

FCC Test Report

Report No.: AGC13858220202FE05

FCC ID : 2A433YH-A936

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : HUMIDIFIER

BRAND NAME : KFC SMART

MODEL NAME : YH-936S, YH-936, YH-936H

APPLICANT: Shenzhen kensonic Intelligent Technology Co., Ltd.

DATE OF ISSUE : Mar. 26, 2022

STANDARD(S)

TEST PROCEDURE(S)

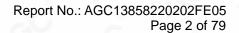
: FCC Part 15.247

REPORT VERSION : V1.0

Attestation of Global compliance (Shenzhen) Co., Ltd



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REPORT REVISE RECORD

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0 | / | Mar. 26, 2022 | Valid | Initial Release |

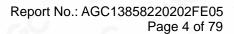
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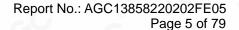
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1. VERIFICATION OF CONFORMITY

| Applicant | Shenzhen kensonic Intelligent Technology Co., Ltd. | |
|----------------------------------|---|--|
| Address | Room 401A, No. 111-2, Jinshan Mountain, Bantian Community, Bantian Street, Longgang District, Shenzhen, Guangdong Province, China | |
| Manufacturer | Shenzhen kensonic Intelligent Technology Co., Ltd. | |
| Address | Room 401A, No. 111-2, Jinshan Mountain, Bantian Community, Bantian Street, Longgang District, Shenzhen, Guangdong Province, China | |
| Factory | Shenzhen kensonic Intelligent Technology Co., Ltd. | |
| Address | Room 401A, No. 111-2, Jinshan Mountain, Bantian Community, Bantian Street, onggang District, Shenzhen, Guangdong Province, China | |
| Product Designation | HUMIDIFIER | |
| Brand Name | KFC SMART | |
| Test Model | YH-936S | |
| Series Model | YH-936, YH-936H | |
| Declaration of Difference | All the series models are the same as the test model except for the model name | |
| Date of test | Mar. 21, 2022 to Mar. 26, 2022 | |
| Deviation | No any deviation from the test method | |
| Condition of Test Sample | Normal | |
| Test Result | Pass | |
| Report Template | 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.

Reviewed By

Calvin Liu
(Reviewer)

Mar. 26, 2022

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "HUMIDIFIER". 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

| | C LOT 13 described as following |
|--------------------------|---|
| Operation Frequency | 2.412 GHz ~ 2.462GHz |
| Output Power (Average) | IEEE 802.11b:16.06dBm; IEEE 802.11g:16.18dBm; |
| Output Power (Average) | IEEE 802.11n(20):13.24dBm; IEEE 802.11n(40):11.98dBm |
| Output Dawer (Book) | IEEE 802.11b:18.50dBm; IEEE 802.11g:21.48dBm; |
| Output Power (Peak) | IEEE 802.11n(20):20.71dBm; IEEE 802.11n(40):19.57dBm |
| Modulation | DSSS(DBPSK/DQPSK/CCK); OFDM(BPSK/QPSK/16-QAM/64-QAM) |
| Number of channels 11 | |
| Hardware Version | 1.0 |
| Software Version | 1.0 |
| Antenna Designation | PCB antenna (Comply with requirements of the FCC part 15.203) |
| Antenna Gain | 2.5dBi |
| Power Supply AC 100-240V | |

2.2. TABLE OF CARRIER FREQUENCYS

| Frequency Band | Channel Number | Frequency | | |
|----------------|----------------|-----------|--|--|
| | 0 1 | 2412 MHZ | | |
| | 2 | 2417 MHZ | | |
| | 3 | 2422 MHZ | | |
| NGO ZO | 4 | 2427 MHZ | | |
| | 5 | 2432 MHZ | | |
| 2400~2483.5MHZ | 6 | 2437 MHZ | | |
| 300 | 7 | 2442 MHZ | | |
| | 8 | 2447 MHZ | | |
| | 9 | 2452 MHZ | | |
| 10° 20 | 10 | 2457 MHZ | | |
| | 11 0 | 2462 MHZ | | |

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

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2.3. IEEE 802.11N MODULATION SCHEME

| MCS Index | Nss | Modulation | R | NBPSC | NCI | NCBPS NDBPS | | | ata Mbps) nsGl | |
|--------------|-----------|------------|-----|-------|-------|-------------|-------|-------|----------------------|-------|
| | | | | | 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 | <u></u> 1 | 64-QAM | 5/6 | 6 | 312 | 648 | 260 | 540 | 65.0 | 135.0 |

| Symbol | Explanation Number of spatial streams | |
|--------|---|--|
| NSS | | |
| 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: 2A433YH-A936** 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.

