

# FCC Test Report

Report No.: AGC03067201002FE05

**FCC ID** : 2AXZL-KG02  
**APPLICATION PURPOSE** : Original Equipment  
**PRODUCT DESIGNATION** : KGateway  
**BRAND NAME** : KBeacon  
**MODEL NAME** : KG02  
**APPLICANT** : KKM Company Limited  
**DATE OF ISSUE** : Jan. 29, 2021  
**STANDARD(S)** : FCC Part 15.247  
**TEST PROCEDURE(S)**  
**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: <http://cn.agc-cert.com/>



### REPORT REVISE RECORD

| Report Version | Revise Time | Issued Date   | Valid Version | Notes           |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0           | /           | Jan. 29, 2021 | Valid         | Initial Release |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: <http://cn.agc-cert.com/>



## TABLE OF CONTENTS

|                                                        |           |
|--------------------------------------------------------|-----------|
| <b>1. VERIFICATION OF CONFORMITY .....</b>             | <b>5</b>  |
| <b>2. GENERAL INFORMATION.....</b>                     | <b>6</b>  |
| 2.1. PRODUCT DESCRIPTION .....                         | 6         |
| 2.2. TABLE OF CARRIER FREQUENCIES .....                | 7         |
| 2.3. IEEE 802.11N MODULATION SCHEME.....               | 8         |
| 2.4. RELATED SUBMITTAL(S) / GRANT (S) .....            | 8         |
| 2.5. TEST METHODOLOGY .....                            | 8         |
| 2.6. SPECIAL ACCESSORIES .....                         | 8         |
| 2.7. EQUIPMENT MODIFICATIONS .....                     | 8         |
| 2.8. ANTENNA REQUIREMENT .....                         | 9         |
| <b>3. MEASUREMENT UNCERTAINTY .....</b>                | <b>10</b> |
| <b>4. DESCRIPTION OF TEST MODES.....</b>               | <b>11</b> |
| <b>5. SYSTEM TEST CONFIGURATION .....</b>              | <b>12</b> |
| 5.1. CONFIGURATION OF EUT SYSTEM .....                 | 12        |
| 5.2. EQUIPMENT USED IN EUT SYSTEM.....                 | 12        |
| 5.3. SUMMARY OF TEST RESULTS.....                      | 12        |
| <b>6. TEST FACILITY .....</b>                          | <b>13</b> |
| <b>7. OUTPUT POWER.....</b>                            | <b>14</b> |
| 7.1. MEASUREMENT PROCEDURE .....                       | 14        |
| 7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)..... | 14        |
| 7.3. LIMITS AND MEASUREMENT RESULT .....               | 15        |
| <b>8. 6 DB BANDWIDTH.....</b>                          | <b>17</b> |
| 8.1. MEASUREMENT PROCEDURE .....                       | 17        |
| 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)..... | 17        |
| 8.3. LIMITS AND MEASUREMENT RESULTS .....              | 18        |
| <b>9. CONDUCTED SPURIOUS EMISSION .....</b>            | <b>26</b> |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.



|                                                                   |           |
|-------------------------------------------------------------------|-----------|
| 9.1. MEASUREMENT PROCEDURE .....                                  | 26        |
| 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....            | 26        |
| 9.3. MEASUREMENT EQUIPMENT USED.....                              | 26        |
| 9.4. LIMITS AND MEASUREMENT RESULT .....                          | 26        |
| <b>10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY .....</b>  | <b>44</b> |
| 10.1 MEASUREMENT PROCEDURE .....                                  | 44        |
| 10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....            | 44        |
| 10.3 MEASUREMENT EQUIPMENT USED .....                             | 44        |
| 10.4 LIMITS AND MEASUREMENT RESULT .....                          | 44        |
| <b>11. RADIATED EMISSION.....</b>                                 | <b>58</b> |
| 11.1. MEASUREMENT PROCEDURE .....                                 | 58        |
| 11.2. TEST SETUP .....                                            | 59        |
| 11.3. LIMITS AND MEASUREMENT RESULT .....                         | 60        |
| 11.4. TEST RESULT .....                                           | 60        |
| <b>12. BAND EDGE EMISSION .....</b>                               | <b>66</b> |
| 12.1. MEASUREMENT PROCEDURE .....                                 | 66        |
| 12.2. TEST SET-UP.....                                            | 66        |
| 12.3. TEST RESULT .....                                           | 67        |
| <b>13. FCC LINE CONDUCTED EMISSION TEST .....</b>                 | <b>83</b> |
| 13.1. LIMITS OF LINE CONDUCTED EMISSION TEST .....                | 83        |
| 13.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST .....         | 83        |
| 13.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST ..... | 84        |
| 13.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST .....       | 84        |
| 13.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST .....           | 85        |
| <b>APPENDIX A: PHOTOGRAPHS OF TEST SETUP .....</b>                | <b>87</b> |
| <b>APPENDIX B: PHOTOGRAPHS OF EUT .....</b>                       | <b>89</b> |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.



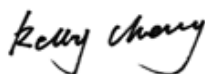
## 1. VERIFICATION OF CONFORMITY

|                                 |                                                                                                                                             |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Applicant</b>                | KKM Company Limited                                                                                                                         |
| <b>Address</b>                  | 4B, Building 6, Baoneng Science & Technology Park, Qingxiang Rd, Longhua Street, Longhua District, Shenzhen City, Guangdong Province, China |
| <b>manufacturer</b>             | KKM Company Limited                                                                                                                         |
| <b>Address</b>                  | 4B, Building 6, Baoneng Science & Technology Park, Qingxiang Rd, Longhua Street, Longhua District, Shenzhen City, Guangdong Province, China |
| <b>Factory</b>                  | KKM Company Limited                                                                                                                         |
| <b>Address</b>                  | 4B, Building 6, Baoneng Science & Technology Park, Qingxiang Rd, Longhua Street, Longhua District, Shenzhen City, Guangdong Province, China |
| <b>Product Designation</b>      | KGateway                                                                                                                                    |
| <b>Brand Name</b>               | KBeacon                                                                                                                                     |
| <b>Test Model</b>               | KG02                                                                                                                                        |
| <b>Date of test</b>             | Oct. 28, 2020 to Jan. 29, 2021                                                                                                              |
| <b>Deviation</b>                | No any deviation from the test method                                                                                                       |
| <b>Condition of Test Sample</b> | Normal                                                                                                                                      |
| <b>Test Result</b>              | Pass                                                                                                                                        |
| <b>Report Template</b>          | AGCRT-US-BGN/RF                                                                                                                             |

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

Prepared By



Kelly Cheng  
(Project Engineer)

Jan. 29, 2021

Reviewed By



Max Zhang  
(Reviewer)

Jan. 29, 2021

Approved By



Forrest Lei  
(Authorized Officer)

Jan. 29, 2021

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.



## 2. GENERAL INFORMATION

### 2.1. PRODUCT DESCRIPTION

The EUT is designed as “KGateway”. It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

|                                 |                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Operation Frequency</b>      | 2.412 GHz~2.462GHz                                                                                    |
| <b>Output Power(Average)</b>    | IEEE 802.11b:13.57dBm; IEEE 802.11g:12.91dBm;<br>IEEE 802.11n(20):14.36dBm; IEEE 802.11n(40):14.13dBm |
| <b>Output Power(Peak)</b>       | IEEE 802.11b:18.43dBm; IEEE 802.11g:19.95dBm;<br>IEEE 802.11n(20):21.33dBm; IEEE 802.11n(40):20.81dBm |
| <b>Modulation</b>               | DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)                                                   |
| <b>Number of channels</b>       | 11                                                                                                    |
| <b>Hardware Version</b>         | V1.0                                                                                                  |
| <b>Software Version</b>         | V1.0.0                                                                                                |
| <b>Antenna Designation</b>      | Integral Antenna (Comply with requirements of the FCC part 15.203)                                    |
| <b>Number of transmit chain</b> | 2(802.11b/g/n all used two antennas,but 802.11b/g support SISO and 802.11n support MIMO)              |
| <b>Antenna Gain</b>             | Antenna 1:0dBi<br>Antenna 2:0dBi                                                                      |
| <b>Power Supply</b>             | DC 5V by adapter                                                                                      |

Note:

1. The EUT is designed as indoor access point operating device.
2. The maximum antenna gain is 0dBi, the device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0 dB (i.e., no array gain) for  $N_{ANT} \leq 4$ ;

So: Directional gain =  $G_{ANT} + \text{Array Gain} = 0\text{dBi} < 6\text{dBi}$

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the “Dedicated Testing/Inspection Stamp” is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



## 2.2. TABLE OF CARRIER FREQUENCIES

| Frequency Band | Channel Number | Frequency |
|----------------|----------------|-----------|
| 2400~2483.5MHZ | 1              | 2412 MHZ  |
|                | 2              | 2417 MHZ  |
|                | 3              | 2422 MHZ  |
|                | 4              | 2427 MHZ  |
|                | 5              | 2432 MHZ  |
|                | 6              | 2437 MHZ  |
|                | 7              | 2442 MHZ  |
|                | 8              | 2447 MHZ  |
|                | 9              | 2452 MHZ  |
|                | 10             | 2457 MHZ  |
|                | 11             | 2462 MHZ  |

Note: For 20MHZ bandwidth system use Channel 1 to Channel 11. For 40MHZ bandwidth system use Channel 3 to Channel 9

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: <http://cn.agc-cert.com/>



### 2.3. IEEE 802.11N MODULATION SCHEME

| MCS Index | Nss | Modulation | R   | NBPSC | NCBPS |       | NDBPS |       | Data rate(Mbps) |       |
|-----------|-----|------------|-----|-------|-------|-------|-------|-------|-----------------|-------|
|           |     |            |     |       |       |       |       |       | 800nsGI         |       |
|           |     |            |     |       | 20MHz | 40MHz | 20MHz | 40MHz | 20MHz           | 40MHz |
| 0         | 1   | BPSK       | 1/2 | 1     | 52    | 108   | 26    | 54    | 6.5             | 13.5  |
| 1         | 1   | QPSK       | 1/2 | 2     | 104   | 216   | 52    | 108   | 13.0            | 27.0  |
| 2         | 1   | QPSK       | 3/4 | 2     | 104   | 216   | 78    | 162   | 19.5            | 40.5  |
| 3         | 1   | 16-QAM     | 1/2 | 4     | 208   | 432   | 104   | 216   | 26.0            | 54.0  |
| 4         | 1   | 16-QAM     | 3/4 | 4     | 208   | 432   | 156   | 324   | 39.0            | 81.0  |
| 5         | 1   | 64-QAM     | 2/3 | 6     | 312   | 648   | 208   | 432   | 52.0            | 108.0 |
| 6         | 1   | 64-QAM     | 3/4 | 6     | 312   | 648   | 234   | 489   | 58.5            | 121.5 |
| 7         | 1   | 64-QAM     | 5/6 | 6     | 312   | 648   | 260   | 540   | 65.0            | 135.0 |

| Symbol | Explanation                             |
|--------|-----------------------------------------|
| NSS    | Number of spatial streams               |
| R      | Code rate                               |
| NBPSC  | Number of coded bits per single carrier |
| NCBPS  | Number of coded bits per symbol         |
| NDBPS  | Number of data bits per symbol          |
| GI     | Guard interval                          |

### 2.4. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AXZL-KG02** filing to comply with the FCC Part 15 requirements.

### 2.5. TEST METHODOLOGY

KDB 558074 D01 15.247 Meas Guidance v05: Guidance for compliance measurements on Digital transmission system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC rules  
ANSI C63.10:2013 : American National Standard for Testing Unlicensed Wireless Devices

### 2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

### 2.7. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



## 2.8. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by [agc@agc-cert.com](mailto:agc@agc-cert.com).

Attestation of Global Compliance(Shenzhen)Co., Ltd

Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

Tel: +86-755 2523 4088 E-mail: [agc@agc-cert.com](mailto:agc@agc-cert.com) Web: <http://cn.agc-cert.com/>



### 3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in measurement” (GUM) published by CISPR and ANSI.

- Uncertainty of Conducted Emission,  $U_c = \pm 3.2$  dB
- Uncertainty of Radiated Emission below 1GHz,  $U_c = \pm 3.9$  dB
- Uncertainty of Radiated Emission above 1GHz,  $U_c = \pm 4.8$  dB

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the “Dedicated Testing/Inspection Stamp” is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by [agc@agc-cert.com](mailto:agc@agc-cert.com).

