

TEST REPORT FROM RADIO FREQUENCY INVESTIGATION LTD.

Test Of: Basys 418MHz Receiver

To: FCC Part 15: 1996 Class B

Test Report Serial No:
RFI/EMCA1/RP37143A

| | |
|---|--------------------------------|
| This Test Report Is Issued Under The Authority Of Brian Watson, Technical Director: | |
| Tested By: | Checked By: |
| Report Copy No: | |
| Issue Date: 10 August 1998 | Test Date: 12 June 1998 |

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The results in this report apply only to the sample(s) tested.

RADIO FREQUENCY INVESTIGATION LTD.

EMC Department

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To: F.C.C. Part 15: 1996 Class B

TEST REPORT

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1. Client Information

| | |
|----------------------|--|
| Company Name: | Basys Technology Ltd |
| Address: | Mumby Road Gosport Hampshire PO12 1AF |
| Contact Name: | Mr S Grant |

2. Equipment Under Test (EUT)

The client has supplied the following information (with the exception of the Date of Receipt):

2.1. Identification Of Equipment Under Test (EUT)

| | |
|-----------------------------|----------------------|
| Brand Name: | Basys Technology Ltd |
| Model Name or Number: | 418MHz Receiver |
| Unique Type Identification: | Not stated |
| Serial Number: | Not stated |
| Country of Manufacture: | UK |
| FCC ID Number: | Not applicable |
| Date of Receipt: | 12 June 1998 |

2.2. Description Of EUT

The equipment under test was a 418MHz receiver.

2.3. Modifications Incorporated In EUT

None stated by client.

2.4. Additional Information Related To Testing

| | |
|---------------------------------|----------------------------|
| Power Supply Requirement: | DC power supply of 12V |
| Intended Operating Environment: | Residential |
| Weight: | Approx. 1.2Kg |
| Dimensions: | Approx. 0.2m x 0.2m x 0.2m |
| Interface Ports: | 2 serial & 1 power |

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2.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

| | |
|-------------------------------|---------------|
| Description: | Keyboard |
| Brand Name: | Compaq |
| Model Name or Number: | KPQ-E99 AC-10 |
| Serial Number: | CTIGE62CVPQ2C |
| FCC ID Number: | EW4KPQ4813 |
| Cable Length And Type: | 2.0m shielded |
| Connected to Port: | Keyboard |

| | |
|-------------------------------|-----------------|
| Description: | Mouse |
| Brand Name: | Compaq |
| Model Name or Number: | M-S34 |
| Serial Number: | B04ABOH5BEC4JZH |
| FCC ID Number: | DZL211029 |
| Cable Length And Type: | 1.85m shielded |
| Connected to Port: | Mouse |

| | |
|-------------------------------|-----------------|
| Description: | PC |
| Brand Name: | Compaq |
| Model Name or Number: | Prolinea 5133 |
| Serial Number: | 8610HXM20867 |
| FCC ID Number: | CNT75MDAC5 |
| Cable Length And Type: | 2.2m unshielded |
| Connected to Port: | Mains |

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Support Equipment continued

| | |
|------------------------|---------------|
| Description: | Monitor |
| Brand Name: | Compaq |
| Model Name or Number: | 445 |
| Serial Number: | 520BC05 CB |
| FCC ID Number: | A3KM050 |
| Cable Length And Type: | 1.4m shielded |
| Connected to Port: | Monitor |

| | |
|------------------------|-----------------|
| Description: | Printer |
| Brand Name: | Hewlett Packard |
| Model Name or Number: | C2168A |
| Serial Number: | SG415161R5 |
| FCC ID Number: | B94C2121X |
| Cable Length And Type: | 1.85m shielded |
| Connected to Port: | Parallel |

| | |
|------------------------|----------------|
| Description: | Dummy Load |
| Brand Name: | Not stated |
| Model Name or Number: | Note stated |
| Serial Number: | Not stated |
| FCC ID Number: | Not applicable |
| Cable Length And Type: | 3.3m shielded |
| Connected to Port: | EUT |

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Support Equipment continued

| | |
|------------------------|---------------------|
| Description: | PSU (to HP Printer) |
| Brand Name: | Hewlett Packard |
| Model Name or Number: | 17122B |
| Serial Number: | Data code 93K249L2 |
| FCC ID Number: | Not applicable |
| Cable Length And Type: | 2 x 2.0m |
| Connected to Port: | HP Printer power in |

| | |
|------------------------|------------------|
| Description: | Battery (2 off) |
| Brand Name: | Yvasa |
| Model Name or Number: | NP7-6 (6V 7.0ah) |
| Serial Number: | Not stated |
| FCC ID Number: | Not applicable |
| Cable Length And Type: | Not applicable |
| Connected to Port: | DC power in |

| | |
|------------------------|----------------|
| Description: | SAT Tag |
| Brand Name: | Basys |
| Model Name or Number: | SAT 1 |
| Serial Number: | 63-2015 |
| FCC ID Number: | Not applicable |
| Cable Length And Type: | Not applicable |
| Connected to Port: | Not applicable |

3. Test Specification, Methods And Procedures

3.1. Test Specification

| | |
|-------------------------|---|
| Reference: | FCC Part 15: 1996 Class B |
| Title: | Code of Federal Regulations, Part 15 (47CFR15) Radio Frequency Devices: Digital Devices. |
| Comments: | A description of the test facility used for this test is on file with, and has been accepted by, the Federal Communications Commission as required by Section 2.948 of Federal Rules. |
| Purpose of Test: | To determine whether the equipment complied with the requirements of the specification for the purposes of certification. |

3.2. Methods And Procedures

The methods and procedures used were as detailed in:

ANSI C63.2 (1987)

Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (1992)

Title: American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1988)

Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)

Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16 (1987)

Title: Specification for Radio Interference measuring apparatus and measurement methods.

3.3. Definition Of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the Methods & Procedures section above. Appendix 1 contains a list of the test equipment used.

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4. Deviations From The Test Specification

None.

5. Operation Of The EUT During Testing

5.1. Operating Conditions

The EUT was tested in a normal laboratory environment. During testing, the EUT was powered by a DC power supply of 12V.

5.2. Operating Modes

The EUT was tested in the following operating mode: "MONTAG" custom software was exercising the EUT in both idle and received mode. The idle mode is defined as the EUT awaiting the reception of a signal from a TAG transmitter. The receive mode is defined as a receiving a signal from a TAG transmitter. The reason for choosing this mode was that it was defined by the client as being likely to be the worst case with regards EMC.

5.3. Configuration And Peripherals

The EUT was tested in the following configuration: Tabletop with a PC, Monitor, Keyboard, Mouse, Printer and "Dummy" load as support. The reason for choosing this configuration was that it was defined by the client as being likely to be the worst case with regards EMC.

NB Section 2 of this report contains a full list of support equipment used and Appendix 3 contains a schematic diagram of the test configuration.

6. Summary Of Test Results

6.1. Radiated Emissions

| Range Of Measurements | Specification Reference | Compliance Status |
|--|----------------------------------|--------------------------|
| Electric Field Strength, 30 MHz to 1000 MHz | Section 15 of C.F.R. 47: 1996 | Complied |

6.2. Location Of Tests

All the measurements described in this report were performed at the premises of Radio Frequency Investigation Ltd, Dunlop House, Dunlop, Ayrshire, KA3 4BD, Scotland.

7. Measurements, Examinations And Derived Results

7.1. General Comments

7.1.1. This section contains test results only. Details of the test methods and procedures can be found in Appendix 2 of this report.

7.1.2. The measurement uncertainties stated were calculated in accordance with the requirements of NAMAS Document NIS 81 with a confidence level of 95%. Please refer to Section 8 for details of measurement uncertainties.

