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ELECTROMAGNETIC ENVIRONMENT MEASUREMENTS OF PRT SYSTEMS AT "TRANSPO®72" VOLUME XII

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FINAL REPORT

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16. Abstract

This report covers the measurements of the broadband conducted noise present on the A.C. power lines feeding the Personalized Rapid Transit (PRT) systems with all four systems operating simultaneously.

The purpose of the measurement effort was to evaluate the electrical environment existing on each of the PRT "hot" and neutral A.C. power lines and to assess the effect if any, on each individual system with all of the other systems operating simultaneously. Each system is isolated from the main high voltage line by a stepdown transformer which should filter out most unwanted higher frequency spikes.

The measurements obtained during this test will be used for a comparison with data obtained with no PRT systems operating and with each system operating individually.

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PREFACE

The work described in this report was performed as part of a test program conducted to evaluate the Safety and Performance characteristics of the four Personalized Rapid Transit Systems (PRT) on display at Transpo® 72. Sponsored by the U.S. Department of Transportation, Transpo® 72 was the first United States International Transportation Exposition and was intended to demonstrate to the general public new technologies in transportation.

The PRT demonstration program was the responsibility of the Urban Mass Transportation Administration (UMTA) and was conducted to provide detailed engineering test data in addition to providing mature candidates for an Urban demonstration.

POWER LINE CONDUCTED NOISE MEASUREMENTS

PRT SYSTEMS - TRANSPO® '72

I. Introduction

This technical report presents the data obtained in the performance of tests for power line conducted noise at the Personal Rapid Transit (PRT) System at TRANSPO® '72 - Dulles Airport, Washington, D. C. This report covers the test defined as Item 6 of Contract No. DOT-TSC-375, and as performed by National Scientific Laboratories, Inc.

Item 6 calls for the performance of conducted noise measurements on PRT a.c. power lines in the frequency range from d.c. to at least 10 KHz, with all four PRT systems (TTI, Ford, Monocab, Dashaveyor) in operation. Data obtained at all four PRT sites will enable characterization of the noise increase attributable to the other systems operation, when considered in comparison with the operational noise data collected for each PRT system singularly and documented* previously by NSL.

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* Technical Reports, Item 5 - TTI System; Ford System; Dashaveyor System; and Monocab System, August 1972, Contract No. DOT-TSC-375, Department of Transportation, Transportation Systems Center, 55 Broadway, Cambridge, Massachusetts 02142

The measurements reported in the document were made during the following time periods:

TTI System:	July 25, 1972 --1424 to 1618
Ford System:	August 2, 1972--1426 to 1615
Dashaveyor System:	July 31, 1972 --1537 to 1640
Monocab System:	July 27, 1972 --1414 to 1530

2. METHOD OF MEASUREMENT

2.1 Instruments

All measurements were made using the same test set-ups and instruments used during individual PRT system tests described in report Item 5. The power line conducted measurements were performed using a Fairchild Model EMC-10 Interface Analyzer. This is a battery-operated RFI/EMI instrument which covers the d.c. to 50 KHz frequency range as a narrow bandwidth receiver. It incorporates internal circuitry that provides a linear signal output to drive a chart recorder, and also a signal to produce frequency tracking for chart recording. A Hewlett Packard Model 3005B chart plotter was driven from the receiver.

Some observations were made at frequencies above 50 KHz through the use of a Hewlett Packard Model 8552/8553A spectrum analyzer. Data was recorded photographically with a Hewlett

Packard Model 198A oscilloscope camera. The analyzer is an extremely versatile instrument in that it has numerous frequency scan and bandwidth settings throughout the frequency spectrum of a few cycles up to 100 MHz.

Signals were obtained from the power lines by using a Fairchild Model PCL-10 Current Probe. This probe is a clamp-on transformer which provides an output voltage in proportion to the current which passes through its aperture.

A block diagram of the instrumentation is contained in Figure 1.

2.2 Power Line Arrangement

The TRANSPO '72 PRT sites are each furnished with 15 Kv, 3 phase (Ø) power via underground feeder lines. This power passes through transformers to obtain site operational power of 480V, 3 phase. These lines enter commercial switchgear at the various PRT companies and are coded as follows:

TABLE I

POWER LINE CONDUCTORS CODES

TTI SITE	Phase:	Color:
	A	Orange
	B	Brown
	C	Yellow
	Neutral	Noncoded

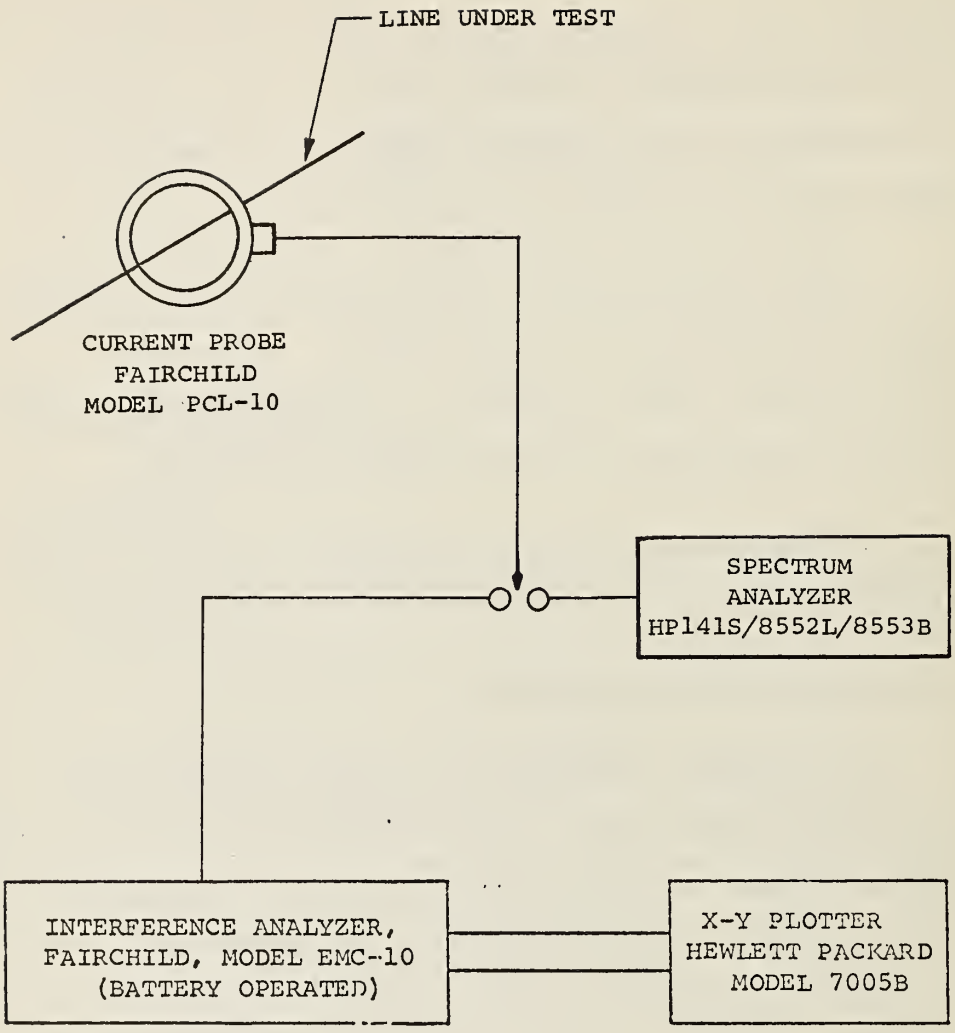


FIGURE 1. CONDUCTION TEST INSTRUMENTATION

TABLE I - Power Line Conductors Codes (Continued)

Ford Site	Phase:	A		Color:	Orange
		B			Brown
		C (Grounded)			Yellow
Dashaveyor Site	Phase:	A	NSL: 4	Color:	Orange
		B	3		Brown
		C	1		Yellow
		Neutral	2		Noncoded
Monocab Site	Phase:	A		Color:	Black
		B			Red
		C			Blue
		Neutral			White

The current probe was attached at the point where the power lines enter the commercial switchgear which is the same point as used when making the measurements described in reports Item 5. The locations of the PRT sites with respect to one-another are shown in the map in Figure 2.

2.3 Measurement Technique

Each of the power conductors (one conductor per phase per site) were tested by scanning two frequency ranges, d.c. to 1 KHz using a 5 Hz bandwidth, and 1 KHz to 50 KHz using a 50 Hz bandwidth. Two recordings were made for each frequency range, on each of the power lines. The scanning time per recording averaged four to six minutes.

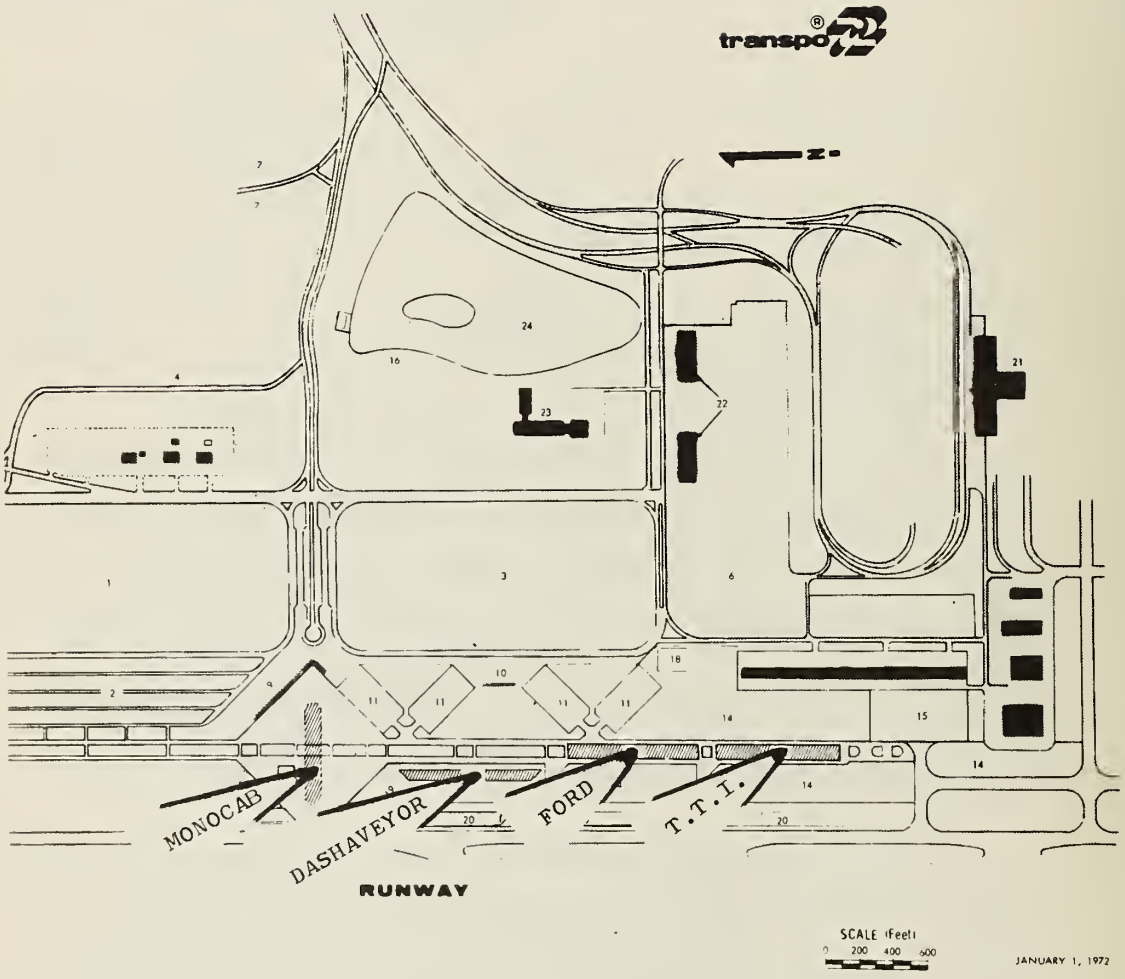


FIGURE 2. PRT SITES

The recordings are reproduced in the forepart of Appendices A, B, C and D for the four PRT sites. The recordings are presented in order of phase rather than the order in which they were produced. The upper charts are the reproductions, and the dB scale refers to the level at the instrument input connector. Some of the charts have two amplitude scales. The upside down letter "Y" located somewhere along the bottom line of the chart indicates the point of switchover from the scale on the left side to the scale on the right side.

The Spectrum Analyzer was used to record data at the Ford site in the frequency area of 150 KHz to 250 KHz wherein the vehicle and computer communicate. These spectrograms are in the latter part of Appendix B.

3.0 INTERPRETATION OF DATA

3.1 General

The amplitude/frequency charts produced during the tests at TTI are reproduced as the upper half of each page of Appendix A-2 through A-17; page B-2 through B-18 of Appendix B for the Ford site; page C-2 through C-17 of Appendix C for the Dashaveyor site; and page D-2 through D-17 of Appendix D for the Monocab site. The lower chart on each page is a plot of approximately one level in each major frequency increment of the chart directly above it. Peaks were selected whenever available. A correction

factor for the current prove (current probe amplitude response is non-linear with frequency) has been included in the levels plotted in the lower charts. The correction factors are presented in Figure 3.

In the upper charts, noise peaks recorded in the top major amplitude divisions are out of the calibrated range of the instrumentation system. Thus, the levels plotted for peaks that enter the upper divisions are given an amplitude of the highest level written numerically on the chart for that particular frequency.

Notations are written on the charts which denote vehicle movement, etc., which occur simultaneously with a noise peak.

The locations of the sites relative to one-another are included as Figure 2 of the report since it will be advantageous to know the adjacent companies in the event it is found that additional noise are observed over those recorded in the individual site tests. Further, it will be necessary to know where the feeder lines furnishing power to the sites are located in order to establish where the additional noises originate; the locations of these feeder lines is not known by NSL.

3.2 TTI Site

The recordings of power line conduction noise obtained at the TTI site, are contained in Appendix A. Notations are written on

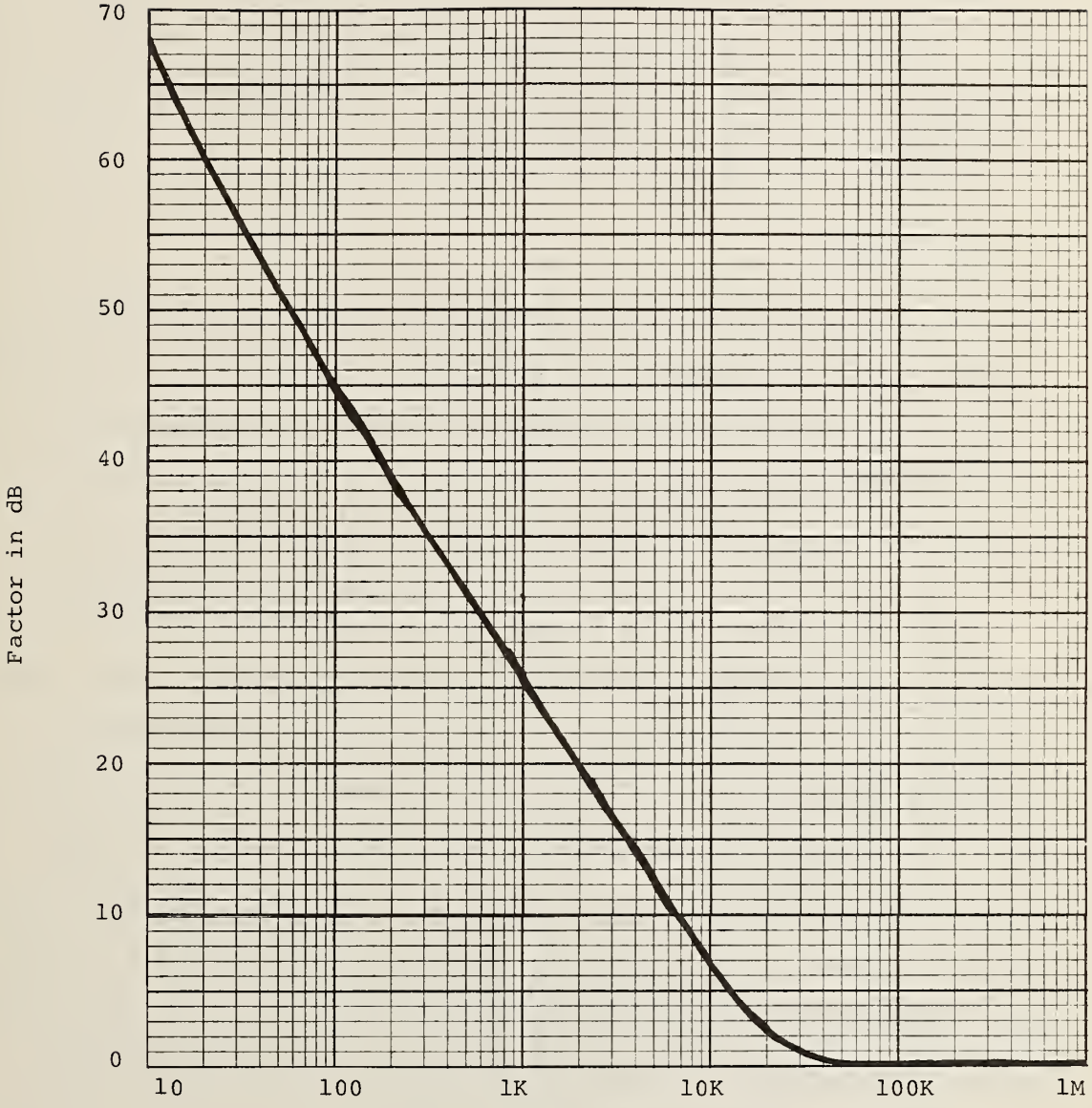


FIGURE 3. CURRENT PROBE CORRECTION FACTORS

the charts which denote vehicle movements occurring simultaneously with noise peaks. For the most part, the notations refer to docking and undocking operations at the station which were observed throughout the frequency range up to 50 KHz. Noises recorded during normal vehicle running on guideway were mostly in the frequency region below 20 KHz.

3.3 Ford Site

The recordings of power line conduction noise obtained at the Ford Site are contained in Appendix B. Notations are written on the charts which denote vehicle movements occurring simultaneously with noise peaks. Generally, this involved vehicle "stop" and "start" on the guideway as well as at the stations.

Test chart No. 457 on Page B-14 is a wideband (0-50 KHz) recording on power line conduction noise on line ØA. Thus, when reading from left to right bear in mind that it represents operational events within the total frequency band involved. Also, the pen was driven manually from left to right so that the time differences between events have no real time significance. There are numerous notations on the chart referenced to vehicle movement. An additional observation is that the vehicle requires more drive current travelling south then it does going north as is shown by the amplitude differences on the chart. Due to the non-linear response characteristic of the current probe, and the wide bandwidth employed, it is not possible to translate with precision to a reading of dB ref 1 microvolt. Therefore, the chart is given as referenced to receiver input.

The spectrograms on pages B-15 through B-18 show the conduction noise at frequencies up to 400 KHz. Presented is a sequence of vehicle travelling, slow down, and finally stopping. This is shown for the south and north going operation. Note the 150 KHz communication (control to vehicle) carrier on page B-17.

The spectrograms on page B-18 were made to show the noise present on the Ford power lines due to the other three PRT system operation. When making these recordings, the Ford system was completely shut down. The upper recording is the noise on ØB power line, the lower recording shows instrumentation signal input ambient.

The amplitude levels given for the spectrogram applies to frequencies above 50 KHz only. To determine the levels for frequencies below 50 KHz, the correction factor from figure 3 must be added to the levels on the spectrograms.

3.4 Dashaveyor Site

Notations are written on the charts which indicate instrumentation noise level, and an occasional guideway switch operation. No operations of the PRT system could be identified with the noise peak in the D.C. to 1 KHz frequency range. However, in the 1 KHz to 50 KHz frequency range, instrument noise and occasional noise spikes are present when no vehicles are running

as indicated in the charts on pages C-4 and C-16. Whenever a vehicle is drawing drive power the noise level is considerably higher as indicated on page C-4.

3.5 Monocab Site

Notations are written on the charts which denote vehicle movements occurring simultaneously with noise peaks. For the most part, the notations refer to a vehicle entering, and also leaving a station, and acceleration after coming out of the southeast turn on the guideway.

4.0 Time Log

The time schedule of activities for the vehicles at the four PRT sites is included as Appendix E of this report.

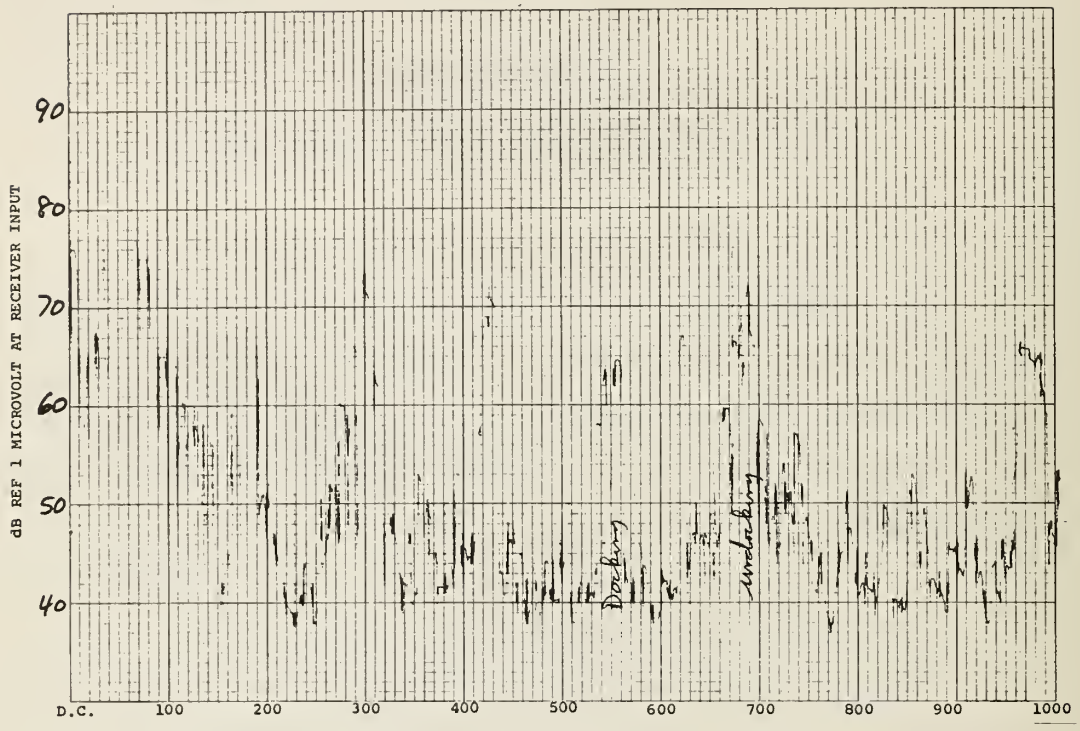
APPENDIX A

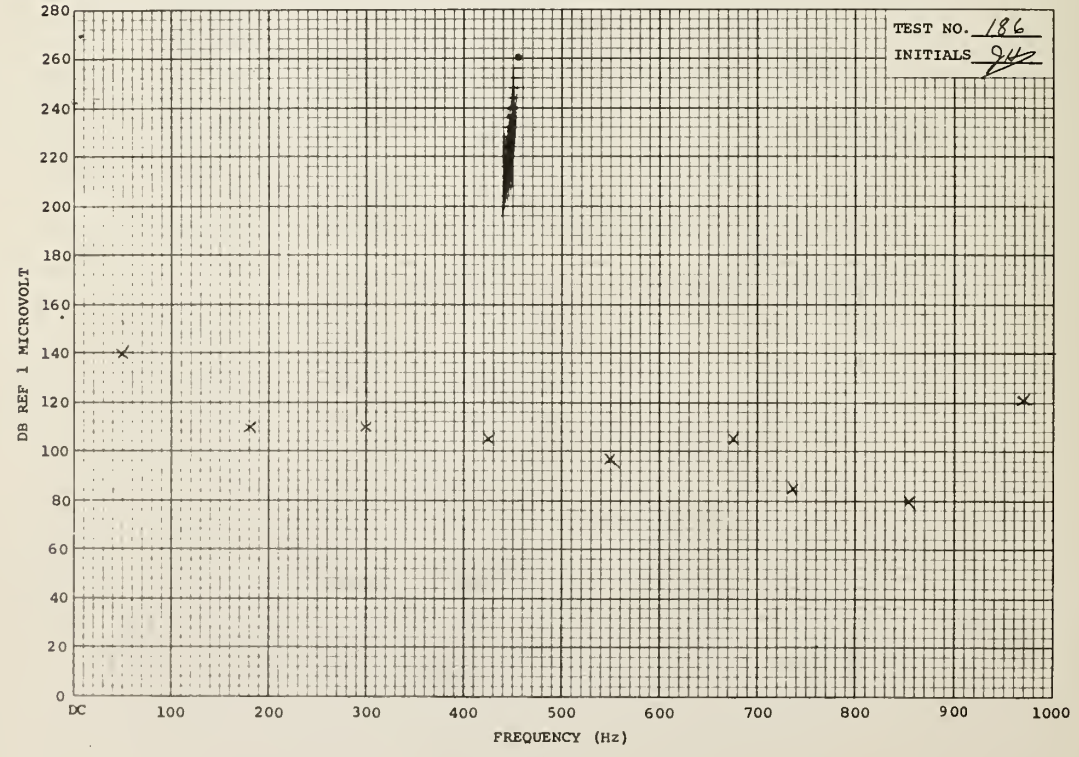
POWER LINE CONDUCTION MEASUREMENTS DATA

This Appendix contains data charts for Test No. 176 through 191 as recorded at the TTI Site. The charts are presented in order of phase -- A, B, C and neutral for ease of analysis, rather than in numerical order as the tests were performed.

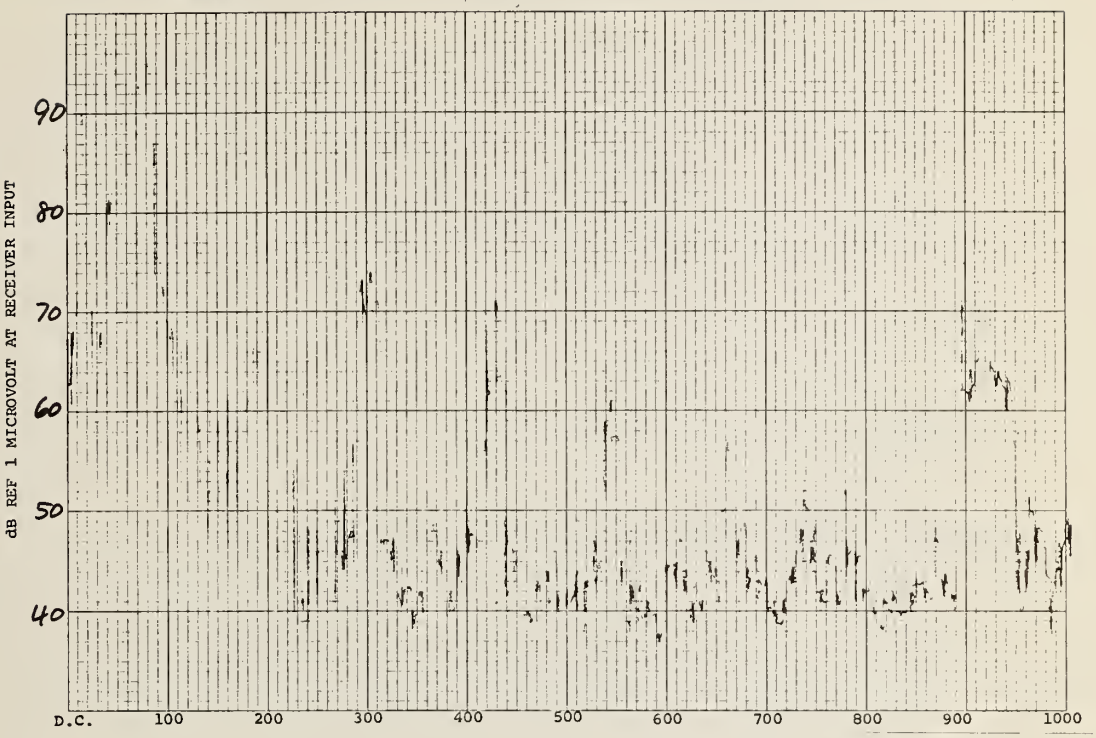
TEST NO. 186
TEST SPECIMEN ØA T.T.I
TEST TYPE P&C
TEST EQUIP. EMC-10
BANDWIDTH 5Hz
DATE 7-25-72

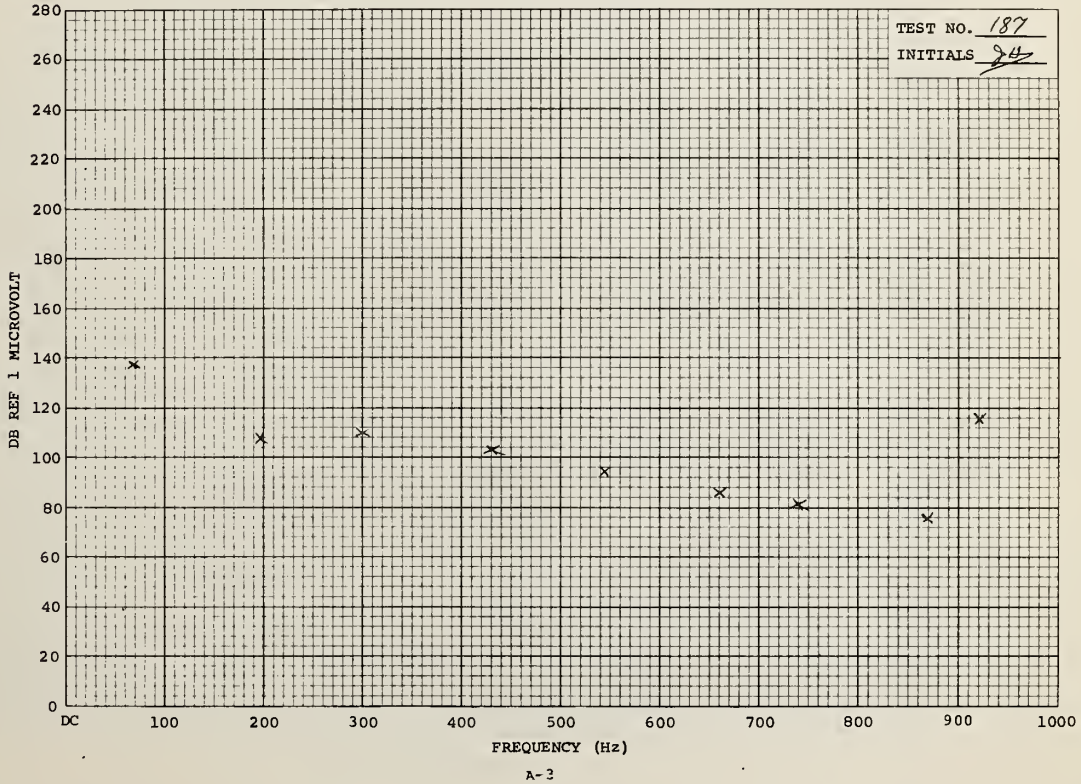
1547
JRC



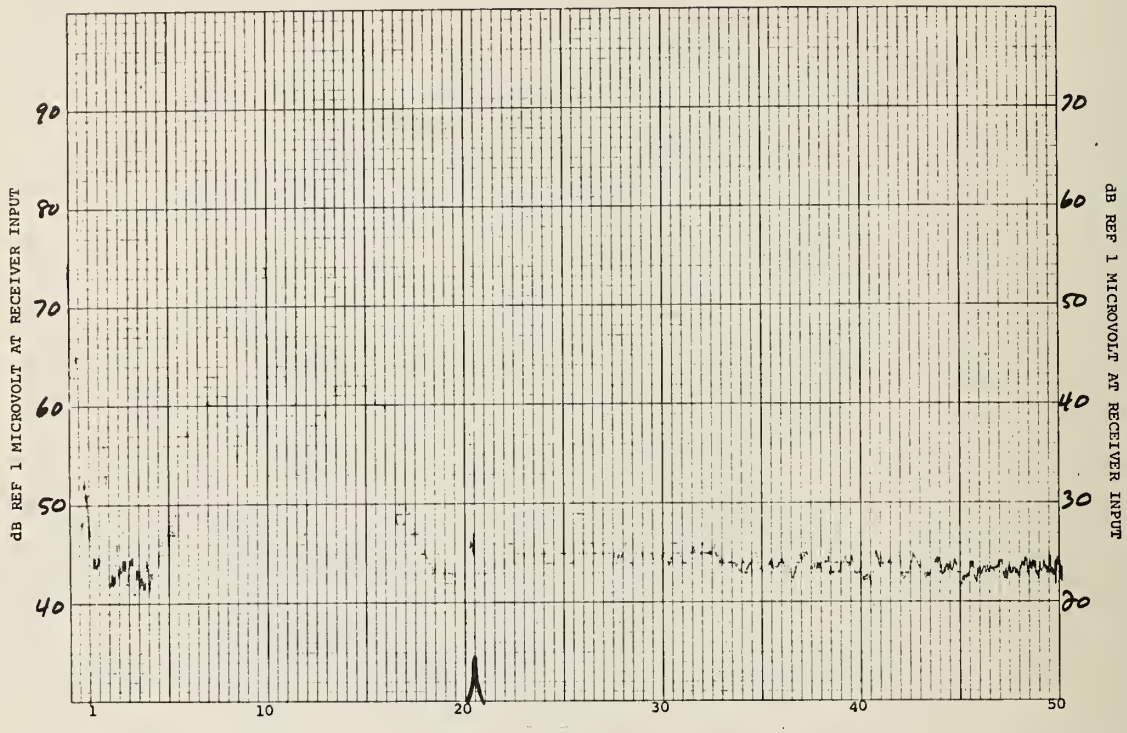


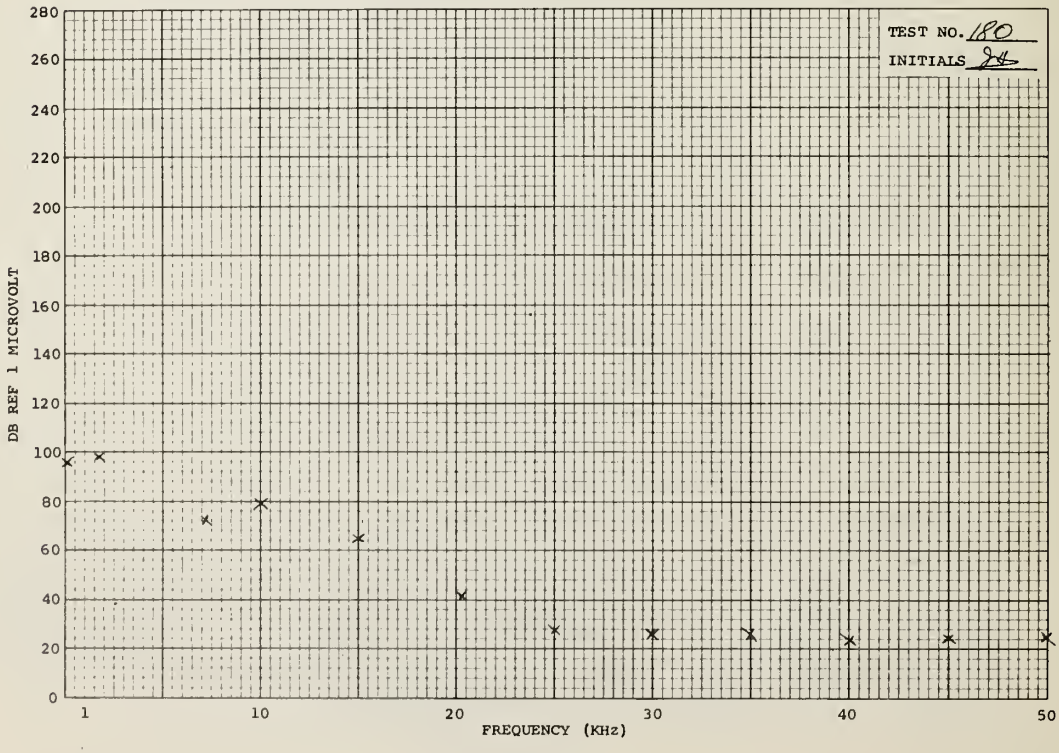
TEST NO. 187 TEST TYPE PLC BANDWIDTH 5Hz 1553
TEST SPECIMEN ØA TEST EQUIP. EMC-10 DATE 7-25-12 URC
T.T.I





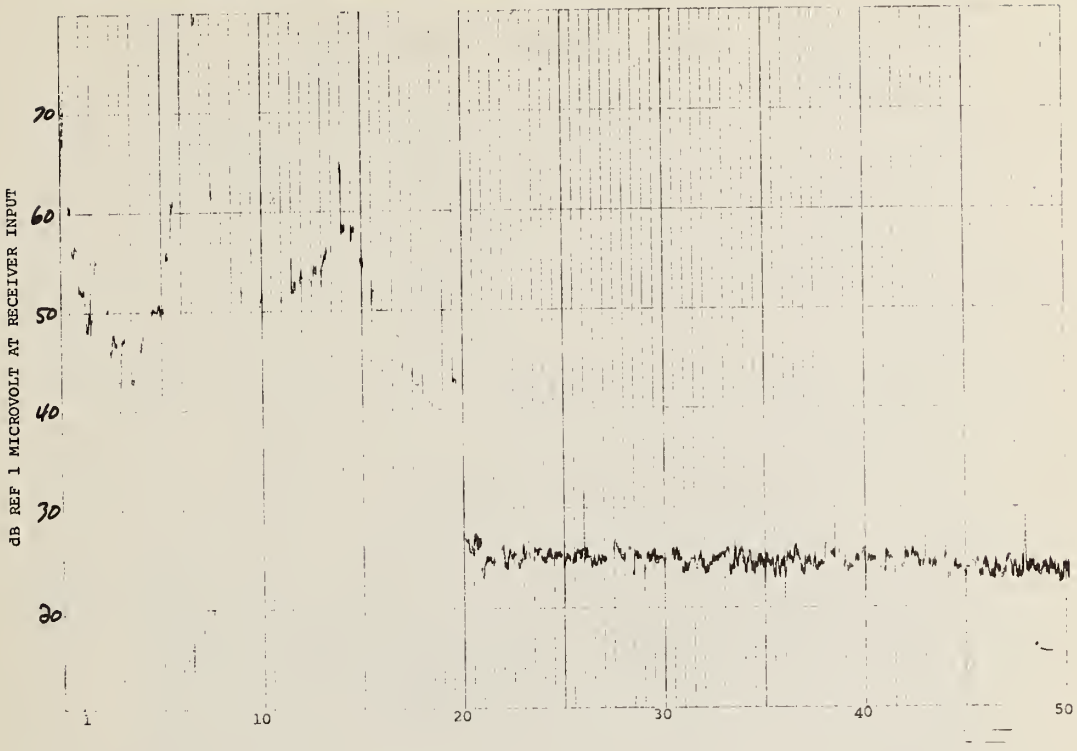
TEST NO. 180 TEST TYPE PLC BANDWIDTH 50Hz 1500
TEST SPECIMEN QA DATE 7-25-72
T.T.I. TEST EQUIP. EMC-10

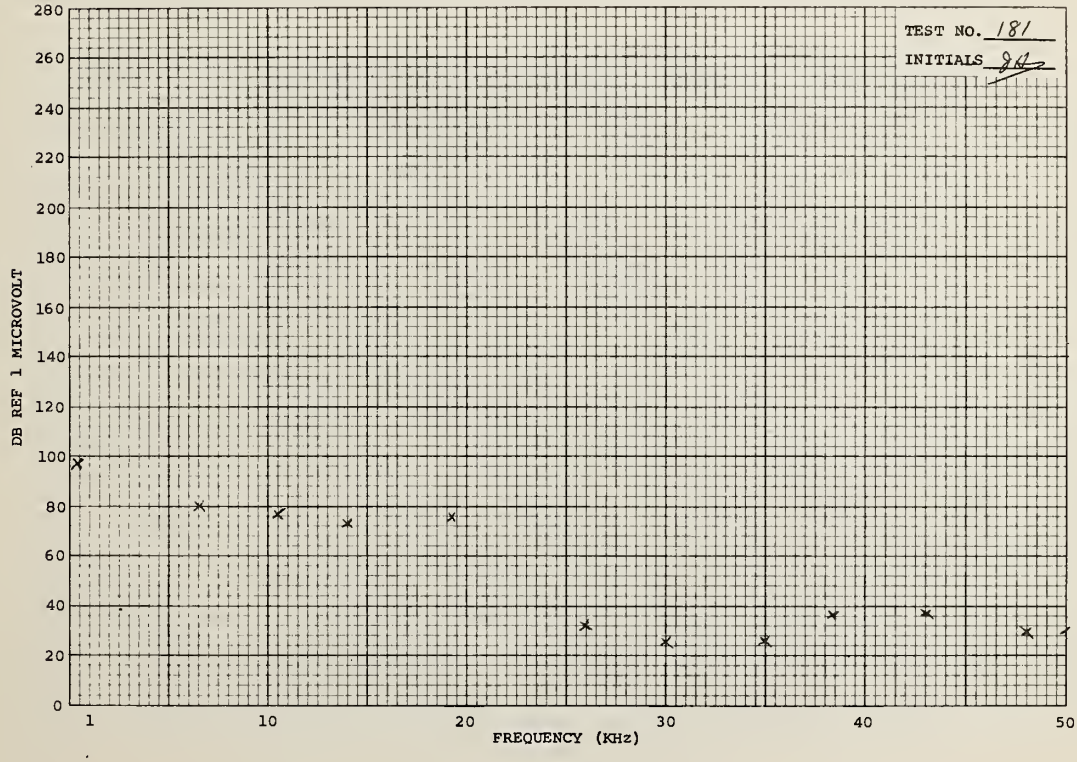




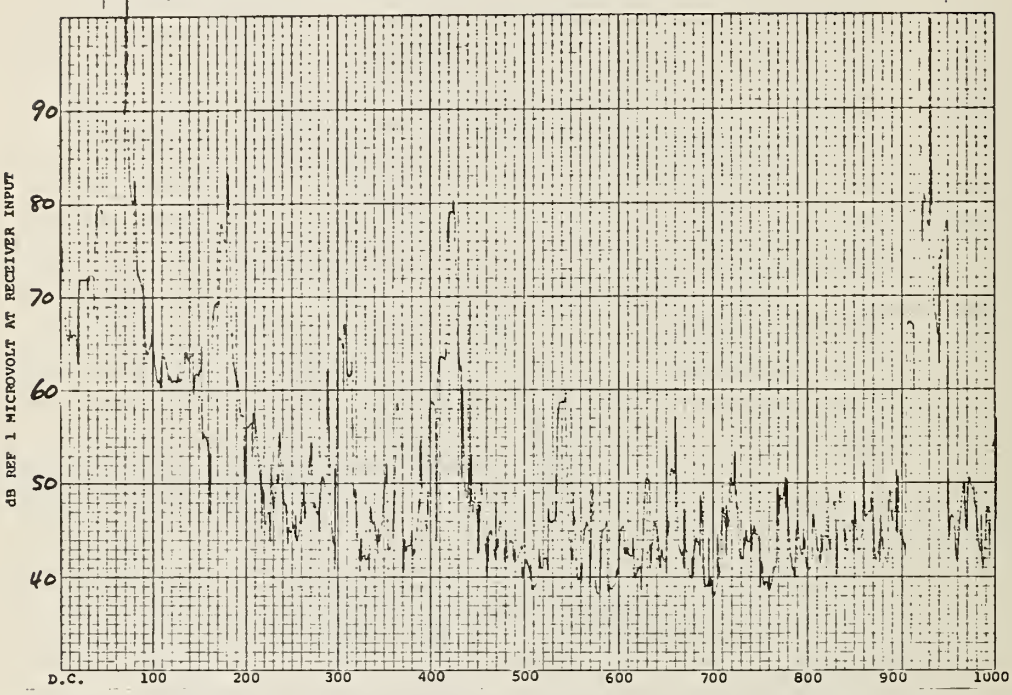
TEST NO. 181 TEST TYPE PLC BANDWIDTH 50 Hz
TEST SPECIMEN ØA T.T.I. TEST EQUIP. EMC-10 DATE 7-25-72

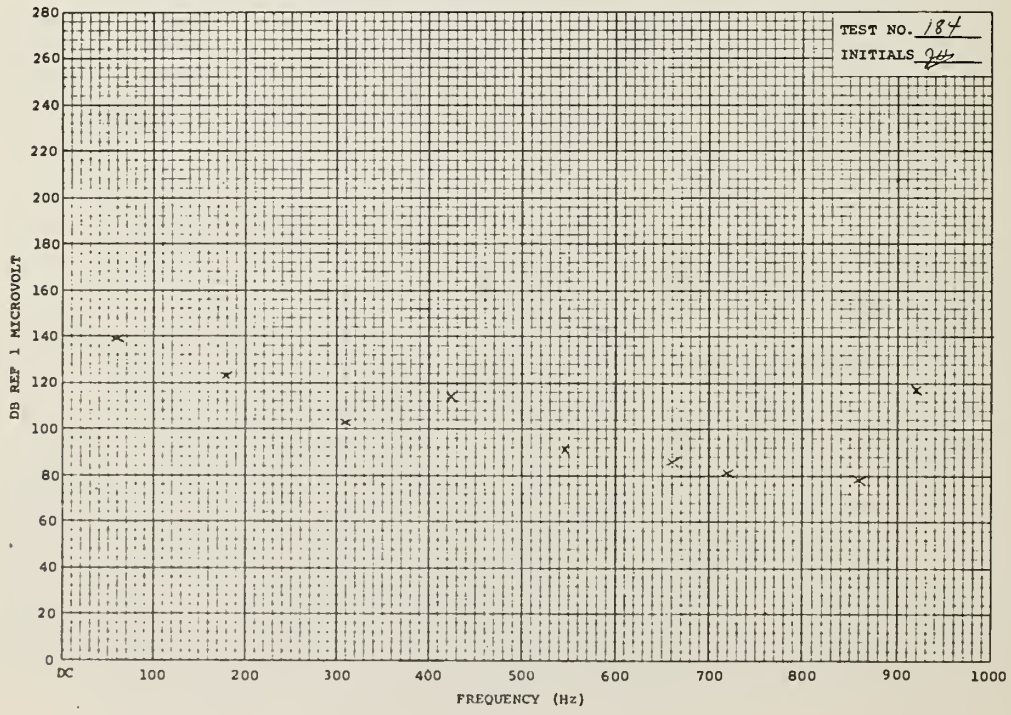
1507 EEJ



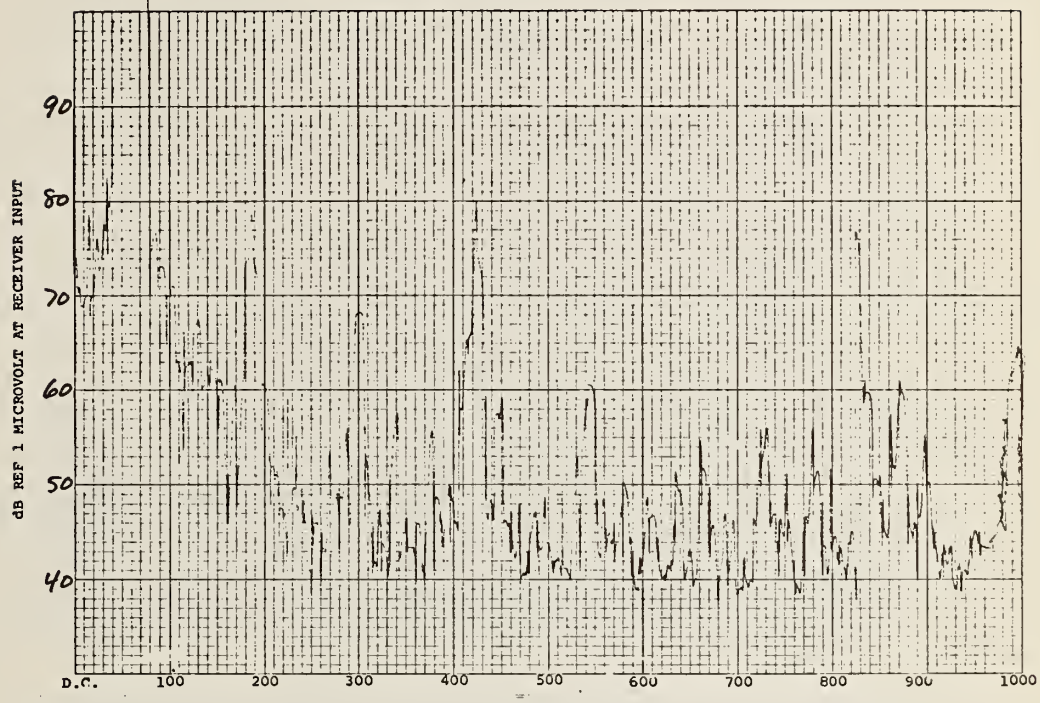


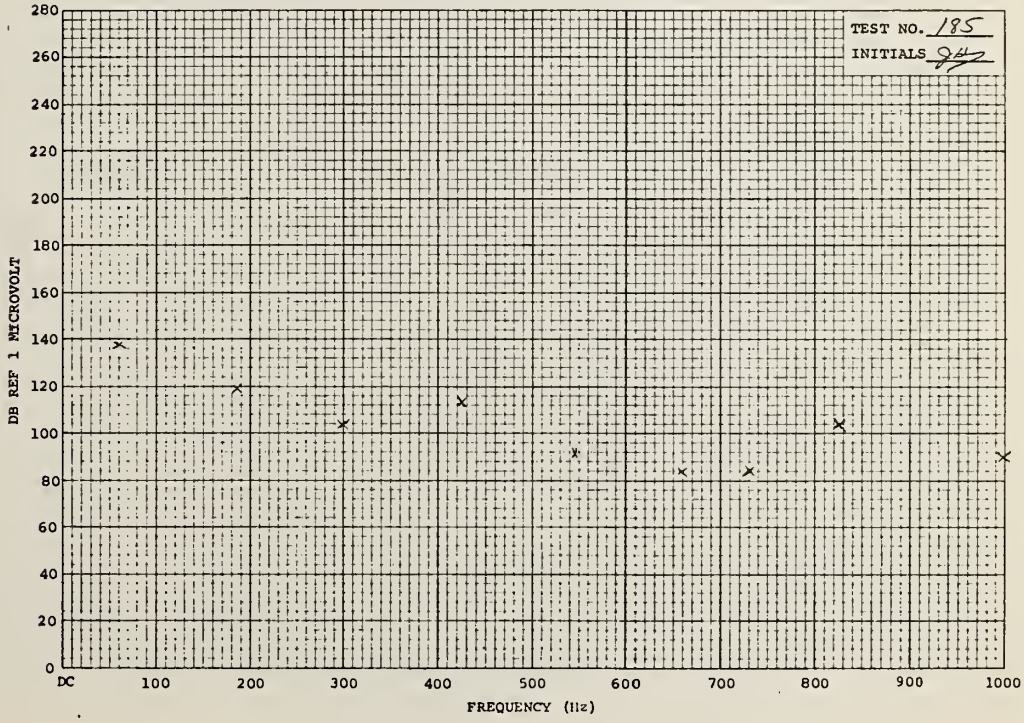
TEST NO. 184 TEST TYPE PLC BANDWIDTH 3 Hz 1537
TEST SPECIMEN QB DATE 7-25-72 VRC
T.T.I. TEST EQUIP. EMC-10



