Technical Consumer Products, Inc.

Remote Wireless CFL
Model: RC223 (TCP Cat. Item 60123)

FCC 15.247:2012

FCC 15.207:2012

FCC 15.205:2012

Report #: GLBC0098

Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

Last Date of Test: November 13, 2012
Technical Consumer Products, Inc.
Remote Wireless CFL
Model: RC223 (TCP Cat. Item 60123)

Emissions

Test Description	Specification	Test Method	Pass/Fail
Duty Cycle	FCC 15.247:2012	ANSI C63.10:2009	Pass
Occupied Bandwidth	FCC 15.247:2012	ANSI C63.10:2009	Pass
Output Power	FCC 15.247:2012	ANSI C63.10:2009	Pass
Band Edge Compliance	FCC 15.247:2012	ANSI C63.10:2009	Pass
Power Spectral Density	FCC 15.247:2012	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.247:2012	ANSI C63.10:2009	Pass
AC Powerline Conducted Emissions	FCC 15.207:2012	ANSI C63.10:2009	Pass
Restricted Bands	FCC 15.205:2012	ANSI C63.10:2009	Pass

Deviations From Test Standards

None

Approved By:

Tim O'Shea, Operations Manager

NVLAP Lab Code: 200676-0

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).

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.

NORTHWEST EMC
REV 2012.08.02

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

NORTHWEST EMC

REV 2012.05.24

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

KCC / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Hong Kong

OFTA – Recognized by OFTA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

Russia

GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

SCOPE

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

MEASUREMENT UNCERTAINTY

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

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 (K=2) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

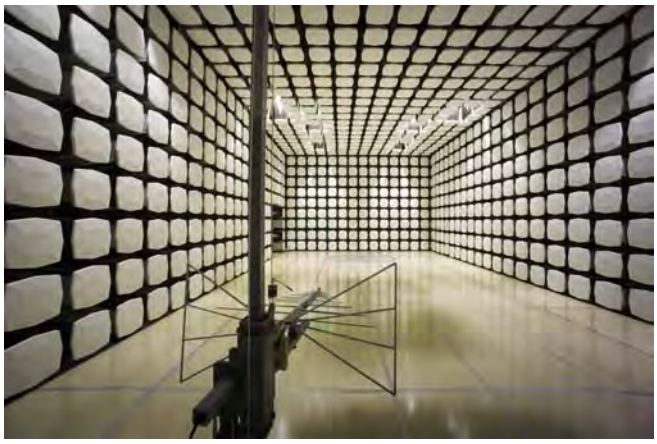
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

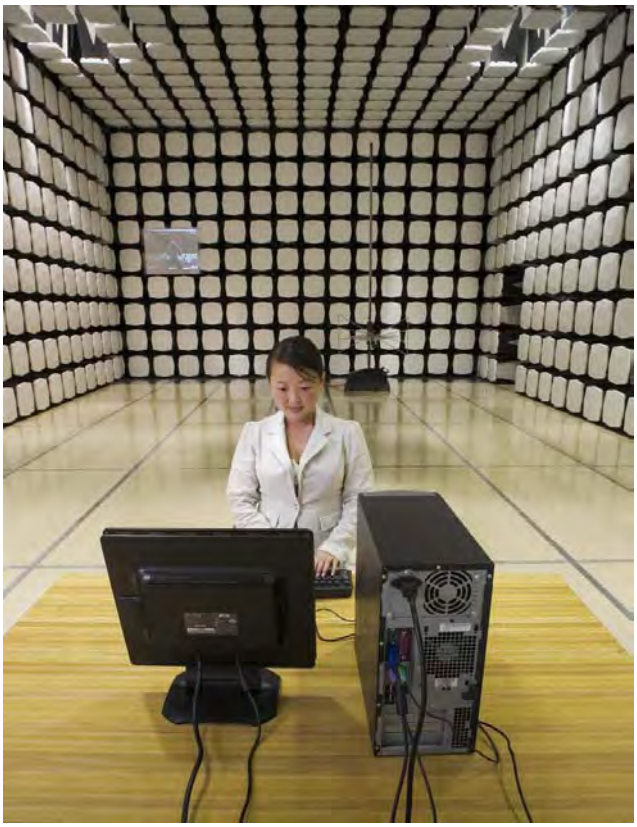
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	4.00	-4.00
AC Powerline Conducted Emissions (dB)	2.70	-2.70

LOCATIONS

REV 2012.08.03

Oregon	California	New York	Minnesota	Washington
Labs EV01-EV12 22975 NW Evergreen Pkwy, #400 Hillsboro, OR 97124 (503) 844-4066	Labs OC01-OC13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs WA01-WA04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Labs MN01-MN08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Labs SU01-SU07 14128 339th Ave. SE Sultan, WA 98294 (360) 793-8675
VCCI				
A-0108	A-0029		A-0109	A-0110
Industry Canada				
2834D-1, 2834D-*2*	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1





PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

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:	RC223 (TCP Cat. Item 60123)
First Date of Test:	November 12, 2012
Last Date of Test:	November 13, 2012
Receipt Date of Samples:	November 12, 2012
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

The Technical Consumer Products Remote Wireless CFL RC223 (TCP Cat. Item 60123) includes 23W CFL and an IEEE802.15.4 standards-based wireless transceiver that transmits and receives data over the air in the unlicensed 2.4GHz band. The wireless transceiver comprises a 2.45GHz radio, modem, a baseband processor, a security coprocessor and PHY controller. The transceiver operation frequency band is 2405-2480 MHz, digital modulation type O-QPSK. The PCB trace antenna's gain is nominally 1.1 dBi.

Testing Objective:

To demonstrate compliance to FCC 15.247 requirements

CONFIGURATIONS

Configuration GLBC0098- 1

Software/Firmware Running during test	
Description	**Version**
Bulb Evaluation Tool	1.2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote Wireless CFL	Technical Consumer Products, Inc.	RC223 (TCP Cat. Item 60123)	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
2.4GHz Antenna	Generic	2.4GHz	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Toshiba	PSAA8U-02200U	46170208Q
Laptop PS	Toshiba	SADP-75PB A	PA3469U-1ACA
Evaluation Kit	NXP	JN5148-EK010	None
Evaluation Kit PS	Ktec	KSAS006050100VUD	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable	No	1.5m	No	AC Mains	EUT
Antenna Cable	No	4.5m	No	Antenna	Evaluation Kit
USB Cable	Yes	1.8m	No	Laptop	Evaluation Kit
DC Cable	No	1.5m	No	AC Mains	Evaluation Kit
AC Cable	No	1.8m	No	AC Mains	Laptop PS
DC Cable	No	1.5m	No	Laptop	Laptop PS
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

MODIFICATIONS

WTD 12.5.23

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	11/12/2012	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.
2	11/12/2012	Duty Cycle	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	11/12/2012	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.
4	11/13/2012	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.
5	11/13/2012	Power Spectral Density	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.
6	11/13/2012	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.
7	11/13/2012	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Duty Cycle

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	10/10/2012	12
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	12

TEST DESCRIPTION

For software controlled or pre-programmed devices, the manufacturer shall declare the duty cycle class or classes for the equipment under test. For manually operated or event dependant devices, with or without software controlled functions, the manufacturer shall declare whether the device once triggered, follows a pre-programmed cycle, or whether the transmission is constant until the trigger is released or manually reset. The manufacturer shall also give a description of the application for the device and include a typical usage pattern. The typical usage pattern as declared by the manufacturer shall be used to determine the duty cycle and hence the duty class.

Where an acknowledgement is required, the additional transmitter on-time shall be included and declared by the manufacturer.

To derive average emission measurements, a duty cycle correction factor per 15.35(c) was utilized:

Duty Cycle = On time/100 milliseconds (or the period, whichever is less)
Where “On time” = N1L1 +N2L2 +….

Where N1 is the number of type 1 pulses, L1 is length of type 1 pulses, N2 is the number of type 2 pulses, L2 is the length of type 2 pulses, etc.

Therefore, Duty Cycle = (N1L1 +N2L2 +…)/100mS. Where T is the period of the pulse train.

The measured value for the EUT’s low channel is as follows:
Period = 8.184 mSec
Pulsewidth of Type 1 Pulse = 0.165967 mSec
Number of Type 1 Pulses = 5
Duty Cycle = 20*log ((0.165967*5)/8.184ms) = 19.88dB

The measured value for the EUT’s mid & high channels are as follows:
Duty Cycle = 20*log ((0.160433*5)/8.178ms) = 20.17dB

Duty Cycle

EUT:	RC223 (TCP Cat. Item 60123)			**Work Order:**	GLBC0098
Serial Number:	None			**Date:**	11/12/12
Customer:	Technical Consumer Products, Inc.			**Temperature:**	20.4 C°C
Attendees:	Leon Kogan, Global Certification Technologies			**Humidity:**	26%
Project:	None			**Barometric Pres.:**	1017
Tested by:	Johnny Candelas	**Power:**	110VAC/60Hz	**Job Site:**	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

Duty Cycle Correction Factor to be applied to average measurements.

