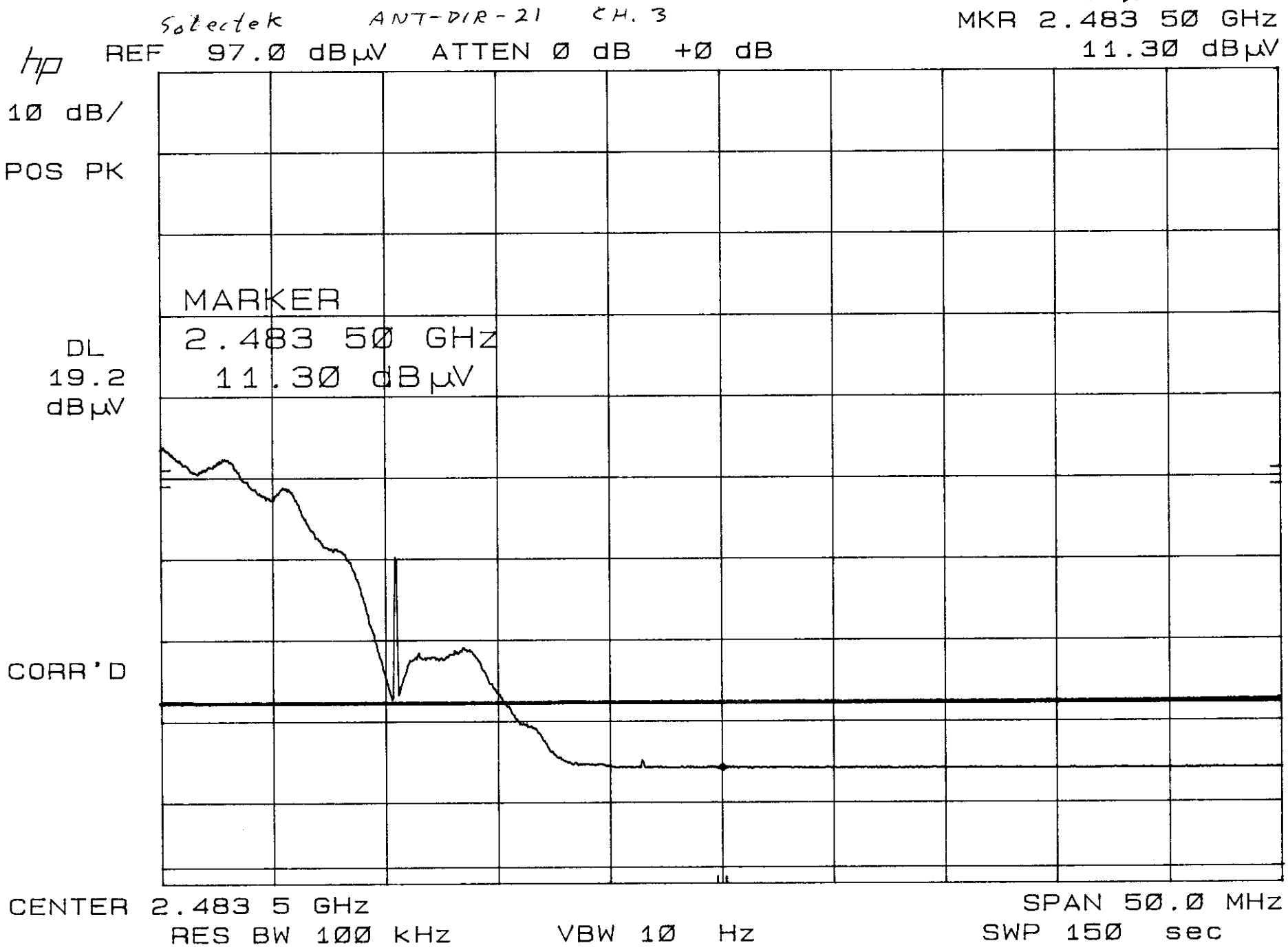
4-2-98



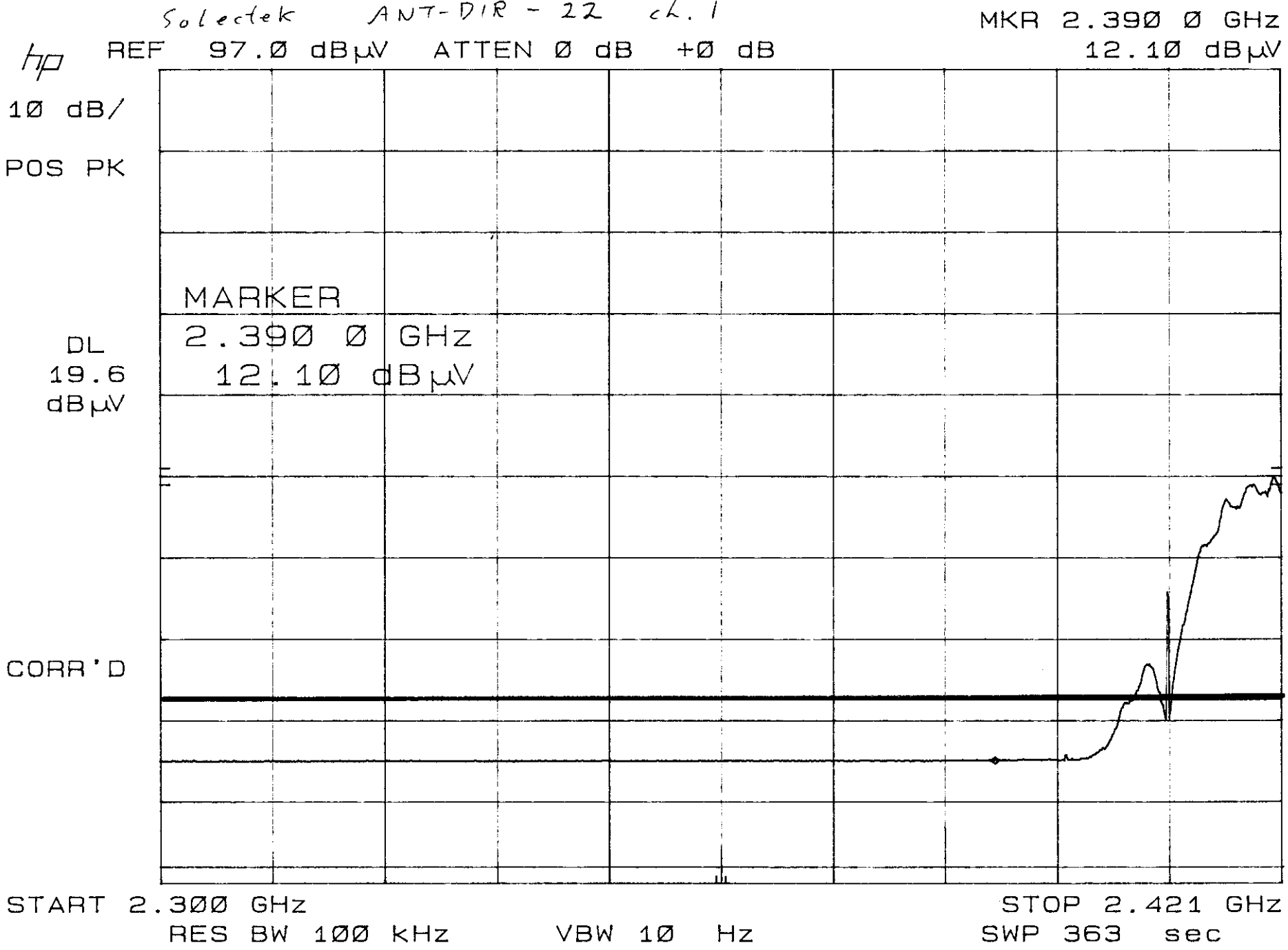
15.247.C.2

Selectek ANT-DIR-21 CH. 3

4-2-98



15.247.C.2
Soletek ANT-DIR - 22 ch. 1
4-2-98

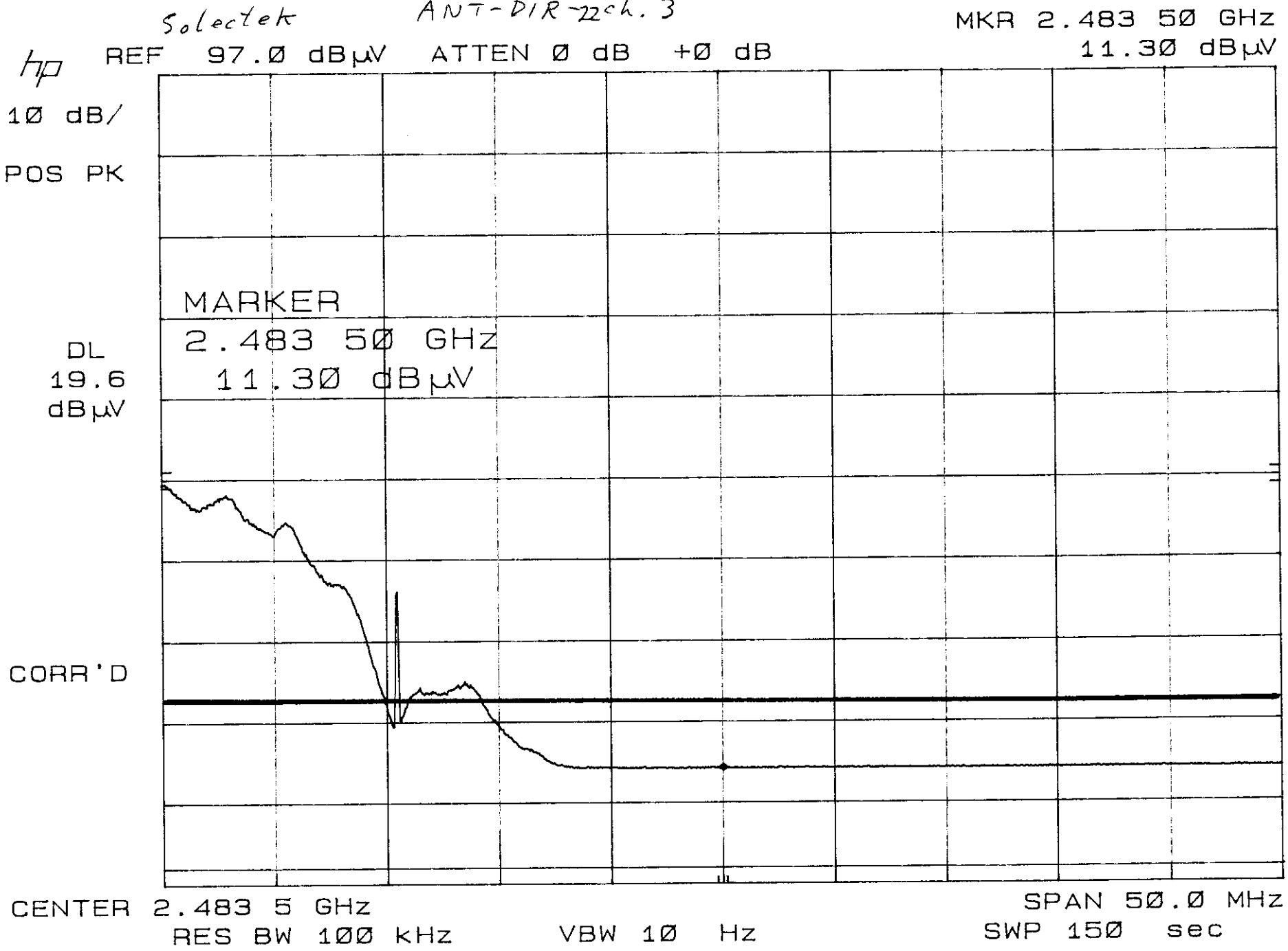


15.247.C.2

Selectek

ANT-DIR-22ch.3

4-2-98



Name of Test:	Out of Band Emissions	
Paragraph:	15.109, 15.205	
Test Conditions:	Standard Temperature and Humidity	
Spec. Limit:	See Below	
Test Equipment:	As per previous page	
Search Antennas:	30 KHz - 200 MHz:	EMCO 3146
	200 MHz - 1 GHz	EMCO 1412
	1 GHz - 10 GHz	EMCO 3115

Limit

In any 100kHz bandwidth outside these frequency bands, radio frequency power that is produced by the modulation products of the spreading sequence, information sequence, and the carrier frequency shall be either

at least 20dB below that in any 100kHz bandwidth within the band that contains the highest level of the desired power

or

shall not exceed the general levels specified in 15.209(a),

whichever results in the lesser attenuation.
All other emissions outside these bands shall not exceed the general radiated emission limits specified in 15.209(a).

Measurement Procedure:

At first, bench tests were performed to locate the emissions at the antenna terminals.

In the field, tests were conducted over the range shown. The test sample was set up on a wooden turntable above ground, and at a distance of three meters from the antenna connected to the spectrum analyzer.

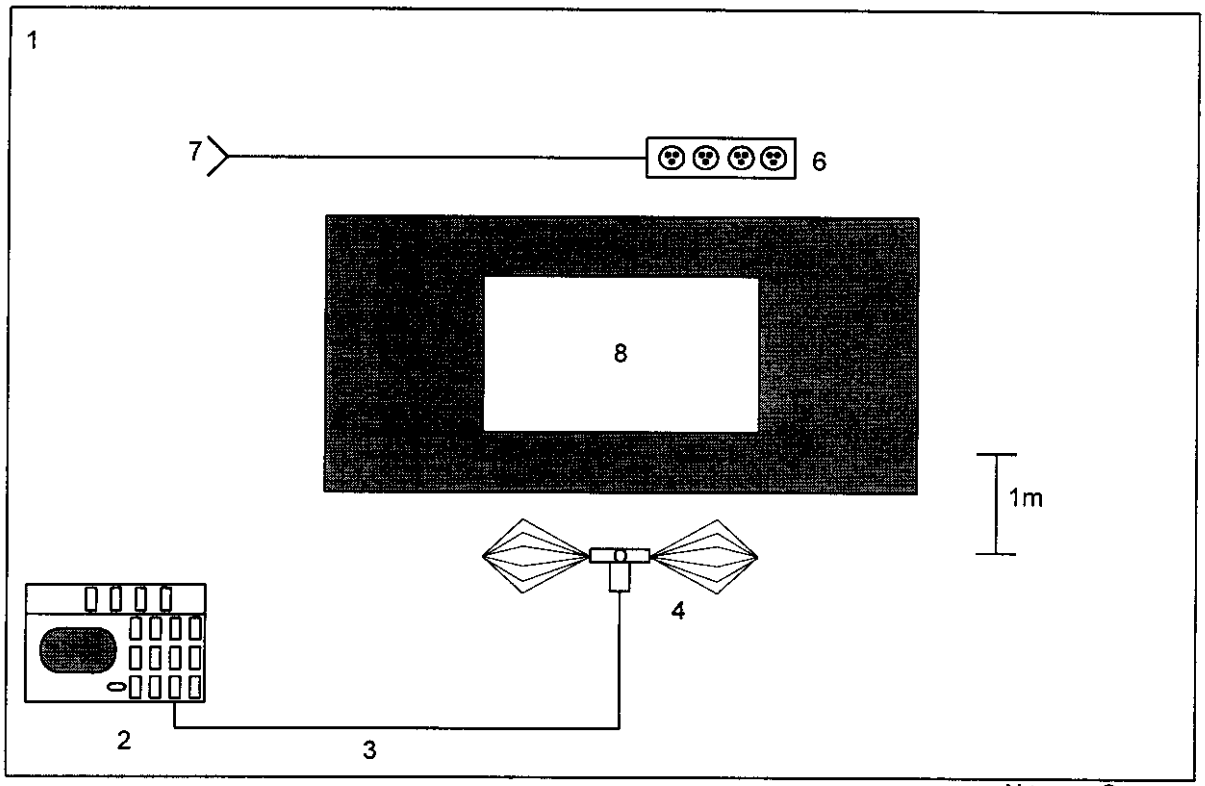
In order to obtain the maximum response at each frequency, the turntable was rotated, and the search antenna was raised and lowered. The E.U.T. was also adjusted for maximum response.

The field strength was calculated from:

$$E\ \mu V/m\ @\ 3m = LOG_{10}^{-1}\ \frac{(dBm + 107 + A.F. + C.L.)}{20}$$

The following results are worst case conditions. Tests were conducted in Horizontal & Vertical polarization modes. Measurement Results: Attached

Test Configuration, Frequency Identification of Radiated Emissions



NOT TO SCALE

CONFIGURATION LEGEND

1. Test Laboratory
2. Spectrum Analyzer with Quasi-Peak Adapter
3. Coax interconnect from Antenna to Spectrum Analyzer
4. Receive Antenna (basic relative position)
5. Non-Conducting table 80 cm above ground plane
6. Power strip for EUT and peripherals
7. AC power for devices (120/230 VAC, 50/60 cycles, single phase)
8. EUT and Associated System

Introduction

As required in 47 CFR, Parts 2 and 15, the methods employed to test the radiated and conducted emissions (as applicable) of the EUT are those contained within the American National Standards Institute (ANSI) document C63.4-1992, titled "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40GHz." All applicable FCC Rule Sections which provide further guidance for performance of such testing are also observed.

