Technical Consumer Products, Inc.

RF Remote Controller
Model: RC100

Report No. GLBC0083

Report Prepared By

www.nwemc.com
1-888-EMI-CERT

EMC Test Report

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Last Date of Test: April 25, 2011
Technical Consumer Products, Inc.
RF Remote Controller Model: RC100

Emissions			
Test Description	**Specification**	**Test Method**	**Pass/Fail**
Occupied Bandwidth	FCC 15.247:2011	ANSI C63.10:2009	**Pass**
Output Power	FCC 15.247:2011	ANSI C63.10:2009	**Pass**
Band Edge Compliance	FCC 15.247:2011	ANSI C63.10:2009	**Pass**
Power Spectral Density	FCC 15.247:2011	ANSI C63.10:2009	**Pass**
Spurious Radiated Emissions	FCC 15.247:2011	ANSI C63.10:2009	**Pass**

Modifications made to the product
See the Modifications section of this report

Test Facility

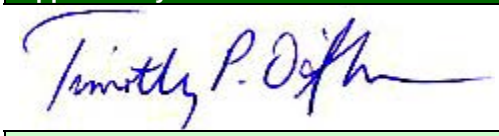
The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
41 Tesla Ave.
Irvine, CA 92618

Phone: (503) 844-4066 Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834B-1).

Approved By:



Tim O'Shea, Operations Manager

NVLAP Lab Code: 200676-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

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. This Report may only be duplicated in its entirety. 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.

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

Accreditations and Authorizations

FCC

Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.

NVLAP

Northwest EMC, Inc. is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. NVLAP is administered by the National Institute of Standards and Technology (NIST), an agency of the U.S. Commerce Department. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.

Industry Canada

Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS-Gen, Issue 2 and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements. (*Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2, Brooklyn Park: 2834E-1)*

CAB

Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.

Australia/New Zealand

The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).

Accreditations and Authorizations

VCCI

Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. *(Registration Numbers. - Hillsboro: C-1071, R-1025, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-1784, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634).*

BSMI

Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement (US0017).

GOST

Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification

KCC

Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (*Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157, Brooklyn Park: US0175)*

VIETNAM

Vietnam MIC has approved Northwest EMC as an accredited test lab. Per Decision No. 194/QD-QLCL (dated December 15, 2009), Northwest EMC test reports can be used for Vietnam approval submissions.

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/

Northwest EMC Locations

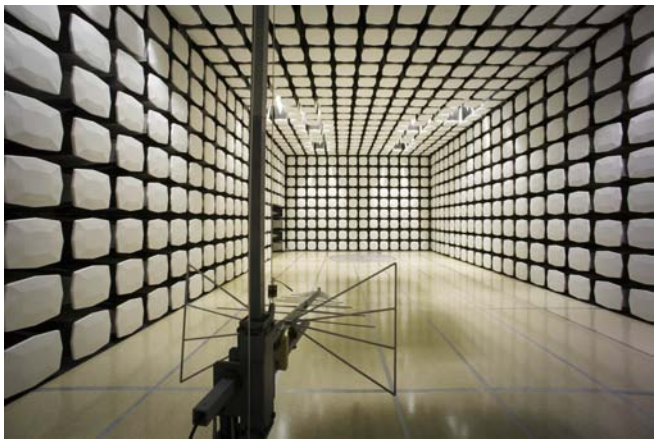
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

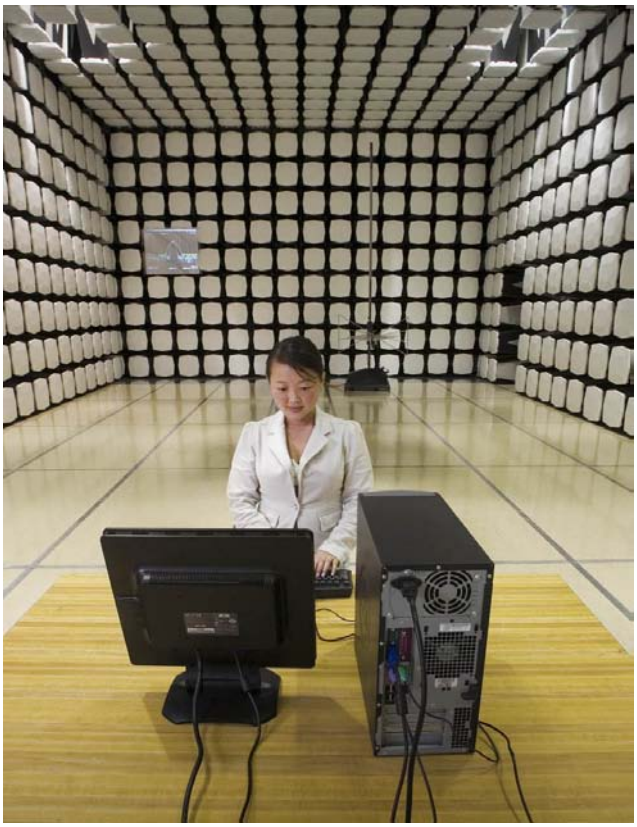
California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

Minnesota
Labs MN01-MN08
9349 W Broadway Ave.
Brooklyn Park,
MN 55445
(763) 425-2281

Washington
Labs SU01-SU07
14128 339th Ave. SE
Sultan, WA 98294
(360) 793-8675

New York
Labs WA01-WA04
4939 Jordan Rd.
Elbridge, NY 13060
(315) 685-0796





Party Requesting the Test

Company Name:	Technical Consumer Products, Inc.
Address:	325 Campus Drive
City, State, Zip:	Aurora, Ohio 44202
Test Requested By:	Leon Kogan, Global Certification Technologies Inc.
Model:	RF Remote Controller Model: RC100
First Date of Test:	April 25, 2011
Last Date of Test:	April 25, 2011
Receipt Date of Samples:	April 25, 2011
Equipment Design Stage:	Preproduction
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

The system consists of a handheld battery powered remote control unit and a receiver module contained in and powered by a compact florescent lamp, 120 V~.

