

APPLICATION CERTIFICATION FCC Part 15C  
On Behalf of  
CPS Distributors, Inc

Marine amplifier  
Model No.: KMC20  
FCC ID: 2ADQM-KMC20

Prepared for : CPS Distributors, Inc  
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Report Number : ATE20142244  
Date of Test : Nov 6-21, 2014  
Date of Report : Dec 03, 2014

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## Test Report Certification

Applicant : CPS Distributors, Inc  
Manufacturer : EVERVICTORY ELECTRONIC COMPANY LIMITED  
EUT Description : Marine amplifier  
(A) MODEL NO.: KMC20  
(B) Trade Name.: N/A  
(C) POWER SUPPLY: DC 12V

Measurement Procedure Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.247**  
**ANSI C63.4: 2009**

The EUT was tested according to DTS test procedure of Jun 05, 2014 KDB558074 D01 DTS Meas Guidance v03r02 for compliance to FCC 47CFR 15.247 requirements

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : Nov 06-Nov 21, 2014  
Date of Report : Dec 03, 2014

Prepared by :   
( Eric Zhang , Engineer)

Approved & Authorized Signer :   
( Sean Liu, Manager)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

|                         |   |                                                                                             |
|-------------------------|---|---------------------------------------------------------------------------------------------|
| EUT                     | : | Marine amplifier                                                                            |
| Model Number            | : | KMC20                                                                                       |
| Frequency Range         | : | 2402-2480MHz                                                                                |
| Number of Channels      | : | Bluetooth 4.0: 40                                                                           |
| Antenna Gain            | : | 0dBi                                                                                        |
| Power Supply            | : | DC 12V                                                                                      |
| Modulation mode         | : | GFSK                                                                                        |
| Applicant               | : | CPS Distributors, Inc                                                                       |
| Address                 | : | 6024 Parretta Drive, Kansas City, MISSOURI 64120                                            |
| Manufacturer            | : | EVERVICTORY ELECTRONIC COMPANY LIMITED                                                      |
| Address                 | : | Chu Chi Management District, Hu Men Town,<br>Dong-Guan City, Guang-Dong Province, P.R.China |
| Date of sample received | : | Nov 6, 2014                                                                                 |
| Date of Test            | : | Nov 6-21, 2014                                                                              |

## 1.2.Carrier Frequency of Channels

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|
| 0       | 2402            | 10      | 2422            | 20      | 2442            | 30      | 2462            |
| 1       | 2404            | 11      | 2424            | 21      | 2444            | 31      | 2464            |
| 2       | 2406            | 12      | 2426            | 22      | 2446            | 32      | 2466            |
| 3       | 2408            | 13      | 2428            | 23      | 2448            | 33      | 2468            |
| 4       | 2410            | 14      | 2430            | 24      | 2450            | 34      | 2470            |
| 5       | 2412            | 15      | 2432            | 25      | 2452            | 35      | 2472            |
| 6       | 2414            | 16      | 2434            | 26      | 2454            | 36      | 2474            |
| 7       | 2416            | 17      | 2436            | 27      | 2456            | 37      | 2476            |
| 8       | 2418            | 18      | 2438            | 28      | 2458            | 38      | 2478            |
| 9       | 2420            | 19      | 2440            | 29      | 2460            | 39      | 2480            |

## 1.3.Special Accessory and Auxiliary Equipment

N/A

#### 1.4. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC  
The Registration Number is 752051

Listed by Industry Canada  
The Registration Number is 5077A-2

Accredited by China National Accreditation Committee  
for Laboratories  
The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.  
Science & Industry Park, Nanshan, Shenzhen, Guangdong  
P.R. China

#### 1.5. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2  
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2  
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2  
(Above 1GHz)

## 2. MEASURING DEVICE AND TEST EQUIPMENT

**Table 1: List of Test and Measurement Equipment**

| Kind of equipment  | Manufacturer              | Type                                    | S/N        | Calibrated dates | Calibrated until |
|--------------------|---------------------------|-----------------------------------------|------------|------------------|------------------|
| EMI Test Receiver  | Rohde&Schwarz             | ESCS30                                  | 100307     | Jan. 11, 2014    | Jan. 10, 2015    |
| EMI Test Receiver  | Rohde&Schwarz             | ESPI3                                   | 101526/003 | Jan. 11, 2014    | Jan. 10, 2015    |
| Spectrum Analyzer  | Agilent                   | E7405A                                  | MY45115511 | Jan. 11, 2014    | Jan. 10, 2015    |
| Pre-Amplifier      | Rohde&Schwarz             | CBLU118354<br>0-01                      | 3791       | Jan. 11, 2014    | Jan. 10, 2015    |
| Loop Antenna       | Schwarzbeck               | FMZB1516                                | 1516131    | Jan. 15, 2014    | Jan. 14, 2015    |
| Bilog Antenna      | Schwarzbeck               | VULB9163                                | 9163-323   | Jan. 15, 2014    | Jan. 14, 2015    |
| Horn Antenna       | Schwarzbeck               | BBHA9120D                               | 9120D-655  | Jan. 15, 2014    | Jan. 14, 2015    |
| Horn Antenna       | Schwarzbeck               | BBHA9170                                | 9170-359   | Jan. 15, 2014    | Jan. 14, 2015    |
| LISN               | Rohde&Schwarz             | ESH3-Z5                                 | 100305     | Jan. 11, 2014    | Jan. 10, 2015    |
| LISN               | Schwarzbeck               | NSLK8126                                | 8126431    | Jan. 11, 2014    | Jan. 10, 2015    |
| Highpass Filter    | Wainwright<br>Instruments | WHKX3.6/18<br>G-10SS                    | N/A        | Jan. 11, 2014    | Jan. 10, 2015    |
| Band Reject Filter | Wainwright<br>Instruments | WRCG2400/2<br>485-2375/2510<br>-60/11SS | N/A        | Jan. 11, 2014    | Jan. 10, 2015    |

### 3. OPERATION OF EUT DURING TESTING

#### 3.1.Operating Mode

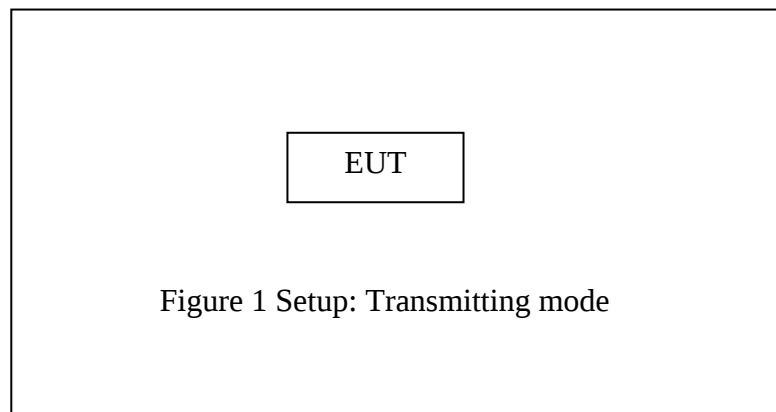
The mode is used: **BLE Transmitting mode**

Low Channel: 2402MHz

Middle Channel: 2440MHz

High Channel: 2480MHz

#### 3.2.Configuration and peripherals



#### 4. TEST PROCEDURES AND RESULTS

| FCC Rules                           | Description of Test              | Result    |
|-------------------------------------|----------------------------------|-----------|
| Section 15.207                      | Power Line Conducted Emission    | Compliant |
| Section 15.247(a)(2)                | 6dB Bandwidth Test               | Compliant |
| Section 15.247(e)                   | Power Spectral Density Test      | Compliant |
| Section 15.247(b)(3)                | Maximum Peak Output Power Test   | Compliant |
| Section 15.247(d)                   | Band Edge Compliance Test        | Compliant |
| Section 15.247(d)<br>Section 15.209 | Radiated Spurious Emission Test  | Compliant |
| Section 15.247(d)                   | Conducted Spurious Emission Test | Compliant |
| Section 15.203                      | Antenna Requirement              | Compliant |

## 5. 6DB BANDWIDTH MEASUREMENT

### 5.1. Block Diagram of Test Setup



(EUT: Marine amplifier)

### 5.2. The Requirement For Section 15.247(a)(2)

Section 15.247(a)(2): Systems using digital modulation techniques may operate in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

### 5.3. EUT Configuration on Measurement

The equipment is installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 5.4. Operating Condition of EUT

5.4.1. Setup the EUT and simulator as shown as Section 5.1.

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

## 5.5. Test Procedure

5.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz.

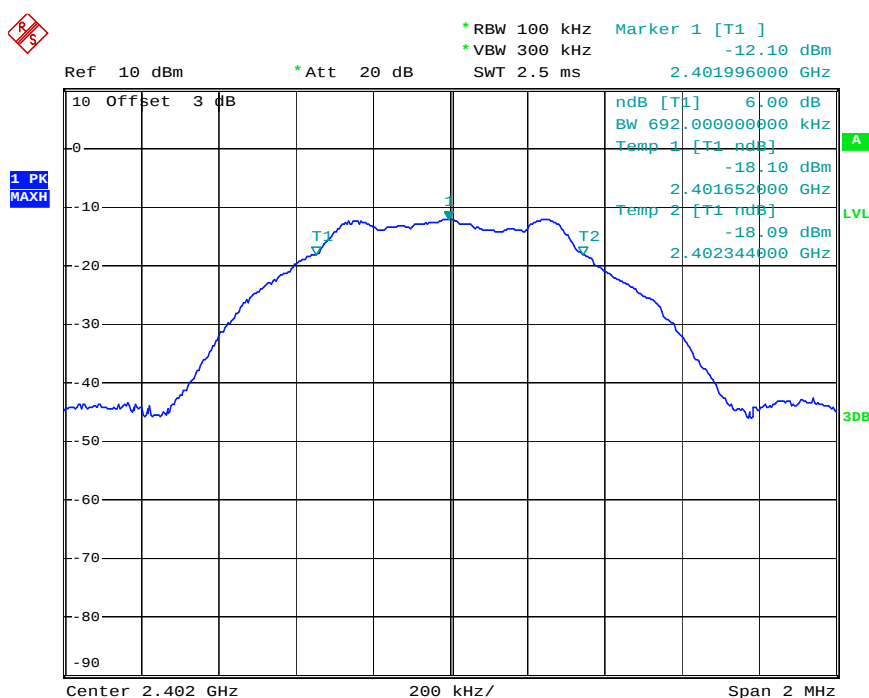
5.5.3. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

## 5.6. Test Result

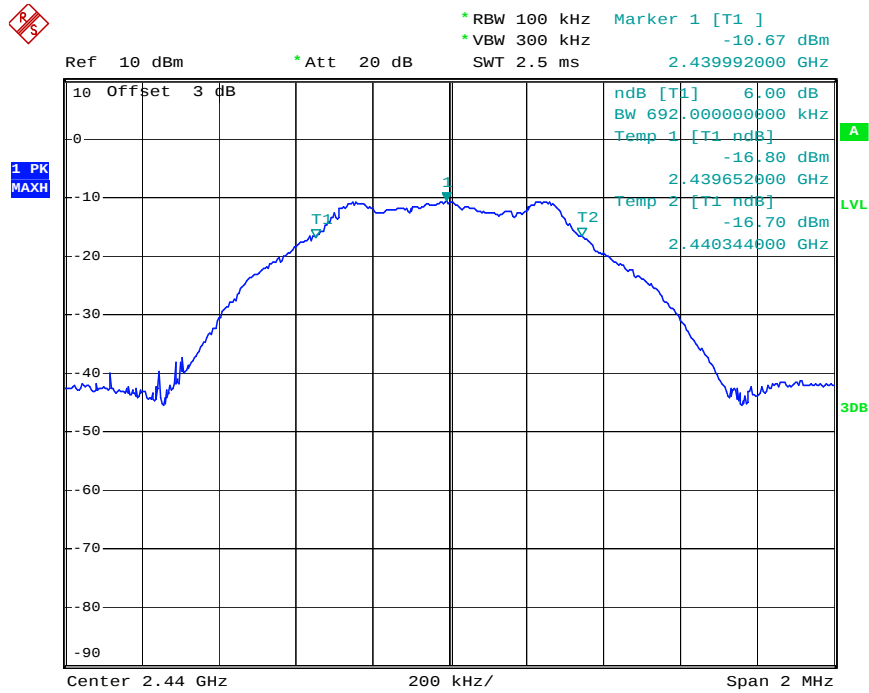
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit(MHz) | PASS/FAIL |
|---------|-----------------|----------------------|--------------------|-----------|
| 0       | 2402            | 0.692                | 0.5                | PASS      |
| 19      | 2440            | 0.692                | 0.5                | PASS      |
| 39      | 2480            | 0.696                | 0.5                | PASS      |

The spectrum analyzer plots are attached as below.

