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# ELECTROMAGNETIC ENVIRONMENT MEASUREMENTS OF PRT SYSTEMS AT "TRANSPO®72" VOLUME VIII DASHAVEYOR SYSTEM

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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 at Dulles Airport with each system operating individually.

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 of each system on the power line with all other PRT systems turned off.

The measurements obtained during this test will be used for a comparison with data obtained with no PRT systems operating and with all four PRT systems operating simultaneously.

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# POWER LINE CONDUCTED NOISE MEASUREMENTS

# DASHAVEYOR SYSTEM - TRANSPO®'72

## 1. 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 of Dashaveyor at TRANSPO®'72 - Dulles Airport, Washington, D. C. This report covers one of the four tests defined under Item 5 of Contract DOT-TSC-375, and as performed by National Scientific Laboratories.

Item 5 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 one PRT system on. The objective of the test was to gather operational data for each of the PRT systems. Such data will enable characterization of the noise increase attributable to system operation, when considered in comparison with the ambient data collected and documented* previously by NSL.

The measurements reported in this document were made during the late afternoon of August 1, 1972.

*Technical Report, Item 4, Ambient Power Line Conducted Noise Survey, PRT Systems, March 1972, Contract No. DOT-TSC-375, Department of Transportation, Transportation Systems Center, 55 Broadway, Cambridge, Massachusetts 02142.

## 2. METHOD OF MEASUREMENT

### 2.1 Instruments

All measurements were made using test set-ups and instruments as nearly identical as possible to those used during ambient testing. The power line conducted measurements were performed using a Fairchild Model EMC-10 Interference Analyzer. This device is a battery-operated calibrated RFI/EMI meter, which, when operated as a narrowband tunable device, covers the frequency range of d.c. to 50 kHz. The receiver has an internal calibration source and incorporates a meter circuit of such design that signal levels are expressed in decibels on a linear scale. In addition, the receiver incorporates circuitry providing buffered voltage outputs in proportion to meter indication and tuned frequency: A Hewlett Packard Model 3005B X-Y Plotter was driven from the receiver.

Signals were obtained from the power lines by means of a Fairchild Model PCL-10 Current Probe. This device is a clamp-on current transformer which provides an output voltage in proportion to the current on the conductor which passes through its aperture. This probe has a specified transfer-admittance characteristic which is a function of frequency.

### 2.2 Power Line Arrangement

The power provided to the PRT site via an underground feeder is 480 v.a.c., 3 phase (Ø). These feeder lines enter commercial switchgear in the Dashaveyor building and are coded as follows:

| PHASE | COLOR CODE | NSL CODE |
|---|---|---|
| A | Orange | 4 |
| B | Brown | 3 |
| C | Yellow | 1 |
| Neutral | Non-Coded | 2 |

The current probe was attached at the point where the feeders enter the switchgear which is the same point as used when making the ambient tests described in report Item 4.

## 2.3 Measurement Technique

Each of the four power conductors 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 have been made for each frequency range, on each of the four power lines. The scanning time per recording averaged 4 to 6 minutes.

These recordings are reproduced in the Appendix as the upper half of Pages A-2 through A-18. The recordings are presented in order of phase rather then the order in which they were produced. The dB scale refers to the level at the instrument input connector.

# 3. INTERPRETATION OF DATA

The amplitude/frequency charts produced during the tests are reproduced in the upper half of each page of Appendix A-2 through A-18. 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 probe (current probe amplitude response is non-linear with frequency) has been included in the levels plotted in the lower chart.

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

Notations are written on the charts which indicate instrumentation noise level, and an occasional guideway switch operation. No operation of the PRT system could be identified with the noise peaks present on the d.c. to 1 kHz charts. However, in the 1 kHz to 50 kHz charts, only receiver noise and occasional noise spikes are present when no vehicles are running as indicated in the chart on Page A-4. Also, the noise level drops to instrument ambient when only one vehicle is operational and cuts its power off when slowing down to make a turn or when coming into a station. The chart on Page A-16 was a situation where vehicles were in operation only during the scan time from 43 kHz to 50 kHz with a short power off when scanning through 49 kHz.

4. TIME LOG

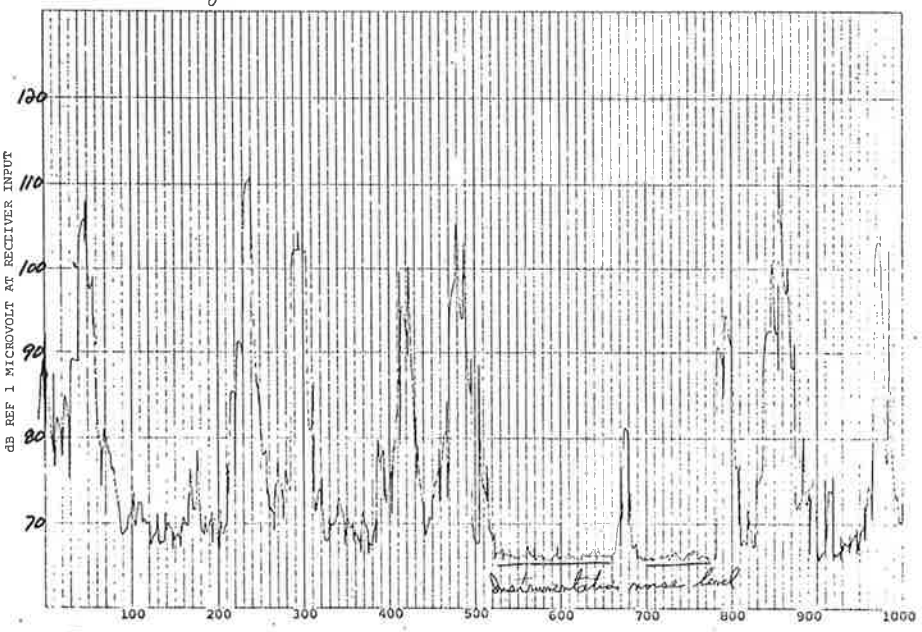
Dashaveyor had two vehicles running during the test period -- 1550 to 1710. The log is on Pages A-19 through A-27 of the Appendix.

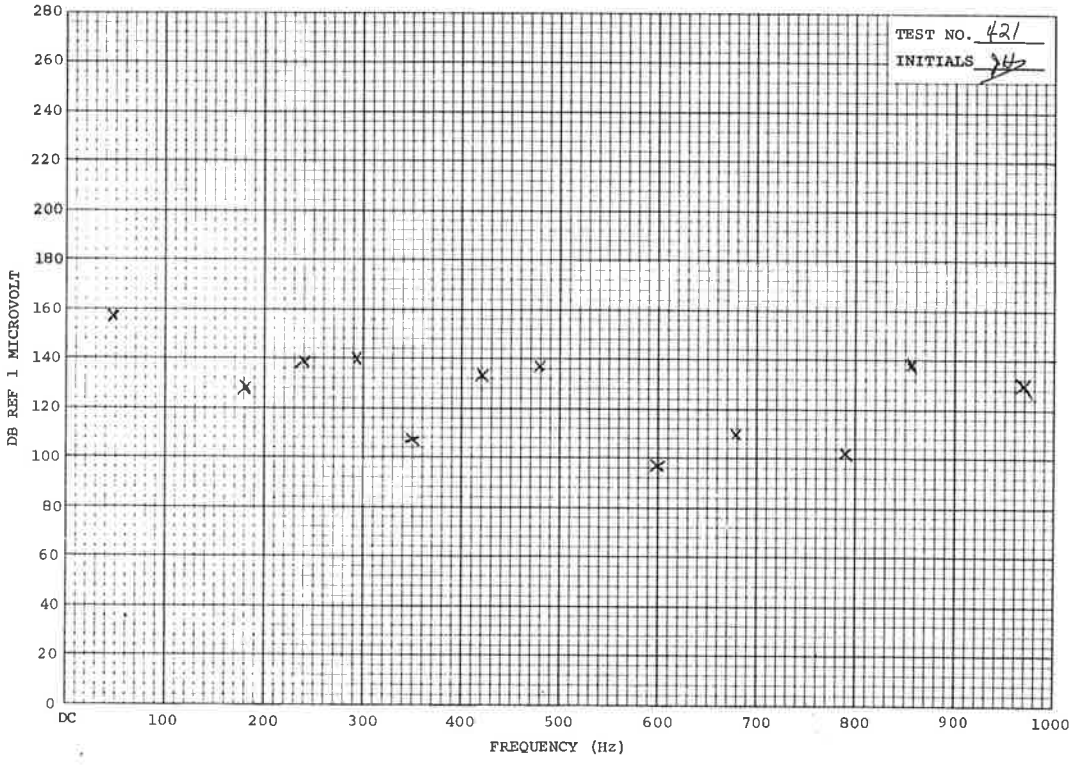
# APPENDIX A

## POWER LINE CONDUCTION MEASUREMENTS DATA

Contains data charts for Test No. 406 through 422. The charts are presented in order of phase - A, B, C, Neutral -- for ease of analysis, rather then in numerical order as the test were performed.

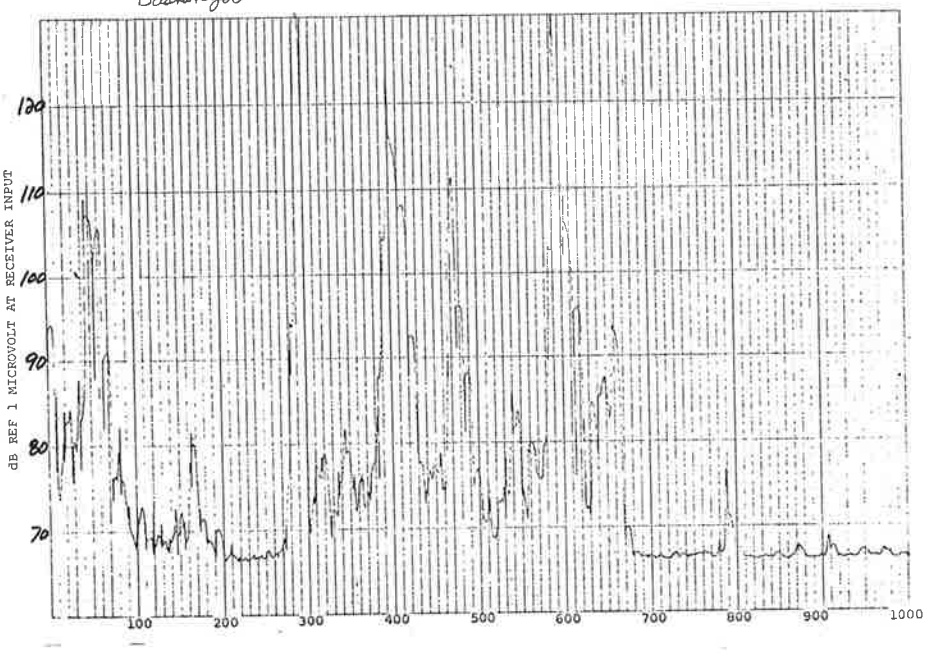
TEST NO. 421 TEST TYPE PLC BANDWIDTH 5 Hz 1703
TEST SPECIMEN QA DATE 8-1-72 EEJ
Dashavaja