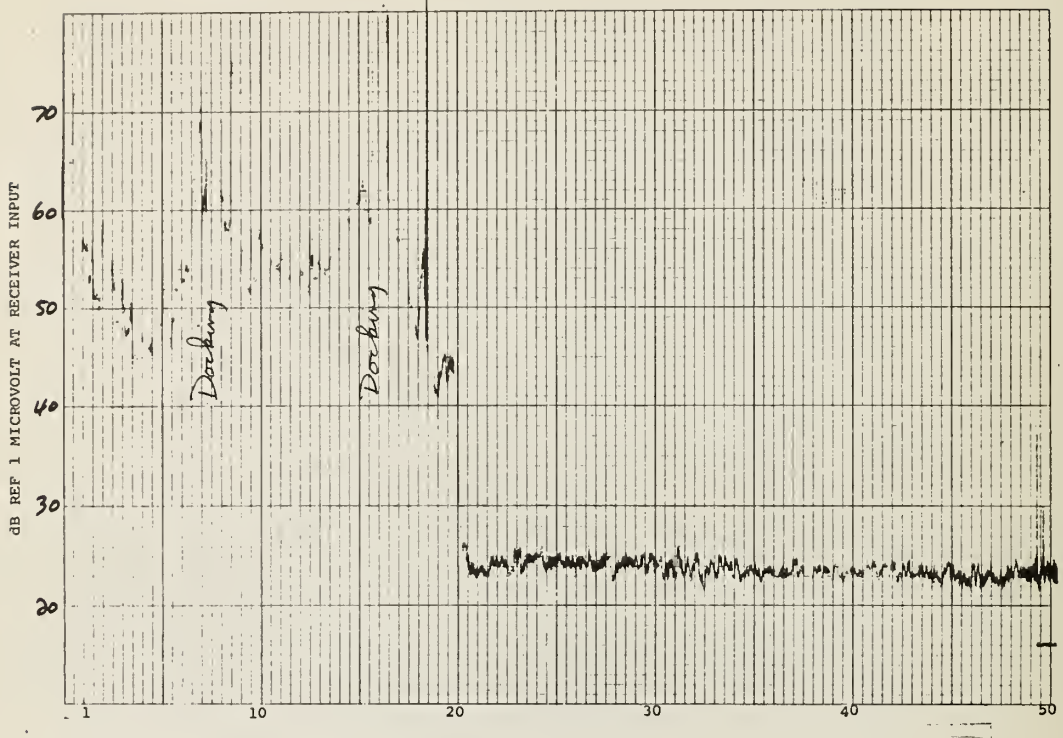


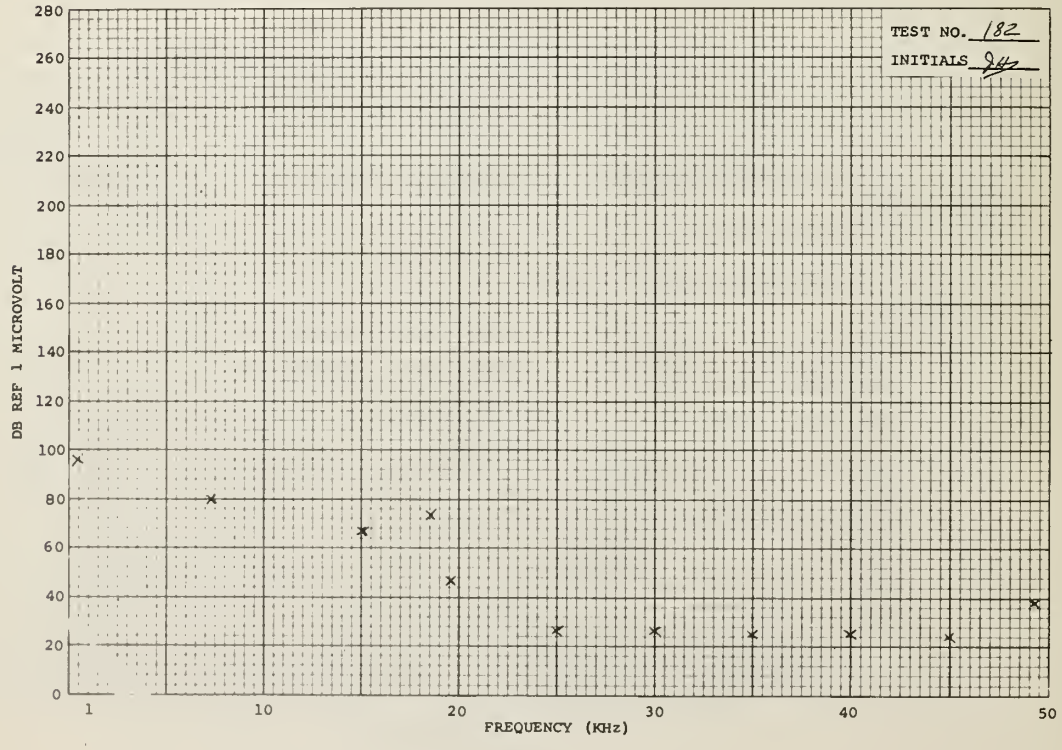
TEST NO. 185 TEST TYPE PLC BANDWIDTH 3Hz 1540
TEST SPECIMEN QR TEST EQUIP. EMC-10 DATE 7-25-72 VAC



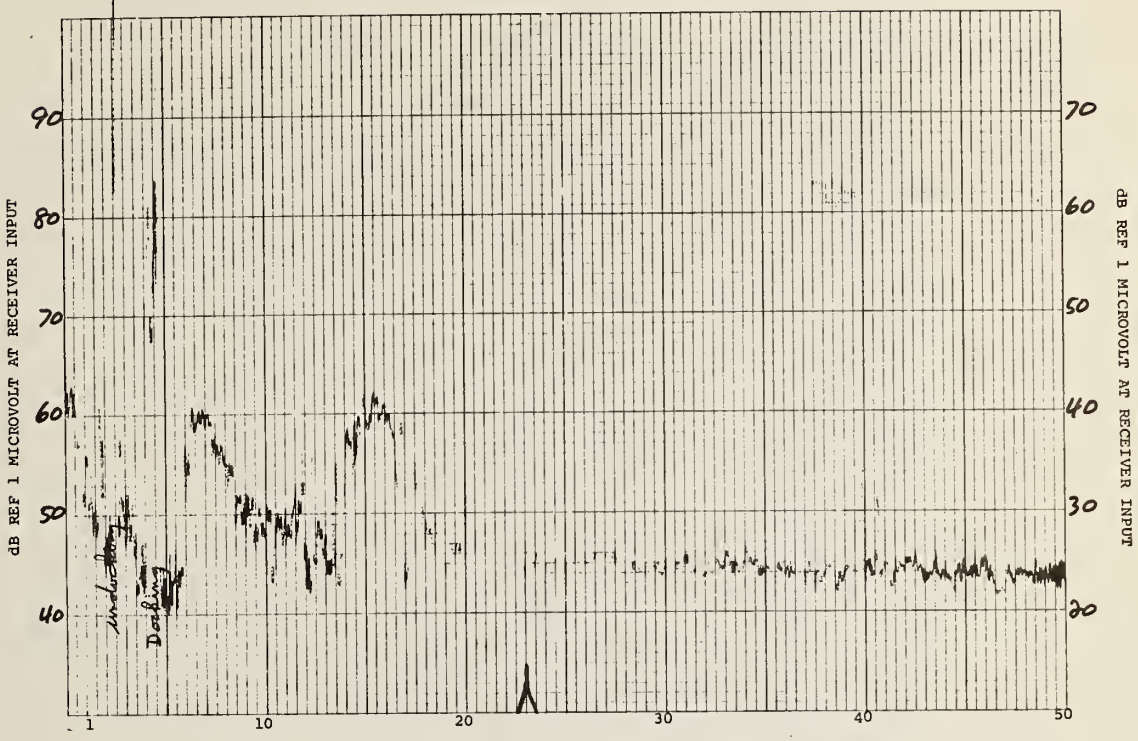


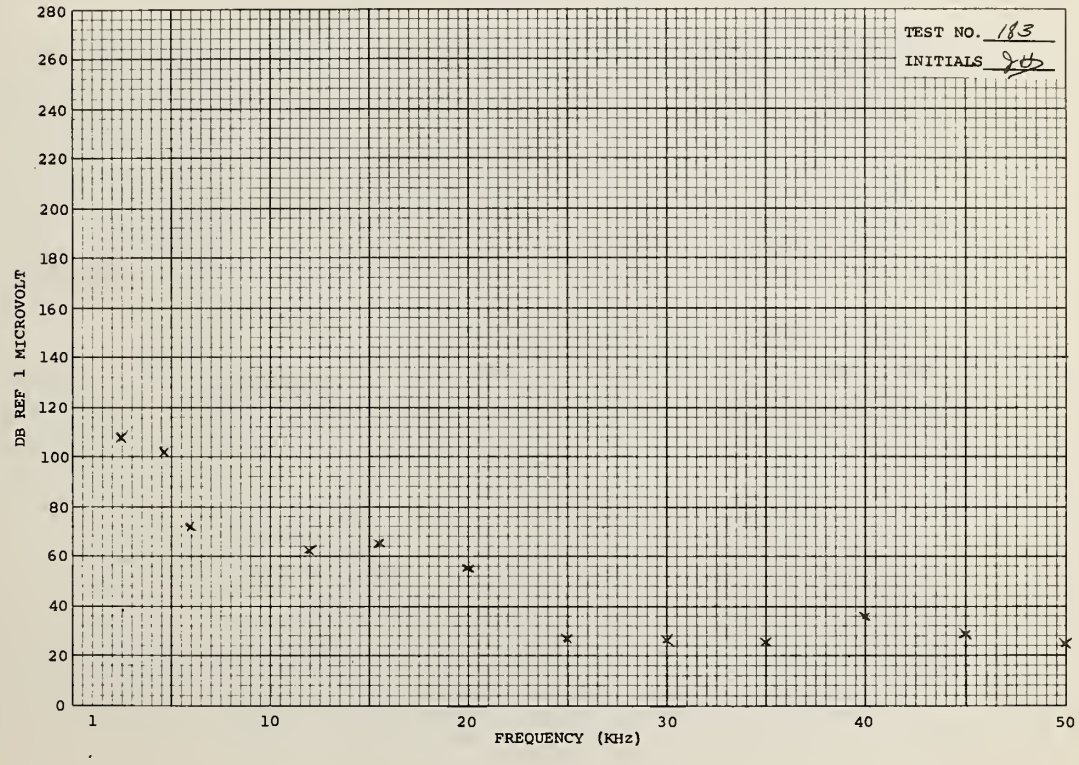
TEST NO. 182 TEST TYPE PLC BANDWIDTH 50 Hz 1513
TEST SPECIMEN QB T.T.I. TEST EQUIP. EMC-10 DATE 7-25-72 ESI





TEST NO. 183 TEST TYPE PLC BANDWIDTH 50 Hz 1519
TEST SPECIMEN ØB T.T.I. TEST EQUIP. EMC-10 DATE 7-25-72 EEJ



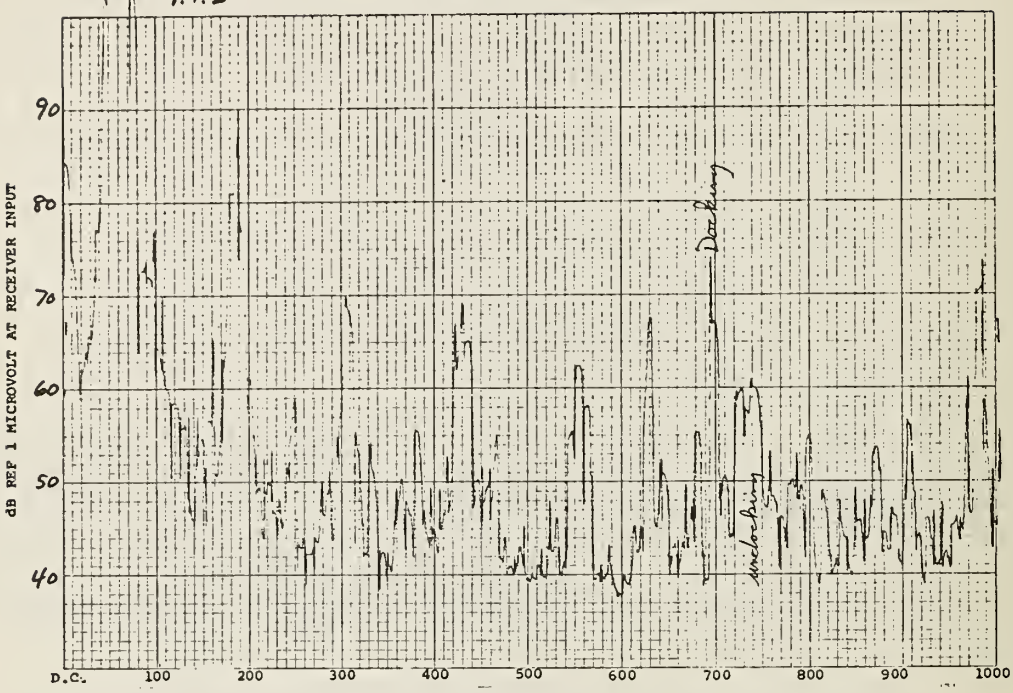


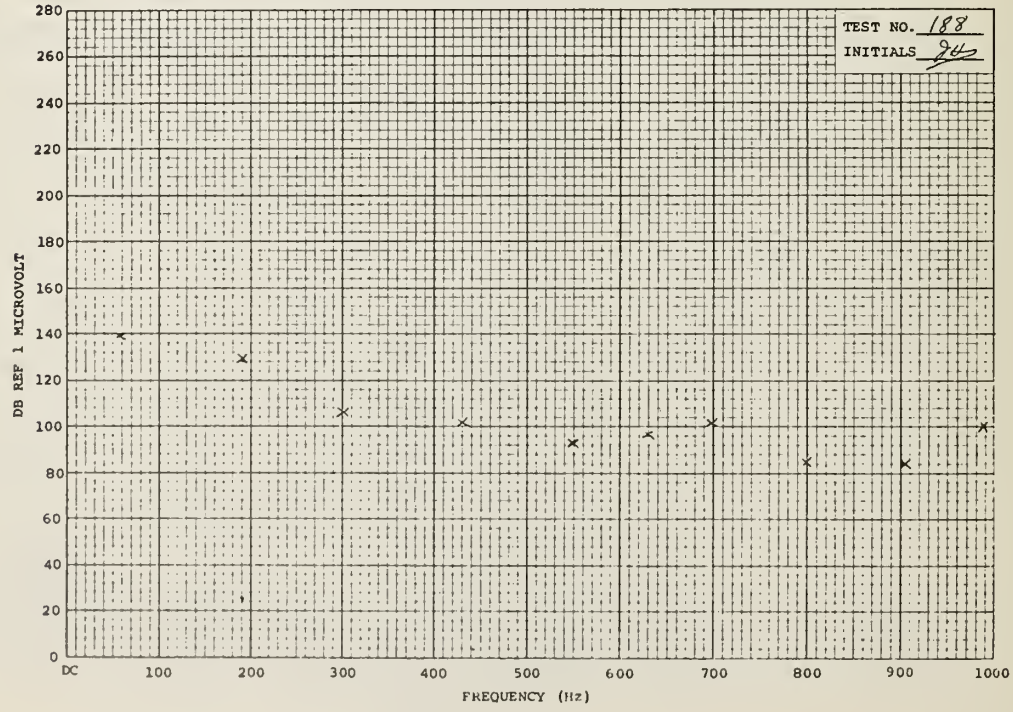
TEST NO. 188
TEST SPECIMEN ØC
T.T.I

TEST TYPE PLC
TEST EQUIP. EMC-10

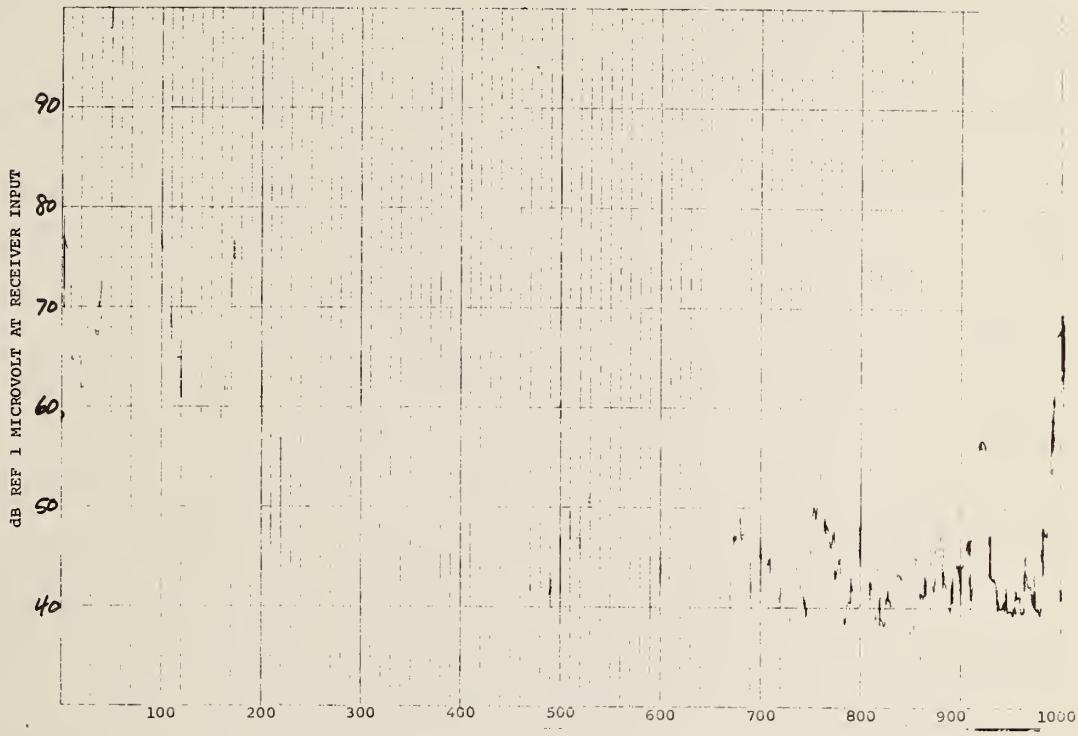
BANDWIDTH 5 Hz
DATE 7-15-77

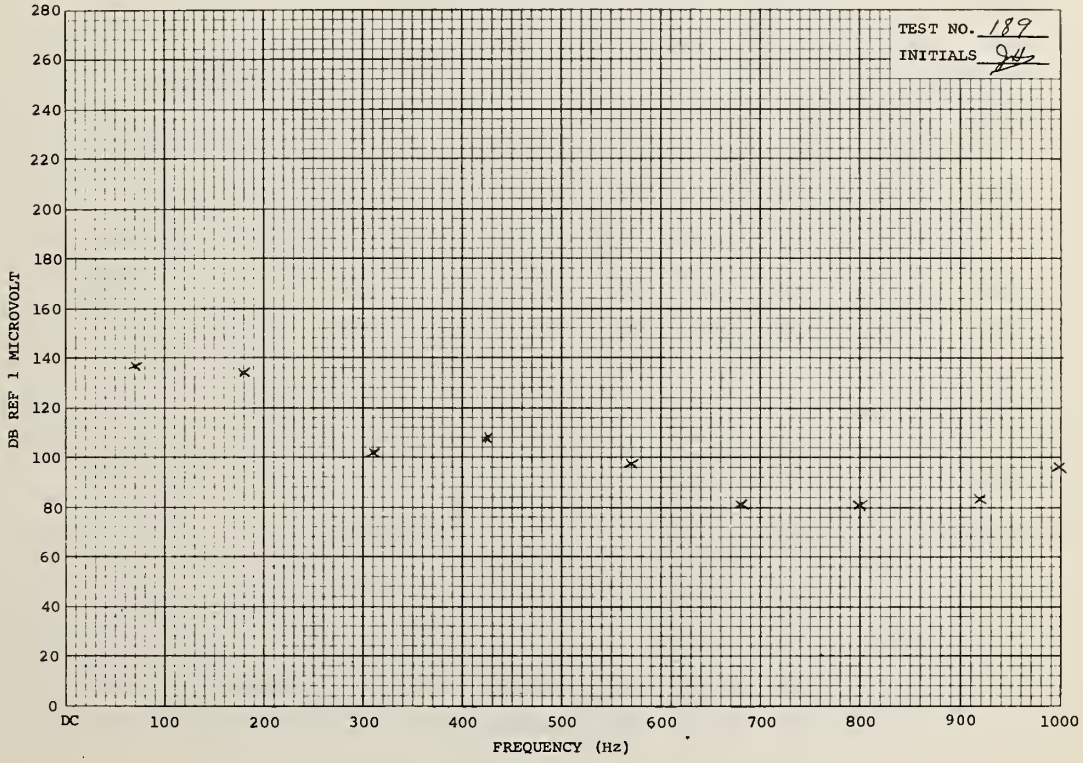
1600
URC



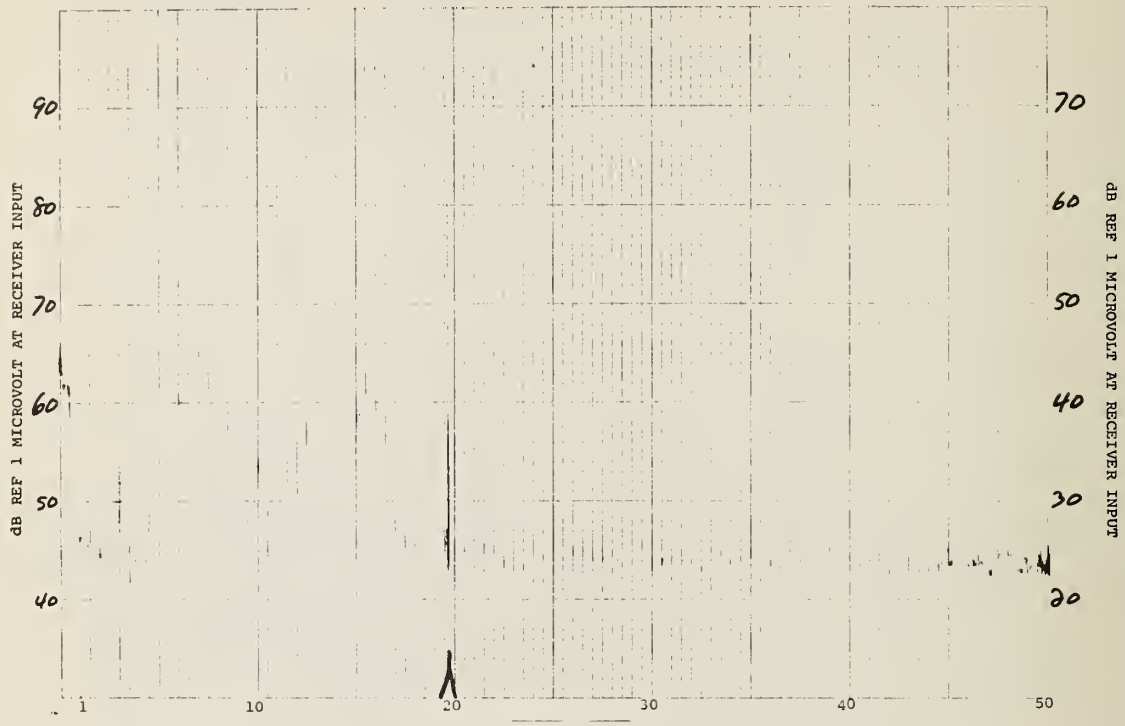


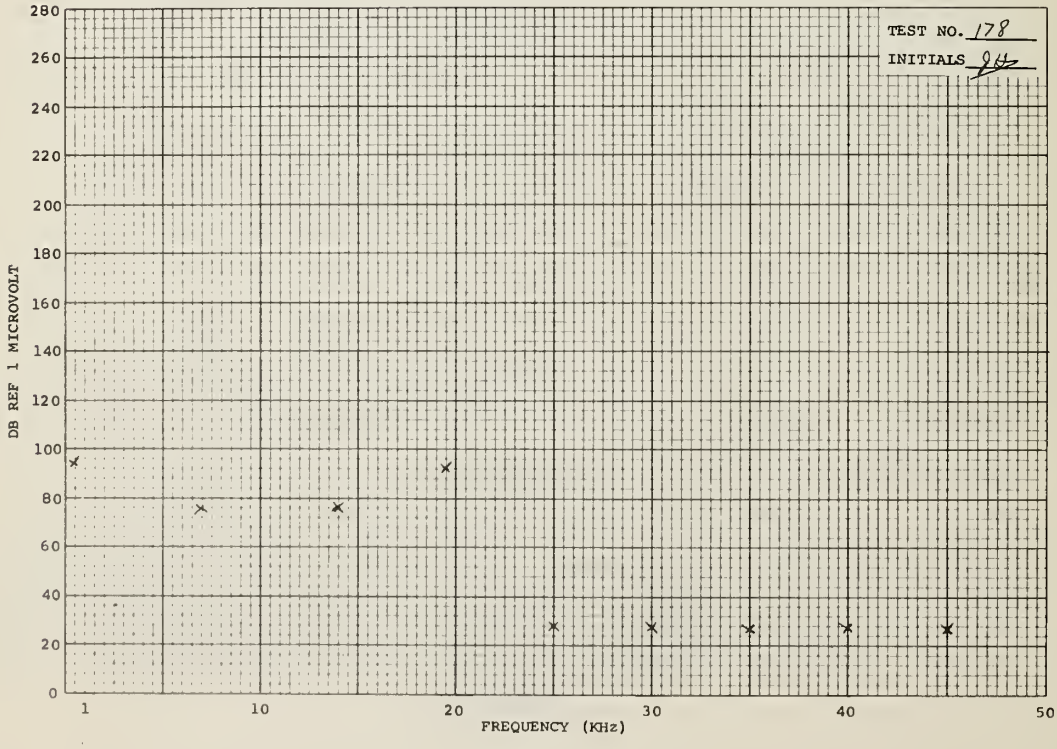
TEST NO. 189 TEST TYPE PLC BANDWIDTH 5Hz 1604
TEST SPECIMEN QR TEST EQUIP. EMC-10 DATE 7-25-72 JRC
T.T.I



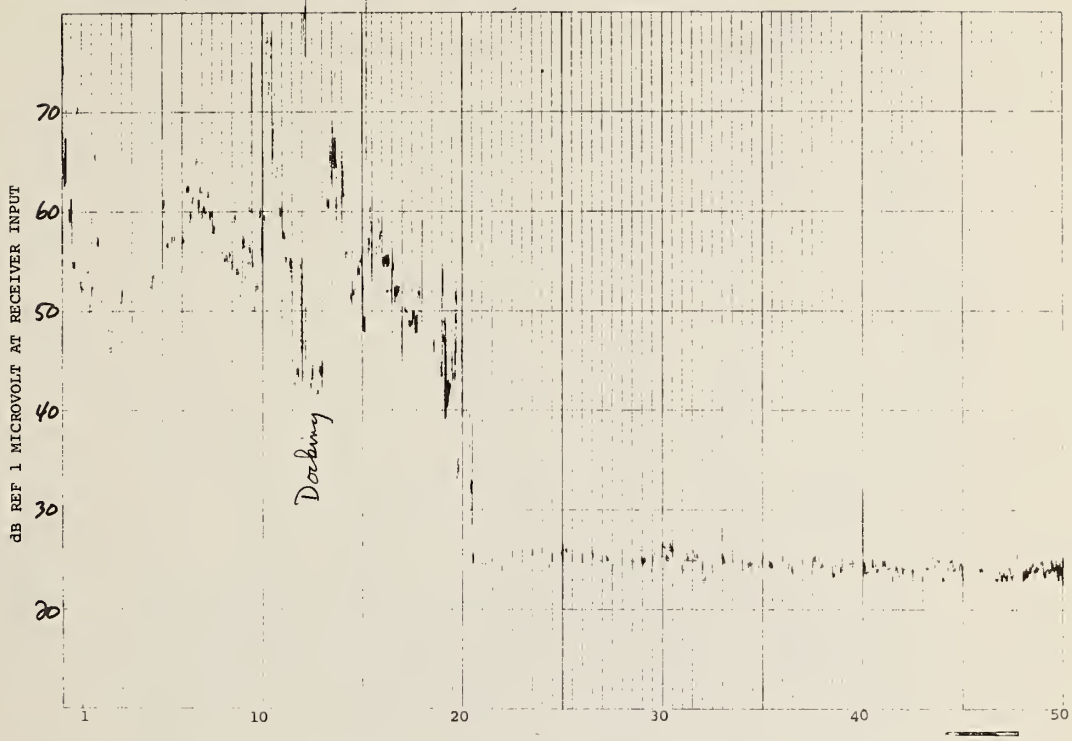


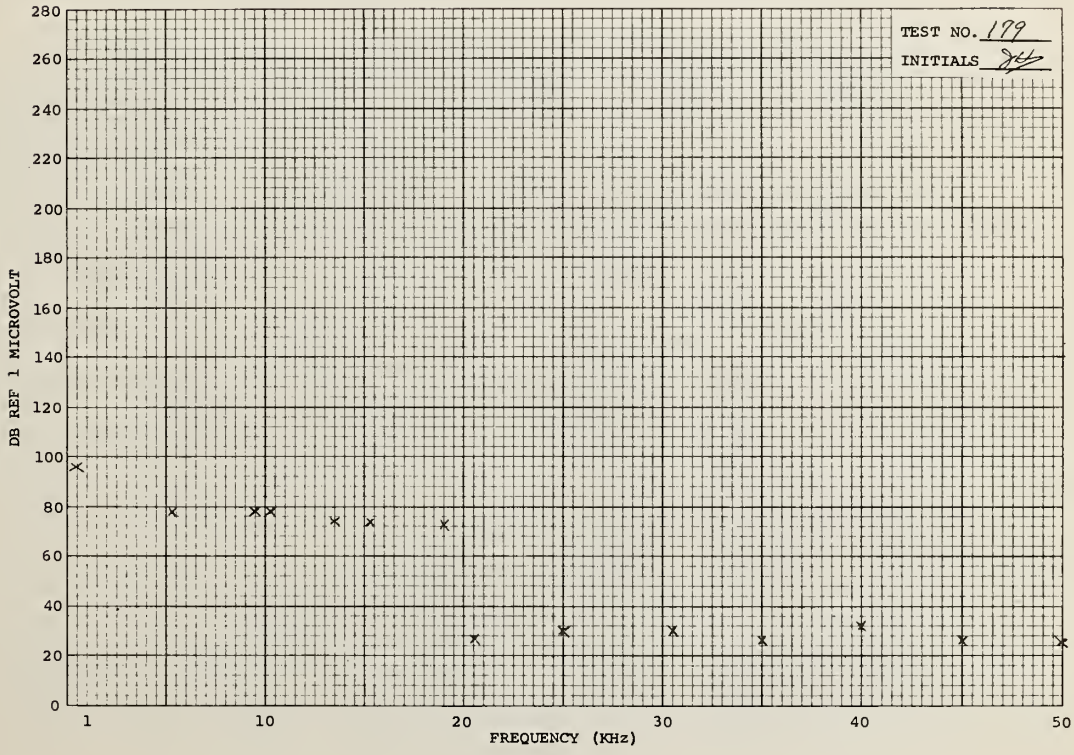
TEST NO. 178
TEST SPECIMEN QC
T.T.I.
TEST TYPE PLC
TEST EQUIP. EMC-10
BANDWIDTH 50Hz
DATE 7-25-72
1440
EEJ





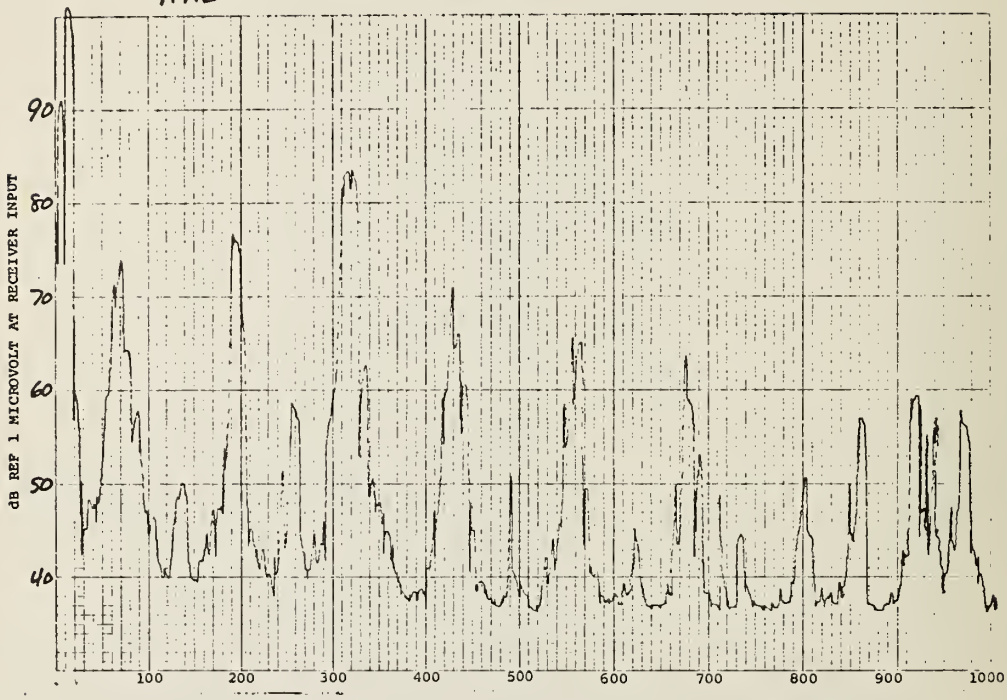
TEST NO. 179 TEST TYPE PLC BANDWIDTH 50Hz 1447
TEST SPECIMEN ϕC TEST EQUIP. EMC-10 DATE 7-25-72 EEJ
T.T.I.

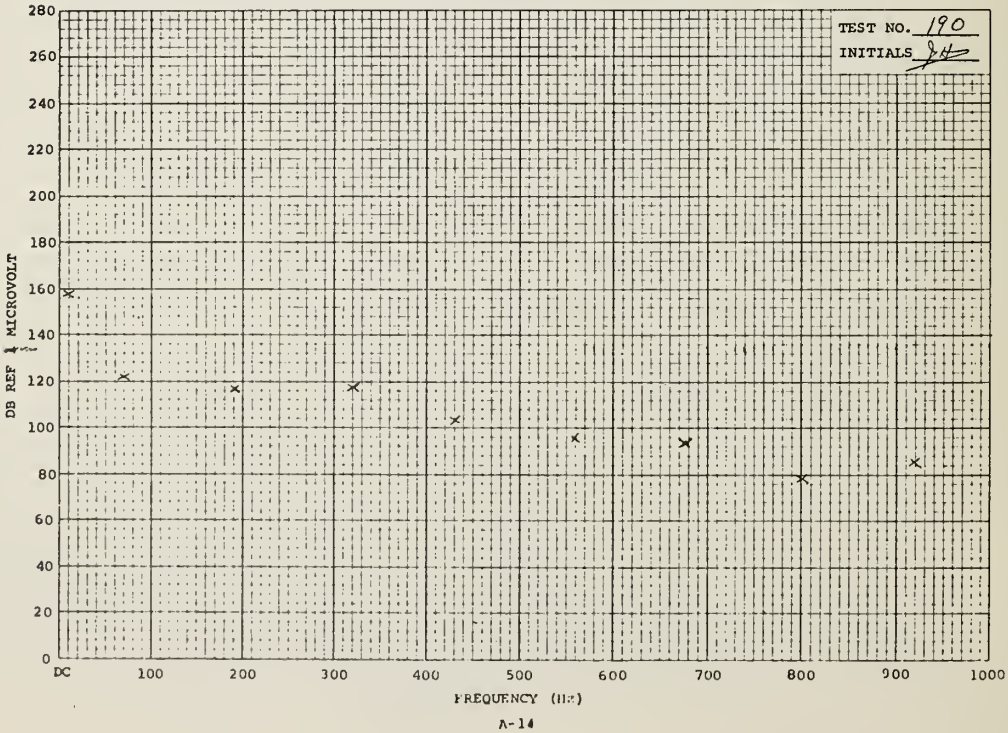




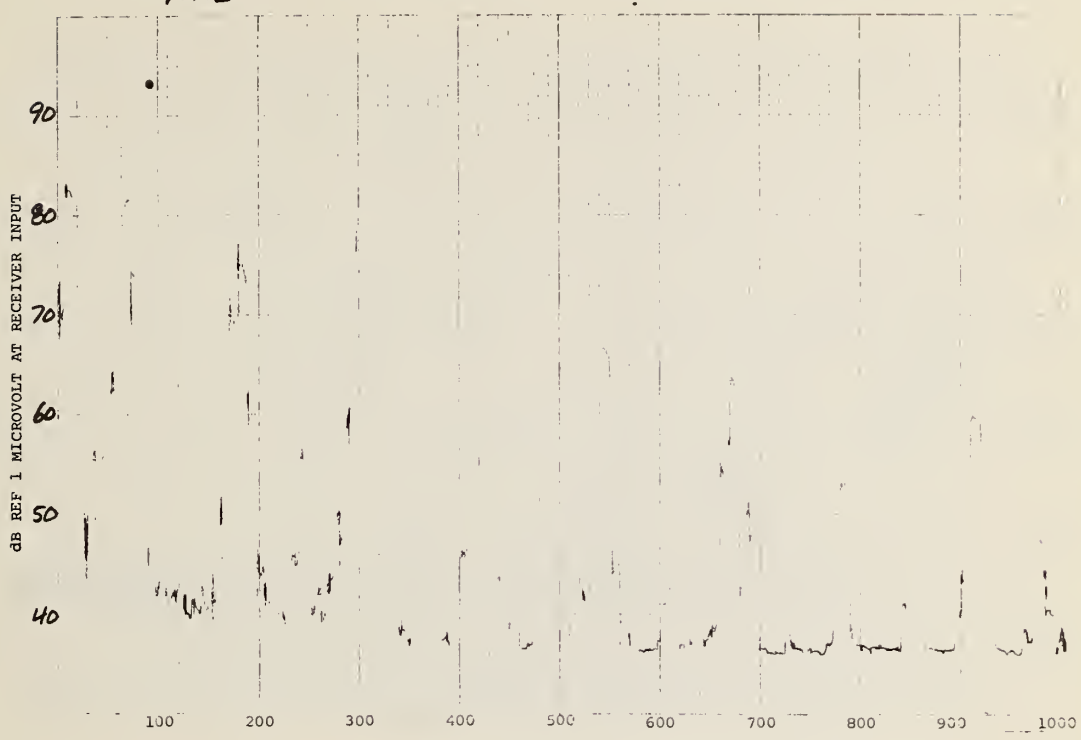
TEST NO. 190 TEST TYPE PLC BANDWIDTH 5Hz
TEST SPECIMEN NEUTRAL TEST EQUIP. EMX-10 DATE 7-25-72
T.T.I

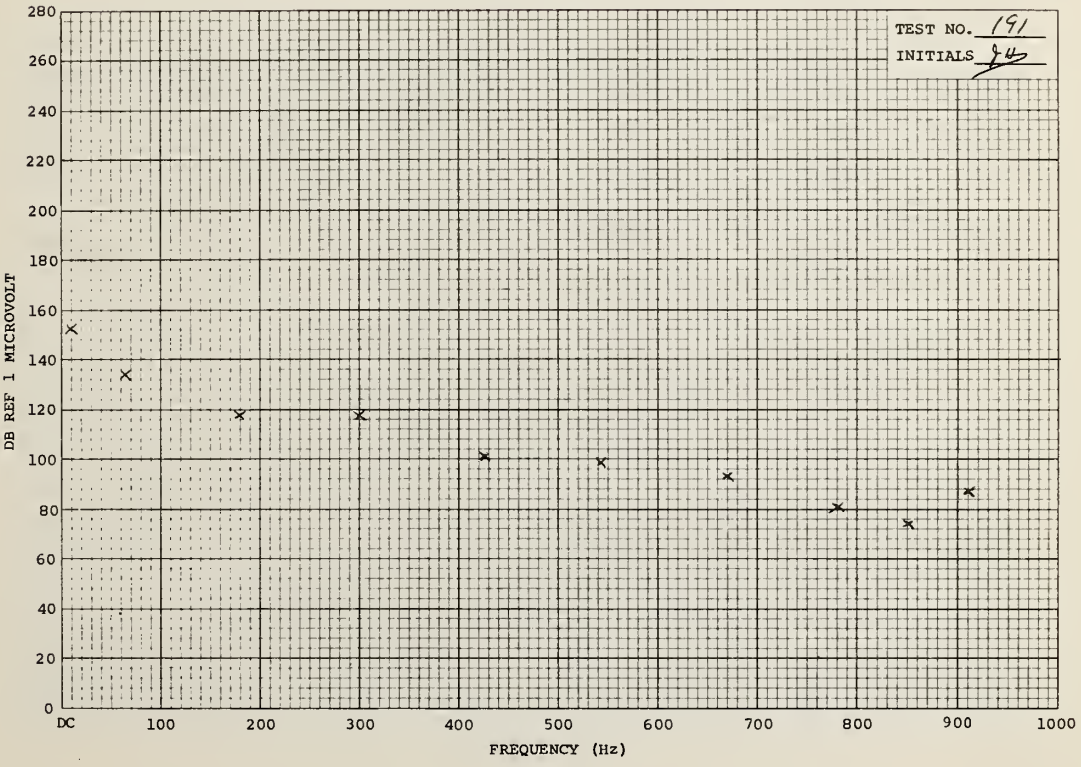
1609
URC



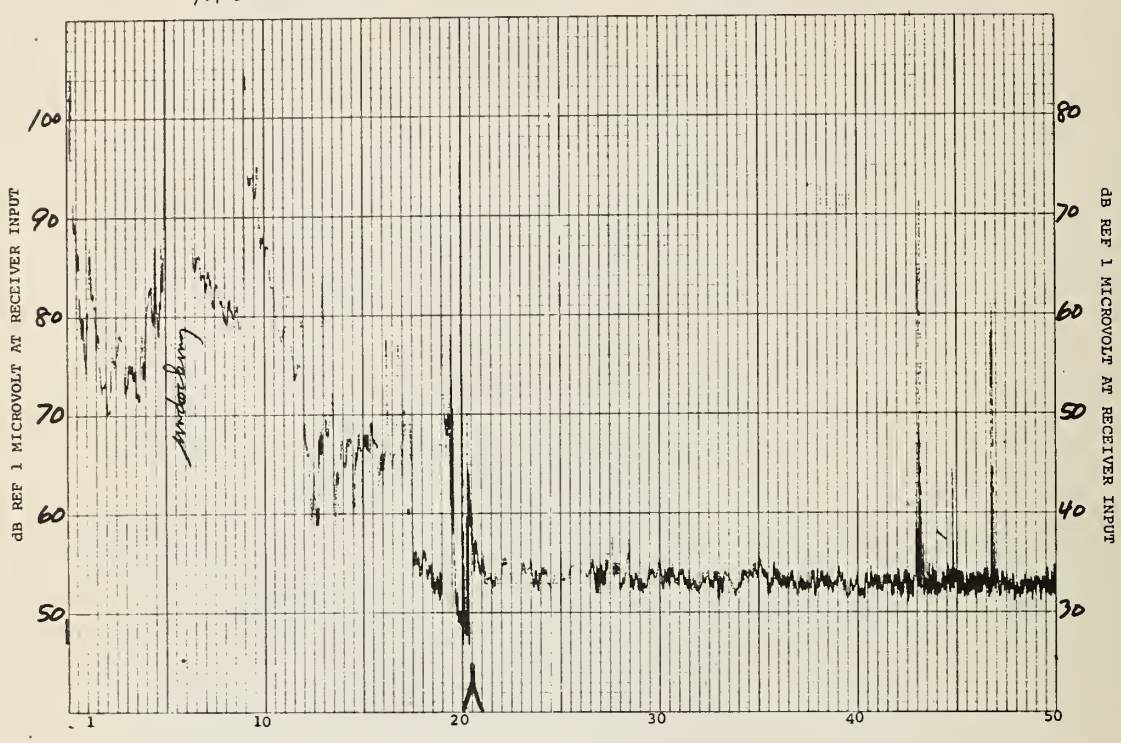


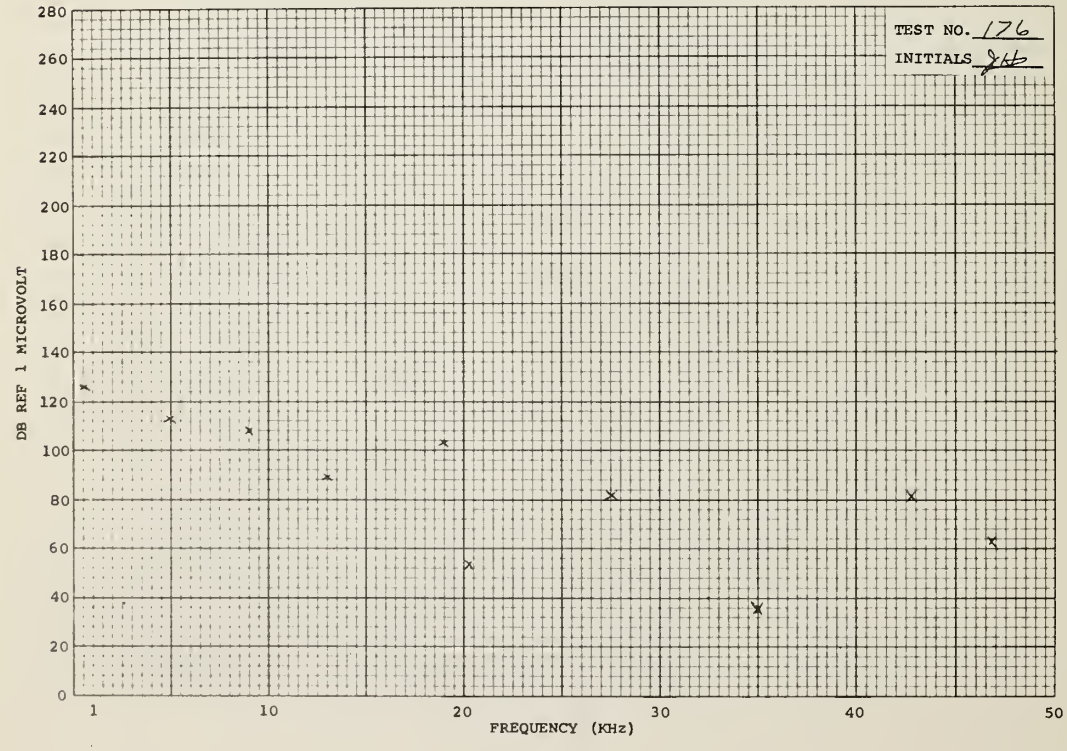
TEST NO. 191 TEST TYPE DLS BANDWIDTH 5Hz 1615
TEST SPECIMEN NSWTRAX DATE 7-25-72 JRC
T.T.I
TEST EQUIP. EMC-10

