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ELECTROMAGNETIC ENVIRONMENT MEASUREMENTS OF PRT SYSTEMS AT 'TRANSPO® 72" VOLUME II DASHAVEYOR SYSTEM

Earl E. Jamison

JANUARY 1974

FINAL REPORT

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16. Abstract

An X-Y plot is made of the radiated Electromagnetic signals and noise between 1KHz and 50KHz at each of the four Personalized Rapid Transit (PRT) sites at Dulles International Airport. The PRT systems were operated individually to establish the signal characteristics of each system. A spectrum analyzer was used to view the frequency spectrum broadband prior to recording and a Polaroid scope camera was used in conjunction with the spectrum analyzer to photograph signals between 50KHz and 50MHz. This frequency range was sufficiently broad to cover all command and control frequencies of the four PRT systems.

The purpose of the measurements program was to establish some base line information on the electromagnetic signal characteristics in the Dulles area in the event there was an interaction between the PRT Command and Control systems and the Federal Aviation Administration Air Traffic Control equipment.

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

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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.

RADIATED FIELD NOISE MEASUREMENTS

DASHAVEYOR SYSTEM - TRANSPO® '72

1. INTRODUCTION

This technical report presents the data obtained in the performance of tests for radiated field 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 2 of Contract DOT-TSC-375, and as performed by National Scientific Laboratories.

Item 2 calls for the performance of radiated field noise measurements from each PRT system in the frequency range from 1 KHz to at least 50 MHz, 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 forenoon of July 28, 1972.

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* Technical Report, Item 1, Ambient Radiated Field Noise Survey PRT Systems - TRANSPO®'72, March 1972, Contract DOT-TSC-375, Department of Transportation, Transportation Systems Center, 55 Broadway, Cambridge, Massachusetts 02142

2. METHOD OF MEASUREMENT

All measurements were made using test setups and instruments as nearly identical as possible to those used during ambient testing.

2.1 Instruments

The measurements made in the frequency range from 1 KHz to 50 KHz 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 from 1 KHz to 50 KHz. The receiver 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 electro-magnetic environment by use of either a Fairchild PEF-10 Electric Field Antenna or a Fairchild ALP-10 Magnetic Field Antenna. Both of these antennas are directional in the horizontal plane, therefore, measurements were made for North/South and East/West orientations.

The measurements made in the 50 KHz to 60 MHz frequency range were performed using a Hewlett Packard Model 8552/8553A

Spectrum Analyzer. 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. The analyzer was used in four frequency bands - 50 KHz to 100 KHz, 100 KHz to 1.1 MHz, 1 MHz to 21 MHz and 10 MHz to 60 MHz. Data was recorded photographically with a Hewlett Packard 198A oscilloscope camera.

Signals were obtained from the electro-magnetic environment in the 50 KHz to 21 MHz frequency range by using an NSL verticle top loaded whip electric field antenna mounted on a cathode follower. This antenna is non-directional in the horizontal plane. In the 20 MHz to 60 MHz frequency range, an EMCO Model 3104 biconical electric field antenna was utilized. This antenna is directional in the horizontal plane, therefore, measurements were made in the North/South and East/West orientations.

During the tests, the various antennas were attached to the top of a mast mounted on the NSL instrumentation van. An antenna rotator was incorporated in the antenna mast to enable rotation in azimuth. The antenna height was approxmately 12 feet above ground.

The various instruments received ac power from a motor generator positioned 150 feet from the van.

2.2 Test Sites

The test sites used during the performance of the measurements were the same locations as denoted in the Item 1 report

for the ambient noise tests. The sites are numbered 1 through 11 for the entire PRT area. Sites 4, 5, and 11 are located at the DASHAVEYOR system as shown in the map, Figure 1. No measurement has previously been made nor reported for Site 11. A complete set on measurements was obtained at each site - magnetic field, 1 KHz to 50 KHz and electric field, 1 KHz to 60 MHz.

2.3 Measurement Technique

Data were obtained in the 1 KHz to 50 KHz frequency range by scanning manually the EMC-10 receiver, using a 50 Hz bandwidth setting. Two recordings have been made for each antenna (magnetic field, electric field) in two orientations (North/South, East/West). The scanning time per recording averaged four to six minutes.

The magnetic field recordings, denoted as MSR type test on the charts, are reproduced in the appendix as the upper half of pages A-2 to A-5, A-15 to A-20, and A-30 to A-33. The dB scale refers to the level at the instruments input connector. Some of the charts have two amplitude scales. Located somewhere along the bottom of the chart is an upside down letter "Y" which denotes the point of changeover from the scale on the left side to the scale on the right side. 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 corrections factor for the antenna (antenna amplitude response is non-linear with frequency) has been included in the

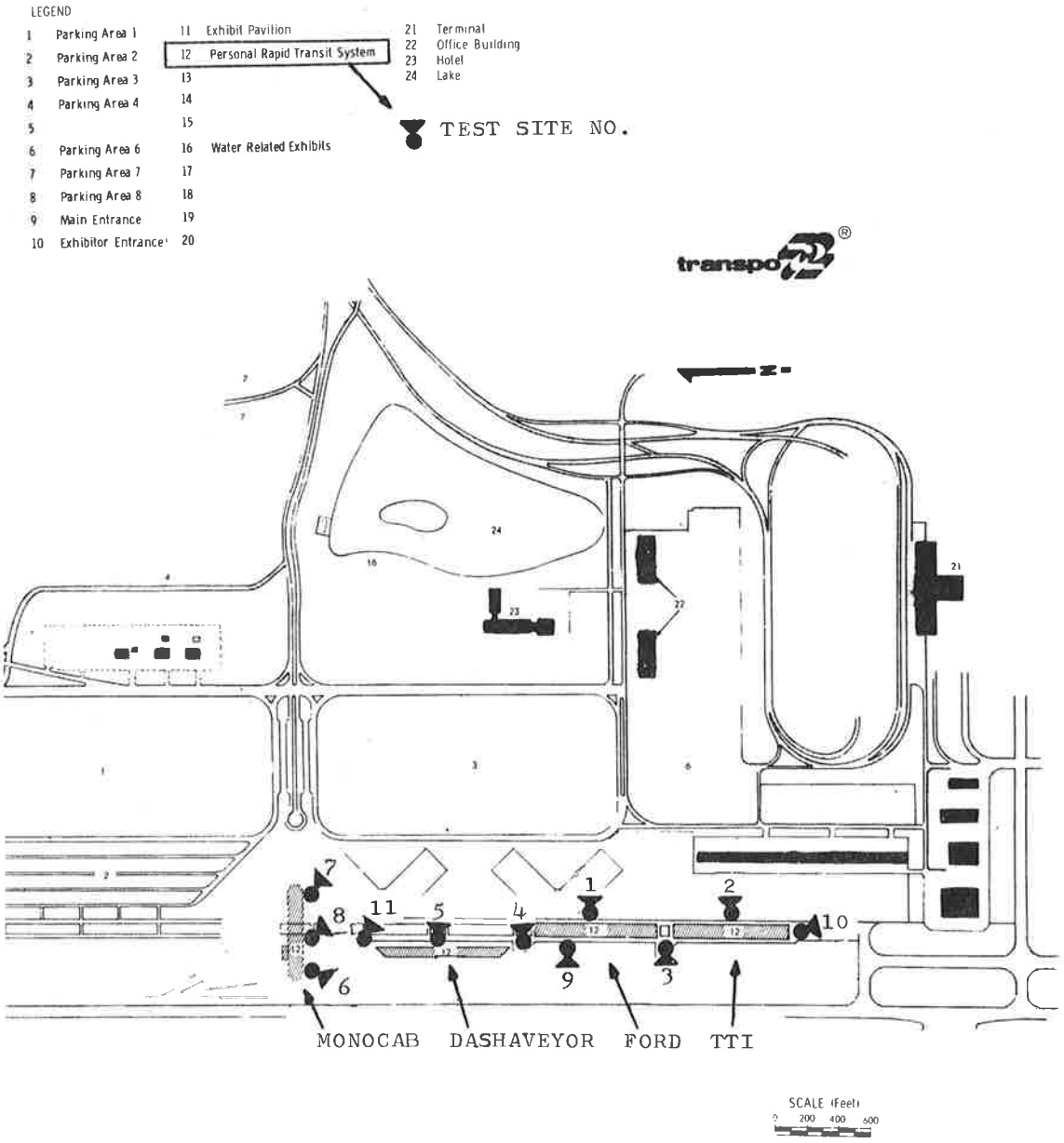


FIGURE 1. PRT TEST SITE LOCATIONS

levels plotted in the lower graphs. 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.

The electric field chart recordings, denoted as ESR type test on the charts, are reproduced in the appendix on pages A-6 to A-9, A-21 to A-24, and A-34 to A-37. Some of these charts also have two amplitude scales, and they are used in the same manner as described for the magnetic field recordings. In addition, noise peaks recorded in the top major amplitude division are out of the calibrated range of the system. The antenna employed has a constant correction factor for all frequencies, and it has been included in the scale designations on these charts.

Electric field data for the 50 KHz to 60 MHz frequency range were obtained as photographic recordings of spectrum analyzer amplitude/frequency CRT displays. Two recordings have been made for each frequency band - 50 KHz to 100 KHz, 100 KHz to 1.1 MHz, and 1 MHz to 21 MHz. A non-directional antenna was used for the above frequencies. Four recordings were obtained for the 10 MHz to 60 MHz frequency band for which a directional antenna was employed, therefore, two recordings were made for North/South orientation, and two recordings for East/West orientations. The antenna employed for the first three frequency bands

has a constant correction factor for all frequencies, and this is included in the amplitude designations for the recorded data. The antenna employed for the high frequency band has a nearly constant correction factor above 20 MHz and this factor has been included in the amplitude designations for the recorded data. Thus, the calibration levels given on the side of the photograph do not apply to frequencies from 10-20 MHz. The photographic recordings are reproduced in the Appendix on pages A-10 to A-14, A-25 to A-29, and A-38 to A-42.

3. INTERPRETATION OF DATA

Measurements for radiated signals have been made at three test sites associated with the DASHAVEYOR installations. These data are contained in the Appendix. Notations are contained on some of the charts which relate to certain vehicle movements, etc. In other recordings it was not possible to associate specific vehicle movement with the radiated signals.

4. TIME LOG

The time schedule of vehicle function is contained on Pages A-43 to A-48 of the Appendix.

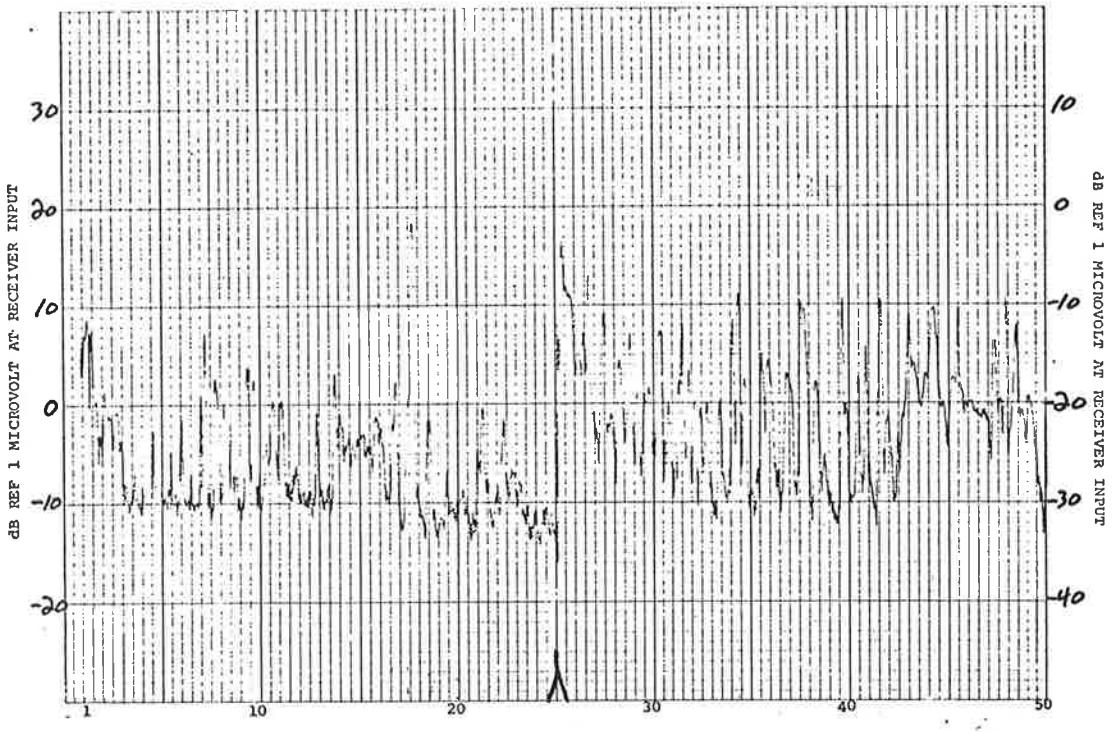
APPENDIX A

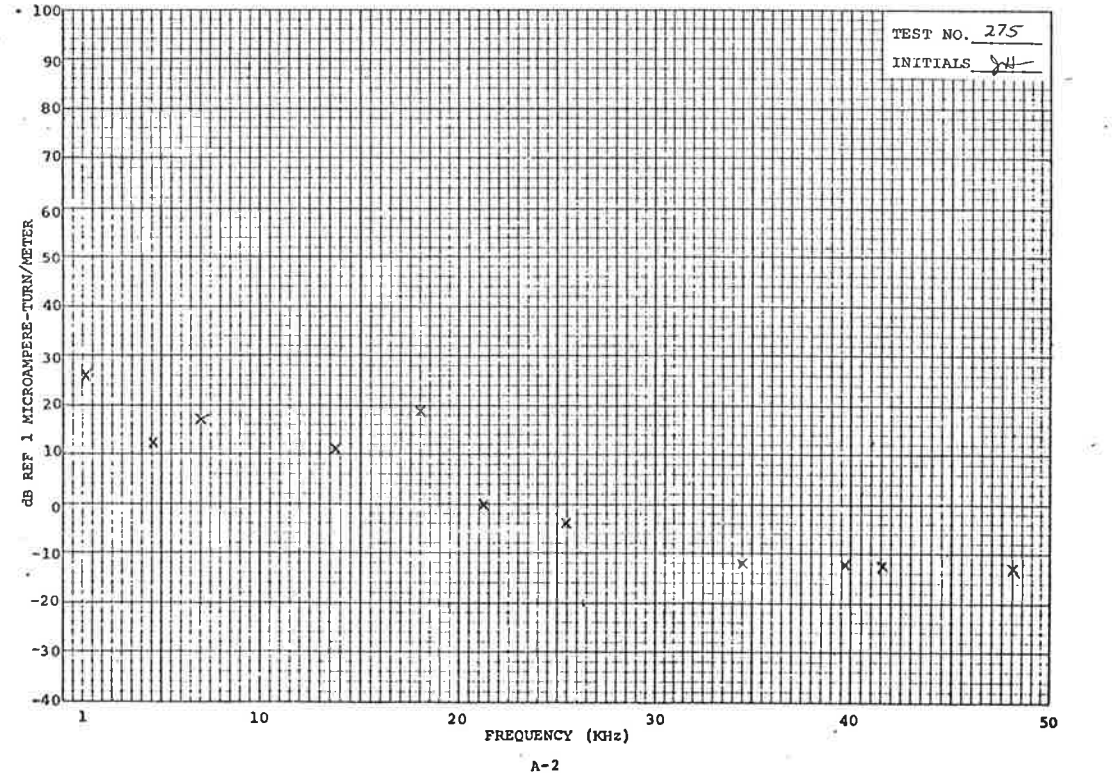
RADIATED FIELD MEASUREMENTS DATA

This appendix contains the data obtained during the various tests performed. The data is not presented in numerical sequence as the tests were performed, but rather by site location number from south to north - Site No. 4, 5, and 11. Further, the data are arranged in the following manner - first, magnetic field charts, then electric-field charts and photographs in order of frequency progression. Data is contained herein for Test No's. 269 to 281, 282 to 296, and 297 to 309.

A time log of events for PRT vehicle operations is contained on pages A-43 to A-48.

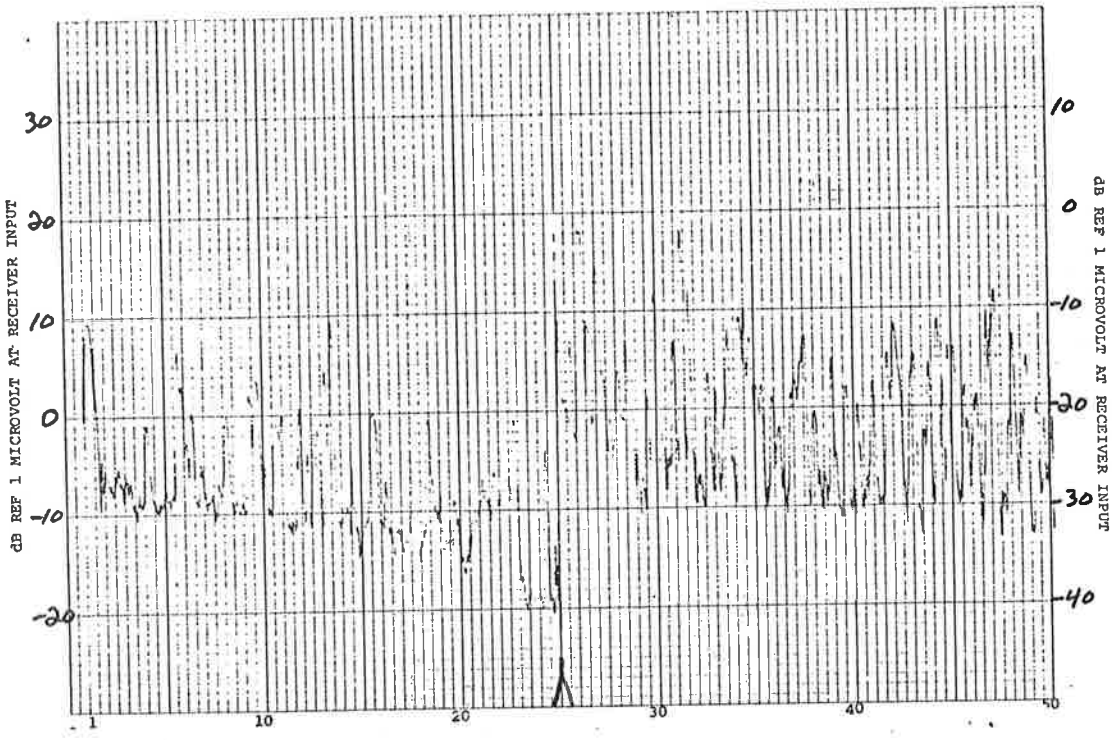
TEST NO. 275 TEST TYPE MSR F/W BANDWIDTH 50Hz 0855
TEST SPECIMEN 1 & 4 TEST EQUIP. EMC 10 DATE 7-27-72 681

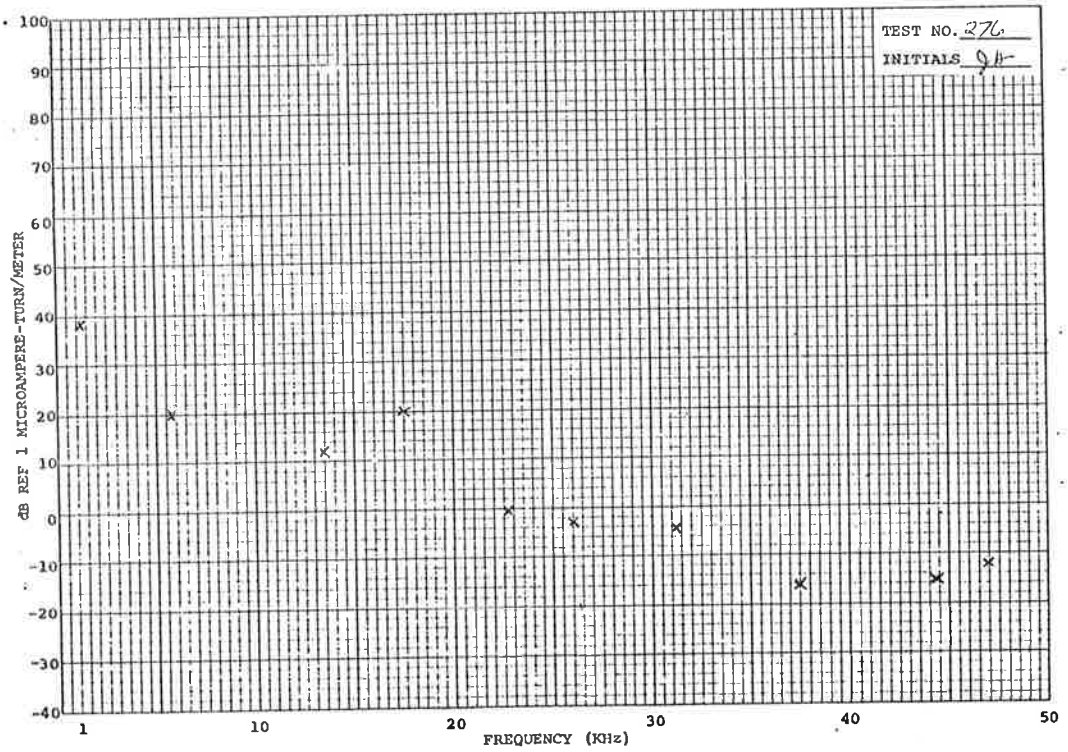




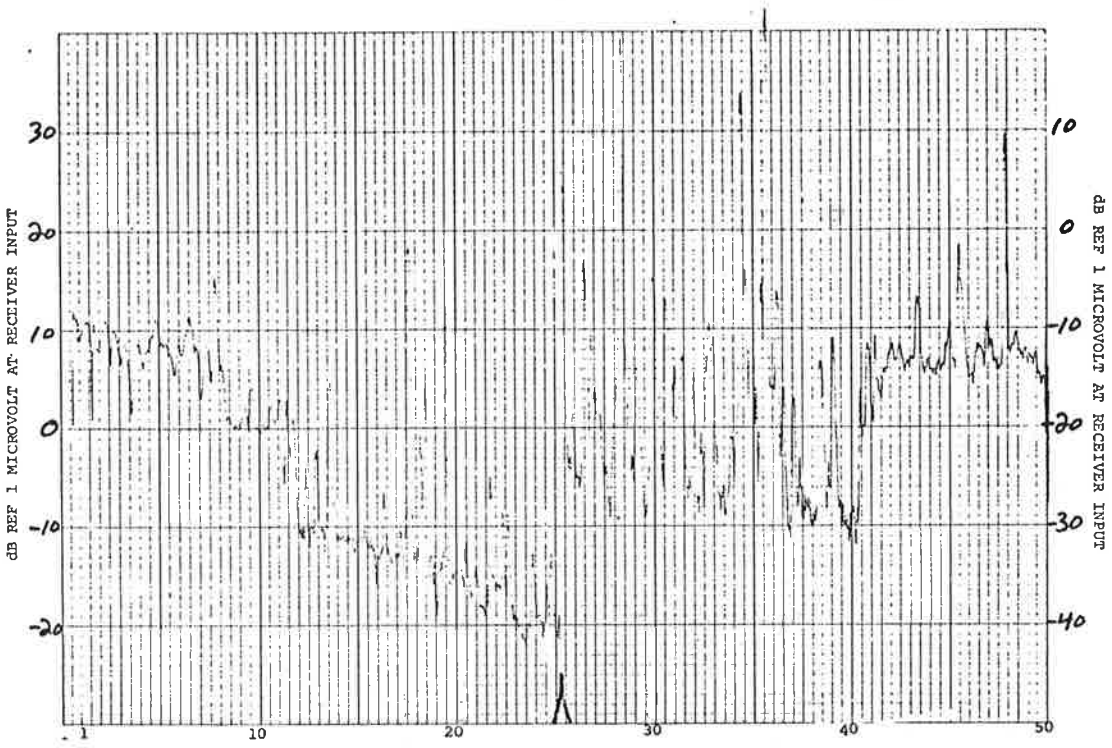
TEST NO. 276 TEST TYPE MSP E/W BANDWIDTH 50H7
TEST SPECIMEN 24 TEST EQUIP. EMC-10 DATE 7-27-72