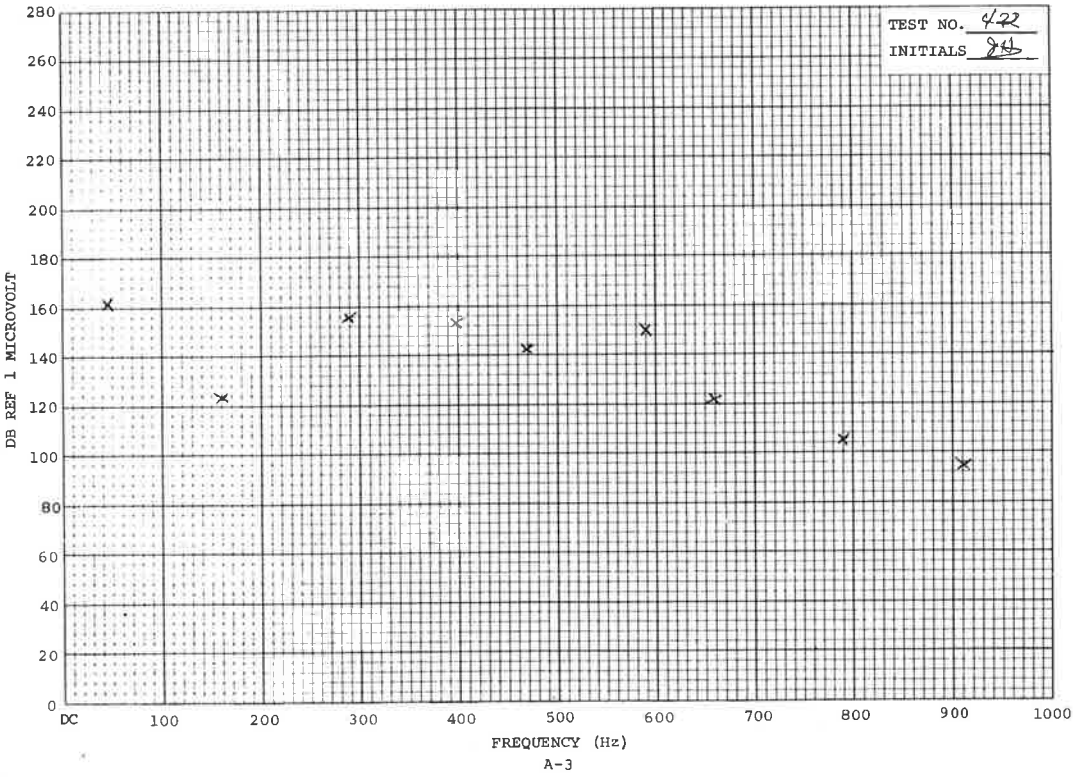


TEST NO. 422 TEST TYPE PLC BANDWIDTH 5 Hz
TEST SPECIMEN QA DATE 8-1-72
TEST EQUIP. EMC-10

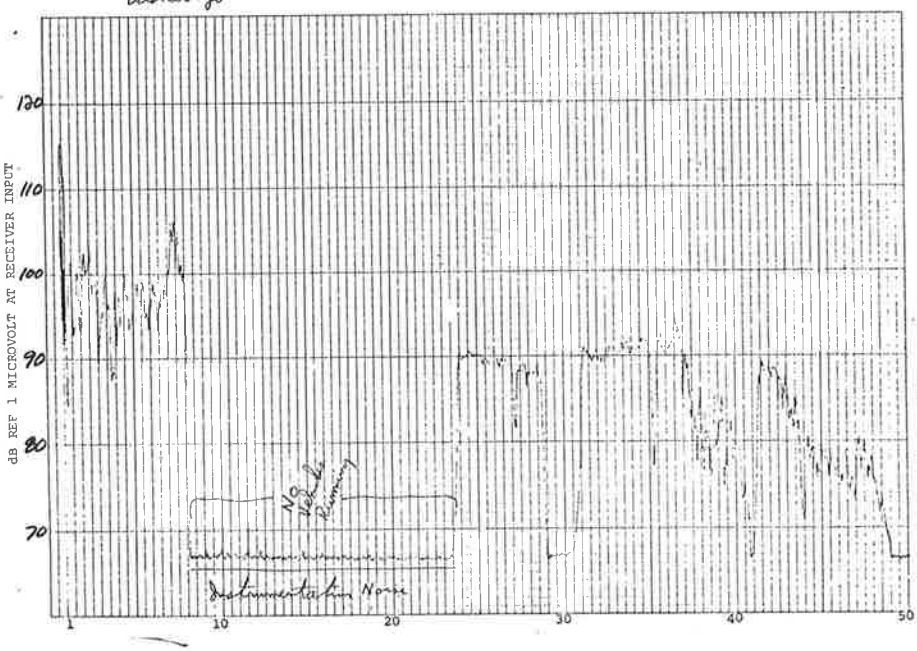
1707
ESD

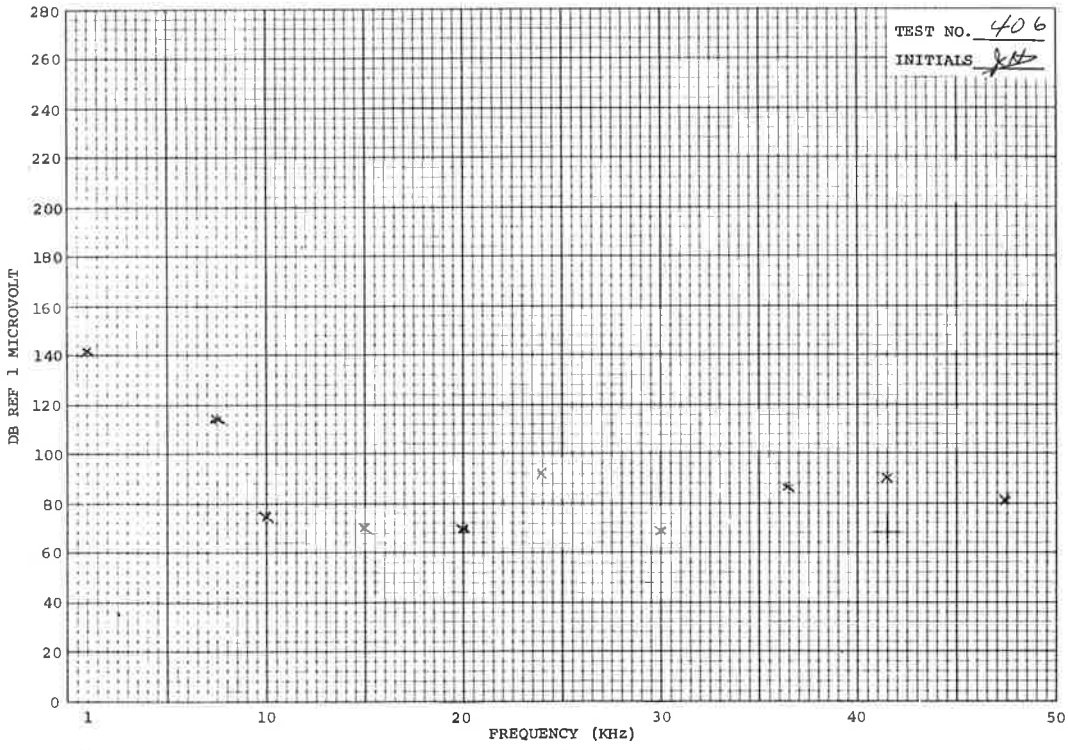


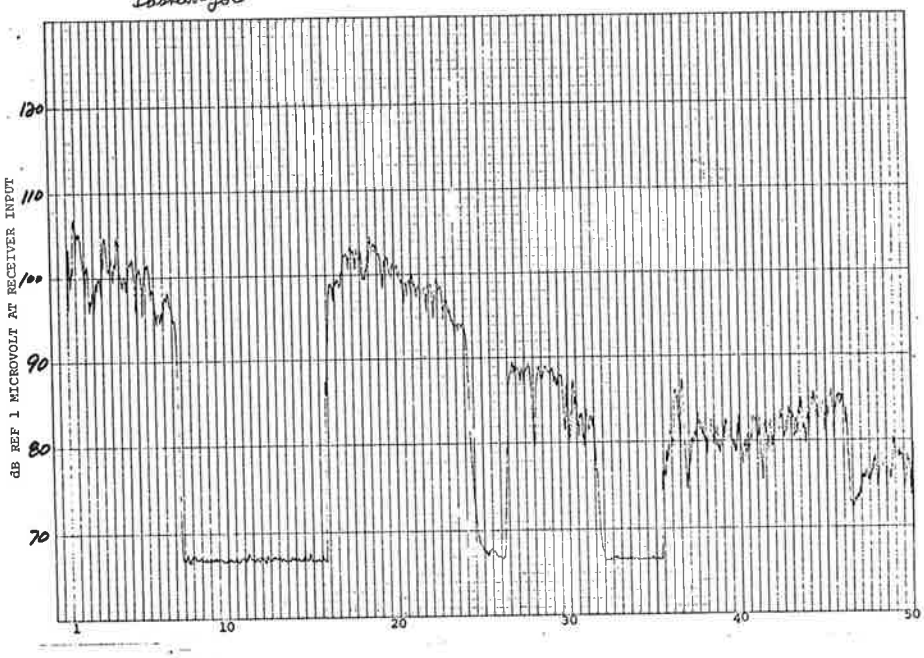
TEST NO. 406 TEST TYPE PLC BANDWIDTH 50 Hz
TEST SPECIMEN QA TEST EQUIP. ENC-10 DATE 8-1-72
Dashaveyor

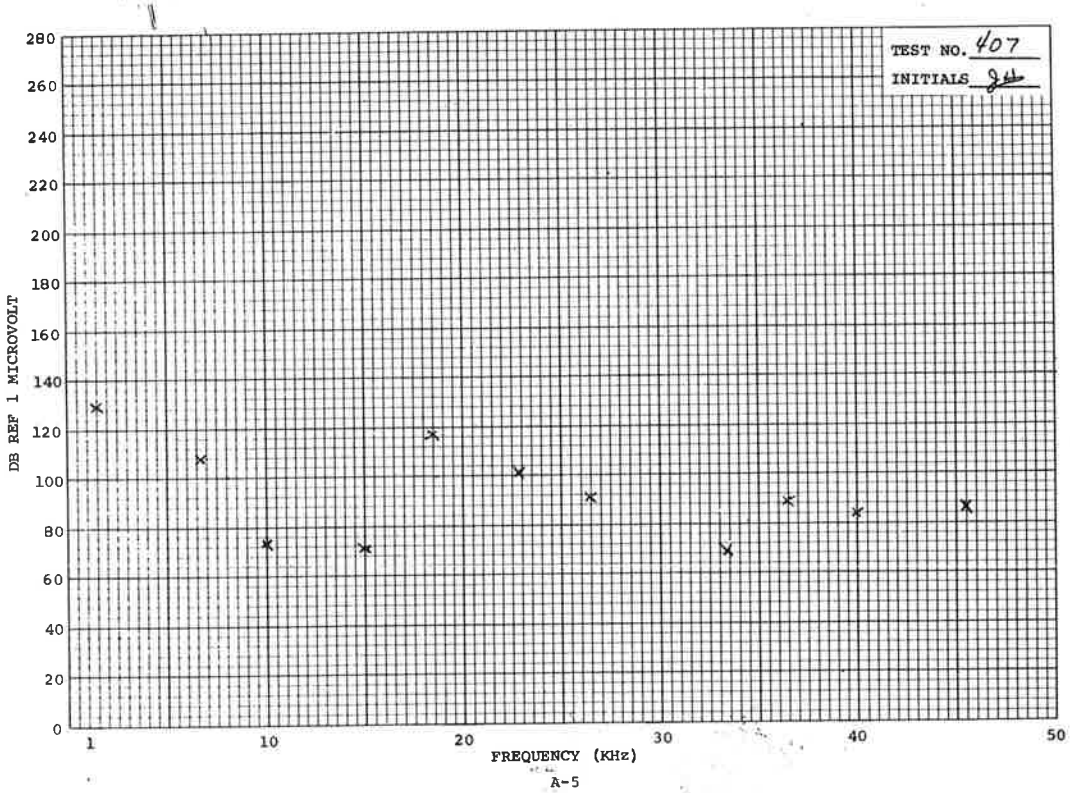
1552
JRC



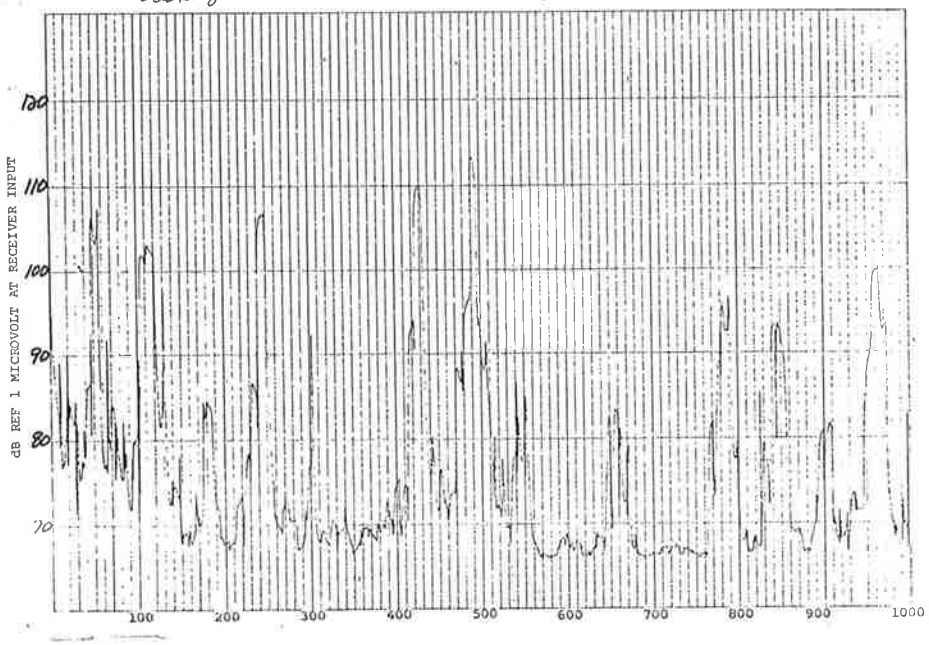
TEST NO. 407 TEST TYPE PLC BANDWIDTH 50 Hz 1556
TEST SPECIMEN QA DATE 8-1-72 JRC
Dataranger
TEST EQUIP. EMC-10

