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A Report on
Background (Ambient) Sound Levels
At
Selected Sensitive Receivers, Olean/Allegany, NY, April 22-24, 2010

May, 3, 2010

Introduction

This report presents the findings and recommendations from a study conducted to determine the long term background sound levels (sometimes referred to as background/ambient sound levels) at selected residential properties to the north, south and west of the proposed Everpower Renewables, Allegany Wind Farm project. These properties have been identified as "Sensitive Receivers." The residential properties are located in the valley between the east and west portions of the wind project. One additional property is located on a ridge top to the east of the eastern portion of the project. The study was conducted to establish the long term background sound level at the properties and to provide data for evaluating the acceptability of the wind turbine project. Long term background sound levels can be used to determine the Community Response and Land Use Compatibility of the anticipated wind utility. Although the condition to be measured is the long term background sound level the method used to make this assessment used one (1) hour samples taken when the soundscape is not dominated by short term events in the community. Data for this study was collected from four (4) properties, two each night, over the evenings and nights of April 22/23 and 23/24, 2010.

The study was conducted at the request of Mr. Gary Abraham on behalf of Concerned Citizens of Cattaraugus County (CCCC) representing non-participating property owners in the footprint of the proposed wind utility. Permission was granted to collect sound data on these properties. The study was conducted in accordance with the methods and procedures of national and international standards for assessing long term background sound levels as needed to determine the Land Use Compatibility and Community Response for new sound emitters that may be introduced into the community. These standards include, but are not limited to, the current versions of American National Standards (ANSI) S12.9-2005 "*Quantities and Procedures for Description and Measurement of Environmental Sound (Part 4-Noise Assessment and Prediction of Long Term Community Response and Part 5-Sound Level Descriptors for Determination of Compatible Land Use*)" and ISO 1996-2.2 (1987 and 2005 Draft) "*Acoustics -- Description and measurement of environmental noise -- Part 2: Acquisition of data pertinent to land use*." Additional references for procedures used in this study are included at the end of the report in the section on Measurement procedures.

Information collected at the four sensitive receiver sites focused on sound level tests outside the study participant's homes. Outdoor tests were for the purpose of establishing baseline profiles of background sounds. The information provided in this

report meets the current ANSI and ASA standards for determining the pre-existing background sound levels for land use planning.

The findings of this study are used to demonstrate that the background sound levels used to characterize the non-participating properties in the Hessler and Associates (HA) Report of January 27, 2010 are flawed and overstate the background sound levels in the community. The findings are also used with the findings of the April 20, 2010 report by Conestoga-Rovers and Associates, (CRA) that presents the results of a sound propagation model for showing the predicted sound levels for properties in the footprint of the proposed wind utility. The predicted sound levels from this model is used with the background/ambient sound levels determined in this study to test the criteria for new projects. The criteria require that the new project not increase the current background/ambient sound levels by more than 3 dB.

Background

Many community and State level noise standards and guidelines written in the 1970's and early 1980's used the term "ambient" in an ambiguous manner. Sometimes it is used a substitute term for 'Long-Term Background (LTB) sound level' and at other times it was used to mean the combination of the LTB plus Short-Term sounds from nearby noise sources, manmade and natural. The NYDEC Guidelines were developed during the time when the use of each term was not yet defined. This ambiguity in the use of ambient and background is often used in noise studies conducted for wind developers as documentation for permitting and complaint resolution. Care must be taken to understand the context when reading such non-standardized documents.

One acoustical consulting firm that uses this ambiguity when conducting background sound studies for wind utility developers in New York is Hessler and Associates. Everpower Renewable's acoustical consultant is the same firm, Hessler and Associates. In previous communications (February 19, 2009 and February 22, 2010) this author has advised the board of this situation and the consequences of accepting the Hessler studies for decision making on the Allegany Wind Farm project.

The flawed concepts and procedures used by Hessler and Associates has been challenged by Paul Schomer, Ph.D., Bd. Cert. INCE, of Schomer and Associates, in a study critiquing the Hessler methods conducted on behalf of the citizens of Cape Vincent, NY. In that study, Dr. Schomer, who is Chair of the Acoustical Society of America's Standards Committee, and therefore represents an impartial and respected arbitrator on issues of acoustical procedures criticized the methods used by Hessler and Associates. In the final report Dr. Schomer states:

> "Hessler's BP study for the Cape Vincent Wind Power Facility appears to have selected the noisiest sites, the noisiest time of year, and the noisiest positions at each measurement site. Collectively, these choices resulted in a substantial

> overestimate of the a-weighted ambient sound level, 45-50 dB according to Hessler."

The complete Cape Vincent study is provided in support of this assertion. After the report was submitted, Hessler and Associates claimed in both written sworn testimony and in public meetings that the problems identified by Dr. Schomer in their procedures was a misunderstanding or as one of the senior members of Hessler and Associates asserted in a rebuttal for the Glacier Hills wind utility project in Wisconsin: "Mr. James's claim that our research has somehow been "debunked" by Dr. Schomer is a complete fabrication."

As a result of statements like the above, both in public and in testimony, Dr. Schomer has recently written a letter to the Supervisor of the Town of Cape Vincent, reaffirming his concerns about the Hessler background sound study methodology. This letter is attached as part of the record. Dr. Schomer states: "Mr. Hessler continues to ignore important facts." and with respect to the Hessler position that wind noise masks wind turbine noise and thus must be included in the background sound measurement: "Even more importantly, regularly and frequently, especially at night, the relation between wind speed and altitude cited by Hessler breaks down completely. It is simply wrong. This is not some idle theory; it is a well known and well documented fact…." The difference of opinion as to how a proper test for background/ambient sound levels should be conducted in New York, or any where else, between Dr. Schomer and Hessler and Associates, is not a case of two equal professionals with a differing opinion. Dr. Schomer, as Chair of the Acoustical Society of America's Standards Committee is the ultimate arbiter on what constitutes proper testing procedures. His opinion, as stated in his study of Hessler's Cape Vincent background sound tests and his more recent letter of re-affirmation is clear. The methods used by Hessler and Associates are wrong.

The same methods that are criticized by Dr. Schomer in Cape Vincent were used in the recent report to the Town of Allegany, titled: "Environmental Sound Survey and Noise Impact Assessment" January 27, 2010. The entirety of Section 2 is devoted to narrative, graphs and photos showing the same flawed procedures that Dr. Schomer stated were "wrong" in the Cape Vincent report and letter. It documents the inappropriate measurement locations (too close to roads), mounting of instruments on poles instead of tripods, inclusion of wind noise and other weather effects in the reported data. These are the same as the flawed procedure in Cape Vincent. Since Hessler and Associates was alerted to the deficiencies in their procedure by Dr. Schomer in May of 2009, and this study was conducted in January of 2010 it seems clear that Hessler and Associates has chosen to use a novel procedure that biases results in favor of the wind utility developer in spite of warnings from senior members of the profession that they are not correct for the Allegany Wind Farm project. On this basis, the studies and any representations about the study's findings by members of the firm or utility developer

must be discounted by the Town of Allegany in its decision making process for the Allegany Wind Farm.

The Hessler study for Everpower concluded in Section 3.3.2 that the background/ambient sound levels for valley properties are 35 dBA and 37 dBA for mountain properties. This was used to project (Table 3.3.4) that the Allegany Wind Farm project could be as high as 40 (valley) to 42 dBA (mountain) and still meet the "Nominal NYDEC Impact Thresholds." The concerns presented in the discussion above should be applied to all findings from the Hessler studies. They are based on flawed procedures and thus present flawed and biased results regarding the Allegany Wind Farm project's impact on the community.

As implied in Dr. Schomer's report and letter since the early 1980's, the terminology and methodologies for determining the impact on a community of a new noise source have been standardized and the proper metric for describing the pre-operational sound levels is Long-Term Background sound level. It is typically measured using a statistical process to identify the quietest one minute of a 10 minute sample (or six minutes of a one hour sample) taken during the time when the new noise source is most likely to generate complaints and other community sounds are at a minimum. This is the condition/time when the new noise source will be most likely to produce complaints or interfere with the use of properties adjacent the wind projects footprint. This measurement is called the L_{A90} or background sound level.

"Ambient" is currently used to mean the 'all encompassing sounds" of a community in the US. It represents the combined effect of LTB and short term events including natural sounds. In standards it has been replaced with the defined term of "Short-Term Background Sound." A copy of the relevant sections of the ANSI/ASA standards for measurement of the long term background sound levels is provided in Appendix B of this report.

Current procedures for predicting community response to any new noise source use the L_{A90} sound levels, as reported for this study. These are the correct metrics for describing pre-operational background sound levels. Where local ordinances or other guidelines use the term 'ambient' in the context of background sound levels it should be understood that generally accepted acoustical engineering procedures (e.g. ANSI, ASA, ASHRAE) have been defined to use L_{A90} to determine this value. For a more complete understanding of these terms as they are now defined by acoustical standards organizations in the U.S. see the definitions section at the end of Appendix A for "ambient sound," "background sound" and "statistical descriptors." Also, see Appendix B at: Section 5.4, 7.1 (and its Notes), 8.7, and 10.2 (a) (and its Note (d) about excluding transient sounds) for more details on how the pre-operation sound levels should be measured and reported.

Description of Tests and Measurement Sites

The Baseline Noise Study data collection was conducted over a two evening/nights beginning the evening of April 22, 2010. Data was collected for the purpose of establishing a baseline of pre-operational sound levels, (L_{A90} and 1/3 un-weighted octave band sound pressure levels (dBZ)).

Instrumentation was set to perform the necessary analysis and storage using a sampling rate of one (1) minute to permit elimination of transient events from test data if required (not needed for these data sets). The samples were aggregated into one (1) hour periods for determining the long term background sound level L_{A90}. Sampling results were collected and stored for each test period.