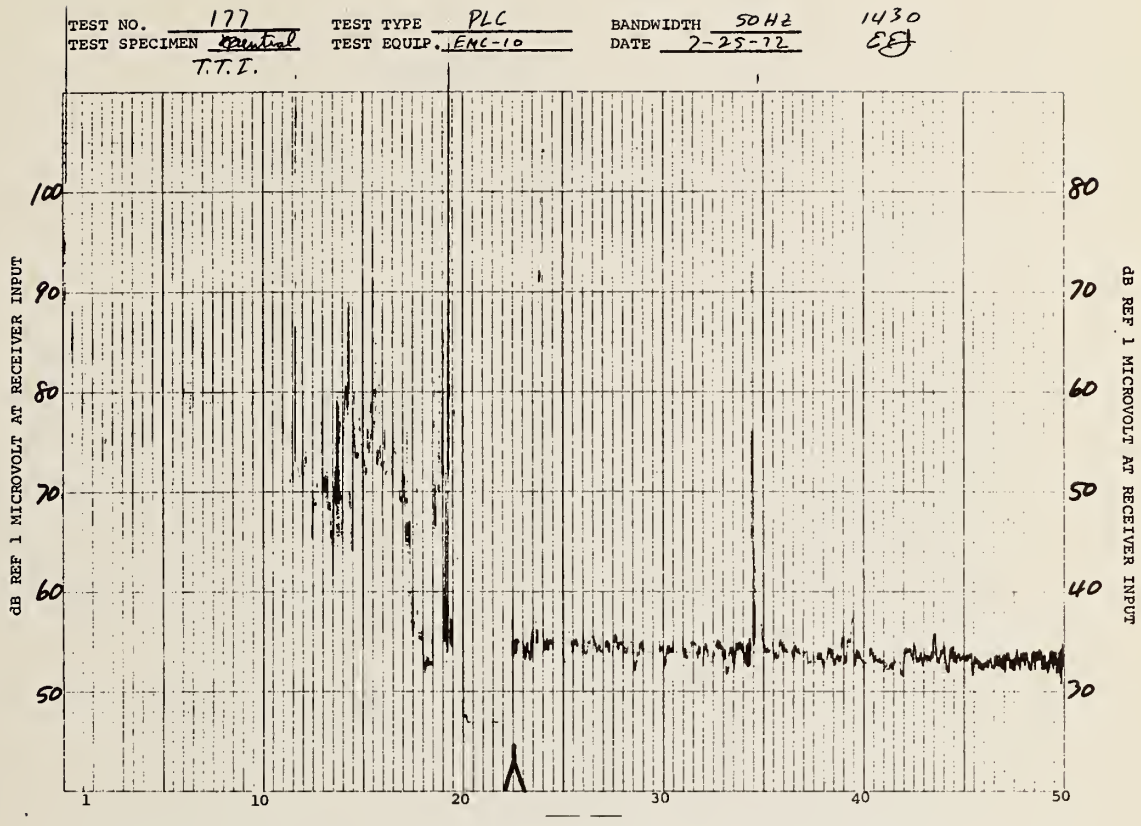


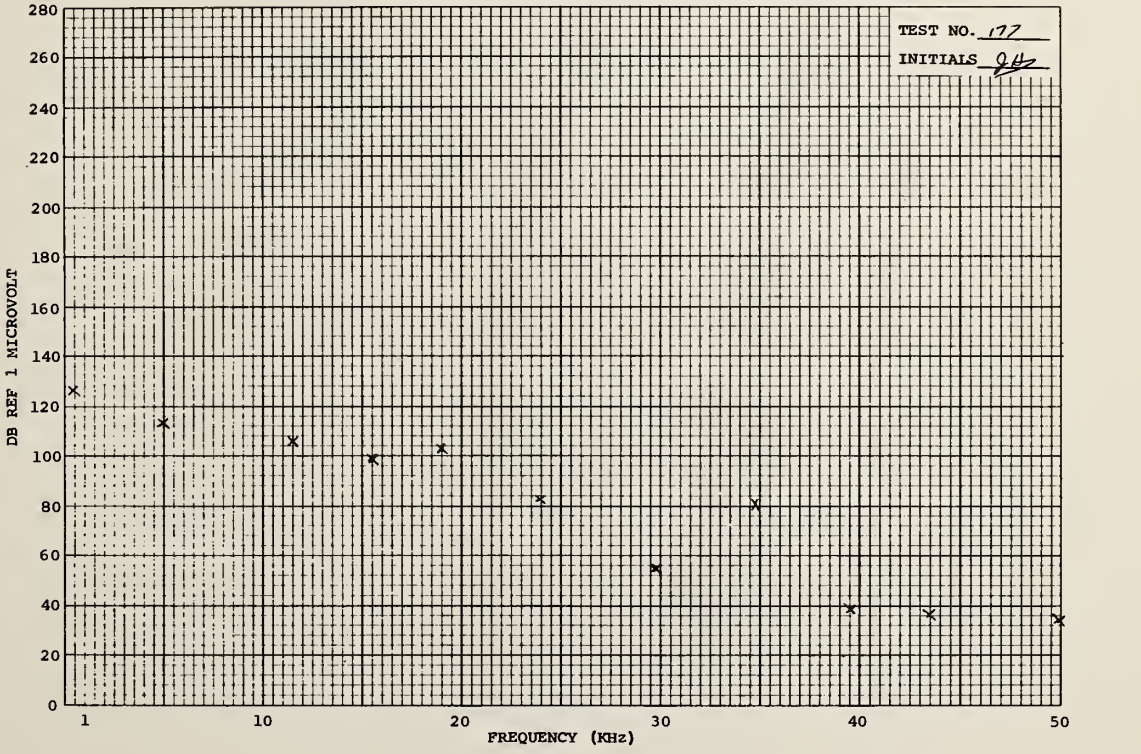


TEST NO. 176 TEST TYPE DLC BANDWIDTH 50Hz 1424
TEST SPECIMEN Neutral TEST EQUIP. EMC-10 DATE 7-25-72 EEJ
T.T.I.






TEST NO. 177
TEST SPECIMEN Control
T.T.I.
TEST TYPE PLC
TEST EQUIP. ENC-10
BANDWIDTH 50 Hz
DATE 7-25-72
1430
EEJ
dB REF 1 MICROVOLT AT RECEIVER INPUT
100
90
80
70
60
50
80
70
60
50
40
30
1
10
20
30
40
50


TEST NO. 177
INITIALS QH
DB REF 1 MICROVOLT
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1
10
20
30
40
50
FREQUENCY (KHz)

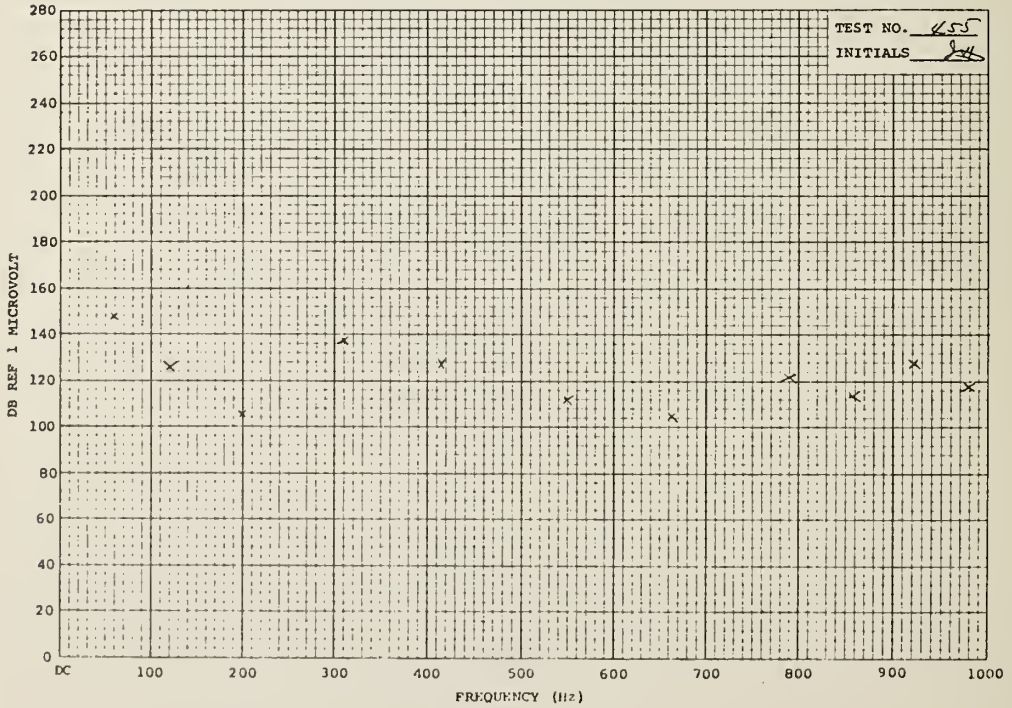
APPENDIX B

POWER LINE CONDUCTIONS MEASUREMENTS DATA

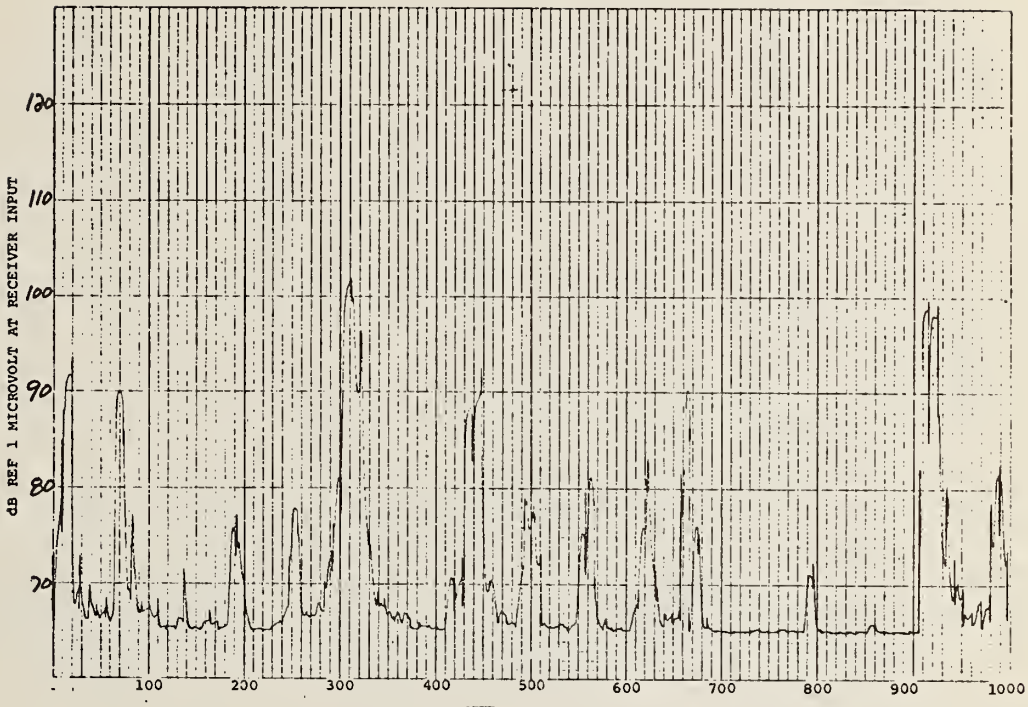
This appendix contains data charts for test No. 445 through 457, and spectrograms No. 458 through 465. The charts are presented in order of phase - A, B, and C for ease of analysis, rather then in numerical order as the tests were performed. The spectrogarms are at the rear of the appendix.

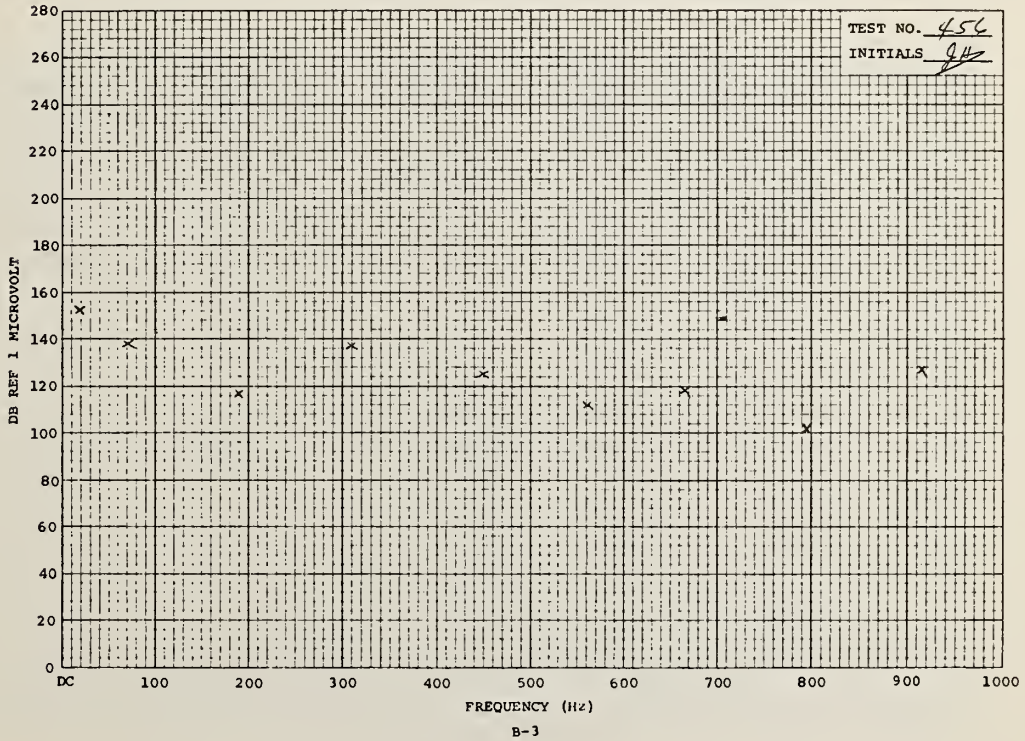
TEST NO. 455 TEST TYPE PLC BANDWIDTH 5 Hz
TEST SPECIMEN ØA TEST EQUIP. EMC-10 DATE 8-8-72
Ford

1515

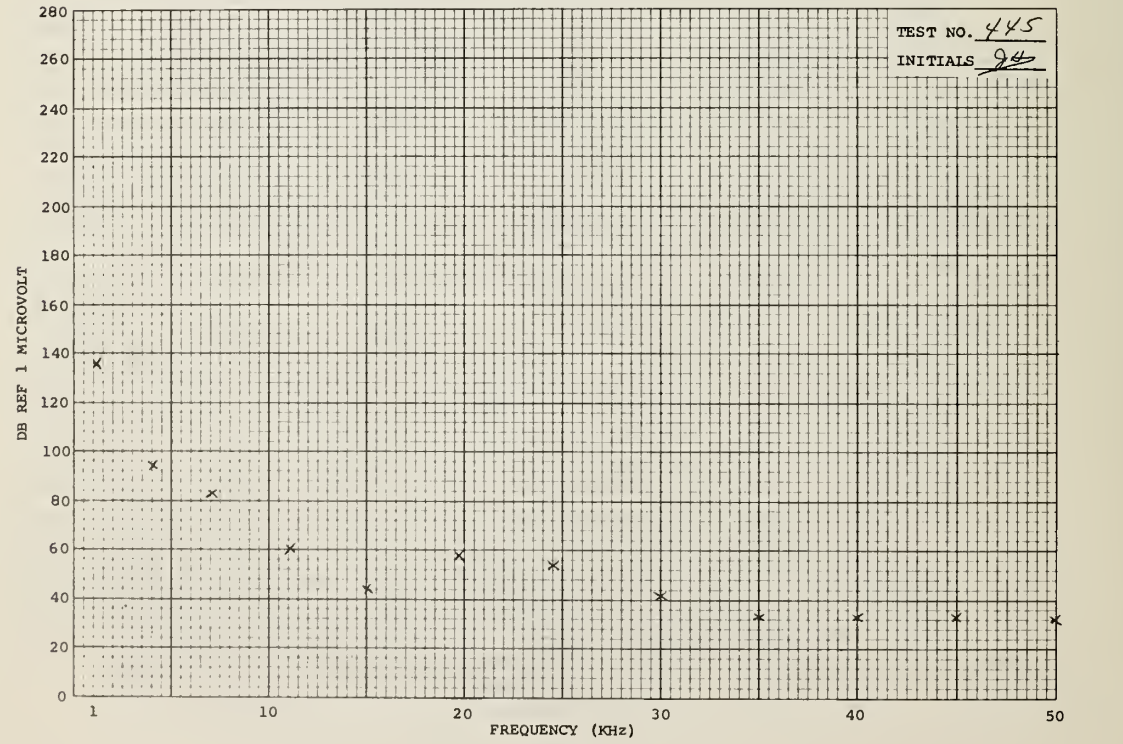


TEST NO. 456 TEST TYPE PLC BANDWIDTH 5 Hz 1518
TEST SPECIMEN 9A DATE 8-2-72
Ford
TEST EQUIP. EMC-10

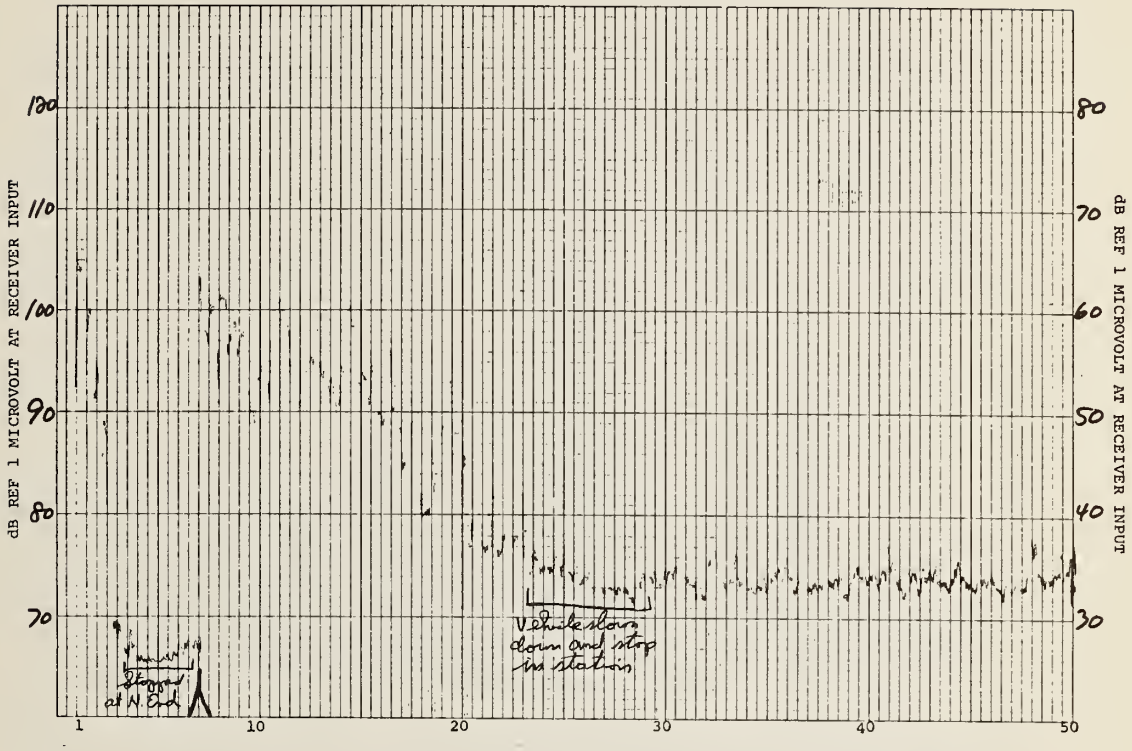


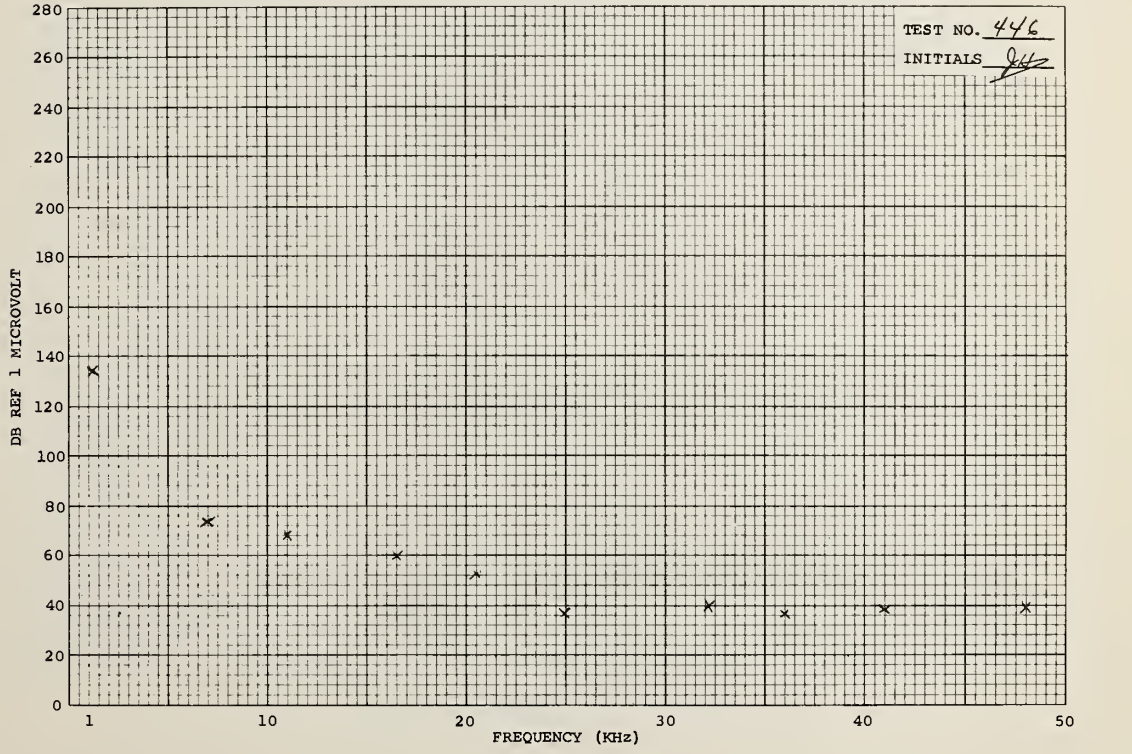


TEST NO. 445 TEST TYPE PLC BANDWIDTH 50 Hz 1426
TEST SPECIMEN ØA DATE 8-2-79
Ford



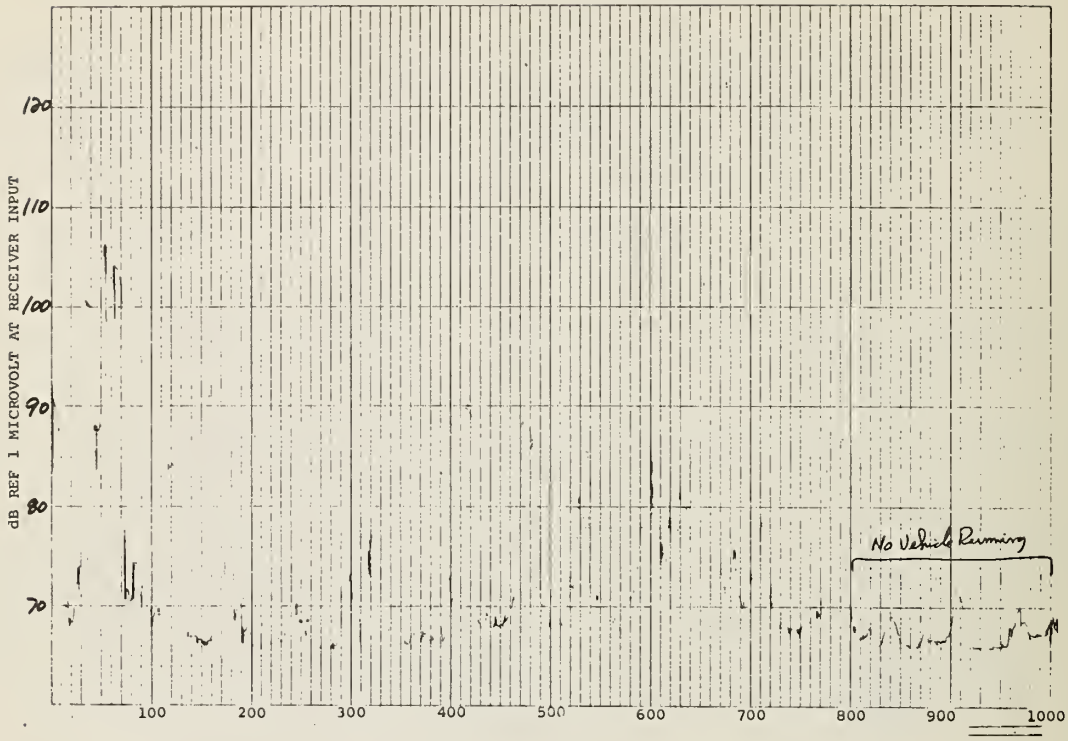
TEST NO. 446 TEST TYPE PLC BANDWIDTH 50 Hz 1431
TEST SPECIMEN ΦA TEST EQUIP. EMC-10 DATE 8-2-72 EG
Ford

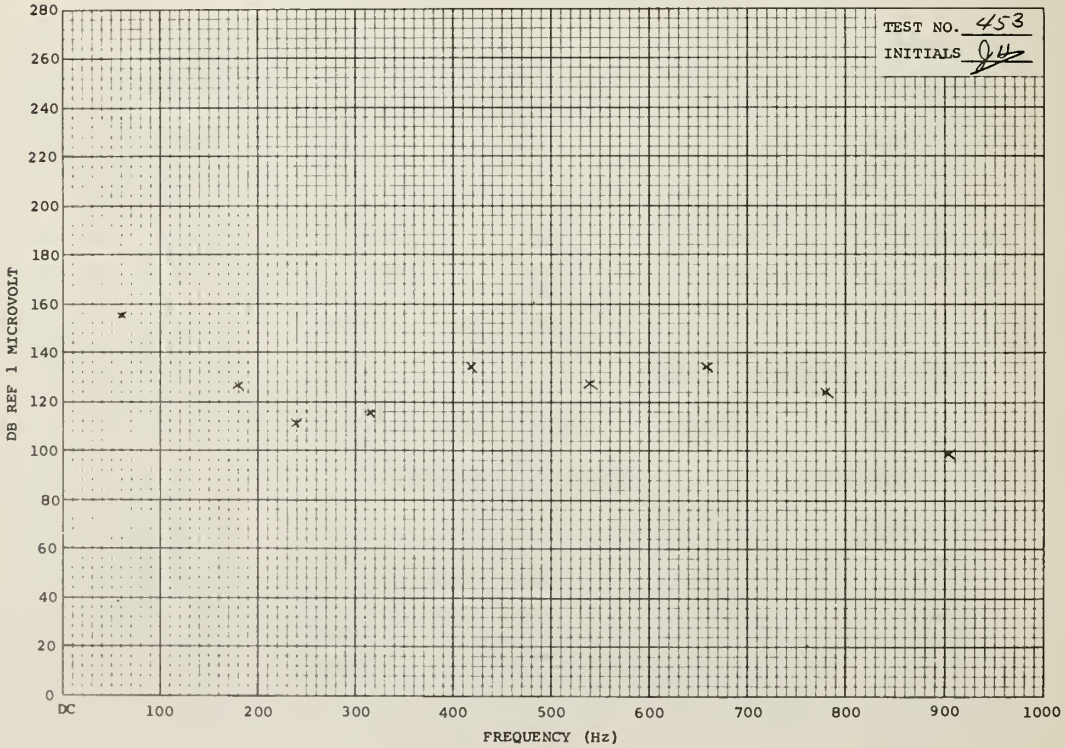




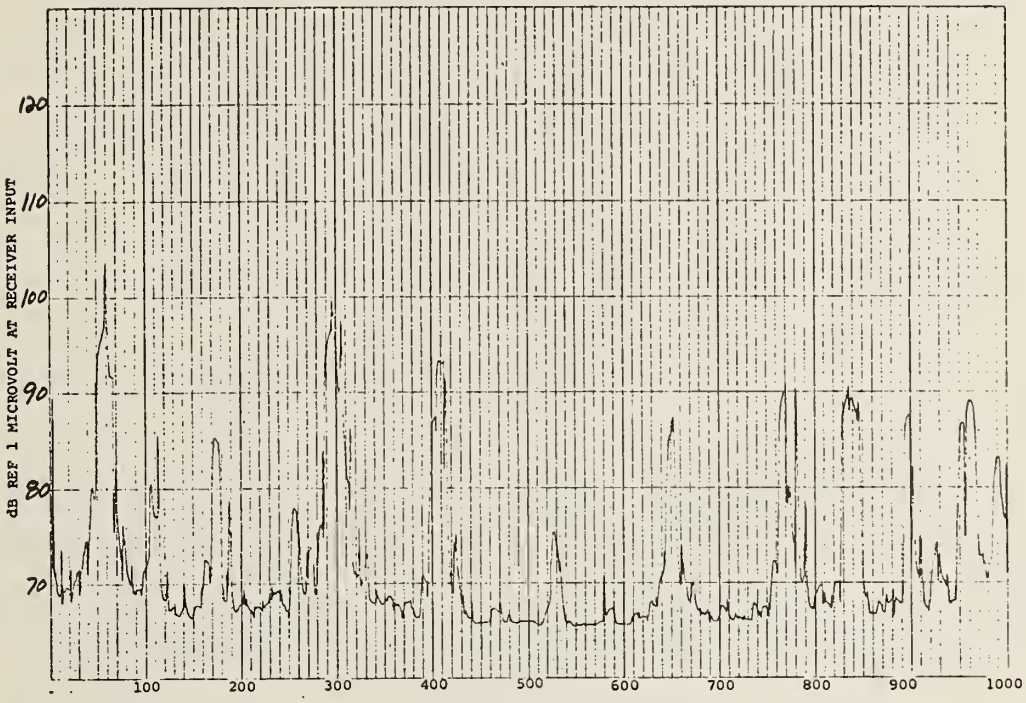
TEST NO. 453 TEST TYPE PLC BANDWIDTH 5 Hz
TEST SPECIMEN ØB TEST EQUIP. EMC-10 DATE 8-2-78
Ford

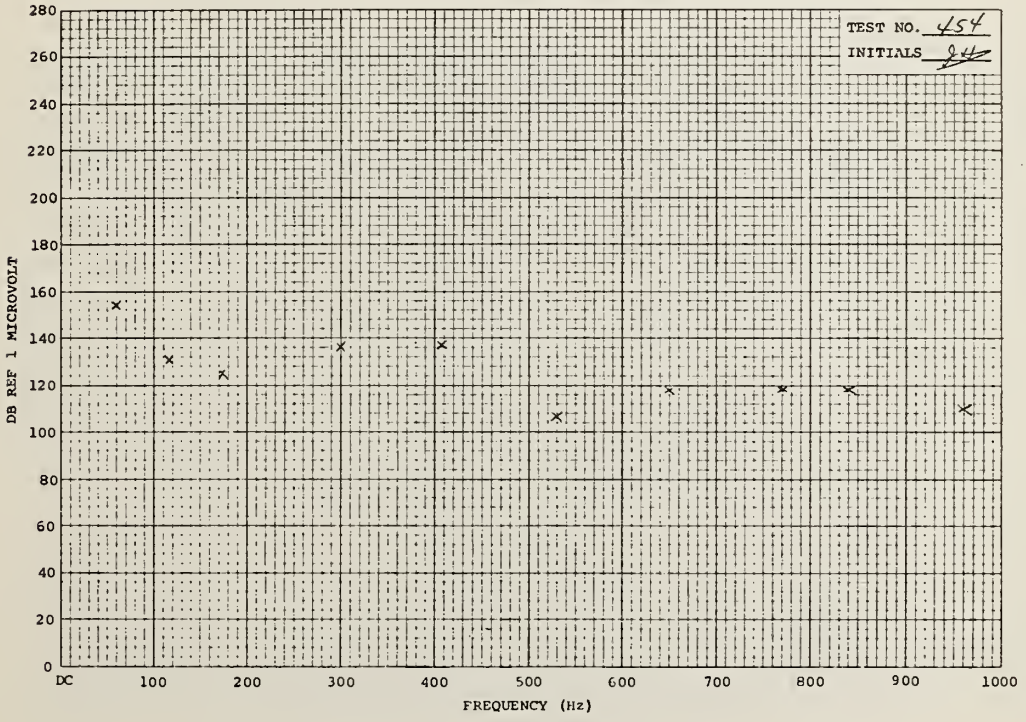
1505
EDJ



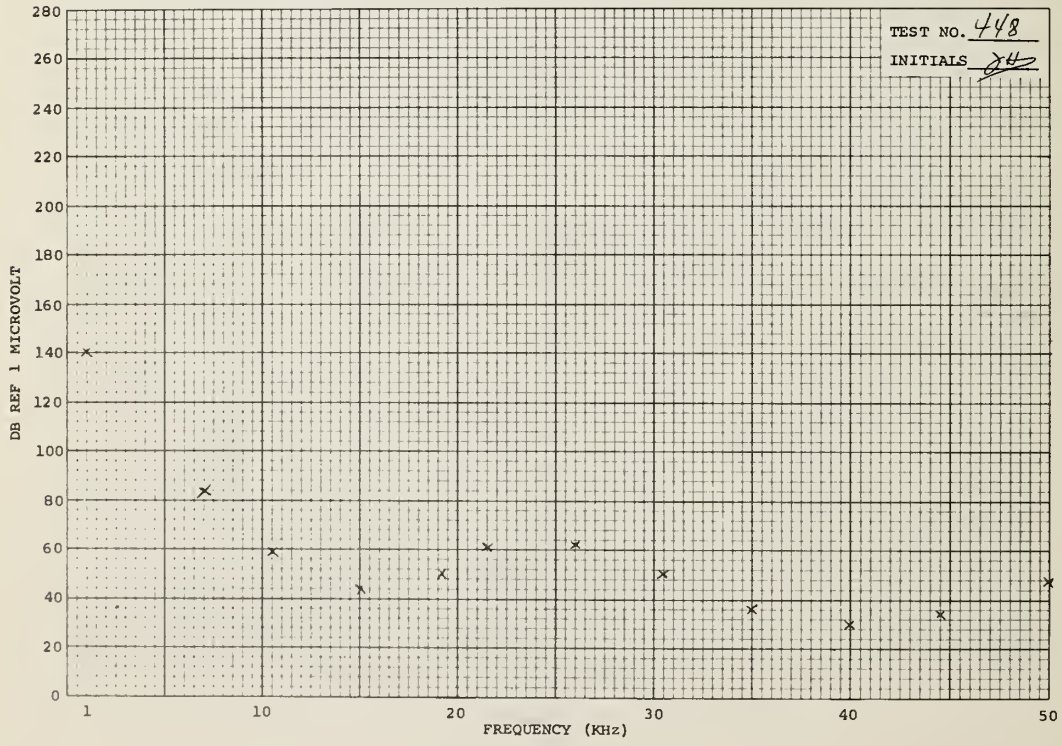


TEST NO. 454 TEST TYPE PLC BANDWIDTH 5 Hz 1510
TEST SPECIMEN φB DATE 8-2-72 EE
Fad

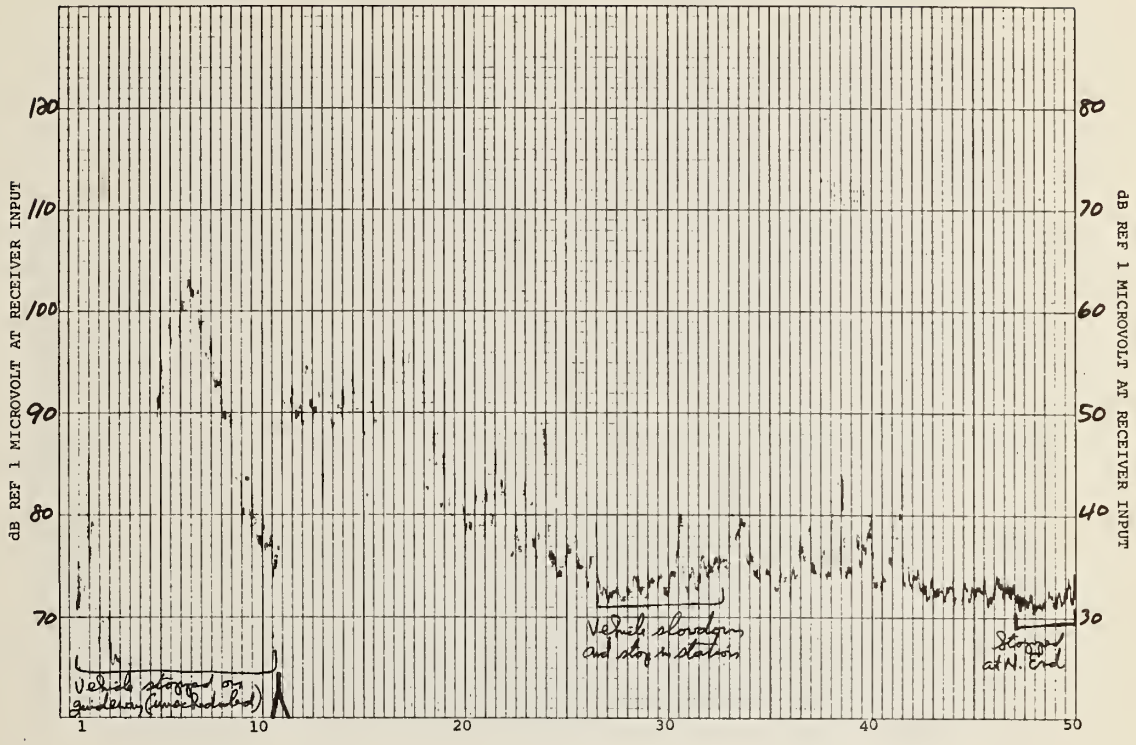


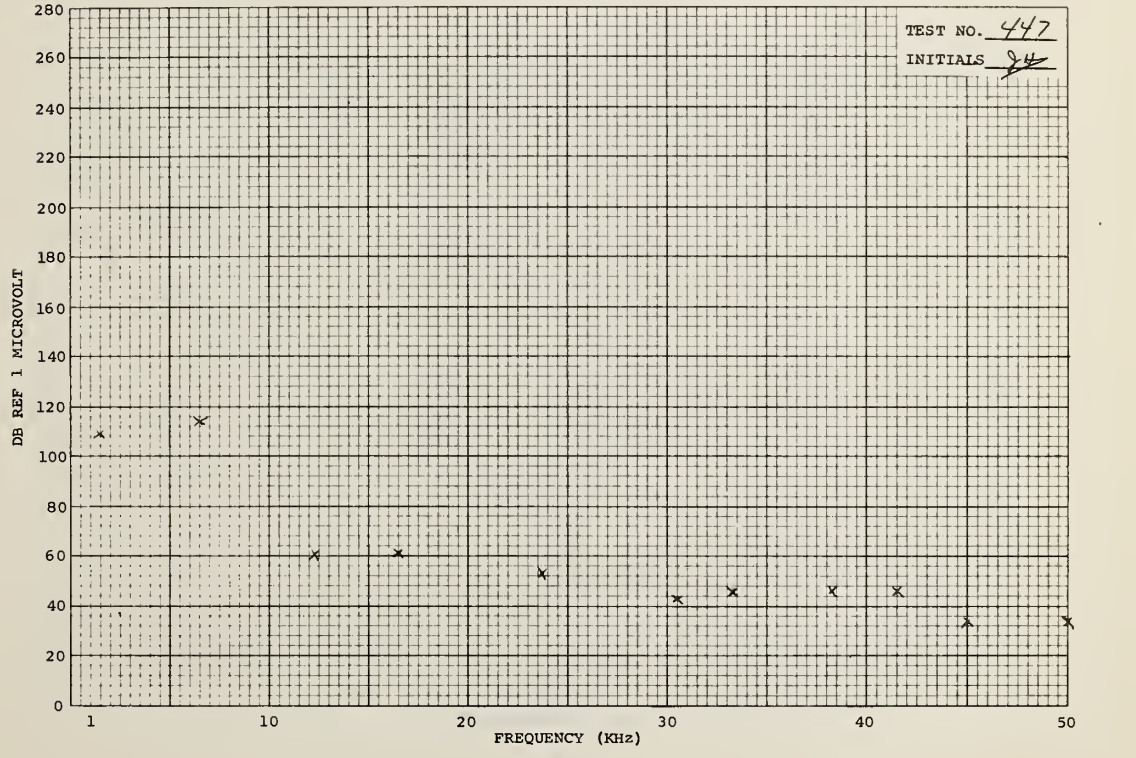


TEST NO. 448 TEST TYPE PLC BANDWIDTH 50 Hz 1444
TEST SPECIMEN ØB Ford TEST EQUIP. EMC-10 DATE 8-2-72 EEJ

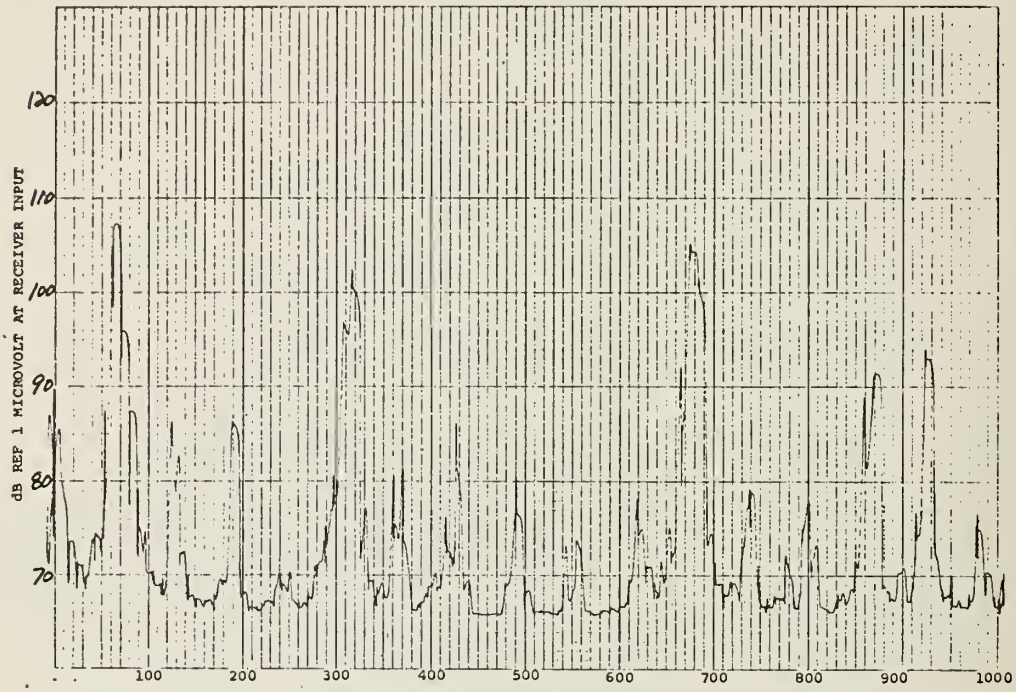


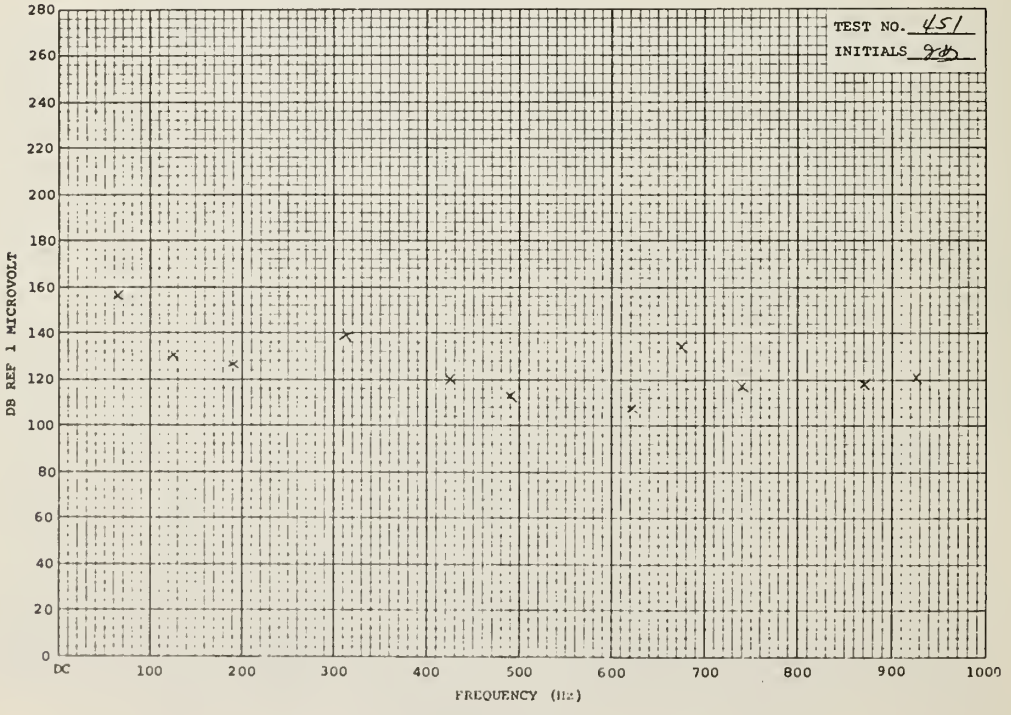
TEST NO. 447 TEST TYPE PLC BANDWIDTH 50 Hz 1435
TEST SPECIMEN ØB TEST EQUIP. EMC-10 DATE 8-2-72
Ford