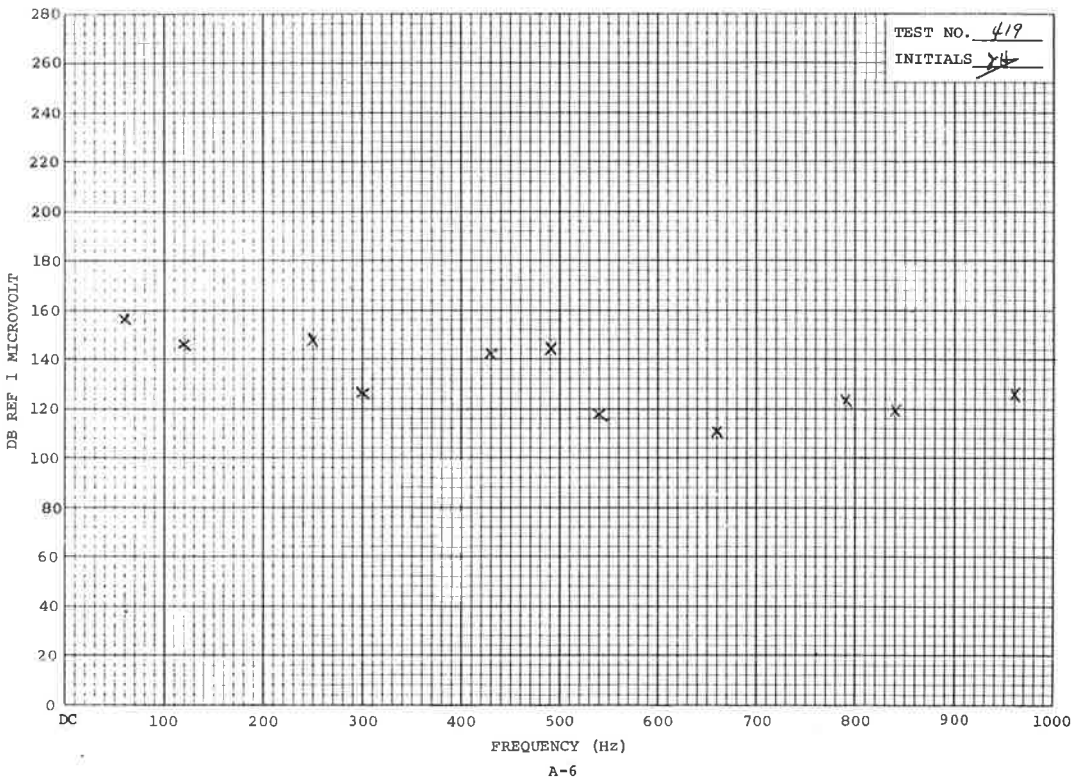


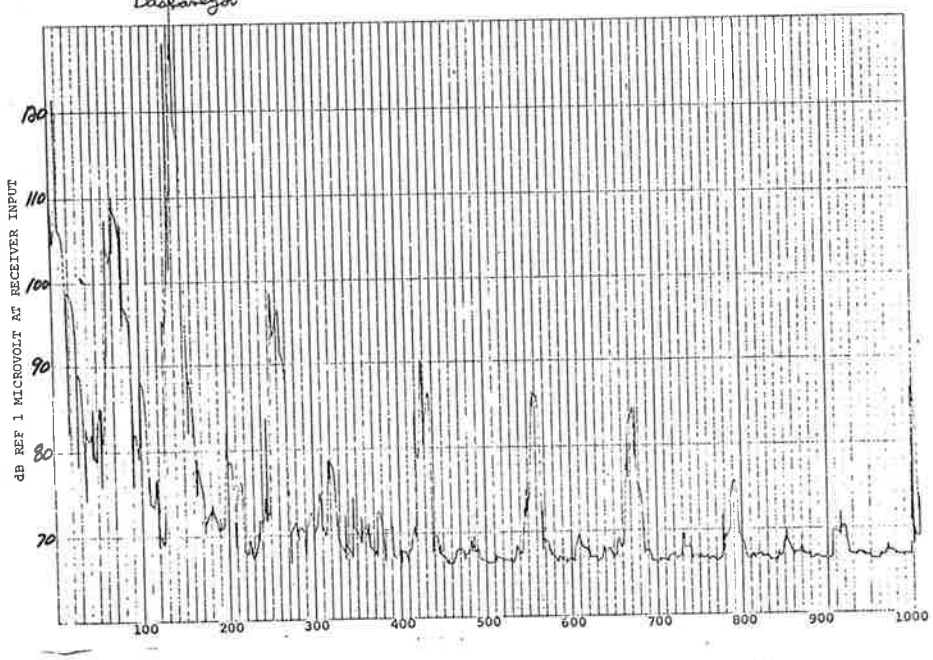
TEST NO. 419 TEST TYPE PLC BANDWIDTH 5 Hz
TEST SPECIMEN ØB Dashanya TEST EQUIP. EMC-10 DATE 8-1-72

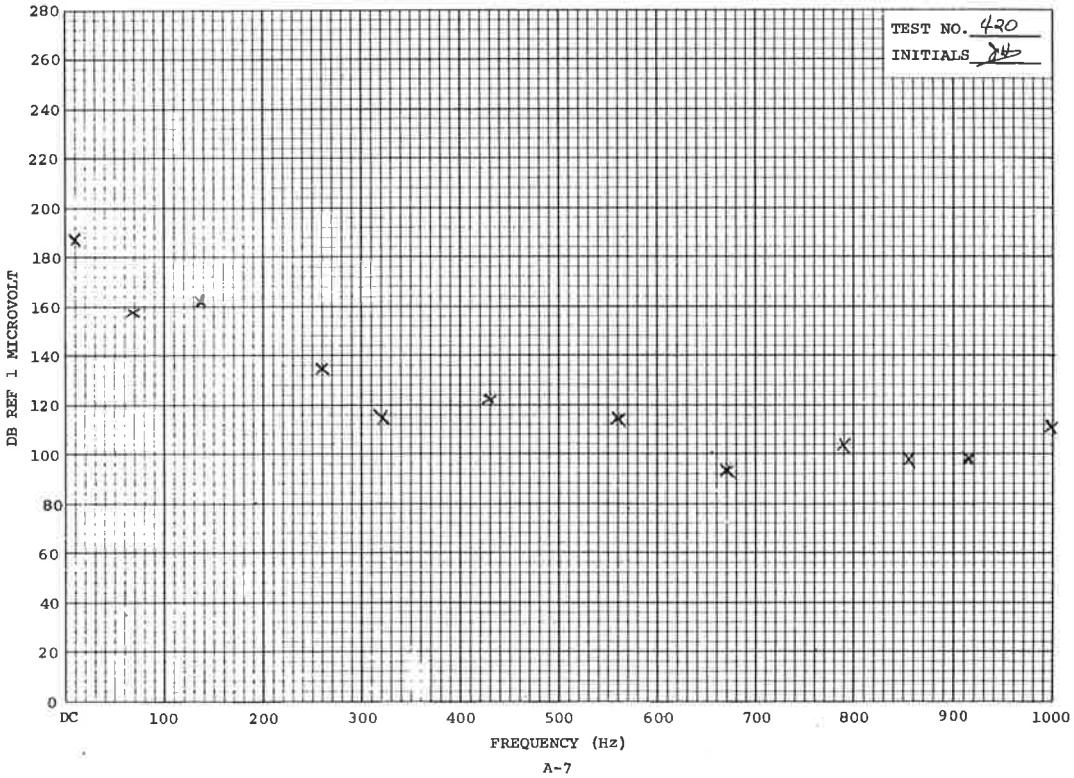
1656
EGJ



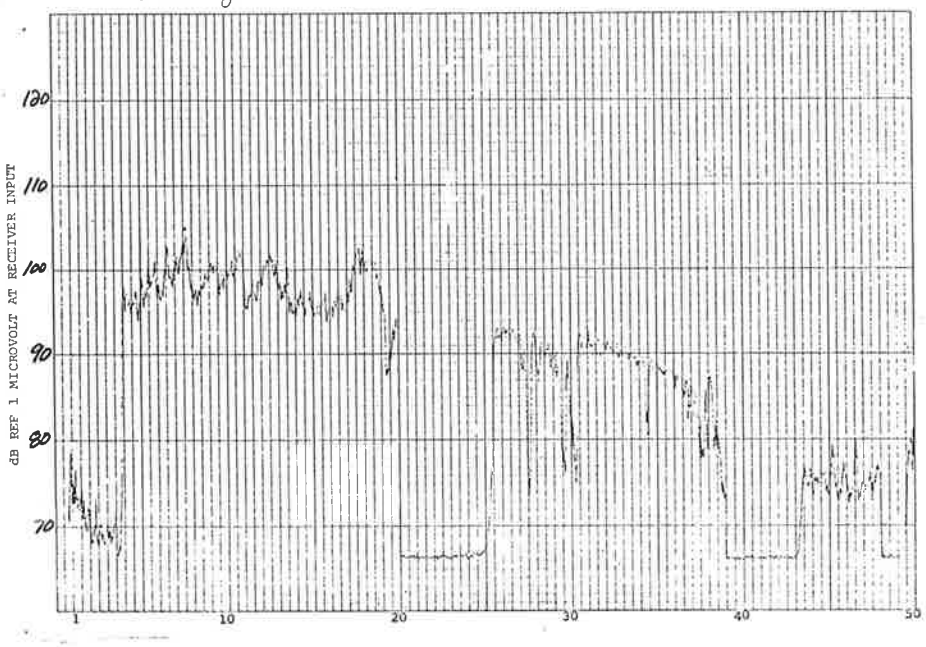



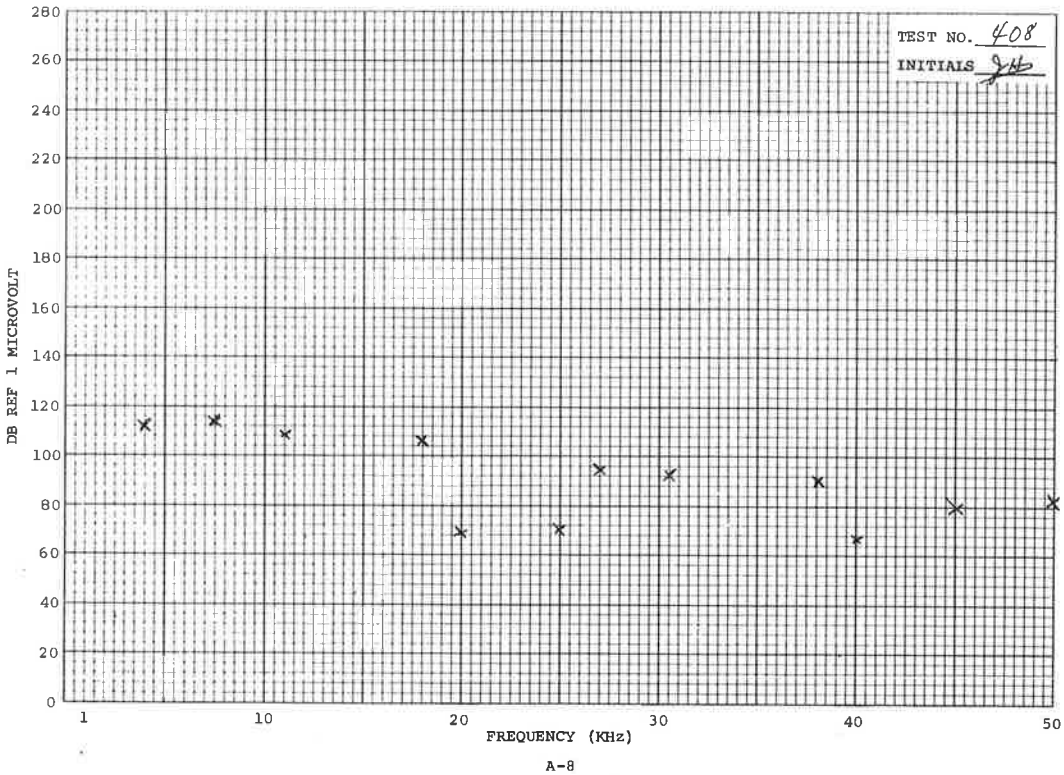
TEST NO. 420
TEST SPECIMEN ØB Daclarezo
TEST TYPE PLC
TEST EQUIP. EMC-10
BANDWIDTH 5 Hz
DATE 8-1-72
1659 EST



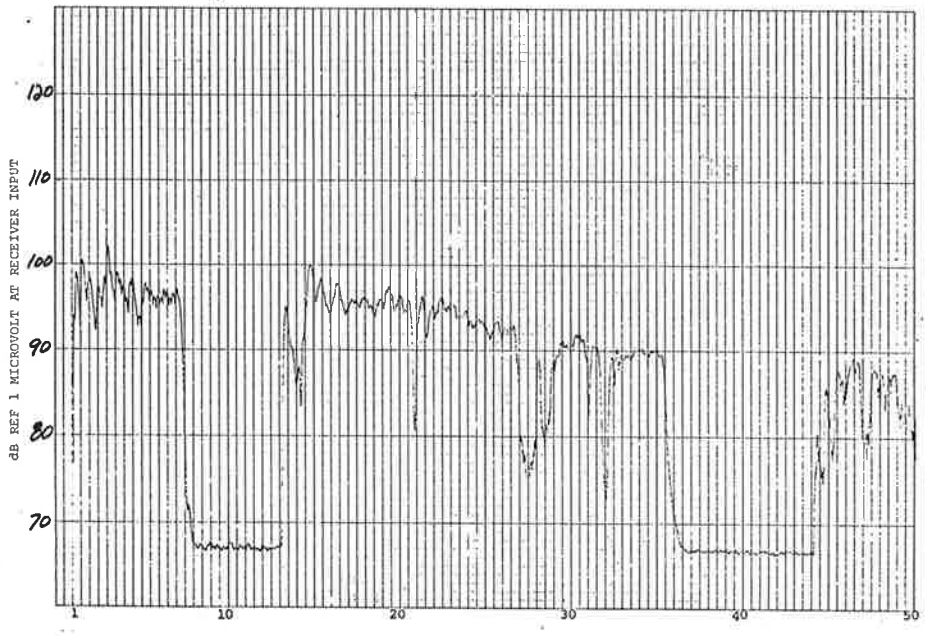
TEST NO. 408 TEST TYPE PLC BANDWIDTH 50Hz 1600
TEST SPECIMEN ØB TEST EQULP. EMC-10 DATE 8-1-72 EE
Dashaveyor

