Intertek ETL SEMKO

July 29, 2005

Mr. Larry Sunshine
Bentax USA
418 Meadow Street
Fairfield CT 06824

Dear Mr. Sunshine:

We appreciate the opportunity to be of service to you. Please find enclosed one bound copy of Intertek Report No. 3080447CRT-001 covering the tests performed on your behalf.

Model(s) Tested:
Bentax In-Duct Unit Models 500F and 100D

If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please contact me.

Sincerely,

Harold C. Lanpher Jr.
Associate Engineer
Appliance Group

Enclosure: Test Report

Intertek Testing Services NA, Inc.
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REPORT
INTERTEK, ETL SEMKO

SINCE 1896

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Project No. 3080447 Date: July 29, 2005

REPORT NO.

3080447CRT-001

RENDERED TO:

Bentax USA
418 Meadow Street
Fairfield, CT 06824

Report Scope:	Performance testing of an in-duct air purification system
Limitation Statement:	The test data and results contained in this report are provided for client information and evaluation. No conclusions are drawn by Intertek.
Authorization:	The tests were authorized by signed Intertek Quote No. 17975899 dated July 12, 2005.
Standards Used:	Client specified testing.
Sample Description:	One Bentax In-Duct air cleaner Model 500F installed in a commercial application, and one Bentax In-Duct air cleaner Model 100D installed in a residential application.
Date of Tests:	July 14 through July 15, 2005.

Test Method:

Objective

To evaluate Bentax USA's air purification equipment by measuring its production of ozone and its effectiveness on ozone, by comparing outdoor ozone levels to indoor ozone levels in both a commercial and residential environment.

Testing Method

Test facility

Commercial Building - Board of Education Building
The Board of Education building is a two story structure comprising approximately 12,000 square feet of occupied space on two floors. The facility is used as an office building and has spaces and equipment typical for that use. Of particular note was a copier/printing room approximately 20 feet from the ozone sampling tube that was in full operation on the day of the testing.

The building is heated and cooled via a ducted air conditioning system. The HVAC (heating ventilating and air conditioning) unit is located on the roof. The unit delivers approximately 11,000 CFM (cubic feet per minute) of air. Approximately 20% of the system air is outside air. The unit is controlled by a building management computer, and operates during normal occupied hours of the day.

The Bentax air purification system in this building is comprised of two Model 500F units located in the discharge plenum of the HVAC unit. The Bentax equipment is energized when the unit fan is operating. The unit's fan runs continuously and the heating or cooling function is cycled to satisfy the space set point.

Residential Building
The Suresky Residence is a two-story structure comprising approximately 4,000 square feet of occupied space on two floors. The facility is a single family home and has spaces and equipment typical for that use.

The building is heated and cooled via ducted air conditioning systems. The air conditioning system for the first floor is located in the basement. The air conditioning system for the second floor is located in the attic. The first floor system was used for these tests. The unit delivers approximately 1,200 CFM (cubic feet per minute) of air. A digital thermostat controls the unit. The unit's fan runs continuously and the heating or cooling function is cycled to satisfy the space set point.

The Bentax air purification system is comprised of two Model 100 D units located in the discharge plenum of the each of the air conditioning units. The Bentax equipment is energized when the unit fan is operating.

Ozone monitoring

Two ozone analyzers were used. One ozone analyzer was used to monitor the indoor ozone, with the sampling tube centrally located within the room, and the second ozone analyzer was used to monitor outdoor ozone, with the sampling tube outdoors. The ozone was measured in parts per million (ppm) using an Advanced Pollution Instrumentation (API) Ozone Monitor, Model 450.

Ion count

The ionization level of both positive and negative ions was controlled by the tested equipment. The measurements were performed by Ion-meter IM 5005, Umwelt-Technic AG, Germany (calibration unknown).

Data logging

The ozone data was recorded continuously by an automated computer data acquisition system directly connected to the Ozone Analyzers. Data was logged every minute during the test period. The ion data was logged every three minutes during the test period.

Testing

The steps of the actual testing procedure were as follows:

Commercial building

a) Two ozone monitors and one ion meter were set-up and started sampling at approximately 7:30am on July 14, 2005. One ozone monitor was used to measure indoor ozone, and one ozone monitor was used to measure outdoor ozone.
b) The Bentax In-duct air cleaner was operating throughout the tests, but was purposely de-energized at approximately 12:55 pm on July 14, 2005, and the ozone monitors continued to log data.
c) At approximately 2:40pm, on July 14, 2005, spikes in ozone were noticed on the indoor ozone analyzer. Ozone levels were not logged, but were physically recorded between 0.015 and 0.017.
d) The Bentax In-duct air cleaner was re-energized at approximately 2:40pm, on July 14, 2005.

