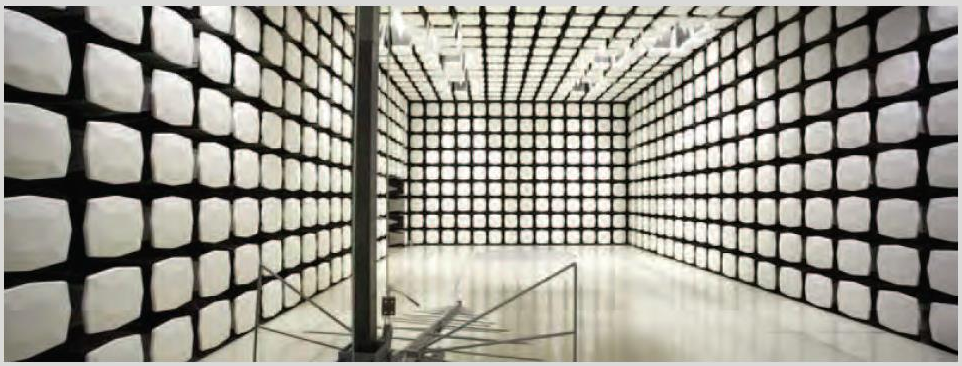
IrriGreen, Inc.

Sprinkler 3 (Model No. 400304)

FCC 15.247:2025

Bluetooth Low Eneregy (DTS) Radio

Report: IRRI0027.2 Rev. 1, Issue Date: June 9, 2025



ACCREDITED
CERT #3310.05

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element
2023.04.17

Section	Page Number

CERTIFICATE OF TEST

Last Date of Test: May 12, 2025
IrriGreen, Inc.
EUT: Sprinkler 3 (Model No. 400304)

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2025	ANSI C63.10:2020

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	
Occupied Bandwidth (99%)	Pass	KDB 558074 - 2.1	6.9.3	
Duty Cycle	N/A	KDB 558074 - 6.0	11.6	Characterization of radio operation.
DTS Bandwidth (6 dB)	Pass	15.247(a)(2), KDB 558074 - 8.2	11.8.2	
Output Power	Pass	15.247(b)(3), KDB 558074 - 8.3.1	11.9.1.1	
Equivalent Isotropic Radiated Power	Pass	15.247(b)(3), KDB 558074 - 8.3.1	11.9.1.1	
Power Spectral Density	Pass	15.247(e), KDB 558074 -8.4	11.10.2	
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	
Radiated Band Edge Emissions	Pass	15.247(d), KDB 558074 - 8.6, 8.7	11.12.1, 11.13.2, 6.6	
Spurious Radiated Emissions	Pass	15.247(d), KDB 558074 - 8.6, 8.7	11.12.1, 11.13.2, 6.4, 6.5, 6.6	

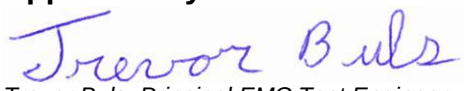
Deviations From Test Standards

None

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.

CERTIFICATE OF TEST

Approved By:



Trevor Buls, Principal EMC Test Engineer
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 (yyyy-mm-dd)	Page Number
00	None		
01	Clarified test setup for radiated tested and analyzer settings for output power and bandwidth tests	2025-06-05	22, 28, 33, 38, 60, 67, 70

ACCREDITATIONS AND AUTHORIZATIONS

element
2025.02.07

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.

FDA - Recognized by the FDA as an Accreditation Scheme for Conformity Assessment (ASCA)-accredited testing laboratory for basic safety and essential performance.

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.

European Union

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

United Kingdom

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

Australia/New Zealand

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

Korea

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

Japan

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

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.

Singapore

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

Israel

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

Hong Kong

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

SCOPE

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

California Minnesota Oregon Washington

FACILITIES

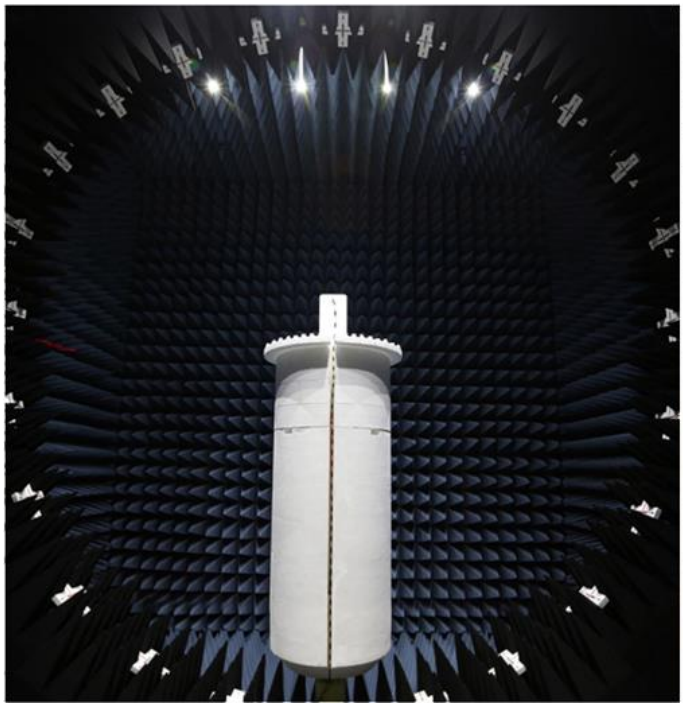
element
2025.01.03

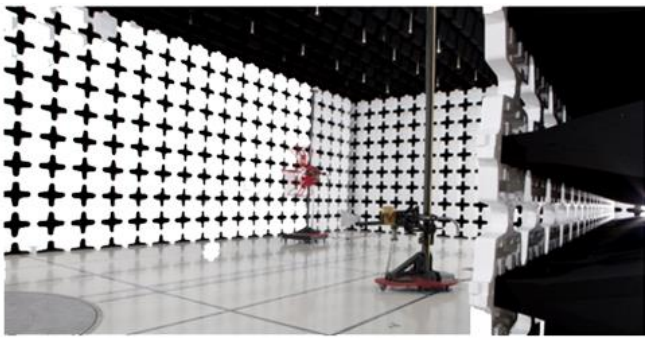
Testing was performed at the following location(s)

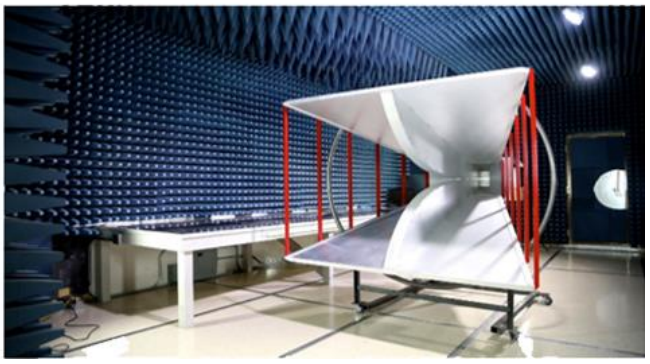
	Location	Labs (1)	Address	A2LA (2)	ISED (3)	BSMI (4)	VCCI (5)	CAB (6)	FDA (7)
☐	California	OC01-17	41 Tesla Irvine, CA 92618 (949) 861-8918	3310.04	2834B	SL2-IN-E-1154R	A-0029	US0158	TL-55
☒	Minnesota	MN01-11	9349 W Broadway Ave. Brooklyn Park, MN 55445 (612) 638-5136	3310.05	2834E	SL2-IN-E-1152R	A-0109	US0175	TL-57
☐	Oregon	EV01-12	6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	3310.02	2834D	SL2-IN-E-1017	A-0108	US0017	TL-56
☐	Washington	NC01-05	19201 120th Ave NE Bothell, WA 98011 (425) 984-6600	3310.06	2834F	SL2-IN-E-1153R	A-0110	US0157	TL-67
☐	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, MOC, NCC, OFCA
(7) FDA ASCA No.







MEASUREMENT UNCERTAINTY

element
MU 2025-03-26

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 reported is based on statistical analysis that was performed by the laboratory. 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 (+/-)
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
Near-field Measurement of E-Field (dB)	1.89
Near-field Measurement of H-Field (dB)	2.65

Field Strength Measurements (dB)

Range	MN09 (+/-)
30MHz-1GHz 3m	4.6
1GHz-6GHz	5.1
6GHz-40GHz	5.3

AC Powerline Conducted Emissions Measurements (dB)

Range	MN03 (+/-)
9kHz-150kHz LISN	3.6
150kHz-30MHz LISN	3.2
150kHz-30MHz CVP	3
150kHz-30MHz Telecom-ISN	4.4

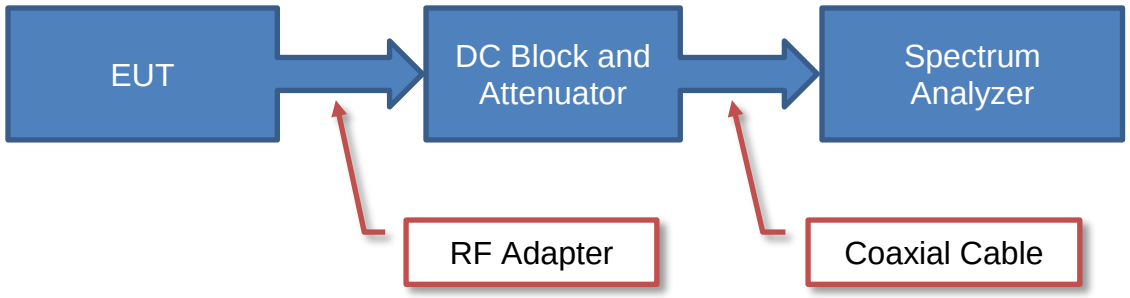
TEST SETUP BLOCK DIAGRAMS

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.

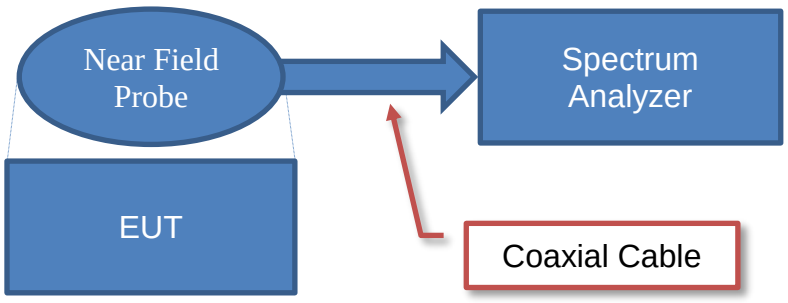
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

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

Near Field Test Fixture Measurements

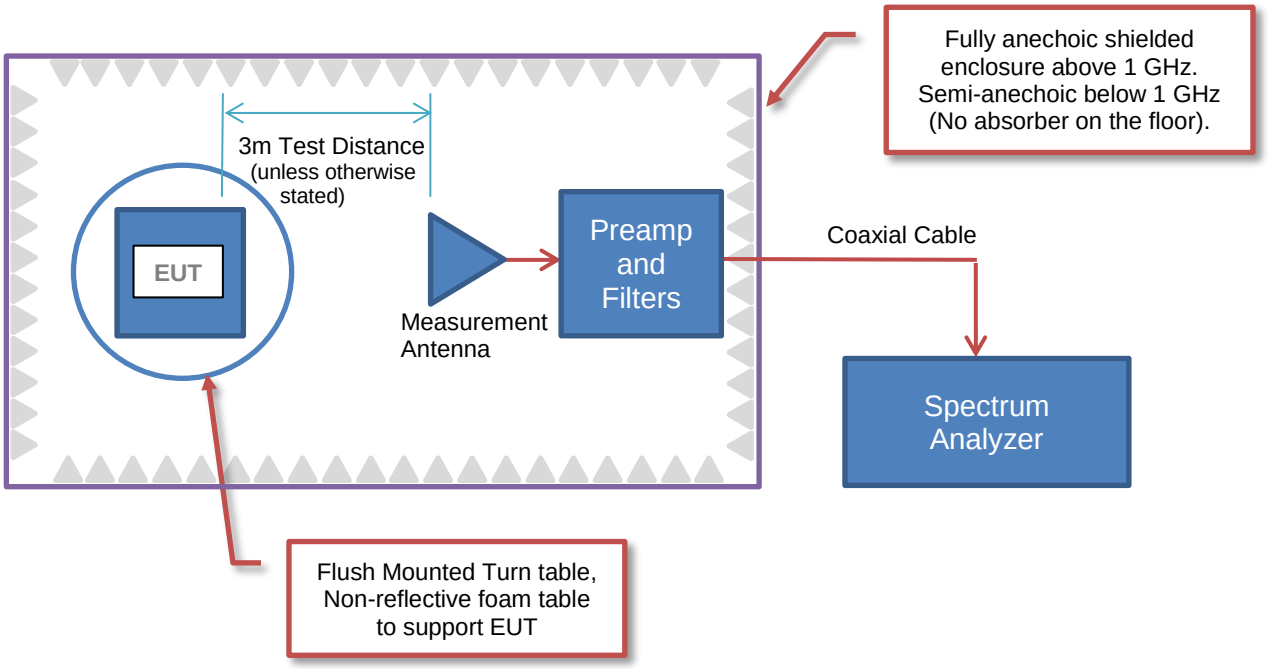


Sample Calculation (logarithmic units)