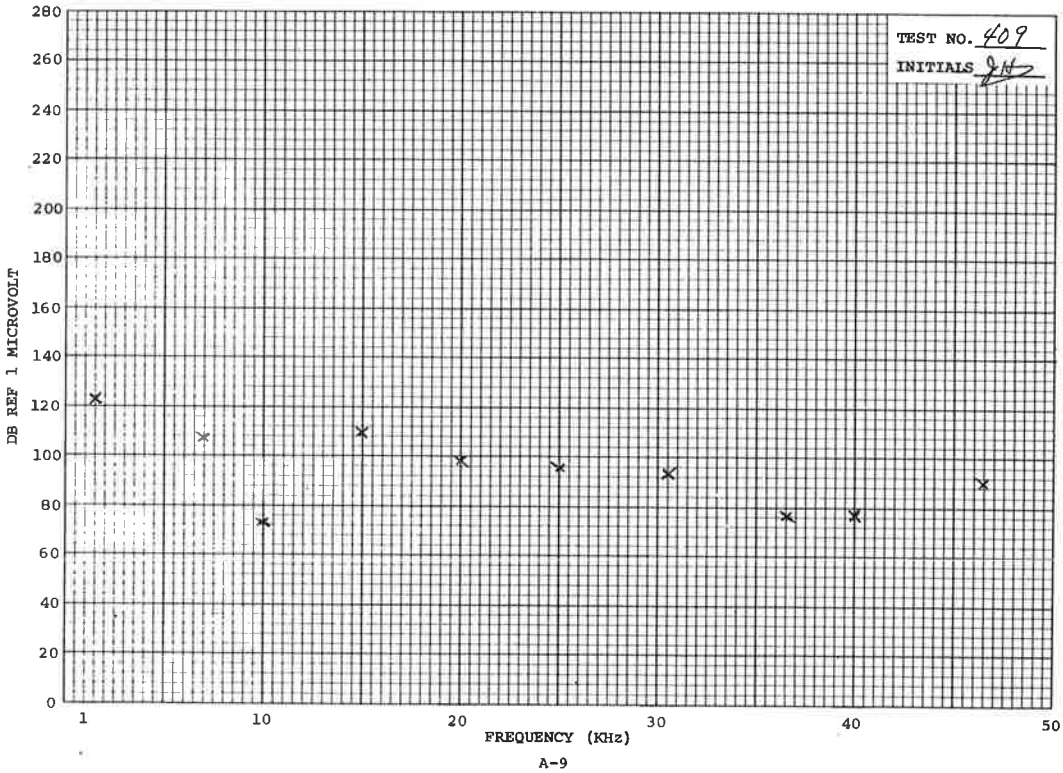


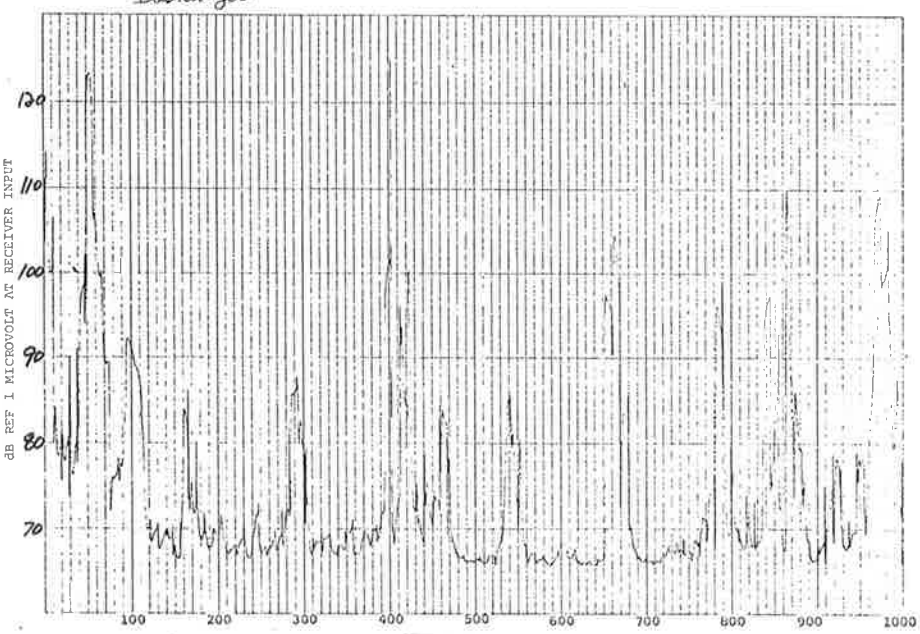
TEST NO. 409 TEST TYPE PLC BANDWIDTH 50 Hz
TEST SPECIMEN ϕ B TEST EQUIP. ENC-10 DATE 8-1-72
Dashanegon

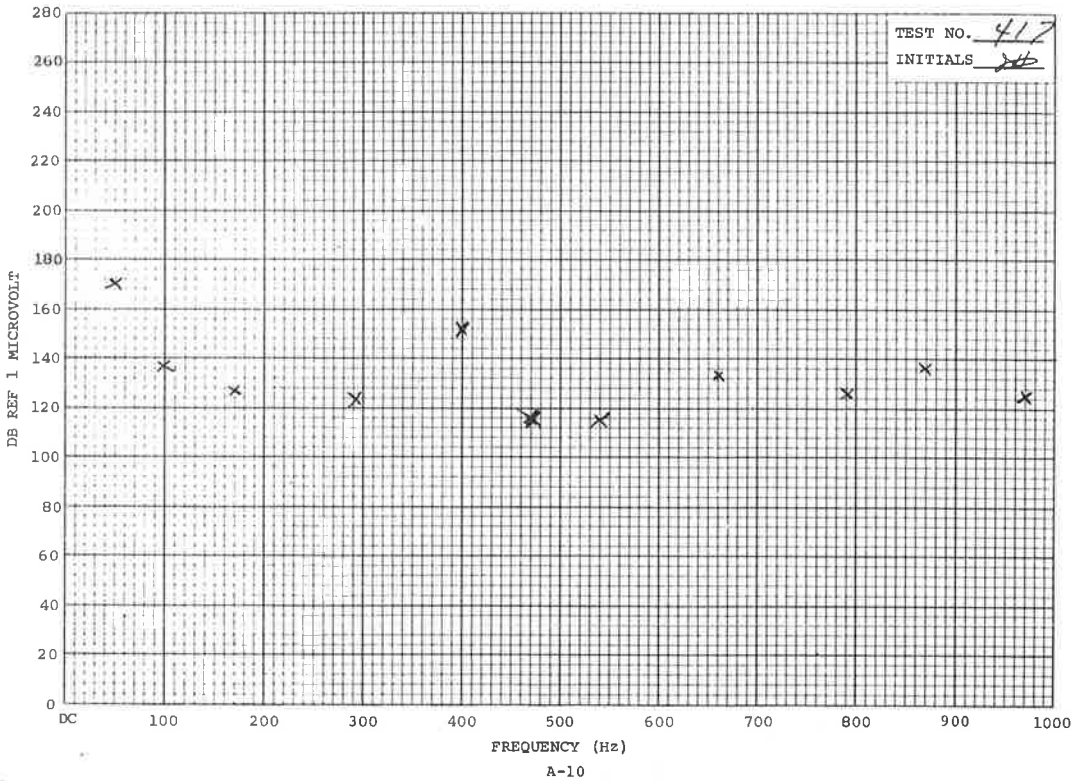
1605
EDT



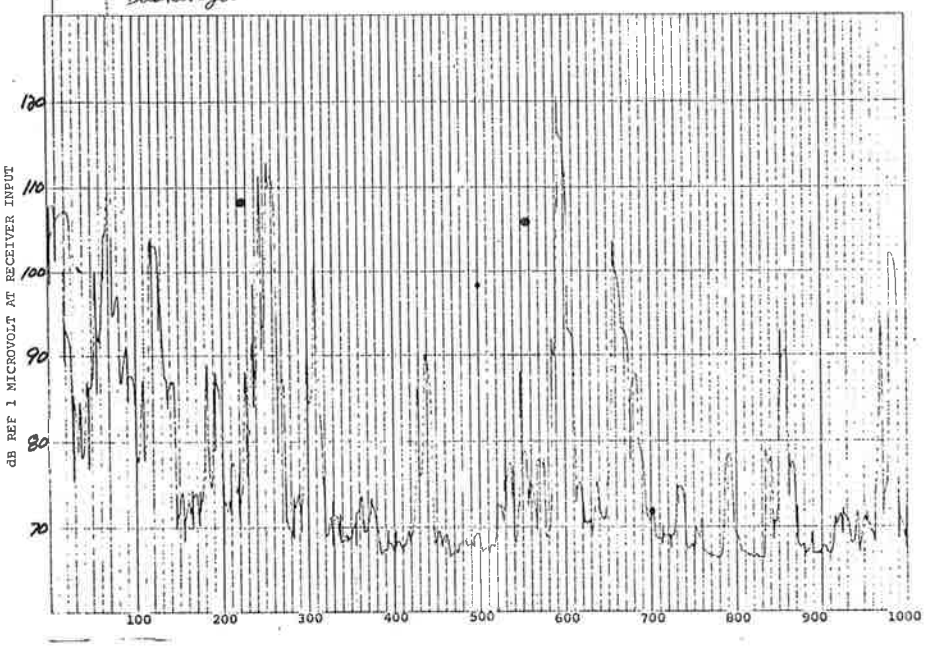



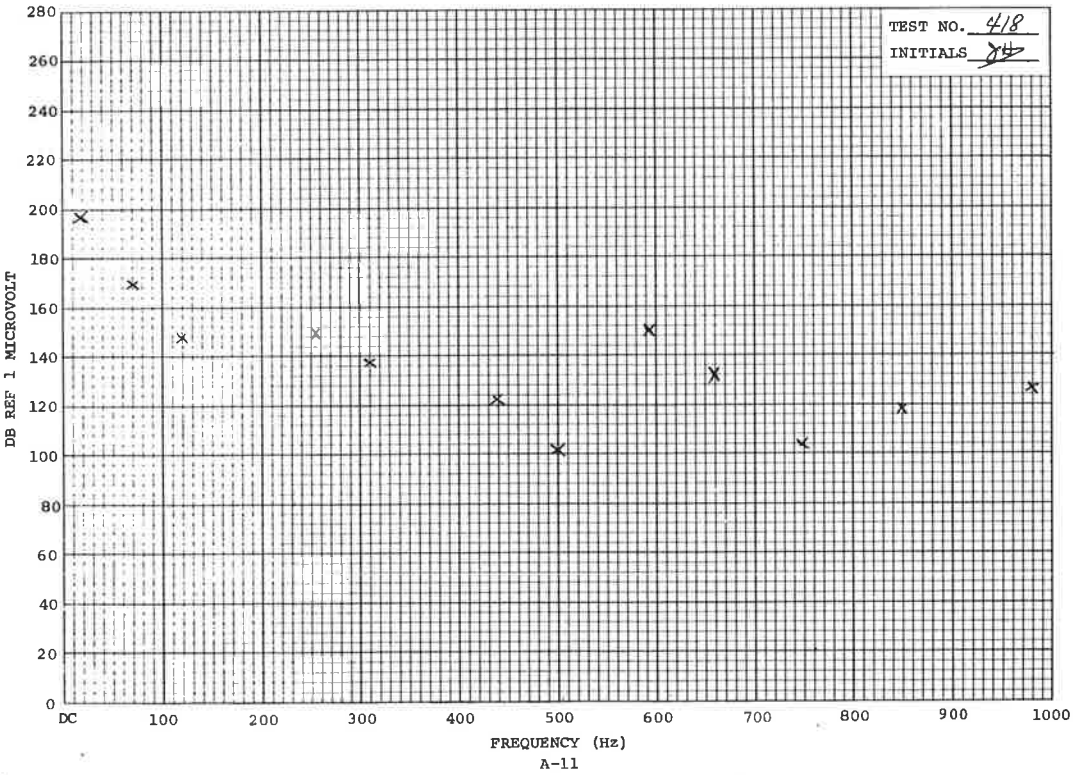
TEST NO. 417 TEST TYPE PLC BANDWIDTH 5 HZ 1648
TEST SPECIMEN ϕC TEST EQUIP. EMC-10 DATE 8-1-78
Dastarezza