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: [agc@agc-cert.com](mailto:agc@agc-cert.com) Web: <http://cn.agc-cert.com/>



#### 4. DESCRIPTION OF TEST MODES

| NO.                                                                                                                                                                                                                                                                                  | TEST MODE DESCRIPTION         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 1                                                                                                                                                                                                                                                                                    | Low channel TX(2412/2422MHz)  |
| 2                                                                                                                                                                                                                                                                                    | Middle channel TX(2437MHz)    |
| 3                                                                                                                                                                                                                                                                                    | High channel TX(2452/2462MHz) |
| Note:<br>Transmit by 802.11b with Data rate (1/2/5.5/11)<br>Transmit by 802.11g with Data rate (6/9/12/18/24/36/48/54)<br>Transmit by 802.11n (20MHz) with Data rate (6.5/13/19.5/26/39/52/58.5/65)<br>Transmit by 802.11n (40MHz) with Data rate (13.5/27/40.5/54/81/108/121.5/135) |                               |

#### Note:

1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency Individually, and the eut is operating at its maximum duty cycle>or equal 98%
2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
3. The test software is the MT7603 QA which can set the EUT into the individual test modes.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

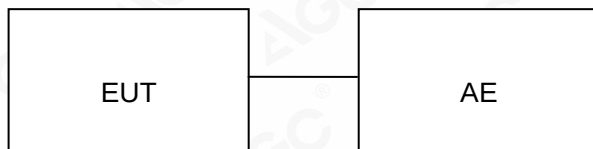
Attestation of Global Compliance(Shenzhen)Co., Ltd  
 Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
 Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: <http://cn.agc-cert.com/>



## 5. SYSTEM TEST CONFIGURATION

### 5.1. CONFIGURATION OF EUT SYSTEM

Configure :



### 5.2. EQUIPMENT USED IN EUT SYSTEM

| Item | Equipment    | Model No.    | ID or Specification                            | Remark |
|------|--------------|--------------|------------------------------------------------|--------|
| 1    | KGateway     | KG02         | 2AXZL-KG02                                     | EUT    |
| 2    | Adapter      | HW-050200C02 | Input:100-240v, 50/60Hz, 0.5A<br>Output:5V, 2A | AE     |
| 3    | Charger line | N/A          | 0.8m unshielded                                | AE     |
| 4    | LAN line     | N/A          | 1.2m unshielded                                | AE     |

### 5.3. SUMMARY OF TEST RESULTS

| FCC RULES | DESCRIPTION OF TEST                             | RESULT    |
|-----------|-------------------------------------------------|-----------|
| §15.247   | Output Power                                    | Compliant |
| §15.247   | 6 dB Bandwidth                                  | Compliant |
| §15.247   | Conducted Spurious Emission                     | Compliant |
| §15.247   | Maximum Conducted Output Power SPECTRAL Density | Compliant |
| §15.209   | Radiated Emission                               | Compliant |
| §15.247   | Band Edges                                      | Compliant |
| §15.207   | Line Conduction Emission                        | Compliant |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



## 6. TEST FACILITY

|                                          |                                                                                                                                          |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Site</b>                         | Attestation of Global Compliance (Shenzhen) Co., Ltd                                                                                     |
| <b>Location</b>                          | 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China |
| <b>Designation Number</b>                | CN1259                                                                                                                                   |
| <b>FCC Test Firm Registration Number</b> | 975832                                                                                                                                   |
| <b>A2LA Cert. No.</b>                    | 5054.02                                                                                                                                  |
| <b>Description</b>                       | Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA                                                                |

### TEST EQUIPMENT OF CONDUCTED EMISSION TEST

| Equipment     | Manufacturer | Model            | S/N    | Cal. Date    | Cal. Due     |
|---------------|--------------|------------------|--------|--------------|--------------|
| TEST RECEIVER | R&S          | ESPI             | 101206 | May 15, 2020 | May 14, 2021 |
| LISN          | R&S          | ESH2-Z5          | 100086 | Jul. 03,2020 | Jul. 02,2021 |
| Test software | R&S          | ES-K1(Ver.V1.71) | N/A    | N/A          | N/A          |

### TEST EQUIPMENT OF RADIATED EMISSION TEST

| Equipment                      | Manufacturer  | Model               | S/N        | Cal. Date     | Cal. Due      |
|--------------------------------|---------------|---------------------|------------|---------------|---------------|
| TEST RECEIVER                  | R&S           | ESCI                | 10096      | May 15, 2020  | May 14, 2021  |
| EXA Signal Analyzer            | Aglient       | N9010A              | MY53470504 | Dec. 07, 2020 | Dec. 06, 2021 |
| Power sensor                   | Aglient       | U2021XA             | MY54110007 | Jun. 08, 2020 | Jun. 07, 2021 |
| 2.4GHz Fliter                  | Micro-tronics | 087                 | N/A        | Mar. 23, 2020 | Mar. 22, 2022 |
| Attenuator                     | ZHINAN        | E-002               | N/A        | Sep. 03, 2020 | Sep. 02, 2022 |
| Horn antenna                   | SCHWARZBECK   | BBHA 9170           | #768       | Sep.21, 2019  | Sep. 20, 2021 |
| Active loop antenna (9K-30MHz) | ZHINAN        | ZN30900C            | 00034609   | May 22, 2020  | May 21, 2022  |
| Double-Ridged Waveguide Horn   | ETS LINDGREN  | 3117                | 00034609   | May. 17, 2019 | May. 16, 2021 |
| Broadband Preamplifier         | ETS LINDGREN  | 3117PA              | 00225134   | Sep. 03, 2020 | Sep. 02, 2022 |
| ANTENNA                        | SCHWARZBECK   | VULB9168            | D69250     | Sep. 20, 2019 | Sep. 19, 2021 |
| Test software                  | FARA          | EZ-EMC (Ver RA-03A) | N/A        | N/A           | N/A           |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



## 7. OUTPUT POWER

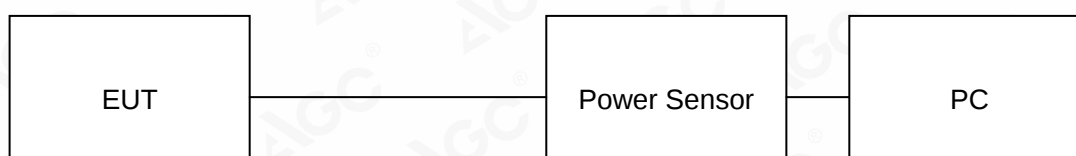
### 7.1. MEASUREMENT PROCEDURE

For average power test:

1. Connect EUT RF output port to power sensor through an RF attenuator.
2. Connect the power sensor to the PC.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Record the maximum power from the software.

**Note :** The EUT was tested according to ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements.

### 7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: <http://cn.agc-cert.com/>



### 7.3. LIMITS AND MEASUREMENT RESULT

|                  |                          |
|------------------|--------------------------|
| <b>TEST ITEM</b> | OUTPUT POWER             |
| <b>TEST MODE</b> | 802.11b with data rate 1 |

| Frequency (GHz) | Average Power Antenna 1 (dBm) | Peak Power Antenna 1 (dBm) | Average Power Antenna 2 (dBm) | Peak Power Antenna 2 (dBm) | Average Power Total (dBm) | Peak Power Total (dBm) | Applicable Limits (dBm) | Pass or Fail |
|-----------------|-------------------------------|----------------------------|-------------------------------|----------------------------|---------------------------|------------------------|-------------------------|--------------|
| 2.412           | 12.20                         | 14.79                      | 12.76                         | 17.87                      | N/A                       | N/A                    | 30                      | Pass         |
| 2.437           | 11.35                         | 13.98                      | 13.57                         | 18.43                      | N/A                       | N/A                    | 30                      | Pass         |
| 2.462           | 11.17                         | 13.68                      | 13.10                         | 18.05                      | N/A                       | N/A                    | 30                      | Pass         |

|                  |                          |
|------------------|--------------------------|
| <b>TEST ITEM</b> | OUTPUT POWER             |
| <b>TEST MODE</b> | 802.11g with data rate 6 |

| Frequency (GHz) | Average Power Antenna 1 (dBm) | Peak Power Antenna 1 (dBm) | Average Power Antenna 2 (dBm) | Peak Power Antenna 2 (dBm) | Average Power Total (dBm) | Peak Power Total (dBm) | Applicable Limits (dBm) | Pass or Fail |
|-----------------|-------------------------------|----------------------------|-------------------------------|----------------------------|---------------------------|------------------------|-------------------------|--------------|
| 2.412           | 11.05                         | 18.11                      | 12.41                         | 19.63                      | N/A                       | N/A                    | 30                      | Pass         |
| 2.437           | 11.76                         | 18.99                      | 12.91                         | 19.95                      | N/A                       | N/A                    | 30                      | Pass         |
| 2.462           | 11.46                         | 18.55                      | 12.37                         | 19.52                      | N/A                       | N/A                    | 30                      | Pass         |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



|                  |                               |
|------------------|-------------------------------|
| <b>TEST ITEM</b> | OUTPUT POWER                  |
| <b>TEST MODE</b> | 802.11n 20 with data rate 6.5 |

| Frequency (GHz) | Average Power Antenna 1 (dBm) | Peak Power Antenna 1 (dBm) | Average Power Antenna 2 (dBm) | Peak Power Antenna 2 (dBm) | Average Power Total (dBm) | Peak Power Total (dBm) | Applicable Limits (dBm) | Pass or Fail |
|-----------------|-------------------------------|----------------------------|-------------------------------|----------------------------|---------------------------|------------------------|-------------------------|--------------|
| 2.412           | 10.84                         | 18.22                      | 11.43                         | 18.22                      | 14.16                     | 21.23                  | 30                      | Pass         |
| 2.437           | 11.83                         | 18.60                      | 10.81                         | 18.02                      | 14.36                     | 21.33                  | 30                      | Pass         |
| 2.462           | 11.34                         | 18.15                      | 10.51                         | 17.61                      | 13.96                     | 20.90                  | 30                      | Pass         |

|                  |                                |
|------------------|--------------------------------|
| <b>TEST ITEM</b> | OUTPUT POWER                   |
| <b>TEST MODE</b> | 802.11n 40 with data rate 13.5 |

| Frequency (GHz) | Average Power Antenna 1 (dBm) | Peak Power Antenna 1 (dBm) | Average Power Antenna 2 (dBm) | Peak Power Antenna 2 (dBm) | Average Power Total (dBm) | Peak Power Total (dBm) | Applicable Limits (dBm) | Pass or Fail |
|-----------------|-------------------------------|----------------------------|-------------------------------|----------------------------|---------------------------|------------------------|-------------------------|--------------|
| 2.422           | 10.64                         | 17.58                      | 10.52                         | 17.13                      | 13.59                     | 20.37                  | 30                      | Pass         |
| 2.437           | 11.65                         | 18.00                      | 10.51                         | 17.52                      | 14.13                     | 20.78                  | 30                      | Pass         |
| 2.452           | 10.41                         | 18.02                      | 10.03                         | 17.57                      | 13.23                     | 20.81                  | 30                      | Pass         |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



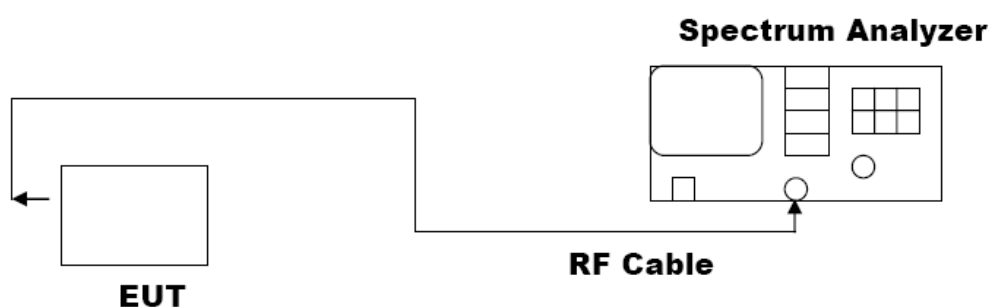
## 8. 6 DB BANDWIDTH

### 8.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW  $\geq 3 \times$  RBW.
4. Set SPA Trace 1 Max hold, then View.

