REPORT ON

Type Approval Testing of the Japan Radio Company Limited NCR-330
Navtex Receiver (Serial No. GD60001) in accordance with IEC 1097-6:1995

Report Number RM900340A February 2000

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Segensworth Road
Fareham
Hampshire
PO15 5RH
UK

REPORT ON Type Approval Testing of the Japan Radio Company Limited NCR-330 Navtex Receiver (Serial No. GD60001) in accordance with IEC 1097-6:1995

Report No. RM900340A

PREPARED FOR

Japan Radio Company Limited
Blackfriars House
157/168 Blackfriars Road
London
SE1 8EZ

APPROVED BY

_____

M JENKINS
Radio Department Manager

DISTRIBUTION

Japan Radio Company Limited	Mr J Moon	Copy No. 1
DERA	Mr P Goddard	Copy No. 2
TUV Product Service Limited		Copy No. 3

Copy No:

CONTENTS:-

LIST OF MEASUREMENTS (Continued)

For copyright details see page 51 of 51

Manufacturer:	Japan Radio Company Limited
Type Designation:	NCR-330
Serial No.:	GD60001
Number of Samples Tested:	One
Test Specification:	IEC 1097-6:1995
Date of Receipt of Test Sample:	11th January 2000
Start of Test:	11th January 2000
Finish of Test:	21st January 2000
Test Engineer(s):	S BENNETT

DECLARATION OF CONFORMITY

We, TUV Product Service Limited of Segensworth Road, Fareham, Hampshire PO15 5RH, declare under our sole responsibility that the product :

Equipment :	Navtex Receiver
Type :	NCR-330
Model :	-
Serial Number :	GD60001
Quantity :	One

to which this declaration relates is in conformity with the following standard(s) or other normative document(s) :

IEC 1097-6:1995

Detailed results are recorded in Report No. RM900340A

Place and date of issue : Fareham, February 2000

Signature : _____

M JENKINS
Radio Department Manager

Date : _____

APPLICANT'S DETAILS	
CATEGORY OF APPLICANT (please tick relevant box opposite)	(a) [✓] MANUFACTURER
	(b) [ ] IMPORTER
If box (b), (c) or (d) is ticked complete details in box below with respect to the manufacturer	(c) [ ] DISTRIBUTOR
	(d) [ ] AGENT
COMPANY NAME :	Japan Radio Company Limited
ADDRESS :	Blackfriars House 157/168 Blackfriars Road London SE1 8EZ
NAME FOR CONTACT PURPOSES :	Mr J Moon
TELEPHONE NO : 0171-593-3400	FAX NO : 0171-803-0996
	E-MAIL :

MANUFACTURER'S DETAILS	
COMPANY NAME :	Japan Radio Company Limited
ADDRESS :	Akasaka Twin Tower (Main) 17-22, Akasaka 2-chome, Minato-ku, Tokyo 107-8432 Japan
NAME FOR CONTACT PURPOSES :	As above.
TELEPHONE NO :	FAX NO :
	E-MAIL:

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 / C / R / - / 3 / 3 / 0 / / / / / OR : TYPE DESIGNATION IN TWO PARTS : 1. EQUIPMENT SERIES NO. (2) ("MODEL NUMBER") / / / / / / / / / / / / / / / / / / AND 2. EQUIPMENT SPECIFIC NO. (3) ("IDENTIFICATION NO") / / / / / / / / / / / / / / / / / /

(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/IEC
Has the equipment been previously type approved to other ETS/IEC? Yes [ ] ETS No. No [✓] Give details of previous type approvals to the equipment : None - New 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 : [ ] 1st kHz [ ] 2nd kHz [ ] 3rd kHz
Receiver Frequency Bands [✓] MF: 518 kHz only [ ] MHF : [ ] HF :

TECHNICAL CHARACTERISTICS OF THE NAVTEX		
RECEIVER PART		
Capable of receiving class of emission : [✓] F1B [ ] J2B [ ] Other : Details :		
ITU designation of class of emission : - Not applicable Rx only		
Receiver antenna characteristics : Antenna input impedance : 50 Ω 10 Ω + 150 pF		
Alarms		
Build-in	[✓]	audible
	[✓]	visual
Remote	[ ]	Yes
	[ ]	No

TECHNICAL CHARACTERISTICS OF THE NAVTEX

INTERFACES

[ ] Audio input - N/A

Impedance : Ω

Level : dBm to dBm

Frequency : Hz (B), Hz (Y)

Centre frequency : Hz

Frequency shift : Hz

[ ] Audio output - N/A

Impedance : Ω

Level : dBm to dBm

Frequency : Hz (B), Hz (Y)

Centre frequency : Hz

Frequency shift : Hz

[ ] Digital output - N/A

details :

[ ] DC output - N/A

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

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

[ ] Other :

[✓] Navigation Data input:

Format required: ITU-RM 625-3

[✓] Alarm Signal output:

Type: Buzzer

Max power: N/A

TECHNICAL CHARACTERISTICS OF THE NAVTEX		
PROCESSOR PART		
Message Format	Conforms with Rec. ITU-R M 625-3 [✓] Yes [ ] No If NO other Rec. …….	
System	Conforms with Rec. ITU-R M540-2 [✓] Yes [ ] No	
Memory		
	Storage capacity	128 ID's
	ID Storage time	72 h
	Storage period after power off	approx. 168 h ID permanent state

TECHNICAL CHARACTERISTICS OF THE NAVTEX			
PRINTER PART			
Printing System	Thermal		
Character Construction	7 x 6/7 x 5 Dot Matrix (Selectable)		
Dot pitch	0.35 mm x 0.24 mm (H x W)		
Characters/line	35/40		
Print speed	17/20 characters/sec		
Printing paper			
Type	H-7ZPJO0044 JRC Code		
Roll paper			
Outer diameter	60 mm		
Inner diameter	12 mm		
Characters/roll	466655 (@ 7 x 6)/533320 (@ 7 x 5)		
Facility to print messages in other language		[✓]	No
		[ ]	Yes
If yes give details:……..			

TECHNICAL CHARACTERISTICS OF THE NAVTEX	
POWER SOURCE	
[ ]	AC MAINS N/A (State Voltage)
	AC mains frequency (Hz)
[✓]	DC voltage 12/24 V (Nominal) (10.8 V - 35 V DC)
[ ]	DC maximum current
[ ]	Other
Battery - Not supplied by JRC	
[ ]	Nickel cadmium
[ ]	Mercury
[ ]	Alkaline
[ ]	Lead acid (vehicle regulated)
[ ]	Leclanché
[ ]	Lithium
[ ]	Other …… Volts
End point voltage as quoted by equipment manufacturer	

CONSTRUCTION OF THE EQUIPMENT	
[✓]	Single unit (1)
[ ]	Multiple units
	If multiple units, describe each one clearly:
	Optional (i) Active antenna NAW330 (ii) Power supply NBG-122 (iii) Power supply NBG-4534A
Combined with other equipment	[ ] Yes
	[ ] No
	details ……..

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

OTHER ITEMS SUPPLIED			
Spare batteries e.g. (portable equipment)	[ ] Yes	Quantity ……..	
	[✓] No		
Battery charging device	[ ] Yes		
	[✓] No		
Rectifier	[✓] Yes	NBG-122/ NBG-4534A	
	[ ] No		
Special tools for dismantling equipment	[ ] Yes		
	[✓] No		
Test interface box (if applicable) or where appropriate the RF test fixture	[ ] Yes		
	[✓] No		
Whip Antenna (Active)(NAW-330)	[✓] Yes	Length 600 mm	
	[ ] No		
Preamplifier Unit	[ ] Yes	Gain …….dB (Ω)	
	[✓] No		
Roll paper	[✓] Yes	Quantity: As required	
	[ ] No		
Full documentation on equipment (Handbook and circuit diagrams)	[✓] Yes		
	[ ] No		
Others	[✓] Yes		
	[ ] No		
If Yes, please specify :	JRC Specification Sheet		

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		
Is the Test Report to be used as part of a Type Approval Application ?	[✓]	Yes
	[ ]	No
If yes, has the product, any direct engineering predecessor, or variant ever been granted Type Approval in any EEC member country ?	[ ]	Yes
	[✓]	No
If yes supply full details		
Will labelling of the equipment comply with the requirements of IEC 1097-6 ?	[✓]	Yes
	[ ]	No
If no supply full details		

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

Signature : Held on file at TUV Product Service Limited

Name : Mr J Moon

Position held : Technical Manager

Date : 21st December 1999

TUV Product Service Limited formally certifies that the manufacturer's declaration as typed out in this report, is a true and accurate record of the original received from the applicant.

Ambient Temperature.....18°C Relative Humidity.....29%

ENVIRONMENTAL TESTS: VIBRATION CLAUSE 5.1.9
PERFORMANCE CHECK: CALL SENSITIVITY

Equipment suspended: [ ] Yes

[✓] No

If YES, state the precise test condition: N/A

FREQUENCY (kHz)	VIBRATION DIRECTION	ARTIFICIAL ANTENNA 50Ω		ARTIFICIAL ANTENNA 10Ω + 150 pF	
		Character error ratio (%)	Vibration frequency (Hz)	Character error ratio (%)	Vibration frequency (Hz)
518	X	0	80	0	80
	Y	0	30	0	30
	Z	0	30	0	30
Measurement uncertainty		$< 1 \times 10^{-3}$			
Limit		< 4%			

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

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, 17
.....

Ambient Temperature.....18°C Relative Humidity.....29%

ENVIRONMENTAL TESTS: VIBRATION RESONANCE FREQUENCIES CLAUSE 5.1.9

Equipment suspended: [ ] Yes

[✓] No

If YES, state the precise test condition: N/A

Artificial Antenna 50 Ω

VIBRATION DIRECTION	RESONANCE FREQUENCIES (Hz)				
X	80	-	-	-	-
Y	-	-	-	-	-
Z	-	-	-	-	-

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

Artificial Antenna 10 Ω + 150 pF

VIBRATION DIRECTION	RESONANCE FREQUENCIES (Hz)				
X	80	-	-	-	-
Y	-	-	-	-	-
Z	-	-	-	-	-

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, 17
.....

