Test Report

Curtis-Straus LLC, *a wholly owned subsidiary of BV CPS*

Report No	EN1170-1
Client	Inncom Ryan Gardner
Address	277 West Main Street Niantic, CT 06357
Phone	860-739-4468
Items tested	E529 Battery Powered Thermostat
FCC ID	GTC202153TXR
IC ID	1609A-202153TXR
FRN	0017924150
Equipment Type	Low Power Communication Device Transmitter
Equipment Code	DXX
Emission Designator	2M49G1D
Standards	47CFR 15.249, RSS 210 Issue 8 and RSS GEN Issue 3
Test Dates	September 10, 12, 13, & 25, 2013 and May 19, 2014
Results	As detailed within this report
Prepared by	Tuyen Truong – Test Engineer
Authorized by	Christopher Reynolds – EMC Supervisor
Issue Date	6/20/2014
Conditions of Issue	This Test Report is issued subject to the conditions stated in the '*Conditions of Testing*' section on page 16 of this report.

Contents

Form Final Report REV 2-16-07 (DW)

Product Tested - Configuration Documentation

EUT Configuration

Work Order: N1170
Company: Inncom
Company Address: 277 West Main Street
Niantic, CT 06357
Contact: Ryan Gardner

	MN	SN
EUT:	E529	not listed
EUT Description:	E529 Battery Powered Thermostat	
EUT Tx Frequency:	2405-2480MHz	

Support Equipment:	**MN**	**SN**
X529 Application Tester	X529	Not Listed
X529 RF	X529.RF	Not Listed

EUT Ports:

Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Unpopulated Reason
ISP	Signal	1	0							Setup only
H1	Signal	1	0							Not Used

Software / Operating Mode Description:

EUT is transmitting to X529.RF

Issue No.	Reason for change	Date Issued
1	Original Release	June 20, 2014

Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.249, RSS GEN Issue 3, and RSS-210, Issue 8. The product is the E529 Battery Powered Thermostat. It is a transmitter that operates in the range 2400 – 2483.5 MHz.

We found that the product met the above requirements. The test sample was received in good condition.

Test Methodology

Radiated emission and AC Line conducted testing was performed according to the procedures specified in ANSI C63.4 (2003) and RSS-GEN. Radiated Emissions were maximized by rotating the device around three orthogonal axes as well as varying the test antenna's height and polarity. The device antenna cannot be maximized separately.

The product was tested with modulation on and peak readings were compared against the average limit presented in section CFR 15.249.

The EUT operating voltage is 6VDC.

The following bandwidths were used during radiated spurious and line conducted emissions.

Frequency	RBW	VBW
0.15-30MHz	9kHz	30kHz
30-1000MHz	120kHz	1MHz
1-25GHz	1MHz	3MHz

Issue No.	Reason for change	Date Issued
1	Original Release	June 20, 2014

Compliance Statement

The E529 Battery Powered Thermostat has been found to conform to the following parts of 47 CFR and RSS 210 as detailed below:

RSS-GEN	RSS 210	Part 15	Comments
5.4		15.15(b)	There are no controls accessible to the user that varies the output power.
5.2		15.19	The label is shown in the label exhibit.
7.1.3		15.21	Information to the user is shown in the instruction manual exhibit.
		15.27	No special accessories are required for compliance.
7.1.2		15.203	The antenna for this device is hardwired to the PCB.
7.2.4		15.207	AC Conducted Testing was not performed since EUT is a battery powered device.
	A2.9(a)	15.249(a)	The fundamental and harmonics meet the limits in 15.249(a)
	A2.9(b)	15.249(d)	Spurious emissions meet the limits in 15.209.
4.6.1			99% emissions bandwidth plot is provided.