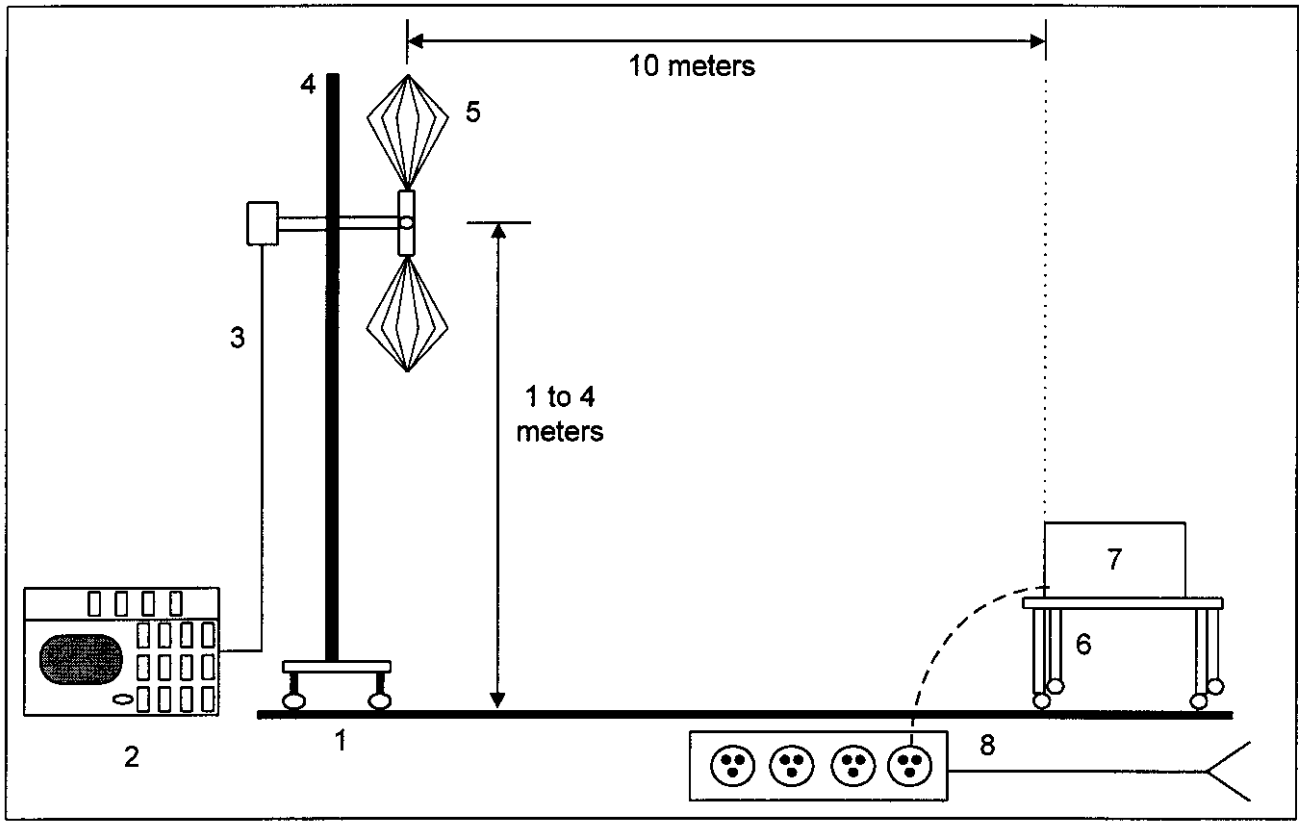
Configuration and Methods of Measurements for Conducted Emissions

Section 7 of ANSI C63.4 determines the general configuration of the EUT and associated equipment, as well as the test platform for conducted emissions testing. Table-top devices are placed on a non-conducting surface 80 centimeters above the ground plane floor and 40 centimeters from the ground plane wall. The EUT and associated system are configured to operate continuously, representing a "normally operating" mode. The emissions are recorded using the required bandwidth of 9kHz in the quasi-peak mode. The average amplitude is also observed employing a 10KHz bandwidth to determine the presence of broadband RFI. When such interference is caused by broadband sources (as defined by the FCC and ANSI Rules), the deviation guidelines contained in Section 11.3.1 of ANSI C63.4 are employed, which allows a correction factor of 13dB to be subtracted from the quasi-peak reading. The emissions levels are then compared to the applicable FCC limits to determine compliance.

System Configuration and Power Cables

EUT MP1100 ODU (Spread Spectrum Transceiver	Solectek Corporation MP1100 N/A KA324WAN4	6 ft., unshielded, 18 AWG, 3 wire, IEC connectors
EUT - Antenna (x3) Comsat Dish Seavey Dish Seavey Omni	 ANT-DIR-22 ANT-DIR-21 OMNI 30	N/A
Monitor	ACER 34T N/A 7134T	6 ft., unshielded, 18 AWG, 3 wire, IEC connectors
Keyboard	Reveal KB5923 N/A E8HEB-5923	N/A

Test Configuration, Radiated Emissions, 10-Meter Open Field Site



NOT TO SCALE

1. Ground Plane (11 x 17 meters)
2. Spectrum Analyzer with Quasi-Peak Adapter
3. Coax interconnect from Antenna to Spectrum Analyzer
4. Antenna Mast with motorized mounting assembly
5. Receive Antenna (basic relative position)
6. Non-Conducting table 80 cm above ground plane
7. EUT and Associated System
8. AC Power for devices

15.247(c)(2)

Electromagnetic Engineering Services, Incorporated
FCC, Part 15.247 Unintentional Radiated Emissions Data Sheet
(10m Open Area Test)

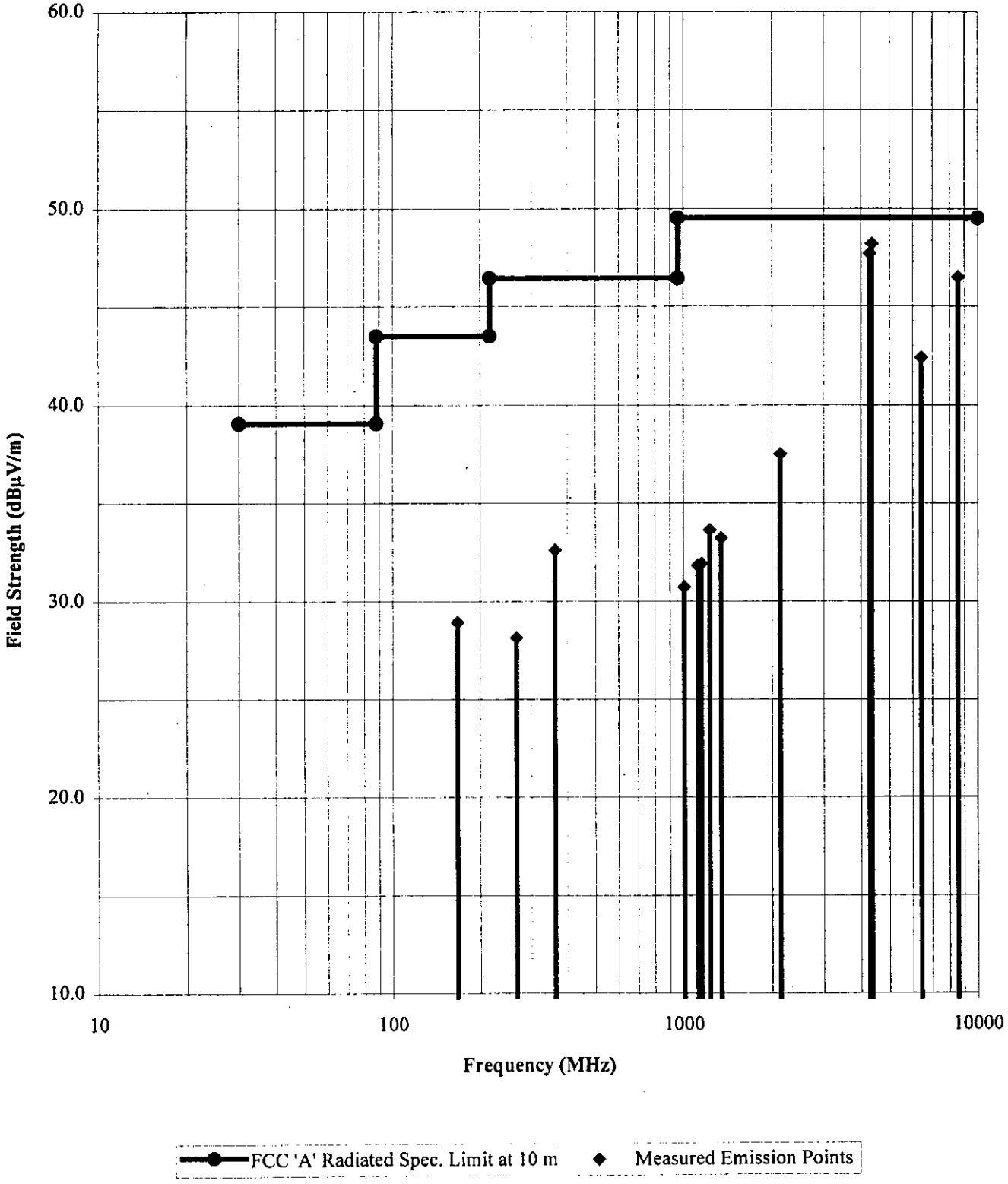
Client: **Solectek** *Conducted by:*
EUT: **Wireless LAN Tranceiver** *Date of Test:* **04-02-98**
Model #: **MP1100 (Receive Mode, Worst Case Antennas)** *Test Distance, Amp. gain:* **3m, 0dB**

Frequency (MHz)	Spectrum Analyzer Reading at 3m (dBµV)	Antenna Polori-zation (vertical or horizontal)	Amp. Gain & Cable Loss, Distance & Antenna Factor Correction for 3m (dBuV/m)	Total Interference Level at 3m (dBµV/m)	Emission Spec. Limit at 3m (dBµV/m)	Difference Margin at 3m
166.740	8.9	h	20.0	28.9	43.5	-14.6
266.800	9.5	h	18.6	28.1	64.4	-18.3
363.070	11.2	v	21.4	32.6	46.4	-13.9
1008.320	2.8	v	27.9	30.7	49.5	-18.8
1120.085	3.6	v	28.2	31.8	49.5	-17.7
1152.405	3.6	v	28.3	31.9	49.5	-17.6
1232.280	4.6	v	29.0	33.6	49.5	-15.9
1344.500	3.9	v	29.3	33.2	49.5	-16.3
2134.870	4.3	h	33.2	37.5	49.5	-12.0
4280.030	7.8	h	39.9	47.7	49.5	-1.8
4356.045	8.4	h	39.8	48.2	49.5	-1.3
6419.995	-0.9	h	43.3	42.4	49.5	-7.1
8559.985	-0.7	h	47.2	46.5	49.5	-3.0

NOTE: These tabulated figures were correction figured in for 3m.

Test Conditions: Standard radiated emissions test set up on FCC registered open field site. The highest emissions for all antenna heights, polarities, and table orientations are the only emissions recorded.

Solectek - Wireless LAN Transceiver (Receive Mode Only): MP1100
FCC Unintentional Radiated Emissions Profile (04-02-98) - EESI



Name of Test: Allowed Occupied Bandwidth

Paragraph: 47 CFR 15.247(a)(2)

Spec. Limit SEE*

*LIMITS

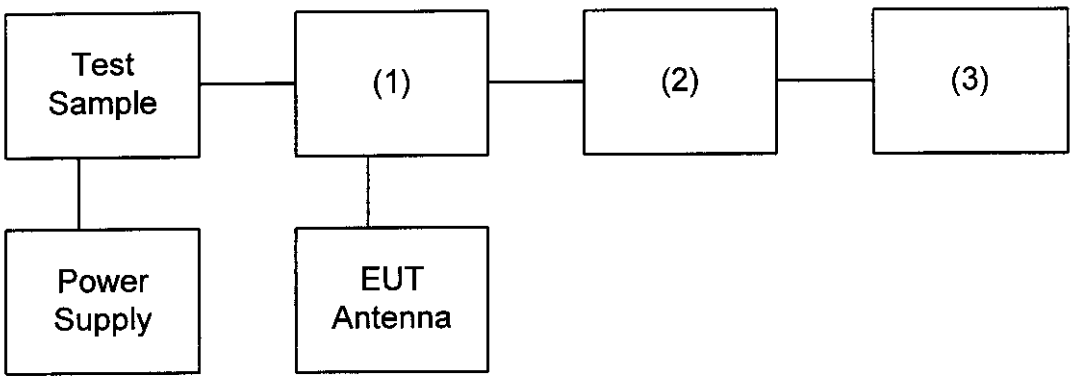
RULE	TYPE	BANDS (MHz)	LIMIT
15.247(a)(2)	D.S.	All	6 dB BW ≥ 500

