



# FCC Test Report

Report No: FCS202107039W01

Issued for

|               |  |
|---------------|--|
| Applicant:    | SHENZHEN ENGETE DIANZI KEJI YOUXIAN GONGSI   |
| Address:      | E207 hedong mansion haoyunlai square xixiang road baoan area, Shenzhen, Guangdong, China |
| Product Name: | UHF Wireless Microphone  |
| Brand Name:   | BOMGE  |
| Model Name:   | BG-220U  |
| Series Model: | JS-12  |
| FCC ID:       | 2A2QZ-BG-220U  |

Issued By: Flux Compliance Service Laboratory  
Add: Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan  
Tel: 769-27280901 Fax:769-27280901 <http://www.fcs-lab.com>

## TEST RESULT CERTIFICATION

Applicant's Name.....: SHENZHEN ENGETE DIANZI KEJI YOUXIAN GONGSI  
Address.....: E207 hedong mansion haoyunlai square xixiang road baoan area, Shenzhen, Guangdong, China  
Manufacture's Name.....: SHENZHEN ENGETE DIANZI KEJI YOUXIAN GONGSI  
Address.....: E207 hedong mansion haoyunlai square xixiang road baoan area, Shenzhen, Guangdong, China

### Product Description

Product Name.....: UHF Wireless Microphone  
Brand Name .....: BOMGE  
Model Name.....: BG-220U  
Series Model.....: JS-12  
Test Standards.....: FCC Rules and Regulations Part 15 Subpart C section 15.236  
Test Procedure.....: ANSI C63.10:2013

This device described above has been tested FCS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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### Date of Test.....:

Date (s) of performance of tests.: 27 Jun. 2021 ~ 13 Jul. 2021

Date of Issue.....: 13 Jul. 2021

Test Result.....: Pass

Tested by

*Scott Shen*

(Scott Shen)

Reviewed by

*Duke Qian*

(Duke Qian)

Approved by

*Kait Chen*

(Kait Chen)

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**Revision History**

| Rev. | Issue Date   | Effect Page | Contents      |
|------|--------------|-------------|---------------|
| 00   | 13 Jul. 2021 | All         | Initial Issue |
|      |              |             |               |

## 1. SUMMARY OF TEST RESULTS

| FCC Part 15 Subpart C section 15.236 |  |          |        |
|--------------------------------------|--|----------|--------|
| Standard Section                     | Test Item                                      | Judgment | Remark |
| FCC Part 15.236(d)                   | Maximum Radiated Power                         | PASS     | --     |
| FCC Part 15.236(f)(2)                | Occupied Bandwidth                             | PASS     | --     |
| FCC Part 15.236(g)                   | Necessary bandwidth                            | PASS     | --     |
| FCC Part 15.236(f)(3)                | Frequency stability                            | PASS     | --     |
| FCC Part 15.236(g)                   | Emission within the band and outside this band | PASS     | --     |
| FCC Part 207(a)                      | Conducted Emission                             | NA       | --     |

### NOTE:

- (1)" N/A" denotes test is not applicable in this Test Report
- (2) All tests are according to ANSI C63.10:2013

## 1.1 TEST FACTORY

|                                    |  |
|------------------------------------|--|
| Company Name:                      | Flux Compliance Service Laboratory   |
| Address:                           | Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan |
| Telephone:                         | +86-769-27280901   |
| Fax:                               | +86-769-27280901   |
| FCC Test Firm Registration Number: | 514908   |
| Designation number:                | CN0127   |
| A2LA accreditation number:         | 5545.01  |

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95 %**.

| No. | Item                                       | Uncertainty   |
|-----|--|---------------|
| 1   | RF output power, conducted                 | $\pm 0.71$ dB |
| 2   | Unwanted Emissions, conducted              | $\pm 2.98$ dB |
| 3   | Conducted Emission (9KHz-150KHz)           | $\pm 4.13$ dB |
| 4   | Conducted Emission (150KHz-30MHz)          | $\pm 4.74$ dB |
| 5   | All emissions, radiated(<1G) 30MHz-1000MHz | $\pm 3.2$ dB  |
| 6   | All emissions, radiated (1GHz -18GHz)      | $\pm 3.66$ dB |
| 7   | All emissions, radiated (18GHz -40GHz)     | $\pm 4.31$ dB |

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF THE EUT

|                         |                                   |
|-------------------------|-----------------------------------|
| Product Name            | UHF Wireless Microphone           |
| Brand Name              | BOMGE                             |
| Model Name              | BG-220U                           |
| Series Model            | JS-12                             |
| Channel List            | Please refer to the Note 2.       |
| Operation frequency     | Channel: 470MHz- 608MHz           |
| Modulation Type         | FM                                |
| Antenna Type            | PCB Antenna                       |
| Antenna Gain (dBi)      | 1.0                               |
| Power Supply            | DC 3V                             |
| Battery                 | 2×1.5V dry batteries              |
| Hardware version number | V1.0                              |
| Software version number | V1.0                              |
| Connecting I/O Port(s)  | Please refer to the User's Manual |

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

## 2. Channel List

| Channel |                 |         |                 |         |                 |
|---------|-----------------|---------|-----------------|---------|-----------------|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 01      | 471.25          | 02      | 539.5           | 03      | 607.75          |
|         |                 |         |                 |         |                 |

| Ant. | Antenna Brand | Antenna Model Name | Antenna Type | Connector | Gain (dBi) | NOTE    |
|------|---------------|--------------------|--------------|-----------|------------|---------|
| 1    | N/A           | DCBX               | PCB Antenna  | N/A       | 1.0        | Antenna |

## 2.2 DESCRIPTION OF THE TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test software:FCC tools

The test software was used to control EUT work in continuous TX mode, and select test channel, Wireless mode as below table, the following operating modes were applied for the related test items. All test modes were tested, only the result of the worst case was recorded in the report.