Results

After approximately 5½ hours of data sampling, the average ozone reading inside the building was 0.000 PPM with the outside ozone levels ranging between 0.01 PPM and 0.05 PPM. After the equipment was de-energized, spikes in inside ozone levels were recorded. When the equipment was re-energized, the spikes in inside ozone ceased and readings went back down to 0.000 PPM. Detailed results are shown in Appendix A, which is attached to, and forms part of, this report.

Residential building

a.) Two ozone monitors and one ion meter were set-up and started sampling at approximately 4:17pm on July 14, 2005. One ozone monitor was used to measure indoor ozone, and one ozone monitor was used to measure outdoor ozone.

b.) At approximately 9:32am on July 15, 2005, the test was ended.

Results

After approximately 17 hours of data sampling, the average ozone reading inside the residence was 0.000 PPM with the outside ozone levels ranging between 0.00 PPM and 0.055 PPM. Detailed results are shown in Appendix B, which is attached to, and forms part of, this report.

Test Equipment List:

Equipment Used	Model Number	Intertek Control #	Cal. Due Date
API Ozone Monitor (outdoor monitor)	450	E426	04-13-06
API Ozone Monitor (indoor monitor)	450	NA	*
Fluke Hydra	2625A	T831	04-05-06

Summary

The Bentax equipment was tested in both a commercial and a residential application, instead of in a laboratory setting, in order to apply real world conditions. In a typical installation, the Bentax equipment would see a wide array of conditions including high outside ozone levels.

Report Reviewed By:

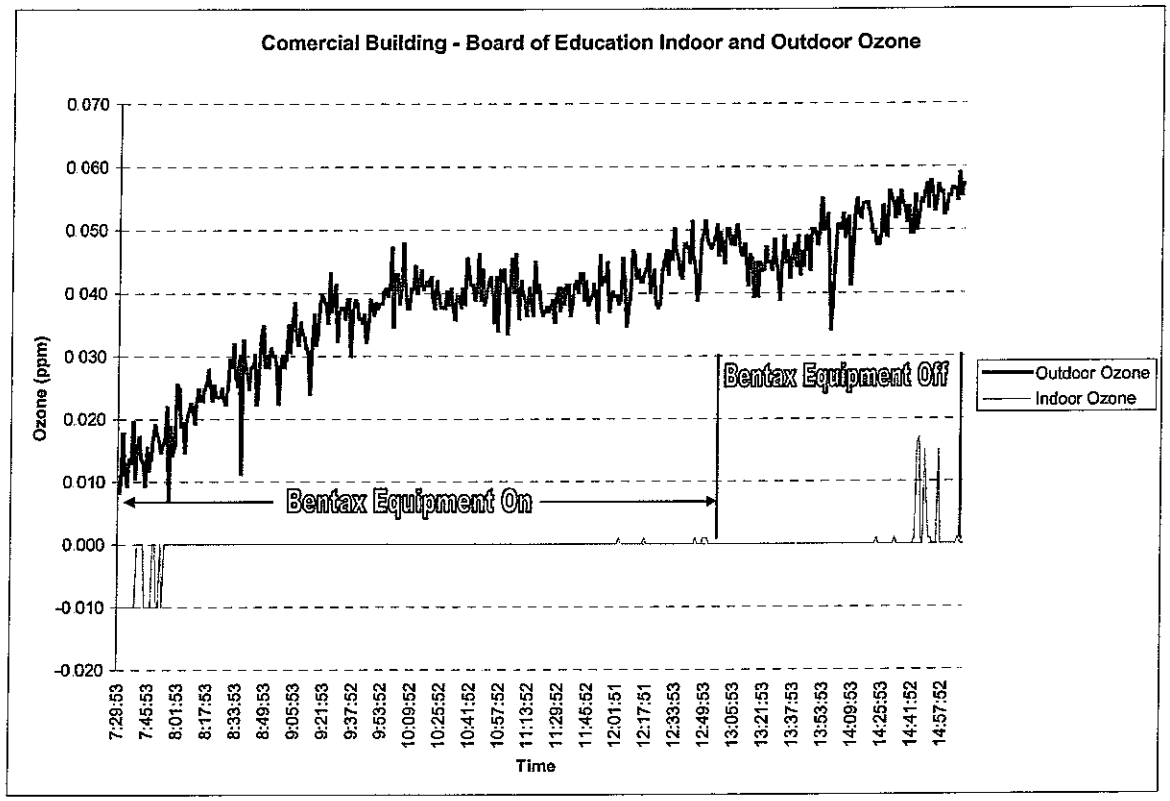
Terence J. O'Beirne
Senior Project Engineer
Appliance Group