DEVIATIONS FROM TEST STANDARD

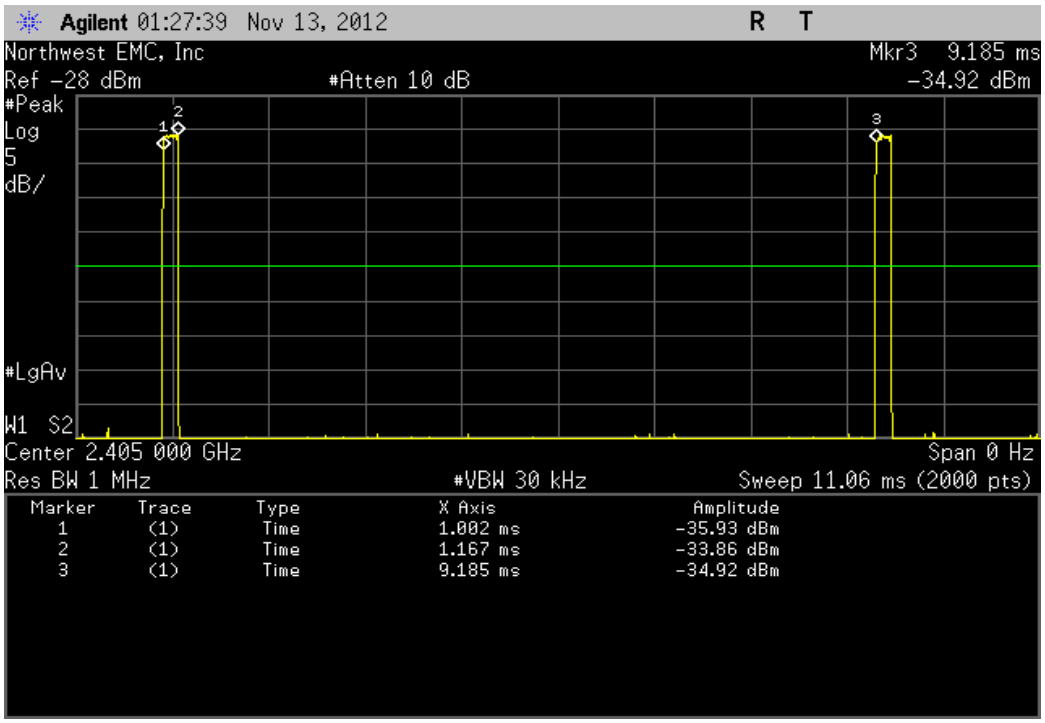
None

Configuration #	1	Signature

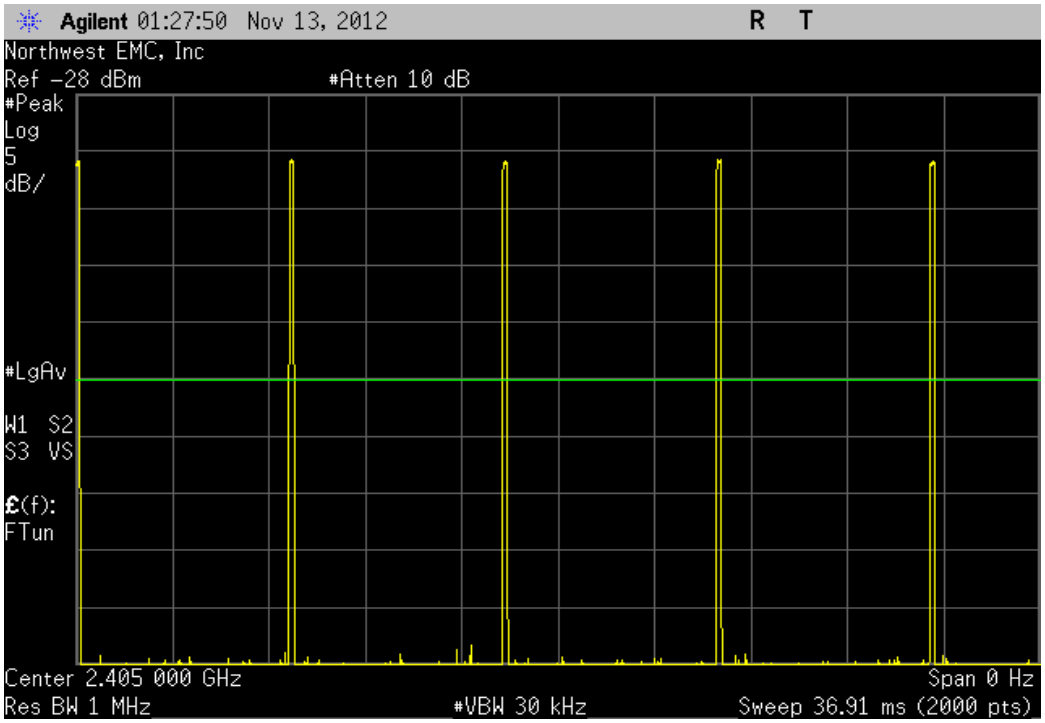
Channel	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Duty Cycle Correction Factor
Low	165.967 uS	8.184 mS	1	2	N/A	-19.88
Low	N/A	N/A	5	N/A	N/A	
Mid	160.433 uS	8.178 mS	1	2	N/A	-20.17
Mid	N/A	N/A	5	N/A	N/A	
High	160.433 uS	8.178 mS	1	2	N/A	-20.17
High	N/A	N/A	5	N/A	N/A	

Duty Cycle

Low						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Duty Cycle Correction Factor
	165.967 uS	8.184 mS	1	2	N/A	-19.88

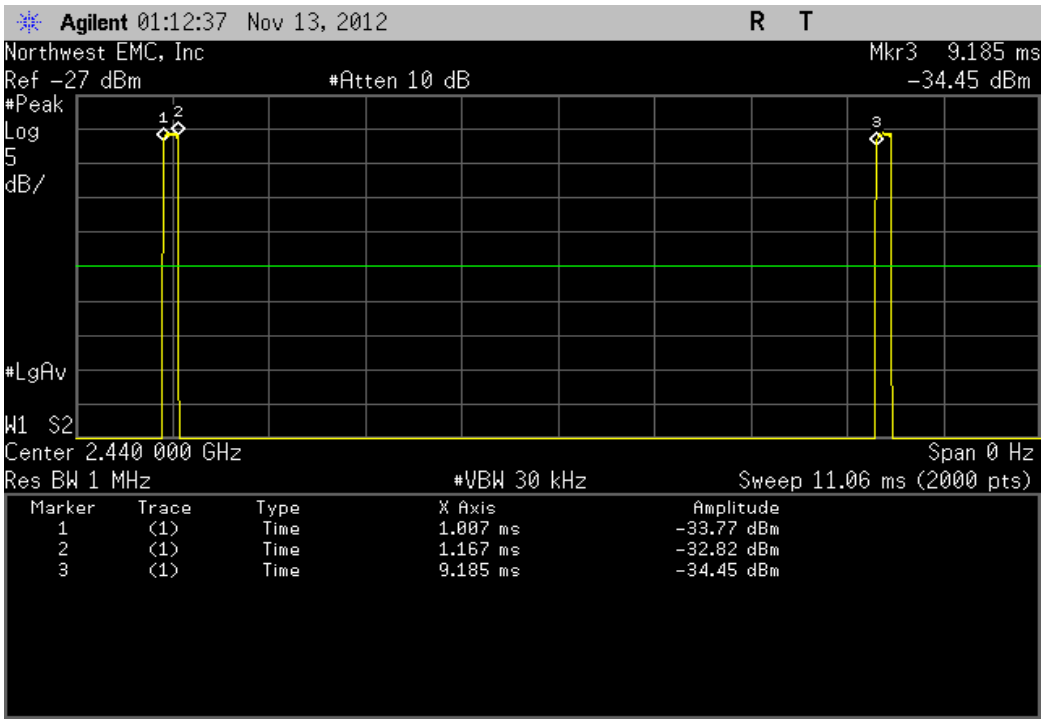


Low						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Duty Cycle Correction Factor
	N/A	N/A	5	N/A	N/A	

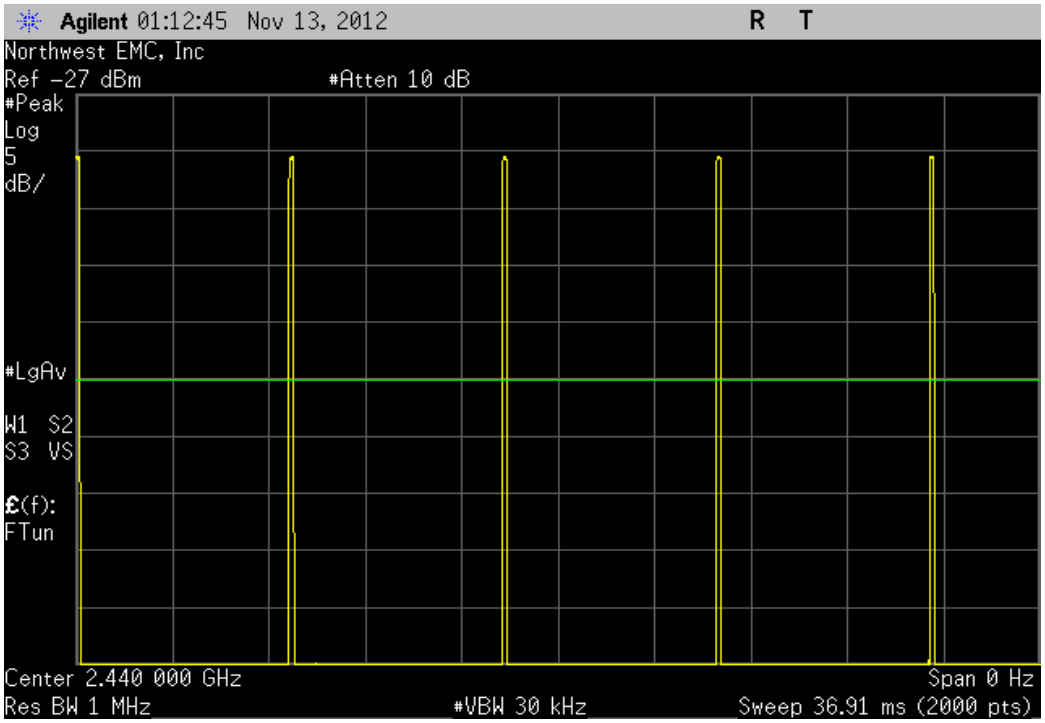


Duty Cycle

Mid						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Duty Cycle Correction Factor
	160.433 uS	8.178 mS	1	2	N/A	-20.17

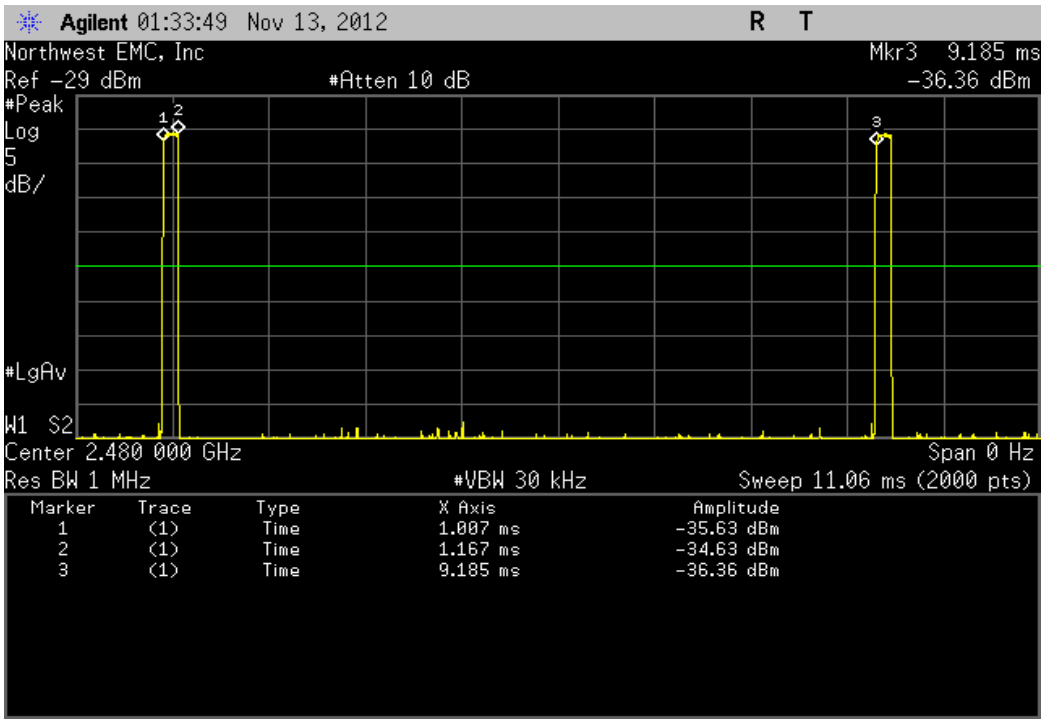


Mid						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Duty Cycle Correction Factor
	N/A	N/A	5	N/A	N/A	

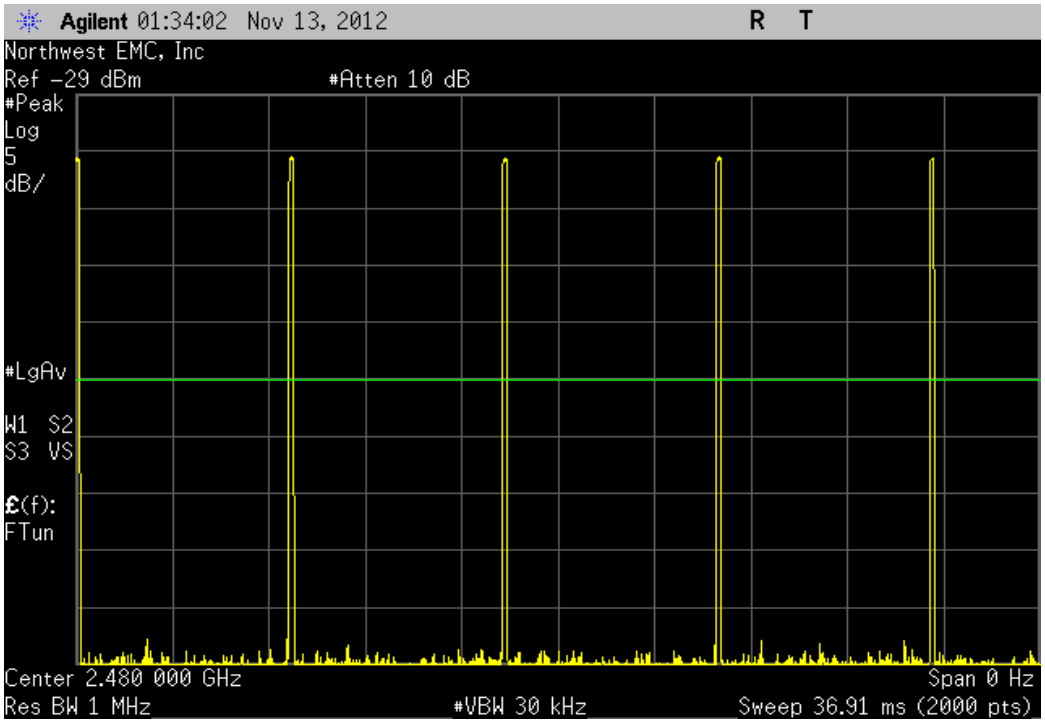


Duty Cycle

High						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Duty Cycle Correction Factor
	160.433 uS	8.178 mS	1	2	N/A	-20.17



High						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Duty Cycle Correction Factor
	N/A	N/A	5	N/A	N/A	



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
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/10/2012	12
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	12

TEST DESCRIPTION

The 6dB occupied bandwidth was measured. The 26 dB (99.9%) emission bandwidth (EBW) was also measured at the same time.

