Progress Report

Covering the period 1 April - 31 May 1973 for the:

"Study to Demonstrate the Feasibility of and Determine the Optimum Method of Remote Haze Monitoring by Satellite."

This contract is ERTS-A proposal number SR 230, GSFC identification number PR 173.

There are no problems impeding the progress of the investigation.

Accomplishments during this period.

As much ground truth data as weather permitted were obtained during ERTS-1 passes over our test area.

Date	Data Obtained*	Notes
1 April	a) b) c) d)	Clear day, only very slight haze. We had hoped for a hazy day to compare with clear data from the previous pass.
19 April	a) b) c) d)	Some clouds and fog-type haze over part of the test area, clear over part of the test area.
7 May	a) b) c) d)	Moderate haze over most of test area. Cirrus over northern part of test area.
25 May	a) b)	Clouded in.

* a) Visibility data from airports

b) Air Pollution Control District Data

c) Aureole Monitor

d) Visual and Photographic data
Altitude of the top of the Haze Layer
Vertical temperature profiles

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a) and b) are obtained from outside sources; c) and d) are actively gathered by the contractor specifically for this analysis.

In the area of data analysis, we have made histograms of the brightness values in certain areas. Histograms of single lines brought to light an interesting fact. Not all brightness values are populated in MSS bands 4, 5, and 6. This is probably a result of data compaction and decompaction. Perhaps we should have known about this, but it came as a surprise. The unpopulated values are particular to a given detector, repeating every six lines for a given band. This peculiarity of the data is not expected to significantly affect our analysis. Histograms of an area 10 lines long and 550 elements wide were made for all MSS channels for the hazy day, 21 Oct and the clear day, 8 Nov. The area included some ocean, beach, harbor, vacant land, city, and parkland. The results are quite surprising The darker areas increased in brightness on the hazy day as we expected, but the bright areas also were brighter on the hazy day than the clear day by an even greater amount. A copy of these histograms is included with this report. Power spectra were calculated for the same area as the histograms. No startling differences are seen on the hazy day as compared with the clear day. Graphs of the power spectra for a single line over the same terrain for 21 Oct and 8 Nov. are included with this report.

Accomplishments planned for the next reporting period:

We will make histograms over other areas of the same frames in order to understand our puzzling results. We will average several lines of power spectra in an attempt to increase the sensitivity of this analysis.

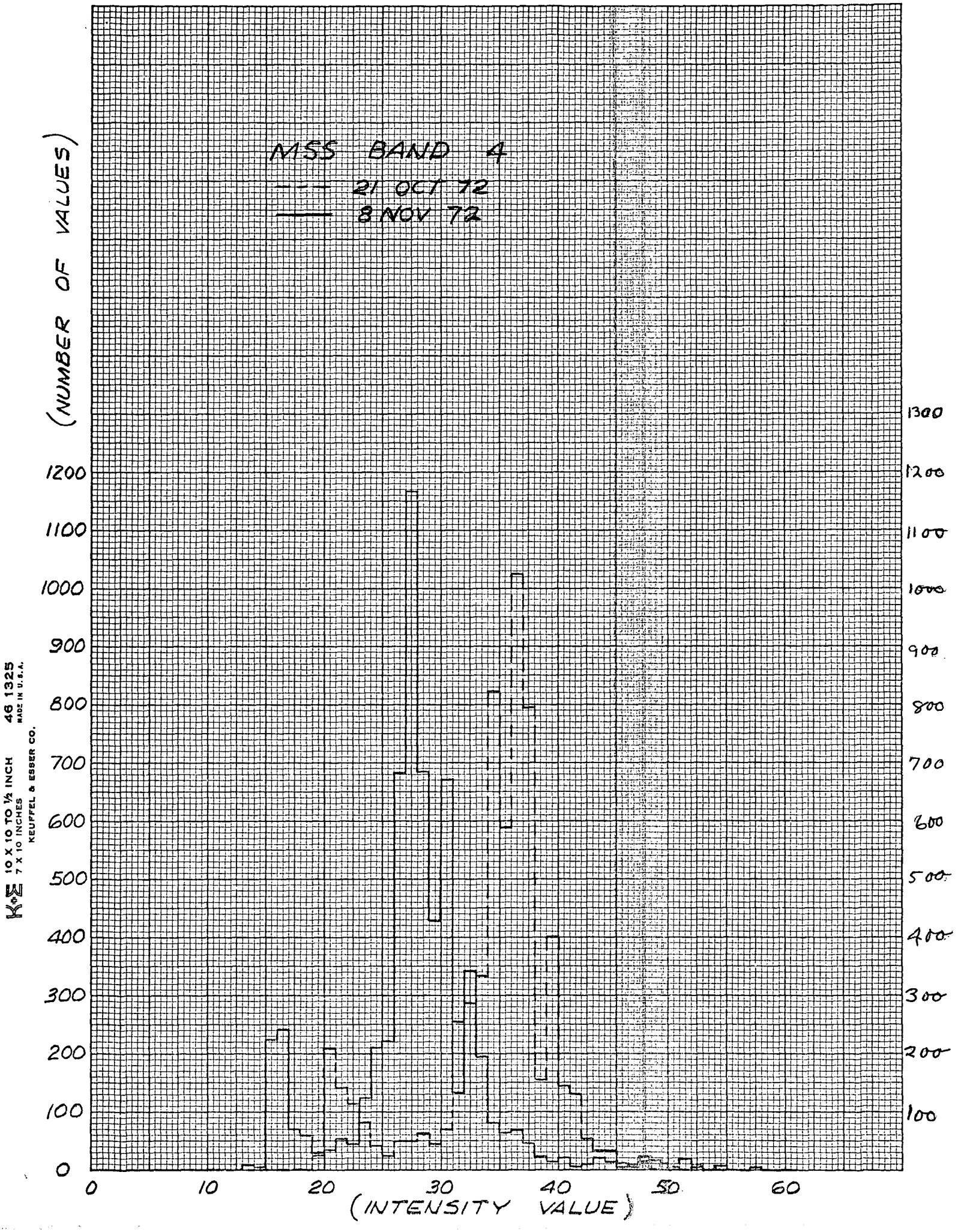
No publications were prepared during this reporting period.

There are no changes recommended in operations and no changes contemplated or requested in standing order products.

No ERTS Descriptor Forms were submitted.

