

FCC PART 15C TEST REPORT FOR CERTIFICATION  
On Behalf of

Soundmax Electronics Limited

Marine source unit

Model Number: CMS4

FCC ID: 2AB7S-CMS4

Prepared for : Soundmax Electronics Limited  
17/F EU YANG SANG TOWER, 11-15 CHATHAM ROAD, T.S.T,  
KOWLOON, HONG KONG

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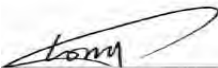
Report Number : ESTE-R1610054  
Date of Test : October 10, 2016~ October 26, 2016  
Date of Report : November 02, 2016

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## Test Report Verification

|                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                       |                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------|
| <b>Applicant:</b>                                                                                                                                                                                 | Soundmax Electronics Limited                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |                                   |
| <b>Address:</b>                                                                                                                                                                                   | 17/F EU YANG SANG TOWER, 11-15 CHATHAM ROAD,<br>T.S.T, KOWLOON, HONG KONG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                       |                                   |
| <b>Manufacturer</b>                                                                                                                                                                               | Soundmax Electronics Limited                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |                                   |
| <b>Address:</b>                                                                                                                                                                                   | 17/F EU YANG SANG TOWER, 11-15 CHATHAM ROAD,<br>T.S.T, KOWLOON, HONG KONG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                       |                                   |
| <b>E.U.T:</b>                                                                                                                                                                                     | Marine source unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                       |                                   |
| <b>Model Number:</b>                                                                                                                                                                              | CMS4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                   |
| <b>Power Supply:</b>                                                                                                                                                                              | DC 12V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                       |                                   |
| <b>Test Voltage:</b>                                                                                                                                                                              | DC 12V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                       |                                   |
| <b>Trade Name:</b>                                                                                                                                                                                | Clarion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Serial No.:                                                                           | -----                             |
| <b>Date of Receipt:</b>                                                                                                                                                                           | October 10, 2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Date of Test:</b>                                                                  | October 10, ~<br>October 26, 2016 |
| <b>Test Specification:</b>                                                                                                                                                                        | FCC Rules and Regulations Part 15 Subpart C:2016<br>ANSI C63.10:2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                   |
| <b>Test Result:</b>                                                                                                                                                                               | <p>The device described above is tested by EST Technology Co., Ltd.. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart C requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd.</p> <p style="text-align: right;"><b>Date:</b> November 02, 2016</p> |                                                                                       |                                   |
| Prepared by:                                                                                                                                                                                      | Tested by:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Approved by:                                                                          |                                   |
|                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                   |
| _____<br>Amy/ Assistant                                                                                                                                                                           | _____<br>Tony.Tang/ Engineer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | _____<br>IcemanHu / Manager                                                           |                                   |
| <b>Other Aspects:</b>                                                                                                                                                                             | None.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                       |                                   |
| Abbreviations: OK/P=passed      fail/F=failed      n.a/N=not applicable      E.U.T=equipment under tested                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                       |                                   |
| This test report is based on a single evaluation of one sample of above mentioned products ,It is not permitted to be duplicated in extracts without written approval of EST Technology Co., Ltd. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                       |                                   |

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

|                            |                                       |
|----------------------------|---------------------------------------|
| <b>Product Name</b>        | : Marine source unit                  |
| <b>Model Number</b>        | : CMS4                                |
| <b>FCC ID</b>              | : 2AB7S-CMS4                          |
| <b>Operation frequency</b> | : 2402MHz~2480MHz                     |
| <b>Number of channel</b>   | : 79                                  |
| <b>Antenna</b>             | : Internal antenna, 4 dBi gain        |
| <b>Modulation</b>          | : BT3.0(GFSK, $\pi/4$ -DQPSK, 8-DPSK) |
| <b>Sample Type</b>         | : Prototype production                |

## 2. SUMMARY OF TEST

### 2.1. Summary of test result

| Description of Test Item                                                                                                                                                             | Standard                                                                        | Results |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------|
| Maximum Peak Output Power                                                                                                                                                            | FCC Part 15: 15.247(b)(1)<br>DA 00-705                                          | PASS    |
| 20dB Bandwidth                                                                                                                                                                       | FCC Part 15: 15.215<br>DA 00-705                                                | PASS    |
| Carrier Frequency Separation                                                                                                                                                         | FCC Part 15: 15.247(a)(1)<br>DA 00-705                                          | PASS    |
| Number Of Hopping Channel                                                                                                                                                            | FCC Part 15: 15.247(a)(1)(iii)<br>DA 00-705                                     | PASS    |
| Dwell Time                                                                                                                                                                           | FCC Part 15: 15.247(a)(1)(iii)<br>DA 00-705                                     | PASS    |
| Radiated Emission                                                                                                                                                                    | FCC Part 15: 15.209<br>FCC Part 15: 15.247(d)<br>ANSI C63.10: 2013<br>DA 00-705 | PASS    |
| Band Edge Compliance                                                                                                                                                                 | FCC Part 15: 15.247(d)<br>DA 00-705                                             | PASS    |
| Power Line Conducted Emissions                                                                                                                                                       | FCC Part 15: 15.207<br>ANSI C63.4: 2003<br>DA 00-705                            | N/A     |
| Antenna requirement                                                                                                                                                                  | FCC Part 15: 15.203                                                             | PASS    |
| Note: 15.207 only signals conducted onto the AC power lines are required to be measured. The equipment is only DC power supply, so "Power Line Conducted Emissions" is not required. |                                                                                 |         |

## 2.2. Test Facilities

EMC Lab : Certificated by CNAL, CHINA  
Registration No.: L5288  
Date of registration: December 07, 2015

Certificated by FCC, USA  
Registration No.: 989591  
Date of registration: November 15, 2016

Certificated by Industry Canada  
Registration No.: 9405A-1  
Date of registration: December 30, 2015

Certificated by VCCI, Japan  
Registration No.: R-3663 & C-4103  
Date of registration: July 25, 2011

Certificated by TUV Rheinland, Germany  
Registration No.: UA 50195514 0001  
Date of registration: January 07, 2011

Certificated by TUV/PS, Shenzhen  
Registration No.: SCN1017  
Date of registration: January 27, 2011

Certificated by Intertek ETL SEMKO  
Registration No.: 2011-RTL-L1-18  
Date of registration: April 28, 2011

Certificated by Siemic, Inc.  
Registration No.: SLCN021  
Date of registration: November 8, 2011

Certificated by Nemko, Hong Kong  
Registration No.: 175193  
Date of registration: May 4, 2011

Name of Firm : EST Technology Co., Ltd.

Site Location : San Tun Management Zone, Houjie Town, Dongguan,  
Guangdong, China

## 2.3. Measurement uncertainty

| Test Item                                               | Uncertainty        |
|---------------------------------------------------------|--------------------|
| Uncertainty for Conduction emission test                | 2.54dB             |
| Uncertainty for Radiation Emission test (30MHz-1GHz)    | 3.62dB             |
| Uncertainty for Radiation Emission test (1GHz to 18GHz) | 4.86dB             |
| Uncertainty for radio frequency                         | $7 \times 10^{-8}$ |
| Uncertainty for conducted RF Power                      | 0.20dB             |
| Uncertainty for Power density test                      | 0.26dB             |

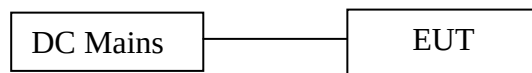
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 2.4. Assistant equipment used for test

2.4.1. N/A

## 2.5. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 m or (1.5m) eter high above ground. EUT was be set into BT test mode by software before test.



(EUT: Marine source unit)



## 2.6. Test mode

The test software was used to control EUT work in Continuous TX mode, and select test channel, wireless mode

| Mode   | Channel | Frequency |
|--------|---------|-----------|
| GFSK   | Low     | 2402MHz   |
|        | Middle  | 2441MHz   |
|        | High    | 2480MHz   |
| 8-DPSK | Low     | 2402MHz   |
|        | Middle  | 2441MHz   |
|        | High    | 2480MHz   |

## 2.7. Channel List for Bluetooth

| Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) |
|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|
| 1           | 2402            | 2           | 2403            | 3           | 2404            | 4           | 2405            |
| 5           | 2406            | 6           | 2407            | 7           | 2408            | 8           | 2409            |
| 9           | 2410            | 10          | 2411            | 11          | 2412            | 12          | 2413            |
| 13          | 2414            | 14          | 2415            | 15          | 2416            | 16          | 2417            |
| 17          | 2418            | 18          | 2419            | 19          | 2420            | 20          | 2421            |
| 21          | 2422            | 22          | 2423            | 23          | 2424            | 24          | 2425            |
| 25          | 2426            | 26          | 2427            | 27          | 2428            | 28          | 2429            |
| 29          | 2430            | 30          | 2431            | 31          | 2432            | 32          | 2433            |
| 33          | 2434            | 34          | 2435            | 35          | 2436            | 36          | 2437            |
| 37          | 2438            | 38          | 2439            | 39          | 2440            | 40          | 2441            |
| 41          | 2442            | 42          | 2443            | 43          | 2444            | 44          | 2445            |
| 45          | 2446            | 46          | 2447            | 47          | 2448            | 48          | 2449            |
| 49          | 2450            | 50          | 2451            | 51          | 2452            | 52          | 2453            |
| 53          | 2454            | 54          | 2455            | 55          | 2456            | 56          | 2457            |
| 57          | 2458            | 58          | 2459            | 59          | 2460            | 60          | 2461            |
| 61          | 2462            | 62          | 2463            | 63          | 2464            | 64          | 2465            |
| 65          | 2466            | 66          | 2467            | 67          | 2468            | 68          | 2469            |
| 69          | 2470            | 70          | 2471            | 71          | 2472            | 72          | 2473            |
| 73          | 2474            | 74          | 2475            | 75          | 2476            | 76          | 2477            |
| 77          | 2478            | 78          | 2479            | 79          | 2480            | -           | -               |

## 2.8. Test Equipment

### 2.8.1. For conducted emission test

| Equipment               | Manufacturer    | Model No. | Serial No. | Last Cal.  | Next Cal. |
|-------------------------|-----------------|-----------|------------|------------|-----------|
| EMI Test Receiver       | Rohde & Schwarz | ESHS30    | 832354     | June 25,16 | 1 Year    |
| Artificial Mains Networ | Rohde & Schwarz | ENV216    | 101260     | June 25,16 | 1 Year    |
| Pulse Limiter           | Rohde & Schwarz | ESH3-Z2   | 101100     | June 25,16 | 1 Year    |

### 2.8.2. For radiated emission test(9 kHz-30MHz)

| Equipment         | Manufacturer    | Model No. | Serial No.       | Last Cal.  | Next Cal. |
|-------------------|-----------------|-----------|------------------|------------|-----------|
| EMI Test Receiver | Rohde & Schwarz | ESCI      | 100435           | June 25,16 | 1 Year    |
| Loop Antenna      | ETS-LINDGREN    | 6502      | 00071730         | June 25,16 | 3 Year    |
| RF Cable          | MIYAZAKI        | 5D-2W     | 966 Chamber No.1 | June 25,16 | 1 Year    |

### 2.8.3. For radiated emissions test (30-1000MHz)

| Equipment         | Manufacturer    | Model No. | Serial No.       | Last Cal.  | Next Cal. |
|-------------------|-----------------|-----------|------------------|------------|-----------|
| EMI Test Receiver | Rohde & Schwarz | ESVS10    | 100004           | June 25,16 | 1 Year    |
| Spectrum Analyzer | Agilent         | E4411B    | MY50140697       | June 25,16 | 1 Year    |
| Bilog Antenna     | Teseq           | CBL 6111D | 27090            | June 28,15 | 3 Year    |
| Signal Amplifier  | Agilent         | 310N      | 187037           | June 25,16 | 1 Year    |
| RF Cable          | MIYAZAKI        | 5D-2W     | 966 Chamber No.1 | June 25,16 | 1 Year    |

### 2.8.4. For radiated emission test(above 1GHz)

| Equipment               | Manufacturer      | Model No.   | Serial No.        | Last Cal.  | Next Cal. |
|-------------------------|-------------------|-------------|-------------------|------------|-----------|
| Horn Antenna            | SCHWARZB<br>ECK   | BBHA 9120 D | BBHA9120D1<br>002 | June 28,15 | 3 Year    |
| Board-Band Horn Antenna | SCHWARZB<br>ECK   | BBHA 9170   | 9170-497          | June 28,15 | 3Year     |
| Signal Amplifier        | SCHWARZB<br>ECK   | BBV9718     | 9718-212          | June 25,16 | 1 Year    |
| Spectrum Analyzer       | Agilent           | E4408B      | MY44211139        | June 25,16 | 1 Year    |
| Spectrum Analyzer       | Rohde<br>&Schwarz | FSV         | 103173            | June 25,16 | 1 Year    |
| RF Cable                | Hubersuhner       | RG 214/U    | 513423            | June 25,16 | 1 Year    |

### 3. MAXIMUM PEAK OUTPUT POWER

#### 3.1. Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts, the e.i.r.p shall not exceed 4W

#### 3.2. Test Procedure

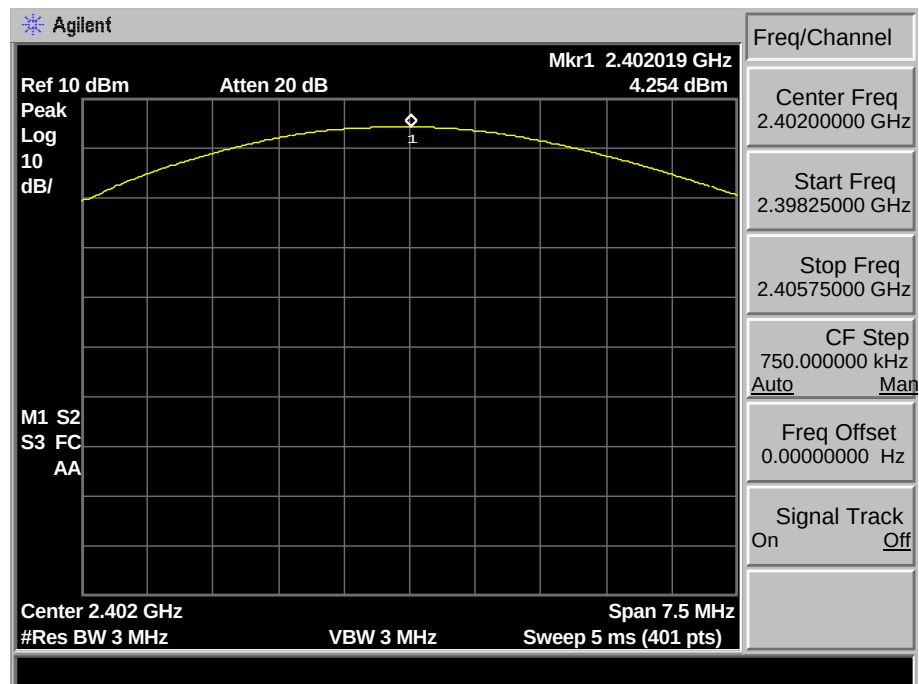
The transmitter output (antenna port) was connected to the spectrum analyzer

#### 3.3. Test Result

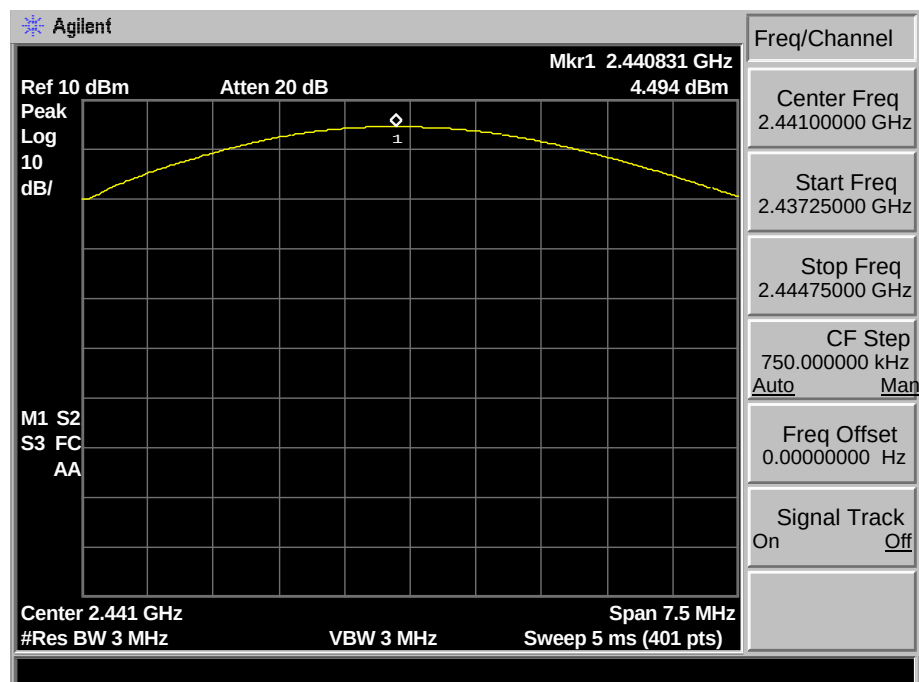
| EUT: Marine source unit |            |                    |       |                      |             |
|-------------------------|------------|--------------------|-------|----------------------|-------------|
| M/N: CMS4               |            |                    |       |                      |             |
| Test date: 2016-10-15   |            | Test site: RF site |       | Tested by: Tony Tang |             |
| Mode                    | Freq (MHz) | Result (dBm)       | Limit |                      | Margin (dB) |
|                         |            |                    | dBm   | W                    |             |
| GFSK                    | 2402       | 4.254              | 30.00 | 1                    | 25.746      |
|                         | 2441       | 4.494              | 30.00 | 1                    | 25.506      |
|                         | 2480       | 4.828              | 30.00 | 1                    | 25.172      |
| 8-DPSK                  | 2402       | 3.606              | 21.00 | 0.125                | 17.394      |
|                         | 2441       | 3.823              | 21.00 | 0.125                | 17.177      |
|                         | 2480       | 4.165              | 21.00 | 0.125                | 16.835      |
| Conclusion: PASS        |            |                    |       |                      |             |

## 3.4. Test Data

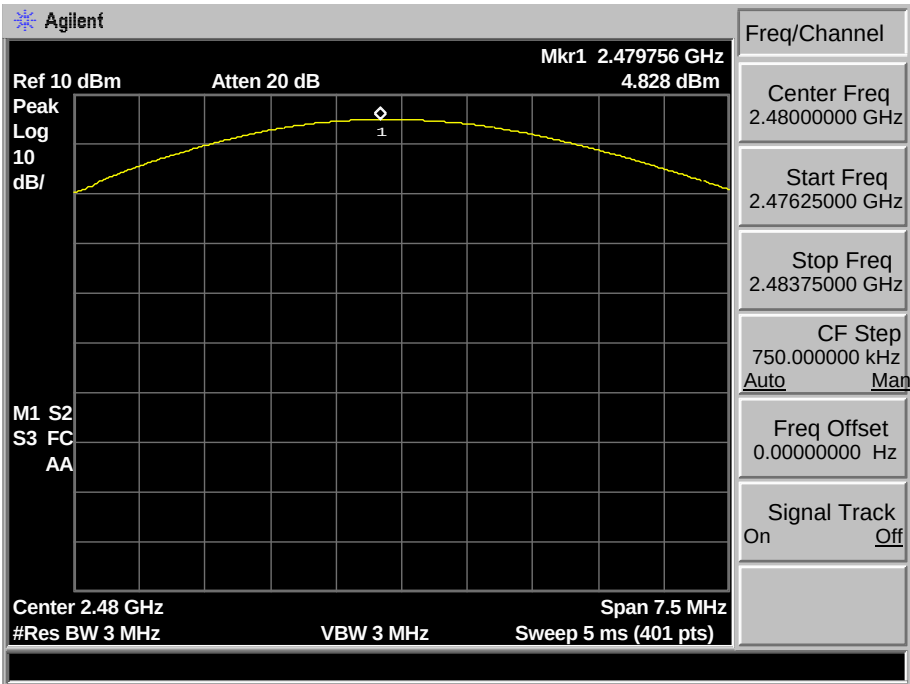
## GFSK 2402 MHz



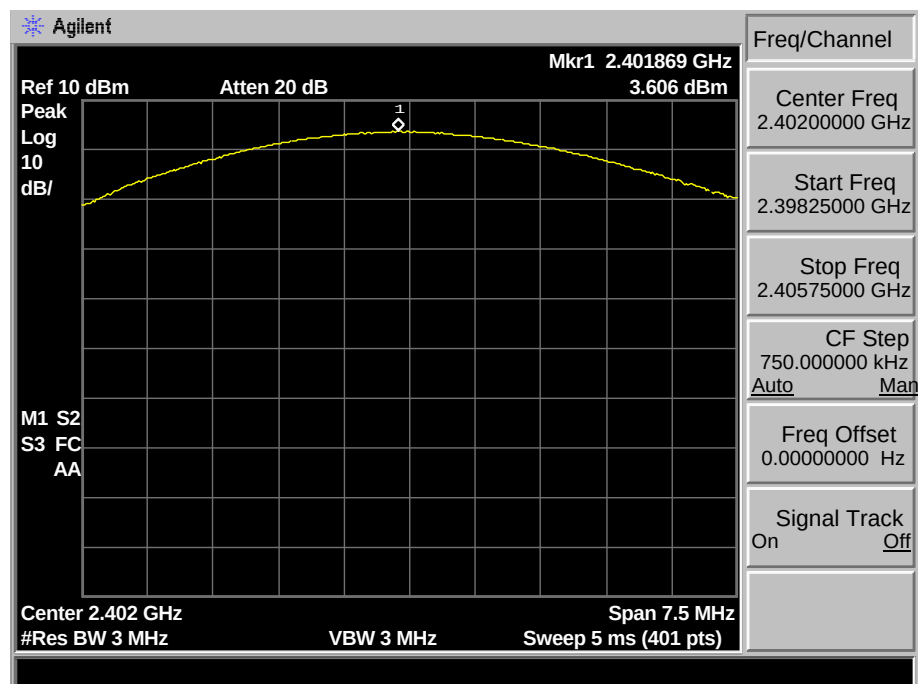
## GFSK 2441 MHz



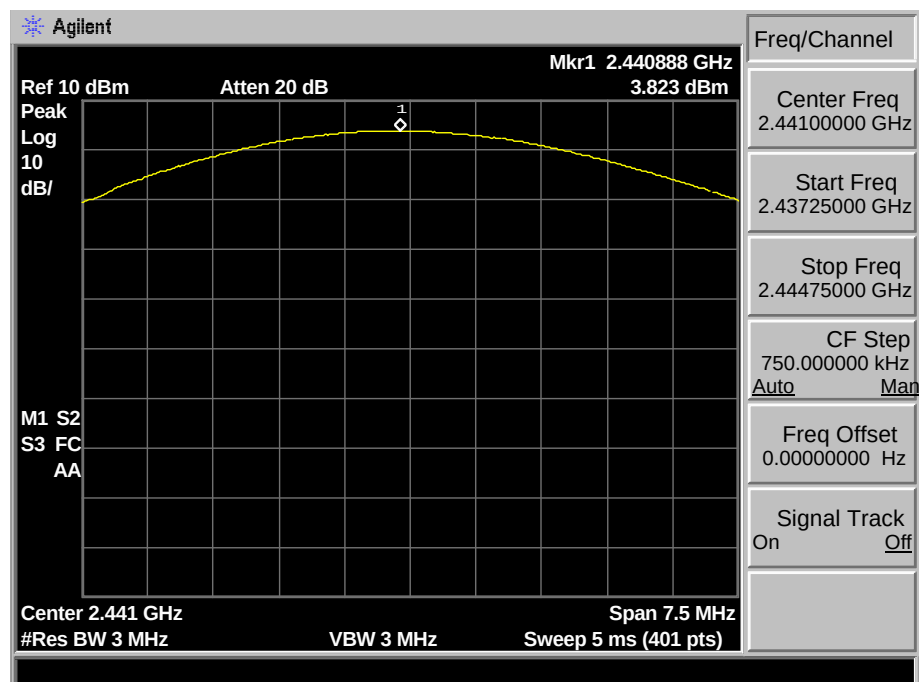
GFSK 2480 MHz



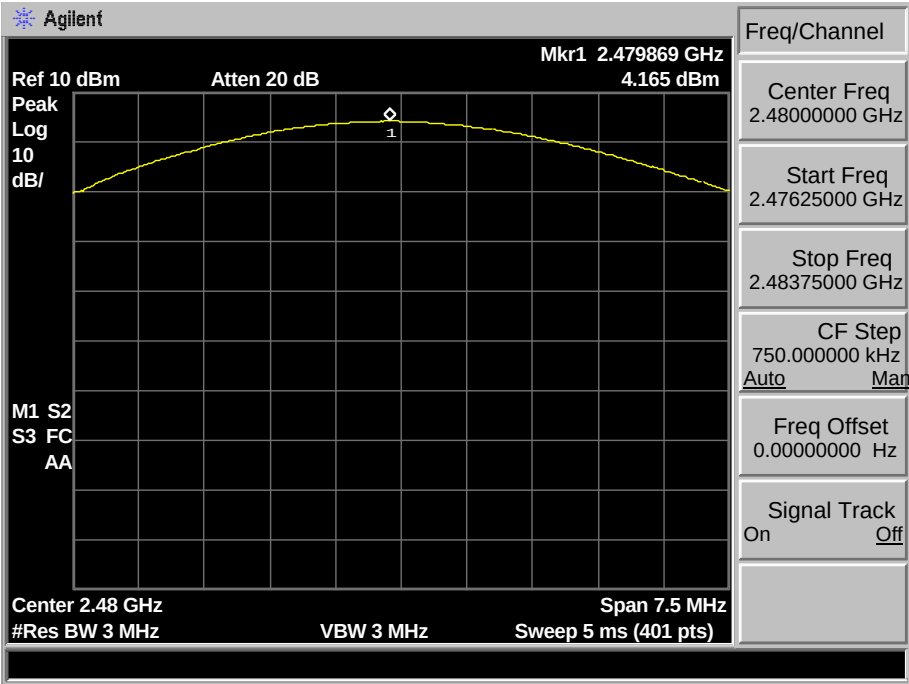
## 8-DPSK 2402 MHz



## 8-DPSK 2441 MHz



8-DPSK 2480 MHz



## 4. 20 DB BANDWIDTH

### 4.1. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

### 4.2. Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer. Connect EUT antenna terminal to the spectrum analyzer with a low loss SMA cable. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

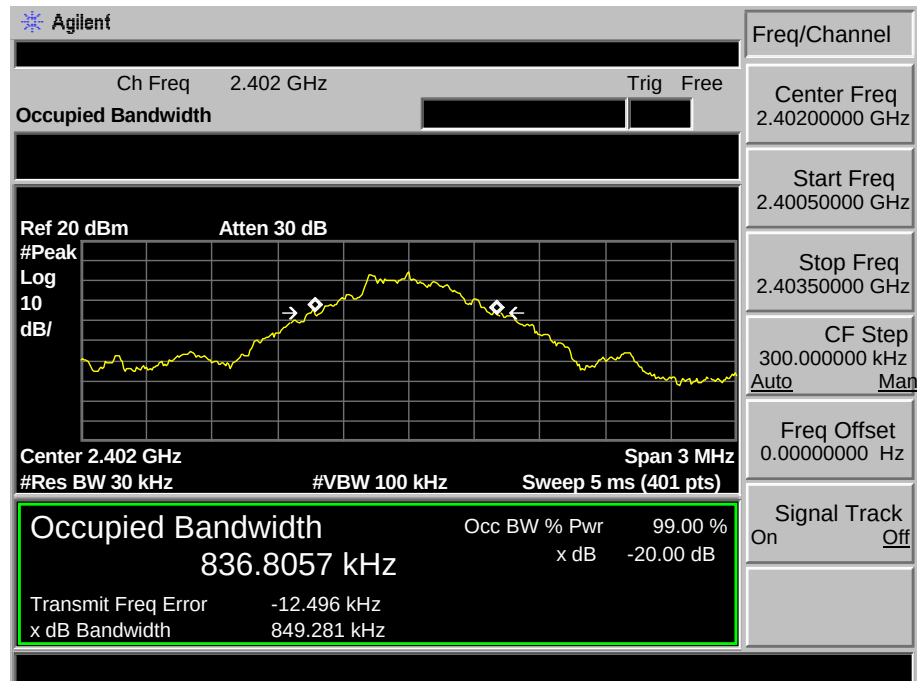
### 4.3. Test Result

| EUT: Marine source unit |            |                      |             |                      |
|-------------------------|------------|----------------------|-------------|----------------------|
| M/N: CMS4               |            |                      |             |                      |
| Test date: 2016-10-15   |            | Test site: RF site   |             | Tested by: Tony Tang |
| Mode                    | Freq (MHz) | 20dB Bandwidth (MHz) | Limit (kHz) | Conclusion           |
| GFSK                    | 2402       | 0.849                | /           | PASS                 |
|                         | 2441       | 0.837                | /           | PASS                 |
|                         | 2480       | 0.859                | /           | PASS                 |
| 8-DPSK                  | 2402       | 1.210                | /           | PASS                 |
|                         | 2441       | 1.218                | /           | PASS                 |
|                         | 2480       | 1.214                | /           | PASS                 |