| Tested mode, channel , information |         |                 |
|------------------------------------|---------|-----------------|
| Mode                               | Channel | Frequency (MHz) |
| Channel                            | CH 01   | 471.25          |
|                                    | CH 02   | 539.5           |
|                                    | CH 03   | 607.75          |
|                                    |         |                 |
|                                    |         |                 |

Note: that use new battery during the test

### 2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

#### Necessary accessories

| Item | Equipment | Mfr/Brand | Model/Type No. | Serial No. | Note |
|------|-----------|-----------|----------------|------------|------|
|      |           |           |                |            |      |
|      |           |           |                |            |      |
|      |           |           |                |            |      |
|      |           |           |                |            |      |

#### Support units

| Item | Equipment | Mfr/Brand | Model/Type No. | Serial No. | Note |
|------|-----------|-----------|----------------|------------|------|
|      |           |           |                |            |      |
|      |           |           |                |            |      |
|      |           |           |                |            |      |
|      |           |           |                |            |      |

#### Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) "YES" is means "shielded" "with core"; "NO" is means "unshielded" "without core".

## 2.4 EQUIPMENTS LIST

### Radiation Test equipment

| Kind of Equipment                | Manufacturer | Type No.     | Company No. | Last calibration | Calibrated until |
|----------------------------------|--------------|--------------|-------------|------------------|------------------|
| EMI Test Receiver                | R&S          | ESRP 3       | FCS-E001    | 2021.05.26       | 2022.05.25       |
| Signal Analyzer                  | R&S          | FSV40-N      | FCS-E012    | 2021.05.26       | 2022.05.25       |
| Active loop Antenna              | ZHINAN       | ZN30900C     | FCS-E013    | 2021.07.09       | 2022.07.10       |
| Bilog Antenna                    | SCHWARZBECK  | VULB 9168    | FCS-E002    | 2020.08.26       | 2021.08.25       |
| Horn Antenna                     | SCHWARZBECK  | BBHA 9120D   | FCS-E003    | 2020.08.26       | 2021.08.25       |
| SHF-EHF Horn Antenna (18G-40GHz) | A-INFO       | LB-180400-KF | FCS-E018    | 2021.05.26       | 2022.05.25       |
| Pre-Amplifier(0.1M-3GHz)         | EMCI         | EM330N       | FCS-E004    | 2021.05.26       | 2022.05.25       |
| Pre-Amplifier (1G-18GHz)         | N/A          | TSAMP-0518SE | FCS-E014    | 2021.05.26       | 2022.05.25       |
| Pre-Amplifier (18G-40GHz)        | TERA-MW      | TRLA-0400    | FCS-E019    | 2021.07.09       | 2022.07.10       |
| Temperature & Humidity           | HTC-1        | victor       | FCS-E005    | 2020.08.26       | 2021.08.25       |
| Signal generator                 | Agilent      | E4421B       | FCS-E025    | 2020.08.26       | 2021.08.25       |
| power meter                      | Anritsu      | ML2495A      | FCS-E30     | 2021.07.09       | 2022.07.10       |

### Conduction Test equipment

| Kind of Equipment      | Manufacturer | Type No. | Company No. | Last calibration | Calibrated until |
|------------------------|--------------|----------|-------------|------------------|------------------|
| EMI Test Receiver      | R&S          | ESPI     | FCS-E020    | 2021.05.26       | 2022.05.25       |
| LISN                   | R&S          | ENV216   | FCS-E007    | 2021.07.09       | 2022.07.10       |
| LISN                   | ETS          | 3810/2NM | FCS-E009    | 2021.05.26       | 2022.05.25       |
| Temperature & Humidity | HTC-1        | victor   | FCS-E008    | 2021.07.09       | 2022.07.10       |

### RF Connected Test

| Kind of Equipment | Manufacturer | Type No. | Company No. | Last calibration | Calibrated until |
|-------------------|--------------|----------|-------------|------------------|------------------|
| Spectrum Analyzer | Keysight     | N9020A   | FCS-E015    | 2021.05.26       | 2022.05.25       |
| Spectrum Analyzer | Agilent      | E4447A   | MY50180039  | 2021.07.09       | 2022.07.10       |
| Spectrum Analyzer | R&S          | FSV-40   | 101499      | 2020.08.26       | 2021.08.25       |

### 3 MAXIMUM RADIATED POWER

#### 3.1 LIMIT

Refer to FCC 15.236(d)

In the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP

#### 3.2 TEST PROCEDURE

A · Connect each EUT's antenna output to power sensor by RF cable and attenuator

#### 3.3 TEST SETUP



#### 3.4 TEST RESULTS

| Test mode | Channel | Frequency (MHz) | Peak Output Power (dBm) | Cable loss(dB m) | Atnenna Gain (dBi) | EIRP(d Bm) | Limit(dB m) | Verdict |
|-----------|---------|-----------------|-------------------------|------------------|--------------------|------------|-------------|---------|
| Channel   | 01      | 471.25          | 3.48                    | 1.0              | 1.0                | 5.48       | 16.99       | PASS    |
|           | 02      | 539.5           | 3.69                    | 1.0              | 1.0                | 5.69       |             |         |
|           | 03      | 607.75          | 3.05                    | 1.0              | 1.0                | 5.05       |             |         |

## 4. OCCUPIED BANDWIDTH

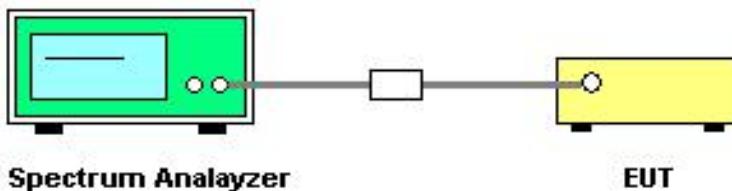
### 4.1 LIMIT

One or more adjacent 25KHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall not exceed 200 kHz