MEASUREMENT DATA

CHANNEL (GHz)	6 Db BANDWIDTH (MHz)
2.420	10.3
2.439	11.8
2.458	11.5

*15.247(a) Direct Sequence 2400-2483.5MHz 6dB BW≥ 500KHz

Transmitter Conducted Measurements



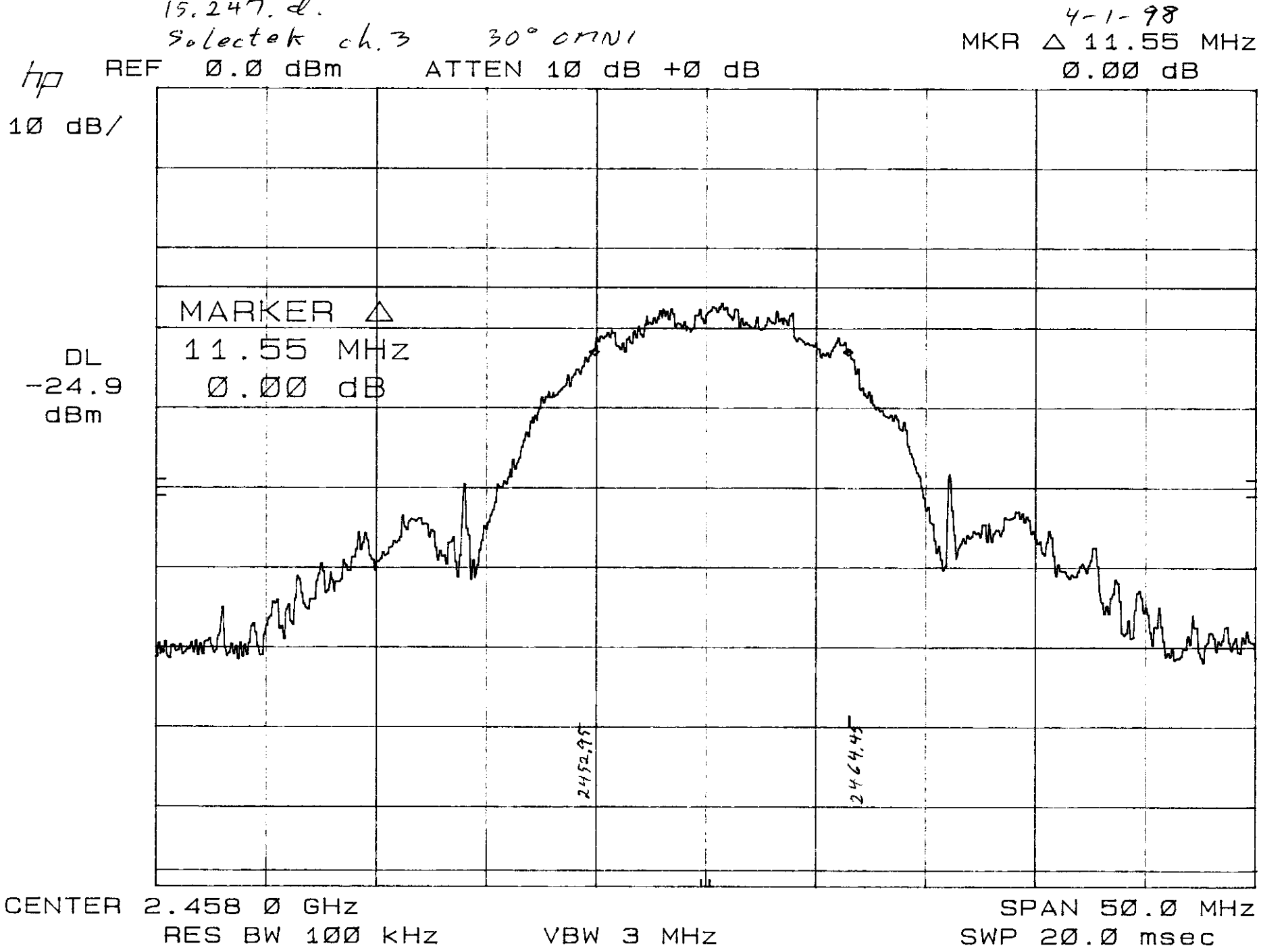
1. Directional Coupler
   HP 779D

2. DC Block
   Pasternack

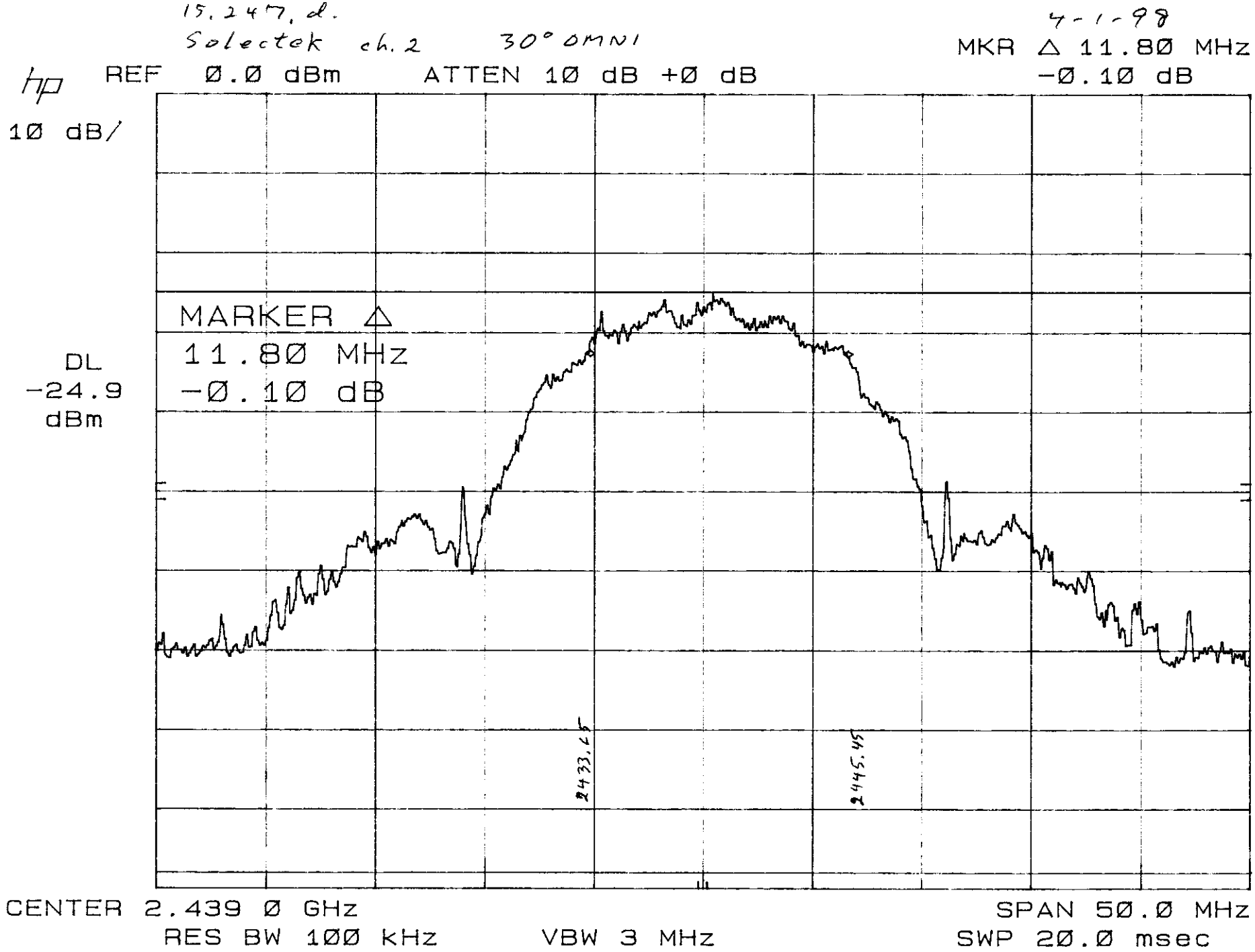
3. Spectrum Analyzer
   HP8566B

15.247.d.
Selectek ch.3 30° omni

4-1-98



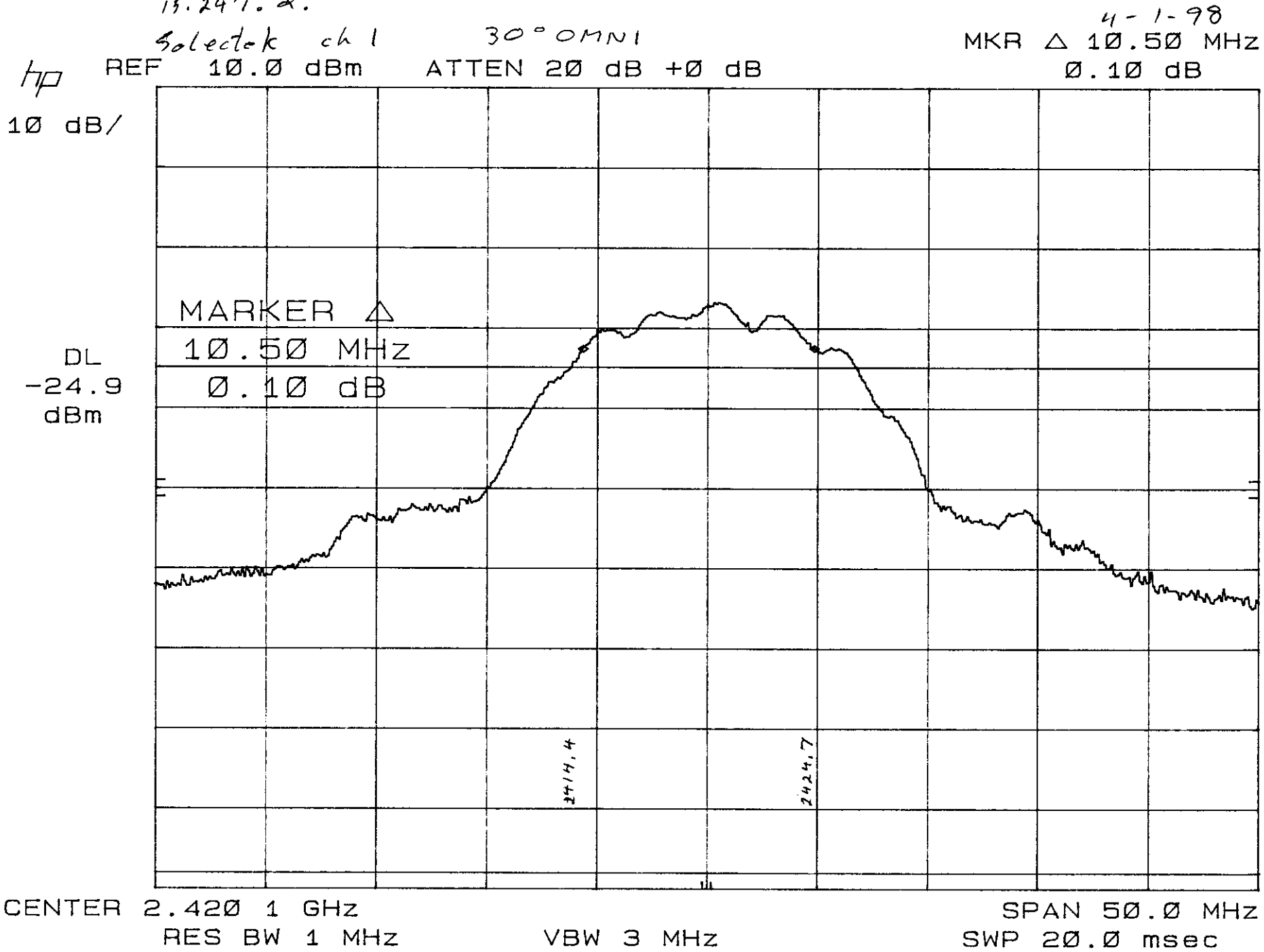
15.247, d.
Selectek ch. 2 30° OMNI
4-1-98



15.247.d.

Selectek ch 1 30° OMNI

4-1-98



15.203 Unique Antenna Connector Description

All Solectek antennas have the unique proprietary identification circuit fitted that causes it to be exclusive to Solectek equipment.

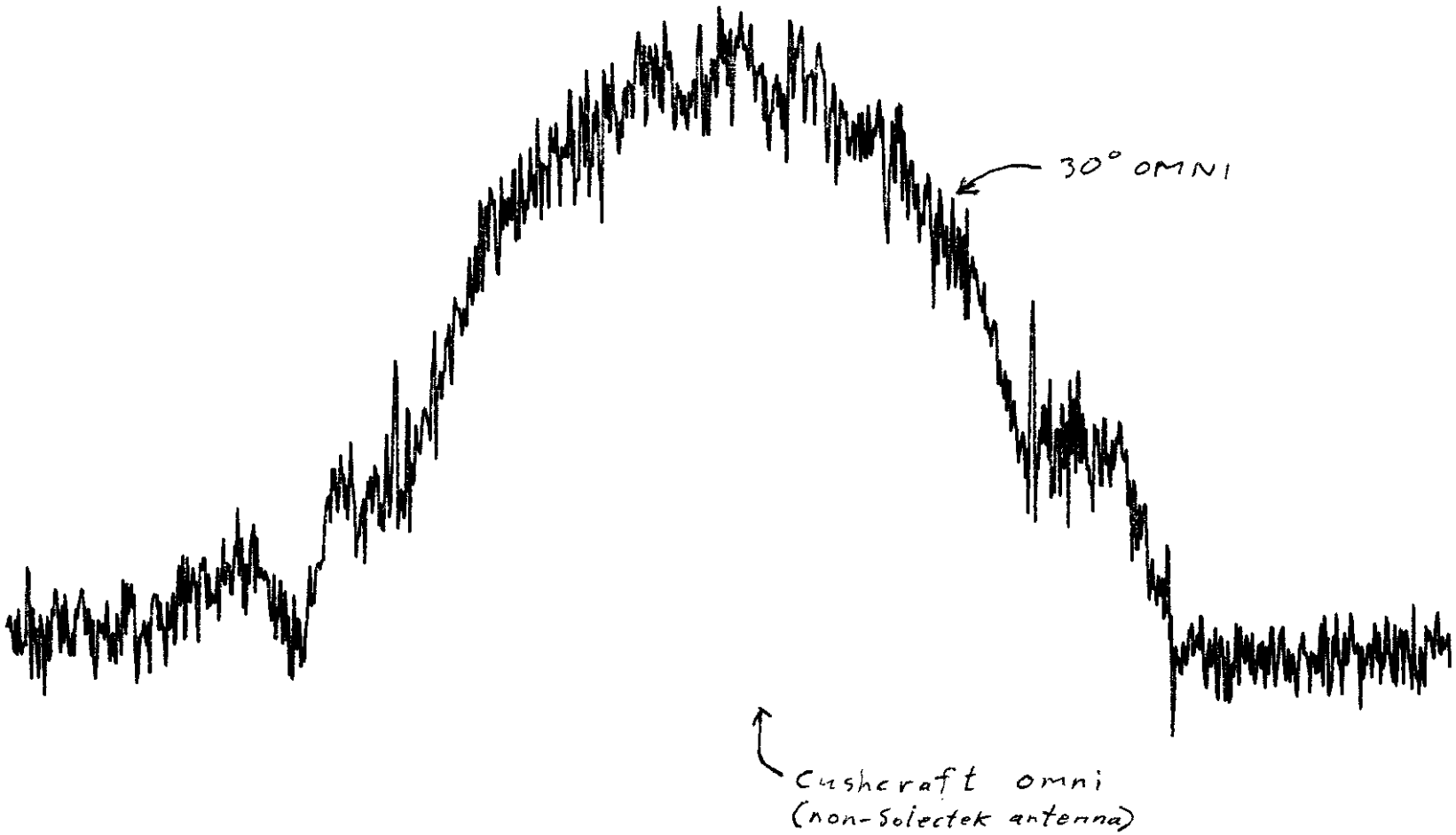
This guarantees that if a non-Solectek antenna were substituted, then the equipment's antenna sensing device would ensure that the output power is virtually zero.

CONCLUSION: This sensing refinement, as was witnessed, plotted and attested to, proves that these antennas function like all other certified Solectek antennas. Therefore, fulfilling its obligation to FCC rule 15.203.

Note: Refer to Section 15.247(b), Peak Output Power for measured Power Output.

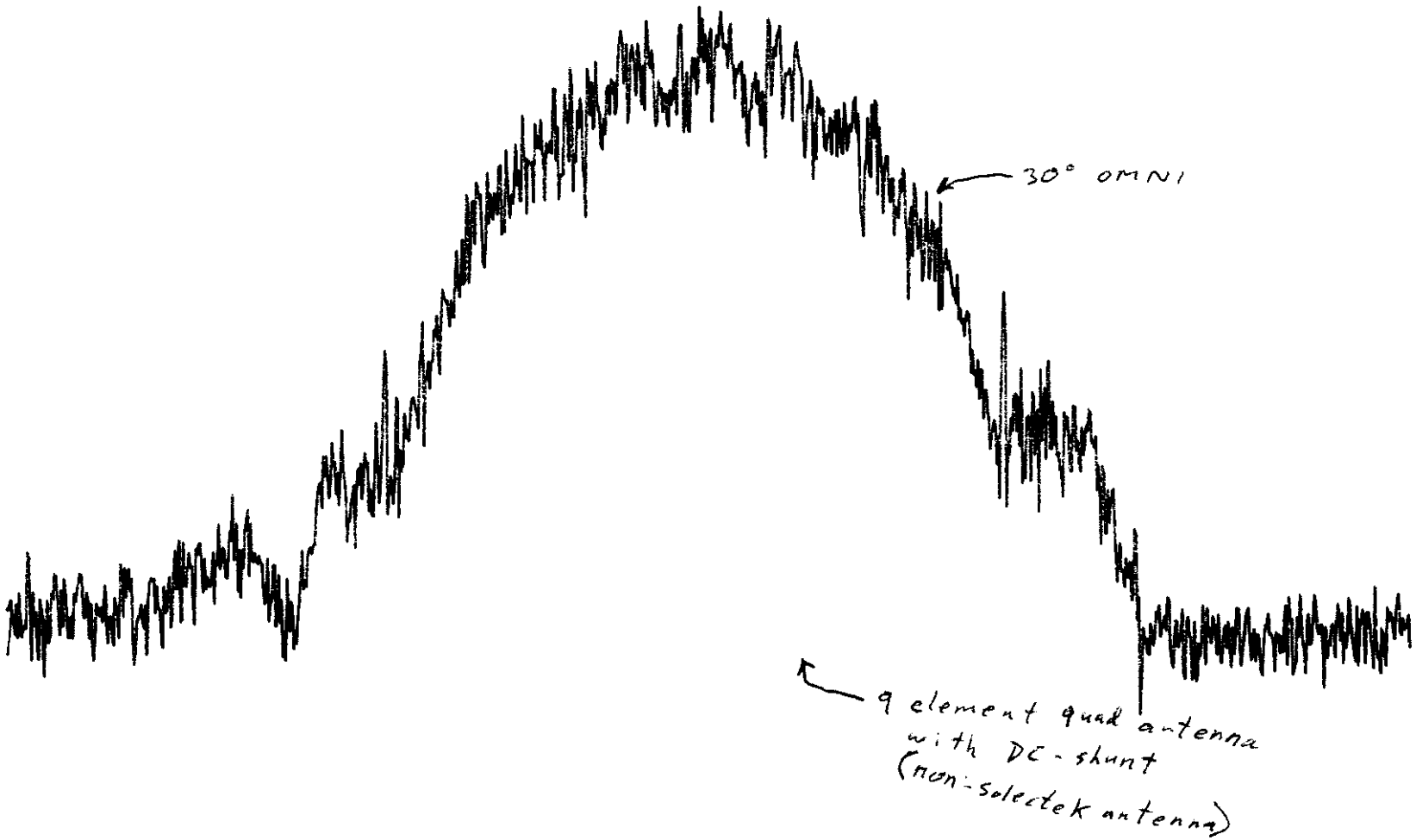
15.203

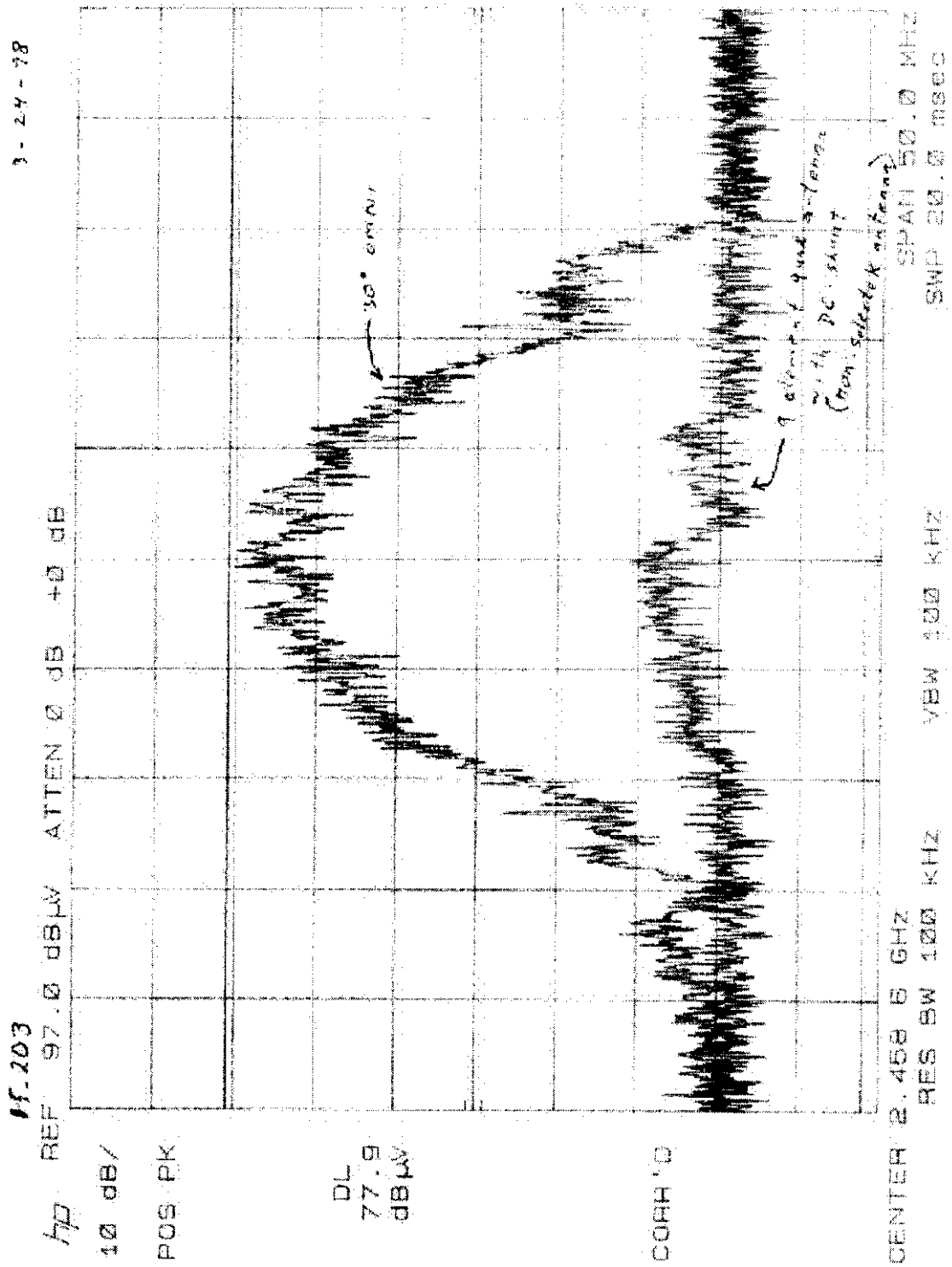
3-24-98



15.203

3-24-98


30° OMNI
9 element quad antenna
with DC-shunt
(non-Selectek antenna)

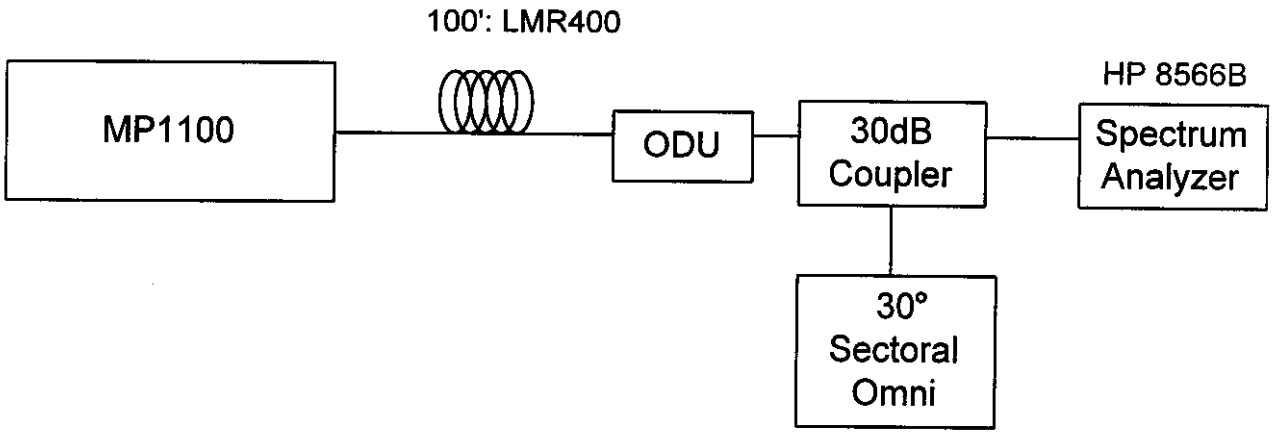

1-24-18
15.203
REF 97.0 dBµV
ATTEN 0 dB +0 dB
10 dB/
POS PK
DL
77.6
dBµV
COMP'D
CENTER 2.458 6 GHz
RES BW 100 kHz
VBW 100 kHz
SWP 20.0 msec
SPAN 50.0 MHz

15.247(d)

Transmitted Power Density

The transmitted power density over any 1 second interval shall not be greater than 8dBm in any 3KHz bandwidth within these bandwidths.