The system operates at 2.45 GHz only, a Direct Sequence Spread spectrum mode of transmission, PCB Trace antennas.

The remote and the receiver module unit have a unique MAC address consisting of our IEEE OUI of 24-BA-30 and an individual manufacturers ID code embedded in each microcontroller/transceiver integrated circuit. The address may have addition date or version information in the string.

The remote also utilizes a capacitive touch routine built into the combination microcontroller/transceiver IC. It senses the presence of a finger over any of the buttons on the overlay. There are no moving parts in the remote.

The remote sends an on or off code string modified by one of five possible modes; A, B, C, D, or ALL. The mode being selected by a finger touch over a mode button followed by an on or off button touch. Transmission occurs only on an on or off button touch.

The receiver module controls two MOSFETs on the compact fluorescent ballast that turns the lamp on or off.

Testing Objective:

To demonstrate compliance to FCC 15.247 requirements.

CONFIGURATION 1 GLBC0082

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Lamp Controller	Technical Consumer Products, Inc.	RC123	None
RF Remote Controller	Technical Consumer Products, Inc.	RC100	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable	No	1m	No	Lamp Controller	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	4/25/2011	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	4/25/2011	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	4/25/2011	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	4/25/2011	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	4/25/2011	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Occupied Bandwidth

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAY	1/11/2011	12
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	3/26/2010	15

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The occupied bandwidth was measured with the EUT set to only one channel because it is the only channel available in the band. The measurement was made in a radiated configuration in a semi-anechoic chamber with the fundamental of the carrier full maximized for its highest radiated power. The EUT was transmitting at its maximum data rate with the typical modulation and a test duty cycle.

NORTHWEST EMC

Occupied Bandwidth

XMit 2011.04.20
PsaTx 2011.04.21

EUT:	RF Remote Controller Model: RC100			Work Order:	GLBC0082
Serial Number:	None			Date:	04/25/11
Customer:	Technical Consumer Products, Inc.			Temperature:	21°C
Attendees:	Leon Kogan (Global Certification Technologies, Inc.)			Humidity:	43%
Project:	None			Barometric Pres.:	1018
Tested by:	Jeremiah Darden	Power:	Battery	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247:2011	ANSI C63.10:2009

COMMENTS

None

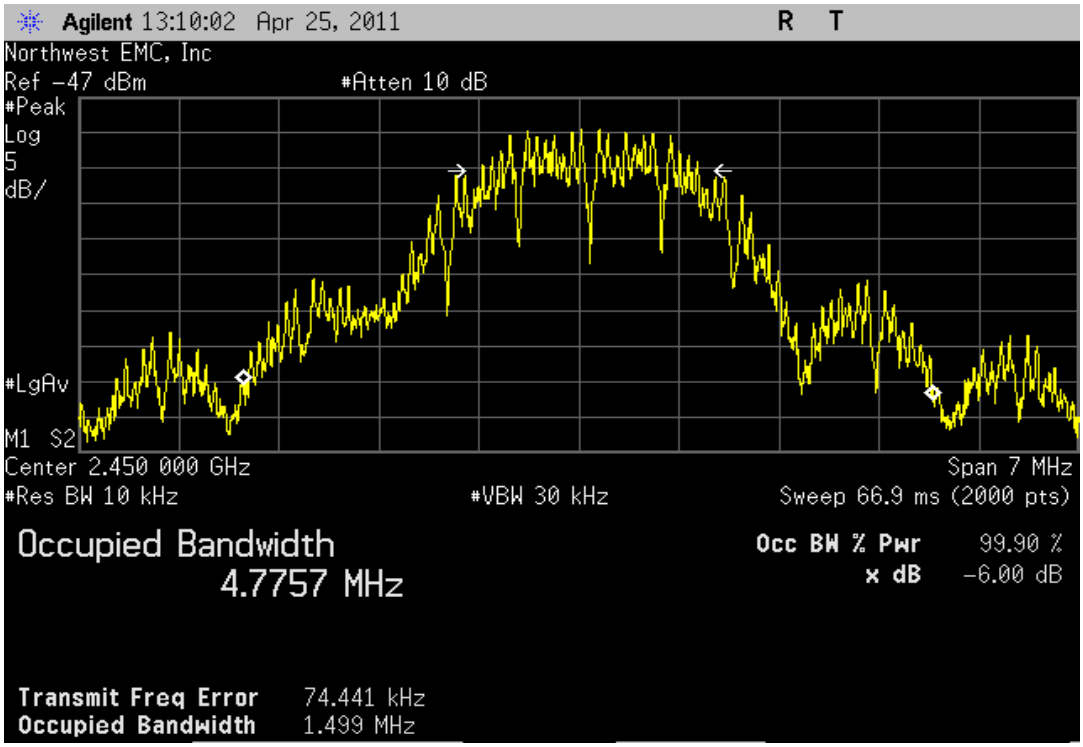
DEVIATIONS FROM TEST STANDARD

None

Configuration #	1	Signature

Channel	Value	Limit	Result
Mid	1.499 MHz	>=500kHz	Pass

				Value	Limit	Result
				1.499 MHz	>=500kHz	Pass



Output Power

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 test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting at 2450MHz

