IEC 62238: 2003

TEST REPORT

For

Shenzhen Jiuzhou Himunication Technology Co.,Ltd

3rd Floor,Block C,Huafeng Second Industry Park, Hangcheng Road,Gushu,Xixiang town, Baoan District, Shenzhen, China

Model: HM380S, HM380S-BB
Multiple Models: HM380C, HM380, HM380-BB, HM380C-BB, HM380-BBN

Report Type:	**Product Type:**
Original Report	Marine Radio

Test Engineer:	*Kevin Hu*
Report Number:	RDG170104001-RA
Report Date:	2017-03-14
Reviewed By:	Henry Ding EMC Leader
Prepared By:	Bay Area Compliance Laboratories Corp. (Chengdu) No.5040, Huilongwan Plaza, No. 1, Shawan Road, Jinniu District, ChengDu, Sichuan China Tel: 028-65523123, Fax: 028-65525125 www.baclcorp.com

TABLE OF CONTENTS

GENERAL INFORMATION **4**
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) 4
OBJECTIVE 4
RELATED SUBMITTAL(S)/GRANT(S) 4
TEST METHODOLOGY 4
TEST FACILITY 4
SYSTEM TEST CONFIGURATION **5**
DESCRIPTION OF TEST CONFIGURATION 5
EQUIPMENT MODIFICATIONS 5
SUPPORT EQUIPMENT LIST AND DETAILS 5
SUMMARY OF TEST RESULTS **6**
§7.4 VIBRATION TEST **7**
APPLICABLE STANDARD 7
TEST EQUIPMENT LIST AND DETAILS 7
TEST DATA 7
§7.5 TEMPERATURE TEST **8**
APPLICABLE STANDARD 8
TEST EQUIPMENT LIST AND DETAILS 8
TEST DATA 8
§8.14 TEST OF GENNERATED CALL SEQUENCES **9**
APPLICABLE STANDARD 9
TEST EQUIPMENT LIST AND DETAILS 9
TEST DATA 9
§9.13 MULTIPLE WATCH CHARACTERISTICS **11**
APPLICABLE STANDARD 11
TEST EQUIPMENT LIST AND DETAILS 11
TEST DATA 11
§10.3 DSC RECEIVER ADJACENT CHANNEL SELECTIVITY **13**
APPLICABLE STANDARD 13
TEST EQUIPMENT LIST AND DETAILS 13
TEST DATA 13
§10.5 DSC RECEIVER INTERMODULATION RESPONSE **15**
APPLICABLE STANDARD 15
TEST EQUIPMENT LIST AND DETAILS 15
TEST DATA 15
§10.8 VERIFICATION OF CORRECT DECODING OF VARIOUS TYPES OF DSC CALLS **16**
APPLICABLE STANDARD 16
TEST EQUIPMENT LIST AND DETAILS 16
TEST DATA 16
§10.9 REACTION TO VTS AND AIS CHANNEL MANAGEMENT DSC TRANSMISSIONS **18**
APPLICABLE STANDARD 18
TEST EQUIPMENT LIST AND DETAILS 18
TEST DATA 18
§10.10 SIMULTANEOUS RECEPTION **20**

APPLICABLE STANDARD 20
TEST EQUIPMENT LIST AND DETAILS 20
TEST DATA 20

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Jiuzhou Himunication Technology Co.,Ltd*'s product, model number: HM380S, HM380S-BB *(FCC ID: RIPHM380S)* or the "EUT" in this report was a *Fixed Marine Radio,* which was measured approximately: 20.0 cm (L) x 11.2 cm (W) x 6.0 cm(H), rated with input voltage: DC 13.8V

Notes: This series products model: HM380S, HM380C, HM380, HM380 Non DSC, HM380-BB, HM380S-BB, HM380C-BB, HM380-BBN are identical; Model HM380S and HM380S-BB were selected for fully testing, the detailed information can be referred to the attached declaration which was stated and guaranteed by the applicant.