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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.

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3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±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%

| Item | Measurement Uncertainty | | |
|---|----------------------------|--|--|
| Uncertainty of Conducted Emission for AC Port | $U_c = \pm 3.1 \text{ dB}$ | | |
| Uncertainty of Radiated Emission below 1GHz | $U_c = \pm 4.0 \text{ dB}$ | | |
| Uncertainty of Radiated Emission above 1GHz | $U_c = \pm 4.8 \text{ dB}$ | | |
| Uncertainty of total RF power, conducted | $U_c = \pm 0.8 \text{ dB}$ | | |
| Uncertainty of RF power density, conducted | $U_c = \pm 2.6 \text{ dB}$ | | |
| Uncertainty of spurious emissions, conducted | U _c = ±2 % | | |
| Uncertainty of Occupied Channel Bandwidth | U _c = ±2 % | | |

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4. DESCRIPTION OF TEST MODES

| NO. | TEST MODE DESCRIPTION |
|-----|----------------------------------|
| 1 | Low channel transmitting (TX) |
| 2 | Middle channel transmitting (TX) |
| 3 | High channel transmitting (TX) |

Note:

Transmit by 802.11b with Date rate (1/2/5.5/11)

Transmit by 802.11g with Date rate (6/9/12/18/24/36/48/54)

Transmit by 802.11n (20MHz) with Date rate (6.5/13/19.5/26/39/52/58.5/65)

Transmit by 802.11n (40MHz) with Date rate (13.5/27/40.5/54/81/108/121.5/135)

The test channel for 20MHZ bandwidth system is channel 1, 6 and 11.

The test channel for 40MHZ bandwidth system is channel 3, 6 and 9.

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 iwpriv which can set the EUT into the individual test modes.

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5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Radiated Emission Configure:

| EUT |
|-----|
|-----|

Conducted Emission Configure:

5.2. EQUIPMENT USED IN EUT SYSTEM

| Item | Equipment | Model No. | ID or Specification | Remark |
|------|------------|-----------|---------------------|--------|
| 1 | HUMIDIFIER | YH-936S | 2A433YH-A936 | EUT |

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 |

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6. TEST FACILITY

| Test Site Attestation of Global Compliance (Shenzhen) Co., Ltd | | |
|--|---|--|
| Location 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Commu Fuhai Street, Bao'an District, Shenzhen, Guangdong, China | | |
| Designation Number | CN1259 | |
| FCC Test Firm Registration Number | 975832 | |
| A2LA Cert. No. | 5054.02 | |
| Description | 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 11, 2021 | May 10, 2022 |
| LISN | R&S | ESH2-Z5 | 100086 | Jun. 09, 2021 | Jun. 08, 2022 |
| 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, 2021 | May 14, 2022 |
| EXA Signal Analyzer | Aglient | N9010A | MY53470504 | Nov. 17, 2021 | Nov. 16, 2022 |
| 2.4GHz Fliter | Micro-tronics | 087 | N/A | Mar. 23, 2022 | Mar. 22, 2024 |
| Attenuator | Weinachel Corp | 58-30-33 | N/A | Sep. 03, 2020 | Sep. 02, 2022 |
| Horn antenna | SCHWARZBECK | BBHA 9170 | #768 | Oct. 31, 2021 | Oct. 30, 2023 |
| Active loop antenna (9K-30MHz) | ZHINAN | ZN30900C | 00034609 | Apr. 23, 2021 | Apr. 22, 2022 |
| Double-Ridged Waveguide Horn | ETS LINDGREN | 3117 | 00034609 | Apr. 23, 2021 | Apr. 22, 2022 |
| Broadband Preamplifier | ETS LINDGREN | 3117PA | 00225134 | Sep. 03, 2020 | Sep. 02, 2022 |
| ANTENNA | SCHWARZBECK | VULB9168 | D69250 | Jan. 08, 2021 | Jan. 07, 2023 |
| Test software | Tonscend | JS32-RE (Ver.2.5) | N/A | N/A | N/A |

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7. OUTPUT POWER

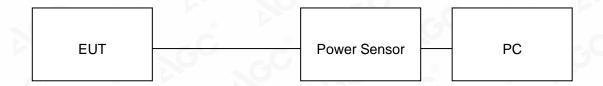
7.1. MEASUREMENT PROCEDURE

For average power test:

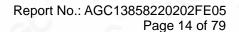
- 1. Connect EUT RF output port to power sensor through an RF attenuator.
- 2. Connect the power sensor to the PC.
- 3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 4. Record the maximum power from the software.