Test Results

Fundamental Measurements

LIMITS

The field strength from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902 - 928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

[15.249(a)]

MEASUREMENTS / RESULTS

Adjusted Peak Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor
Average readings were taken with 30Hz VBW

Radiated Emissions Table

Date: 10-Sep-13 **Company:** Inncom **Work Order:** N1170
Engineer: Chris Reynolds **EUT Desc:** E529-4G **EUT Operating Voltage/Frequency:** 6Vdc
Temp: 23.5°C **Humidity:** 36% **Pressure:** 1009mBar
Frequency Range: Fundamentals **Measurement Distance:** 3 m
Notes: w/ Duty Cycle Correction Factor of 2ms on over 100ms **EUT Tx Freq:** 2405 - 2480MHz
Worst case Duty Cycle Correction = -20

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC Part 15.249 - Peak Limit (dBµV/m)	FCC Part 15.249 - Peak Margin (dB)	FCC Part 15.249 - Peak Result (Pass/Fail)	FCC Part 15.249 - Average Limit (dBµV/m)	FCC Part 15.249 - Average Margin (dB)	FCC Part 15.249 - Average Result (Pass/Fail)
				---	---	---	---	---	---	---	---	---	---	---
				---	---	---	---	---	---	---	---	---	---	---
h	2405.0	66.03	46.0	0.0	28.2	3.3	97.5	77.5	114.0	-16.5	Pass	94.0	-16.5	Pass
v	2405.0	71.98	52.0	0.0	28.2	3.3	103.5	83.5	114.0	-10.5	Pass	94.0	-10.5	Pass
h	2445.0	66.06	46.1	0.0	28.3	3.3	97.7	77.7	114.0	-16.3	Pass	94.0	-16.3	Pass
v	2445.0	71.13	51.1	0.0	28.3	3.3	102.7	82.7	114.0	-11.3	Pass	94.0	-11.3	Pass
h	2480.0	67.85	47.9	0.0	28.5	3.3	99.7	79.7	114.0	-14.3	Pass	94.0	-14.4	Pass
v	2480.0	70.74	50.7	0.0	28.5	3.3	102.5	82.5	114.0	-11.5	Pass	94.0	-11.5	Pass

Table Result: Pass by -10.5 dB ***Worst Freq:*** 2405.0 MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #1781 **Cable 2:** Asset #1785 **Cable 3:** ---
Analyzer: Asset #1328 **Preamp:** none **Antenna:** Orange Horn **Preselector:** ---

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	12/19/2013

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	2/16/2014

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Orange Horn	1-18GHz	3115	EMCO	0004-6123	390	I	8/27/2014

Cables	Range		Mfr			Cat	Calibration Due
Asset #1781	9kHz - 18GHz		Florida RF			II	3/6/2014
Asset #1785	9kHz - 18GHz		Florida RF			II	3/14/2014

Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/20/2014
CHAMBER1 Thermohygrometer		35519-044	Control Company	72457642	1345	II	Retired

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

Radiated Spurious Emissions

LIMITS

15.249 (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

MEASUREMENTS / RESULTS

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor
Adjusted Average Reading = Adjusted Peak Reading – DCCF

Radiated Emissions Table (Band Edge)

Date: 25-Sep-13 **Company:** InnCom **Work Order:** N1170
Engineer: Tuyen Truong **EUT Desc:** E529 Battery Powered Thermostat **EUT Operating Voltage/Frequency:** 6Vdc
Temp: 21°C **Humidity:** 35% **Pressure:** 1005mBar
Frequency Range: Band Edge **Measurement Distance:** 3 m
Notes: All orientations of EUT were checked for maximized emissions. **EUT TX Freq:** 2405-2480MHz
Wost case duty cycle is -20

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 - High Frequency - Peak Limit (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	FCC 15.209 - High Frequency - Average Limit (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)
Running Low Channel				---	---	---	---	---	---	---	---	---	---	---
v	2390.0	34.13	14.1	18.7	28.6	3.2	47.2	27.2	74.0	-26.8	Pass	54.0	-26.8	Pass
h	2390.0	32.99	13.0	18.7	28.6	3.2	46.1	26.1	74.0	-27.9	Pass	54.0	-27.9	Pass
v	2400.0	45.83	25.8	18.7	28.6	3.3	59.0	39.0	74.0	-15.0	Pass	54.0	-15.0	Pass
h	2400.0	41.52	21.5	18.7	28.6	3.3	54.7	34.7	74.0	-19.3	Pass	54.0	-19.3	Pass
				---	---	---	---		---	---	---	---		---
Running High Channel				---	---	---	---		---	---	---	---		---
v	2483.5	60.38	40.4	18.8	28.9	3.3	73.8	53.8	74.0	-0.2	Pass	54.0	-0.2	Pass
h	2483.5	58.69	38.7	18.8	28.9	3.3	72.1	52.1	74.0	-1.9	Pass	54.0	-1.9	Pass
				---	---	---	---		---	---	---	---		---

