



# element

**IrriGreen, Inc.**

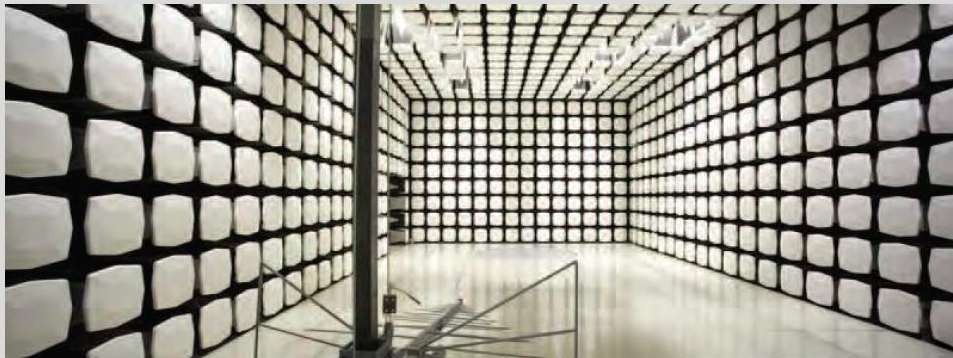
**Controller 3, Model 705101**

**FCC 15.207:2024**

**FCC 15.247:2024**

**Wi-Fi 802.11 a/b/g/n SISO radio**

**Report: IRR10024.4 Rev. 1, Issue Date: September 19, 2024**



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# CERTIFICATE OF TEST

Last Date of Test: September 13, 2024

IrriGreen, Inc.

EUT: Sprinkler with Controller, Controller 3, Model 705101

## Radio Equipment Testing

### Standards

| Specification   | Method           |
|-----------------|------------------|
| FCC 15.207:2024 | ANSI C63.10:2013 |
| FCC 15.247:2024 |                  |

### Guidance

|                            |
|----------------------------|
| FCC KDB 558074 v05r02:2019 |
|----------------------------|

### Results

| Test Description                           | Result    | Specification Section(s)        | Method Section(s)          | Comments |
|--------------------------------------------|-----------|---------------------------------|----------------------------|----------|
| Powerline Conducted Emissions              | Pass      | 15.207                          | 6.2                        |          |
| Duty Cycle                                 | Evaluated | KDB 558074 -6.0                 | 11.6                       |          |
| DTS Bandwidth                              | Pass      | 15.247(a)(2), KDB 558074 -8.2   | 11.8.2                     |          |
| Occupied Bandwidth                         | Evaluated | KDB 558074 -2.1                 | 6.9.3                      |          |
| Output Power                               | Pass      | 15.247(b)(3), KDB 558074 -8.3.2 | 11.9.2.2.4                 |          |
| Equivalent Isotropic Radiated Power (EIRP) | Pass      | 15.247(b)(3), KDB 558074 -8.3.2 | 11.9.2.2.4                 |          |
| Power Spectral Density                     | Pass      | 15.247(e), KDB 558074 -8.4      | 11.10.5                    |          |
| Band Edge Compliance                       | Pass      | 15.247(d), KDB 558074 -8.5      | 11.11                      |          |
| Spurious Conducted Emissions               | Pass      | 15.247(d), KDB 558074 -8.5      | 11.11                      |          |
| Spurious Radiated Emissions                | Pass      | 15.247(d), KDB 558074 -8.6, 8.7 | 11.12.1, 11.13.2, 6.5, 6.6 |          |

### Deviations From Test Standards

None

### Approved By:



Cole Ghizzone, Operations Manager  
Signed for and on behalf of Element

*Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.*

# REVISION HISTORY

| Revision Number | Description                                   | Date<br>(yyyy-mm-dd) | Page Number |
|-----------------|-----------------------------------------------|----------------------|-------------|
| 00              | None                                          |                      |             |
| 01              | Updated test lab accreditation number         | 2024-09-19           | 1           |
|                 | Changed test lab from MN to EV                |                      | 6           |
|                 | Updated antenna gain and power settings table |                      | 12          |
|                 | Updated EIRP values                           |                      | 61 – 62     |
|                 | Updated test description and tabular data     |                      | 63 - 65     |

# ACCREDITATIONS AND AUTHORIZATIONS



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## United States

**FCC** - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

**A2LA** - Each laboratory is accredited by A2LA to ISO / IEC 17025, and as a product certifier to ISO / IEC 17065 which allows Element to certify transmitters to FCC and IC specifications.

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## Canada

**ISED** - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

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## European Union

**European Commission** – Recognized as an EU Notified Body validated for the EMCD and RED Directives.

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## United Kingdom

**BEIS** – Recognized by the UK as an Approved Body under the UK Radio Equipment and UK EMC Regulations.

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## Australia/New Zealand

**ACMA** - Recognized by ACMA as a CAB for the acceptance of test data.

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## Korea

**MSIT / RRA** - Recognized by KCC's RRA as a CAB for the acceptance of test data.

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## Japan

**VCCI** - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

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## Taiwan

**BSMI** – Recognized by BSMI as a CAB for the acceptance of test data.

**NCC** - Recognized by NCC as a CAB for the acceptance of test data.

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## Singapore

**IDA** – Recognized by IDA as a CAB for the acceptance of test data.

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## Israel

**MOC** – Recognized by MOC as a CAB for the acceptance of test data.

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## Hong Kong

**OFCA** – Recognized by OFCA as a CAB for the acceptance of test data.

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## Vietnam

**MIC** – Recognized by MIC as a CAB for the acceptance of test data.

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## SCOPE

For details on the Scopes of our Accreditations, please visit:

[California](#)

[Minnesota](#)

[Oregon](#)

[Texas](#)

[Washington](#)

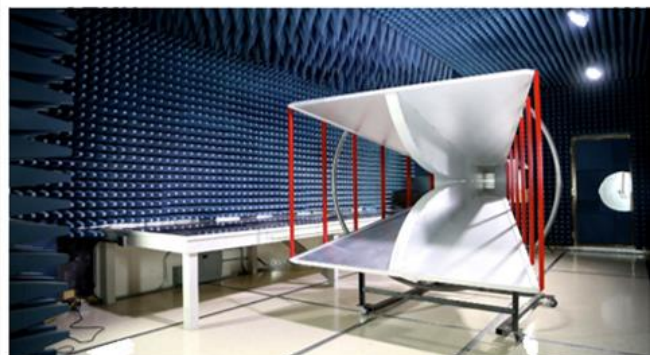
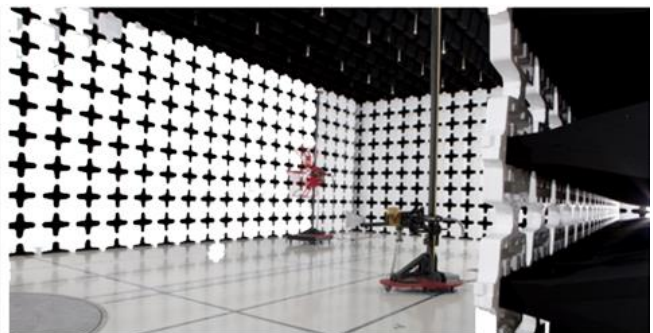
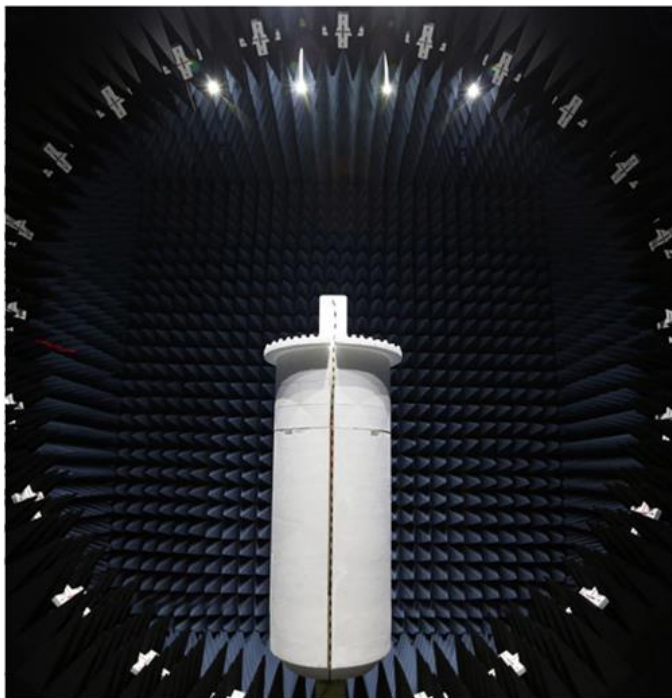
# FACILITIES

Testing was performed at the following location(s)

|                                     | Location    | Labs <sup>(1)</sup> | Address                                                              | A2LA <sup>(2)</sup> | ISED <sup>(3)</sup> | BSMI <sup>(4)</sup> | VCCI <sup>(5)</sup> | CAB <sup>(6)</sup> | FDA <sup>(7)</sup> |
|-------------------------------------|-------------|---------------------|----------------------------------------------------------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|
| <input type="checkbox"/>            | California  | OC01-17             | 41 Tesla<br>Irvine, CA 92618<br>(949) 861-8918                       | 3310.04             | 2834B               | SL2-IN-E-1154R      | A-0029              | US0158             | TL-55              |
| <input type="checkbox"/>            | Minnesota   | MN01-11             | 9349 W Broadway Ave.<br>Brooklyn Park, MN 55445<br>(612) 638-5136    | 3310.05             | 2834E               | SL2-IN-E-1152R      | A-0109              | US0175             | TL-57              |
| <input checked="" type="checkbox"/> | Oregon      | EV01-12             | 6775 NE Evergreen Pkwy #400<br>Hillsboro, OR 97124<br>(503) 844-4066 | 3310.02             | 2834D               | SL2-IN-E-1017       | A-0108              | US0017             | TL-56              |
| <input type="checkbox"/>            | Plano Texas | PT01-15             | 1701 E Plano Pkwy, Ste 150<br>Plano, TX 75074<br>(972) 509-2566      | 214.19              | 32637               | SL2-IN-E-057R       | A-0426              | US0054             | N/A                |
| <input type="checkbox"/>            | Texas       | TX01-09             | 3801 E Plano Pkwy<br>Plano, TX 75074<br>(469) 304-5255               | 3310.03             | 2834G               | SL2-IN-E-1158R      | N/A                 | US0191             | TL-54              |
| <input type="checkbox"/>            | Washington  | NC01-05             | 19201 120th Ave NE<br>Bothell, WA 98011<br>(425) 984-6600            | 3310.06             | 2834F               | SL2-IN-E-1153R      | A-0110              | US0157             | TL-67              |
| <input type="checkbox"/>            | Offsite     | N/A                 | See Product Description                                              | N/A                 | N/A                 | N/A                 | N/A                 | N/A                | N/A                |

See data sheets for specific labs

- (1) The lab designations denote individual rooms within each location. (OC01, OC02, OC03, etc.)
- (2) A2LA Certificate No.
- (3) ISED Company No.
- (4) BSMI No.
- (5) VCCI Site Filing No.
- (6) CAB Identifier. Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA
- (7) FDA ASCA No.



# MEASUREMENT UNCERTAINTY

## Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty ( $k=2$ ) can be found in the table below. A lab specific value may also be found in the applicable test description section. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable) and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

### Various Measurements

| Test                                 | All Labs<br>(+/-) |
|--------------------------------------|-------------------|
| Frequency Accuracy (%)               | 0.0007            |
| Amplitude Accuracy (dB)              | 1.2               |
| Conducted Power (dB)                 | 1.2               |
| Radiated Power via Substitution (dB) | 0.7               |
| Temperature (degrees C)              | 0.7               |
| Humidity (% RH)                      | 2.5               |
| Voltage (AC) (%)                     | 1                 |
| Voltage (DC) (%)                     | 0.7               |

### Field Strength Measurements (dB)

| Range         | EV01<br>(+/-) | EV06<br>(+/-) |
|---------------|---------------|---------------|
| 10kHz-30MHz   | 1.8           | N/A           |
| 30MHz-1GHz 3m | 4.6           | N/A           |
| 1GHz-6GHz     | 5.1           | N/A           |
| 6GHz-40GHz    | 5.2           | N/A           |

### AC Powerline Conducted Emissions Measurements (dB)

| Range                    | EV07<br>(+/-) | EV06<br>(+/-) |
|--------------------------|---------------|---------------|
| 9kHz-150kHz LISN         | 3.6           | N/A           |
| 150kHz-30MHz LISN        | 3.2           | N/A           |
| 150kHz-30MHz CVP         | 3.2           | N/A           |
| 150kHz-30MHz Telecom-ISN | 4.4           | N/A           |

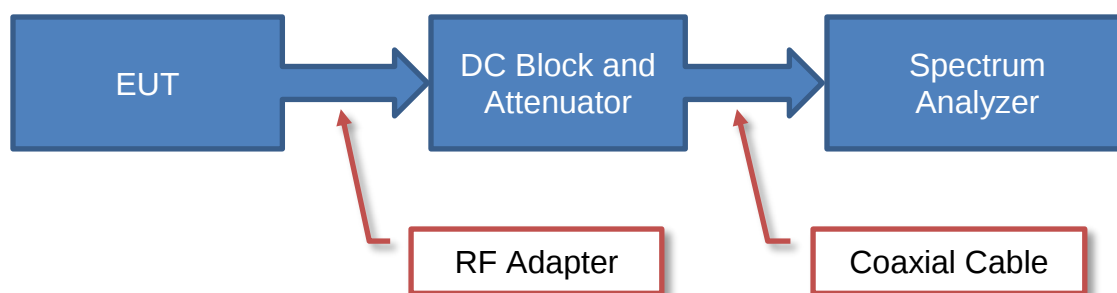
# TEST SETUP BLOCK DIAGRAMS

## Measurement Bandwidths

| Frequency Range (MHz) | Peak Data (kHz) | Quasi-Peak Data (kHz) | Average Data (kHz) |
|-----------------------|-----------------|-----------------------|--------------------|
| 0.01 - 0.15           | 1.0             | 0.2                   | 0.2                |
| 0.15 - 30.0           | 10.0            | 9.0                   | 9.0                |
| 30.0 - 1000           | 100.0           | 120.0                 | 120.0              |
| Above 1000            | 1000.0          | N/A                   | 1000.0             |

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used.

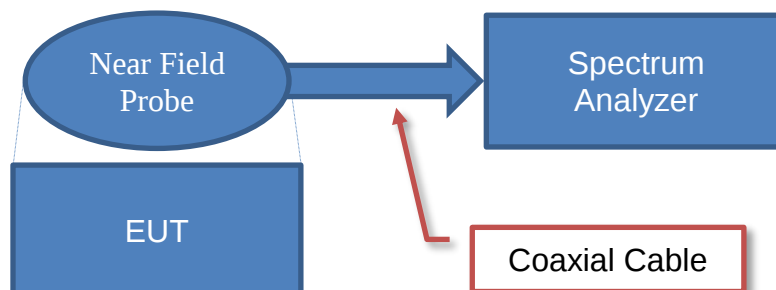
## Antenna Port Conducted Measurements



## Sample Calculation (logarithmic units)

|                |   |                |   |                        |
|----------------|---|----------------|---|------------------------|
| Measured Value |   | Measured Level |   | Reference Level Offset |
| 71.2           | = | 42.6           | + | 28.6                   |

## Near Field Test Fixture Measurements

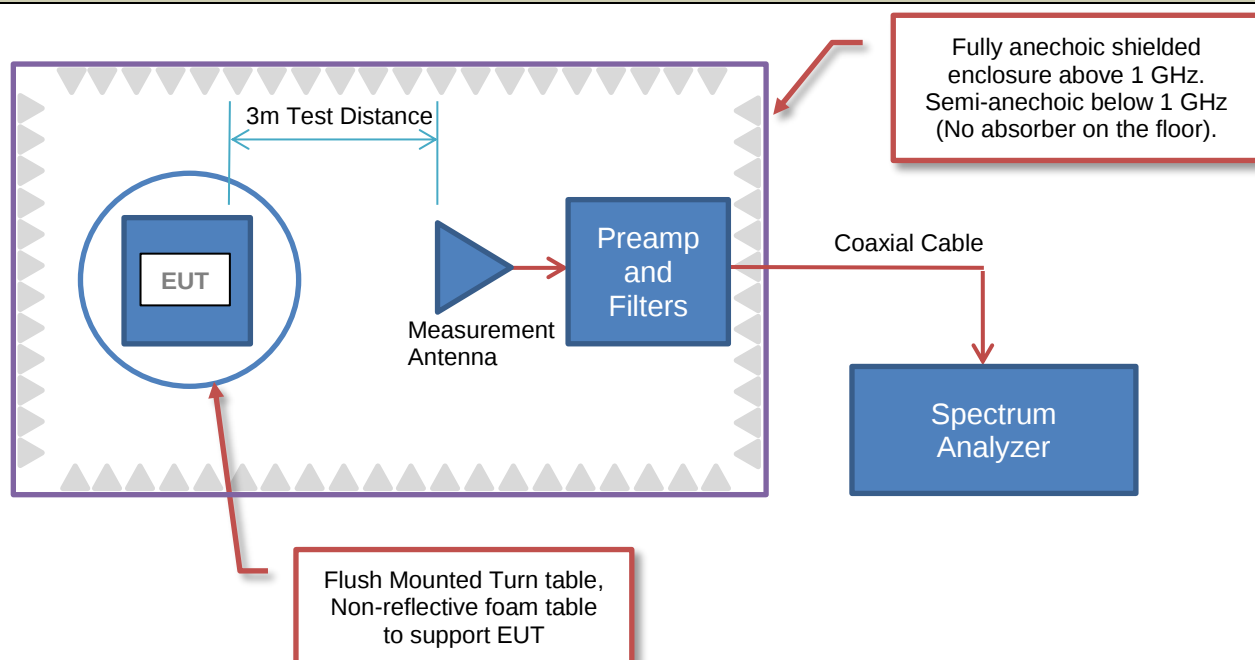


## Sample Calculation (logarithmic units)

|                |   |                |   |                        |
|----------------|---|----------------|---|------------------------|
| Measured Value |   | Measured Level |   | Reference Level Offset |
| 71.2           | = | 42.6           | + | 28.6                   |

# TEST SETUP BLOCK DIAGRAMS

## Emissions Measurements



## Sample Calculation (logarithmic units)

### Radiated Emissions:

| Measured Level<br>(Amplitude) | Factor         |              |                | Distance Adjustment Factor | External Attenuation | Field Strength |
|-------------------------------|----------------|--------------|----------------|----------------------------|----------------------|----------------|
|                               | Antenna Factor | Cable Factor | Amplifier Gain |                            |                      |                |
| 42.6                          | 28.6           | 3.1          | 40.8           | 0.0                        | 0.0                  | 33.5           |

### Conducted Emissions:

| Measured Level<br>(Amplitude) | Factor            |              | External Attenuation | Adjusted Level |
|-------------------------------|-------------------|--------------|----------------------|----------------|
|                               | Transducer Factor | Cable Factor |                      |                |
| 26.7                          | 0.3               | 0.1          | 20.0                 | 47.1           |

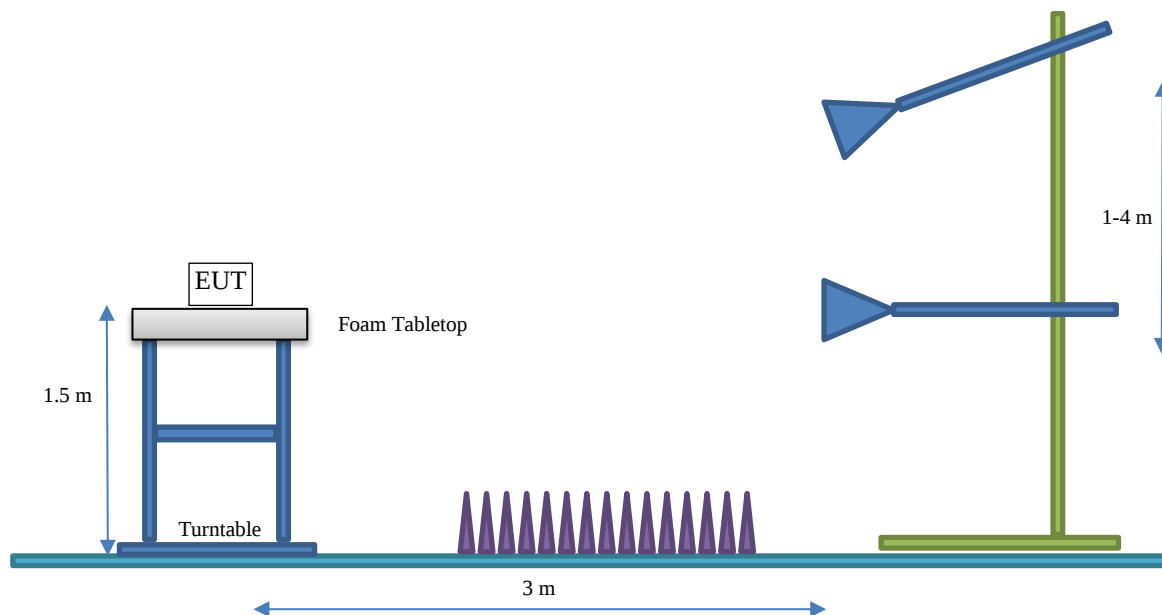
### Radiated Power (ERP/EIRP) – Substitution Method:

| Measured Level into Substitution Antenna<br>(Amplitude dBm) | Substitution Antenna Factor<br>(dBi) | EIRP to ERP<br>(if applicable) | Measured power<br>(dBm ERP/EIRP) |
|-------------------------------------------------------------|--------------------------------------|--------------------------------|----------------------------------|
| 10.0                                                        | 6.0                                  | 2.15                           | 13.9/16.0                        |

# TEST SETUP BLOCK DIAGRAMS

## Bore Sighting (>1GHz)

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.



# PRODUCT DESCRIPTION

## Client and Equipment under Test (EUT) Information

|                                 |                            |
|---------------------------------|----------------------------|
| <b>Company Name:</b>            | IrriGreen, Inc.            |
| <b>Address:</b>                 | 5250 West 73rd Street      |
| <b>City, State, Zip:</b>        | Edina, MN 55439            |
| <b>Test Requested By:</b>       | Gary Klinefelter           |
| <b>EUT:</b>                     | Controller 3, Model 705101 |
| <b>First Date of Test:</b>      | July 22, 2024              |
| <b>Last Date of Test:</b>       | September 13, 2024         |
| <b>Receipt Date of Samples:</b> | July 22, 2024              |
| <b>Equipment Design Stage:</b>  | Production                 |
| <b>Equipment Condition:</b>     | No Damage                  |
| <b>Purchase Authorization:</b>  | Verified                   |

## Information Provided by the Party Requesting the Test

### Functional Description of the EUT:

The controller is labeled as a "Controller 3" with an IrriGreen sprinkler model 705101.

The controller contains three radio types:

- BLE
- 2.4 GHz Wi-Fi
- 5 GHz Wi-Fi. The 5 GHz Wi-Fi supports UNII-1 and UNII-3 bands.

The BLE radio uses a PCB Trace antenna.

Wi-Fi has a software-controlled diversity switch that changes the path to two identical antennas placed in two different orientations. The antennas are Shenzhen Keesun Technology Co. Ltd., EM60 PCB antennas. Only one antenna can actively transmit at a time.

This report is specific to the 2.4 GHz Wi-Fi radio.

### Testing Objective:

To demonstrate compliance of the Wi-Fi 802.11 a/b/g/n SISO radio under FCC 15.247 for operation in the 2.4 GHz band.

# POWER SETTINGS AND ANTENNAS



The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information. The power settings below reflect the maximum power that the EUT is allowed to transmit at during normal operation.

## ANTENNA GAIN (dBi)

| Antenna | Type | Provided by:                        | Part Number | Frequency Range (MHz) | Gain (dBi) |
|---------|------|-------------------------------------|-------------|-----------------------|------------|
| Ant. 1  | PCB  | Shenzhen Keesun Technology Co. Ltd. | EM60        | 2400-2480             | 3.48       |
| Ant. 2  | PCB  | Shenzhen Keesun Technology Co. Ltd. | EM60        | 2400-2480             | 3.48       |

The EUT is a SISO radio which contains an RF switch connecting Ant. 1 and Ant. 2 to the RF path. This switch is for diversity purposes only and does not allow for simultaneous transmissions.

The EUT was tested using the power settings provided by the manufacturer which were based upon:

- ☒ Test software settings      Test software/firmware installed on EUT: CC31XX/CC32XX Radio Tool V1.0.3.19  
☐ Rated power settings

## SETTINGS FOR ALL TESTS IN THIS REPORT

| Modulation Types | Data Rates               | Channel Bandwidths (MHz) | Channel Position (20 MHz Ch.)   | Frequency Range (MHz) | Power Setting* |
|------------------|--------------------------|--------------------------|---------------------------------|-----------------------|----------------|
| DSSS             | 1 Mbps                   | 20                       | Low (1)<br>Mid (6)<br>High (11) | 2412<br>2437<br>2462  | 0              |
| CCK              | 11 Mbps                  | 20                       | Low (1)<br>Mid (6)<br>High (11) | 2412<br>2437<br>2462  | 0              |
| OFDM             | 6 Mbps, 36 Mbps, 54 Mbps | 20                       | Low (1)<br>Mid (6)<br>High (11) | 2412<br>2437<br>2462  | 0              |
| BPSK             | MCS0                     | 20                       | Low (1)<br>Mid (6)<br>High (11) | 2412<br>2437<br>2462  | 0              |
| 64-QAM           | MCS7                     | 20                       | Low (1)<br>Mid (6)<br>High (11) | 2412<br>2437<br>2462  | 0              |

\*The power setting indicates the amount of attenuation the radio control software adds to the RF path. A value of 0 indicates that no additional attenuation was added. The radio firmware installed on the EUT sets the RF power level (dBm) for channel 1 to a value that is 6 dB lower than the other channels.

# CONFIGURATIONS



## Configuration IRR0024-1

| Software/Firmware Running During Test |          |
|---------------------------------------|----------|
| Description                           | Version  |
| CC31XX/CC32XX Radio Tool              | 1.0.3.19 |

| EUT                  |               |                            |                   |
|----------------------|---------------|----------------------------|-------------------|
| Description          | Manufacturer  | Model/Part Number          | Serial Number     |
| Sprinkler Controller | Irrigreen Inc | Controller 3, Model 705101 | 1C:63:49:9D:4E:DC |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| Laptop                                          | Dell         | Vostro 15 3530    | 7PC3424       |
| AC Adapter                                      | Dell         | LA65NS2-01        | None          |
| Developer Kit                                   | Ti           | LP-EDS110ET       | None          |

| Cables        |        |            |         |                      |               |
|---------------|--------|------------|---------|----------------------|---------------|
| Cable Type    | Shield | Length (m) | Ferrite | Connection 1         | Connection 2  |
| AC Power      | No     | 4.5        | No      | Sprinkler Controller | AC mains      |
| USB C         | Yes    | 0.5        | No      | Developer Kit        | USB Extension |
| USB Extension | Yes    | 2.9        | No      | USB C                | Laptop        |
| AC Power      | No     | 0.9        | No      | AC Mains             | AC Adapter    |
| Flex cable    | No     | 0.2        | No      | Sprinkler Controller | Developer Kit |
| DC Power      | No     | 1.8        | Yes     | AC Adapter           | Laptop        |

# CONFIGURATIONS



## Configuration IRR0024-8

| Software/Firmware Running During Test |          |
|---------------------------------------|----------|
| Description                           | Version  |
| CC31XX/CC32XX Radio Tool              | 1.0.3.19 |

| EUT                  |               |                            |                   |
|----------------------|---------------|----------------------------|-------------------|
| Description          | Manufacturer  | Model/Part Number          | Serial Number     |
| Sprinkler Controller | Irrigreen Inc | Controller 3, Model 705101 | 1C:63:49:9D:33:FF |

| Peripherals in Test Setup Boundary |              |                   |               |
|------------------------------------|--------------|-------------------|---------------|
| Description                        | Manufacturer | Model/Part Number | Serial Number |
| Laptop                             | Dell         | Vostro 15 3530    | 7PC3424       |
| AC Adapter                         | Dell         | LA65NS2-01        | None          |
| Developer Kit                      | Ti           | CC-2652-R7        | None          |

| Cables       |        |            |         |                      |               |
|--------------|--------|------------|---------|----------------------|---------------|
| Cable Type   | Shield | Length (m) | Ferrite | Connection 1         | Connection 2  |
| AC Power     | No     | 4.5        | No      | Sprinkler Controller | AC mains      |
| AC Power     | No     | 0.9        | No      | AC Mains             | AC Adapter    |
| Ribbon Cable | No     | 0.1        | No      | Sprinkler Controller | Developer Kit |
| Micro USB    | Yes    | 0.9        | No      | Developer Kit        | Laptop        |
| DC Power     | No     | 1.8        | Yes     | AC Adapter           | Laptop        |

# CONFIGURATIONS



## Configuration IRR0024-9

| Software/Firmware Running During Test |          |
|---------------------------------------|----------|
| Description                           | Version  |
| CC31XX/CC32XX Radio Tool              | 1.0.3.19 |

| EUT                  |               |                            |                   |
|----------------------|---------------|----------------------------|-------------------|
| Description          | Manufacturer  | Model/Part Number          | Serial Number     |
| Sprinkler Controller | Irrigreen Inc | Controller 3, Model 705101 | 1C:63:49:9D:4E:DC |

| Remote Equipment Outside of Test Setup Boundary |               |                   |               |
|-------------------------------------------------|---------------|-------------------|---------------|
| Description                                     | Manufacturer  | Model/Part Number | Serial Number |
| Laptop                                          | Dell          | Vostro 15 3530    | 7PC3424       |
| Developer Kit                                   | Ti            | LP-EDS110ET       | None          |
| Sprinkler Head                                  | Irrigreen Inc | 400104            | None          |

| Cables     |        |            |         |                      |               |
|------------|--------|------------|---------|----------------------|---------------|
| Cable Type | Shield | Length (m) | Ferrite | Connection 1         | Connection 2  |
| AC Power   | No     | 4.5        | No      | Sprinkler Controller | AC mains      |
| Flex cable | No     | 0.2        | No      | Sprinkler Controller | Developer Kit |
| USB C      | Yes    | 0.5        | No      | Developer Kit        | Laptop        |
| I/O Cable  | No     | 15.2       | No      | Sprinkler Controller | Sprinkler     |

# MODIFICATIONS

## Equipment Modifications

| Item | Date       | Test                                | Modification                         | Note                                                                | Disposition of EUT                          |
|------|------------|-------------------------------------|--------------------------------------|---------------------------------------------------------------------|---------------------------------------------|
| 1    | 2024-07-26 | DTS Bandwidth (6 dB)                | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 2    | 2024-07-26 | Power Spectral Density              | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 3    | 2024-07-26 | Occupied Bandwidth (99%)            | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 4    | 2024-08-21 | Band Edge Compliance                | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 5    | 2024-08-21 | Spurious Conducted Emissions        | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed.            |
| 6    | 2024-09-10 | Duty Cycle                          | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 7    | 2024-09-10 | Output Power                        | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 8    | 2024-09-10 | Equivalent Isotropic Radiated Power | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 9    | 2024-09-11 | Spurious Radiated Emissions         | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 10   | 2024-07-24 | Powerline Conducted Emissions       | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed.            |

# POWERLINE CONDUCTED EMISSIONS

## TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## TEST EQUIPMENT

| Description                      | Manufacturer      | Model              | ID   | Last Cal.  | Cal. Due   |
|----------------------------------|-------------------|--------------------|------|------------|------------|
| Receiver                         | Gauss Instruments | TDEMI 30M          | ARN  | 2024-05-22 | 2025-05-22 |
| Cable - Conducted Cable Assembly | Northwest EMC     | EVG, HHD, RKT, VAB | EVGA | 2024-04-19 | 2025-04-19 |
| LISN                             | Solar Electronics | 9252-50-R-24-BNC   | LIR  | 2024-09-13 | 2025-09-13 |

## CONFIGURATIONS INVESTIGATED

IRRI0024-3

## MODES INVESTIGATED

Transmitting 802.11b, 1 Mbps, Ch. 6 = 2437 MHz, Ant. 1

# POWERLINE CONDUCTED EMISSIONS



|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:4E:DC          | Date:                 | 2024-09-13 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 21.9°C     |
| Attendees:        | None                       | Relative Humidity:    | 48%        |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1015 mb    |
| Tested By:        | Jeff Alcock                | Job Site:             | EV01       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-9 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.207:2024 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |    |       |         |                             |   |
|--------|----|-------|---------|-----------------------------|---|
| Run #: | 20 | Line: | Neutral | Add. Ext. Attenuation (dB): | 0 |
|--------|----|-------|---------|-----------------------------|---|

## COMMENTS

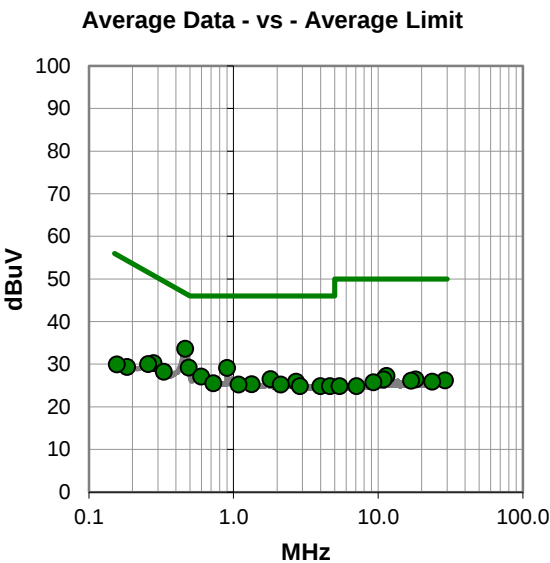
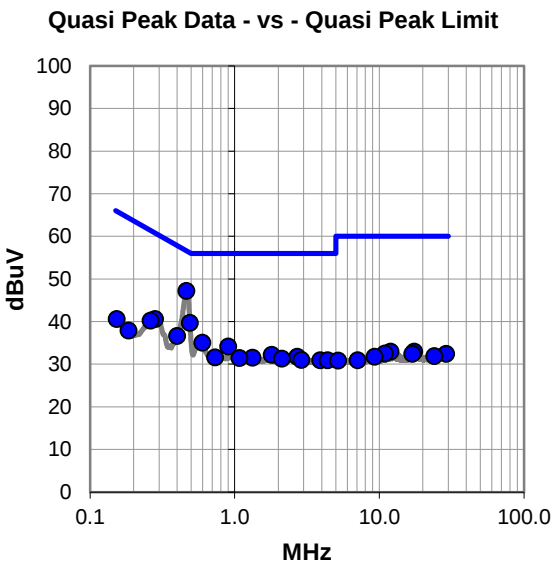
|                                                     |
|-----------------------------------------------------|
| Unable to bundle I/O cable due to excessive length. |
|-----------------------------------------------------|

## EUT OPERATING MODES

|                                                        |
|--------------------------------------------------------|
| Transmitting 802.11b, 1 Mbps, Ch. 6 = 2437 MHz, Ant. 1 |
|--------------------------------------------------------|

## DEVIATIONS FROM TEST STANDARD

|      |
|------|
| None |
|------|



# POWERLINE CONDUCTED EMISSIONS

## RESULTS - Run #20

Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 0.464      | 27.3        | 19.9        | 47.2            | 56.6               | -9.4        |
| 0.490      | 19.8        | 19.9        | 39.7            | 56.2               | -16.5       |
| 0.281      | 20.7        | 19.9        | 40.6            | 60.8               | -20.2       |
| 0.597      | 15.1        | 19.9        | 35.0            | 56.0               | -21.0       |
| 0.263      | 20.3        | 19.9        | 40.2            | 61.3               | -21.1       |
| 0.400      | 16.7        | 19.9        | 36.6            | 57.8               | -21.2       |
| 0.902      | 14.1        | 20.0        | 34.1            | 56.0               | -21.9       |
| 1.804      | 12.2        | 20.0        | 32.2            | 56.0               | -23.8       |
| 2.706      | 11.6        | 20.1        | 31.7            | 56.0               | -24.3       |
| 0.733      | 11.7        | 19.9        | 31.6            | 56.0               | -24.4       |
| 1.331      | 11.5        | 20.0        | 31.5            | 56.0               | -24.5       |
| 1.078      | 11.4        | 20.0        | 31.4            | 56.0               | -24.6       |
| 2.126      | 11.2        | 20.1        | 31.3            | 56.0               | -24.7       |
| 2.895      | 10.9        | 20.1        | 31.0            | 56.0               | -25.0       |
| 3.910      | 10.6        | 20.3        | 30.9            | 56.0               | -25.1       |
| 4.396      | 10.6        | 20.3        | 30.9            | 56.0               | -25.1       |
| 0.153      | 20.5        | 20.1        | 40.6            | 65.8               | -25.2       |
| 0.185      | 17.9        | 20.0        | 37.9            | 64.3               | -26.4       |
| 12.002     | 12.2        | 20.7        | 32.9            | 60.0               | -27.1       |
| 17.482     | 11.7        | 21.2        | 32.9            | 60.0               | -27.1       |
| 10.913     | 11.8        | 20.7        | 32.5            | 60.0               | -27.5       |
| 16.909     | 11.2        | 21.2        | 32.4            | 60.0               | -27.6       |
| 29.014     | 10.1        | 22.3        | 32.4            | 60.0               | -27.6       |
| 24.003     | 10.2        | 21.7        | 31.9            | 60.0               | -28.1       |
| 9.277      | 11.2        | 20.5        | 31.7            | 60.0               | -28.3       |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 0.463      | 13.7        | 19.9        | 33.6            | 46.6               | -13.0       |
| 0.902      | 9.1         | 20.0        | 29.1            | 46.0               | -16.9       |
| 0.490      | 9.3         | 19.9        | 29.2            | 46.2               | -17.0       |
| 0.597      | 7.2         | 19.9        | 27.1            | 46.0               | -18.9       |
| 1.804      | 6.5         | 20.0        | 26.5            | 46.0               | -19.5       |
| 2.704      | 5.8         | 20.1        | 25.9            | 46.0               | -20.1       |
| 0.727      | 5.6         | 19.9        | 25.5            | 46.0               | -20.5       |
| 0.280      | 10.3        | 19.9        | 30.2            | 50.8               | -20.6       |
| 1.339      | 5.3         | 20.0        | 25.3            | 46.0               | -20.7       |
| 1.082      | 5.2         | 20.0        | 25.2            | 46.0               | -20.8       |
| 2.123      | 5.1         | 20.1        | 25.2            | 46.0               | -20.8       |
| 2.881      | 4.7         | 20.1        | 24.8            | 46.0               | -21.2       |
| 4.000      | 4.5         | 20.3        | 24.8            | 46.0               | -21.2       |
| 4.654      | 4.5         | 20.3        | 24.8            | 46.0               | -21.2       |
| 0.330      | 8.3         | 19.9        | 28.2            | 49.5               | -21.3       |
| 0.257      | 10.1        | 19.9        | 30.0            | 51.5               | -21.5       |
| 11.458     | 6.5         | 20.7        | 27.2            | 50.0               | -22.8       |
| 10.913     | 5.7         | 20.7        | 26.4            | 50.0               | -23.6       |
| 18.182     | 5.2         | 21.2        | 26.4            | 50.0               | -23.6       |
| 28.959     | 3.9         | 22.3        | 26.2            | 50.0               | -23.8       |
| 16.911     | 4.9         | 21.2        | 26.1            | 50.0               | -23.9       |
| 23.637     | 4.3         | 21.6        | 25.9            | 50.0               | -24.1       |
| 9.274      | 5.2         | 20.5        | 25.7            | 50.0               | -24.3       |
| 0.184      | 9.3         | 20.0        | 29.3            | 54.3               | -25.0       |
| 5.409      | 4.5         | 20.3        | 24.8            | 50.0               | -25.2       |

## CONCLUSION

Pass



Tested By

# POWERLINE CONDUCTED EMISSIONS

|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:4E:DC          | Date:                 | 2024-09-13 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 21.9°C     |
| Attendees:        | None                       | Relative Humidity:    | 48%        |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1015 mb    |
| Tested By:        | Jeff Alcock                | Job Site:             | EV01       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-9 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.207:2024 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |    |       |           |                             |   |
|--------|----|-------|-----------|-----------------------------|---|
| Run #: | 21 | Line: | High Line | Add. Ext. Attenuation (dB): | 0 |
|--------|----|-------|-----------|-----------------------------|---|

## COMMENTS

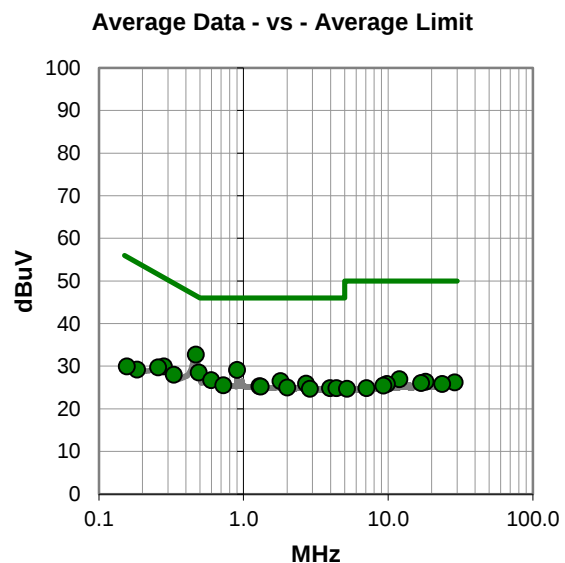
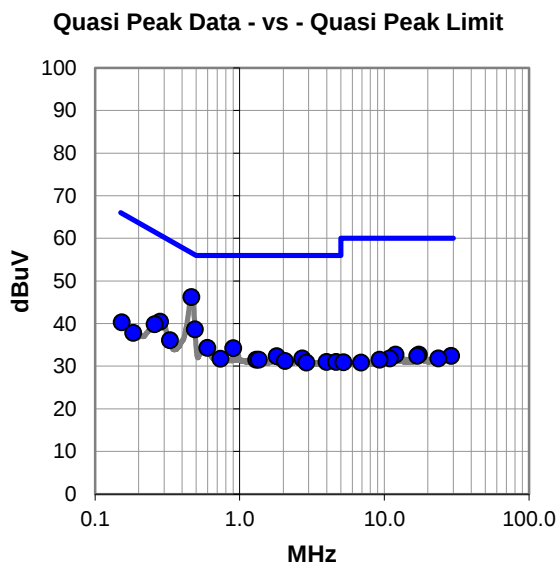
|                                                     |
|-----------------------------------------------------|
| Unable to bundle I/O cable due to excessive length. |
|-----------------------------------------------------|

## EUT OPERATING MODES

|                                                        |
|--------------------------------------------------------|
| Transmitting 802.11b, 1 Mbps, Ch. 6 = 2437 MHz, Ant. 1 |
|--------------------------------------------------------|

