EXHIBIT E

REPORT OF MEASUREMENTS

A. TEST REPORT

The <device> was tested and found to comply with the limits imposed by the FCC "Code of Federal Regulations", Title 47, Part <15, Subpart B, Class B for unintentional radiators. >

The attached test report describes the results of the test in detail.

FCC ID: NX3SKY2000

ELITE ELECTRONIC ENGINEERING COMPANY
1516 CENTRE CIRCLE
DOWNERS GROVE, ILLINOIS 60515-1082

ELITE PROJECT: 26731 DATES TESTED: June 2-3, 1998

TEST PERSONNEL: C.E. Herhold H.W. Herhold

TEST SPECIFICATION: FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.239 for Intentional Radiators Operating in the band 88-108MHz

ENGINEERING TEST REPORT NO. 20753

MEASUREMENT OF RF EMISSIONS ON THE

SKY-2000 FM TRANSMITTER

FOR: Skywave Electronics, Inc.
Rockford, Illinois

Report By: for Charles E. Herhold, NCE
NARTE Certified EMC Engineer
Cert. No. EMC-001045-NE

Approved By: Raymond J. Klouda
Registered Professional
Engineer of Illinois - 44894

ENGINEERING TEST REPORT NO. 20753

ADMINISTRATIVE DATA AND SUMMARY OF TESTS

DESCRIPTION OF TEST ITEM	:	A low powered FM band (88.1 to 107.9MHz) transmitter with an AC to DC power adapter
MODEL	:	SKY-2000
SERIAL NUMBER	:	None
FCC ID NUMBER	:	NX3SKY2000
MANUFACTURER	:	Skywave Electronics, Inc. 1205 N. Horace Avenue Rockford, IL 61101
APPLICABLE SPECIFICATION	:	FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C for Intentional Radiators, Sections 15.207, 15.209 and 15.239
QUANTITY OF ITEMS TESTED	:	One (1)
TEST PERFORMED BY:		ELITE ELECTRONIC ENGINEERING COMPANY Radio Interference Consultants Downers Grove, Illinois 60515-1082
DATES TESTED	:	June 2-3, 1998
TEST PERSONNEL	:	Charles E. Herhold & Howard W. Herhold - Elite
ELITE JOB NO.	:	26731

ABSTRACT: The Skywave Electronics, Inc. , SKY-2000 FM transmitter **DOES MEET** the radio frequency emissions requirements of the FCC "Code of Federal Regulations", Title 47, Part 15, Subpart C for intentional radiators operating in the 88-108MHz frequency band. The conducted emissions level closest to the limit occurred at 24.004MHz. The emissions level at this frequency was 24.9dB within the limit. The radiated emissions level closest to the limit occurred at 88.9MHz. The emissions level at this frequency was 1.4dB within the limit. Refer to the individual test results and Data Pages for details.

ENGINEERING TEST REPORT NO. 20753

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ENGINEERING TEST REPORT NO. 20753

MEASUREMENT OF RF EMISSIONS ON THE SKY-2000 FM TRANSMITTER

1.0 INTRODUCTION:

During the period of June 2-3, 1998, a series of radio interference measurements were performed on a Low Powered FM Broadcast Band Transmitter, Model Designation: SKY-2000. The FCC ID code has been applied for. No serial number was assigned to the unit. The test item was manufactured by Skywave Electronics, Inc., located in Rockford, Illinois.

1.1 DESCRIPTION OF THE TEST ITEM: The test item is a low power non-licensed FM band transmitter. It weighs approximately 4.5lbs and measures 11.5in Wide x 7in Deep x 2.5in High. Speaker volume controls, microphone, line in/out ports, 13.5VDC input and a permanently attached antenna are located on the rear of the test item. All other controls and user information are on the top (front) panel. The rear-mounted collapsible antenna is permanently attached with a total extended length of 28in.

The test item is designed to digitally record nine separated messages with a total length of four minutes. The recorded messages are stored in non-volatile memory and continuously transmitted in sequence. Transmit frequencies and functions are selected by means of front panel pushbuttons. Tuning is digital (under microprocessor control) with 200kHz spacing over the frequency range of 88.1MHz to 107.9MHz. The transmitter frequency and message selected are displayed on the front panel LEDs.

Power to the test item was provided by a wall-plug transformer. The transformer was a non-polarized, two-prong unit manufactured by Oriental Hero Electrical Factory, Model: NF-13-10T. Its electrical

specifications were: INPUT: 120VAC 60Hz 20W and OUTPUT: 13.5VDC 1000mA. The two-wire DC output cable was approximately 6ft long.

As provided for test, the test item's non-volatile memory contained several radio commercials which continuously repeated. For tests requiring a specific audio frequency and sound pressure level, an external microphone was connected to the rear panel MIC input port. The microphone provided for test was low impedance, cardioid type manufactured by Audio Technia, Model: ATR 20.

1.2 PURPOSE: The test series was performed to determine if the test item meets the radiated RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.203, 15.207, 15.209 and 15.239 for Intentional Radiators. Testing was performed in accordance with ANSI C63.4-1992.

1.3 DEVIATIONS, ADDITIONS AND EXCLUSIONS: There were no deviations, additions, or exclusions from the test specification.

1.4 APPLICABLE DOCUMENTS: The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission, "Code of Federal Regulations", Title 47, Part 15, Subpart C, dated 1 October 1997.
- American National Standards Institute (ANSI) C63.4-1992 entitled "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz".
- American National Standards Institute (ANSI/NCSL) Z540-1 "Calibration Laboratories and Measuring and Test Equipment - General Requirements", dated 10 August 1994.
- Military Standard (MIL-STD) 45662A "Calibration Systems Requirements", dated 1 August 1988.

1.5 SUBCONTRACTOR IDENTIFICATION: This series of tests was performed by the Elite Electronic Engineering Company, radio interference consultants of Downers Grove, Illinois at their test facility in Cocoa Beach, Florida.

2.0 TEST ITEM SETUP AND OPERATION:

For all tests, the test item was placed on a 0.8m high non-conductive turntable. The test item was powered by its 120VAC to 13.5VDC wall plug transformer. The collapsible antenna was extended to its full length and oriented vertically. The transmit frequency was adjusted and verified before each test.

For the preliminary radiated and occupied bandwidth measurements, a specific frequency and Sound Pressure Level (SPL) was used. An audio source was assembled with a signal generator, audio amplifier and a 4in, 20W speaker. The signal generator and amplifier were adjusted to produce an audio tone of 1kHz at a sound level of 100dBSPL into the test item's external microphone at a distance of 10cm. The microphone was elevated and placed exactly 10cm away from the speaker. A sound level meter was used to check and verify that the Sound Pressure Level of 100dBSPL was maintained.

Additional occupied bandwidth measurements were made by using the test item's internal digitally sampled messages.

For all open field measurements, the test item's internal digitally sampled messages were used as a modulation source.

Since the test item was powered by an ungrounded external DC power source, it remained ungrounded for all tests.

3.0 TEST SITE AND INSTRUMENTATION:

3.1 TEST SITE: All conducted emissions tests and preliminary

radiated tests were performed in a shielded enclosure at the Elite Electronic Engineering Company's laboratory in Cocoa Beach, Florida.

The open field radiated emission tests were performed at Elite's 3m open field test site located at the Cocoa Beach Laboratory. This open field test site is located in a clear area and is equipped with a 1/4in wire mesh ground plane. The test site complies with the "Reference Test Site" information as detailed in Section 5.4.1 and the "Normalized Site Attenuation Measurement Procedures" as detailed in section 5.4.6.4 of the ANSI C63.4-1992 specification. Furthermore, the test site also complies with the "Description of Measurement Procedures" as detailed in Section 2.948, Part 2, Subpart J of the FCC Rules and Regulations under CFR Title 47.

3.2 TEST INSTRUMENTATION: A list of the test equipment used can be found on Table I. All equipment used to demonstrate compliance to the specifications listed herein is calibrated on a six month, 1 or 2 year basis in accordance with the requirements of ANSI/NCSL Z540-1 and MIL-STD-45662A.

Preliminary radiated, conducted, and open field radiated emissions tests were performed with an HP 8566A Spectrum Analyzer in conjunction with an HP 85650A Quasi-Peak Adapter. Receiver bandwidths were 9kHz for the 450kHz to 30MHz conducted emissions data and 120kHz for the 30MHz to 1000MHz radiated emissions data. (See "Addendum A" for details concerning computer operation with the HP8566A Spectrum Analyzer.)

4.0 REQUIREMENTS, PROCEDURES AND RESULTS:

4.1 OPERATING FREQUENCIES TO BE EXAMINED:

FCC Part 15.31(m) requires that measurements on intentional

radiators shall be performed and reported for each band in which the device can be operated. If the device is tunable, measurements must be performed in each band according to the following table:

Frequency range over which device operates	Number of frequencies measured	Location in the range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near top and 1 near bottom
more than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

The test item operates on discrete frequencies inside the 88.1MHz to 107.9MHz frequency band. Prior to test, clear (unoccupied) frequencies were determined to be at 88.9MHz, 98.5MHz and 107.9MHz. Measurements were performed at these three frequencies to meet the requirements stated above.

4.2 POWER LINE CONDUCTED EMISSIONS:

FCC Part 15.207(a) requires that measurements shall be performed on intentional radiators connected to the public utility (AC) power line.

4.2.1 REQUIREMENTS: All radio frequency voltages on the power lines of an intentional radiator shall be below 250uV (quasi-peak) over the frequency range from 450kHz to 30MHz. It is also to be noted that if emitted levels in the peak detector function do not exceed the above limits, the test item does meet the intent of these requirements.

4.2.2 PROCEDURES: The interference on each power lead was measured by connecting the measuring equipment to the appropriate meter terminal of the LISN. The meter terminal of the LISN not under

test was terminated with a 50 ohm resistor. Measurements were first made over the entire frequency range from 450kHz through 30MHz with a peak detector and the results were automatically plotted. The data thus obtained was then searched by the computer for the highest levels. Quasi-peak measurements were automatically performed at the frequencies selected from the highest peak measurements, and the results were printed.

4.2.3 RESULTS: The plots of the peak preliminary conducted voltage levels on each power line are presented on Data Pages 101 and 103. The conducted limit for intentional radiators is shown as a reference. The final quasi-peak results are presented on Data Pages 102 and 104. All conducted emission levels met the specification's requirements.

The emissions level closest to the limit occurred at 24.004MHz. The emissions level at this frequency was 24.9dB below the 250uV limit. Photographs of the test configuration which yielded the highest conducted emission levels are shown as Figures A and B.

4.3 PRELIMINARY RADIATED EMISSIONS:

4.3.1 REQUIREMENTS: Because emission levels in the open field may be masked by interference from sources other than the test items, preliminary radiated measurements are first performed in the low ambient environment of a shielded enclosure. Since the quasi-peak detector requires long time integration at a suspect frequency, and since the absolute level of radiated emissions cannot be measured in a shielded enclosure, it is not practical to automatically measure the quasi-peak levels. Therefore, radiated emissions from the test item were first measured and automatically plotted using a peak detector.

