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Report On

Limited Radio Testing of the
Yaesu UK Ltd GX-1300E
In accordance with IEC 62238

COMMERCIAL-IN-CONFIDENCE

Document 75928073 Report 04 Issue 1

February 2015



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PREPARED FOR

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PREPARED BY

A handwritten signature in black ink, appearing to read 'N. Bennett', written over a horizontal line.

Natalie Bennett
Senior Administrator, Project Support

APPROVED BY

A handwritten signature in blue ink, appearing to read 'Ryan Henley', written over a horizontal line.

Ryan Henley
Authorised Signatory

DATED

05 February 2015





CONTENTS

Section	Page No
1	REPORT SUMMARY 3
1.1	Introduction 4
1.2	Brief Summary of Results 5
1.3	Application Form 6
1.4	Product Information 10
1.5	Deviations from the Standard 11
1.6	Modification Record 11
1.7	General comments 11
2	TEST DETAILS 12
2.1	Test of Generated Call Sequences 13
2.2	Multiple Watch Characteristics 14
2.3	DSC Receiver Adjacent Channel Selectivity 15
2.4	DSC Receiver Intermodulation Response 16
2.5	DSC Receiver Spurious Emissions 17
2.6	Reaction to VTS and AIS Channel Management DSC Transmissions 18
2.7	Simultaneous Reception 19
3	TEST EQUIPMENT USED 20
3.1	Test Equipment Used 21
3.2	Measurement Uncertainty 24
4	PHOTOGRAPHS 25
4.1	Photographs of Equipment Under Test (EUT) 26
5	ACCREDITATION, DISCLAIMERS AND COPYRIGHT 27
5.1	Accreditation, Disclaimers and Copyright 28



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SECTION 1

REPORT SUMMARY

Limited Radio Testing of the
Yaesu UK Ltd GX-1300E
In accordance with IEC 62238



1.1 INTRODUCTION

The information contained in this report is intended to show the verification of Limited Radio Testing of the Yaesu UK Ltd GX-1300E to the requirements of IEC 62238.

Objective	To perform Radio Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Yaesu UK Ltd
Model Number(s)	GX-1300E
Serial Number(s)	L74C010001
Manufacturer Declared Variant	GX-1300
Number of Samples Tested	1
Test Specification/Issue/Date	IEC 62238 (2003-03)
Incoming Release Date	Application Form 21 November 2014
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	5714 24 September 2014
Start of Test	25 November 2014
Finish of Test	23 January 2015
Name of Engineer(s)	M Russell S Bennett



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with IEC 62238 is shown below.

Section	Spec Clause	Test Description	Result	Comments/Base Standard
Transmit				
2.1	8.14	Test of Generated Call Sequences	Pass	
2.2	9.13	Multiple Watch Characteristics	Pass	
2.3	10.3	DSC Receiver Adjacent Channel Selectivity	Pass	
2.4	10.5	DSC Receiver Intermodulation Response	Pass	
2.5	10.7	DSC Receiver Spurious Emissions	Pass	
2.6	10.9	Reaction to VTS and AIS Channel Management DSC Transmissions	Pass	
2.7	10.10	Simultaneous Reception	Pass	



1.3 APPLICATION FORM

EQUIPMENT DESCRIPTION	
Model Name/Number	Eclipse
Part Number	GX-1300E
Technical Description (Please provide a brief description of the intended use of the equipment)	EUT is a marine band VHF ClassD Fixed Mount transceiver designed for use in the European Marine Leisure Market

EXTREME TEMPERATURE RANGE (over which equipment is to be type tested)	
<input type="checkbox"/>	Not Applicable (no extreme temperature testing required)
<input checked="" type="checkbox"/>	Category I (General)
<input type="checkbox"/>	Category II (Portable equipments)