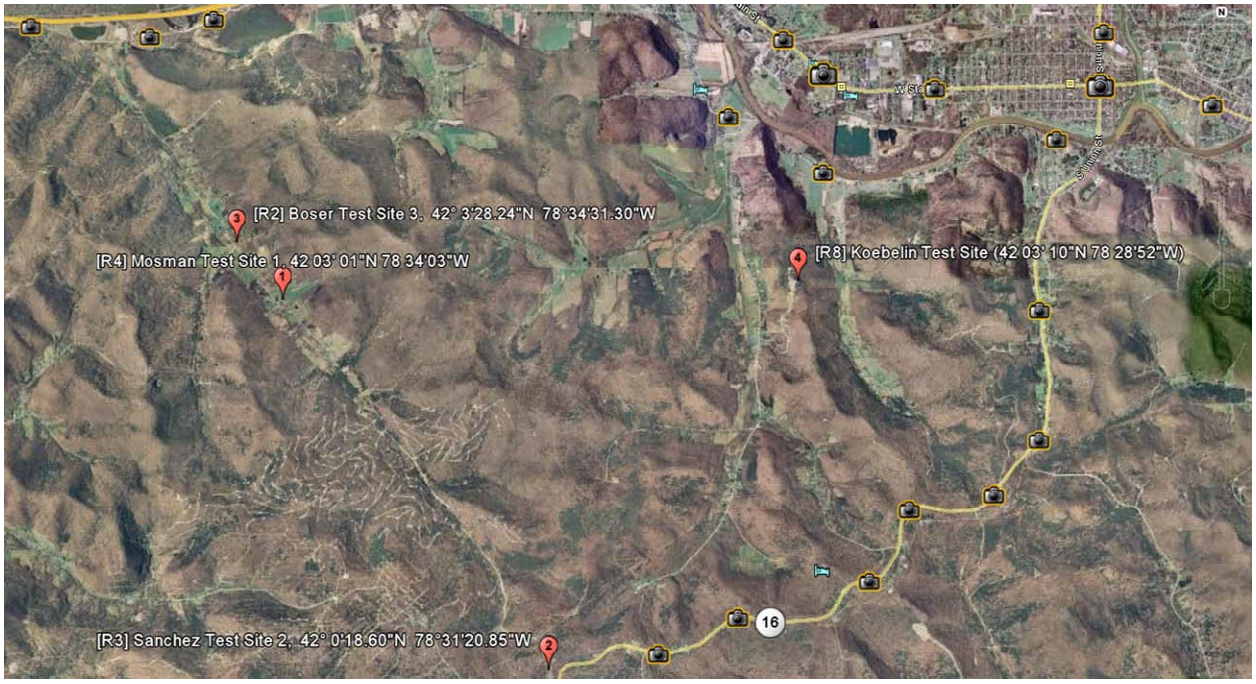


Figure 1-Location of the four (4) test sites for Background Sound Test at Sensitive Receivers

Everpower Allegany Wind Farm, Olean/Allegany, NY

Tests Sites

Sensitive Receiver Locations

The properties that were the focus of this study were identified as being Sensitive Receivers by the Town of Allegany. There are eight such locations that are provided in the CRA report to the Town Planning Board in the report dated April 20, 2010. Of the eight sites listed in that report four (4) were selected for this study. The basis for selection was to conduct a background sound level test at three valley properties located along Chipmunk Rd at the north and south end of the valley and also to monitor at one site outside the valley to the east of the project on an adjacent ridge.

Valley properties along Chipmunk Rd.

Site 1. The Mosman residence (R4): Meter location was open yard behind the house and barn. There was some traffic noise from vehicles on Chipmunk Road. Primary sources of noise were distant birds and periodic vehicle noise.

Site 2. The Sanchez residence (R3): Meter location was to the south of the parking area on the south side of the house. During the time represented by the monitoring there was sporatic traffic noise from vehicles on Chipmunk Rd and also on Hwy 16 to the east. Other sources of noise included birds in the distance.

Site 3: The Boser residence (R2): The meter location was behind the house in the open portion of the yard. Traffic noise from vehicles on Chipmunk Rd was present, but infrequent, during the test period.

Mountain Property to the East

Site 4: The Koebelin residence (R8): Meter location behind the house on the north side nearest the ridgetop. Traffic and other man-made noise was noted from the town to the north of the site and Highway 417 and 86. During the period for which monitoring is reported sounds from the town to the north was at a minimum but was the likely source of low level background sound. Some distant bird activity was also present.

Aerial views and photographs of the test sites are provided in the Data Section located after the narrative to this report.

Tables 1 and 2 below summarize the test sites, their locations, and weather.

TABLE 1- Summary of Test Sites, Locations, and Weather Conditions

Sensitive Receiver Locations Monitored in E-CS study

E-CS Site	Name	Sensitive Receiver	Date	Start Time	Duration	Latitude Longitude	Address	Wind (mph)	%RH	Temp °F
1	R. Mosman	R4	22-April-10	10PM-midnight	2:00:00	42° 03' 01"N 78° 34'03"W	1064 Chipmunk Rd.	<2 mph	43	35-42
2	J. Sanchez	R3	23-April-10	1-3 AM	2:00:00	42°0'18.6"N 78°31'20.8"W	143 Chipmunk Rd	<2 mph	21-43	30-40
3	W. Boser	R2	24-April-10	3-5 AM	2:00:00	42° 3'28.24"N 78°34'31.30"W	1216 Chipmunk Rd.	<2 mph	23-42	30-40
4	D. Koebelin	R8	24-April-10	Midnight to 2 AM	2:00:00	42° 03' 10" N 78 28'52"W	300 Hawthorne Ln	<2 mph	23-42	30-40

Interpretation of Findings

Test data was collected for late evening and nighttime conditions. The nature of the community is quiet rural with little traffic noise except as noted. Table 2 summarizes the background sound level data for each test site. In addition, it also presents the predicted sound level for wind utility operation as modeled by CRA in their April 20, 2010 report. This data is used to assess whether the project can comply with the Town of Allegany criteria that the wind turbines cannot raise the existing background sound level by more than 3 dBA. The table shows the permitted level for the wind turbines, the CRA model predicted level for each sensitive receiver and a final column showing whether the wind turbine project passes or fails the criteria.

Table 2- Test Results (L_{A90} and L_{Aeq})

		E-CS Background[1] Sound Level Test Results		Permitted Wind Turbine Sound Level	CRA Model Prediction (Table 2)	Pass/Fail Criteria
Test Site #	Property Owned By:	dBA L_{A90}[2]	dBA L_{Aeq}[2]	(dBA L_{A90} plus 3 dB)	dBA (L_{eq})	dB
1 [R4]	R. Mosman	26	29	29	38.2	Fail by 12 dB
2 [R3]	J. Sanchez	22	24	25	39.2	Fail by 17 dB
3 [R2]	W. Boser	28	29	31	34.1	Fail by 3 dB
4 [R8]	D. Koebelin	28	29	31	30.9	At Limit

[1] Long-Term Background Sound Level L_{A90} (As defined Per ANSI S12.9 Part 3 and S12.18) for comparing new noise source to existing community sound levels to assess community response. The nighttime LTB would be equal to or lower than the daytime results.

[2] It should be noted that night time tests when man-made sounds are not present will often show that the Background Sound Level (L_{90}) and Average Sound Level (L_{eq}) are very close (1 to 7 dB). It would take only one or two short term events that were significantly louder than the background sound level to make for this much difference, especially at night in quiet rural areas.

The new noise sources under development are wind turbines, which will operate 24 hours a day and seven (7) days a week. Thus, the focus of this discussion will be on how the wind turbine operational sound emissions will affect nighttime sound levels. Nighttime is the focus because it the most likely time for complaints of sleep disturbance. As noted in the Table, the wind turbine project does not meet the criteria for increases in sound level at sensitive receivers at any of the valley properties. Even, at the sensitive receiver site on the ridge to the east of the project footprint the wind turbine sounds will just equal the criteria. This assumes that the model represents normal operating conditions. Under conditions where turbulence or other factors increase the wind turbine sound emissions above those anticipated in the CRA model it is possible that the project will also fail the criteria at Sensitive Receiver R8.

Instrumentation

Data was collected using a Type 1 Larson Davis Model 831, Precision Integrating Sound Level Meter (ISLM SN# 1710) meeting all applicable ANSI/ISO standards for acoustical

test instruments of this type and class. In addition, video and audio data were also collected to document baseline conditions. Audio data was collected using the LD 831's internal recording ability that saves the analog output of the ISLM preamplifier to an internal memory card. This data was used to confirm that data used for this report was not contaminated by artifacts. The report does not provide the audio data. It is on file should it be needed in the future. Instruments were field calibrated before and after each series of field measurements. The calibration was stable across the entire series of tests. Annual and interim field calibration information is available on request.

Weather

Weather conditions on the test nights were calm to light breeze with a moderate humidity and cool temperatures. Conditions were suitable for collecting background sound levels. The temperature was in the low 30's to mid 40's with humidity ranging mainly in the 20-40% range. A copy of the hourly weather for the test nights is included in the Data Section at the end of the narrative to this report.

Sample Selection Process

Test sites were arranged by CCCC and a representative of CCCC participated in the testing to assist in locating homes and navigating through the community. Test sites on each property were selected to be on the side of the home where human activities are most likely to be affected by sounds from the ridgeline where turbines are to be located. The one (1) hour test sample periods (2 hours total) reported were selected to avoid these artifacts from man-made activities, traffic, wind, and birds/bugs to the extent possible. However, some samples include the sounds of distant vehicles and birds. Sample periods selected for this report include at least six minutes of the one hour or longer sample without any loud "events." Thus, the L_{A90} evening and night time values are reflective of only distant natural sounds (traffic and community) as is appropriate for this type of test. Bird song from birds close to the microphone, and other short term nature sounds were excluded from the reported test data.

General Observations

Valley Properties (R2, R3, R4)

Table 2 shows that the locations are very quiet during evening and nighttime hours. Background sound levels for this group of homes ranged from the low 22 dBA to 28 dBA. These sound levels are typical of what is measured in other communities during the night. This is an indication of how little community activity there is for the homes represented by Sites 1(R4), 2(R3), and 3(R2). Note that as distance from the town of Allegany and Olean increase the background sound levels decrease.

Mountain Properties (R8)

Table 2 shows that the location on the west side of the ridge to the east of the eastern portion of the Allegany Wind Farm is also a very quiet area. This location has some background noise from the city and vehicles on highways to the north of the property,

but at night these sounds are significantly reduce as human activity decreases during evening and night time hours.

Discussion

When reviewing studies commissioned by the wind project developer it is important to determine if the reported "background/ambient" sound levels are representative of the property's. This includes determining what types of sounds were included in the developer's sampling. As seen in this study the L_{A90} values are lower than most communities that have higher population densities, but are still in line with what is found in other quiet rural/wilderness communities, especially at night. If a noise study by the wind project developer was to show higher sound levels than reported in Table 2 for the E-CS study it is likely that the ambient/background tests were adversely affected by transient sounds or contamination from wind or other sources. These contaminating sounds are specifically excluded from properly conducted tests of baseline nighttime sound levels by ANSI/ASA standards and were excluded in this study.

Since there are few, if any, sources of nighttime transient and other man-made sounds it should be expected that the average nighttime sound levels (L_{Aeq}) will be less than 30 dBA at all test sites. A single vehicle pass-by during the quiet of night can cause a large increase in the L_{Aeq} value. Because L_{A90} is less sensitive to these events it is now preferred over L_{Aeq} for establishing the baseline conditions for land use compatibility assessment.

As discussed in the earlier section on Background the study conducted by Hessler and Associates claims that the background sound levels in the community are in the 35-37 dBA (L_{A90}) range depending on whether the property is valley or mountain ridge. These values are at 10 dB higher than they should be and since the report by Hessler and Associates emphasizes that they included wind noise in the study the 10 dB is likely an artifact of the flawed procedure used by this and other firms.