TEST NO. 418 TEST TYPE PLC BANDWIDTH 5 Hz 1651
TEST SPECIMEN ØC TEST EQUIP. EMC-10 DATE 8-1-72
Dadaveya



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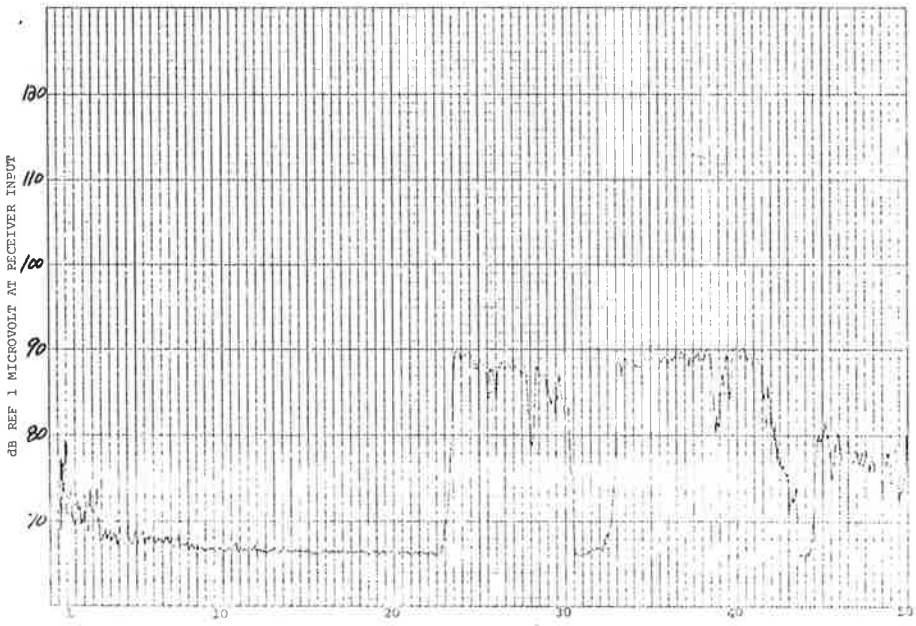
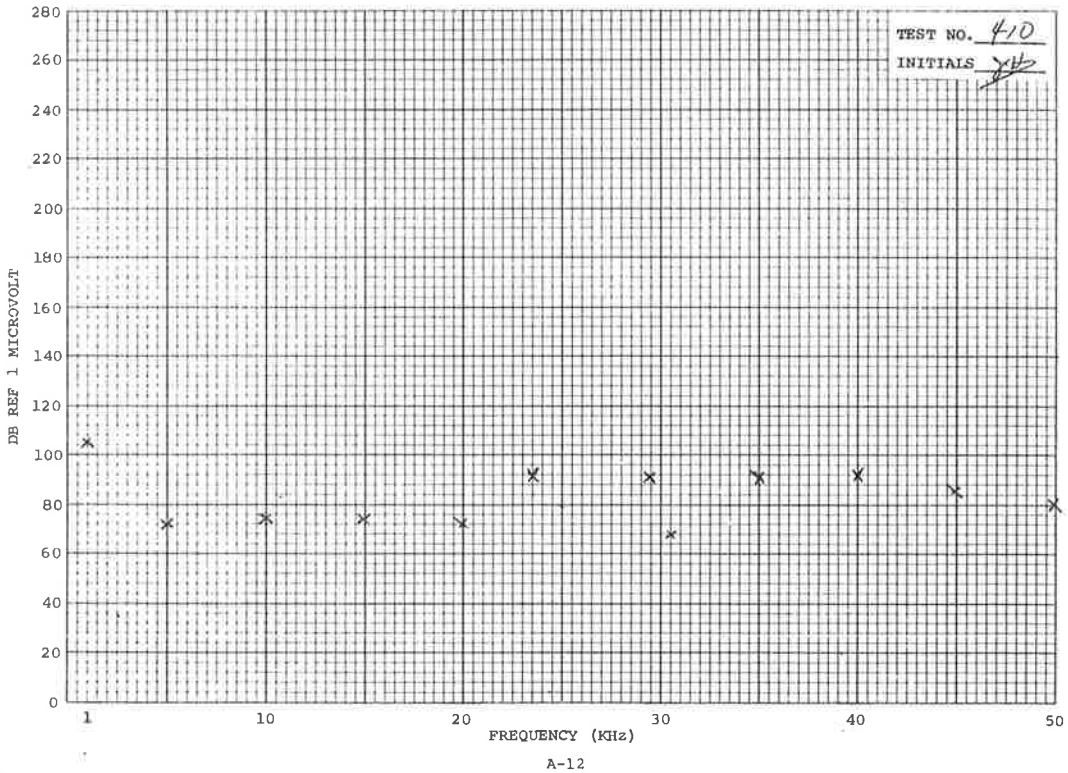
TEST SPECIMEN QC TEST EQUIP. ENC-10 DATE 8-1-72 EEJ
Dashaveya



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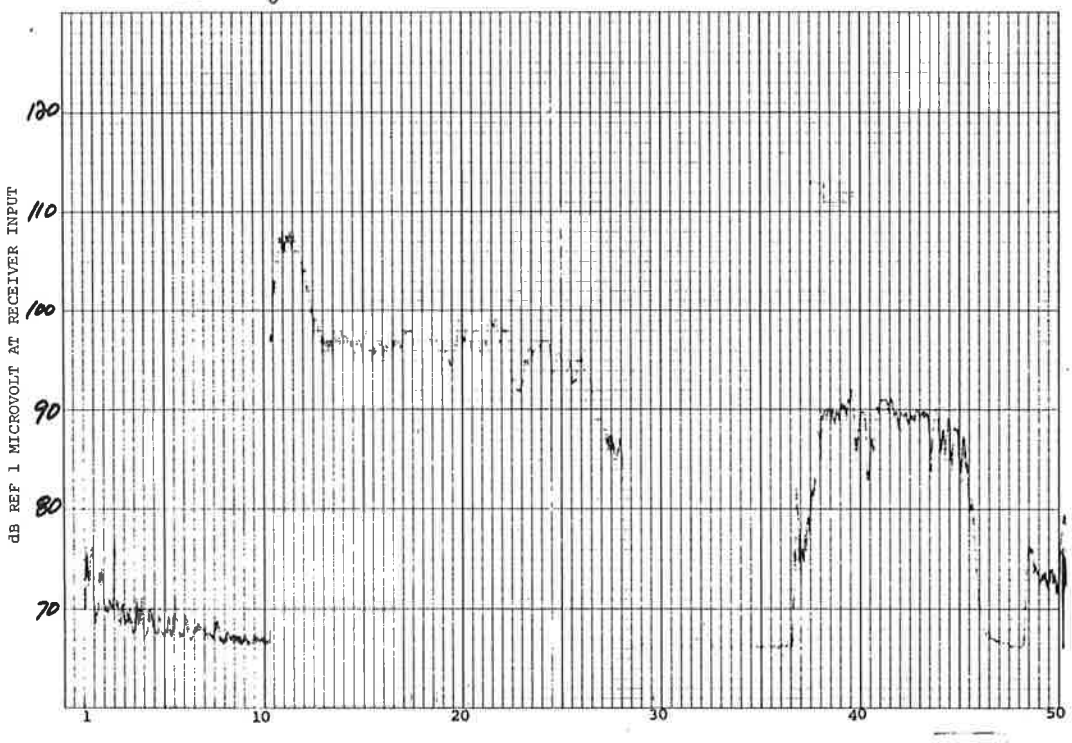
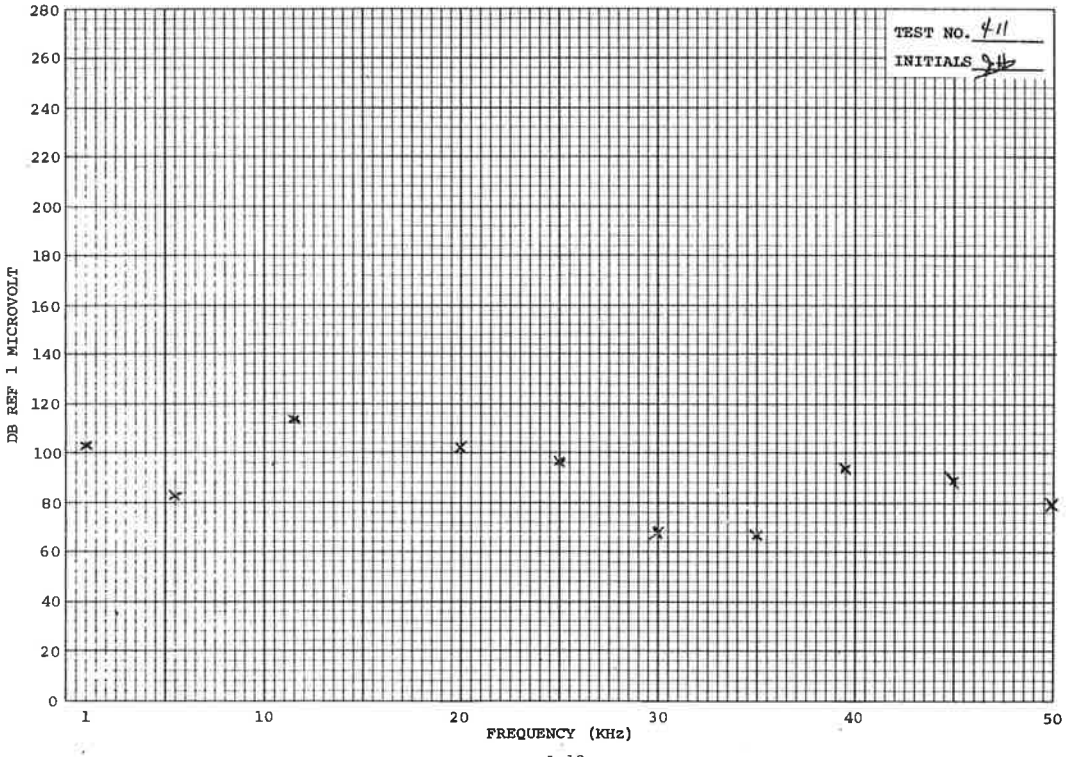
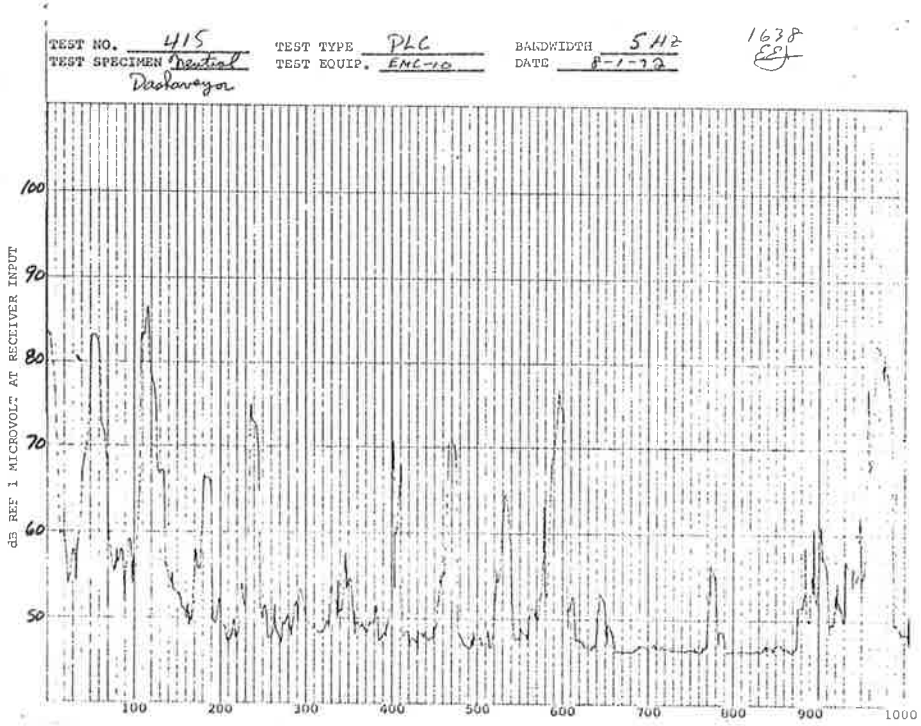
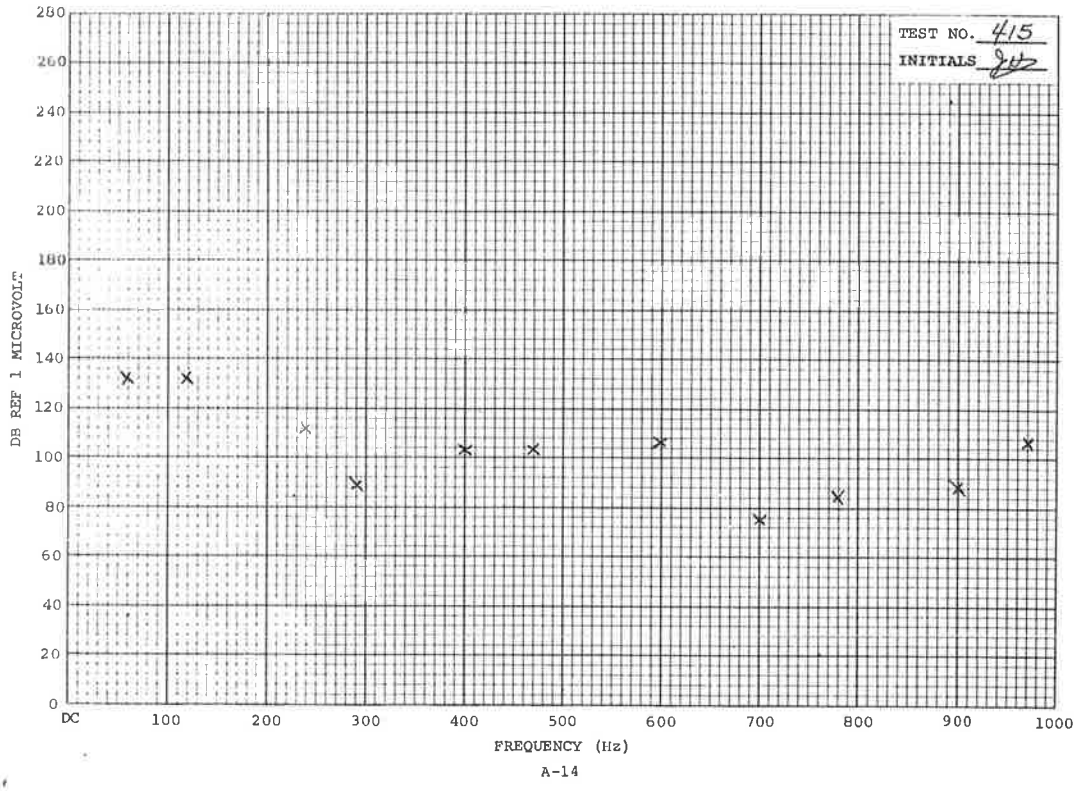
TEST SPECIMEN ØC TEST EQUIP. EMC-10 DATE 8-1-72 EEJ
Daskaveyor