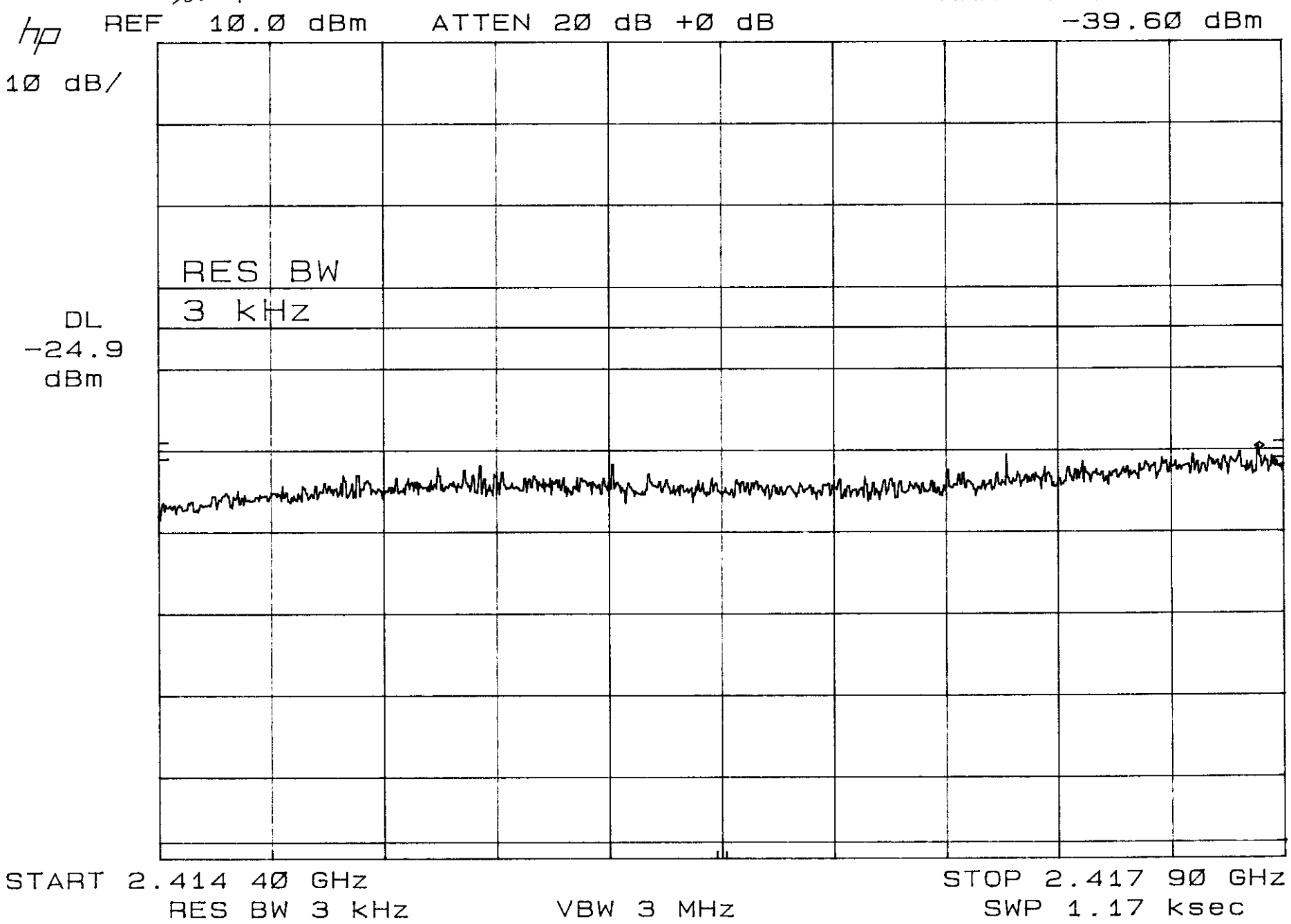
Spectral Density (Test Setup)



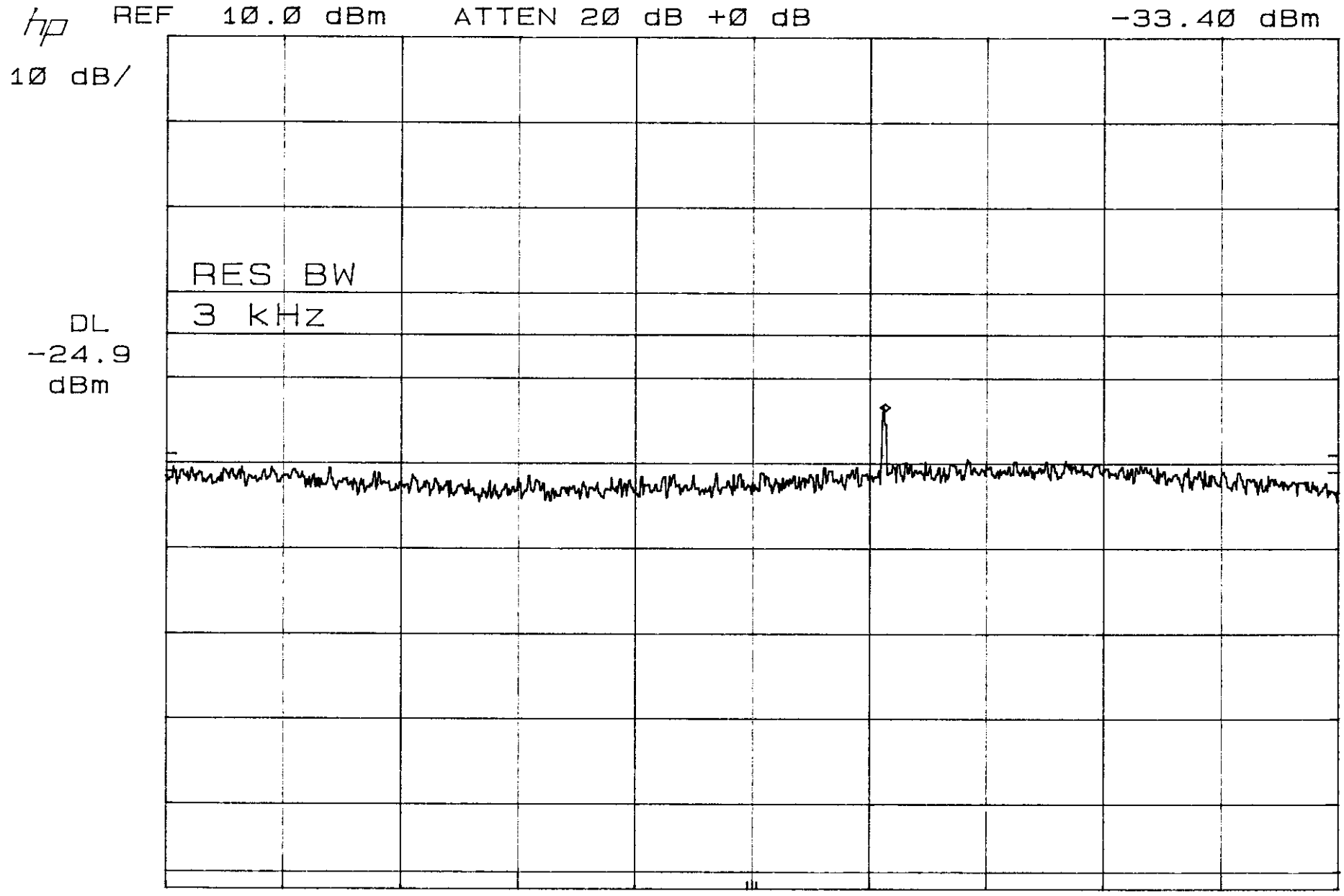
Note: The 30° Omni was used because it causes the Out-Door Unit to generate the greatest power.