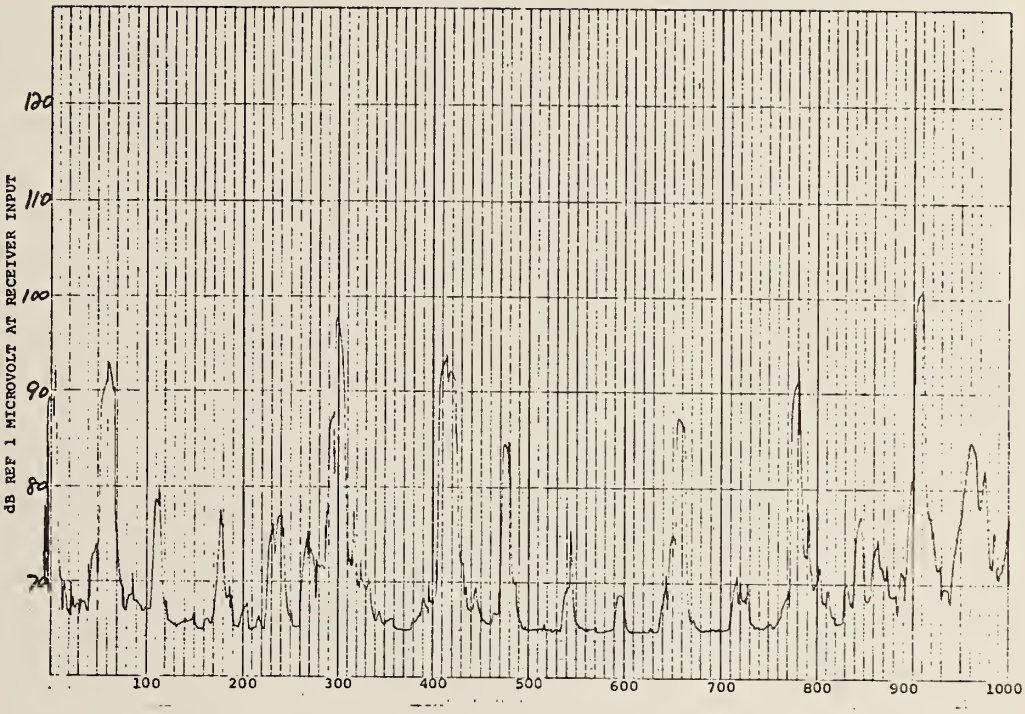


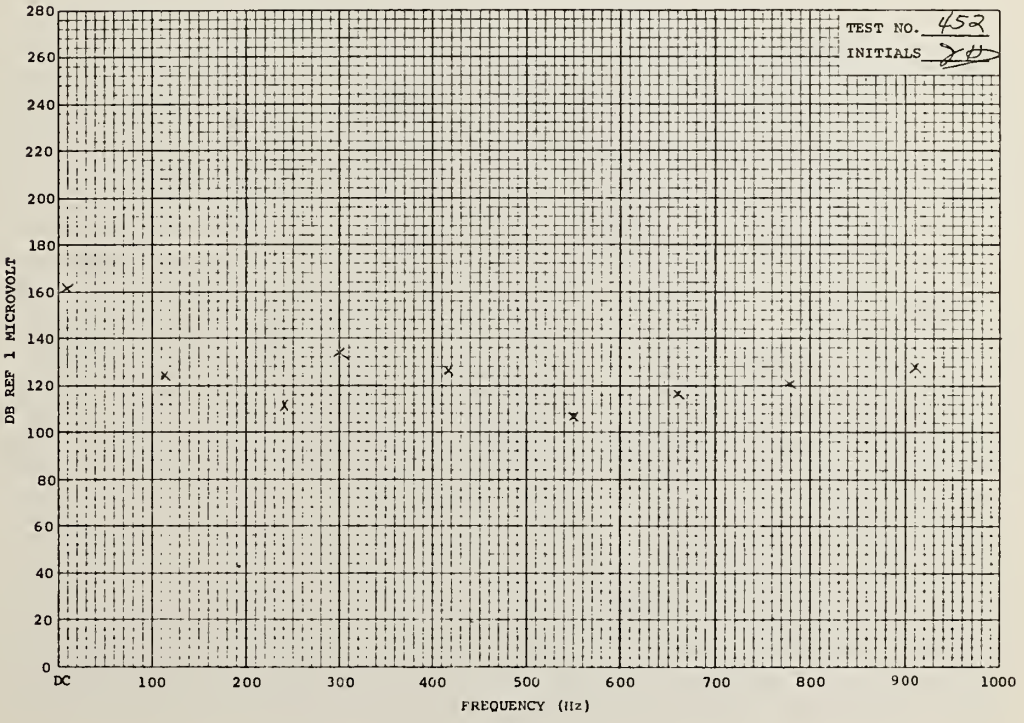
TEST NO. 451 TEST TYPE PLC BANDWIDTH 5 Hz 1459
TEST SPECIMEN ØC DATE 8-2-72 ESA
Ford



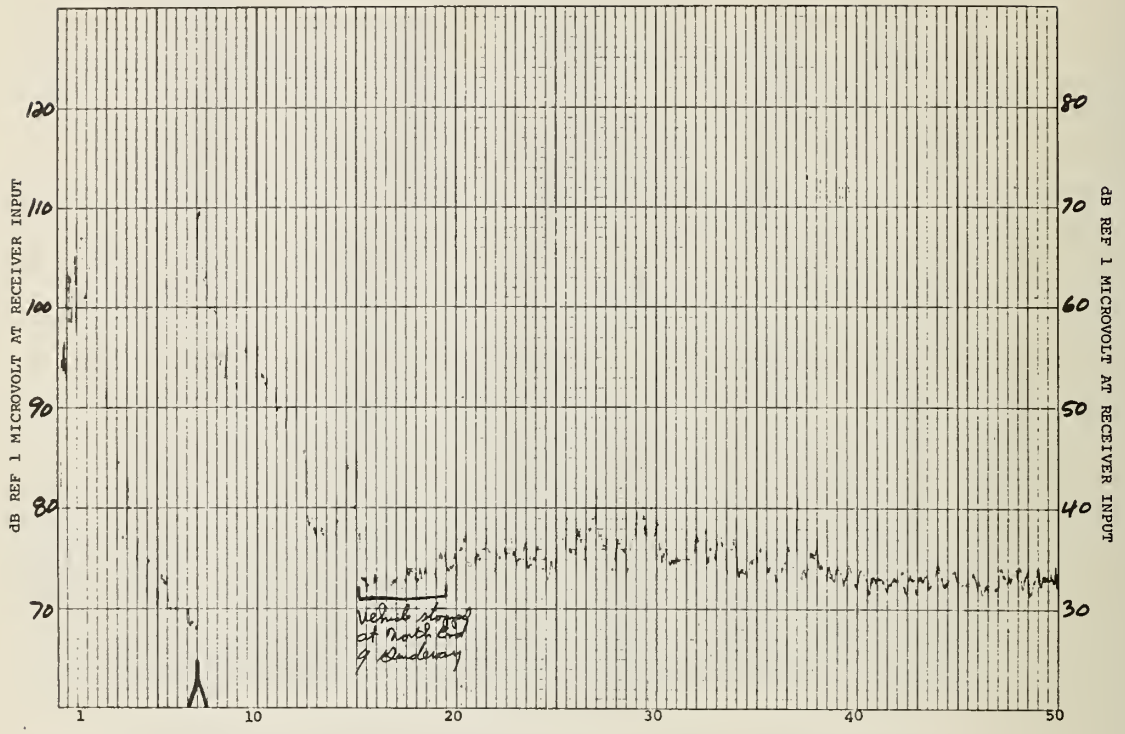


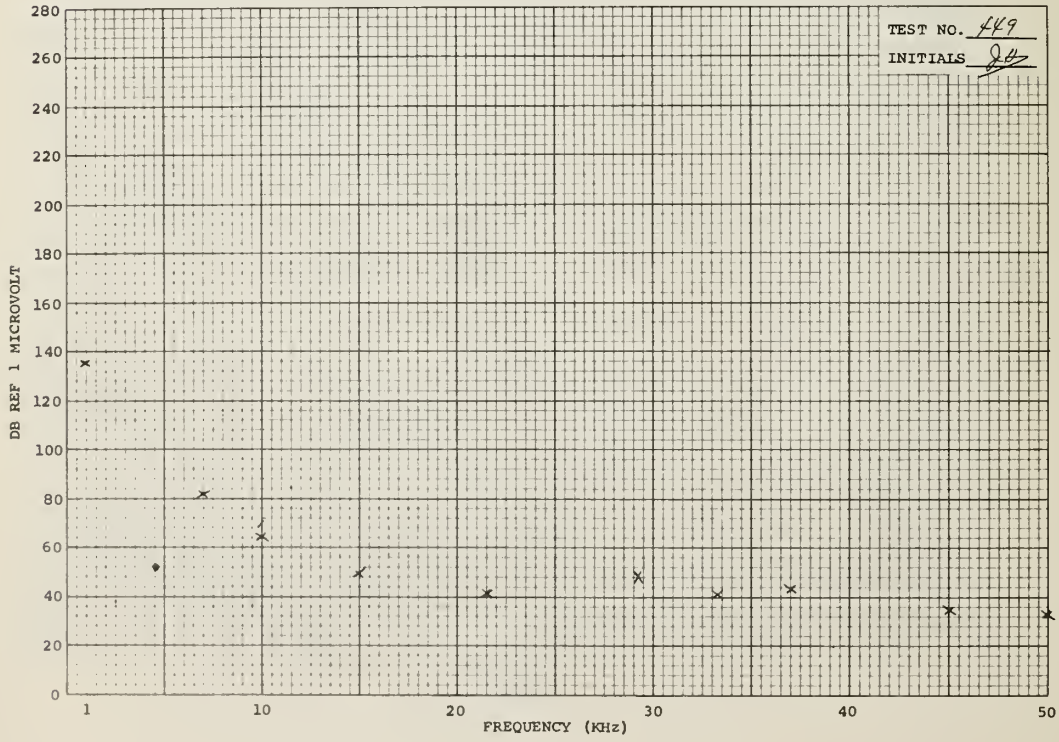
TEST NO. 452 TEST TYPE PLC BANDWIDTH 5 Hz 1502
TEST SPECIMEN ØC DATE 8-3-72
Ford



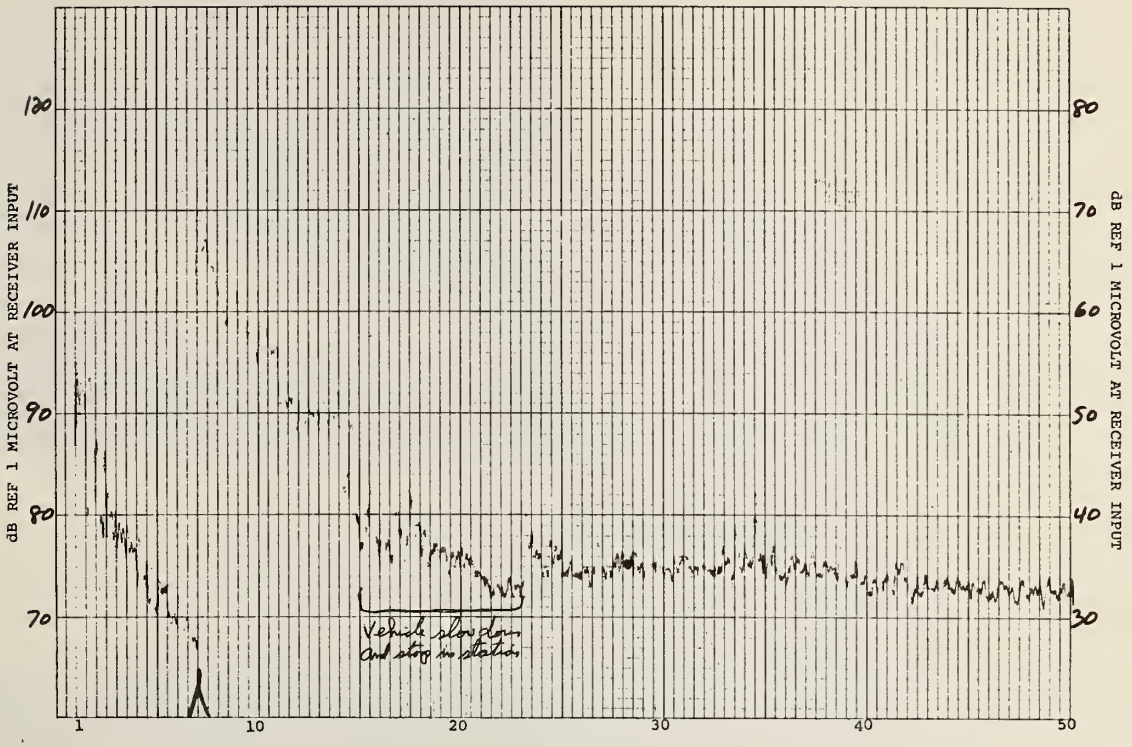


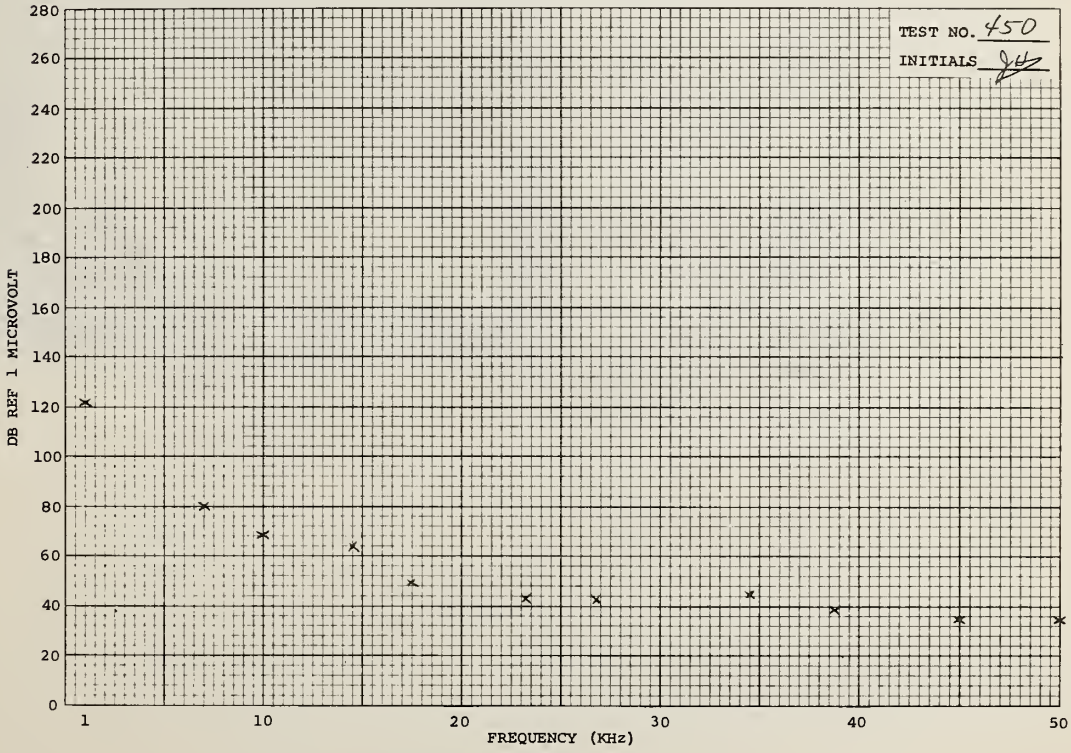
TEST NO. 449 TEST TYPE PLC BANDWIDTH 50 Hz 1449
TEST SPECIMEN QC DATE 8-2-72
Ford

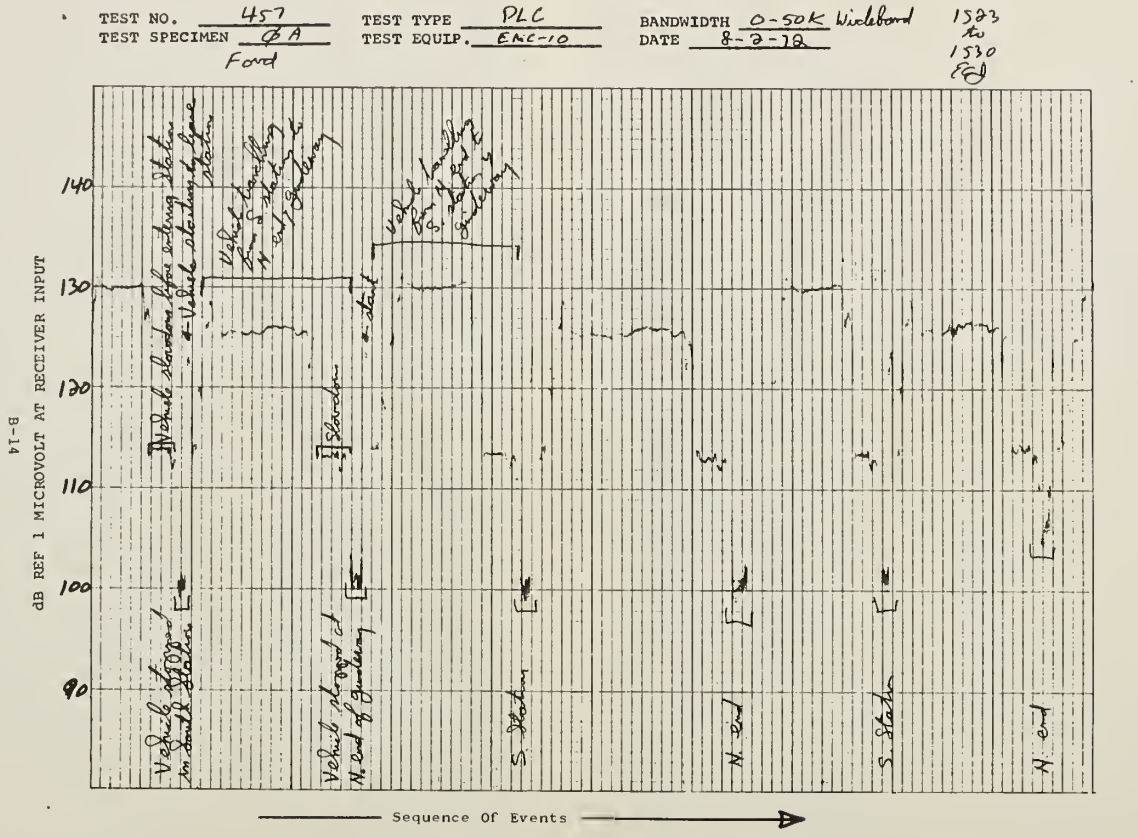


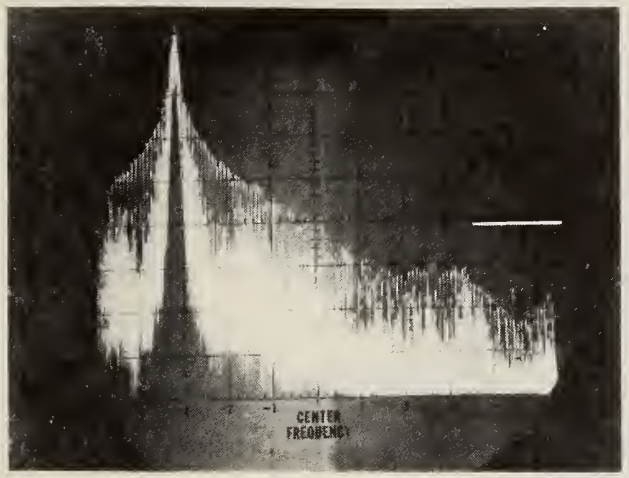


TEST NO. 450 TEST TYPE PLC BANDWIDTH 50 Hz 1453
TEST SPECIMEN ØC Ford TEST EQUIP. EMC-10 DATE 8-2-72 EEJ






TEST NO. 457
TEST SPECIMEN ØA
Ford
TEST TYPE PLC
TEST EQUIP. ENC-10
BANDWIDTH 0-50K Wideband
DATE 8-2-78
1523 to 1530
dB REF 1 MICROVOLT AT RECEIVER INPUT
140
130
120
110
100
90
Sequence Of Events
S. Station
N. end
S. Station
N. end



f_c
150 KHz

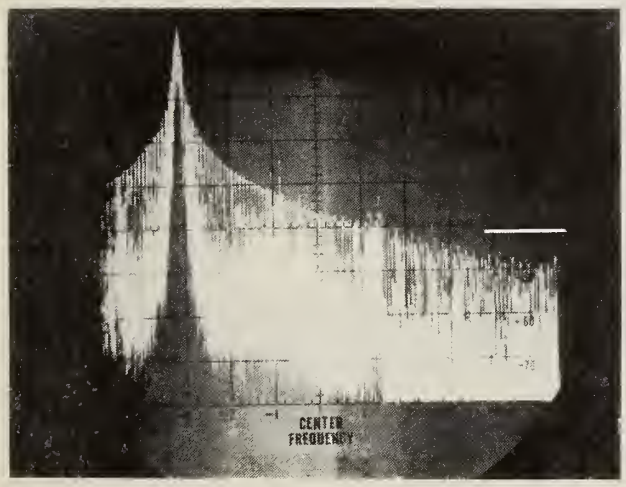
Test No. 459

Power Line: ØB

Freq. Scan: 50 KHz/Div.
Time Scan: 0.1 Sec/Div.

Amplitude: Center Gradicule line is 95 dBμV/MHz (10 dB/Div.)

Vehicle travelling from south to north on guideway.



f_c
150 KHz

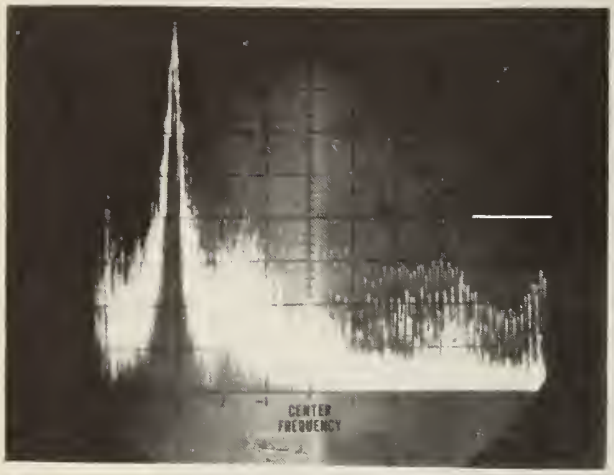
Test No. 461

Power Line: ØB

Freq. Scan: 50 KHz/Div.
Time Scan: 0.1 Sec/Div.

Amplitude: Center Gradicule Line is 95dBμV/MHz (10dB/Div.)

Vehicle travelling from north to south on guideway.



f_c
150 KHz

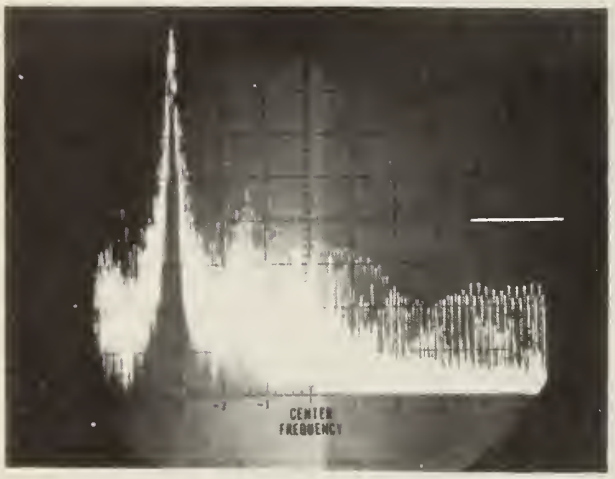
Test No. 462

Power Line: ØB

Freq. Scan: 50 KHz/Div.
Time Scan: 0.1 Sec/Div.

Amplitude: Center Gradicule Line is 95dBμV/MHz

Vehicle slow down before entering south station.



f_c
150 KHz

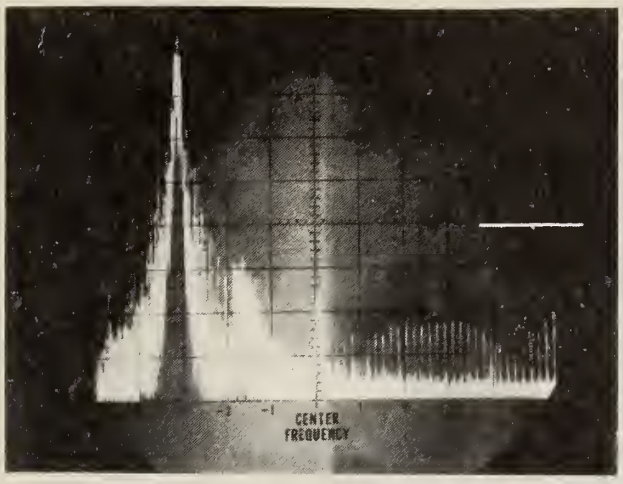
Test No. 460

Power Line: ØB

Freq. Scan: 50KHz/Div.
Time Scan: 0.1 Sec/Div.

Amplitude: Center Gradicule Line is 95dBμV/MHz (10dB/Div.)

Vehicle slow down before stopping at north end of guideway.



f_c
150 KHz

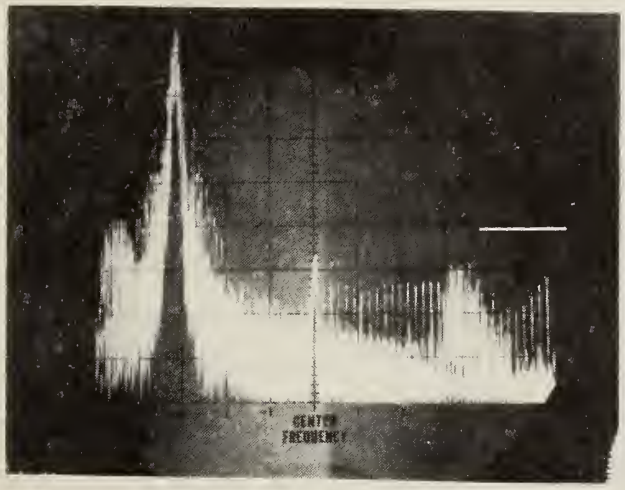
Test No. 463

Power Line: ØB

Freq. Scan: 50 KHz/Div.
Time Scan: 0.1 Sec/Div.

Amplitude: Center Gradiucle Line is 85dBμV/MHz (10dB/Div.)

Vehicle stopped in south station.



f_c
150 KHz

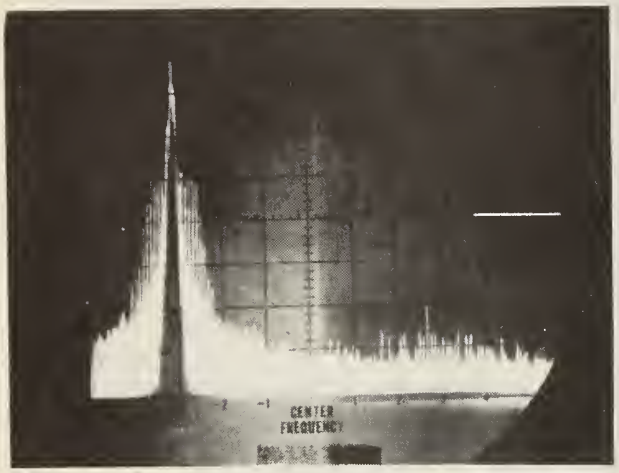
Test No. 458

Power Line: ØB

Freq. Scan: 50 KHz/Div.
Time Scan: 0.1 Sec/Div.

Amplitude: Center Gradicule Line is 85dBμV/MHz (10dB/Div.)

Vehicle stopped at north end of guideway.



f_c
150 KHz

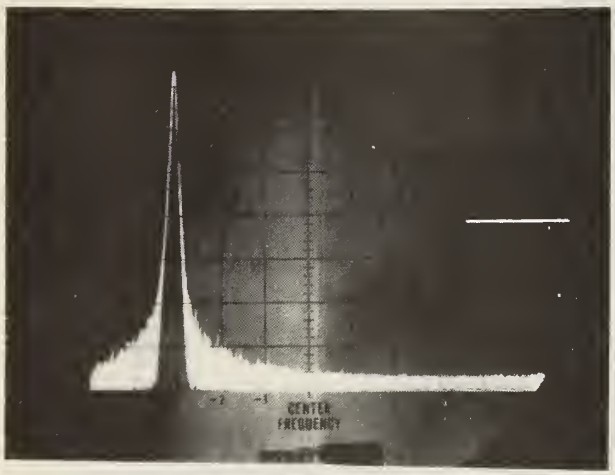
Test No. 464

Power Line: ØB

Freq. Scan: 50 KHz/Div.
Time Scan: 0.1 Sec/Div.

Amplitude: Center Gradicule Line is 85dBμV/MHz (10dB/Div.)

Noise when Ford PRT System is shut down.



f_c
150 KHz

Test No. 465

Freq. Scan: 50 KHz/Div.

Amplitude: Center Gradicule Line is 85dBμV/MHz (10dB/Div.)

Instrumentation Ambient

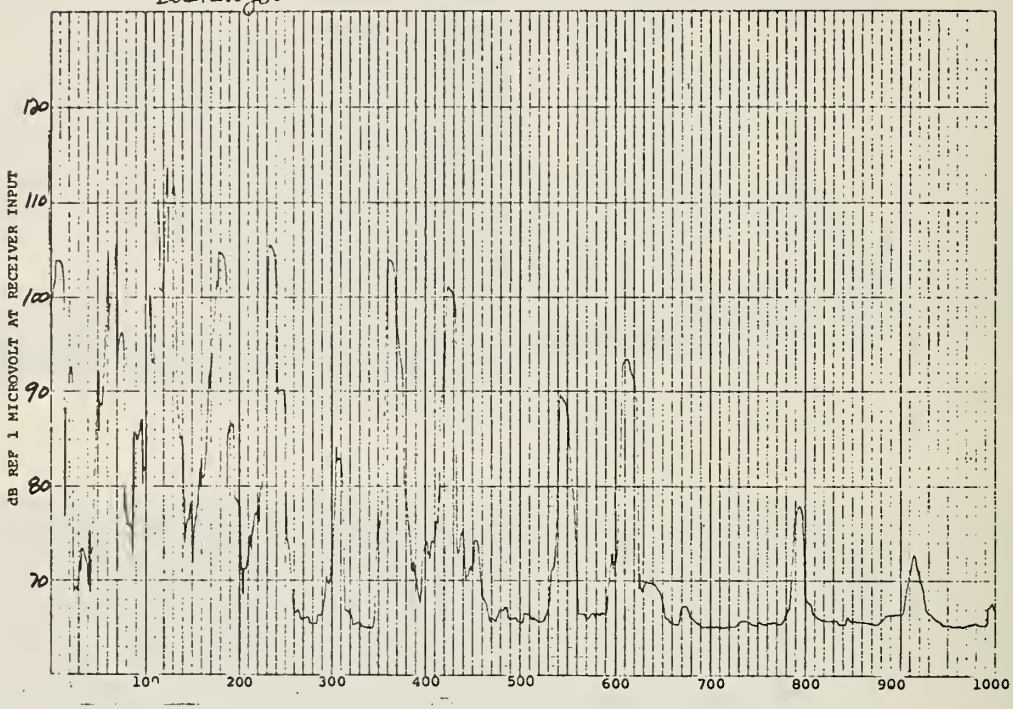
APPENDIX C

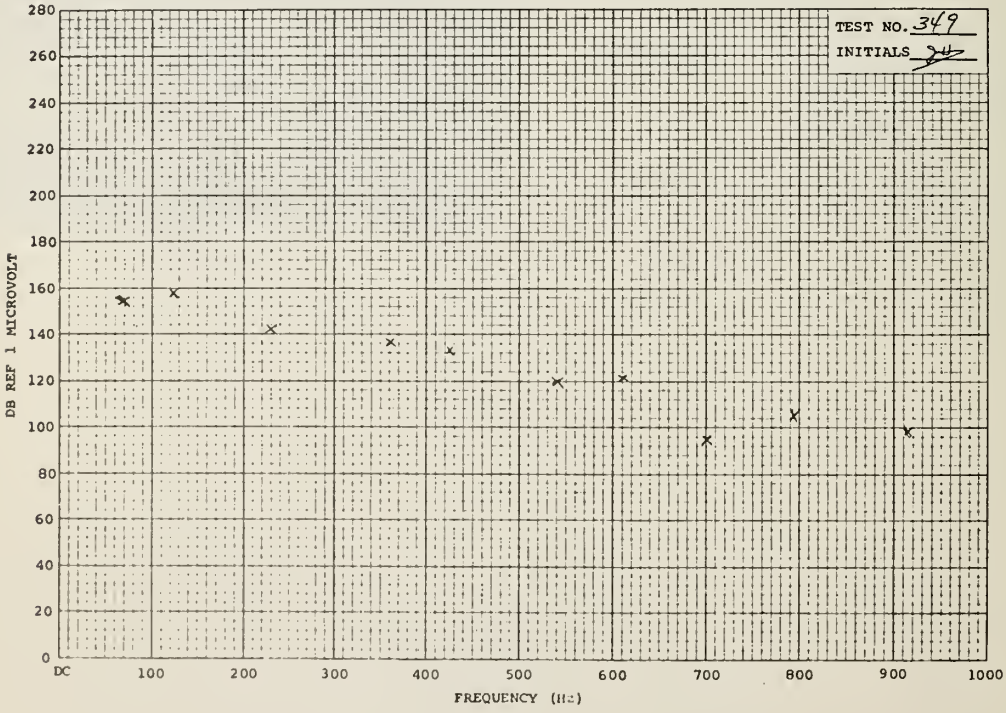
POWER LINE CONDUCTION MEASUREMENTS DATA

This appendix contains data charts for test No. 335 through 350. The charts are presented in order of phase -- A, B, C and neutral for ease of analysis, rather than in the numerical order as the tests were performed.

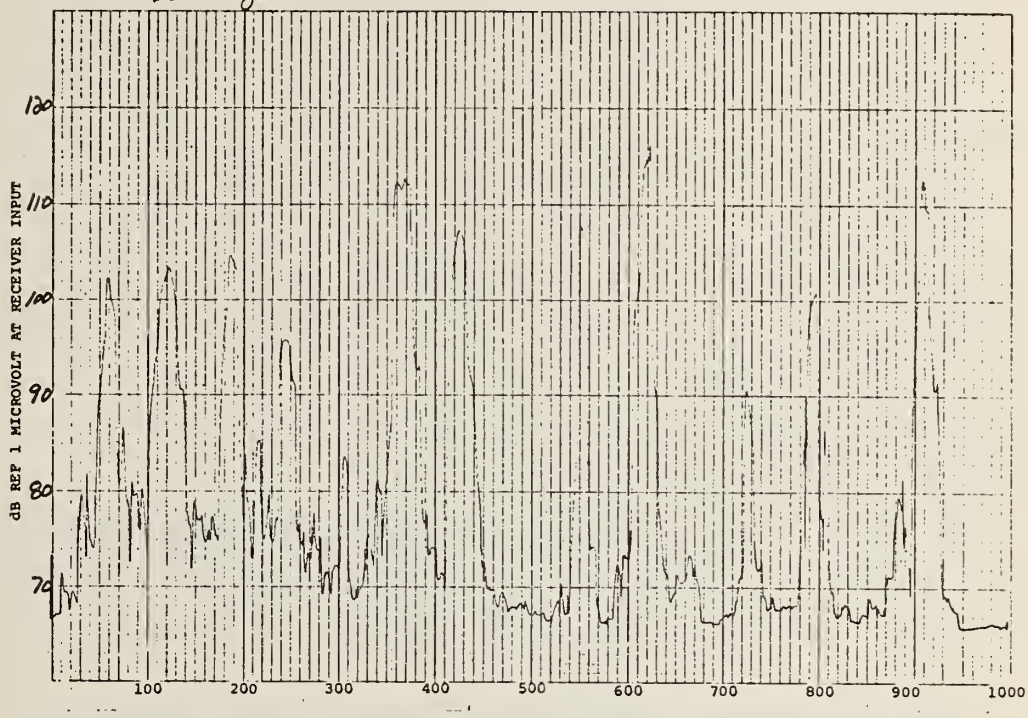
TEST NO. 349 TEST TYPE PLC BANDWIDTH 5 HZ
TEST SPECIMEN QA TEST EQUIP. EMC-10 DATE 7-21-72
Dastaveyor

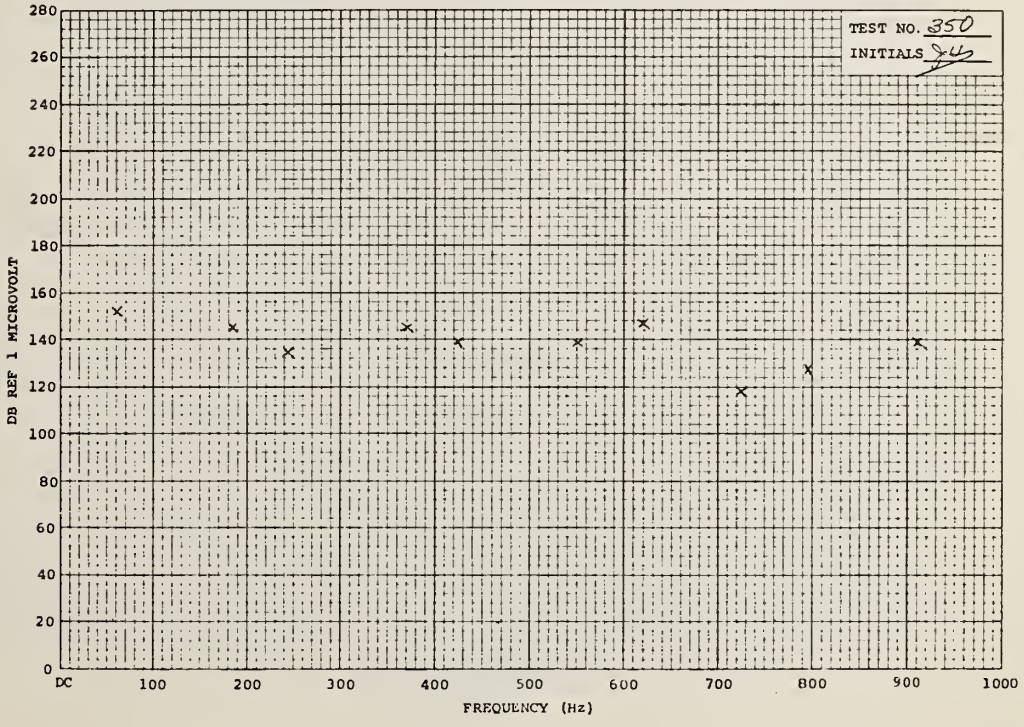
1678
SEJ





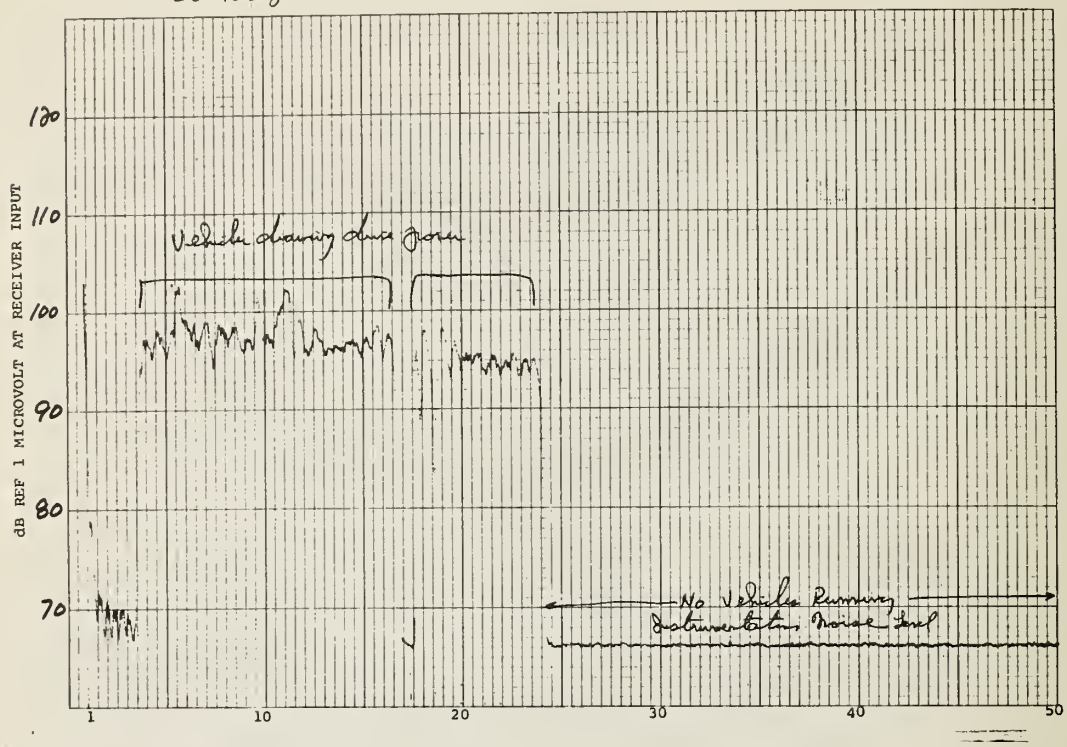
TEST NO. 350 TEST TYPE PLC BANDWIDTH 5 Hz 1635
TEST SPECIMEN ØA TEST EQUIP. EMC-10 DATE 7-31-79
Dataray

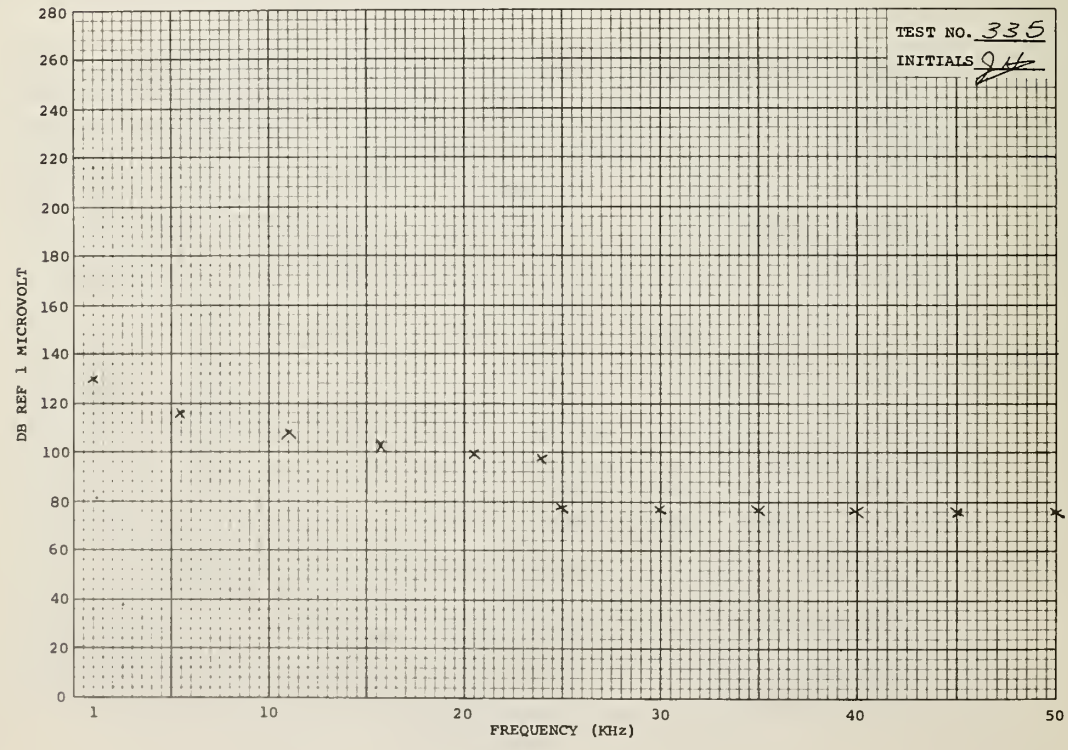




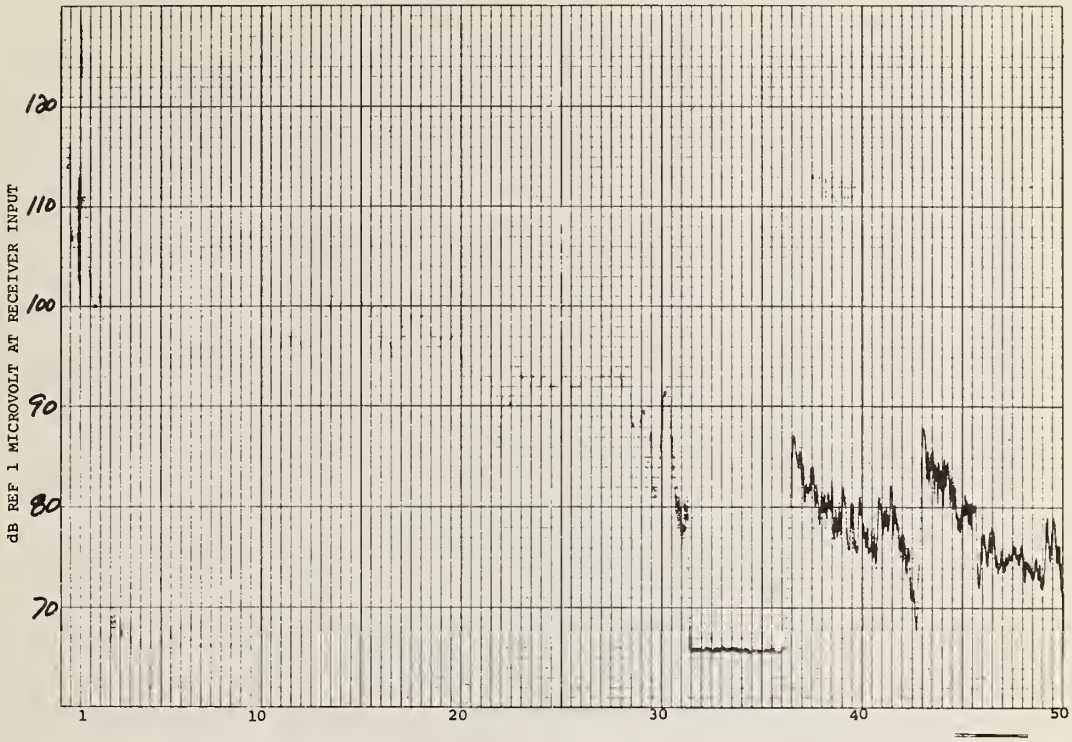
TEST NO. 335
TEST SPECIMEN QA Dashcarveyor
TEST TYPE PLC
TEST EQUIP. EMC-10
BANDWIDTH 50 Hz
DATE 7-31-72