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 (Amplitude)		Factor: Antenna Factor		Factor: Cable Factor		Factor: Amplifier Gain		Distance Adjustment Factor		External Attenuation		Field Strength
42.6	+	28.6	+	3.1	-	40.8	+	0.0	+	0.0	=	**33.5**

Conducted Emissions:

Measured Level (Amplitude)		Factor: Transducer Factor		Factor: Cable Factor		External Attenuation		Adjusted Level
26.7	+	0.3	+	0.1	+	20.0	=	**47.1**

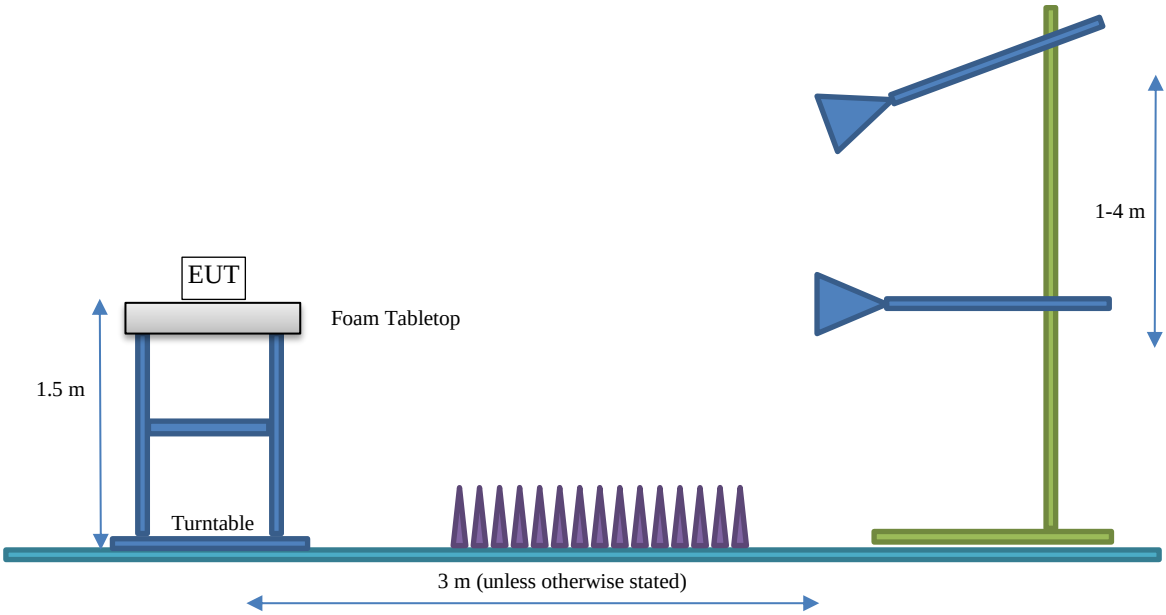
Radiated Power (ERP/EIRP) – Substitution Method:

Measured Level into Substitution Antenna (Amplitude dBm)		Substitution Antenna Factor (dBi)		EIRP to ERP (if applicable)		Measured power (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

Company Name:	IrriGreen, Inc.
Address:	5250 West 73rd Street
City, State, Zip:	Edina, MN 55439
Test Requested By:	Gary Klinefelter
EUT:	Sprinkler 3 (Model No. 400304)
First Date of Test:	April 1, 2025
Last Date of Test:	May 12, 2025
Receipt Date of Samples:	April 1, 2025
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Landscape irrigation system consisting of an Irrigreen Controller 3 and an Irrigreen Sprinkler 3 (Model No. 400304)

Testing Objective:
To demonstrate compliance of the Bluetooth Low Energy (DTS) radio to FCC 15.247 requirements.

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)

Type	Provided by:	Frequency Range (MHz)	Gain (dBi)
F-Type PCB Trace	IrriGreen, Inc	2400-2483.5	-4.31

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

☐ Test software settings
☒ Rated power settings

Software / firmware used for testing:
Firmware v2.26
Smart RF Studio 8 v1.2.0

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types / Data Rates	Type	Channel	Position	Frequency (MHz)	Power Setting (dBm)
BLE GFSK 125 kbps, 500 kbps, 1 Mbps, 2 Mbps	DTS	37	Low Channel	2402	5
		18	Mid Channel	2442	5
		39	High Channel	2480	5

CONFIGURATIONS

Configuration IRRI0027-2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Sprinkler	IrriGreen, Inc.	Sprinkler 3 (Model No. 400304)	30725692

Peripherals in Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
IrriGreen Controller	IrriGreen, Inc.	Controller 3	N/A

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Dell Technology	Vostro 15 3530	ST7PC3424

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Sprinkler Control Cable	No	10 m	No	IrriGreen Controller	Sprinkler
AC Power cable	No	6 m	No	IrriGreen Controller	AC Mains

CONFIGURATIONS

Configuration IRRI0027-3

Software/Firmware Running During Test	
Description	**Version**
Sprinkler Firmware	2.26 build 23b6e0f
Smart RF Studio 8	v1.2.0

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Sprinkler Board, Direct Connect	IrriGreen, Inc.	Sprinkler 3 (Model No. 400304)	250300220

Peripherals in Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
TI Development Board	Texas Instruments	CC2652-R7	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Dell Technology	Vostro 15 3530	ST7PC3424

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB Cable	Yes	0.7 m	No	Laptop	TI Development Board
Ribbon Cable	No	0.1 m	No	TI Development Board	Sprinkler Board

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2025-04-01	Powerline Conducted 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.
2	2025-04-02	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.
3	2025-04-03	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.
4	2025-04-03	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.
5	2025-04-03	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.
6	2025-04-03	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.
7	2025-04-03	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.
8	2025-04-03	Spurious Conducted 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.
9	2025-04-03	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.
10	2025-05-12	Radiated Band Edge 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

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

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	ARS	2024-05-07	2025-05-07
Cable - Conducted Cable Assembly	Northwest EMC	MNC, HGN, TYK, VAE	MNCA	2025-02-14	2026-02-14
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	2025-03-30	2026-03-30

CONFIGURATIONS INVESTIGATED

IRRI0027-2

MODES INVESTIGATED

BLE Transmitting mid channel (2442 MHz), 1 Mbps

POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	Sprinkler 3 (Model No. 400304)	Work Order:	IRRI0027
Serial Number:	30725692	Date:	2025-04-01
Customer:	IrriGreen, Inc.	Temperature:	22.3°C
Attendees:	Sawyer Hamond	Relative Humidity:	27.2%
Customer Project:	None	Bar. Pressure (PMSL):	1014 mb
Tested By:	Ko Vorasarn	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	IRRI0027-2

TEST PARAMETERS

Run #:	1	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

None

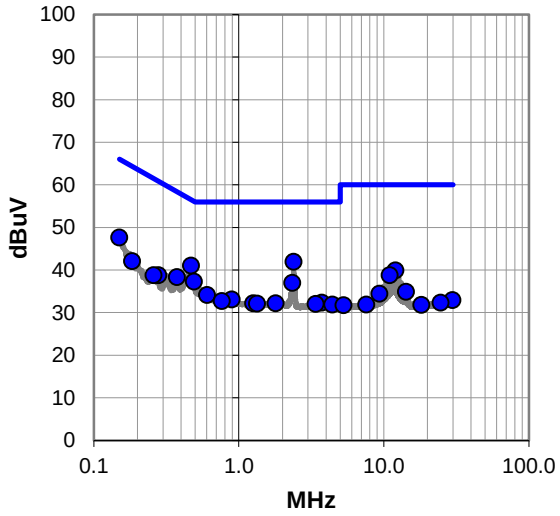
EUT OPERATING MODES

BLE Transmitting mid channel (2442 MHz), 1 Mbps

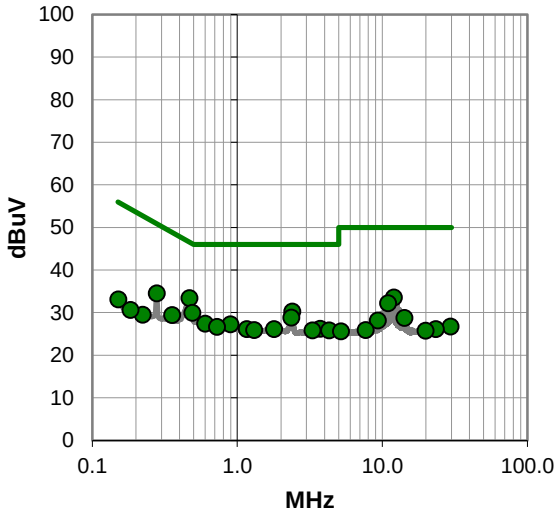
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #1

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.393	21.2	20.7	41.9	56.0	-14.1
0.467	20.3	20.7	41.0	56.6	-15.6
0.150	26.5	21.1	47.6	66.0	-18.4
0.490	16.6	20.7	37.3	56.2	-18.9
2.333	16.3	20.7	37.0	56.0	-19.0
12.070	18.5	21.4	39.9	60.0	-20.1
0.374	17.7	20.6	38.3	58.4	-20.1
10.973	17.6	21.2	38.8	60.0	-21.2
0.603	13.4	20.7	34.1	56.0	-21.9
0.278	18.2	20.6	38.8	60.9	-22.1
0.184	21.1	21.0	42.1	64.3	-22.2
0.258	18.1	20.7	38.8	61.5	-22.7
0.896	12.4	20.7	33.1	56.0	-22.9
0.765	11.9	20.8	32.7	56.0	-23.3
3.726	11.4	20.9	32.3	56.0	-23.7
1.256	11.5	20.7	32.2	56.0	-23.8
1.796	11.5	20.7	32.2	56.0	-23.8
1.334	11.4	20.7	32.1	56.0	-23.9
3.386	11.1	20.9	32.0	56.0	-24.0
4.418	11.0	20.9	31.9	56.0	-24.1
14.264	13.5	21.4	34.9	60.0	-25.1
9.328	13.3	21.1	34.4	60.0	-25.6
29.729	10.0	22.9	32.9	60.0	-27.1
24.615	10.0	22.3	32.3	60.0	-27.7
7.562	10.9	21.0	31.9	60.0	-28.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.467	12.7	20.7	33.4	46.6	-13.2
2.404	9.5	20.7	30.2	46.0	-15.8
0.490	9.2	20.7	29.9	46.2	-16.3
0.278	13.9	20.6	34.5	50.9	-16.4
12.070	12.1	21.4	33.5	50.0	-16.5
2.362	8.1	20.7	28.8	46.0	-17.2
10.973	11.0	21.2	32.2	50.0	-17.8
0.600	6.7	20.7	27.4	46.0	-18.6
0.898	6.5	20.7	27.2	46.0	-18.8
0.356	8.8	20.6	29.4	48.8	-19.4
0.727	5.8	20.8	26.6	46.0	-19.4
3.731	5.3	20.9	26.2	46.0	-19.8
1.163	5.4	20.7	26.1	46.0	-19.9
1.795	5.4	20.7	26.1	46.0	-19.9
1.311	5.2	20.7	25.9	46.0	-20.1
3.308	4.9	20.9	25.8	46.0	-20.2
4.308	4.9	20.9	25.8	46.0	-20.2
14.264	7.3	21.4	28.7	50.0	-21.3
9.325	7.0	21.1	28.1	50.0	-21.9
0.152	12.0	21.1	33.1	55.9	-22.8
0.223	8.7	20.8	29.5	52.7	-23.2
29.600	3.8	22.9	26.7	50.0	-23.3
0.184	9.6	21.0	30.6	54.3	-23.7
23.426	3.9	22.2	26.1	50.0	-23.9
7.680	4.9	21.0	25.9	50.0	-24.1

