REPORT ON

Type Approval Testing of the ICS
NAV-5 NAVTEX Receiver (Serial Nos. 100 and 101)
in accordance with
ETS 300 065

Report No 102151 February 1993

ASSESSMENT SERVICES

ASSESSMENT SERVICES

Assessment Services Limited
Segensworth Road Titchfield
Fareham Hampshire
England PO15 5RH
Telephone: 0329 443300
Fax: 0329 443421

REPORT ON: Type Approval Testing of the ICS NAV-5 NAVTEX Receiver (Serial Nos. 100 and 101) in accordance with ETS 300 065

Report No. 102151

PREPARED FOR: ICS Electronics Ltd.
Unit V, Rudford Industrial Estate
Ford, Arundel
West Sussex
BN18 0BD

DISTRIBUTION:

ICS Electronics Ltd	Mr P Martinez	Copy No. 1
DTI Waterloo Bridge House	Mr J Poole	Copy No. 2
Assessment Services Limited		Copy No. 3

COPY NO. 1

APPLICANT'S DETAILS

CATEGORY OF APPLICANT
(Please tick relevant box)

(a)	[✓]	Manufacturer
(b)	[ ]	Importer
(c)	[ ]	Distributor
(d)	[ ]	Agent

If box (b), (c) or (d) is ticked complete details in box below with respect to the manufacturer.

Company Name : ICS Electronics Inc

Address : Unit V, Rudford Industrial Estate
Ford, Arundel
West Sussex
BN18 0BD

Name for Contact Purposes : Mr Peter Martinez

Telephone No : 090 373-1101 Fax No : 090 373-1105

Telex No :

MANUFACTURER'S DETAILS

Company Name :

Address :

Name for Contact Purposes :

Telephone No : Fax No :

Telex No :

TYPE DESIGNATION (1)

The type designation may be either a single alphanumeric code or an alphanumeric code divided into two parts.

Please fill in

EITHER :

Type Designation as a single alphanumeric code / N / A / V / - / 5 / / / / / / /

OR :

Type Designation in two parts :

1. Equipment Series No (2) - ("Model Number")

/ / / / / / / / / / / / / / / /

AND

2. Equipment Specific No (3) - ("Identification Number")

/ / / / / / / / / / / / / / / /

(1) This is the manufacturer's numeric or alphanumeric code or name that is specific to a particular equipment. It may contain information in coded form on the characteristics of the equipment e.g. frequency, power. The manufacturer is free to choose the form of the type designation.

(2) This is the number, code or trade name used by the manufacturer to describe a series or 'family' of equipment of substantially the same mechanical and electrical construction which will include a number of related equipments. This number is often referred to as the "model number".

(3) This is the manufacturer's identification number given to a specific equipment in the series or 'family' of equipments. it is often referred to as the "identification number".

TYPE APPROVAL TO OTHER ETS

Has the equipment been previously type approved to other ETS?

Yes [ ] ETS No. .....

No [✓]

Give details of previous type approvals to the equipment :

.....

TECHNICAL CHARACTERISTICS OF THE NAVTEX
RECEIVER PART
Frequencies : [✓] 1st 518 kHz [ ] 2nd ... kHz [ ] 3rd ... kHz
Method of Frequency Generation : [✓] Crystal [ ] Synthesizer [ ] Other : Intermediate Frequencies : There are no intermediate frequencies. [ ] 1st ... kHz [ ] 2nd ... kHz [ ] 3rd ... kHz
Receiver Frequency - 518 kHz only [ ] MF to kHz [ ] MHF to MHz [ ] HF to MHz

TECHNICAL CHARACTERISTICS OF THE NAVTEX
RECEIVER PART
Capable of Receiving Class of Emission : [✓] F1B [ ] J2B [ ] Other : Details :
ITU Designation of Class of Emission : /
Receiver Antenna Characteristics : Antenna input impedance : 50 Ω
Alarms Build-in [✓] audible [✓] visual Remote [✓] Yes [ ] No

TECHNICAL CHARACTERISTICS OF THE NAVTEX

INTERFACES

[ ] Audio Input

Impedance : ... Ω

Level : ... dBm

Frequency : ... Hz (B), ... Hz (Y)

Centre frequency : ... Hz

Frequency shift : ... Hz

[ ] Audio Output

Impedance : ... Ω

Level : ... dBm to ... dBm

Frequency : ... Hz (B), ... Hz (Y)

Centre frequency : ... Hz

Frequency shift : ... Hz

[ ] DC Output

[ ] comply with CCITT Rec V.10/V.24

[ ] comply with CCITT Rec V.28/V.24

[ ] Other :

details :.....

[ ] Navigation Data Input

Format required : .....

[✓] Alarm Signal Output

Type : contact pair

Max Power : 30 Watts 1 amp

TECHNICAL CHARACTERISTICS OF THE NAVTEX		
PROCESSOR PART		
Message Format : Conforms with CCIR Rec. 625-1 collective B-mode [✓] Yes [ ] No If NO other Rec :		
System : Conforms with CCIR Rec. 540-2 [✓] Yes [ ] No		
Memory		
Storage Capacity :	100	message identifiers
ID Storage Time :	72	h
Storage Period after Power Off	10	years

TECHNICAL CHARACTERISTICS OF THE NAVTEX			
PRINTER PART			
Printing System	:	Thermal	
Character Construction	:	7 x 5 dot matrix	
Dot Pitch	:	0.35 vertical x 0.24 horizontal	
Characters/Line	:	40	
Print Speed	:	36 lines per minute	
Printing Paper			
Type	:	Thermal	
Outer Diameter	:	42	mm
Width	:	80	mm
Inner Diameter	:	12.5	mm
Characters/roll	:	210,000	

TECHNICAL CHARACTERISTICS OF THE NAVTEX	
POWER SOURCE	
[ ]	AC Mains : ...
	AC Mains Frequency : ... Hz
[✓]	DC Voltage Nominal : 12 and 24 Volts Minimum : 10 Maximum : 30
	DC Maximum Current : 0.6 A
[ ]	Other .....
BATTERY (Main power)	
[ ]	Nickel Cadmium
[ ]	Mercury
[ ]	Alkaline
[ ]	Lead Acid (vehicle regulated)
[ ]	Lelanchè
[ ]	Lithium
[ ]	Other
	Details : .....

CONSTRUCTION OF THE EQUIPMENT	
[✓]	Single Unit (1)
[ ]	Multiple Units
	If multiple units, describe each one clearly : .....
	.....

(1) Unit means a physically separate item of the equipment.