Ambient Temperature.....18°C Relative Humidity.....29%

ENVIRONMENTAL TESTS: VIBRATION CLAUSE 5.1.9
PERFORMANCE CHECK: VISUAL INSPECTION

Visible damage or deterioration: [ ] Yes

[✓] No

Observations: N/A

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, 17
.....

Ambient Temperature.....21°C Relative Humidity.....31%

ENVIRONMENTAL TESTS: DRY HEAT CYCLE CLAUSE 5.1.9
PERFORMANCE CHECK: CALL SENSITIVITY

SUPPLY	FREQUENCY (kHz)	CHARACTER ERROR RATIO (%)	
		Artificial Antenna 50Ω	Artificial Antenna 10Ω + 150 pF
24.0 V DC	518	0	0
10.8 V DC	518	0	0
31.2 V DC	518	0	0
	Measurement uncertainty	$< 1 \times 10^{-3}$	
	Limit	< 4%	

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8, 25
.....

Ambient Temperature.....20°C Relative Humidity.....37%

ENVIRONMENTAL TESTS: DAMP HEAT CYCLE CLAUSE 5.1.9
PERFORMANCE CHECK: CALL SENSITIVITY

SUPPLY	FREQUENCY (kHz)	CHARACTER ERROR RATIO (%)	
		Artificial Antenna 50Ω	Artificial Antenna 10Ω + 150 pF
24.0 V DC	518	0	0
10.8 V DC	518	0	0
31.2 V DC	518	0	0
	Measurement uncertainty	$< 1 \times 10^{-3}$	
	Limit	< 4%	

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8, 26
.....

Ambient Temperature.....19°C Relative Humidity.....43%

ENVIRONMENTAL TESTS: LOW TEMPERATURE CYCLE CLAUSE 5.1.9
PERFORMANCE CHECK: CALL SENSITIVITY

SUPPLY	FREQUENCY (kHz)	CHARACTER ERROR RATIO (%)	
		Artificial Antenna 50Ω	Artificial Antenna 10Ω + 150 pF
24.0 V DC	518	0	0
10.8 V DC	518	0	0
31.2 V DC	518	0	0
	Measurement uncertainty	$< 1 \times 10^{-3}$	
	Limit	< 4%	

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8, 25
.....

GENERAL Satisfactory: Yes No

5.2.1 (3.2.1) System Components

Radio Receiver	[✓]	[ ]
Signal Processor	[✓]	[ ]
Printing Device	[✓]	[ ]
Does the equipment utilise a loudspeaker?	[ ]	[✓]
If yes, is a self return switch fitted?	N/A	

5.2.2 (3.2.2) Exclusion of Coverage Areas

Selection of the coast stations from which the messages are printed	[✓]	[ ]
Messages of excluded coast stations are not printed or stored	[✓]	[ ]

5.2.3 (3.2.2) Exclusion of Message Categories

Ability to inhibit printing of at least 4 different message categories, other than navigational warnings, meteorological warnings and SAR messages	[✓]	[ ]
Number of message categories that can be excluded	22	

5.2.4 (3.2.3) Operation of the Receiver at 518 kHz

Receiver Frequency : 518 kHz

Frequency:	518 kHz	*CER: 0%
	517.95 kHz	*CER: 0%
	518.05 kHz	*CER: 0%

5.2.5 (3.2.3) Operation at Other Frequencies N/A

5.2.6 (3.2.3) Simultaneous Operation on 518 kHz and Other Frequencies N/A

5.2.7 (3.2.4) Receiver Test Facility

Manual contains information on activating test facility	[✓]	[ ]
Self test routine operates in accordance with documentation	[✓]	[ ]
Self Test print out contains >36 valid characters	[✓]	[ ]

* Character Error Ratio (C.E.R)

			Satisfactory:	Yes	No
5.2.8	(3.2.5)	Internal Storage and Erasure of Oldest Message Identifications			
		Message storage capacity >100 message identifications		[✓]	[ ]
		Storage capacity:		128	
		Oldest message erased if the storage capacity is exceeded		[✓]	[ ]
5.2.9	(3.2.5)	Erasure of Message Identifications/Storage Time			
		Automatic erasure of message identifications after a period of 60 to 72 hours		[✓]	[ ]
		Automatic erasure after:		72 hours	
5.2.10	(3.2.6)	Storage of Message Identifications			
		*STS repeated 35 times with **CER <4%			
		Message stored:		[✓]	[ ]
5.2.11	(3.2.6)	Reception of Messages			
		*STS repeated 35 times with **CER >4% and ≤33%			
		Messages stored		[ ]	[✓]
5.2.12	(3.2.6)	Unsatisfactory Reception			
		*STS repeated 35 times with **CER >33%			
		Messages stored:		[ ]	[✓]
		Messages printed:		[ ]	[✓]
5.2.13	(3.2.7)	Search and Rescue (SAR) Alarm Provision and Reset			
		Alarm incorporated in the equipment		[✓]	[ ]
		Manual reset of alarm without inhibiting further other alarms		[✓]	[ ]
5.2.14	(3.2.7)	Additional Alarms			
		Additional alarm indicating reception of navigational and meteorological warnings		[✓]	[ ]
		Alarm suppression capability		[✓]	[ ]

* Standard Test Signal (STS)
** Character Error Ratio (CER)

Ambient Temperature.....23°C Relative Humidity.....25%

CALL SENSITIVITY CLAUSE 5.2.16.1

TEST CONDITIONS		CHARACTER ERROR RATIO (%)	
		Artificial antenna: 50Ω	Artificial Antenna: 10Ω + 150 pF
		F_{rx} = 518 kHz	F_{rx} = 518 kHz
T_{nom}(23°C)	V_{nom}(24.0 V DC)	0	0
	V_{min}(10.8 V DC)	0	0
	V_{max}(31.2 V DC)	0	0
Measurement uncertainty		$< 1 \times 10^{-3}$	
Limit		< 4%	

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8
.....

Ambient Temperature.....24°C Relative Humidity.....26%

INTERFERENCE REJECTION AND BLOCKING IMMUNITY CLAUSE 5.2.16.2

Receiver frequency = 518 kHz

24.0 V DC Supply

Intefering Frequency Range (MHz)	No. of freq. steps used	CHARACTER ERROR RATIO (%)	
		Artificial Antenna: 50Ω	Artificial Antenna: 10Ω + 150 pF
0.100 - 0.515	350	0	0
0.515 - 0.517	100	0	0
0.517 - 0.5175	50	0	0
0.5185 - 0.519	50	0	0
0.519 - 0.521	100	1.4×10^{-3}	0
0.521 - 30.00	1000	0	0
156.0 - 174.0	1000	0	0
450.0 - 470.0	1000	0	0
Measurement uncertainty		$< 1 \times 10^{-3}$	
Limit		Character error ratio $<4 \times 10^{-2}$	

Remarks

The equipment is digital with no signal output available. Test performed with a swept (100ms/step) interfering signal.

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8, 19, 20
.....

Ambient Temperature.....22°C Relative Humidity.....31%

CO-CHANNEL REJECTION CLAUSE 5.2.16.3

24.0 V DC Supply

RECEIVER FREQUENCY (kHz)	CHARACTER ERROR RATIO (%)	
	Artificial Antenna: 50 Ω	Artificial Antenna: 10 Ω + 150 pF
518	0	0
Measurement uncertainty	$< 1 \times 10^{-3}$	
Limit	≤ 4%	

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8, 18, 19
.....

Ambient Temperature.....23°C Relative Humidity.....33%

INTERMODULATION CLAUSE 5.2.16.4

24.0 V DC Supply

F_{wanted} (kHz)	$F_{unwanted}$		CHARACTER ERROR RATIO (%)	
	F1 (kHz)	F2 (kHz)	Artificial Antenna 50 Ω	Artificial Antenna 10 Ω + 150 pF
518	1036	1554	0	0
Measurement uncertainty			$< 1 \times 10^{-3}$	
Limit			≤ 4%	

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8, 18, 19, 20, 21
.....

			Satisfactory:	Yes	No
5.2.15	(3.2.8)	Power Interruptions			
		Memory not erased during power supply interruptions of up to 6 hours		[✓]	[ ]
5.2.17	(3.2.10)	Printer Characteristics			
		Paper roll length:		40 m	
		Normal characters per roll, print capacity:		533,320	
		Large characters per roll, print capacity:		466,655	
		Normal characters per line, print capacity:		40	
		Large characters per line, print capacity:		35	
		Acoustic noise level at 1 m:		47 dBA	
5.2.18	(3.2.10)	Paper Roll End Alarm and Storage Inhibition			
		Alarm activated when paper is running out		[✓]	[ ]
		Test message being received at time of paper alarm printed		[ ]	[✓]
		After insertion of new paper roll, extra test message printed		[✓]	[ ]
5.2.19	(3.2.11)	Automatic Line Feed Indication and Paper Feed			
		Division of word by automatic line feed		[ ]	[✓]
		Division of word invokes line feed		[✓]	[ ]
		Two line feeds at message end		[✓]	[ ]
5.2.20	(3.2.12)	Mutilated Character Indication			
		Mutilated characters printed as an asterisk		[✓]	[ ]

TECHNICAL CHARACTERISTICS	Satisfactory:	Yes	No
5.3.1 (4.2.1) B_1B_2 Character Selection			
As covered in 5.2.2 and 5.2.3			
5.3.2 (4.2.2) Printer Activation/Error-Free Preamble B_1 - B_4			
Mutilated message identifications stored		[ ]	[✓]
Subsequent messages printed		[ ]	[✓]
5.3.3 (4.2.3) Non-Repetitive Printing of a Message			
As covered in 4.2.3			
5.3.4 (4.2.4) Message with B_3B_4=00			
B_3B_4=00, with selected B_1. Message printed		[✓]	[ ]
B_3B_4=00, with not selected B_1. Message printed		[ ]	[✓]

Ambient Temperature.....22°C Relative Humidity.....36%

SPURIOUS EMISSIONS CLAUSE 5.4

24.0 V DC Supply

SPURIOUS EMISSIONS LEVEL (µW)		
F_{rx} = 518 kHz		
Spurious Freq. (MHz)	Bandwidth (kHz)	Power Level (nW)
202.9	100	0.157
Measurement uncertainty	±2.0 dB	
Limit	≤ 1 nW	

Bandwidth = Bandwidth of the measurement equipment

Remarks

No other emissions were detected at a level within 10 dB of the limit.