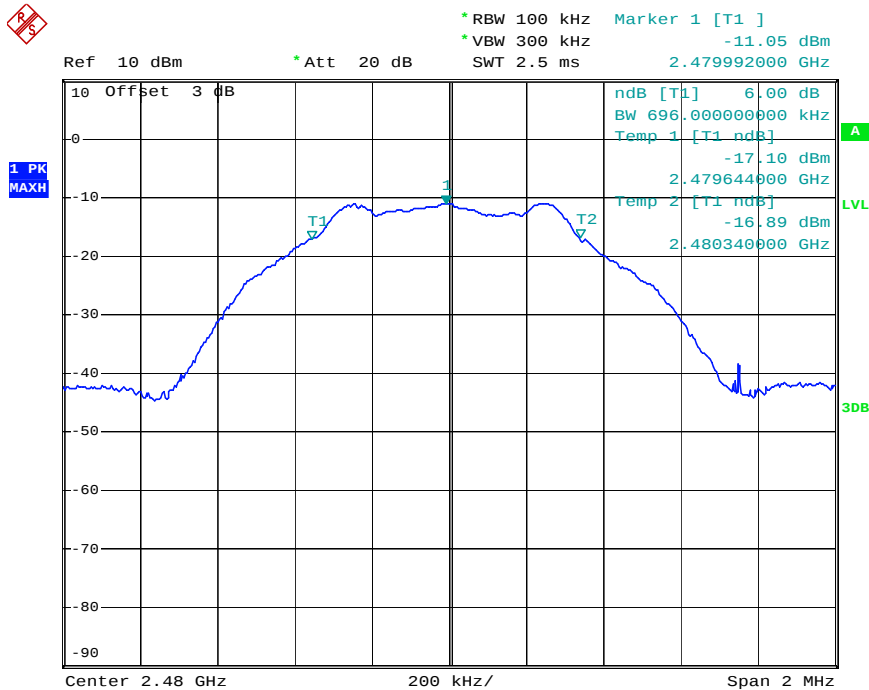
*channel 0*



## channel 19



## channel 39



## 6. MAXIMUM PEAK OUTPUT POWER

### 6.1. Block Diagram of Test Setup



(EUT: Marine amplifier)

### 6.2. The Requirement For Section 15.247(b)(3)

Section 15.247(b)(3): For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

### 6.3. EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 6.4. Operating Condition of EUT

6.4.1. Setup the EUT and simulator as shown as Section 6.1.

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

## 6.5. Test Procedure

6.5.1. Set the RBW  $\geq$  DTS bandwidth. VBW  $\geq 3 \times$  RBW.

6.5.2. Set span  $\geq 3 \times$  RBW

6.5.3. Sweep time = auto couple.

6.5.4. Detector = peak.

6.5.5. Trace mode = max hold.

6.5.6. Allow trace to fully stabilize.

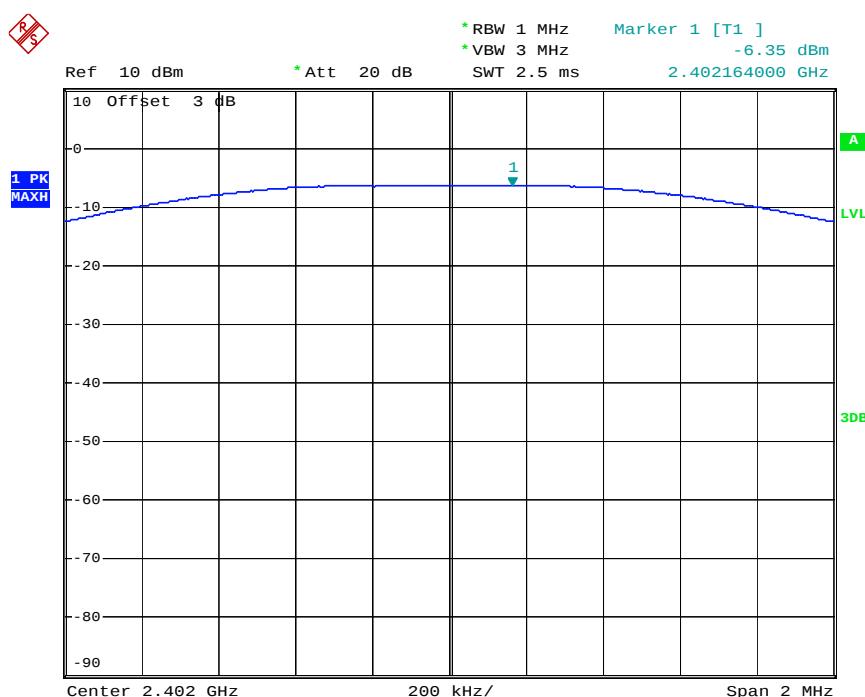
6.5.7. Use peak marker function to determine the peak amplitude level.

## 6.6. Test Result

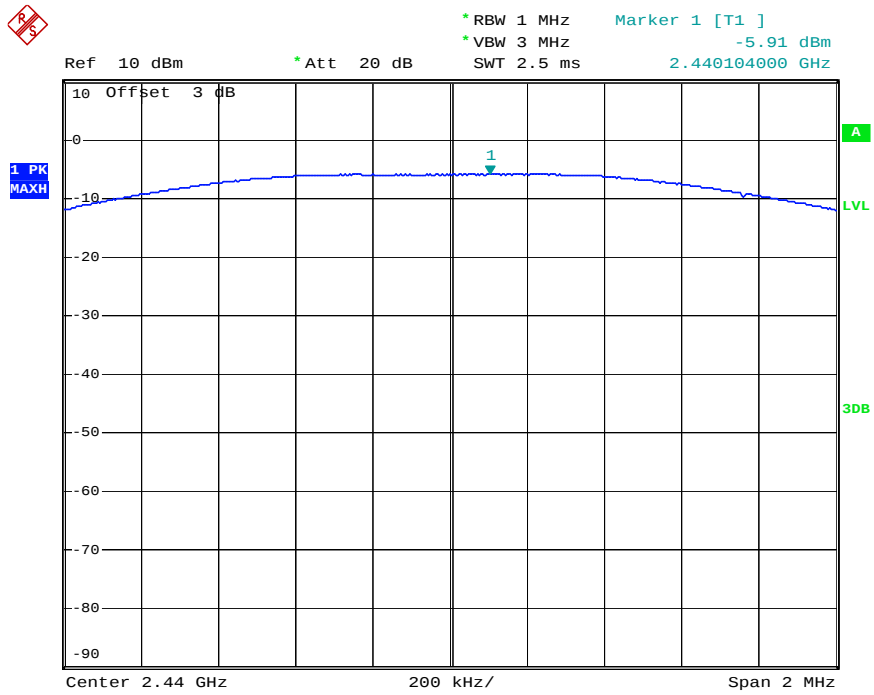
| Channel | Frequency (MHz) | Peak Power Output (dBm) | Peak Power Limit (dBm) | Pass / Fail |
|---------|-----------------|-------------------------|------------------------|-------------|
| 0       | 2402            | -6.35                   | 30                     | PASS        |
| 19      | 2440            | -5.91                   | 30                     | PASS        |
| 39      | 2480            | -5.18                   | 30                     | PASS        |

The spectrum analyzer plots are attached as below.

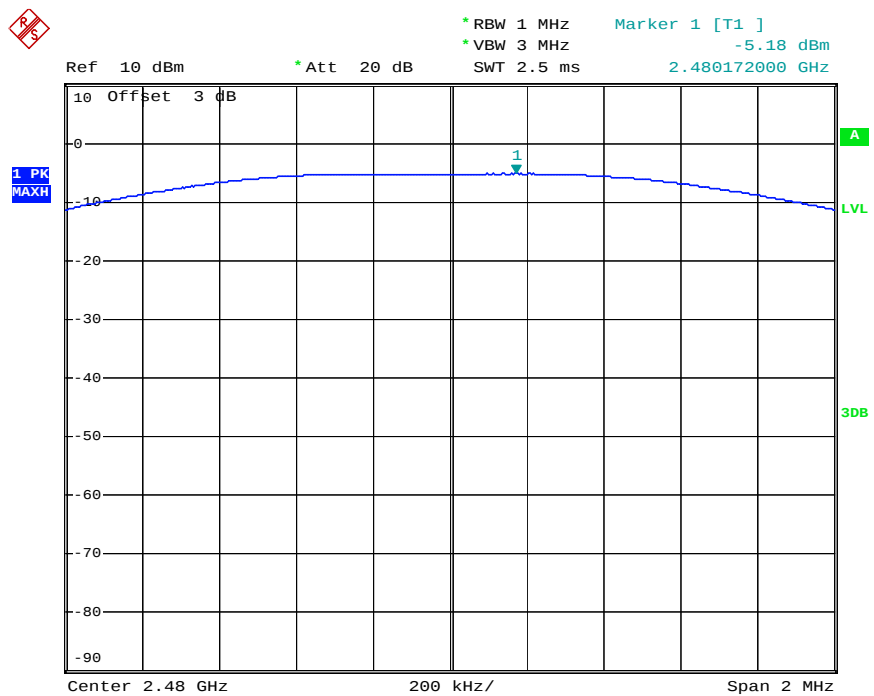
*channel 0*



channel 19



channel 39



## 7. POWER SPECTRAL DENSITY MEASUREMENT

### 7.1. Block Diagram of Test Setup



(EUT: Marine amplifier)

### 7.2. The Requirement For Section 15.247(e)

Section 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 7.3. EUT Configuration on Measurement

The equipment is installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 7.4. Operating Condition of EUT

7.4.1. Setup the EUT and simulator as shown as Section 8.1.

7.4.2. Turn on the power of all equipment.

7.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

## 7.5. Test Procedure

7.5.1. The EUT was tested according to DTS test procedure of KDB558074 D01 DTS Meas Guidance v03r02 for compliance to FCC 47CFR 15.247 requirements.

7.5.2. The transmitter output was connected to the spectrum analyzer through a low loss cable.

### 7.5.3. Measurement Procedure PKPSD:

This procedure must be used if maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit, and is optional if the maximum (average) conducted output power was used to demonstrate compliance.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
4. Set the VBW  $\geq 3 \times \text{RBW}$ .
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

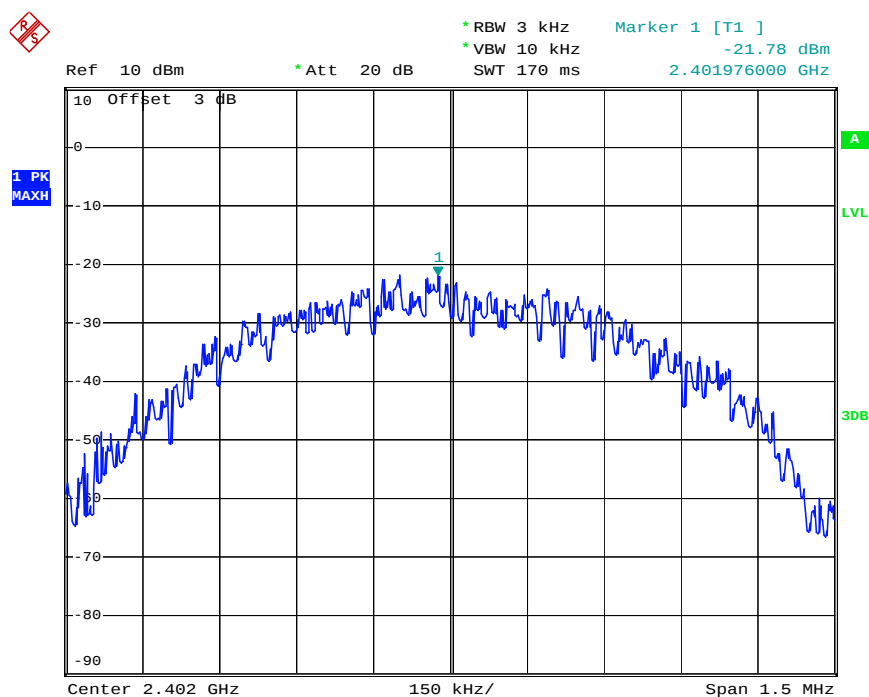
### 7.5.4. Measurement the maximum power spectral density.

## 7.6. Test Result

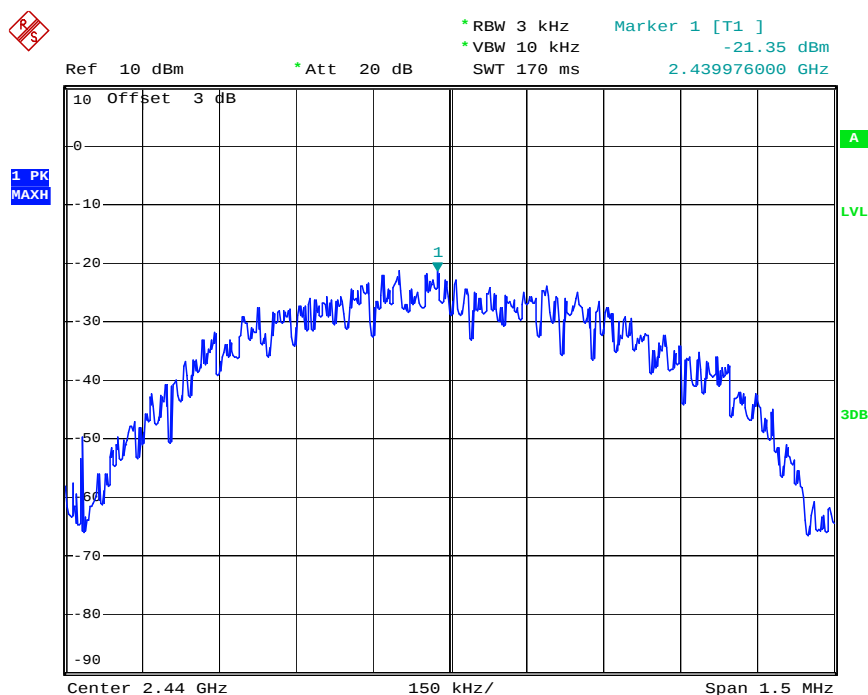
| CHANNEL NUMBER | FREQUENCY (MHz ) | PSD (dBm/3KHz) | LIMIT (dBm/3KHz) | PASS/FAIL |
|----------------|------------------|----------------|------------------|-----------|
| 0              | 2402             | -21.78         | 8                | PASS      |
| 19             | 2440             | -21.35         | 8                | PASS      |
| 39             | 2480             | -20.68         | 8                | PASS      |

The spectrum analyzer plots are attached as below.