### 4.2 TEST PROCEDURE

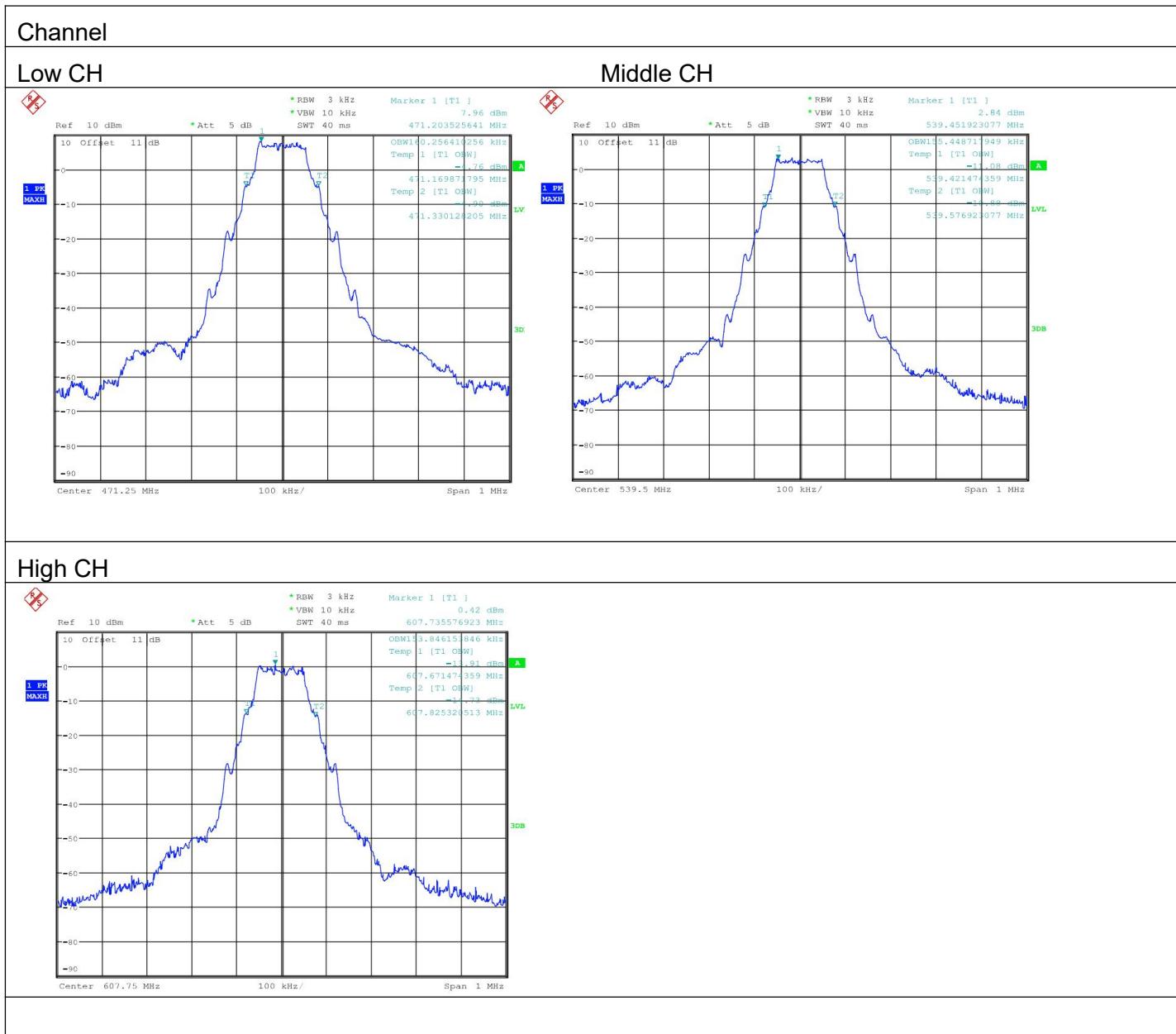
| Parameter            | Setting  |
|----------------------|--|
| Detector             | Peak/AV  |
| Sweep time           | Auto   |
| Resolution bandwidth | 1 % to 5 % of the occupied bandwidth                           |
| Video bandwidth:     | 3 x resolution bandwidth                                       |
| Span:                | 2 x emission bandwidth   |
| Trace mode:          | Max. hold  |
| Analyzer function:   | 99% power occupied bandwidth function                          |
| EUT:                 | Modulated signal with max(FM,2.5kHz tone). frequency deviation |

### 4.3 TEST SETUP



#### 4.4 TEST RESULTS

| Test mode | Channel   | Frequency (MHz) | 99% Bandwidth (KHz) | Limit(KHz) | Verdict |
|-----------|-----------|-----------------|---------------------|------------|---------|
| Channel   | Low CH    | 471.25          | 160.25              | 200        | PASS    |
|           | Middle CH | 539.5           | 155.45              |            |         |
|           | High CH   | 607.75          | 153.85              |            |         |



## 5 NECESSARY BANDWIDTH

### 5.1 LIMIT

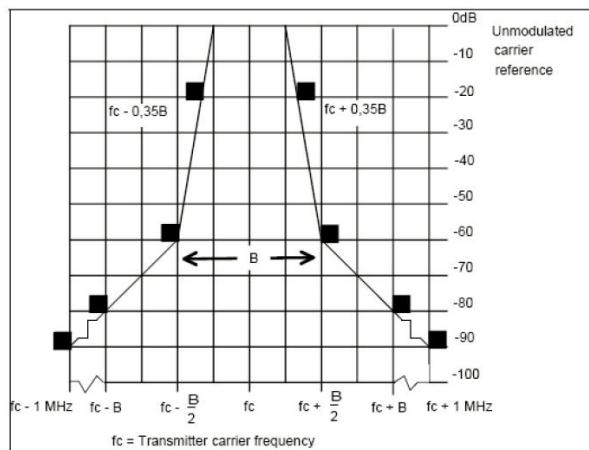
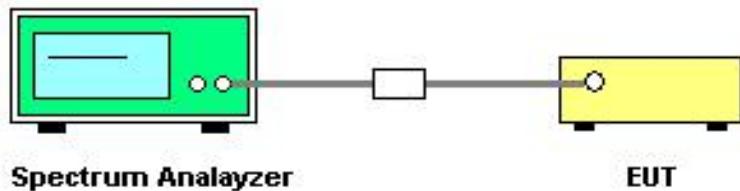