TYPE OF EQUIPMENT			
<input checked="" type="checkbox"/> Fixed Station	<input type="checkbox"/> Transmitter	<input checked="" type="checkbox"/> Simplex	<input type="checkbox"/> Integral Antenna
	<input type="checkbox"/> Receiver	<input type="checkbox"/> Duplex	<input checked="" type="checkbox"/> Single Antenna
<input type="checkbox"/> Mobile Station	<input checked="" type="checkbox"/> Transceiver		<input type="checkbox"/> Two Antenna Connector
			<input type="checkbox"/> Multiple Antenna Connectors No.
<input type="checkbox"/> Portable Station	<input type="checkbox"/>		
<input type="checkbox"/> Transponder (Tag)	<input type="checkbox"/> Active	<input type="checkbox"/> Passive	

TRANSMITTER TECHNICAL CHARACTERISTICS		
FREQUENCY CHARACTERISTICS		
Transmitter frequency alignment range	156.025 to 157.425	MHz
Transmitter channel switching frequency range	156.025 to 157.425	MHz
Channel Separation (Channel Bandwidth):	25KHz	
State the maximum number of channels over which the equipment can operate:	55	



TRANSMITTER RF POWER CHARACTERISTICS			
Maximum rated transmitter output power as stated by manufacturer (if applicable)			
25	W	At transmitter permanent external 50 Ω RF output connector	
and/or		W Effective radiated power (for equipment with integral antenna)	
Minimum rated transmitter output power as stated by manufacturer (if applicable)			
1	W	At transmitter permanent external 50 Ω RF output connector	
and/or		W Effective radiated power (for equipment with integral antenna)	
Is transmitter intended for :			
Continuous duty		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Intermittent duty only		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
If intermittent duty state DUTY CYCLE 25% Duty Cycle			
Transmitter ON	1	Seconds	Transmitter OFF 3 Seconds

TRANSMITTER - MODULATION			
Amplitude	<input type="checkbox"/>	Other	<input type="checkbox"/>
Frequency	<input type="checkbox"/>	Details :	16K0G3E & 16K0G2B
Phase	<input checked="" type="checkbox"/>	Channel Spacing	
Can the transmitter be operated without modulation? * See definition below		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Wideband		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Narrowband		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<u>Definition</u>			
Narrowband: Equipment to be used in a non-channelized continuous frequency band with an occupied bandwidth of equal or less than 25kHz, or equipment to be used in a channelized frequency band with a channel spacing of equal or less than 25 kHz			
Note: For equipment to be used in a non-channelized frequency band by the regulation the channel spacing of the equipment is defined by the provider.			
Modulation input signal level for 60% of maximum deviation at			
at			
Microphone socket	mV	Impedance	2000Ohms
Accessory socket	mV	Impedance	1200Ohms
Other (4)	mV	Impedance	1200Ohms
Lowest audio modulation frequency transmitted by the equipment		300Hz	



RECEIVER TECHNICAL CHARACTERISTICS	
FREQUENCY CHARACTERISTICS	
Receiver frequency alignment range	156.050 to 162.000 MHz
Receiver channel switching frequency range	156.050 to 162.000 MHz
Channel Separation (if applicable)	25KHz
State the maximum number of channels over which the equipment can operate:	
Receiver Category	

POWER SOURCE	
<input type="checkbox"/> AC mains	State voltage
AC supply frequency (Hz)	
VAC	
Max Current	
Hz	
<input type="checkbox"/> Single phase	<input type="checkbox"/> Three phase
And / Or	
<input checked="" type="checkbox"/> External DC supply	
Nominal voltage 13.8 V	Max Current 25 A
Extreme upper voltage 16.65 V	
Extreme lower voltage 11.04 V	
Battery	
<input type="checkbox"/> Nickel Cadmium	<input type="checkbox"/> Lead acid (Vehicle regulated)
<input type="checkbox"/> Alkaline	<input type="checkbox"/> Leclanche
<input type="checkbox"/> Lithium	<input type="checkbox"/> Other Details :
Volts nominal.	
End point voltage as quoted by equipment manufacturer	V