POWER SETTINGS INVESTIGATED

120VAC/60Hz.(Rx) and 3.0 VDC (Tx)

CONFIGURATIONS INVESTIGATED

GLBC0082 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	2400MHz	Stop Frequency	2483.5MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24 mo
Spectrum Analyzer	Agilent	E4446A	AAY	1/11/2011	12 mo
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	3/26/2010	15 mo

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

Measurements were made using the IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth was used.

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The peak output power was measured with the EUT set one channel since that is the only channel used in the band. The radiated power was measured using a spectrum analyzer and horn antenna in a semi-anechoic chamber. The resolution bandwidth was set to 3 MHz and the video bandwidth was to set to 8 MHz. A peak detector was used. The EUT was transmitting at its maximum data rate. The level of fundamental emission was maximized by rotating the turntable and moving the measurement antenna from 1 – 4 meters in height. The EUT, a handheld device, was also tested in multiple positions to maximize the output level.

The field strength measurement was converted to effective radiated power (EIRP) using the Friis transmission equation. A simplified version is found in ANSI C63.10:2009, Equation 5.

NORTHWEST
EMC

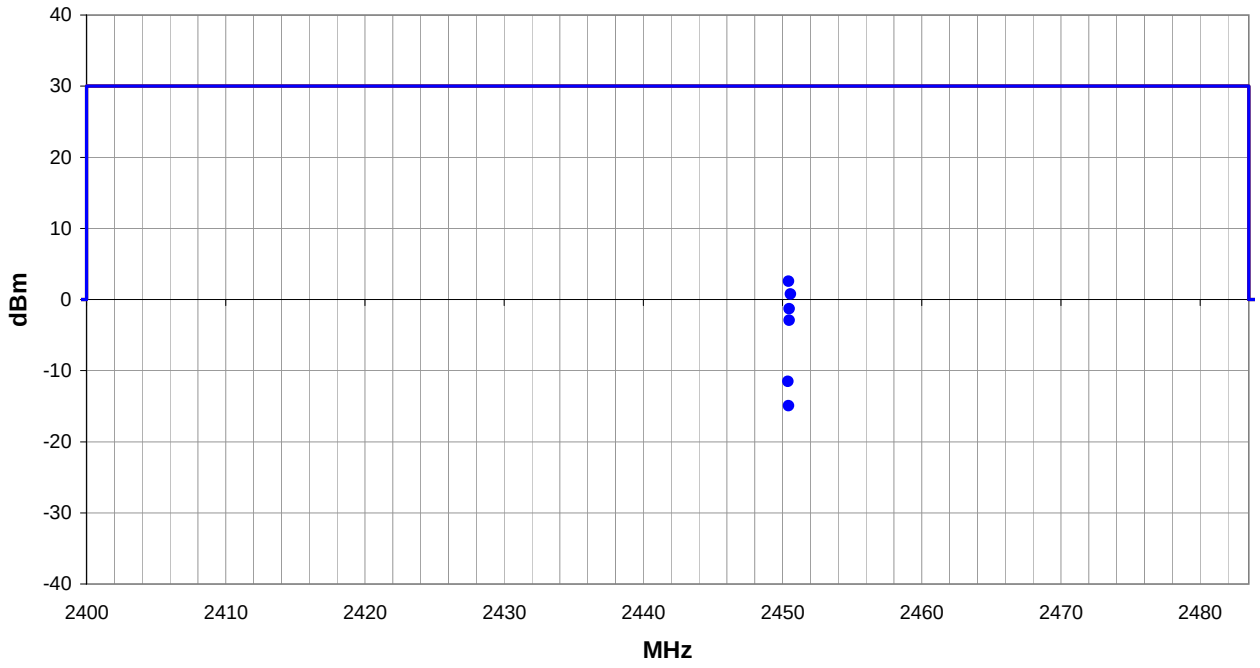
PSA-ESCI 2010.04.06
Version 2010.4.15

Output Power

Work Order:	GLBC0082	**Date:**	04/25/11		
Project:	None	**Temperature:**	21C		
Job Site:	OC10	**Humidity:**	43%		
Serial Number:	None	**Barometric Pres.:**	1018mb	**Tested by:**	Jeremiah Darden
EUT:	RF Remote Controller Model: RC100				
Configuration:	1				
Customer:	Technical Consumer Products, Inc.				
Attendees:	Leon Kogan (Global Certification Technologies, Inc.)				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmitting at 2450MHz				
Deviations:	None				
Comments:	Model RC100 powered by two AAA batteries only, and the lamp Receiver Model: RC123 was AC powered				