Health Risks

For purposes of this discussion it can be assumed that all test sites have long term nighttime background sound levels outside their homes at night of 30 dBA or less. Using the information in Appendix C: "Excerpts from WHO 2007 Nighttime Noise Guidelines for Preventing Adverse Health Effects" Table 3 (last page) it is possible to give a prediction of the health effects of the environment. Table 3 "Summary of the relation between night noise and health effects in the population" shows that for this condition ($L_{night\text{-}outside}$ up to 30 dB) the expected health effect would be: "***Although individual sensitivities and circumstances differ, it appears that up to this level no substantial biological effects are observed.***" It should be noted that this Table is based in WHO's evaluation of peer reviewed medical and acoustical research current as of 2007. The 2007 WHO Guidelines replace the 1999 WHO Guidelines which used 30 dBA in the

bedroom as the criteria for healthy sleeping conditions. A similar WHO document was released in 2009 that re-affirmed the limits for safe and healthful sleep given in the 2007 document along with some guidance for communities that had nighttime sound levels exceeding 40 dBA to work towards reducing the community sound levels to 40 dBA or lower.

Everpower's Allegany Wind Farm operations can be expected to increase nighttime noise from the current $L_{night\text{-}outside}$ levels of 22-28 dBA for homes in the valley to $L_{night\text{-}outside}$ sound levels of 34 to 39 dBA depending on wind speed, direction and location of the receiving property. Table 3 of the WHO 2007 Nighttime Noise Guidelines states: "***There is a sharp increase in adverse health effects and many of the exposed population are now affected and have to adapt their lives to cope with the noise. Vulnerable groups are now severely affected.***" **It should be anticipated that full operation of Allegany Wind Farm will result in adverse health effects due to sleep disturbance for the residents in the valley along Chipmunk Road.**[1]

In addition to the over-all sound levels described above, this study documented the spectrum shape of the current baseline conditions. This was done to establish a baseline for the community sounds as separate "1/3 octave band" measurements. The attached charts showing spectrum levels for each of the test sites display A-weighted sound pressure levels (dBA).

The spectrums in the graphs (See appendix) are typical of very quiet communities with little or no heavy truck or industrial activities. The results of these tests for the 1/3 octave band center frequencies from 200 Hz and below are important to have documented for future purposes. Concerns have been raised about wind turbine sound emissions having strong low frequency content. The graphs that follow establish the current L_{90} sound pressure levels (dBA SPL) in the lower frequency octave bands. Should low frequency sounds from wind turbine operation become a source of complaints the values in the graphs can be used as a benchmark against operational 1/3 octave band sound pressure levels from the turbines to determine how much the wind utility has increased low frequency sound in the receiving communities.

Early reports from recent medical research conducted for people living at distances similar to those anticipated for the residents show that the lower frequency sound emissions from wind turbines of the type being installed have resulted in adverse health effects for vulnerable people with homes within a mile of wind turbines. The infra and low frequency sound energy can affect auditory function for a small percentage of people who are sensitive to low frequency sound, but, of more importance, it can cause adverse health effects related to functioning of vestibular (our

[1] The author of this paper recommends that the nighttime criteria be defined as presented in Data Section "Noise Criteria For Siting Wind Turbines To Prevent Health Risks"

organs of balance) and cardio-vascular systems. Sound with strong low frequency content can also cause vibration in structures leading to wiggling of mirrors and wall mounted pictures, rattle of small objects on shelves, and is also known to cause sleep disturbance. Currently, infra and low frequency sounds are not a problem in the Allegany/Olean ridge community except for periodic heavy trucks and vehicles with inadequate exhaust systems on the area's roads.

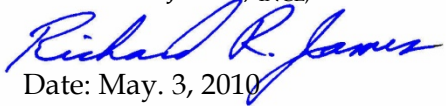
Conclusion

This study demonstrates that the valley and mountain properties that will be near the Everpower Allegany Wind Farm project's wind turbines is extremely quiet, especially in the late evening and night when sleeping conditions are critical. When the wind utility begins full operation it is expected to emit sound at levels above 34 dBA at night for valley residents along Chipmunk road. Increases in the sound levels at the mountain site on the ridge to the east of the project will also be noted, but for the CRA predicted sound levels will just meet the criteria limiting increases in background sound levels. Levels of 40 dBA and higher should also expected, but will be dependent on location and weather conditions. Based on current health research, including the WHO 2007 Guidelines for Nighttime Noise, people occupying sensitive properties, like residences, will be exposed to ongoing sound levels that are hazardous to health. Currently, these areas rank as safe and healthful for nighttime sleep. The community will be routinely subjected to night time noise in excess of the sound levels presented in the 2007 World Health Organization Guidelines for Nighttime Noise as being safe for long term nighttime exposure. In addition, the daytime soundscape will be permanently altered such that the natural sounds of a rural/wilderness community will be replaced with the constant sound of wind turbine operations.

Finally, the project fails the test for protecting the current property owners.

End of Report Narrative

Richard R. James, INCE, For E-Coustic Solutions



Date: May. 3, 2010

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DATA SECTION

Section Description

1 Aerial and Surface Photographs of Test Sites

2 April 22-24, 2010 Local Weather

3 Test Results (Charts and Graphs)

APPENDIX SECTION

APPENDIX Description

A E-CS Procedures, Terms, Standards (Measurement)

B ANSI/ASA Standards for Measuring Long Term Background Sound Level for Land-Use Compatibility Assessment

C Excerpts from WHO 2007 Nighttime Noise Guidelines for Preventing Adverse Health Effects

Aerial and Surface Photographs of Test Sites

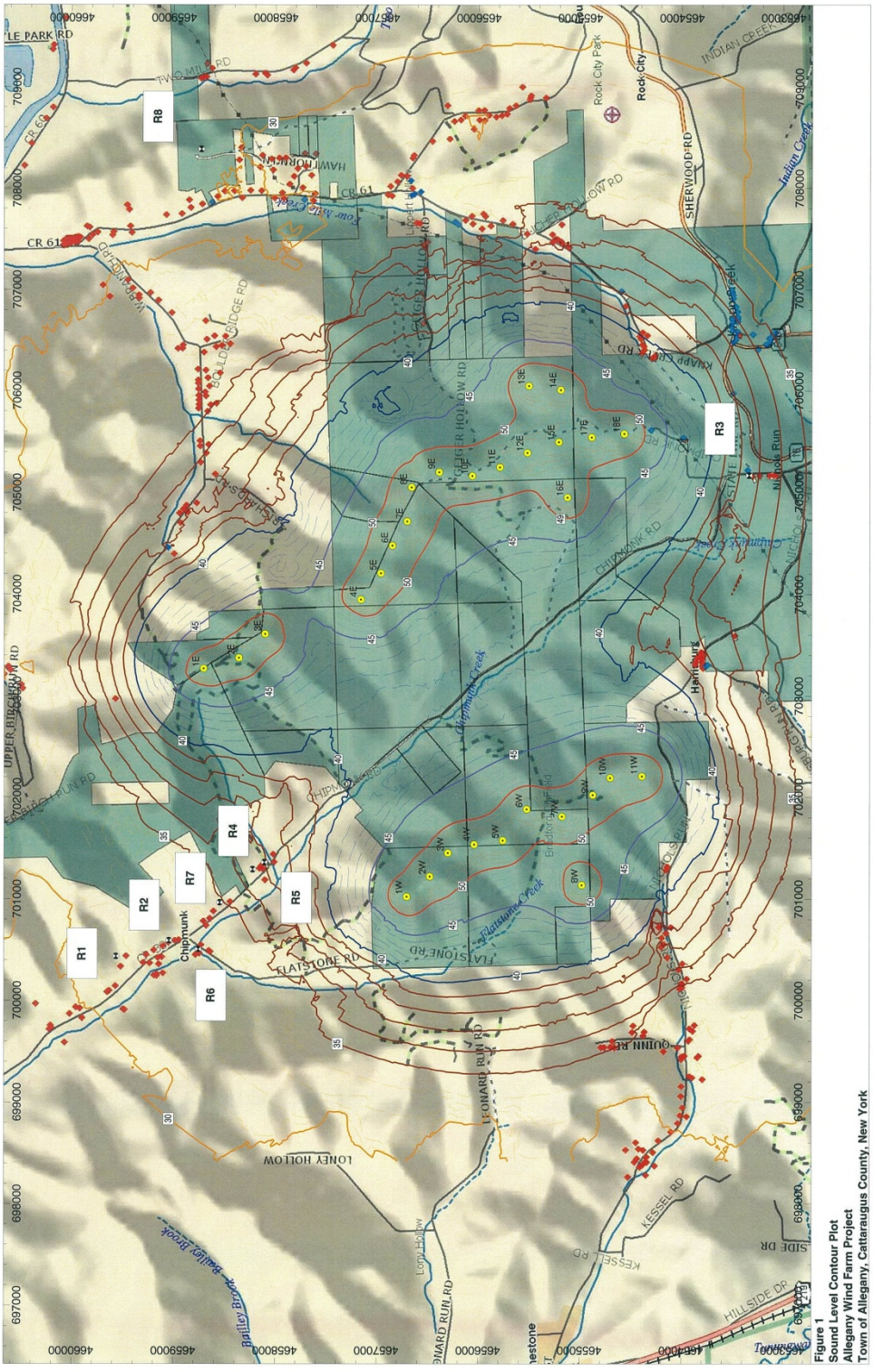


Figure 2-Overview of Allegany Wind Farm and Adjacent Community from CRA Report, April 20, 2010

Figure 3-Mosman Residence

Figure 4-Mosman Test Site 1 showing typical instrumentation setup

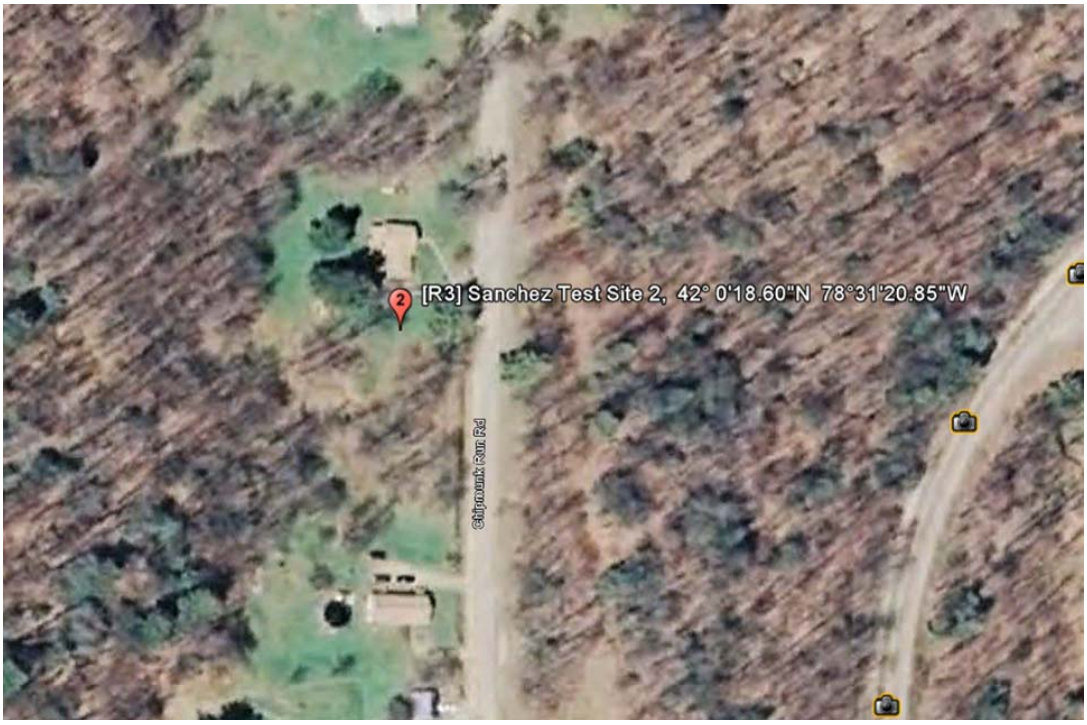


Figure 5-Sanchez Test Site 2

Figure 6-Sanchez Test Site 2 (behind trees near home)