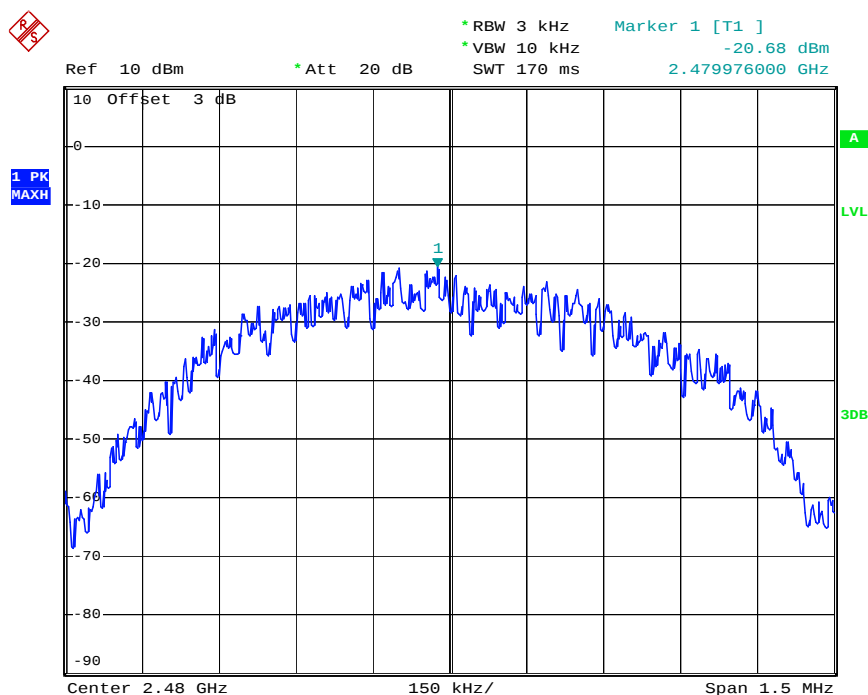
*channel 0*



## channel 19



## channel 39



## 8. BAND EDGE COMPLIANCE TEST

### 8.1. Block Diagram of Test Setup



(EUT: Marine amplifier)

### 8.2. The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

### 8.3. EUT Configuration on Measurement

The equipment is installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

## 8.4.Operating Condition of EUT

8.4.1.Setup the EUT and simulator as shown as Section 9.1.

8.4.2.Turn on the power of all equipment.

8.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

## 8.5.Test Procedure

### Conducted Band Edge:

8.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.

8.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz.

### Radiate Band Edge:

8.5.3. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.

8.5.4. The turntable was rotated for 360 degrees to determine the position of maximum emission level.

8.5.5. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

8.5.6.Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

RBW=1MHz, VBW=1MHz

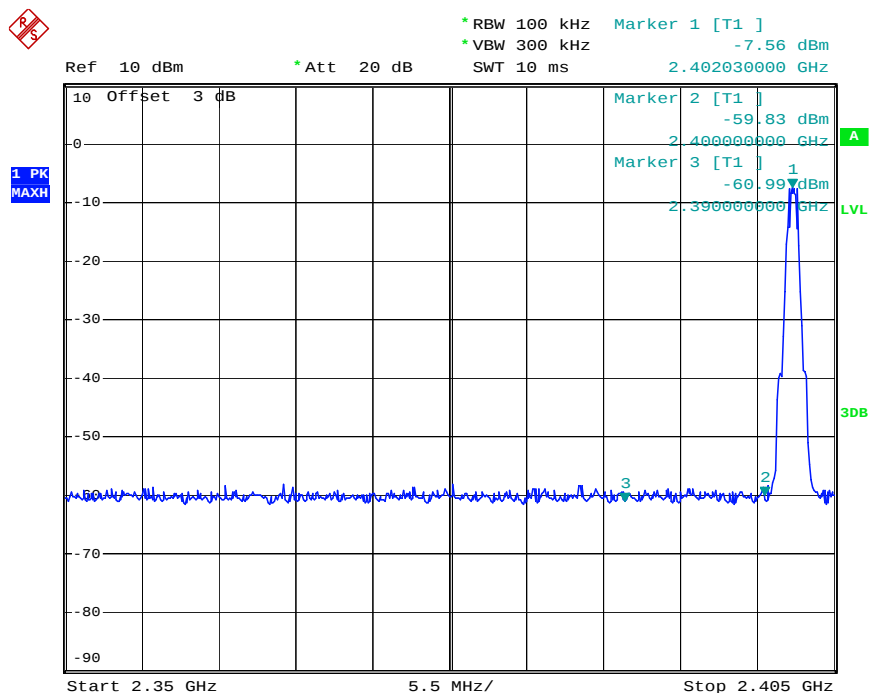
8.5.7.The band edges was measured and recorded.

## 8.6.Test Result

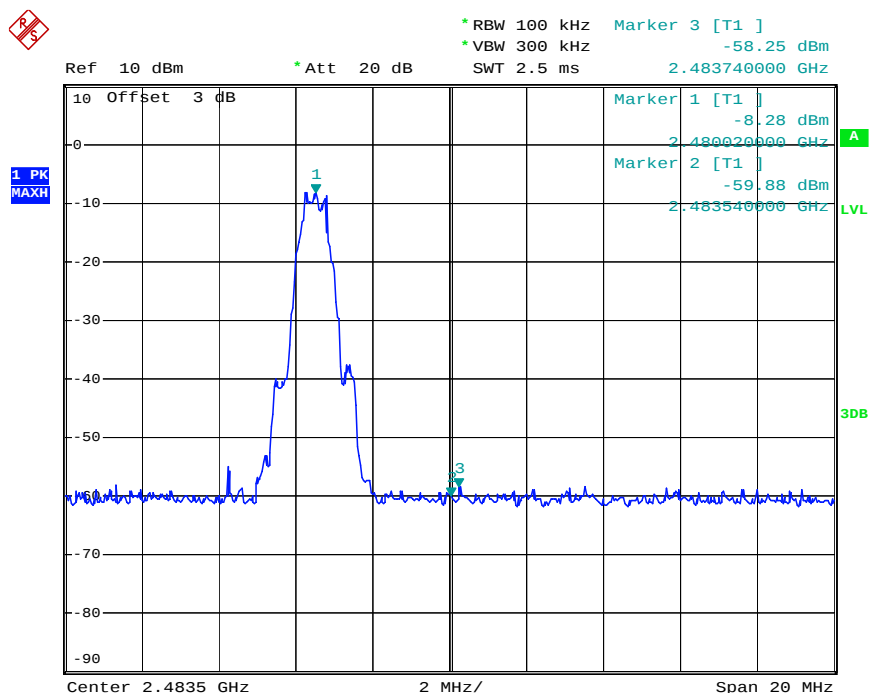
**Pass**

| Channel | Frequency | Delta peak to band emission | Limit(dBc) |
|---------|-----------|-----------------------------|------------|
| 0       | 2390.0MHz | 53.43                       | 20         |
| 39      | 2484.5MHz | 49.97                       | 20         |

## channel 0



## channel 39



## Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:  
Result = Reading + Corrected Factor
3. Display the measurement of peak values.



**ACCURATE TECHNOLOGY CO., LTD.**

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #3015

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2402MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Horizontal

Power Source: DC 12V

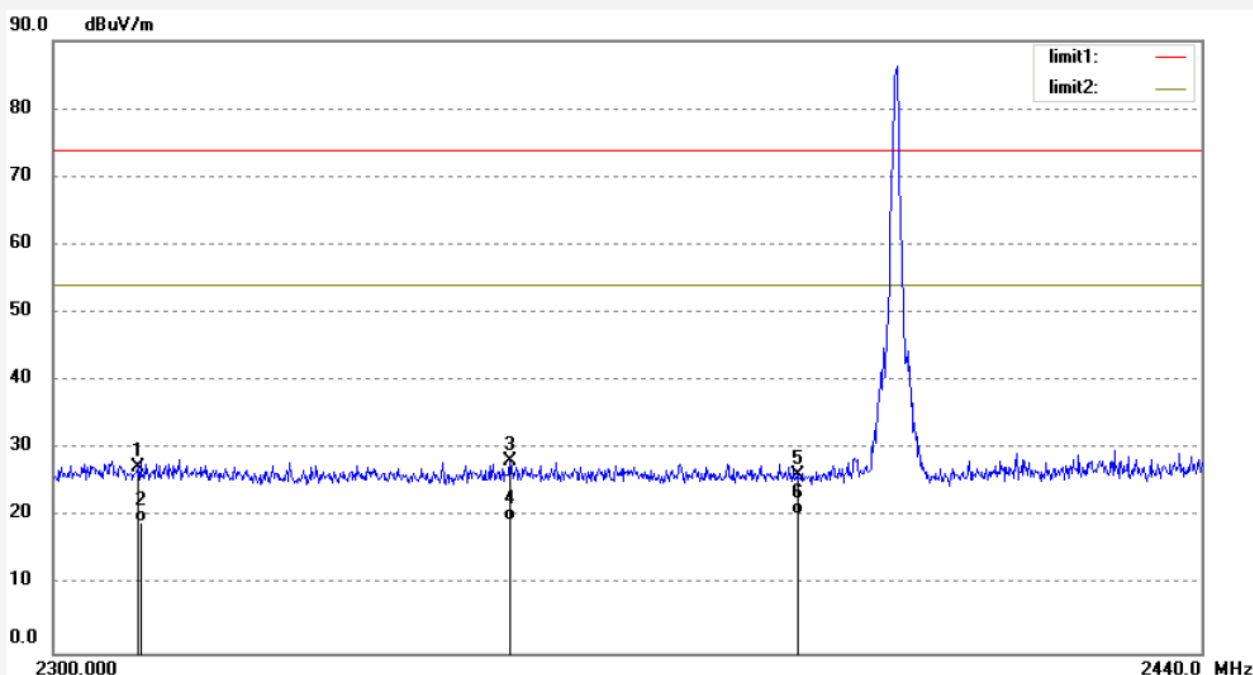
Date: 14/11/15/

Time: 14/25/37

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2310.000    | 34.27            | -6.99       | 27.28           | 74.00          | -46.72      | peak     |             |               |        |
| 2   | 2310.000    | 26.25            | -6.99       | 19.26           | 54.00          | -34.74      | AVG      |             |               |        |
| 3   | 2354.740    | 35.04            | -6.88       | 28.16           | 74.00          | -45.84      | peak     |             |               |        |
| 4   | 2354.740    | 26.41            | -6.88       | 19.53           | 54.00          | -34.47      | AVG      |             |               |        |
| 5   | 2390.000    | 33.03            | -6.78       | 26.25           | 74.00          | -47.75      | peak     |             |               |        |
| 6   | 2390.000    | 27.20            | -6.78       | 20.42           | 54.00          | -33.58      | AVG      |             |               |        |



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #3016

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2402MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Vertical

Power Source: DC 12V

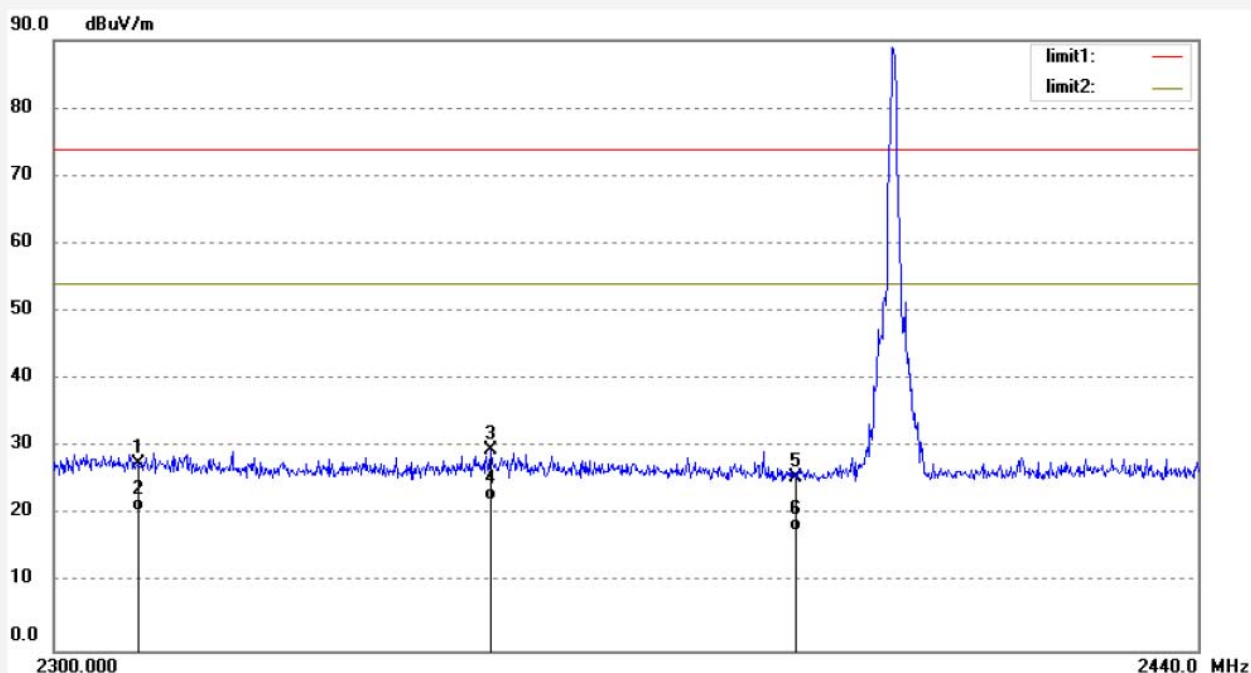
Date: 14/11/15/

Time: 14/29/06

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 2310.000       | 34.53               | -6.99          | 27.54              | 74.00             | -46.46         | peak     |                |                  |        |
| 2   | 2310.000       | 27.58               | -6.99          | 20.59              | 54.00             | -33.41         | AVG      |                |                  |        |
| 3   | 2352.640       | 36.54               | -6.88          | 29.66              | 74.00             | -44.34         | peak     |                |                  |        |
| 4   | 2352.640       | 28.93               | -6.88          | 22.05              | 54.00             | -31.95         | AVG      |                |                  |        |
| 5   | 2390.000       | 32.43               | -6.78          | 25.65              | 74.00             | -48.35         | peak     |                |                  |        |
| 6   | 2390.000       | 24.55               | -6.78          | 17.77              | 54.00             | -36.23         | AVG      |                |                  |        |



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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