Table Result: Pass by -0.2 dB ***Worst Freq:*** 2483.5 MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #1781 **Cable 2:** Asset #1785 **Cable 3:** ---
Analyzer: Gold **Preamp:** Brown **Antenna:** Black Horn **Preselector:** ---

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/18/2014

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	2/16/2014

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Brown	1-18GHz	CS	CS	N/A	1523	II	2/27/2014

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/5/2015

Cables	Range	Mfr				Cat	Calibration Due
Asset #1781	9kHz - 18GHz	Florida RF				II	3/6/2014
Asset #1785	9kHz - 18GHz	Florida RF				II	3/14/2014

Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due
Weather Clock (Pressure Only)	BA928	Oregon Scientific	C3166-1	831	I	3/20/2014
CHAMBER1 Thermohygrometer	35519-044	Control Company	72457642	1345	II	Retired

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

Radiated Emissions Table

Date: 10-Sep-13 **Company:** Inncom **Work Order:** N1170
Engineer: Chris Bramley **EUT Desc:** E529-4G Battery Powered Thermostat **EUT Operating Voltage/Frequency:** 6Vdc
Temp: 23.5°C **Humidity:** 36% **Pressure:** 1009mBar
Frequency Range: 30-1000MHz **Measurement Distance:** 3 m
Notes: Fundamental Frequency set at 2405MHz Tx Mode **EUT Tx Freq:** 2405-2480MHz

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
v	43.38	22.7	22.5	10.9	0.5	11.6	---	---	---	40.0	-28.4	Pass
v	117.8	24.2	22.5	14.0	0.8	16.5	---	---	---	43.5	-27.0	Pass
v	171.5	26.5	22.5	11.5	0.9	16.4	---	---	---	43.5	-27.1	Pass
h	256.0	27.2	22.5	11.7	1.2	17.6	---	---	---	46.0	-28.4	Pass
h	288.0	23.5	22.5	13.4	1.2	15.6	---	---	---	46.0	-30.4	Pass
v	416.0	25.3	22.5	16.4	1.6	20.8	---	---	---	46.0	-25.2	Pass
v	480.0	21.5	22.1	17.8	1.6	18.8	---	---	---	46.0	-27.2	Pass
h	490.9	23.0	22.2	17.9	1.5	20.2	---	---	---	46.0	-25.8	Pass

Table Result: Pass by -25.2 dB ***Worst Freq:*** 416.0 MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #1781 **Cable 2:** Asset #1785
Analyzer: Asset #1328 **Preamp:** Blue **Antenna:** Red-Brown

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	12/19/2013

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	2/16/2014

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Blue	0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	5/31/2014

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	I	1/8/2015

Cables	Range	Mfr	Cat	Calibration Due
Asset #1781	9kHz - 18GHz	Florida RF	II	3/6/2014
Asset #1785	9kHz - 18GHz	Florida RF	II	3/14/2014

Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due
Weather Clock (Pressure Only)	BA928	Oregon Scientific	C3166-1	831	I	3/20/2014
CHAMBER1 Thermohygrometer	35519-044	Control Company	72457642	1345	II	Retired