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	Sprinkler 3 (Model No. 400304)	Work Order:	IRRI0027
Serial Number:	30725692	Date:	2025-04-01
Customer:	IrriGreen, Inc.	Temperature:	22.3°C
Attendees:	Sawyer Hamond	Relative Humidity:	27.2%
Customer Project:	None	Bar. Pressure (PMSL):	1014 mb
Tested By:	Ko Vorasarn	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	IRRI0027-2

TEST PARAMETERS

Run #:	2	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None

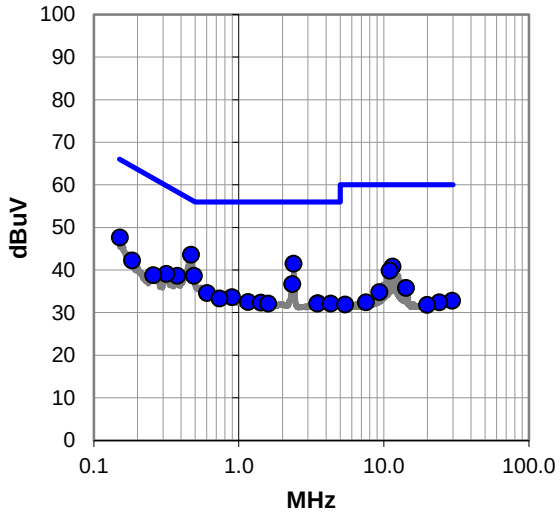
EUT OPERATING MODES

BLE Transmitting mid channel (2442 MHz), 1 Mbps

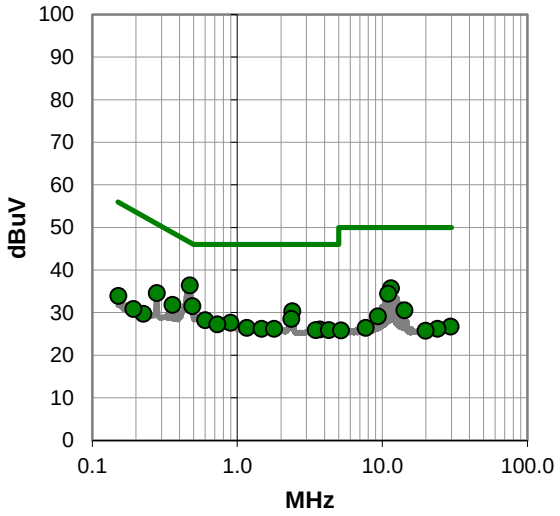
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #2

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.467	22.9	20.7	43.6	56.6	-13.0
2.390	20.8	20.7	41.5	56.0	-14.5
0.490	17.9	20.7	38.6	56.2	-17.6
0.152	26.5	21.1	47.6	65.9	-18.3
11.522	19.5	21.3	40.8	60.0	-19.2
2.333	16.0	20.7	36.7	56.0	-19.3
0.376	18.0	20.6	38.6	58.4	-19.8
10.973	18.6	21.2	39.8	60.0	-20.2
0.316	18.5	20.6	39.1	59.8	-20.7
0.605	13.9	20.7	34.6	56.0	-21.4
0.184	21.2	21.0	42.2	64.3	-22.1
0.898	12.9	20.7	33.6	56.0	-22.4
0.257	18.1	20.7	38.8	61.5	-22.7
0.737	12.5	20.8	33.3	56.0	-22.7
1.159	11.8	20.7	32.5	56.0	-23.5
1.419	11.6	20.7	32.3	56.0	-23.7
3.521	11.3	20.9	32.2	56.0	-23.8
1.596	11.4	20.7	32.1	56.0	-23.9
3.479	11.2	20.9	32.1	56.0	-23.9
4.308	11.2	20.9	32.1	56.0	-23.9
14.264	14.4	21.4	35.8	60.0	-24.2
9.325	13.7	21.1	34.8	60.0	-25.2
29.619	9.9	22.9	32.8	60.0	-27.2
7.539	11.4	21.0	32.4	60.0	-27.6
24.178	10.1	22.3	32.4	60.0	-27.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.472	15.7	20.7	36.4	46.5	-10.1
11.522	14.4	21.3	35.7	50.0	-14.3
0.490	10.8	20.7	31.5	46.2	-14.7
10.973	13.2	21.2	34.4	50.0	-15.6
2.404	9.6	20.7	30.3	46.0	-15.7
0.278	14.0	20.6	34.6	50.9	-16.3
0.358	11.2	20.6	31.8	48.8	-17.0
2.361	7.8	20.7	28.5	46.0	-17.5
0.600	7.5	20.7	28.2	46.0	-17.8
0.898	6.9	20.7	27.6	46.0	-18.4
0.728	6.4	20.8	27.2	46.0	-18.8
14.264	9.1	21.4	30.5	50.0	-19.5
1.168	5.7	20.7	26.4	46.0	-19.6
1.470	5.5	20.7	26.2	46.0	-19.8
1.795	5.5	20.7	26.2	46.0	-19.8
3.713	5.1	20.9	26.0	46.0	-20.0
3.475	5.0	20.9	25.9	46.0	-20.1
4.285	5.0	20.9	25.9	46.0	-20.1
9.325	8.0	21.1	29.1	50.0	-20.9
0.152	12.8	21.1	33.9	55.9	-22.0
0.225	8.9	20.8	29.7	52.6	-22.9
0.193	9.9	20.9	30.8	53.9	-23.1
29.601	3.8	22.9	26.7	50.0	-23.3
7.681	5.4	21.0	26.4	50.0	-23.6
24.023	3.9	22.3	26.2	50.0	-23.8

CONCLUSION

Pass

Tested By

OCCUPIED BANDWIDTH (99%)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

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 C63.10:2020, 6.9.3, the spectrum analyzer was configured as follows:

Sweep time: Auto
Resolution Bandwidth: 1% to 5% of the OBW
Video Bandwidth: ≥ 3 * RBW
Trace: Max Hold
Span: Large enough to capture all products of the modulation process, including the emission skirts.

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
Generator - Signal	Agilent	N5183A	TIK	2025-02-13	2028-02-13
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2024-08-28	2025-08-28
Block - DC	Fairview Microwave	SD3379	ANH	2024-08-28	2025-08-28
Attenuator	S.M. Electronics	SA26B-20	RFW	2025-02-03	2026-02-03

OCCUPIED BANDWIDTH (99%)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

EUT:	Sprinkler 3 (Model No. 400304)	Work Order:	IRRI0027
Serial Number:	250300220	Date:	2025-04-03
Customer:	IrriGreen, Inc.	Temperature:	21.8°C
Attendees:	Sawyer Hamond	Relative Humidity:	30.1%
Customer Project:	None	Bar. Pressure (PMSL):	1011 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	5VDC via USB	Configuration:	IRRI0027-3

COMMENTS

Reference level offset includes measurement cable, attenuator, and DC block.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

N/A

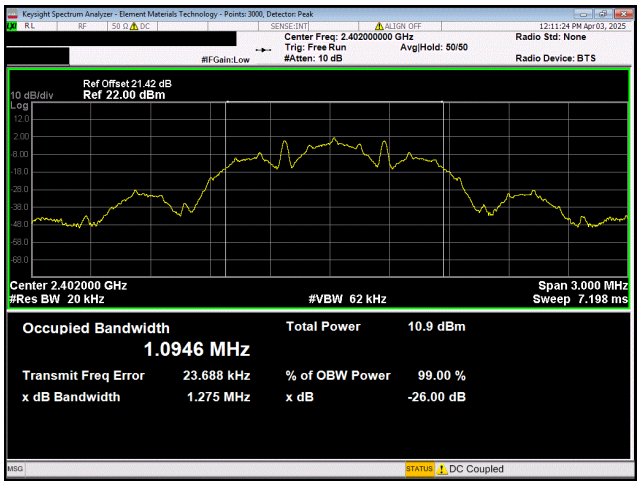
Tested By

TEST RESULTS

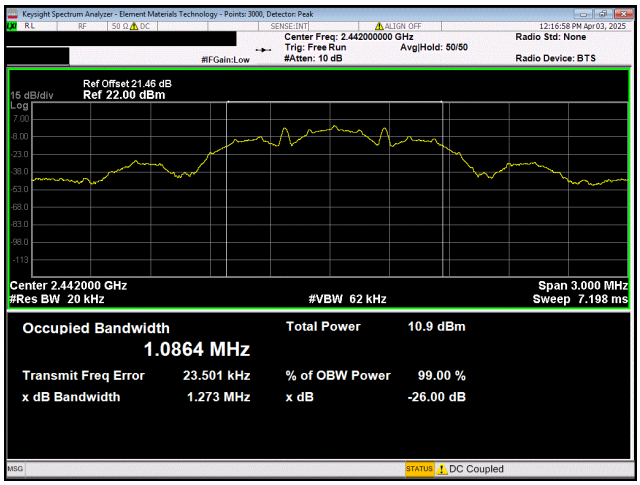
	Value	Limit	Result
BLE/GFSK 125 kbps			
Low Channel, 2402 MHz	1.095 MHz	N/A	N/A
Mid Channel, 2442 MHz	1.086 MHz	N/A	N/A
High Channel, 2480 MHz	1.1 MHz	N/A	N/A
BLE/GFSK 500 kbps			
Low Channel, 2402 MHz	1.062 MHz	N/A	N/A
Mid Channel, 2442 MHz	1.055 MHz	N/A	N/A
High Channel, 2480 MHz	1.058 MHz	N/A	N/A
BLE/GFSK 1 Mbps			
Low Channel, 2402 MHz	1.085 MHz	N/A	N/A
Mid Channel, 2442 MHz	1.073 MHz	N/A	N/A
High Channel, 2480 MHz	1.086 MHz	N/A	N/A
BLE/GFSK 2 Mbps			
Low Channel, 2402 MHz	2.053 MHz	N/A	N/A
Mid Channel, 2442 MHz	2.077 MHz	N/A	N/A
High Channel, 2480 MHz	2.044 MHz	N/A	N/A

OCCUPIED BANDWIDTH (99%)

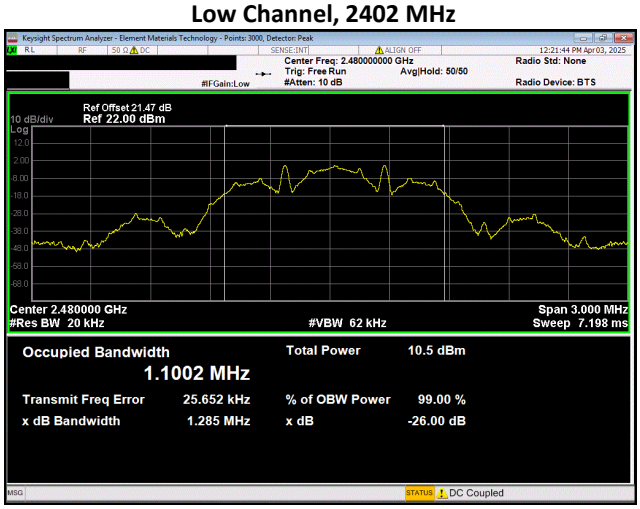
element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