## DEVIATIONS FROM TEST STANDARD

|      |
|------|
| None |
|------|



# POWERLINE CONDUCTED EMISSIONS

## RESULTS - Run #21

Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 0.464      | 26.3        | 19.9        | 46.2            | 56.6               | -10.4       |
| 0.490      | 18.7        | 19.9        | 38.6            | 56.2               | -17.6       |
| 0.281      | 20.5        | 19.9        | 40.4            | 60.8               | -20.4       |
| 0.258      | 19.9        | 19.9        | 39.8            | 61.5               | -21.7       |
| 0.597      | 14.4        | 19.9        | 34.3            | 56.0               | -21.7       |
| 0.902      | 14.2        | 20.0        | 34.2            | 56.0               | -21.8       |
| 0.330      | 16.2        | 19.9        | 36.1            | 59.5               | -23.4       |
| 1.804      | 12.3        | 20.0        | 32.3            | 56.0               | -23.7       |
| 2.706      | 11.7        | 20.1        | 31.8            | 56.0               | -24.2       |
| 0.737      | 11.8        | 19.9        | 31.7            | 56.0               | -24.3       |
| 1.302      | 11.5        | 20.0        | 31.5            | 56.0               | -24.5       |
| 1.354      | 11.5        | 20.0        | 31.5            | 56.0               | -24.5       |
| 2.059      | 11.2        | 20.0        | 31.2            | 56.0               | -24.8       |
| 3.989      | 10.7        | 20.3        | 31.0            | 56.0               | -25.0       |
| 4.656      | 10.7        | 20.3        | 31.0            | 56.0               | -25.0       |
| 2.896      | 10.7        | 20.1        | 30.8            | 56.0               | -25.2       |
| 0.153      | 20.2        | 20.1        | 40.3            | 65.8               | -25.5       |
| 0.184      | 17.8        | 20.0        | 37.8            | 64.3               | -26.5       |
| 12.002     | 12.0        | 20.7        | 32.7            | 60.0               | -27.3       |
| 17.384     | 11.5        | 21.2        | 32.7            | 60.0               | -27.3       |
| 16.914     | 11.2        | 21.2        | 32.4            | 60.0               | -27.6       |
| 29.041     | 10.1        | 22.3        | 32.4            | 60.0               | -27.6       |
| 10.913     | 11.1        | 20.7        | 31.8            | 60.0               | -28.2       |
| 23.637     | 10.2        | 21.6        | 31.8            | 60.0               | -28.2       |
| 9.277      | 11.0        | 20.5        | 31.5            | 60.0               | -28.5       |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 0.467      | 12.8        | 19.9        | 32.7            | 46.6               | -13.9       |
| 0.902      | 9.1         | 20.0        | 29.1            | 46.0               | -16.9       |
| 0.490      | 8.6         | 19.9        | 28.5            | 46.2               | -17.7       |
| 0.597      | 6.8         | 19.9        | 26.7            | 46.0               | -19.3       |
| 1.804      | 6.5         | 20.0        | 26.5            | 46.0               | -19.5       |
| 2.706      | 5.8         | 20.1        | 25.9            | 46.0               | -20.1       |
| 0.727      | 5.6         | 19.9        | 25.5            | 46.0               | -20.5       |
| 1.288      | 5.3         | 20.0        | 25.3            | 46.0               | -20.7       |
| 1.314      | 5.2         | 20.0        | 25.2            | 46.0               | -20.8       |
| 0.281      | 10.0        | 19.9        | 29.9            | 50.8               | -20.9       |
| 2.005      | 5.0         | 20.0        | 25.0            | 46.0               | -21.0       |
| 3.972      | 4.5         | 20.3        | 24.8            | 46.0               | -21.2       |
| 4.396      | 4.5         | 20.3        | 24.8            | 46.0               | -21.2       |
| 2.881      | 4.6         | 20.1        | 24.7            | 46.0               | -21.3       |
| 0.330      | 8.1         | 19.9        | 28.0            | 49.5               | -21.5       |
| 0.257      | 9.8         | 19.9        | 29.7            | 51.5               | -21.8       |
| 12.002     | 6.2         | 20.7        | 26.9            | 50.0               | -23.1       |
| 18.182     | 5.1         | 21.2        | 26.3            | 50.0               | -23.7       |
| 28.957     | 3.9         | 22.3        | 26.2            | 50.0               | -23.8       |
| 16.913     | 4.8         | 21.2        | 26.0            | 50.0               | -24.0       |
| 9.821      | 5.3         | 20.5        | 25.8            | 50.0               | -24.2       |
| 23.637     | 4.2         | 21.6        | 25.8            | 50.0               | -24.2       |
| 9.274      | 4.9         | 20.5        | 25.4            | 50.0               | -24.6       |
| 0.184      | 9.2         | 20.0        | 29.2            | 54.3               | -25.1       |
| 7.092      | 4.4         | 20.4        | 24.8            | 50.0               | -25.2       |

## CONCLUSION

Pass

  
Tested By

# DUTY CYCLE

## TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

## TEST EQUIPMENT

| Description                  | Manufacturer       | Model                 | ID  | Last Cal.  | Cal. Due   |
|------------------------------|--------------------|-----------------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer | Agilent            | E4440A                | AAW | 2024-02-14 | 2025-02-14 |
| Block - DC                   | Fairview Microwave | SD3379                | AMX | 2024-03-16 | 2025-03-16 |
| Attenuator                   | Fairview Microwave | SA26B-20              | TWJ | 2024-03-14 | 2025-03-14 |
| Cable                        | Micro-Coax         | UFD150A-1-0720-200200 | EVK | 2024-03-13 | 2025-03-13 |
| Generator - Signal           | Keysight           | N5182B                | TEU | 2024-04-18 | 2027-04-18 |

# DUTY CYCLE

|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:33:FF          | Date:                 | 2024-09-10 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 22°C       |
| Attendees:        | None                       | Relative Humidity:    | 47.4%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1013 mbar  |
| Tested By:        | Jeff Alcock                | Job Site:             | EV06       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-8 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## COMMENTS

Reference level offset includes: DC Block, 20 dB attenuator and measurement cable

## DEVIATIONS FROM TEST STANDARD

None

## CONCLUSION

N/A

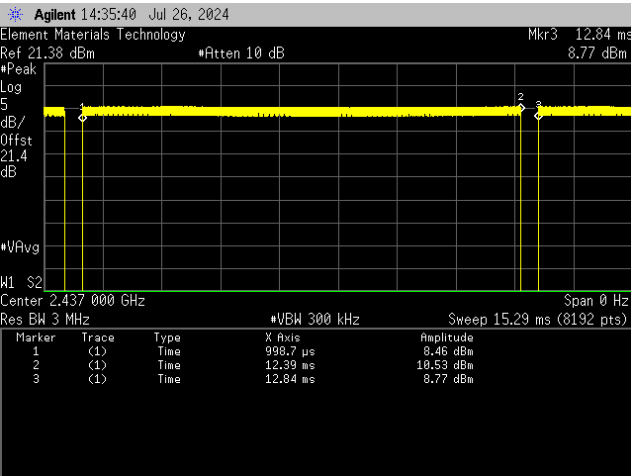


Tested By

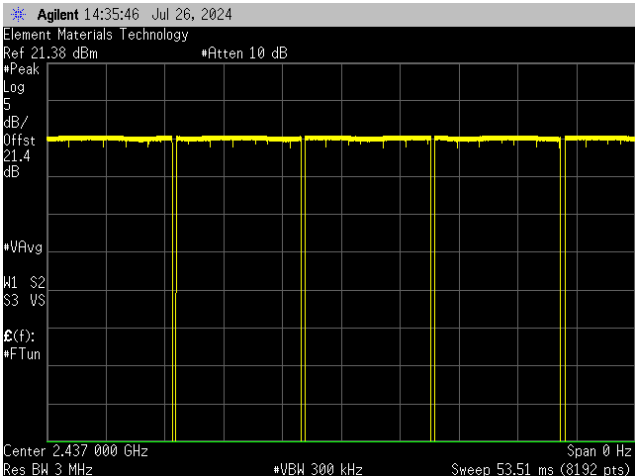
## TEST RESULTS

|                            | Pulse Width | Period    | Number of Pulses | Value (%) | Limit N/A | Results |
|----------------------------|-------------|-----------|------------------|-----------|-----------|---------|
| Antenna 2                  |             |           |                  |           |           |         |
| 802.11(b), 20 MHz, 1 Mbps  |             |           |                  |           |           |         |
| Mid Channel 6, 2437 MHz    | 11.392 ms   | 11.844 ms | 1                | 96.2      | N/A       | N/A     |
|                            | N/A         | N/A       | 5                | N/A       | N/A       | N/A     |
| 802.11(b), 20 MHz, 11 Mbps |             |           |                  |           |           |         |
| Mid Channel 6, 2437 MHz    | 1.211 ms    | 1.472 ms  | 1                | 82.2      | N/A       | N/A     |
|                            | N/A         | N/A       | 5                | N/A       | N/A       | N/A     |
| 802.11(g), 20 MHz, 6 Mbps  |             |           |                  |           |           |         |
| Mid Channel 6, 2437 MHz    | 1.892 ms    | 2.07 ms   | 1                | 91.4      | N/A       | N/A     |
|                            | N/A         | N/A       | 5                | N/A       | N/A       | N/A     |
| 802.11(g), 20 MHz, 36 Mbps |             |           |                  |           |           |         |
| Mid Channel 6, 2437 MHz    | 332.5 us    | 780.3 us  | 1                | 42.6      | N/A       | N/A     |
|                            | N/A         | N/A       | 5                | N/A       | N/A       | N/A     |
| 802.11(g), 20 MHz, 54 Mbps |             |           |                  |           |           |         |
| Mid Channel 6, 2437 MHz    | 228.744 us  | 1.633 ms  | 2                | 28.0      | N/A       | N/A     |
|                            | N/A         | N/A       | 10               | N/A       | N/A       | N/A     |
| 802.11(n), 20 MHz, MCS0    |             |           |                  |           |           |         |
| Mid Channel 6, 2437 MHz    | 1.764 ms    | 1.951 ms  | 1                | 90.4      | N/A       | N/A     |
|                            | N/A         | N/A       | 5                | N/A       | N/A       | N/A     |
| 802.11(n), 20 MHz, MCS7    |             |           |                  |           |           |         |
| Mid Channel 6, 2437 MHz    | 195.1 us    | 1.584 ms  | 2                | 24.5      | N/A       | N/A     |
|                            | N/A         | N/A       | 10               | N/A       | N/A       | N/A     |

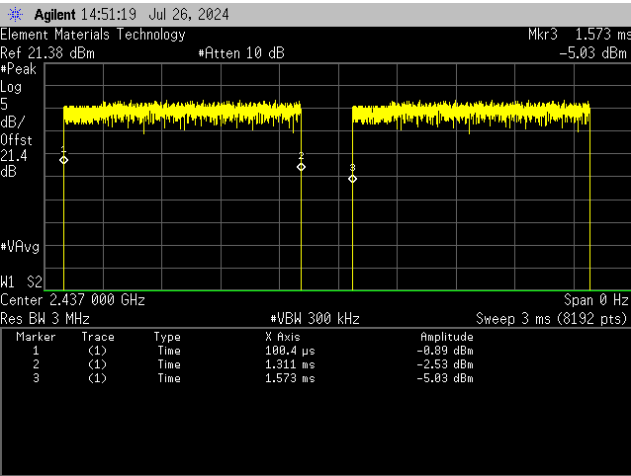
# DUTY CYCLE



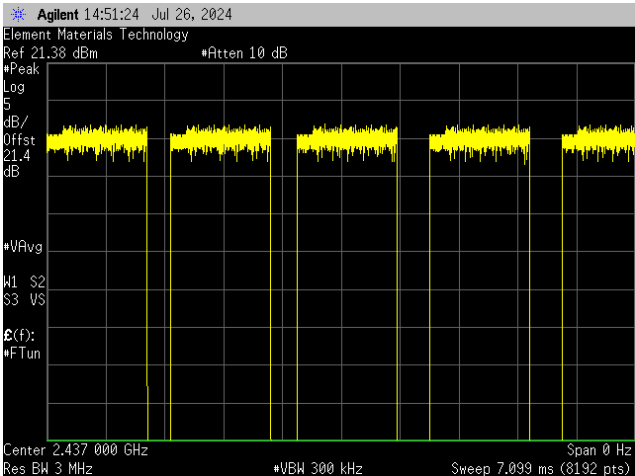
Antenna 2  
802.11(b), 20 MHz, 1 Mbps  
Mid Channel 6, 2437 MHz



Antenna 2  
802.11(b), 20 MHz, 1 Mbps  
Mid Channel 6, 2437 MHz

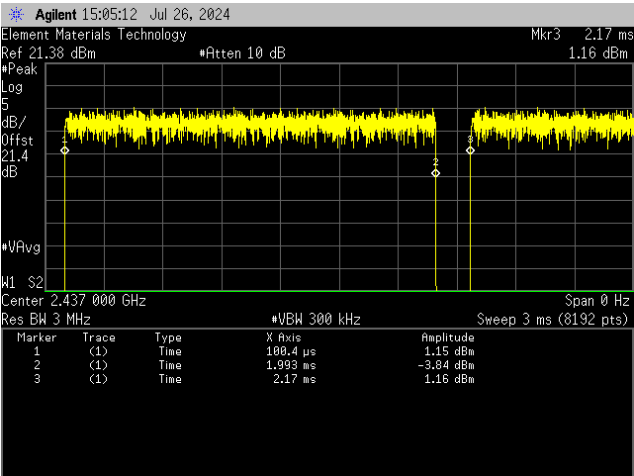


Antenna 2  
802.11(b), 20 MHz, 11 Mbps  
Mid Channel 6, 2437 MHz

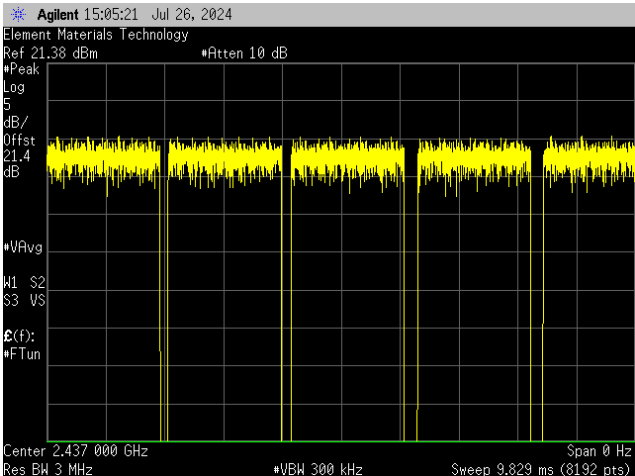


Antenna 2  
802.11(b), 20 MHz, 11 Mbps  
Mid Channel 6, 2437 MHz

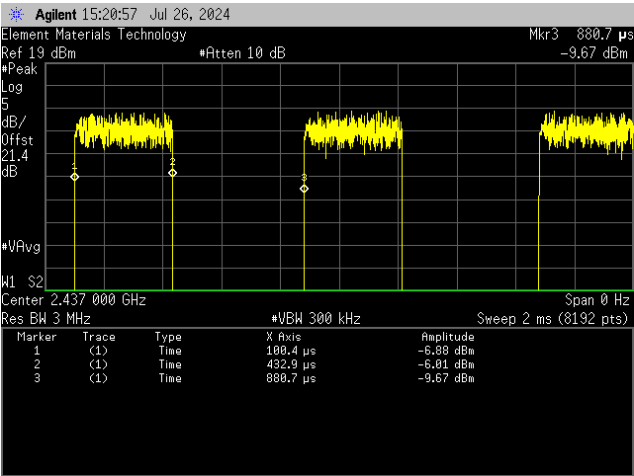
# DUTY CYCLE



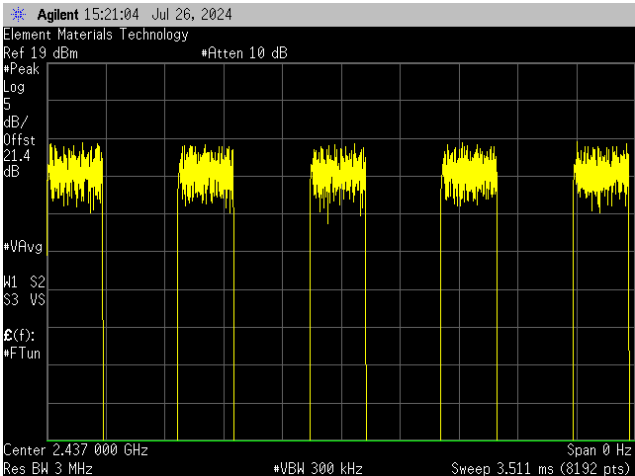
Antenna 2  
802.11(g), 20 MHz, 6 Mbps  
Mid Channel 6, 2437 MHz



Antenna 2  
802.11(g), 20 MHz, 6 Mbps  
Mid Channel 6, 2437 MHz

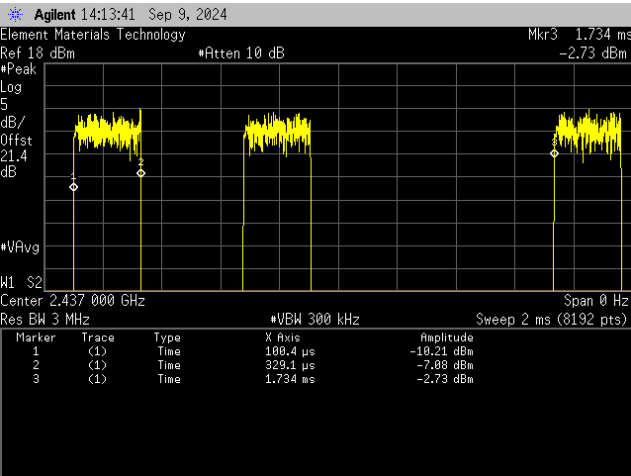


Antenna 2  
802.11(g), 20 MHz, 36 Mbps  
Mid Channel 6, 2437 MHz

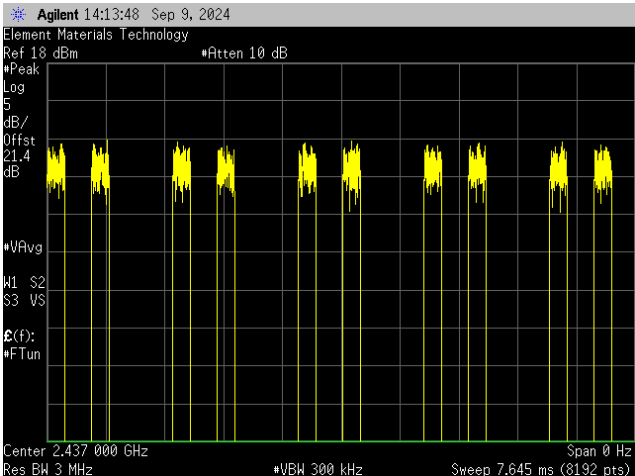


Antenna 2  
802.11(g), 20 MHz, 36 Mbps  
Mid Channel 6, 2437 MHz

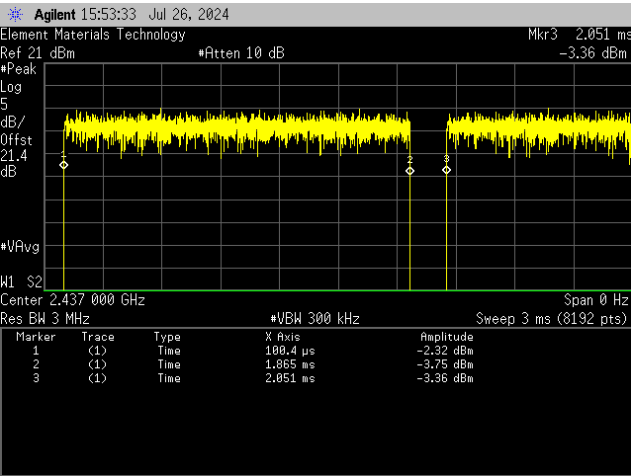
# DUTY CYCLE



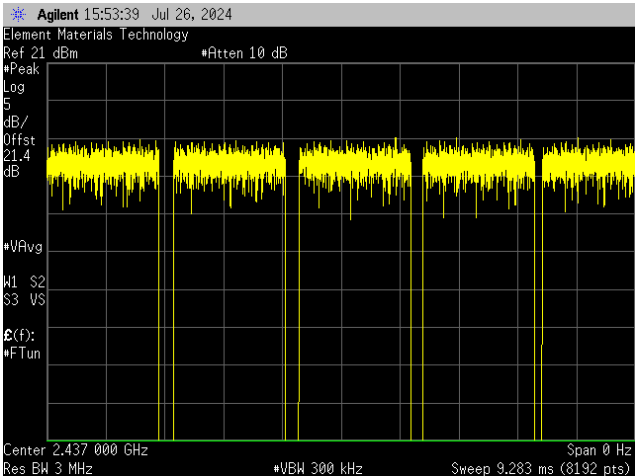
**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**Mid Channel 6, 2437 MHz**



**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**Mid Channel 6, 2437 MHz**

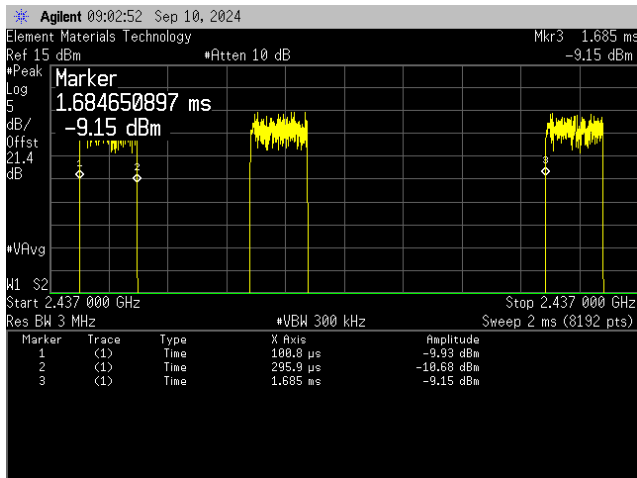


**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Mid Channel 6, 2437 MHz**

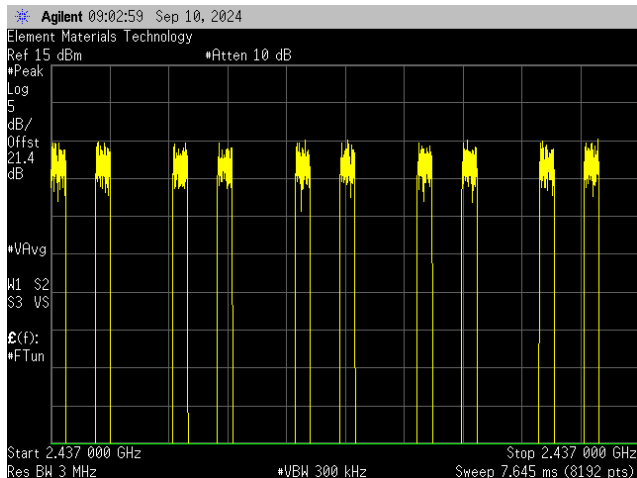


**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Mid Channel 6, 2437 MHz**

# DUTY CYCLE



Antenna 2  
802.11(n), 20 MHz, MCS7  
Mid Channel 6, 2437 MHz



Antenna 2  
802.11(n), 20 MHz, MCS7  
Mid Channel 6, 2437 MHz

# DTS BANDWIDTH (6dB)

## TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The EUT was set to the channels and modes listed in the datasheet.

The 6dB DTS bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

## TEST EQUIPMENT

| Description                  | Manufacturer       | Model                 | ID  | Last Cal.  | Cal. Due   |
|------------------------------|--------------------|-----------------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer | Agilent            | E4440A                | AAW | 2024-02-14 | 2025-02-14 |
| Cable                        | Micro-Coax         | UFD150A-1-0720-200200 | EVI | 2023-11-22 | 2024-11-22 |
| Attenuator                   | S.M. Electronics   | SA26B-20              | AUY | 2024-03-13 | 2025-03-13 |
| Block - DC                   | Fairview Microwave | SD3379                | AMW | 2024-03-13 | 2025-03-13 |
| Generator - Signal           | Keysight           | N5182B                | TEU | 2024-04-18 | 2027-04-18 |

# DTS BANDWIDTH (6dB)



|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:4E:DC          | Date:                 | 2024-07-26 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 22.3°C     |
| Attendees:        | None                       | Relative Humidity:    | 51.3%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1016 mbar  |
| Tested By:        | Christopher Ladwig         | Job Site:             | EV06       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-3 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## COMMENTS

Reference level offset includes: DC block, 20 dB attenuator and measurement cable.  
Measurements performed on the antenna port that has the highest conducted output power.

## DEVIATIONS FROM TEST STANDARD

None

## CONCLUSION

Pass

Tested By

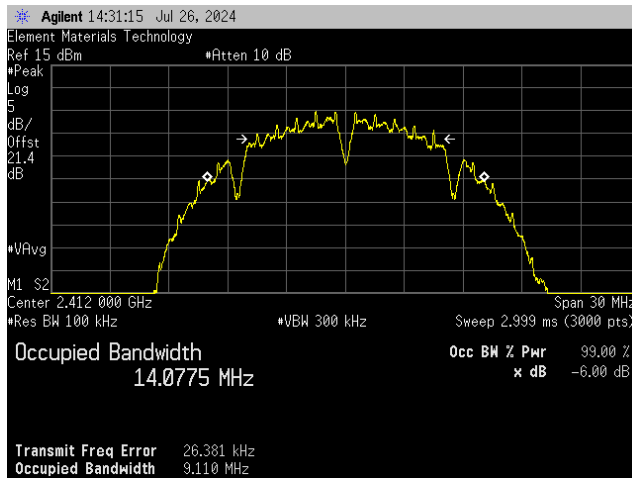
## TEST RESULTS

| Limit                      |            |         |      |
|----------------------------|------------|---------|------|
| Antenna 2                  |            |         |      |
| 802.11(b), 20 MHz, 1 Mbps  |            |         |      |
| Low Channel 1, 2412 MHz    | 9.11 MHz   | 500 kHz | Pass |
| Mid Channel 6, 2437 MHz    | 9.101 MHz  | 500 kHz | Pass |
| High Channel 11, 2462 MHz  | 9.102 MHz  | 500 kHz | Pass |
| 802.11(b), 20 MHz, 11 Mbps |            |         |      |
| Low Channel 1, 2412 MHz    | 9.5 MHz    | 500 kHz | Pass |
| Mid Channel 6, 2437 MHz    | 9.473 MHz  | 500 kHz | Pass |
| High Channel 11, 2462 MHz  | 9.624 MHz  | 500 kHz | Pass |
| 802.11(g), 20 MHz, 6 Mbps  |            |         |      |
| Low Channel 1, 2412 MHz    | 13.791 MHz | 500 kHz | Pass |
| Mid Channel 6, 2437 MHz    | 14.464 MHz | 500 kHz | Pass |
| High Channel 11, 2462 MHz  | 14.884 MHz | 500 kHz | Pass |
| 802.11(g), 20 MHz, 36 Mbps |            |         |      |
| Low Channel 1, 2412 MHz    | 16.468 MHz | 500 kHz | Pass |
| Mid Channel 6, 2437 MHz    | 16.429 MHz | 500 kHz | Pass |
| High Channel 11, 2462 MHz  | 16.442 MHz | 500 kHz | Pass |
| 802.11(g), 20 MHz, 54 Mbps |            |         |      |
| Low Channel 1, 2412 MHz    | 16.445 MHz | 500 kHz | Pass |
| Mid Channel 6, 2437 MHz    | 16.49 MHz  | 500 kHz | Pass |
| High Channel 11, 2462 MHz  | 16.392 MHz | 500 kHz | Pass |
| 802.11(n), 20 MHz, MCS0    |            |         |      |

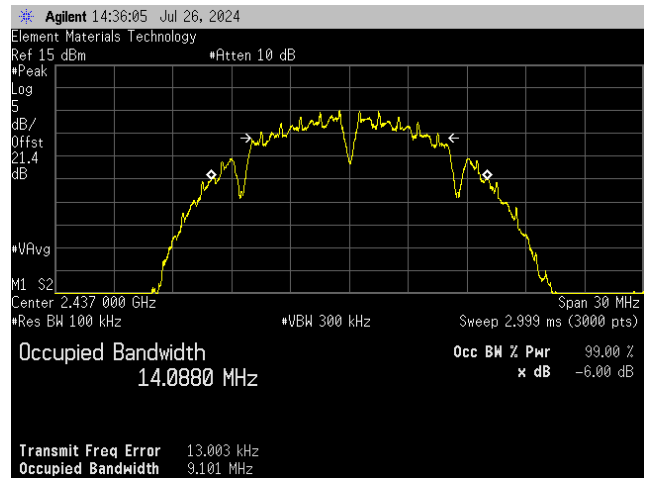
# DTS BANDWIDTH (6dB)

| Limit                     |            |         |      |
|---------------------------|------------|---------|------|
| Low Channel 1, 2412 MHz   | 15.065 MHz | 500 kHz | Pass |
| Mid Channel 6, 2437 MHz   | 13.599 MHz | 500 kHz | Pass |
| High Channel 11, 2462 MHz | 15.099 MHz | 500 kHz | Pass |
| 802.11(n), 20 MHz, MCS7   |            |         |      |
| Low Channel 1, 2412 MHz   | 17.586 MHz | 500 kHz | Pass |
| Mid Channel 6, 2437 MHz   | 17.601 MHz | 500 kHz | Pass |
| High Channel 11, 2462 MHz | 17.652 MHz | 500 kHz | Pass |

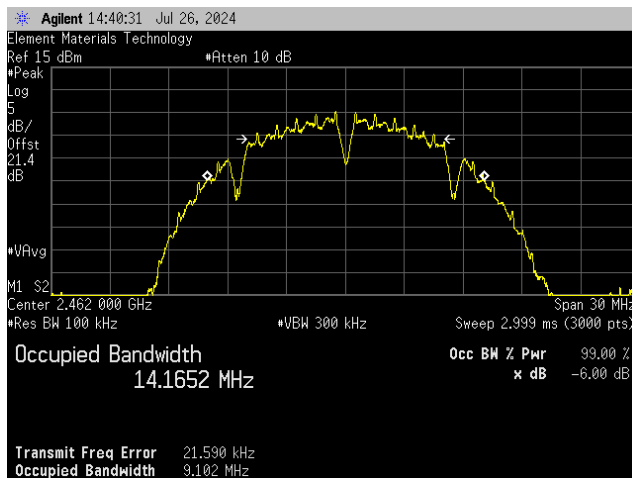
# DTS BANDWIDTH (6dB)



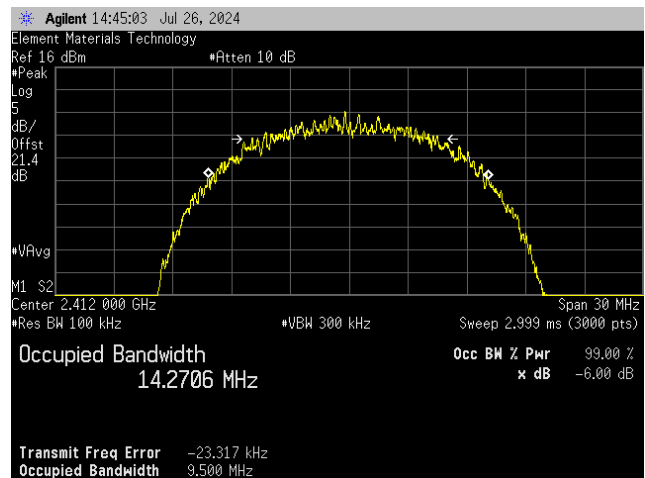
**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Mid Channel 6, 2437 MHz**

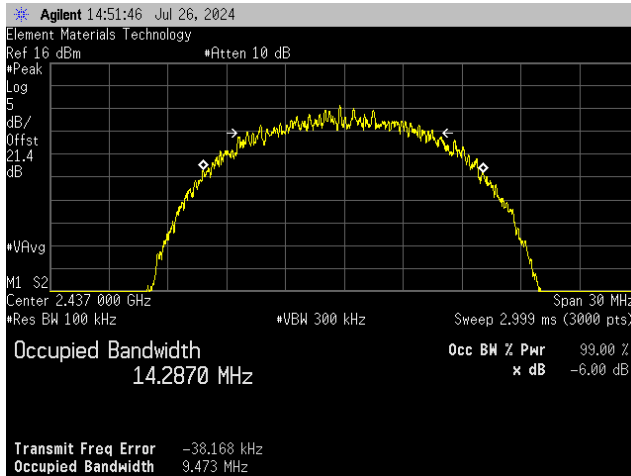


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**High Channel 11, 2462 MHz**

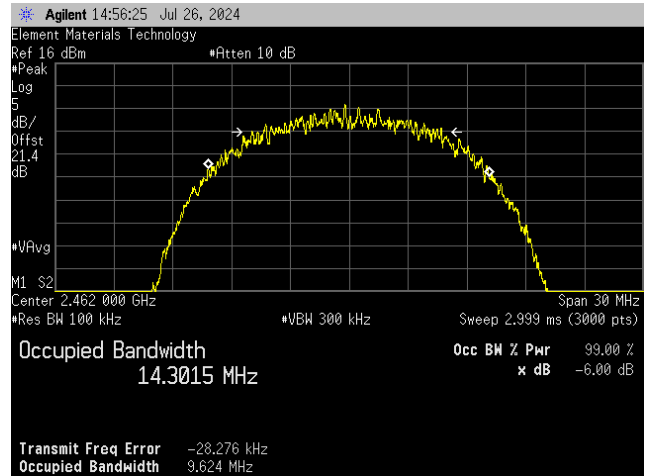


**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**Low Channel 1, 2412 MHz**

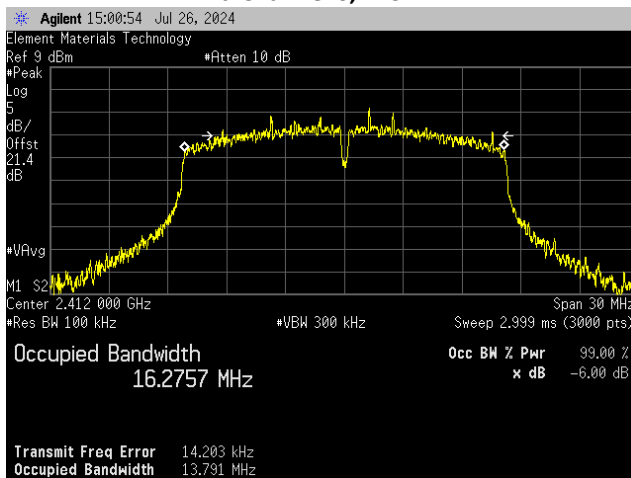
# DTS BANDWIDTH (6dB)



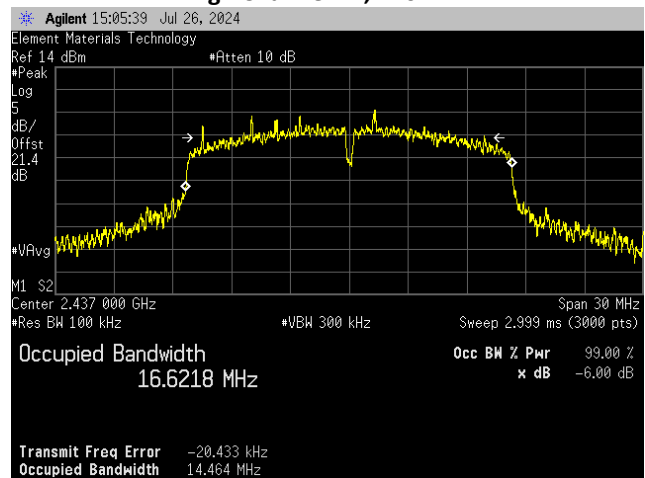
**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**Mid Channel 6, 2437 MHz**



**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**High Channel 11, 2462 MHz**

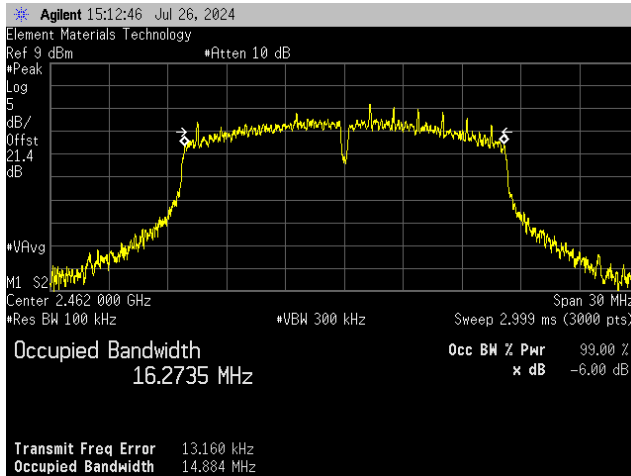


**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Low Channel 1, 2412 MHz**

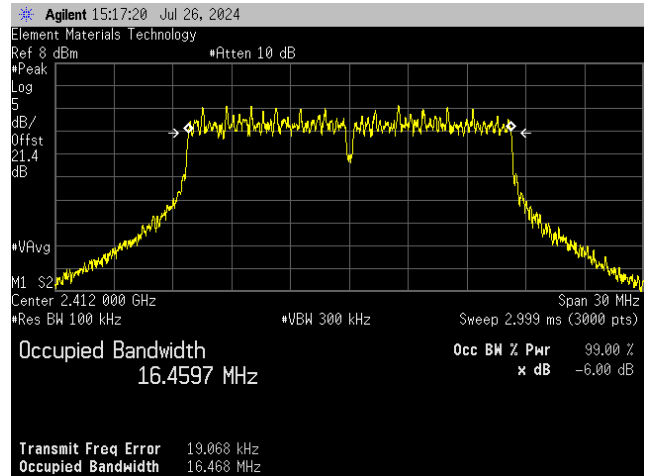


**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Mid Channel 6, 2437 MHz**

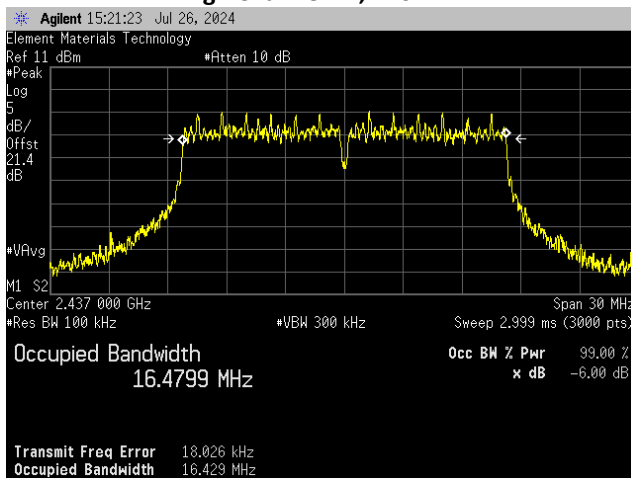
# DTS BANDWIDTH (6dB)



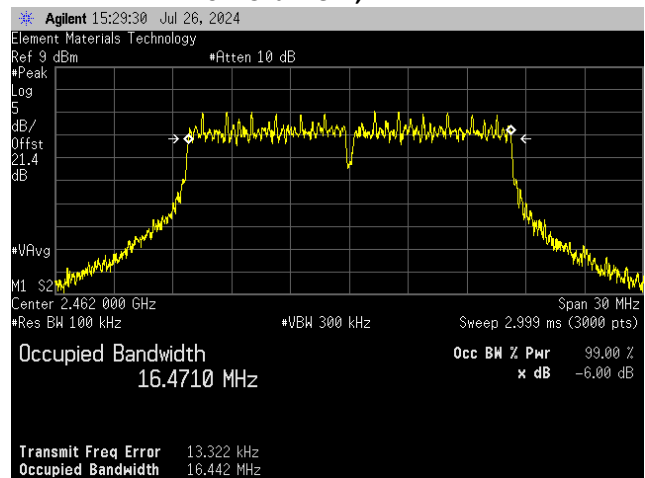
**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**High Channel 11, 2462 MHz**



**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**Low Channel 1, 2412 MHz**

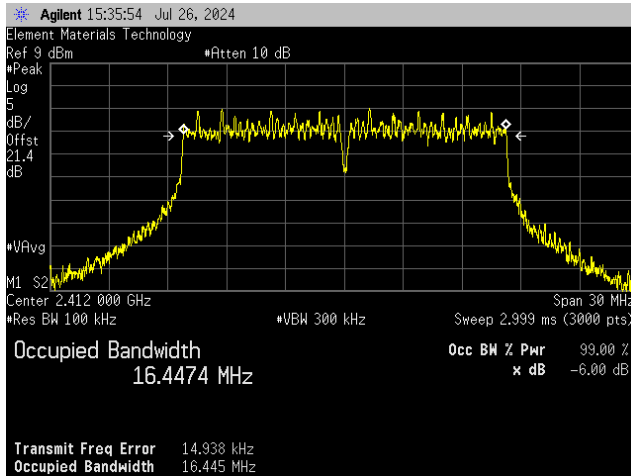


**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**Mid Channel 6, 2437 MHz**

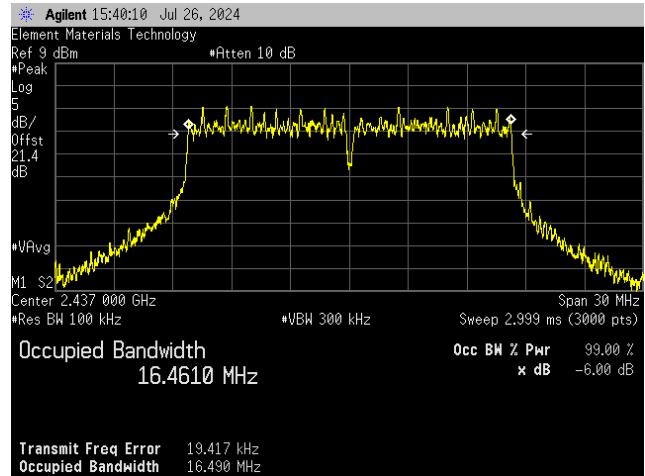


**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**High Channel 11, 2462 MHz**

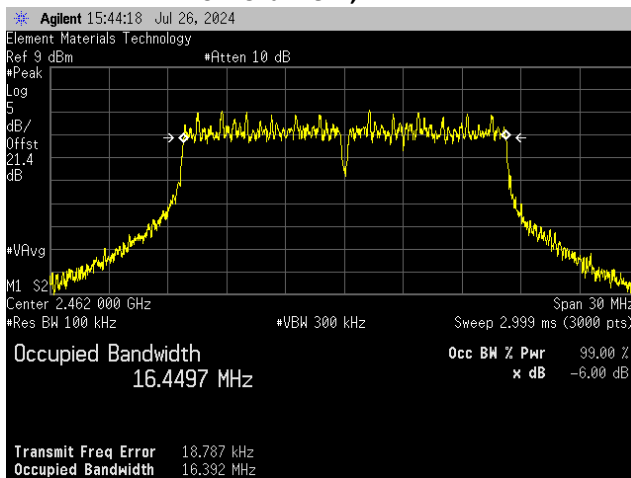
# DTS BANDWIDTH (6dB)



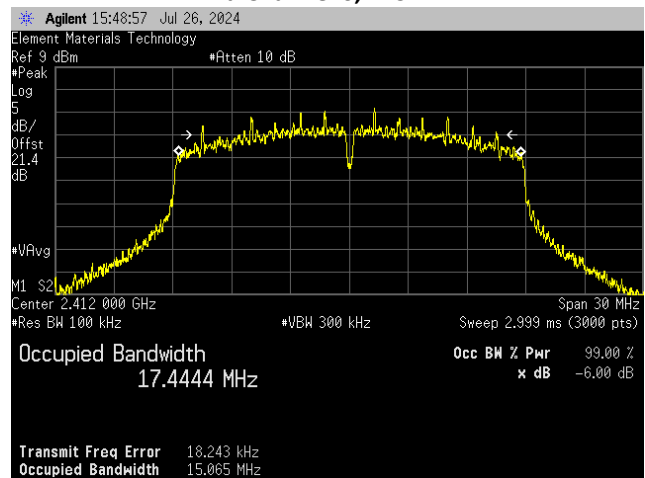
**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**Mid Channel 6, 2437 MHz**

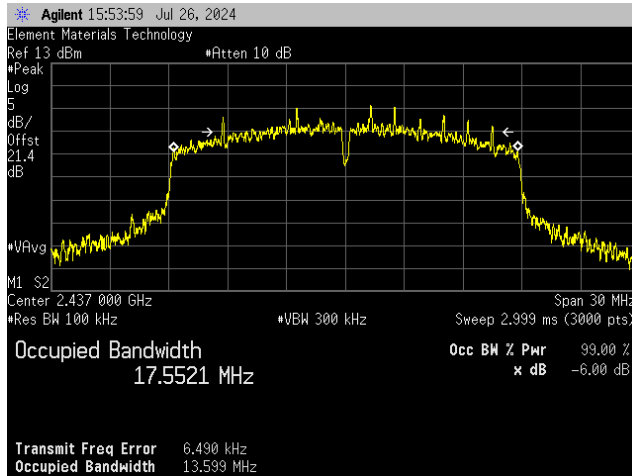


**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**High Channel 11, 2462 MHz**

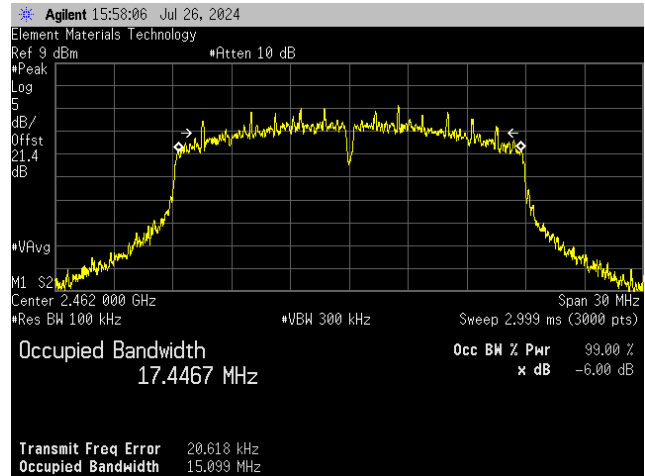


**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Low Channel 1, 2412 MHz**

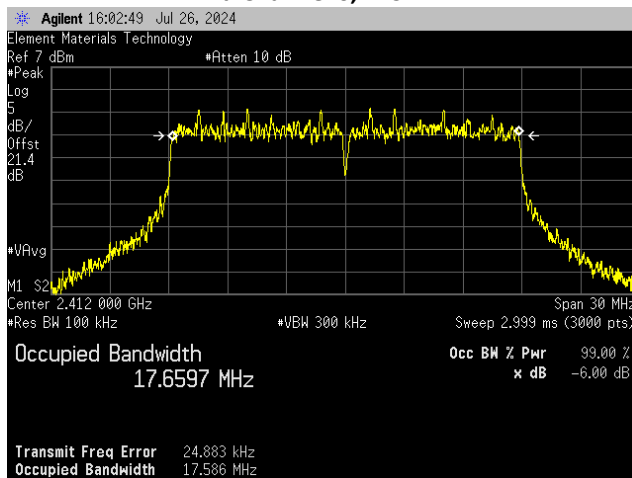
# DTS BANDWIDTH (6dB)



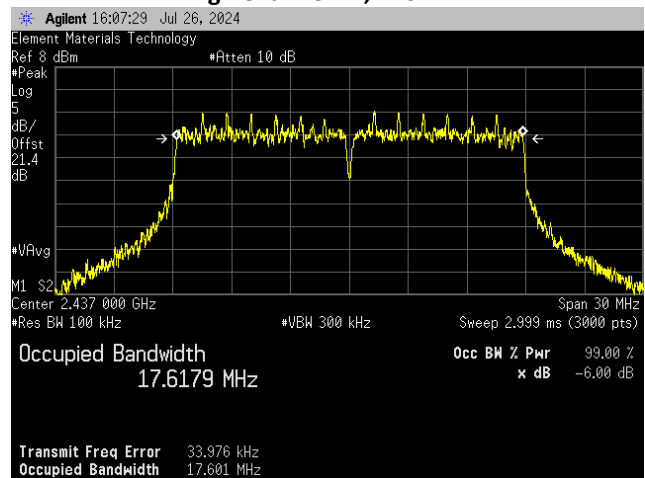
Antenna 2  
802.11(n), 20 MHz, MCS0  
Mid Channel 6, 2437 MHz



Antenna 2  
802.11(n), 20 MHz, MCS0  
High Channel 11, 2462 MHz

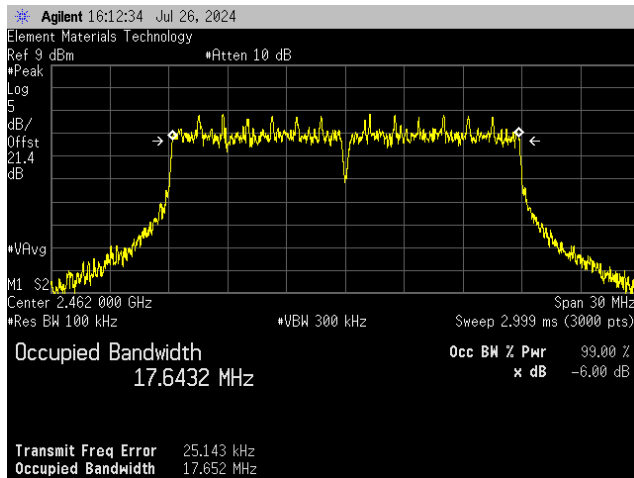


Antenna 2  
802.11(n), 20 MHz, MCS7  
Low Channel 1, 2412 MHz



Antenna 2  
802.11(n), 20 MHz, MCS7  
Mid Channel 6, 2437 MHz

# DTS BANDWIDTH (6dB)



**Antenna 2**  
**802.11(n), 20 MHz, MCS7**  
**High Channel 11, 2462 MHz**

# OCCUPIED BANDWIDTH (99%)

## TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The 99% occupied bandwidth was measured with the EUT configured for continuous modulated operation.