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

Radiated Emissions Table

Date: 10-Sep-13 **Company:** Inncom **Work Order:** N1170
Engineer: Chris Bramley **EUT Desc:** E529-4G Battery Powered Thermostat **EUT Operating Voltage/Frequency:** 6Vdc
Temp: 23.5°C **Humidity:** 36% **Pressure:** 1009mBar
Frequency Range: 1-6GHz **Measurement Distance:** 3 m
Notes: Fundamental Frequency set at 2405MHz Tx Mode **EUT Tx Freq:** 2405-2480MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak Limit (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	FCC 15.209 High Frequency - Average Limit (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)
v	2351.0	42.39	34.3	18.7	28.1	3.2	55.0	46.9	74.0	-19.0	Pass	54.0	-7.1	Pass
v	2459.0	40.89	31.6	18.7	28.4	3.3	53.9	44.6	74.0	-20.1	Pass	54.0	-9.4	Pass
v	4810.0	36.38	28.7	17.3	32.9	4.9	56.9	49.2	74.0	-17.1	Pass	54.0	-4.8	Pass
h	4810.0	35.77	29.4	17.3	32.9	4.9	56.3	49.9	74.0	-17.7	Pass	54.0	-4.1	Pass

Table Result: Pass by -4.1 dB ***Worst Freq:*** 4810.0 MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #1781 **Cable 2:** Asset #1785
Analyzer: Asset #1328 **Preamp:** Brown **Antenna:** Orange Horn

Radiated Emissions Table

Date: 10-Sep-13 **Company:** Inncom **Work Order:** N1170
Engineer: Chris Bramley **EUT Desc:** E529-4G Battery Powered Thermostat **EUT Operating Voltage/Frequency:** 6Vdc
Temp: 23.5°C **Humidity:** 36% **Pressure:** 1009mBar
Frequency Range: 6-10GHz **Measurement Distance:** 1 m
Notes: Fundamental Frequency set at 2405MHz Tx Mode **EUT Tx Freq:** 2405-2480MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	7216.0	33.94	21.7	16.0	37.0	6.2	61.1	48.9	83.5	-22.4	Pass	63.5	-14.6	Pass
h	9618.0	33.43	21.3	15.4	38.4	7.3	63.7	51.6	83.5	-19.8	Pass	63.5	-11.9	Pass

Table Result: Pass by -11.9 dB ***Worst Freq:*** 9618.0 MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #1781 **Cable 2:** Asset #1785
Analyzer: Asset #1328 **Preamp:** Brown **Antenna:** Orange Horn

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	12/19/2013

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	2/16/2014

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Brown	1-18GHz	CS	CS	N/A	1523	II	2/27/2014

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Orange Horn	1-18GHz	3115	EMCO	0004-6123	390	I	8/27/2014

Cables	Range	Mfr	Cat	Calibration Due
Asset #1781	9kHz - 18GHz	Florida RF	II	3/6/2014
Asset #1785	9kHz - 18GHz	Florida RF	II	3/14/2014

Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due
Weather Clock (Pressure Only)	BA928	Oregon Scientific	C3166-1	831	I	3/20/2014
CHAMBER1 Thermohygrometer	35519-044	Control Company	72457642	1345	II	Retired

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

Radiated Emissions Table

Date: 12-Sep-13 **Company:** Inncom **Work Order:** N1170
Engineer: Chris Bramley **EUT Desc:** E529-4G Battery Powered Thermostat **EUT Operating Voltage/Frequency:** 6Vdc
Temp: 26.0°C **Humidity:** 47% **Pressure:** 1003mBar
Frequency Range: 10-18GHz **Measurement Distance:** 1 m
Notes: Fundamental Frequency set at 2405MHz - Ch11 Tx Mode **EUT Tx Freq:** 2405-2480MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
h	12023.0	33.56	22.5	19.7	39.2	8.0	61.1	50.0	83.5	-22.4	Pass	63.5	-13.5	Pass

Table Result: Pass by -13.5 dB ***Worst Freq:*** 12023.0 MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #1781 **Cable 2:** Asset #1785
Analyzer: Rental SA#1 **Preamp:** Asset #1517 **Antenna:** Yellow Horn

