



TEST REPORT

Report Number: 101009953DEN-002

Project Number: G101009953

Report Issue Date: 3/21/13

Product Designation: Model: CPOD24

Standards: FCC 47 CFR Part 15.249

(Operation within the bands 902-928MHz, 2400-2483.5MHz,
5725-5875MHz and 24.0-24.25GHz)

Tested by:
Intertek Testing Services NA, Inc.
1795 Dogwood St. Suite 200
Louisville, CO 80027

Client:
Colorado Sound N' Light
12061 Pennsylvania Street, Suite B102
Thornton, CO 80241

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded **the product tested complies with the requirements of the standard(s) indicated**. The results obtained in this test report pertain only to the item(s) tested.

1.1 Test Facility

Intertek Denver's testing facilities are located at 1795 Dogwood St. Suite 200 Louisville, CO 80027. The testing facility is ISO17025:2005 accredited by A2LA, our lab code is 2506.02, our VCCI registration numbers are. R-1643, C-1752 and T-1558, our FCC designation no. US1121 and our IC lab no. 2042N.

Testing contained in this test report may not be covered under the laboratories scope of accreditation. A note will be placed in the specific test section for testing not covered under the laboratories scope.

2 Test Summary

Section	Test full name	Test date	Result
5	Radiated Emissions – Field Strength of the Fundamental & Harmonics of the Fundamental – FCC 249(a)	01/15/2013 01/16/2013 03/06/2013	Pass
6	Radiated Emissions – Unintentional and Spurious FCC 15.249(d)/ 15.209	01/15/2013	Pass
7	Radiated Emissions – Band Edge FCC 15.249(d)/ 15.209	01/15/2013	Pass
8	AC Conducted Emissions – FCC 15.207	-----	N/A Note 3
9	Duty Cycle Determination – FCC 15.35(c)	01/16/2013	Pass

Notes:

- 1) The scope of this report was to qualify the CPOD24 Wireless LED Remote Controller.
Note that the associated Receiver Model: CSL 12-1 was also tested and passed - refer to Intertek Report 101009953DEN-001 for details.
- 2) The CPOD24 has the following pending FCC ID: RRW-CPOD24
- 3) The product has no ac ports – therefore, Conducted Emissions testing is not applicable.

2.1 General Test Methodology

All radio testing in this report performed in accordance with the following standards:

- ANSI C63.10:2009 – ANSI Standard for Testing Unlicensed Wireless Devices
- FCC Part 15, Subpart C – Intentional Radiators

Specific Test Notes:

- ANSI C63.10, Section 6.3: Testing was performed in 3 different orthogonal axes to determine the worst-case emissions from the device. The worst-case axis and emissions are shown in this report.
- ANSI C63.10, Section 5.13/ FCC CFR Part 15.31(e): For battery-operated equipment, the equipment tests shall be performed using a new battery. A new battery was used for testing.
- ANSI C63.10, Section 4.2.3.2/ FCC 15.35: Measurement detector functions and bandwidths utilized in this testing were per the preceding guidelines.
- ANSI C63.10, Section 4.2.3.2.2/ FCC 15.35(b): When an average limit is specified, the peak emission must also be measured to ensure the emissions is less than 20dB above the average limit and/or below the peak limit specified. This report includes both average and peak test data.
- ANSI C63.10, Section 4.2.3.2.4/ FCC 15.35(c): When the field strength (or envelope power) is not constant or when it pulses, and an average detector/limit is specified to be used, a duty cycle correction factor may be utilized to determine the pulsed “average” of the field strength or power. Duty cycle correction was utilized in this report where applicable.
- ANSI C63.10, Section 5.3/ FCC 15.31: All measurements taken at an antenna-to-product test distance of 3-meters for the following frequency range: 30MHz to 18GHz. All measurements taken at an antenna-to-product test distance of 1-meter for the following frequency range: 18GHz to 40GHz. The measurements were then extrapolated to 3-meters using a factor of 20dB/decade.
- ANSI C63.10, Section 5.5, Table 2/ FCC 15.33(a): The frequency range of measurement per the requirements of the preceding standards. The product was tested from 30MHz to 25GHz.
- ANSI C63.10, Section 6.3.1/ FCC 15.35(b): Measurement bandwidths utilized for peak emissions were equal to or greater than the 6dB bandwidth of the emission.
- ANSI C63.10, Section 6.3/ FCC 15.31(m): Measurements were taken for at the lowest, middle and highest channels of the product tested. The product utilizes 3-channels only.

Product-Specific Radio Notes:

1. The product is not a fixed, point-to-point operating system.
2. The product is a battery-operated device – therefore no ac port testing was required.
3. The product is configured with an integral antenna – not user accessible. Therefore, FCC 15.203 antenna requirements were satisfied.
4. Duty Cycle Correction Factors were utilized in this testing and report per client request.
5. The product utilizes 3-channels only for RGB output control – all channels and product functions (user control buttons) were tested.
6. The product design does not incorporate any radio modulation schemes.

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3 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
RF Wireless Touching LED Remote Controller	Colorado Sound N' Light	CPOD24	1001

Receive Date:	01/14/2013
Received Condition:	Good
Type:	Production Samples

Description of Equipment Under Test (provided by client)
The CPOD24 is CSL's newest wireless control system featuring 2.4GHz RF control for lighting. The product features improved syncing with more transmit range (100 feet) and functions. Features include: ▪ 2.4GHz RF transmitter ▪ Output control: 3-circuits (R/G/B) ▪ (5) Function buttons (power, light mode, color/white light switching, brightness up/speed, brightness down/speed) ▪ Color Ring The product is battery-powered - (3) AAA batteries

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
12 VDC	6A/circuit	---	---

Operating modes of the EUT: Intentional Tx Testing

No.	Descriptions of EUT Exercising
1	Product configured in normal transmit mode at full power, normal duty cycle.
2	All function keys/buttons tested to determine worst-case.
3	Product tested in 3-axes to determine worst-case axis.

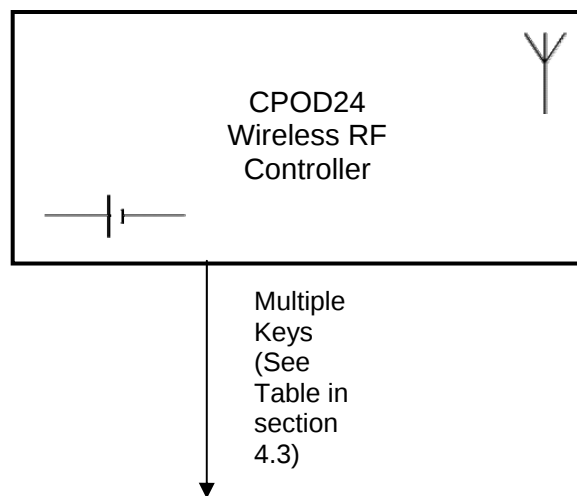
Note: None

4 System setup including cable interconnection details, support equipment and simplified block diagram

4.1 Method:

Record the details of EUT cabling, document the support equipment, and show the interconnections in a block diagram.

4.2 EUT Block Diagram:



Note: If applicable, dashed lines indicate auxiliary/support equipment outside the test area

4.3 Support Data:

ID	Description	Function	Tested	Notes
1	Key 1	Power On/Off	Yes	
2	Key 2	Light Changing Mode	Yes	
3	Key 3	Color Light/ White Switching Mode	Yes	
4	Key 4	Brightness/ Speed Increase	Yes	
5	Key 5	Brightness/ Speed Decrease	Yes	

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
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Notes: The product power Key 1 (power) was found to be worst-case during the initial fundamental signal field strength testing. Note that all keys and associated RF field strength levels were approximately equal.

5 Radiated Emissions – Fundamental & Harmonics of the Fundamental

5.1 Method

The test methods used comply with ANSI C63.10:2009. Unless otherwise stated no deviations were made from **FCC CFR47 15.249(a)**.

This testing was performed at Intertek Denver, located at 1795 Dogwood St. Suite 200, Louisville, CO 80027.

5.2 Test Equipment Used:

<u>Asset ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Serial</u>	<u>Cal Date</u>	<u>Cal Due</u>
18882	Spectrum Analyzer (dc-22 GHz)	Hewlett-Packard	8566B	2410A00154	02/24/2012	02/24/2013
18660	Spectrum Analyzer Display Section (set 1)	Hewlett-Packard	85662A	2318A04983	02/24/2012	02/24/2013
18880	Q.P Adapter	HP	85650A	2811A01300	02/24/2012	02/24/2013
18912	9 kHz- 1.3GHz Pre Amp	Hewlett-Packard	8447F	3113A05545	6/6/2012	6/6/2013
18906	Amplifier (1-4 GHz)	Mini-Circuits Lab	ZHL-42	N052792-2	6/7/2012	6/7/2013
18900	RF Pre-Amplifier (4-8 GHz)	Avantek	AFT97-8434-10F	1007	6/7/2012	6/7/2013
18901	RF Pre-Amplifier (8-16 GHz)	Avantek	AWT-18037	1002	6/7/2012	6/7/2013
19937	Bilog Antenna 30MHz - 6GHz	Sunol Sciences	JB6	A050707-2	03/07/2012	03/07/2013
18887	Horn Antenna 1-18GHz	EMCO	3115	9205-3886	2/28/2012	2/27/2013
18913	Spectrum Analyzer	Hewlett-Packard	E7405A	My44211889	07/16/2012	07/16/2013
18805	HF Active Antenna/Harmonic Mixer 18 GHz to 26.5 GHz	Hewlett-Packard	11970K	2332A01280	01/30/2013	01/30/2014
SW-6	Software for Radiated and Conducted emissions.	Intertek	OATS vba	V. 3.0	VBU	VBU

5.3 Results:

The sample tested was found to comply with the requirements of:

- FCC Part 15.249(a) – Field Strength of the Fundamental (50 mV/m)
- FCC Part 15.249(a) – Field Strength of Harmonics (500 uV/m)

5.4 Setup Photographs:

Test setup – Field Strength Measurements (Front View)

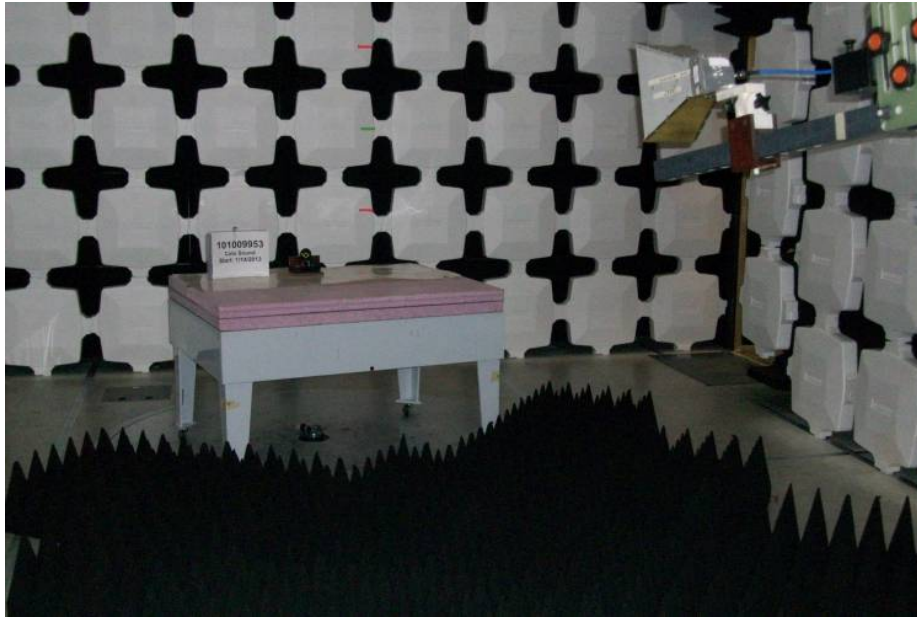


Test setup – Field Strength Measurements (Rear View)