TEST EQUIPMENT USED:
1, 2, 3, 13
.....

Ambient Temperature.....23°C Relative Humidity.....32%

PROTECTION OF INPUT CIRCUITS CLAUSE 5.4.2

24.0 V DC Supply

RECEIVER FREQUENCY (kHz)	TEST FREQUENCY (kHz)	RX OPERATES NORMALLY YES/NO
518	5000	Yes
Requirement		Yes

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8, 9, 24
.....

Reverse Polarity Supply

The power supply was set up to output 24 V DC. This voltage was then applied to the input voltage terminals of the EUT in a reverse polarised state. The EUT was then left in this condition for 5 minutes.

On inspection of the unit, the fuse, (F1), was found to have blown. On replacing this fuse and applying the normal operating voltage in the correct polarity, the EUT functioned correctly.

A performance check was carried out which was satisfactory.

Excessive Voltage

The EUT was set up operating on its normal voltage, 24 V DC, and switched on. The voltage was increased to 55 V DC. The radio went into 'self protect' mode which stopped it from functioning.

On returning the supply voltage to within the manufacturers declared operating range, the EUT, on pressing the power switch, functioned correctly.

A performance check was carried out which was satisfactory.

TEST EQUIPMENT USED:
1, 2, 3, 4, 5, 6, 7, 8, 9, 24
.....

ADDITIONAL INFORMATION SUPPLEMENTARY TO THE TEST REPORT

1. Testing was performed at the Japan Radio Company Limited premises in Mitaka, Japan, in the presence of Mr Fujii of JRC (Japan).

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

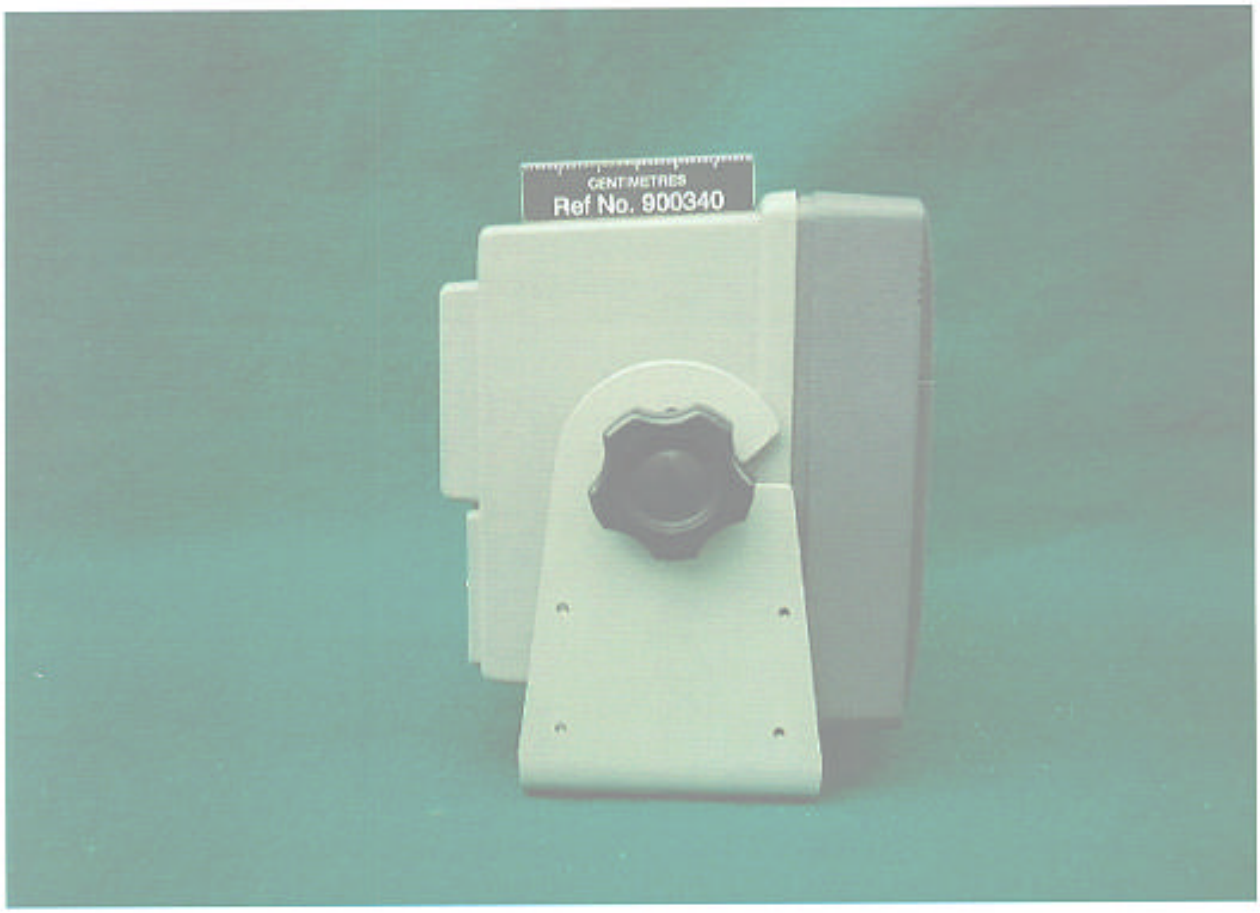
To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory.

No	Instrument/Ancillary	Type	Manufacturer	Serial No.
1	Thermohygrograph	Hygromer A1	Rotronic	12814 038
2	Digital Voltmeter	TR6355	Takeda Riken	83601481
3	Power Supply Unit	B418A-32	Metronix	689288
4	Signal Generator	8664A	Hewlett Packard	3315A00514
5	PC	PC-9801	NEC	N/S
6	Message Generator	JES-3	JRC	GA11828
7	Navtex Receiver	NCR-300A	JRC	GD17696
8	DC Amplifier	N/A	JRC	GBBB0010
9	Stop Watch	S026-6000	Seiko	801100
10	Sound Level Meter	NA-61	Rion	66301143
11	Anechoic Room	MPBX21860	JRC	BP94841
12	Tape Measure	3-5m Class 1	Tajima Manufacturing	N/S
13	Spectrum Analyser	R3361A	Advantest	01730043
14	Vibration System	G-8230	Shinken	SG-1880-1
15	PC	PC-9861	NEC	N/S
16	Measurement Sensor	7701-050	Endevco	CJ-30
17	Control Sensor	7701-050	Endevco	CJ-32
18	Signal Generator	MG3631A	Anritsu	MT31530
19	Combiner	Z-164A	Anritsu	M7523
20	Signal Generator	MG3633A	Anritsu	MT11580
21	Combiner	Z164-A	Anritsu	M5354
22	Transceiver	JST345D	JRC	RG00350
23	Oscilloscope	Yokogawa	DL1540	7015FB756
24	Power Supply	MSU70A-10	Metronix	98218
25	Climatic Chamber	EC-850LHFS	Hitachi	U5971329
26	Climatic Chamber	Super Jumbo	Ohnishi Thermal Engineering	N/S