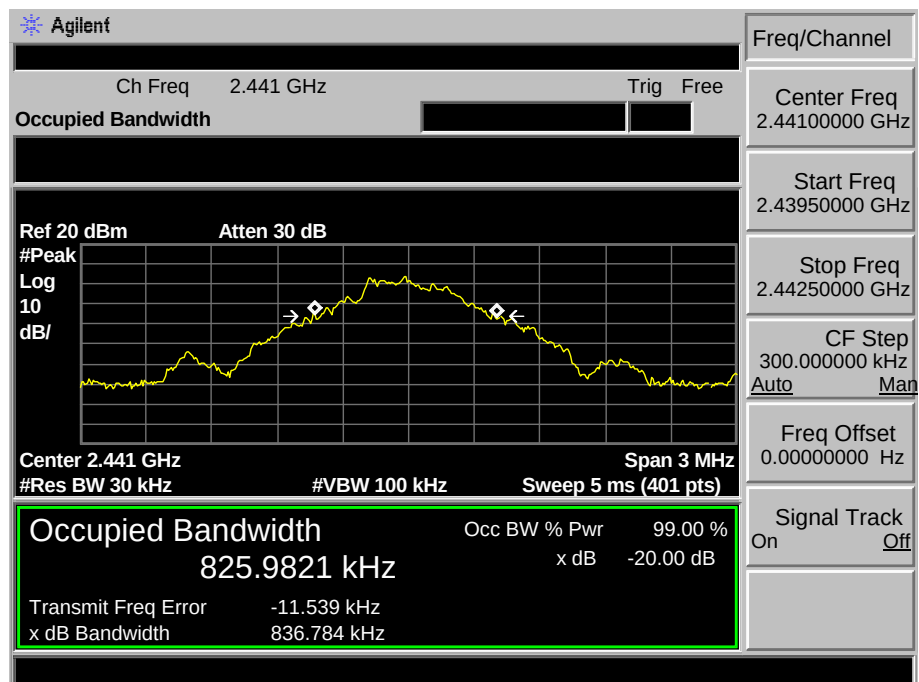


## 4.4. Test Data

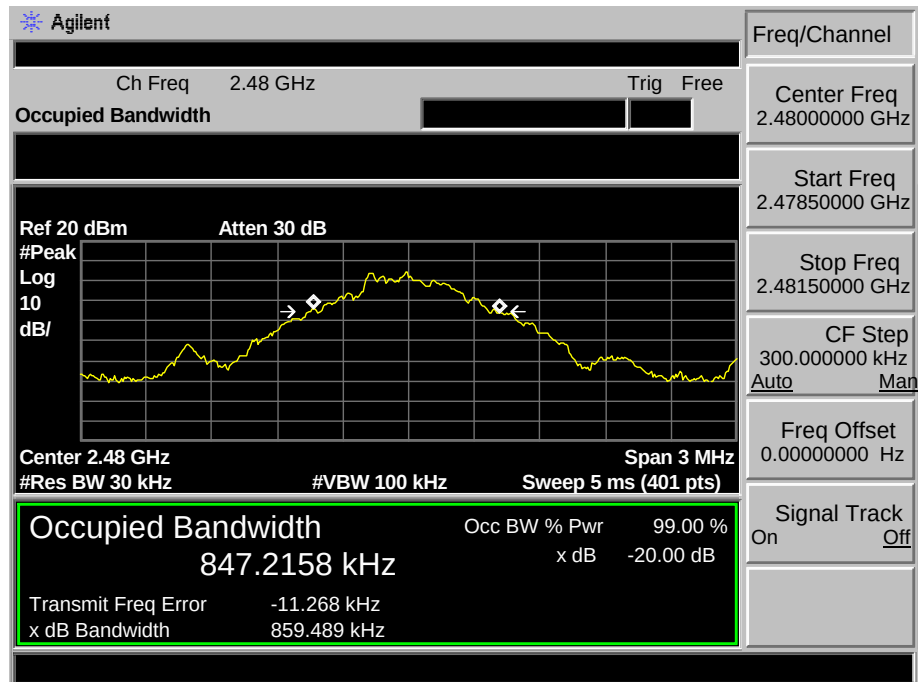
## GFSK 2402MHz



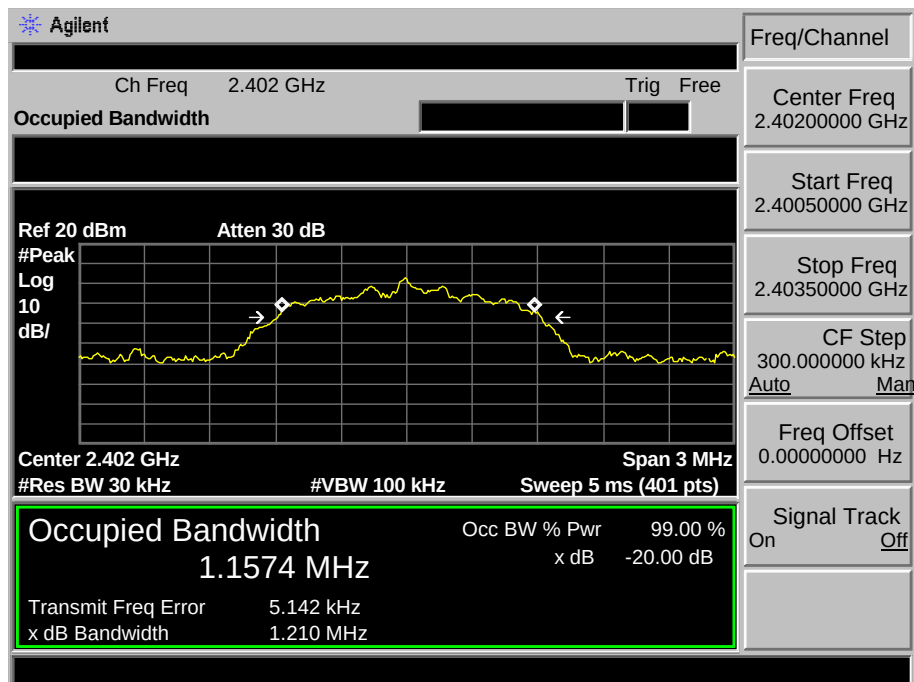
## GFSK 2441MHz



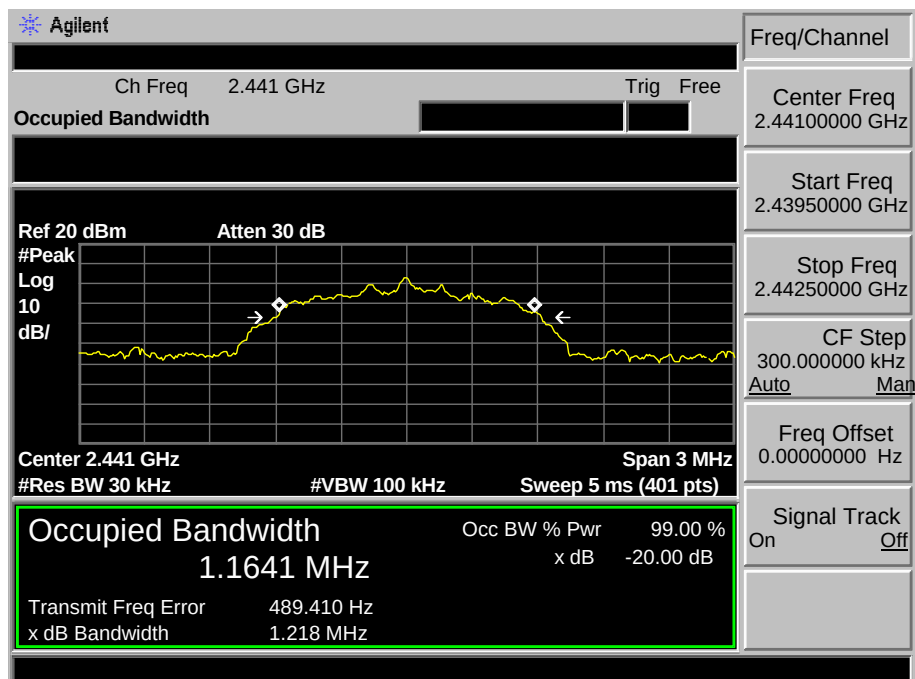
## GFSK 2480MHz



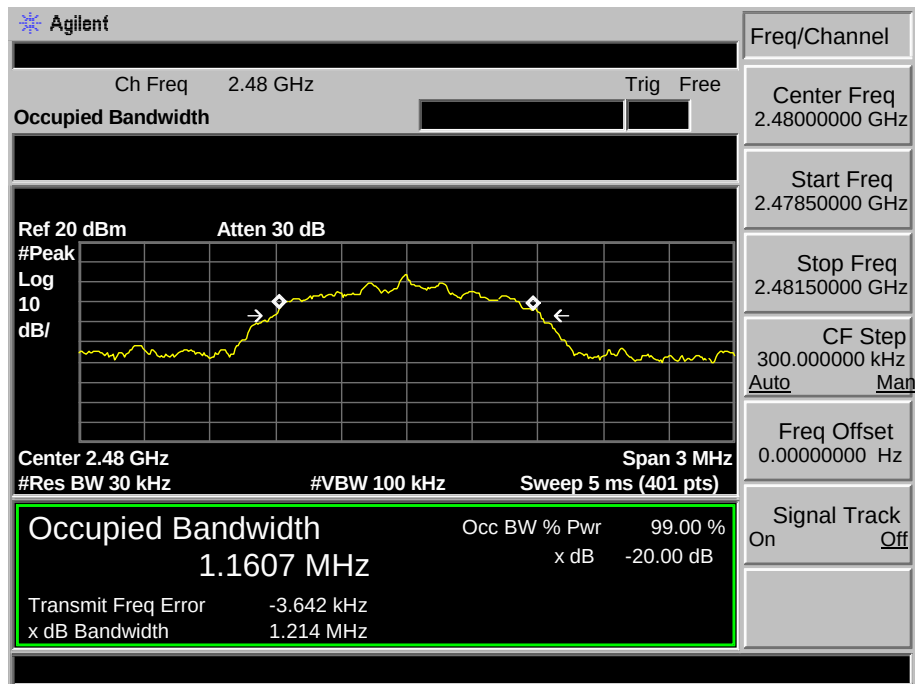
## 8-DPSK 2402MHz



## 8-DPSK 2441MHz



## 8-DPSK 2480MHz



## 5. CARRIER FREQUENCY SEPARATION

### 5.1. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW

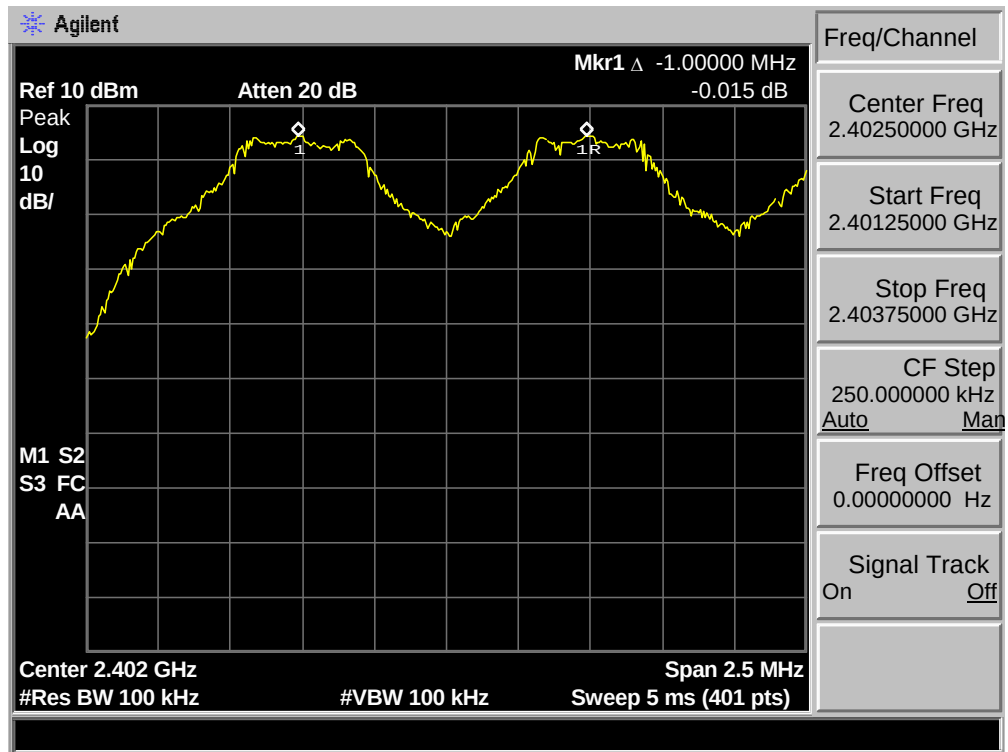
### 5.2. Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer. Connect EUT antenna terminal to the spectrum analyzer with a low loss SMA cable. The carrier frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW.

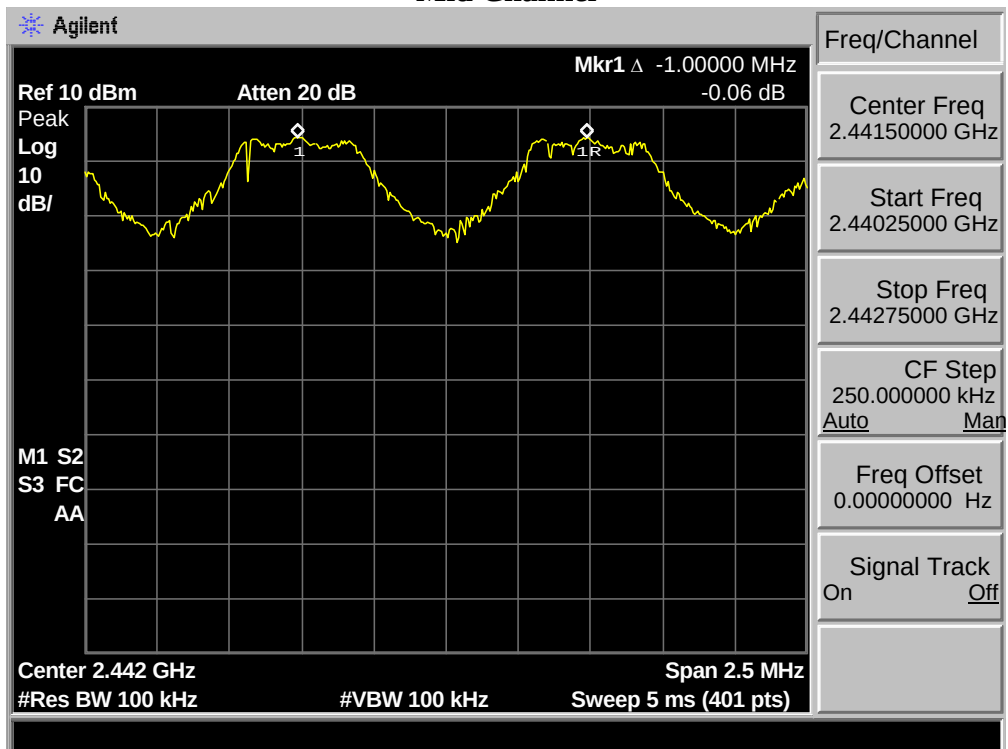
### 5.3. Test Result

| EUT: Marine source unit |         |                          |                                                               |                      |
|-------------------------|---------|--------------------------|---------------------------------------------------------------|----------------------|
| M/N: CMS4               |         |                          |                                                               |                      |
| Test date: 2016-10-15   |         |                          | Test site: RF site                                            | Tested by: Tony Tang |
| Mode                    | Channel | Channel separation (MHz) | Limit                                                         | Conclusion           |
| GFSK                    | Low CH  | 1.000                    | 0.849 MHz                                                     | PASS                 |
|                         | Mid CH  | 1.000                    | 0.837 MHz                                                     | PASS                 |
|                         | High CH | 1.000                    | 0.859 MHz                                                     | PASS                 |
| 8-DPSK                  | Low CH  | 1.000                    | > 2/3 of the 20dB Bandwidth or 25[kHz]( whichever is greater) | PASS                 |
|                         | Mid CH  | 1.000                    |                                                               | PASS                 |
|                         | High CH | 1.000                    |                                                               | PASS                 |

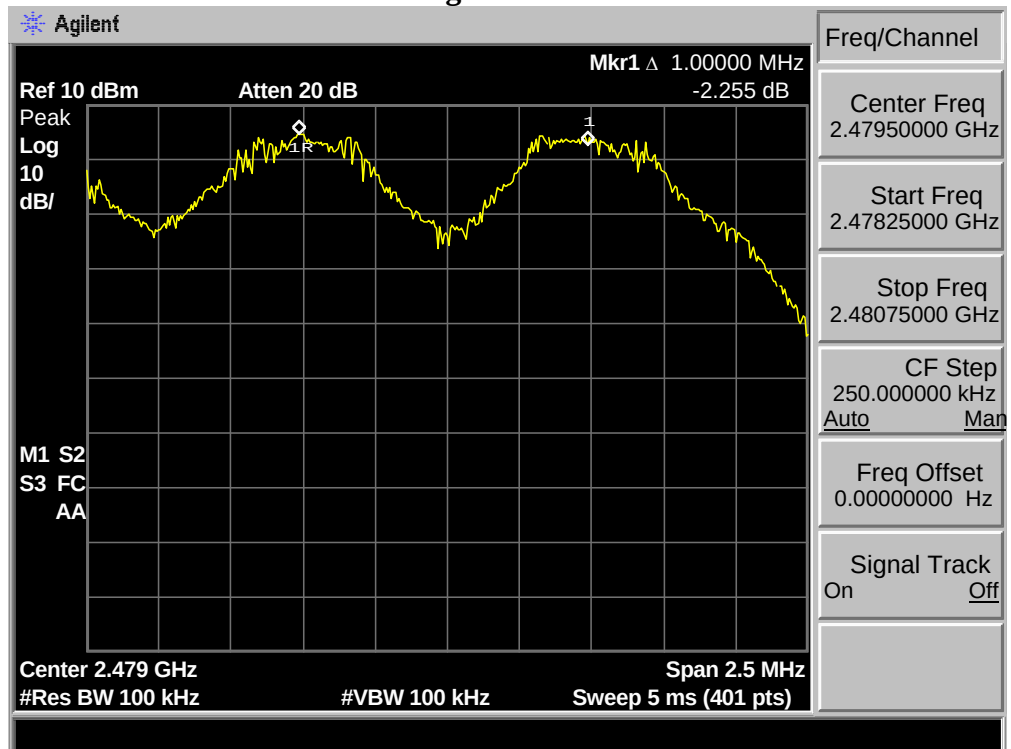
## 5.4. Test Data

GFSK  
Low Channel

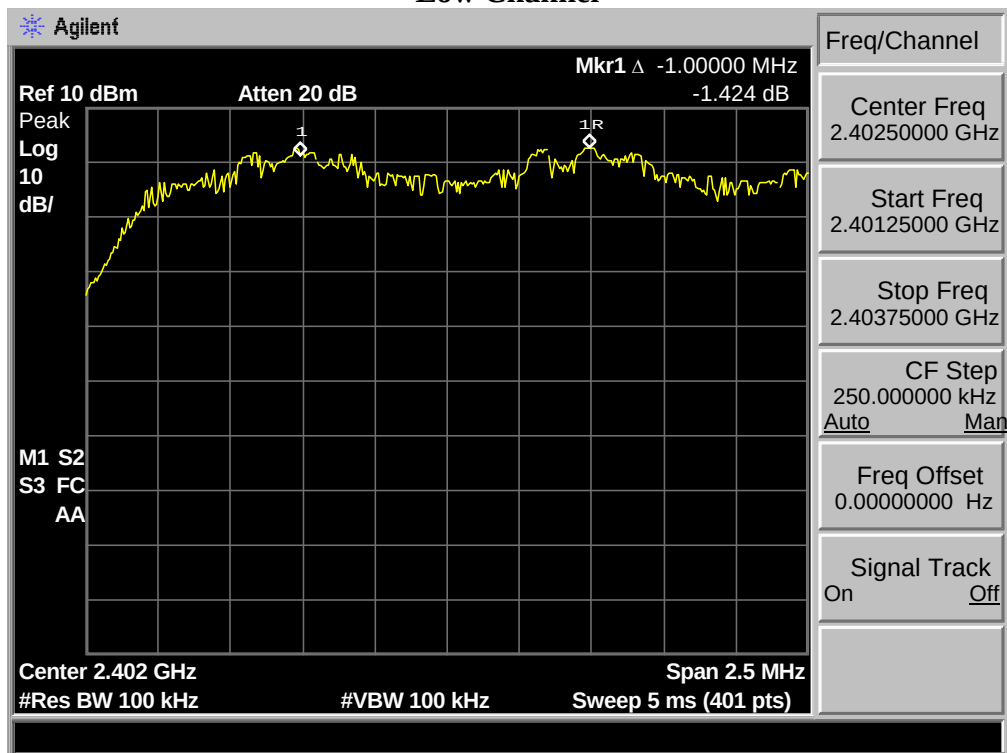
## Mid Channel



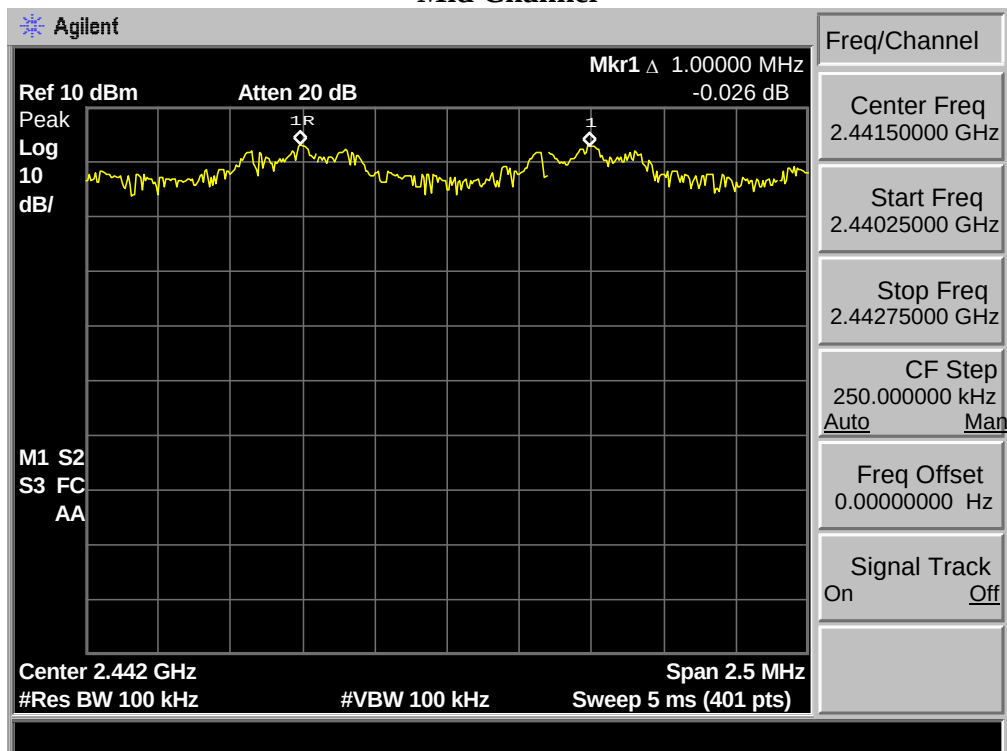
## High Channel



### 8-DPSK Low Channel

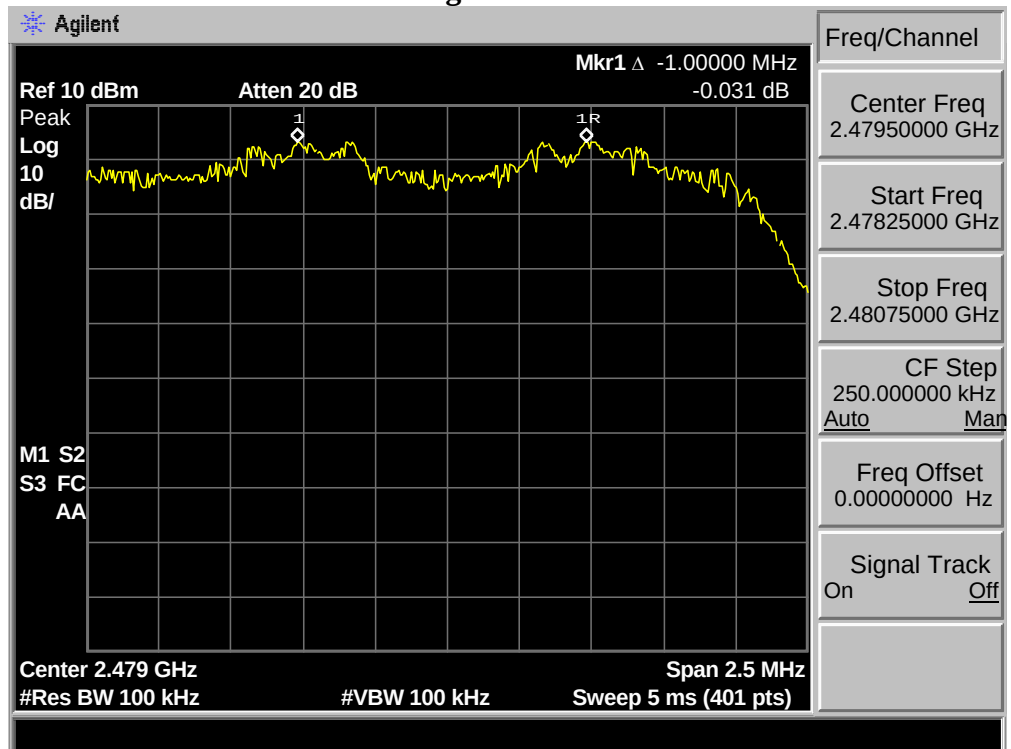


### Mid Channel





## High Channel



## 6. NUMBER OF HOPPING CHANNEL

### 6.1. Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

### 6.2. Test Procedure

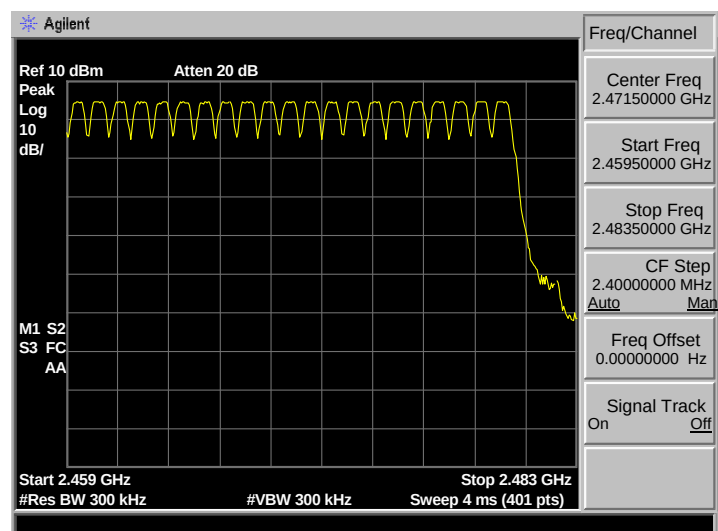
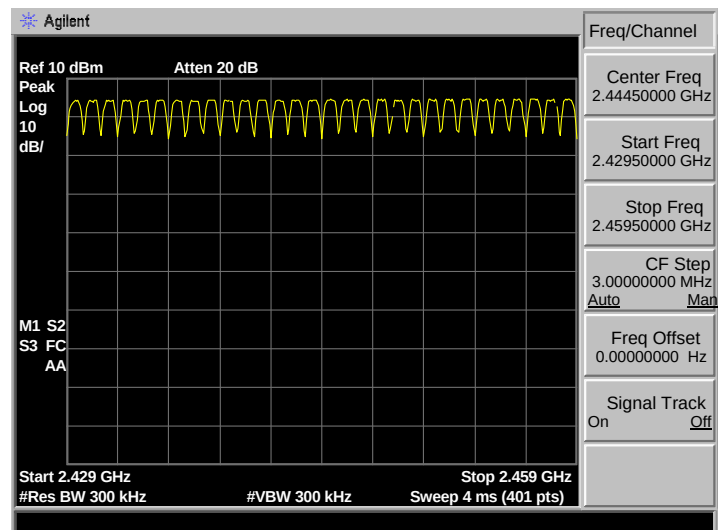
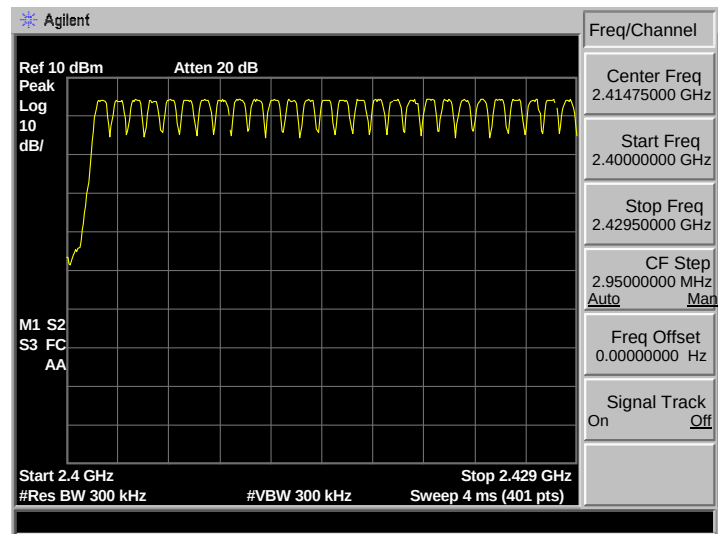
The transmitter output (antenna port) was connected to the spectrum analyzer. Connect EUT antenna terminal to the spectrum analyzer with a low loss SMA cable. The number of hopping channel was measured by spectrum analyzer with 300kHz RBW and 300kHz VBW.