Per ANSI C63.10:2013, 6.9.3, the spectrum analyzer was configured as follows:

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) of the spectrum analyzer was set to the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth. The analyzer sweep time was set to auto to prevent video filtering or averaging. A sample detector was used unless the device was not able to be operated in a continuous transmit mode, in which case a peak detector was used.

The spectrum analyzer occupied bandwidth measurement function was used to sum the power of the transmission in linear terms to obtain the 99% bandwidth.

## TEST EQUIPMENT

| Description                  | Manufacturer       | Model                 | ID  | Last Cal.  | Cal. Due   |
|------------------------------|--------------------|-----------------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer | Agilent            | E4440A                | AAW | 2024-02-14 | 2025-02-14 |
| Cable                        | Micro-Coax         | UFD150A-1-0720-200200 | EVI | 2023-11-22 | 2024-11-22 |
| Attenuator                   | S.M. Electronics   | SA26B-20              | AUY | 2024-03-13 | 2025-03-13 |
| Block - DC                   | Fairview Microwave | SD3379                | AMW | 2024-03-13 | 2025-03-13 |
| Generator - Signal           | Keysight           | N5182B                | TEU | 2024-04-18 | 2027-04-18 |

# OCCUPIED BANDWIDTH (99%)

|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:4E:DC          | Date:                 | 2024-07-26 |
| Customer:         | Irrigreen, Inc.            | Temperature:          | 22.2°C     |
| Attendees:        | None                       | Relative Humidity:    | 50.9%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1016 mbar  |
| Tested By:        | Christopher Ladwig         | Job Site:             | EV06       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-3 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## COMMENTS

Reference level offset includes: DC block, 20 dB attenuator and measurement cable.  
Measurements performed on the antenna port that has the highest conducted output power.

## DEVIATIONS FROM TEST STANDARD

None

## CONCLUSION

N/A



Tested By

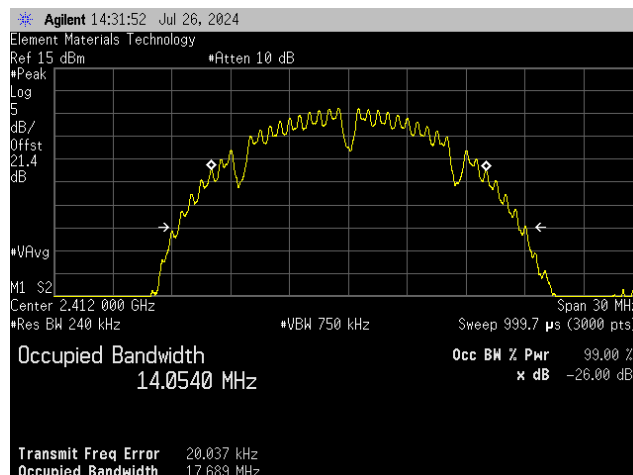
## TEST RESULTS

|                            | Value      | Limit | Result |
|----------------------------|------------|-------|--------|
| Antenna 2                  |            |       |        |
| 802.11(b), 20 MHz, 1 Mbps  |            |       |        |
| Low Channel 1, 2412 MHz    | 14.054 MHz | N/A   | N/A    |
| Mid Channel 6, 2437 MHz    | 14.074 MHz | N/A   | N/A    |
| High Channel 11, 2462 MHz  | 14.136 MHz | N/A   | N/A    |
| 802.11(b), 20 MHz, 11 Mbps |            |       |        |
| Low Channel 1, 2412 MHz    | 14.264 MHz | N/A   | N/A    |
| Mid Channel 6, 2437 MHz    | 14.296 MHz | N/A   | N/A    |
| High Channel 11, 2462 MHz  | 14.303 MHz | N/A   | N/A    |
| 802.11(g), 20 MHz, 6 Mbps  |            |       |        |
| Low Channel 1, 2412 MHz    | 16.484 MHz | N/A   | N/A    |
| Mid Channel 6, 2437 MHz    | 16.961 MHz | N/A   | N/A    |
| High Channel 11, 2462 MHz  | 16.429 MHz | N/A   | N/A    |
| 802.11(g), 20 MHz, 36 Mbps |            |       |        |
| Low Channel 1, 2412 MHz    | 16.709 MHz | N/A   | N/A    |
| Mid Channel 6, 2437 MHz    | 16.906 MHz | N/A   | N/A    |
| High Channel 11, 2462 MHz  | 16.89 MHz  | N/A   | N/A    |
| 802.11(g), 20 MHz, 54 Mbps |            |       |        |
| Low Channel 1, 2412 MHz    | 16.784 MHz | N/A   | N/A    |
| Mid Channel 6, 2437 MHz    | 16.749 MHz | N/A   | N/A    |
| High Channel 11, 2462 MHz  | 16.8 MHz   | N/A   | N/A    |
| 802.11(n), 20 MHz, MCS0    |            |       |        |

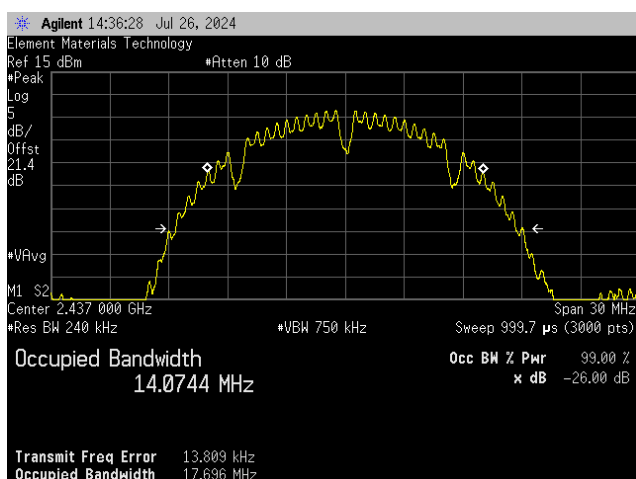
# OCCUPIED BANDWIDTH (99%)

|                           | Value      | Limit | Result |
|---------------------------|------------|-------|--------|
| Low Channel 1, 2412 MHz   | 17.535 MHz | N/A   | N/A    |
| Mid Channel 6, 2437 MHz   | 17.74 MHz  | N/A   | N/A    |
| High Channel 11, 2462 MHz | 17.546 MHz | N/A   | N/A    |
| 802.11(n), 20 MHz, MCS7   |            |       |        |
| Low Channel 1, 2412 MHz   | 17.839 MHz | N/A   | N/A    |
| Mid Channel 6, 2437 MHz   | 17.897 MHz | N/A   | N/A    |
| High Channel 11, 2462 MHz | 17.87 MHz  | N/A   | N/A    |

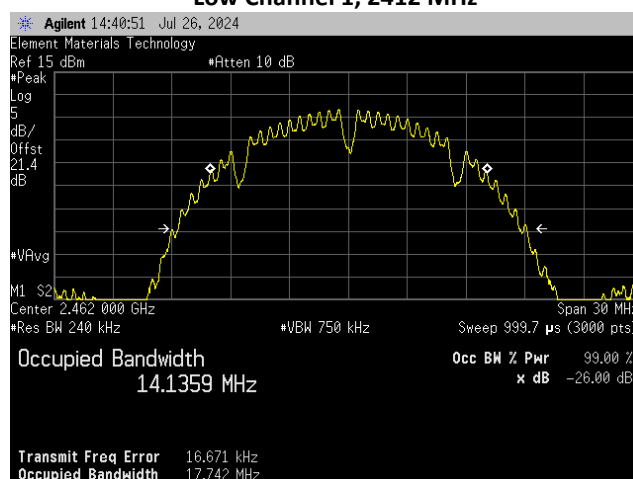
# OCCUPIED BANDWIDTH (99%)



**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Low Channel 1, 2412 MHz**

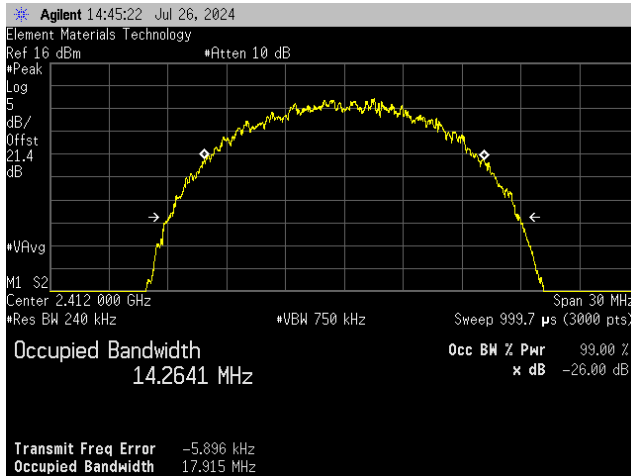


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Mid Channel 6, 2437 MHz**

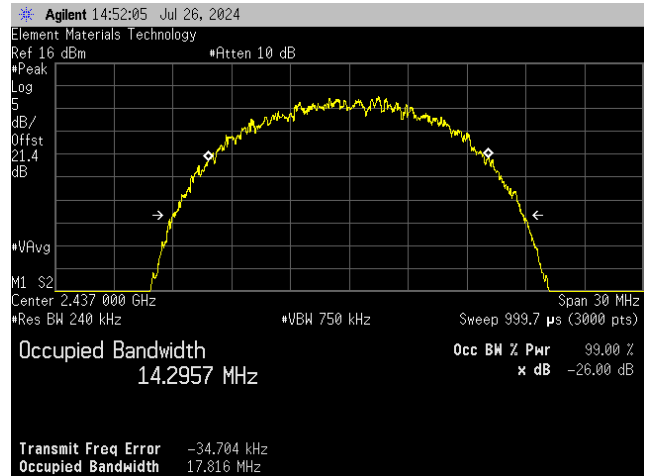


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**High Channel 11, 2462 MHz**

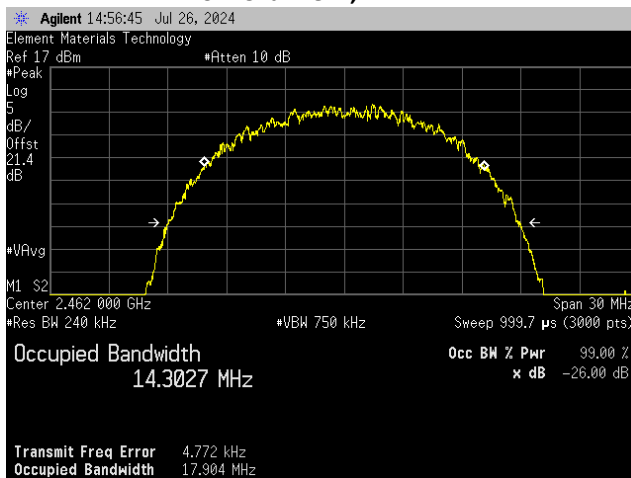
# OCCUPIED BANDWIDTH (99%)



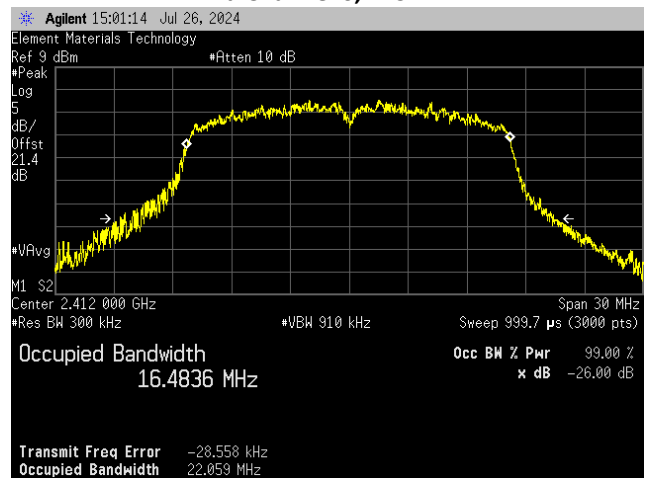
**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**Mid Channel 6, 2437 MHz**

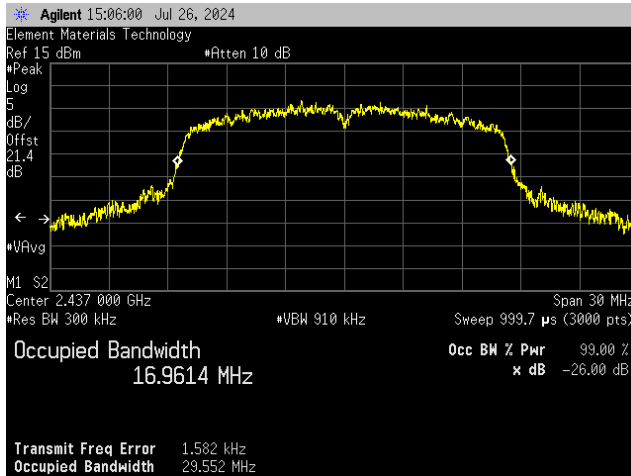


**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**High Channel 11, 2462 MHz**

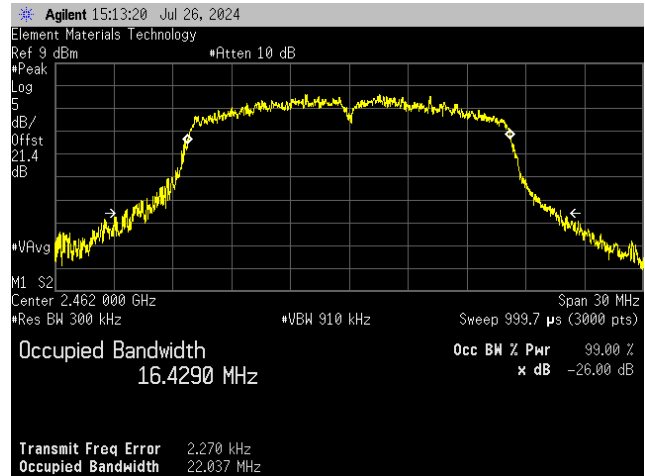


**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Low Channel 1, 2412 MHz**

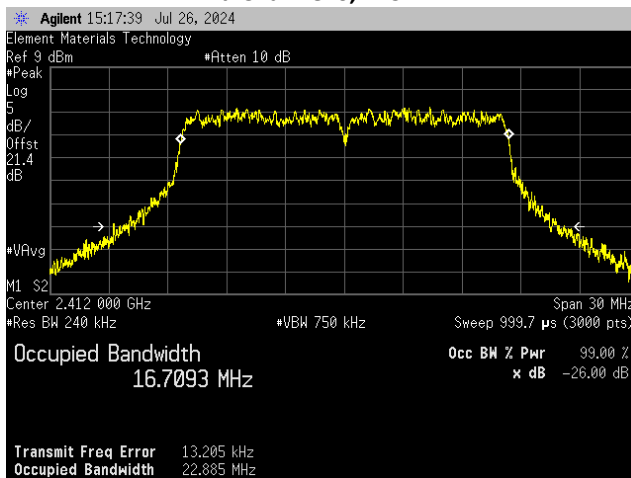
# OCCUPIED BANDWIDTH (99%)



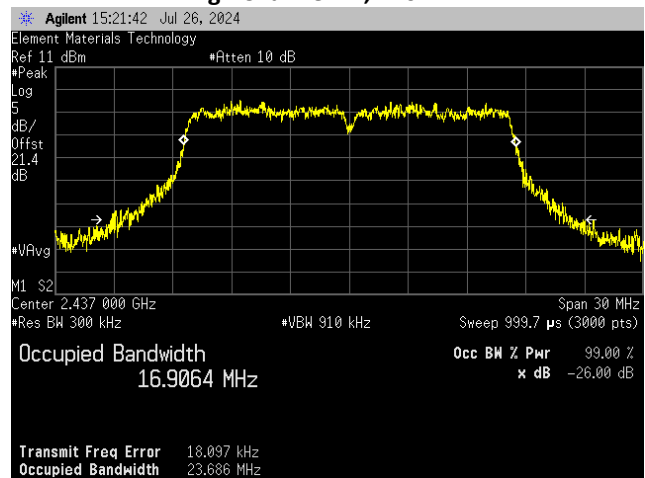
Antenna 2  
802.11(g), 20 MHz, 6 Mbps  
Mid Channel 6, 2437 MHz



Antenna 2  
802.11(g), 20 MHz, 6 Mbps  
High Channel 11, 2462 MHz

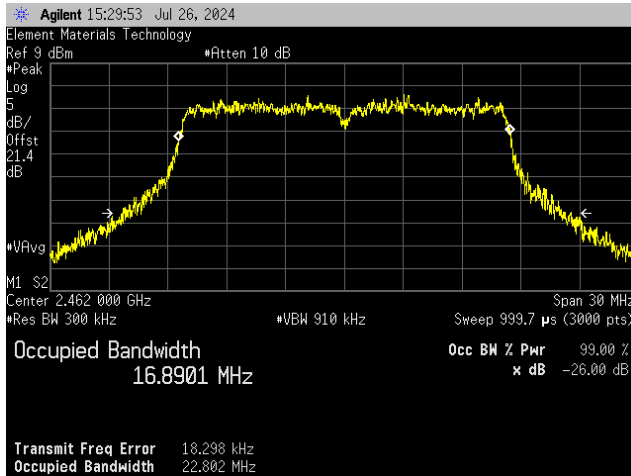


Antenna 2  
802.11(g), 20 MHz, 36 Mbps  
Low Channel 1, 2412 MHz

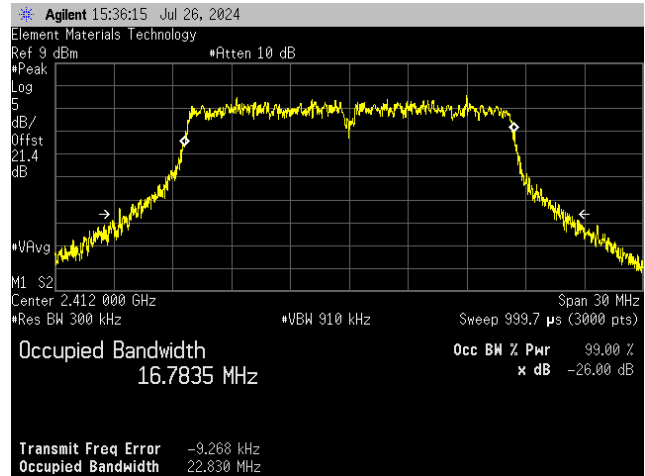


Antenna 2  
802.11(g), 20 MHz, 36 Mbps  
Mid Channel 6, 2437 MHz

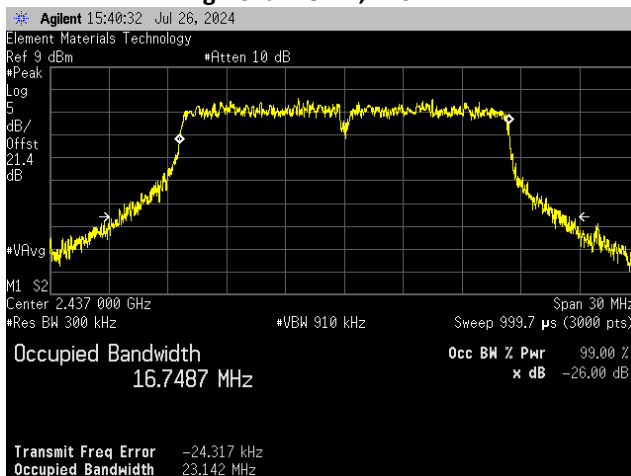
# OCCUPIED BANDWIDTH (99%)



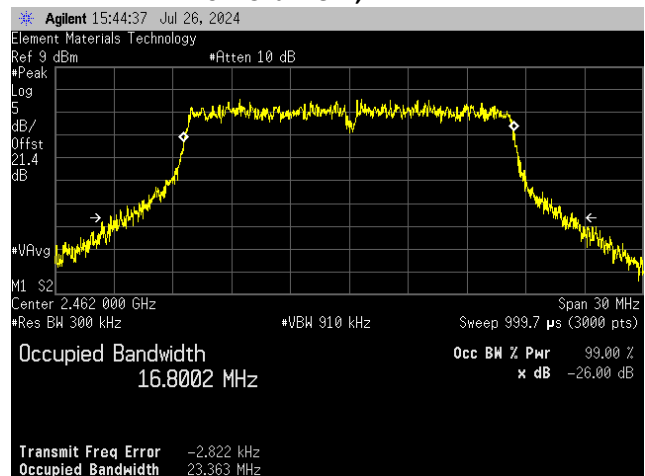
**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**High Channel 11, 2462 MHz**



**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**Low Channel 1, 2412 MHz**

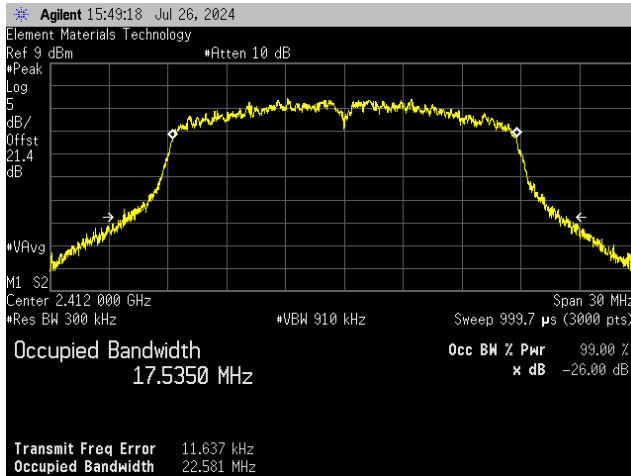


**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**Mid Channel 6, 2437 MHz**

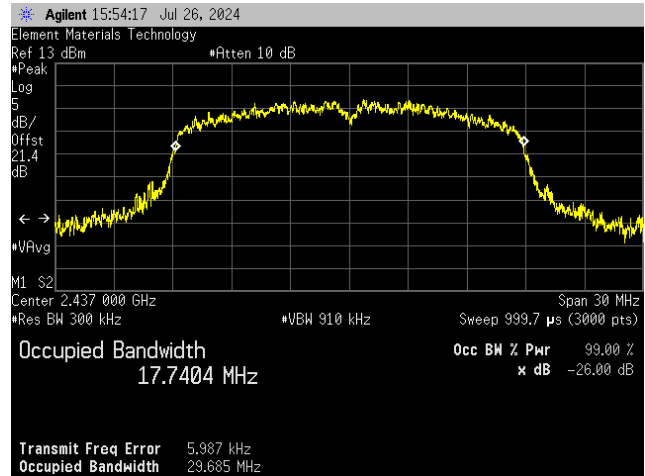


**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**High Channel 11, 2462 MHz**

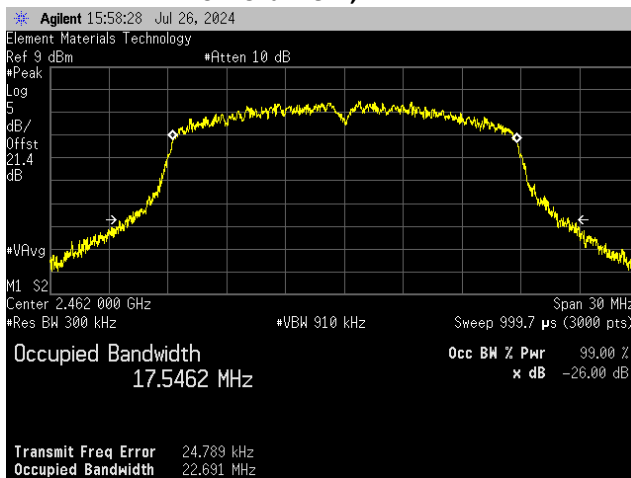
# OCCUPIED BANDWIDTH (99%)



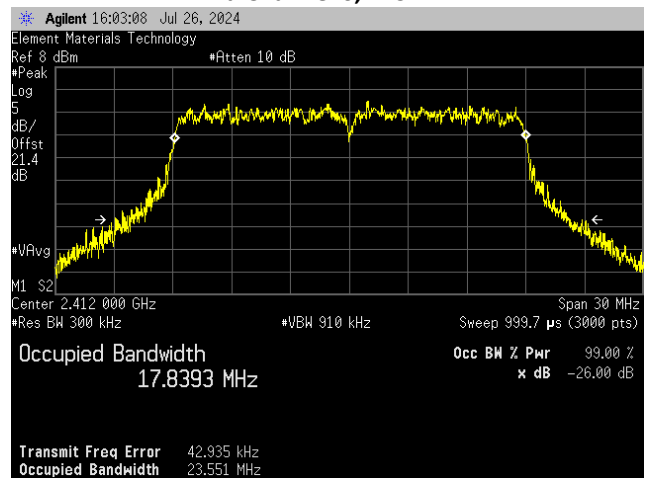
Antenna 2  
802.11(n), 20 MHz, MCS0  
Low Channel 1, 2412 MHz



Antenna 2  
802.11(n), 20 MHz, MCS0  
Mid Channel 6, 2437 MHz

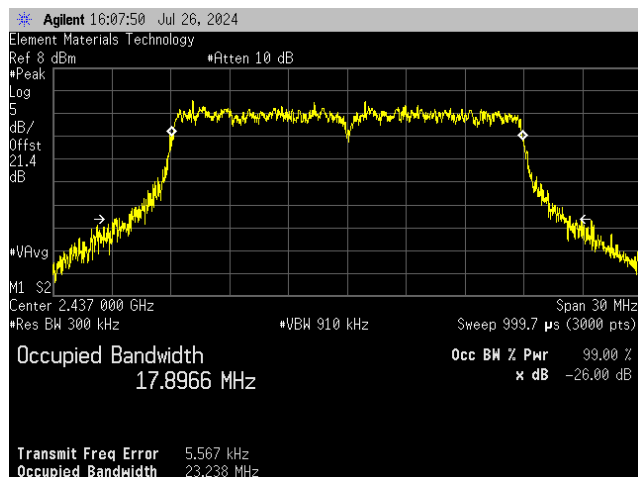


Antenna 2  
802.11(n), 20 MHz, MCS0  
High Channel 11, 2462 MHz

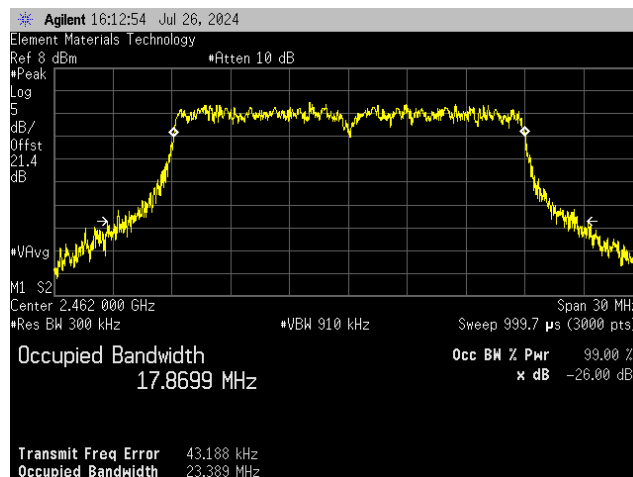


Antenna 2  
802.11(n), 20 MHz, MCS7  
Low Channel 1, 2412 MHz

# OCCUPIED BANDWIDTH (99%)



**Antenna 2**  
**802.11(n), 20 MHz, MCS7**  
**Mid Channel 6, 2437 MHz**



**Antenna 2**  
**802.11(n), 20 MHz, MCS7**  
**High Channel 11, 2462 MHz**

# OUTPUT POWER

## TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

Prior to measuring output power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method AVGSA-2 in section 11.9.2.2.4 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding  $[10 \log (1 / D)]$ , where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

## TEST EQUIPMENT

| Description                  | Manufacturer       | Model                 | ID  | Last Cal.  | Cal. Due   |
|------------------------------|--------------------|-----------------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer | Agilent            | E4440A                | AAW | 2024-02-14 | 2025-02-14 |
| Block - DC                   | Fairview Microwave | SD3379                | AMX | 2024-03-16 | 2025-03-16 |
| Attenuator                   | Fairview Microwave | SA26B-20              | TWJ | 2024-03-14 | 2025-03-14 |
| Cable                        | Micro-Coax         | UFD150A-1-0720-200200 | EVK | 2024-03-13 | 2025-03-13 |
| Generator - Signal           | Keysight           | N5182B                | TEU | 2024-04-18 | 2027-04-18 |

# OUTPUT POWER

|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:33:FF          | Date:                 | 2024-09-10 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 22°C       |
| Attendees:        | None                       | Relative Humidity:    | 47.6%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1013 mbar  |
| Tested By:        | Jeff Alcock                | Job Site:             | EV06       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-8 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## COMMENTS

Reference level offset includes: DC Block, 20 dB attenuator and measurement cable

## DEVIATIONS FROM TEST STANDARD

None

## CONCLUSION

Pass



Tested By

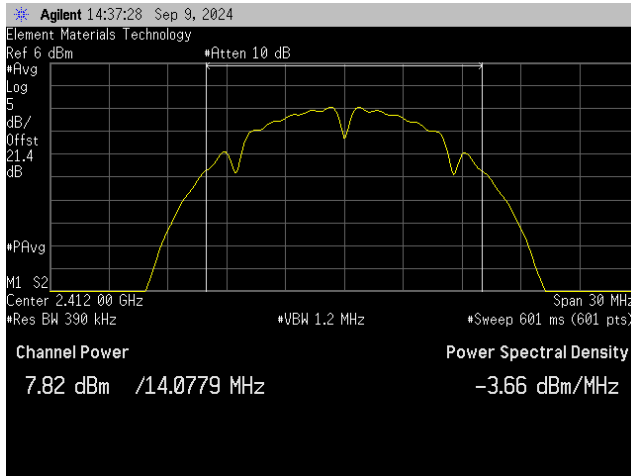
## TEST RESULTS

|                            | Avg Cond Pwr<br>(dBm) | Duty Cycle<br>Factor (dB) | Out Pwr<br>(dBm) | Limit<br>(dBm) | Result |
|----------------------------|-----------------------|---------------------------|------------------|----------------|--------|
| Antenna 1                  |                       |                           |                  |                |        |
| 802.11(b), 20 MHz, 1 Mbps  |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | 7.825                 | 0.2                       | 8.0              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 14.104                | 0.2                       | 14.3             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 14.158                | 0.2                       | 14.4             | 30             | Pass   |
| 802.11(b), 20 MHz, 11 Mbps |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | 7.576                 | 0.9                       | 8.5              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 13.961                | 0.9                       | 14.9             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 14.052                | 0.9                       | 15.0             | 30             | Pass   |
| 802.11(g), 20 MHz, 6 Mbps  |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | 3.286                 | 0.4                       | 3.7              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 13.715                | 0.4                       | 14.1             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 9.313                 | 0.4                       | 9.7              | 30             | Pass   |
| 802.11(g), 20 MHz, 36 Mbps |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | 0.023                 | 3.7                       | 3.7              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 8.111                 | 3.7                       | 11.8             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 6.051                 | 3.7                       | 9.8              | 30             | Pass   |
| 802.11(g), 20 MHz, 54 Mbps |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | -1.575                | 5.5                       | 3.9              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 4.862                 | 5.5                       | 10.4             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 4.462                 | 5.5                       | 10.0             | 30             | Pass   |
| 802.11(n), 20 MHz, MCS0    |                       |                           |                  |                |        |

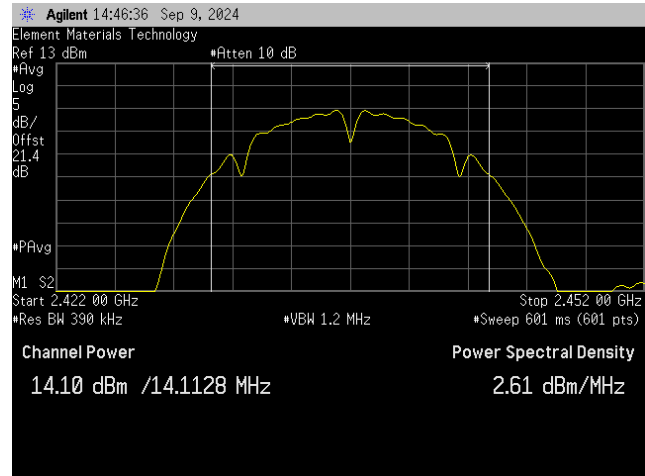
# OUTPUT POWER

|                            | Avg Cond Pwr<br>(dBm) | Duty Cycle<br>Factor (dB) | Out Pwr<br>(dBm) | Limit<br>(dBm) | Result |
|----------------------------|-----------------------|---------------------------|------------------|----------------|--------|
| Low Channel 1, 2412 MHz    | 3.245                 | 0.4                       | 3.6              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 12.608                | 0.4                       | 13.0             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 9.118                 | 0.4                       | 9.5              | 30             | Pass   |
| 802.11(n), 20 MHz, MCS7    |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | -3.072                | 6.1                       | 3.0              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 2.847                 | 6.1                       | 8.9              | 30             | Pass   |
| High Channel 11, 2462 MHz  | 2.976                 | 6.1                       | 9.1              | 30             | Pass   |
| Antenna 2                  |                       |                           |                  |                |        |
| 802.11(b), 20 MHz, 1 Mbps  |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | 6.598                 | 0.2                       | 6.8              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 14.586                | 0.2                       | 14.8             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 14.781                | 0.2                       | 15.0             | 30             | Pass   |
| 802.11(b), 20 MHz, 11 Mbps |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | 6.448                 | 0.9                       | 7.3              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 14.245                | 0.9                       | 15.1             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 14.456                | 0.9                       | 15.4             | 30             | Pass   |
| 802.11(g), 20 MHz, 6 Mbps  |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | 2.423                 | 0.4                       | 2.8              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 14.075                | 0.4                       | 14.5             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 9.78                  | 0.4                       | 10.2             | 30             | Pass   |
| 802.11(g), 20 MHz, 36 Mbps |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | -0.91                 | 3.7                       | 2.8              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 8.47                  | 3.7                       | 12.2             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 6.568                 | 3.7                       | 10.3             | 30             | Pass   |
| 802.11(g), 20 MHz, 54 Mbps |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | -2.532                | 5.5                       | 3.0              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 5.227                 | 5.5                       | 10.7             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 4.989                 | 5.5                       | 10.5             | 30             | Pass   |
| 802.11(n), 20 MHz, MCS0    |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | 2.218                 | 0.4                       | 2.6              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 12.982                | 0.4                       | 13.4             | 30             | Pass   |
| High Channel 11, 2462 MHz  | 9.589                 | 0.4                       | 10.0             | 30             | Pass   |
| 802.11(n), 20 MHz, MCS7    |                       |                           |                  |                |        |
| Low Channel 1, 2412 MHz    | -4.994                | 6.1                       | 1.1              | 30             | Pass   |
| Mid Channel 6, 2437 MHz    | 3.168                 | 6.1                       | 9.3              | 30             | Pass   |
| High Channel 11, 2462 MHz  | 3.457                 | 6.1                       | 9.6              | 30             | Pass   |

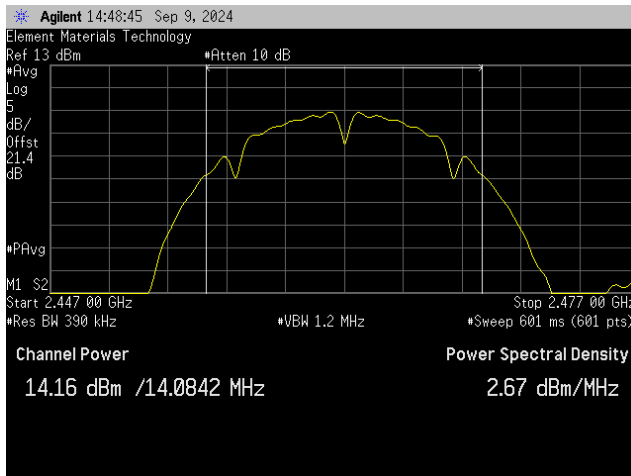
# OUTPUT POWER



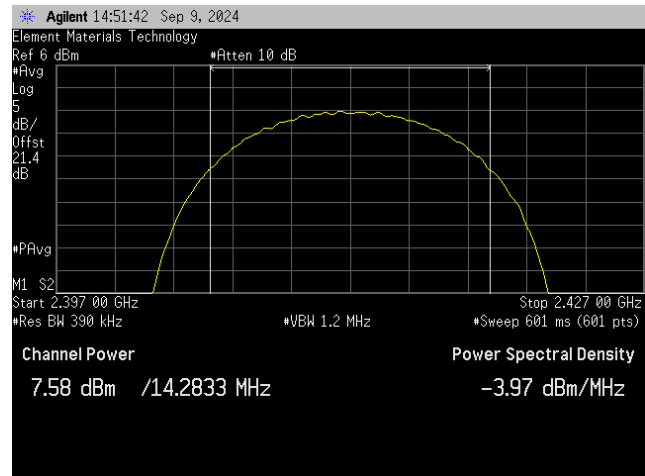
**Antenna 1**  
**802.11(b), 20 MHz, 1 Mbps**  
**Low Channel 1, 2412 MHz**