The EUT was set to low, medium and high transmit frequencies. 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 the data rate(s) listed in the datasheet.

Occupied Bandwidth

EUT:	RC223 (TCP Cat. Item 60123)			**Work Order:**	GLBC0098
Serial Number:	None			**Date:**	11/13/12
Customer:	Technical Consumer Products, Inc.			**Temperature:**	20.4 C°C
Attendees:	Leon Kogan, Global Certification Technologies			**Humidity:**	26%
Project:	None			**Barometric Pres.:**	1017
Tested by:	Johnny Candelas	**Power:**	120VAC/60Hz	**Job Site:**	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

Configuration #	1	Signature

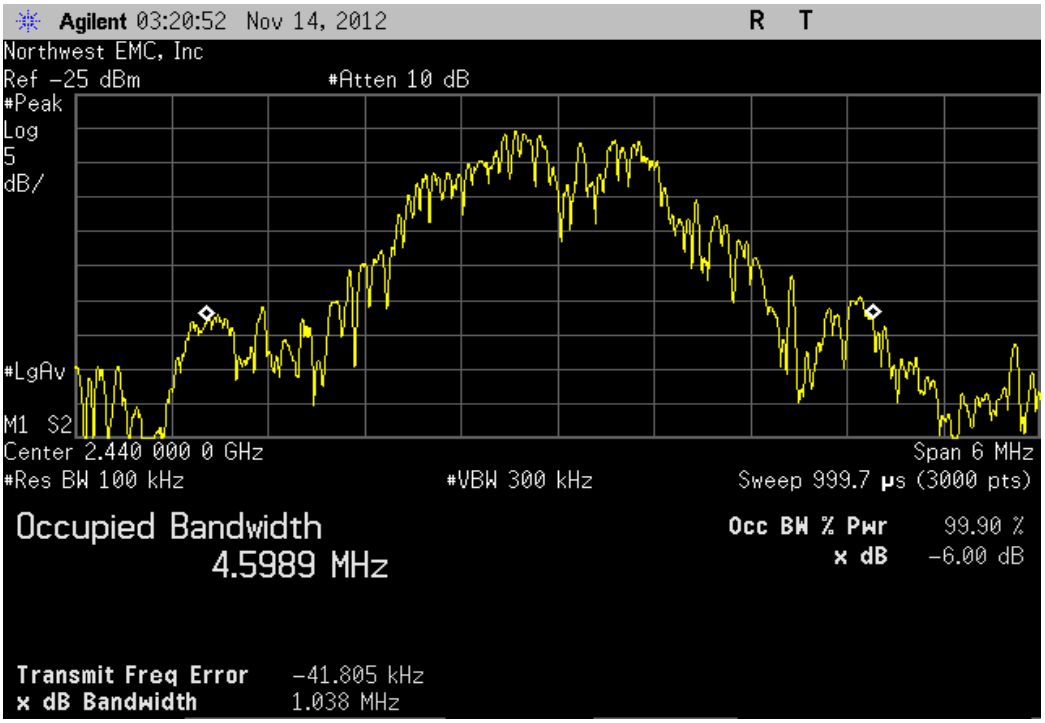
Channel	Value	Limit	Result
Low	1.24 MHz	> 500 kHz	Pass
Mid	1.038 MHz	> 500 kHz	Pass
High	1.221 MHz	> 500 kHz	Pass

Low

				Value	Limit	Result
				1.24 MHz	> 500 kHz	Pass

Mid

				Value	Limit	Result
				1.038 MHz	> 500 kHz	Pass



Occupied Bandwidth

High						
				Value	Limit	Result
				1.221 MHz	> 500 kHz	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

Continuously Transmitting

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

GLBC0098 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	2400 MHz	Stop Frequency	2483.5 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
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24 mo
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/10/2012	12 mo
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	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

TEST DESCRIPTION

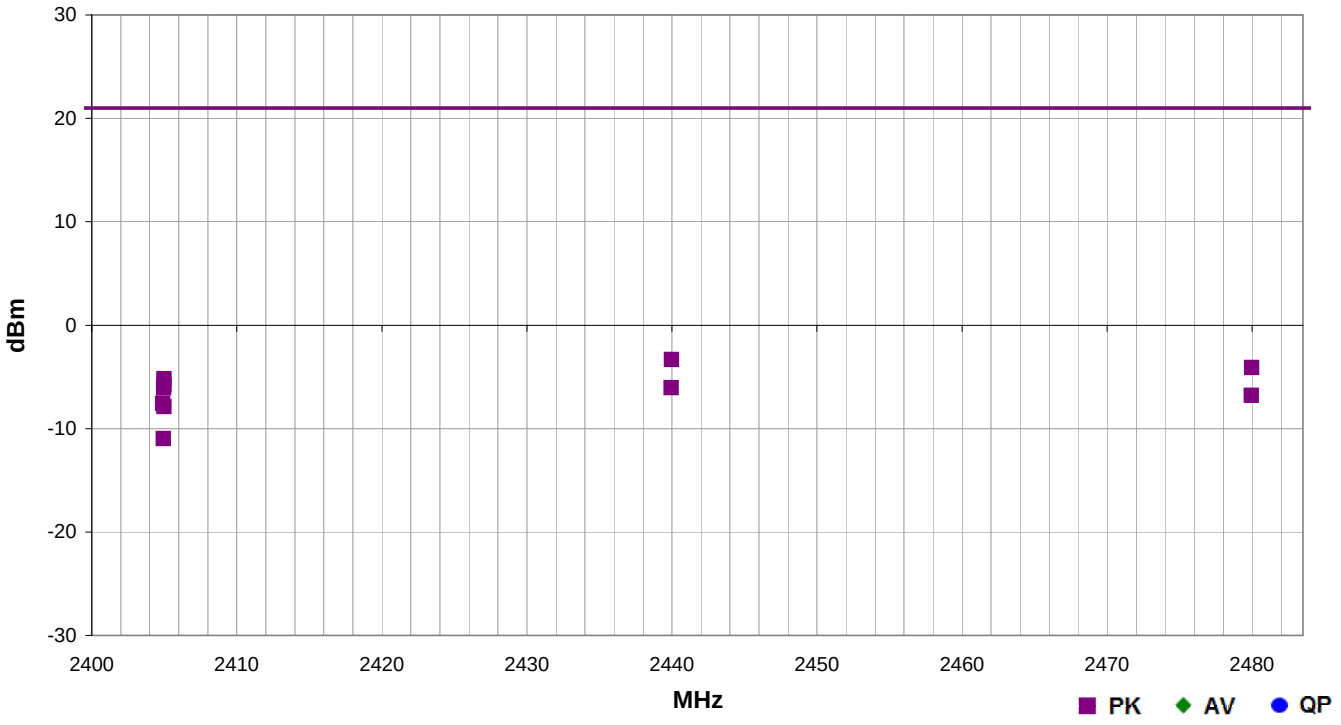
The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and orientation in 3 orthogonal planes, the EUT and/or associated antenna is positioned in 3 orthogonal planes (per ANSI C63.10).

OUTPUT POWER

Work Order:	GLBC0098	**Date:**	11/12/12		
Project:	None	**Temperature:**	20.5 °C		
Job Site:	OC10	**Humidity:**	25.2% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnny Candelas
EUT:	RC223 (TCP Cat. Item 60123)				
Configuration:	1				
Customer:	Technical Consumer Products, Inc.				
Attendees:	Leon Kogan, Global Certification Technologies				
EUT Power:	110VAC/60Hz				
Operating Mode:	Continuously Transmitting				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.247:2012	ANSI C63.10:2009

Run #	1	**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
	2439.967	1.2	348.0	Vert	PK	4.64E-04	-3.3	21.0	-24.3	X-Axis, Ch 18
	2479.973	1.2	359.0	Vert	PK	3.90E-04	-4.1	21.0	-25.1	X-Axis, Ch 26
	2404.989	1.8	309.0	Vert	PK	3.04E-04	-5.2	21.0	-26.2	X-Axis, Ch 11
	2404.990	1.2	18.0	Horz	PK	2.65E-04	-5.8	21.0	-26.8	X-Axis, Ch 11
	2439.953	1.2	177.0	Horz	PK	2.49E-04	-6.0	21.0	-27.0	X-Axis, Ch 18
	2404.964	1.2	305.0	Horz	PK	2.47E-04	-6.1	21.0	-27.1	Z-Axis, Ch 11
	2479.947	2.5	70.0	Horz	PK	2.10E-04	-6.8	21.0	-27.8	X-Axis, Ch 26
	2404.901	1.2	163.0	Vert	PK	1.75E-04	-7.6	21.0	-28.6	Y-Axis, Ch 11
	2404.977	1.2	167.0	Horz	PK	1.63E-04	-7.9	21.0	-28.9	Y-Axis, Ch 11
	2404.948	1.8	248.0	Vert	PK	7.99E-05	-11.0	21.0	-32.0	Z-Axis, Ch 11

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	10/10/2012	12
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	12

TEST DESCRIPTION

The spurious RF emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. 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 the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

Band Edge Compliance

EUT:	RC223 (TCB Cat. Item 60123)			**Work Order:**	GLBC0098
Serial Number:	None			**Date:**	11/13/12
Customer:	Technical Consumer Products, Inc.			**Temperature:**	20.4 C°C
Attendees:	Leon Kogan, Global Certification Technologies			**Humidity:**	26%
Project:	None			**Barometric Pres.:**	1017
Tested by:	Johnny Candelas	**Power:**	120VAC/60Hz	**Job Site:**	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

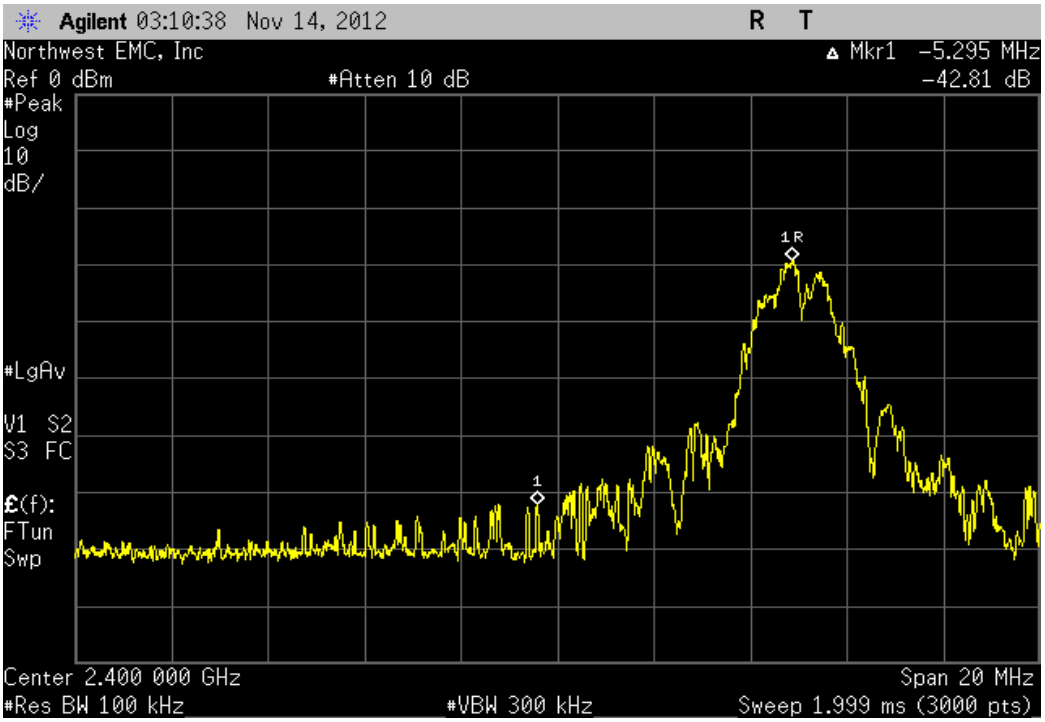
Configuration #	1	Signature

Channel	Value	Limit	Result
Low	-42.81 dBc	≤ -20 dBc	Pass
High	-39.47 dBc	≤ -20 dBc	Pass