KA324WAN4
Spectral Power Density

15.247.d
Selectek ch.1 30° omni Part 1 of 3
4-1-98

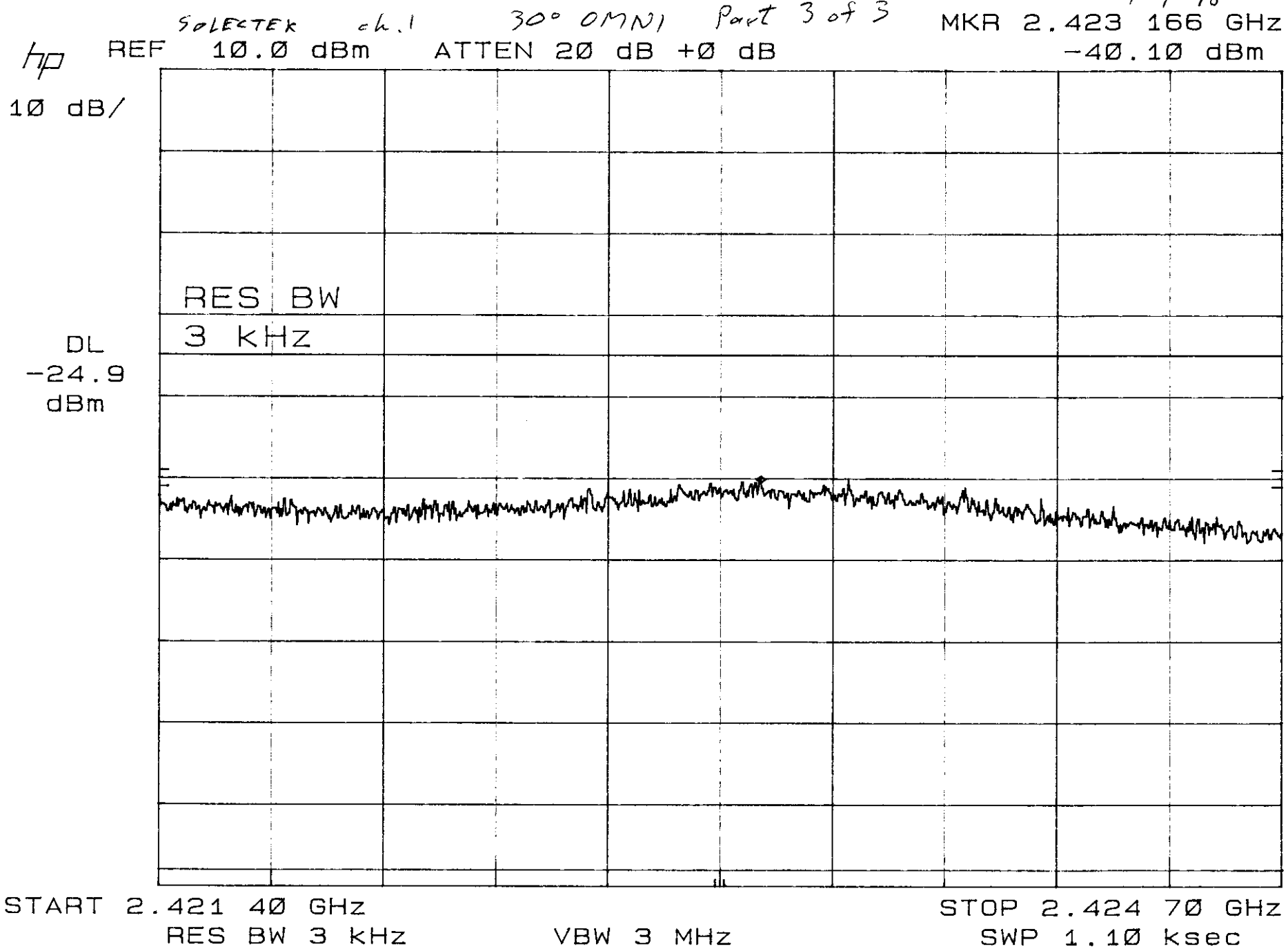


15.247.d.
SOLECTEK ch.1 30° OMNI Part 2 of 3 4-1-98

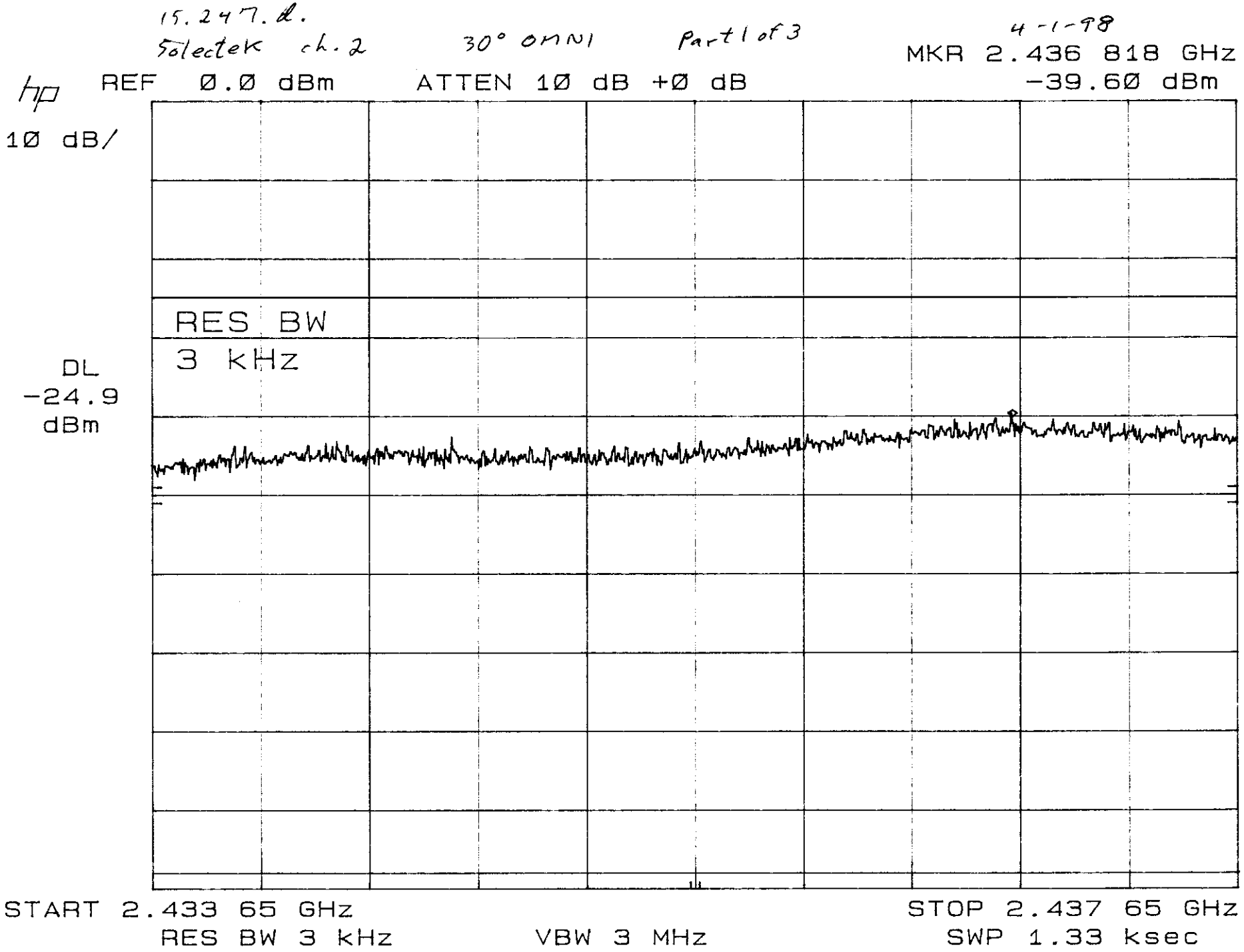


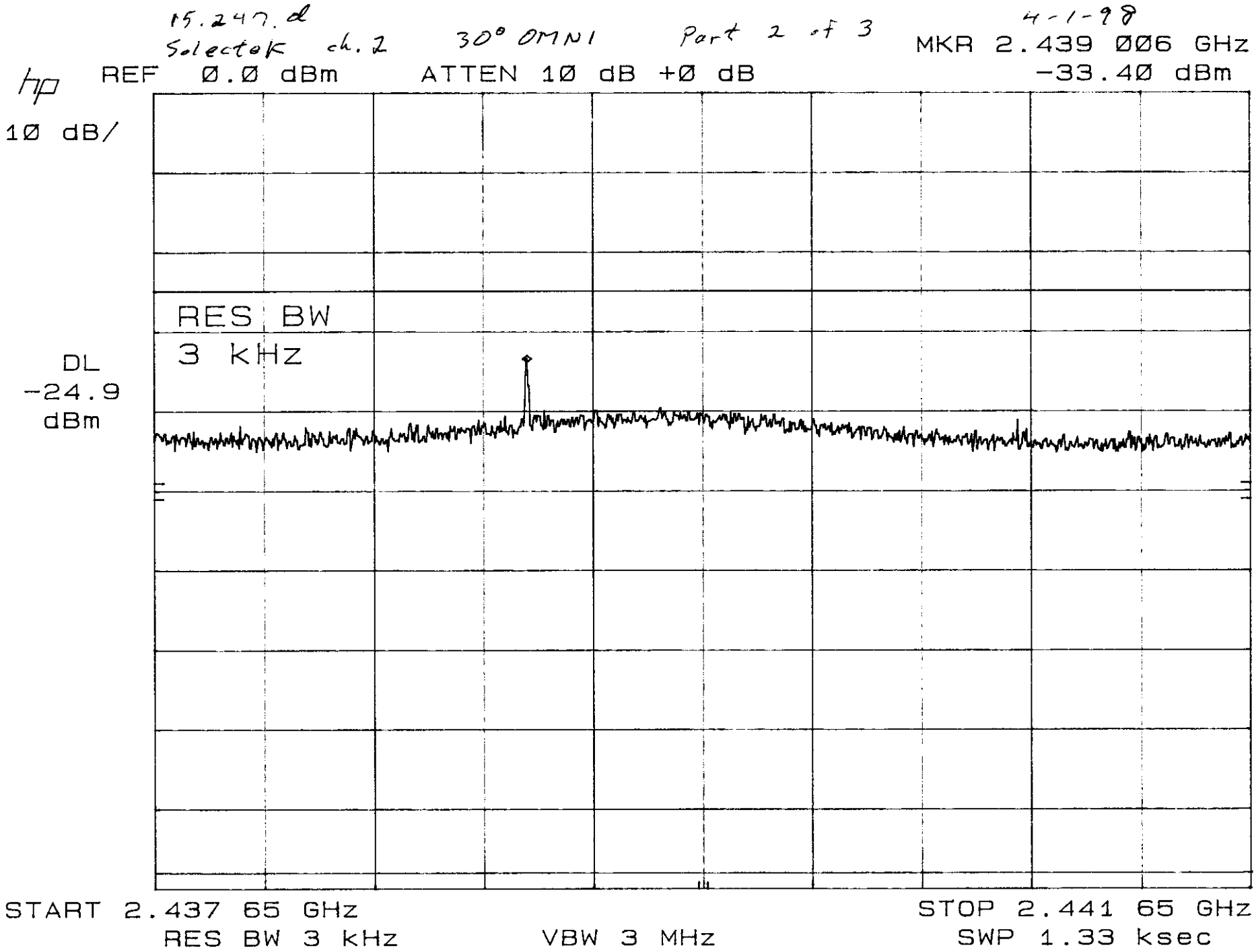
15.247.d.

SOLECTEK ch.1 30° OMNI Part 3 of 3 4-1-98

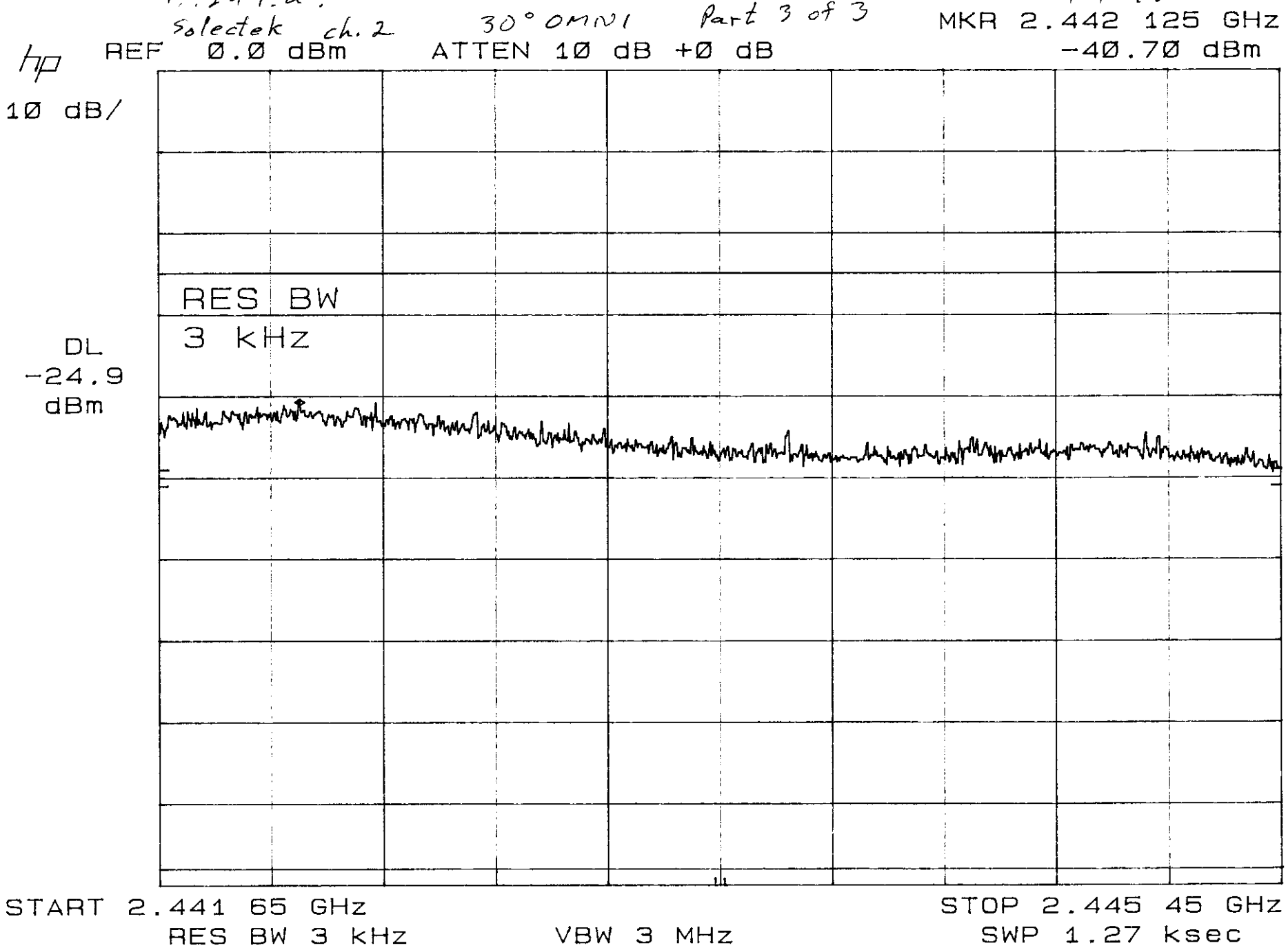


15.247.d.
Soletek ch.2 30° OMNI Part 1 of 3
4-1-98

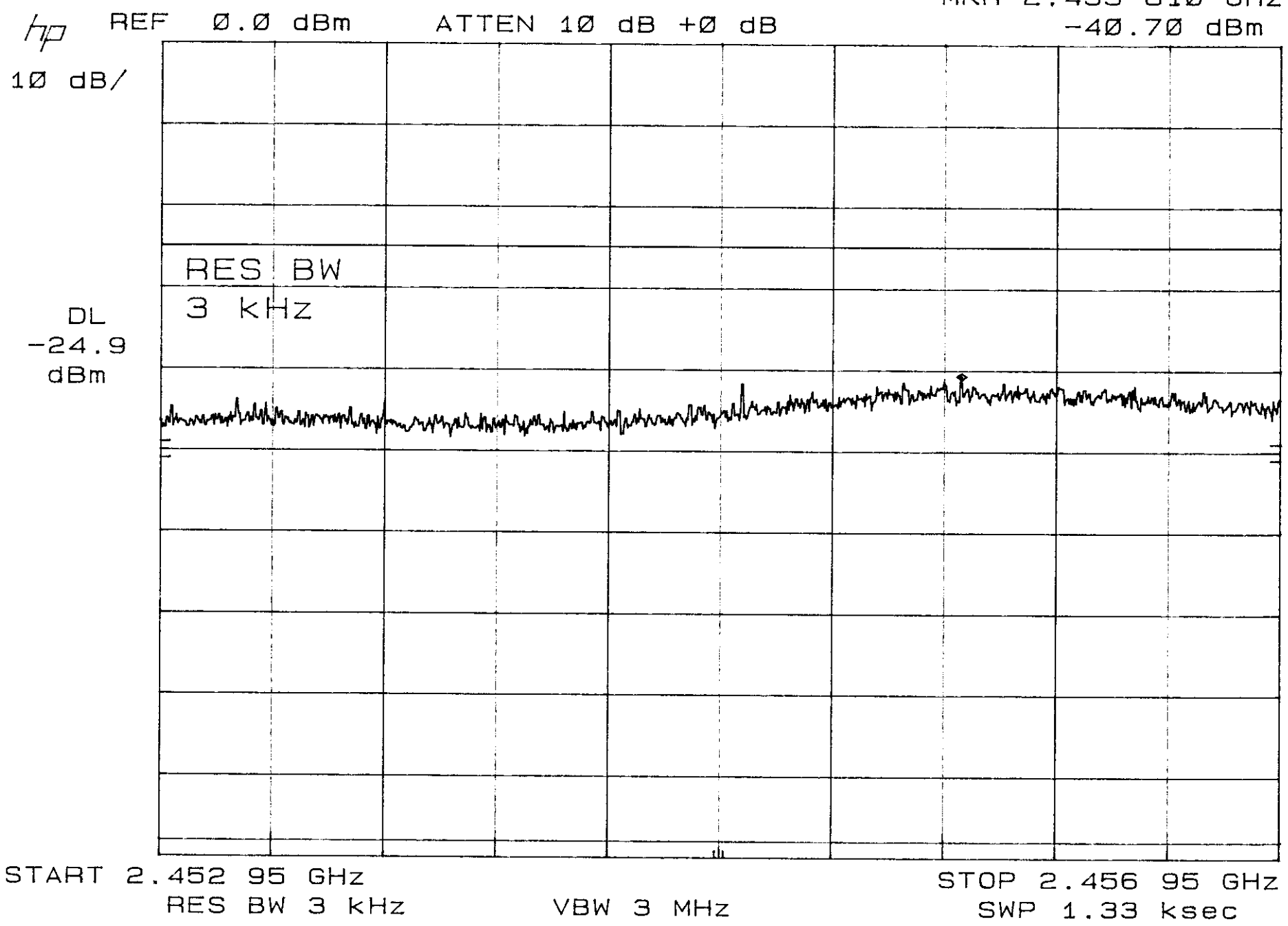



15.247.d
Selectek ch. 2
30° OMNI
Part 2 of 3
4-1-98
REF 0.0 dBm
ATTEN 10 dB +0 dB
MKR 2.439 006 GHz
-33.40 dBm
10 dB/
RES BW
3 kHz
DL
-24.9
dBm
START 2.437 65 GHz
RES BW 3 kHz
VBW 3 MHz
STOP 2.441 65 GHz
SWP 1.33 ksec

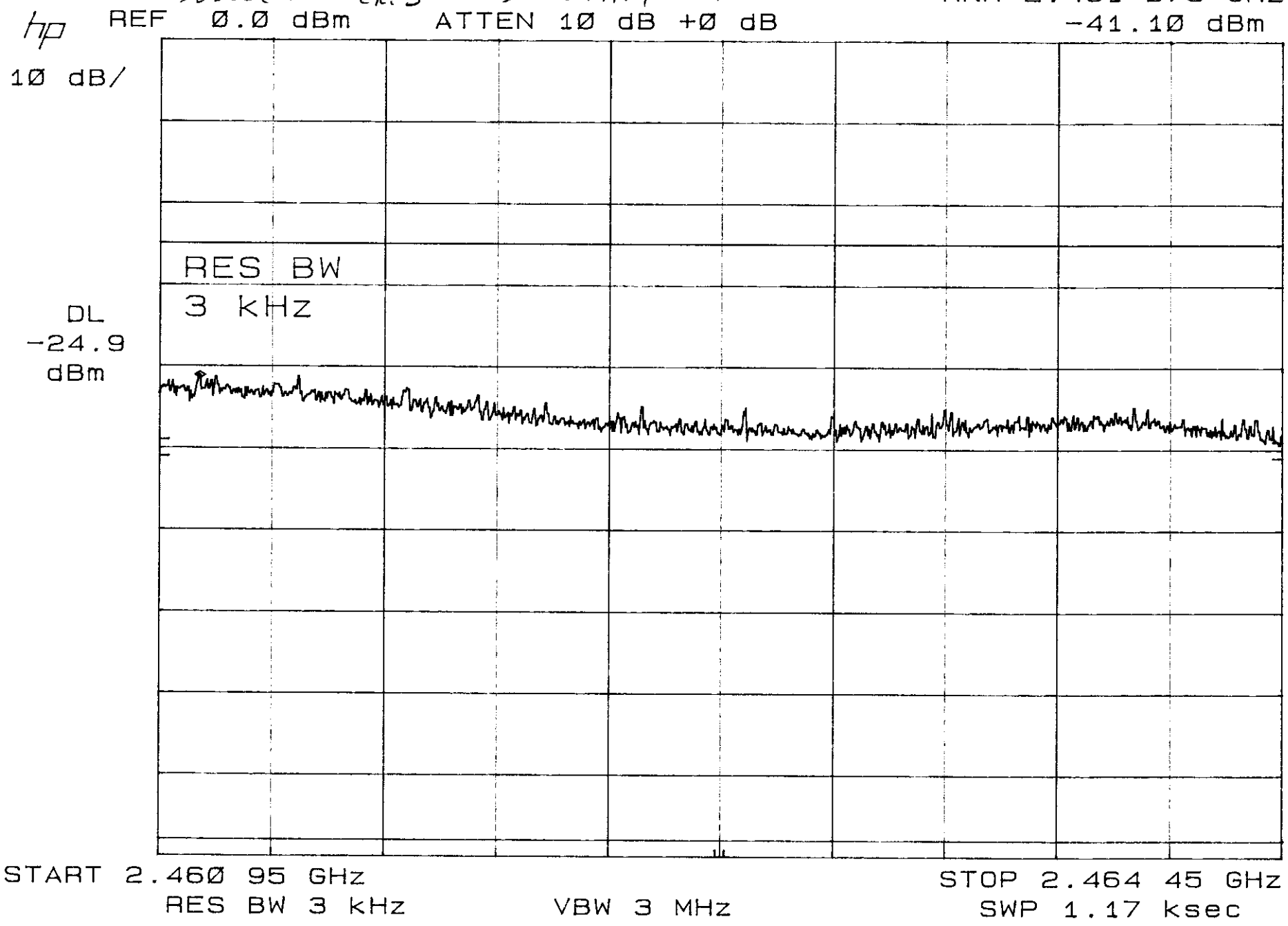
15.247.d.
Selectek ch. 2 30° OMNI Part 3 of 3 4-1-98



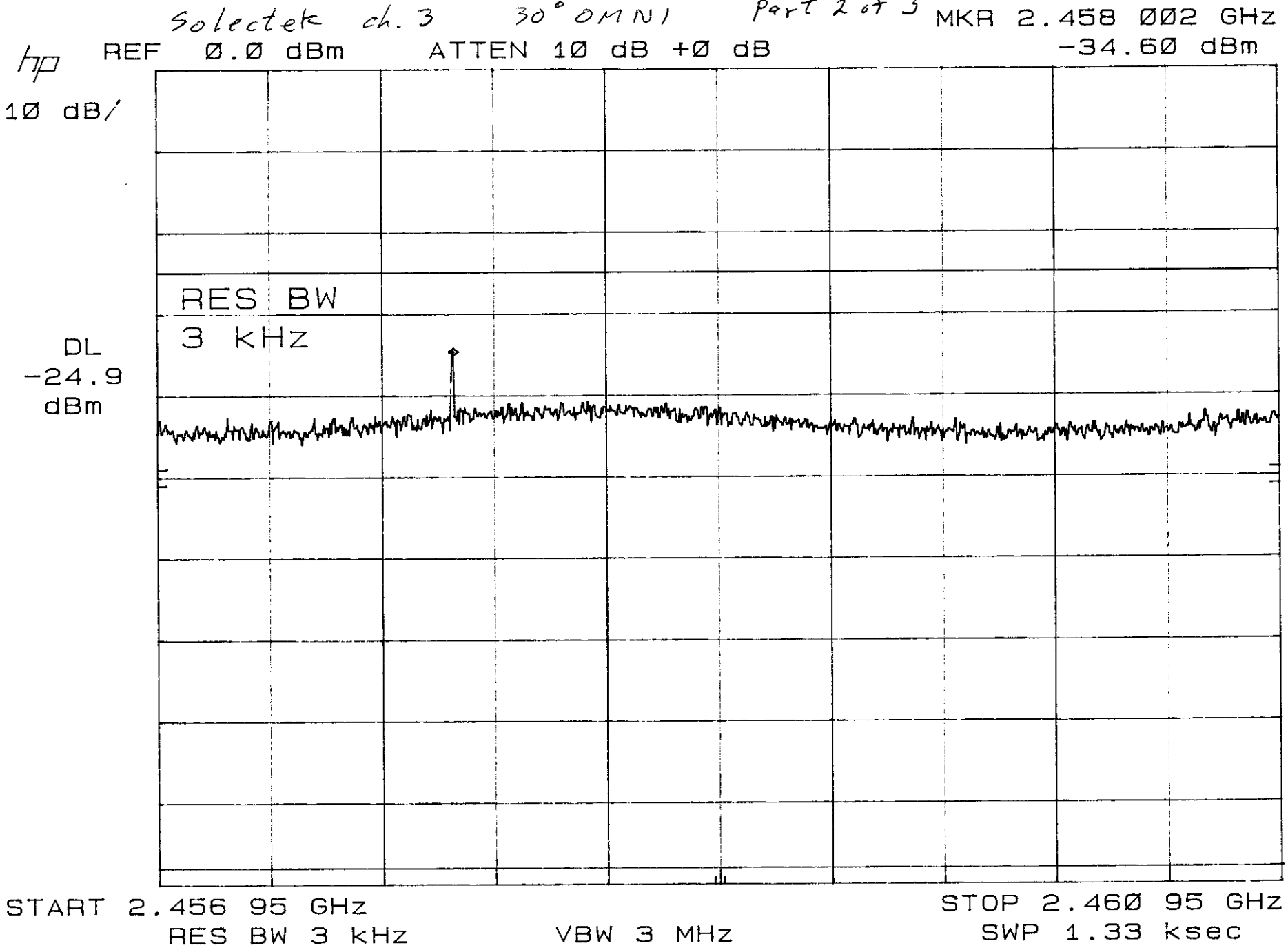
15.247.d.
Soloctek ch. 3 30° OMNI Part 1 of 3
4-1-98