**Antenna 1**  
**802.11(b), 20 MHz, 1 Mbps**  
**Mid Channel 6, 2437 MHz**

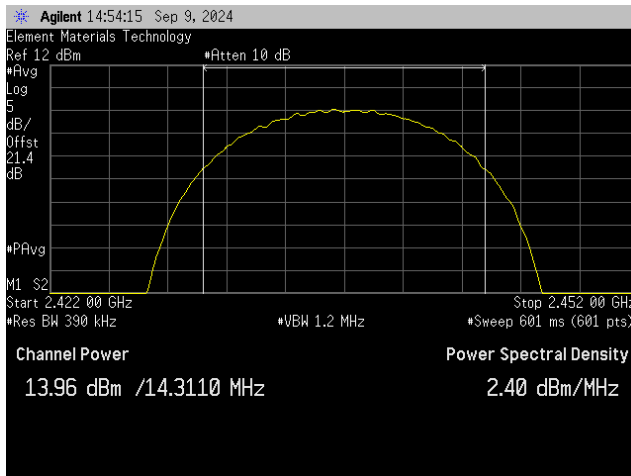


**Antenna 1**  
**802.11(b), 20 MHz, 1 Mbps**  
**High Channel 11, 2462 MHz**

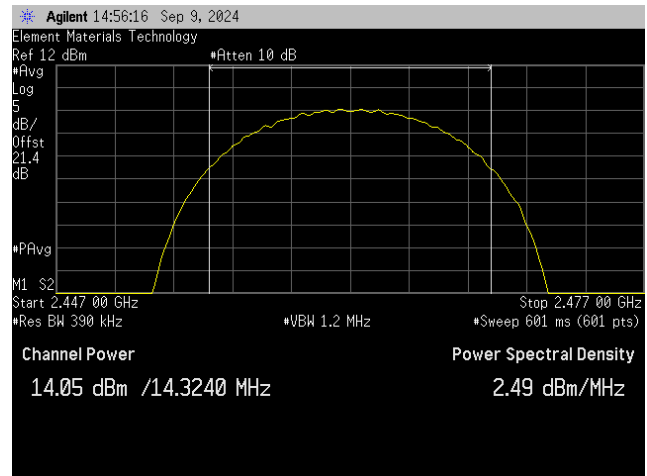


**Antenna 1**  
**802.11(b), 20 MHz, 11 Mbps**  
**Low Channel 1, 2412 MHz**

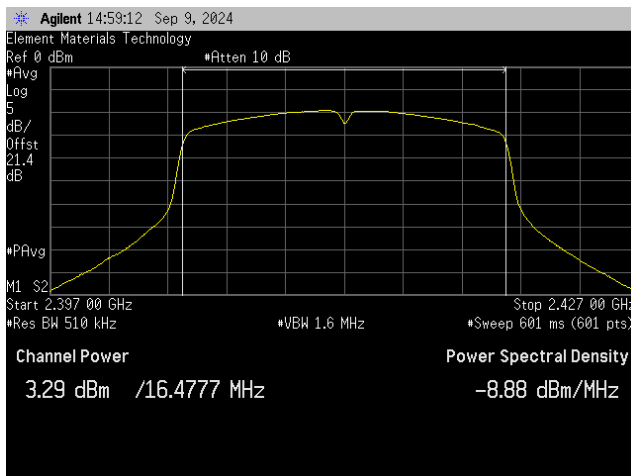
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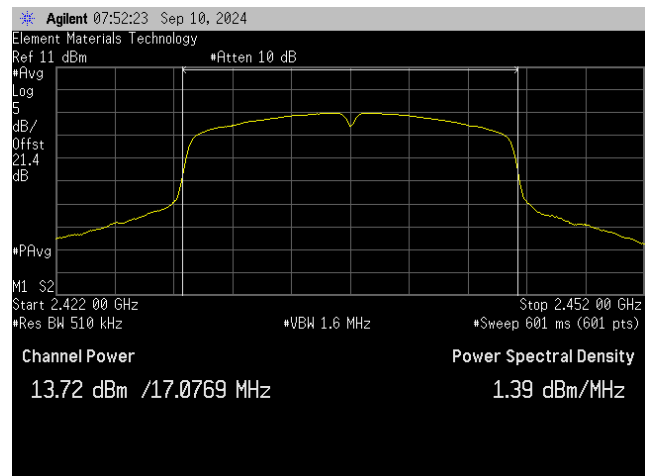
**Antenna 1**  
**802.11(b), 20 MHz, 11 Mbps**  
**Mid Channel 6, 2437 MHz**



**Antenna 1**  
**802.11(b), 20 MHz, 11 Mbps**  
**High Channel 11, 2462 MHz**

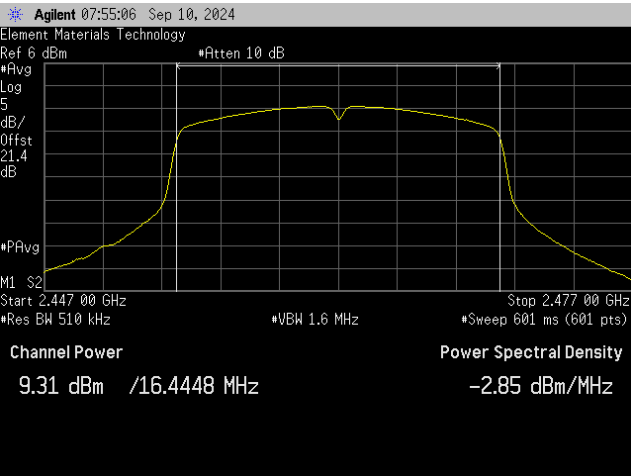


**Antenna 1**  
**802.11(g), 20 MHz, 6 Mbps**  
**Low Channel 1, 2412 MHz**

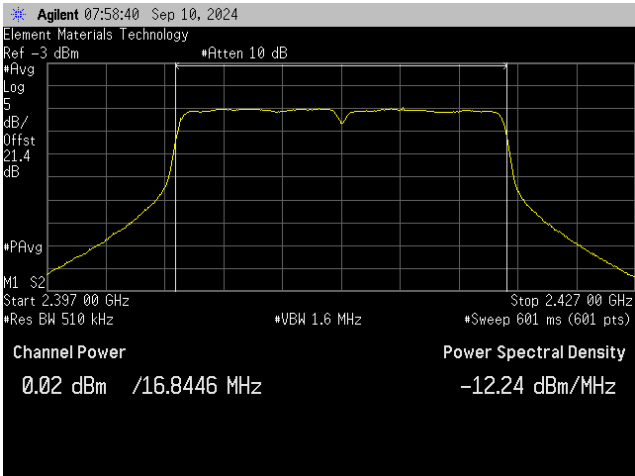


**Antenna 1**  
**802.11(g), 20 MHz, 6 Mbps**  
**Mid Channel 6, 2437 MHz**

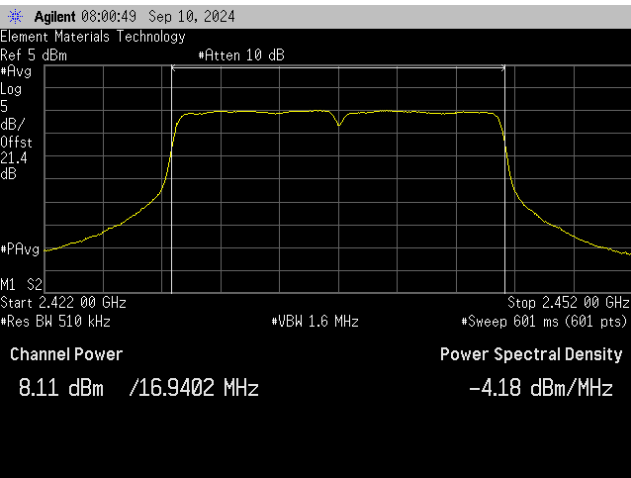
# OUTPUT POWER



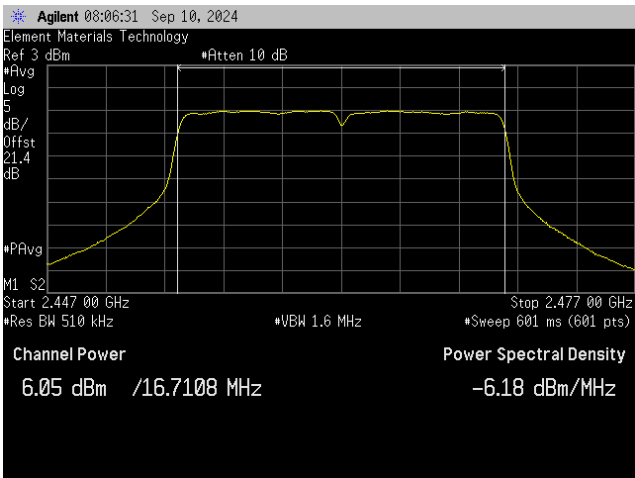
Antenna 1  
802.11(g), 20 MHz, 6 Mbps  
High Channel 11, 2462 MHz



Antenna 1  
802.11(g), 20 MHz, 36 Mbps  
Low Channel 1, 2412 MHz

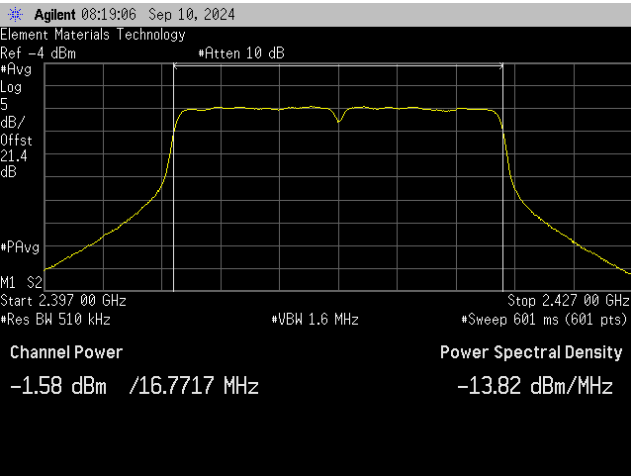


Antenna 1  
802.11(g), 20 MHz, 36 Mbps  
Mid Channel 6, 2437 MHz

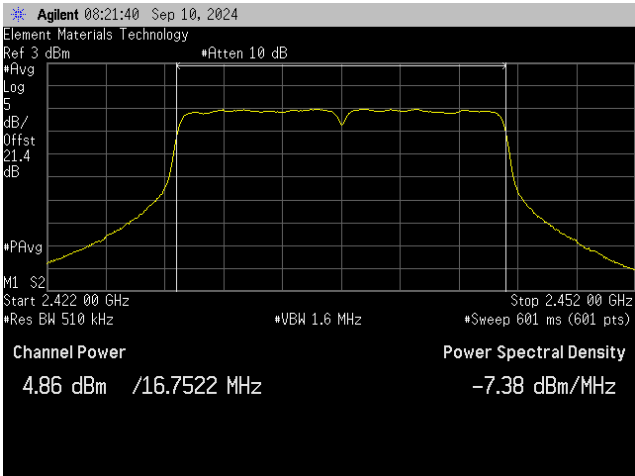


Antenna 1  
802.11(g), 20 MHz, 36 Mbps  
High Channel 11, 2462 MHz

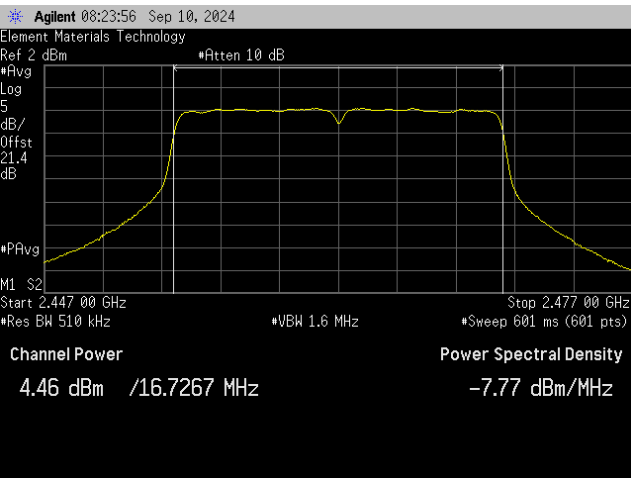
# OUTPUT POWER



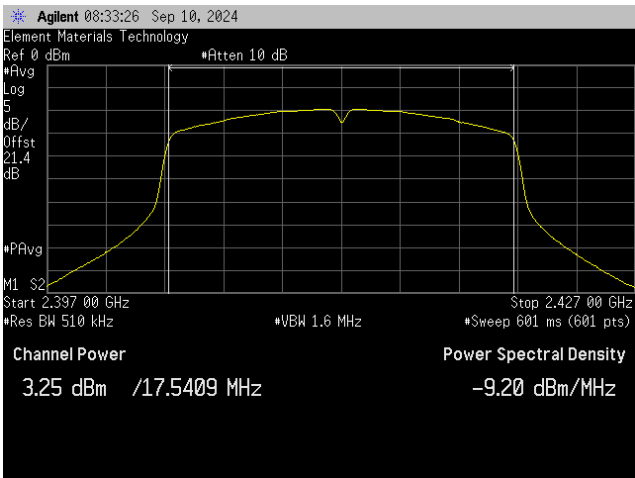
Antenna 1  
802.11(g), 20 MHz, 54 Mbps  
Low Channel 1, 2412 MHz



Antenna 1  
802.11(g), 20 MHz, 54 Mbps  
Mid Channel 6, 2437 MHz

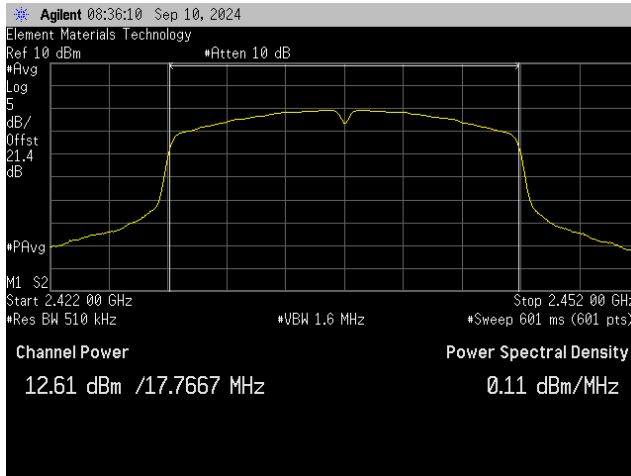


Antenna 1  
802.11(g), 20 MHz, 54 Mbps  
High Channel 11, 2462 MHz

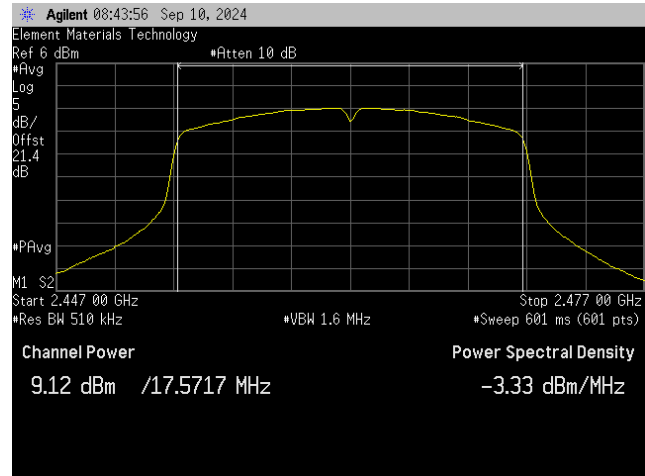


Antenna 1  
802.11(n), 20 MHz, MCS0  
Low Channel 1, 2412 MHz

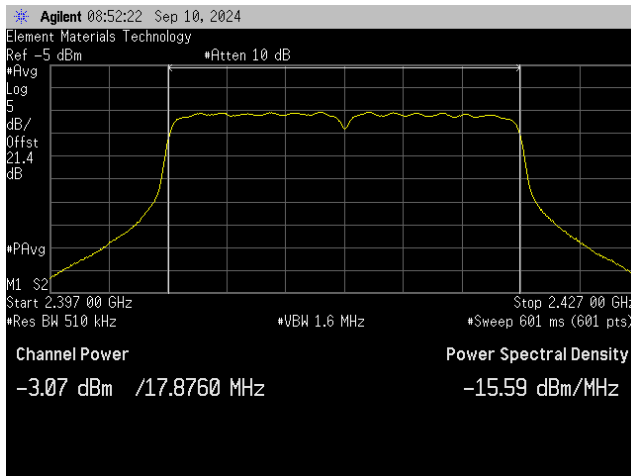
# OUTPUT POWER



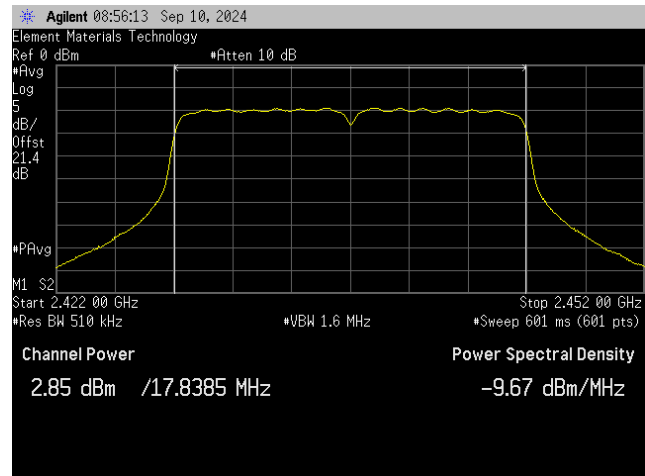
**Antenna 1**  
**802.11(n), 20 MHz, MCS0**  
**Mid Channel 6, 2437 MHz**



**Antenna 1**  
**802.11(n), 20 MHz, MCS0**  
**High Channel 11, 2462 MHz**

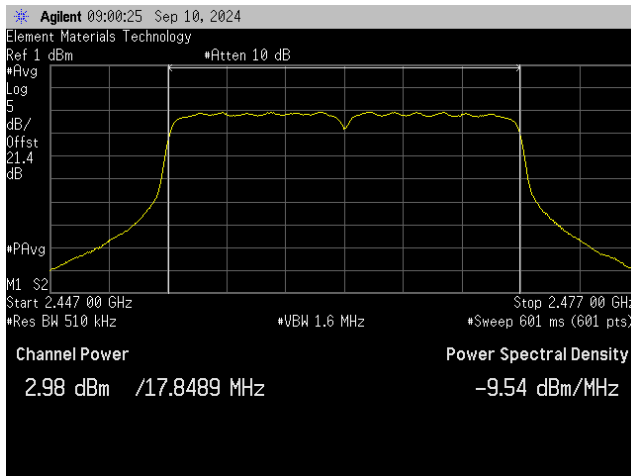


**Antenna 1**  
**802.11(n), 20 MHz, MCS7**  
**Low Channel 1, 2412 MHz**

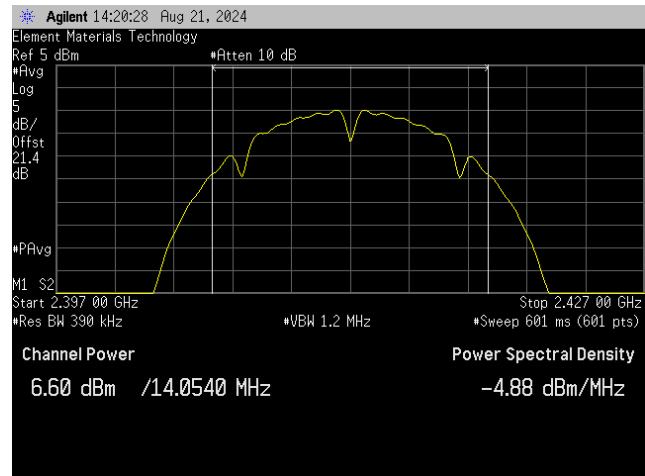


**Antenna 1**  
**802.11(n), 20 MHz, MCS7**  
**Mid Channel 6, 2437 MHz**

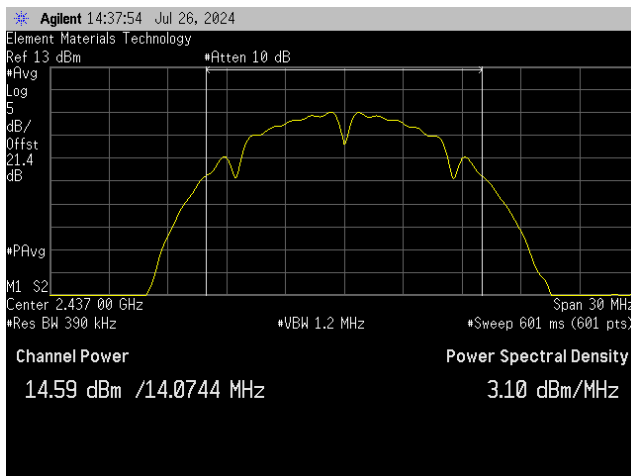
# OUTPUT POWER



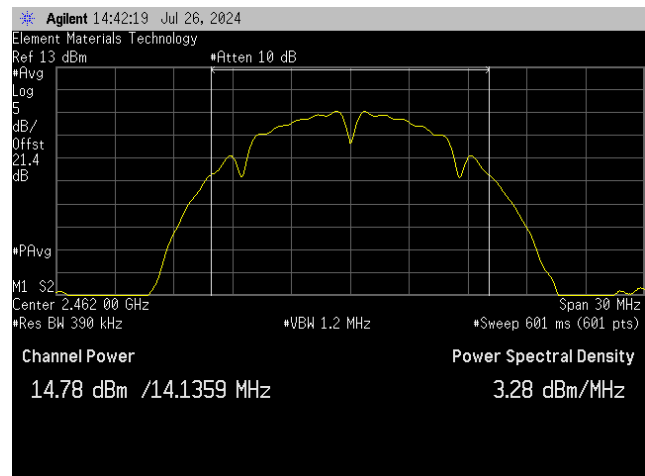
**Antenna 1**  
**802.11(n), 20 MHz, MCS7**  
**High Channel 11, 2462 MHz**



**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Low Channel 1, 2412 MHz**

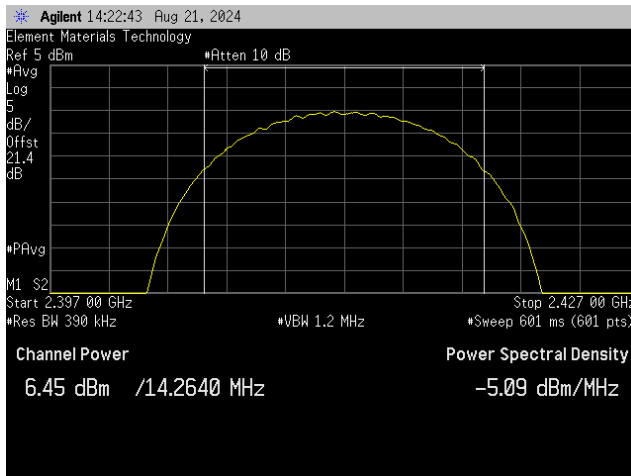


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Mid Channel 6, 2437 MHz**

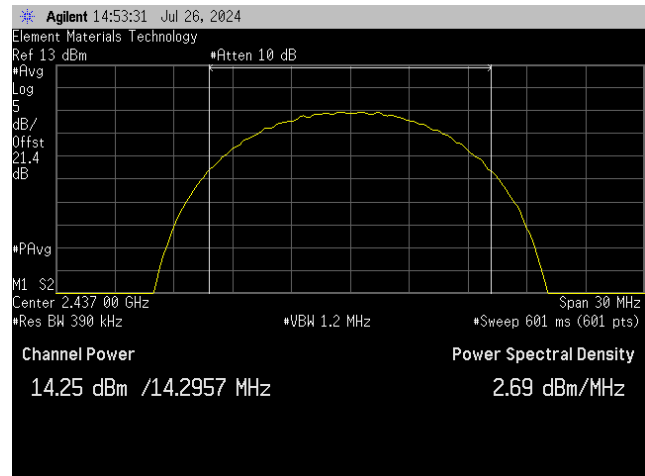


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**High Channel 11, 2462 MHz**

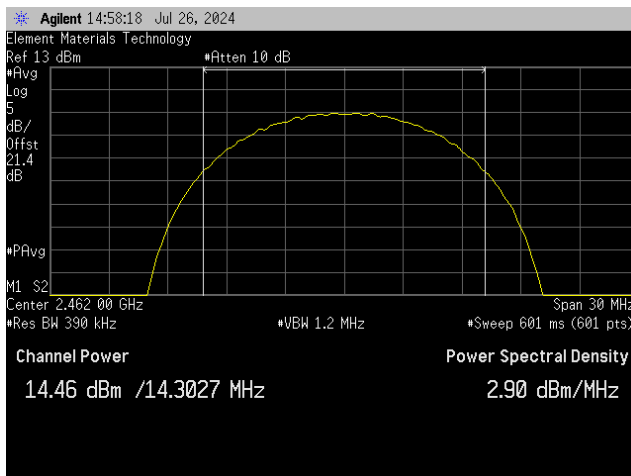
# OUTPUT POWER



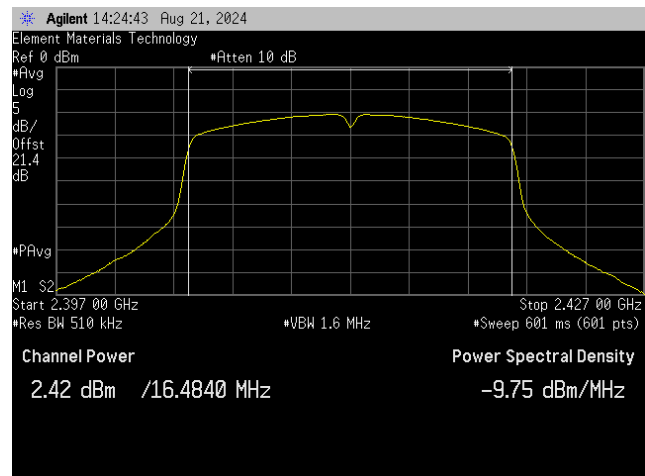
**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**Mid Channel 6, 2437 MHz**

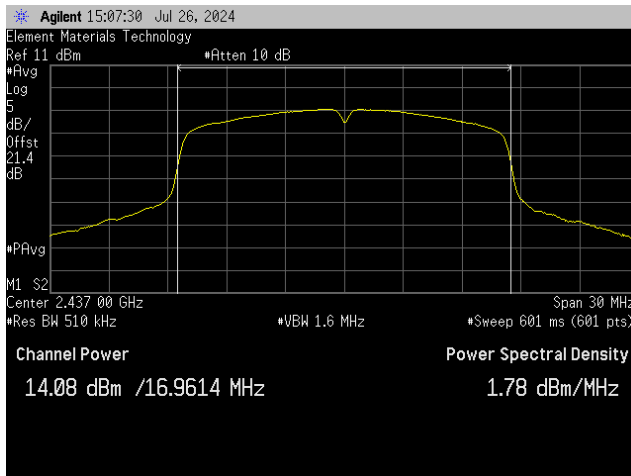


**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**High Channel 11, 2462 MHz**

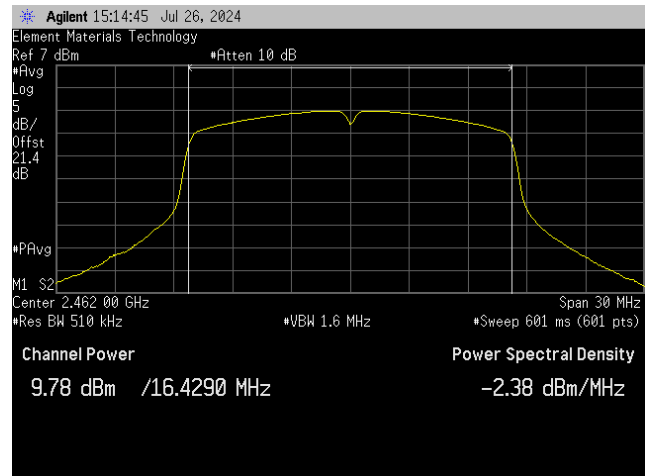


**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Low Channel 1, 2412 MHz**

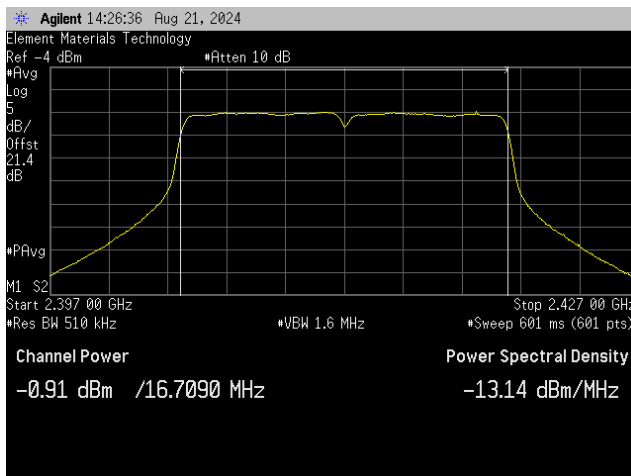
# OUTPUT POWER



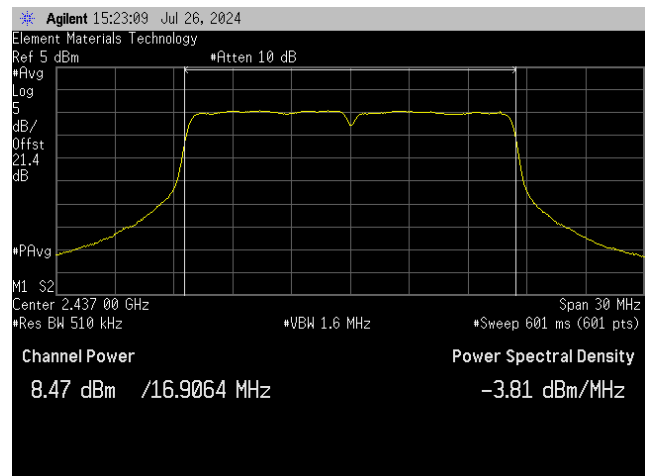
**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Mid Channel 6, 2437 MHz**



**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**High Channel 11, 2462 MHz**

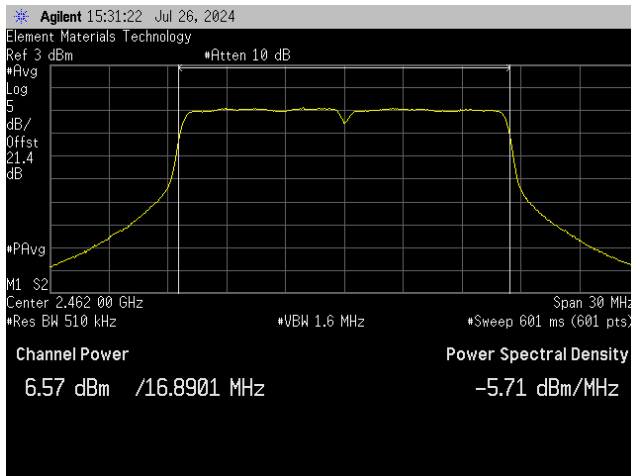


**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**Low Channel 1, 2412 MHz**

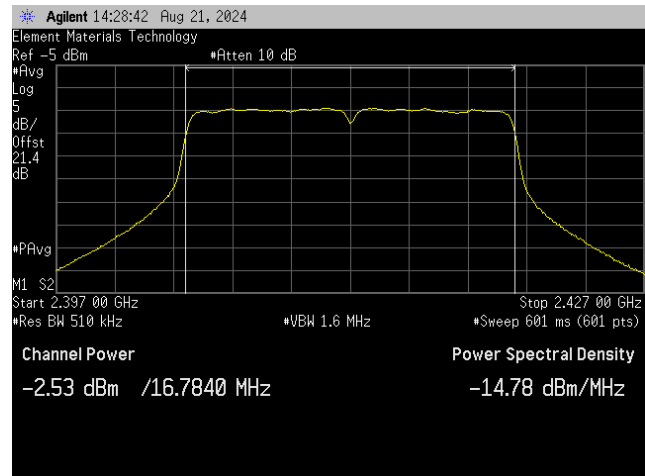


**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**Mid Channel 6, 2437 MHz**

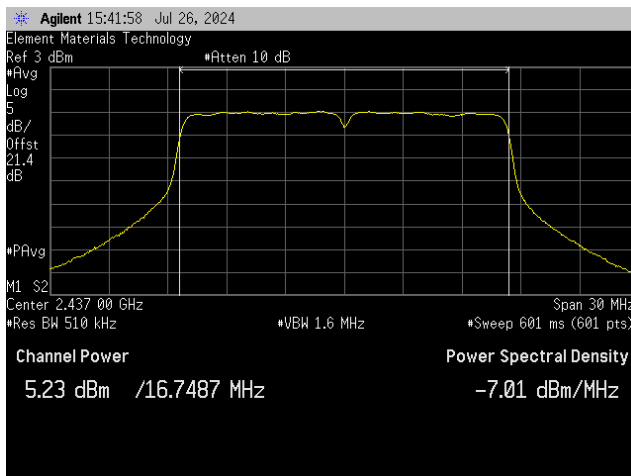
# OUTPUT POWER



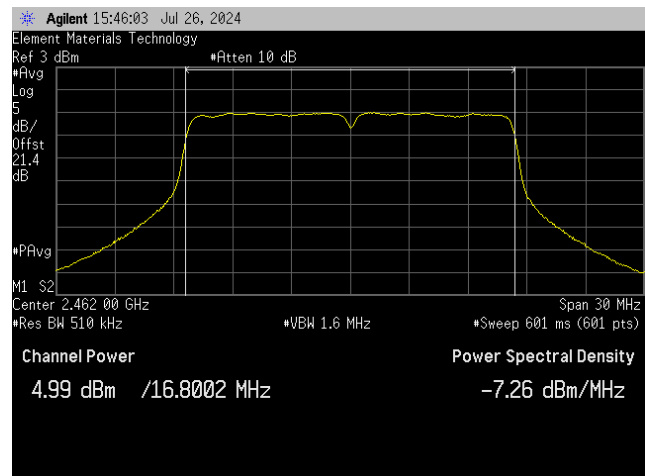
**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**High Channel 11, 2462 MHz**



**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**Low Channel 1, 2412 MHz**

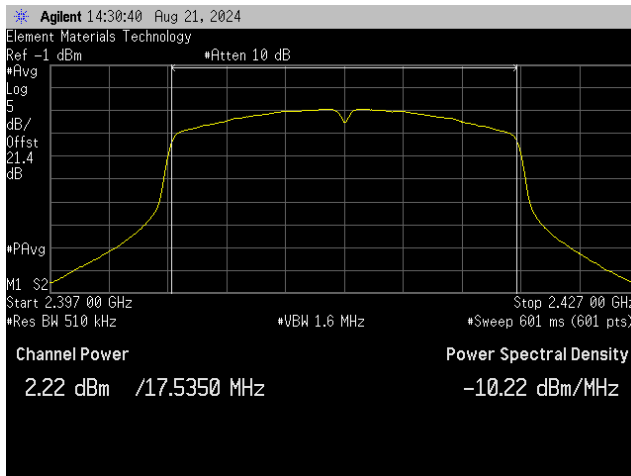


**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**Mid Channel 6, 2437 MHz**

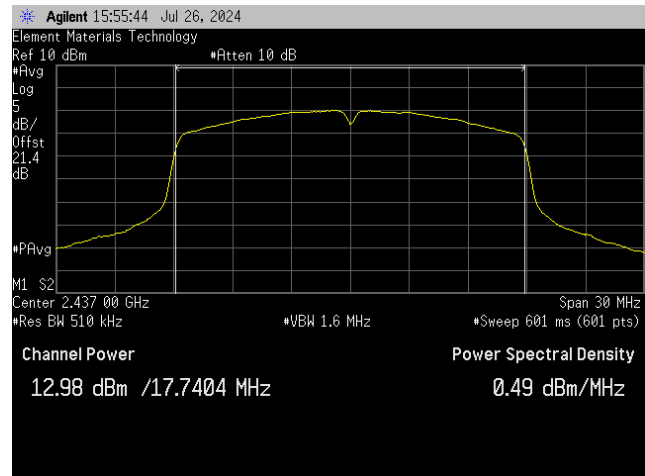


**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**High Channel 11, 2462 MHz**

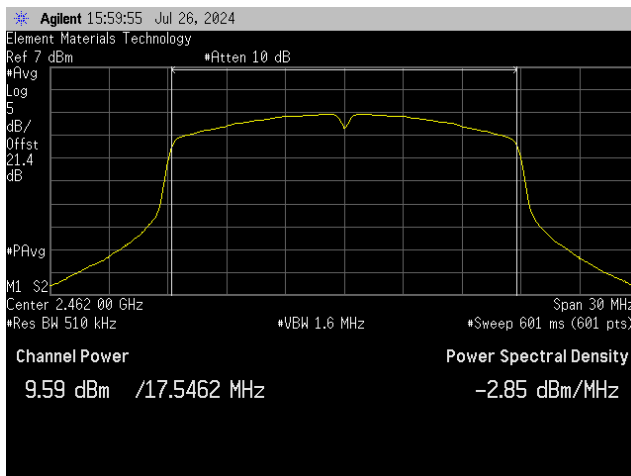
# OUTPUT POWER



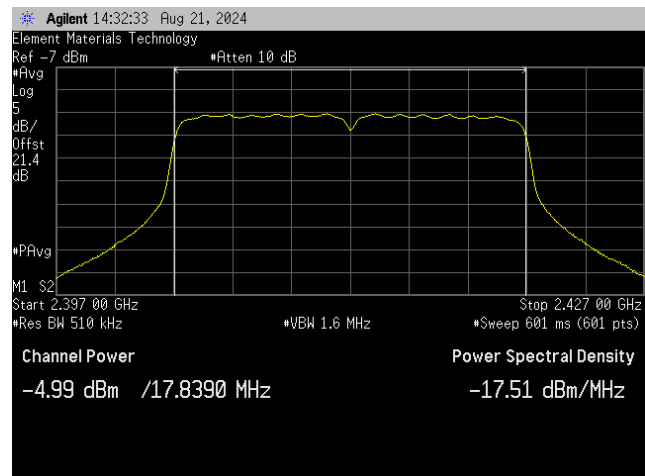
**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Mid Channel 6, 2437 MHz**

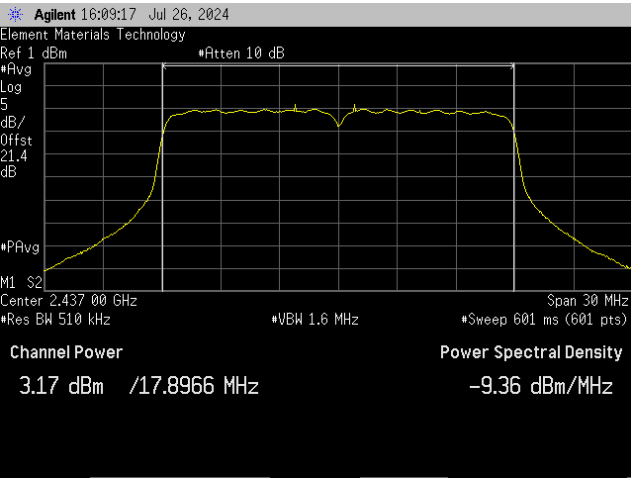


**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**High Channel 11, 2462 MHz**

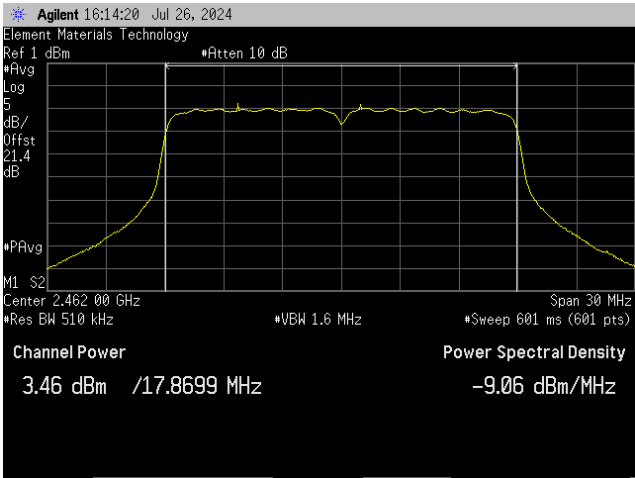


**Antenna 2**  
**802.11(n), 20 MHz, MCS7**  
**Low Channel 1, 2412 MHz**

# OUTPUT POWER



Antenna 2  
802.11(n), 20 MHz, MCS7  
Mid Channel 6, 2437 MHz



Antenna 2  
802.11(n), 20 MHz, MCS7  
High Channel 11, 2462 MHz

# EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



## TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

Prior to measuring output power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method AVGSA-2 in section 11.9.2.2.4 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding  $[10 \log (1 / D)]$ , where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

Equivalent Isotropic Radiated Power (EIRP) = Max Measured Power + Antenna gain (dBi)

## TEST EQUIPMENT

| Description                  | Manufacturer       | Model                 | ID  | Last Cal.  | Cal. Due   |
|------------------------------|--------------------|-----------------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer | Agilent            | E4440A                | AAW | 2024-02-14 | 2025-02-14 |
| Block - DC                   | Fairview Microwave | SD3379                | AMX | 2024-03-16 | 2025-03-16 |
| Attenuator                   | Fairview Microwave | SA26B-20              | TWJ | 2024-03-14 | 2025-03-14 |
| Cable                        | Micro-Coax         | UFD150A-1-0720-200200 | EVK | 2024-03-13 | 2025-03-13 |
| Generator - Signal           | Keysight           | N5182B                | TEU | 2024-04-18 | 2027-04-18 |

# EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:33:FF          | Date:                 | 2024-09-10 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 22°C       |
| Attendees:        | None                       | Relative Humidity:    | 47.3%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1013 mbar  |
| Tested By:        | Jeff Alcock                | Job Site:             | EV06       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-8 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## COMMENTS

|                                                                                   |
|-----------------------------------------------------------------------------------|
| Reference level offset includes: DC Block, 20 dB attenuator and measurement cable |
|-----------------------------------------------------------------------------------|

## DEVIATIONS FROM TEST STANDARD

|      |
|------|
| None |
|------|

## CONCLUSION

Pass

  
Tested By

## TEST RESULTS

|                            |  | Avg Cond Pwr | Duty Cycle  | Out Pwr | Antenna    | EIRP  | EIRP Limit |        |
|----------------------------|--|--------------|-------------|---------|------------|-------|------------|--------|
|                            |  | (dBm)        | Factor (dB) | (dBm)   | Gain (dBi) | (dBm) | (dBm)      | Result |
| Antenna 1                  |  |              |             |         |            |       |            |        |
| 802.11(b), 20 MHz, 1 Mbps  |  |              |             |         |            |       |            |        |
| Low Channel 1, 2412 MHz    |  | 7.825        | 0.2         | 8       | 3.48       | 11.5  | 36         | Pass   |
| Mid Channel 6, 2437 MHz    |  | 14.104       | 0.2         | 14.3    | 3.48       | 17.8  | 36         | Pass   |
| High Channel 11, 2462 MHz  |  | 14.158       | 0.2         | 14.4    | 3.48       | 17.9  | 36         | Pass   |
| 802.11(b), 20 MHz, 11 Mbps |  |              |             |         |            |       |            |        |
| Low Channel 1, 2412 MHz    |  | 7.576        | 0.9         | 8.5     | 3.48       | 12.0  | 36         | Pass   |
| Mid Channel 6, 2437 MHz    |  | 13.961       | 0.9         | 14.9    | 3.48       | 18.4  | 36         | Pass   |
| High Channel 11, 2462 MHz  |  | 14.052       | 0.9         | 15      | 3.48       | 18.5  | 36         | Pass   |
| 802.11(g), 20 MHz, 6 Mbps  |  |              |             |         |            |       |            |        |
| Low Channel 1, 2412 MHz    |  | 3.286        | 0.4         | 3.7     | 3.48       | 7.2   | 36         | Pass   |
| Mid Channel 6, 2437 MHz    |  | 13.715       | 0.4         | 14.1    | 3.48       | 17.6  | 36         | Pass   |
| High Channel 11, 2462 MHz  |  | 9.313        | 0.4         | 9.7     | 3.48       | 13.2  | 36         | Pass   |
| 802.11(g), 20 MHz, 36 Mbps |  |              |             |         |            |       |            |        |
| Low Channel 1, 2412 MHz    |  | 0.023        | 3.7         | 3.7     | 3.48       | 7.2   | 36         | Pass   |
| Mid Channel 6, 2437 MHz    |  | 8.111        | 3.7         | 11.8    | 3.48       | 15.3  | 36         | Pass   |
| High Channel 11, 2462 MHz  |  | 6.051        | 3.7         | 9.8     | 3.48       | 13.3  | 36         | Pass   |
| 802.11(g), 20 MHz, 54 Mbps |  |              |             |         |            |       |            |        |
| Low Channel 1, 2412 MHz    |  | -1.575       | 5.5         | 3.9     | 3.48       | 7.4   | 36         | Pass   |
| Mid Channel 6, 2437 MHz    |  | 4.862        | 5.5         | 10.4    | 3.48       | 13.9  | 36         | Pass   |

# EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

|                            |        |     |       |      |      |    |      |
|----------------------------|--------|-----|-------|------|------|----|------|
| High Channel 11, 2462 MHz  | 4.462  | 5.5 | 10    | 3.48 | 13.5 | 36 | Pass |
| 802.11(n), 20 MHz, MCS0    |        |     |       |      |      |    |      |
| Low Channel 1, 2412 MHz    | 3.245  | 0.4 | 3.6   | 3.48 | 7.1  | 36 | Pass |
| Mid Channel 6, 2437 MHz    | 12.608 | 0.4 | 13    | 3.48 | 16.5 | 36 | Pass |
| High Channel 11, 2462 MHz  | 9.118  | 0.4 | 9.5   | 3.48 | 13.0 | 36 | Pass |
| 802.11(n), 20 MHz, MCS7    |        |     |       |      |      |    |      |
| Low Channel 1, 2412 MHz    | -3.072 | 6.1 | 3     | 3.48 | 6.5  | 36 | Pass |
| Mid Channel 6, 2437 MHz    | 2.847  | 6.1 | 8.9   | 3.48 | 12.4 | 36 | Pass |
| High Channel 11, 2462 MHz  | 2.976  | 6.1 | 9.1   | 3.48 | 12.6 | 36 | Pass |
| Antenna 2                  |        |     |       |      |      |    |      |
| 802.11(b), 20 MHz, 1 Mbps  |        |     |       |      |      |    |      |
| Low Channel 1, 2412 MHz    | 6.598  | 0.2 | 6.8   | 3.48 | 10.3 | 36 | Pass |
| Mid Channel 6, 2437 MHz    | 14.586 | 0.2 | 14.8  | 3.48 | 18.3 | 36 | Pass |
| High Channel 11, 2462 MHz  | 14.781 | 0.2 | 15    | 3.48 | 18.5 | 36 | Pass |
| 802.11(b), 20 MHz, 11 Mbps |        |     |       |      |      |    |      |
| Low Channel 1, 2412 MHz    | 6.448  | 0.9 | 7.3   | 3.48 | 10.8 | 36 | Pass |
| Mid Channel 6, 2437 MHz    | 14.245 | 0.9 | 15.1  | 3.48 | 18.6 | 36 | Pass |
| High Channel 11, 2462 MHz  | 14.456 | 0.9 | 15.4  | 3.48 | 18.9 | 36 | Pass |
| 802.11(g), 20 MHz, 6 Mbps  |        |     |       |      |      |    |      |
| Low Channel 1, 2412 MHz    | 2.423  | 0.4 | 2.8   | 3.48 | 6.3  | 36 | Pass |
| Mid Channel 6, 2437 MHz    | 14.075 | 0.4 | 14.5  | 3.48 | 18.0 | 36 | Pass |
| High Channel 11, 2462 MHz  | 9.78   | 0.4 | 10.2  | 3.48 | 13.7 | 36 | Pass |
| 802.11(g), 20 MHz, 36 Mbps |        |     |       |      |      |    |      |
| Low Channel 1, 2412 MHz    | -0.91  | 3.7 | 2.8   | 3.48 | 6.3  | 36 | Pass |
| Mid Channel 6, 2437 MHz    | 8.47   | 3.7 | 12.2  | 3.48 | 15.7 | 36 | Pass |
| High Channel 11, 2462 MHz  | 6.568  | 3.7 | 10.3  | 3.48 | 13.8 | 36 | Pass |
| 802.11(g), 20 MHz, 54 Mbps |        |     |       |      |      |    |      |
| Low Channel 1, 2412 MHz    | -2.532 | 5.5 | 3     | 3.48 | 6.5  | 36 | Pass |
| Mid Channel 6, 2437 MHz    | 5.227  | 5.5 | 10.7  | 3.48 | 14.2 | 36 | Pass |
| High Channel 11, 2462 MHz  | 4.989  | 5.5 | 10.5  | 3.48 | 14.0 | 36 | Pass |
| 802.11(n), 20 MHz, MCS0    |        |     |       |      |      |    |      |
| Low Channel 1, 2412 MHz    | 2.218  | 0.4 | 2.6   | 3.48 | 6.1  | 36 | Pass |
| Mid Channel 6, 2437 MHz    | 12.982 | 0.4 | 13.48 | 3.48 | 17.0 | 36 | Pass |
| High Channel 11, 2462 MHz  | 9.589  | 0.4 | 10    | 3.48 | 13.5 | 36 | Pass |
| 802.11(n), 20 MHz, MCS7    |        |     |       |      |      |    |      |
| Low Channel 1, 2412 MHz    | -4.994 | 6.1 | 1.1   | 3.48 | 4.6  | 36 | Pass |
| Mid Channel 6, 2437 MHz    | 3.168  | 6.1 | 9.3   | 3.48 | 12.8 | 36 | Pass |
| High Channel 11, 2462 MHz  | 3.4857 | 6.1 | 9.6   | 3.48 | 13.1 | 36 | Pass |

# POWER SPECTRAL DENSITY

## TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The power spectral density was measured using the channels and modes as called out in the following data sheets.