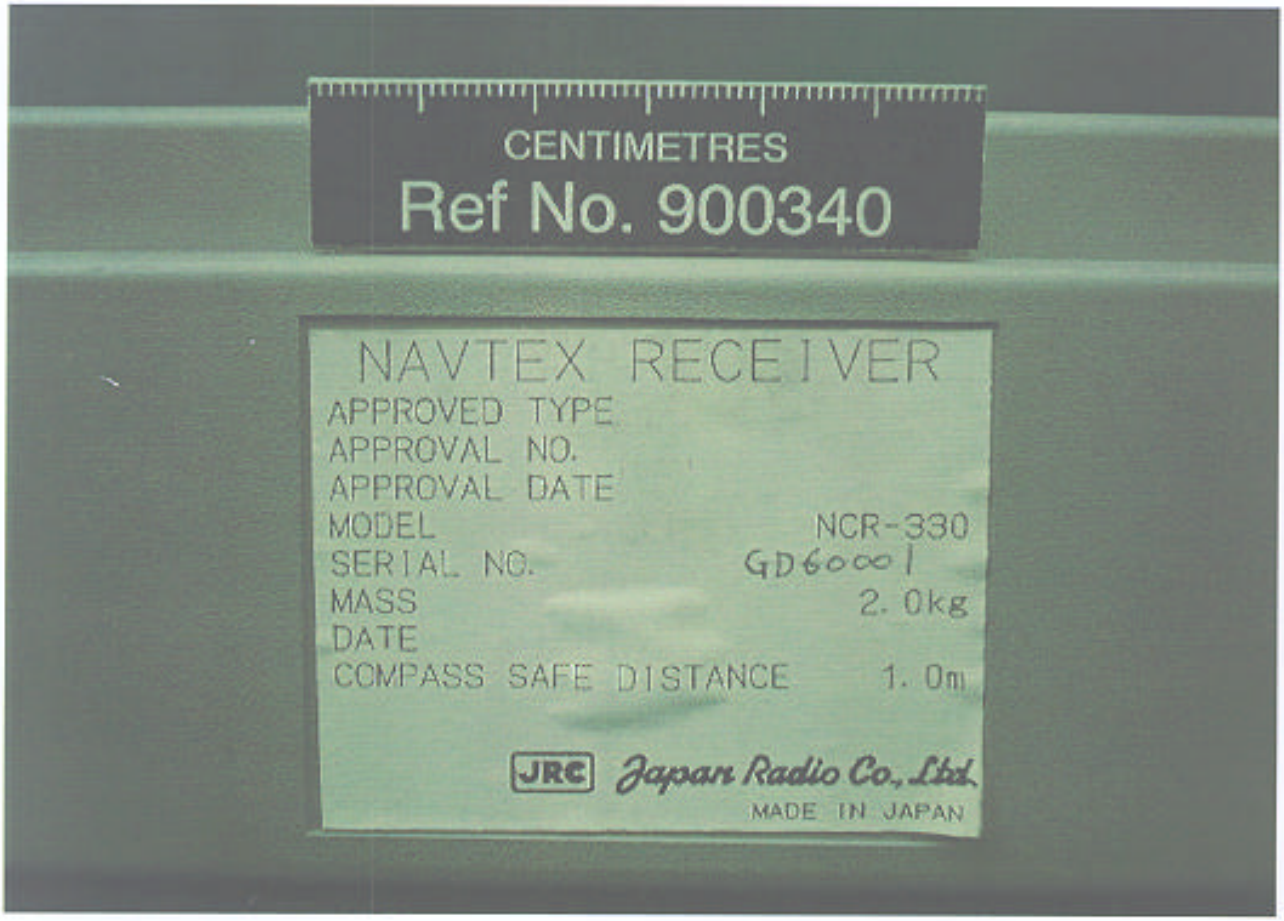

CENTIMETRES
Ref No. 900340
JRC
NAVTEX RECEIVER
POWER
RECEIVE
TEST
PAPER
FEED
ALARM

Front View

Rear View



Side View

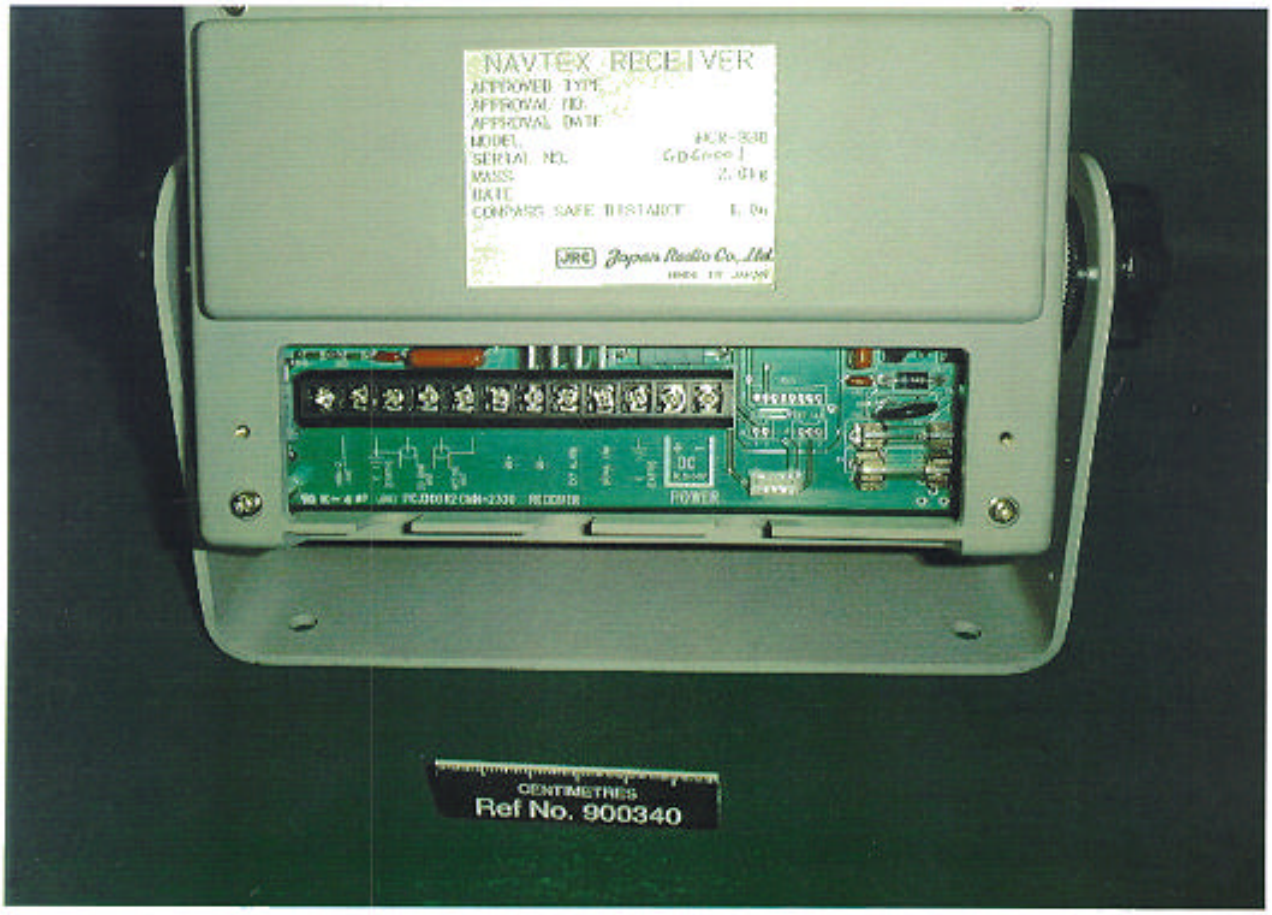

CENTIMETRES
Ref No. 900340
NAVTEX RECEIVER
APPROVED TYPE
APPROVAL NO.
APPROVAL DATE
MODEL NCR-330
SERIAL NO. GD60001
MASS 2.0kg
DATE
COMPASS SAFE DISTANCE 1.0m
JRC Japan Radio Co., Ltd.
MADE IN JAPAN