Photo: Antenna Setups

Horn (1GHz – 18GHz)



HF Active Antenna/Harmonic Mixer (18GHz – 26.5GHz)



Photo: Product Test Axes

Axis 1 (EUT Flat on Table)



Axis 2 (EUT Vertical) – Worst Case



Axis 3 (EUT Vertical & Rotated 90 Degrees)



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5.5 Test Data: Average Limit per FCC 15.249(a)

Fundamental and Spurious Harmonics of the Transmitter

Test Report #:	G101009953	Test Area:	CC1 Radiated	Temperature:	22.8	°C
Test Method:	FCC 15.249	Test Date:	13-Jan-2013	Relative Humidity:	23.7	%
EUT Model #:	CPOD24	EUT Power:	Battery	Air Pressure:	82.9	kPa
EUT Serial #:	1001					

Manufacturer:	Colorado Sound & Light	Level Key	
EUT Description:	RF Wireless LED Remote Controller – 2.4GHz Band	Pk – Peak	Nb – Narrow Band
Notes:	Product transmitting continuously – normal duty cycle	Qp – QuasiPeak	Bb – Broad Band
	All product functions/ user control buttons tested	Av - Average	
Peak Detector Measurements –duty-cycle corrected for pulsed average per ANSI C63.10:2009, Section 7.5 & FCC 15.35(c) for comparison to the Average Limits			

The following Duty Cycle was verified by Intertek: 10.5%

Averaging method for pulsed signals and calculation in accordance to FCC CFR47 Part 15.35(c) utilized to calculate field strength emissions.

The testing performed in accordance to FCC CFR47 Part 15.249 and delta limits were calculated as follows:

Final Corrected Peak Measurement – Duty Cycle Correction Factor* = Final Calculated Emission

The Final Calculated Emission was then compared to the Limits in CFR47 Part 15.49 and the emission/limit delta was calculated.

DTCF is calculated as follows $20 \cdot \log_{10}(\text{duty cycle per 100ms})$.

Part 15.249

FREQ	LEVEL	DET	CABLE	Antenna	PREAMP	FINAL	Duty Cycle CF	Duty Cycle Corrected	POL	HGT	AZ	FCC Average Limit	Delta Limit	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	= [dBuV]	(dB)	FINAL	(V/H)	(m)	(DEG)	(dB)	(dB)	(MHz)

Fundamental Measurements - Axis 1 - EUT Flat on Table

Tx Mid Channel - Button 1

2443.15259	69.25	Pk	3.55	28.47	0.00	101.27	19.58	81.69	H	1.50	45.0	94.00	- 12.31	1.00
2443.15259	66.27	Pk	3.55	28.47	0.00	98.29	19.58	78.71	V	1.68	12.0	94.00	- 15.29	1.00

Tx Mid Channel - Button 2

2443.15259	68.05	Pk	3.55	28.47	0.00	100.07	19.58	80.49	H	1.50	45.0	94.00	- 13.51	1.00
2443.15259	66.14	Pk	3.55	28.47	0.00	98.16	19.58	78.58	V	1.62	7.0	94.00	- 15.42	1.00

Tx Mid Channel - Button 3

2443.15259	69.05	Pk	3.55	28.47	0.00	101.07	19.58	81.49	H	1.50	236.0	94.00	- 12.51	1.00
2443.15259	67.12	Pk	3.55	28.47	0.00	99.14	19.58	79.56	V	1.57	8.0	94.00	- 14.44	1.00

Tx Mid Channel - Button 4

2443.15259	66.25	Pk	3.55	28.47	0.00	98.27	19.58	78.69	V	1.60	316.0	94.00	- 15.31	1.00
2443.15259	68.65	Pk	3.55	28.47	0.00	100.67	19.58	81.09	H	1.60	287.0	94.00	- 12.91	1.00

Tx Mid Channel - Power Button

2443.15259	69.35	Pk	3.55	28.47	0.00	101.37	19.58	81.79	H	1.50	45.0	94.00	- 12.21	1.00
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2443.15259	66.20	Pk	3.55	28.47	0.00	98.22	19.58	78.64	V	1.80	286.0	94.00	- 15.36	1.00
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FREQ	LEVEL	DET	CABLE	Antenna	PREAMP	FINAL	Duty Cycle CF	Duty Cycle Corrected	POL	HGT	AZ	Average Limit	Delta Limit	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	= [dBuV]	(dB)	FINAL	(V/H)	(m)	(DEG)	(dB)	(dB)	(MHz)
Tx Power Button determined to be worst-case – following measurements taken using the Power Button.														
Tx Fundamental – Mid Channel - AXIS 2 - EUT VERTICAL														
2443.15259	68.18	Pk	3.55	28.47	0.00	100.20	19.58	80.62	V	1.64	10.0	94.00	- 13.38	1.00
2443.15259	70.15	Pk	3.55	28.47	0.00	102.17	19.58	82.59	H	1.50	45.0	94.00	- 11.41	1.00
Tx Fundamental – Mid Channel - AXIS 3 - EUT VERTICAL & ROTATED 90 DEGREES														
2443.15259	65.70	Pk	3.55	28.47	0.00	97.72	19.58	78.14	V	1.70	193.0	94.00	- 15.86	1.00
2443.15259	68.90	Pk	3.55	28.47	0.00	100.92	19.58	81.34	H	1.50	186.0	94.00	- 12.66	1.00
Axis 2 determined to be worst-case – following measurements taken with product in Axis 2 position.														
Tx Fundamental - Low Channel - Worst-case Button & Test Axis 2														
2408.0000	68.30	Pk	3.52	28.38	0.00	100.20	19.58	80.62	V	1.74	11.7	94.00	- 13.38	1.00
2408.0000	69.93	Pk	3.52	28.38	0.00	101.83	19.58	82.25	H	1.47	74.3	94.00	- 11.75	1.00
Tx Fundamental - High Channel - Worst-case Button & Test Axis 2														
2478.1000	67.41	Pk	3.57	28.55	0.00	99.53	19.58	79.95	V	1.67	72.3	94.00	- 14.05	1.00
2478.1000	67.53	Pk	3.57	28.55	0.00	99.65	19.58	80.07	H	1.27	6.4	94.00	- 13.93	1.00

FREQ	LEVEL	DET	CABLE	Antenna	PREAMP	FINAL	Duty Cycle CF	Duty Cycle Corrected	POL	HGT	AZ	FCC Average Limit	Delta Limit	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	= [dBuV]	(dB)	FINAL (dBuV)	(V/H)	(m)	(DEG)	(dB)	(dB)	(MHz)
Tx Harmonics - Mid Channel - Worst-case Button & Test Axis 2														
4886.30518	53.20	Pk	5.20	33.46	38.82	53.04	19.58	33.46	H	1.60	104.0	54.00	-20.54	1
4886.30518	55.85	Pk	5.20	33.46	38.82	55.69	19.58	36.11	V	1.50	264.0	54.00	- 17.89	1
7329.45777	62.50	Pk	6.47	36.62	39.19	66.40	19.58	46.82	H	1.40	323.0	54.00	- 7.18	1
7329.45777	63.55	Pk	6.47	36.62	39.19	67.45	19.58	47.87	V	1.40	85.0	54.00	- 6.13	1
9772.61036	37.60	Pk	7.66	37.83	48.73	34.36	19.58	14.78	H	1.30	342.0	54.00	- 39.22	1
9772.61036	36.90	Pk	7.66	37.83	48.73	33.66	19.58	14.08	V	1.30	222.0	54.00	- 39.92	1
12215.76295	34.85	Pk	8.83	40.79	45.62	38.85	19.58	19.27	H	1.30	342.0	54.00	- 34.73	1
12215.76295	35.80	Pk	8.83	40.79	45.62	39.80	19.58	20.22	V	1.30	168.0	54.00	- 33.78	1
14658.91554	41.00	Pk	9.51	47.04	47.85	49.70	19.58	30.12	H	1.30	342.0	54.00	- 23.88	1
14658.91554	40.30	Pk	9.51	47.04	47.85	49.00	19.58	29.42	V	1.30	168.0	54.00	- 24.58	1
17102.06813	40.85	Pk	10.60	42.37	47.45	46.37	19.58	26.79	H	1.30	342.0	54.00	- 27.21	1
17102.06813	40.15	Pk	10.60	42.37	47.45	45.67	19.58	26.09	V	1.30	168.0	54.00	- 27.91	1
19545.2200	33.04	Pk	0.00	22.05	9.54	45.55	19.58	25.97	V	1.0	0.00	54.00	- 28.03	1
19545.2200	34.64	Pk	0.00	22.05	9.54	47.15	19.58	27.57	H	1.0	0.00	54.00	- 26.43	1
21988.3800	33.19	Pk	0.00	21.40	9.54	45.05	19.58	25.47	V	1.0	0.00	54.00	- 28.53	1
21988.3800	32.78	Pk	0.00	21.40	9.54	44.64	19.58	25.06	H	1.0	0.00	54.00	- 28.94	1
24431.5300	33.00	Pk	0.00	21.63	9.54	45.09	19.58	25.51	V	1.0	0.00	54.00	- 28.49	1
24431.5300	31.31	Pk	0.00	21.63	9.54	43.40	19.58	23.82	H	1.0	0.00	54.00	- 30.18	1
Tx Harmonics - Low Channel - Worst-case Button & Test Axis 2														
4816.0000	48.71	Pk	5.17	33.24	38.94	48.18	19.58	28.6	H	1.27	12.0	54.00	- 25.40	1
4816.0000	42.44	Pk	5.17	33.24	38.94	41.91	19.58	22.3	V	1.28	354.0	54.00	- 31.67	1
7224.0000	65.12	Pk	6.42	36.19	39.45	68.28	19.58	48.7	H	1.27	6.4	54.00	- 5.30	1
7224.0000	44.37	Pk	6.42	36.19	39.45	47.53	19.58	28.0	V	1.30	354.0	54.00	- 26.05	1
9632.0000	52.39	Pk	7.60	37.76	48.65	49.10	19.58	29.5	V	1.22	352.0	54.00	- 24.48	1
9632.0000	47.33	Pk	7.60	37.76	48.65	44.04	19.58	24.5	H	1.11	7.0	54.00	- 29.54	1
12040.0000	34.30	Pk	8.72	39.63	45.60	37.05	19.58	17.5	V	1.25	7.0	54.00	- 36.53	1
12040.0000	34.61	Pk	8.72	39.63	45.60	37.36	19.58	17.8	H	1.17	3.0	54.00	- 36.22	1
14448.0000	35.08	Pk	9.42	51.05	48.00	47.55	19.58	28.0	V	1.20	21.0	54.00	- 26.03	1
14448.0000	34.99	Pk	9.42	51.05	48.00	47.46	19.58	27.9	H	1.19	18.0	54.00	- 26.12	1
16856.0000	35.12	Pk	10.60	42.37	47.45	40.64	19.58	21.1	V	1.25	3.0	54.00	- 32.94	1
16856.0000	36.47	Pk	10.60	42.37	47.45	41.99	19.58	22.4	H	1.20	68.0	54.00	- 31.59	1
19264.0000	33.12	Pk	0.00	22.02	9.54	45.60	19.58	26.02	V	1.0	0.00	54.00	- 27.98	1
19264.0000	34.24	Pk	0.00	22.02	9.54	46.72	19.58	27.14	H	1.0	0.00	54.00	- 26.86	1
21672.0000	32.98	Pk	0.00	21.38	9.54	44.82	19.58	25.24	V	1.0	0.00	54.00	- 28.76	1
21672.0000	33.21	Pk	0.00	21.38	9.54	45.05	19.58	25.47	H	1.0	0.00	54.00	- 28.53	1
24080.0000	32.97	Pk	0.00	21.60	9.54	45.03	19.58	25.45	V	1.0	0.00	54.00	- 28.55	1
24080.0000	33.02	Pk	0.00	21.60	9.54	45.08	19.58	25.50	H	1.0	0.00	54.00	- 28.50	1
Tx Harmonics - High Channel - Worst-case Button & Test Axis 2														
4956.2000	43.68	Pk	5.24	33.59	38.70	43.81	19.58	24.2	V	1.00	359.0	54.00	- 29.77	1