Test Specifications	**Test Method**
FCC 15.247:2011	ANSI C63.10: 2009

Run #	10	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



Freq (MHz)			Antenna Height (meters)	Azimuth (degrees)			Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
2450.449			1.5	300.0			Vert	PK	1.81E-03	2.6	30.0	-27.4	z
2450.569			1.1	263.0			Horz	PK	1.20E-03	0.8	30.0	-29.2	x
2450.485			1.0	359.0			Horz	PK	7.38E-04	-1.3	30.0	-31.3	y
2450.492			1.1	294.0			Vert	PK	5.10E-04	-2.9	30.0	-32.9	y
2450.390			2.0	255.0			Horz	PK	7.05E-05	-11.5	30.0	-41.5	z
2450.442			2.3	163.0			Vert	PK	3.22E-05	-14.9	30.0	-44.9	x

Band Edge Compliance

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	3/26/2010	15
Spectrum Analyzer	Agilent	E4446A	AAY	1/11/2011	12

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The spurious RF radiated emissions at the edges of the authorized bands were measured with the EUT set to only one band because that is the only frequency that will be used and allowed by the module. The channels closest to the band edges were selected. The EUT was transmitting at its only data rate available.

The spectrum was scanned across each band edge from at least 10 MHz below the band edge to 10 MHz above the band edge.

NORTHWEST EMC

Band Edge Compliance

XMit 2011.04.20
PsaTx 2011.04.21

EUT:	RF Remote Controller Model: RC100			Work Order:	GLBC0082
Serial Number:	None			Date:	04/25/11
Customer:	Technical Consumer Products, Inc.			Temperature:	21°C
Attendees:	Leon Kogan (Global Certification Technologies, Inc.)			Humidity:	43%
Project:	None			Barometric Pres.:	1018
Tested by:	Jeremiah Darden	Power:	Battery	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247:2011	ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

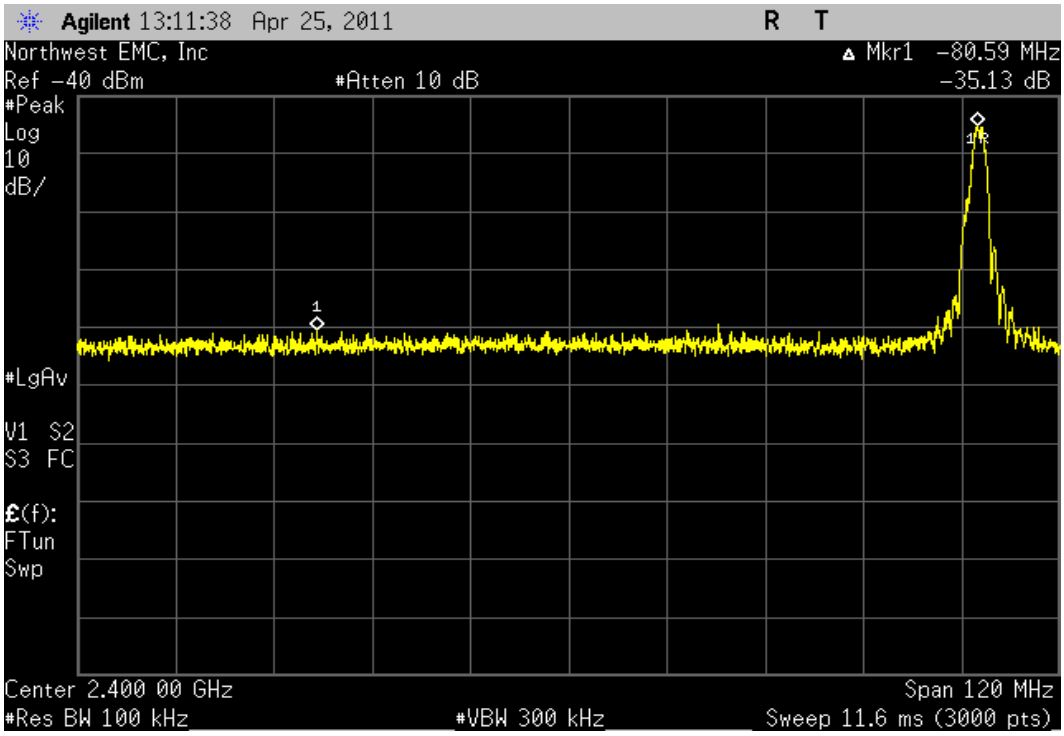
None

Configuration #	1	Signature

Channel	Value	Limit	Result
Low	-35.14 dBc	>=-20 dBc	Pass
High	-34.76 dBc	>=-20 dBc	Pass