OTHER ITEMS SUPPLIED			
Spare Batteries	[ ]	Yes	Quantity : .....
	[✓]	No	
Battery Charging Device	[ ]	Yes	
	[✓]	No	
Rectifier	[ ]	Yes	
	[✓]	No	
Special tools for dismantling equipment			
	[ ]	Yes	
	[✓]	No	
Test Interface Box	[ ]	Yes	
	[✓]	No	
Whip Antenna	[ ]	Yes	Length : ...m
	[✓]	No	
Preamplifier Unit	[ ]	Yes	Gain : ... dB (... Ω)
	[✓]	No	
Roll Paper	[✓]	Yes	Quantity : 1
	[ ]	No	
Full documentation on equipment (Handbook and circuit diagrams)			
	[ ]	Yes	
	[✓]	No : Operator Handbook only	
Others	[ ]	Yes	
	[✓]	No	

DECLARATION		
Are the equipments submitted representative production models?	[ ]	Yes
	[✓]	No
If not, are the equipments pre-production models?	[✓]	Yes
	[ ]	No
If pre-production equipments are submitted, will the final production equipments be identical in all respects with the equipment tested?	[ ]	Yes
	[✓]	No
If NO, supply full details : See additional information page 34		

I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature :

Name : Peter Martinez

Position Held : Engineering Manager

Date : 25th Jan 1993

LIST OF MEASUREMENTS

The list of measured or checked parameters called for in ETS 300 065 is give below.

Clause

[1] At present still contained in Annex VI to CEPT Recommendation T/R 34-01 [3]

This report has been prepared in accordance with the requirements of the Radiocommunications Agency (D.T.I.) U.K. and is based on the format produced by ETSI and approved by CEPT. The applicants submission has been expanded to more clearly define the equipment characteristics in order to assist the testing procedure and also the assessment under General Conditions has been modified to provide a definitive statement of compliance where tests have been carried out.

GENERAL CONDITIONS CLAUSE 3

	Satisfactory Yes	No
• Design	✓	
• Labelling of :		
controls, instruments and terminals	✓	
power supply	✓	
type designation	✓	
• Extinction of all light sources other than visual alarms	✓	
Receiver frequency : 518kHz	✓	
Second frequency : kHz		✓
Third frequency : kHz		✓
Manual selection only of #2 and #3 frequency		✓
• Test facility for :		
The signal path from the antenna to the loudspeaker or to the audio-frequency output		✓
A self-return switch is used if a loudspeaker is used		✓
The signal processing unit	✓	
The printing device	✓	
Selection of the coast stations from which the messages must be printed	✓	
Messages of not selected coast stations are not printed	✓	
B1 character selected/excluded information displayed or easily accessible	✓	

GENERAL CONDITIONS - Continued CLAUSE 3

	Satisfactory	Yes	No
• Exclusion of messages			
Possibility to inhibit printing of at least 4 different message categories, other than navigational warnings, gale warnings and SAR messages		✓	
Number of message categories that can be excluded : 23			
Indication of excluded message categories		✓	
• Printing prevention			
CORRECTLY received messages :			
Double printing prevention		✓	
Storage of message identification		✓	
NOT CORRECTLY received messages :			
Printing inhibited		✓	
No storage of message identification		✓	
Printing prevention of messages of which the ID is already stored		✓	
Message with B3 B4 = 00 always printed		✓	
• Memory :			
Storage capacity ≥ 100 message identifiers		✓	
Storage capacity : 100			
Oldest message erased if the storage capacity is exceeded		✓	
Automatic erasure of messages identifications after a period of 60 to 72 h		✓	

GENERAL CONDITIONS - Continued CLAUSE 3

	Satisfactory Yes	No
• Alarm indicating the reception of SAR messages :		
Incorporated in the equipment	✓	
Remote	✓	
Manually stopping only without inhibiting the receipt of further other alarms	✓	
• Additional alarm indicating the reception of navigational and gale warnings		✓
Capable of being suppressed		✓
• Optional facilities to store complete messages without being printed directly	✓	
• Direct printing of messages with B3 B4 = 00 and/or B2 = A, B, D, or L	✓	
• Possible printing order : last stored - first printed		✓
• Paper supply alarm	✓	
• Incomplete message printing due to paper supply error prevents message ID storing	✓	
• Storage of new message ID not possible if paper not available	✓	
• An asterisk is printed for each invalid character detected	✓	
• Optional facilities to print messages in a second language not using a latin alphabet		✓

GENERAL CONDITIONS - Continued CLAUSE 3

	Satisfactory Yes	No
• Protection against the effects of excessive current and voltage	✓	
• Protection against the effects of excessive temperature increase	✓	
• Protection against damage due to the reversal of power supply polarity	✓	
• Earthing	✓	
• Protection against accidental access of voltages greater than 50 Volts peak	✓	
• Memory not erased during power supply interruptions up to 6 hours	✓	

• Memories erased after : 72h

Ambient Temperature .....21°C Relative humidity 22%

ENVIRONMENTAL TESTS : VIBRATION CLAUSE 4.6

PERFORMANCE CHECK : CALL SENSITIVITY

Equipment suspended : [ ] Yes

[✓] No

If Yes, state the precise test conditions :

Frequency (kHz)	Vibration Direction	Character error ratio Artificial Antenna 50Ω
	X	
	Y	
	Z	
518	X	0
	Y	0
	Z	0
	X	
	Y	
	Z	
Measurement Uncertainty		$\leq 1 \times 10^{-3}$
Limit		$< 4 \times 10^{-2}$

X, Y - Mutual perpendicular directions in the horizontal plane
Z - Vertical direction
Note : Lowest frequency 3 Hz. No visible damage or deterioration observed.

TEST EQUIPMENT USED
1,2,3,8,12
.....

Ambient Temperature .....20°C Relative humidity 22%

ENVIRONMENTAL TESTS : VIBRATION CLAUSE 4.6

RESONANCE FREQUENCIES

Equipment suspended : [ ] Yes

[✓] No

If Yes, state the precise test conditions :

Found during performance check :

Vibration direction	Resonance Frequencies (Hz)			
X				
Y				
Z				

X, Y = Mutual perpendicular directions in the horizontal plane
Z = Vertical direction

Remarks : No resonances observed.

TEST EQUIPMENT USED
1,2,3,8,12
.....

Ambient Temperature .....20°C Relative humidity 32%

ENVIRONMENTAL TESTS : DRY HEAT CYCLE CLAUSE 4.6

PERFORMANCE CHECK : CALL SENSITIVITY

Frequency (kHz)	Character error ratio (Artificial antenna - 50Ω)
518	0
Measurement uncertainty	$\leq 1 \times 10^{-3}$
Limit	$< 4 \times 10^{-2}$

Remarks : No visible deterioration, unit functioned correctly.

TEST EQUIPMENT USED
1,2,3,8,12
.....

Ambient Temperature .....20°C Relative humidity 25%

ENVIRONMENTAL TESTS : DAMP HEAT CYCLE CLAUSE 4.6

PERFORMANCE CHECK : CALL SENSITIVITY

Frequency (kHz)	Character error ratio (Artificial antenna - 50Ω)
518	0
Measurement uncertainty	$\leq 1 \times 10^{-3}$
Limit	$< 4 \times 10^{-2}$

Remarks : No visible deterioration, unit functioned correctly.