No Data Request Forms for retrospective data were submitted.

We met with Dr. William A. Anikouchine and Dr. Dwight D. Pollard of Oceanographic Services, Inc., Santa Barbara, California. We provided them with listings of our digital analysis programs, which will be useful to them as they also use a CDC computer.


MSS BAND 4
21 OCT 72
8 NOV 72
(NUMBER OF VALUES)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
0
10
20
30
40
50
60
(INTENSITY VALUE)
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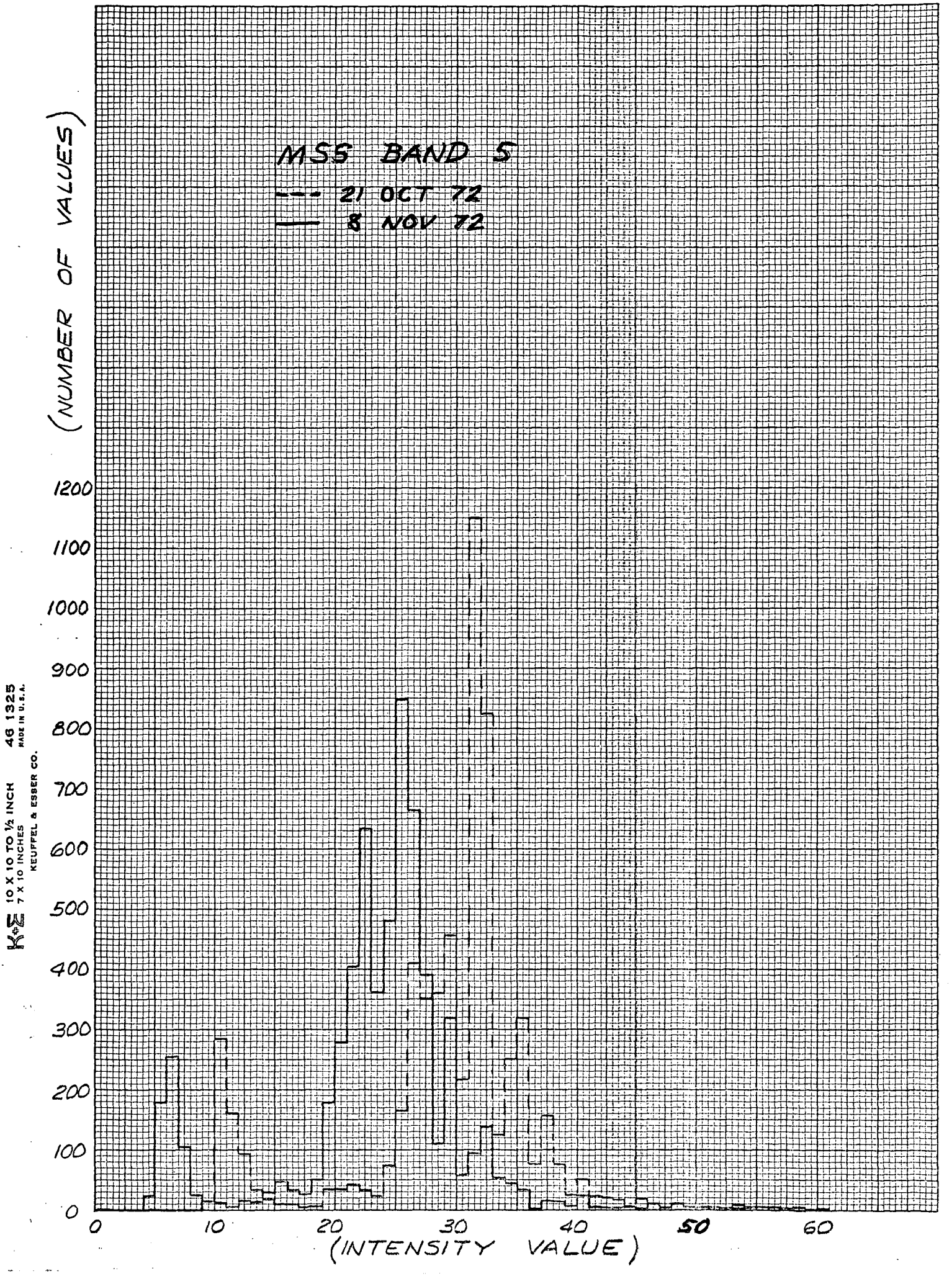
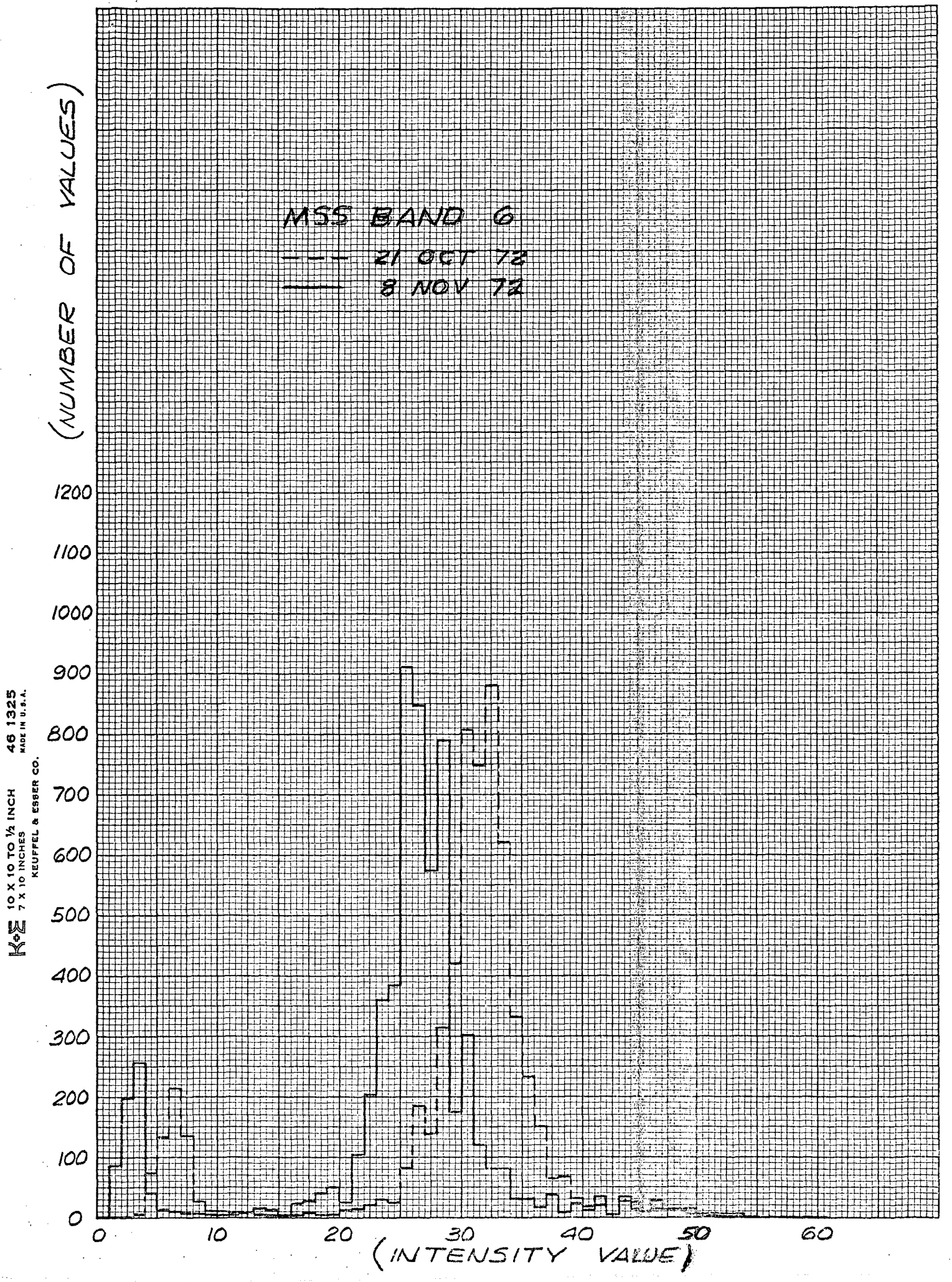
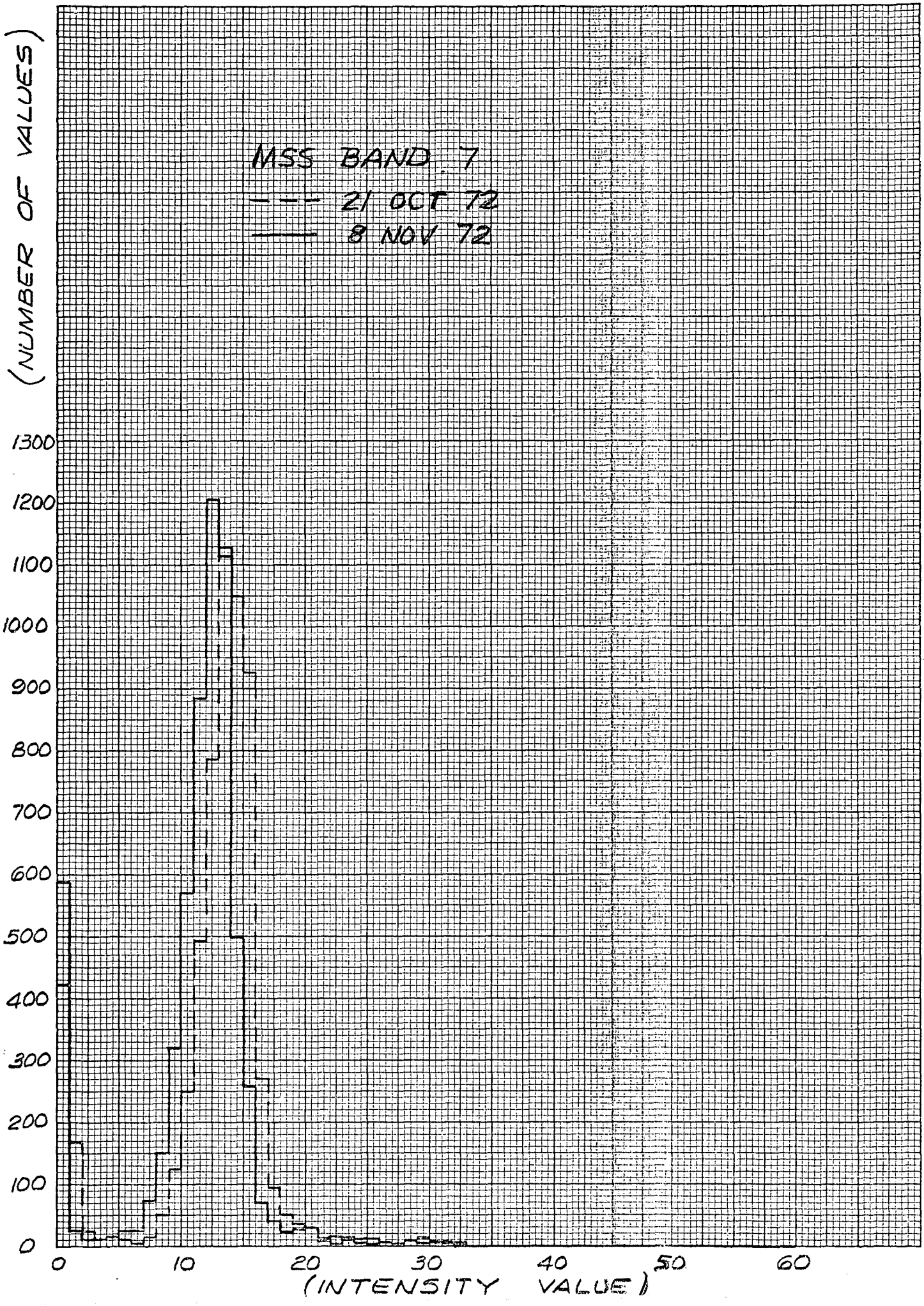
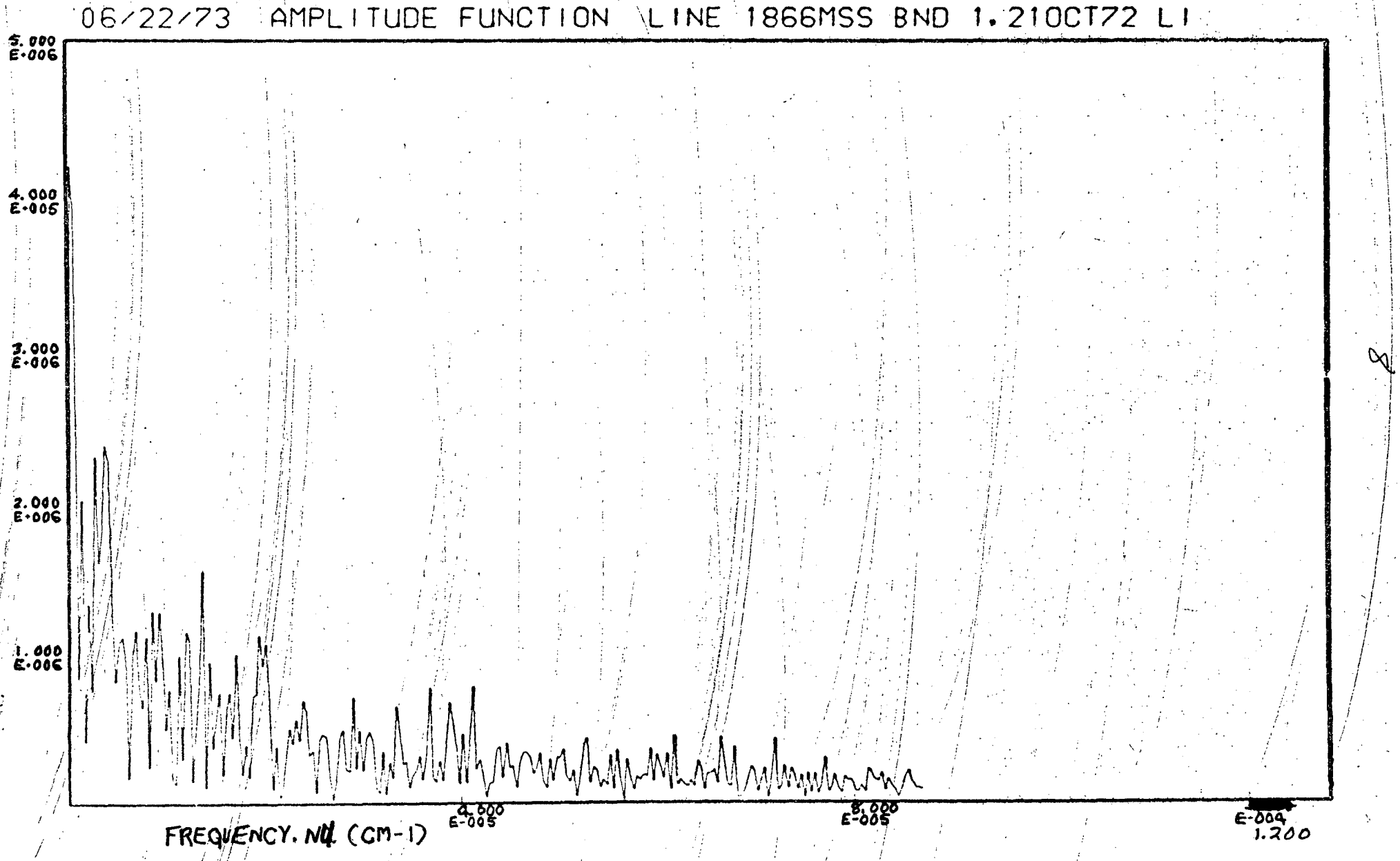
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.