Figure 1: Spectrum mask for analogue systems in all bands

### 5.2 TEST PROCEDURE

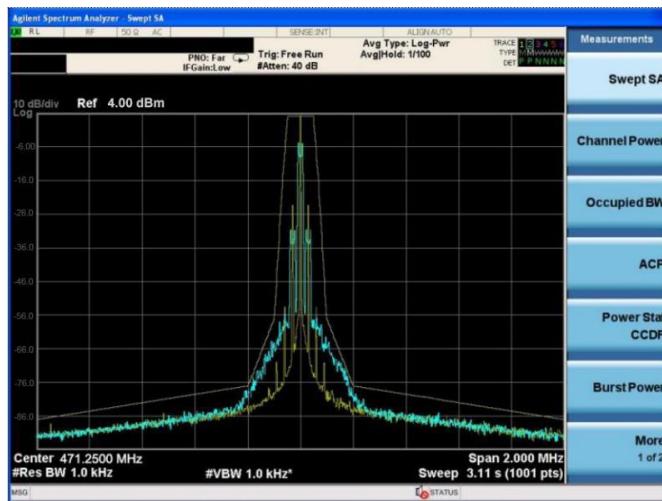
EN300422-1 V1.4.2 Clause 8.3.

### 5.3 TEST SETUP

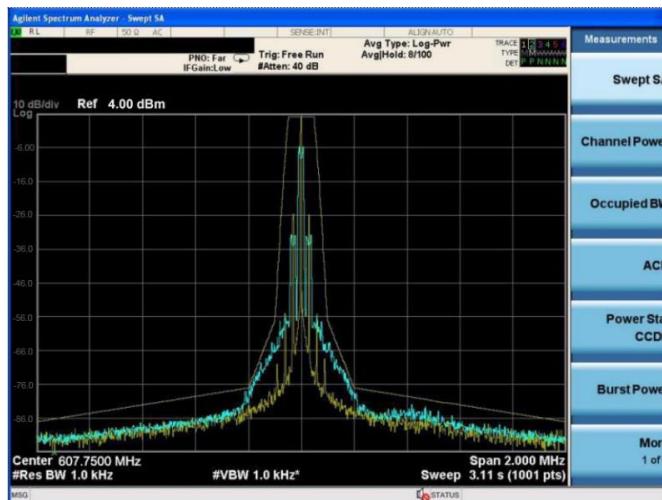


### 5.4 TEST RESULT

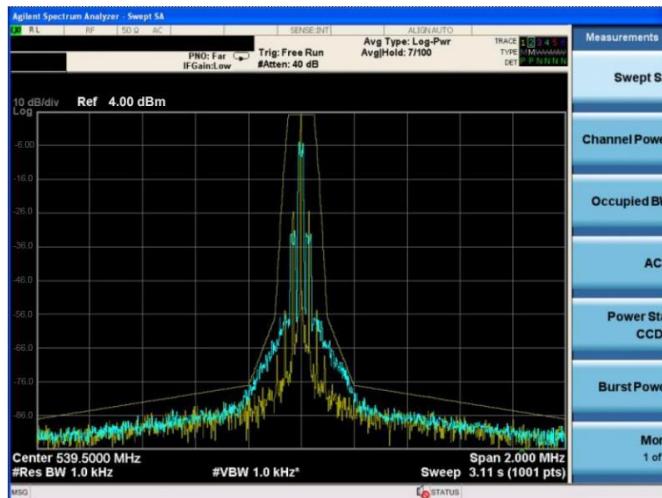
Emission Mask  
Channel  
Low CH



Middle CH



High CH



Note:

B: declared channel Bandwidth 200KHz

Flux Compliance Service Laboratory

Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan

Tel: 769-27280901 Fax:769-27280901 <http://www.fcs-lab.com>

## 6. TRANSMITTER UNWANTED EMISSIONS

### 6.1 LIMIT

Spurious emissions are emissions outside the frequency range(s) of the equipment. The power of the spurious emissions shall not exceed the limits of table as below:

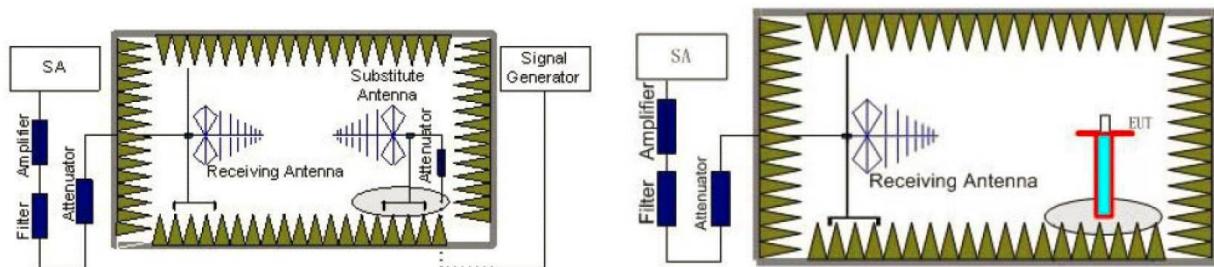
| State     | Frequency   |                                    |                              |
|-----------|---|------------------------------------|------------------------------|
|           | 47MHz to 74MHz, 87.5MHz to 137MHz<br>174MHz to 230MHz, 470MHz to 862MHz | Other Frequencies<br>below 1000MHz | Frequencies above<br>1000MHz |
| Operation | 4nW   | 250nW                              | 1uW                          |
| Standby   | 2nW   | 2nW                                | 20nW                         |

### 5.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. Set spectrum

1. analyzer start 30MHz to 6000MHz with 100 KHz RBW and 300 KHz VBW
2. Please refer to ETSI EN 300 422-1 V1.4.2 (2011-08) clause 6.1 for the test conditions.
3. Please refer to ETSI EN 300 422-1 V1.4.2 (2011-08) clause 8.4.2 for the measurement method.