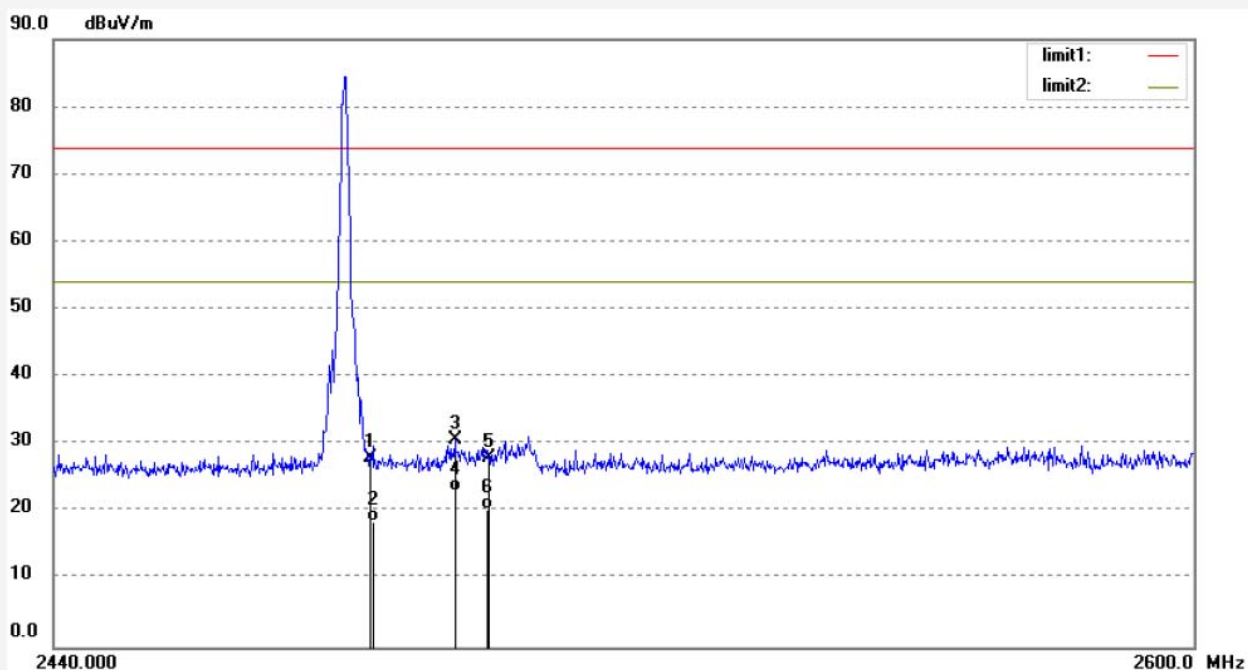
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #3017  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Marine amplifier  
Mode: TX 2480MHz  
Model: KMC20  
Manufacturer: EVERVICTORY

Polarization: Vertical  
Power Source: DC 12V  
Date: 14/11/15/  
Time: 14/32/02  
Engineer Signature:  
Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2483.500    | 34.48            | -6.54       | 27.94           | 74.00          | -46.06      | peak     |             |               |        |
| 2   | 2483.500    | 25.17            | -6.54       | 18.63           | 54.00          | -35.37      | AVG      |             |               |        |
| 3   | 2495.200    | 37.21            | -6.50       | 30.71           | 74.00          | -43.29      | peak     |             |               |        |
| 4   | 2495.200    | 29.50            | -6.50       | 23.00           | 54.00          | -31.00      | AVG      |             |               |        |
| 5   | 2500.000    | 34.56            | -6.50       | 28.06           | 74.00          | -45.94      | peak     |             |               |        |
| 6   | 2500.000    | 26.93            | -6.50       | 20.43           | 54.00          | -33.57      | AVG      |             |               |        |

Job No.: STAR #3018

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2480MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Horizontal

Power Source: DC 12V

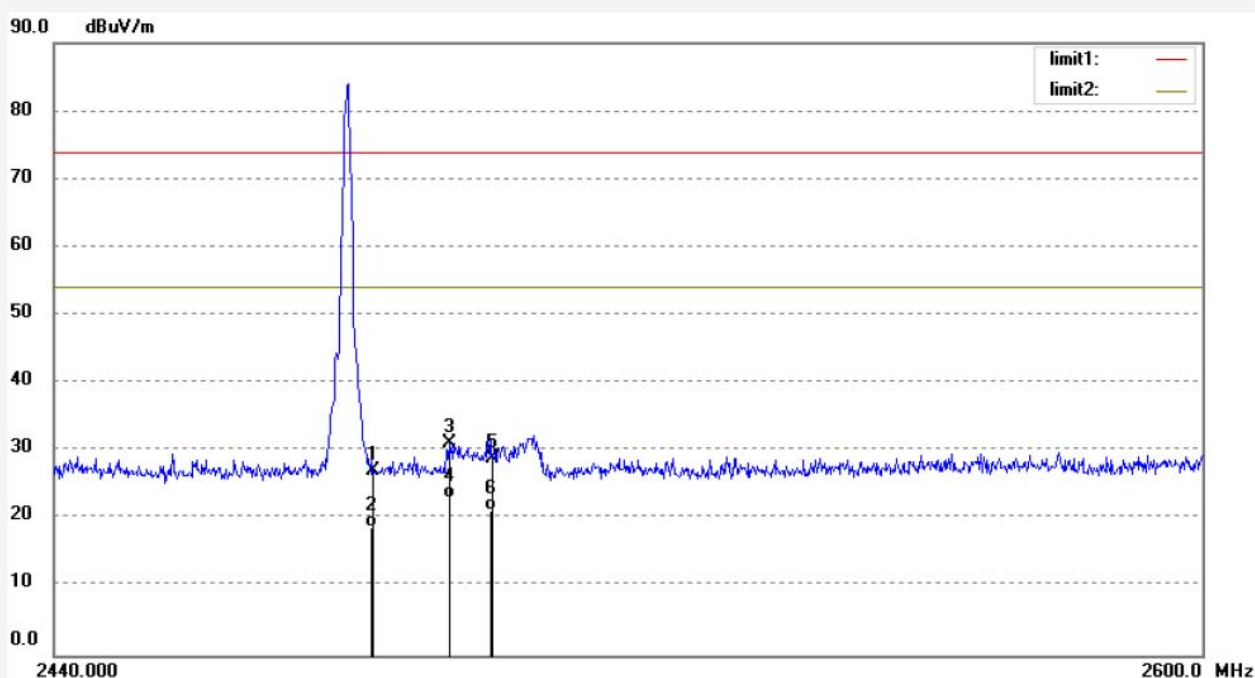
Date: 14/11/15/

Time: 14/36/21

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20142244

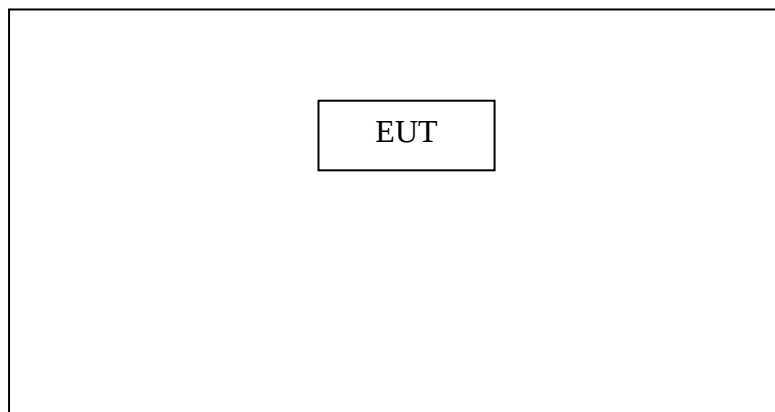


| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2483.500    | 33.60            | -6.54       | 27.06           | 74.00          | -46.94      | peak     |             |               |        |
| 2   | 2483.500    | 25.40            | -6.54       | 18.86           | 54.00          | -35.14      | AVG      |             |               |        |
| 3   | 2493.920    | 37.76            | -6.51       | 31.25           | 74.00          | -42.75      | peak     |             |               |        |
| 4   | 2493.920    | 29.50            | -6.51       | 22.99           | 54.00          | -31.01      | AVG      |             |               |        |
| 5   | 2500.000    | 35.31            | -6.50       | 28.81           | 74.00          | -45.19      | peak     |             |               |        |
| 6   | 2500.000    | 27.80            | -6.50       | 21.30           | 54.00          | -32.70      | AVG      |             |               |        |

## 9. RADIATED SPURIOUS EMISSION TEST

### 9.1. Block Diagram of Test Setup

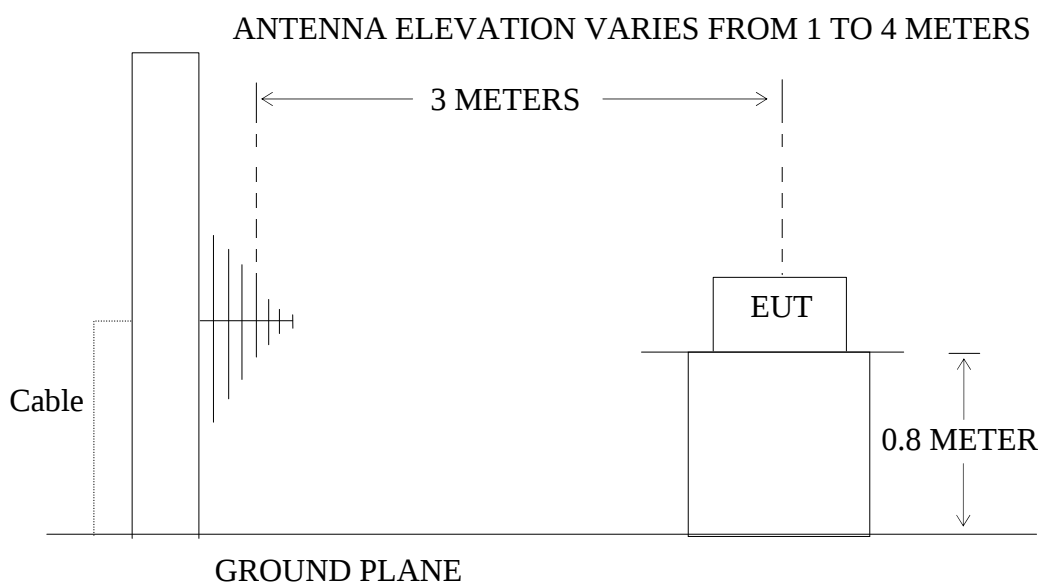
#### 9.1.1. Block diagram of connection between the EUT and peripherals



Setup: Transmitting mode

(EUT: Marine amplifier)

#### 9.1.2. Semi-Anechoic Chamber Test Setup Diagram



## 9.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

## 9.3.Restricted bands of operation

### 9.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

| 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> ) |
| 13.36-13.41              |                     |               |                  |

<sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510

<sup>2</sup>Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

## 9.4. Configuration of EUT on Measurement

The equipment is installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

## 9.5. Operating Condition of EUT

9.5.1. Setup the EUT and simulator as shown as Section 10.1.

9.5.2. Turn on the power of all equipment.

9.5.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

## 9.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector. When average radiated emissions measurements are specified there is also a limit on the peak emissions level which is 20 dB above the applicable maximum permitted average emission limit

RBW (120 kHz), VBW (300 kHz) for QP detector below 1GHz  
Peak detector above 1GHz  
RBW (1 MHz), VBW (3MHz) for Peak measurement  
RBW (1 MHz), VBW (10Hz) for AV measurement

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

## 9.7.The Field Strength of Radiation Emission Measurement Results

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. The EUT is tested radiation emission at Low, Middle, High channel in three axes. The worst emissions are reported in all channels. The fundamental radiated emissions were reduced by Band Reject Filter in the attached plots.

3. The radiation emissions from 18-25GHz are not reported, because the test values lower than the limits of 20dB.

4. The average measurement was not performed when peak measured data under the limit of average detection.



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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: star2014 #1825

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2402MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Vertical

Power Source: DC 12V

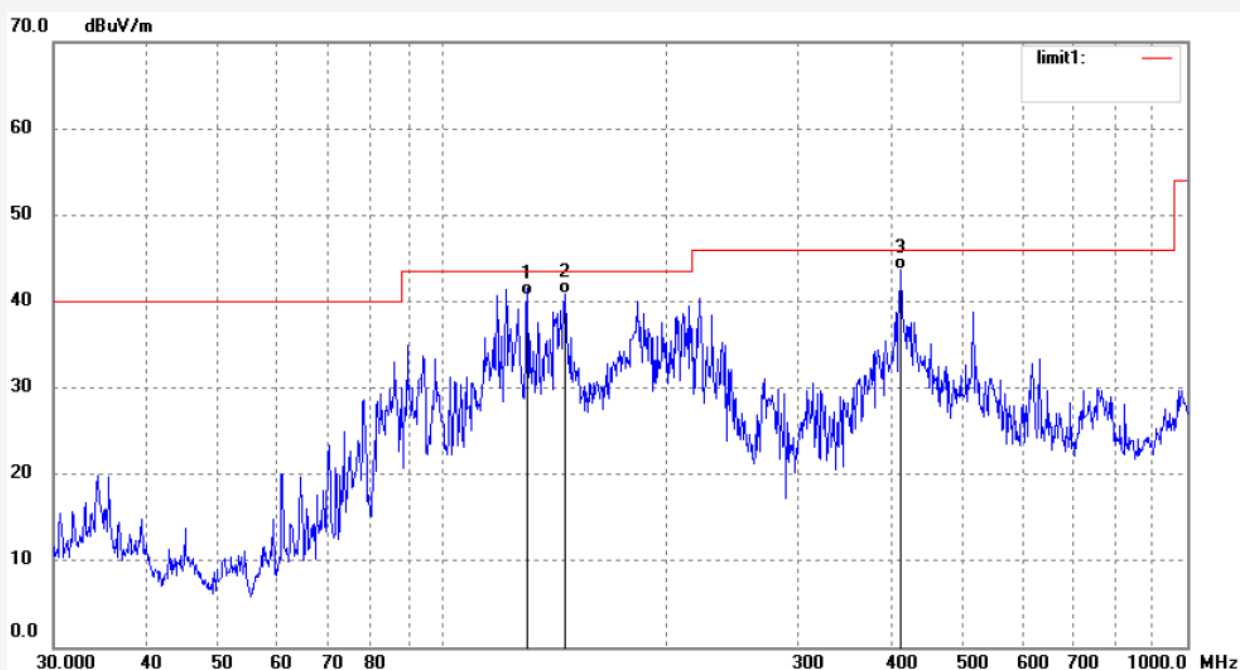
Date: 2014/11/15

Time: 13:59:33

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 129.9226    | 63.70            | -23.03      | 40.67           | 43.50          | -2.83       | QP       |             |               |        |
| 2   | 145.8611    | 64.52            | -23.72      | 40.80           | 43.50          | -2.70       | QP       |             |               |        |
| 3   | 411.8240    | 59.18            | -15.45      | 43.73           | 46.00          | -2.27       | QP       |             |               |        |