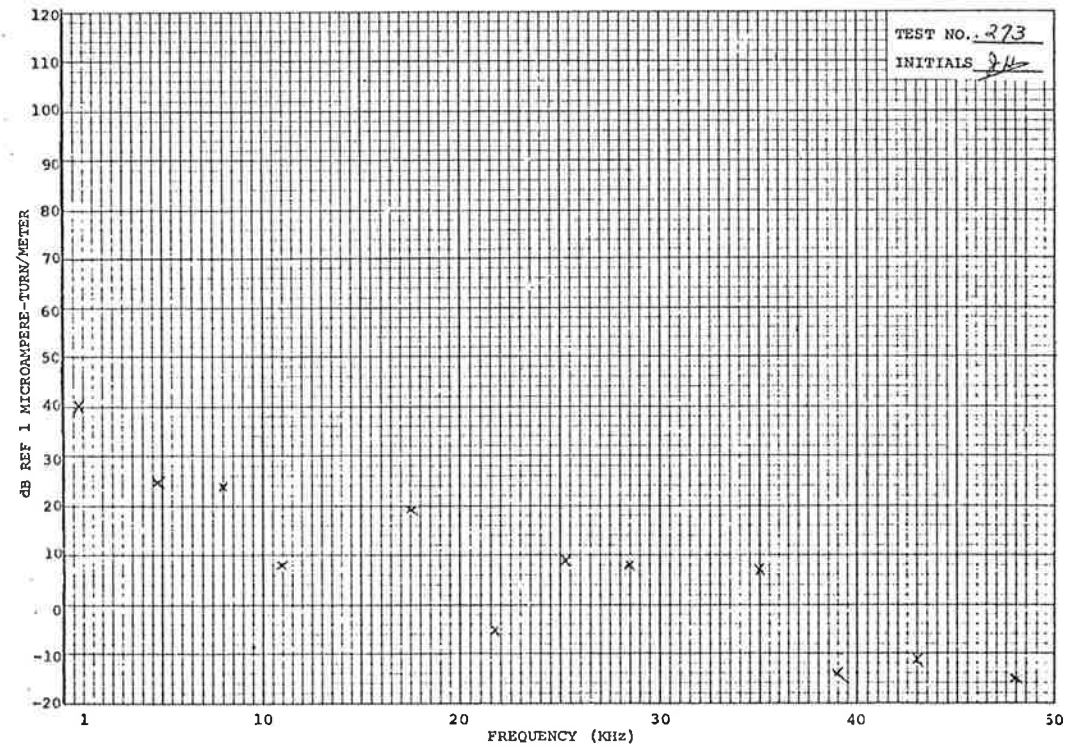
0859
EEJ





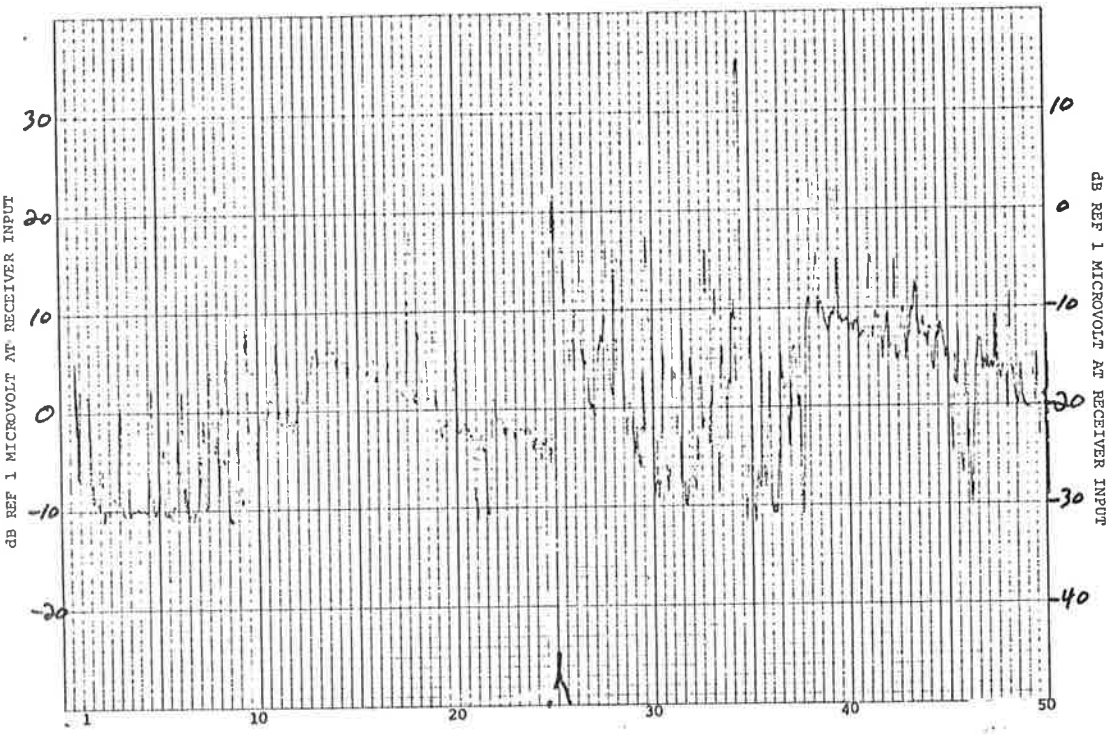
TEST NO. 273 TEST TYPE MSP N/S BANDWIDTH 50Hz 0848
TEST SPECIMEN 804 TEST EQUIP. EMC-10 DATE 2-28-72

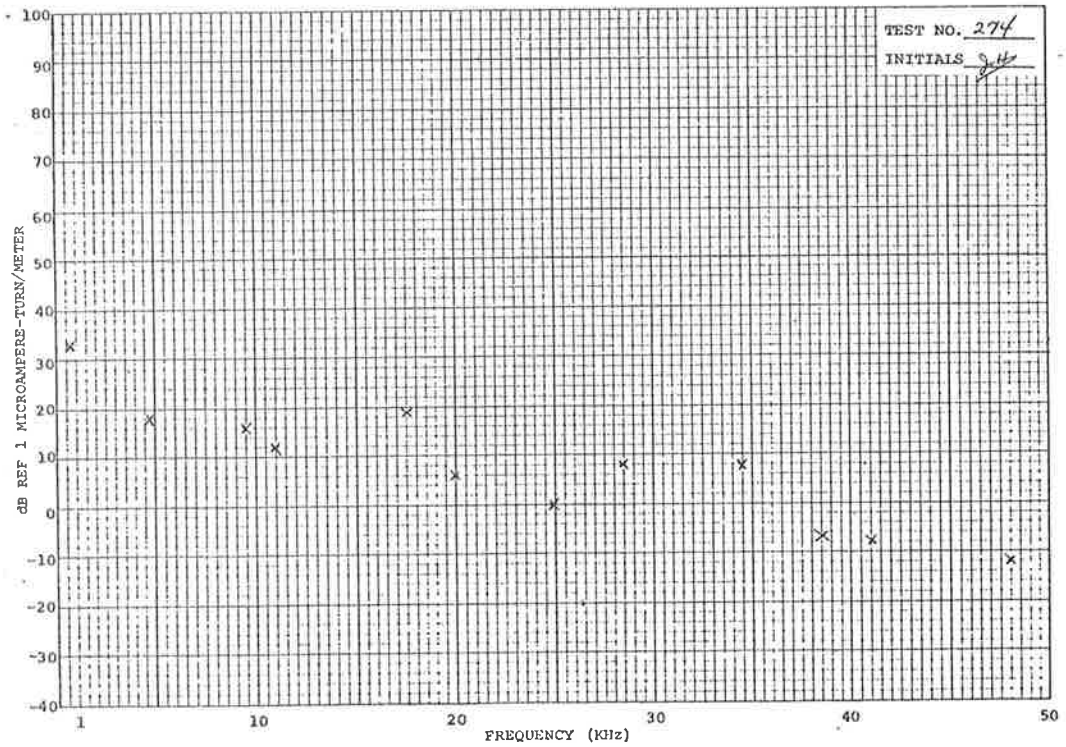




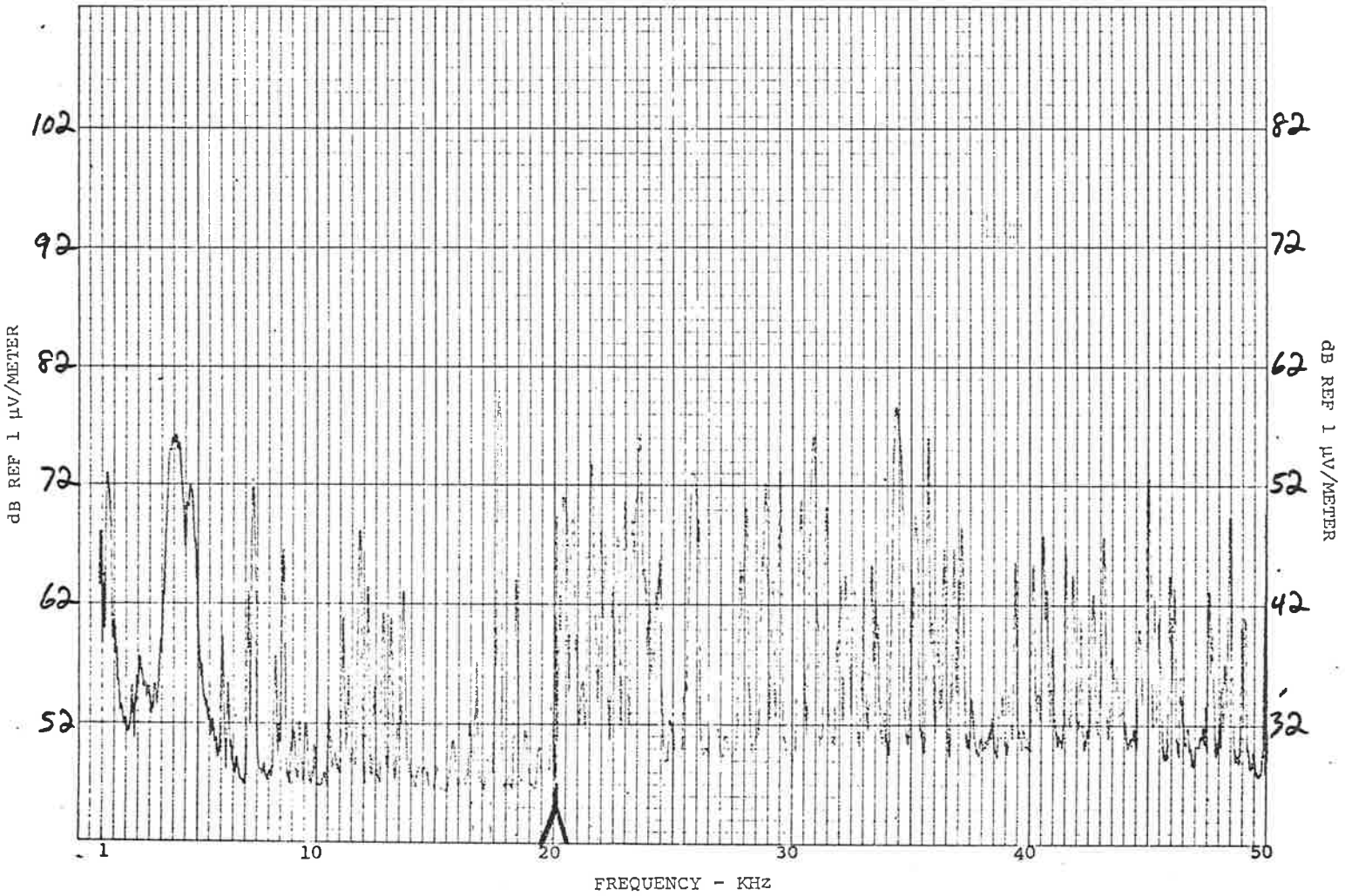
TEST NO. 274 TEST TYPE MSR N/S BANDWIDTH 50 Hz
TEST SPECIMEN 26 4 TEST EQUIP. EMC-10 DATE 7-28-12

0851
EEJ



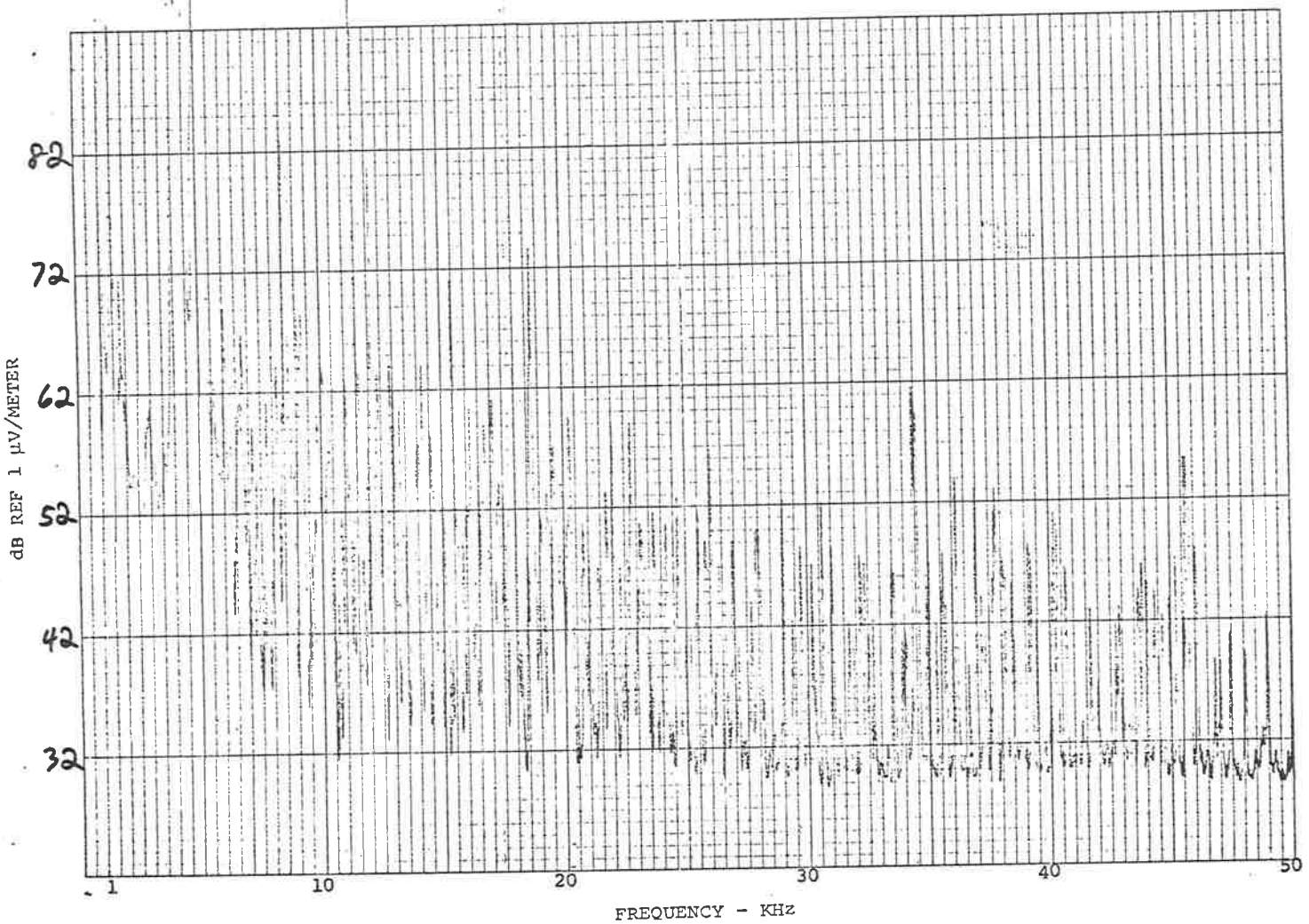


TEST NO. 269 TEST TYPE ESR E/W BANDWIDTH 50Hz 0830
TEST SPECIMEN Lab 4 TEST EQUIP. EMC-10 DATE 7-28-72 EJ



TEST NO. 270
TEST SPECIMEN Sub 4
TEST TYPE ESR E/W
TEST EQUIP. EMC-10
BANDWIDTH 50Hz
DATE 7-28-72

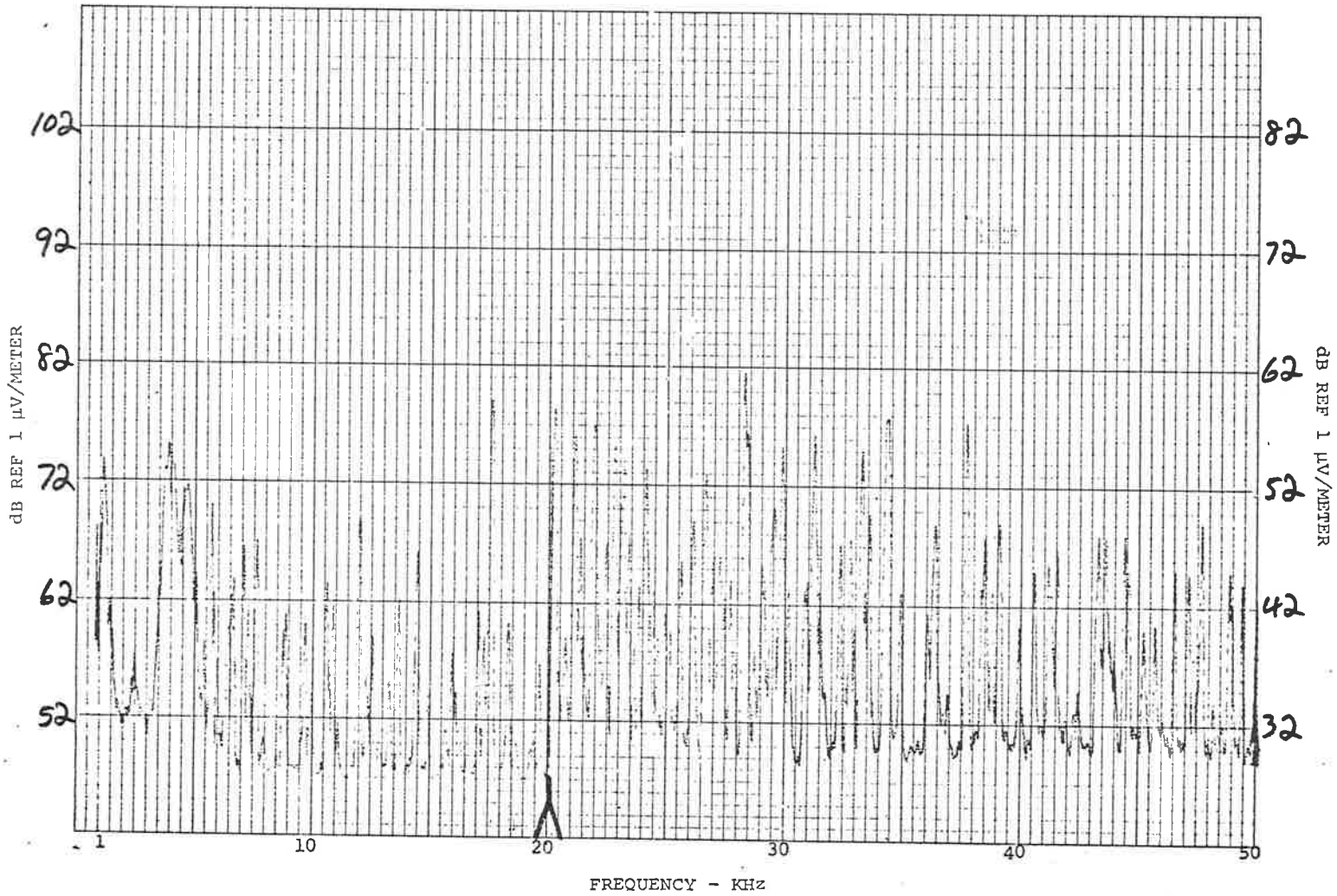
0834



dB REF 1 µV/METER

TEST NO. 271
TEST SPECIMEN Sch 4
TEST TYPE ESR N/S
TEST EQUIP. EMC-10
BANDWIDTH 50 Hz
DATE 7-28-72

0838
ESJ

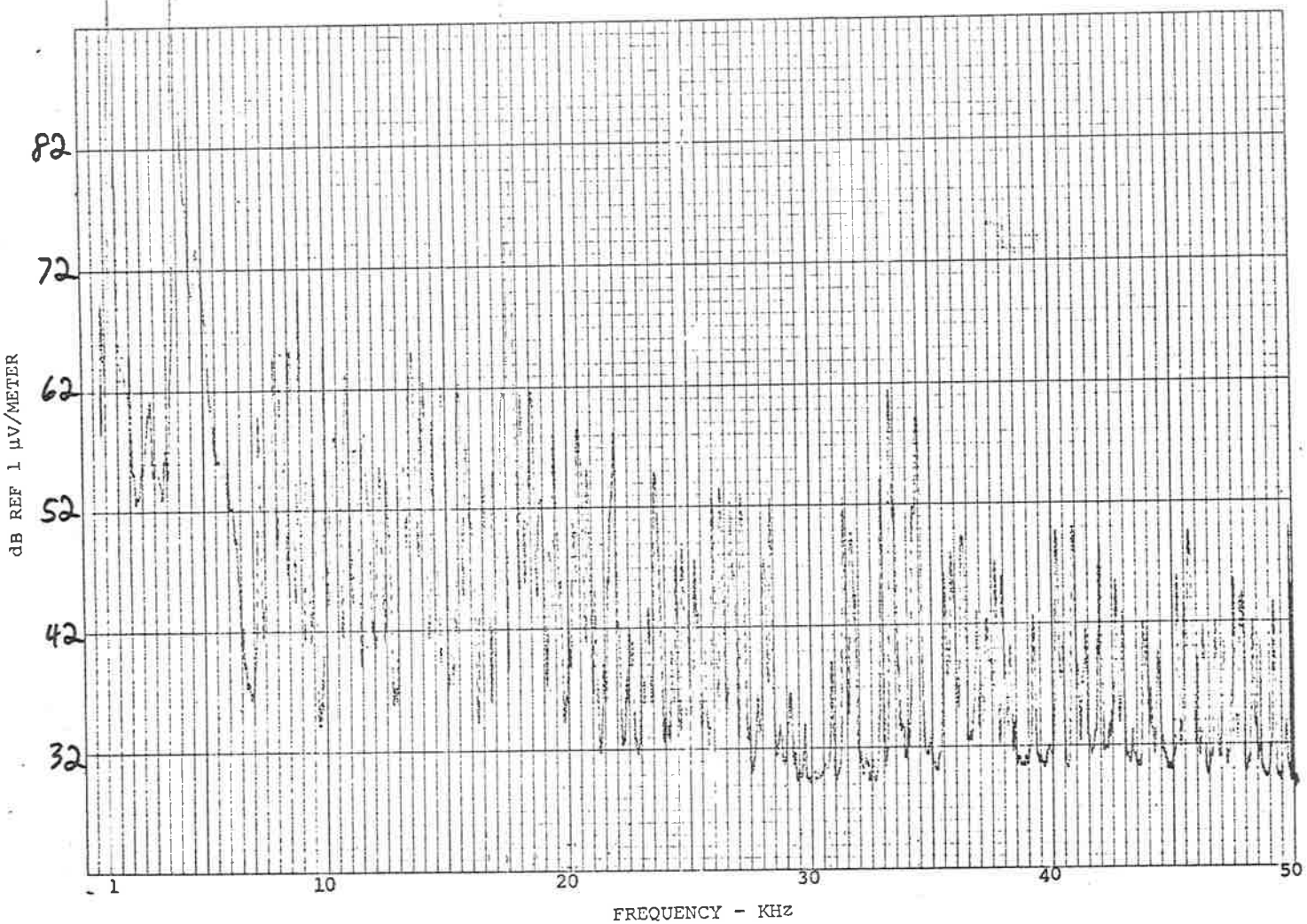


TEST NO. 272
TEST SPECIMEN 2-to 4

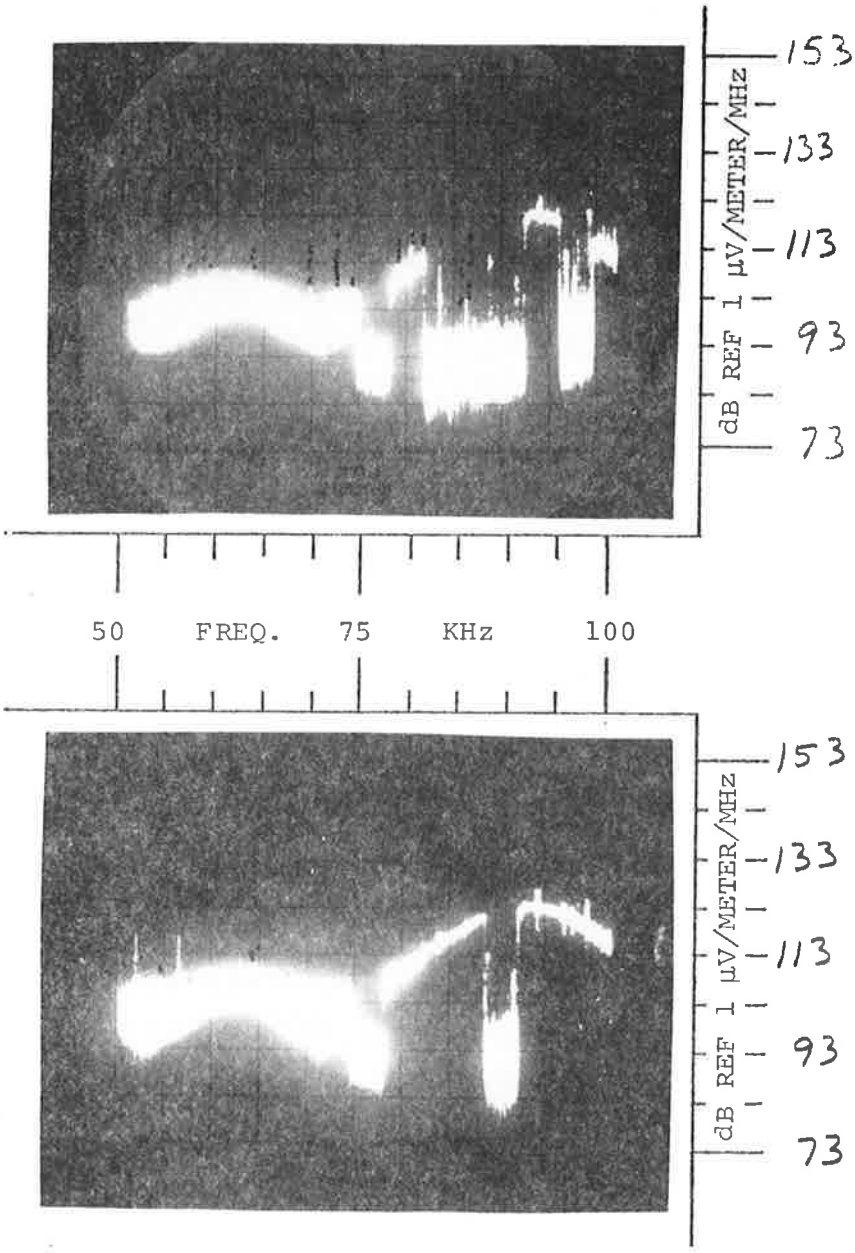
TEST TYPE ESD N/S
TEST EQUIP. EMC-10

BANDWIDTH 50Hz
DATE 7-28-72

0842
EEJ



LOCATION: SITE 4 TYPE TEST ESR DATE 7-28-72

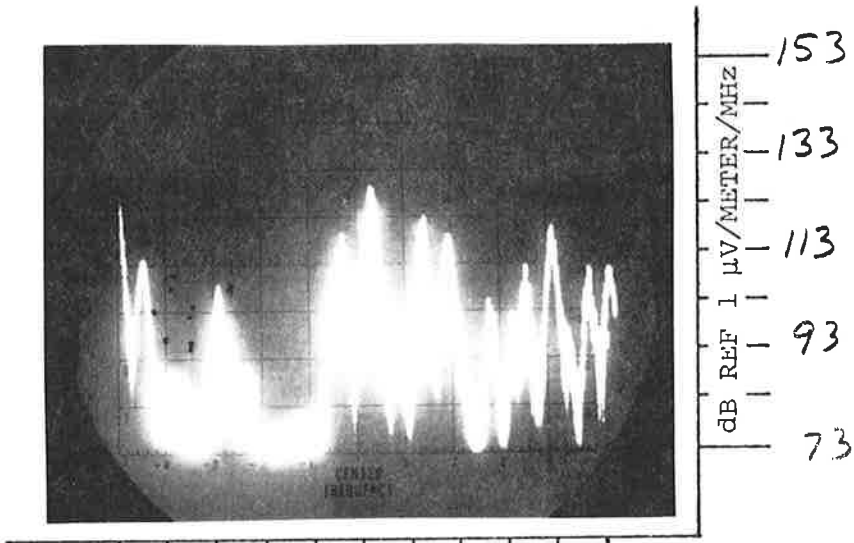


TEST 277
TIME 0907

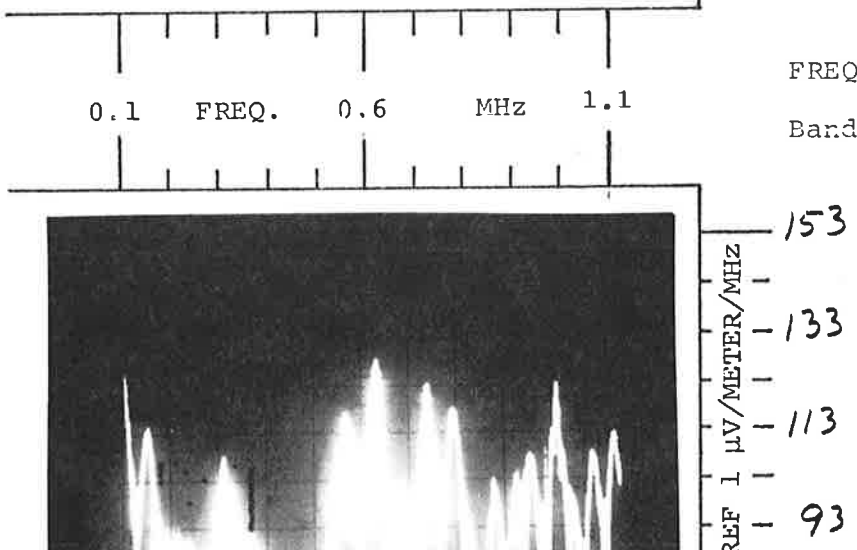
FREQ. SCAN: 5 KHz/Div.
Bandwidth: 10 KHz