TEST EQUIPMENT USED
1,2,3,8,12
.....

Ambient Temperature .....18°C Relative humidity 32%

ENVIRONMENTAL TESTS : LOW TEMPERATURE CYCLE CLAUSE 4.6

PERFORMANCE CHECK : CALL SENSITIVITY

Frequency (kHz)	Character error ratio (Artificial antenna - 50Ω)
518	0
Measurement uncertainty	$\leq 1 \times 10^{-3}$
Limit	$< 4 \times 10^{-2}$

Remarks : No visible deterioration, unit functioned correctly.

TEST EQUIPMENT USED
1,2,3,8,12
.....

Ambient Temperature .....20°C Relative humidity 18%

CALL SENSITIVITY CLAUSE 5.1

Test Conditions		Character error ratio
		Artificial antenna : 50Ω
Tnom(19°C)	Vnom (13.2V)	0
Tmin (0°C)	Vmin (10.0V)	0
	Vmax (30.0V)	0
Tmax (40°C)	Vmin (10.0V)	0
	Vmax (30.0V)	0
Measurement uncertainty		$\leq 1 \times 10^{-3}$
Limit		$< 4 \times 10^{-2}$

TEST EQUIPMENT USED
1,2,3,4,8,12
.....

Ambient Temperature .....18°C Relative humidity 20%

INTERFERENCE REJECTION AND BLOCKING IMMUNITY CLAUSE 5.2

Receiver frequency = 518 kHz

Interfering Frequency Range (MHz)	No. of freq. steps used	Character error ratio				
		T_{nom}(19°C) V_{nom}(13.2V)	T_{max}(40°C) V_{min}(10.0V)	T_{max}(40°C) V_{max}(30.0V)	T_{min}(0°C) V_{min}(10.0V)	T_{min}(0°C) V_{max}(30.0V)
0.100 - 0.515	350	0	0	3×10^{-3}	0	6×10^{-3}
0.515 - 0.517	100	0	0	0	0	0
0.517 - 0.5175	50	0	0	0	0	0
0.5185 - 0.519	50	0	0	4×10^{-3}	0	0
0.519 - 0.521	100	0	0	0	0	0
0.521 - 30.00	1000	0	3×10^{-3}	1×10^{-3}	1×10^{-3}	1×10^{-3}
156.0 - 174.0	1000	0	0	0	0	0
450.0 - 470.0	1000	0	0	0	0	0
Measurement Uncertainty		$\leq 1 \times 10^{-3}$				
Limit		Character error ratio $< 4 \times 10^{-2}$				

TEST EQUIPMENT USED
1,2,3,4,5,8,9,10,11,12,34
.....

Ambient Temperature .....20°C Relative humidity 24%

CO-CHANNEL REJECTION CLAUSE 5.3

Receiver frequency (kHz)	Character error ratio
518	0
Measurement Uncertainty	$\leq 1 \times 10^{-3}$
Limit	$\leq 4 \times 10^{-2}$

Note: Test performed into 50 Ω

TEST EQUIPMENT USED
1,2,3,5,8,9,10,11,12,34
.....

Ambient Temperature .....20°C Relative humidity 24%

INTERMODULATION CLAUSE 5.3

Fass = *FW* (kHz)	*Funw*		Character error ratio
	F1 (kHz)	F2 (kHz)	
518	1036	1554	0
Measurement Uncertainty			$\leq 1 \times 10^{-3}$
Limit			$\leq 4 \times 10^{-2}$

FW = wanted frequency *Funw* = unwanted frequency *Fass* = assigned frequency

TEST EQUIPMENT USED
1,2,3,5,6,8,9,10,11,12
.....

Ambient Temperature .....20°C Relative humidity 35%

RADIATED SPURIOUS EMISSIONS CLAUSE 5.5

Spurious emissions power level					
Frx = 518kHz		Frx = kHz		Frx = kHz	
Spurious Freq (MHz)	Power Level (nW)	Spurious Freq (MHz)	Power Level (nW)	Spurious Freq (MHz)	Power Level (nW)
Measurement Uncertainty		±1.45dB			
Limit		≤1 nW.			

Remarks: No emissions detected at a level greater than 10 dB below the limit.

TEST EQUIPMENT USED
1,2,3,17,18,19,20,21,22,24,30,31,32
.....

Ambient Temperature .....20°C Relative humidity 35%

CONDUCTED SPURIOUS EMISSIONS CLAUSE 5.5

Spurious emissions power level					
Frx = 518kHz		Frx = kHz		Frx = kHz	
Spurious Freq (MHz)	Power Level (nW)	Spurious Freq (MHz)	Power Level (nW)	Spurious Freq (MHz)	Power Level (nW)
154.86	0.55				
169.65	0.14				
Measurement Uncertainty		±2.0dB			
Limit		≤1 nW			

Remarks: No other emissions were detected at a level greater than 10 dB below the limit.

TEST EQUIPMENT USED
1,2,8,15,16,18
.....

Ambient Temperature .....20°C Relative humidity 48%

PROTECTION OF INPUT CIRCUITS CLAUSE 5.6

• Protection against damage due to an unmodulated test signal of 30 Volt r.m.s. during 15 minutes in the frequency range 100 kHz to 28 MHz.

Receiver Frequency (kHz)	Test Frequency (kHz)	Rx operates normally yes/no
518	518	Yes
Requirement		Yes

• DC path from the antenna terminal to the chassis : $<0.5\ \Omega$

Limit : $\leq 100k\Omega$

Remarks: No degredation of performance was found after a 15 minute period.

TEST EQUIPMENT USED
1,2,3,8,9,13,14,33
.....

Ambient Temperature .....20°C Relative humidity 25%

PRINTING DEVICE : GENERAL CLAUSE 6.1

	Yes	No
The printing device :		
• operates on 50Hz mains frequency		✓
• operates on 60Hz mains frequency		✓
• prints on paper	✓	
• has an easy paper changing	✓	
• has a paper capacity ≥200.00 characters	✓	
• capacity : 210,000 characters		