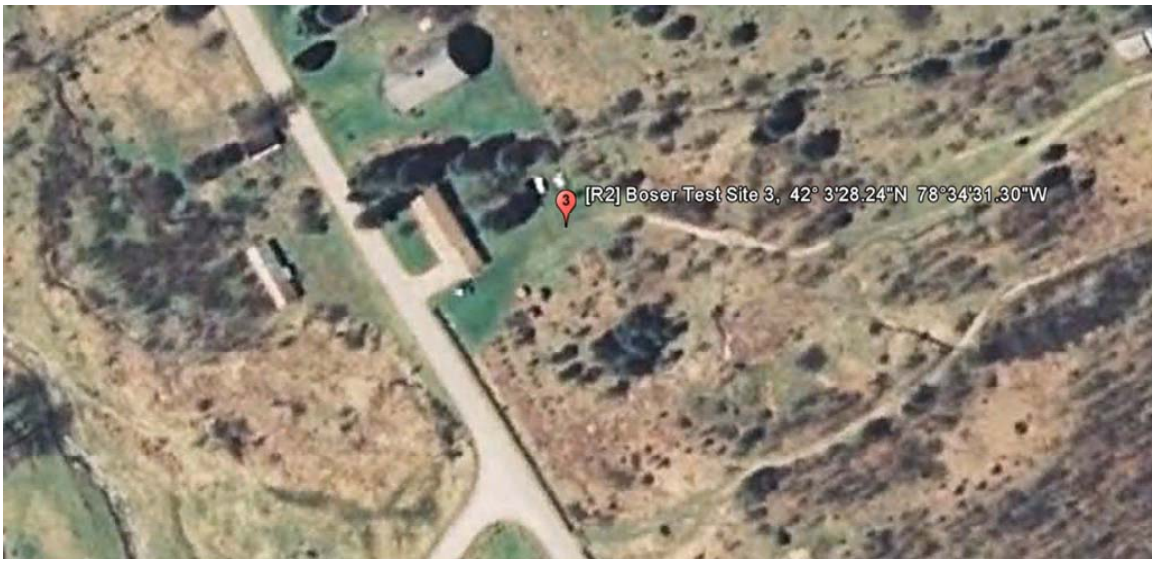


Figure 7-Sanchez Test Site 2

Figure 8-Boser Test Site 3

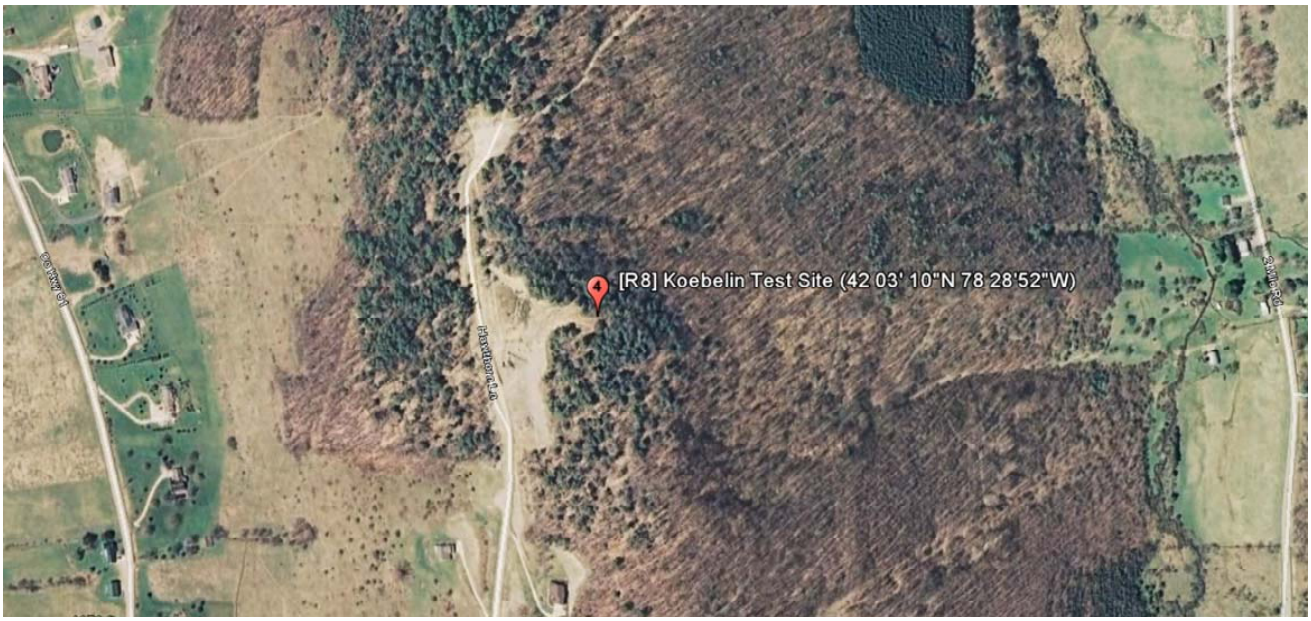
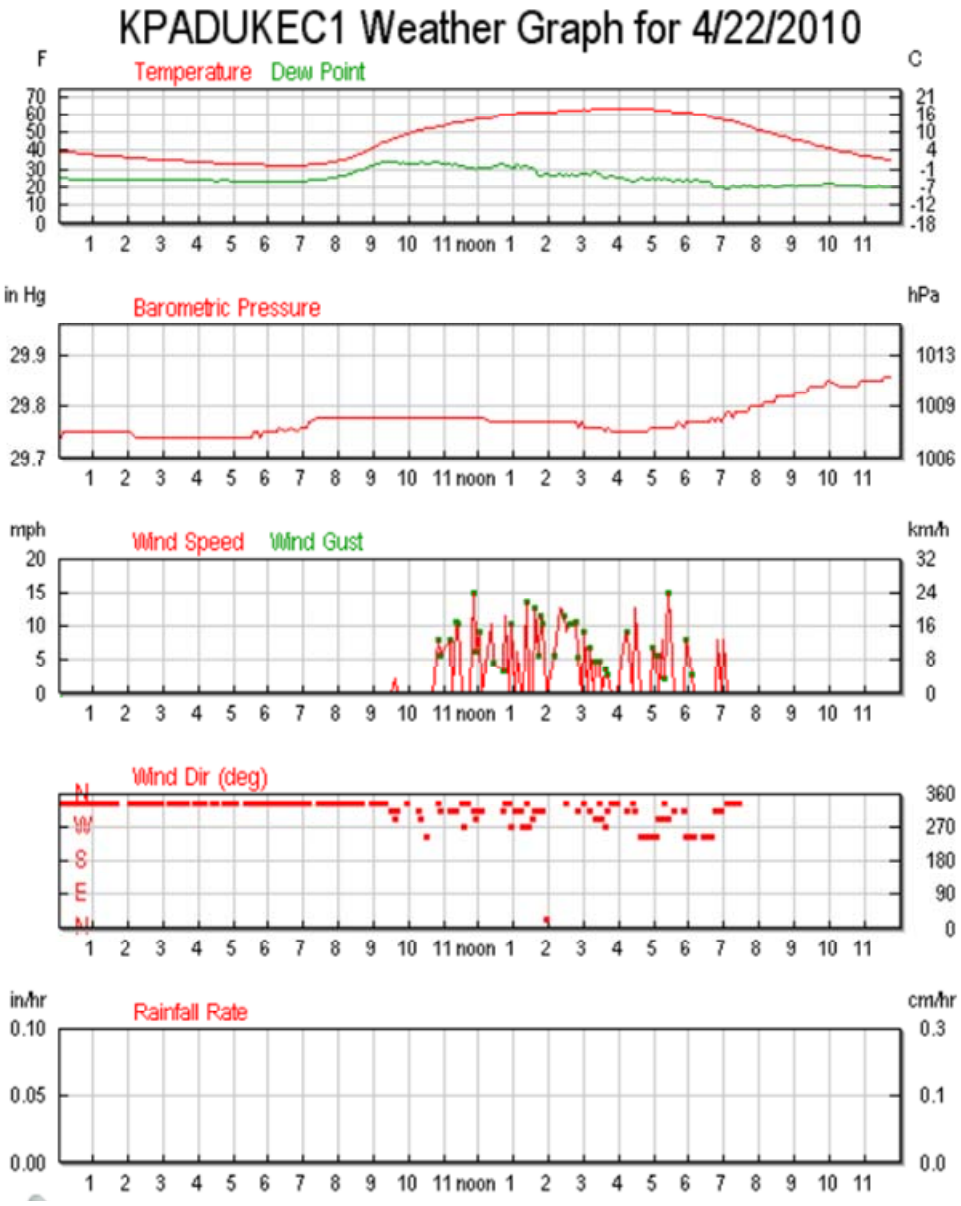
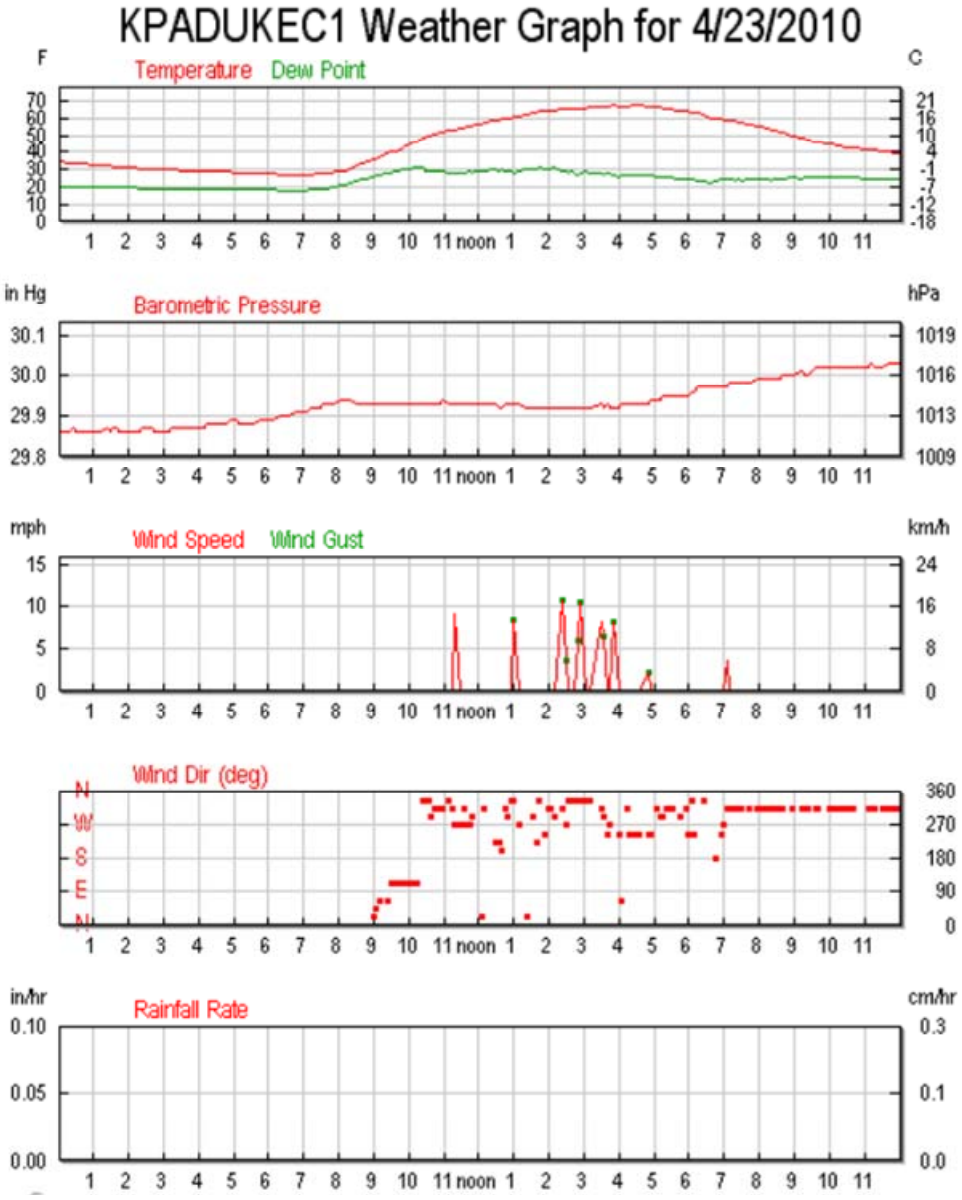