The frequencies with significant emission levels were then manually remeasured in the open field using the quasi-peak detector.

4.3.2 PROCEDURES: All preliminary tests were performed in a 16ft x 12ft x 10ft high shielded enclosure. This enclosure prevents emissions from other sources, such as radio and television stations, from interfering with the measurements. All power lines and signal lines entering the enclosure pass through filters on the enclosure wall. The power line filters prevent extraneous signals from entering the enclosure on these leads.

Separate measurements were performed at the low, middle and high frequencies noted above. The electromagnetic fields were measured with the appropriate antennas from 30MHz to 1000MHz. These broadband antennas were positioned at a 1m distance from the test item and connected to an HP 8566A Spectrum Analyzer. The frequency range from 30MHz to 1000MHz was investigated using a peak detector function. The data was then processed by the computer to an equivalent field intensity at 3m using linear extrapolation. A -9.5dB (20*Log(1m/3m)) distance correction factor has automatically been applied to the plotted emissions data to allow a comparison of the data obtained at 1m with the limit at 3m. Note that the line labeled 'B Limit' coincides with the general requirements detailed for an intentional radiator in Section 15.209.

4.3.3 RESULTS: The preliminary radiated emissions plots are presented on Data Pages 105 through 107. They are only presented for reference and are not used as official data. All significant radiated emissions were later measured at the open field test site. Photographs of the preliminary radiated emissions test setups are presented as

Figures C through F.

4.4 FINAL RADIATED EMISSIONS:

4.4.1 REQUIREMENTS: FCC Section 15.239(b) states that the field strength of any emissions within the band of 88MHz to 108MHz shall not exceed 250uV/m at 3m. The emission limit is based on measurements instrumentation employing an average detector. All other emissions must comply with the limits detailed in Section 15.209(a) as shown on Table A (below):

TABLE A - RADIATION LIMITS PER SECTION 15.209(a)

Frequency MHz	Field Strength* microvolt/meter	Measurement Distance meters
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

* The tighter limit applies at the band edges. Emissions limits are based on using a quasi-peak detector except for the bands 9-90kHz, 110-490kHz and above 1000MHz where an average detector is to be used.

4.4.2 PROCEDURES: Final open field measurements were performed at the Cocoa Beach facility open field test site at a test distance of 3m using a quasi-peak detector. A pre-amplifier was used to increase the sensitivity of the spectrum analyzer. A correction factor of the pre-amplifier's gain is applied to each measurement.

Tuned dipoles were used as pick up devices to measure the fundamental and harmonics to 1000MHz. Above 1000MHz a double-ridged waveguide antenna was used. For measurement of spurious emissions a broadband biconical or a tuned dipole was used. No measurements were performed above the 10th harmonic or 1079.0MHz.

A quasi-peak detector was used to measure the field strength of the fundamental since the results obtained would be equal to that obtained with an average detector.

All significant broadband and narrowband signals were measured and recorded. To make certain that the highest electric field emissions from the test items were measured, the following steps were taken:

(a) The test item was rotated so that all sides were exposed to the measurement antenna.

(b) Since the measurement antennas are linearly polarized, both horizontal and vertical polarities were utilized.

(c) The measuring antenna was raised and lowered from 1 to 4m for each antenna polarization to maximize the readings.

(d) If the measured level at a particular frequency is within 3dB of the limit, the measurement is repeated with a dipole antenna tuned to the suspect frequency. However, if the detected signal is observed with a vertically polarized antenna and its frequency is less that 70MHz, then a dipole cut to 70MHz shall be used to make the quasi-peak measurement with an appropriate antenna factor.

4.4.3 RESULTS: The open field radiated emissions is presented on Data Pages 108 through 112. Photographs of the open field radiated test setup is presented as Figure G.

The highest radiated emissions level closest to the limit occurred at it 88.9MHz. At this frequency, the field strength was 1.4dB below the specification limit.

4.5 ANTENNA CONSIDERATIONS AND OCCUPIED BANDWIDTH MEASUREMENTS:

4.5.1 REQUIREMENTS: FCC Section 15.203 requires that an intentional radiator "shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna....shall be

considered sufficient to comply with the provisions of this section."

FCC Section 15.239(a) requires that emissions from an intentional radiator "shall be confined within a band 200kHz wide centered on the operating frequency. The 200kHz band shall lie wholly within the frequency range of 88-108MHz."

4.5.2 PROCEDURES: The test item's antenna was permanently attached to the main circuit board and exited the rear of the case through a rubber insulating grommet. Therefore, its design is in compliance with the standard. The antenna was a collapsible type with a total extended length of 28in. For purposes of test, the antenna was fully extended and oriented vertically. A broadband biconical antenna was placed in the shielded enclosure and positioned 1m away from the test item. An HP 8566A Spectrum analyzer was used as the receiver and it was adjusted to measure the occupied bandwidth at the low, middle and high frequencies. A peak detector and the max-hold function were used to fill in and describe an envelope of all emissions present. A 'screen dump' utility was used to create an X-Y plot of the spectrum analyzer's display.

4.5.3 RESULTS: The X-Y 'screen dump' plots are presented on Data Pages 113 through 115. The maximum occupied bandwidth was 198.5kHz and all emissions were wholly contained within the 88-108MHz frequency band.

Therefore, the test item does meet the requirements of Section 15.239(a).

5.0 CONCLUSION:

It was found that the Skywave Electronics, Inc. SKY-2000 FM Transmitter, **DOES MEET** the radio frequency emissions requirements for

Sections 15.203, 15.209 and 15.239 of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C for intentional radiators operating within the 88MHz-108MHz band.

6.0 CERTIFICATION:

Elite Electronic Engineering Company certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the test specification.

The data presented in this test report pertains to the test item at the test dates. Any electrical or mechanical modification made to the test item subsequent to the specified test dates will serve to invalidate the data and void this certification.

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

ENGINEERING TEST REPORT NO. 20753

TABLE - I EQUIPMENT LIST

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Cal Inv	Due Date
Equipment Type: RECEIVERS								
RAE3	SPECTRUM ANALYZER - FL	HEWLETT PACKARD	8566A	2209A01339	100HZ-22GHZ	08/27/98	12	08/27/99
RAF2	QUASIPEAK ADAPTER - FL	HEWLETT PACKARD	85650A	2043A00245	10KHZ-1GHZ	08/27/98	12	08/27/99
Equipment Type: COMPUTERS								
CCA2	CALCULATOR - FL	HEWLETT PACKARD	9825A	1622A08377	---		N/A	
CRAO	MICROCOMPUTER - FL	RADIO SHACK	26-1066	0011814	---		N/A	
CRAA	INTERFACE - FL	SCIENTIFIC ENG.	488-80C	1262	---		N/A	
CDA4	COMPUTER - FL	HEWLETT PACKARD	9836	2440A09718	---		N/A	
Equipment Type: PRINTERS/PLOTTERS								
HRB2	PRINTER - FL	HEWLETT PACKARD	2631B	2121A19858	---		N/A	
HLK2	PLOTTER - FL	HEWLETT PACKARD	7550A	2631A53539	---		N/A	
Equipment Type: SIGNAL GENERATORS								
GFA1	SYNTHESIZED GENERATOR - FL	HEWLETT PACKARD	3325A	1748A07035	1HZ-20MHZ	04/13/98	12	04/13/99
Equipment Type: ANTENNAS								
NDD5	TUNED DIPOLE ANTENNA - FL	EMPIRE DEVICES	DM-205/T1	515	20MHZ-200MHZ	07/02/97	12	07/02/98
NDH5	TUNED DIPOLE ANTENNA - FL	EMPIRE DEVICES	DM-205/T2	515	200MHZ-400MHZ	07/02/97	12	07/02/98
NDK1	TUNED DIPOLE ANTENNA - FL	EMPIRE DEVICES	DM-205/T3	515	400MHZ-1GHZ	07/02/97	12	07/02/98
NSB3	LOG SPIRAL ANTENNA - FL	ELECTRO-METRICS	LCA-25	8-09	200MHZ-1GHZ	02/06/98	12	02/06/99
NBF0	BICONICAL ANTENNA - FL	ELECTRO-METRICS	BIA-25	7-72	20MHZ-200MHZ	02/06/98	12	02/06/99
NWF0	DBL. RDG W.G ANTENNA - FL	EMCO	3105	2035	1GHZ-12.4GHZ	07/29/97	12	07/29/98
Equipment Type: AMPLIFIERS								
AAB0	AUDIO AMPLIFIER - FL	MCINTOSH	M60	5403	20HZ-100KHZ		NOTE 1	
APJ0	PRE-AMPLIFIER - FL	MINI-CIRCUITS	ZFL-2000	860902	10MHZ-2GHZ	05/06/98	12	05/06/99
Equipment Type: PROBES								
PLL7	50UH LISN - FL	ELITE	462D	008	10KHZ-400MHZ	06/19/97	24	06/19/98
PLL8	50UH LISN - FL	ELITE	462D	009	10KHZ-400MHZ	06/13/97	24	06/13/98

I/O: Initial Only N/A: Not Applicable

Note 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

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ADDENDUM A

DETAILED DESCRIPTION OF HOW THE COMPUTERIZED PROGRAMS PERFORM CONDUCTED AND RADIATED MEASUREMENTS

The spectrum analyzer provides many advantages over a normal tuned receiver when measuring RF voltage levels. When a computer is connected to the analyzer, it provides a system which will automatically take, process, and output the data without operator interaction. This eliminates operator error.

The software system designed and used by The Elite Electronic Engineering Company takes full advantage of the speed, accuracy, instrument control, processing and decision making capabilities of the computer.

Since the FCC requires measurements to be performed in the quasi-peak detector function, all final test procedures use this detector function. With the quasi-peak detector function, the lowest emission levels of the interface signal are obtained. Unfortunately, this detector function also requires a very slow sweep time to obtain accurate readings. To reduce the required test time, the entire frequency band is first investigated using a peak detector function with the specified receiver bandwidth. (It should be noted that the FCC accepts peak reading levels as long as they do not exceed the quasi-peak limits.) This data is then processed and X-Y plotted as the preliminary data, which is then presented in graphical form. Both the conducted and preliminary radiated tests are processed in this manner. Since broadband interference can also be present with narrowband interference, the spectrum analyzer bandwidth is reduced. This procedure lowers the broadband levels present and the narrowband

levels are not affected. The frequency band is then scanned again. This allows for identification of the narrowband signals which may be "buried" in the broadband noise and would otherwise be overlooked.

The computer then divides each frequency band (2 bands for broadband and 2 bands for narrowband) into 8 equal frequency segments for conducted measurements and 10 for radiated. A computer search then finds the frequencies with the highest levels in each segment. (32 for conducted measurements or 40 for radiated measurements).

For the conducted data, those frequencies which have the highest levels become frequencies for additional computerized testing. The additional testing is accomplished using the quasi-peak detector function with the specified receiver bandwidths. Each group of signal levels in the frequency band being analyzed is investigated. The highest levels encountered are then recorded, processed, and printed.