Band Edge Compliance

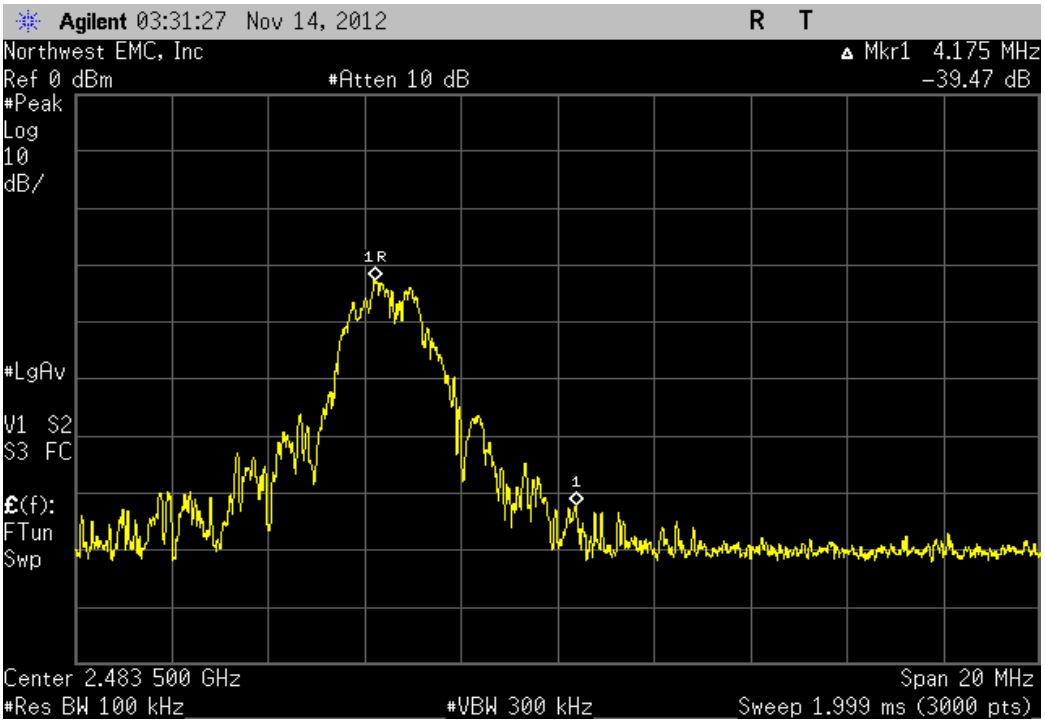
Low

				Value	Limit	Result
				-42.81 dBc	≤ -20 dBc	Pass



High

				Value	Limit	Result
				-39.47 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
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/10/2012	12
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	12

TEST DESCRIPTION

The maximum power spectral density measurements were measured with the EUT set to the required transmit frequencies in each 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 the lowest, middle, and maximum data rate for each modulation type available.

Per the procedure outlined in FCC KDB 558074 D01 DTS Measurement Section 5.3.1, the spectrum analyzer was used as follows:

- RBW = 100 kHz
- VBW = 300 kHz
- Detector = Peak (to match method used for power measurement)
- Trace = Max hold

The observed power level is then scaled to an equivalent value in 3 kHz by adding a Bandwidth Correction Factor (BWCF) where:

BWCF = 10*LOG (3 kHz / 100 kHz) = -15.2 dB

Power Spectral Density

EUT:	RC223 (TCP Cat. Item 60123)			Work Order:	GLBC0098
Serial Number:	None			Date:	11/13/12
Customer:	Technical Consumer Products, Inc.			Temperature:	20.4 C°C
Attendees:	Leon Kogan, Global Certification Technologies			Humidity:	26%
Project:	None			Barometric Pres.:	1017
Tested by:	Johnny Candelas	Power:	120VAC/60Hz	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

Transmitter has very low output power. The measurement was made in a radiated configuration in a semi-anechoic chamber with pre-amp bypassed. No offset required.

DEVIATIONS FROM TEST STANDARD

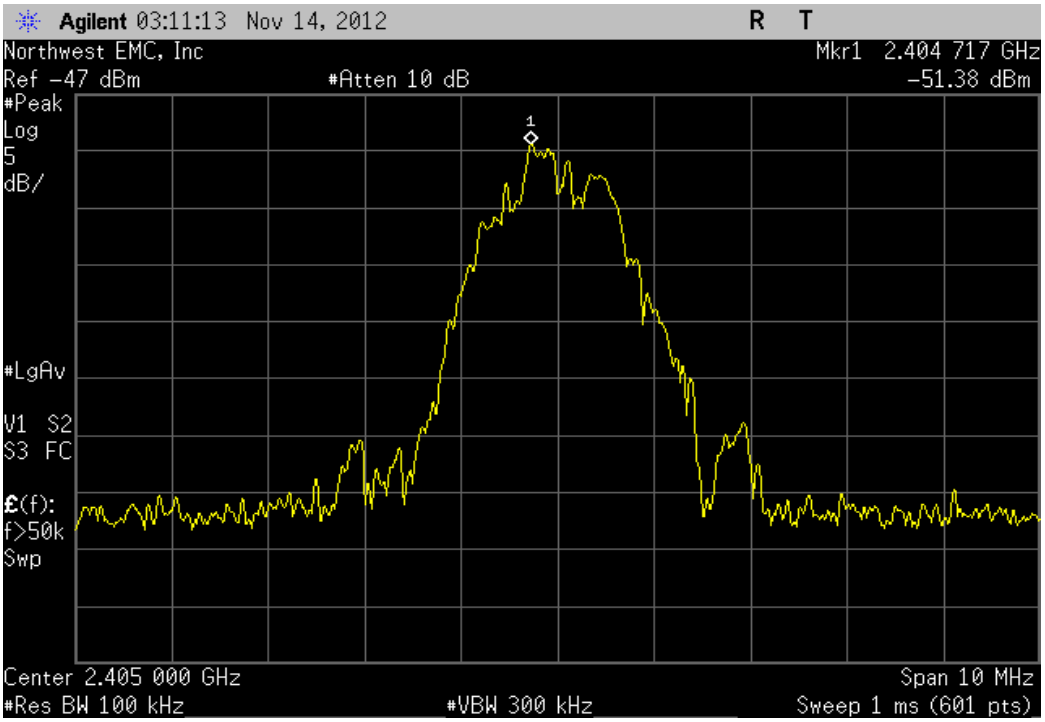
None

Configuration #	1	Signature

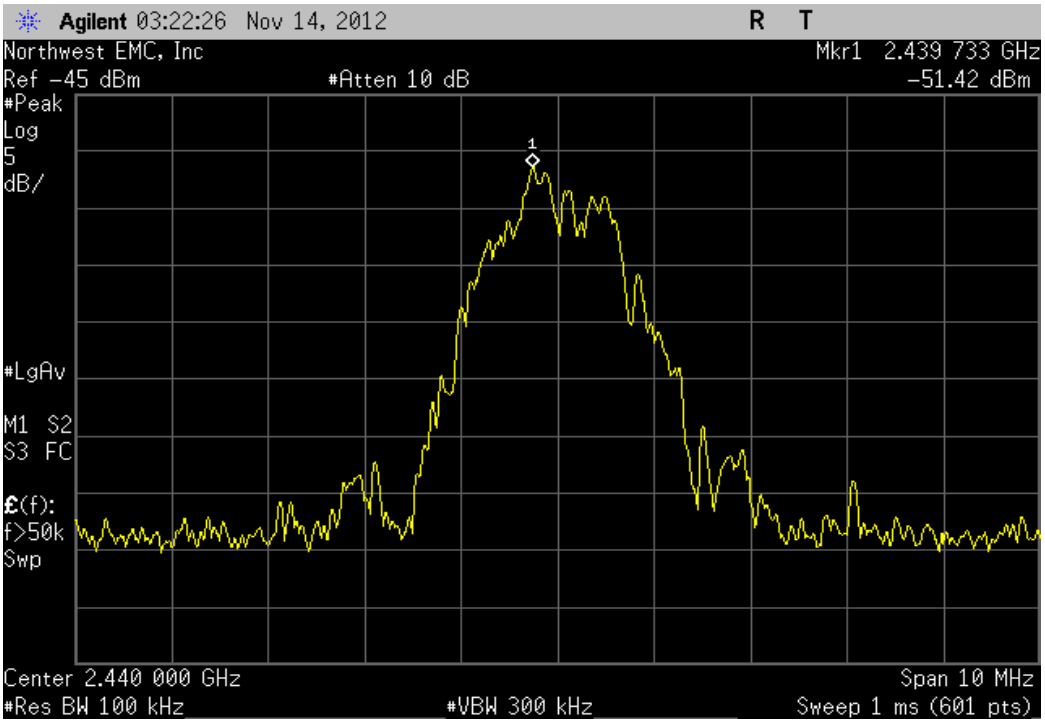
Channel	Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
Low	-51.385	-15.2	-66.585	8	Pass
Mid	-51.425	-15.2	-66.625	8	Pass
High	-53.81	-15.2	-69.01	8	Pass

Power Spectral Density

Low						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-51.385	-15.2	-66.585	8	Pass

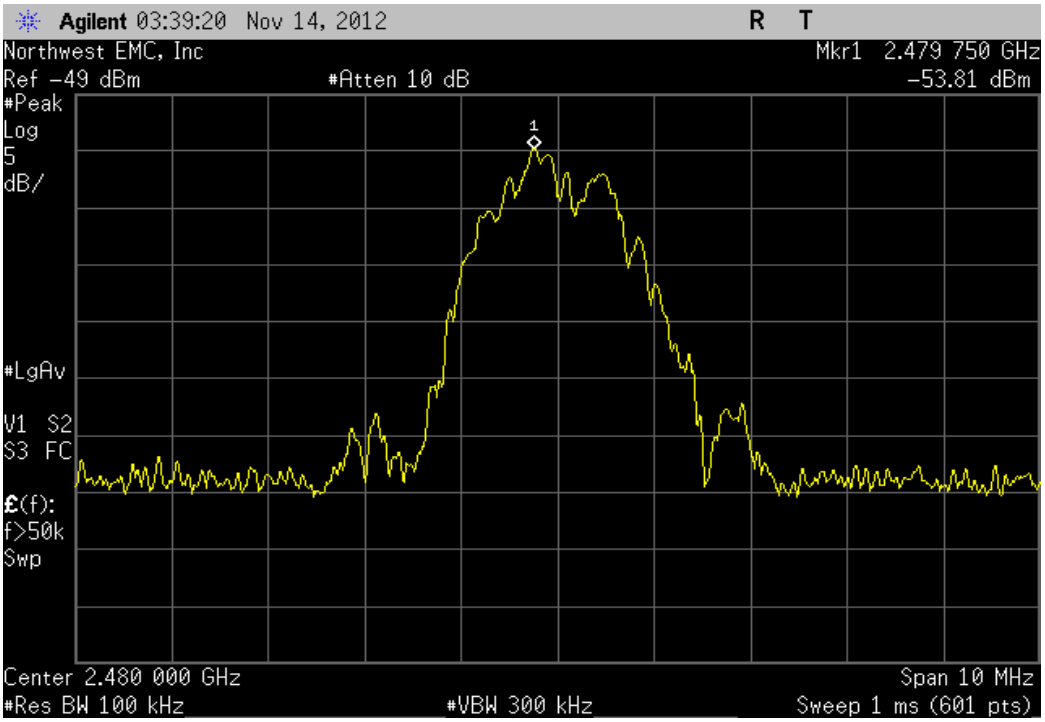


Mid						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-51.425	-15.2	-66.625	8	Pass