The method AVGPSD-2 in clause 11.10.5 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging and RMS detection across the ON and OFF times of the transmission. The analyzer was configured to the following settings:

Span = at least 1.5 \* OBW  
RBW = 100 kHz  
VBW = 300 kHz  
Detector = RMS  
Sweep = 601 mS  
Points = 601

The peak marker function was used to determine the maximum amplitude level.

## TEST EQUIPMENT

| Description                  | Manufacturer       | Model                 | ID  | Last Cal.  | Cal. Due   |
|------------------------------|--------------------|-----------------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer | Agilent            | E4440A                | AAW | 2024-02-14 | 2025-02-14 |
| Block - DC                   | Fairview Microwave | SD3379                | AMX | 2024-03-16 | 2025-03-16 |
| Attenuator                   | Fairview Microwave | SA26B-20              | TWJ | 2024-03-14 | 2025-03-14 |
| Cable                        | Micro-Coax         | UFD150A-1-0720-200200 | EVK | 2024-03-13 | 2025-03-13 |
| Generator - Signal           | Keysight           | N5182B                | TEU | 2024-04-18 | 2027-04-18 |

# POWER SPECTRAL DENSITY

|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:33:FF          | Date:                 | 2024-07-26 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 22.3°C     |
| Attendees:        | None                       | Relative Humidity:    | 47.9%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1015 mbar  |
| Tested By:        | Christopher Ladwig         | Job Site:             | EV06       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-8 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## COMMENTS

Reference level offset includes: DC block, 20 dB attenuator and measurement cable.  
Measurements performed on the antenna port that has the highest conducted output power.

## DEVIATIONS FROM TEST STANDARD

None

## CONCLUSION

Pass



Tested By

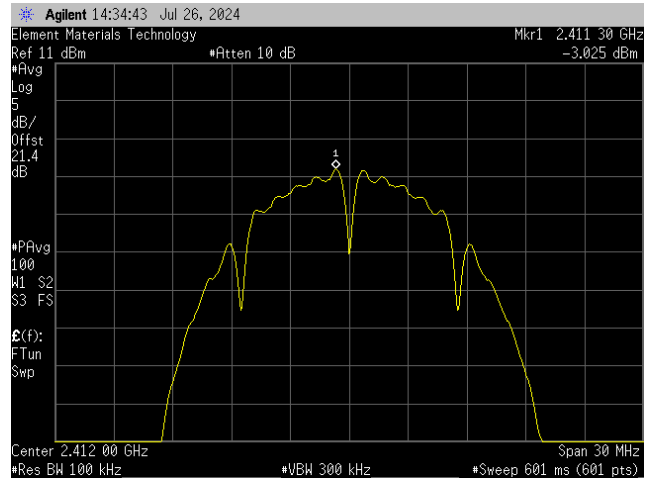
## TEST RESULTS

|                            |                           | Measured    | Duty Cycle  | Final       | Limit        | Results |
|----------------------------|---------------------------|-------------|-------------|-------------|--------------|---------|
|                            |                           | Value (dBm) | Factor (dB) | Value (dBm) | ≤ (dBm/3kHz) |         |
| Antenna 2                  |                           |             |             |             |              |         |
| 802.11(b), 20 MHz, 1 Mbps  |                           |             |             |             |              |         |
|                            | Low Channel 1, 2412 MHz   | -3.025      | 0.1         | -2.9        | 8            | Pass    |
|                            | Mid Channel 6, 2437 MHz   | -2.726      | 0.2         | -2.5        | 8            | Pass    |
|                            | High Channel 11, 2462 MHz | -2.519      | 0.2         | -2.3        | 8            | Pass    |
| 802.11(b), 20 MHz, 11 Mbps |                           |             |             |             |              |         |
|                            | Low Channel 1, 2412 MHz   | -3.694      | 0.9         | -2.8        | 8            | Pass    |
|                            | Mid Channel 6, 2437 MHz   | -3.337      | 0.9         | -2.4        | 8            | Pass    |
|                            | High Channel 11, 2462 MHz | -3.169      | 0.9         | -2.3        | 8            | Pass    |
| 802.11(g), 20 MHz, 6 Mbps  |                           |             |             |             |              |         |
|                            | Low Channel 1, 2412 MHz   | -9.952      | 0.5         | -9.5        | 8            | Pass    |
|                            | Mid Channel 6, 2437 MHz   | -5.265      | 0.4         | -4.9        | 8            | Pass    |
|                            | High Channel 11, 2462 MHz | -9.591      | 0.5         | -9.1        | 8            | Pass    |
| 802.11(g), 20 MHz, 36 Mbps |                           |             |             |             |              |         |
|                            | Low Channel 1, 2412 MHz   | -13.88      | 3.7         | -10.2       | 8            | Pass    |
|                            | Mid Channel 6, 2437 MHz   | -11.584     | 3.7         | -7.9        | 8            | Pass    |
|                            | High Channel 11, 2462 MHz | -13.464     | 3.7         | -9.8        | 8            | Pass    |
| 802.11(g), 20 MHz, 54 Mbps |                           |             |             |             |              |         |
|                            | Low Channel 1, 2412 MHz   | -15.075     | 4           | -11.1       | 8            | Pass    |

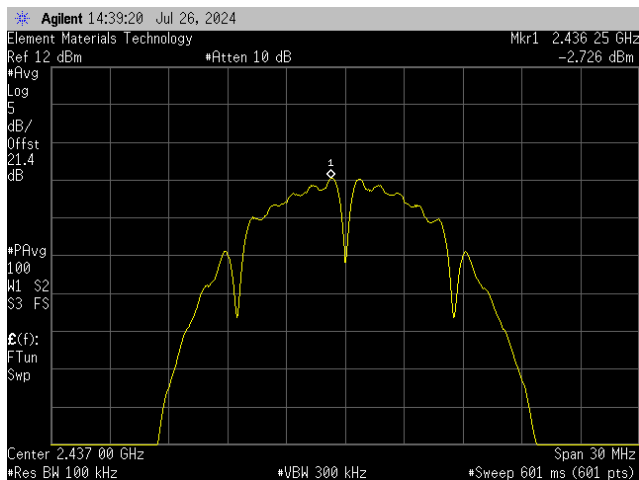
# POWER SPECTRAL DENSITY

|                           |         |     |       |   |      |
|---------------------------|---------|-----|-------|---|------|
| Mid Channel 6, 2437 MHz   | -14.41  | 4   | -10.4 | 8 | Pass |
| High Channel 11, 2462 MHz | -14.817 | 4   | -10.8 | 8 | Pass |
| 802.11(n), 20 MHz, MCS0   |         |     |       |   |      |
| Low Channel 1, 2412 MHz   | -10.248 | 0.4 | -9.8  | 8 | Pass |
| Mid Channel 6, 2437 MHz   | -6.608  | 0.4 | -6.2  | 8 | Pass |
| High Channel 11, 2462 MHz | -9.942  | 0.5 | -9.4  | 8 | Pass |
| 802.11(n), 20 MHz, MCS7   |         |     |       |   |      |
| Low Channel 1, 2412 MHz   | -16.258 | 7.2 | -9.1  | 8 | Pass |
| Mid Channel 6, 2437 MHz   | -16.359 | 4.7 | -11.7 | 8 | Pass |
| High Channel 11, 2462 MHz | -15.979 | 7.1 | -8.9  | 8 | Pass |

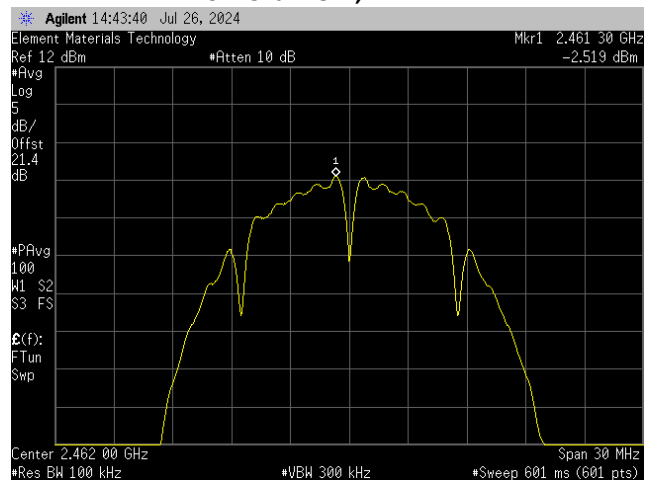
# POWER SPECTRAL DENSITY



**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Low Channel 1, 2412 MHz**

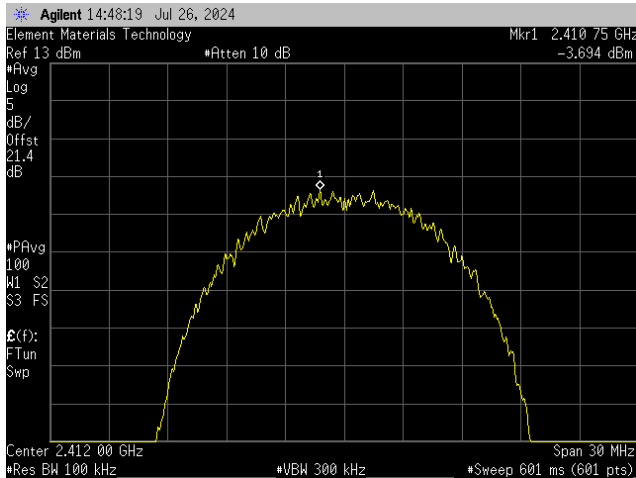


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Mid Channel 6, 2437 MHz**

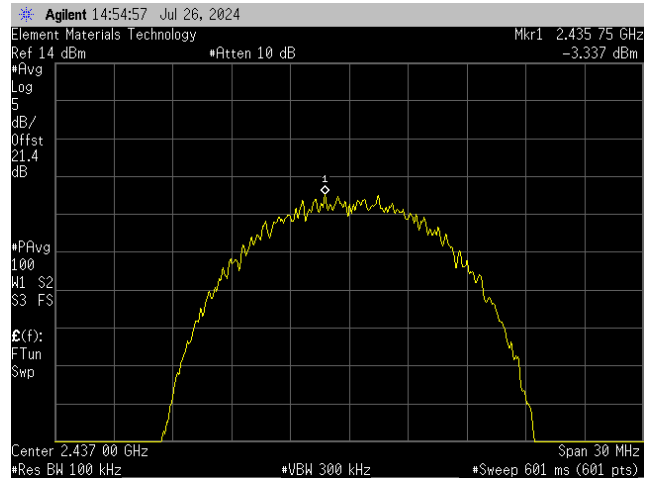


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**High Channel 11, 2462 MHz**

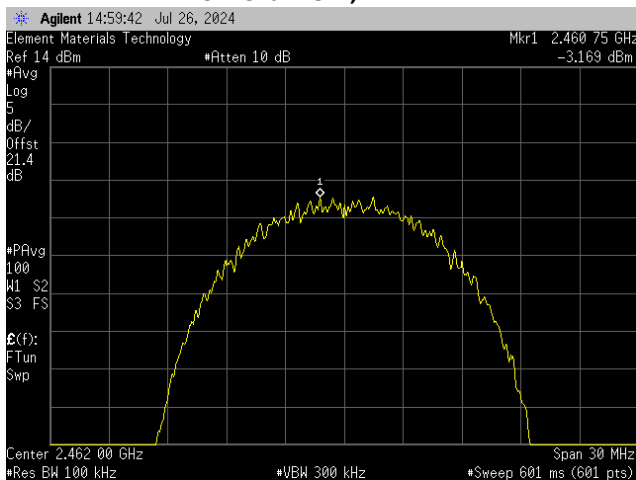
# POWER SPECTRAL DENSITY



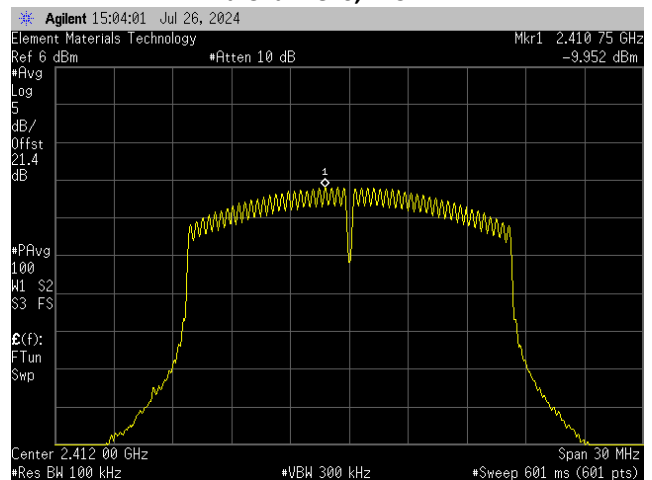
**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**Mid Channel 6, 2437 MHz**

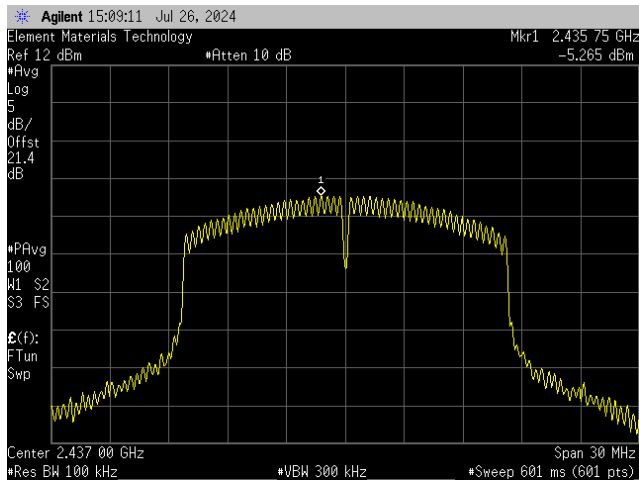


**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**High Channel 11, 2462 MHz**

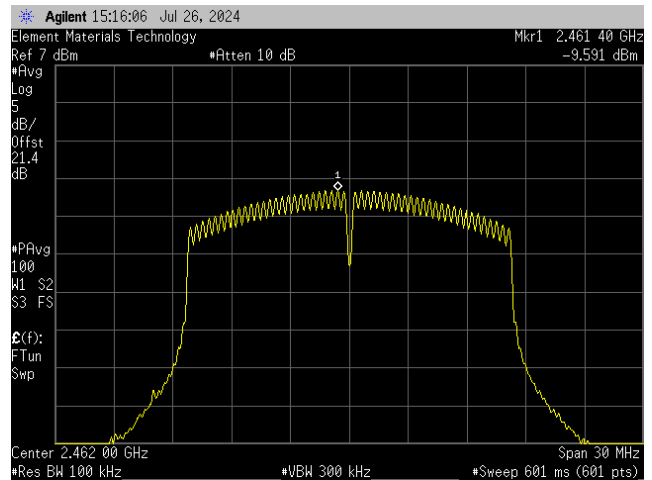


**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Low Channel 1, 2412 MHz**

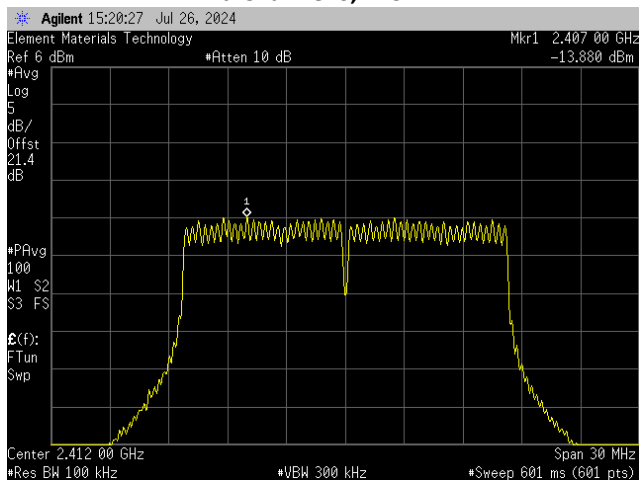
# POWER SPECTRAL DENSITY



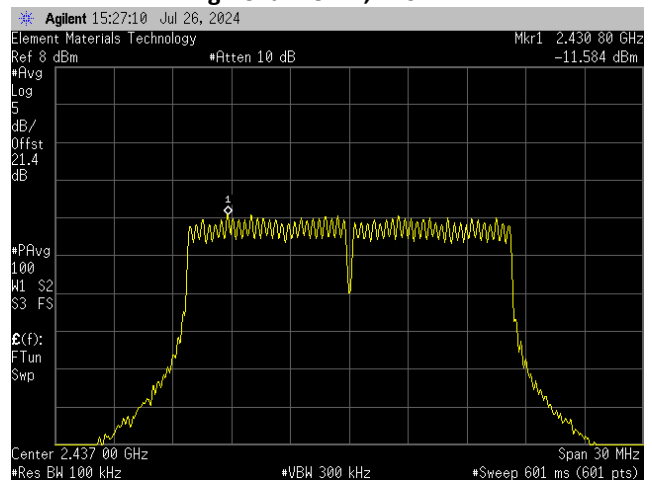
**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Mid Channel 6, 2437 MHz**



**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**High Channel 11, 2462 MHz**

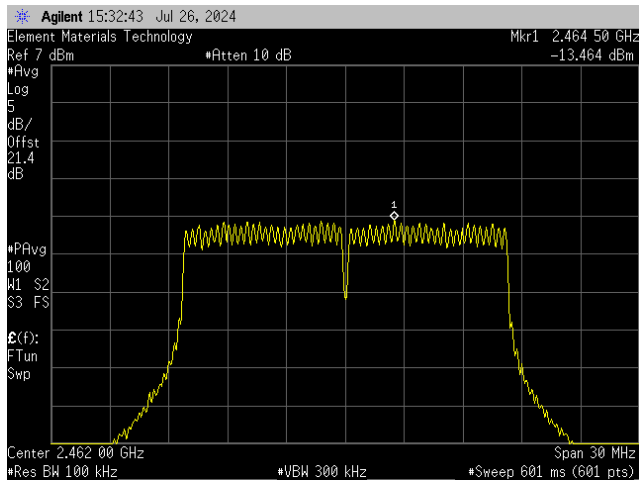


**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**Low Channel 1, 2412 MHz**

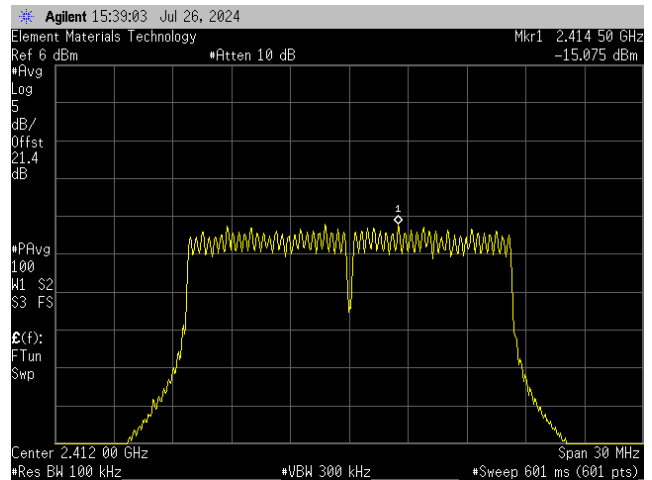


**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**Mid Channel 6, 2437 MHz**

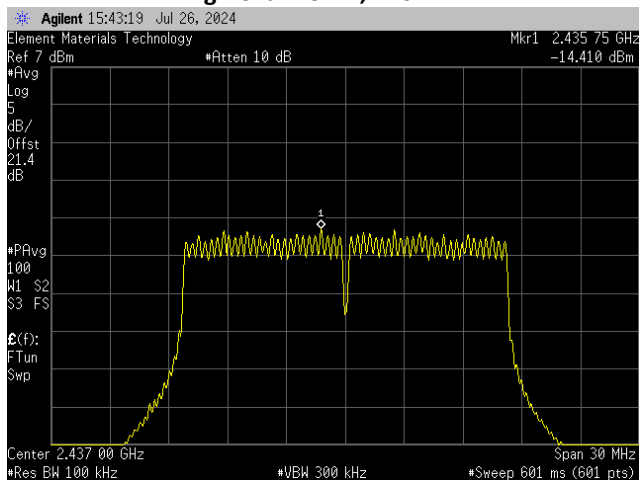
# POWER SPECTRAL DENSITY



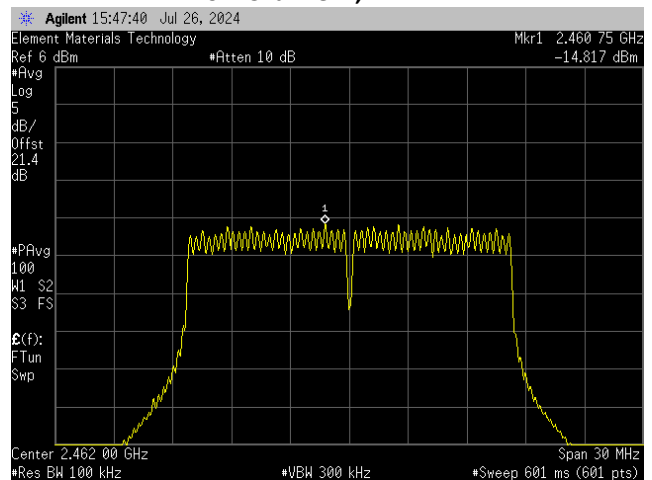
**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**High Channel 11, 2462 MHz**



**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**Low Channel 1, 2412 MHz**

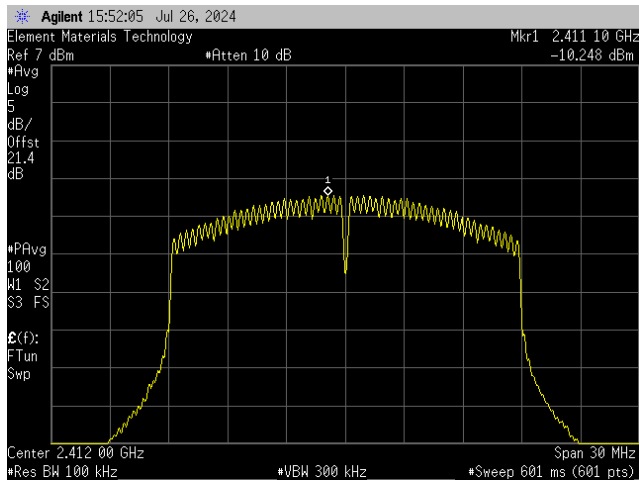


**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**Mid Channel 6, 2437 MHz**

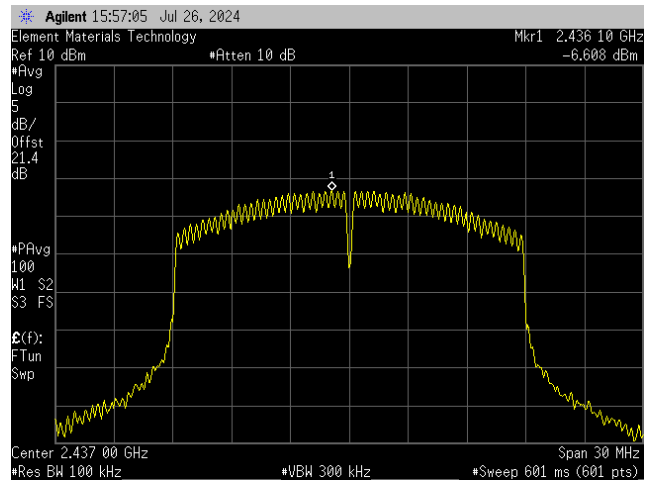


**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**High Channel 11, 2462 MHz**

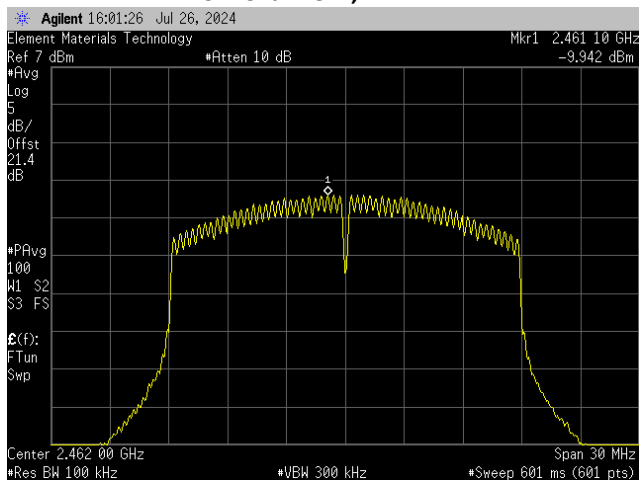
# POWER SPECTRAL DENSITY



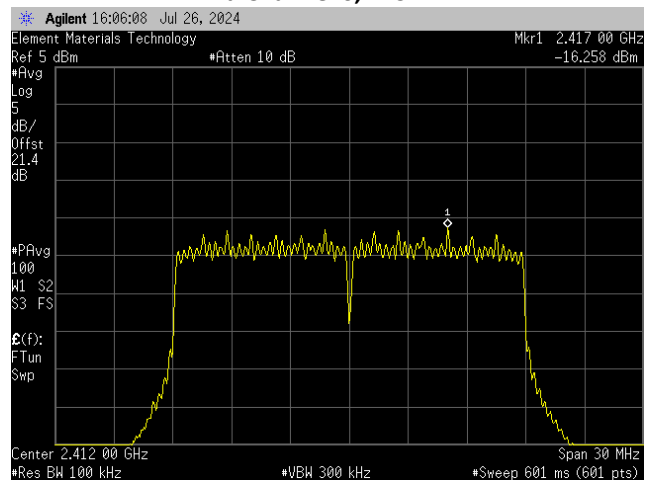
**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Mid Channel 6, 2437 MHz**

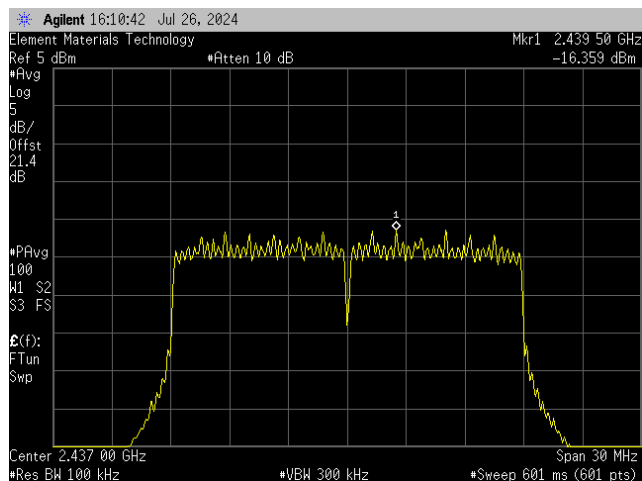


**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**High Channel 11, 2462 MHz**

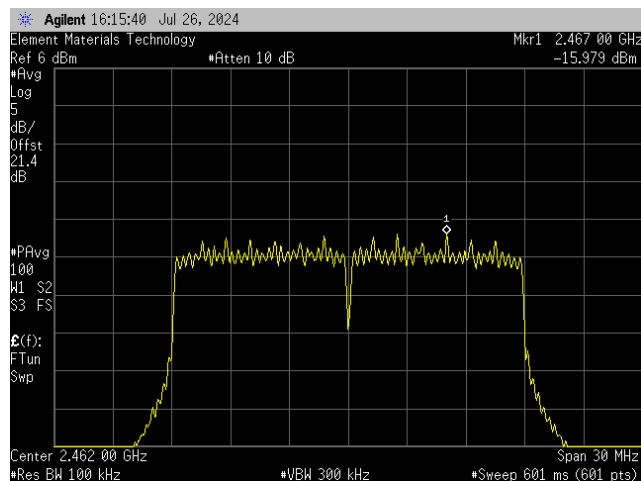


**Antenna 2**  
**802.11(n), 20 MHz, MCS7**  
**Low Channel 1, 2412 MHz**

# POWER SPECTRAL DENSITY



**Antenna 2**  
**802.11(n), 20 MHz, MCS7**  
**Mid Channel 6, 2437 MHz**



**Antenna 2**  
**802.11(n), 20 MHz, MCS7**  
**High Channel 11, 2462 MHz**

# BAND EDGE COMPLIANCE

## TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge. The analyzer screen captures for this test show an example of the emission mask for the test mode also used during the radiated spurious emissions at the restricted band edges test.

## TEST EQUIPMENT

| Description                  | Manufacturer       | Model                 | ID  | Last Cal.  | Cal. Due   |
|------------------------------|--------------------|-----------------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer | Agilent            | E4440A                | AAW | 2024-02-14 | 2025-02-14 |
| Block - DC                   | Fairview Microwave | SD3379                | AMX | 2024-03-16 | 2025-03-16 |
| Attenuator                   | Fairview Microwave | SA26B-20              | TWJ | 2024-03-14 | 2025-03-14 |
| Cable                        | Micro-Coax         | UFD150A-1-0720-200200 | EVK | 2024-03-13 | 2025-03-13 |
| Generator - Signal           | Keysight           | N5182B                | TEU | 2024-04-18 | 2027-04-18 |

# BAND EDGE COMPLIANCE

|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:33:FF          | Date:                 | 2024-08-21 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 22.3°C     |
| Attendees:        | None                       | Relative Humidity:    | 48.3%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1015 mbar  |
| Tested By:        | Christopher Ladwig         | Job Site:             | EV06       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-8 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## COMMENTS

Reference level offset includes: DC block, 20 dB attenuator and measurement cable.  
Measurements performed on the antenna port that has the highest conducted output power.

## DEVIATIONS FROM TEST STANDARD

None

## CONCLUSION

Pass

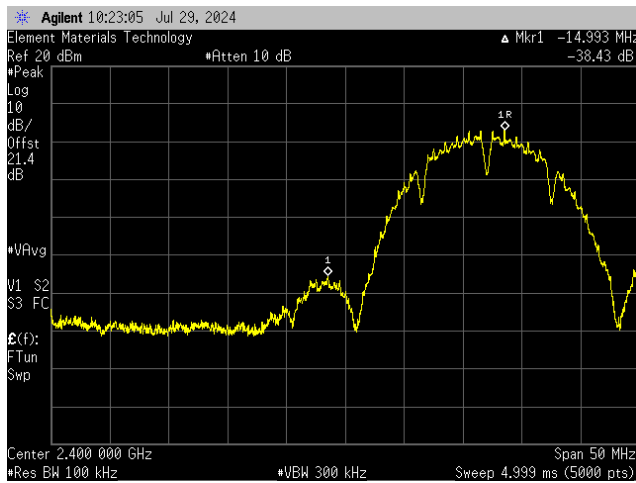


Tested By

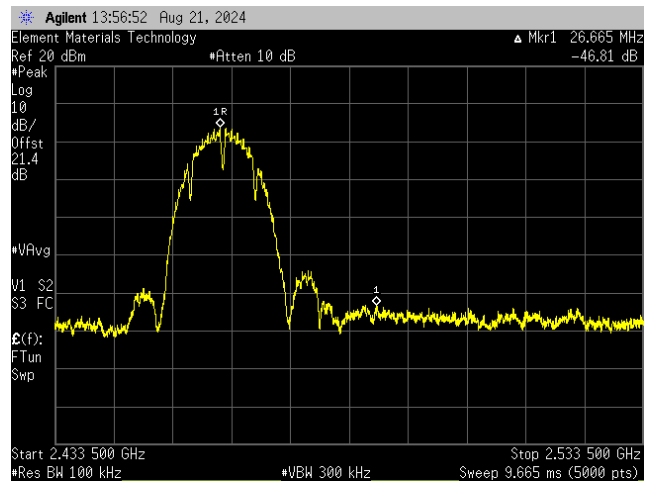
## TEST RESULTS

|                            | Value<br>(dBc) | Limit<br>≤ (dBc) | Result |
|----------------------------|----------------|------------------|--------|
| Antenna 2                  |                |                  |        |
| 802.11(b), 20 MHz, 1 Mbps  |                |                  |        |
| Low Channel 1, 2412 MHz    | -38.43         | -30              | Pass   |
| High Channel 11, 2462 MHz  | -46.81         | -30              | Pass   |
| 802.11(b), 20 MHz, 11 Mbps |                |                  |        |
| Low Channel 1, 2412 MHz    | -32.4          | -30              | Pass   |
| High Channel 11, 2462 MHz  | -46.59         | -30              | Pass   |
| 802.11(g), 20 MHz, 6 Mbps  |                |                  |        |
| Low Channel 1, 2412 MHz    | -31.25         | -30              | Pass   |
| High Channel 11, 2462 MHz  | -43.43         | -30              | Pass   |
| 802.11(g), 20 MHz, 36 Mbps |                |                  |        |
| Low Channel 1, 2412 MHz    | -30.98         | -30              | Pass   |
| High Channel 11, 2462 MHz  | -43.7          | -30              | Pass   |
| 802.11(g), 20 MHz, 54 Mbps |                |                  |        |
| Low Channel 1, 2412 MHz    | -31.31         | -30              | Pass   |
| High Channel 11, 2462 MHz  | -43.43         | -30              | Pass   |
| 802.11(n), 20 MHz, MCS0    |                |                  |        |
| Low Channel 1, 2412 MHz    | -32.55         | -30              | Pass   |
| High Channel 11, 2462 MHz  | -44.5          | -30              | Pass   |
| 802.11(n), 20 MHz, MCS7    |                |                  |        |
| Low Channel 1, 2412 MHz    | -31.89         | -30              | Pass   |
| High Channel 11, 2462 MHz  | -43.68         | -30              | Pass   |

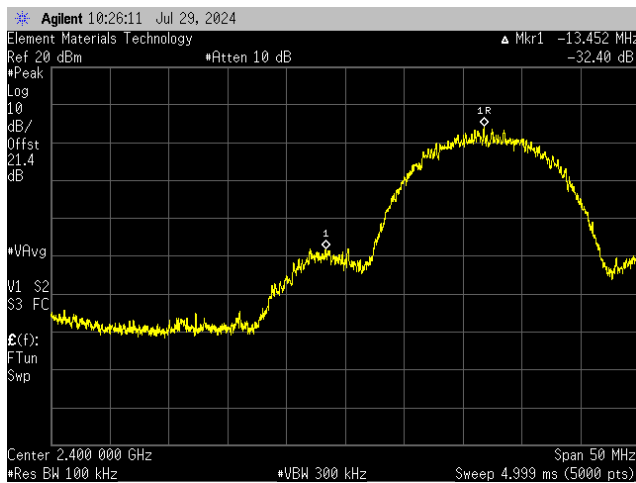
# BAND EDGE COMPLIANCE



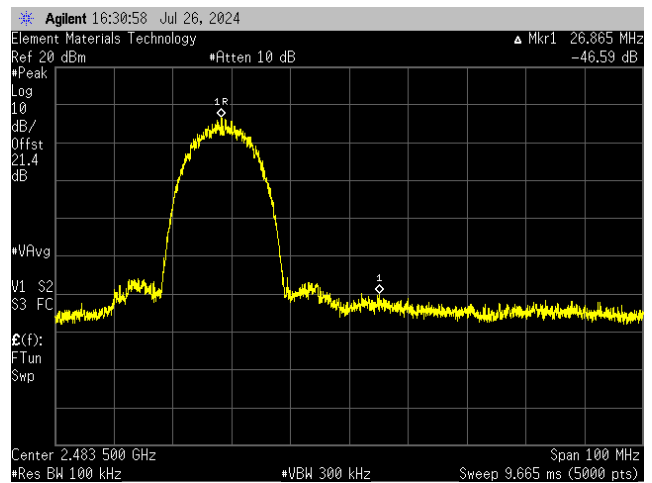
**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**High Channel 11, 2462 MHz**

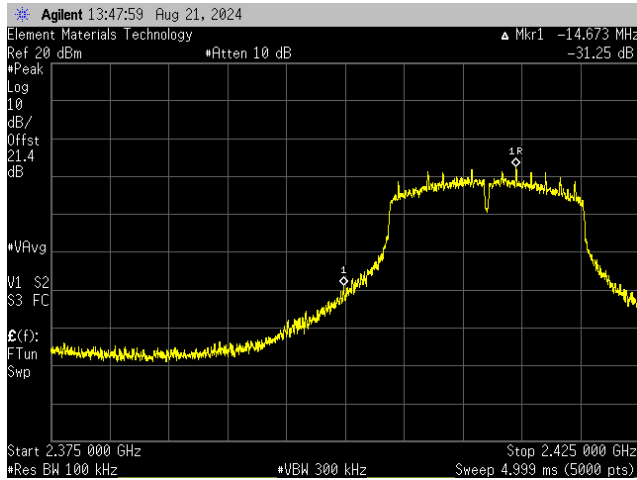


**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**Low Channel 1, 2412 MHz**

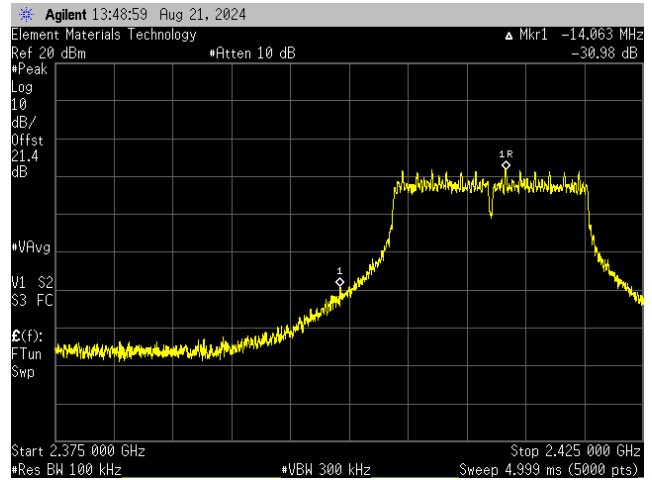


**Antenna 2**  
**802.11(b), 20 MHz, 11 Mbps**  
**High Channel 11, 2462 MHz**

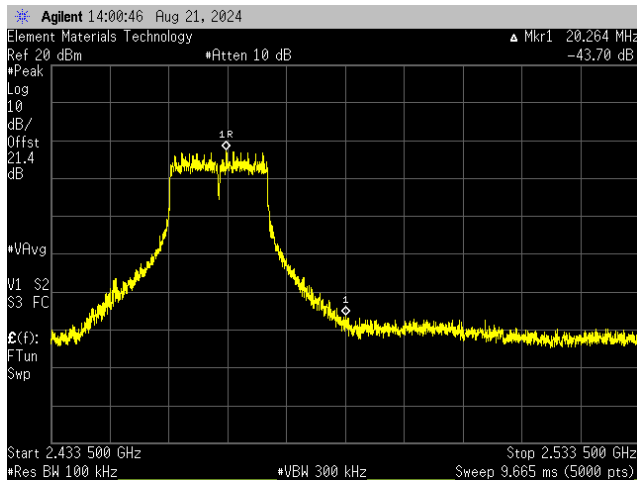
# BAND EDGE COMPLIANCE



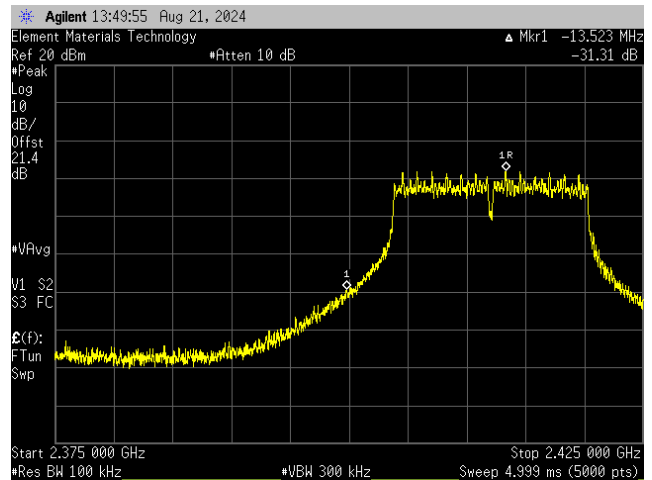
**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**Low Channel 1, 2412 MHz**

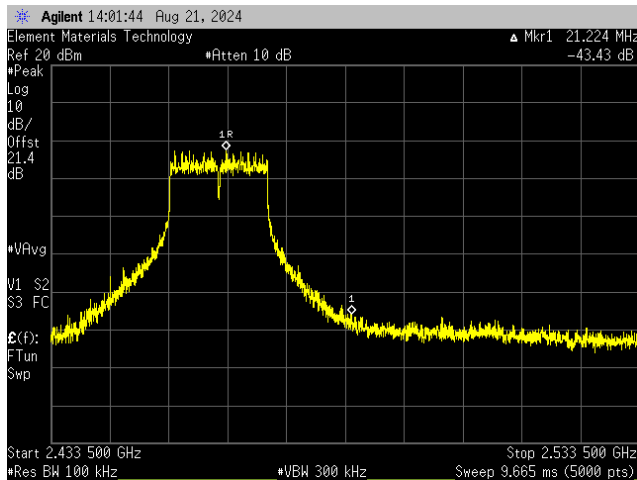


**Antenna 2**  
**802.11(g), 20 MHz, 36 Mbps**  
**High Channel 11, 2462 MHz**

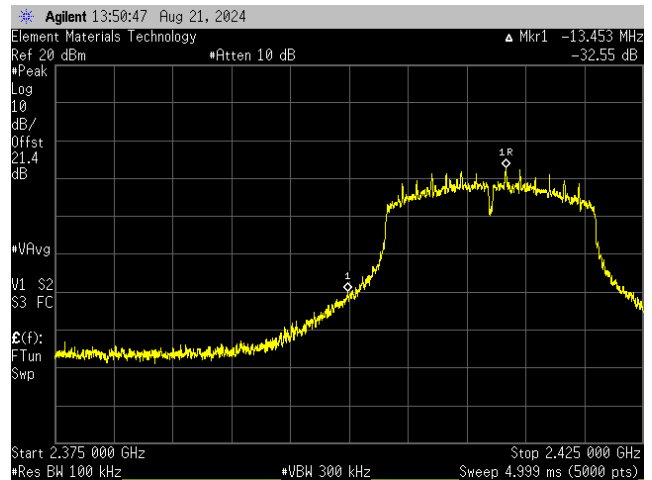


**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**Low Channel 1, 2412 MHz**

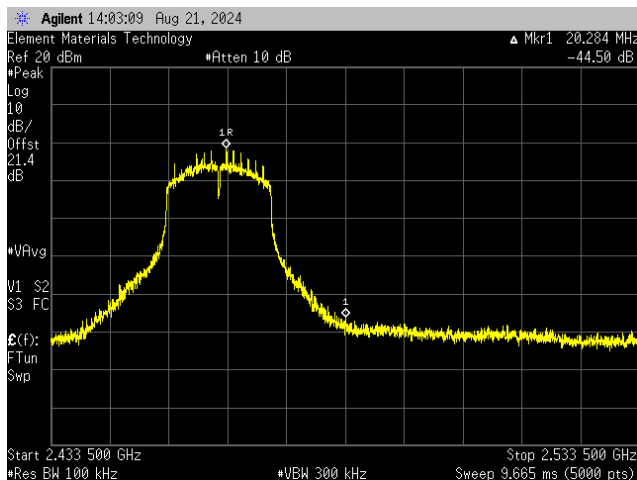
# BAND EDGE COMPLIANCE



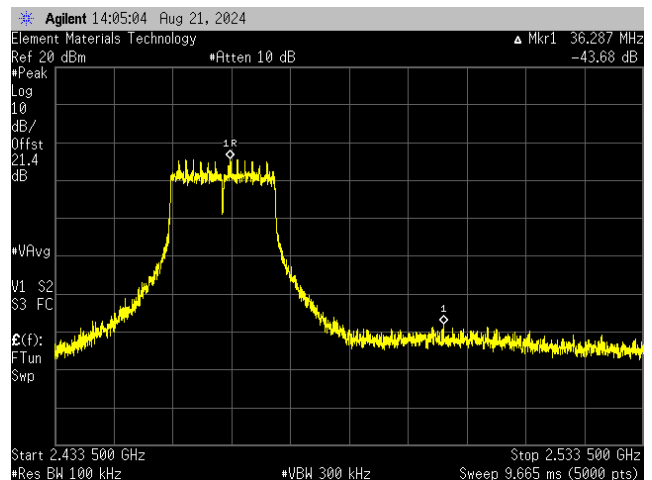
**Antenna 2**  
**802.11(g), 20 MHz, 54 Mbps**  
**High Channel 11, 2462 MHz**



**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**High Channel 11, 2462 MHz**



**Antenna 2**  
**802.11(n), 20 MHz, MCS7**  
**High Channel 11, 2462 MHz**

# SPURIOUS CONDUCTED EMISSIONS

## TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the fundamental was measured with a 100 kHz resolution bandwidth and the highest value was recorded. The rest of the spectrum was then measured with a 100 kHz resolution bandwidth and the highest value was found. The difference between the value found on the fundamental and the rest of the spectrum was compared against the limit to determine compliance.