The above process obtains the highest levels throughout the frequency band automatically without having to resort to manual scanning. This type of data processing insures that all mathematical computations are performed accurately and in a minimum amount of time.

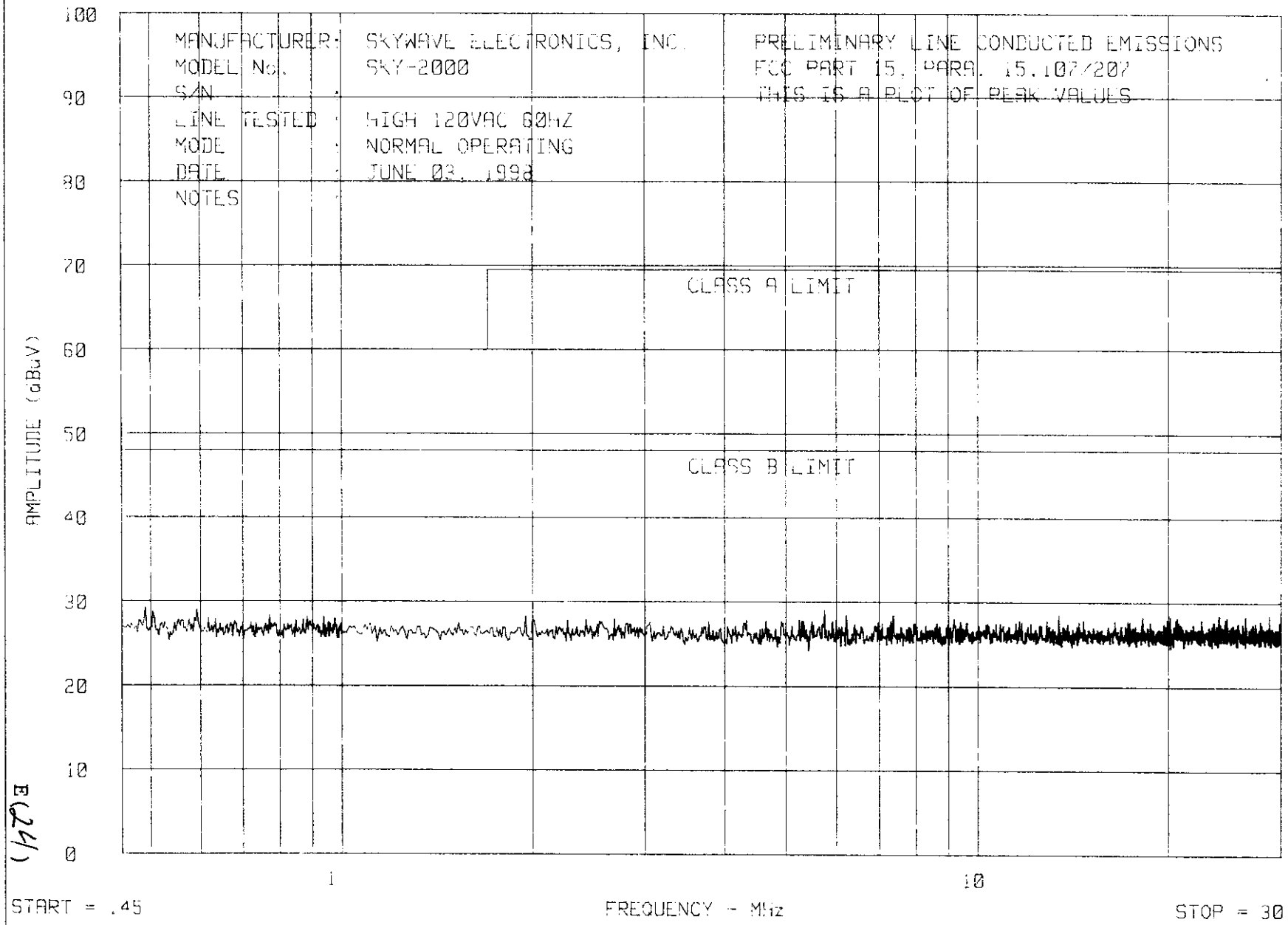
For the radiated data, the relative field intensities are plotted and the maximum levels printed. This data is automatically corrected for antenna factors, cable losses and propagation losses. While this data is not used as final data, it is intended to indicate the frequencies at which high levels may be present so that they can be closely investigated during the open field tests. Final data is then taken manually using an HP 8566A spectrum analyzer with an HP 85650A Quasi-Peak adapter.

ENGINEERING TEST REPORT NO. 20753

DATA PAGE SUMMARY LIST

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515



E(17)

FCC ID: NX3SKY2000

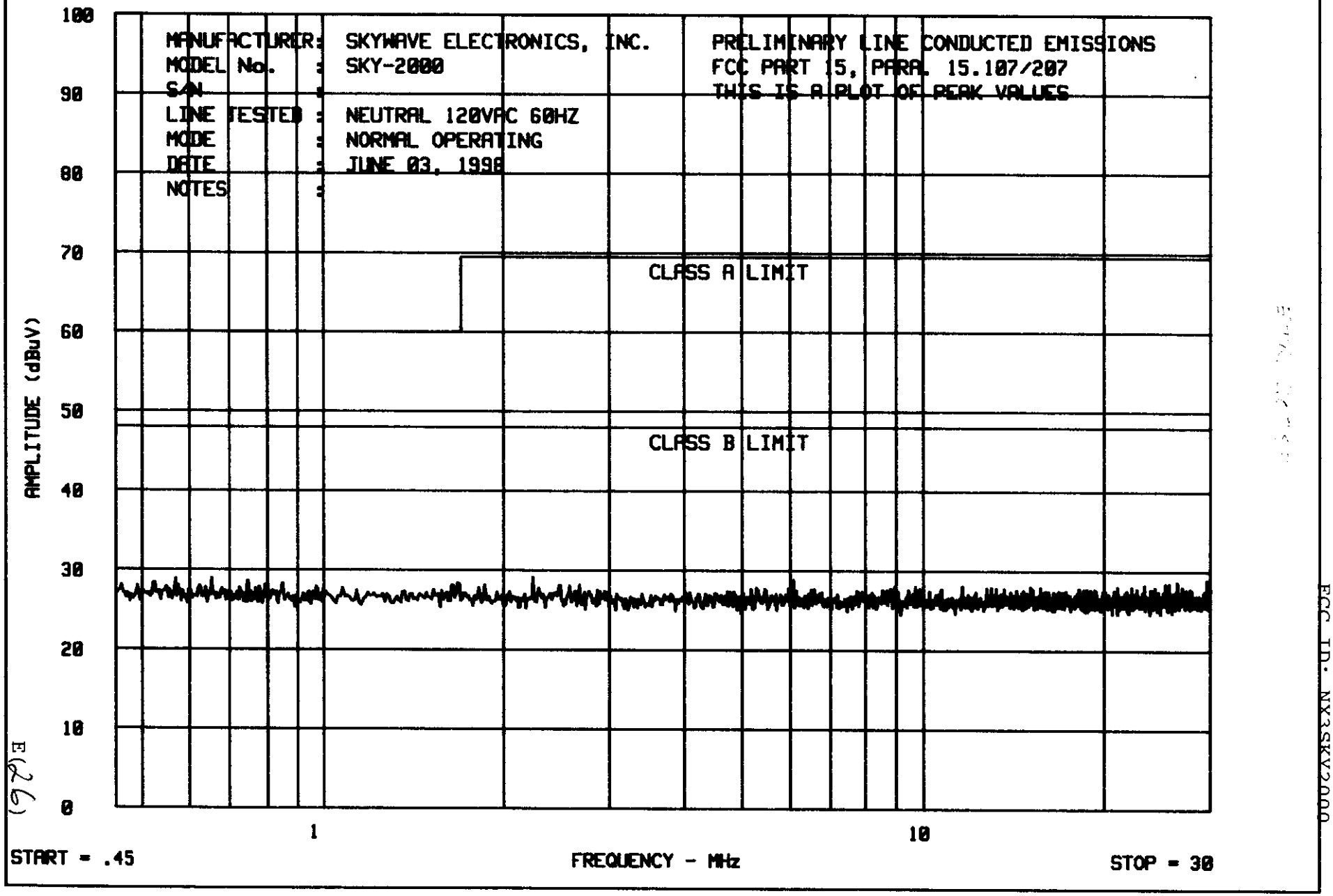
MANUFACTURER : SKYWAVE ELECTRONICS, INC.
MODEL : SKY-2000
S/N :
SPECIFICATION : FCC DIGITAL EQUIPMENT, CLASS B
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : HIGH 120VAC 60HZ
MODE : NORMAL OPERATING
DATE : JUNE 03, 1998
NOTES :
RECEIVER : HP 8566 w/ HP85650A QP ADAPTOR
VALUES MEASURED WITH QP DETECTOR USING 9kHz BANDWIDTH

FREQUENCY MHz	METER RDG. uV	LIMIT uV
.480	5.7 BB	250
.761	8.3 BB	250
.872	8.3 BB	250
.977	8.3	250
1.514	8.4 BB	250
1.934	8.3 BB	250
2.676	8.5 BB	250
3.734	5.2 BB	250
4.292	5.1 BB	250
5.309	5.2	250
5.702	5.2 BB	250
6.173	5.3 BB	250
6.729	5.2 BB	250
7.325	5.3 BB	250
9.140	5.2 BB	250
11.584	5.1 BB	250
12.809	5.2 BB	250
13.368	5.1 BB	250
16.398	5.1 BB	250
18.148	5.2 BB	250
18.729	5.2 BB	250
19.874	5.2 BB	250
20.109	5.2 BB	250
20.391	5.2	250
22.485	5.2 BB	250
24.004	14.2	250
24.005	14.2	250
26.379	5.1 BB	250
27.819	5.1 BB	250
28.723	5.1 BB	250

CHECKED BY: [signature] E(25)