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)



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7.3. LIMITS AND MEASUREMENT RESULT

| Test Data of Conducted Output Power | | | | | |
|-------------------------------------|-----------------------|---------------------|---------------------|--------------|--------------|
| Test Mode | Test Channel (MHz) | Average Power (dBm) | Peak Power (dBm) | Limits (dBm) | Pass or Fail |
| - G | 2412 | 15.54 | 18.20 | ≪30 | Pass |
| 802.11b | 2437 | 16.06 | 18.50 | \$ 0 | Pass |
| | 2462 | 15.60 | 18.03 | \$ 0 | Pass |
| 8 | 2412 | 12.59 | 20.14 | ⊴ 30 | Pass |
| 802.11g | 2437 | 13.99 | 21.48 | ₹30 | Pass |
| | 2462 | 16.18 | 18.00 | ≼30 | Pass |
| 0 | 2412 | 12.58 | 20.11 | ₹30 | Pass |
| 802.11n20 | 2437 | 12.96 | 20.51 | ⊴ 30 | Pass |
| | 2462 | 13.24 | 20.71 | \$ 0 | Pass |
| | 2422 | 11.82 | 19.39 | \$ 0 | Pass |
| 802.11n40 | 2437 | 11.98 | 19.57 | - ≪30 | Pass |
| | 2452 | 11.83 | 19.52 | ≼3 0 | Pass |

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8. BANDWIDTH

8.1. MEASUREMENT PROCEDURE

6dB bandwidth:

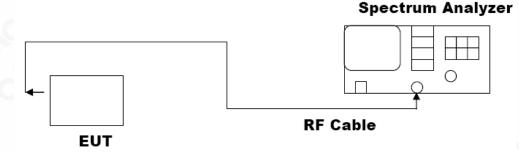
- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 kHz, VBW≥3×RBW.
- 4. Set SPA Trace 1 Max hold, then View.

Occupied bandwidth:

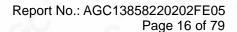
- Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hoping channel
 The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video
 bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
- 4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

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



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8.3. LIMITS AND MEASUREMENT RESULTS

| | Test Data C | or Occupied Bandwid | th and DTS Bandwi | atn | |
|-----------|-----------------------|---------------------------------|-------------------------|-----------------|--------------|
| Test Mode | Test Channel (MHz) | 99% Occupied Bandwidth (MHz) | -6dB Bandwidth (MHz) | Limits (MHz) | Pass or Fail |
| | 2412 | 12.706 | 8.073 | ∌.5 | Pass |
| 802.11b | 2437 | 13.595 | 8.574 | ∌.5 | Pass |
| | 2462 | 12.997 | 8.082 | ∌.5 | Pass |
| 6. 0 | 2412 | 16.392 | 15.10 | ∌.5 | Pass |
| 802.11g | 2437 | 16.622 | 15.44 | ∌.5 | Pass |
| | 2462 | 16.428 | 15.11 | ∌.5 | Pass |
|) | 2412 | 17.460 | 15.10 | ∌.5 | Pass |
| 802.11n20 | 2437 | 17.611 | 15.95 | ₹0.5 | Pass |
| | 2462 | 17.475 | 15.11 | ∌.5 | Pass |
| | 2422 | 35.855 | 32.56 | ∌.5 | Pass |
| 802.11n40 | 2437 | 36.242 | 35.35 | ∌.5 | Pass |
| | 2452 | 35.726 | 33.76 | ∌.5 | Pass |

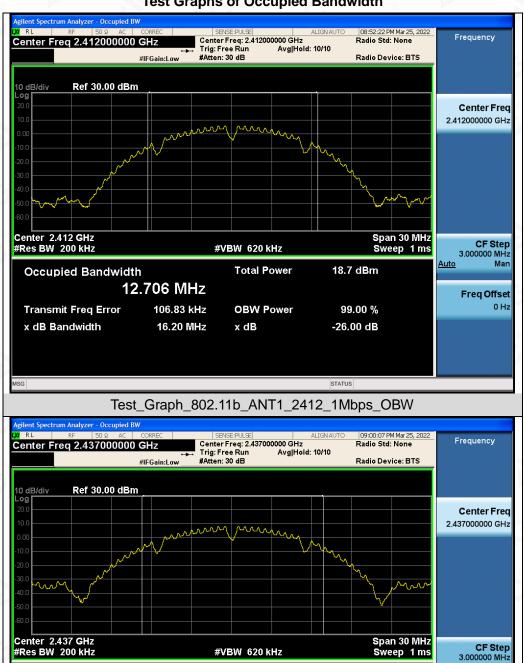
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the Bedicated Pasting/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the writter purportation of AGE. 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 15day 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.

