



DATE: 29 January 2017

I.T.L. (PRODUCT TESTING) LTD.

FCC Radio Test Report

for

BACCARA GEVA

Equipment under test:

(ii.ri) Smart irrigation Controller

1279300101

Tested by:

M. Zohar

Approved by:

D. Shidlowsky

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This report relates only to items tested.



Measurement/Technical Report for BACCARA GEVA

Equipment under test:

(ii.ri) Smart irrigation Controller 1279300101

FCC ID: 2AJGQII-RI

This report concerns:

Original Grant: X

Class I change:

Class II change:

Equipment type:

Low Power Communication Device
Transmitter

Limits used:

47CFR15 Section 15.249

Measurement procedure used is ANSI C63.10-2013.

Application for Certification
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1. General Information

1.1 Administrative Information

Manufacturer: BACCARA GEVA

Manufacturer's Address: Kvutzat Geva
18915 Israel

Tel: +972-4-653 5869

Fax: +972-4-653 5376

Manufacturer's Representative: Ahmad Omari

Equipment Under Test (E.U.T): (ii.ri) Smart irrigation Controller

Equipment Model No.: 1279300101

Equipment Serial No.: 1042

Date of Receipt of E.U.T: 28.October 2016

Start of Test: 28.October 2016

End of Test: 03. November .2016

Test Laboratory Location: I.T.L (Product Testing) Ltd.
1 Batsheva St.,
Lod
ISRAEL 7120101

Test Specifications: FCC Part 15, Subpart C, Section 15.249



1.2 List of Accreditations

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), FCC Designation Number IL1005.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) (Japan), Registration Numbers: C-3006, R-2729, T-1877, G-245.
5. Industry Canada (Canada), IC File No.: 46405-4025; Site No. IC 4025A-1, IC 4025A-2.

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

1.3 Product Description

The ii.ri is a Smart Irrigation Controller that can operate any valve equipped with 3/4" UNEF. It is powered by a single 3V battery containing 3/4" UNEF Solenoid.

ii.ri is:

- the first irrigation controller that allows anyone and everyone to manage and control their own computerized garden irrigation system through a user-friendly smartphone app
- a smart controller that makes it all easy, with a simple but brilliant device
- compatible with all water faucet and pipe sizes available on the market today
- completely wireless

There's no screen and no keypad

So how does it work?

It couldn't be easier!

ii.ri has just one button, which you use to connect to a user-friendly app that easily and simply controls the irrigation system

Without wasting precious time

ii.ri has several irrigation options -- from a standard irrigation program, to a fixed-interval program that's independent of the day of the week, to a program suitable for brief irrigation sessions, and more.

| | |
|---------------------------|-----------------------|
| Model name | 1279300101 |
| Working voltage | 3VDC battery operated |
| Mode of operation | Transceiver |
| Modulations | BLE |
| Assigned Frequency Range | 2400.0-2483.5MHz |
| Operating Frequency Range | 2402.0MHz-2480.0MHz |
| Transmit power | -24.3dBm |
| Antenna Gain | 0.5dBi |
| Modulation BW | >500kHz |

1.4 Test Methodology

Radiated testing was performed according to the procedures in ANSI C63.10-2013. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 Test Facility

Radiated emissions tests were performed at I.T.L.'s testing facility in Lod, Israel. I.T.L.'s EMC Laboratory is accredited by A2LA, certificate No. 1152.01 and its FCC Designation Number is IL1005.



1.6 *Measurement Uncertainty*

Radiated Emission

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4
ANSI C63.10-2013) for open site 30-1000MHz:

Expanded Uncertainty (95% Confidence, K=2):

± 4.96 dB

2. System Test Configuration

2.1 Justification

The unit was evaluated while transmitting at the low channel (2402MHz), the mid channel (2440MHz) and the high channel (2480MHz) with duty cycle above 98% by BLE technology.

Exploratory emission testing was performed in 3 orthogonal polarities to determine the “worst case” emissions.

The results are shown in the below table:

| Frequency | X axis | | | Y axis | | | Z axis | | |
|-----------|----------------|--------------------------|--------------------------|----------------|--------------------------|--------------------------|----------------|--------------------------|--------------------------|
| | Field Strength | 2 nd Harmonic | 3 th Harmonic | Field Strength | 2 nd Harmonic | 3 th Harmonic | Field Strength | 2 nd Harmonic | 3 th Harmonic |
| | (dBuV/m) | (dBuV/m) | (dBuV/m) | (dBuV/m) | (dBuV/m) | (dBuV/m) | (dBuV/m) | (dBuV/m) | (dBuV/m) |
| 2402.0 | 65.8 | 55.0 | 62.1 | 66.6 | 56.0 | 62.8 | 61.6 | 54.8 | 62.2 |
| 2440.0 | 66.6 | 55.1 | 62.2 | 67.9 | 58.4 | 64.4 | 61.7 | 54.8 | 62.2 |
| 2480.0 | 64.0 | 54.0 | 62.0 | 64.9 | 55.8 | 62.6 | 68.4 | 57.7 | 63.0 |

Figure 1. Screening Results

According to above results the worst case was the Y axis for low and mid channels and Z axis for high channel.

2.2 EUT Exercise Software

No special exercise software was needed to achieve compliance.

2.3 Special Accessories

No special exercise software was needed to achieve compliance.

2.4 Equipment Modifications

No equipment modifications were needed to achieve compliance.