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FREQ	LEVEL	DET	CABLE	Antenna	PREAMP	FINAL	Duty Cycle CF	Duty Cycle Corrected	POL	HGT	AZ	FCC Average Limit	Delta Limit	RBW
<u>MHz</u>	<u>dBuV</u>	<u>Qp</u> <u>Av</u> <u>Pk</u>	<u>+</u> [dB]	<u>+</u> [dB/m]	<u>-</u> [dB]	<u>=</u> [dBuV]	(dB)	FINAL (dBuV)	(V/H)	(m)	(DEG)	(dB)	(dB)	(MHz)
4956.2000	43.53	Pk	5.24	33.59	38.70	43.66	19.58	24.1	H	1.28	359.0	54.00	- 29.92	1
7434.3000	61.32	Pk	6.53	36.69	39.24	65.30	19.58	45.7	V	1.00	359.0	54.00	- 8.28	1
7434.3000	61.65	Pk	6.53	36.69	39.24	65.63	19.58	46.1	H	1.19	359.0	54.00	- 7.95	1
9912.4000	49.29	Pk	7.73	38.01	48.77	46.26	19.58	26.7	H	1.22	352.0	54.00	- 27.32	1
9912.4000	48.27	Pk	7.73	38.01	48.77	45.24	19.58	25.7	V	1.24	12.0	54.00	- 28.34	1
12390.5000	39.32	Pk	8.93	42.13	45.73	44.65	19.58	25.1	H	1.25	7.0	54.00	- 28.93	1
12390.5000	39.23	Pk	8.93	42.13	45.73	44.56	19.58	25.0	V	1.19	355.0	54.00	- 29.02	1
14868.6000	37.73	Pk	9.61	44.46	47.82	43.98	19.58	24.4	H	1.34	21.0	54.00	- 29.60	1
14868.6000	40.18	Pk	9.61	44.46	47.82	46.43	19.58	26.9	V	1.18	10.0	54.00	- 27.15	1
19824.8000	33.25	Pk	0.00	22.15	9.54	45.86	19.58	26.28	V	1.0	0.00	54.00	- 27.72	1
19824.8000	33.12	Pk	0.00	22.15	9.54	45.73	19.58	26.15	H	1.0	0.00	54.00	- 27.85	1
22302.9000	33.19	Pk	0.00	21.43	9.54	45.08	19.58	25.50	V	1.0	0.00	54.00	- 28.50	1
22302.9000	32.78	Pk	0.00	21.43	9.54	44.67	19.58	25.09	H	1.0	0.00	54.00	- 28.91	1
24781.0000	33.11	Pk	0.00	21.69	9.54	45.26	19.58	25.68	V	1.0	0.00	54.00	- 28.32	1
24781.0000	32.68	Pk	0.00	21.69	9.54	44.83	19.58	25.25	H	1.0	0.00	54.00	- 28.75	1

Intertek	
Report Number: 101009953DEN-002	Issued:3/21/13

5.6 Test Data: Peak Limit per FCC 15.35(b)

Fundamental and Spurious Harmonics of the Transmitter

Test Report #: **G101009953** Test Area: CC1 Radiated Temperature: 22.8 °C
 Test Method: FCC 15.249 Test Date: 13-Jan-2013 Relative Humidity: 23.7 %
 EUT Model #: CPOD24 EUT Power: Battery Air Pressure: 82.9 kPa
 EUT Serial #: 1001

Manufacturer: Colorado Sound & Light

EUT Description: RF Wireless LED Remote Controller – 2.4GHz Band

Notes: Product transmitting continuously – normal duty cycle

All product functions/ user control buttons tested

Peak Detector Measurements for comparison to the peak limits (above 1GHz)
per ANSI C63.10:2009, Section 4.2.3.2.2 & FCC 15.35(b)

Level Key

Pk – Peak Nb – Narrow Band
 Qp – QuasiPeak Bb – Broad Band
 Av - Average

The following Duty Cycle was verified by Intertek: 10.5%

No duty cycle correction utilized for comparison to the peak limit

Part 15.249

FREQ	LEVEL	DET	CABLE	Antenna	PREAMP	FINAL	Duty Cycle CF	Duty Cycle Corrected	POL	HGT	AZ	FCC Peak Limit	Delta Limit	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	= [dBuV]	(dB)	FINAL	(V/H)	(m)	(DEG)	(dB)	(dB)	(MHz)

Fundamental Measurements - Axis 1 - EUT Flat on Table

Tx Mid Channel - Button 1

2443.15259	69.25	Pk	3.55	28.47	0.00	101.27	0.00	101.27	H	1.50	45.0	114.00	- 12.73	1.00
2443.15259	66.27	Pk	3.55	28.47	0.00	98.29	0.00	98.29	V	1.68	12.0	114.00	- 15.71	1.00

Tx Mid Channel - Button 2

2443.15259	68.05	Pk	3.55	28.47	0.00	100.07	0.00	100.07	H	1.50	45.0	114.00	- 13.93	1.00
2443.15259	66.14	Pk	3.55	28.47	0.00	98.16	0.00	98.16	V	1.62	7.0	114.00	- 15.84	1.00

Tx Mid Channel - Button 3

2443.15259	69.05	Pk	3.55	28.47	0.00	101.07	0.00	101.07	H	1.50	236.0	114.00	- 12.93	1.00
2443.15259	67.12	Pk	3.55	28.47	0.00	99.14	0.00	99.14	V	1.57	8.0	114.00	- 14.86	1.00

Tx Mid Channel - Button 4

2443.15259	66.25	Pk	3.55	28.47	0.00	98.27	0.00	98.27	V	1.60	316.0	114.00	- 15.73	1.00
2443.15259	68.65	Pk	3.55	28.47	0.00	100.67	0.00	100.67	H	1.60	287.0	114.00	- 13.33	1.00

Tx Mid Channel - Power Button

2443.15259	69.35	Pk	3.55	28.47	0.00	101.37	0.00	101.37	H	1.50	45.0	114.00	- 12.63	1.00
2443.15259	66.20	Pk	3.55	28.47	0.00	98.22	0.00	98.22	V	1.80	286.0	114.00	- 15.78	1.00

FREQ	LEVEL	DET	CABLE	Antenna	PREAMP	FINAL	Duty Cycle CF	Duty Cycle Corrected	POL	HGT	AZ	FCC Peak Limit	Delta Limit	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	= [dBuV]	(dB)	FINAL	(V/H)	(m)	(DEG)	(dB)	(dB)	(MHz)
Tx Power Button determined to be worst-case – following measurements taken using the power button														
Tx Fundamental – Mid Channel - AXIS 2 - EUT VERTICAL														
2443.15259	68.18	Pk	3.55	28.47	0.00	100.20	0.00	100.20	V	1.64	10.0	114.00	- 13.80	1.00
2443.15259	70.15	Pk	3.55	28.47	0.00	102.17	0.00	102.17	H	1.50	45.0	114.00	- 11.83	1.00
Tx Fundamental – Mid Channel - AXIS 3 - EUT VERTICAL & ROTATED 90 DEGREES														
2443.15259	65.70	Pk	3.55	28.47	0.00	97.72	0.00	97.72	V	1.70	193.0	114.00	- 16.28	1.00
2443.15259	68.90	Pk	3.55	28.47	0.00	100.92	0.00	100.92	H	1.50	186.0	114.00	- 13.08	1.00
Axis 2 determined to be worst-case – following measurements taken with product in Axis 2 position														
Tx Fundamental - Low Channel - Worst-case Button & Test Axis 2														
2408.0000	68.30	Pk	3.52	28.38	0.00	100.20	0.00	100.20	V	1.74	11.7	114.00	- 13.80	1.00
2408.0000	69.93	Pk	3.52	28.38	0.00	101.83	0.00	101.83	H	1.47	74.3	114.00	- 12.17	1.00
Tx Fundamental - High Channel - Worst-case Button & Test Axis 2														
2478.1000	67.41	Pk	3.57	28.55	0.00	99.53	0.00	99.53	V	1.67	72.3	114.00	- 14.47	1.00
2478.1000	67.53	Pk	3.57	28.55	0.00	99.65	0.00	99.65	H	1.27	6.4	114.00	- 14.35	1.00