The reference level offset for the fundamental screen capture was based on a measured value of the loss between the spectrum analyzer and the EUT which was verified at the time of test. The remaining screen capture(s) use an internal transducer factor on the analyzer to correct the displayed trace based on the cable loss over frequency. The reference level offset for the additional screen capture(s) is then based on the expected attenuator value and any other losses.

Fundamental Offset = Ref Lvl Offset showing measured composite factor of all losses

Remaining Screen capture(s) Offset = "Internal" cable loss factor not shown on screen capture + Ref Lvl Offset showing expected attenuator value and any other losses

## TEST EQUIPMENT

| Description                  | Manufacturer       | Model                 | ID  | Last Cal.  | Cal. Due   |
|------------------------------|--------------------|-----------------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer | Agilent            | E4440A                | AAW | 2024-02-14 | 2025-02-14 |
| Block - DC                   | Fairview Microwave | SD3379                | AMX | 2024-03-16 | 2025-03-16 |
| Attenuator                   | Fairview Microwave | SA26B-20              | TWJ | 2024-03-14 | 2025-03-14 |
| Cable                        | Micro-Coax         | UFD150A-1-0720-200200 | EVK | 2024-03-13 | 2025-03-13 |
| Generator - Signal           | Keysight           | N5182B                | TEU | 2024-04-18 | 2027-04-18 |

# SPURIOUS CONDUCTED EMISSIONS

|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:33:FF          | Date:                 | 2024-08-21 |
| Customer:         | Irrigreen, Inc.            | Temperature:          | 22.4°C     |
| Attendees:        | None                       | Relative Humidity:    | 48.3%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1015 mbar  |
| Tested By:        | Christopher Ladwig         | Job Site:             | EV06       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-8 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## COMMENTS

Reference level offset includes: DC block, 20 dB attenuator and measurement cable.  
Measurements performed on the antenna port that has the highest conducted output power.

## DEVIATIONS FROM TEST STANDARD

None

## CONCLUSION

Pass



Tested By

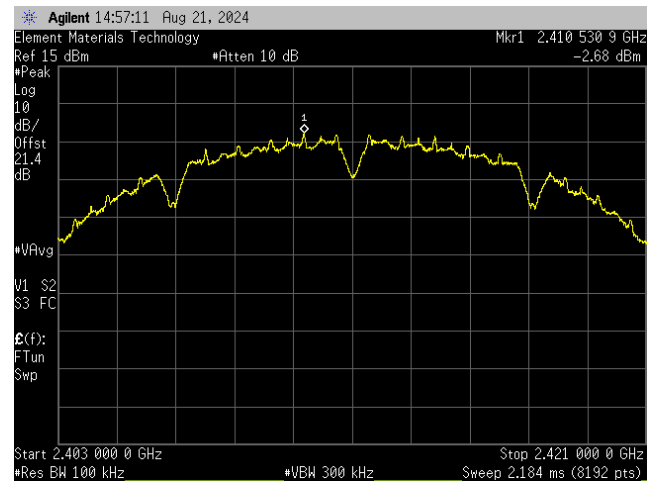
## TEST RESULTS

|                           | Frequency Range   | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
|---------------------------|-------------------|---------------------|-----------------|---------------|--------|
| Antenna 2                 |                   |                     |                 |               |        |
| 802.11(b), 20 MHz, 1 Mbps |                   |                     |                 |               |        |
| Low Channel 1, 2412 MHz   | Fundamental       | 2410.53             | N/A             | N/A           | N/A    |
|                           | 30 MHz - 12.5 GHz | 2334.9              | -46.84          | -30           | Pass   |
|                           | 12.5 GHz - 25 GHz | 24871.8             | -45.07          | -30           | Pass   |
| Mid Channel 6, 2437 MHz   | Fundamental       | 2436.49             | N/A             | N/A           | N/A    |
|                           | 30 MHz - 12.5 GHz | 2354.7              | -48.1           | -30           | Pass   |
|                           | 12.5 GHz - 25 GHz | 24729.9             | -50.76          | -30           | Pass   |
| High Channel 11, 2462 MHz | Fundamental       | 2461.52             | N/A             | N/A           | N/A    |
|                           | 30 MHz - 12.5 GHz | 2513                | -49.52          | -30           | Pass   |
|                           | 12.5 GHz - 25 GHz | 24270.5             | -51.89          | -30           | Pass   |
| 802.11(g), 20 MHz, 6 Mbps |                   |                     |                 |               |        |
| Low Channel 1, 2412 MHz   | Fundamental       | 2413.31             | N/A             | N/A           | N/A    |
|                           | 30 MHz - 12.5 GHz | 2386.7              | -45.4           | -30           | Pass   |
|                           | 12.5 GHz - 25 GHz | 24388               | -45.58          | -30           | Pass   |
| Mid Channel 6, 2437 MHz   | Fundamental       | 2435.77             | N/A             | N/A           | N/A    |
|                           | 30 MHz - 12.5 GHz | 2353.2              | -48.98          | -30           | Pass   |
|                           | 12.5 GHz - 25 GHz | 24955.7             | -49.89          | -30           | Pass   |
| High Channel 11, 2462 MHz | Fundamental       | 2463.29             | N/A             | N/A           | N/A    |
|                           | 30 MHz - 12.5 GHz | 2505.4              | -47.45          | -30           | Pass   |
|                           | 12.5 GHz - 25 GHz | 24504               | -45.85          | -30           | Pass   |
| 802.11(n), 20 MHz, MCS0   |                   |                     |                 |               |        |
| Low Channel 1, 2412 MHz   | Fundamental       | 2413.3              | N/A             | N/A           | N/A    |
|                           | 30 MHz - 12.5 GHz | 7891.7              | -46.19          | -30           | Pass   |
|                           | 12.5 GHz - 25 GHz | 24333.1             | -39.73          | -30           | Pass   |
| Mid Channel 6, 2437 MHz   | Fundamental       | 2438.28             | N/A             | N/A           | N/A    |

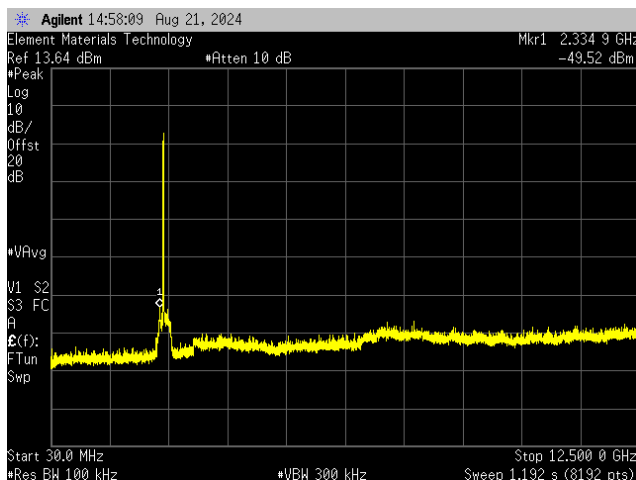
# SPURIOUS CONDUCTED EMISSIONS

|                           | Frequency Range   | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
|---------------------------|-------------------|---------------------|-----------------|---------------|--------|
| High Channel 11, 2462 MHz | 30 MHz - 12.5 GHz | 2360.8              | -48.05          | -30           | Pass   |
|                           | 12.5 GHz - 25 GHz | 24870.3             | -50.01          | -30           | Pass   |
|                           | Fundamental       | 2463.3              | N/A             | N/A           | N/A    |
|                           | 30 MHz - 12.5 GHz | 2538.9              | -47.23          | -30           | Pass   |
|                           | 12.5 GHz - 25 GHz | 24438.4             | -45.71          | -30           | Pass   |

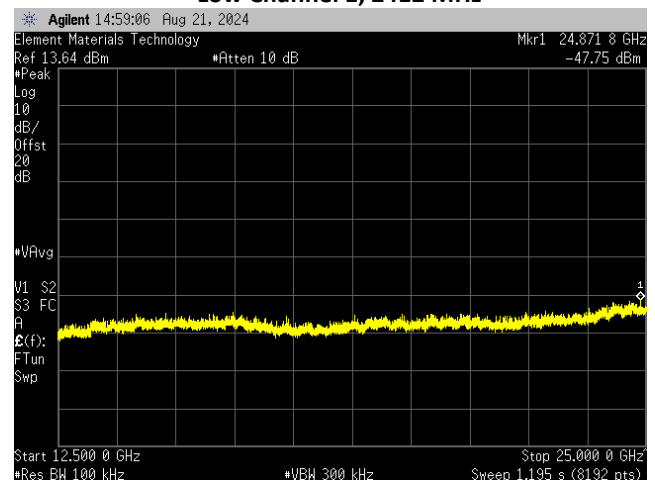
# SPURIOUS CONDUCTED EMISSIONS



**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Low Channel 1, 2412 MHz**

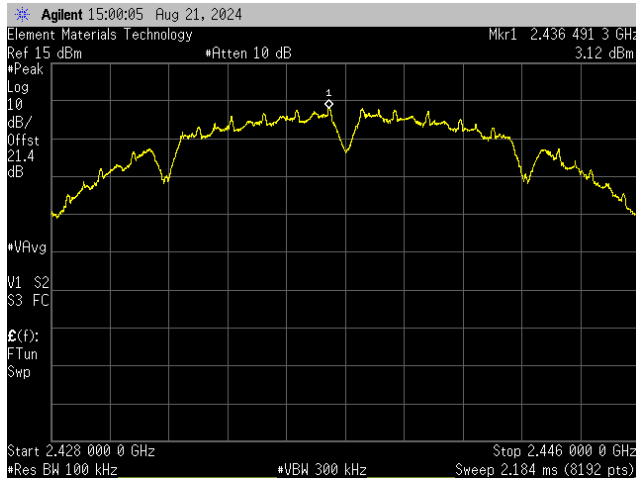


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Low Channel 1, 2412 MHz**

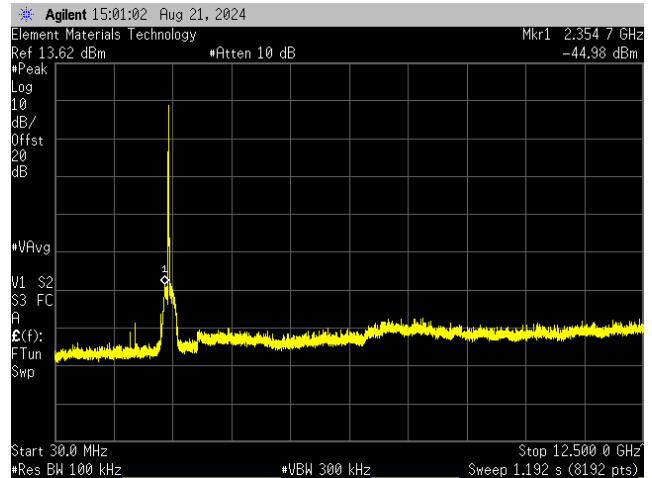


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Low Channel 1, 2412 MHz**

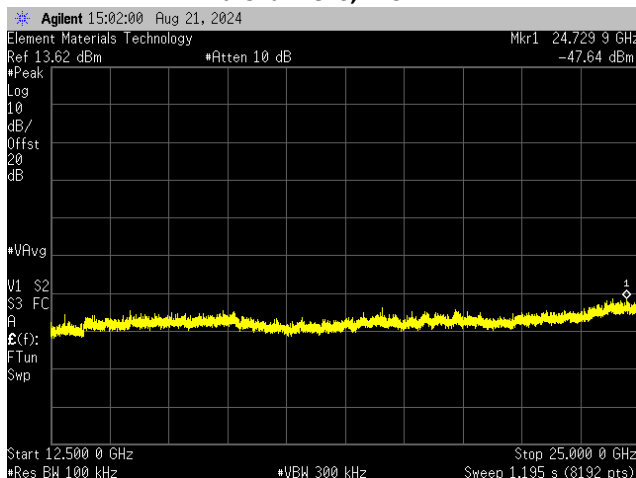
# SPURIOUS CONDUCTED EMISSIONS



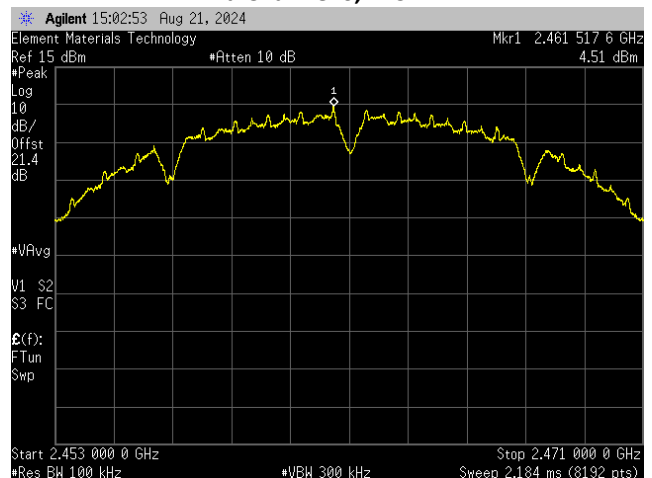
**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Mid Channel 6, 2437 MHz**



**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Mid Channel 6, 2437 MHz**

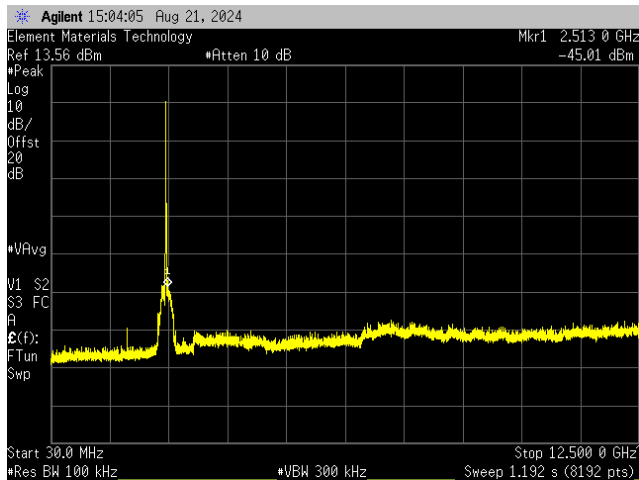


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**Mid Channel 6, 2437 MHz**

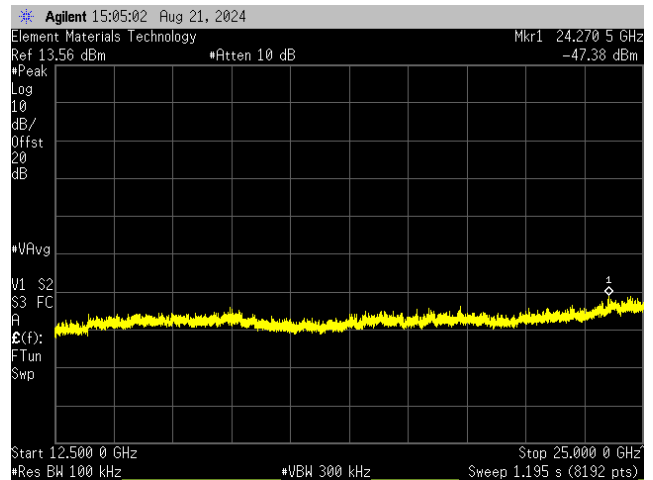


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**High Channel 11, 2462 MHz**

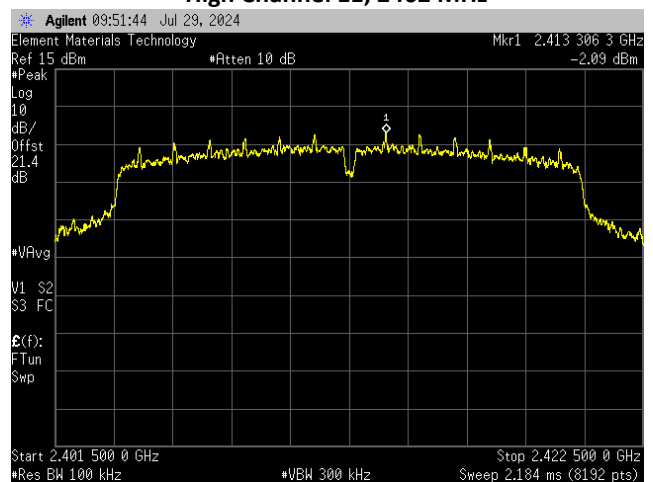
# SPURIOUS CONDUCTED EMISSIONS



**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**High Channel 11, 2462 MHz**

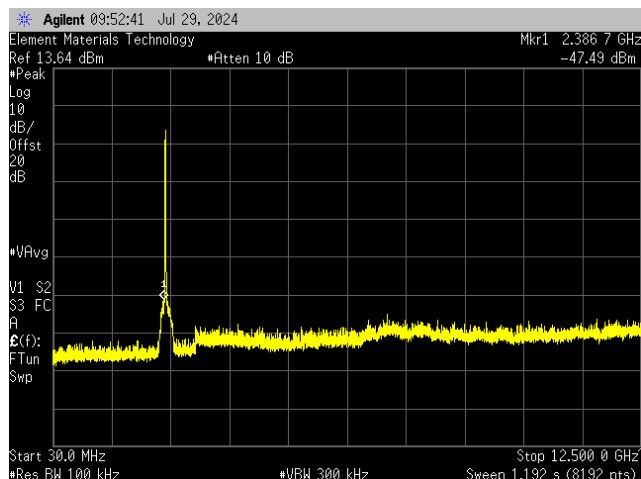


**Antenna 2**  
**802.11(b), 20 MHz, 1 Mbps**  
**High Channel 11, 2462 MHz**

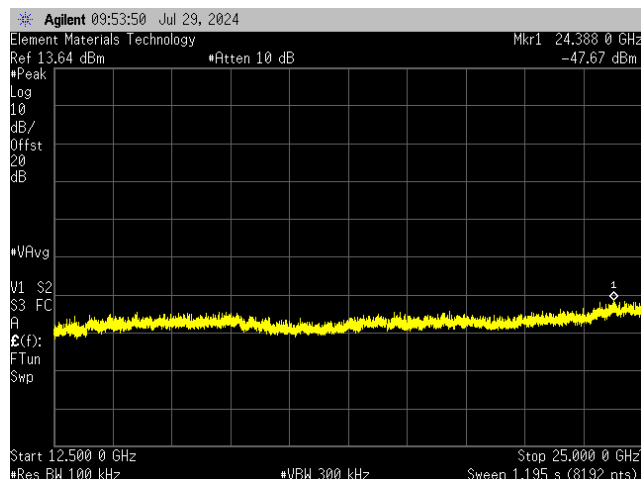


**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Low Channel 1, 2412 MHz**

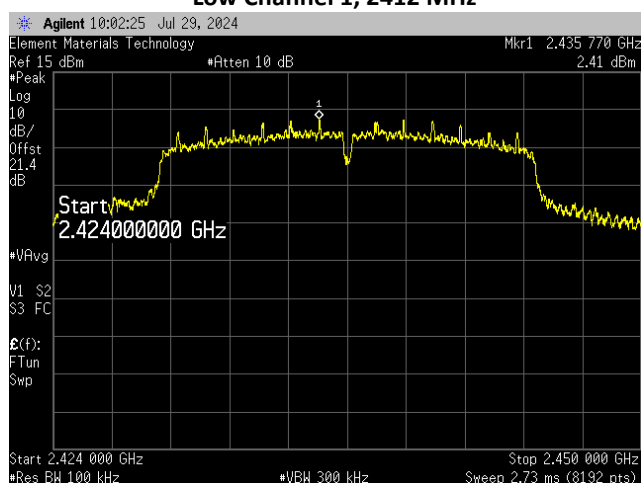
# SPURIOUS CONDUCTED EMISSIONS



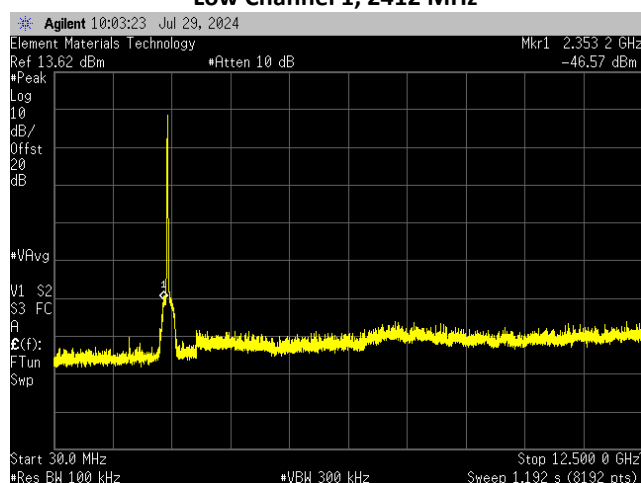
**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Low Channel 1, 2412 MHz**

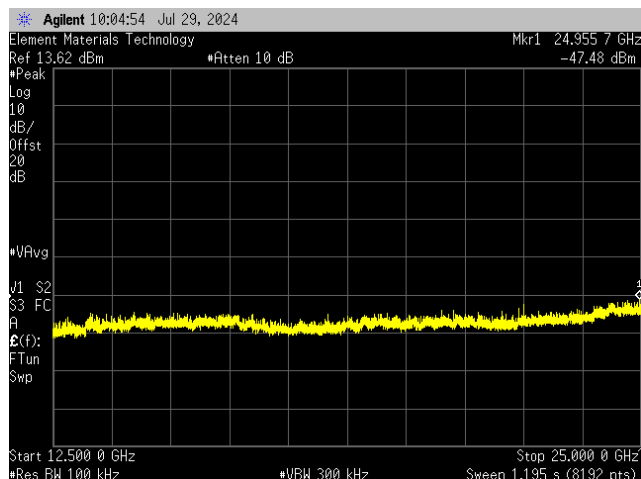


**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Mid Channel 6, 2437 MHz**

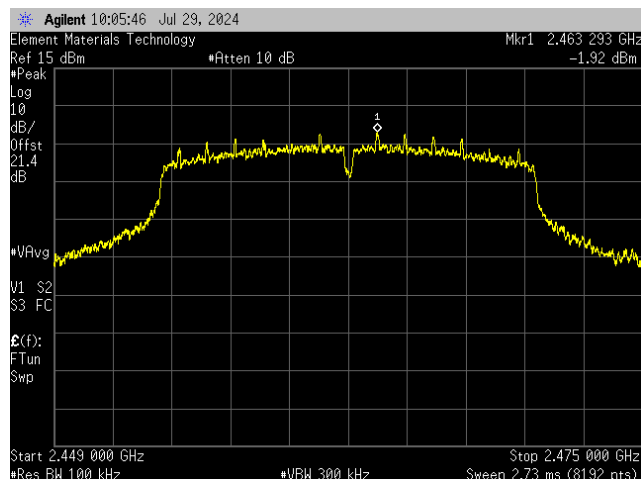


**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Mid Channel 6, 2437 MHz**

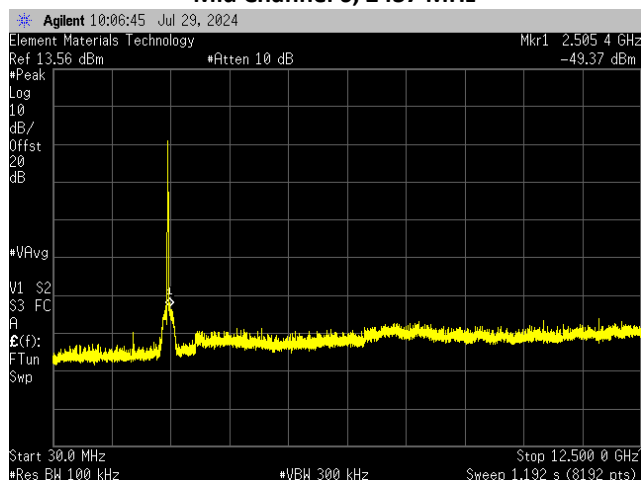
# SPURIOUS CONDUCTED EMISSIONS



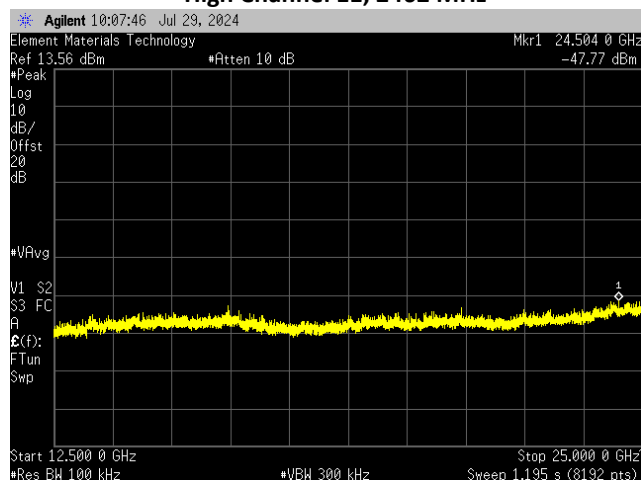
**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**Mid Channel 6, 2437 MHz**



**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**High Channel 11, 2462 MHz**

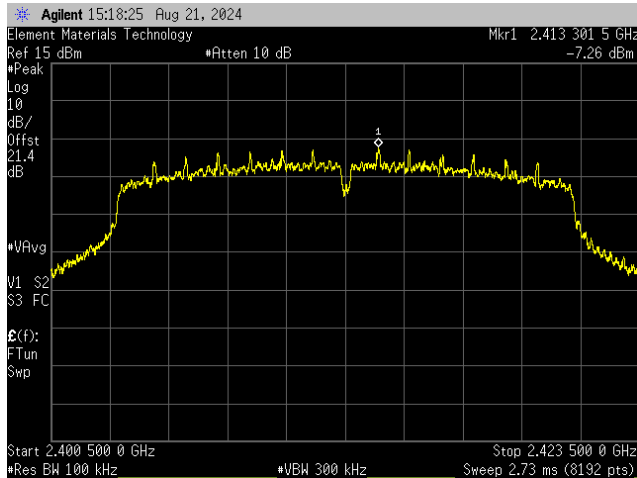


**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**High Channel 11, 2462 MHz**

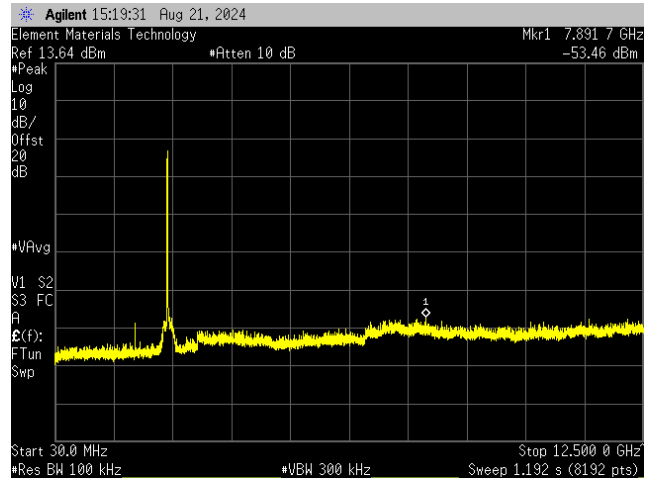


**Antenna 2**  
**802.11(g), 20 MHz, 6 Mbps**  
**High Channel 11, 2462 MHz**

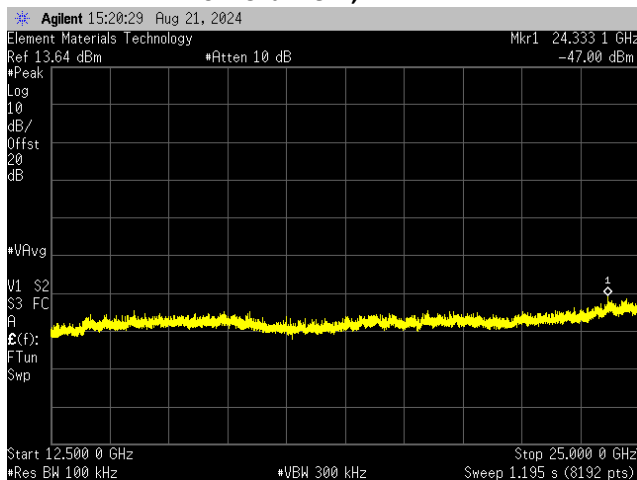
# SPURIOUS CONDUCTED EMISSIONS



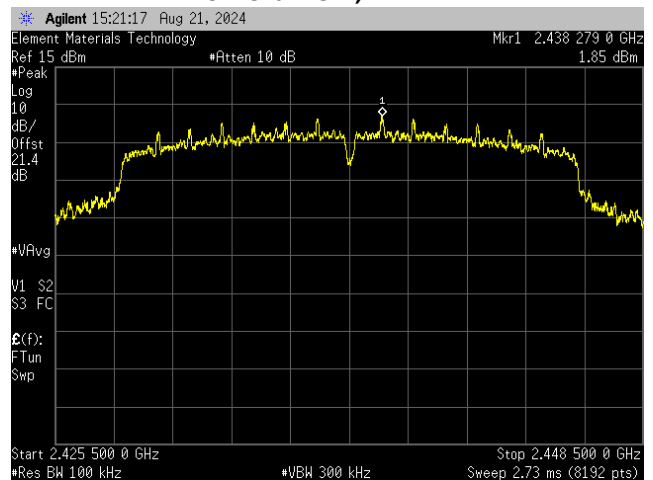
**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Low Channel 1, 2412 MHz**



**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Low Channel 1, 2412 MHz**

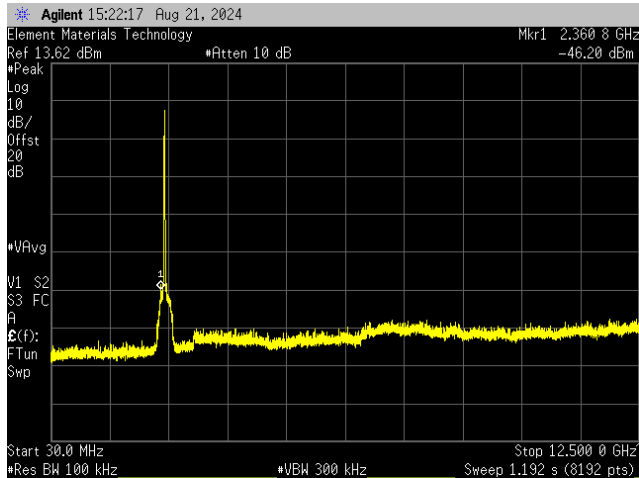


**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Low Channel 1, 2412 MHz**

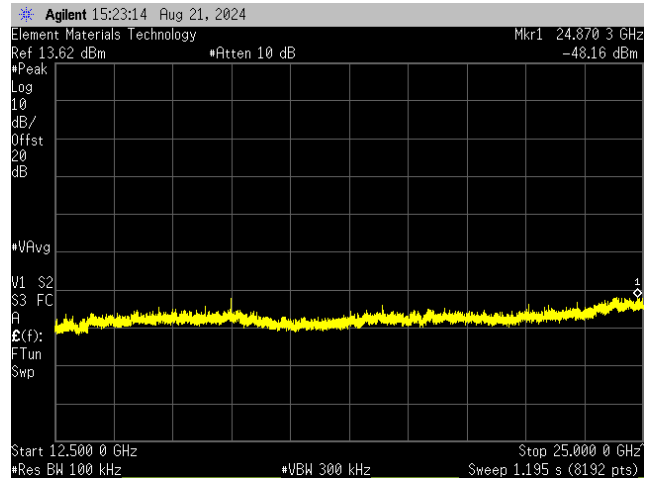


**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**Mid Channel 6, 2437 MHz**

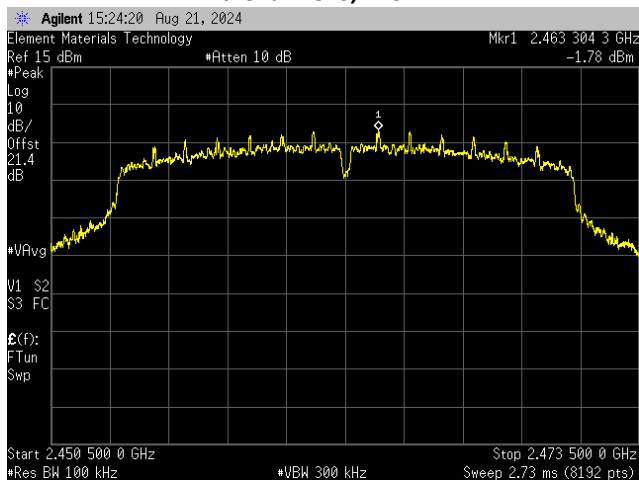
# SPURIOUS CONDUCTED EMISSIONS



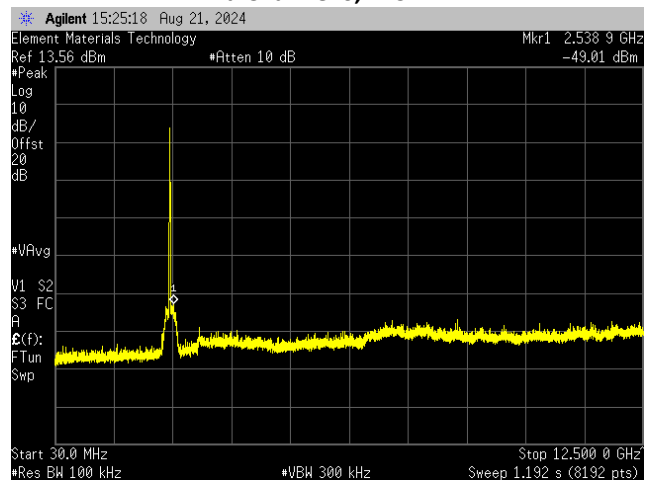
Antenna 2  
802.11(n), 20 MHz, MCS0  
Mid Channel 6, 2437 MHz



Antenna 2  
802.11(n), 20 MHz, MCS0  
Mid Channel 6, 2437 MHz

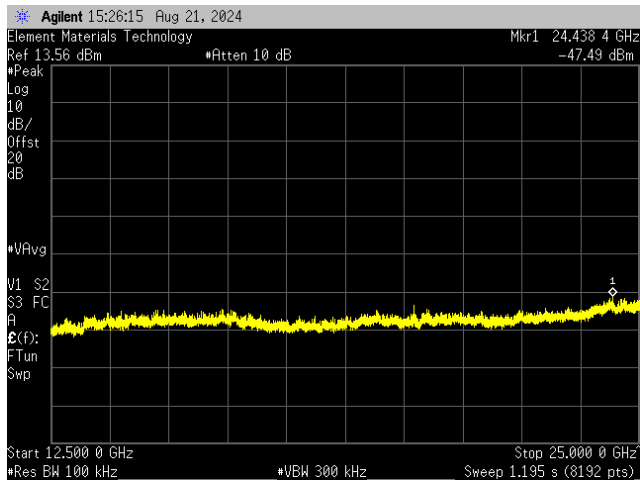


Antenna 2  
802.11(n), 20 MHz, MCS0  
High Channel 11, 2462 MHz



Antenna 2  
802.11(n), 20 MHz, MCS0  
High Channel 11, 2462 MHz

# SPURIOUS CONDUCTED EMISSIONS



**Antenna 2**  
**802.11(n), 20 MHz, MCS0**  
**High Channel 11, 2462 MHz**

# SPURIOUS RADIATED EMISSIONS

## TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These "pre-scans" are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector  
PK = Peak Detector  
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of  $10 \cdot \log(1/dc)$ .