2.5 Configuration of Tested System

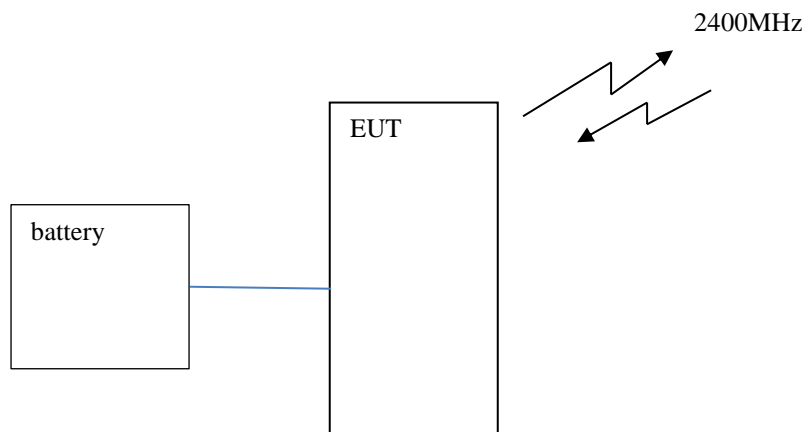


Figure 2. Configuration of Tested System

3. Test Set-Up Photos



Figure 3. Field Strength of Fundamental Test



Figure 4. Field Strength of Harmonics



Figure 5. Radiated Emission Test



Figure 6. Radiated Emission Test



Figure 7. Radiated Emission Test



Figure 8. Radiated Emission Test

4. Field Strength of Fundamental

4.1 Test Specification

F.C.C., Part 15, Subpart C, Section 15.249(a)

4.2 Test Procedure

(Temperature (22°C)/ Humidity (70% RH))

The E.U.T operation mode and test set-up are as described in Section 2 of this report.

The E.U.T was tested in the chamber, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 1.5 meters above the ground and at 3meter distance from antenna testing. The readings were maximized by adjusting the turntable azimuth between 0-360°, and the antenna polarization

The configuration tested is shown in

Figure 2.

The E.U.T was evaluated in the operating frequencies: low (2402MHz), mid (2440MHz) and high (2480MHz).

4.3 Test Limit

| Fundamental frequency | Field strength of fundamental (millivolts/meter) | Field strength of fundamental (dBuV/m) |
|-----------------------|--|--|
| 902.0-928.0 MHz | 50.0 | 94.0 |
| 2400-2483.5 MHz | 50.0 | 94.0 |
| 5725.0-5875.0 MHz | 50.0 | 94.0 |
| 24.0-24.25 GHz | 250.0 | 108.0 |

** For frequencies above 1000 MHz, the field strength limits of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

4.4 Test Results

JUDGEMENT: Passed by 33.1dB

The EUT met the FCC Part 15, Subpart C, Section 15.249(a) specification requirements.

The details of the highest emissions are given in *Figure 9.*

Field Strength of Fundamental

E.U.T Description (ii.ri) Smart irrigation
Controller
Model Number 1279300101
Serial Number: 1042

Specification: F.C.C., Part 15, Subpart C 15.249(a)

Antenna Polarization: Horizontal/Vertical

Test Distance: 3 meters

Detector: Peak

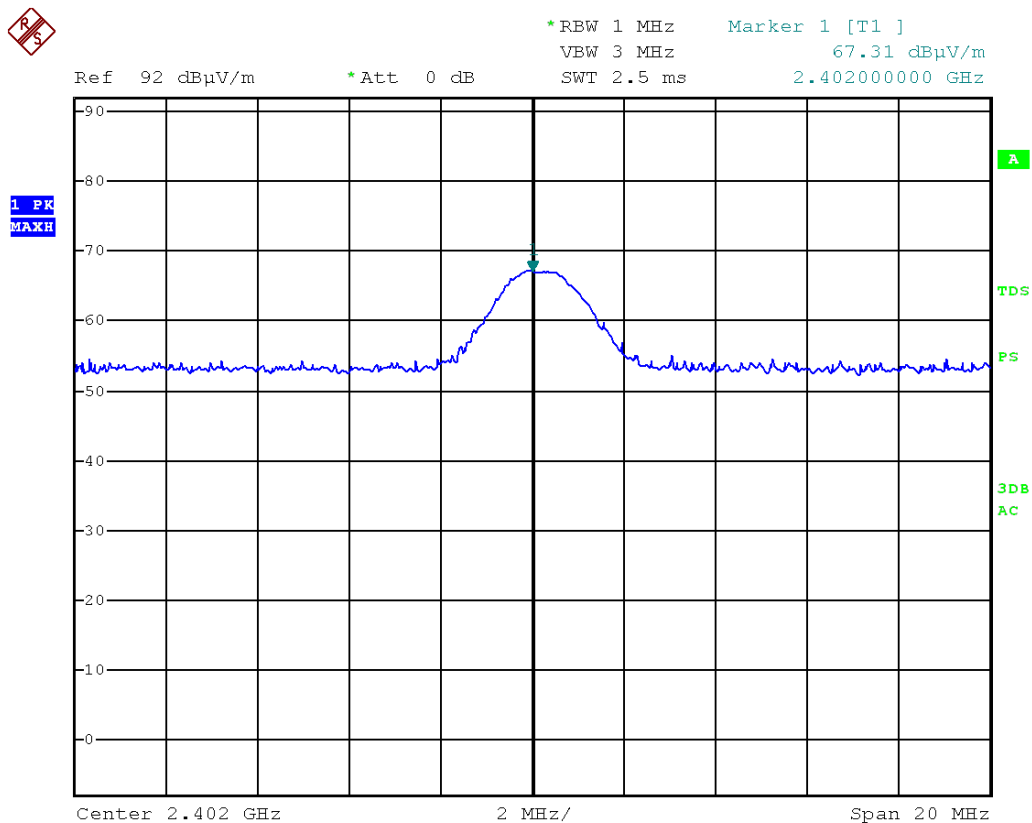
| Freq. | Pol. | Peak Reading | Average Limit | Average Margin |
|--------|-------|----------------|----------------|----------------|
| (MHz) | (V/H) | (dB μ V/m) | (dB μ V/m) | (dB) |
| 2402.0 | V | 67.3 | 94.0 | -26.7 |
| | H | 66.9 | 94.0 | -27.1 |
| 2440.0 | V | 68.8 | 94.0 | -25.2 |
| | H | 66.1 | 94.0 | -27.9 |
| 2480.0 | V | 70.9 | 94.0 | -23.1 |
| | H | 65.0 | 94.0 | -29.0 |