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7.2. Test Results For Radiated Emissions 30 MHz to 1 GHz: Idle Mode

7.2.1. Electric Field Strength Measurements

7.2.1.1. The client has stated that the highest clock frequency for the EUT was 4.1943 MHz. Therefore tests were performed up to 2000 MHz.

7.2.1.2. Plots of the initial scans can be found in Appendix 4.

7.2.1.3. The following table lists frequencies at which emissions were measured using a Quasi-Peak detector (results incorporate antenna factors and cable losses):

| Frequency (MHz) | Ant. Pol. | Q-P Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Result |
|-----------------|-----------|--------------------|----------------|-------------|-------------------|
| 47.429 | Vert. | 28.6 | 40.0 | 11.4 | Complied |
| 55.476 | Vert. | 26.9 | 40.0 | 13.1 | Complied |
| 58.093 | Vert. | 25.9 | 40.0 | 14.1 | Complied |
| 62.306 | Vert. | 24.6 | 40.0 | 15.4 | Complied |
| 71.840 | Horiz. | 30.9 | 40.0 | 9.1 | Complied |
| 75.834 | Vert. | 33.3 | 40.0 | 6.7 | Complied |
| 91.801 | Vert. | 34.7 | 43.5 | 8.8 | Complied (note 1) |
| 100.180 | Vert. | 32.8 | 43.5 | 10.7 | Complied |
| 133.635 | Horiz. | 32.5 | 43.5 | 11.0 | Complied |
| 173.566 | Horiz. | 30.9 | 43.5 | 12.6 | Complied |
| 206.726 | Vert. | 29.8 | 43.5 | 13.7 | Complied |
| 231.429 | Vert. | 30.1 | 46.0 | 15.9 | Complied |
| 247.988 | Horiz. | 33.9 | 46.0 | 12.1 | Complied |
| 264.511 | Horiz. | 40.3 | 46.0 | 5.7 | Complied |
| 400.877 | Vert. | 34.8 | 46.0 | 11.2 | Complied |
| 601.349 | Vert. | 38.3 | 46.0 | 7.7 | Complied |
| 677.833 | Horiz. | 40.5 | 46.0 | 5.5 | Complied |
| 801.833 | Vert. | 34.0 | 46.0 | 12.0 | Complied |

Notes

1. This frequency was measured in the presence of an ambient, however, the combined amplitude was 8.8 dB below the limit.

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7.3. Test Results For Radiated Emissions 30 MHz to 1 GHz: Receive Mode

7.3.1. Electric Field Strength Measurements

7.3.1.1. The client has stated that the highest clock frequency for the EUT was 4.1943 MHz. Therefore tests were performed up to 2000 MHz.

7.3.1.2. Plots of the initial scans can be found in Appendix 4.

7.3.1.3. The following table lists frequencies at which emissions were measured using a Quasi-Peak detector (results incorporate antenna factors and cable losses):

| Frequency (MHz) | Ant. Pol. | Q-P Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Result |
|-----------------|-----------|--------------------|----------------|-------------|-------------------|
| 47.904 | Vert. | 35.1 | 40.0 | 4.9 | Complied |
| 55.806 | Vert. | 27.2 | 40.0 | 12.8 | Complied |
| 58.093 | Vert. | 26.2 | 40.0 | 13.8 | Complied |
| 62.302 | Vert. | 23.2 | 40.0 | 16.8 | Complied |
| 71.786 | Horiz. | 32.3 | 40.0 | 7.7 | Complied |
| 75.800 | Vert. | 31.0 | 40.0 | 9.0 | Complied |
| 91.801 | Vert. | 35.2 | 43.5 | 8.3 | Complied (note 1) |
| 100.200 | Vert. | 34.1 | 43.5 | 9.4 | Complied |
| 133.626 | Vert. | 32.6 | 43.5 | 10.9 | Complied |
| 173.539 | Horiz. | 33.1 | 43.5 | 10.4 | Complied |
| 206.728 | Vert. | 29.3 | 43.5 | 14.2 | Complied |
| 231.431 | Vert. | 31.1 | 46.0 | 14.9 | Complied |
| 239.716 | Vert. | 37.6 | 46.0 | 8.4 | Complied |
| 264.533 | Horiz. | 37.8 | 46.0 | 8.2 | Complied |
| 281.050 | Horiz. | 30.0 | 46.0 | 16.0 | Complied |
| 300.661 | Vert. | 30.1 | 46.0 | 15.9 | Complied |
| 400.900 | Vert. | 38.3 | 46.0 | 7.7 | Complied |
| 601.338 | Vert. | 36.4 | 46.0 | 9.6 | Complied |
| 677.838 | Vert. | 42.5 | 46.0 | 3.5 | Complied |

Note

1. This frequency was measured in the presence of a high ambient however, the combined amplitude was 8.3 dB below the limit.

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7.4. Test Results For Radiated Emissions 1 GHz – 2 GHz: Idle Mode

7.4.1. Electric Field Strength Measurements: Peak Measurement

7.4.1.1. The client has stated that the highest clock frequency for the EUT was 4.1943 MHz. Therefore tests were performed up to 2000 MHz.

7.4.1.2. Plots of the initial scans can be found in Appendix 4.

7.4.1.1. The following table lists frequencies at which emissions were measured using a Peak detector (results incorporate antenna factors and cable losses): Highest Peak Level:

| Frequency (MHz) | Antenna Polarity (H/V) | Peak Level (dBµV) | Cable Loss (dB) | Antenna Factor (dB) | Actual Peak Level (dBµV/m) | Limit (dBµV/m) | Peak Margin (dB) | Result |
|-----------------|------------------------|-------------------|-----------------|---------------------|----------------------------|----------------|------------------|----------|
| 1002.2 | Vert | 18.2 | 1.9 | 24.1 | 44.3 | 74.0 | 29.7 | Complied |
| 1016.7 | Vert | 15.9 | 1.9 | 24.1 | 41.9 | 74.0 | 32.1 | Complied |
| 1041.6 | Horiz | 13.7 | 1.9 | 24.2 | 39.8 | 74.0 | 34.2 | Complied |
| 1190.4 | Vert | 12.5 | 1.9 | 24.6 | 39.0 | 74.0 | 35.0 | Complied |
| 1336.3 | Vert | 17.4 | 1.9 | 25.0 | 44.3 | 74.0 | 29.7 | Complied |
| 1399.9 | Vert | 15.0 | 1.9 | 25.2 | 42.1 | 74.0 | 31.9 | Complied |

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7.5. Test Results For Radiated Emissions 1GHz – 2GHz: Idle Mode

7.5.1. Electric Field Strength Measurements: Average Measurement

7.5.1.1. The client has stated that the highest clock frequency for the EUT was 4.1943 MHz. Therefore tests were performed up to 2000 MHz.

7.5.1.2. Plots of the initial scans can be found in Appendix 4.

7.5.1.3. The following table lists frequencies at which emissions were measured using an Average detector (results incorporate antenna factors and cable losses): Highest Average Level:

| Frequency (MHz) | Antenna Polarity (H/V) | Av. Level (dBµV) | Cable Loss (dB) | Antenna Factor (dB/m) | Actual Average Level (dBµV/m) | Limit (dBµV/m) | Average Margin (dB) | Result |
|-----------------|------------------------|------------------|-----------------|-----------------------|-------------------------------|----------------|---------------------|----------|
| 1002.2 | Vert | 7.1 | 1.9 | 24.1 | 33.1 | 54.0 | 20.9 | Complied |
| 1016.7 | Vert | 4.6 | 1.9 | 24.1 | 30.6 | 54.0 | 23.4 | Complied |
| 1041.6 | Horiz | 5.9 | 1.9 | 24.2 | 32.0 | 54.0 | 22.0 | Complied |
| 1190.4 | Vert | 2.1 | 1.9 | 24.6 | 28.6 | 54.0 | 25.4 | Complied |
| 1336.3 | Vert | 8.4 | 1.9 | 25.0 | 35.3 | 54.0 | 18.7 | Complied |
| 1399.9 | Vert | 2.6 | 1.9 | 25.2 | 29.7 | 54.0 | 24.3 | Complied |

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7.6. Test Results For Radiated Emissions 1GHz – 2GHz: Receive Mode

7.6.1. Electric Field Strength Measurements: Peak Measurement

7.6.1.1. The client has stated that the highest clock frequency for the EUT was 4.1943MHz. Therefore tests were performed up to 2000 MHz.