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515



FCC ID: NX3SKY2000

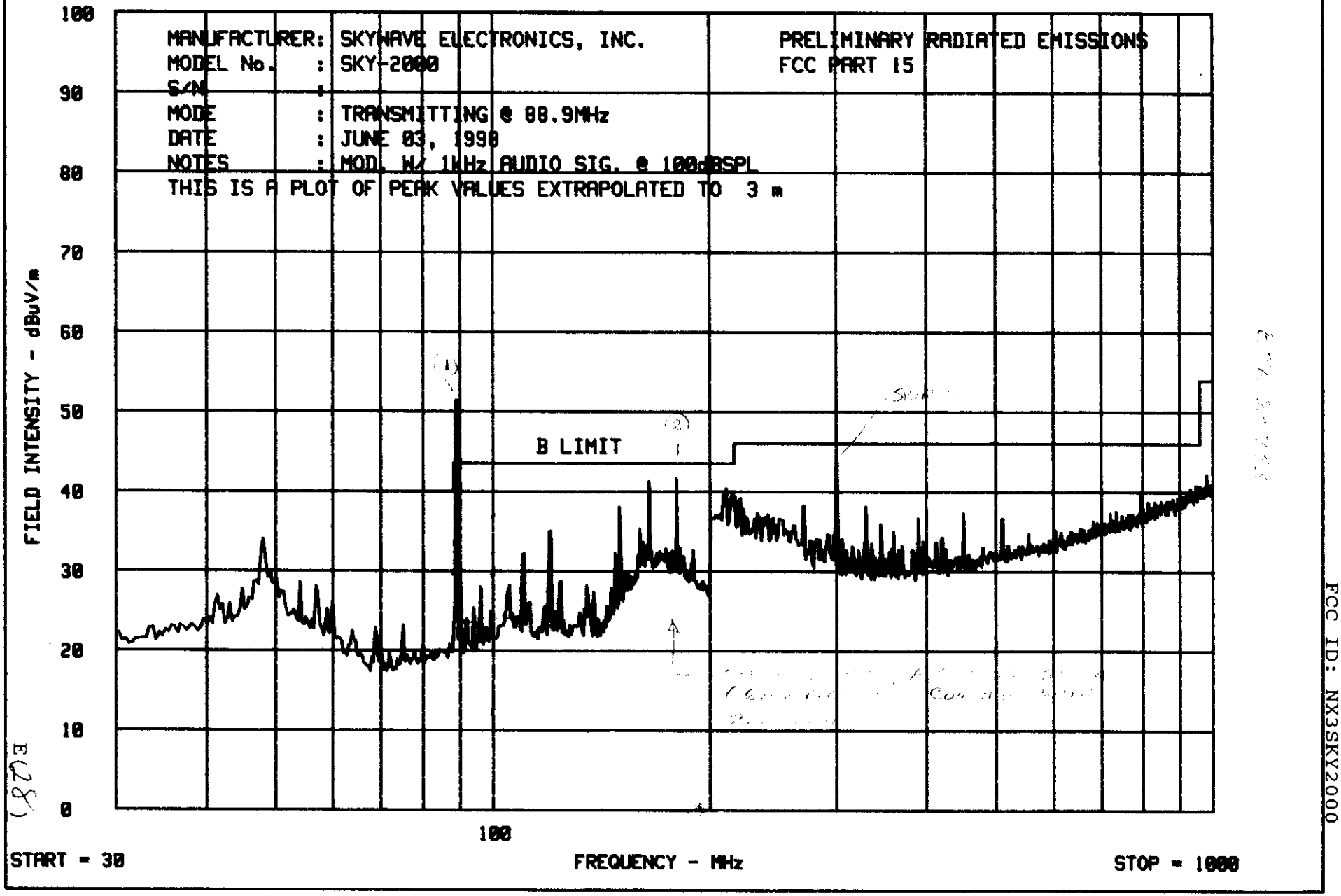
MANUFACTURER : SKYNAVE ELECTRONICS, INC.
MODEL : SKY-2000
S/N :
SPECIFICATION : FCC DIGITAL EQUIPMENT, CLASS B
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : NEUTRAL 120VAC 60HZ
MODE : NORMAL OPERATING
DATE : JUNE 03, 1998
NOTES :
RECEIVER : HP 8566 w/ HP85650A QP ADAPTOR
VALUES MEASURED WITH QP DETECTOR USING 9kHz BANDWIDTH

FREQUENCY MHz	METER RDG. uV	LIMIT uV
.552	5.4 BB	250
.640	8.4 BB	250
.835	8.3 BB	250
.953	8.3	250
1.628	8.3 BB	250
2.224	8.3 BB	250
2.660	8.3 BB	250
3.038	5.2 BB	250
4.691	5.1 BB	250
5.231	5.2 BB	250
6.029	5.2 BB	250
6.350	5.3 BB	250
8.511	5.1 BB	250
8.912	5.2 BB	250
9.380	5.1 BB	250
11.564	5.1 BB	250
12.940	5.2 BB	250
13.599	5.2 BB	250
15.849	5.2 BB	250
18.108	5.1 BB	250
18.263	5.1	250
18.624	5.2 BB	250
21.044	5.1 BB	250
21.333	5.1	250
22.203	5.2 BB	250
23.309	5.2 BB	250
24.746	5.2 BB	250
26.393	5.1 BB	250
26.953	5.2 BB	250
29.595	5.2 BB	250

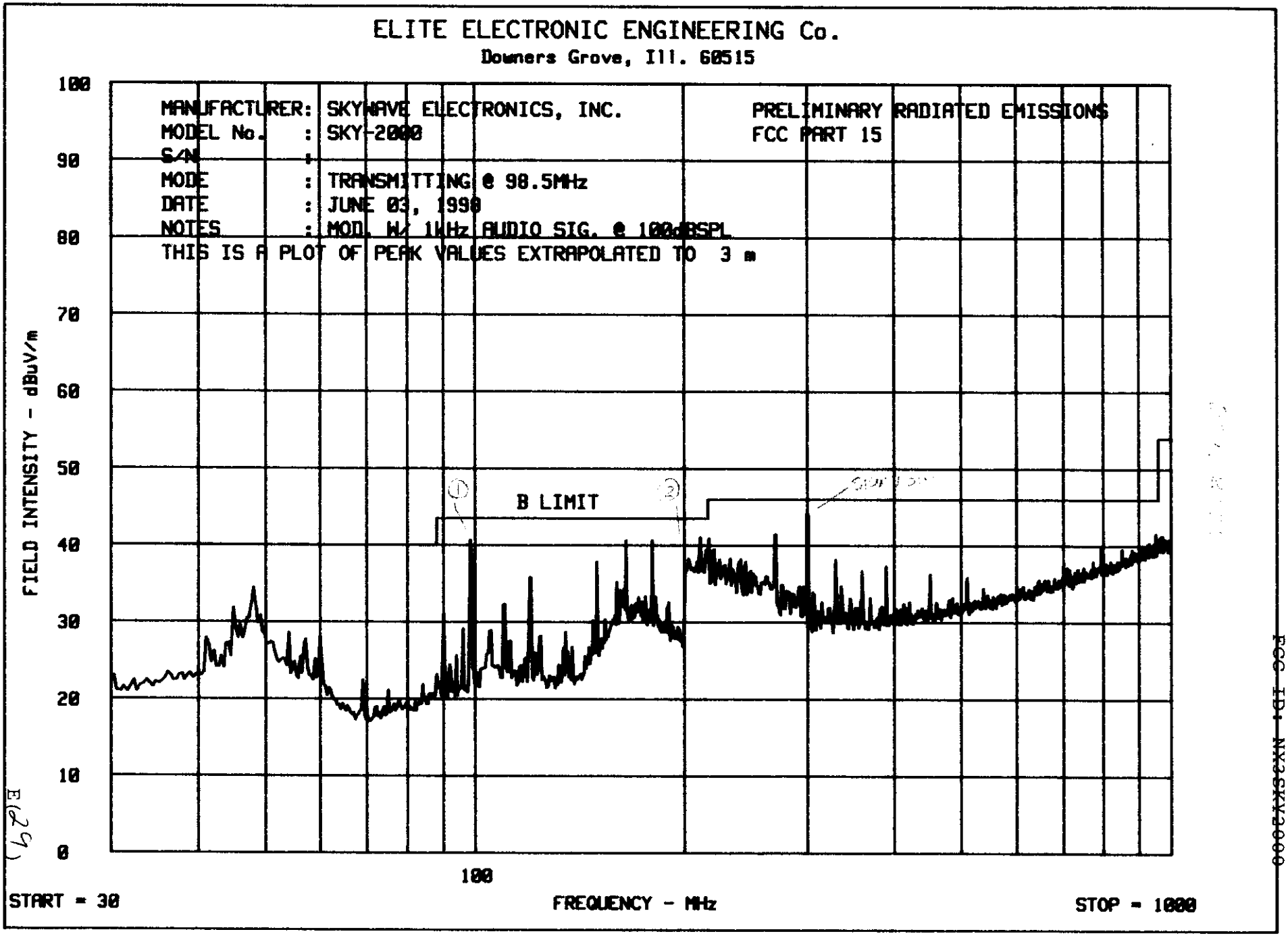
CHECKED BY: E(27)