** All measurement and test data in this report was gathered from production sample serial number: 170104001 (Assigned by BACL, Chengdu). The EUT supplied by the applicant was received on 2017-01-04.*

Objective

This test report is prepared on behalf of *Shenzhen Jiuzhou Himunication Technology Co.,Ltd* in accordance with IEC 62238:2003.

Related Submittal(s)/Grant(s)

No related submittal(s)

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the IEC 62238 First edition 2003-03, Maritime navigation and radiocommunication equipment and systems-VHF radiotelephone equipment incorporating Class “D” Digital Selective Calling (DSC)-Methods of testing and required test results.

Test Facility

The test site used by BACL to collect test data is located in the No.5040, Huilongwan Plaza, No. 1, Shawan Road, Jinniu District, ChengDu, Sichuan China

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a DSC mode in accordance with IEC 62238.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Pro instrument	DC Power Supply	pps3300	/

SUMMARY OF TEST RESULTS

IEC 62238 Rules	Description of Test	Results
§7.4	Vibration Test	Compliance
§7.5	Temperature Tests	Compliance
§8.14	Test of Gennerated Call Sequences	Compliance
§9.13	Multiple Watch Characteristics	Compliance
§10.3	DSC Receiver Adjacent Channel Selectivity	Compliance
§10.5	DSC Receiver Intermodulation Response	Compliance
§10.8	Verification of Correct Decoding of Various Types of DSC Calls	Compliance
§10.9	Reaction to VTS and AIS Channel Management DSC Transmissions	Compliance
§10.10	Simultaneous Reception	Compliance

Note: a brief summary of the tests carried out in accordance with IEC 62238 standards.

§7.4 VIBRATION TEST

Applicable Standard

According to IEC 62238, Clause 7.4

Limit:

The requirement of the performance check shall be met.

Test Equipment List and Details

Manufacturer	Description	Model	Calibration Date	Calibration Due Date
HP	RF Communications Test Set	8920A	2016-08-10	2017-08-09
TOPNOTCH	Vibration Tester	G-0	2016-07-25	2017-07-24

Test Data

Environmental Conditions

External Temperature:	24.3 ℃
Relative Humidity:	37 %
ATM Pressure:	101.2 kPa

The testing was performed on 2017-03-03

Model: HM380S, HM380S-BB

Test Levels:

- 2Hz to 5Hz and up to 13.2Hz with and excursion of ±1.43mm ± 10% (9.8m/s^2 maximum acceleration at 13.2Hz)
- Above 13.2Hz and up to 600Hz with a constant acceleration of 1g
- Nominal test voltage = +13.8Vdc

Endurance Test for 2 hour sat each resonant frequency or frequency with a g level ≥ 5 times the drive g level. If no resonant frequencies or frequency with a g level ≥ 5 times the drive g levelare found endurance test shall be performed at 30Hz.

Test Result: Compliance.

§7.5 TEMPERATURE TEST

Applicable Standard

According to IEC 62238, Clause 7.5

Test Equipment List and Details

Manufacturer	Description	Model	Calibration Date	Calibration Due Date
HP	RF Communications Test Set	8920A	00 247	2016-08-10
BACL	High Temperature Test Chamber	BTH-150	2016-12-02	2017-12-01

Test Data

Environmental Conditions

External Temperature:	24.3 ~25.1 ℃
Relative Humidity:	37 ~42 %
ATM Pressure:	101.2 ~ 101.5 kPa

The testing was performed from 2017-03-01 to 2017-03-04

Model: HM380S, HM380S-BB

Test Result: Compliance. Please refer to following table.

Environmental Conditions		Temperature	Voltage (V_{DC})	Test Period(Hour)	Results
Dry Heat	Storage Test	70±1℃	-	15	Compliance
	Functional Test	55±1℃	15.9	15	Compliance
			13.8	15	Compliance
			11.7	15	Compliance

§8.14 TEST OF GENNERATED CALL SEQUENCES

Applicable Standard

According to IEC 62238, Clause 8.14

Limit:

The requirement of ITU-R Recoomendation M.493-10 regarding message composition and content shell be met.