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Rental SA #1 (Brown)	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	4/15/2014
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	2/16/2014
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	4/15/2014
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**
Yellow Horn	1-18GHz	3115	EMCO	9608-4898	37	I	7/19/2014
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**
Asset #1781	9kHz - 18GHz		Florida RF			II	3/6/2014
Asset #1785	9kHz - 18GHz		Florida RF			II	3/14/2014
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/20/2014
CHAMBER1 Thermohygrometer		35519-044	Control Company	72457642	1345	II	Retired

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

Radiated Emissions Table

Date: 10-Sep-13 **Company:** Inncom **Work Order:** N1170

Engineer: Chris Bramley **EUT Desc:** E529-4G Battery Powered Thermostat **EUT Operating Voltage/Frequency:** 6Vdc

Temp: 23.5°C **Humidity:** 36% **Pressure:** 1009mBar

Frequency Range: 18-26.5GHz **Measurement Distance:** 0.1 m

Notes: Fundamental Frequency set at 2405MHz Tx Mode **EUT Tx Freq:** 2405-2480MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
No emissions found														

Table Result: --- by --- dB ***Worst Freq:*** --- MHz

Test Site: EMI Chamber 1 **Cable 1:** EMIR-HIGH-22

Analyzer: Rental SA#1 **Preamp:** 18-26.5GHz **Antenna:** 18-26.5GHz Horn

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Rental SA #1 (Brown)	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	4/15/2014
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	2/16/2014
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**
HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	I	10/13/2013
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**
HF (White) Horn	18-26.5GHz	801-WLM	Waveline	758	758	I	Verify before Use
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**
REMI-High-22	9kHz - 15GHz		C-S			II	2/2/2014
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/20/2014
CHAMBER1 Thermohygrometer		35519-044	Control Company	72457642	1345	II	Retired

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

AC Line Conducted Emissions

LIMITS

Frequency of emission (MHz)	Quasi-peak limit (dBµV)	Average limit (dBµV)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

[47 CFR 15.207(a)]

MEASUREMENTS / RESULTS

Not applicable since EUT is battery powered.