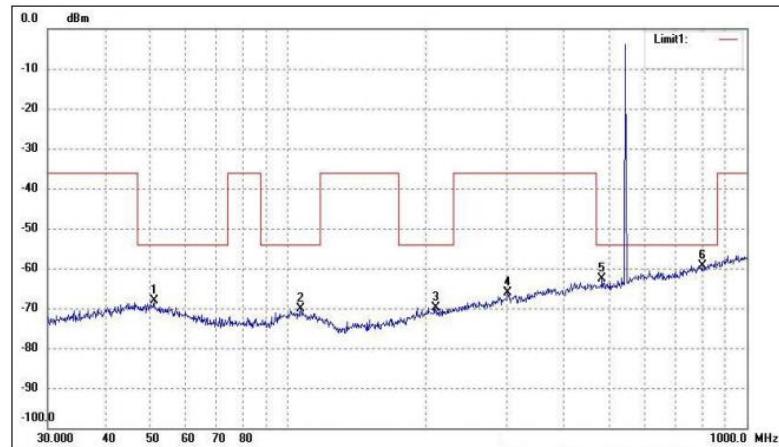
### 5.3 TEST SETUP



## 6.4 TEST RESULTS

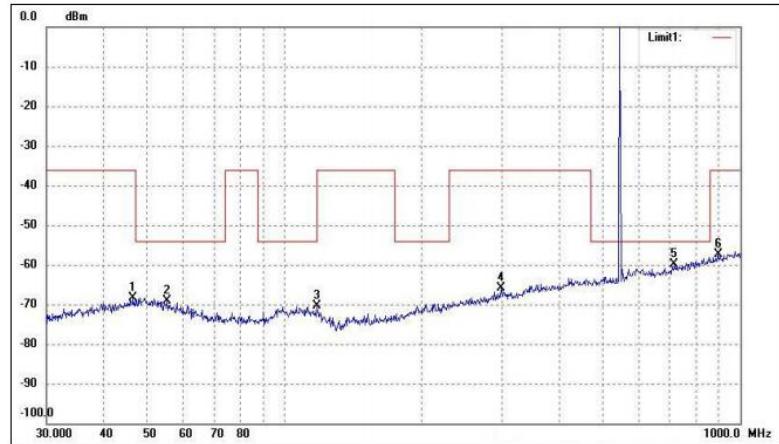
CHANNEL -LOW CH-30MHZ-1000MHZ

Vertical



| No. | Frequency (MHz) | Reading (dBm) | Correct dB | Result (dBm) | Limit (dBm) | Margin (dB) | Degree ( ) | Height (cm) | Remark |
|-----|-----------------|---------------|------------|--------------|-------------|-------------|------------|-------------|--------|
| 1   | 51.1209         | -68.69        | 0.55       | -68.14       | -54.00      | -14.14      | 228        | 100         | peak   |
| 2   | 106.7587        | -68.83        | -1.27      | -70.10       | -54.00      | -16.10      | 259        | 100         | peak   |
| 3   | 210.0482        | -69.01        | -0.74      | -69.75       | -54.00      | -15.75      | 70         | 100         | peak   |
| 4   | 301.4224        | -68.73        | 2.56       | -66.17       | -36.00      | -30.17      | 350        | 100         | peak   |
| 5   | 483.9094        | -67.94        | 5.40       | -62.54       | -54.00      | -8.54       | 281        | 100         | peak   |
| 6   | 798.9797        | -68.88        | 9.57       | -59.31       | -54.00      | -5.31       | 218        | 100         | peak   |

Horizontal

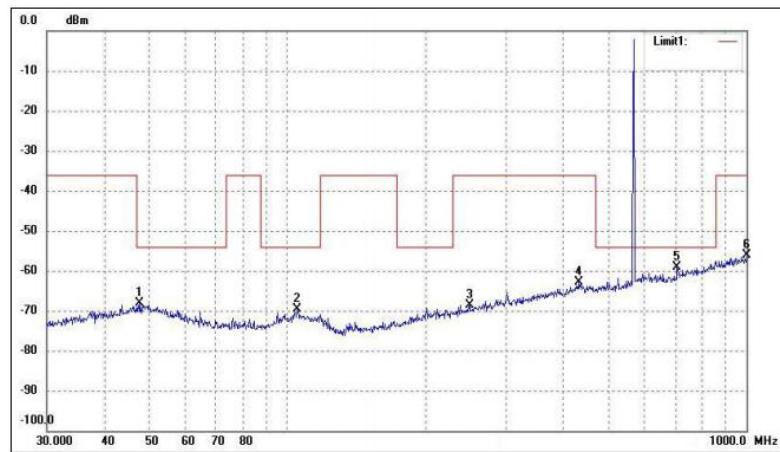


| No. | Frequency (MHz) | Reading (dBm) | Correct dB | Result (dBm) | Limit (dBm) | Margin (dB) | Degree ( ) | Height (cm) | Remark |
|-----|-----------------|---------------|------------|--------------|-------------|-------------|------------|-------------|--------|
| 1   | 46.5030         | -68.94        | 0.57       | -68.37       | -36.00      | -32.37      | 327        | 100         | peak   |
| 2   | 55.2207         | -68.60        | -0.40      | -69.00       | -54.00      | -15.00      | 108        | 100         | peak   |
| 3   | 117.7725        | -68.27        | -2.10      | -70.37       | -54.00      | -16.37      | 62         | 100         | peak   |
| 4   | 298.2681        | -68.39        | 2.47       | -65.92       | -36.00      | -29.92      | 116        | 100         | peak   |
| 5   | 716.6820        | -68.47        | 8.51       | -59.96       | -54.00      | -5.96       | 149        | 100         | peak   |
| 6   | 893.8567        | -68.46        | 11.13      | -57.33       | -36.00      | -21.33      | 152        | 100         | peak   |