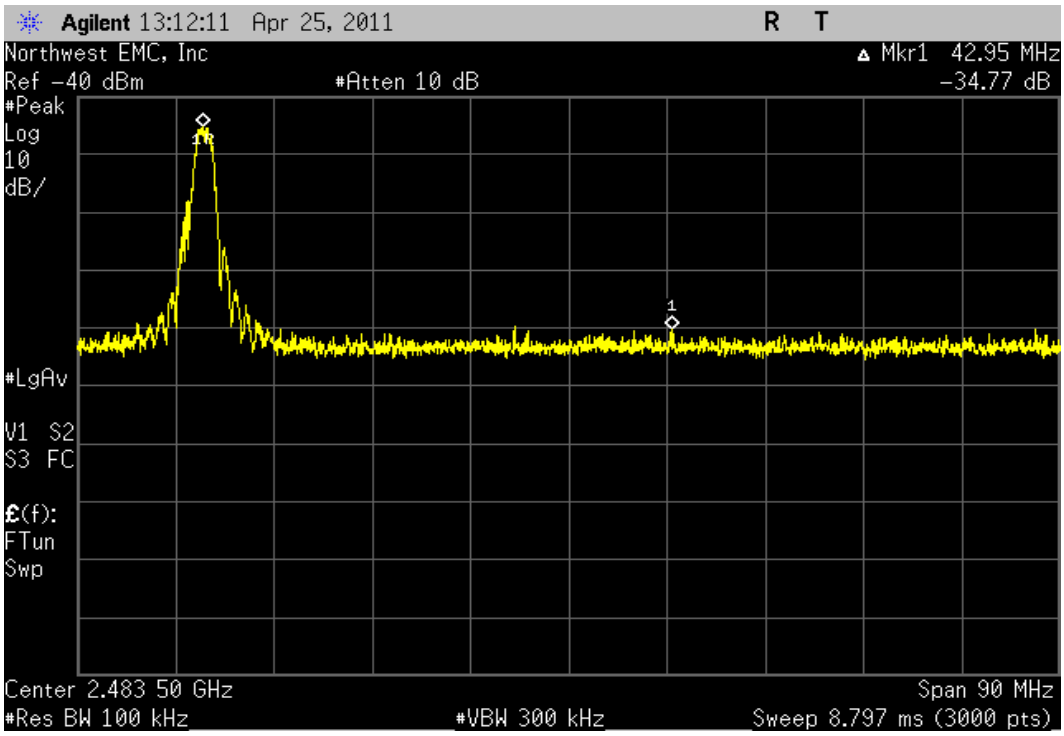
Low

				Value	Limit	Result
				-35.14 dBc	>=-20 dBc	Pass



High

				Value	Limit	Result
				-34.76 dBc	>=-20 dBc	Pass



Power Spectral Density

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24
Spectrum Analyzer	Agilent	E4446A	AAY	1/11/2011	12
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	3/26/2010	15

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The power spectral density measurements were measured with the EUT set to one channel since that is the only channel used in the band. The measurement was made using a radiated method since the antenna is integral. The EUT was transmitting at its maximum data rate for each modulation type available. While the average output power was measured as defined in section ANSI C63.10:2009, section 6.10.2.2, procedure 6.11.2.4. The final data was converted from a field strength to a direct value. Section 6.11.2.3 was followed. The spectrum analyzer was set as follows:

The emission peak was located and zoomed in on within the passband.

a) RBW = 3 kHz

b) VBW = 10 kHz

c) Span = 300 kHz

d) Sweep time = 100s

e) Trace set to MAX

f) The 1 hz Marker Noise function on the analyzer was used. The data was corrected to 3 kHz by adding 34.8 dB to the reading.

NORTHWEST EMC

Power Spectral Density

XMit 2011.04.20
PsaTx 2011.04.21

EUT:	RF Remote Controller Model: RC100			Work Order:	GLBC0082
Serial Number:	None			Date:	04/25/11
Customer:	Technical Consumer Products, Inc.			Temperature:	21°C
Attendees:	Leon Kogan (Global Certification Technologies, Inc.)			Humidity:	43%
Project:	None			Barometric Pres.:	1018
Tested by:	Jeremiah Darden	Power:	Battery	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247:2011	ANSI C63.10:2009