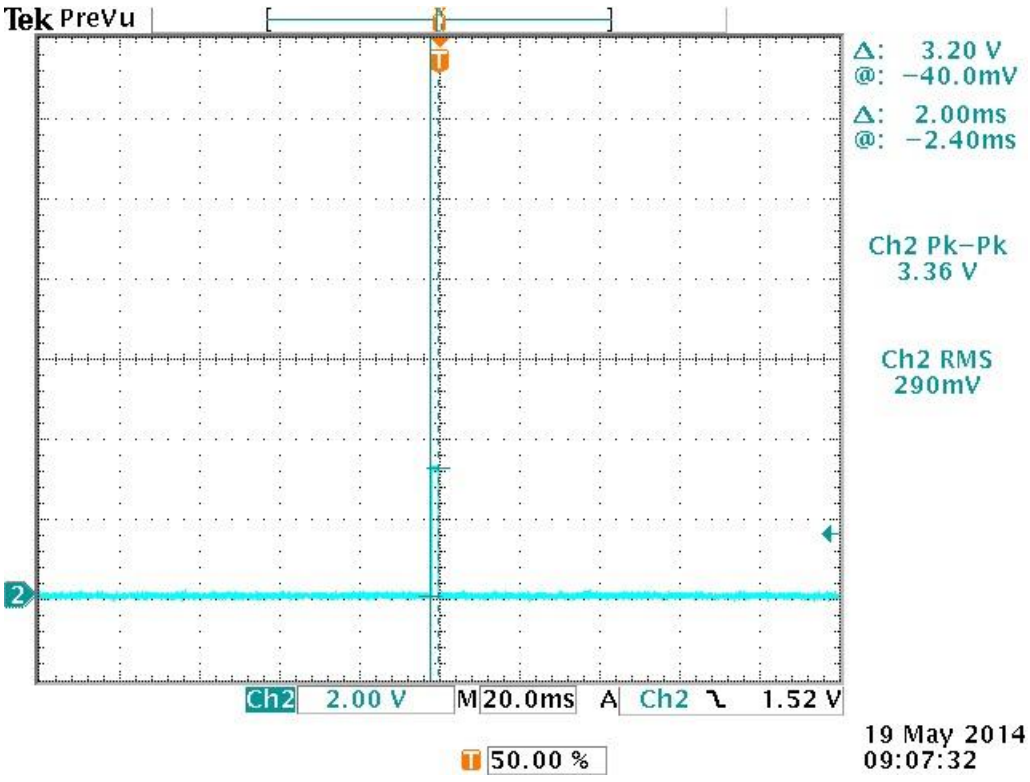
Duty Cycle Correction Calculation

MEASUREMENTS / CALCULATIONS

Engineer	Tuyen Truong
Date	5/19/2014
Site	3meter Indoor
Environmental Conditions	24.1°C, 31%, 1005mb

DCCF = 20*log (total On Time /100ms)
= 20*log (2.0/100)
= -33.98

PLOTS

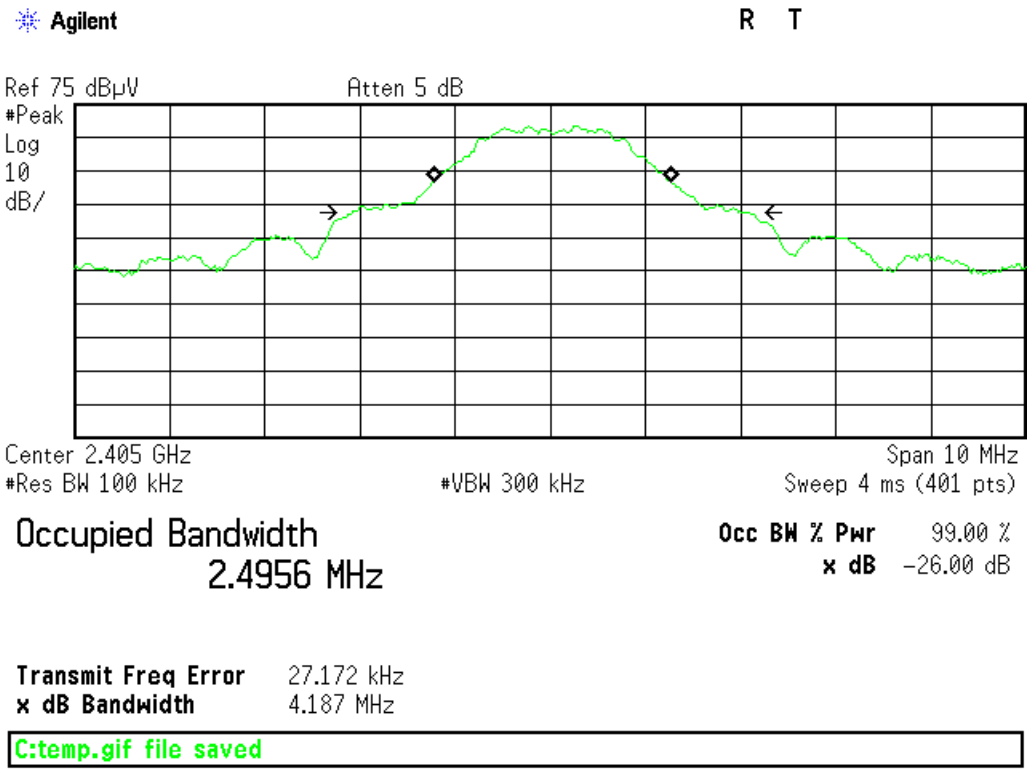


Individual Pulse On time – 2.0ms in 100ms Window

Occupied Bandwidth

REQUIREMENT

When an occupied bandwidth is no specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured. [RSS-GEN 4.6.1]



