



**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: <input checked="" type="checkbox"/>
	Class I change: <input type="checkbox"/>
	Class II change: <input type="checkbox"/>
Equipment type:	Low Power Communication Device Transmitter
Limits used:	47CFR15 Section 15.249
Measurement procedure used is ANSI C63.10-2013.	
Application for Certification prepared by:	Applicant for this device: (different from "prepared by")
R. Pinchuck	Ahmad Omari
ITL (Product Testing) Ltd.	BACCARA GEVA
1 Bat Sheva Street	Kvutzat Geva
Lod	18915 Israel
Israel	
Tel: +972-8-918-6117	Tel: +972-4-653 5869
Fax: +972-8-915-3101	Fax: +972-4-653 5376
Email: <a href="mailto:Rpinchuck@itl.co.il">Rpinchuck@itl.co.il</a>	Email: <a href="mailto:ahmad.omari@baccara-geva.com">ahmad.omari@baccara-geva.com</a>



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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 <sup>rd</sup> Harmonic	3 <sup>rd</sup> Harmonic	Field Strength	2 <sup>rd</sup> Harmonic	3 <sup>rd</sup> Harmonic	Field Strength	2 <sup>rd</sup> Harmonic	3 <sup>rd</sup> 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

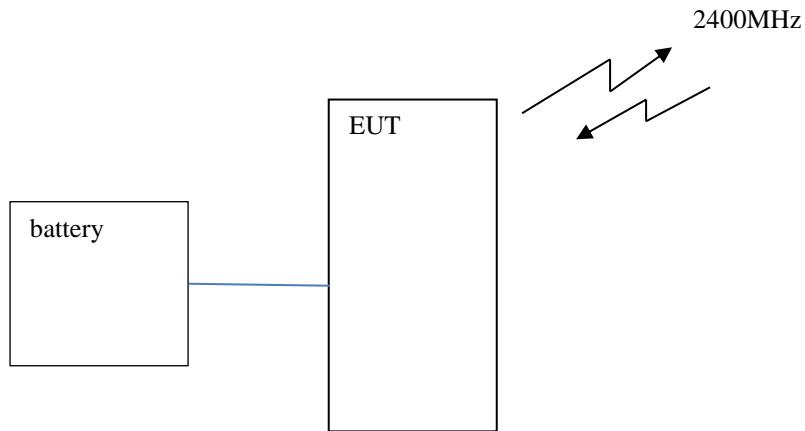
No special exercise software was needed to achieve compliance.

### 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**



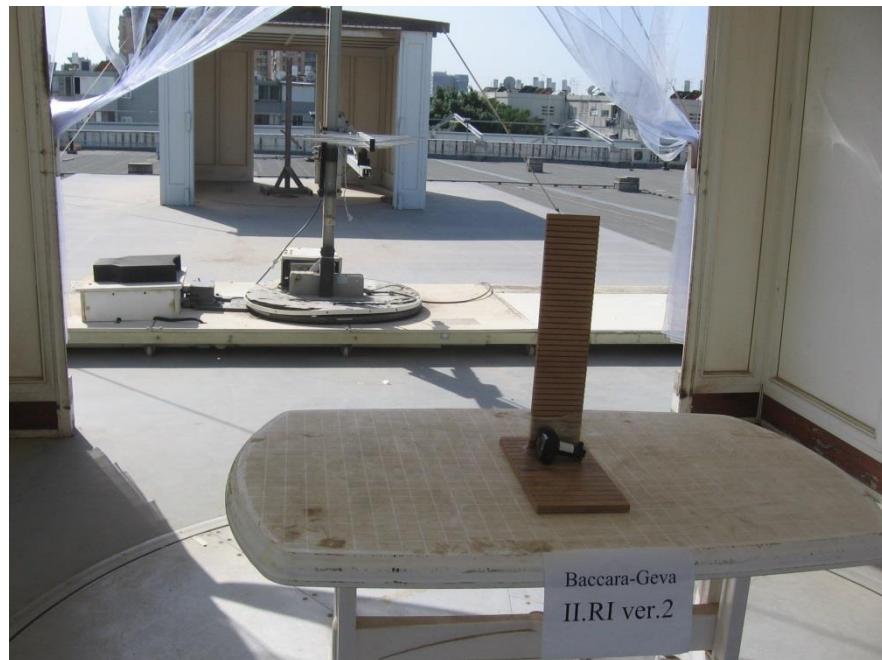
**Figure 4. Field Strength of Harmonics**



**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 $\mu$ V/m)	(dB $\mu$ 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.