<u>Auto</u>

Freq Offset



Test Graphs of Occupied Bandwidth



Test_Graph_802.11b_ANT1_2437_1Mbps_OBW

Total Power

OBW Power

x dB

21.0 dBm

99.00 %

-26.00 dB

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Occupied Bandwidth

Transmit Freq Error

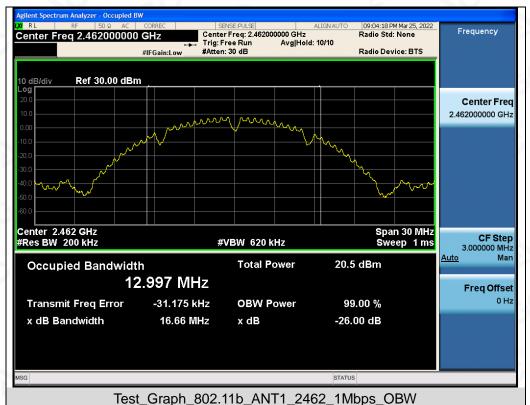
x dB Bandwidth

13.595 MHz

92.766 kHz

17.21 MHz



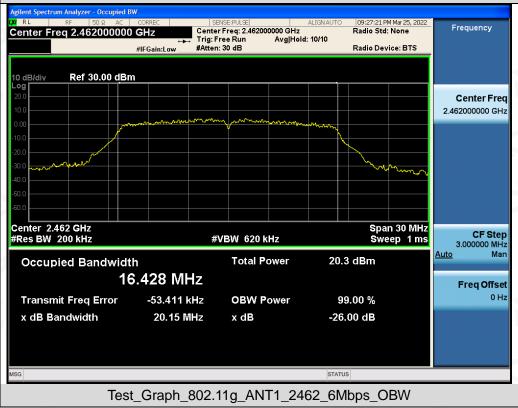




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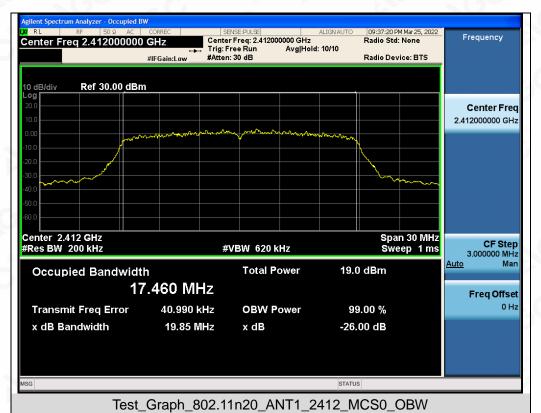






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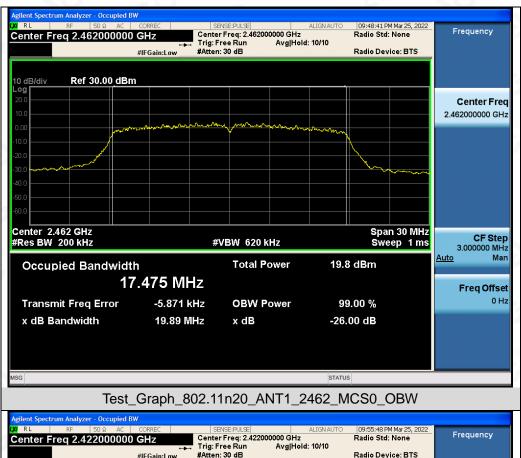