AUTOMATIC EQUIPMENT SWITCH OFF	
If the equipment is designed to automatically switch off at a predetermined voltage level which is higher or lower in value than the battery minimum and minimum calculated values this shall be clearly stated.	
<input checked="" type="checkbox"/> Applies	11.4 V cut-off voltage
<input type="checkbox"/> Does not apply	



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ALIGNMENT RANGE

The definition of the alignment range AR0, AR1, AR2 and AR3 is given in subclause 4.1.3 of the Standard. The applicant should ensure that the sample equipment(s) submitted in (are) operational on the appropriate frequencies as given in subclauses 4.1.4 through to 4.1.10 and tick the appropriate box.

The definition of the alignment range AR1 and AR2 are given in Sub Clauses 3.1.2 and 3.1.3 of the Standard. The applicant should ensure that the sample equipment(s) submitted are operational on the appropriate channel(s) as given in Sub Clauses 3.1.5 through to 3.1.11 and tick the appropriate box.

- 4.1.4 One sample single channel equipment of category AR0 ☐
- or 4.1.5 Two samples of single channel equipment of category AR1 ☐
- or 4.1.6 Three samples of single channel equipment of category AR2 ☐
- or 4.1.7 Four or more samples of single channel equipment of category AR3 ☐
- 3.1.5 One sample single channel equipment of category AR1 ☐
- or 3.1.6 Three samples of single channel equipment of category AR2 ☐
- or 3.1.7 One sample two channel equipment of category AR1 ☐
- or 3.1.8 Three samples of two channel equipment of category AR2 ☐
- or 3.1.9 One sample multichannel equipment of category AR1 ☐
- or 3.1.10 Three samples of multichannel equipment of category AR2 ☐
- or 3.1.11 One sample of multichannel equipment of category AR2 ☐
- where the switching range equals the alignment range

If more than one option of the equipment is being submitted with different Type Designations, samples should be provided in accordance with the Standard.

CHANNEL IDENTIFICATION

Each equipment, whether one or more submitted for tests shall carry clear identification (such as a serial number), together with the frequencies associated with the channel identification displayed on the equipment.

Equipment Identification eg Serial Number	Channel No.	Transmit Nominal Freq MHz	Receive Nominal Freq MHz

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: Paul Bigwood

Position held: Type Approval Consultant

Date: 21st November 2014



1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Yaesu UK Ltd GX-1300E as shown in the photograph below. A full technical description can be found in the manufacturer's documentation.



Equipment Under Test



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1.5 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standard were made during testing.

1.6 MODIFICATION RECORD

Modification 0 - No modifications were made to the test sample during testing.

1.7 GENERAL COMMENTS

All receiver testing was carried out using a resistive load of 2.667 Ω , (8 Ω + 4 Ω in parallel as instructed by the manufacturer.



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SECTION 2

TEST DETAILS

Limited Radio Testing of the
Yaesu UK Ltd GX-1300E
In accordance with IEC 62238



Product Service

2.1 TEST OF GENERATED CALL SEQUENCES

2.1.1 Specification Reference

IEC 62238, Clause 8.14

2.1.2 Equipment Under Test and Modification State

GX-1300E S/N: L74C010001 - Modification State 0

2.1.3 Date of Test

22 January 2015

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Environmental Conditions

Ambient Temperature 20.5°C
Relative Humidity 25.9%

2.1.6 Test Results

Call Sent	Received without error	Telecommand 1	Telecommand 2
Distress	Yes	100	-
All Ships Urgency	Yes	100	126
All Ships Safety	Yes	100	126
Individual Routine	Yes	100	126
Group Routine	Yes	100	126

Limit Clause 8.14.3

The requirements of ITU-R Recommendation M.493-10 regarding message composition and content shall be met.

The generated call shall be analysed with the calibrated apparatus for correct configuration of the signal format, including time diversity.