Ft. 247. &.
Selectek ch. 3 30° OMNI Part 3 of 3
4-1-98



15.247.cl.
Selectek ch. 3 30° OMNI Part 2 of 3
4-1-98



NAME OF TEST: AC POWER-LINE CONDUCTED INTERFERENCE

PARAGRAPH: 15.207

TEST CONDITIONS: STANDARD TEMPERATURE AND HUMIDITY

SPEC. LIMIT: $\leq$ 250 μV

TEST EQUIPMENT: AS PER ATTACHED PAGE

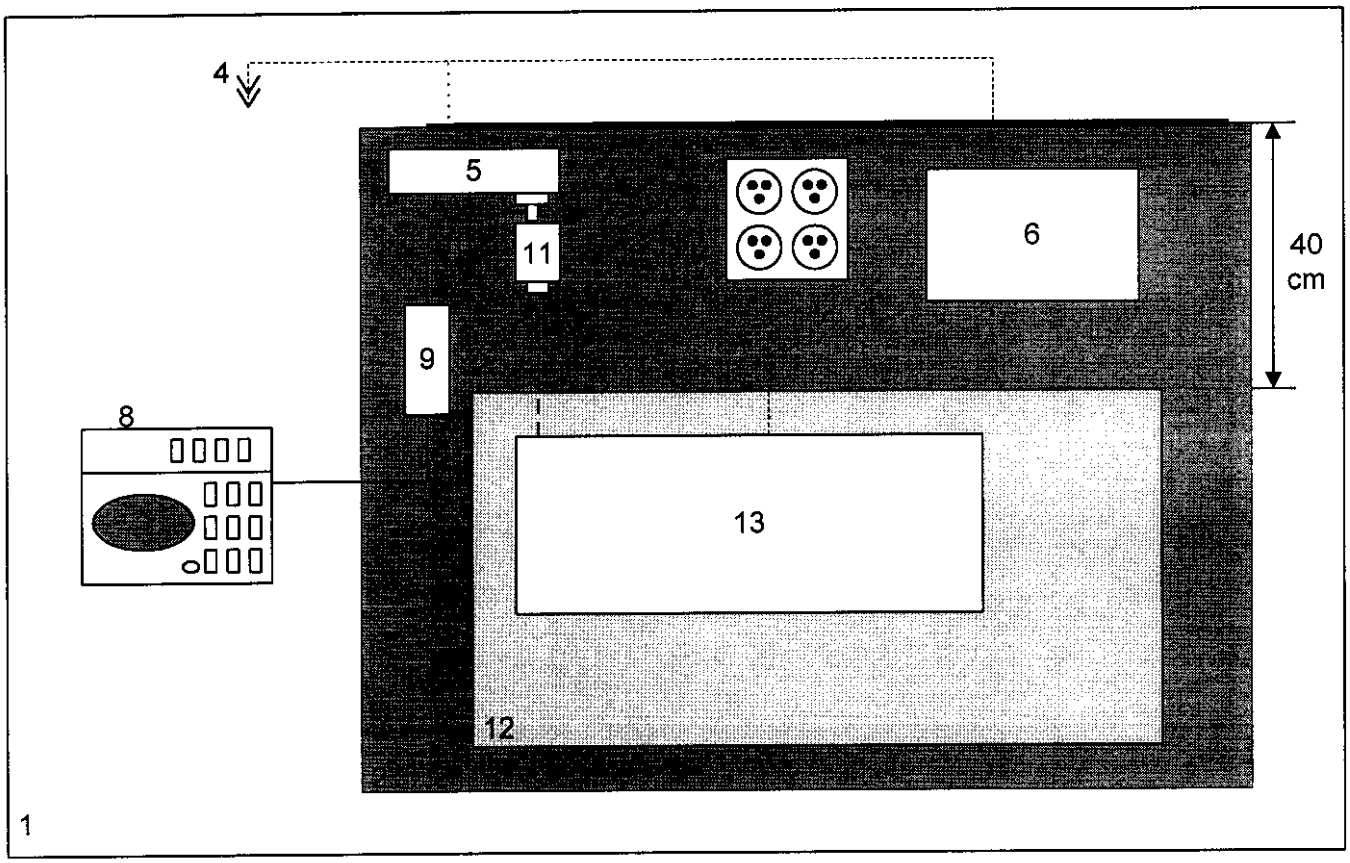
REFERENCE STANDARDS

1. American National Standard Specifications for Electromagnetic Interference and Field Strength Instrumentations 10kHz to 10GHz, ANSI C 63.2 (1980)
2. American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage and Electronic Equipment in the range of 10kHz to 1GHz, ANSI C63.4 (1992)
3. Part 15 of FCC Rules and Regulations (47 CFR Part 15)

MEASUREMENT PROCEDURE

1. Table mounted or hand-held E.U.T.'s were placed on a non-conducting 1.0 x 1.5m table at a height of 0.8m above an earth-grounded conducting surface of 2.5 x 3.0m.
2. Floor mounted E.U.T.'s were placed directly on insulating material covering the ground plane and arranged as specified in ANSI C63.4 (1992).
3. The test sample was connected to the Public Utility lines through a LISN Ailtech Model 94641-1(50 μh).
4. A reference level of 250 μV was set on the Spectrum Analyzer. The spectrum searched was over the range of 450kHz to 30MHz.
5. All other emissions were 20dB or more below limit.
6. MEASUREMENT RESULTS: ATTACHED

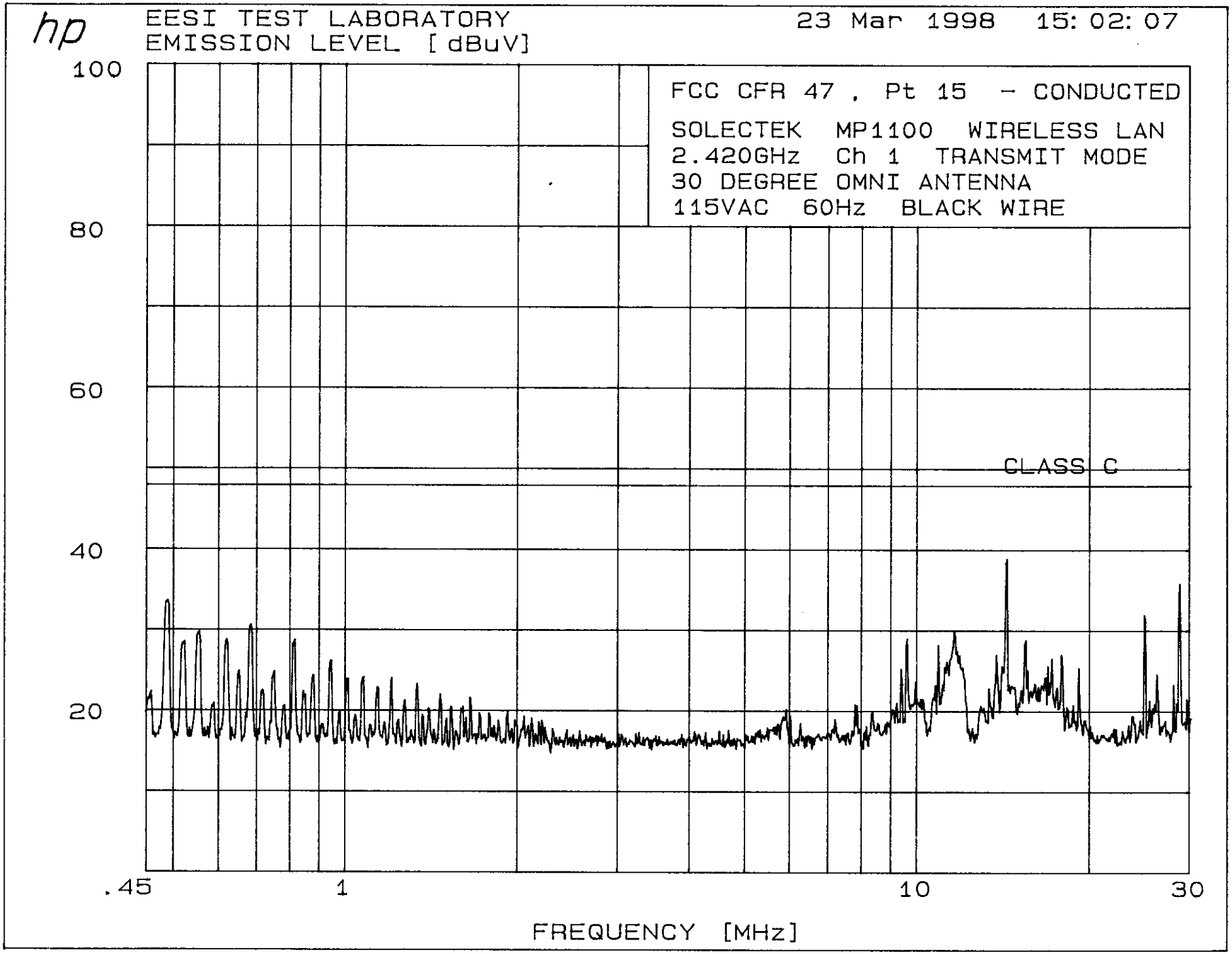
EUT and Associated System, General Configuration