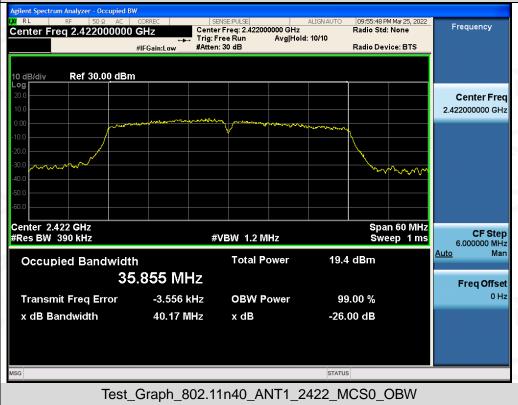


Test_Graph_802.11n20_ANT1_2437_MCS0_OBW

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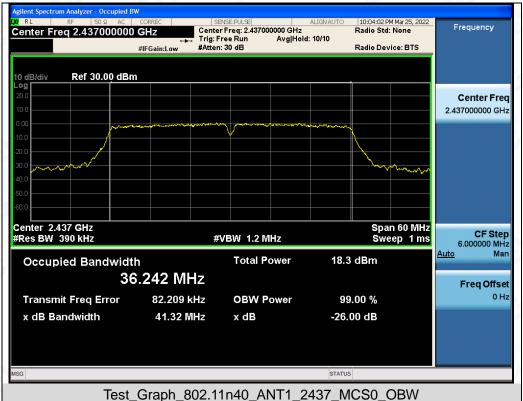


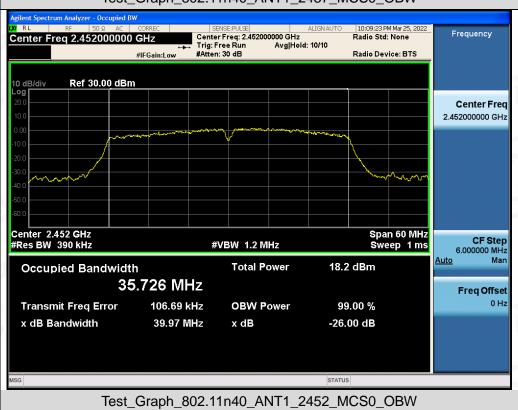




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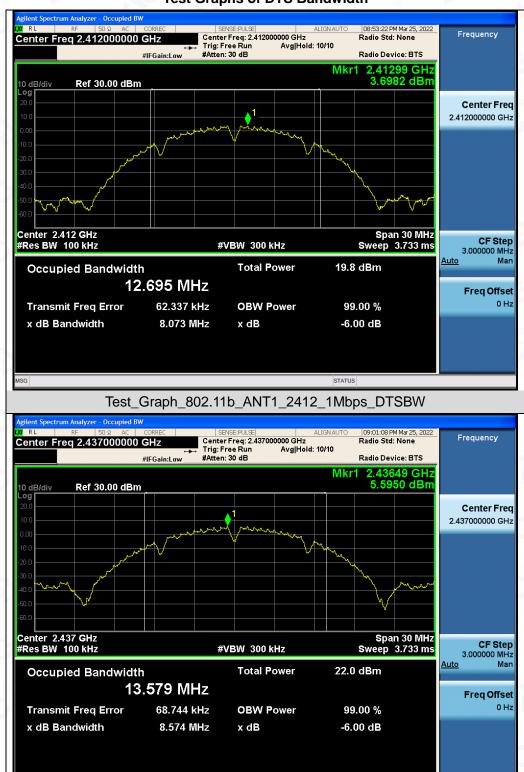




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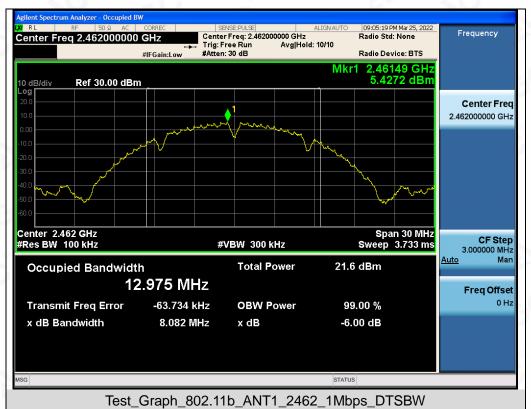
Test Graphs of DTS Bandwidth

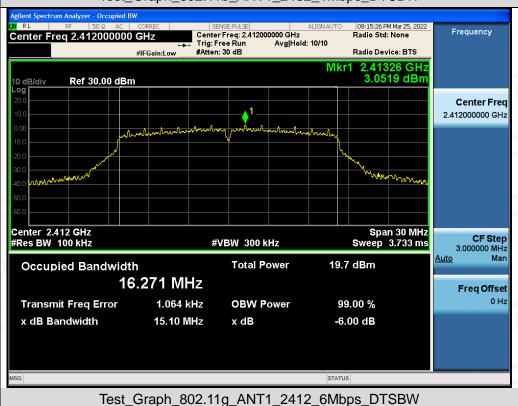


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Test_Graph_802.11b_ANT1_2437_1Mbps_DTSBW