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515

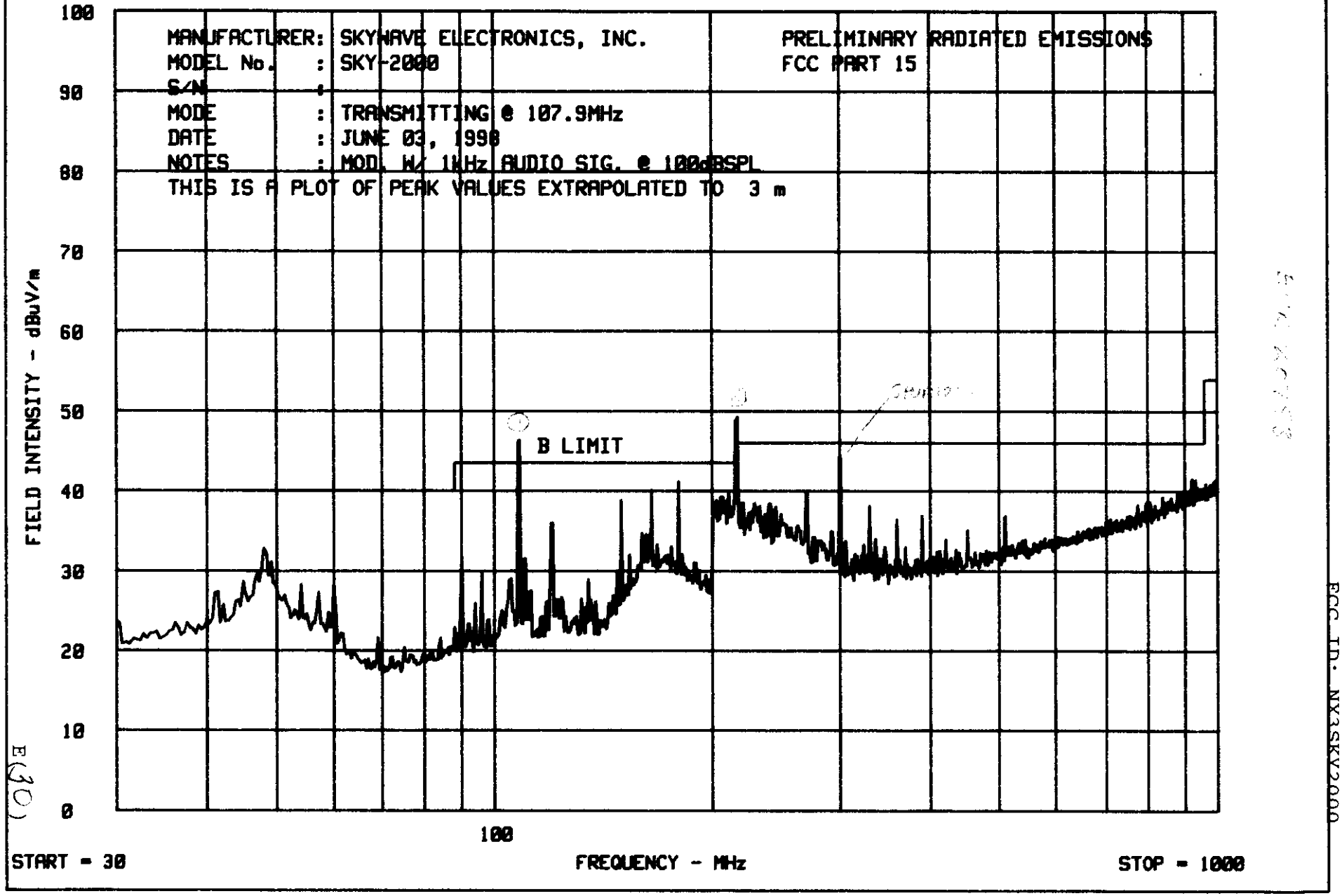


FCC ID: NX3SKY2000


ELITE ELECTRONIC ENGINEERING Co.
Downers Grove, Ill. 60515
MANUFACTURER: SKYWAVE ELECTRONICS, INC.
MODEL No. : SKY-2000
S/N :
MODE : TRANSMITTING @ 98.5MHz
DATE : JUNE 03, 1998
NOTES : MOD. W/ 1kHz AUDIO SIG. @ 100dBSPL
THIS IS A PLOT OF PEAK VALUES EXTRAPOLATED TO 3 m
PRELIMINARY RADIATED EMISSIONS
FCC PART 15
B LIMIT
FIELD INTENSITY - dBuV/m
100
90
80
70
60
50
40
30
20
10
0
START = 30
100
FREQUENCY - MHz
STOP = 1000
FCC ID: NX3SKY2000

ELITE ELECTRONIC ENGINEERING Co.

Downers Grove, Ill. 60515



FCC ID: NX3SKY2000

ENGINEERING TEST REPORT NO. 20753

TESTED FOR : SKYWAVE ELECTRONICS INC.
TEST ITEM : Low-Power Unlicensed FM Broadcast Band Transmitter
MODEL/SERIAL : Model: SKY-2000 Serial: (none)
TYPE TEST : Radiated Emissions, Electric Field, 30MHz-1000MHz
SPECIFICATION : FCC Part 15C, Section 15.239 Intentional Radiators
TEST DATE : June 1-2, 1998
TEST PERSONNEL : CE Herhold, HW Herhold/Elite
TEST EQUIP. : RAE3 RAF2 NDD5 NDH5 NDK1 APJ0
TEST SETUP : See text and photographs
NOTES : Transmitting at 88.9MHz
NOTES : All readings taken at 3 meters w/tuned dipoles

Frequency MHz	ANT POL	QUASI-PEAK METER RDG dBuV		TUNED DIPOLE ANTENNA FACTOR dB/m	CABLE LOSS dB	APJ0 PRE-AMP CORR dB	TEST ITEM dBuV/m	TEST ITEM uV/m	LIMIT uV/m	MARGIN (BELOW SPEC) dB
88.9	V	58.2		7.2	2.1	-20.9	46.6	213.8	250	1.4
177.8	V	31.6		13.2	3.0	-20.8	27.0	22.4	150	16.5
266.7	V	26.4		16.7	3.7	-20.7	26.1	20.2	200	19.9
355.6	V	26.1		19.2	4.3	-20.7	28.9	27.9	200	17.1
444.5	V	18.1	*	21.1	4.8	-20.6	23.4	14.8	200	22.6
533.4	V	17.8	*	22.7	5.3	-20.5	25.3	18.4	200	20.7
622.3	V	18.9	*	24.0	5.7	-20.5	28.1	25.4	200	17.9
711.2	V	15.9	*	25.2	6.2	-20.4	26.9	22.1	200	19.1
800.1	V	15.5	*	26.2	6.5	-20.4	27.8	24.5	200	18.2
889.0	V	15.7	*	27.1	6.9	-20.4	29.3	29.2	200	16.7
88.9	H	50.9		7.2	2.1	-20.9	39.3	92.3	250	8.7
177.8	H	35.6		13.2	3.0	-20.8	31.0	35.5	150	12.5
266.7	H	34.1		16.7	3.7	-20.7	33.8	49.0	200	12.2
355.6	H	30.0		19.2	4.3	-20.7	32.8	43.7	200	13.2
444.5	H	22.6	*	21.1	4.8	-20.6	27.9	24.8	200	18.1
533.4	H	23.8	*	22.7	5.3	-20.5	31.3	36.7	200	14.7
622.3	H	22.8	*	24.0	5.7	-20.5	32.0	39.8	200	14.0
711.2	H	22.5	*	25.2	6.2	-20.4	33.5	47.3	200	12.5
800.1	H	22.5	*	26.2	6.5	-20.4	34.8	55.0	200	11.2
889.0	H	22.6	*	27.1	6.9	-20.4	36.2	64.6	200	9.8

* = Ambient

Checked By: CEHerhold

A:\GRAPH2
SKYWAVEL.WKS

E(3/)

ENGINEERING TEST REPORT NO. 20753

TESTED FOR : SKYWAVE ELECTRONICS INC.
TEST ITEM : Low-Power Unlicensed FM Broadcast Band Transmitter
MODEL/SERIAL : Model: SKY-2000 Serial: (none)
TYPE TEST : Radiated Emissions, Electric Field, 30MHz-1000MHz
SPECIFICATION : FCC Part 15C, Section 15.239 Intentional Radiators
TEST DATE : June 1-2, 1998
TEST PERSONNEL : CE Herhold, HW Herhold/Elite
TEST EQUIP. : RAE3 RAF2 NDD5 NDH5 NDK1 APJ0
TEST SETUP : See text and photographs
NOTES : Transmitting at 98.5MHz
NOTES : All readings taken at 3 meters w/tuned dipoles

Frequency MHz	ANT POL	QUASI-PEAK METER RDG dBuV		TUNED DIPOLE ANTENNA FACTOR dB/m	CABLE LOSS dB	APJ0 PRE-AMP CORR dB	TEST ITEM dBuV/m	TEST ITEM uV/m	LIMIT uV/m	MARGIN (BELOW SPEC) dB
98.5	V	56.0		8.1	2.2	-20.8	45.5	188.4	250	2.5
197.0	V	28.5		14.1	3.2	-20.8	25.0	17.8	150	18.5
295.5	V	32.6		17.6	3.9	-20.7	33.4	46.8	200	12.6
394.0	V	16.4	*	20.1	4.5	-20.6	20.4	10.5	200	25.6
492.5	V	16.2	*	22.0	5.1	-20.6	22.7	13.6	200	23.3
591.0	V	20.1	*	23.6	5.6	-20.5	28.8	27.5	200	17.2
689.5	V	15.6	*	24.9	6.1	-20.5	26.1	20.2	200	19.9
788.0	V	15.5	*	26.0	6.5	-20.4	27.6	24.0	200	18.4
886.5	V	15.6	*	27.1	6.9	-20.4	29.2	28.8	200	16.8
985.0	V	15.7	*	28.0	7.3	-20.5	30.5	33.5	500	23.5
98.5	H	47.7		8.1	2.2	-20.8	37.2	72.4	250	10.8
197.0	H	25.3		14.1	3.2	-20.8	21.8	12.3	150	21.7
295.5	H	38.5		17.6	3.9	-20.7	39.3	92.3	200	6.7
394.0	H	25.6		20.1	4.5	-20.6	29.6	30.2	200	16.4
492.5	H	26.5	*	22.0	5.1	-20.6	33.0	44.7	200	13.0
591.0	H	23.5	*	23.6	5.6	-20.5	32.2	40.7	200	13.8
689.5	H	23.2	*	24.9	6.1	-20.5	33.7	48.4	200	12.3
788.0	H	23.3	*	26.0	6.5	-20.4	35.4	58.9	200	10.6
886.5	H	22.8	*	27.1	6.9	-20.4	36.4	66.1	200	9.6
985.0	H	23.1	*	28.0	7.3	-20.5	37.9	78.5	500	16.1

* = Ambient

Checked By: CEHerhold

A:\GRAPH2
SKYWAVEM.WKS

ENGINEERING TEST REPORT NO. 20753

TESTED FOR : SKYWAVE ELECTRONICS INC.
TEST ITEM : Low-Power Unlicensed FM Broadcast Band Transmitter
MODEL/SERIAL : Model: SKY-2000 Serial: (none)
TYPE TEST : Radiated Emissions, Electric Field, 30MHz-1000MHz
SPECIFICATION : FCC Part 15C, Section 15.239 Intentional Radiators
TEST DATE : June 1-2, 1998
TEST PERSONNEL : CE Herhold, HW Herhold/Elite
TEST EQUIP. : RAE3 RAF2 NDD5 NDH5 NDK1 NWF0 APJ0
TEST SETUP : See text and photographs
NOTES : Transmitting at 107.9MHz
NOTES : All readings taken at 3 meters w/tuned dipoles

Frequency MHz	ANT POL	QUASI-PEAK METER RDG dBuV		TUNED DIPOLE ANTENNA FACTOR dB/m	CABLE LOSS dB	APJ0 PRE-AMP CORR dB	TEST ITEM dBuV/m	TEST ITEM uV/m	LIMIT uV/m	MARGIN (BELOW SPEC) dB
107.9	V	55.1		8.9	2.3	-20.8	45.5	188.4	250	2.5
215.8	V	25.3		14.9	3.3	-20.8	22.7	13.6	150	20.8
323.7	V	21.8		18.4	4.1	-20.6	23.7	15.3	200	22.3
431.6	V	18.8	*	20.9	4.8	-20.6	23.9	15.7	200	22.1
539.5	V	16.7	*	22.8	5.3	-20.5	24.3	16.4	200	21.7
647.4	V	18.0	*	24.3	5.9	-20.5	27.7	24.3	200	18.3
755.3	V	15.5	*	25.7	6.3	-20.4	27.1	22.6	200	18.9
863.2	V	15.6	*	26.8	6.8	-20.4	28.8	27.5	200	17.2
971.1	V	15.5	*	27.8	7.2	-20.4	30.1	32.0	200	15.9
1079.0	V	13.7	#	24.1	7.6	-20.5	24.9	17.6	500	29.1
107.9	H	52.0		8.9	2.3	-20.8	42.4	131.8	250	5.6
215.8	H	22.3		14.9	3.3	-20.8	19.7	9.7	150	23.8
323.7	H	29.9		18.4	4.1	-20.6	31.8	38.9	200	14.2
431.6	H	23.2	*	20.9	4.8	-20.6	28.3	26.0	200	17.7
539.5	H	23.3	*	22.8	5.3	-20.5	30.9	35.1	200	15.1
647.4	H	24.5	*	24.3	5.9	-20.5	34.2	51.3	200	11.8
755.3	H	23.2	*	25.7	6.3	-20.4	34.8	55.0	200	11.2
863.2	H	23.4	*	26.8	6.8	-20.4	36.6	67.6	200	9.4
971.1	H	23.3	*	27.8	7.2	-20.4	37.9	78.5	200	8.1
1079.0	H	17.1	#	24.1	7.6	-20.5	28.3	26.0	500	25.7