## TEST EQUIPMENT

| Description                  | Manufacturer       | Model                     | ID  | Last Cal.  | Cal. Due   |
|------------------------------|--------------------|---------------------------|-----|------------|------------|
| Antenna - Loop               | A.H. Systems, Inc. | SAS-563B                  | TNI | 2022-06-07 | 2025-06-07 |
| Antenna - Biconilog          | EMCO               | 3142B                     | AXJ | 2023-04-17 | 2025-04-17 |
| Antenna - Double Ridge       | ETS Lindgren       | 3115                      | AIZ | 2024-03-08 | 2026-03-08 |
| Antenna - Standard Gain      | ETS Lindgren       | 3160-07                   | AHU | NCR        | NCR        |
| Antenna - Standard Gain      | ETS Lindgren       | 3160-08                   | AHV | NCR        | NCR        |
| Antenna - Standard Gain      | ETS Lindgren       | 3160-09                   | AIV | NCR        | NCR        |
| Amplifier - Pre-Amplifier    | Miteq              | AM-1616-1000              | AOL | 2023-11-05 | 2024-11-05 |
| Amplifier - Pre-Amplifier    | Miteq              | AMF-3D-00100800-32-13P    | PAG | 2024-03-14 | 2025-03-14 |
| Amplifier - Pre-Amplifier    | L-3 Narda-MITEQ    | AMF-6F-08001200-30-10P    | PAO | 2023-10-31 | 2024-10-31 |
| Amplifier - Pre-Amplifier    | Miteq              | AMF-6F-12001800-30-10P    | AVD | 2023-10-31 | 2024-10-31 |
| Amplifier - Pre-Amplifier    | Miteq              | AMF-6F-18002650-25-10P    | AVU | 2024-07-09 | 2025-07-09 |
| Cable                        | N/A                | Bilog Cables              | EVA | 2023-11-05 | 2024-11-05 |
| Cable                        | N/A                | Double Ridge Horn Cables  | EVB | 2024-03-14 | 2025-03-14 |
| Cable                        | None               | Standard Gain Horn Cables | EVF | 2023-10-31 | 2024-10-31 |
| Cable                        | ESM Cable Corp.    | TTBJ141-KMKM-72           | EVY | 2024-07-09 | 2025-07-09 |
| Attenuator                   | Coaxicom           | 3910-20                   | AXZ | 2024-02-12 | 2025-02-12 |
| Attenuator                   | Coaxicom           | 3910-10                   | AWX | 2024-02-12 | 2025-02-12 |
| Filter - Low Pass            | Micro-Tronics      | LPM50004                  | LFD | 2024-02-12 | 2025-02-12 |
| Filter - High Pass           | Micro-Tronics      | HPM50111                  | HFO | 2023-11-06 | 2024-11-06 |
| Analyzer - Spectrum Analyzer | Keysight           | N9010A                    | AFO | 2023-10-04 | 2024-10-04 |

## FREQUENCY RANGE INVESTIGATED

9 kHz TO 26.4 GHz

## POWER INVESTIGATED

110VAC/60Hz

# SPURIOUS RADIATED EMISSIONS

## CONFIGURATIONS INVESTIGATED

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IRRI0024-1  
IRRI0024-9

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## MODES INVESTIGATED

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Tx 802.11bgn, Ch. 1 = 2412 MHz, Ch. 6 = 2437 MHz, Ch. 11 = 2462 MHz, 1 Mbps, Ant 1  
Tx 802.11bgn, Ch. 1 = 2412 MHz, Ch. 6 = 2437 MHz, Ch. 11 = 2462 MHz, 1 Mbps, Ant 2

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# SPURIOUS RADIATED EMISSIONS

|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:4E:DC          | Date:                 | 2024-07-22 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 22.1°C     |
| Attendees:        | Seth Hammond               | Relative Humidity:    | 46.3%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1020 mb    |
| Tested By:        | Jeff Alcock                | Job Site:             | EV01       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-1 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |    |                    |   |                     |           |
|--------|----|--------------------|---|---------------------|-----------|
| Run #: | 22 | Test Distance (m): | 3 | Ant. Height(s) (m): | 1 to 4(m) |
|--------|----|--------------------|---|---------------------|-----------|

## COMMENTS

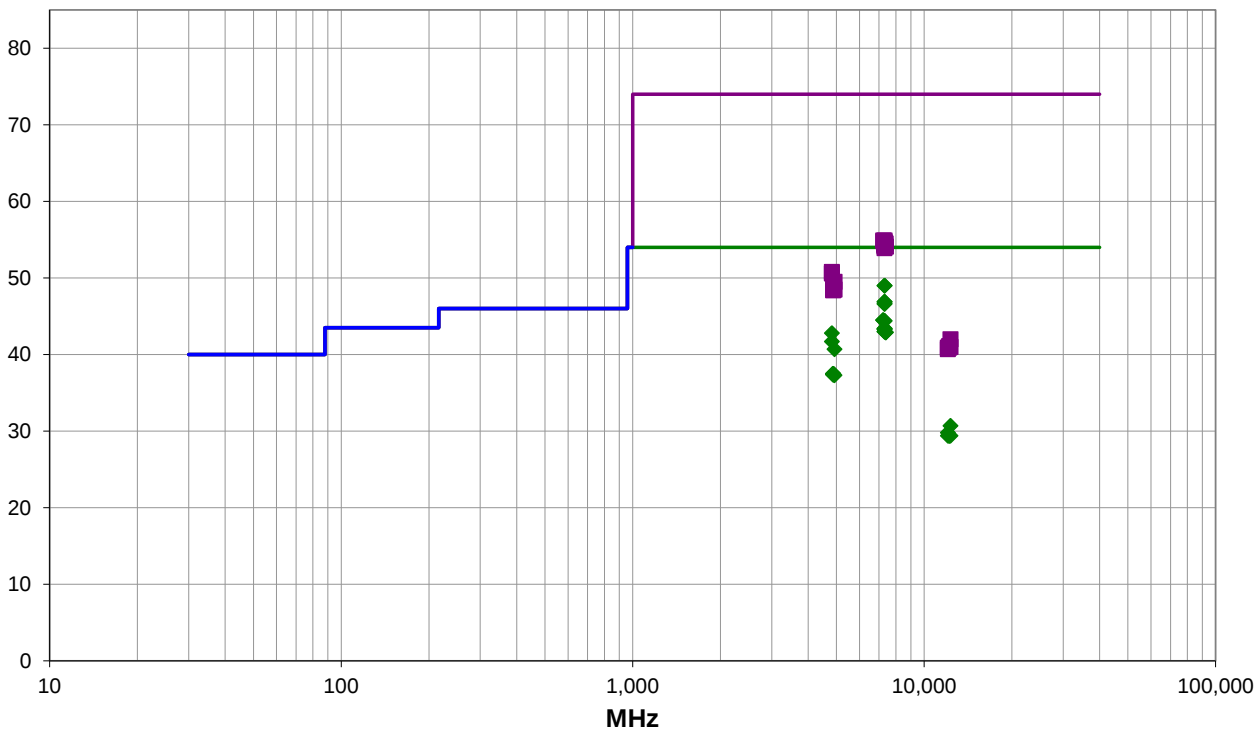
|                                                                              |
|------------------------------------------------------------------------------|
| Please reference comments below for channel, data rate, and EUT orientation. |
|------------------------------------------------------------------------------|

## EUT OPERATING MODES

|                                                                                    |
|------------------------------------------------------------------------------------|
| Tx 802.11bgn, Ch. 1 = 2412 MHz, Ch. 6 = 2437 MHz, Ch. 11 = 2462 MHz, 1 Mbps, Ant 1 |
|------------------------------------------------------------------------------------|

## DEVIATIONS FROM TEST STANDARD

|      |
|------|
| None |
|------|



Run #: 22

■ PK ◆ AV ● QP

# SPURIOUS RADIATED EMISSIONS

## RESULTS - Run #22

| Freq (MHz) | Amplitude (dBuV) | Factor (dB/m) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (meters) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                   |
|------------|------------------|---------------|-------------------------|-------------------|---------------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------|
| 7313.425   | 27.3             | 15.6          | 1.5                     | 108.0             | 6.1                                   | 0.0                       | Horz                      | AV       | 0.0                      | 49.0              | 54.0                 | -5.0                   | Ch. 6, MCS7, EUT Vert      |
| 7311.325   | 27.3             | 15.6          | 1.5                     | 145.0             | 6.1                                   | 0.0                       | Vert                      | AV       | 0.0                      | 49.0              | 54.0                 | -5.0                   | Ch. 6, MCS7, EUT Vert      |
| 7313.267   | 27.3             | 15.6          | 1.5                     | 69.0              | 4.0                                   | 0.0                       | Horz                      | AV       | 0.0                      | 46.9              | 54.0                 | -7.1                   | Ch. 6, 54 Mbps, EUT Vert   |
| 7312.600   | 27.3             | 15.6          | 1.5                     | 312.0             | 4.0                                   | 0.0                       | Vert                      | AV       | 0.0                      | 46.9              | 54.0                 | -7.1                   | Ch. 6, 54 Mbps, EUT Vert   |
| 7312.658   | 27.4             | 15.6          | 3.2                     | 107.0             | 3.7                                   | 0.0                       | Horz                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | Ch. 6, 36 Mbps, EUT Vert   |
| 7312.725   | 27.3             | 15.6          | 1.5                     | 306.0             | 3.7                                   | 0.0                       | Vert                      | AV       | 0.0                      | 46.6              | 54.0                 | -7.4                   | Ch. 6, 36 Mbps, EUT Vert   |
| 7234.158   | 27.4             | 15.5          | 1.5                     | 172.0             | 1.6                                   | 0.0                       | Horz                      | AV       | 0.0                      | 44.5              | 54.0                 | -9.5                   | Ch. 1, 1 Mbps, EUT Vert    |
| 7233.708   | 27.4             | 15.5          | 1.5                     | 266.0             | 1.6                                   | 0.0                       | Vert                      | AV       | 0.0                      | 44.5              | 54.0                 | -9.5                   | Ch. 1, 1 Mbps, EUT Vert    |
| 7313.075   | 27.6             | 15.6          | 1.5                     | 148.0             | 1.2                                   | 0.0                       | Horz                      | AV       | 0.0                      | 44.4              | 54.0                 | -9.6                   | Ch. 6, 11 Mbps, EUT Vert   |
| 7309.758   | 27.6             | 15.6          | 1.5                     | 0.0               | 1.2                                   | 0.0                       | Vert                      | AV       | 0.0                      | 44.4              | 54.0                 | -9.6                   | Ch. 6, 11 Mbps, EUT Vert   |
| 7311.708   | 27.3             | 15.6          | 1.5                     | 119.0             | 0.5                                   | 0.0                       | Horz                      | AV       | 0.0                      | 43.4              | 54.0                 | -10.6                  | Ch. 6, 6 Mbps, EUT Vert    |
| 7313.317   | 27.3             | 15.6          | 1.5                     | 10.0              | 0.5                                   | 0.0                       | Vert                      | AV       | 0.0                      | 43.4              | 54.0                 | -10.6                  | Ch. 6, 6 Mbps, EUT Vert    |
| 7312.600   | 27.3             | 15.6          | 1.5                     | 214.0             | 0.4                                   | 0.0                       | Horz                      | AV       | 0.0                      | 43.3              | 54.0                 | -10.7                  | Ch. 6, MCS0, EUT Vert      |
| 7312.750   | 27.3             | 15.6          | 1.5                     | 27.0              | 0.4                                   | 0.0                       | Vert                      | AV       | 0.0                      | 43.3              | 54.0                 | -10.7                  | Ch. 6, MCS0, EUT Vert      |
| 7311.833   | 27.3             | 15.6          | 1.5                     | 213.0             | 0.1                                   | 0.0                       | Horz                      | AV       | 0.0                      | 43.0              | 54.0                 | -11.0                  | Ch. 6, 1 Mbps, EUT Vert    |
| 7312.200   | 27.3             | 15.6          | 1.5                     | 145.0             | 0.1                                   | 0.0                       | Vert                      | AV       | 0.0                      | 43.0              | 54.0                 | -11.0                  | Ch. 6, 1 Mbps, EUT Vert    |
| 7383.725   | 27.1             | 15.7          | 1.5                     | 65.0              | 0.1                                   | 0.0                       | Horz                      | AV       | 0.0                      | 42.9              | 54.0                 | -11.1                  | Ch. 11, 1 Mbps, EUT Vert   |
| 7384.758   | 27.1             | 15.7          | 1.5                     | 245.0             | 0.1                                   | 0.0                       | Vert                      | AV       | 0.0                      | 42.9              | 54.0                 | -11.1                  | Ch. 11, 1 Mbps, EUT Vert   |
| 4824.000   | 33.2             | 9.5           | 1.5                     | 43.0              | 0.1                                   | 0.0                       | Horz                      | AV       | 0.0                      | 42.8              | 54.0                 | -11.2                  | Ch. 1, 1 Mbps, EUT Vert    |
| 4824.033   | 32.1             | 9.5           | 2.1                     | 25.0              | 0.1                                   | 0.0                       | Vert                      | AV       | 0.0                      | 41.7              | 54.0                 | -12.3                  | Ch. 1, 1 Mbps, EUT Vert    |
| 4924.000   | 31.1             | 9.5           | 1.5                     | 360.0             | 0.1                                   | 0.0                       | Horz                      | AV       | 0.0                      | 40.7              | 54.0                 | -13.3                  | Ch. 11, 1 Mbps, EUT Vert   |
| 4871.542   | 27.9             | 9.5           | 1.5                     | 236.0             | 0.1                                   | 0.0                       | Vert                      | AV       | 0.0                      | 37.5              | 54.0                 | -16.5                  | Ch. 6, 1 Mbps, EUT Horz    |
| 4871.892   | 27.9             | 9.5           | 1.5                     | 246.0             | 0.1                                   | 0.0                       | Horz                      | AV       | 0.0                      | 37.5              | 54.0                 | -16.5                  | Ch. 6, 1 Mbps, EUT Vert    |
| 4871.542   | 27.9             | 9.5           | 1.5                     | 11.0              | 0.1                                   | 0.0                       | Vert                      | AV       | 0.0                      | 37.5              | 54.0                 | -16.5                  | Ch. 6, 1 Mbps, EUT Vert    |
| 4871.658   | 27.8             | 9.5           | 1.5                     | 341.0             | 0.1                                   | 0.0                       | Horz                      | AV       | 0.0                      | 37.4              | 54.0                 | -16.6                  | Ch. 6, 1 Mbps, EUT Horz    |
| 4871.500   | 27.8             | 9.5           | 1.5                     | 98.0              | 0.1                                   | 0.0                       | Horz                      | AV       | 0.0                      | 37.4              | 54.0                 | -16.6                  | Ch. 6, 1 Mbps, EUT On Side |
| 4873.442   | 27.8             | 9.5           | 1.5                     | 114.0             | 0.1                                   | 0.0                       | Vert                      | AV       | 0.0                      | 37.4              | 54.0                 | -16.6                  | Ch. 6, 1 Mbps, EUT On Side |
| 4923.867   | 27.7             | 9.5           | 1.5                     | 150.0             | 0.1                                   | 0.0                       | Vert                      | AV       | 0.0                      | 37.3              | 54.0                 | -16.7                  | Ch. 11, 1 Mbps, EUT Vert   |
| 7311.883   | 39.3             | 15.6          | 1.5                     | 306.0             | 0.0                                   | 0.0                       | Vert                      | PK       | 0.0                      | 54.9              | 74.0                 | -19.1                  | Ch. 6, 36 Mbps, EUT Vert   |
| 7234.700   | 39.4             | 15.5          | 1.5                     | 266.0             | 0.0                                   | 0.0                       | Vert                      | PK       | 0.0                      | 54.9              | 74.0                 | -19.1                  | Ch. 1, 1 Mbps, EUT Vert    |
| 7235.592   | 39.3             | 15.5          | 1.5                     | 172.0             | 0.0                                   | 0.0                       | Horz                      | PK       | 0.0                      | 54.8              | 74.0                 | -19.2                  | Ch. 1, 1 Mbps, EUT Vert    |
| 7310.208   | 39.1             | 15.6          | 1.5                     | 0.0               | 0.0                                   | 0.0                       | Vert                      | PK       | 0.0                      | 54.7              | 74.0                 | -19.3                  | Ch. 6, 11 Mbps, EUT Vert   |
| 7313.167   | 39.0             | 15.6          | 1.5                     | 312.0             | 0.0                                   | 0.0                       | Vert                      | PK       | 0.0                      | 54.6              | 74.0                 | -19.4                  | Ch. 6, 54 Mbps, EUT Vert   |
| 7312.075   | 39.0             | 15.6          | 1.5                     | 108.0             | 0.0                                   | 0.0                       | Horz                      | PK       | 0.0                      | 54.6              | 74.0                 | -19.4                  | Ch. 6, MCS7, EUT Vert      |
| 7309.083   | 39.0             | 15.6          | 1.5                     | 145.0             | 0.0                                   | 0.0                       | Vert                      | PK       | 0.0                      | 54.6              | 74.0                 | -19.4                  | Ch. 6, MCS7, EUT Vert      |
| 7384.675   | 38.8             | 15.7          | 1.5                     | 65.0              | 0.0                                   | 0.0                       | Horz                      | PK       | 0.0                      | 54.5              | 74.0                 | -19.5                  | Ch. 11, 1 Mbps, EUT Vert   |
| 7310.667   | 38.9             | 15.6          | 1.5                     | 148.0             | 0.0                                   | 0.0                       | Horz                      | PK       | 0.0                      | 54.5              | 74.0                 | -19.5                  | Ch. 6, 11 Mbps, EUT Vert   |
| 7311.925   | 38.8             | 15.6          | 1.5                     | 119.0             | 0.0                                   | 0.0                       | Horz                      | PK       | 0.0                      | 54.4              | 74.0                 | -19.6                  | Ch. 6, 6 Mbps, EUT Vert    |
| 7312.925   | 38.8             | 15.6          | 1.5                     | 69.0              | 0.0                                   | 0.0                       | Horz                      | PK       | 0.0                      | 54.4              | 74.0                 | -19.6                  | Ch. 6, 54 Mbps, EUT Vert   |
| 7308.750   | 38.8             | 15.6          | 1.5                     | 214.0             | 0.0                                   | 0.0                       | Horz                      | PK       | 0.0                      | 54.4              | 74.0                 | -19.6                  | Ch. 6, MCS0, EUT Vert      |
| 7313.342   | 38.7             | 15.6          | 1.5                     | 213.0             | 0.0                                   | 0.0                       | Horz                      | PK       | 0.0                      | 54.3              | 74.0                 | -19.7                  | Ch. 6, 1 Mbps, EUT Vert    |
| 7313.092   | 38.7             | 15.6          | 1.5                     | 27.0              | 0.0                                   | 0.0                       | Vert                      | PK       | 0.0                      | 54.3              | 74.0                 | -19.7                  | Ch. 6, MCS0, EUT Vert      |

# SPURIOUS RADIATED EMISSIONS

| Freq (MHz) | Amplitude (dBuV) | Factor (dB/m) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (meters) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                   |
|------------|------------------|---------------|-------------------------|-------------------|---------------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------|
| 7312.775   | 38.6             | 15.6          | 1.5                     | 145.0             | 0.0                                   | 0.0                       | Vert                     | PK       | 0.0                      | 54.2              | 74.0                 | -19.8                  | Ch. 6, 1 Mbps, EUT Vert    |
| 7386.375   | 38.4             | 15.7          | 1.5                     | 245.0             | 0.0                                   | 0.0                       | Vert                     | PK       | 0.0                      | 54.1              | 74.0                 | -19.9                  | Ch. 11, 1 Mbps, EUT Vert   |
| 7310.975   | 38.5             | 15.6          | 3.2                     | 107.0             | 0.0                                   | 0.0                       | Horz                     | PK       | 0.0                      | 54.1              | 74.0                 | -19.9                  | Ch. 6, 36 Mbps, EUT Vert   |
| 7309.275   | 38.3             | 15.6          | 1.5                     | 10.0              | 0.0                                   | 0.0                       | Vert                     | PK       | 0.0                      | 53.9              | 74.0                 | -20.1                  | Ch. 6, 6 Mbps, EUT Vert    |
| 4824.250   | 41.3             | 9.5           | 2.1                     | 25.0              | 0.0                                   | 0.0                       | Vert                     | PK       | 0.0                      | 50.8              | 74.0                 | -23.2                  | Ch. 1, 1 Mbps, EUT Vert    |
| 12310.720  | 29.9             | 0.7           | 1.7                     | 57.0              | 0.1                                   | 0.0                       | Vert                     | AV       | 0.0                      | 30.7              | 54.0                 | -23.3                  | Ch. 11, 1 Mbps, EUT Vert   |
| 4824.092   | 41.1             | 9.5           | 1.5                     | 43.0              | 0.0                                   | 0.0                       | Horz                     | PK       | 0.0                      | 50.6              | 74.0                 | -23.4                  | Ch. 1, 1 Mbps, EUT Vert    |
| 12057.730  | 29.0             | 0.7           | 1.5                     | 47.0              | 0.1                                   | 0.0                       | Vert                     | AV       | 0.0                      | 29.8              | 54.0                 | -24.2                  | Ch. 1, 1 Mbps, EUT Vert    |
| 4923.533   | 40.0             | 9.5           | 1.5                     | 360.0             | 0.0                                   | 0.0                       | Horz                     | PK       | 0.0                      | 49.5              | 74.0                 | -24.5                  | Ch. 11, 1 Mbps, EUT Vert   |
| 12308.270  | 28.6             | 0.7           | 1.5                     | 336.0             | 0.1                                   | 0.0                       | Horz                     | AV       | 0.0                      | 29.4              | 54.0                 | -24.6                  | Ch. 11, 1 Mbps, EUT Vert   |
| 12185.770  | 28.5             | 0.8           | 1.5                     | 15.0              | 0.1                                   | 0.0                       | Horz                     | AV       | 0.0                      | 29.4              | 54.0                 | -24.6                  | Ch. 6, 1 Mbps, EUT Vert    |
| 12185.780  | 28.5             | 0.8           | 1.6                     | 284.0             | 0.1                                   | 0.0                       | Vert                     | AV       | 0.0                      | 29.4              | 54.0                 | -24.6                  | Ch. 6, 1 Mbps, EUT Vert    |
| 12058.350  | 28.6             | 0.7           | 1.5                     | 338.0             | 0.1                                   | 0.0                       | Horz                     | AV       | 0.0                      | 29.4              | 54.0                 | -24.6                  | Ch. 1, 1 Mbps, EUT Vert    |
| 4874.025   | 39.6             | 9.5           | 1.5                     | 246.0             | 0.0                                   | 0.0                       | Horz                     | PK       | 0.0                      | 49.1              | 74.0                 | -24.9                  | Ch. 6, 1 Mbps, EUT Vert    |
| 4872.033   | 39.4             | 9.5           | 1.5                     | 11.0              | 0.0                                   | 0.0                       | Vert                     | PK       | 0.0                      | 48.9              | 74.0                 | -25.1                  | Ch. 6, 1 Mbps, EUT Vert    |
| 4874.458   | 39.3             | 9.5           | 1.5                     | 236.0             | 0.0                                   | 0.0                       | Vert                     | PK       | 0.0                      | 48.8              | 74.0                 | -25.2                  | Ch. 6, 1 Mbps, EUT Horz    |
| 4872.808   | 39.1             | 9.5           | 1.5                     | 114.0             | 0.0                                   | 0.0                       | Vert                     | PK       | 0.0                      | 48.6              | 74.0                 | -25.4                  | Ch. 6, 1 Mbps, EUT On Side |
| 4924.033   | 39.0             | 9.5           | 1.5                     | 150.0             | 0.0                                   | 0.0                       | Vert                     | PK       | 0.0                      | 48.5              | 74.0                 | -25.5                  | Ch. 11, 1 Mbps, EUT Vert   |
| 4874.592   | 38.9             | 9.5           | 1.5                     | 341.0             | 0.0                                   | 0.0                       | Horz                     | PK       | 0.0                      | 48.4              | 74.0                 | -25.6                  | Ch. 6, 1 Mbps, EUT Horz    |
| 4874.358   | 38.9             | 9.5           | 1.5                     | 98.0              | 0.0                                   | 0.0                       | Horz                     | PK       | 0.0                      | 48.4              | 74.0                 | -25.6                  | Ch. 6, 1 Mbps, EUT On Side |
| 12309.730  | 41.3             | 0.7           | 1.7                     | 57.0              | 0.0                                   | 0.0                       | Vert                     | PK       | 0.0                      | 42.0              | 74.0                 | -32.0                  | Ch. 11, 1 Mbps, EUT Vert   |
| 12183.850  | 40.3             | 0.8           | 1.6                     | 284.0             | 0.0                                   | 0.0                       | Vert                     | PK       | 0.0                      | 41.1              | 74.0                 | -32.9                  | Ch. 6, 1 Mbps, EUT Vert    |
| 12311.350  | 40.3             | 0.7           | 1.5                     | 336.0             | 0.0                                   | 0.0                       | Horz                     | PK       | 0.0                      | 41.0              | 74.0                 | -33.0                  | Ch. 11, 1 Mbps, EUT Vert   |
| 12186.680  | 40.1             | 0.8           | 1.5                     | 15.0              | 0.0                                   | 0.0                       | Horz                     | PK       | 0.0                      | 40.9              | 74.0                 | -33.1                  | Ch. 6, 1 Mbps, EUT Vert    |
| 12058.040  | 40.2             | 0.7           | 1.5                     | 338.0             | 0.0                                   | 0.0                       | Horz                     | PK       | 0.0                      | 40.9              | 74.0                 | -33.1                  | Ch. 1, 1 Mbps, EUT Vert    |
| 12059.380  | 40.0             | 0.7           | 1.5                     | 47.0              | 0.0                                   | 0.0                       | Vert                     | PK       | 0.0                      | 40.7              | 74.0                 | -33.3                  | Ch. 1, 1 Mbps, EUT Vert    |

## CONCLUSION

Pass



Tested By

# SPURIOUS RADIATED EMISSIONS



|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:4E:DC          | Date:                 | 2024-09-10 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 21.8°C     |
| Attendees:        | None                       | Relative Humidity:    | 46.2%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1013 mb    |
| Tested By:        | Jeff Alcock                | Job Site:             | EV01       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-1 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |     |                    |   |                     |           |
|--------|-----|--------------------|---|---------------------|-----------|
| Run #: | 180 | Test Distance (m): | 3 | Ant. Height(s) (m): | 1 to 4(m) |
|--------|-----|--------------------|---|---------------------|-----------|

## COMMENTS

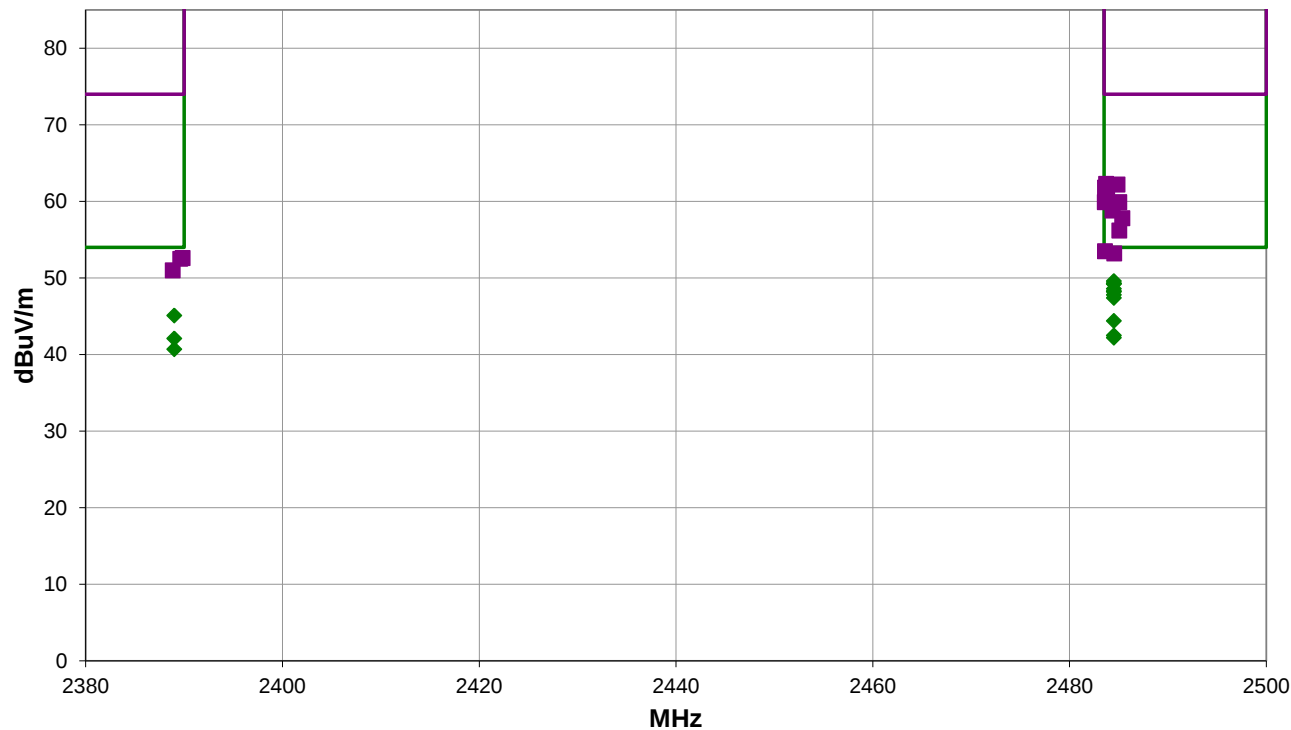
|                                                                                   |
|-----------------------------------------------------------------------------------|
| Please reference data comments below for channel, data rate, and EUT orientation. |
|-----------------------------------------------------------------------------------|

## EUT OPERATING MODES

|                                                                                       |
|---------------------------------------------------------------------------------------|
| Transmitting 802.11bgn, Ch. 1 = 2412 MHz, Ch. 6 = 2437 MHz, Ch. 11 = 2468 MHz, Ant 1. |
|---------------------------------------------------------------------------------------|

## DEVIATIONS FROM TEST STANDARD

|      |
|------|
| None |
|------|



Run #: 180

■ PK    ◆ AV    ● QP

# SPURIOUS RADIATED EMISSIONS

## RESULTS - Run #180

| Freq (MHz) | Amplitude (dBuV) | Factor (dB/m) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                    |
|------------|------------------|---------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-----------------------------|
| 2484.500   | 41.2             | -2.0          | 1.0                     | 179.0             | 0.4                               | 10.0                      | Horz                     | AV       | 0.0                      | 49.6              | 54.0                 | -4.4                   | Ch. 11, 6 Mbps, EUT Vert    |
| 2484.500   | 35.2             | -2.0          | 1.5                     | 178.0             | 6.1                               | 10.0                      | Horz                     | AV       | 0.0                      | 49.3              | 54.0                 | -4.7                   | Ch. 11, MCS7, EUT Vert      |
| 2484.500   | 35.8             | -2.0          | 1.5                     | 178.0             | 5.5                               | 10.0                      | Horz                     | AV       | 0.0                      | 49.3              | 54.0                 | -4.7                   | Ch. 11, 54 Mbps, EUT Vert   |
| 2484.500   | 40.3             | -2.0          | 1.5                     | 178.0             | 0.9                               | 10.0                      | Horz                     | AV       | 0.0                      | 49.2              | 54.0                 | -4.8                   | Ch. 11, 11 Mbps, EUT Vert   |
| 2484.500   | 36.9             | -2.0          | 1.5                     | 178.0             | 3.7                               | 10.0                      | Horz                     | AV       | 0.0                      | 48.6              | 54.0                 | -5.4                   | Ch. 11, 36 Mbps, EUT Vert   |
| 2484.500   | 40.1             | -2.0          | 1.5                     | 178.0             | 0.2                               | 10.0                      | Horz                     | AV       | 0.0                      | 48.3              | 54.0                 | -5.7                   | Ch. 11, 1 Mbps, EUT Vert    |
| 2484.500   | 39.8             | -2.0          | 1.0                     | 183.0             | 0.4                               | 10.0                      | Vert                     | AV       | 0.0                      | 48.2              | 54.0                 | -5.8                   | Ch. 11, 6 Mbps, EUT on Side |
| 2484.500   | 39.4             | -2.0          | 1.5                     | 178.0             | 0.4                               | 10.0                      | Horz                     | AV       | 0.0                      | 47.8              | 54.0                 | -6.2                   | Ch. 11, MCS0, EUT Vert      |
| 2484.500   | 39.0             | -2.0          | 2.02                    | 343.0             | 0.4                               | 10.0                      | Horz                     | AV       | 0.0                      | 47.4              | 54.0                 | -6.6                   | Ch. 11, 6 Mbps, EUT Horz    |
| 2389.000   | 31.4             | -2.4          | 1.5                     | 168.0             | 6.1                               | 10.0                      | Horz                     | AV       | 0.0                      | 45.1              | 54.0                 | -8.9                   | Ch. 1, MCS7, EUT Vert       |
| 2484.500   | 36.0             | -2.0          | 1.5                     | 75.0              | 0.4                               | 10.0                      | Vert                     | AV       | 0.0                      | 44.4              | 54.0                 | -9.6                   | Ch. 11, 6 Mbps, EUT Vert    |
| 2484.500   | 34.1             | -2.0          | 1.5                     | 351.0             | 0.4                               | 10.0                      | Horz                     | AV       | 0.0                      | 42.5              | 54.0                 | -11.5                  | Ch. 11, 6 Mbps, EUT on Side |
| 2483.710   | 54.3             | -2.0          | 1.5                     | 178.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 62.3              | 74.0                 | -11.7                  | Ch. 11, 36 Mbps, EUT Vert   |
| 2484.870   | 54.2             | -2.0          | 1.0                     | 179.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 62.2              | 74.0                 | -11.8                  | Ch. 11, 6 Mbps, EUT Vert    |
| 2484.500   | 33.8             | -2.0          | 1.5                     | 39.0              | 0.4                               | 10.0                      | Vert                     | AV       | 0.0                      | 42.2              | 54.0                 | -11.8                  | Ch. 11, 6 Mbps, EUT Horz    |
| 2389.000   | 34.3             | -2.4          | 1.5                     | 168.0             | 0.2                               | 10.0                      | Horz                     | AV       | 0.0                      | 42.1              | 54.0                 | -11.9                  | Ch. 1, 1 Mbps, EUT Vert     |
| 2483.607   | 53.8             | -2.0          | 1.5                     | 178.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 61.8              | 74.0                 | -12.2                  | Ch. 11, 54 Mbps, EUT Vert   |
| 2483.807   | 53.0             | -2.0          | 1.5                     | 178.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 61.0              | 74.0                 | -13.0                  | Ch. 11, MCS0, EUT Vert      |
| 2389.000   | 32.7             | -2.4          | 1.5                     | 168.0             | 0.4                               | 10.0                      | Horz                     | AV       | 0.0                      | 40.7              | 54.0                 | -13.3                  | Ch. 1, 6 Mbps, EUT Vert     |
| 2483.713   | 52.1             | -2.0          | 1.5                     | 178.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 60.1              | 74.0                 | -13.9                  | Ch. 11, MCS7, EUT Vert      |
| 2485.047   | 51.9             | -2.0          | 1.0                     | 183.0             | 0.0                               | 10.0                      | Vert                     | PK       | 0.0                      | 59.9              | 74.0                 | -14.1                  | Ch. 11, 6 Mbps, EUT on Side |
| 2483.580   | 51.9             | -2.0          | 2.02                    | 343.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 59.9              | 74.0                 | -14.1                  | Ch. 11, 6 Mbps, EUT Horz    |
| 2484.377   | 50.8             | -2.0          | 1.5                     | 178.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 58.8              | 74.0                 | -15.2                  | Ch. 11, 11 Mbps, EUT Vert   |
| 2485.357   | 49.8             | -2.0          | 1.5                     | 178.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 57.8              | 74.0                 | -16.2                  | Ch. 11, 1 Mbps, EUT Vert    |
| 2485.057   | 48.2             | -2.0          | 1.5                     | 75.0              | 0.0                               | 10.0                      | Vert                     | PK       | 0.0                      | 56.2              | 74.0                 | -17.8                  | Ch. 11, 6 Mbps, EUT Vert    |
| 2483.600   | 45.5             | -2.0          | 1.5                     | 39.0              | 0.0                               | 10.0                      | Vert                     | PK       | 0.0                      | 53.5              | 74.0                 | -20.5                  | Ch. 11, 6 Mbps, EUT Horz    |
| 2484.537   | 45.2             | -2.0          | 1.5                     | 351.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 53.2              | 74.0                 | -20.8                  | Ch. 11, 6 Mbps, EUT on Side |
| 2389.853   | 45.0             | -2.4          | 1.5                     | 168.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 52.6              | 74.0                 | -21.4                  | Ch. 1, 6 Mbps, EUT Vert     |
| 2389.607   | 44.9             | -2.4          | 1.5                     | 168.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 52.5              | 74.0                 | -21.5                  | Ch. 1, 1 Mbps, EUT Vert     |
| 2388.843   | 43.4             | -2.4          | 1.5                     | 168.0             | 0.0                               | 10.0                      | Horz                     | PK       | 0.0                      | 51.0              | 74.0                 | -23.0                  | Ch. 1, MCS7, EUT Vert       |

## CONCLUSION

Pass



Tested By

# SPURIOUS RADIATED EMISSIONS



|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:4E:DC          | Date:                 | 2024-07-23 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 22.1°C     |
| Attendees:        | Seth Hammond               | Relative Humidity:    | 46.7%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1021 mb    |
| Tested By:        | Christopher Ladwig         | Job Site:             | EV01       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-1 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |    |                    |   |                     |           |
|--------|----|--------------------|---|---------------------|-----------|
| Run #: | 38 | Test Distance (m): | 3 | Ant. Height(s) (m): | 1 to 4(m) |
|--------|----|--------------------|---|---------------------|-----------|

## COMMENTS

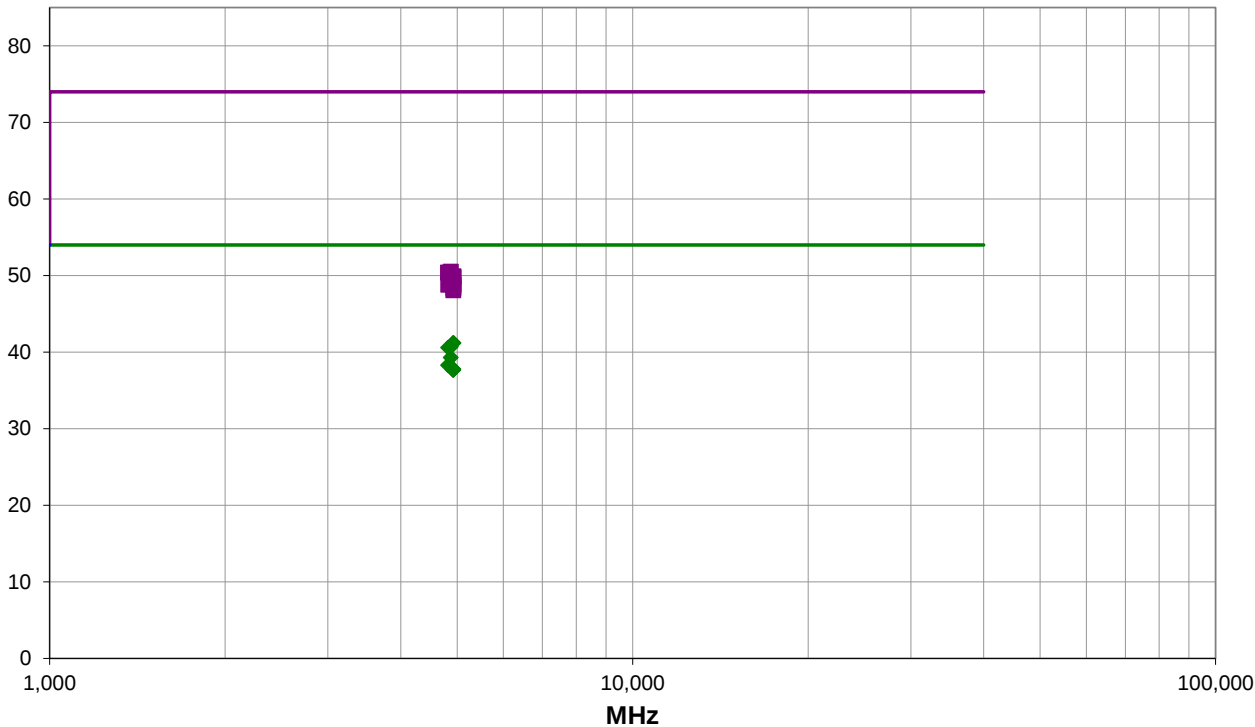
|                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Please reference comments below for channel, data rate, and EUT orientation.<br>Measurement performed on worst case non-noise floor harmonic. |
|-----------------------------------------------------------------------------------------------------------------------------------------------|

## EUT OPERATING MODES

|                                                                                    |
|------------------------------------------------------------------------------------|
| Tx 802.11bgn, Ch. 1 = 2412 MHz, Ch. 6 = 2437 MHz, Ch. 11 = 2462 MHz, 1 Mbps, Ant 2 |
|------------------------------------------------------------------------------------|

## DEVIATIONS FROM TEST STANDARD

|      |
|------|
| None |
|------|



Run #: 38

■ PK    ◆ AV    ● QP

# SPURIOUS RADIATED EMISSIONS

## RESULTS - Run #38

| Freq (MHz) | Amplitude (dBuV) | Factor (dB/m) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                |
|------------|------------------|---------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------|
| 4924.017   | 31.5             | 9.5           | 1.5                     | 352.0             | 0.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 41.2              | 54.0                 | -12.8                  | Ch. 11, 1Mbps, EUT Vert |
| 4924.033   | 31.5             | 9.5           | 1.0                     | 54.0              | 0.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 41.2              | 54.0                 | -12.8                  | Ch. 11, 1Mbps, EUT Vert |
| 4873.983   | 31.0             | 9.5           | 1.5                     | 352.0             | 0.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 40.7              | 54.0                 | -13.3                  | Ch. 6, 1Mbps, EUT Vert  |
| 4823.975   | 30.9             | 9.5           | 1.5                     | 352.0             | 0.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 40.6              | 54.0                 | -13.4                  | Ch. 1, 1Mbps, EUT Vert  |
| 4874.050   | 29.6             | 9.5           | 1.5                     | 66.0              | 0.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | Ch. 6, 1Mbps, EUT Vert  |
| 4823.933   | 28.6             | 9.5           | 1.5                     | 37.0              | 0.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 38.3              | 54.0                 | -15.7                  | Ch. 1, 1Mbps, EUT Vert  |
| 4921.750   | 27.9             | 9.5           | 1.5                     | 45.0              | 0.4                               | 0.0                       | Vert                      | AV       | 0.0                      | 37.8              | 54.0                 | -16.2                  | Ch. 11, MCS0, EUT Vert  |
| 4921.508   | 27.8             | 9.5           | 1.5                     | 321.0             | 0.4                               | 0.0                       | Horz                      | AV       | 0.0                      | 37.7              | 54.0                 | -16.3                  | Ch. 11, 6Mbps, EUT Vert |
| 4921.833   | 27.8             | 9.5           | 3.0                     | 248.0             | 0.4                               | 0.0                       | Vert                      | AV       | 0.0                      | 37.7              | 54.0                 | -16.3                  | Ch. 11, 6Mbps, EUT Vert |
| 4921.708   | 27.8             | 9.5           | 3.1                     | 299.0             | 0.4                               | 0.0                       | Horz                      | AV       | 0.0                      | 37.7              | 54.0                 | -16.3                  | Ch. 11, MCS0, EUT Vert  |
| 4874.075   | 41.0             | 9.5           | 1.5                     | 352.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 50.5              | 74.0                 | -23.5                  | Ch. 6, 1Mbps, EUT Vert  |
| 4824.258   | 40.9             | 9.5           | 1.5                     | 352.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 50.4              | 74.0                 | -23.6                  | Ch. 1, 1Mbps, EUT Vert  |
| 4923.858   | 40.4             | 9.5           | 1.5                     | 352.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 49.9              | 74.0                 | -24.1                  | Ch. 11, 1Mbps, EUT Vert |
| 4923.958   | 40.3             | 9.5           | 1.0                     | 54.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 49.8              | 74.0                 | -24.2                  | Ch. 11, 1Mbps, EUT Vert |
| 4874.108   | 39.7             | 9.5           | 1.5                     | 66.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 49.2              | 74.0                 | -24.8                  | Ch. 6, 1Mbps, EUT Vert  |
| 4922.008   | 39.4             | 9.5           | 1.5                     | 321.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 48.9              | 74.0                 | -25.1                  | Ch. 11, 6Mbps, EUT Vert |
| 4825.883   | 39.3             | 9.5           | 1.5                     | 37.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 48.8              | 74.0                 | -25.2                  | Ch. 1, 1Mbps, EUT Vert  |
| 4924.967   | 39.3             | 9.5           | 3.0                     | 248.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 48.8              | 74.0                 | -25.2                  | Ch. 11, 6Mbps, EUT Vert |
| 4925.183   | 38.9             | 9.5           | 3.1                     | 299.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 48.4              | 74.0                 | -25.6                  | Ch. 11, MCS0, EUT Vert  |
| 4923.258   | 38.6             | 9.5           | 1.5                     | 45.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 48.1              | 74.0                 | -25.9                  | Ch. 11, MCS0, EUT Vert  |

## CONCLUSION

Pass



Tested By

# SPURIOUS RADIATED EMISSIONS



|                   |                                        |                       |            |
|-------------------|----------------------------------------|-----------------------|------------|
| EUT:              | Sprinkler with Controller Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 900636 RevA1 Unit A                    | Date:                 | 2024-07-23 |
| Customer:         | IrriGreen, Inc.                        | Temperature:          | 22.1°C     |
| Attendees:        | Seth Hammond                           | Relative Humidity:    | 46.7%      |
| Customer Project: | None                                   | Bar. Pressure (PMSL): | 1021 mb    |
| Tested By:        | Christopher Ladwig                     | Job Site:             | EV01       |
| Power:            | 110VAC/60Hz                            | Configuration:        | IRRI0024-1 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |    |                    |   |                     |           |
|--------|----|--------------------|---|---------------------|-----------|
| Run #: | 39 | Test Distance (m): | 3 | Ant. Height(s) (m): | 1 to 4(m) |
|--------|----|--------------------|---|---------------------|-----------|