**Note:** The EUT was tested according to ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements.

### 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: <http://cn.agc-cert.com/>



### 8.3. LIMITS AND MEASUREMENT RESULTS

|           |                           |
|-----------|---------------------------|
| TEST ITEM | 6DB BANDWIDTH             |
| TEST MODE | 802.11b with data rate 11 |

| LIMITS AND MEASUREMENT RESULT |                   |       |          |
|-------------------------------|-------------------|-------|----------|
| Applicable Limits             | Applicable Limits |       |          |
|                               | Test Data (MHz)   |       | Criteria |
| >500KHZ                       | Low Channel       | 9.762 | PASS     |
|                               | Middle Channel    | 9.793 | PASS     |
|                               | High Channel      | 9.070 | PASS     |

|           |                           |
|-----------|---------------------------|
| TEST ITEM | 6DB BANDWIDTH             |
| TEST MODE | 802.11g with data rate 54 |

| LIMITS AND MEASUREMENT RESULT |                   |       |          |
|-------------------------------|-------------------|-------|----------|
| Applicable Limits             | Applicable Limits |       |          |
|                               | Test Data (MHz)   |       | Criteria |
| >500KHZ                       | Low Channel       | 15.07 | PASS     |
|                               | Middle Channel    | 15.09 | PASS     |
|                               | High Channel      | 15.09 | PASS     |

|           |                              |
|-----------|------------------------------|
| TEST ITEM | 6DB BANDWIDTH                |
| TEST MODE | 802.11n 20 with data rate 65 |

| LIMITS AND MEASUREMENT RESULT |                   |       |          |
|-------------------------------|-------------------|-------|----------|
| Applicable Limits             | Applicable Limits |       |          |
|                               | Test Data (MHz)   |       | Criteria |
| >500KHZ                       | Low Channel       | 15.07 | PASS     |
|                               | Middle Channel    | 15.08 | PASS     |
|                               | High Channel      | 15.10 | PASS     |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



|           |                               |
|-----------|-------------------------------|
| TEST ITEM | 6DB BANDWIDTH                 |
| TEST MODE | 802.11n 40 with data rate 135 |

| LIMITS AND MEASUREMENT RESULT |                   |       |          |
|-------------------------------|-------------------|-------|----------|
| Applicable Limits             | Applicable Limits |       |          |
|                               | Test Data (MHz)   |       | Criteria |
| >500KHZ                       | Low Channel       | 35.03 | PASS     |
|                               | Middle Channel    | 35.07 | PASS     |
|                               | High Channel      | 33.78 | PASS     |

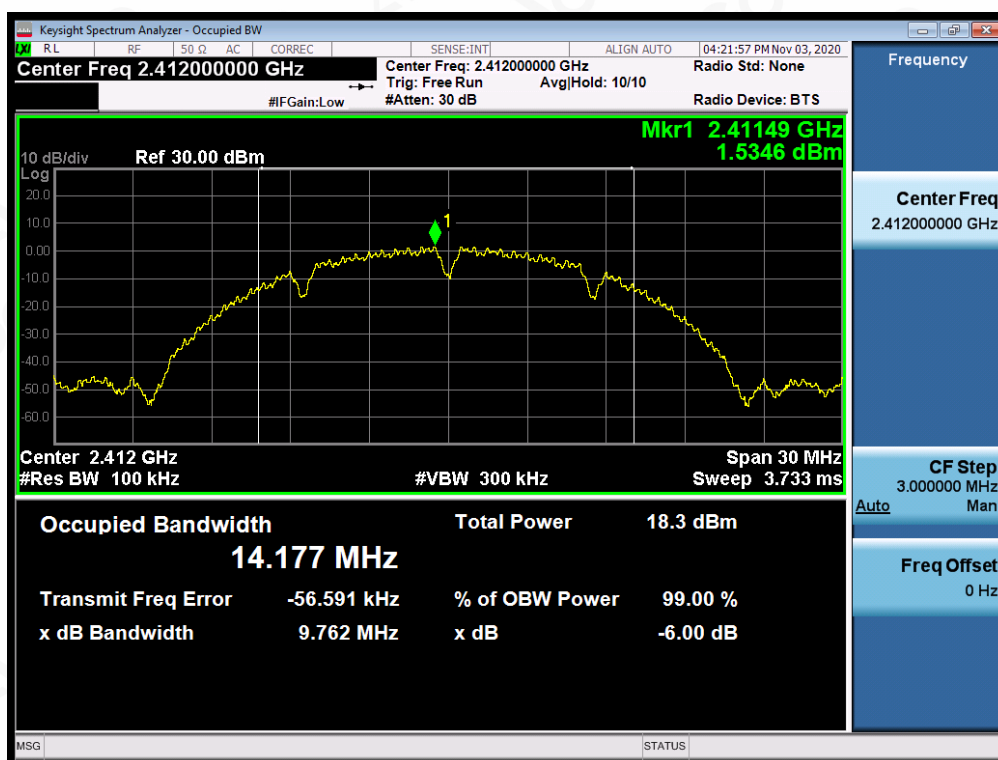
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



## 802.11b TEST RESULT

### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/

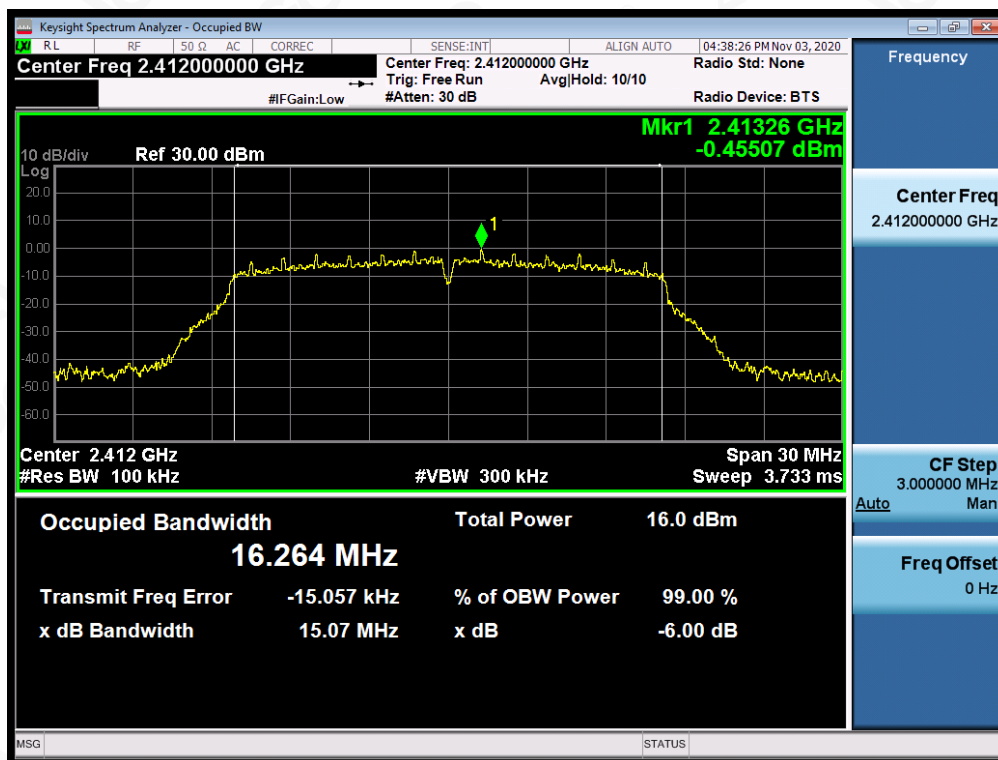


### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



### 802.11g TEST RESULT

### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

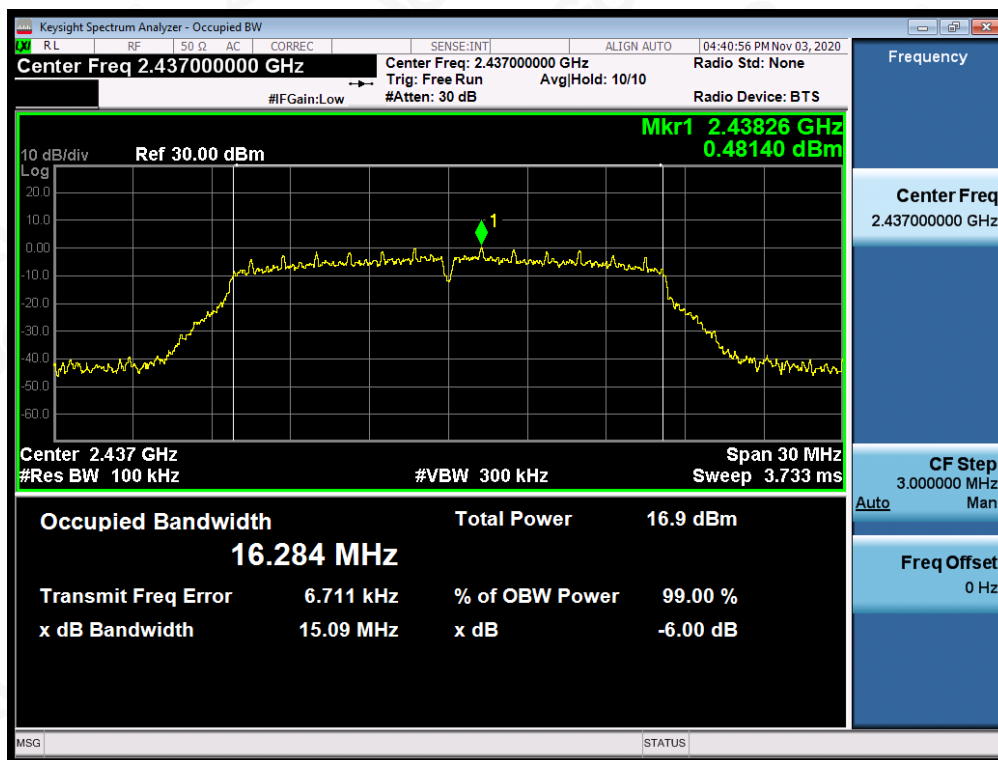


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

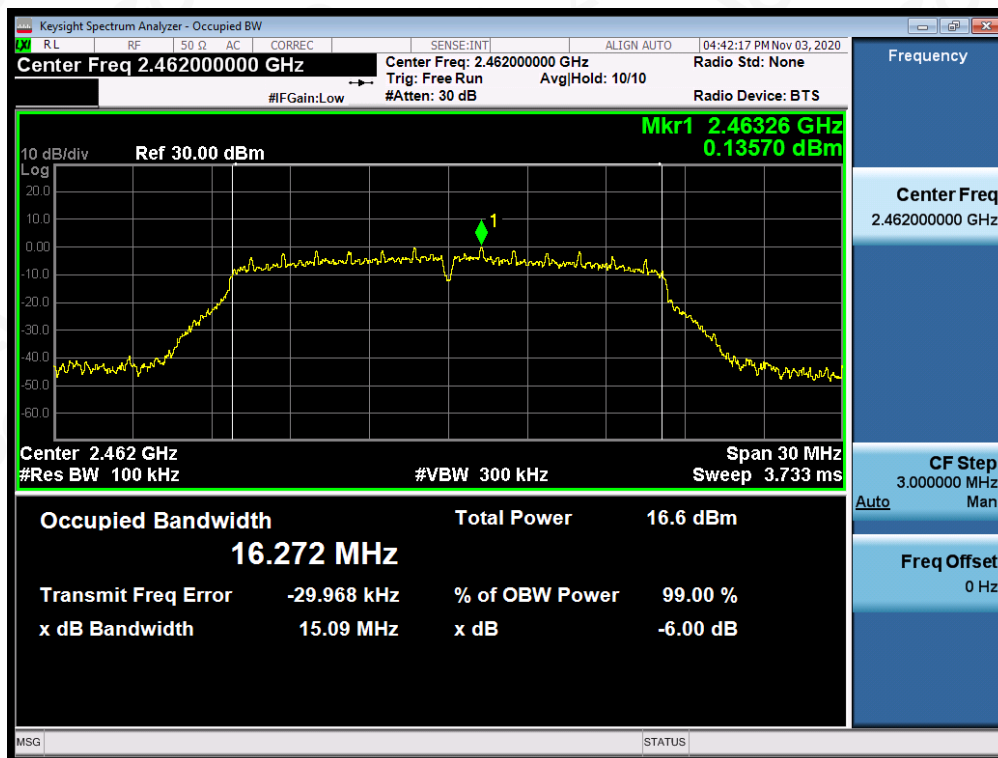
Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



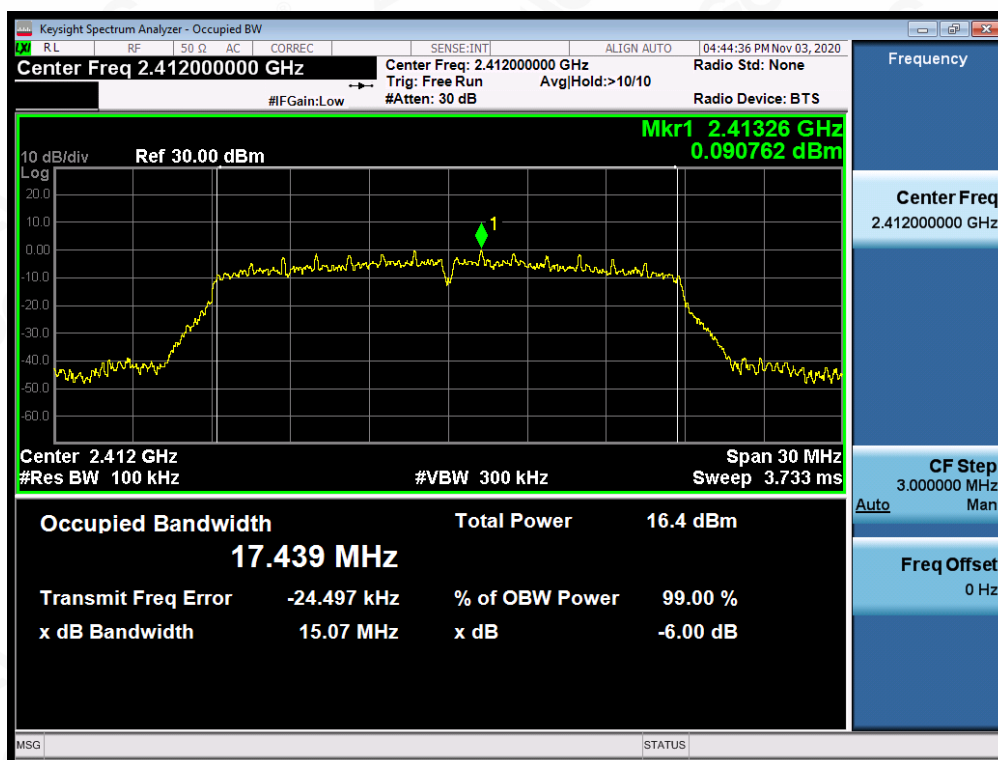
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