Label View

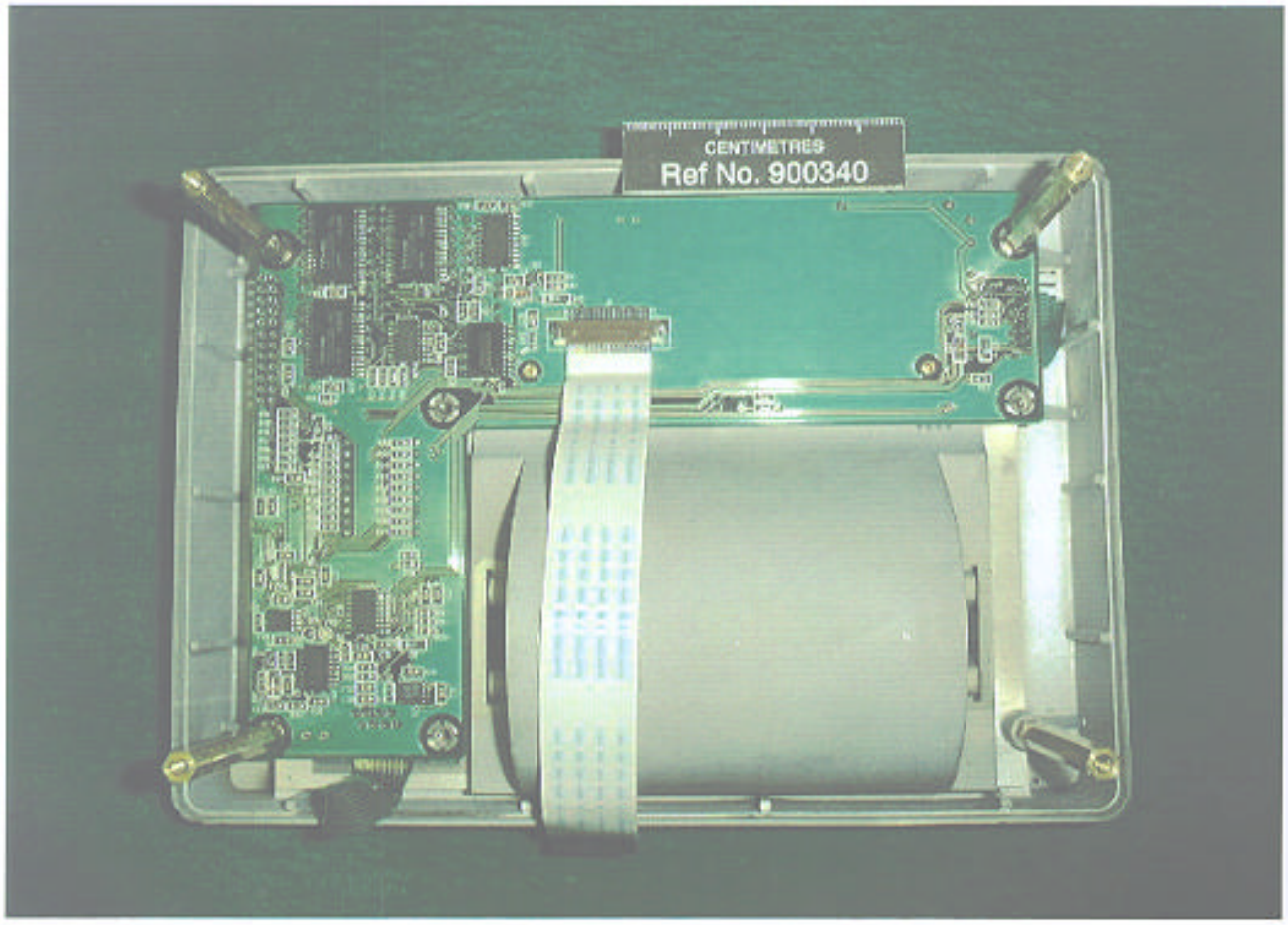
Front View- Lid Removed

Front View - Lid Removed - Paper Removed

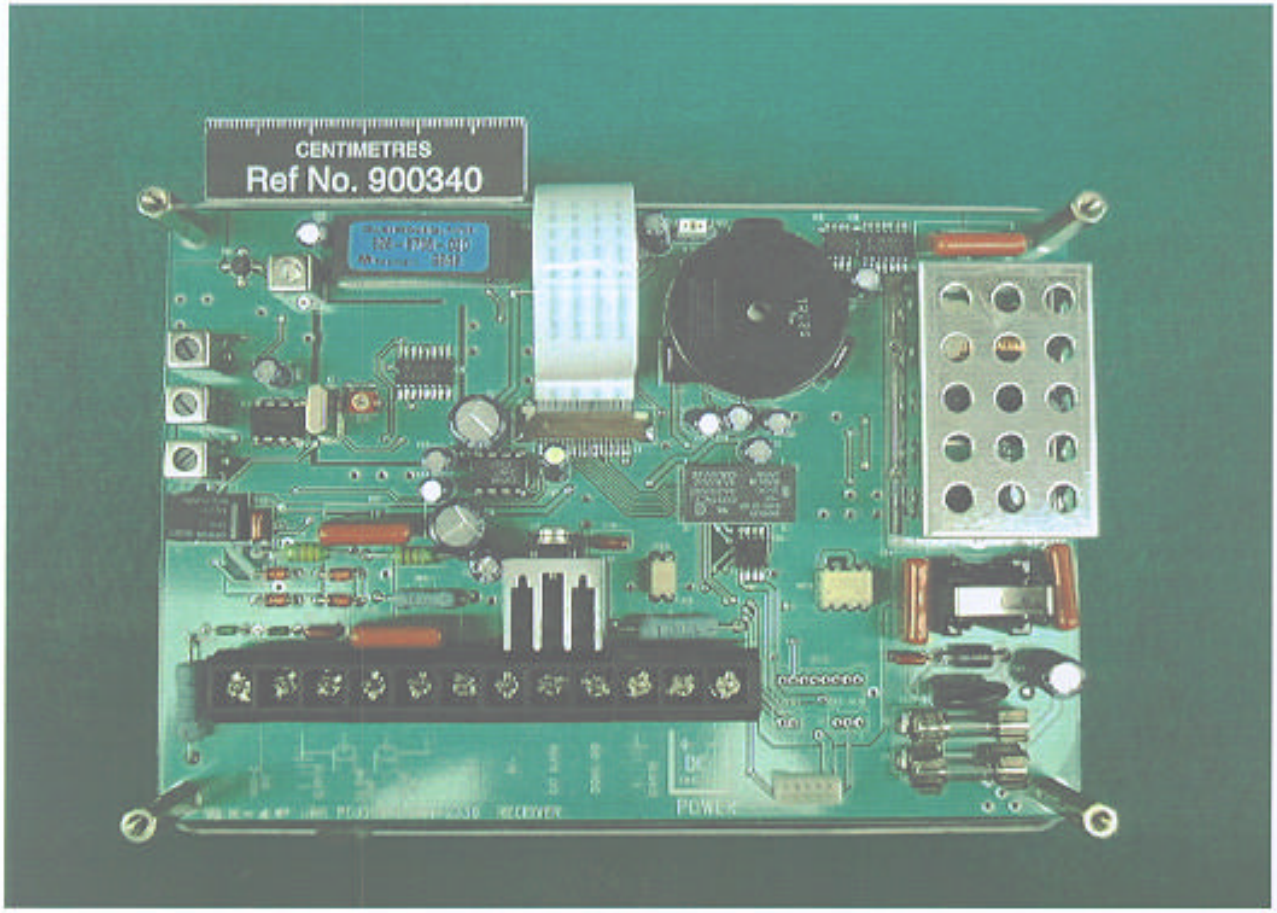
Internal View No. 1



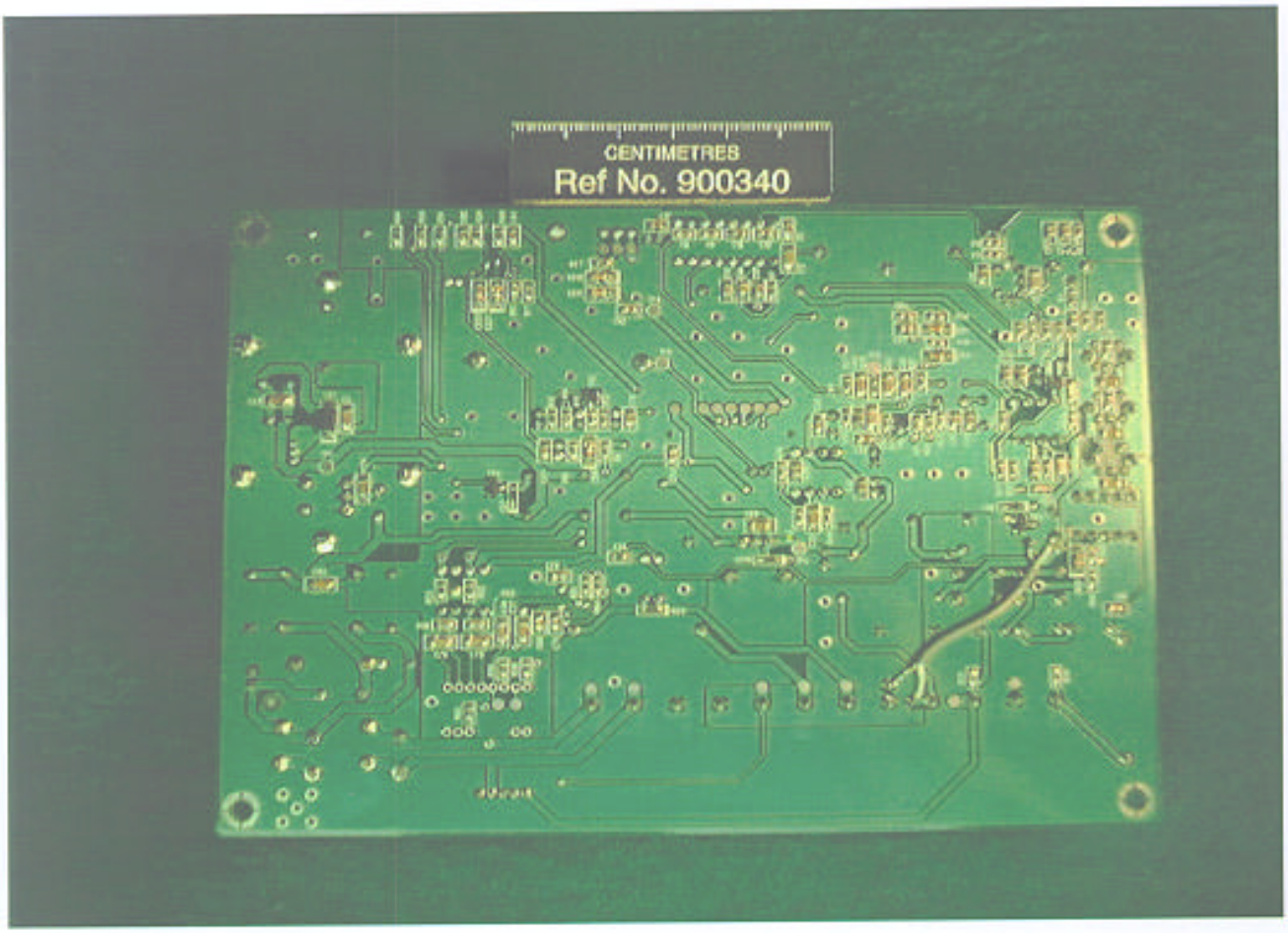
Internal View No. 2



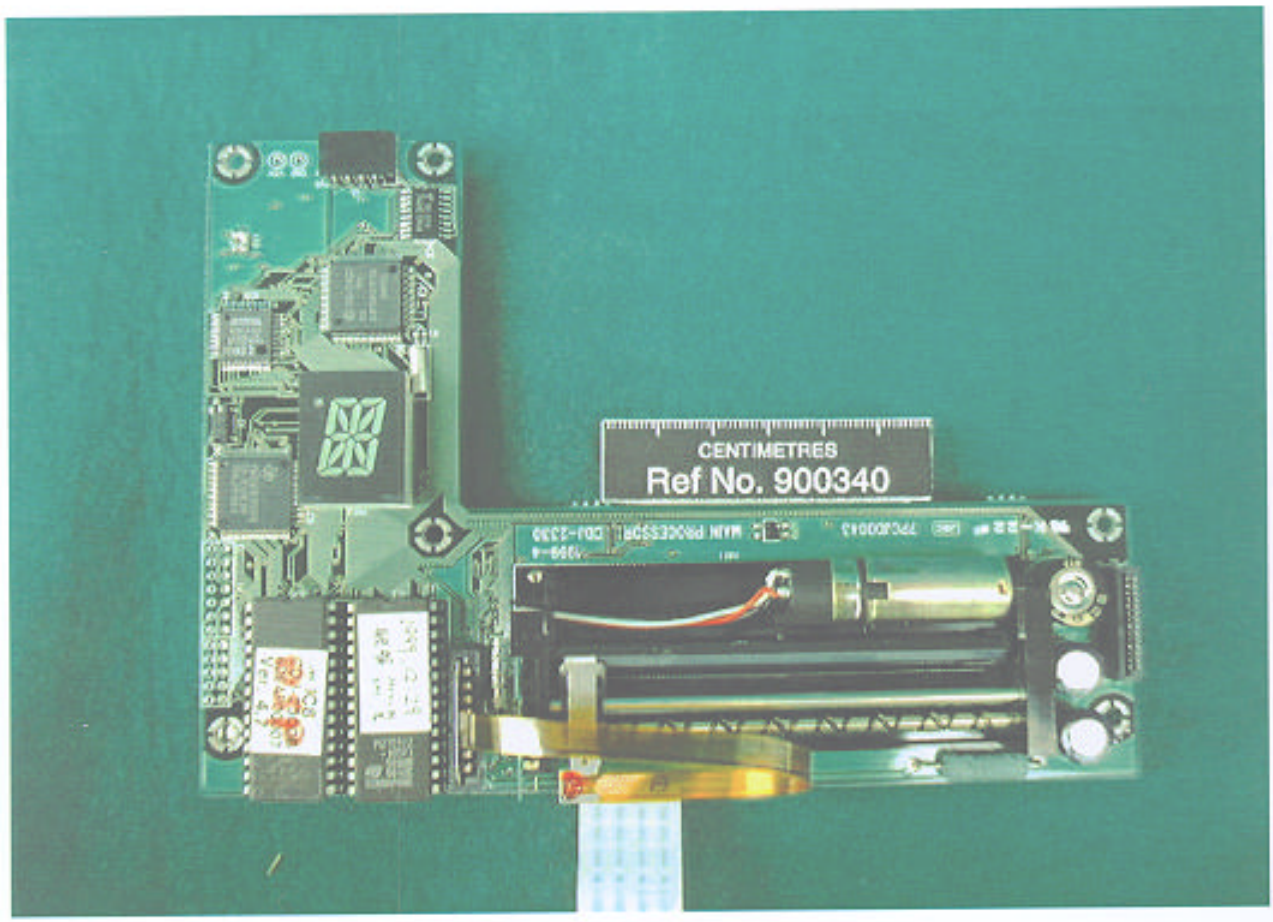
Internal View No. 3



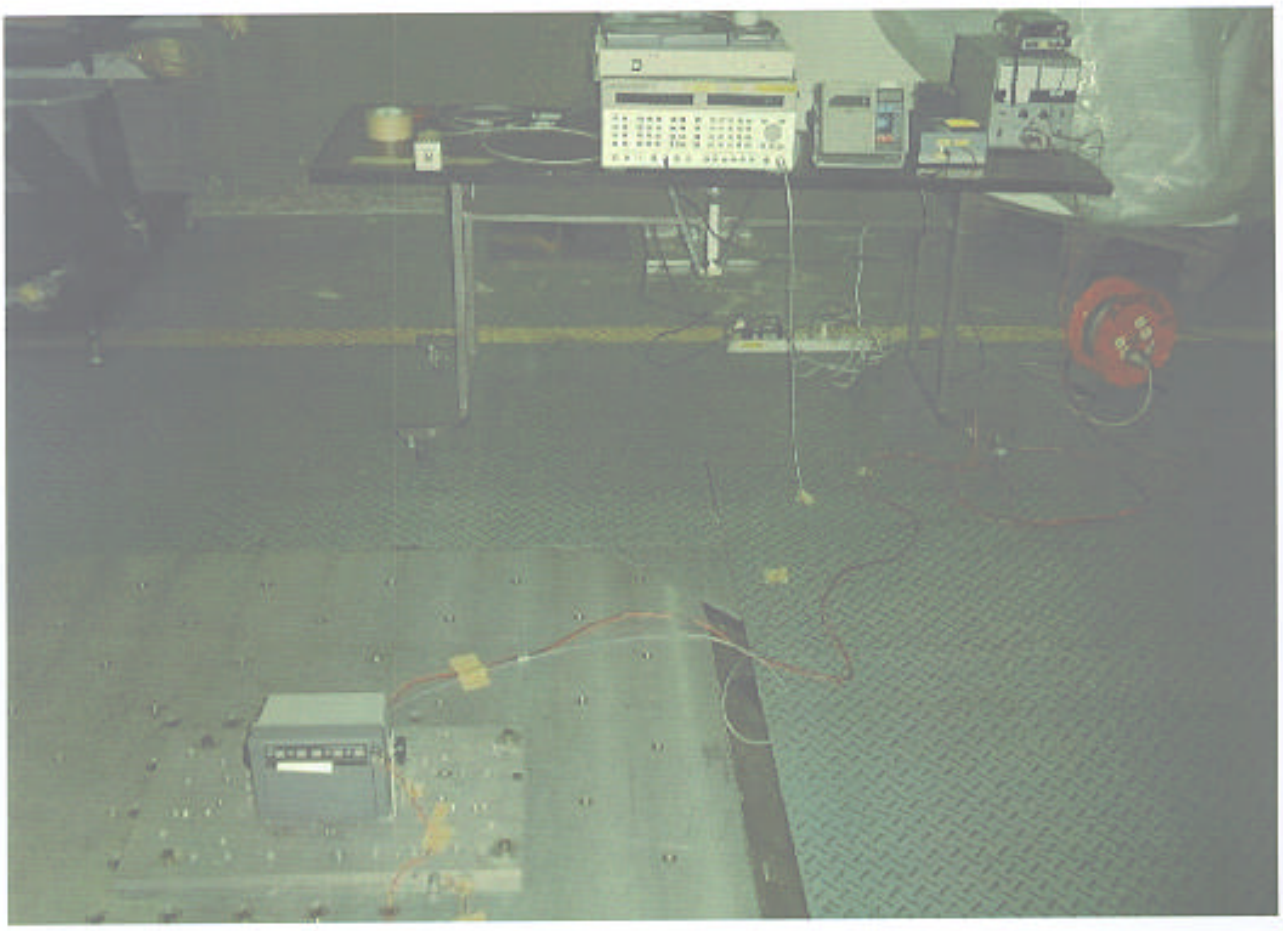
Internal View No. 4



Internal View No. 5

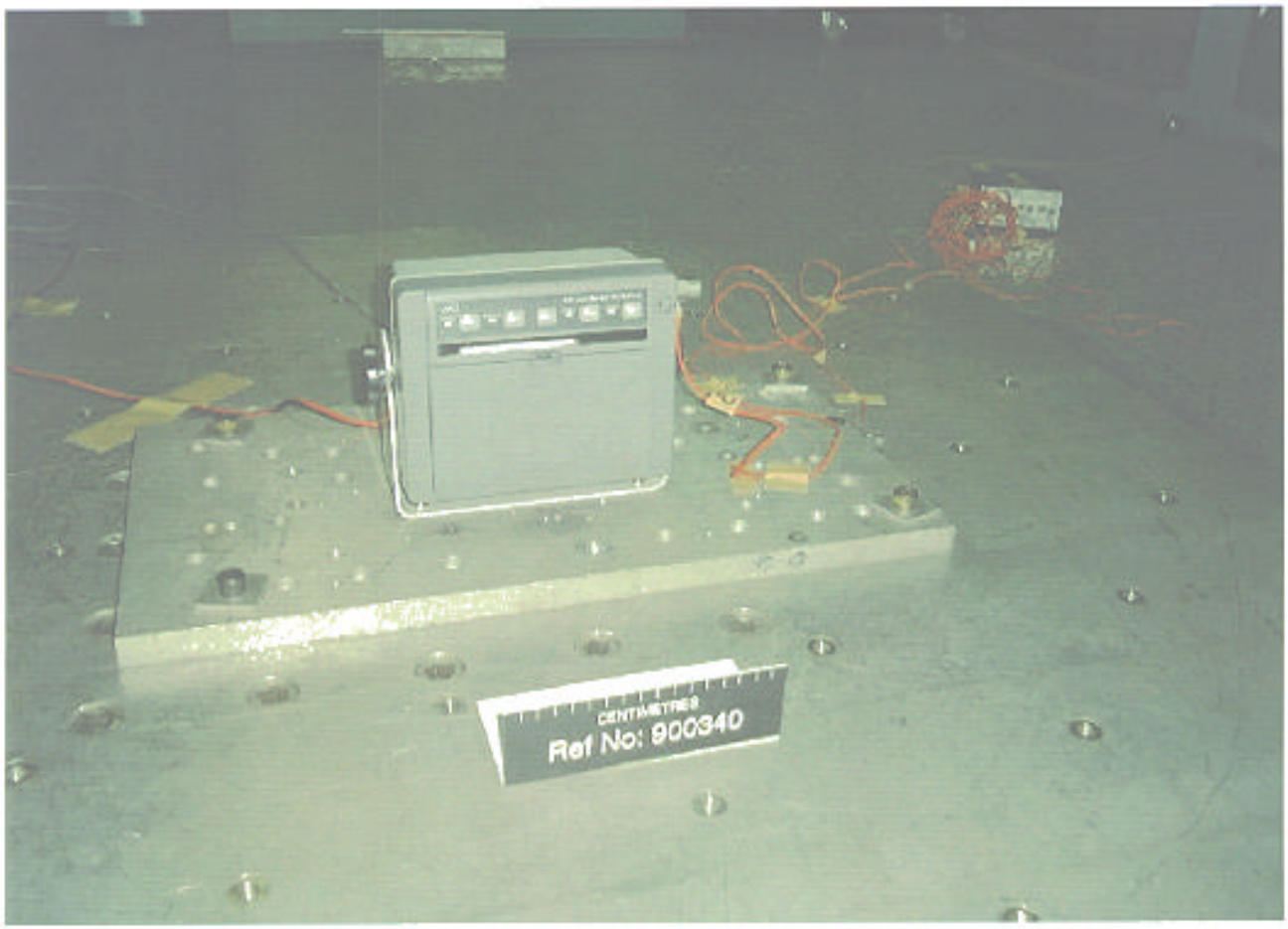


Internal View No. 6

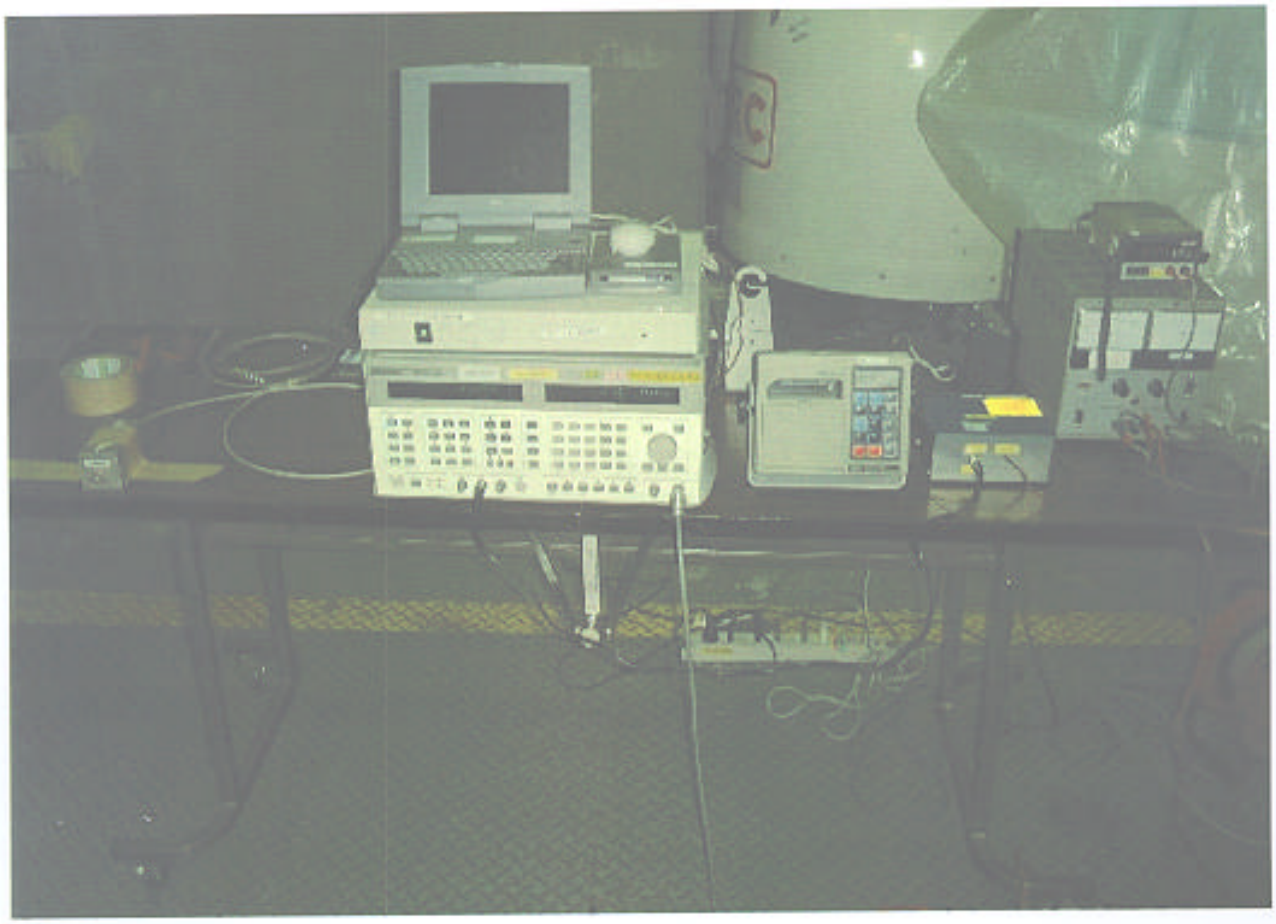


View No. 1 of NCR 330 during Vibration Test

View No. 2 of NCR 330 during Vibration Test



View No. 3 of NCR 330 during Vibration Test



View of Test Equipment Set Up during Vibration Test

A N N E X A

SUPPLEMENTARY INFORMATION

MANUFACTURERS DECLARATION

TO: WHOM IT MAY CONCERN

SUBJECT: MANUFACTURERS DECLARATION FOR TYPE APPROVAL OF NAVTEX RECEIVER

MODEL: NCR-330 NAVTEX RECEIVER

MANUFACTURER: JAPAN RADIO CO.,LTD.
5-1-1 Shimorenjyaku, Mitaka City
Tokyo 181, Japan

This is the declaration for model NCR-330 NAVTEX RECEIVER complies with the requirements of the mould growth test contained in the paragraph 5.1.9 of IEC1097-6/1995.

JAPAN RADIO CO.,LTD.

E. Kobayashi

E. Kobayashi, Manager,
Maritime Communications Section I
Engineering Department I
Marine Electronics Division

MOULD GROWTH TEST

All materials used for NCR-330 NAVTEX RECEIVER had been tested with similer equipment.