TEST 277
TIME 0908

LOCATION: SITE 4 TYPE TEST ESR DATE 7-28-72



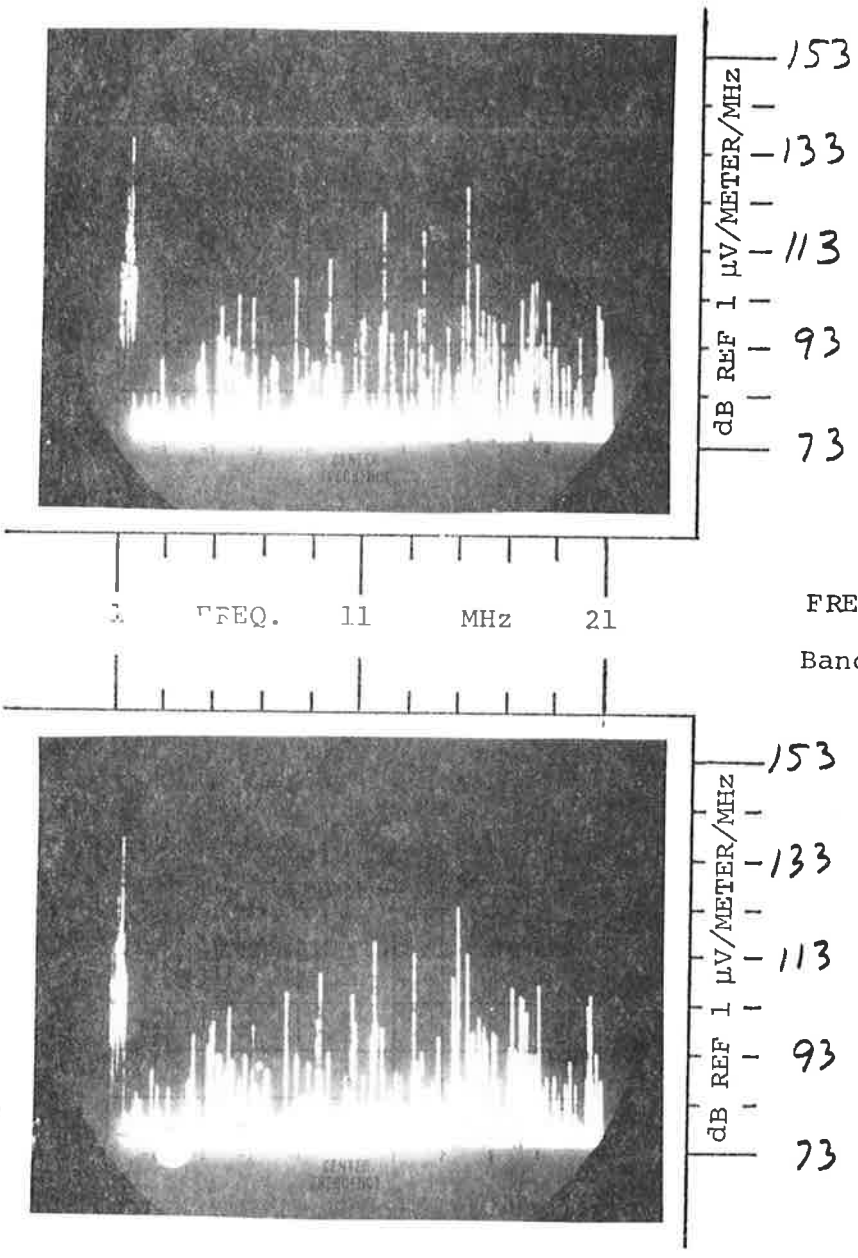
TEST 278
TIME 0917



FREQ. SCAN: 0.1 MHz/Div.
Bandwidth. 10 KHz

TEST 278
TIME 0918

LOCATION: SITE 4 TYPE TEST ESR DATE 7-28-72

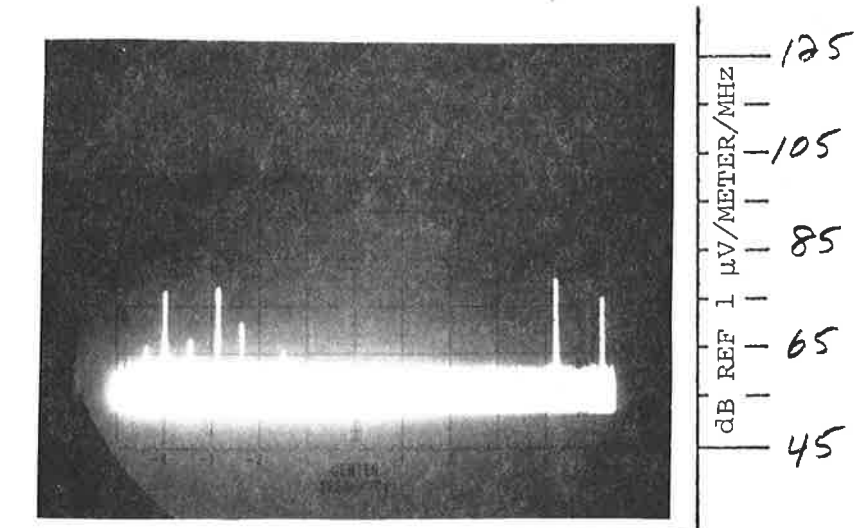


TEST 279
TIME 0920

FREQ. SCAN: 2MHz/Div.
Bandwidth: 10 KHz

TEST 279
TIME 0921

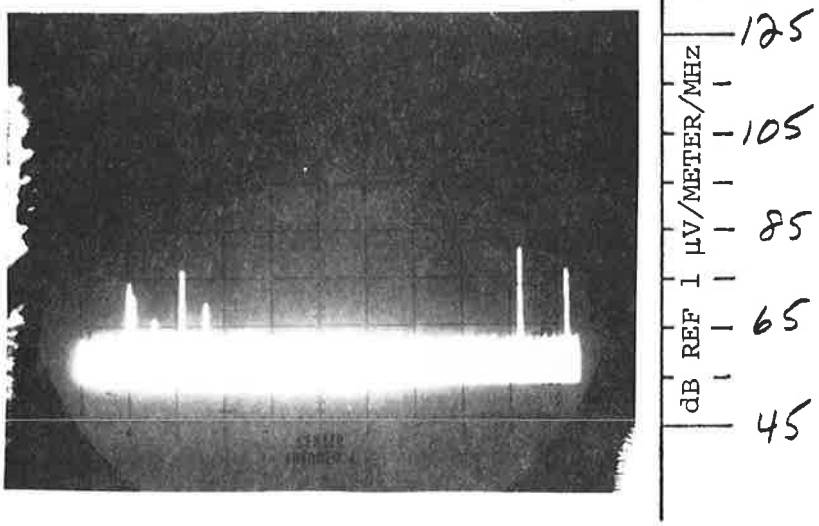
LOCATION: SITE 4 TYPE TEST ESR E/W DATE 7-28-72



TEST 280
TIME 0924

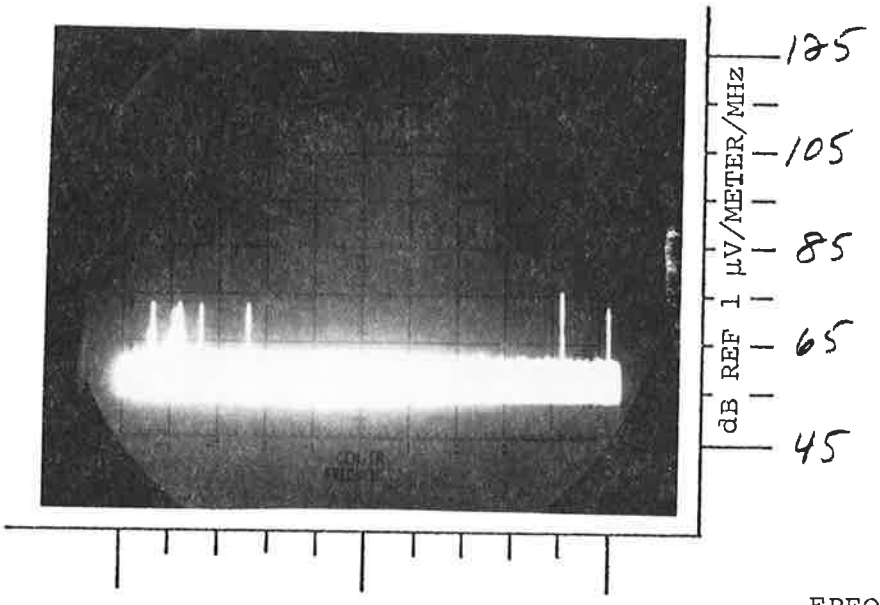
10 FREQ. 35 MHz 60

FREQ. SCAN: 5MHz/Div.
Bandwidth: 10 KHz

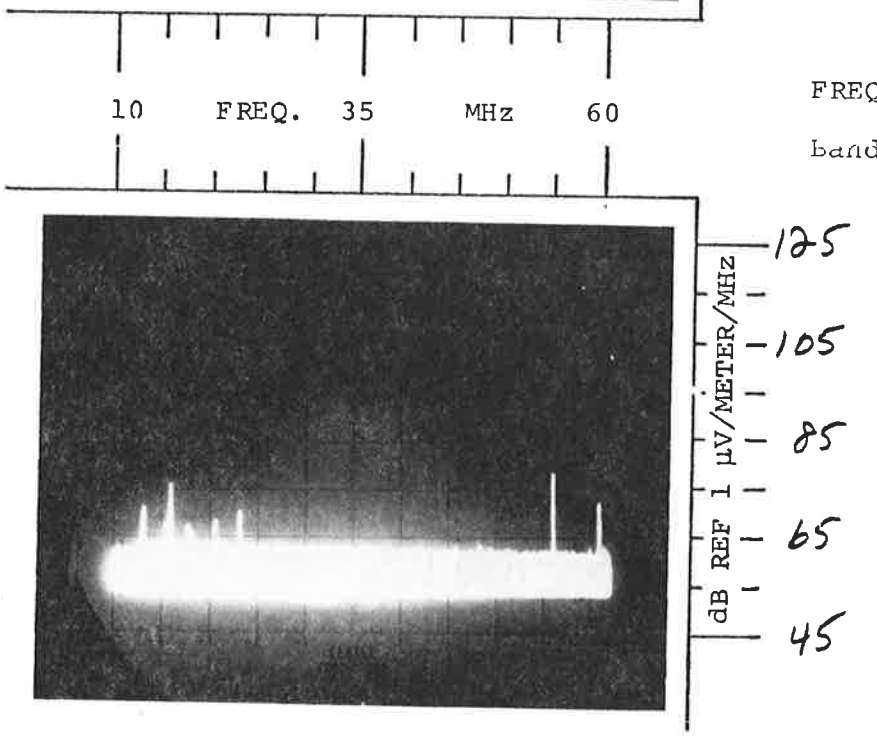


TEST 280
TIME 0925

LOCATION: SITE 4 TYPE TEST ESR N/S DATE 7-22-72



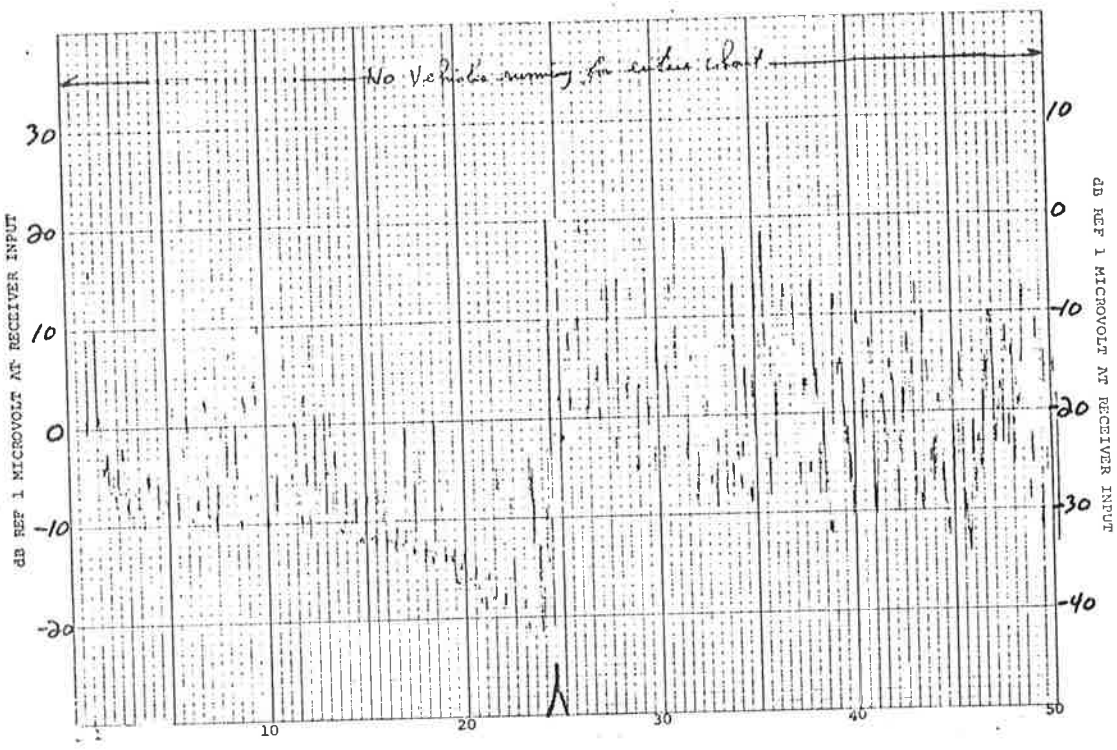
TEST 281
TIME 0929

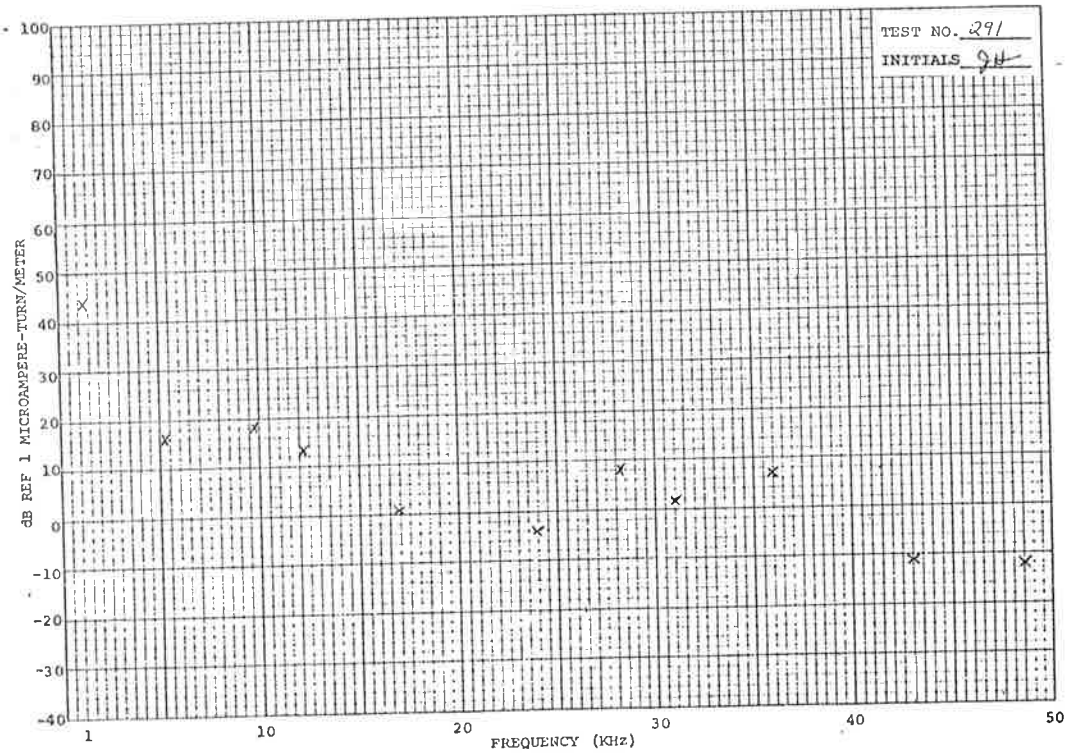


FREQ. SCAN: 5MHz/Div.
bandwidth: 10 KHz

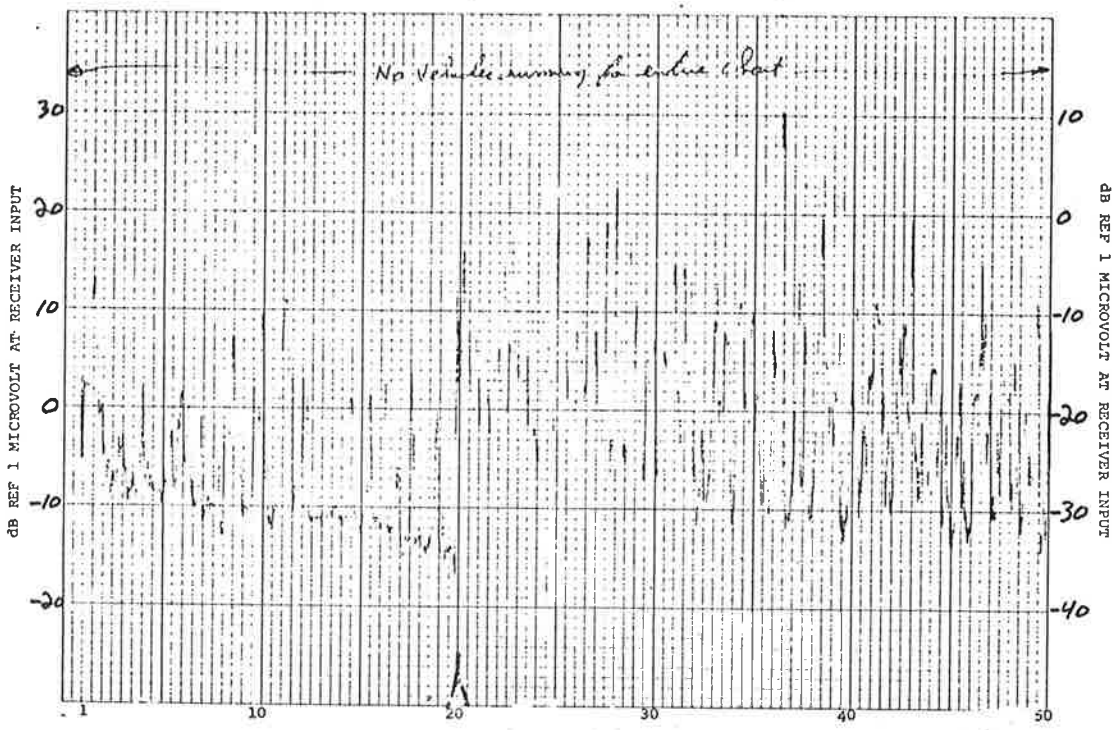
TEST 281
TIME 0930

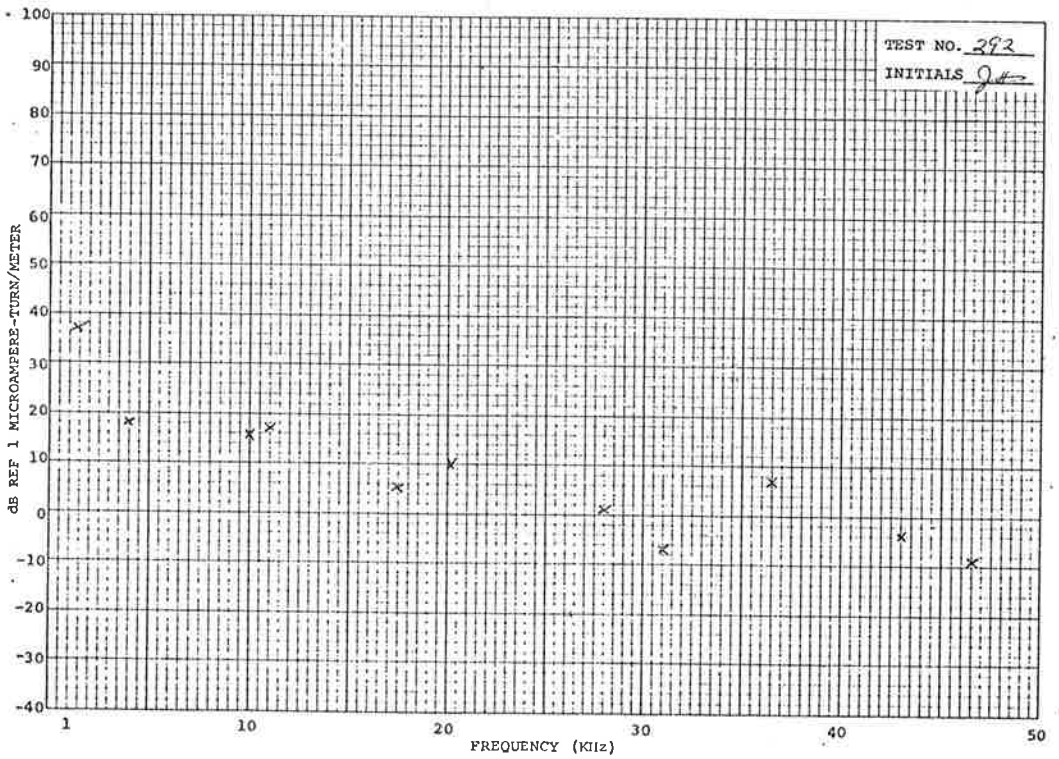
TEST NO. 291 TEST TYPE MSP E/W BANDWIDTH 50 Hz 1023
TEST SPECIMEN [illegible] TEST EQUIP. FMC 15 DATE 2-28-12 ES





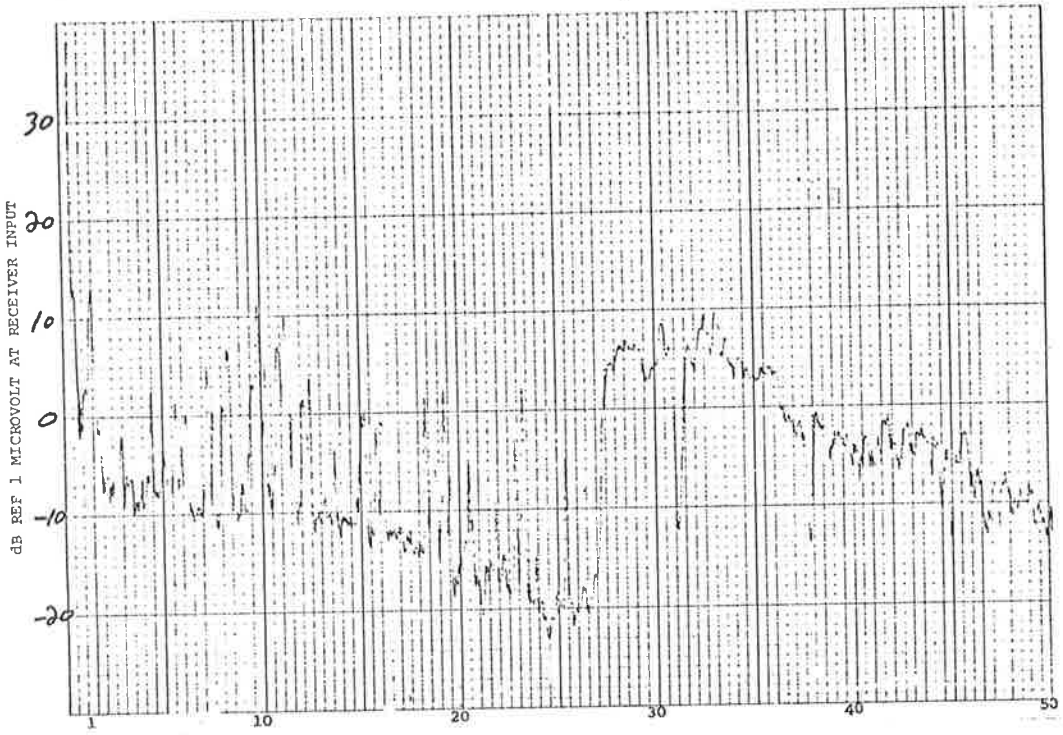
TEST NO. 292 TEST TYPE MSD - F/L BANDWIDTH 50Hz 1026
TEST SPECIMEN S.C.S TEST EQUIP. EMC-10 DATE 7-28-72