## 802.11n (20) TEST RESULT

### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/

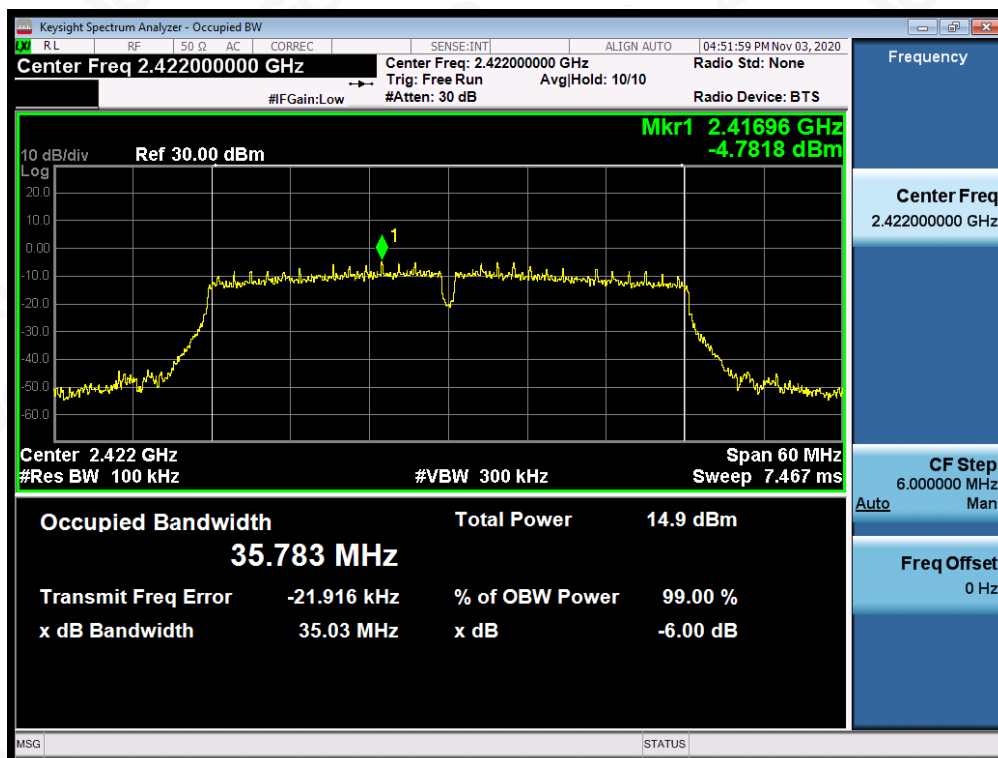


### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



### 802.11n (40) TEST RESULT

### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

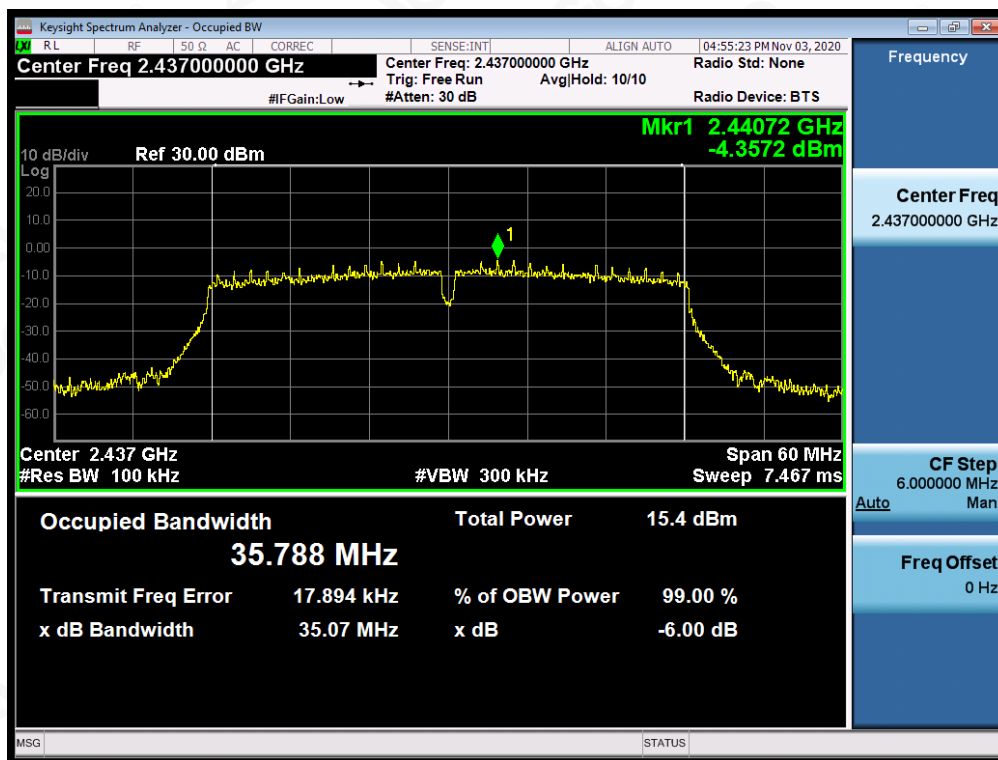


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

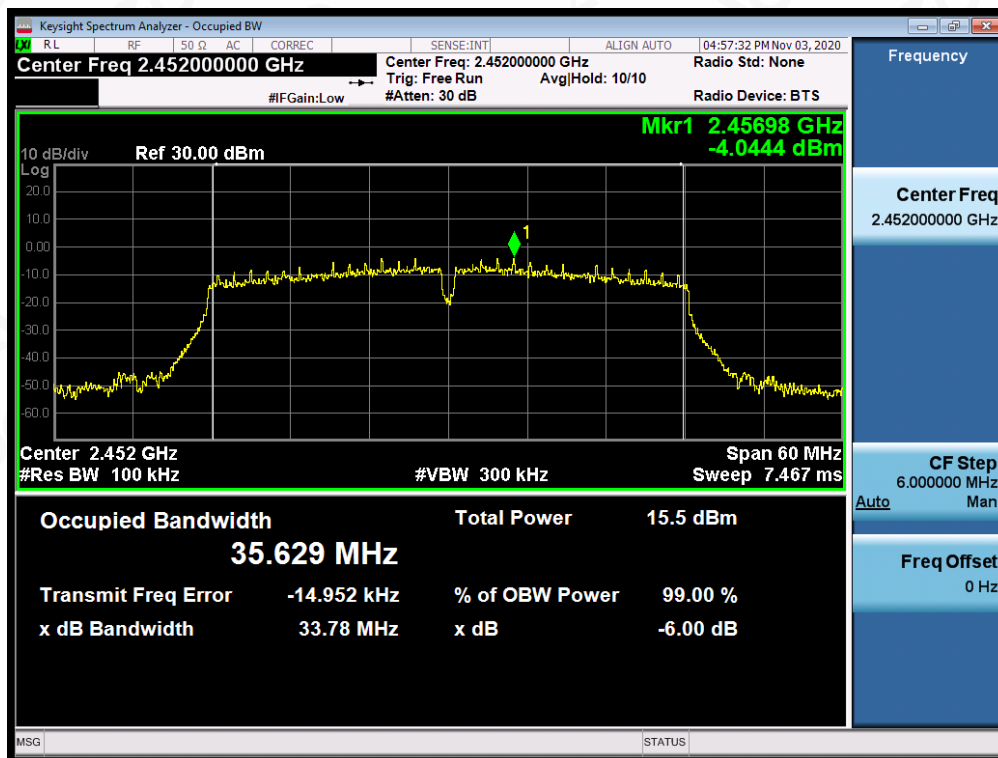
Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



## 9. CONDUCTED SPURIOUS EMISSION

### 9.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Trace 1 Max hold, then View.

**Note:** The EUT was tested according to ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements. Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW>RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW>RBW) are conform to the requirement.

### 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2.

### 9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

### 9.4. LIMITS AND MEASUREMENT RESULT

| LIMITS AND MEASUREMENT RESULT                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                |          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------|
| Applicable Limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Measurement Result                                             |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Test Data                                                      | Criteria |
| In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.<br>In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a)) | At least -20dBc than the limit Specified on the BOTTOM Channel | PASS     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | At least -20dBc than the limit Specified on the TOP Channel    | PASS     |

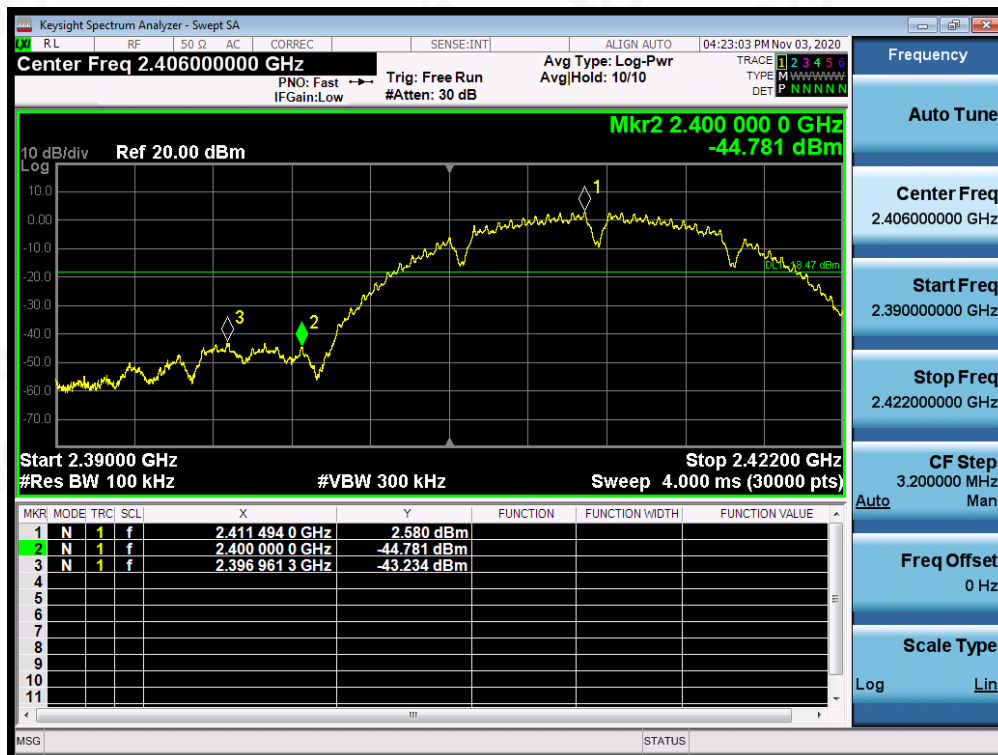
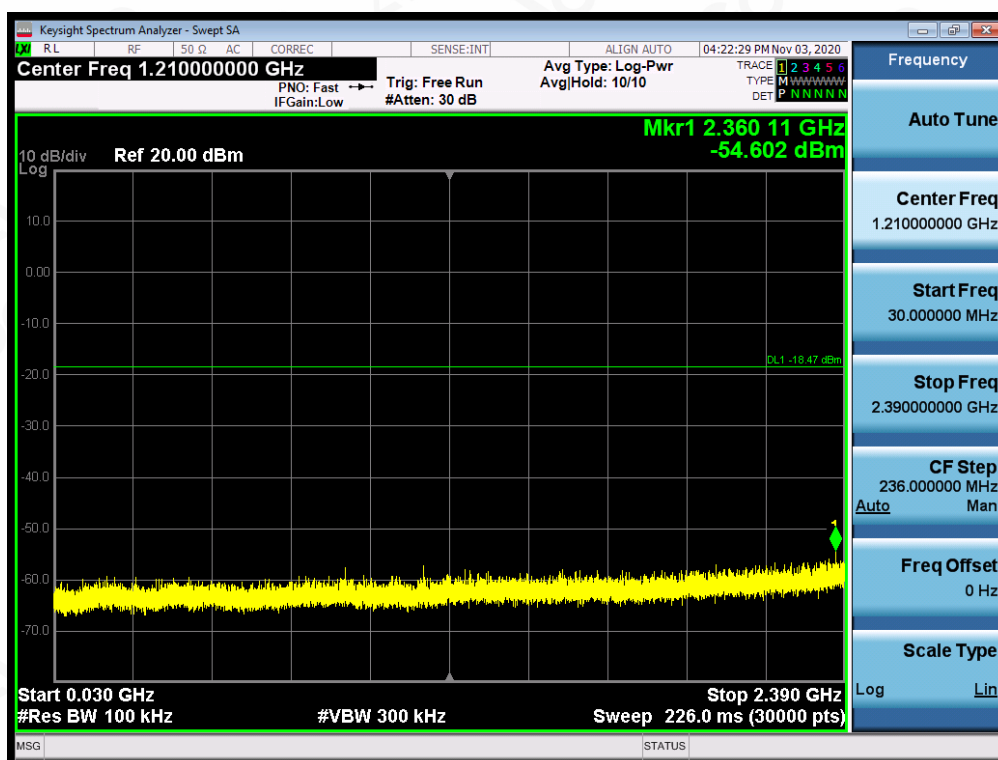
Note: The limits reference level is according to the test plot of -6dB bandwidth.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



# TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11b FOR MODULATION IN LOW CHANNEL



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



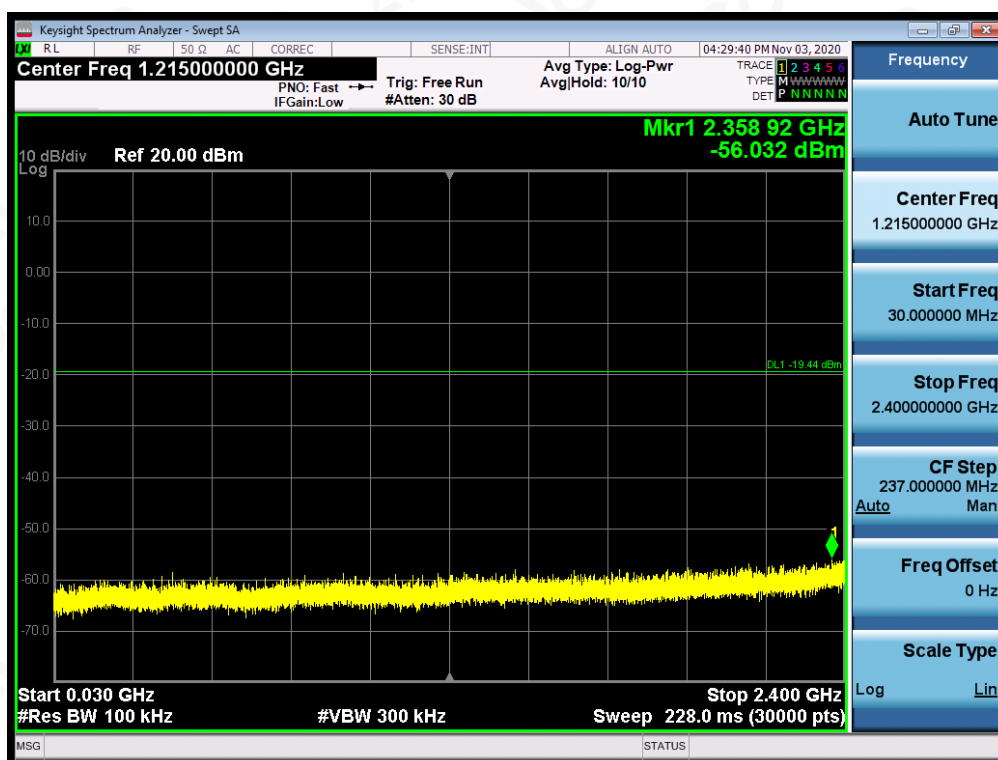


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



# TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11b FOR MODULATION IN MIDDLE CHANNEL

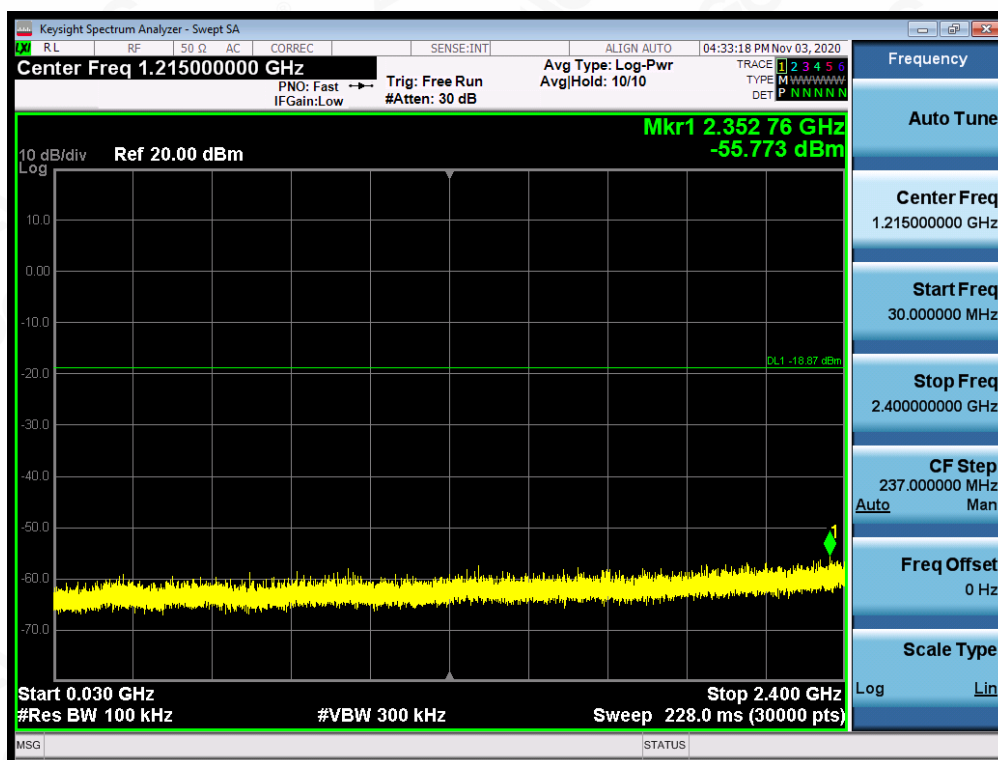


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE  
OF 802.11b FOR MODULATION IN HIGH CHANNEL

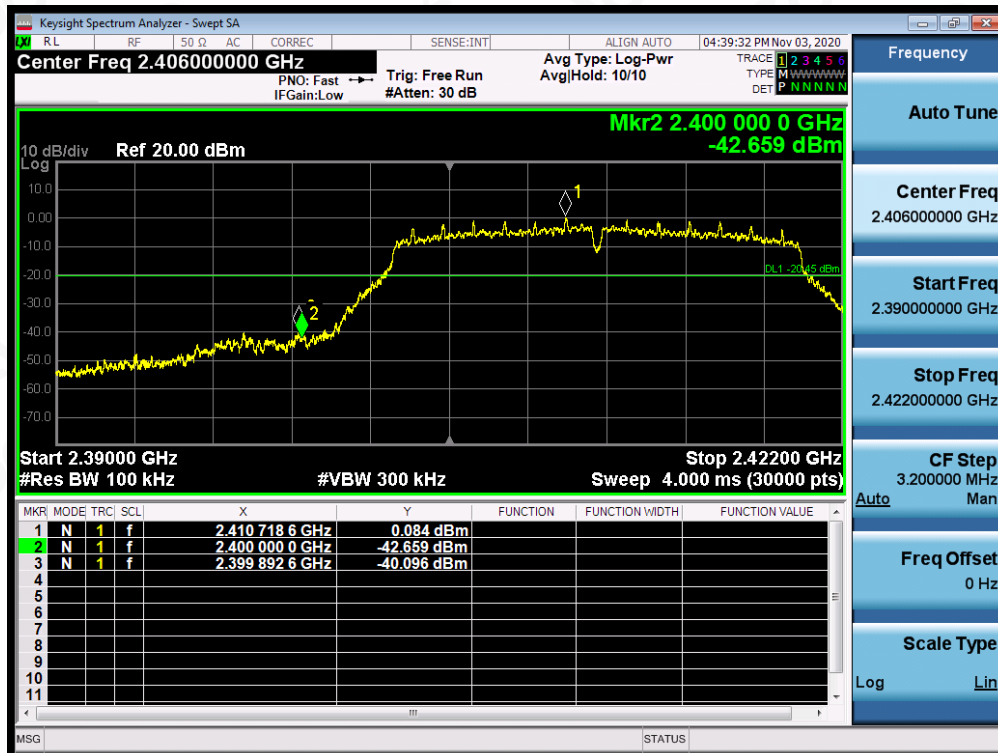
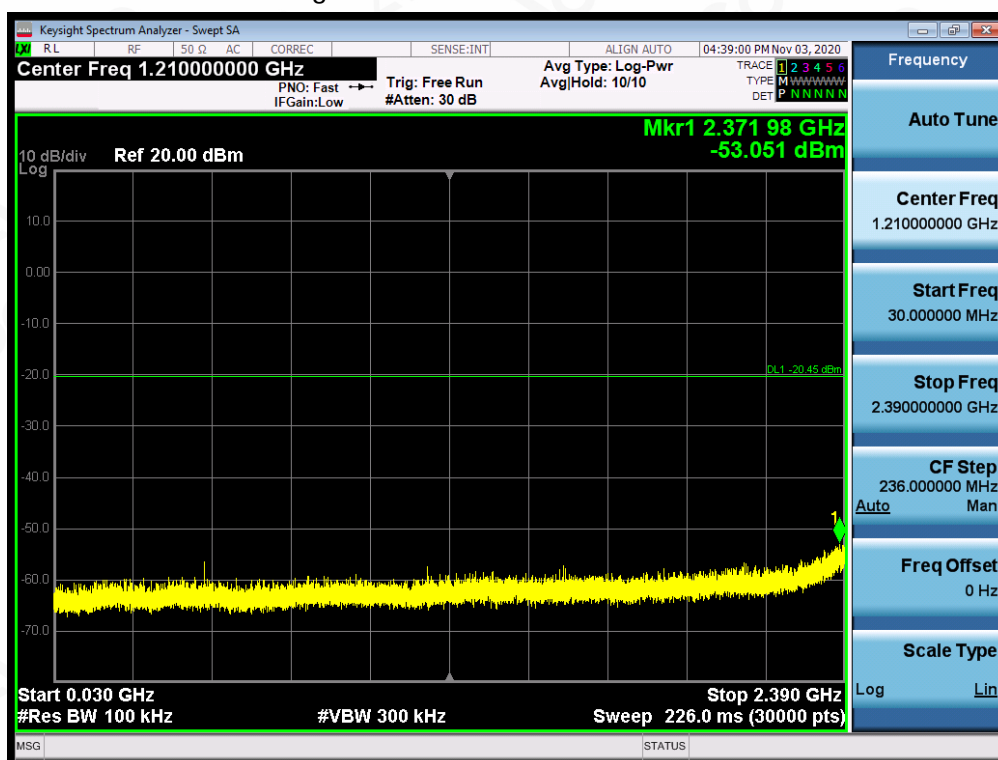


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



# TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11g FOR MODULATION IN LOW CHANNEL



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



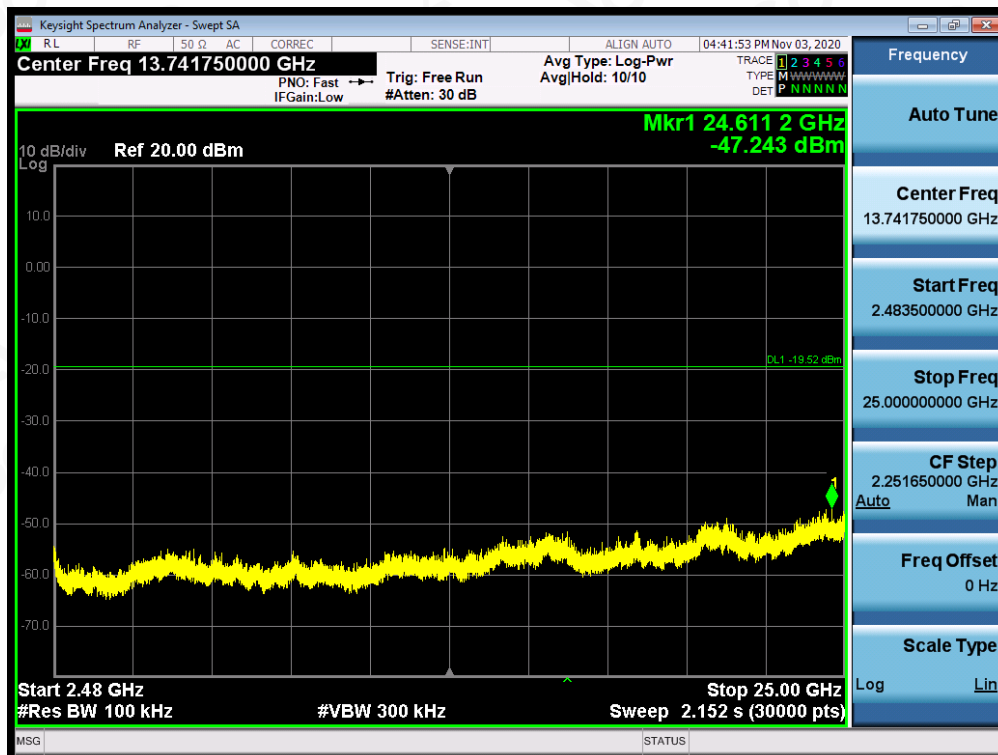
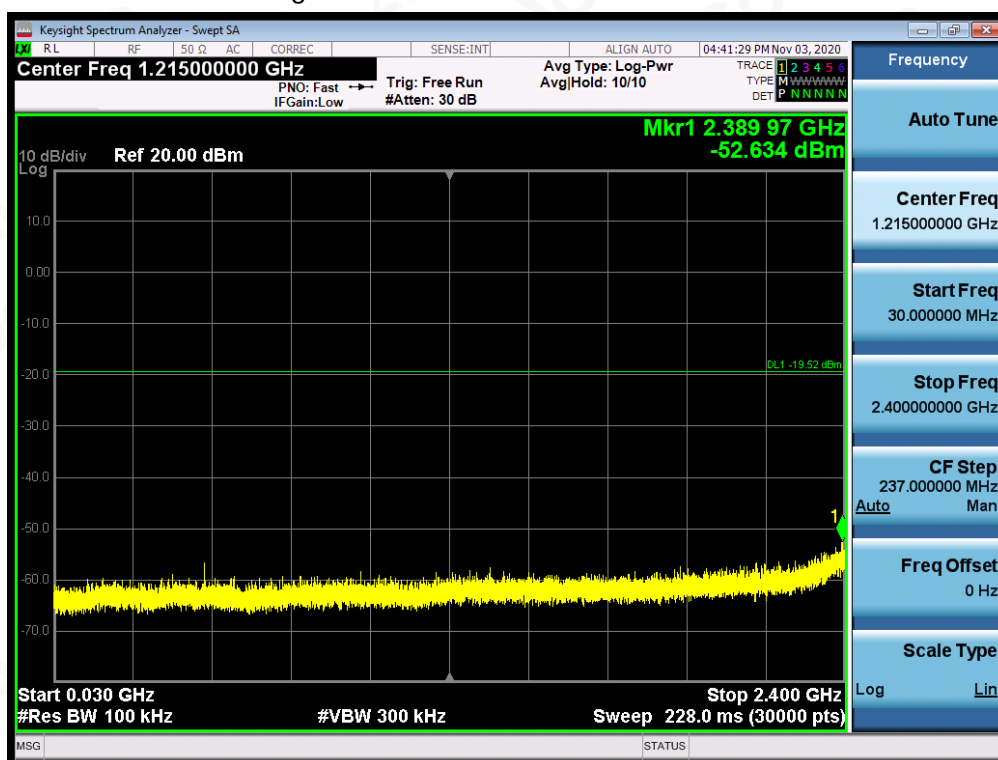


