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Report On

Limited FCC Testing of the
TreeGreen Limited EG-SA
In accordance with FCC CFR 47 Part 15C

COMMERCIAL-IN-CONFIDENCE

FCC ID: O5CEG-SA

Document 75915772 Report 05 Issue 1 **May 2012**

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REPORT ON

Limited FCC Testing of the
TreeGreen Limited EG-SA
In accordance with FCC CFR 47 Part 15C

Document 75915772 Report 05 Issue 1

May 2012

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Authorised Signatory

DATED 23 May 2012

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 15C. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

R Henley G Lawler

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SECTION 1

REPORT SUMMARY

Limited FCC Testing of the
TreeGreen Limited EG-SA
In accordance with FCC CFR 47 Part 15C

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1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Limited FCC Testing of the TreeGreen Limited EG-SA to the requirements of FCC CFR 47 Part 15C.

Objective	To perform Limited FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	TreeGreen Limited
Model Number(s)	EG-SA01G01-01
Serial Number(s)	Not Serialised (TSR0015)
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15C (2011)
Incoming Release Date	Application Form 6 March 2012
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	Not Applicable Not Applicable
Start of Test	12 February 2012
Finish of Test	13 April 2012
Name of Engineer(s)	R Henley G Lawler
Related Document(s)	ANSI C63.10: 2009

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1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 15C is shown below.

Section	Spec Clause	Test Description	Result	Comments/Base Standard
Transmit - Wire Antenna				
2.1	15.231 (a)(1)	Manually Operated Transmitter	Pass	
2.2	15.231 (b)	Field Strength of Emissions	Pass	
2.3	15.231 (c)	20dB Bandwidth	Pass	

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1.3 APPLICATION FORM

APPLICANT'S DETAILS

COMPANY NAME : ……Treegreen Limited……
ADDRESS : ……..15 Park Way, Kildrum, Cumbernauld, G67 2BT
……
……
NAME FOR CONTACT PURPOSES : ..……Brian O'Reilly……

TELEPHONE NO: ……. FAX NO: ……
E-MAIL: 07879 486787……

EQUIPMENT INFORMATION

Model name/number ……EG-SA…….. Identification/Part number ……EG-SA……..……..
Hardware Version ……3.4…..…… Software Version ……1.8……..……
Manufacturer ……Semecs…..…… Country of Origin ……Slovakia……..……..
FCC ID ……O5CEG-SA…..…… Industry Canada ID ……N/A……..……..
Technical description (a brief description of the intended use and operation)

energy saving device designed to switch off appliances when user exits the room or presses the button.……

Supply Voltage:

[ ]	AC mains	State AC voltage …… V	and AC frequency …… Hz
[ ]	DC (external)	State DC voltage …… V	and DC current …… A
[✓]	DC (internal)	State DC voltage ……9… V	and Battery type …Alkaline……

Frequency characteristics:
Transmitter Frequency range ……433.92……. MHz to …433.92……. MHz Channel spacing ……. (if channelized)
Receiver Frequency range ……. MHz to ……. MHz Channel spacing ……. (if channelized)
(if different)
Designated test frequencies:
Bottom: ……433.92…… MHz Middle: …… MHz Top: …… MHz
Intermediate Frequencies : …… MHz
Highest Internally Generated Frequency : ……433.92…… MHz

Power characteristics:
Maximum transmitter power ……1mW…… W Minimum transmitter power …… W (if variable)

[ ] Continuous transmission
[✓] Intermittent transmission State duty cycle ……
If intermittent, can transmitter be set to continuous transmit test mode? Yes

Antenna characteristics:

[ ]	Antenna connector	State impedance …… ohm
[ ]	Temporary antenna connector	State impedance …… ohm
[✓]	Integral antenna	State gain …… dBi

Modulation characteristics:

[✓]	Amplitude	[ ]	Other
[ ]	Frequency	Details: ……..	
[ ]	Phase	(GMSK, QSPK etc)	

Can the transmitter operate un-modulated? No
ITU Class of emission: ……??…….

Battery/Power Supply
Model name/number …….……. Identification/Part number …….…….
Manufacturer …….……. Country of Origin …….…….

Ancillaries (if applicable)
Model name/number …….……. Identification/Part number …….…….
Manufacturer …….……. Country of Origin …….…….