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3.000 E-006
2.000 E-006
1.000 E-006
4.000 E-005
8.000 E-005
E-004
1.200
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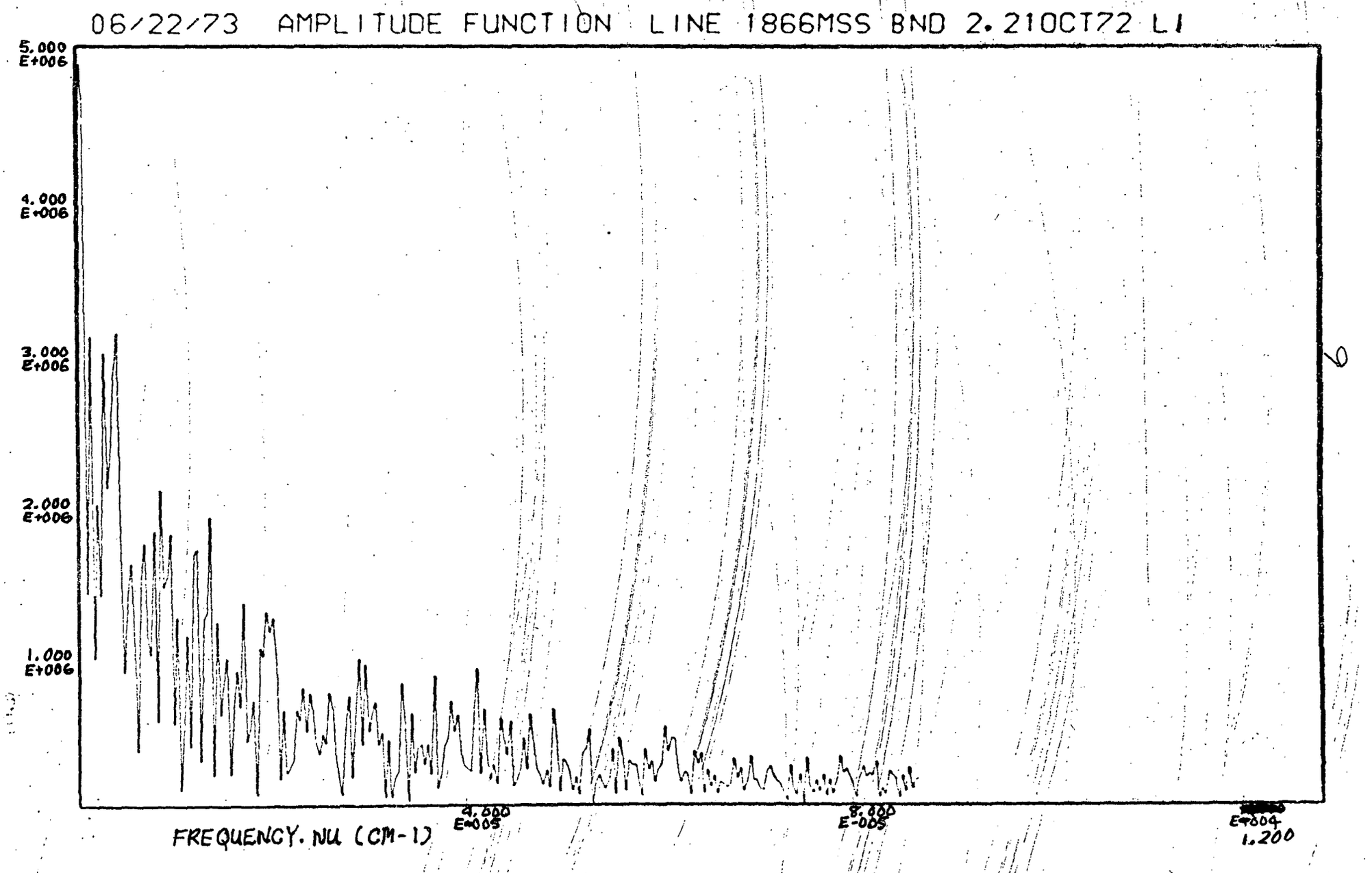
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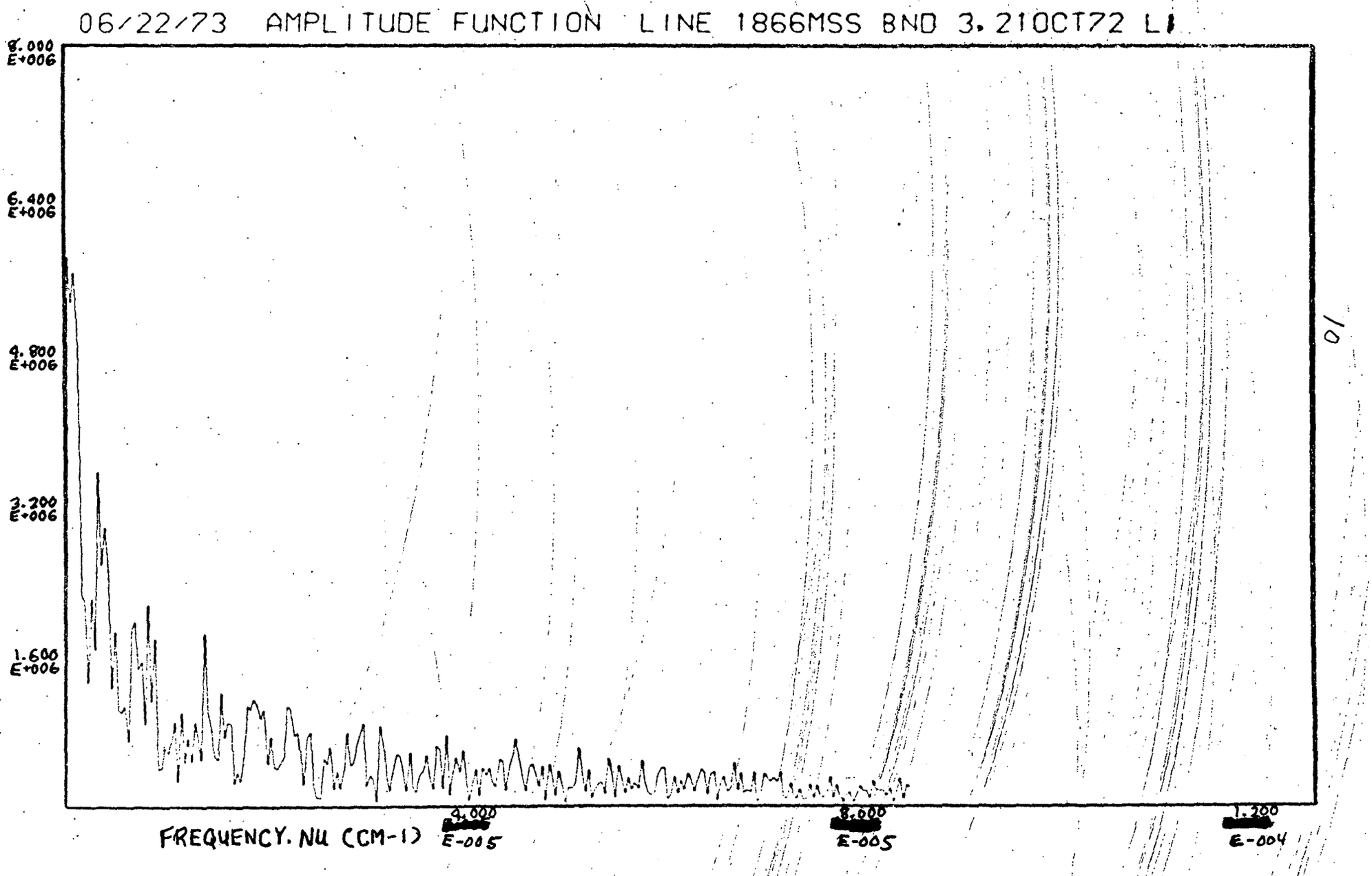
4.000 E+006
3.000 E+006
2.000 E+006
1.000 E+006