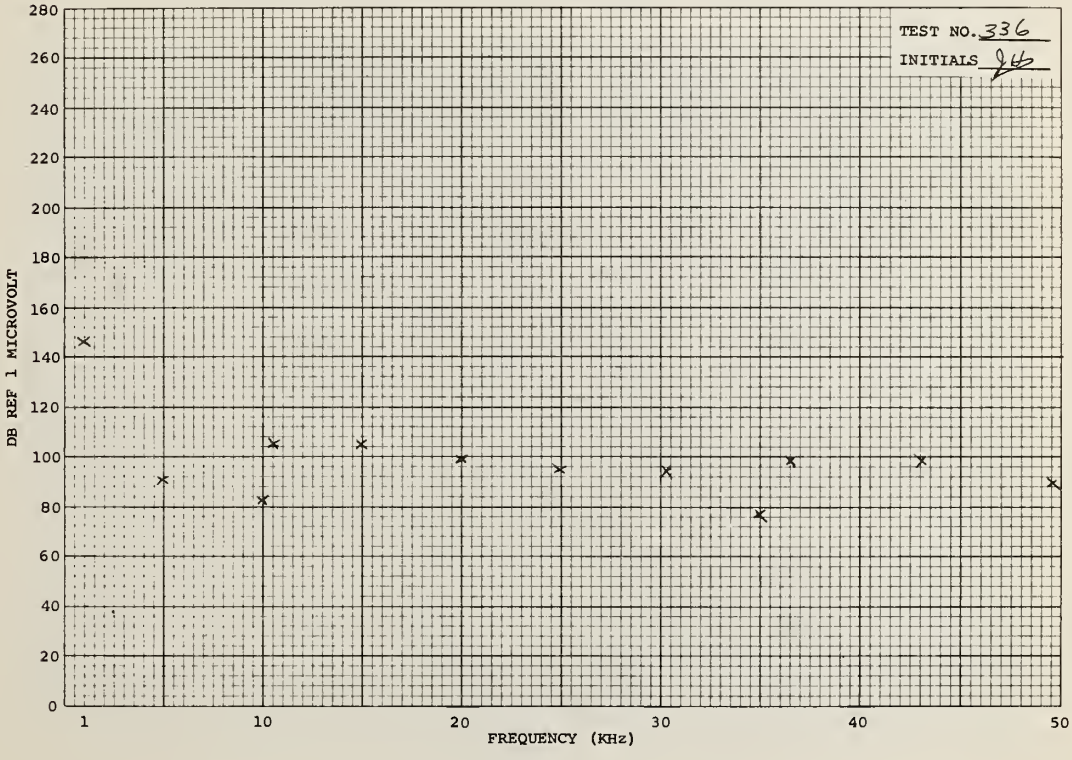
1537
JRC





TEST NO. 336 TEST TYPE PLC BANDWIDTH 50 Hz 1542
TEST SPECIMEN ΦA TEST EQUIP. EMC-10 DATE 7-31-72 EEJ
Daatavegor

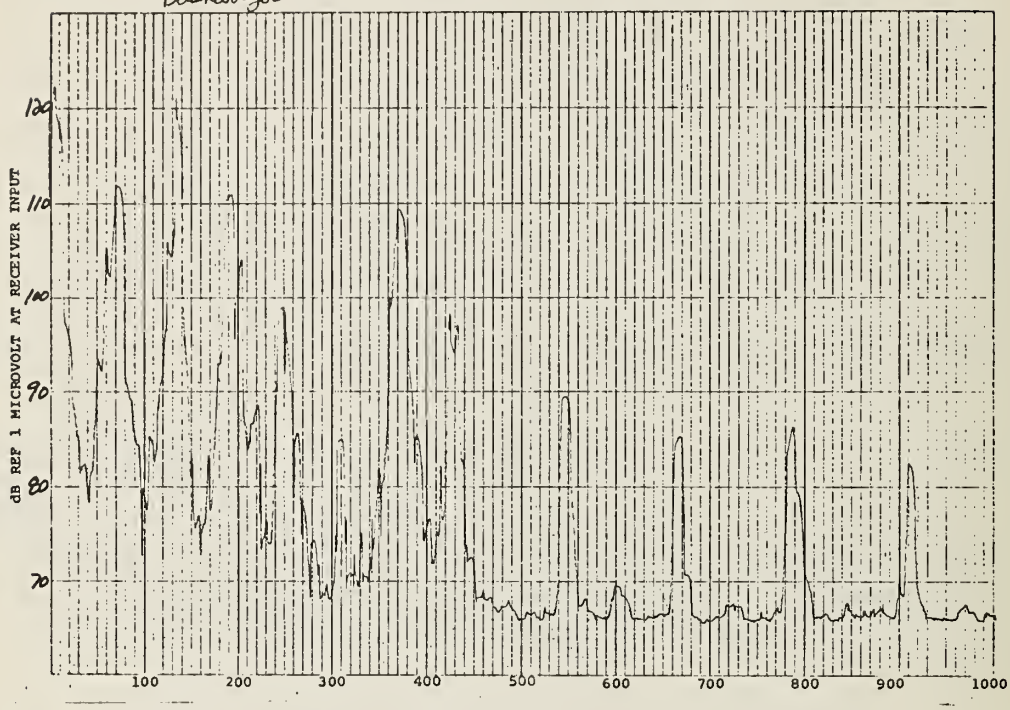


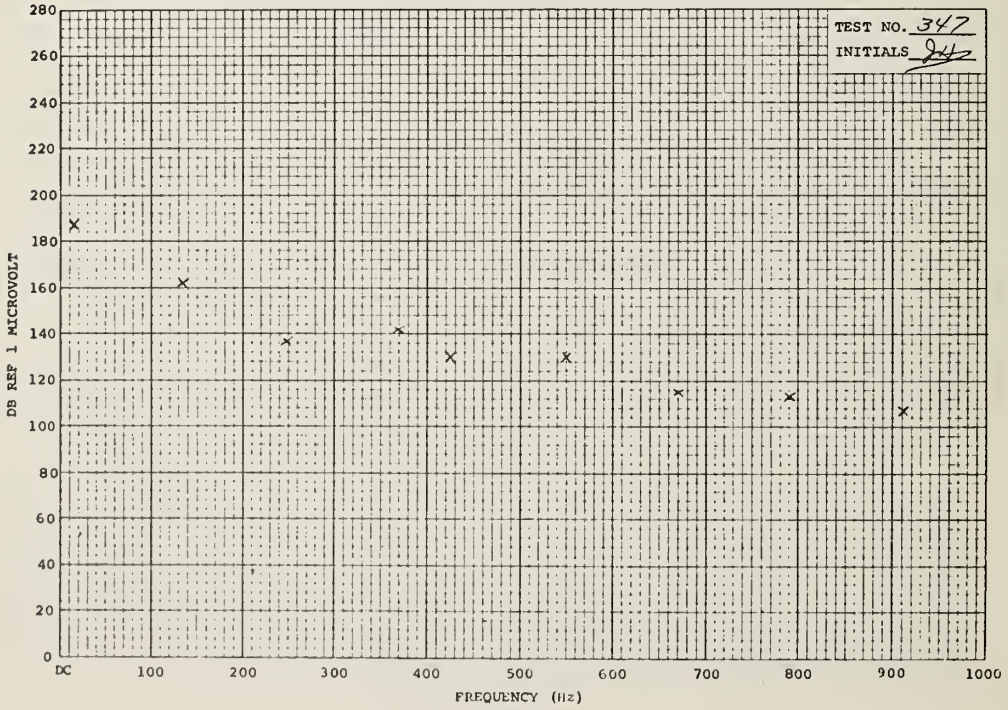


TEST NO. 347 TEST TYPE PLC BANDWIDTH 5 Hz
TEST SPECIMEN QB TEST EQUIP. ENC-10 DATE 7-21-72

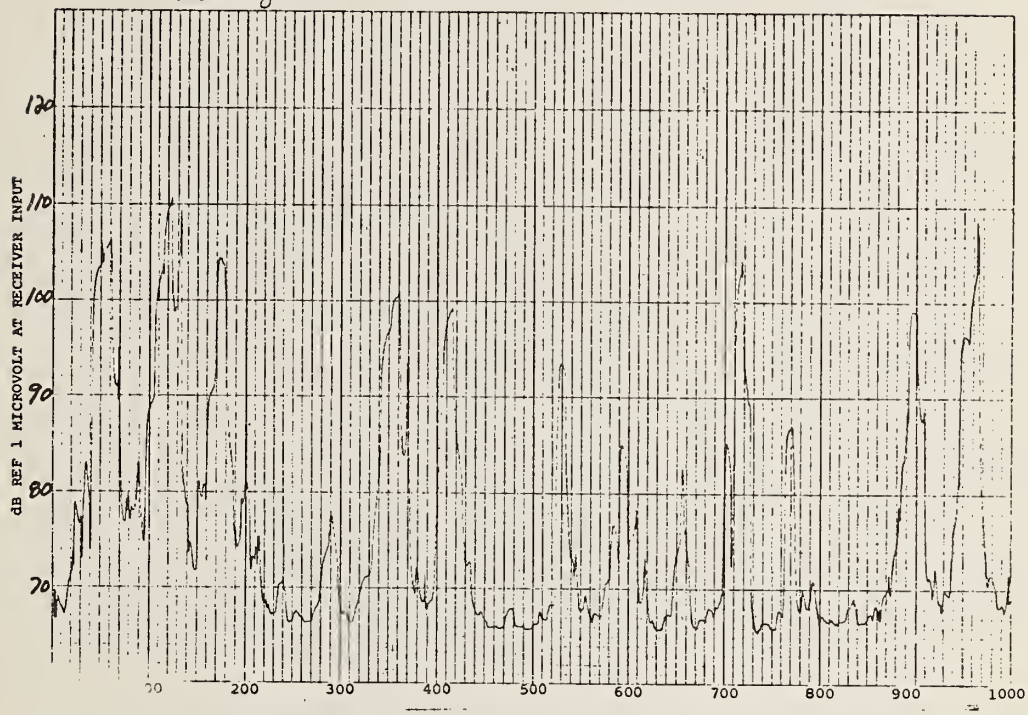
1628

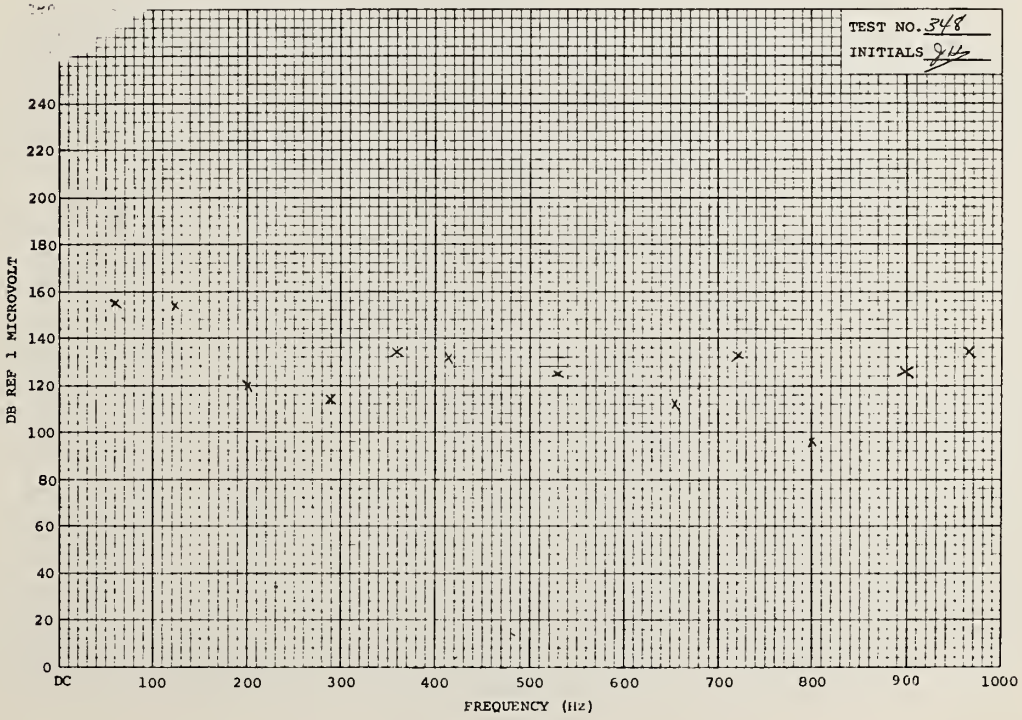
Daahaveya



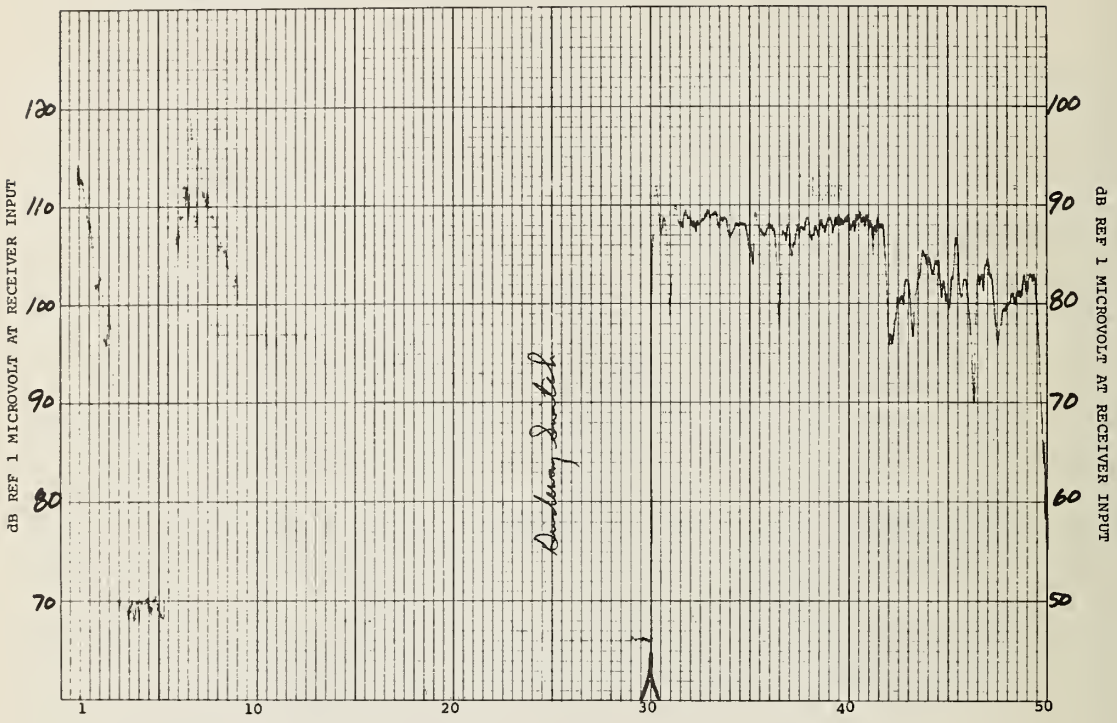


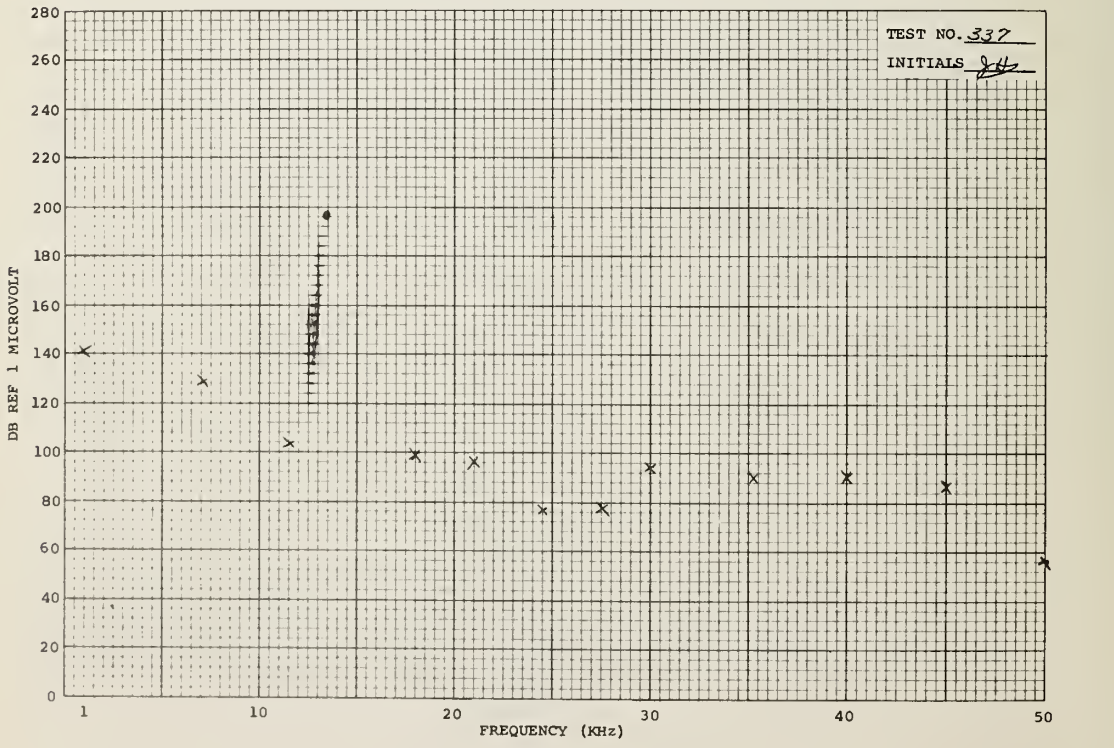
TEST NO. 348 TEST TYPE PLC BANDWIDTH 5 Hz 1630
TEST SPECIMEN ØB DATE 7-31-72
Daboraya



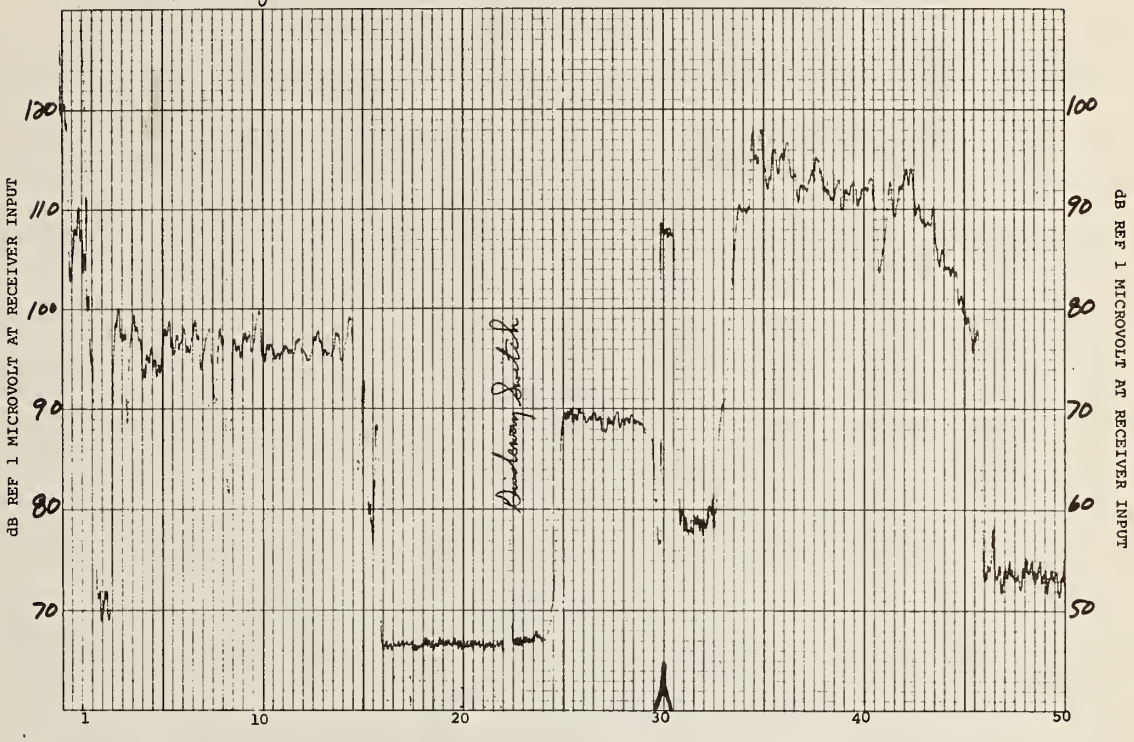


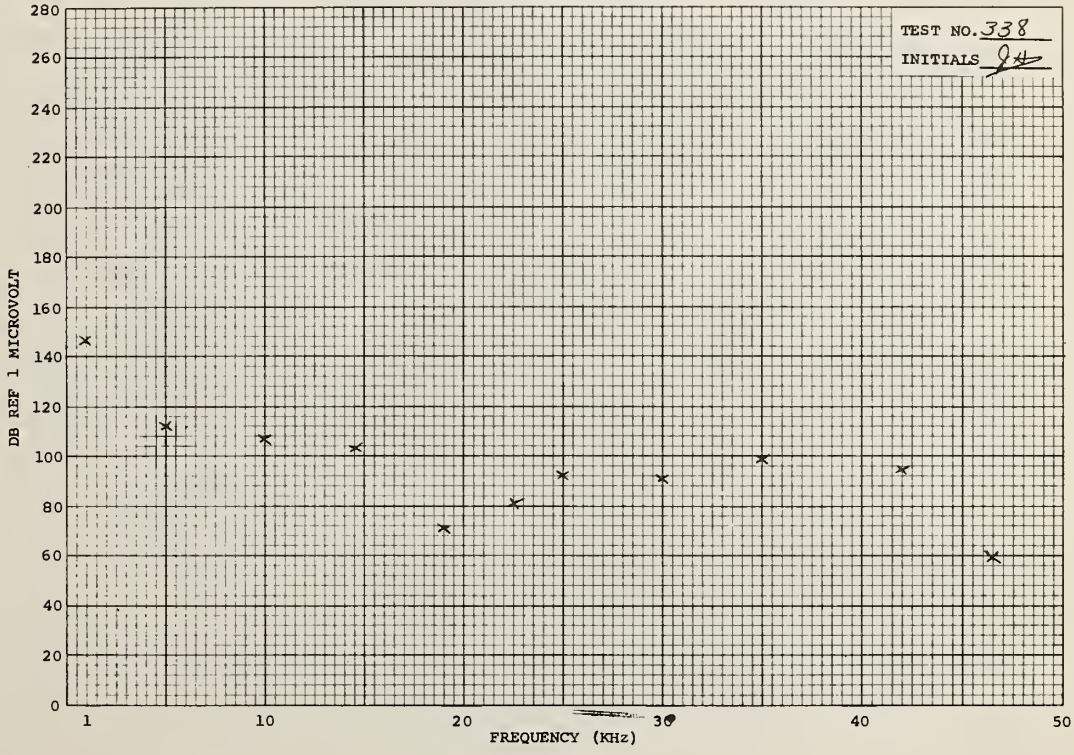
TEST NO. 337 TEST TYPE PLC BANDWIDTH 50 Hz 1546
TEST SPECIMEN ϕ B TEST EQUIP. EMC-10 DATE 7-31-78
Dashaveyor



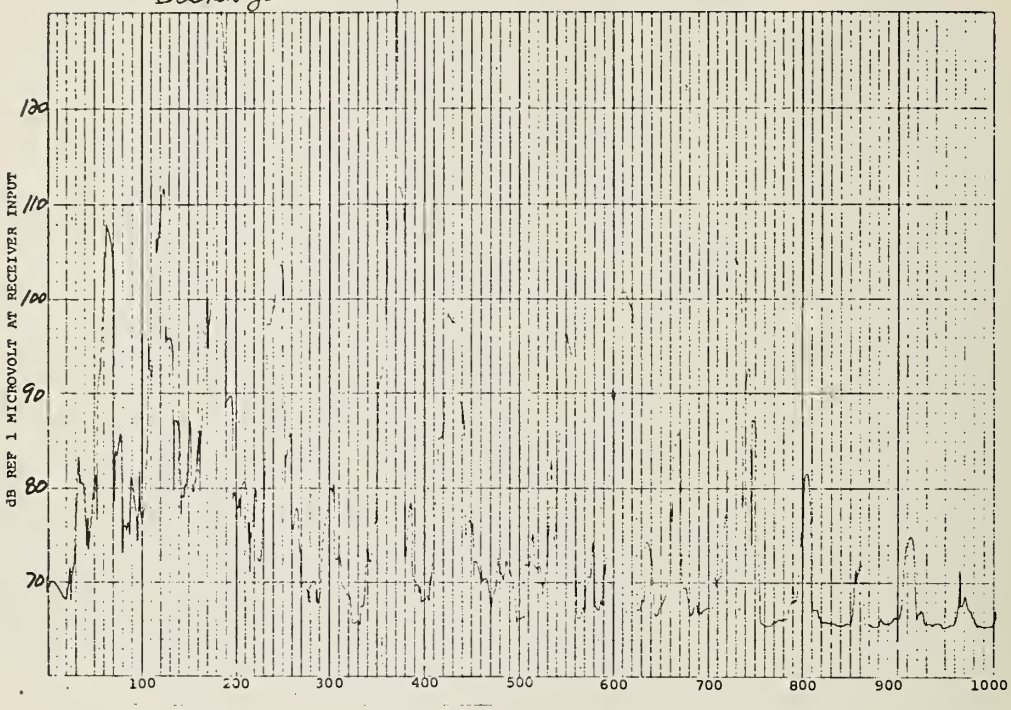


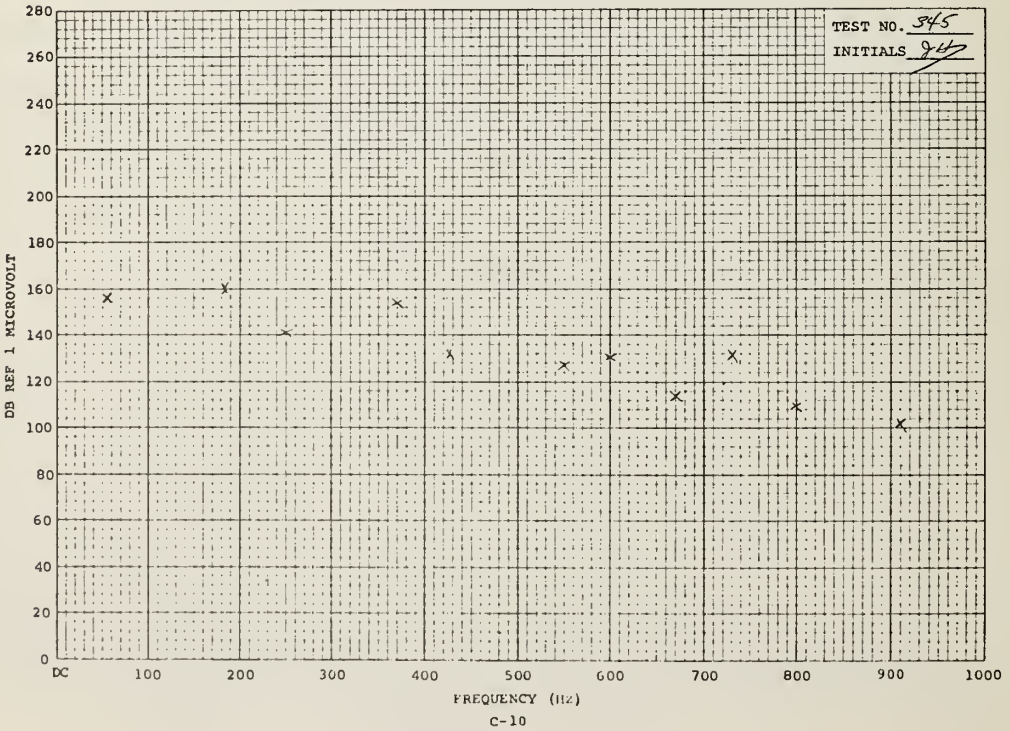
TEST NO. 338 TEST TYPE PLC BANDWIDTH 50 Hz 1550
TEST SPECIMEN ØB TEST EQUIP. EMC-10 DATE 7-31-72
Dashavego





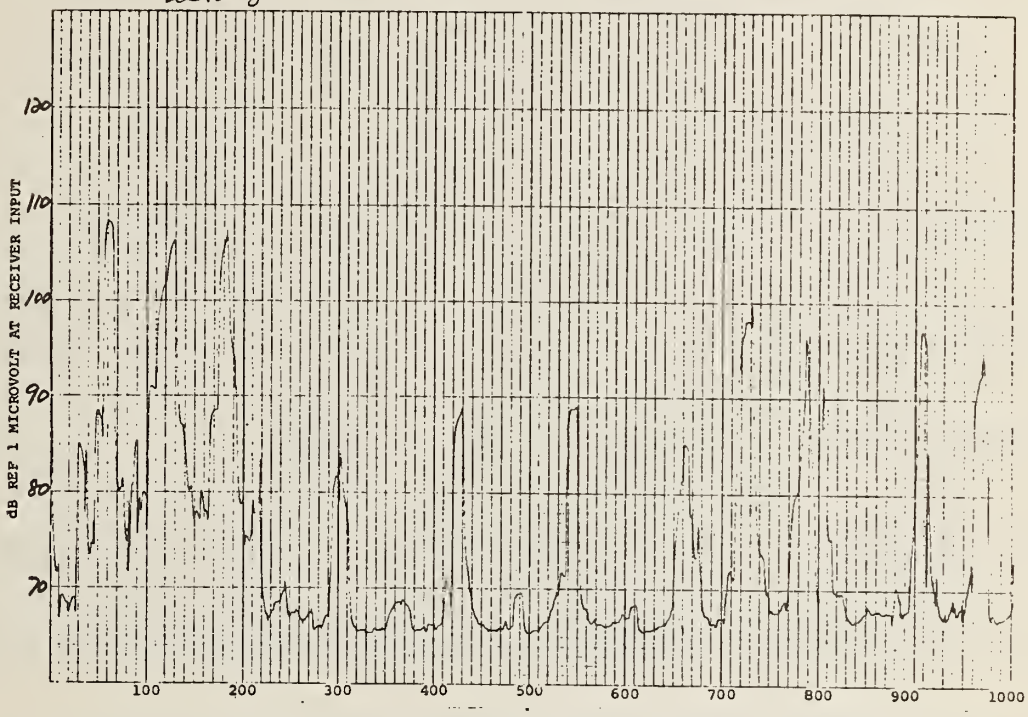
TEST NO. 345 TEST TYPE PLC BANDWIDTH 5 Hz 1623
TEST SPECIMEN GC TEST EQUIP. EMC-10 DATE 7-31-72
Dashavega

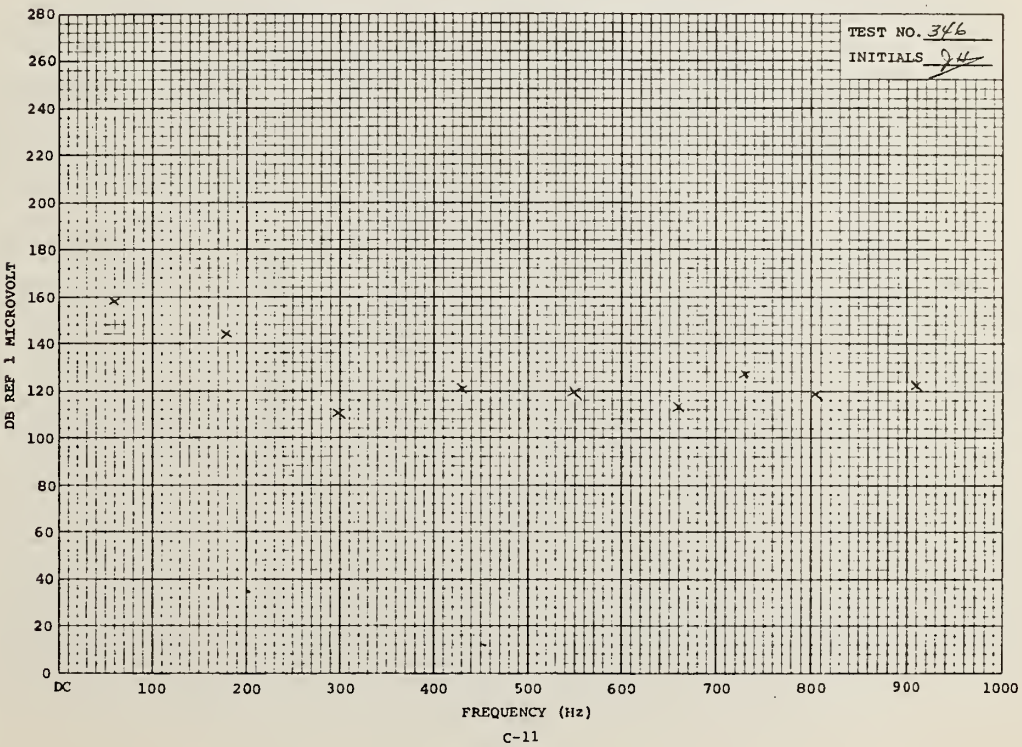




C-10

TEST NO. 346 TEST TYPE PLC BANDWIDTH 5 Hz 1625 Ed
TEST SPECIMEN ØC TEST EQUIP. ENC-10 DATE 7-31-72
Dashavejon



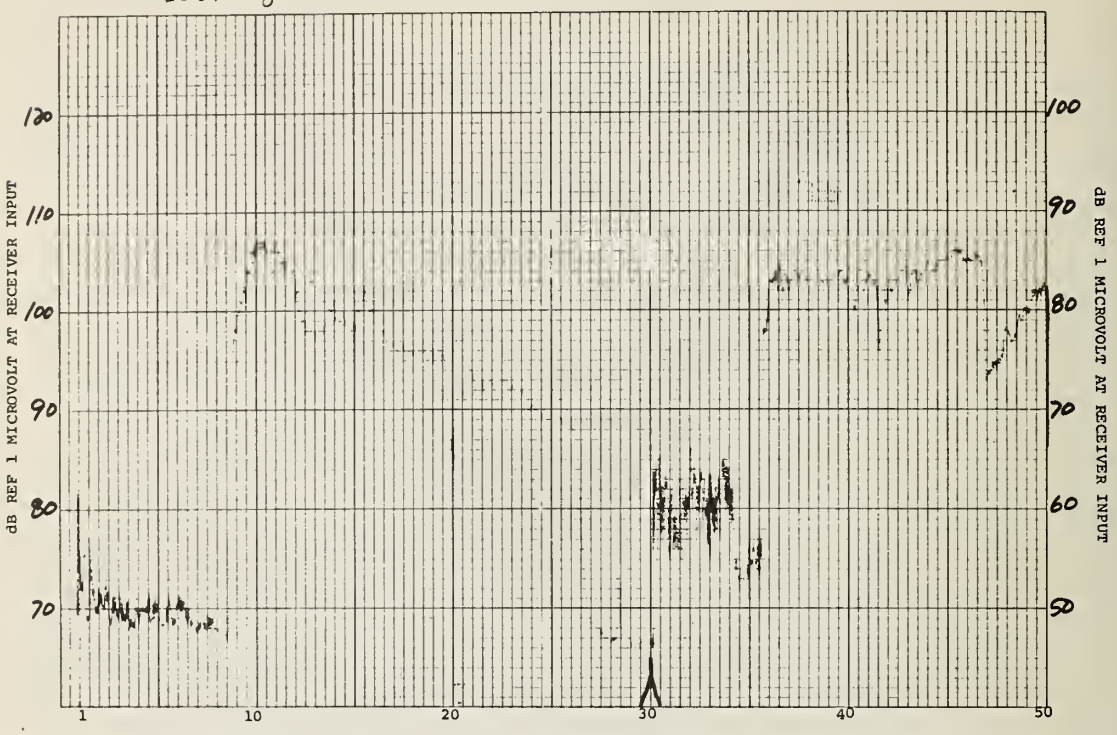


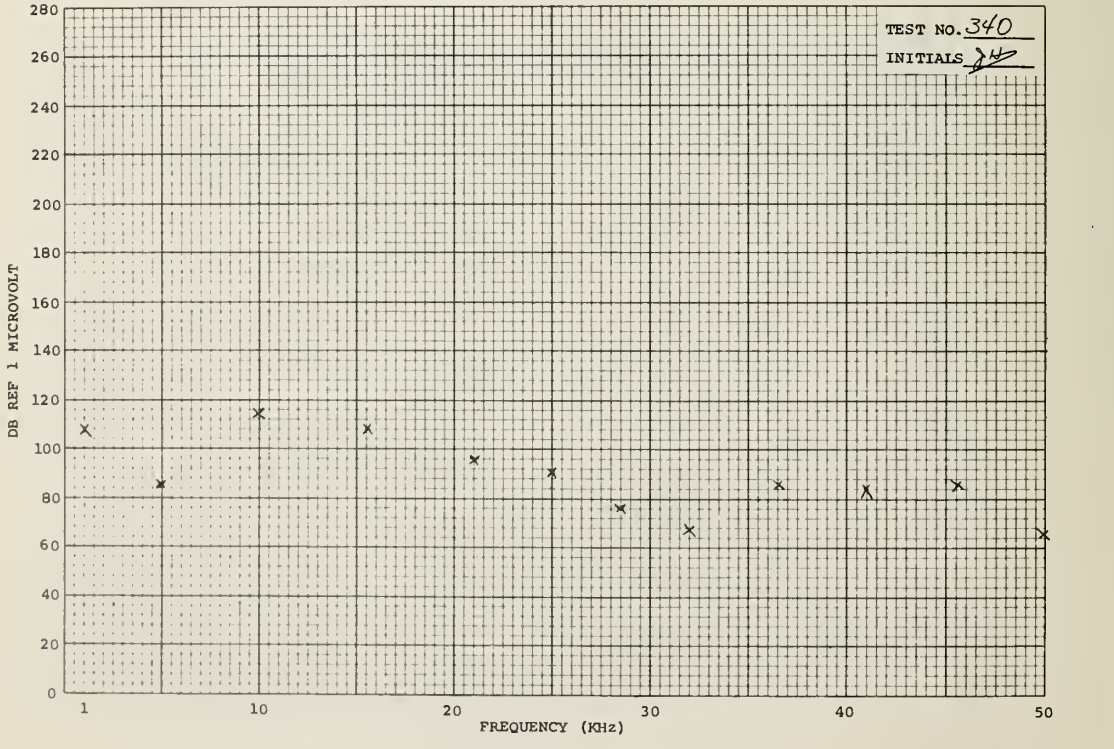
TEST NO. 339
TEST SPECIMEN ØC
Dashavega

TEST TYPE PLC
TEST EQUIP. EMC-10

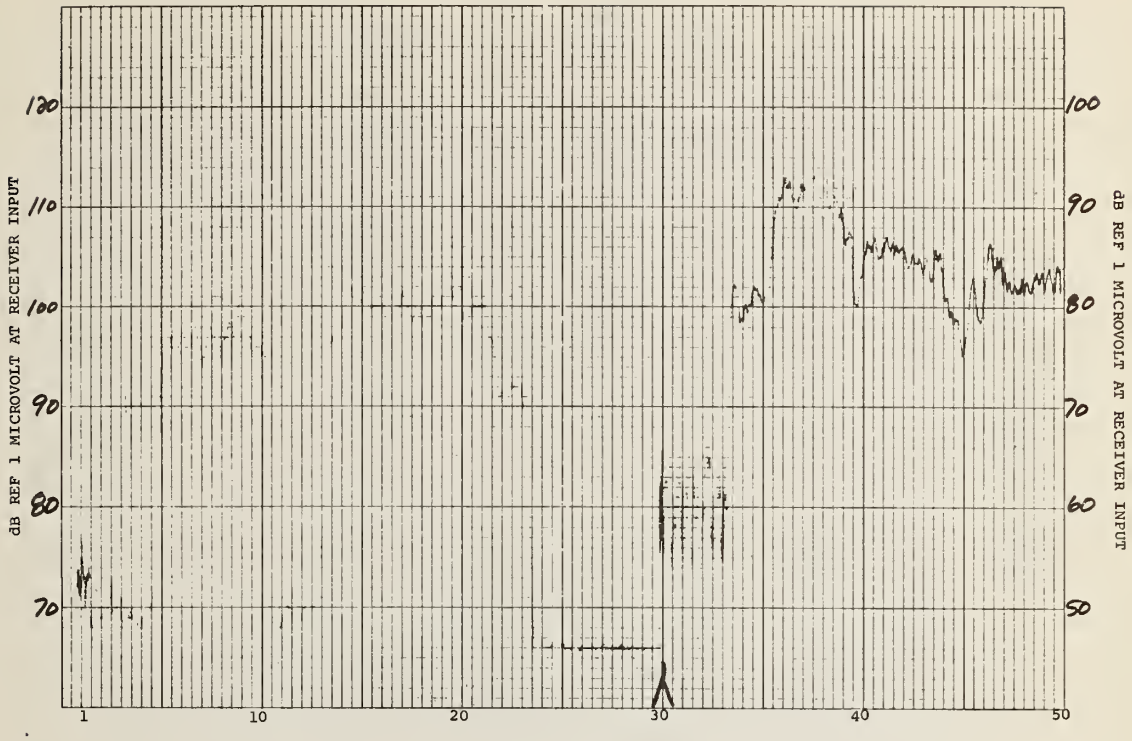
BANDWIDTH 50 Hz
DATE 7-31-72

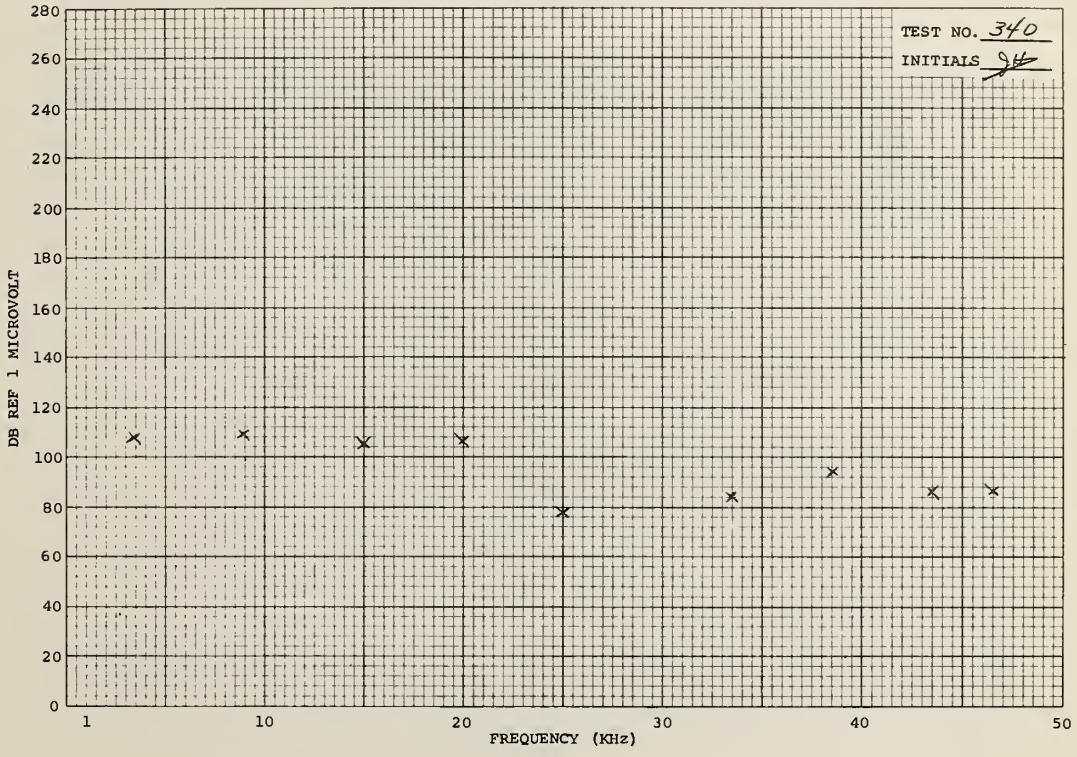
1554



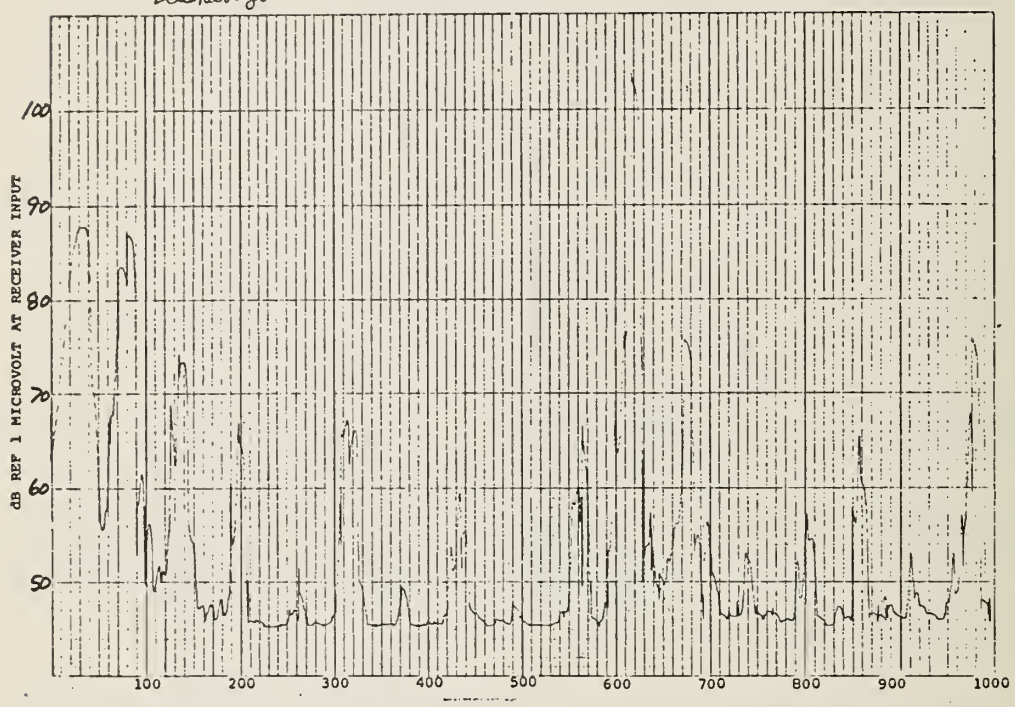


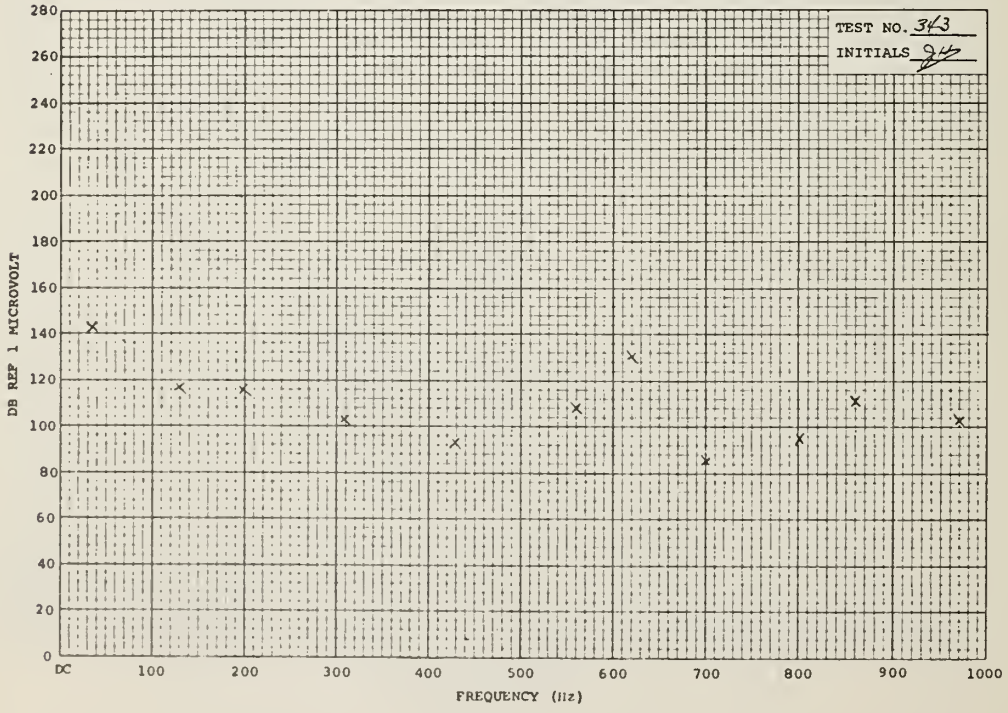
TEST NO. 340 TEST TYPE PLC BANDWIDTH 50 Hz 1557
TEST SPECIMEN ØC TEST EQUIP. EMC-10 DATE 7-31-72
Dashaveyor



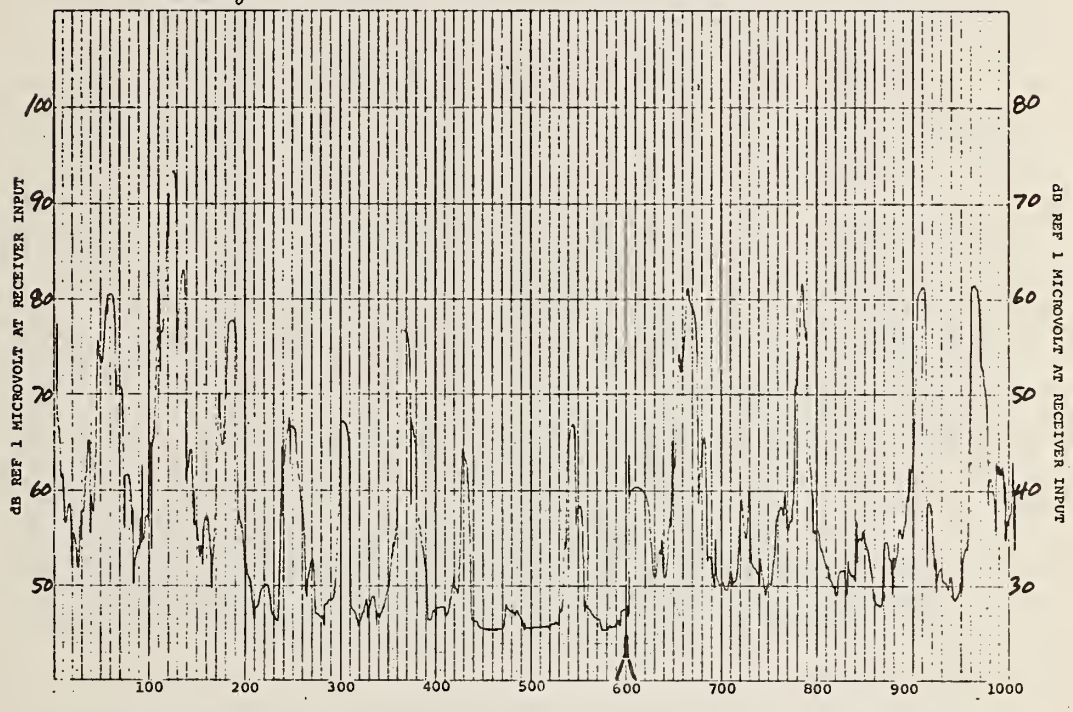


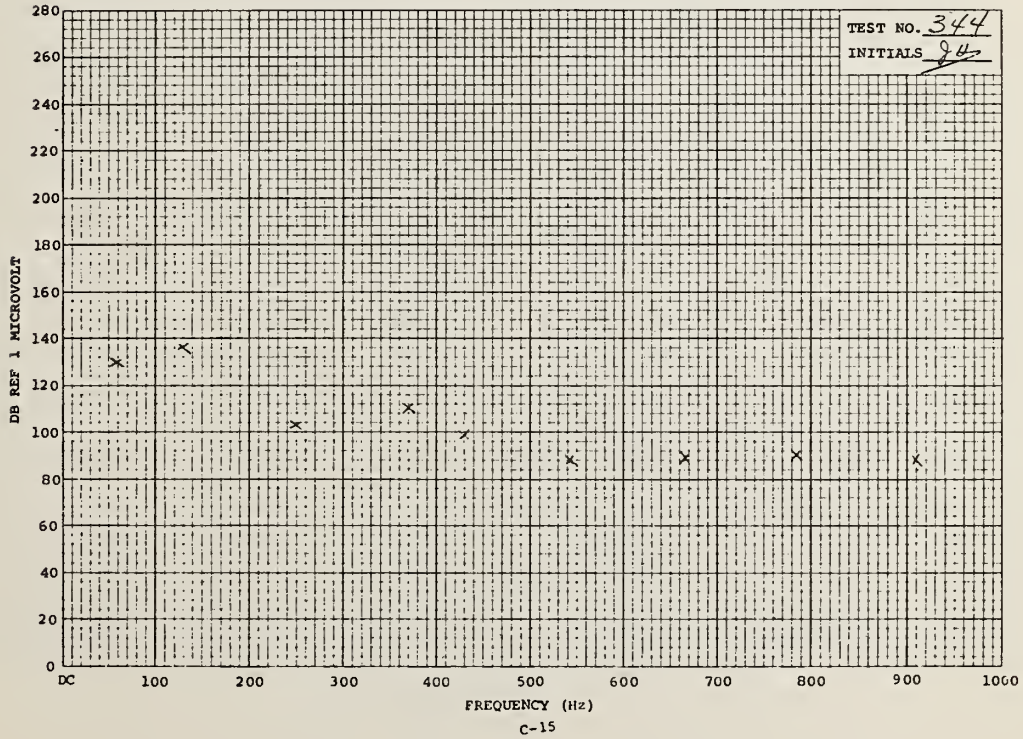
TEST NO. 343 TEST TYPE PLC BANDWIDTH 5HZ 1611
TEST SPECIMEN Printed DATE 7-31-72 EB
Dashaveyor
TEST EQUIP. EMC-10