### 6.3. Test Result

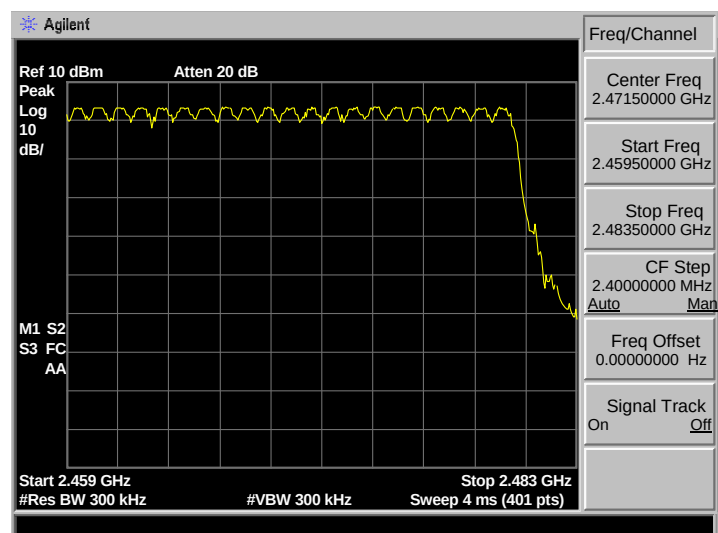
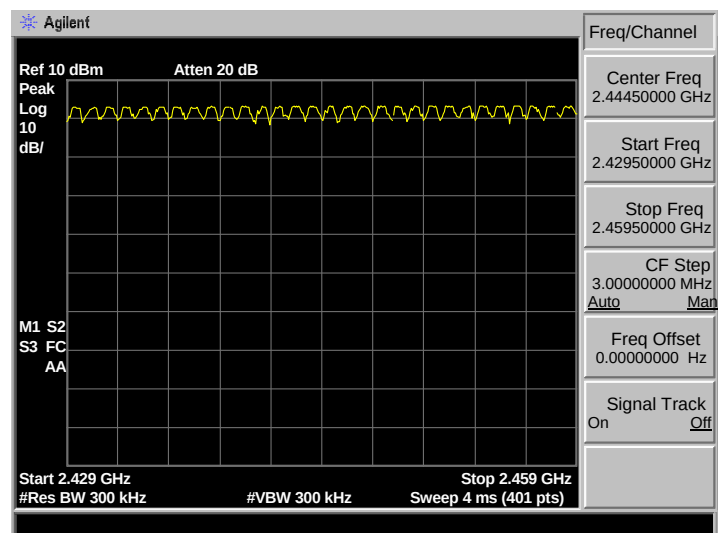
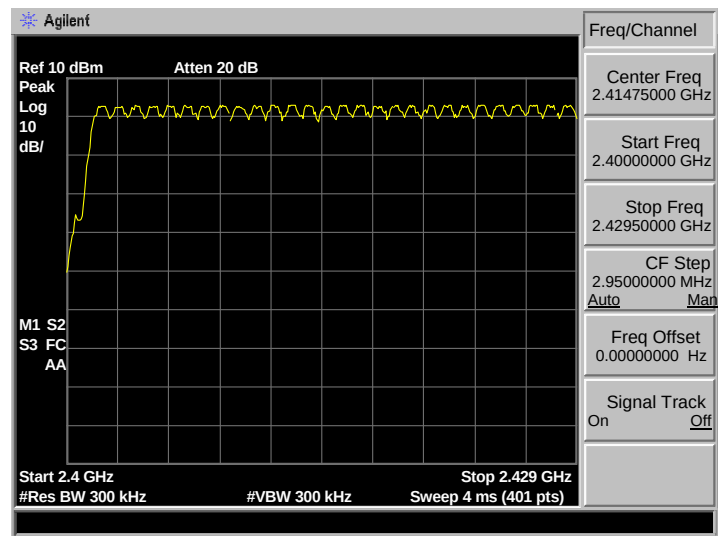
| EUT: Marine source unit |                           |                    |                      |
|-------------------------|---------------------------|--------------------|----------------------|
| M/N: CMS4               |                           |                    |                      |
| Test date: 2016-10-15   |                           | Test site: RF site | Tested by: Tony.Tang |
| Mode                    | Number of hopping channel | Limit              | Conclusion           |
| GFSK                    | 79                        | >15                | PASS                 |
| 8-DPSK                  | 79                        | >15                | PASS                 |

## 6.4. Test Data

## GFSK



## 8-DPSK



## 7. DWELL TIME

### 7.1. Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

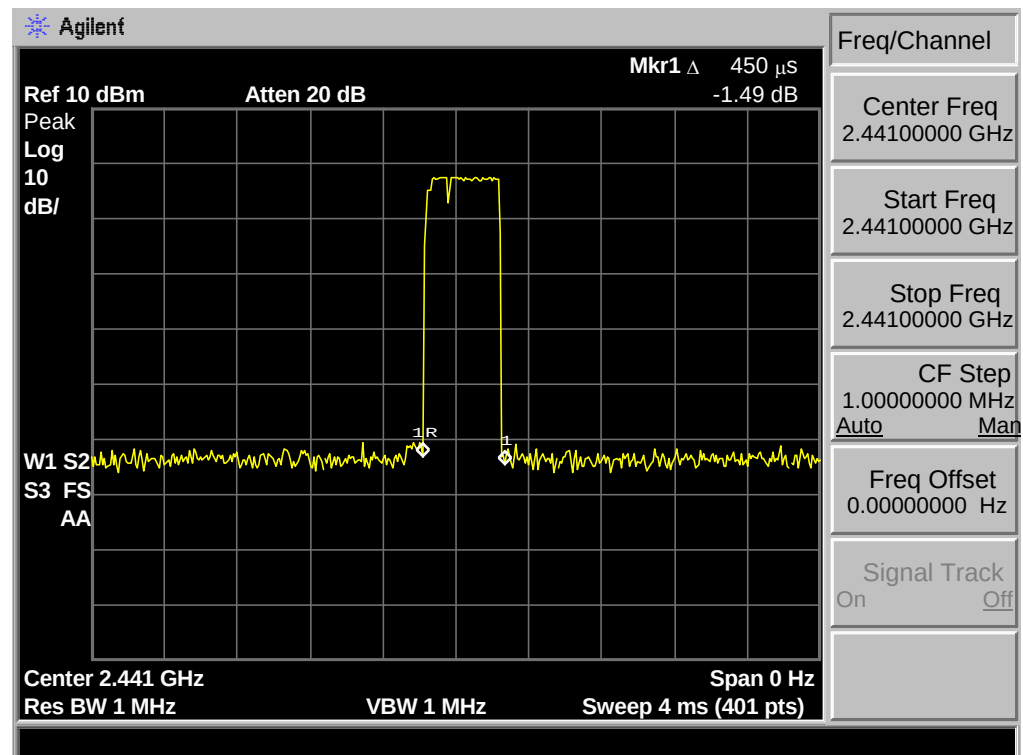
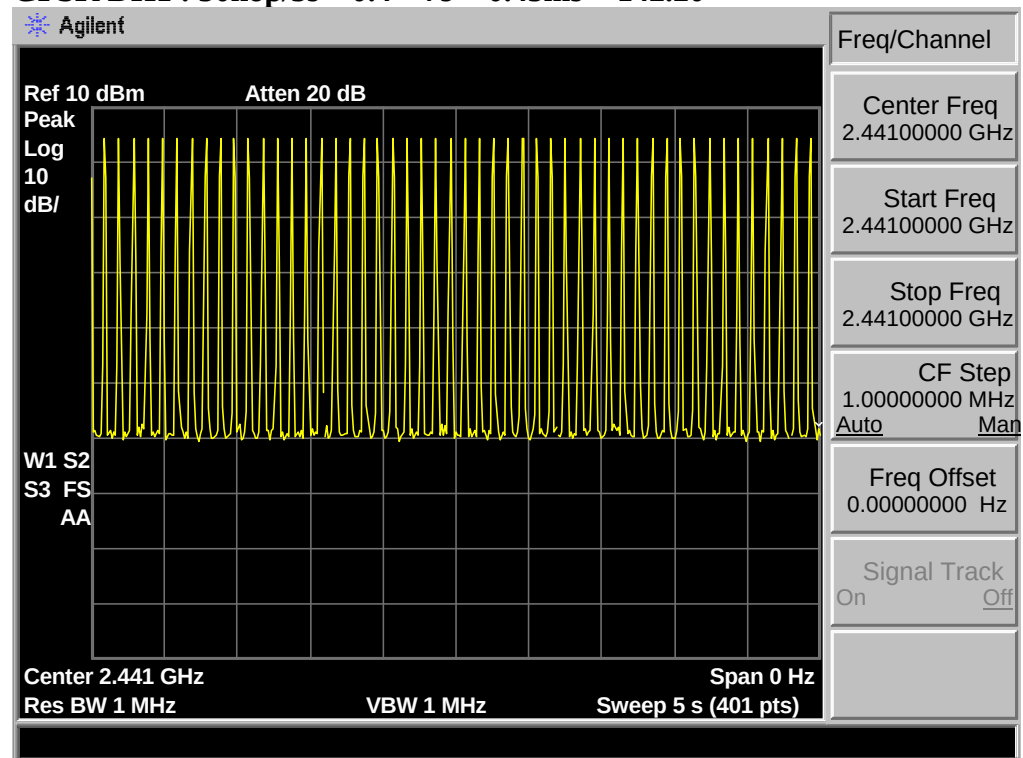
### 7.2. Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer. Connect EUT antenna terminal to the spectrum analyzer with a low loss SMA cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: Centered Frequency = measured channel, RBW = 1MHz, VBW= 1MHz, Frequency Span = 0 Hz.
4. Set sweep time properly to capture the entire dwell time per hopping channel.
5. Set detector type to Peak and trace mode to Max Hold and make the measurement.
6. Repeat step 3-5 until all channels measured were complete.

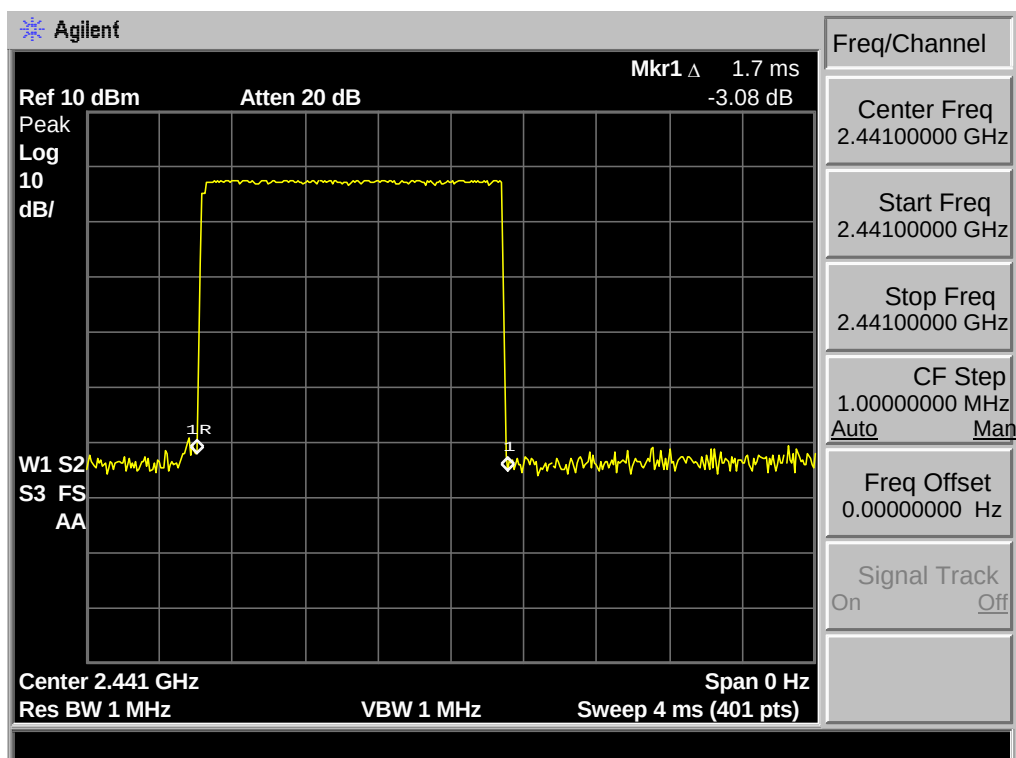
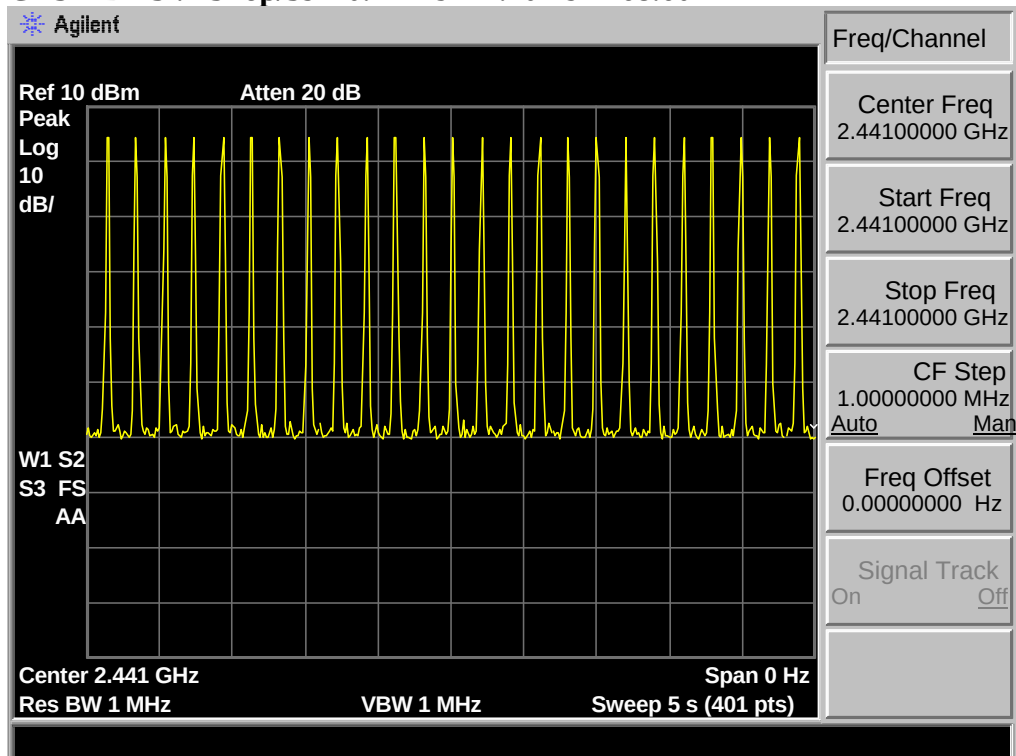
### 7.3. Test Result

| EUT: Marine source unit |                 |                    |                      |
|-------------------------|-----------------|--------------------|----------------------|
| M/N: CMS4               |                 |                    |                      |
| Test date: 2016-10-15   |                 | Test site: RF site | Tested by: Tony Tang |
| Mode                    | Dwell time (ms) | Limit              | Conclusion           |
| GFSK DH1                | 142.20          | <400ms             | PASS                 |
| GFSK DH3                | 268.60          | <400ms             | PASS                 |
| GFSK DH5                | 316.95          | <400ms             | PASS                 |
| 8-DPSK 3DH1             | 142.20          | <400ms             | PASS                 |
| 8-DPSK 3DH3             | 271.76          | <400ms             | PASS                 |
| 8-DPSK 3DH5             | 319.10          | <400ms             | PASS                 |

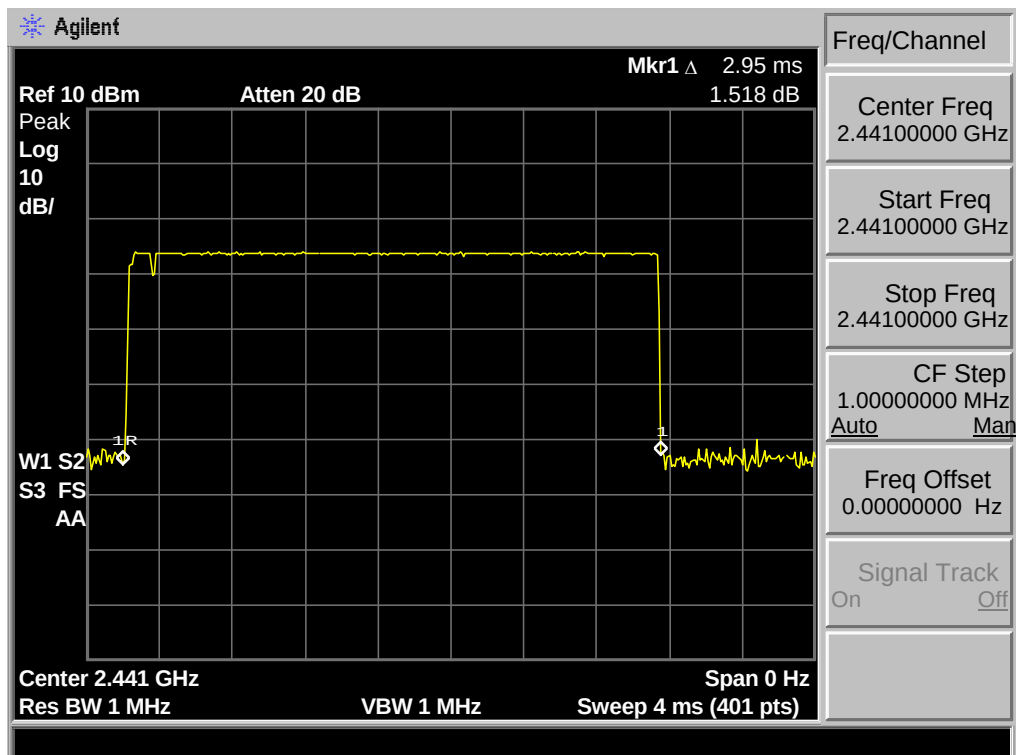
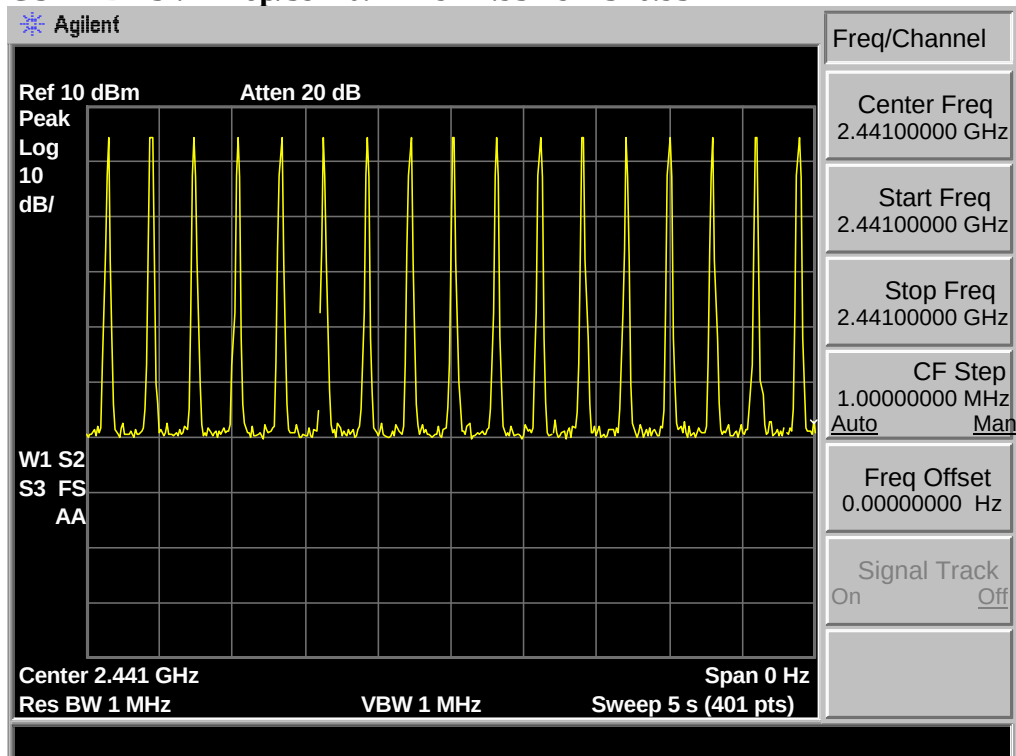
## 7.4. Test Data

**GFSK DH1 :  $50\text{hop}/5\text{s} * 0.4 * 79 * 0.45\text{ms} = 142.20$** 

**GFSK DH3 : 25hop/5s \* 0.4 \* 79 \* 1.70ms= 268.60**

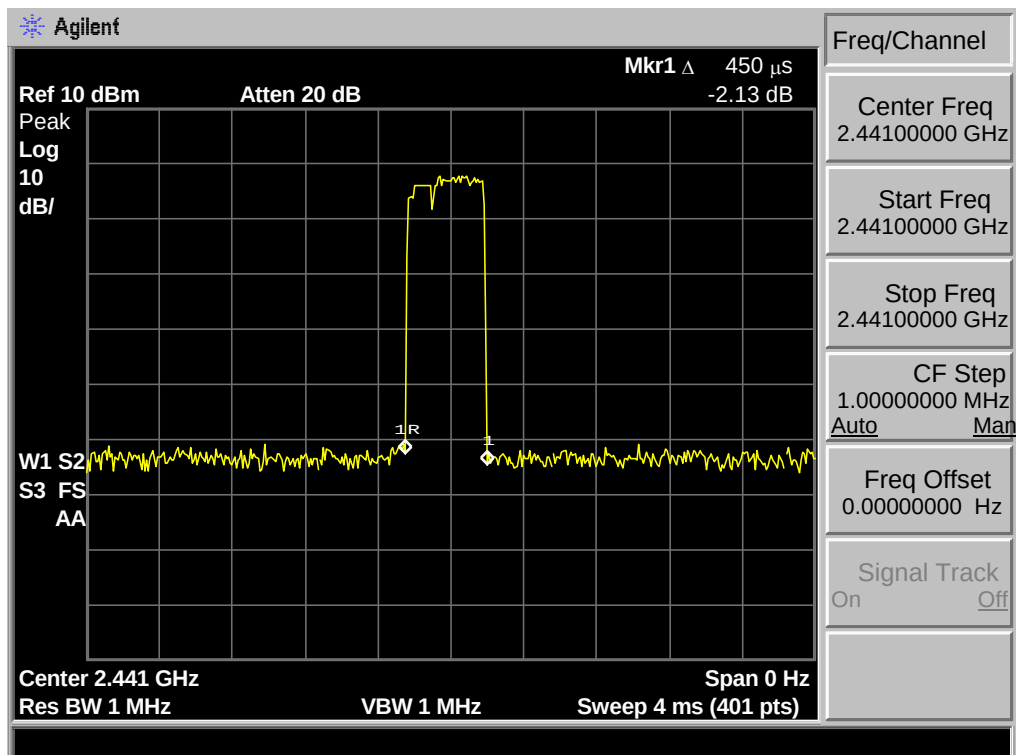
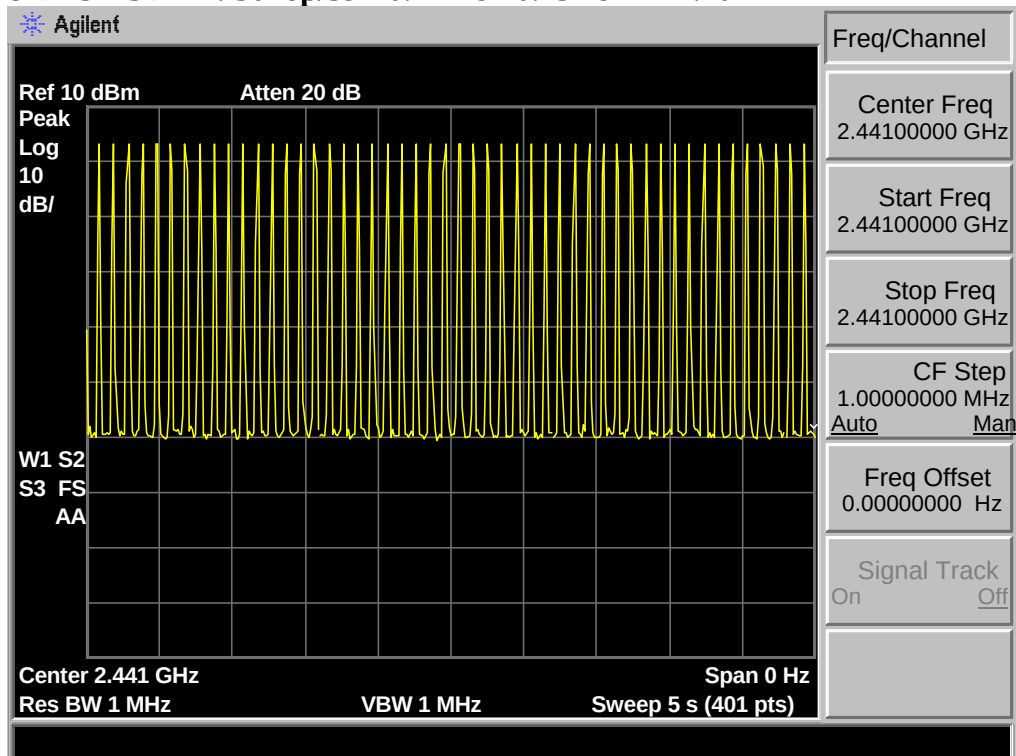