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE  
OF 802.11g FOR MODULATION IN MIDDLE CHANNEL

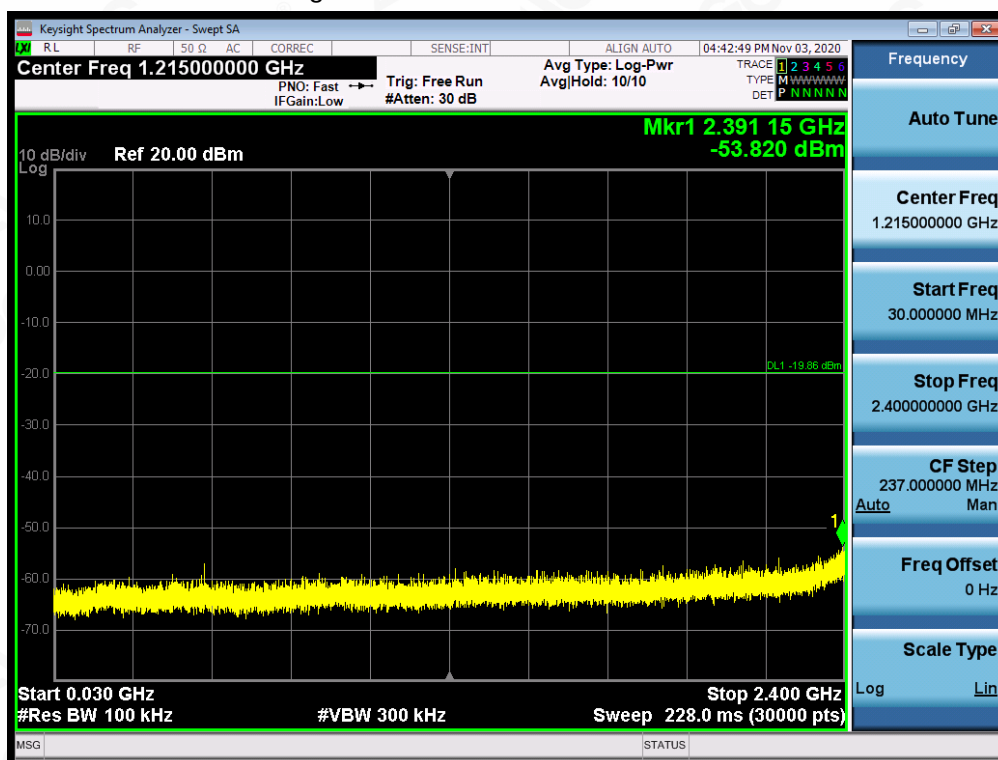


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE  
OF 802.11g FOR MODULATION IN HIGH CHANNEL

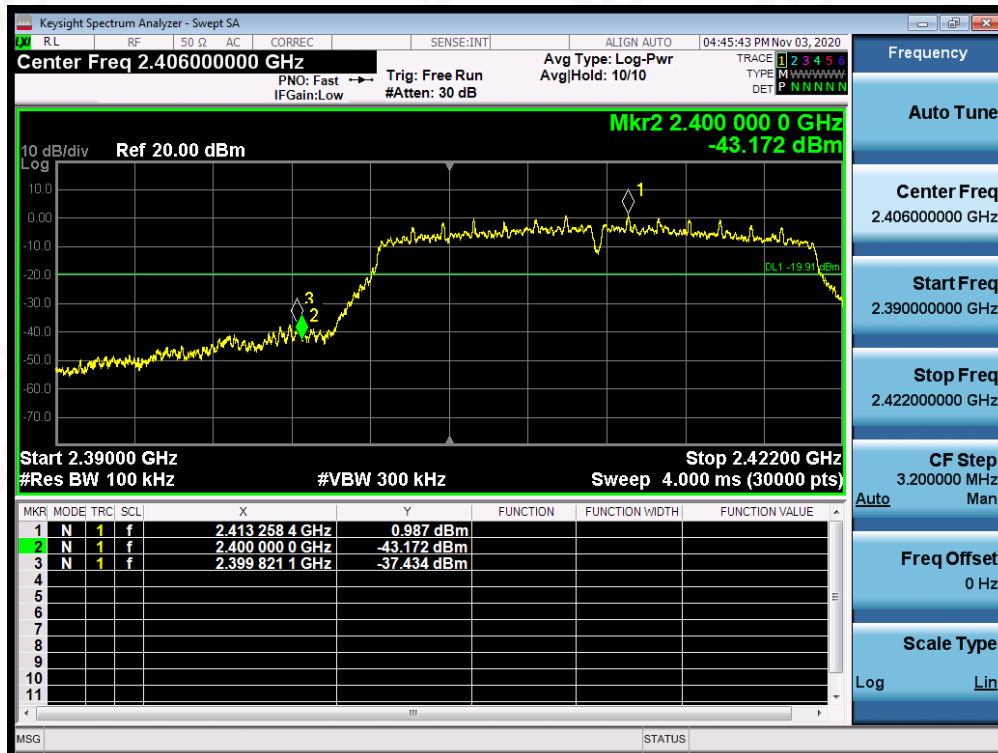
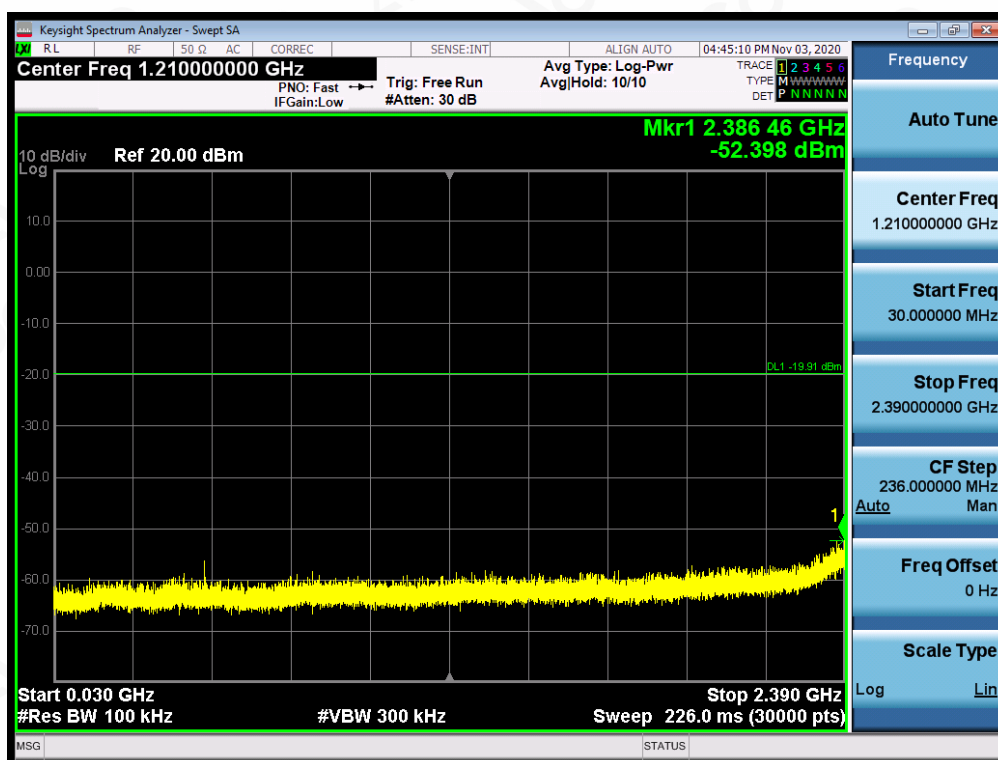


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



# TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11n20 FOR MODULATION IN LOW CHANNEL



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



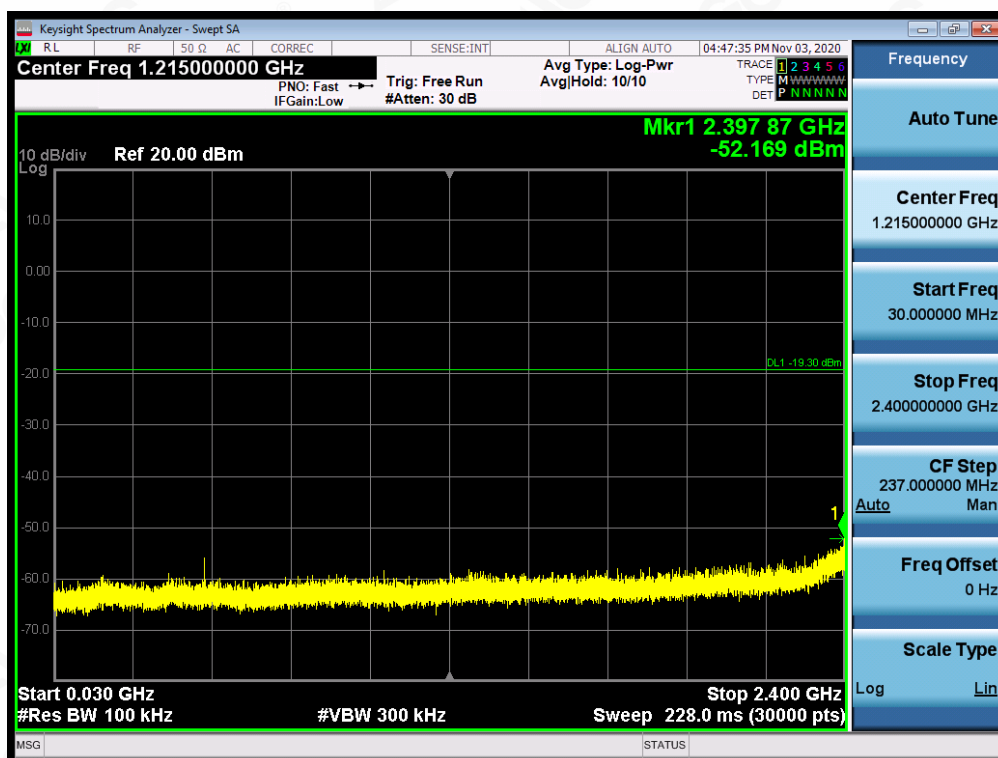


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE  
OF 802.11n20 FOR MODULATION IN MIDDLE CHANNEL

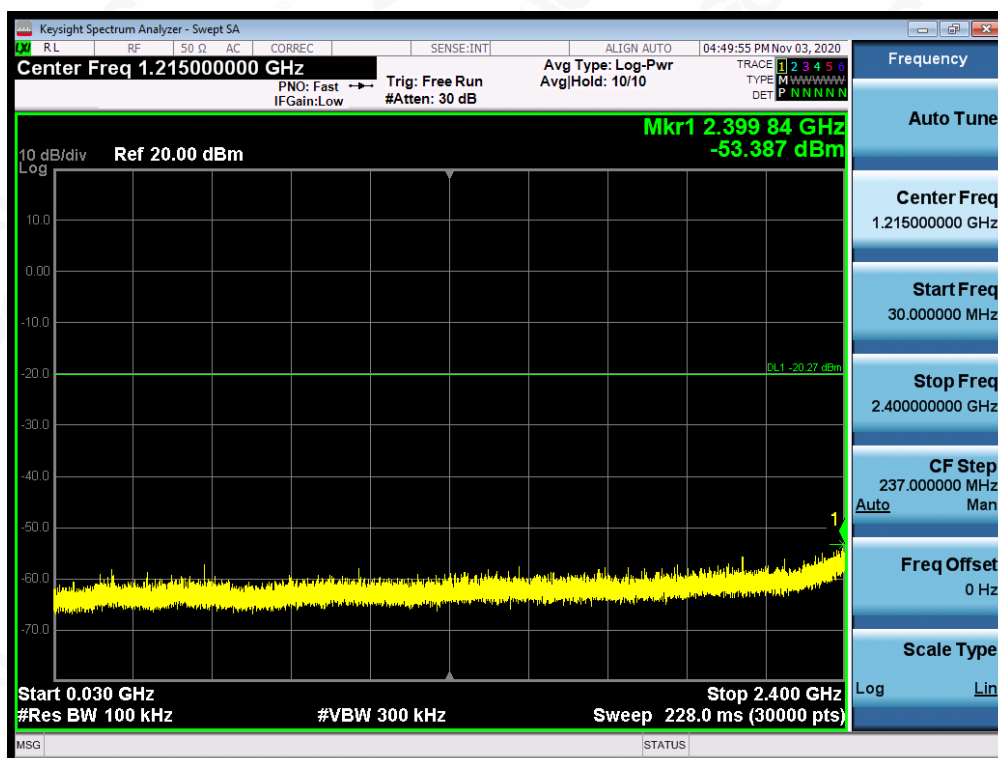


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE  
OF 802.11n20 FOR MODULATION IN HIGH CHANNEL

