



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**

|                                              |                                                                                                                                                                                                           |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Report Type:</b><br>Original Report       | <b>Product Type:</b><br>Marine Radio                                                                                                                                                                      |
| <b>Test Engineer:</b> <u>Kevin Hu</u>        | <i>Kevin Hu</i>                                                                                                                                                                                           |
| <b>Report Number:</b> <u>RDG170104001-RA</u> |                                                                                                                                                                                                           |
| <b>Report Date:</b> <u>2017-03-14</u>        |                                                                                                                                                                                                           |
| <b>Reviewed By:</b> <u>EMC Leader</u>        | <i>Henry Ding</i>                                                                                                                                                                                         |
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FINAL

## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The *Shenzhen Jiuzhou Himunication Technology Co.,Ltd's* product, model number: HM380S, HM380S-BB (FCC ID: RIPH380S) 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

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### 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**

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| <b>IEC 62238 Rules</b> | <b>Description of Test</b>                                     | <b>Results</b> |
|------------------------|----------------------------------------------------------------|----------------|
| §7.4                   | Vibration Test                                                 | Compliance     |
| §7.5                   | Temperature Tests                                              | Compliance     |
| §8.14                  | Test of Generated 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 °C   |
| 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 an excursion of  $\pm 1.43\text{mm} \pm 10\%$  ( $9.8\text{m/s}^2$  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 at each resonant frequency or frequency with a g level  $\geq 5$  times the drive g level. If no resonant frequencies or frequency with a g level  $\geq 5$  times the drive g level are 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 °C     |
| 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 <sub>DC</sub> ) | Test Period(Hour) | Results    |
|--------------------------|-----------------|-------------|----------------------------|-------------------|------------|
| Dry Heat                 | Storage Test    | 70±1°C      | -                          | 15                | Compliance |
|                          | Functional Test | 55±1°C      | 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 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.

### 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 °C   |
| 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 | 1 <sup>st</sup> telecommand<br>(symbol No.) | 2 <sup>st</sup> telecommand<br>(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                 | $\leq 2s$             |
| Dwell Time (Priority Channel)   | $\leq 150ms$          |
| Dwell Time (Additional Channel) | Between 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 °C   |
| 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<br>Time(s) | Dwell on Priority<br>(ms) | Dwell on<br>Additional (s) |
|-----------------|----------------------------|---------------------|---------------------------|----------------------------|
| Temperature(°C) | Voltage (V <sub>DC</sub> ) |                     |                           |                            |
| -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**

|                           |           |
|---------------------------|-----------|
| <b>Temperature:</b>       | 24.3 °C   |
| <b>Relative Humidity:</b> | 37 %      |
| <b>ATM Pressure:</b>      | 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 <sub>DC</sub> ) | 156.525MHz                 |                            |
|                 |                            | +25 kHz                    | -25 kHz                    |
| -15             | 17.94                      | Less than 10 <sup>-2</sup> | Less than 10 <sup>-2</sup> |
| -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 °C   |
| 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 Recommendation 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 °C   |
| 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 | 1 <sup>st</sup> telecommand<br>(symbol No.) | 2 <sup>st</sup> telecommand<br>(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 been verified 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 °C   |
| 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) | $\geq 20$ 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 °C   |
| 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 \*\*\*\*\*