4.000 E-005
8.000 E-005
E+004
1.200
FREQUENCY. NU (CM-1)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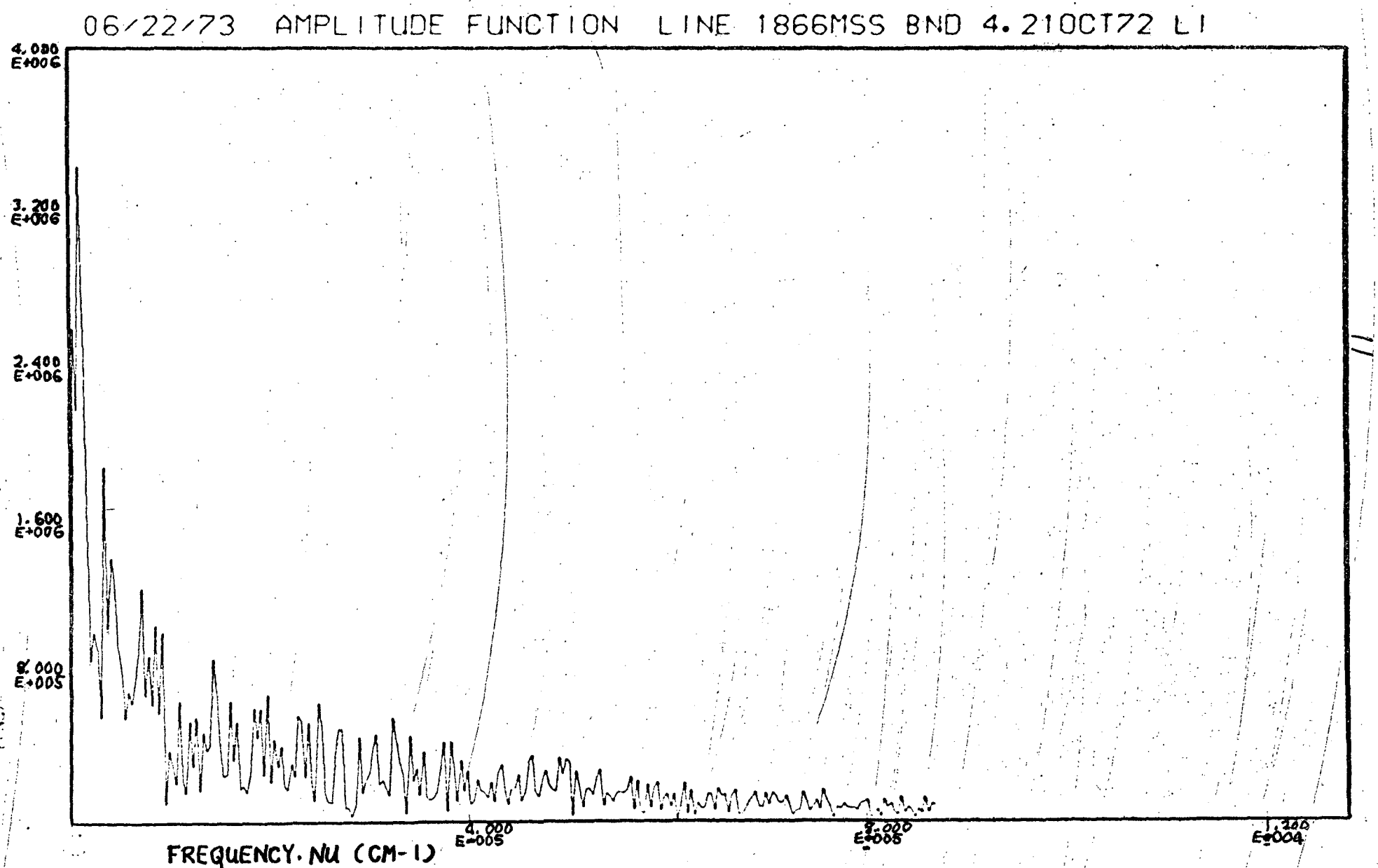
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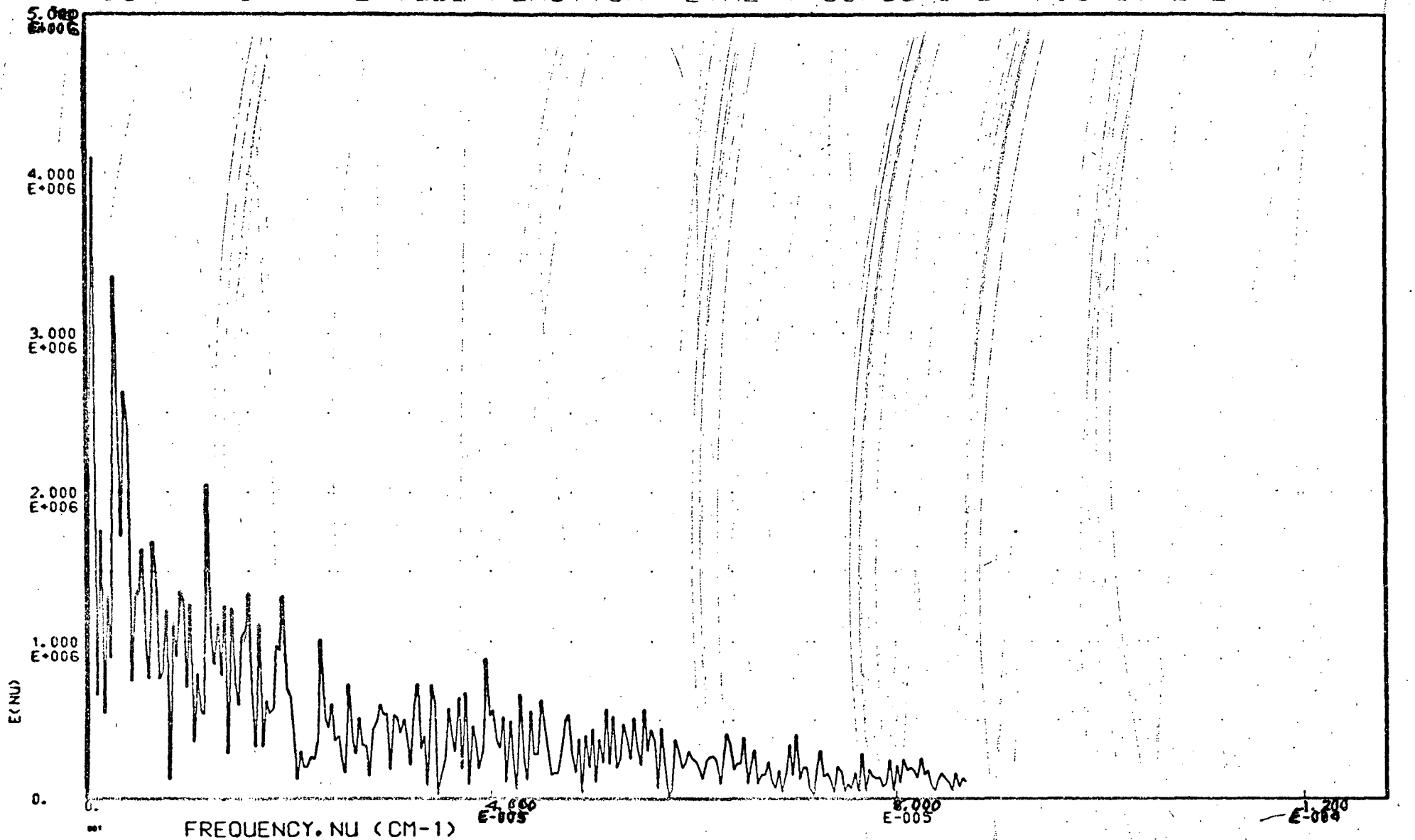
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2.000 E+006
1.000 E+006
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E(NU)