- The similer equipment （ LIFE BOAT RADIO -- Model: JSL-5A ） had been performed mould growth test.
- All of the materials used for NCR-330 NAVTEX RECEIVER are included in those used for JSL-5A LIFE BOAT RADIO.
- The test method of mould grouth used for JSL-5A was based on MPT1204 which is old specification in UK. And the test method contained in MPT1204 is the same method as EN60945.

Therefore attached test report for JSL-5A LIFE BOAT RADIO is satisfactory to show that NCR-330 NAVTEX RECEIVER complies with the requirements of this test.

Note:

Materials used for NCR-330 NAVTEX RECEIVER

1. ABS
2. Rubber
3. Metal（a kind of iron）
4. Brass
5. Print circuit board with electric parts

Japan Food Research Laboratories

AUTHORIZED BY THE JAPANESE GOVERNMENT

TOKYO HEAD OFFICE : 52-1, MOTOYOYOGI-CHO, SHIBUYA-KU, TOKYO
OSAKA BRANCH : 3-1, TOYOTSU-CHO, SUITA-SHI, OSAKA

R E P O R T

(ANALYSIS CERTIFICATE)

No. 14050937-2

Requested by : JAPAN RADIO CO., LTD.

Sample : JSL-5 PORTABLE LIFEBOAT RADIO

Date of Assay : Jul. 11, 1981

Laboratory No. 1

Received : May 25, 1981

Mold Resistance Test

1. Purpose of test

A mold resistance test was carried out on the samples in accordance with MTP Standards and JIS Z2911.

2. Outline of test

1) Test strains

Aspergillus niger
Aspergillus terreus
Aureobacidium pullulans
Paecillomyces varioti
Penicillium funiculosum
Penicillium citrinum
Scopulariopsis brevicaulis
Trichoderma viride

2) Preparation of mixed suspension of mold spores

The above strains were cultured in respective potato-dextrose agar slants to sufficiently form mold spores. After the suspensions of the respective mold spores were prepared by suspending these mold spores in sterilized solutions of 0.005 % sodium dioctyl sulfosuccinate, equal amounts of these suspensions were mixed together to prepare a mixed suspension of mold spores.

3) Sample treatment and result judgement

The respective samples were uniformly sprayed with the mixed mold spore suspension, and then kept at 29±1°C and a relative humidity not lower than 95 % for a period of 28 days, during which period the samples were visually observed of the mold growth on them at intervals of 7 days

- continued on page 2 -

The mold growth was judged according to the following indications ;

Indication	Mold growth
A	no growth observed
B	slight growth observed
C	mold growth observed on less than a half of the surface
D	mold growth observed on more than a half of the surface
E	mold growth observed on the entire surface

3. Test results

The test results are shown in the following table ;

Culture period	7 days	14 days	21 days	28 days
Judgement	A	A	A	A

The photographs of the samples before the test and during the test in the incubator are attached.