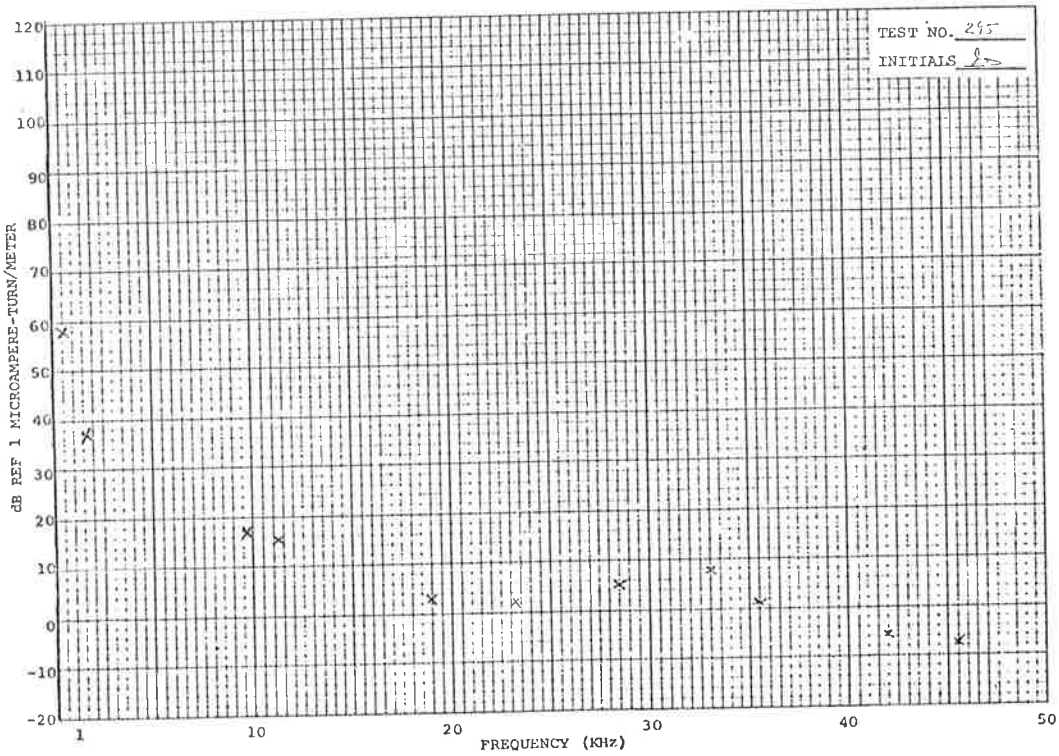




TEST NO. 295 TEST TYPE MS12 E/W BANDWIDTH 50Hz
TEST SPECIMEN 265 TEST EQUIP. EMC-10 DATE 7-28-12

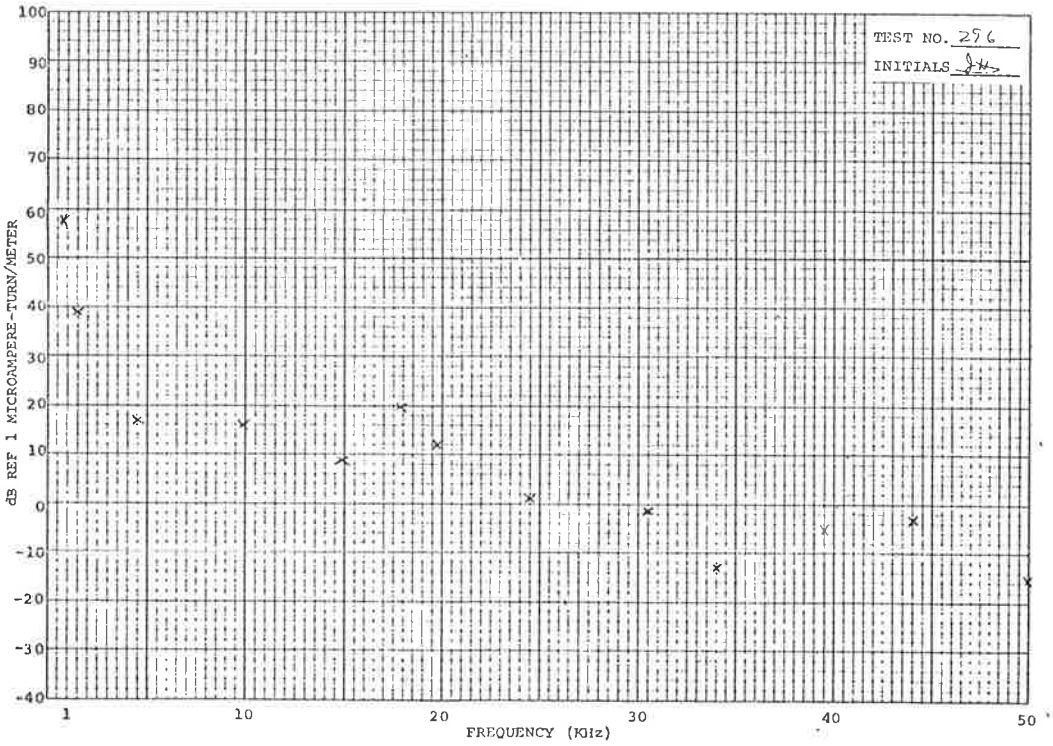
1042
EG





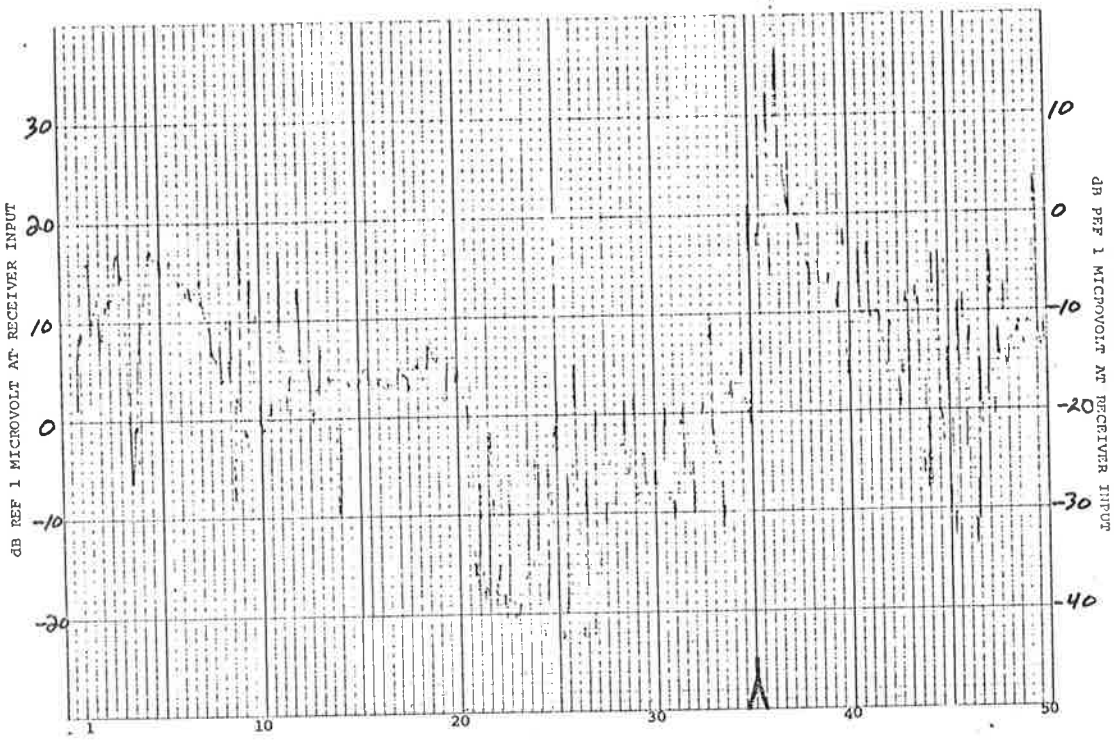
TEST NO. 296. TEST TYPE MSP F/L BANDWIDTH 50 Hz
TEST SPECIMEN S & S TEST EQUIP. EMC 10 DATE 7-28-12

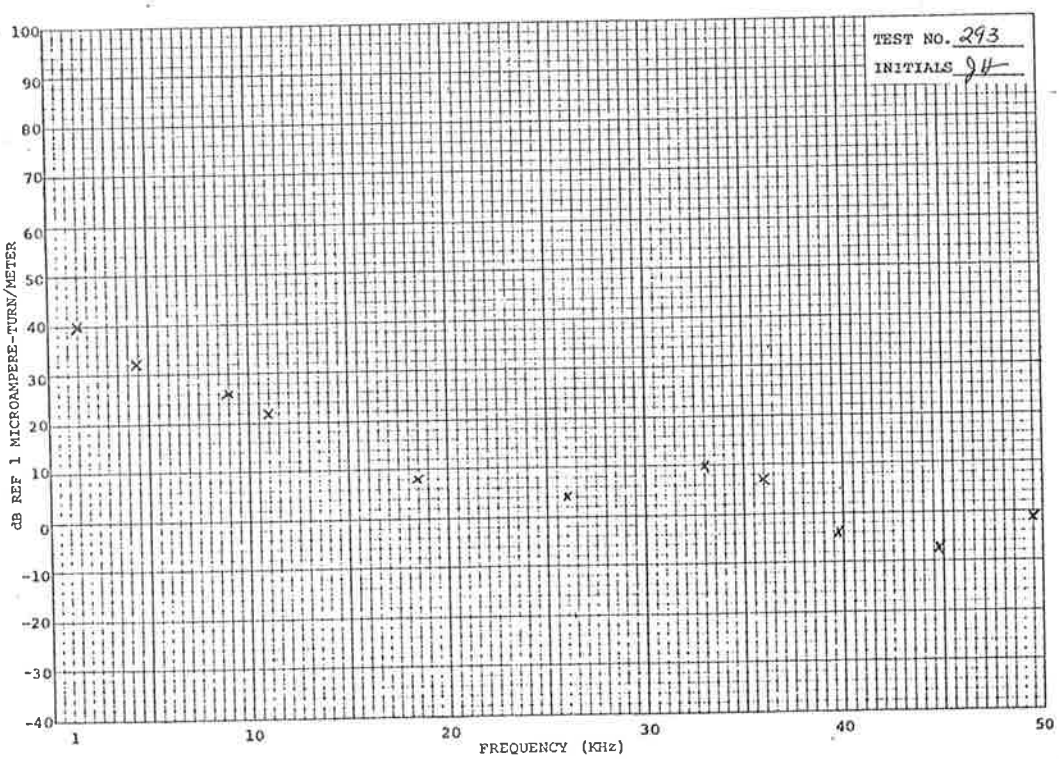
1047
ESD



TEST NO. 293
TEST SPECIMEN SITE 5
TEST TYPE MSR N-S
TEST EQUIP. EMX-10
BANDWIDTH 50Hz
DATE 7-27-72

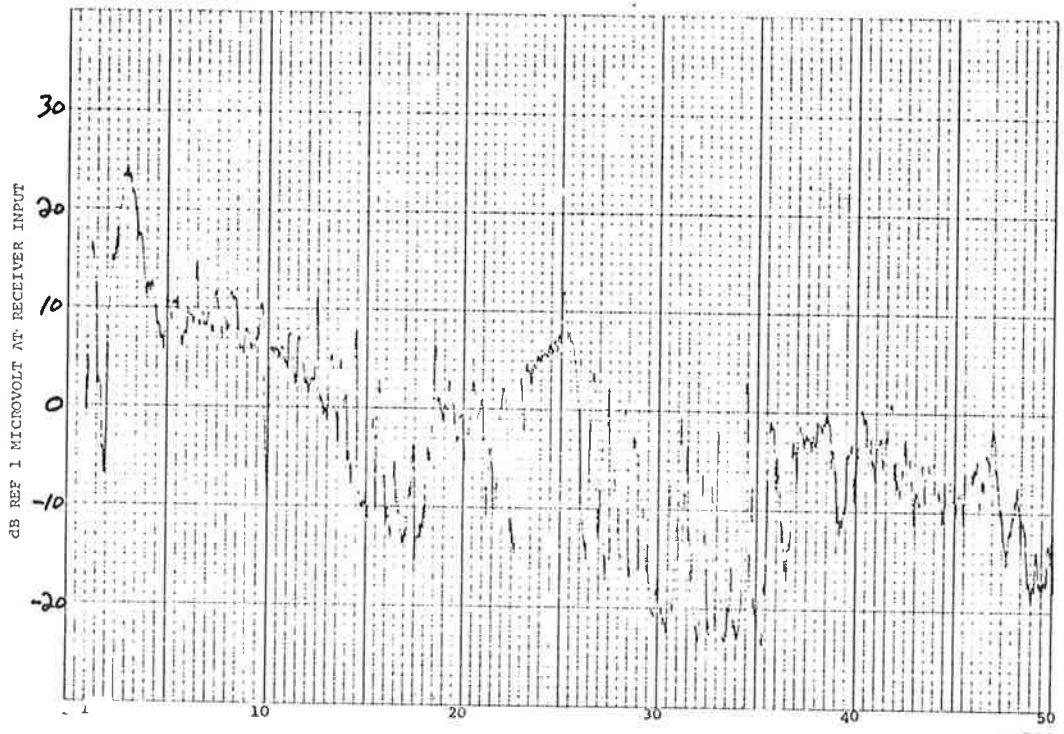
1033
JRC

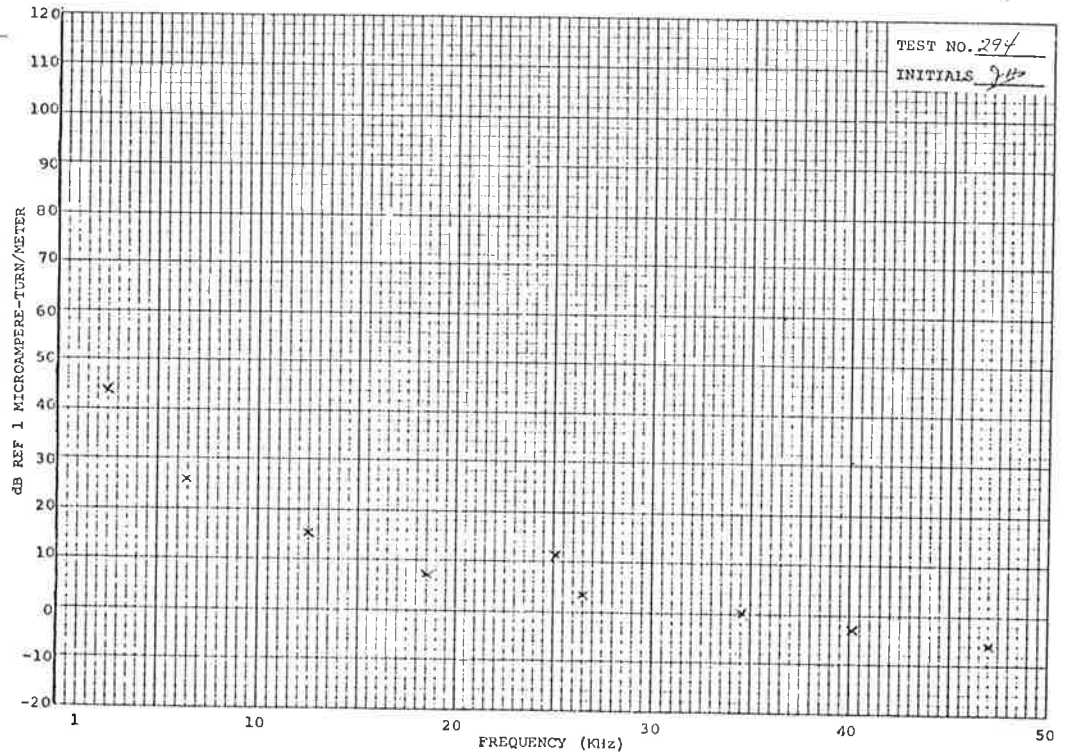




TEST NO. 294 TEST TYPE NSR N-5 BANDWIDTH 50Hz
TEST SPECIMEN SIR-5 TEST EQUIP. EMX-10 DATE 9-21-72

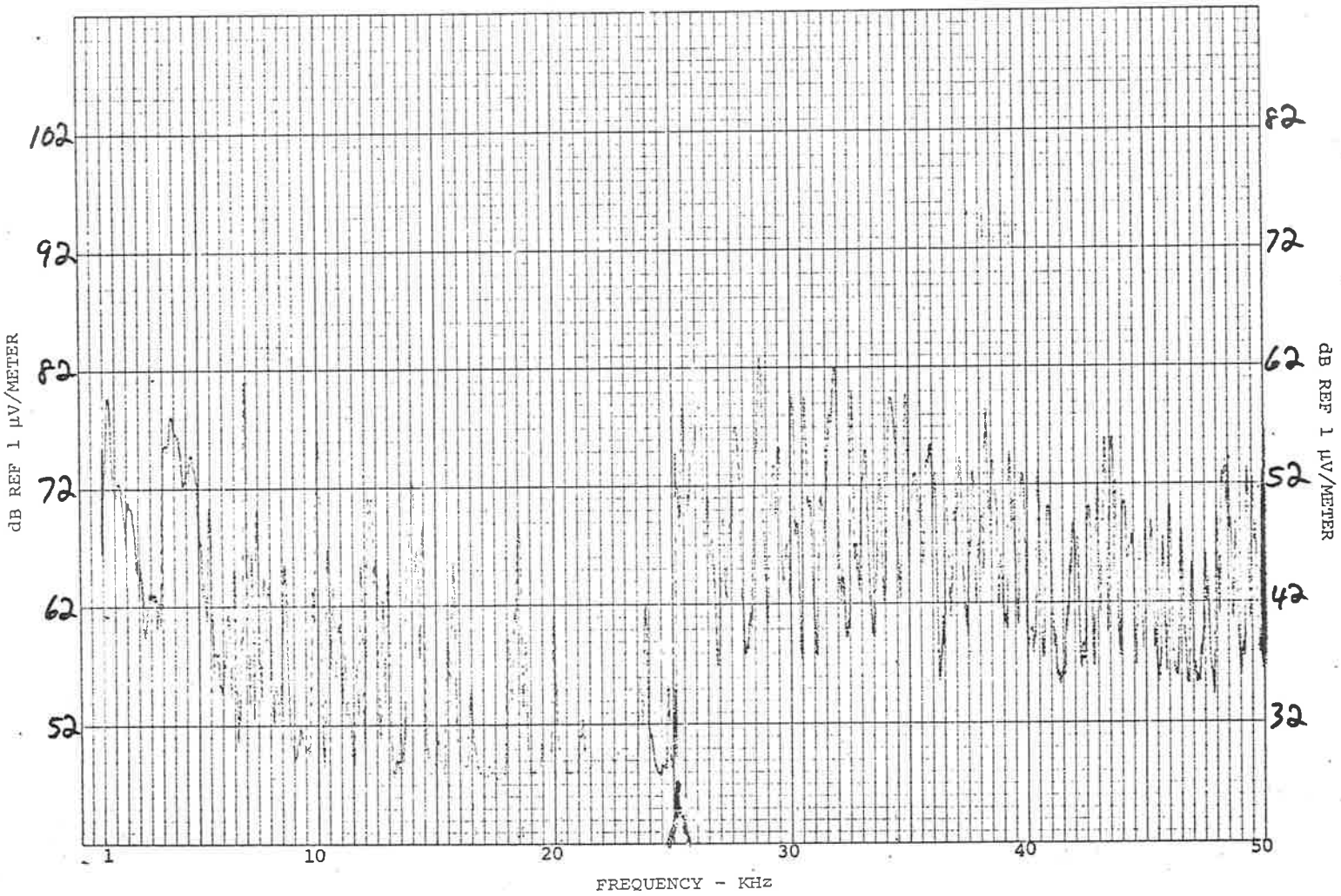
10.37
JRC





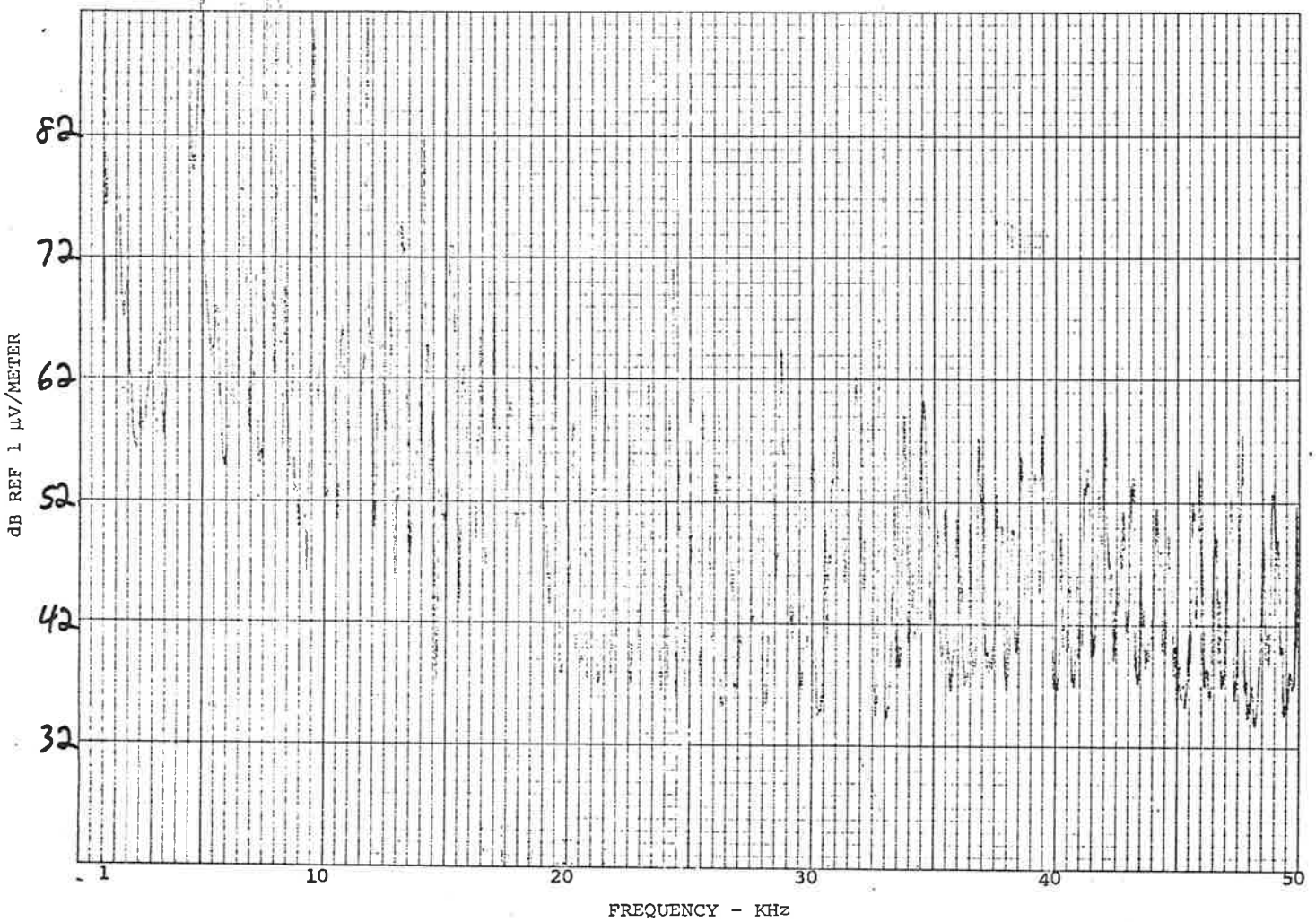
TEST NO. 287
TEST SPECIMEN 2 to 5
TEST TYPE ESR E/W
TEST EQUIP. EMC-10
BANDWIDTH 50 Hz
DATE 7-28-72