0.
4.000 E-005
8.000 E-005
1.200 E-004
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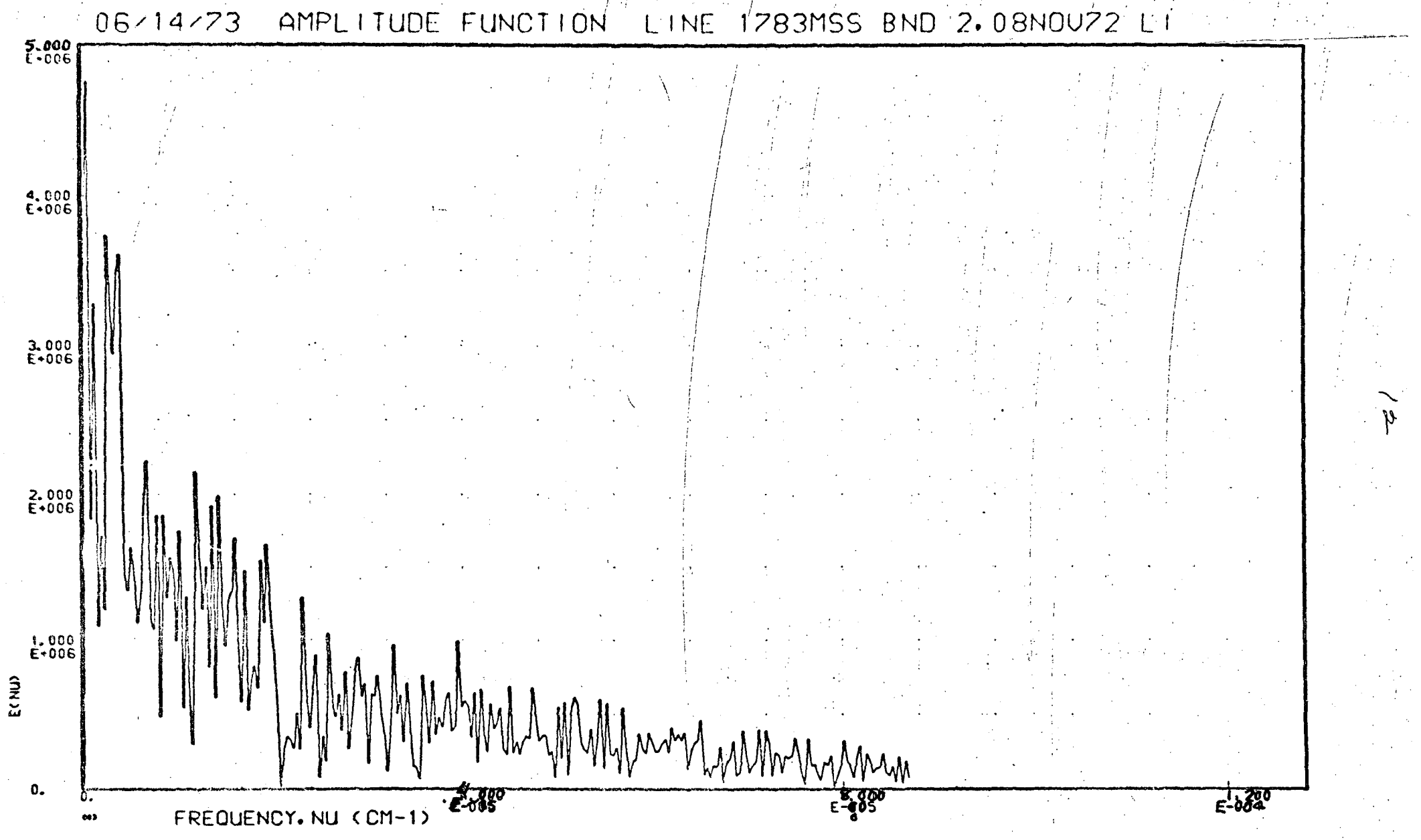
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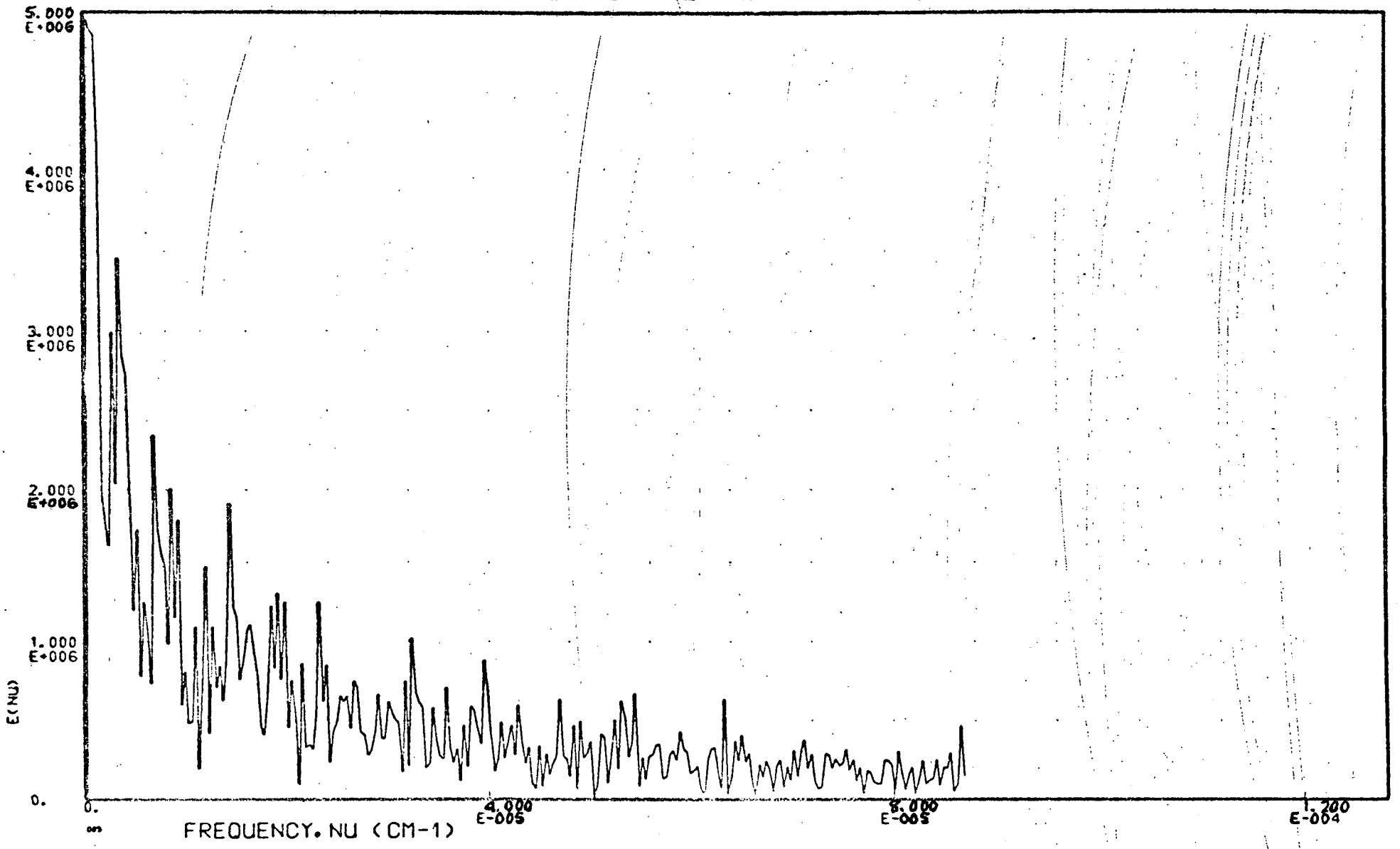
2.000 E+006
1.000 E+006
0.
E(NU)
FREQUENCY. NU (CM-1)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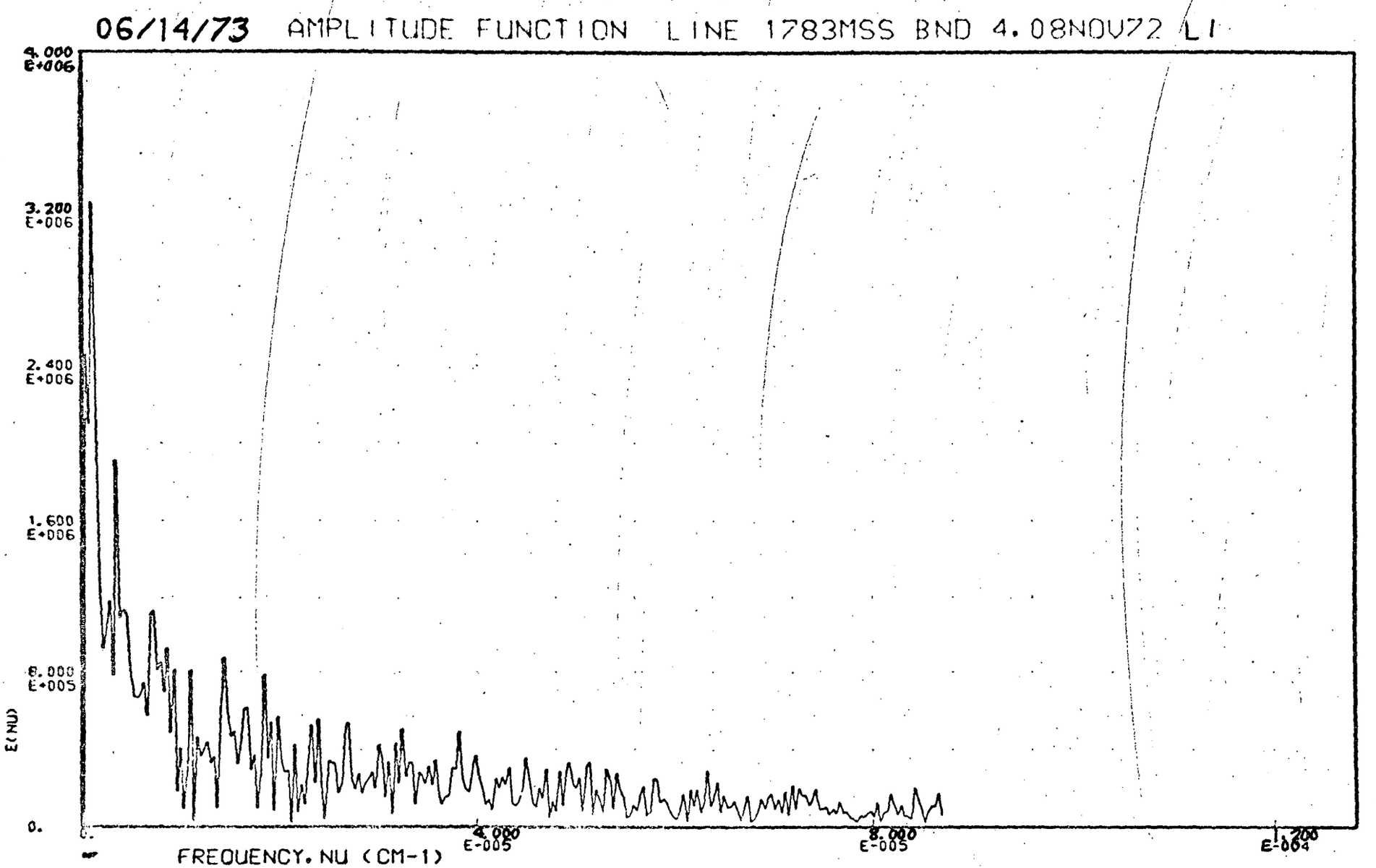
3.000 E+006
2.000 E+006
1.000 E+006
0.
E(NU)
0.
4.000 E-005
8.000 E-005
1.200 E-004
FREQUENCY. NU (CM-1)


06/14/73 AMPLITUDE FUNCTION LINE 1783MSS BND 4.08NOV72 L1
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2.400 E+006
1.600 E+006
8.000 E+005
0.
E(NU)
0.
4.000 E-005
8.000 E-005
1.200 E-004
FREQUENCY. NU (CM-1)