FREQ	LEVEL	DET	CABLE	Antenna	PREAMP	FINAL	Duty Cycle CF	Duty Cycle Corrected	POL	HGT	AZ	FCC Peak Limit	Delta Limit	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	= [dBuV]	(dB)	FINAL (dBuV)	(V/H)	(m)	(DEG)	(dB)	(dB)	(MHz)
Tx Harmonics - Mid Channel - Worst-case Button & Test Axis 2														
4886.30518	53.20	Pk	5.20	33.46	38.82	53.04	0.00	53.04	H	1.60	104.0	74.00	- 20.96	1.00
4886.30518	55.85	Pk	5.20	33.46	38.82	55.69	0.00	55.69	V	1.50	264.0	74.00	- 18.31	1.00
7329.45777	62.50	Pk	6.47	36.62	39.19	66.40	0.00	66.40	H	1.40	323.0	74.00	- 7.60	1.00
7329.45777	63.55	Pk	6.47	36.62	39.19	67.45	0.00	67.45	V	1.40	85.0	74.00	- 6.55	1.00
9772.61036	37.60	Pk	7.66	37.83	48.73	34.36	0.00	34.36	H	1.30	342.0	74.00	- 39.64	1.00
9772.61036	36.90	Pk	7.66	37.83	48.73	33.66	0.00	33.66	V	1.30	222.0	74.00	- 40.34	1.00
12215.76295	34.85	Pk	8.83	40.79	45.62	38.85	0.00	38.85	H	1.30	342.0	74.00	- 35.15	1.00
12215.76295	35.80	Pk	8.83	40.79	45.62	39.80	0.00	39.80	V	1.30	168.0	74.00	- 34.20	1.00
14658.91554	41.00	Pk	9.51	47.04	47.85	49.70	0.00	49.70	H	1.30	342.0	74.00	- 24.30	1.00
14658.91554	40.30	Pk	9.51	47.04	47.85	49.00	0.00	49.00	V	1.30	168.0	74.00	- 25.00	1.00
17102.06813	40.85	Pk	10.60	42.37	47.45	46.37	0.00	46.37	H	1.30	342.0	74.00	- 27.63	1.00
17102.06813	40.15	Pk	10.60	42.37	47.45	45.67	0.00	45.67	V	1.30	168.0	74.00	- 28.33	1.00
19545.2200	33.04	Pk	0.00	22.05	9.54	45.55	0.00	45.55	V	1.0	0.00	74.00	- 28.45	1.00
19545.2200	34.64	Pk	0.00	22.05	9.54	47.15	0.00	47.15	H	1.0	0.00	74.00	- 26.85	1.00
21988.3800	33.19	Pk	0.00	21.40	9.54	45.05	0.00	45.05	V	1.0	0.00	74.00	- 28.95	1.00
21988.3800	32.78	Pk	0.00	21.40	9.54	44.64	0.00	44.64	H	1.0	0.00	74.00	- 29.36	1.00
24431.5300	33.00	Pk	0.00	21.63	9.54	45.09	0.00	45.09	V	1.0	0.00	74.00	- 28.91	1.00
24431.5300	31.31	Pk	0.00	21.63	9.54	43.40	0.00	43.40	H	1.0	0.00	74.00	- 30.60	1.00
Tx Harmonics - Low Channel - Worst-case Button & Test Axis 2														
4816.0000	48.71	Pk	5.17	33.24	38.94	48.18	0.00	48.18	H	1.27	12.0	74.00	- 25.82	1.00
4816.0000	42.44	Pk	5.17	33.24	38.94	41.91	0.00	41.91	V	1.28	354.0	74.00	- 32.09	1.00
7224.0000	65.12	Pk	6.42	36.19	39.45	68.28	0.00	68.28	H	1.27	6.4	74.00	- 5.72	1.00
7224.0000	44.37	Pk	6.42	36.19	39.45	47.53	0.00	47.53	V	1.30	354.0	74.00	- 26.47	1.00
9632.0000	52.39	Pk	7.60	37.76	48.65	49.10	0.00	49.10	V	1.22	352.0	74.00	- 24.90	1.00
9632.0000	47.33	Pk	7.60	37.76	48.65	44.04	0.00	44.04	H	1.11	7.0	74.00	- 29.96	1.00
12040.0000	34.30	Pk	8.72	39.63	45.60	37.05	0.00	37.05	V	1.25	7.0	74.00	- 36.95	1.00
12040.0000	34.61	Pk	8.72	39.63	45.60	37.36	0.00	37.36	H	1.17	3.0	74.00	- 36.64	1.00
14448.0000	35.08	Pk	9.42	51.05	48.00	47.55	0.00	47.55	V	1.20	21.0	74.00	- 26.45	1.00
14448.0000	34.99	Pk	9.42	51.05	48.00	47.46	0.00	47.46	H	1.19	18.0	74.00	- 26.54	1.00
16856.0000	35.12	Pk	10.60	42.37	47.45	40.64	0.00	40.64	V	1.25	3.0	74.00	- 33.36	1.00
16856.0000	36.47	Pk	10.60	42.37	47.45	41.99	0.00	41.99	H	1.20	68.0	74.00	- 32.01	1.00
19264.0000	33.12	Pk	0.00	22.02	9.54	45.60	0.00	45.60	V	1.0	0.00	74.00	- 28.40	1.00
19264.0000	34.24	Pk	0.00	22.02	9.54	46.72	0.00	46.72	H	1.0	0.00	74.00	- 27.28	1.00
21672.0000	32.98	Pk	0.00	21.38	9.54	44.82	0.00	44.82	V	1.0	0.00	74.00	- 29.18	1.00
21672.0000	33.21	Pk	0.00	21.38	9.54	45.05	0.00	45.05	H	1.0	0.00	74.00	- 28.95	1.00
24080.0000	32.97	Pk	0.00	21.60	9.54	45.03	0.00	45.03	V	1.0	0.00	74.00	- 28.97	1.00
24080.0000	33.02	Pk	0.00	21.60	9.54	45.08	0.00	45.08	H	1.0	0.00	74.00	- 28.92	1.00
Tx Harmonics - High Channel - Worst-case Button & Test Axis 2														
4956.2000	43.68	Pk	5.24	33.59	38.70	43.81	0.00	43.81	V	1.00	359.0	74.00	- 30.19	1.00

FREQ	LEVEL	DET	CABLE	Antenna	PREAMP	FINAL	Duty Cycle CF	Duty Cycle Corrected	POL	HGT	AZ	FCC Peak Limit	Delta Limit	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	= [dBuV]	(dB)	FINAL (dBuV)	(V/H)	(m)	(DEG)	(dB)	(dB)	(MHz)
4956.2000	43.53	Pk	5.24	33.59	38.70	43.66	0.00	43.66	H	1.28	359.0	74.00	- 30.34	1.00
7434.3000	61.32	Pk	6.53	36.69	39.24	65.30	0.00	65.30	V	1.00	359.0	74.00	- 8.70	1.00
7434.3000	61.65	Pk	6.53	36.69	39.24	65.63	0.00	65.63	H	1.19	359.0	74.00	- 8.37	1.00
9912.4000	49.29	Pk	7.73	38.01	48.77	46.26	0.00	46.26	H	1.22	352.0	74.00	- 27.74	1.00
9912.4000	48.27	Pk	7.73	38.01	48.77	45.24	0.00	45.24	V	1.24	12.0	74.00	- 28.76	
12390.5000	39.32	Pk	8.93	42.13	45.73	44.65	0.00	44.65	H	1.25	7.0	74.00	- 29.35	1.00
12390.5000	39.23	Pk	8.93	42.13	45.73	44.56	0.00	44.56	V	1.19	355.0	74.00	- 29.44	1.00
14868.6000	37.73	Pk	9.61	44.46	47.82	43.98	0.00	43.98	H	1.34	21.0	74.00	- 30.02	1.00
14868.6000	40.18	Pk	9.61	44.46	47.82	46.43	0.00	46.43	V	1.18	10.0	74.00	- 27.57	1.00
17346.7000	43.85	Pk	10.71	44.27	46.34	52.49	0.00	52.49	H	1.10	168.0	74.00	- 21.51	1.00
17346.7000	43.68	Pk	10.71	44.27	46.34	52.32	0.00	52.32	V	1.12	11.0	74.00	- 21.68	1.00
19824.8000	33.25	Pk	0.00	22.15	9.54	45.86	0.00	45.86	V	1.0	0.00	74.00	- 28.14	1.00
19824.8000	33.12	Pk	0.00	22.15	9.54	45.73	0.00	45.73	H	1.0	0.00	74.00	- 28.27	1.00
22302.9000	33.19	Pk	0.00	21.43	9.54	45.08	0.00	45.08	V	1.0	0.00	74.00	- 28.92	1.00
22302.9000	32.78	Pk	0.00	21.43	9.54	44.67	0.00	44.67	H	1.0	0.00	74.00	- 29.33	1.00
24781.0000	33.11	Pk	0.00	21.69	9.54	45.26	0.00	45.26	V	1.0	0.00	74.00	- 28.74	1.00
24781.0000	32.68	Pk	0.00	21.69	9.54	44.83	0.00	44.83	H	1.0	0.00	74.00	- 29.17	1.00

Notes:

- 1) All Fundamental and Harmonics measurements are Radiated Field Strength - peak detector measurements – 1MHz RBW/ 3MHz VBW.
- 2) For comparison to the Average Limit - All measurements were adjusted by the allowed duty cycle correction factor per FCC 15.35(c).
- 3) For comparison to the Peak Limit (20dB above average limit), no duty cycle correction was utilized.
- 4) Worst-case Fundamental: Mid-Channel - 2443.15MHz, 82.59dBuV (- 11.41dB under average limit).
- 5) Worst-case Harmonic of the Fundamental: Low-Channel – 7224.00MHz, 48.7dB (- 5.30dB under average limit).

Deviations, Additions, or Exclusions: None

6 TX Spurious & Unintentional Emissions

6.1 Method

The test methods used comply with ANSI C63.10:2009. Unless otherwise stated no deviations were made from **FCC 15.249(d)/ 15.209**.

This testing was performed at Intertek Denver, located at 1795 Dogwood St. Suite 200, Louisville, CO 80027.

6.2 Test Equipment Used:

<u>Asset ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Serial</u>	<u>Cal Date</u>	<u>Cal Due</u>
18882	Spectrum Analyzer (dc-22 GHz)	Hewlett-Packard	8566B	2410A00154	02/24/2012	02/24/2013
18660	Spectrum Analyzer Display Section (set 1)	Hewlett-Packard	85662A	2318A04983	02/24/2012	02/24/2013
18880	Q.P Adapter	HP	85650A	2811A01300	02/24/2012	02/24/2013
18912	9 kHz- 1.3GHz Pre Amp	Hewlett-Packard	8447F	3113A05545	6/6/2012	6/6/2013
18906	Amplifier (1-4 GHz)	Mini-Circuits Lab	ZHL-42	N052792-2	6/7/2012	6/7/2013
18900	RF Pre-Amplifier (4-8 GHz)	Avantek	AFT97-8434-10F	1007	6/7/2012	6/7/2013
18901	RF Pre-Amplifier (8-18 GHz)	Avantek	AWT-18037	1002	6/7/2012	6/7/2013
19937	Bilog Antenna 30MHz - 6GHz	Sunol Sciences	JB6	A050707-2	03/07/2012	03/07/2013
18887	Horn Antenna 1-18GHz	EMCO	3115	9205-3886	2/28/2012	2/27/2013
18805	HF Active Antenna/Harmonic Mixer 18 GHz to 26.5 GHz	Hewlett-Packard	11970K	2332A01280	01/30/2013	01/30/2014
SW-6	Software for Radiated and Conducted emissions.	Intertek	OATS vba	V. 3.0	VBV	VBV

6.3 Results:

The sample tested was found to comply with the requirements of:

- FCC 15.209/ 15.249(d)

6.4 Setup Photographs:

Test setup – Field Strength Measurements (Front View)



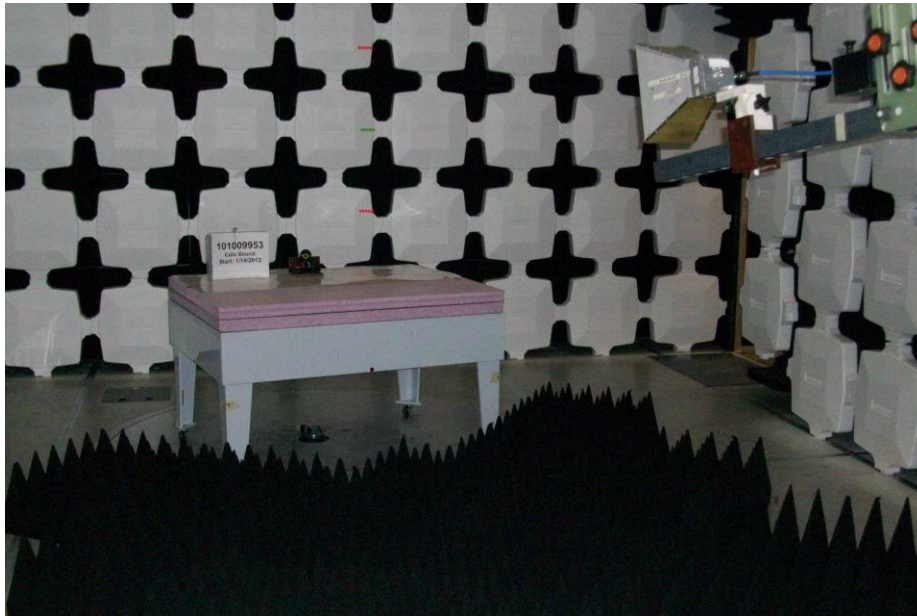
30-1000MHz



6.5 Photo:

Test setup – Field Strength Measurements (Front View)