Power Spectral Density

		High				
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-53.81	-15.2	-69.01	8	Pass



SPURIOUS RADIATED EMISSIONS

TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. 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. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

A Duty Cycle Correction Factor was added to the Average data:
20*log ((0.165967*5)/8.184ms) = 19.88dB for low channel
20*log ((0.160433*5)/8.178ms) = 20.17dB for mid & high channel

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440A	AFG	05/16/2012	12 mo
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/10/2012	12 mo
Antenna, Horn	EMCO	3115	AHB	03/08/2011	24 mo
Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	06/07/2012	12 mo
OC 10 Cables	N/A	12-18GHz RE Cables	OCO	10/10/2012	12 mo
Antenna, Horn	ETS	3160-07	AHR	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	11/21/2011	12 mo
Antenna, Horn	ETS	3160-08	AHT	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	11/21/2011	12 mo
OC floating Cable	N/A	18-26GHz RE Cables	OCK	04/27/2012	12 mo
Antenna, Horn	EMCO	3160-09	AHN	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	04/27/2012	12 mo
High Pass Filter	Micro-Tronics	HPM50111	HFM	04/02/2012	24 mo

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.8 dB	2.8 dB

FREQUENCY RANGE INVESTIGATED

1 GHz TO 26 GHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

GLBC0098-1

MODES INVESTIGATED

Continuously Receiving Channel 11, 2405MHz
Continuously Receiving Channel 18, 2440MHz
Continuously Receiving Channel 26, 2480MHz
Continuously Transmitting Channel 11, 2405MHz
Continuously Transmitting Channel 18, 2440MHz
Continuously Transmitting Channel 26, 2480MHz

SPURIOUS RADIATED EMISSIONS

EUT:	RC223 (TCP Cat. Item 60123)	Work Order:	GLBC0098
Serial Number:	None	Date:	11/12/2012
Customer:	Technical Consumer Products, Inc.	Temperature:	20.5°C
Attendees:	Leon Kogan, Global Certification Technologies	Relative Humidity:	25.2%
Customer Project:	None	Bar. Pressure:	1017 mb
Tested By:	Johnny Candelas	Job Site:	OC10
Power:	110VAC/60Hz	Configuration:	GLBC0098-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2012	ANSI C63.10:2009

TEST PARAMETERS

Run #:	3	Test Distance (m):	3	Ant. Height(s) (m):	1-4m

COMMENTS

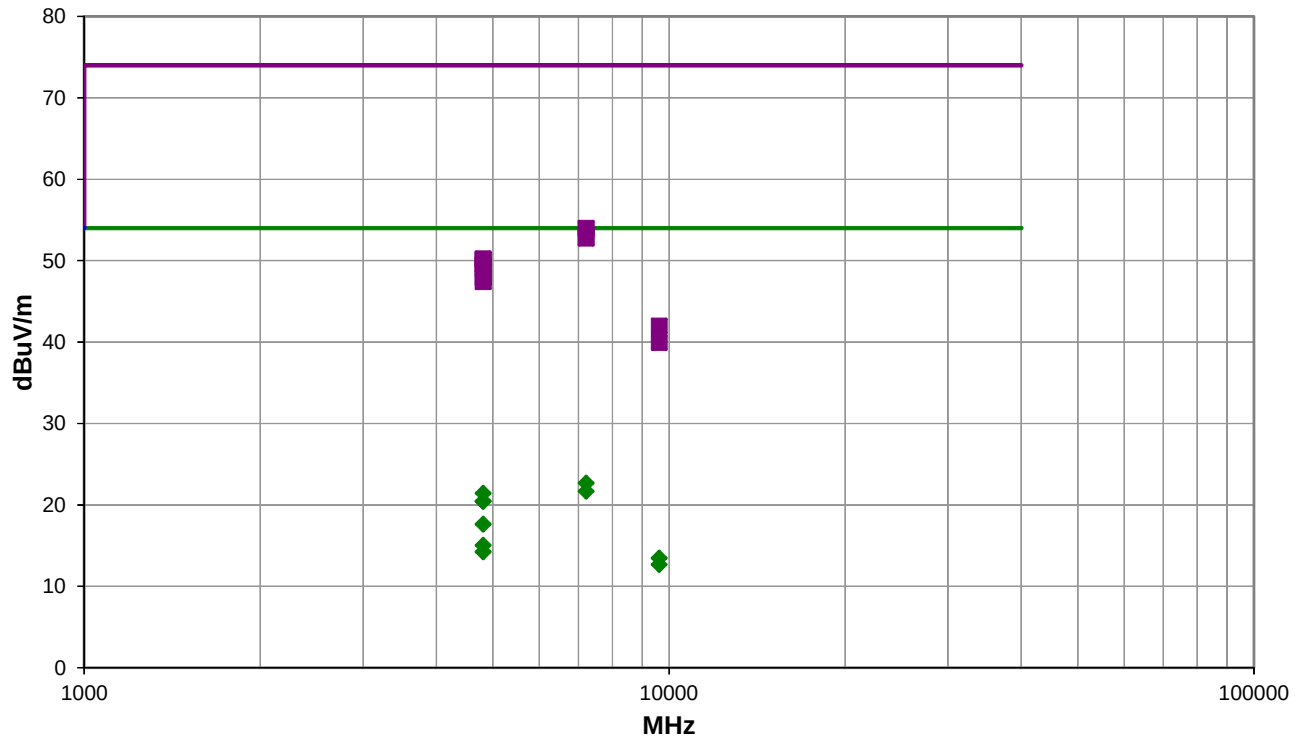
None

EUT OPERATING MODES

Continuously Transmitting Channel 11, 2405MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 3 PK AV QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #3

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Ant. Height (m)	Azimuth (deg.)	Duty Cycle Correction Factor	Ext. Atten. (dB)	Polar. Trans. Type	Detect.	Dist. Adjust. (dB)	Adj. (dBuV/m)	Spec. Limit (dBuV/m)	Margin. (dB)
7215.304	38.6	15.4	1.8	72.0	0.0	0.0	Vert	PK	0.0	54.0	74.0	-20.0
	X-Axis											
7214.971	37.4	15.4	1.2	236.0	0.0	0.0	Horz	PK	0.0	52.8	74.0	-21.2
	X-Axis											
4809.613	40.0	10.2	1.6	33.0	0.0	0.0	Horz	PK	0.0	50.2	74.0	-23.8
	X-Axis											
4810.007	39.8	10.2	1.4	1.0	0.0	0.0	Vert	PK	0.0	50.0	74.0	-24.0
	X-Axis											
4809.913	39.3	10.2	1.2	161.0	0.0	0.0	Horz	PK	0.0	49.5	74.0	-24.5
	Z-Axis											
4810.047	38.8	10.2	1.2	99.0	0.0	0.0	Vert	PK	0.0	49.0	74.0	-25.0
	Y-Axis											
4811.367	37.7	10.2	1.0	62.0	0.0	0.0	Vert	PK	0.0	47.9	74.0	-26.1
	Z-Axis											
4810.173	37.2	10.2	1.2	58.0	0.0	0.0	Horz	PK	0.0	47.4	74.0	-26.6
	Y-Axis											
7214.884	27.2	15.4	1.2	236.0	-19.9	0.0	Horz	AV	0.0	22.7	54.0	-31.3
	X-Axis											
9619.893	51.1	-9.1	1.2	229.0	0.0	0.0	Vert	PK	0.0	42.0	74.0	-32.0
	X-Axis											
7214.897	26.2	15.4	1.8	72.0	-19.9	0.0	Vert	AV	0.0	21.7	54.0	-32.3
	X-Axis											
4809.960	31.1	10.2	1.4	1.0	-19.9	0.0	Vert	AV	0.0	21.4	54.0	-32.6
	X-Axis											
4809.947	30.1	10.2	1.2	161.0	-19.9	0.0	Horz	AV	0.0	20.4	54.0	-33.6
	Z-Axis											
4809.920	30.1	10.2	1.6	33.0	-19.9	0.0	Horz	AV	0.0	20.4	54.0	-33.6
	X-Axis											
9619.899	49.1	-9.1	1.2	97.0	0.0	0.0	Horz	PK	0.0	40.0	74.0	-34.0
	X-Axis											
4809.953	27.3	10.2	1.2	99.0	-19.9	0.0	Vert	AV	0.0	17.6	54.0	-36.4
	Y-Axis											
4809.980	24.7	10.2	1.2	58.0	-19.9	0.0	Horz	AV	0.0	15.0	54.0	-39.0
	Y-Axis											
4809.967	23.9	10.2	1.0	62.0	-19.9	0.0	Vert	AV	0.0	14.2	54.0	-39.8
	Z-Axis											
9619.919	42.5	-9.1	1.2	229.0	-19.9	0.0	Vert	AV	0.0	13.5	54.0	-40.5
	X-Axis											
9619.913	41.7	-9.1	1.2	97.0	-19.9	0.0	Horz	AV	0.0	12.7	54.0	-41.3
	X-Axis											

CONCLUSION

Pass

Based on this set of preliminary measurements the X-Axis was determined to be worst case and subsequently the final transmit and receive measurements were all made in the x – Axis.

Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	RC223 (TCP Cat. Item 60123)	Work Order:	GLBC0098
Serial Number:	None	Date:	11/12/2012
Customer:	Technical Consumer Products, Inc.	Temperature:	20.5°C
Attendees:	Leon Kogan, Global Certification Technologies	Relative Humidity:	25.2%
Customer Project:	None	Bar. Pressure:	1017 mb
Tested By:	Johnny Candelas	Job Site:	OC10
Power:	110VAC/60Hz	Configuration:	GLBC0098-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2012	ANSI C63.10:2009

TEST PARAMETERS

Run #:	6	Test Distance (m):	3	Ant. Height(s) (m):	1-4m

COMMENTS

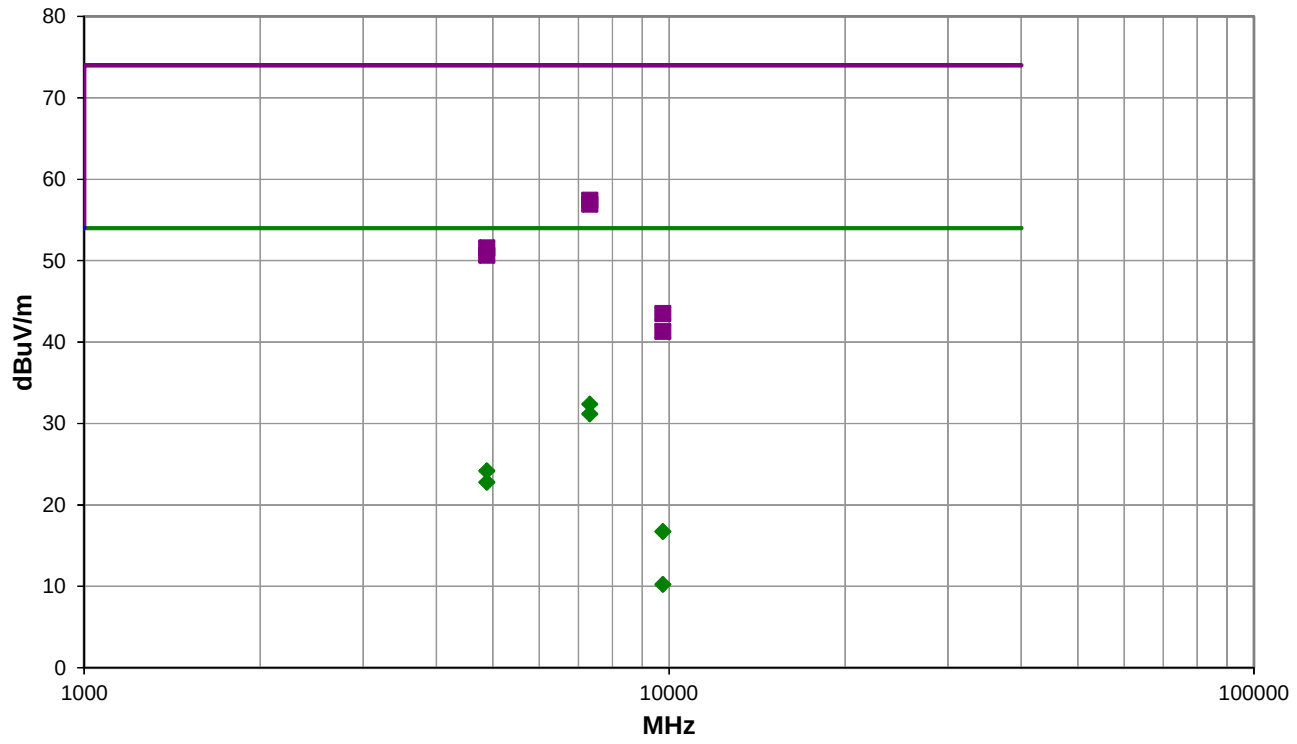
X-Axis

EUT OPERATING MODES

Continuously Transmitting Channel 18, 2440MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 6 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #6