7.6.1.2. Plots of the initial scans can be found in Appendix 4.

7.6.1.3. The following table lists frequencies at which emissions were measured using a Peak detector (results incorporate antenna factors and cable losses):

Highest Peak Level:

| Frequency (MHz) | Antenna Polarity (H/V) | Peak Level (dBµV) | Cable Loss (dB) | Antenna Factor (dB) | Actual Peak Level (dBµV/m) | Limit (dBµV/m) | Peak Margin (dB) | Result |
|-----------------|------------------------|-------------------|-----------------|---------------------|----------------------------|----------------|------------------|----------|
| 1000.2 | Vert | 17.8 | 1.9 | 24.1 | 43.8 | 74.0 | 30.2 | Complied |
| 1043.6 | Vert | 14.8 | 1.9 | 24.2 | 40.9 | 74.0 | 33.1 | Complied |
| 1066.3 | Horiz | 14.9 | 1.9 | 24.3 | 41.1 | 74.0 | 32.9 | Complied |
| 1074.6 | Horiz | 12.1 | 1.9 | 24.3 | 38.3 | 74.0 | 35.7 | Complied |
| 1197.4 | Horiz | 11.7 | 1.9 | 24.7 | 38.3 | 74.0 | 35.7 | Complied |
| 1336.3 | Vert | 15.7 | 1.9 | 25.0 | 42.6 | 74.0 | 31.4 | Complied |

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7.7. Test Results For Radiated Emissions 1GHz – 2GHz: Receive Mode

7.7.1. Electric Field Strength Measurements: Average Measurement

7.7.1.1. The client has stated that the highest clock frequency for the EUT was 4.1943 MHz. Therefore tests were performed up to 2000 MHz.

7.7.1.2. Plots of the initial scans can be found in Appendix 4.

7.7.1.3. The following table lists frequencies at which emissions were measured using a Average detector (results incorporate antenna factors and cable losses):

Highest Average Level:

| Frequency (MHz) | Antenna Polarity (H/V) | Av. Level (dBµV) | Cable Loss (dB) | Antenna Factor (dB/m) | Actual Average Level (dBµV/m) | Limit (dBµV/m) | Av. Margin (dB) | Result |
|-----------------|------------------------|------------------|-----------------|-----------------------|-------------------------------|----------------|-----------------|----------|
| 1000.2 | Vert | 6.5 | 1.9 | 24.1 | 32.5 | 54.0 | 21.5 | Complied |
| 1043.6 | Vert | 5.9 | 1.9 | 24.2 | 32.0 | 54.0 | 22.0 | Complied |
| 1066.3 | Horiz | 4.3 | 1.9 | 24.3 | 30.5 | 54.0 | 23.5 | Complied |
| 1074.6 | Horiz | 3.1 | 1.9 | 24.3 | 29.3 | 54.0 | 24.3 | Complied |
| 1197.4 | Vert | 1.5 | 1.9 | 24.7 | 28.1 | 54.0 | 25.9 | Complied |
| 1336.3 | Vert | 7.0 | 1.9 | 25.0 | 33.9 | 54.0 | 20.1 | Complied |

8. Measurement Uncertainty

8.1. Company Policy, as based on the NAMAS Accreditation Standard, M10, paragraph 12.11 (o), states that Test Reports shall include estimated uncertainty of the calibration or test result (this information need only appear in test reports and test certificates where it is relevant to the validity or application of the test result, where a client's instructions so require or where uncertainty affects compliance to a specification or limit).

8.2. The global uncertainties have been calculated in accordance with NAMAS NIS 81 (Edition 1, May 1994) as follows:

| Measurement Type | Range | Confidence Level | Calculated Uncertainty |
|--------------------|--------------------|------------------|------------------------|
| Radiated Emissions | 30 MHz to 1000 MHz | 95% | +/- 4.9 dB |
| Radiated Emissions | 1 GHz to 2 GHz | 95% | +/- 4.3 dB |

8.3. Measurement uncertainties have been applied in accordance with NAMAS document NIS 81 (edition 1, May 1994), and in the absence of any specification criteria, guidance, or code of practice, compliance has been judged on the basis of shared risk.

8.4. In the case of emissions tests, the measured value of the disturbance from the product sample shall be compared directly with the limits. If the measured value is equal to or less than the limit the product is deemed to pass the test.

8.5. In the case of immunity tests, the equipment is deemed to pass the test if it fulfils the stated performance criteria at the required or a higher severity level. The measurement uncertainty has been taken into account in the calibration procedures stated in the relevant basic standard.

8.6. The methods used to calculate the above uncertainties are in line with those used for calibration laboratories contained in NAMAS document NIS 3003 Edition 8 "The Expression of Uncertainty and Confidence in Measurement" May 1995, which align with international recommendations "Guide to the Expression of Uncertainty in Measurement" ISO/IEC/OIML/BIPM (Prepared by ISO/TAG 4: January 1993).

Appendix 1. Test Equipment Used

| Instrument | Manufacturer | Model | RFI No. |
|--|--------------|----------|---------|
| Radiated Electric Field, Initial Scans: | | | |
| Bi Conical Antenna | R & S | HK116 | A507 |
| Log Spiral | EMCO | 3101 | A514 |
| Double Ridge Guide Antenna | EMCO | 3115 | A605 |
| Display Unit | R & S | ESAI-D | M505 |
| RF Unit | R & S | ESBI | M506 |
| Radiated Electric Field (O.A.T.S.) | | | |
| Bi-Log Antenna | Chase | CBL6111A | A546 |
| Double Ridge Guide Antenna | EMCO | 3115 | A605 |
| Receiver | R & S | ESVP | M023 |
| Receiver | R & S | ESCS 30 | L515 |
| 3 dB Attenuator | Narda | 757c-3 | A610 |

NB In accordance with NAMAS requirements, all the measurement equipment is on a calibration schedule.

Appendix 2. Measurement Methods

A2.1. Radiated Emissions: FCC Part 15

A2.1.1. Radiated emissions measurements were performed in accordance with the standard, against appropriate limits for each detector function.

A2.1.2. Initial measurements covering the entire measurement band in the form of swept scans in a shielded enclosure were performed in order to identify frequencies on which the EUT was generating interference. This determined the frequencies on which the EUT should be re-measured in full on the open area test site. In order to minimise the time taken for the swept measurements, a Peak detector was used in conjunction with the appropriate detector IF measuring bandwidth (see table below). Repetitive scans were performed to allow for emissions with low repetition rates, and for the duty cycle of the EUT. The test configuration was the same for the initial scans as for the final measurements.

A2.1.3. The initial scans were performed using an antenna height of 1.5 m and a measurement distance of 3 m. Following the initial scans, graphs were produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. A tolerance line was set 6 dB below the specification limit and levels above the tolerance line were re-tested on the open area test site, at the appropriate distance, using a measuring receivers with a Quasi-Peak detector (below 1000 MHz), where applicable, for measurements above 1000 MHz average and peak detectors were used.