**GSEK DH5 : 17hop/5s \* 0.4 \* 79 \* 2.95ms = 316.95**

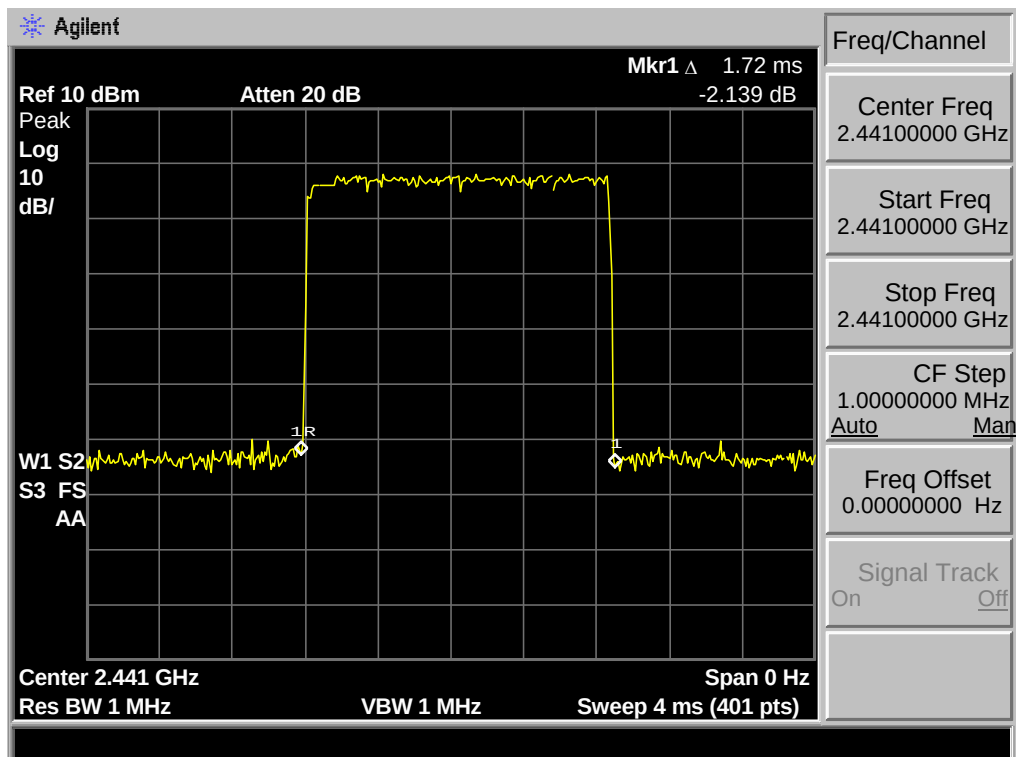
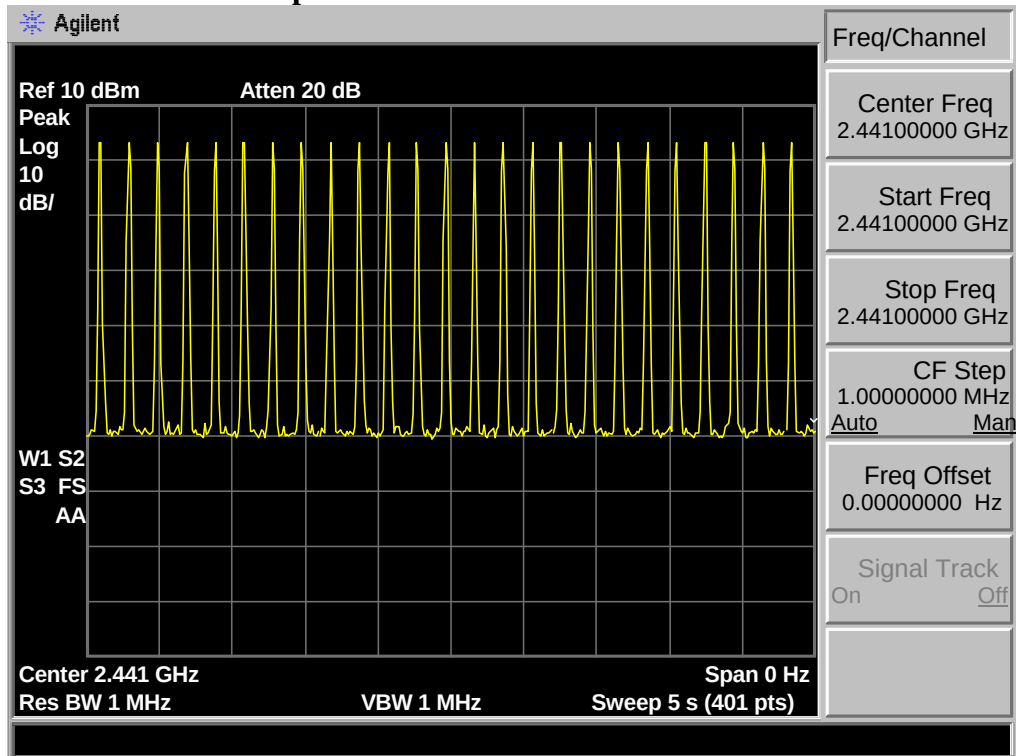




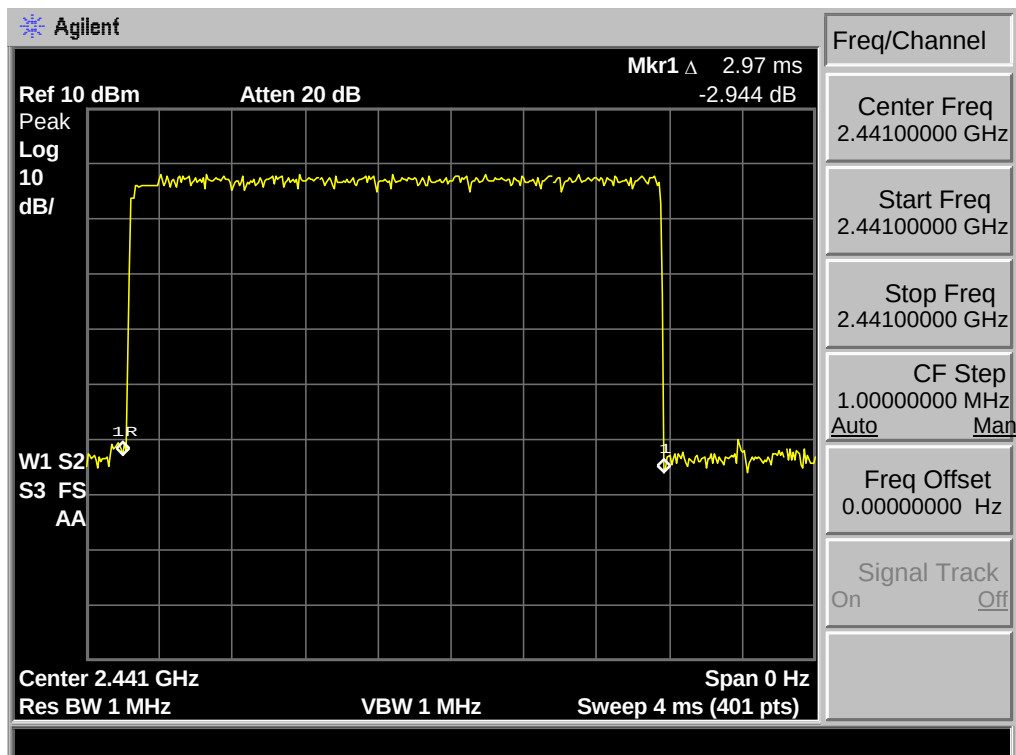
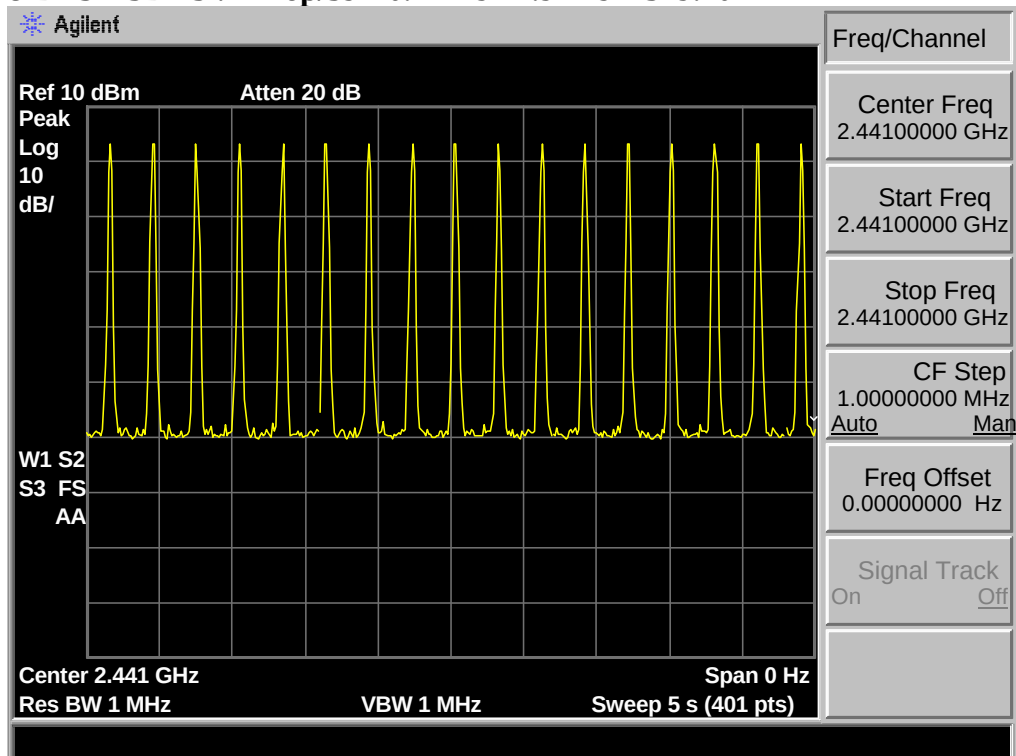
8-DPSK 3DH1 : 50hop/5s \* 0.4 \* 79 \* 0.45ms = 142.20



8-DPSK 3DH3: 25hop/5s \* 0.4 \* 79 \* 1.72ms = 271.76



8-DPSK 3DH5 :  $17\text{hop}/5\text{s} * 0.4 * 79 * 2.97\text{ms} = 319.10$



## 8. RADIATED EMISSIONS

### 8.1. Limit

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

#### 15.205 Restricted frequency band

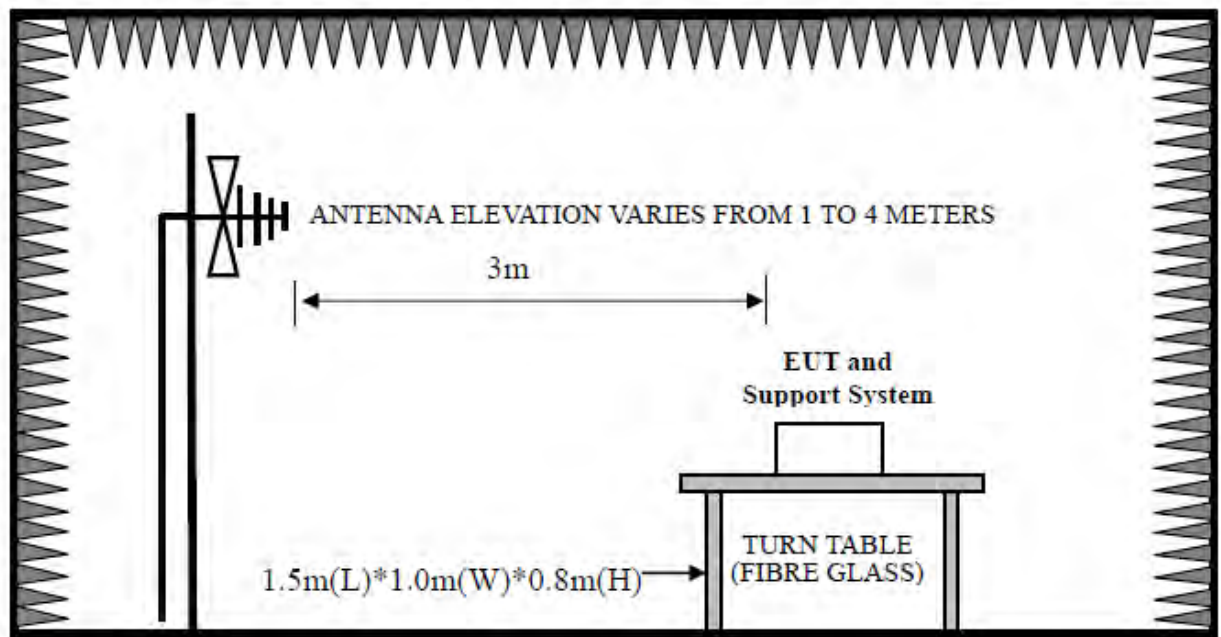
| MHz                        | MHz                   | MHz             | GHz              |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 0.495 - 0.505 | 16.69475 - 16.69525   | 608 - 614       | 5.35 - 5.46      |
| 2.1735 - 2.1905            | 16.80425 - 16.80475   | 960 - 1240      | 7.25 - 7.75      |
| 4.125 - 4.128              | 25.5 - 25.67          | 1300 - 1427     | 8.025 - 8.5      |
| 4.17725 - 4.17775          | 37.5 - 38.25          | 1435 - 1626.5   | 9.0 - 9.2        |
| 4.20725 - 4.20775          | 73 - 74.6             | 1645.5 - 1646.5 | 9.3 - 9.5        |
| 6.215 - 6.218              | 74.8 - 75.2           | 1660 - 1710     | 10.6 - 12.7      |
| 6.26775 - 6.26825          | 108 - 121.94          | 1718.8 - 1722.2 | 13.25 - 13.4     |
| 6.31175 - 6.31225          | 123 - 138             | 2200 - 2300     | 14.47 - 14.5     |
| 8.291 - 8.294              | 149.9 - 150.05        | 2310 - 2390     | 15.35 - 16.2     |
| 8.362 - 8.366              | 156.52475 - 156.52525 | 2483.5 - 2500   | 17.7 - 21.4      |
| 8.37625 - 8.38675          | 156.7 - 156.9         | 2690 - 2900     | 22.01 - 23.12    |
| 8.41425 - 8.41475          | 162.0125 - 167.17     | 3260 - 3267     | 23.6 - 24.0      |
| 12.29 - 12.293             | 167.72 - 173.2        | 3332 - 3339     | 31.2 - 31.8      |
| 12.51975 - 12.52025        | 240 - 285             | 3345.8 - 3358   | 36.43 - 36.5     |
| 12.57675 - 12.57725        | 322 - 335.4           | 3600 - 4400     | ( <sup>2</sup> ) |

#### 15.209 Limit

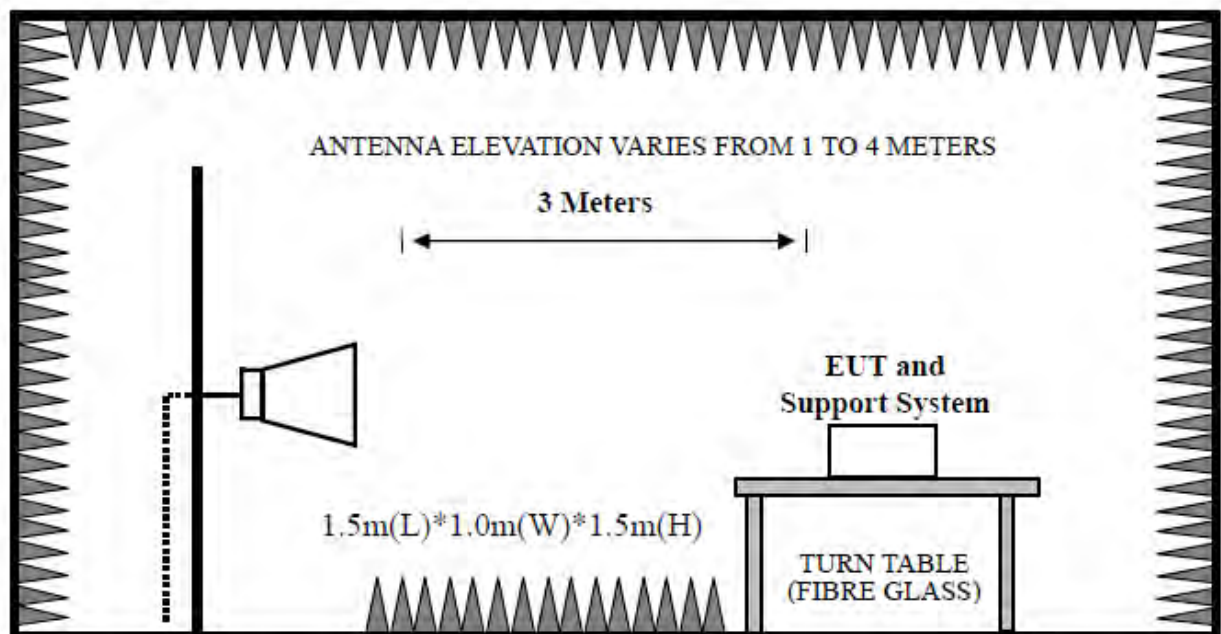
| FREQUENCY<br>MHz | DISTANCE<br>Meters | FIELD STRENGTHS LIMIT                           |          |
|------------------|--------------------|-------------------------------------------------|----------|
|                  |                    | μV/m                                            | dB(μV)/m |
| 30 ~ 88          | 3                  | 100                                             | 40.0     |
| 88 ~ 216         | 3                  | 150                                             | 43.5     |
| 216 ~ 960        | 3                  | 200                                             | 46.0     |
| 960 ~ 1000       | 3                  | 500                                             | 54.0     |
| Above 1000       | 3                  | 74.0 dB(μV)/m (Peak)<br>54.0 dB(μV)/m (Average) |          |

## 8.2. Block Diagram of Test setup

30~1000MHz



Above 1GHz



### 8.3. Test Procedure

EUT was placed on a turn table, which is 0.8 meter high above ground for 9kHz~1000MHz test, and which is 1.5 meter high above ground for above 1GHz test. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

The test frequency analyzer system was set to Peak Detect (300Hz RBW in 9kHz to 150kHz and 10kHz RBW in 150kHz to 30MHz) Function and Specified Bandwidth with Maximum Hold Mode.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 1MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

PEAK detector, 1MHz/1MHz for PAEK measurement,

PEAK detector, 1MHz/10Hz for Average measurement

The frequency range from 30MHz to 10th harmonic (25GHz) are checked.

### 8.4. Test Result

Pass

Note: 1、 For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

2、 The frequency 2402MHz 、2441MHz and 2480MHz is fundamental frequency which no limit, the limit on plots is automatically generated by the software, it's not fundamental limit, we can't remove it.

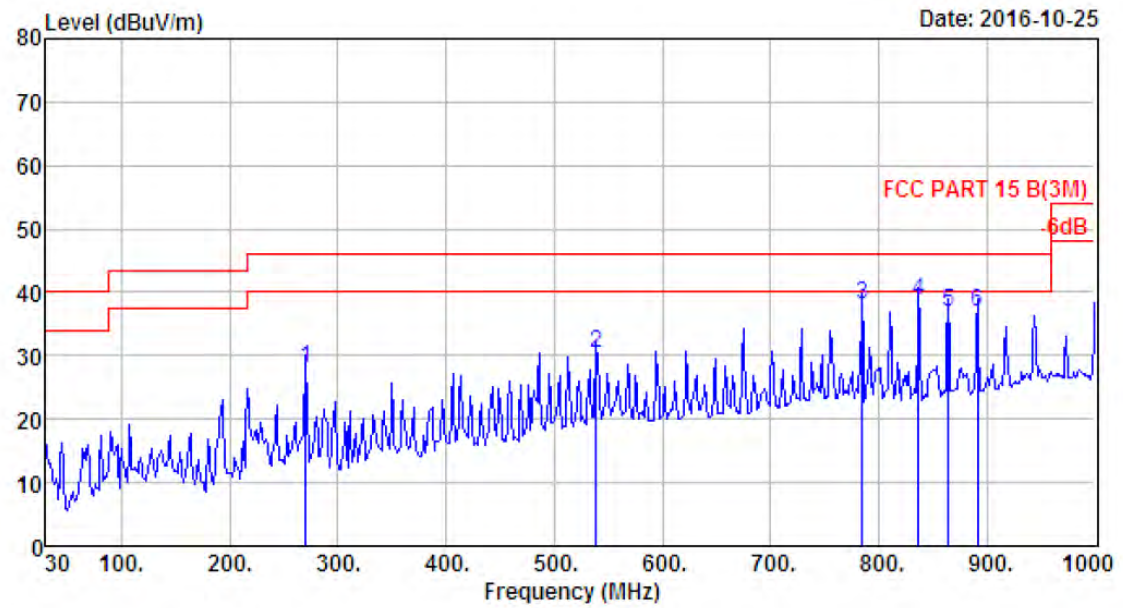
## 8.5. Test Data

9 kHz – 30 MHz

Pass

Note: The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

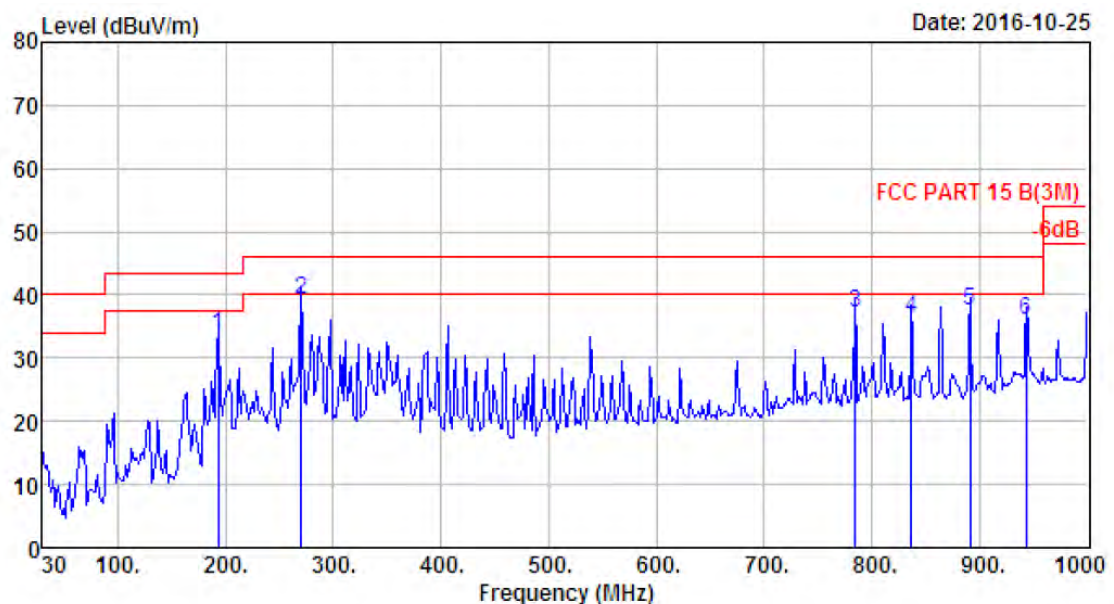
## 30 MHz – 1000 MHz



Site no. : 966 1# chamber Data no. : 604  
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2402MHz

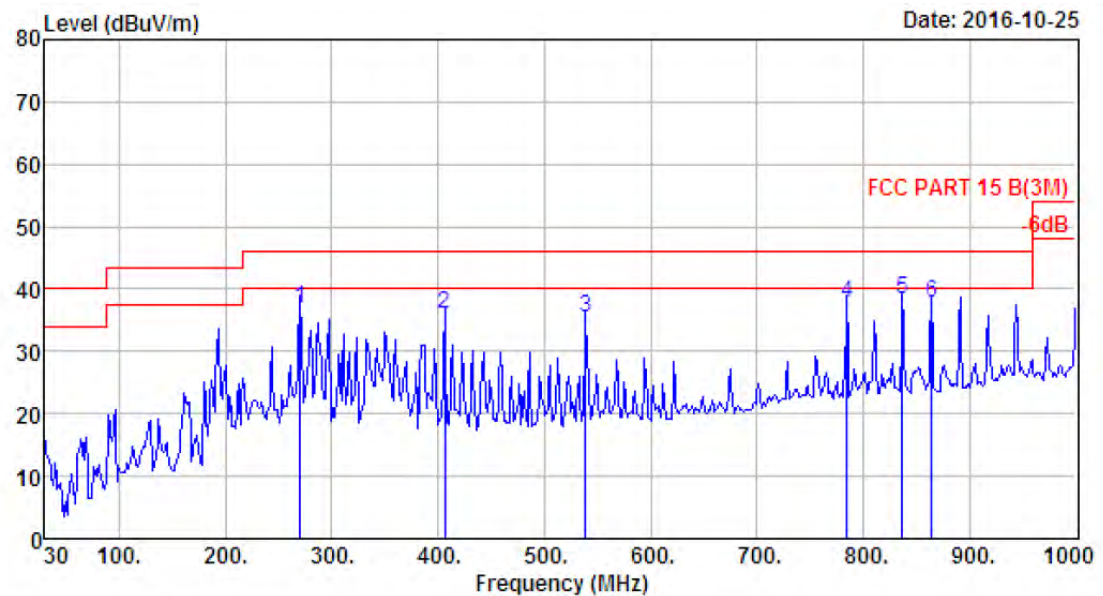
|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 270.56         | 12.53                   | 2.27                  | 13.36             | 28.16                         | 46.00             | 17.84          | QP     |
| 2 | 539.25         | 19.35                   | 3.22                  | 7.71              | 30.28                         | 46.00             | 15.72          | QP     |
| 3 | 784.66         | 22.02                   | 3.82                  | 12.14             | 37.98                         | 46.00             | 8.02           | QP     |
| 4 | 837.04         | 22.57                   | 3.66                  | 12.53             | 38.76                         | 46.00             | 7.24           | QP     |
| 5 | 864.20         | 22.90                   | 3.78                  | 10.27             | 36.95                         | 46.00             | 9.05           | QP     |
| 6 | 891.36         | 22.89                   | 3.91                  | 10.21             | 37.01                         | 46.00             | 8.99           | QP     |





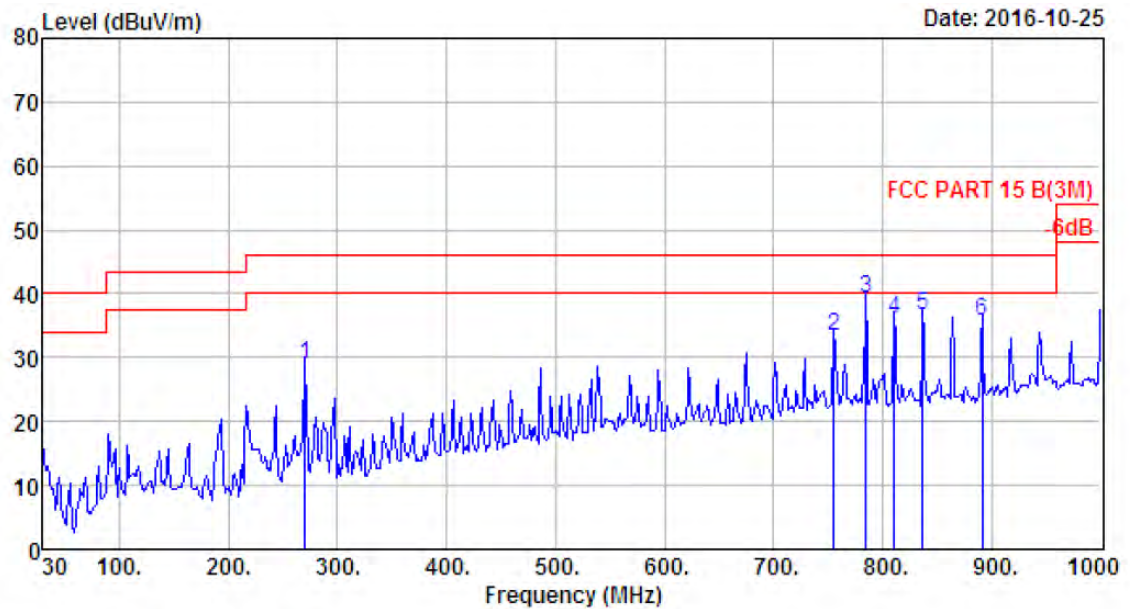
Site no. : 966 1# chamber      Data no. : 605  
 Dis. / Ant. : 3m 27137      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2402MHz

|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 192.96         | 7.85                    | 1.77                  | 24.16             | 33.78                         | 43.50             | 9.72           | QP     |
| 2 | 270.56         | 12.53                   | 2.27                  | 24.52             | 39.32                         | 46.00             | 6.68           | QP     |
| 3 | 784.66         | 22.02                   | 3.82                  | 11.45             | 37.29                         | 46.00             | 8.71           | QP     |
| 4 | 837.04         | 22.57                   | 3.66                  | 10.19             | 36.42                         | 46.00             | 9.58           | QP     |
| 5 | 891.36         | 22.89                   | 3.91                  | 10.81             | 37.61                         | 46.00             | 8.39           | QP     |
| 6 | 943.74         | 24.64                   | 4.59                  | 6.92              | 36.15                         | 46.00             | 9.85           | QP     |