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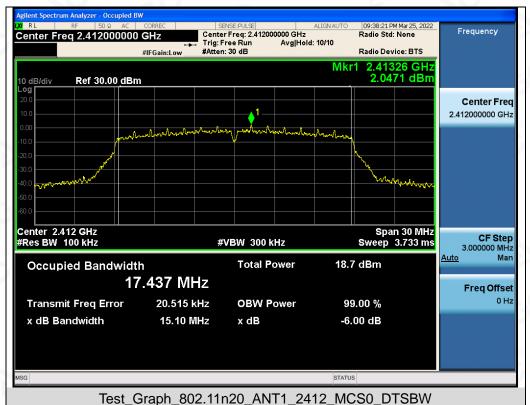


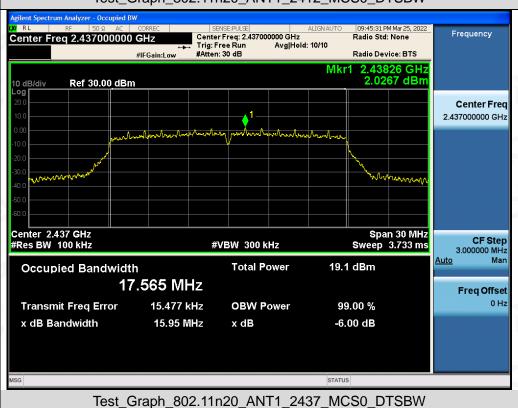




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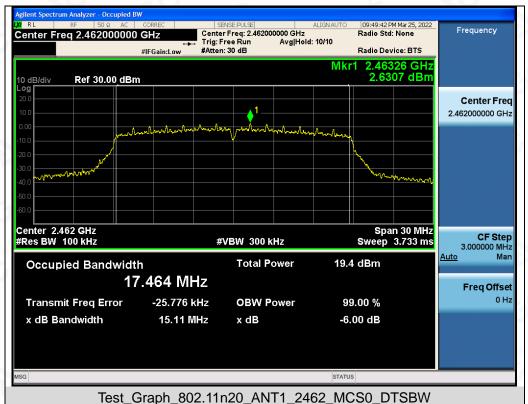






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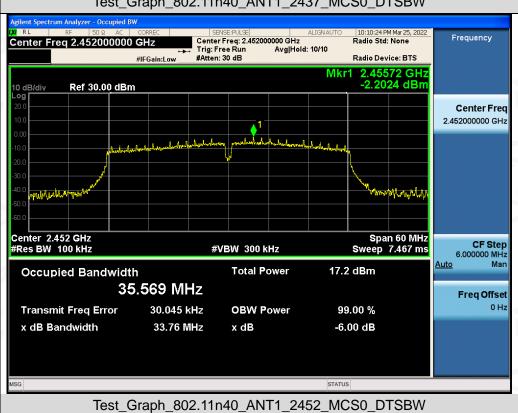




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9. CONDUCTED SPURIOUS EMISSION

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 USEDJN

The same as described in section 6.

9.4. LIMITS AND MEASUREMENT RESULT

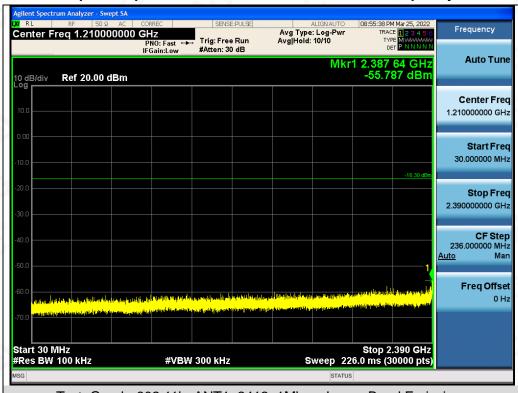
| LIMITS AND MEASUREMENT RESULT | | | | | | |
|---|--|----------|--|--|--|--|
| Annelia alda I insida | Measurement Result | | | | | |
| Applicable Limits | Test Data | Criteria | | | | |
| In any 100 KHz Bandwidth Outside the | At least -20dBc than the limit | | | | | |
| frequency band in which the spread spectrum | Specified on the BOTTOM | PASS | | | | |
| intentional radiator is operating, the radio frequency | Channel | a.C | | | | |
| 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. 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 TOP Channel | PASS | | | | |