The generated call shall be anlaysed 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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	RF Communications Test Set	8920A	00 247	2016-08-10	2017-08-09
Aeroflex	Digital Radio Test Set	3920	100636695	2016-09-06	2017-09-05
HP	Signal Generator	8648C	3623A04150	2016-05-23	2017-05-22
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20

Test Data

Environmental Conditions

Temperature:	24.3 ℃
Relative Humidity:	37 %
ATM Pressure:	101.2 kPa

The testing was performed by Kevin Hu on 2017-03-03

Test Result: Compliance. Please refer to following table.

Format specifier	Category	1st telecommand (symbol No.)	2st telecommand (symbol No.)
Distress	-	100	126
All Ships	Distress	100	126
All Ships	Urgency	100	126
All Ships	Safety	100	126
Individual	Urgency	100	126
Individual	Safety	100	126
Individual	Routine	100	126
Group	Routine	100	126

§9.13 MULTIPLE WATCH CHARACTERISTICS

Applicable Standard

According to IEC 62238, Clause 9.13

Limit:

Test Project	Requirement
Scanning Period	≤2s
Dwell Time (Priority Channel)	≤150ms
Dwell Time (Additional Channel)	Betweeen 850 ms and 2s

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	RF Communications Test Set	8920A	00 247	2016-08-10	2017-08-09
Aeroflex	Digital Radio Test Set	3920	100636695	2016-09-06	2017-09-05
HP	Signal Generator	8648C	3623A04150	2016-05-23	2017-05-22
BACL	High Temperature Test Chamber	BTH-150	30024	2016-12-02	2017-12-01
Danphone	Maritime Communications Test Box	Futronic MKII	01363	2016-12-09	2017-12-08

Test Data

Environmental Conditions

Temperature:	24.3 ℃
Relative Humidity:	37 %
ATM Pressure:	101.2 kPa

The testing was performed by Kevin Hu on 2017-03-03.

Test Result: Compliance. Please refer to following table.

Test Conditions		Scanning Tine(s)	Dwell on Priority (ms)	Dwell on Additional (s)
Temperature(°C)	Voltage (V_{DC})			
-15	17.94	1.632	86.5	1.612
-15	13.8	1.630	87.1	1.609
-15	12.42	1.635	88.2	1.602
+25	13.8	1.631	86.9	1.607
+55	17.94	1.638	87.8	1.606
+55	13.8	1.636	88.0	1.601
+55	12.42	1.635	86.9	1.605

§10.3 DSC RECEIVER ADJACENT CHANNEL SELECTIVITY

Applicable Standard

According to IEC 62238, Clause 10.3

Limit:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	RF Communications Test Set	8920A	00 247	2016-08-10	2017-08-09
Aeroflex	Digital Radio Test Set	3920	100636695	2016-09-06	2017-09-05
HP	Signal Generator	8648C	3623A04150	2016-05-23	2017-05-22
BACL	High Temperature Test Chamber	BTH-150	30024	2016-12-02	2017-12-01
Danphone	Maritime Communications Test Box	Futronic MKII	01363	2016-12-09	2017-12-08

Test Data

Environmental Conditions

Temperature:	24.3 ℃
Relative Humidity:	37 %
ATM Pressure:	101.2 kPa

The testing was performed by Kevin Hu on 2017-03-03.

Test Result: Compliance. Please refer to following table.

Test Conditions		Bit Error Ratio	
Temperature(°C)	Voltage (V_{DC})	156.525MHz	
		+25 kHz	-25 kHz
-15	17.94	Less than 10^{-2}	Less than 10^{-2}
-15	13.8		
-15	12.42		
+25	13.8		
+55	17.94		
+55	13.8		
+55	12.42		

§10.5 DSC RECEIVER INTERMODULATION RESPONSE

Applicable Standard

According to IEC 62238, Clause 10.5

Limit:

The BER shall not exceed 10^{-2}

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	RF Communications Test Set	8920A	00 247	2016-08-10	2017-08-09
Aeroflex	Digital Radio Test Set	3920	100636695	2016-09-06	2017-09-05
HP	Signal Generator	8648C	3623A04150	2016-05-23	2017-05-22
Danphone	Maritime Communications Test Box	Futronic MKII	01363	2016-12-09	2017-12-08

Test Data

Environmental Conditions

Temperature:	24.3 ℃
Relative Humidity:	37 %
ATM Pressure:	101.2 kPa

The testing was performed by Kevin Hu on 2017-03-03.