Job No.: star2014 #1826

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2402MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Horizontal

Power Source: DC 12V

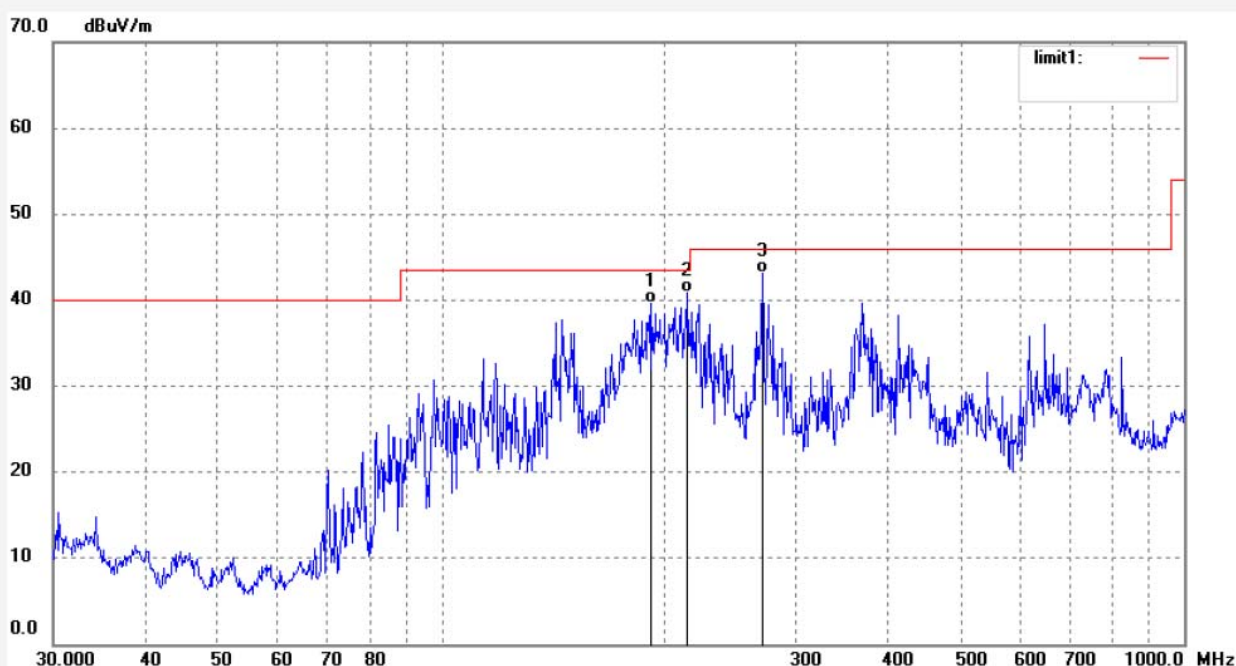
Date: 2014/11/15

Time: 14:00:20

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 191.7450    | 60.40            | -20.80      | 39.60           | 43.50          | -3.90       | QP       |             |               |        |
| 2   | 214.5143    | 60.82            | -19.97      | 40.85           | 43.50          | -2.65       | QP       |             |               |        |
| 3   | 270.3748    | 61.81            | -18.68      | 43.13           | 46.00          | -2.87       | QP       |             |               |        |



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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

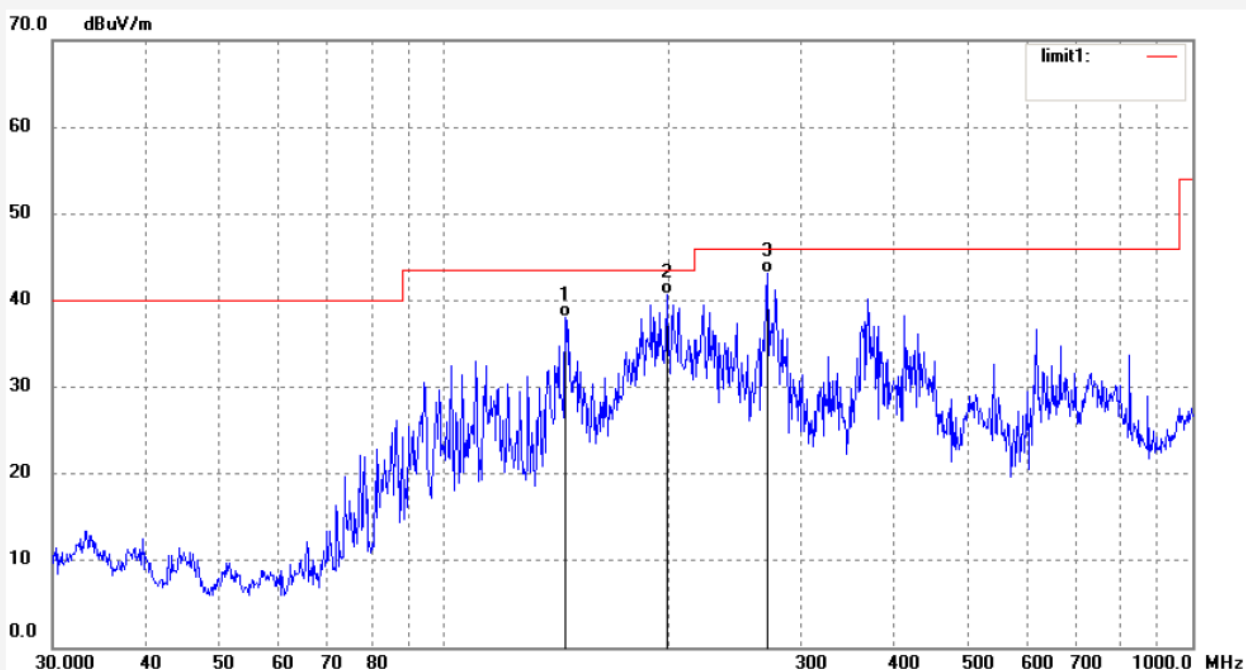
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: star2014 #1827  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Marine amplifier  
Mode: TX 2440MHz  
Model: KMC20  
Manufacturer: EVERVICTORY

Polarization: Horizontal  
Power Source: DC 12V  
Date: 2014/11/15  
Time: 14:01:01  
Engineer Signature: STAR  
Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 145.3505    | 61.76            | -23.70      | 38.06           | 43.50          | -5.44       | QP       |             |               |        |
| 2   | 198.5879    | 61.03            | -20.32      | 40.71           | 43.50          | -2.79       | QP       |             |               |        |
| 3   | 270.3747    | 61.83            | -18.68      | 43.15           | 46.00          | -2.85       | QP       |             |               |        |

Job No.: star2014 #1828

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2440MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Vertical

Power Source: DC 12V

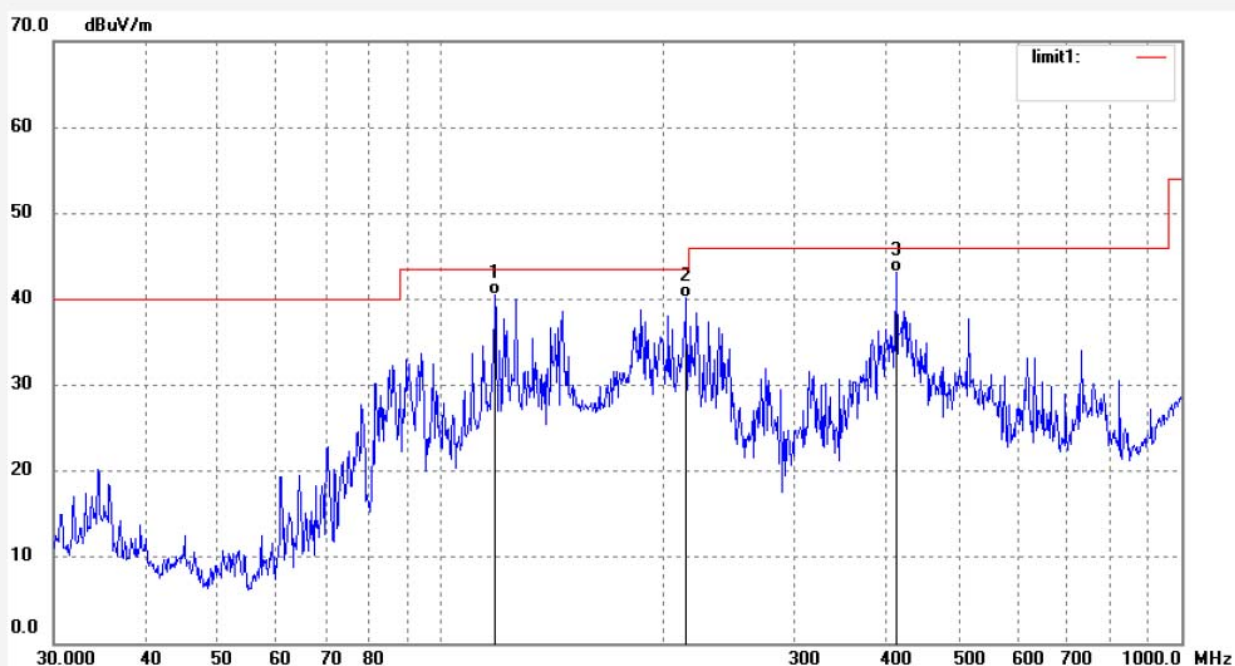
Date: 2014/11/15

Time: 14:01:50

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 118.1861    | 62.91            | -22.46      | 40.45           | 43.50          | -3.05       | QP       |             |               |        |
| 2   | 214.5142    | 60.20            | -19.97      | 40.23           | 43.50          | -3.27       | QP       |             |               |        |
| 3   | 411.8240    | 58.58            | -15.45      | 43.13           | 46.00          | -2.87       | QP       |             |               |        |

Job No.: star2014 #1829

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2480MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Vertical

Power Source: DC 12V

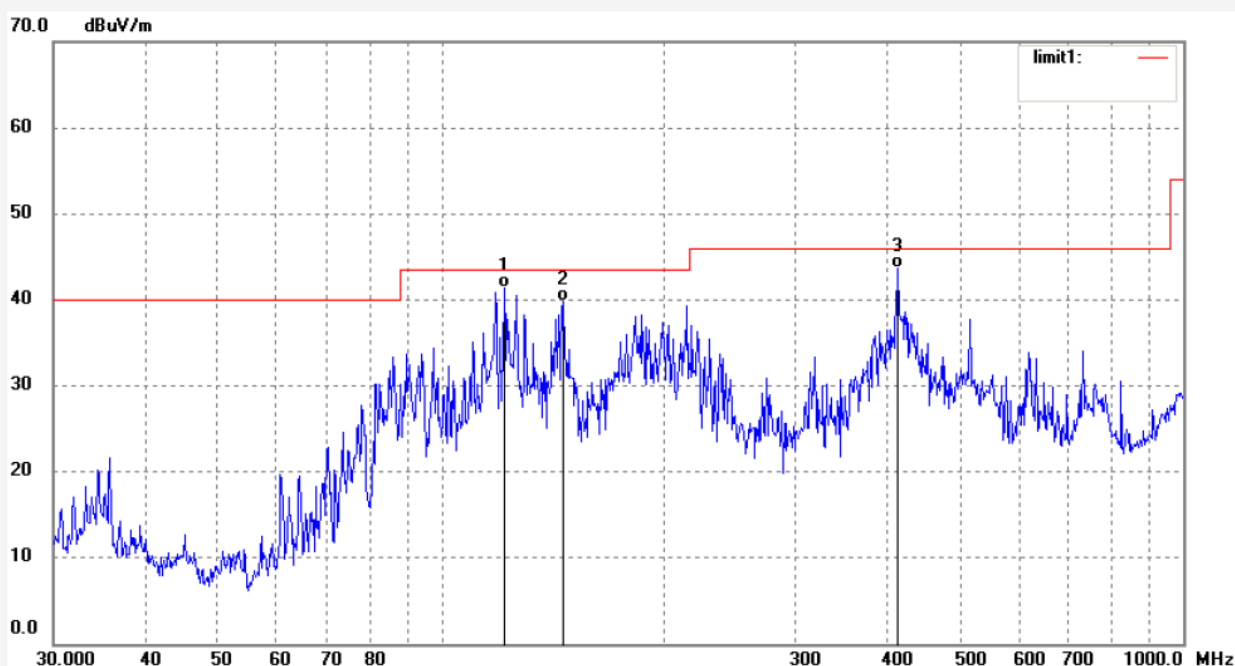
Date: 2014/11/15

Time: 14:02:29

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 121.5486    | 64.05            | -22.61      | 41.44           | 43.50          | -2.06       | QP       |             |               |        |
| 2   | 145.8611    | 63.45            | -23.72      | 39.73           | 43.50          | -3.77       | QP       |             |               |        |
| 3   | 411.8240    | 59.08            | -15.45      | 43.63           | 46.00          | -2.37       | QP       |             |               |        |

Job No.: star2014 #1830

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2480MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Horizontal