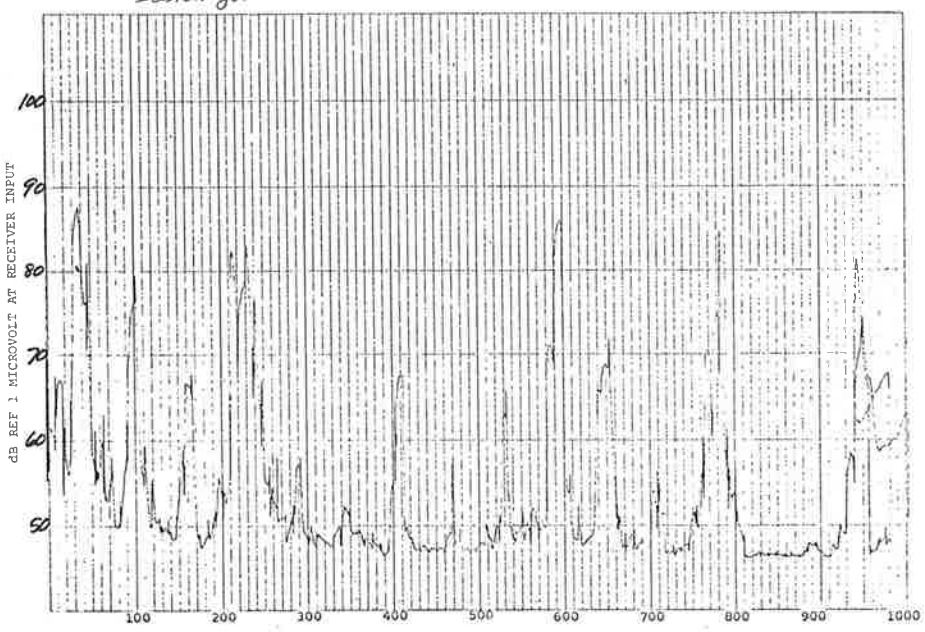


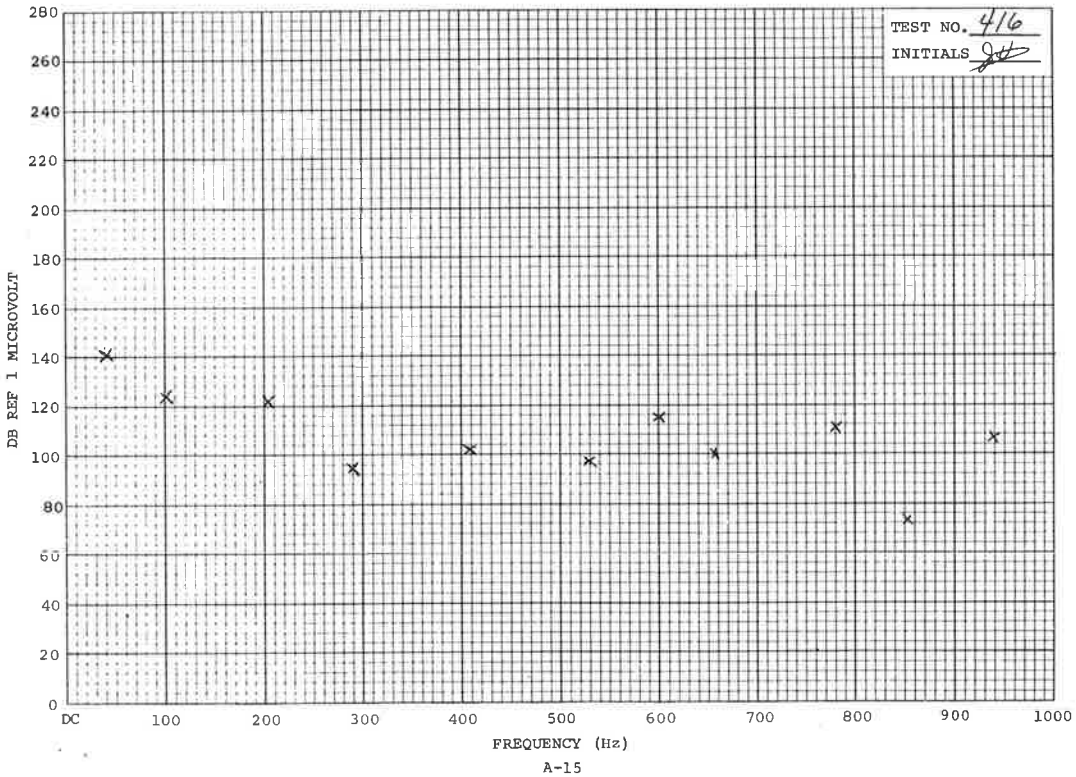




TEST NO. 415
TEST SPECIMEN Neutral Dashpot
TEST TYPE PLC
TEST EQUIP. EMC-10
BANDWIDTH 5 Hz
DATE 8-1-72
1638
dB REF 1 MICROVOLT AT RECEIVER INPUT
100
90
80
70
60
50
100
200
300
400
500
600
700
800
900
1000

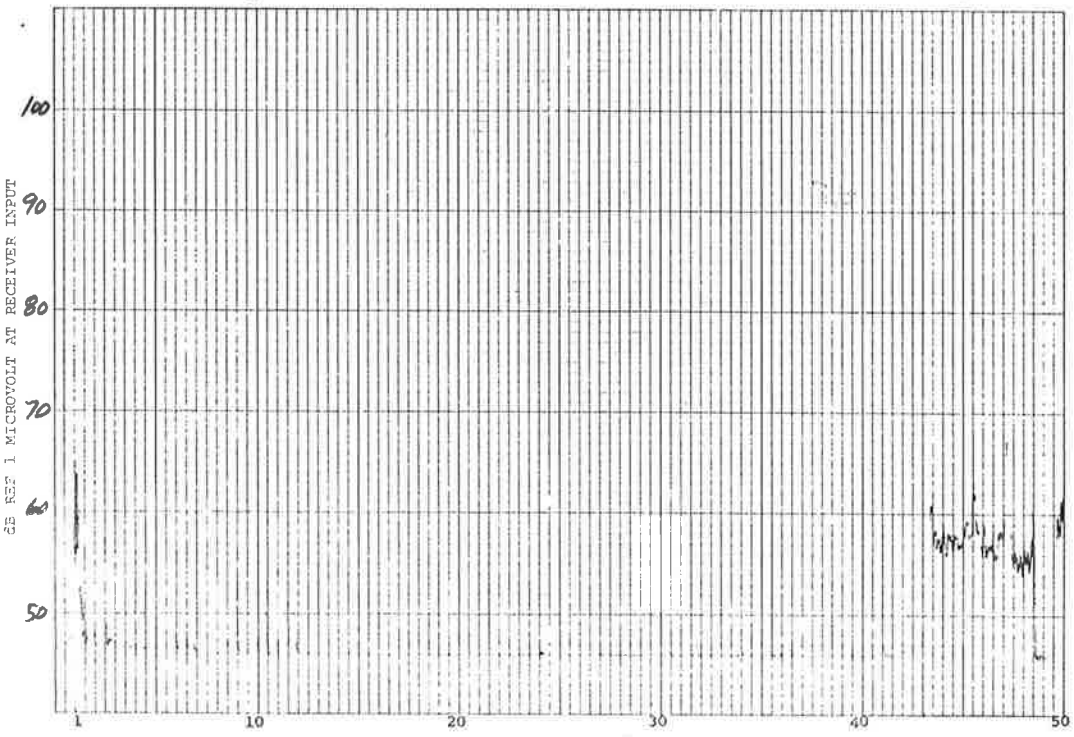

TEST NO. 415
INITIALS JH
DB REF 1 MICROVOLT
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
DC
100
200
300
400
500
600
700
800
900
1000
FREQUENCY (Hz)

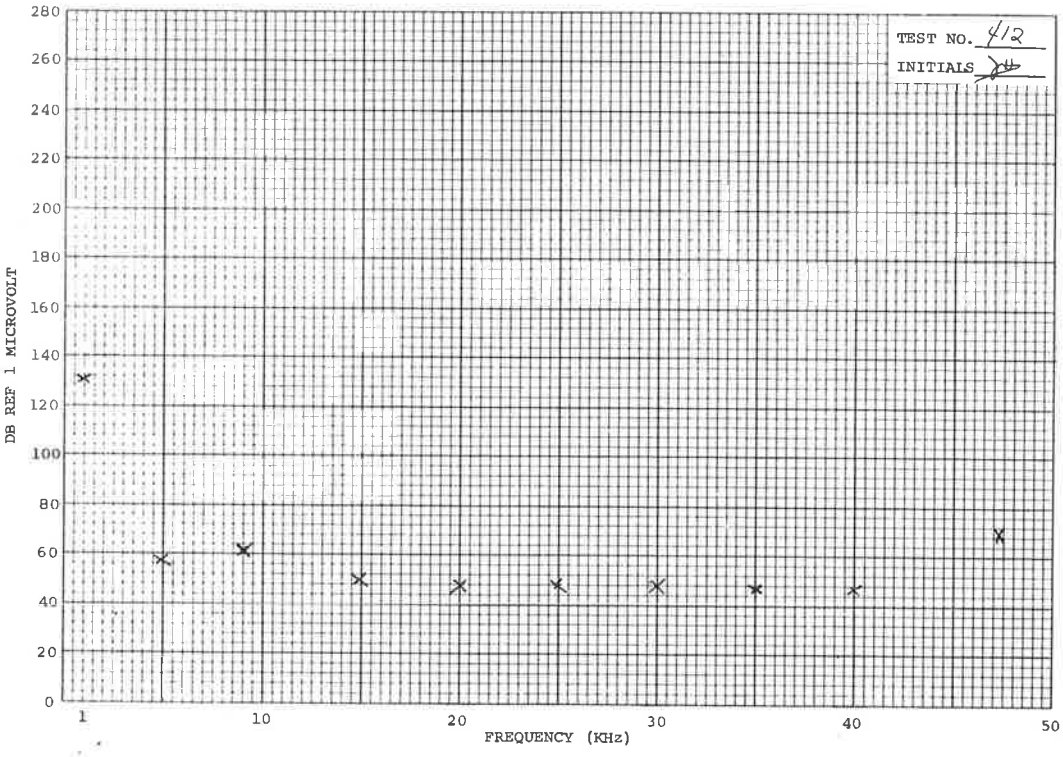
TEST NO. 416 TEST TYPE PLC BANDWIDTH 5 Hz 1641
TEST SPECIMEN Neutral Dostavaya TEST EQUIP. EMC-10 DATE 8-1-72 EB