A2.1.4. For the main (final) measurements the EUT was arranged on a non-conducting table on an open area test site, as detailed in the specification.

A2.1.5. All measurements on the open area test site were performed using broadband antennas.

A2.1.6. On the open area test site, at each frequency where a signal was found, the levels were maximised by initially rotating the turntable through 360° and then varying the antenna height between 1 m and 4 m. At this point, any signals found to be between the limit and a level 6 dB below it were further maximised by changing the configuration of the EUT, e.g. re-routing cables to peripherals and moving peripherals with respect to the EUT.

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A2.1.7. The test equipment settings for radiated emissions measurements were as follows:

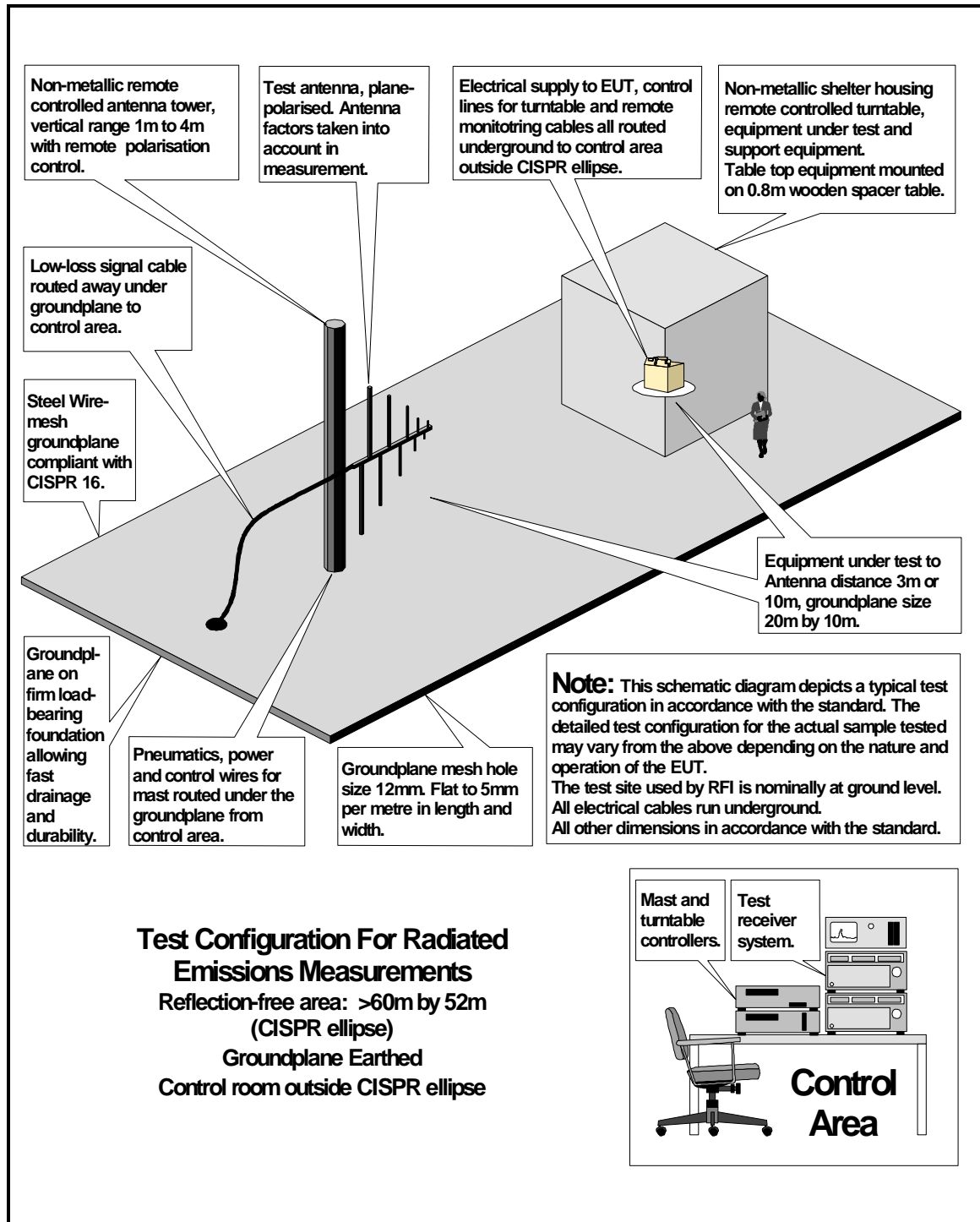
| Receiver Function | Initial Scan | Final Measurements Below 1GHz | Final Measurements Above 1 GHz |
|--------------------------|---------------------|--|---|
| Detector Type: | Peak | Quasi-Peak (CISPR) | Peak/Average |
| Mode: | Max Hold | Not applicable | Not applicable |
| Bandwidth: | 100 kHz | 120 kHz | 1 MHz |
| Amplitude Range: | 60 dB | 20 dB | 20 dB (typical) |
| Measurement Time: | Not applicable | > 1 s | > 1 s |
| Observation Time: | Not applicable | > 15 s | > 15 s |
| Step Size: | Continuous sweep | Not applicable | Not applicable |
| Sweep Time: | Coupled | Not applicable | Not applicable |

Appendix 3. Test Configuration Drawings

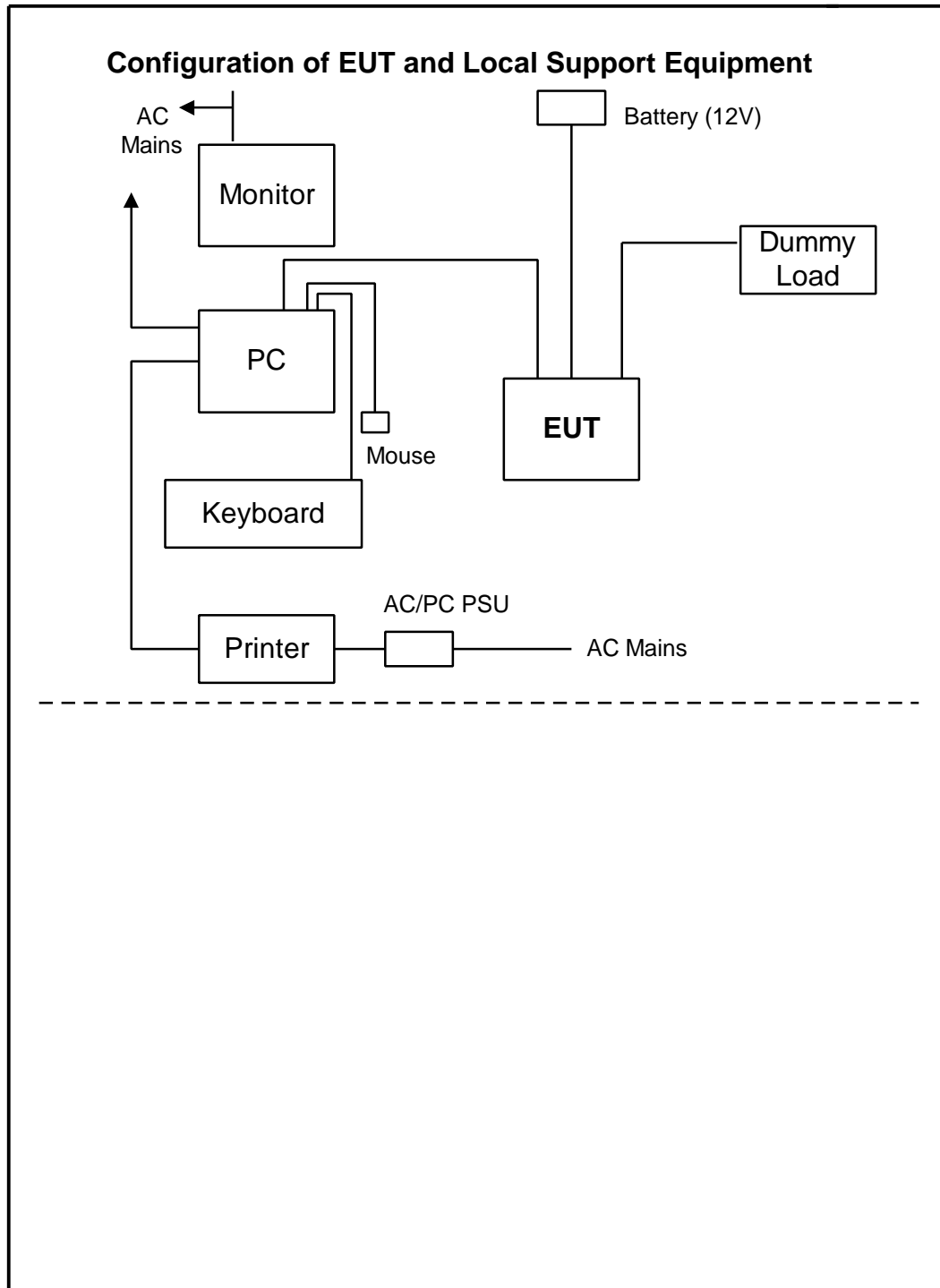
This appendix contains the following drawings:

| Drawing Reference Number | Title |
|----------------------------|--|
| DRG\37143JD01/ETF03\EMIRAD | Test configuration for measurement of radiated emissions |
| DRG\37143JD01/ETF03\001 | Schematic diagram of the EUT, support equipment and interconnecting cables used for the test |

DRG\37143JD01/ETF03\EMIRAD



DRG\37143JD01/ETF03\001



Appendix 4. Graphical Test Results

This appendix contains the following graphs:

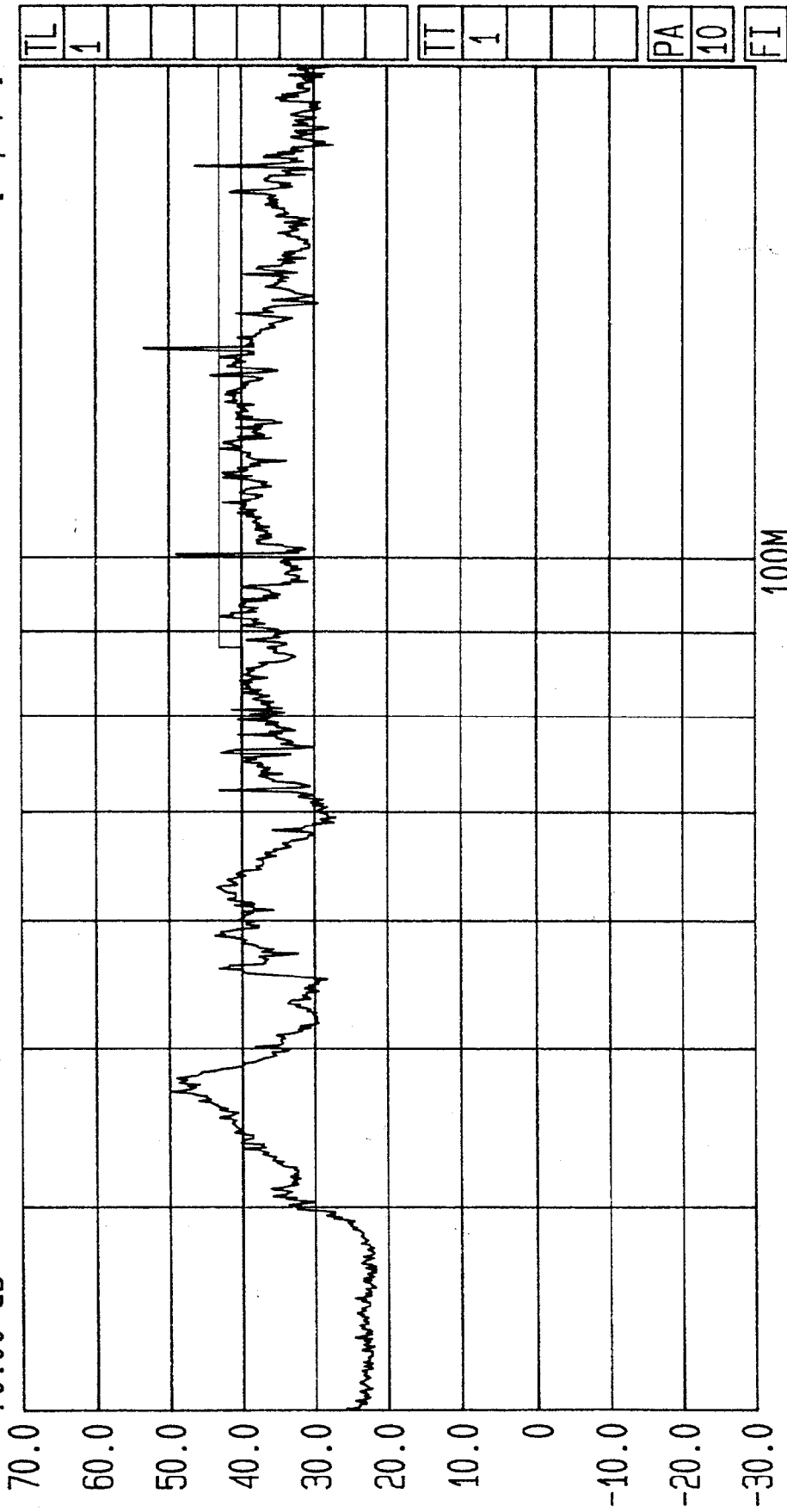
| Graph Reference Number | Title |
|-------------------------------|--|
| GPH\37143JD01/ETF03\001 | Scan of radiated electric field: both polarisations (30 to 200 MHz) Idle mode |
| GPH\37143JD01/ETF03\002 | Scan of radiated electric field: non-polarised (200 to 1000 MHz) Idle mode |
| GPH\37143JD01/ETF03\003 | Scan of radiated electric field: both polarisations (30 to 200 MHz) Receive mode |
| GPH\37143JD01/ETF03\004 | Scan of radiated electric field: non-polarised (200 to 1000 MHz) Receive mode |
| GPH\37143JD01/ETF03\008 | Scan of radiated electric field: (1GHz to 2GHz) Receive mode |
| GPH\37143JD01/ETF03\009 | Scan of radiated electric field: (1GHz to 2GHz) Idle mode |

These pages are not included in the total number of pages for this report.