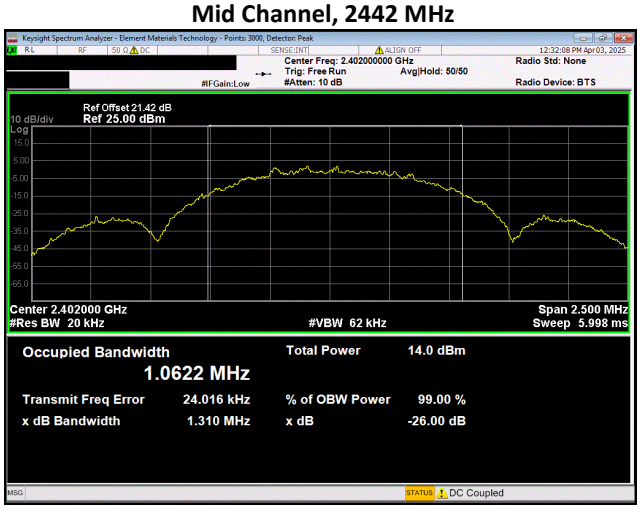
BLE/GFSK 125 kbps
Low Channel, 2402 MHz



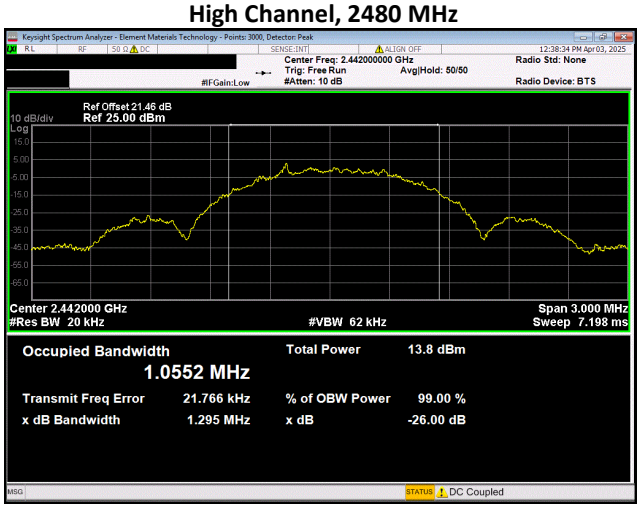
BLE/GFSK 125 kbps
Mid Channel, 2442 MHz



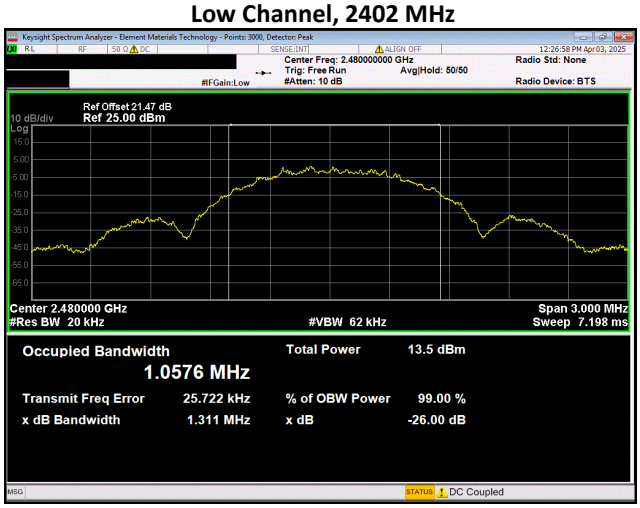
BLE/GFSK 125 kbps
High Channel, 2480 MHz



BLE/GFSK 500 kbps
Low Channel, 2402 MHz



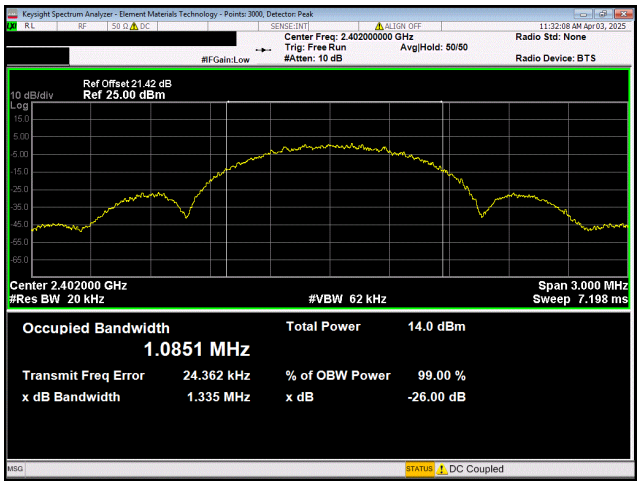
BLE/GFSK 500 kbps
Mid Channel, 2442 MHz



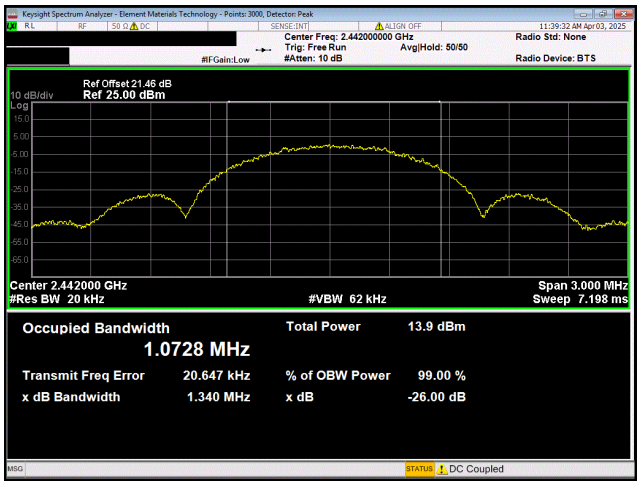
BLE/GFSK 500 kbps
High Channel, 2480 MHz

OCCUPIED BANDWIDTH (99%)

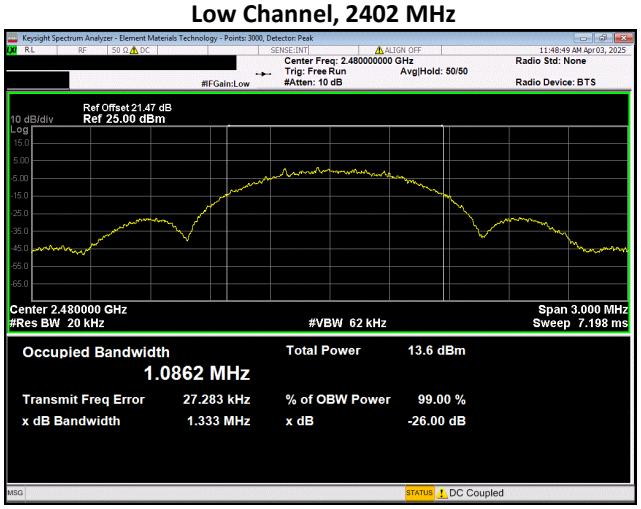
element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



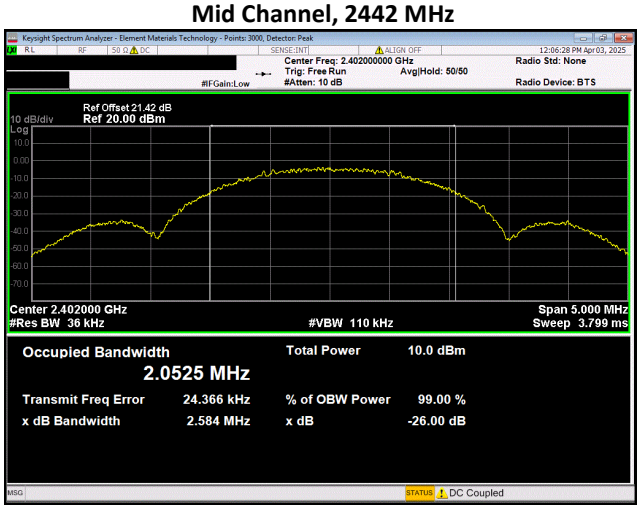
BLE/GFSK 1 Mbps
Low Channel, 2402 MHz



BLE/GFSK 1 Mbps
Mid Channel, 2442 MHz



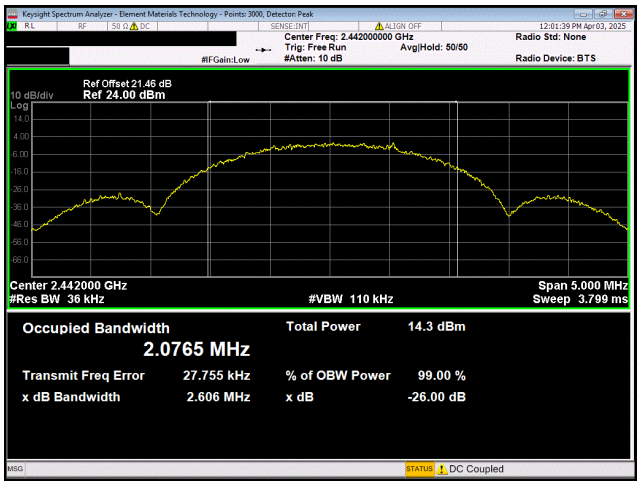
BLE/GFSK 1 Mbps
High Channel, 2480 MHz



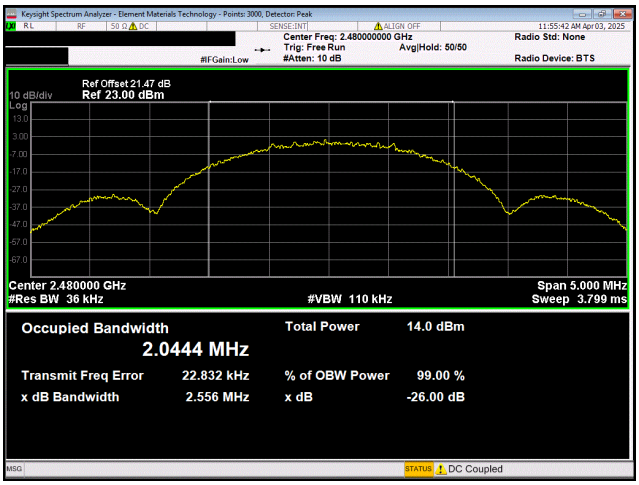
BLE/GFSK 2 Mbps
Low Channel, 2402 MHz

OCCUPIED BANDWIDTH (99%)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



BLE/GFSK 2 Mbps
Mid Channel, 2442 MHz



BLE/GFSK 2 Mbps
High Channel, 2480 MHz

DUTY CYCLE

element
2023/09/26

TEST DESCRIPTION

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 test software provided for operation in a fixed, single channel mode allows the EUT to operate continuously at 100% Duty Cycle.