It shall be verified that, after transmission of a DSC call, the transmitter re-tunes to the original channel. However, in the case of a distress call, the transmitter shall tune to channel 16 and automatically select the maximum power.



2.2 MULTIPLE WATCH CHARACTERISTICS

2.2.1 Specification Reference

IEC 62238, Clause 9.13

2.2.2 Equipment Under Test and Modification State

GX-1300E S/N: L74C010001 - Modification State 0

2.2.3 Date of Test

23 January 2015

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Environmental Conditions

Ambient Temperature 24.5°C
Relative Humidity 24.5 - 25.5%

2.2.6 Test Results

Test Conditions		Scanning Time (s)	Dwell on priority (ms)	Dwell on Additional (s)
T _{nom} (24.5°C)	V _{nom} (12.0 V DC)	1.57	126.67	1.44
T _{min} (-15.0°C)	V _{min} (10.8 V DC)	1.57	126.67	1.44
T _{max} (+55.0°C)	V _{max} (15.6 V DC)	1.56	124.44	1.43

Duplex

Test Conditions		Scanning Time (s)	Dwell on priority (ms)	Dwell on Additional (s)
T _{nom} (24.5°C)	V _{nom} (12.0 V DC)	1.56	124.44	1.44
T _{min} (-15.0°C)	V _{min} (10.8 V DC)	1.56	125.56	1.44
T _{max} (+55.0°C)	V _{max} (15.6 V DC)	1.56	125.56	1.44

Limit Clause 9.13.3

Scanning Period	≤ 2 s
Dwell Time (Priority Channel)	≤ 150 ms
Dwell Time (Additional Channel)	Between 850 ms and 2 s



2.3 DSC RECEIVER ADJACENT CHANNEL SELECTIVITY

2.3.1 Specification Reference

IEC 62238, Clause 10.3

2.3.2 Equipment Under Test and Modification State

GX-1300E S/N: L74C010001 - Modification State 0

2.3.3 Date of Test

1 December 2014 & 23 January 2015

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Environmental Conditions

Ambient Temperature 20.6 - 24.5°C
Relative Humidity 24.5 - 34.7%

2.3.6 Test Results

12.0 V DC Supply

Test Conditions		Bit Error Ratio	
		156.525 MHz	
		+25 kHz	-25kHz
T _{nom} (20.6°C)	V _{nom} (12.0 V DC)	0	0
T _{min} (-15.0°C)	V _{min} (10.8 V DC)	0	0
T _{max} (+55.0°C)	V _{max} (15.6 V DC)	0	0

Limit Clause 10.3.3

The bit error ratio shall be less than 10^{-2}



Product Service

2.4 DSC RECEIVER INTERMODULATION RESPONSE**2.4.1 Specification Reference**

IEC 62238, Clause 10.5

2.4.2 Equipment Under Test and Modification State

GX-1300E S/N: L74C010001 - Modification State 0

2.4.3 Date of Test

1 December 2014

2.4.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Environmental Conditions

Ambient Temperature	20.8°C
Relative Humidity	34.0%

2.4.6 Test Results

12.0 V DC Supply

Frequency Increments of Unwanted Signals	Bit Error Rate
	156.525 MHz
+ 50/100 kHz	0
- 50/100 kHz	0

Limit Clause 10.5.3The BER shall not exceed 10^{-2}



Product Service

2.5 DSC RECEIVER SPURIOUS EMISSIONS**2.5.1 Specification Reference**

IEC 62238, Clause 10.7

2.5.2 Equipment Under Test and Modification State

GX-1300E S/N: L74C010001 - Modification State 0

2.5.3 Date of Test

25 November 2014

2.5.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.5 Environmental Conditions

Ambient Temperature 22.3°C
 Relative Humidity 35.3%

2.5.6 Test Results

12.0 V DC Supply

156.525 MHz

Frequency (MHz)	Spurious Emission Level (nW)
*	

*No emissions were detected within 10 dB below the limit.