Date 13.Jun.'98 Time 16:35:54
Ref.Lvl 70.00 dB*

Res.Bw 120 kHz [imp] Vid.Bw 3 MHz
TG.Lvl Off
CF.Stp 17.000 MHz RF.Att 0 dB
Unit [dBμV/m]



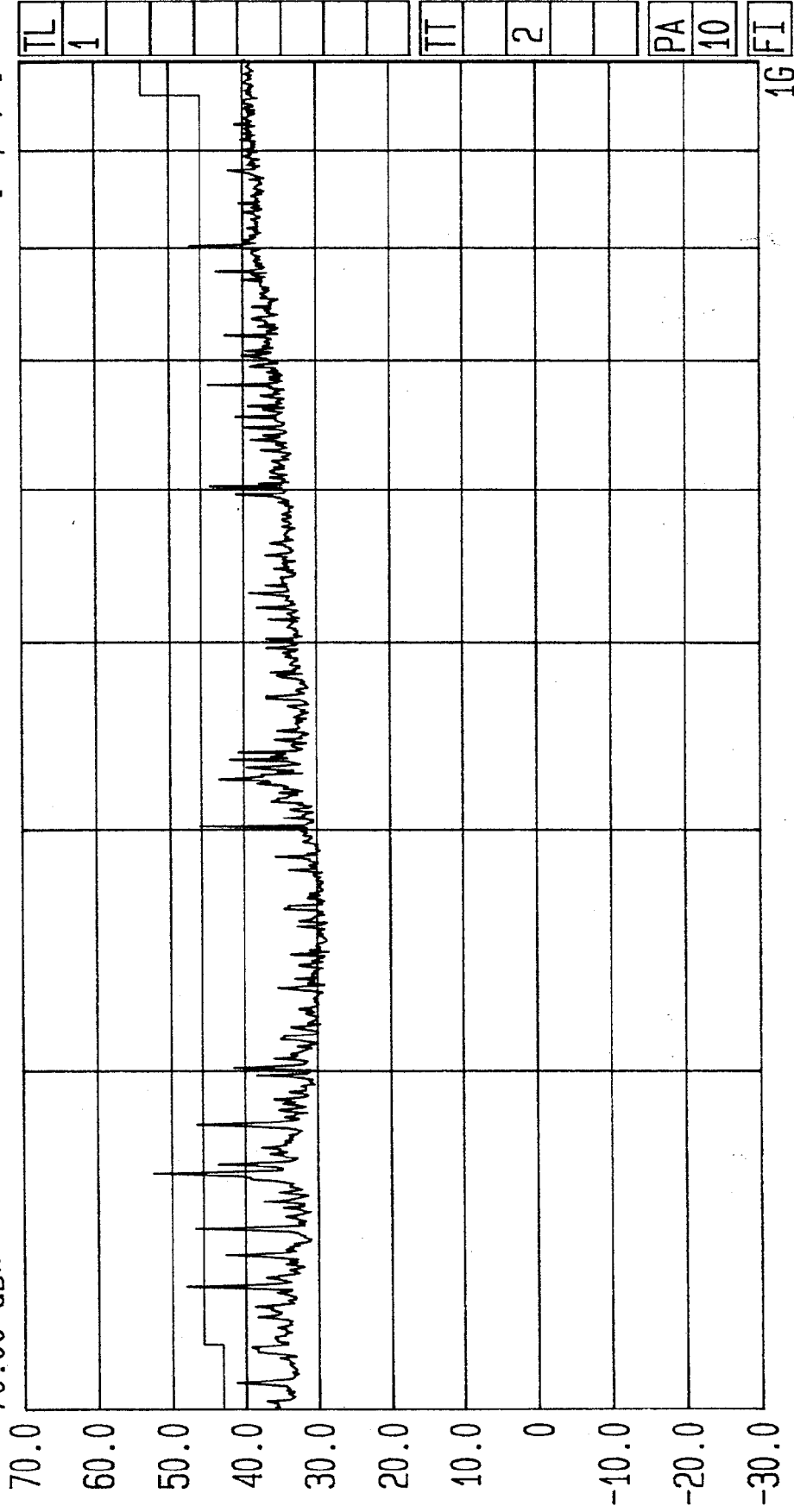
Start 30 MHz Span 170.0 MHz Center 77.45 MHz Sweep 80 ms Stop 200.0 MHz

Radio Frequency Investigation Ltd. RADIATED PRESCANS @ 3M GPH/37143E03/01
EUT: 418 MHz Rx \Cust: BASYS \Opcond: IDLE MODE /Eng: JL /Spec: FCC 47 pt15 B



Date 13.Jun.'98 Time 17:15:21
Ref.Lvl 70.00 dB*

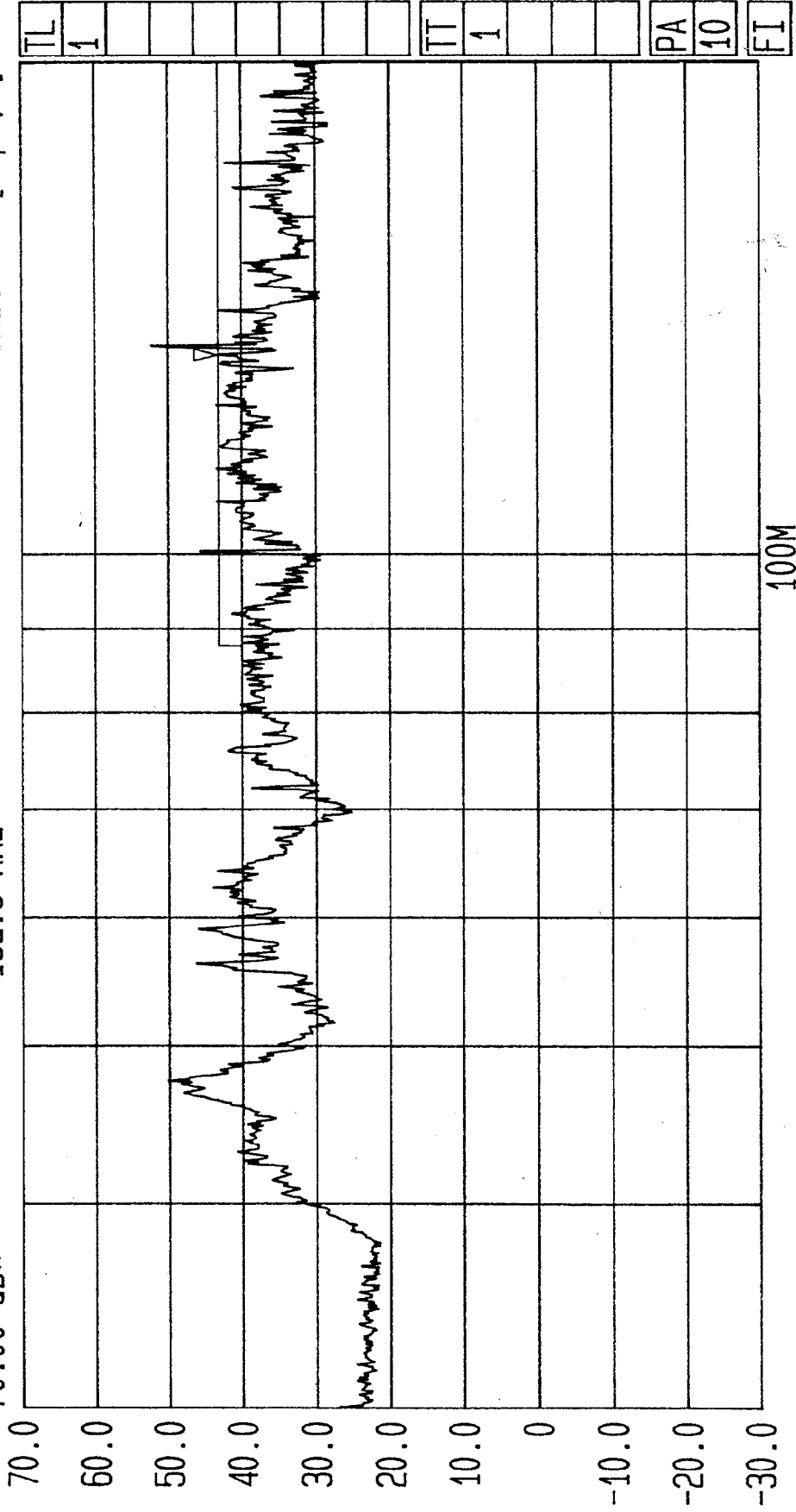
Res.Bw 120 kHz [imp] 3 MHz
TG.Lvl off
CF.Stp 80.000 MHz
RF.Att 0 dB
Unit [dBμV/m]