DTS BANDWIDTH (6 dB)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

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 the following analyzer settings:

Detector: Peak
Sweep time: Auto
Resolution Bandwidth: 1% to 5% of the OBW but not less than 100 kHz
Video Bandwidth: ≥ 3 * RBW
Trace: Max Hold
Span: Large enough to capture all products of the modulation process, including the emission skirts.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2025-02-13	2028-02-13
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2024-08-28	2025-08-28
Block - DC	Fairview Microwave	SD3379	ANH	2024-08-28	2025-08-28
Attenuator	S.M. Electronics	SA26B-20	RFW	2025-02-03	2026-02-03

DTS BANDWIDTH (6 dB)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

EUT:	Sprinkler 3 (Model No. 400304)	Work Order:	IRRI0027
Serial Number:	250300220	Date:	2025-04-03
Customer:	IrriGreen, Inc.	Temperature:	21.8°C
Attendees:	Sawyer Hamond	Relative Humidity:	30.1%
Customer Project:	None	Bar. Pressure (PMSL):	1011 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	5VDC via USB	Configuration:	IRRI0027-3

COMMENTS

Reference level offset includes measurement cable, attenuator, and DC block.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

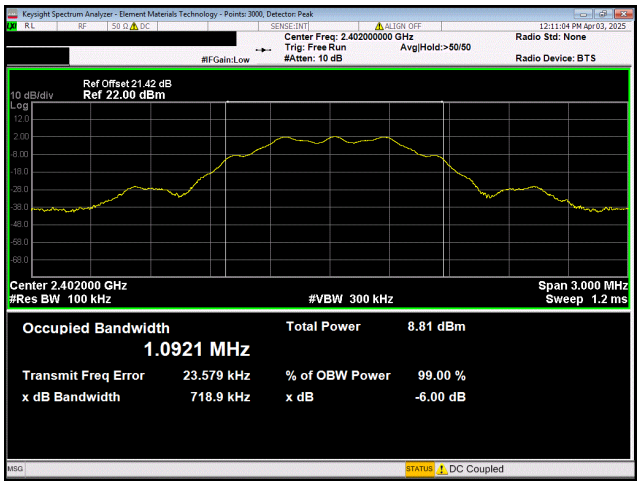
Tested By

TEST RESULTS

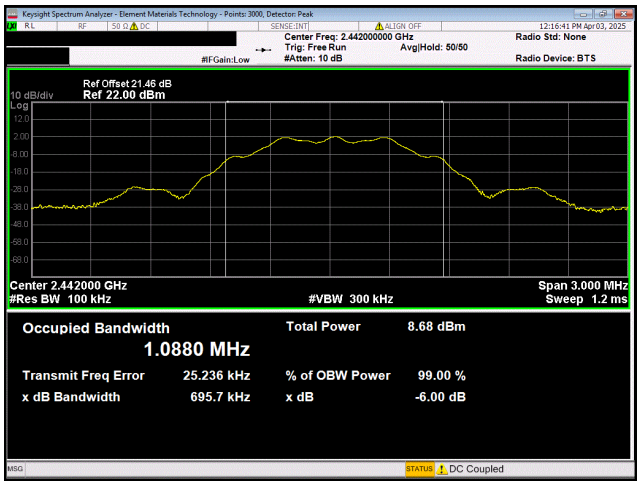
	Value	Limit (≥)	Result
BLE/GFSK 125 kbps			
Low Channel, 2402 MHz	718.94 kHz	500 kHz	Pass
Mid Channel, 2442 MHz	695.659 kHz	500 kHz	Pass
High Channel, 2480 MHz	717.749 kHz	500 kHz	Pass
BLE/GFSK 500 kbps			
Low Channel, 2402 MHz	691.047 kHz	500 kHz	Pass
Mid Channel, 2442 MHz	669.81 kHz	500 kHz	Pass
High Channel, 2480 MHz	676.991 kHz	500 kHz	Pass
BLE/GFSK 1 Mbps			
Low Channel, 2402 MHz	710.158 kHz	500 kHz	Pass
Mid Channel, 2442 MHz	701.914 kHz	500 kHz	Pass
High Channel, 2480 MHz	707.698 kHz	500 kHz	Pass
BLE/GFSK 2 Mbps			
Low Channel, 2402 MHz	1.309 MHz	500 kHz	Pass
Mid Channel, 2442 MHz	1.312 MHz	500 kHz	Pass
High Channel, 2480 MHz	1.319 MHz	500 kHz	Pass

DTS BANDWIDTH (6 dB)

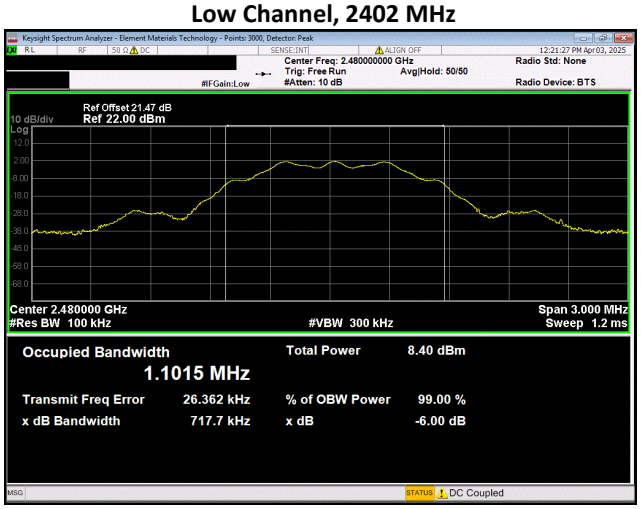
element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



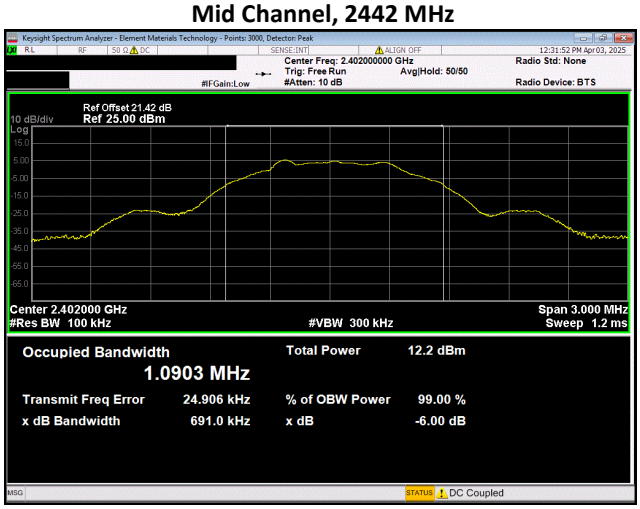
BLE/GFSK 125 kbps
Low Channel, 2402 MHz



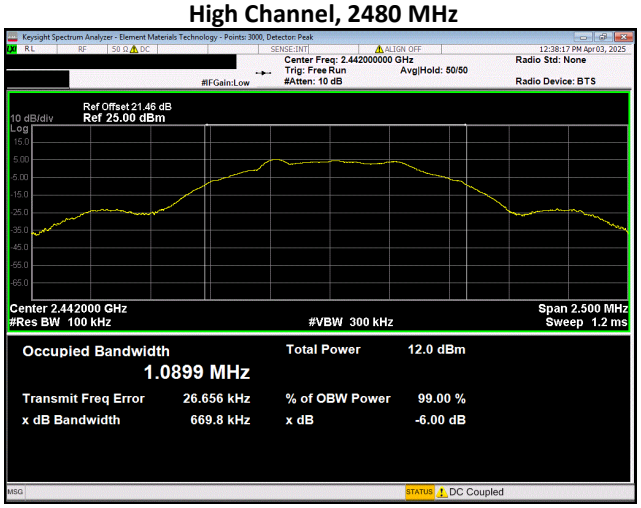
BLE/GFSK 125 kbps
Mid Channel, 2442 MHz



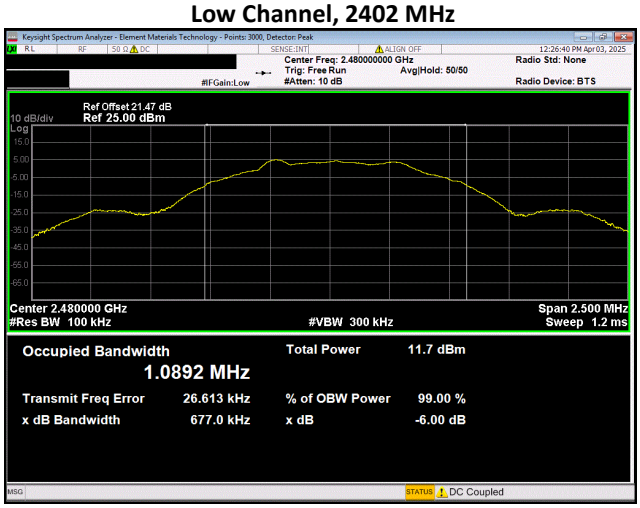
BLE/GFSK 125 kbps
High Channel, 2480 MHz



BLE/GFSK 500 kbps
Low Channel, 2402 MHz



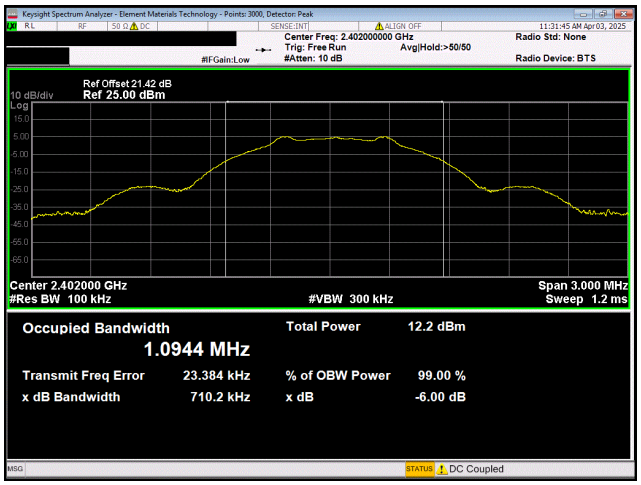
BLE/GFSK 500 kbps
Mid Channel, 2442 MHz



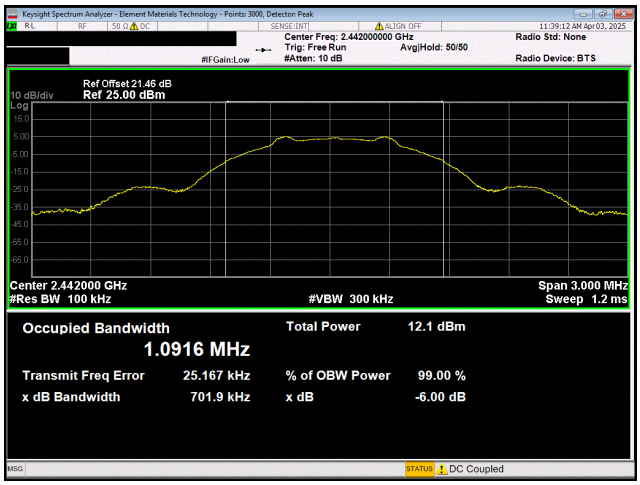
BLE/GFSK 500 kbps
High Channel, 2480 MHz

DTS BANDWIDTH (6 dB)

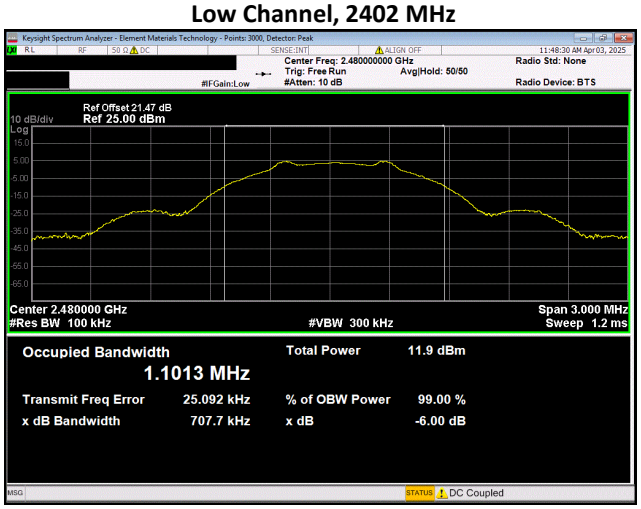
element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