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Ant. Height (m)	Azimuth (deg.)	Duty Cycle Correction Factor	Ext. Atten. (dB)	Polar. Trans. Type	Detect.	Dist. Adjust. (dB)	Adj. (dBuV/m)	Spec. Limit (dBuV/m)	Margin. (dB)
7320.163	41.6	15.9	1.2	94.0	0.0	0.0	Vert	PK	0.0	57.5	74.0	-16.5
7319.778	41.1	15.9	1.2	166.0	0.0	0.0	Horz	PK	0.0	57.0	74.0	-17.0
7319.930	36.7	15.9	1.2	166.0	-20.2	0.0	Horz	AV	0.0	32.4	54.0	-21.6
4879.804	41.2	10.4	1.2	120.0	0.0	0.0	Vert	PK	0.0	51.6	74.0	-22.4
7319.928	35.5	15.9	1.2	94.0	-20.2	0.0	Vert	AV	0.0	31.2	54.0	-22.8
4879.947	40.3	10.4	1.2	46.0	0.0	0.0	Horz	PK	0.0	50.7	74.0	-23.3
4879.937	34.0	10.4	1.2	120.0	-20.2	0.0	Vert	AV	0.0	24.2	54.0	-29.8
9760.083	52.6	-9.1	1.2	326.0	0.0	0.0	Vert	PK	0.0	43.5	74.0	-30.5
4879.946	32.6	10.4	1.2	46.0	-20.2	0.0	Horz	AV	0.0	22.8	54.0	-31.2
9759.942	50.4	-9.1	1.0	277.0	0.0	0.0	Horz	PK	0.0	41.3	74.0	-32.7
9759.883	46.0	-9.1	1.2	326.0	-20.2	0.0	Vert	AV	0.0	16.7	54.0	-37.3
9759.875	39.5	-9.1	1.0	277.0	-20.2	0.0	Horz	AV	0.0	10.2	54.0	-43.8

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	RC223 (TCP Cat. Item 60123)	Work Order:	GLBC0098
Serial Number:	None	Date:	11/12/2012
Customer:	Technical Consumer Products, Inc.	Temperature:	20.5°C
Attendees:	Leon Kogan, Global Certification Technologies	Relative Humidity:	25.2%
Customer Project:	None	Bar. Pressure:	1017 mb
Tested By:	Johnny Candelas	Job Site:	OC10
Power:	110VAC/60Hz	Configuration:	GLBC0098-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2012	ANSI C63.10:2009

TEST PARAMETERS

Run #:	9	Test Distance (m):	3	Ant. Height(s) (m):	1-4m

COMMENTS

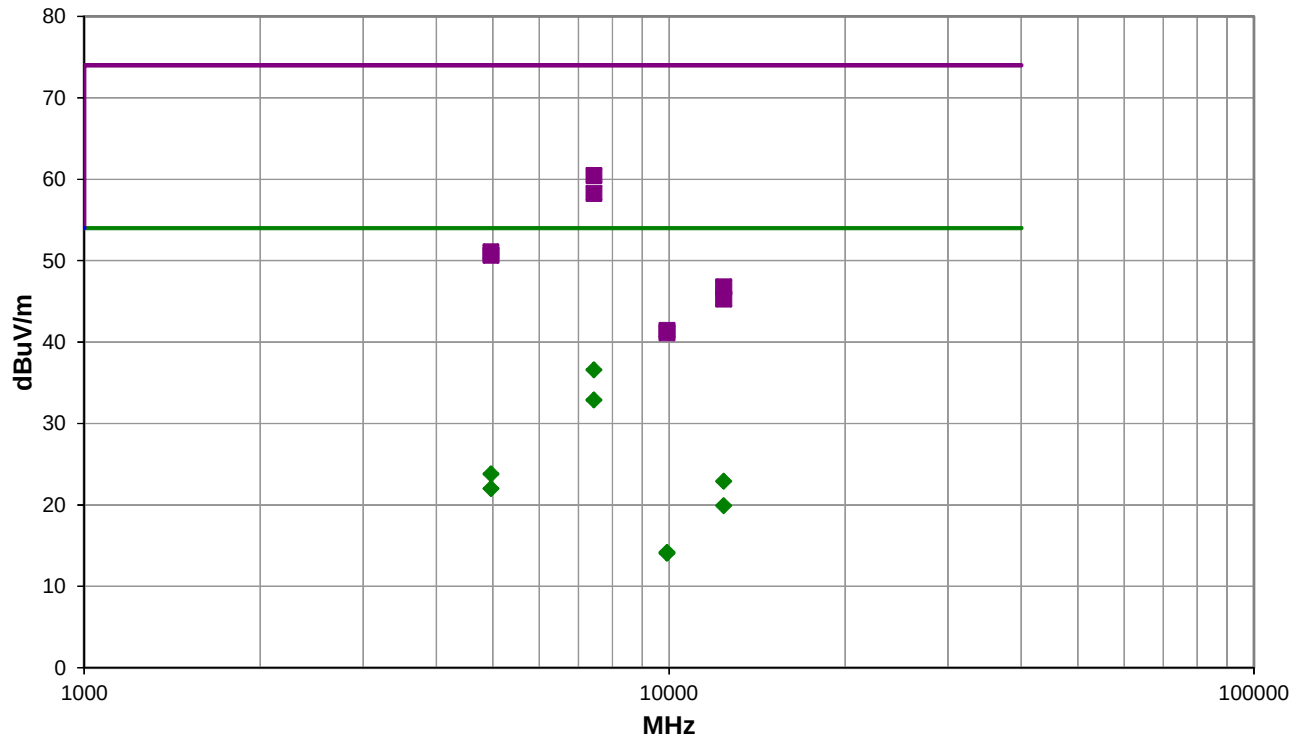
X-Axis

EUT OPERATING MODES

Continuously Transmitting Channel 26, 2480MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 9 ■ PK ◆ AV ● QP

NORTHWEST EMC

WTD.2012.11.07, PSA-ESCI 2012.09.25, PSA-ESCI Version 2011.12.21

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #9

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Ant. Height (m)	Azimuth (deg.)	Duty Cycle Correction Factor	Ext. Atten. (dB)	Polar. Trans. Type	Detect.	Dist. Adjust. (dB)	Adj. (dBuV/m)	Spec. Limit (dBuV/m)	Margin. (dB)
7440.253	44.5	16.0	1.2	169.0	0.0	0.0	Horz	PK	0.0	60.5	74.0	-13.5
7439.793	42.3	16.0	1.2	90.0	0.0	0.0	Vert	PK	0.0	58.3	74.0	-15.7
7439.920	40.8	16.0	1.2	169.0	-20.2	0.0	Horz	AV	0.0	36.6	54.0	-17.4
7439.920	37.1	16.0	1.2	90.0	-20.2	0.0	Vert	AV	0.0	32.9	54.0	-21.1
4959.729	40.5	10.6	1.2	132.0	0.0	0.0	Vert	PK	0.0	51.1	74.0	-22.9
4960.001	40.1	10.6	1.2	99.0	0.0	0.0	Horz	PK	0.0	50.7	74.0	-23.3
12399.700	55.1	-8.3	1.2	332.0	0.0	0.0	Vert	PK	0.0	46.8	74.0	-27.2
12399.870	53.6	-8.3	1.2	359.0	0.0	0.0	Horz	PK	0.0	45.3	74.0	-28.7
4959.954	33.4	10.6	1.2	99.0	-20.2	0.0	Horz	AV	0.0	23.8	54.0	-30.2
12399.820	51.4	-8.3	1.2	332.0	-20.2	0.0	Vert	AV	0.0	22.9	54.0	-31.1
4959.969	31.6	10.6	1.2	132.0	-20.2	0.0	Vert	AV	0.0	22.0	54.0	-32.0
9919.837	50.5	-9.1	1.2	47.0	0.0	0.0	Vert	PK	0.0	41.4	74.0	-32.6
9919.963	50.2	-9.1	1.2	281.0	0.0	0.0	Horz	PK	0.0	41.1	74.0	-32.9
12399.850	48.4	-8.3	1.2	359.0	-20.2	0.0	Horz	AV	0.0	19.9	54.0	-34.1
9919.903	43.4	-9.1	1.2	275.0	-20.2	0.0	Horz	AV	0.0	14.2	54.0	-39.8
9919.877	43.3	-9.1	1.2	47.0	-20.2	0.0	Vert	AV	0.0	14.1	54.0	-39.9

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	RC223 (TCP Cat. Item 60123)	Work Order:	GLBC0098
Serial Number:	None	Date:	11/12/2012
Customer:	Technical Consumer Products, Inc.	Temperature:	22°C
Attendees:	Leon Kogan, Global Certification Technologies	Relative Humidity:	25.3%
Customer Project:	None	Bar. Pressure:	1017 mb
Tested By:	Johnny Candelas	Job Site:	OC10
Power:	110VAC/60Hz	Configuration:	GLBC0098-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2012	ANSI C63.10:2009

TEST PARAMETERS

Run #:	12	Test Distance (m):	3	Ant. Height(s) (m):	1-4m

COMMENTS

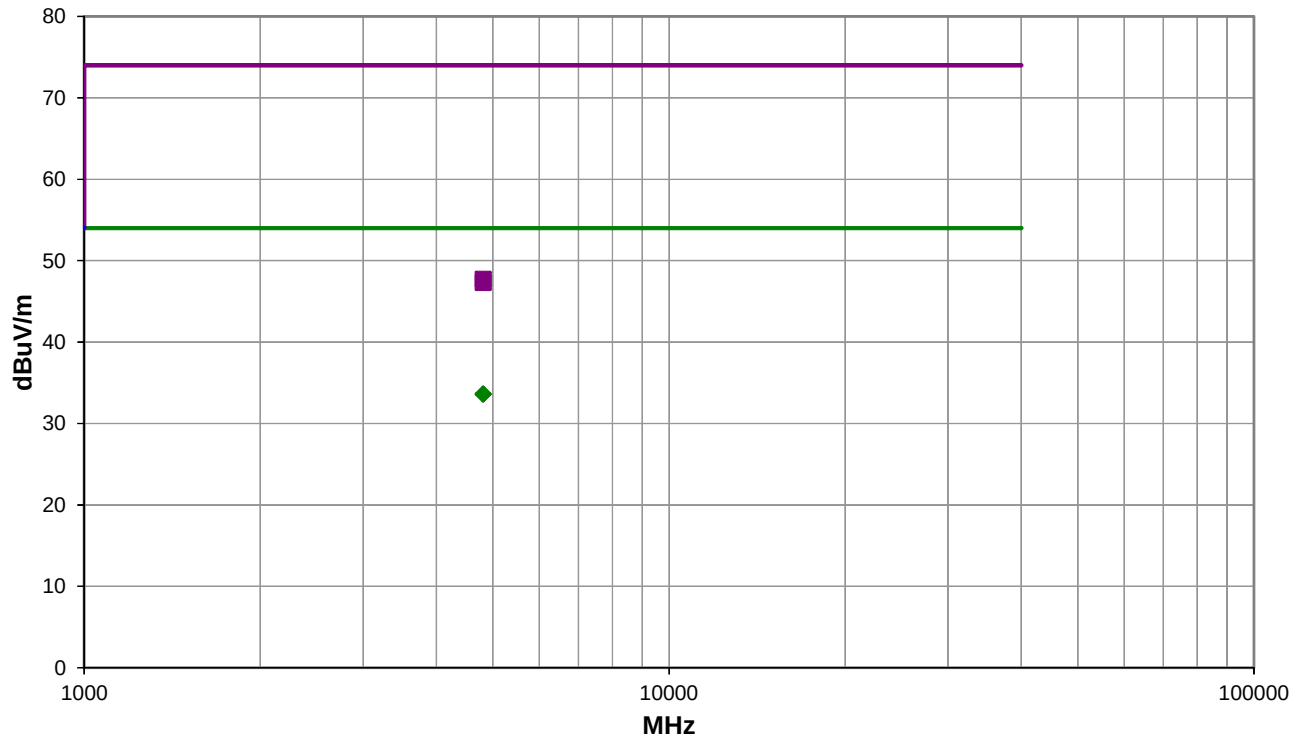
X-Axis

EUT OPERATING MODES

Continuously Receiving Channel 11, 2405MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 12 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #12