Limit Clause 10.7.3

Frequency Range	9 kHz to 2 GHz
Limit	≤2.0 nW (-57.0 dBm)



2.6 REACTION TO VTS AND AIS CHANNEL MANAGEMENT DSC TRANSMISSIONS

2.6.1 Specification Reference

IEC 62238, Clause 10.9

2.6.2 Equipment Under Test and Modification State

GX-1300E S/N: L74C010001 - Modification State 0

2.6.3 Date of Test

22 January 2015

2.6.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.6.5 Environmental Conditions

Ambient Temperature 21.3°C
Relative Humidity 25.9%

2.6.6 Test Results

	Confirm (Y or N)
Not sound an alarm	Y
Not display a message (An accurate informative display is permissible but not required)	Y
Not transmit a response	Y
Not suggest a transmitted response	Y
Not lock up	Y
Not require operator intervention	Y

Limit Clause 10.9.3

The equipment shall not sound an alarm, display a message (an accurate, informative display is permissible but not required), transmit a response or suggest a transmitted response, lock up, or require operator intervention.



Product Service

2.7 SIMULTANEOUS RECEPTION**2.7.1 Specification Reference**

IEC 62238, Clause 10.10

2.7.2 Equipment Under Test and Modification State

GX-1300E S/N: L74C010001 - Modification State 0

2.7.3 Date of Test

23 January 2015

2.7.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.7.5 Environmental Conditions

Ambient Temperature 23.1°C
Relative Humidity 19.9%

2.7.6 Test Results156.525 MHz

SINAD (dB) No DSC Signal	SINAD (dB) DSC Signal Applied	Bit Error Rate
38.2	38.2	0

Limit Clause 10.10.3

SINAD Ratio (dB)	≥ 20 dB in presence of DSC Signal
Bit Error Rate	$\leq 10^{-2}$



Product Service

SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 - Test of Generated Call Sequences					
Modem (VHF DSC)	ICS	PLT02249	120	12	11-Feb-2015
Attenuator 10dB/25W	Weinschel	46-10-43	400	12	4-Jun-2015
Attenuator 10dB/10W	Trilithic	HFP-50N	454	12	15-Aug-2015
Multimeter	Fluke	79 Series III	611	12	1-Sep-2015
Power Supply Unit	Farnell	TSV-70	2043	-	O/P Mon
Attenuator (30dB/50W)	Aeroflex / Weinschel	47-30-34	3164	12	12-Dec-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
Communications Receiver, AM, FM, & WFM	ICOM	IC-R5	3330	-	O/P Mon
Attenuator (30dB, 150W)	Narda	769-30	3369	12	28-May-2015
Section 2.2 - Multiple Watch Characteristics					
Signal Generator	Rohde & Schwarz	SMY 01	118	12	17-Oct-2015
Temperature Chamber	Montford	2F3	467	-	O/P Mon
Multimeter	Fluke	79 Series III	611	12	1-Sep-2015
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	30-Jan-2015
Power Supply Unit	Farnell	TSV-70	2043	-	O/P Mon
Digital Thermometer	Digitron	T208	2831	12	31-Jul-2015
Attenuator (10dB, 50W)	Aeroflex / Weinschel	47-10-34	3166	12	16-Sep-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
Signal Generator, 9kHz to 3GHz	Rohde & Schwarz	SMA 100A	3494	12	6-Mar-2015
Combiner/Splitter	Weinschel	1506A	3878	12	28-May-2015
Oscilloscope	Agilent Technologies	DSO9104A	4142	12	28-Jul-2015
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	30-Jan-2015
Section 2.3 - DSC Receiver Adjacent Channel Selectivity					
Modulation Analyser	Hewlett Packard	8901B	45	12	26-Aug-2015
Digital Time Analyser	Marconi	2850-BS	80	-	TU
DSC Decoder/Encoder	TUV SUD Product Service	DSC TPOO1	81	-	TU
Signal Generator	Rohde & Schwarz	SMY 01	118	12	17-Oct-2015
Temperature Chamber	Montford	2F3	467	-	O/P Mon
Power Splitter	Weinschel	1506A	606	12	14-Jan-2015
Multimeter	Fluke	79 Series III	611	12	1-Sep-2015
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	30-Jan-2015
Power Supply Unit	Farnell	TSV-70	2043	-	O/P Mon
Multimeter	Iso-tech	IDM101	2424	12	26-Sep-2015
Sensor	Hewlett Packard	11722A	2787	12	29-Aug-2015
Digital Thermometer	Digitron	T208	2831	12	31-Jul-2015
Attenuator (10dB, 50W)	Aeroflex / Weinschel	47-10-34	3166	12	16-Sep-2015
DSC Pre-Emphasis Unit for VHF Modem	TUV SUD Product Service	RAB 200701	3314	12	11-Feb-2015
Signal Generator, 9kHz to 3GHz	Rohde & Schwarz	SMA 100A	3494	12	6-Mar-2015
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	3-Sep-2015
Combiner/Splitter	Weinschel	1506A	3878	12	28-May-2015
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	24-Sep-2015
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	30-Jan-2015