## COMMENTS

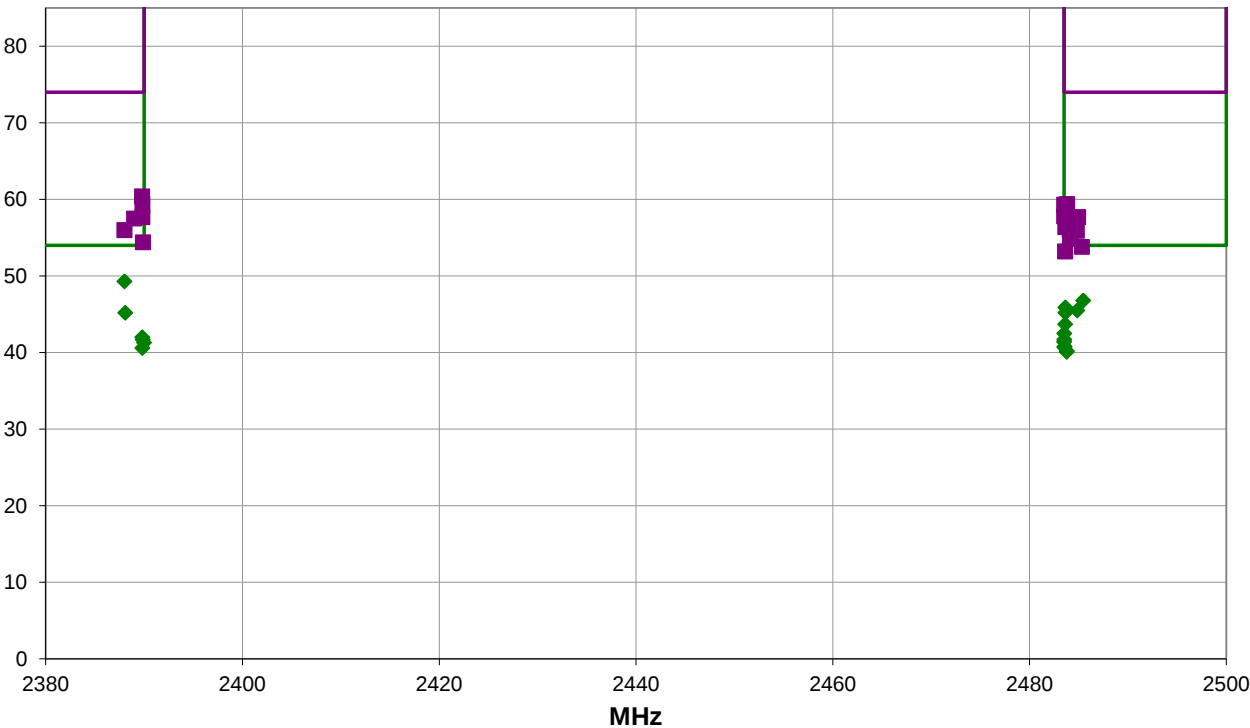
|                                                                              |
|------------------------------------------------------------------------------|
| Please reference comments below for channel, data rate, and EUT orientation. |
|------------------------------------------------------------------------------|

## EUT OPERATING MODES

|                                                                                    |
|------------------------------------------------------------------------------------|
| Tx 802.11bgn, Ch. 1 = 2412 MHz, Ch. 6 = 2437 MHz, Ch. 11 = 2462 MHz, 1 Mbps, Ant 2 |
|------------------------------------------------------------------------------------|

## DEVIATIONS FROM TEST STANDARD

|      |
|------|
| None |
|------|



Run #: 39

■ PK    ◆ AV    ● QP

# SPURIOUS RADIATED EMISSIONS

## RESULTS - Run #39

| Freq (MHz) | Amplitude (dBuV) | Factor (dB/m) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                    |
|------------|------------------|---------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-----------------------------|
| 2388.003   | 41.5             | -2.4          | 1.0                     | 62.0              | 0.2                               | 10.0                      | Horz                      | AV       | 0.0                      | 49.3              | 54.0                 | -4.7                   | Ch. 1, 1Mbps, EUT Horz      |
| 2485.450   | 38.6             | -2.0          | 1.0                     | 235.0             | 0.2                               | 10.0                      | Vert                      | AV       | 0.0                      | 46.8              | 54.0                 | -7.2                   | Ch. 11, 1Mbps, EUT On Side  |
| 2483.637   | 31.8             | -2.0          | 1.0                     | 235.0             | 6.1                               | 10.0                      | Vert                      | AV       | 0.0                      | 45.9              | 54.0                 | -8.1                   | Ch. 11, MCS7, EUT On Side   |
| 2484.850   | 36.6             | -2.0          | 1.0                     | 235.0             | 0.9                               | 10.0                      | Vert                      | AV       | 0.0                      | 45.5              | 54.0                 | -8.5                   | Ch. 11, 11Mbps, EUT On Side |
| 2388.083   | 37.4             | -2.4          | 1.0                     | 51.0              | 0.2                               | 10.0                      | Vert                      | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | Ch. 1, 1Mbps, EUT On Side   |
| 2483.640   | 31.7             | -2.0          | 1.0                     | 235.0             | 5.5                               | 10.0                      | Vert                      | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | Ch. 11, 54Mbps, EUT On Side |
| 2483.617   | 32.0             | -2.0          | 1.0                     | 235.0             | 3.7                               | 10.0                      | Vert                      | AV       | 0.0                      | 43.7              | 54.0                 | -10.3                  | Ch. 11, 36Mbps, EUT On Side |
| 2483.523   | 34.1             | -2.0          | 1.0                     | 302.0             | 0.4                               | 10.0                      | Vert                      | AV       | 0.0                      | 42.5              | 54.0                 | -11.5                  | Ch. 11, MCS0, EUT On Side   |
| 2389.817   | 34.0             | -2.4          | 1.0                     | 62.0              | 0.4                               | 10.0                      | Horz                      | AV       | 0.0                      | 42.0              | 54.0                 | -12.0                  | Ch. 1, MCS0, EUT Horz       |
| 2389.860   | 33.7             | -2.4          | 1.0                     | 62.0              | 0.4                               | 10.0                      | Horz                      | AV       | 0.0                      | 41.7              | 54.0                 | -12.3                  | Ch. 1, 6Mbps, EUT Horz      |
| 2483.530   | 33.3             | -2.0          | 1.0                     | 235.0             | 0.4                               | 10.0                      | Vert                      | AV       | 0.0                      | 41.7              | 54.0                 | -12.3                  | Ch. 11, 6Mbps, EUT On Side  |
| 2483.507   | 33.0             | -2.0          | 1.0                     | 0.0               | 0.4                               | 10.0                      | Horz                      | AV       | 0.0                      | 41.4              | 54.0                 | -12.6                  | Ch. 11, MCS0, EUT Horz      |
| 2389.990   | 33.3             | -2.4          | 1.0                     | 51.0              | 0.4                               | 10.0                      | Vert                      | AV       | 0.0                      | 41.3              | 54.0                 | -12.7                  | Ch. 1, MCS0, EUT On Side    |
| 2483.563   | 32.4             | -2.0          | 2.0                     | 239.0             | 0.4                               | 10.0                      | Vert                      | AV       | 0.0                      | 40.8              | 54.0                 | -13.2                  | Ch. 11, MCS0, EUT Horz      |
| 2483.527   | 32.3             | -2.0          | 1.1                     | 207.0             | 0.4                               | 10.0                      | Horz                      | AV       | 0.0                      | 40.7              | 54.0                 | -13.3                  | Ch. 11, MCS0, EUT On Side   |
| 2389.823   | 32.6             | -2.4          | 1.0                     | 51.0              | 0.4                               | 10.0                      | Vert                      | AV       | 0.0                      | 40.6              | 54.0                 | -13.4                  | Ch. 1, 6Mbps, EUT On Side   |
| 2389.797   | 52.8             | -2.4          | 1.0                     | 62.0              | 0.0                               | 10.0                      | Horz                      | PK       | 0.0                      | 60.4              | 74.0                 | -13.6                  | Ch. 1, MCS0, EUT Horz       |
| 2483.783   | 31.8             | -2.0          | 1.5                     | 105.0             | 0.4                               | 10.0                      | Vert                      | AV       | 0.0                      | 40.2              | 54.0                 | -13.8                  | Ch. 11, MCS0, EUT Vert      |
| 2483.773   | 31.7             | -2.0          | 1.5                     | 231.0             | 0.4                               | 10.0                      | Horz                      | AV       | 0.0                      | 40.1              | 54.0                 | -13.9                  | Ch. 11, MCS0, EUT Vert      |
| 2483.813   | 51.4             | -2.0          | 1.0                     | 235.0             | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 59.4              | 74.0                 | -14.6                  | Ch. 11, 36Mbps, EUT On Side |
| 2389.827   | 51.7             | -2.4          | 1.0                     | 51.0              | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 59.3              | 74.0                 | -14.7                  | Ch. 1, MCS0, EUT On Side    |
| 2483.713   | 51.3             | -2.0          | 1.0                     | 235.0             | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 59.3              | 74.0                 | -14.7                  | Ch. 11, 54Mbps, EUT On Side |
| 2483.517   | 51.3             | -2.0          | 1.0                     | 302.0             | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 59.3              | 74.0                 | -14.7                  | Ch. 11, MCS0, EUT On Side   |
| 2483.623   | 50.8             | -2.0          | 1.0                     | 235.0             | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 58.8              | 74.0                 | -15.2                  | Ch. 11, 6Mbps, EUT On Side  |
| 2483.510   | 49.8             | -2.0          | 1.0                     | 235.0             | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 57.8              | 74.0                 | -16.2                  | Ch. 11, MCS7, EUT On Side   |
| 2389.830   | 50.1             | -2.4          | 1.0                     | 62.0              | 0.0                               | 10.0                      | Horz                      | PK       | 0.0                      | 57.7              | 74.0                 | -16.3                  | Ch. 1, 6Mbps, EUT Horz      |
| 2484.933   | 49.7             | -2.0          | 1.0                     | 235.0             | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 57.7              | 74.0                 | -16.3                  | Ch. 11, 11Mbps, EUT On Side |
| 2388.977   | 49.9             | -2.4          | 1.0                     | 62.0              | 0.0                               | 10.0                      | Horz                      | PK       | 0.0                      | 57.5              | 74.0                 | -16.5                  | Ch. 1, 1Mbps, EUT Horz      |
| 2483.627   | 48.4             | -2.0          | 1.0                     | 0.0               | 0.0                               | 10.0                      | Horz                      | PK       | 0.0                      | 56.4              | 74.0                 | -17.6                  | Ch. 11, MCS0, EUT Horz      |
| 2388.003   | 48.4             | -2.4          | 1.0                     | 51.0              | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 56.0              | 74.0                 | -18.0                  | Ch. 1, 6Mbps, EUT On Side   |
| 2484.070   | 48.0             | -2.0          | 2.0                     | 239.0             | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 56.0              | 74.0                 | -18.0                  | Ch. 11, MCS0, EUT Horz      |
| 2484.790   | 47.9             | -2.0          | 1.0                     | 235.0             | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 55.9              | 74.0                 | -18.1                  | Ch. 11, 1Mbps, EUT On Side  |
| 2484.120   | 47.0             | -2.0          | 1.1                     | 207.0             | 0.0                               | 10.0                      | Horz                      | PK       | 0.0                      | 55.0              | 74.0                 | -19.0                  | Ch. 11, MCS0, EUT On Side   |
| 2389.887   | 46.8             | -2.4          | 1.0                     | 51.0              | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 54.4              | 74.0                 | -19.6                  | Ch. 1, 1Mbps, EUT On Side   |
| 2485.323   | 45.8             | -2.0          | 1.5                     | 105.0             | 0.0                               | 10.0                      | Vert                      | PK       | 0.0                      | 53.8              | 74.0                 | -20.2                  | Ch. 11, MCS0, EUT Vert      |
| 2483.617   | 45.2             | -2.0          | 1.5                     | 231.0             | 0.0                               | 10.0                      | Horz                      | PK       | 0.0                      | 53.2              | 74.0                 | -20.8                  | Ch. 11, MCS0, EUT Vert      |

## CONCLUSION

Pass



Tested By

# SPURIOUS RADIATED EMISSIONS



|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:4E:DC          | Date:                 | 2024-09-11 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 21.8°C     |
| Attendees:        | None                       | Relative Humidity:    | 47.9%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1008 mb    |
| Tested By:        | Jeff Alcock                | Job Site:             | EV01       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-9 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |     |                    |   |                     |           |
|--------|-----|--------------------|---|---------------------|-----------|
| Run #: | 183 | Test Distance (m): | 3 | Ant. Height(s) (m): | 1 to 4(m) |
|--------|-----|--------------------|---|---------------------|-----------|

## COMMENTS

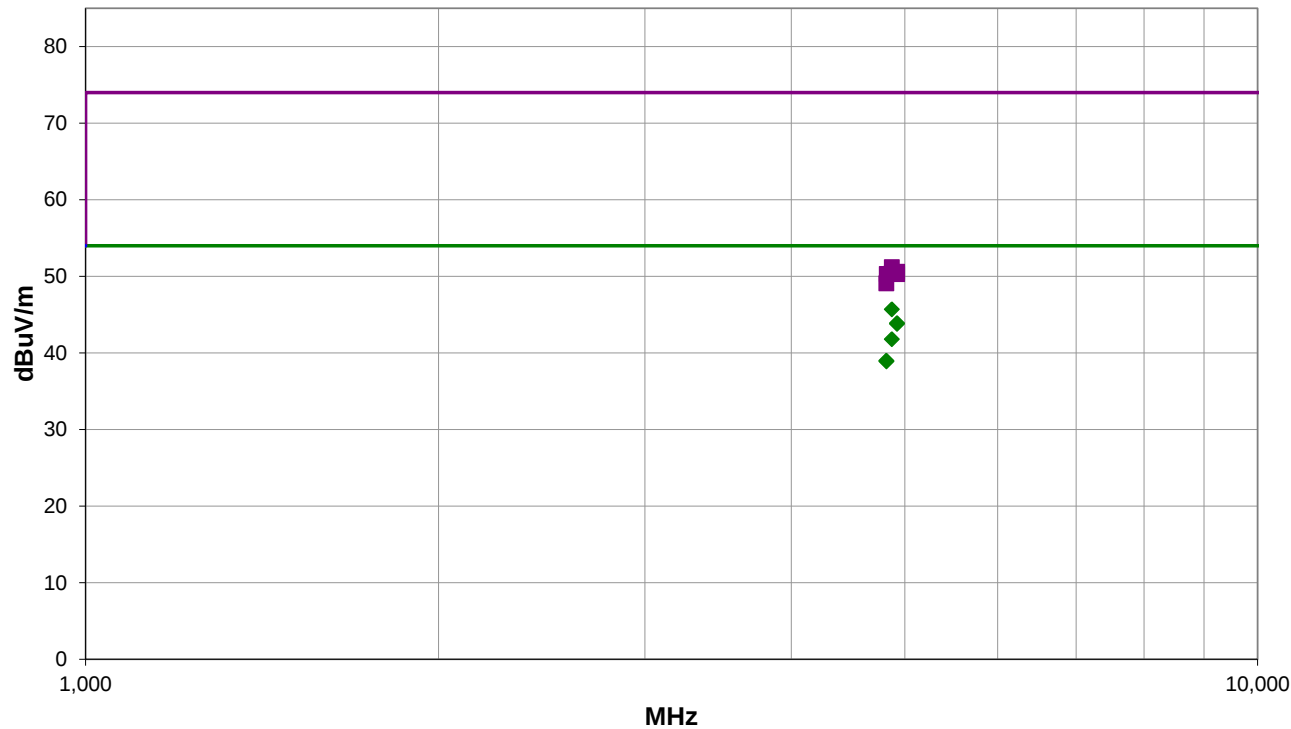
Please reference data comments below for channel, data rate, and EUT orientation. Spot-checking worst case non-noise floor emission.

## EUT OPERATING MODES

Transmitting 802.11bgn, Ch. 1 = 2412 MHz, Ch. 6 = 2437 MHz, Ch. 11 = 2462 MHz, Antenna 1

## DEVIATIONS FROM TEST STANDARD

None



Run #: 183

PK AV QP

# SPURIOUS RADIATED EMISSIONS

## RESULTS - Run #183

| Freq (MHz) | Amplitude (dBuV) | Factor (dB/m) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                 |
|------------|------------------|---------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------|
| 4873.975   | 36.0             | 9.5           | 3.5                     | 332.0             | 0.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 45.7              | 54.0                 | -8.3                   | Ch. 6, 1 Mbps, EUT Vert  |
| 4923.975   | 34.2             | 9.5           | 1.6                     | 345.0             | 0.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 43.9              | 54.0                 | -10.1                  | Ch. 11, 1 Mbps, EUT Vert |
| 4924.075   | 34.1             | 9.5           | 1.4                     | 14.0              | 0.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 43.8              | 54.0                 | -10.2                  | Ch. 11, 1 Mbps, EUT Vert |
| 4874.000   | 32.1             | 9.5           | 1.5                     | 335.0             | 0.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 41.8              | 54.0                 | -12.2                  | Ch. 6, 1 Mbps, EUT Vert  |
| 4821.742   | 29.3             | 9.5           | 1.5                     | 151.0             | 0.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.0              | 54.0                 | -15.0                  | Ch 1, 1 Mbps, EUT Vert   |
| 4822.817   | 29.2             | 9.5           | 2.8                     | 146.0             | 0.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 38.9              | 54.0                 | -15.1                  | Ch. 1, 1 Mbps, EUT Vert  |
| 4874.008   | 41.7             | 9.5           | 3.5                     | 332.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 51.2              | 74.0                 | -22.8                  | Ch. 6, 1 Mbps, EUT Vert  |
| 4924.075   | 41.1             | 9.5           | 1.4                     | 14.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 50.6              | 74.0                 | -23.4                  | Ch. 11, 1 Mbps, EUT Vert |
| 4874.050   | 41.0             | 9.5           | 1.5                     | 335.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 50.5              | 74.0                 | -23.5                  | Ch. 6, 1 Mbps, EUT Vert  |
| 4924.192   | 40.8             | 9.5           | 1.6                     | 345.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 50.3              | 74.0                 | -23.7                  | Ch. 11, 1 Mbps, EUT Vert |
| 4826.150   | 40.8             | 9.5           | 2.8                     | 146.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 50.3              | 74.0                 | -23.7                  | Ch. 1, 1 Mbps, EUT Vert  |
| 4821.625   | 39.6             | 9.5           | 1.5                     | 151.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 49.1              | 74.0                 | -24.9                  | Ch 1, 1 Mbps, EUT Vert   |

## CONCLUSION

Pass



Tested By

# SPURIOUS RADIATED EMISSIONS



|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:4E:DC          | Date:                 | 2024-09-11 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 21.7°C     |
| Attendees:        | None                       | Relative Humidity:    | 47.7%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1008 mb    |
| Tested By:        | Jeff Alcock                | Job Site:             | EV01       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-9 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |     |                    |   |                     |           |
|--------|-----|--------------------|---|---------------------|-----------|
| Run #: | 184 | Test Distance (m): | 3 | Ant. Height(s) (m): | 1 to 4(m) |
|--------|-----|--------------------|---|---------------------|-----------|

## COMMENTS

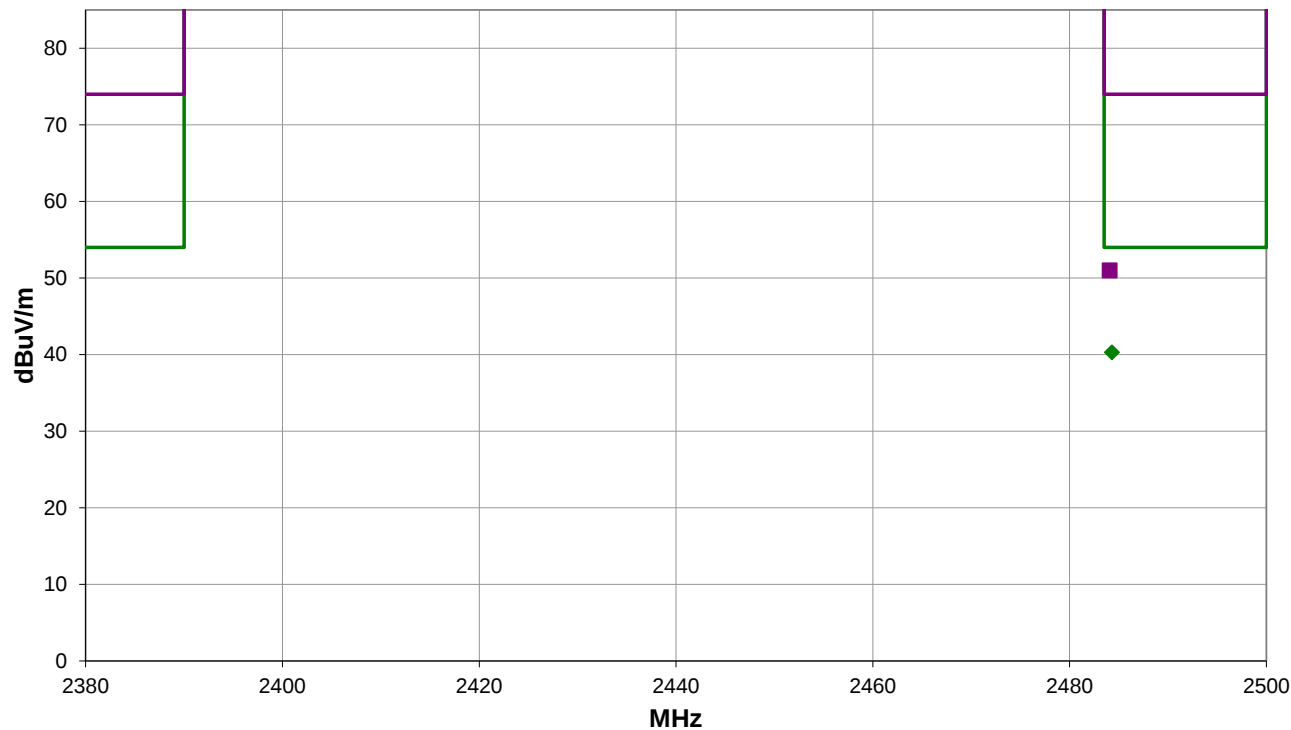
|                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------|
| Please reference data comments below for channel, data rate, and EUT orientation. Spot-checking worst case emission. |
|----------------------------------------------------------------------------------------------------------------------|

## EUT OPERATING MODES

|                                                                                          |
|------------------------------------------------------------------------------------------|
| Transmitting 802.11bgn, Ch. 1 = 2412 MHz, Ch. 6 = 2437 MHz, Ch. 11 = 2462 MHz, Antenna 1 |
|------------------------------------------------------------------------------------------|

## DEVIATIONS FROM TEST STANDARD

|      |
|------|
| None |
|------|



Run #: 184

■ PK ◆ AV ● QP

# SPURIOUS RADIATED EMISSIONS

RESULTS - Run #184

| Freq<br>(MHz) | Amplitude<br>(dBuV) | Factor<br>(dB/m) | Antenna Height<br>(meters) | Azimuth<br>(degrees) | Duty Cycle<br>Correction Factor<br>(dB) | External<br>Attenuation<br>(dB) | Polarity/<br>Transducer Type | Detector | Distance<br>Adjustment<br>(dB) | Adjusted<br>(dBuV/m) | Spec. Limit<br>(dBuV/m) | Compared to<br>Spec.<br>(dB) | Comments                 |
|---------------|---------------------|------------------|----------------------------|----------------------|-----------------------------------------|---------------------------------|------------------------------|----------|--------------------------------|----------------------|-------------------------|------------------------------|--------------------------|
| 2484.300      | 31.9                | -2.0             | 1.5                        | 183.0                | 0.4                                     | 10.0                            | Horz                         | AV       | 0.0                            | 40.3                 | 54.0                    | -13.7                        | Ch. 11, 6 Mbps, EUT Vert |
| 2484.070      | 43.0                | -2.0             | 1.5                        | 183.0                | 0.0                                     | 10.0                            | Horz                         | PK       | 0.0                            | 51.0                 | 74.0                    | -23.0                        | Ch. 11, 6 Mbps, EUT Vert |

CONCLUSION  
Pass

  
Tested By

# SPURIOUS RADIATED EMISSIONS



|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:4E:DC          | Date:                 | 2024-09-11 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 21.7°C     |
| Attendees:        | None                       | Relative Humidity:    | 47.7%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1008 mb    |
| Tested By:        | Jeff Alcock                | Job Site:             | EV01       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-9 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |     |                    |   |                     |           |
|--------|-----|--------------------|---|---------------------|-----------|
| Run #: | 185 | Test Distance (m): | 3 | Ant. Height(s) (m): | 1 to 4(m) |
|--------|-----|--------------------|---|---------------------|-----------|

## COMMENTS

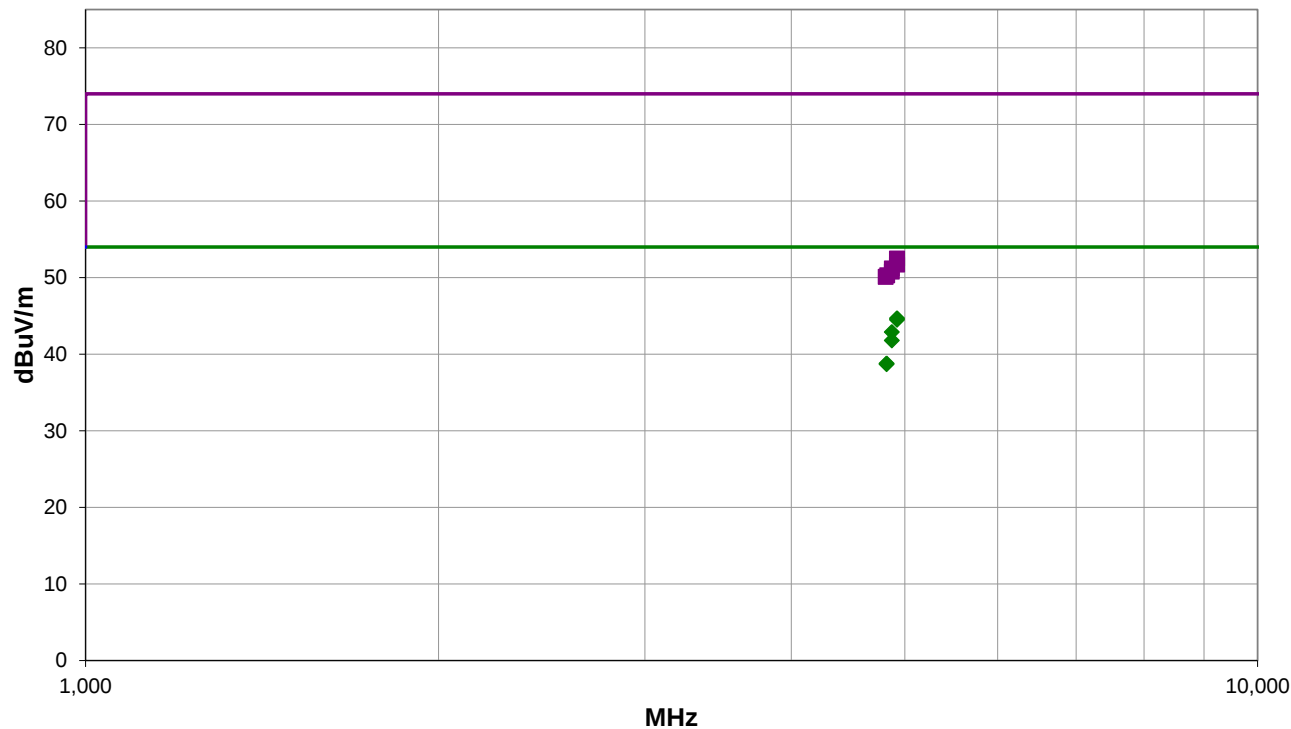
Please reference data comments below for channel, data rate, and EUT orientation. Spot checking worst case non-noise floor harmonic.

## EUT OPERATING MODES

Transmitting 802.11bgn, Ch. 1 = 2412 MHz, Ch. 6 = 2437 MHz, Ch. 11 = 2462 MHz, Antenna 2

## DEVIATIONS FROM TEST STANDARD

None



Run #: 185

■ PK    ◆ AV    ● QP

# SPURIOUS RADIATED EMISSIONS

## RESULTS - Run #185

| Freq (MHz) | Amplitude (dBuV) | Factor (dB/m) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                 |
|------------|------------------|---------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------|
| 4924.000   | 35.0             | 9.5           | 1.7                     | 340.0             | 0.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 44.7              | 54.0                 | -9.3                   | Ch. 11, 1 Mbps, EUT Vert |
| 4924.000   | 34.8             | 9.5           | 1.43                    | 353.0             | 0.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 44.5              | 54.0                 | -9.5                   | Ch. 11, 1 Mbps, EUT Vert |
| 4874.000   | 33.2             | 9.5           | 1.58                    | 338.0             | 0.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 42.9              | 54.0                 | -11.1                  | Ch. 6, 1 Mbps, EUT Vert  |
| 4874.000   | 32.1             | 9.5           | 1.5                     | 349.0             | 0.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 41.8              | 54.0                 | -12.2                  | Ch. 6, 1 Mbps, EUT Vert  |
| 4824.000   | 29.1             | 9.5           | 1.5                     | 173.0             | 0.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 38.8              | 54.0                 | -15.2                  | Ch. 1, 1 Mbps, EUT Vert  |
| 4824.000   | 29.0             | 9.5           | 1.5                     | 13.0              | 0.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 38.7              | 54.0                 | -15.3                  | Ch. 1, 1 Mbps, EUT Vert  |
| 4923.960   | 43.0             | 9.5           | 1.7                     | 340.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 52.5              | 74.0                 | -21.5                  | Ch. 11, 1 Mbps, EUT Vert |
| 4923.923   | 42.2             | 9.5           | 1.43                    | 353.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 51.7              | 74.0                 | -22.3                  | Ch. 11, 1 Mbps, EUT Vert |
| 4873.793   | 41.7             | 9.5           | 1.5                     | 349.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 51.2              | 74.0                 | -22.8                  | Ch. 6, 1 Mbps, EUT Vert  |
| 4874.020   | 41.3             | 9.5           | 1.58                    | 338.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 50.8              | 74.0                 | -23.2                  | Ch. 6, 1 Mbps, EUT Vert  |
| 4830.080   | 40.8             | 9.5           | 1.5                     | 173.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 50.3              | 74.0                 | -23.7                  | Ch. 1, 1 Mbps, EUT Vert  |
| 4815.580   | 40.6             | 9.5           | 1.5                     | 13.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 50.1              | 74.0                 | -23.9                  | Ch. 1, 1 Mbps, EUT Vert  |

## CONCLUSION

Pass



Tested By

# SPURIOUS RADIATED EMISSIONS

|                   |                            |                       |            |
|-------------------|----------------------------|-----------------------|------------|
| EUT:              | Controller 3, Model 705101 | Work Order:           | IRRI0024   |
| Serial Number:    | 1C:63:49:9D:4E:DC          | Date:                 | 2024-09-11 |
| Customer:         | IrriGreen, Inc.            | Temperature:          | 21.7°C     |
| Attendees:        | None                       | Relative Humidity:    | 47.7%      |
| Customer Project: | None                       | Bar. Pressure (PMSL): | 1008 mb    |
| Tested By:        | Jeff Alcock                | Job Site:             | EV01       |
| Power:            | 110VAC/60Hz                | Configuration:        | IRRI0024-9 |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.247:2024 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |     |                    |   |                     |           |
|--------|-----|--------------------|---|---------------------|-----------|
| Run #: | 186 | Test Distance (m): | 3 | Ant. Height(s) (m): | 1 to 4(m) |
|--------|-----|--------------------|---|---------------------|-----------|

## COMMENTS

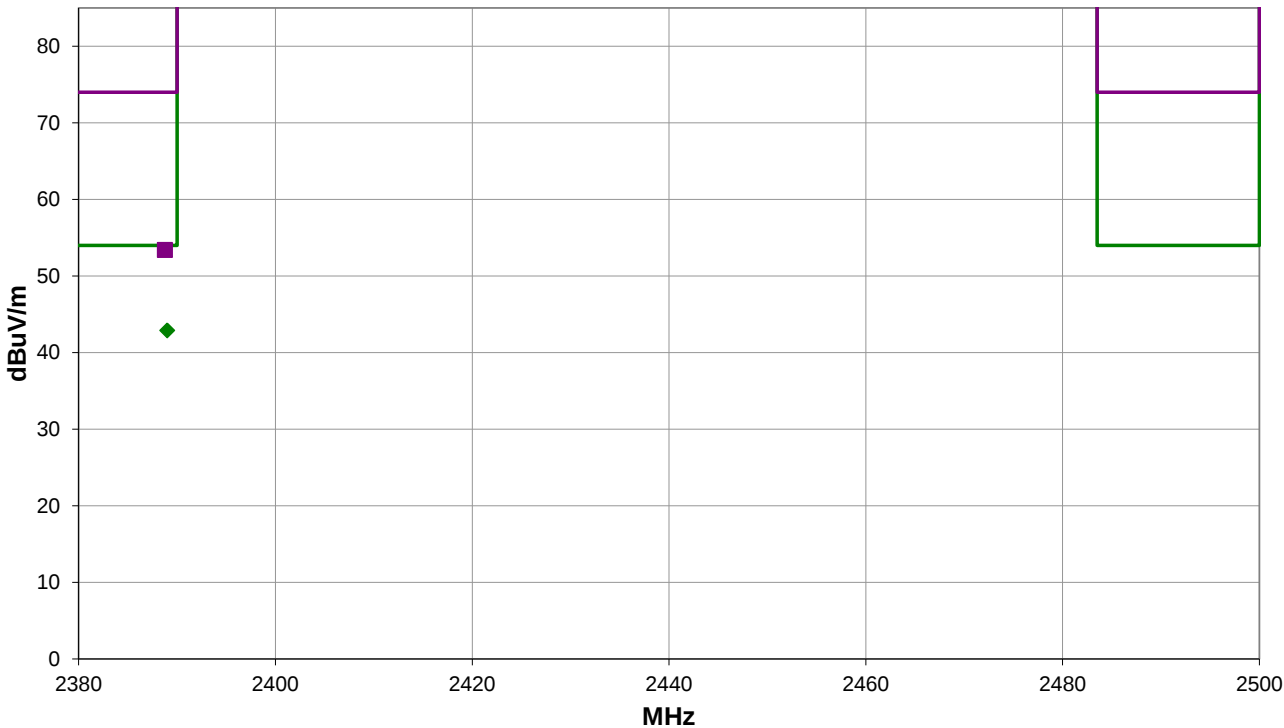
|                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------|
| Please reference data comments below for channel, data rate, and EUT orientation. Spot checking worst case emission. |
|----------------------------------------------------------------------------------------------------------------------|

## EUT OPERATING MODES

|                                                                                          |
|------------------------------------------------------------------------------------------|
| Transmitting 802.11bgn, Ch. 1 = 2412 MHz, Ch. 6 = 2437 MHz, Ch. 11 = 2462 MHz, Antenna 2 |
|------------------------------------------------------------------------------------------|

## DEVIATIONS FROM TEST STANDARD

|      |
|------|
| None |
|------|



Run #: 186

■ PK ◆ AV ● QP

# SPURIOUS RADIATED EMISSIONS

RESULTS - Run #186

| Freq (MHz) | Amplitude (dBuV) | Factor (dB/m) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                |
|------------|------------------|---------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------|
| 2389.000   | 35.1             | -2.4          | 1.0                     | 213.0             | 0.2                               | 10.0                      | Horz                      | AV       | 0.0                      | 42.9              | 54.0                 | -11.1                  | Ch. 1, 1 Mbps, EUT Horz |
| 2388.760   | 45.8             | -2.4          | 1.0                     | 213.0             |                                   | 10.0                      | Horz                      | PK       | 0.0                      | 53.4              | 74.0                 | -20.6                  | Ch. 1, 1 Mbps, EUT Horz |

CONCLUSION

Pass

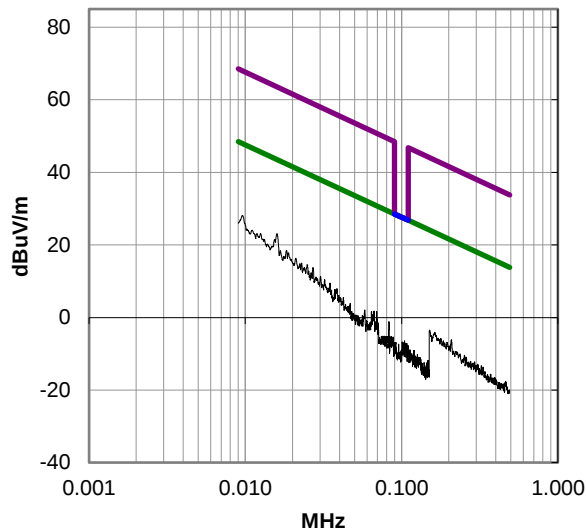
  
Tested By

# SPURIOUS RADIATED EMISSIONS

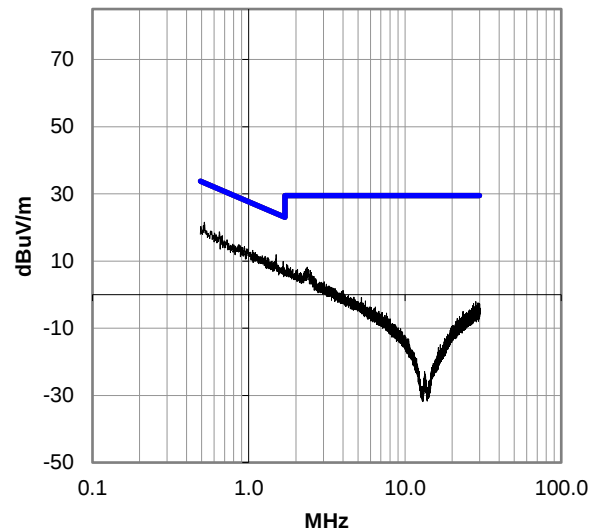
## PRESCAN DATA

Radiated spurious emissions from the EUT are initially reviewed with Pre-scans (Preview scans). Pre-scans are performed, with the EUT transmitting on the lowest applicable data rate, for both vertical and horizontal polarizations. The Pre-scan plots below are shown with a peak detector and RBW for the following frequency ranges: 9 kHz RBW (< 30 MHz); 120 kHz RBW (30 - 1000 MHz); 1 MHz RBW (> 1 GHz). In the case where unintentional emissions are observed, an ambient or idle pre-scan with the radio off, will be shown for comparison.

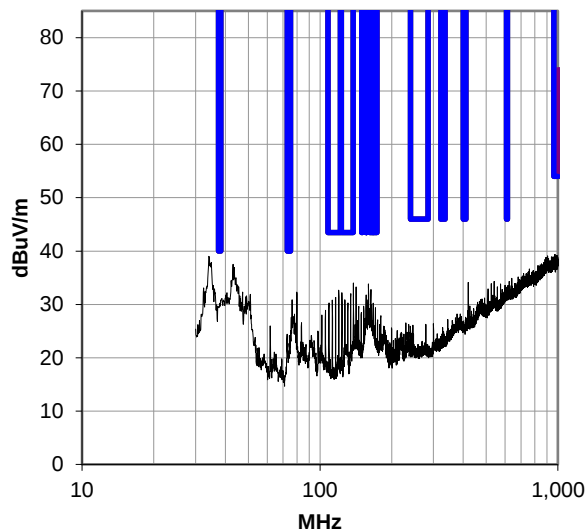
0.009-0.49 MHz, Run 48



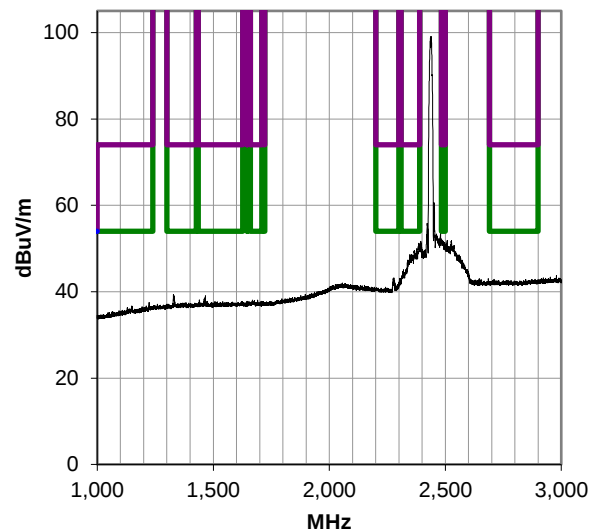
0.49-30 MHz, Run 47



30-1000 MHz, Run 42

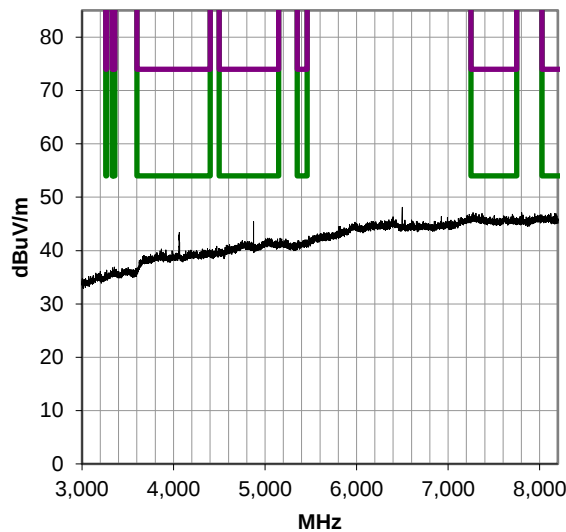


1000-3000 MHz, Run 13

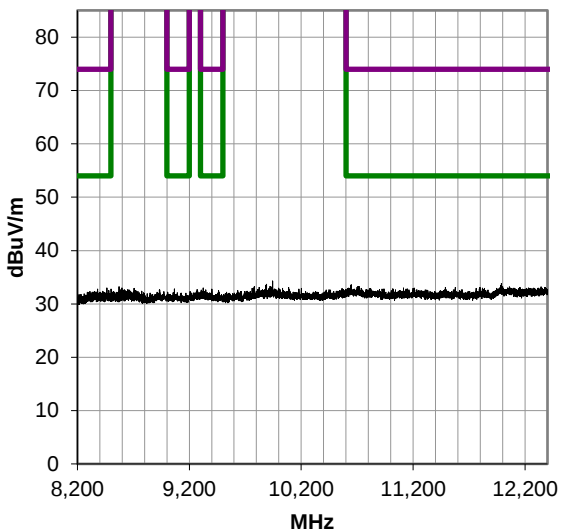


# SPURIOUS RADIATED EMISSIONS

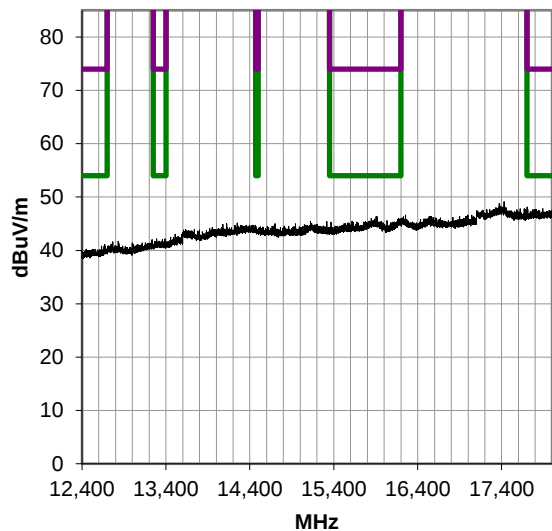
3000-8200 MHz, Run 14



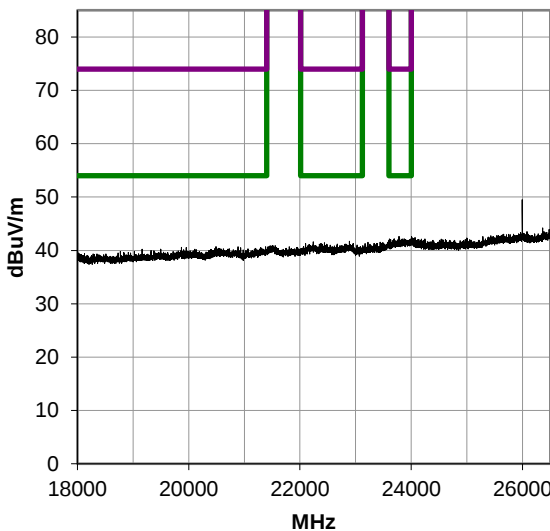
8200-12400 MHz, Run 15



12400-18000 MHz, Run 16



18000-26500 MHz, Run 27



End of Test Report