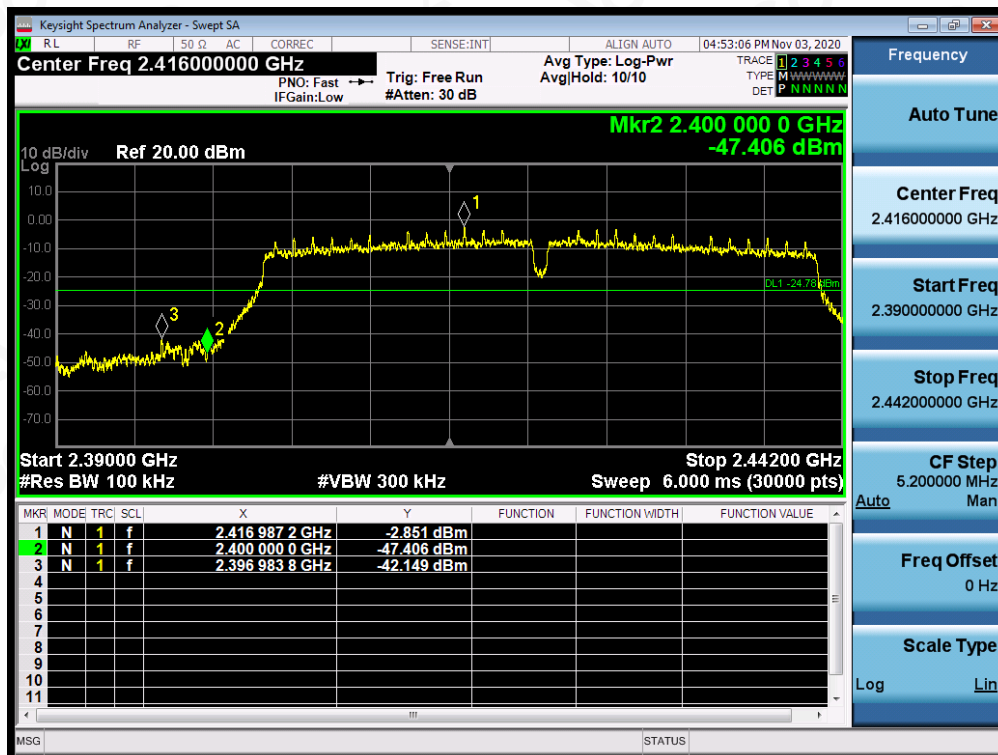
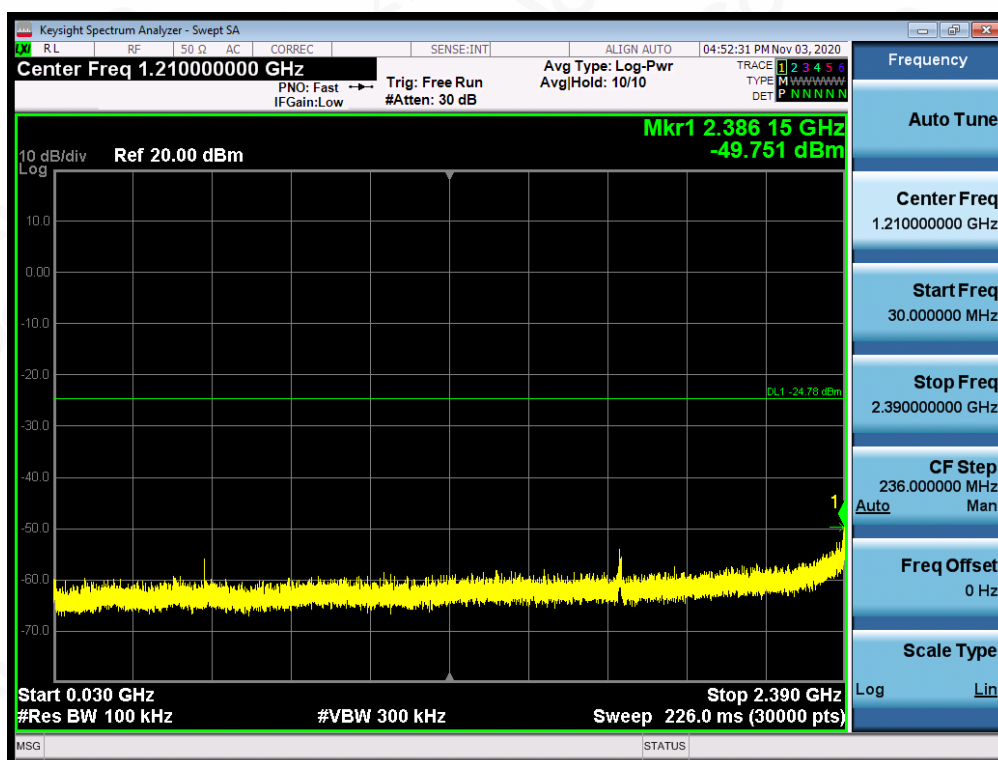


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



# TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11n40 FOR MODULATION IN LOW CHANNEL



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



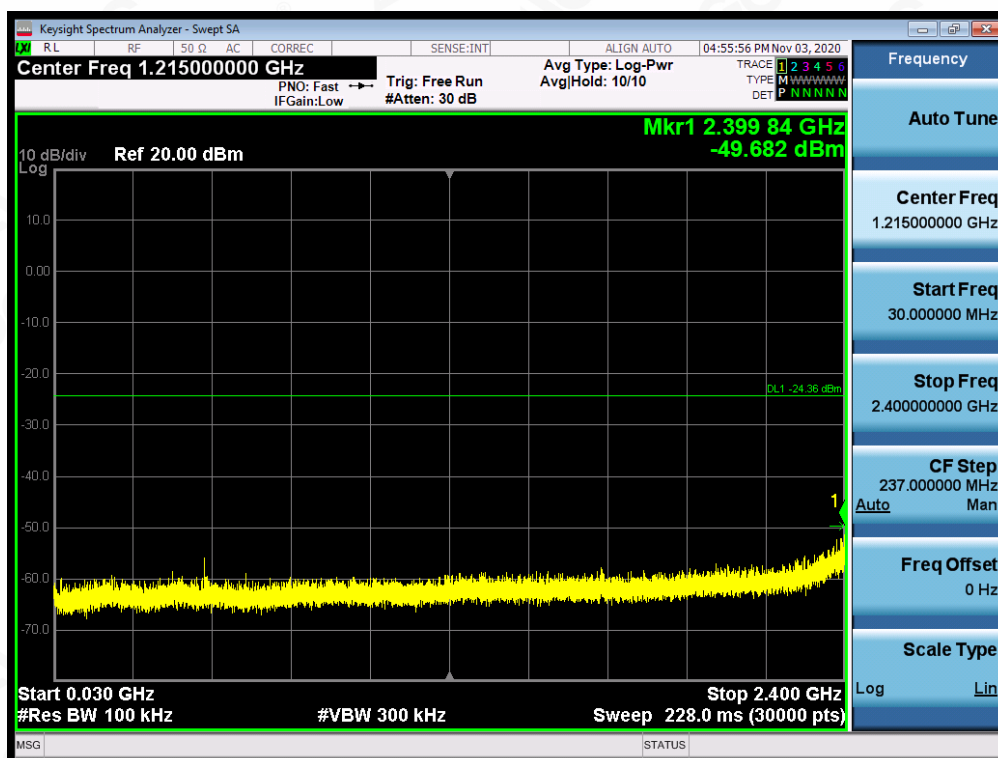


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE  
OF 802.11n40 FOR MODULATION IN MIDDLE CHANNEL

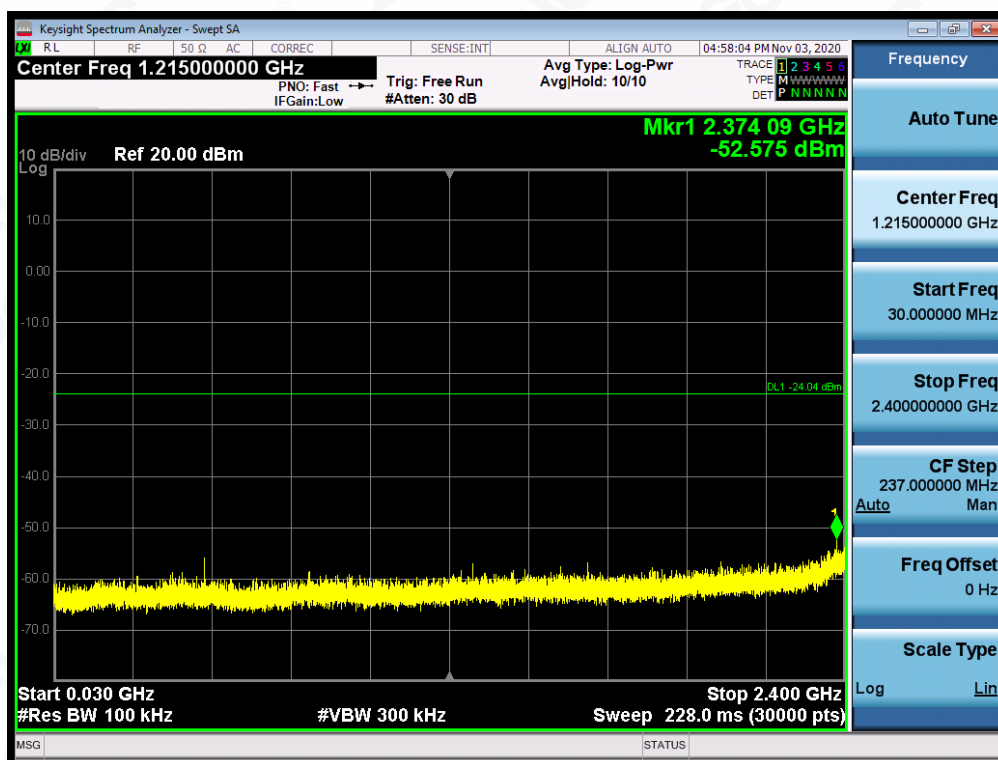


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



# TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11n40 FOR MODULATION IN HIGH CHANNEL



Note: Emissions from 2483.5-2500MHz which fall in the restricted bands had been considered with the radiated emission limits specified. The in 802.11b, 802.11g mode antenna 1 is the worst case and recorded in the report;

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



For 802.11n mode, the worst case Antenna 1 has more than 3dB margins, so the MIMO mode also compliance the limit.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by [agc@agc-cert.com](mailto:agc@agc-cert.com).

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: [agc@agc-cert.com](mailto:agc@agc-cert.com) Web: <http://cn.agc-cert.com/>



## 10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

### 10.1 MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the ANSI C63.10 (2013) item 11.10 was used in this testing.