Product Service

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.4 - DSC Receiver Intermodulation Response					
Modulation Analyser	Hewlett Packard	8901B	45	12	26-Aug-2015
Signal Generator	Rohde & Schwarz	SMY 01	49	12	17-Oct-2015
Digital Time Analyser	Marconi	2850-BS	80	-	TU
DSC Decoder/Encoder	TUV SUD Product Service	DSC TPOO1	81	-	TU
Signal Generator	Rohde & Schwarz	SMY 01	118	12	17-Oct-2015
Power Divider	Weinschel	1506A	603	12	28-May-2015
Power Splitter	Weinschel	1506A	606	12	14-Jan-2015
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	18-Jan-2015
Multimeter	Iso-tech	IDM101	2424	12	26-Sep-2015
Sensor	Hewlett Packard	11722A	2787	12	29-Aug-2015
DSC Pre-Emphasis Unit for VHF Modem	TUV SUD Product Service	RAB 200701	3314	12	11-Feb-2015
Signal Generator, 9kHz to 3GHz	Rohde & Schwarz	SMA 100A	3494	12	6-Mar-2015
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	18-Jan-2015
Section 2.5 - Receiver Spurious Emissions					
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	18-Jan-2015
Multimeter	Fluke	79 Series II	3057	12	6-Oct-2015
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	6-Aug-2015
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	3-Sep-2015
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	24-Sep-2015
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	18-Jan-2015
Section 2.6 - Reaction to VTS and AIS Channel Management DSC Transmissions					
Modulation Analyser	Hewlett Packard	8901B	45	12	26-Aug-2015
Signal Generator	Rohde & Schwarz	SMY 01	49	12	17-Oct-2015
Modem (VHF DSC)	ICS	PLT02249	120	12	11-Feb-2015
Multimeter	Fluke	79 Series III	611	12	1-Sep-2015
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	30-Jan-2015
Power Supply Unit	Farnell	TSV-70	2043	-	O/P Mon
Sensor	Hewlett Packard	11722A	2787	12	29-Aug-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
DSC Pre-Emphasis Unit for VHF Modem	TUV SUD Product Service	RAB 200701	3314	12	11-Feb-2015
Attenuator (30dB, 150W)	Narda	769-30	3369	12	28-May-2015
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	30-Jan-2015