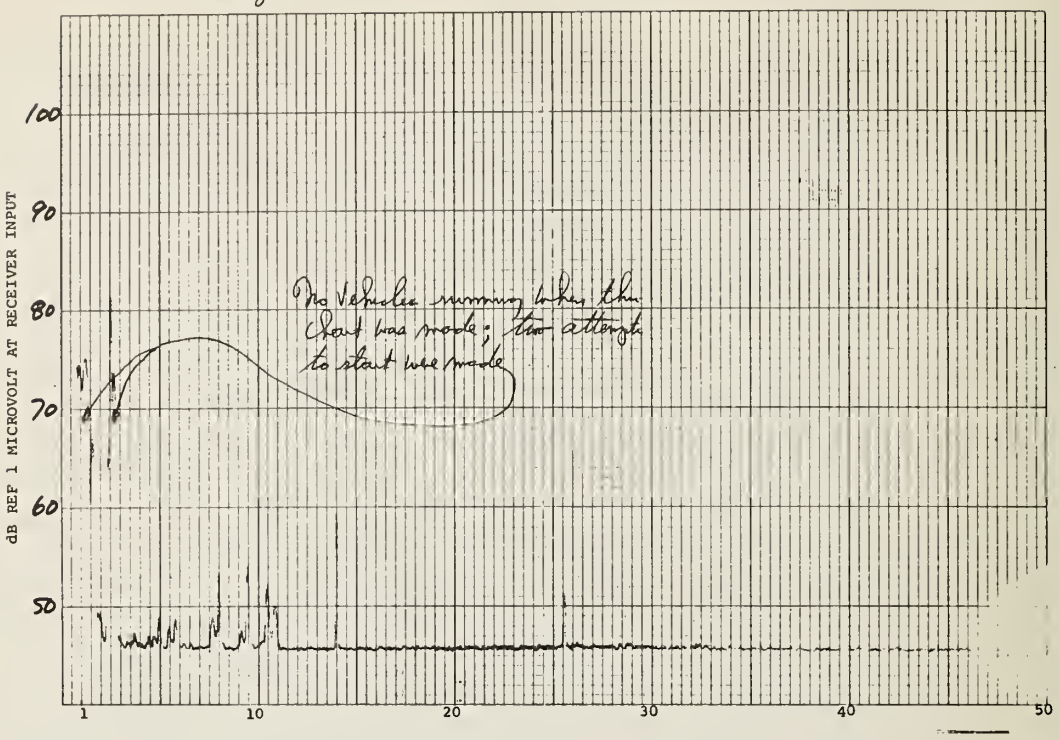
TEST NO. 344 TEST TYPE PLC BANDWIDTH 5 Hz
TEST SPECIMEN Dental Dataveyor TEST EQUIP. EMI-10 DATE 7-31-72

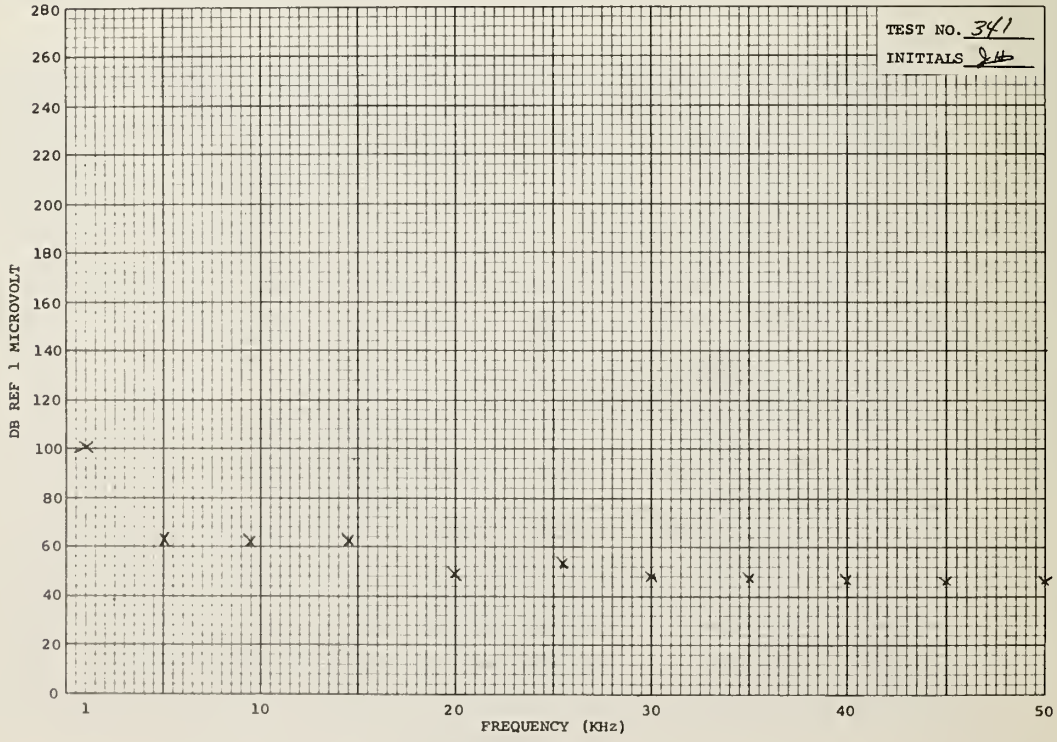




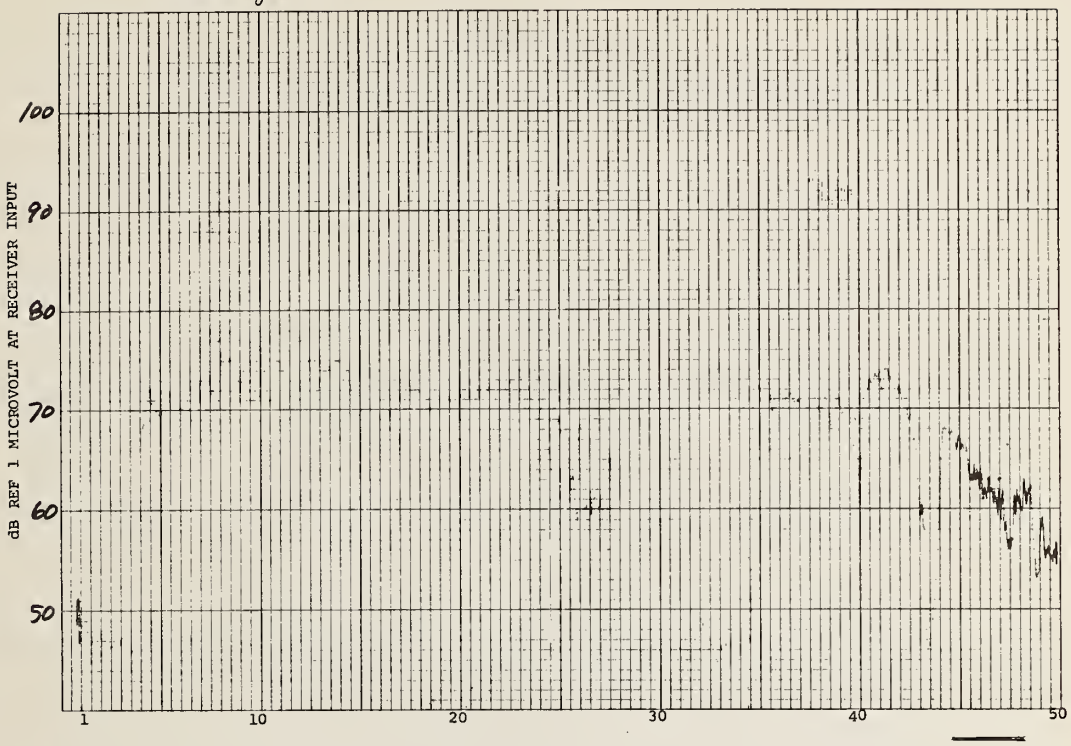
TEST NO. 341 TEST TYPE PLC BANDWIDTH 50Hz
TEST SPECIMEN Neutral Datavejor TEST EQUIP. EMC-10 DATE 7-31-72

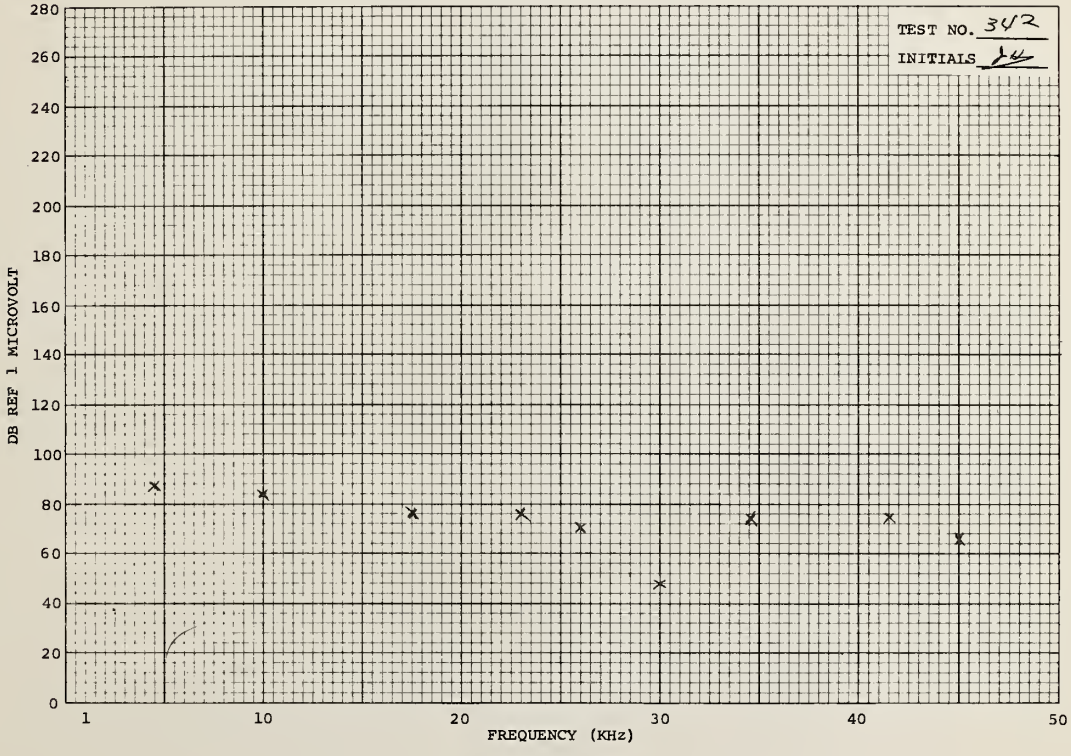
1602





TEST NO. 342 TEST TYPE PLC BANDWIDTH 50 47 1607
TEST SPECIMEN Neutral TEST EQUIP. EMC-10 DATE 7-31-72 EEJ
Dashaveyor





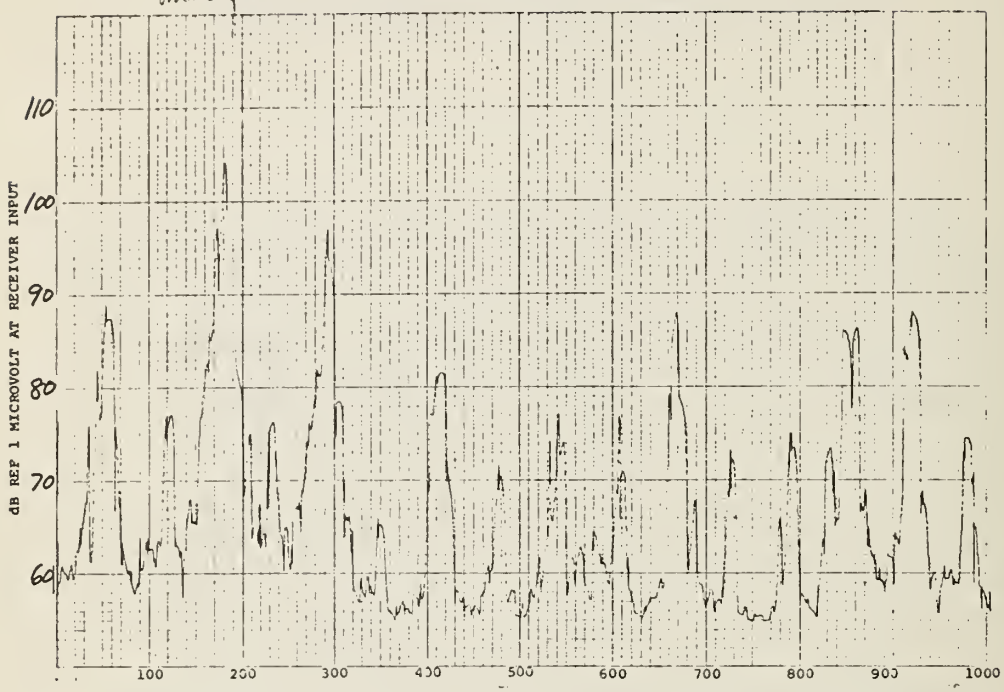
APPENDIX D

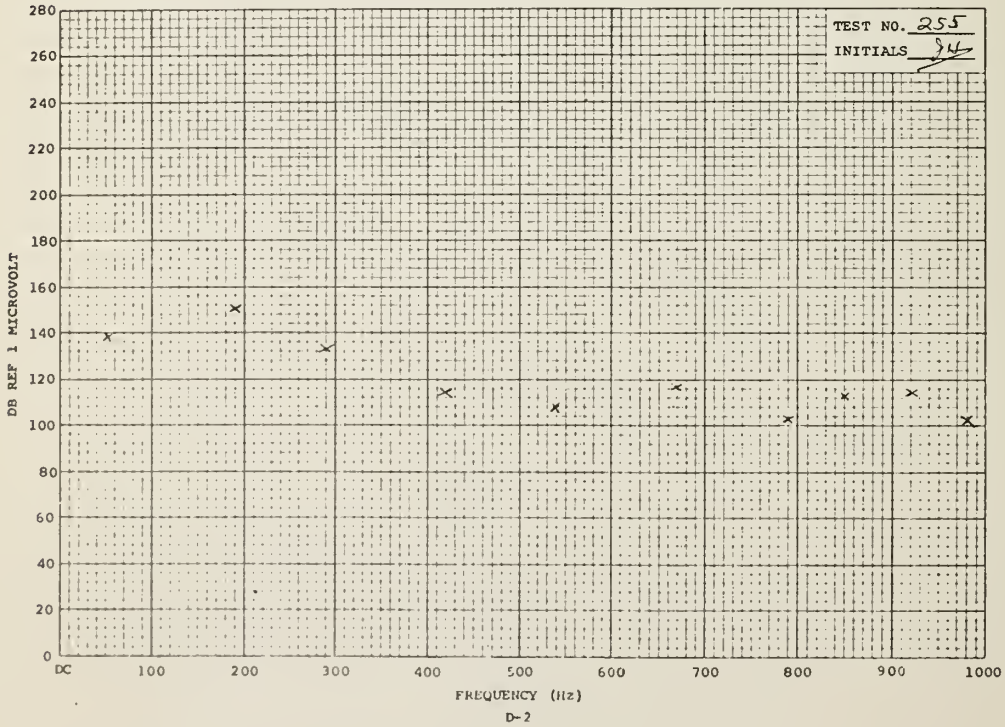
POWER LINE CONDUCTIONS MEASUREMENTS DATA

This appendix contains data charts for test No. 249 through 264. The charts are presented in order of phase -- A, B, C and neutral for ease of anaysis, rather then in the numerical order as the tests were performed.

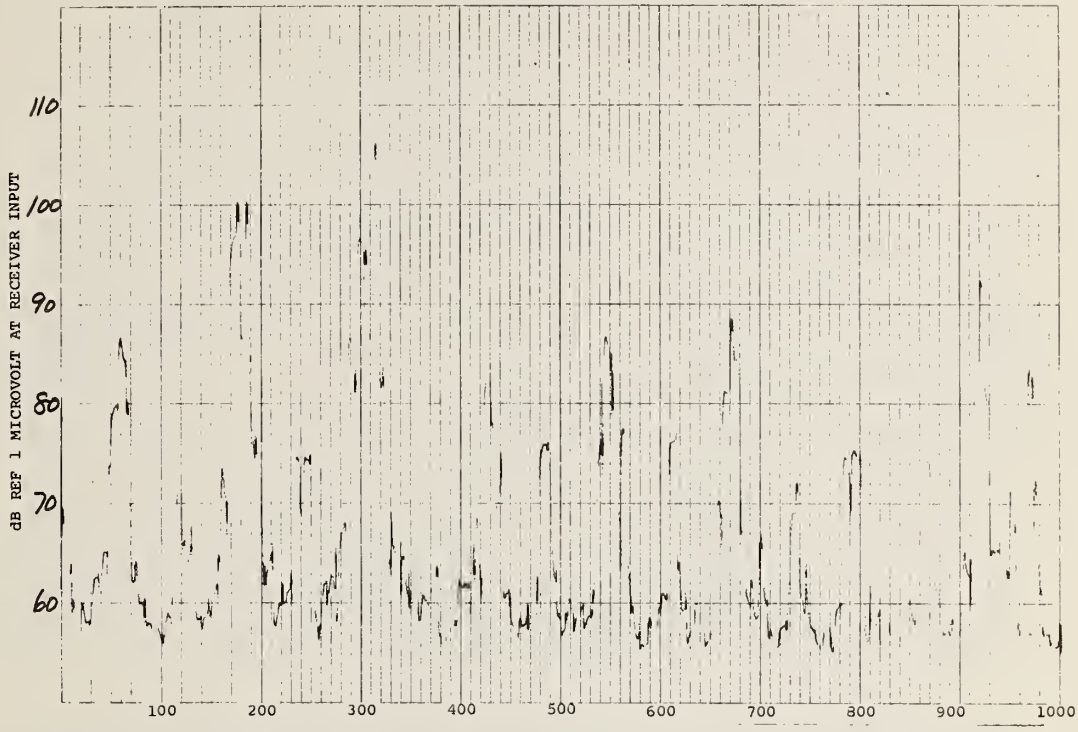
TEST NO. 255 TEST TYPE PLC BANDWIDTH 5112
TEST SPECIMEN QA DATE 2-27-72
Monopole TEST EQUIP. EMC-10

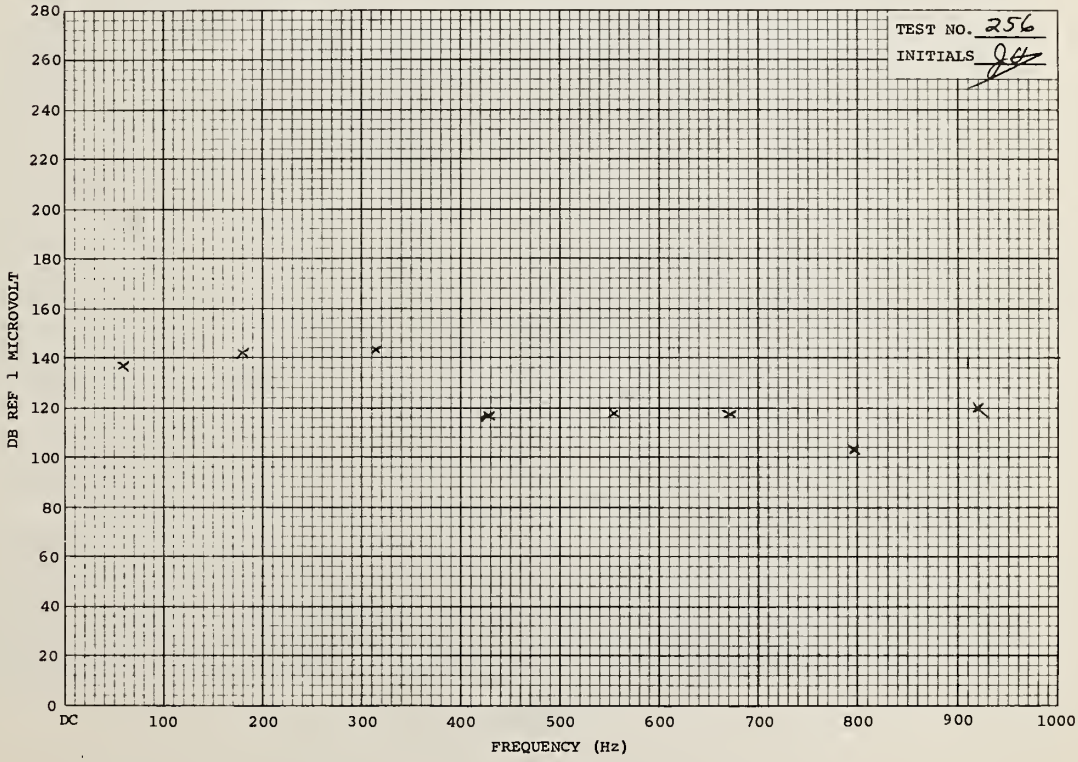
1436
EO



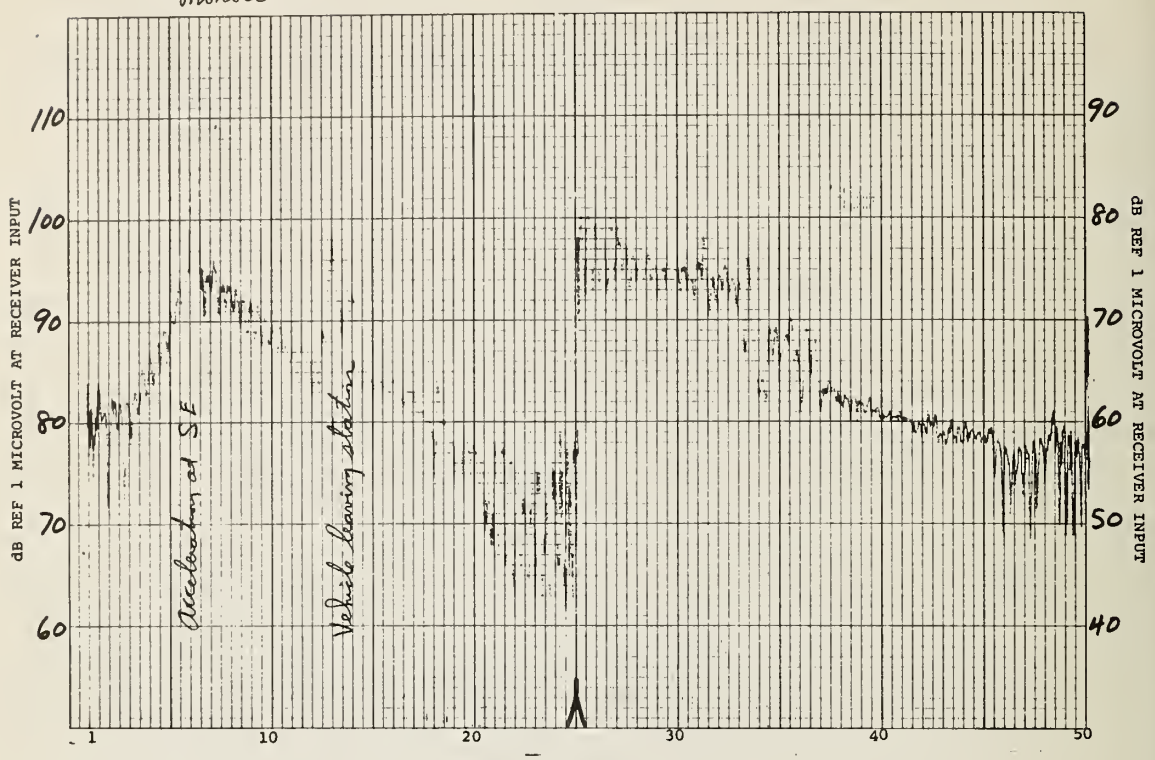


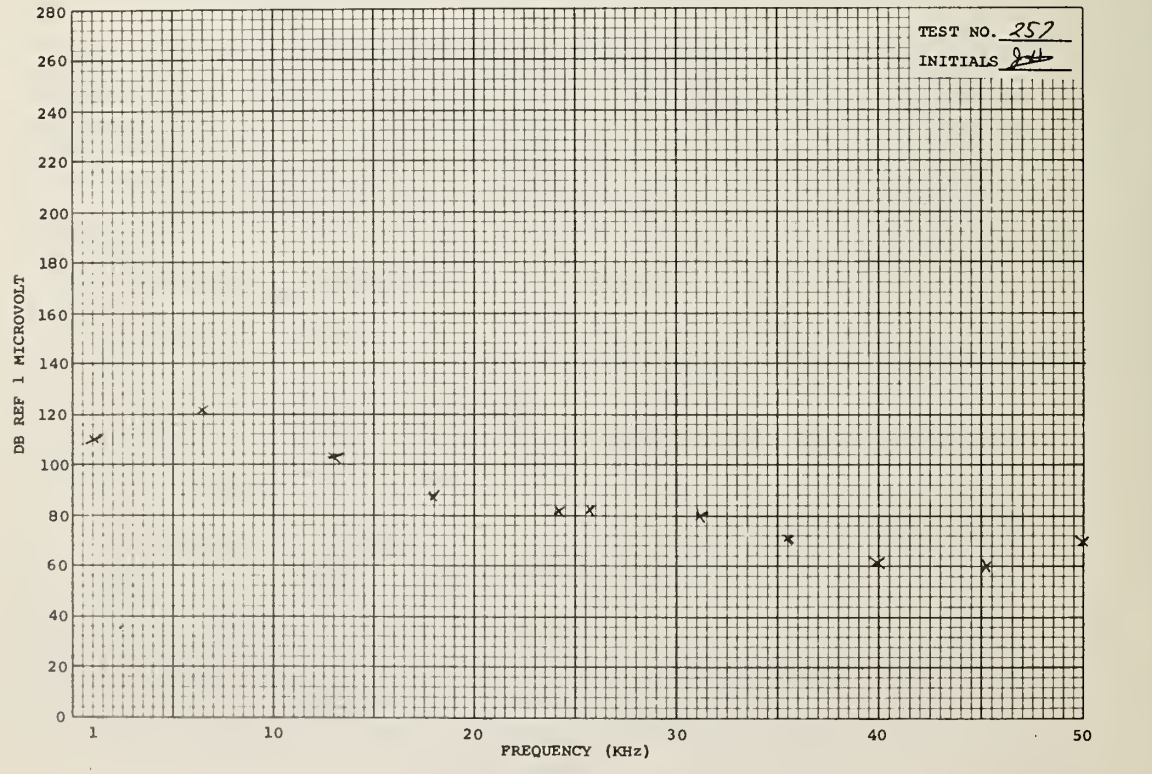
TEST NO. 256 TEST TYPE PLC BANDWIDTH 5 Hz 1439
TEST SPECIMEN ØA DATE 7-27-72
Monocab





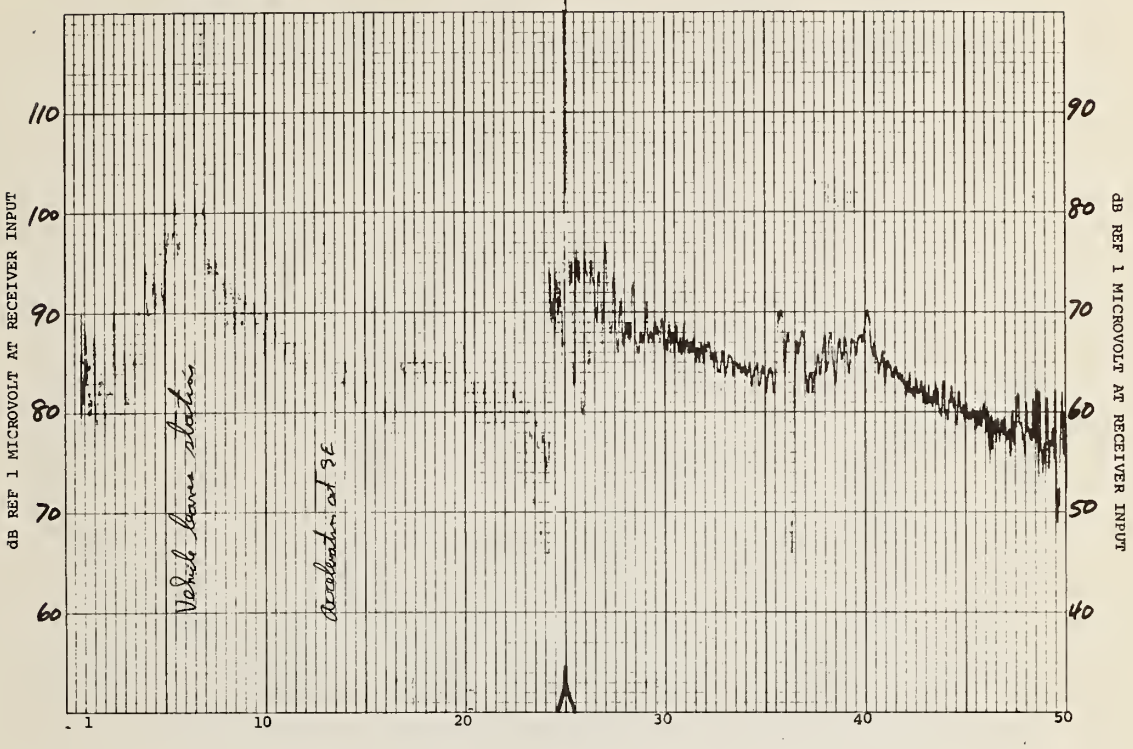
TEST NO. 257 TEST TYPE PLC BANDWIDTH 50 Hz 1445
TEST SPECIMEN ØA TEST EQUIP. EMC-10 DATE 7-27-72 EØ
Monocab

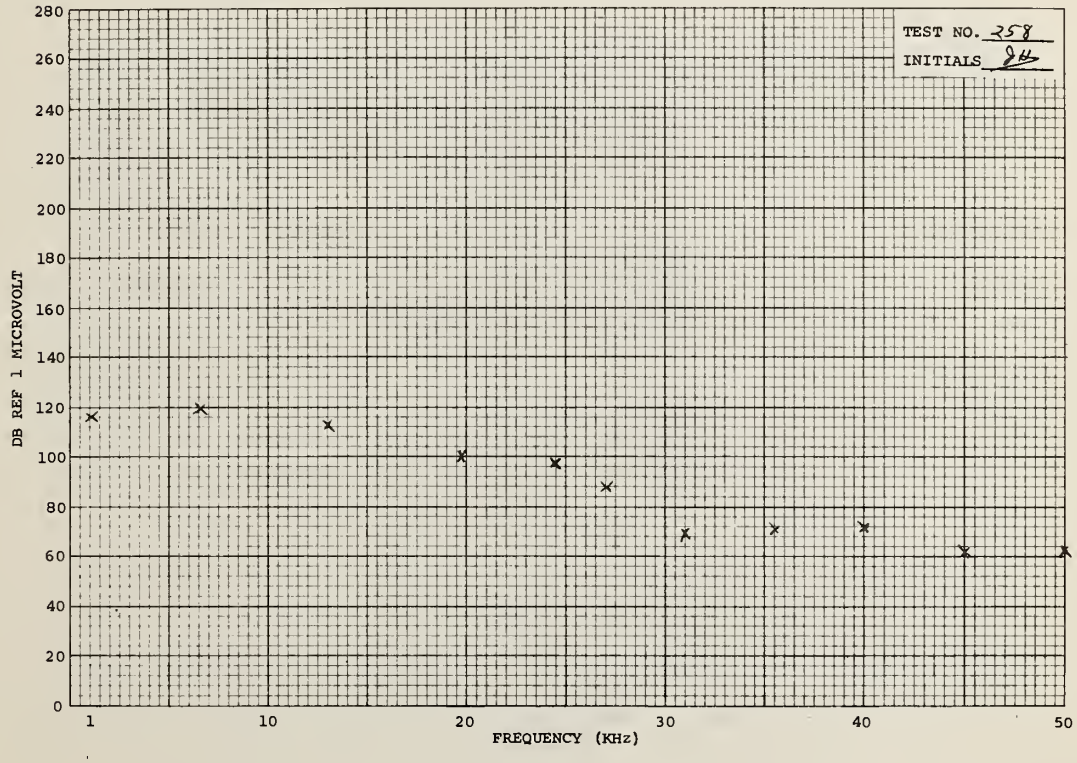




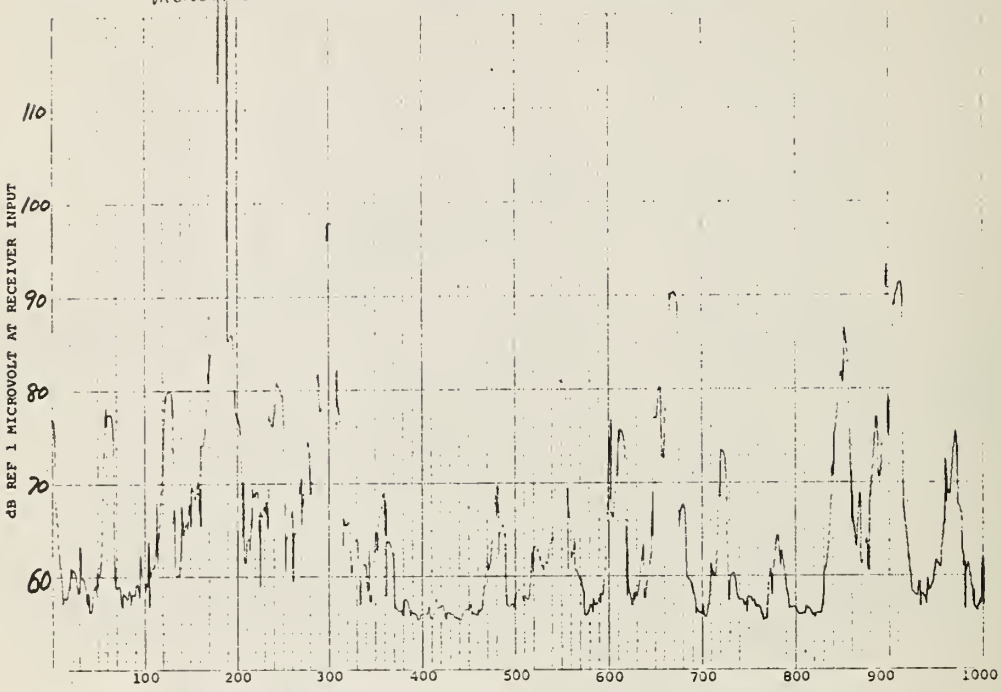
TEST NO. 258 TEST TYPE PLC BANDWIDTH 50 Hz
TEST SPECIMEN ØA TEST EQUIP. ENC-10 DATE 7-27-72
Monocab

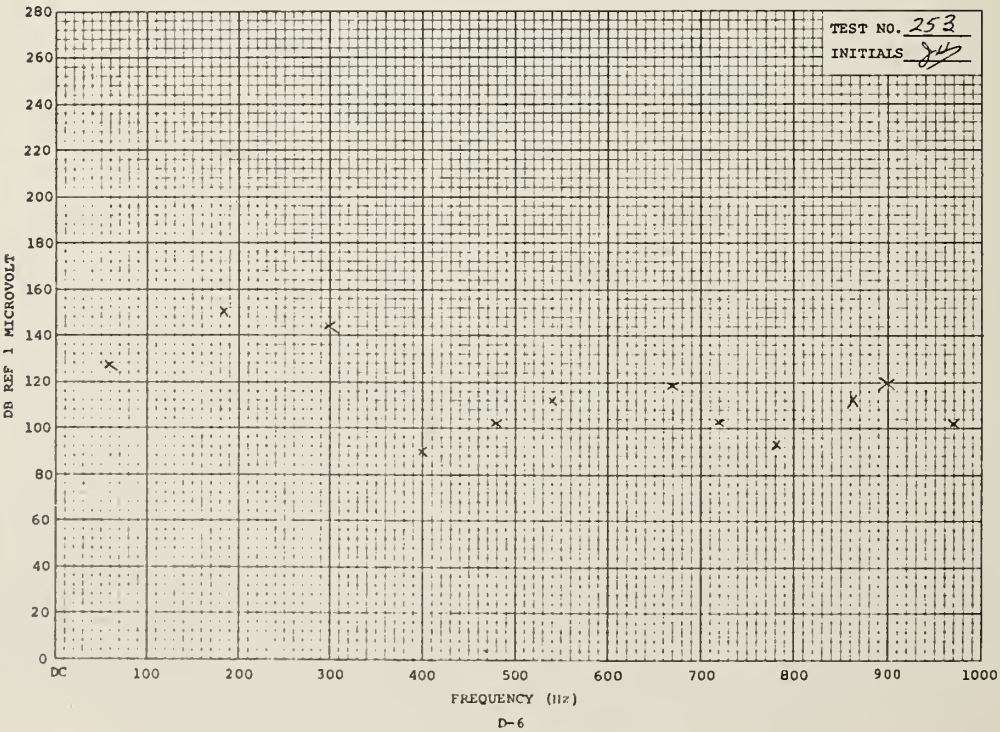
1449
EE





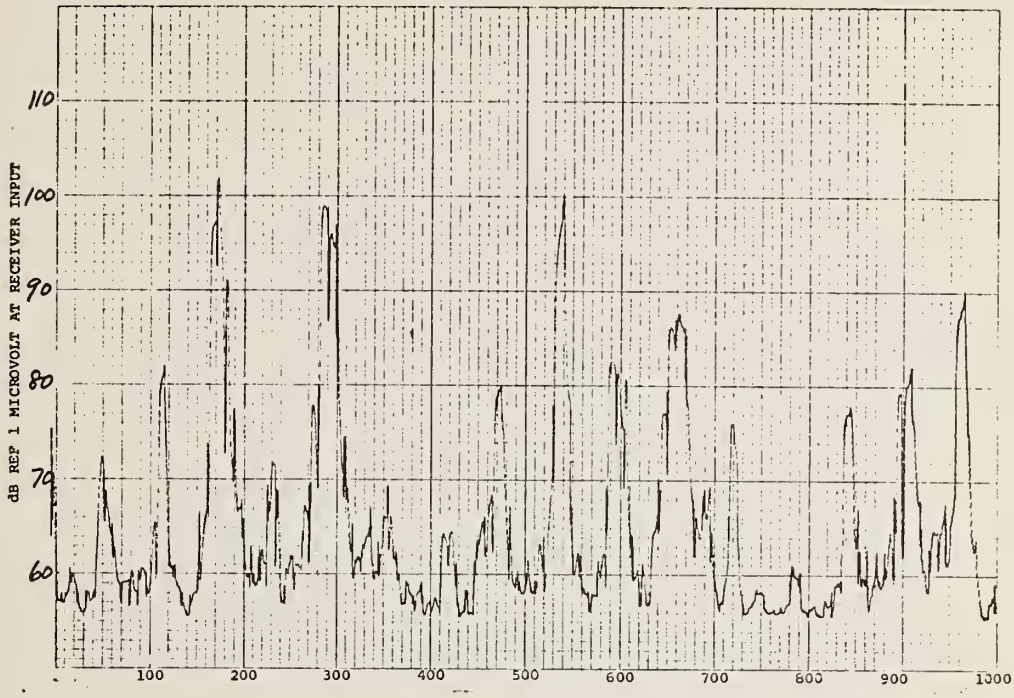
TEST NO. 253 TEST TYPE PLC BANDWIDTH 5 Hz 1429
TEST SPECIMEN QB TEST EQUIP. EM-10 DATE 7-21-72
Monaural