Power Source: DC 12V

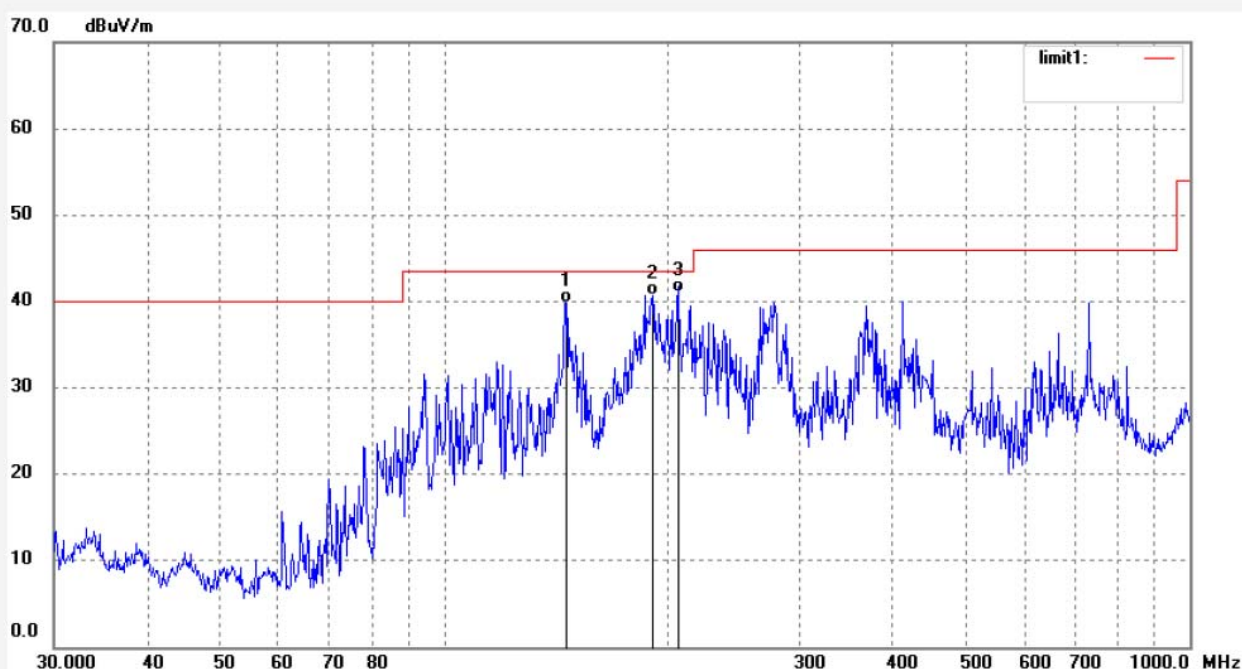
Date: 2014/11/15

Time: 14:03:17

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 145.8611    | 63.56            | -23.72      | 39.84           | 43.50          | -3.66       | QP       |             |               |        |
| 2   | 190.4050    | 61.65            | -20.93      | 40.72           | 43.50          | -2.78       | QP       |             |               |        |
| 3   | 206.3976    | 60.99            | -20.04      | 40.95           | 43.50          | -2.55       | QP       |             |               |        |



## ACCURATE TECHNOLOGY CO., LTD.

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Tel:+86-0755-26503290

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Job No.: star2014 #816

Standard: FCC PART 15B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2402MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Vertical

Power Source: DC 12V

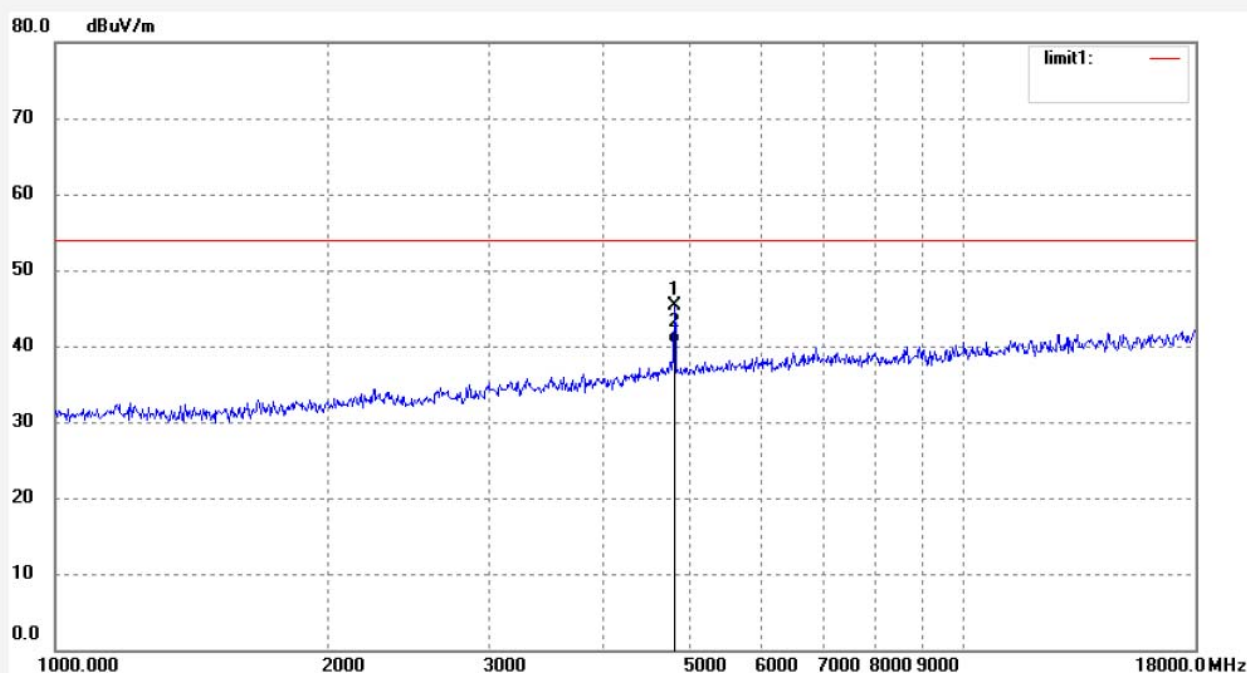
Date: 14/11/15/

Time: 11/12/43

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 4804.110    | 46.93            | -1.59       | 45.34           | 54.00          | -8.66       | peak     |             |               |        |
| 2   | 4804.110    | 41.87            | -1.59       | 40.28           | 54.00          | -13.72      | AVG      |             |               |        |

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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: star2014 #817

Standard: FCC PART 15B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2402MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Horizontal

Power Source: DC 12V

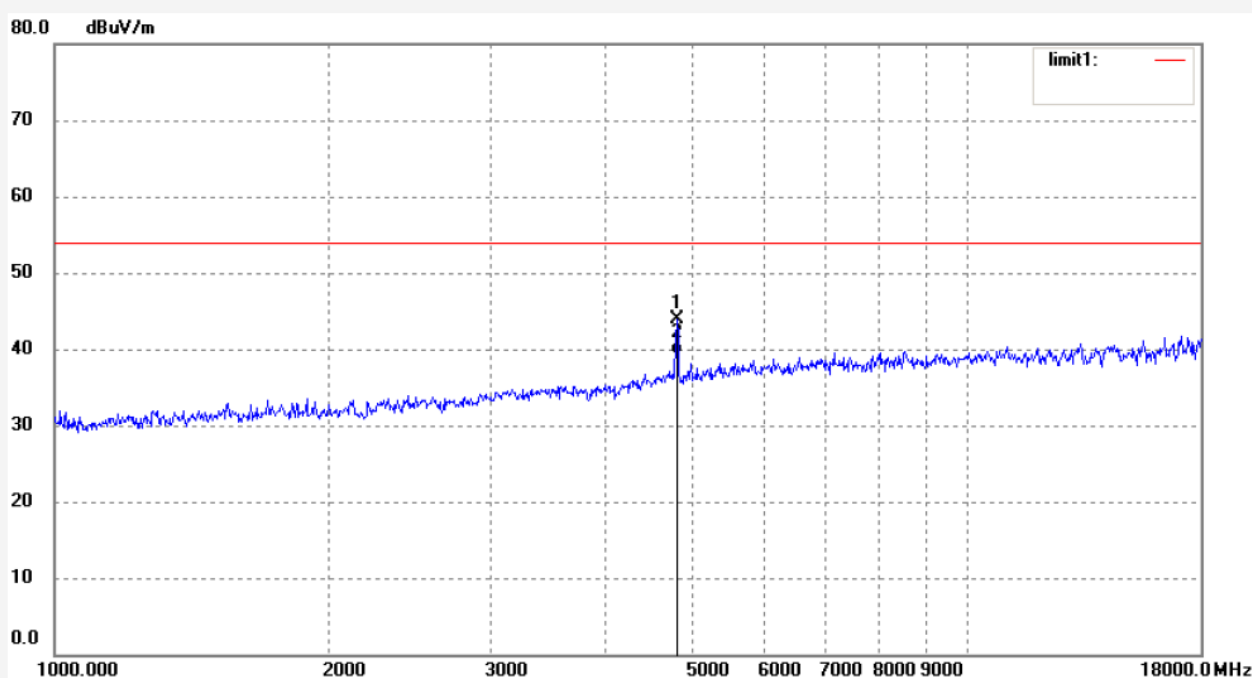
Date: 14/11/15/

Time: 11/16/36

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 4804.110       | 45.42               | -1.59          | 43.83              | 54.00             | -10.17         | peak     |                |                  |        |
| 2   | 4804.110       | 40.85               | -1.59          | 39.26              | 54.00             | -14.74         | AVG      |                |                  |        |

Job No.: star2014 #818

Standard: FCC PART 15B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2440MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Horizontal

Power Source: DC 12V

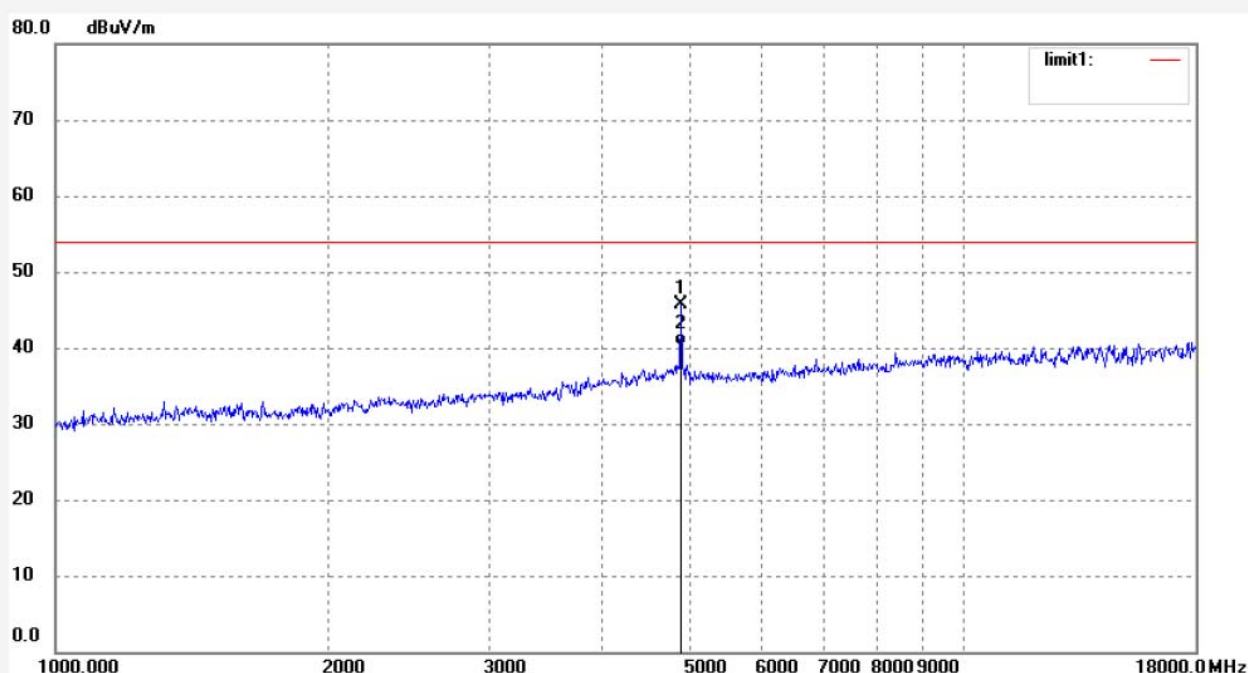
Date: 14/11/15/

Time: 11/21/54

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 4888.151       | 46.98               | -1.33          | 45.65              | 54.00             | -8.35          | peak     |                |                  |        |
| 2   | 4888.151       | 41.71               | -1.33          | 40.38              | 54.00             | -13.62         | AVG      |                |                  |        |



# ACCURATE TECHNOLOGY CO., LTD.

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Report No.: ATE20142244

Page 40 of 51

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: star2014 #819

Standard: FCC PART 15B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2440MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Vertical