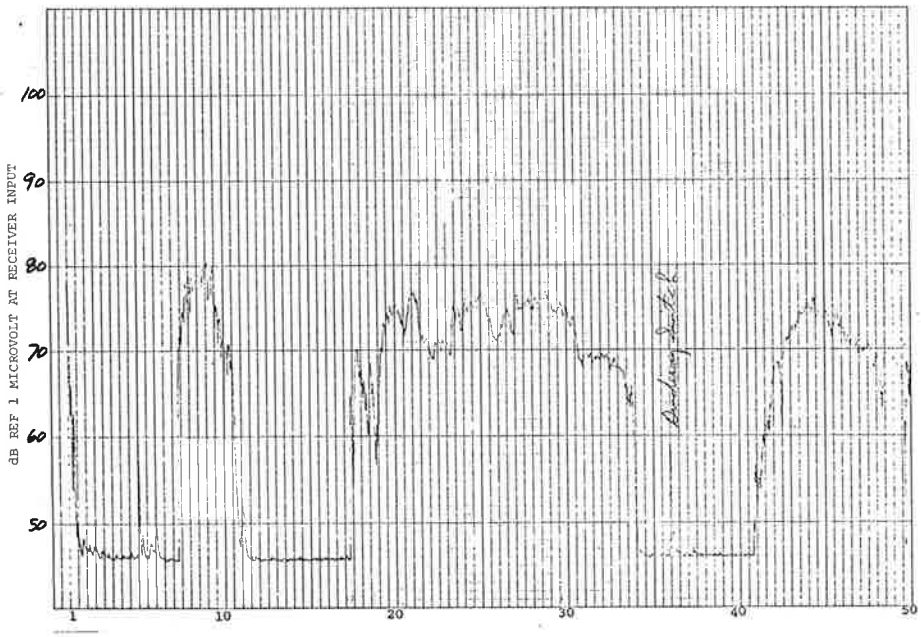



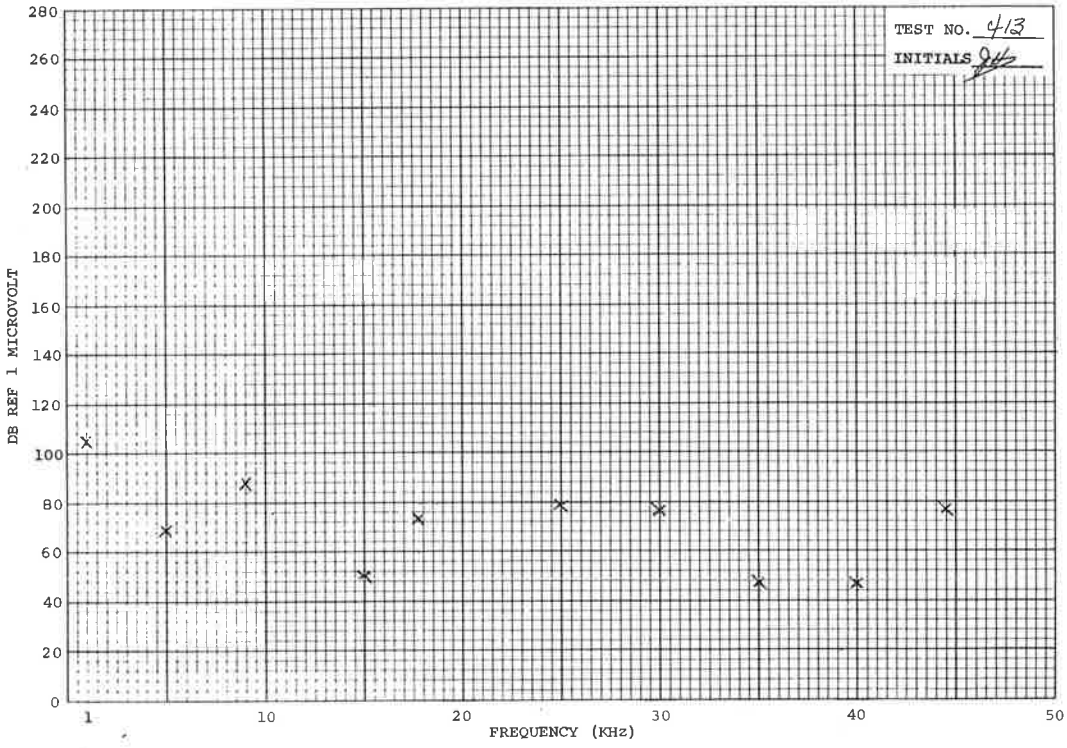
TEST NO. 412 TEST TYPE PLC BANDWIDTH 50 Hz 1620
TEST SPECIMEN Neutral Deshaveyor TEST EQUIP. EMC-10 DATE 8-1-72 EST



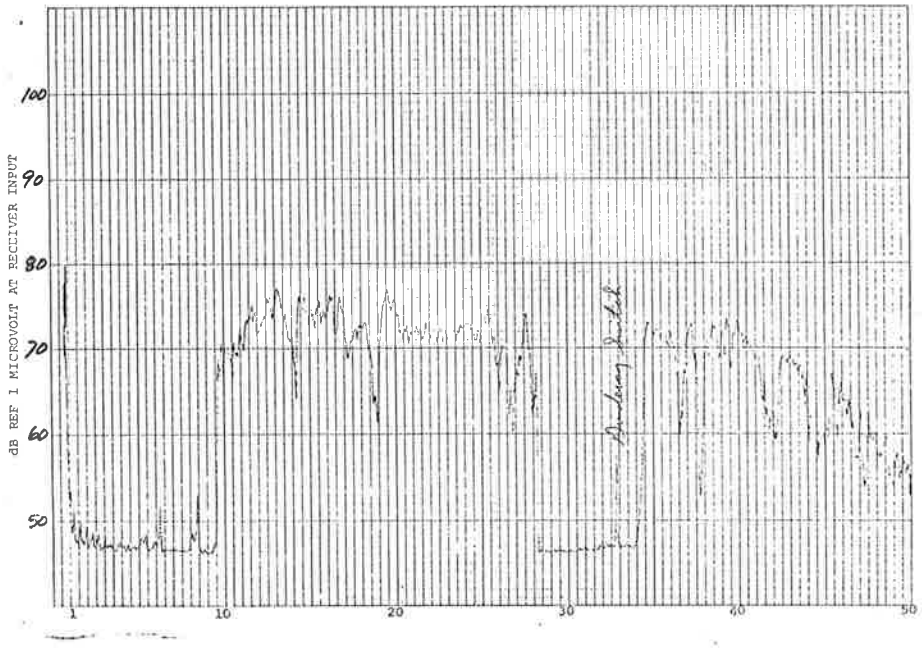



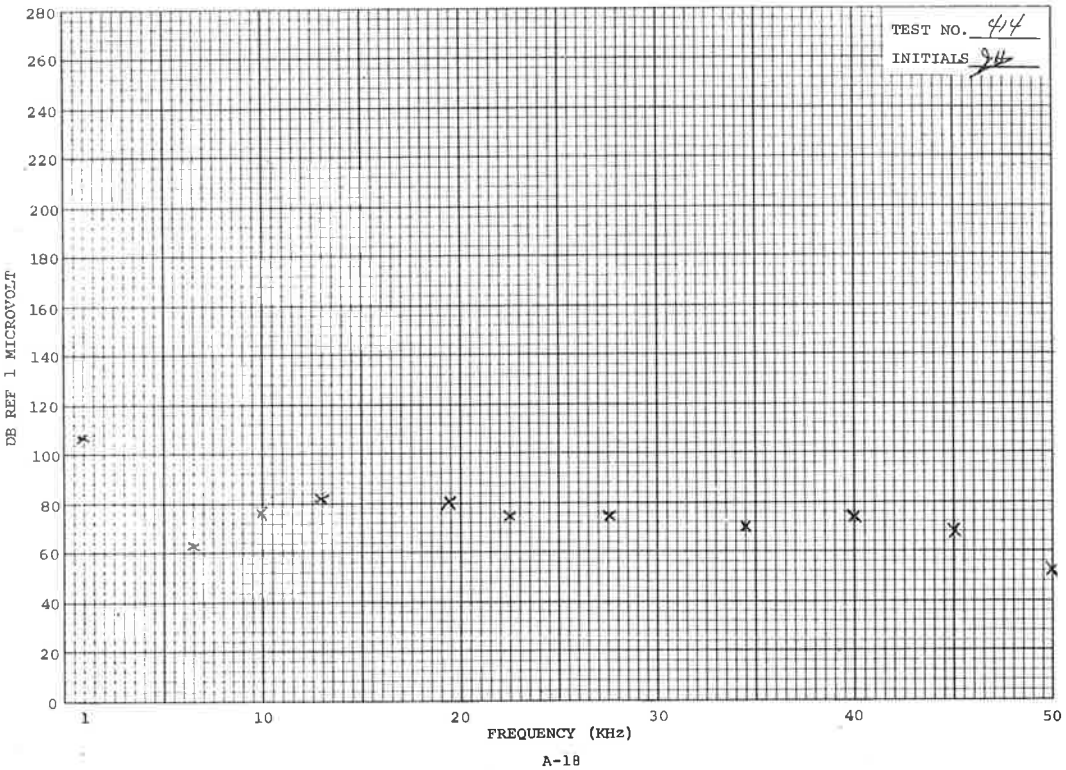
TEST NO. 413 TEST TYPE PLC BANDWIDTH 50 Hz 1626
TEST SPECIMEN Neutral TEST EQUIP. EMC-10 DATE 1-72 EEJ
Dashavaya



TEST NO. 414 TEST TYPE PLC BANDWIDTH 50 Hz 1630
TEST SPECIMEN Neutral TEST EQUIP. EMC-10 DATE 8-1-72 EEJ
Dashavezor