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Ant. Height (m)	Azimuth (deg.)	Test Dist. (m)	Ext. Atten. (dB)	Polar. Trans. Type	Detect.	Dist. Adjust. (dB)	Adj. (dBuV/m)	Spec. Limit (dBuV/m)	Margin. (dB)
4810.227	23.4	10.2	1.0	238.0	3.0	0.0	Vert	AV	0.0	33.6	54.0	-20.4
4810.315	23.4	10.2	1.0	220.0	3.0	0.0	Horz	AV	0.0	33.6	54.0	-20.4
4810.233	37.5	10.2	1.0	220.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3
4810.440	37.1	10.2	1.0	238.0	3.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	RC223 (TCP Cat. Item 60123)	Work Order:	GLBC0098
Serial Number:	None	Date:	11/12/2012
Customer:	Technical Consumer Products, Inc.	Temperature:	22°C
Attendees:	Leon Kogan, Global Certification Technologies	Relative Humidity:	25.3%
Customer Project:	None	Bar. Pressure:	1017 mb
Tested By:	Johnny Candelas	Job Site:	OC10
Power:	110VAC/60Hz	Configuration:	GLBC0098-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2012	ANSI C63.10:2009

TEST PARAMETERS

Run #:	16	Test Distance (m):	3	Ant. Height(s) (m):	1-4m

COMMENTS

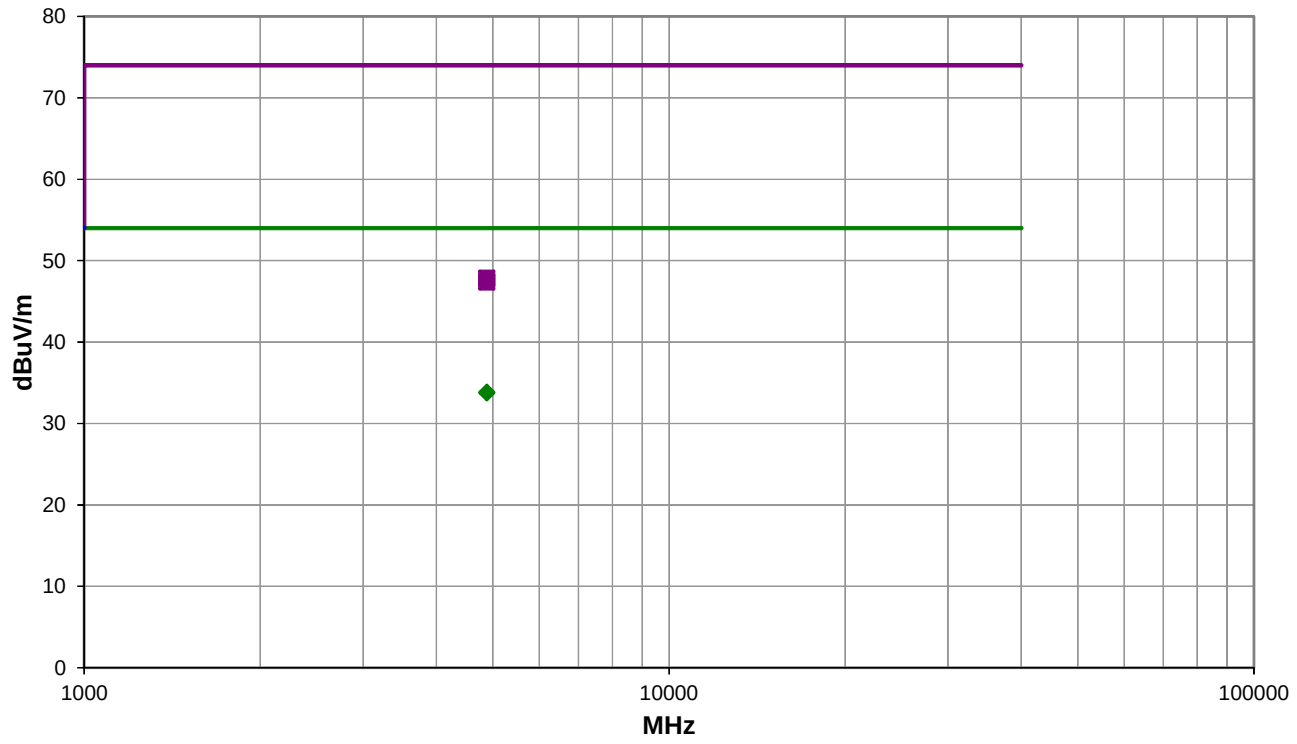
X-Axis

EUT OPERATING MODES

Continuously Receiving Channel 18, 2440MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 16 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #16

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Ant. Height (m)	Azimuth (deg.)	Test Dist. (m)	Ext. Atten. (dB)	Polar. Trans. Type	Detect.	Dist. Adjust. (dB)	Adj. (dBuV/m)	Spec. Limit (dBuV/m)	Margin. (dB)
4879.913	23.5	10.4	2.3	347.0	3.0	0.0	Horz	AV	0.0	33.9	54.0	-20.1
4880.213	23.4	10.4	2.3	201.0	3.0	0.0	Vert	AV	0.0	33.8	54.0	-20.2
4880.153	37.5	10.4	2.3	201.0	3.0	0.0	Vert	PK	0.0	47.9	74.0	-26.1
4879.847	37.0	10.4	2.3	347.0	3.0	0.0	Horz	PK	0.0	47.4	74.0	-26.6

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	RC223 (TCP Cat. Item 60123)	Work Order:	GLBC0098
Serial Number:	None	Date:	11/12/2012
Customer:	Technical Consumer Products, Inc.	Temperature:	22°C
Attendees:	Leon Kogan, Global Certification Technologies	Relative Humidity:	25.3%
Customer Project:	None	Bar. Pressure:	1017 mb
Tested By:	Johnny Candelas	Job Site:	OC10
Power:	110VAC/60Hz	Configuration:	GLBC0098-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2012	ANSI C63.10:2009

TEST PARAMETERS

Run #:	20	Test Distance (m):	3	Ant. Height(s) (m):	1-4m

COMMENTS

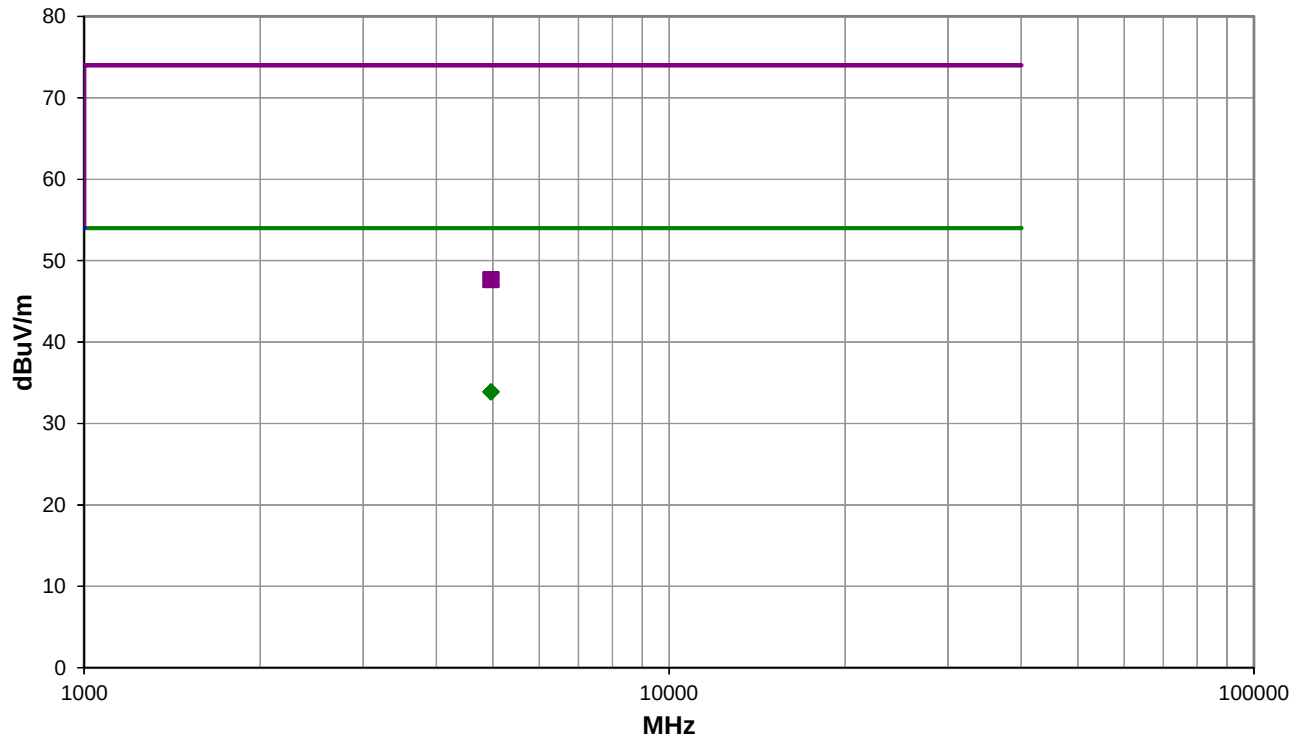
X-Axis

EUT OPERATING MODES

Continuously Receiving Channel 26, 2480MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 20 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #20

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Ant. Height (m)	Azimuth (deg.)	Test Dist. (m)	Ext. Atten. (dB)	Polar. Trans. Type	Detect.	Dist. Adjust. (dB)	Adj. (dBuV/m)	Spec. Limit (dBuV/m)	Margin. (dB)
4960.760	23.3	10.6	1.0	151.0	3.0	0.0	Vert	AV	0.0	33.9	54.0	-20.1
4961.367	23.3	10.6	1.0	82.0	3.0	0.0	Horz	AV	0.0	33.9	54.0	-20.1
4960.207	37.1	10.6	1.0	151.0	3.0	0.0	Vert	PK	0.0	47.7	74.0	-26.3
4959.600	37.1	10.6	1.0	82.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50Ω.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Receiver	Rohde & Schwarz	ESCI	ARF	04/26/2012	12 mo
OC06 Cables	N/A	CE Cables	OCM	04/06/2012	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HFP	03/01/2012	24 mo
Attenuator	Pasternack	6N10W-20	AWC	03/01/2012	12 mo
LISN	Solar	9252-50-24-BNC	LIA	06/04/2012	12 mo

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.94 dB	-2.94 dB

CONFIGURATIONS INVESTIGATED

GLBC0098-1

MODES INVESTIGATED

Normal Operation

AC POWERLINE CONDUCTED EMISSIONS

EUT:	RC223 (TCP Cat. Item 60123)	Work Order:	GLBC0098
Serial Number:	None	Date:	11/13/2012
Customer:	Technical Consumer Products, Inc.	Temperature:	23.75°C
Attendees:	Leon Kogan, Global Certification Technologies	Relative Humidity:	23.3%
Customer Project:	None	Bar. Pressure:	1018 mb
Tested By:	Johnny Candelas	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	GLBC0098-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2012	ANSI C63.10:2009