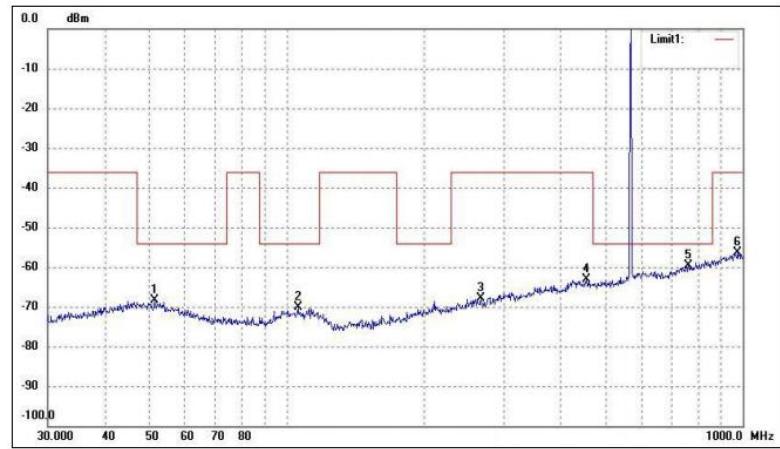
Note :

1. Result = Reading + Corrected Factor Note :

2. The fundamental wave filtered out during the test.

**CHANNEL -MIDDLE CH-30MHZ-1000MHZ**
**Vertical**


| No. | Frequency (MHz) | Reading (dBm) | Correct dB | Result (dBm) | Limit (dBm) | Margin (dB) | Degree ( ) | Height (cm) | Remark |
|-----|-----------------|---------------|------------|--------------|-------------|-------------|------------|-------------|--------|
| 1   | 47.8260         | -68.88        | 0.66       | -68.22       | -54.00      | -14.22      | 222        | 100         | peak   |
| 2   | 105.2718        | -68.37        | -1.29      | -69.66       | -54.00      | -15.66      | 171        | 100         | peak   |
| 3   | 249.4250        | -69.42        | 0.77       | -68.65       | -36.00      | -32.65      | 136        | 100         | peak   |
| 4   | 431.0316        | -68.41        | 5.61       | -62.80       | -36.00      | -26.80      | 114        | 100         | peak   |
| 5   | 706.6999        | -67.34        | 8.14       | -59.20       | -54.00      | -5.20       | 277        | 100         | peak   |
| 6   | 1000.0000       | -68.42        | 12.40      | -56.02       | -36.00      | -20.02      | 109        | 100         | peak   |

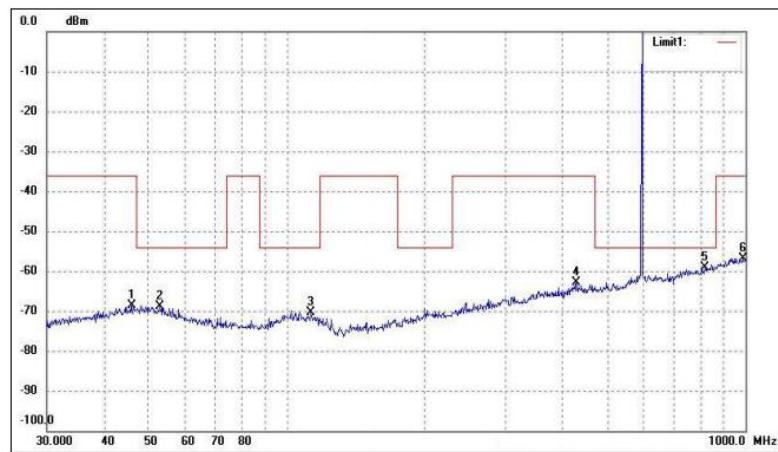
**Horizontal**


| No. | Frequency (MHz) | Reading (dBm) | Correct dB | Result (dBm) | Limit (dBm) | Margin (dB) | Degree ( ) | Height (cm) | Remark |
|-----|-----------------|---------------|------------|--------------|-------------|-------------|------------|-------------|--------|
| 1   | 51.4807         | -68.80        | 0.47       | -68.33       | -54.00      | -14.33      | 202        | 100         | peak   |
| 2   | 106.0126        | -68.93        | -1.28      | -70.21       | -54.00      | -16.21      | 95         | 100         | peak   |
| 3   | 266.6089        | -68.89        | 1.09       | -67.80       | -36.00      | -31.80      | 270        | 100         | peak   |
| 4   | 454.3100        | -68.53        | 5.34       | -63.19       | -36.00      | -27.19      | 116        | 100         | peak   |
| 5   | 760.7036        | -68.80        | 9.26       | -59.54       | -54.00      | -5.54       | 117        | 100         | peak   |
| 6   | 975.7529        | -68.51        | 12.11      | -56.40       | -36.00      | -20.40      | 313        | 100         | peak   |