COMMENTS

Z position

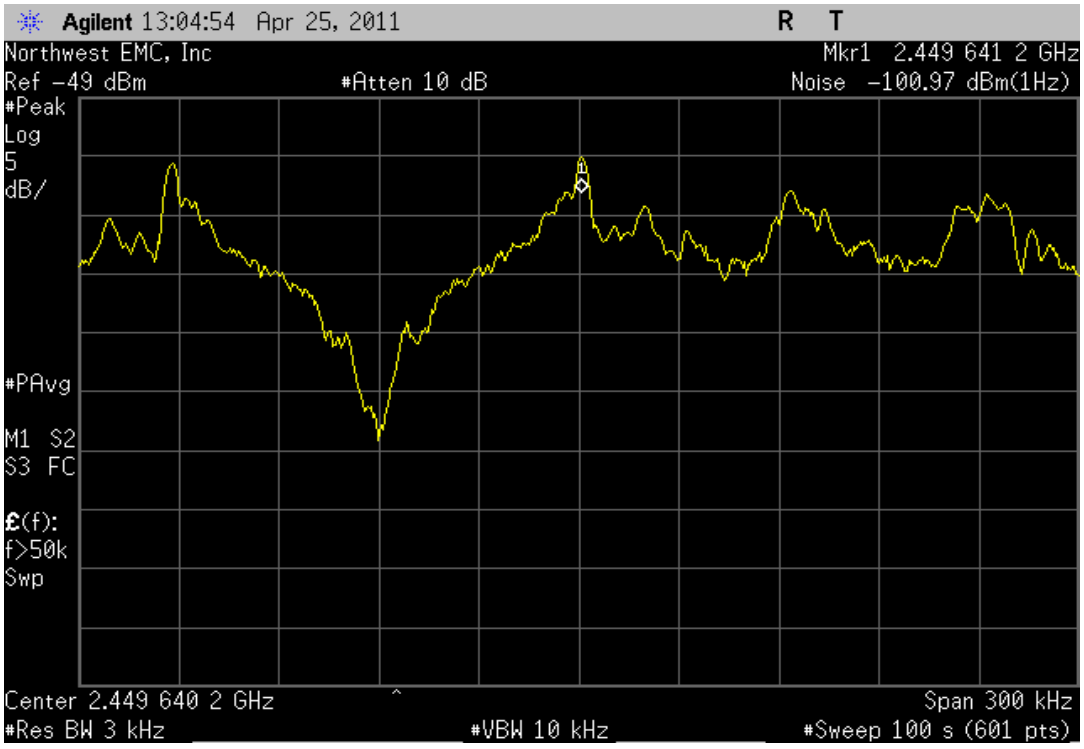
DEVIATIONS FROM TEST STANDARD

None

Configuration #	1	Signature

Channel	Meter Reading (dBm/Hz)	Meter Reading (dBm/3kHz)	Factor dB	Field Str PSD (dBm/3kHz/m)	Value (dBm / 3 kHz)	Limit	Result
Mid	-100.97	-65.97	33.6	-32.37	-20.6	<=8dBm/3kHz	Pass

Meter Reading (dBm/Hz)	Meter Reading (dBm/3kHz)	Factor dB	Field Str PSD (dBm/3kHz/m)	Value (dBm / 3 kHz)	Limit	Result
-100.97	-65.97	33.6	-32.37	-20.6	<=8dBm/3kHz	Pass



SPURIOUS RADIATED EMISSIONS

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 test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting at 2450MHz

POWER SETTINGS INVESTIGATED

120VAC/60Hz (Rx) and 3.0 VDC (Tx)

CONFIGURATIONS INVESTIGATED

GLBC0082 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26000 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator, 20db, 'SMA'	Weinschel Corp	4H-20	AWB	3/19/2010	15 mo
High Pass Filter	Micro-Tronics	HPM50111	HFM	3/17/2010	24 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	5/3/2010	12 mo
Antenna, Horn	EMCO	3160-09	AHN	NCR	0 mo
OC floating Cable	N/A	18-26GHz RE Cables	OCK	5/3/2010	12 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	11/17/2010	12 mo
Antenna, Horn	ETS	3160-08	AHT	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	11/17/2010	12 mo
Antenna, Horn	ETS	3160-07	AHR	NCR	0 mo
OC 10 Cables	N/A	12-18GHz RE Cables	OCO	3/26/2010	15 mo
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24 mo
Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	3/26/2010	15 mo
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	3/26/2010	15 mo
Antenna, Biconilog	EMCO	3142	AXJ	3/24/2010	24 mo
OC10 Cables	N/A	10kHz-1GHz RE Cables	OCH	4/1/2010	15 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOM	4/1/2010	15 mo
Spectrum Analyzer	Agilent	E4446A	AAY	1/11/2011	12 mo

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

Measurements were made using the IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth was used.

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for one channel because the unit only transmits on one frequency. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