1000
ESJ



TEST NO. 288
TEST SPECIMEN SITE 5
TEST TYPE ESR E-W
TEST EQUIP. EMC-10
BANDWIDTH 50 Hz
DATE 7-28-72

1004
JRC

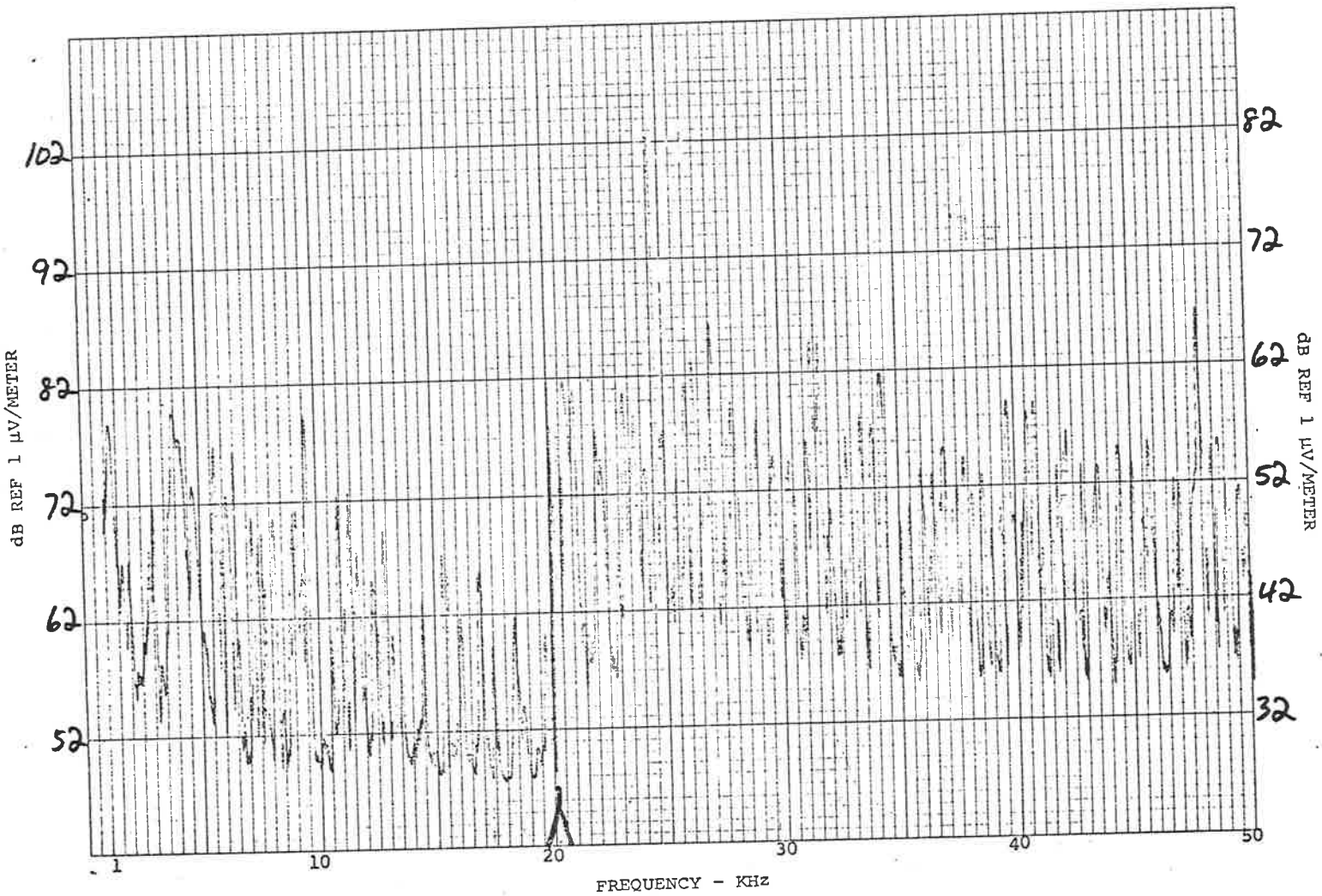


TEST NO. 289
TEST SPECIMEN SITE 5

TEST TYPE ESR N-S
TEST EQUIP. EMC-10

BANDWIDTH 50Hz
DATE 7-28-88

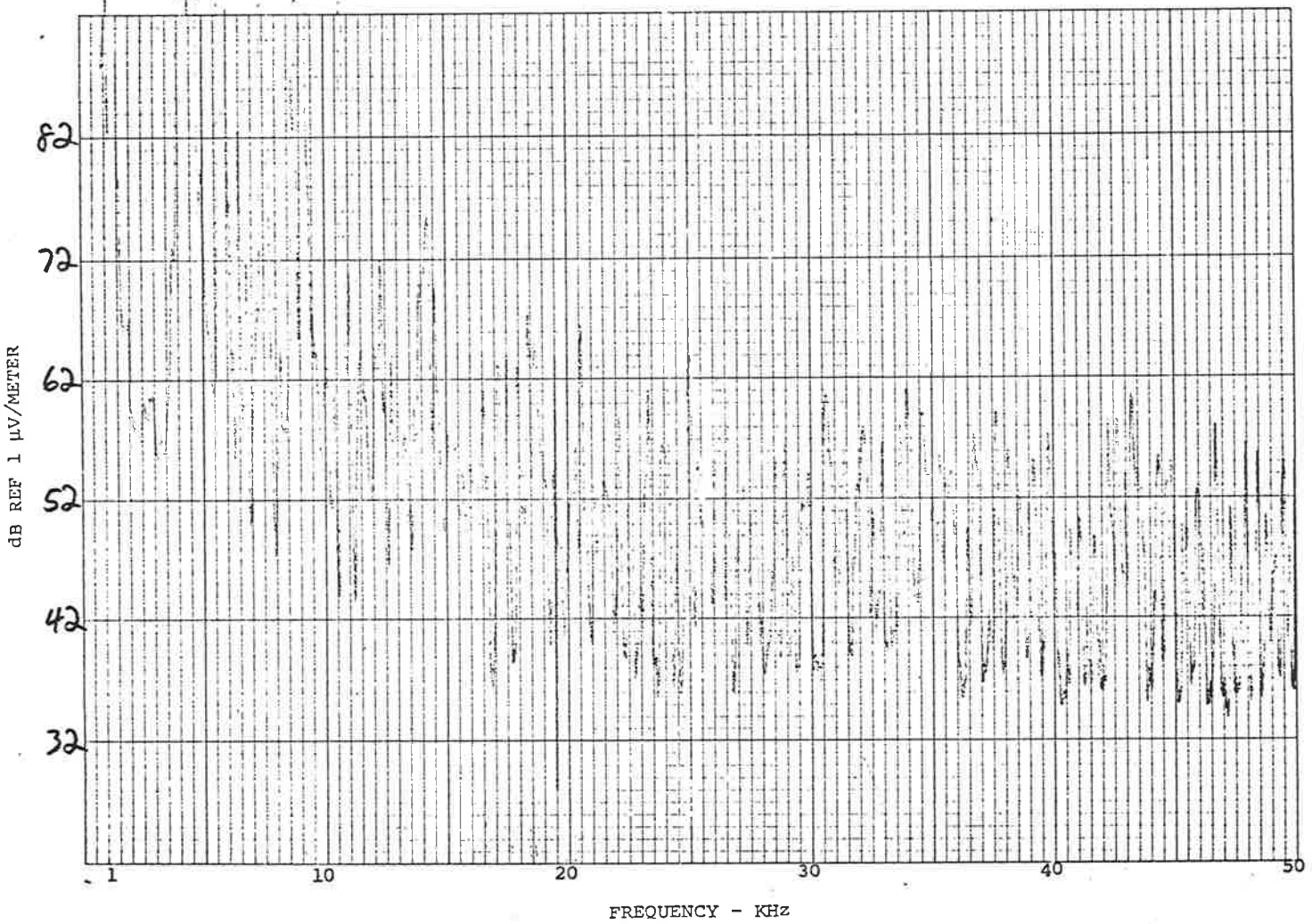
1008
URC



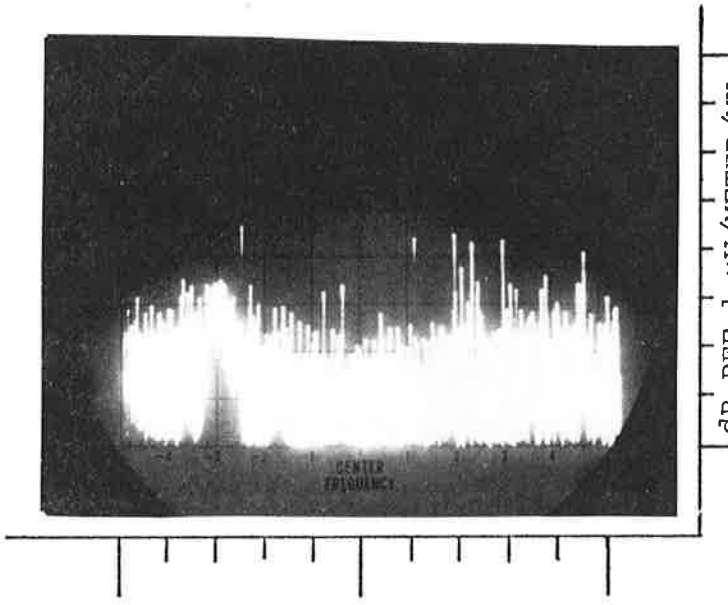
TEST NO. 290 TEST TYPE ESR N-S BANDWIDTH 50Hz

TEST SPECIMEN SITE 5 TEST EQUIP. EMC-10 DATE 7-28-72

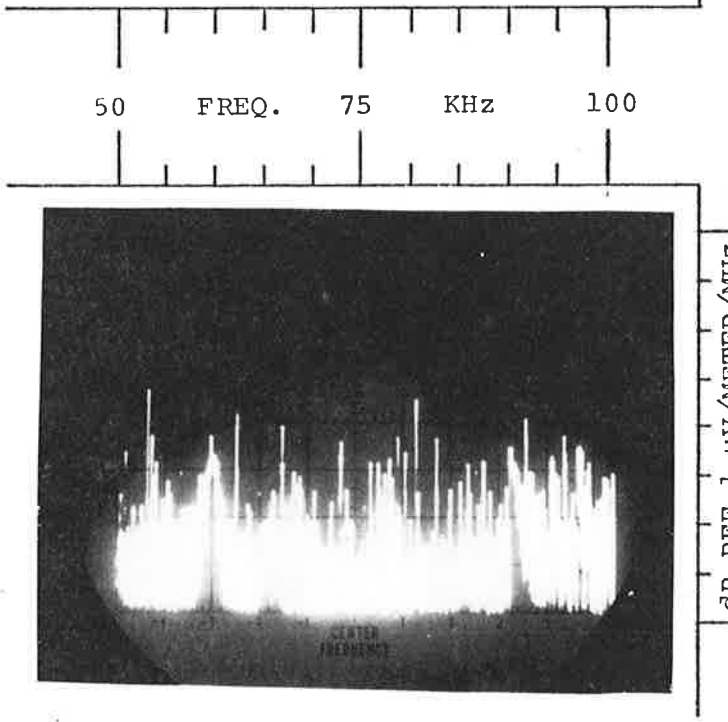
1014
JRC



LOCATION: SITE 5 TYPE TEST ESR DATE 7-28-72



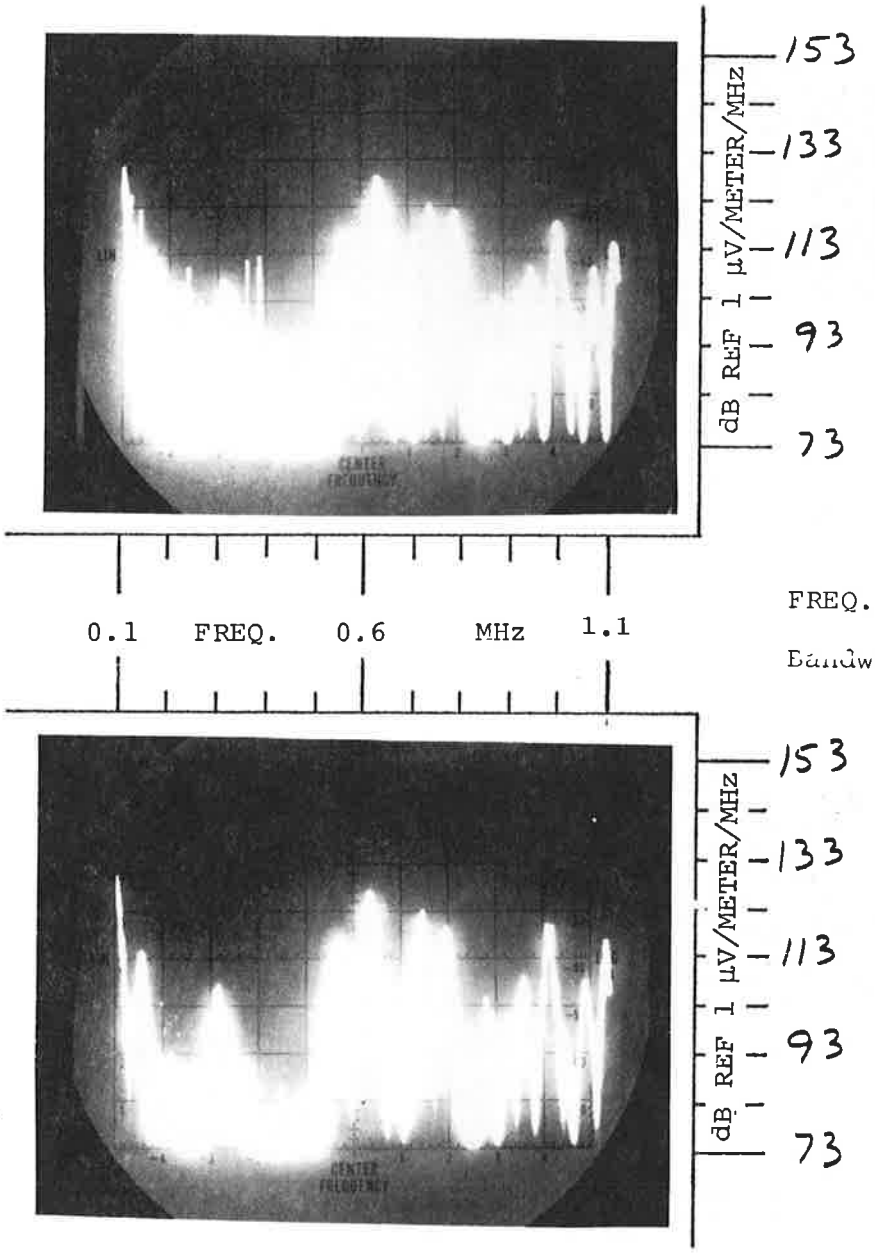
TEST 286
TIME 0955



FREQ. SCAN: 5 KHz/Div.
Bandwidth: 10 KHz

TEST 286
TIME 0956

LOCATION: SITE 5 TYPE TEST ESR DATE 7-28-72

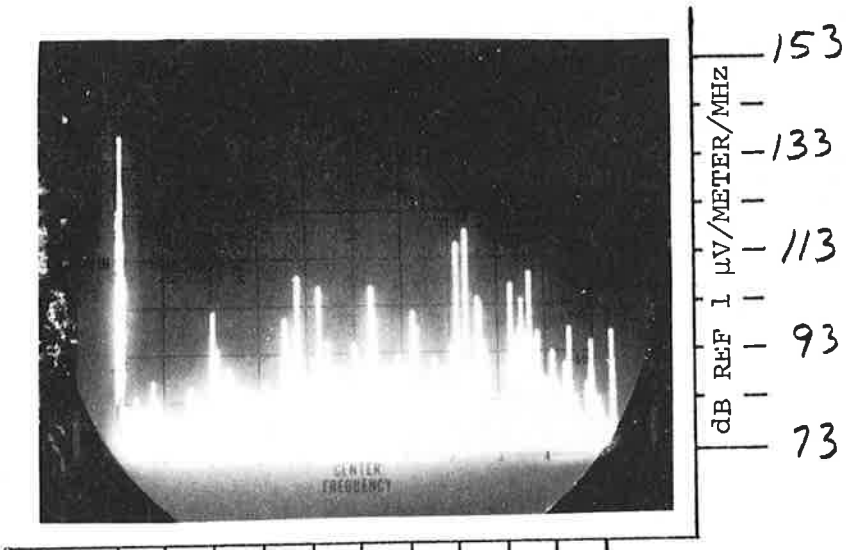


TEST 285
TIME 0950

FREQ. SCAN: 0.1 MHz/Div.
Bandwidth: 10 KHz

TEST 285
TIME 0953

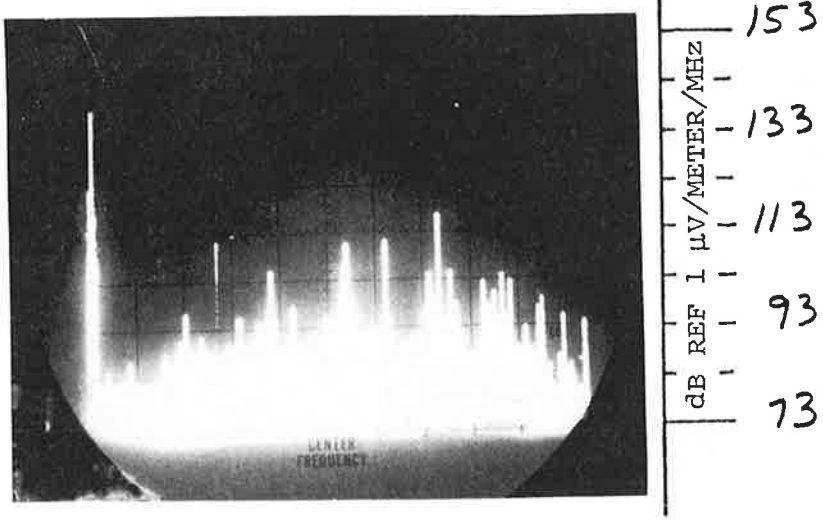
LOCATION: SITE 5 TYPE TEST ESR DATE 7-28-72



TEST 284
TIME 0948

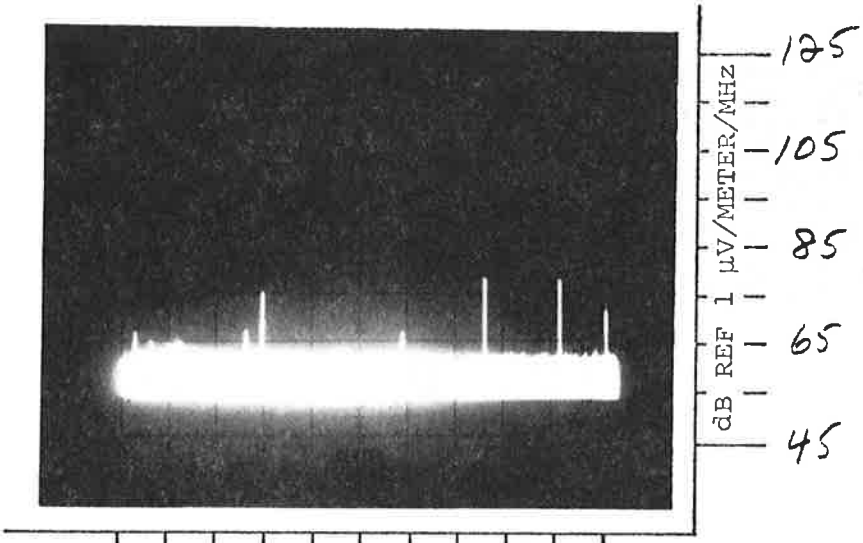
1 FREQ. 11 MHz 21

FREQ. SCAN: 2MHz/Div.
Bandwidth: 10 KHz

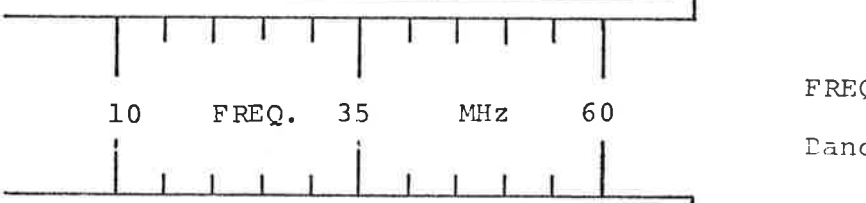


TEST 284
TIME 0949

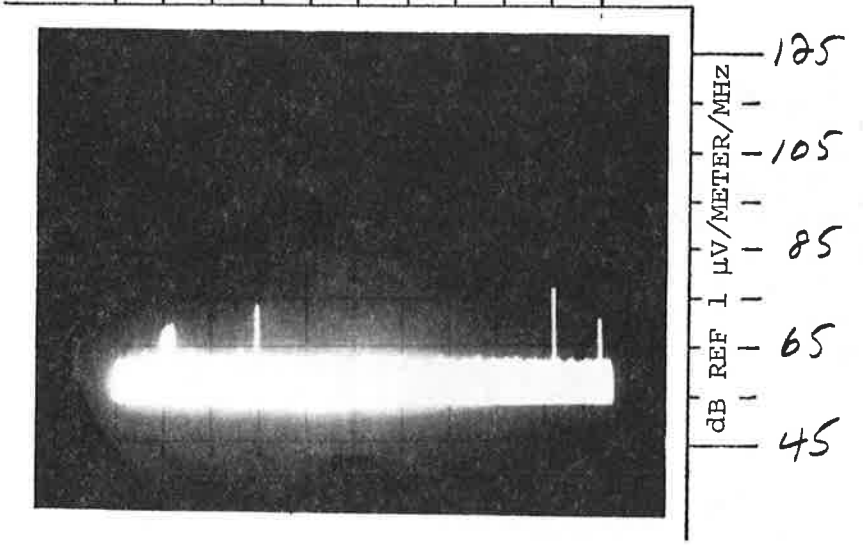
LOCATION: SITE 5 TYPE TEST ESR E/W DATE 7-22-72