* = Ambient
\# = Average measurement w/RWG antenna (NWF0)

Checked by: CEHerhold

A:\GRAPH2
SKYWAVEH.WKS

DATA SHEET

MANUFACTURER : SKYWAVE ELECTRONICS
MODEL NO. : SKY-2000
S/N : (NONE)
SPECIFICATION: FCC Part 15C, SECT. 15.239 SPURIOUS EMISSIONS
TEST : Open Field Radiated Emissions Measurements
DATE TESTED : 06/03/98

NOTES : TEST ITEM TUNED TO 88.9MHZ. SPURIOUS EMISSIONS ARE NOT A FUNCTION OF TUNED FREQUENCY, BUT OF ITEM'S INTERNAL MICROPROCESSOR. REFER TO OTHER DATA PAGES FOR MEASUREMENTS OF FUNDAMANTAL AND HARMONICS
NOTES : All readings taken at 3 meters

FREQ MHz	ANT POL	QUASI-PEAK METER RDG dBuV	ANTENNA FACTOR dB/m	CABLE LOSS dB	AMP CORR dB	TEST ITEM dBuV/m	TEST ITEM uV/m	FCC LIMIT uV/m	MARGIN (BELOW SPEC) dB
30.000	V	29.3	12.3	1.2	-21.2	21.6	12.0	100.0	+18.4
36.000	V	32.1	13.4	1.3	-21.2	25.6	19.1	100.0	+14.4
48.000	V	30.0	10.3	1.5	-21.3	20.5	10.6	100.0	+19.5
54.000	V	29.9	10.0	1.6	-21.4	20.1	10.1	100.0	+19.9
60.000	V	36.1	10.8	1.7	-21.4	27.2	22.9	100.0	+12.8
72.000	V	30.1*	7.7	1.9	-21.3	18.4	8.3	100.0	+21.6
78.000	V	31.1	8.4	2.0	-21.3	20.2	10.2	100.0	+19.8
84.000	V	31.2	9.0	2.0	-21.3	20.9	11.1	100.0	+19.1
114.000	V	26.5	14.7	2.4	-21.2	22.4	13.2	150.0	+21.1
120.000	V	37.6	14.8	2.4	-21.2	33.6	47.9	150.0	+9.9
126.000	V	20.3*	15.4	2.5	-21.2	17.0	7.1	150.0	+26.5
132.000	V	24.5*	15.1	2.6	-21.1	21.1	11.4	150.0	+22.4
138.000	V	21.2*	13.5	2.6	-21.1	16.2	6.5	150.0	+27.3
144.000	V	22.3*	14.0	2.7	-21.1	17.9	7.9	150.0	+25.6
150.000	V	34.5	15.3	2.7	-21.1	31.4	37.2	150.0	+12.1
156.000	V	27.1	15.2	2.8	-21.0	24.1	16.0	150.0	+19.4
162.000	V	25.6*	15.3	2.9	-21.0	22.8	13.8	150.0	+20.7
168.000	V	27.0	16.0	2.9	-21.0	24.9	17.6	150.0	+18.6
174.000	V	22.0*	16.5	3.0	-20.9	20.6	10.7	150.0	+22.9
180.000	V	38.7	16.8	3.0	-20.9	37.6	75.9	150.0	+5.9
186.000	V	23.6*	17.1	3.1	-20.9	22.9	14.0	150.0	+20.6
192.000	V	20.6*	17.3	3.1	-20.8	20.2	10.2	150.0	+23.3
198.000	V	19.6*	17.4	3.2	-20.8	19.4	9.3	150.0	+24.1
204.000	V	17.2*	14.4#	3.2	-20.8	14.0	5.0	150.0	+29.5
210.000	V	30.1	14.7#	3.3	-20.8	27.3	23.2	150.0	+16.2
270.000	V	32.1	16.8#	3.7	-20.7	31.9	39.4	200.0	+14.1
300.000	V	31.9	17.8#	3.9	-20.7	32.9	44.2	200.0	+13.1

IF PRESENT: *=Ambient #=Tuned Dipole

Checked By: CEHelmold

E(34)

DATA SHEET

MANUFACTURER : SKYWAVE ELECTRONICS
MODEL NO. : SKY-2000
S/N : (NONE)
SPECIFICATION: FCC Part 15C, SECT. 15.239 SPURIOUS EMISSIONS
TEST : Open Field Radiated Emissions Measurements
DATE TESTED : 06/03/98

NOTES : TEST ITEM TUNED TO 88.9MHZ. SPURIOUS EMISSIONS ARE NOT A FUNCTION OF TUNED FREQUENCY, BUT OF ITEM'S INTERNAL MICROPROCESSOR. REFER TO OTHER DATA PAGES FOR MEASUREMENTS OF FUNDAMANTAL AND HARMONICS