1GHz to 18GHz

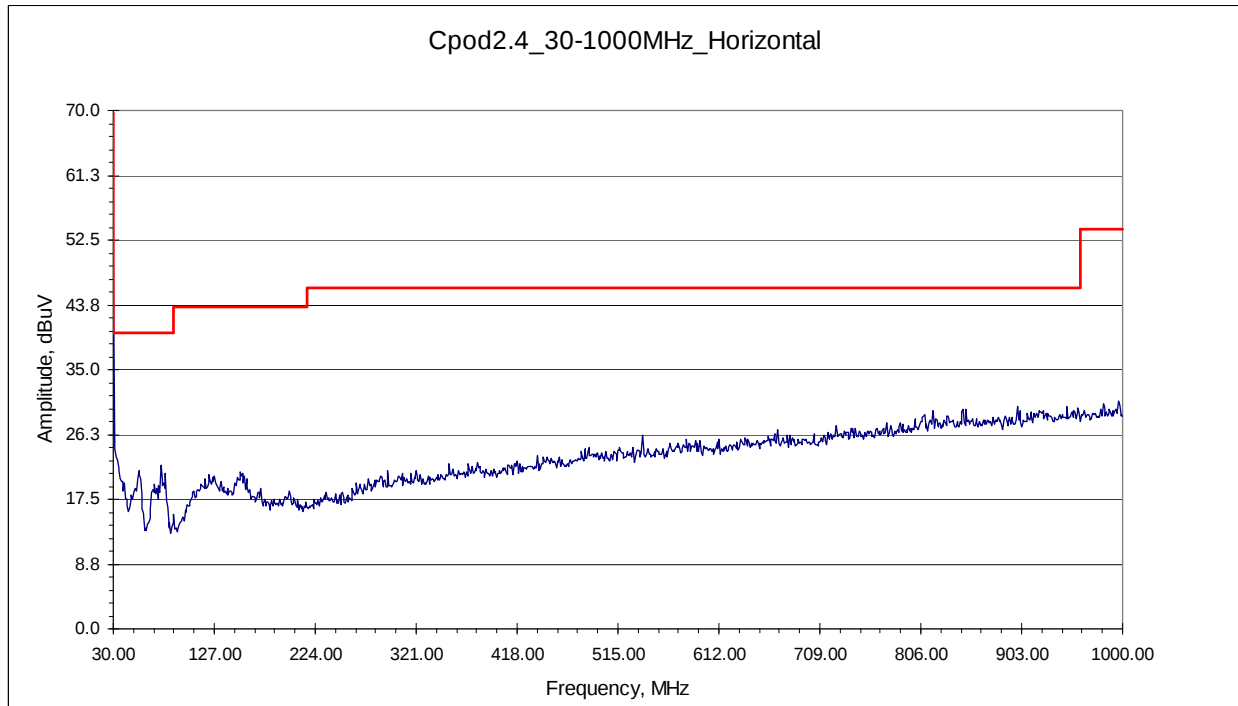
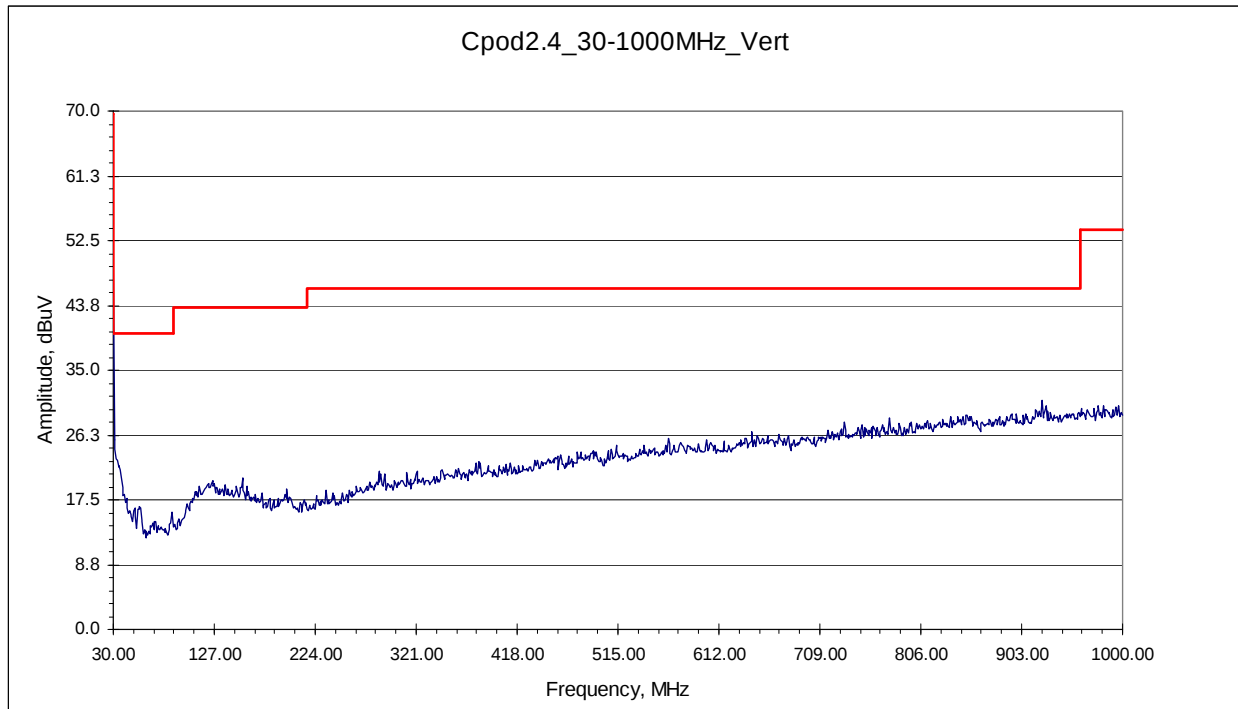


18GHz to 25GHz



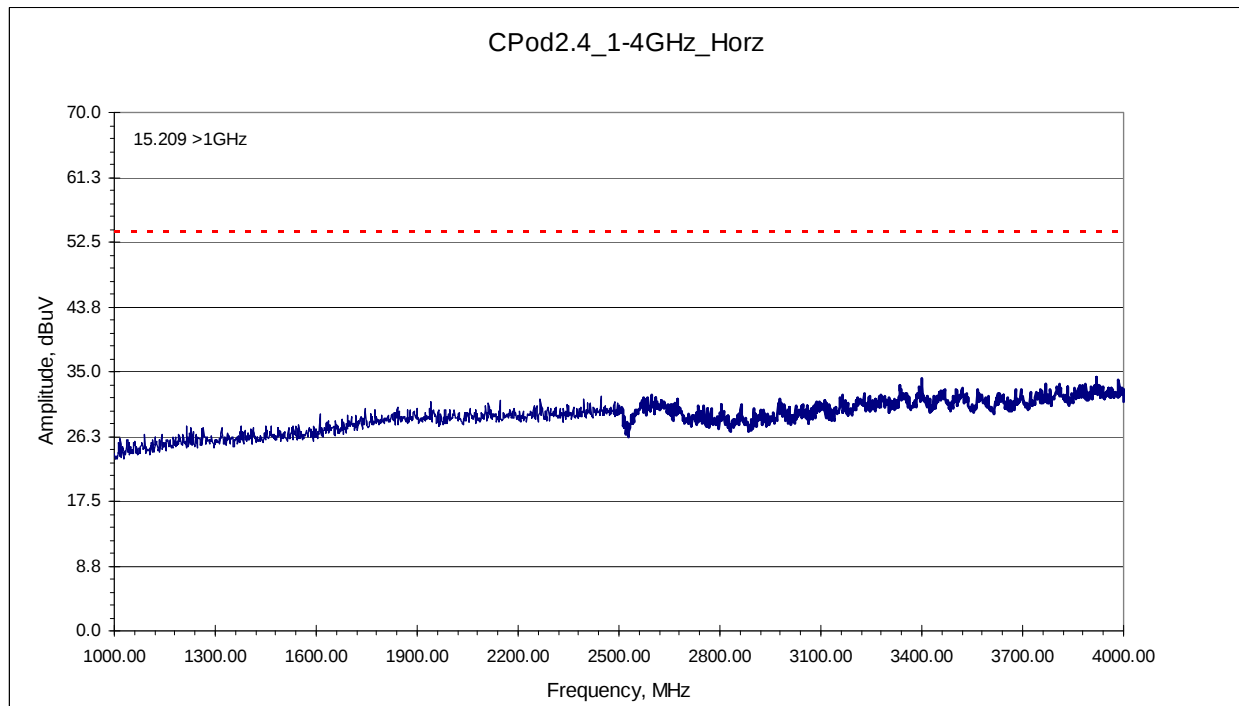
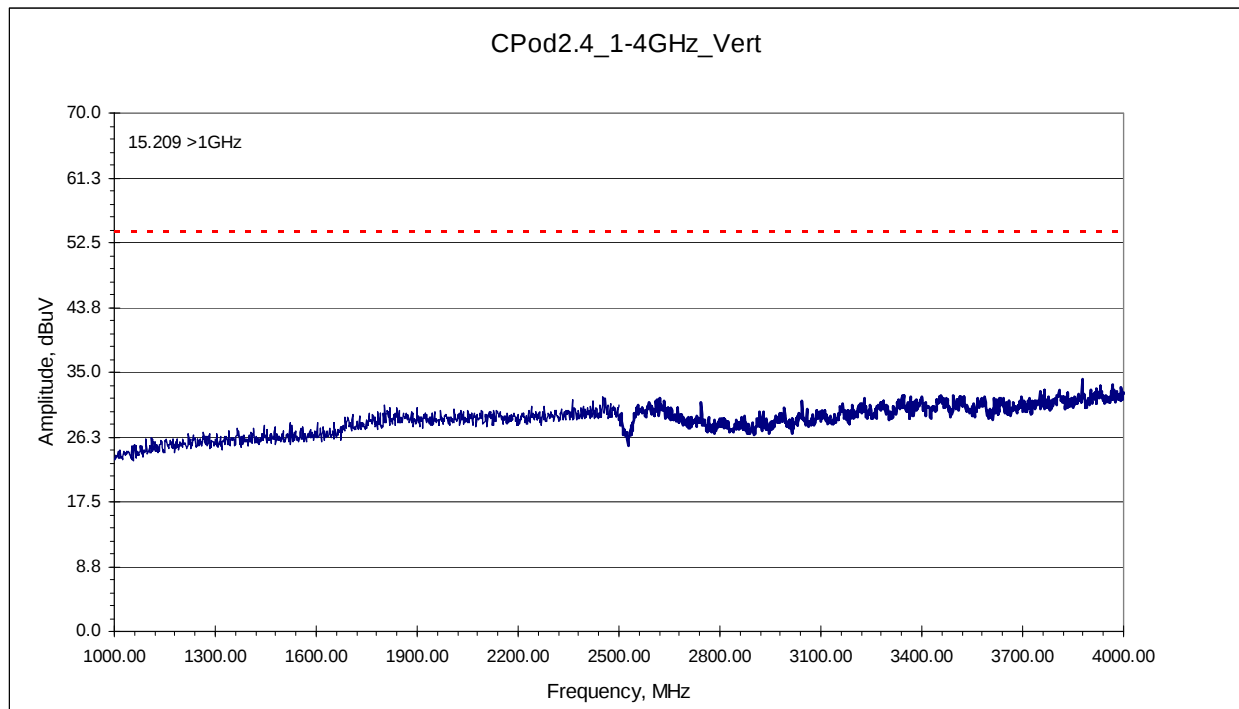
6.6 Plots: 30-1000MHz