Extreme conditions:
Maximum temperature …… ºC Minimum temperature …… ºC
Maximum supply voltage …… V Minimum supply voltage …… V

I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature : Held on file	Position held :	Managing Director
Name : Brian O'Reilly	Date :	06/03/2012

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a TreeGreen Limited EG-SA. A full technical description can be found in the manufacturer's documentation.

1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure.

The EUT was powered from a 9 V DC supply.

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standard or test plan were made during testing.

1.7 MODIFICATION RECORD

Modification 0 - No modifications were made to the test sample during testing.

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SECTION 2

TEST DETAILS

Limited FCC Testing of the
TreeGreen Limited EG-SA
In accordance with FCC CFR 47 Part 15C

Product Service

2.1 MANUALLY OPERATED TRANSMITTER

2.1.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.231 (a)(1)

2.1.2 Equipment Under Test and Modification State

EG-SA01G01-01 S/N: Not Serialised (TSR0015) - Modification State 0

2.1.3 Date of Test

13 April 2012

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Procedure

The EUT was placed on a remotely controlled turntable within a semi-anechoic chamber. Measurements of the carrier frequency from the EUT were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

2.1.6 Environmental Conditions

Ambient Temperature	24.8°C
Relative Humidity	24.9%

2.1.7 Test Results

9 V DC Supply

Does the switch automatically deactivate the transmitter in ≤ 5 seconds? Yes

Limit Clause

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

2.2 FIELD STRENGTH OF EMISSIONS

2.2.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.231 (b)

2.2.2 Equipment Under Test and Modification State

EG-SA01G01-01 S/N: Not Serialised (TSR0015) - Modification State 0

2.2.3 Date of Test

12 February 2012 & 31 March 2012

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Procedure

For conducted emissions, the EUT was set to operate at maximum power on the worst case data rate. The test was performed on the bottom, middle and top channels. The test was performed from 9 kHz to 25 GHz. Firstly, the power of each fundamental frequency was measured in 100 kHz bandwidth and this was used to shown a -20 dBc limit line on the trace. The measurement path loss in each relevant frequency band was measured and entered as a reference level offset.

For radiated emissions, the test method described above was also used. However, the measurement was performed from 30 MHz to 25 GHz and the path loss is incorporated as a transducer factor and entered into the spectrum analyser.

The band edge measurements were performed in accordance with ANSI C63.10, Clause 6.9.3. The results were analysed to ensure compliance with restricted bands. The EUT was set to the lowest and highest operating frequencies.

2.2.6 Environmental Conditions

Ambient Temperature	19.2 - 21.1°C
Relative Humidity	27.0 - 33.5%

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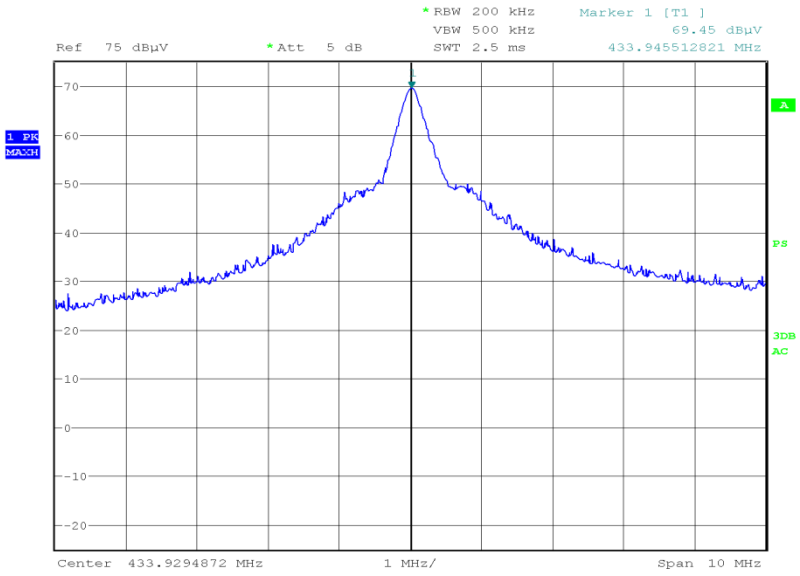
2.2.7 Test Results