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

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Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands



Test_Graph_802.11b_ANT1_2412_1Mbps_Lower Band Emissions

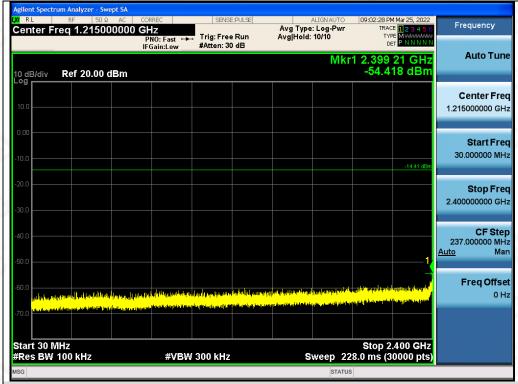


Test_Graph_802.11b_ANT1_2412_1Mbps_Higher Band Emissions

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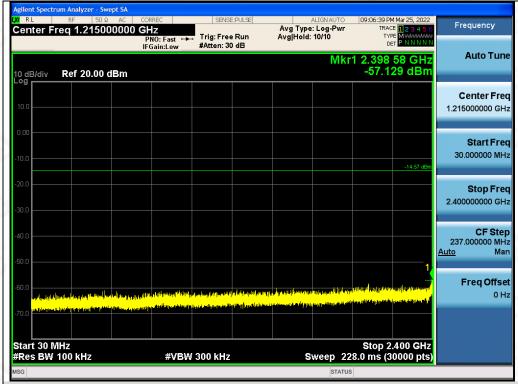


Test_Graph_802.11b_ANT1_2437_1Mbps_Lower Band Emissions



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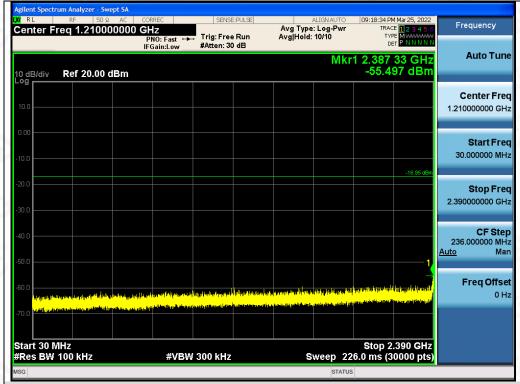


Test_Graph_802.11b_ANT1_2462_1Mbps_Lower Band Emissions



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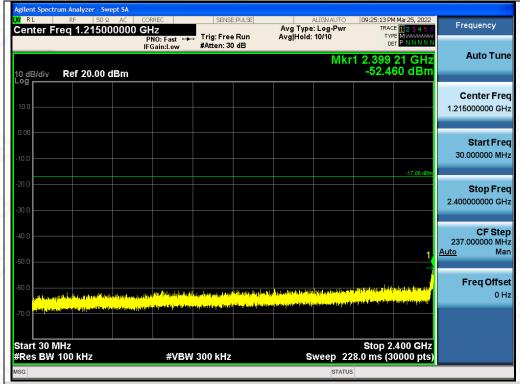


Test_Graph_802.11g_ANT1_2412_6Mbps_Lower Band Emissions



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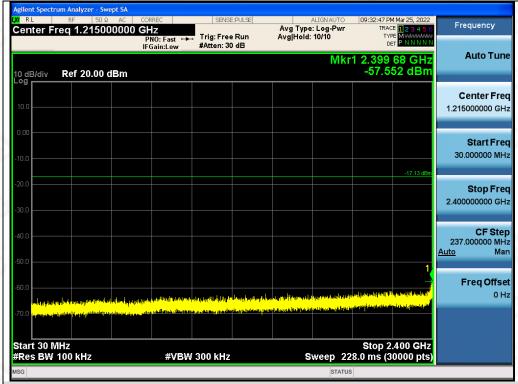


Test_Graph_802.11g_ANT1_2437_6Mbps_Lower Band Emissions



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Test_Graph_802.11g_ANT1_2462_6Mbps_Lower Band Emissions