FCC 15.209 Limits



6.7 Plots: 1-4GHz

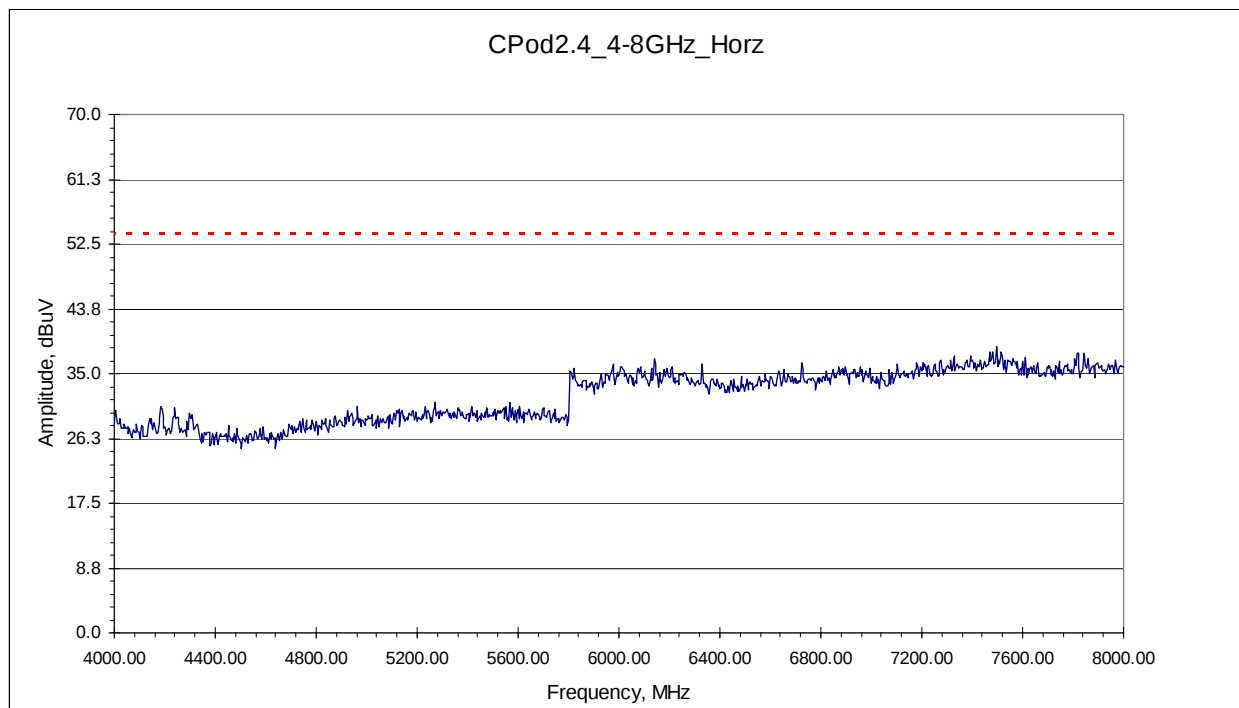
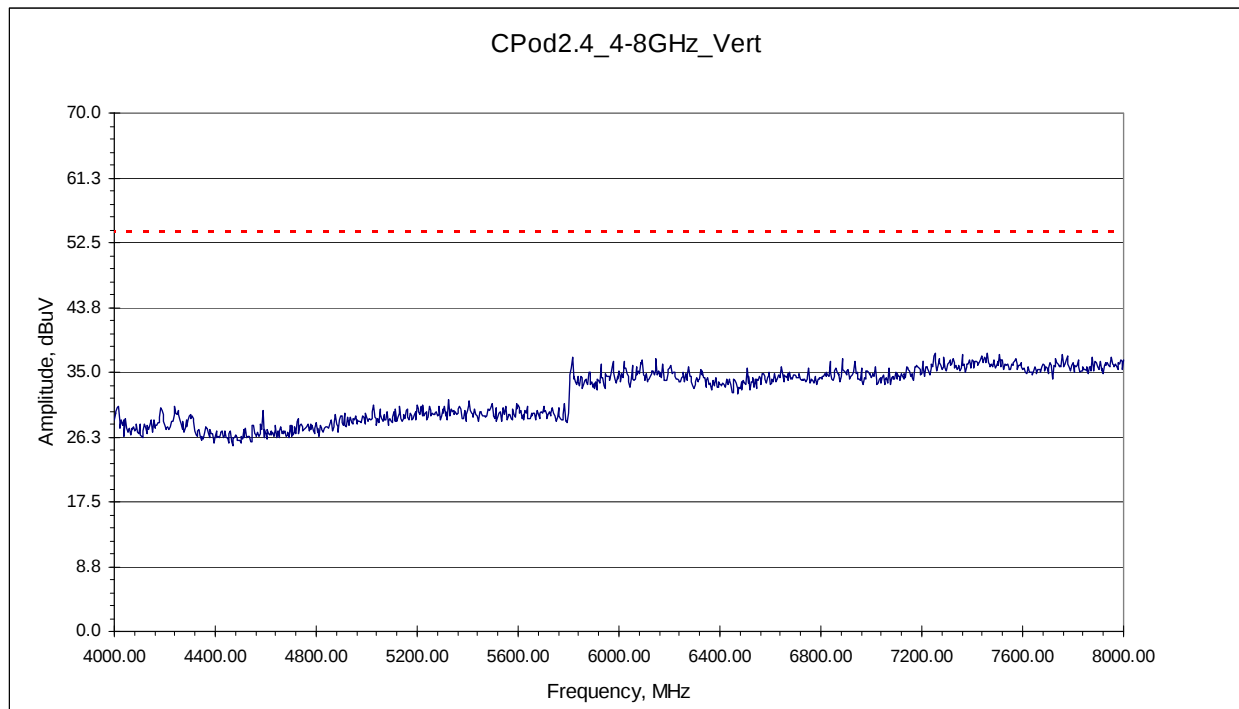
FCC 15.209 Limits



Note: 2.4GHz band notched out

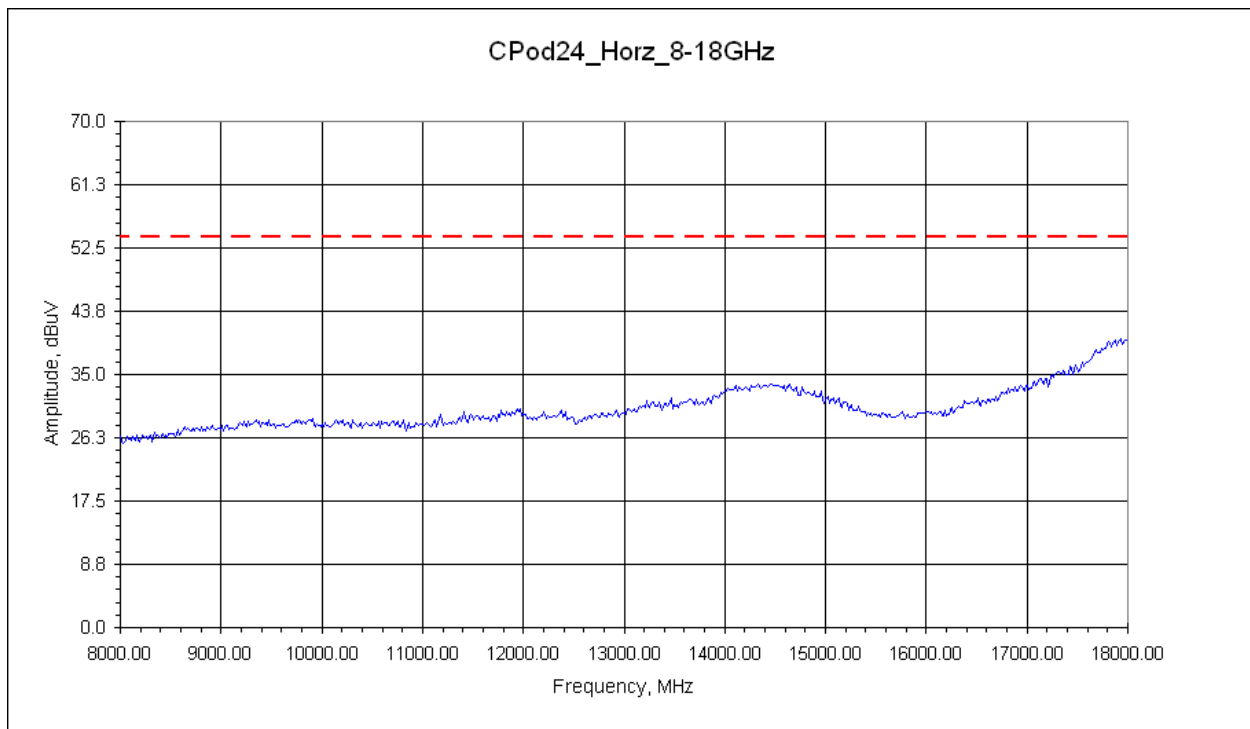
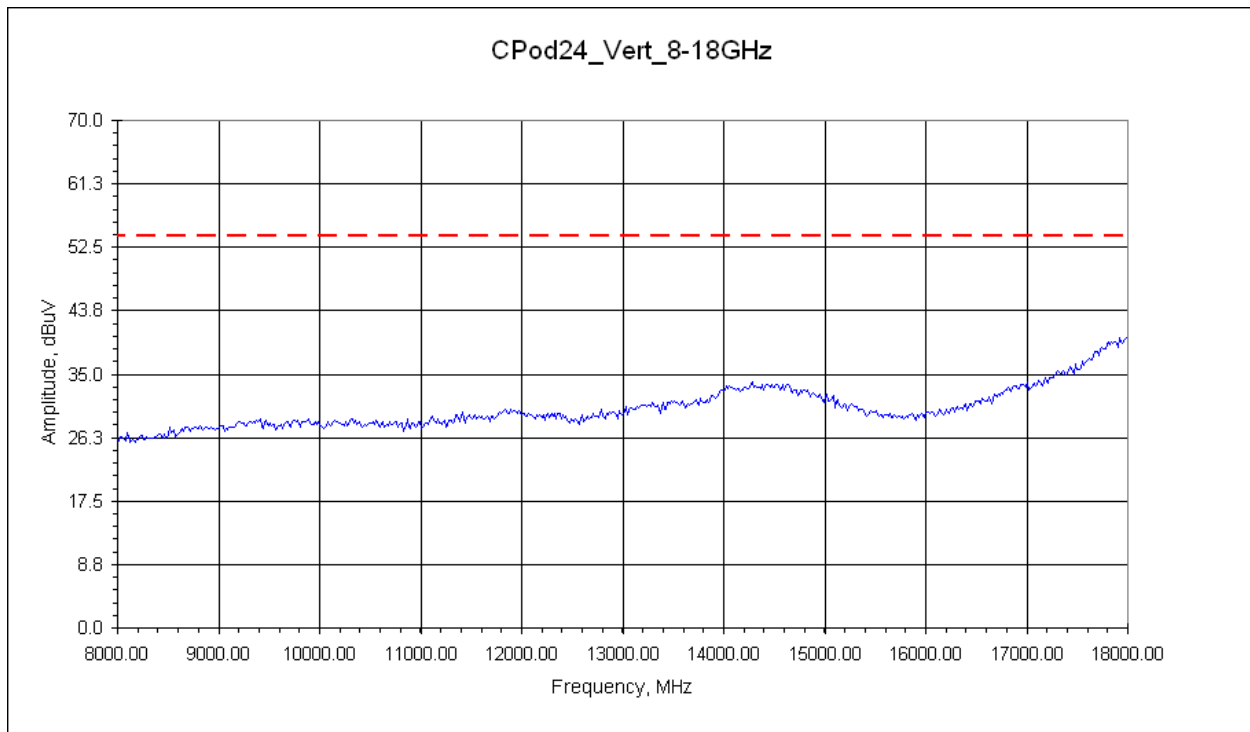
6.8 Plots: 4-8GHz