Figure 9-Koebelin Test Site 4 (located north of rear side of home in sight of ridges to west.)

Figure 10-Koebelin Property looking west towards ridges where Allegany Wind will be located

Weather Summary for April 22-24, 2010




KPADUKEC1 Weather Graph for 4/23/2010
F
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in Hg
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1013
1009
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mph
Wind Speed
Wind Gust
km/h
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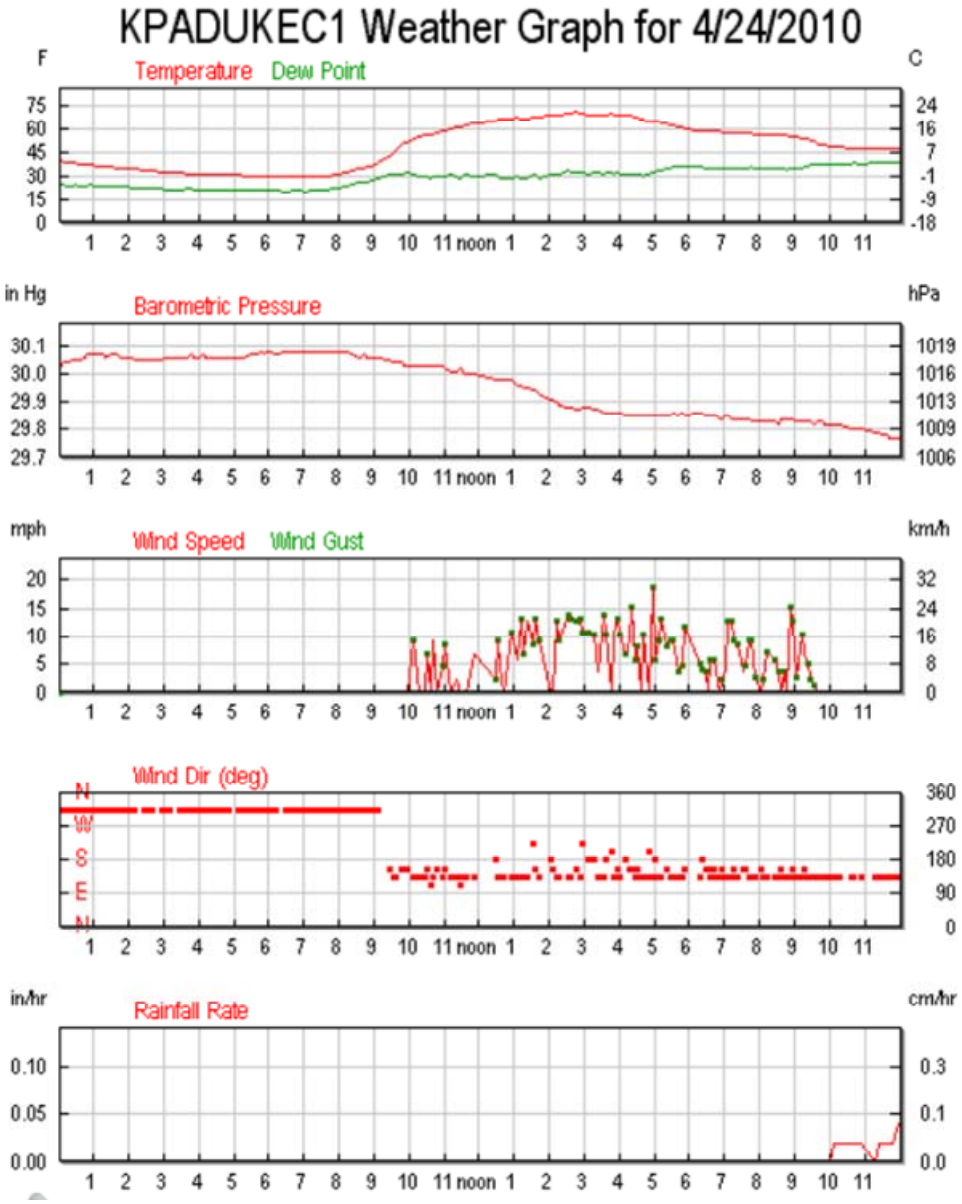
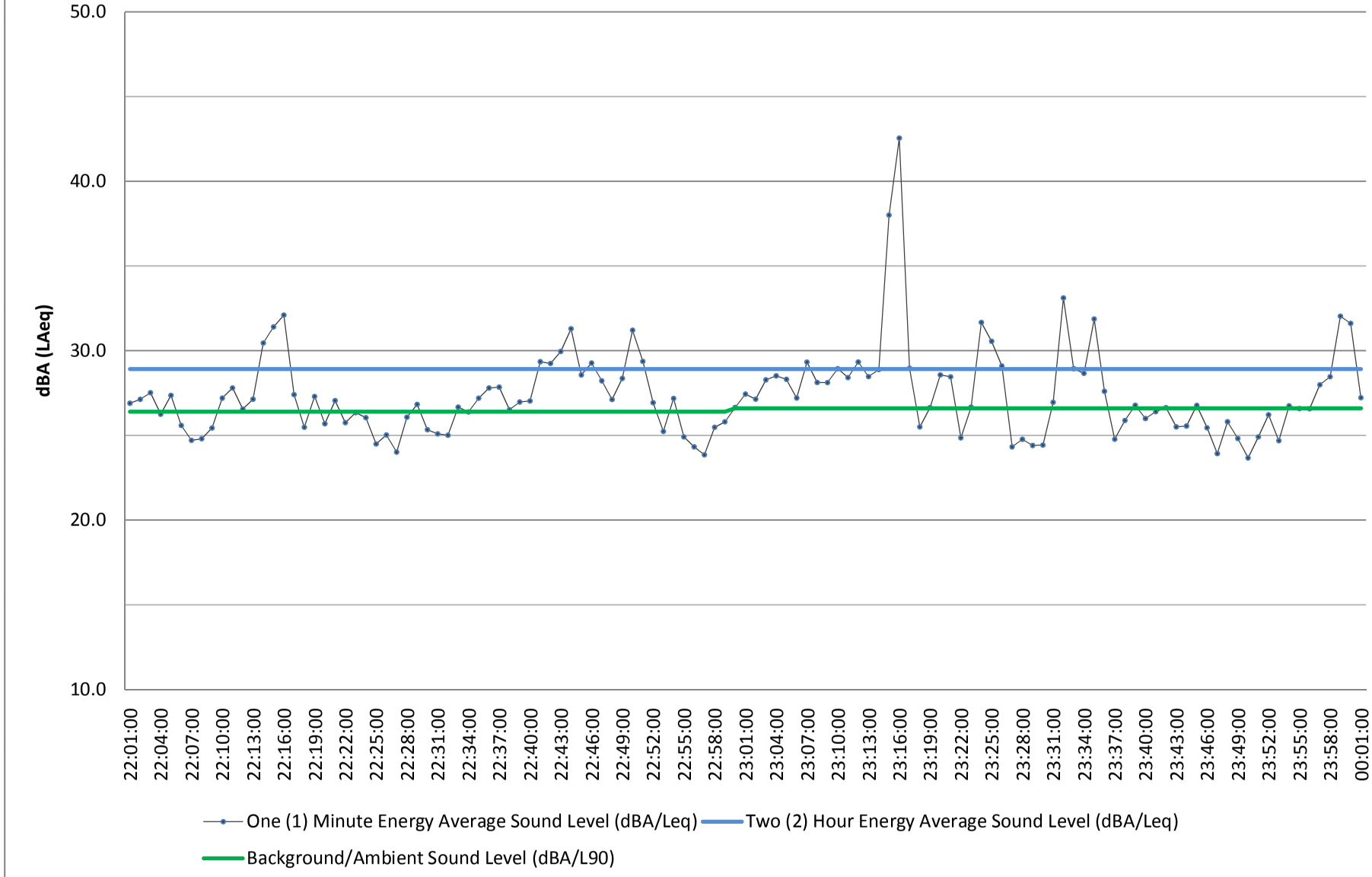
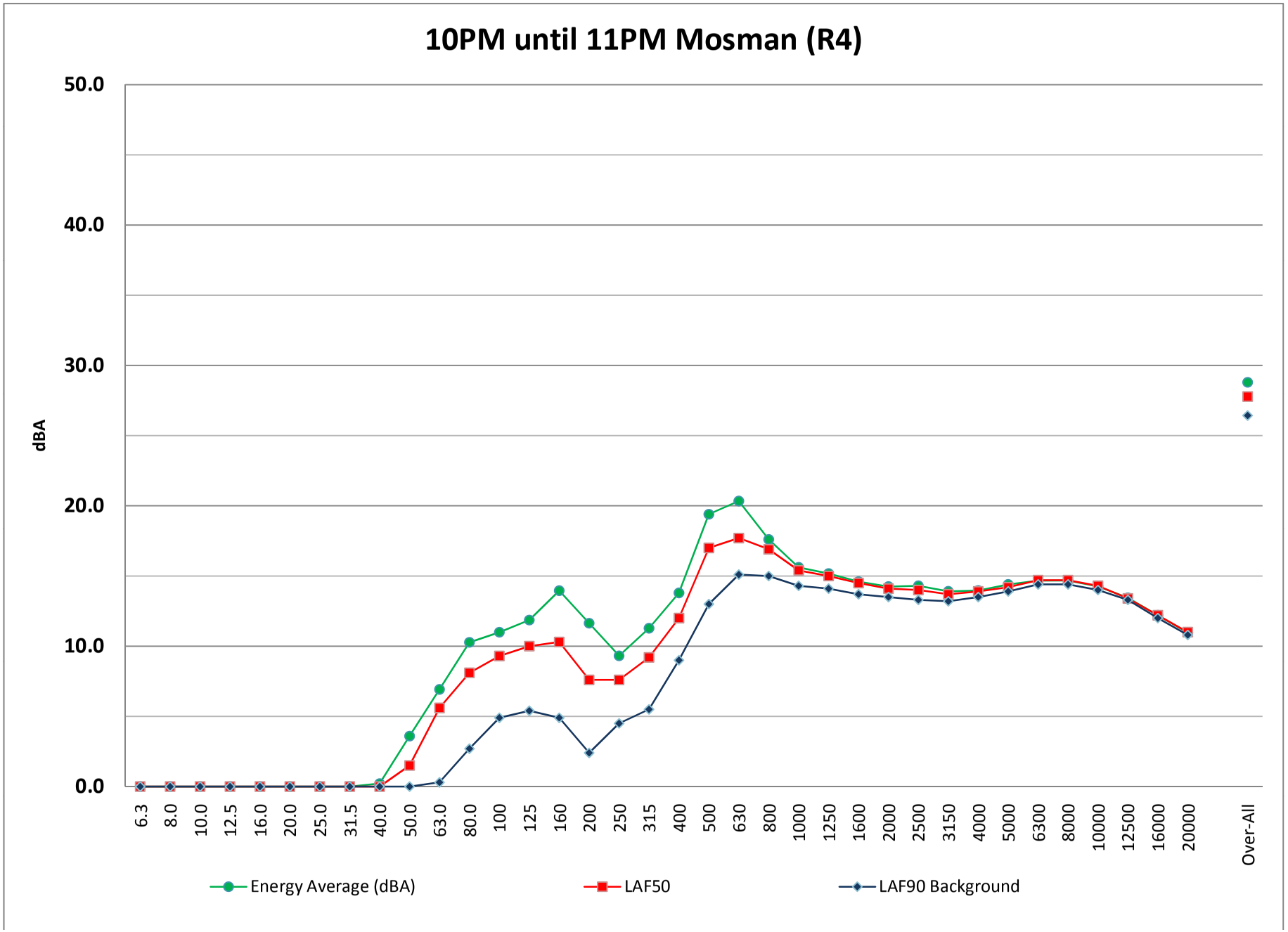
24
16
8
0
1 2 3 4 5 6 7 8 9 10 11 noon 1 2 3 4 5 6 7 8 9 10 11
Wind Dir (deg)
N
W
S
E
N
360
270
180
90
0
1 2 3 4 5 6 7 8 9 10 11 noon 1 2 3 4 5 6 7 8 9 10 11
in/hr
Rainfall Rate
cm/hr
0.10
0.05
0.00
0.3
0.1
0.0
1 2 3 4 5 6 7 8 9 10 11 noon 1 2 3 4 5 6 7 8 9 10 11