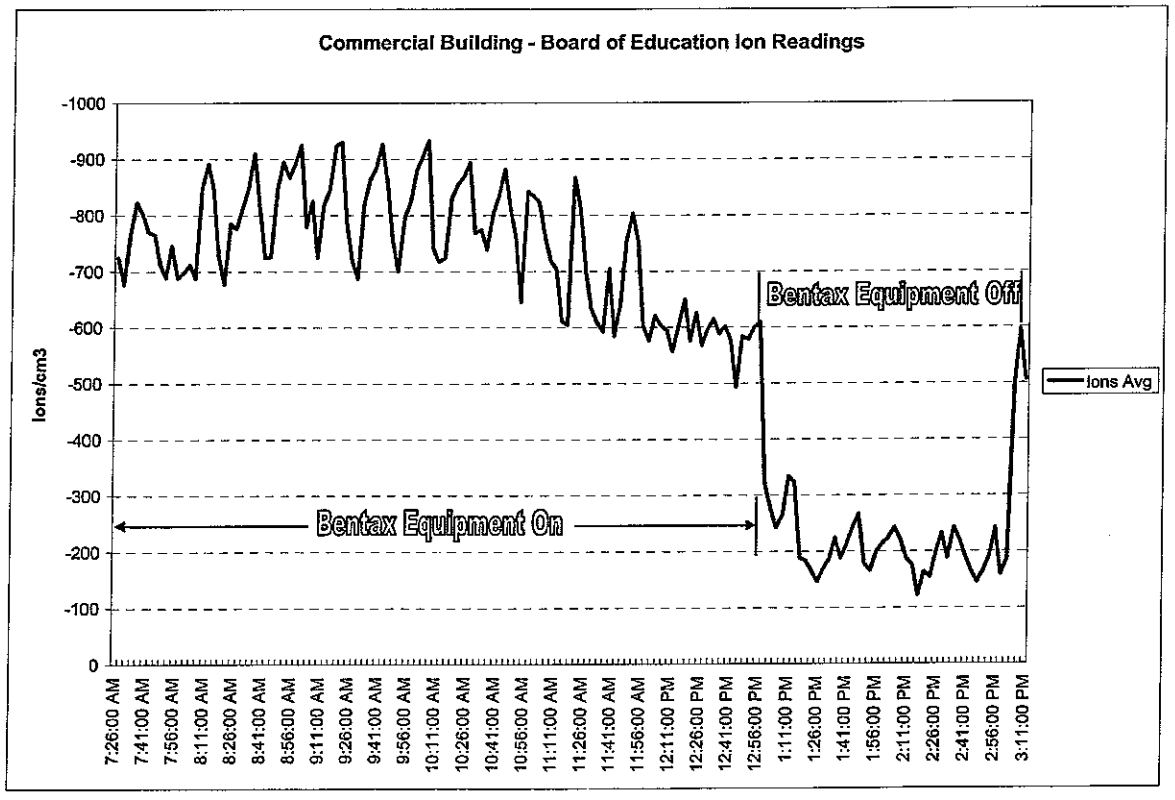
Tested By:

Harold C. Lanpher, Jr
Associate Engineer
Appliance Group

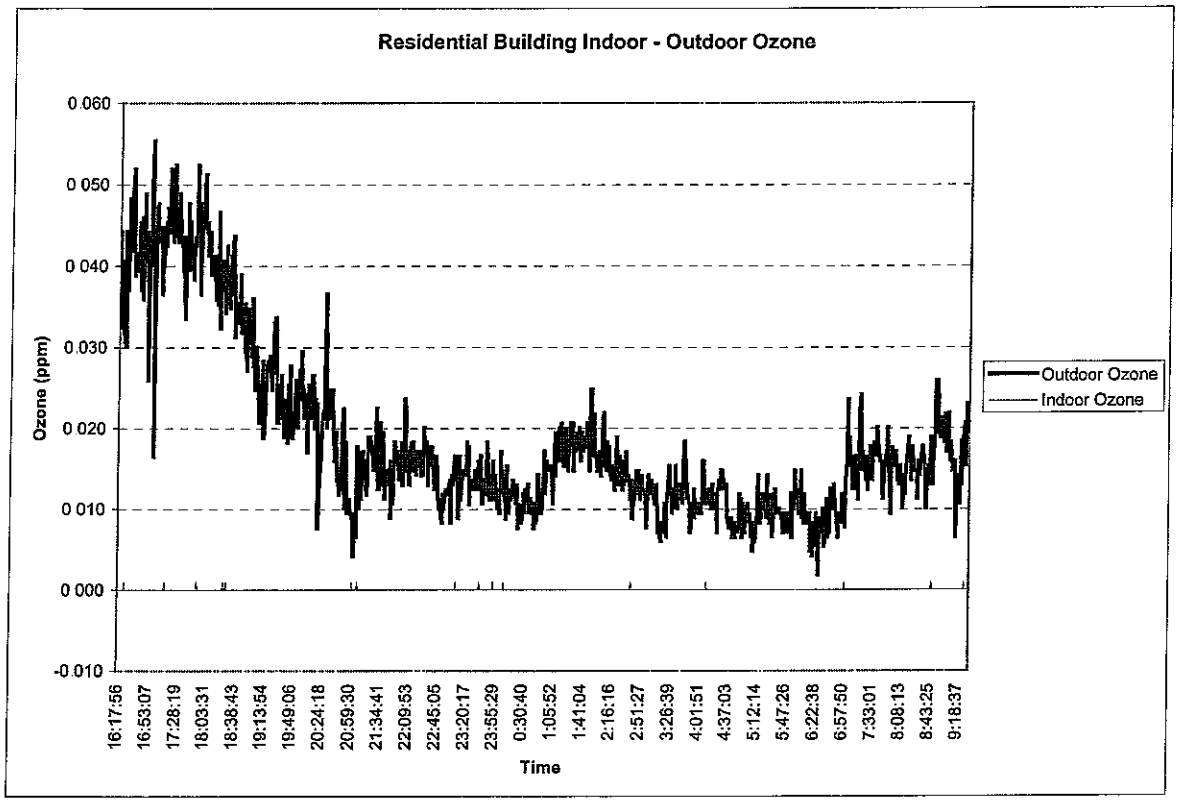
* Indoor ozone monitor was correlated with outdoor ozone monitor, Intertek No. E426