TEST 283
TIME 0944

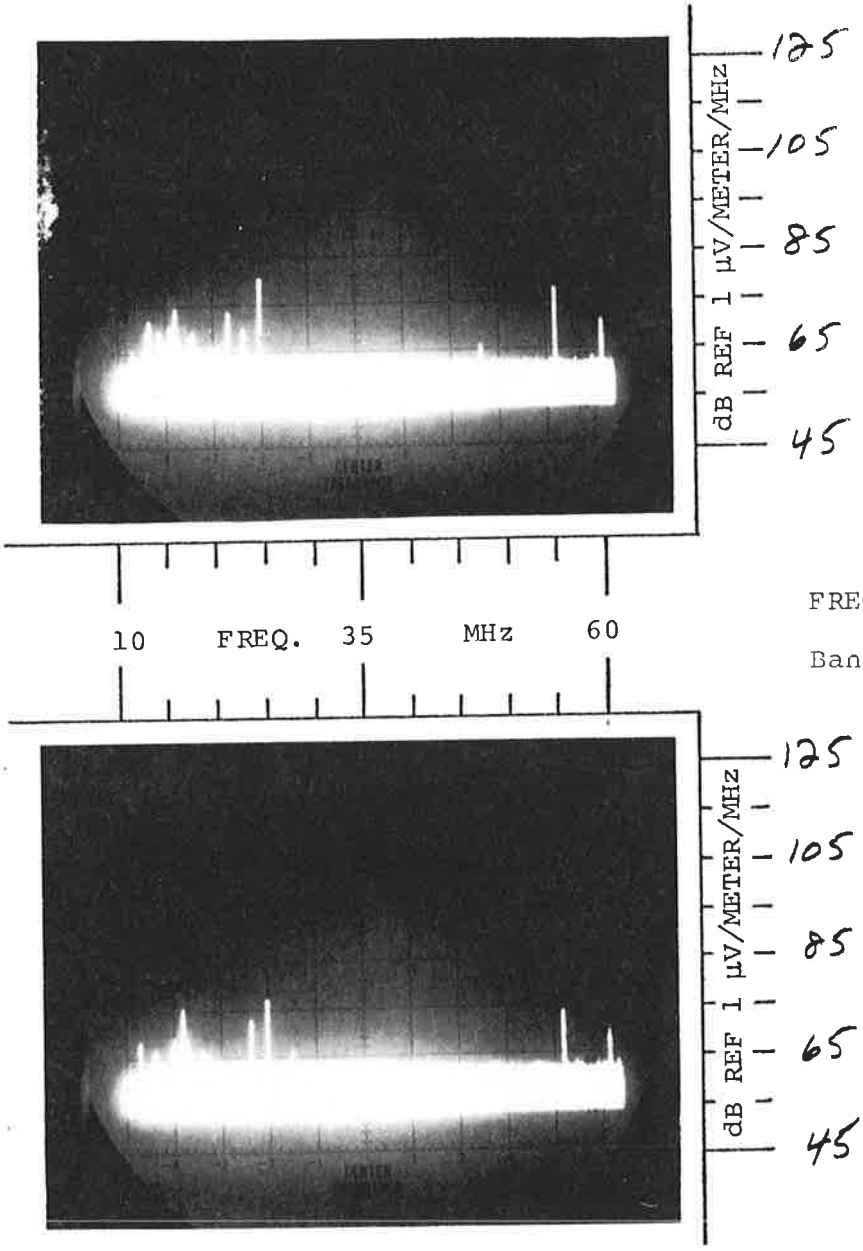


FREQ. SCAN: 5MHz/Div.
Bandwidth: 10 KHz



TEST 283
TIME 0945

LOCATION: SITE 5 TYPE TEST ESR N/S DATE 7-22-72



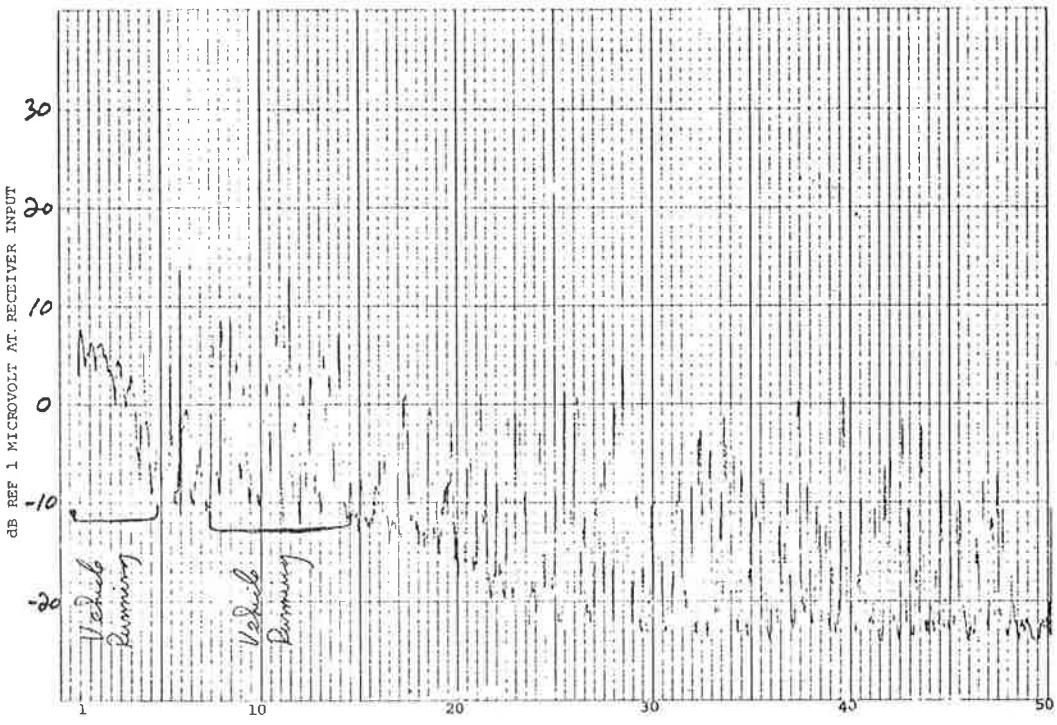
TEST 222
TIME 0941

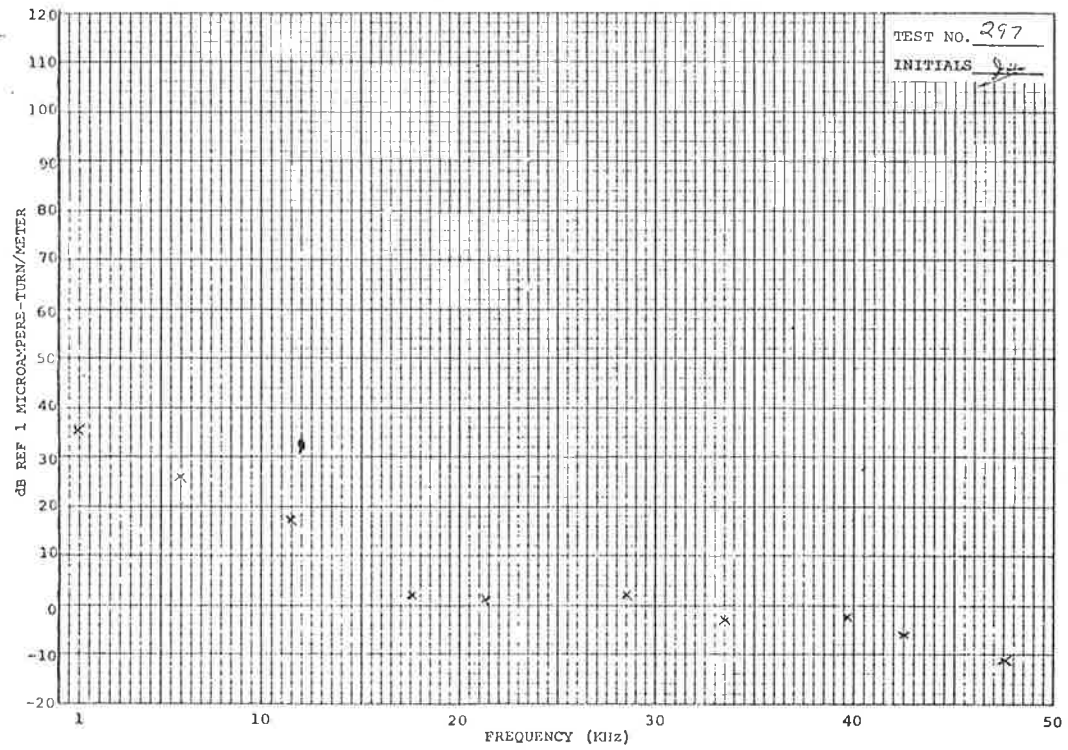
FREQ. SCAN: 5MHz/Div.
Bandwidth: 10 KHz

TEST 222
TIME 0942

TEST NO. 297 TEST TYPE MSP F/W BANDWIDTH 50 Hz
TEST SPECIMEN 86 11 TEST EQUIP. EMC-10 DATE 7-22-73

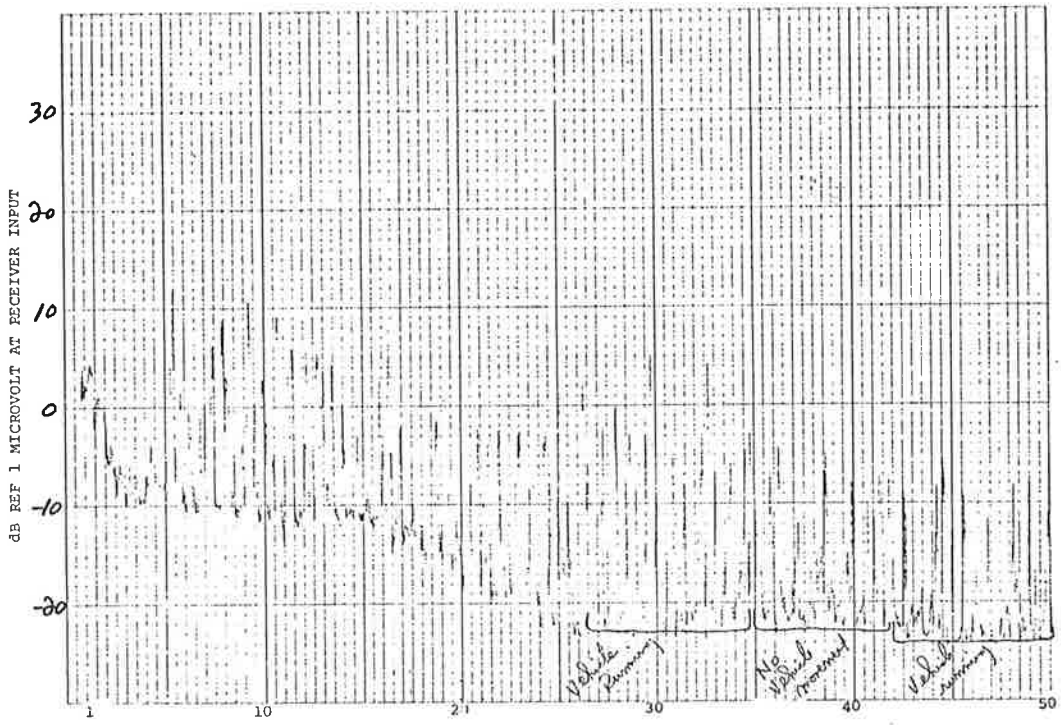
JRC

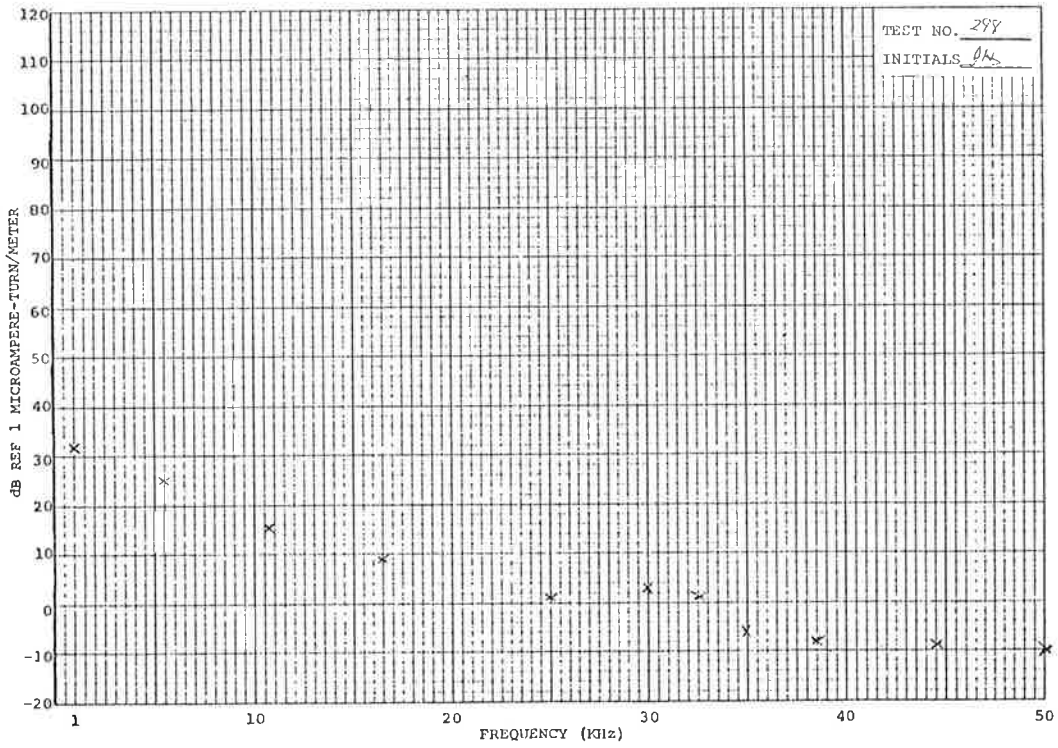




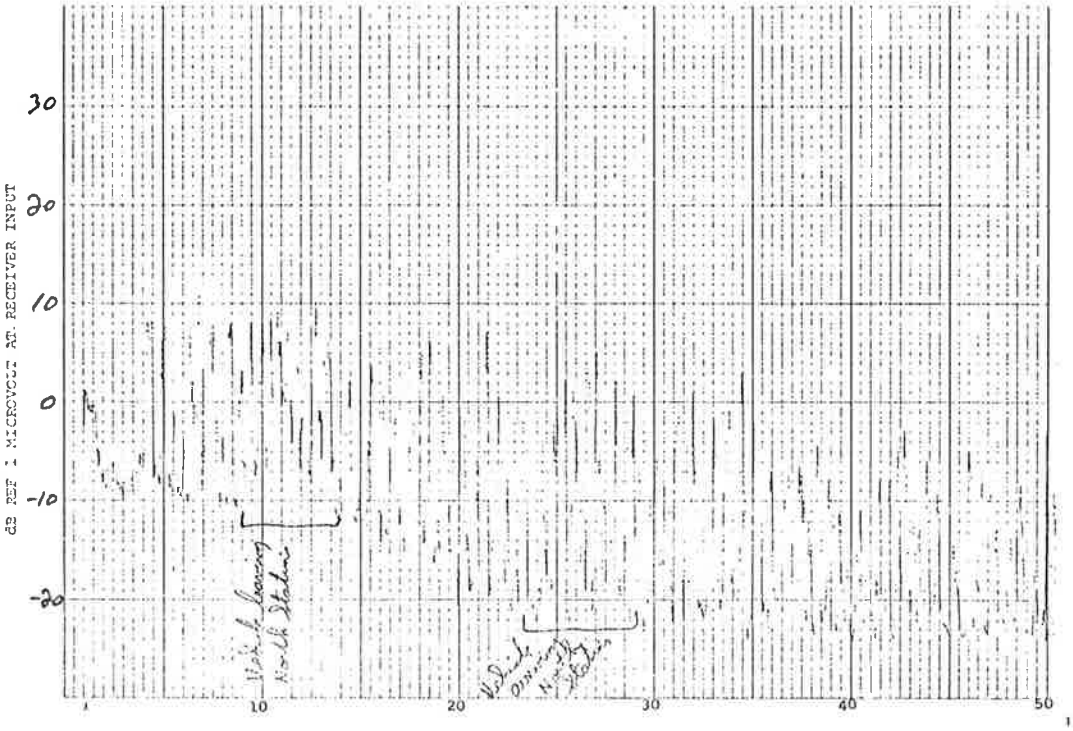
TEST NO. 278 TEST TYPE MSP E/N BANDWIDTH 50Hz
TEST SPECIMEN S6 11 TEST EQUIP. TMC-10 DATE 2-28-72

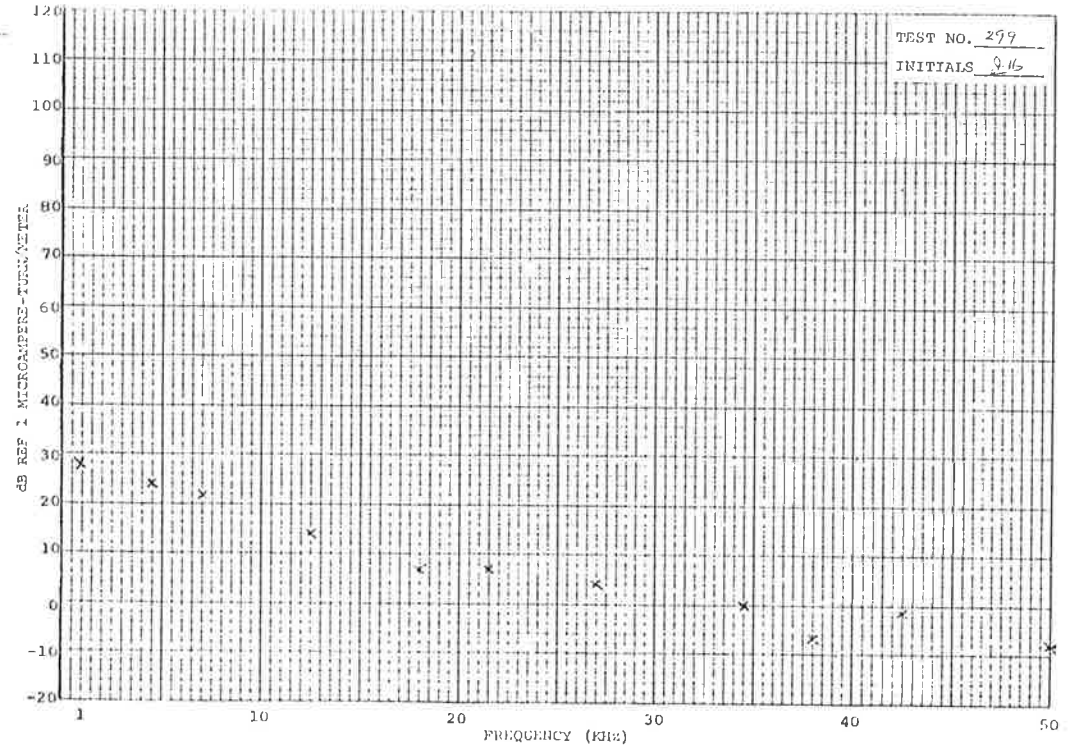
1110





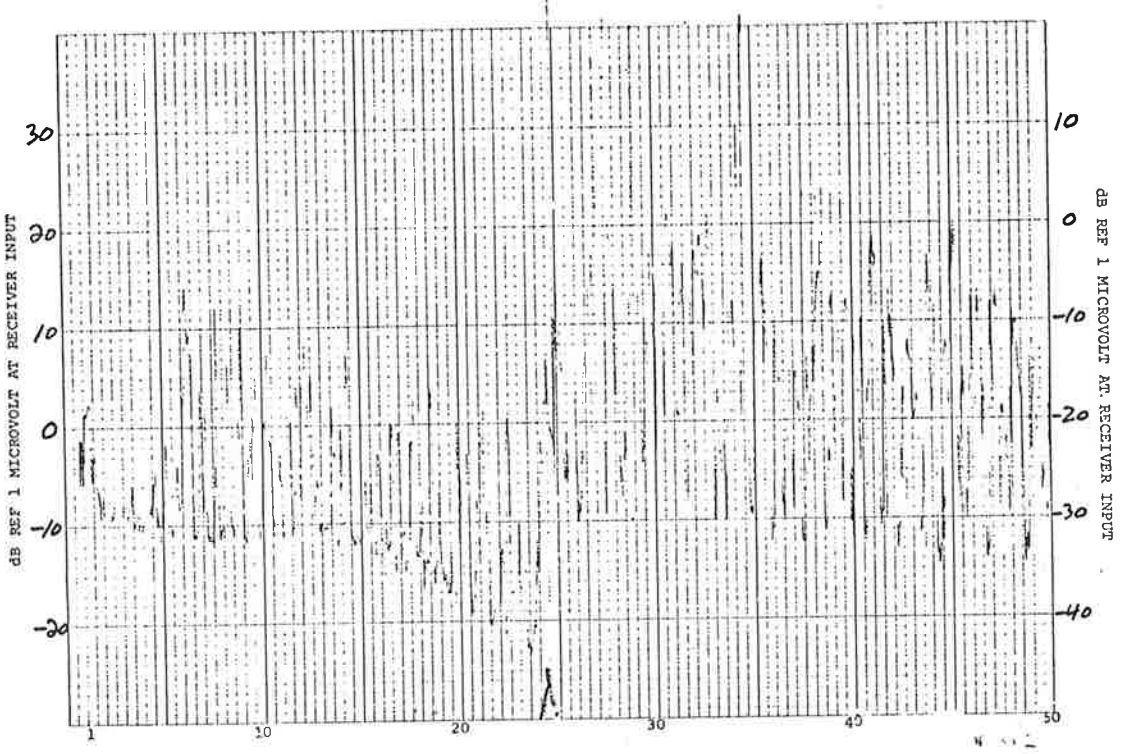
TEST NO. 299 TEST TYPE MSP N/S BANDWIDTH 50 Hz
TEST SPECIMEN S.S. 11 TEST EQUIP. LNC 12 DATE 2-28-72

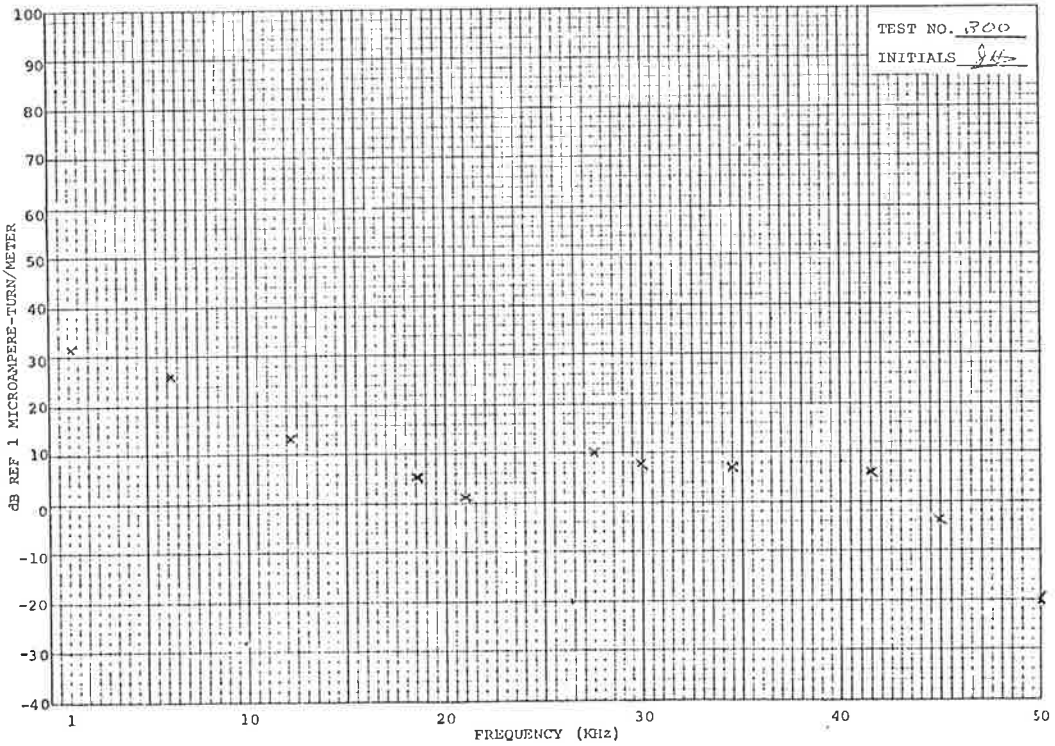




TEST NO. 300
TEST SPECIMEN 3.6 11
TEST TYPE MSP N/S
TEST EQUIP. ENC-10
BANDWIDTH 50Hz
DATE 7-28-72

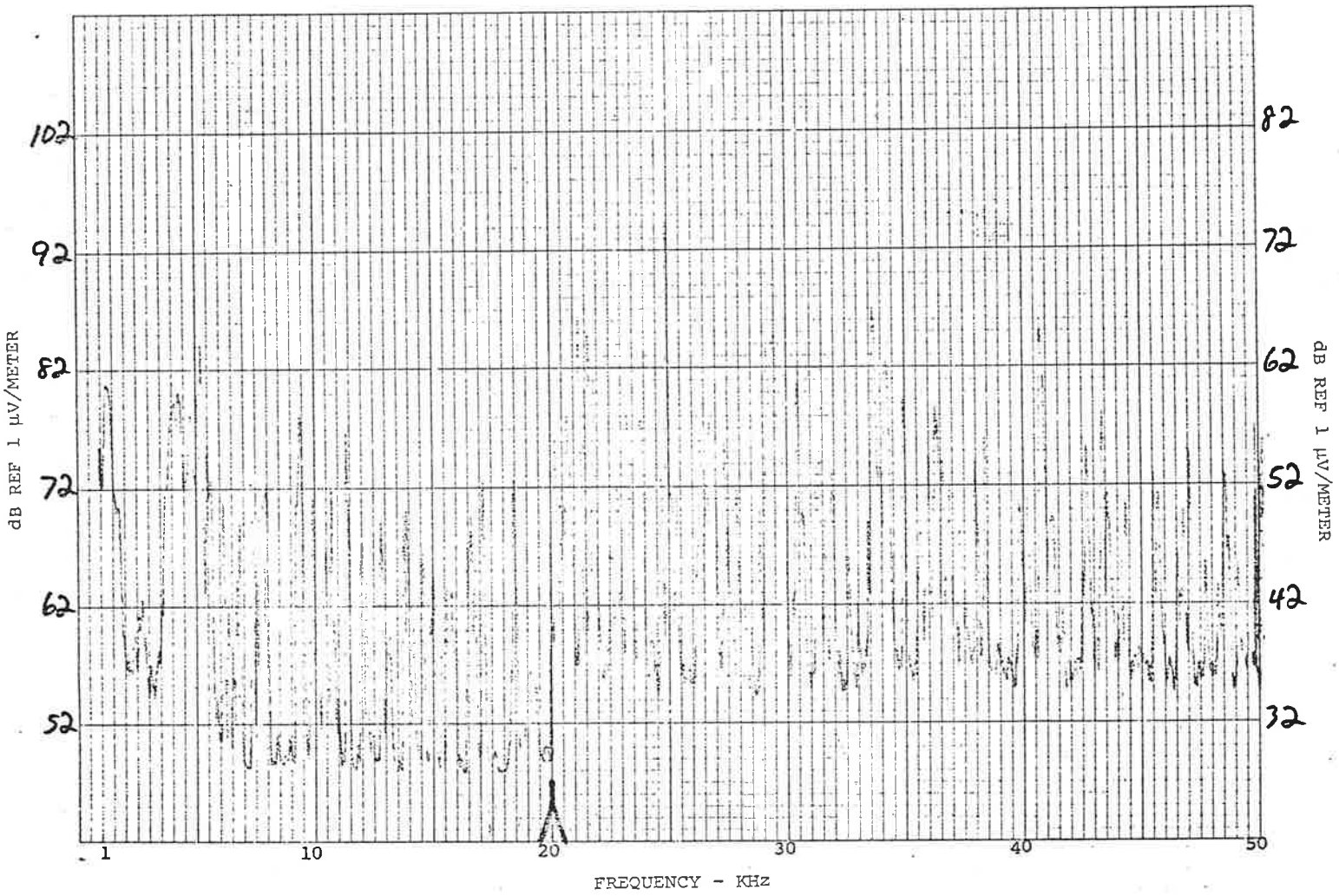
1127





TEST NO. 303 TEST TYPE ESR E/W BANDWIDTH 50 Hz
TEST SPECIMEN Subs 11 TEST EQUIP. EMC-10 DATE 7-28-72

1136
EEJ



ARRIVAL VEH A STA S AT 11:46:21
SCHEDULED ARRIVAL 11:45:[illegible]

ARRIVAL VEH B STA C AT 11:47:06
SCHEDULED ARRIVAL 11:46:36

ARRIVAL VEH A STA N AT 11:47:24
SCHEDULED ARRIVAL 11:46:37

ARRIVAL VEH B STA S AT 11:48:05
SCHEDULED ARRIVAL 11:47:27

ARRIVAL VEH A STA C AT 11:48:31
SCHEDULED ARRIVAL 11:47:24

ARRIVAL VEH B STA N AT 11:49:29
SCHEDULED ARRIVAL 11:48:38

ARRIVAL VEH A STA S AT 11:49:35
SCHEDULED ARRIVAL 11:48:13

ARRIVAL VEH B STA C AT 11:50:19
SCHEDULED ARRIVAL 11:49:25

ARRIVAL VEH A STA N AT 11:50:37
SCHEDULED ARRIVAL 11:49:24

ARRIVAL VEH B STA S AT 11:51:18
SCHEDULED ARRIVAL 11:50:14

ARRIVAL VEH A STA C AT 11:51:44
SCHEDULED ARRIVAL 11:50:11

ARRIVAL VEH B STA N AT 11:52:41
SCHEDULED ARRIVAL 11:51:25

ARRIVAL VEH A STA S AT 11:52:52
SCHEDULED ARRIVAL 11:51:08

SCHEDULE RE-ADJUSTED FOR VEHICLE A
T=12
ARRIVAL VEH B STA C AT 11:53.3!
SCHEDULED ARRIVAL 11:52:15
T=12:00:00
TIME 12:53:49

ARRIVAL VEH A STA N AT 12:53:54
SCHEDULED ARRIVAL 12:54:12
T=12:01:00
TIME 12:01:08

ARRIVAL VEH B STA S AT 12:01:22
SCHEDULED ARRIVAL 11:59:00

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 12:01:47
SCHEDULED ARRIVAL 12:01:06

ARRIVAL VEH B STA N AT 12:04:05
SCHEDULED ARRIVAL 12:02:41

ARRIVAL VEH A STA S AT 12:04:11
SCHEDULED ARRIVAL 12:01:47

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 12:05:07
SCHEDULED ARRIVAL 12:03:28

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 12:05:26
SCHEDULED ARRIVAL 12:05:32

ARRIVAL VEH B STA S AT 12:06:07
SCHEDULED ARRIVAL 12:06:06

ARRIVAL VEH A STA C AT 12:06:33
SCHEDULED ARRIVAL 12:06:21

ARRIVAL VEH B STA N AT 12:07:29
SCHEDULED ARRIVAL 12:07:24

VEH B IN SECTION 0 MORE THAN 30 SECONDS

ARRIVAL VEH A STA S AT 12:08:11
SCHEDULED ARRIVAL 12:07:09

ARRIVAL VEH B STA C AT 12:08:35
SCHEDULED ARRIVAL 12:08:11

ARRIVAL VEH B STA S AT 12:09:34
SCHEDULED ARRIVAL 12:09:00

ARRIVAL VEH A STA N AT 12:09:[illegible]
SCHEDULED ARRIVAL [illegible]

ARRIVAL VEH A STA C AT 12:10:[illegible]
SCHEDULED ARRIVAL 12:09:07

ARRIVAL VEH B STA N AT 12:10:45
SCHEDULED ARRIVAL 12:10:11

VEH B IN SECTION 0 MORE THAN 30 SECONDS

ARRIVAL VEH A STA S AT 12:11:31
SCHEDULED ARRIVAL 12:09:56

ARRIVAL VEH B STA C AT 12:11:56
SCHEDULED ARRIVAL 12:10:58

ARRIVAL VEH B STA S AT 12:13:11
SCHEDULED ARRIVAL 12:11:46

ARRIVAL VEH A STA N AT 12:13:14
SCHEDULED ARRIVAL 12:11:[illegible]

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 12:14:03
SCHEDULED ARRIVAL 12:14:03

ARRIVAL VEH B STA N AT 12:14:20
SCHEDULED ARRIVAL 12:12:57

ARRIVAL VEH A STA S AT 12:15:04
SCHEDULED ARRIVAL 12:14:56

ARRIVAL VEH B STA C AT 12:15:28
SCHEDULED ARRIVAL 12:13:44

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH B STA S AT 12:16:31
SCHEDULED ARRIVAL 12:16:27