DASHAVEYOR Time Log for August 1, 1972

```
ARRIVAL VEH B STA C AT 15:46:56
SCHEDULED ARRIVAL      15:45:43

ARRIVAL VEH A STA N AT 15:47:21
SCHEDULED ARRIVAL      15:45:51

ARRIVAL VEH B STA S AT 15:48:02
SCHEDULED ARRIVAL      15:46:31

ARRIVAL VEH A STA C AT 15:48:28
SCHEDULED ARRIVAL      15:46:38

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 15:49:12
SCHEDULED ARRIVAL      15:47:42

ARRIVAL VEH A STA S AT 15:49:55
SCHEDULED ARRIVAL      15:49:25

ARRIVAL VEH B STA C AT 15:50:19
SCHEDULED ARRIVAL      15:48:29

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH B STA S AT 15:51:16
SCHEDULED ARRIVAL      15:51:16

ARRIVAL VEH A STA N AT 15:51:19
SCHEDULED ARRIVAL      15:50:35

ARRIVAL VEH A STA C AT 15:52:09
SCHEDULED ARRIVAL      15:51:22

VEH B IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH B STA N AT 15:53:30
SCHEDULED ARRIVAL      15:52:32

ARRIVAL VEH A STA S AT 15:54:12
SCHEDULED ARRIVAL      15:52:10

SCHEDULE RE-ADJUSTED FOR VEHICLE A
```

```
ARRIVAL VEH B STA C AT 15:54:36
SCHEDULED ARRIVAL      15:53:19

ARRIVAL VEH B STA S AT 15:55:33
SCHEDULED ARRIVAL      15:54:08

ARRIVAL VEH A STA N AT 15:55:36
SCHEDULED ARRIVAL      15:55:33

ARRIVAL VEH A STA C AT 15:56:26
SCHEDULED ARRIVAL      15:56:20

ARRIVAL VEH B STA N AT 15:56:45
SCHEDULED ARRIVAL      15:55:19

ARRIVAL VEH A STA S AT 15:57:27
SCHEDULED ARRIVAL      15:57:09

ARRIVAL VEH B STA C AT 15:57:50
SCHEDULED ARRIVAL      15:56:06

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH B STA S AT 15:58:47
SCHEDULED ARRIVAL      15:58:48

ARRIVAL VEH A STA N AT 15:58:50
SCHEDULED ARRIVAL      15:58:20

ARRIVAL VEH A STA C AT 15:59:39
SCHEDULED ARRIVAL      15:59:07

ARRIVAL VEH B STA N AT 16:00:04
SCHEDULED ARRIVAL      16:00:05

ARRIVAL VEH A STA S AT 16:00:46
SCHEDULED ARRIVAL      15:59:56

ARRIVAL VEH B STA C AT 16:01:09
SCHEDULED ARRIVAL      16:00:54

ARRIVAL VEH B STA S AT 16:02:06
SCHEDULED ARRIVAL      16:01:43

ARRIVAL VEH A STA N AT 16:02:09
SCHEDULED ARRIVAL      16:01:06

ARRIVAL VEH A STA C AT 16:02:59
SCHEDULED ARRIVAL      16:01:54

ARRIVAL VEH B STA N AT 16:03:18
SCHEDULED ARRIVAL      16:02:54

ARRIVAL VEH A STA S AT 16:04:00
SCHEDULED ARRIVAL      16:02:42
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ARRIVAL VEH B STA C AT 16:04:24
SCHEDULED ARRIVAL      16:03:41

ARRIVAL VEH B STA S AT 16:05:20
SCHEDULED ARRIVAL      16:04:30

ARRIVAL VEH A STA N AT 16:05:24
SCHEDULED ARRIVAL      16:03:53

ARRIVAL VEH A STA C AT 16:06:14
SCHEDULED ARRIVAL      16:04:40

ARRIVAL VEH B STA N AT 16:07:16
SCHEDULED ARRIVAL      16:05:40

ARRIVAL VEH A STA S AT 16:07:22
SCHEDULED ARRIVAL      16:05:29

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 16:08:10
SCHEDULED ARRIVAL      16:06:27

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 16:08:36
SCHEDULED ARRIVAL      16:08:41

ARRIVAL VEH B STA S AT 16:09:27
SCHEDULED ARRIVAL      16:09:09

ARRIVAL VEH A STA C AT 16:09:52
SCHEDULED ARRIVAL      16:09:30

ARRIVAL VEH B STA N AT 16:10:49
SCHEDULED ARRIVAL      16:10:20

ARRIVAL VEH A STA S AT 16:10:54
SCHEDULED ARRIVAL      16:10:19

ARRIVAL VEH B STA C AT 16:11:42
SCHEDULED ARRIVAL      16:11:07

ARRIVAL VEH A STA N AT 16:12:07
SCHEDULED ARRIVAL      16:11:29

ARRIVAL VEH B STA S AT 16:12:58
SCHEDULED ARRIVAL      16:11:56

ARRIVAL VEH A STA C AT 16:13:23
SCHEDULED ARRIVAL      16:12:16

ARRIVAL VEH B STA N AT 16:14:08
SCHEDULED ARRIVAL      16:13:06
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ARRIVAL VEH A STA S AT 16:14:50
SCHEDULED ARRIVAL      16:13:05

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 16:15:14
SCHEDULED ARRIVAL      16:13:53

ARRIVAL VEH B STA S AT 16:16:11
SCHEDULED ARRIVAL      16:14:42

ARRIVAL VEH A STA N AT 16:16:14
SCHEDULED ARRIVAL      16:16:10

ARRIVAL VEH A STA C AT 16:17:04
SCHEDULED ARRIVAL      16:16:57

ARRIVAL VEH B STA N AT 16:17:24
SCHEDULED ARRIVAL      16:15:53

ARRIVAL VEH A STA S AT 16:18:06
SCHEDULED ARRIVAL      16:17:46

ARRIVAL VEH B STA C AT 16:18:58
SCHEDULED ARRIVAL      16:16:40

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 16:19:20
SCHEDULED ARRIVAL      16:18:57

ARRIVAL VEH B STA S AT 16:20:01
SCHEDULED ARRIVAL      16:19:57

ARRIVAL VEH A STA C AT 16:20:26
SCHEDULED ARRIVAL      16:19:44

ARRIVAL VEH B STA N AT 16:21:23 *78
SCHEDULED ARRIVAL      16:21:12

ARRIVAL VEH A STA S AT 16:21:28
SCHEDULED ARRIVAL      16:20:33

VEH A IN SECTION 9 MORE THAN 30 SECONDS

ARRIVAL VEH B STA C AT 16:22:47
SCHEDULED ARRIVAL      16:21:59

ARRIVAL VEH A STA N AT 16:23:06
SCHEDULED ARRIVAL      16:21:43

ARRIVAL VEH B STA S AT 16:23:47
SCHEDULED ARRIVAL      16:22:48
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ARRIVAL VEH A STA C AT 16:24:13
SCHEDULED ARRIVAL      16:22:30

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 16:25:20
SCHEDULED ARRIVAL      16:23:58

ARRIVAL VEH A STA S AT 16:25:26
SCHEDULED ARRIVAL      16:25:10

ARRIVAL VEH B STA C AT 16:26:15
SCHEDULED ARRIVAL      16:24:45

ARRIVAL VEH A STA N AT 16:26:40
SCHEDULED ARRIVAL      16:26:21

ARRIVAL VEH B STA S AT 16:27:21
SCHEDULED ARRIVAL      16:25:34

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 16:27:47
SCHEDULED ARRIVAL      16:27:08

ARRIVAL VEH B STA N AT 16:28:43
SCHEDULED ARRIVAL      16:28:40

ARRIVAL VEH A STA S AT 16:28:49
SCHEDULED ARRIVAL      16:27:57

ARRIVAL VEH B STA C AT 16:29:37
SCHEDULED ARRIVAL      16:29:27

ARRIVAL VEH A STA N AT 16:30:02
SCHEDULED ARRIVAL      16:29:07

ARRIVAL VEH B STA S AT 16:32:14
SCHEDULED ARRIVAL      16:30:14

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 16:32:39
SCHEDULED ARRIVAL      16:29:53

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 16:33:36
SCHEDULED ARRIVAL      16:33:35

ARRIVAL VEH A STA S AT 16:33:41
SCHEDULED ARRIVAL      16:33:36

ARRIVAL VEH B STA C AT 16:34:30
SCHEDULED ARRIVAL      16:34:22
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ARRIVAL VEH A STA N AT 16:34:59
SCHEDULED ARRIVAL      16:34:49

ARRIVAL VEH B STA S AT 16:35:39
SCHEDULED ARRIVAL      16:35:11

ARRIVAL VEH A STA C AT 16:36:05
SCHEDULED ARRIVAL      16:35:35

ARRIVAL VEH B STA N AT 16:37:35
SCHEDULED ARRIVAL      16:36:21

ARRIVAL VEH A STA S AT 16:37:41
SCHEDULED ARRIVAL      16:36:24

ARRIVAL VEH B STA C AT 16:38:28
SCHEDULED ARRIVAL      16:37:08

ARRIVAL VEH A STA N AT 16:38:55
SCHEDULED ARRIVAL      16:37:35

ARRIVAL VEH B STA S AT 16:40:30
SCHEDULED ARRIVAL      16:37:56

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 16:40:55
SCHEDULED ARRIVAL      16:38:21

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 16:41:52
SCHEDULED ARRIVAL      16:41:49

ARRIVAL VEH A STA S AT 16:41:58
SCHEDULED ARRIVAL      16:41:52

ARRIVAL VEH B STA C AT 16:42:45
SCHEDULED ARRIVAL      16:42:36

ARRIVAL VEH A STA N AT 16:43:13
SCHEDULED ARRIVAL      16:43:04

ARRIVAL VEH B STA S AT 16:43:53
SCHEDULED ARRIVAL      16:43:25

ARRIVAL VEH A STA C AT 16:44:19
SCHEDULED ARRIVAL      16:43:51

ARRIVAL VEH B STA N AT 16:45:20
SCHEDULED ARRIVAL      16:44:35

ARRIVAL VEH A STA S AT 16:45:26
SCHEDULED ARRIVAL      16:44:40
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ARRIVAL VEH B STA C AT 16:46:14
SCHEDULED ARRIVAL 16:45:22

ARRIVAL VEH A STA N AT 16:46:40
SCHEDULED ARRIVAL 16:45:51

ARRIVAL VEH B STA S AT 16:47:21
SCHEDULED ARRIVAL 16:46:11

ARRIVAL VEH A STA C AT 16:47:46
SCHEDULED ARRIVAL 16:46:38

ARRIVAL VEH A STA S AT 16:49:03
SCHEDULED ARRIVAL 16:47:26

VEH B IM[illegible]O[illegible] BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH B STA N AT 16:50:51
SCHEDULED ARRIVAL 16:47:20

SCHEDULE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH B STA C AT 16:51:39
SCHEDULED ARRIVAL 16:51:40

SCHEDULED ARRIVAL 16:48:36

SCHEDULE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 16:52:41
SCHEDULED ARRIVAL 16:52:36

ARRIVAL VEH A STA C AT 16:53:07
SCHEDULED ARRIVAL 16:52:46

VEH B IM[illegible]O[illegible] BERTHING A[illegible]

A[illegible] I AL EH B A N A 16:5[illegible]:16
SCHED[illegible]LED A I AL 16:5[illegible]:49

A[illegible] I AL EH A A A 16:54:56
C[illegible] L[illegible] I AL 16:53:35

ARRI[illegible] L EH B A C A 16:55:21
CHED[illegible]LED A I AL 16:54:36

A[illegible] I AL EH B A A 16:[illegible]
CHED LED A I AL 16:55:25

ARRIVAL EH A A N A 16:56:19
SCHED[illegible]LED A I AL 16:54:45

ARRIVAL VEH A STA C AT 16:57:08
SCHEDULED ARRIVAL 16:55:32

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ARRIVAL VEH B STA N AT 16:57:27
SCHEDULED ARRIVAL      16:56:36

ARRIVAL VEH A STA S AT 16:58:09
SCHEDULED ARRIVAL      16:56:21

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 16:58:32
SCHEDULED ARRIVAL      16:57:23

ARRIVAL VEH B STA S AT 16:59:28
SCHEDULED ARRIVAL      16:58:12

ARRIVAL VEH B STA S AT 16:59:28
SCHEDULED ARRIVAL      16:58:12

ARRIVAL VEH A STA N AT 16:59:32
SCHEDULED ARRIVAL      16:59:30

ARRIVAL VEH A STA C AT 17:00:21
SCHEDULED ARRIVAL      17:00:17

ARRIVAL VEH B STA N AT 17:00:40
SCHEDULED ARRIVAL      16:59:23

VEH B IN SECTION 0 MORE THAN 30 SECONDS

ARRIVAL VEH A STA S AT 17:01:25
SCHEDULED ARRIVAL      17:01:06

ARRIVAL VEH B STA C AT 17:01:49
SCHEDULED ARRIVAL      17:00:10

ARRIVAL VEH B STA S AT 17:02:45
SCHEDULED ARRIVAL      17:00:59

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 17:02:49
SCHEDULED ARRIVAL      17:02:19

ARRIVAL VEH A STA C AT 17:03:39
SCHEDULED ARRIVAL      17:03:06

VEH B IN SECTION 5 MORE THAN 30 SECONDS

ARRIVAL VEH B STA N AT 17:04:21
SCHEDULED ARRIVAL      17:04:05

ARRIVAL VEH A STA S AT 17:05:03
SCHEDULED ARRIVAL      17:03:54

ARRIVAL VEH B STA C AT 17:05:26
SCHEDULED ARRIVAL      17:04:52
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ARRIVAL VEH B STA S AT 17:06:22
SCHEDULED ARRIVAL      17:05:41

ARRIVAL VEH A STA N AT 17:06:26
SCHEDULED ARRIVAL      17:05:05

VEH B IN SECTION / MORE THAN 30 SECONDS

ARRIVAL VEH A STA C AT 17:08:04
SCHEDULED ARRIVAL      17:05:51

VEH B IN SECTION 5 MORE THAN 30 SECONDS

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 17:08:46
SCHEDULED ARRIVAL      17:06:51

SCHEDULE RE-ADJUSTED FOR VEHICLE B

VEH B IN SECTION / MORE THAN 30 SECONDS

VEH B IN SECTION 0 MORE THAN 30 SECONDS

ARRIVAL VEH A STA S AT 17:10:22
SCHEDULED ARRIVAL      17:09:02

ARRIVAL VEH B STA C AT 17:10:46
SCHEDULED ARRIVAL      17:09:34

VEH B IN SECTION / MORE THAN 30 SECONDS

VEH B IN SECTION 4 MORE THAN 30 SECONDS

ARRIVAL VEH B STA S AT 17:12:13
SCHEDULED ARRIVAL      17:10:22

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 17:12:17
SCHEDULED ARRIVAL      17:10:12

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 17:13:07
SCHEDULED ARRIVAL      17:13:06

ARRIVAL VEH B STA N AT 17:13:25
SCHEDULED ARRIVAL      17:13:34

ARRIVAL VEH A STA S AT 17:14:09
SCHEDULED ARRIVAL      17:14:00
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ARRIVAL VEH B STA S AT 17:06:22
SCHEDULED ARRIVAL      17:05:41

ARRIVAL VEH A STA N AT 17:06:26
SCHEDULED ARRIVAL      17:05:05

VEH B IN SECTION / MORE THAN 30 SECONDS

ARRIVAL VEH A STA C AT 17:08:04
SCHEDULED ARRIVAL      17:05:51

VEH B IN SECTION 5 MORE THAN 30 SECONDS

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 17:08:46
SCHEDULED ARRIVAL      17:06:51

SCHEDULE RE-ADJUSTED FOR VEHICLE B

VEH B IN SECTION / MORE THAN 30 SECONDS

VEH B IN SECTION 0 MORE THAN 30 SECONDS

ARRIVAL VEH A STA S AT 17:10:22
SCHEDULED ARRIVAL      17:09:02

ARRIVAL VEH B STA C AT 17:10:46
SCHEDULED ARRIVAL      17:09:34

VEH B IN SECTION / MORE THAN 30 SECONDS

VEH B IN SECTION 4 MORE THAN 30 SECONDS

ARRIVAL VEH B STA S AT 17:12:13
SCHEDULED ARRIVAL      17:10:22

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 17:12:17
SCHEDULED ARRIVAL      17:10:12

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 17:13:07
SCHEDULED ARRIVAL      17:13:06

ARRIVAL VEH B STA N AT 17:13:25
SCHEDULED ARRIVAL      17:13:34

ARRIVAL VEH A STA S AT 17:14:09
SCHEDULED ARRIVAL      17:14:00
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