TEST PARAMETERS

Run #:	1	Line:	High Line	Ext. Attenuation (dB):	20

COMMENTS

None

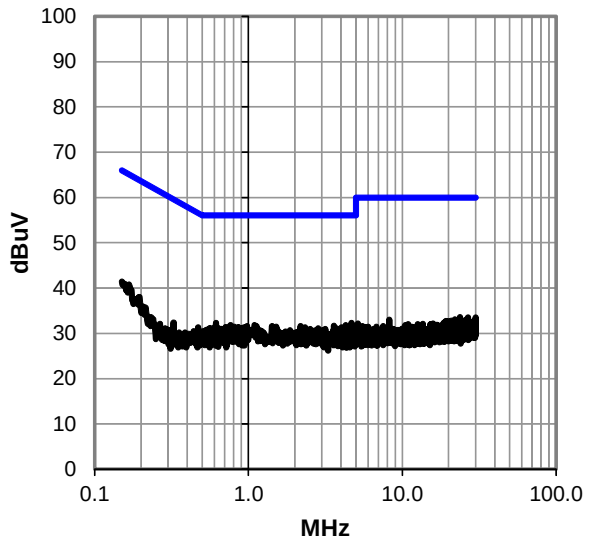
EUT OPERATING MODES

Normal Operation

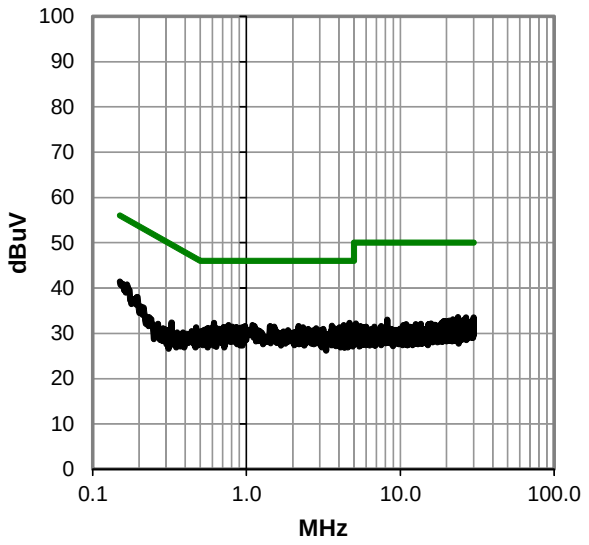
DEVIATIONS FROM TEST STANDARD

None

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



NORTHWEST EMC

WTD.2012.11.07, PSA-ESCI 2012.09.25, PSA-ESCI Version 2011.12.21

AC POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #1

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.614	12.2	20.1	32.3	56.0	-23.7
4.672	12.2	20.1	32.3	56.0	-23.7
0.764	11.7	20.1	31.8	56.0	-24.2
1.096	11.7	20.1	31.8	56.0	-24.2
4.296	11.7	20.1	31.8	56.0	-24.2
3.600	11.6	20.1	31.7	56.0	-24.3
0.981	11.5	20.1	31.6	56.0	-24.4
1.424	11.5	20.1	31.6	56.0	-24.4
2.184	11.5	20.1	31.6	56.0	-24.4
0.606	11.4	20.1	31.5	56.0	-24.5
0.810	11.4	20.1	31.5	56.0	-24.5
1.512	11.4	20.1	31.5	56.0	-24.5
0.711	11.3	20.1	31.4	56.0	-24.6
0.862	11.3	20.1	31.4	56.0	-24.6
0.150	21.3	20.1	41.4	66.0	-24.6
0.934	11.2	20.1	31.3	56.0	-24.7
2.336	11.2	20.1	31.3	56.0	-24.7
4.024	11.2	20.1	31.3	56.0	-24.7
0.563	11.1	20.1	31.2	56.0	-24.8
0.640	11.0	20.1	31.1	56.0	-24.9
2.840	11.0	20.1	31.1	56.0	-24.9
3.728	11.0	20.1	31.1	56.0	-24.9
4.136	11.0	20.1	31.1	56.0	-24.9
4.816	11.0	20.1	31.1	56.0	-24.9
2.520	10.9	20.1	31.0	56.0	-25.0
3.160	10.9	20.1	31.0	56.0	-25.0

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.614	12.2	20.1	32.3	46.0	-13.7
4.672	12.2	20.1	32.3	46.0	-13.7
0.764	11.7	20.1	31.8	46.0	-14.2
1.096	11.7	20.1	31.8	46.0	-14.2
4.296	11.7	20.1	31.8	46.0	-14.2
3.600	11.6	20.1	31.7	46.0	-14.3
0.981	11.5	20.1	31.6	46.0	-14.4
1.424	11.5	20.1	31.6	46.0	-14.4
2.184	11.5	20.1	31.6	46.0	-14.4
0.606	11.4	20.1	31.5	46.0	-14.5
0.810	11.4	20.1	31.5	46.0	-14.5
1.512	11.4	20.1	31.5	46.0	-14.5
0.711	11.3	20.1	31.4	46.0	-14.6
0.862	11.3	20.1	31.4	46.0	-14.6
0.150	21.3	20.1	41.4	56.0	-14.6
0.934	11.2	20.1	31.3	46.0	-14.7
2.336	11.2	20.1	31.3	46.0	-14.7
4.024	11.2	20.1	31.3	46.0	-14.7
0.563	11.1	20.1	31.2	46.0	-14.8
0.640	11.0	20.1	31.1	46.0	-14.9
2.840	11.0	20.1	31.1	46.0	-14.9
3.728	11.0	20.1	31.1	46.0	-14.9
4.136	11.0	20.1	31.1	46.0	-14.9
4.816	11.0	20.1	31.1	46.0	-14.9
2.520	10.9	20.1	31.0	46.0	-15.0
3.160	10.9	20.1	31.0	46.0	-15.0

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS

EUT:	RC223 (TCP Cat. Item 60123)	Work Order:	GLBC0098
Serial Number:	None	Date:	11/13/2012
Customer:	Technical Consumer Products, Inc.	Temperature:	23.75°C
Attendees:	Leon Kogan, Global Certification Technologies	Relative Humidity:	23.3%
Customer Project:	None	Bar. Pressure:	1018 mb
Tested By:	Johnny Candelas	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	GLBC0098-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2012	ANSI C63.10:2009

TEST PARAMETERS

Run #:	2	Line:	Neutral	Ext. Attenuation (dB):	20

COMMENTS

None

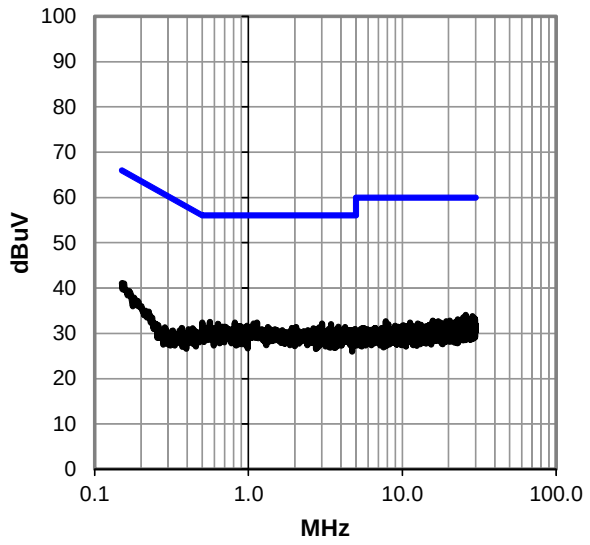
EUT OPERATING MODES

Normal Operation

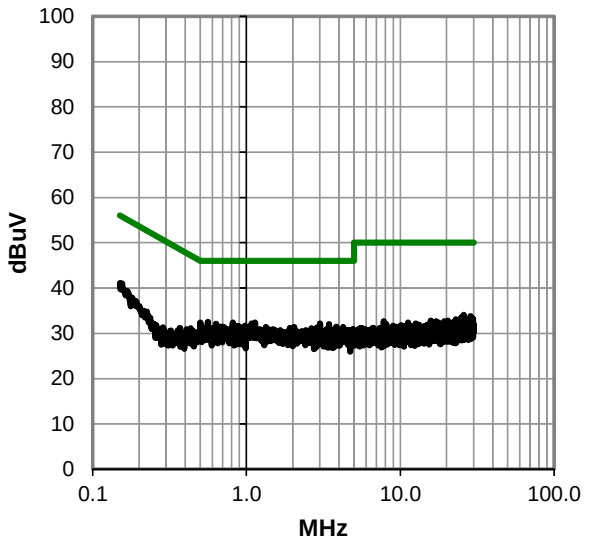
DEVIATIONS FROM TEST STANDARD

None

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #2

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.561	12.4	20.1	32.5	56.0	-23.5
0.502	12.3	20.1	32.4	56.0	-23.6
0.815	12.3	20.1	32.4	56.0	-23.6
1.136	12.3	20.1	32.4	56.0	-23.6
1.080	12.1	20.1	32.2	56.0	-23.8
3.008	12.1	20.1	32.2	56.0	-23.8
0.635	12.0	20.1	32.1	56.0	-23.9
3.440	11.9	20.1	32.0	56.0	-24.0
0.978	11.6	20.1	31.7	56.0	-24.3
0.867	11.5	20.1	31.6	56.0	-24.4
0.679	11.4	20.1	31.5	56.0	-24.5
0.703	11.4	20.1	31.5	56.0	-24.5
3.840	11.4	20.1	31.5	56.0	-24.5
0.665	11.3	20.1	31.4	56.0	-24.6
0.951	11.3	20.1	31.4	56.0	-24.6
1.336	11.3	20.1	31.4	56.0	-24.6
2.040	11.3	20.1	31.4	56.0	-24.6
4.248	11.3	20.1	31.4	56.0	-24.6
2.880	11.2	20.1	31.3	56.0	-24.7
1.920	11.1	20.1	31.2	56.0	-24.8
0.150	21.0	20.1	41.1	66.0	-24.9
0.830	11.0	20.1	31.1	56.0	-24.9
2.648	11.0	20.1	31.1	56.0	-24.9
2.736	10.9	20.1	31.0	56.0	-25.0
3.328	10.9	20.1	31.0	56.0	-25.0
3.512	10.9	20.1	31.0	56.0	-25.0

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.561	12.4	20.1	32.5	46.0	-13.5
0.502	12.3	20.1	32.4	46.0	-13.6
0.815	12.3	20.1	32.4	46.0	-13.6
1.136	12.3	20.1	32.4	46.0	-13.6
1.080	12.1	20.1	32.2	46.0	-13.8
3.008	12.1	20.1	32.2	46.0	-13.8
0.635	12.0	20.1	32.1	46.0	-13.9
3.440	11.9	20.1	32.0	46.0	-14.0
0.978	11.6	20.1	31.7	46.0	-14.3
0.867	11.5	20.1	31.6	46.0	-14.4
0.679	11.4	20.1	31.5	46.0	-14.5
0.703	11.4	20.1	31.5	46.0	-14.5
3.840	11.4	20.1	31.5	46.0	-14.5
0.665	11.3	20.1	31.4	46.0	-14.6
0.951	11.3	20.1	31.4	46.0	-14.6
1.336	11.3	20.1	31.4	46.0	-14.6
2.040	11.3	20.1	31.4	46.0	-14.6
4.248	11.3	20.1	31.4	46.0	-14.6
2.880	11.2	20.1	31.3	46.0	-14.7
1.920	11.1	20.1	31.2	46.0	-14.8
0.150	21.0	20.1	41.1	56.0	-14.9
0.830	11.0	20.1	31.1	46.0	-14.9
2.648	11.0	20.1	31.1	46.0	-14.9
2.736	10.9	20.1	31.0	46.0	-15.0
3.328	10.9	20.1	31.0	46.0	-15.0
3.512	10.9	20.1	31.0	46.0	-15.0

CONCLUSION

Pass

Tested By