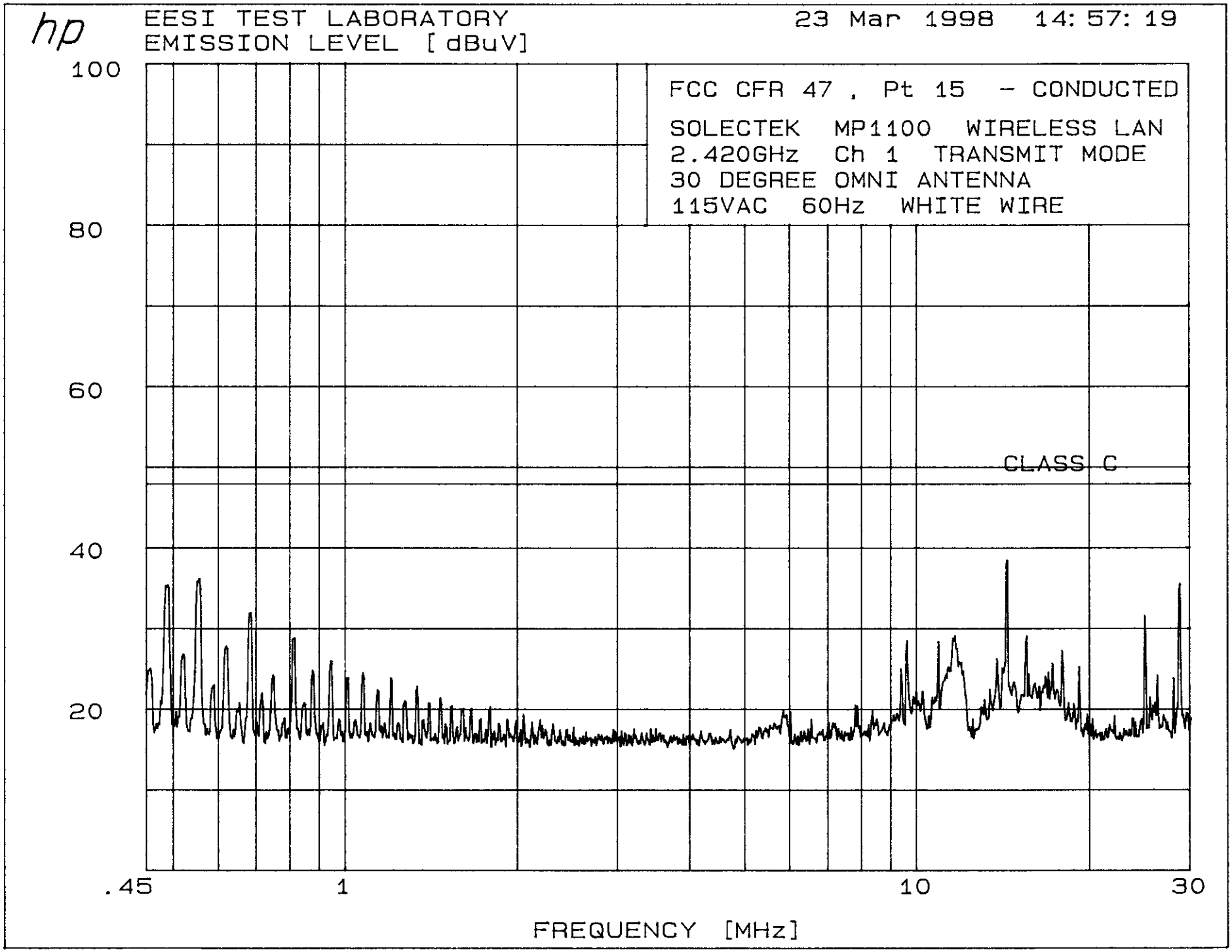


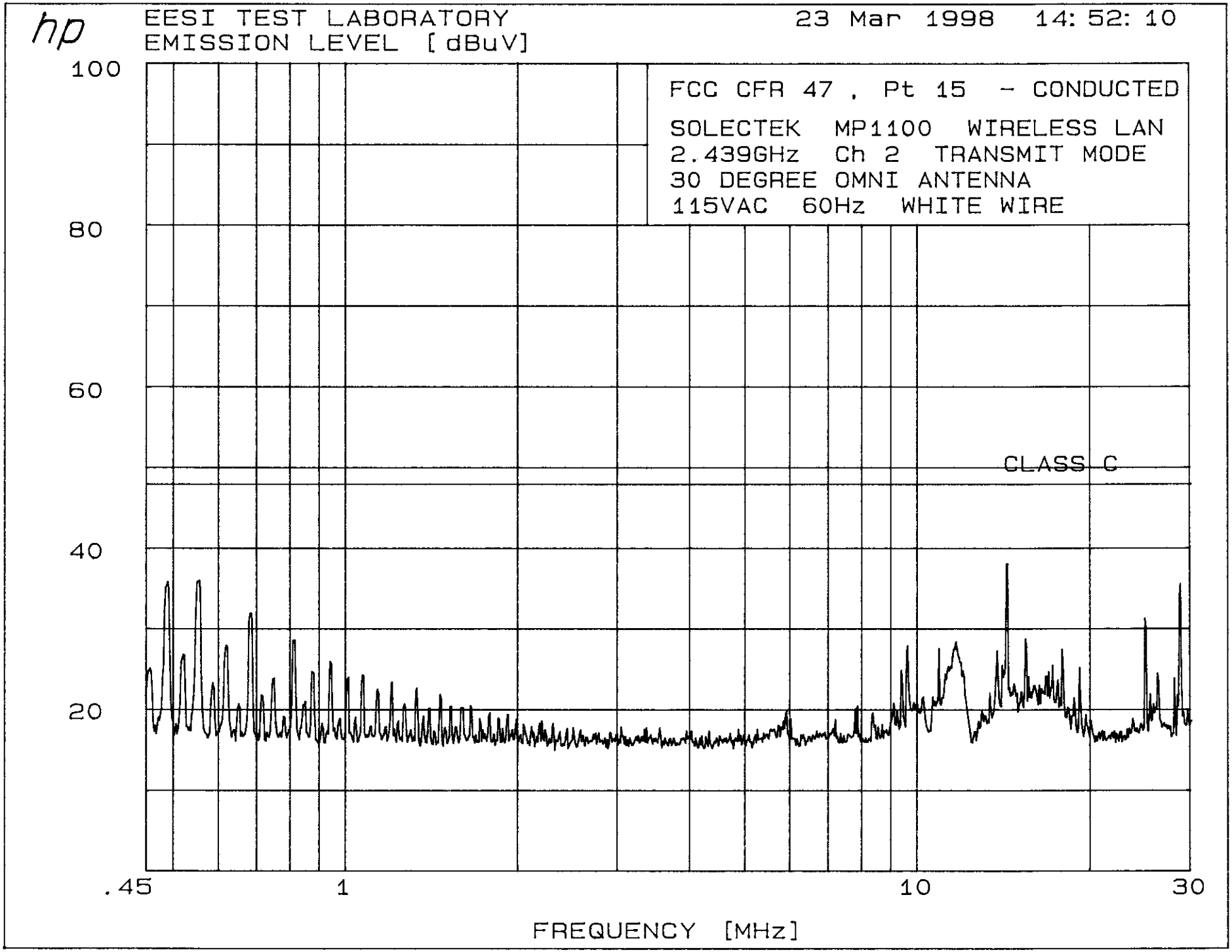
NOT TO SCALE

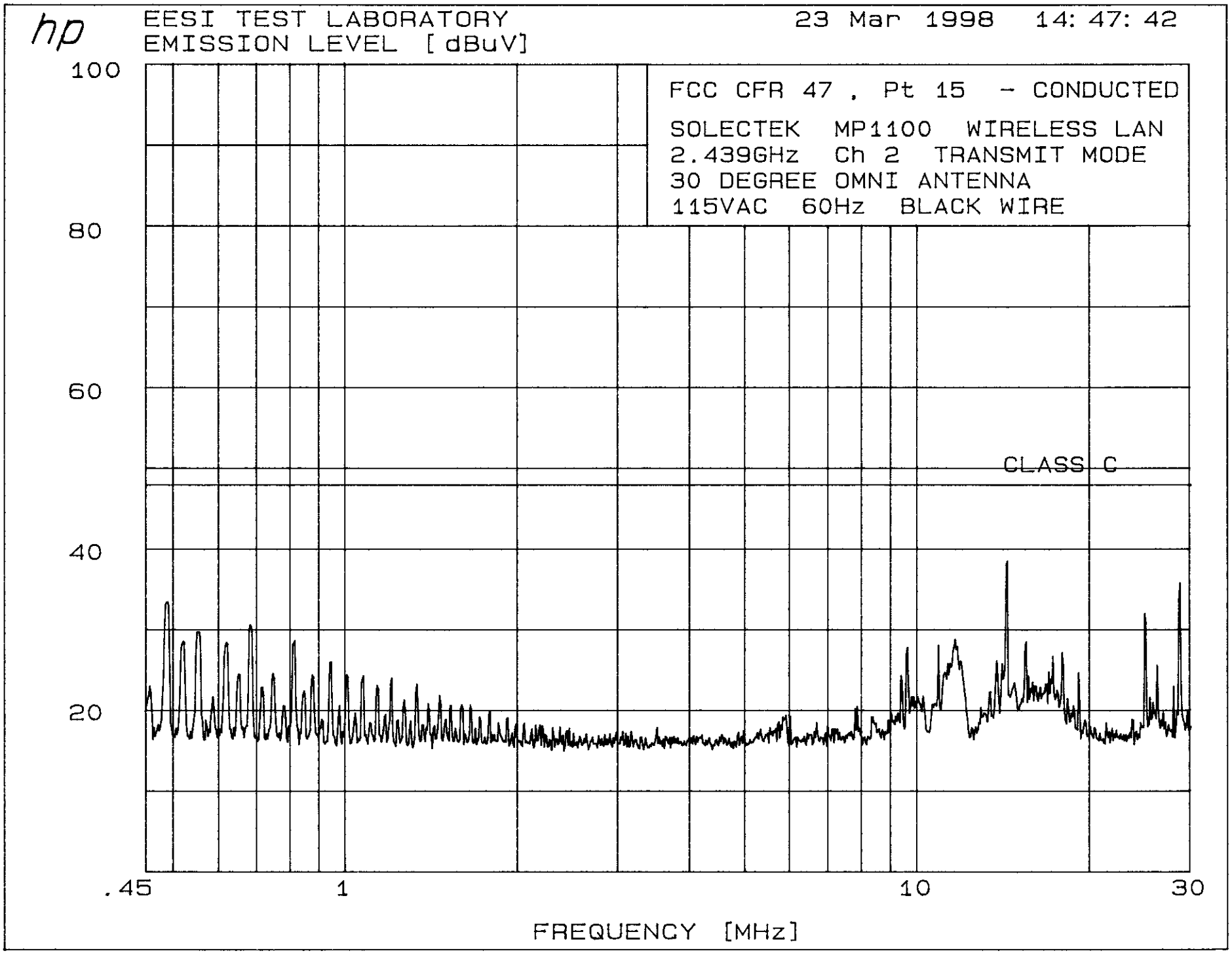
CONFIGURATION LEGEND

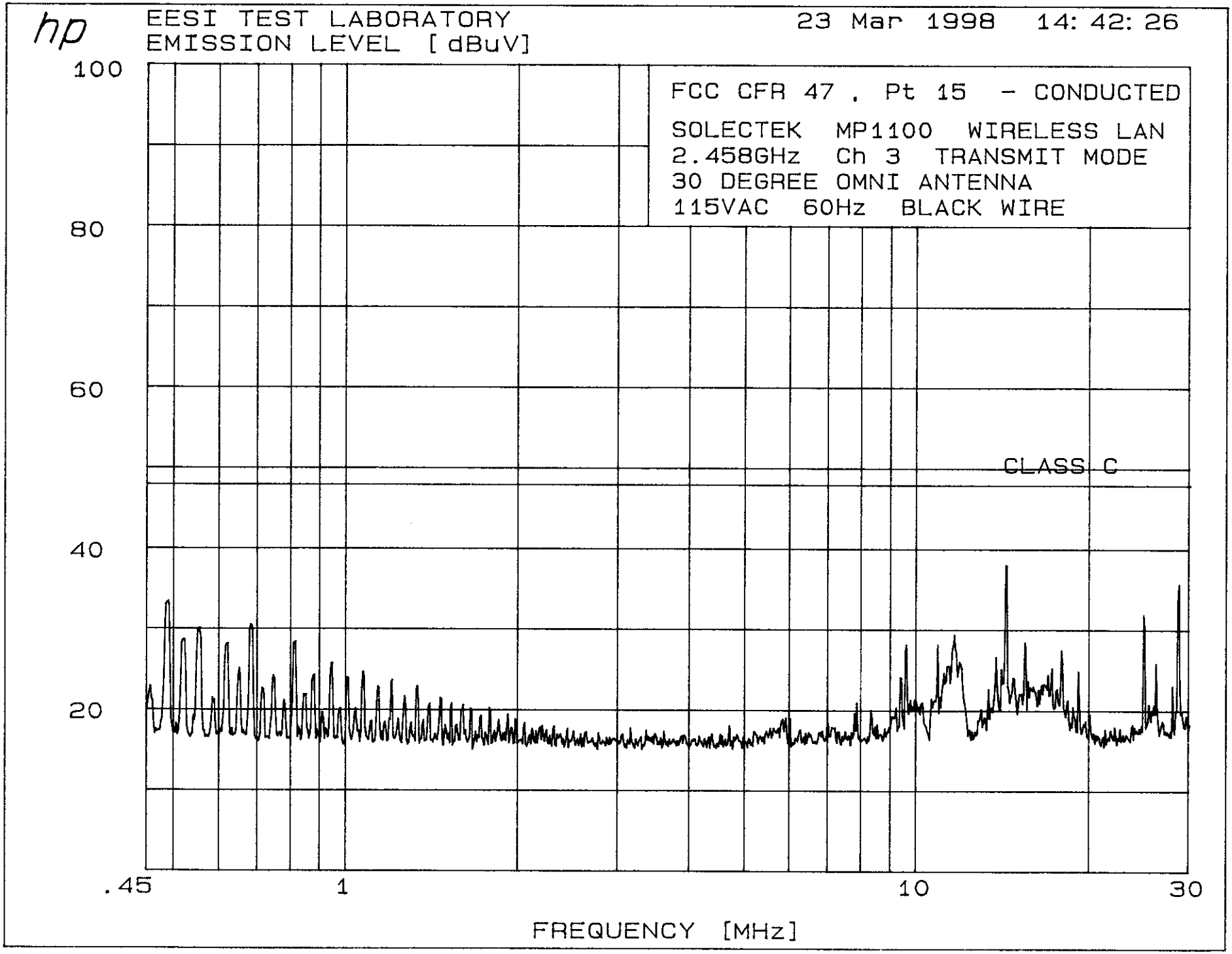
1. Test Laboratory (6 x 6 meters)
2. Ground Plane (15 square meters)
3. Vertical Conducting Wall (Grounded through Ground Plane via 10' ground rod)
4. AC Power for Devices (120V, 60 cycles, single phase)
5. Power Line Filter, Lindgren, 120 dB, 30 amp
6. Line Impedance Stabilization Network (LISN) for peripheral devices
7. Power Distribution Box for peripheral devices Coax input from EUT
8. Spectrum Analyzer with Quasi-Peak Adapter
9. High Pass Filter
10. Coax input from EUT LISN to Spectrum Analyzer
11. LISN for EUT
12. Non-Conducting table 80cm above ground plane
13. EUT and associated system

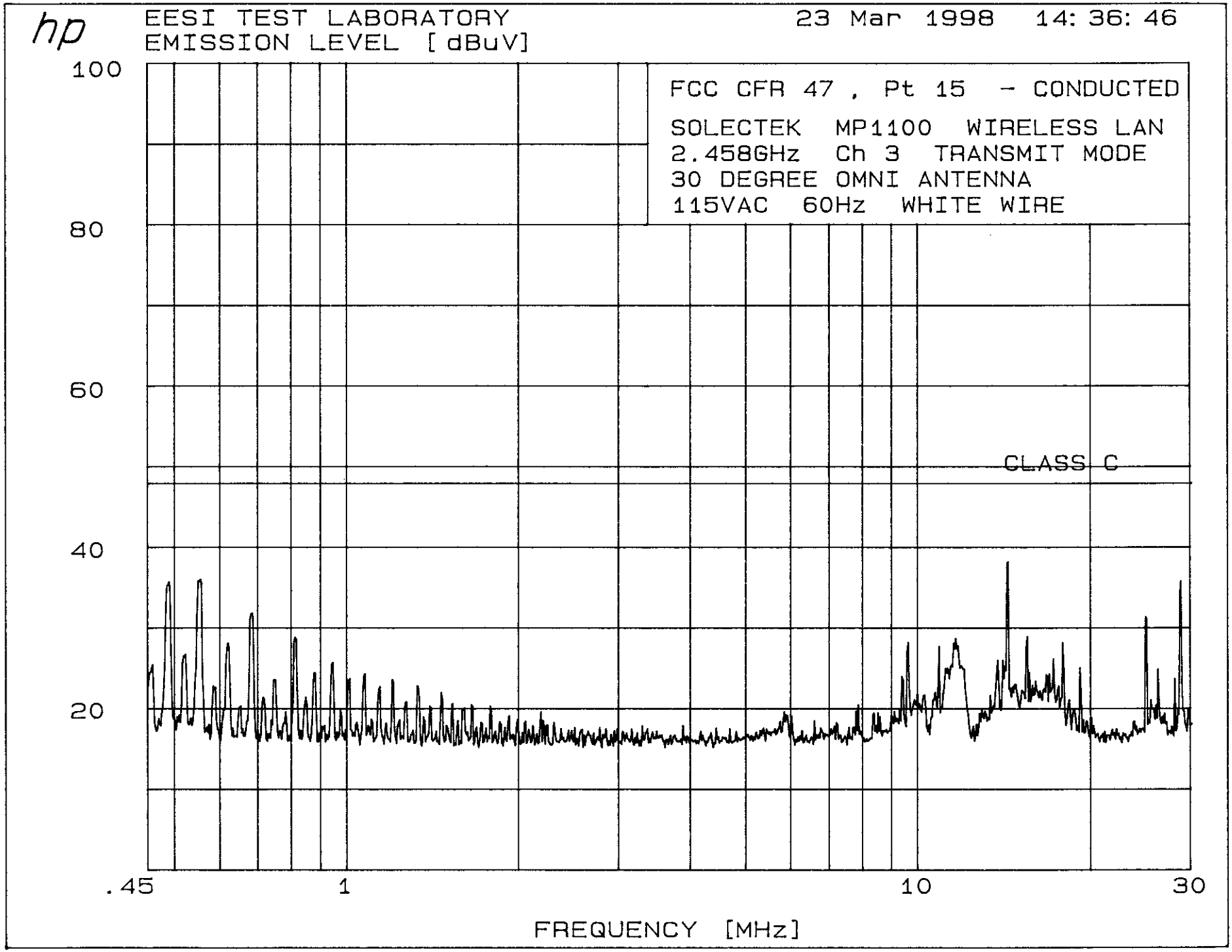

hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 15:02:07
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.420GHz Ch 1 TRANSMIT MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz BLACK WIRE
CLASS C
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

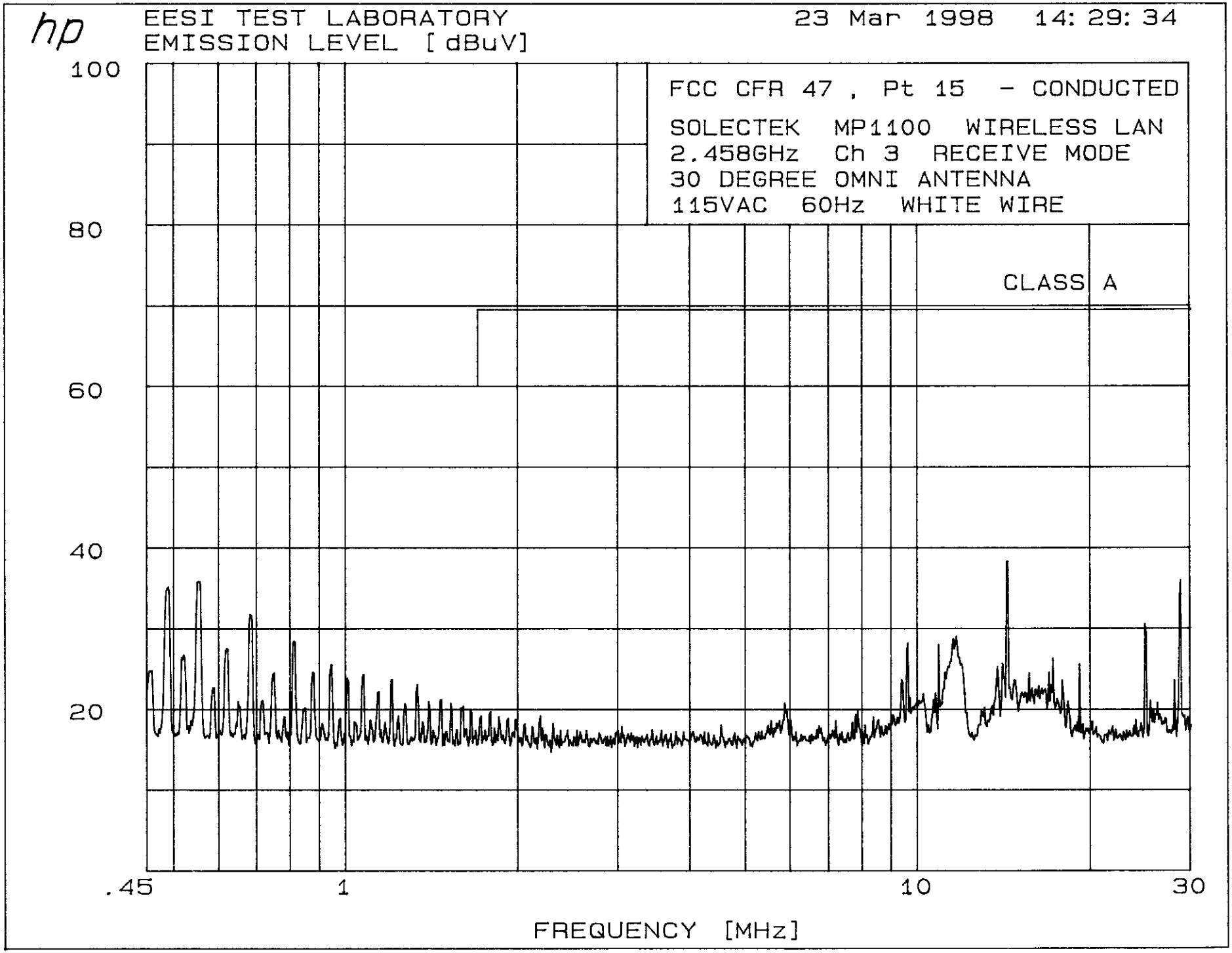

hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 14:57:19
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.420GHz Ch 1 TRANSMIT MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz WHITE WIRE
CLASS C
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

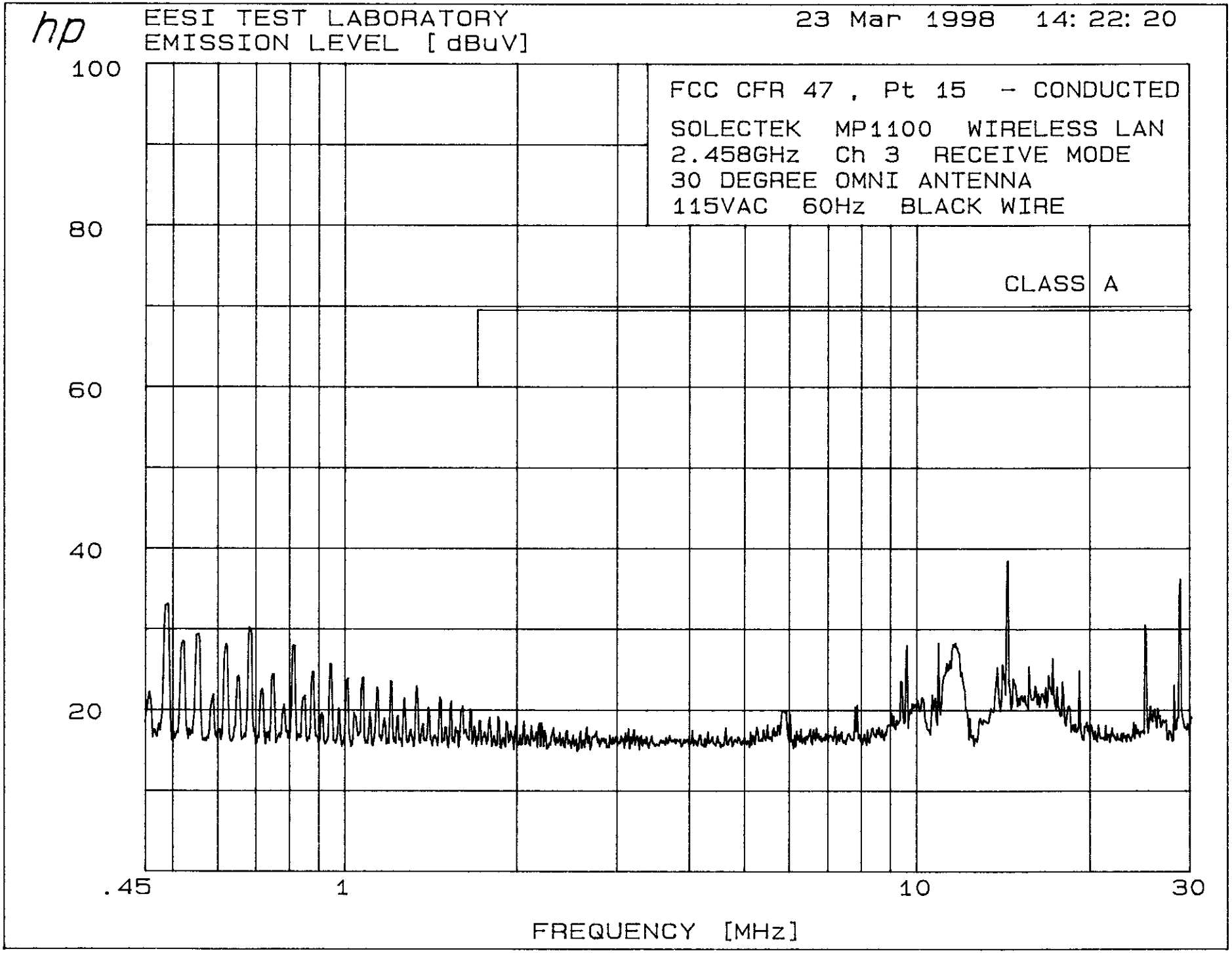

hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 14:52:10
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.439GHz Ch 2 TRANSMIT MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz WHITE WIRE
CLASS C
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