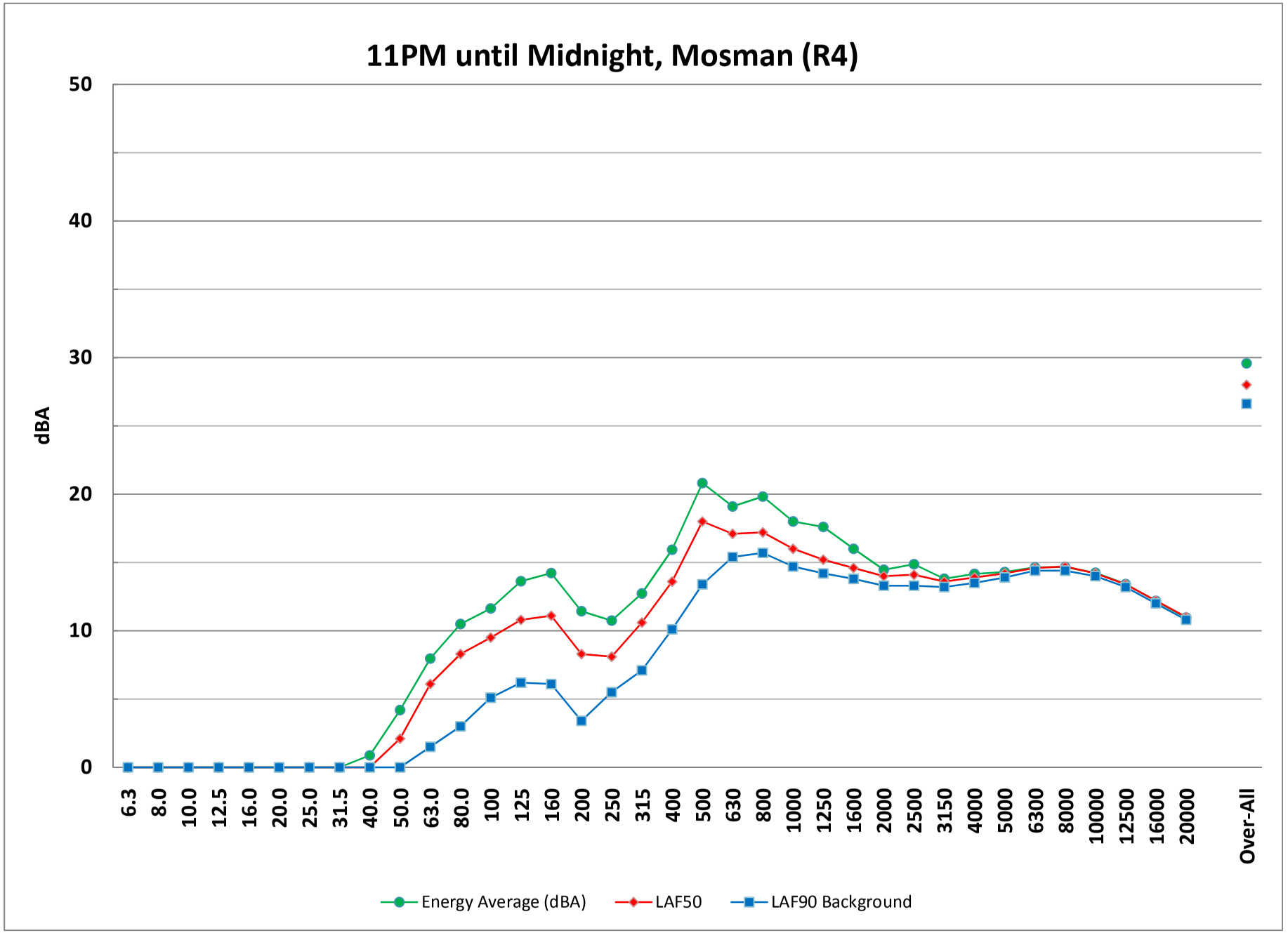

KPADUKEC1 Weather Graph for 4/24/2010
F
Temperature
Dew Point
C
75
60
45
30
15
0
24
16
7
-1
-9
-18
1 2 3 4 5 6 7 8 9 10 11 noon 1 2 3 4 5 6 7 8 9 10 11
in Hg
Barometric Pressure
hPa
30.1
30.0
29.9
29.8
29.7
1019
1016
1013
1009
1006
1 2 3 4 5 6 7 8 9 10 11 noon 1 2 3 4 5 6 7 8 9 10 11
mph
Wind Speed
Wind Gust
km/h
20
15
10
5
0
32
24
16
8
0
1 2 3 4 5 6 7 8 9 10 11 noon 1 2 3 4 5 6 7 8 9 10 11
Wind Dir (deg)
N
W
S
E
N
360
270
180
90
0
1 2 3 4 5 6 7 8 9 10 11 noon 1 2 3 4 5 6 7 8 9 10 11
in/hr
Rainfall Rate
cm/hr
0.10
0.05
0.00
0.3
0.1
0.0
1 2 3 4 5 6 7 8 9 10 11 noon 1 2 3 4 5 6 7 8 9 10 11