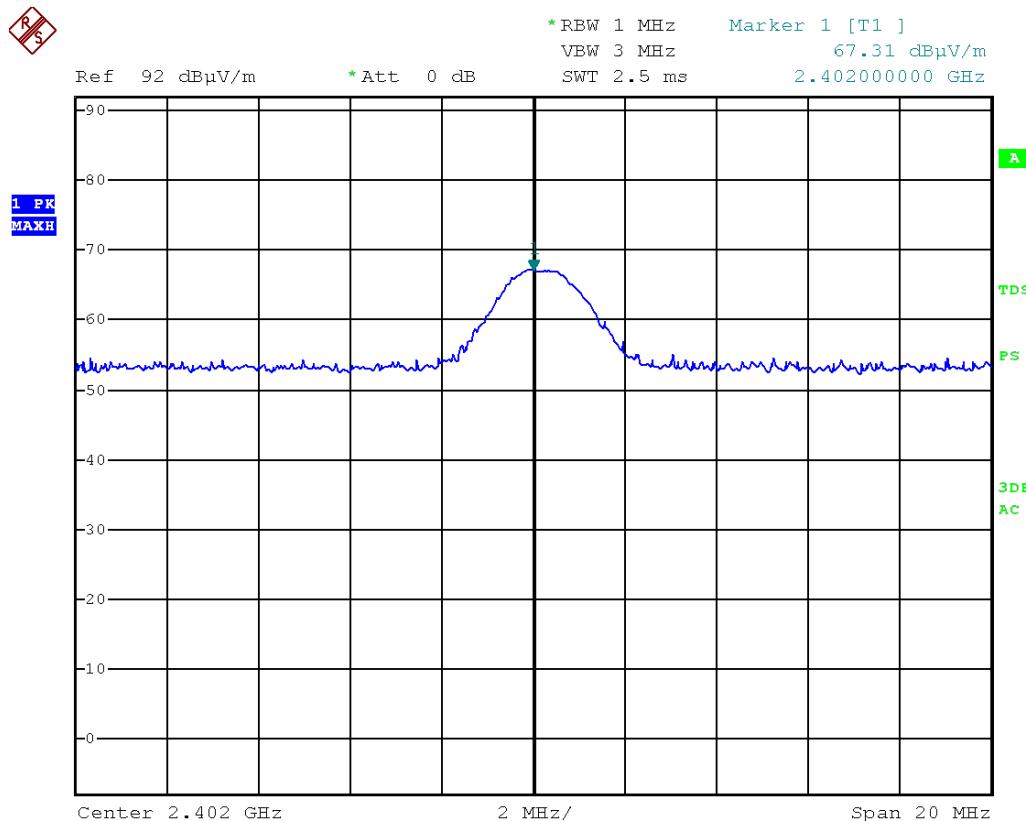


## Field Strength of Fundamental

E.U.T Description (ii.ri) Smart irrigation Controller

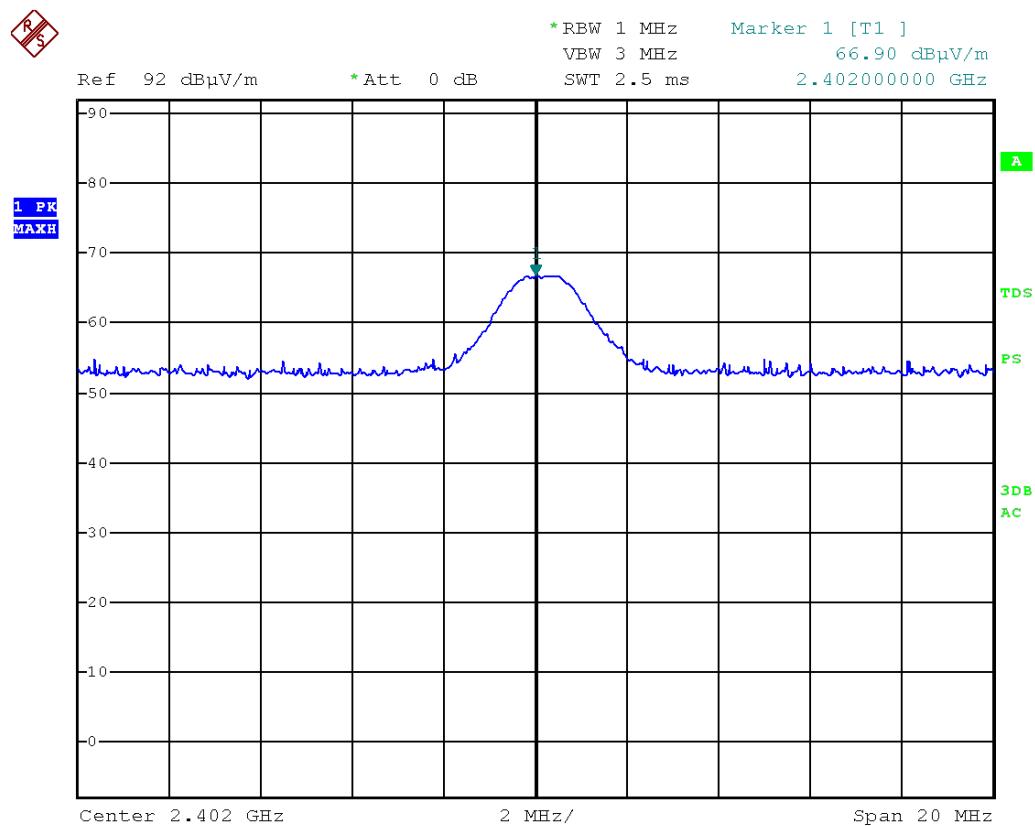
Model Number 1279300101

Serial Number: 1042



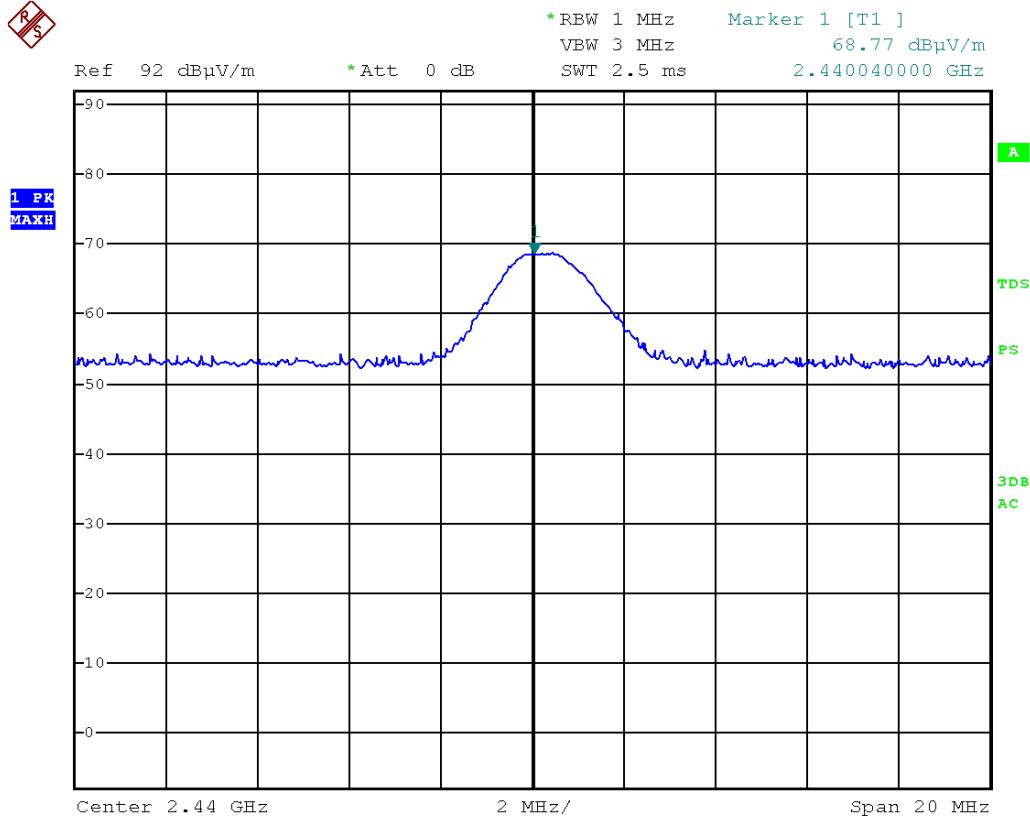
Date: 31.OCT.2016 12:54:14

**Figure 10 2402.0 MHz – Vertical**



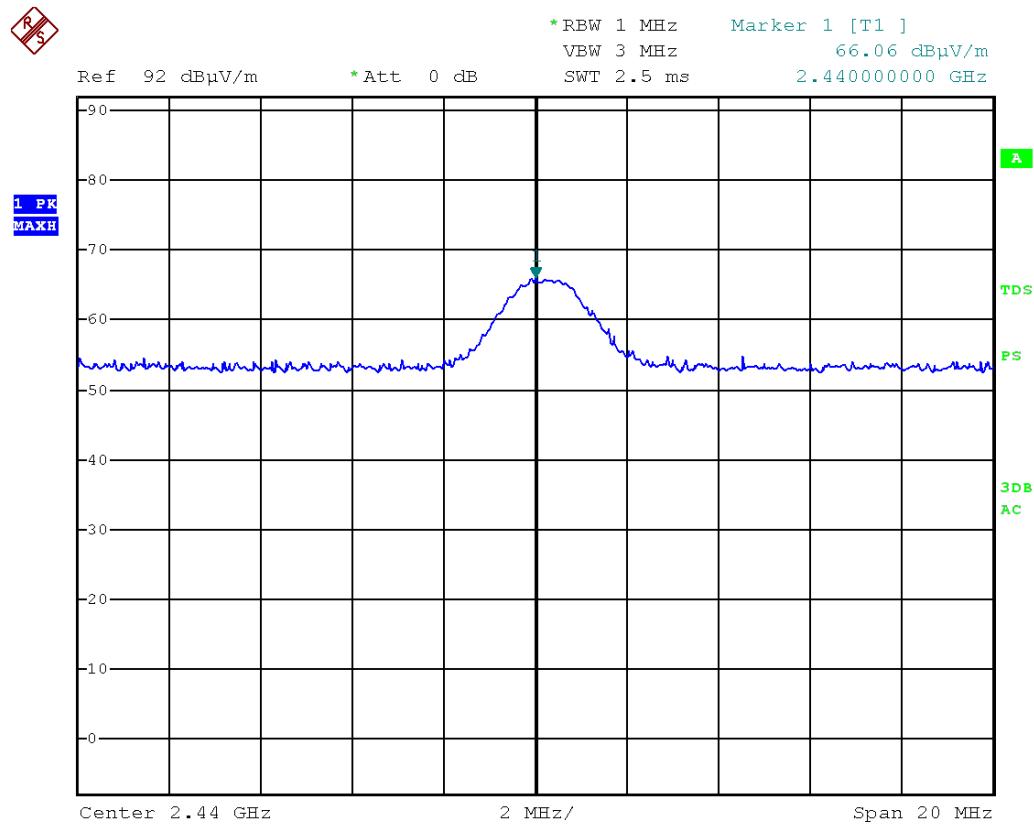
Date: 31.OCT.2016 13:05:22

**Figure 11 2402.0 MHz – Horizontal**



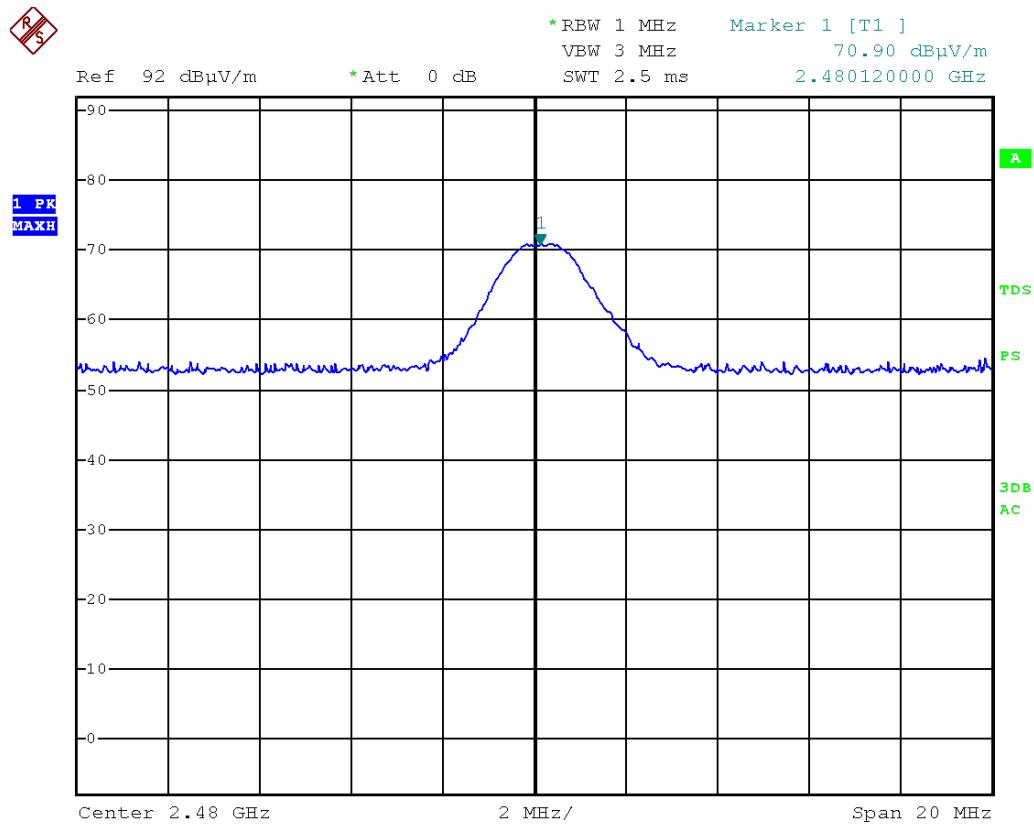