NORTHWEST

EMC SPURIOUS RADIATED EMISSIONS

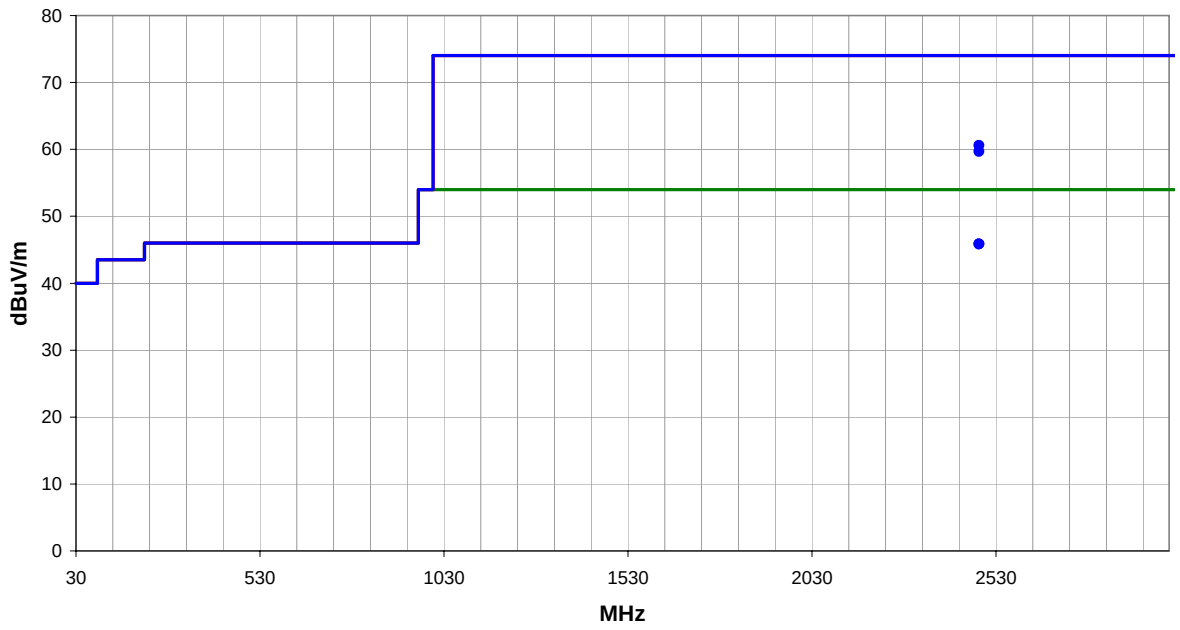
PSA-ESCI 2010.04.06
Version 2010.4.15

Work Order:	GLBC0082	**Date:**	04/25/11		
Project:	None	**Temperature:**	21C		
Job Site:	OC10	**Humidity:**	43%		
Serial Number:	None	**Barometric Pres.:**	1018mb	**Tested by:**	Jeremiah Darden

EUT:	RF Remote Controller Model: RC100
Configuration:	1
Customer:	Technical Consumer Products, Inc.
Attendees:	Leon Kogan (Global Certification Technologies, Inc.)
EUT Power:	120VAC/60Hz
Operating Mode:	Transmitting at 2450MHz
Deviations:	None
Comments:	Z position. Model RC100 powered by two AAA batteries only, and the lamp Receiver Model: RC123 was AC powered

Test Specifications	**Test Method**
FCC 15.247:2011	ANSI C63.10:2009

Run #	8	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
2483.504	24.7	1.2	1.0	223.0	3.0	20.0	Vert	AV	0.0	45.9	54.0	-8.1
2483.514	24.7	1.2	1.0	358.0	3.0	20.0	Horz	AV	0.0	45.9	54.0	-8.1
2483.481	39.4	1.2	1.0	223.0	3.0	20.0	Vert	PK	0.0	60.6	74.0	-13.4
2483.498	38.5	1.2	1.0	358.0	3.0	20.0	Horz	PK	0.0	59.7	74.0	-14.3

NORTHWEST

EMC SPURIOUS RADIATED EMISSIONS

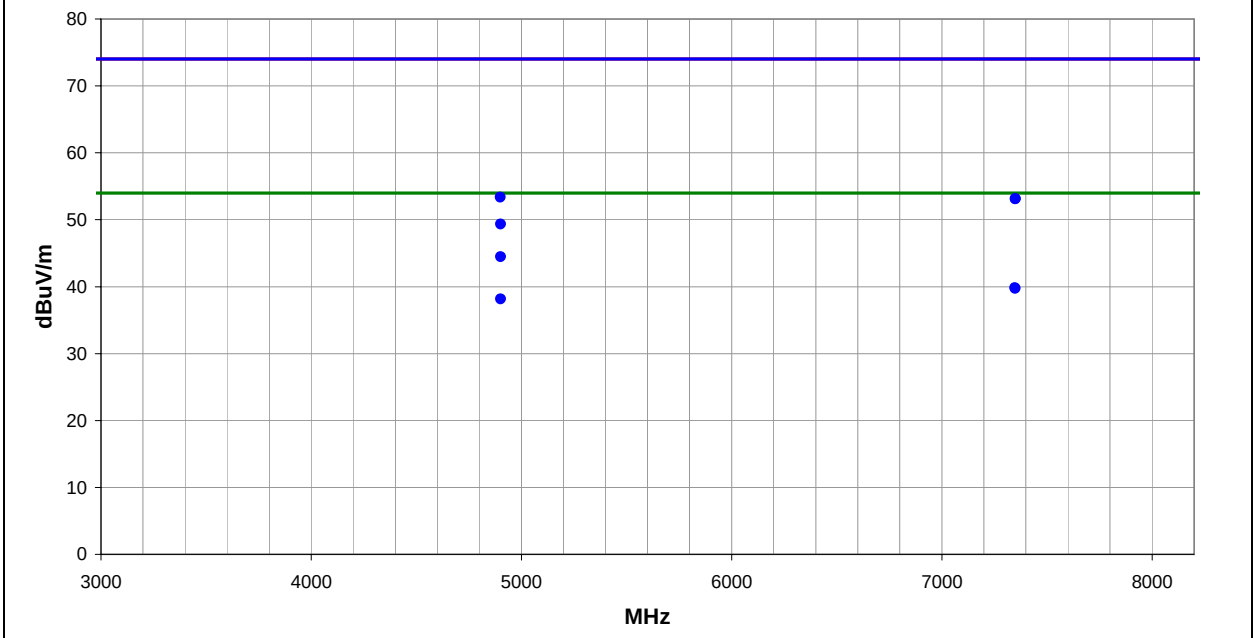
PSA-ESCI 2010.04.06
Version 2010.4.15

Work Order:	GLBC0082	**Date:**	04/25/11		
Project:	None	**Temperature:**	21C		
Job Site:	OC10	**Humidity:**	43%		
Serial Number:	None	**Barometric Pres.:**	1018mb	**Tested by:**	Jeremiah Darden

EUT:	RF Remote Controller Model: RC100
Configuration:	1
Customer:	Technical Consumer Products, Inc.
Attendees:	Leon Kogan (Global Certification Technologies, Inc.)
EUT Power:	120VAC/60Hz
Operating Mode:	Transmitting at 2450MHz
Deviations:	None
Comments:	Z position. Model RC100 powered by two AAA batteries only, and the lamp Receiver Model: RC123 was AC powered