Date 13. Jun. '98 Time 16:55:18
Ref.Lvl 70.00 dB* Marker 43.39 dB*
132.3 MHz

Res.Bw 120 kHz [imp] Vid.Bw 3 MHz
TG.Lvl off RF.Att 0 dB
CF.Stp 17.000 MHz Unit [dBμV/m]



Start 30 MHz Stop 200.0 MHz
Span 170.0 MHz Sweep 80 ms
Center 77.45 MHz
Radio Frequency Investigation Ltd. RADIATED PRESCANS @ 3M GPH/37143E03/03
EUT: 418 MHz Rx \Cust: BASYS \Opcond: RX MODE /Eng: JL /Spec: FCC 47 pt15 B



Date 13. Jun. '98 Time 17:06:50

Ref.Lvl 70.00 dBx

Marker 73.98 dBx

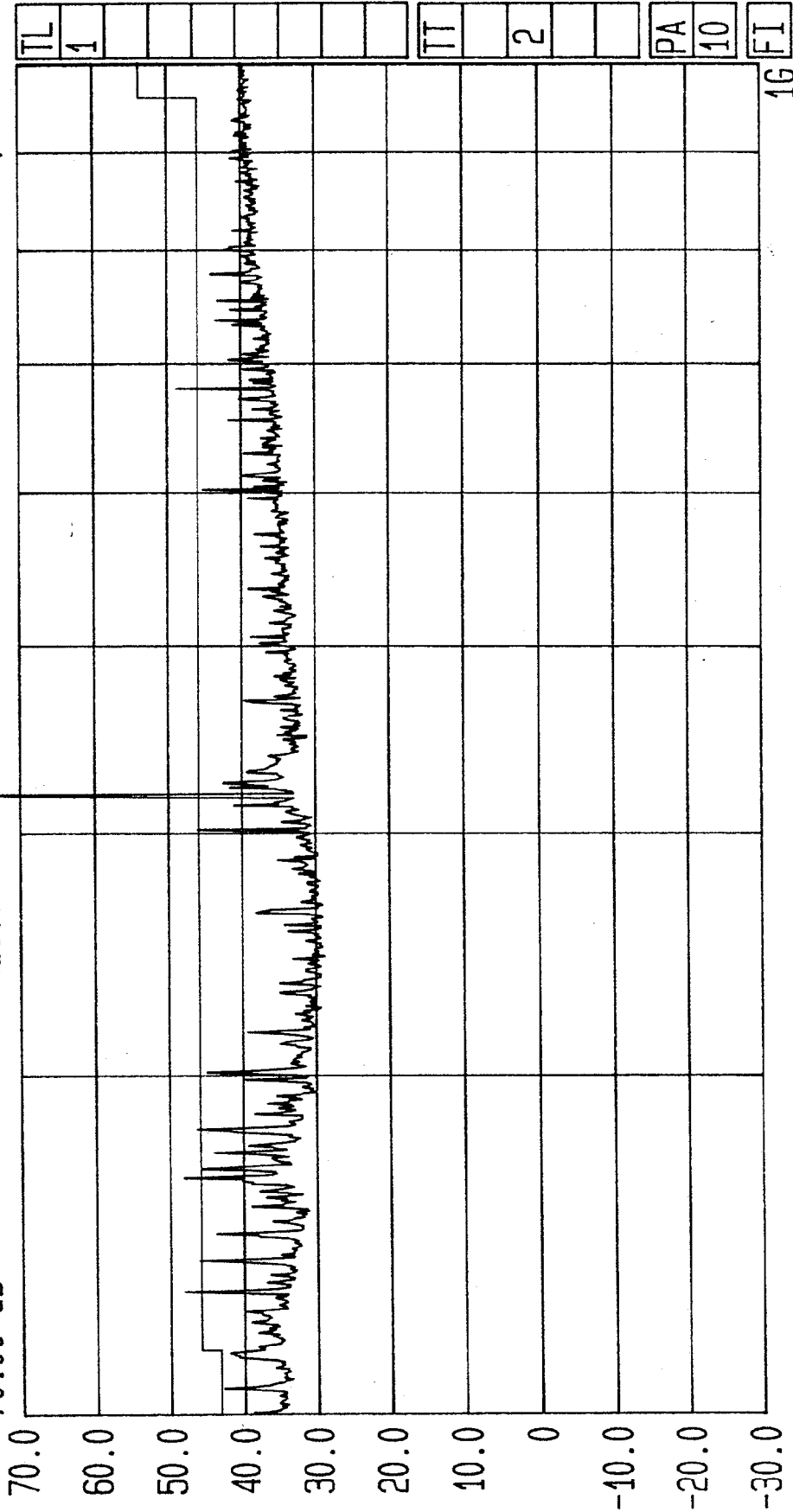
418.5 MHz

Res.Bw
TG.Lvl
CF.Stp

120 kHz [imp]
off
80.000 MHz

Vid.Bw
RF.Att
Unit

3 MHz
0 dB
[dBμV/m]



Start
200 MHz

Span
800 MHz

Center
447.2 MHz

Sweep
360 ms

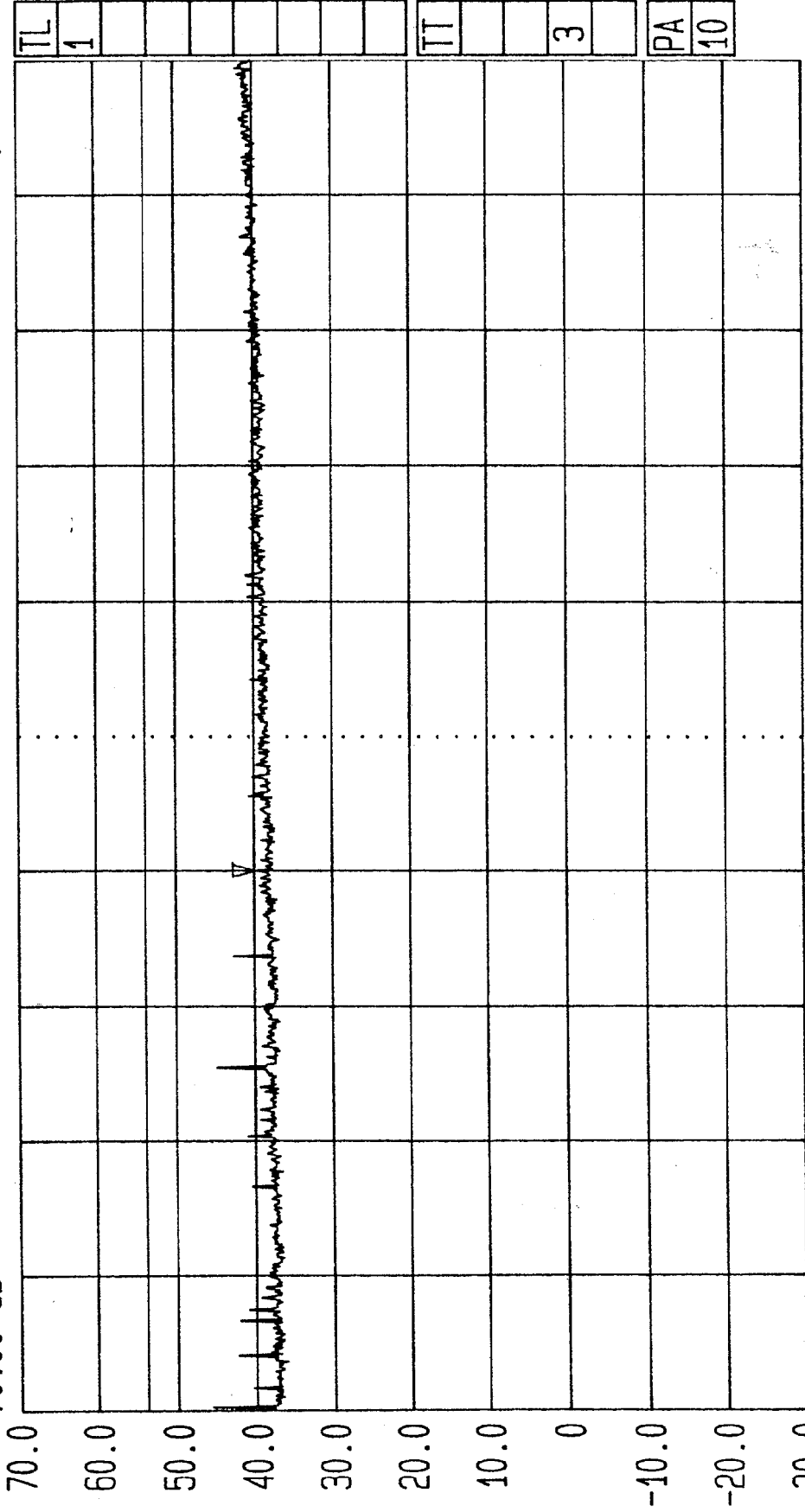
Stop
1 GHz

Radio Frequency Investigation Ltd. RADIATED PRESCANS @ 3M GPH/37143E03/04
EUT: 418 MHz Rx \Cust: BASYS \Opcond: RX MODE /Eng: JL /Spec: FCC 47 pt15 B



Date 13.Jun.'98 Time 18:42:31
Ref.Lvl 70.00 dB* Marker 39.89 dB*
1.4000 GHz

Res.Bw 120 kHz [imp] off
TG.Lvl 100.000 MHz
CF.Stp 0 dB
Vid.Bw 3 MHz
RF.Att [dBμV/m]



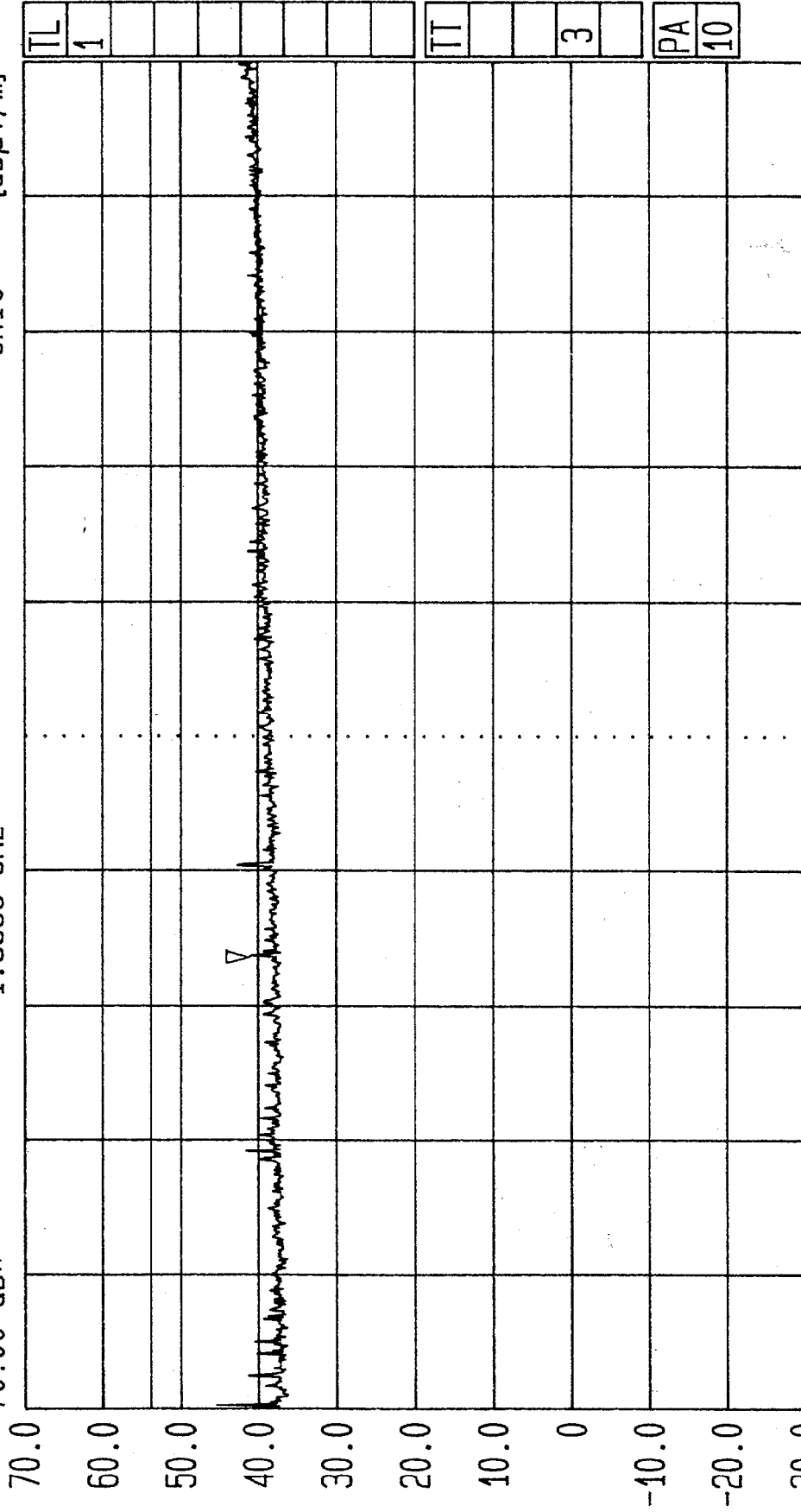
Start 1 GHz Stop 2 GHz
Span 1 GHz Sweep 600 ms
Center 1.5 GHz

Radio Frequency Investigation Ltd. RADIATED PRESCANS @ 3M GHz/37143E03/08