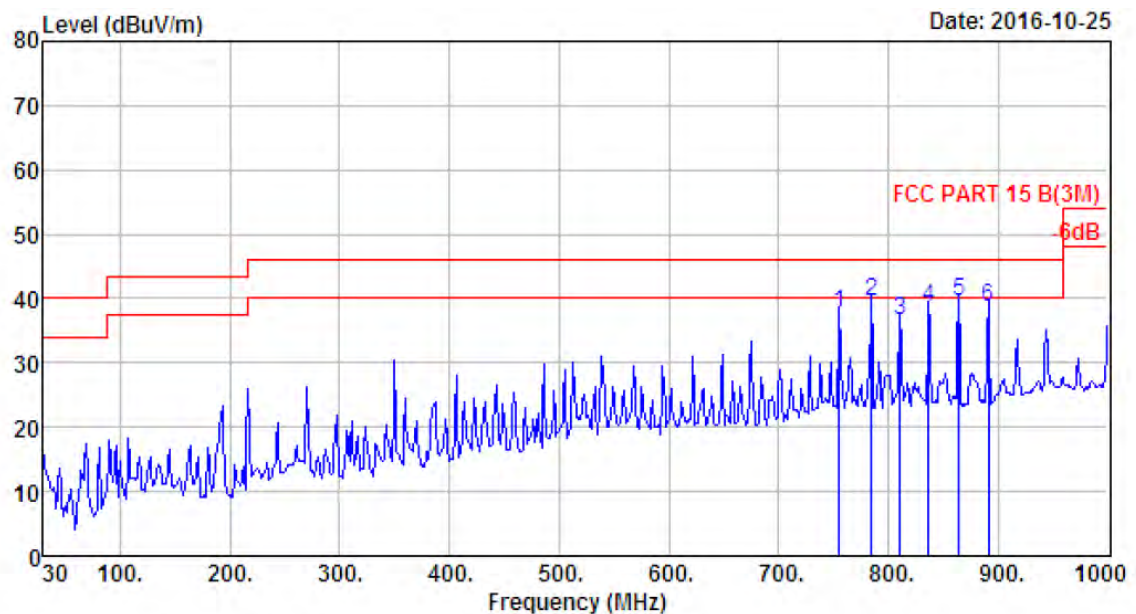
Site no. : 966 1# chamber                      Data no. : 606  
 Dis. / Ant. : 3m 27137                      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2441MHz

|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 270.56         | 12.53                   | 2.27                  | 22.10             | 36.90                         | 46.00             | 9.10           | QP     |
| 2 | 406.36         | 16.20                   | 2.64                  | 17.30             | 36.14                         | 46.00             | 9.86           | QP     |
| 3 | 539.25         | 19.35                   | 3.22                  | 12.87             | 35.44                         | 46.00             | 10.56          | QP     |
| 4 | 784.66         | 22.02                   | 3.82                  | 12.04             | 37.88                         | 46.00             | 8.12           | QP     |
| 5 | 837.04         | 22.57                   | 3.66                  | 12.08             | 38.31                         | 46.00             | 7.69           | QP     |
| 6 | 864.20         | 22.90                   | 3.78                  | 11.10             | 37.78                         | 46.00             | 8.22           | QP     |



Site no. : 966 1# chamber      Data no. : 607  
 Dis. / Ant. : 3m 27137      Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2441MHz

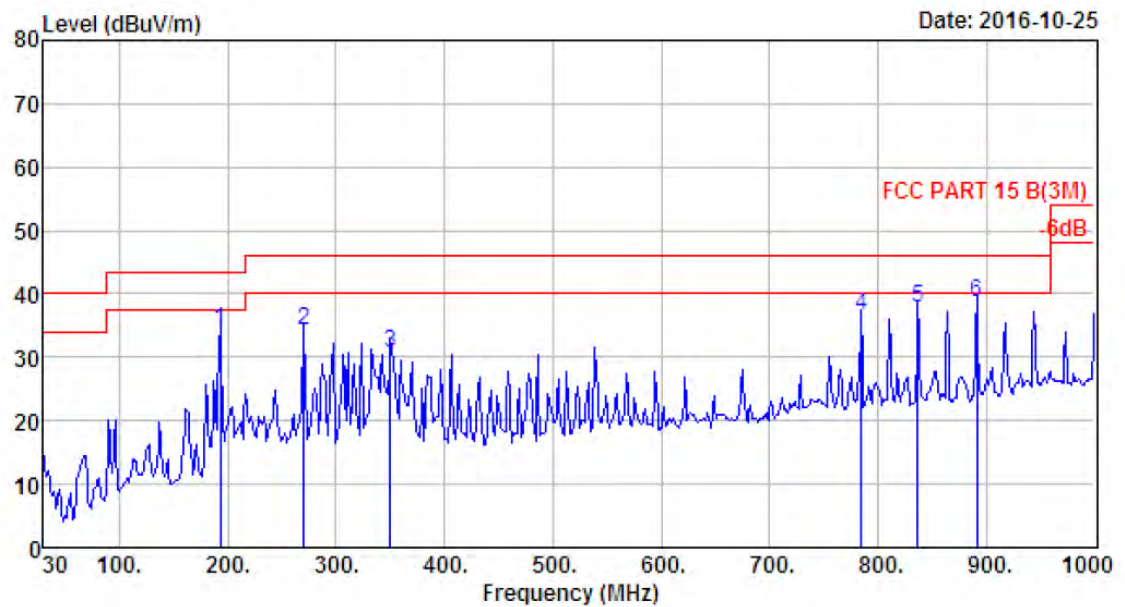
|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 270.56         | 12.53                   | 2.27                  | 14.27             | 29.07                         | 46.00             | 16.93          | QP     |
| 2 | 755.56         | 22.10                   | 3.87                  | 7.35              | 33.32                         | 46.00             | 12.68          | QP     |
| 3 | 784.66         | 22.02                   | 3.82                  | 13.43             | 39.27                         | 46.00             | 6.73           | QP     |
| 4 | 810.85         | 22.38                   | 3.83                  | 9.94              | 36.15                         | 46.00             | 9.85           | QP     |
| 5 | 837.04         | 22.57                   | 3.66                  | 10.44             | 36.67                         | 46.00             | 9.33           | QP     |
| 6 | 891.36         | 22.89                   | 3.91                  | 9.01              | 35.81                         | 46.00             | 10.19          | QP     |



Site no. : 966 1# chamber Data no. : 608  
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2480MHz

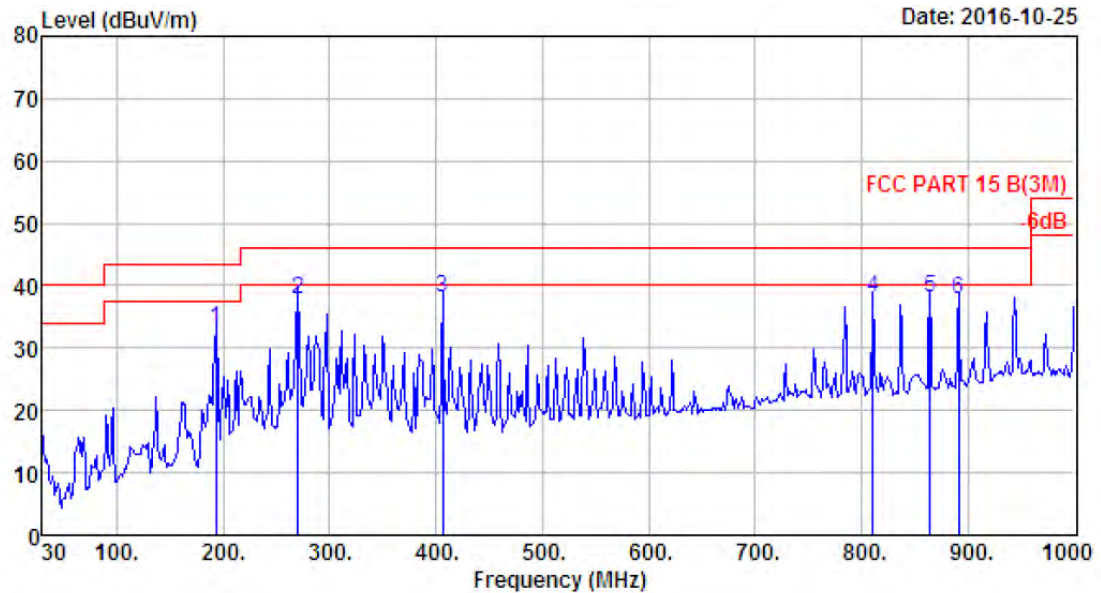
|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 755.56         | 22.10                   | 3.87                  | 11.71             | 37.68                         | 46.00             | 8.32           | QP     |
| 2 | 784.66         | 22.02                   | 3.82                  | 13.64             | 39.48                         | 46.00             | 6.52           | QP     |
| 3 | 810.85         | 22.38                   | 3.83                  | 10.42             | 36.63                         | 46.00             | 9.37           | QP     |
| 4 | 837.04         | 22.57                   | 3.66                  | 12.37             | 38.60                         | 46.00             | 7.40           | QP     |
| 5 | 864.20         | 22.90                   | 3.78                  | 12.77             | 39.45                         | 46.00             | 6.55           | QP     |
| 6 | 891.36         | 22.89                   | 3.91                  | 11.87             | 38.67                         | 46.00             | 7.33           | QP     |





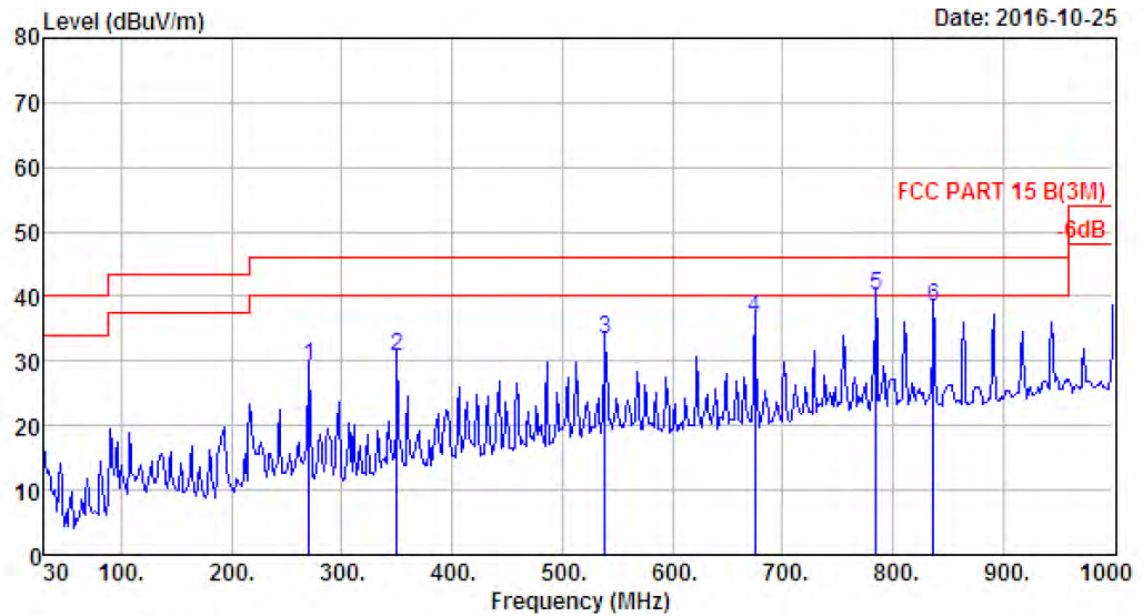
Site no. : 966 1# chamber      Data no. : 609  
 Dis. / Ant. : 3m 27137      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2480MHz

|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 192.96         | 7.85                    | 1.77                  | 24.65             | 34.27                         | 43.50             | 9.23           | QP     |
| 2 | 270.56         | 12.53                   | 2.27                  | 19.40             | 34.20                         | 46.00             | 11.80          | QP     |
| 3 | 350.10         | 14.47                   | 2.51                  | 13.75             | 30.73                         | 46.00             | 15.27          | QP     |
| 4 | 784.66         | 22.02                   | 3.82                  | 10.75             | 36.59                         | 46.00             | 9.41           | QP     |
| 5 | 837.04         | 22.57                   | 3.66                  | 11.54             | 37.77                         | 46.00             | 8.23           | QP     |
| 6 | 891.36         | 22.89                   | 3.91                  | 11.73             | 38.53                         | 46.00             | 7.47           | QP     |



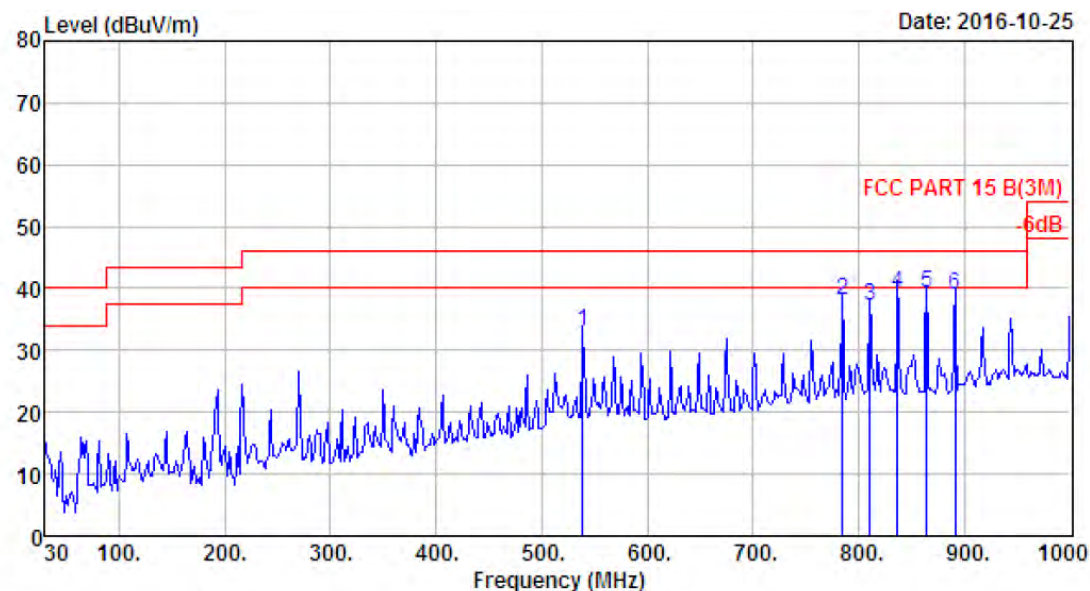
Site no. : 966 1# chamber                      Data no. : 610  
 Dis. / Ant. : 3m 27137                      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2402MHz

|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 192.96         | 7.85                    | 1.77                  | 23.48             | 33.10                         | 43.50             | 10.40          | QP     |
| 2 | 270.56         | 12.53                   | 2.27                  | 22.92             | 37.72                         | 46.00             | 8.28           | QP     |
| 3 | 406.36         | 16.20                   | 2.64                  | 19.15             | 37.99                         | 46.00             | 8.01           | QP     |
| 4 | 810.85         | 22.38                   | 3.83                  | 11.83             | 38.04                         | 46.00             | 7.96           | QP     |
| 5 | 864.20         | 22.90                   | 3.78                  | 11.31             | 37.99                         | 46.00             | 8.01           | QP     |
| 6 | 891.36         | 22.89                   | 3.91                  | 11.11             | 37.91                         | 46.00             | 8.09           | QP     |



Site no. : 966 1# chamber Data no. : 611  
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2402MHz

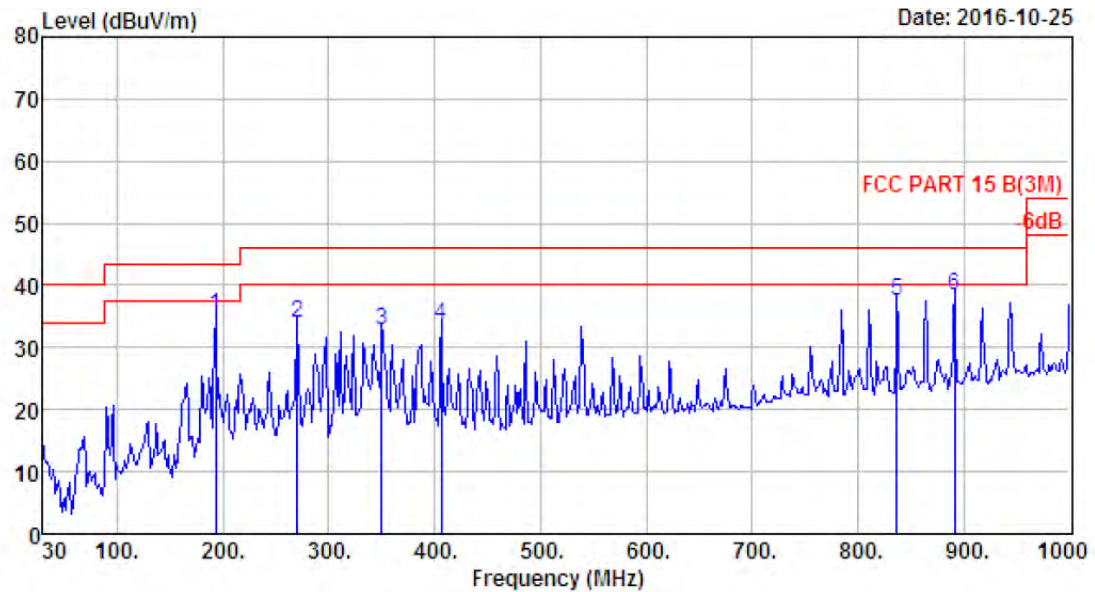
|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 270.56         | 12.53                   | 2.27                  | 14.31             | 29.11                         | 46.00             | 16.89          | QP     |
| 2 | 350.10         | 14.47                   | 2.51                  | 13.65             | 30.63                         | 46.00             | 15.37          | QP     |
| 3 | 539.25         | 19.35                   | 3.22                  | 10.76             | 33.33                         | 46.00             | 12.67          | QP     |
| 4 | 675.05         | 20.26                   | 3.64                  | 12.83             | 36.73                         | 46.00             | 9.27           | QP     |
| 5 | 784.66         | 22.02                   | 3.82                  | 14.17             | 40.01                         | 46.00             | 5.99           | QP     |
| 6 | 837.04         | 22.57                   | 3.66                  | 12.24             | 38.47                         | 46.00             | 7.53           | QP     |



Site no. : 966 1# chamber                      Data no. : 612  
 Dis. / Ant. : 3m 27137                      Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2441MHz

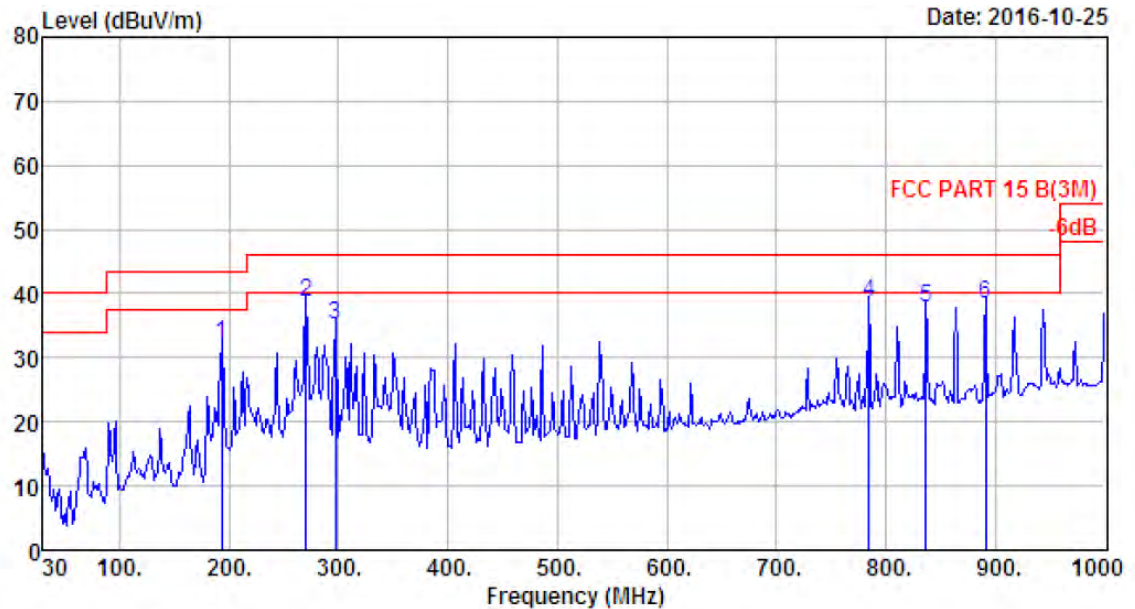
|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 539.25         | 19.35                   | 3.22                  | 10.42             | 32.99                         | 46.00             | 13.01          | QP     |
| 2 | 784.66         | 22.02                   | 3.82                  | 12.12             | 37.96                         | 46.00             | 8.04           | QP     |
| 3 | 810.85         | 22.38                   | 3.83                  | 10.87             | 37.08                         | 46.00             | 8.92           | QP     |
| 4 | 837.04         | 22.57                   | 3.66                  | 13.07             | 39.30                         | 46.00             | 6.70           | QP     |
| 5 | 864.20         | 22.90                   | 3.78                  | 12.66             | 39.34                         | 46.00             | 6.66           | QP     |
| 6 | 891.36         | 22.89                   | 3.91                  | 12.17             | 38.97                         | 46.00             | 7.03           | QP     |





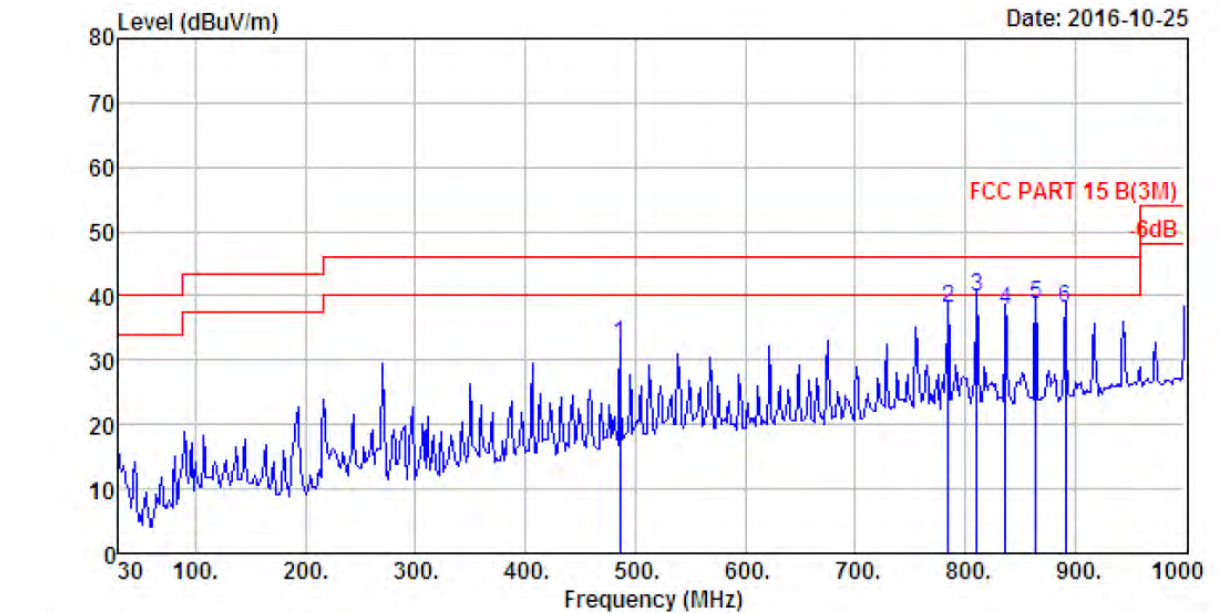
Site no. : 966 1# chamber      Data no. : 613  
 Dis. / Ant. : 3m 27137      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2441MHz

|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 192.96         | 7.85                    | 1.77                  | 25.56             | 35.18                         | 43.50             | 8.32           | QP     |
| 2 | 270.56         | 12.53                   | 2.27                  | 19.18             | 33.98                         | 46.00             | 12.02          | QP     |
| 3 | 350.10         | 14.47                   | 2.51                  | 15.71             | 32.69                         | 46.00             | 13.31          | QP     |
| 4 | 406.36         | 16.20                   | 2.64                  | 14.70             | 33.54                         | 46.00             | 12.46          | QP     |
| 5 | 837.04         | 22.57                   | 3.66                  | 11.20             | 37.43                         | 46.00             | 8.57           | QP     |
| 6 | 891.36         | 22.89                   | 3.91                  | 11.56             | 38.36                         | 46.00             | 7.64           | QP     |



Site no. : 966 1# chamber Data no. : 614  
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2480MHz

|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 192.96         | 7.85                    | 1.77                  | 22.51             | 32.13                         | 43.50             | 11.37          | QP     |
| 2 | 270.56         | 12.53                   | 2.27                  | 23.79             | 38.59                         | 46.00             | 7.41           | QP     |
| 3 | 296.75         | 12.99                   | 2.32                  | 19.70             | 35.01                         | 46.00             | 10.99          | QP     |
| 4 | 784.66         | 22.02                   | 3.82                  | 12.79             | 38.63                         | 46.00             | 7.37           | QP     |
| 5 | 837.04         | 22.57                   | 3.66                  | 11.47             | 37.70                         | 46.00             | 8.30           | QP     |
| 6 | 891.36         | 22.89                   | 3.91                  | 11.55             | 38.35                         | 46.00             | 7.65           | QP     |



Site no. : 966 1# chamber      Data no. : 615  
 Dis. / Ant. : 3m 27137      Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2480MHz

|   | Freq.<br>(MHz) | ANT<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|-------------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 485.90         | 17.67                   | 3.10                  | 11.71             | 32.48                         | 46.00             | 13.52          | QP     |
| 2 | 784.66         | 22.02                   | 3.82                  | 12.19             | 38.03                         | 46.00             | 7.97           | QP     |
| 3 | 810.85         | 22.38                   | 3.83                  | 13.60             | 39.81                         | 46.00             | 6.19           | QP     |
| 4 | 837.04         | 22.57                   | 3.66                  | 11.48             | 37.71                         | 46.00             | 8.29           | QP     |
| 5 | 864.20         | 22.90                   | 3.78                  | 12.02             | 38.70                         | 46.00             | 7.30           | QP     |
| 6 | 891.36         | 22.89                   | 3.91                  | 11.38             | 38.18                         | 46.00             | 7.82           | QP     |