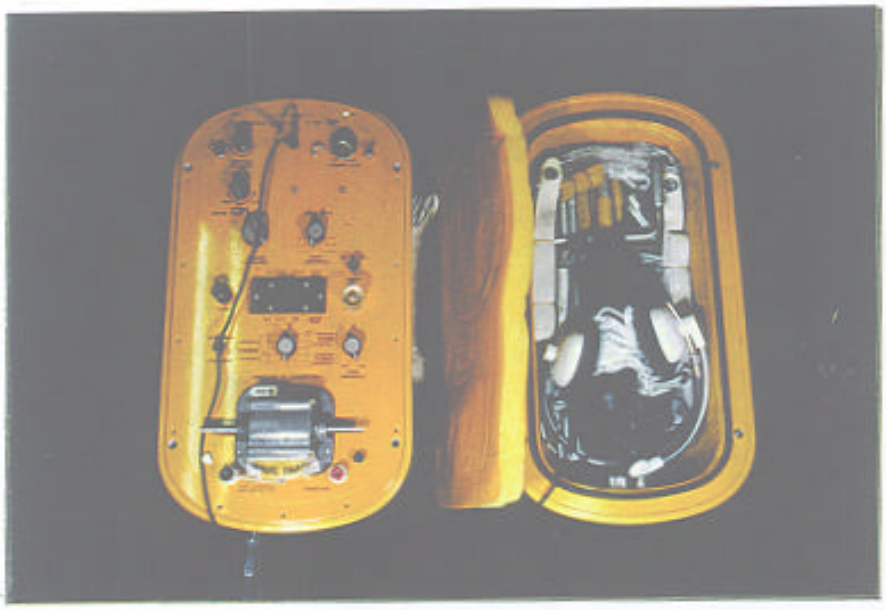
- The end -

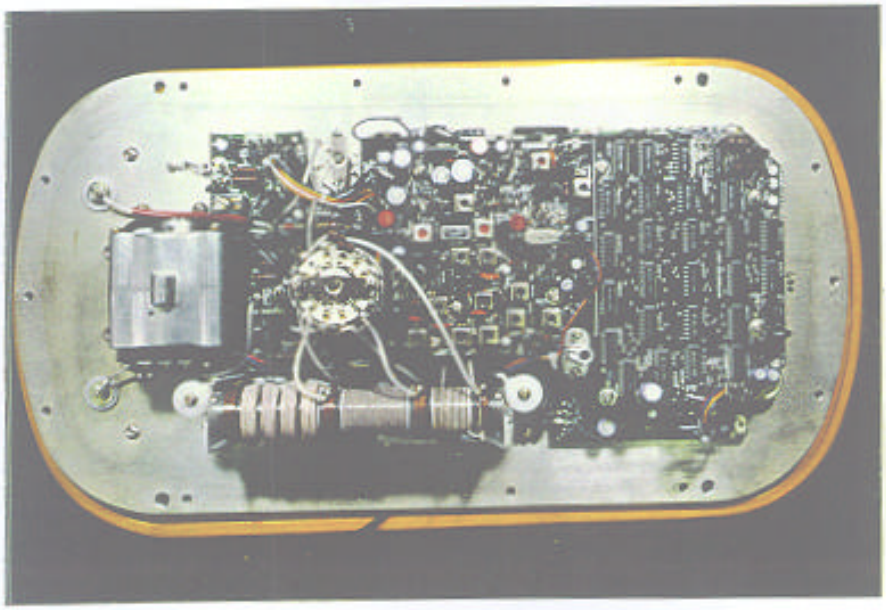
Japan Food Research Laboratories

H. Uchibe Inspector

ライフボート無線機 408

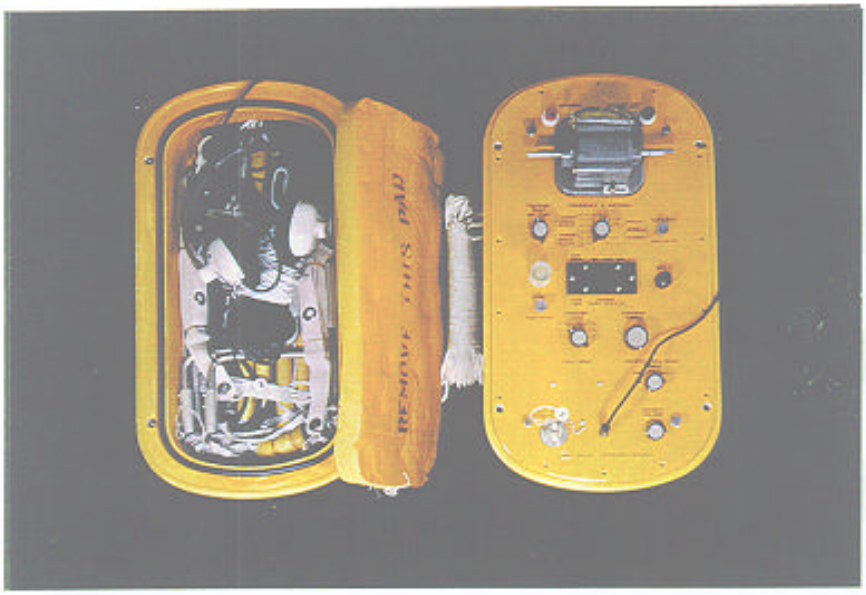
<Before the test>
Life Boat Radio 408

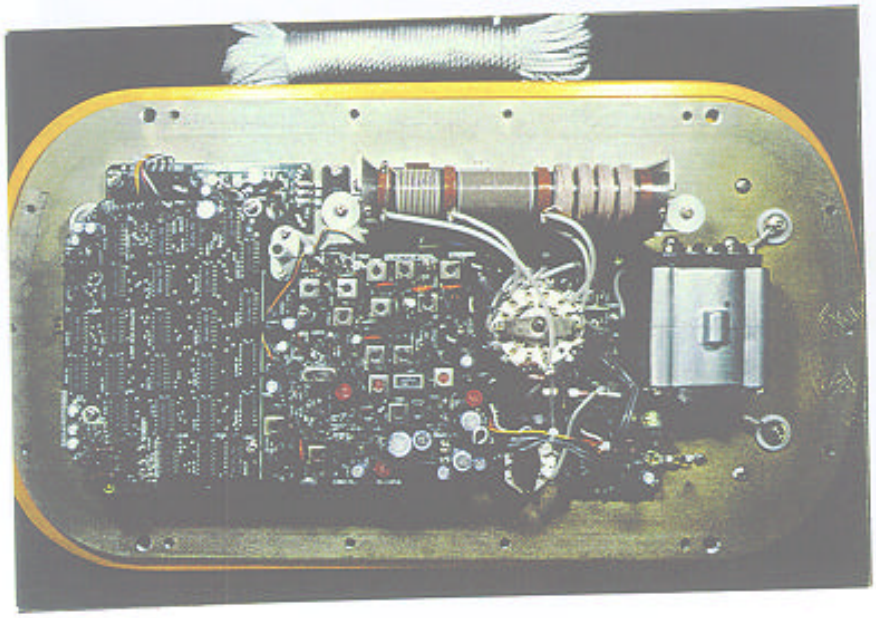




〈試験開始前〉
ライフボート無線機 407

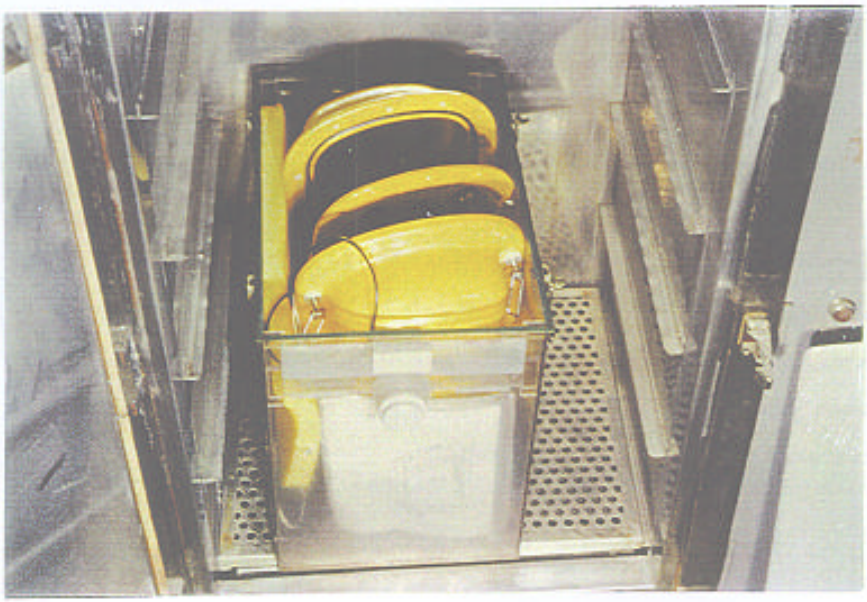
<Before the test>
Life Boat Radio 407





〈ふらん器内試験中〉
< During the test >

ライフボート無線機
407
Life Boat Radio
407



ライフボート無線機
408
Life Boat Radio
408

MANUFACTURERS DECLARATION

TO: WHOM IT MAY CONCERN

SUBJECT: MANUFACTURERS DECLARATION FOR TYPE APPROVAL OF NAVTEX RECEIVER

MODEL: NCR-330 NAVTEX RECEIVER

MANUFACTURER: JAPAN RADIO CO.,LTD.
5-1-1 Shimorenjyaku, Mitaka City
Tokyo 181, Japan

This is the declaration for model NCR-330 NAVTEX RECEIVER complies with the requirements of the corrosion test contained in the paragraph 8.12 of EN60945/1997 and in the paragraph 5.1.9 of IEC1097-6/1995.

This equipment has been tested in accordance with the above specifications.

JAPAN RADIO CO.,LTD.

E. Kobayashi

E. Kobayashi, Manager,
Maritime Communications Section 1
Engineering Department 1
Marine Electronics Division

CORROSION TEST

The corrosion test was conducted on the basis of EN60945. The method of measurement described in EN60945.

DESCRIPTION OF TEST

NCR-330 Navtex receiver had been placed in the chamber described below and subjected to a saline environment as stipulated in EN60945 clause 8.12.2 for 2 hours.

At the end of the spraying period, the EUT had been placed in a chamber. The conditions as stipulated in EN60945 clause 8.12.2 were maintained for seven days.

NCR-330 had been subjected to a test comprising four spraying periods, each of duration 2 h, with a storage period of seven days after each.

On completion of the above test, EUT were visually examined and it was confirmed that there were no undue deterioration or corrosion of the metal parts, finishes to the naked eye. The results were prints taken (copies included).

Salt spray instrument:
It is internationally accepted apparatus for evaluating corrosion resistance of metal finishing, anodized aluminum, rust preventing oil and electric parts.

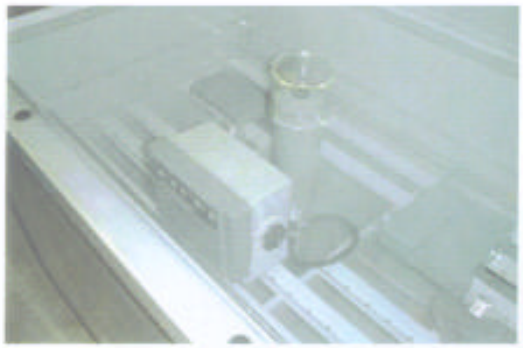
1.	Model	CASSER- Ⅱ R-ISO-3
2.	Manufacturer	SUGA TEST INSTRUMENTS CO., LTD.
3.	Applicable standards	JIS D0201, H8502, H8610, H8611, H8681, H8617, K5400, Z2371 ISO 3768, 3769, 3770/ASTM B117, B258
4.	Dimensions	1540mm (W) × 860mm (D) × 1260mm (H)

Chanber for storage :

1. Model PL-3 PLATINOUS
2. Manufacturer TABAI
3. Number 030-0117

1. Corrosion test

1-1. Spraying



1-2. Storage

2. Test results

2-1. NCR-330 NAVTEX RECEIVER (After test)

2-2. P.C. Board (After test)