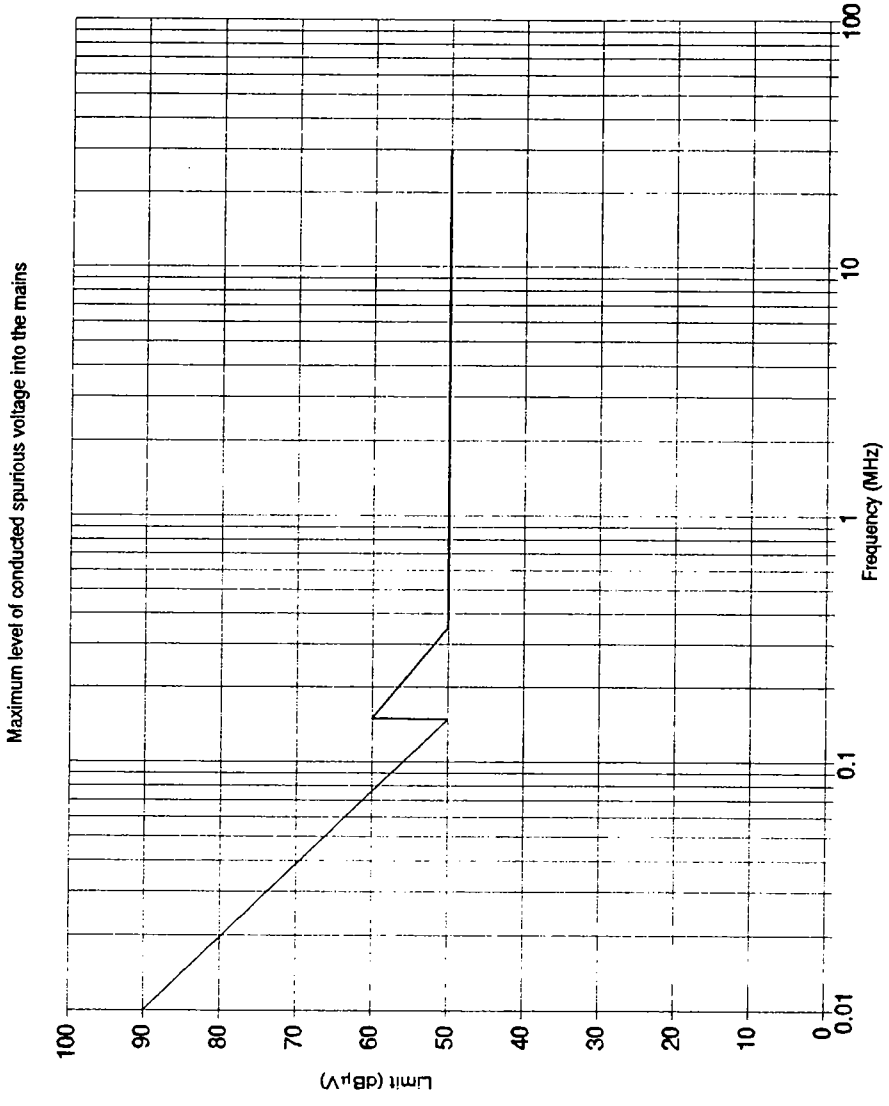
PRINTING DEVICE : PRINTING CLAUSE 6.2

	Yes	No
The printing device :		
• prints easily legible signs	✓	
• has a low noise level	✓	
• ≥ 32 characters/line	✓	
number of characters/line : 40		

TEST EQUIPMENT USED
1
.....

Ambient Temperature .....20°C Relative humidity 25%

MAXIMUM LEVEL OF CONDUCTED SPURIOUS VOLTAGE INTO THE MAINS CLAUSE 7.2



Remarks : Equipment not mains powered.

TEST EQUIPMENT USED

1

.....

Engineer : **T PHILLIPS**

Project Manager : **H E WARD**

Approved by :

C M PARRY
Radio Regulatory Manager

ADDITIONAL INFORMATION SUPPLEMENTARY TO THE TEST REPORT

ICS Electronics Ltd.

NAV-5 for Type Approval. Serial nos. 100 and 101.

Discrepancy List

1. The slot on the rear of the cabinet will, in the production units, match the length of the rear connector.

2. The two holes in the end cheeks will, in the production units, be fitted with blind threaded brass inserts.

3. The rear label and label inside the front door will have the same artwork as the paper labels fitted to these samples and will be fabricated from a suitable material (sample supplied with original discrepancy list).

4. The paper roll, in the production units, will be supported on a nylon spindle which engages in the ends of the retaining spring.

P Martinez
ICS Electronics Ltd.
11th January 1993

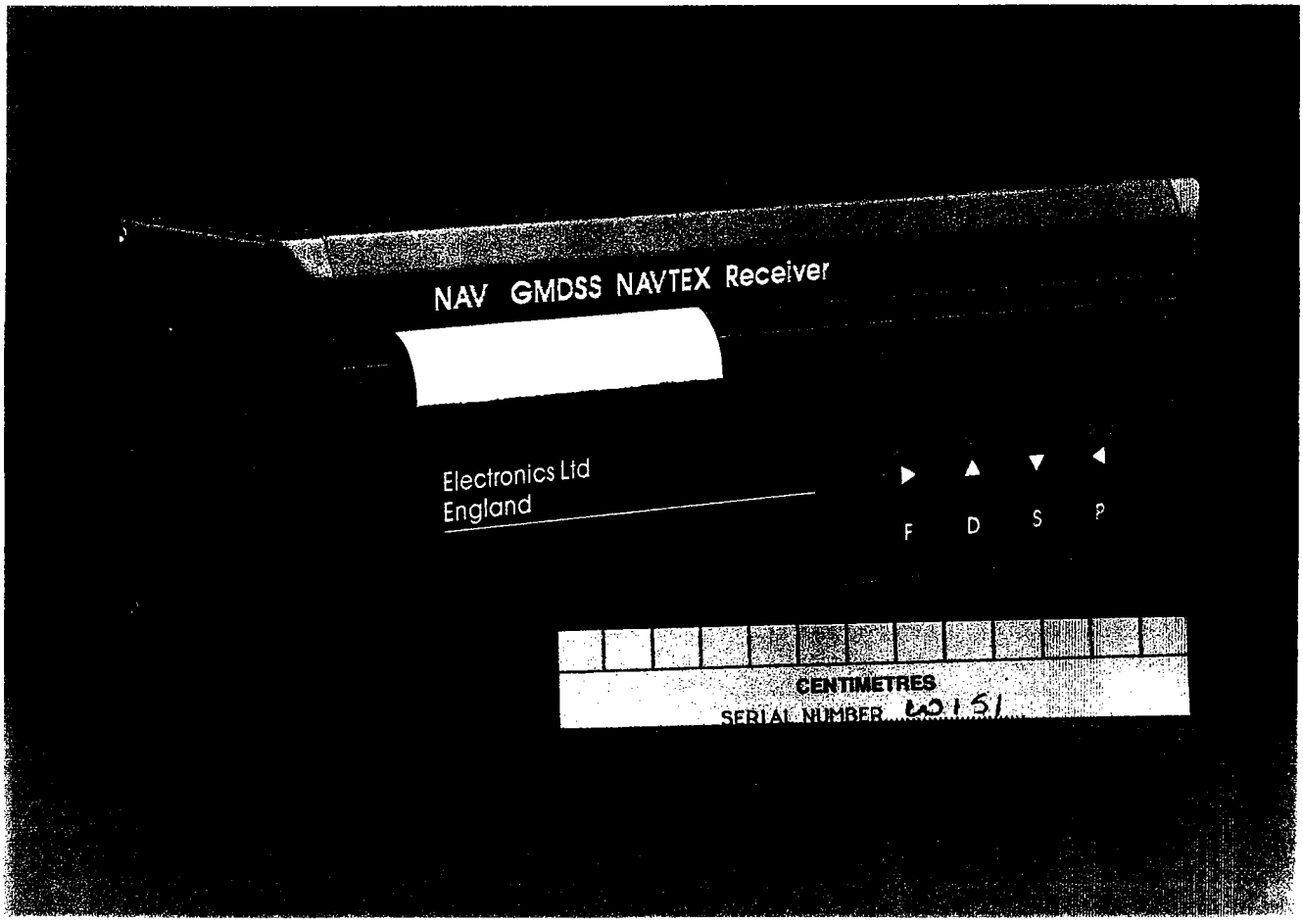
TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

To aid inclusion on each page of the test equipment used for tests, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory.