FCC 15.209 Limits



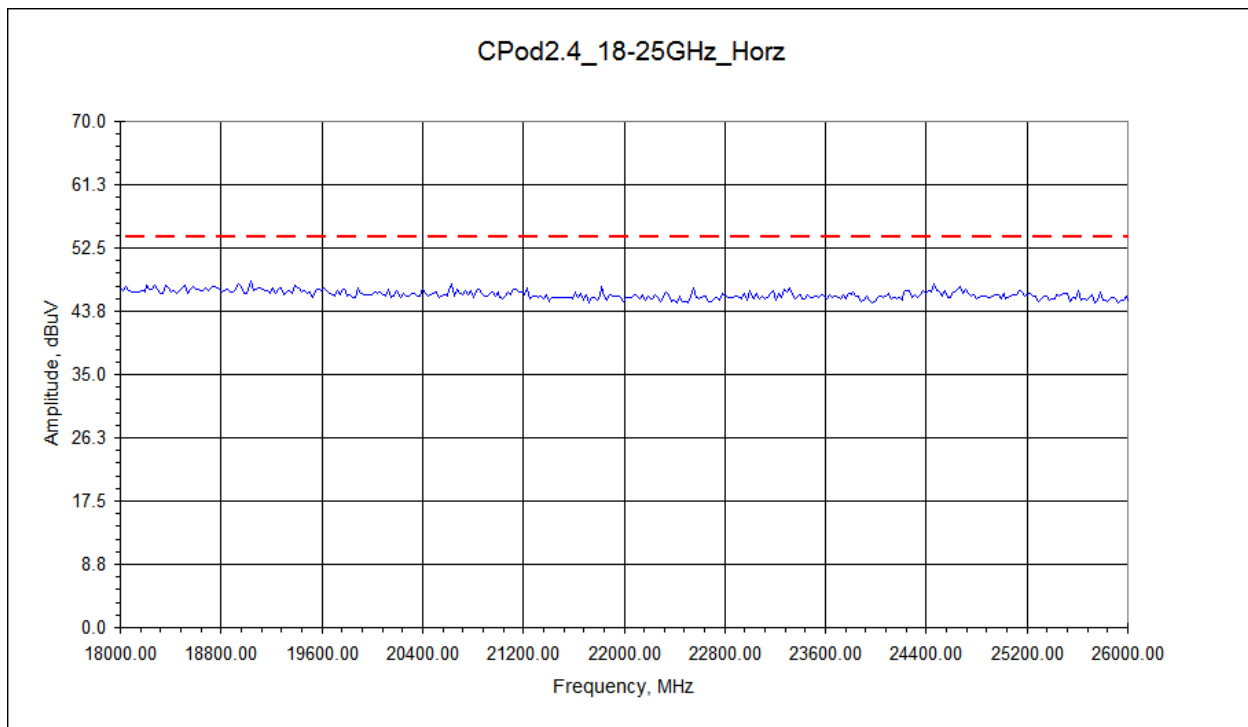
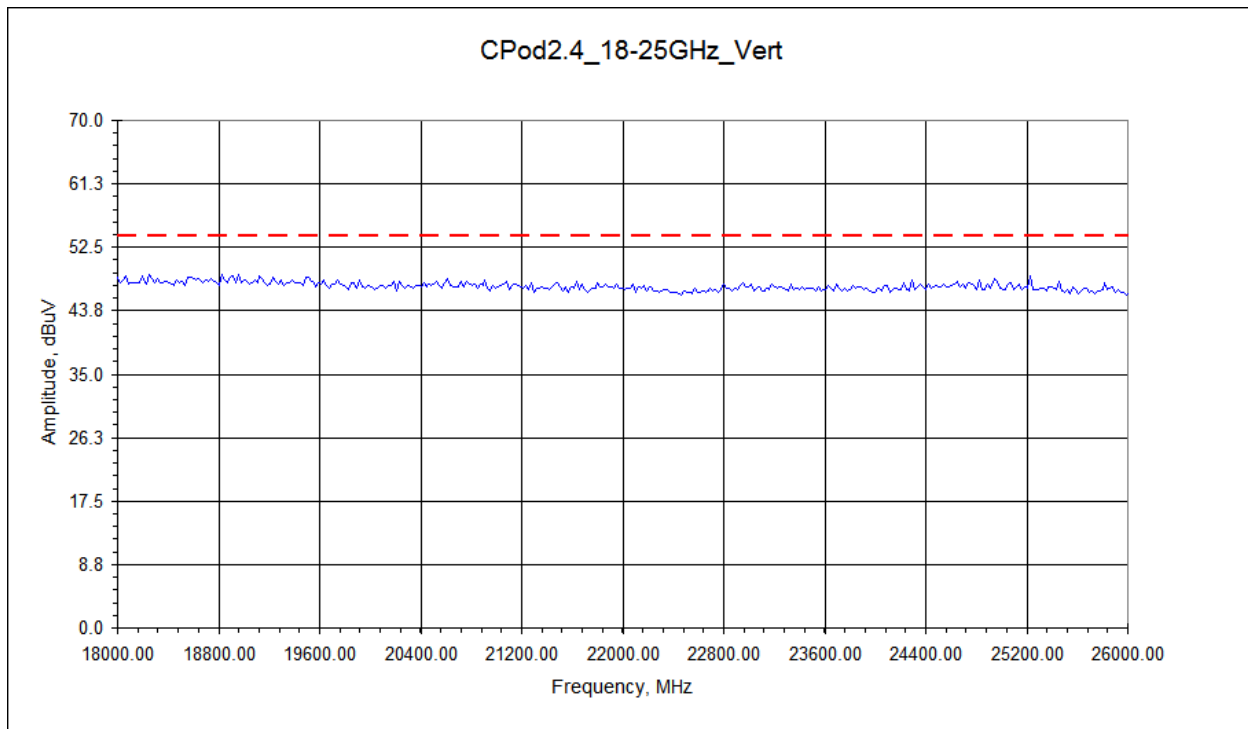
6.9 Plots: 8-18GHz

FCC 15.209 Limits



6.10 Plots: 18-25GHz

FCC 15.209 Limits



Notes: No significant spurious signals found.

6.11 Test Data:

Radiated Spurious & Unintentional Electromagnetic Emissions

Test Report #: 100908828DEN-001	Test Area: CC1 Radiated	Temperature: <u>23.4</u> °C
Test Method: FCC 15.209	Test Date: <u>01/15/2013</u>	Relative Humidity: <u>33.5</u> %
EUT Model #: CPod24	EUT Power: <u>Battery</u>	Air Pressure: <u>82.7</u> kPa
EUT Serial #: 1001		

Manufacturer: Colorado Sound 'N Light		Level Key
EUT Description: Wireless LED Remote Controller		
Notes:	Test Data: Spurious/ Unintentional Emissions	
		Pk – Peak
		Qp – Quasi Peak
		Av - Average

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	Delta2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.209 QP	N/A	(MHz)
30MHz to 1000MHz Vertical Antenna													
41.84216	30.75	Qp	0.77	12.61	28.20	0.00	15.93	V	1.30	326.0	- 24.07	NA	0.120
42.00143	30.20	Qp	0.77	12.50	28.20	0.00	15.27	V	1.10	335.0	- 24.73	NA	0.120
45.06148	33.45	Qp	0.77	10.67	28.20	0.00	16.69	V	1.20	298.0	- 23.31	NA	0.120
52.38161	39.25	Qp	0.77	7.99	28.19	0.00	19.82	V	1.20	58.0	- 20.18	NA	0.120
57.27480	31.25	Qp	0.77	7.60	28.16	0.00	11.45	V	1.30	202.0	- 28.55	NA	0.120
67.34304	31.10	Qp	0.77	8.20	28.12	0.00	11.95	V	1.30	282.0	- 28.05	NA	0.120
68.46166	35.20	Qp	0.77	8.25	28.11	0.00	16.10	V	1.20	186.0	- 23.90	NA	0.120
81.72171	36.40	Qp	0.77	7.80	28.05	0.00	16.92	V	1.20	186.0	- 23.08	NA	0.120
83.65732	32.30	Qp	0.77	7.70	28.04	0.00	12.73	V	1.30	130.0	- 27.27	NA	0.120
85.90364	31.45	Qp	0.77	7.70	28.03	0.00	11.89	V	1.20	64.0	- 28.11	NA	0.120
100.22554	28.85	Qp	0.77	10.49	27.96	0.00	12.15	V	1.20	264.0	- 31.35	NA	0.120
154.86753	32.35	Qp	0.84	12.41	27.70	0.00	17.90	V	1.20	312.0	- 25.60	NA	0.120
155.31517	28.50	Qp	0.84	12.43	27.70	0.00	14.07	V	1.30	242.0	- 29.45	NA	0.120
159.12996	28.10	Qp	0.85	12.50	27.68	0.00	13.77	V	1.20	312.0	- 29.73	NA	0.120
30MHz to 1000MHz Horizontal Antenna													
45.69835	29.45	Qp	0.77	10.35	28.20	0.00	12.37	H	1.70	312.0	- 27.63	NA	0.120
51.99837	32.15	Qp	0.77	8.10	28.19	0.00	12.83	H	1.70	332.0	- 27.17	NA	0.120
152.92368	27.55	Qp	0.83	12.41	27.71	0.00	13.08	H	1.70	172.0	- 30.42	NA	0.120

Notes: No significant emissions found above 1GHz – refer to pre-scan plots.

Intertek	
Report Number: 101009953DEN-002	Issued:3/21/13

7 Band Edge Measurements – Unintentional and Spurious of the Transmitter

7.1 Method

The test methods used comply with ANSI C63.10:2009. Unless otherwise stated no deviations were made from **FCC 15.249(d)/ 15.209**.

This testing was performed at Intertek Denver, located at 1795 Dogwood St. Suite 200, Louisville, CO 80027.

7.2 Test Equipment Used:

<u>Asset ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Serial</u>	<u>Cal Date</u>	<u>Cal Due</u>
18913	Spectrum Analyzer	Hewlett-Packard	E7405A	My44211889	07/16/2012	07/16/2013
18882	Spectrum Analyzer (dc-22 GHz)	Hewlett-Packard	8566B	2410A00154	02/24/2012	02/24/2013
18906	Amplifier (1-4 GHz)	Mini-Circuits Lab	ZHL-42	N052792-2	6/7/2012	6/7/2013
18887	Horn Antenna 1-18GHz	EMCO	3115	9205-3886	2/28/2012	2/27/2013
SW-6	Software for Radiated and Conducted emissions.	Intertek	OATS vba	V. 3.0	VBU	VBU