### 10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 8.2.

### 10.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

### 10.4 LIMITS AND MEASUREMENT RESULT

| TEST ITEM | POWER SPECTRAL DENSITY   |
|-----------|--------------------------|
| TEST MODE | 802.11b with data rate 1 |

| Channel No.    | Power density Antenna 1 (dBm/20kHz) | Power density Antenna 1 (dBm/3kHz) | Power density Antenna 2 (dBm/20kHz) | Power density Antenna 2 (dBm/3kHz) | Power density Total (dBm/20kHz) | Power density Total (dBm/3kHz) | Limit (dBm/3kHz) | Result |
|----------------|-------------------------------------|------------------------------------|-------------------------------------|------------------------------------|---------------------------------|--------------------------------|------------------|--------|
| Low Channel    | 1.576                               | -6.66                              | 5.205                               | -3.03                              | N/A                             | N/A                            | 8                | Pass   |
| Middle Channel | 0.902                               | -7.34                              | 5.752                               | -2.49                              | N/A                             | N/A                            | 8                | Pass   |
| High Channel   | 0.656                               | -7.58                              | 5.397                               | -2.84                              | N/A                             | N/A                            | 8                | Pass   |

| TEST ITEM | POWER SPECTRAL DENSITY   |
|-----------|--------------------------|
| TEST MODE | 802.11g with data rate 6 |

| Channel No.    | Power density Antenna 1 (dBm/20kHz) | Power density Antenna 1 (dBm/3kHz) | Power density Antenna 2 (dBm/20kHz) | Power density Antenna 2 (dBm/3kHz) | Power density Total (dBm/20kHz) | Power density Total (dBm/3kHz) | Limit (dBm/3kHz) | Result |
|----------------|-------------------------------------|------------------------------------|-------------------------------------|------------------------------------|---------------------------------|--------------------------------|------------------|--------|
| Low Channel    | -5.969                              | -14.21                             | -5.269                              | -13.51                             | N/A                             | N/A                            | 8                | Pass   |
| Middle Channel | -5.524                              | -13.76                             | -4.131                              | -12.37                             | N/A                             | N/A                            | 8                | Pass   |
| High Channel   | -5.750                              | -13.99                             | -4.505                              | -12.74                             | N/A                             | N/A                            | 8                | Pass   |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.



| TEST ITEM | POWER SPECTRAL DENSITY        |
|-----------|-------------------------------|
| TEST MODE | 802.11n 20 with data rate 6.5 |

| Channel No.    | Power density Antenna 1 (dBm/20kHz) | Power density Antenna 1 (dBm/3kHz) | Power density Antenna 2 (dBm/20kHz) | Power density Antenna 2 (dBm/3kHz) | Power density Total (dBm/20kHz) | Power density Total (dBm/3kHz) | Limit (dBm/3kHz) | Result |
|----------------|-------------------------------------|------------------------------------|-------------------------------------|------------------------------------|---------------------------------|--------------------------------|------------------|--------|
| Low Channel    | -5.235                              | -13.47                             | -4.878                              | -13.12                             | -2.04                           | -10.28                         | 8                | Pass   |
| Middle Channel | -5.390                              | -13.63                             | -6.077                              | -14.32                             | -2.71                           | -10.95                         | 8                | Pass   |
| High Channel   | -5.179                              | -13.42                             | -5.864                              | -14.10                             | -2.50                           | -10.74                         | 8                | Pass   |

| TEST ITEM | POWER SPECTRAL DENSITY         |
|-----------|--------------------------------|
| TEST MODE | 802.11n 40 with data rate 13.5 |

| Channel No.    | Power density Antenna 1 (dBm/20kHz) | Power density Antenna 1 (dBm/3kHz) | Power density Antenna 2 (dBm/20kHz) | Power density Antenna 2 (dBm/3kHz) | Power density Total (dBm/20kHz) | Power density Total (dBm/3kHz) | Limit (dBm/3kHz) | Result |
|----------------|-------------------------------------|------------------------------------|-------------------------------------|------------------------------------|---------------------------------|--------------------------------|------------------|--------|
| Low Channel    | -9.926                              | -18.17                             | -10.646                             | -18.89                             | -7.26                           | -15.50                         | 8                | Pass   |
| Middle Channel | -10.336                             | -18.58                             | -9.780                              | -18.02                             | -7.04                           | -15.28                         | 8                | Pass   |
| High Channel   | -8.893                              | -17.13                             | -9.361                              | -17.60                             | -6.11                           | -14.35                         | 8                | Pass   |

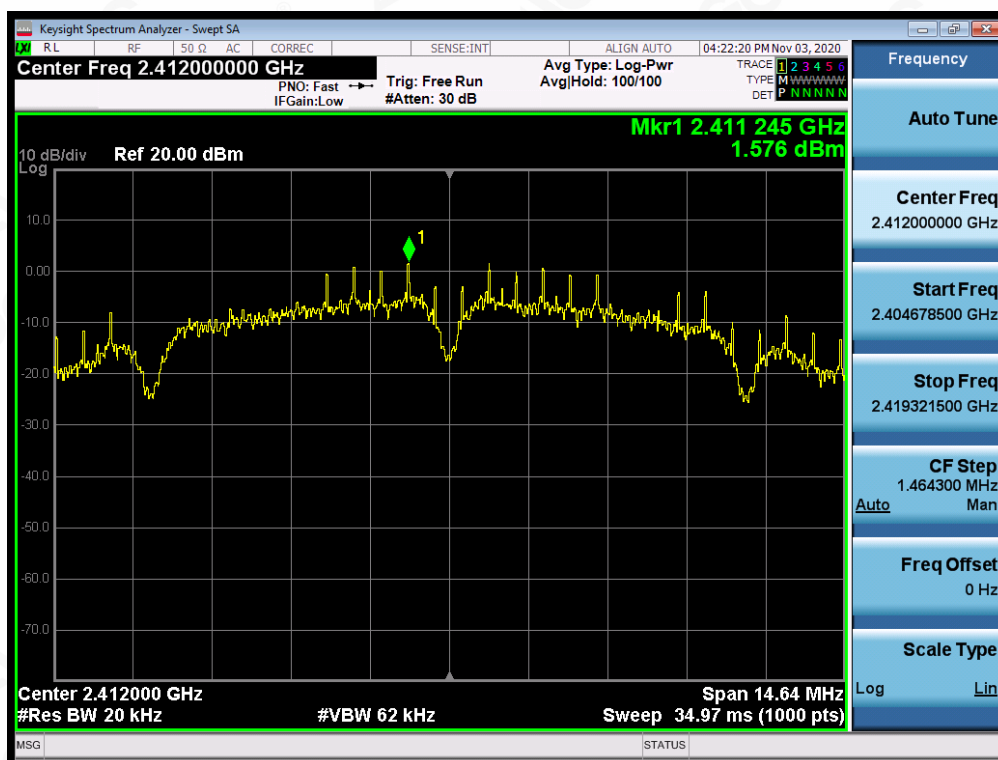
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/

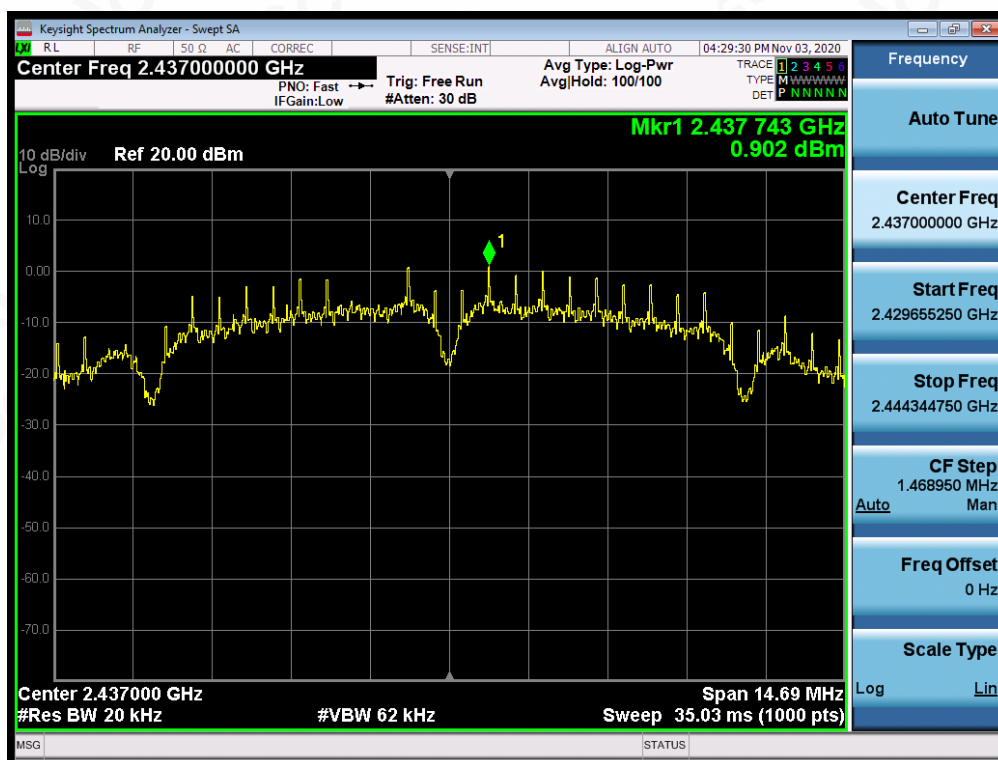


### 802.11b TEST RESULT AT ANTENNA 1

#### TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



#### TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

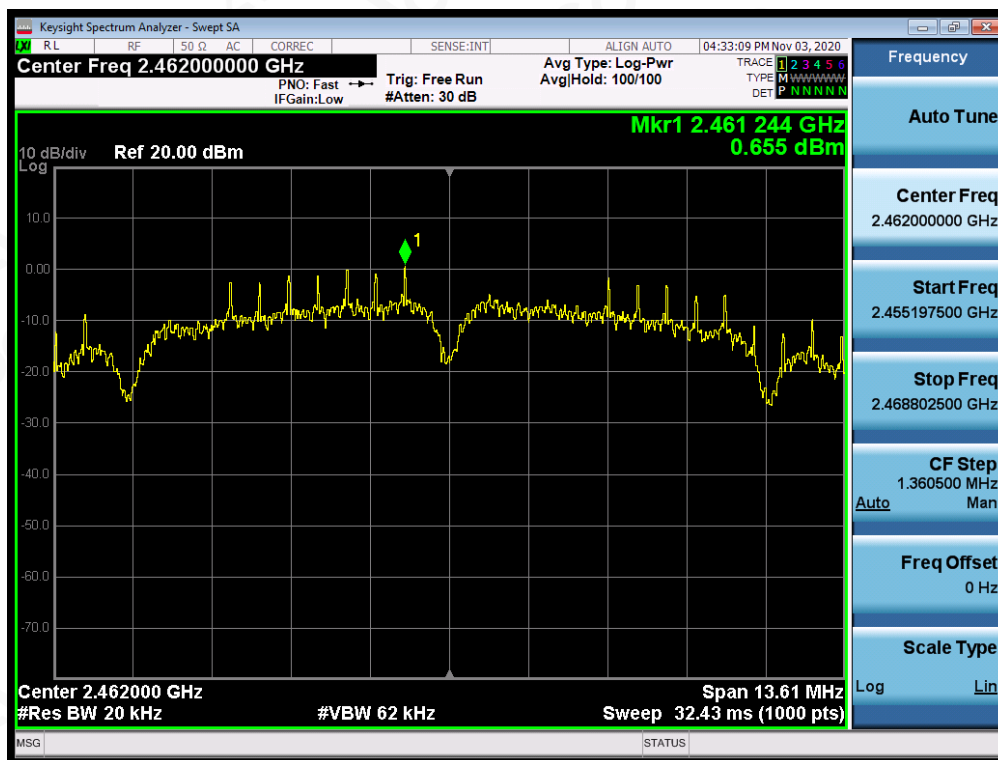


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/

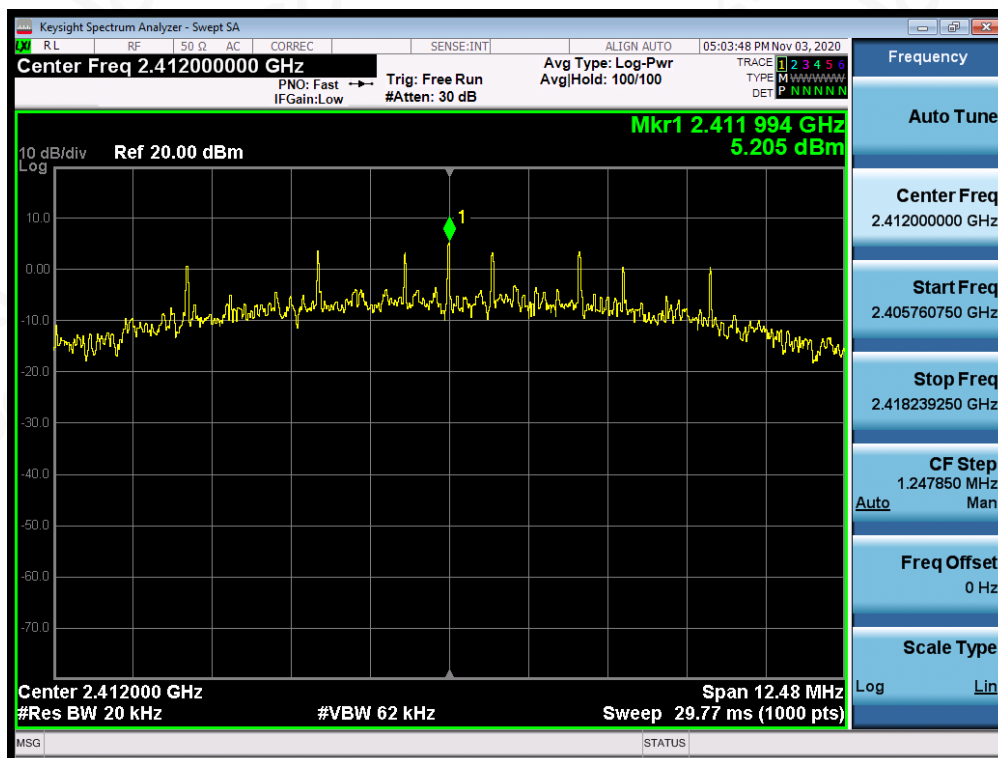


### TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



### 802.11b TEST RESULT AT ANTENNA 2

### TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/