Figure 9. Field Strength of Fundamental

Note: Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

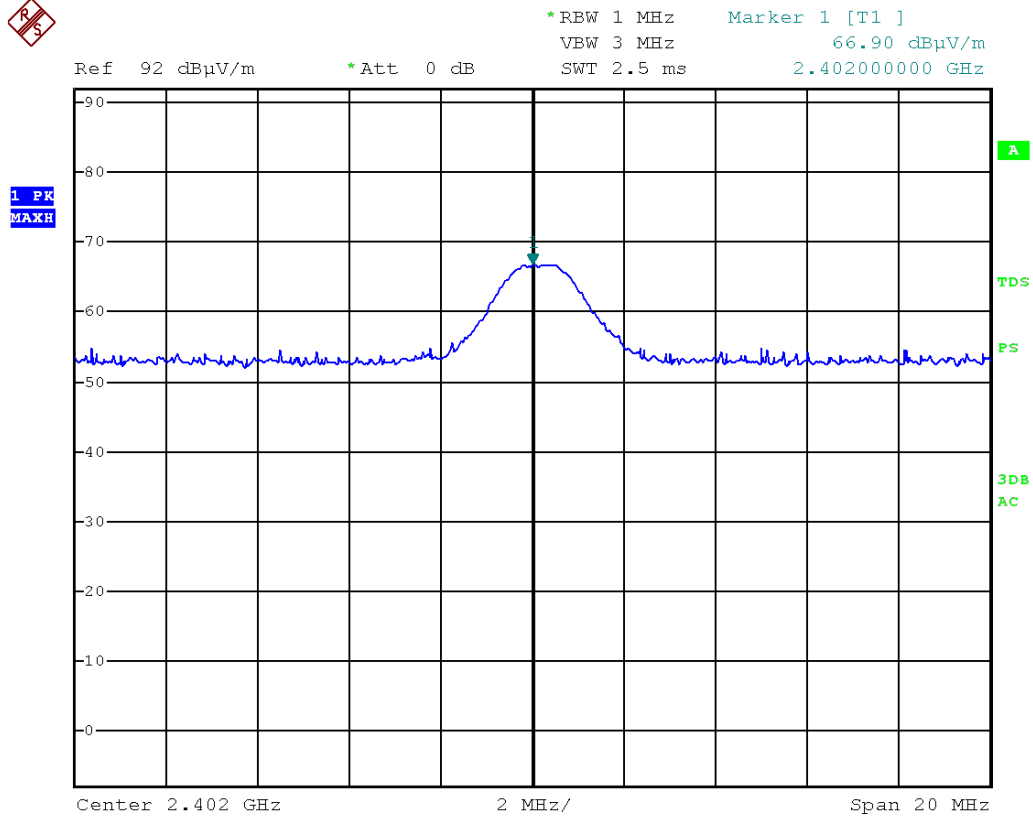
Field Strength of Fundamental

E.U.T Description (ii.ri) Smart irrigation
Controller
Model Number 1279300101
Serial Number: 1042