## Above 1GHz

Site no. : 966 1# chamber Data no. : 528  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2402MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2402.00        | 27.61                    | 6.62                  | 34.64                 | 94.14             | 93.73                         | 74.00              | -19.73         | Peak   |
| 2 | 4804.00        | 31.25                    | 11.77                 | 35.64                 | 30.80             | 38.18                         | 74.00              | 35.82          | Peak   |
| 3 | 7206.00        | 36.52                    | 11.54                 | 33.95                 | 28.61             | 42.72                         | 74.00              | 31.28          | Peak   |
| 4 | 8684.00        | 37.32                    | 11.45                 | 33.66                 | 29.14             | 44.25                         | 74.00              | 29.75          | Peak   |
| 5 | 10826.00       | 39.33                    | 11.30                 | 34.00                 | 26.76             | 43.39                         | 74.00              | 30.61          | Peak   |
| 6 | 13954.00       | 41.35                    | 10.96                 | 32.99                 | 25.70             | 45.02                         | 74.00              | 28.98          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : 966 1# chamber Data no. : 529  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2402MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2402.00        | 27.61                    | 6.62                  | 34.64                 | 95.48             | 95.07                         | 74.00              | -21.07         | Peak   |
| 2 | 4804.00        | 31.25                    | 11.77                 | 35.64                 | 30.56             | 37.94                         | 74.00              | 36.06          | Peak   |
| 3 | 7206.00        | 36.52                    | 11.54                 | 33.95                 | 27.24             | 41.35                         | 74.00              | 32.65          | Peak   |
| 4 | 10214.00       | 38.48                    | 11.47                 | 34.50                 | 28.01             | 43.46                         | 74.00              | 30.54          | Peak   |
| 5 | 11200.00       | 39.39                    | 11.14                 | 33.24                 | 26.37             | 43.66                         | 74.00              | 30.34          | Peak   |
| 6 | 13580.00       | 40.31                    | 11.40                 | 32.64                 | 25.86             | 44.93                         | 74.00              | 29.07          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : 966 1# chamber      Data no. : 532  
 Dis. / Ant. : 3m ANT 1-18G      Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2441MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2441.00        | 27.60                    | 6.67                  | 34.85                 | 93.83             | 93.25                         | 74.00              | -19.25         | Peak   |
| 2 | 4882.00        | 31.37                    | 12.07                 | 35.76                 | 31.14             | 38.82                         | 74.00              | 35.18          | Peak   |
| 3 | 7323.00        | 36.55                    | 11.57                 | 34.14                 | 28.64             | 42.62                         | 74.00              | 31.38          | Peak   |
| 4 | 8735.00        | 37.40                    | 11.45                 | 33.76                 | 28.46             | 43.55                         | 74.00              | 30.45          | Peak   |
| 5 | 11234.00       | 39.37                    | 11.12                 | 33.25                 | 25.41             | 42.65                         | 74.00              | 31.35          | Peak   |
| 6 | 14056.00       | 41.51                    | 10.90                 | 33.06                 | 24.55             | 43.90                         | 74.00              | 30.10          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : 966 1# chamber      Data no. : 533  
 Dis. / Ant. : 3m ANT 1-18G      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2441MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2441.00        | 27.60                    | 6.67                  | 34.85                 | 94.75             | 94.17                         | 74.00              | -20.17         | Peak   |
| 2 | 4882.00        | 31.37                    | 12.07                 | 35.76                 | 30.61             | 38.29                         | 74.00              | 35.71          | Peak   |
| 3 | 7323.00        | 36.55                    | 11.57                 | 34.14                 | 28.25             | 42.23                         | 74.00              | 31.77          | Peak   |
| 4 | 8684.00        | 37.32                    | 11.45                 | 33.66                 | 26.43             | 41.54                         | 74.00              | 32.46          | Peak   |
| 5 | 11200.00       | 39.39                    | 11.14                 | 33.24                 | 25.36             | 42.65                         | 74.00              | 31.35          | Peak   |
| 6 | 14056.00       | 41.51                    | 10.90                 | 33.06                 | 25.12             | 44.47                         | 74.00              | 29.53          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : 966 1# chamber                      Data no. : 534  
 Dis. / Ant. : 3m ANT 1-18G                      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2480MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2480.00        | 27.58                    | 6.71                  | 35.11                 | 96.07             | 95.25                         | 74.00              | -21.25         | Peak   |
| 2 | 4960.00        | 31.49                    | 12.44                 | 36.01                 | 31.14             | 39.06                         | 74.00              | 34.94          | Peak   |
| 3 | 7440.00        | 36.54                    | 11.61                 | 34.22                 | 29.24             | 43.17                         | 74.00              | 30.83          | Peak   |
| 4 | 9160.00        | 37.69                    | 11.54                 | 34.07                 | 28.14             | 43.30                         | 74.00              | 30.70          | Peak   |
| 5 | 10180.00       | 38.42                    | 11.49                 | 34.53                 | 27.94             | 43.32                         | 74.00              | 30.68          | Peak   |
| 6 | 13614.00       | 40.40                    | 11.36                 | 32.68                 | 24.83             | 43.91                         | 74.00              | 30.09          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : 966 1# chamber                      Data no. : 535  
 Dis. / Ant. : 3m ANT 1-18G                      Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2480MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2480.00        | 27.58                    | 6.71                  | 35.11                 | 94.88             | 94.06                         | 74.00              | -20.06         | Peak   |
| 2 | 4960.00        | 31.49                    | 12.44                 | 36.01                 | 32.06             | 39.98                         | 74.00              | 34.02          | Peak   |
| 3 | 7440.00        | 36.54                    | 11.61                 | 34.22                 | 29.22             | 43.15                         | 74.00              | 30.85          | Peak   |
| 4 | 8684.00        | 37.32                    | 11.45                 | 33.66                 | 28.15             | 43.26                         | 74.00              | 30.74          | Peak   |
| 5 | 11115.00       | 39.44                    | 11.20                 | 33.55                 | 26.25             | 43.34                         | 74.00              | 30.66          | Peak   |
| 6 | 14175.00       | 41.61                    | 10.91                 | 33.35                 | 25.46             | 44.63                         | 74.00              | 29.37          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 966 1# chamber                      Data no. : 538  
 Dis. / Ant. : 3m ANT 1-18G                      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2402MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2402.00        | 27.61                    | 6.62                  | 34.64                 | 95.25             | 94.84                         | 74.00              | -20.84         | Peak   |
| 2 | 4804.00        | 31.25                    | 11.77                 | 35.64                 | 31.49             | 38.87                         | 74.00              | 35.13          | Peak   |
| 3 | 7206.00        | 36.52                    | 11.54                 | 33.95                 | 27.68             | 41.79                         | 74.00              | 32.21          | Peak   |
| 4 | 9296.00        | 37.91                    | 11.61                 | 34.57                 | 26.64             | 41.59                         | 74.00              | 32.41          | Peak   |
| 5 | 11234.00       | 39.37                    | 11.12                 | 33.25                 | 25.42             | 42.66                         | 74.00              | 31.34          | Peak   |
| 6 | 13546.00       | 40.21                    | 11.44                 | 32.61                 | 25.32             | 44.36                         | 74.00              | 29.64          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official  
 limit are not reported.

Site no. : 966 1# chamber                      Data no. : 539  
 Dis. / Ant. : 3m ANT 1-18G                      Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2402MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2402.00        | 27.61                    | 6.62                  | 34.64                 | 94.05             | 93.64                         | 74.00              | -19.64         | Peak   |
| 2 | 4804.00        | 31.25                    | 11.77                 | 35.64                 | 32.06             | 39.44                         | 74.00              | 34.56          | Peak   |
| 3 | 7206.00        | 36.52                    | 11.54                 | 33.95                 | 27.88             | 41.99                         | 74.00              | 32.01          | Peak   |
| 4 | 8684.00        | 37.32                    | 11.45                 | 33.66                 | 28.34             | 43.45                         | 74.00              | 30.55          | Peak   |
| 5 | 10180.00       | 38.42                    | 11.49                 | 34.53                 | 27.65             | 43.03                         | 74.00              | 30.97          | Peak   |
| 6 | 14175.00       | 41.61                    | 10.91                 | 33.35                 | 26.64             | 45.81                         | 74.00              | 28.19          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official  
 limit are not reported.

Site no. : 966 1# chamber                      Data no. : 542  
 Dis. / Ant. : 3m ANT 1-18G                      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2441MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2441.00        | 27.60                    | 6.67                  | 34.85                 | 94.94             | 94.36                         | 74.00              | -20.36         | Peak   |
| 2 | 4882.00        | 31.37                    | 12.07                 | 35.76                 | 32.15             | 39.83                         | 74.00              | 34.17          | Peak   |
| 3 | 7323.00        | 36.55                    | 11.57                 | 34.14                 | 28.94             | 42.92                         | 74.00              | 31.08          | Peak   |
| 4 | 8684.00        | 37.32                    | 11.45                 | 33.66                 | 28.37             | 43.48                         | 74.00              | 30.52          | Peak   |
| 5 | 11285.00       | 39.33                    | 11.08                 | 33.32                 | 26.59             | 43.68                         | 74.00              | 30.32          | Peak   |
| 6 | 14005.00       | 41.46                    | 10.90                 | 33.01                 | 26.18             | 45.53                         | 74.00              | 28.47          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : 966 1# chamber                      Data no. : 543  
 Dis. / Ant. : 3m ANT 1-18G                      Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2441MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2441.00        | 27.60                    | 6.67                  | 34.85                 | 93.70             | 93.12                         | 74.00              | -19.12         | Peak   |
| 2 | 4882.00        | 31.37                    | 12.07                 | 35.76                 | 31.15             | 38.83                         | 74.00              | 35.17          | Peak   |
| 3 | 7323.00        | 36.55                    | 11.57                 | 34.14                 | 28.94             | 42.92                         | 74.00              | 31.08          | Peak   |
| 4 | 8684.00        | 37.32                    | 11.45                 | 33.66                 | 28.37             | 43.48                         | 74.00              | 30.52          | Peak   |
| 5 | 11285.00       | 39.33                    | 11.08                 | 33.32                 | 26.59             | 43.68                         | 74.00              | 30.32          | Peak   |
| 6 | 14090.00       | 41.54                    | 10.91                 | 33.13                 | 25.39             | 44.71                         | 74.00              | 29.29          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 966 1# chamber                      Data no. : 544  
 Dis. / Ant. : 3m ANT 1-18G                      Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2480MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2480.00        | 27.58                    | 6.71                  | 35.11                 | 93.89             | 93.07                         | 74.00              | -19.07         | Peak   |
| 2 | 4960.00        | 31.49                    | 12.44                 | 36.01                 | 32.85             | 40.77                         | 74.00              | 33.23          | Peak   |
| 3 | 7440.00        | 36.54                    | 11.61                 | 34.22                 | 29.21             | 43.14                         | 74.00              | 30.86          | Peak   |
| 4 | 8786.00        | 37.48                    | 11.46                 | 33.90                 | 28.61             | 43.65                         | 74.00              | 30.35          | Peak   |
| 5 | 11030.00       | 39.50                    | 11.27                 | 33.98                 | 26.14             | 42.93                         | 74.00              | 31.07          | Peak   |
| 6 | 13954.00       | 41.35                    | 10.96                 | 32.99                 | 25.29             | 44.61                         | 74.00              | 29.39          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : 966 1# chamber                      Data no. : 545  
 Dis. / Ant. : 3m ANT 1-18G                      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2480MHz

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2480.00        | 27.58                    | 6.71                  | 35.11                 | 94.90             | 94.08                         | 74.00              | -20.08         | Peak   |
| 2 | 4960.00        | 31.49                    | 12.44                 | 36.01                 | 30.71             | 38.63                         | 74.00              | 35.37          | Peak   |
| 3 | 7440.00        | 36.54                    | 11.61                 | 34.22                 | 28.16             | 42.09                         | 74.00              | 31.91          | Peak   |
| 4 | 10214.00       | 38.48                    | 11.47                 | 34.50                 | 27.61             | 43.06                         | 74.00              | 30.94          | Peak   |
| 5 | 11676.00       | 39.00                    | 11.09                 | 33.24                 | 25.74             | 42.59                         | 74.00              | 31.41          | Peak   |
| 6 | 13920.00       | 41.26                    | 11.00                 | 33.00                 | 25.25             | 44.51                         | 74.00              | 29.49          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

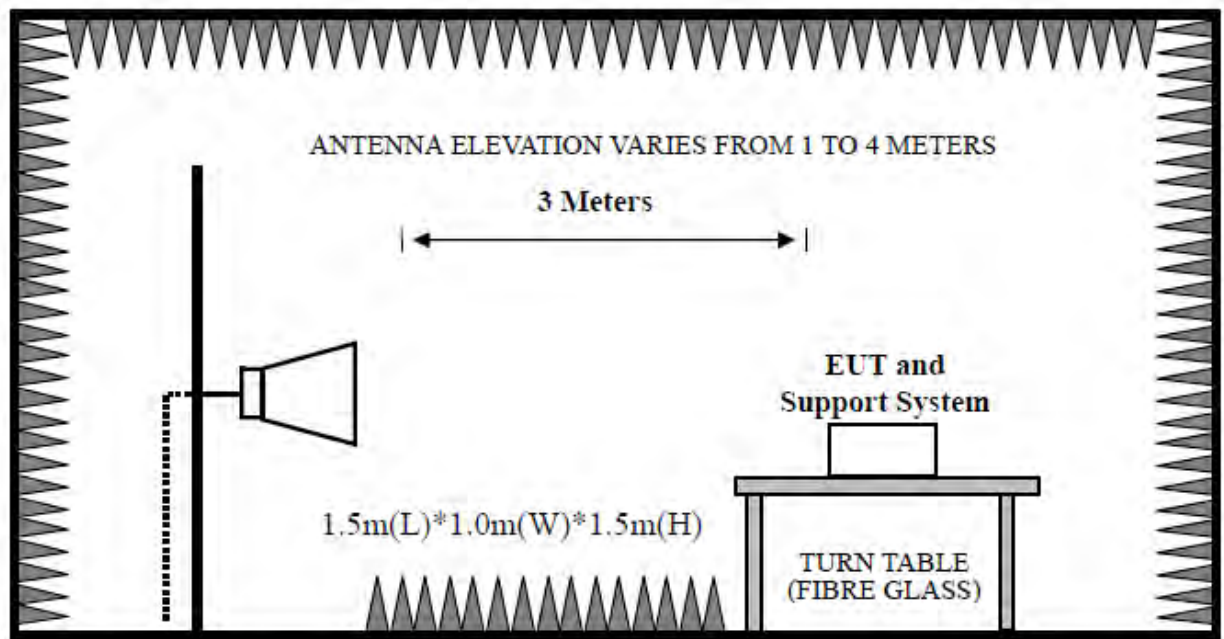
## 9. BAND EDGE COMPLIANCE

### 9.1. Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

### 9.2. Block Diagram of Test setup

Above 1GHz



### 9.3. Test Procedure

EUT was placed on a turn table, which is 1.5 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of emissions

(a) Peak : RBW = 1MHz, VBW = 1MHz, Detector=PEAK detector, Sweep time = auto

(b) AV : RBW = 1MHz, VBW = 10Hz, Detector=PEAK detector, Sweep time = auto .

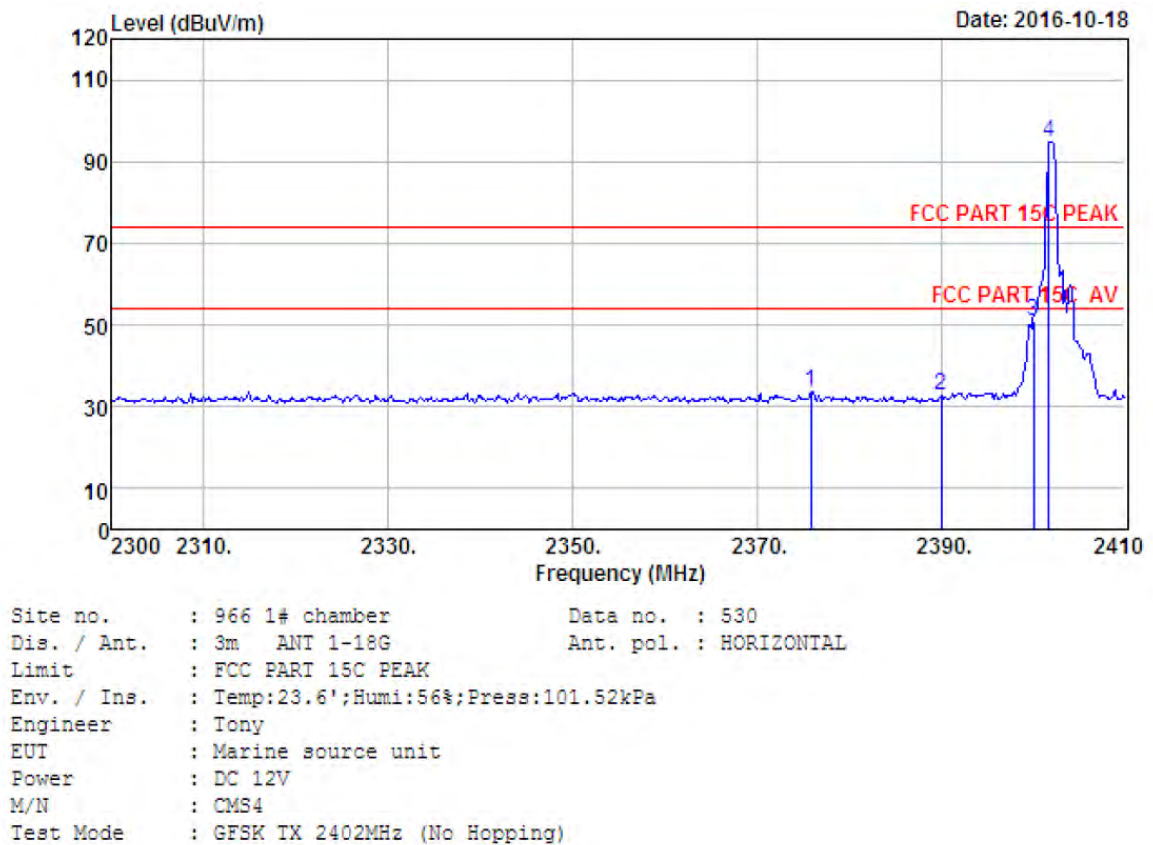
### 9.4. Test Result

Pass

Note: 1、 For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

2、 The frequency 2402MHz 、2441MHz and 2480MHz is fundamental frequency which no limit, the limit on plots is automatically generated by the software, it's not fundamental limit, we can't remove it.

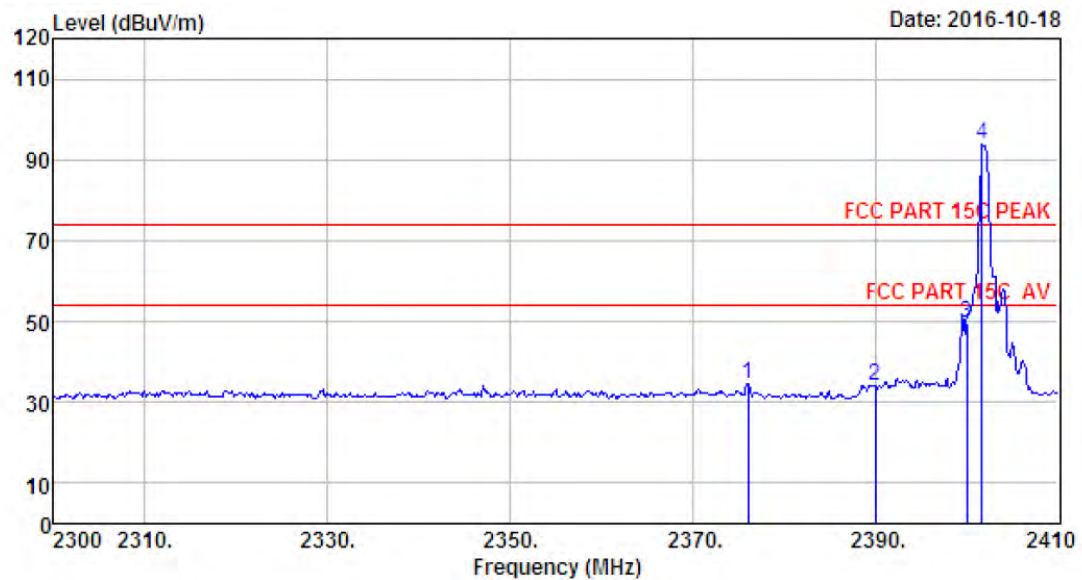
## 9.5. Test Data



|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2375.90        | 27.64                    | 6.60                  | 34.59                 | 34.09             | 33.74                         | 74.00              | 40.26          | Peak   |
| 2 | 2390.00        | 27.64                    | 6.62                  | 34.62                 | 33.07             | 32.71                         | 74.00              | 41.29          | Peak   |
| 3 | 2400.00        | 27.61                    | 6.62                  | 34.64                 | 51.38             | 50.97                         | 74.00              | 23.03          | Peak   |
| 4 | 2401.75        | 27.61                    | 6.62                  | 34.64                 | 95.17             | 94.76                         | 74.00              | -20.76         | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

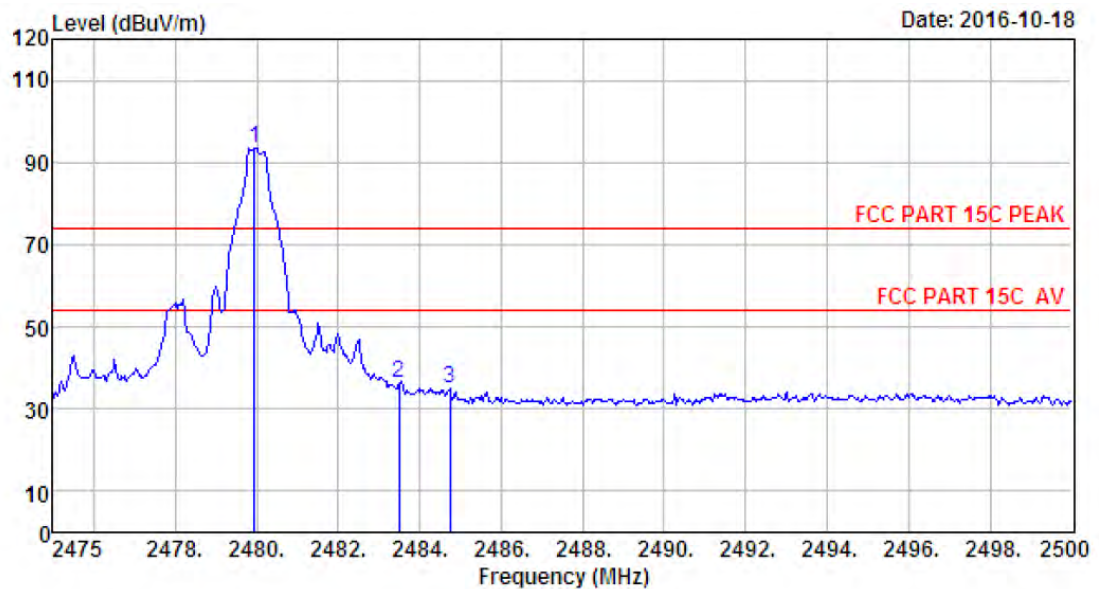




Site no. : 966 1# chamber      Data no. : 531  
 Dis. / Ant. : 3m ANT 1-18G      Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6°;Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2402MHz (No Hopping)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBUV) | Emission<br>Level<br>(dBUV/m) | Limits<br>(dBUV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2376.12        | 27.64                    | 6.60                  | 34.59                 | 35.05             | 34.70                         | 74.00              | 39.30          | Peak   |
| 2 | 2390.00        | 27.64                    | 6.62                  | 34.62                 | 34.43             | 34.07                         | 74.00              | 39.93          | Peak   |
| 3 | 2400.00        | 27.61                    | 6.62                  | 34.64                 | 49.85             | 49.44                         | 74.00              | 24.56          | Peak   |
| 4 | 2401.75        | 27.61                    | 6.62                  | 34.64                 | 94.07             | 93.66                         | 74.00              | -19.66         | Peak   |

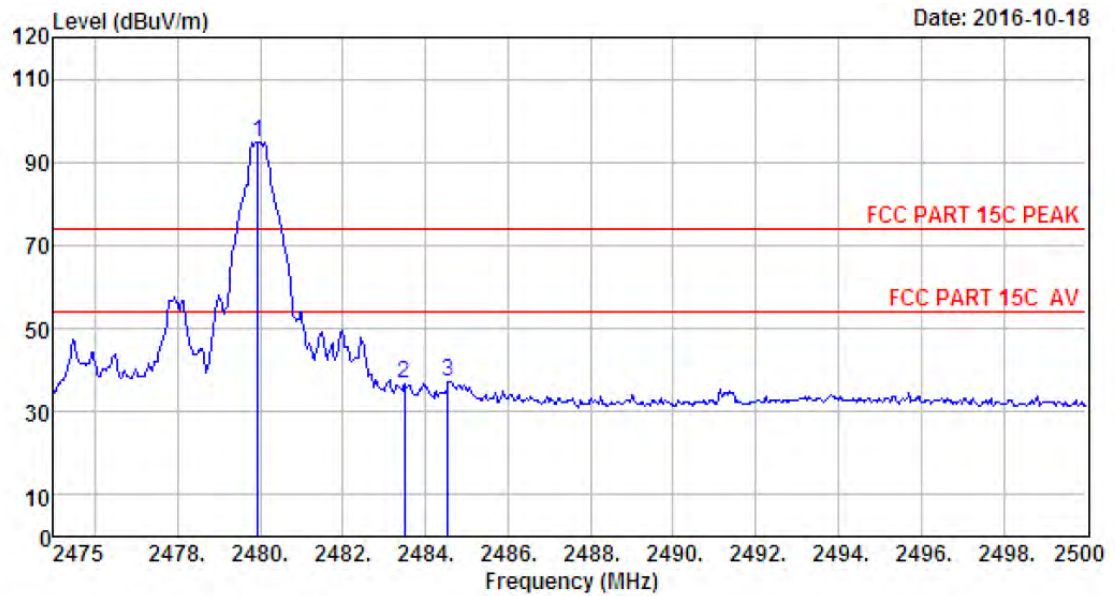
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 966 1# chamber      Data no. : 536  
 Dis. / Ant. : 3m ANT 1-18G      Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK IX 2480MHz (No Hopping)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2479.95        | 27.58                    | 6.71                  | 35.11                 | 94.24             | 93.42                         | 74.00              | -19.42         | Peak   |
| 2 | 2483.50        | 27.58                    | 6.71                  | 35.11                 | 37.04             | 36.22                         | 74.00              | 37.78          | Peak   |
| 3 | 2484.75        | 27.58                    | 6.71                  | 35.11                 | 35.70             | 34.88                         | 74.00              | 39.12          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

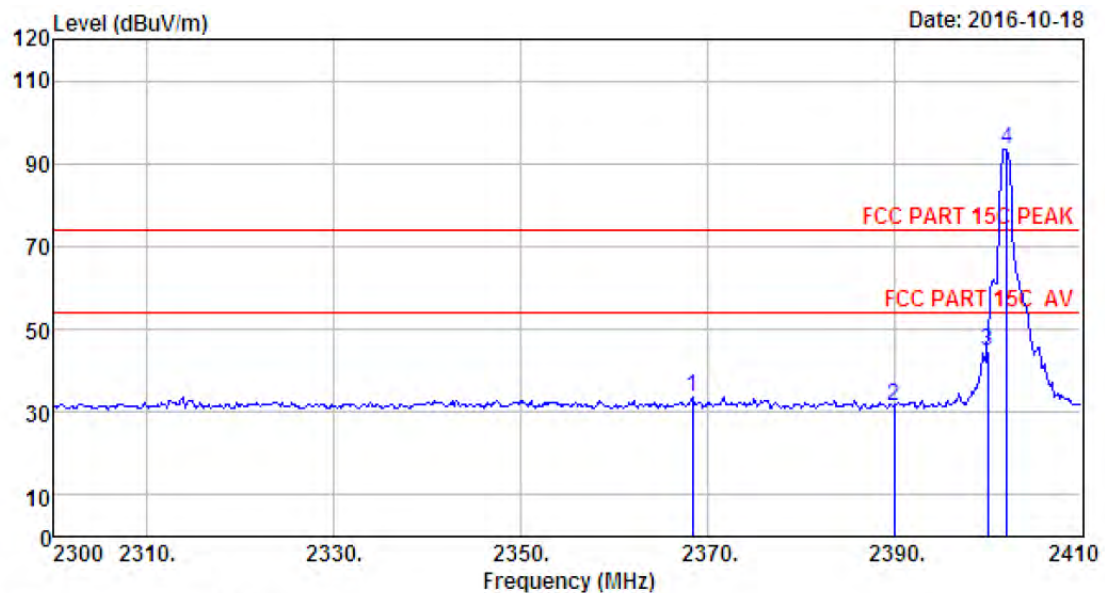


Site no. : 966 1# chamber                      Data no. : 537  
 Dis. / Ant. : 3m ANT 1-18G                      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2480MHz (No Hopping)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2479.95        | 27.58                    | 6.71                  | 35.11                 | 95.75             | 94.93                         | 74.00              | -20.93         | Peak   |
| 2 | 2483.50        | 27.58                    | 6.71                  | 35.11                 | 37.62             | 36.80                         | 74.00              | 37.20          | Peak   |
| 3 | 2484.55        | 27.58                    | 6.71                  | 35.11                 | 38.08             | 37.26                         | 74.00              | 36.74          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