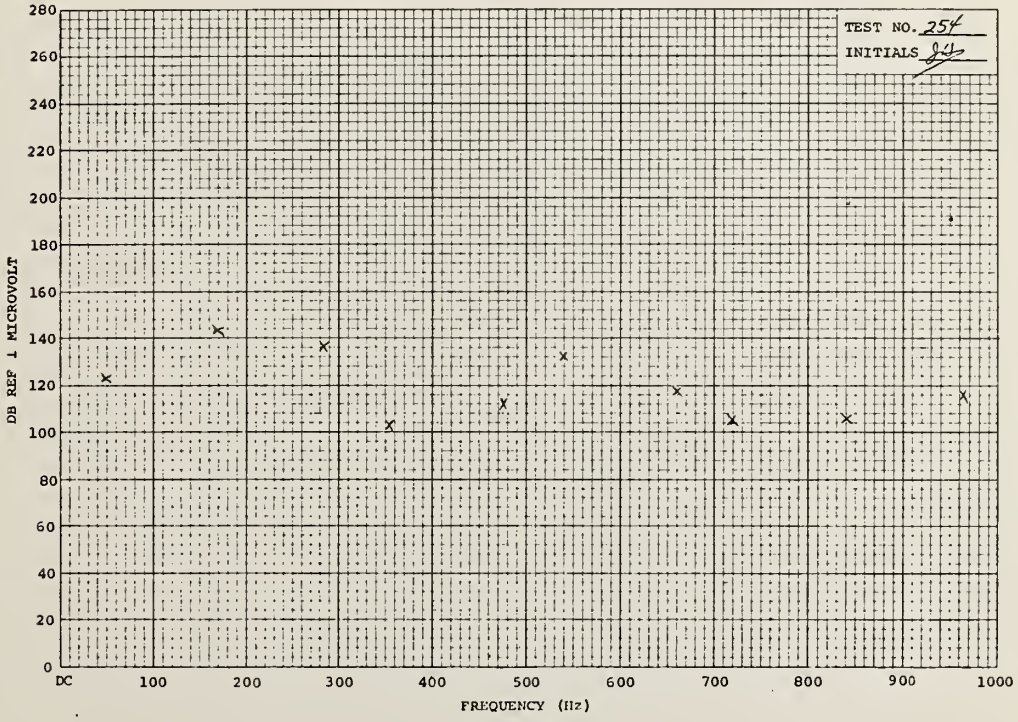




TEST NO. 254 TEST TYPE PLC BANDWIDTH 5 Hz
TEST SPECIMEN ØB TEST EQUIP. EMC-10 DATE 7-31-12
Monocord

1432
EEJ



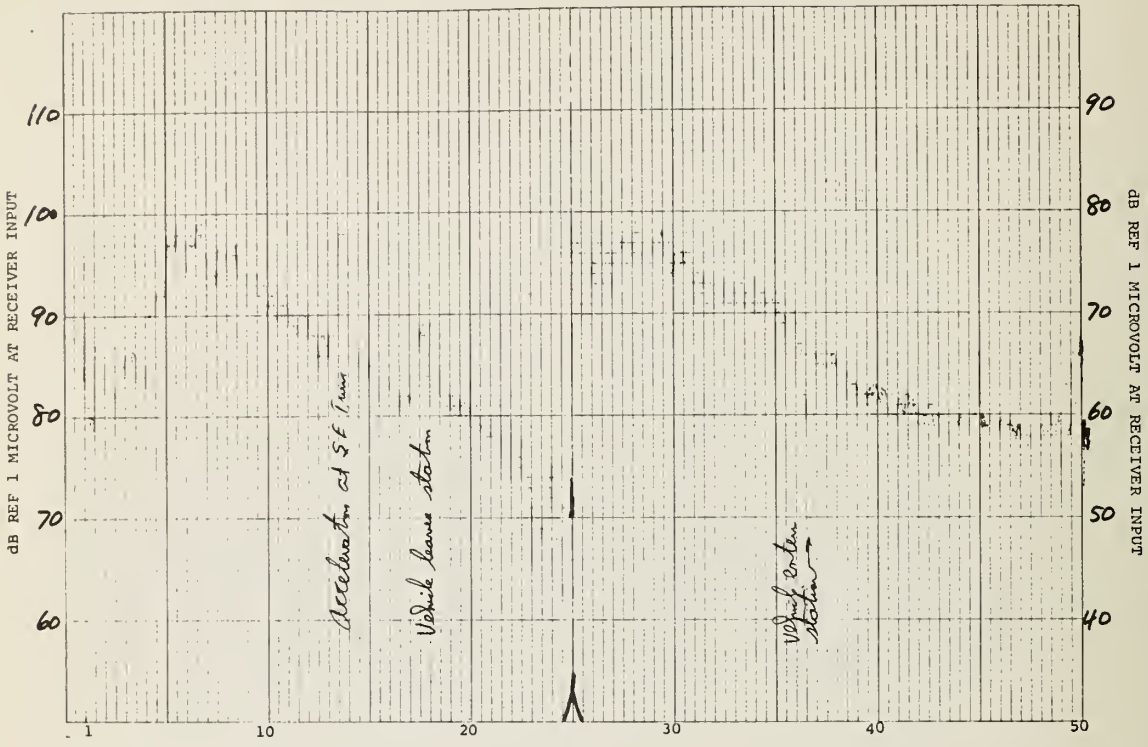


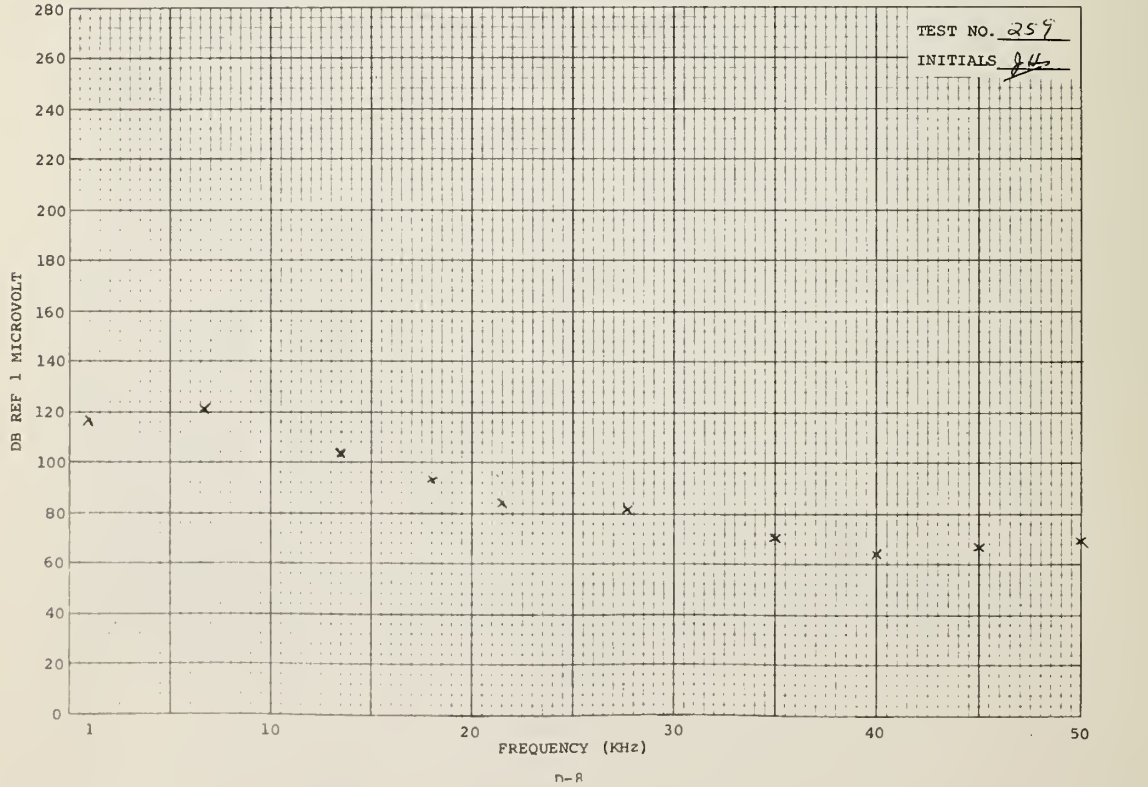
TEST NO. 259
TEST SPECIMEN ØB
Monocab

TEST TYPE PLC
TEST EQUIP. EMC-10

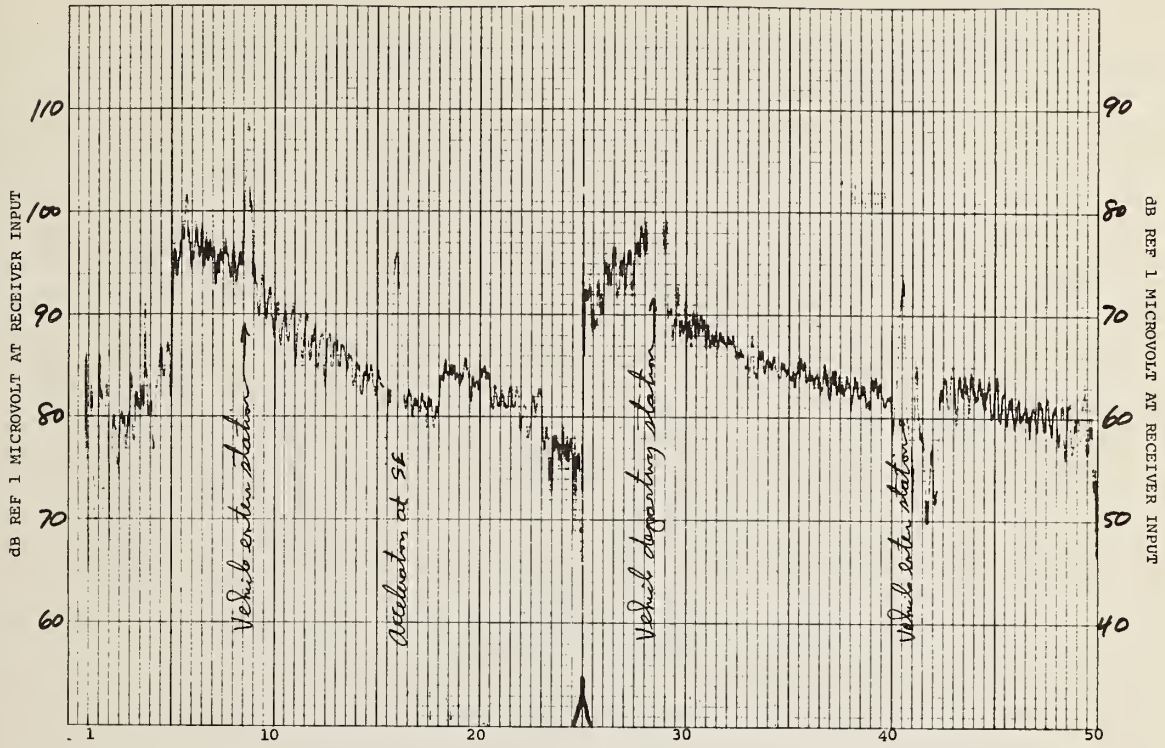
BANDWIDTH 50Hz
DATE 7-27-72

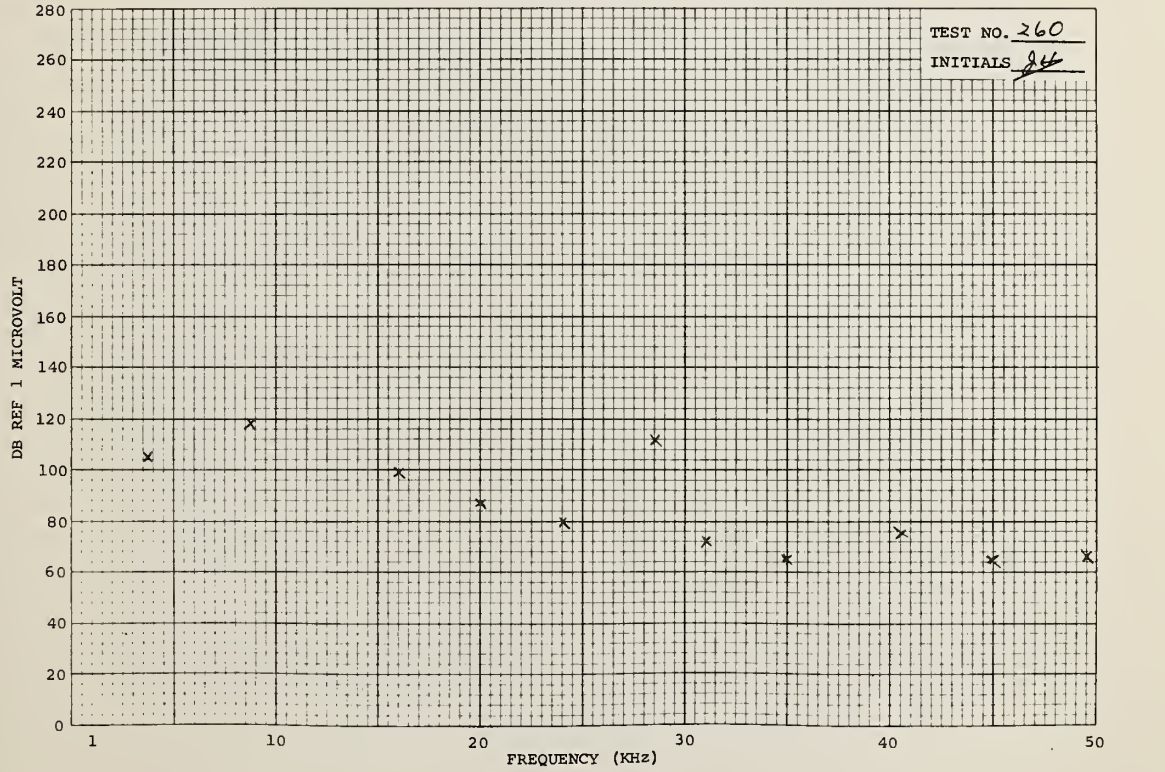
1455
EST





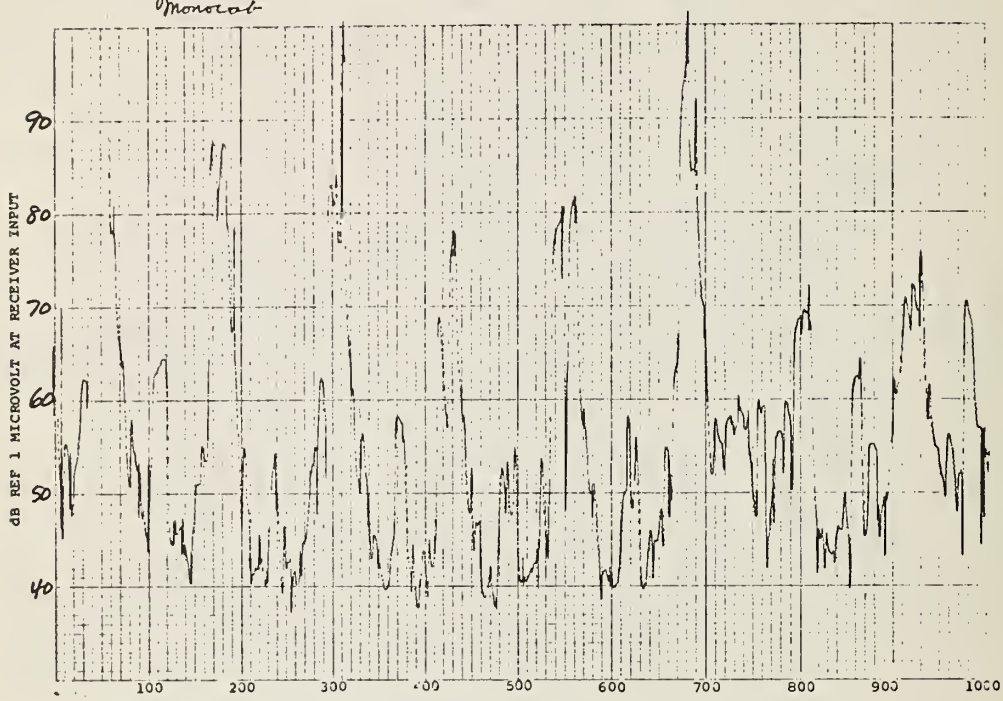
TEST NO. 260 TEST TYPE PLC BANDWIDTH 50Hz 1500
TEST SPECIMEN ØB TEST EQUIP. EMC-10 DATE 7-27-72 EGJ
Monocab

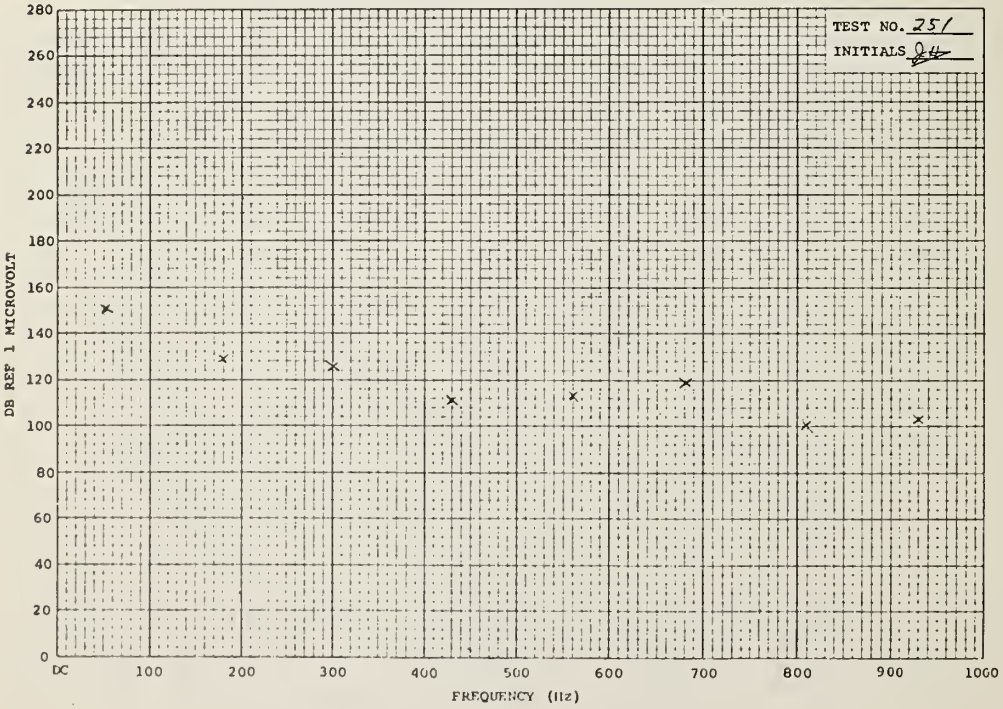




TEST NO. 251 TEST TYPE PLC BANDWIDTH 5Hz
TEST SPECIMEN QC TEST EQUIP. EMC-10 DATE 7-27-72
Monocab

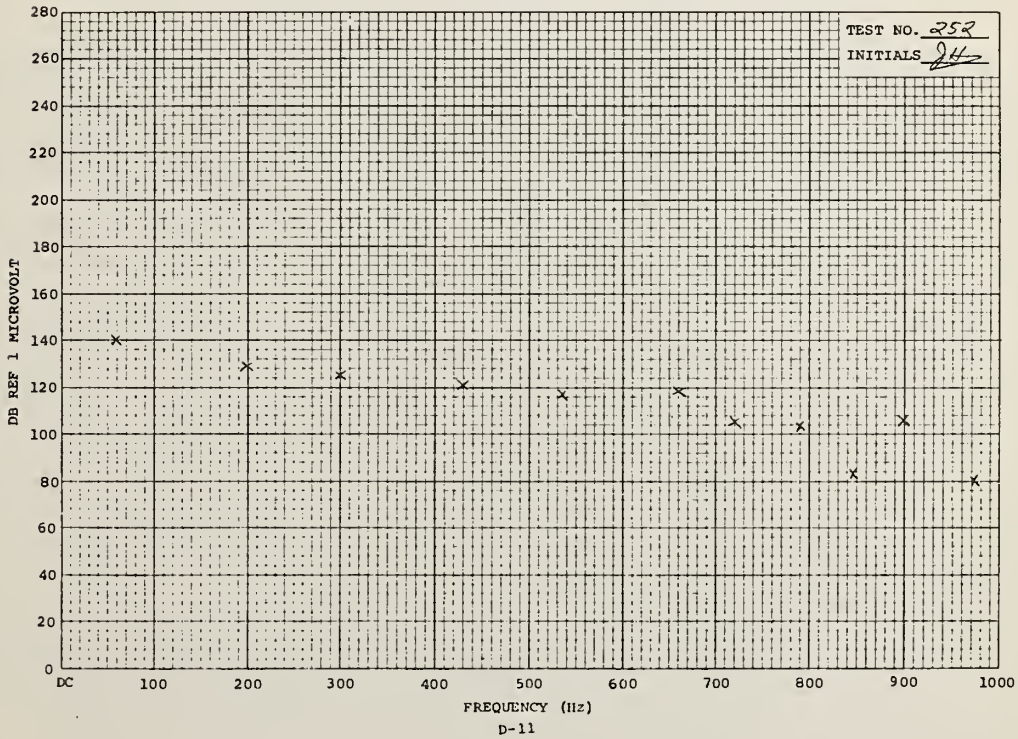
1421
EG



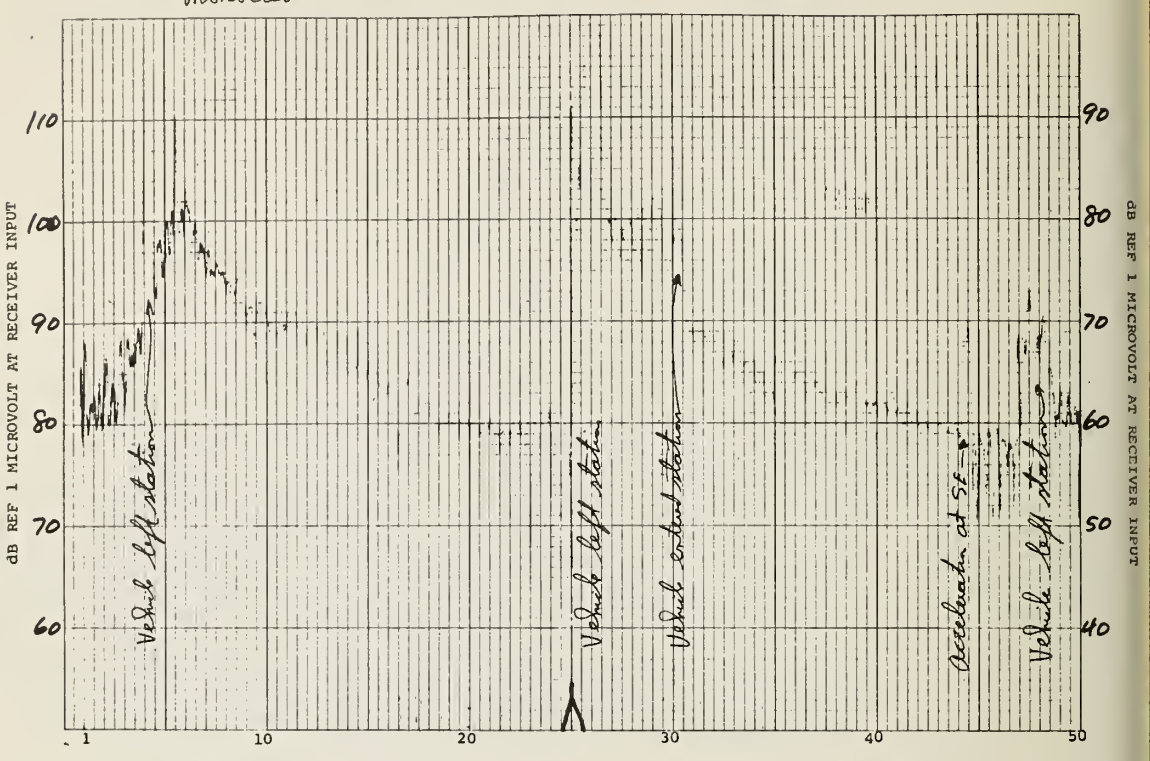


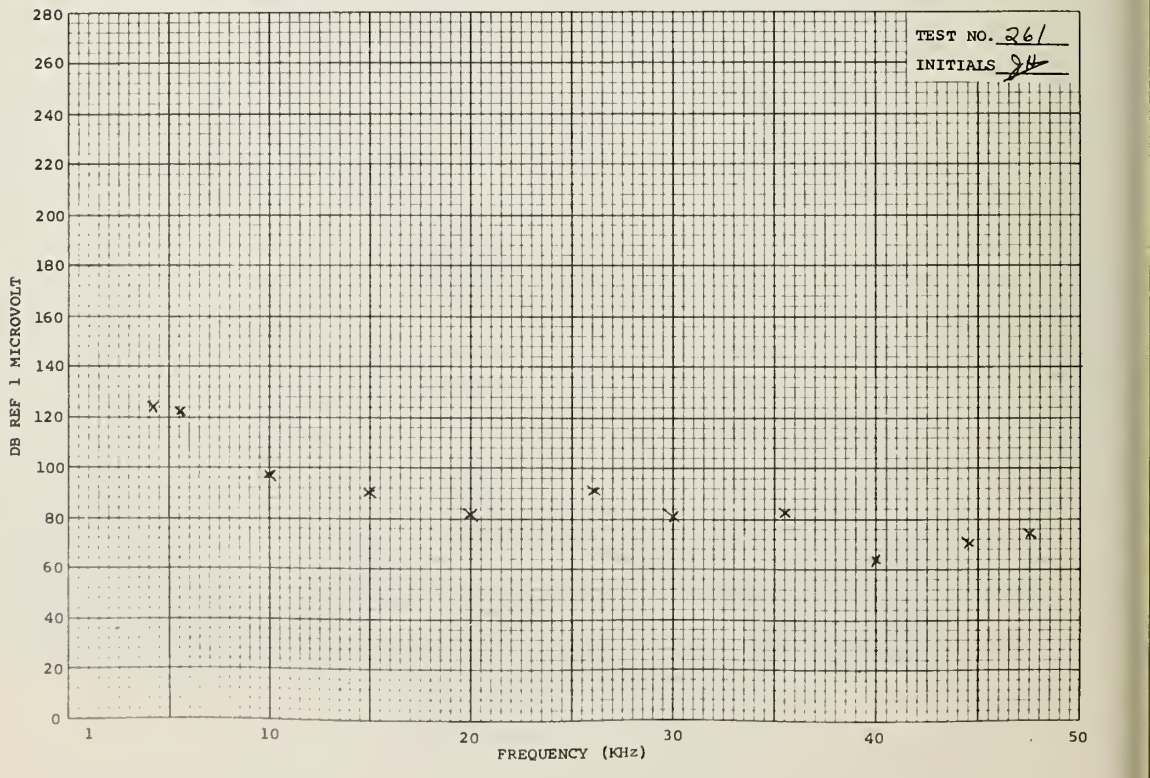
TEST NO. 252 TEST TYPE PLC BANDWIDTH 5 Hz
TEST SPECIMEN PC TEST EQUIP. EMC 10 DATE 1-31-72
Monorail

1424
EEI

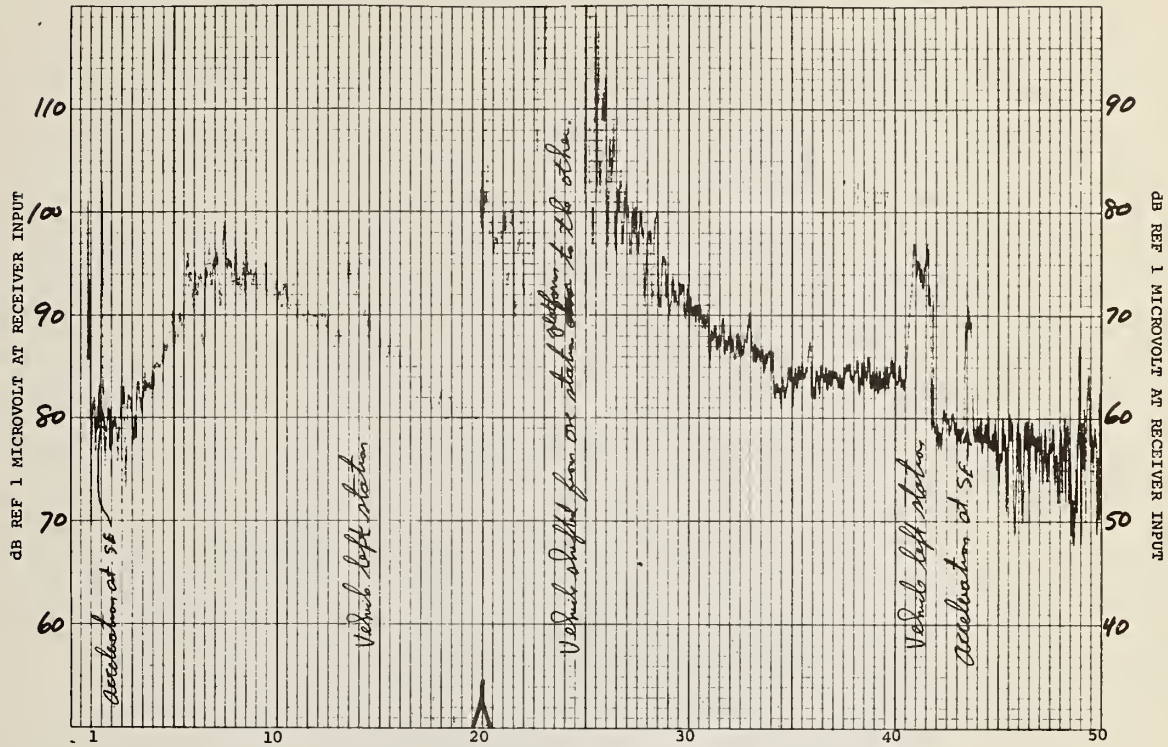


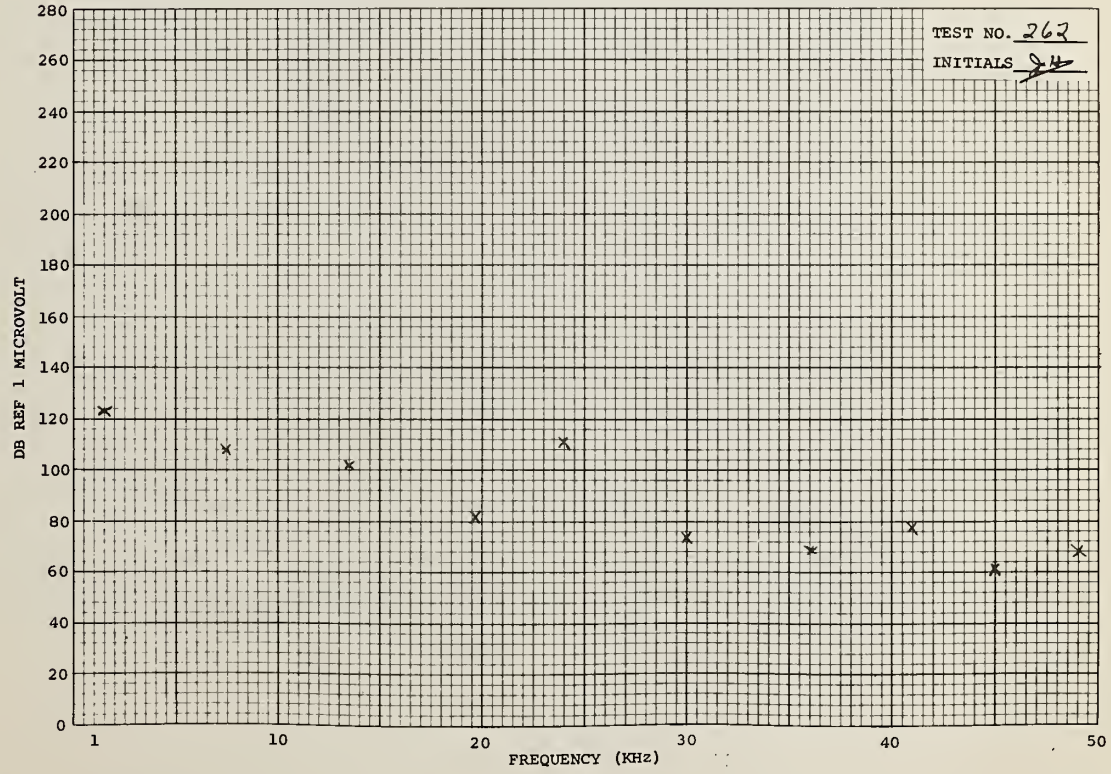
TEST NO. 261 TEST TYPE PLC BANDWIDTH 50 Hz 1505
TEST SPECIMEN QC DATE 7-27-72 EST
Monocab TEST EQUIP. EMC-10



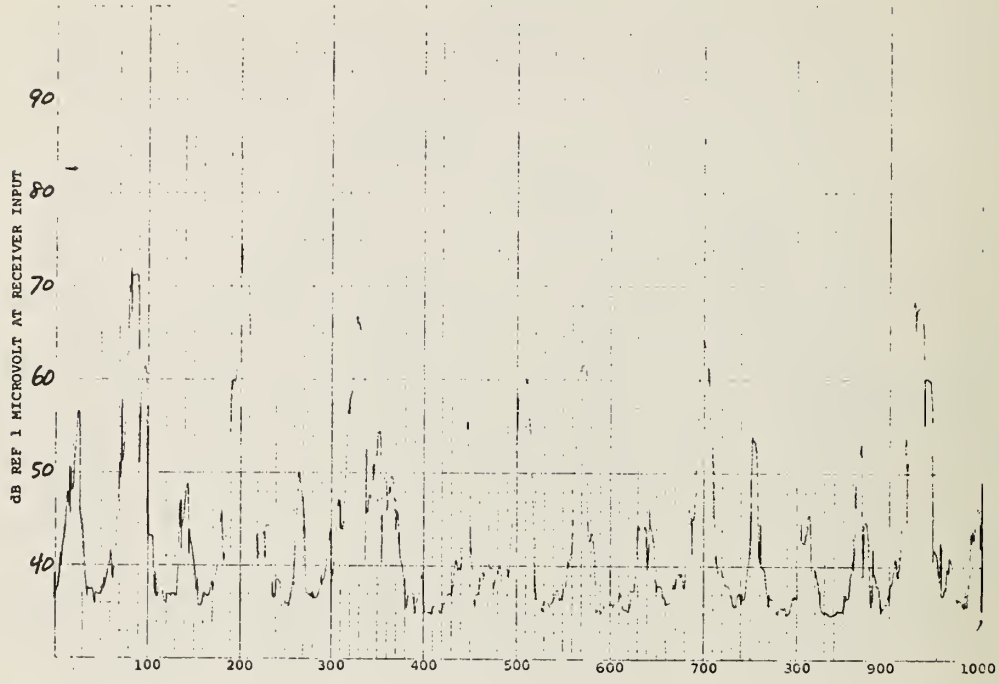


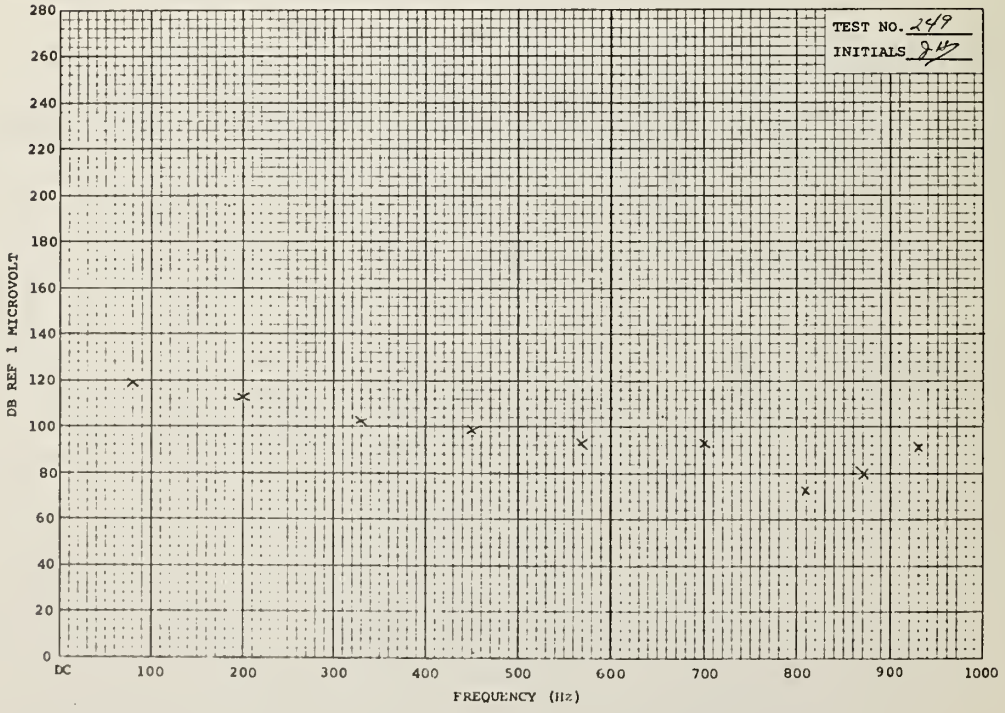
TEST NO. 262 TEST TYPE PLC BANDWIDTH 50Hz 1511
TEST SPECIMEN QC DATE 7-27-72
Monocab



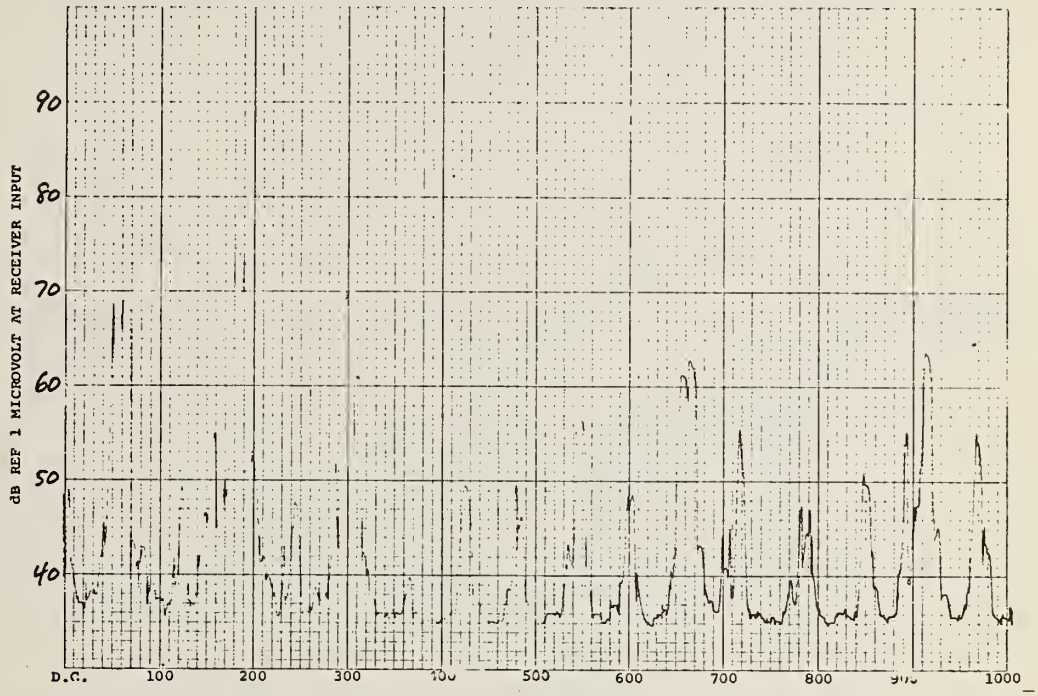


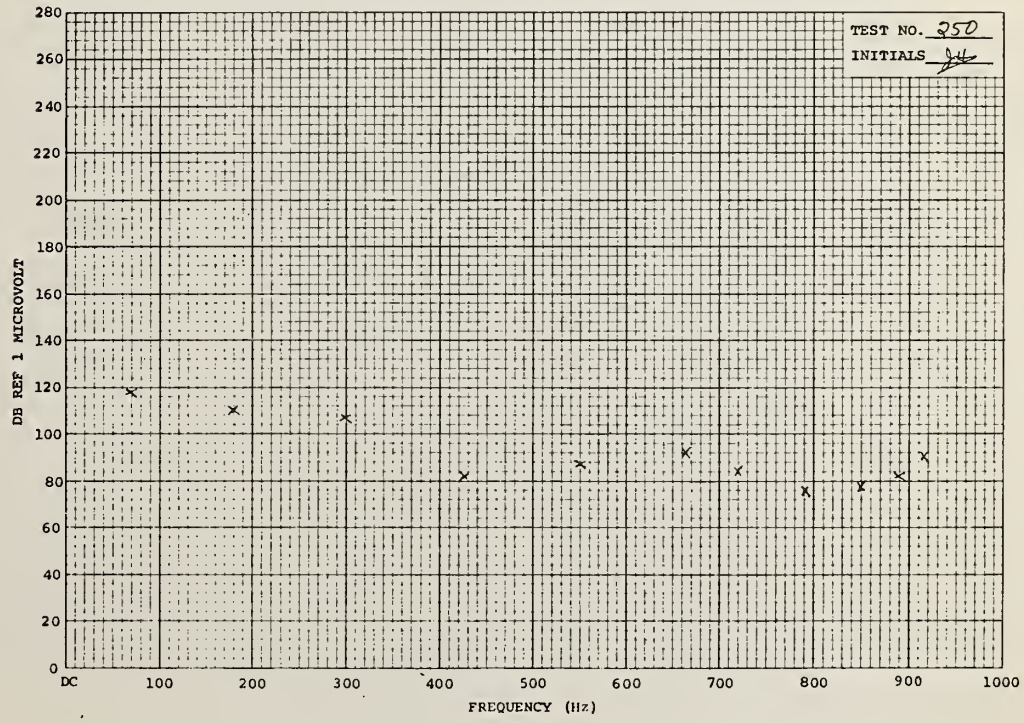
TEST NO. 249 TEST TYPE: PLC BANDWIDTH 5Hz 1414
TEST SPECIMEN Neutral TEST EQUIP. CMC 10 DATE 1-21-12 EEJ
Monorail



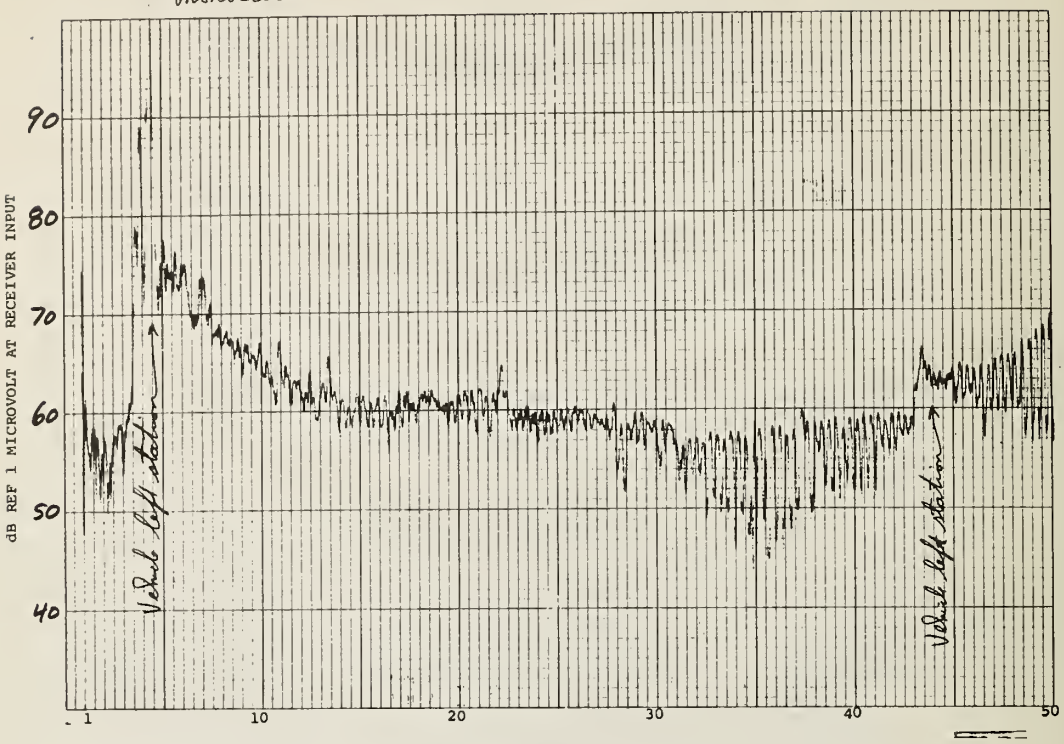


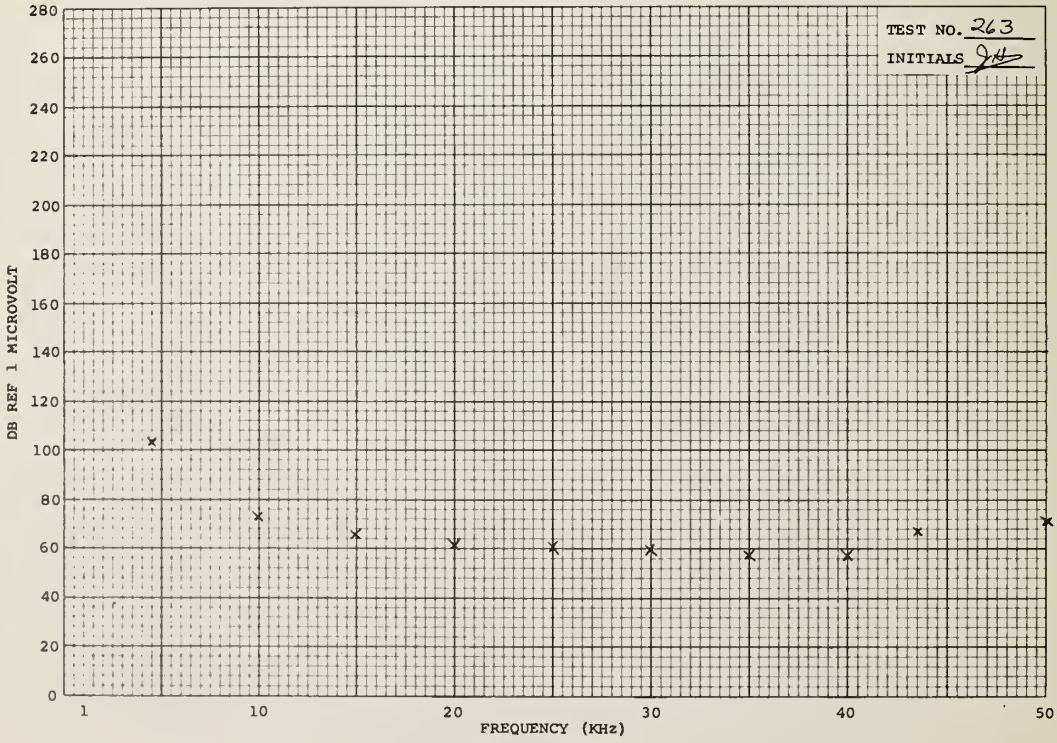
TEST NO. 250 TEST TYPE RE BANDWIDTH 5 Hz 1417
TEST SPECIMEN Monarch TEST EQUIP. EMC 10 DATE 2-22-72 EB



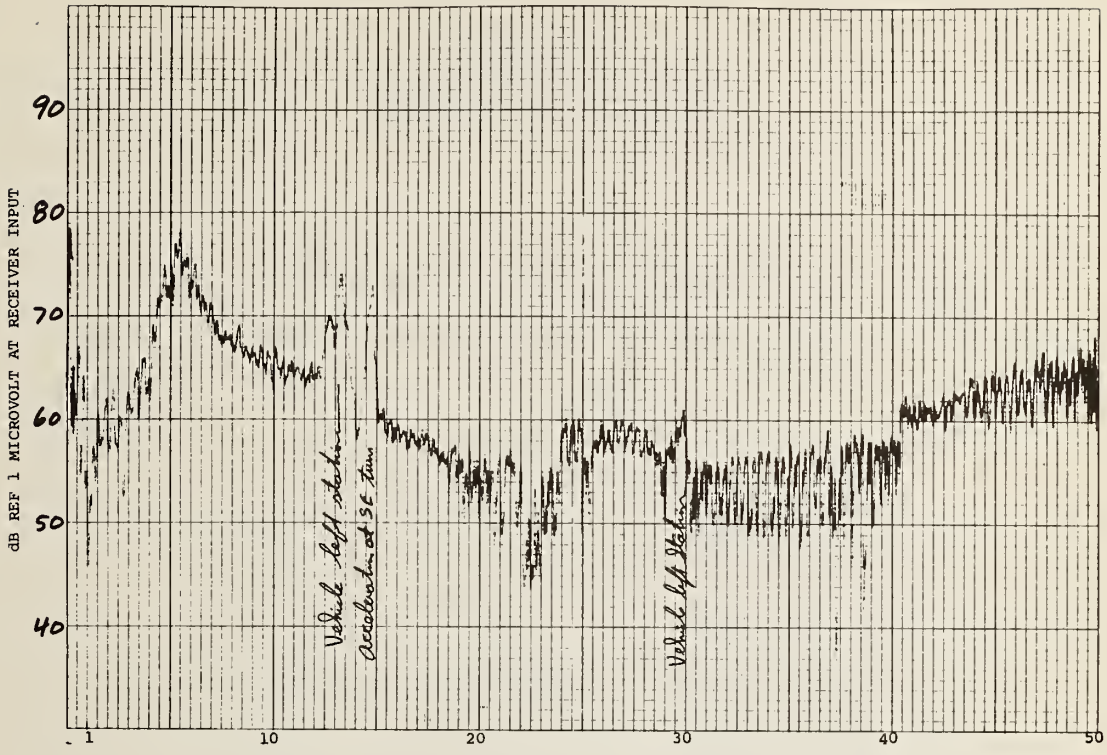


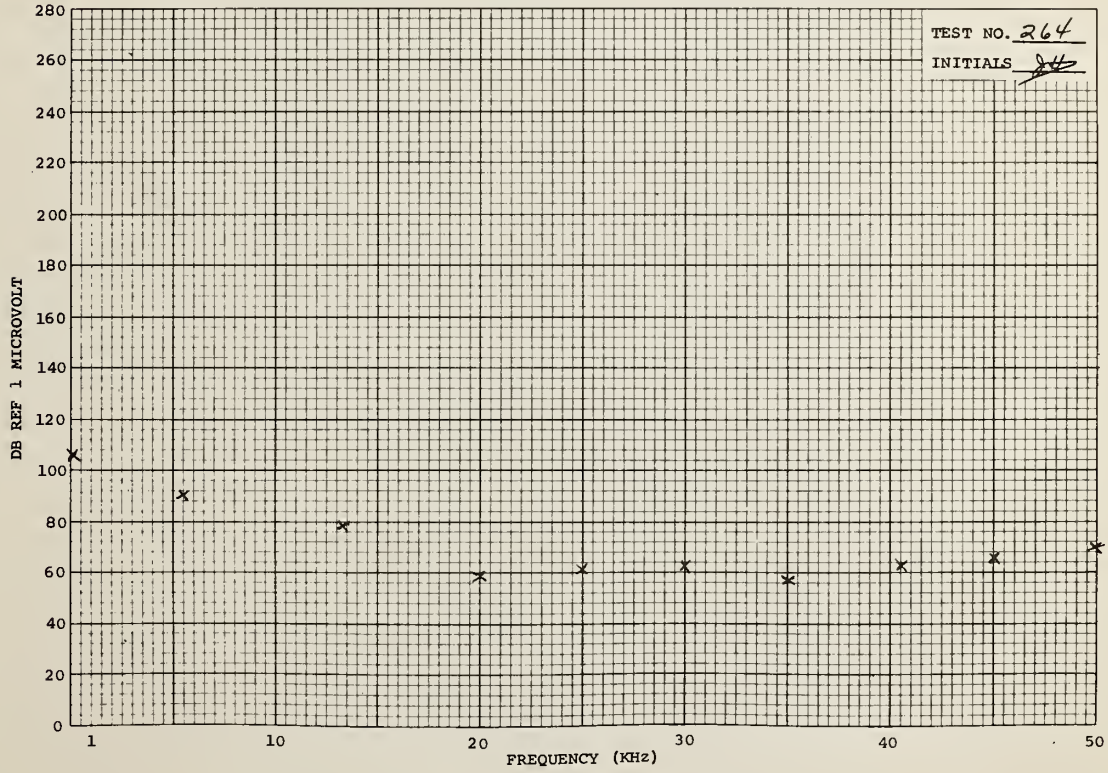
TEST NO. 263 TEST TYPE PLC BANDWIDTH 50 Hz 1518
TEST SPECIMEN Neutral Monocab TEST EQUIP. EMC-10 DATE 7-27-72





TEST NO. 264 TEST TYPE PLC BANDWIDTH 50 Hz 1522
TEST SPECIMEN Neutral DATE 7-27-72
Monocab TEST EQUIP. EMC-10





APPENDIX E

OPERATIONAL TIME LOG

This appendix contains the time logs for the PRT sites as they pertain to the tests described in this report, as follows:

TTI SITE TESTS

July 25, 1972

Time	
1353	Resumed 2 vehicle full automatic.
1500	Full automatic on 1 and 2.
1600	Full automatic operation vehicles 1 and 2.
1622	Stop vehicle operation.

transpo 72

DULLES SYSTEM

Ford

ORIGINATOR E.M. Paddock

VEHICLE Shirley & Rachel

DATE 7-25-72 (TUES)

O.D. READING — MILES

HOUR METER READING — HOURS

Item or Subject: Activity Record for EMI Tests

Explanations:

Observations from station B resulted in a breakdown of a single cycle as follows

2:04:45	Vehicles at A & B - both began the cycle
2:05:25	Vehicle from B has come to a stop at E while as vehicle from A has reached the loop and slowed considerably
2:05:45	Vehicle at E begins to move to A
2:05:55	" from A stops in B
2:07:25	" from E stops in A
2:07:32	Both vehicles began to move (from A & B)
2:08:10	Vehicle from B stops at E
2:09:50	Vehicle from E stops at A
2:10:12	Next cycle

ΔT = 5 min 27 sec

Observations while on board the vehicle, resulted in a cycle breakdown as follows

A to B	1 min, 01 sec
stop at B	1 min, 20 sec (long because other vehicle is going to
B to E	46 sec
stop at E	21 sec
E to A	1 min 35 sec
stop at A	8 sec

1 min, 13 sec = 5 min, 11 sec

Form STS 5

transpo 72

DULLES SYSTEM

Ford

ORIGINATOR: E.M. Paddock

VEHICLE: Shirley & Rachel

DATE: 7-25-72

O.D. READING: / MILES

HOUR METER READING: — HOURS

Item or Subject: Activity Record for EMI tests

Explanations:

12:57:40 Begin cycle - vehicle move. 50 ft - power shutdown on both lanes
1:04:40 Power up both lanes
1:05:40 move main lane vehicle (goes 100 ft before stopping)
1:09:30 " " " " (" 25" " " " - move it back
1:54:10 Both vehicles move - start of cycle.
1:59:17 Begin 2nd cycles
2:04:45 " 3rd "
2:10:12 " 4th "
2:13:05 Both vehicles stop - passengers board at A.
2:14:03 Continue cycle after long station stop (1 min 03 sec)
2:16:30 Both vehicles at a stop - another long station stop (2 min, 13 sec
2:18:43 Begin 5th cycle
2:20:03 Vehicles stop - one at E, one at Frog
2:20:30 Power down - fuses out - same vehicle position
2:24:25 Fuses in - power on
2:26:10 vehicle moves from frog to B.
2:27:43 " on main lane comes to emergency stop (was requested by pass
2:28:18 Fuses out
2:29:53 Fuses in
2:30:17 Power on main lane only - vehicle moved to A.
2:31:31 Station lane power on.
2:33:42 Begin one vehicle mode operation on main lane - other vehicle at B.
" Long station stop.
2:37:38 Begin next cycle from A.
2:40:17 Vehicle moves from E
2:40:52 Power failed and vehicle brought to emergency stop 200' from A
2:41:26 Power on
2:44:41 Vehicle moves toward A (20ft) and stops
2:45:37 " " into " and stops
2:47:16 Both vehicles resume at the end of dual vehicle cycle which was previously terminated (2:26:10)
2:50:50 Begin 6th cycle.
2:55:16 " 7th "
3:00:04 " 8th "

Form STS 5

transpo 72

DULLES SYSTEM

Ford

ORIGINATOR E M Paddock

VEHICLE Shirley & Rachel

DATE 7-25-77

O.D. READING — MILES

HOUR METER READING — HOURS

Item or Subject: Activity Recorded for 6MI Test

Explanations:

3:00:41 Vehicle from A stops at frog
3:01:32 " moved to B and cycle continues but a long station stop (37 sec due to people entering
3:06:29 Begin 9th cycle
3:11:58 Vehicle stops in A but long stop anticipated, otherwise next cycle
3:14:07 Began 10th cycle
3:19:02 Begin 11th cycle
3:24:05 " 12th "
3:25:08 Vehicle from A stops at frog
3:27:5 " moves from Frog to B
3:36:19 Begin 13th cycle
3:43:07 " 14th "
3:44:32 " 15th "
3:50:18 Stop one vehicle in station - breakers off - other vehicle at B
3:52:06 Vehicle moved to A from B
3:55:55 Begin 16th cycle
" 17th "
Some confusion as to lots
4:11:15 Began 18th cycle
4:13:08 Vehicle at each station
4:15:20 resume other half of cycle
4:18:37 begin 19th cycle
4:24:00 shut down station lane power
4:24:30 one vehicle mode on main lane
4:26:02 fuses out after vehicle moved from A to frog
4:35:18 fuses in - power on - move vehicle from frog to A
4:43:56 Begin next cycle - (vehicle from A stopped 50ft short of B but other vehicle remained on cycle

Form STS 5

TRANSPO® '72 COMPUTER SYSTEM START UP

DASLNeyor / BenDix
July 25, 1972

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RESTRICTIONS?
NEW CONFIGURATION? Y
CONFIGURATION CHANGE
MODE (D,S):
CLASS 2 FAILURE - VEHICLE B
S
RUNTHRU(FOR A,B,E,F,G,P,Q ONLY!)?
CONFIGURATION (A-V): A
VEHICLE(S) (A,B,2): 2
ACCEPTED
CONFIGURATION  MODE  OPERATING VEHICLE
      A          S           A,B

OK? Y
READY

ELECTRIFY? Y
BEGIN ELECTRIFICATION

READY
T-14:24:30
TIME 00:02:23
T=24
TIME 24:02:39
T=14:25:00
TIME 14:25:00

CLASS 2 FAILURE - VEHICLE A

ARRIVAL VEH B STA C AT 14:25:12
SCHEDULED ARRIVAL      14:24:35

ARRIVAL VEH A STA N AT 14:26:00
SCHEDULED ARRIVAL      14:25:36

ARRIVAL VEH B STA S AT 14:28:10
SCHEDULED ARRIVAL      14:25:22

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 14:28:40
SCHEDULED ARRIVAL      14:26:22

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 14:29:33
SCHEDULED ARRIVAL      14:29:29

ARRIVAL VEH A STA S AT 14:29:47
SCHEDULED ARRIVAL      14:29:37

VEH A IN SECTION 9 MORE THAN 30 SECONDS

ARRIVAL VEH B STA C AT 14:31:31
SCHEDULED ARRIVAL      14:30:15

VEHICLE A EMERGENCY STOP AT STATION S

ARRIVAL VEH A STA N AT 14:31:59
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ARRIVAL VEH A STA N AT 14:31:59
SCHEDULED ARRIVAL      14:30:47

ARRIVAL VEH B STA S AT 14:32:54
SCHEDULED ARRIVAL      14:31:04

SCHEDULE RE-ADJUSTED FOR VEHICLE B.