Date: 31.OCT.2016 11:27:54

**Figure 12 2440.0 MHz – Vertical**



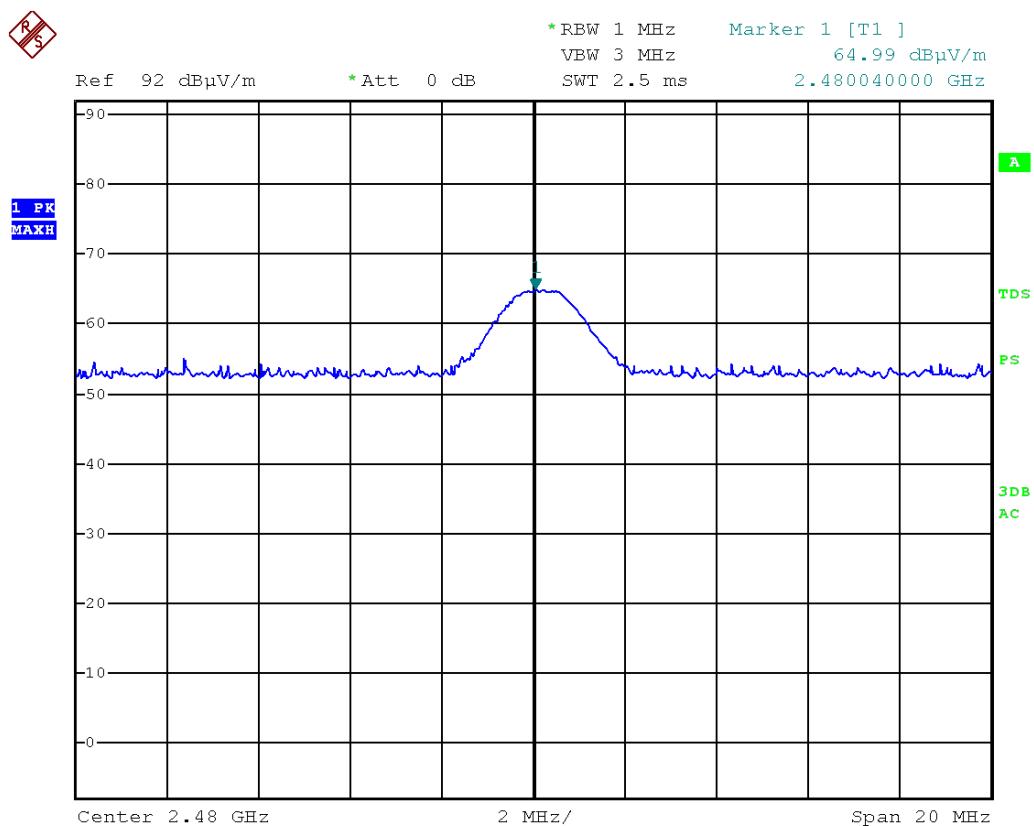
Date: 31.OCT.2016 11:24:17

**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 $\mu$ V/m)	(dB $\mu$ 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

<b>Operation Frequency</b> (MHz)	<b>Frequency</b> (MHz)	<b>Polarity</b> (H/V)	<b>Average Reading</b> (dB $\mu$ V/m)	<b>Average Specification</b> (dB $\mu$ V/m)	<b>Average Margin</b> (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 $\mu$ V/m]

RA: Receiver Amplitude [dB $\mu$ V]

AF: Receiving Antenna Correction Factor [dB/m]

CF: Cable Attenuation Factor [dB]

Example: FS = 30.7 dB $\mu$ V (RA) + 14.0 dB (AF) + 0.9 dB (CF) = 45.6 dB $\mu$ 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 (dB $\mu$ V/m)	Field strength* (dB $\mu$ V/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:

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

FS: Field Strength [dB $\mu$ v/m]

RA: Receiver Amplitude [dB $\mu$ v]

AF: Receiving Antenna Correction Factor [dB/m]

CF: Cable Attenuation Factor [dB]



## 7. Antenna Gain/Information

0.5 dBi

### 2.45 GHz Antenna

Detail Specification: 09/03/03

P/N 2450AT18A100

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#### 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

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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 <sup>1)</sup>
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