Test Specifications	**Test Method**
FCC 15.247:2011	ANSI C63.10:2009

Run #	7	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
4901.151	34.5	10.0	1.2	174.0	3.0	0.0	Horz	AV	0.0	44.5	54.0	-9.5
7347.817	25.4	14.4	3.7	193.0	3.0	0.0	Horz	AV	0.0	39.8	54.0	-14.2
7348.550	25.3	14.4	1.0	254.0	3.0	0.0	Vert	AV	0.0	39.7	54.0	-14.3
4901.137	28.2	10.0	1.2	62.0	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8
4899.051	43.4	9.9	1.2	174.0	3.0	0.0	Horz	PK	0.0	53.3	74.0	-20.7
7351.283	38.7	14.4	1.0	254.0	3.0	0.0	Vert	PK	0.0	53.1	74.0	-20.9
7348.450	38.7	14.4	3.7	193.0	3.0	0.0	Horz	PK	0.0	53.1	74.0	-20.9
4900.970	39.4	10.0	1.2	62.0	3.0	0.0	Vert	PK	0.0	49.4	74.0	-24.6

NORTHWEST

EMC SPURIOUS RADIATED EMISSIONS

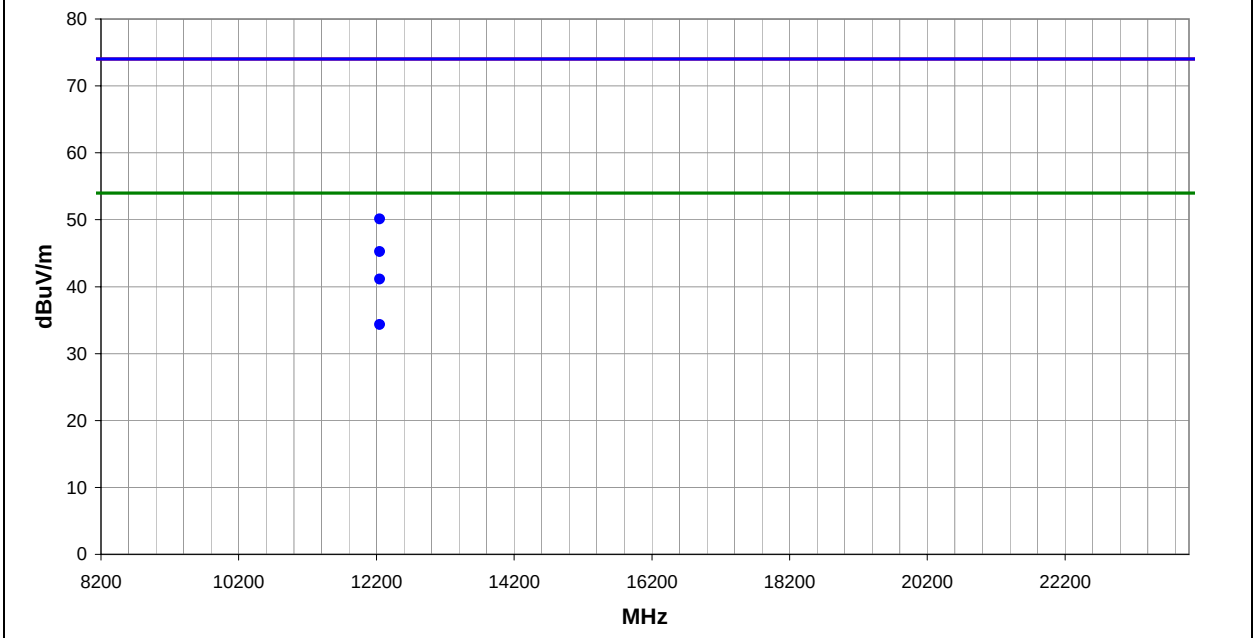
PSA-ESCI 2010.04.06
Version 2010.4.15

Work Order:	GLBC0082	**Date:**	04/25/11		
Project:	None	**Temperature:**	21C		
Job Site:	OC10	**Humidity:**	43%		
Serial Number:	None	**Barometric Pres.:**	1018mb	**Tested by:**	Jeremiah Darden

EUT:	RF Remote Controller Model: RC100
Configuration:	1
Customer:	Technical Consumer Products, Inc.
Attendees:	Leon Kogan (Global Certification Technologies, Inc.)
EUT Power:	120VAC/60Hz
Operating Mode:	Transmitting at 2450MHz
Deviations:	None
Comments:	Z position. Model RC100 powered by two AAA batteries only, and the lamp Receiver Model: RC123 was AC powered

Test Specifications	**Test Method**
FCC 15.247:2011	ANSI C63.10:2009

Run #	9	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
12247.840	47.8	-6.7	1.2	234.0	3.0	0.0	Vert	AV	0.0	41.1	54.0	-12.9
12247.820	41.0	-6.7	1.2	40.0	3.0	0.0	Horz	AV	0.0	34.3	54.0	-19.7
12247.780	56.8	-6.7	1.2	234.0	3.0	0.0	Vert	PK	0.0	50.1	74.0	-23.9
12247.520	51.9	-6.7	1.2	40.0	3.0	0.0	Horz	PK	0.0	45.2	74.0	-28.8