



FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

47173 BENICIA STREET, FREMONT, CA 94538
PHONE: (510) 771-1000 FAX: (501) 661-0888

Project #: 10U13230
Report #: 10U13230-1
Date& Time: 5/27/2010
Test Engr: Vien Tran

Company: Jonhnson Outdoors, Inc.
EUT Description: 433 MHz Battery-Power Remote Control
Test Configuration : EUT Batteries Operated .
Type of Test: FCC 15.231(b)
Mode of Operation: Continuous Transmit

M% = ((t1+t2+t3+...)/T) = 17.4%

Av Reading = Pk Reading + 20*log(M%)
20 * log (M%) = -15.19 (Max=-20dB)

Freq. (MHz)	Pk Rdg (dBuV)	Av Rdg (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Pk Level (dBuV/m)	Av Level (dBuV/m)	Pk Limit FCC_B	Av Limit FCC_B	Pk Margin (dB)	Avg Margin (dB)	Pol (H/V)
433.917MHz Fundamental Frequency												
EUT At X Position												
433.92	55.43	40.24	14.00	1.62	0.00	71.05	55.86	100.83	80.83	-29.78	-24.97	3mV
433.92	71.45	56.26	14.00	1.62	0.00	87.07	71.88	100.83	80.83	-13.76	-8.95	3mH
EUT At Y Position												
		-15.19										
433.92	69.36	54.17	14.00	1.62	0.00	84.98	69.79	100.83	80.83	-15.85	-11.04	3mH
433.92	59.96	44.77	14.00	1.62	0.00	75.58	60.39	100.83	80.83	-25.25	-20.44	3mV
EUT At Z Position												
433.92	68.30	53.11	14.00	1.62	0.00	83.92	68.73	100.83	80.83	-16.91	-12.10	3mH
433.92	67.28	52.09	14.00	1.62	0.00	82.90	67.71	100.83	80.83	-17.93	-13.12	3mV
X-Position is the worst case												
867.80	44.98	29.79	18.90	2.40	28.50	37.78	22.59	80.83	60.83	-43.05	-38.24	3mV
867.80	57.24	42.05	18.90	2.40	28.50	50.04	34.85	80.83	60.83	-30.79	-25.98	3mH

Note: No other emissions were detected above system noise floor from 30 MHz to 1000 MHz.

High Frequency Measurement

Compliance Certification Services, Fremont 3m Chamber

Company:

Johnson Outdoors, Inc.

Project #:

10U13230

Date:

05/27/10

Test Engineer:

Vien Tran

Configuration:

EUT Battery Operated

Mode:

Continuous Transmit

Test Equipment:

Horn 1-18GHz

T60; S/N: 2238 @3m

Pre-amplifier 1-26GHz

T34 HP 8449B

Pre-amplifier 26-40GHz

Horn > 18GHz

Hi Frequency Cables

3' cable 22807700

12' cable 22807600

20' cable 22807500

3' cable 22807700

12' cable 22807600

20' cable 22807500

HPF

Reject Filter

Peak Measurements

RBW=VBW=1MHz

Average Measurements

Average = Peak - Duty Cycle

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.301	3.0	57.7	42.5	25.5	2.7	-37.8	0.0	0.0	48.1	32.9	74	54	-25.9	-21.1	V
1.739	3.0	66.4	51.2	26.9	3.2	-37.2	0.0	0.0	59.2	44.1	74	54	-14.8	-9.9	V
2.170	3.0	65.7	50.5	27.9	3.6	-36.6	0.0	0.0	60.6	45.4	74	54	-13.4	-8.6	V
2.604	3.0	57.1	41.9	28.6	4.0	-36.2	0.0	0.0	53.5	38.3	74	54	-20.5	-15.7	V
3.037	3.0	52.5	37.3	29.8	4.4	-35.9	0.0	0.0	50.8	35.6	74	54	-23.2	-18.4	V
3.471	3.0	51.6	36.4	30.8	4.7	-35.5	0.0	0.0	51.7	36.5	74	54	-22.3	-17.5	V
3.905	3.0	45.9	30.7	31.8	5.1	-35.1	0.0	0.0	47.8	32.6	74	54	-26.2	-21.4	V
4.339	3.0	46.3	31.1	32.3	5.4	-34.9	0.0	0.0	49.1	33.9	74	54	-24.9	-20.1	V
1.301	3.0	59.7	44.5	25.5	2.7	-37.8	0.0	0.0	50.0	34.8	74	54	-24.0	-19.2	H
1.739	3.0	65.0	49.8	26.9	3.2	-37.2	0.0	0.0	57.8	42.6	74	54	-16.2	-11.4	H
2.170	3.0	64.0	48.8	27.9	3.6	-36.6	0.0	0.0	58.9	43.7	74	54	-15.1	-10.3	H
2.604	3.0	53.5	38.3	28.6	4.0	-36.2	0.0	0.0	49.9	34.7	74	54	-24.1	-19.3	H
3.037	3.0	51.1	35.9	29.8	4.4	-35.9	0.0	0.0	49.4	34.2	74	54	-24.6	-19.8	H
3.471	3.0	52.3	37.2	30.8	4.7	-35.5	0.0	0.0	52.4	37.2	74	54	-21.6	-16.8	H
3.905	3.0	44.9	29.7	31.8	5.1	-35.1	0.0	0.0	46.8	31.6	74	54	-27.2	-22.4	H
4.339	3.0	48.2	33.0	32.3	5.4	-34.9	0.0	0.0	51.0	35.8	74	54	-23.0	-18.2	H

f

Measurement Frequency

Dist

Distance to Antenna

Read

Analyzer Reading

AF

Antenna Factor

CL

Cable Loss

Amp

Preamp Gain

D Corr

Distance Correct to 3 meters

Avg

Average Field Strength @ 3 m

Peak

Calculated Peak Field Strength

HPF

High Pass Filter

Avg Lim

Average Field Strength Limit

Pk Lim

Peak Field Strength Limit

Avg Mar

Margin vs. Average Limit

Pk Mar

Margin vs. Peak Limit

1. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01171	07/14/10
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	07/06/10
Antenna, Horn, 18 GHz	EMCO	3115	C00872	07/29/10
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	08/04/10
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01176	08/24/10