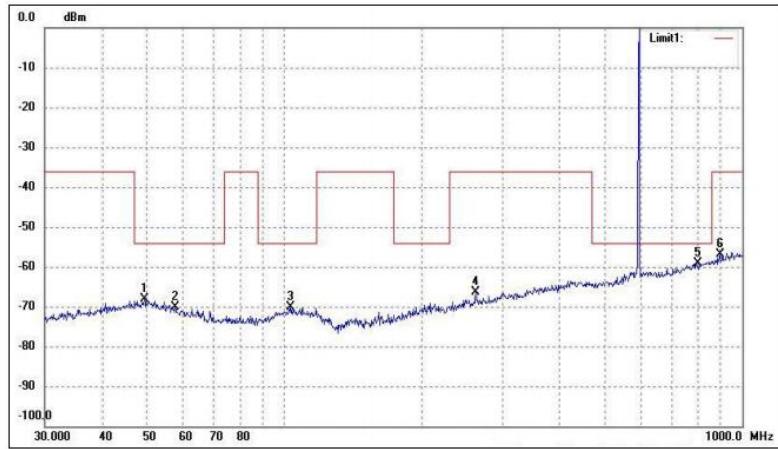
**Note :**

1. Result = Reading + Corrected Factor Note :

2. The fundamental wave filtered out during the test.

**CHANNEL -HIGH CH-30MHZ-1000MHZ**
**Vertical**


| No. | Frequency<br>(MHz) | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|------------------|---------------|-----------------|----------------|----------------|---------------|----------------|--------|
| 1   | 46.0164            | -69.21           | 0.53          | -68.68          | -36.00         | -32.68         | 279           | 100            | peak   |
| 2   | 52.9453            | -68.92           | 0.12          | -68.80          | -54.00         | -14.80         | 100           | 100            | peak   |
| 3   | 112.9196           | -68.79           | -1.54         | -70.33          | -54.00         | -16.33         | 316           | 100            | peak   |
| 4   | 428.0193           | -68.50           | 5.61          | -62.89          | -36.00         | -26.89         | 109           | 100            | peak   |
| 5   | 815.9678           | -69.09           | 9.96          | -59.13          | -54.00         | -5.13          | 213           | 100            | peak   |
| 6   | 986.0717           | -68.99           | 12.23         | -56.76          | -36.00         | -20.76         | 321           | 100            | peak   |

**Horizontal**


| No. | Frequency<br>(MHz) | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|------------------|---------------|-----------------|----------------|----------------|---------------|----------------|--------|
| 1   | 49.5328            | -68.86           | 0.78          | -68.08          | -54.00         | -14.08         | 78            | 100            | peak   |
| 2   | 57.7962            | -69.03           | -1.02         | -70.05          | -54.00         | -16.05         | 292           | 100            | peak   |
| 3   | 103.4421           | -68.76           | -1.33         | -70.09          | -54.00         | -16.09         | 70            | 100            | peak   |
| 4   | 261.9753           | -67.28           | 1.02          | -66.26          | -36.00         | -30.26         | 213           | 100            | peak   |
| 5   | 801.7863           | -68.72           | 9.62          | -59.10          | -54.00         | -5.10          | 263           | 100            | peak   |
| 6   | 893.8567           | -67.88           | 11.13         | -56.75          | -36.00         | -20.75         | 252           | 100            | peak   |

**Note :**

1. Result = Reading + Corrected Factor Note :

2. The fundamental wave filtered out during the test.

## CHANNEL 1GHZ-6GHZ

| Frequency<br>(MHz)      | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Polar |
|-------------------------|------------------|---------------|-----------------|----------------|----------------|-------|
| Low Channel-471.25MHz   |                  |               |                 |                |                |       |
| 1413.75                 | -49.69           | 7.92          | -41.77          | -30            | -11.77         | H     |
| 1885.00                 | -57.36           | 13.97         | -43.39          | -30            | -13.39         | H     |
| 1413.75                 | -49.85           | 7.92          | -41.93          | -30            | -11.93         | V     |
| 1885.00                 | -49.21           | 13.64         | -35.57          | -30            | -5.57          | V     |
| Middle Channel-539.5MHz |                  |               |                 |                |                |       |
| 1618.50                 | -54.24           | 8.27          | -45.97          | -30            | -15.97         | H     |
| 2158.00                 | -55.78           | 13.73         | -42.05          | -30            | -12.05         | H     |
| 1618.50                 | -48.86           | 8.27          | -40.59          | -30            | -10.59         | V     |
| 2158.00                 | -48.37           | 13.73         | -34.64          | -30            | -4.64          | V     |
| High Channel-607.75MHz  |                  |               |                 |                |                |       |
| 1823.25                 | -52.33           | 8.27          | -44.06          | -30            | -14.06         | H     |
| 2431.00                 | -53.82           | 13.73         | -40.09          | -30            | -10.09         | H     |
| 1823.25                 | -50.79           | 8.27          | -42.52          | -30            | -12.52         | V     |
| 2431.00                 | -47.84           | 13.73         | -34.11          | -30            | -4.11          | V     |

Note: all other emissions are attenuated 20dB below the limits, so it does not record in report.