ARRIVAL VEH A STA N AT 12:16:34
SCHEDULED ARRIVAL 12:16:09

ARRIVAL VEH A STA C AT 12:17:25
SCHEDULED ARRIVAL 12:16:56

ARRIVAL VEH B STA N AT 12:17:38
SCHEDULED ARRIVAL 12:17:41

ARRIVAL VEH A STA S AT 12:18:21
SCHEDULED ARRIVAL 12:7:45
S
SYSTEM SHUT DOWN
S
SYSTEM SHUT DOWN

EMERGENCY - POWER DUMPED
INITIATING SHUT DOWN

SYSTEM SHUT DOWN

EMERGENCY - POWER DUMPED
INITIATING SHUT DOWN

SYSTEM SHUT DOWN

EMERGENCY - POWER DUMPED
INITIATING SHUT DOWN

SYSTEM SHUT DOWN

EMERGENCY - POWER DUMPED
INITIATING SHUT DOWN

SYSTEM SHUT DOWN
E
CLEAR ALARM

SYSTEM SHUT DOWN

TRANSPO®'72 COMPUTER SYSTEM START UP

RESTRICTIONS?
[illegible]
ELECTRIFY?
ELECTRIFICATION WILL NOT START

46 2 vehicle loop in morn

```
ARRIVAL VEH F STA N AT 11:03:16
SCHEDULED ARRIVAL       11:01:47

ARRIVAL VEH A STA S AT 11:04:00
SCHEDULED ARRIVAL       11:04:03

ARRIVAL VEH B STA C AT 11:04:24
SCHEDULED ARRIVAL       11:03:34

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH F STA S AT 11:06:44
SCHEDULED ARRIVAL       11:06:30

ARRIVAL VEH A STA N AT 11:06:47
SCHEDULED ARRIVAL       11:05:21

ARRIVAL VEH A STA C AT 11:07:39
SCHEDULED ARRIVAL       11:06:08

ARRIVAL VEH B STA N AT 11:07:51
SCHEDULED ARRIVAL       11:07:41

ARRIVAL VEH A STA S AT 11:08:36
SCHEDULED ARRIVAL       11:06:57

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 11:09:01
SCHEDULED ARRIVAL       11:08:27

ARRIVAL VEH B STA S AT 11:09:59
SCHEDULED ARRIVAL       11:09:17

ARRIVAL VEH A STA N AT 11:10:02
SCHEDULED ARRIVAL       11:09:56

ARRIVAL VEH A STA C AT 11:10:55
SCHEDULED ARRIVAL       11:10:44

ARRIVAL VEH B STA N AT 11:11:21
SCHEDULED ARRIVAL       11:10:27

ARRIVAL VEH A STA S AT 11:12:03
SCHEDULED ARRIVAL       11:11:32

ARRIVAL VEH B STA C AT 11:12:07
SCHEDULED ARRIVAL       11:11:14

ARRIVAL VEH B STA S AT 11:13:43
SCHEDULED ARRIVAL       11:12:03

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 11:13:46
SCHEDULED ARRIVAL       11:12:43

ARRIVAL VEH A STA C AT 11:14:37
SCHEDULED ARRIVAL       11:13:30



ARRIVAL VEH B STA N AT 11:25:41
SCHEDULED ARRIVAL       11:14:53

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 11:25:49
SCHEDULED ARRIVAL       11:14:09

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 11:26:29
SCHEDULED ARRIVAL       11:26:32

ARRIVAL VEH A STA N AT 11:26:52
SCHEDULED ARRIVAL       11:27:10



ARRIVAL VEH B STA S AT 11:26:06
SCHEDULED ARRIVAL       11:27:26

ARRIVAL VEH A STA C AT 11:28:34
SCHEDULED ARRIVAL       11:27:56

ARRIVAL VEH F STA N AT 11:30:41
SCHEDULED ARRIVAL       11:28:38

ARRIVAL VEH A STA S AT 11:30:07
SCHEDULED ARRIVAL       11:28:46

ARRIVAL VEH F STA C AT 11:30:53
SCHEDULED ARRIVAL       11:29:30

ARRIVAL VEH A STA N AT 11:31:40
SCHEDULED ARRIVAL       11:29:57

SCHEDULE RE-ADJUSTED FOR VEHICLE A
T=11:
ILLEGAL COMMAND

READY

ARRIVAL VEH B STA S AT 11:32:26
SCHEDULED ARRIVAL       11:30:14

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 11:32:51
SCHEDULED ARRIVAL       11:32:38

ARRIVAL VEH B STA N AT 11:33:56
SCHEDULED ARRIVAL       11:33:46

ARRIVAL VEH A STA S AT 11:33:57
SCHEDULED ARRIVAL       11:33:21

VEH A IN SECTION 9 MORE THAN 30 SECONDS

ARRIVAL VEH B STA C AT 11:36:09
SCHEDULED ARRIVAL       11:34:31

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 11:36:28
SCHEDULED ARRIVAL       11:34:39

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 11:37:10
SCHEDULED ARRIVAL       11:37:06

ARRIVAL VEH A STA C AT 11:37:35
SCHEDULED ARRIVAL       11:37:17

VEH B IN SECTION 7 MORE THAN 30 SECONDS

ARRIVAL VEH A STA S AT 11:38:46
SCHEDULED ARRIVAL       11:38:06

ARRIVAL VEH B STA N AT 11:39:52
SCHEDULED ARRIVAL       11:38:23

ARRIVAL VEH B STA C AT 11:40:41
SCHEDULED ARRIVAL       11:39:10

ARRIVAL VEH A STA N AT 11:41:01
SCHEDULED ARRIVAL       11:39:15

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 11:41:43
SCHEDULED ARRIVAL       11:39:59

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 11:42:08
SCHEDULED ARRIVAL       11:41:50

ARRIVAL VEH B STA N AT 11:43:06
SCHEDULED ARRIVAL       11:43:02

ARRIVAL VEH A STA S AT 11:43:11
SCHEDULED ARRIVAL       11:42:39

ARRIVAL VEH B STA C AT 11:43:54
SCHEDULED ARRIVAL       11:43:50

ARRIVAL VEH A STA N AT 11:44:13
SCHEDULED ARRIVAL       11:43:50

ARRIVAL VEH B STA S AT 11:44:52
SCHEDULED ARRIVAL       11:44:41

ARRIVAL VEH A STA C AT 11:45:18
SCHEDULED ARRIVAL       11:44:37

ARRIVAL VEH B STA N AT 11:46:16
SCHEDULED ARRIVAL       11:45:51
```

...AY

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 10:15:10
SCHEDULED ARRIVAL 10:13:56

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 10:15:19
SCHEDULED ARRIVAL 10:13:16

SCHEDULE RE-ADJUSTED FOR VEHICLE A
TIME 10:25:00
TIME 10:25:00

ARRIVAL VEH A STA C AT 10:25:21
SCHEDULED ARRIVAL 10:25:10

ARRIVAL VEH B STA N AT 10:25:32
SCHEDULED ARRIVAL 10:25:36

ARRIVAL VEH A STA S AT 10:26:16
SCHEDULED ARRIVAL 10:25:59

ARRIVAL VEH B STA C AT 10:26:43
SCHEDULED ARRIVAL 10:26:25

ARRIVAL VEH B STA S AT 10:27:41
SCHEDULED ARRIVAL 10:27:14

ARRIVAL VEH A STA N AT 10:27:45
SCHEDULED ARRIVAL 10:27:10

ARRIVAL VEH A STA C AT 10:28:37
SCHEDULED ARRIVAL 10:27:57

ARRIVAL VEH B STA N AT 10:28:46
SCHEDULED ARRIVAL 10:28:25

ARRIVAL VEH A STA S AT 10:29:34
SCHEDULED ARRIVAL 10:28:46

ARRIVAL VEH B STA C AT 10:29:59
SCHEDULED ARRIVAL 10:29:12

ARRIVAL VEH B STA S AT 10:30:59
SCHEDULED ARRIVAL 10:30:01

ARRIVAL VEH A STA N AT 10:31:02
SCHEDULED ARRIVAL 10:29:56

ARRIVAL VEH A STA C AT 10:31:55
SCHEDULED ARRIVAL 10:30:44

ARRIVAL VEH B STA N AT 10:32:07
SCHEDULED ARRIVAL 10:31:11

ARRIVAL VEH A STA S AT 10:32:51
SCHEDULED ARRIVAL 10:31:33

ARRIVAL VEH B STA C AT 10:33:16
SCHEDULED ARRIVAL 10:31:58

ARRIVAL VEH B STA S AT 10:34:16
SCHEDULED ARRIVAL 10:32:47

ARRIVAL VEH A STA N AT 10:34:20
SCHEDULED ARRIVAL 10:32:43

ARRIVAL VEH A STA C AT 10:35:13
SCHEDULED ARRIVAL 10:33:30

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 10:35:25
SCHEDULED ARRIVAL 10:33:58

ARRIVAL VEH A STA S AT 10:36:09
SCHEDULED ARRIVAL 10:36:12

ARRIVAL VEH B STA C AT 10:36:34
SCHEDULED ARRIVAL 10:34:40

SCHEDULE RE-ADJUSTED FOR VEHICLE B
TIME 10:40:00
ILLEGAL COMMAND

...AY
...10:42:00
TIME 10:45:00

ARRIVAL VEH B STA S AT 10:43:56
SCHEDULED ARRIVAL 10:36:00

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 10:43:56
SCHEDULED ARRIVAL 10:36:26

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 10:43:56
SCHEDULED ARRIVAL 10:43:56

ARRIVAL VEH B STA N AT 10:44:06
SCHEDULED ARRIVAL 10:44:12

ARRIVAL VEH A STA S AT 10:44:56
SCHEDULED ARRIVAL 10:44:51

ARRIVAL VEH B STA C AT 10:45:22
SCHEDULED ARRIVAL 10:45:01

ARRIVAL VEH B STA S AT 10:47:15
SCHEDULED ARRIVAL 10:45:49

ARRIVAL VEH A STA N AT 10:47:19
SCHEDULED ARRIVAL 10:46:00

ARRIVAL VEH A STA C AT 10:48:12
SCHEDULED ARRIVAL 10:46:47

ARRIVAL VEH B STA N AT 10:48:23
SCHEDULED ARRIVAL 10:47:00

ARRIVAL VEH A STA S AT 10:49:09
SCHEDULED ARRIVAL 10:47:36

ARRIVAL VEH B STA C AT 10:49:33
SCHEDULED ARRIVAL 10:47:47

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH B STA S AT 10:50:48
SCHEDULED ARRIVAL 10:50:32

ARRIVAL VEH A STA N AT 10:50:52
SCHEDULED ARRIVAL 10:46:47

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 10:51:44
SCHEDULED ARRIVAL 10:51:03

ARRIVAL VEH B STA N AT 10:51:54
SCHEDULED ARRIVAL 10:51:43

ARRIVAL VEH A STA S AT 10:52:45
SCHEDULED ARRIVAL 10:52:37

ARRIVAL VEH B STA C AT 10:53:09
SCHEDULED ARRIVAL 10:52:29

ARRIVAL VEH B STA S AT 10:57:39
SCHEDULED ARRIVAL 10:53:15

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 10:57:43
SCHEDULED ARRIVAL 10:53:44

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 10:58:35
SCHEDULED ARRIVAL 10:58:34