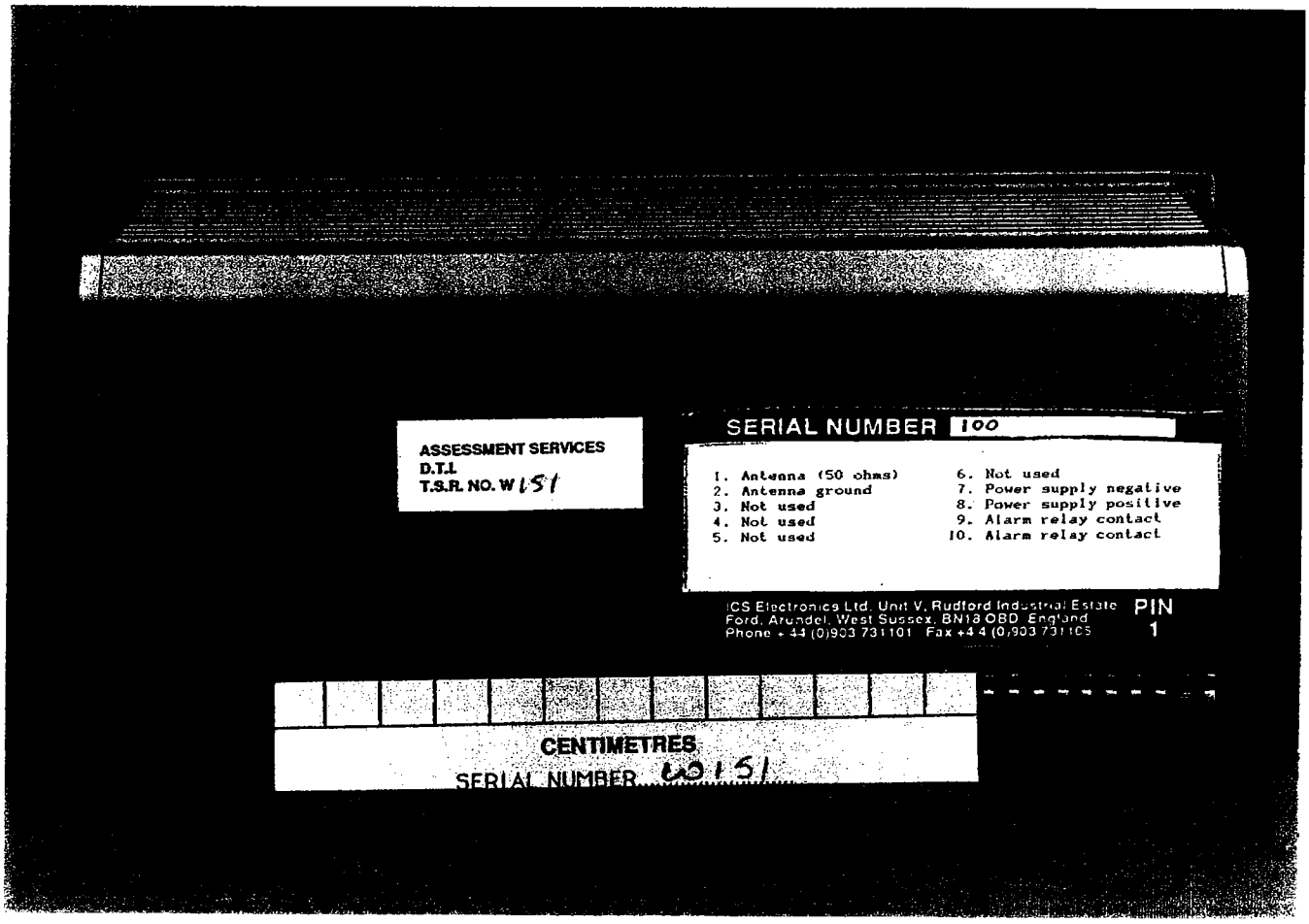
No	Instrument/Ancillary	Type	Manufacturer	Serial No.
1	Thermohygrograph	T9184\C\MK	Casella	013058
2	DC Power Supply	6269B	Hewlett Packard	2323A10764
3	Digital Multimeter	8050A	Fluke	4940008
4	Temperature Chamber	2F3	Mountford	3090-K5467
5	Signal Generator	SMX	Rohde & Schwarz	883747-69
6	Signal Generator	SMX	Rohde & Schwarz	827372-002
7	Spectrum Analyser	8591A	Hewlett Packard	3202U02054
8	Cable	1m N-N	Sealectro	CS0085
9	Cable	1m N-N	Sealectro	CS0067
10	Power Splitter	1506	Weinschel	AC4921
11	Cable	2m N-N	Sealectro	CS0009
12	Signal Generator	2031	Marconi	119301/030
13	10 dB Attenuator	8308-100	Bird	Not serialised
14	Broadband Amplifier	50A15	Amplifier Research	1612
15	Spectrum Analyser	8569A	Hewlett Packard	2409A01330
16	Digital Multimeter	3435A	Hewlett Packard	1606A18155
17	Signal generator	8657B	Hewlett Packard	3208U02456
18	Spectrum Analyser	8566A	Hewlett Packard	2349A00319
19	Biconical Antenna	BCH-2030/A	Antenna Research	102
20	Biconical Antenna	BSC-2030/A	Antenna Research	103