## 7. FREQUENCY STABILITY

### 7.1 LIMIT

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.005\%$  of the operating frequency over a temperature variation of  $-20$  degrees to  $+50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from  $85\%$  to  $115\%$  of the rated supply voltage at a temperature of  $20$  degrees C

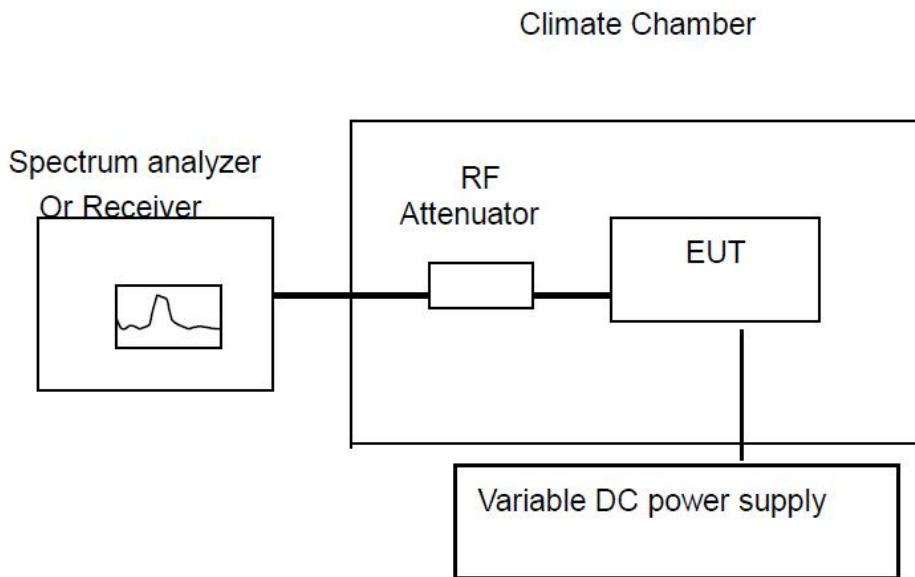
### 7.2 TEST PROCEDURE

a. The EUT was connected to an external DC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber. The DC leads and the RF output cable, exited the chamber through an opening made for that purpose.

After the temperature stabilized the frequency output was recorded from the counter. An external variable DC power supply was connected to the battery terminals of the equipment under test.

b. For hand carried, battery powered equipment primary supply voltage was reduced to the battery operating end point as specified by the manufacturer. The output frequency was recorded for each battery voltage.

### 7.3 TEST SETUP



## 7.4 TEST RESULTS

- (1) Frequency stability versus input voltage (Supply Nominal voltage is DC 3.0V)
- (2) Frequency stability versus input voltage (Supply battery operating end point which shall be specified by the manufacturer DC 2.55V)

| Refernce Frequency: 471.25MHz |                             |                      |                       |
|-------------------------------|-----------------------------|----------------------|-----------------------|
| Power supply                  | Environment Temperature(°C) | Frequency Error (Hz) | Frequency Error (ppm) |
| DC 2.55V                      | 20                          | 1010                 | 2.02                  |
| DC 3.00V                      | 20                          | 1008                 | 2.01                  |
| DC 3.45V                      | 20                          | 1015                 | 2.03                  |

| Refernce Frequency: 471.25MHz                             |                      |                       |             |         |
|---|----------------------|-----------------------|-------------|---------|
| Frequency Deviation measured with time Elapse(30 minutes) |                      |                       |             |         |
| Environment Temperature(°C)                               | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) | Results |
| 50  | 1008                 | 2.01                  | 50          | Pass    |
| 40  | 1009                 | 2.01                  |             |         |
| 30  | 1008                 | 2.01                  |             |         |
| 20  | 1008                 | 2.01                  |             |         |
| 10  | 1009                 | 2.01                  |             |         |
| 0   | 1021                 | 2.04                  |             |         |
| -10   | 1007                 | 2.01                  |             |         |
| -20   | 1005                 | 2.00                  |             |         |
|   |                      |                       |             |         |
|   |                      |                       |             |         |
|   |                      |                       |             |         |

| Refernce Frequency: 539.5MHz |                             |                      |                       |
|------------------------------|-----------------------------|----------------------|-----------------------|
| Power supply                 | Environment Temperature(°C) | Frequency Error (Hz) | Frequency Error (ppm) |
| DC 2.55V                     | 20                          | 1009                 | 1.97                  |
| DC 3.00V                     | 20                          | 1010                 | 1.97                  |
| DC 3.45V                     | 20                          | 1006                 | 1.96                  |
|                              |                             |                      |                       |

| Refernce Frequency: 539.5MHz                              |                      |                       |             |         |
|---|----------------------|-----------------------|-------------|---------|
| Frequency Deviation measured with time Elapse(30 minutes) |                      |                       |             |         |
| Environment Temperature(°C)                               | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) | Results |
| 50  | 1008                 | 1.97                  | 50          | Pass    |
| 40  | 1006                 | 1.96                  |             |         |
| 30  | 1008                 | 1.97                  |             |         |
| 20  | 1008                 | 1.97                  |             |         |
| 10  | 1007                 | 1.97                  |             |         |
| 0   | 1006                 | 1.96                  |             |         |
| -10   | 1006                 | 1.96                  |             |         |
| -20   | 1011                 | 1.97                  |             |         |

| Refernce Frequency: 607.75MHz |                             |                      |                       |
|-------------------------------|-----------------------------|----------------------|-----------------------|
| Power supply                  | Environment Temperature(°C) | Frequency Error (Hz) | Frequency Error (ppm) |
| DC 2.55V                      | 20                          | 1013                 | 1.91                  |
| DC 3.00V                      | 20                          | 1011                 | 1.88                  |
| DC 3.45V                      | 20                          | 1010                 | 1.88                  |

| Refernce Frequency: 607.75MHz                             |                      |                       |             |         |
|---|----------------------|-----------------------|-------------|---------|
| Frequency Deviation measured with time Elapse(30 minutes) |                      |                       |             |         |
| Environment Temperature(°C)                               | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) | Results |
| 50  | 1010                 | 1.88                  | 50          | Pass    |
| 40  | 1006                 | 1.97                  |             |         |
| 30  | 1007                 | 1.99                  |             |         |
| 20  | 1005                 | 1.95                  |             |         |
| 10  | 1007                 | 1.99                  |             |         |
| 0   | 1006                 | 1.97                  |             |         |
| -10   | 1006                 | 1.97                  |             |         |
| -20   | 1007                 | 1.99                  |             |         |

\*\*\*\*\*END OF THE REPORT\*\*\*\*\*