EUT: 418 MHz Rx \Cust: BASYS \Opcond: RX MODE /Eng: JL/Spec: FCC 47 pt15 B



Date 13.Jun.'98 Time 18:33:57
Ref.Lvl 70.00 dB* Marker 41.23 dB*
1.3366 GHz

Res.Bw 120 kHz [imp] Vid.Bw 3 MHz
TG.Lvl Off
CF.Stp 100.000 MHz RF.Att 0 dB
Unit [dBμV/m]



Start 1 GHz Center 1.5 GHz Sweep 600 ms Stop 2 GHz
Radio Frequency Investigation Ltd. RADIATED PRESCANS @ 3M GPH/37143E03/0X1
EUT: 418 MHz Rx \Cust: BASYS \Opcond: IDLE MODE /Eng: JL/Spec: FCC 47 pt15 B

Appendix 5. Photographs of the equipment under test.

This appendix contains the following photographs, which have been included in this report at the request of the client.

| Photograph Reference Number | Title |
|------------------------------------|--|
| PHT\37143JD01/ETF03\001 | Front view of radiated emissions. |
| PHT\37143JD01/ETF03\002 | Front right hand side of radiated emissions. |
| PHT\37143JD01/ETF03\003 | Side view of radiated emissions |
| PHT\37143JD01/ETF03\004 | Rear view of radiated emissions |

PHT\37143JD01\ETF03\001: Front view of radiated emissions.



PHT\37143JD01\ETF03\002: Front right hand side view of radiated emissions.



PHT\37143JD01\ETF03\003: Side view of radiated emissions.



PHT\37143JD01\ETF03\004: Rear view of radiated emissions.