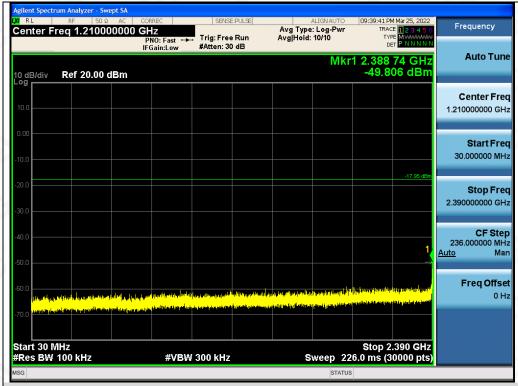


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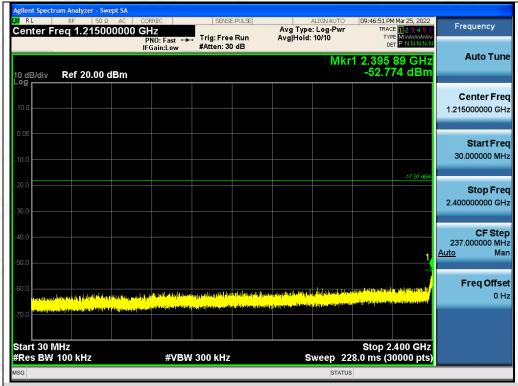


Test_Graph_802.11n20_ANT1_2412_MCS0_Lower Band Emissions



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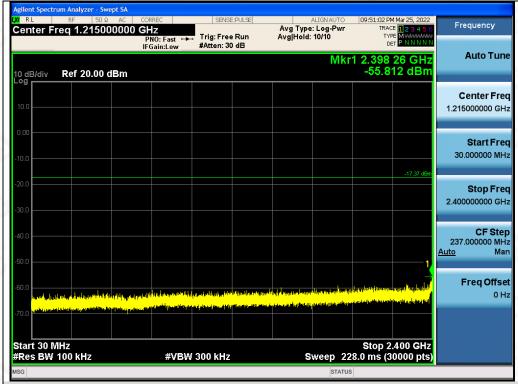


Test_Graph_802.11n20_ANT1_2437_MCS0_Lower Band Emissions

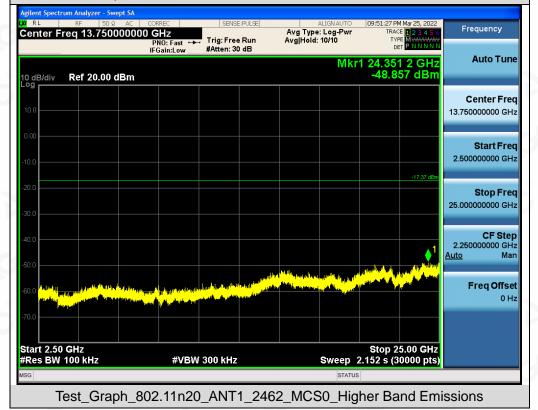


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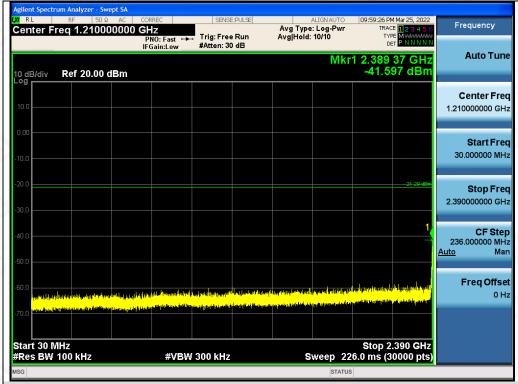


Test_Graph_802.11n20_ANT1_2462_MCS0_Lower Band Emissions

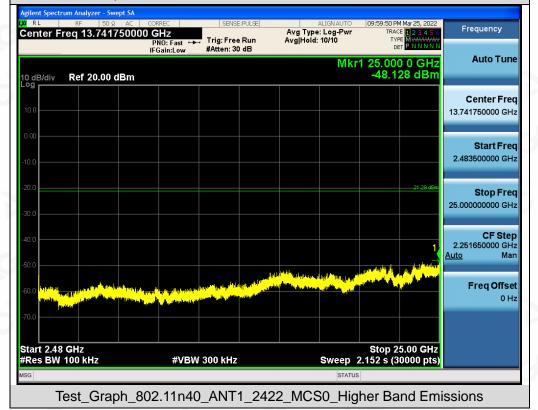


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Test_Graph_802.11n40_ANT1_2422_MCS0_Lower Band Emissions



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