Low Channel

Measurement Uncertainty

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty
Radiated Emissions (30-1000MHz) NIST CISPR	 5.6dB 4.6dB	 N/A 5.2dB (Ucispr)
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions NIST CISPR	 3.9dB 3.6dB	 N/A 3.6dB (Ucispr)
Telco Conducted Emissions (Current)	2.9dB	N/A
Telco Conducted Emissions (Voltage)	4.4dB	N/A
Electrostatic Discharge	11.5%	N/A
Radiated RF Immunity (Uniform Field)	1.6dB	N/A
Electrical Fast Transients	23.1%	N/A
Surge	23.1%	N/A
Conducted RF Immunity	3dB	N/A
Magnetic Immunity	12.8%	N/A
Dips and Interrupts	2.3V	N/A
Harmonics	3.5%	N/A
Flicker	3.5%	N/A
Radio frequency (@ 2.4GHz)	3.23×10^{-8}	1×10^{-7}
RF power, conducted	0.40dB	0.75dB
Maximum frequency deviation: • Within 300Hz and 6kHz of audio frequency / Within 6kHz and 25kHz of audio frequency	 3.4% 0.3dB	 5% 3dB
Adjacent channel power	1.9dB	3dB
Conducted spurious emission of transmitter, valid up to 12.75GHz	2.39dB	3dB
Conducted emission of receivers	1.3dB	3dB
Radiated emission of transmitter, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of transmitter, valid up to 80GHz	3.3dB	6dB
Radiated emission of receiver, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of receiver, valid up to 80GHz	3.3dB	6dB
Humidity	2.37%	5%
Temperature	0.7°C	1.0°C
Time	4.1%	10%
RF Power Density, Conducted	0.4dB	3dB
DC and low frequency voltages	1.3%	3%
Voltage (AC, <10kHz)	1.3%	2%
Voltage (DC)	0.62%	1%
The above reflects a 95% confidence level		

Conditions Of Testing

[Bureau Veritas Consumer Products Services, Inc., a Massachusetts corporation], and/or its affiliates (collectively, the "Company") will conduct, at the request of the Submitter ("Client"), the tests specified on the submitted Test Request Form or equivalent in accordance with, and subject to, the following terms and conditions (collectively, "Conditions"):