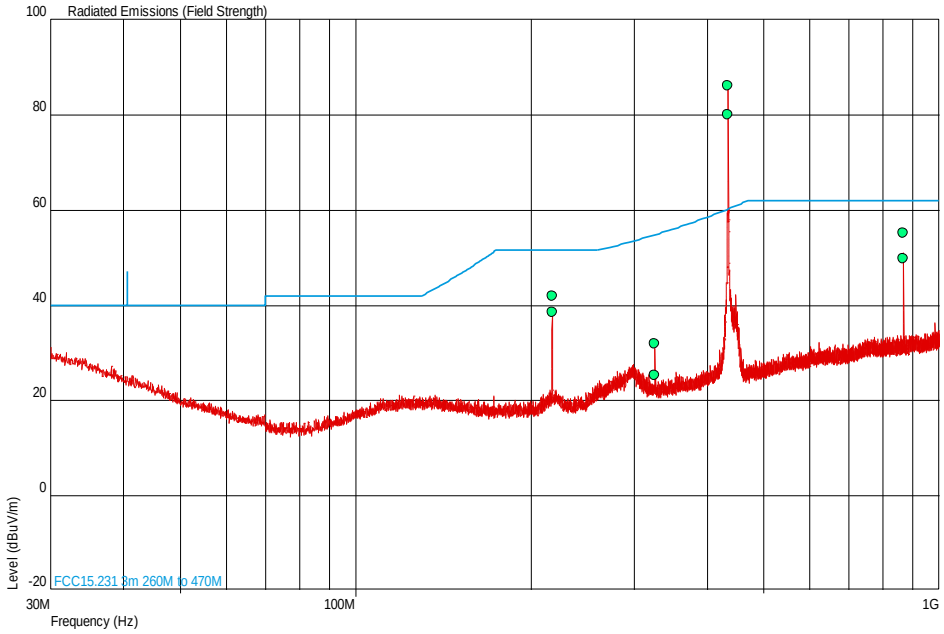
9 V DC Supply

Carrier



Date: 12.FEB.2012 10:27:44

30 MHz to 1 GHz

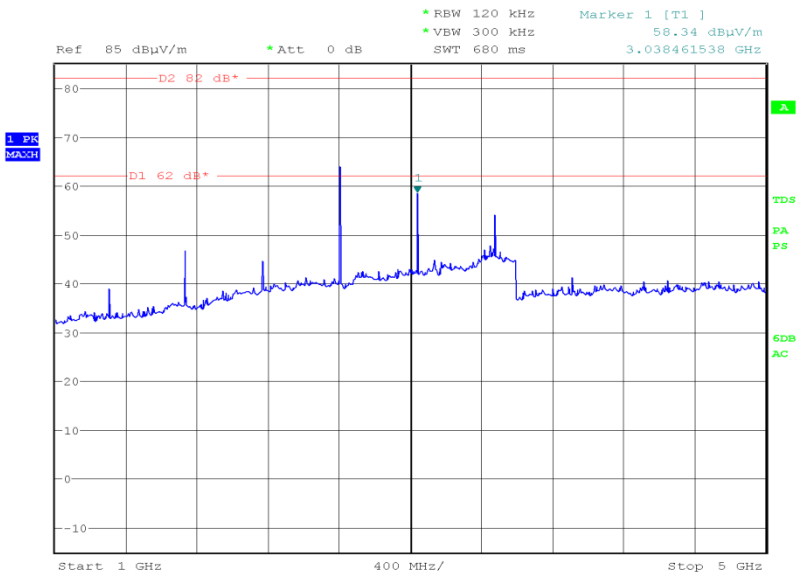


Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
216.961	41.8	123.0	51.5	376	-9.7	253.0	266	3.87	Vertical
216.968	38.6	85.1	51.5	376	-12.9	290.9	210	1.00	Horizontal
325.438	31.8	38.9	54.7	543	-23.0	504.1	283	1.00	Horizontal
325.448	25.2	18.2	54.7	543	-29.5	524.8	192	1.00	Vertical
867.866	49.8	309.0	61.9	1245	-12.2	936.0	356	1.00	Horizontal
867.866	55.1	568.9	61.9	1245	-6.8	676.1	89	1.39	Vertical

1 GHz to 5 GHz

Frequency (MHz)	QP Level (dBµV/m) at 3m	QP Level (µV/m) at 3m	QP Limit (dBµV/m) at 3m	QP Limit (µV/m) at 3m	Angle (deg)	Height (m)	Polarity
433.94	53.65	481.39	80.83	10998.00	100	127	Vertical

1 GHz to 5 GHz



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Limit Clause

Fundamental Frequency (MHz)	Field Strength of Fundamental (Microvolts/meter)	Field Strength of Spurious Emissions (Microvolts/meter)
40.66 to 40.70	2250	225
70.00 to 130.00	1250	125
130.00 to 174.00	[1] 1250 to 3750	[1] 125 to 375
174.00 to 260.00	3750	375
260.00 to 470.00	[1] 3750 to 12500	[1] 375 to 1250
Above 470.00	12500	1250

NOTE: [1] Linear interpolations

433.94MHz measured with a PEAK detector and corrected with a declared Duty Cycle correction.