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS - Continued

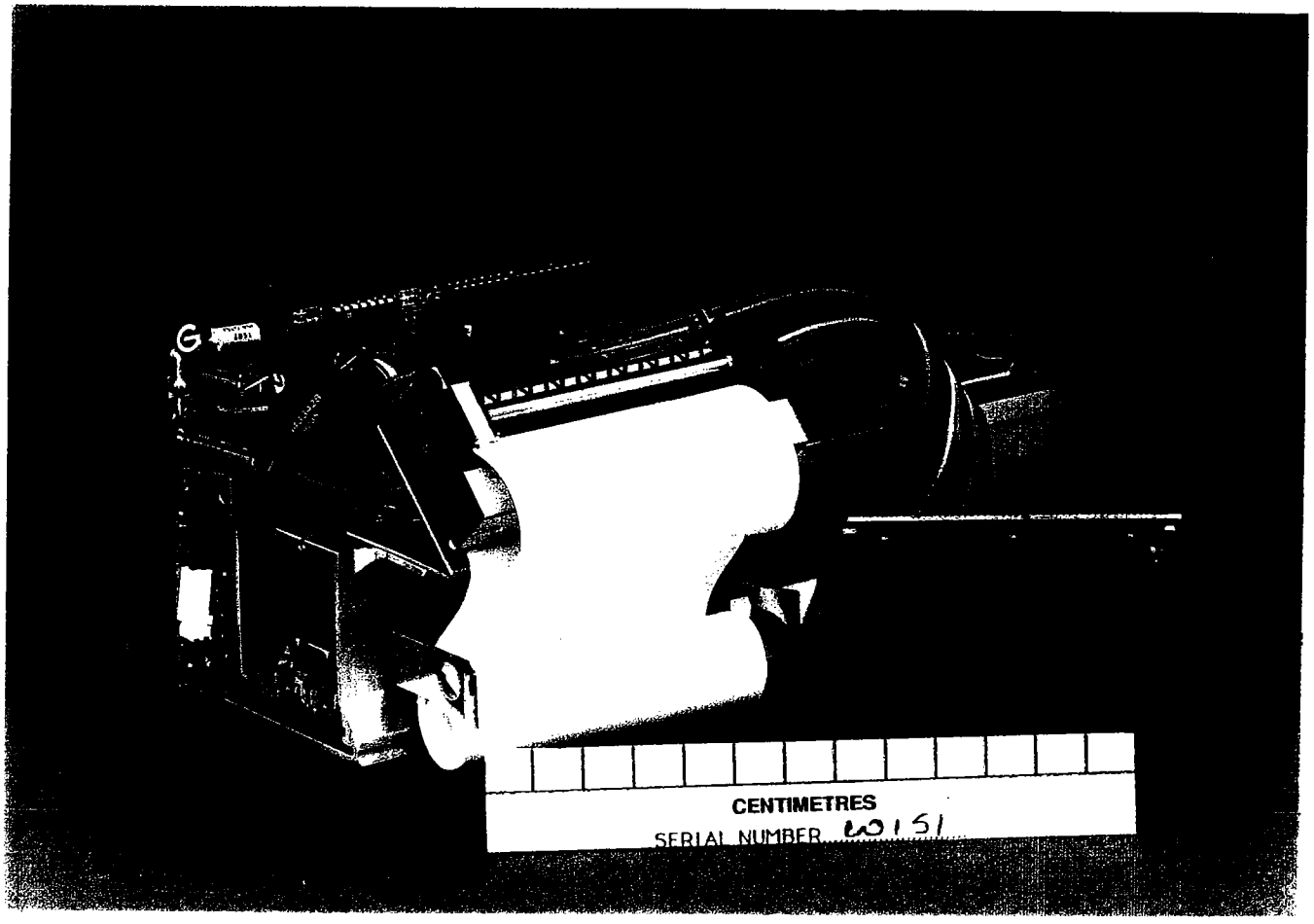
No	Instrument/Ancillary	Type	Manufacturer	Serial No.
21	Tunned Dipole	TDS 4010/A	Antenna Research	101
22	Tunned Dipole	TDS 614/A	Antenna Research	101
22	Cable	2m N - N	Sealectro	CS0005
23	Cable	1m N - N	Sealectro	CS0034
24	Cable	1m N - N	Sealectro	CS0164
25	Cable	1m N - N	Sealectro	CS0145
26	Cable	3m N - N	Sealectro	CS0146
27	Cable	5m N - N	Sealectro	CS0082
30	Log periodic	LPD 2010/A	Antenna Research	000
31	Log periodic	LPD 1440/A	Antenna Research	101
32	Log periodic	LPD 118/A	Antenna Research	101
33	CRO	SS5321	Iwatsu	52673296
34	Signal Generator	8663A	Hewlett Packard	2405A00302
35	Test Receiver	ESH3	Rohde and Schwarz	FNR.872742
36	Spectrum Monitor	EZM 374-40	Rohde and Schwarz	892242-023
37	L.I.S. Network 1 Phase	MN 2050	Chase	1563
38	Bandpass Filter	7205-0.33	REL	N/S
39	Pulse Limiter	ESH3-Z2	Rohde and Schwarz	357-8810-5
40				


NAV GMDSS NAVTEX Receiver
Electronics Ltd
England
F
D
S
P
CENTIMETRES
SERIAL NUMBER