7.3 Results:

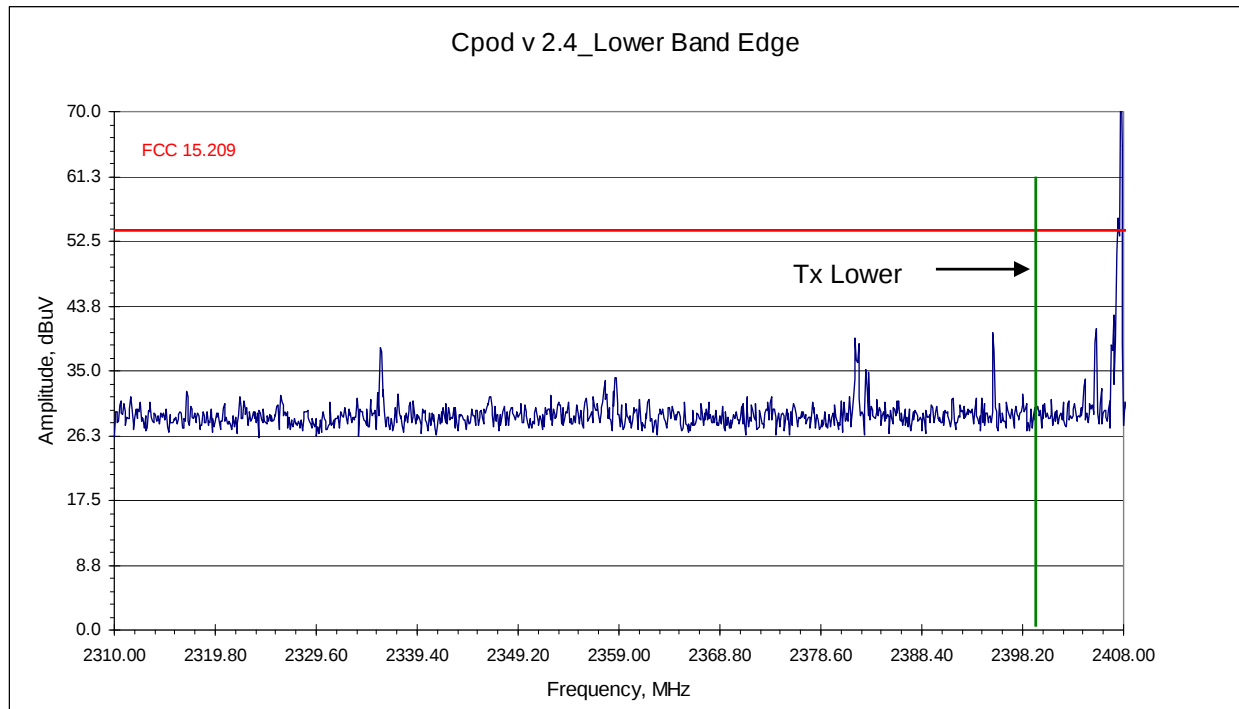
The sample tested was found to comply with the requirements of:

- FCC 15.249(d)/ 15.209

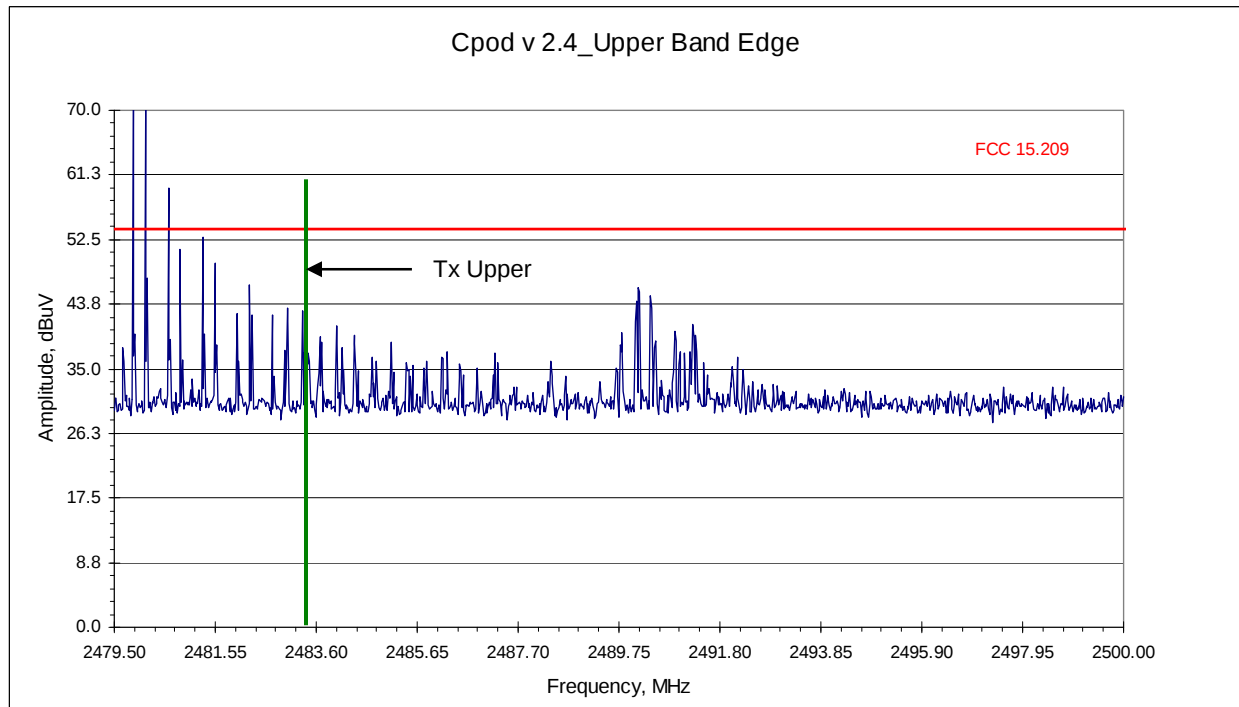
7.4 Test Data: Band Edge Plots

FCC 15.249(d)/ 15.209

Radiated Band Edge Plot – Low Channel



Radiated Band Edge Plot – High Channel



Note: Allowed Tx Band 2.4GHz to 2.483.5GHz

Intertek	
Report Number: 101009953DEN-002	Issued:3/21/13

8 AC Mains Conducted Emissions

8.1 Method

The test methods used comply with ANSI C63.10:2009 and CISPR 16. Unless otherwise stated no deviations were made from FCC 15.207.

This testing was performed at Intertek Denver, located at 1795 Dogwood St. Suite 200, Louisville, CO 80027.

8.2 Test Equipment Used:

<u>Asset ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Serial</u>	<u>Cal Date</u>	<u>Cal Due</u>

8.3 Results:

Not Applicable – product has no ac port.

8.4 Setup Photographs:

8.5 Plots: Pre-Scan Peak Measurements - Not Final Data

8.6 Test Data: 150kHz to 30MHz

Example calculation:

Measured Level		Transducer, Cable Loss & Amplifier corrections		Corrected Reading	Specification Limit		Corrected Reading		Delta Specification
(dB μ V)	+	(dB)	=	(dB μ V/m)	(dB μ V/m)	-	(dB μ V/m)	=	
14.0		14.9		28.9	40.0		28.9		-11.1

Notes:

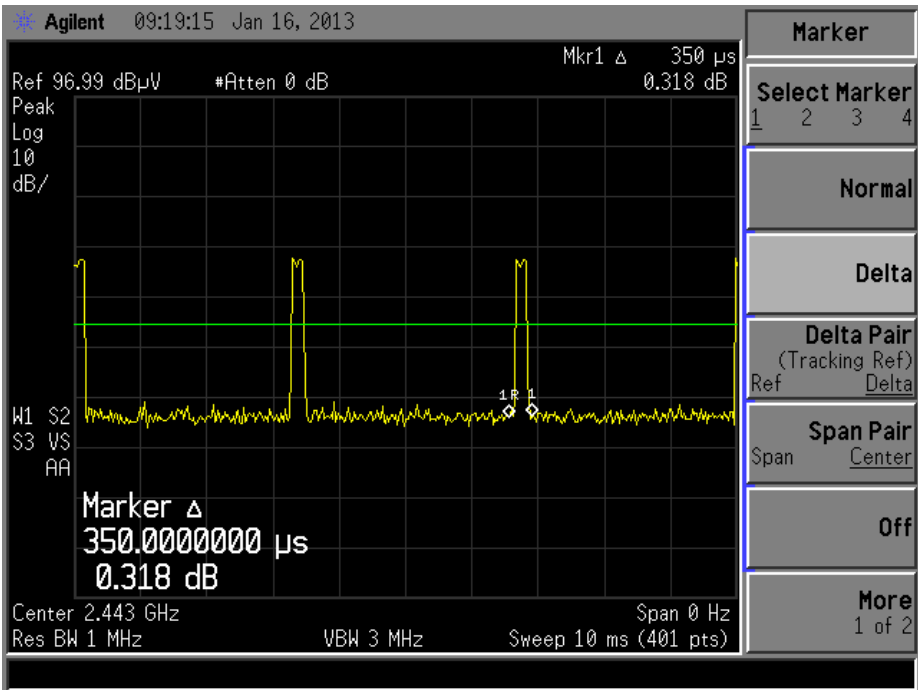
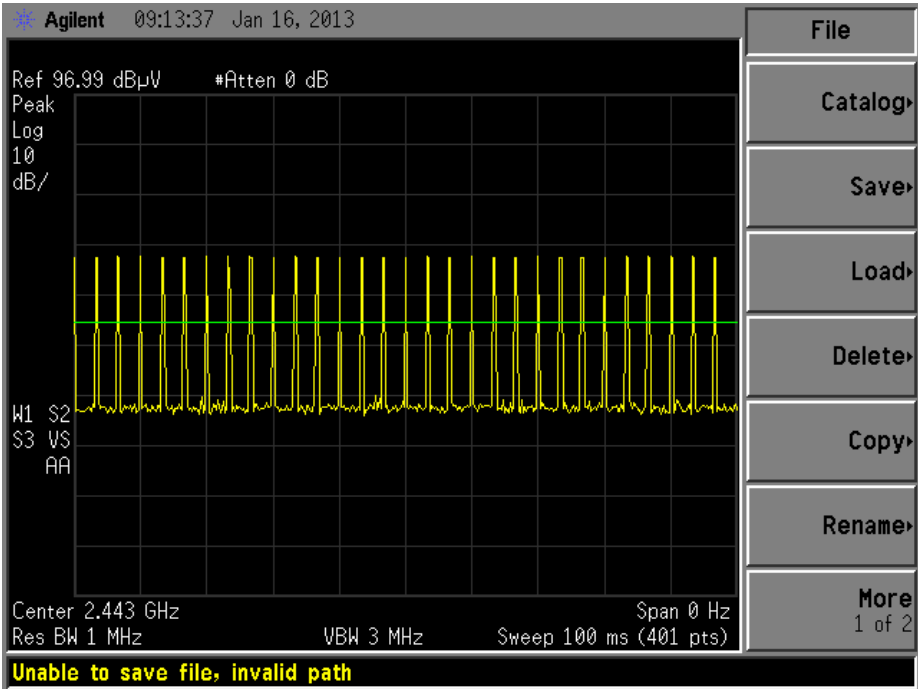
(1) None

Deviations, Additions, or Exclusions: None

9 Duty Cycle Correction Factor

Duty cycle correction factor was applied during this testing.

9.1 Duty Cycle Plots:



Intertek	
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9.2 Duty Cycle Calculation:

$$.35\text{ms (Pw)} \times 30 \text{ (N)} = 10.5\text{ms}$$

$$10.5\text{ms} / 100\text{ms} = 10.5\% \text{ Duty Cycle}$$

$$\text{Duty Cycle Correction Factor} = 20 \times \text{Log}_{10} (\text{Duty Cycle}) = -19.58\text{dB}$$

10 Measurement Uncertainty

The measured value related to the corresponding limit will be used to decide whether the equipment meets the requirements.

The measurement uncertainty figures were calculated and correspond to a coverage factor of $k = 2$, providing a confidence level of respectively 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian).

Measurement uncertainty Table

Parameter	Uncertainty $\pm$	Notes
Radiated emissions, 10kHz to 1000 MHz	4.4 dB	
Radiated emissions, 1 to 18 GHz	4.7 dB	
AC mains Conducted emissions, 9kHz to 30 MHz	3.14 dB	

Intertek	
Report Number: 101009953DEN-002	Issued:3/21/13

11 Revision History

Revision Level	Date	Report Number	Notes
0	TBD	101009953DEN-002	Original Issue