Power Source: DC 12V

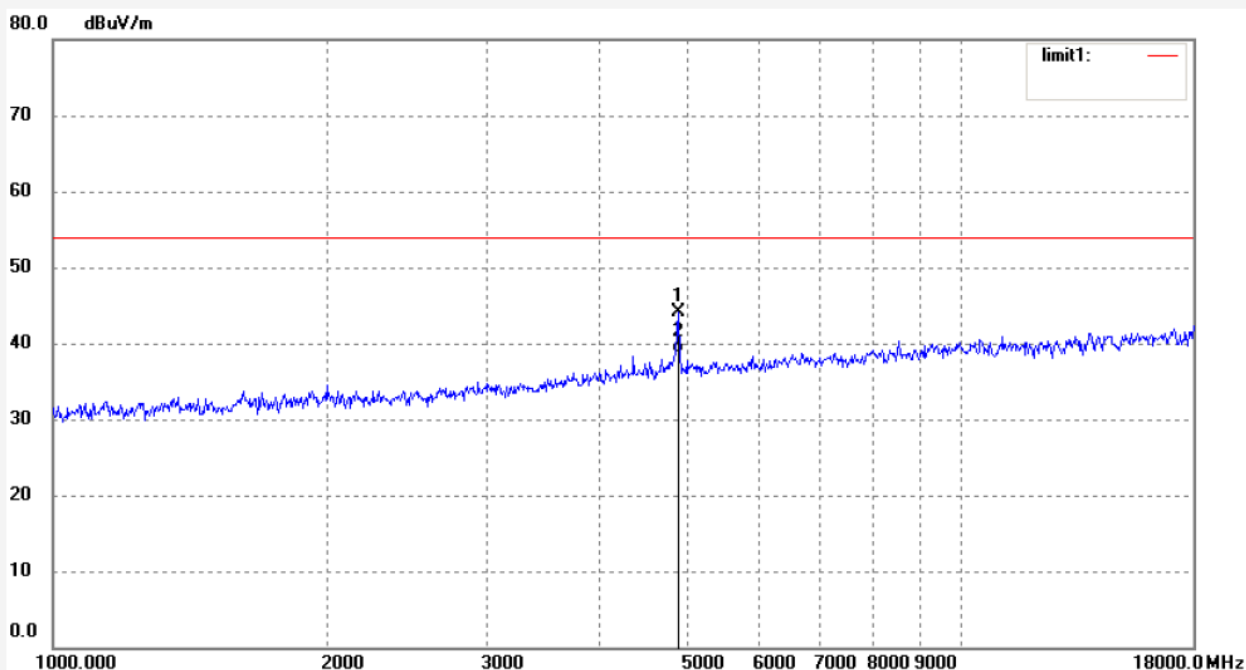
Date: 14/11/15/

Time: 11/26/49

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 4874.042       | 45.50               | -1.37          | 44.13              | 54.00             | -9.87          | peak     |                |                  |        |
| 2   | 4874.042       | 40.10               | -1.37          | 38.73              | 54.00             | -15.27         | AVG      |                |                  |        |

**ACCURATE TECHNOLOGY CO., LTD.**F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: star2014 #820

Standard: FCC PART 15B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2480MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Vertical

Power Source: DC 12V

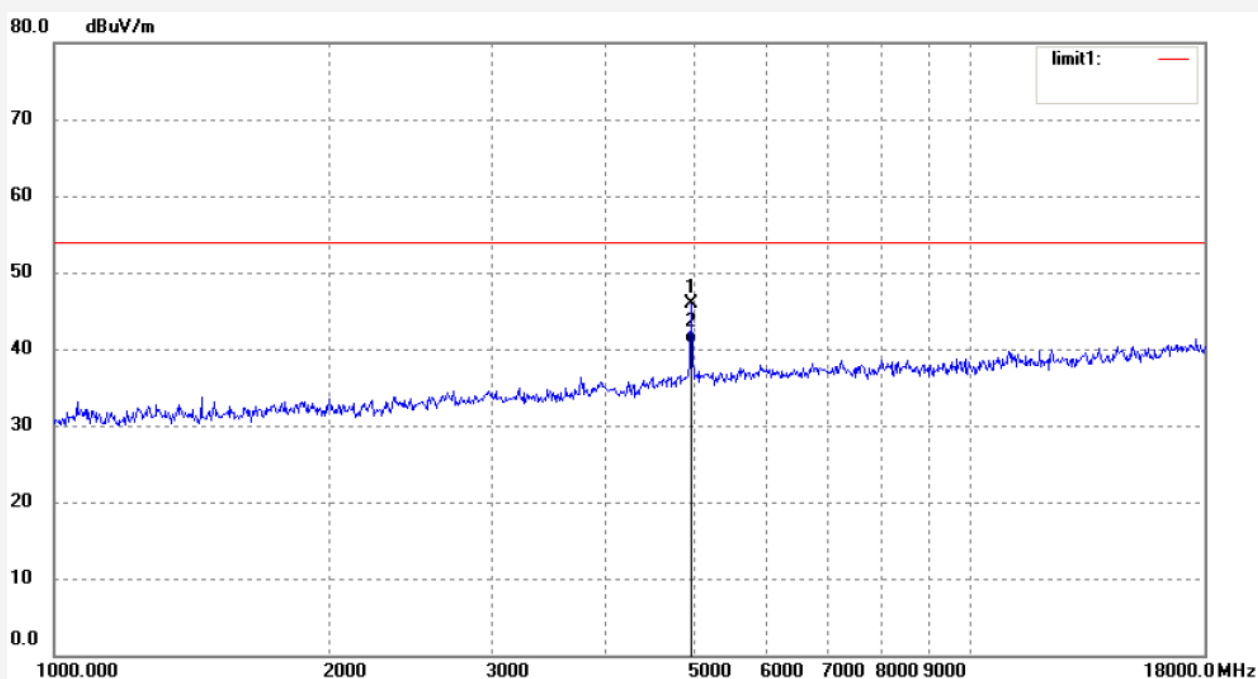
Date: 14/11/15/

Time: 11/31/42

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20142244



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 4959.307       | 46.95               | -1.12          | 45.83              | 54.00             | -8.17          | peak     |                |                  |        |
| 2   | 4959.307       | 41.89               | -1.12          | 40.77              | 54.00             | -13.23         | AVG      |                |                  |        |

Job No.: star2014 #821

Standard: FCC PART 15B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Marine amplifier

Mode: TX 2480MHz

Model: KMC20

Manufacturer: EVERVICTORY

Polarization: Horizontal

Power Source: DC 12V

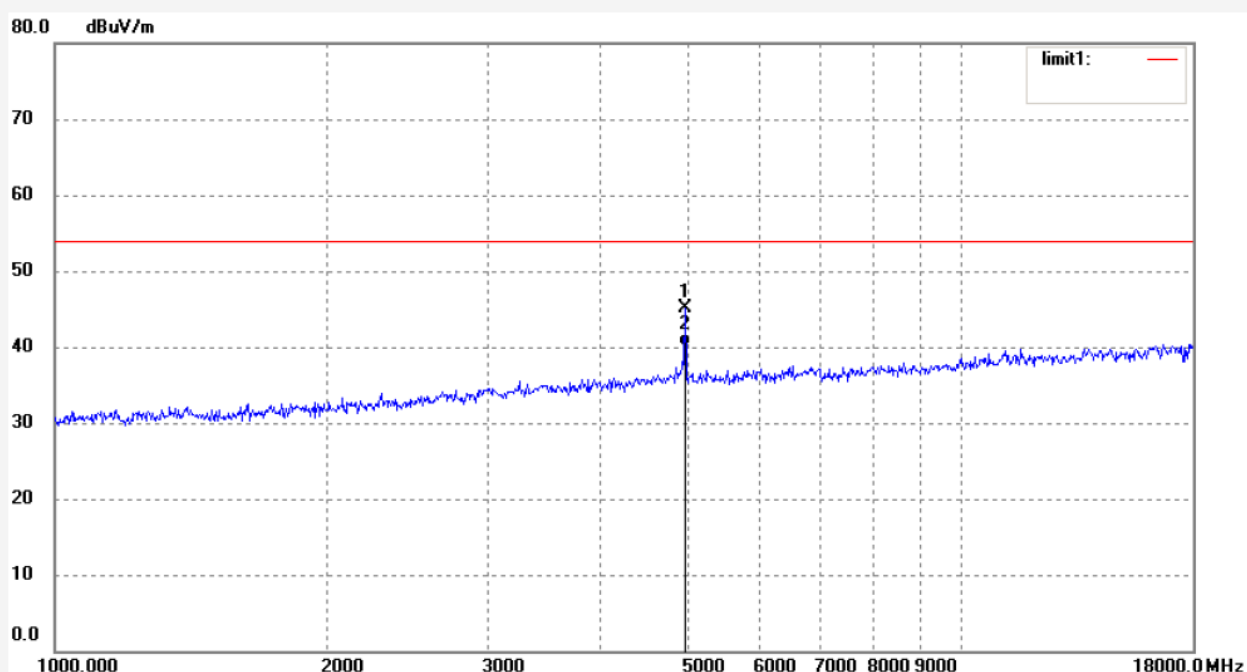
Date: 14/11/15/

Time: 11/35/53

Engineer Signature: STAR

Distance: 3m

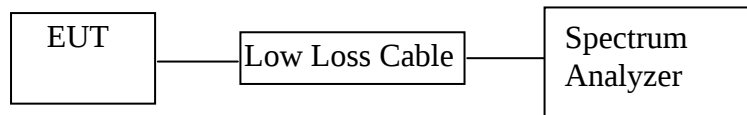
Note: Report No.:ATE20142244



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 4959.307       | 46.24               | -1.12          | 45.12              | 54.00             | -8.88          | peak     |                |                  |        |
| 2   | 4959.307       | 41.14               | -1.12          | 40.02              | 54.00             | -13.98         | AVG      |                |                  |        |

## 10.CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

### 10.1.Block Diagram of Test Setup



(EUT: Marine amplifier)

### 10.2.The Requirement of Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

### 10.3.EUT Configuration on Measurement

The equipment is installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

## 10.4. Operating Condition of EUT

10.4.1. Setup the EUT and simulator as shown as Section 11.1.

10.4.2. Turn on the power of all equipment.

10.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

## 10.5. Test Procedure

10.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.

10.5.2. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz

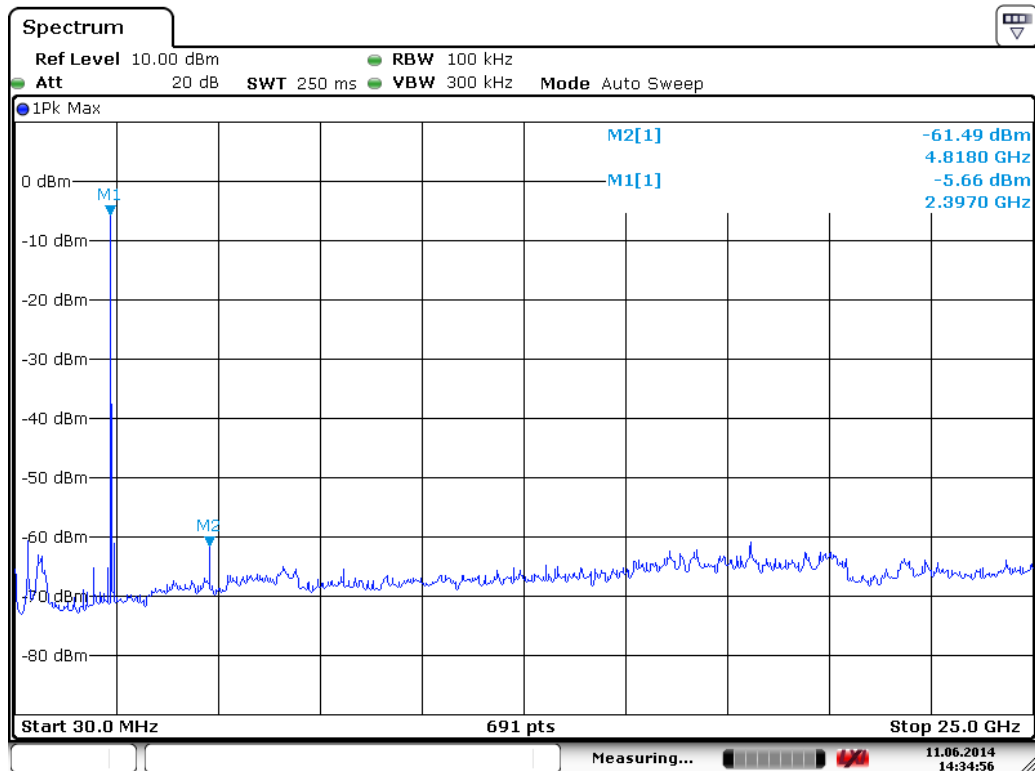
10.5.3. The Conducted Spurious Emission was measured and recorded.

## 10.6. Test Result

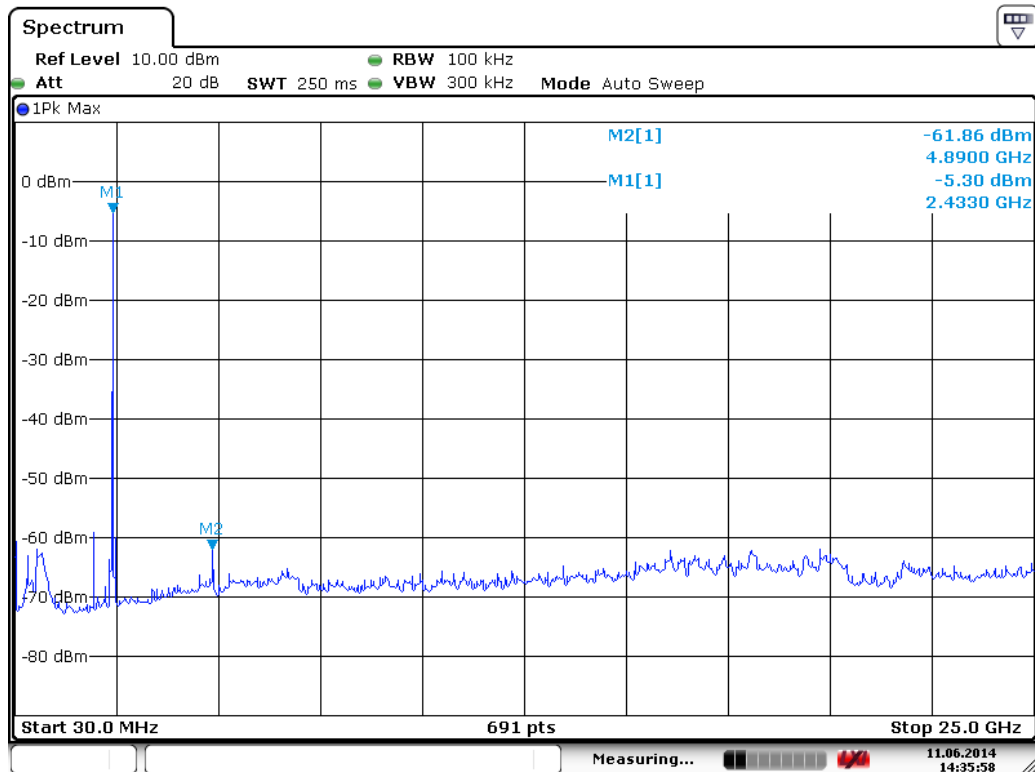
**Pass.**

The spectrum analyzer plots are attached as below.