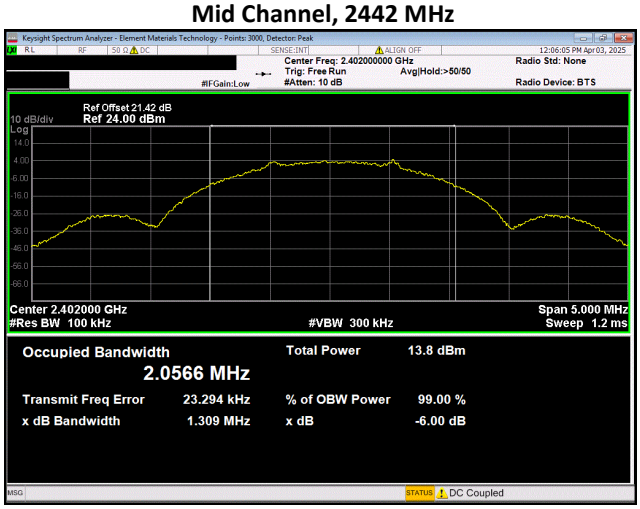
BLE/GFSK 1 Mbps
Low Channel, 2402 MHz



BLE/GFSK 1 Mbps
Mid Channel, 2442 MHz



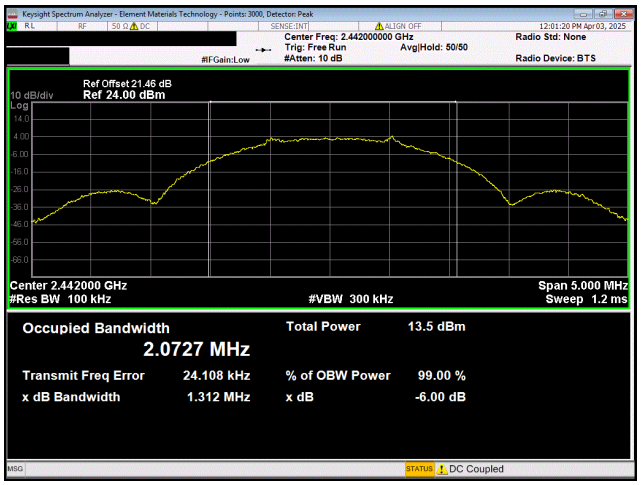
BLE/GFSK 1 Mbps
High Channel, 2480 MHz



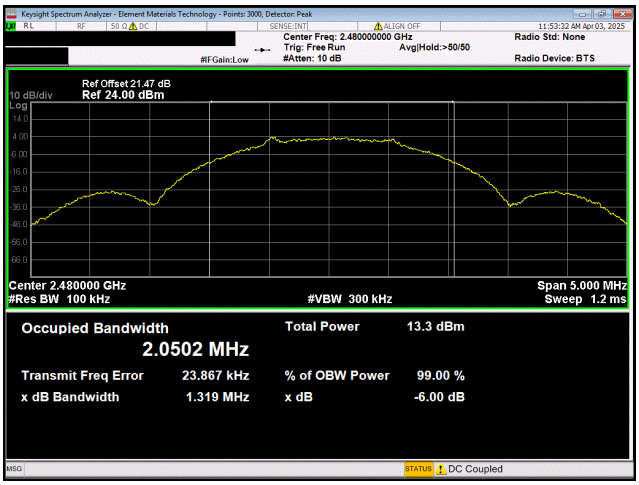
BLE/GFSK 2 Mbps
Low Channel, 2402 MHz

DTS BANDWIDTH (6 dB)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



BLE/GFSK 2 Mbps
Mid Channel, 2442 MHz



BLE/GFSK 2 Mbps
High Channel, 2480 MHz

OUTPUT POWER

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

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 transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2020 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

Analyzer settings:

Detector: Peak
Sweep time: Auto
Resolution Bandwidth: ≥ DTS bandwidth
Video Bandwidth: ≥ 3 * RBW
Trace: Max Hold

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2025-02-13	2028-02-13
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2024-08-28	2025-08-28
Block - DC	Fairview Microwave	SD3379	ANH	2024-08-28	2025-08-28
Attenuator	S.M. Electronics	SA26B-20	RFW	2025-02-03	2026-02-03

OUTPUT POWER

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

EUT:	Sprinkler 3 (Model No. 400304)	Work Order:	IRRI0027
Serial Number:	250300220	Date:	2025-04-03
Customer:	IrriGreen, Inc.	Temperature:	21.8°C
Attendees:	Sawyer Hamond	Relative Humidity:	30.1%
Customer Project:	None	Bar. Pressure (PMSL):	1011 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	5VDC via USB	Configuration:	IRRI0027-3

COMMENTS

Reference level offset includes measurement cable, attenuator, and DC block.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

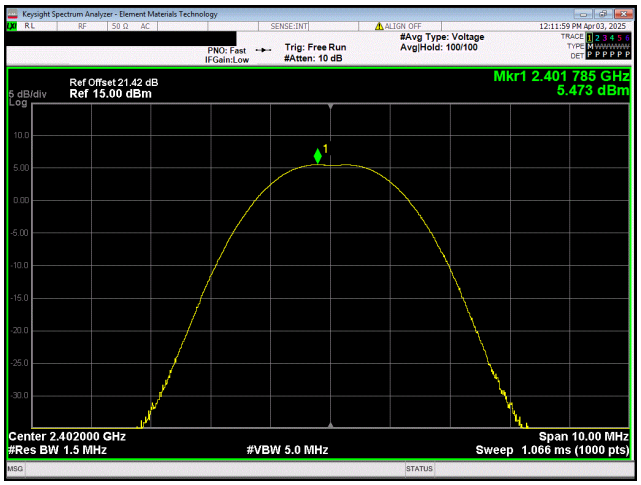
Tested By

TEST RESULTS

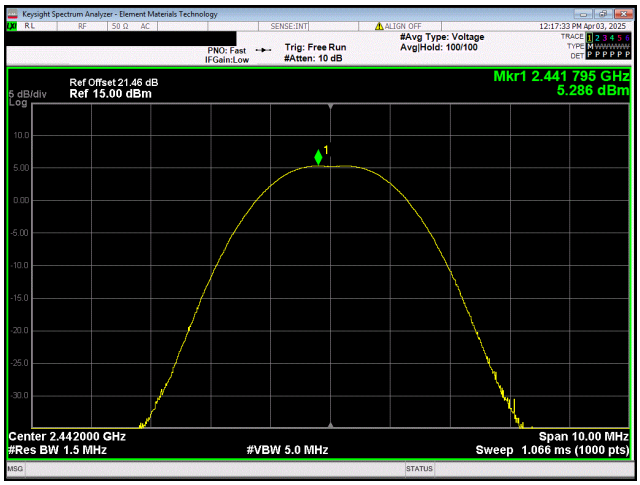
	Out Pwr (dBm)	Limit (dBm)	Result
BLE/GFSK 125 kbps			
Low Channel, 2402 MHz	5.473	30	Pass
Mid Channel, 2442 MHz	5.286	30	Pass
High Channel, 2480 MHz	5.001	30	Pass
BLE/GFSK 500 kbps			
Low Channel, 2402 MHz	5.474	30	Pass
Mid Channel, 2442 MHz	5.287	30	Pass
High Channel, 2480 MHz	5.009	30	Pass
BLE/GFSK 1 Mbps			
Low Channel, 2402 MHz	5.441	30	Pass
Mid Channel, 2442 MHz	5.273	30	Pass
High Channel, 2480 MHz	4.998	30	Pass
BLE/GFSK 2 Mbps			
Low Channel, 2402 MHz	5.48	30	Pass
Mid Channel, 2442 MHz	5.299	30	Pass
High Channel, 2480 MHz	5.017	30	Pass

OUTPUT POWER

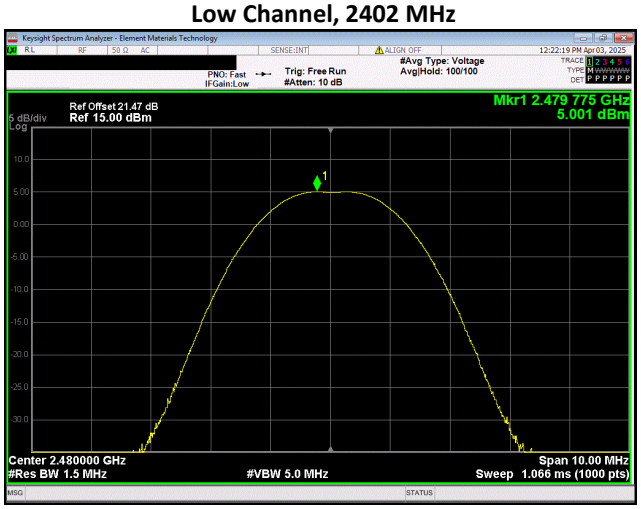
element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



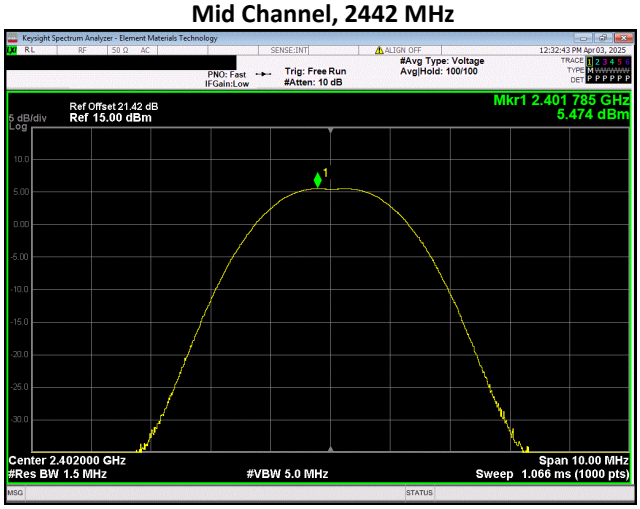
BLE/GFSK 125 kbps
Low Channel, 2402 MHz



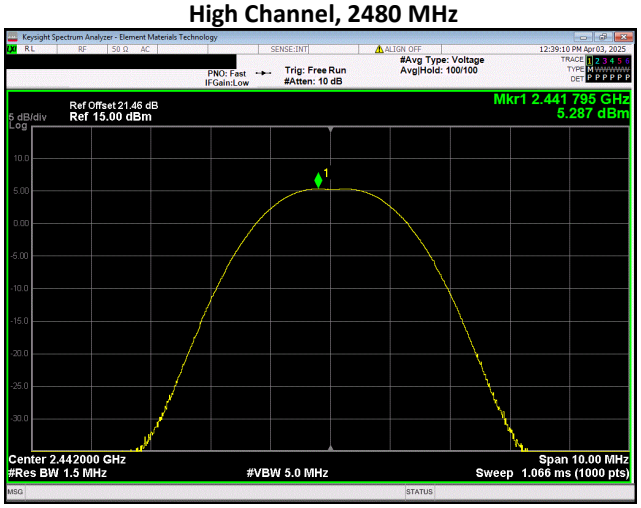
BLE/GFSK 125 kbps
Mid Channel, 2442 MHz



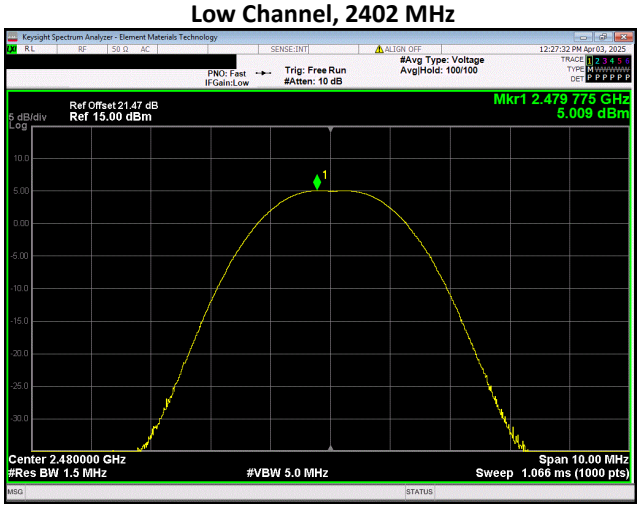
BLE/GFSK 125 kbps
High Channel, 2480 MHz