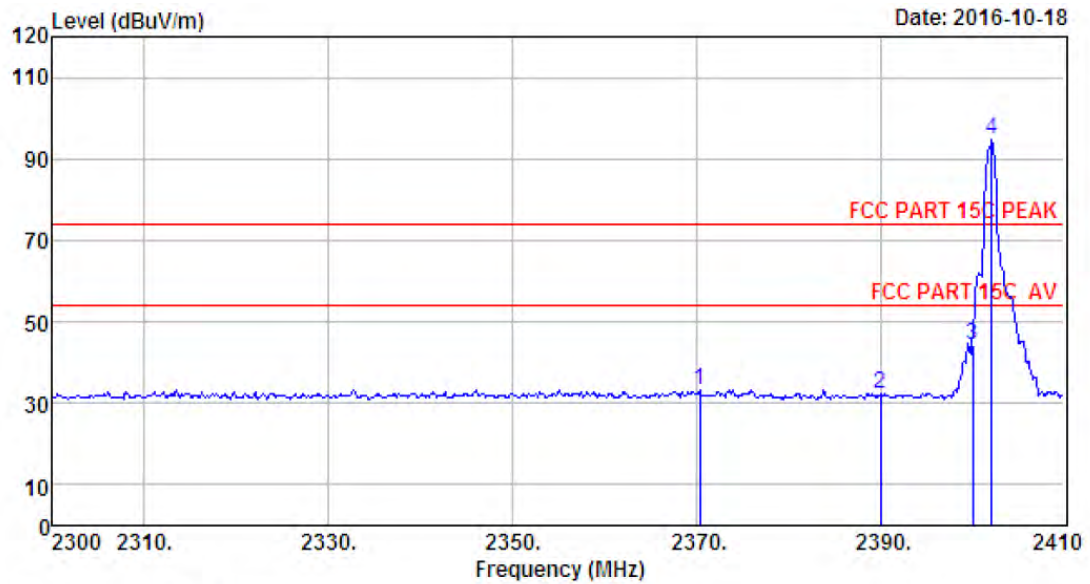




Site no. : 966 1# chamber      Data no. : 540  
 Dis. / Ant. : 3m ANT 1-18G      Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2402MHz (No Hopping)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2368.42        | 27.67                    | 6.58                  | 34.59                 | 33.85             | 33.51                         | 74.00              | 40.49          | Peak   |
| 2 | 2390.00        | 27.64                    | 6.62                  | 34.62                 | 31.77             | 31.41                         | 74.00              | 42.59          | Peak   |
| 3 | 2400.00        | 27.61                    | 6.62                  | 34.64                 | 45.15             | 44.74                         | 74.00              | 29.26          | Peak   |
| 4 | 2402.08        | 27.61                    | 6.62                  | 34.64                 | 93.78             | 93.37                         | 74.00              | -19.37         | Peak   |

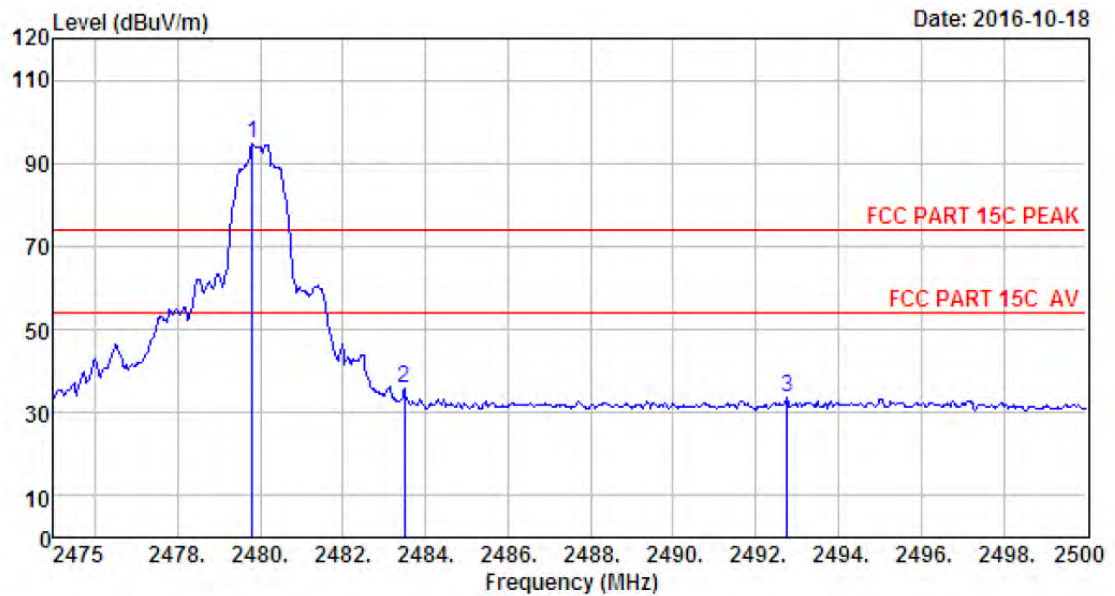
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 966 1# chamber      Data no. : 541  
 Dis. / Ant. : 3m ANT 1-18G      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2402MHz (No Hopping)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 2370.40        | 27.67                    | 6.60                  | 34.59                 | 33.52             | 33.20                         | 74.00             | 40.80          | Peak   |
| 2 | 2390.00        | 27.64                    | 6.62                  | 34.62                 | 32.47             | 32.11                         | 74.00             | 41.89          | Peak   |
| 3 | 2400.00        | 27.61                    | 6.62                  | 34.64                 | 44.54             | 44.13                         | 74.00             | 29.87          | Peak   |
| 4 | 2402.08        | 27.61                    | 6.62                  | 34.64                 | 95.31             | 94.90                         | 74.00             | -20.90         | Peak   |

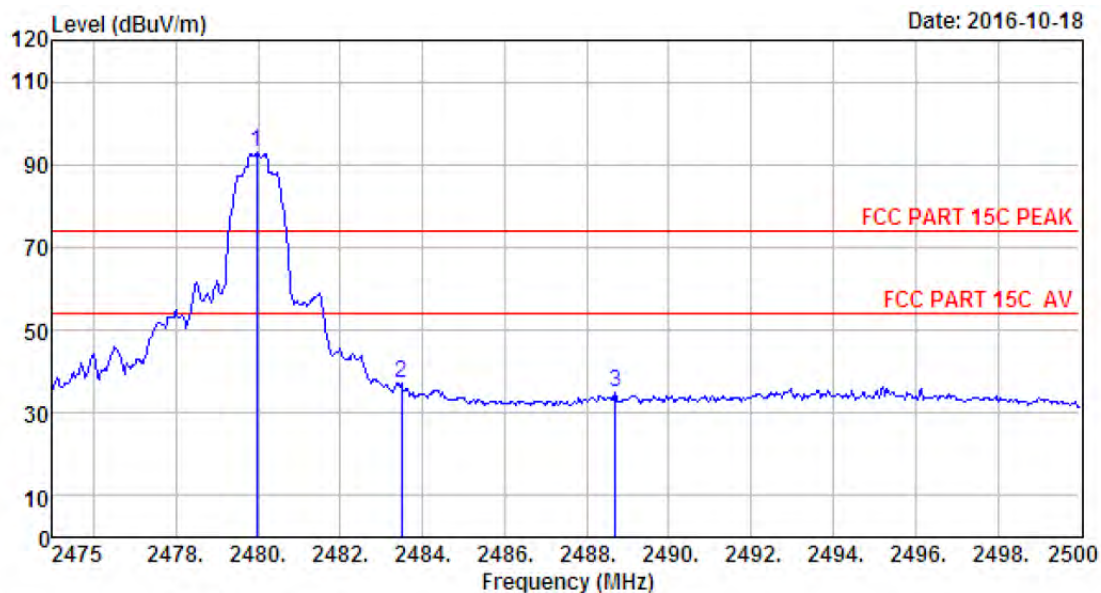
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 966 1# chamber Data no. : 546  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2480MHz (No Hopping)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|-------------------|----------------|--------|
| 1 | 2479.80        | 27.58                    | 6.71                  | 35.11                 | 95.55             | 94.73                         | 74.00             | -20.73         | Peak   |
| 2 | 2483.50        | 27.58                    | 6.71                  | 35.11                 | 36.75             | 35.93                         | 74.00             | 38.07          | Peak   |
| 3 | 2492.75        | 27.58                    | 6.73                  | 35.24                 | 34.75             | 33.82                         | 74.00             | 40.18          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

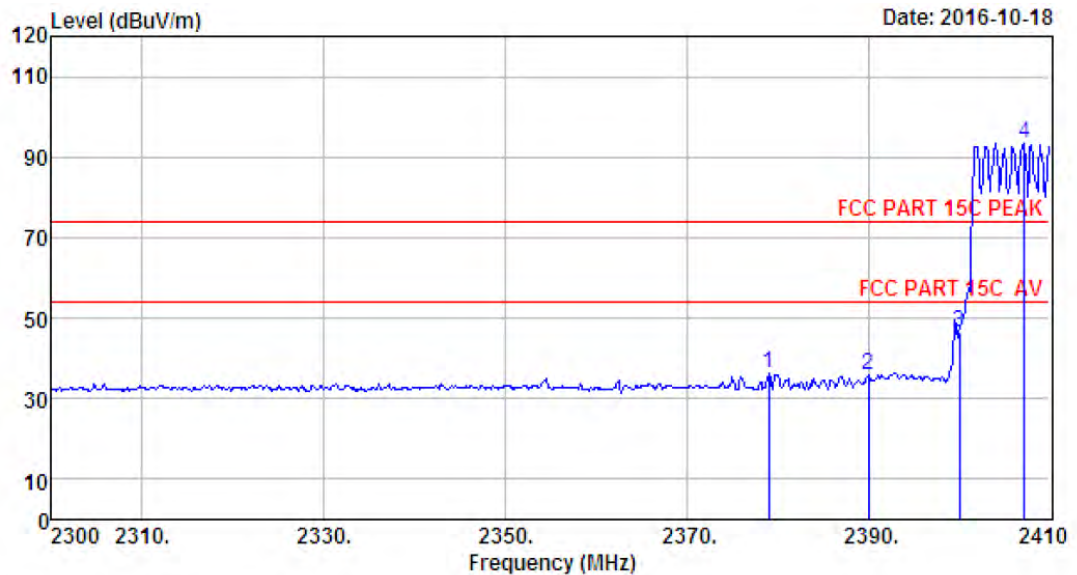


Site no. : 966 1# chamber                      Data no. : 547  
 Dis. / Ant. : 3m ANT 1-18G                      Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2480MHz (No Hopping)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBUV) | Emission<br>Level<br>(dBUV/m) | Limits<br>(dBUV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2479.98        | 27.58                    | 6.71                  | 35.11                 | 93.86             | 93.04                         | 74.00              | -19.04         | Peak   |
| 2 | 2483.50        | 27.58                    | 6.71                  | 35.11                 | 38.04             | 37.22                         | 74.00              | 36.78          | Peak   |
| 3 | 2488.70        | 27.58                    | 6.73                  | 35.11                 | 35.87             | 35.07                         | 74.00              | 38.93          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



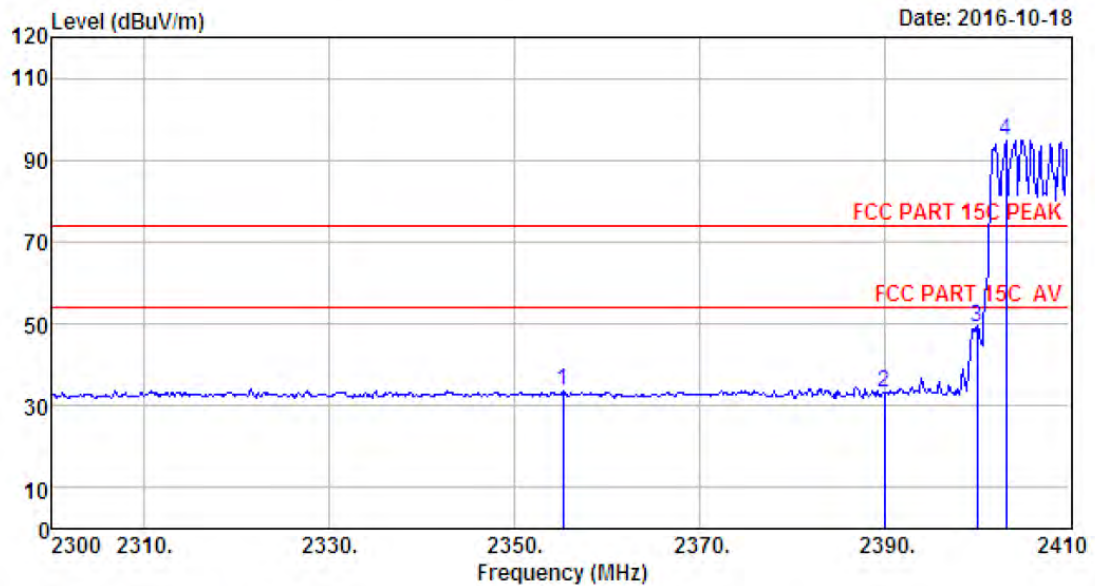


Site no. : 966 1# chamber  
 Dis. / Ant. : 3m ANT 1-18G  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2402MHz (Hopping On)

Data no. : 548  
Ant. pol. : VERTICAL

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2378.98        | 27.64                    | 6.60                  | 34.59                 | 36.48             | 36.13                         | 74.00              | 37.87          | Peak   |
| 2 | 2390.00        | 27.64                    | 6.62                  | 34.62                 | 36.16             | 35.80                         | 74.00              | 38.20          | Peak   |
| 3 | 2400.00        | 27.61                    | 6.62                  | 34.64                 | 46.83             | 46.42                         | 74.00              | 27.58          | Peak   |
| 4 | 2407.25        | 27.61                    | 6.64                  | 34.64                 | 93.88             | 93.49                         | 74.00              | -19.49         | Peak   |

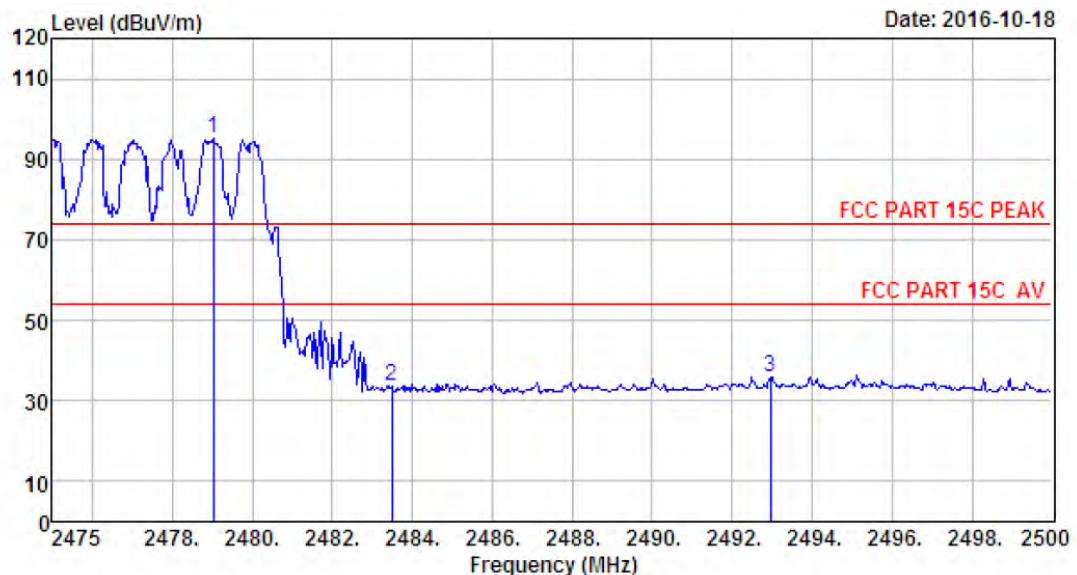
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 966 1# chamber                      Data no. : 549  
 Dis. / Ant. : 3m ANT 1-18G                      Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2402MHz (Hopping On)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2355.22        | 27.70                    | 6.58                  | 34.57                 | 34.04             | 33.75                         | 74.00              | 40.25          | Peak   |
| 2 | 2390.00        | 27.64                    | 6.62                  | 34.62                 | 33.78             | 33.42                         | 74.00              | 40.58          | Peak   |
| 3 | 2400.00        | 27.61                    | 6.62                  | 34.64                 | 49.77             | 49.36                         | 74.00              | 24.64          | Peak   |
| 4 | 2403.18        | 27.61                    | 6.64                  | 34.64                 | 95.23             | 94.84                         | 74.00              | -20.84         | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

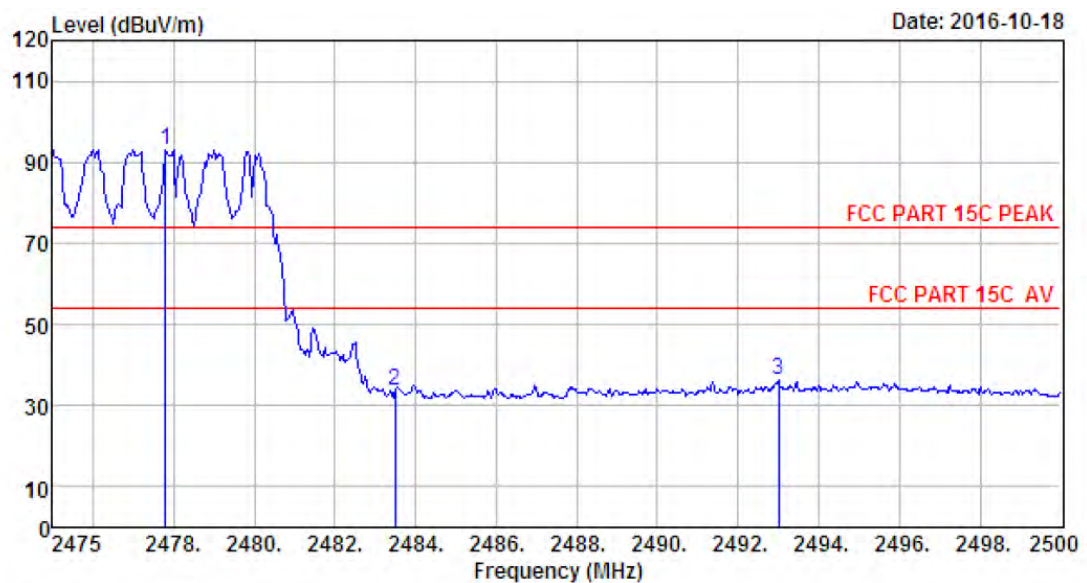


Site no. : 966 1# chamber Data no. : 550  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2480MHz (Hopping On)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2479.03        | 27.58                    | 6.71                  | 35.11                 | 95.83             | 95.01                         | 74.00              | -21.01         | Peak   |
| 2 | 2483.50        | 27.58                    | 6.71                  | 35.11                 | 34.54             | 33.72                         | 74.00              | 40.28          | Peak   |
| 3 | 2492.95        | 27.58                    | 6.73                  | 35.24                 | 36.85             | 35.92                         | 74.00              | 38.08          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

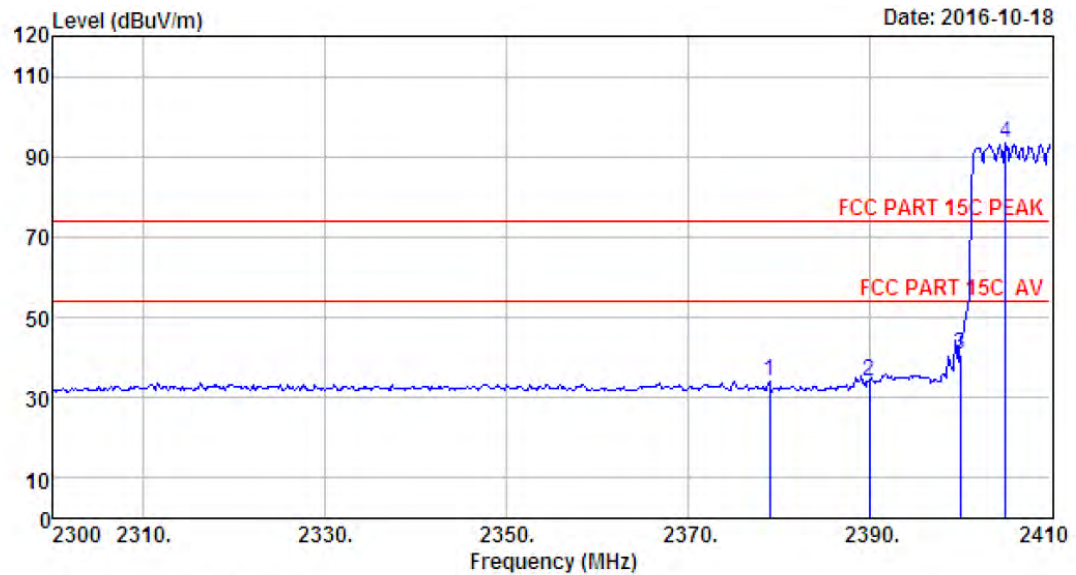




Site no. : 966 1# chamber Data no. : 551  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : GFSK TX 2480MHz (Hopping On)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2477.80        | 27.58                    | 6.71                  | 35.11                 | 93.96             | 93.14                         | 74.00              | -19.14         | Peak   |
| 2 | 2483.50        | 27.58                    | 6.71                  | 35.11                 | 34.61             | 33.79                         | 74.00              | 40.21          | Peak   |
| 3 | 2493.00        | 27.58                    | 6.73                  | 35.24                 | 37.40             | 36.47                         | 74.00              | 37.53          | Peak   |

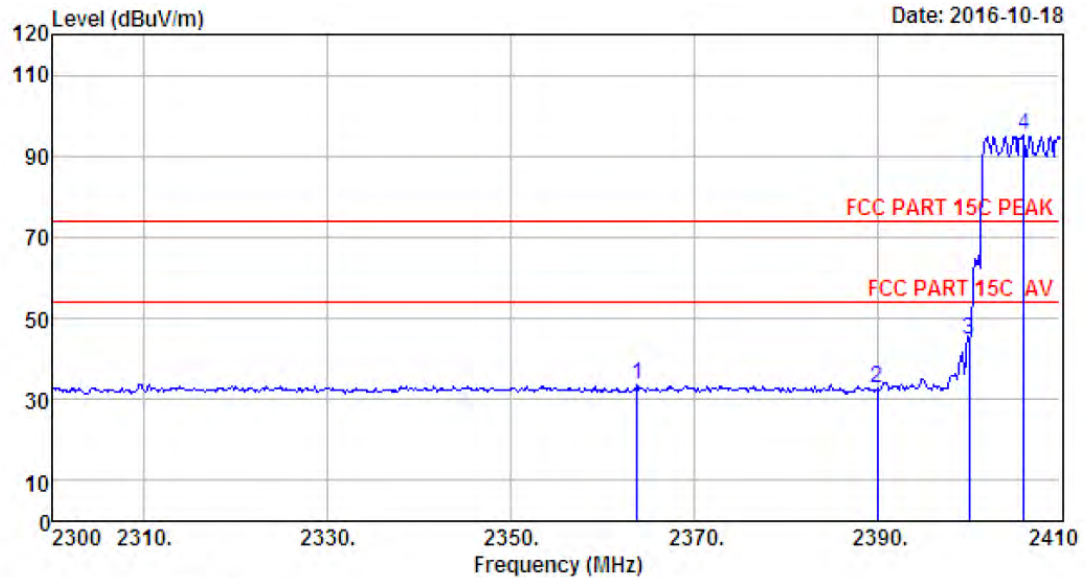
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 966 1# chamber      Data no. : 552  
 Dis. / Ant. : 3m ANT 1-18G      Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6°; Humi:56%; Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2402MHz (Hopping On)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2378.98        | 27.64                    | 6.60                  | 34.59                 | 34.50             | 34.15                         | 74.00              | 39.85          | Peak   |
| 2 | 2390.00        | 27.64                    | 6.62                  | 34.62                 | 34.62             | 34.26                         | 74.00              | 39.74          | Peak   |
| 3 | 2400.00        | 27.61                    | 6.62                  | 34.64                 | 41.31             | 40.90                         | 74.00              | 33.10          | Peak   |
| 4 | 2405.05        | 27.61                    | 6.64                  | 34.64                 | 93.62             | 93.23                         | 74.00              | -19.23         | Peak   |

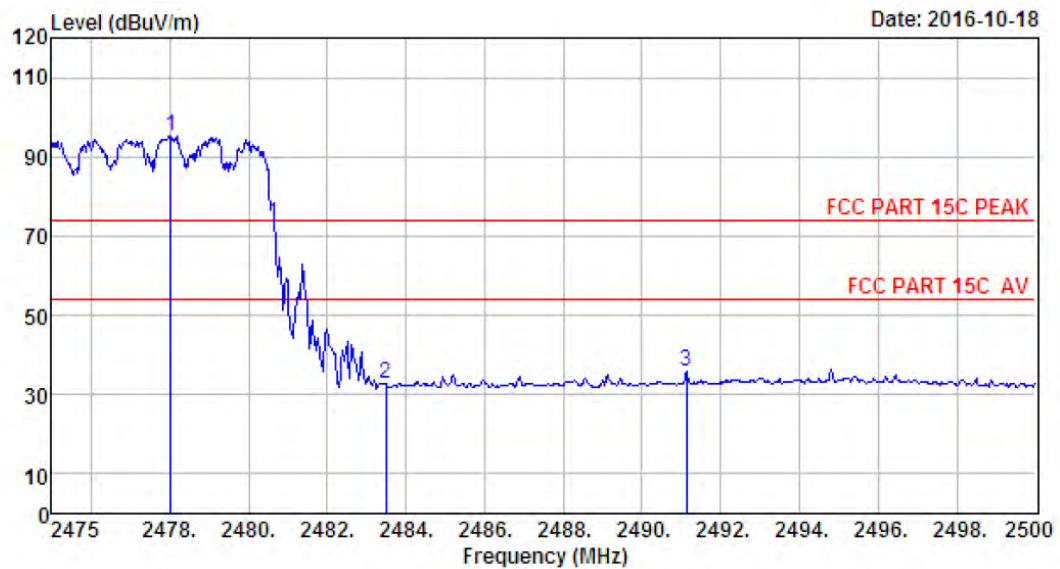
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 966 1# chamber Data no. : 553  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2402MHz (Hopping On)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2363.80        | 27.67                    | 6.58                  | 34.59                 | 33.88             | 33.54                         | 74.00              | 40.46          | Peak   |
| 2 | 2390.00        | 27.64                    | 6.62                  | 34.62                 | 33.06             | 32.70                         | 74.00              | 41.30          | Peak   |
| 3 | 2400.00        | 27.61                    | 6.62                  | 34.64                 | 44.98             | 44.57                         | 74.00              | 29.43          | Peak   |
| 4 | 2406.04        | 27.61                    | 6.64                  | 34.64                 | 95.59             | 95.20                         | 74.00              | -21.20         | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

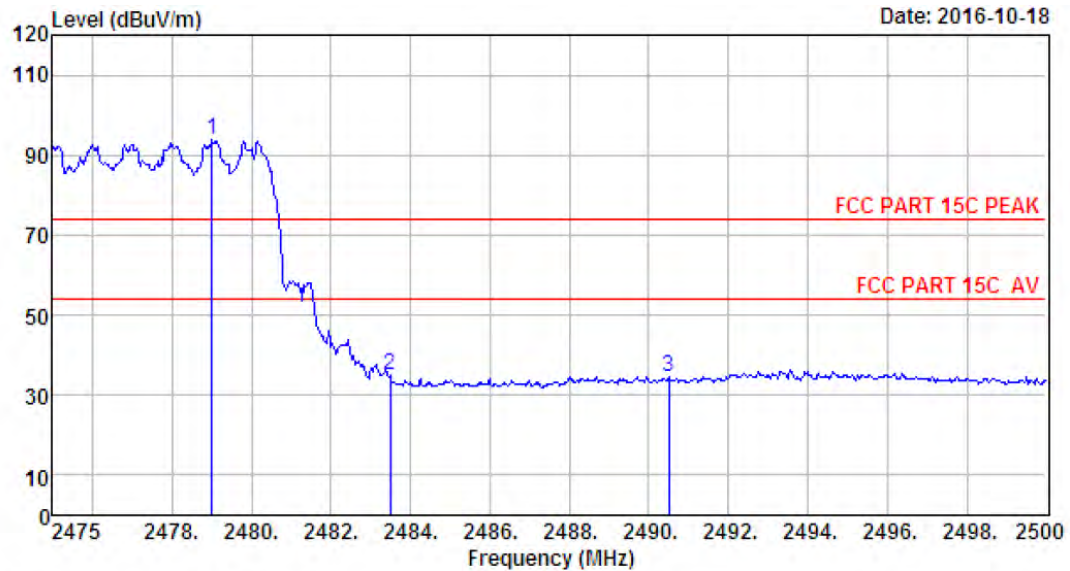


Site no. : 966 1# chamber Data no. : 554  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2480MHz (Hopping On)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2478.03        | 27.58                    | 6.71                  | 35.11                 | 95.98             | 95.16                         | 74.00              | -21.16         | Peak   |
| 2 | 2483.50        | 27.58                    | 6.71                  | 35.11                 | 33.62             | 32.80                         | 74.00              | 41.20          | Peak   |
| 3 | 2491.13        | 27.58                    | 6.73                  | 35.24                 | 36.72             | 35.79                         | 74.00              | 38.21          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.