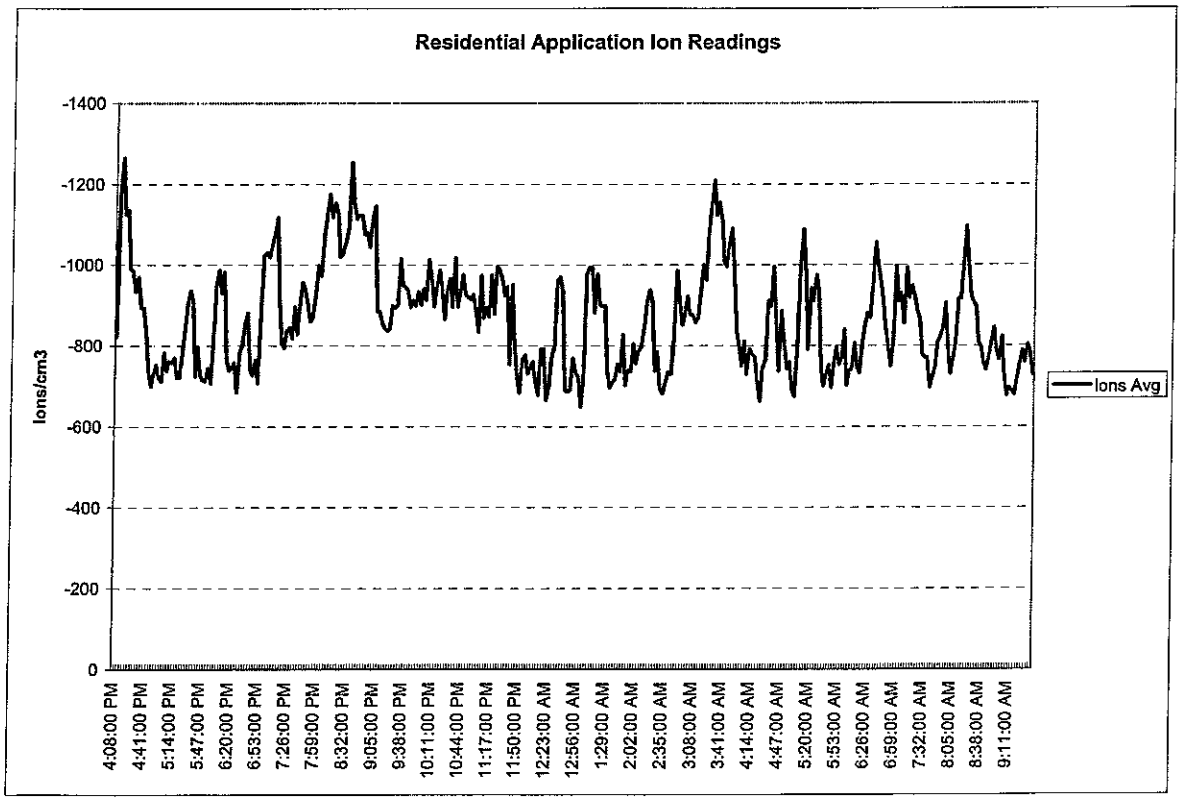
Appendix A


Comercial Building - Board of Education Indoor and Outdoor Ozone
Ozone (ppm)
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
-0.010
-0.020
Bentax Equipment Off
Bentax Equipment On
Outdoor Ozone
Indoor Ozone
7:29:53
7:45:53
8:01:53
8:17:53
8:33:53
8:49:53
9:05:53
9:21:53
9:37:52
9:53:52
10:09:52
10:25:52
10:41:52
10:57:52
11:13:52
11:29:52
11:45:52
12:01:51
12:17:51
12:33:53
12:49:53
13:05:53
13:21:53
13:37:53
13:53:53
14:09:53
14:25:53
14:41:52
14:57:52
Time


Commercial Building - Board of Education Ion Readings
Ions/cm3
-1000
-900
-800
-700
-600
-500
-400
-300
-200
-100
0
Bentax Equipment Off
Bentax Equipment On
Ions Avg
7:26:00 AM
7:41:00 AM
7:56:00 AM
8:11:00 AM
8:26:00 AM
8:41:00 AM
8:56:00 AM
9:11:00 AM
9:26:00 AM
9:41:00 AM
9:56:00 AM
10:11:00 AM
10:26:00 AM
10:41:00 AM
10:56:00 AM
11:11:00 AM
11:26:00 AM
11:41:00 AM
11:56:00 AM
12:11:00 PM
12:26:00 PM
12:41:00 PM
12:56:00 PM
1:11:00 PM
1:26:00 PM
1:41:00 PM
1:56:00 PM
2:11:00 PM
2:26:00 PM
2:41:00 PM
2:56:00 PM
3:11:00 PM

Appendix B


Residential Building Indoor - Outdoor Ozone
Ozone (ppm)
0.060
0.050
0.040
0.030
0.020
0.010
0.000
-0.010
16:17:56
16:53:07
17:28:19
18:03:31
18:38:43
19:13:54
19:49:06
20:24:18
20:59:30
21:34:41
22:09:53
22:45:05
23:20:17
23:55:29
0:30:40
1:05:52
1:41:04
2:16:16
2:51:27
3:26:39
4:01:51
4:37:03
5:12:14
5:47:26
6:22:38
6:57:50
7:33:01
8:08:13
8:43:25
9:18:37
Time
Outdoor Ozone
Indoor Ozone


Residential Application Ion Readings
Ions/cm3
-1400
-1200
-1000
-800
-600
-400
-200
0
4:08:00 PM
4:41:00 PM
5:14:00 PM
5:47:00 PM
6:20:00 PM
6:53:00 PM
7:26:00 PM
7:59:00 PM
8:32:00 PM
9:05:00 PM
9:38:00 PM
10:11:00 PM
10:44:00 PM
11:17:00 PM
11:50:00 PM
12:23:00 AM
12:56:00 AM
1:29:00 AM
2:02:00 AM
2:35:00 AM
3:08:00 AM
3:41:00 AM
4:14:00 AM
4:47:00 AM
5:20:00 AM
5:53:00 AM
6:26:00 AM
6:59:00 AM
7:32:00 AM
8:05:00 AM
8:38:00 AM
9:11:00 AM
Ions Avg