BLE/GFSK 500 kbps
Low Channel, 2402 MHz



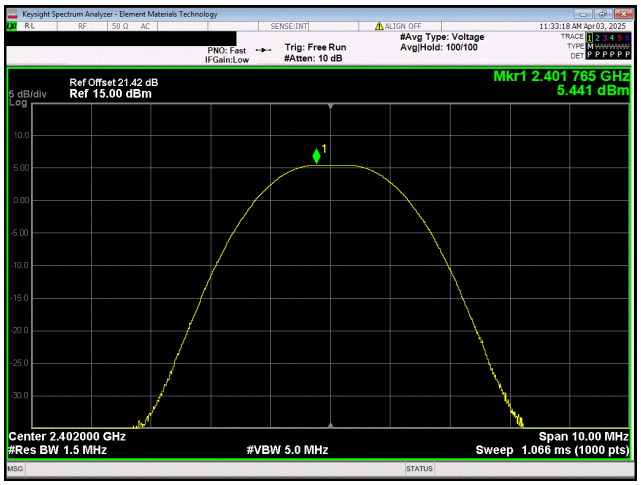
BLE/GFSK 500 kbps
Mid Channel, 2442 MHz



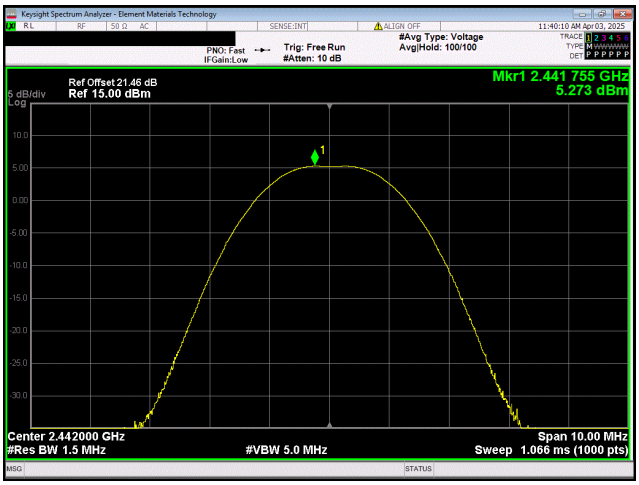
BLE/GFSK 500 kbps
High Channel, 2480 MHz

OUTPUT POWER

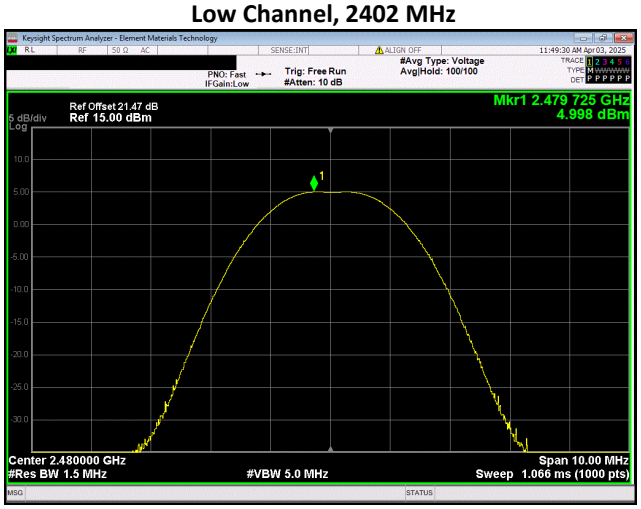
element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



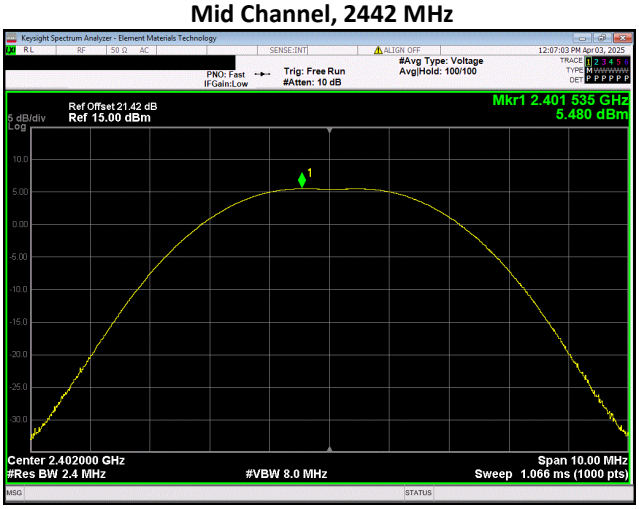
BLE/GFSK 1 Mbps
Low Channel, 2402 MHz



BLE/GFSK 1 Mbps
Mid Channel, 2442 MHz



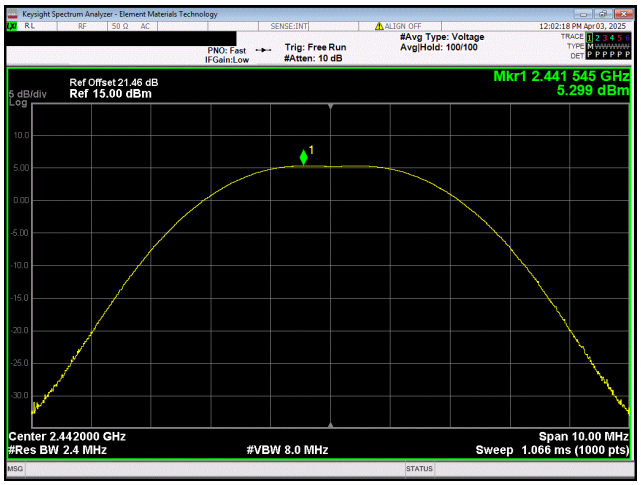
BLE/GFSK 1 Mbps
High Channel, 2480 MHz



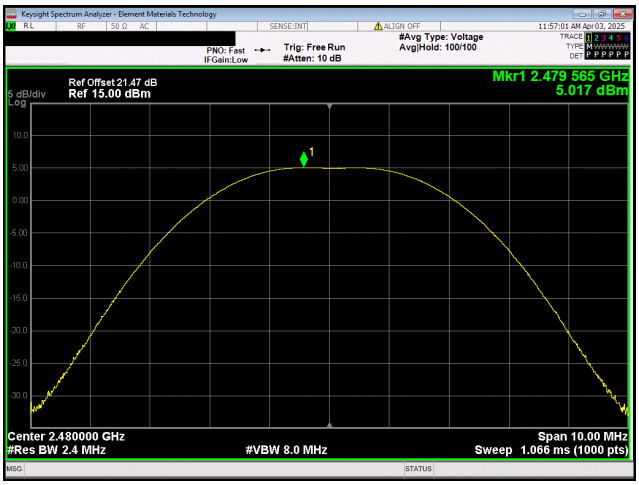
BLE/GFSK 2 Mbps
Low Channel, 2402 MHz

OUTPUT POWER

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



BLE/GFSK 2 Mbps
Mid Channel, 2442 MHz



BLE/GFSK 2 Mbps
High Channel, 2480 MHz

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

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 transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2020 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

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

Analyzer settings:

- Detector: Peak
- Sweep time: Auto
- Resolution Bandwidth: ≥ DTS bandwidth
- Video Bandwidth: ≥ 3 * RBW
- Trace: Max Hold

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2025-02-13	2028-02-13
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2024-08-28	2025-08-28
Block - DC	Fairview Microwave	SD3379	ANH	2024-08-28	2025-08-28
Attenuator	S.M. Electronics	SA26B-20	RFW	2025-02-03	2026-02-03

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

EUT:	Sprinkler 3 (Model No. 400304)	Work Order:	IRRI0027
Serial Number:	250300220	Date:	2025-04-03
Customer:	IrriGreen, Inc.	Temperature:	21.8°C
Attendees:	Sawyer Hamond	Relative Humidity:	30%
Customer Project:	None	Bar. Pressure (PMSL):	1011 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	5VDC via USB	Configuration:	IRRI0027-3

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

Tested By

TEST RESULTS

	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
BLE/GFSK 125 kbps					
Low Channel, 2402 MHz	5.473	-4.31	1.163	36	Pass
Mid Channel, 2442 MHz	5.286	-4.31	0.976	36	Pass
High Channel, 2480 MHz	5.001	-4.31	0.691	36	Pass
BLE/GFSK 500 kbps					
Low Channel, 2402 MHz	5.474	-4.31	1.164	36	Pass
Mid Channel, 2442 MHz	5.287	-4.31	0.977	36	Pass
High Channel, 2480 MHz	5.009	-4.31	0.699	36	Pass
BLE/GFSK 1 Mbps					
Low Channel, 2402 MHz	5.441	-4.31	1.131	36	Pass
Mid Channel, 2442 MHz	5.273	-4.31	0.963	36	Pass
High Channel, 2480 MHz	4.998	-4.31	0.688	36	Pass
BLE/GFSK 2 Mbps					
Low Channel, 2402 MHz	5.48	-4.31	1.17	36	Pass
Mid Channel, 2442 MHz	5.299	-4.31	0.989	36	Pass
High Channel, 2480 MHz	5.017	-4.31	0.707	36	Pass

POWER SPECTRAL DENSITY

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

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 maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2025-02-13	2028-02-13
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2024-08-28	2025-08-28
Block - DC	Fairview Microwave	SD3379	ANH	2024-08-28	2025-08-28
Attenuator	S.M. Electronics	SA26B-20	RFW	2025-02-03	2026-02-03

POWER SPECTRAL DENSITY

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

EUT:	Sprinkler 3 (Model No. 400304)	Work Order:	IRRI0027
Serial Number:	250300220	Date:	2025-04-03
Customer:	IrriGreen, Inc.	Temperature:	21.8°C
Attendees:	Sawyer Hamond	Relative Humidity:	30.1%
Customer Project:	None	Bar. Pressure (PMSL):	1011 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	5VDC via USB	Configuration:	IRRI0027-3

COMMENTS

Reference level offset includes measurement cable, attenuator, and DC block.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

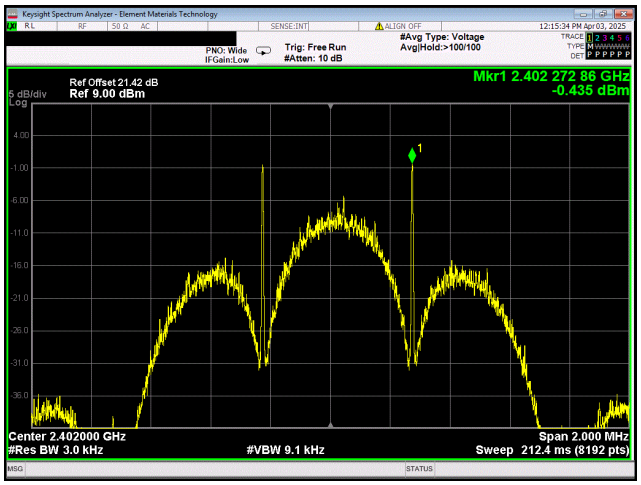
Tested By

TEST RESULTS

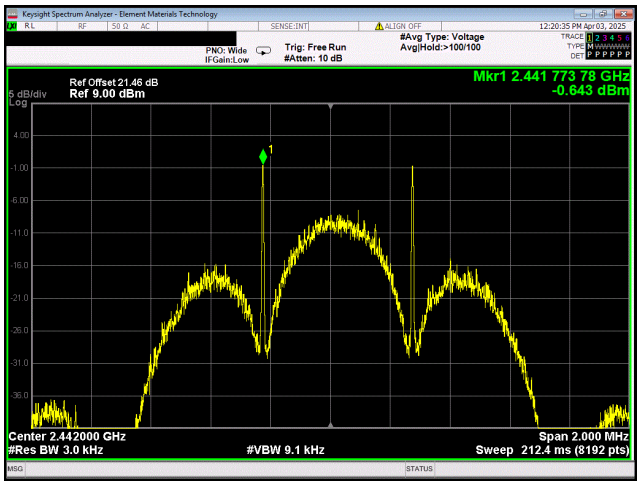
	Value dBm/3kHz	Limit ≤ (dBm/3kHz)	Results
BLE/GFSK 125 kbps			
Low Channel, 2402 MHz	-0.435	8	Pass
Mid Channel, 2442 MHz	-0.643	8	Pass
High Channel, 2480 MHz	-0.768	8	Pass
BLE/GFSK 500 kbps			
Low Channel, 2402 MHz	-6.825	8	Pass
Mid Channel, 2442 MHz	-6.543	8	Pass
High Channel, 2480 MHz	-7.757	8	Pass
BLE/GFSK 1 Mbps			
Low Channel, 2402 MHz	-6.258	8	Pass
Mid Channel, 2442 MHz	-6.703	8	Pass
High Channel, 2480 MHz	-6.067	8	Pass
BLE/GFSK 2 Mbps			
Low Channel, 2402 MHz	-8.642	8	Pass
Mid Channel, 2442 MHz	-8.143	8	Pass
High Channel, 2480 MHz	-9.044	8	Pass

POWER SPECTRAL DENSITY

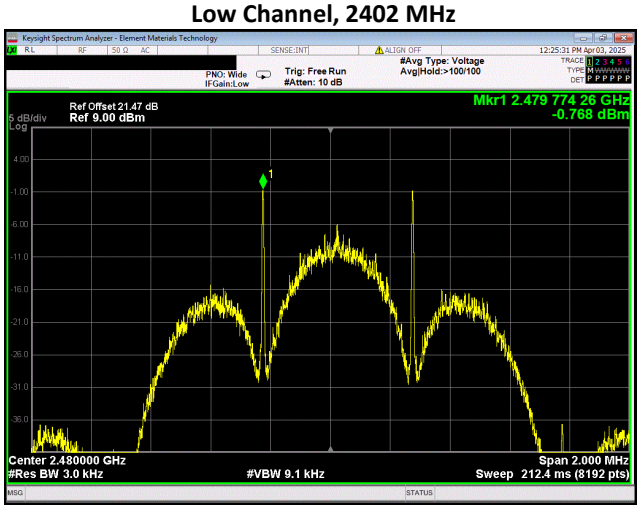
element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



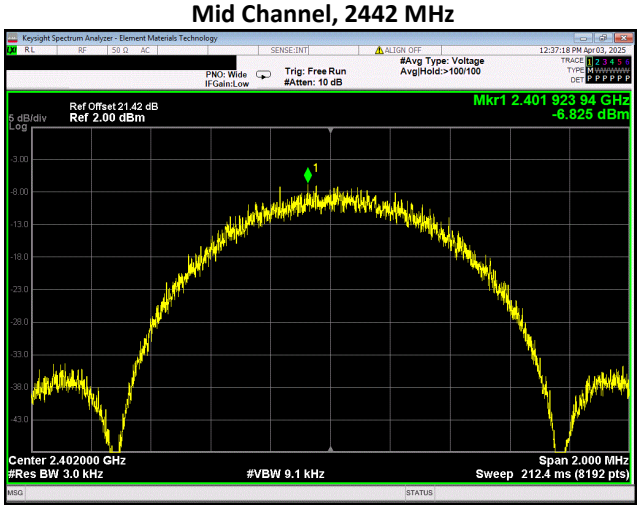
BLE/GFSK 125 kbps
Low Channel, 2402 MHz



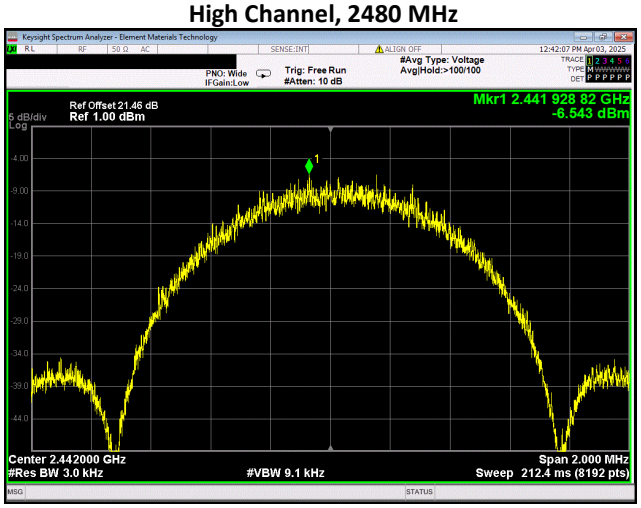
BLE/GFSK 125 kbps
Mid Channel, 2442 MHz



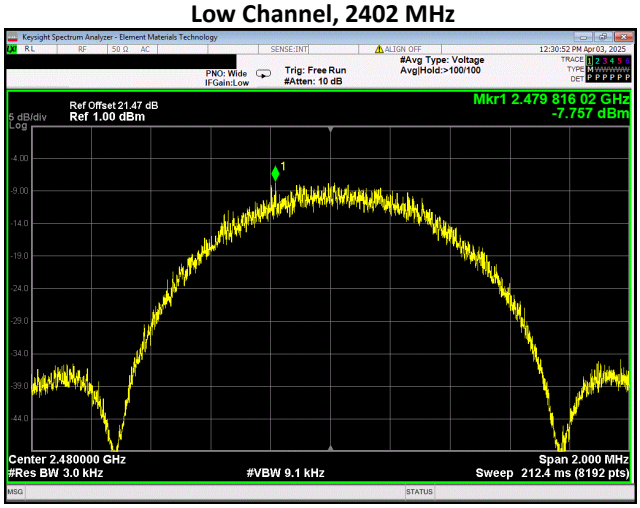
BLE/GFSK 125 kbps
High Channel, 2480 MHz



BLE/GFSK 500 kbps
Low Channel, 2402 MHz



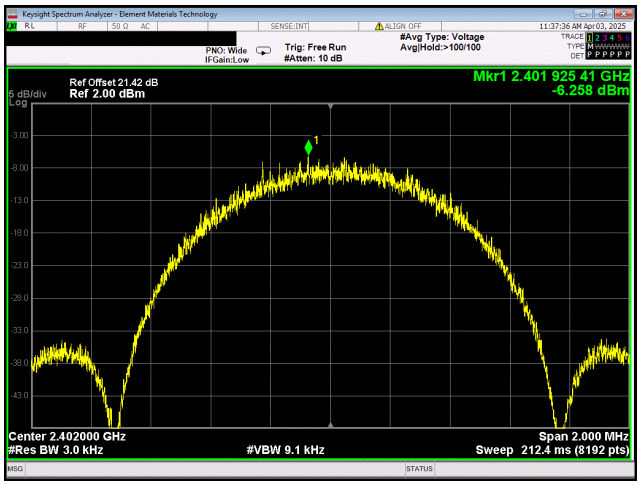
BLE/GFSK 500 kbps
Mid Channel, 2442 MHz



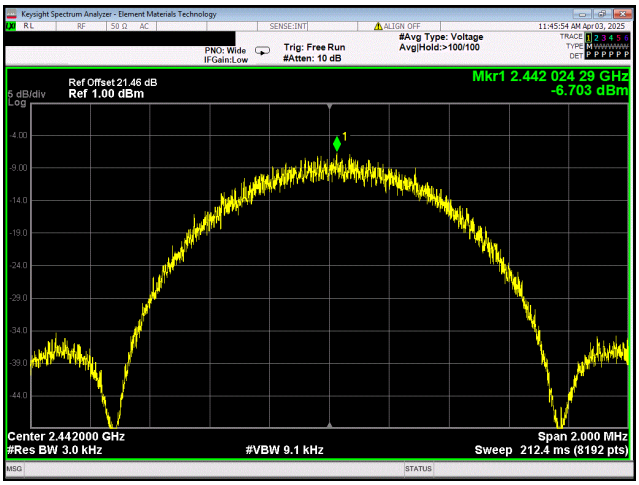
BLE/GFSK 500 kbps
High Channel, 2480 MHz

POWER SPECTRAL DENSITY

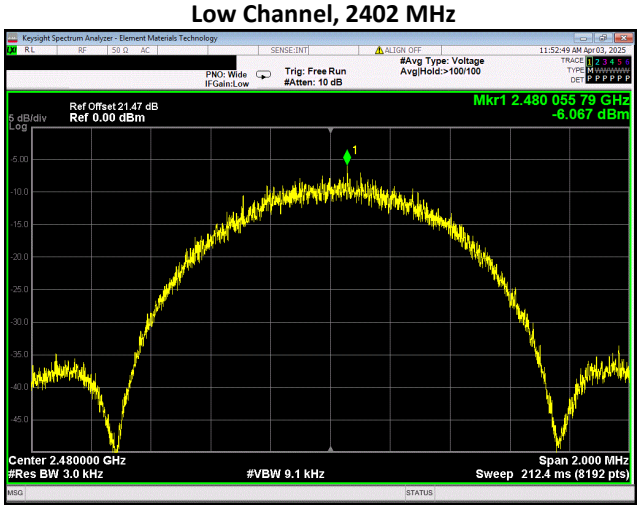
element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



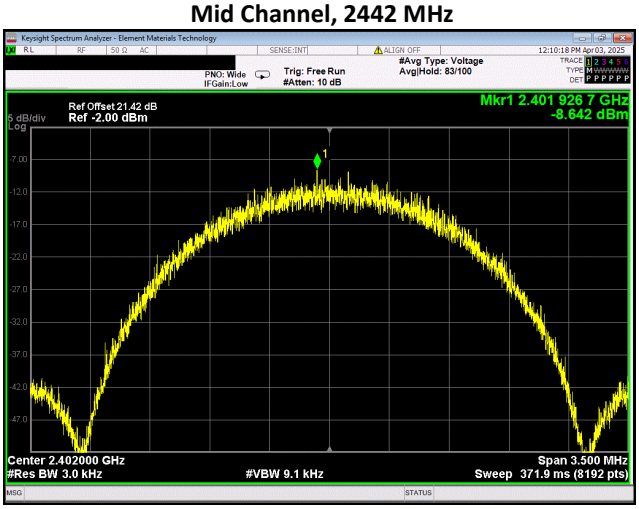
BLE/GFSK 1 Mbps
Low Channel, 2402 MHz



BLE/GFSK 1 Mbps
Mid Channel, 2442 MHz



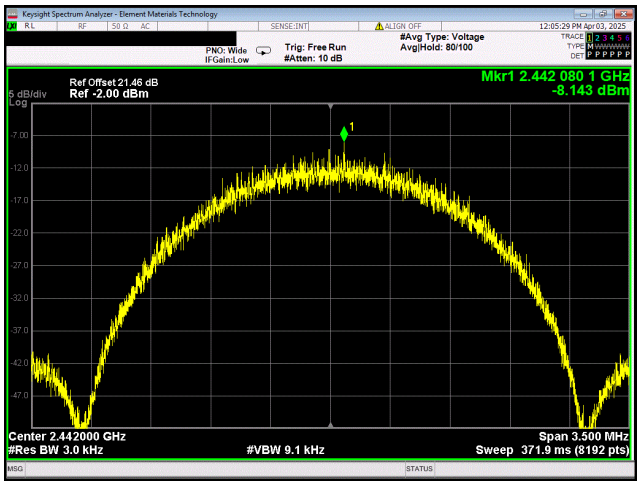
BLE/GFSK 1 Mbps
High Channel, 2480 MHz



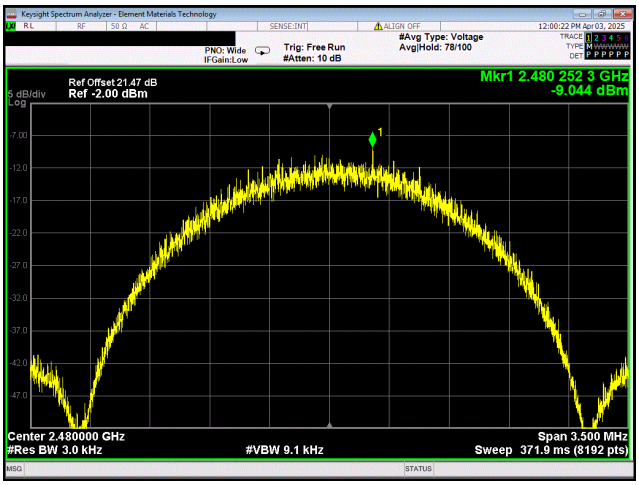
BLE/GFSK 2 Mbps
Low Channel, 2402 MHz

POWER SPECTRAL DENSITY

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



BLE/GFSK 2 Mbps
Mid Channel, 2442 MHz



BLE/GFSK 2 Mbps
High Channel, 2480 MHz