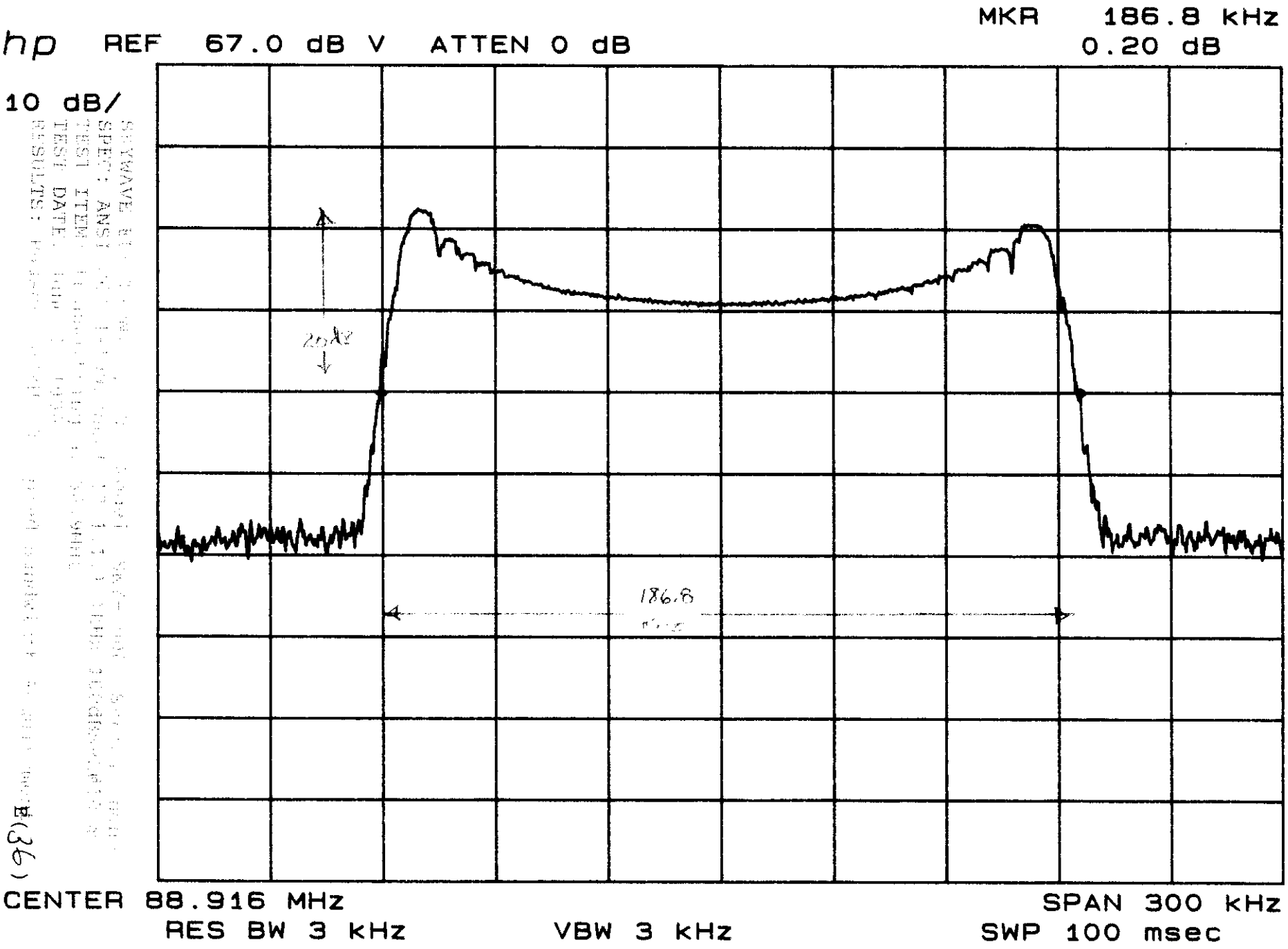
NOTES : All readings taken at 3 meters

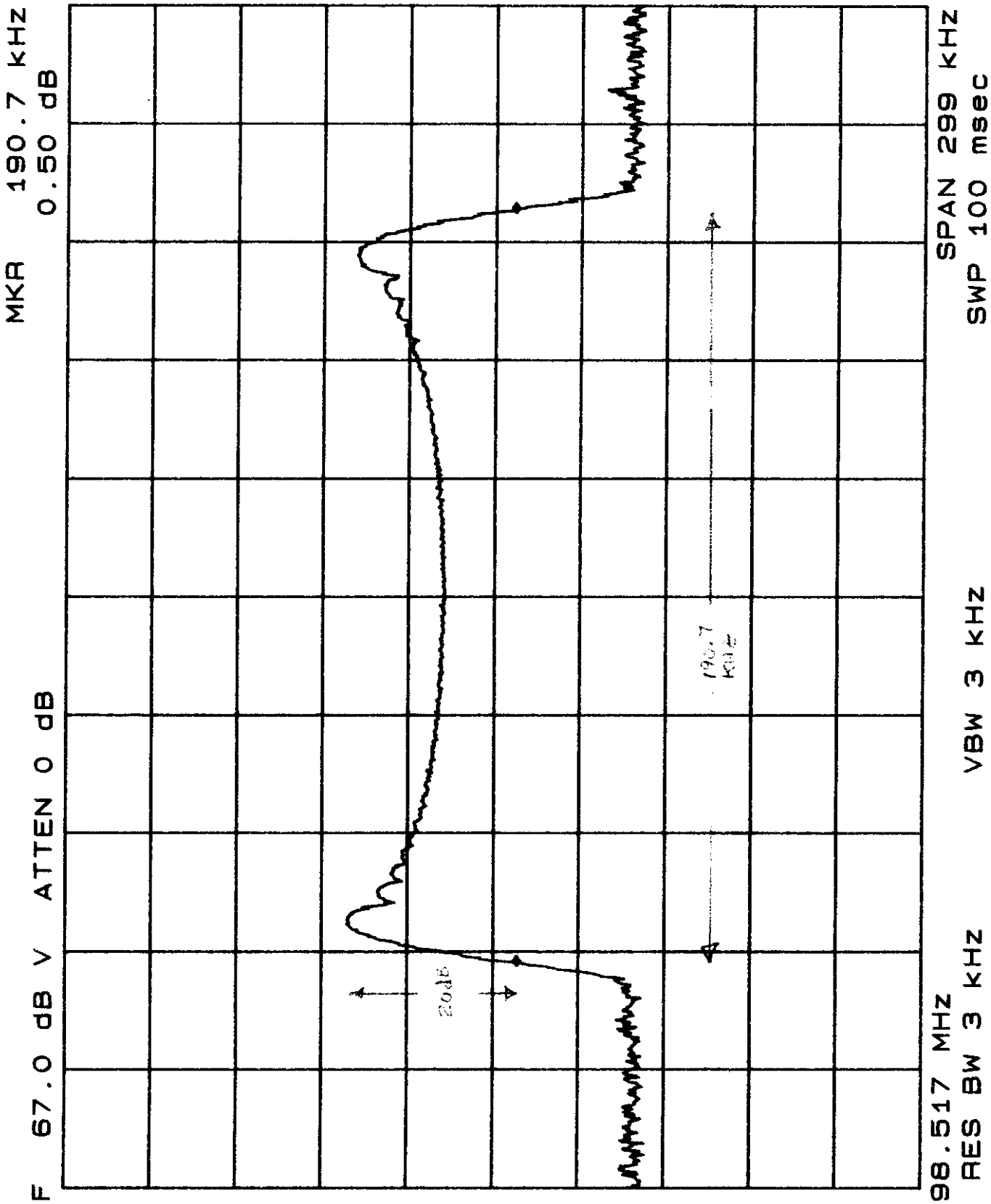
FREQ MHz	ANT POL	QUASI-PEAK METER RDG dBuV	ANTENNA FACTOR dB/m	CABLE LOSS dB	APJO CORR dB	TEST ITEM dBuV/m	TEST ITEM uV/m	FCC LIMIT uV/m	MARGIN (BELOW SPEC) dB
30.000	H	27.9	12.3	1.2	-21.2	20.2	10.2	100.0	+19.8
36.000	H	26.2	13.4	1.3	-21.2	19.7	9.7	100.0	+20.3
48.000	H	29.5	10.3	1.5	-21.3	20.0	10.0	100.0	+20.0
54.000	H	26.7*	10.0	1.6	-21.4	16.9	7.0	100.0	+23.1
60.000	H	37.5	10.8	1.7	-21.4	28.6	26.9	100.0	+11.4
72.000	H	30.1*	7.7	1.9	-21.3	18.4	8.3	100.0	+21.6
78.000	H	26.6*	8.4	2.0	-21.3	15.7	6.1	100.0	+24.3
96.000	H	35.6	11.5	2.2	-21.2	28.1	25.4	150.0	+15.4
108.000	H	26.1*	14.3	2.3	-21.2	21.5	11.9	150.0	+22.0
114.000	H	23.8*	14.7	2.4	-21.2	19.7	9.7	150.0	+23.8
120.000	H	37.5	14.8	2.4	-21.2	33.5	47.3	150.0	+10.0
126.000	H	26.0	15.4	2.5	-21.2	22.7	13.6	150.0	+20.8
132.000	H	24.0*	15.1	2.6	-21.1	20.6	10.7	150.0	+22.9
138.000	H	23.8*	13.5	2.6	-21.1	18.8	8.7	150.0	+24.7
144.000	H	24.7*	14.0	2.7	-21.1	20.3	10.4	150.0	+23.2
150.000	H	34.4	15.3	2.7	-21.1	31.3	36.7	150.0	+12.2
156.000	H	27.0	15.2	2.8	-21.0	24.0	15.8	150.0	+19.5
162.000	H	23.0*	15.3	2.9	-21.0	20.2	10.2	150.0	+23.3
168.000	H	20.5*	16.0	2.9	-21.0	18.4	8.3	150.0	+25.1
174.000	H	17.4*	16.5	3.0	-20.9	16.0	6.3	150.0	+27.5
180.000	H	30.6	16.8	3.0	-20.9	29.5	29.9	150.0	+14.0
186.000	H	18.3*	17.1	3.1	-20.9	17.6	7.6	150.0	+25.9
198.000	H	22.5*	17.4	3.2	-20.8	22.3	13.0	150.0	+21.2
204.000	H	18.4*	14.4#	3.2	-20.8	15.2	5.8	150.0	+28.3
210.000	H	30.7	14.7#	3.3	-20.8	27.9	24.8	150.0	+15.6
270.000	H	28.7	16.8#	3.7	-20.7	28.5	26.6	200.0	+17.5
300.000	H	26.2	17.8#	3.9	-20.7	27.2	22.9	200.0	+18.8

IF PRESENT: *=Ambient #=Tuned Dipole

Checked By: [signature]

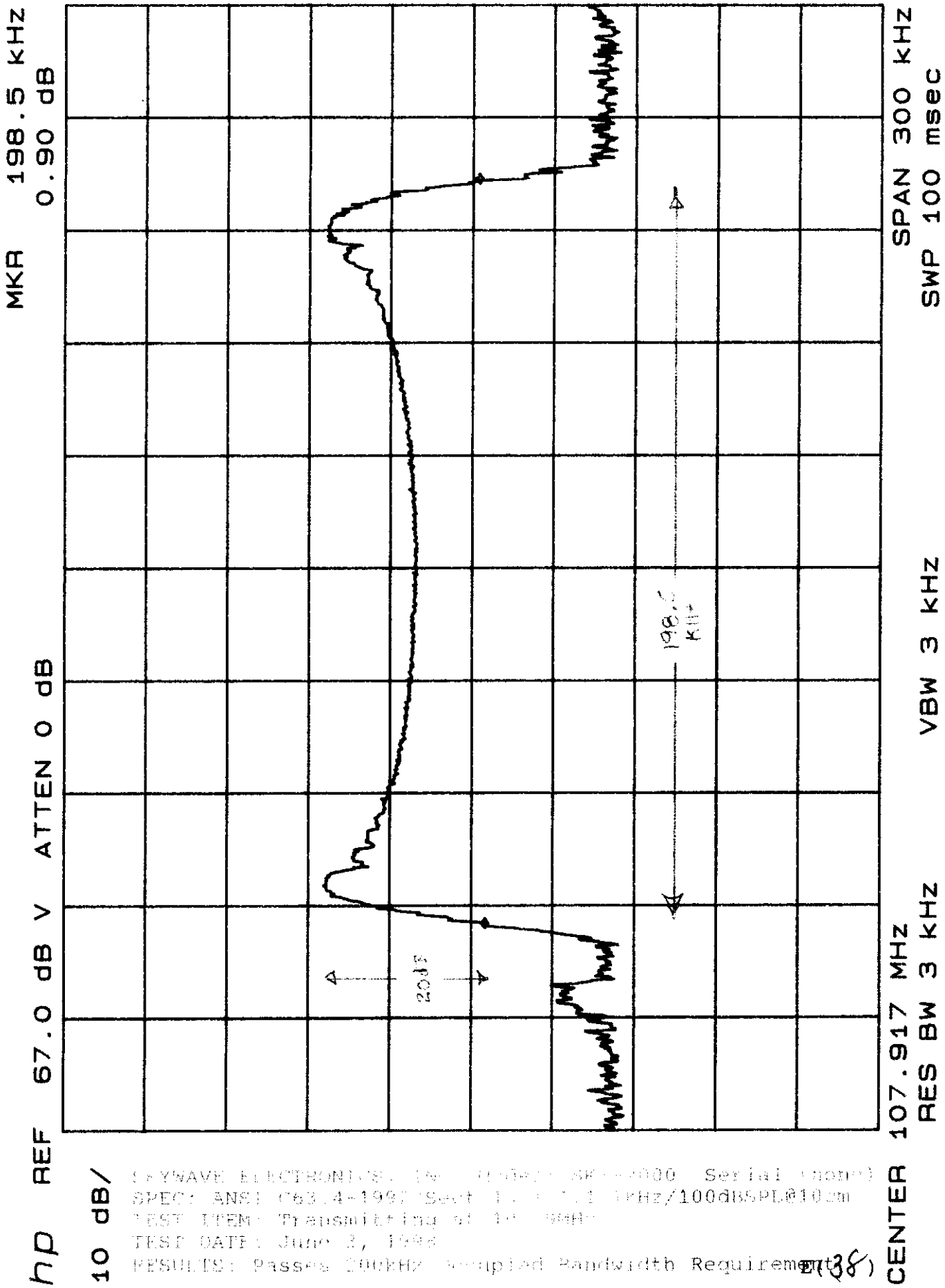
E(35)





SKYWAVE ELECTRONICS, INC. Model: SKY-000 Serial (none)
SPEC: ANSI C63.4-1992 Sect 13.1.7.2 1MHz/100dBSPL@10cm
TEST ITEM: Transmitting at 98.5MHz
TEST DATE: June 2, 1998
RESULTS: Passes 200kHz Occupied Bandwidth Requirement

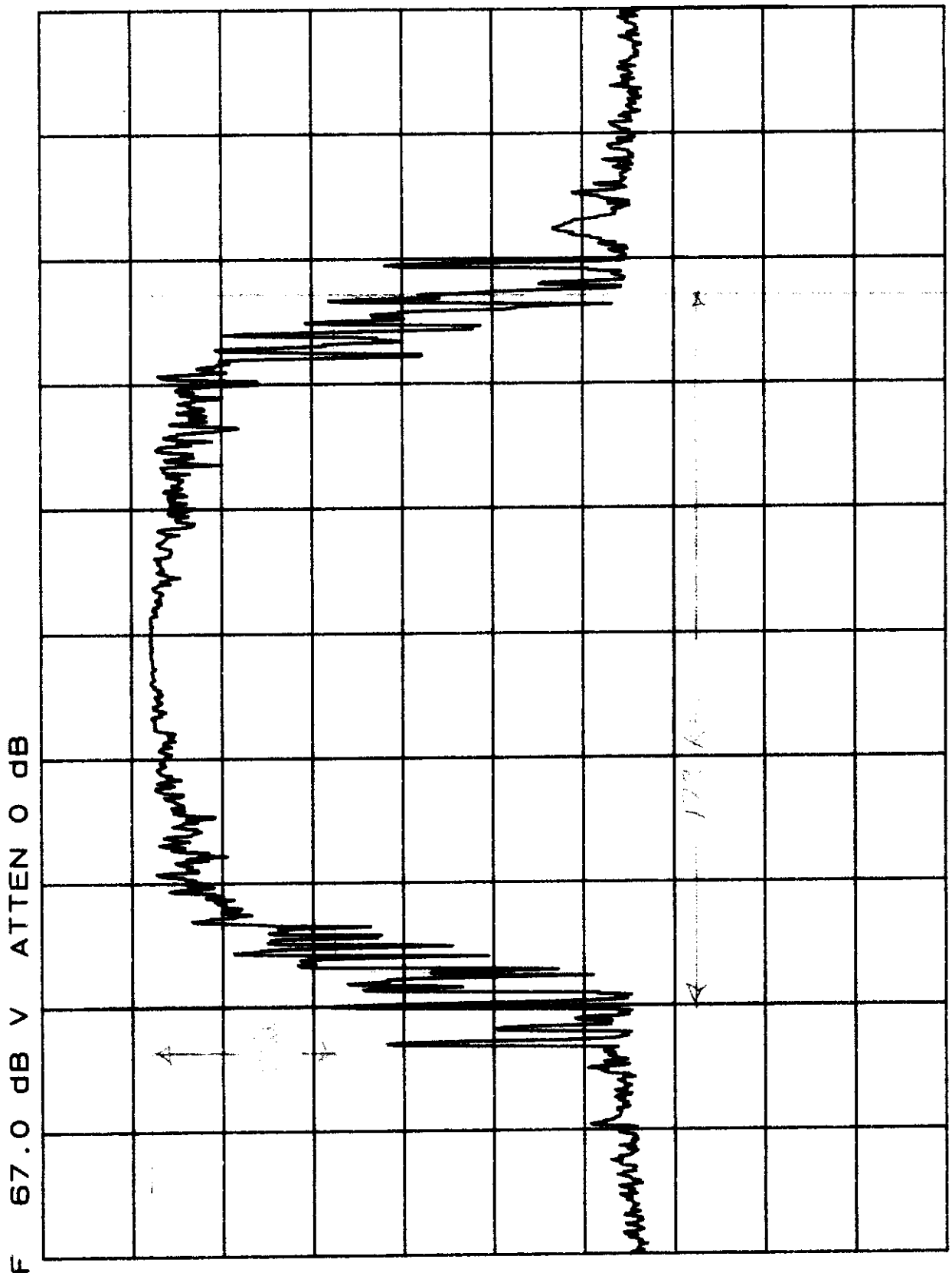
E(37)