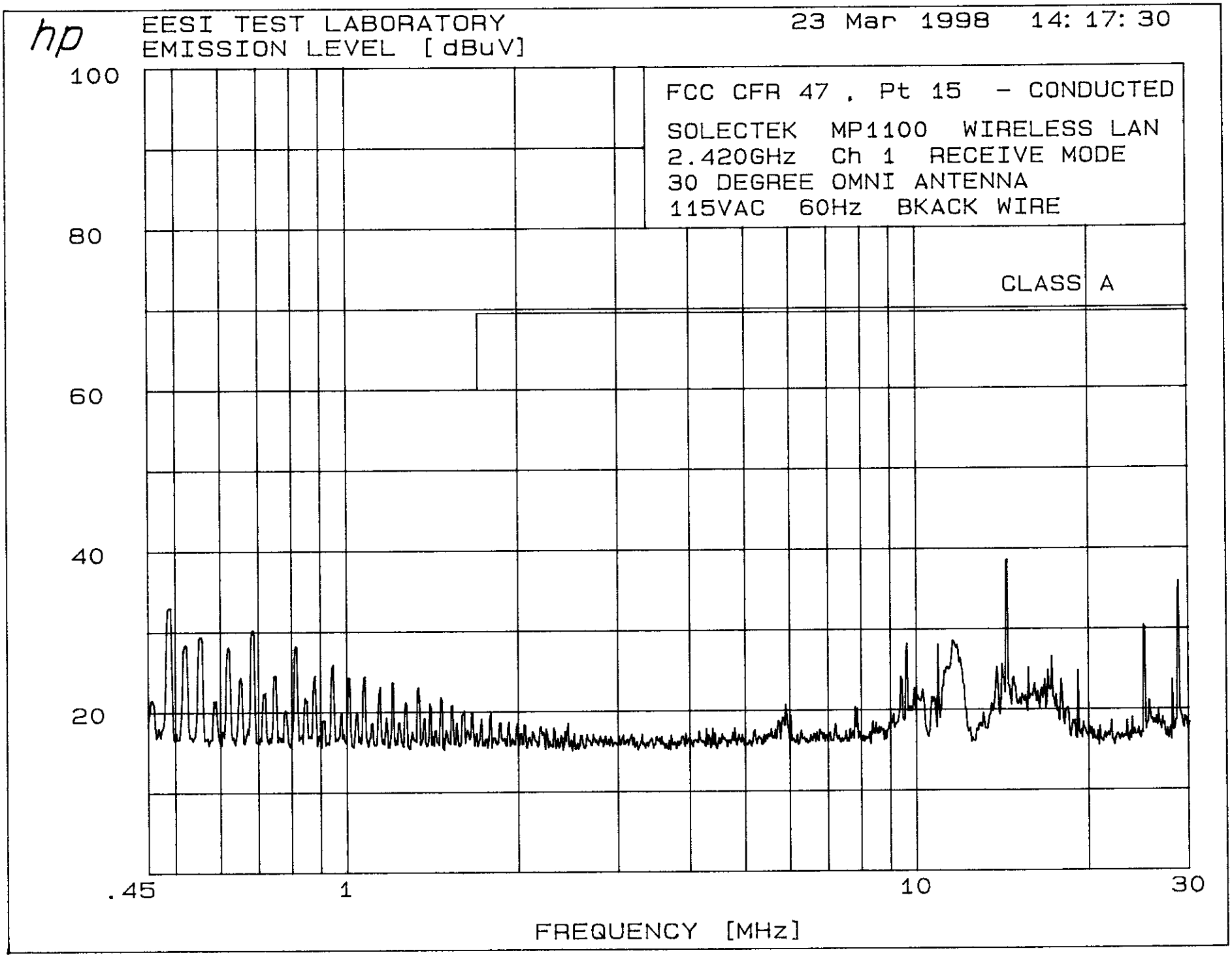

hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 14:47:42
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.439GHz Ch 2 TRANSMIT MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz BLACK WIRE
CLASS C
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

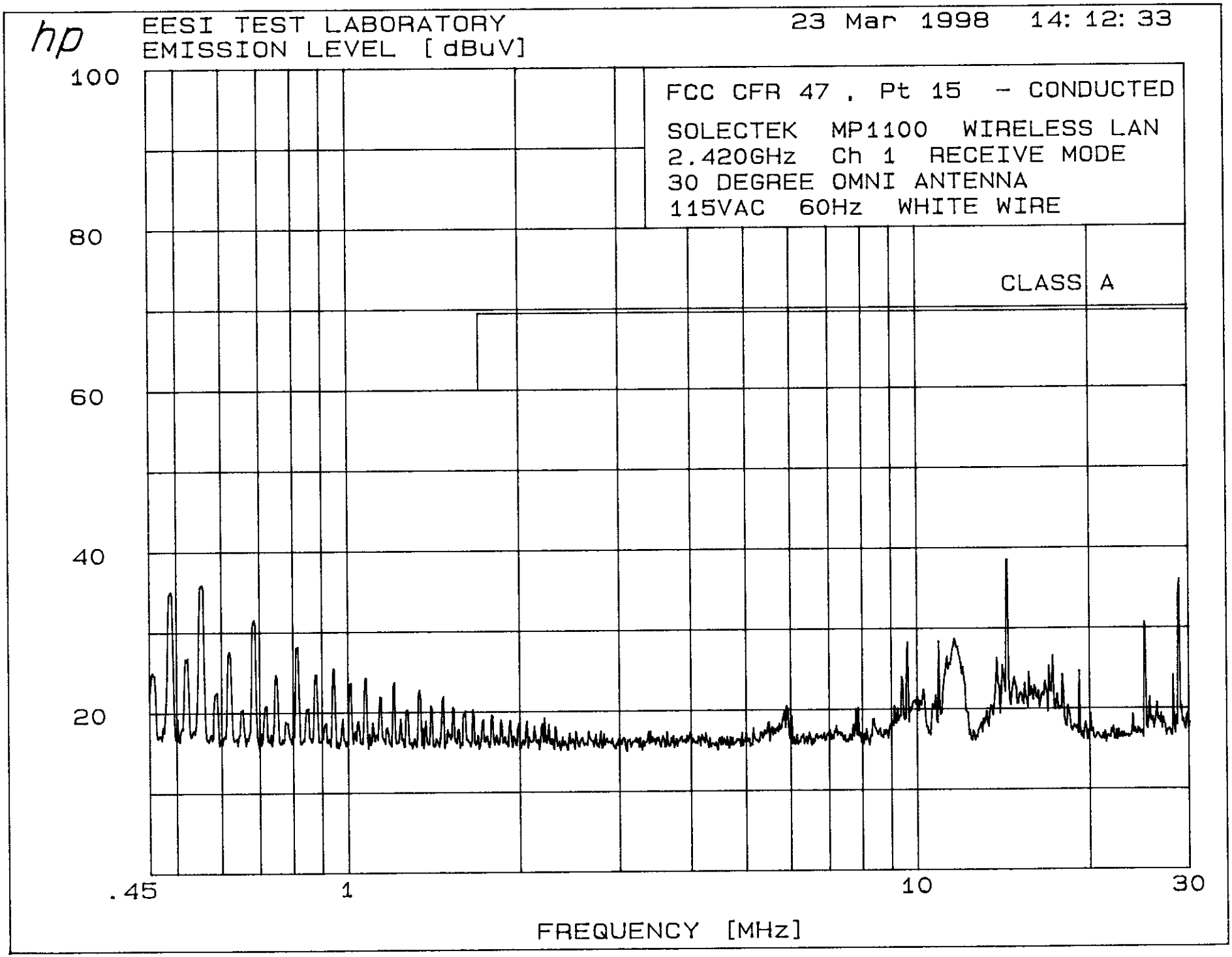

hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 14:42:26
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.458GHz Ch 3 TRANSMIT MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz BLACK WIRE
CLASS C
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

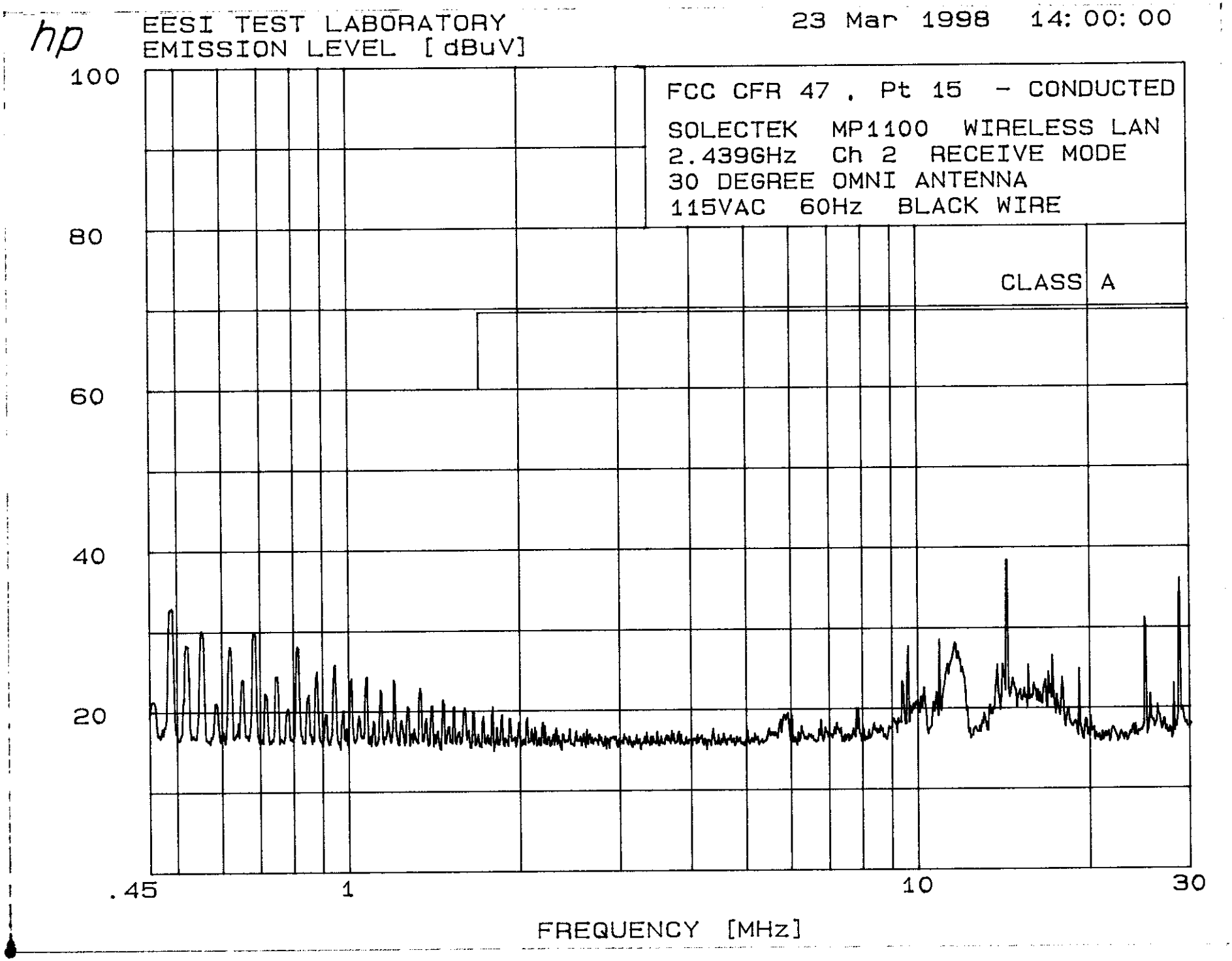

hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 14:36:46
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.458GHz Ch 3 TRANSMIT MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz WHITE WIRE
CLASS C
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

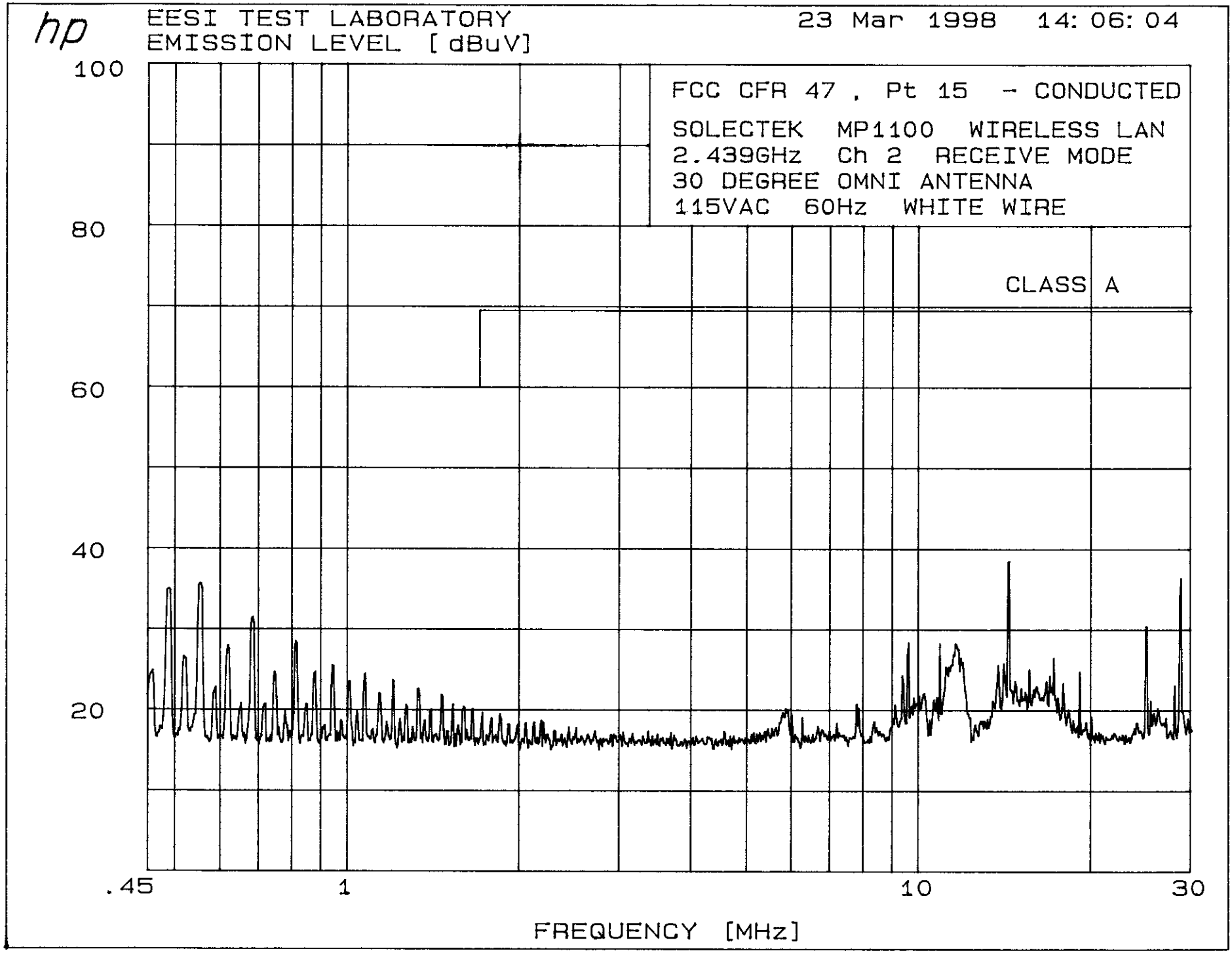

hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 14:29:34
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.458GHz Ch 3 RECEIVE MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz WHITE WIRE
CLASS A
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]


hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 14:22:20
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.458GHz Ch 3 RECEIVE MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz BLACK WIRE
CLASS A
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]


hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 14:17:30
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.420GHz Ch 1 RECEIVE MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz BKACK WIRE
CLASS A
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]


hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 14:12:33
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.420GHz Ch 1 RECEIVE MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz WHITE WIRE
CLASS A
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]


hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 14:00:00
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.439GHz Ch 2 RECEIVE MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz BLACK WIRE
CLASS A
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]


hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
23 Mar 1998 14:06:04
FCC CFR 47 , Pt 15 - CONDUCTED
SOLECTEK MP1100 WIRELESS LAN
2.439GHz Ch 2 RECEIVE MODE
30 DEGREE OMNI ANTENNA
115VAC 60Hz WHITE WIRE
CLASS A
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]