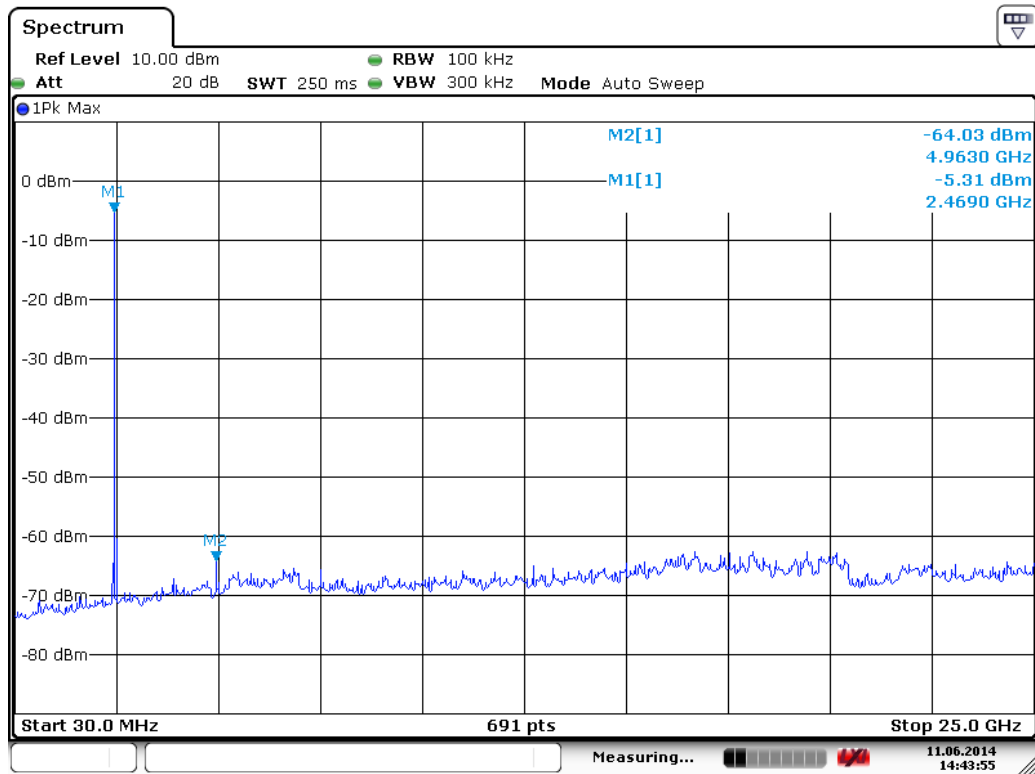
## BLE Channel Low 2402MHz



## BLE Channel Middle 2440MHz

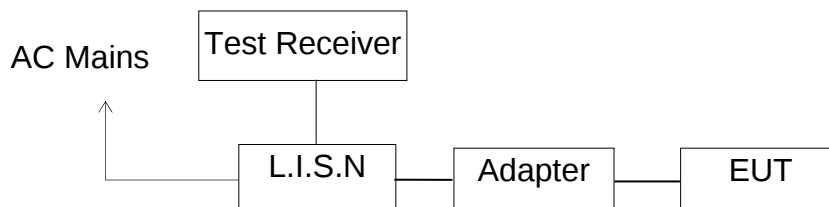


## BLE Channel High 2480MHz



## 11. POWER LINE CONDUCTED MEASUREMENT

### 11.1. Block Diagram of Test Setup



(EUT: Marine amplifier)

### 11.2. Power Line Conducted Emission Measurement Limits

| Frequency<br>(MHz)                                                                                       | Limit dB(μV)     |               |
|----------------------------------------------------------------------------------------------------------|------------------|---------------|
|                                                                                                          | Quasi-peak Level | Average Level |
| 0.15 - 0.50                                                                                              | 66.0 – 56.0 *    | 56.0 – 46.0 * |
| 0.50 - 5.00                                                                                              | 56.0             | 46.0          |
| 5.00 - 30.00                                                                                             | 60.0             | 50.0          |
| NOTE1: The lower limit shall apply at the transition frequencies.                                        |                  |               |
| NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz. |                  |               |

### 11.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

### 11.4. Operating Condition of EUT

11.4.1. Setup the EUT and simulator as shown as Section 5.1.

11.4.2. Turn on the power of all equipment.

11.4.3. Let the EUT work in test mode and measure it.

### 11.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2009 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

### 11.6. Power Line Conducted Emission Measurement Results

**PASS.**

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are attached as below.

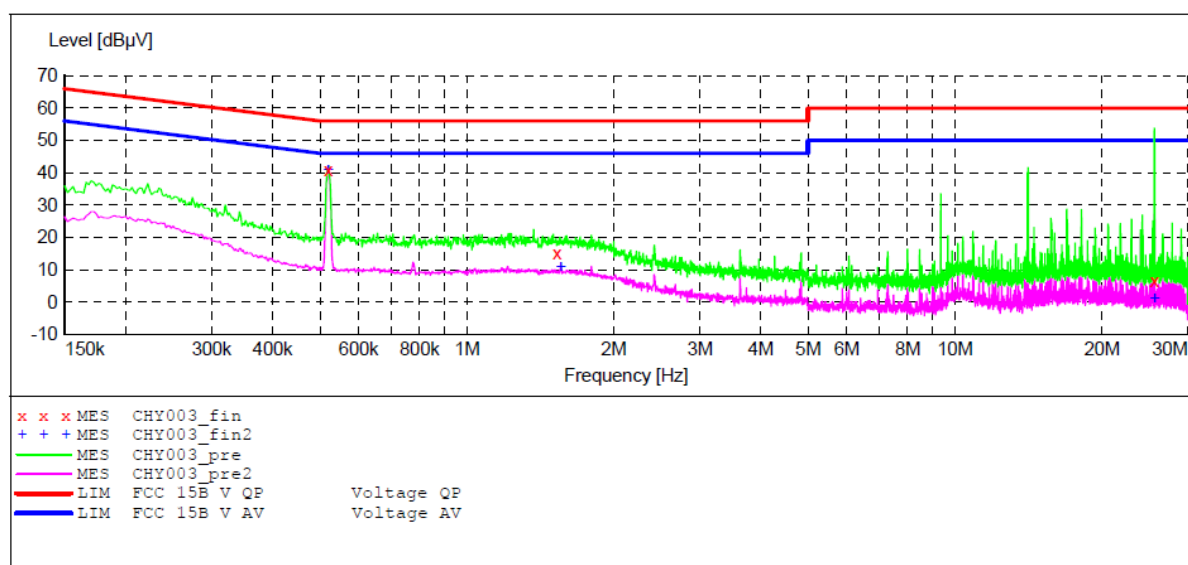
ACCURATE TECHNOLOGY CO., LTD

## CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Marine amplifier M/N:KMC20  
 Manufacturer: EVERVICTORY  
 Operating Condition: ON  
 Test Site: 2#Shielding Room  
 Operator: star  
 Test Specification: N DC 12V  
 Comment: Report NO.:ATE20142244  
 Start of Test: 2014-11-13 / 16:10:45

### SCAN TABLE: "V 150K-30MHz fin"

Short Description: \_SUB\_STD\_VTERM2 1.70  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz LISN (ESH3-Z5)  
 Average



### MEASUREMENT RESULT: "CHY003\_fin"

2014-11-13 16:13

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.520000         | 40.80         | 11.5         | 56            | 15.2         | QP       | N    | GND |
| 1.532000         | 15.00         | 11.6         | 56            | 41.0         | QP       | N    | GND |
| 25.625000        | 46.50         | 12.0         | 60            | 13.5         | QP       | N    | GND |

### MEASUREMENT RESULT: "CHY003\_fin2"

2014-11-13 16:13

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.520000         | 40.80         | 11.5         | 46            | 5.2          | AV       | N    | GND |
| 1.558000         | 10.90         | 11.6         | 46            | 35.1         | AV       | N    | GND |
| 25.625000        | 31.00         | 12.0         | 50            | 19.0         | AV       | N    | GND |

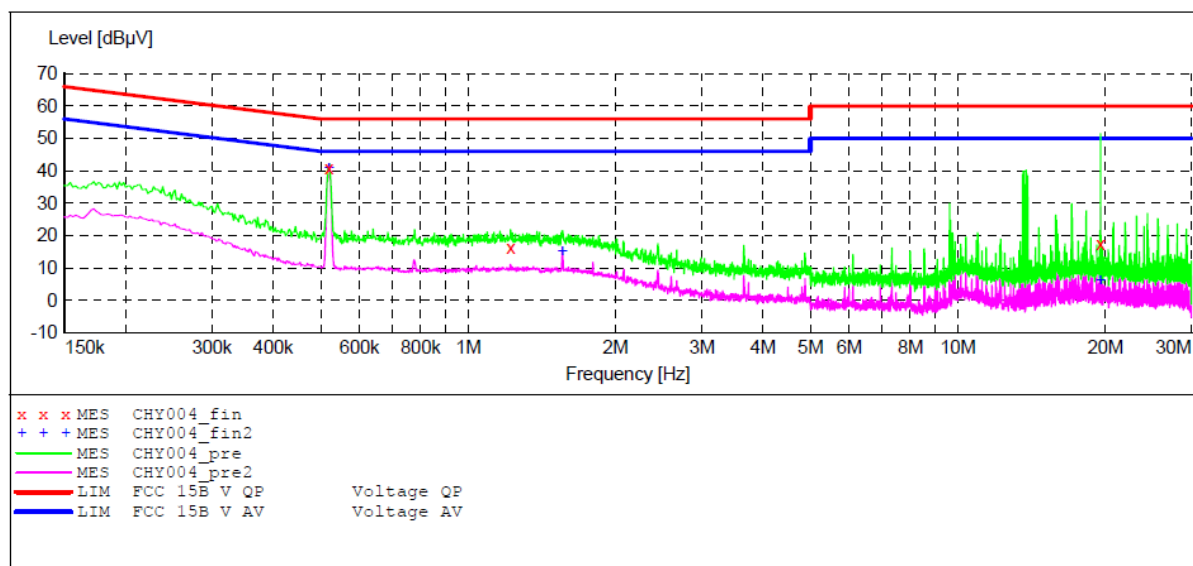
## ACCURATE TECHNOLOGY CO., LTD

### CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Marine amplifier M/N:KMC20  
 Manufacturer: EVERVICTORY  
 Operating Condition: ON  
 Test Site: 2#Shielding Room  
 Operator: star  
 Test Specification: L DC 12V  
 Comment: Report NO.:ATE20142244  
 Start of Test: 2014-11-13 / 16:14:41

#### SCAN TABLE: "V 150K-30MHz fin"

Short Description: \_SUB\_STD\_VTERM2 1.70  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz LISN (ESH3-Z5)  
 Average



#### MEASUREMENT RESULT: "CHY004\_fin"

2014-11-13 16:17

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.520000         | 40.70         | 11.5         | 56            | 15.3         | QP       | L1   | GND |
| 1.222000         | 16.40         | 11.6         | 56            | 39.6         | QP       | L1   | GND |
| 19.563500        | 47.40         | 11.9         | 60            | 12.6         | QP       | L1   | GND |

#### MEASUREMENT RESULT: "CHY004\_fin2"

2014-11-13 16:17

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.520000         | 40.70         | 11.5         | 46            | 5.3          | AV       | L1   | GND |
| 1.558000         | 14.90         | 11.6         | 46            | 31.1         | AV       | L1   | GND |
| 19.563500        | 36.20         | 11.9         | 50            | 13.8         | AV       | L1   | GND |

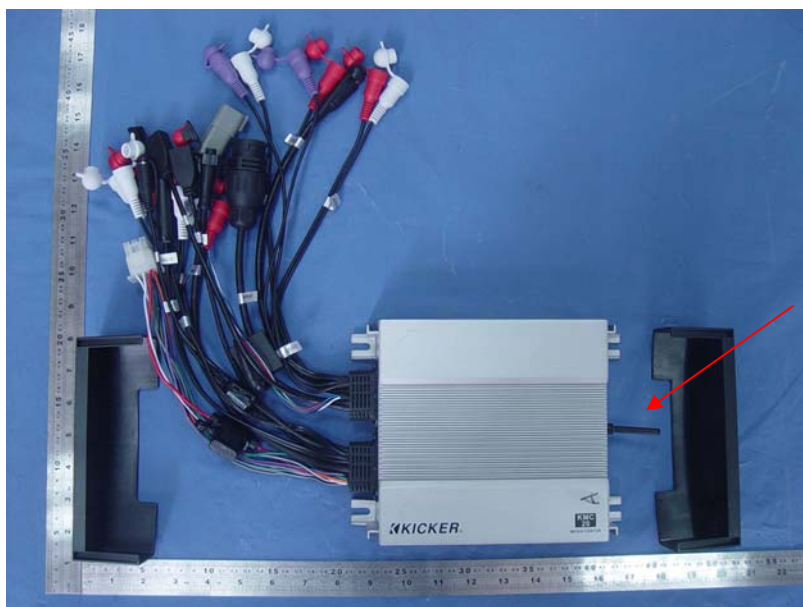
## 12.ANTENNA REQUIREMENT

### 12.1.The Requirement

According to 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.

### 12.2.Antenna Construction

Device is equipped with a permanent attached antenna, which isn't displaced by other antenna, it cannot be removed and the gain is 0 dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna