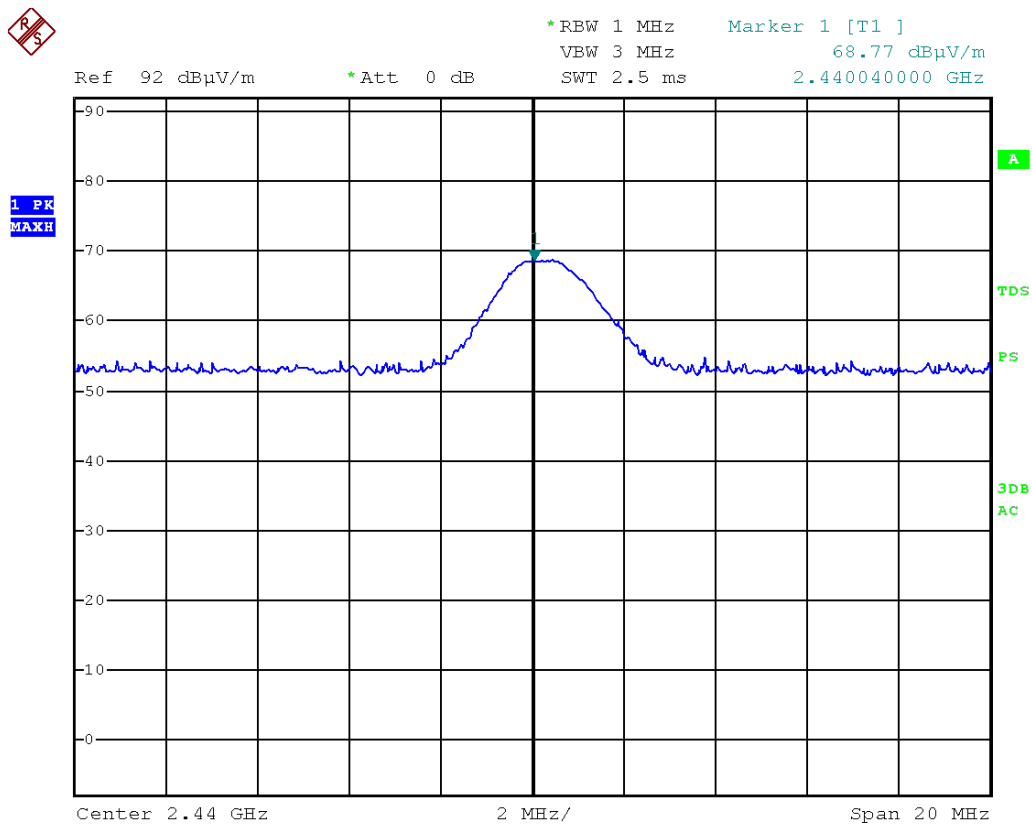
Date: 31.OCT.2016 12:54:14

Figure 10 2402.0 MHz – Vertical



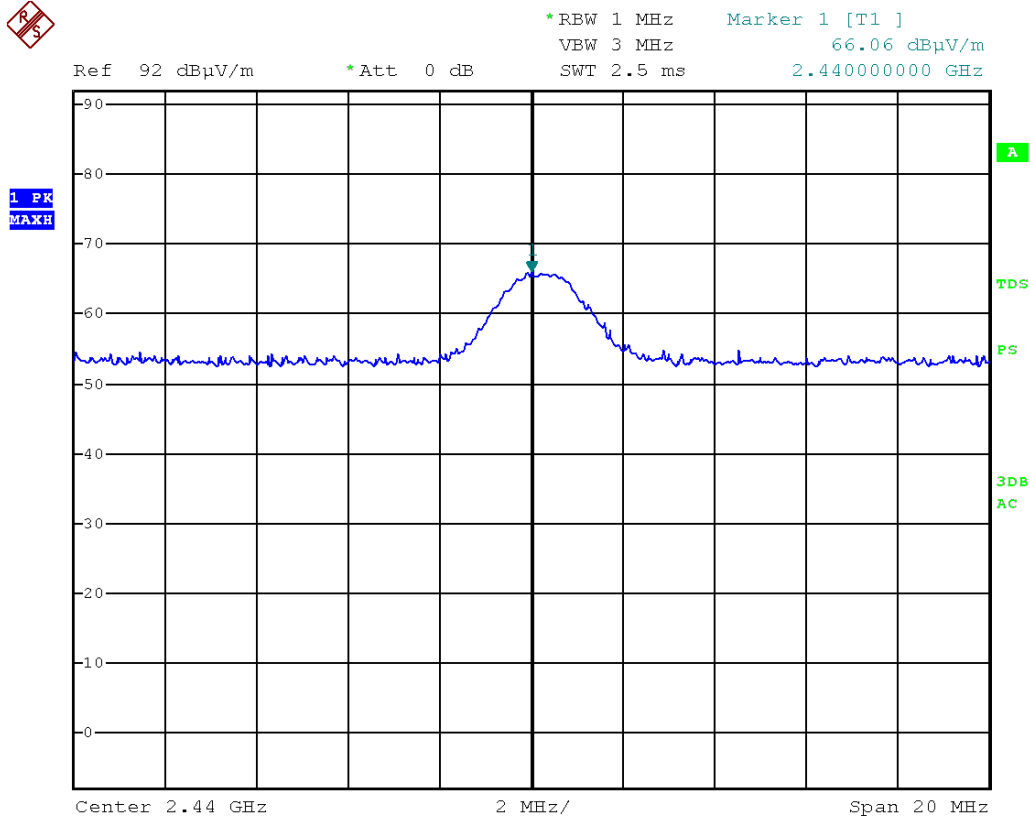
Date: 31.OCT.2016 13:05:22

Figure 11 2402.0 MHz – Horizontal



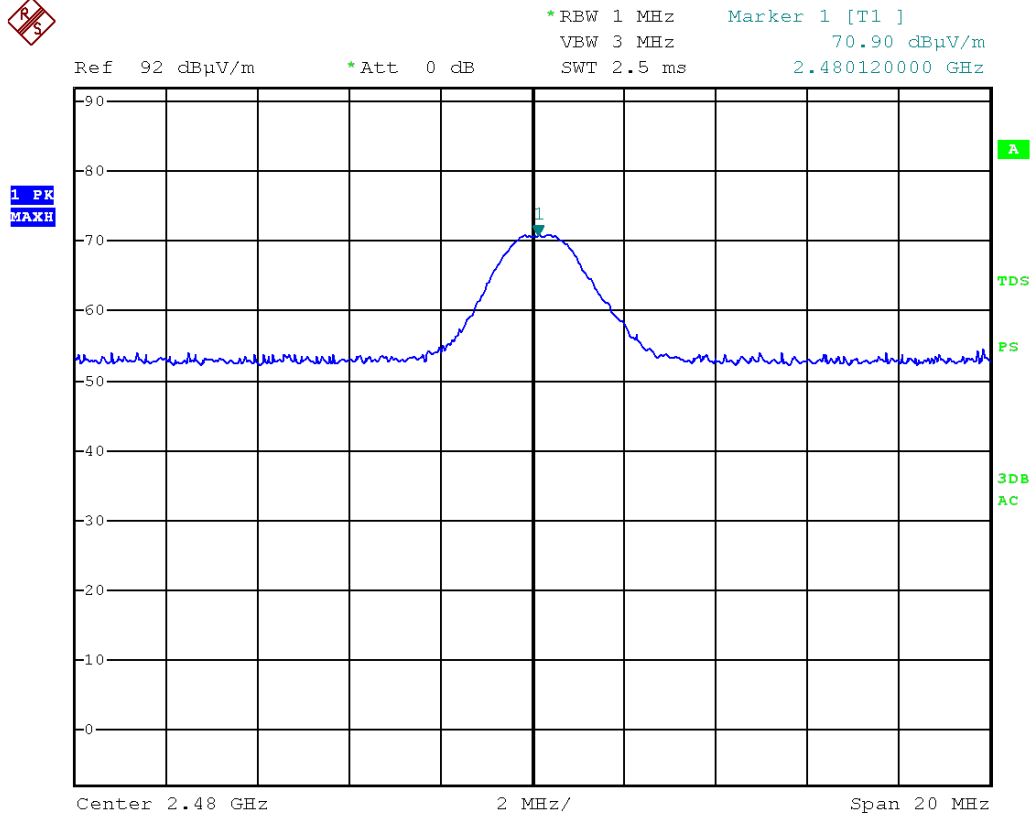
Date: 31.OCT.2016 11:27:54

Figure 12 2440.0 MHz – Vertical



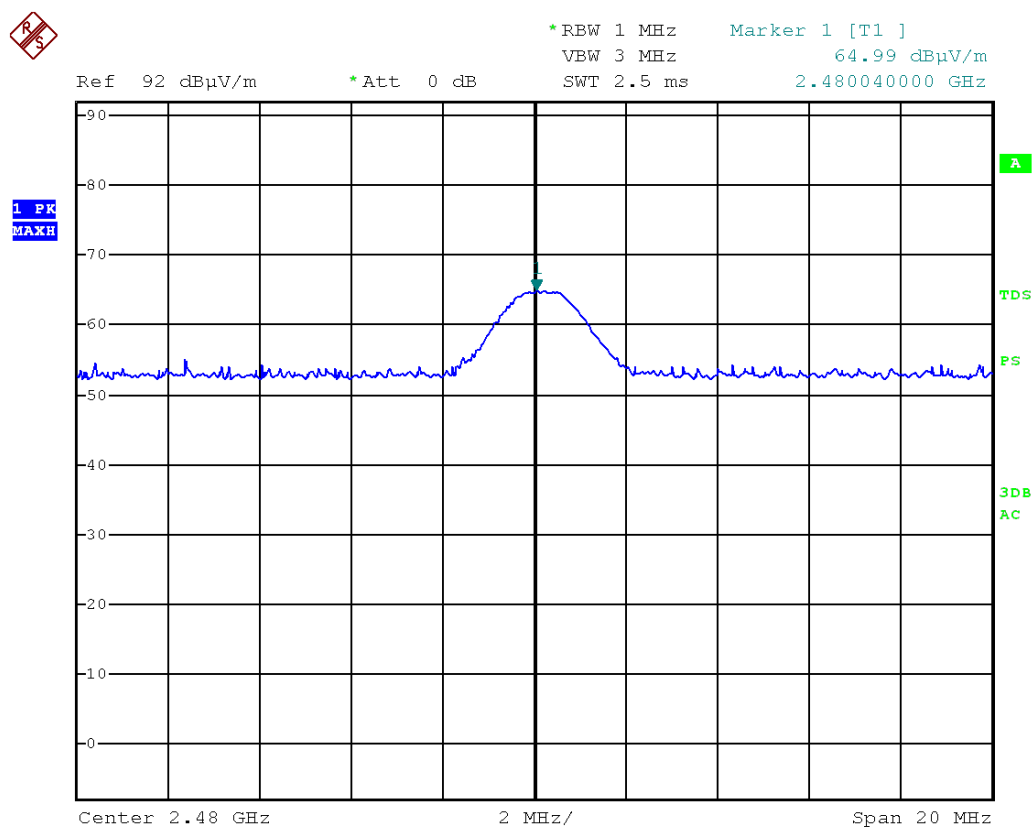
Date: 31.OCT.2016 11:24:17

Figure 13 2440.0 MHz – Horizontal



Date: 31.OCT.2016 11:05:36

Figure 14 2480.0 MHz – Vertical



Date: 31.OCT.2016 11:02:55

Figure 15 2480.0 MHz – Horizontal

4.5 *Test Instrumentation Used; Field Strength of Fundamental*

| Instrument | Manufacturer | Model | Serial No. | Last Calibration | Next Calibration |
|-----------------------------|--------------|-------|------------|------------------|------------------|
| EMI Receiver | R&S | ESCI7 | 100724 | 29 February 2016 | 01 March 2017 |
| Horn Antenna | ETS | 3115 | 6142 | 19 May 2015 | 19 May 2018 |
| Semi Anechoic Civil Chamber | ETS | S81 | SL 11643 | NCR | NCR |

Figure 16 Test Equipment Used

5. Field Strength of Harmonics

5.1 Test Specification

FCC, Part 15, Subpart C, Section 15.249(a)

5.2 Test Procedure

The E.U.T. operation mode and test set-up are as described in Section 2 of this report.

The E.U.T was placed in the chamber and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 1.5 meters above the ground and 3 meter distance from testing antenna.

The frequency range 1000.0MHz-25,000MHz was scanned. RBW was set to 1000 kHz. The readings were maximized by adjusting the turntable azimuth between 0-360°, and the antenna polarization.

5.3 Test Limit

| Fundamental frequency (MHz) | Field strength of harmonics (microvolts/meter) | Field strength of harmonics (dBuV/m) |
|--------------------------------|---|---|
| 902.0-928.0 MHz | 500.0 | 54.0 |
| 2400-2483.5 MHz | 500.0 | 54.0 |
| 5725.0-5875.0 MHz | 500.0 | 54.0 |
| 24.0-24.25 GHz | 2500.0 | 68.0 |

* For frequencies above 1000 MHz, the field strength limits of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

5.4 Test Results

JUDGEMENT: Passed

The EUT met the requirements of the F.C.C. Part 15, Subpart C, Section 249(a) specification.

For additional information see *Figure 17* and *Figure 18*.

Field Strength of Harmonics

E.U.T Description (ii.ri) Smart irrigation
Controller
Type 1279300101
Serial Number: 1042

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency Range: 1.0 GHz to 25.0 GHz
Test Distance: 3 meters Detector: Peak
Operation Frequency: 2402MHz, 2440MHz, 2480MHz

| Operation Frequency | Frequency | Polarity | Peak Reading | Peak Specification | Peak Margin |
|---------------------|-----------|----------|----------------|--------------------|-------------|
| (MHz) | (MHz) | (H/V) | (dB μ V/m) | (dB μ V/m) | (dB) |
| 2402.0 | 4804.0 | H | 48.5 | 74.0 | -25.5 |
| | 4804.0 | V | 50.5 | 74.0 | -23.5 |
| | 7206.0 | H | 59.5 | 74.0 | -14.5 |
| | 7206.0 | V | 60.7 | 74.0 | -13.3 |
| 2440.0 | 4880.0 | H | 49.7 | 74.0 | -24.3 |
| | 4880.0 | V | 49.8 | 74.0 | -24.2 |
| | 7320.0 | H | 57.4 | 74.0 | -16.6 |
| | 7320.0 | V | 59.5 | 74.0 | -14.5 |
| 2480.0 | 4960.0 | H | 50.8 | 74.0 | -23.2 |
| | 4960.0 | V | 50.8 | 74.0 | -23.2 |

Figure 17. Field Strength of Harmonics

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Average Reading” includes correction factor.

Field Strength of Harmonics

E.U.T Description (ii.ri) Smart irrigation
Controller
Type 1279300101
Serial Number: 1042

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency Range: 1.0 GHz to 25.0 GHz
Test Distance: 3 meters Detector: Average
Operation Frequency: 2402MHz,2440MHz,2480MHz

| Operation Frequency | Frequency | Polarity | Average Reading | Average Specification | Average Margin |
|---------------------|-----------|----------|-----------------|-----------------------|----------------|
| (MHz) | (MHz) | (H/V) | (dBμV/m) | (dBμV/m) | (dB) |
| 2402.0 | 4804.0 | H | - | 54.0 | |
| | 4804.0 | V | - | 54.0 | |
| | 7206.0 | H | 47.8 | 54.0 | -6.2 |
| | 7206.0 | V | 48.0 | 54.0 | -6.0 |
| 2440.0 | 4880.0 | H | - | 54.0 | |
| | 4880.0 | V | - | 54.0 | |
| | 7320.0 | H | 44.6 | 54.0 | -9.4 |
| | 7320.0 | V | 47.3 | 54.0 | -6.7 |
| 2480.0 | 4960.0 | H | - | 54.0 | |
| | 4960.0 | V | - | 54.0 | |

Figure 18. Field Strength of Harmonics

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Peak Reading” includes correction factor.

5.5 Test Instrumentation Used; Field Strength of Harmonics Measurements

| Instrument | Manufacturer | Model | Serial No. | Last Calibration | Next Calibration |
|-----------------------------|-----------------|--------------|---------------|------------------|------------------|
| EMI Receiver | R&S | ESCI7 | 100724 | 29 February 2016 | 01 March 2017 |
| Spectrum Analyzer | HP | 8592L | 3826A01204 | 13 March 2016 | 13 March 2017 |
| Spectrum Analyzer | HP | 8564E | 3442A00275 | 10 March 2016 | 10 March 2017 |
| Horn Antenna | ETS | 3115 | 29845 | 19 May 2015 | 19 May 2018 |
| Horn Antenna | ARA | SWH-28 | 1007 | 30 March 2014 | 30 March 2017 |
| Low Noise Amplifier | Narda | DBS-0411N313 | 13 | 08 August 2016 | 08 August 2017 |
| Low Noise Amplifier | Sophia Wireless | LNA28-B | 232 | 08 August 2016 | 08 August 2017 |
| Spectrum Analyzer | HP | 8593EM | 3536A00120ADI | 10 March 2016 | 10 March 2017 |
| Semi Anechoic Civil Chamber | ETS | S81 | SL 11643 | NCR | NCR |

Figure 19 Test Equipment Used

5.6 **Field Strength Calculation**

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$FS = RA + AF + CF$$

FS: Field Strength [dB μ V/m]

RA: Receiver Amplitude [dB μ V]

AF: Receiving Antenna Correction Factor [dB/m]

CF: Cable Attenuation Factor [dB]

Example: $FS = 30.7 \text{ dB}\mu\text{V (RA)} + 14.0 \text{ dB (AF)} + 0.9 \text{ dB (CF)} = 45.6 \text{ dB}\mu\text{V}$

No external pre-amplifiers are used.

6. Radiated Emission

6.1 Test Specification

Part 15, Subpart C, Section 15.249(d)

6.2 Test Procedure

(Temperature (20°C)/ Humidity (68%RH))

For measurements between 0.009MHz-30MHz:

The E.U.T was tested inside the shielded room at a distance of 3 meters and the E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The frequency range 0.009MHz-30MHz was scanned. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The emissions were measured at a distance of 3 meters.

For measurements between 30.0MHz-1.0GHz:

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The frequency range 30.0MHz -1.0GHz was scanned and the list of the highest emissions was verified and updated accordingly.

The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.

The emissions were measured at a distance of 3 meters.

For measurements between 1.0GHz-25.0GHz:

The E.U.T was tested inside the shielded room at a distance of 3 meters and the E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The frequency range 1.0GHz -25.0GHz was scanned. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The emissions were measured at a distance of 3 meters.

The E.U.T. was operated at the low (2402MHz), mid (2440MHz) and high (2480MHz).

6.3 Test Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

§15.209 table limits:

| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) | Field strength (dBμV/m) | Field strength* (dBμV/m)@3m |
|-----------------|-----------------------------------|-------------------------------|-------------------------|-----------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 | 48.5-13.8 | 128.5-73.8 |
| 0.490-1.705 | 24000/F(kHz) | 30 | 33.8-23.0 | 73.8-63.0 |
| 1.705-30.0 | 30 | 30 | 29.5 | 69.5 |
| 30-88 | 100 | 3 | 40.0 | 40.0 |
| 88-216 | 150 | 3 | 43.5 | 43.5 |
| 216-960 | 200 | 3 | 46.0 | 46.0 |
| Above 960 | 500 | 3 | 54.0 | 54.0 |

*The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

6.4 Test Results

JUDGEMENT: Passed

All signals were below the EMI receiver noise level which is at least 6dB below the specification limit.

The EUT met the requirements of the F.C.C. Part 15, Subpart C, Section 15.249 specification.

6.5 Test Instrumentation Used; Radiated Emission

| Instrument | Manufacturer | Model | Serial No. | Last Calibration | Next Calibration |
|-----------------------------|-----------------|--------------|---------------|------------------|------------------|
| EMI Receiver | R&S | ESCI7 | 100724 | 29 February 2016 | 01 March 2017 |
| Spectrum Analyzer | HP | 8592L | 3826A01204 | 13 March 2016 | 13 March 2017 |
| EMI Receiver | HP | 8542E | 3906A00276 | 03 March 2016 | 03 March 2017 |
| RF Filter Section | HP | 85420E | 3705A00248 | 03 March 2016 | 03 March 2017 |
| Spectrum Analyzer | HP | 8564E | 3442A00275 | 10 March 2016 | 10 March 2017 |
| Biconical Antenna | EMCO | 3104 | 2606 | 24 March 2016 | 24 March 2017 |
| Active Loop Antenna | EMCO | 6502 | 9506-2950 | 05 November 2015 | 05 November 2016 |
| Log Periodic Antenna | EMCO | 3146 | 9505-4081 | 23 April 2016 | 23 April 2017 |
| Horn Antenna | ETS | 3115 | 29845 | 19 May 2015 | 19 May 2018 |
| Horn Antenna | ARA | SWH-28 | 1007 | 30 March 2014 | 30 March 2017 |
| Low Noise Amplifier | Narda | DBS-0411N313 | 13 | 08 August 2016 | 08 August 2017 |
| Low Noise Amplifier | Sophia Wireless | LNA28-B | 232 | 08 August 2016 | 08 August 2017 |
| Spectrum Analyzer | HP | 8593EM | 3536A00120ADI | 10 March 2016 | 10 March 2017 |
| Semi Anechoic Civil Chamber | ETS | S81 | SL 11643 | NCR | NCR |

Figure 20 Test Equipment Used

6.6 **Field Strength Calculation**

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$[\text{dB}\mu\text{V/m}] \text{ FS} = \text{RA} + \text{AF} + \text{CF}$$

| | |
|-----|--|
| FS: | Field Strength [dB μ V/m] |
| RA: | Receiver Amplitude [dB μ V] |
| AF: | Receiving Antenna Correction Factor [dB/m] |
| CF: | Cable Attenuation Factor [dB] |



7. Antenna Gain/Information

0.5 dBi

2.45 GHz Antenna

P/N 2450AT18A100

Detail Specification: 09/03/03

Page 1 of 3

General Specifications

| | |
|-----------------|----------------------|
| Part Number | 2450AT18A100 |
| Frequency Range | 2400 - 2500 Mhz |
| Peak Gain | 0.5 dBi typ. (XZ-V) |
| Average Gain | -0.5 dBi typ. (XZ-V) |
| Return Loss | 9.5 dB min. |

| | |
|-----------------------|--------------|
| Input Power | 500mW max. |
| Impedance | 50 Ω |
| Operating Temperature | -40 to +85°C |
| Reel Quantity | 3,000 |



www.johansontechnology.com

931 Via Alondra • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

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8. R.F Exposure/Safety

Typical use of the E.U.T. is as smart irrigation controller.

The typical placement of the E.U.T. is outside in field/garden.

The typical distance between the E.U.T. and the user is 20 cm.

Calculation of Maximum Permissible Exposure (MPE)

Based on Section 1.1310 Requirements

(a) FCC limits at 2480 MHz is:

$$1 \frac{mW}{cm^2}$$

Using table 1 of Section 1.1310 limit for general population/uncontrolled exposures, the above level is an average over 30 minutes.

(b) The power density produced by the E.U.T. is

$$S = \frac{P_t G_t}{4\pi R^2}$$

P_t - Transmitted Power 70.9 dBuV/m (Peak) = -24.3 dBm = 0.004mW

* G_t - Antenna Gain,

*Note – because antenna is integral and tests were conducted radiated, the transmitted power, P_t , takes the antenna gain into account

R- Distance from Transmitter using 20cm worst case

(c) The peak power density is:

$$S_p = \frac{0.004}{4\pi(20)^2} = 7.96 \times 10^{-7} \frac{mW}{cm^2}$$

(e) This is below the FCC limit.

9. APPENDIX A - CORRECTION FACTORS

9.1 Correction factors for RF OATS Cable 35m ITL #1784

| Frequency(MHz) | Cable loss(dB) |
|----------------|----------------|
| 10.0 | -0.3 |
| 20.0 | -0.3 |
| 50.0 | -0.5 |
| 100.0 | -0.7 |
| 200.0 | -1.1 |
| 500.0 | -1.8 |
| 1000.0 | -2.7 |

9.1 Correction factors for RF OATS Cable 10m ITL #1794

| Frequency (MHz) | Cable loss (dB) |
|------------------|-----------------|
| 10.0 | 0.3 |
| 20.0 | 0.2 |
| 50.0 | -0.1 |
| 100.0 | -0.6 |
| 200.0 | -1.2 |
| 500.0 | -2.3 |
| 1000.0 | -3.6 |

9.1 **Correction factor for RF CABLE for Semi Anechoic Chamber**

| FREQ (MHz) | LOSS (dB) |
|---------------|--------------|
| 1000.0 | 1.5 |
| 2000.0 | 2.1 |
| 3000.0 | 2.7 |
| 4000.0 | 3.1 |
| 5000.0 | 3.5 |
| 6000.0 | 4.1 |
| 7000.0 | 4.6 |
| 8000.0 | 4.9 |
| 9000.0 | 5.7 |
| 10000.0 | 5.7 |
| 11000.0 | 6.1 |
| 12000.0 | 6.1 |
| 13000.0 | 6.2 |
| 14000.0 | 6.7 |
| 15000.0 | 7.4 |
| 16000.0 | 7.5 |
| 17000.0 | 7.9 |
| 18000.0 | 8.1 |
| 19000.0 | 8.8 |
| 20000.0 | 9.1 |

NOTES:

1. The cable is manufactured by Commscope
2. The cable type is 0623 WBC-400, serial # G020132 and 10m long
3. ITL # 1841



9.2 Correction factors for ACTIVE LOOP ANTENNA
Model 6502
S/N 9506-2950

| f(MHz) | MAF(dBs/m) | AF(dB/m) |
|--------|------------|----------|
| 0.01 | -33.1 | 18.4 |
| 0.02 | -37.2 | 14.3 |
| 0.03 | -38.2 | 13.3 |
| 0.05 | -39.8 | 11.7 |
| 0.1 | -40.1 | 11.4 |
| 0.2 | -40.3 | 11.2 |
| 0.3 | -40.3 | 11.2 |
| 0.5 | -40.3 | 11.2 |
| 0.7 | -40.3 | 11.2 |
| 1 | -40.1 | 11.4 |
| 2 | -40 | 11.5 |
| 3 | -40 | 11.5 |
| 4 | -40.1 | 11.4 |
| 5 | -40.2 | 11.3 |
| 6 | -40.4 | 11.1 |
| 7 | -40.4 | 11.1 |
| 8 | -40.4 | 11.1 |
| 9 | -40.5 | 11 |
| 10 | -40.5 | 11 |
| 20 | -41.5 | 10 |
| 30 | -43.5 | 8 |



9.3 Correction factors for Biconical Antenna
EMCO, Model 3110B,
Serial #9912-3337

| Frequency [MHz] | AF [dB/m] |
|-----------------|--------------|
| 30.0 | 14.18 |
| 35.0 | 13.95 |
| 40.0 | 12.84 |
| 45.0 | 11.23 |
| 50.0 | 11.10 |
| 60.0 | 10.39 |
| 70.0 | 9.34 |
| 80.0 | 9.02 |
| 90.0 | 9.31 |
| 100.0 | 8.95 |
| 120.0 | 11.53 |
| 140.0 | 12.20 |
| 160.0 | 12.56 |
| 180.0 | 13.49 |
| 200.0 | 15.27 |



9.4 Correction factors for Log Periodic Antenna
EMCO, Model 3146,
Serial #9505-4081

| Frequency [MHz] | AF [dB/m] |
|-----------------|--------------|
| 200.0 | 11.47 |
| 250.0 | 12.06 |
| 300.0 | 14.77 |
| 400.0 | 15.77 |
| 500.0 | 18.01 |
| 600.0 | 18.84 |
| 700.0 | 20.93 |
| 800.0 | 21.27 |
| 900.0 | 22.44 |
| 1000.0 | 24.10 |



9.5 Correction factors for

Horn Antenna

**Model: SWH-28
at 1 meter range.**

| Frequency, MHz | Measured antenna factor, dB/m ¹⁾ |
|----------------|---|
| 18000 | 33.0 |
| 18500 | 32.9 |
| 19000 | 33.1 |
| 19500 | 33.3 |
| 20000 | 33.6 |
| 20500 | 33.6 |
| 21000 | 33.4 |
| 21500 | 33.8 |
| 22000 | 33.7 |
| 22500 | 33.9 |
| 23000 | 34.8 |
| 23500 | 34.5 |
| 24000 | 34.2 |
| 24500 | 34.8 |
| 25000 | 34.4 |
| 25500 | 35.2 |
| 26000 | 35.9 |
| 26500 | 36.0 |

9.6 Correction factors for **Horn ANTENNA.**

Model: 3115

Antenna serial number: 29845

3 meter range

| f(GHz) | AF(dB/m) | GA(dB) |
|--------|----------|--------|
| 0.75 | 25 | 3 |
| 1G | 23.5 | 7 |
| 1.5G | 26 | 8 |
| 2G | 29 | 7 |
| 2.5G | 27.5 | 10 |
| 3G | 30 | 10 |
| 3.5G | 31.5 | 10 |
| 4G | 32.5 | 9.5 |
| 4.5G | 32.5 | 10.5 |
| 5G | 33 | 10.5 |
| 5.5G | 35 | 10.5 |
| 6G | 36.5 | 9.5 |
| 6.5G | 36.5 | 10 |
| 7G | 37.5 | 10 |
| 7.5G | 37.5 | 10 |
| 8G | 37.5 | 11 |
| 8.5G | 38 | 11 |
| 9G | 37.5 | 11.5 |
| 9.5G | 38 | 11.5 |
| 10G | 38.5 | 11.5 |
| 10.5G | 38.5 | 12 |
| 11G | 38.5 | 12.5 |
| 11.5G | 38.5 | 13 |
| 12G | 38 | 13.5 |
| 12.5G | 38.5 | 13 |
| 13G | 40 | 12 |
| 13.5G | 41 | 12 |
| 14G | 40 | 13 |
| 14.5G | 39 | 14 |
| 15G | 38 | 15.5 |
| 15.5G | 37.5 | 16 |
| 16G | 37.5 | 16 |
| 16.5G | 39 | 15 |
| 17G | 40 | 15 |
| 17.5G | 42 | 13.5 |
| 18G | 42.5 | 13 |