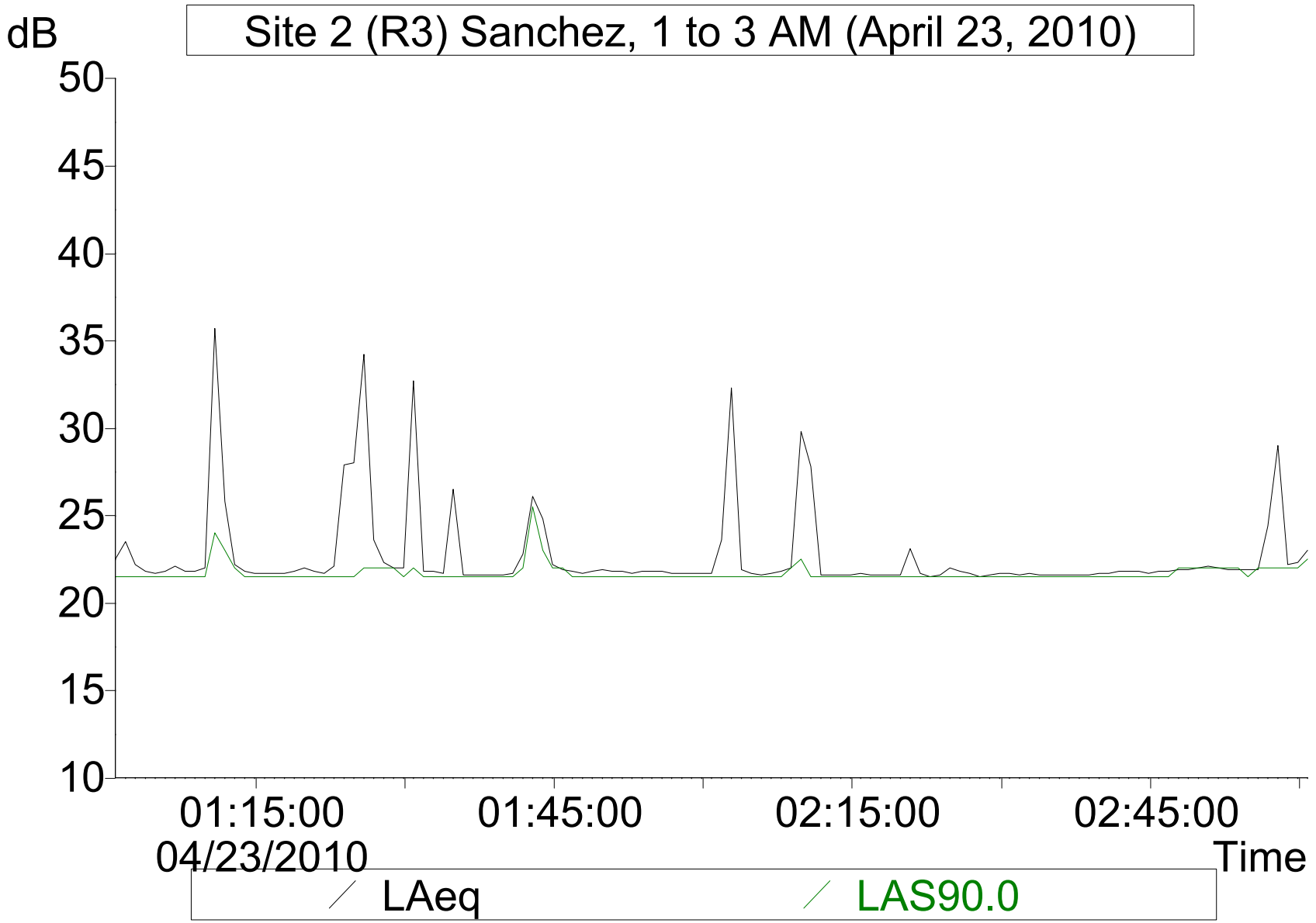
Detailed Charts and Graphs of Test Results

10PM until Midnight
Sensitive Receiver Site R4 (Mosman)




10PM until 11PM Mosman (R4)
dBA
50.0
40.0
30.0
20.0
10.0
0.0
6.3
8.0
10.0
12.5
16.0
20.0
25.0
31.5
40.0
50.0
63.0
80.0
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
12500
16000
20000
Over-All
Energy Average (dBA)
LAF50
LAF90 Background


11PM until Midnight, Mosman (R4)
dBA
50
40
30
20
10
0
6.3
8.0
10.0
12.5
16.0
20.0
25.0
31.5
40.0
50.0
63.0
80.0
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
12500
16000
20000
Over-All
Energy Average (dBA)
LAF50
LAF90 Background



D:\MY DOCUMENTS\MY DATA\ISLM FIELD DATA\LD\10-04-22 TO 24 OLEAN NIGHT BACKGROUND\10-04-22\CEL SITE 2\100422SITE2.DTA
Band = Broadband
Overall profile duration = 07:42:16 (462 samples)

- LAeq -

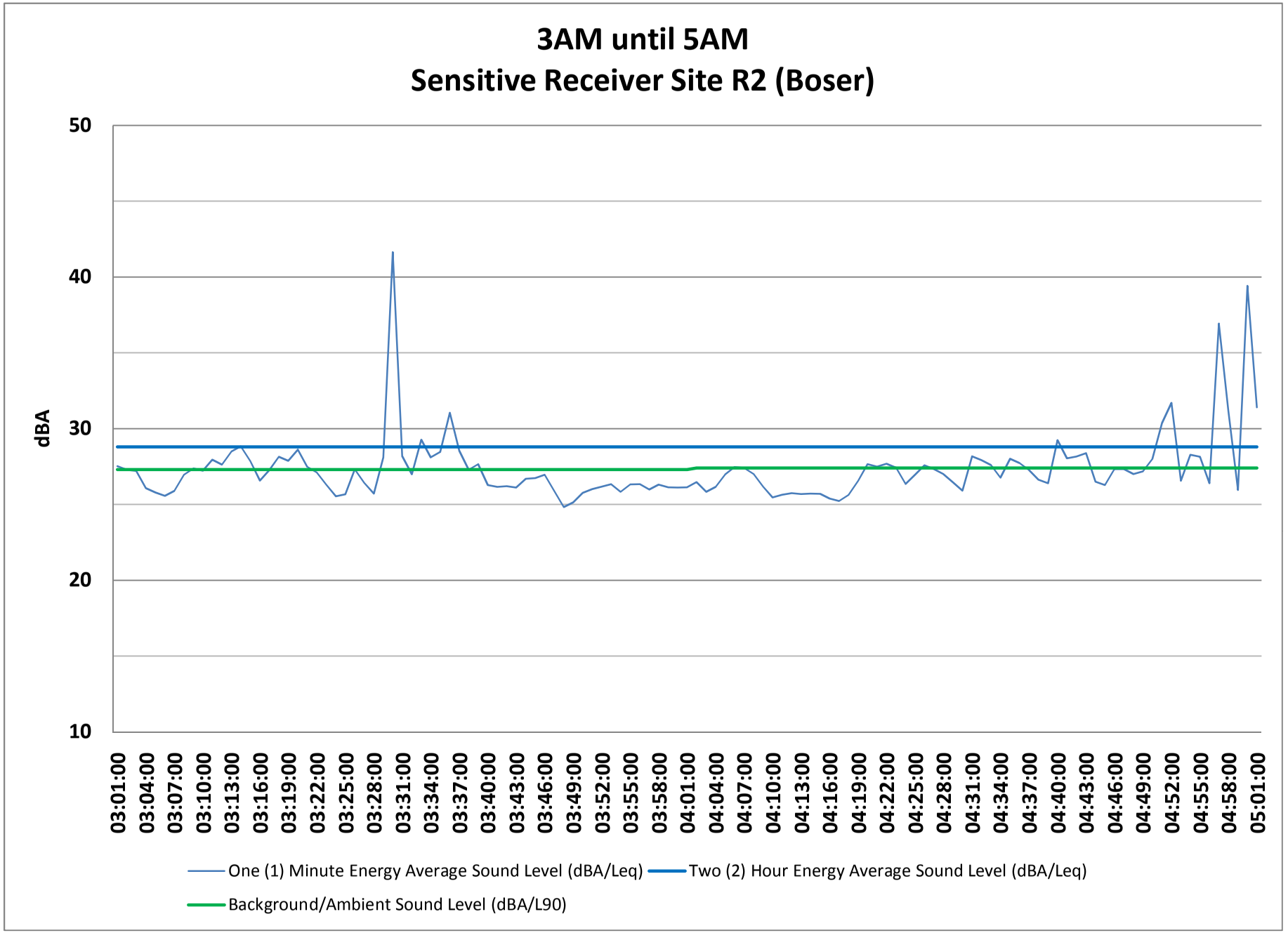
Minimum LAeq = 21.5 dB, On / between the cursors. Time of minimum = 04/23/2010 02:22:47
Maximum LAeq = 35.7 dB, On / between the cursors. Time of maximum = 04/23/2010 01:10:47

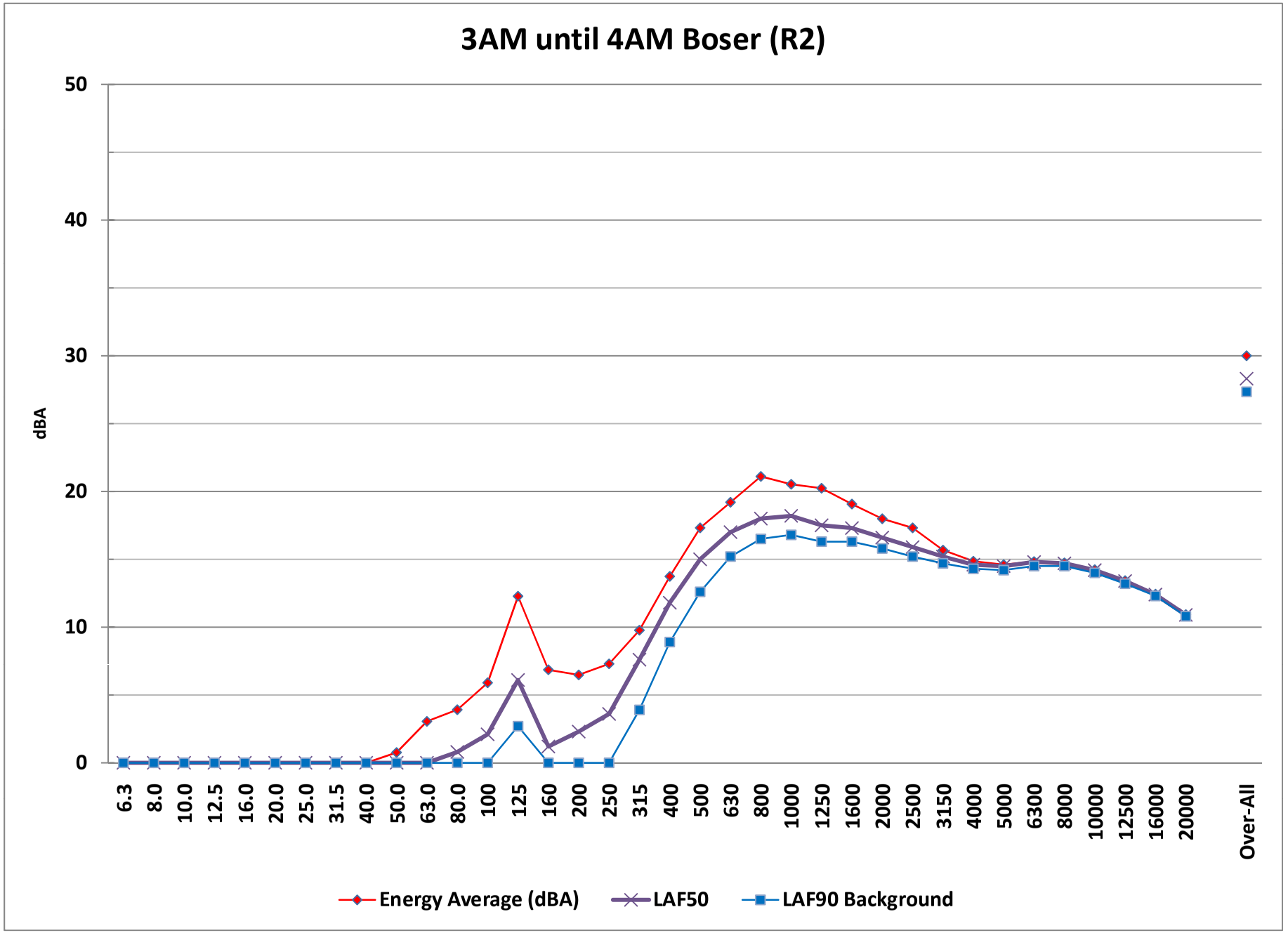
Calculated average LAeq = 31.6 dB, Overall
Calculated average LAeq = 24.2 dB, On / between the cursors
Calculated average LAeq = 32.7 dB, Outside the cursors