ARRIVAL VEH A STA C AT 14:33:24
SCHEDULED ARRIVAL      14:31:33

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 14:34:00
SCHEDULED ARRIVAL      14:34:12

ARRIVAL VEH A STA S AT 14:34:48
SCHEDULED ARRIVAL      14:34:23

ARRIVAL VEH B STA C AT 14:35:15
SCHEDULED ARRIVAL      14:35:01

ARRIVAL VEH A STA N AT 14:36:15
SCHEDULED ARRIVAL      14:35:33

CLASS 1 FAILURE - VEHICLE B

VEHICLE B EMERGENCY STOP AT STATION S
K
CLEAR ALARM
R
TRANSPO® '72 COMPUTER SYSTEM START UP

RESTRICTIONS?
NEW CONFIGURATION? Y
CONFIGURATION CHANGE
MODE (D,S): S
RUNTHRU(FOR A,B,E,F,G,P,Q ONLY!)?
CONFIGURATION (A-V): A
VEHICLE(S) (A,B,2): 2
ACCEPTED
CONFIGURATION  MODE  OPERATING VEHICLE
      A          S           A,B

OK? Y
READY

ELECTRIFY? Y
BEGIN ELECTRIFICATION

READY

ARRIVAL VEH B STA S AT 14:40:25
SCHEDULED ARRIVAL      14:41:02

ARRIVAL VEH A STA C AT 14:40:54
SCHEDULED ARRIVAL      14:40:46

ARRIVAL VEH B STA N AT 14:41:47
SCHEDULED ARRIVAL      14:42:21
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ARRIVAL VEH A STA S AT 14:42:01
SCHEDULED ARRIVAL      14:41:34

ARRIVAL VEH B STA C AT 14:43:14
SCHEDULED ARRIVAL      14:43:09

ARRIVAL VEH A STA N AT 14:43:42
SCHEDULED ARRIVAL      14:42:45

ARRIVAL VEH B STA S AT 14:44:25
SCHEDULED ARRIVAL      14:43:59

ARRIVAL VEH A STA C AT 14:44:56
SCHEDULED ARRIVAL      14:43:32

CLASS 3 FAILURE - VEHICLE B

ARRIVAL VEH B STA N AT 14:45:30
SCHEDULED ARRIVAL      14:45:10

ARRIVAL VEH A STA S AT 14:46:18
SCHEDULED ARRIVAL      14:44:20

SCHEDULE RE-ADJUSTED FOR VEHICLE A

CLASS 3 FAILURE - VEHICLE A

ARRIVAL VEH B STA C AT 14:46:44
SCHEDULED ARRIVAL      14:45:57

ARRIVAL VEH A STA N AT 14:47:46
SCHEDULED ARRIVAL      14:47:37

ARRIVAL VEH B STA S AT 14:49:13
SCHEDULED ARRIVAL      14:46:44

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 14:49:42
SCHEDULED ARRIVAL      14:48:23

ARRIVAL VEH B STA N AT 14:50:35
SCHEDULED ARRIVAL      14:50:32

ARRIVAL VEH A STA S AT 14:50:49
SCHEDULED ARRIVAL      14:49:12

ARRIVAL VEH B STA C AT 14:51:31
SCHEDULED ARRIVAL      14:51:19

ARRIVAL VEH A STA N AT 14:52:16
SCHEDULED ARRIVAL      14:50:22

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 14:52:59
SCHEDULED ARRIVAL      14:52:08

ARRIVAL VEH A STA C AT 14:53:30
SCHEDULED ARRIVAL      14:53:05

ARRIVAL VEH B STA N AT 14:54:03
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ARRIVAL VEH A STA C AT 14:53:30
SCHEDULED ARRIVAL       14:53:05

ARRIVAL VEH B STA N AT 14:54:03
SCHEDULED ARRIVAL       14:53:18

ARRIVAL VEH A STA S AT 14:54:51
SCHEDULED ARRIVAL       14:53:54
T=14:55:5
          ARRIVAL VEH B STA C AT 14:55:17
SCHEDULED ARRIVAL       14:54:05

ARRIVAL VEH B STA S AT 14:56:21
SCHEDULED ARRIVAL       14:54:54

ARRIVAL VEH A STA N AT 14:56:30
SCHEDULED ARRIVAL       14:55:04

ARRIVAL VEH A STA C AT 14:57:46
SCHEDULED ARRIVAL       14:55:51

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 14:58:01
SCHEDULED ARRIVAL       14:56:04

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 14:58:49
SCHEDULED ARRIVAL       14:58:45

ARRIVAL VEH B STA C AT 14:59:15
SCHEDULED ARRIVAL       14:58:50
T=15:00:00
TIME 14:55:50

ARRIVAL VEH B STA S AT 14:56:29
SCHEDULED ARRIVAL       14:55:39

ARRIVAL VEH A STA N AT 14:56:39
SCHEDULED ARRIVAL       14:55:59
T=15:01:30
TIME 15:01:30

ARRIVAL VEH A STA C AT 15:01:52
SCHEDULED ARRIVAL       15:00:46

ARRIVAL VEH B STA N AT 15:01:59
SCHEDULED ARRIVAL       15:00:50

ARRIVAL VEH A STA S AT 15:02:54
SCHEDULED ARRIVAL       15:01:35

ARRIVAL VEH B STA C AT 15:03:22
SCHEDULED ARRIVAL       15:01:36

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 15:04:20
SCHEDULED ARRIVAL       15:02:45

ARRIVAL VEH B STA S AT 15:05:03
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SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 15:04:20
SCHEDULED ARRIVAL      15:02:45

ARRIVAL VEH B STA S AT 15:05:03
SCHEDULED ARRIVAL      15:04:20

ARRIVAL VEH A STA C AT 15:05:32
SCHEDULED ARRIVAL      15:03:32

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 15:06:26
SCHEDULED ARRIVAL      15:05:31

ARRIVAL VEH A STA S AT 15:06:39
SCHEDULED ARRIVAL      15:06:30

ARRIVAL VEH B STA C AT 15:07:21
SCHEDULED ARRIVAL      15:06:18

ARRIVAL VEH A STA N AT 15:08:06
SCHEDULED ARRIVAL      15:07:40

ARRIVAL VEH B STA S AT 15:09:53
SCHEDULED ARRIVAL      15:07:06

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 15:10:22
SCHEDULED ARRIVAL      15:08:26

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 15:11:19
SCHEDULED ARRIVAL      15:11:11

ARRIVAL VEH A STA S AT 15:11:33
SCHEDULED ARRIVAL      15:11:19

ARRIVAL VEH B STA C AT 15:12:16
SCHEDULED ARRIVAL      15:11:58

ARRIVAL VEH A STA N AT 15:13:01
SCHEDULED ARRIVAL      15:12:29

ARRIVAL VEH B STA S AT 15:13:44
SCHEDULED ARRIVAL      15:12:47

ARRIVAL VEH A STA C AT 15:14:13
SCHEDULED ARRIVAL      15:13:16

ARRIVAL VEH B STA N AT 15:15:06
SCHEDULED ARRIVAL      15:13:57

ARRIVAL VEH A STA S AT 15:15:20
SCHEDULED ARRIVAL      15:14:05

ARRIVAL VEH B STA C AT 15:16:02
SCHEDULED ARRIVAL      15:14:44
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ARRIVAL VEH A STA S AT 15:15:20
SCHEDULED ARRIVAL      15:14:05

ARRIVAL VEH B STA C AT 15:16:02
SCHEDULED ARRIVAL      15:14:44

ARRIVAL VEH A STA N AT 15:16:48
SCHEDULED ARRIVAL      15:15:16

ARRIVAL VEH B STA S AT 15:17:31
SCHEDULED ARRIVAL      15:15:33

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 15:18:00
SCHEDULED ARRIVAL      15:16:02

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 15:18:54
SCHEDULED ARRIVAL      15:18:51

ARRIVAL VEH A STA S AT 15:19:07
SCHEDULED ARRIVAL      15:18:57

ARRIVAL VEH B STA C AT 15:19:49
SCHEDULED ARRIVAL      15:19:38

ARRIVAL VEH A STA N AT 15:20:36
SCHEDULED ARRIVAL      15:20:08

ARRIVAL VEH B STA S AT 15:21:19
SCHEDULED ARRIVAL      15:20:26

ARRIVAL VEH A STA C AT 15:21:48
SCHEDULED ARRIVAL      15:20:55

ARRIVAL VEH B STA N AT 15:22:41
SCHEDULED ARRIVAL      15:21:37

ARRIVAL VEH A STA S AT 15:22:55
SCHEDULED ARRIVAL      15:21:44

ARRIVAL VEH B STA C AT 15:23:37
SCHEDULED ARRIVAL      15:22:24

ARRIVAL VEH A STA N AT 15:24:21
SCHEDULED ARRIVAL      15:22:54

ARRIVAL VEH B STA S AT 15:25:03
SCHEDULED ARRIVAL      15:23:12

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 15:25:34
SCHEDULED ARRIVAL      15:23:41

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 15:26:08
SCHEDULED ARRIVAL      15:26:23
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SCHEDULED ARRIVAL 15:25:41

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 15:26:08
SCHEDULED ARRIVAL 15:26:23

ARRIVAL VEH A STA S AT 15:26:55
SCHEDULED ARRIVAL 15:26:33

ARRIVAL VEH B STA C AT 15:27:22
SCHEDULED ARRIVAL 15:27:12

ARRIVAL VEH A STA N AT 15:28:20
SCHEDULED ARRIVAL 15:27:43

ARRIVAL VEH B STA S AT 15:30:38
SCHEDULED ARRIVAL 15:27:59

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 15:31:07
SCHEDULED ARRIVAL 15:28:28

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 15:32:00
SCHEDULED ARRIVAL 15:31:57

ARRIVAL VEH A STA S AT 15:32:15
SCHEDULED ARRIVAL 15:32:05

ARRIVAL VEH B STA C AT 15:32:57
SCHEDULED ARRIVAL 15:32:45

ARRIVAL VEH A STA N AT 15:33:42
SCHEDULED ARRIVAL 15:33:16

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH B STA S AT 15:39:43
SCHEDULED ARRIVAL 15:40:00
T=15:43:45
TIME 15:43:45

ARRIVAL VEH A STA C AT 15:43:47
SCHEDULED ARRIVAL 15:37:13

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 15:45:59
SCHEDULED ARRIVAL 15:44:17

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 15:46:13
SCHEDULED ARRIVAL 15:44:44

ARRIVAL VEH B STA C AT 15:46:55
SCHEDULED ARRIVAL 15:46:51

ARRIVAL VEH A STA N AT 15:47:41
SCHEDULED ARRIVAL 15:45:55

C AT 15:46:55
15:46:51

N AT 15:47:41
15:45:55

USTED FOR VEHICLE A

S AT 15:48:23
15:47:41

C AT 15:48:54
15:48:30

N AT 15:49:28
15:48:52

S AT 15:50:16
15:49:18

C AT 15:50:42
15:49:39

S AT 15:51:51
15:50:28

N AT 15:51:55
15:50:29

C AT 15:52:50
15:51:16

N AT 15:53:00
15:51:38

S AT 15:53:52
15:52:05

USTED FOR VEHICLE A

C AT 15:54:19
15:52:25

USTED FOR VEHICLE B

N AT 15:55:18
15:55:10

S AT 15:56:01
15:55:17

C AT 15:56:31
15:55:57

N AT 15:57:06
15:56:28

S AT 15:57:54
15:56:46

C AT 15:58:20

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   IVAL VEH A STA S AT 15:57:54
HEDULED ARRIVAL       15:56:46

   IVAL VEH B STA C AT 15:58:20
HEDULED ARRIVAL       15:57:15

RRIVAL VEH B STA S AT 16:00:44
HEDULED ARRIVAL       15:58:03

HEDULE RE-ADJUSTED FOR VEHICLE B

 A IN SECTION 6 MORE THAN 30 SECONDS

RRIVAL VEH A STA N AT 16:02:01
HEDULED ARRIVAL       15:57:53

HEDULE RE-ADJUSTED FOR VEHICLE A

EH A IN SECTION 7 MORE THAN 30 SECONDS

EH A IN SECTION 6 MORE THAN 30 SECONDS

H B IN SECTION 9 MORE THAN 30 SECONDS

TRANSPO® '72 COMPUTER SYSTEM START UP

STRICTIONS?
 CONFIGURATION? Y
FIGURATION CHANGE
DE (D,S): S
THRU(FOR A,B,E,F,G,P,Q ONLY!)?
NFIGURATION (A-V): A
EHICLE(S) (A,B,2): 2
CEPTED
NFIGURATION  MODE  OPERATING VEHICLE
     A         S          A,B

? Y
ADY

LECTRIFY? Y
IN ELECTRIFICATION

ADY

 A IN SECTION 0 MORE THAN 30 SECONDS

 A IN SECTION 0 MORE THAN 30 SECONDS

 A IN SECTION 0 MORE THAN 30 SECONDS

 A IMPROPER BERTHING AT STATION C - OVERSHOOT

 A IMPROPER BERTHING AT STATION C - OVERSHOOT

 VAL VEH A STA C AT 16:1 :41
 DULED ARRIVAL       16:06:24

EDULE RE-ADJUSTED FOR VEHICLE A

IVAL VEH B STA N AT 16:11:01
```

DOPED AT .24

VEH A IN SECTION Ø MORE THAN 30 SECONDS

VEH A IN SECTION Ø MORE THAN 30 SECONDS

VEH A IN SECTION Ø MORE THAN 30 SECONDS

VEH A IMPROPER BERTHING AT STATION C - OVERSHOOT

VEH A IMPROPER BERTHING AT STATION C - OVERSHOOT

ARRIVAL VEH A STA C AT 16:10:41
SCHEDULED ARRIVAL 16:06:24

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 16:11:01
SCHEDULED ARRIVAL 16:07:25

SCHEDULE RE-ADJUSTED FOR VEHICLE B

STOPPED AT 16:24

MONOCAB SITE TEST
July 25, 1972

Time	
1:58	Guideway power on.
2:10	Both vehicles running auto.
2:15	Both vhiecles stopped.
2:20	Both vehicles running auto.
2:45	Both vehicles running in manual.
2:48	Both vehicles stopped.
3:00	Both vehicles running auto.
3:17	Both vehicles stopped.
3:19	Both vehicles running in manual.
3:21	Both vehicles stopped.
3:22	Both vehicles running in auto.
3:40	Both vehicles stopped.
3:55	Both vehicles running auto.
4:05	Both vehicles stopped.

TTI SITE TEST
August 2, 1972

Time	
1400	Start two vehicles full automatic.
1603	Shut down two vehicles full automatic.

transpo

DULLES SYSTEM

Ford

INATOR

CLE Rachel
8-2-72

O.D. READING _____ MILES

HOUR METER READING _____ HOURS

or Subject: _____

anations: Stop in Sta. more To Switch area
~~2:02 Begin 87th cycle on Rachael~~

158	"	87 "	"	"	"
2:00	"	88th	"	"	"
202	"	89 "	"	"	"
204	"	90 "	"	"	"
206	"	91 "	"	"	"
209	"	92 "	"	"	"
211	"	93 "	"	"	"
214	"	94 "	"	"	"
217	"	95 "	"	"	"
220	"	96 "	"	"	"
222	"	97 "	"	"	"
225	"	98 "	"	"	"
228	"	99 "	"	"	"
230	"	100 "	"	"	"
232	"	101 "	"	"	"
235	"	102 "	"	"	"
243	"	103 "	"	"	"
245	"	104 "	"	"	"
247	"	105 "	"	"	"
249	"	106 "	"	"	"
252	"	107 "	"	"	"
255	"	108 "	"	"	"
257	"	109 "	"	"	"
259	"	110 "	"	"	"
301	"	111 "	"	"	"
304	"	112 "	"	"	"
307	"	113 "	"	"	"
311	"	114 "	"	"	"
313	"	115 "	"	"	"
315	"	116 "	"	"	"
316	Rachael Stopped on guideway at Sta B Restart at 3:17 Back in Sta A at 3:19				
3:20	Begin	117th cycle on Rachael			
3:22	"	118 "	"	"	"
3:25	"	119 "	"	"	"
3:27	"	120 "	"	"	"
		121 "	"	"	"

Form STS 5

transpo '72

DULLES SYSTEM

Ford

ORIGINATOR _____ O.D. READING _____ MILES

VEHICLE _____ HOUR METER READING _____ HOURS

DATE 8-2-72

Item or Subject: _____

Explanations:

3:31 Begin 122nd cycle on Rachael
3:34 " 123 " " " "
3:36 " 124 " " " "
3:38 Stopped at Sta B Reading South
Restarted for Sta B in Sta A at 3:39
3:40 Begin 125th Cycle on Rachael
3:42 " 126 " " " "
3:44 " 127 " " " "
3:46 " 128 " " " "
3:48 Shut down for evaluation by NSL Group

Form STS 5

DASHAVEYOR TEST SITE
August 2, 1972

Time	
1515	Start two vehicles running intermittently by remote manual control.
1615	Shut down two vehicles.

MONOCAB SITE TEST
August 2, 1972

Time	
2:00	Both vehicles running manually.
3:40	One vehicle stopped, one vehicle running.
3:42	Both vehicles stopped.
3:45	Guideway power turned off.
3:52	Guideway power turned on.
3:55	Both vehicles running manually.
4:10 +3 Min. -0	Both vehicles stopped.
4:13 ±3 Min.	Guideway power turned off.

TTI SITE TEST
July 31, 1972

Time	
1400	Start two vehicles full automatic.
1633	Shut down two vehicles full automatic.

ranspo 72

DULLES SYSTEM

Ford

NATOR M. Sommer & LSB

LE Shirley & Rachel

7-31-72

O.D. READING _____ MILES

HOUR METER READING _____ HOURS

STOPS WERE MADE AT A + E as of time between -6s + 9s

or Subject: Activity Record for Emi test

nations:

--- Shirley in B Rachel in A

1.45 Begin 1st cycle

2.05 Power was off

2.15 Rachel in one Vehicle made A + E + A

2.16 Begin 2 st cycle

2.18 " 3th cycle

2.20 Tripped power

2.21 Power back on

2.22 Begin 4th cycle

2.23 Tripped Power

2.24 Power back on

2.25 Begin 5th cycle

2.27 " 6 " "

2.30 " 7 " "

2.32 Tripped Power

2.33 Power back on

2.34 Begin 8th cycle at 9 MPH down & Back 3-9 sec STOPS FROM A-E

2.38 " 9th " " " " " " "

2.42 " 10th " " " " " " "

2.46 " 11th " " " " " " "

2.50 " 12th " " " " " "

2.54 " 13th " " " " " "

2.58 " 14th " " " " " "

" 15th " " " " " "

Form STS 5

ranspo

DULLES SYSTEM

Ford

MATOR _____ O.D. READING _____ MILES

LE _____ HOUR METER READING _____ HOURS

7-31-72

or Subject: _____

nations:

300 Begin 20th cycle at 9 mph Down + Back
311 " 21th " " " " " "
313 " 22th " " " " " "
316 " 23 " " " " " "
319 " 24th " " " " " "
322 " 25th " " " " " "
325 " 26th " " " " " "
329 " 27th " " " " " "
332 " 28th " " " " " "
334 " 29th " " " " " "
334 Power on Shirley For cycle Run
336 Power off on Shirley at station B
36 Begin 30th cycle on Rachel at 9 mph A + E
39 " 31 " " " " " "
343 " 33th " " " " " "
346 " 34th " " " " " "
350 " 35th " " " " " "
354 " 36th " " " " " "
357 " 37th " " " " " "
00 Power on station lane For Shirley For cycle Run
01 " OFF " " " " " "
Cont 38th cycle on Rachel at 9 mph A + E
25 " 39th " " " " " "
28 " 40th " " " " " "
30 " 41th " " " " " "
42 " " " " " " " "
" " " " " " " "

Form STS 5

Dashaveyor

July 31, 1972

~~3:00~~ PM
15:00

ERROR TRAP AT LOC 763536

TRANSPO® '72 COMPUTER SYSTEM START UP

RESTRICTIONS?
NEW CONFIGURATION? Y
CONFIGURATION CHANGE
MODE (D,S): S
RUNTHRU(FOR A,B,E,F,G,P,Q ONLY!)?
CONFIGURATION (A-V): A
VEHICLE(S) (A,B,2): 2
ACCEPTED

CONFIGURATION	MODE	OPERATING VEHICLE
A	S	A,B

OK? Y
READY

ELECTRIFY? Y
BEGIN ELECTRIFICATION

READY

CLASS 2 FAILURE - VEHICLE B

VEHICLE A EMERGENCY STOP AT STATION S

ARRIVAL VEH B STA C AT 00:02:56
SCHEDULED ARRIVAL 00:02:36

CLASS 2 FAILURE - VEHICLE A

VEH A IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH A STA N AT 00:03:34
SCHEDULED ARRIVAL 00:03:37

VEHICLE B EMERGENCY STOP AT STATION S

ARRIVAL VEH B STA S AT 00:04:21
SCHEDULED ARRIVAL 00:03:24

ARRIVAL VEH A STA C AT 00:04:47
SCHEDULED ARRIVAL 00:04:26

ARRIVAL VEH A STA S AT 00:05:49
SCHEDULED ARRIVAL 00:05:15

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ARRIVAL VEH A STA C AT 00:04:47
SCHEDULED ARRIVAL       00:04:26

ARRIVAL VEH A STA S AT 00:05:49
SCHEDULED ARRIVAL       00:05:15

ARRIVAL VEH B STA N AT 00:05:56
SCHEDULED ARRIVAL       00:04:35

ARRIVAL VEH B STA C AT 00:06:36
SCHEDULED ARRIVAL       00:05:22

ARRIVAL VEH A STA N AT 00:07:13
SCHEDULED ARRIVAL       00:06:25

ARRIVAL VEH B STA S AT 00:07:55
SCHEDULED ARRIVAL       00:06:11

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 00:08:34
SCHEDULED ARRIVAL       00:07:12

ARRIVAL VEH B STA N AT 00:09:10
SCHEDULED ARRIVAL       00:09:13

ARRIVAL VEH A STA S AT 00:09:52
SCHEDULED ARRIVAL       00:08:01

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 00:10:17
SCHEDULED ARRIVAL       00:10:02

ARRIVAL VEH B STA S AT 00:11:15
SCHEDULED ARRIVAL       00:10:51

ARRIVAL VEH A STA N AT 00:11:28
SCHEDULED ARRIVAL       00:11:12

ARRIVAL VEH A STA C AT 00:12:32
SCHEDULED ARRIVAL       00:11:59

ARRIVAL VEH B STA N AT 00:12:57
SCHEDULED ARRIVAL       00:12:02

ARRIVAL VEH A STA S AT 00:13:39
SCHEDULED ARRIVAL       00:12:48

ARRIVAL VEH B STA C AT 00:14:07
SCHEDULED ARRIVAL       00:12:48

ARRIVAL VEH B STA S AT 00:15:04
SCHEDULED ARRIVAL       00:13:37

VEH A IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH A STA N AT 00:15:44
SCHEDULED ARRIVAL       00:13:58

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 00:16:47
SCHEDULED ARRIVAL       00:16:34

ARRIVAL VEH B STA N AT 00:16:59
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SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 00:16:47
SCHEDULED ARRIVAL      00:16:34

ARRIVAL VEH B STA N AT 00:16:59
SCHEDULED ARRIVAL      00:14:48

SCHEDULE RE-ADJUSTED FOR VEHICLE B

CLASS 3 FAILURE - VEHICLE B

ARRIVAL VEH A STA S AT 00:17:57
SCHEDULED ARRIVAL      00:17:23

ARRIVAL VEH B STA C AT 00:18:22
SCHEDULED ARRIVAL      00:17:47

ARRIVAL VEH B STA S AT 00:19:20
SCHEDULED ARRIVAL      00:18:36

ARRIVAL VEH A STA N AT 00:19:31
SCHEDULED ARRIVAL      00:18:33

CLASS 3 FAILURE - VEHICLE A

ARRIVAL VEH A STA C AT 00:20:19
SCHEDULED ARRIVAL      00:19:20

VEH B IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH B STA N AT 00:21:52
SCHEDULED ARRIVAL      00:19:46

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 00:22:34
SCHEDULED ARRIVAL      00:20:08

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 00:23:13
SCHEDULED ARRIVAL      00:22:40

ARRIVAL VEH A STA N AT 00:24:25
SCHEDULED ARRIVAL      00:23:54

ARRIVAL VEH B STA S AT 00:26:21
SCHEDULED ARRIVAL      00:23:27

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 00:26:47
SCHEDULED ARRIVAL      00:24:40

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA S AT 00:27:49
SCHEDULED ARRIVAL      00:27:44

VEH B IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH B STA N AT 00:28:21
SCHEDULED ARRIVAL      00:27:41
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ARRIVAL VEH B STA C AT 00:29:06
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ARRIVAL VEH B STA N AT 00:28:21
SCHEDULED ARRIVAL       00:27:41

ARRIVAL VEH B STA C AT 00:29:06
SCHEDULED ARRIVAL       00:28:28

VEH A IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH A STA N AT 00:29:59
SCHEDULED ARRIVAL       00:28:55

ARRIVAL VEH B STA S AT 00:31:11
SCHEDULED ARRIVAL       00:29:16

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 00:31:37
SCHEDULED ARRIVAL       00:29:41

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA S AT 00:32:39
SCHEDULED ARRIVAL       00:32:34

VEH B IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH B STA N AT 00:33:07
SCHEDULED ARRIVAL       00:32:31

ARRIVAL VEH B STA C AT 00:33:46
SCHEDULED ARRIVAL       00:33:19

ARRIVAL VEH A STA N AT 00:34:17
SCHEDULED ARRIVAL       00:33:45

VEH B IMPROPER BERTHING AT STATION S - UNDERSHOOT

ARRIVAL VEH B STA S AT 00:35:26
SCHEDULED ARRIVAL       00:34:07

ARRIVAL VEH A STA C AT 00:35:39
SCHEDULED ARRIVAL       00:34:32

ARRIVAL VEH A STA S AT 00:36:40
SCHEDULED ARRIVAL       00:35:21

VEH B IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH B STA N AT 00:37:09
SCHEDULED ARRIVAL       00:35:17

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH B STA C AT 00:37:53
SCHEDULED ARRIVAL       00:37:59

VEH A IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH A STA N AT 00:38:42
SCHEDULED ARRIVAL       00:36:31

SCHEDULE RE-ADJUSTED FOR VEHICLE A
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ARRIVAL VEH B STA S AT 00:39:24
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SCHEDULED ARRIVAL       00:36:31

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 00:39:24
SCHEDULED ARRIVAL       00:38:55

ARRIVAL VEH A STA C AT 00:39:50
SCHEDULED ARRIVAL       00:39:31

ARRIVAL VEH A STA S AT 00:40:52
SCHEDULED ARRIVAL       00:40:20

ARRIVAL VEH B STA N AT 00:41:01
SCHEDULED ARRIVAL       00:40:05

ARRIVAL VEH B STA C AT 00:41:49
SCHEDULED ARRIVAL       00:40:53

ARRIVAL VEH A STA N AT 00:42:19
SCHEDULED ARRIVAL       00:41:30

ARRIVAL VEH B STA S AT 00:43:01
SCHEDULED ARRIVAL       00:4x:41

ARRIVAL VEH A STA C AT 00:43:26
SCHEDULED ARRIVAL       00:42:17

ARRIVAL VEH A STA S AT 00:44:27
SCHEDULED ARRIVAL       00:43:06

ARRIVAL VEH B STA N AT 00:44:37
SCHEDULED ARRIVAL       00:42:52

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH B STA C AT 00:45:25
SCHEDULED ARRIVAL       00:45:26

VEH A IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH A STA N AT 00:46:05
SCHEDULED ARRIVAL       00:44:16

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 00:46:53
SCHEDULED ARRIVAL       00:46:22

ARRIVAL VEH A STA C AT 00:47:19
SCHEDULED ARRIVAL       00:46:54

ARRIVAL VEH A STA S AT 00:48:19
SCHEDULED ARRIVAL       00:47:43

ARRIVAL VEH B STA N AT 00:48:29
SCHEDULED ARRIVAL       00:47:32

ARRIVAL VEH B STA C AT 00:50:07
SCHEDULED ARRIVAL       00:48:18

SCHEDULE RE-ADJUSTED FOR VEHICLE B
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ARRIVAL VEH A STA N AT 00:50:54
SCHEDULED ARRIVAL       00:48:53
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SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 00:50:54
SCHEDULED ARRIVAL      00:48:53

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 00:51:35
SCHEDULED ARRIVAL      00:51:06

ARRIVAL VEH A STA C AT 00:52:08
SCHEDULED ARRIVAL      00:51:42

ARRIVAL VEH B STA N AT 00:52:52
SCHEDULED ARRIVAL      00:52:17

ARRIVAL VEH A STA S AT 00:53:34
SCHEDULED ARRIVAL      00:52:31

ARRIVAL VEH B STA C AT 00:54:05
SCHEDULED ARRIVAL      00:53:03

VEH B IN SECTION 4 MORE THAN 30 SECONDS

VEH B IMPROPER BERTHING AT STATION S - OVERSHOOT

ARRIVAL VEH B STA S AT 00:55:23
SCHEDULED ARRIVAL      00:53:52

ARRIVAL VEH A STA N AT 00:55:37
SCHEDULED ARRIVAL      00:53:41

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 00:56:17
SCHEDULED ARRIVAL      00:56:26

VEH B IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH B STA N AT 00:57:08
SCHEDULED ARRIVAL      00:55:02

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 00:57:50
SCHEDULED ARRIVAL      00:57:23

ARRIVAL VEH B STA C AT 00:58:14
SCHEDULED ARRIVAL      00:57:57

ARRIVAL VEH B STA S AT 00:59:11
SCHEDULED ARRIVAL      00:58:46
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7/31

2 veh loop opers.

16:12 TIME finished

July 31, 1972

MONOCAB SITE TEST
July 31, 1972

Time	
2:00	Both vehicles running manually.
2:45	Both vehicles stopped.
2:47	Both vehicles running manually.
4:00	Both vehicles stopped.
4:10	Both vehicles running manually.
4:50	Both vehicles stopped.

TTI SITE TEST
July 27, 1972

Time	
13:47	Two vehicles full automatic.
16:25	Stopped two vehicles full automatic.

ransp

DULLES SYSTEM

Final

ATOR E. M. Paddock

O.D. READING _____ MILES

LE Shirley & Rachel

HOUR METER READING _____ HOURS

7-27-72

or Subject: Activity for EMI tests

1 vehicle mode speed - A → E @ 9 mph E → A @ 12 mph

ations:

2:00:10 - Power up on single lane - Shirley A - ready to run single vehicle mode

2:04:20 - Begin 1st run

2:08:05 - Begin 2nd " - This was a good run, anything longer (normally) ✓

2:10:43 - Begin 3rd cycle - a long station stop due to passengers boarding

2:13:08 - " 4th cycle - speed test and stops. - 2:

2:14:06 - Fuses pulled (power off)

2:16:10 - Fuses in - power on

2:17:40 - Fuses out power off.

2:19:06 - Fuses in - power on and vehicle moved in

2:19:22 - Begins 4th cycle again

2:22:40 - " 5th " "

2:25:47 - " 6th " "

2:28:30 - " 7th " "

2:30:31 " 8th cycle

2:32:53 " 9th cycle

2:35:10 - Vehicle Berth at A (load Japanese visitors)

2:38:17 - Begin 10th cycle

2:40:28 - " 11th "

2:43:50 - Vehicle Berth at A (unload visitors)

2:43:30 - Begin 12th cycle

2:46:15 - " 13th "

2:48:42 - " 14th "

2:51:47 " 15th "

2:54:15 - Station lane power on - ready

2:55:40 - Begin dual vehicle mode - vehicles go & stand stop

2:56:49 - Fuses out.

3:01:18 - Fuses in - power on - more vehicles back into stations

3:07:09 - Both vehicles in - run 1 at dual vehicle cycle

3:17:57 - Begin 2 vehicle cycle

3:[illegible] - " 2nd cycle

3:20:43 - " 4th cycle

3:22:25 - Power down on main lane (speed trap)

3:23:28 - Pull fuses on both lanes.

3:25:34 - Fuses in - vehicle on main lane moves into A.

Form STS 5

Dashaveyor
July 27, 72

```
R
ILLEGAL COMMAND

READY
R
TRANSPO® '72 COMPUTER SYSTEM START UP

RESTRICTIONS?
NEW CONFIGURATION? Y
CONFIGURATION CHANGE
MODE (D,S): S
RUNTHRU(FOR A,B,E,F,G,P,Q ONLY!)?
CONFIGURATION (A-V): A
VEHICLE(S) (A,B,2): 2
ACCEPTED
CONFIGURATION  MODE  OPERATING VEHICLE
      A          S           A,B

OK? Y
READY

ELECTRIFY? Y
BEGIN ELECTRIFICATION

READY

ARRIVAL VEH B STA S AT 14:03:19
SCHEDULED ARRIVAL      14:02:55

ARRIVAL VEH A STA C AT 14:03:45
SCHEDULED ARRIVAL      14:02:45

ARRIVAL VEH B STA N AT 14:08:05
SCHEDULED ARRIVAL      14:04:02

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 14:08:12
SCHEDULED ARRIVAL      14:03:30

SCHEDULE RE-ADJUSTED FOR VEHICLE A

VEH B IN SECTION 2 MORE THAN 30 SECONDS

VEH A IN SECTION 9 MORE THAN 30 SECONDS

ARRIVAL VEH B STA C AT 14:11:05
SCHEDULED ARRIVAL      14:08:54

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 14:11:15
SCHEDULED ARRIVAL      14:09:31

SCHEDULE RE-ADJUSTED FOR VEHICLE A
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ARRIVAL VEH B STA S AT 14:12:02
SCHEDULED ARRIVAL      14:12:04
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SCHEDULED ARRIVAL       14:09:31

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 14:12:02
SCHEDULED ARRIVAL       14:12:04

ARRIVAL VEH A STA C AT 14:12:27
SCHEDULED ARRIVAL       14:12:04

ARRIVAL VEH B STA N AT 14:13:44
SCHEDULED ARRIVAL       14:13:23

ARRIVAL VEH A STA S AT 14:13:51
SCHEDULED ARRIVAL       14:12:53

ARRIVAL VEH B STA C AT 14:14:39
SCHEDULED ARRIVAL       14:14:10

ARRIVAL VEH A STA N AT 14:16:01
SCHEDULED ARRIVAL       14:14:02

ARRIVAL VEH B STA S AT 14:16:02
SCHEDULED ARRIVAL       14:14:58

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 14:16:53
SCHEDULED ARRIVAL       14:16:53

ARRIVAL VEH B STA N AT 14:17:36
SCHEDULED ARRIVAL       14:16:09

ARRIVAL VEH A STA S AT 14:19:18
SCHEDULED ARRIVAL       14:17:46

ARRIVAL VEH B STA C AT 14:19:45
SCHEDULED ARRIVAL       14:16:55

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 14:21:58
SCHEDULED ARRIVAL       14:18:56

ARRIVAL VEH B STA S AT 14:21:58
SCHEDULED ARRIVAL       14:20:41

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 14:22:49
SCHEDULED ARRIVAL       14:22:50

ARRIVAL VEH B STA N AT 14:23:32
SCHEDULED ARRIVAL       14:21:51

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 14:24:20
SCHEDULED ARRIVAL       14:23:45

VEH B IN SECTION 2 MORE THAN 30 SECONDS
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ARRIVAL VEH B STA C AT 14:25:30
SCHEDULED ARRIVAL       14:24:20

ARRIVAL VEH A STA N AT 14:26:33
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VEH B IN SECTION 2 MORE THAN 30 SECONDS

ARRIVAL VEH B STA C AT 14:25:30
SCHEDULED ARRIVAL 14:24:20

ARRIVAL VEH A STA N AT 14:26:33
SCHEDULED ARRIVAL 14:24:55

ARRIVAL VEH B STA S AT 14:26:34
SCHEDULED ARRIVAL 14:25:09

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 14:27:25
SCHEDULED ARRIVAL 14:27:24

ARRIVAL VEH B STA N AT 14:28:07
SCHEDULED ARRIVAL 14:26:19

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 14:29:18
SCHEDULED ARRIVAL 14:28:17

ARRIVAL VEH B STA C AT 14:29:49
SCHEDULED ARRIVAL 14:28:56

ARRIVAL VEH B STA S AT 14:32:02
SCHEDULED ARRIVAL 14:29:43

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 14:32:16
SCHEDULED ARRIVAL 14:29:26

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 14:33:26
SCHEDULED ARRIVAL 14:33:05

ARRIVAL VEH B STA N AT 14:33:50
SCHEDULED ARRIVAL 14:33:23

ARRIVAL VEH A STA S AT 14:34:32
SCHEDULED ARRIVAL 14:33:54

ARRIVAL VEH B STA C AT 14:35:25
SCHEDULED ARRIVAL 14:34:09

ARRIVAL VEH A STA N AT 14:36:15
SCHEDULED ARRIVAL 14:35:04

ARRIVAL VEH B STA S AT 14:36:57
SCHEDULED ARRIVAL 14:34:58

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 14:37:22
SCHEDULED ARRIVAL 14:35:51

ARRIVAL VEH B STA N AT 14:39:32
SCHEDULED ARRIVAL 14:38:16

ARRIVAL VEH A STA S AT 14:39:38
SCHEDULED ARRIVAL 14:36:39

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ARRIVAL VEH B STA N AT 14:39:32
SCHEDULED ARRIVAL       14:38:16

ARRIVAL VEH A STA S AT 14:39:38
SCHEDULED ARRIVAL       14:36:39

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 14:40:54
SCHEDULED ARRIVAL       14:39:03

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 14:41:13
SCHEDULED ARRIVAL       14:40:58

ARRIVAL VEH B STA S AT 14:41:54
SCHEDULED ARRIVAL       14:41:53

ARRIVAL VEH A STA C AT 14:42:19
SCHEDULED ARRIVAL       14:41:45

ARRIVAL VEH B STA N AT 14:43:50
SCHEDULED ARRIVAL       14:43:10

ARRIVAL VEH A STA S AT 14:43:56
SCHEDULED ARRIVAL       14:42:34

ARRIVAL VEH B STA C AT 14:44:59
SCHEDULED ARRIVAL       14:43:57

ARRIVAL VEH A STA N AT 14:45:18
SCHEDULED ARRIVAL       14:43:44

ARRIVAL VEH B STA S AT 14:45:59
SCHEDULED ARRIVAL       14:44:46

ARRIVAL VEH A STA C AT 14:46:24
SCHEDULED ARRIVAL       14:44:31

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 14:48:12
SCHEDULED ARRIVAL       14:45:55

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 14:48:19
SCHEDULED ARRIVAL       14:47:22

ARRIVAL VEH B STA C AT 14:49:39
SCHEDULED ARRIVAL       14:49:03

ARRIVAL VEH A STA N AT 14:50:28
SCHEDULED ARRIVAL       14:48:32

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 14:50:38
SCHEDULED ARRIVAL       14:49:52

ARRIVAL VEH A STA C AT 14:51:19
SCHEDULED ARRIVAL       14:51:19

ARRIVAL VEH B STA N AT 14:53:40
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ARRIVAL VEH A STA C AT 14:51:19
SCHEDULED ARRIVAL      14:51:19

ARRIVAL VEH B STA N AT 14:53:40
SCHEDULED ARRIVAL      14:51:01

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 14:53:46
SCHEDULED ARRIVAL      14:52:13

ARRIVAL VEH. B STA C AT 14:54:51
SCHEDULED ARRIVAL      14:54:31

ARRIVAL VEH A STA N AT 14:55:10
SCHEDULED ARRIVAL      14:53:23

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 14:55:52
SCHEDULED ARRIVAL      14:55:20

ARRIVAL VEH A STA C AT 14:56:17
SCHEDULED ARRIVAL      14:55:59

ARRIVAL VEH B STA N AT 14:57:39
SCHEDULED ARRIVAL      14:56:30

ARRIVAL VEH A STA S AT 14:57:45
SCHEDULED ARRIVAL      14:56:48

ARRIVAL VEH B STA C AT 14:59:37
SCHEDULED ARRIVAL      14:57:16

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 14:59:56
SCHEDULED ARRIVAL      14:57:58

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 15:00:57
SCHEDULED ARRIVAL      15:00:36

ARRIVAL VEH A STA C AT 15:01:23
SCHEDULED ARRIVAL      15:00:44

ARRIVAL VEH B STA N AT 15:02:07
SCHEDULED ARRIVAL      15:01:46

ARRIVAL VEH A STA S AT 15:02:48
SCHEDULED ARRIVAL      15:01:33

ARRIVAL VEH B STA C AT 15:03:15
SCHEDULED ARRIVAL      15:02:33

ARRIVAL VEH B STA S AT 15:04:46
SCHEDULED ARRIVAL      15:03:22

ARRIVAL VEH A STA N AT 15:04:50
SCHEDULED ARRIVAL      15:02:43
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SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 15:05:41
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ARRIVAL VEH A STA N AT 15:04:50
SCHEDULED ARRIVAL       15:02:43

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 15:05:41
SCHEDULED ARRIVAL       15:05:41

VEH B IN SECTION / MORE THAN 30 SECONDS

VEH B IN SECTION / MORE THAN 30 SECONDS

VEH B IN SECTION 5 MORE THAN 30 SECONDS

ARRIVAL VEH A STA S AT 15:11:56
SCHEDULED ARRIVAL       15:06:33

SCHEDULE RE-ADJUSTED FOR VEHICLE A

VEH B IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH B STA N AT 15:12:36
SCHEDULED ARRIVAL       15:04:26

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH B STA C AT 15:13:21
SCHEDULED ARRIVAL       15:13:25

ARRIVAL VEH A STA N AT 15:13:41
SCHEDULED ARRIVAL       15:13:16

ARRIVAL VEH B STA S AT 15:14:51
SCHEDULED ARRIVAL       15:14:14

ARRIVAL VEH A STA C AT 15:15:17
SCHEDULED ARRIVAL       15:14:02

ARRIVAL VEH B STA N AT 15:17:29
SCHEDULED ARRIVAL       15:15:23

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 15:17:35
SCHEDULED ARRIVAL       15:14:50

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 15:18:22
SCHEDULED ARRIVAL       15:18:20

ARRIVAL VEH A STA N AT 15:19:11
SCHEDULED ARRIVAL       15:18:53

ARRIVAL VEH B STA S AT 15:19:50
SCHEDULED ARRIVAL       15:19:13

ARRIVAL VEH A STA C AT 15:20:16
SCHEDULED ARRIVAL       15:19:40

ARRIVAL VEH B STA N AT 15:21:31
SCHEDULED ARRIVAL       15:20:23
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ARRIVAL VEH A STA S AT 15:21:36
SCHEDULED ARRIVAL       15:20:29
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ARRIVAL VEH B STA D AT 15:21:31
SCHEDULED ARRIVAL      15:20:23

ARRIVAL VEH A STA S AT 15:21:36
SCHEDULED ARRIVAL      15:20:29

ARRIVAL VEH B STA C AT 15:22:25
SCHEDULED ARRIVAL      15:21:10

ARRIVAL VEH A STA N AT 15:23:10
SCHEDULED ARRIVAL      15:21:39

ARRIVAL VEH B STA S AT 15:23:50
SCHEDULED ARRIVAL      15:21:59

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 15:24:16
SCHEDULED ARRIVAL      15:22:26

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 15:25:34
SCHEDULED ARRIVAL      15:25:09

ARRIVAL VEH A STA S AT 15:25:39
SCHEDULED ARRIVAL      15:25:15

ARRIVAL VEH B STA C AT 15:26:28
SCHEDULED ARRIVAL      15:25:56

ARRIVAL VEH A STA N AT 15:27:18
SCHEDULED ARRIVAL      15:26:25

ARRIVAL VEH B STA S AT 15:27:57
SCHEDULED ARRIVAL      15:26:45

ARRIVAL VEH A STA C AT 15:28:23
SCHEDULED ARRIVAL      15:27:12

ARRIVAL VEH B STA N AT 15:30:16
SCHEDULED ARRIVAL      15:27:54

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 15:30:21
SCHEDULED ARRIVAL      15:28:00

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 15:31:11
SCHEDULED ARRIVAL      15:31:07

ARRIVAL VEH A STA N AT 15:32:00
SCHEDULED ARRIVAL      15:31:39

ARRIVAL VEH B STA S AT 15:32:40
SCHEDULED ARRIVAL      15:31:58

ARRIVAL VEH A STA C AT 15:33:05
SCHEDULED ARRIVAL      15:32:26
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ARRIVAL VEH B STA N AT 15:34:30
SCHEDULED ARRIVAL      15:33:08
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MONOCAB SITE TEST
July 27, 1972

Time	
2:05	Both vehicles running automatic.
2:18	Both vehicles stopped.
2:23	Both vehicles running automatic.
3:30	Both vehicles stopped.