2.3 20dB BANDWIDTH

2.3.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.231 (c)

2.3.2 Equipment Under Test and Modification State

EG-SA01G01-01 S/N: Not Serialised (TSR0015) - Modification State 0

2.3.3 Date of Test

13 April 2012

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Test Procedure

The EUT was placed on a remotely controlled turntable within a semi-anechoic chamber. Measurements of the carrier frequency from the EUT were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

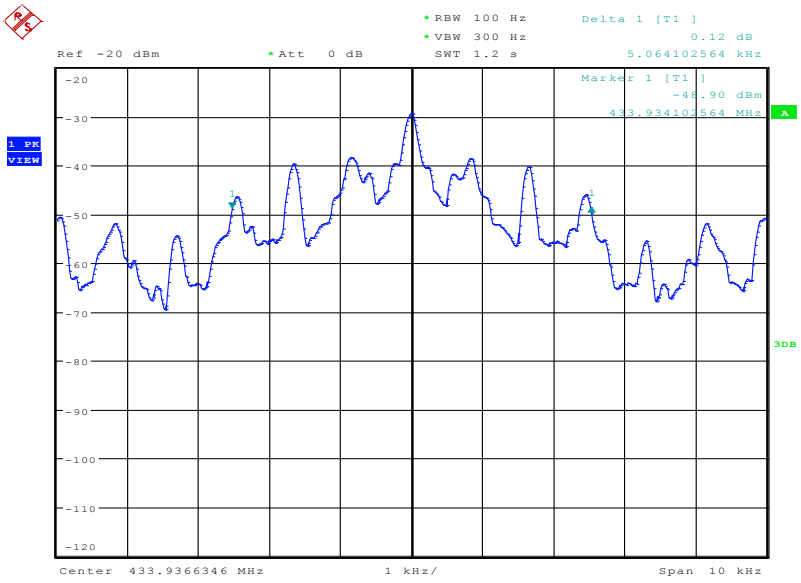
2.3.6 Environmental Conditions

Ambient Temperature	24.7°C
Relative Humidity	28.1%

2.3.7 Test Results

9 V DC Supply

Frequency (MHz)	20 dB Bandwidth
433.94	5.064102564 kHz



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SECTION 3

TEST EQUIPMENT USED

Product Service

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 – Manually Operated Transmitter					
Hygrometer	Rotronic	I-1000	2891	12	3-May-2012
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	21-Apr-2012
'N' - 'N' RF Cable (2m)	Rhophase	NPS-1803-2000-NPS	3698	12	12-Jan-2013
Section 2.2 – Field Strength of Emissions					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	12	14-Nov-2012
Screened Room (5)	Rainford	Rainford	1545	36	3-Feb-2014
Mast Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Antenna (Bilog)	Chase	CBL6143	2904	24	12-May-2013
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	3171	12	22-Aug-2012
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	29-Sep-2012
'3.5mm' - '3.5mm' RF Cable (2m)	Rhophase	3PS-1803-2000-3PS	3703	-	TU
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	12	26-Aug-2012
Tilt Antenna Mast	maturo Gmbh	TAM 4.0-P	3916	-	TU
Mast Controller	maturo Gmbh	NCD	3917	-	TU
Section 2.3- Channel Bandwidth					
Hygrometer	Rotronic	I-1000	2891	12	3-May-2012
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	21-Apr-2012
'N' - 'N' RF Cable (2m)	Rhophase	NPS-1803-2000-NPS	3698	12	12-Jan-2013

TU – Traceability Unscheduled
O/P MON – Output Monitored with Calibrated Equipment

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3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	MU
Field Strength of Emissions	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB
Manually Operated Transmitter	-
20dB Bandwidth	± 16.74 kHz

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SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

Product Service

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

UKAS TESTING 0141

This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).