Test Result: Compliance. Please refer to following table.

Frequency Increments of Unwanted Signals	Bit Error Rate
	156.525 MHz
+50/100 kHz	Less than 10^{-2}
-50/100 kHz	Less than 10^{-2}

§10.8 VERIFICATION OF CORRECT DECODING OF VARIOUS TYPES OF DSC CALLS

Applicable Standard

According to IEC 62238, Clause 10.8

Limit:

The requirement of ITU-R Reconmmendation M.493.13(5) regarding message composition and content shall be met.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	RF Communications Test Set	8920A	00 247	2016-08-10	2017-08-09
Aeroflex	Digital Radio Test Set	3920	100636695	2016-09-06	2017-09-05
HP	Signal Generator	8648C	3623A04150	2016-05-23	2017-05-22
Danphone	Maritime Communications Test Box	Futronic MKII	01363	2016-12-09	2017-12-08

Test Data

Environmental Conditions

Temperature:	24.3 ℃
Relative Humidity:	37 %
ATM Pressure:	101.2 kPa

The testing was performed by Kevin Hu on 2017-03-03.

Test Result: Compliance. Please refer to following tables.

Format specifier	Category	1st telecommand (symbol No.)	2st telecommand (symbol No.)
Distress	-	100	126
All Ships	Distress	100	126
All Ships	Urgency	100	126
All Ships	Safety	100	126
Individual	Urgency	100	126
Individual	Safety	100	126
Individual	Routine	100	126
Group	Routine	100	126

	Confirm (Y or N)
Confirm that the decoded call sequences at the output of the receiver have been examined for correct technical format, including error check characteristics:	Y
Error found:	N
Confirm that the checks have been made to ensure accordance between printer output and display:	Y
Error found:	N
It has beenverified that the equipment is capable of switching to a channel identified in the DSC call:	Y

§10.9 REACTION TO VTS AND AIS CHANNEL MANAGEMENT DSC TRANSMISSIONS

Applicable Standard

According to IEC 62238, Clause 10.9

Limit:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	RF Communications Test Set	8920A	00 247	2016-08-10	2017-08-09
Aeroflex	Digital Radio Test Set	3920	100636695	2016-09-06	2017-09-05
HP	Signal Generator	8648C	3623A04150	2016-05-23	2017-05-22
Danphone	Maritime Communications Test Box	Futronic MKII	01363	2016-12-09	2017-12-08

Test Data

Environmental Conditions

Temperature:	24.3 ℃
Relative Humidity:	37 %
ATM Pressure:	101.2 kPa

The testing was performed by Kevin Hu on 2017-03-03.

Test Result: Compliance. Please refer to following table.

	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

§10.10 SIMULTANEOUS RECEPTION

Applicable Standard

According to IEC 62238, Clause 10.10

Limit:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	RF Communications Test Set	8920A	00 247	2016-08-10	2017-08-09
Aeroflex	Digital Radio Test Set	3920	100636695	2016-09-06	2017-09-05
HP	Signal Generator	8648C	3623A04150	2016-05-23	2017-05-22
BACL	High Temperature Test Chamber	BTH-150	30024	2016-12-02	2017-12-01
Danphone	Maritime Communications Test Box	Futronic MKII	01363	2016-12-09	2017-12-08

Test Data

Environmental Conditions

Temperature:	24.3 ℃
Relative Humidity:	37 %
ATM Pressure:	101.2 kPa

The testing was performed by Kevin Hu on 2017-03-03

Test Mode: Transmitting

Test Result: Compliance. Please refer to following table.

SINAD (dB) No DSC Signal	SINAD (dB) DSC Signal Applied	Bit Error Rate
44.5	44.9	Less than 10^{-2}

*******END OF REPORT *******