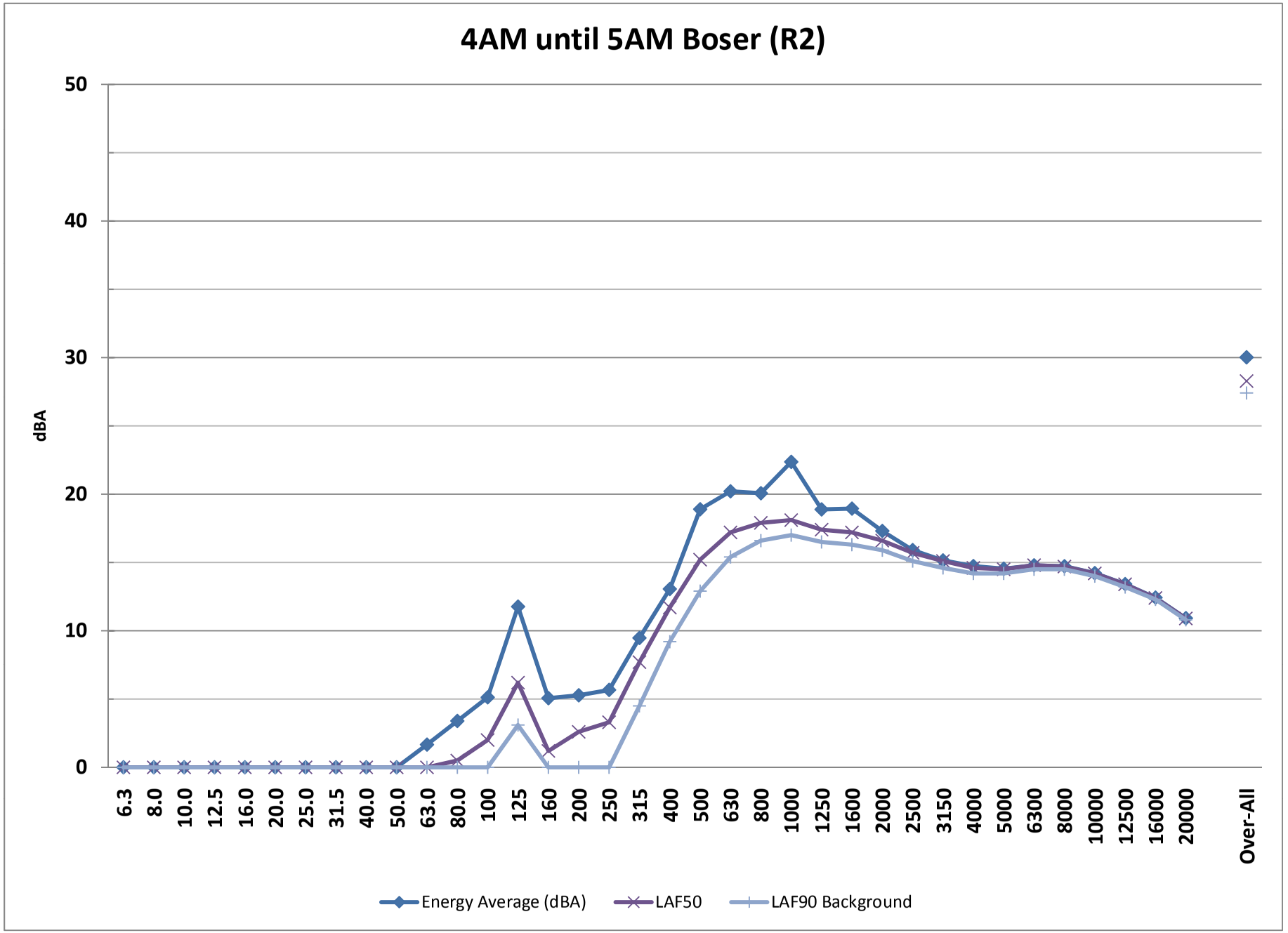
- LAS90.0 -

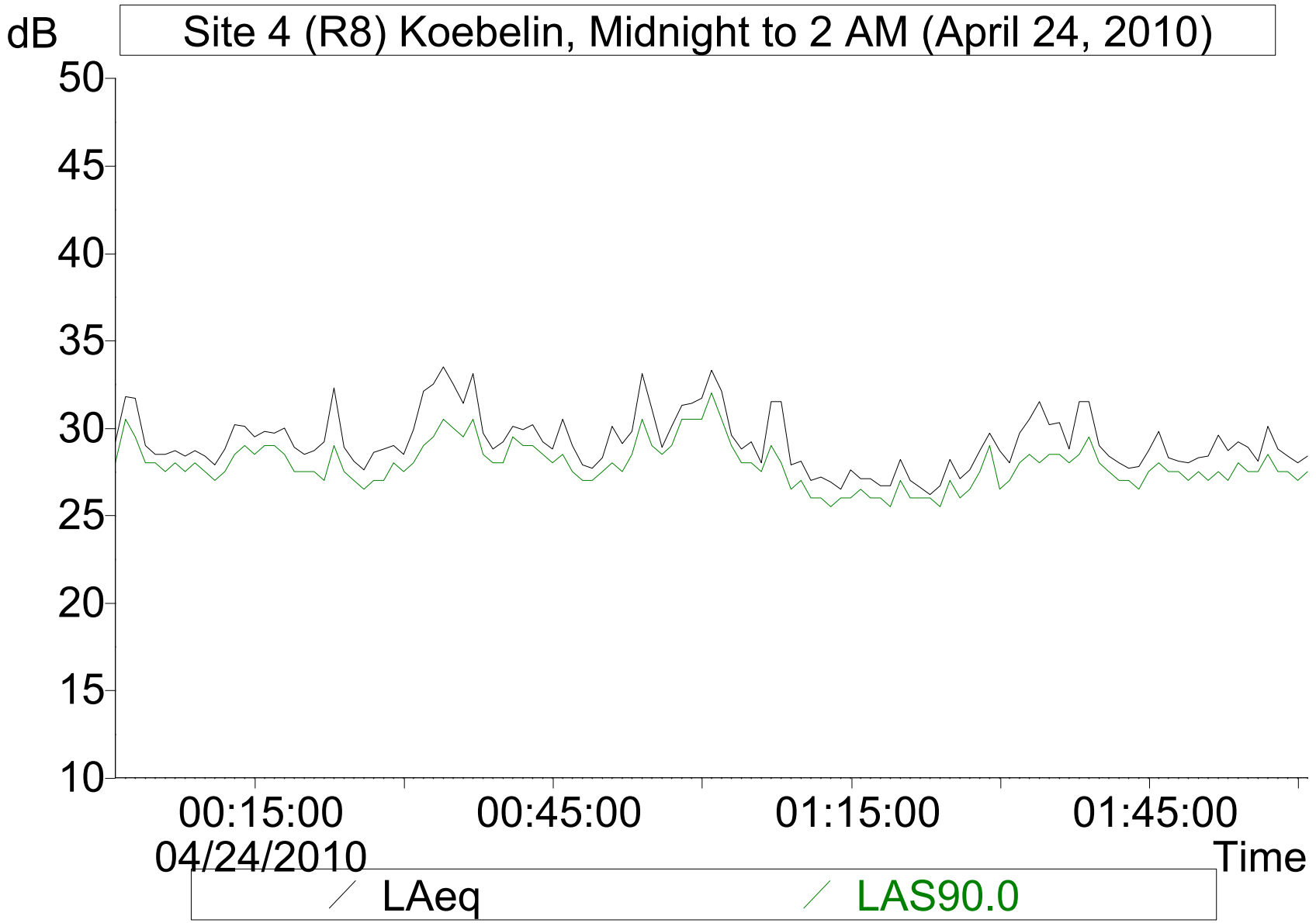
Minimum LAS90.0 = 21.5 dB, On / between the cursors. Time of minimum = 04/23/2010 01:00:47
Maximum LAS90.0 = 25.5 dB, On / between the cursors. Time of maximum = 04/23/2010 01:42:47

Calculated average LAS90.0 = 21.7 dB, On / between the cursors


3AM until 5AM
Sensitive Receiver Site R2 (Boser)
dBA
50
40
30
20
10
03:01:00
03:04:00
03:07:00
03:10:00
03:13:00
03:16:00
03:19:00
03:22:00
03:25:00
03:28:00
03:31:00
03:34:00
03:37:00
03:40:00
03:43:00
03:46:00
03:49:00
03:52:00
03:55:00
03:58:00
04:01:00
04:04:00
04:07:00
04:10:00
04:13:00
04:16:00
04:19:00
04:22:00
04:25:00
04:28:00
04:31:00
04:34:00
04:37:00
04:40:00
04:43:00
04:46:00
04:49:00
04:52:00
04:55:00
04:58:00
05:01:00
One (1) Minute Energy Average Sound Level (dBA/Leq)
Two (2) Hour Energy Average Sound Level (dBA/Leq)
Background/Ambient Sound Level (dBA/L90)


3AM until 4AM Boser (R2)
dBA
50
40
30
20
10
0
6.3
8.0
10.0
12.5
16.0
20.0
25.0
31.5
40.0
50.0
63.0
80.0
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
12500
16000
20000
Over-All
Energy Average (dBA)
LAF50
LAF90 Background


4AM until 5AM Boser (R2)
dBA
50
40
30
20
10
0
6.3
8.0
10.0
12.5
16.0
20.0
25.0
31.5
40.0
50.0
63.0
80.0
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
12500
16000
20000
Over-All
Energy Average (dBA)
LAF50
LAF90 Background



D:\MY DOCUMENTS\MY DATA\ISLM FIELD DATA\LD\10-04-22 TO 24 OLEAN NIGHT BACKGROUND\10-04-23\CEL SITE 4\1004234.DTA
Band = Broadband
Overall profile duration = 11:38:41 (698 samples)

- LAeq -

Minimum LAeq = 26.2 dB, On / between the cursors. Time of minimum = 04/24/2010 01:22:52
Maximum LAeq = 33.5 dB, On / between the cursors. Time of maximum = 04/24/2010 00:33:52

Calculated average LAeq = 42.2 dB, Overall
Calculated average LAeq = 29.5 dB, On / between the cursors
Calculated average LAeq = 43.0 dB, Outside the cursors

- LAS90.0 -

Minimum LAS90.0 = 25.5 dB, On / between the cursors. Time of minimum = 04/24/2010 01:12:52
Maximum LAS90.0 = 32.0 dB, On / between the cursors. Time of maximum = 04/24/2010 01:00:52

Calculated average LAS90.0 = 27.9 dB, On / between the cursors