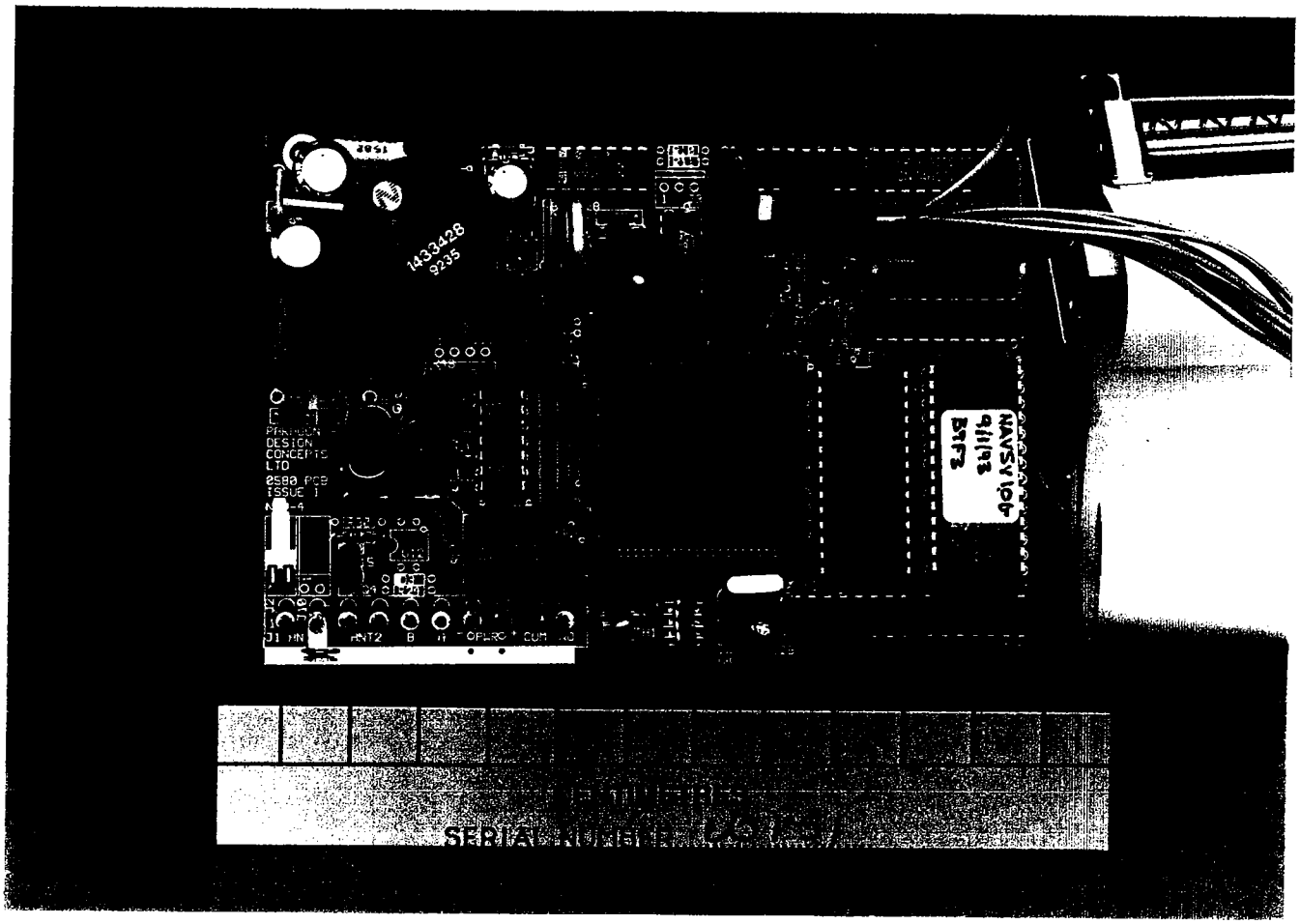
Front View


ASSESSMENT SERVICES
D.T.I.
T.S.R. NO. W151
SERIAL NUMBER 100
1. Antenna (50 ohms)
2. Antenna ground
3. Not used
4. Not used
5. Not used
6. Not used
7. Power supply negative
8. Power supply positive
9. Alarm relay contact
10. Alarm relay contact
ICS Electronics Ltd. Unit V, Rudford Industrial Estate
Ford, Arundel, West Sussex, BN18 0BD England
Phone + 44 (0)903 731101 Fax +44 (0)903 731105
PIN 1
CENTIMETRES
SERIAL NUMBER W151