Site no. : 966 1# chamber Data no. : 555  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Marine source unit  
 Power : DC 12V  
 M/N : CMS4  
 Test Mode : 8-DPSK TX 2480MHz (Hopping On)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Amp<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2479.00        | 27.58                    | 6.71                  | 35.11                 | 94.50             | 93.68                         | 74.00              | -19.68         | Peak   |
| 2 | 2483.50        | 27.58                    | 6.71                  | 35.11                 | 35.86             | 35.04                         | 74.00              | 38.96          | Peak   |
| 3 | 2490.50        | 27.58                    | 6.73                  | 35.24                 | 35.54             | 34.61                         | 74.00              | 39.39          | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

## **10. ANTENNA REQUIREMENTS**

### **10.1. Limit**

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

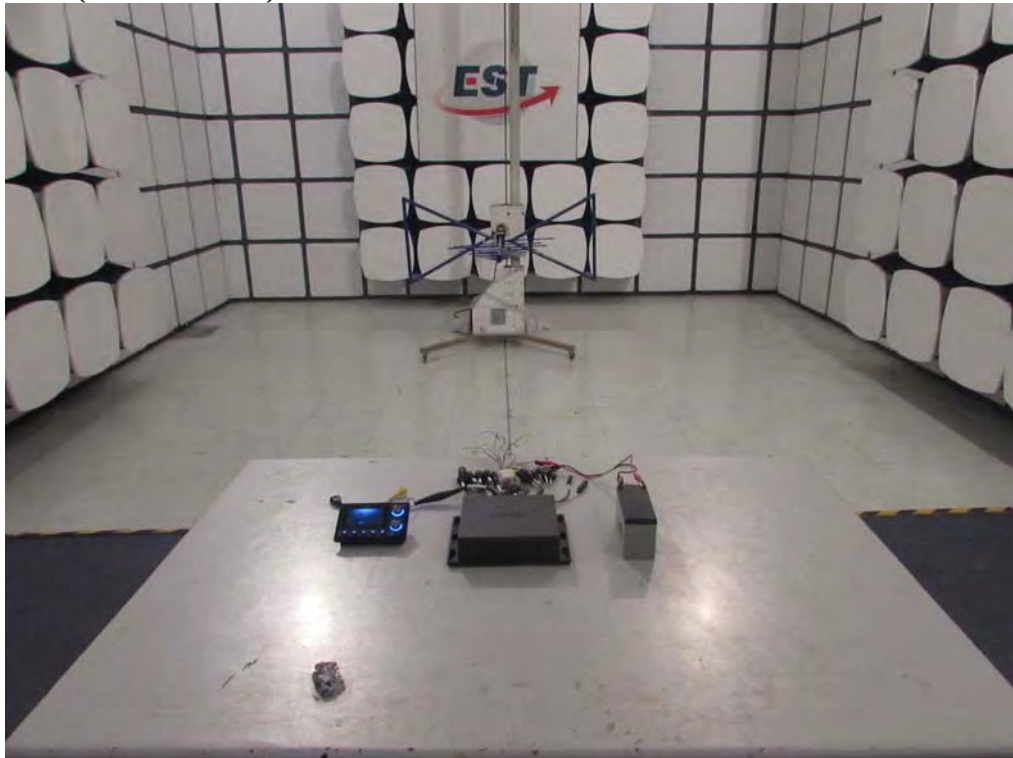
### **10.2. Result**

The antennas used for this product are Internal antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 4dBi.

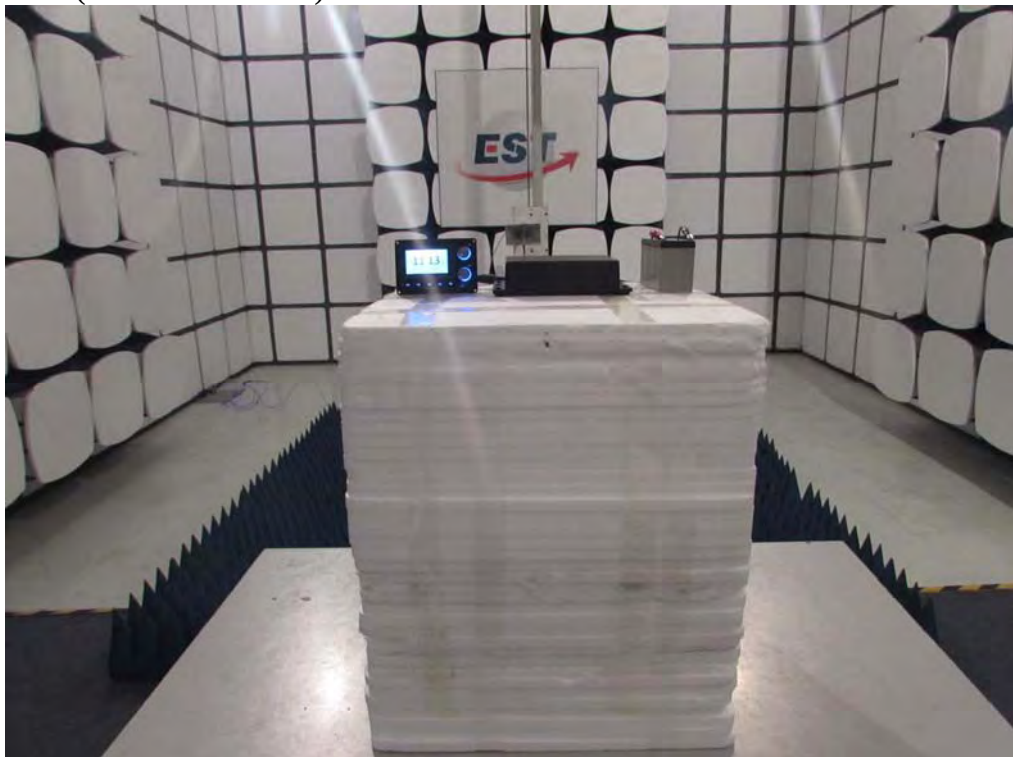


## 11. TEST SETUP PHOTO

Radiated Test (30-1000 MHz)



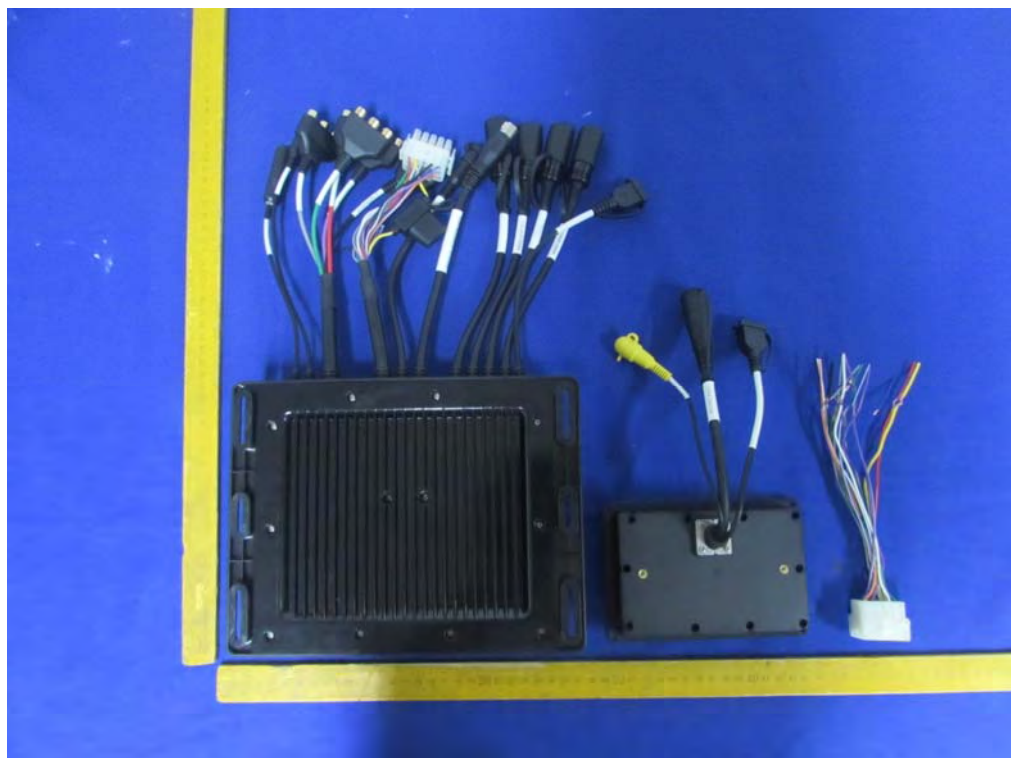
Radiated Test (1000-25000 MHz)



## 12. PHOTOS OF EUT

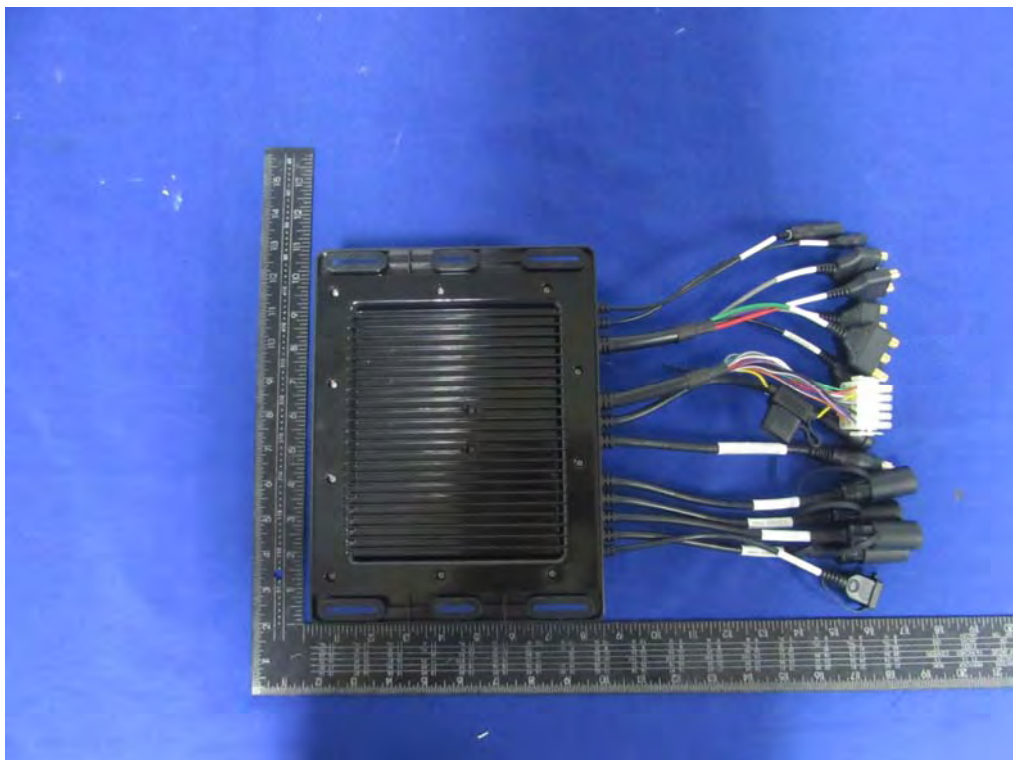
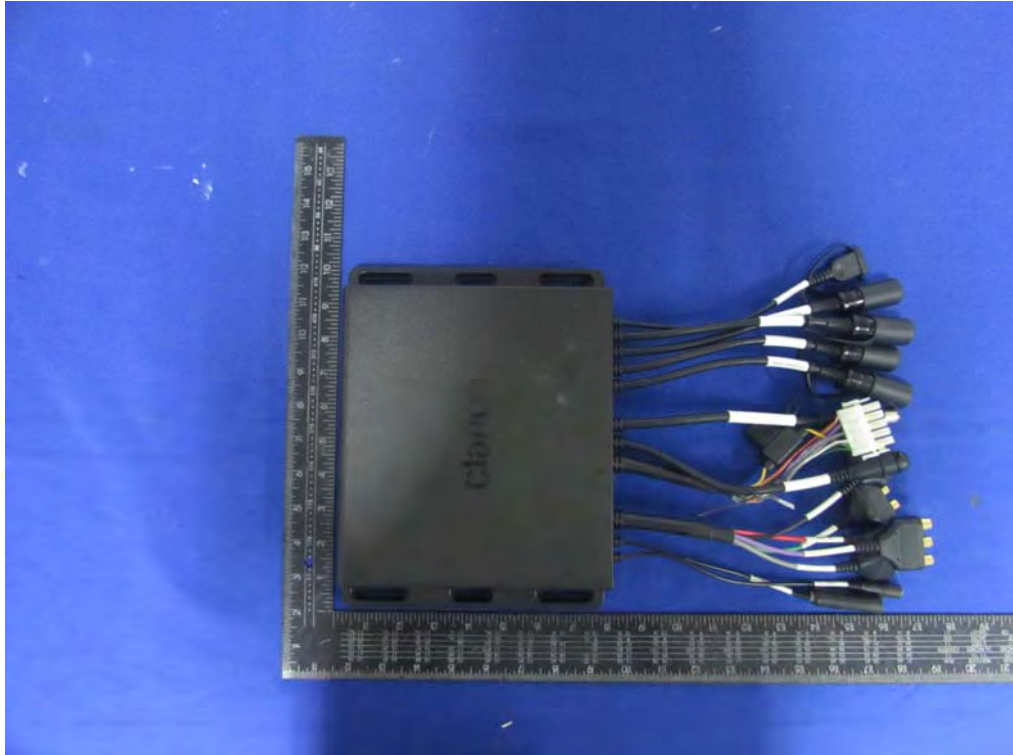
### External Photos

M/N: CMS4



## External Photos

M/N: CMS4





## External Photos

M/N: CMS4



## External Photos

M/N: CMS4





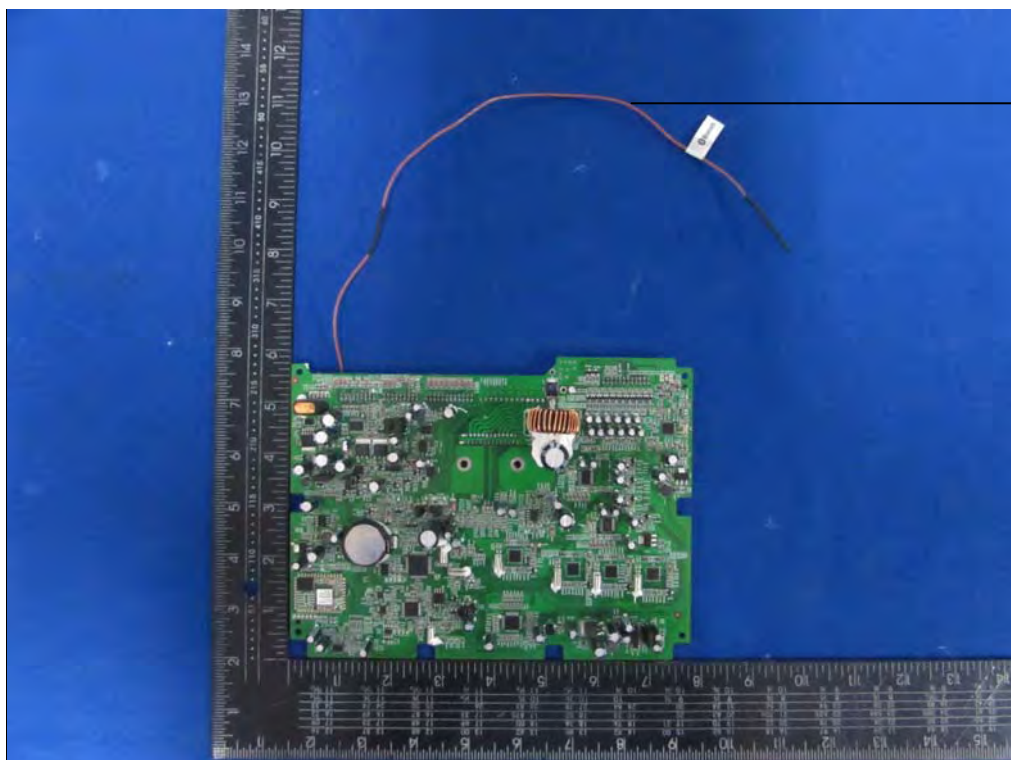
## External Photos

M/N: CMS4





**Internal Photos**  
M/N: CMS4



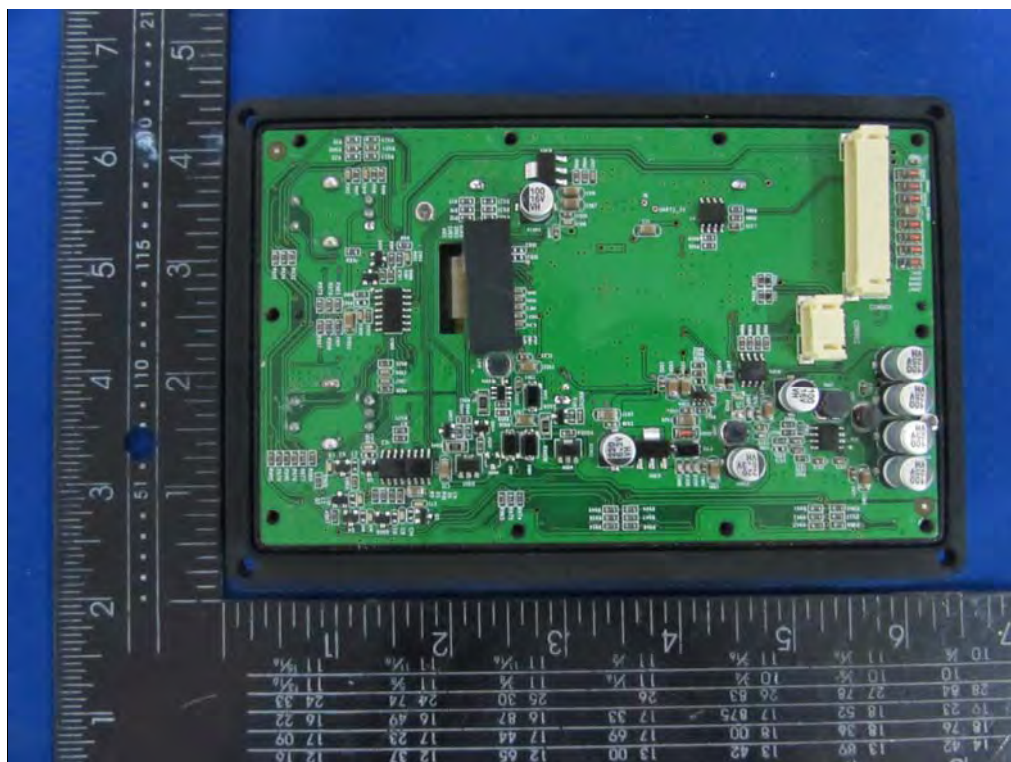
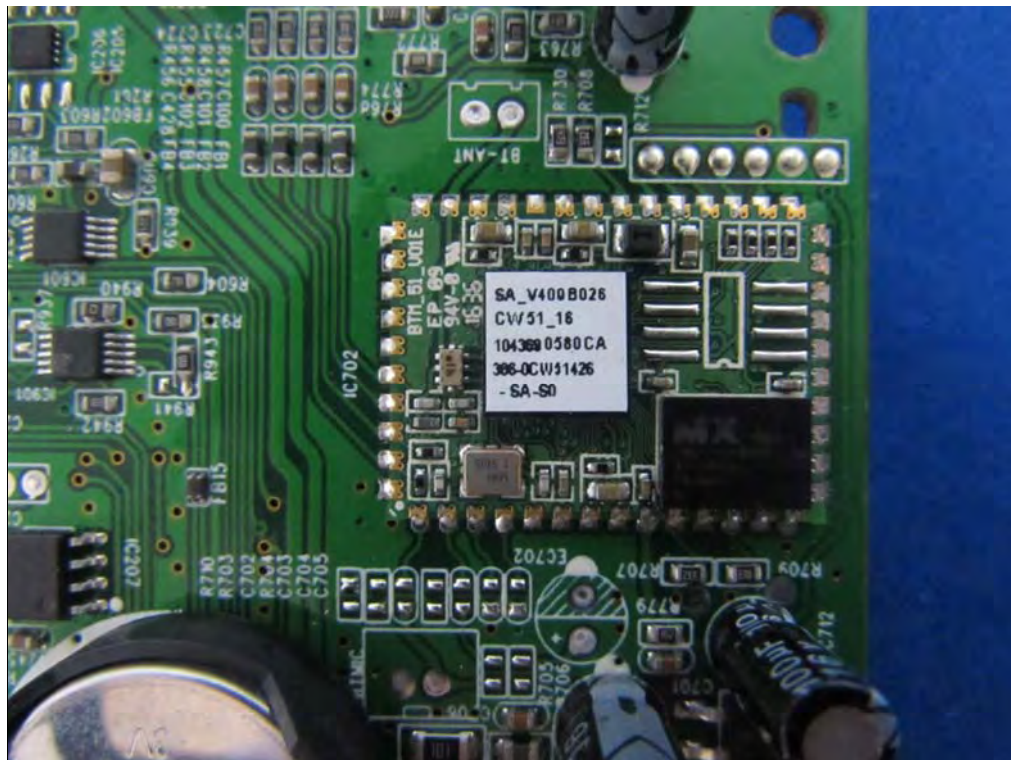
Bluetooth  
Antenna

**Internal Photos**  
M/N: CMS4

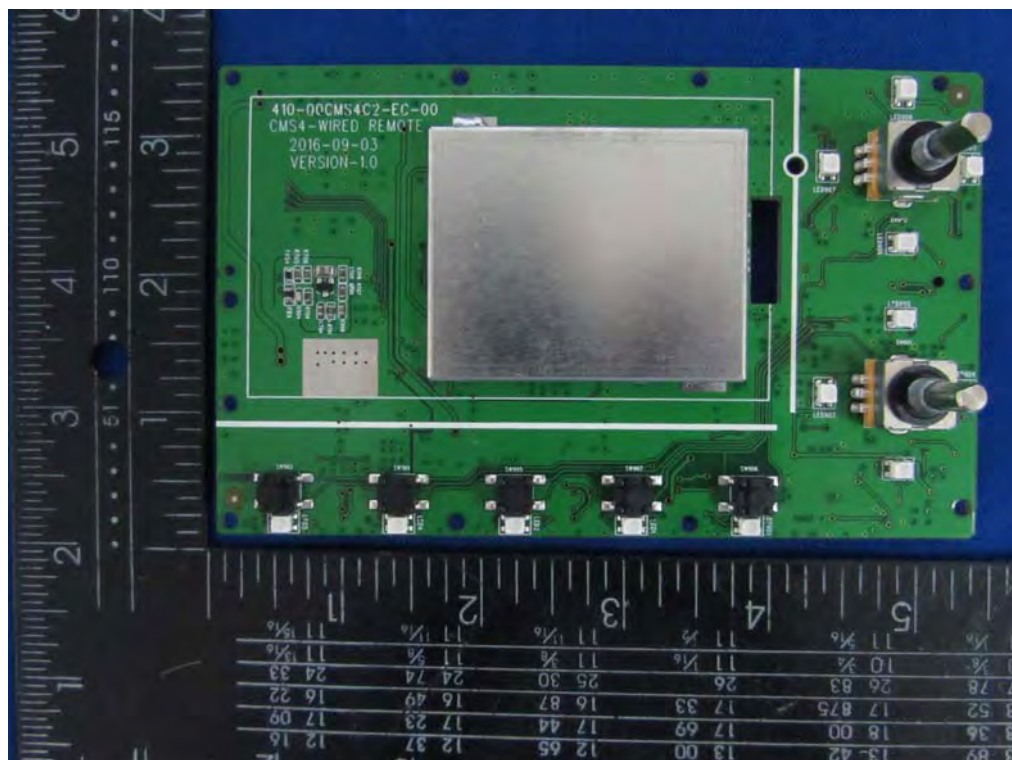
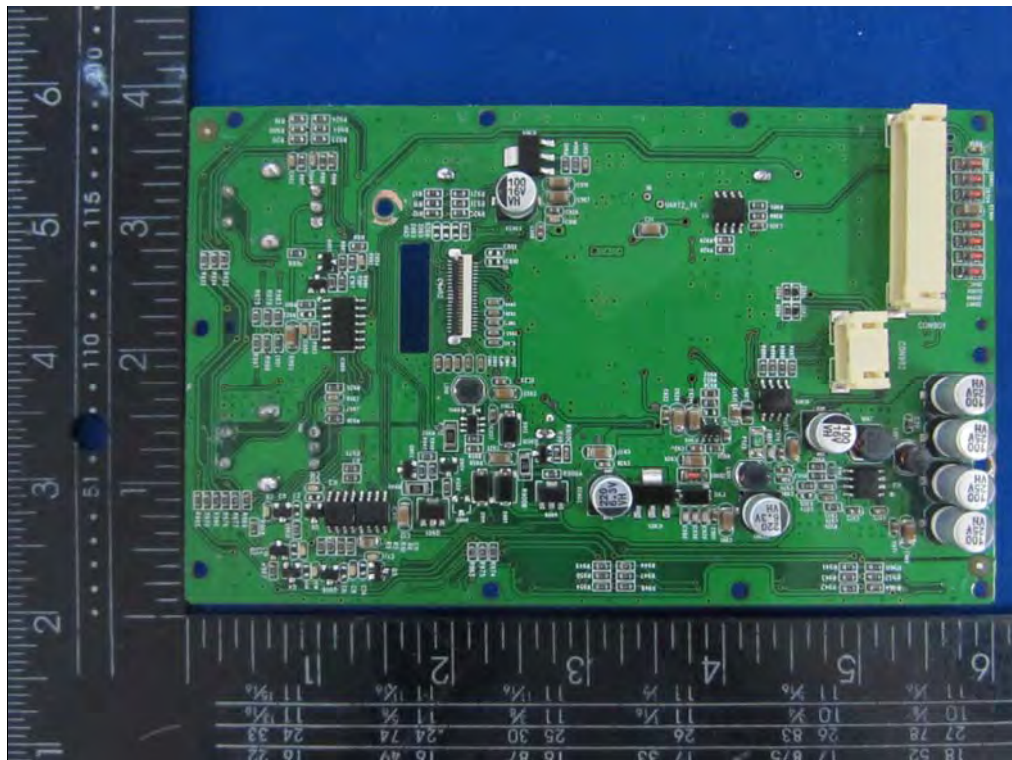




# Internal Photos M/N: CMS4



# Internal Photos M/N: CMS4





**Internal Photos**  
M/N: CMS4