ARRIVAL VEH B STA N AT 10:58:46
SCHEDULED ARRIVAL 10:59:00

ARRIVAL VEH A STA S AT 10:59:37
SCHEDULED ARRIVAL 10:59:08

ARRIVAL VEH B STA C AT 11:00:01
SCHEDULED ARRIVAL 10:59:46

ARRIVAL VEH B STA S AT 11:04:07
SCHEDULED ARRIVAL 11:00:36

ARRIVAL VEH A STA N AT 11:02:11
SCHEDULED ARRIVAL 11:01:37

ARRIVAL VEH A STA C AT 11:03:04
SCHEDULED ARRIVAL 11:01:24

SCHEDULE RE-ADJUSTED FOR VEHICLE A

```
ARRIVAL VEH B STA C AT 09:37:10
SCHEDULED ARRIVAL       09:36:46

ARRIVAL VEH B STA S AT 09:38:36
SCHEDULED ARRIVAL       09:38:36

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 09:38:40
SCHEDULED ARRIVAL       09:38:53

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 09:39:33
SCHEDULED ARRIVAL       09:39:31

ARRIVAL VEH B STA N AT 09:39:44
SCHEDULED ARRIVAL       09:39:57

ARRIVAL VEH A STA S AT 09:40:34
SCHEDULED ARRIVAL       09:40:34

ARRIVAL VEH B STA C AT 09:40:59
SCHEDULED ARRIVAL       09:40:46

ARRIVAL VEH B STA S AT 09:42:06
SCHEDULED ARRIVAL       09:41:34

ARRIVAL VEH A STA N AT 09:42:09
SCHEDULED ARRIVAL       09:41:34

ARRIVAL VEH A STA C AT 09:43:03
SCHEDULED ARRIVAL       09:42:31

ARRIVAL VEH B STA N AT 09:43:19
SCHEDULED ARRIVAL       09:42:45

ARRIVAL VEH A STA S AT 09:44:01
SCHEDULED ARRIVAL       09:43:10

ARRIVAL VEH B STA C AT 09:44:26
SCHEDULED ARRIVAL       09:43:34

ARRIVAL VEH B STA S AT 09:45:09
SCHEDULED ARRIVAL       09:44:21

ARRIVAL VEH A STA N AT 09:45:33
SCHEDULED ARRIVAL       09:47:21

ARRIVAL VEH A STA C AT 09:46:27
SCHEDULED ARRIVAL       09:45:08

ARRIVAL VEH B STA N AT 09:46:38
SCHEDULED ARRIVAL       09:45:32

ARRIVAL VEH A STA S AT 09:47:24
SCHEDULED ARRIVAL       09:45:57

ARRIVAL VEH B STA C AT 09:47:49
SCHEDULED ARRIVAL       09:46:19

ARRIVAL VEH B STA S AT 09:49:07
SCHEDULED ARRIVAL       09:47:07

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 09:49:16
SCHEDULED ARRIVAL       09:47:07

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 09:50:02
SCHEDULED ARRIVAL       09:50:01

ARRIVAL VEH B STA N AT 09:50:13
SCHEDULED ARRIVAL       09:50:27

ARRIVAL VEH A STA S AT 09:51:04
SCHEDULED ARRIVAL       09:50:55

ARRIVAL VEH B STA C AT 09:51:29
SCHEDULED ARRIVAL       09:51:16

ARRIVAL VEH B STA S AT 09:53:00
SCHEDULED ARRIVAL       09:52:04

ARRIVAL VEH A STA N AT 09:53:04
SCHEDULED ARRIVAL       09:52:05

ARRIVAL VEH A STA C AT 09:53:57
SCHEDULED ARRIVAL       09:52:53

ARRIVAL VEH B STA N AT 09:54:09
SCHEDULED ARRIVAL       09:53:15

ARRIVAL VEH A STA S AT 09:54:53
SCHEDULED ARRIVAL       09:53:4[illegible]

ARRIVAL VEH B STA C AT 09:55:16
SCHEDULED ARRIVAL       09:54:[illegible]

ARRIVAL VEH B STA S AT 09:56:17
SCHEDULED ARRIVAL       09:56:31

ARRIVAL VEH A STA N AT 09:56:[illegible]1
SCHEDULED ARRIVAL       09:54:52

ARRIVAL VEH A STA C AT 09:57:15
SCHEDULED ARRIVAL       09:55:39

ARRIVAL VEH B STA N AT 09:57:[illegible]6
SCHEDULED ARRIVAL       09:56:[illegible]3

ARRIVAL VEH A STA S AT 09:58:[illegible]2
SCHEDULED ARRIVAL       09:56:[illegible]5

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 09:58:37
SCHEDULED ARRIVAL       09:56:49

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH B STA S AT 10:[illegible]:[illegible]4
SCHEDULED ARRIVAL       09:59:35

ARRIVAL VEH A STA N AT 10:[illegible]:07
SCHEDULED ARRIVAL       09:59:32

ARRIVAL VEH A STA C AT 10:01:30
SCHEDULED ARRIVAL       10:00:19

ARRIVAL VEH B STA N AT 10:01:16
SCHEDULED ARRIVAL       10:00:46

ARRIVAL VEH A STA S AT 10:01:58
SCHEDULED ARRIVAL       10:01:09

ARRIVAL VEH B STA C AT 10:02:23
SCHEDULED ARRIVAL       10:01:33

ARRIVAL VEH B STA S AT 10:03:39
SCHEDULED ARRIVAL       10:02:22

ARRIVAL VEH A STA N AT 10:03:42
SCHEDULED ARRIVAL       10:02:19

ARRIVAL VEH A STA C AT 10:04:36
SCHEDULED ARRIVAL       10:03:06

ARRIVAL VEH B STA N AT 10:04:47
SCHEDULED ARRIVAL       10:03:33

ARRIVAL VEH A STA S AT 10:05:33
SCHEDULED ARRIVAL       10:03:55

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 10:05:56
SCHEDULED ARRIVAL       10:04:26

ARRIVAL VEH B STA S AT 10:06:57
SCHEDULED ARRIVAL       10:05:09

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 10:07:05
SCHEDULED ARRIVAL       10:06:53
R
TRANSPO '72 COMPUTER SYSTEM START UP

RESTRICTIONS?
NEW CONFIGURATION?
ELECTRIFY? Y
BEGIN ELECTRIFICATION

READY

ARRIVAL VEH A STA C AT 10:06:31
SCHEDULED ARRIVAL       10:06:35

ARRIVAL VEH B STA N AT 10:06:48
SCHEDULED ARRIVAL       10:09:36

ARRIVAL VEH A STA S AT 10:09:35
SCHEDULED ARRIVAL       10:09:24

ARRIVAL VEH B STA C AT 10:10:28
SCHEDULED ARRIVAL       10:10:24
R
TRANSPO '72 COMPUTER SYSTEM START UP

RESTRICTIONS?
NEW CONFIGURATION?
ELECTRIFY? Y
BEGIN ELECTRIFICATION
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ARRIVAL VEH A STA N AT 09:05:?
SCHEDULED ARRIVAL      09:04:47

SYSTEM SHUT DOWN

TRANSPO®'72 COMPUTER SYSTEM START UP

RESTRICTIONS?
VEH CONFIGURATION?
ELECTRIFY? Y
BEGIN ELECTRIFICATION

READY

SCHEDULE RE-ADJUSTED FOR VEHICLE F

ARRIVAL VEH A STA C AT 09:03:05
SCHEDULED ARRIVAL      09:02:21

ARRIVAL VEH F STA A AT 09:01:?4
SCHEDULED ARRIVAL      09:01:30

ARRIVAL VEH A STA S AT 09:03:?7
SCHEDULED ARRIVAL      09:02:09

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA C AT 09:02:15
SCHEDULED ARRIVAL      09:02:21

ARRIVAL VEH B STA S AT 09:03:40
SCHEDULED ARRIVAL      09:03:12

ARRIVAL VEH A STA N AT 09:03:50
SCHEDULED ARRIVAL      09:03:21
R
TRANSPO®'72 COMPUTER SYSTEM START UP

RESTRICTIONS?
VEH CONFIGURATION?
ELECTRIFY? Y
BEGIN ELECTRIFICATION

READY

ARRIVAL VEH A STA C AT 09:06:13
SCHEDULED ARRIVAL      09:04:54

ARRIVAL VEH B STA N AT 09:06:?5
SCHEDULED ARRIVAL      09:05:3?

ARRIVAL VEH A STA S AT 09:07:00
SCHEDULED ARRIVAL      09:05:43

ARRIVAL VEH F STA C AT 09:07:25
SCHEDULED ARRIVAL      09:06:20

ARRIVAL VEH F STA S AT 09:09:23
SCHEDULED ARRIVAL      09:07:08

ARRIVAL VEH A STA N AT 09:09:?4
SCHEDULED ARRIVAL      09:06:53

SCHEDULE RE-ADJUSTED FOR VEHICLE E

SCHEDULE RE-ADJUSTED FOR VEHICLE A

CLASS 1 FAILURE - VEHICLE A
R
CLEAR ALARM
R
TRANSPO®'72 COMPUTER SYSTEM START UP

RESTRICTIONS?
VEH CONFIGURATION?
ELECTRIFY? Y
BEGIN ELECTRIFICATION

READY

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 09:13:55
SCHEDULED ARRIVAL      09:13:57

ARRIVAL VEH B STA N AT 09:14:12
SCHEDULED ARRIVAL      09:11:52

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA S AT 09:14:59
SCHEDULED ARRIVAL      09:14:54

ARRIVAL VEH F STA C AT 09:15:?4
SCHEDULED ARRIVAL      09:15:?1

ARRIVAL VEH F STA S AT 09:17:17
SCHEDULED ARRIVAL      09:15:?9

ARRIVAL VEH A STA N AT 09:15:?9
SCHEDULED ARRIVAL      09:14:43

SCHEDULE RE-ADJUSTED FOR VEHICLE F

ARRIVAL VEH A STA C AT 09:16:03
SCHEDULED ARRIVAL      09:16:05

ARRIVAL VEH F STA A AT 09:15:?7
SCHEDULED ARRIVAL      09:15:?0

ARRIVAL VEH F STA S AT 09:17:?9
SCHEDULED ARRIVAL      09:16:?7

SCHEDULE RE-ADJUSTED FOR VEHICLE B

VEH B IN SECTION A , JOB TIME 30 SECONDS

VEH B INTERLOCK WAITING AT STATION S - OVERSHOOT

ARRIVAL VEH B STA S AT 09:18:21
SCHEDULED ARRIVAL      09:17:38

ARRIVAL VEH A STA N AT 09:18:24
SCHEDULED ARRIVAL      09:16:49

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 09:22:17
SCHEDULED ARRIVAL      09:22:15

ARRIVAL VEH B STA N AT 09:22:27
SCHEDULED ARRIVAL      09:21:43

ARRIVAL VEH A STA S AT 09:23:18
SCHEDULED ARRIVAL      09:23:08

ARRIVAL VEH B STA C AT 09:23:43
SCHEDULED ARRIVAL      09:22:30

ARRIVAL VEH B STA S AT 09:26:19
SCHEDULED ARRIVAL      09:23:17

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 09:26:23
SCHEDULED ARRIVAL      09:24:17

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 09:27:16
SCHEDULED ARRIVAL      09:27:14

ARRIVAL VEH B STA N AT 09:27:27
SCHEDULED ARRIVAL      09:27:40

ARRIVAL VEH A STA S AT 09:28:17
SCHEDULED ARRIVAL      09:28:07

ARRIVAL VEH B STA C AT 09:28:42
SCHEDULED ARRIVAL      09:28:29

ARRIVAL VEH B STA S AT 09:30:02
SCHEDULED ARRIVAL      09:29:17

ARRIVAL VEH A STA N AT 09:30:06
SCHEDULED ARRIVAL      09:29:17

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH A STA C AT 09:31:53
SCHEDULED ARRIVAL      09:32:00

ARRIVAL VEH F STA C AT 09:32:11
SCHEDULED ARRIVAL      09:30:47

SCHEDULE RE-ADJUSTED FOR VEHICLE F

ARRIVAL VEH A STA S AT 09:33:02
SCHEDULED ARRIVAL      09:32:56

ARRIVAL VEH B STA C AT 09:33:27
SCHEDULED ARRIVAL      09:33:00

ARRIVAL VEH F STA S AT 09:34:53
SCHEDULED ARRIVAL      09:33:49

ARRIVAL VEH A STA N AT 09:34:57
SCHEDULED ARRIVAL      09:34:07

ARRIVAL VEH A STA C AT 09:35:49
SCHEDULED ARRIVAL      09:34:54

ARRIVAL VEH F STA A AT 09:34:??
SCHEDULED ARRIVAL      09:34:59

ARRIVAL VEH A STA S AT 09:36:45
SCHEDULED ARRIVAL      09:35:43
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7/25/72

TRANSP®'72 COMPUTER SYSTEM START UP

RESTRICTIONS?
NEW CONFIGURATION? Y
CONFIGURATION CHANGE
MODE (E,S):
CLASS 2 FAILURE - VEHICLE A

CLASS 2 FAILURE - VEHICLE B
S
DISTANCE(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

VEHICLE A EMERGENCY STOP AT STATION S

ARRIVAL VEH B STA S AT 00:03:52
SCHEDULED ARRIVAL 00:02:53

VEH A IMPROPER BERTHING AT STATION N - UNDERSHOOT

ARRIVAL VEH A STA N AT 00:04:16
SCHEDULED ARRIVAL 00:03:36
T=\=08:26:00
TIME 0s:26:00

ARRIVAL VEH A STA C AT 08:26:22
SCHEDULED ARRIVAL 08:25:23

ARRIVAL VEH B STA N AT 08:26:30
SCHEDULED ARRIVAL 08:25:03

VEH A IMPROPER BERTHING AT STATION S - UNDERSHOOT

ARRIVAL VEH A STA S AT 08:27:50
SCHEDULED ARRIVAL 08:26:12

ARRIVAL VEH B STA C AT 08:28:35
SCHEDULED ARRIVAL 08:25:49

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 08:29:15
SCHEDULED ARRIVAL 08:27:22

SCHEDULE RE-ADJUSTED FOR VEHICLE A

CLASS 1 FAILURE - VEHICLE B
K
CLEAR ALARM
K
TRANSP®'72 COMPUTER SYSTEM START UP

RESTRICTIONS?
NEW CONFIGURATION?
ELECTRIFY? Y
BEGIN ELECTRIFICATION

READY
T=8:33:35
TIME 9:32:03
T
VEHICLE EMERGENCY STOP AT STATION S

ARRIVAL VEH B STA S AT 9U:32:25
SCHEDULED ARRIVAL 10:30:21

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 9U:32:51
SCHEDULED ARRIVAL 10:30:50

SCHEDULE RE-ADJUSTED FOR VEHICLE A
T=8:35:35
TIME 1:33:18
T=8:35:00
TIME 0s:35:00

VEH A IN SECTION 4 MORE THAN 30 SECONDS

VEH A IMPROPER BERTHING AT STATION S - OVERSHOOT

ARRIVAL VEH B STA N AT 08:36:58
SCHEDULED ARRIVAL 08:36:00

ARRIVAL VEH A STA S AT 08:40:05
SCHEDULED ARRIVAL 08:38:40

VEH B IMPROPER BERTHING AT STATION S - OVERSHOOT

VEH B IMPROPER BERTHING AT STATION N - OVERSHOOT

ARRIVAL VEH B STA N AT 08:39:01
SCHEDULED ARRIVAL 08:35:53

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH B STA C AT 08:41:21
SCHEDULED ARRIVAL 08:39:51

ARRIVAL VEH A STA N AT 08:41:45
SCHEDULED ARRIVAL 08:35:55

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA S AT 08:42:27
SCHEDULED ARRIVAL 08:40:40

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA C AT 08:42:53
SCHEDULED ARRIVAL 08:42:34

CLASS 3 FAILURE - VEHICLE B

ARRIVAL VEH B STA N AT 08:43:56
SCHEDULED ARRIVAL 08:43:48

ARRIVAL VEH A STA S AT 08:44:03
SCHEDULED ARRIVAL 08:43:22

ARRIVAL VEH B STA C AT 08:45:41
SCHEDULED ARRIVAL 08:44:34

ARRIVAL VEH A STA N AT 08:46:02
SCHEDULED ARRIVAL 08:44:32

ARRIVAL VEH B STA S AT 08:46:43
SCHEDULED ARRIVAL 08:45:23

ARRIVAL VEH A STA C AT 08:47:09
SCHEDULED ARRIVAL 08:45:19

SCHEDULE RE-ADJUSTED FOR VEHICLE A

ARRIVAL VEH B STA N AT 08:48:10
SCHEDULED ARRIVAL 08:46:33

ARRIVAL VEH A STA S AT 08:48:19
SCHEDULED ARRIVAL 08:48:08

ARRIVAL VEH B STA C AT 08:49:25
SCHEDULED ARRIVAL 08:47:20

SCHEDULE RE-ADJUSTED FOR VEHICLE B

ARRIVAL VEH A STA N AT 08:49:45
SCHEDULED ARRIVAL 08:49:19

ARRIVAL VEH B STA S AT 08:50:27
SCHEDULED ARRIVAL 08:50:24

ARRIVAL VEH A STA C AT 08:50:53
SCHEDULED ARRIVAL 08:50:06

ARRIVAL VEH B STA N AT 08:51:46
SCHEDULED ARRIVAL 08:51:35
T=U9
ARRIVAL VEH A STA S AT 08:52:04
SCHEDULED ARRIVAL 08:50:54

ARRIVAL VEH B STA C AT 08:52:47
SCHEDULED ARRIVAL 08:52:22
T=0957
TIME 08:53:08

ARRIVAL VEH B STA S AT 08:53:26
SCHEDULED ARRIVAL 08:53:11

ARRIVAL VEH A STA N AT 08:53:39
SCHEDULED ARRIVAL 08:52:05

ARRIVAL VEH A STA C AT 08:54:30
SCHEDULED ARRIVAL 08:53:52

SCHEDULE RE-ADJUSTED FOR VEHICLE A

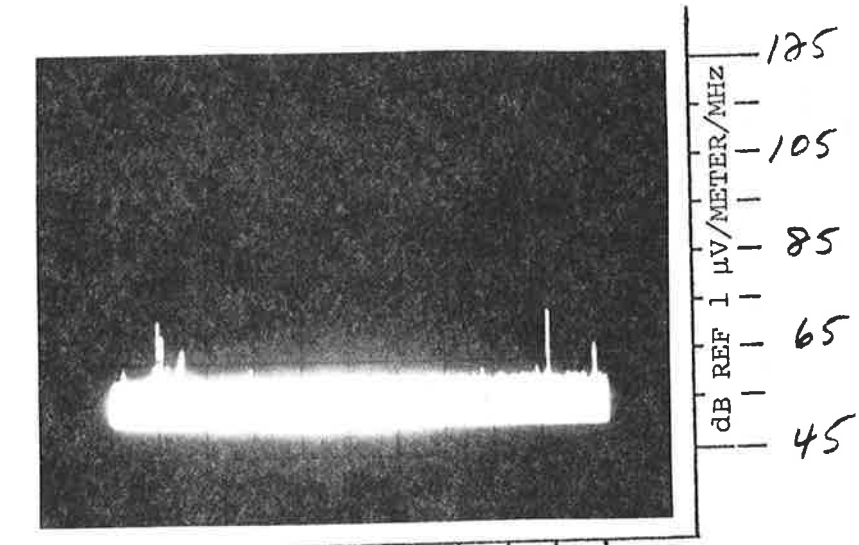
ARRIVAL VEH B STA N AT 08:54:41
SCHEDULED ARRIVAL 08:54:22

ARRIVAL VEH A STA S AT 08:55:27
SCHEDULED ARRIVAL 08:55:09

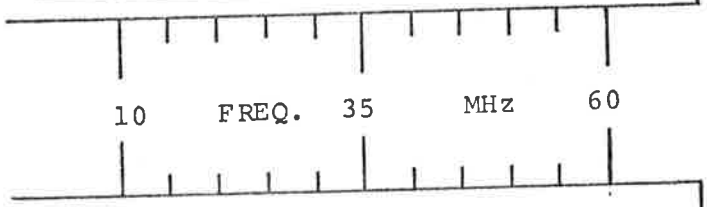
ARRIVAL VEH B STA C AT 08:55:52
SCHEDULED ARRIVAL 08:55:09

ARRIVAL VEH B STA S AT 08:57:05
SCHEDULED ARRIVAL 08:56:47

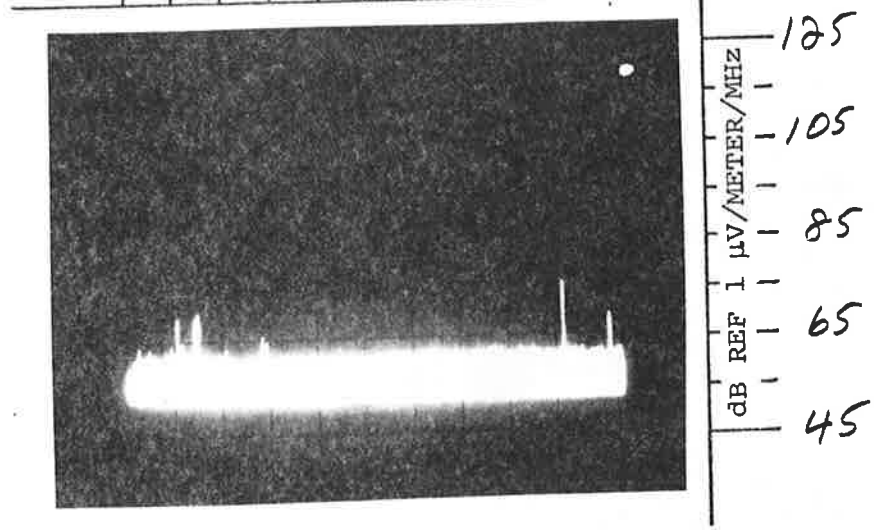
LOCATION: SITE 11 TYPE TEST ESR N/S DATE 7-28-72



TEST 308
TIME 1205

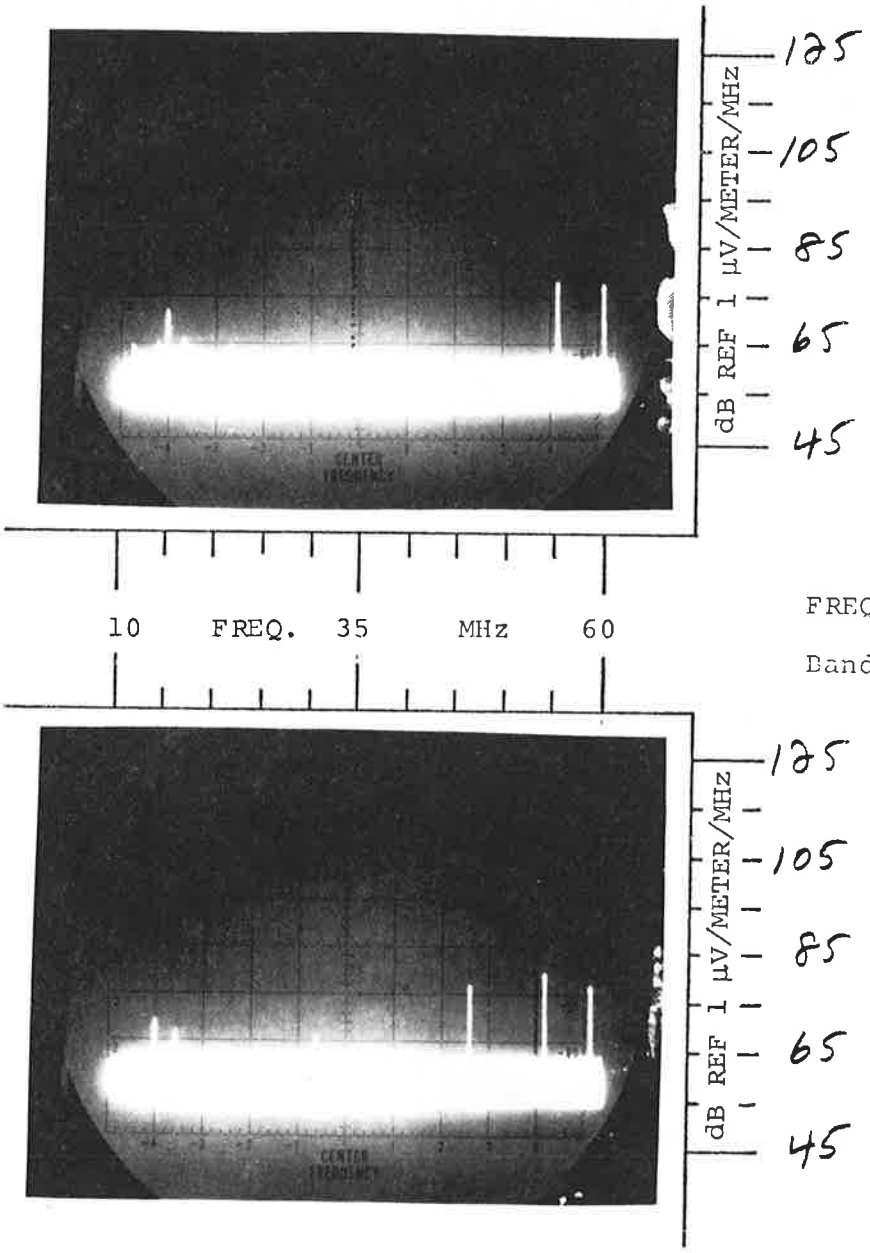


FREQ. SCAN: 5MHz/Div.
Bandwidth: 10 KHz



TEST 308
TIME 1207

LOCATION: SITE 11 TYPE TEST ESR E/N DATE 7-22-72

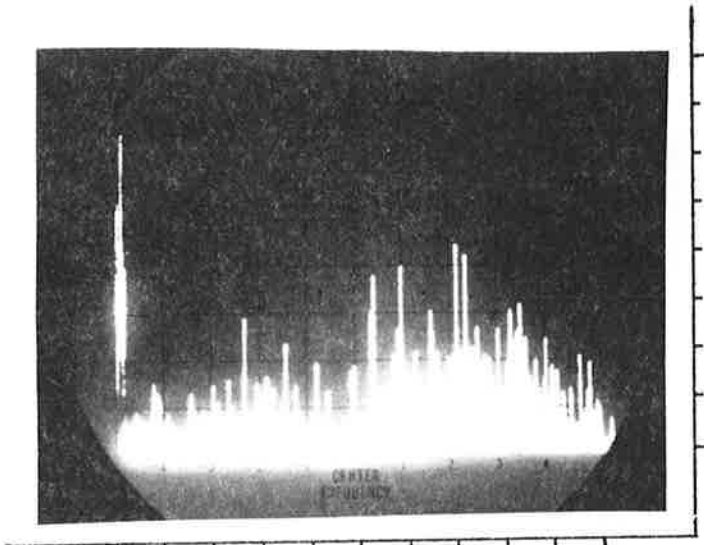


TEST 309
TIME 1202.5

FREQ. SCAN: 5MHz/Div.
Bandwidth: 10 KHz

TEST 309
TIME 1211

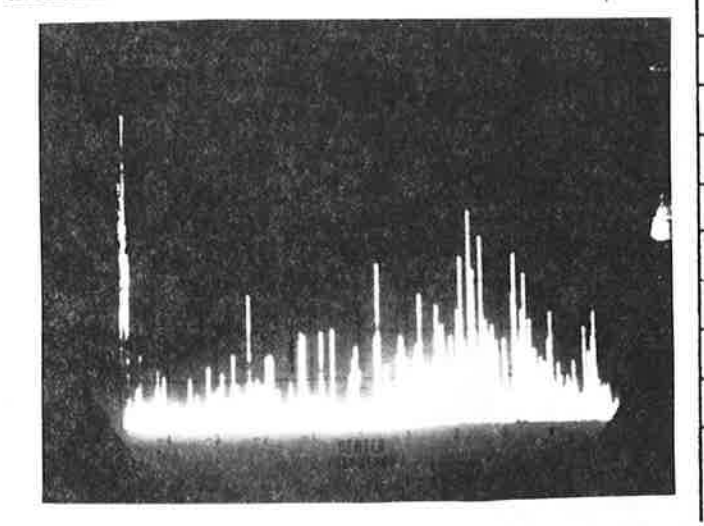
LOCATION: SITE 11 TYPE TEST ESR DATE 7-28-72



TEST 307
TIME 1155

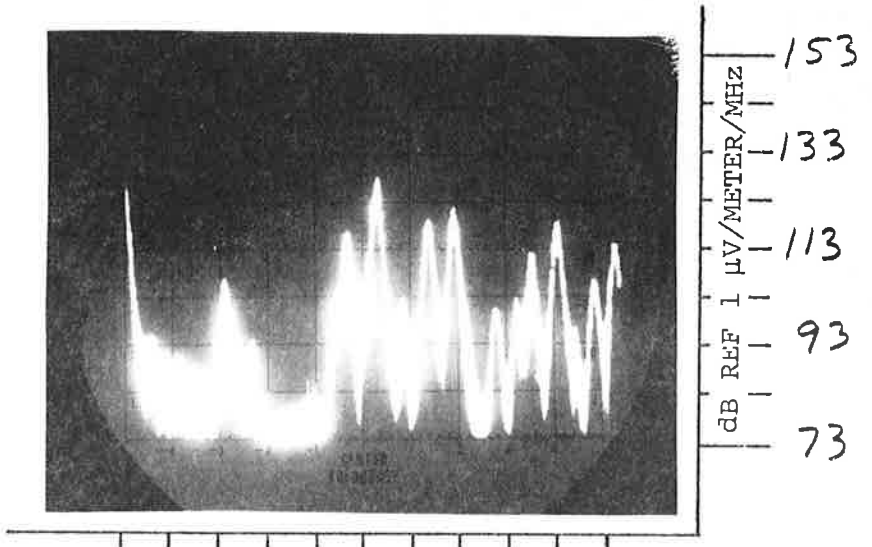
1 FREQ. 11 MHz 21

FREQ. SCAN: 2MHz/Div.
Bandwidth: 10 KHz

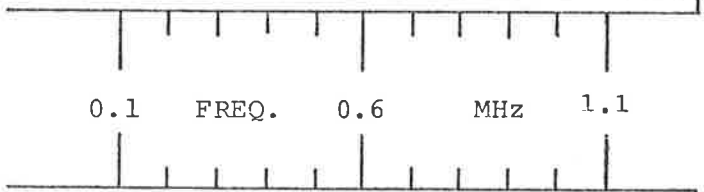


TEST 307
TIME 1157

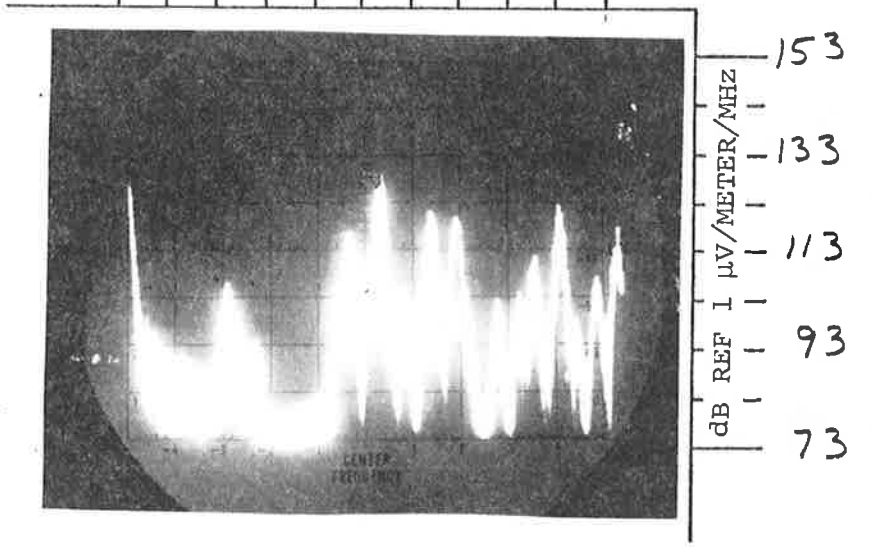
LOCATION: SITE 11 TYPE TEST ESR DATE 7-28-72



TEST 306
TIME 1152

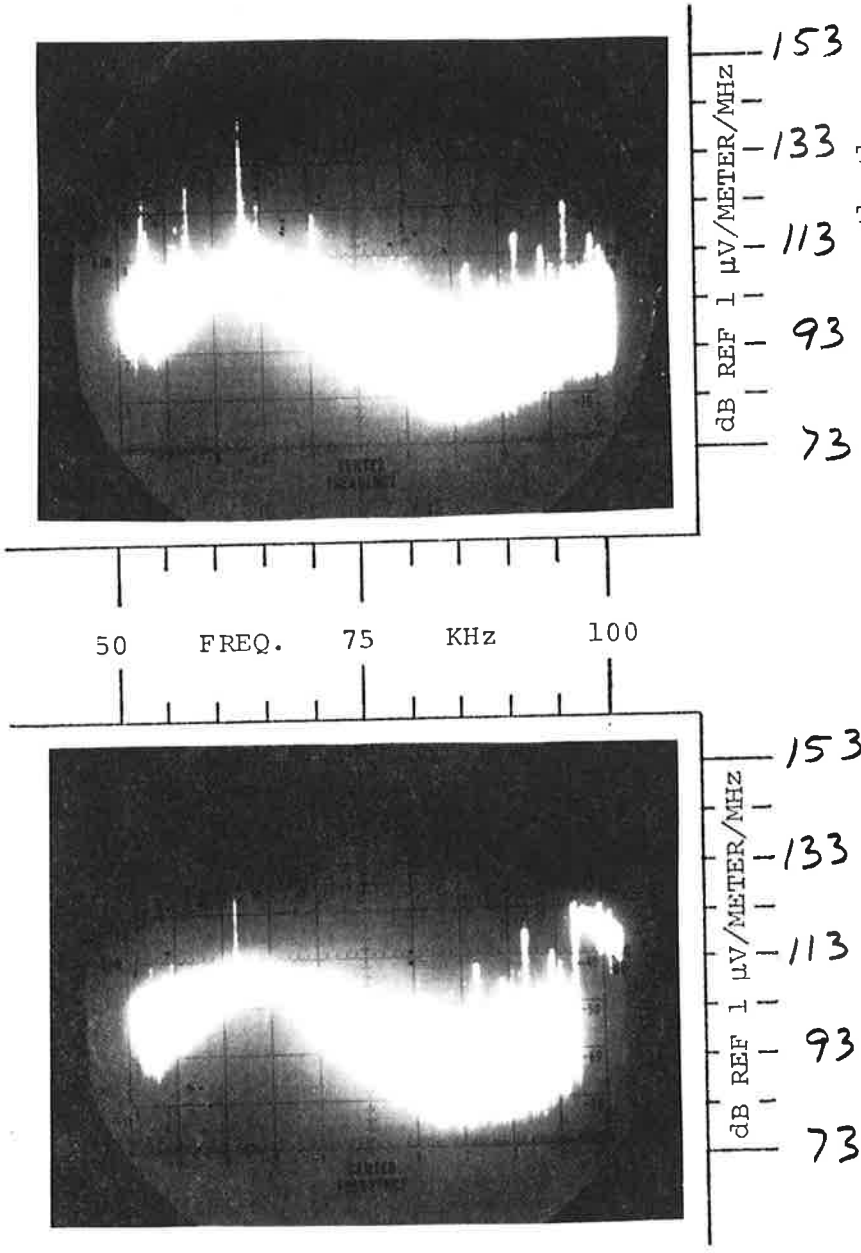


FREQ. SCAN: 0.1 MHz/Div.
Bandwidth: 10 KHz



TEST 306
TIME 1153

LOCATION: SITE 11 TYPE TEST ESR DATE 7-28-72



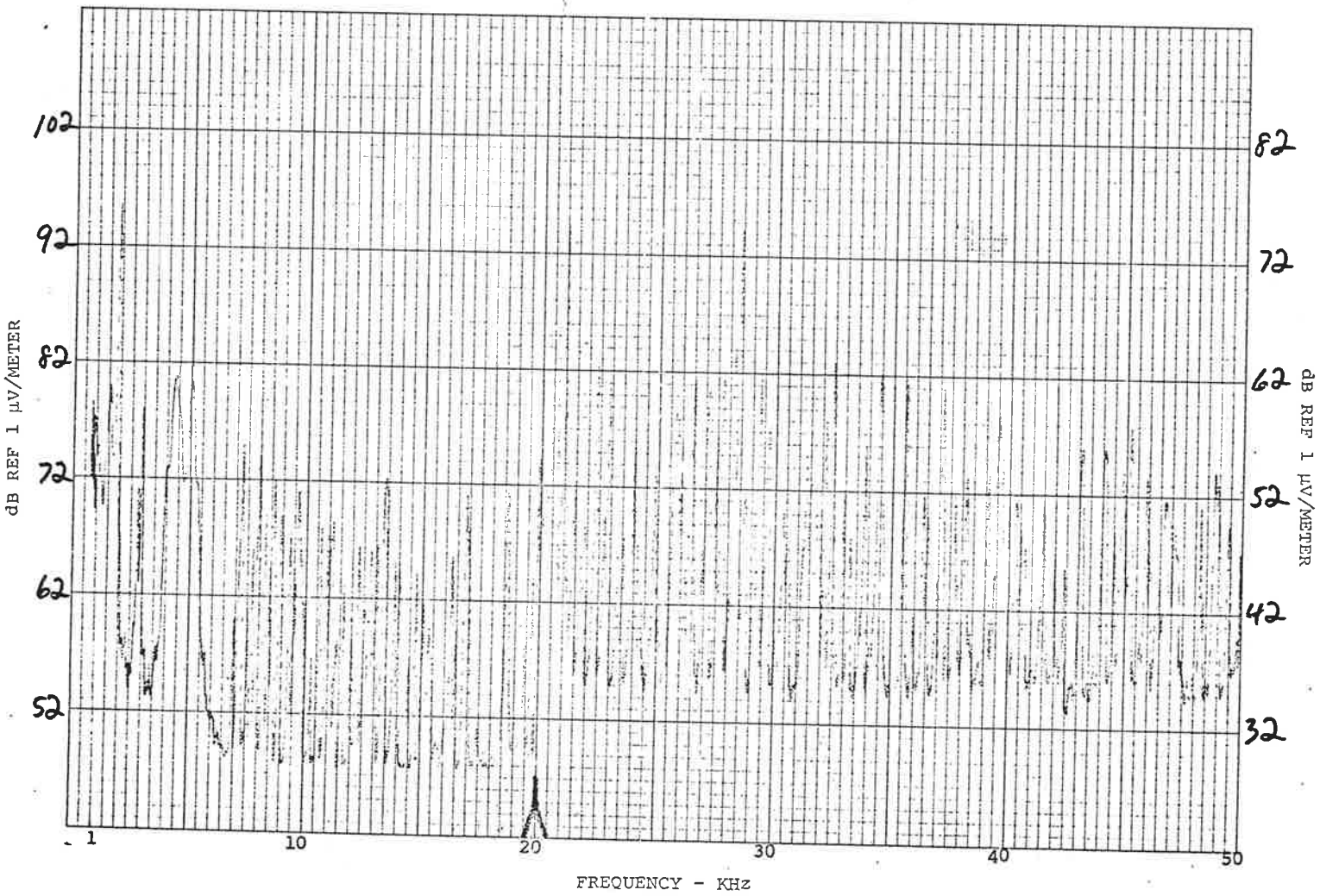
TEST 305
TIME 1147

FREQ. SCAN: 5 KHz/Div.
Bandwidth: 10 KHz

TEST 305
TIME 1149

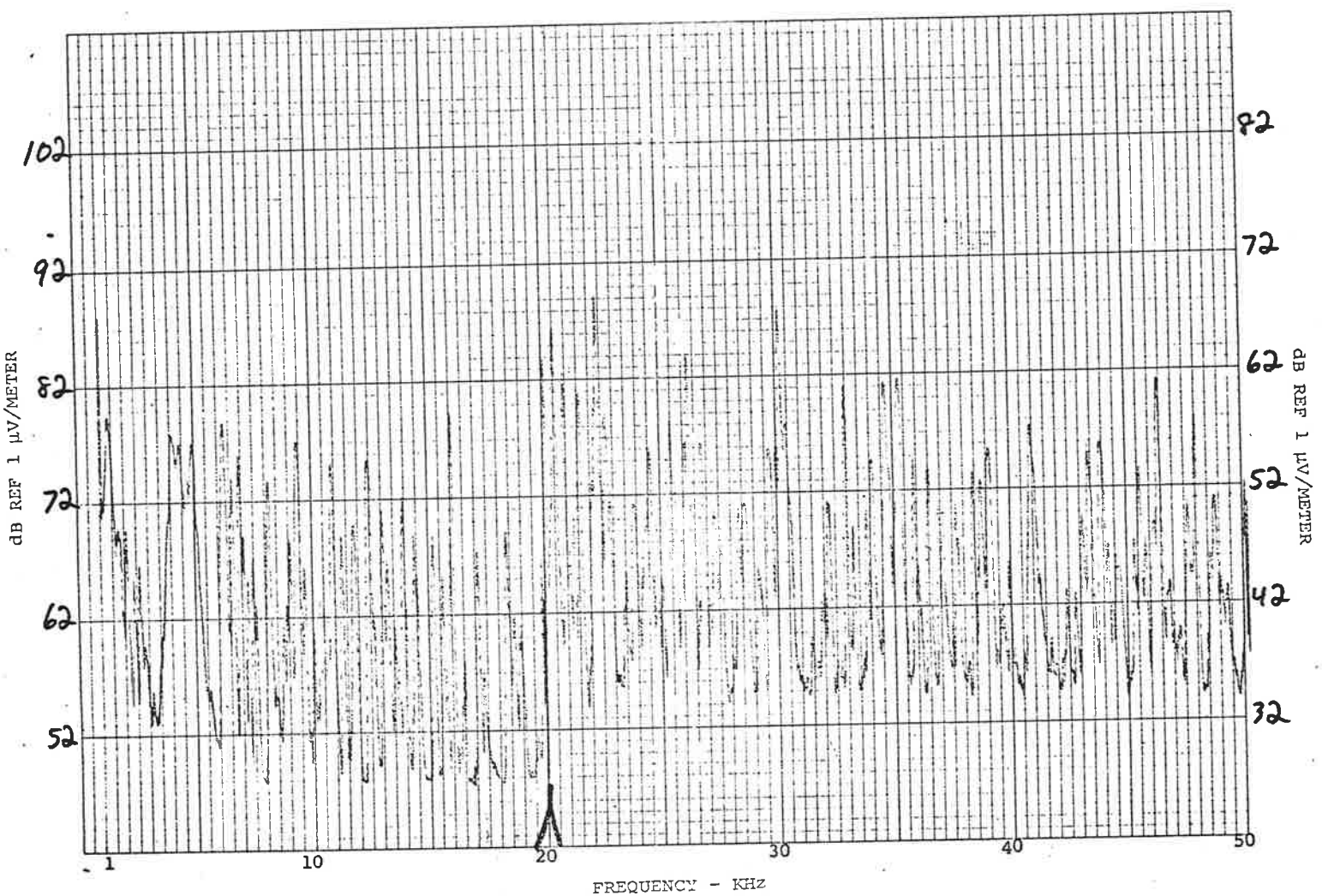
TEST NO. 302
TEST SPECIMEN ~~2 to 11~~
TEST TYPE ESR N/S
TEST EQUIP. EMC-10
BANDWIDTH 50 Hz
DATE 7-22-72

1130
EJ



TEST NO. 301
TEST SPECIMEN 2 to 11
TEST TYPE ES12 N/S
TEST EQUIP. EMC-10
BANDWIDTH 50 Hz
DATE 7-28-72

1127
EGJ



TEST NO. 304
TEST SPECIMEN ~~26 11~~
TEST TYPE ESR E/W
TEST EQUIP. EMC-16
BANDWIDTH 50Hz
DATE 7-28-72

1140
EJ