Product Service

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.7 - Simultaneous Reception					
Audio Analyser	Hewlett Packard	8903B	44	12	3-Oct-2015
Modulation Analyser	Hewlett Packard	8901B	45	12	26-Aug-2015
Digital Time Analyser	Marconi	2850-BS	80	-	TU
DSC Decoder/Encoder	TUV SUD Product Service	DSC TPOO1	81	-	TU
Signal Generator	Rohde & Schwarz	SMY 01	118	12	17-Oct-2015
Multimeter	Fluke	79 Series III	611	12	1-Sep-2015
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	30-Jan-2015
Power Supply Unit	Farnell	TSV-70	2043	-	O/P Mon
Sensor	Hewlett Packard	11722A	2787	12	29-Aug-2015
Attenuator (10dB, 50W)	Aeroflex / Weinschel	47-10-34	3166	12	16-Sep-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
DSC Pre-Emphasis Unit for VHF Modem	TUV SUD Product Service	RAB 200701	3314	12	11-Feb-2015
Signal Generator, 9kHz to 3GHz	Rohde & Schwarz	SMA 100A	3494	12	6-Mar-2015
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	3-Sep-2015
Combiner/Splitter	Weinschel	1506A	3878	12	28-May-2015
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	24-Sep-2015
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	30-Jan-2015

TU – Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment



3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	MU
Multiple Watch Characteristics	-
DSC Receiver Adjacent Channel Selectivity	± 2.6 dB
DSC Receiver Intermodulation Response	± 1.7 dB
DSC Receiver Spurious Emissions	± 2.0 dB
Reaction to VTS and AIS Channel Management DSC Transmissions	-
Simultaneous Reception	± 1.8 dB
Test of Generated Call Sequences	-



Product Service

SECTION 4

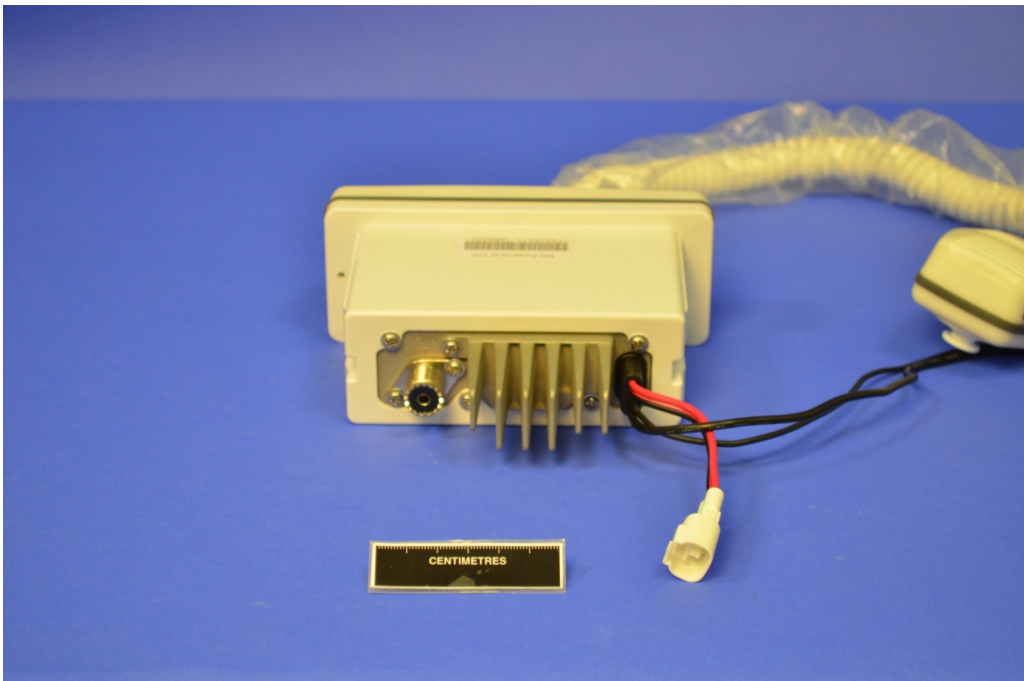
PHOTOGRAPHS



4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)



Front View



Rear View



Product Service

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Product Service

5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA
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