1. All orders for tests are subject to acceptance by the Company, and no order will constitute a binding commitment of the Company unless and until such order is accepted by it, as evidenced by the issuance of a written report ("Test Report") by the Company. The Test Report is issued solely by the Company, is intended for the exclusive use of Client and shall not be published, used for advertising purposes, copied or replicated for distribution to any other person or entity or otherwise publicly disclosed without the prior written consent of the Company. By submitting a request for services to the Company, Client consents to the disclosure to accreditation bodies of those records of Client relevant to the accreditation body's assessment of the Company's competence and compliance with relevant accreditation criteria. The Company shall not be liable for any loss or damage whatsoever resulting from the failure of the Company to provide its services within any time period for completion estimated by the Company. If Client anticipates using the Test Report in any legal proceeding, arbitration, dispute resolution forum or other proceeding, it shall so notify the Company prior to submitting the Test Report in such proceeding. The Company has no obligation to provide a fact or expert witness at such proceeding unless the Company agrees in advance to do so for a separate and additional fee.
2. The Test Report will set forth the findings of the Company solely with respect to the test samples identified therein. Unless specifically and expressly indicated in the Test Report, the results set forth in such Test Report are not intended to be indicative or representative of the quality or characteristics of the lot from which a test sample is taken, and Client shall not rely upon the Test Report as being so indicative or representative of the lot or of the tested product in general. The Test Report will reflect the findings of the Company at the time of testing only, and the Company shall have no obligation to update the Test Report after its issuance. The Test Report will set forth the results of the tests performed by the Company based upon the written information provided to the Company. The Test Report will be based solely on the samples and written information submitted to the Company by Client, and the Company shall not be obligated to conduct any independent investigation or inquiry with respect thereto.
3. The Company may, in its sole discretion, destroy samples which have been furnished to the Company for testing and which have not been destroyed in the course of testing. The Company may delegate the performance of all or a portion of the services contemplated hereunder to an affiliate, agent or subcontractor of the Company, and Client consents to such delegation.
4. These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof and of the Test Report, and no modification, variance or extrapolation with respect thereto shall be permitted without the prior written consent of the Company.
5. The names, service marks, trademarks and copyrights of the Company and its affiliates, including the names "BUREAU VERITAS," "BUREAU VERITAS CONSUMER PRODUCTS SERVICES," "BVCPS", "MTL", "ACTS", "MTL-ACTS" and CURTIS-STRAUS (collectively, the "Marks") are and shall remain the sole property of the Company or its affiliates and shall not be used by Client except solely to the extent that Client obtains the prior written approval of the Company and then only in the manner prescribed by the Company. Client shall not contest the validity of the Marks or take any action that might impair the value or goodwill associated with the Marks or the image or reputation of the Company or its affiliates.
6. Payment in full shall be due 30 days after the date of invoice. Interest shall be due on overdue amounts from the due date until paid at an interest rate of 1.5% per month or, if less, the maximum rate permitted by law. The Company reserves the right, at any time and from time to time, to revoke any credit extended to Client. Client shall reimburse the Company for any costs it incurs in collecting past due amounts, including court costs and fees and expenses of attorneys and collection agencies. The Test Report may not be used or relied upon by Client if and for so long as Client fails to pay when due any invoice issued by the Company or any affiliate of it to Client or any affiliate or subsidiary of Client together with interest and penalties, if any, accrued thereon.
7. The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
8. Client understands and agrees that the Company is neither an insurer nor a guarantor, that the Company does not take the place of Client or any designer, manufacturer, agent, buyer, distributor or transportation or shipping company, and that the Company disclaims all liability in such capacities. Client further understands that if it seeks assurance against loss or damage, it should obtain appropriate insurance.
9. Client agrees that the Company, by providing the services, does not take the place of Client nor any third party, nor does the Company release them from any of their obligations, nor does the Company otherwise assume, abridge, abrogate or undertake to discharge any duty of any third party to Client or any duty of Client or any third party to any other third party, and Client will not release any third party from its obligations and duties with respect to the tested goods.
10. Client shall, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform properly its services, (b) provide, or cause Client's suppliers and contractors to provide, the Company with all documents necessary to enable the Company to perform its services, (c) furnish the Company with all relevant information regarding Client's intended use and purposes of the tested goods, (d) advise the Company of essential dates and deadlines relevant to the tested goods and (e) fully exercise all rights and remedies available to Client against third parties in respect of the tested goods.
11. The Company shall undertake due care and ordinary skill in the performance of its services to Client, and the Company shall accept responsibility only were such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or

different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.

13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.

14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, IS MADE.

15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

(B)NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN, AND IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS TO CLIENT AND THE COMPANY ASSOCIATED WITH THE TESTING SERVICES CONTEMPLATED HEREBY, THE RISKS HAVE BEEN ALLOCATED SUCH THAT UNDER NO CIRCUMSTANCES WHATSOEVER SHALL THE LIABILITY OF THE COMPANY TO CLIENT OR ANY THIRD PARTY IN RESPECT OF ANY CLAIM FOR LOSS, DAMAGE OR EXPENSE, OF WHATSOEVER NATURE OR MAGNITUDE, AND HOWSOEVER ARISING, EXCEED AN AMOUNT EQUAL TO FIVE (5) TIMES THE AMOUNT OF THE FEES PAID TO THE COMPANY FOR THE SPECIFIC SERVICES WHICH GAVE RISE TO SUCH CLAIM OR U.S.$10,000, WHICHEVER IS THE LESSER AMOUNT.

16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.

Company's services, including these Conditions, shall be governed by, and construed in accordance with, the local laws of the country where the Company performs the tests or, in the case of tests performed in the United States of America, the laws of Massachusetts without regard to conflicts of laws principles. If any aspect(s) of these Conditions is found to be illegal or unenforceable, the validity, legality and enforceability of all remaining aspects of these Conditions shall not in any way be affected or impaired thereby. Any proceeding related to the subject matter hereof shall be brought, if at all, in the courts of the country where the Company performs the tests or, in the case of tests performed in the United States of America, in the courts of Massachusetts. Client waives the right to interpose any counterclaim or setoffs of any nature in any litigation arising hereunder.

The complete list of the Approved Subcontractors Curtis-Straus may use to delegate the performance of work can be provided upon request.