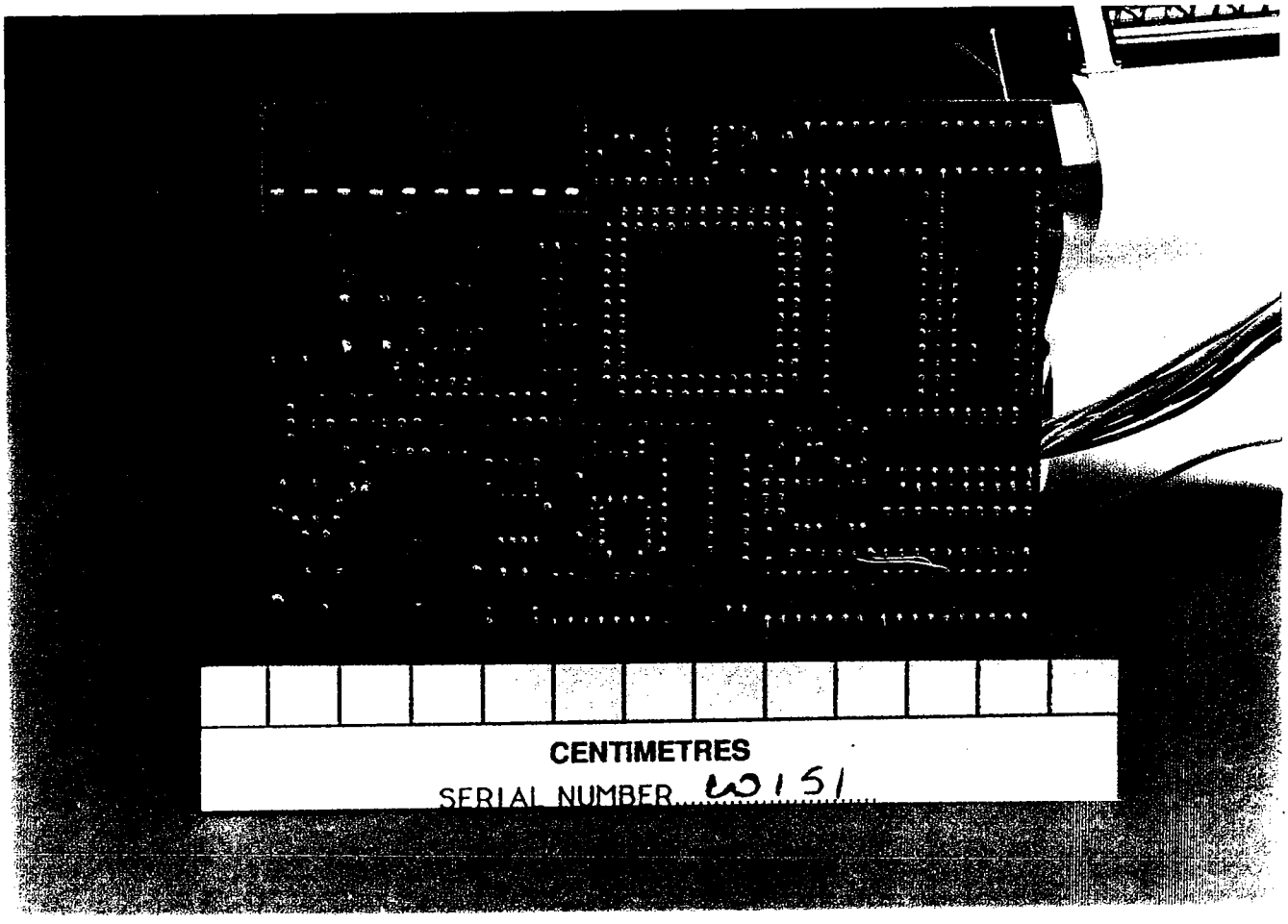
Rear View



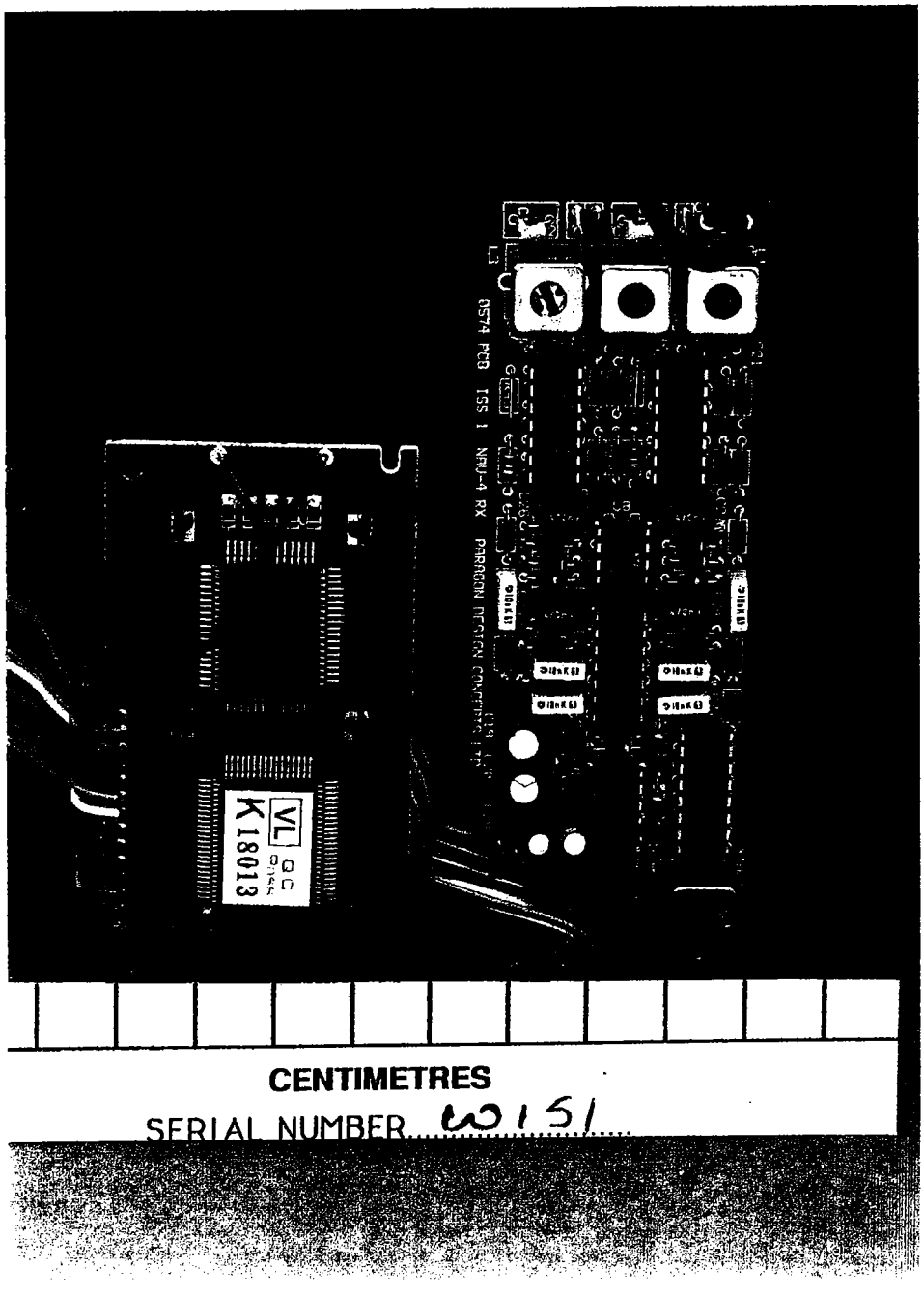
Internal View 1



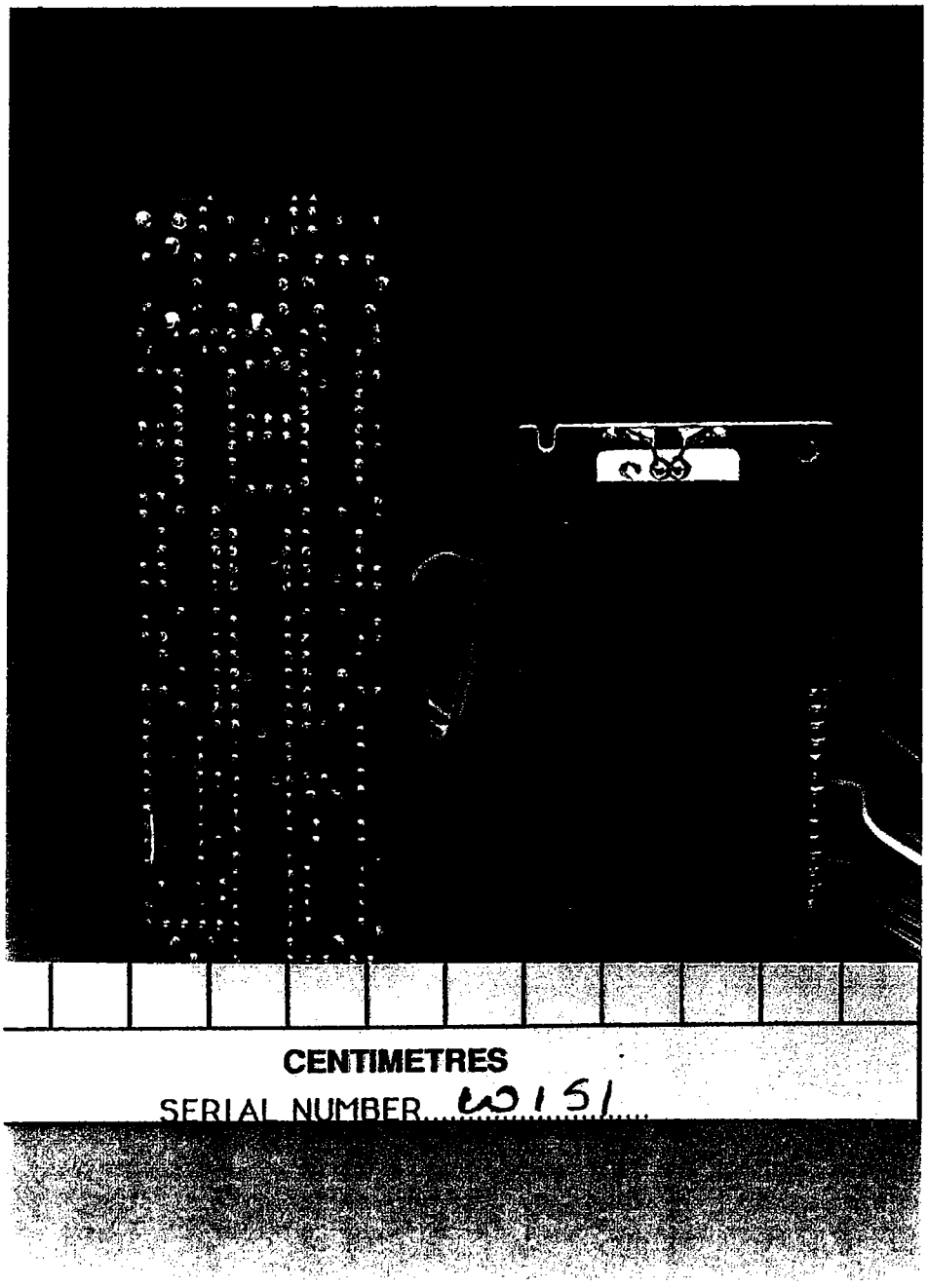
Internal View 2



Internal View 3



Internal View 4



Internal View 5