hp

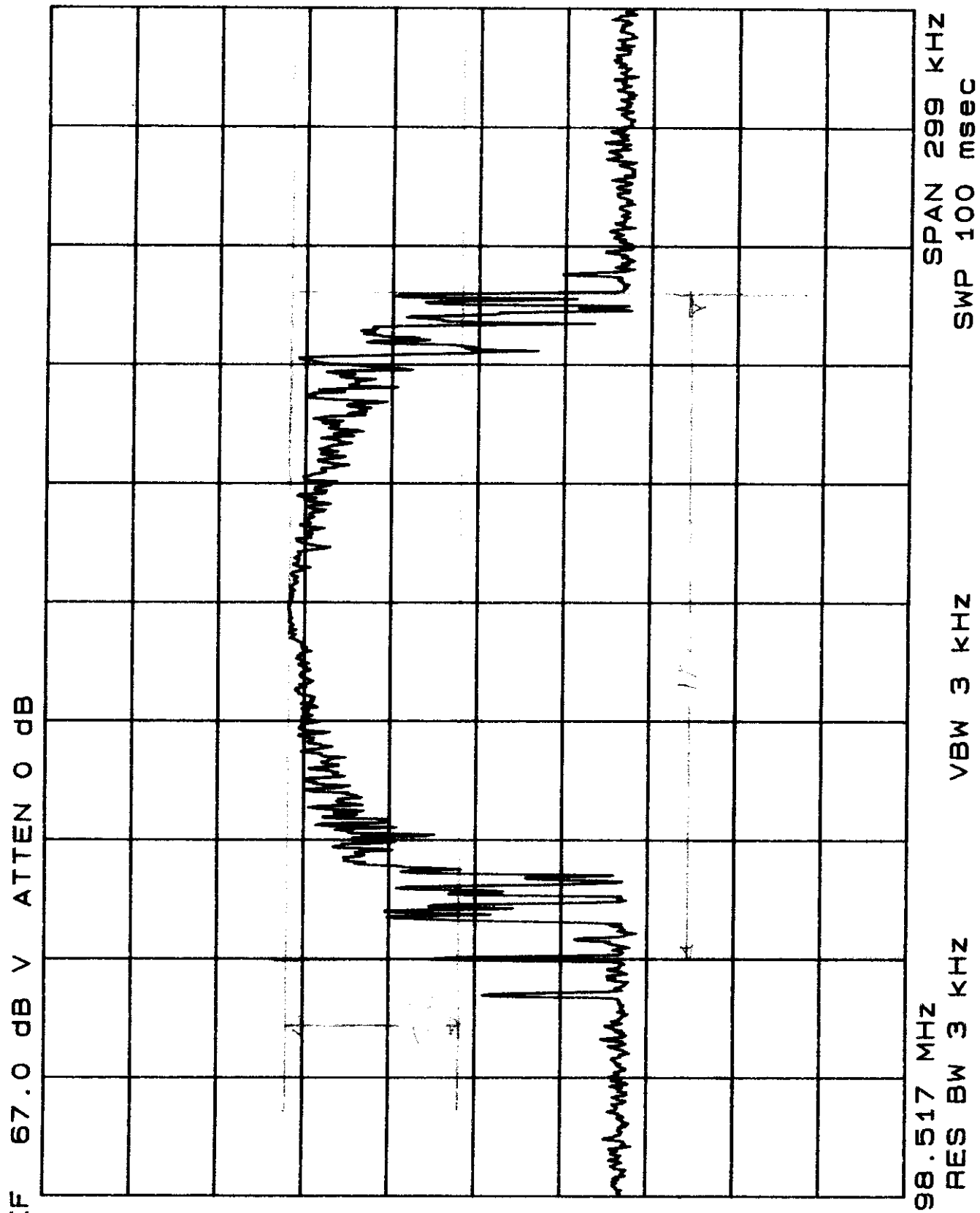
SKYWAVE ELECTRONICS, Inc. Model: SK-2000 Serial (none)
SPEC: ANSI C63.4-1992 Sect 13.1.7.1 3kHz/100dBuVPL@10cm
TEST ITEM: Transmitting at 107.9MHz
TEST DATE: June 2, 1998
RESULTS: Passes 200kHz Occupied Bandwidth Requirement

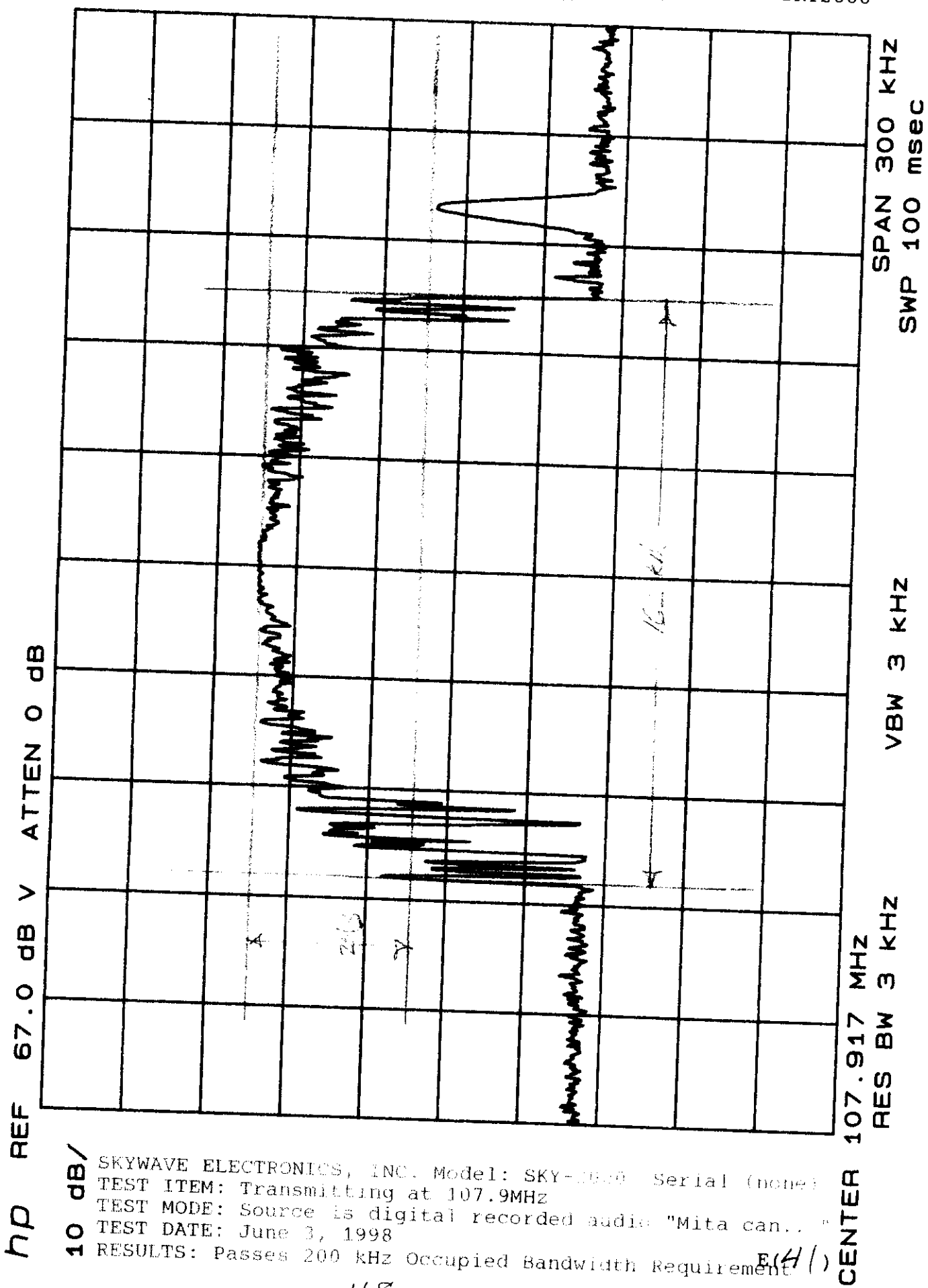
E(38)



SKYWAVE ELECTRONICS, INC. Model: SKY 2000 Serial (none)
TEST ITEM: Transmitting at 88 MHz
TEST MODE: Source is digital recorded audio "Mita can..."
TEST DATE: June 6, 1995
RESULTS: Passes 200 kHz Occupied Bandwidth Requirement

E(39)


hp REF 67.0 dB V ATTEN 0 dB
10 dB/
SPAN 299 kHz
SWP 100 msec
VBW 3 kHz
RES BW 3 kHz
CENTER 98.517 MHz
SKYWAVE ELECTRONICS, INC. Model: SKY-1000 Serial: (none)
TEST ITEM: Transmitting at 98.5MHz
TEST MODE: Source is digital, recorded audio "Mita can.."
TEST DATE: June 3, 1998
RESULTS: Passes 200 kHz Occupied Bandwidth Requirement
E(40)



SKYWAVE ELECTRONICS, INC. Model: SKY-2000 Serial (none)
TEST ITEM: Transmitting at 107.9MHz
TEST MODE: Source is digital recorded audio "Mita can.. "
TEST DATE: June 3, 1998
RESULTS: Passes 200 kHz Occupied Bandwidth Requirement

E(4/)